TM 55-1520-240-23-7

TECHNICAL MANUAL

AVIATION UNIT AND AVIATION INTERMEDIATE MAINTENANCE MANUAL

CH-47D HELICOPTER

HEADQUARTERS, DEPARTMENT OF THE ARMY

10 MAY 1983

TM 55-1520-240-23-7
C22

CHANGE

NO. 22

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WASHINGTON, D. C., 15 JULY 2000

Aviation Unit and Aviation Intermediate
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CH-47D HELICOPTER

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A through F	A through F
8-2.1 and 8-2.2	8-2.1 and 8-2.2
-----	8-2.3 and 8-2.4
8-3 and 8-4	8-3 and 8-4
------	8-4.1 and 8-4.2
8-5 and 8-6	8-5 and 8-6
-------	8-6.1/(8-6.2 blank)
8-7 and 8-8	8-7 and 8-8
8-8.1/(8-8.2 blank)	8-8.1/(8-8.2 blank)
- - - -	8-8-3/(8-8.4 blank)
8-13 through 8-30	8-13 through 8-30
8-37 and 8-38	8-37 and 8-38
8-42.1 and 8-42.2	8-42.1 and 8-42.2
8-43 through 8-50	8-43 through 8-50
8-50.1/(8-50.2 blank)	8-50.1 and 8-50.2
- - -	8-50.3/(8-50.4 blank)
-----	8-50.5/(8-50.6 blank)
9-5 and 9-6	9-5 and 9-6
-----	9-6.1/(9-6.2 blank)
------	9-70.1/(9-70.2 blank)
9-71 and 9-72	9-71 and 9-72
9-157 and 9-158	9-157 and 9-158
9-158.1 and 9-158.2	9-158.1 and 9-158.2
-----	9-158.3 and 9-158.4
9-159 and 9-160	9-159 ad 9-160
9-160.1 and 9-160.2	9-160.1 and 9-160.2
-- - - -	9-160.3 and 9-160.4
9-161 and 9-162	9-161 and 9-162
9-162.1 and 9-162.2	9-162.1 and 9-162.2
------	9-162.3 and 9-162.4

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C22

Remove pages	Insert pages
9-171 and 9-172	9-171 and 9-172
9-261 and 9-262	9-261 and 9-262
9-267 and 9-268	9-267 and 9-268
9-268.9 and 9-268.10	9-268.9 and 9-268.10
9-268.15 and 9-266.16	9-268.15 and 9-268.16
9-268.23 through 9-268.26	9-268.23 through 9-268.26
9-268.31 and 9-268.32	9-268.31 and 9-268.32
-------	9-268.32.1/(9-268.32.2 blank)
9-268.37 and 9-268.38	9-268.37 and 9-268.38
9-272.1 through 9-272.4	9-272.1 through 9-272.4
9-272.17/(9-272.18 blank)	9-272.17/(9-272.18 blank)
9-283 through 9-286	9-283 through 9-286
9-336.1 through 9-336.8	9-336.1 through 9-336.8
9-336.11 through 9-336.14	9-336.11 through 9-336.13/(9-336.14 blank)
9-337 and 9-338	9-337 and 9-338
9-344.1 through 9-344.4	9-344.1 through 9-344.4
9-344.7 through 9-344.8	9-344.7 through 9-344.8
9-344.9/(9-344.10 blank)	9-344.9 and 9-344.10
------	9-344.11 and 9-344.12
9-345 and 9-346	9-345 and 9-346
-------	9-346.1 and 9-346.2
9-347 and 9-348	9-347 and 9-348
- - - -	9-350.1 through 9-350.5/(9-350.6 blank)
9-351 and 9-352	9-351 and 9-352
9-355 and 9-356	9-355 and 9-356
------	9-356.1 and 9-356.2
9-372.1 and 9-372.2	9-372.1 and 9-372.2
9-372.7 and 9-372.8	9-372.7 and 9-372.8
- - - -	9-372.11 through 9-372.15/(9-372.16 blank)

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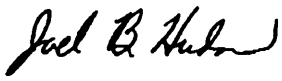

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CH-47D HELICOPTER

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8-99 and 8-100	8-99 and 8-100
8-102.1 through 8-102.3/(8-102.4 blank)	8-102.1 through 8-102.3/(8-102.4 blank)
9-149 and 9-150	9-149 and 9-150
9-150.1 and 9-150.2	9-150.1 and 9-150.2

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Remove pages	Insert pages
i and ii	i and ii
9-268.13 and 9-268.14	9-268.13 and 9-268.14
9-268.29 through 9-268.32	9-268.29 through 9-268.32

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CH-47D HELICOPTER

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9-31 and 9-32	9-31 and 9-32
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9-33 through 9-36	9-33 through 9-36
- - - - -	9-36.1/(9-36.2 blank)

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i and ii	i and ii
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9-369 through 9-372.2	9-369 through 9-372.2
----------	9-372.3 through 9-372.9/(9-372.10 blank)

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i and ii	i and ii
8-107 through 8-110	8-107 through 8-110
8-174.17 and 8-174.18	8-174.17 and 8-174.18
--------	8-1 74.18.1 through 8-174.18.21/(8-174.18.22 blank)

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8-29 and 8-30	8-29 and 8-30
8-42.1 and 8-42.2	8-42.1 and 8-42.2
8-43 and 8-44	8-43 and 8-44
8-75 through 8-78	8-75 through 8-78
8-189 and 8-190	8-189 and 8-190
8-193 and 8-194	8-193 and 8-194
9-3 and 9-4	9-3 and 9-4
9-57 and 9-58	9-57 and 9-58
9-60.5 and 9-60.6	9-60.5 and 9-60.6
9-69 and 9-70	9-69 and 9-70
9-76.1 and 9-76.2	9-76.1 and 9-76.2
9-149 and 9-150	9-149 and 9-150

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8-9 through 8-12	8-9 through 8-12
8-73 through 8-78	8-73 through 8-78
9-60.5 and 9-60.6	9-60.5 and 9-60.6
9-89 and 9-90/(9-91 blank)	9-89 and 9-90
-----	9-90.1 and 9-90.2
9-92	9-91 and 9-92
9-133 through 9-136	9-133 and 9-134
9-136.1 /(9.136.2 blank)	-----
9-137 through 9-144	-----
9-144.1 and 9-144.2	-----
9-145 and 9-146	9-146

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CH-47D HELICOPTERS

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Remove pages	Insert pages
i and ii	i and ii
9-234.1 and 9-234.2	9-234.1 and 9-234.2
9-361 and 9-362	9-361 and 9-362

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Remove pages	Insert pages
8-35 and 8-36	8-35 and 8-36
8-36.1 through 8-36.4	8-36.1 through 8-36.4
8-38.1 through 8-38.4	8-38.1 through 8-38.4
8-39 and 8-40	8-39 and 8-40
9-167 and 9-168	9-167 and 9-168

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CH-47D HELICOPTER

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Remove pages	Insert pages
- - - -	8-36.1 through 8-36.4
8-37 and 8-38	8-37 and 8-38
- - - -	8-38.1 through 8-38.4
8-39 and 8-40	8-39 and 8-40
8-42.1 through 8-42.4	8-42.1 through 8-42.4
8-49 and 8-50	8-49 and 8-50
8-173 and 8-174	8-173 and 8-174
8-189 through 8-192	8-189 through 8-192
8-217 and 8-218	8-217 and 8-218
8-233 and 8-234	8-233 and 8-234
9-9 and 9-10	9-9 and 9-10
9-10.3 and 9-10.4	9-10.3 and 9-10.4
9-11 and 9-12	9-11 and 9-12
9-15 and 9-16	9-15 and 9-16
9-75 and 9-76	9-75 and 9-76
9-278.3 and 9-278.4	9-278.3 and 9-278.4
9-343 and 9-344	9-343/9-344
9-344.1 through 9-344.7/9-344.8	9-344.1 through 9-344.8
9-442.1 and 9-442.2	9-442.1 and 9-442.2
9-442.13 and 9-442.14	9-442.13 and 9-442.14
9-442.19/9-442.20	9-442.19/9-442.20

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AVIATION UNIT AND AVIATION INTERMEDIATE MAINTENANCE MANUAL

CH-47D HELICOPTER

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Remove pages	Insert pages
8-5 and 8-6	8-5 and 8-6
8-37 and 8-38	8-37 and 8-38
9-60.1 and 9-60.2	9-60.1 and 9-60.2
9-217 and 9-218	9-217 and 9-218
9-218.1/9-218.2	9-218.1/9-218.2
9-219 and 9-220	9-219 and 9-220
9-268.1 and 9-268.2	9-268.1 and 9-268.2
9-268.17 and 9-268.18	9-268.17 and 9-268.18
9-269 and 9-270	9-269 and 9-270
9-272.15 and 9-272.16	9-272.15 and 9-272.16
9-273 and 9-274	9-273 and 9-274
9-359 and 9-360	9-359 and 9-360
9-367 and 9-368	9-367 and 9-368
– – – –	9-438.1 and 9-438.2

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CH-47D HELICOPTER

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8-37 and 8-38	8-37 and 8-38
8-89 throuqh 8-92	8-89 through 8-92
8-103 and 8-104	8-103 and 8-104
---	8-104.1 and 8-104.2
8-173 and 8-174	8-173 and 8-174
8-178.1 through 8-178.4	8-178.1 through 8-178.4
8-237 and 8-238	8-237 and 8-238
8-245 and 8-246	8-245 and 8-246
8-253 through 8-258	8-253 through 8-258
--	8-258.1/8-258.2
8-259 and 8-260	8-259 and 8-260
8-264.1 and 8-264.2	8-264.1 and 8-264.2
8-265 and 8-266	8-265 and 8-266
---	8-266.1/8-266.2
8-267 and 8-268	8-267 and 8-268
9-1/9-2	9-1/9-2
9-3 through 9-10	9-3 through 9-10
9-10.1/9-10.2	9-10.1 through 9-10.5/9-10.6
9-33 through 9-36	9-33 through 9-36
9-57 and 9-58	9-57 and 9-58
9-68.1/9-68.2	9-68.1/9-68.2
9-69 through 9-76	9-69 through 9-76
9-76.1/9-76.2	9-76.1 through 9-76.7/9-76.8
9-87 and 9-88	9-87 and 9-88
---	9-150.3/9-150.4
9-151 and 9-152	9-151 and 9-152
9-152.1 and 9-152.2	9-152.1 and 9-152.2
9-171 and 9-172	9-171 and 9-172
9-189 and 9-190	9-189 and 9-190
9-268.3 and 9-268.4	9-268.3 and 9-268.4
9-278.1 and 9-278.2	9-278.1 and 9-278.2
---	9-278.2.1/9-278.2.2
9-278.3 through 9-278.5/9-278.6	9-278.3 through 9-278.6
9-315 and 9-316	9-315 and 9-316
9-327 and 9-328	9-327 and 9-328

Remove pages	Insert pages
9-334.1 through 9-334.4	9-334.1 through 9-334.4
---	9-344.9/9-344.10
9-345 through 9-348	9-345 through 9-348
9-355 and 9-356	9-355 and 9-356
9-361 through 9-365/9-366	9-361 through 9-365/9-366
9-393 and 9-394	9-393 and 9-394
---	9-396.1 through 9-396.6

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Aviation Unit and Aviation Intermediate Maintenance Manual

CH-47D HELICOPTER

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8-178.3 thru 8-178.6	8-178.3 thru 8-178.6
8-265 thru 8-268	8-265 thru 8-268
9-11 and 9-12	9-11 and 9-12
9-15 and 9-16	9-15 and 9-16
9-221 and 9-222	9-221 and 9-222
9-390.1/9-390.2	9-390.1/9-390.2
9-391 thru 9-394	9-391 thru 9-394
9-439 thru 9-442	9-439 thru 9-442

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WASHINGTON, D.C., 8 December 1987

Aviation Unit and Aviation Intermediate
Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-7, 10 May 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
i through iv	i through iv
8-67 and 8-68	8-67 and 8-68
8-127 and 8-128	8-127 and 8-128
9-57 and 9-58	9-57 and 9-58
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9-369 through 9-372	9-369 through 9-372
9-372.1 and 9-372.2	9-372.1 and 9-372.2
9-393 and 9-394	9-393 and 9-394

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Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

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To be distributed in accordance with DA Form 12-31, AVUM and AVIM Maintenance Requirements for CH-47D Helicopter, Cargo Transport.

URGENT

TM 55-1520-240-23-7
C 6

CHANGE
NO. 6

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 April 1987

Aviation Unit and Aviation Intermediate
Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-7, 10 May 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
8-215 and 8-216	8-215 and 8-216
8-221 and 8-222	8-221 and 8-222
8-229 and 8-230	8-229 and 8-230

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TM 55-1520-240-23-7
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CHANGE
NO. 5

HEADQUARTERS
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Aviation Unit and Aviation Intermediate
Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-7, 10 May 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
9-265 and 9-266	9-265 and 9-266

2. Retain this sheet in front of manual for reference purposes.

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NO. 4

HEADQUARTERS
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TM 55-1520-240-23-7, 10 May 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert pages
9-63 and 9-64	9-63 and 9-64
9-131 and 9-132	9-131 and 9-132

2. Retain this sheet in front of manual for reference purposes.

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CHANGE NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
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Aviation Unit and Aviation Intermediate Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-7, 10 May 1983, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

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9-372.1 and 9-372.2	9-372.1 and 9-372.2
9-442.11 and 9-442.12	9-442.11 and 9-442.12

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By Order of the Secretary of the Army:

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Chief of Staff

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Brigadier General, United States Army
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TM 55-1520-240-23-7
C 2

CHANGE

NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 August 1985

Aviation Unit and Aviation Intermediate
Maintenance Manual

CH-47D HELICOPTER

TM 55-1520-240-23-7, 10 May 1983 is changed as follows:

1. Change 1 Banner Page, dated 18 April 1985, was incorrectly stated as Change 7. It should be corrected to read Change 1.

2. Retain this sheet in front of manual for reference purposes.

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CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 18 April 1985

Aviation Unit and Aviation Intermediate
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—--	9-442.1 thru 9-442.19/9-442.20
9-449 and 9-450	9-449 and 9-450

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JOHN A. WICKHAM, JR.
General, United States Army
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DONALD J. DELANDRO
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31, Organizational, DS and GS Maintenance Requirements for CH-47D aircraft.

WARNING AND FIRST AID DATA.

For artificial respiration and other first aid data, refer to FM 21-11.

Personnel performing instructions involving operations, procedures, and practices which are included or implied in this technical manual shall observe the following instructions. Disregard of these warnings and precautionary information can cause serious injury, illness, death, or an aborted mission.

WARNING

An operating procedure, practice, etc., which if not correctly followed, could result in personal injury or loss of life.

CAUTION

An operation procedure, practice, etc., which if not strictly observed, could result in damage to or destruction of equipment.

NOTE

An operating procedure, condition, etc., which is essential to highlight.

WARNING

Cleaning Solvents

- Those areas of skin and clothing that come in contact with cleaning solvents should be thoroughly washed immediately.
- Saturated clothing should be removed immediately.
- Areas in which cleaning solvents are used should be adequately ventilated to keep vapors to a minimum.
- If cleaning solvents contact the eyes, nose, or ears, flush them with generous quantities of water, and then seek medical attention immediately.

WARNING

Electrical and Electronic Equipment Maintenanca

- Do not wear rings, watches, or metal jewelry when working around electrical equipment. Serious burns can result.
- Be careful when working on 150- and 300-volt dc circuits and on ac generator 115- and 200-volt” ac outputs. Serious burns can result.

WARNING

Dangerous Static Charges

Ground the helicopter during parking, fueling, or defueling. Sparks can" cause fuel vapor to ignite.

WARNING

Dangerous Voltages at Antenna Terminals

Be careful when working near antenna or antenna terminals. Radio frequency (rf) voltages exist at these points when transmitters are operating. Contact with radiating antennas can cause serious rf burns.

WARNING

Poisonous Carbon Monoxide Fumes

Toxic carbon monoxide fumes may be present inside the helicopter whenever engines or apu are operating with cargo ramp open. Ventilate the cockpit.

WARNING

Corrodve Battery Electrolyte (Potassium Hydroxide)

- The electrolyte used in nickel-cadmium batteries contains potassium hydroxide which is a caustic substance.
- Contact with skin or eyes will cause burns.
- Use rubber gloves, rubber apron, and protective eye covering or face shield when handling battery.
- If personal contact with electrolyte occurs, flush immediately with large amounts of only clean water. Get medical attention immediately.

WARNING

Explosive Battery Hazard

- Before removing or installing battery, make sure battery switch is OFF and battery has cooled down if overheated.
- Connecting or disconnecting battery connector while battery is under load may cause explosion or electrical arcing resulting in injury to personnel.

WARNING

Electrolyte Contamination

- Separate nickel-cadmium batteries and lead-acid type batteries as far as possible from each other.
- Do not let anything associated with a lead-acid battery, including air, come in contact with a nickel-cadmium battery or its electrolyte. Sulfuric acid fumes from a lead-acid battery could result in damage to a nickel-cadmium battery leading to battery failure and a hazard to personnel.
- Do not use same tools or protective clothing for both types of batteries.
- If sulfuric acid has been somehow mixed with electrolyte in the battery, the upper areas of the battery cells will appear green in color indicating battery failure or damage and potential danger to personnel unless replaced.

WARNING

Acids and Alkalines

- Do not add water to acid. A violent action will result. Add acid to water in small quantities.
- Rust stripper is an alkaline solution.
- Avoid skin contact. Wear protective clothing. Wash thoroughly after using.

WARNING

Windshield Rain Repellent

- Do not let windshield rain repellent contact open flame. Deadly hydrogen fluoride gas could be generated.
- Wash hands with soap and water after handling repellent.

WARNING

Antiseize Compounds

- Some antiseize compounds are irritants. Avoid inhaling fumes and contact with skin.
- Wear protective clothing. Wash thoroughly after using.

WARNING

Paints, Varnishes, Dopes, Thinners, and Lubricants

- These materials are generally highly flammable and may be irritants. Work in a well-ventilated area away from open flames.
- Avoid inhaling fumes and prolonged contact with skin. Wash thoroughly after using.

WARNING

Epoxy Resin, Cements, and Adhesives

- These materials may contain toxic or irritating substances. They may also be flammable. Work in a well-ventilated area away from open flames.
- Wear protective clothing. Avoid contact with skin. Wash thoroughly after using.

WARNING

Radiation Hazard

- Some instruments contain radioactive material. Do not try to disassemble these instruments. They present no radiation hazard unless seal is broken.
- If you think seal is broken, do not remove instrument from helicopter before consulting Base Radioactive Protection Officer (AR 40-15).
- Use a beta-gamma radiac meter AN/PDR-27 or equivalent to determine if instrument contains radioactive material (radium).

WARNING

Fire Extinguishing Agents

- Monobromotrifluoromethane (CF_3Br) is highly volatile but is not easily detected by smell. It is not toxic, but reduces oxygen available for proper breathing.
- If liquid CF_3Br contacts skin, it can cause frostbite or low temperature bums.
- If agent touches eyes or skin, immediately flush affected area with running water. Get medical attention.

WARNING

Noise

- Sound pressure levels in this helicopter during some operating conditions exceed the Surgeon General's hearing conservation criteria (TB MED251).
- Hearing protection devices, such as aviator helmet or ear plugs, shall be worn by all personnel in and around the helicopter during operation.

WARNING

FOD

- Make sure area is clear of foreign objects before closing access doors, panels, and fairings.
- If area is not clear, damage to components or systems could result in personal injury or death.

WARNING

JP-4/JP-5 Fuel
MIL-T-5624

- Fuel is flammable. Do not use near welding areas, open flames, or on very hot surfaces.
- Use only with adequate ventilation.
- Avoid prolonged or repeated contact with skin. Prolonged contact may cause drying and irritation of skin.
- Remove saturated clothing immediately.
- Do not smoke when handling fuel.
- Do not take internally.
- Store in approved, metal safety containers.

WARNING

Lubricating Oils
MIL-L-23699 or MIL-L-7808

- If oil is decomposed by heat, toxic gases are released.
- Prolonged contact with liquid or mist may cause dermatitis and irritation.
- If there is prolonged contact with skin, wash affected area with soap and water. If oil contacts eyes, flush with water immediately. Remove saturated clothing.
- If swallowed, do not try to vomit. Seek immediate medical attention.
- When handling liquid oil, wear rubber gloves, If prolonged contact with mist is likely, wear approved respirator.

WARNING

Lifting Components With Hoist

- Lifting or hoisting of components shall only be done by designated personnel.
- The load capacity rating shall be clearly marked on hoist. Do not exceed load rating.
- Inspection and testing for cracks or defects in hoist system shall be performed on a regular basis.
- Before lifting, alert personnel in immediate areas.
- Before lifting, balance the load.
- Do not stand under load while it is being moved from one area to another on a hoist.
- Do not stand under load to do maintenance work.

WARNING

Hydraulic Pressures

- High pressures used in testing hydraulic components can cause line rupture or component failure.
- Only qualified personnel shall operate, service, and maintain hydraulic test equipment.
- Use heavy plastic shielding at least 1/2-inch thick when applying pressures over 250 psi to prevent injury to personnel.

WARNING

Hydraulic Fluid

- Hydraulic fluid is toxic. It can irritate skin and eyes and cause burns. When fluid is decomposed by heating, it releases toxic gases.
- Avoid inhaling. Use only with adequate ventilation. If prolonged contact with mist is likely, wear an appropriate respirator.
- Avoid contact with skin, eyes, or clothing. Wear rubber gloves if handling liquid.
- In case of contact with skin, immediately wash skin with soap and water. In case of contact with eyes, flush them immediately with clear water and get medical attention.
- If liquid is swallowed, do not induce vomiting; get immediate medical attention.

WARNING

Compressed Air

- Do not use more than 30 psi compressed air for cleaning purposes. Debris propelled under pressure can cause injury to eyes.
- Use eye protection to prevent injury to personnel.

WARNING

Flare Dispenser

- Flares can accidentally fire, sometimes from stray voltage. Injury or death can result.
- Remove all electrical power from helicopter before installing loaded payload module on dispenser assembly.
- Keep hands and face away from end of payload module during installation.

WARNING

Maintenance Platforms/Workstands

- Use only appropriate maintenance platforms/workstands illustrated in TM 55-405-10, or other approved locally procured stands and restraint equipment, when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

WARNING

- Do not wear eyeglasses having light sensitive lenses while performing magnetic particle (black light) or fluorescent penetrant inspections.
- Such lenses have a 16 to 45 percent light transmission loss.
- Wearing them can result in failure to detect flaws and cracks under ultraviolet light.

WARNING

Cadmium-Plated Tools

- Use only chrome-plated or unplated steel tools when working on the helicopter.
- Cadmium or zinc-plated tools are not permitted, since these platings are prone to chipping and flaking. The chips and flakes could cause corrosion or fluid contamination.
- All tools, regardless of plating type, shall be serviceable and free of chipping.

LIST OF EFFECTIVE PAGES

Insert latest changed pages; dispose of superseded pages in accordance with regulations.

NOTE: On a changed page, the portion of the text affected by the latest change is indicated by a vertical line in the outer margin of the page. Changes to illustrations are indicated by miniature pointing hands.

Dates of issue for original and changed pages are:

Original	10 May 1983	Change 12	30 July 1993
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Change 2	30 August 1985	Change 14	31 January 1995
Change 3	31 October 1986	Change 15	16 May 1996
Change 4	22 November 1986	Change 16	19 August 1996
Change 5	26 November 1986	Change 17	16 February 1997
Change 6	30 April 1986	Change 18	28 February 1997
Change 7	08 December 1987	Change 19	30 May 1997
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TECHNICAL MANUAL

NO. 55-1520-240-23

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC., 10 May 1983

Aviation Unit and Aviation Intermediate Maintenance Manual CH-47D HELICOPTER

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of any way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander. U.S. Army Aviation and Missile. Command, ATTN: AMSAM-MMC-LS-LP, Redstone Arsenal. AL, 35898-5230. A reply will be furnished to you. You may also send in your comments electronically to our e-mail address: ls-lp@redstone.army.mil or by fax 205-842-6546/DSN 788-6546. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

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CHAPTER 8

INSTRUMENTS

SECTION I

ENGINE INSTRUMENTS

DESCRIPTION AND OPERATION

POWER TURBINE INLET TEMPERATURE (PTIT) AND EMERGENCY POWER INDICATING SYSTEM (WITHOUT 74)

Description:

Except for component locations, the ptit and emergency power indicating circuits are identical for each engine. The ptit system uses a lo-probe thermocouple to measure temperature at the inlet to the engine power turbine section. This temperature is displayed on indicators, one for each engine, on, the center instrument panel. The emergency power and indicating system includes a set-point circuit in each indicator, an EMERG PWR light for each engine, and an emergency power panel. The set-point circuit is factory adjusted to provide a signal when ptit is 890° to 910°C. This indicates the engine is providing emergency power. When an engine is operated at emergency power, the EMERG PWR light comes on.

The EMERG PWR lights are located on the pilot's and copilot's instrument panels. When ptit exceeds 910°C for at least 4 seconds, a timer starts recording overtemperature duration. A striped latch display on the emergency power panel indicates that the engine was operated under emergency power and alerts maintenance personnel to record time and perform any necessary inspections or maintenance. The emergency power panel is located in the cockpit overhead panel, below the engine condition panel.

Thermocouple probes (10) are in tubes around the power turbine nozzle. The probes extend into the gas stream between the vanes of the third turbine nozzle. Heat from the combustion chamber causes the probes to generate a voltage proportional to the heat. This voltage is applied to the No. 1 PTIT indicator and the indicator displays the temperature on a scale calibrated 0 to 1,200°C.

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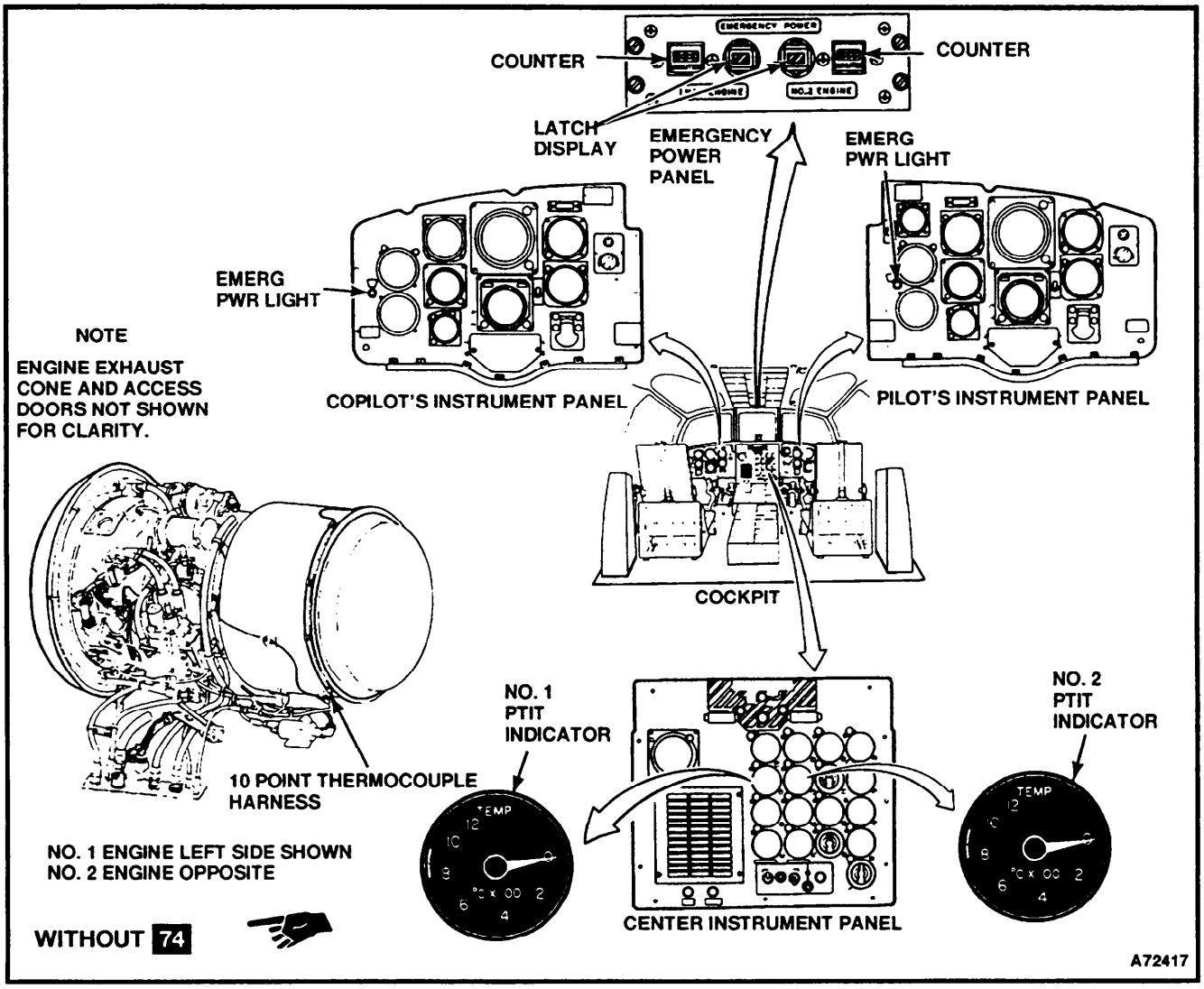

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POWER TURBINE INLET TEMPERATURE AND CONTINGENCY POWER INDICATING SYSTEM (WITH 74)

Description:

Except for component locations, the power turbine inlet temperature (ptit) and contingency power indicating circuits are the same for both engines. The ptit system uses ten T4.5 thermocouples and a harness to measure the temperature at the inlet to each engine power turbine section. The power turbine inlet temperature signal is sent to the digital electronic control unit (decu). An output signal is sent from the decu to the ptit indicators on the center instrument panel. The indicators are hermetically sealed and powered by 28 Vdc. The indicator has a high impedance so that the wiring harness resistance does not have an effect on the indication of the ptit.

The contingency power indicating system is operated from the ptit indicators. When the power turbine inlet reaches a temperature of greater than 894°C on either engine, a switched ground circuit is completed at the indicator. This causes the amber ENG CONT PWR light on the Master Caution Panel to come on. When the ptit drops below the contingency level, the ENG CONT PWR light goes out.

Ten T4.5 thermocouple probes are mounted in tubes around the power turbine nozzle. The probes extend into the gas stream between the vanes of the third turbine nozzle. The probes are connected to a harness. Heat at the power turbine inlet causes the probes to generate a voltage proportional to the heat. The voltage is sent to the decu and then to the ptit indicator. The indicator displays the temperature on a scale calibrated 0 to 1,200°C.

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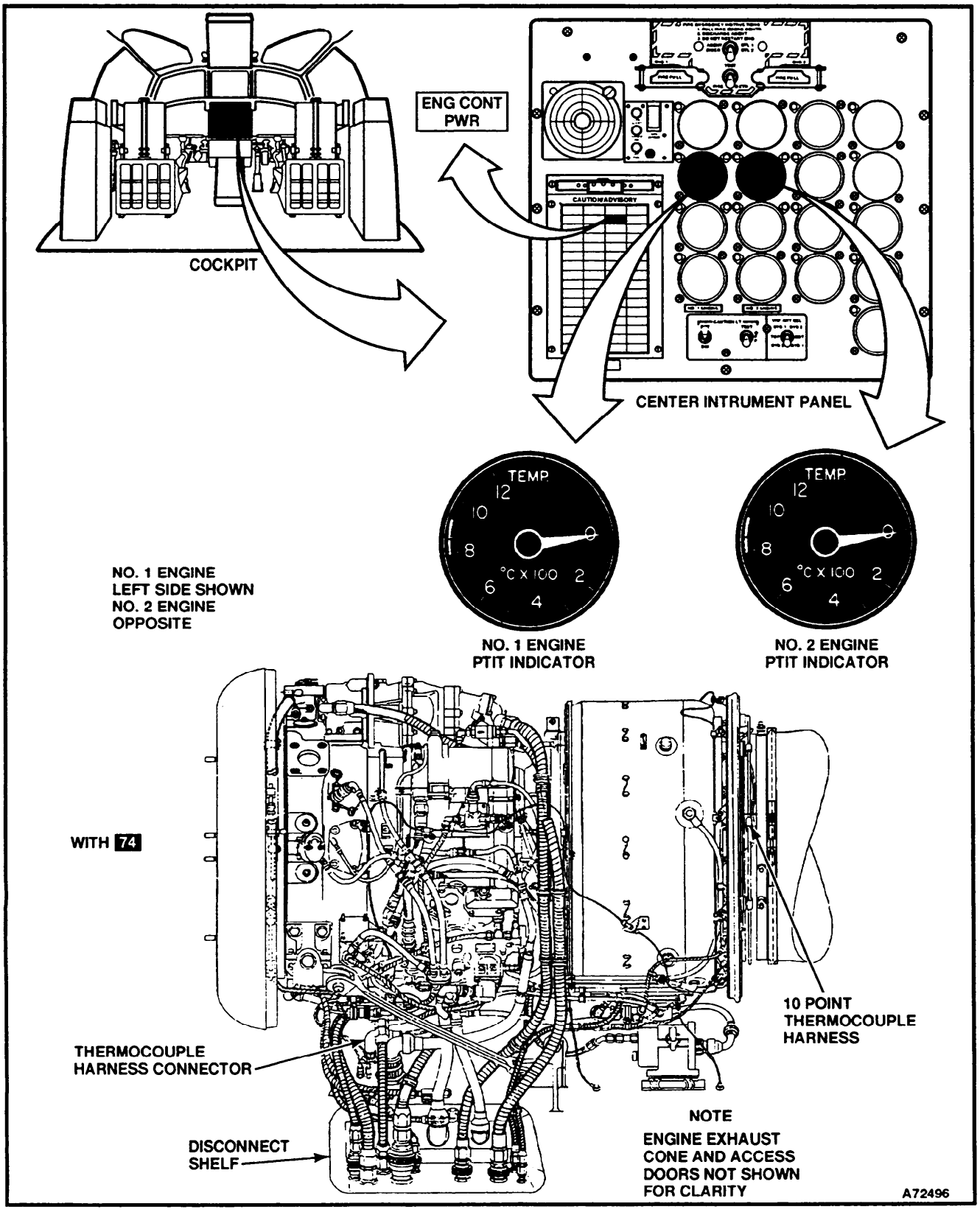

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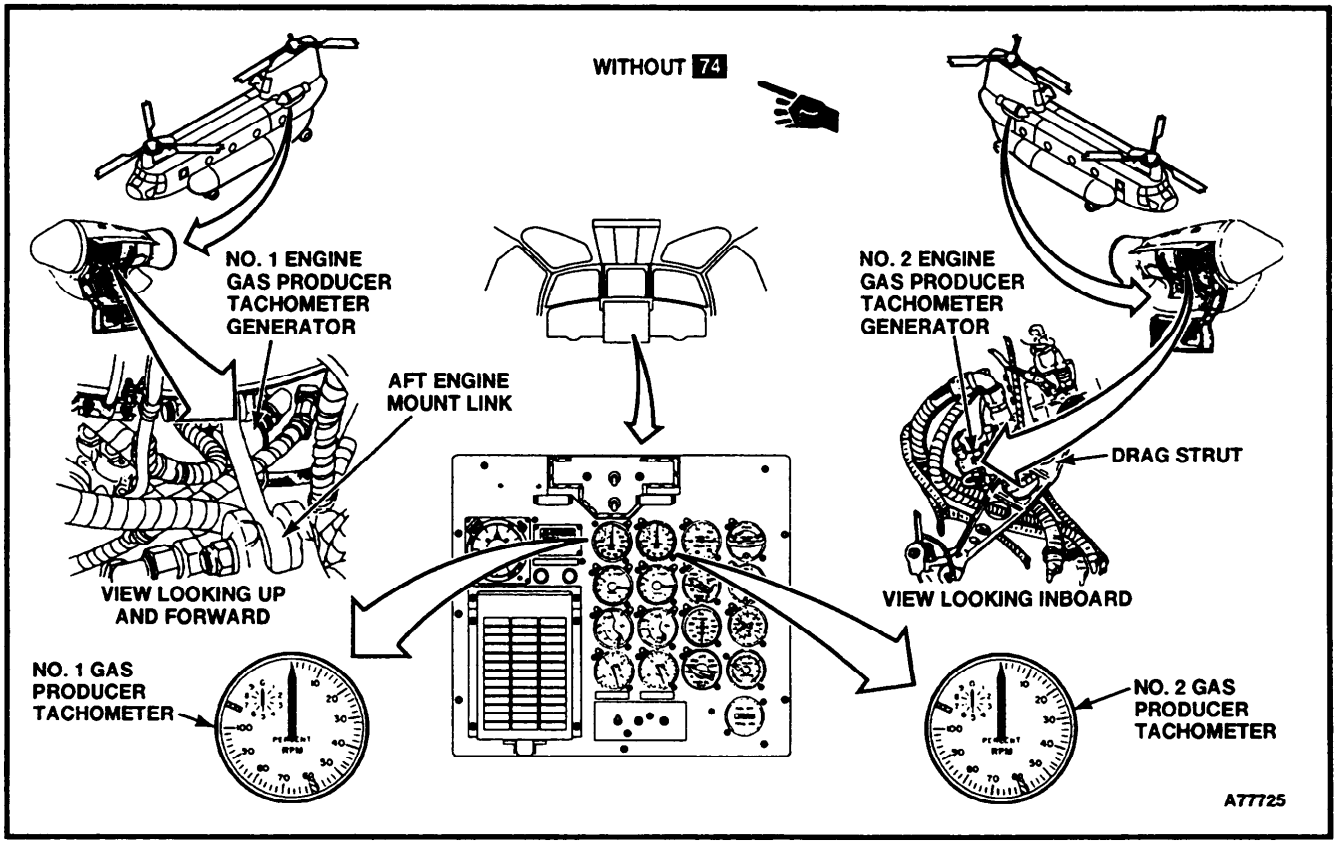
GAS PRODUCER TACHOMETER SYSTEM (WITHOUT 74)

Description:

The gas producer tachometer system is a synchronous system that measures engine compressor rpm. There is a separate system for each engine. Each system consists of an indicator and a tachometer generator. The generator is on the engine. The indicator is on the center instrument panel.

The gas producer tachometer indicator indicates compressor rpm as a percentage of maximum rated speed. The indicator is calibrated 0 to 110 percent rpm. Electrical connections are made through a connector at the rear of the clamp-mounted instrument.

The gas producer tachometer generator is a three phase ac generator mounted on the engine at the five o'clock position. It supplies voltage to the tachometer indicator at a frequency proportional to the speed of the engine compressor. Electrical connections are made through a connector in the side of the generator.



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GAS PRODUCER TACHOMETER SYSTEM (WITH 74)

Description:

The gas producer tachometer indicating (N1) system measures engine compressor rpm. There is a separate system for each engine. Each system consists of an indicator and a magnetic (speed) pickup. The magnetic pickup is mounted on the engine. The indicator is mounted on the center instrument panel.

The gas producer tachometer (N1) indicator shows compressor rpm as a percentage of maximum rated speed. The indicator is calibrated 0 to 110 percent (%) rpm. Electrical connections are made through a connector at the rear of the instrument.

The only powerplant-mounted equipment is a magnetic pickup. The magnetic pickup gives a signal frequency that is proportional to gas producer speed. Electrical connections are made through a connector on the side of the magnetic pickup.

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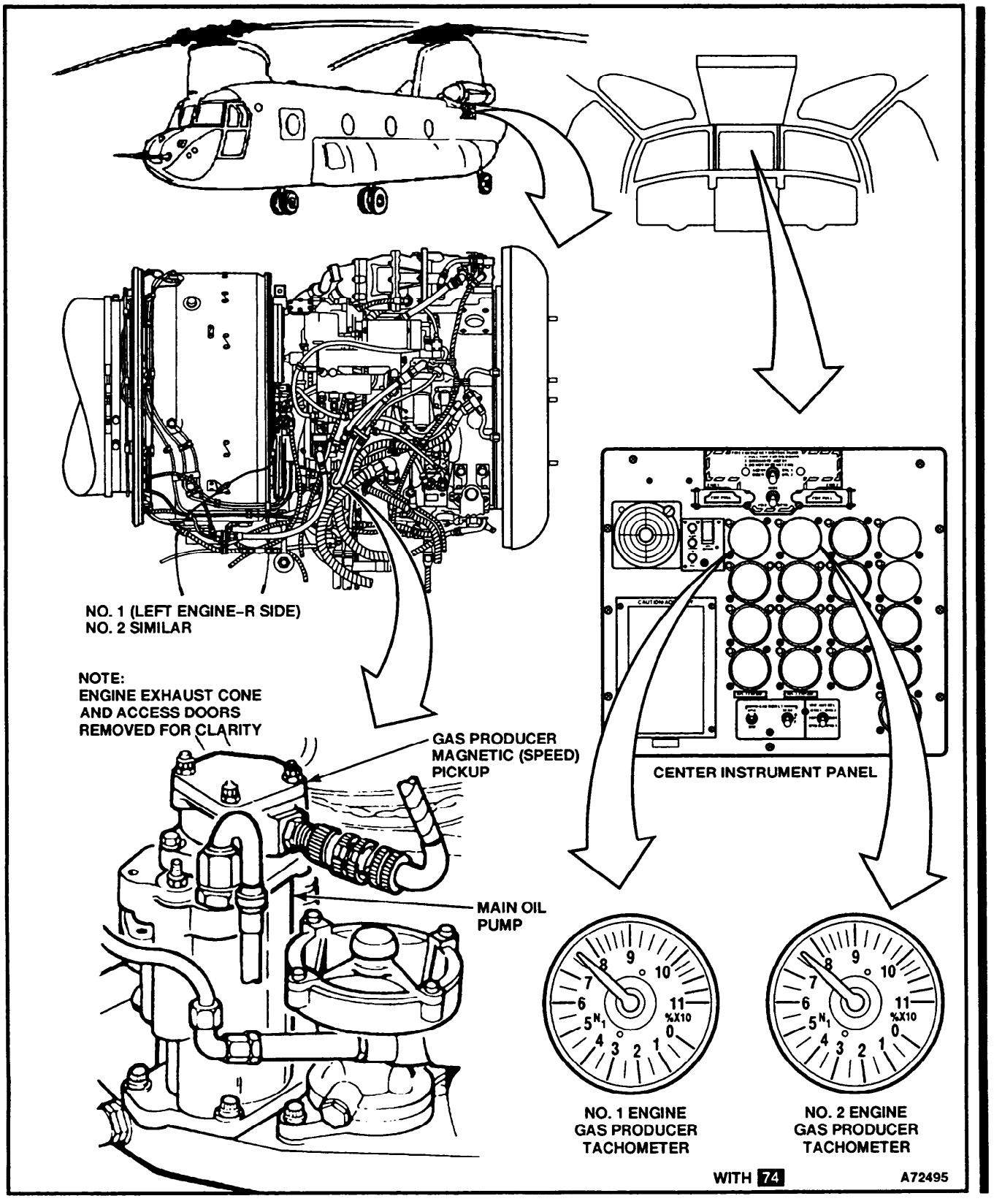

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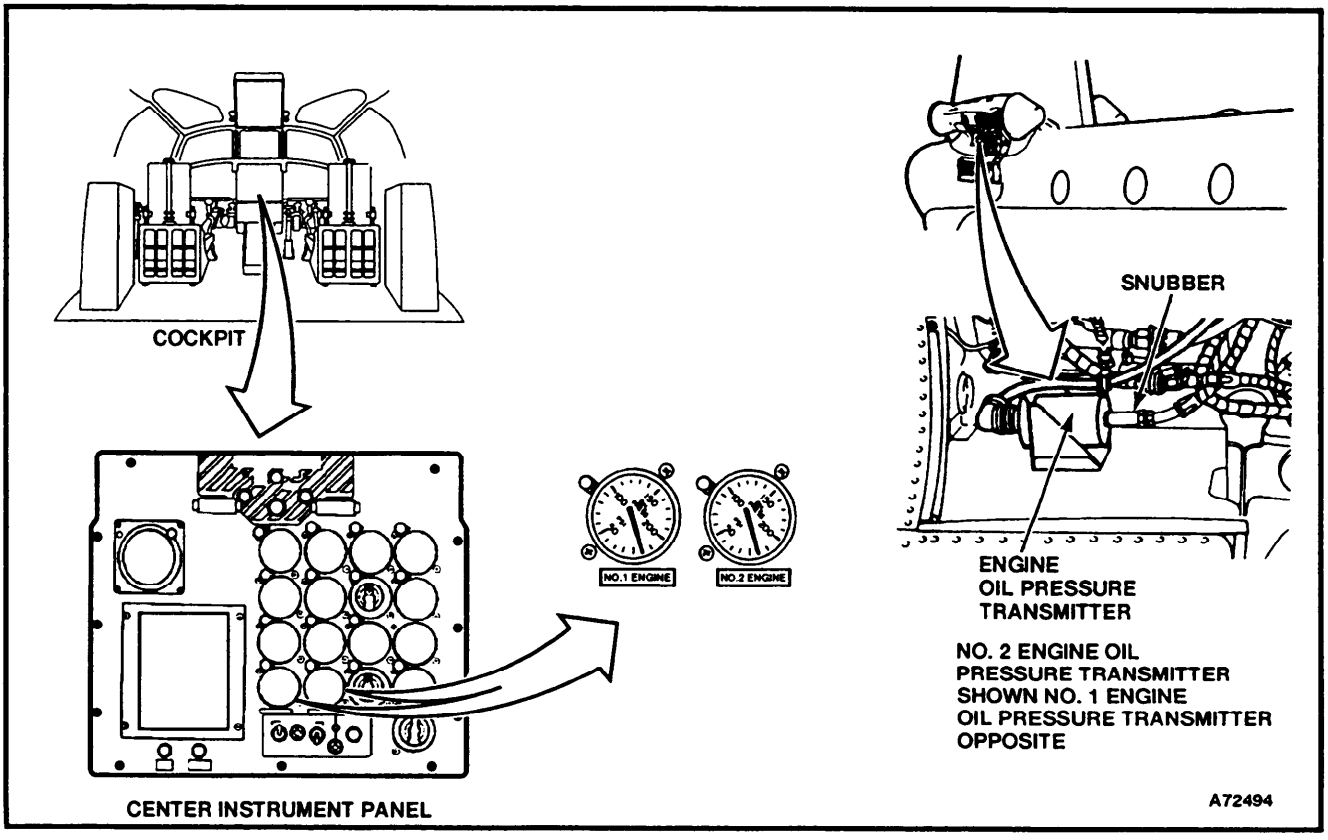
ENGINE OIL PRESSURE INDICATING SYSTEM

Description:

The engine oil pressure indicating system is a differential pressure synchro system. It measures and indicates the pressure of oil circulating within the engine. There is a separate system for each engine. Each system consists of an indicator and a pressure transmitter synchro. The transmitter is located in the engine nacelle. The indicator is on the center instrument panel.

The engine oil pressure indicator, a synchro receiver, indicates oil pressure as psi. The indicator is calibrated from 0 to 200 psi. Electrical connections are made through a connector at the rear of the clamp mounted instrument.

The transmitter, a synchro transmitter, is linked to the engine oil system through a flexible hose, coupling and snubber. Pressure is applied to a diaphragm in the transmitter causing the transmitter rotor to turn. This causes a change in the stator voltage in the indicator, that causes the stator rotor to turn, moving the pointer to the correct pressure indication. The snubber reduces the effect of pressure surges on the system. A zero adjustment is included on the transmitter.



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ENGINE OIL TEMPERATURE INDICATING SYSTEM

Description:

The engine oil temperature indicating system is an electrical resistance thermometer system. It measures and indicates the temperature of the oil circulating in the engine. There is a seperate system for each engine. Each system consists of an indicator and a temperature bulb. As oil temperature varies, bulb resistance varies, causing the indicator pointer to move a distance proportional to the temperature change.

The temperature bulb senses and transmits engine oil temperature signals to the indicator. The bulb is calibrated to provide 90.38 ohms resistance at 0°C (32°F). It is located at the 4 o'clock position, screwed into a lube fitting, on the engine.

The indicator is clamp-mounted on the center instrument panel with electrical connections provided through an electrical connector at the rear of the indicator. The indicator is calibrated from -70°C to +150°C.

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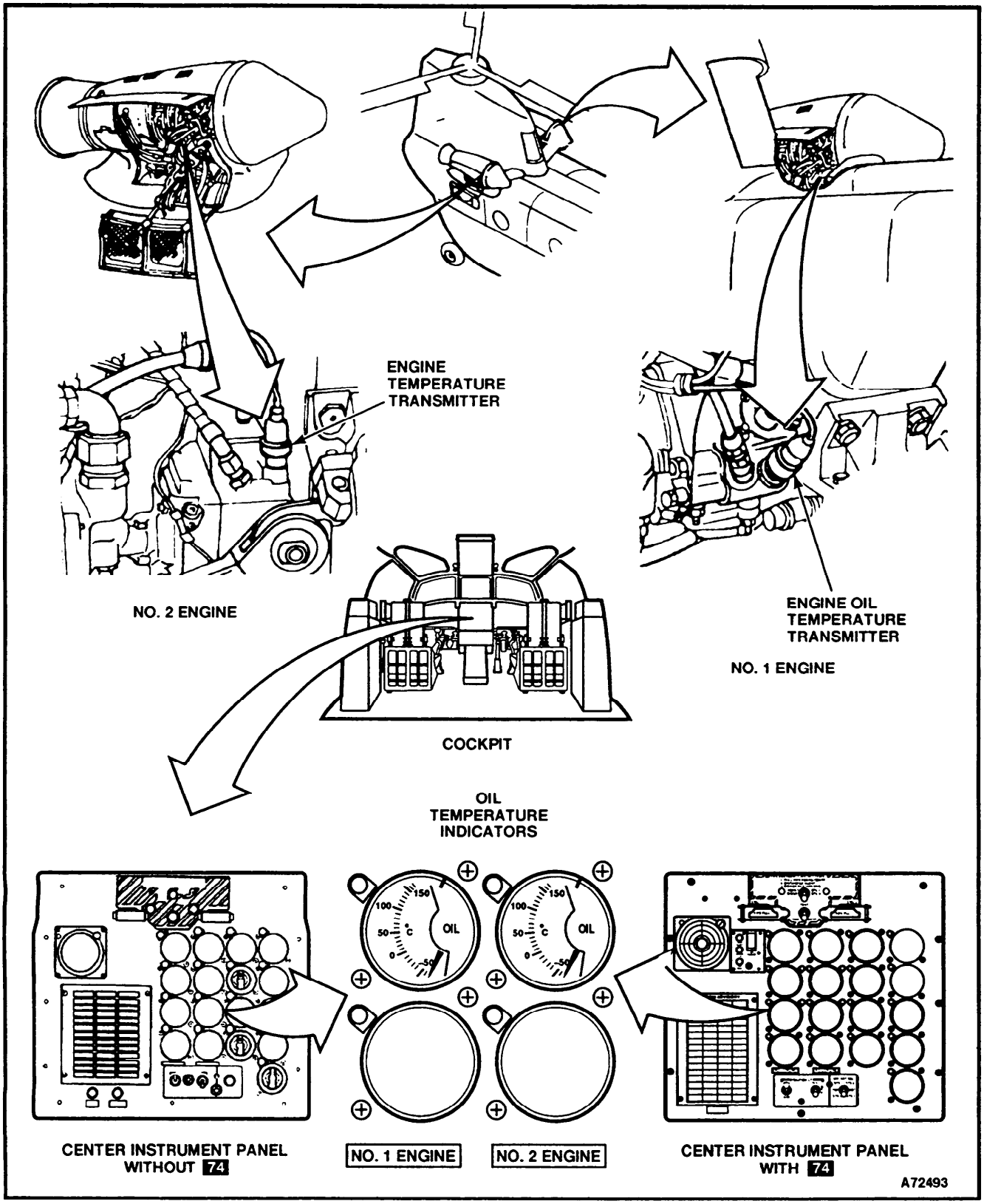

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TORQUE INDICATING SYSTEM (WITHOUT 74)

Description:

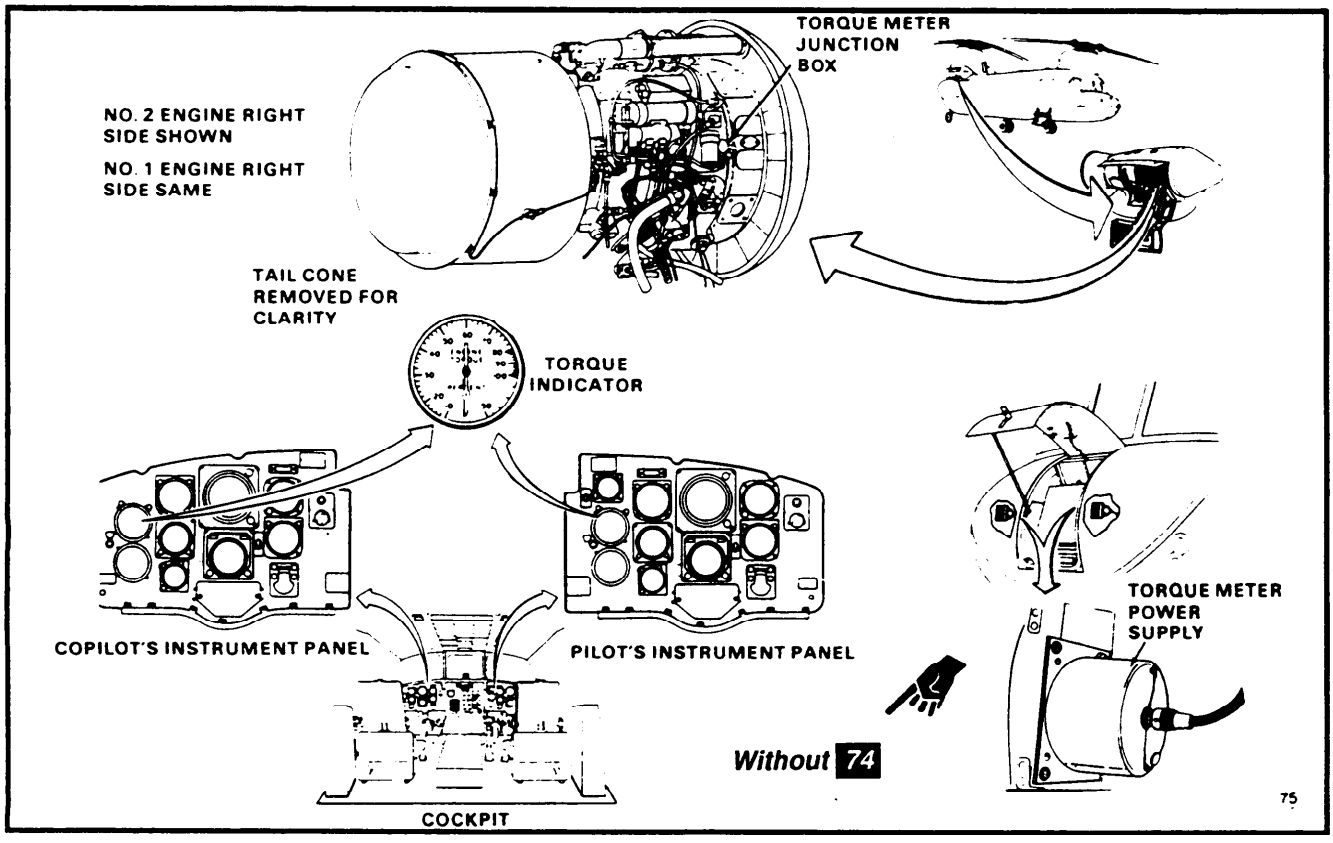
The torque indicating system, which monitors engine power output, is a ratio system. It measures and indicates the amount of engine torque. The system consists of an engine-driven power shaft, a head assembly and a junction box on each engine, a dual torque indicator on each pilot's instrument panel, and two power supplies in the nose compartment.

The head assembly and the power shaft make up a transformer. The head assembly contains the single primary and two secondary windings of the transformer. The power shaft is the core of the transformer. The junction box provides interconnection between system components. The head assembly, power shaft, and junction box make up a calibrated set. If one part is bad, all three must be replaced with a matched set.

A signal from the torquemeter power supply is applied to the primary winding in the head assembly. With no engine torque developed, equal signals are coupled to the secondary windings. When engine torque is developed, the power shaft is distorted, and unequal signals are coupled to the secondaries. The signals from the secondaries are rectified in the indicator and moves the pointer to show percentage of rated torque.

The indicator is calibrated 0 to 150 percent and has two numbered pointers, one for each engine. Electrical connections are provided through two connectors at the rear of the clamp-mounted indicators.

The torquemeter power supply is a solid-state inverter that converts dc voltage to ac voltage for use by the engine torque sensor (head assembly).



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TORQUE INDICATING SYSTEM (WITH 74)

Description:

The torque indicating system, which monitors the engine power output, is a ratio detector system. It measures and indicates the amount of engine torque. The system consists of two dual torque indicators on each pilot's instrument panel, an engine driven power shaft, a head assembly and a junction box on each engine, and two separate torque signal processor/power supply units. The torque signal processor/power supply units are mounted in the aft cabin ceiling at left hand sta 465 and right hand sta 474.

The torquemeter head provides an electric torque signal that is proportional to the twisting motion of the power shaft. That signal is transmitted through a cable to the junction box. The junction box is mounted on the engine inlet housing. It provides operating power for the torquemeter head and receives signals from the head and sends them to the torque signal processor/power supply. The engine driven power shaft, head assembly and junction box make up a matched assembly. If one component is bad, all three must be replaced with a matched set.

The torque signal processor/power supply provides a 6 kHz constant current signal to the torquemeter head. It processes the signal coming from the junction box and sends this signal to cockpit torque indicator and engine digital electronic control unit (DECU).

The torque indicator is calibrated 0 to 150 percent. It has two pointers each marked with the number of its respective engine. Electrical connections are provided through connectors at the rear of each indicator. The indicator is hermetically sealed.

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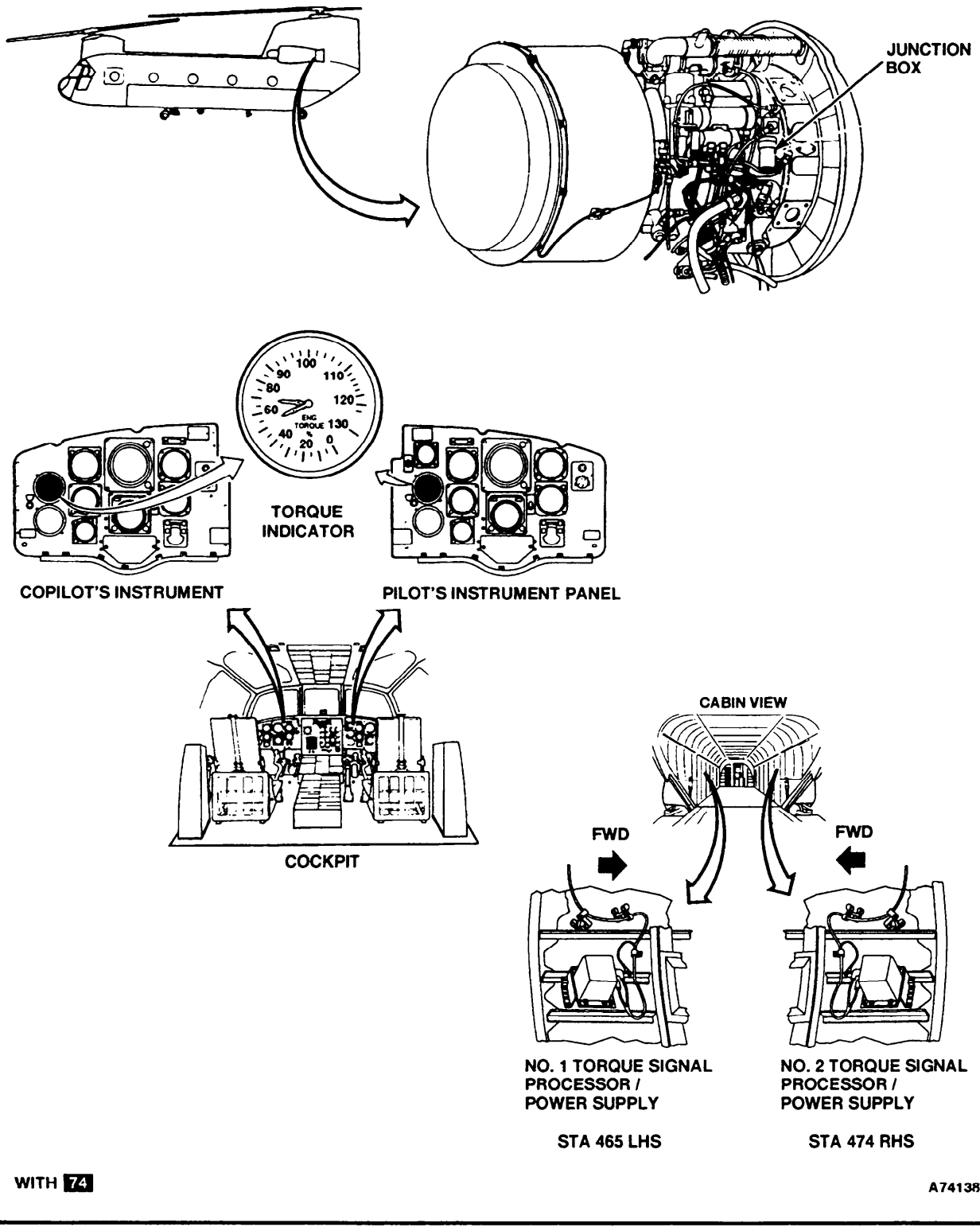

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FUEL FLOW INDICATING SYSTEM

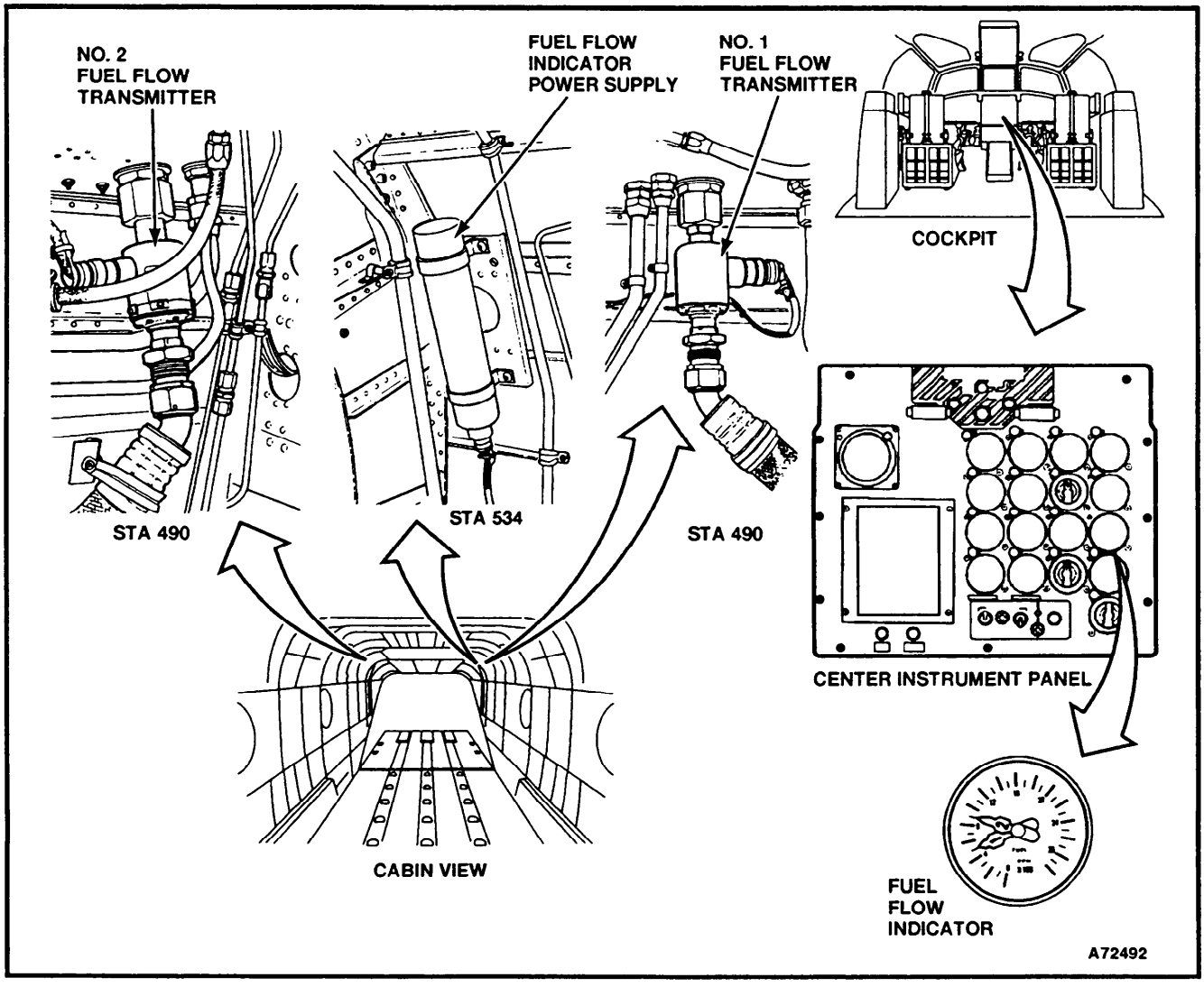
Description:

This system consists of a fuel flow indicator, a power supply, and two transmitters, one for each engine.

The fuel flow indicator, clamp-mounted on the center instrument panel indicates fuel flow in pounds per hour (PPH). The power supply provides power to both transmitters, which are located below the engine disconnect shelves, both sides, aft cabin.

The fuel flow indicator power supply furnishes power to the transmitter motor, the rotor of which is an impeller. The impeller is driven at a constant angular velocity. As fuel passes through the impeller it picks up the angular velocity of the impeller. The fuel strikes a spring restrained stator causing the stator to rotate in proportion to the flow rate. The change in angular rotation is measured by a synchro connected to the stator.

The synchro signal is applied to a receiver synchro in the fuel flow indicator and displays the fuel flow rate in pounds per hour (PPH).



END OF TASK

SECTION II
ENGINE INSTRUMENTS

8-2 TEST POWER TURBINE INLET TEMPERATURE (PTIT) INDICATOR

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Tester, Exhaust Gas Temperature Model BH112JB-53
Power Supply, 28 Volts Dc
Multimeter
Connector M83723-75W1407N
Light Indicator MS25041-4
Lamp MS25237-327
Wire, No. 20 Insulated

Materials:

Solder (E360)

Personnel Required:

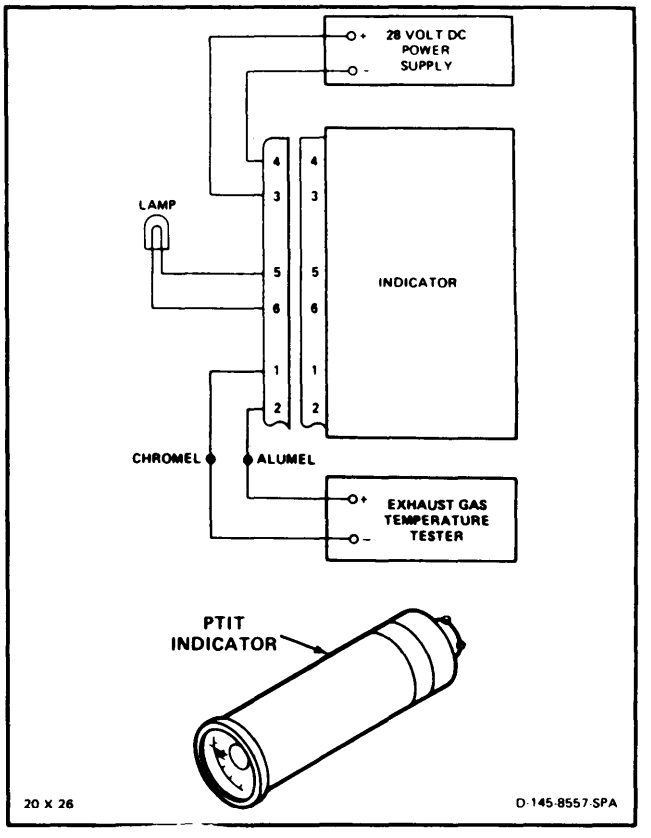
68F20 Aircraft Electrician
67U30 Inspector

References:

TM 55-1500-323-25
TM 55-4920-401-13&P

Equipment Condition:

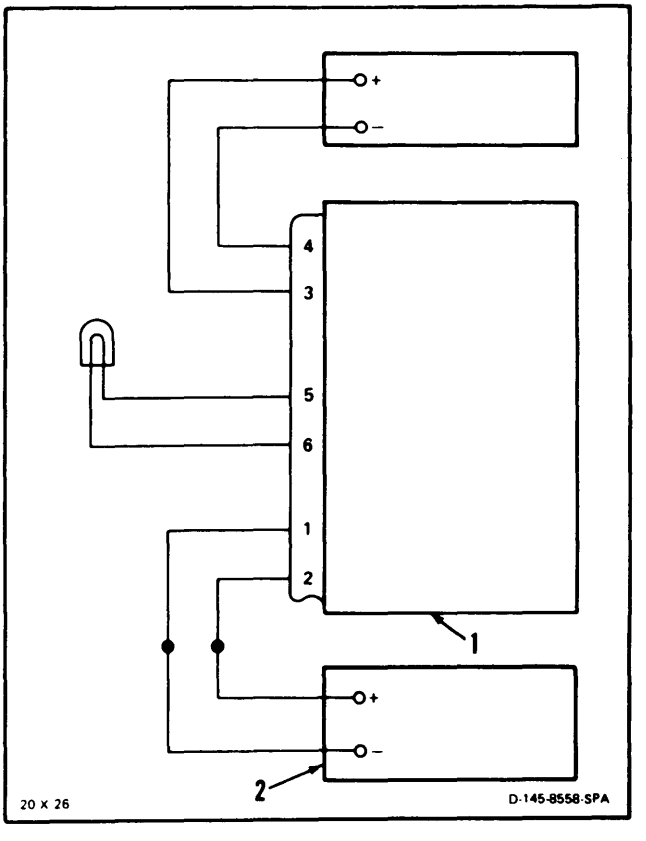
Off Helicopter Task Test Setup



1. Connect indicator (1) to test setup.
2. Apply 28 volts dc to test setup.

FRICTION TEST

3. **Slowly adjust tester (2) to cause indicator (1) to read 200° C.** Record indicator reading.
4. **Tap indicator (1).** Record indicator reading.
5. **Compare indicator (2) readings from steps 3 and 4.** Difference shall be no more than 24°C.
6. **Repeat steps 3,4 and 5 at 400°, 700°C, 800°C, 900°C, and 1200°C.** Difference shall be no more than 24°C at all noted settings.



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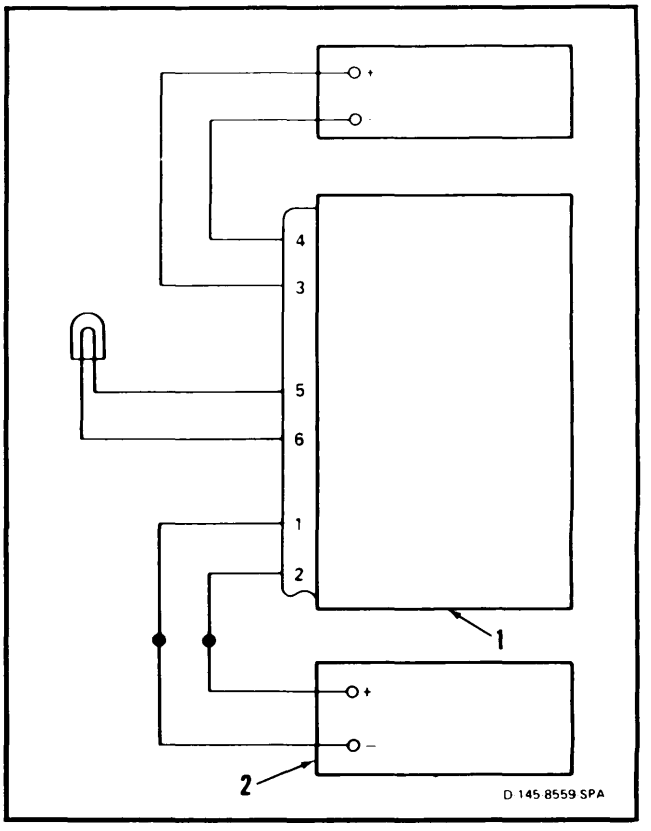
SCALE ERROR TEST

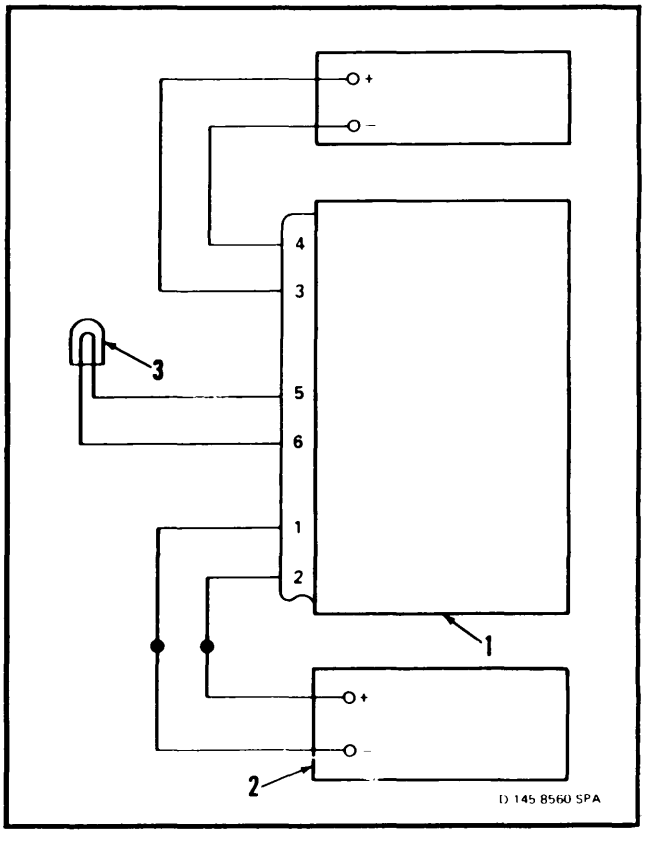
7. **Adjust tester (2) to °C. Test Point settings listed. Indicator (1) readings shall be within tolerance as follows:** (Tap indicator before recording readings).

TEST POINT °C	INDICATOR READING RANGE °C
200	160 to 240
300	260 to 340
400	370 to 430
500	470 to 530
600	580 to 620
700	690 to 710
800	795 to 805
900	890 to 910
1000	980 to 1020
1100	1070 to 1130
1200	1160 to 1240



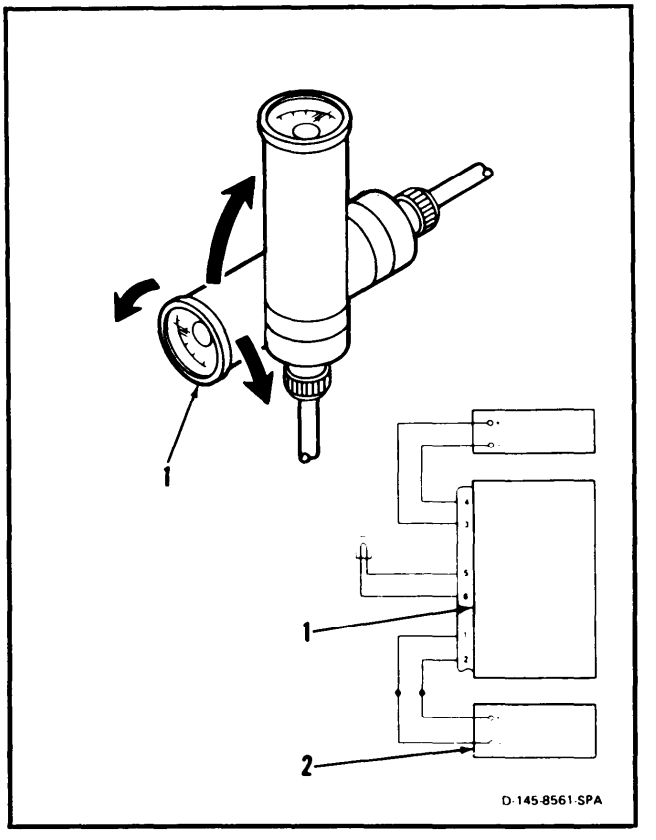
SWITCH POINT SETTING

8. **Adjust tester (2) to 0°C setting.**
9. **Slowly adjust tester (2) up until lamp (3) comes on.**
10. **Tap indicator (1) and record reading.** Reading shall be 890°C to 910°C.



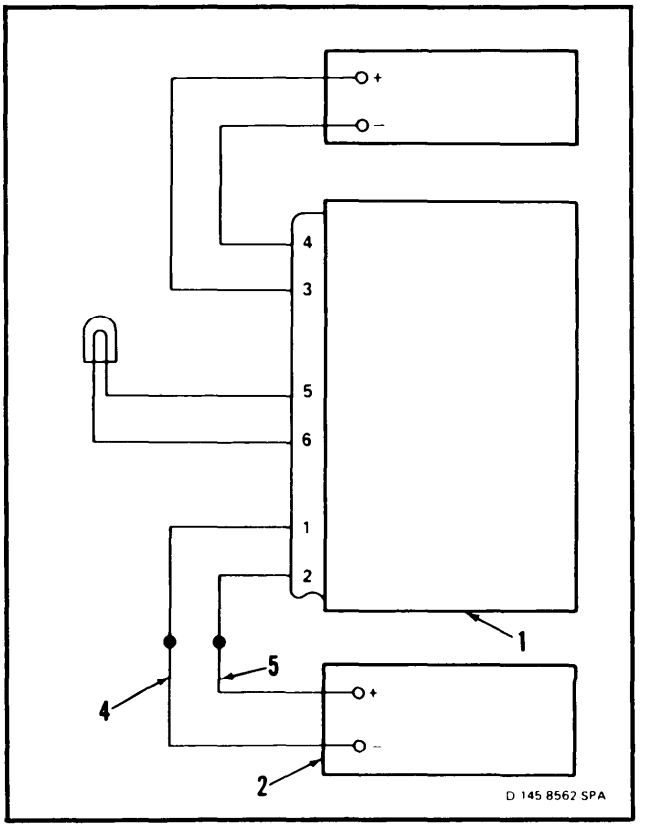
POSITION ERROR TEST

11. **Adjust tester (2) cause indicator (1) to read 600°C with indicator dial in normal (vertical) position.**
12. **Rotate indicator (1) 90 degrees counter-clockwise. Tap indidator** and record reading. Return indicator to original position.
13. **Rotate indicator (1) 90 degrees clockwise. Tap indicator** and record reading. Return indicator to original position.
14. **Rotate indicator up (dial in horizontal position). Tap indicator** and record reading. Return indicator to original position.
15. **Compare readings from steps 11, 12, 13, and 14.** Difference shall not be more than 24°C.



GROUNDED THERMOCOUPLE TEST

16. **Adjust tester (2) to 800°C.** Check indicator. Indicator (1) shall read 795°C to 805°C. Record indicator reading.
17. **Ground tester (2) chromel lead (4) to indicator (1) case.** Check indicator. Indicator shall not read more than 5°C from reading in step 16.
18. Remove ground from chromel lead.
19. **Repeat steps 17 and 18, grounding tester alumel lead (5) to indicator (1) case.** Check indicator. Indicator shall not read more than ±5°C from reading in step 16.



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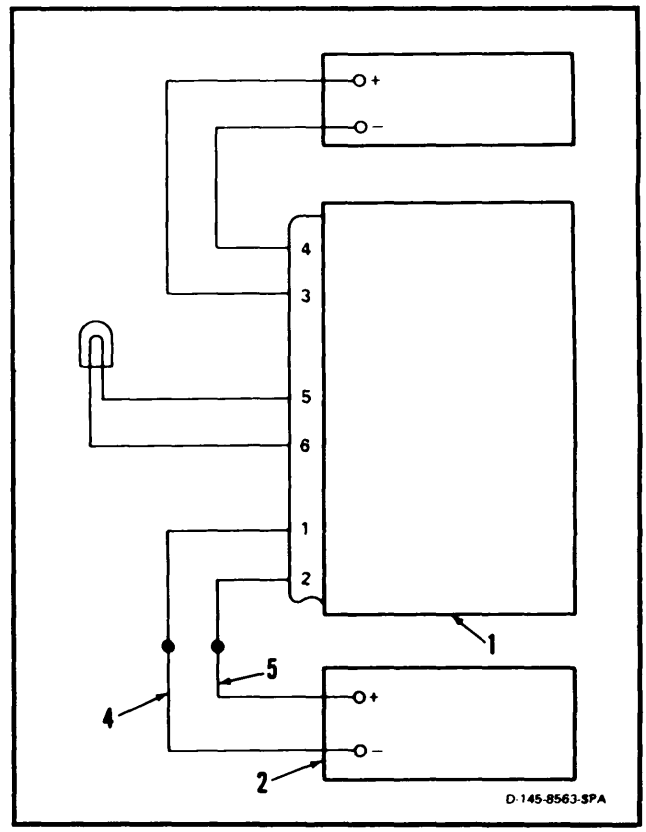
8-2 TEST POWER TURBINE INLET TEMPERATURE (PTIT) INDICATOR (Continued) 8-2

OPEN THERMOCOUPLE TEST

20. **Adjust tester (2) to 900°C.** Check indicator (1). Indicator shall read 890°C to 910°C. Record indicator reading.
21. Disconnect tester (2) chrome! lead (4). **Check indicator (1). Pointer of indicator shall fall to full down scale stop.**
22. **Reconnect tester (2) chromel lead (4). Check indicator (1). Indicator shall indicate reading recorded in stop 20.**
23. **Repeat steps 21 and 22, disconnect tester Alumel lead (5).**
24. Turn off power to test setup.
25. Disconnect indicator (1) from test setup.



FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-3 REMOVE PILOT'S OR COPILOT'S EMERGENCY POWER LIGHT

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:

Tape (E385)
Tags (E264)

Personnel Required:

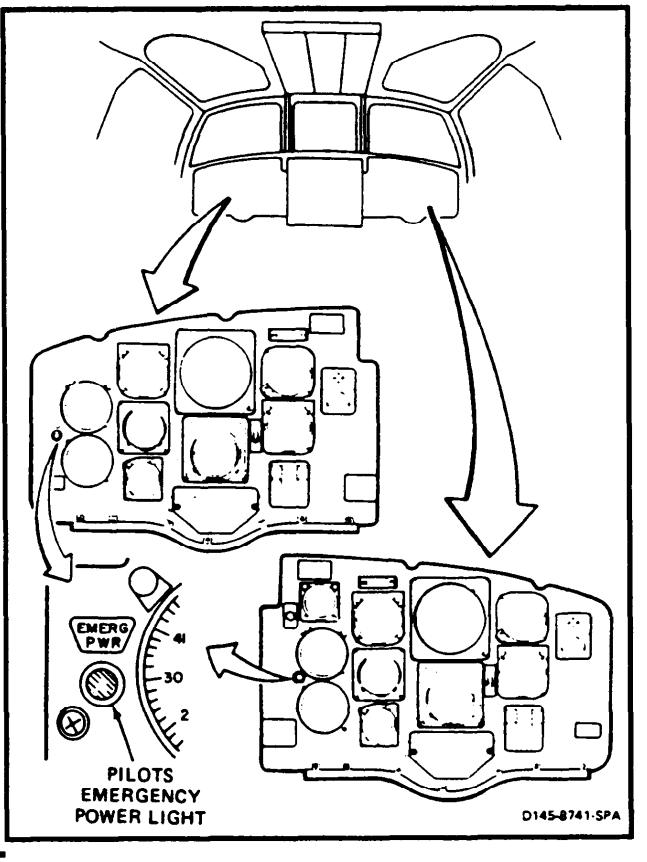
Aircraft Electrician

References:

TM 55-1500-323-25

Equipment Condition:

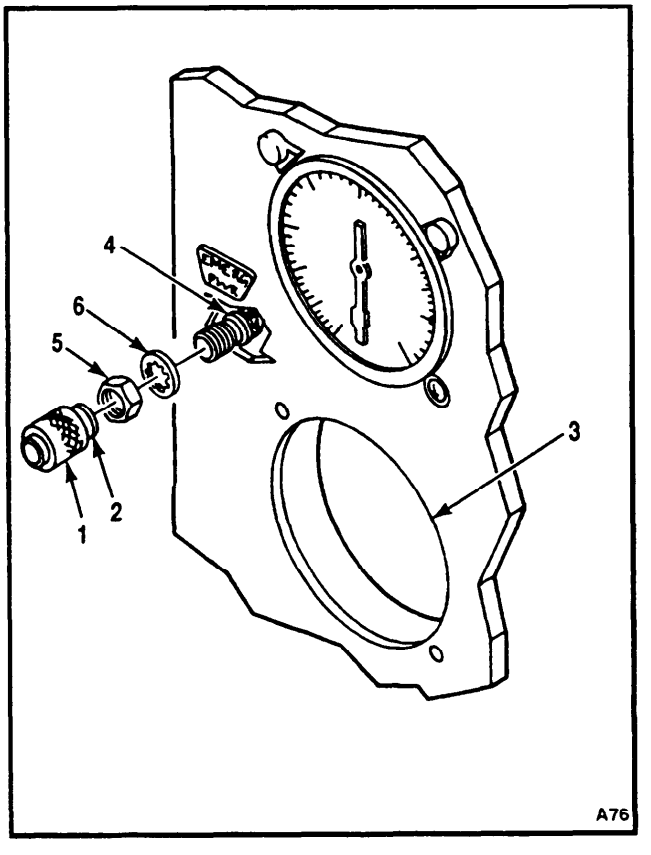
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Rotor Tachometer Indicator Removed (Task 8-88)



NOTE

Procedure is the same to remove pilot's or copilot's light. Pilot's is shown here.

1. **Remove lens (1) with lamp (2),** turn lens counterclockwise to remove.
2. Reach through rotor tachometer indicator mount hole (3) and hold light base (4).
3. **Remove nut (5) and washer (6).**



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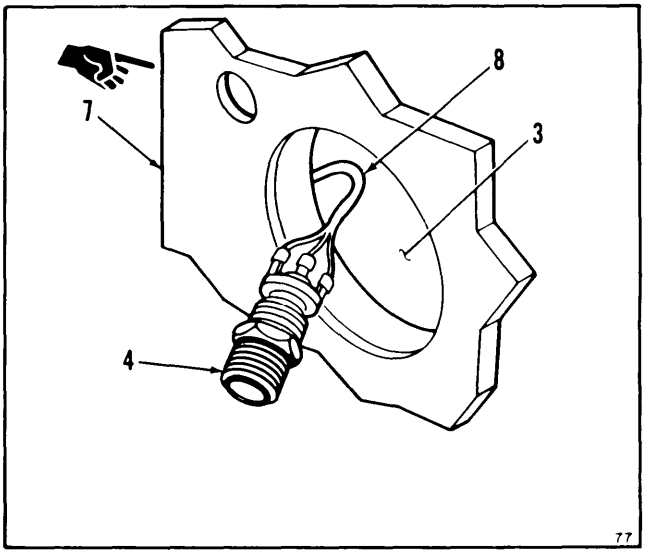
8-3 REMOVE PILOT'S OR COPILOT'S EMERGENCY POWER LIGHT (Continued) 8-3

4. Pull light base (4) through to back of panel (7).
5. Pull light base (4) through rotor tachometer indicator mount hole (3).
6. **Tag and unsolder wires (8).** Tape ends of wires (TM 55-1500-323-25).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-4 INSTALL PILOT'S OR COPILOT'S EMERGENCY POWER LIGHT 8-4

INITIAL SETUP

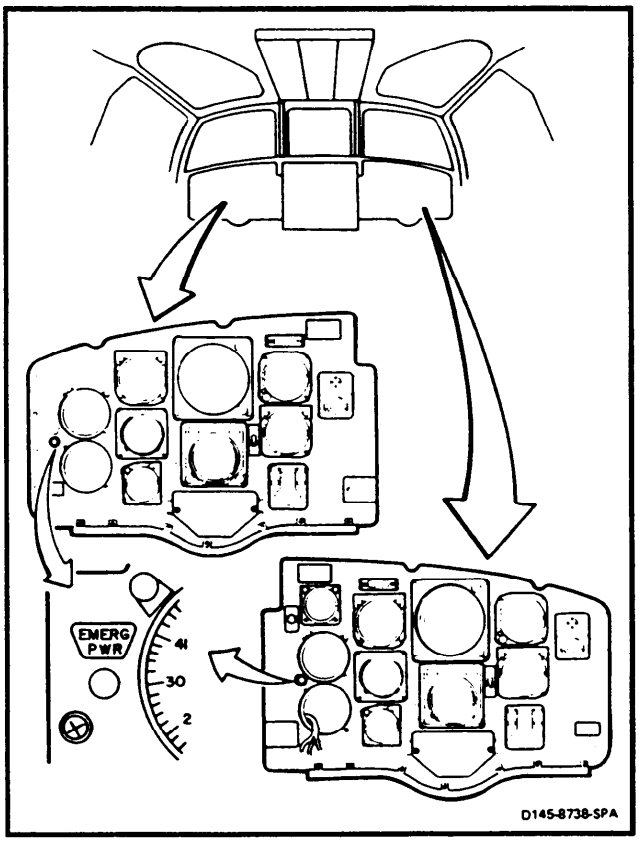
Applicable Configurations:
Without 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Heat Gun

Tools:
Solder (E360)
Tubing (E431)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25



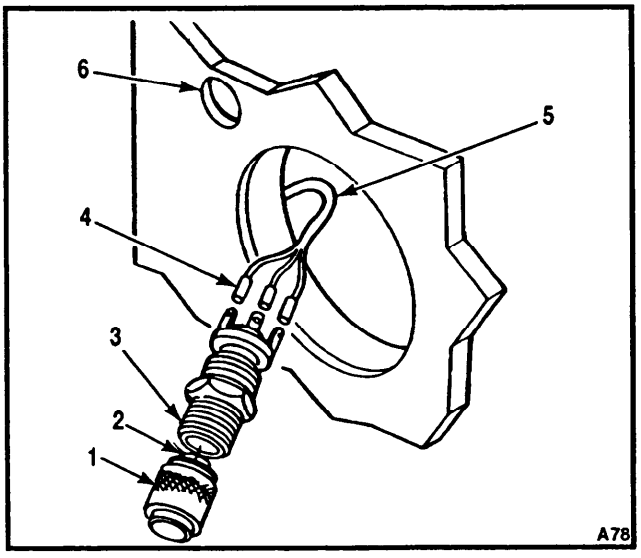
NOTE

Procedure is the same to install pilot's or copilot's light. Pilot's is shown here.

CAUTION

Remove lens and lamp prior to soldering. Lamp center contact may melt and solder in place.

1. **Remove lens (1) and lamp (2)** from light base (3).
2. Install tubing (4) and solder wires (5) to light base (3). Slide tubing over solder joint and shrink with heat gun (TM 55-1500-323-25).
3. **Install light base (3)** in panel mount hole (6).



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8-4 INSTALL PILOT'S OR COPILOT'S EMERGENCY POWER LIGHT (Continued) 8-4

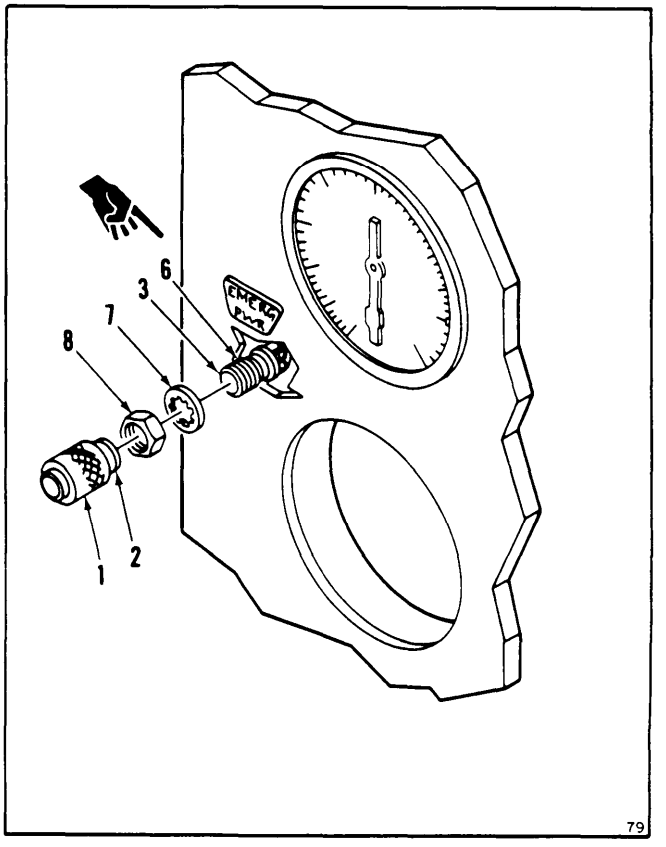
4. **Install washer (7) and nut (8)** on light base (3).
5. **Install lens (1)** with lamp (2).

INSPECT

FOLLOW-ON MAINTENANCE:

Install rotor tachometer indicator (Task 8-89).

Emergency power light operational check (TM 55-1520-240-T).



END OF TASK

8-5 REPLACE PILOT'S OR COPILOT'S EMERGENCY POWER LAMP 8-5

INITIAL SETUP

Applicable Configurations:
Without 74

Tools:
None

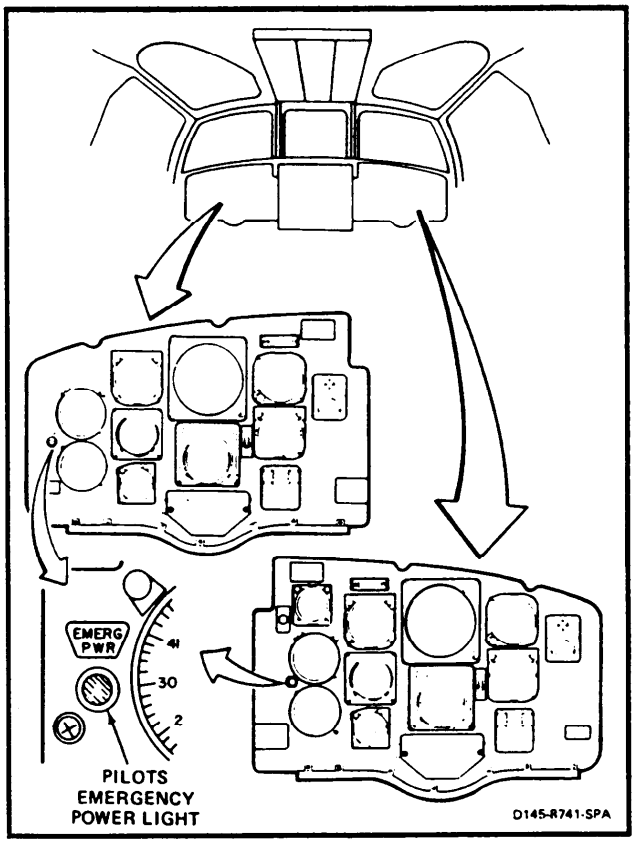
Materials:
None

Parts:
Lamp

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

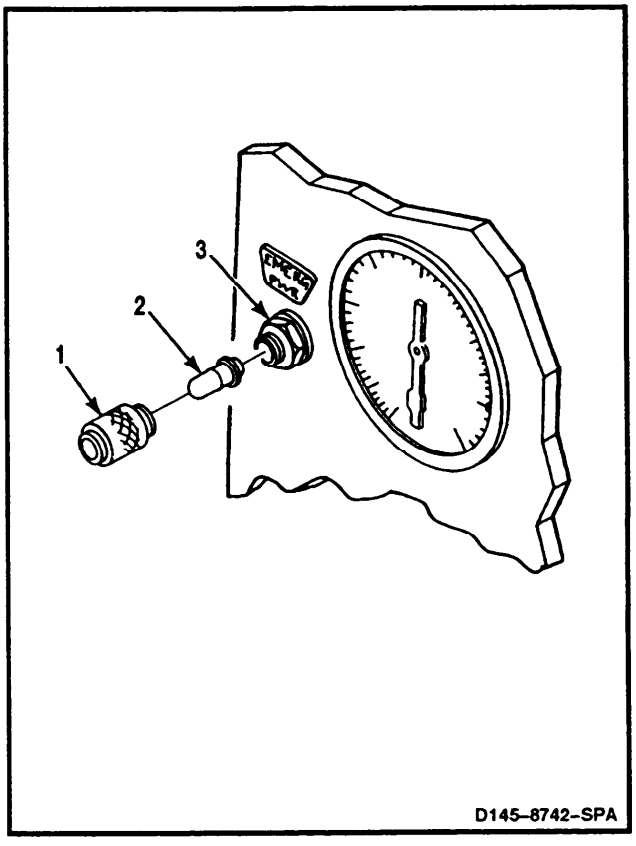


NOTE

Procedure is the same to replace pilot's or copilot's emergency power lamp. Pilot's lamp shown here.

1. **Remove lens (1)** with lamp (2). Turn lens counterclockwise to remove.
2. **Remove lamp (2)** from lens (1).
3. **Install lamp (2)** in lens (1).
4. **Install lens (1)** with lamp (2) on light base (3).

FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T).



END OF TASK

8-6 REMOVE EMERGENCY POWER SWITCHES 8-6

INITIAL SETUP

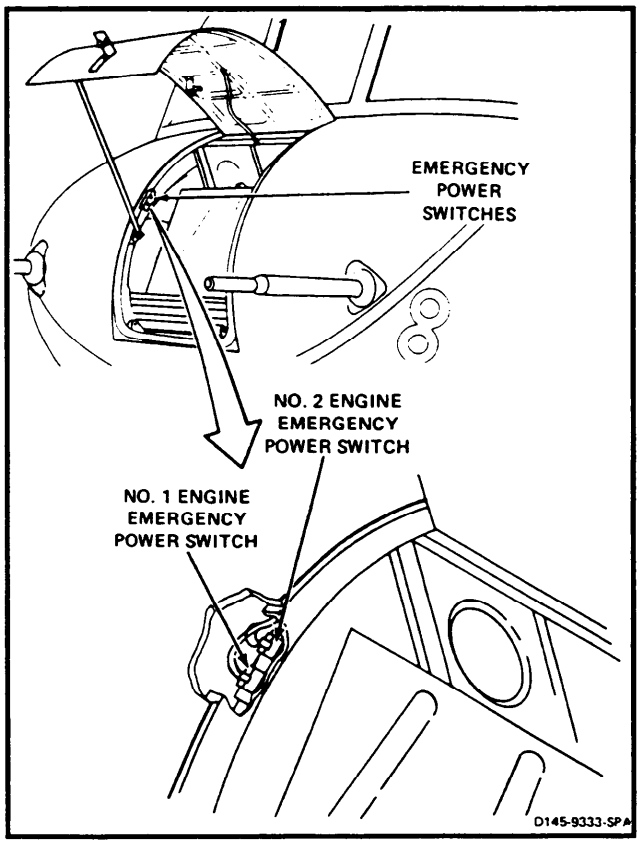
Applicable Configurations:
Without 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:
Paper Tags (E264)

Personnel Required:
Aircraft Electrician

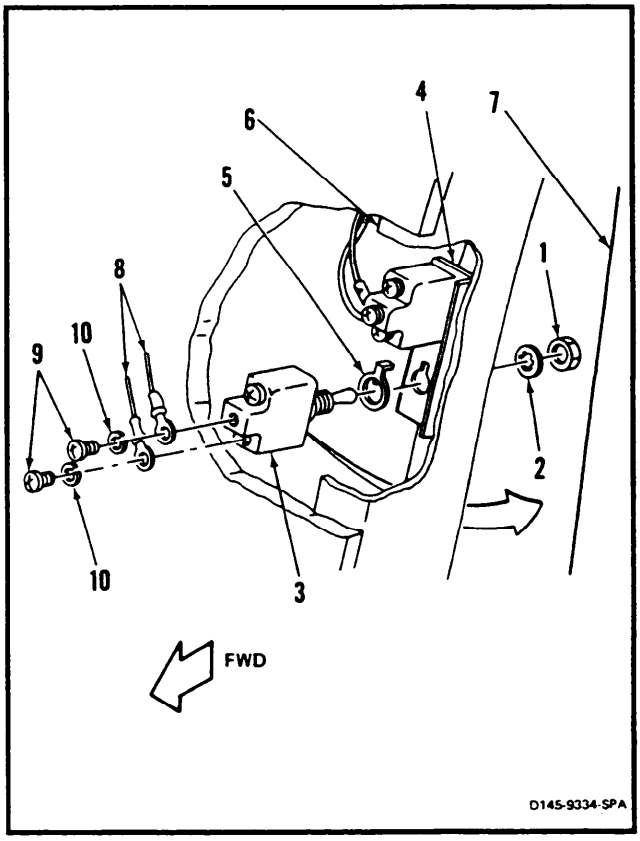
Equipment Condition:
Battery Disconnected (Task 1-39)
Hydraulic Power Off
Electrical Power Off
Nose Enclosure Door Open (Task 2-2)



NOTE
Procedure is the same for removing No. 1 or No. 2 engine emergency power switches. No. 1 is shown here.

1. **Remove nut (1)** and washer (2) from switch (3).
2. **Push switch (3)** up and out of bracket (4).
3. **Remove locking ring (5).**
4. Pull switch (3) down into area between frame (6) and absorber (7).
5. Tag two wires (8).
6. Remove two screws (9) and two washers (10).
7. Remove two wires (8).

FOLLOW-ON MAINTENANCE:
None



END OF TASK

8-7 INSTALL EMERGENCY POWER SWITCHES 8-7

INITIAL SETUP

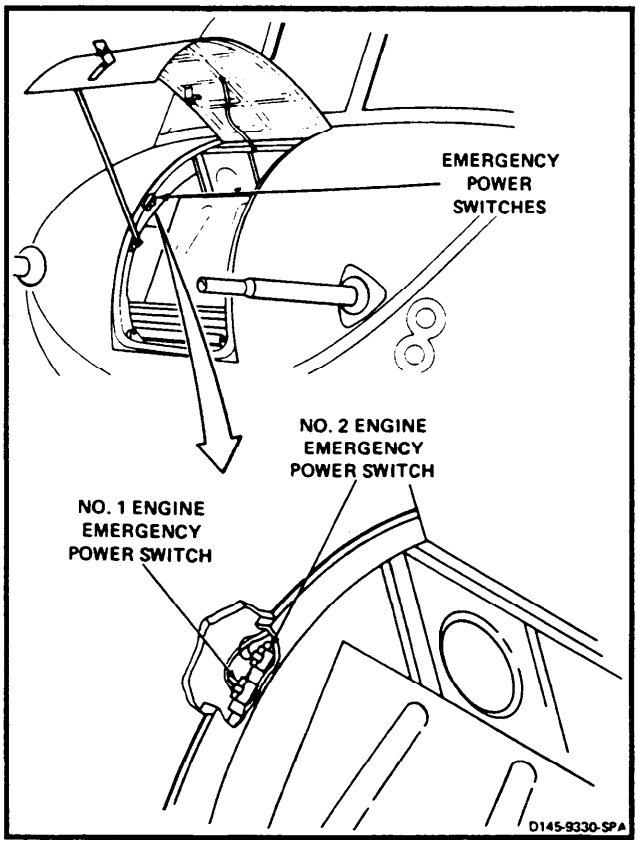
Applicable Configurations:
Without 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:
None

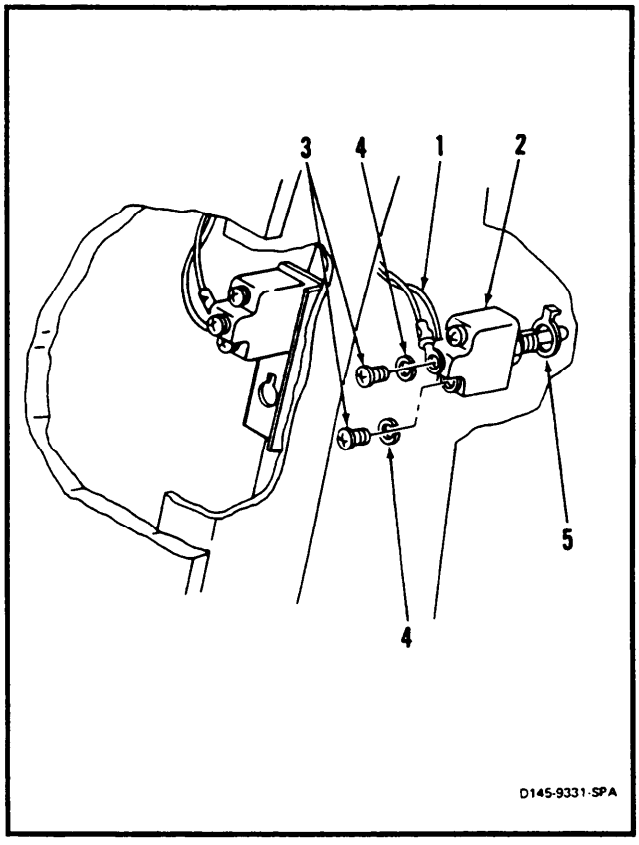
Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23 P



NOTE
Procedure is the same for installing No. 1 or No. 2 engine emergency power switches. No. 1 is shown here.

1. Remove two tags and **connect wires (1)** to switch (2). Use two screws (3) and washers (4).
2. **Install locking ring (5)** on switch (2).



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8-7 INSTALL EMERGENCY POWER SWITCHES (Continued) 8-7

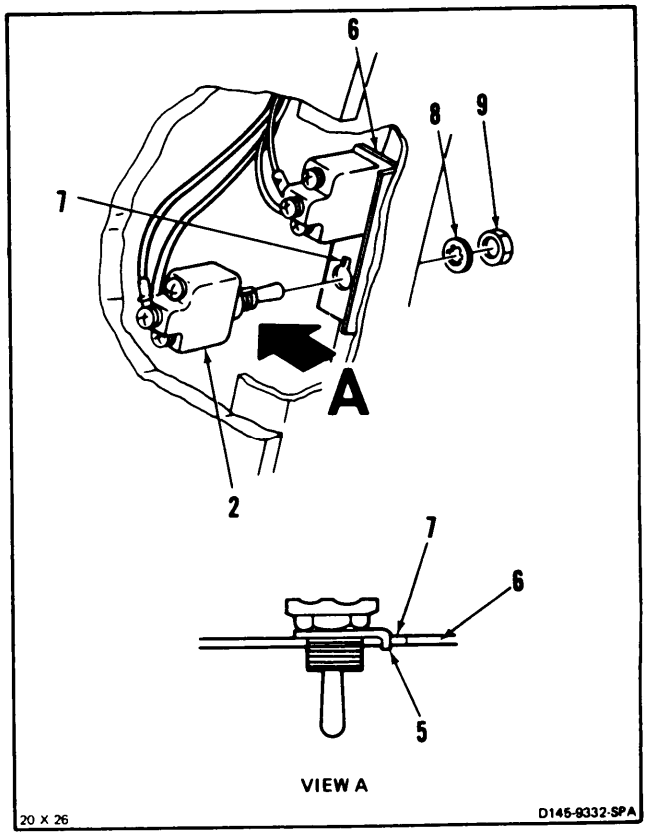
3. **Install switch (2)** in switch bracket (6). Make sure tab of locking ring (5) engages slot (7) of switch bracket (6).
4. **Install lockwasher (8) and nut (9).**

INSPECT

FOLLOW-ON MAINTENANCE:

Operational check of emergency power warning system (TM 55-1520-240-T).

Close nose enclosure door (Task 2-2).



END OF TASK

INITIAL SETUP

Applicable Configurations:

Without: 74

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Tachometer Indicator-Generator Test Set
TTU-27/E
AC Power Supply 115V 400Hz

Materials:

None

Personnel Required:

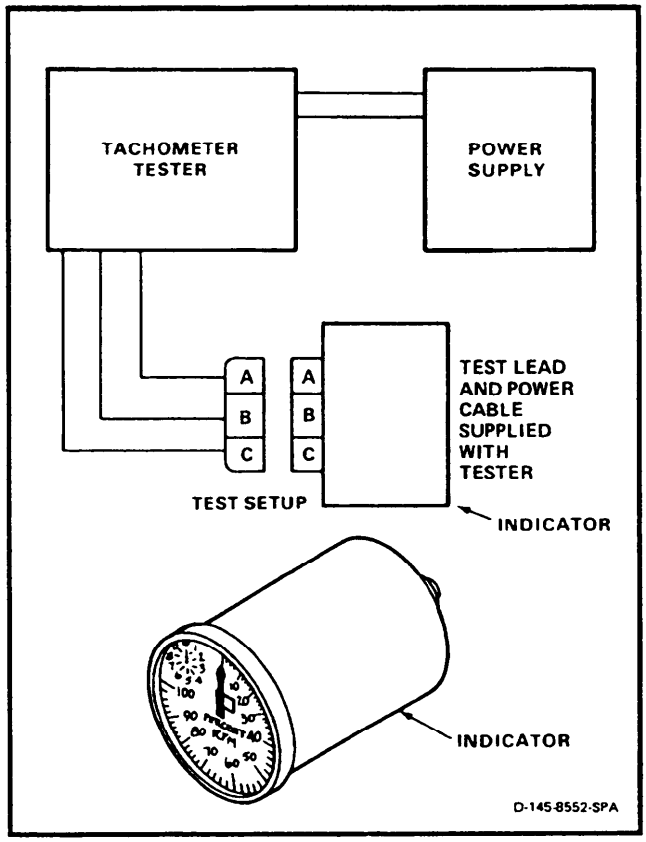
Aircraft Electrician
Inspector

References:

TM 55-1500-204-25/1
TM 11-6625-673-15-1

Equipment Condition:

Off Helicopter Task
Test Setup



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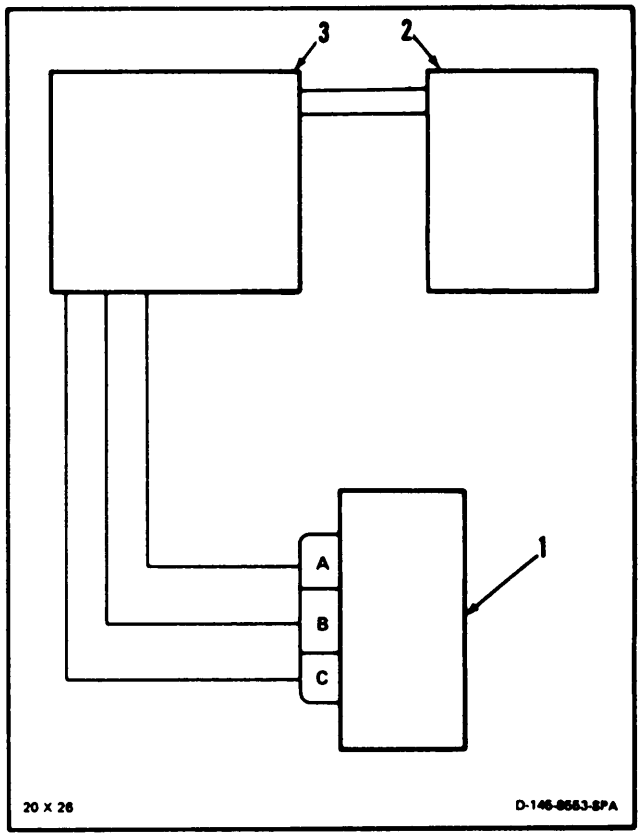
8-8 TEST GAS PRODUCER TACHOMETER INDICATOR (Continued)

1. **Connect indicator (1)** to test setup (TM 11-6625-673-15-1).
2. **Turn on power supply (2).**
3. **Adjust tester (3) and check indicator (1)** at each of the following settings. **Tester shall mad as follows:** (TM 11-6625-673-15-1).

INDICATOR READING (PERCENT RPM)	TESTER RPM X1 INDICATOR
0	0
10	418 to 422
25	1044 to 1056
50	2083 to 2117
75	3134 to 3166
100	4179 to 4221
110	4597 to 4643



4. **Repeat step 3 in reverse order.**

INSPECT

5. Shutdown power supply (2).
6. Disconnect indicator (1) from test setup.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-9 REMOVE NO. 1 GAS PRODUCER TACHOMETER GENERATOR 8-9

INITIAL SETUP

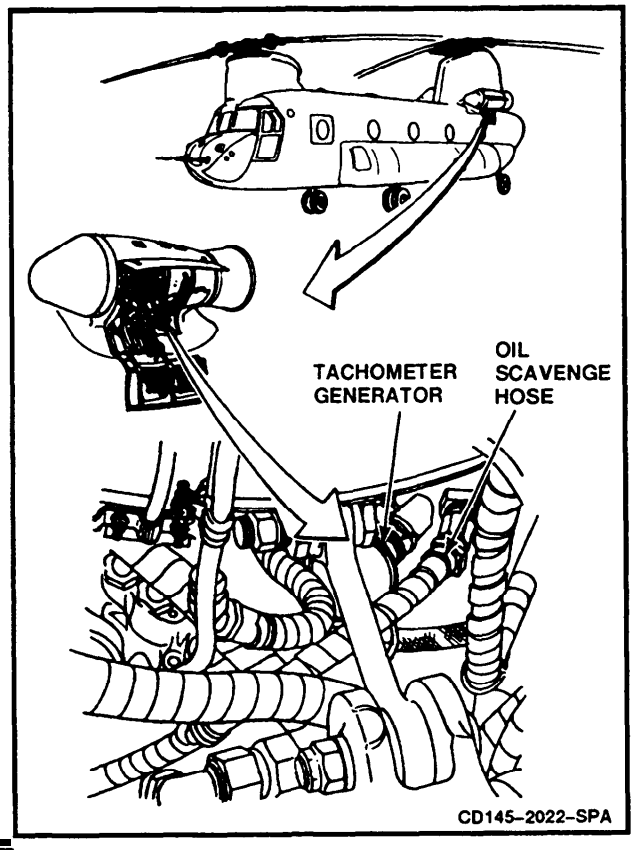
Applicable Configurations:
Without 74

Tools:
Powerplant Repairer's Tool Kit,
NSN 5180-00-323-4944

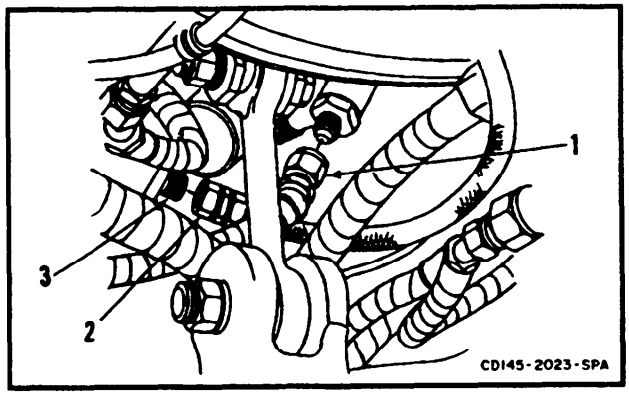
Materials:
Cloths (E120)

Personnel Required:
Aircraft Powerplant Repairer

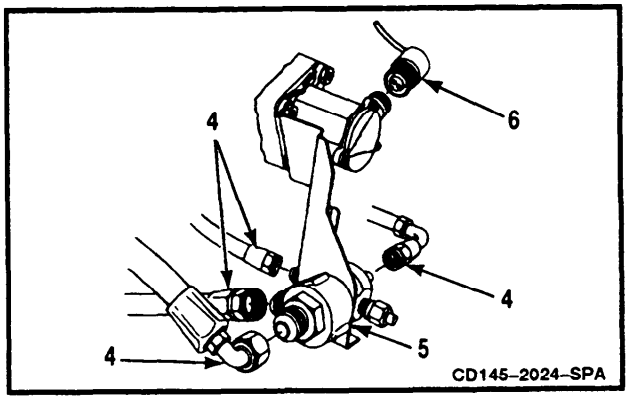
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Engine Access Cover Opened (Task 4-49)
Engine Work Platform Open (Task 2-2)



1. **Disconnect oil scavenge hose (1).** Cap hose immediately.
2. **Disconnect fuel hose (2).** Cap hose and fuel control fitting (3). Use container and cloths (E120) for spilled fluid.



3. **Disconnect four drain hoses (4)** from bracket (5).
4. Remove lockwire and **disconnect cable connector (6).**



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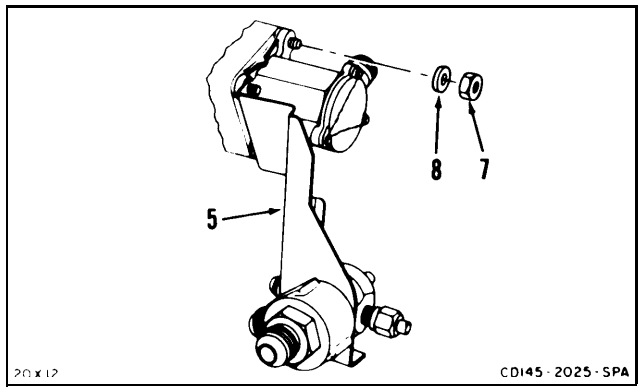
8-9 REMOVE NO. 1 GAS PRODUCER TACHOMETER GENERATOR (Continued)

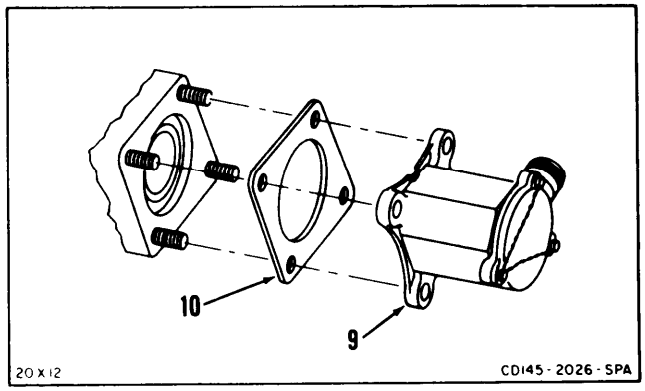
5. Remove four nuts (7) and washers (8).
6. **Remove bracket (5).**



7. **Remove tachometer generator (9)** and gasket (10).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-10 REMOVE NO. 2 GAS PRODUCER TACHOMETER GENERATOR 8-10

INITIAL SETUP

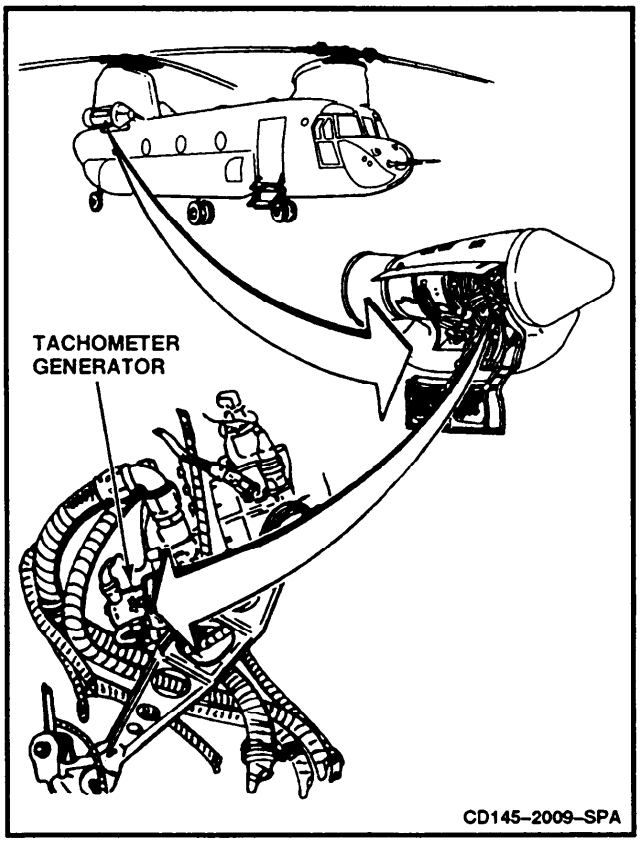
Applicable Configurations:
Without 74

Tools:
Powerplant Repairer's Tool Kit,
NSN 5180-00-323-4944

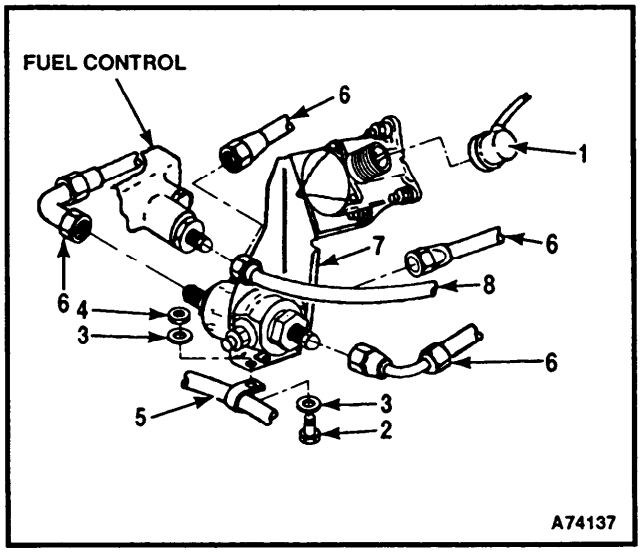
Materials:
Cloths (E120)

Personnel Required:
Aircraft Powerplant Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Engine Access Cover Open (Task 4-49)
Engine Work Platform Open (Task 2-2)



1. Remove lockwire and **disconnect cable connector (1).**
2. Remove screw (2) two washers (3) and nut (4). **Disconnect clamp (5)** from bracket (7).
3. **Disconnect four drain hoses (6)** from bracket (7). Use cloths (E120) for spilled fluid.
4. **Disconnect fuel hose (8).** Cap hose. Use cloths (E120) for spilled fluid.



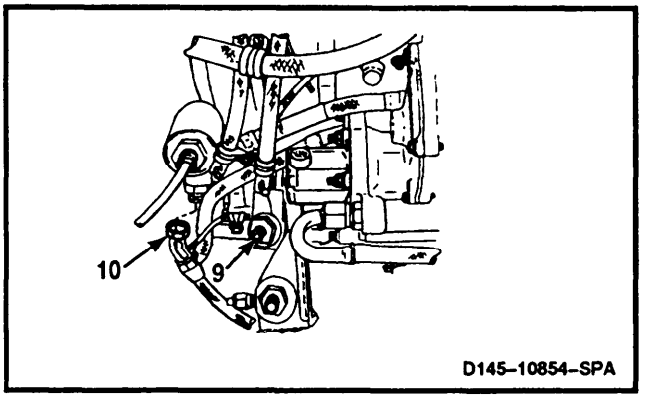
GO TO NEXT PAGE

8-10 REMOVE NO. 2 GAS PRODUCER TACHOMETER GENERATOR (Continued) 8-10

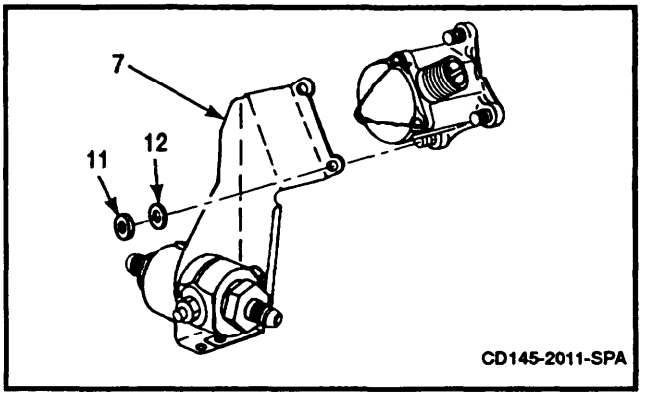
NOTE

Do not remove packing from fuel control fitting.

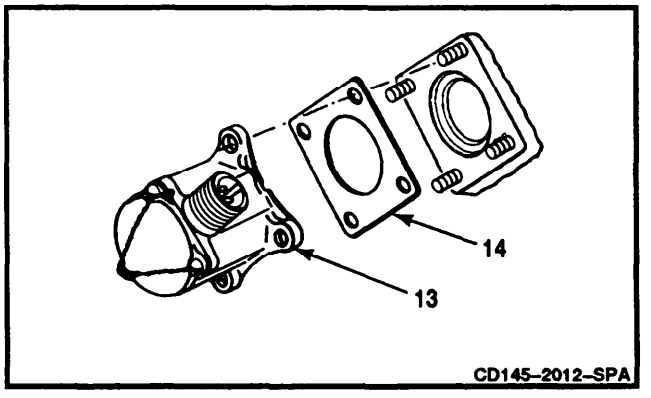
5. **Remove fuel control fitting (9).**
6. **Disconnect oil scavenge hose (10).** Cap hose immediately. Use cloths (E120) for spilled fluid.



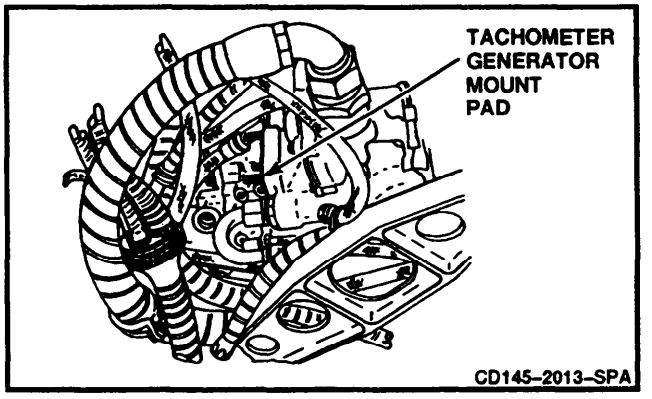
7. Remove four nuts (11) and washers (12).
8. **Remove bracket (7).**



9. **Remove tachometer generator (13)** and gasket (14).



FOLLOW-ON MAINTENANCE:
None



END OF TASK

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Tachometer Indicator-Generator Test Set TTU-27/E

AC Power Supply 115V 400Hz

Materials:

None

Personnel Required:

Aircraft Electrician

Inspector

References:

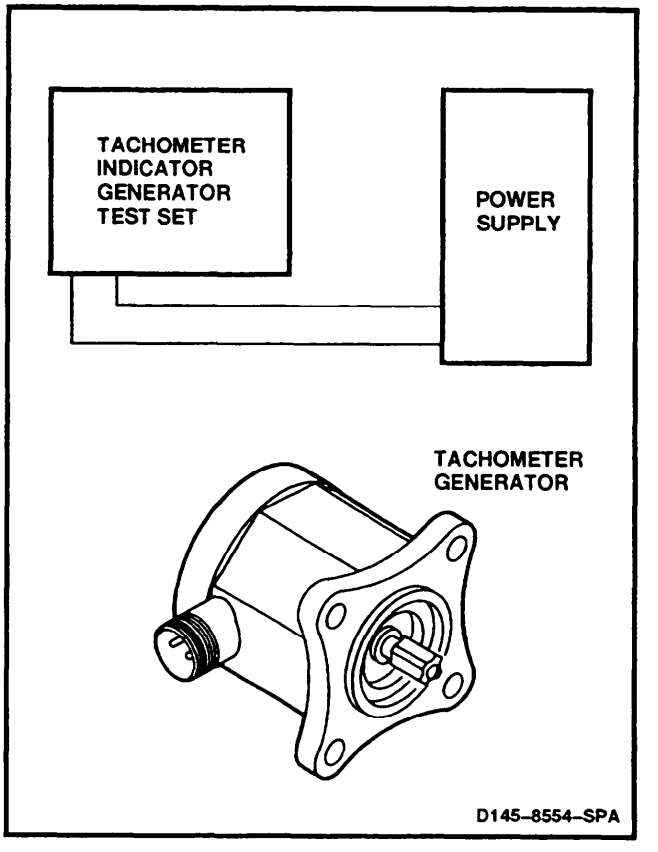
TM 55-1500-204-25/1

TM 11-6625-673-15-1

Equipment Condition:

Off Helicopter Task

Test Setup



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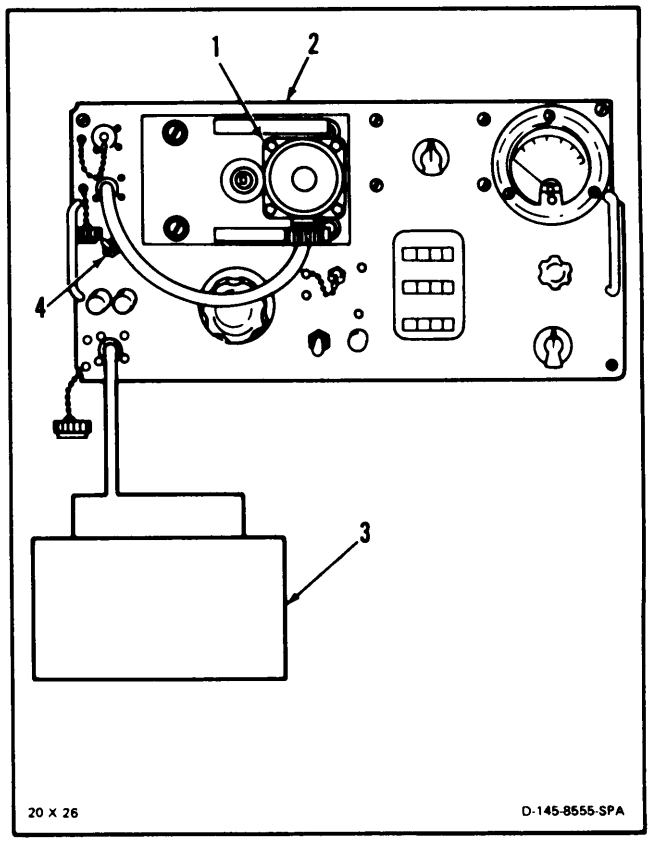
8-11 TEST GAS PRODUCER TACHOMETER GENERATOR (Continued)

1. **Attach generator (1) to test set (2)** (TM 11-6625-673-15-1).
2. **Turn on power** supply (3).
3. **Turn on and adjust test set (2). Check generator (1) at the following settings by operating test set switch (4) from TEST GEN to MASTER GEN and comparing indications** (TM 11-6625-673-15-1).



DRIVE SPEED RPM X1 INDICATOR	INDICATION PERCENT TEST SET INDICATOR	INDICATION TOLERANCE
0	0	±0.5
1050	25	±0.6
2100	50	±0.8
3150	75	±0.5
4200	100	±0.5
4600	110	±0.5

4. Repeat step 2 in reverse order.

GO TO NEXT PAGE

5. **Adjust test set to obtain 9500 RPM**. (TM 11-6625-673-15-1).

6. **Set test switch (4) to TEST GEN**.

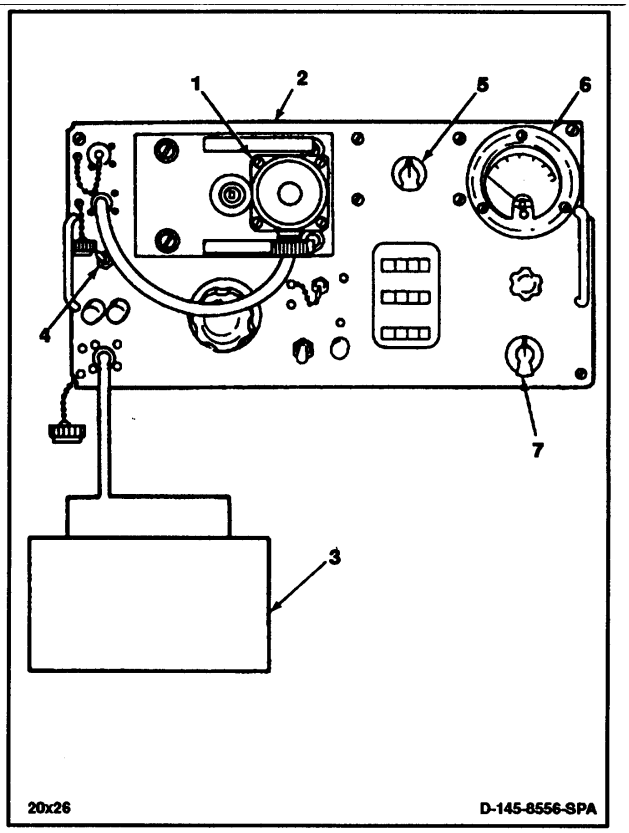
7. **Set LOAD IN OHMS switch (5) to 40Y. Check GENERATOR OUTPUT VOLTAGE (6) by setting TEST GEN switch (7) to positions A-B, B-C and A-C**. Output voltage shall not exceed 12.5 volts. Voltage shall be same at all positions. (TM 11-6625-673-15-1).

8. **Repeat step 7, set LOAD IN OHMS switch (5) to 20Y**. Voltage shall not exceed 1l.5 volts. (TM 11-6625-673-15-1).

9. Shut down test set (2).

10. Shut down power supply (3).

11. Remove generator (1) from test set (2).



FOLLOW-ON MAINTENANCE

None

END OF TASK

8-12 INSTALL NO. 1 GAS PRODUCER TACHOMETER GENERATOR 8-12

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Powerplant Repairer's Tool Kit,
NSN 5180-00-323-4944

Materials:

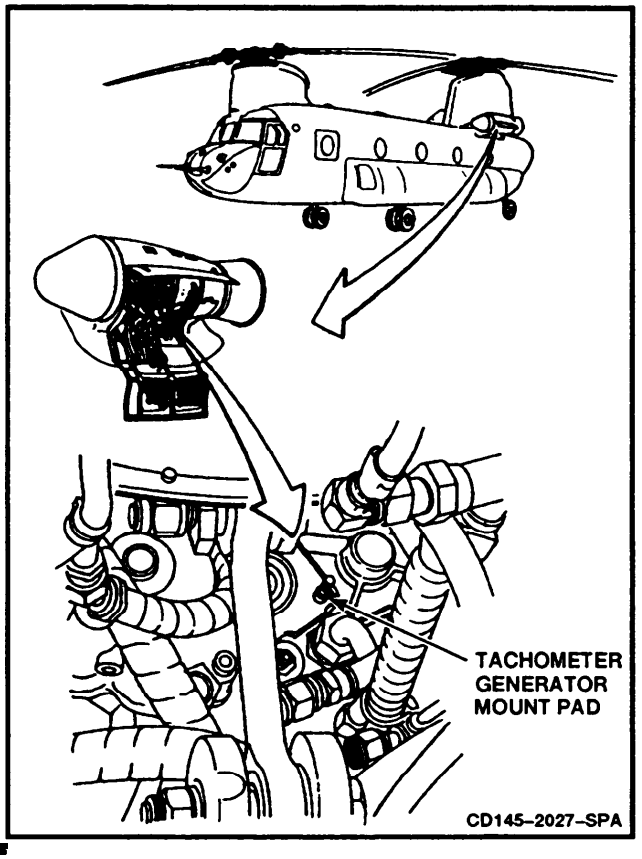
Plastilube (E280)
Lockwire (E231)

Personnel Required:

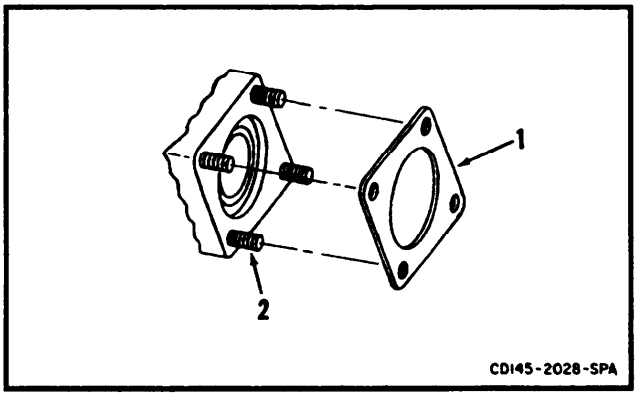
Aircraft Powerplant Repairer
Inspector

References:

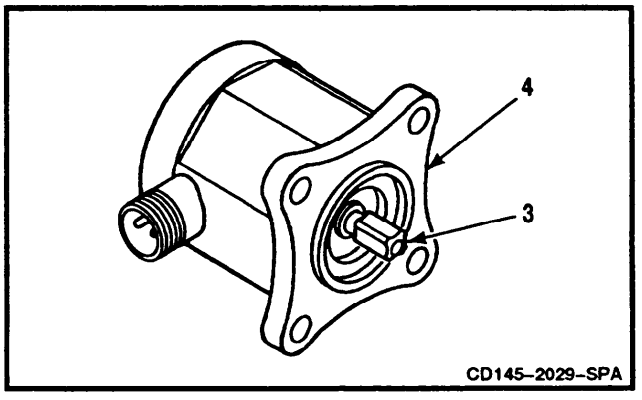
TM 55-1520-240-23P



1. **Install gasket (1)** over mount pad studs (2).



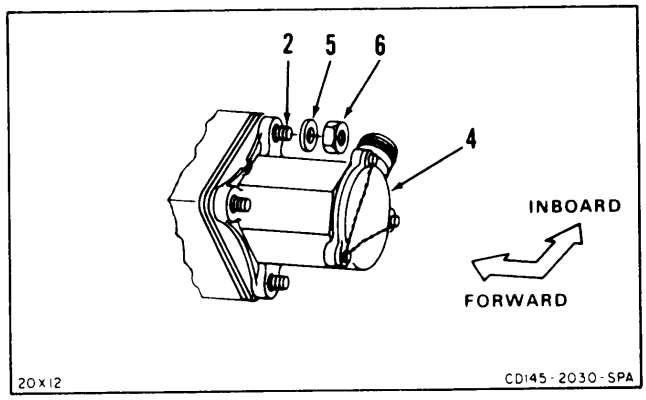
2. Lubricate shaft (3) on tachometer generator (4). Use plastilube (E280).



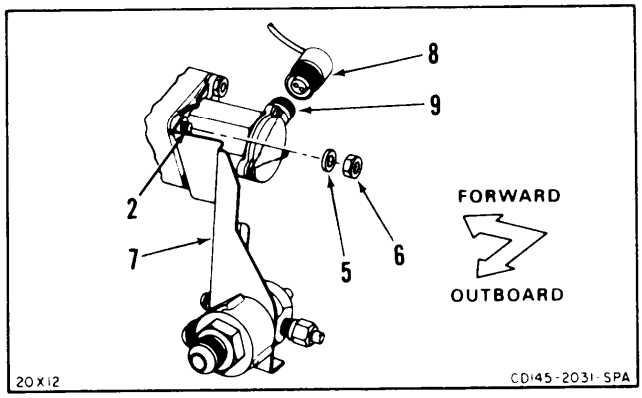
GO TO NEXT PAGE

8-12 INSTALL NO.1 GAS PRODUCER TACHOMETER GENERATOR (Continued) 8-12

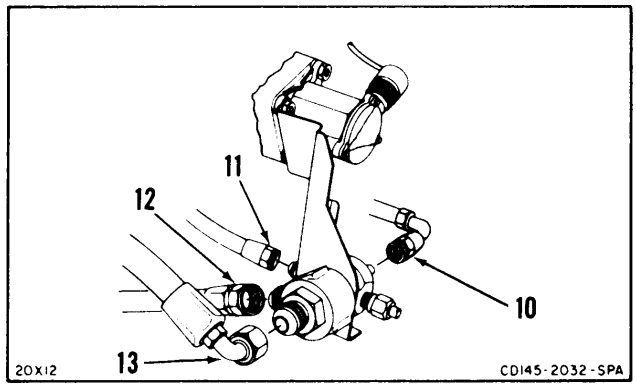
3. **Position tachometer generator (4)** on mount pad studs (2) with receptacle positioned at 2 o'clock.
4. **Install two** washers (5) and **nuts (6) on two inboard studs.** Do not tighten nuts at this time.



5. **Position bracket (7)** over two outboard studs (2).
6. **Install two** washers (5) and **nuts (6) on two outboard studs.** Tighten four nuts.
7. **Connect connector (8).** Lockwire connector with lockwire (E231).

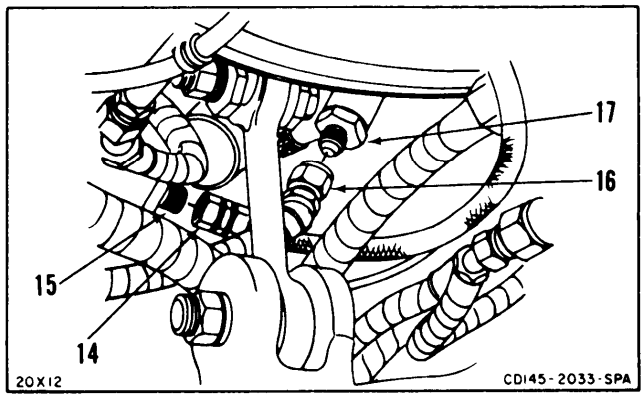


8. **Connect drain hose (10).**
9. **Connect drain hose (11).**
10. **Connect drain hose (12).**
11. **Connect drain hose (13).**



12. Remove cap from fuel control fitting (15) and **connect fuel hose (14)** to fitting.
13. Remove caps and **connect oil scavenge hose (16)** to dual chip detector housing fitting (17).

INSPECT



GO TO NEXT PAGE

8-12 INSTALL NO.1 GAS PRODUCER TACHOMETER GENERATOR 8-12 (Continued)

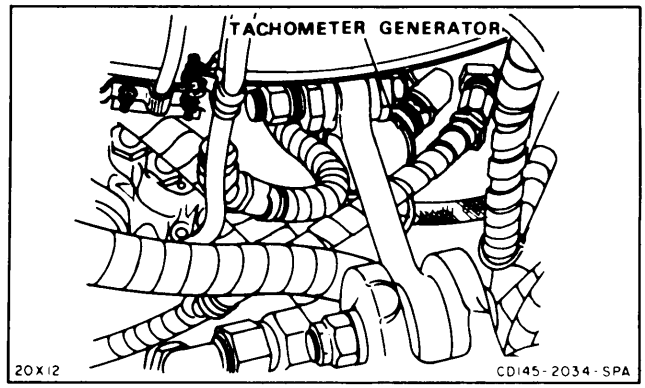
FOLLOW-ON MAINTENANCE:

Check engine oil level (Task 1-52).

Operation check of gas producer tachometer generator (TM 55-1520-240-T).

Close engine access cover (Task 4-50).

Close engine work platform (Task 2-2),



END OF TASK

8-13 INSTALL NO.2 GAS PRODUCER TACHOMETER GENERATOR 8-13

INITIAL SETUP

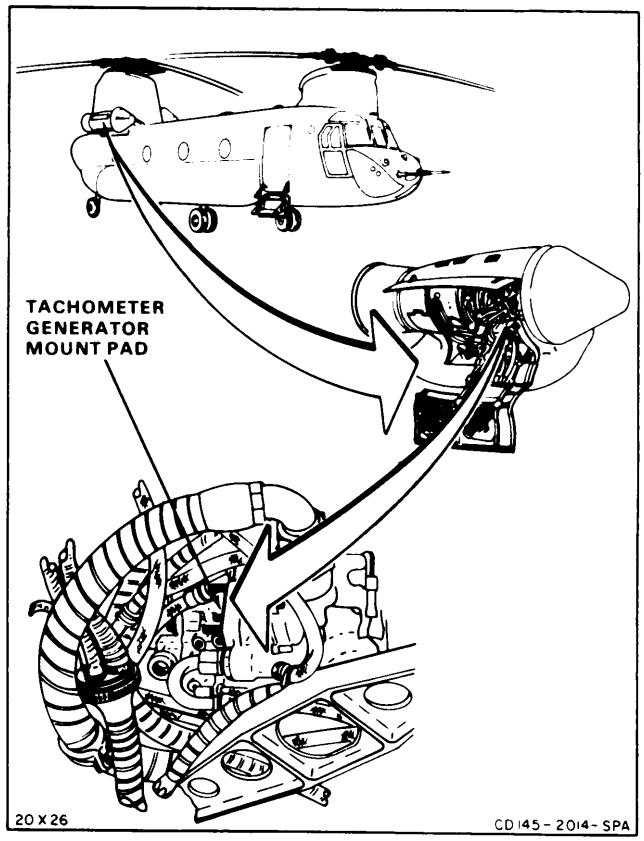
Applicable Configurations:
All

Tools:
Powerplant Repairer's Tool Kit,
NSN 5180-00-323-4944

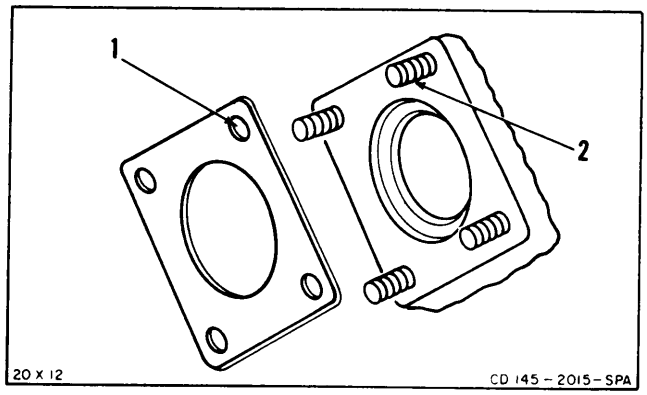
Materials:
Plastilube (E280)
Lockwire (E231)

Personnel Required:
68B10 Aircraft Powerplant Repairer
67U30 inspector

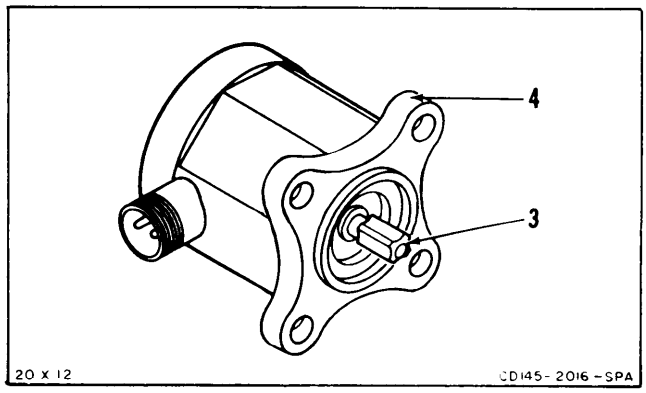
References:
TM 55-1520-240-23P



1. **Install gasket (1)** over mount pad studs (2).



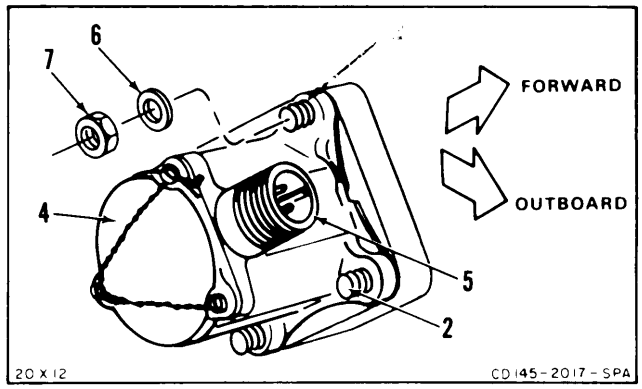
2. Lubricate shaft (3) on tachometer generator (4). Use piastilube (E280).



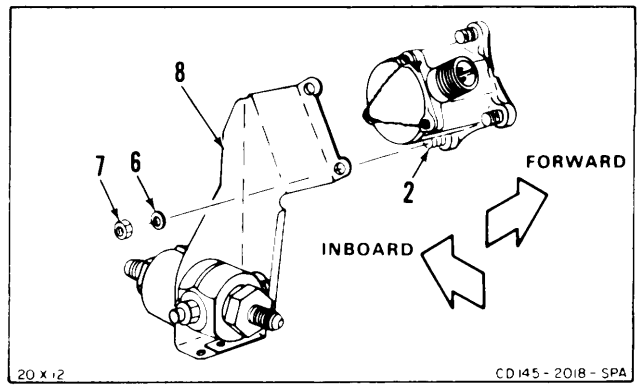
GO TO NEXT PAGE

8-13 INSTALL NO.2 GAS PRODUCER TACHOMETER GENERATOR (Continued) 8-13

3. **Position tachometer generator (4)** on mount pad **studs (2)** with receptacle (5) positioned at 2 o'clock.
4. **Install two washers (6) and nuts (7) on two outboard studs (2).** Do not tighten nuts at this time.



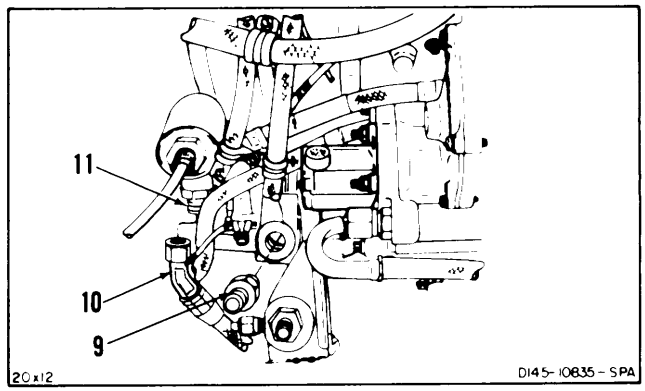
5. **Position bracket (8)** over two inboard studs (2).
6. **Install two washers (6) and nuts (7) on two inboard studs (2).** Tighten all four nuts (7).



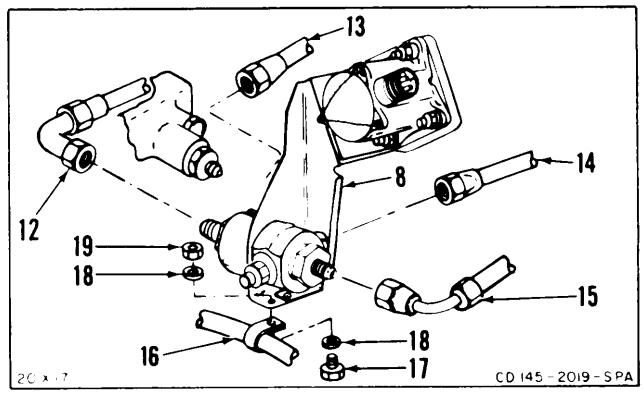
NOTE

Check that packing on fitting is serviceable.

7. **Install fuel control fitting (9).**
8. Remove cap and **connect oil scavenge hose (10)** to dual chip detector housing fitting (11).



9. **Connect drain hose (12).**
10. **Connect drain hose (13).**
11. **Connect drain hose (14).**
12. **Connect drain hose (15).**
13. **Connect clamp (16)** to bracket (8). Install screw (17), two washers (18), and nut (19).



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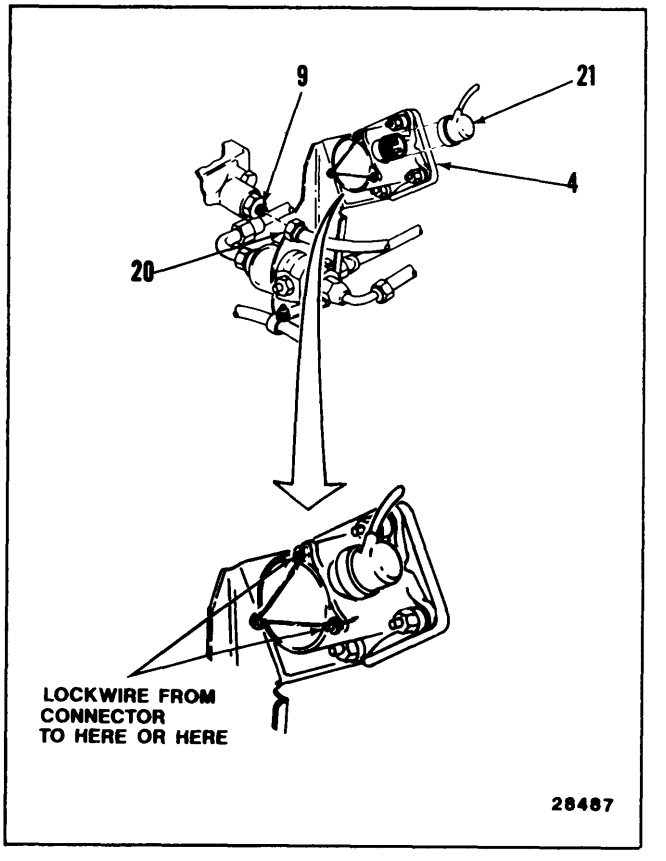
14. **Connect fuel hose (20) to fitting (9).**
15. **Connect cable connector (21)** to tachometer generator (4). Lockwire connector with lockwire (E231).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of gas producer tachometer generator (TM 55-1520-240-T).
Close engine access cover (Task 4-50).
Close engine work platform (Task 2-2),

END OF TASK

8-14 TEST ENGINE OIL PRESSURE INDICATOR 8-14

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Test Set, Synchro TTU-23/E

Multi meter

Ac Power Supply, 115 Volt 400 Hz

Materials:

None

Personnel Required:

Aircraft Electrician

Inspector

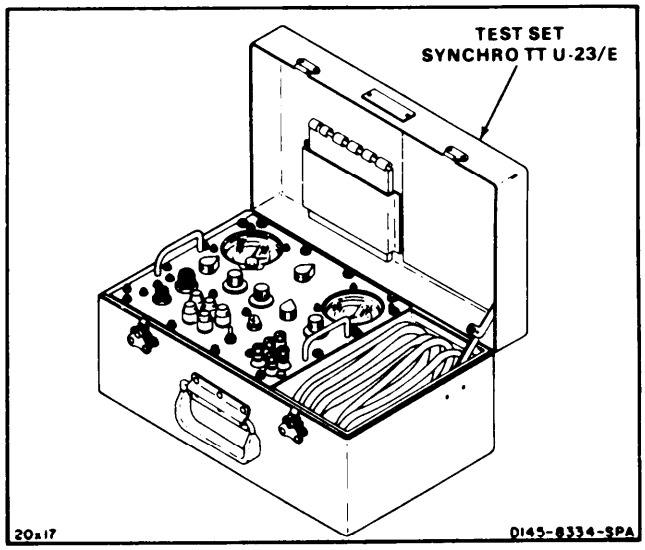
References:

TM 55-1500-204-25/1

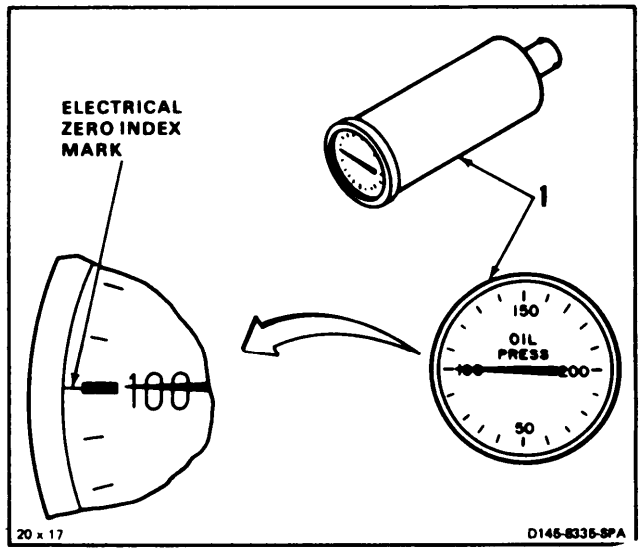
TM 11-6625-2843-14

Equipment Condition:

Off Helicopter Task



1. Set up test set (TM 11-6625-2843-14).
2. **Connect indicator (1)** to test set.
3. **Check indicator (1)** electrical zero (TM 11-6625-2843-14). Tip of indicator pointer shall be within 0.010 inch of electrical zero index mark (0.31 inch long mark at 100 graduation).



INSPECT

4. **Check indicator calibration (TM 11-6625-2843-14)** using listed readings.

TRANSMITTER PRESSURE (PSI)	TEST SET INDICATOR ANGLE (DEGREES)
0	0 to 5
40	67 to 77
80	139 to 149
120	209 to 233
160	281 to 295
200	353 to 360

INSPECT

5. Disconnect indicator (1) from test set.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-15 REMOVE ENGINE OIL PRESSURE TRANSMITTER 8-15

INITIAL SETUP

Applicable Configurations:

Without 44

Tools:

Engine and Powerplant Repairer Tool Kit, NSN 5180-00-323-4944

Materials:

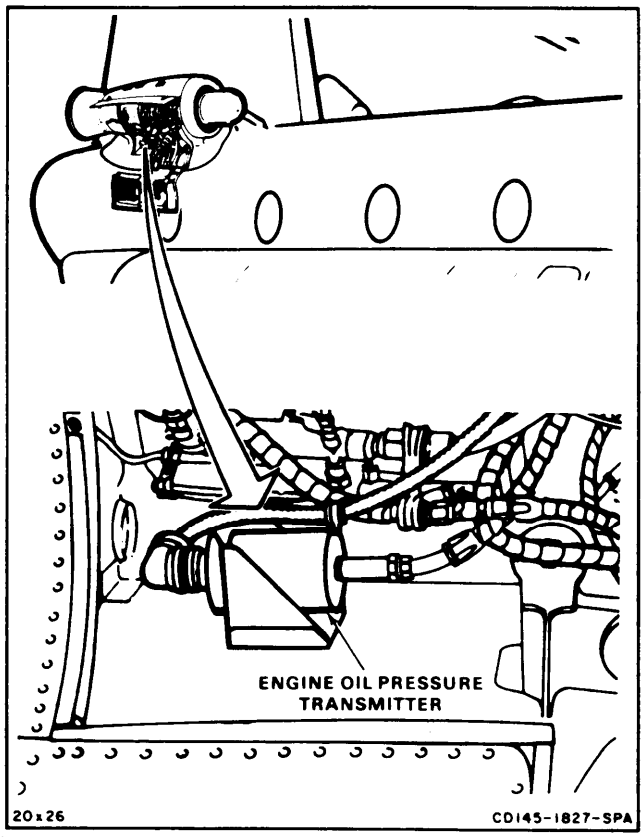
Cloths (E120)

Personnel Required:

Medium Helicopter Repairer

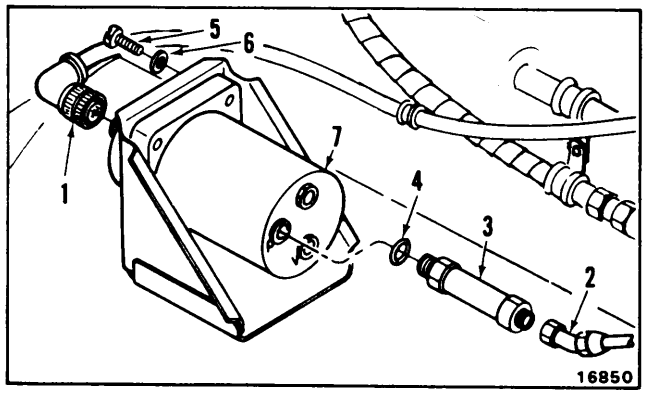
Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Engine Access Door Open (Task 4-49)
Engine Work Platform Open (Task 2-2)



NOTE

Procedure is same for No. 1 and No. 2 engine oil pressure transmitters. No. 2 transmitter is shown here.



1. Remove lockwire and **disconnect cable plug (1).**
2. **Disconnect oil hose (2).**
3. **Remove dampener (3)** and packing (4).
4. Wipe up oil with cloths (E120).
5. Remove lockwire and remove four screws (5) and washers (6).
6. **Remove transmitter (7).**

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-15.1 REMOVE ENGINE OIL PRESSURE TRANSMITTER AND VIBRATION ISOLATOR MOUNT

INITIAL SETUP

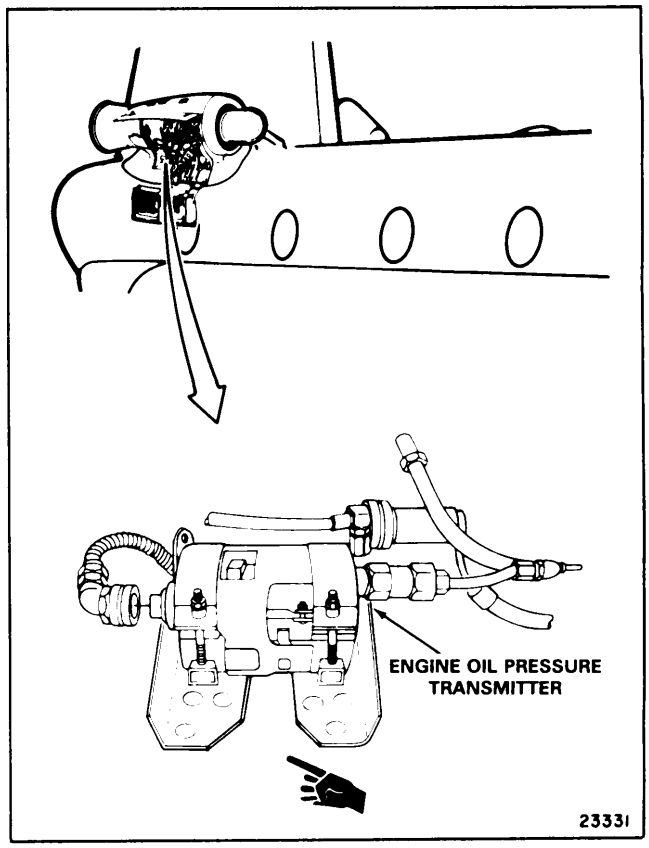
Applicable Configurations:
With 44

Tools:
Engine and Powerplant Repairer Tool Kit, NSN 5180-00-323-4944

Materials:
Cloths (E120)

Personnel Required:
Medium Helicopter Repairer

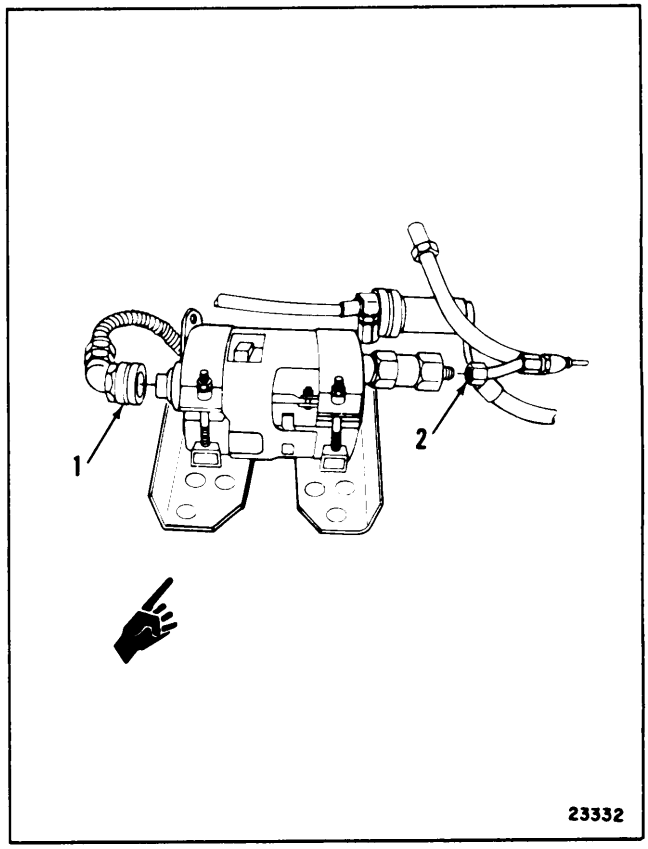
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Engine Access Door Open (Task 4-49)
Engine Work Platform Open (Task 2-2)



NOTE

Procedure is same for No. 1 and No. 2 engine oil pressure transmitters. No. 2 transmitter is shown here.

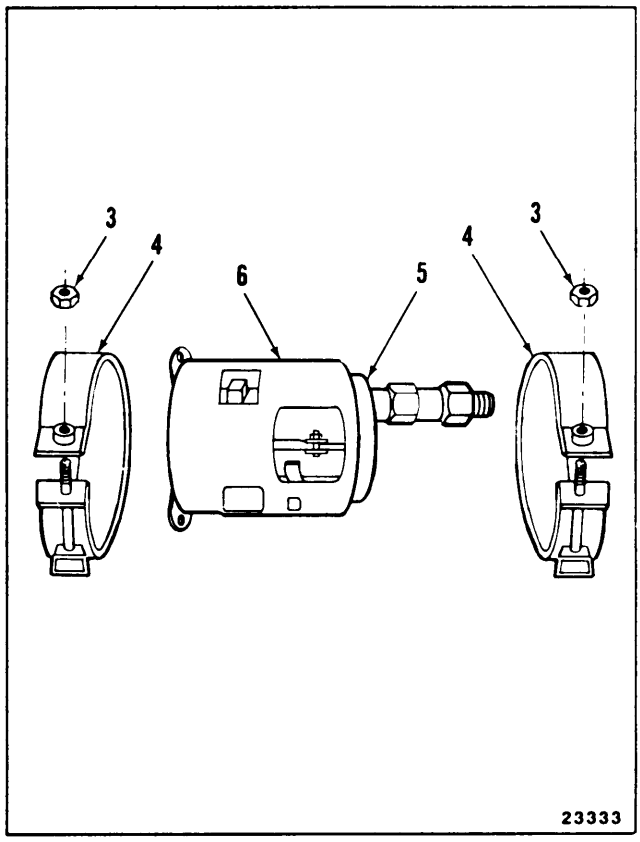
1. Remove lockwire and **disconnect cable plug (1).**
2. **Disconnect oil hose (2).**
3. Wipe up oil with cloths (E120).



GO TO NEXT PAGE

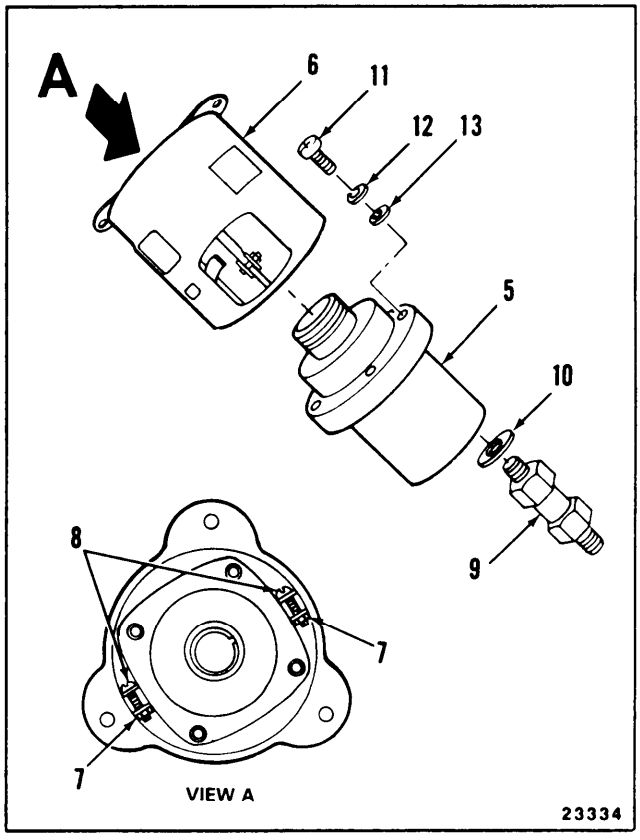
8-15.1 REMOVE ENGINE OIL PRESSURE TRANSMITTER AND VIBRATION ISOLATOR MOUNT (Continued) 8-15.1

4. Remove two nuts (3) and **open two clamps (4).**
5. **Remove transmitter (5)** and mount (6).



6. Loosen two nuts (7) and screws (8).
7. **Remove transmitter (5) from mount (6).**
8. **Remove dampener (9)** and packing (10) from transmitter (5).
9. **Remove screw (11),** lockwasher (12), and washer (13) from transmitter (5).

FOLLOW-ON MAINTENANCE:
Replace Transmitter Isolator Mount Clamps (if Necessary) (Task 8-15.2).



END OF TASK

8-15.2 REPLACE ENGINE OIL PRESSURE TRANSMITTER VIBRATION ISOLATOR CLAMPS

INITIAL SETUP

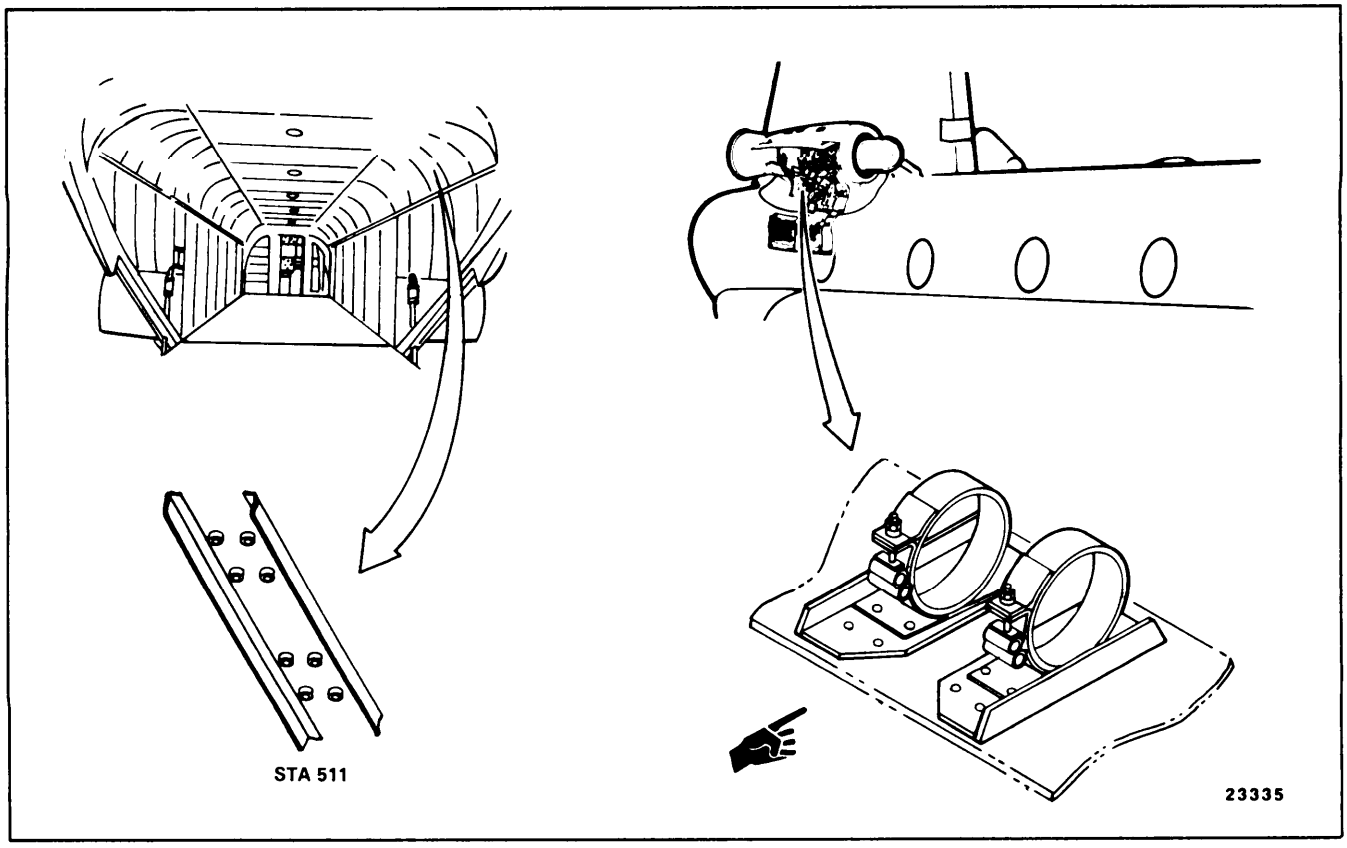
Applicable Configurations:
With 44

Tools:
Airframe Repairer's Tool Kit,
NSN 5180-00-323-4876

Materials:
None

Personnel Required:
Aircraft Structural Repairer (2)
Inspector

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Engine Access Door Open (Task 4-49)
Engine Work Platform Open (Task 2-2)
Cargo Ramp Open and Level (TM 55-1520-240-T)
Engine Oil Pressure Transmitter and Vibration Isolator Mount Removed (Task 8-15.1)



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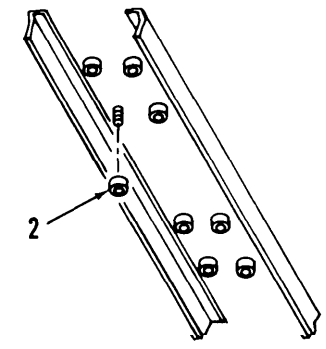
8-15.2 REPLACE ENGINE OIL PRESSURE TRANSMITTER VIBRATION ISOLATOR CLAMPS (Continued) 8-15.2

NOTE

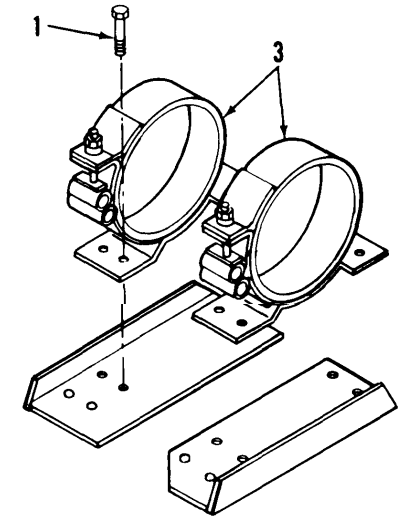
Procedure is same for No. 1 and No. 2 isolator mount clamps. No. 2 clamps are shown here.

1. Position helper inside aft fuselage.
2. **Remove eight bolts (1)** from outside and eight collars (2) from inside.
3. Remove two clamps (3).
4. Position serviceable clamp (3) on structure with clamp opening outboard.
5. **Install four bolts (1)** from outside and **four collars (2)** from inside.
6. Repeat steps 4 and 5 for other clamp (3).

INSPECT



INSIDE



OUTSIDE

FOLLOW-ON MAINTENANCE:
Install Oil Pressure Transmitter and Vibration Isolator Mount (Task 8-16.1).

END OF TASK

8-16 INSTALL ENGINE OIL PRESSURE TRANSMITTER 8-16

INITIAL SETUP

Applicable Configurations:
Without 44 and 74

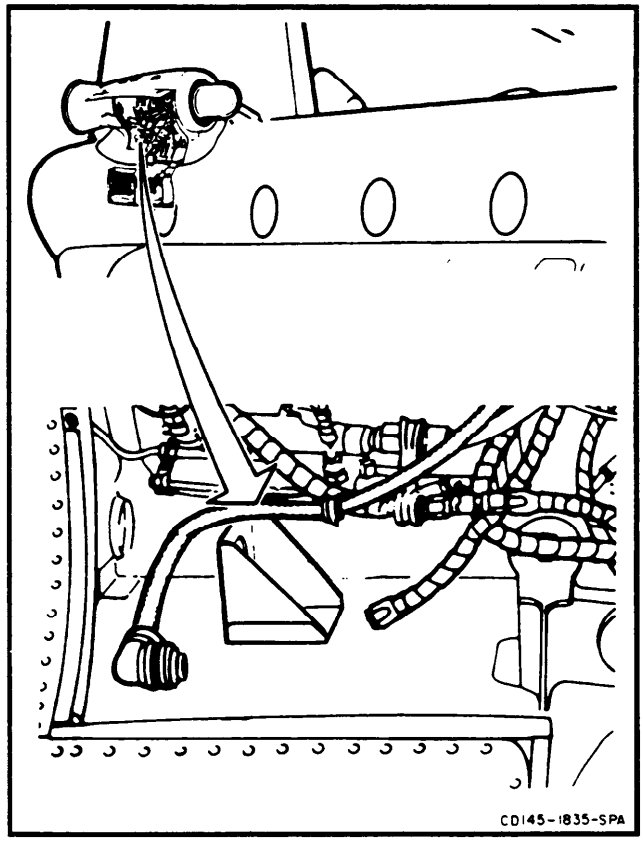
Tools:
Engine and Powerplant Repairer Tool Kit, NSN 5180-00-323-4944

Materials:
Lockwire (E231)
Petrolatum (E274)

Parts:
Preformed Packing

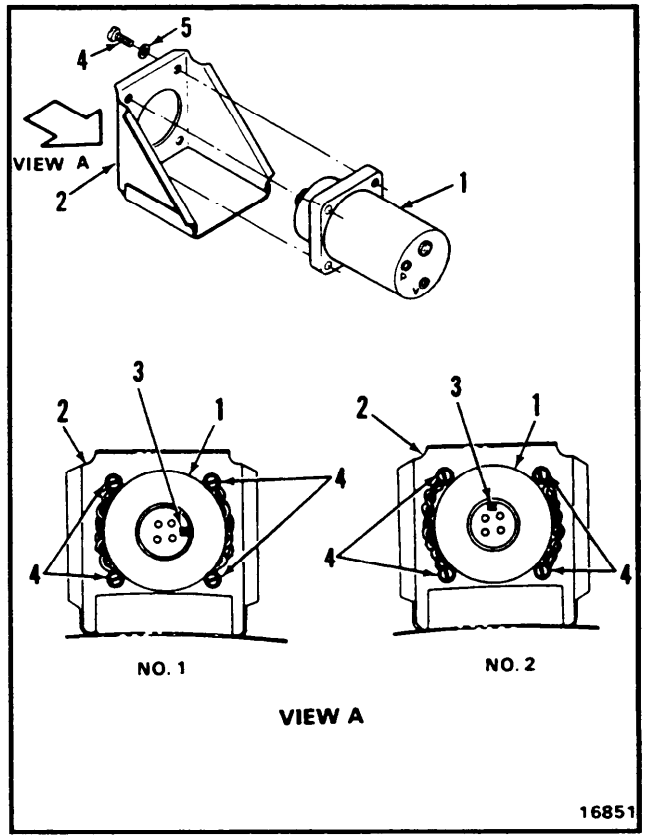
Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



NOTE
Procedure is same for No. 1 and No. 2 engine oil pressure transmitters except as noted. No. 2 transmitter is shown here.

1. **For No. 1 installation, position transmitter (1)** in bracket (2). Make sure connector keyway (3) is inboard.
2. **For No. 2 installation, position transmitter (1)** in bracket (2). Make sure connector keyway (3) is up.
3. **Install four screws (4)** and washers (5).
4. Lockwire screws (4) together. Use lockwire (E231).



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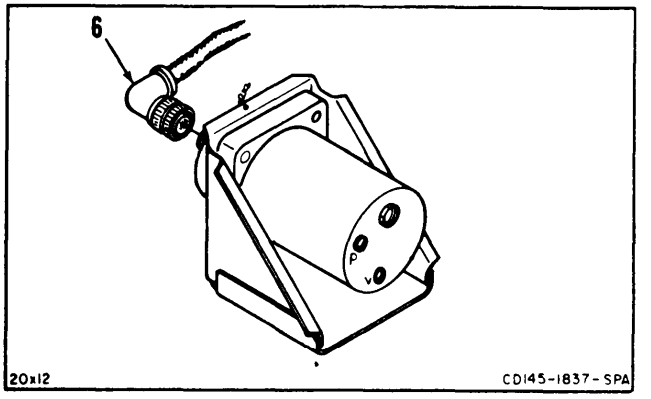
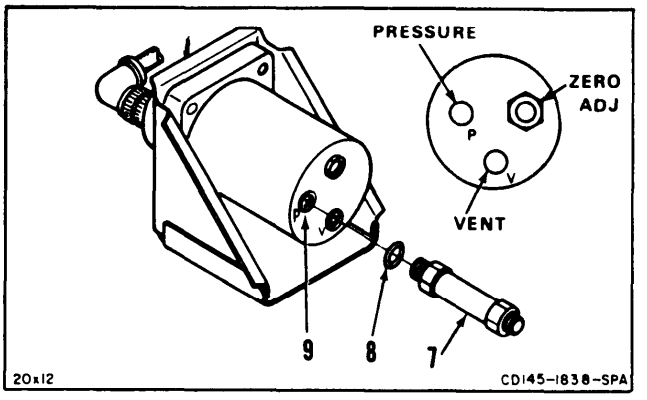
5. **Connect** and lockwire **cable plug (6). Use lockwire (E231).**



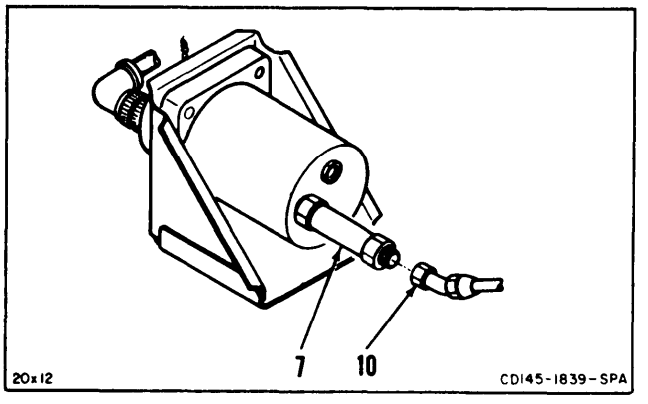
NOTE

- Transmitter has three ports at forward end: P, V, and capped port (zero adjust).
- Arrow on dampener shall point toward transmitter.

6. Lubricate dampener (7) and packing (8). Use petrolatum (E274). **Install dampener (7)** and packing (8) in P port (9).

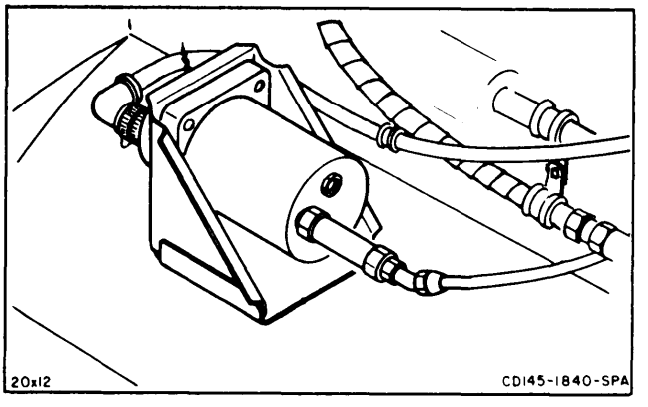


7. Lubricate thread of hose fitting (10). Use petrolatum (E274). **Connect hose (10)** to dampener (7).



INSPECT

FOLLOW-ON MAINTENANCE:
Close engine access door (Task 4-50).
Close engine work platform (Task 2-2).
Perform engine operational check (TM 55-1520-240-T).



END OF TASK

8-16.1 INSTALL ENGINE OIL PRESSURE TRANSMITTER AND VIBRATION ISOLATOR MOUNT

INITIAL SETUP

Applicable Configurations:
With 44

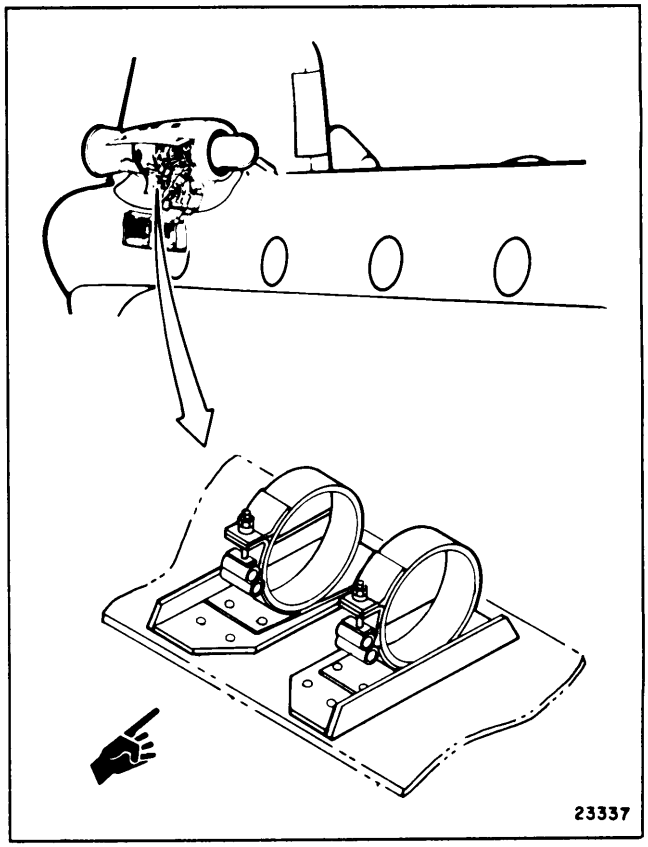
Tools:
Engine and Powerplant Repairer Tool kit, NSN 5180-00-323-4944

Materials:
Lockwire (E227)
Petrolatum (E274)

Parts:
Preformed Packing

Personnel Required:
Medium Helicopter Repairer
Inspector

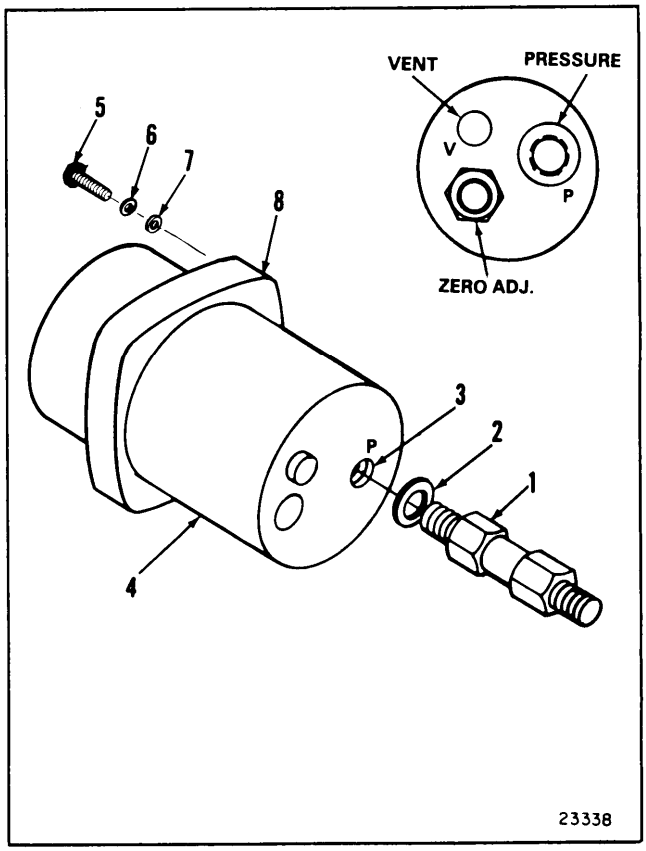
References:
TM 55-1520-240-23P



NOTE

- Procedure is same for No. 1 and No. 2 engine oil pressure transmitters. No. 2 transmitter is shown here.
- Transmitter has three ports at forward end: P, V, and capped port (zero adjust).
- Arrow on dampener shall point toward transmitter.

1. Lubricate dampener (1) and packing (2). Use petrolatum (E274). **Install dampener** and packing in P port (3) of transmitter (4).
2. Install screw (5), lockwasher (6), and washer (7) in any hole of mounting flange (8).



GO TO NEXT PAGE

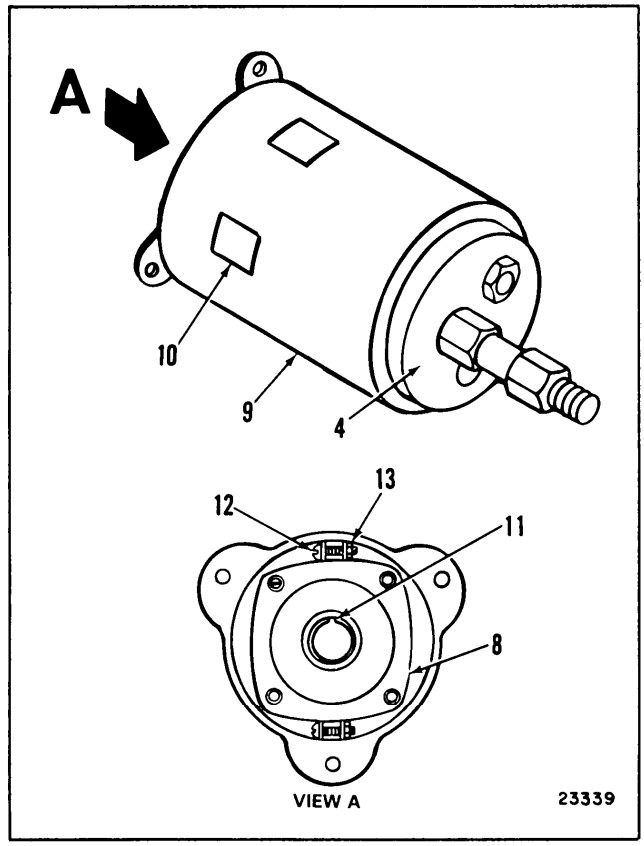
3. **Insert transmitter (4) in mount (9).** Position as follows:

NOTE

- The lefthand transmitter keyway must be between the 11 and 1 o'clock position after installation.
- The righthand transmitter keyway must be between the 5 and 7 o'clock position after installation.
- In order to clear installation of clamp it may be necessary to reposition fuel lines.

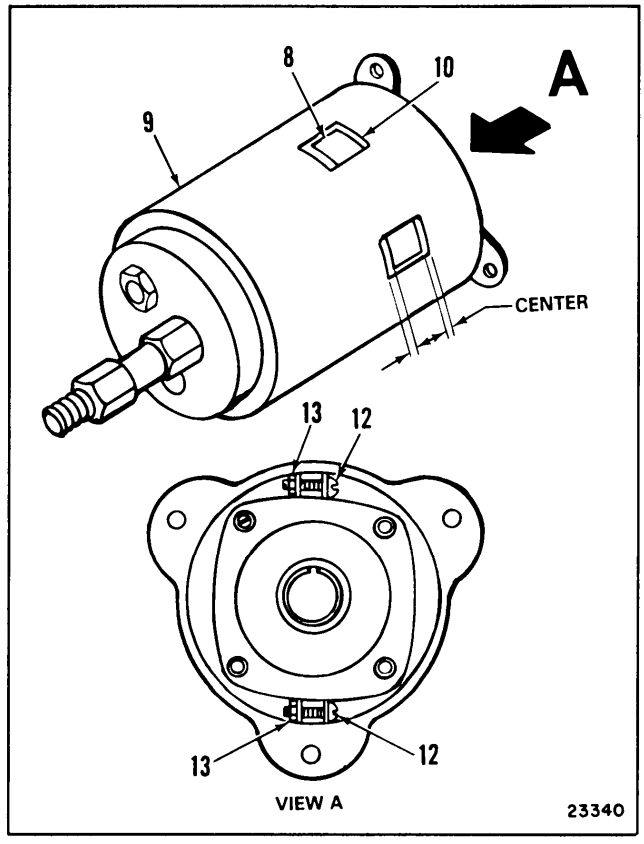
a. Rotate transmitter (4) until four corners of mounting flange (8) are within four square mount holes (10).

b. Rotate transmitter (4) until keyway (11) and two screws (12) and nuts (13) are approximately aligned as shown.



c. Center transmitter mounting flange (8) within square mount holes (10).

4. **Tighten two screws (12) and nuts (13)** in mount (9).



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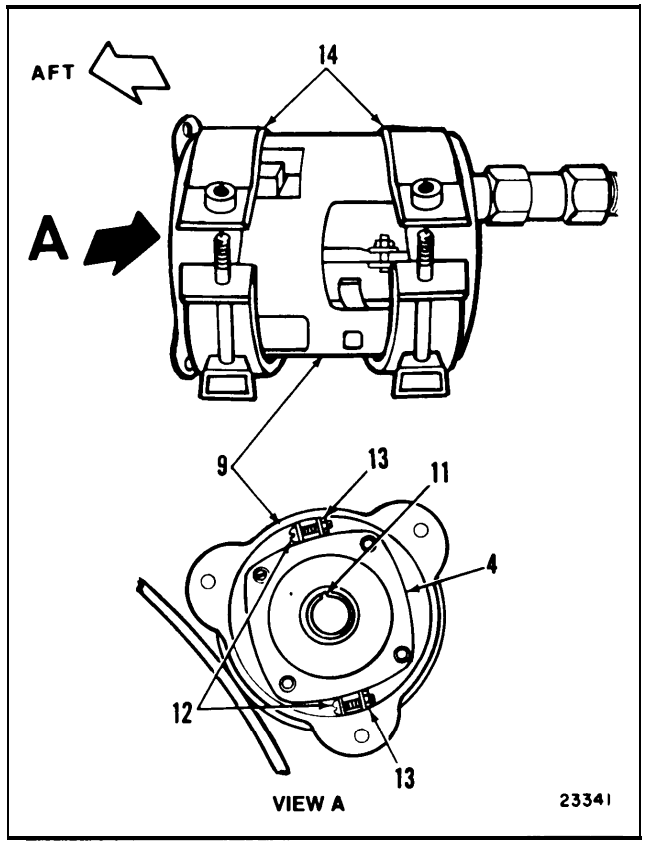
8-16.1 INSTALL ENGINE OIL PRESSURE TRANSMITTER AND VIBRATION ISOLATOR MOUNT (Continued)

5. **Position mount (9) in two clamps (14).** Make sure keyway (11) is facing up. Make sure one screw (12) and nut (13) is facing up.
6. If transmitter (4) and mount (9) is not positioned as shown, loosen two screws (12) and nuts (13) and go to step 3.

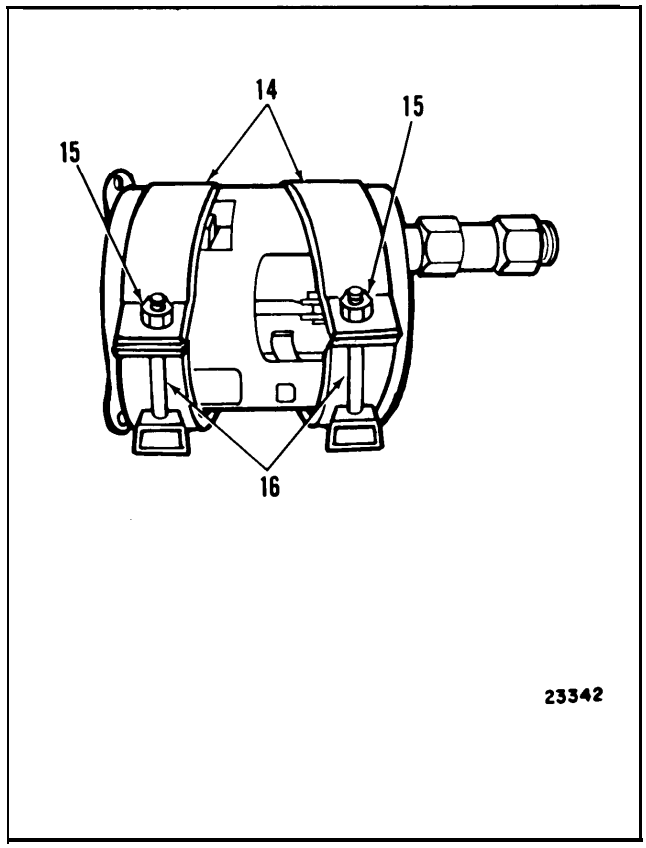


7. **Close clamps (14)** and install two nuts (15) on t-bolts (16).

NOTE

After tightening, minor distortion of mount is acceptable.

8. **Tighten nuts (15) until one to three threads of t-bolt (16) show** above each nut.



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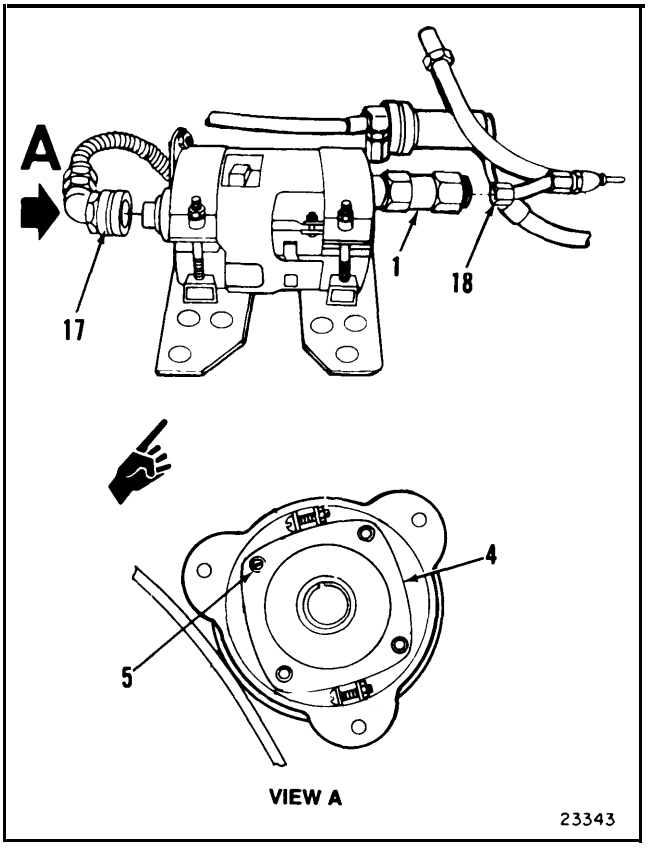
9. **Connect cable plug (17)** to transmitter (4),
10. **Lockwire cable plug (17)** to screw (5). Use lockwire (E227).
11. Lubricate thread of hose fitting (18). Use petrolatum (E274). **Connect hose** to dampener (1).

INSPECT



FOLLOW-ON MAINTENANCE:
Close engine access door (Task 4-50),
Close engine work platform (Task 2-2),
Perform engine operational check (TM 55-1520 - 240-T).

END OF TASK

8-17 TEST ENGINE OIL TEMPERATURE INDICATOR

INITIAL SETUP

Applicable Configurations:
All

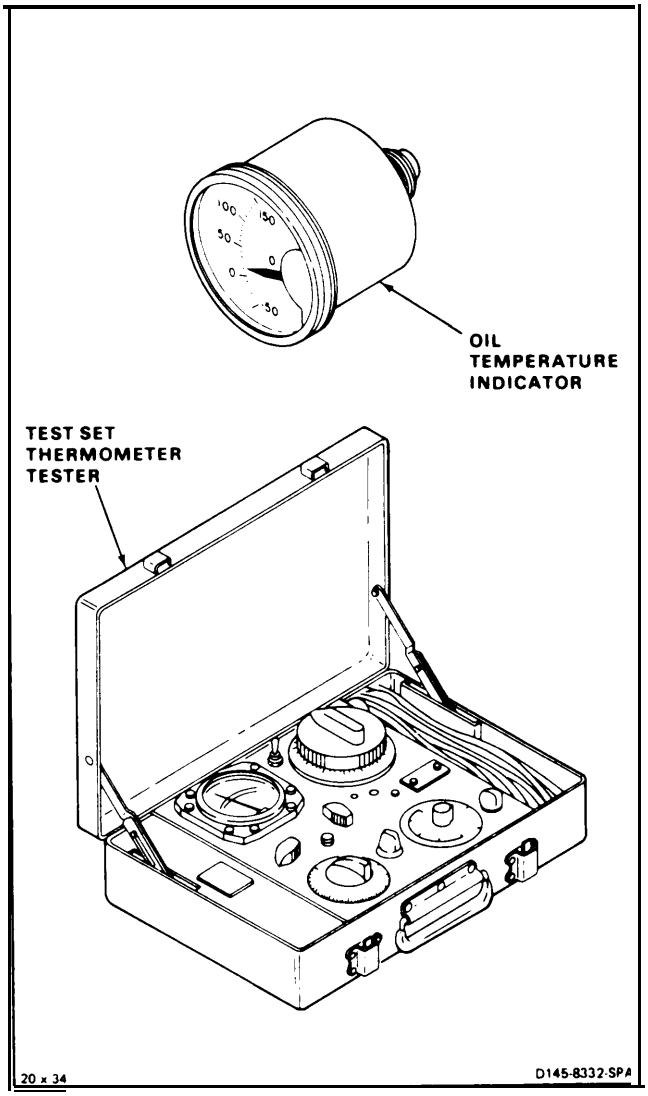
Tools:
Electrical Repairer's Tool Kit,
NSN 6625-00-556-4915
Thermometer Tester, Electrical
DC Power Supply 0-50 volt
Multi meter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1500-204-25/1
TM 55-6695-200-15

Equipment Condition:
Off Helicopter Task



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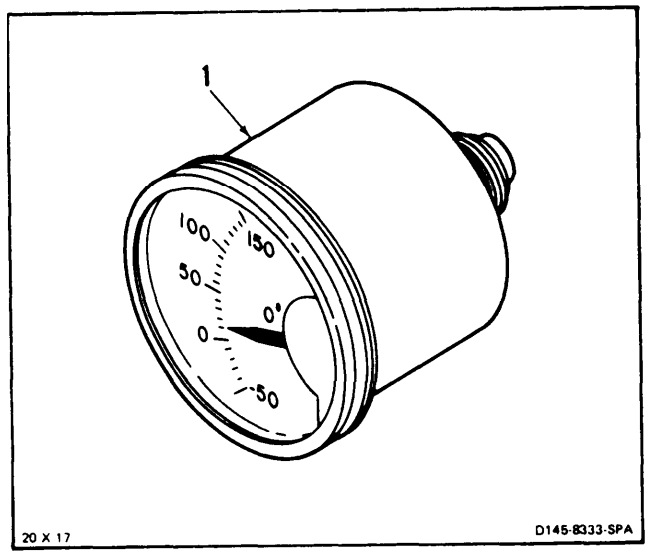
8-17 TEST ENGINE OIL TEMPERATURE INDICATOR (Continued)

1. Set up test set (1) (TM 55-6695-200-15).
2. **Connect indicator (1) to test set.**
3. **Perform scale error test** (TM 55-6695-200-15), at 28.5 volts dc. Indicator readings shall be within tolerance as follows:



INDICATOR TEST POINT ° C (°F)	TEST SET AT NORMAL VOLTAGE (28.5) RANGE ° C (°F)
-70(-94)	-66 to -74°(-86.8 to -101.2°)
-30(-22)	-27 to -33°(-16.6 to -27.4°)
0(32)	-2 to 2°(28.4 to 35.6°)
30(86)	28 to 32°(82.4 to 89.6°)
80(176)	78 to 82°(172.4 to 179.6°)
120(248)	117 to 123°(242.6 to 253.4°)
150(302)	146 to 154°(294.8 to 309.2°)

4. Repeat step 2 at 22.5 volts dc.

INDICATOR TEST POINT °C (°F)	TEST SET AT REDUCED VOLTAGE (22.5) RANGE ° C (°F)
-70(-94)	-67 to -73°(-88.6 to -99.4°)
-30(-22)	-27 to -33°(-16.6 to -27.4°)
0(32)	-2 to 2°(28.4 to 35.6°)
30(86)	28 to 32°(82.4 to 89.6°)
80(176)	78 to 82°(172.4 to 179.6°)
120(248)	117 to 123°(242.6 to 253.4°)
150(302)	147 to 155°(296.6 to 307.4°)

INSPECT

5. **Disconnect indicator (1) from test set.**

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-18 REPLACE ENGINE OIL TEMPERATURE TRANSMITTER (BULB) 8-18

INITIAL SETUP

Applicable Configurations:
All

Tools:
Engine and Powerplant Repairer's Tool Kit, NSN 5180-00-323-4944

Materials:
None

Personnel Required:
Aircraft Powerplant Repairer

References:
TM 55-2840-254-23P
TM 55-2840-254-23

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Engine Access Door Open (Task 4-49)
Engine Work Platform Open (Task 2-2)

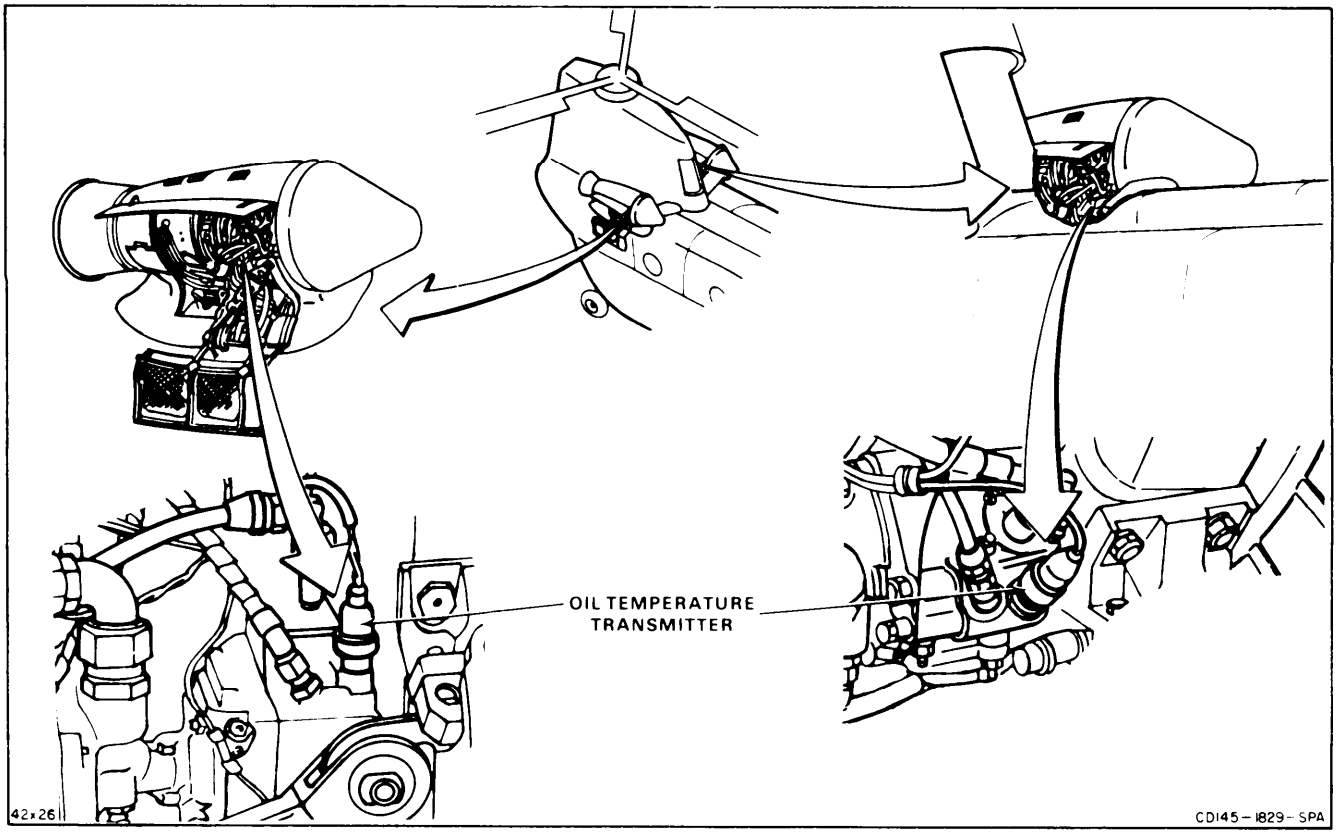
NOTE

Engine oil temperature transmitter IS forward on right of both engines.

Replace engine oil temperature transmitter (TM 55-2840-254-23.

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-18.1 ZERO ADJUST PILOT'S OR COPILOT'S TORQUEMETER INDICATOR 8-18.1

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Test Cable (E42)

Materials:

None

Personnel Required:

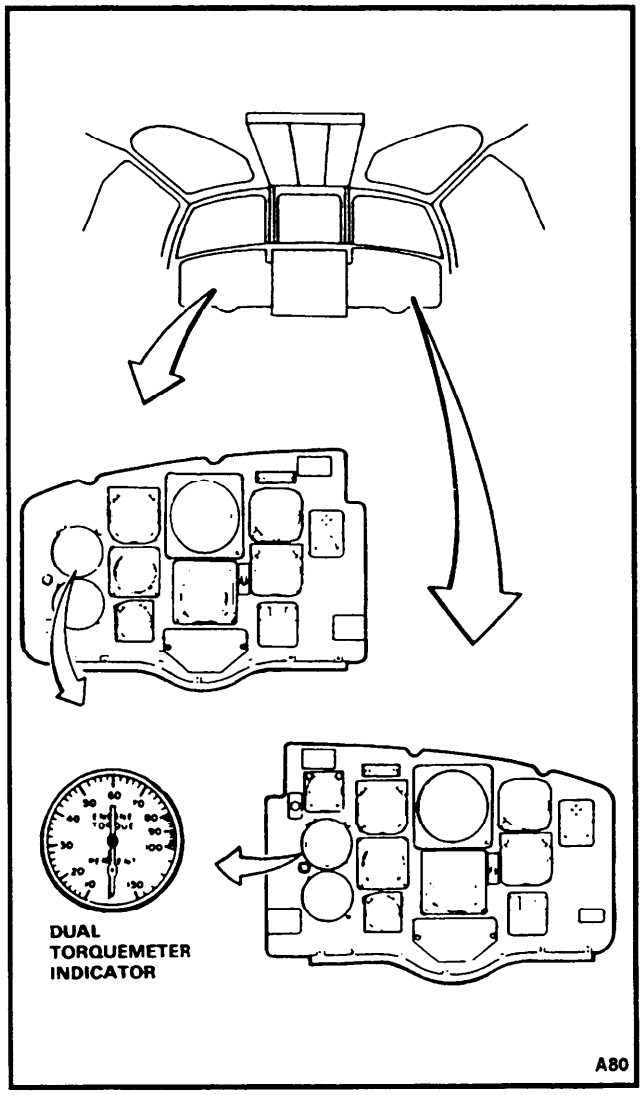
Aircraft Electrician
Inspector

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Engine Access Cover Open (Task 4-49)
Engine Work Platform Open (Task 2-2)

References:

TM 55-6600-200-20

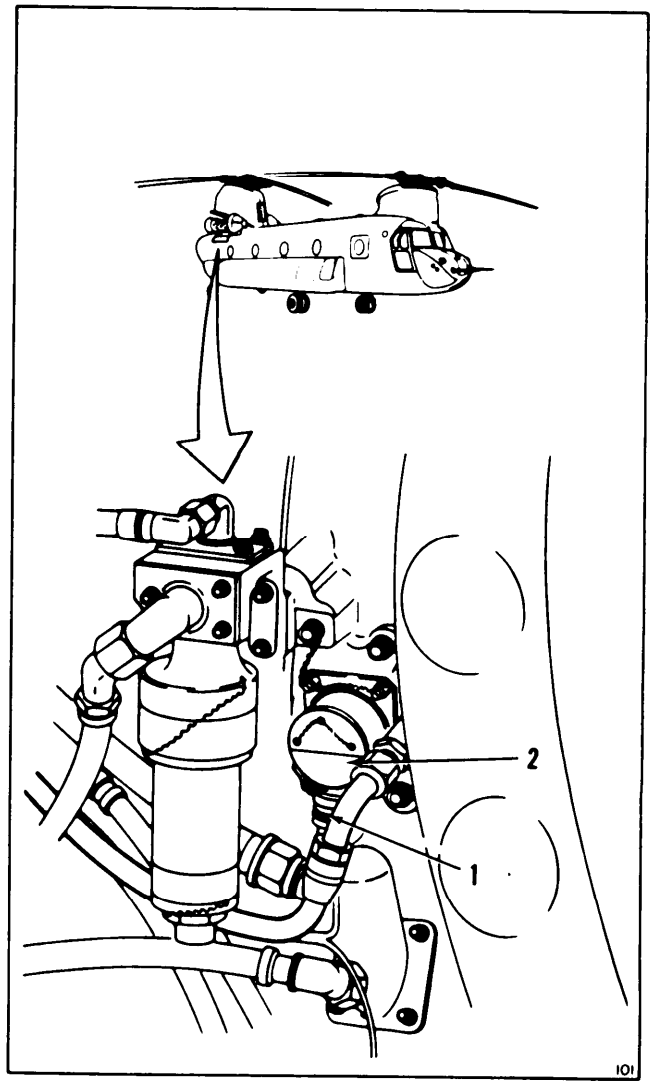


NOTE

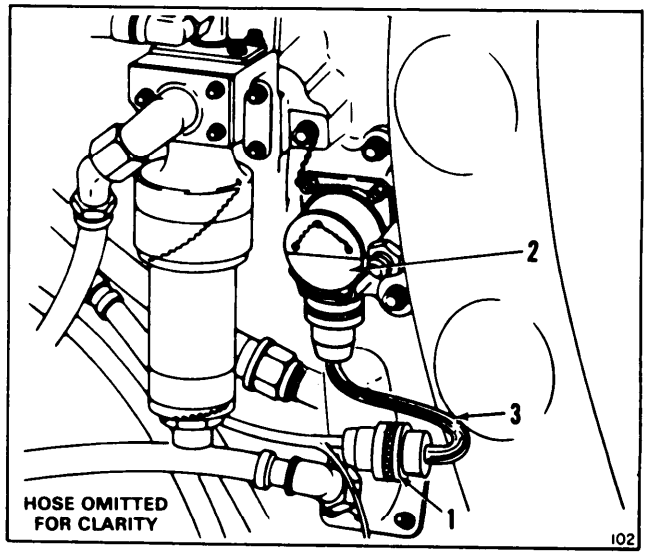
Procedure is the same to adjust pilots or copilot's torquemeter indicator, except for pointers affected. Adjusting the copilot's indicator affects both No. 1 pointers. Adjusting the pilots indicator affects both No. 2 pointers. Adjustment of pilot's indicator is shown here. Intermixing of P/N 114ES270-3 and P/N 114ES270-4 on the same aircraft is not allowed.

GO TO NEXT PAGE

1. **Disconnect electrical connector (1)** from torquemeter junction box (2).



2. **Connect test cable (E42)** (3) between connector (1) and junction box (2).



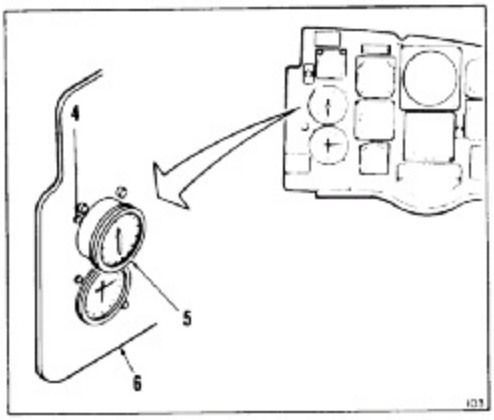
8-18.1 ZERO ADJUST PILOT'S OR COPILOT'S TORQUEMETER INDICATOR (Continued)

3. **Loosen round head clamp screw (4).**

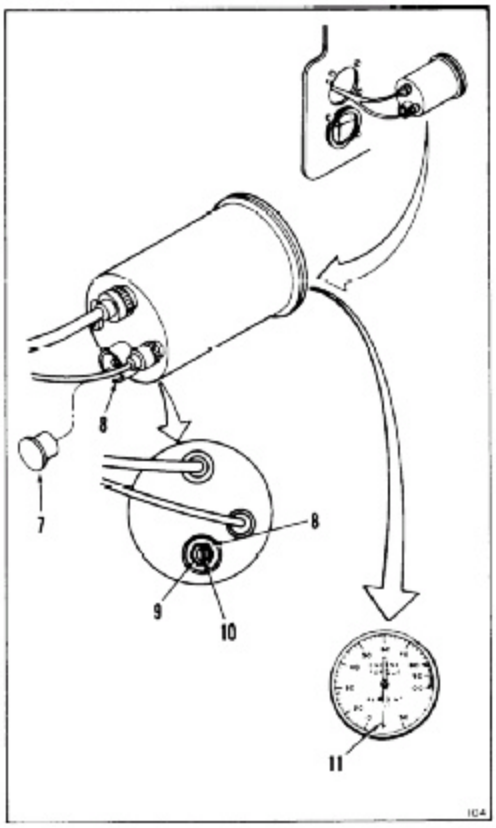
CAUTION

Be careful when handling indicators. Rough handling will damage indicators.

4. Grasp indicator (5) at case rim. Then pull **indicator from panel (6).**



5. **Remove cap (7)** from resistor R101 (8).
6. **Connect battery** (Task 1-39).
7. Start and **run apu** (Task 1-36).
8. **Loosen lock nut (9)** on resistor R101 (8). **Turn screw (10)** until pilot's and copilot's No. 2 pointers (11) are as near to 0 as possible.
9. **Tighten lock nut (9).** Install cap (7) over resistor R101 (8).



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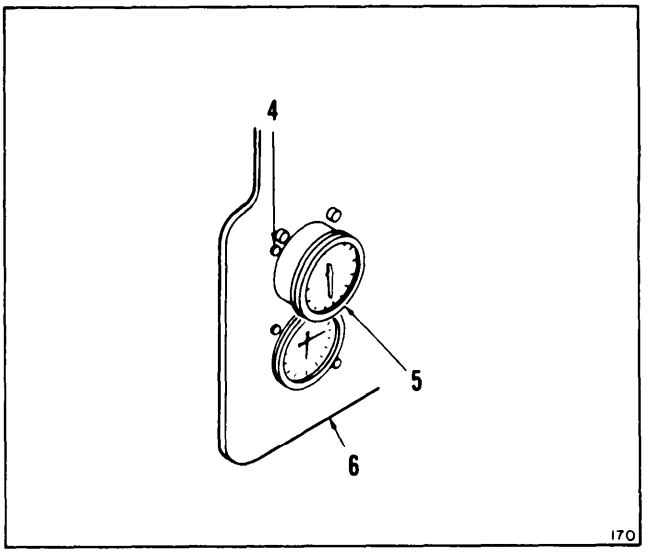
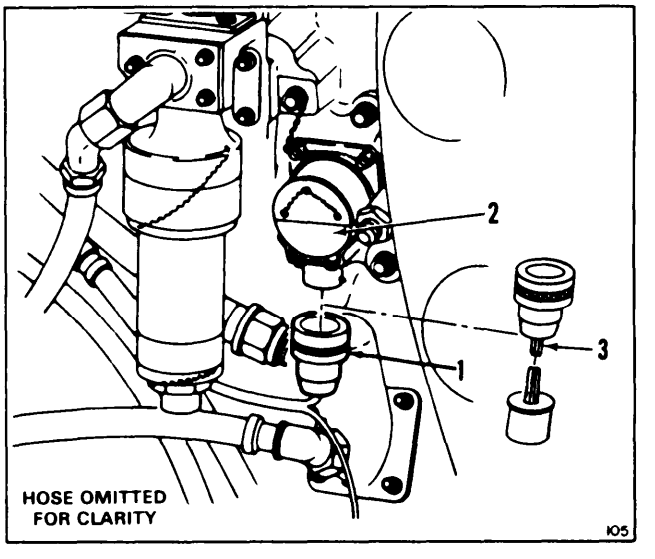
10. **Install indicator (5)** in panel (6).
11. Tighten round head clamp screw (4).
12. Apply index mark from indicator (5) to panel (6) (TM 55-6600-200-20).



13. **Shut down apu** (Task 1-36).
14. **Disconnect battery** (Task 1-39).
15. Disconnect and **remove test cable E42 (3).**
16. **Connect electrical connector (1)** to torquemeter junction box (2).

INSPECT

FOLLOW-ON MAINTENANCE:
Close engine access cover (Task 4-50).
Close engine work platform (Task 2-3).
Perform operational check of engine torquemeter system (TM 55-1520-240-T).



END OF TASK

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
AC Power Supply, 115 Volt, 400 Hz
Meter Test Set, TS-682A/GSM-1
Soldering Gun
Crimping Tool,
NSN 5120-00-075-2544
Connector PT06CE8-4S
Connector MS3476W12-10S
Wire, No. 20, Insulated

Personnel Required:

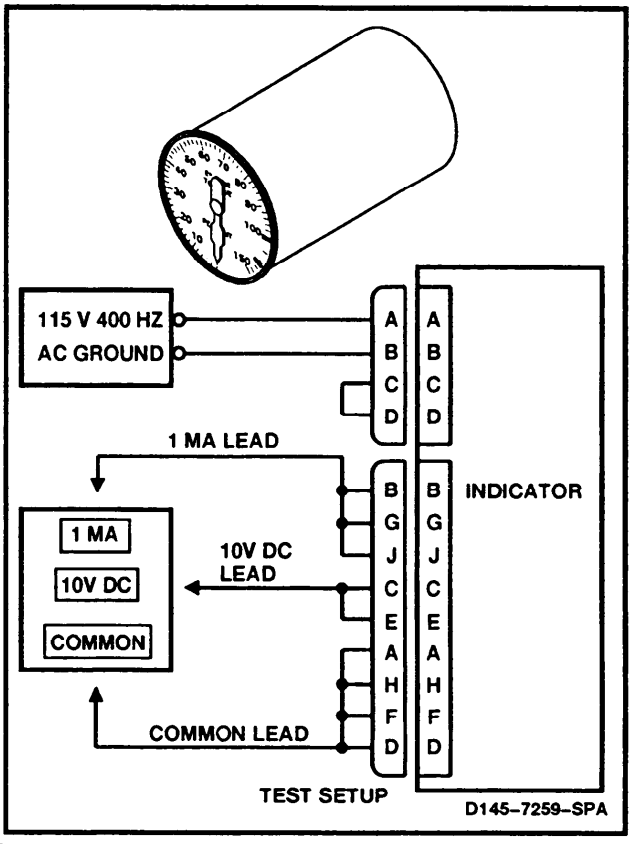
Aircraft Electrician
Inspector

References:

TM 11-6625-277-14

Equipment Condition:

Off Helicopter Task
Electrical Test Setup

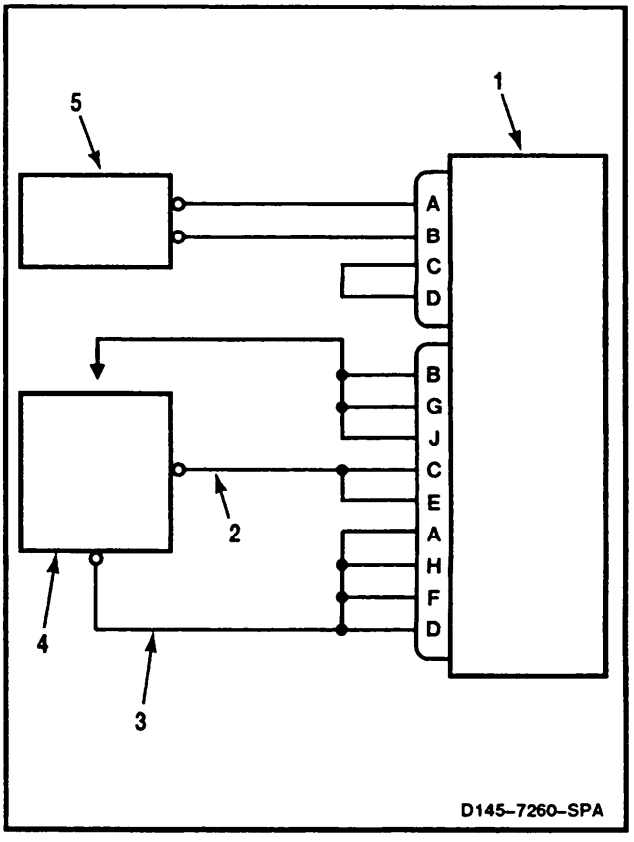


TEST SETUP D145-7259-SPA

NOTE

- Connect 1 MA or 1 OVDC test leads to indicated jack only when specified in test procedure.
- Intermixing of P/N 114ES270-3 and 114ES70-4 on the same aircraft is not allowed.

1. **Connect indicator (1) to test setup.**
2. **Connect 10VDC lead (2) and COMMON lead (3) to meter test set (4) jacks.**
3. **Apply power to power supply (5).**



D145-7260-SPA

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8-19 TEST DUAL TORQUEMETER INDICATOR (AVIM) (Continued)

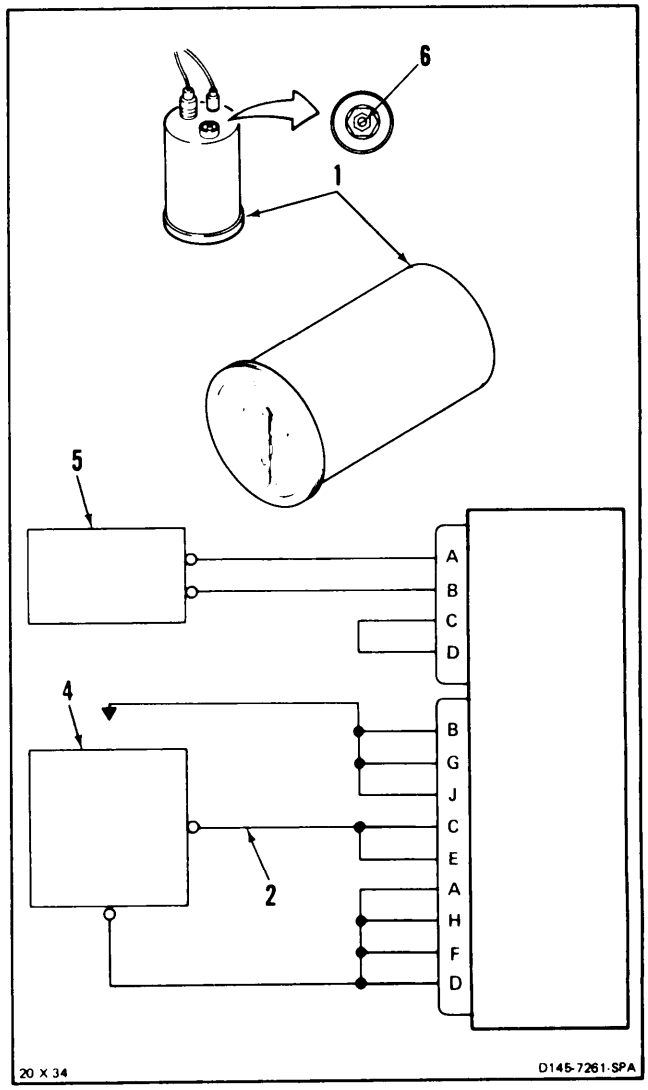
4 **Adjust meter test set (4) DIRECT CURRENT COURSE and DIRECT CURRENT FINE controls until DC MICROAMPERE meter reads 7.5 volts dc** (TM 11-6625-277-14).

5 **Adjust indicator zero adjust screw (6) on back of indicator (1), until No. 1 pointer reads 0.**

6. **Adjust meter test set (4) DIRECT CURRENTCOURSE and DIRECT CURRENT FINE controls until DC MICROAMPERE meter reads 0** (TM 11-6625-277-14).

7 **Shut down power supply (5).**

8. **Disconnect 10VDC lead (2) from meter test set (4).**



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8-19 TEST DUAL TORQUEMETER INDICATOR (AWM) (Continued)

9. **Connect 1 MA lead (7) to meter test set (4).**

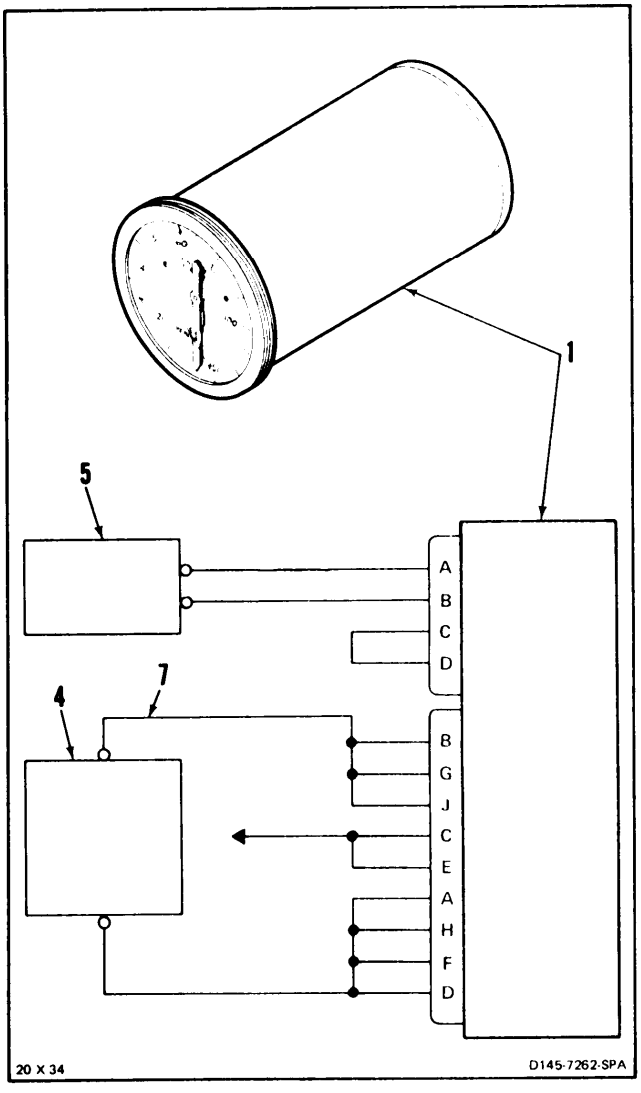
10. **Apply power to power supply (5).**

NOTE

When testing No. 1 pointer of indicator, No. 2 pointer will also move. Ignore No. 2 pointer until test of No. 1 is complete.

11. **Adjust meter test set (4) DIRECT CURRENT COURSE and DIRECT CURRENT FINE controls to obtain indicator (1) settings as indicated below.** For indicator setting listed test set be MICROAMPERE reading shall be within range as listed below;

TORQUEMETER INDICATOR READING	TS-682A/GSM-1 DC MICROAMPERE RANGE (UA)
10	51 to 63
20	117 to 129
40	277 to 289
60	450 to 462
80	599 to 611
100	694 to 706
150	813 to 825



12. **Repeat step 11 and check indicator (1) pointer No. 2. Meter test set (4) readings shall be within tolerance as listed in step 11.**

13. Adjust meter test set (4) DIRECT CURRENT COURSE and DIRECT CURRENT FINE to 0 dc output (TM 11-6625-277-14).

14. **Shutdown power supply (5).**

15. Disconnect indicator (1) from test setup.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-20 REMOVE ENGINE TORQUEMETER POWER SUPPLY 8-20

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Workstand

Materials:

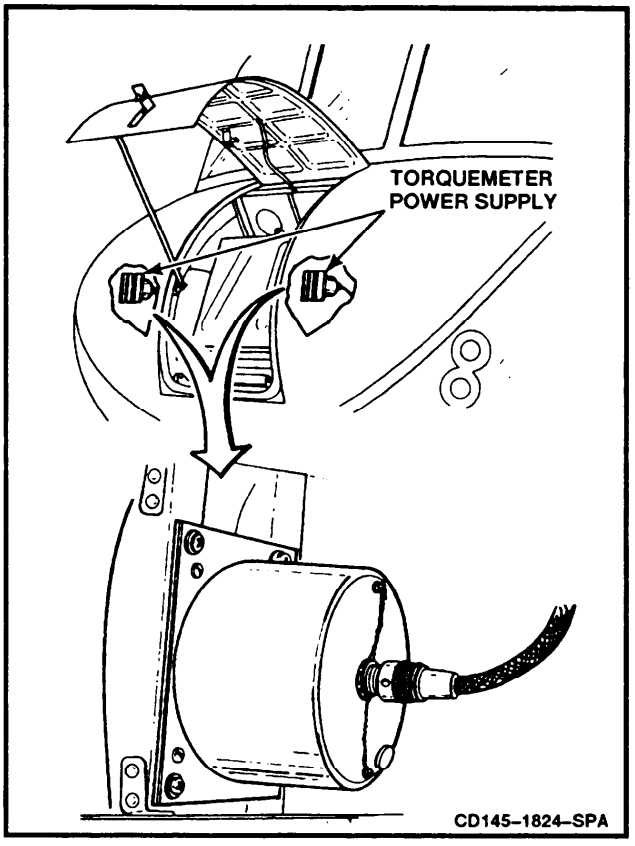
Cloths (E120)

Personnel Required:

Medium Helicopter Repairer (2)

Equipment Condition:

Battery Disconnected (Task 1-39)
Hydraulic Power Off
Electrical Power Off
Nose Enclosure Door Open (Task 2-2)



NOTE

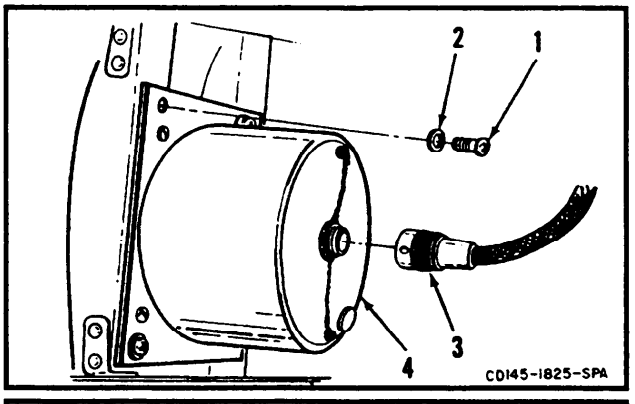
Procedure is same for left and right power supply. Left power supply is shown here.

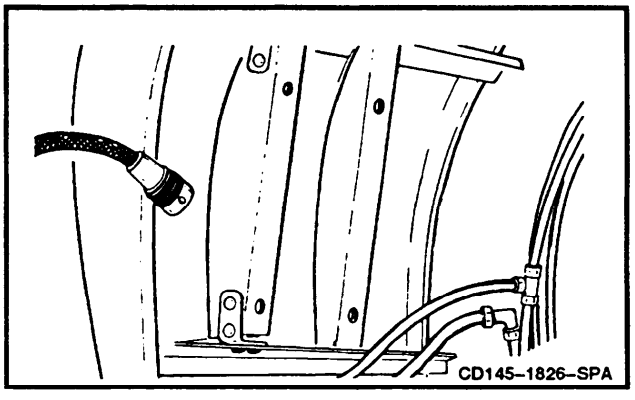
1. Place cloths (E120) on lower windshield panel to protect surface.
2. **Remove four screws (1)** and washers (2).
3. **Disconnect cable plug (3).**

NOTE

Power supply will not pass through nose enclosure. Vibration absorber blocks way.

4. Have helper **remove power supply (4)** through cockpit.





FOLLOW-ON MAINTENANCE:

None

END OF TASK

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
DC Power Supply, 0 to 30 Volt dc
Electronic Counter AN/USM 26 or Equal
Voltmeter, Differential, ac/dc ±0.2% Accuracy (Fluke 803B or Equal)
Resistor Precision, 1 Ohm ±0.1%, 3 Watt (Dale Type, RS-2 or Equal)
Resistance Decade, 0 to 2500 Ohms ±1%
Inductors, Toroid 2.5 mH (Thordarson Meissner TOR 7231 or Equal) (5)
Switch MS25125-1 or Equal (2)
Connector MS3126-8-4S
Crimping Tool,
NSN 5120-00-075-2455
Wire, No. 20, Insulated

Materials:

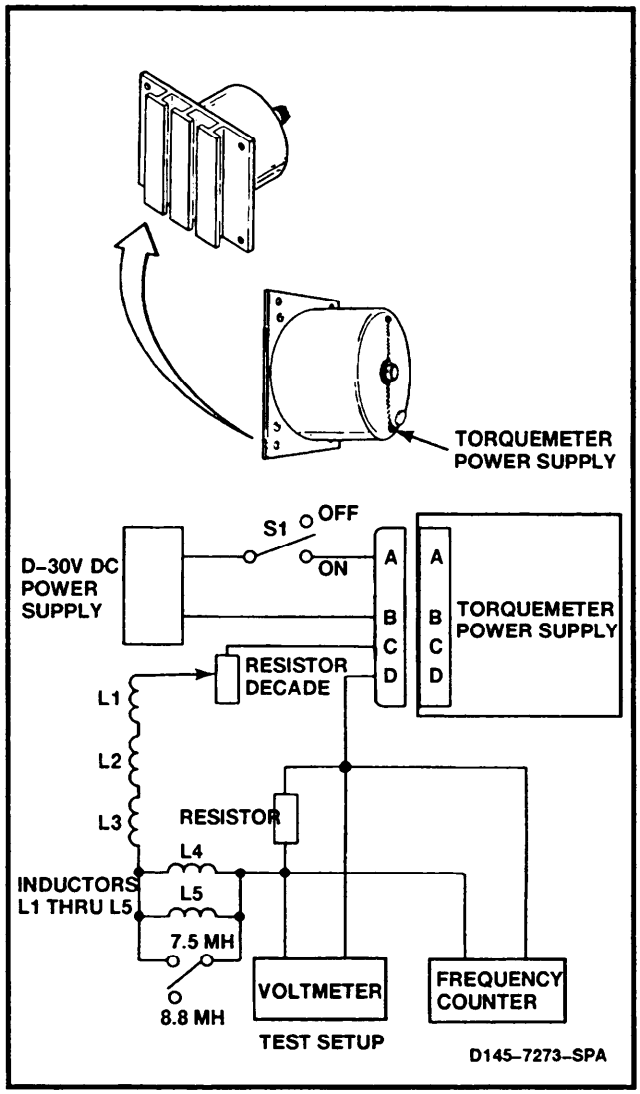
None

Personnel Required:

Aircraft Electrician
Inspector

Equipment Condition:

Off Helicopter Task
Electrical Test Setup



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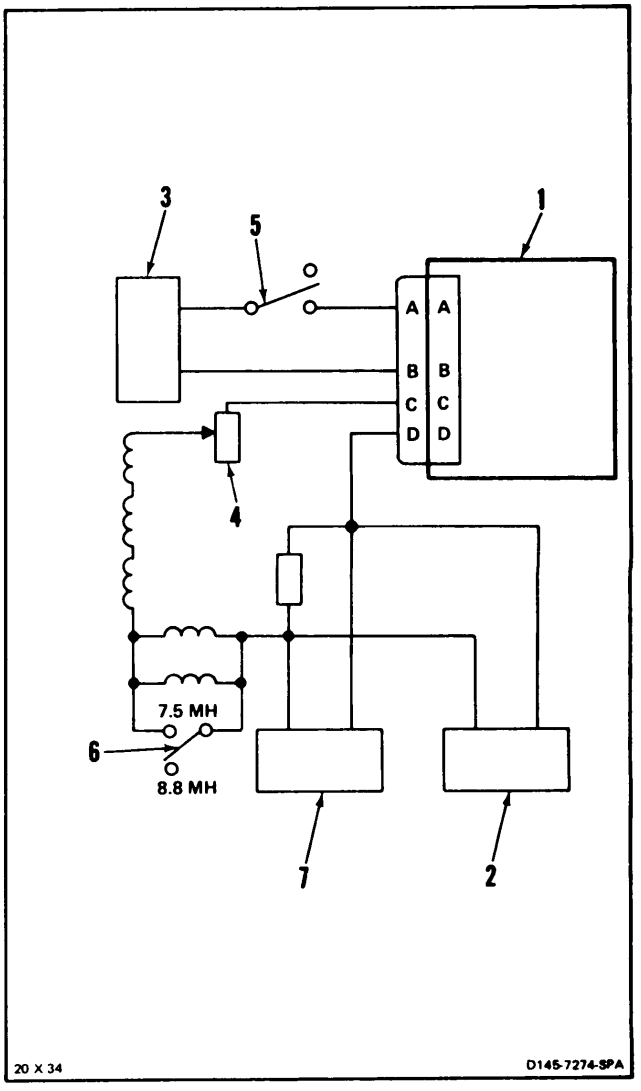
8-21 TEST TORQUEMETER POWER SUPPLY (AVIM) (Continued) 8-21

TEST TORQUEMETER POWER SUPPLY

1. **Connect torquemeter power supply (1) to test setup.**
2. **Set electronic counter (2) to minimum time base of 10 seconds.**
3. **Turn on power supply (3) and adjust power supply (3) to 30 vdc.**
4. **Adjust resistance decade (4) to 20 ohms.**
5. **Set switch (5) to ON.**
6. **Set switch (6) to 7.5 mH position (closed). Check voltmeter (7).** Voltmeter shall read 537 to 543 millivolts. **Check electronic counter (2).** Counter shall read 1,995 to 2,005 Hz.
7. **Adjust resistance decade (4) to 30 ohms. Check voltmeter (7) and counter (2).** Readings shall be same as readings in step 6.
8. **Set switch (6) to 8.8mH position (open). Check voltmeter (7) and counter (2).** Readings shall be same as readings in step 6.
9. **Adjust resistance decade (4) to 20 ohms. Check voltmeter (7) and counter (2).** Readings shall be same as reading in step 6.
10. **Adjust power supply (3) to 24 vdc. Repeat steps 6 thru 9. Check voltmeter (7) and counter (2).** Readings at each step shall be same as readings in step 6.



SHUTDOWN

11. **Set switch (5) to OFF.**
12. **Shutdown power supply (3).**
13. Disconnect torquemeter power supply (1) from test setup.

INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-22 INSTALL ENGINE TORQUEMETER POWER SUPPLY

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Workstand

Materials:

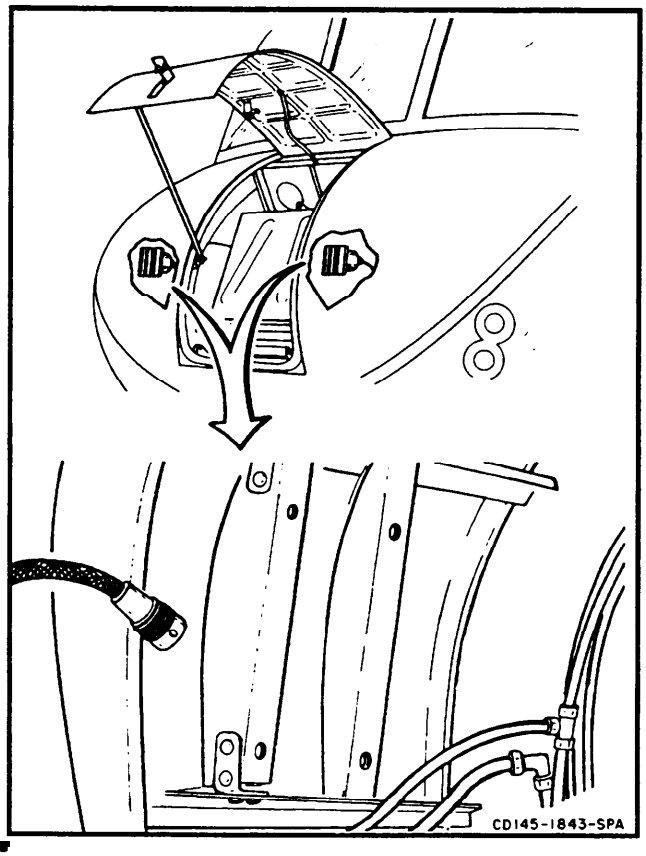
None

Personnel Required:

Medium Helicopter Repairer (2)
inspector

References:

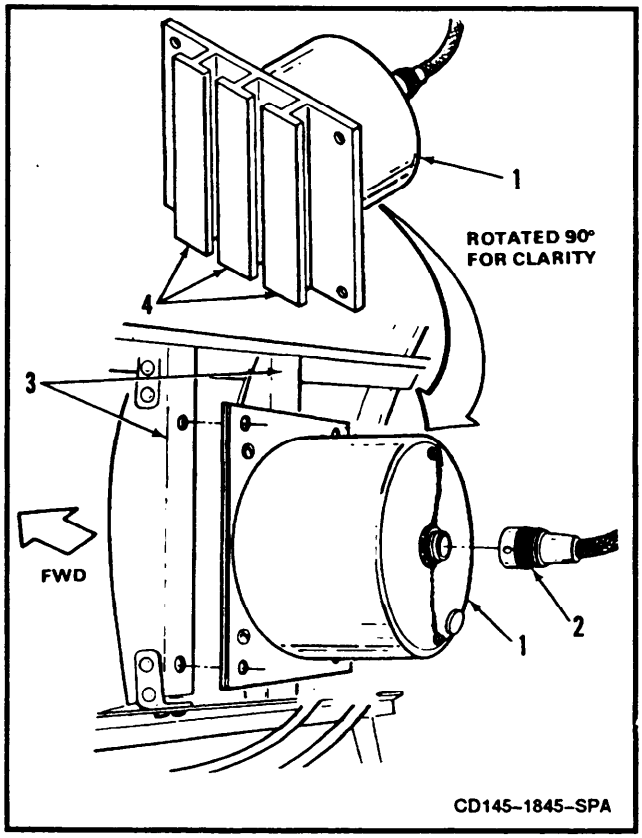
TM 55-1520-240-23P



NOTE

- Procedure can be used for left or right power supply. Left power supply is shown here.
- Power supply will not pass through nose enclosure. Vibration absorber blocks way.

1. Have helper inside cockpit, guide power supply (1) from cockpit into nose enclosure.
2. **Connect cable plug (2)** to power supply (1).
3. **Position power supply (1)** on mounting bracket (3) with cooling fins (4) vertical and forward.



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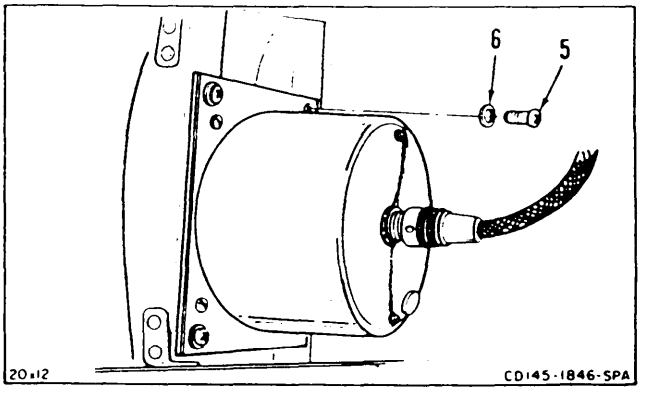
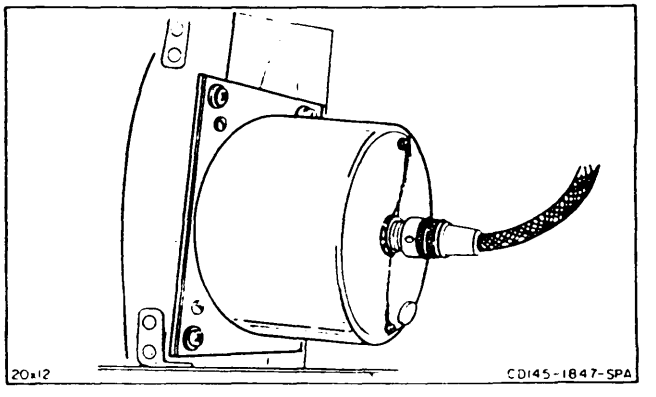
8-22 INSTALL ENGINE TORQUEMETER POWER SUPPLY (Continued) 8-22

4. **Install four screws (5)** and washers (6).

5. Remove cloths from lower windshield panel.

INSPECT





FOLLOW-ON MAINTENANCE:

Zero adjust engine torquemeter indicator (Task 8-18.1).

Close nose enclosure door (Task 2-2).

Perform engine operational check (TM 55-1520-240-T).

END OF TASK

8-22.1 REMOVE NO. 1 OR NO. 2 TORQUE SIGNAL PROCESSOR/POWER SUPPLY 8-22.1

INITIAL SETUP

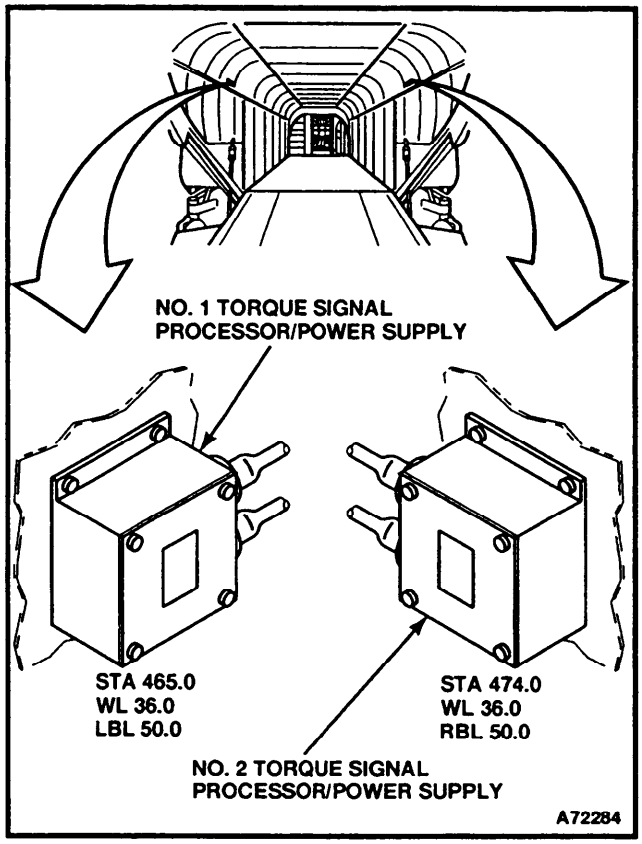
Applicable Configurations:
With 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)

Personnel Required:
Aircraft Electrician

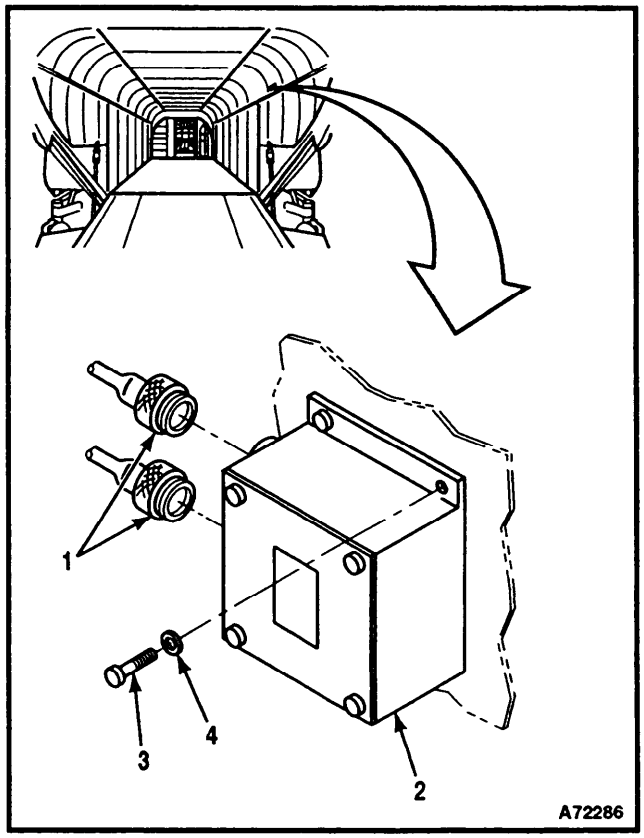
Equipment Conditions:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

The procedure is the same to remove the No. 1 or No. 2 torque signal processor/power supply. The No. 2 torque signal processor/power supply is shown here.

1. Tag and **disconnect two connectors (1)** from torque signal processor/power supply (2). Use paper tags (E264).
2. **Remove four screws (3) and washers (4).**
3. **Remove torque signal processor/power sup ply (2).**



FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-22.2 INSTALL NO. 1 OR NO. 2 TORQUE SIGNAL PROCESSOR/POWER SUPPLY

INITIAL SETUP

Applicable Configurations:

With 7-1

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:

Aliphatic Naphtha, Type II (E245)
Cloths (E120)
Gloves (E184.1)

Personnel Required:

Aircraft Electrician
Inspector

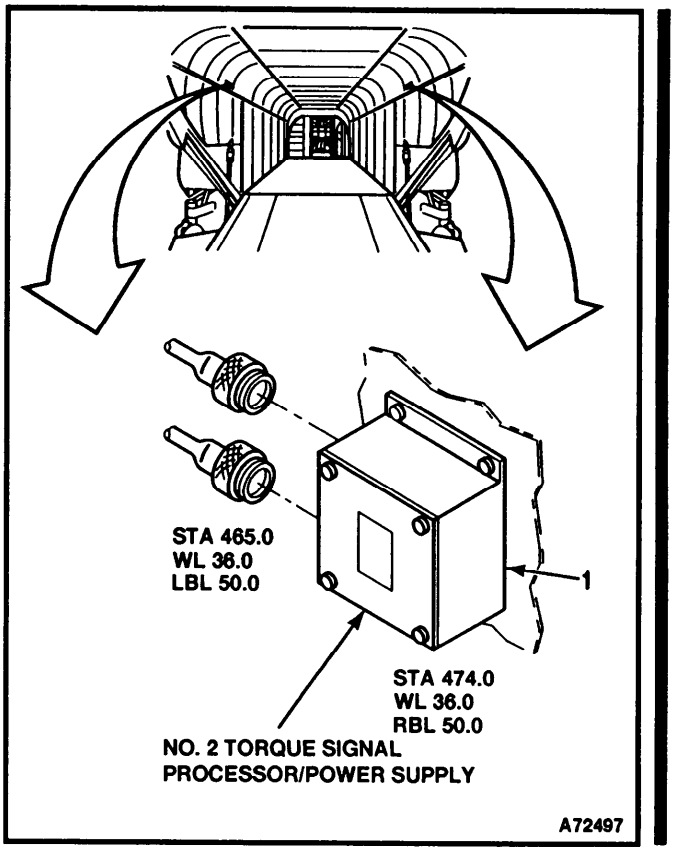
References;

TM 55-1520-240-T

General Safety Instructions:

WARNING

Aliphatic naphtha (E245) is combustible and toxic. It can Irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. Use only with adequate ventilation. Keep away from heat, sparks, and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



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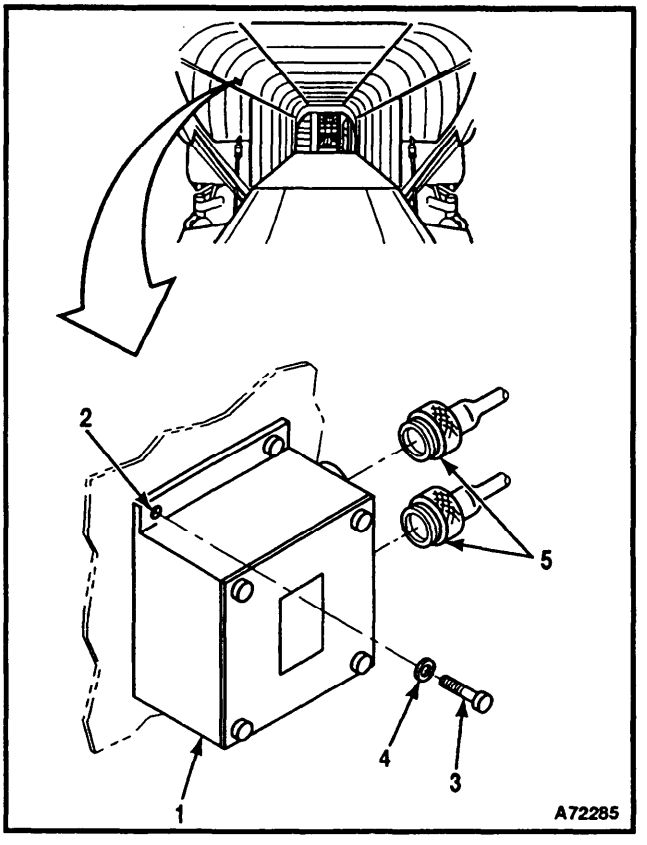
8-22.2 INSTALL NO. 1 OR NO. 2 TORQUE SIGNAL PROCESSOR/POWER SUPPLY (Continued)

NOTE

The procedure is the same to install the No. 1 or No. 2 torque signal processor/ power supply. The No. 1 torque signal processor/power supply is shown here.

1. Put on gloves (E184.1).
2. Clean bonding surfaces of torque signal processor/power supply (1). Use aliphatic naphtha (E245) and cloths (E120).
3. **Put torque signal processor/power supply (1) over mounting holes (2).**
4. **Install four screws (3)** and washers (4).
5. **Connect electrical connectors (5).** Remove paper tags.



FOLLOW-ON MAINTENANCE:

Perform an operational check of engine torque indicating system (TM 55-1520-240-T).

END OF TASK

SECTION III
FLIGHT INSTRUMENTS
DESCRIPTION AND OPERATION

PITOT-STATIC SYSTEM

Description:

The **pitot-static system** senses dynamic and static air pressure. It supplies these pressures to the afcs computers and to the vertical speed indicators, and to the altimeters and the airspeed indicators on the pilots panels. The system consists of pitot tubes, static pressure ports, and interconnecting tubing. A heater is an integral part of the pitot tubes and uses 115 vac.

Teflon tubing and flexible hoses are used to connect the components of the pitot-static system. The flexible hoses are installed between the tubing and the flight instruments and the afcs computers. Compression sleeve fitting assemblies are used to connect tubing together or to pitot-static system components.

The **pitot tube** senses dynamic air pressure. The left tube supplies pressure to the copilot's airspeed indicator and NO. 1 afcs computer. The right tube supplies pressure to the pilot's airspeed indicator and NO. 2 afcs computer.

The **static ports** sense air pressure. This pressure is supplied to the vertical speed altimeter and the airspeed indicators and the afcs computers.

The **airspeed indicator** is a sensitive differential pressure gage. It measures and indicates the pressure differential between pitot (dynamic) and static air pressures. Two airspeed indicators are installed, one in each pilot's instrument panel. The indicators are calibrated from 20 to 250 knots. A restrictor in the pitot port of the indicator dampens pointer fluctuations.

Two altimeters, one in each pilot's panel, are installed. The copilot's altimeter is a barometric instrument. It indicates the height of the helicopter above sea level. The pilot's altimeter is an AIMS instrument. In addition to providing the barometric altitude, it provides data to the IFF system for ground readout of helicopter altitude.

The **vertical speed indicator** measures and displays rate of ascent or descent in feet-per-minute. An adjustment screw, on the front of the indicator, is used to zero the pointer. Two indicators are installed, one in each pilot's instrument panel.

Four yaw sensing ports are in pairs on the sides of the lower nose compartment. Each port is heated by a 25-watt heater. The sideslip sensing ports provide differential air pressure to both No. 1 and No. 2 afcs computers.

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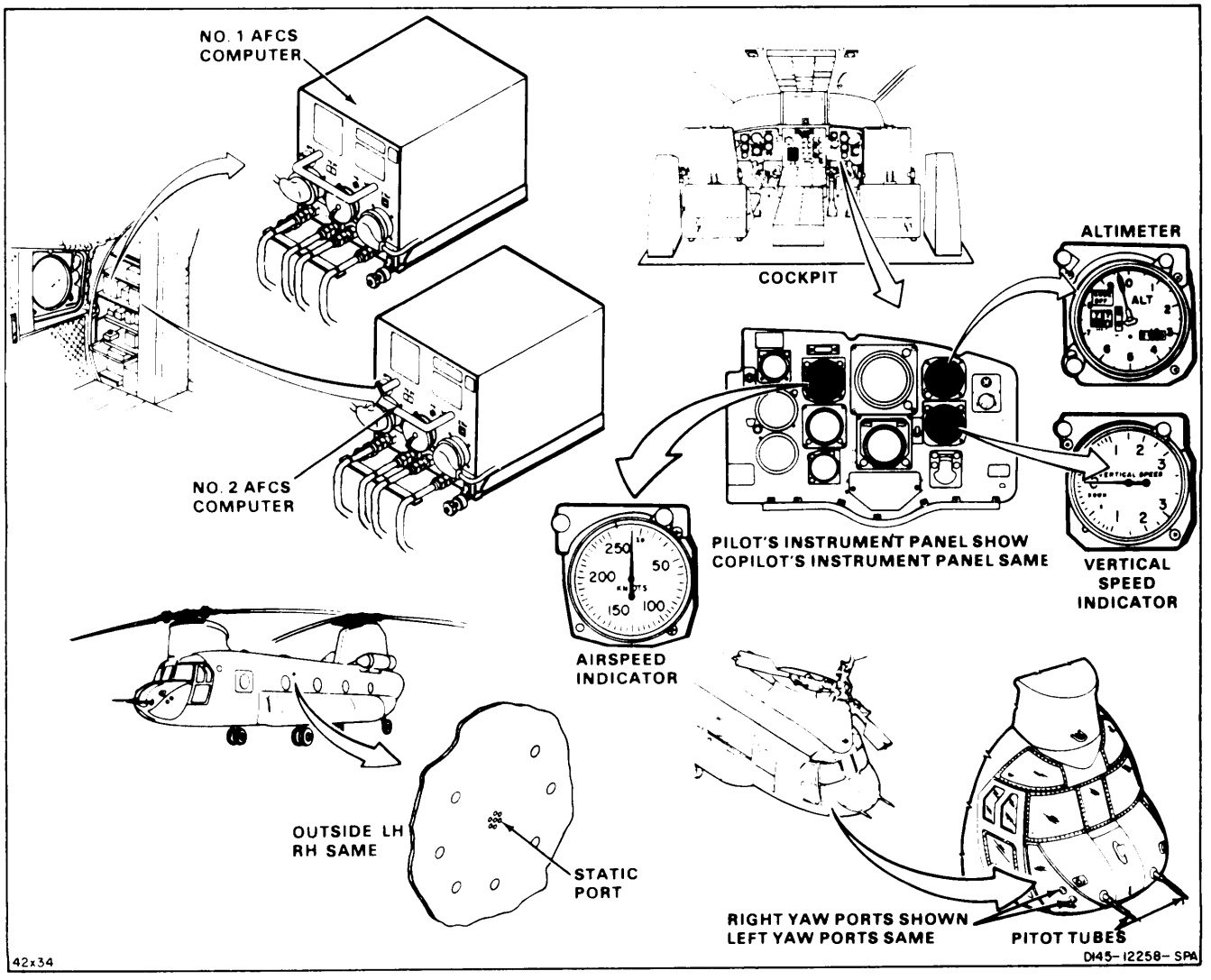
8-23 FLIGHT INSTRUMENTS (Continued)



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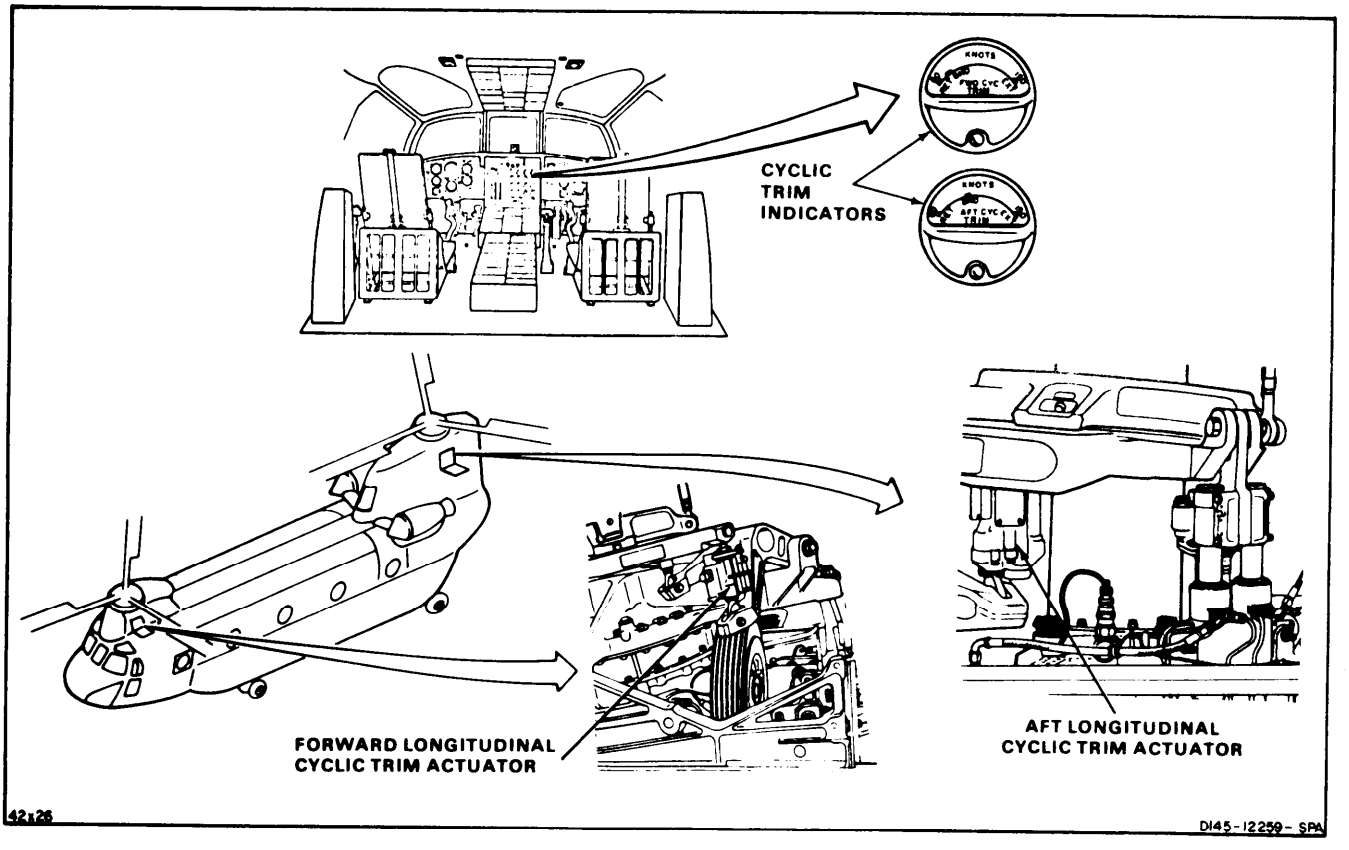
FORWARD AND AFT CYCLIC TRIM INDICATOR

Description:

Two cyclic trim indicators show the positions of the forward and aft longitudinal cyclic trim actuators relative to airspeed. The indicators provide an indication to the pilots that the actuators are tilting the swashplates to the correct angle for the indicated airspeed. The indicators are clamp-mounted on the center instrument panel. They are calibrated 60 to 160 knots.



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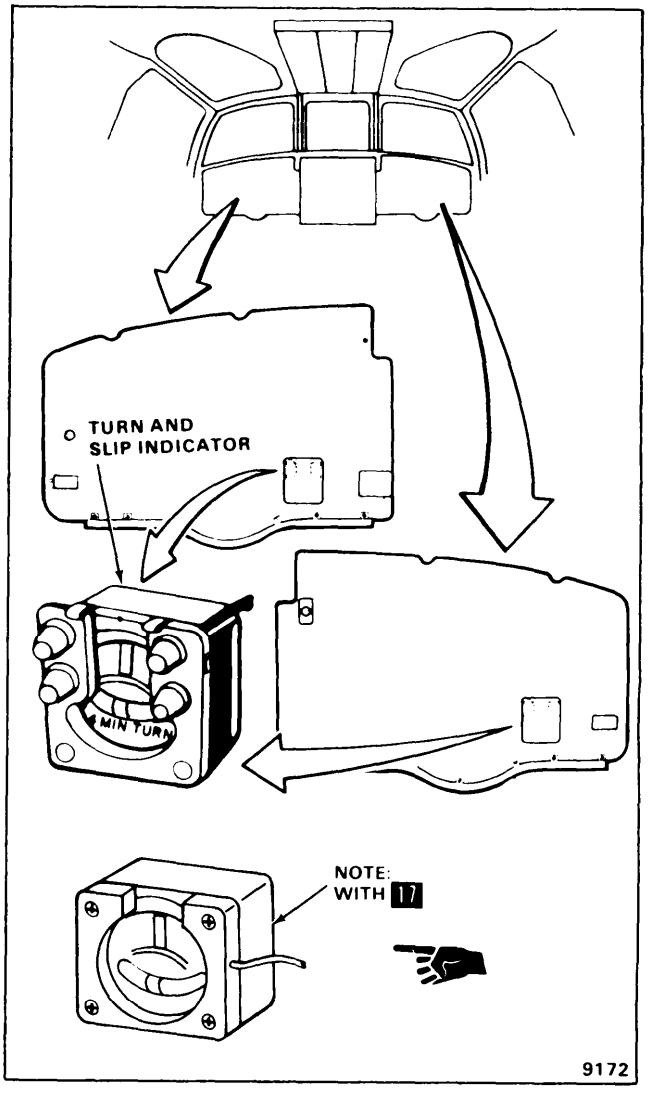
TURN AND SLIP INDICATOR

Description:

The **turn and slip** indicator consists of an inclinometer and an electrically driven gyro. The inclinometer contains a ball in a curved, sealed glass tube. The tube is filled with damping fluid. Two turn and slip indicators are installed, one in each pilot's instrument panel. The indicators are on sloping plates. The plates maintain the indicators in a flight level attitude. The turn and slip indicators are powered by 28 vdc.



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SECTION IV

FLIGHT INSTRUMENTS

8-24 INSPECT PITOT-STATIC AND SIDESLIP SENSING SYSTEMS

INITIAL SETUP

Applicable Configurations:
All

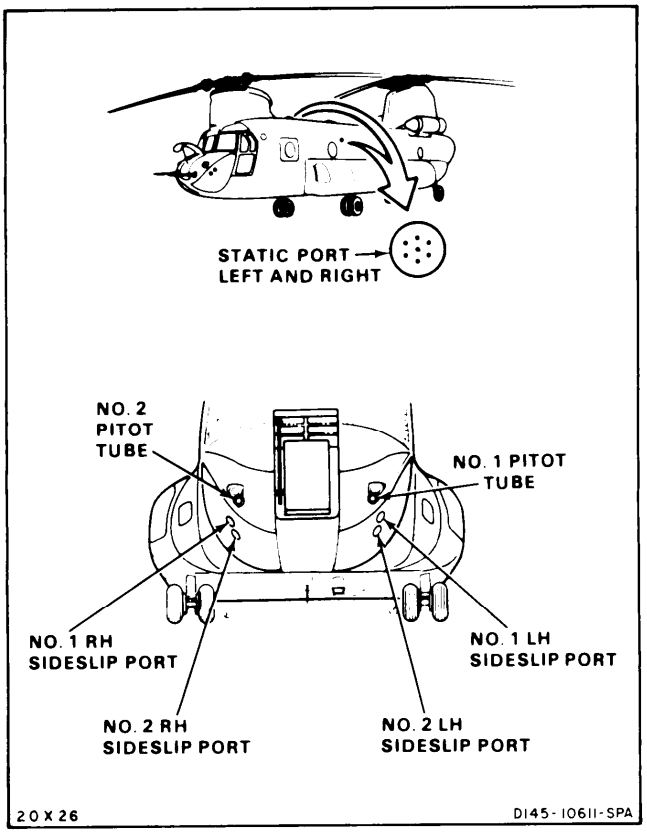
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstands

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1500-204-25/1
TM 11-1520-240-20
TM 55-1520-240-T
Task 8-26
Task 8-38
Task 8-90
Task 8-91

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power OFF
Hydraulic Power OFF
Nose Enclosure Access Door Open (Task 2-2)



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8-24 INSPECT PITOT-STATIC AND SIDESLIP SENSING SYSTEMS (Continued)

1. Test pitot tube heat (TM 55-1520-240-T).
2. Test sideslip sense port heat (TM 55-1520-240-T).
3. Remove altimeters (Task 8-90).
4. Test altimeters (Task 8-38).
5. Install altimeters (Task 8-91).
6. Drain pitot-static and sideslip sense systems (Task 8-25).
7. Perform leak check of pitot-static system (TM 55-1520-240-T).
8. Perform leak check of sideslip sense system (TM 55-1520-240-T).

FOLLOW-ON MAINTENANCE:

Close nose enclosure access door (Task 2-2).

END OF TASK

8-25 DRAIN PITOT-STATIC AND SIDESLIP SENSING SYSTEMS

INITIAL SETUP

Applicable Configurations:
All

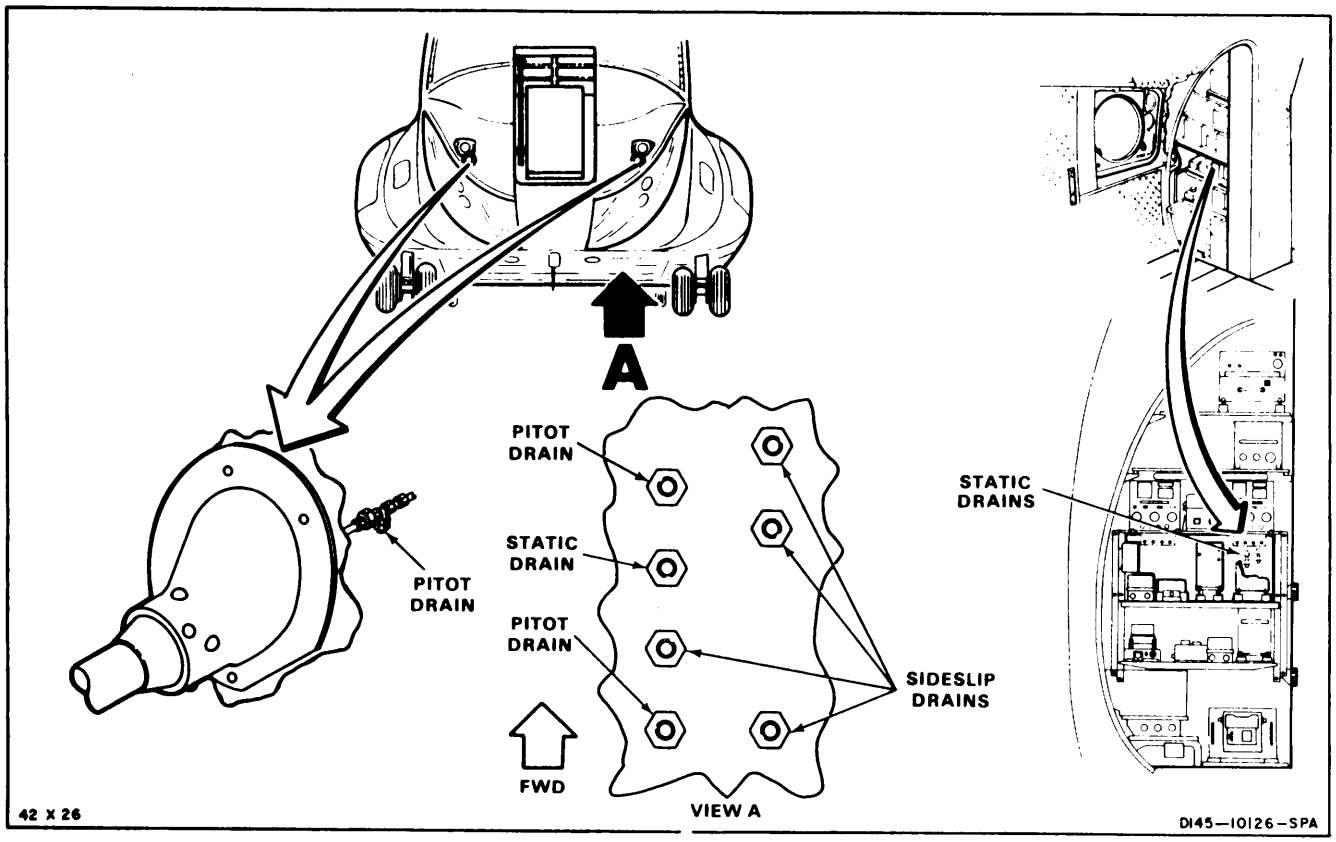
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Workstand

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1500-204-25/1
TM 11-1520-240-20

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Nose Enclosure Door Open (Task 2-2)
Radio Compartment Acoustical Blanket Removed (Task 2-208)
TSEC/KY28 Removed (TM 11-1520-240-20)



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8-25 DRAIN PITOT-STATIC AND SIDESLIP SENSING SYSTEMS (Continued)

NOTE

The procedure to drain pitot-static and side slip sensing systems requires removal of 11 drain caps in three areas of aircraft, nose compartment, electronics compartment, and lower fuselage (outside) skin, sta 118, lbl 6. Removal of lower fuselage static drain is shown here.

1. **Remove static drain cap (1).**
2. **Shake moisture from cap (1).**
3. **Install drain cap (1).** Tighten cap finger tight plus 1/4 turn.
4. Repeat steps at remaining drain cap locations.

FOLLOW-ON MAINTENANCE:

Pitot-static system leak check (TM 55-1520-240-T).

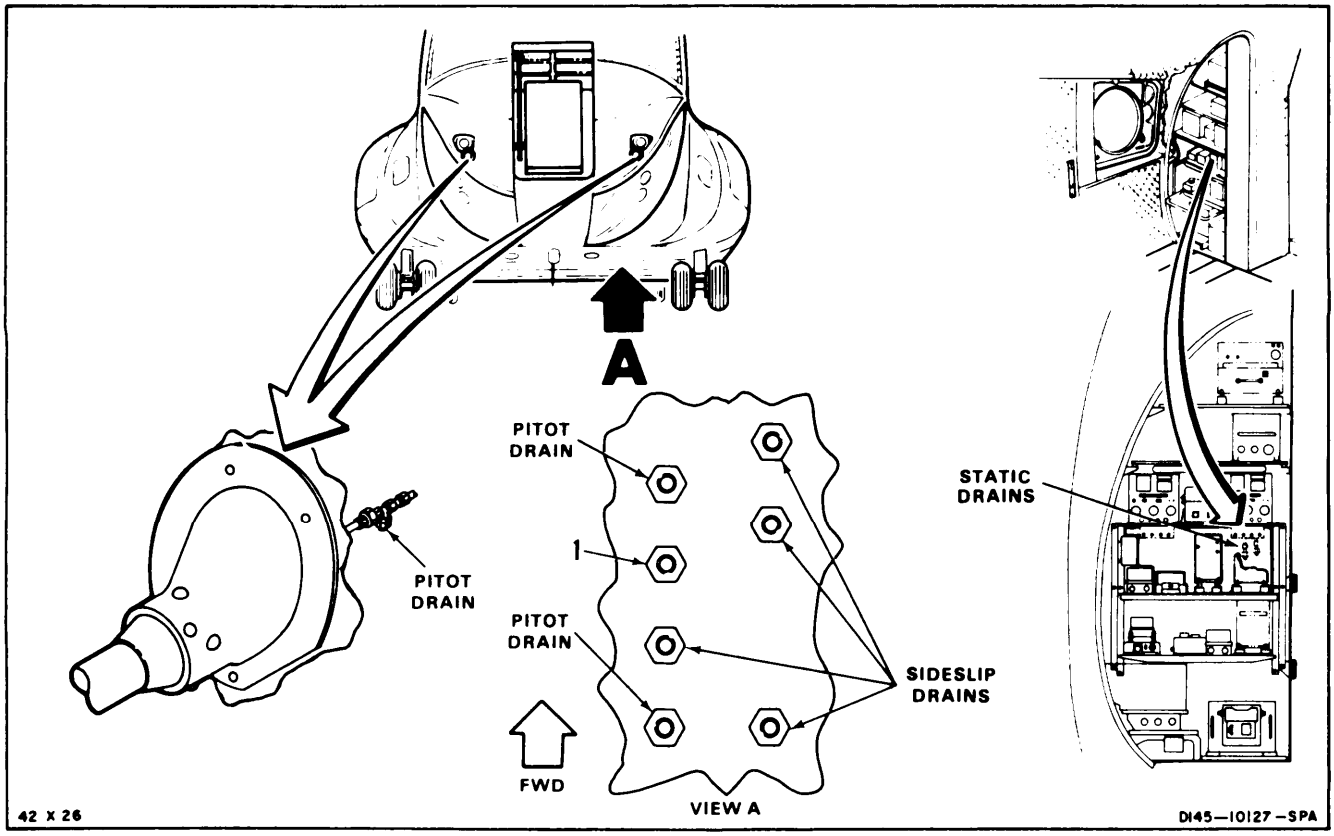
Side slip sensing system leak check (TM 55-1520-240-T).

Install TSEC/KY28 (TM 11-1520-240-20).

Install radio compartment acoustical blanket (Task 2-210).

Close nose enclosure door (Task 2-2).

INSPECT



END OF TASK

8-26 PURGE PITOT-STATIC AND SIDESLIP SENSE SYSTEMS

INITIAL SETUP

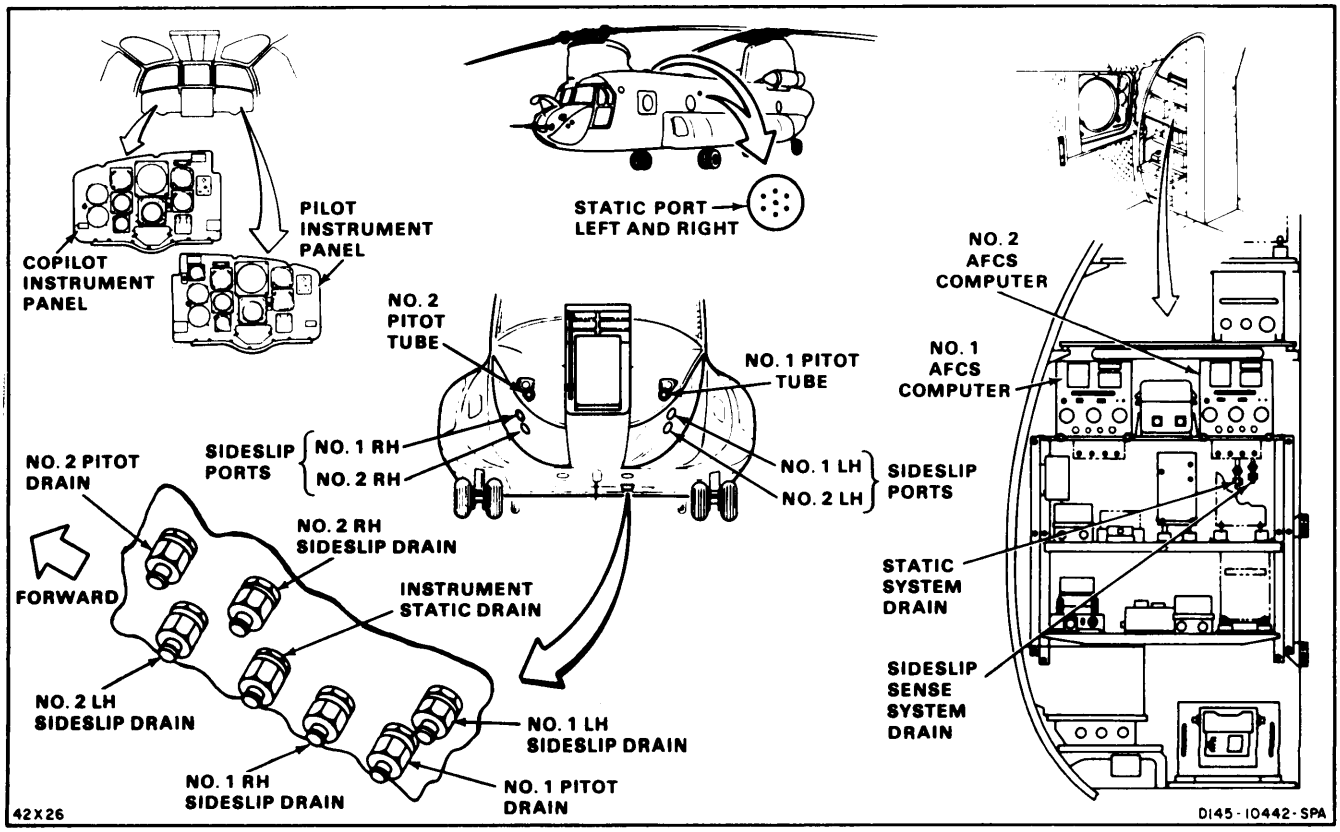
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
VVorkstands
Source of Low Pressure (40-50 Psi) Dry Compressed Air or Nitrogen

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician
67U30 Inspector

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Nose Enclosure Door Open (Task 2-2)
Radio Compartment Acoustical Blanket Removed (Task 2-208)
TSEC/KY28 Removed (TM 11-1520-240-20)
Pilot's AIMS Altimeter, Copilot's Barometric Altimeter Removed (Task 8-90)
Pilot's and Copilot's Vertical Speed and Airspeed Indicators Removed (Task 8-90)



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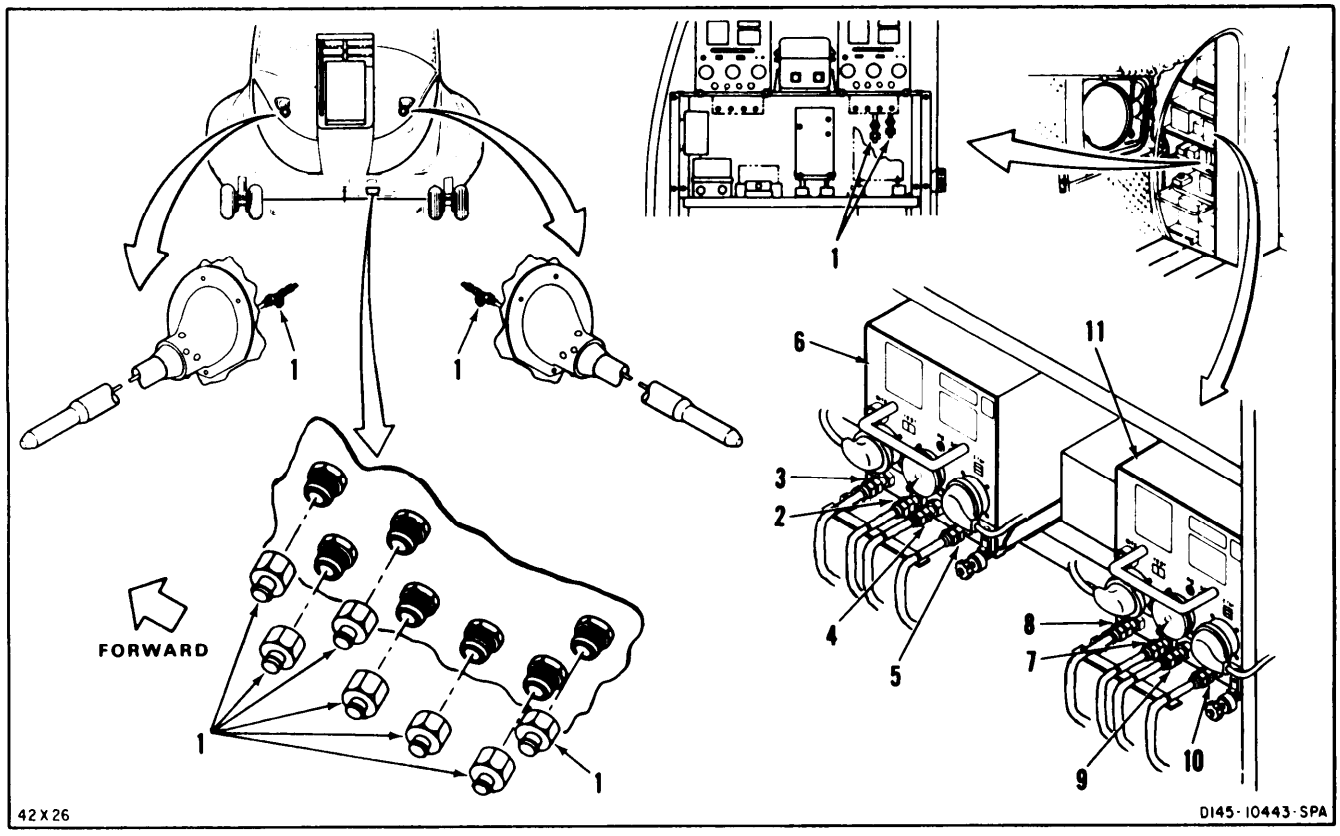
8-26 PURGE PITOT-STATIC AND SIDESLIP SENSE SYSTEMS (Continued)

1. **Remove seven bottom fuselage drain caps (1).**
2. **Remove two nose compartment drain caps (1).**
3. **Remove two radio compartment drain caps (1).**
4. **Disconnect pitot (2), static (3) and side-slip lines (4 and 3)** from No. 1 AFCS Computer (6).
5. **Disconnect pitot (7) static (8) and sida-slip lines (9 and 10)** from No. 2 AFCS Computer (11).



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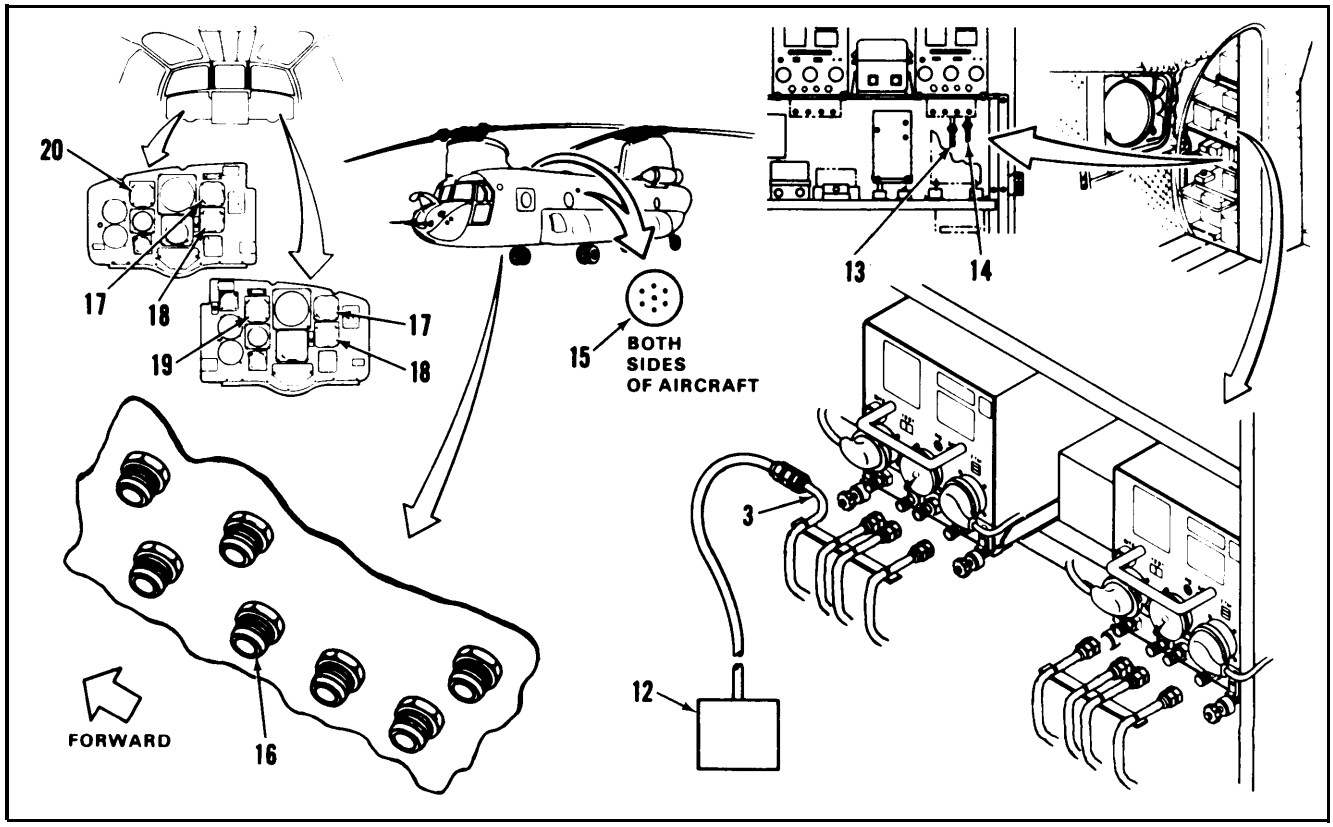
8-26 PURGE PITOT-STATIC AND SIDESLIP SENSE SYSTEMS (Continued)

CAUTION

Do not purge pitot or static lines unless they are disconnected from the flight instruments and the afcs computers. Otherwise, the instruments or computers can be damaged.

6. **Connect compressed dry air source (2) to No. 1 afcs computer static pressure line (3).**
7. **Turn on dry air source (12). Adjust air to 45 psi.** Check that air flows from static lines until moisture and other contaminates are removed at the following locations:
   a. No. 2 afcs static pressure line (8).
   b. Radio compartment static system drains (13 and 14).
   c. No. 1 and No. 2 static ports, No. 1 (15) is shown here.
   d. Lower fuselage at static system drain (16).
   e. Static pressure lines at pilot's and co-pilot's altimeters (17) vertical speed indicators (18).
   f. Static pressure line at pilot's airspeed indicator (19).
   g. Static pressure line at copilot's airspeed indicator (20).
8. Turn off air source (12).
9. Disconnect air source (12) from No. 1 afcs computer static pressure line (3).



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8-26 PURGE PITOT-STATIC AND SIDESLIP SENSE SYSTEMS (Continued) 8-26

10. **Connect compressed air source (12) to No. 1 afcs computer pitot line (2).**

11. **Turn on dry air source (12). Adjust to 45 psi.** Check that air flows from pitot lines, until moisture and other contaminates are removed at the following locations:

    a. Lower fuselage No. 1 pitot system drain (21)

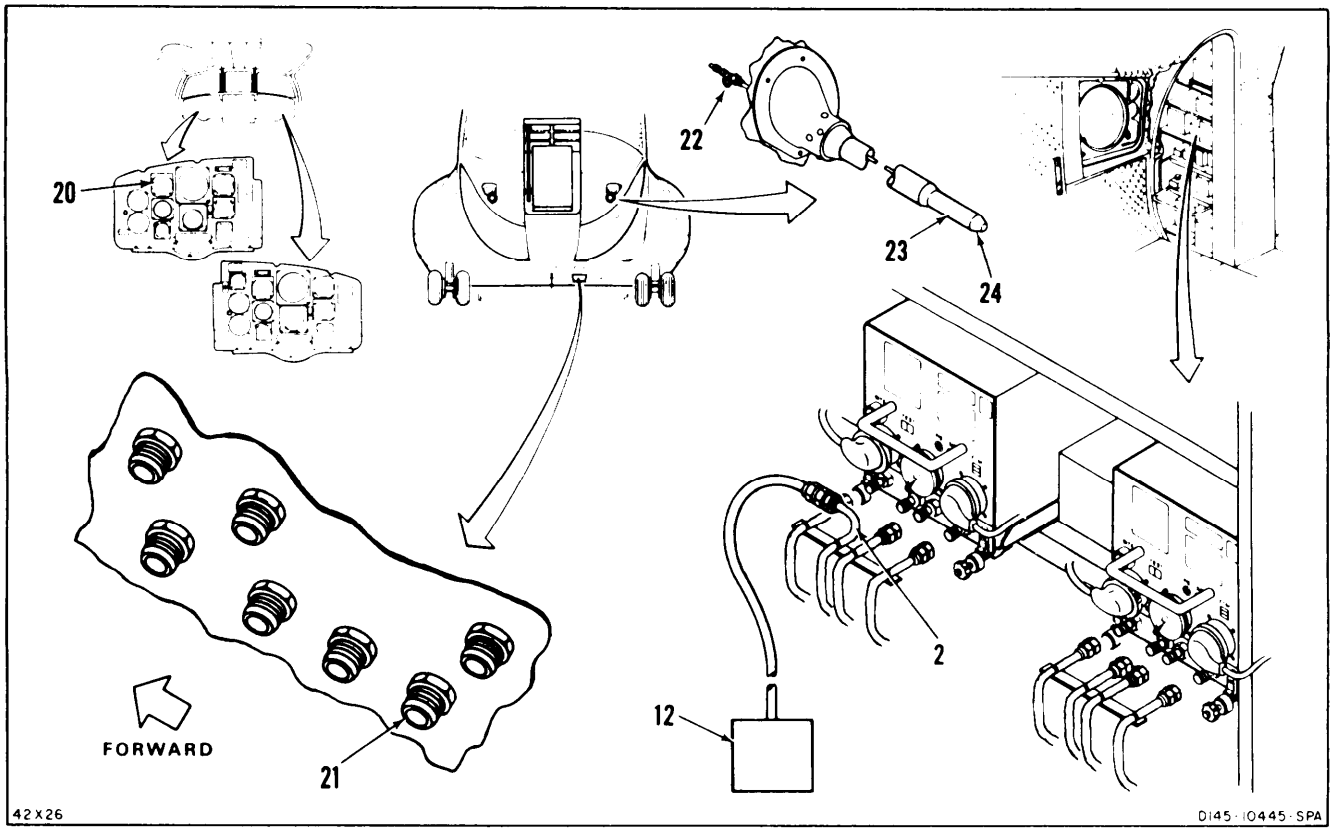
    b. No. 1 pitot mast extension drain (22).

    c. No. 1 pitot tube (23) and pitot tube drain hole (24).

    d. Pitot line to copilot's airspeed indicator (20).

12. Turn off air source (12),

13. Disconnect air source (12) from No. 1 afcs computer pltot line (3).



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8-26 PURGE PITOT-STATIC AND SIDESLIP SENSE SYSTEMS (Continued)

14. **Connect compressed air source (12) to No. 2 afcs computer pitot line (8).**

15. **Turn on dry air source (12). Adjust to 45 psi.** Check that air flows from pitot lines, until moisture and other contaminates are removed at the following locations:

    a. Lower fuselage No. 2 (25).

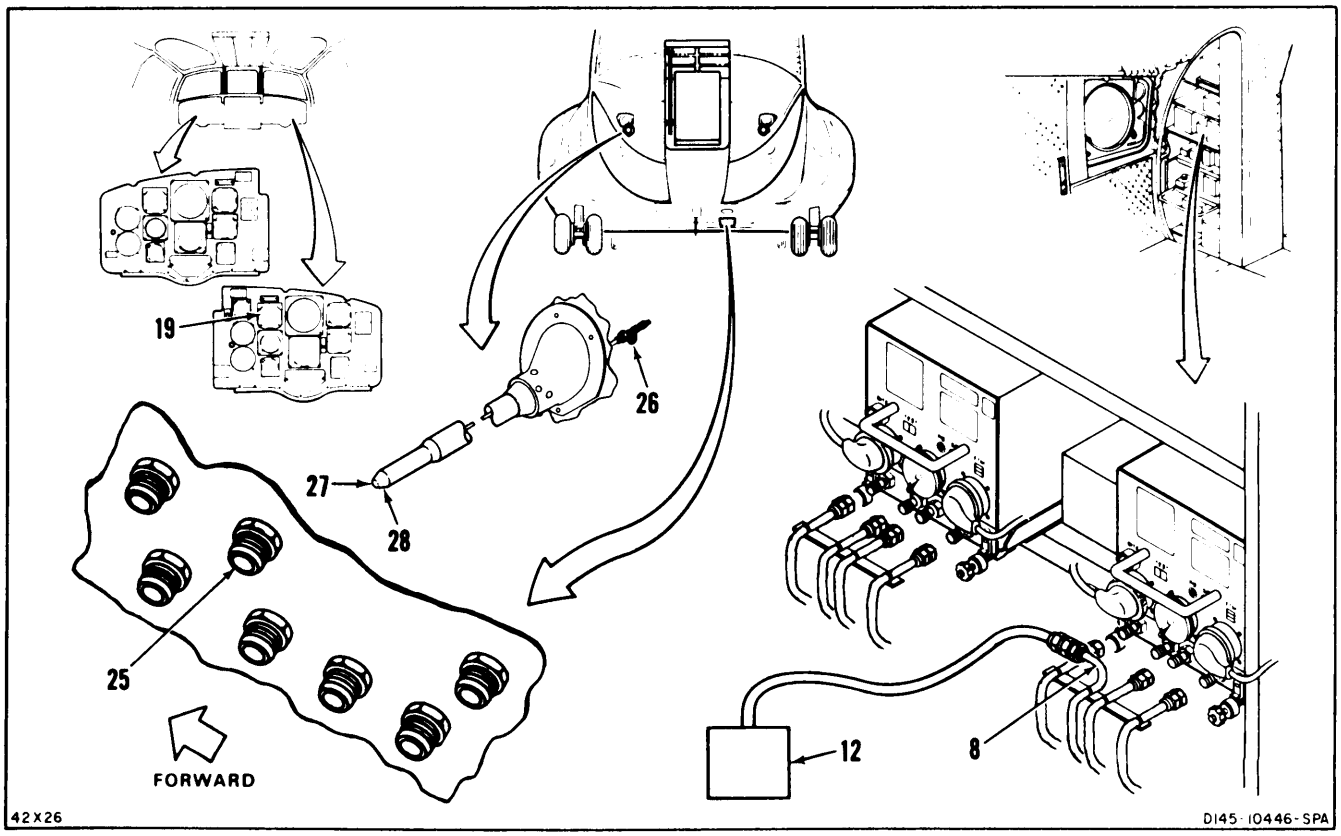
    b. No. 2 pitot mast extension drain (26).

    c. No. 2 pitot tube (27) and pitot tube drain hole (28).

    d. Pitot line to copilot's airspeed indicator (19).

16. Turn off air source (12).

17. Disconnect air source (12) from No. 2 afcs computer pitot line (8).



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8-26 PURGE PITOT-STATIC AND SIDESLIP SENSE SYSTEMS (Continued)

18. **Connect compressed dry air source (12) to No. 1 afcs, LH No. 1 sideslip line (4).**

19. **Turn on dry air source (12). Adjust air to 45 psi.** Check that air flows from sideslip line, until moisture and other contaminates are removed at the following locations:
    a. Lower fuselage LH No. 1 sideslip drain (29).
    b. LH No. 1 sideslip port (30).

20. Turn off air source (12).

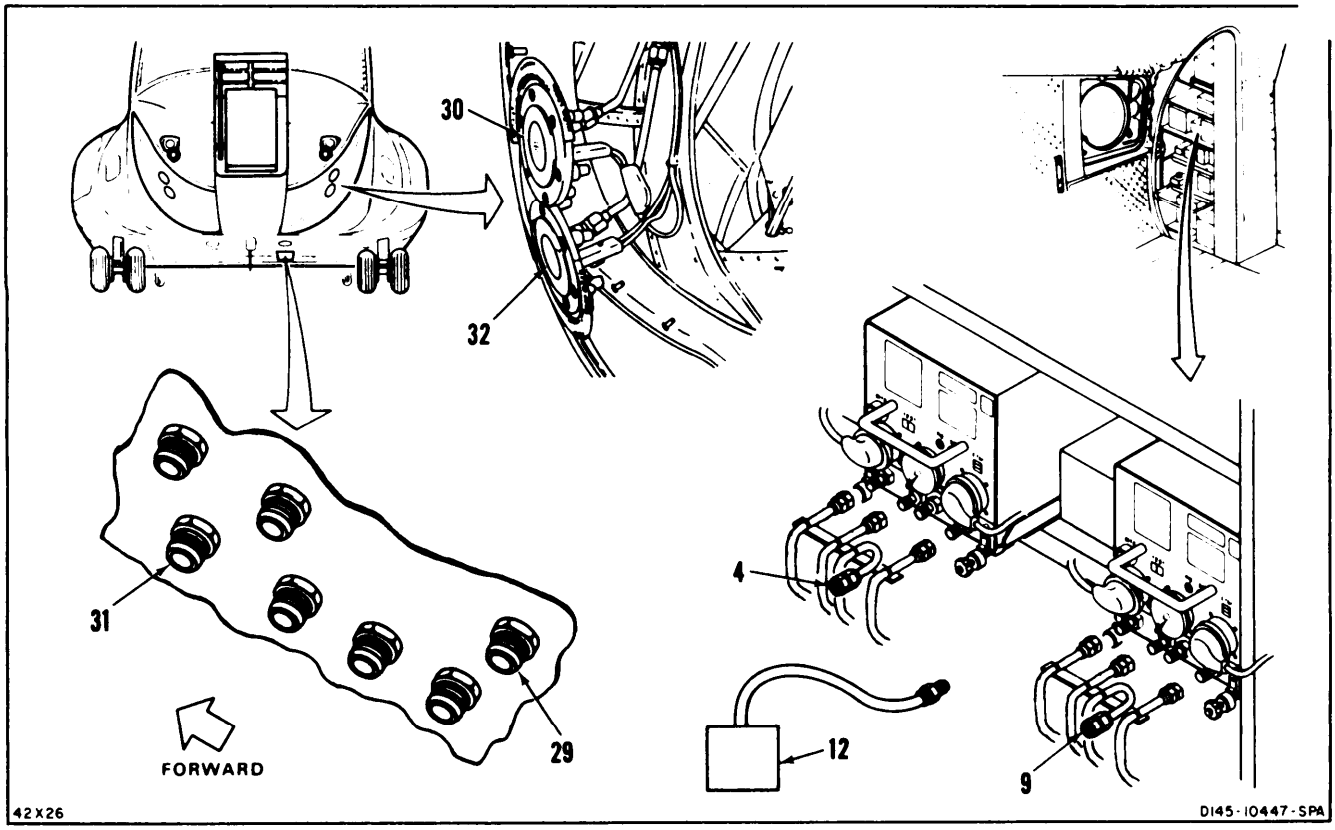
21. Disconnect air source (12) from No. 1 afcs, LH No. 1 sideslip line (4).

22. **Connect compressed dry air source (12) to No. 2 afcs LH No. 2 sideslip line (9).**

23. **Turn on dry air source (12). Adjust air to 45 psi.** Check that air flows from sideslip line, until moisture and other contaminates are removed at the following locations:
    a. Lower fuselage LH No. 2 sideslip drain (31).
    b. LH No. 2 sideslip port (32).

24 Turn off air source (12).

25 Disconnect air source (12) from No. 2 afcs LH No. 2 sideslip line (9).



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8-26 PURGE PITOT-STATIC AND SLIDESLIP SENSE SYSTEMS (Continued)

26. **Connect compressed dry air source (12) to No. 1 afcs RH No. 1 sideslip line (5).**

27. **Turn on dry air source (12). Adjust air to 45 psi.** Check that air flows from sideslip line, until moisture and other contaminates are removed, at the following locations:

    a. Lower fuselage RH No. 1 sideslip drain (33).

    b. RH No. 1 sideslip port (34).

28. Turn off air source (12).

29. Disconnect air source (12) from No. 1 afcs RH No. 1 sideslip line (5).

30. **Connect compressed dry air source (12) to No. 2 afcs R H No. 2 sideslip line (10).**

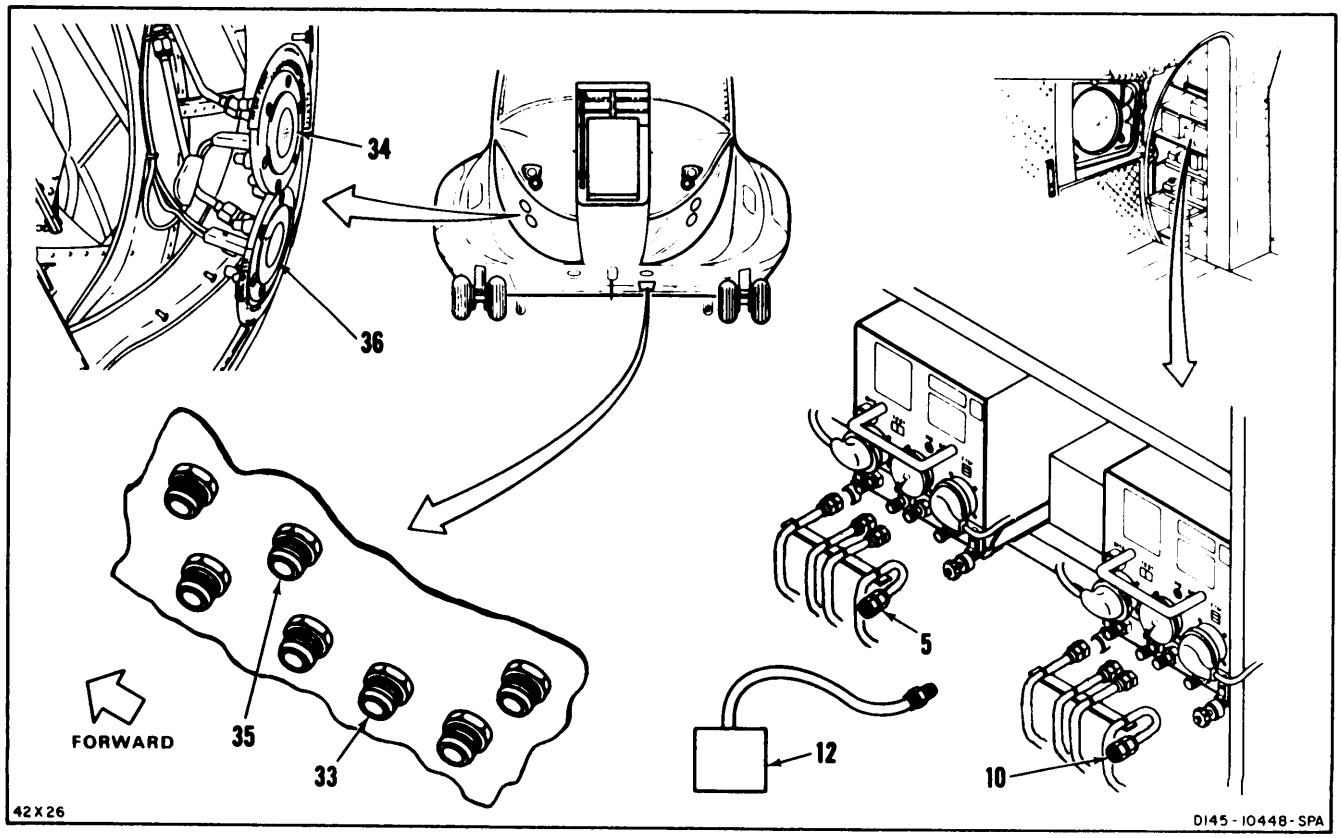
31. **Turn on dry air source (12). Adjust air to 45 psi.** Check that air flows from sideslip line until moisture and other contaminates are removed at the following locations:

    a. Lower fuselage RH No. 2 sideslip drain (35).

    b. RH No. 2 sideslip port (36).

32. Turn off air source (12).

33. Disconnect air source (12) from No. 2 afcs, RH No. 2 sideslip line (10).



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8-26 PURGE PITOT-STATIC AND SIDESLIP SENSE SYSTEMS (Continued)

34. **Connet pitot (7), static (8), and sideslip lines (9 and 10) to No. 2 afcs computer (11).**

35. **Connect pitot (2) static (3), and sideslip lines (4 and 5) to No. 1 afcs computer (6).**

36. **Install two radio compartment drain caps (1).**

37. **Install two nose compartment drain caps (1).**

38. **Install seven bottom fuselage drain caps (1).**

FOLLOW-ON MAINTENANCE:

Pitot static system leak check (TM 55-1520-240-T).

Sideslip sensing system leak check (TM 55-1520-240-T).

Install TSEC/KY28 (TM 11-1520-240-20).

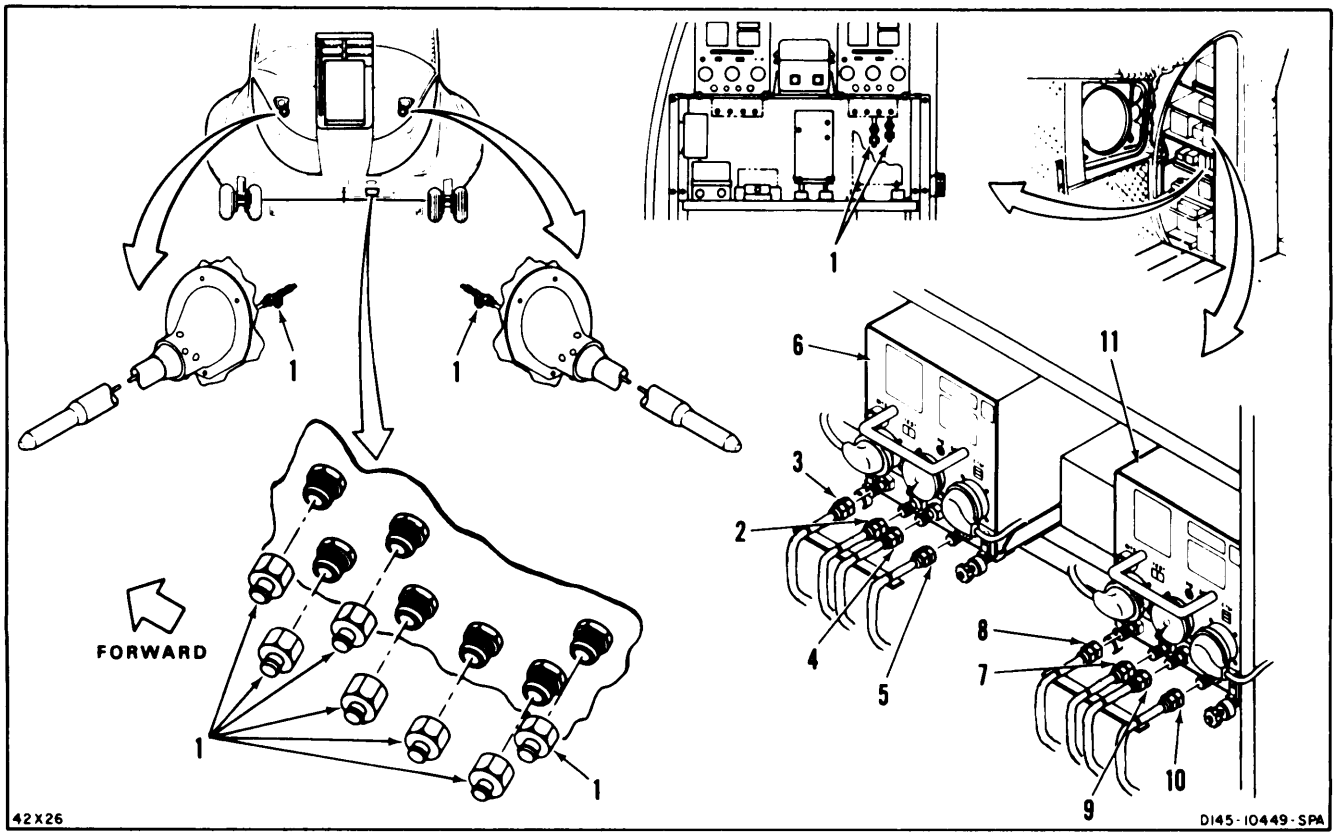
Install electronic compartment acoustical blanket (Task 2-210).

Install pilot's AIMS altimeter, copilot's barometric altimeter (Task 8-91).

Install pilot's and copilot's vertical speed and airspeed indicators (Task 8-91).

Close nose enclosure door (Task 2-2).

TSEC/KY28 operational check (TM 11-1520-240-20).



END OF TASK

8-26.1 REPLACE PITOT STATIC AND SIDESLIP SWAGELOK FITTINGS AND TUBING

INITIAL SETUP

Applicable Configurations:
All

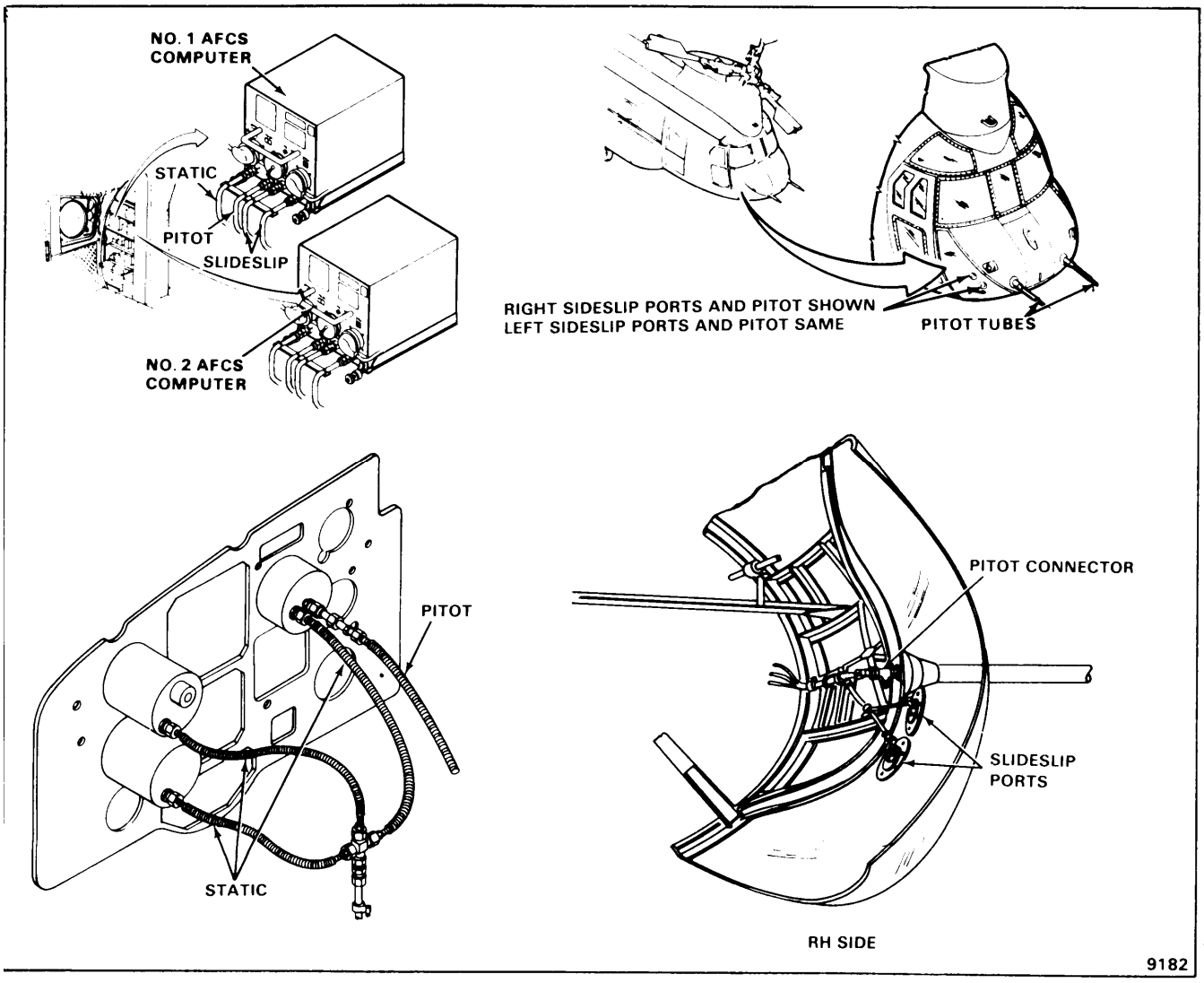
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Adhesive (E50.1)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power OFF
Hydraulic Power OFF
Radio Compartment Acoustical Blanket Removed (Task 2-208)
Nose Enclosure Open

References:
TM 55-1520-240-23P



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8-26.1 REPLACE PITOT STATIC AND SIDESLIP SWAGELOK FITTINGS AND TUBING (Continued)

DISCONNECT SWAGELOK CONNECTED PARTS

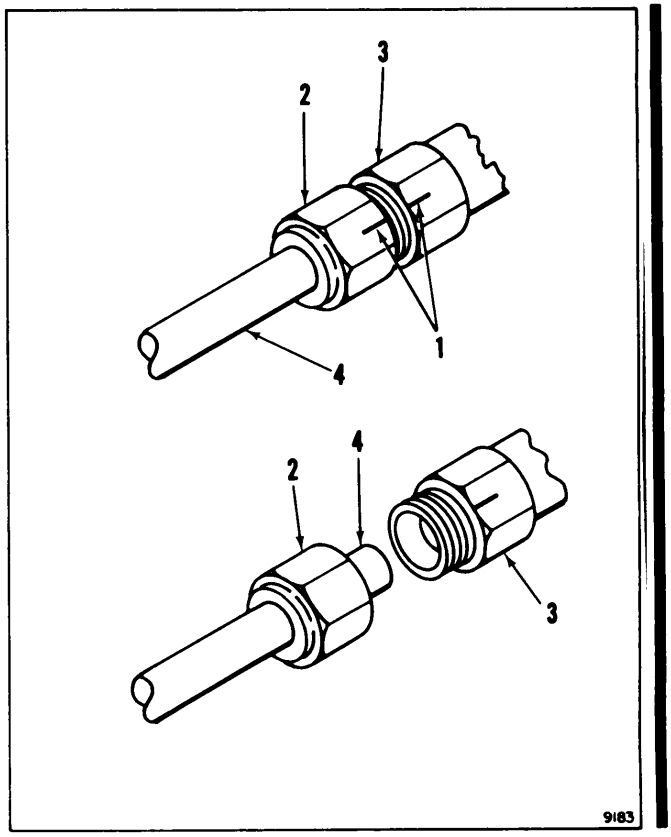
NOTE

This procedure is the same for replacing swageloked connections using either serrated tube hose connections or non-corrugated tubing. Non-corrugated tubing connections are shown.

CAUTION

Do not pull connector or tubing from nut. Ensure that ferrules and compression nut stay with either serrated tube connector or non-corrugated tubing as applicable. If ferrules slide from non-corrugated tubing or serrated tube hose install new ferrules and thread compression nut loosely into fitting body.

1. **Scribe index mark (1)** on compression nut (2) and fitting body (3).
2. Hold fitting body (3) with a wrench. Using another wrench, loosen compression nut (2).
3. Remove compression nut (2) and tubing (4) from fitting (3).



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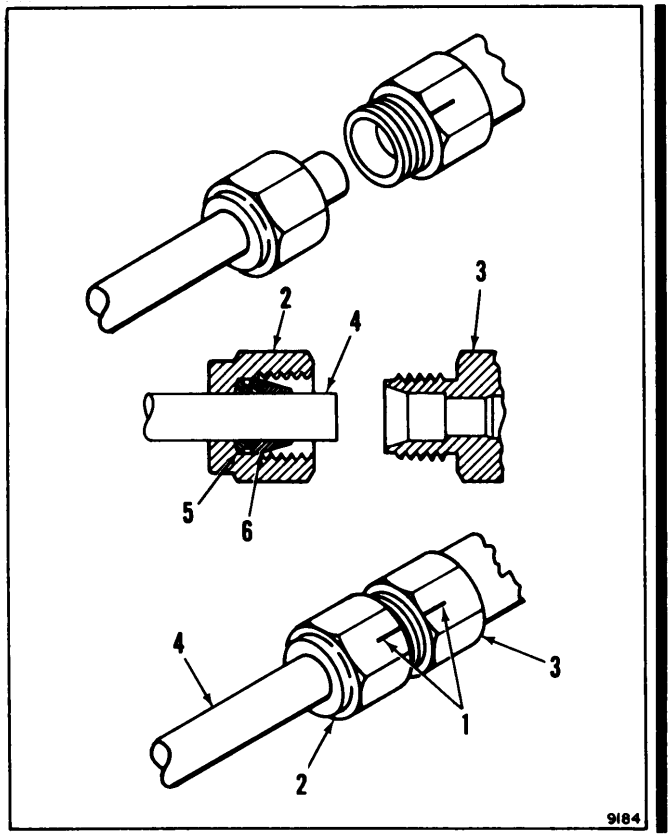
8-26.1 REPLACE PITOT STATIC AND SIDESLIP SWAGELOK FITTINGS AND TUBING (Continued)

RECONNECT PREVIOUSLY SWAGED SWAGELOK PARTS, PLUGS AND FIRINGS

CAUTION

When installing nuts and plugs, machined ferrule end of ports, or reducing port connectors, tighten only until index marks align, otherwise, damage to tubing could occur.

4. Check that ferrules (5 and 6) are in position in compression nut (2).
5. **Insert serrated tube connector or non-corrugated tubing (4)** as applicable, into fitting (3) until ferrule (6) seats in fitting.
6. **Tighten compression nut (2)** finger tight.
7. Hold fitting (3) with wrench. Using another wrench, turn compression nut (2) only until index marks (1) align.



CONNECT FITTINGS THAT MUST BE SWAGED

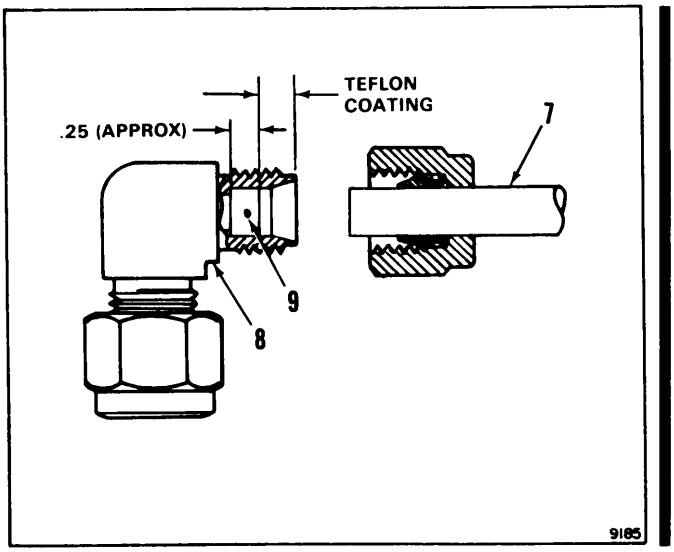
CAUTION

Do not apply adhesive (E50.1) to teflon coating.

NOTE

Use steps 8 through 12 when fittings and tubing must be removed for swaging. When fittings and tubing can be swaged in their installed location go to 14.

8. **Remove end of tubing (7)** from fitting (8).
9. Check that end of tubing (7) and fitting (8) are free from foreign material.
10. **Apply dab of adhesive (9)** (E50.1) to inside of fitting (8).
11. **Insert tube (7) into fitting (8)** and hold in position until adhesive sets. Wait at least one minute.
12. **Remove tube (7) and fitting (8)** from their installed location and swage.



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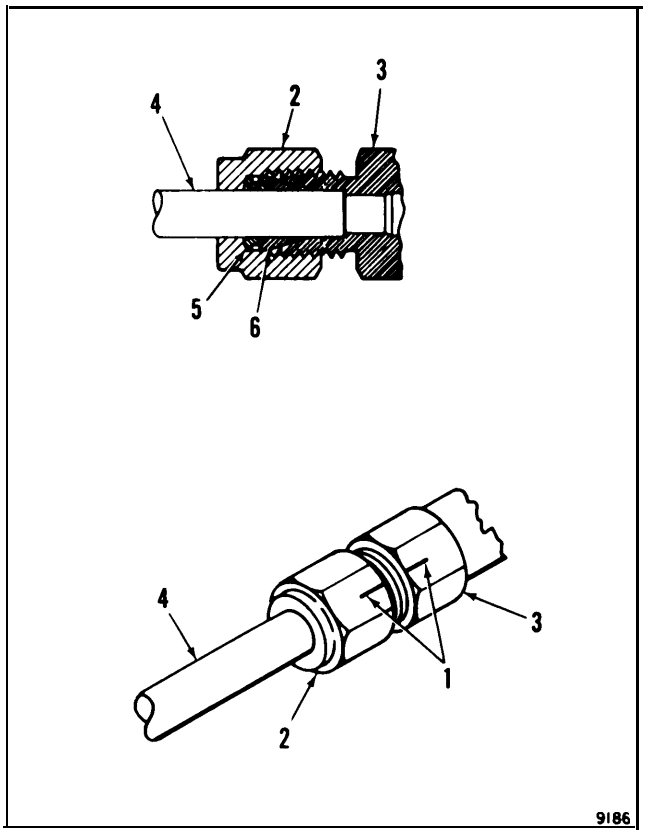
8-26.1 REPLACE PITOT STATIC AND SIDESLIP SWAGELOK FITTINGS AND TUBING (Continued)

13. Check that ferrules (5 and 6) are in position in fitting (3).
14. Check that compression nut (2) is loosely installed.
15. **Insert serrated tube connector or non-corrugated tubing (4)** as applicable, through compression nut (2) into fitting body (3) until contact is made with shoulder of fitting body.
16. **Tighten compression nut (2)** finger tight.
17. **Scribe new index mark (1)** on compression nut (2) and fitting body (3).
18. **Hold fitting body (3)** with wrench. With another wrench, **tighten compression nut (2)** 1 1/4 turns past scribe mark (1).
19. If tube and fitting were removed for swaging, reinstall in aircraft.

INSPECT



REPLACE CORRUGATED TUBING ON SERRATED TUBE CONNECTOR

CAUTION

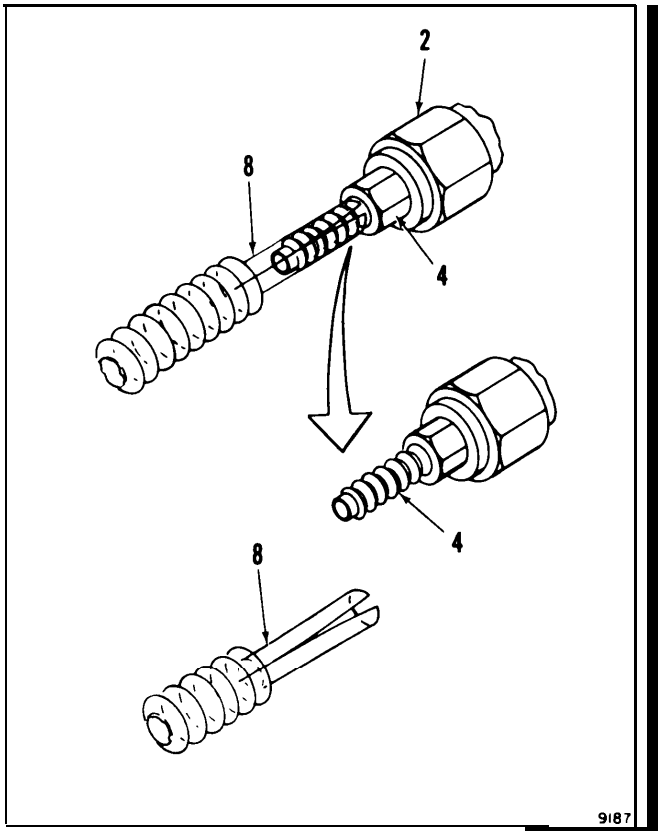
When cutting corrugated tubing, do not nick or cut the serrated tube connector.

NOTE

Use this procedure only to replace corrugated tubing or serrated tube connector.

20 Cut tubing (8) about 1/2 inch below connector (4). Continue cut toward compression nut (2), until tubing can be peeled from connector.

21 Remove tubing (8).



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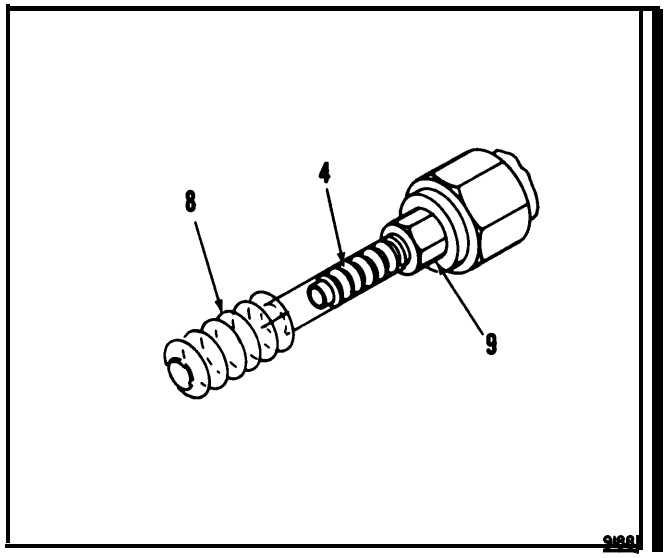
8-26.1 REPLACE PITOT STATIC AND SIDESLIP SWAGELOK FITTINGS AND TUBING (Continued)

22. Install corrugated tubing (8) by pushing end of tube onto serrated connector (4) until tubing contacts fitting body shoulder (9).

INSPECT



FOLLOW-ON MAINTENANCE:

Test pitot static system (TM 55-1520-240-T)

END OF TASK

8-26.2 REPAIR PITOT-STATIC AND SIDESLIP TUBING 8-26.2

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4918
Workstand
Heat Gun 200° to 500°F
Knife, Craftsman
Gloves

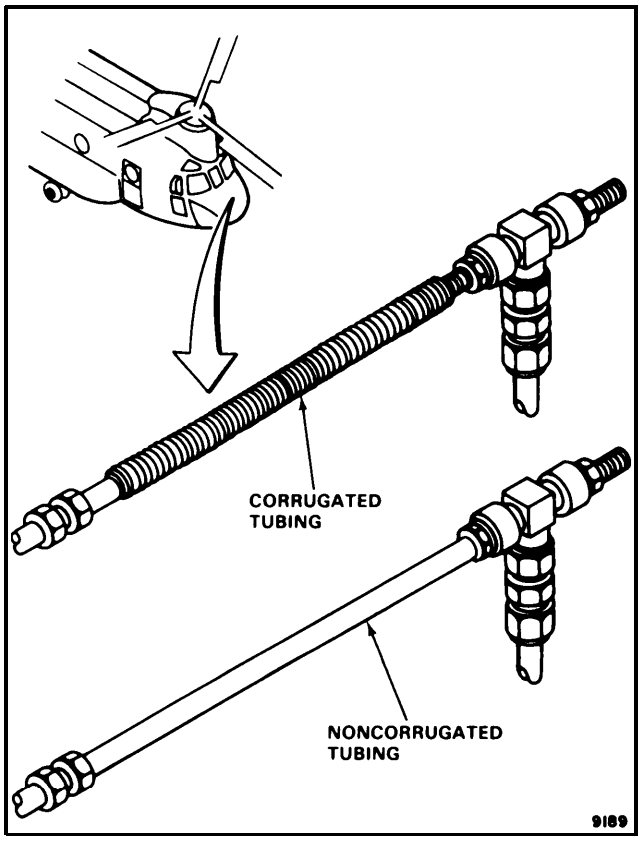
Materials:
Cloths
Container, Water

Parts:
Unions NY-400-6
Compression Nuts NY-402-1
Ferrule Front NY-404-1
Ferrule Back NY-403-1
Tubing 11464 TEFZEL

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-T

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



CAUTION

Heat tubing to a workable state only. When overheated, tubing will change to a sticky liquid state.

GO TO NEXT PAGE

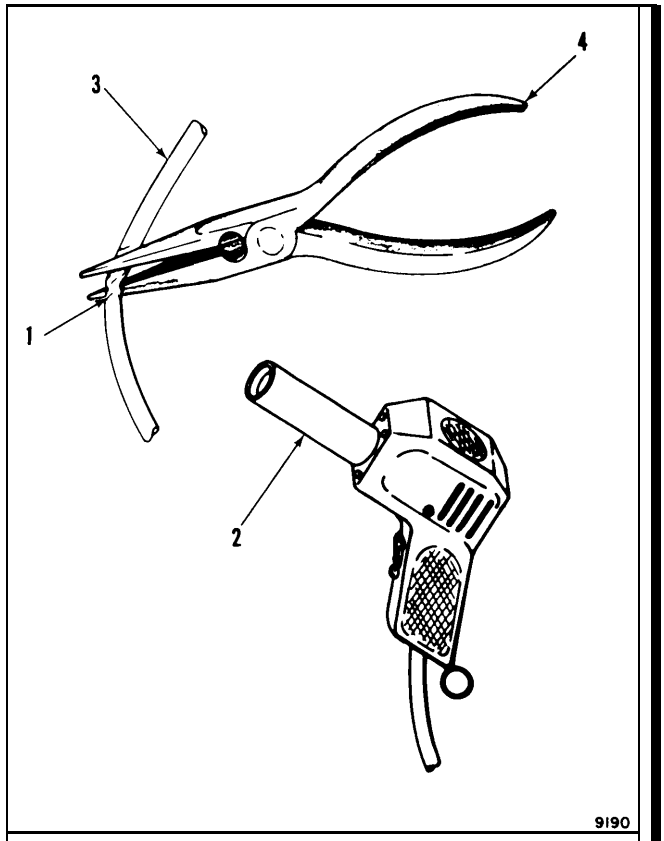
8-26.2 REPAIR PITOT-STATIC AND SIDESLIP TUBING (Continued) 8-26.2

NOTE

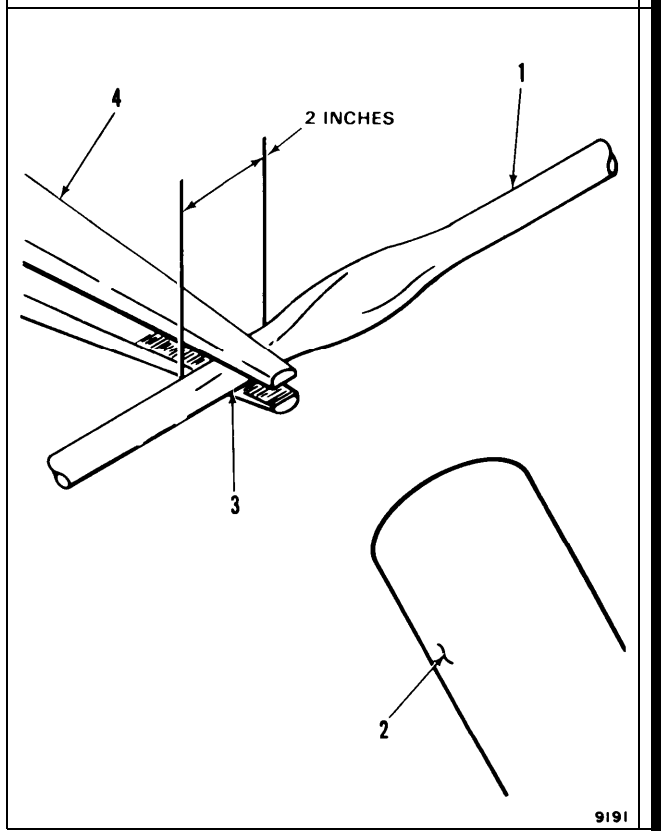
There is no repair for corrugated tubing. Replace entire length. (Task 8-26.1)

REPAIR OF MINOR KINKS

1. Adjust heat control and heat gun and apply heat (250° to 300°F) to kinked area (1). Hold heat gun (2) 9 to 12 inches from tubing (3) until tubing becomes soft and workable.
2. Remove heat source. Apply pressure gently on the tube (3) 90° to the kink (1). Reshape the tube using smooth broad nose pliers (4).



3. Reapply heat to damaged area. Using pliers (4), gently stroke tube (3) starting 2 inches above kink (1) and continue to 2 inches below kink to remove bulge. Repeat at several places around outside diameter of tube as it cools.



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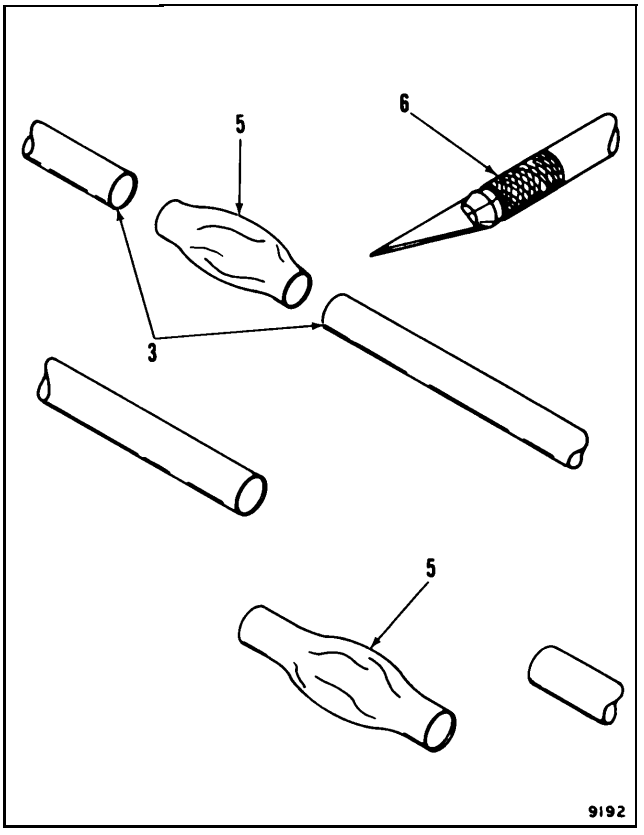
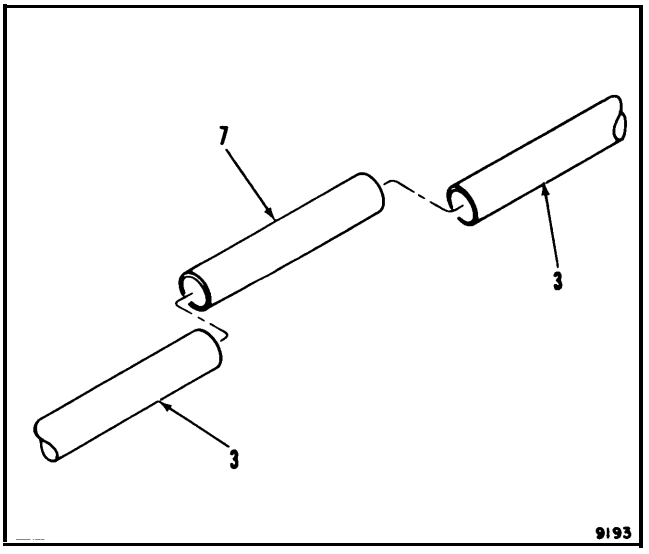
REPAIR OF SEVERELY KINKED OR CRUSHED TUBING

4. Cut through tube (3) just beyond bulge on each side of damaged section (5). Make cut 90° to tube. Use knife (6). Remove damaged section (5).



5. Cut piece of new tubing (7) to fit into cut out section of installed tubing (3).

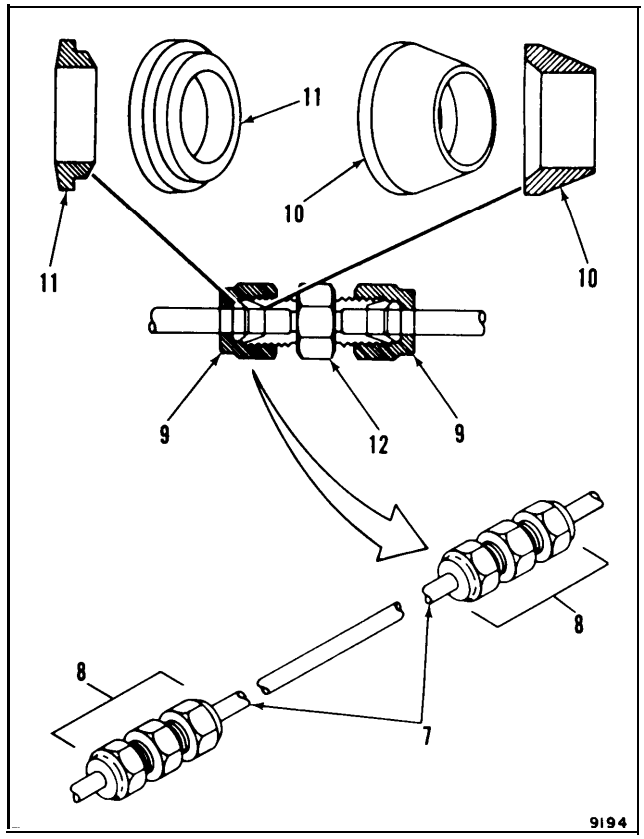


8-26.2 REPAIR PITOT-STATIC AND SIDESLIP TUBING (Continued) 8-26.2

NOTE

During assembly of fittings, check that the front and back ferrules are correctly positioned in the compression nuts and that ends of tubing are clean and free of foreign matter.

6. Assemble a fitting (8) on each end of new tubing (7). Use two compression nuts (9), four ferrules (10 and 11), and a union (12).



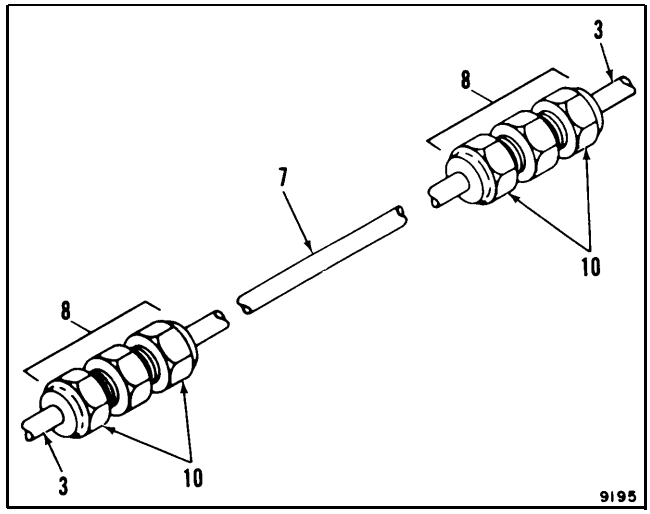
7. Position new tubing (7) and fittings (8) into cutout section of installed tubing (3).

NOTE

Make sure that ends of tubing are firmly seated against shoulder of union.

8. Tighten compression nuts (10). (Task 8-26.1)

INSPECT



FOLLOW-ON MAINTENANCE:

Leak check system (TM 55-1520-240-T).

END OF TASK

8-27 REMOVE NO. 1 OR NO. 2 PITOT TUBE

INITIAL SETUP

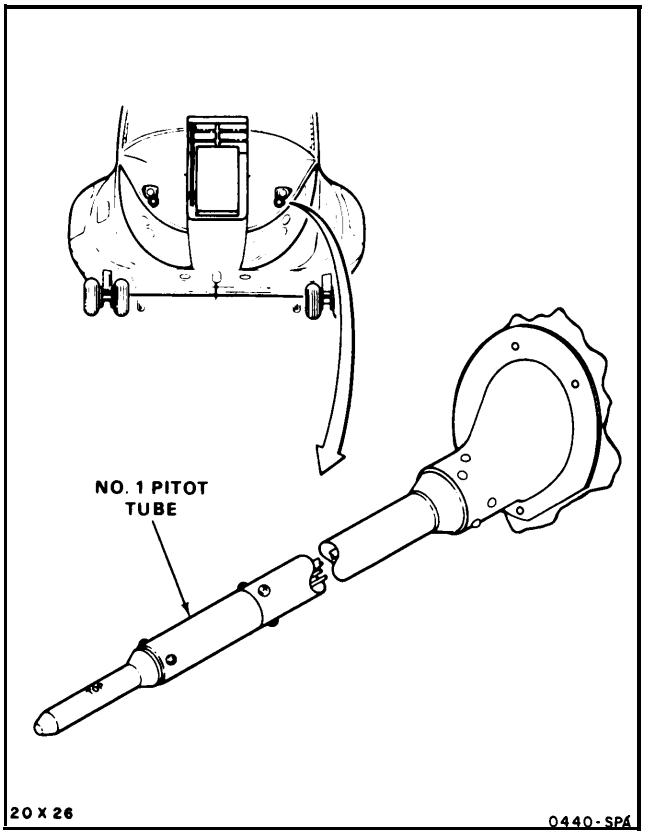
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:
None

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



WARNING

Be sure electrical power is off when working with pitot tube. Otherwise, personnel could be burned.

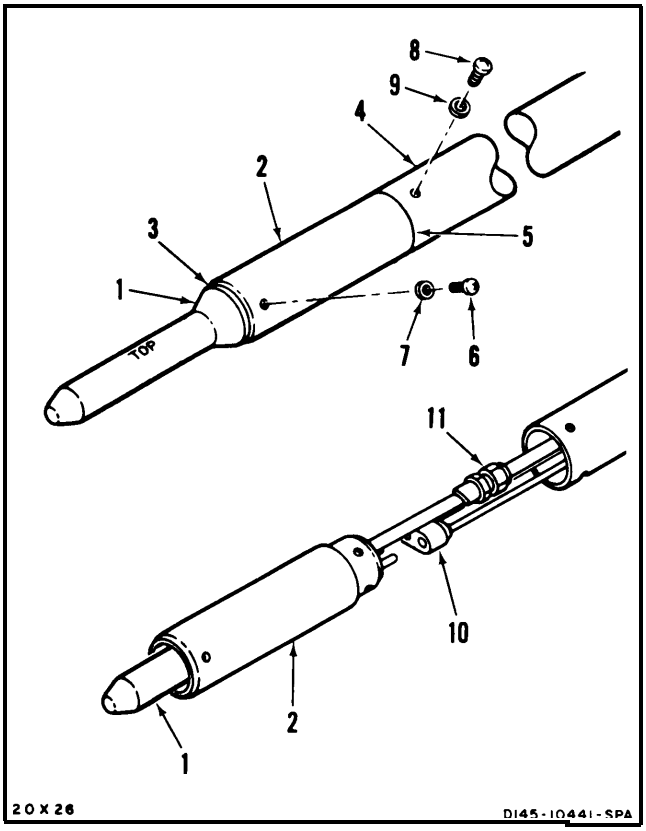
NOTE

Procedure is same to remove No. 1 or No. 2 pitot tube.

1. **Remove sealant from pitot tube (1) and sleeve (2) joint** (3).
2. **Remove sealant from sleeve (2) and support (4)** joint (5).
3. Remove sealant from three screws (6). **Remove screws and washers (7).**
4. Remove sealant from four screws (8). **Remove screws and washers (9).**
5. **Slide sleeve (2) forward** over pitot tube (1).
6. **Disconnect electrical connector (10).**
7. **Disconnect pitot tube** at coupling (11).
8. **Remove pitot tube (1)** and sleeve (2).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-28 REMOVE NO. 1 OR NO. 2 PITOT TUBE SUPPORT

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:

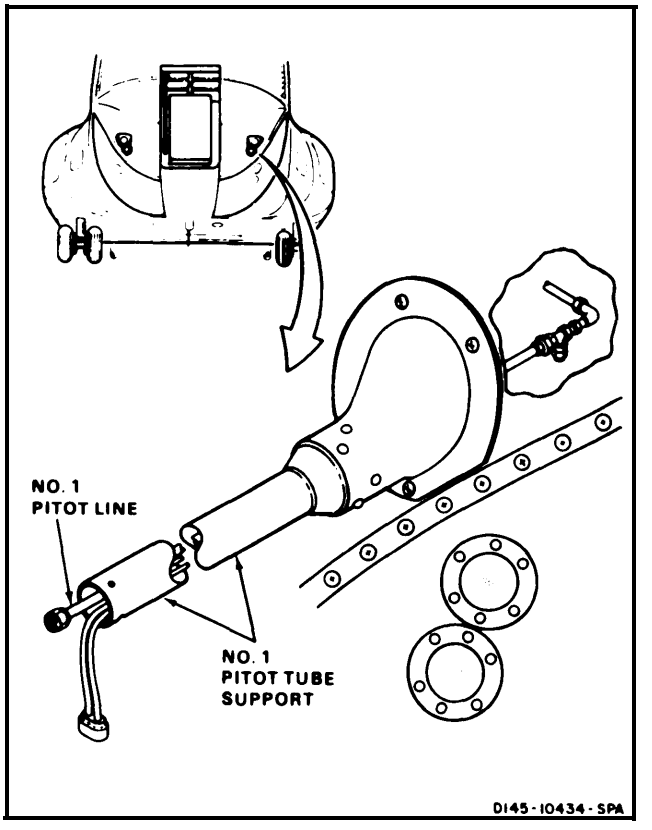
None

Personnel Required:

68F10 Aircraft Electrician

Equipment Condition:

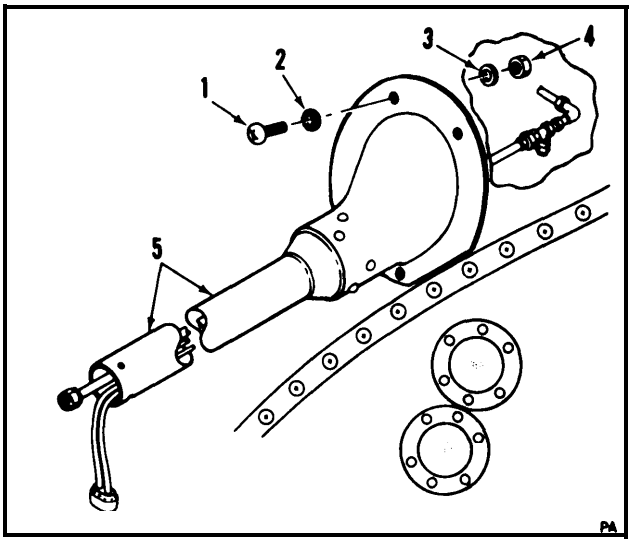
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Nose Enclosure Access Door Open (Task 2-2)
Pitot Tube No. 1 or No. 2 Removed (Task 8-27)



NOTE

Procedure is same to remove No. 1 or No. 2 pitot tube support. No. 1 pitot tube support removal is shown here.

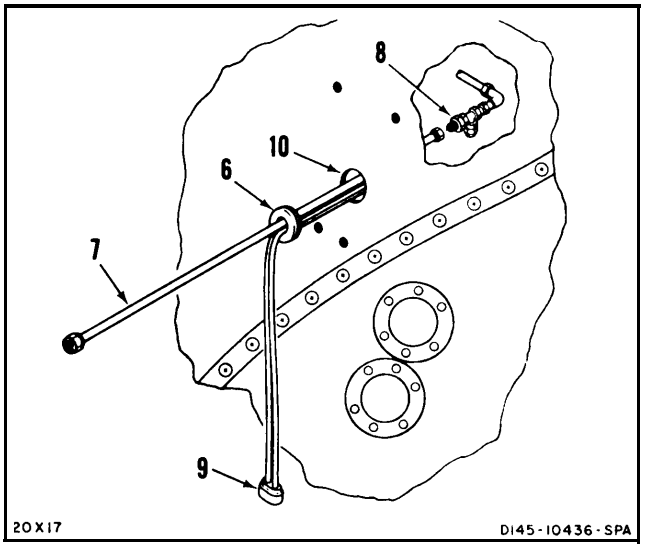
1. **Remove sealant and four screws (1),** seal washers (2), washers (3), and **nuts (4).**
2. **Remove support (5).**



GO TO NEXT PAGE

8-28 REMOVE NO. 1 OR NO. 2 PITOT TUBE SUPPORT (Continued)

3. **Remove grommet (6).**
4. **Disconnect pitot line (7)** at fitting (8)
5. Pull wire harness (9) through access hole (10).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-29 INSTALL NO.1 OR NO.2 PITOT TUBE SUPPORT 8-29

INITIAL SETUP

Applicable Configurations:
All

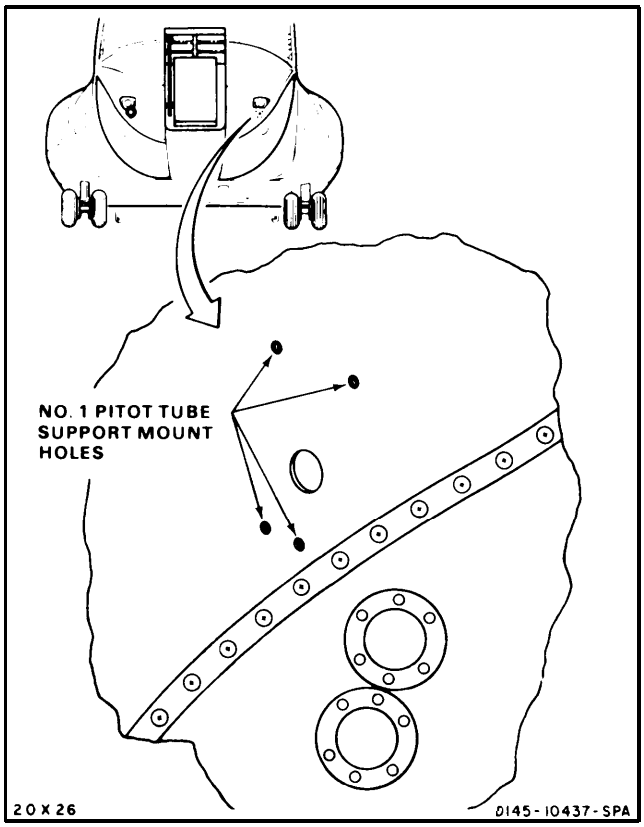
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:
Dry Cleaning Solvent (E162)
Cloths (E120)
Gloves (E186)
Twine (E433)
Sealant (E336)

Parts:
Seal Washers

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P

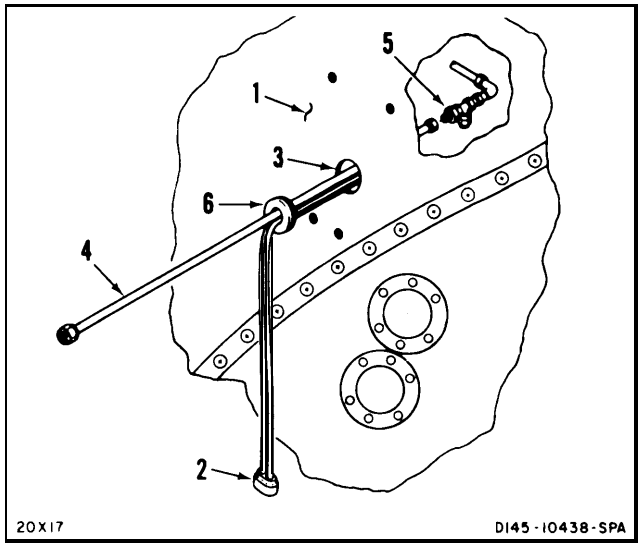


NOTE

The procedure to install No. 1 or No. 2 pitot tube support is the same. installation of No. 1 pitot tube support is shown here.

WARNING

Dry cleaning solvent (E162) is combustible and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

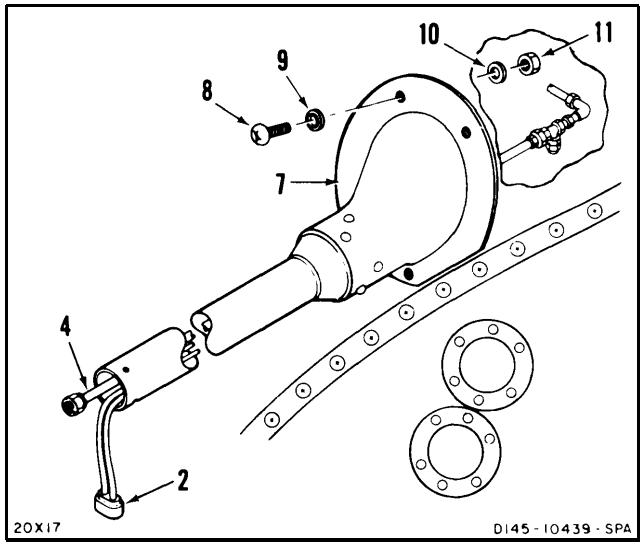


1. Clean pitot tube mount area (1). Use dry cleaning solvent (E162), cloth (E120), and gloves (E186).
2. Pull wire harness connector (2) through access hole (3).
3. **Install pitot line (4)** to fitting (3).
4. **Install grommet (6).**

GO TO NEXT PAGE

8-29 INSTALL NO.1 OR NO.2 PITOT TUBE SUPPORT (Continued)

5. **Position pitot tube support (7),** over pitot line (4) and wire harness connector (2). Use twine to tie connector (2) to pitot tube end of line.
6. **Install four screws (8),** make sure seal washers (9) are under heads of screws.
7. Install four washers (10) and nuts (11).
8. Remove twine installed in Step 5.



WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

9. Seal screws (8) and pitot tube support (7) mating surfaces. Use sealant (E336).

INSPECT

FOLLOW-ON MAINTENANCE:

Install pitot tube (Task 8-30).

Close nose access door (Task 2-2).

END OF TASK

8-30 INSTALL NO. 1 OR NO. 2 PITOT TUBE

INITIAL SETUP

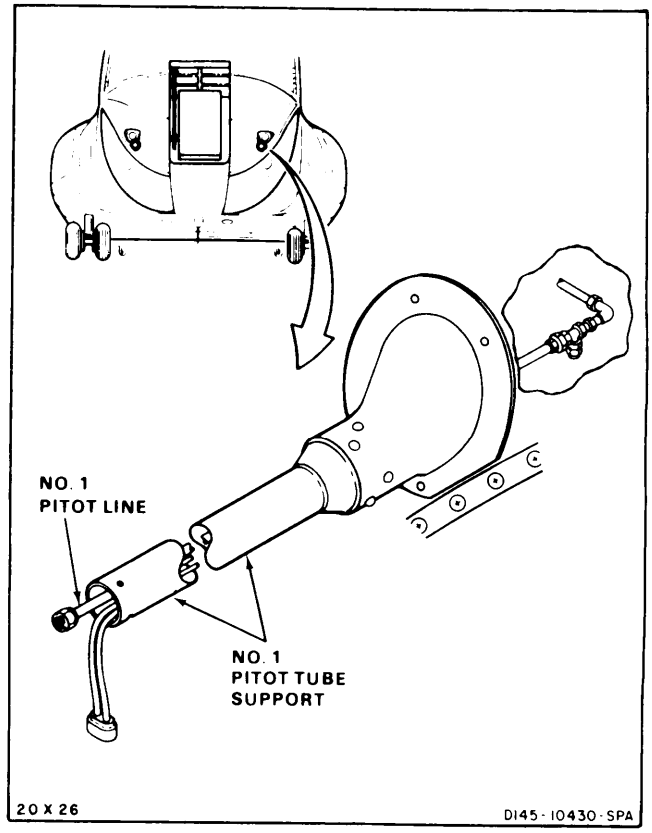
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:
Sealant (E336)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

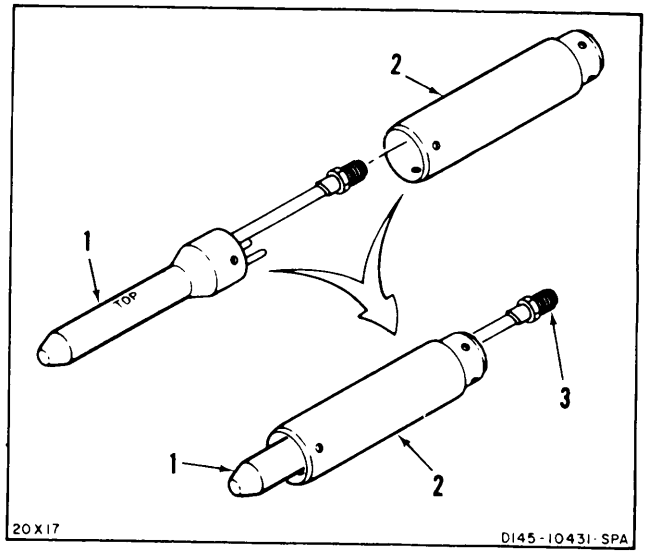
References:
TM 55-1520-240-23P



NOTE

The procedure to install No. 1 or No, 2 pitot tube is the same. Installation of No. 1 is shown here.

1. **Place pitot tube (1) inside sleeve (2),** make sure **fitting (3) protrudes** from stepped down end of sleeve.



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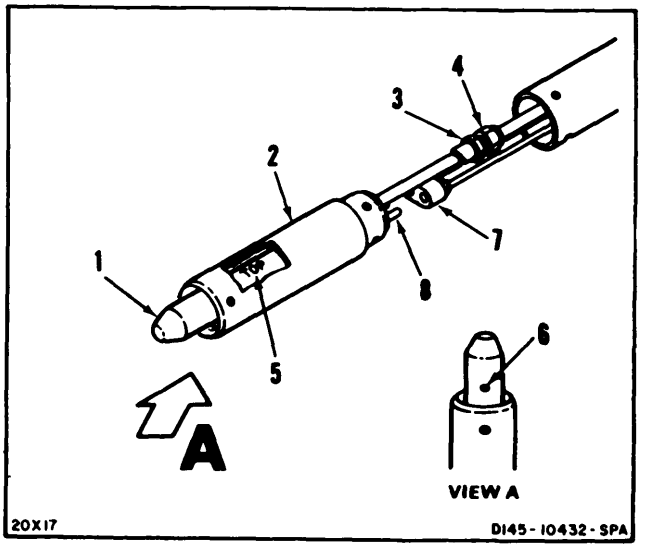
8-30 INSTALL NO.1 OR NO.2 PITOT TUBE (Continued) 8-30



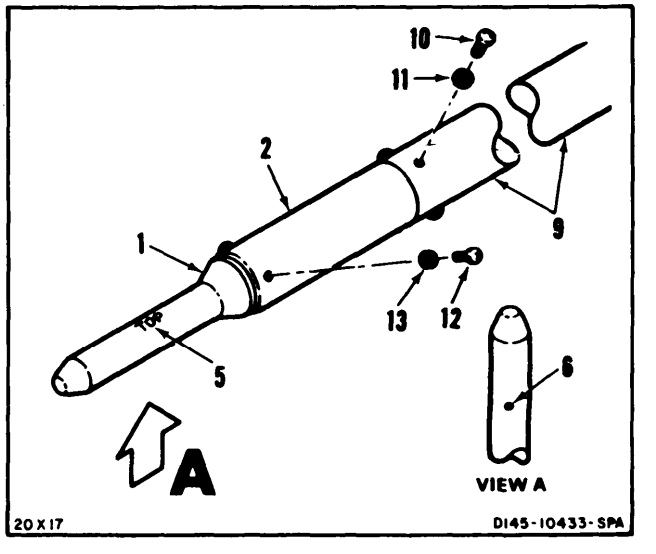
2. **Connect pitot line (4)** to pitot tube fitting (3). Make sure word **'TOP' (5)** at up position and that drain hole (6) is down.

3. Connect electrical connector (7) to pins (8).

4. Slide sleeve (2) over pitot tube (1) and into pitot tube support (9).

5. **Install four screws (10)** and washers (11).

6. **Install three screws (12)** and washers (13). Make sure word **'TOP' (5)** is at **up** position and that drain hole (6) is down.



WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In casm of contact, immediately flush skin or eyes with water for at lent 15 minutes. Get medical attention for eyes.

7. Seal screws (10) and pitot tube (9) mating surfaces.

INSPECT

FOLLOW-ON MAINTENANCE:

Test pitot-static system (TM 55-1520-240-T).

Close nose enclosure access door (Task 2-2).

END OF TASK

8-31 REMOVE SIDESLIP SENSING PORTS

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:

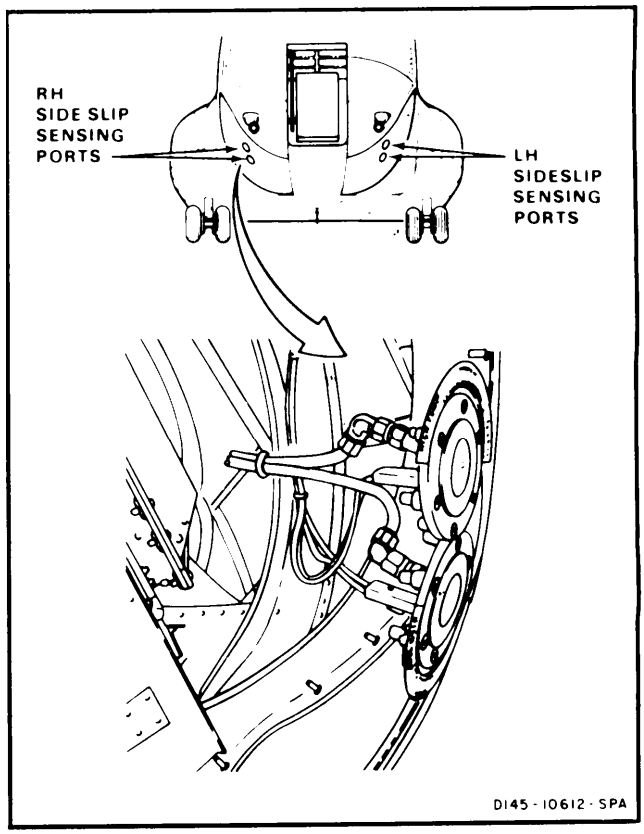
None

Personnel Required:

Aircraft Electrician

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Nose Enclosure Access Door Open (Task 2-2)



NOTE

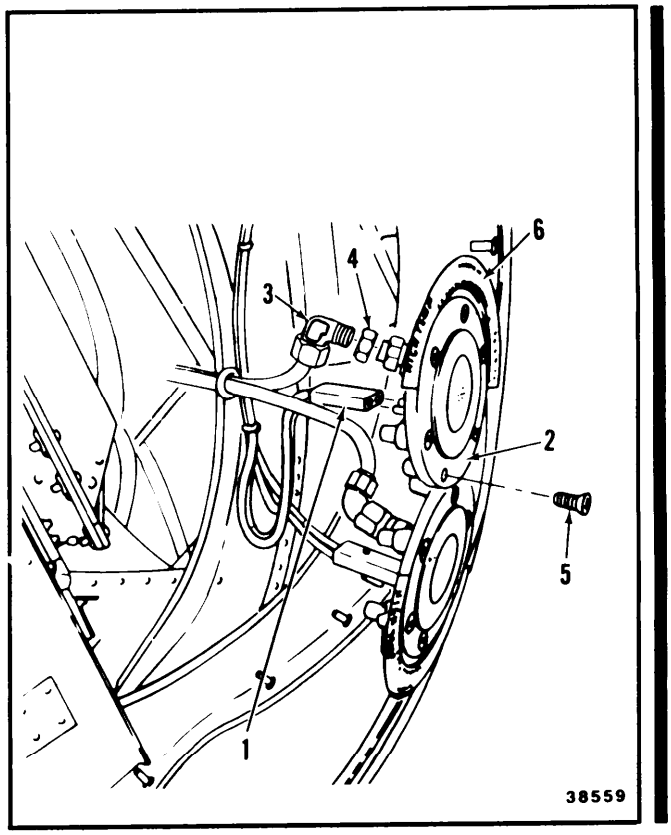
Procedure is the same to remove all four sideslip sensing ports. No. 1 RH is shown here.

1. **Disconnect electrical connector (1)** from sideslip sensing port (2).

CAUTION

Do not disassemble compression fitting in order to retain clips inside of compression fitting.

2. **Disconnect sideslip sensing line (3), at compression fitting nut (4).**
3. **Remove six screws (5).**
4. **Remove sideslip sensing port (2)** from window panel (6).



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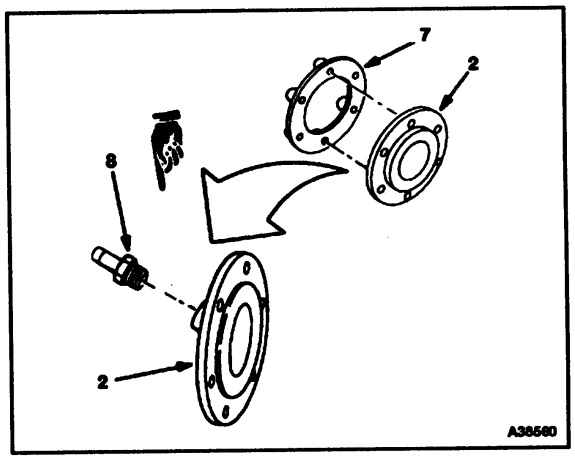
5. **Remove retainer (7)** from slideslip sensing port (2).

6. **Remove tube adapter (8)** from slideslip sensing port (2).

FOLLOW-ON MAINTENANCE:
None



END OF TASK

8-32 INSTALL SIDESLIP SENSING PORTS8-32

INITIAL SETUP

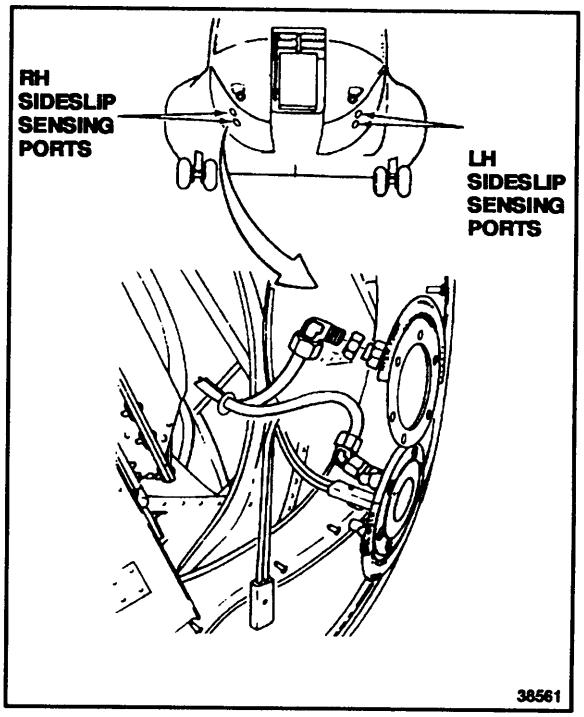
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand
Torque Screwdriver, 0 to 50 Inch-Pounds

Materials:
Packing

Personnel Required:
Aircraft Electrician
Inspector

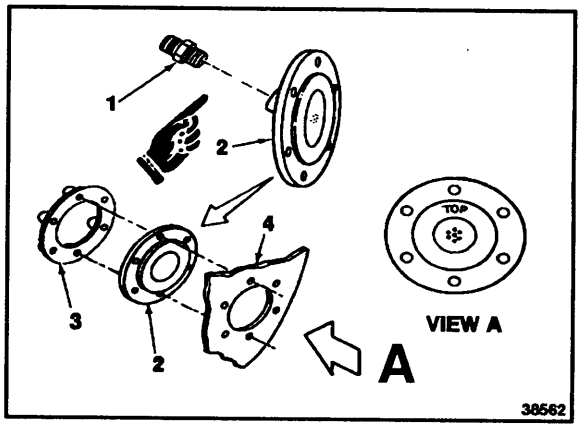
References:
TM 55-1520-240-23P



NOTE

Procedure is the same to install four sideslip sensing ports No. 1 RH is shown here.

1. **Install adapter (1**) in slideslip sensing port (2).
2. **Install retainer (3**) on slideslip sensing port (2).
3. **Position sideslip sensing port (2)** and retainer (3) in window panel (4). Position from inside panel and make sure word TOP is up.



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8-32 INSTALL SIDESLIP SENSING PORTS (Continued) **8-32**

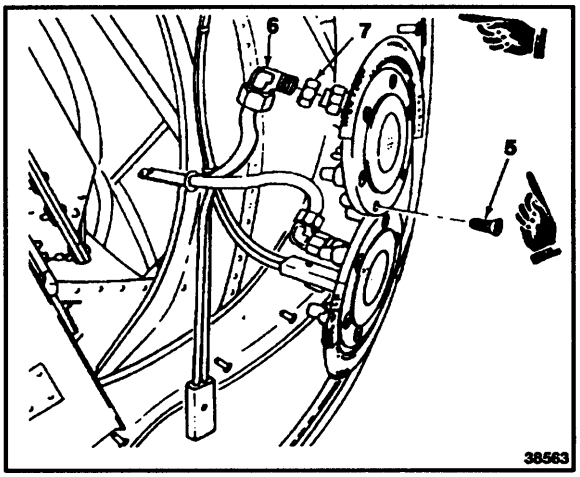
p

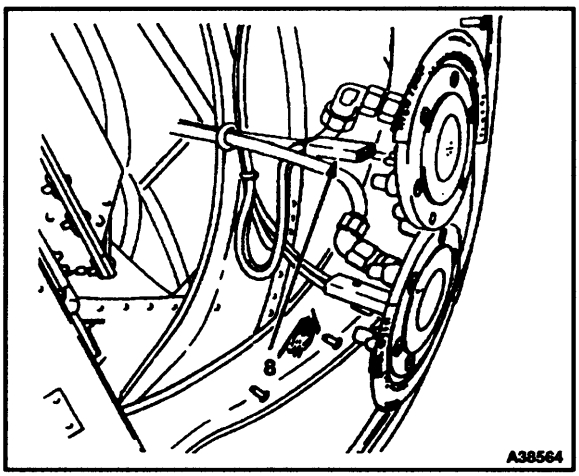
4. **Install six screws (5). Torque screws to 6 inch-pounds.**

5. **Connect sideslip sensing line (6), at compression fitting nut (7).**

6. **Connect electrical connector (8).**

FOLLOW-ON MAINTENANCE:
Leak check sideslip system (TM 55-1520-240-T).
Close nose enclosure access door (Task 2-2).





END OF TASK

8-33 REMOVE STATIC PORT ADAPTER

INITIAL SETUP

Applicable Configurations:
All

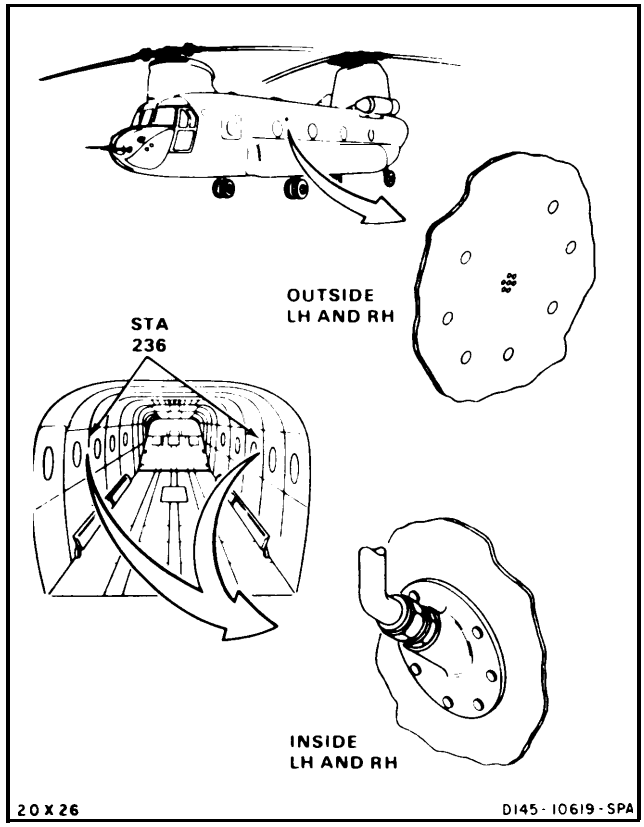
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Airframe Repairer's Tool Kit,
NSN 5180-00-323-4876
Workstand

Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer
68G10 Aircraft Structural Repairer

References:
TM 55-1500-204-25/1

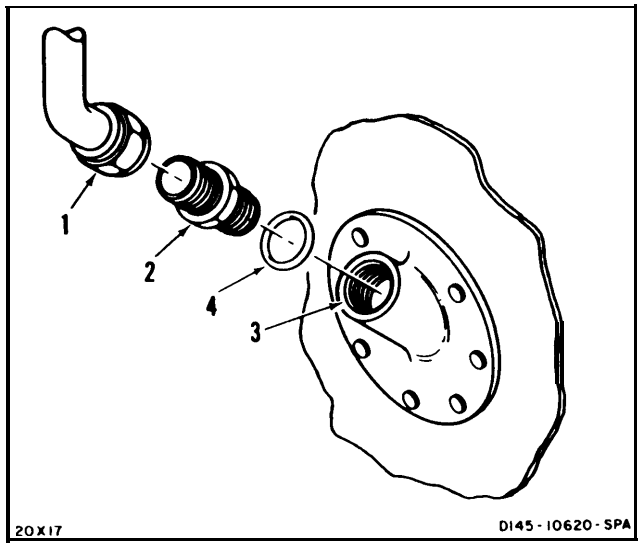
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Side Acoustic Blanket (Station 200 to 240) Removed (Task 2-208)



NOTE

Procedure is same to remove No. 1 or No. 2 static ports. No. 1 static port is shown here.

1. **Disconnect tube (1).**
2. **Remove** straight thread connector (2) and packing (4) from static port adapter (3).



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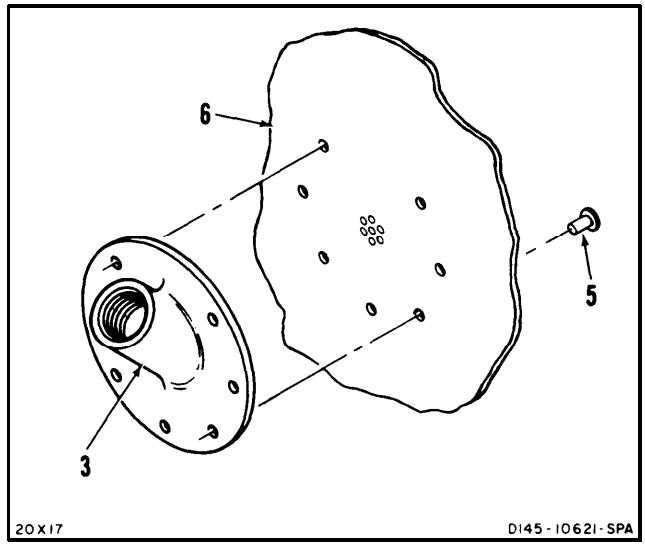
8-33 REMOVE STATIC PORT ADAPTER (Continued)

3. From outside aircraft, **remove seven rivets (5).**
4. From inside aircraft, **remove static port adapter (3)** from fuselage skin (6).

FOLLOW-ON MAINTENANCE:
None



END OF TASK

8-34 INSTALL STATIC PORT ADAPTER

INITIAL SETUP

Applicable Configurations:
All

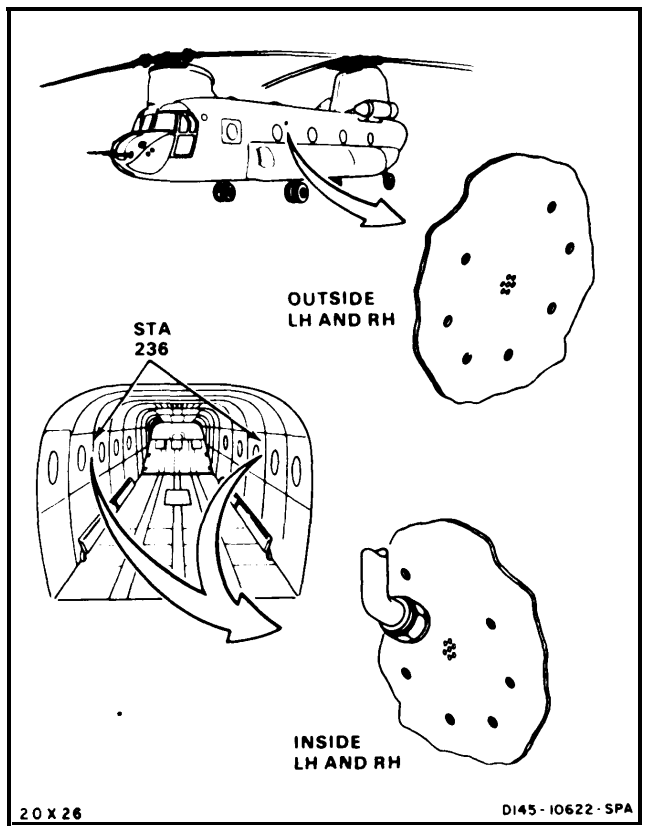
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Airframe Repairer's Tool Kit, NSN 5180-00-323-4876
Workstand

Materials:
Dry Cleaning Solvent (E162)
Cloths (E120)
Gloves (E186)
Sealant (E336)

Parts:
Packing
Rivets

Personnel Required:
67U10 Medium Helicopter Repairer
68G10 Aircraft Structure Repairer
67U30 Inspector

References:
TM 55-1500-204-25/1
TM 55-1520-240-23P
TM 55-1520-240-T

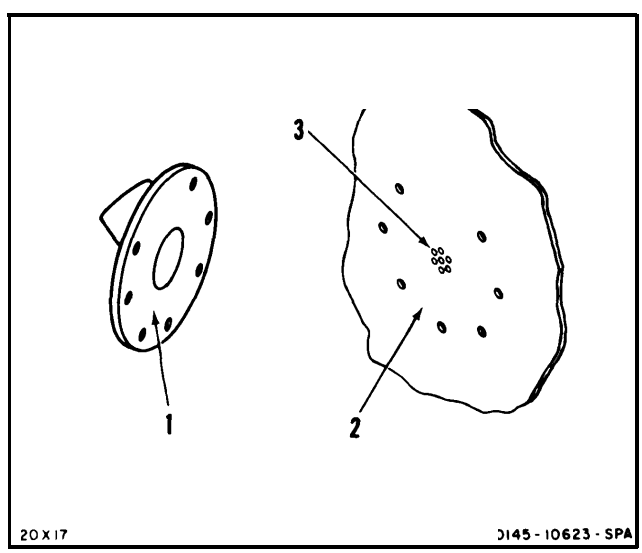


NOTE

Procedure is same to install No. 1 or No. 2 static ports. No. 1 static port is shown here.

WARNING

Dry cleaning solvent (1) (E162) is combustible and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



1. **Clean mating surfaces** of static port adapter (1) and inner fuselage skin (2). Use gloves (E186) and dry cleaning solvent (E162). Make sure no debris is in static port holes (3). Make sure holes are not deformed.

GO TO NEXT PAGE

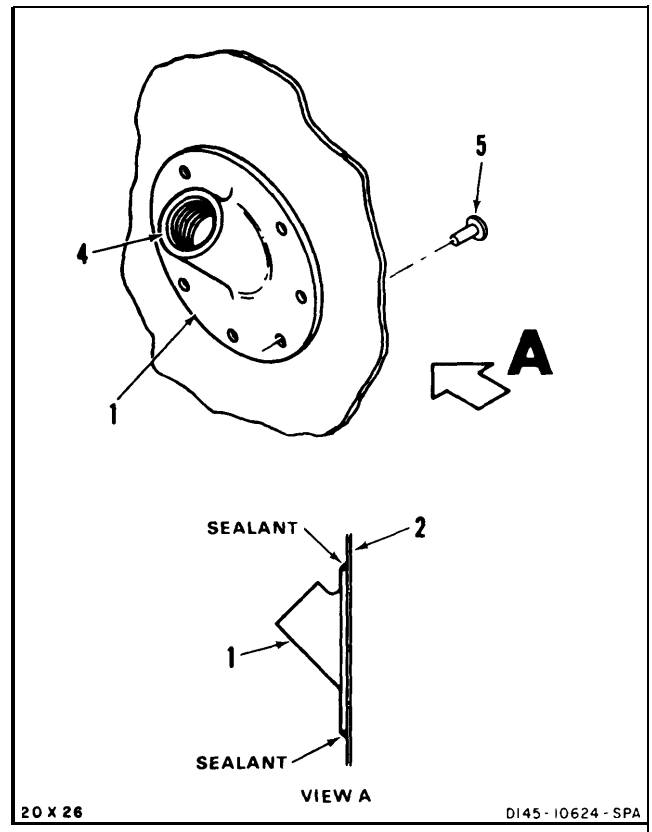
8-34 INSTALL STATIC PORT ADAPTER (Continued

2. **Position static port adapter (1).** Make sure threaded port (4) is up.
3. From outside aircraft, **install seven rivets (5).**

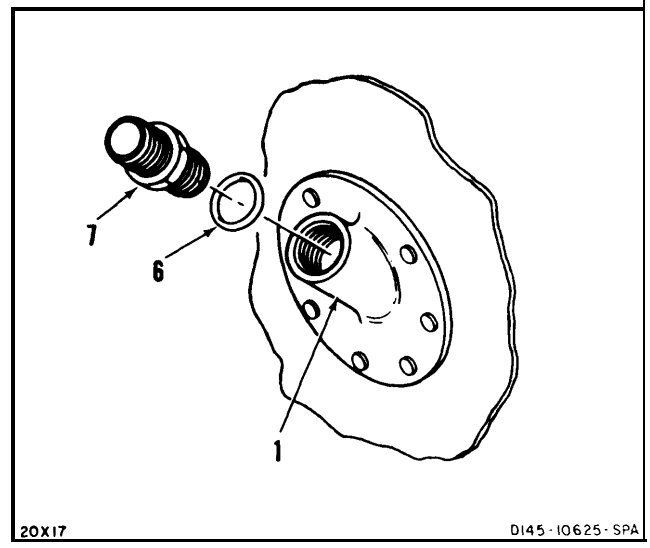
WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

4. From inside aircraft, **seal static port adapter (1)** to inner fuselage skin (2). Use sealant (E336). Wear gloves (E186).



5. Install packing (6) in groove of straight thread connector (7).
6. **Install straight** thread connector (7) in static port adapter (1).



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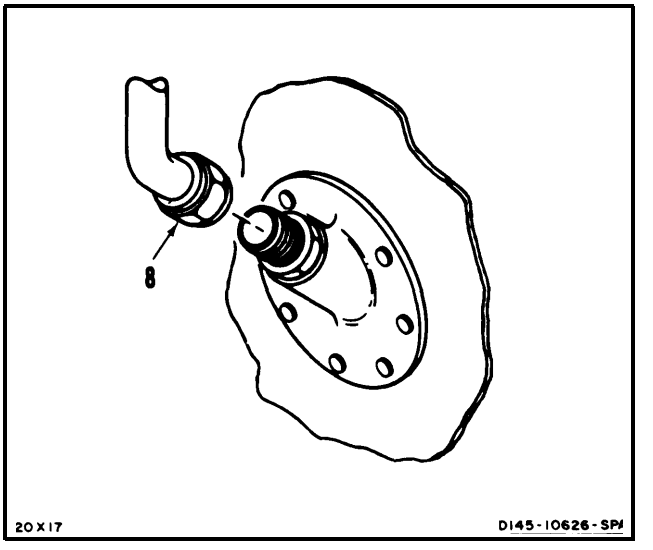
8-34 INSTALL STATIC PORT ADAPTER (Continued) 8-34

7. **Connect static line tube (8).**



INSPECT

INSPECT

FOLLOW-ON MAINTENANCE:

Leak check pitot static system (TM 55-1520-240-T).

Install side acoustical blanket (Task 2-210).

END OF TASK

8-35 TEST AIRSPEED INDICATOR RESTRICTOR

INITIAL SETUP

Applicable Configurations:
All

Tools:
Instrument Repairer's Tool Kit
NSN 4920-00-323-4913
Pitot and Static Systems Tester
Stopwatch

Materials:
None

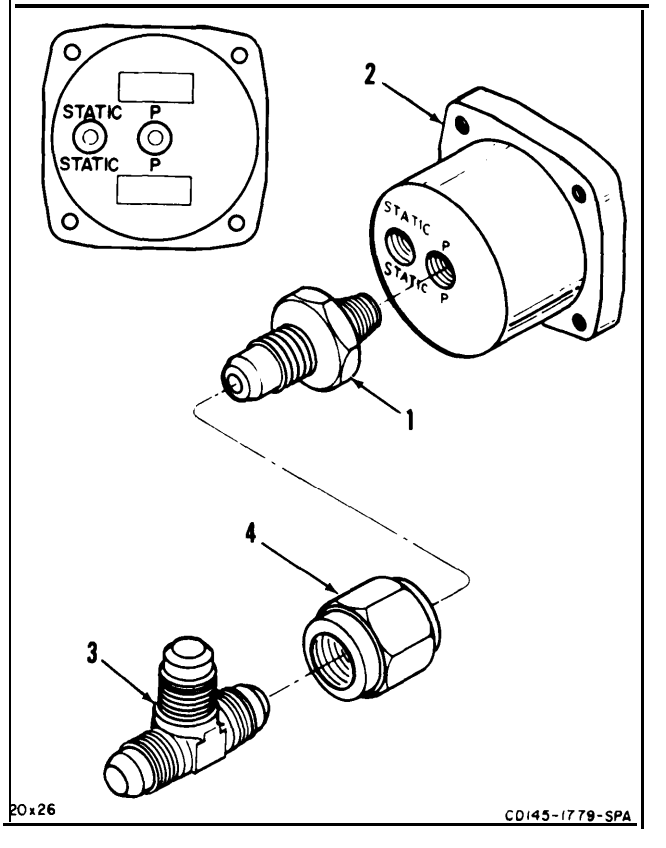
Parts:
Airspeed Indicator
Flared Tube Tee
Tube Coupling

Personnel Required:
68F20 Aircraft Electrician

References:
TM 55-4920-231-14

Equipment Condition:
Tester Rigged For Airspeed Indicator Test (TM 55-4920-231-14)
Off Helicopter Task

1. Install restrictor (1) in P port of serviceable airspeed indicator (2).
2. Connect tee (3) to restrictor (1) with coupling (4).



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8-35 TEST AIRSPEED INDICATOR RESTRICTOR (Continued)

3. Connect hose (5) of tester (6) to tee (3).
4. Connect external case leak valve (7) to tee (3). Make sure valve is closed.

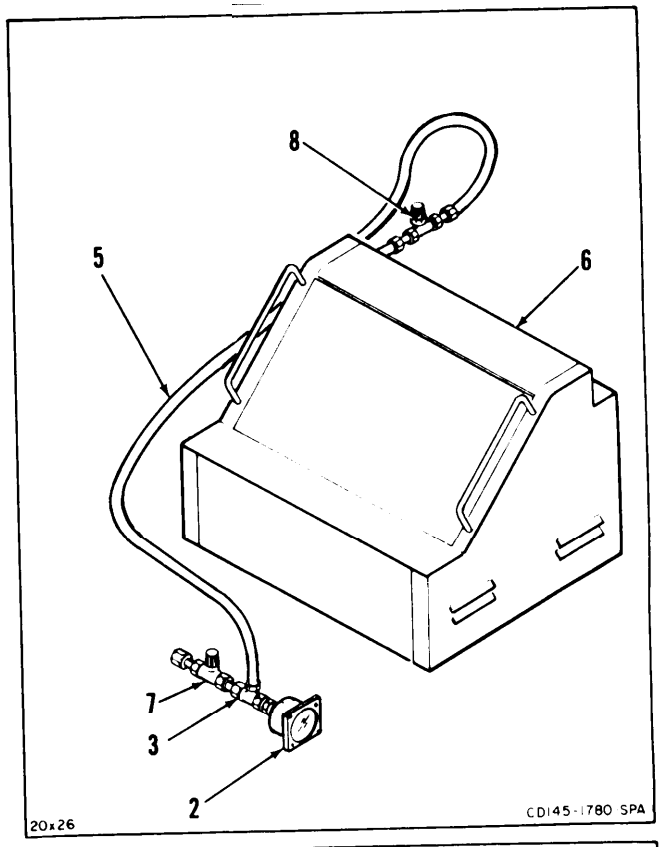
NOTE

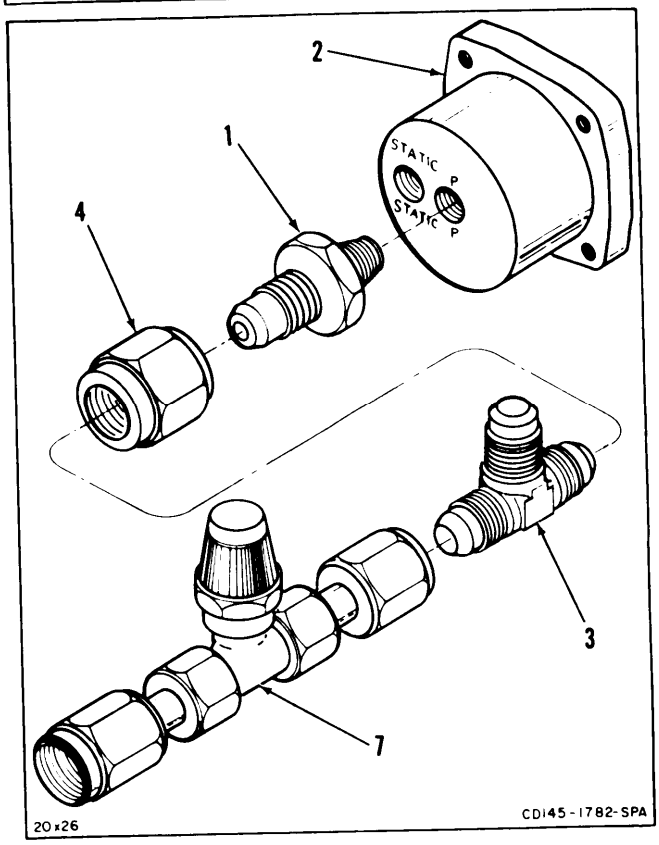
External case leak valve is part of tester.

5. Check indicator (2) reads 0.
6. **Adjust tester (6) until indicator (2) reads 250 knots** (TM 55-4920-231-14).
7. Close external case leak valve (8). Check that indicator (2) reading does not change.
8. **Open valve (7) and record time for indicator (2) reading to drop to 20 knots.** Use stop watch. Elapsed time shall 3.5 to 4.0 seconds.
9. **Open valve (8) and close valve (7).**
10. **Repeat steps 5. thru 8. twice.** Adjust restrictor if recorded times are not 3.5 to 4.5 seconds (Task 8-37).
11. Disconnect hose (5) from tee (3).
12. Shut down tester (6) (TM 55-4920-231-14).
13. Remove valve (7), tee (3), and coupling (4) from restrictor (1).
14. Remove restrictor (1) from airspeed indicator (2).

FOLLOW-ON MAINTENANCE:

None





END OF TASK

8-36 REPLACE AIRSPEED INDICATOR RESTRICTOR 8-36

INITIAL SETUP

Applicable Configurations:
All

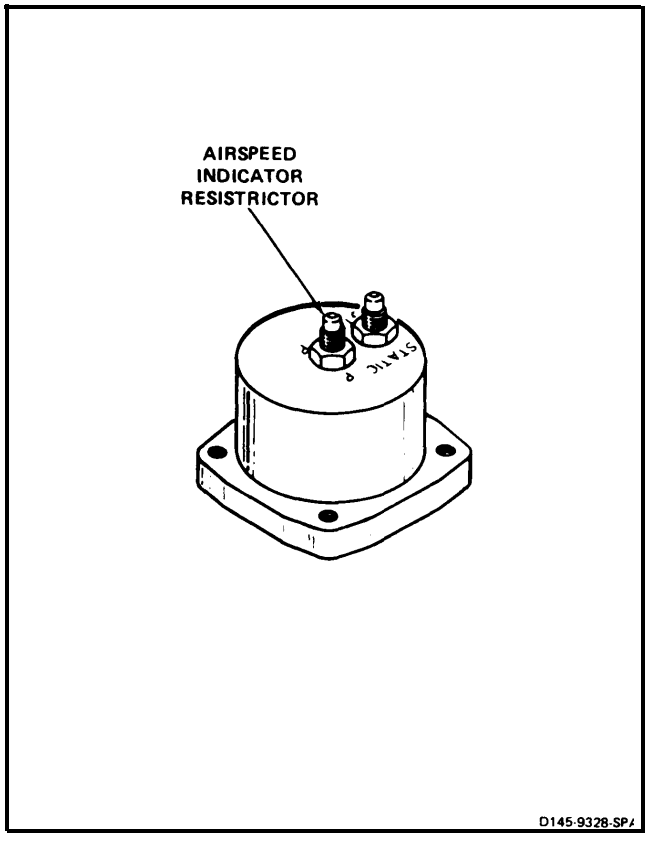
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Cloth (E120)
Gloves (E186)
Antiseize Thread Compound (E76)

Personnel Required
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Off Helicopter Task



NOTE

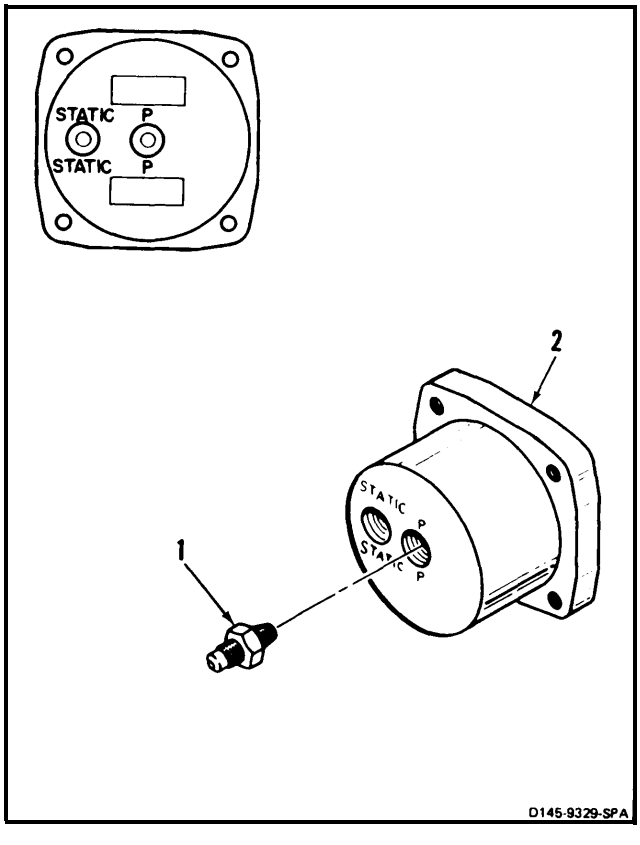
Be careful when handling the airspeed indicator. Rough handling will damage indicator.

1. **Remove restrictor (1)** from P port of airspeed indicator (2).

WARNING

Antiseize compound (E76) is extremely toxic. It can irritate skin and cause burns. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. In case of contact, inmedately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

2. **Apply antiseize (E76)** to pipe thread end of restrictor (1), Use gloves (E186).
3. **Install restrictor (1)** in P port of airspeed indicator (2).



INSPECT

FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-37 ADJUST AIRSPEED INDICATOR RESTRICTOR

INITIAL SETUP

Applicable Configurations:
All

Tools:
Instrument Repairer's Tool Kit, NSN 4920-00-323-4913
Pitot and Static Systems Tester
Stopwatch
Spline Wrench, .050-inch, NSN 5120-00-288-9085

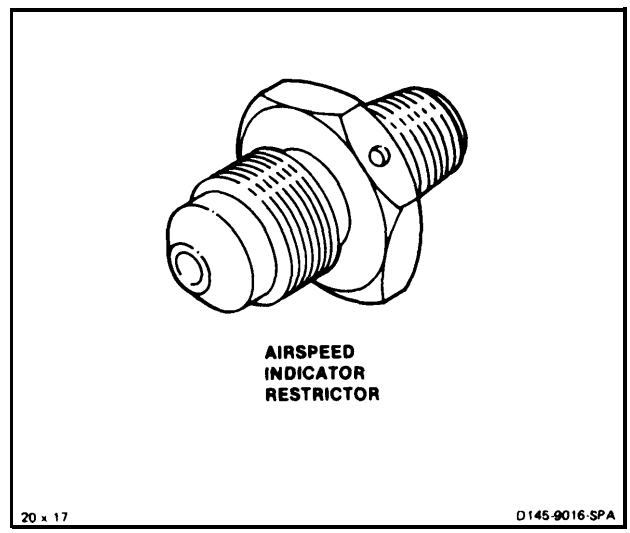
Materials:
Sealant (E340)
Primer (E299)
Gloves (E186)

Parts:
Airspeed Indicator
Flared Tube Tee
Tube Coupling

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23 (Task 8-35)
TM 55-4920-231-14

Equipment Condition:
Tester Rigged for Airspeed Indicator Test (TM 55-4920-231-14)
Airspeed Indicator Restrictor Tested (Task 8-35)
Off Helicopter Task



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8-37 ADJUST AIRSPEED INDICATOR RESTRICTOR (Continued) 8-37

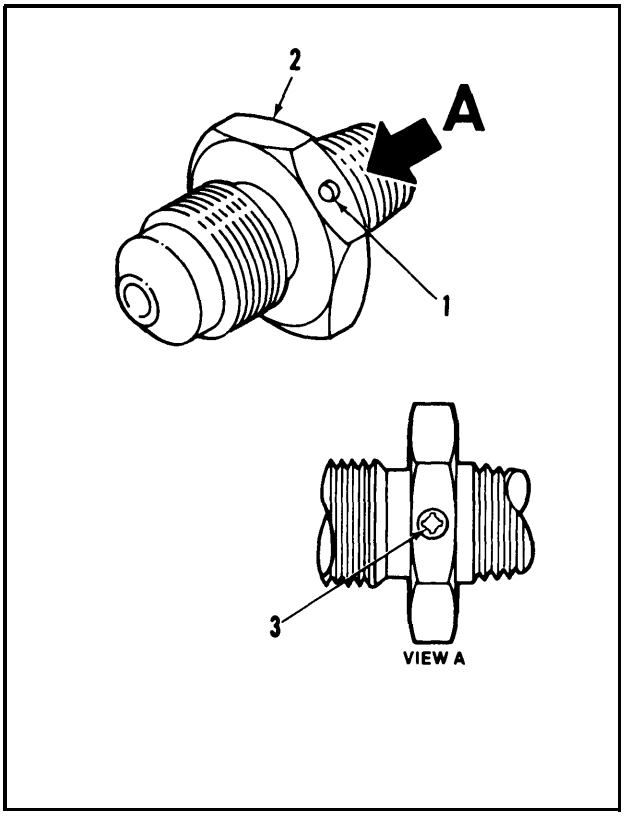
1. Remove sealant from set screw hole (1) of restrictor (2).

NOTE

Set screw is turned very slightly when adjusting.

2. If the elapsed time in test (Task 8-35) was more than 4.0 seconds, turn setscrew (3) counterclockwise. If the elapsed time was less than 3.5 seconds, turn set screw clockwise.

3. After adjusting set screw (3), **repeat test (Task 8-35).** If the elapsed time is not 3.5 to 4 seconds, repeat step 2. If the elapsed time is 3.5 to 4 seconds, goon to step 4.



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WARNING

Primer (E299) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

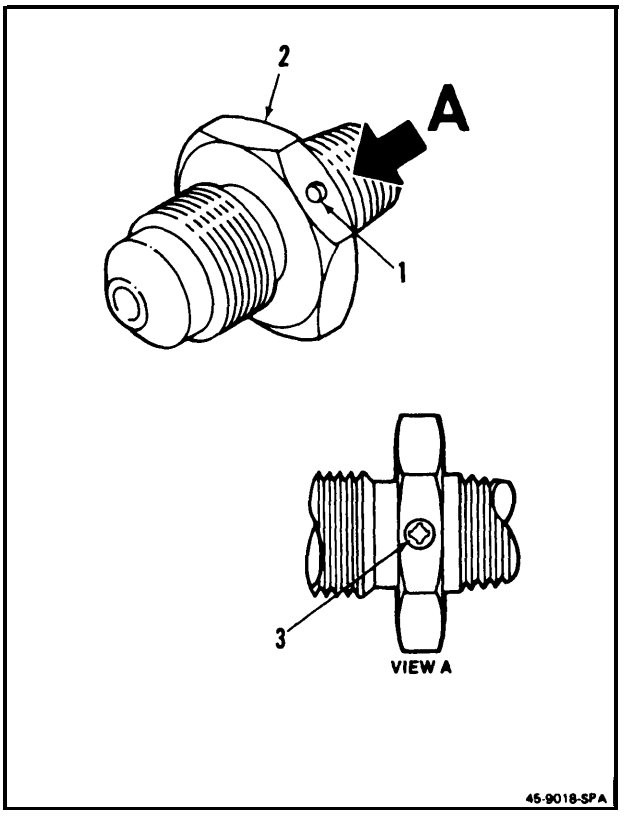
4. **Apply primer (E299)** to thread of set screw hole (1). Do not get primer in spline socket of set screw (3). Allow primer to dry at room temperature for 30 minutes. Wear gloves (E186).

WARNING

Sealant (E340) can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

5 **Apply sealant (E340)** to set screw hole (1). Wear gloves (E186).

6. **Test restrictor (2)** (Task 8-35). Elapsed time must be 3.5 to 4 seconds.



INSPECT

7. Cure sealant (E340) for 24 hours.

8. **Test restrictor (2)** (Task 8-35) after 24 hour cure time. Elapsed time must be 3.5 to 4 seconds.

INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-38 TEST BAROMETRIC ALTIMETER

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit, NSN 5180-00-323-4915
Pitot and Static Systems Tester
Power Supply, 28-Volt Dc
Stopwatch

Materials:

None

Personnel Required:

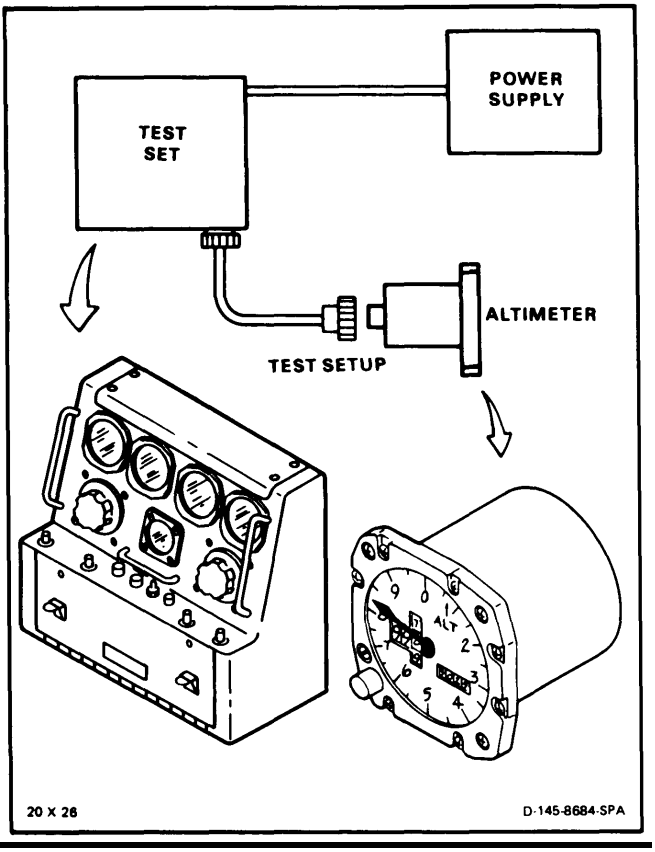
Aircraft Electrician
Inspector

References:

TM 55-1500-204-25/1
TM 55-4920-231-14

Equipment Condition:

Off Helicopter Task
Test Setup



CAUTION

Be careful when handling altimeter. Rough handling will damage altimeter.

1. Supply 28 volts dc to altimeter vibrator during following test.

1.1. **Set altimeter (1) to read 0 feet altitude.**

2. **Connect altimeter to test set (2)** (TM 55-4920-231-14).

3. **Turn on power supply (3).**

CAUTION

Do not exceed 3,000 feet per minute rate of increase.

4. **Turn on and adjust test set (2) to cause altimeter (1) to read 18,000 feet** (TM 55-4920-231-14).

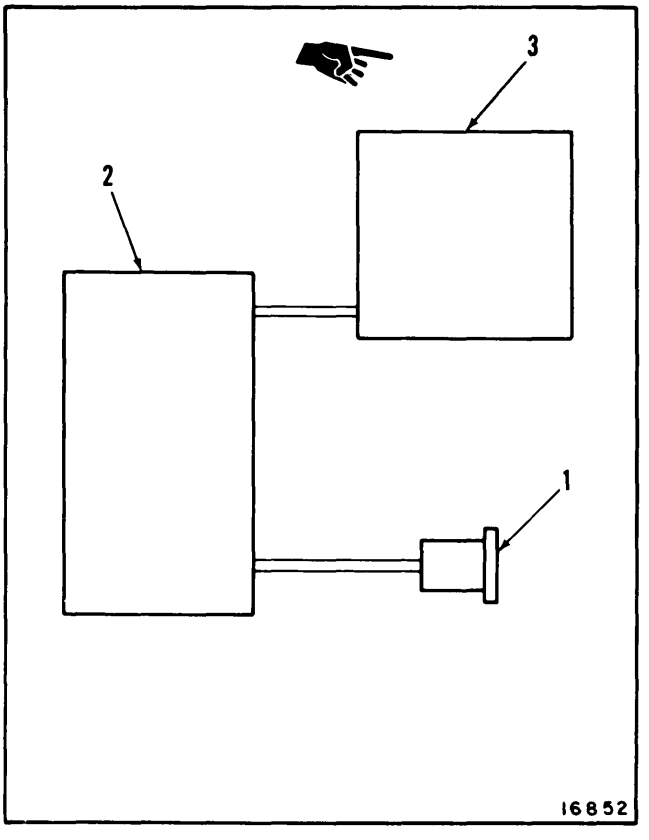
5. **Shut test set valve off. Check altimeter (1).** Altimeter shall not lose more tham 100 feet in 1 minute (TM 55-1500-204-25/1).

INSPECT

CAUTION

Do not exceed 3,000 feet per minute rate of decrease.

6. **Adjust test set (2) to cause altimeter (1) to return to 0 feet altitude reading** (TM 55-4920-231-14).



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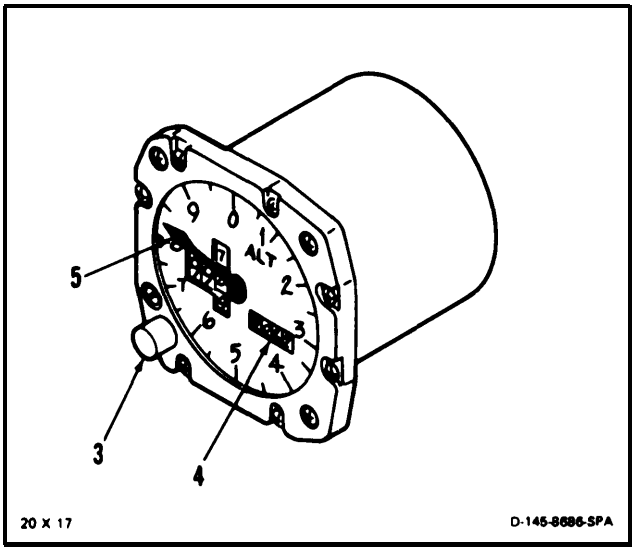
8-38 TEST BAROMETRIC ALTIMETER (Continued)

7. **Rotate adjustment knob (3) to bring barometric scale (4) from 28.10 to 31.00.** Check that no binding occurs and that pointers (5) move smoothly.
8. **Rotate adjustment knob (3) to bring barometric scale to 29.92. Record altitude reading.**
9. **Rotate adjustment knob (3) to bring barometric scale to 28.50. Record altitude reading.**
10. **Compare readings from steps 8 and 9.** The difference shall be between 1,315 and 1,365 feet.



INSPECT

11. **Rotate adjustment knob (3) to bring barometric scale to 29.92. Record reading.**
12. **Rotate adjustment knob (3) to bring barometric scale to 30.90. Record reading.**
13. **Compare readings from steps 11 and 12.** The difference shall be between 868 and 918 feet.

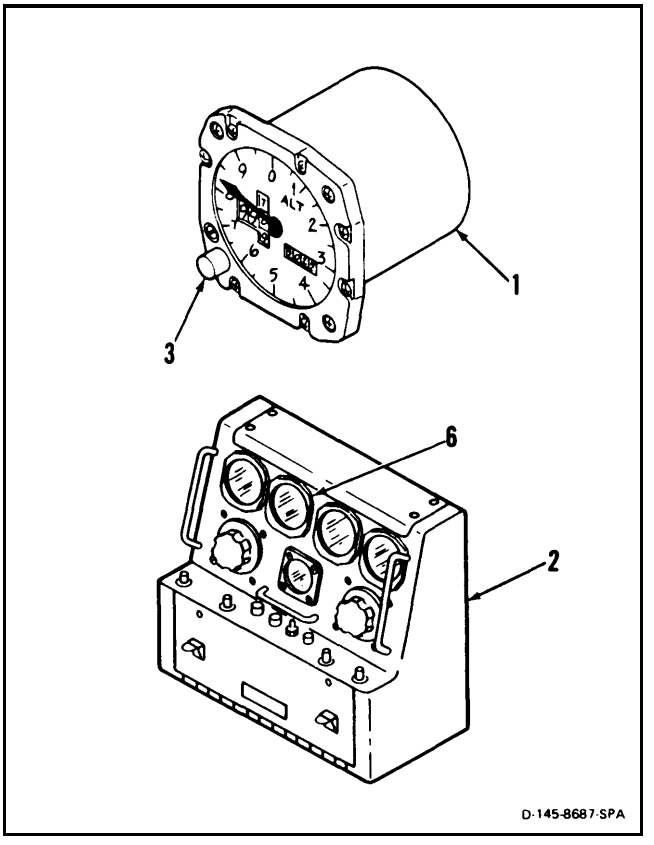
INSPECT

GO 70 NEXT PAGE

14. **Rotate adjustment knob (3) of test altimeter (6) and altimeter being tested to bring both barometric scales to <u>29.92.</u> Record altitude reading.**
15. **Adjust test set to altitude test points following. Readings shall be within tolerance listed** (TM 55-4920-231-14).

INSPECT

16. Adjust test set (2) to cause altimeter to return to altitude recorded in step 14.
17. Shut down test set (TM 55-4920-231-14).
18. Shut down power supply.
19. Disconnect altimeter (1) from test setup.



ALTITUDE TEST POINT (FEET)	ALTIMETER READING (FEET)
0	-30 to 30
500	465 to 535
1,000	965 to 1,035
1,500	1,460 to 1,540
2,000	1,960 to 2,040
3,000	2,955 to 3,045
4,000	3,950 to 4,050
6,000	5,940 to 6,060
8,000	7,930 to 8,070
10,000	9,920 to 10,080
12,000	11,910 to 12,090
14,000	13,900 to 14,100
16,000	15,890 to 16,110
18,000	17,880 to 18,120
20,000	19,870 to 20,130

FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-39 REMOVE CRUISE GUIDE SIGNAL CONDITIONER 8-39

INITIAL SETUP

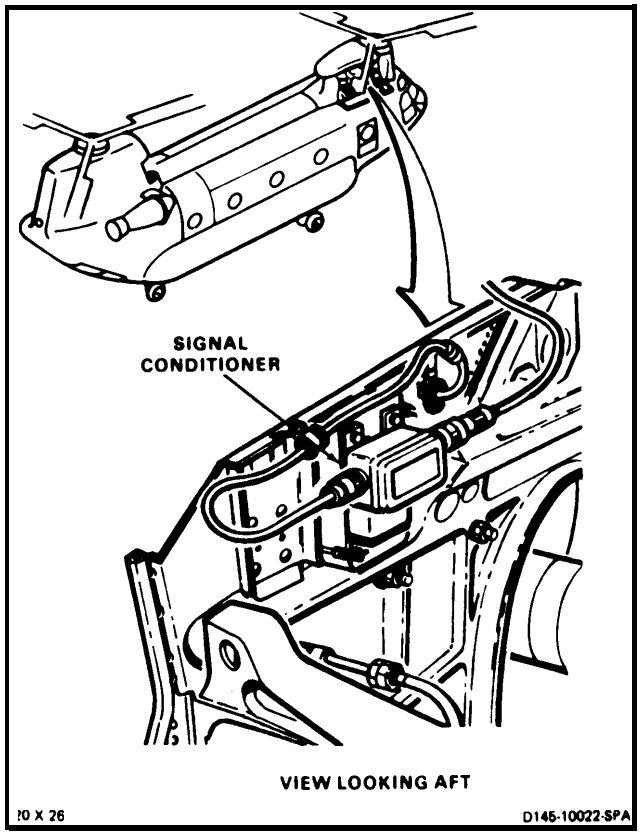
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

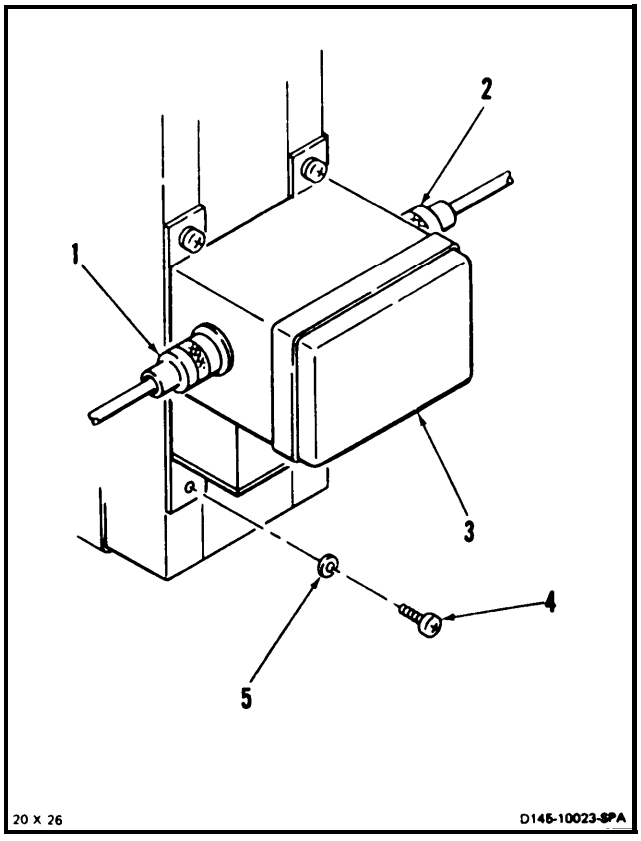
Materials:
Paper Tags (E264)

Personnel Required:
68F10O Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Right Forward Work Platform Open (Task 2-2)



1. Tag and **disconnect two connectors (1 and 2)** from signal conditioner (3).
2. **Remove four screws** (4) and washers (5).
3. **Remove signal conditioner (3).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-40 INSTALL CRUISE GUIDE SIGNAL CONDITIONER 8-40

INITIAL SETUP

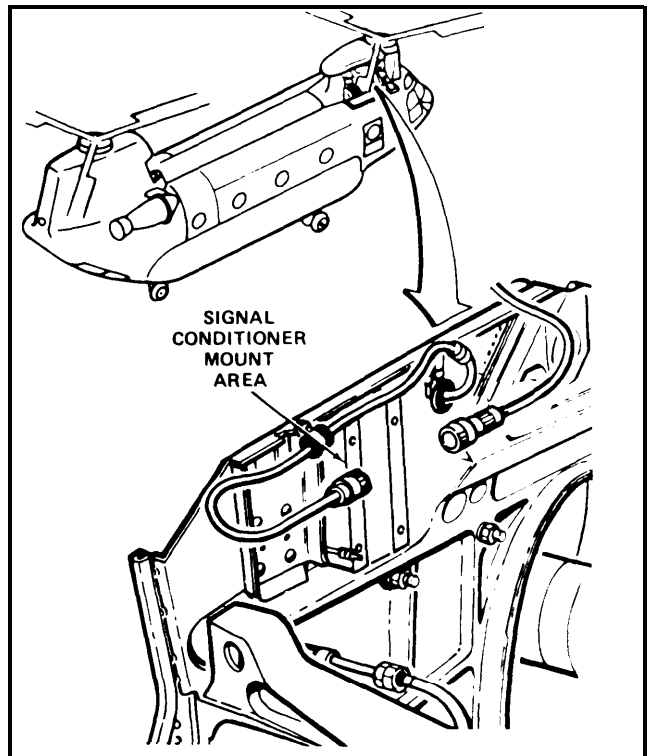
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Dry Cleaning Solvent (E162)
Cloths (E120)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25



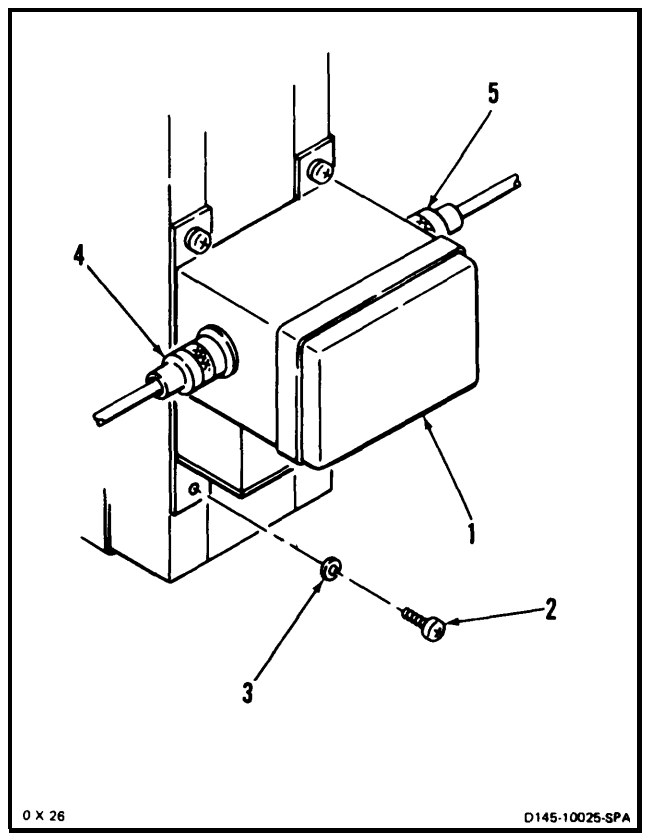
VIEW LOOKING AFT

'0 X 26 D145-10024-SPA

WARNING

Dry cleaning solvent (E162) is combustible and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean bonding surfaces of signal conditioner (1). Use dry cleaning solvent (E162), cloth (E120) and gloves (E186).
2. **Position signal conditioner (1).**
3. **Install four screws (2)** and washers (3).
4. **Connect two electrical connectors (4 and 5).** Remove tags.



0 X 26 D145-10025-SPA

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8-40 INSTALL CRUISE GUIDE SIGNAL CONDITIONER (Continued) 8-40

INSPECT

FOLLOW-ON MAINTENANCE:

Close right forward work platform (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-41 REMOVE CRUISE GUIDE SIGNAL PROCESSOR

INITIAL SETUP

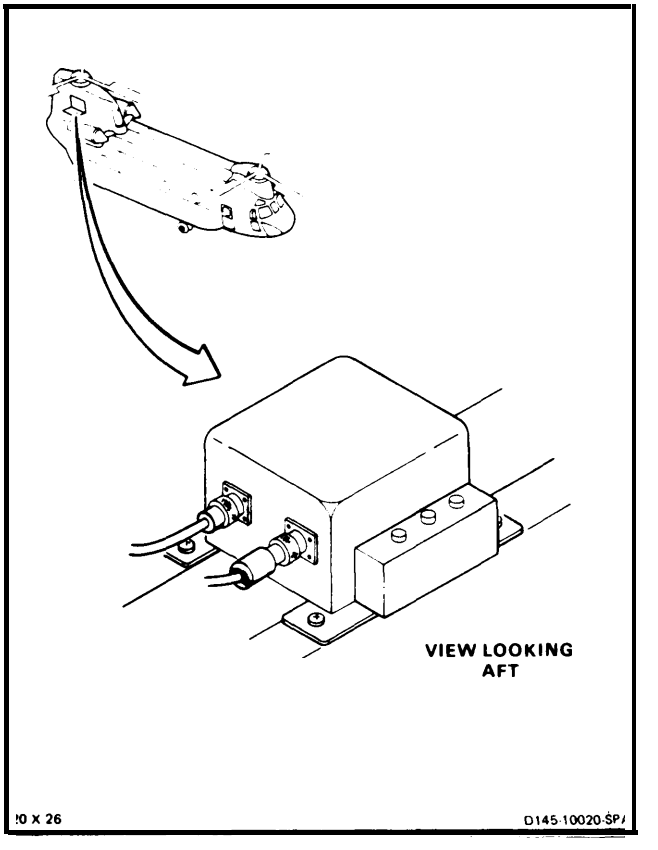
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

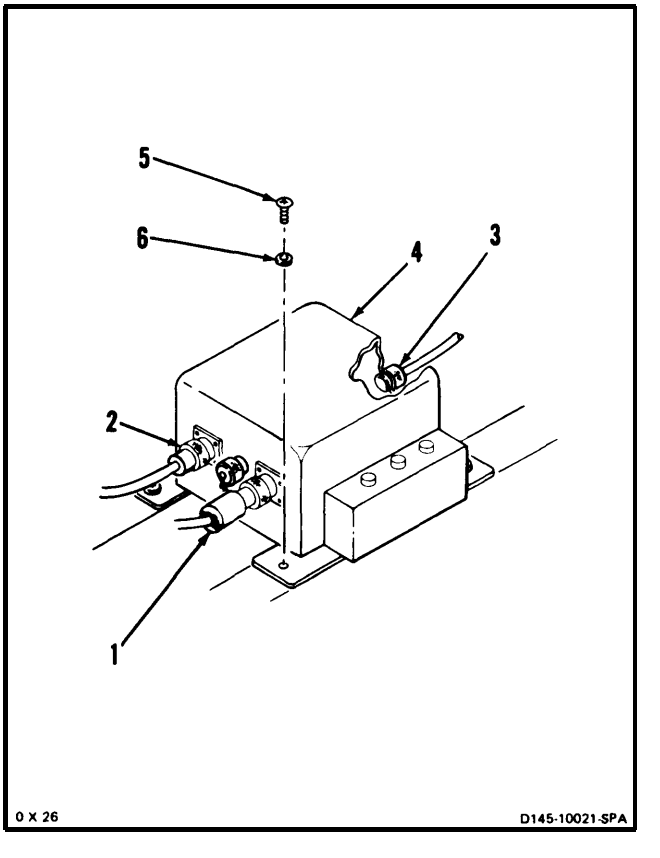
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Right Pylon Work Platform Open (Task 2-2



1. Tag and **disconnect three connectors** (1,2 and 3) from signal processor (4).
2. **Remove four screws (5)** and washers (6).
3. **Remove signal processor (4).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-42 INSTALL CRUISE GUIDE SIGNAL PROCESSOR

INITIAL SETUP

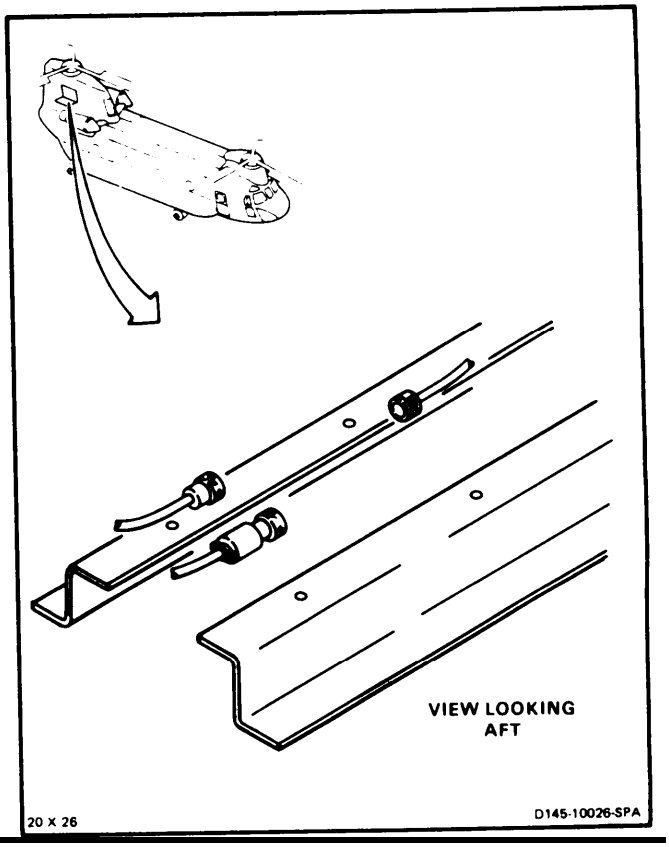
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Dry Cleaning Solvent (E162)
Cloths (E120)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25



WARNING

Dry cleaning solvent (E162) is combustible and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

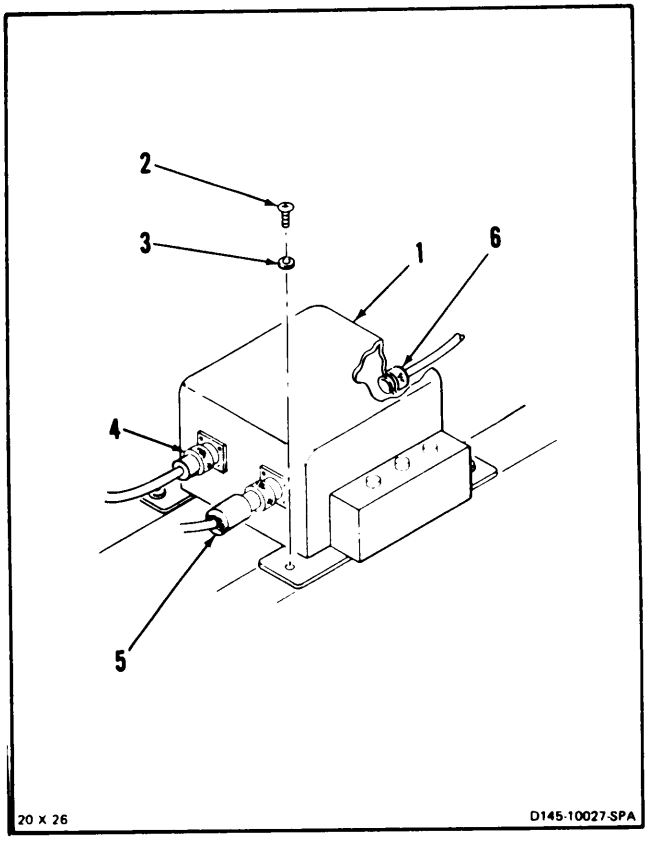
1. Clean bonding surfaces of signal processor (1). Use dry cleaning solvent (E162), cloth (E120) and gloves (E186).
2. **Position signal processor (1).**
3. **Install four screws (2)** and washers (3).
4. **Connect three electrical connectors (4,5 and 6).** Remove tags.

INSPECT

FOLLOW-ON MAINTENANCE:

Close right pylon work platform (Task 2-2). Perform operational check (TM 55-1520-240-T).

END OF TASK



8-43 TEST FORWARD OR AFT CYCLIC TRIM INDICATOR

INITIAL SETUP

Applicable Configurations:
All

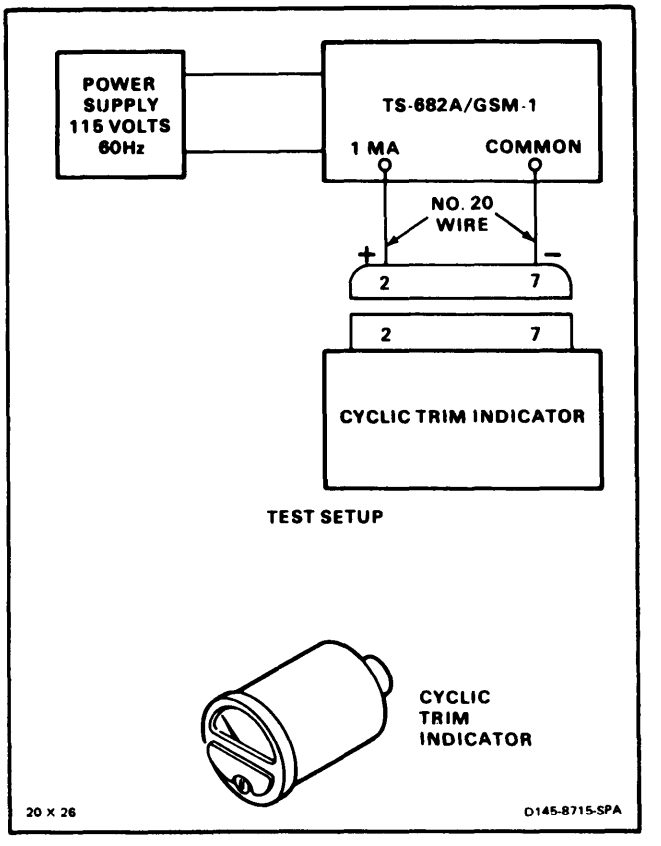
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Ac Power Supply, 115 Volt 60 Hz
Meter Test Set, TS-682A/GSM-1
Wire, No. 20, Insulated
Connector MS3476W10-6S

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 11-6625-277-14

Equipment Conditions:
Off Helicopter Task
Electrical Test Setup

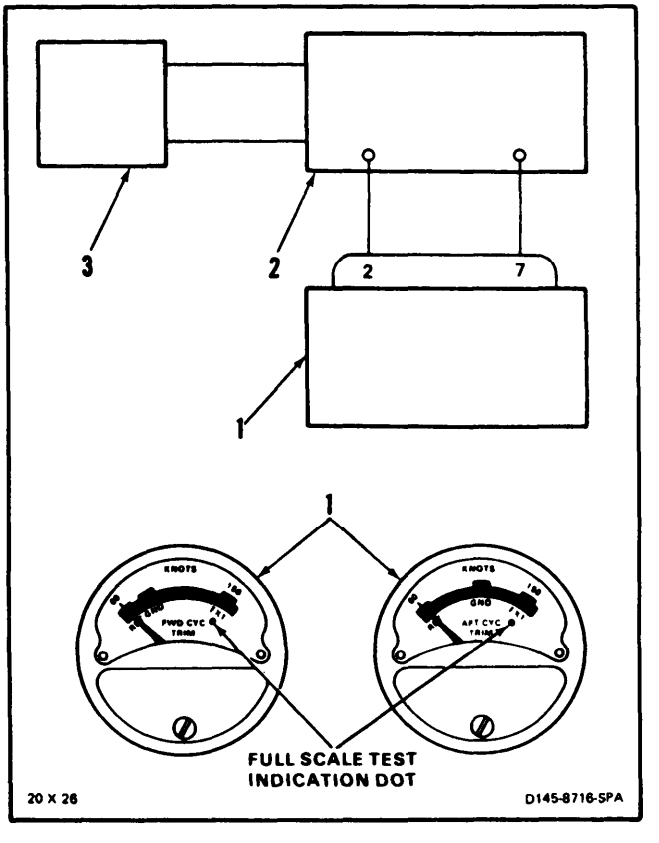


1. **Connect forward or aft cyclic trim indicator (1) to test setup** (TM 11-6625-277-14).
2. **Turn on power supply (2).**
3. **Adjust test set (3) for minimum dc output.**
4. **Turn on test set (2).**
5. **Adjust test sat dc output. Increase dc output until indicator (1) reads full scale (test indication dot).**
6. **Check test set (2).** Test set shall read 520 to 530 microampere.
7. Adjust test set (3) to minimum dc output.
8. Shut down test set (2) (TM 11-6625-277-14).
9. Shut down power supply (3).
10. Remove indicator (1) from test setup.

FOLLOW-ON MAIN"

None

END OF TASK



8-44 REMOVE TURN AND SLIP INDICATOR — PILOTS OR COPILOTS 8-44 INSTRUMENT PANEL

INITIAL SETUP

Applicable Configurations:

Without 17

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:

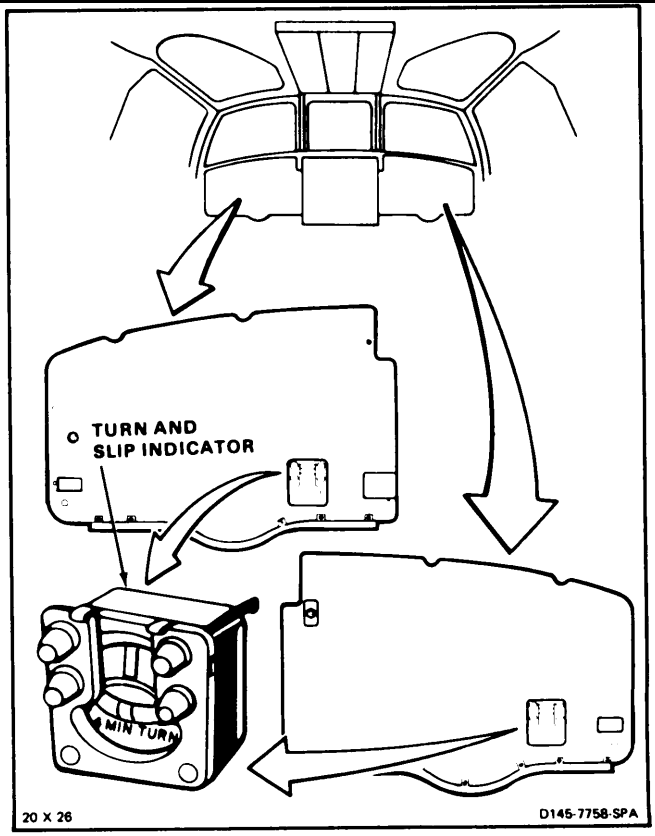
None

Personnel Required:

Aircraft Electrician

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

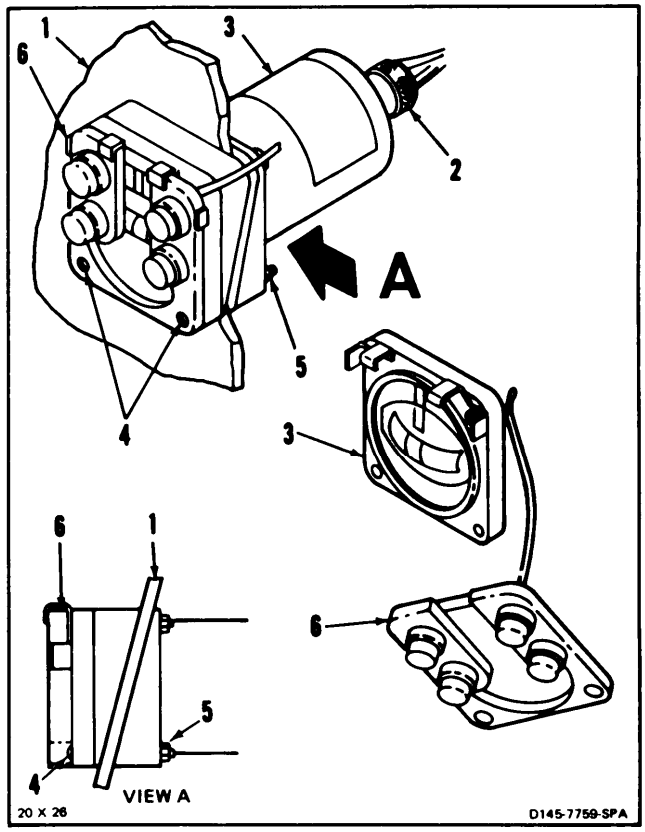
Procedure is same for removing pilots or copilots turn and slip indicator.

1. Reach up under instrument panel (1) and disconnect wire harness connector (2) from indicator (3).
2. Remove two long screws (4) and nuts (5).

NOTE

Do not cut or disconnect wire to light fixture.

3 Remove light fixture (6), pull fixture down and aft, away from indicator (3).



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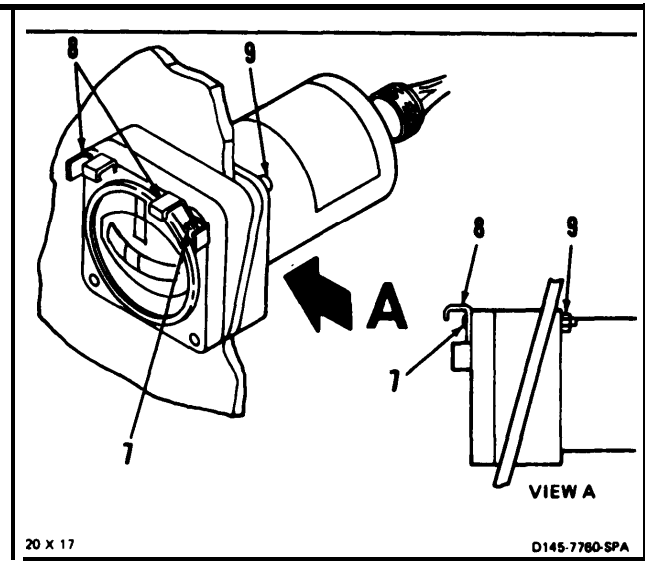
8-44 REMOVE TURN AND SLIP INDICATOR — PILOTS OR COPILOTS INSTRUMENT PANEL (Continued)

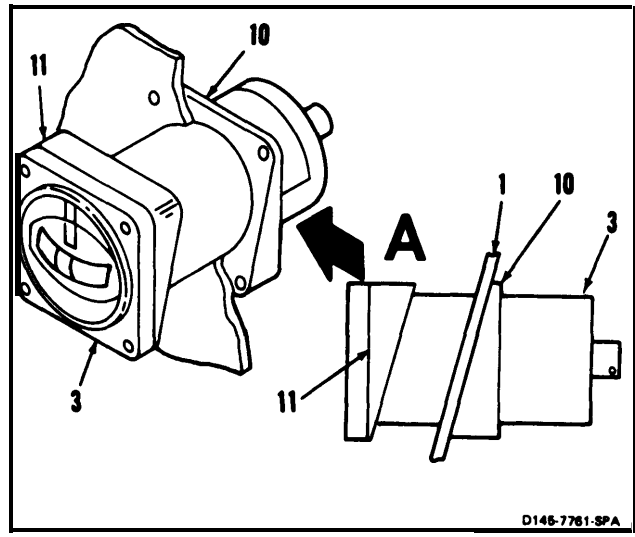
4. Remove two short screws (7), two clips (8), and nuts (9).



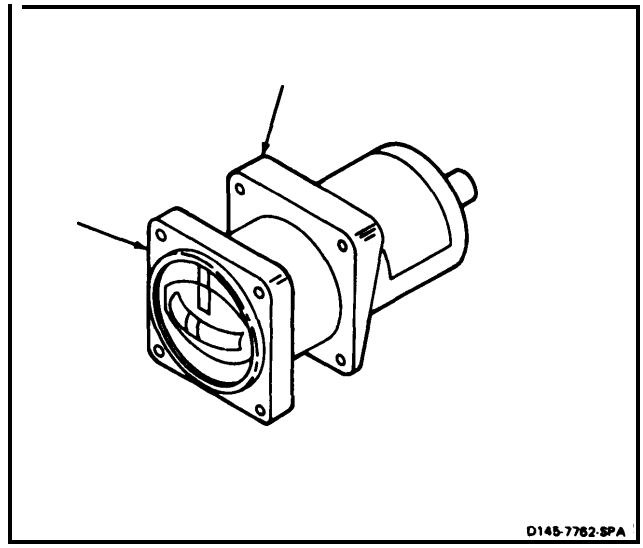
CAUTION

Be careful when handling indicator. Rough handling will damage indicator.

5. Reach up under instrument panel (1) and hold mounting plate (10).
6. **Slide indicator (3) and second mounting plate (11) out of instrument panel (1).**
7. **Remove mounting plate (10) from** in back of instrument panel (1).



8. **Remove mounting plate. (11)** from indicator (3).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-44.1 REMOVE TURN AND SLIP INDICATOR – PILOTS OR COPILOTS INSTRUMENT PANEL

INITIAL SETUP

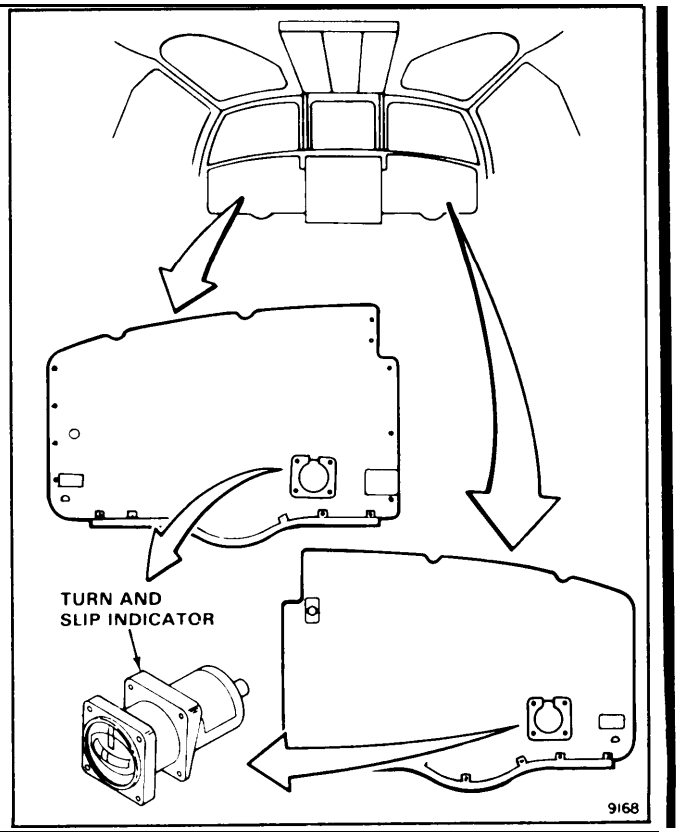
Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power
Hydraulic Power Off



NOTE

Procedure is same for removing pilots or copilots turn and slip indicator.

1. Reach up under instrument panel (1) and disconnect wire harness connector (2) from indicator (3).
2. Remove four screws (4) and nuts (5).

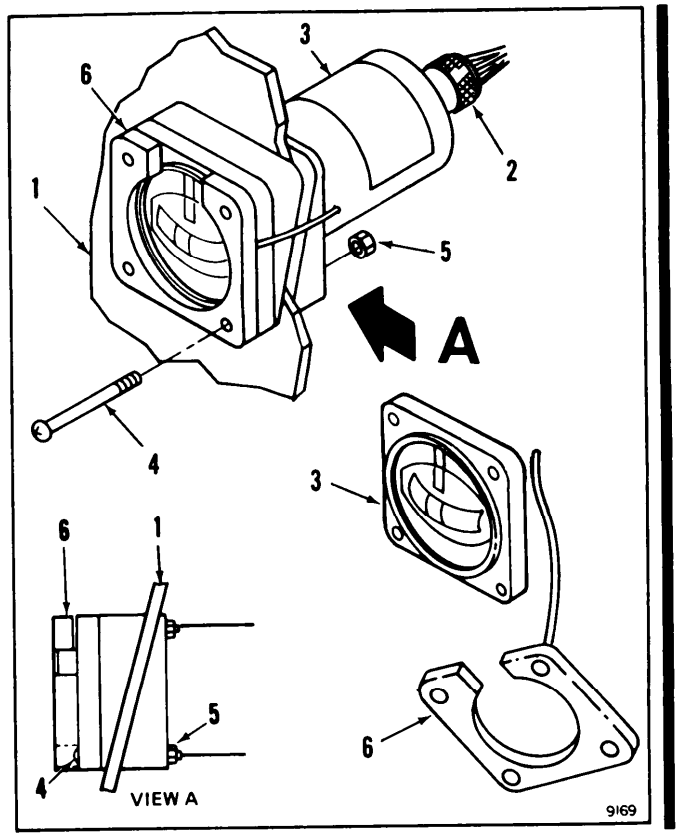
CAUTION

If light fixture is not supported, internal connection to power wire could be damaged.

NOTE

Do not cut or disconnect wire to light fixture.

3. Remove light fixture (6) from indicator (3). Support fixture.



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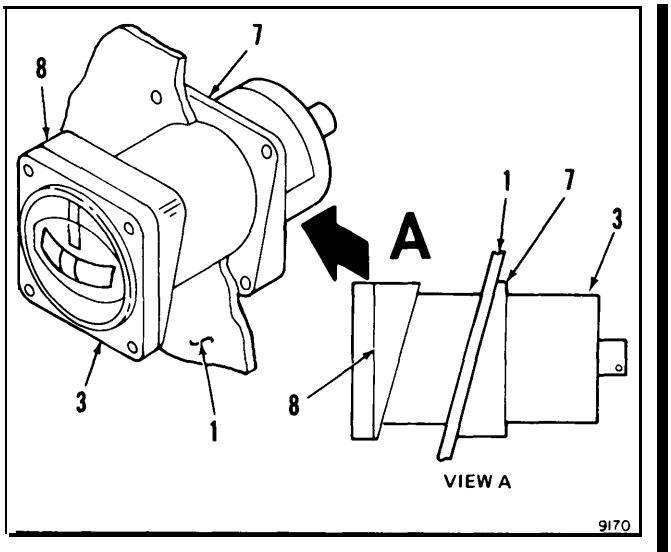
8-44.1 REMOVE TURN AND SLIP INDICATOR – PILOTS OR COPILOTS INSTRUMENT PANEL (Continued)

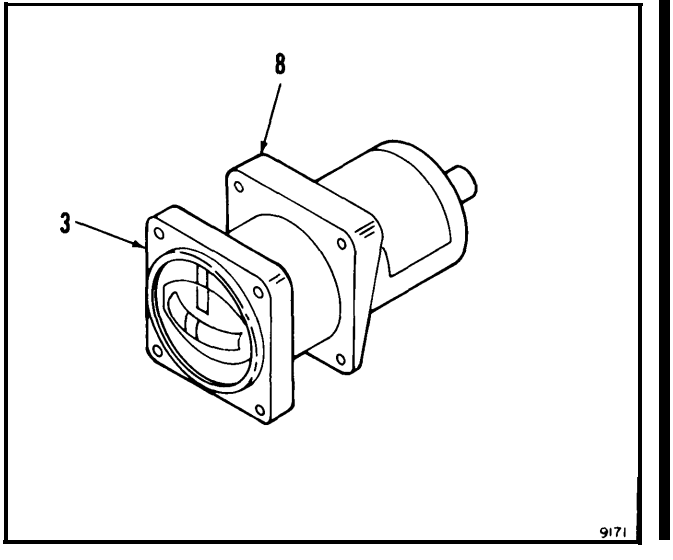
CAUTION

Be careful when handling indicator. Rough handling will damage indicator.

4. Reach up under instrument panel (1) and hold mounting plate (7).
5. **Slide indicator (3) and second mounting plate (8) out of instrument panel (1).**
6. **Remove mounting plate (7) from** in back of instrument panel (1).



7. **Remove mounting plate (8)** from indicator (3).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-45 INSTALL TURN AND SLIP INDICATOR IN PILOTS OR COPILOTS INSTRUMENT PANEL

INITIAL SETUP

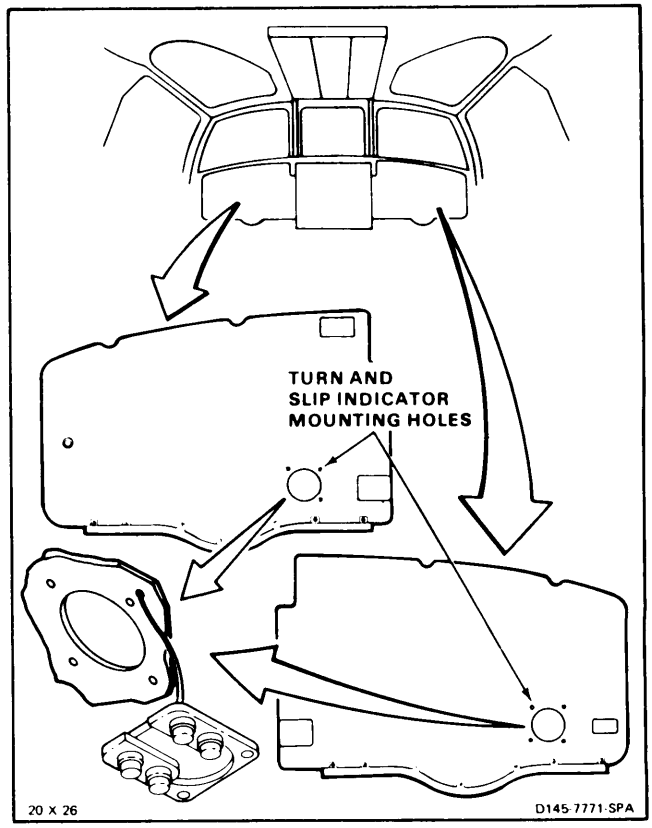
Applicable Configurations:
Without 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Cloth (E120)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P
TM 55-6600-200-20
TM 55-1500-323-25



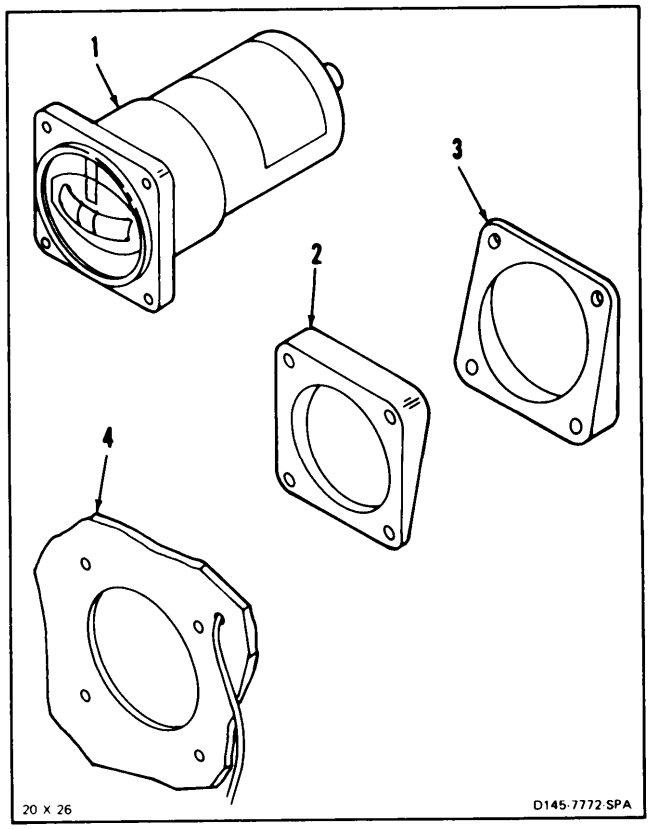
NOTE

Procedure is same for installing pilots or copilots turn and slip indicator.

CAUTION

Be careful when handling indicators. Rough handling will damage indicators.

1. Clean bonding surfaces of indicator (1) mounting plates (2 and 3) and instrument panel (4). Use cloth (E120) (TM 55-1500-323-25).



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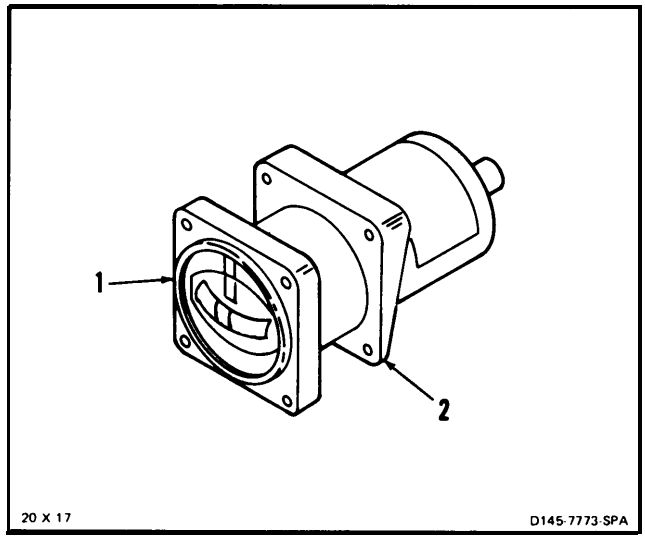
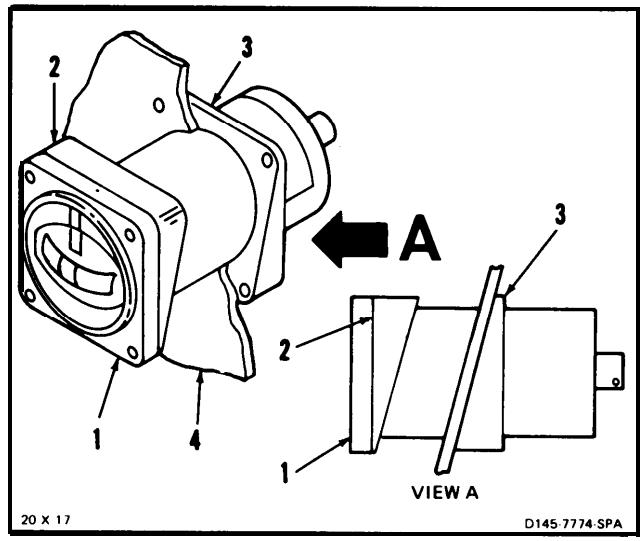
8-45 INSTALL TURN AND SLIP INDICATOR IN PILOTS OR COPILOTS INSTRUMENT PANEL (Continued)

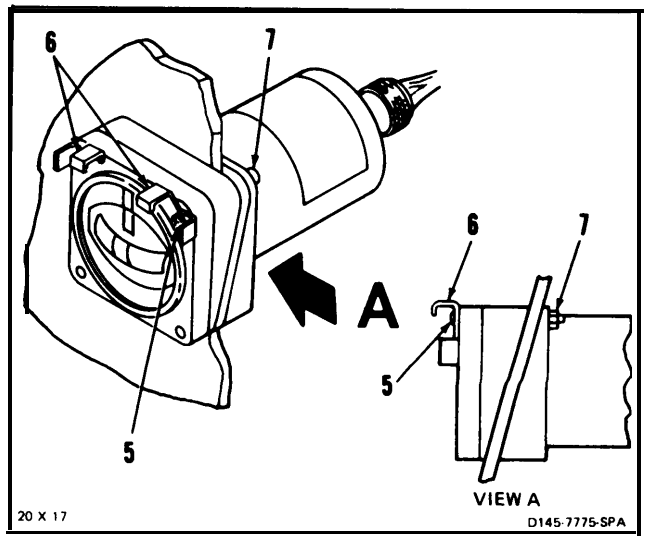
2. Install mounting plate (2) on indicator (1). Make sure screw holes of indicator and mount plate are aligned and that wide Section of mount plate is up.



3. Hold second mount plate (3) in place behind instrument panel (4), wide section of mount plate down.
4. **Install indicator (1)** and first mount plate (2) in instrument panel (4).



5. **Install two short screws (5) and clips (6).** Make sure turned down end of clip is at top.
6. **Install two nuts (7).**



GO TO NEXT PAGE

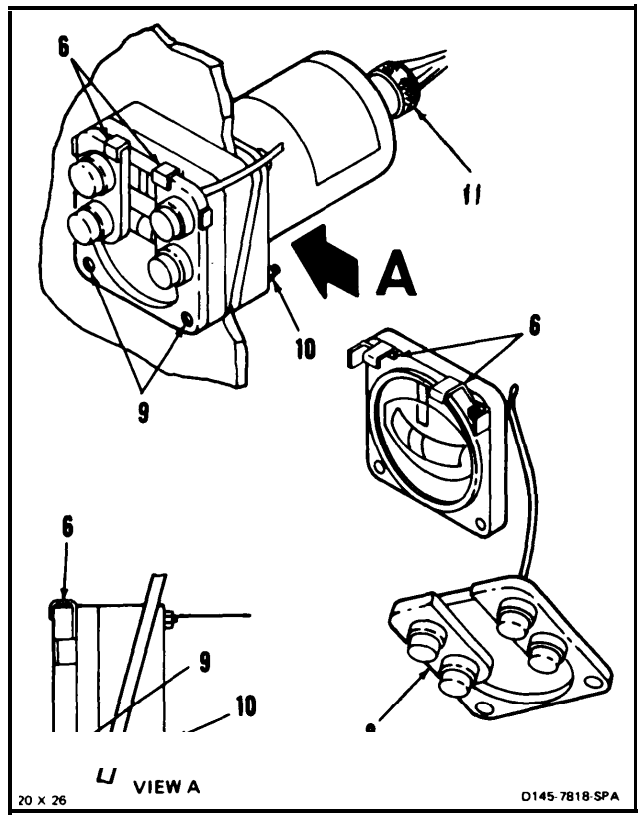
8-45 INSTALL TURN AND SLIP INDICATOR IN PILOTS OR COPILOTS INSTRUMENT PANEL (Continued)

7. **Install lamp fixture (8),** slide fixture up and under the turned down ends of clips (6).
8. **Install two long screws (9).**
9. **Install two nuts (10).**
10. Connactcommctot (11).

FOLLOW-ON MAINTENANCE:

Perform operational check of turn and slip indicator (TM 55-1520-240-T).

Perform operational check of instrument lighting (TM 55-1520-240-T).



END OF TASK

8-45.1 INSTALL TURN AND SLIP INDICATOR IN PILOTS OR COPILOTS INSTRUMENT PANEL

INITIAL SETUP

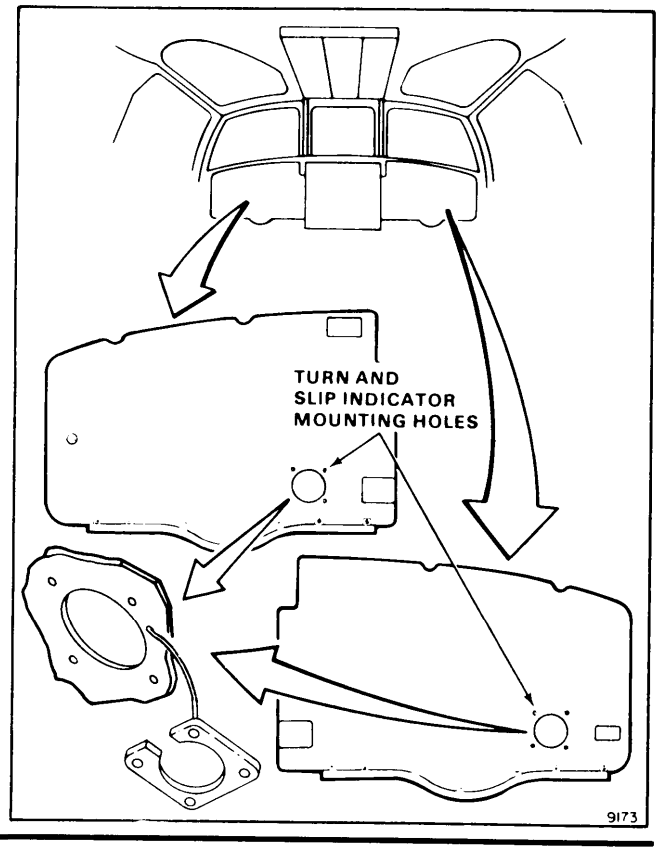
Applicable Configurations:
With q

Tools:
Electrical Repairer's Tool Kit, NSN5180-00-323-4915

Materials:
Cloth (E 120)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P
TM 55-600-200-20
TM 55-1500-323-25



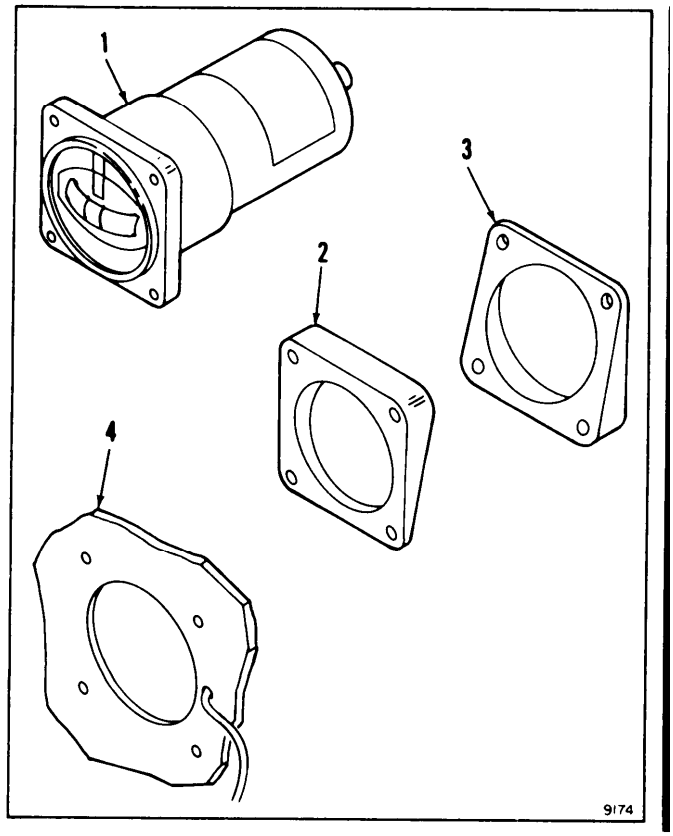
NOTE

Procedure is same for installing pilots or copilots turn and slip indicator.

CAUTION

Be careful when handling indicators. Rough handling will damage indicators.

1. Clean bonding surfaces of indicator (1) mounting plates (2 and 3) and instrument panel (4). Use cloth (E120)(TM55-1500-323-25).



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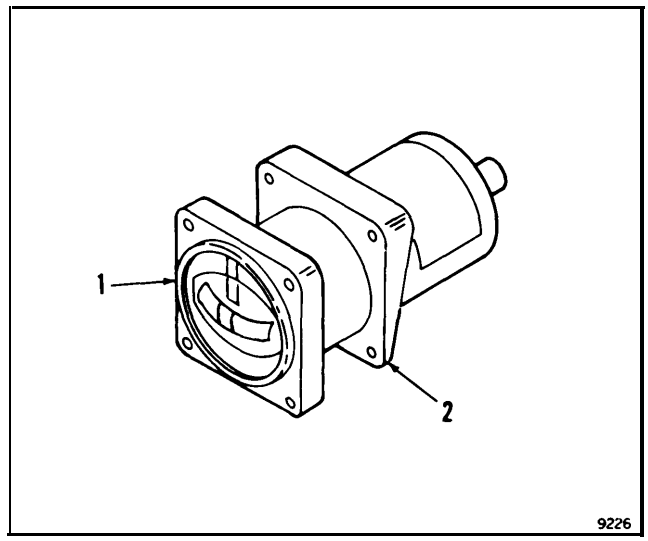
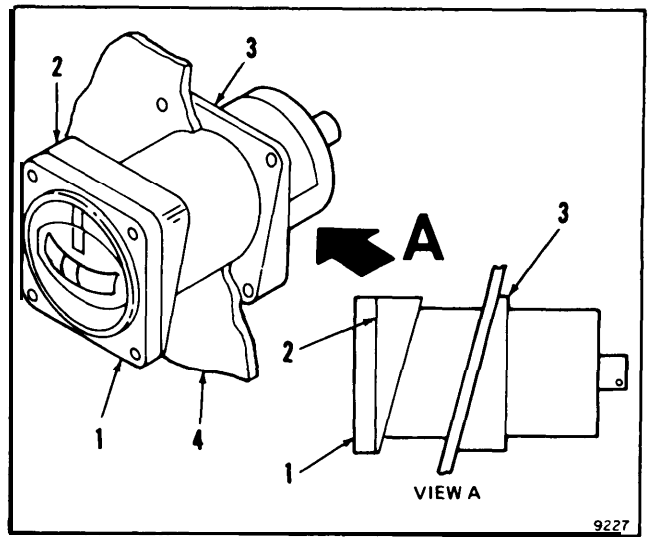
8-45.1 INSTALL TURN AND SLIP INDICATOR IN PILOTS OR COPILOTS INSTRUMENT PANEL (Continued) 8-45.1

2. Install mounting (2) on indicator (1). Make sure screw holes of indicator and mount plate are aligned and that wide section of mount plate is up.



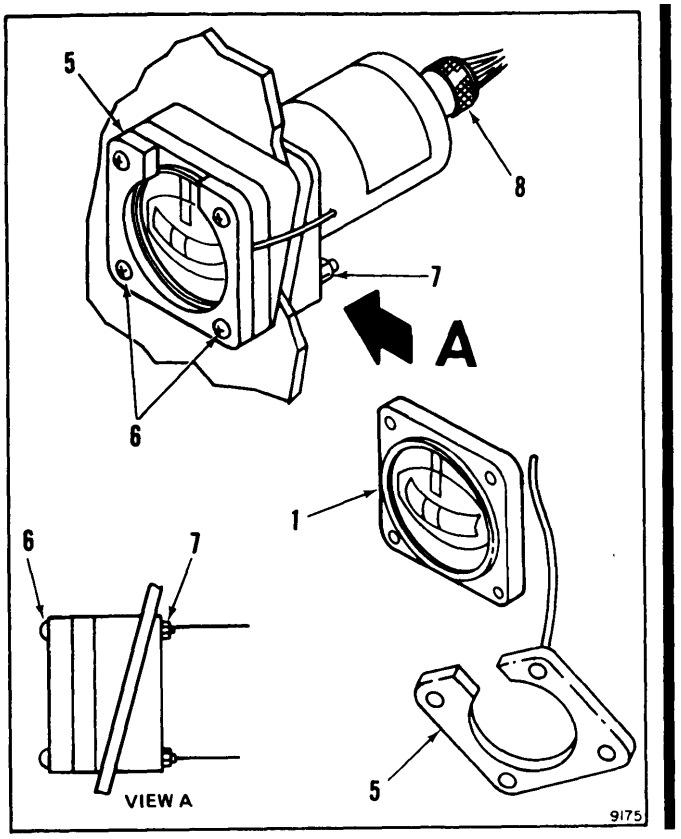
3. Hold second mount plate (3) in place behind instrument panel (4), wide section of mount plate down.
4. **Install indicator (1)** and first mount plate (2) in instrument panel (4).



GO TO NEXT PAGE

8-45.1 INSTALL TURN AND SLIP INDICATOR IN PILOTS OR COPILOTS INSTRUMENT PANEL (Continued)

5. **Install light fixture (5).**
6. Install four screws (6) and nuts (10).
7. Connect connector (8).



FOLLOW-ON MAINTENANCE:

Perform operational check of turn and slip indicator (TM 55-1520-240-T).

Perform operational check of instrument lighting (TM 55-1520-240-T).

END OF TASK

8-46 REMOVE MAGNETIC COMPASS

INITIAL SETUP

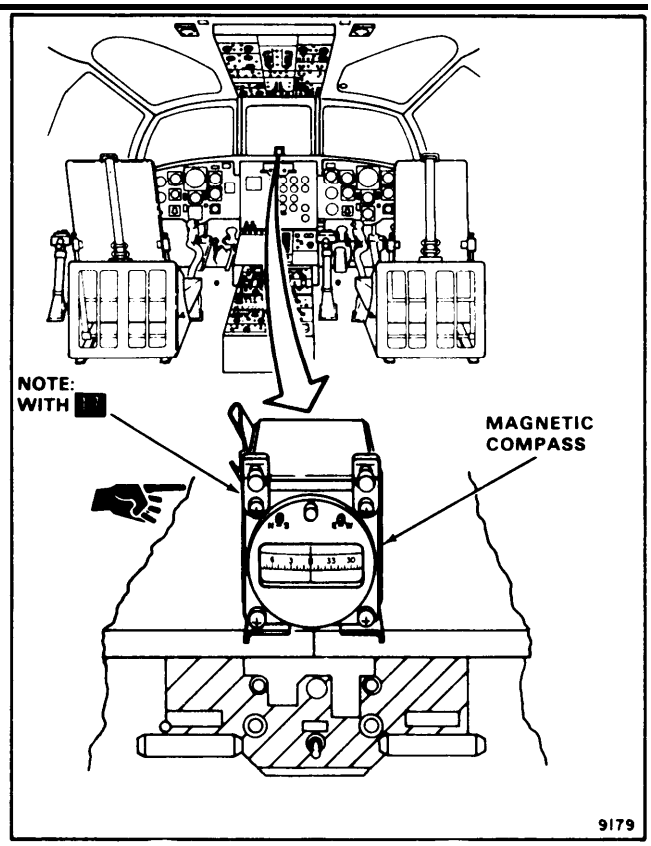
Applicable Configurations:
All

Tools:
Instrument Repairer's Tool Kit,
NSN 5180-00-323-4913
Non-Magnetic Screwdriver

Materials:
None

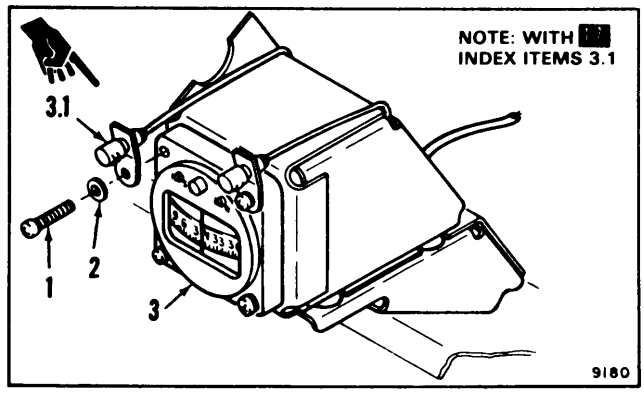
Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

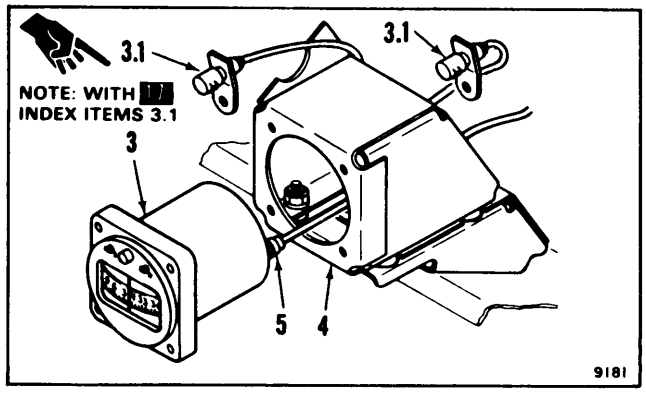


1. **Remove four screws (1)** and washers (2) from compass (3).

1.1 With 17, remove two light assemblys 3.1.



2. **Remove compass (3)** from bracket (4).
3. **Disconnect connector (5)** from compass (3).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-46.1 REMOVE MAGNETIC COMPASS BRACKET 8-46.1

INITIAL SETUP

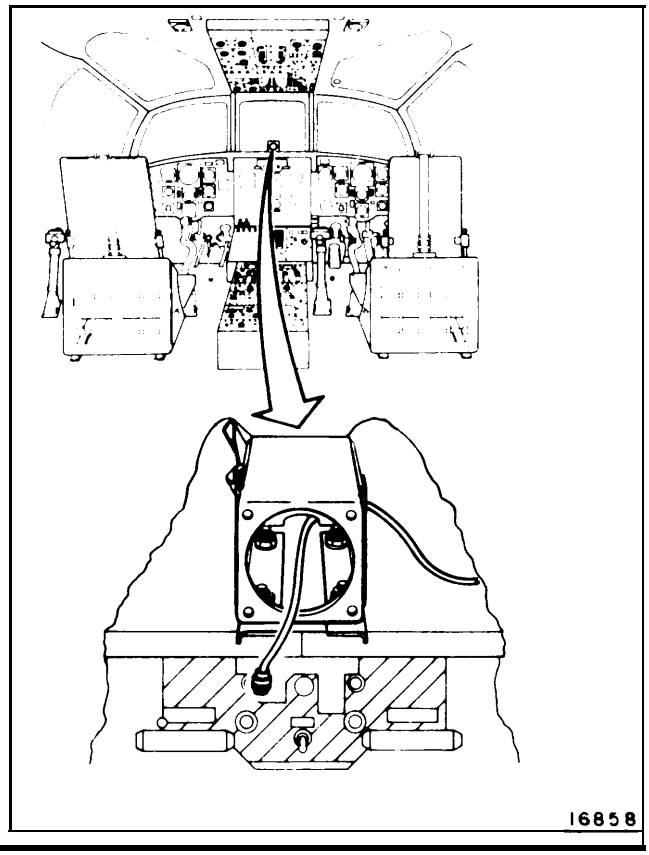
Applicable Configurations:
All

Tools:
Instrument Repairer Tool Kit,
NSN 5180-00-323-4913

Materials:
None

Personnel Required:
Medium Helicopter Repairer

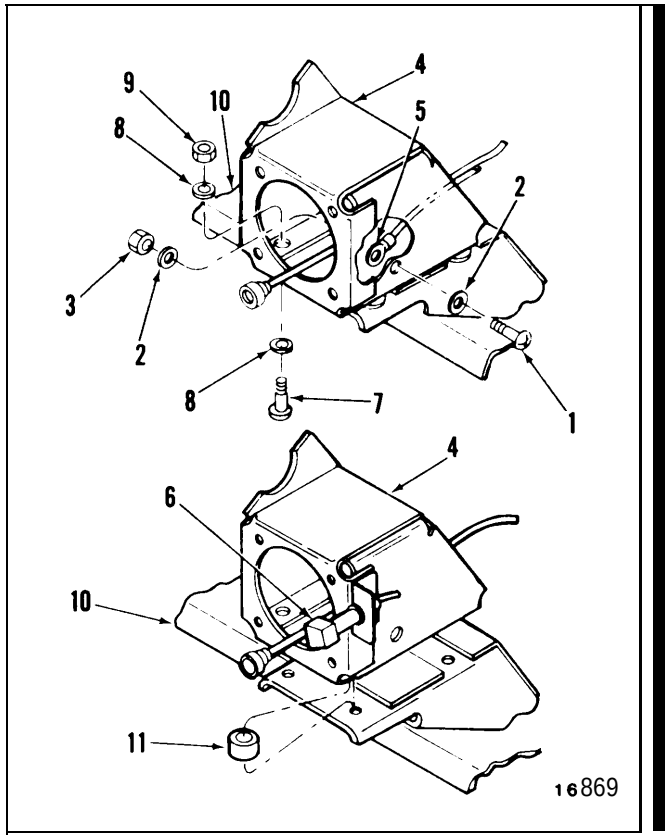
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Magnetic Compass Removed (Task 8-46)



1. Without 17, **remove screw (1),** washers (2), and nut (3) from bracket (4) and ground wire (5).
2. Without 17, remove postlight (6) from side of bracket (4).
3. **Remove four screws (7),** eight washers (8), and four nuts (9) from bracket (4) and sill of glare shield (1 O).
4. **Remove bracket (4)** and shock mounts (11) from glare shield (10).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-46.2 INSTALL MAGNETIC COMPASS BRACKET 8-46.2

INITIAL SETUP

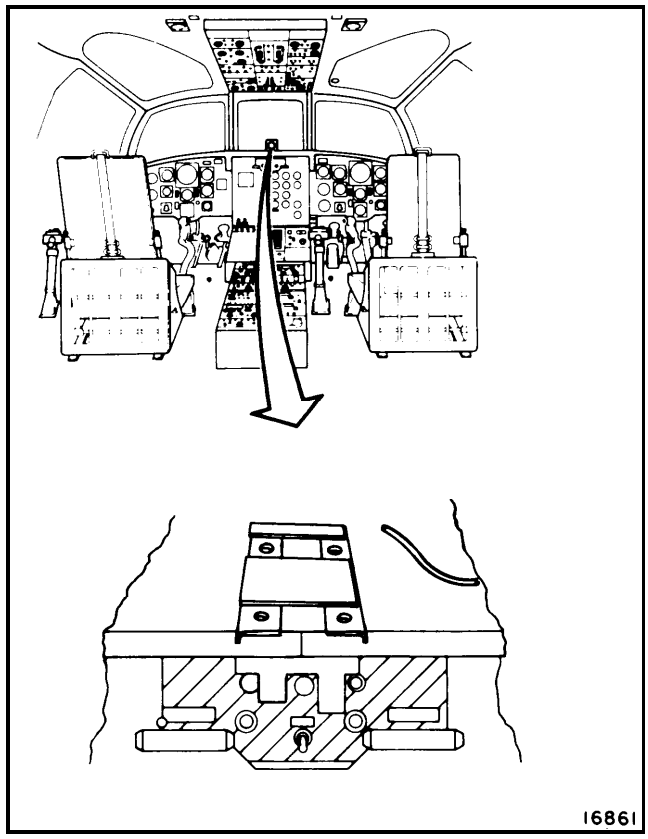
Applicable Configurations:
All

Tools:
Instrument Repairer Tool Kit,
NSN 5180-00-323-4913

Materials:
None

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P

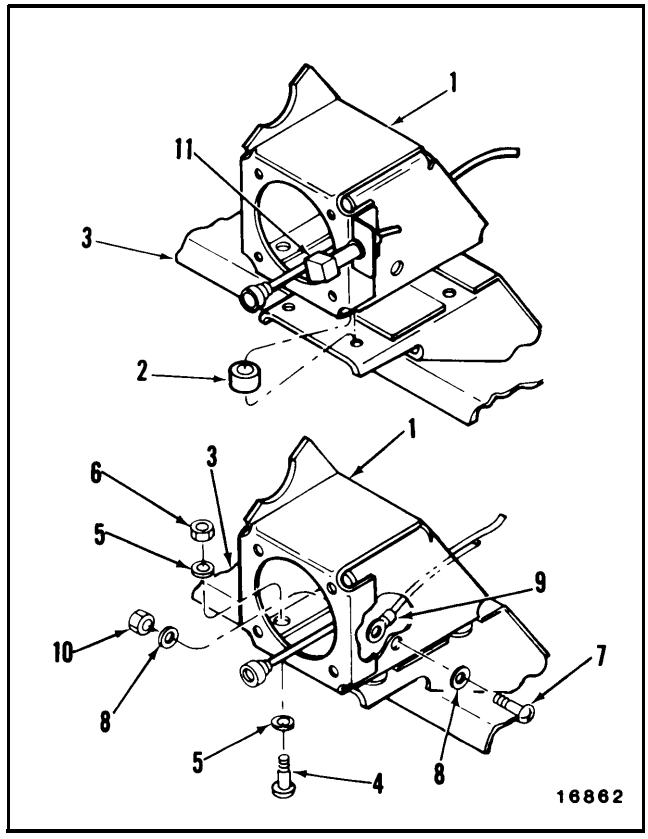


1. **Position bracket (1)** with four shock mounts (2) on sill of glare shield (3).
2. **Install four screws (4),** eight washers (5), and four nuts (6) in bracket (1) and glare shield (3).
3. **Without 17, install screw (7),** washer (8), ground wire (9), washer (8) and nut (10) in bracket (1).
4. Without 17, install postlight (11) on side of bracket (1).

INSPECT

FOLLOW-ON MAINTENANCE:

Install magnetic compass (Task 8-47).



END OF TASK

8-47 INSTALL MAGNETIC COMPASS

INITIAL SETUP

***Applicable* Configurations:**

All

Tools:

Instrument Repairer Tool Kit,
NSN 5180-00-323-4913
Non-Magnetic Screwdriver

Materials:

None

Personnel Required:

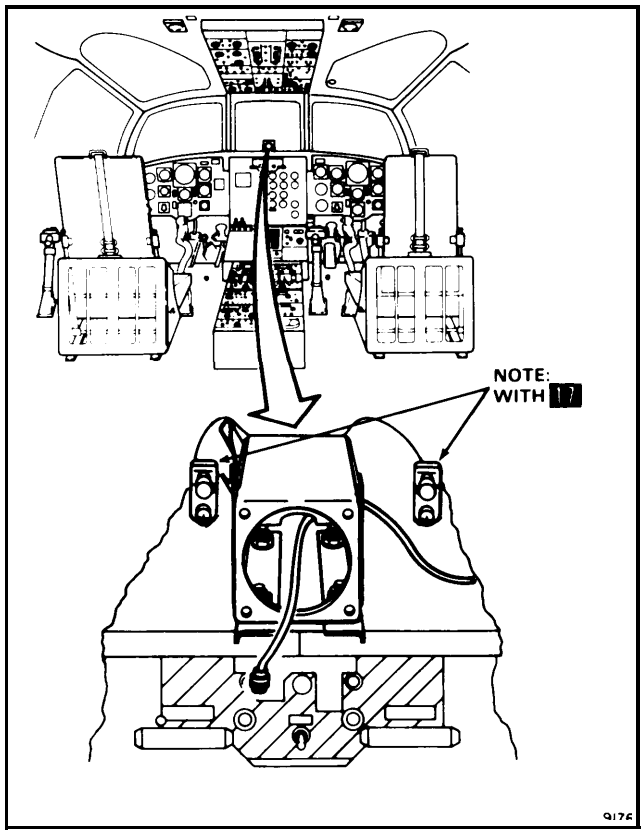
Medium Helicopter Repairer
Inspector

References:

TM 55-1520-240-23P

CAUTION

Screws, screwdriver, and washers must be non-magnetic.



1. **Connect electrical connector (1)** to compass (2).
2. **Position compass (2)** in bracket (3) as shown.

2.1. With 17, position two light assemblies (3.1) over upper compass mounting holes.

CAUTION

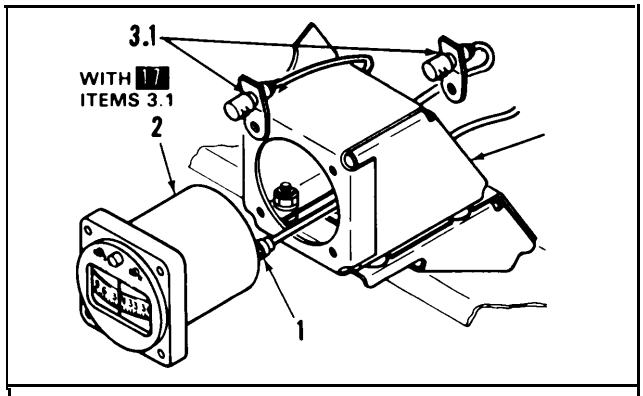
Screws, screwdriver, and washers must be non-magnetic.

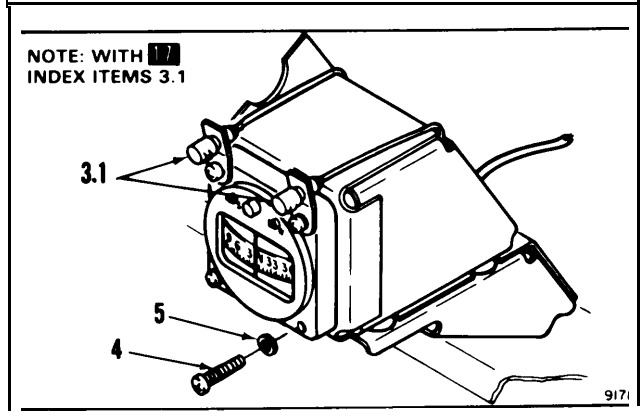
3. **Install four screws (4)** and washers (5).

INSPECT

FOLLOW-ON MAINTENANCE:

Compensate compass (TM 55-1500-204-25/1).





END OF TASK

8-48 REPLACE OR REPAIR PILOTS OR COPILOTS HORIZONTAL SITUATION INDICATOR (ID2103)

INITIAL SETUP

Applicable Configurations:
All

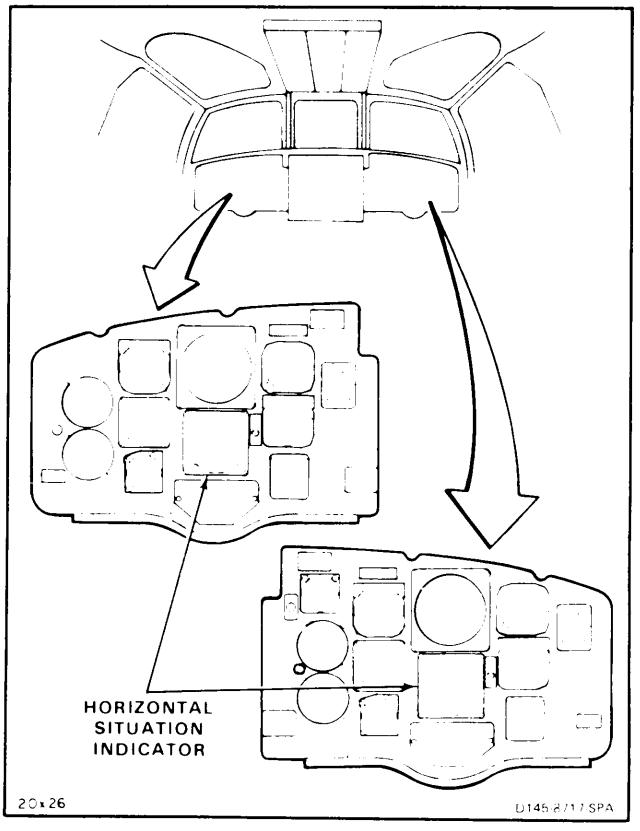
Tools:
Electronic Equipment Tool Kit,
TK-101/G NSN 5180-00-064-5178

Materials:
None

Personnel Required:
Navigation/Flight Control Equipmen Repa rer
Avionics Inspector

References:
TM 11-1520-240-20
TM 11-1520-240-34

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



See TM 11-1520-240-20 for maintenance instructions.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-49 REPLACE OR REPAIR HORIZONTAL SITUATION INDICATOR (HSB) MODE SELECT PANEL

INITIAL SETUP

Applicable Configurations:
All

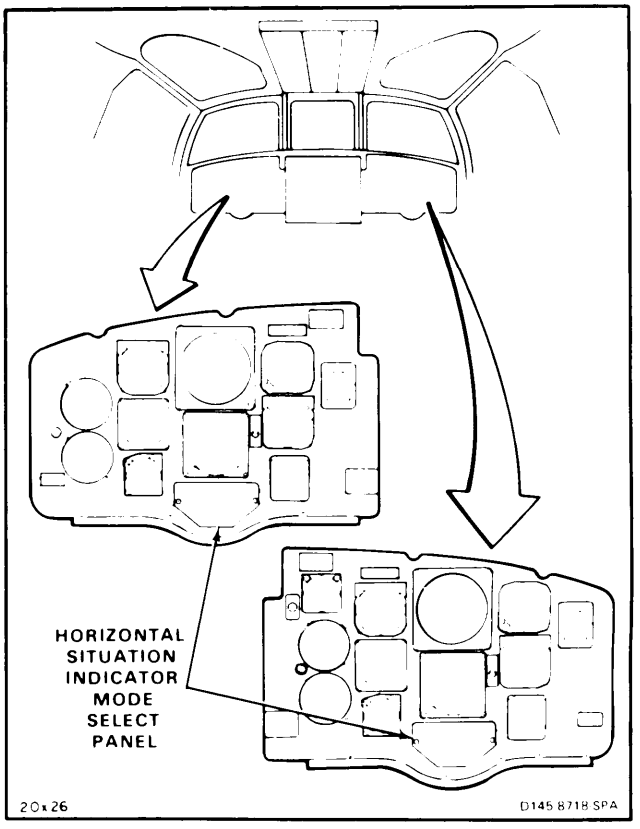
Tools:
Electronic Equipment Tool Kit,
TK-101/G NSN 5180-00-064-5178

Materials:
None

Personnel Required:
Navigation/Flight Control Equipment Repairer
Avionics Inspector

References:
TM 11-1520-240-20
TM 11-1520-240-34

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



See TM 11-1520-240-20 for maintenance Instructions.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-50 TEST HORIZONTAL SITUATION INDICATOR (HSI) MODE SELECT PANEL

INITIAL SETUP

Applicable Configurations:
All

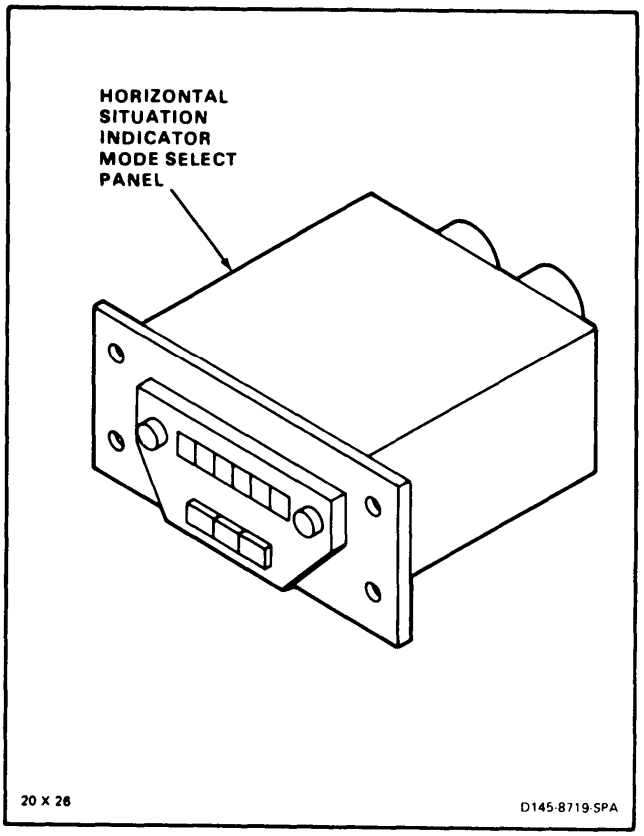
Tools:
Electronic Equipment Tool Kit,
TK-101/G NSN 5180-00-064-5178

Materials:
None

Personnel Required:
35M10 Navigation/Flight Control Equipment Repairer
35P30 Avionics Inspector

References:
TM 11-1520-240-20
TM 11-1520-240-34

Equipment Condition:
Off Helicopter Task



See TM 11-1520-240-20 for test instructions.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-51 REPLACE OR REPAIR PILOTS RADAR ALTIMETER INDICATOR/RECEIVER-TRANSMITTER (RT-1115A/APN-209, without 62) (RT-1115FIAPN-209, with 62)

INITIAL SETUP

Applicable configurations:
All

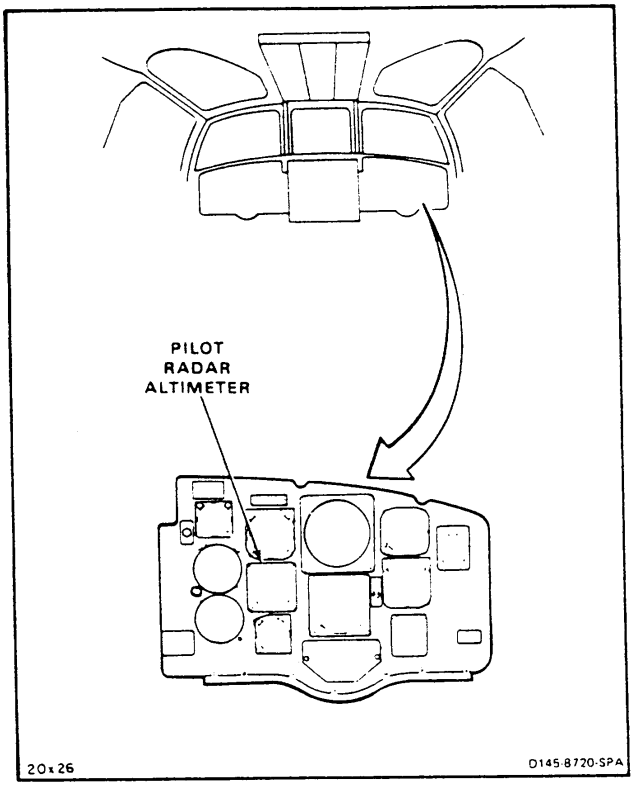
Tools:
Electronic Equipment Tool Kit,
TK-101/G NSN 5180-00-064-5178

Materials:
None

Personnel Required:
Navigation/Flight Control Equipment Repairer
Avionics Inspector

References:
TM 11-1520-240-23

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



See TM 11-1 520-240-23 for maintenance instructions.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-52 TEST PILOTS RADAR ALTIMETER INDICATOR/ RECEIVER-TRANSMITTER (RT-1115A/APN-209, without 62) (RT-1 115F/APN-209, with 62)

INITIAL SETUP

Applicable configurations:
All

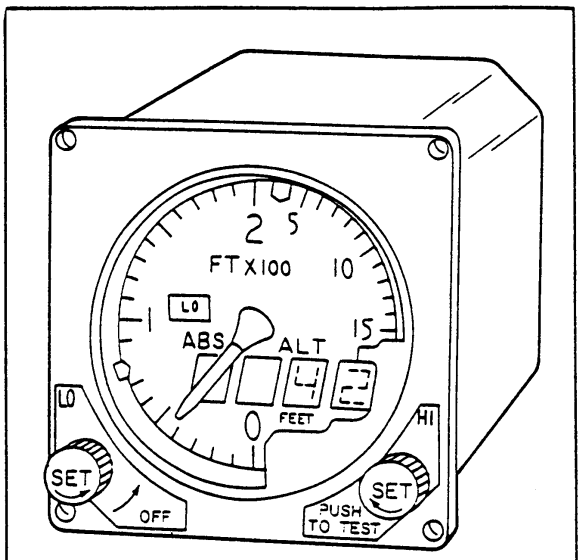
Tools:
Electronic Equipment Tool Kit,
TK-101/G NSN 5180-00-064-5178
Multimeter

Materials:
None

Personnel Required:
35M 10 Navigation/Flight Control Equipment Repairer
35P30 Avionics Inspector

References:
TM 11-1520-240-23

Equipment Condition:
Off Helicopter Task



RT-1115/APN-209(V)
INDICATOR/RECEIVER/TRANSMITTER
(IRT)

See TM 11-1520-240-23 for maintenance instructions.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-53 REPLACE OR REPAIR COPILOT RADAR ALTIMETER REMOTE INDICATOR (ID-1917/APN-209)

INITIAL SETUP

Applicable Configurations:
All

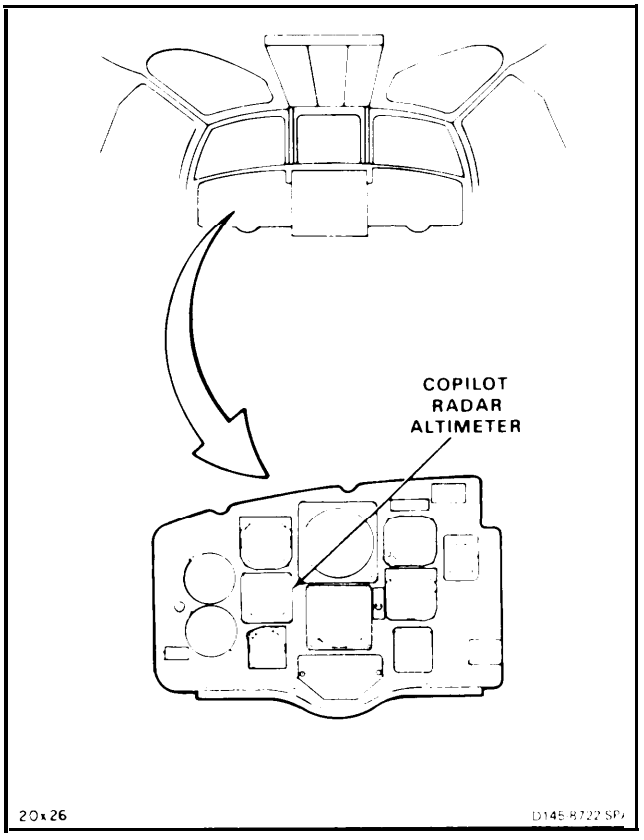
Tools:
Electronic Equipment Tool Kit,
TK-101/G NSN 5180-00-064-5178

Materials:
None

Personnel Required:
Navigation/Flight Control Equipment Repairer
Avionics Inspector

References:
TM 11-1520-240-20
TM 11-1520-240-34

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



See TM 11-1520-240-20 for maintenance instructions.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-54 TEST COPILOTS RADAR ALTIMETER REMOTE INDICATOR (ID-1917/APN-209)

INITIAL SETUP

Applicable Configurations:
All

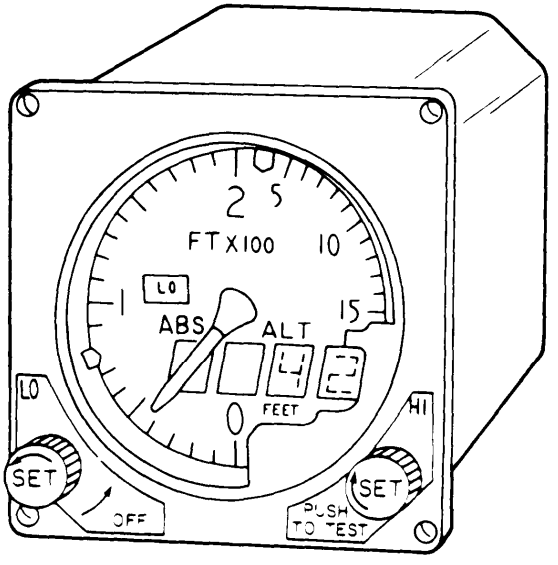
Tools:
Electronic Equipment Tool Kit,
TK-101/G NSN 5180-00-064-5178
Multimeter

Materials:
None

Personnel Required:
35M10 Navigation/Flight Control Equipment Repairer
35P30 Avionics Inspector

References:
TM 11-1520-240-20
TM 11-1520-240-34

Equipment Condition:
Off Helicopter Task



ID-1917/APN-209(V)
REMOTE INDICATOR
(RT)

20 x 26

D145 8723 SPA

See TM 11-1520-240-20 for maintenance instructions.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-55 REPLACE OR REPAIR PILOTS OR COPILOTS ATTITUDE INDICATOR (ARU-12/A)

INITIAL SETUP

Applicable Configurations:
All

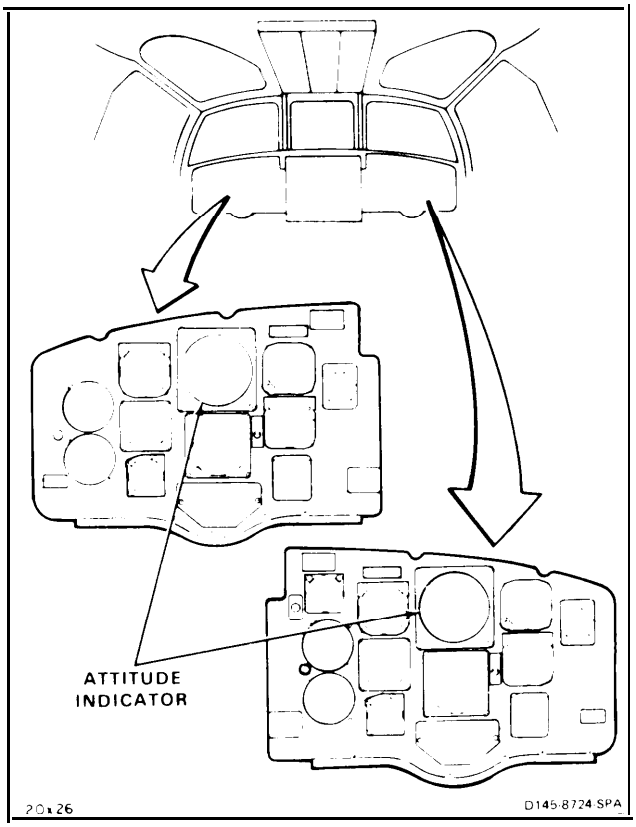
Tools:
Electronic Equipment Tool Kit,
TK-101/G NSN 5180-00-064-5178

Materials:
None

Personnel Required:
Navigation/Flight Control Equipment Repairer
Avionics Inspector

References:
TM 11-1520-240-20
TM 11-1520-240-34

Equipment Condition:
Battery Disconnected (Task 1-39
Electrical Power Off
Hydraulic Power Off



See TM 11-1520-240-20 for maintenance instructions.

FOLLOW-ON MAINTENANCE

None

END OF TASK

8-56 TEST ATTITUDE INDICATOR (ARU-12/A)

INITIAL SETUP

Applicable Configurations:
All

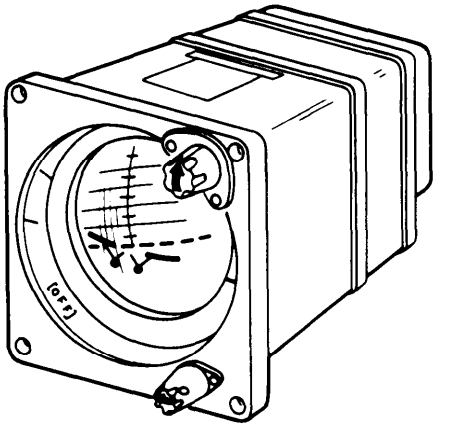
Tools:
Electronic Equipment Tool Kit,
TK-101/G NSN 5180-00-064-5178
Multimeter

Materials:
None

Personnel Required:
35M10 Navigation/Flight Control Equipment Repairer
35P30 Avionics Inspector

References:
TM 11-1520-240-20
TM 11-1520-240-34

Equipment Condition:
Off Helicopter Task



ATTITUDE
INDICATOR
ARU-12/A

20 x 26

D145-8725-SPA

See TM 11-1520-240-20 for maintenance instructions.

FOLLOW-ON MAINTENANCE:
None

END OF TASK

SECTION V

MISCELLANEOUS INSTRUMENTS

DESCRIPTION AND OPERATION

TRANSMISSION OIL PRESSURE INDICATING AND CAUTION SYSTEM

Description

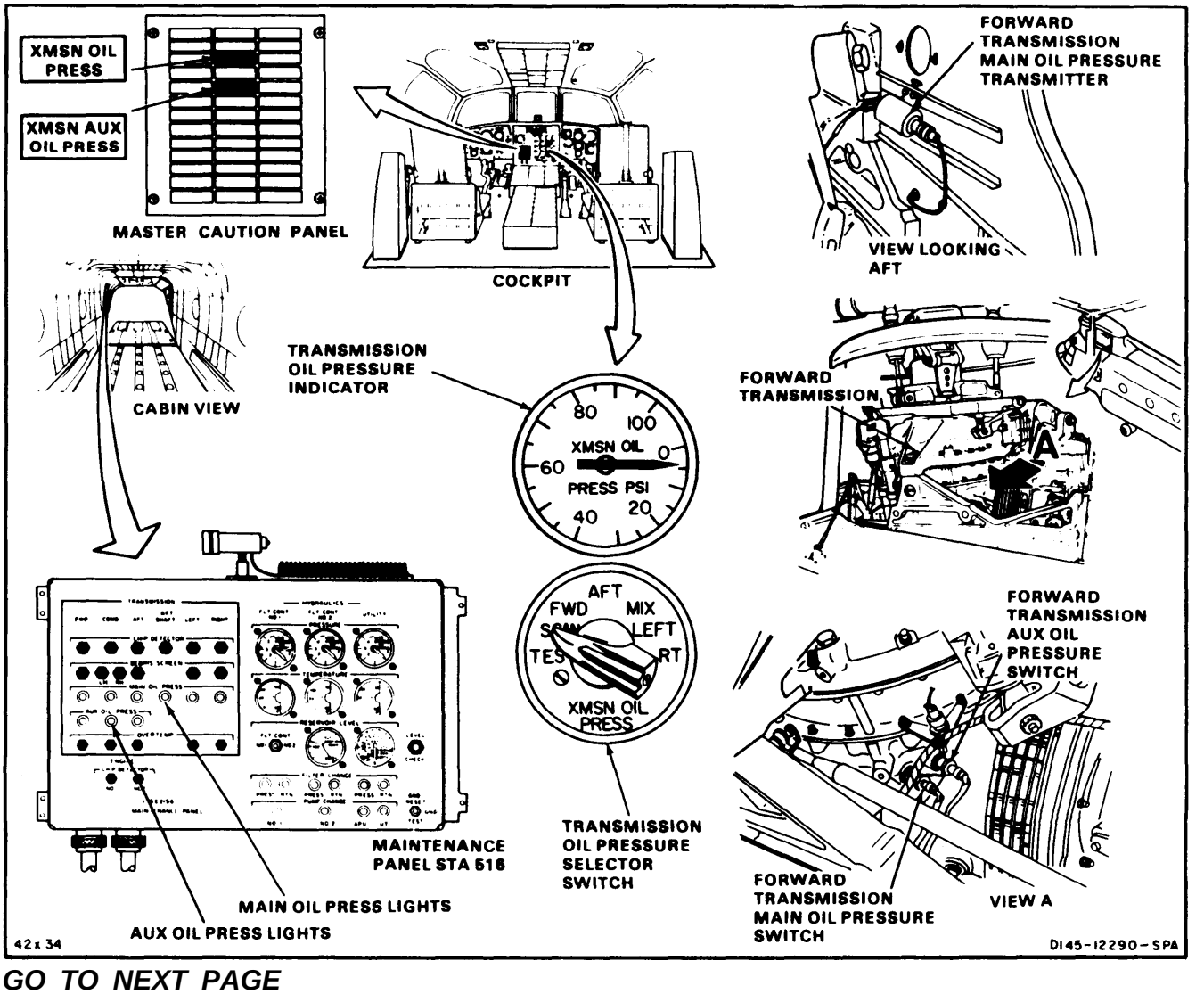
This system consists of an oil pressure indicating system and an oil pressure caution system for the transmission main and auxiliary oil lubrication systems. The main lube system has both indicating and caution light monitoring circuits. The auxiliary system has only caution light monitoring circuits.

The **indicating system** includes the transmission oil pressure selector switch and indicator, clamp mounted on center instrument panel, and five transducers, one for each transmission. The indicating system is powered by 115 vac.

The indicating system senses pressure in the five transmissions and indicates the lowest of the five pressures or the pressure at the selected transmission. The transducers that provide signals to the indicator are linear variable differential transducers with internal electronic circuitry.

The test circuit is limited to checking of the indicator system. Operating the selector switch to TEST causes the indicator pointer to move to the low end of the scale.

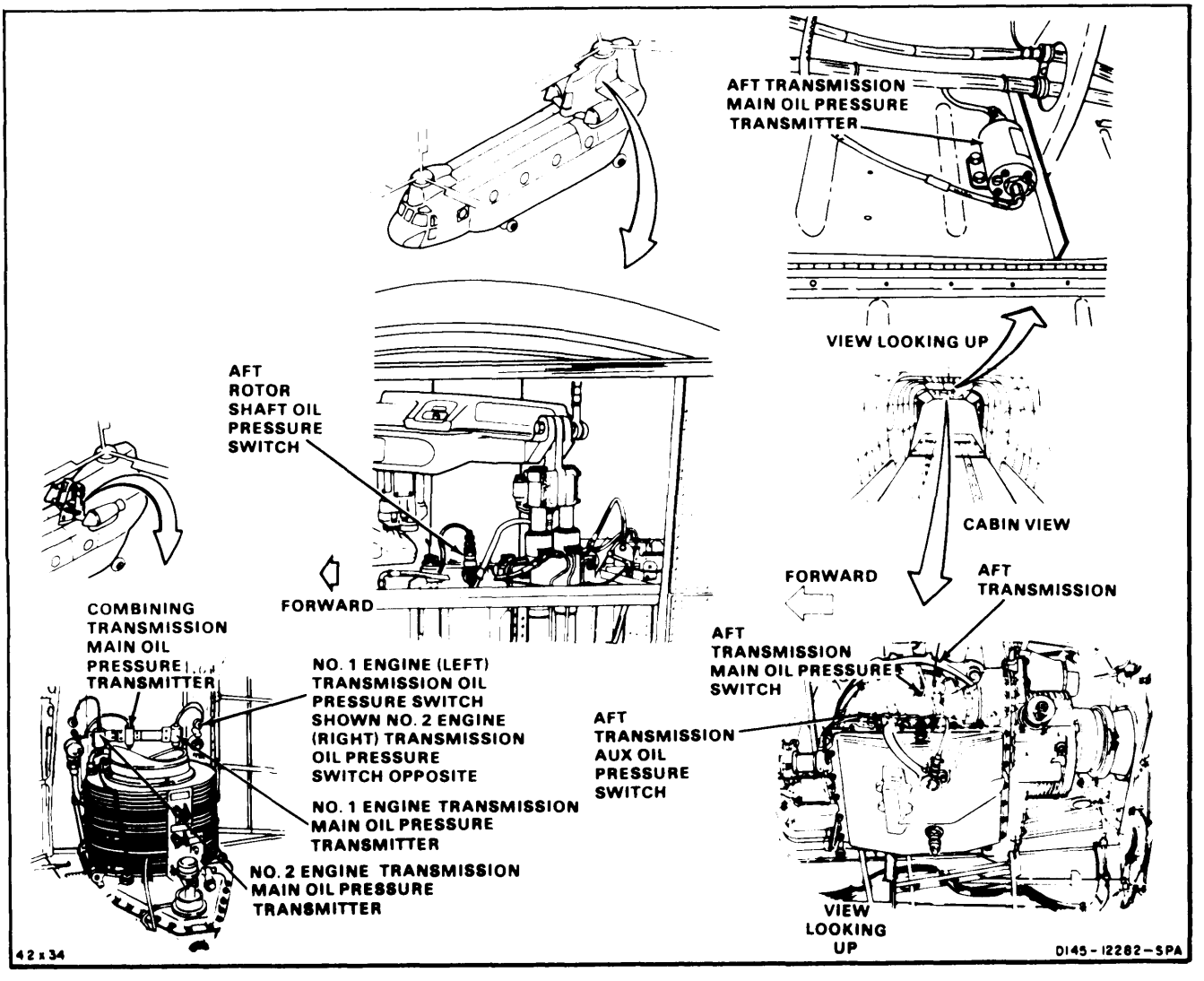
The caution system includes six pressure switches in the main oil system, three pressure switches in the auxiliary oil system, nine lights on the maintenance panel and two capsules in the caution panel, all powered by 28 vdc. The maintenance panel is located in the aft cabin, right



GO TO NEXT PAGE

8-57 MISCELLANEOUS INSTRUMENTS (Continued) 8-57

side. When pressure in the monitored oil system falls below the normal range, its switch completes a ground circuit causing the corresponding maintenance panel transmission oil pressure light to come on. A diode circuit in the maintenance panel connects this ground circuit to the master caution panel to light either the XMSN OIL PRESS or XMSN AUX OIL PRESS capsule.



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TRANSMISSION OIL TEMPERATURE INDICATING AND CAUTION SYSTEM

Description

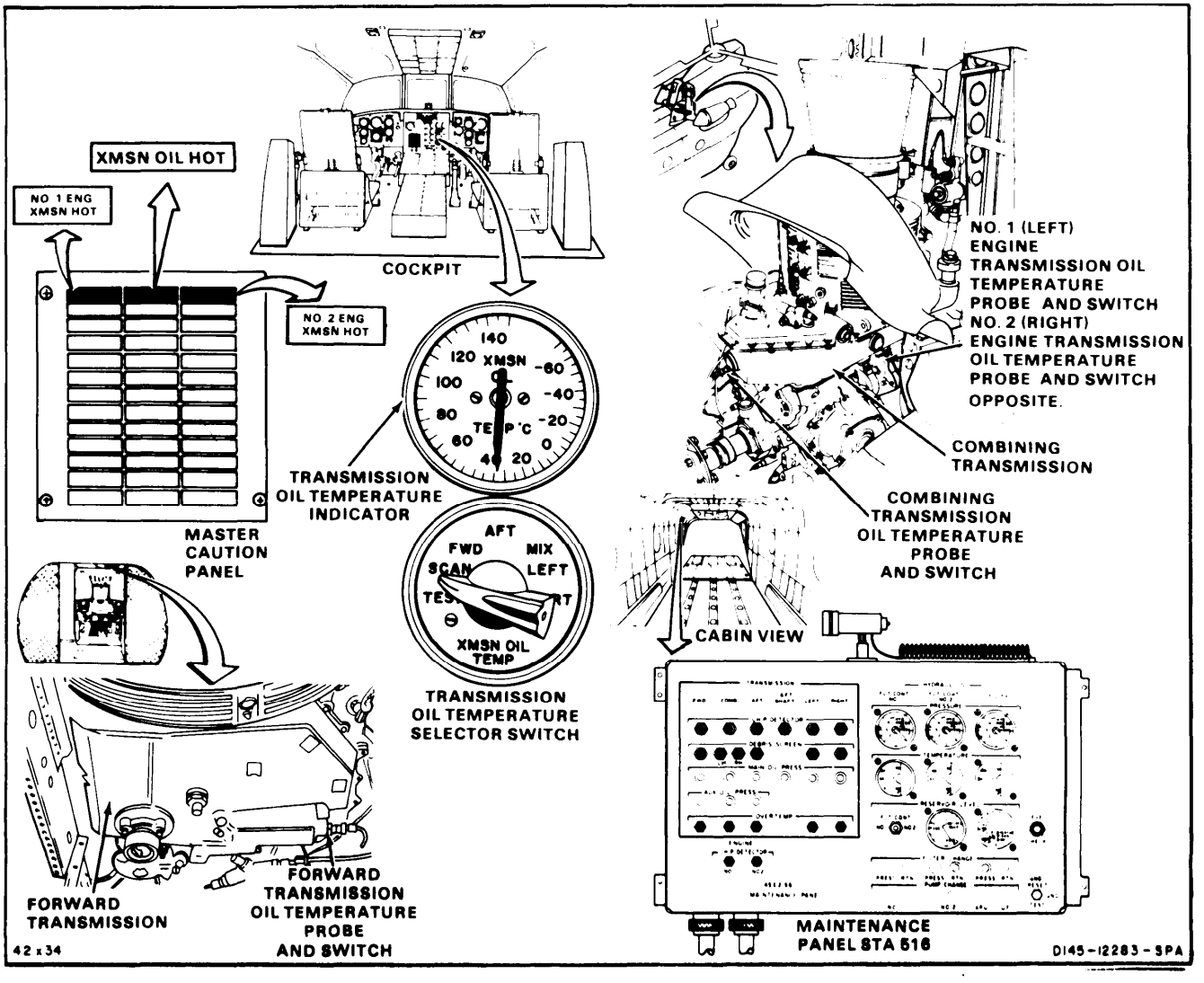
This system includes the transmission oil temperature indicating system and a transmission oil temperature caution system for the main oil lubrication system.

The **indicating system** includes the transmission oil temperature selector switch and indicator, clamp mounted on center instrument panel and five temperature probes, one in each transmission sump. The indicating system is powered by 115 vac.

The indicating system senses oil temperature in the five transmissions and indicates the highest of the five temperatures or the oil temperature in a selected transmission.

Temperature probe resistance is proportional to oil temperature and is displayed on the cockpit indicator.

A monitor provides two indications if a temperature probe is open or shorted. When the selector switch is at SCAN the indicator pointer will indicate above full scale. When the selector switch is at the position corresponding to the defective bulb, the pointer will indicate below -70° C.



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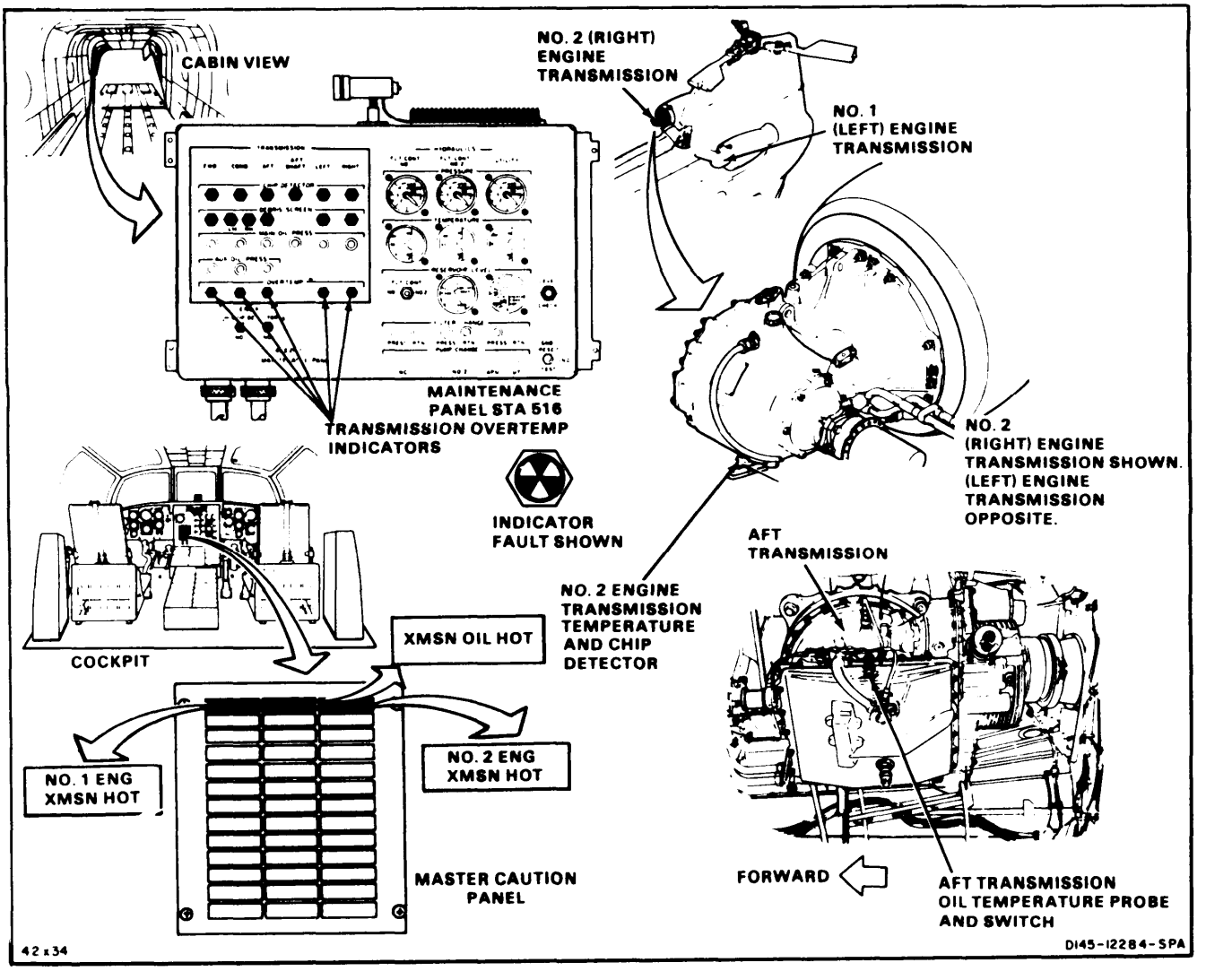
8-57 MISCELLANEOUS INSTRUMENTS (Continued) 8-57

A test circuit performs an overall check of the indicator. When the selector switch is set to TEST, the indicator pointer should go below -70° C.

The **caution system** includes five indicators on the maintenance panel, three capsules on the caution panel and seven thermal switches. Five of the thermal switches are in temperature transmitters as follows; forward transmission sump, combining transmission sump, aft transmission sump, No. 1 engine transmission sump, and No. 2 engine transmission sump. The two remaining thermal switches are in the engine transmission temperature switch and chip detectors, which are mounted in the engine transmission housing.

The caution system has five circuits that operate magnetic latch type indicators on the maintenance panel. When oil temperature in any of the five-transmissions exceeds 276° to 292° F (136° to 144°C) the thermal switch closes and completes a ground circuit to latch the indicator. When latched, the indicator displays a black and white pattern. The ground from any of the five thermal switches is also applied through its associated diode to turn on the XMSN OIL HOT capsule on the caution panel. The diodes form an OR gate that lights the single caution capsule from any one of the five switches while inhibiting the latching of all annunciators on the maintenance panel when one switch closes.

The caution system also has two circuits that turn on No. 1 and No. 2 ENG XMSN OIL HOT capsules on the caution panel. When oil temperature in an engine transmission exceeds 375° to 425°F (191° to 218°C), the thermal switch in the transmission temperature switch and chip detector closes and completes a ground circuit. This ground lights the associated capsule in the caution panel.



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FUEL QUANTITY INDICATING SYSTEM

Description

This system includes the fuel quantity indicating system and a low level sensing system.

The **indicating system** includes the fuel quantity selector switch and indicator clamp mounted on center instrument panel, and ten tank units, one in each forward or aft aux tank and three in each main tank. A change in fuel level causes a change in the capacitance of the tank units. This causes an unbalance in the fuel quantity indicator bridge circuit. The unbalance results in a gage correction signal at the bridge output. This signal is amplified to drive a servo motor. The servo motor moves a variable resistor wiper arm thru reduction gears to reestablish the bridge balance. A printer on the wiper shaft moves across the calibrated scale and indicates the quantity in single-tank quantity indication. The variable resistor wiper arm is mechanically linked to a counter mechanism which displays the total fuel quantity in pounds. The rear of the indicator contains four adjustments for full and empty calibration, two for the dial and two for the digital readout. The indicator is powered by 115 vac and electrical connection is through a connector at the rear of the indicator.

The low level sensing system includes a dual thermistor control unit. in the console, a low level sensor in each center tank unit at the 20 percent level, and two capsules, L or R FUEL LOW in the master caution panel.

When the fuel quantity falls below the 20 percent level, the thermistor in the low fuel sensor is no longer cooled by fuel. Its temperature then rises and its resistance decreases, The thermistor is part of a normally unbalanced bridge circuit in the thermistor control unit. The output signal which results from the imbalance is amplified to operate a relay. When the resistance of the thermistor decreases, the relay releases as the bridge approaches a null condition. The L or R FUEL LOW light capsule is lighted when the relay releases. The low level sensing system is powered by 28 vdc.

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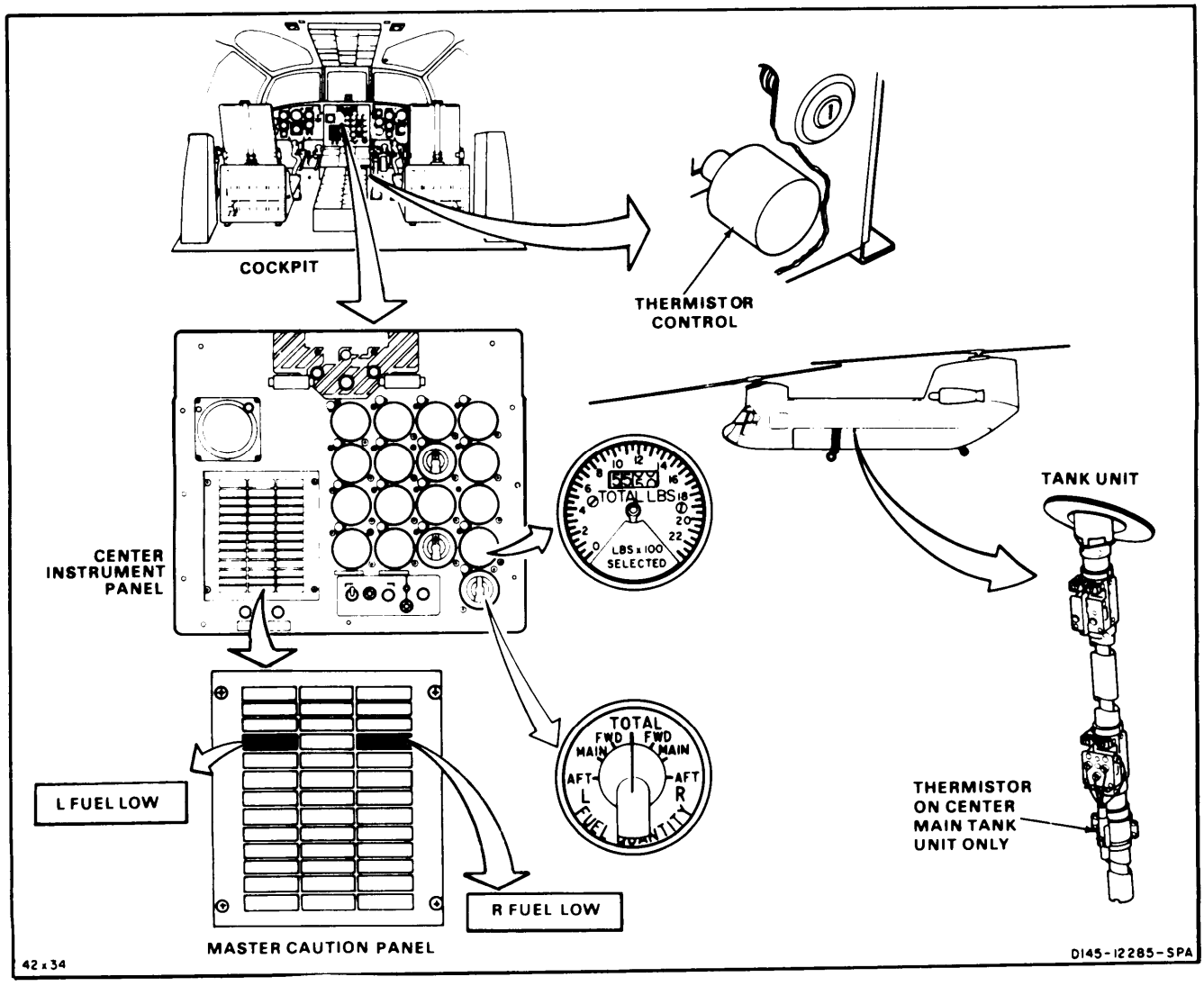
8-57 MISCELLANEOUS INSTRUMENTS (Continued)



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8-57 MISCELLANEOUS INSTRUMENTS (Continued) 8-57

The fuel quantity system also includes a switching box and an inverter. These are used to provide fuel quantity indication at the refueling station.

The inverter provides 115 vac to the fuel quantity indicating system when fuel quantity is checked at the refueling station. The inverter is located in the cabin overhead at sta 220.

The switching box removes the fuel quantity probe signals from the cockpit indicator and switch and connects the signals to the refueling station indicator and switch. This occurs when the refueling station is activated. The switching box is located at sta 220.

ROTOR TACHOMETER INDICATING SYSTEM

Description

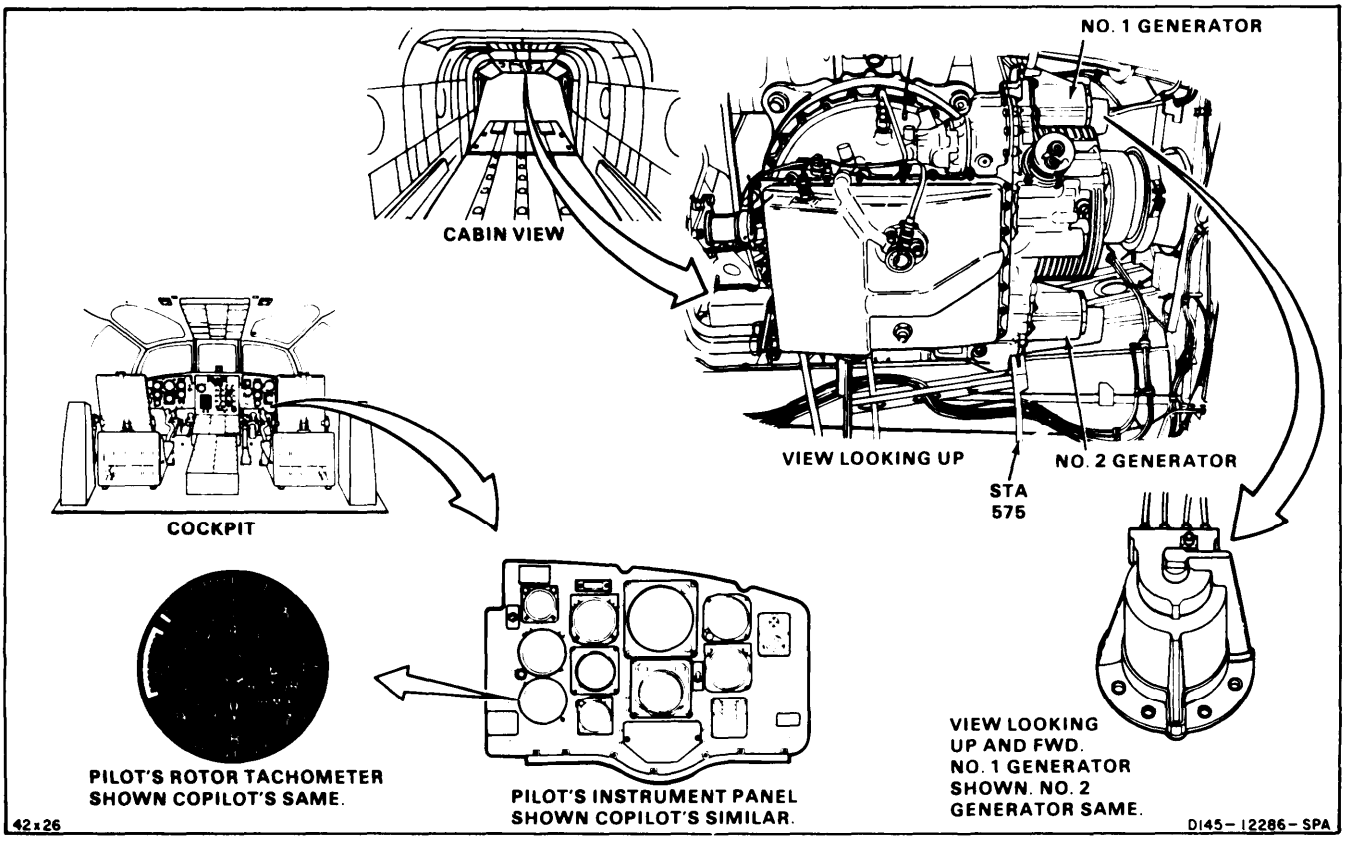
The rotor tachometer system includes two identical circuits. Each circuit indirectly measures and indicates rotor rpm in percentage between 0 and 130. One hundred percent equals 225 rotor rpm.

The system includes a speed sensor in each ac main generator and a rotor tachometer indicator in each pilots instrument panel.

Each speed sensor is a simple stator coil within the main generator pmg (permanent magnet generator) that provides a signal whose frequency is proportional to ac generator rpm and rotor rpm. The sensor output is available regardless of the generator on/off state. Loss of rpm output can occur only as the result of a failed sensor coil or a sheared generator shaft.

The sensor signal is processed within each indicator by converting the signal frequency to a proportional dc voltage level. The dc lever is then amplified within a conventional servo loop within the indicator. Rotor rpm is shown on the dial face using a dial and sub dial pointer. The short sub dial pointer indicates rotor rpm in percent from 0 to 60 percent. The long dial pointer then indicates between 60 and 130 percent.

The rotor tachometers are clamp mounted in pilots instrument panels and powered by a 28 vdc circuit breaker.



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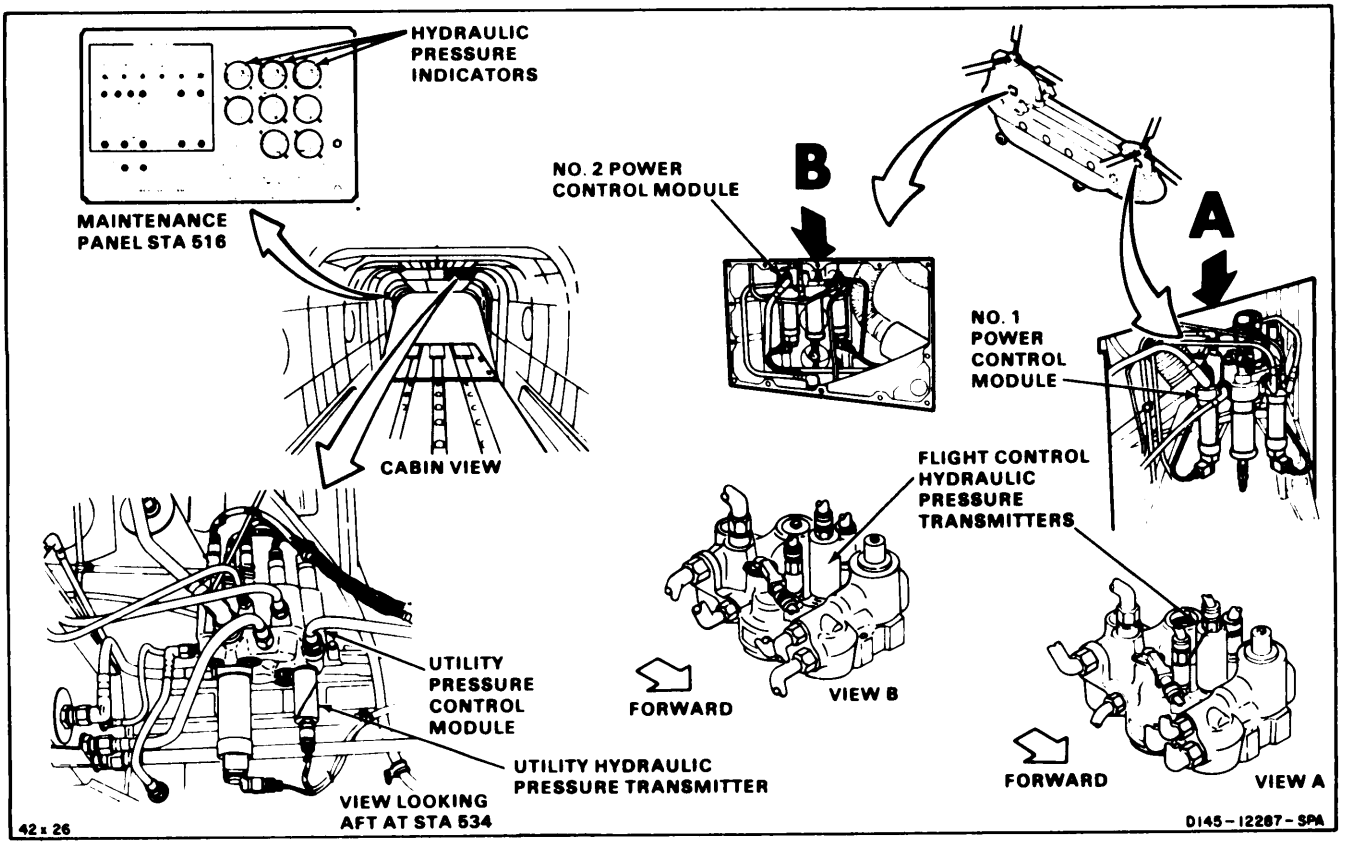
HYDRAULIC PRESSURE INDICATING SYSTEMS

Description

The maintenance panel contains indicators for three **hydraulic pressure indicating systems.** Two of these systems measure pressure in the two flight control hydraulic systems. The other system measures pressure in the utility hydraulic system. Each system consists of an indicator and a pressure transmitter. In operation, hydraulic pressure is applied to the transmitter. The transmitter generates an electrical signal proportional to pressure. The signal is transmitted to the indicator where it is converted to a pressure reading. These systems are powered by 28 vdc.

The hydraulic pressure indicators are 0 to 5 volt meter movements with scale indications of 0 to 4000 psi. Three identical indicators are clamp mounted in the maintenance panel one for each hydraulic system. Electrical connections are made through a receptacle on the rear of each indicator.

The transmitter receives 28 vdc and provides an output of 0 to 5 vdc. The transmitter contains a flexible pressure dome which has bonded strain gages. These strain gages, resistive elements, are connected as a wheatstone bridge. When pressure is applied to the dome, the dome distorts and changes the resistance of the bridge. The change in bridge output is amplified to drive a conventional moving coil type indicator to display pressure in psi. There are three pressure transmitters, utility system, located on the utility system control module (STA 534 LH), No. 1 system, located on the No. 1 system power control module (STA 123, WL 78), and No. 2 system, located on the No. 2 system power control module (STA 544, WL 86).



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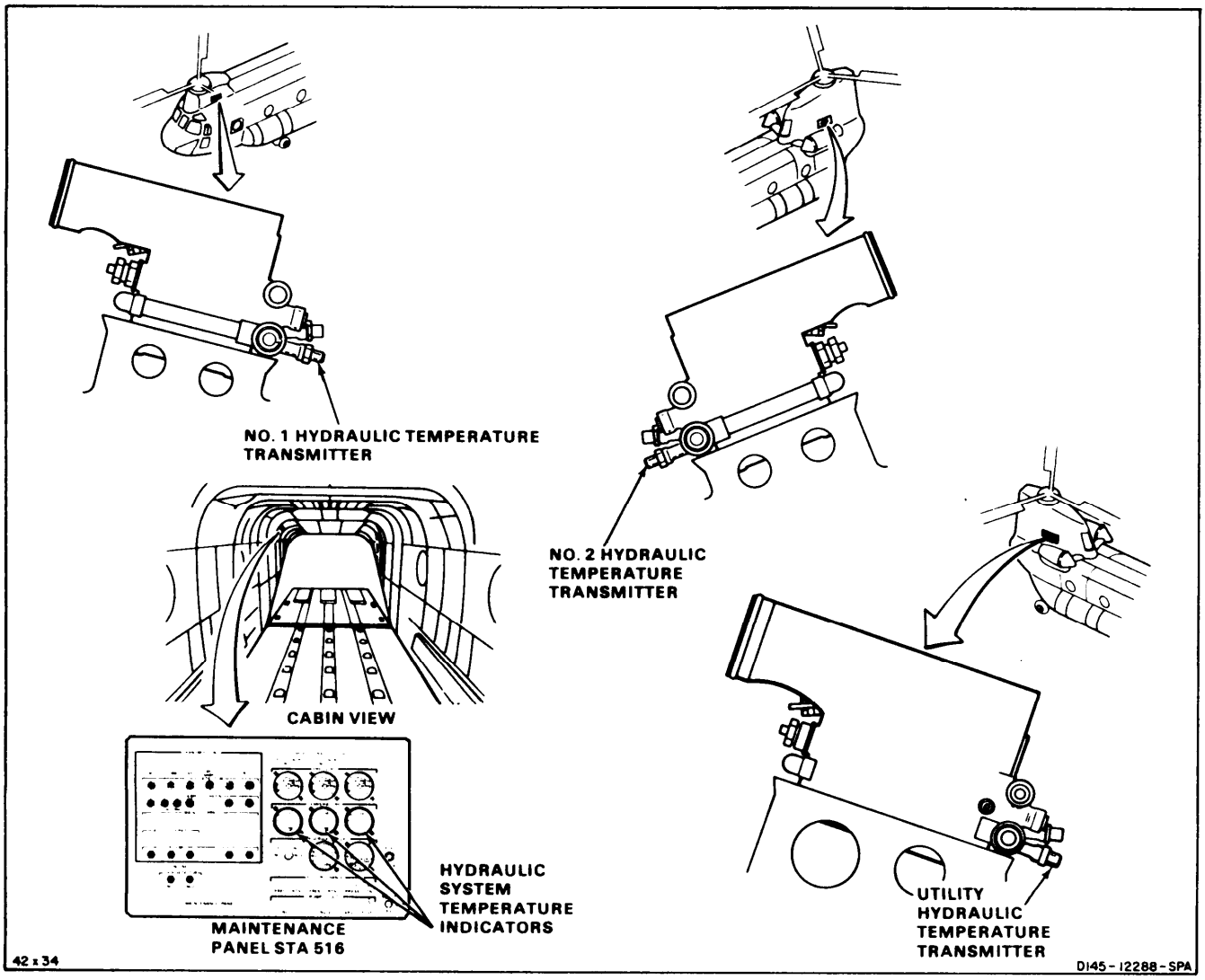
HYDRAULIC TEMPERATURE INDICATING SYSTEM

Description

The maintenance panel contains indicators for three **hydraulic oil temperature indicating systems.** Two systems measure temperature of the hydraulic oil in the flight control (No. 1 and No. 2) hydraulic systems. The other system measures temperature of the hydraulic oil in the utility hydraulic system. Each system contains an indicator and a temperature transmitter. As hydraulic oil temperature varies, transmitter resistance varies. The resistance change causes the indicator pointer to move a distance proportional to the hydraulic oil temperature change.

The hydraulic temperature indicators, calibrated –50° to + 150°C, are clamp mounted in the maintenance panel. Electrical connection is provided by a receptacle at the rear of each indicator.

The hydraulic temperature transmitter senses and transmits hydraulic oil temperature signals to the indicator. The transmitters are calibrated to provide 90.38 ohms at 0°C (32°F). Each transmitter is threaded into its respective hydraulic system reservoir cooler.



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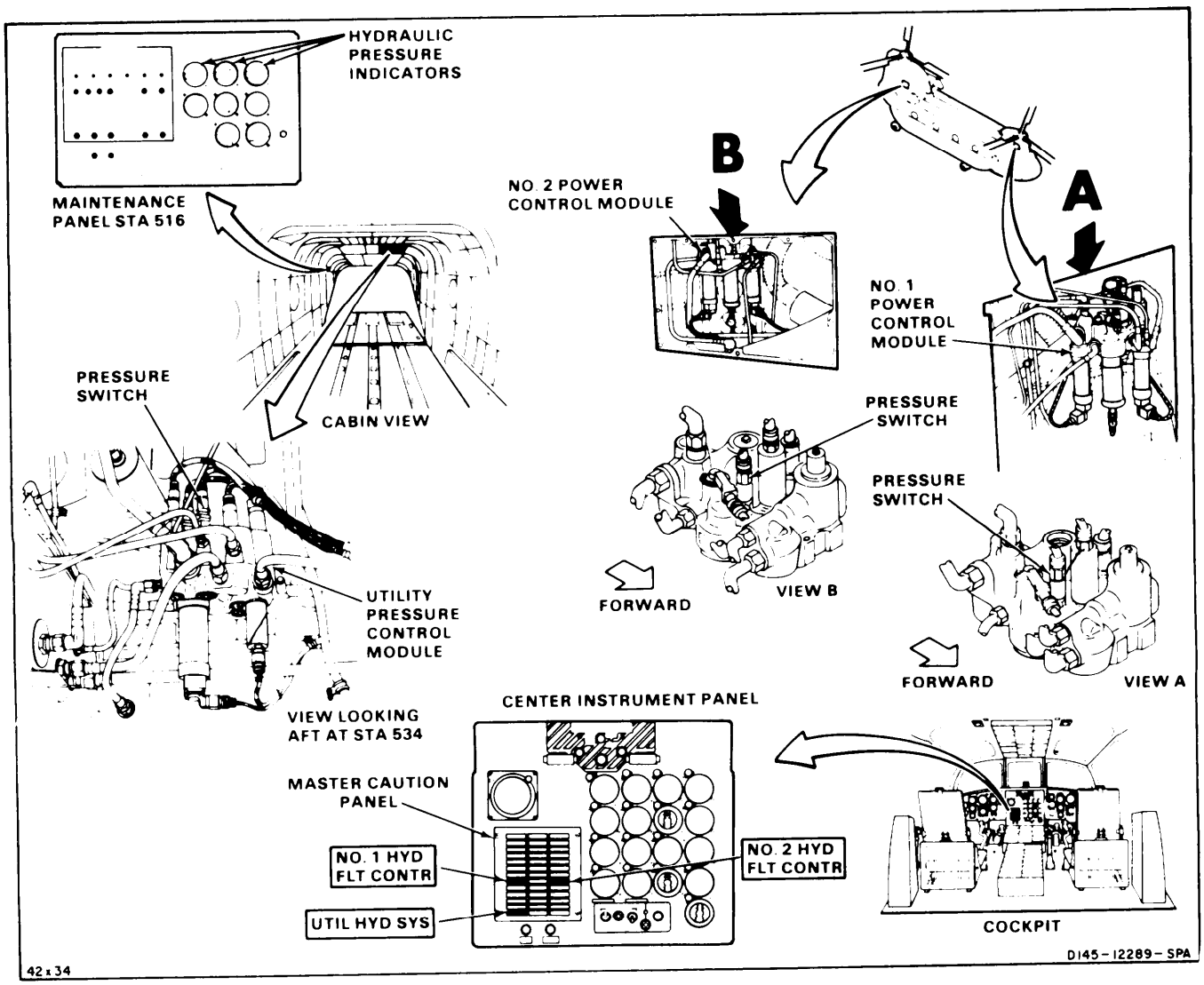
HYDRAULIC LOW PRESSURE WARNING SYSTEM

Description

Each of the three hydraulic systems contains a pressure switch that causes a caution light on the master caution panel to come on with decreasing system pressure. Two of the switches have additional functions. The No. 1 and No. 2 boost pressure switches signal their respective afcs computers when the hydraulic systems are pressurized. The switches are also used as an interlock to prevent turning off a good system when one system has malfunctioned.

The hydraulic low pressure switch opens at increasing pressure below 1,400 psi. This turns the caution light off. It closes at a decreasing pressure between 2,050 and 1,950 psi. This turns the caution light on. The utility system pressure switch is on the utility system pressure control module. The No. 1 and No. 2 hydraulic system low pressure switches are on the No. 1 and No. 2 power control modules respectively.



END OF TASK

SECTION VI

MISCELLANEOUS INSTRUMENTS

8-58 TEST TRANSMISSION OIL PRESSURE SELECTOR SWITCH OR INDICATOR (AVIM)

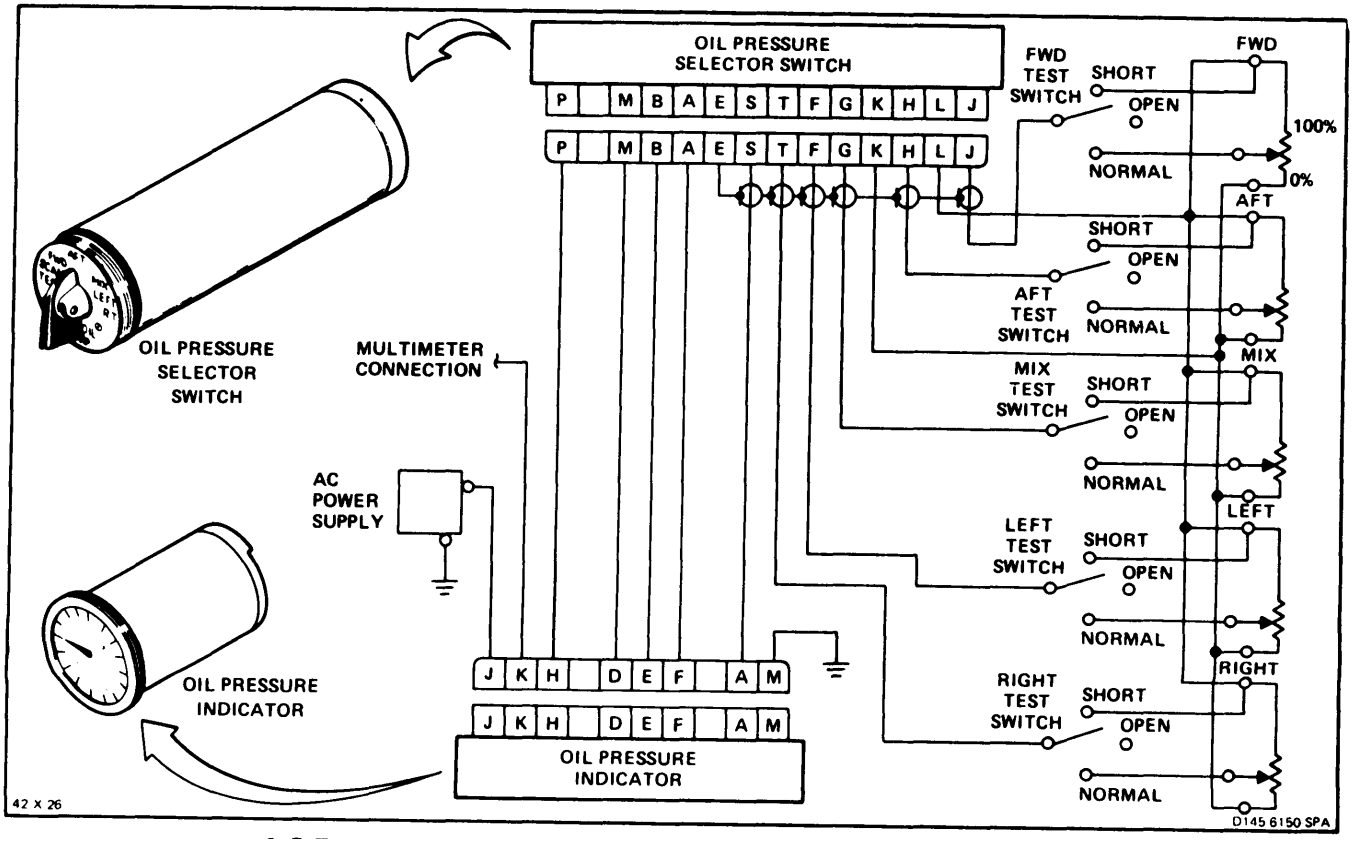
INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Ac Power Supply, 115 Volt 400 Hz
Transmission Oil Pressure Selector Switch, 384332-016
Transmission Oil Pressure Indicator, 331002-06015
Variable Resistors, 5000 Ohm ±3 Percent, 5 Watt, 10 Turn, Counter, 0-100%, 0.25 Percent Linearity (5)
Stopwatch
Multimeter
Crimping Tool, NSN 5120-00-075-2544
Connector, MS3476W14-19S
Connector, MS3476W14-15S
Switch, MS24523-21 (5)
Wire, No. 20, Insulated
Wire, No. 20, Shielded

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

Equipment Condition:
Off Helicopter Task
Electrical Test Setup



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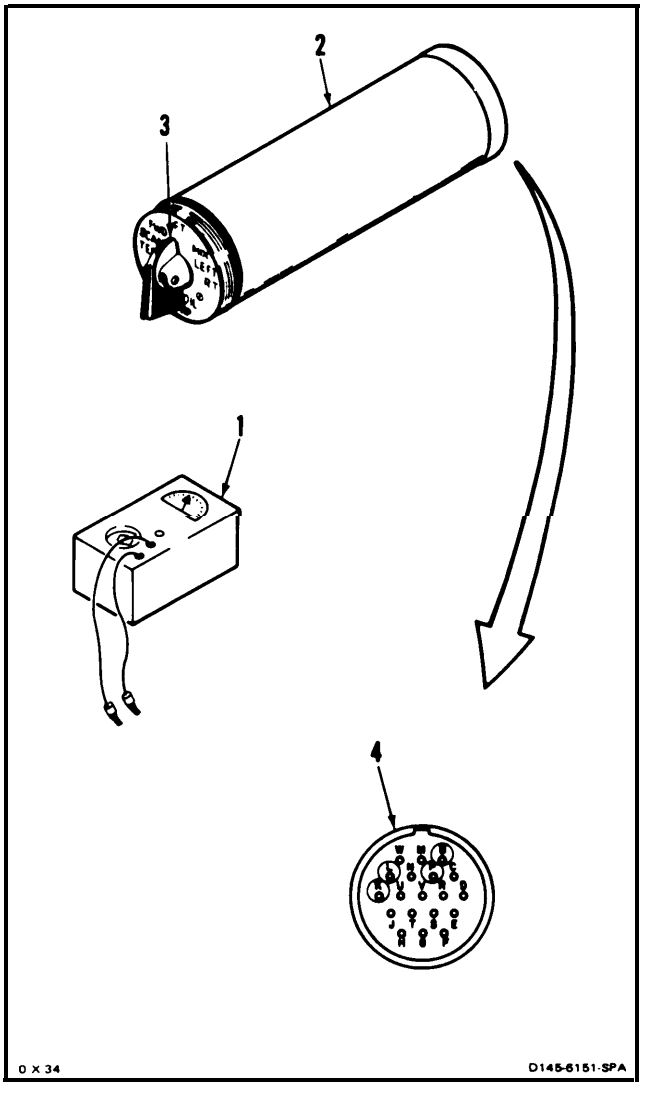
8-58 TEST TRANSMISSION OIL PRESSURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued)

NOTE

- For testing indicator, a known good selector switch is used.
- For testing selector switch, a known good indicator is used.
- Variable resistors are at maximum resistance with dials at 0, minimum resistance with dials at 100 percent.
- Clockwise rotation of resistors increases resistance.
- Clockwise rotation of resistors lowers pressure reading on indicator.
- Perform steps 1 thru 54 if testing selector switch.
- Perform steps 9 thru 54 if testing indicator.



SELECTOR SWITCH CONTINUITY AND RESISTANCE TEST

1. **Connect multimeter (1) set to Rx1 to pins B and L of selector switch (2).**
2. **Rotate selector switch knob (3) through all dial positions. Check multimeter (1) at each position.** Multimeter shall indicate continuity at all switch positions.
3. **Remove multimeter test lead from pin L. Connect lead to selector switch case ground (receptacle shell) (4).**
4. **Rotate selector switch knob (3) through all dial positions. Check multimater (1) at each position.** Muitimeter shall indicate open circuit at all switch positions.
5. **Disconnect multimeter (1).**
6. **Connect multimeter (1) set to Rx1 to pins P and K of selector switch (2). Check multimeter.** Multimeter shall indicate continuity.
7. **Remove multimeter lead from pin P. Connect load to selector switch case ground (4). Check multimeter (1).** Multimeter shall indicate continuity.
8. **Disconnect multimeter (1).**

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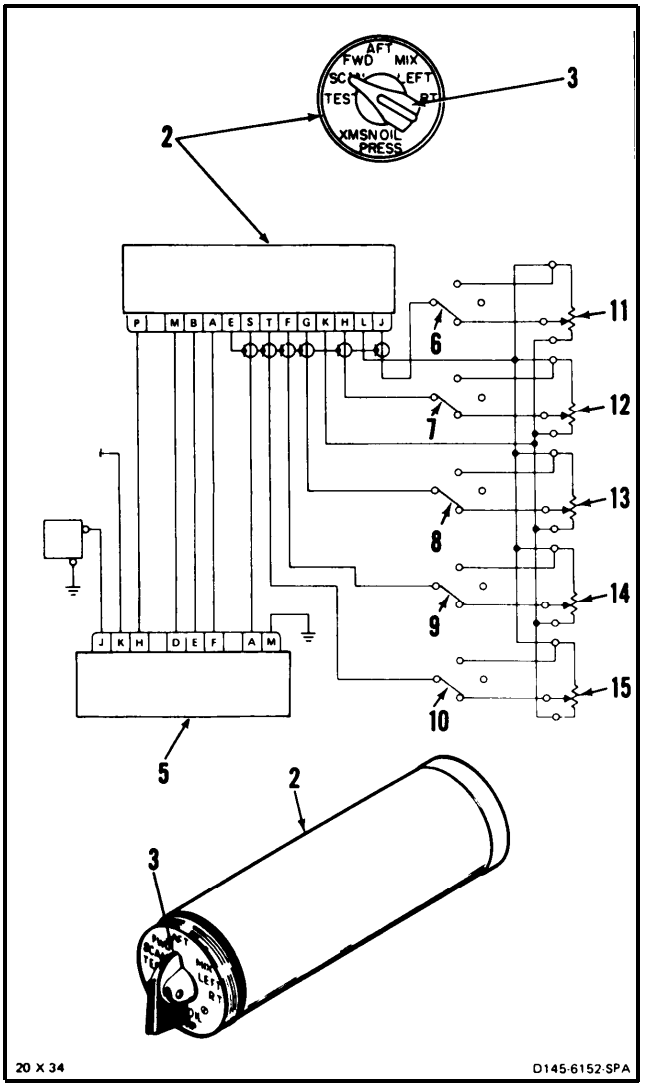
DIAL LAMP TEST (Without 17)

9. **Connect selector switch (2) to test setup. Switch knob (3) to SCAN.**
10. **Connect indicator (5) to test setup.**
11. **Set test switches (6, 7, 8, 9, and 10) to NORMAL.**
12. **Adjust variable resistors (11, 12, 13, 14, and 15) to 100 percent (full counterclockwise).**
13. **Apply power to test setup.** Indicator (5) shall read 100 psi. Selector switch (2) SCAN position dial lamp shall come on.
14. **Set selector switch knob (3) to TEST and hold. Check TEST dial lamp.** Lamp shall come on. **Release selector switch.** Switch knob (3) shall return to SCAN.
15. **Set selector switch knob (3) to each dial position, FWD, AFT, MIX, LEFT, and RIGHT. Check dial lamp for each position.** Lamp shall come on at each position.



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8-58 TEST TRANSMISSION OIL PRESSURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued) 8-58

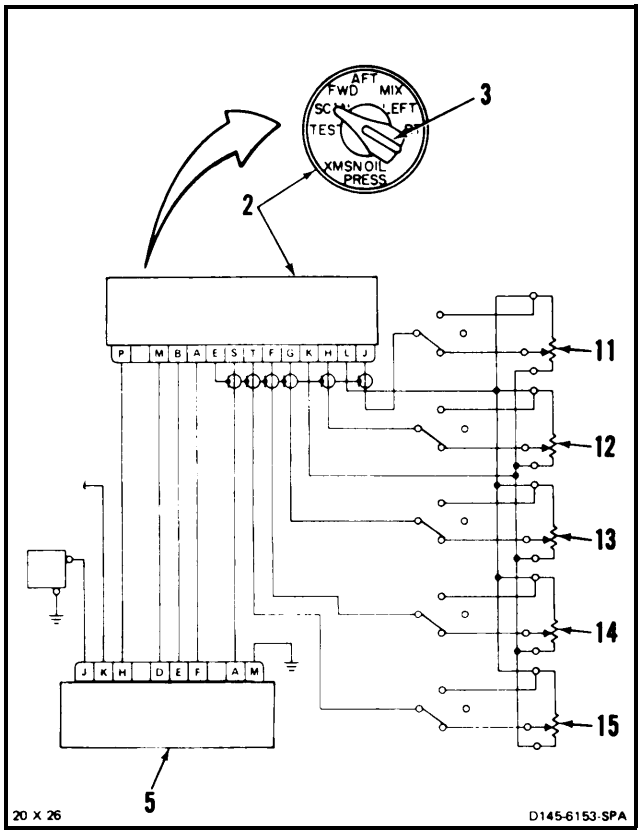
TRANSDUCER CIRCUIT TEST

16. **Set selector switch knob (3) to SCAN.**

NOTE

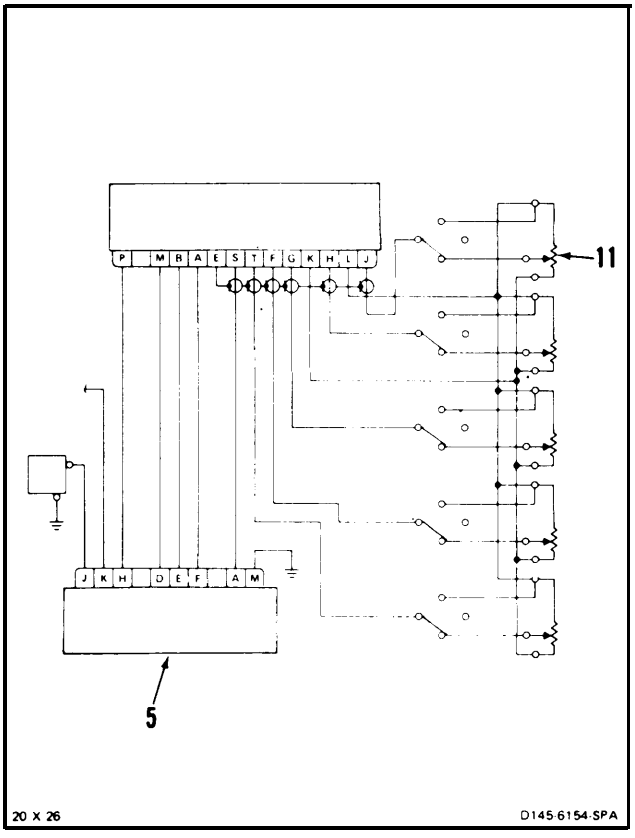
Without 17, SCAN dial lamp remains on when selector switch is at SCAN.

17. **Adjust FWD resistor (11) three turns clockwise.**
18. Check selector switch (2). Without 17, FWD dial lamp shall come on as resistor (11) is adjusted.
19. Check indicator (5). Indicator shall read 70 psi. Adjust FWD resistor (11) to 100 percent (full counterclockwise).
20. Repeat steps 17, 18, and 19 at AFT resistor (12), MIX resistor (13), LEFT resistor (14), and RIGHT resistor (15).



SENSITIVITY TEST

21. **Adjust FWD resistor (11) clockwise until indicator (5) reads 20 psi. Record FWD resistor setting.**
22. **Adjust FWD resistor (11) counterclockwise until pointer of indicator (5) just begins to move. Record FWD resistor setting.**
23. **Compare settings for FWD resistor (11) in steps 21 and 22.** Difference shall be less than 1 percent.
24. **Repeat steps 21, 22, and 23 four times. Use 40, 50, 70, and 90 psi as starting points.** Then go to step 25.
25. **Repeat steps 21, 22, and 23 five times. Use 90, 70, 50, 40, and 20 psi as starting points and adjust FWD resistor (11) clockwise.** Then go to step 26.



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8-58 TEST TRANSMISSION OIL PRESSURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued)

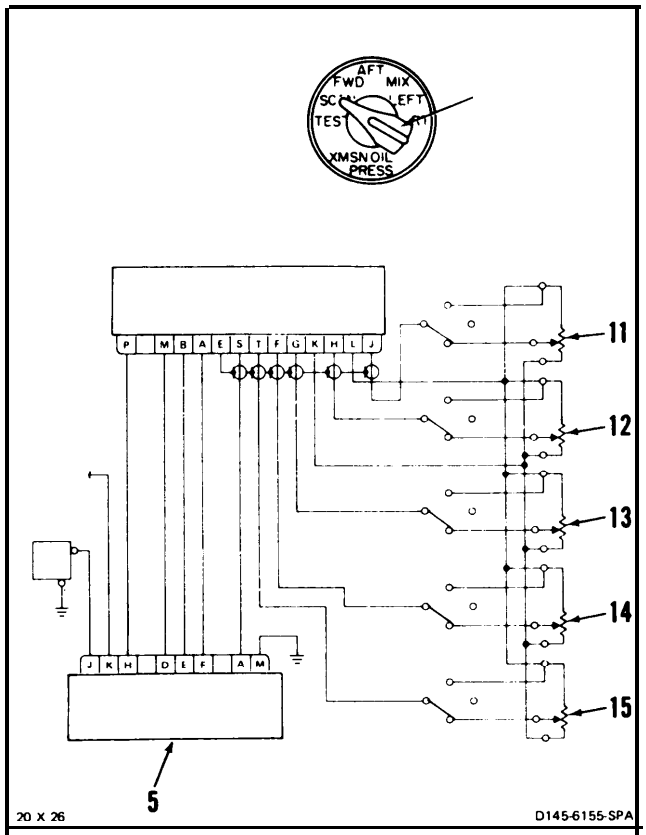
RESPONSE TEST

26. **Set selector switch knob (3) to SCAN. Adjust FWD resistor (11) until indicator (5) reads 30 psi.**

27. Adjust AFT resistor (12), MIX resistor (13), LEFT resistor (14), and RIGHT resistor (15) clockwise to 3500 ohms (7 turns).

28. **Adjust AFT resistor (12) clockwise until pointer of indicator (5) moves upscale then downscale. Check upscale movement of pointer.** Upscale movement of pointer shall be less than 1 psi. **Adjust AFT resistor to setting recorded in step 27.**

29. Repeat steps 27 and 28 at MIX (13), LEFT (14), and RIGHT (15) resistors. Then go to step 30.



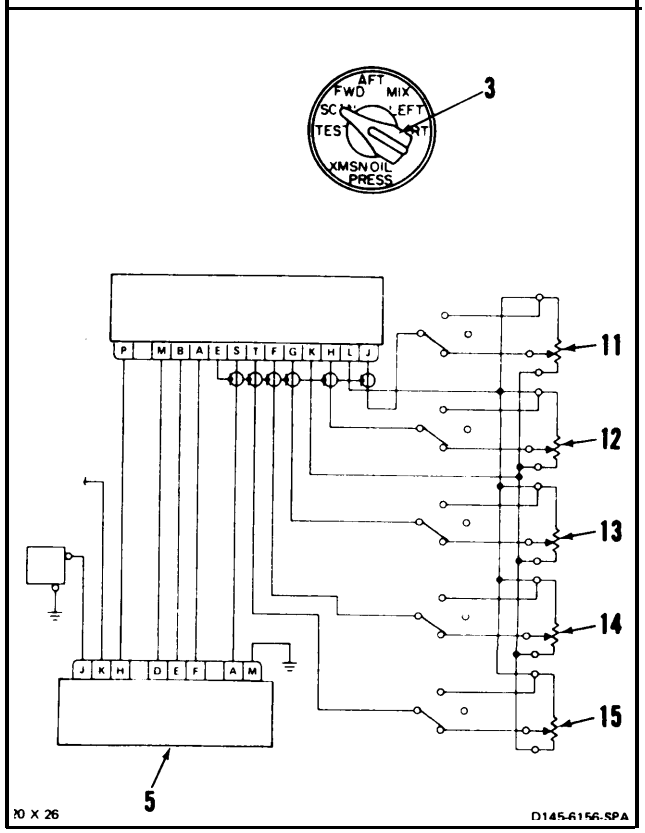
SCALE ERROR TEST

30. **Set selector switch knob (3) to SCAN.**

31. **Adjust resistors (11, 12, 13, 14, and 15) to 100 percent (full counterclockwise).**

32. **Adjust FWD resistor (11) clockwise. For indicator (5) readings listed, resistor settings shall be within tolerance as follows :**

SET INDICATOR READING TO	VARIABLE RESISTOR SETTING SHALL BE
95 PSI	93.5 TO 96.5 PERCENT
80 PSI	78.5 TO 81.5 PERCENT
60 PSI	58.5 TO 61.5 PERCENT
40 PSI	38.5 TO 41.5 PERCENT
20 PSI	18.5 T0 21.5 PERCENT
0 PSI	0 TO 1.5 PERCENT



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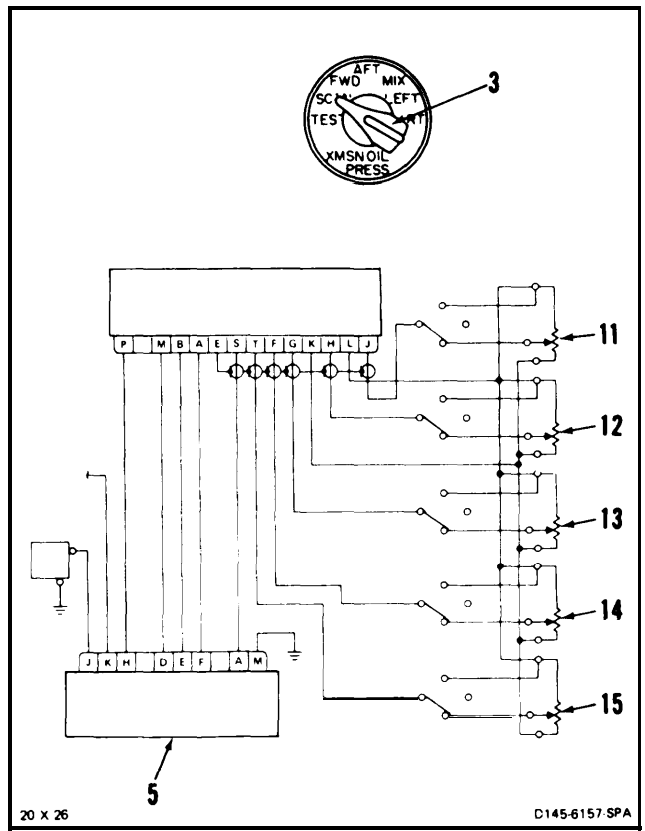
8-58 TEST TRANSMISSION OIL PRESSURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued)

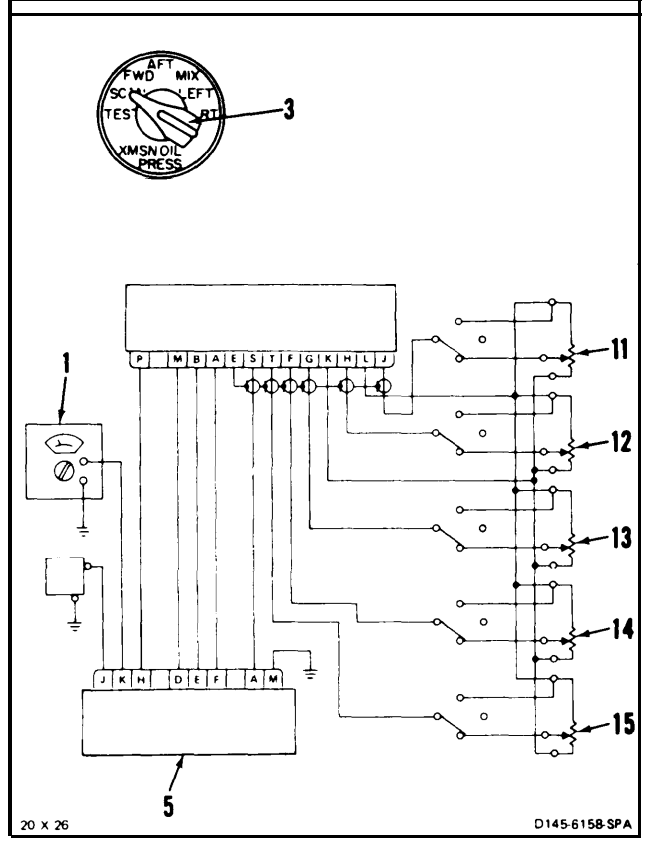
TRAVEL TIME TEST

33. **Set selector switch knob (3) to FWD.**
34. **Adjust resistors (11, 12, 13, 14, and 15) to 100 percent (full counterclockwise).**
35. **Adjust FWD resistor (11) clockwise until indicator (5) reads 50 psi.**
36. **Set selector switch knob (3) to AFT.**
37. **Adjust AFT resistor (12) clockwise until indicator (5) reads 15 psi.**
38. **Set selector switch knob (3) to FWD. Check indicator (5).** Pointer of indicator shall move to 15 psi in less than 5 seconds.
39. **Set selector switch knob (3) to AFT. Check indicator (5).** Pointer of indicator shall move to 50 psi in less than 5 seconds.



CAUTION LIGHT TEST

40. **Set selector switch knob (3) to SCAN.**
41. **Adjust resistors (11,,12, 13,14, and 15) to 100 percent (full counterclockwise).**
42. **Connect multimeter (1), set to Rx1, between case ground and pin K of indicator (5).**
43. **Adjust FWD resistor (11) clockwise until indicator (5) reads 95 psi.**
44. **Continue to adjust FWD resistor (11) clockwise. Check multimeter (1).** Multimeter shall indicate continuity when indicator (5) reads 21.5 to 18.5 psi. Muitimeter shall continue to indicate continuity to 0 psi on indicator.
45. **Disconnect multimeter (1).**



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8-58 TEST TRANSMISSION OIL PRESSURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued) 8-58

FAIL SAFE CIRCUIT TEST (OPEN)

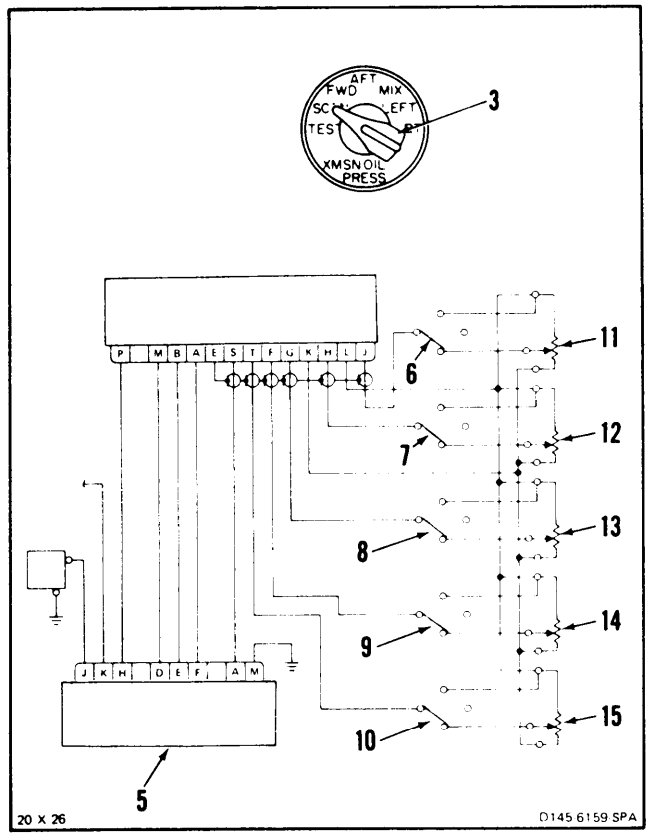
46. **Set selector switch knob (3) to SCAN.**

47. **Adjust variable resistors (11, 12, 13, 14, and 15) to 100 percent (full counter-clockwise).**

48. **Adjust variable resistors (11, 12, 13, 14, and 15) five turns clockwise. Check indicator (5).** Indicator shall read 50 psi.

49. **Set FWD test switch (6) to OPEN. Check indicator (5).** pointer of indicator shall move to 0 psi. **Set FWD test switch to NORMAL.** Pointer of indicator shall return to 50 psi.

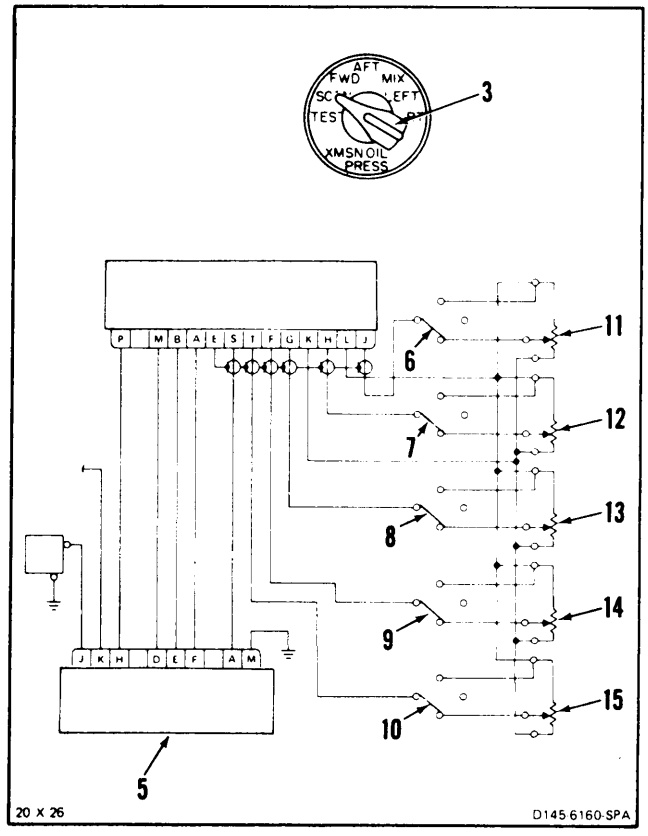
50. **Repeat step 49 at AFT test switch (7), MIX test switch (8), LEFT test switch (9), and RIGHT test switch (10).**



FAIL SAFE CIRCUIT TEST (SHORT)

51. **Set setector switch knob (3) to FWD. Set FWD test switch (6) to SHORT. Check indicator (5).** Pointer of indicator shall move to 100 psi. **Set FWD test switch to NORMAL.** Pointer of indicator shall return to 50 psi.

52. Repeat step 51 with selector switch (2) at AFT, MIX, LEFT, and RIGHT dial position, for AFT test switch (7), MIX test switch (8), LEFT test switch (9), and RIGHT test switch (10), respectively.



SHUTDOWN

53. Remove power from test setup.

54. Remove indicator (5) and selector switch 2) from test setup.

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-59 REMOVE COMBINING NO. 1, OR NO. 2 ENGINE TRANSMISSION OIL PRESSURE TRANSDUCER

INITIAL SETUP

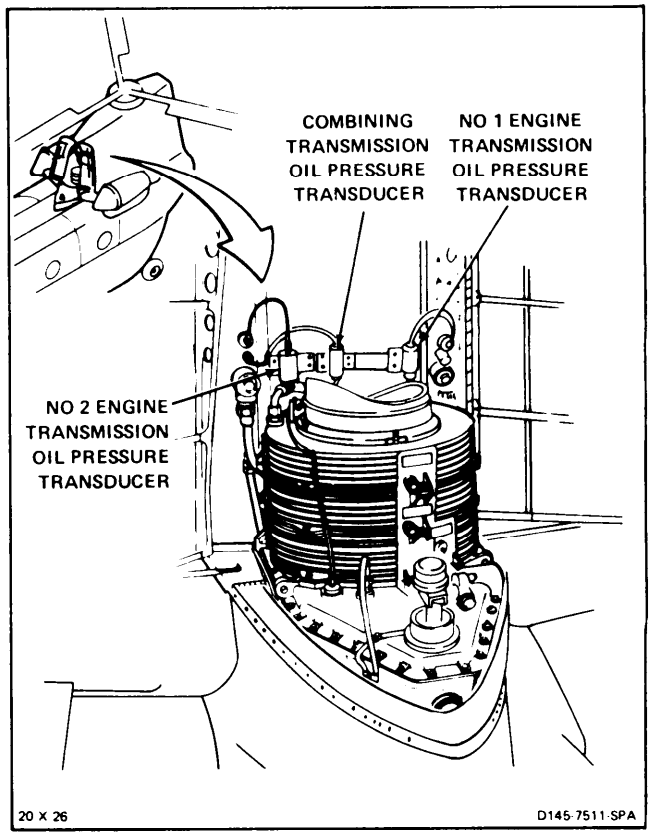
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Container, Two Quart

Materials:
Cloth (E120)

Personnel Required:
Medium Helicopter Repairer

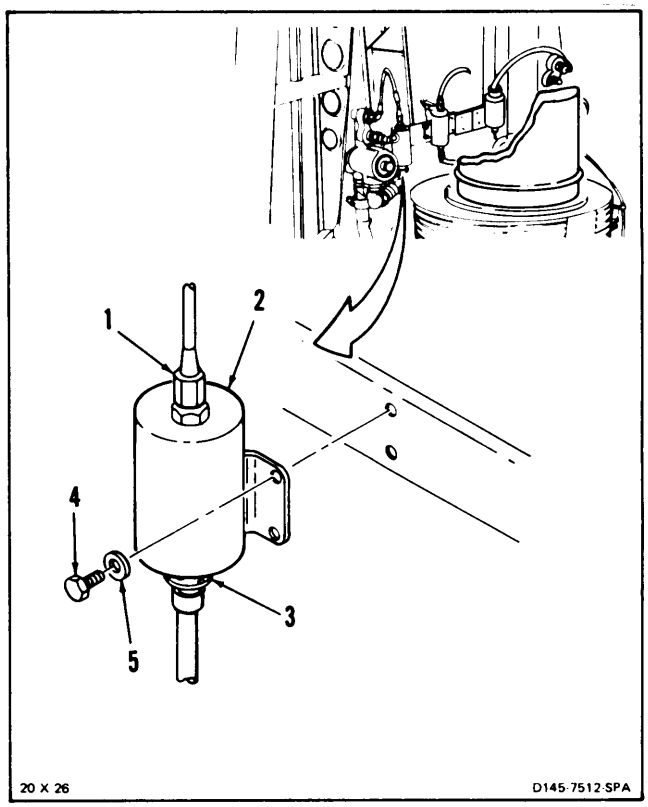
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Aft Pylon Doors Open (Task 2-2)



NOTE

Removal of No. 1 and No. 2 engine and combining transmission oil pressure transducers is similar. Electrical disconnect is at bottom of engine transmission transducers and at top of combining transmission transducer. Removal of No. 2 engine transmission oil pressure transducer is shown here.

1. **Disconnect hose (1),** from transducer (2). Use container and cloths (E120) for spilled oil.
2. **Disconnect electrical connector (3)** from pressure transducer (2).
3. Remove four bolts (4) and washers (5).
4. **Remove pressure transducer (2).**



FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-60 INSTALL COMBINING NO.1, OR NO.2 ENGINE TRANSMISSION OIL PRESSURE TRANSDUCER

INITIAL SETUP

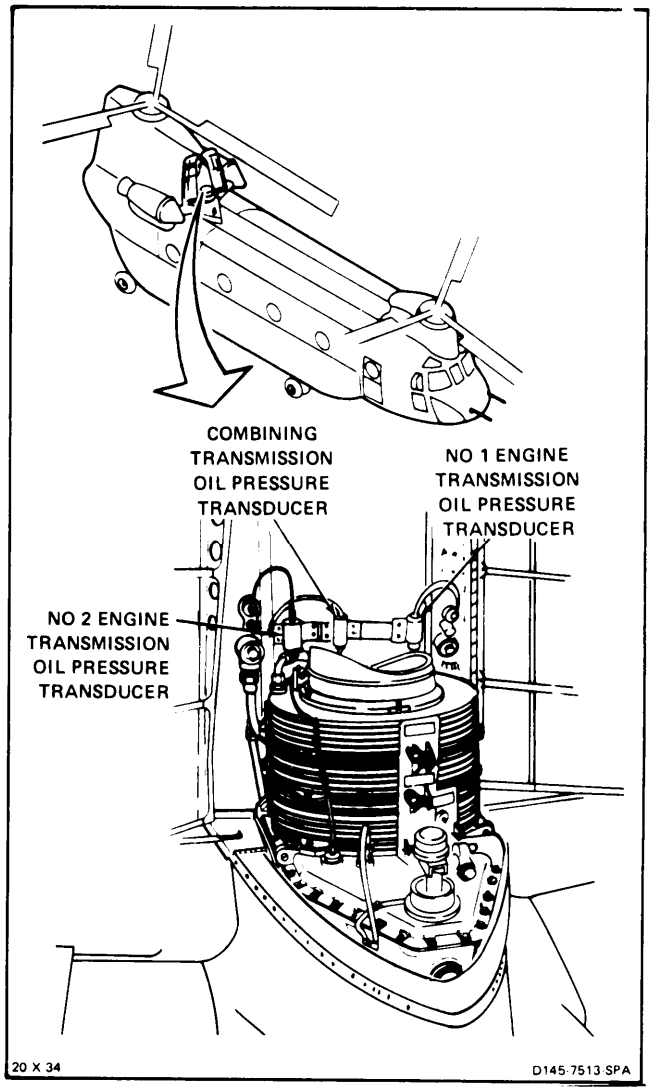
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
Cloth (E 120)

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25
TM 55-1500-325-25



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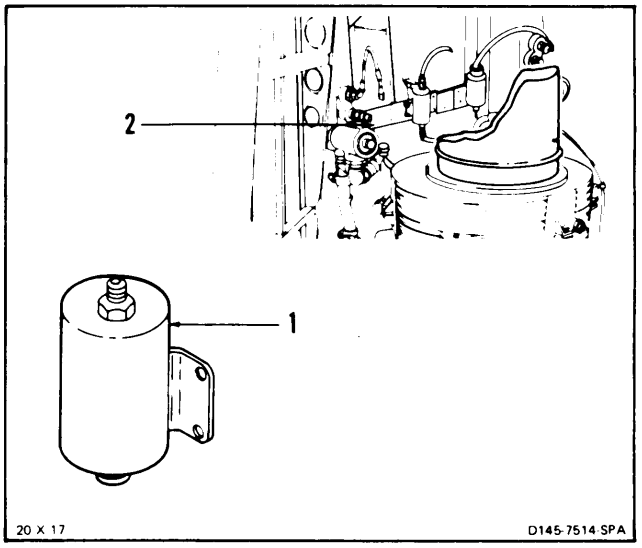
8-60 INSTALL COMBINING NO.1, OR NO.2 ENGINE TRANSMISSION OIL PRESSURE TRANSDUCER (Continued)

NOTE

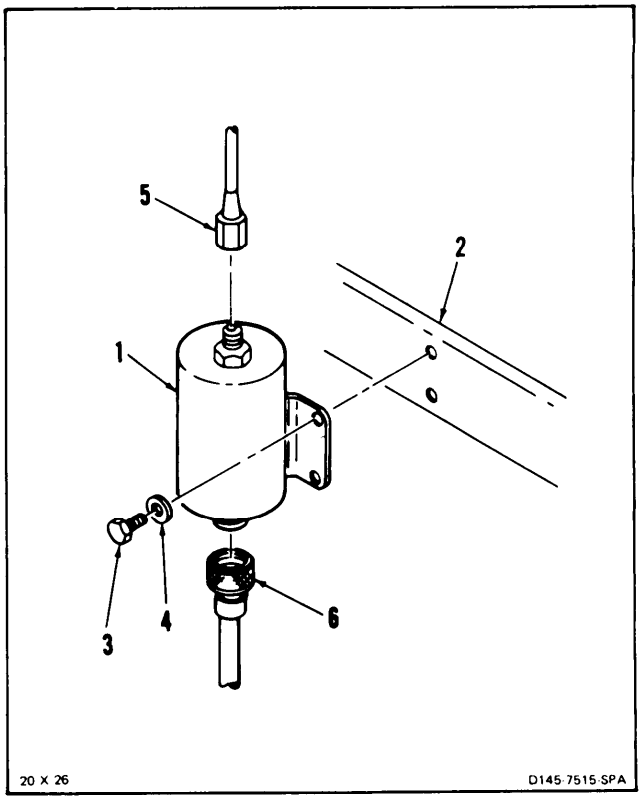
Installation of No. 1 and No. 2 engine and combining transmission oil pressure transducers is similar. Electrical disconnect is at bottom of engine transmission transducers and at top of combining transmission transducer. Installation of No. 2 engine transmission oil pressure transducer is shown here.



1. Clean bonding surfaces of transducer (1) and mount surface (2) (TM 55-1500-325-25). Use cloth (E120).

2. **Position transducer (1)** on mount surface (2). **Install four bolts (3)** and washers (4).
3. **Connect hose (5)** to transducer (1).
4. **Connect connector (6)** to transducer (1).

INSPECT



FOLLOW-ON MAINTENANCE:

Close aft pylon doors (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-61 REMOVE AFT TRANSMISSION OIL PRESSURE TRANSDUCER 8-61

INITIAL SETUP

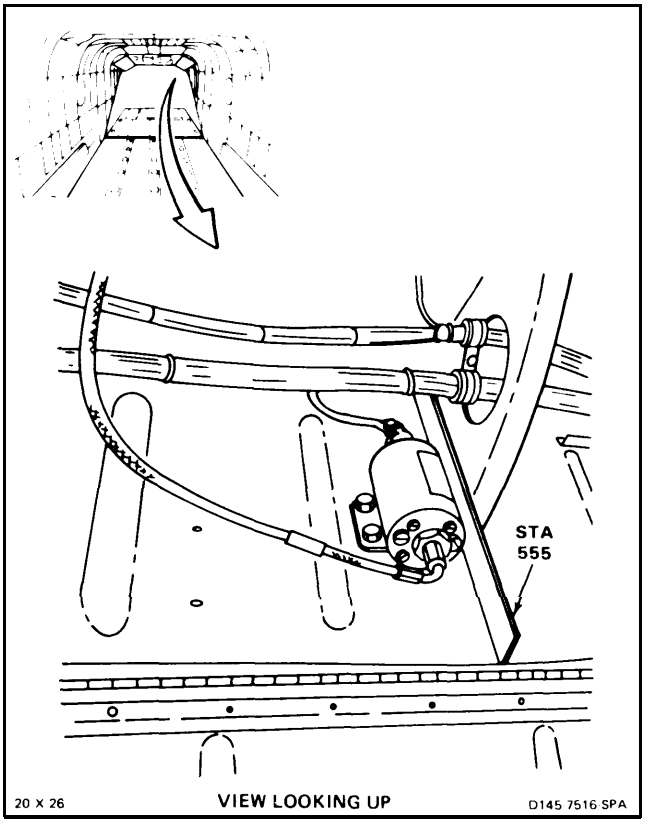
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Container, Two Quart

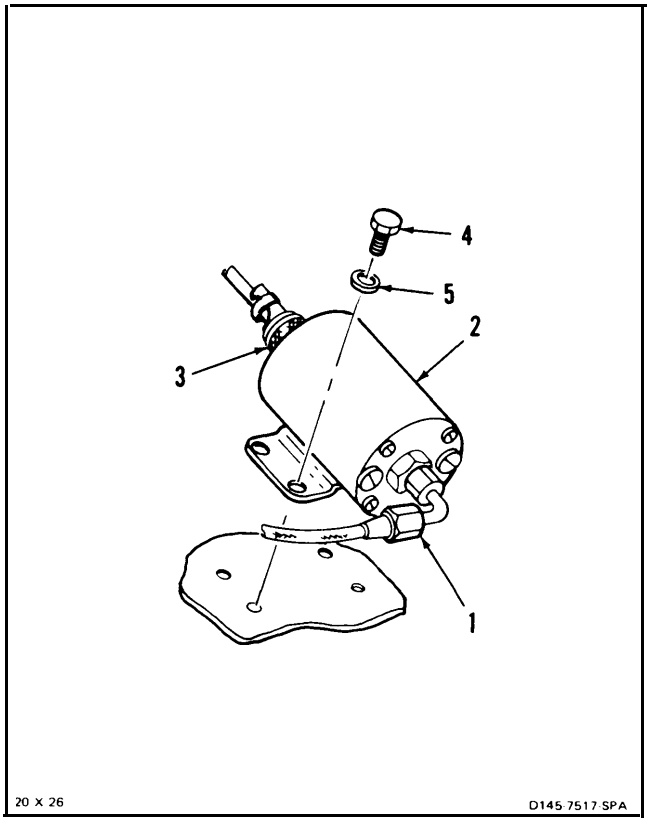
Tools:
Cloth (E120)

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Cargo Ramp Open and Level
(TM 55-1520-240-T)
Baffles Under Aft Transmission Open
(Task 2-2)



1. **Disconnect hose (1)** from pressure transducer (2). Use container and cloths (E120) for spilled oil.
2. **Disconnect electrical connector (3)** from pressure transducer (2).
3. Remove four bolts (4) and washers (5).
4. **Remove pressure transducer (2).**



FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-62 INSTALL AFT TRANSMISSION OIL PRESSURE TRANSDUCER 8-62

INITIAL SETUP

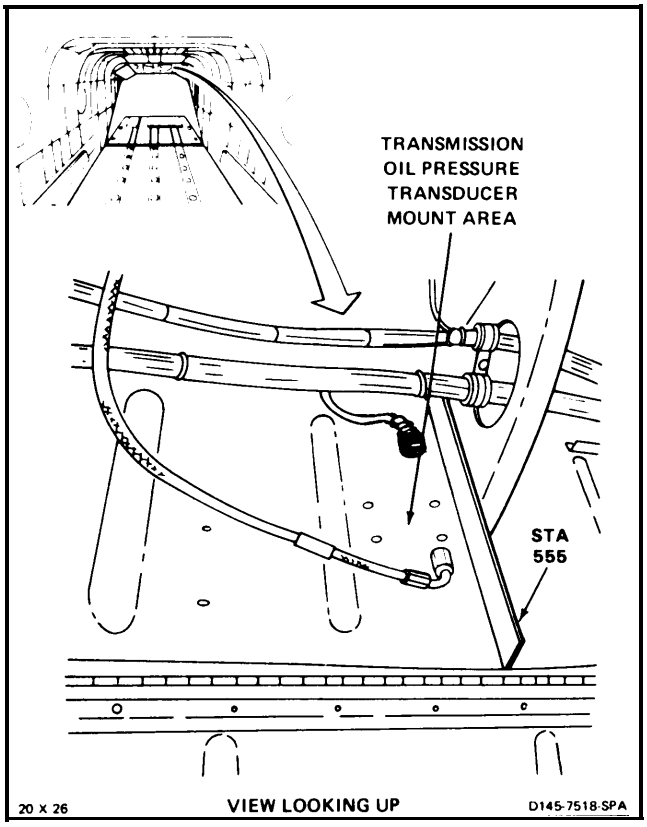
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

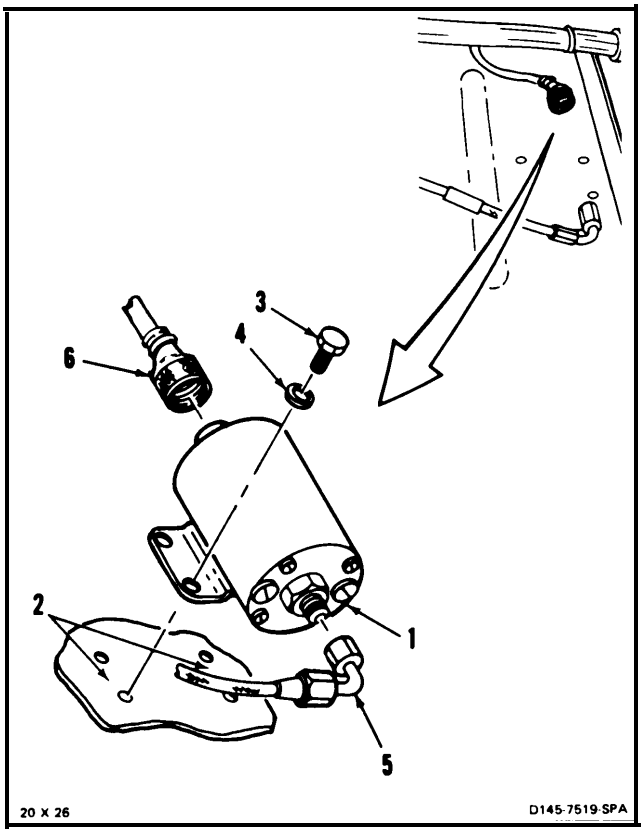
Materials:
Cloth (E 120)

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25



1. Clean mounting surfaces of transducer (1) and structure (2) (TM 55-1500-323-25). Use cloth (E120).
2. **Position transducer (1). Install four bolts (3)** and washers (4).
3. **Connect hose (5)** to transducer (1).
4. **Connect connector (6)** to transducer (1).



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8-62 INSTALL AFT TRANSMISSION OIL PRESSURE TRANSDUCER (Continued) 8-62

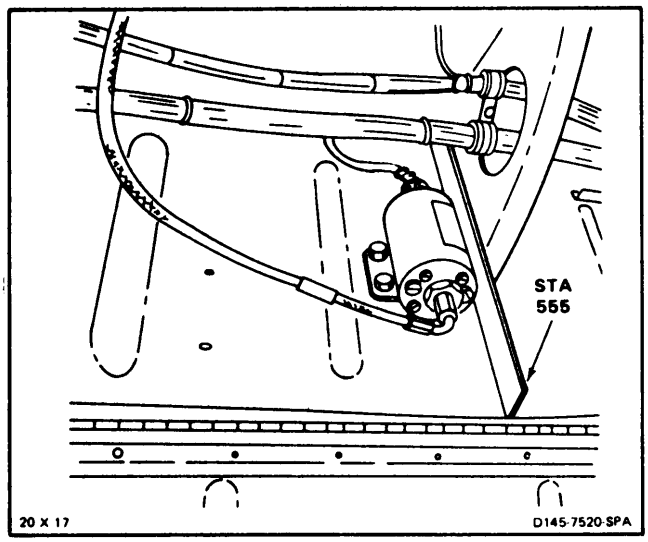
INSPECT

FOLLOW-ON MAINTENANCE:

Close baffles under aft transmission (Task 2-2).

Perform operational check (TM 55-1520-240-T).

Close cargo ramp (TM 55-1520-240-T)



END OF TASK

8-63 REMOVE FORWARD TRANSMISSION OIL PRESSURE TRANSDUCER

INITIAL SETUP

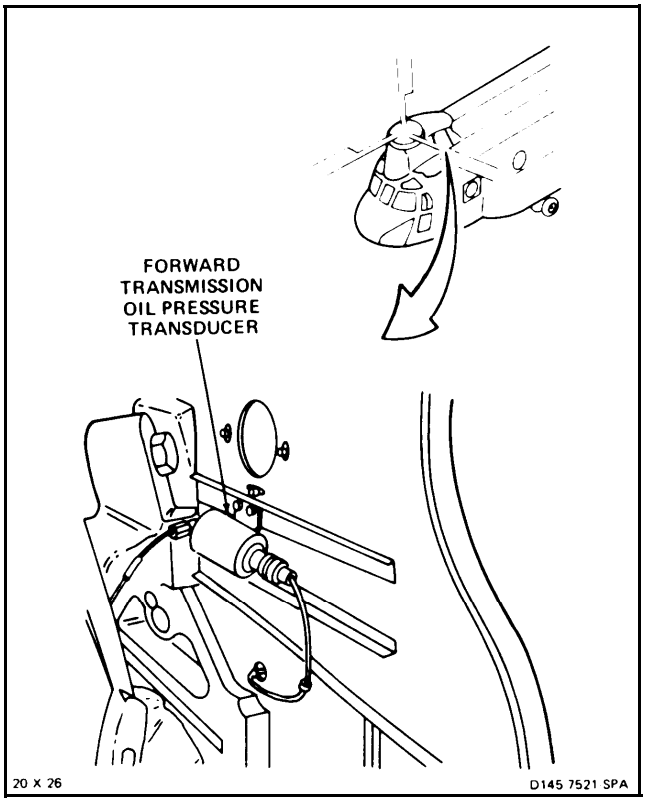
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Container, Two Quart

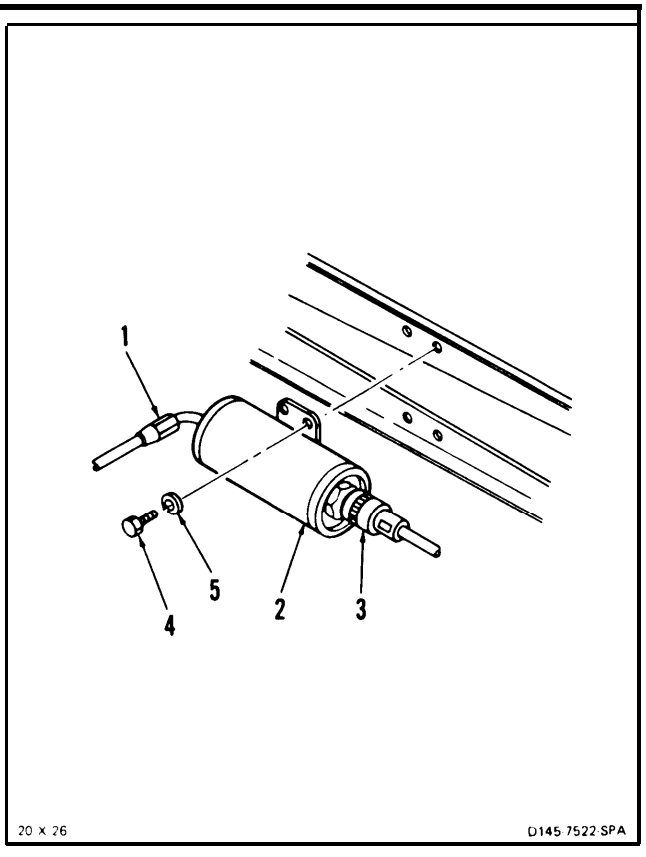
Materials:
Cloth (E120)

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Left Forward Work Platform Open (Task 2-2)



1. **Disconnect hose (1)** from pressure transducer (2). Use container and cloths (E120) for spilled oil.
2. **Disconnect electrical connector (3)** from pressure transducer (2).
3. Remove four bolts (4) and washers (5).
4. **Remove pressure transducer (2).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-64 INSTALL FORWARD TRANSMISSION OIL PRESSURE TRANSDUCER

INITIAL SETUP

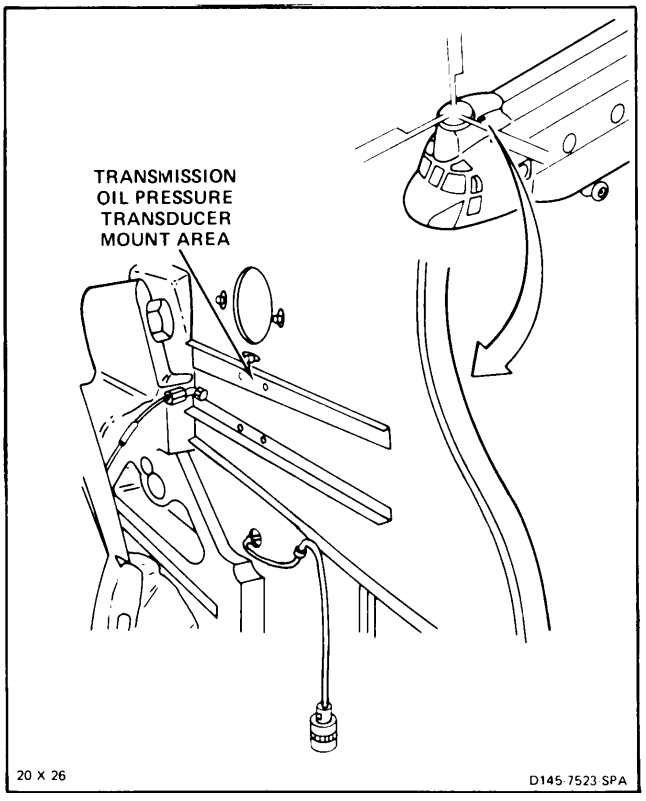
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
Cloth (E120)
Dry Cleaning Solvent (E162)
Gloves (E186)

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25



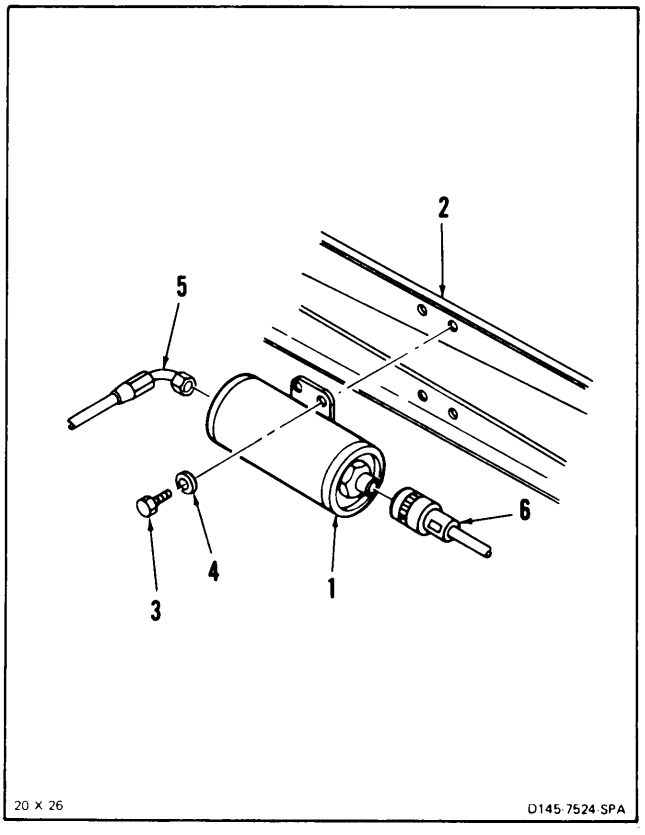
WARNING

Dry cleaning solvent (E162) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Cleaning bonding surfaces of transducer (1) and mounting surface (2) (TM 55-1500-323-25). Use dry cleaning solvent (E162), cloth (E120), and gloves (E186).
2. **Position transducer (1). Install four bolts (3)** and washers (4).
3. **Connect hose (5)** to transducer (1).
4. **Connect connector (6)** to transducer (1).

INSPECT

FOLLOW-ON MAINTENANCE:
Close left forward work platform (Task 2-2).
Perform operational check (TM 55-1520-240-T).



END OF TASK

8-65 REPLACE FORWARD TRANSMISSION OIL PRESSURE SWITCHES

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

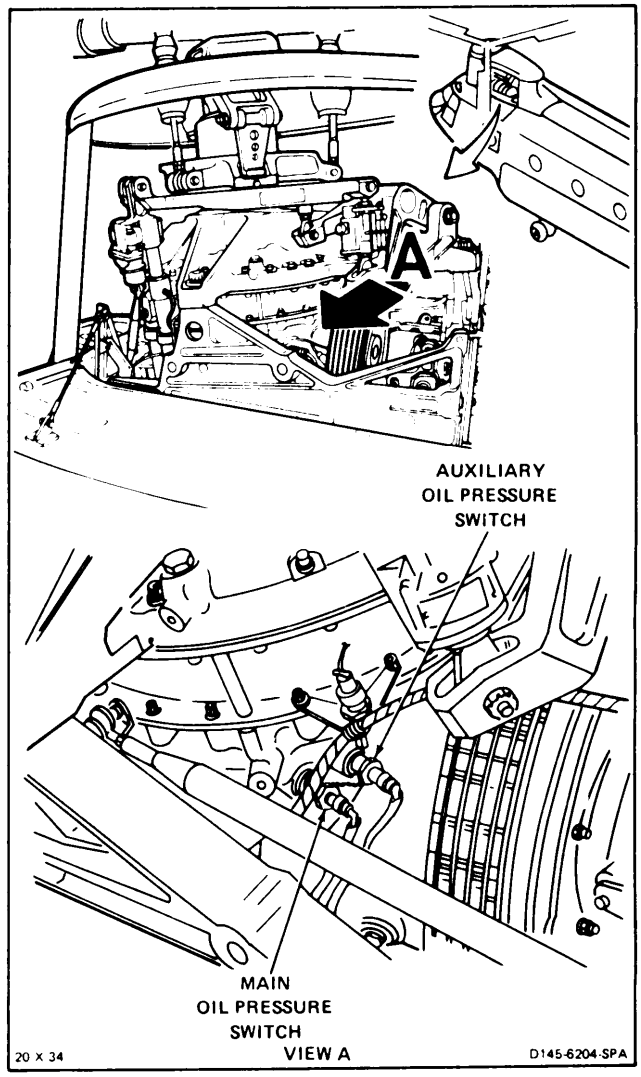
Materials:
Lockwire (E231)
Oil (E254)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Left Forward Transmission Fairing Open (Task 2-2)

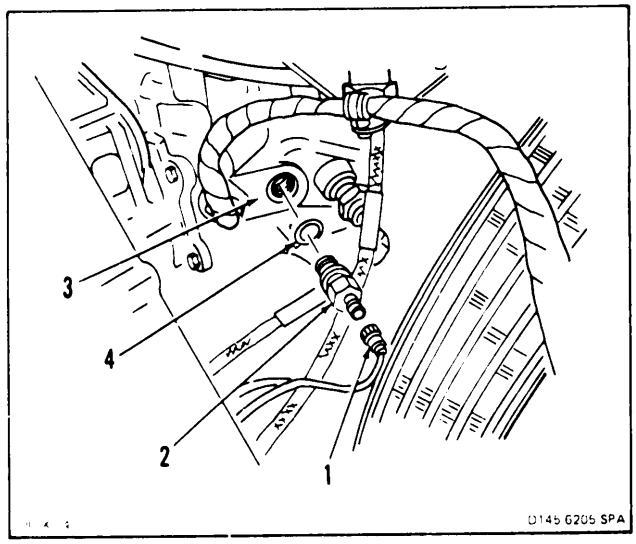


NOTE

Procedure is same to replace main or auxiliary switch. Replacement of main switch is shown here.

REMOVE SWITCH

1. **Disconnect connector (1)** from switch (2).
2. Remove lockwire from switch (2).
3. **Remove switch (2)** from transmission (3).
4. Remove packing (4) from switch (2).



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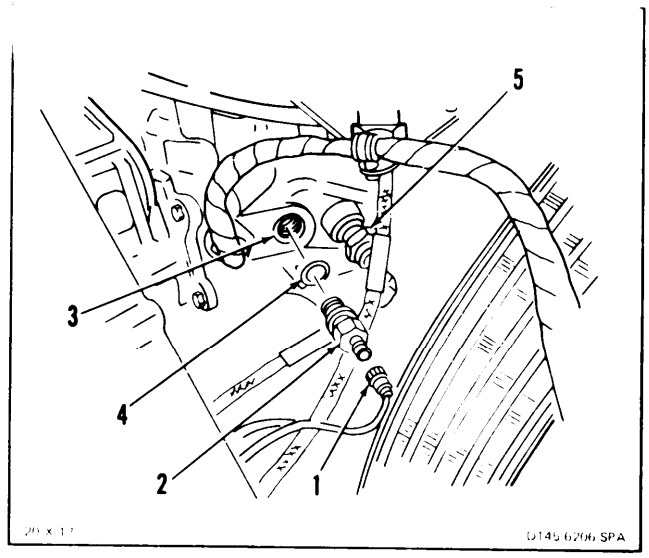
8-65 REPLACE FORWARD TRANSMISSIN OIL PRESSURE SWITCHES (Continued)

INSTALL SWITCH

5. Coat packing (4) and threads of switch (2) with oil (E254).
6. Install packing (4) on switch (2).
7. **Install switch (2)** in transmission (3). **Torque switch to 80 inch-pounds.**
8. Lockwire main switch (2) to auxiliary switch (5). Use lockwire (E231).
9. **Connect connector (1)** to switch (2).

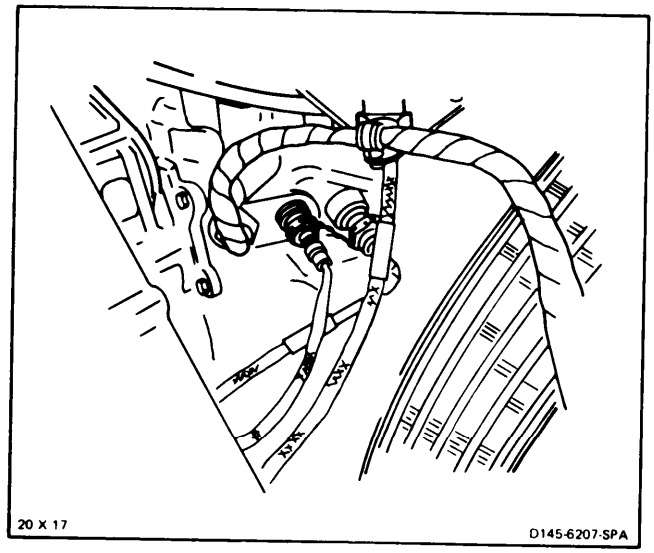


INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Close left forward transmission fairing (Task 2-2).



END OF TASK

8-66 REPLACE COMBINING TRANSMISSION MAIN OIL PRESSURE SWITCH

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

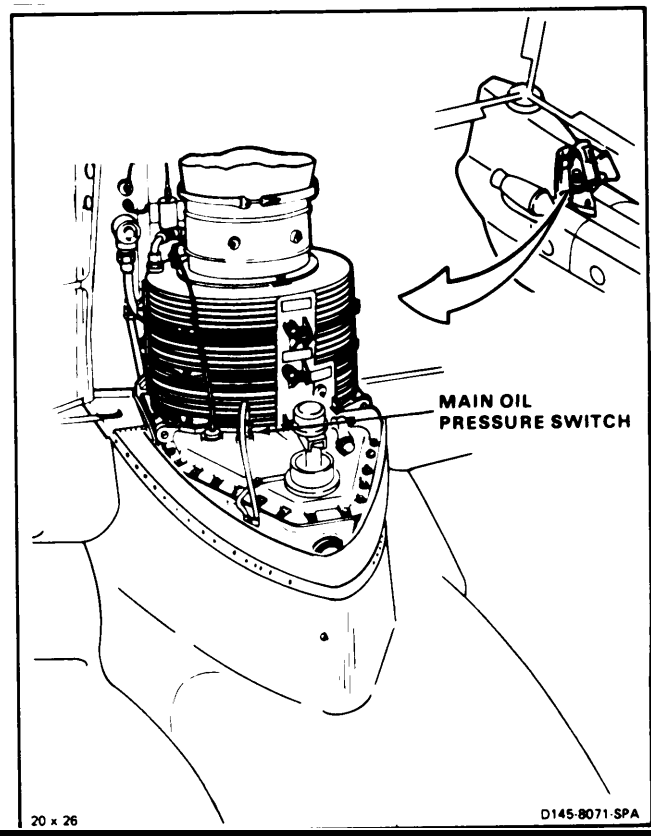
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

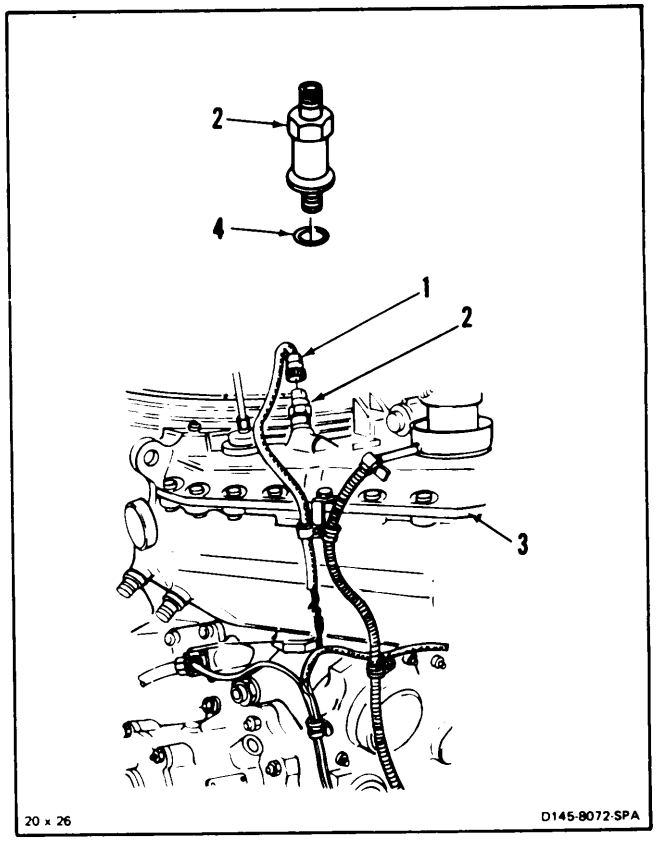
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Aft Pylon Doors Open (Task 2-2)



REMOVE SWITCH

1. **Disconnect electrical connector (1)** from switch (2).
2. Remove lockwire from switch (2).
3. **Remove switch (2)** from sump cover (3).
4. Wipe up spilled oil. Use cloth (E120).
5. Remove packing (4) from switch (2).



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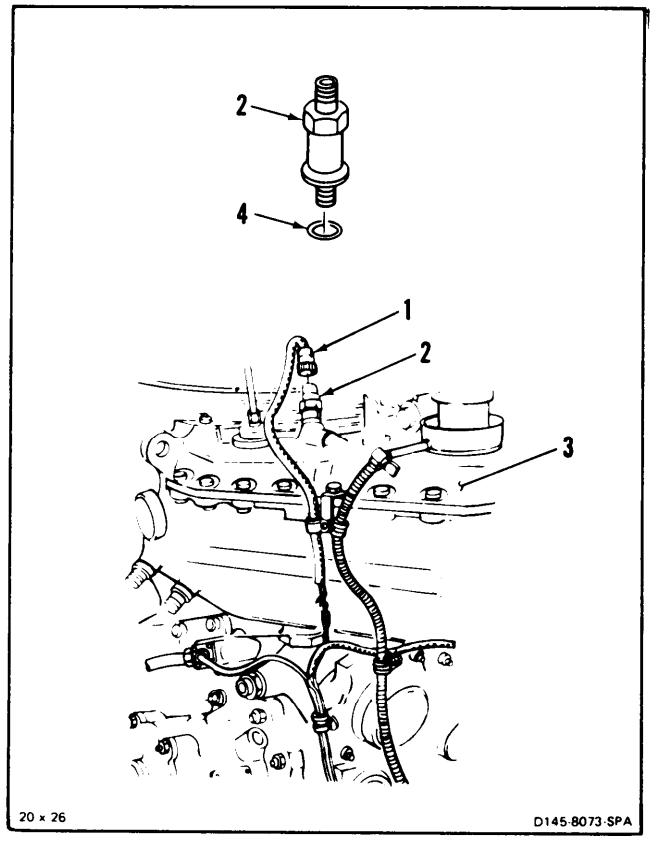
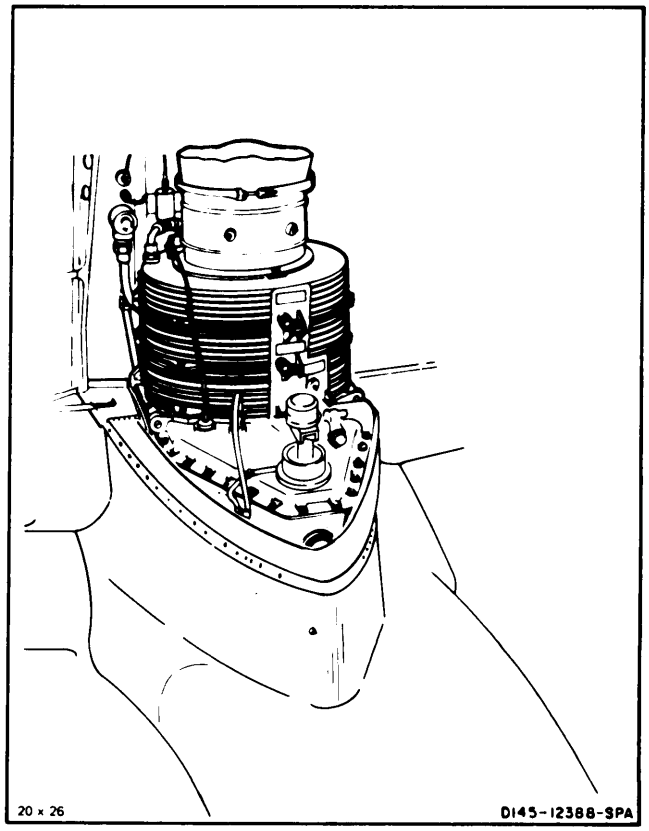
INSTALL SWITCH

6. Coat packing (4) and thread of switch (2) with oil (E254),
7. Install packing (4) on switch (2).
8. **Install switch (2)** in sump cover (3). **Torque switch to 80 inch-pounds.**
9. Lockwire switch (2) to sump cover (3). Use lockwire (E231).
10. Connect electrical connector (1) to switch (2).



INSPECT



FOLLOW-ON MAINTENANCE:

Close aft pylon doors (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-67 REPLACE COMBINING TRANSMISSION AUXILIARY OIL PRESSURE SWITCH

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

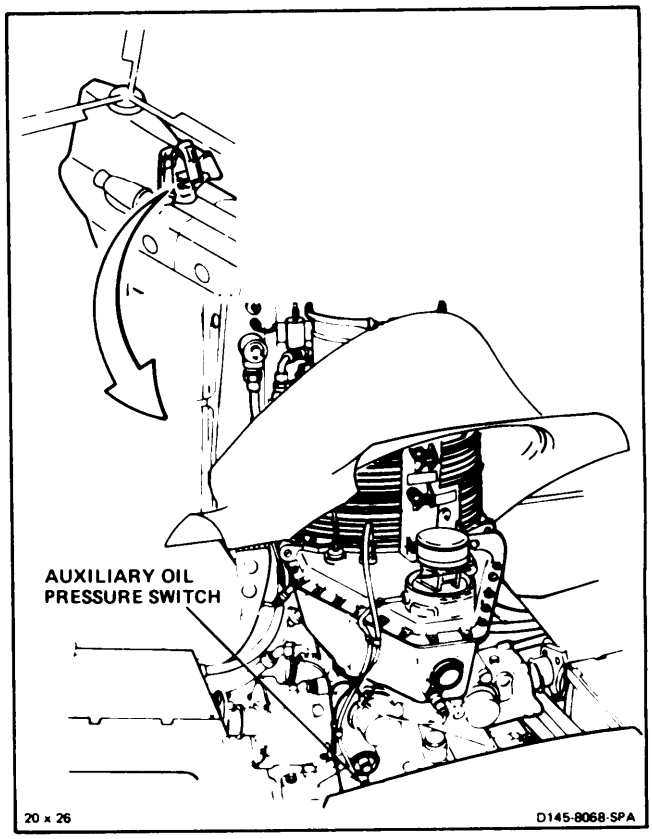
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

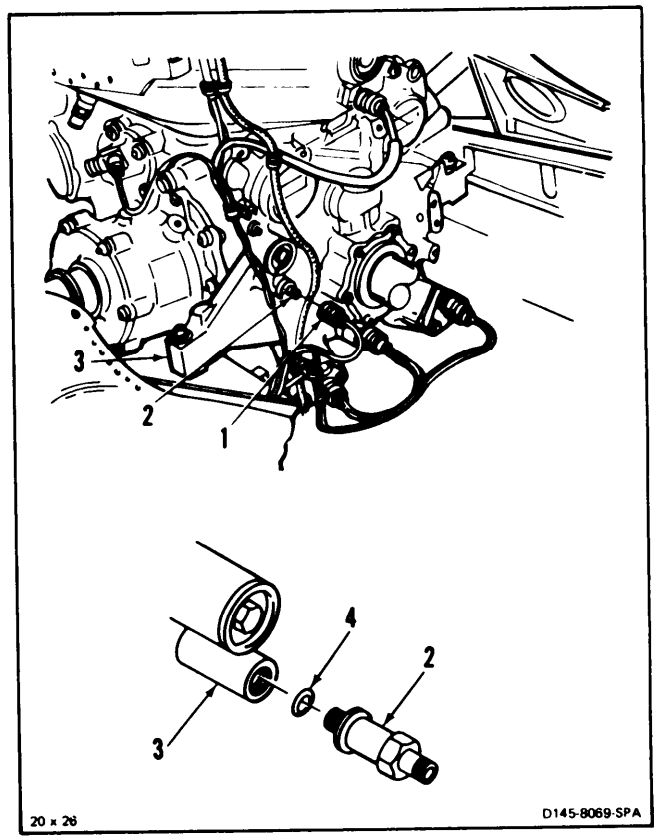
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Pylon Doors Open (Task 2-2)
Pylon Lower Fairing Open (Task 2-2)



REMOVE SWITCH

1. **Disconnect electrical connector (1)** from switch (2).
2. Remove lockwire from switch (2).
3. **Remove switch (2)** from transmission (3).
4. Wipe up spilled oil. Use cloth (E104).
5. Remove packing (4) from switch (2).



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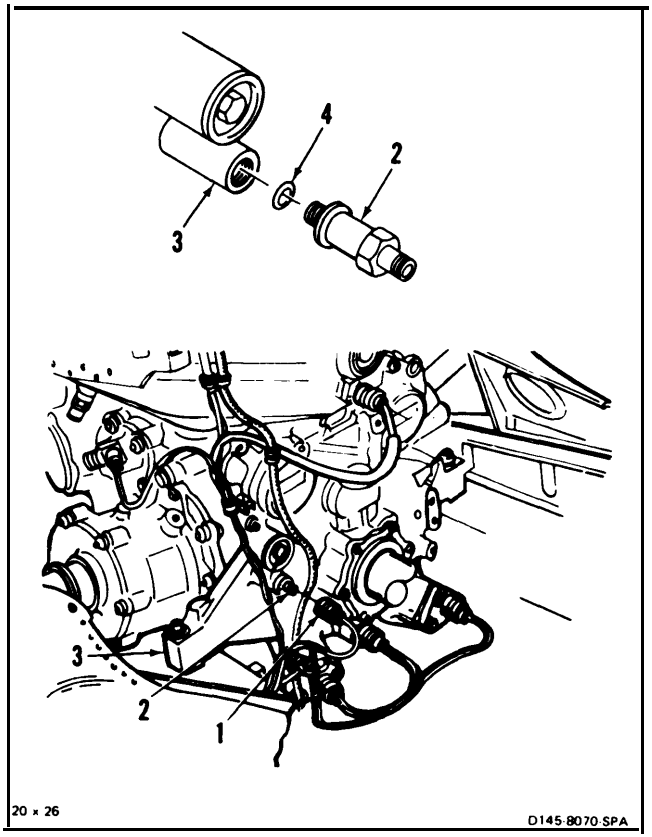
8-67 REPLACE COMBINING TRANSMISSI0N AUXILIARY OIL PRESSURE SWITCH (Continued)

INSTALL SWITCH

6. Coat packing (4) and thread of switch (2) with oil (E254).
7. Install packing (4) on switch (2).
8. **Install switch (2)** in transmission (3). **Torque switch to 80 inch-pounds.**
9. Lockwire switch (2) to transmission (3). Use lockwire (E231).
10. **Connect electrical connector (1)** to switch (2).



INSPECT

FOLLOW-ON MAINTENANCE:

Close pylon lower fairing (Task 2-2).

Close pylon doors (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-68 REPLACE NO.1 ENGINE TRANSMISSION MAIN OIL PRESSURE SWITCH

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

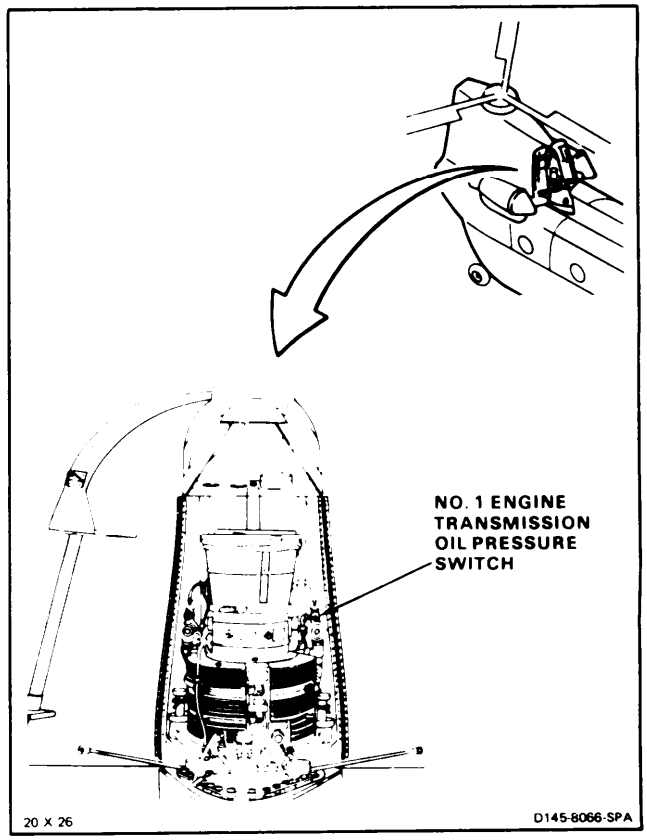
Materials:
Oil (E254)
Lockwire (E231)
Cloths (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

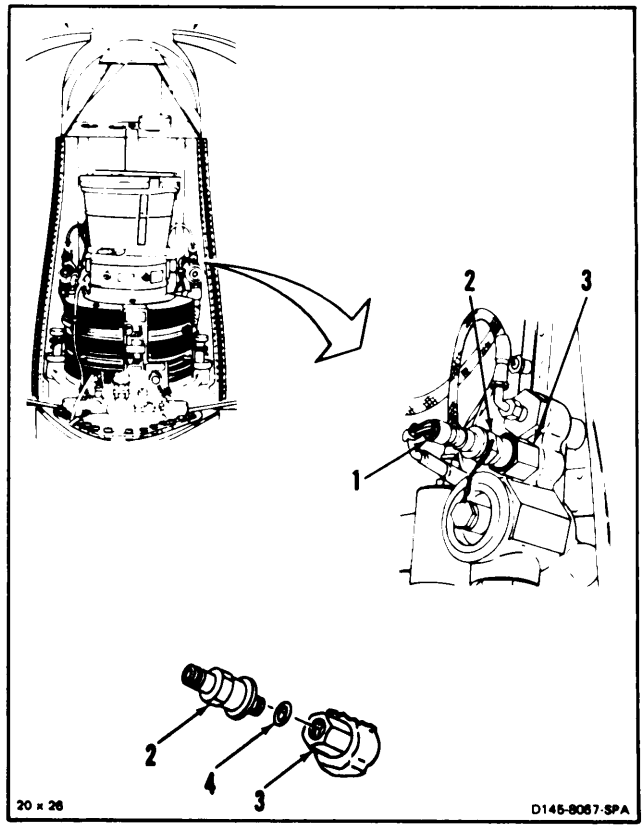
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Pylon Doors Open (Task 2-2)



REMOVE SWITCH

1. **Disconnect electrical connector (1)** from switch (2).
2. Remove lockwire from switch (2).
3. **Remove switch (2)** from screen support housing (3).
4. Wipe up spilled oil. Use cloth (E120).
5. Remove packing (4) from switch (2).



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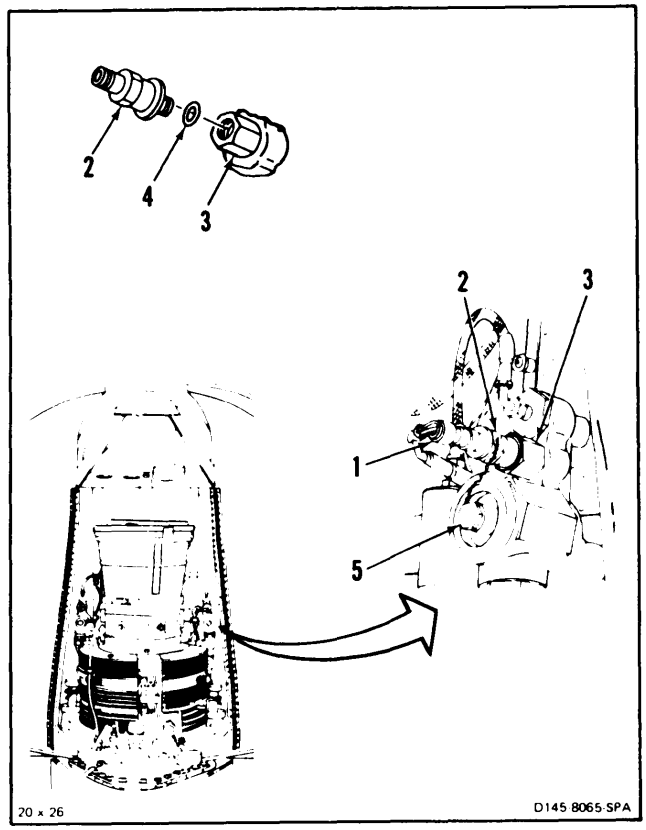
8-68 REPLACE NO.1 ENGINE TRANSMISSION MAIN OIL PRESSURE SWITCH (Continued)



INSTALL SWITCH

6. Coat packing (4) and thread of switch (2). oil (E254).
7. **Install packing (4)** on switch (2).
8. **Install switch (2)** in screen support housing (3). **Torque switch to 80 inch-pounds.**
9. Lockwire switch (2) to screen cover (5). Use lockwire (E231).
10. **Connect electrical connector (1)** to switch (2).

INSPECT

FOLLOW-ON MAINTENANCE:

Close pylon doors (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-69 REPLACE NO. 2 ENGINE TRANSMISSION MAIN OIL PRESSURE SWITCH 8-69

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

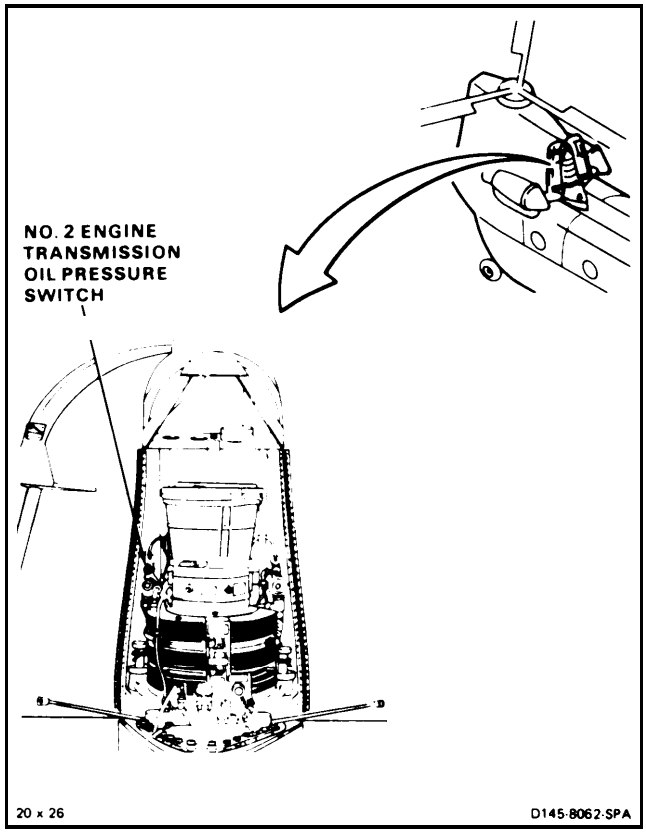
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
Medium Helicopter Repairer
Inspector

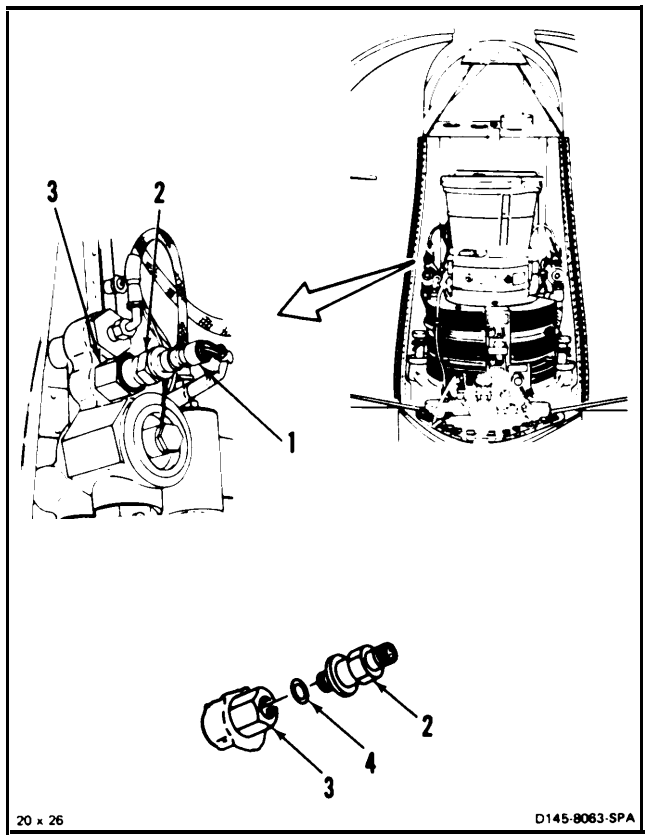
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Pylon Doors Open (Task 2-2)



REMOVE SWITCH

1. **Disconnect electrical connector (1)** from switch (2).
2. Remove lockwire from switch (2).
3. **Remove switch (2)** from screen support housing (3), Wipe up spilled oil. Use cloth (E120).
4. Remove packing (4) from switch (2).



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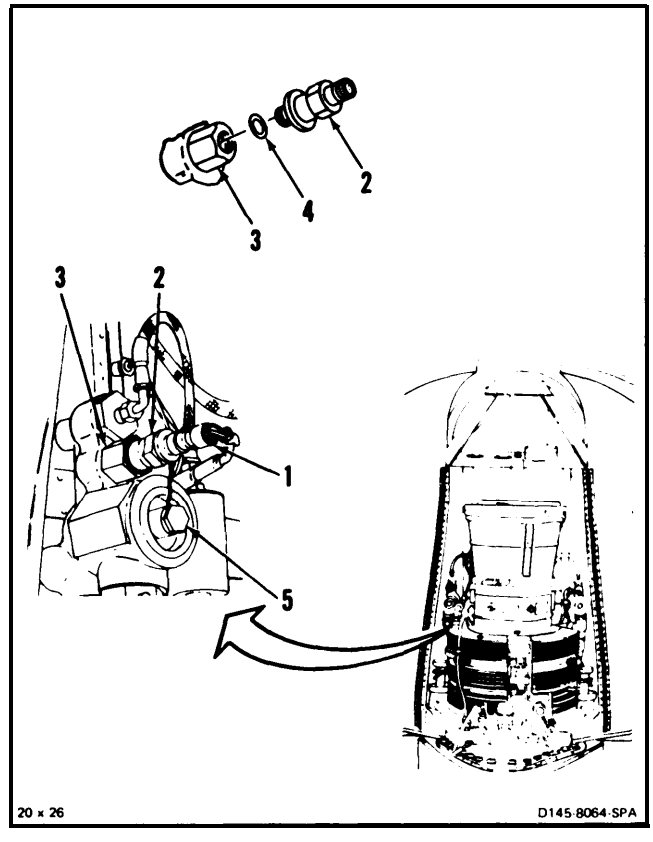
8-69 REPLACE NO.2 ENGINE TRANSMISSION MAIN OIL PRESSURE SWITCH (Continued)

INSTALL SWITCH

5. Coat packing (4) and thread of switch (2) with oil (E254).
6. Install packing (4) on switch (2).
7. **Install switch (2)** in screen support housing (3). **Torque switch to 80 inch-pounds.**
8. Lockwire switch (2) to screen cover (5). Use lockwire (E231).
9. **Connect electrical connector (1)** to switch (2).



INSPECT

FOLLOW-ON MAINTENANCE:

Close pylon doors (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-70 REPLACE AFT TRANSMISSION MAIN OIL PRESSURE SWITCH

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

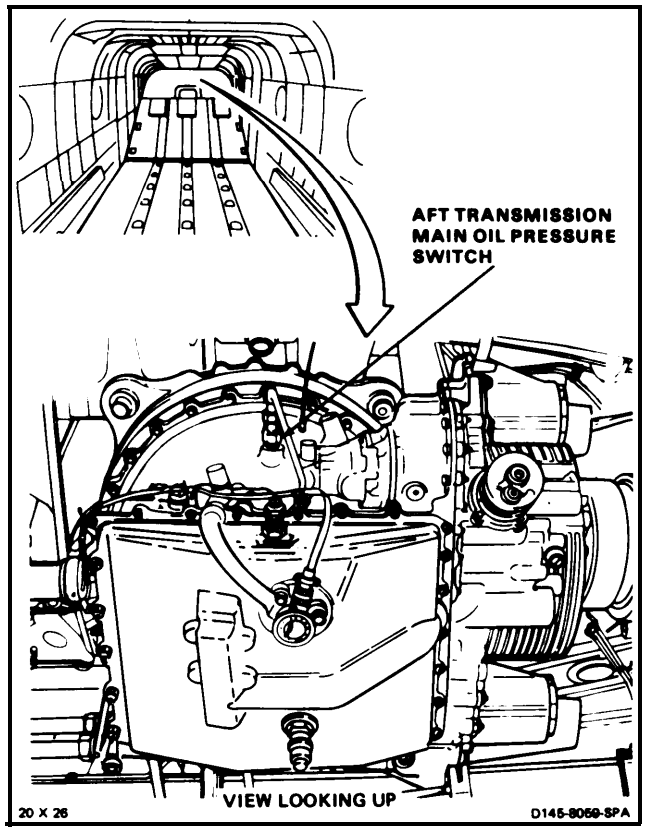
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)
Baffles Under Aft Transmission Open (Task 2-2)
Aft Transmission Drip Tray Removed (Task 2-3)



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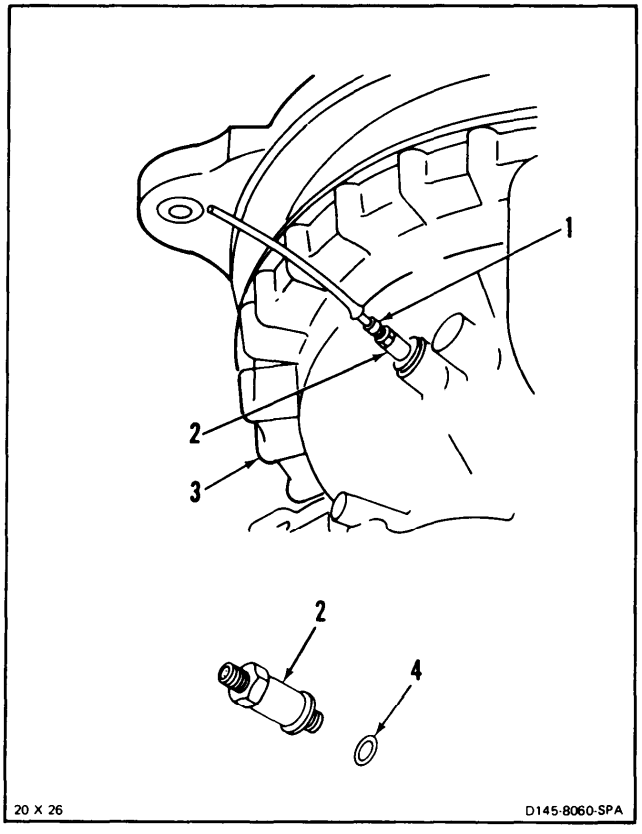
8-70 REPLACE AFT TRANSMISSION MAIN OIL PRESSURE SWITCH (Continued)

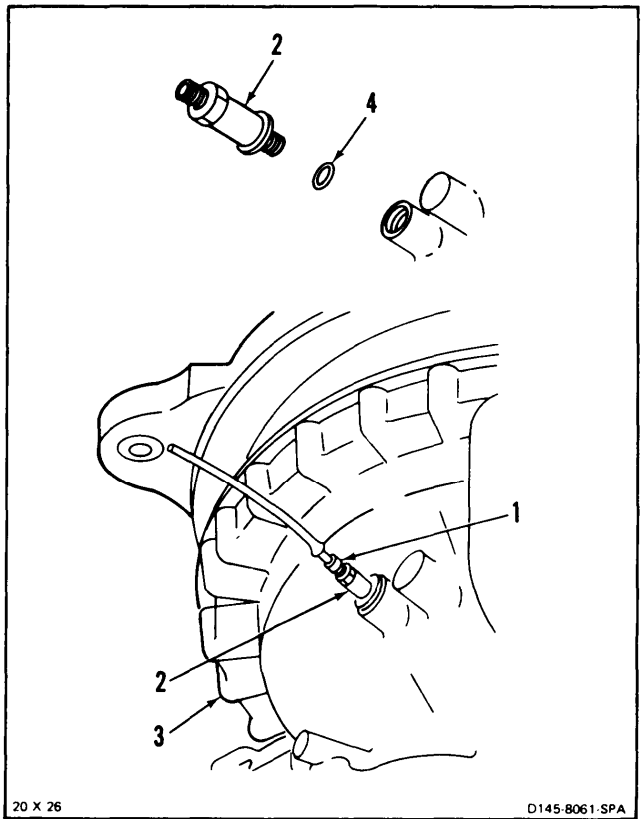
REMOVE SWITCH

1. **Disconnect electrical connector (1)** from switch (2).
2. Remove Iockwire from switch (2).
3. **Remove switch (2)** from transmission (3). Wipe up spilled oil. Use cloth (El20).
4. Remove packing (4) from switch (2).



INSTALL SWITCH

5. Coat packing (4) and thread of switch (2) with oil (E254).
6. Install packing (4) on switch (2).
7. **Install switch (2)** in transmission (3). **Torque switch to <u>80 inch-pounds.</u>**
8. Lockwire switch (2) to transmission (3), Use Iockwire (E231).
9. **Connect electrical connector (1)** to switch (2).



INSPECT

FOLLOW-ON MAINTENANCE:

Close baffles under aft transmission (Task 2-2).

Install aft transmission drip tray (Task 2-3).

Close cargo ramp (TM 55-1520-240-T).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-71 REPLACE AFT TRANSMISSION AUXILIARY OIL PRESSURE SWITCH

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

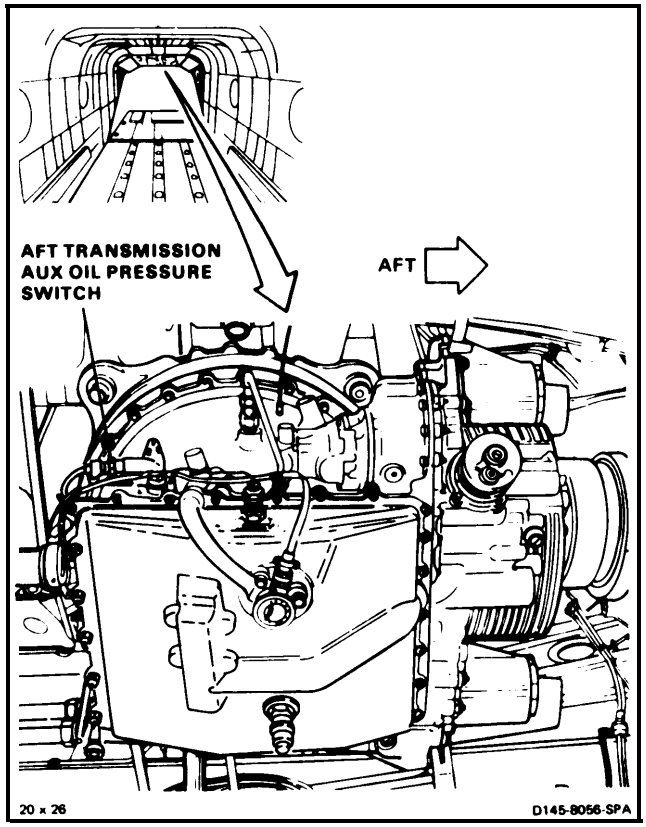
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)
Baffles Under Aft Transmission Open (Task 2-2)
Aft Transmission Drip Tray Removed (Task 2-3)



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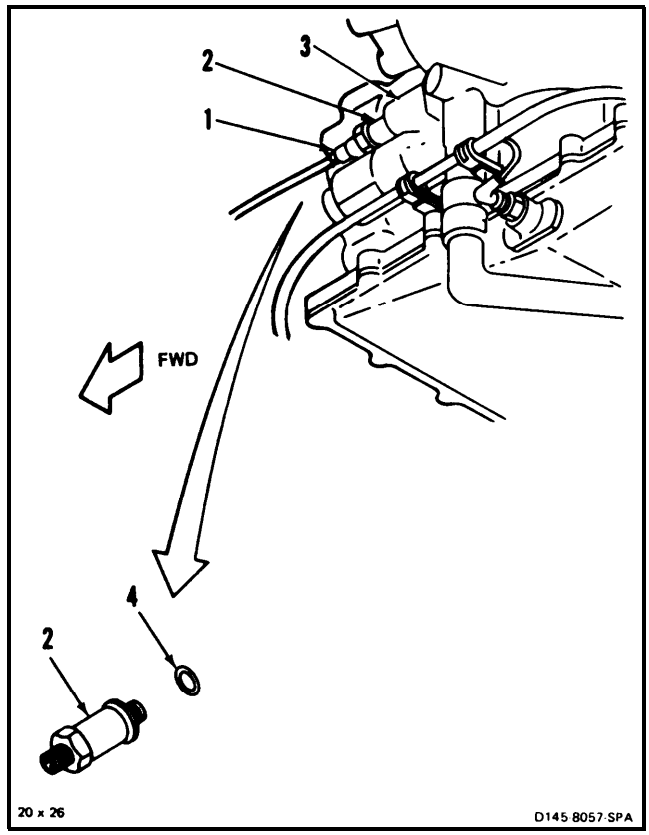
8-71 REPLACE AFT TRANSMISSiON AUXILIARY OIL PRESSURE SWITCH (Continued)

REMOVE SWITCH

1. **Disconnect electrical connector (1)** from switch (2).
2. Remove lockwire from switch (2).
3. **Remove switch (2)** from transmission (3). Wipe up spilled oil. Use cloth (E120).
4. Remove packing (4) from switch (2).



INSTALL SWITCH

5. Coat packing (4) and thread of switch (2) with oil (E254).
6. Install packing (4) on switch (2).
7. **Install switch (2)** in transmission (3). **Torque switch to 80 inch-pounds.**
8. Lockwire switch (2) to screen cover (5). Use lockwire (E231).
9. **Conecct electrical connector (1)** to switch (2).

INSPECT

FOLLOW-ON MAINTENANCE:

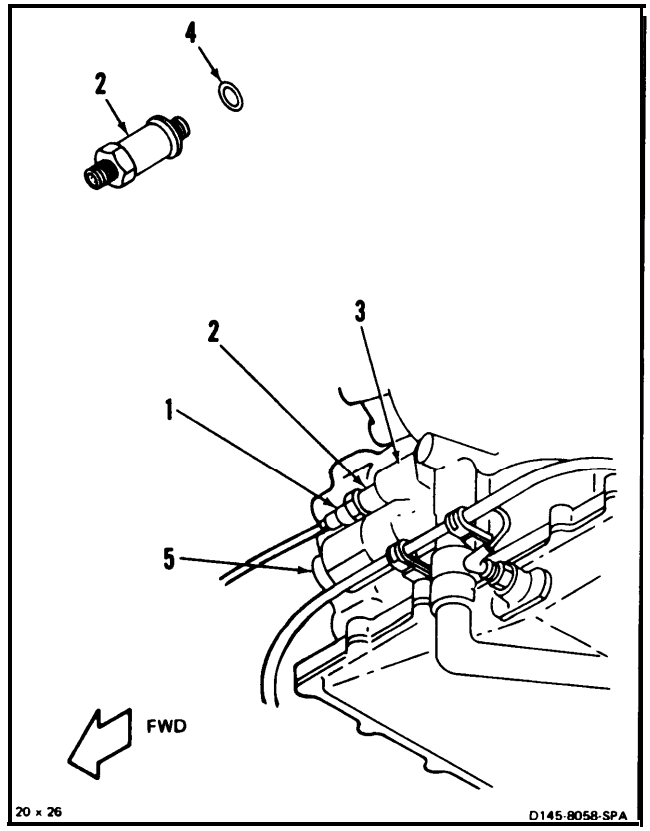
Close baffles under aft transmission (Task 2-2).

Install aft transmission drip tray (Task 2-3).

Close cargo ramp (TM 55-1520-240-T).

Perform operational check (TM 55-1520-240-T).

END OF TASK



8-72 REPLACE AFT ROTOR SHAFT MAIN OIL PRESSURE SWITCH 8-72

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

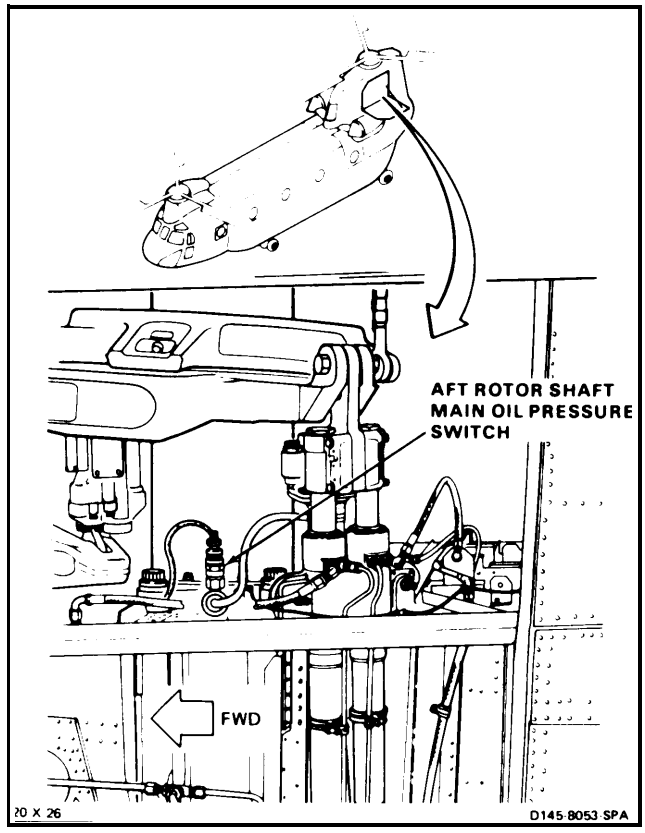
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

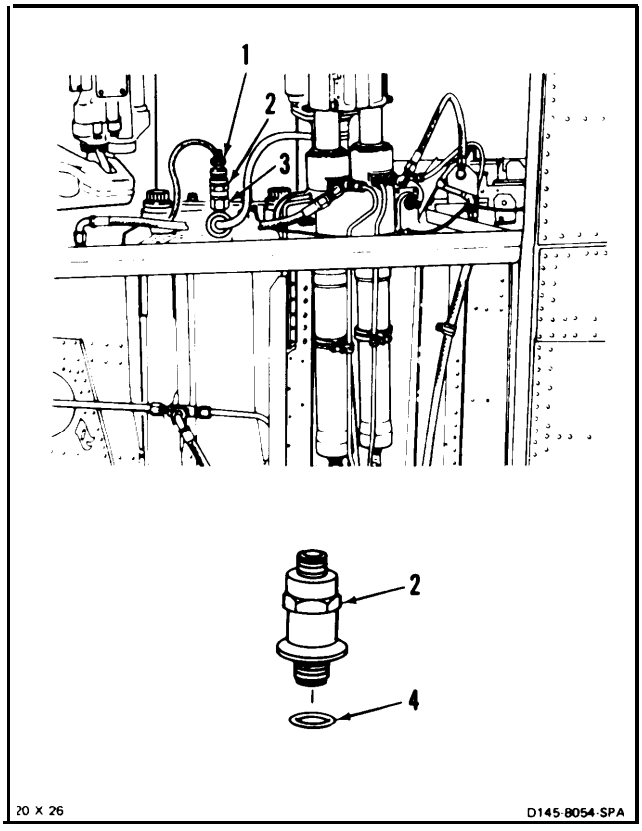
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Aft Left Work Platform Open (Task 2-2)



REMOVE SWITCH

1. **Disconnect electrical connector (1)** from switch (2).
2. Remove lockwire from switch (2).
3. **Remove switch (2)** from bushing (3). Wipe up spilled oil. Use cloth (E120).
4. Remove packing (4) from switch (2).



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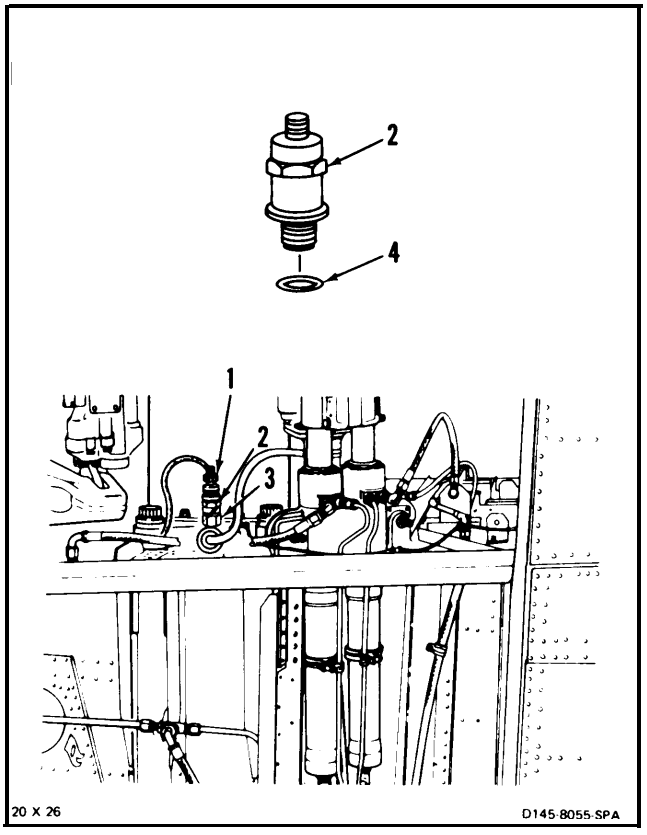
8-72 REPLACE AFT ROTOR SHAFT MAIN OIL PRESSURE SWITCH (Continued)

INSTALL SWITCH

5. Coat packing (4) and thread of switch (2) with oil (E254).
6. Install packing (4) on switch (2).
7. **Install switch (2)** in bushing (3). Torque **switch to 80 inch-pounds.**
8. Lockwire switch (2) to bushing (3). Use lockwire (E231).
9. **Connect electrical connector (1)** to switch (2).



INSPECT

FOLLOW-ON MAINTENANCE:

Close aft left work platform (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-73 TEST TRANSMISSION OIL TEMPERATURE SELECTOR SWITCH OR INDICATOR (AVIM)

INITIAL SETUP

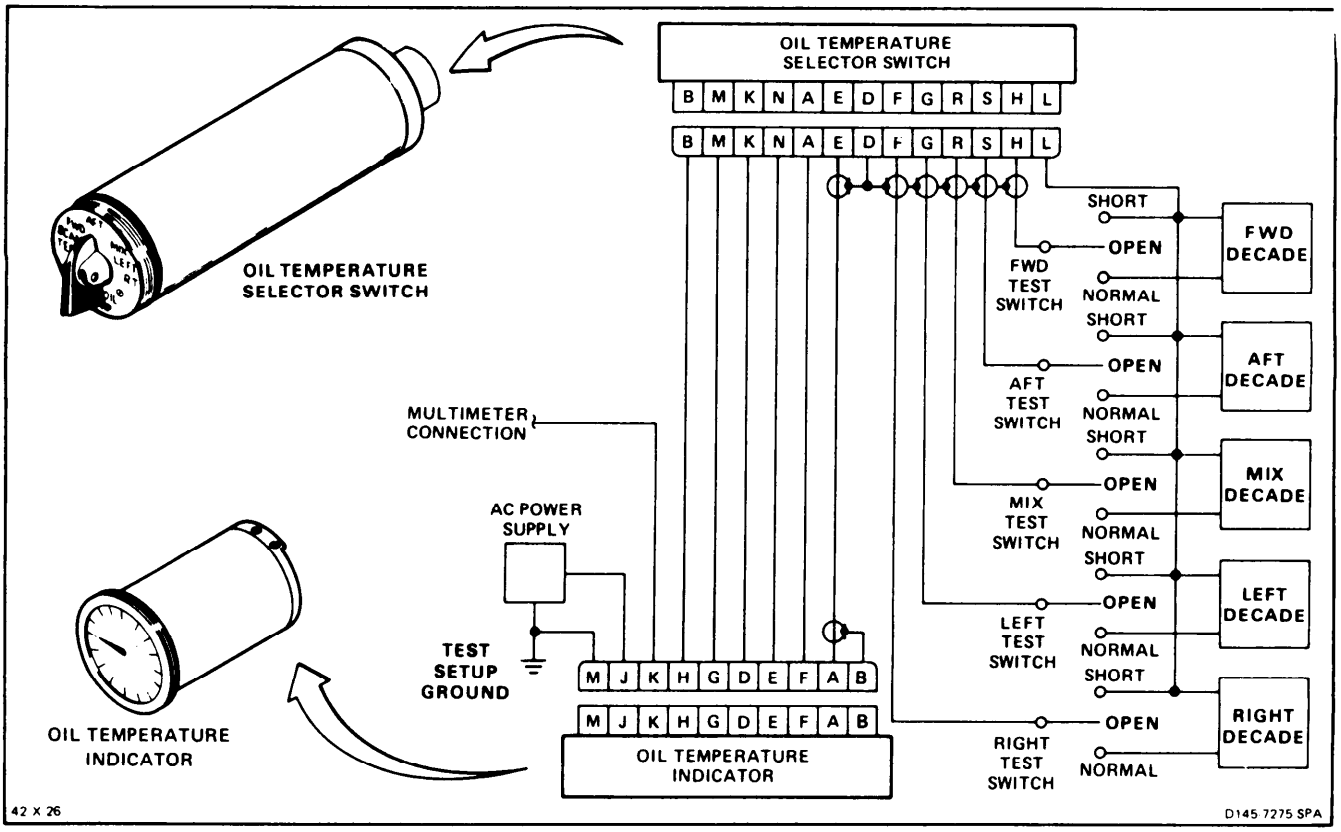
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Ac Power Supply, 115 Volt 400 Hz
Transmission Oil Temperature Selector Switch
384332-015
Transmission Oil Temperature Indicator
321001-03019
Resistance Decade, 0 to 2500 Ohms
±1%(5)
Multimeter
Stopwatch
Crimping Tool
NSN 5120-00-075-2544
Connector MS3476W14-15SX
Connector MS3476W14-18S
Wire, No. 20, Insulated
Wire, No. 20, Shielded
Switch MS24523-21 (5)

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

Equipment Condition:
Off Helicopter Task
Electrical Test Setup



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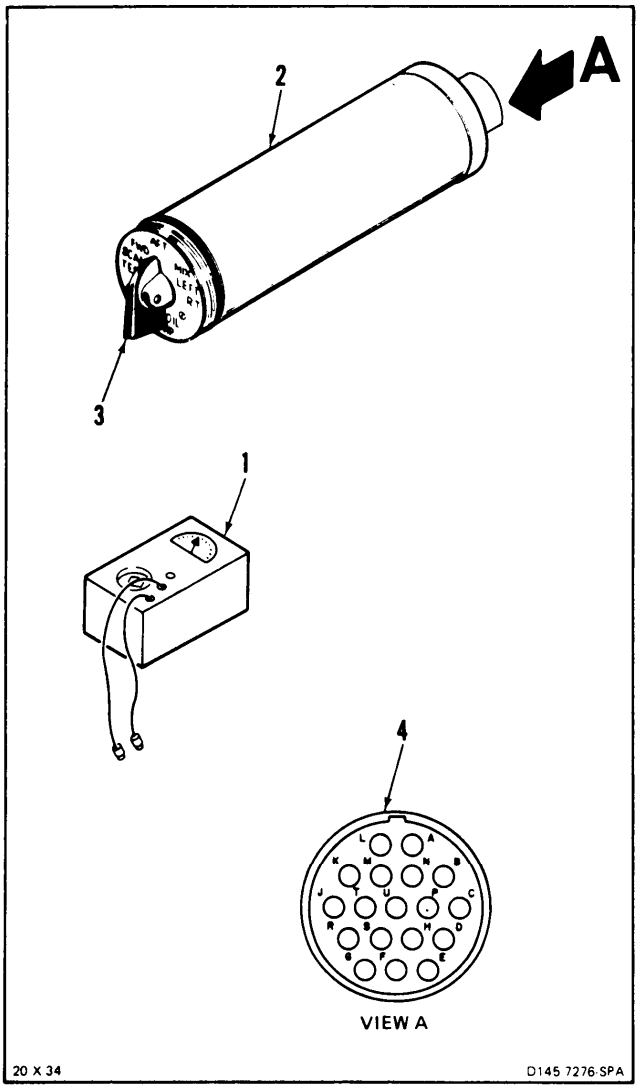
8-73 TEST TRANSMISSION OIL TEMPERATURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued)

NOTE

- For testing indicator, a known good selector switch is used.
- For testing selector switch a known good indicator is used.
- Perform steps 1 thru 52 if testing selector switch.
- Perform steps 8 thru 52 if testing indicator.

SELECTOR SWITCH CONTINUITY AND RESISTANCE TEST

1. **Connect multimeter (1), set to RX1, to pins A and L of selector switch (2).**
2. **Rotate selector switch knob (3) through all dial positions. Check multimeter (1).** Multi meter shall indicate continuity at all switch positions. Disconnet multimeter.
3. **Connect multimeter (1), set to RX1, to pins A and D of selector switch (2). Repeat step 2.** Disconnect multi meter.
4. **Connect multimeter (1) set to RX1 to pin A and case ground (4) (receptacle shell). Repeat step 2. Disconnect multimeter.**
5. **Set selector switch knob (3) to SCAN.**
6. **Conmnect multimeter (1), set to RX 10,000 to pins N to S of switch (2). Check multimeter (1).** Multimeter shall indicate between 9.975 and 11.025 K ohm.
7. **Repeat step 6 between pins N to R, N to G, N to H, and N to F of switch (2). Then go to step 8.**



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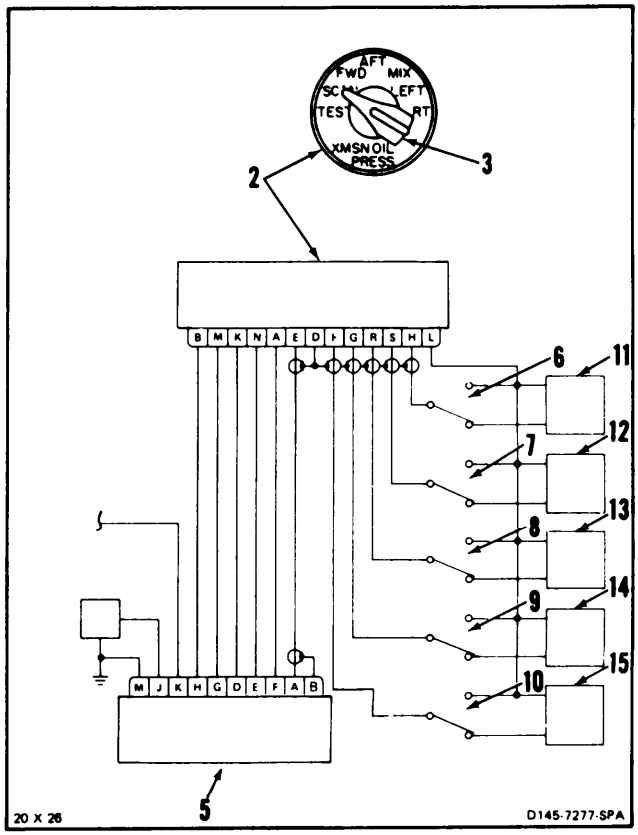
8-73 TEST TRANSMISSION OIL TEMPERATURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued) 8-73

DIAL LAMP TEST

8. **Connect selector switch (2) to SCAN to test setup.**
9. **Connect indicator (5) to test setup.**
10. **Set test switches 6, 7, 8, 9 and 10 to NORMAL.**
11. **Set decades (11, 12, 13, 14, and 15) to 0 ohm.**
12. **Apply power to test set up.** Selector switch (2) SCAN position dial lamp shall come on.
13. **Set and hold selector switch knob (3) to TEST. Check TEST dial lamp.** Lamp shall come on. **Release selector switch.** Switch knob (3) shall return to SCAN.
14. **Set selector switch knob (3) to each dial position, FWD, AFT, MIX, LEFT, AND RT. Check dial lamp for each position.** Lamp shall come on at each position.

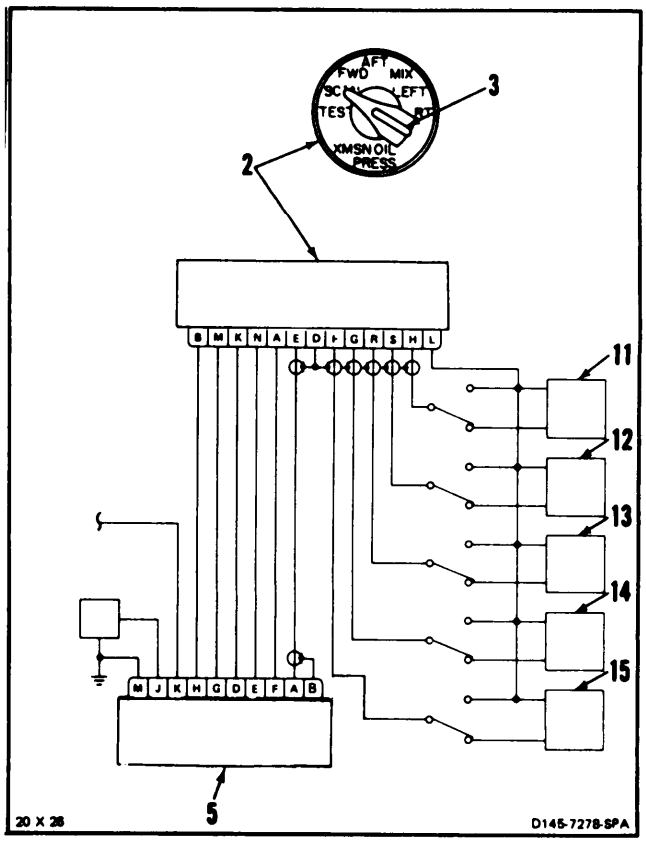


TRANSDUCER CIRCUIT TEST

15. **Set selector switch knob (3) to SCAN.**

NOTE
SCAN dial lamp remains on when selector switch is at SCAN.

16. **Adjust FWD decade (11) AFT decade (12), MIX decade (13), LEFT decade (14), and RIGHT decade (15) to 1500 ohms.**
17. **Adjust FWD decade (11) to 500 ohms.**
18. **Check doctor switch (2).** FWD dial lamp shall come on as decade (11) is adjusted.
19. **Check indicator (5).** Indcator shall read below -60°C.
20. **Adjust FWD decade (11) to 1500 Ohms.**
21. **Repeat steps 17 thru 20 at AFT decade (12), MIX decade (13), LEFT decade (14), and RIGHT decade (15). Then go to step 26.**



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8-73 TEST TRANSMISSION OIL TEMPERATURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued)

SENSITIVITY TEST

22. **Adjust AFT decade (12), MIX decade (13), LEFT decade (14), and RIGHT decade (15) to 1000 ohms.**

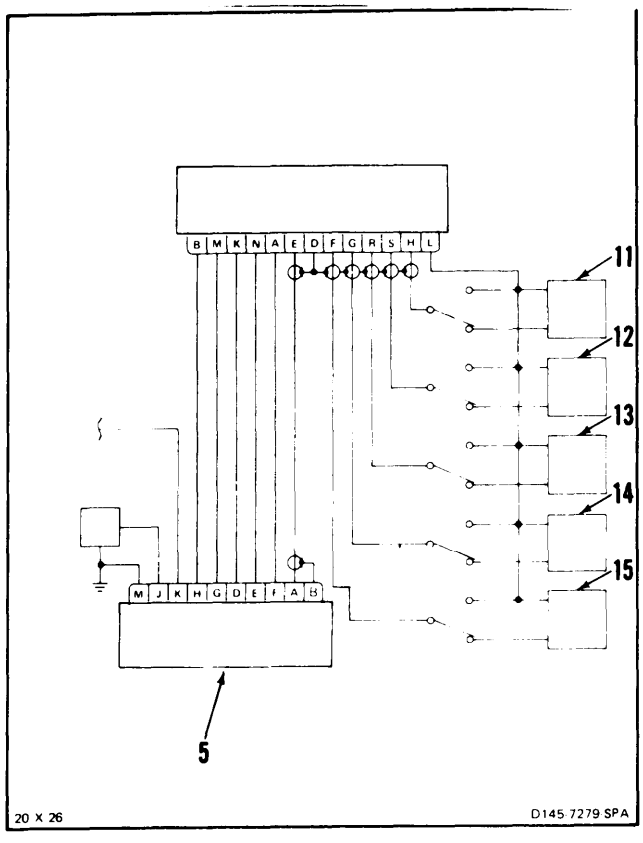
23. **Adjust FWD decade (11) until pointer of indicator (5) reads 10°C. Record decade setting.**

24. **Adjust FWD decade (11) down until pointer of indicator (5) just begins to move. Record decade setting.**

25. **Compare settings for FWD decade (11) in steps 23 and 24.** Difference shall be no more than 9.0 ohms.

26. **Repeat steps 23 thru 25 four times. Use 40°C, 60°C, 100°C, and 120°C as starting points.** Then go to step 27.

27. **Repeat steps 23 thru 25 five times. Use 120°C, 100°C, 60°C, 40°C, and 10°C as starting points and adjust FWD decade (11) up.** Then go to step 28.



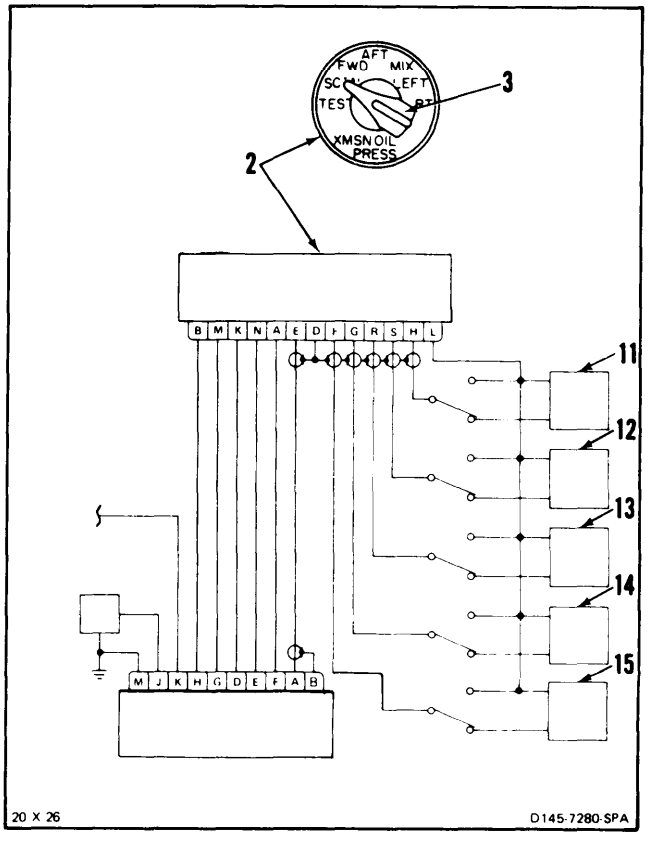
RESPONSE TEST

28. **Set selector switch knob (3) to SCAN. Adjust FWD decade (11). Aft decade (12), MIX decade (13), LEFT decade (14), and RIGHT decade (15) to 1500 ohms.**

29. **Adjust FWD decade (11) up until pointer of indicator (5) moves to follow adjustment. Pointer shall first decrease then increase to follow adjustment. Check down scale movement of pointer.** Down scale movement of pointer shall be less than 2.5°C.

30. **Adjust FWD decade to 1500 ohms.**

31. **Repeat steps 29 and 30 at AFT decade (12), MIX decade (13), LEFT decade (14), and RIGHT decade.** Then go to step 32.



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8-73 TEST TRANSMISSION OIL TEMPERATURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued) 8-73

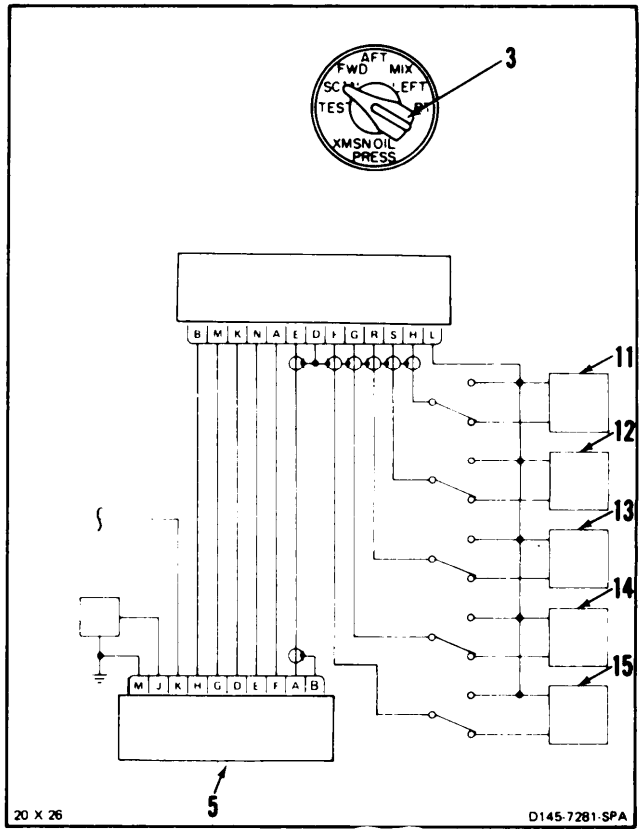
SCALE ERROR TEST

32. **Set selector switch knob (3) to SCAN.**

33. **Adjust AFT decade (1 2), MIX decade (13), LEFT decade (14), and RIGHT decade (15) to 700 ohms.**

34. **Adjust FWD decade (11) to cause indicator (5) readings listed. Decade settings shall be within tolerance as follows:**

SET INDICATOR READING TO	DECADE SETTING SHALL BE (OHMS)
-70°C	776.4 to 818.4
-50°C	885.9 to 927.9
0°C	1,179.0 to 1,221.0
+50°C	1,508.8 to 1,550.8
+100°C	1,882.7 to 1,924.7
+150°C	2,304.6 to 2,346.6



TRAVEL TIME TEST

35. **Set selector switch knob (3) to FWD.**

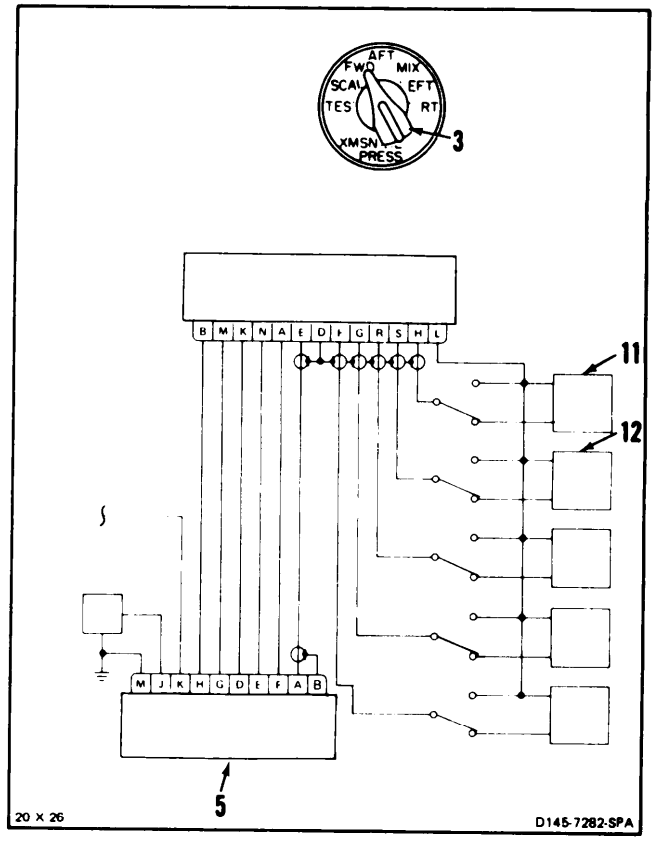
36. **Adjust FWD decade (11) until indicator (5) reads +50°C.**

37. **Set selector switch knob (3) to AFT.**

38. **Adjust AFT decade (12) until indicator (5) reads -30°C.**

39. **Set selector switch knob (3) to FWD. Check indicator (5).** Pointer of indicator shall move to +50°C in less than 5 seconds.

40. **Set selector switch knob (3) to AFT. Check indicator (5).** Pointer of indicator shall move to -30°C in less than 5 seconds.



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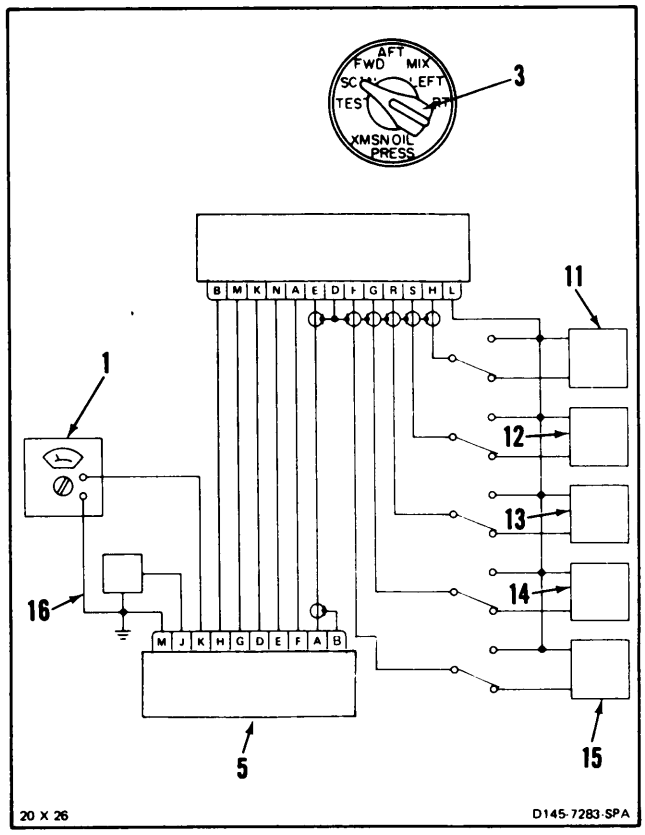
8-73 TEST TRANSMISSION OIL TEMPERATURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued) 8-73

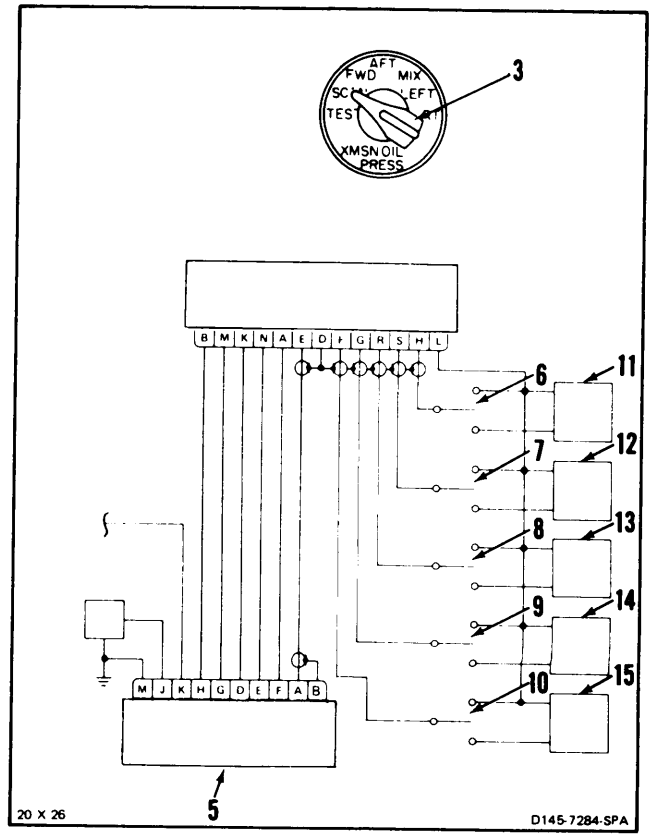
CAUTION LIGHT TEST

41. **Set selector switch knob (3) to SCAN.**
42. **Adjust AFT decade (12), MIX decade (13), LEFT decade (14), and RIGHT decade (15) to 700 ohms.**
43. **Connect multirneter (1), set to RX1, between test setup ground (16) and pin K of indicator (5).**
44. **Adjust FWD decade (11) to 797.4 ohms.**
45. **Continue to increase adjustment of FWD decade (11).** Check multimeter (1). Multimeter shall indicate continuity when indicator (5) reads 127°C to 133°C. FWD decade setting shall be greater than 2023.8 ohms. Multimeter shall continue to indicate continuity to 150°C on indicator.
46. **Disconnect multimeter (1).**



FAIL-SAFE CIRCUIT TEST (OPEN)

47. **Set selector switch knob (3) to SCAN.**
48. **Adjust FWD decade (11), AFT decade (12), MIX decade (13), LEFT decade (14) and RIGHT decade (15) to 1200 ohms. Check indicator (5).** Indicator shall read 0°C.
49. **Set FWD test switch (6) to OPEN. Check indicator (5).** Pointer of indicator shall move to 150°C. **Set FWD test switch to NORMAL.** Pointer of indicator shall return to 0°C.
50. **Repeat step 49 at AFT test switch (7), MIX test switch (8), LEFT test switch (9), and RIGHT test switch (10).** Then go to step (51).



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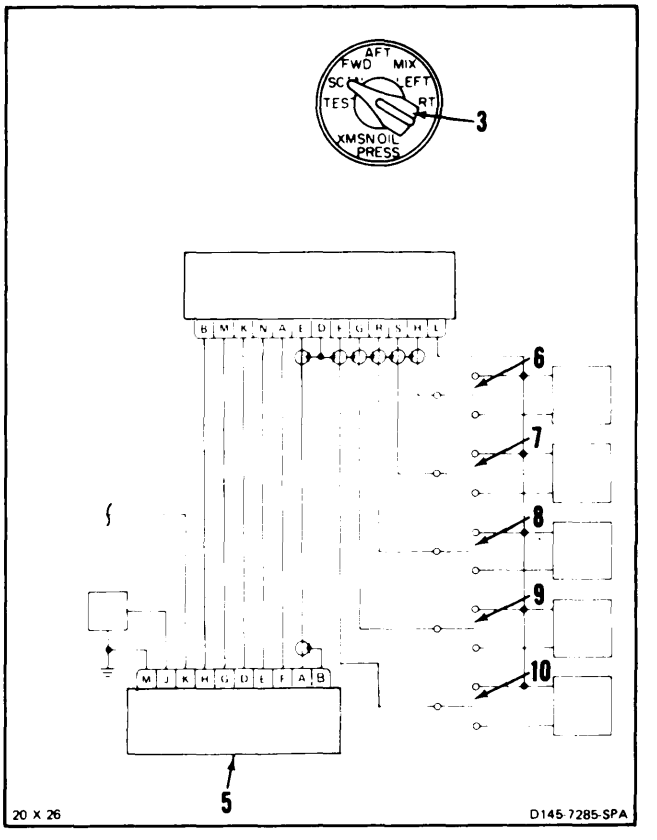
8-73 TEST TRANSMISSION OIL TEMPERATURE SELECTOR SWITCH OR INDICATOR (AVIM) (Continued)

FAIL-SAFE CIRCUIT TEST (SHORT)

51. **Set selector switch knob (3) to FWD. Sot FWD test switch (6) to SHORT. Check indicator (5).** pointer of indicator shall move to 0°C. **Set FWD test switch to NORMAL.** Pointer of indicator shall return to 150°C.

52. **Repeat step 50 with selector switch knob (3) at AFT, MIX, LEFT, and RIGHT dial positions, for test switch AFT (7), MIX (8), LEFT (9), and RIGHT (10) respectively.** Then go to step 53.



SHUTDOWN

53. **Shutdown A.C. power.**

54. Remove indicator (5) and selector switch (2) from test setup.

INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-74 REPLACE FORWARD TRANSMISSION OIL TEMPERATURE TRANSMITTER

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

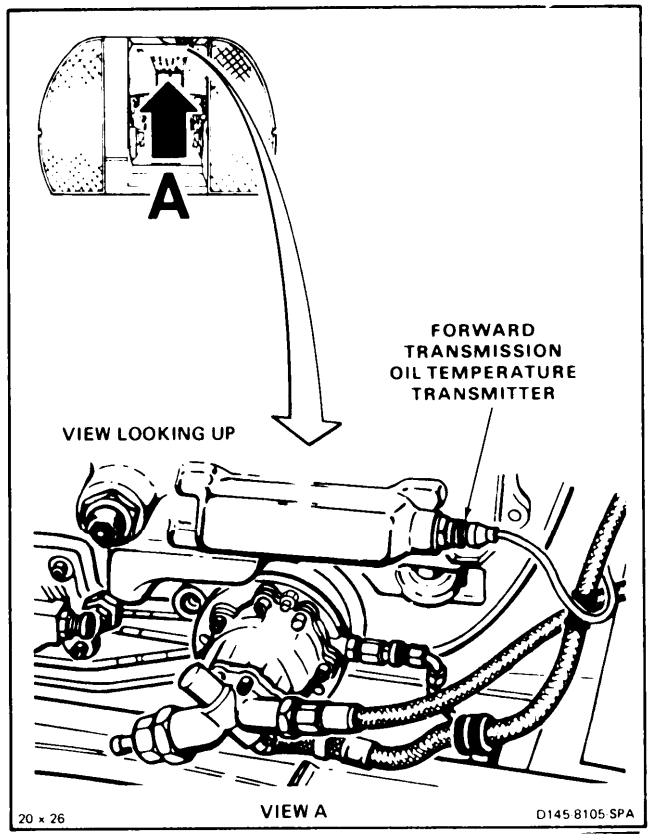
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

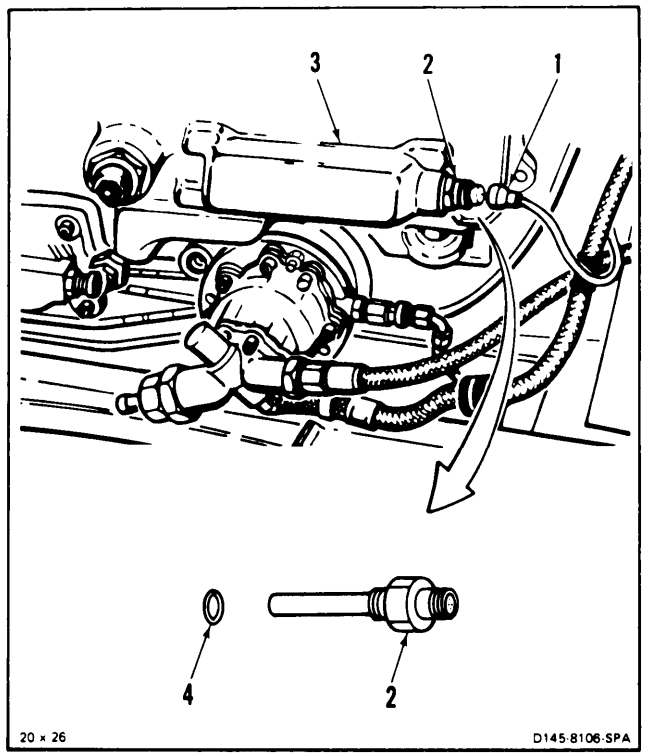
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Passageway Acoustic Blanket Removed (Task 2-107)
Forward Transmission Drip Pan Removed (Task 2-3)
Forward Transmission Oil Drained (Task 6-110)



REMOVE TRANSMITTER

1. **Disconnect electrical connector (1)** from transmitter (2).
2. Remove lockwire from transmitter (2).
3. **Remove transmitter (2)** from transmission sump (3).
4. Wipe Up spilled oil, Use cloth (E120).
5. Remove packing (4) from transmitter (2).



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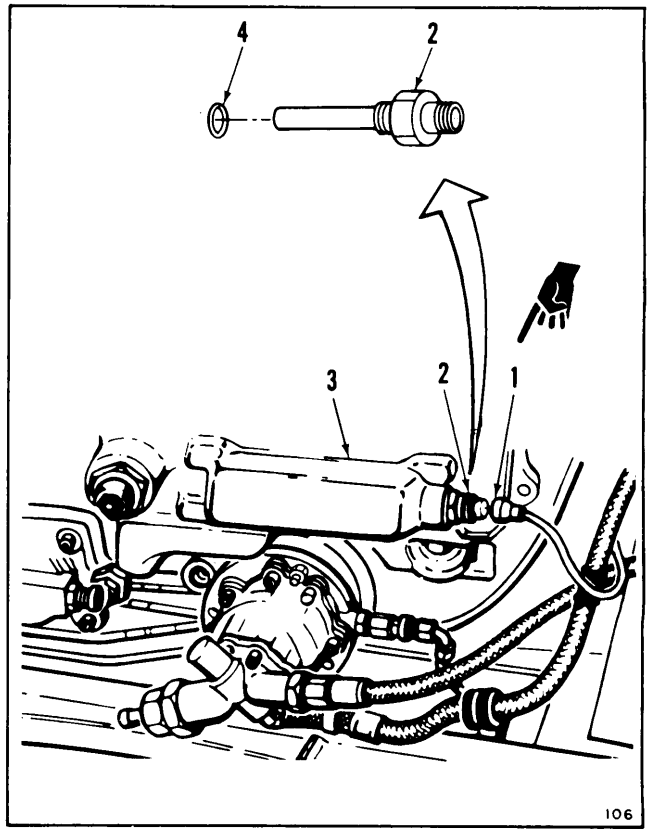
8-74 REPLACE FORWARD TRANSMISSION OIL TEMPERATURE TRANSMITTER (Continued) 8-74

INSTALL TRANSMITTER

6. Coat packing (4) and threads of transmitter (2) with oil (E254).
7. Install packing (4) on transmitter (2).
8. **Install transmitter (2)** in transmission sump (3). **Torque transmitter to 80 inch-pounds.**
9. Lockwire transmitter to transmission sump (3). Use lockwire (E231).
10. **Connect electrical connector (1)** to transmitter (2).

INSPECT



FOLLOW-ON MAINTENANCE:

Service forward transmission (Task 1-54).

Perform operational check (TM 55-1520-240-T).

Install forward transmission drip pan (Task 2-3).

Install passageway acoustic blankets (Task 2-108).

END OF TASK

8-75 REPLACE COMBINING TRANSMISSION OIL TEMPERATURE TRANSMITTER

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

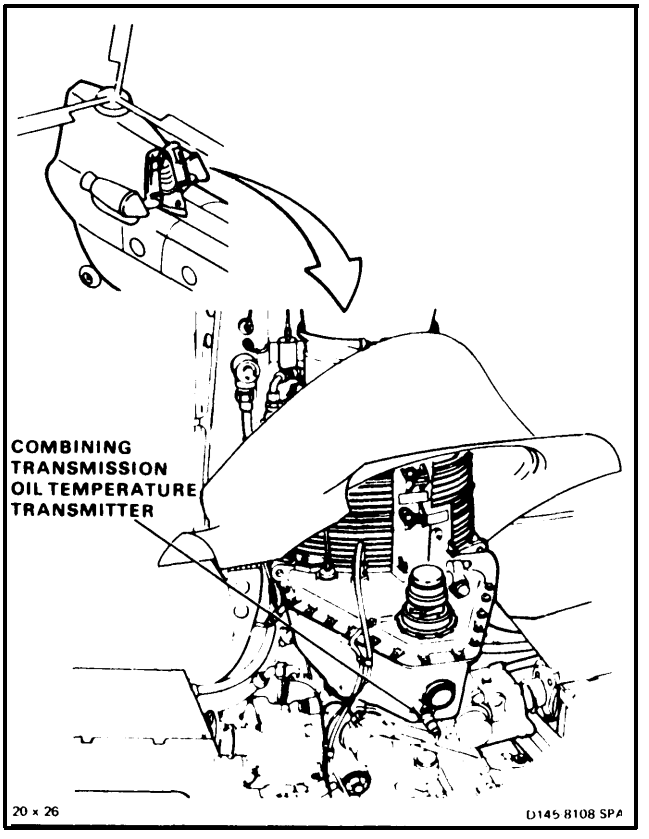
Materials:
Oil (254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

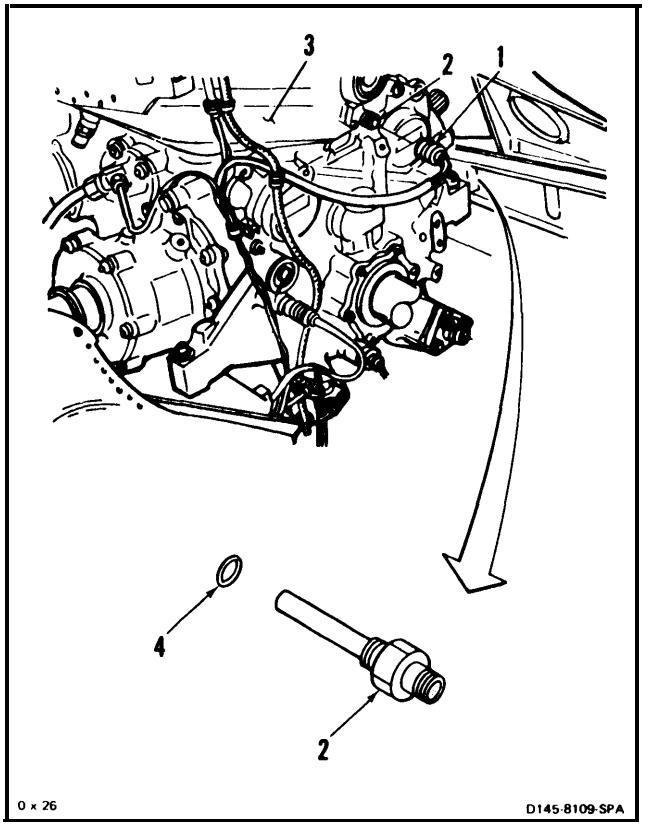
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Pylon Doors Open (Task 2-2)
Pylon Lower Fairing Open (Task 2-2)
Combining Transmission Oil Drained (Task 6-168)



REMOVE TRANSMITTER

1. **Disconnect electrical connector (1)** from transmitter (2).
2. Remove lockwire from transmitter (2).
3. **Remove transmitter (2)** from transmission sump (3).
4. Wipe up spilled oil. Use cloth (E120).
5. Remove packing (4) from transmitter (2).



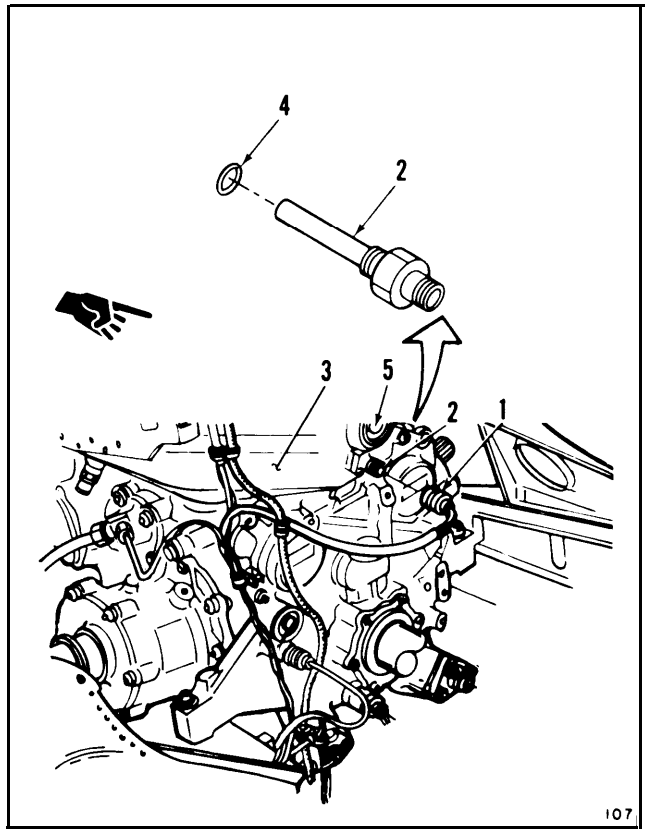
GO TO NEXT PAGE

8-75 REPLACE COMBINING TRANSMISSION OIL TEMPERATURE TRANSMITTER (Continued) 8-75

INSTALL TRANSMITTER

6. Coat packing (4) and threads of transmitter (2) with oil (E254).
7. Install packing (4) on transmitter (2).
8. **Install transmitter (2)** in transmission sump (3). **Torque transmitter to 80 inch-pounds.**
9. Lockwire transmitter (2) to sight gage (5).
10. **Connect electrical connector (1)** to transmitter (2).

INSPECT



FOLLOW-ON MAINTENANCE:

Service combining transmission (Task 1-54).

Close pylon lower fairing (Task 2-2).

Close pylon doors (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-76 REPLACE NO.1 ENGINE TRANSMISSION OIL TEMPERATURE TRANSMITTER

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

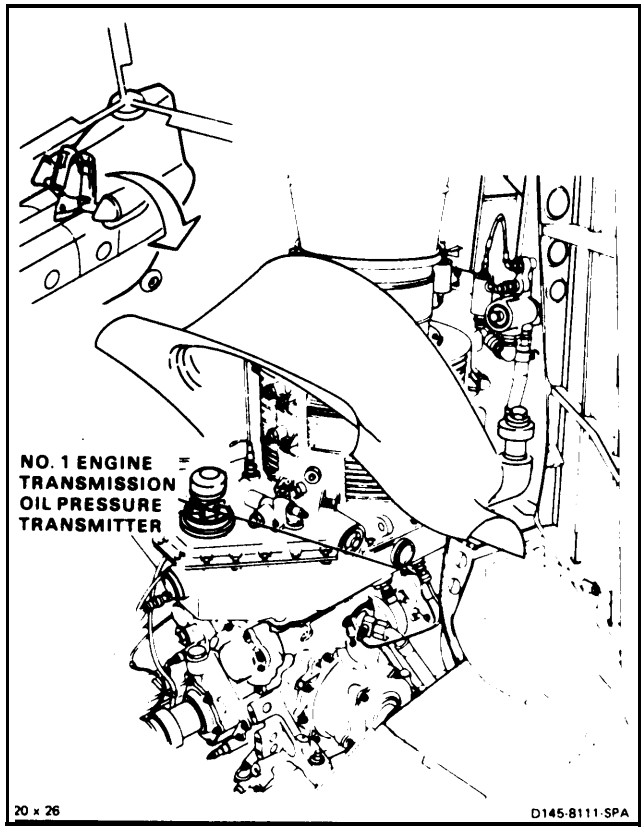
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

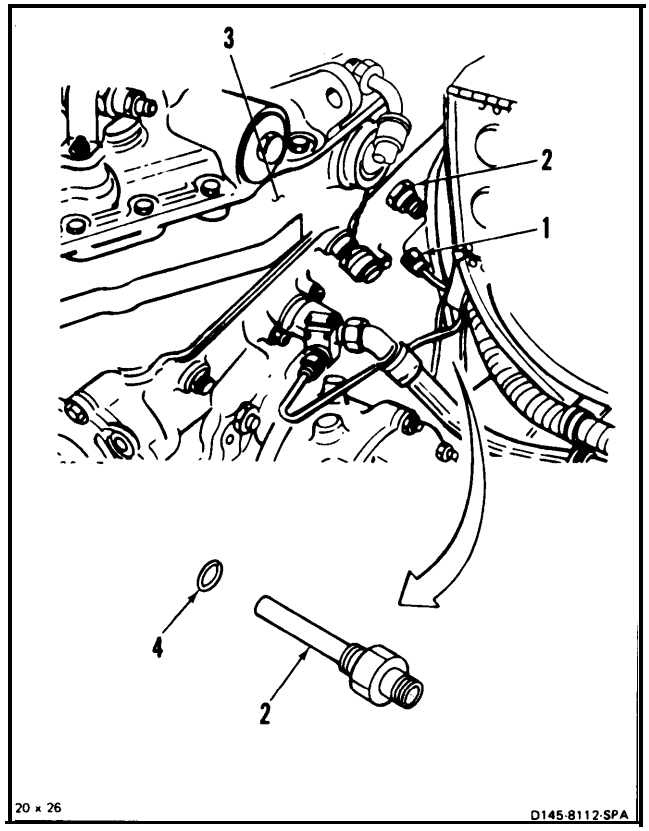
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Pylon Doors Open (Task 2-2)
Aft Pylon Lower Fairing Open (Task 2-2)
No. 1 Engine Transmission Drained (Task 6-196)



REMOVE TRANSMITTER

1. **Disconnect electrical connector (1)** from transmitter (2).
2. Remove lockwire from transmitter (2).
3. **Remove transmitter (2)** from transmission sump (3).
4. Wipe up spilled oil. Use cloth (E120).
5. Remove packing (4) from transmitter (2).



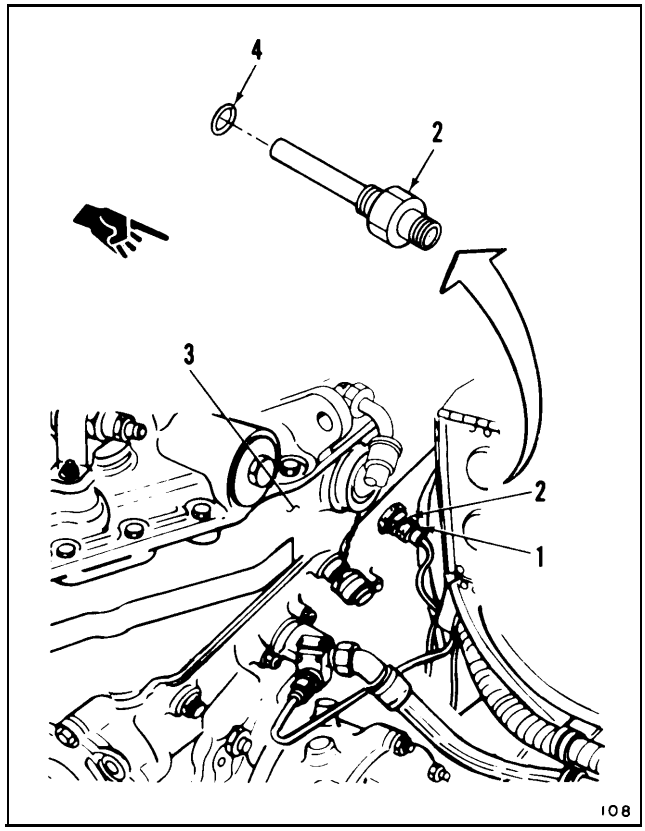
GO TO NEXT PAGE

8-76 REPLACE NO. 1 ENGINE TRANSMISSION OIL TEMPERATURE TRANSMITTER (Continued] 8-76

INSTALL TRANSMITTER

6. Coat packing (4) and threads of transmitter (2) with oil (E254).
7. Install packing (4) on transmitter (2).
8. **Install transmitter (2)** in transmission sump (3). **Torque transmitter to 80 inch-pounds.**
9. Lockwire transmitter (2) to transmission sump (3).
10. **Connect electrical connector (1)** to transmitter (2).

INSPECT



FOLLOW-ON MAINTENANCE:

Service No. 1 engine transmission (Task 1 -54).

Close pylon lower fairing (Task 2-2).

Close pylon doors (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-77 REPLACE NO. 2 ENGINE TRANSMISSION OIL TEMPERATURE TRANSMITTER

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

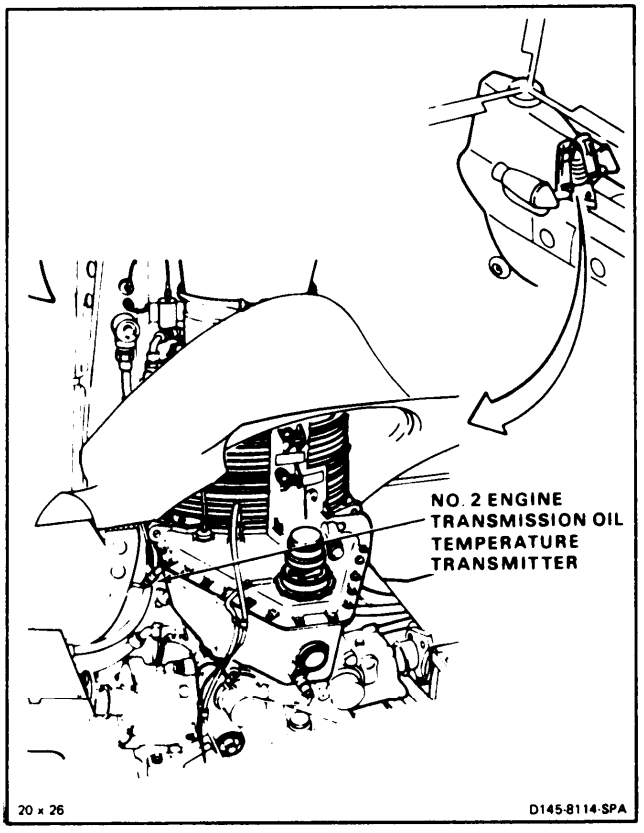
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Pylon Doors Open (Task 2-2)
Pylon Lower Fairing Open (Task 2-2)
No. 2 Engine Transmission Drained (Task 6-196)

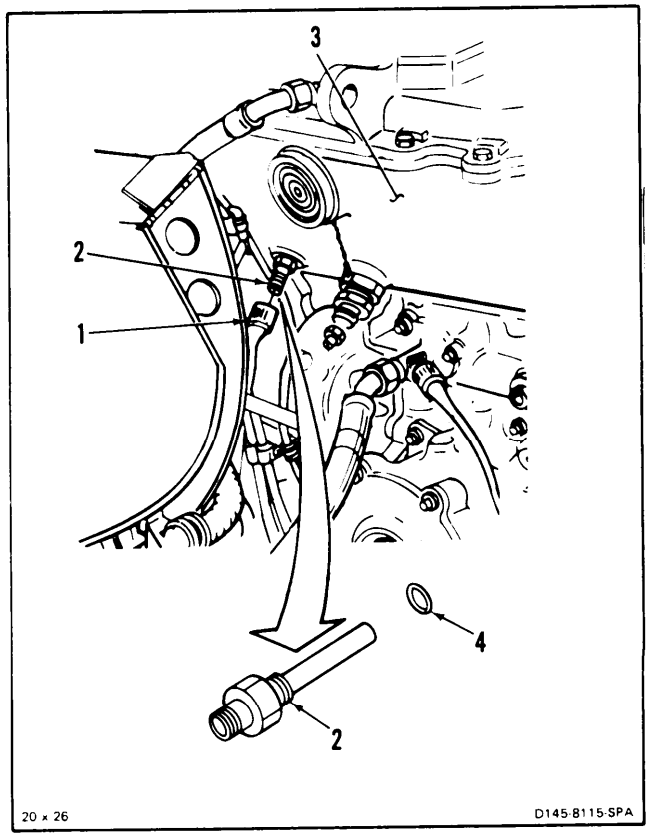


GO TO NEXT PAGE

8-77 REPLACE NO. 2 ENGINE TRANSMISSION OIL TEMPERATURE TRANSMITTER (Continued)

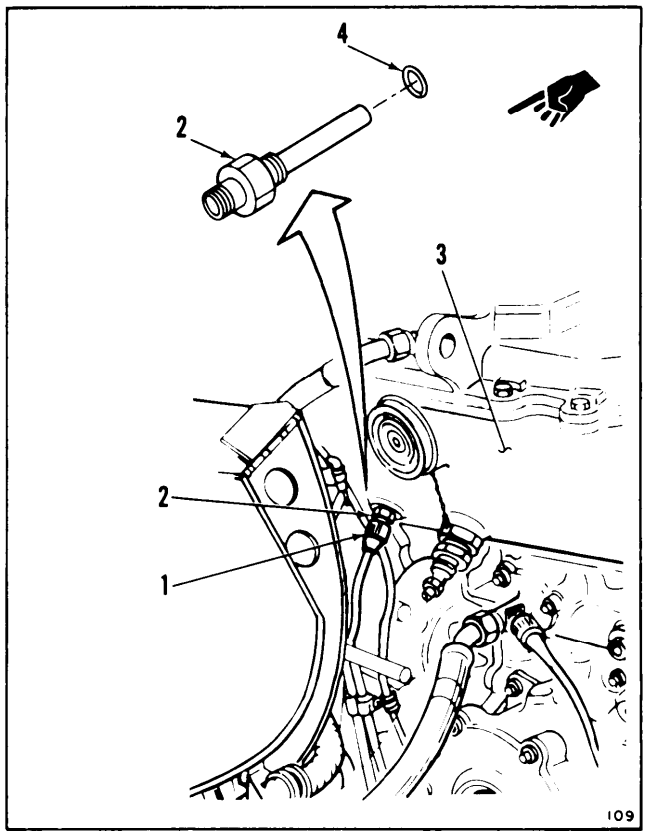
REMOVE TRANSITTER

1. Disconnect electrical connector (1) from transmitter (2).
2. Remove lockwire from transmitter (2).
3. **Remove transmitter (2)** from transmission sump (3).
4. Wipe up spilled oil. Use cloth (E120).
5. Remove packing (4) from transmitter (2).



INSTALL TRANSMITTER

6. Coat packing (4) and threads of transmitter (2) with oil (E254).
7. Install packing (4) on transmitter (2).
8. **Install transmitter (2)** in transmission sump (3) **Torque transmitter to 80 inch-pounds.**
9. Lockwire transmitter (2) to transmission sump (3).
10. **Connect electrical connector (1)** to transmitter (2).



INSPECT

FOLLOW-ON MAINTENANCE:

Service No. 2 engine transmission (Task 1-54).

Close aft pylon lower fairing (Task 2-2).

Close aft pylon door (Task 2-2).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-78 REPLACE AFT TRANSMISSION OIL TEMPERATURE TRANSMITTER

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds
Workstand

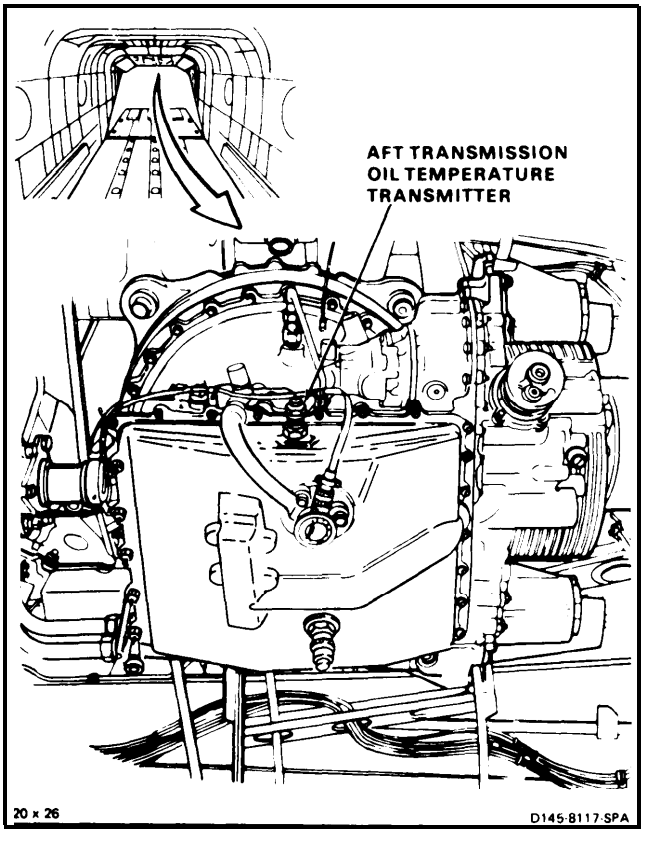
Materials:
Oil (E254)
Lockwire (E231)
Cloth (E120)

Parts:
Packing

Personnel Required:
67LJ10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T).
Baffles Under Aft Transmission open (Task 2-2)
Aft Transmission Drip Tray Removed (Task 2-3)
Aft Transmission Oil Drained (Task 6-138)



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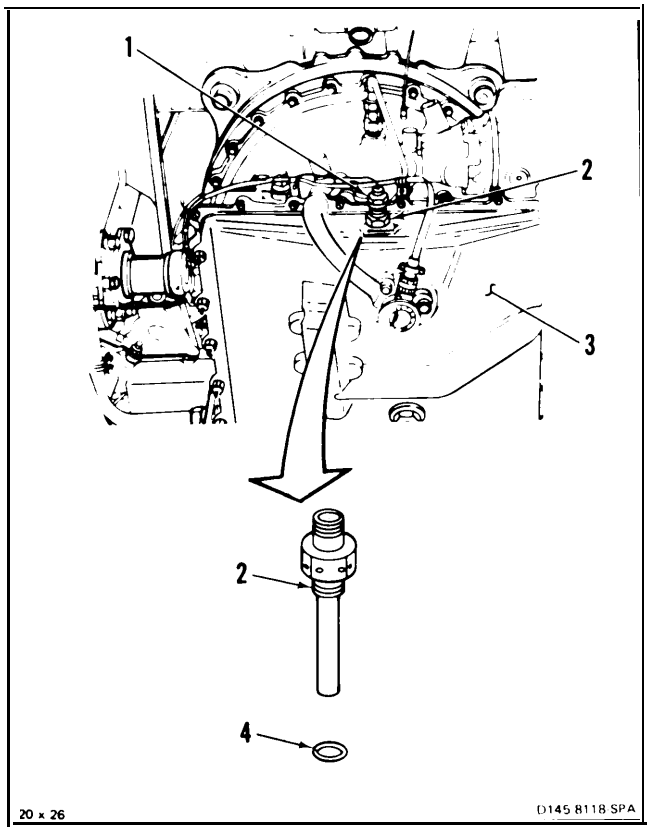
8-78 REPLACE AFT TRANSMISSION OIL TEMPERATURE TRANSMITTER (Continued)

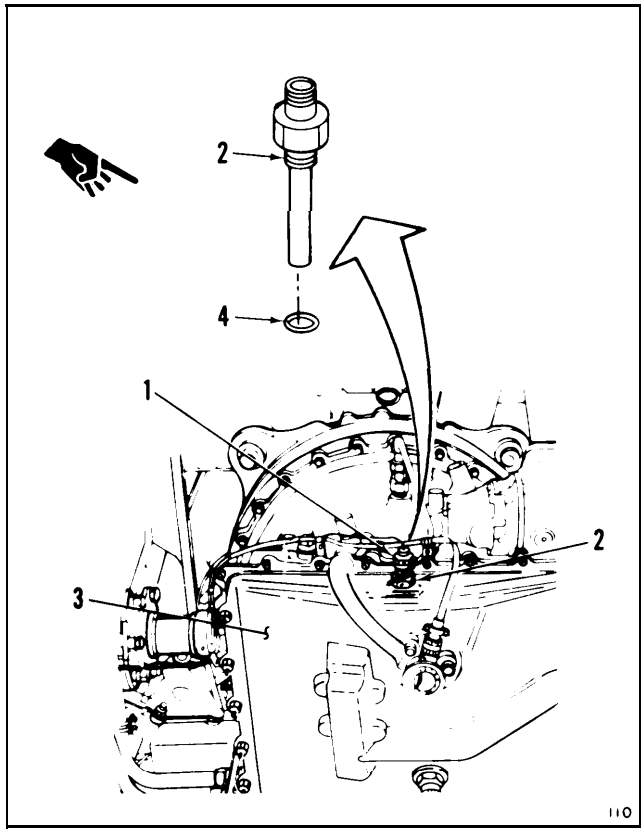
REMOVE TRANSMITTER

1. **Disconnect electrical connector (1)** from transmitter (2).
2. Remove lockwire from transmitter (2).
3. **Remove transmitter (2)** from transmission sump (3).
4. Wipe up spilled oil. Use cloth (E120).
5. Remove packing (4) from transmitter (2).



INSTALL TRANSMITTER

6. Coat packing (4) and threads of transmitter (2) with oil (E254).
7. Install packing (4) on transmitter (2).
8. **Install transmitter (2)** in transmission sump (3). **Torque transmitter to 80 inch-pounds.**
9. Lockwire transmitter (2) to transmitter sump (3).
10. **Connect electrical connector (1)** to transmitter (2).



INSPECT

FOLLOW-ON MAINTENANCE:

Service aft transmission (Task 1-54).

Install aft transmission drip tray (Task 2-3).

Close baffles under aft transmission (Task 2-2).

Close cargo ramp (TM 55-1520-240-T).

Perform operational check (TM 55-1520-240-T).

END OF TASK

8-79 REMOVE FUEL QUANTITY INDICATING SYSTEM THERMISTOR CONTROL UNIT

INITIAL SETUP

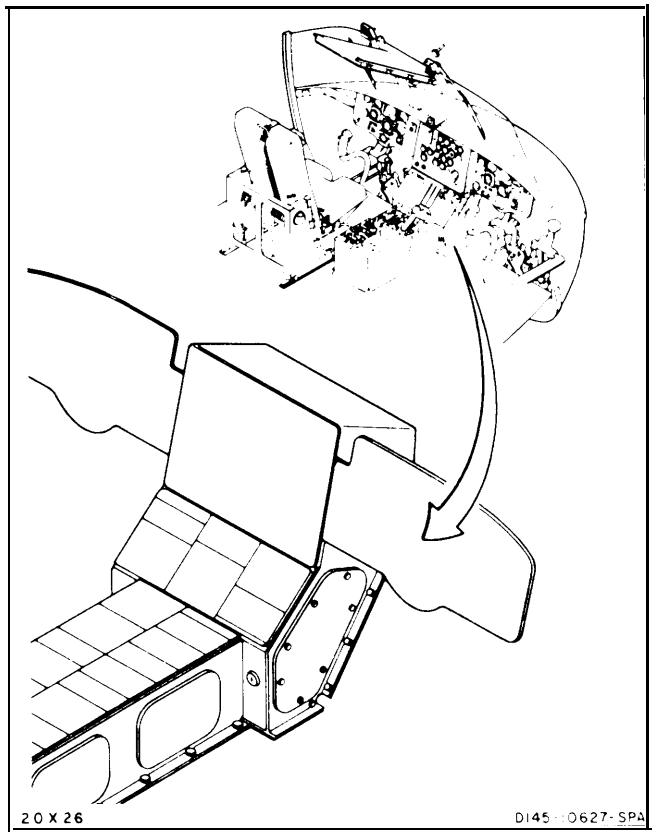
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

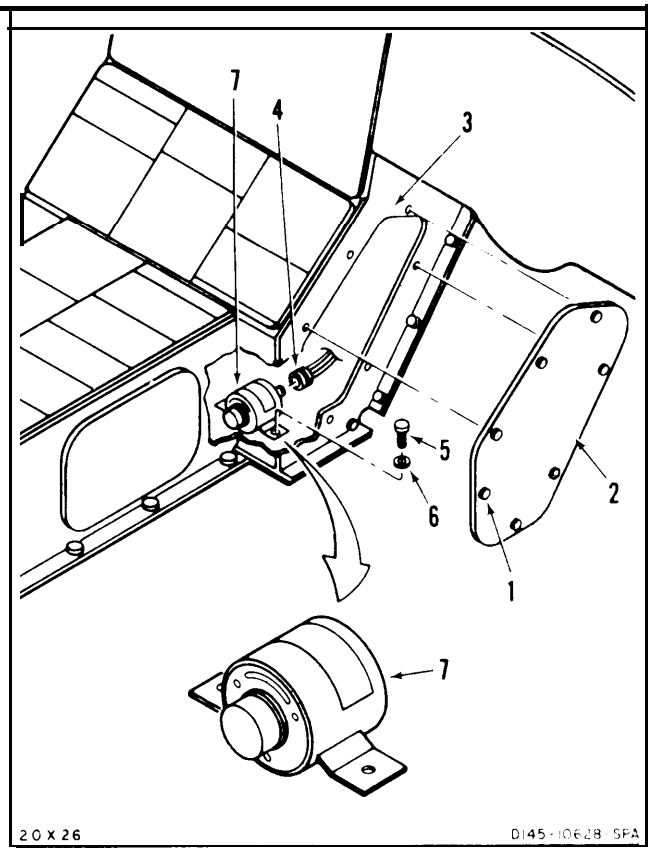
Materials:
None

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. **Loosen seven fasteners (1). Remove panel (2)** from side of console (3).
2. Disconnect electrical connector (4).
3. Remove two screws (5) and washers (6 **Remove control unit (7).**



FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-80 INSTALL FUEL QUANTITY INDICATING SYSTEM THERMISTOR CONTROL UNIT

INITIAL SETUP

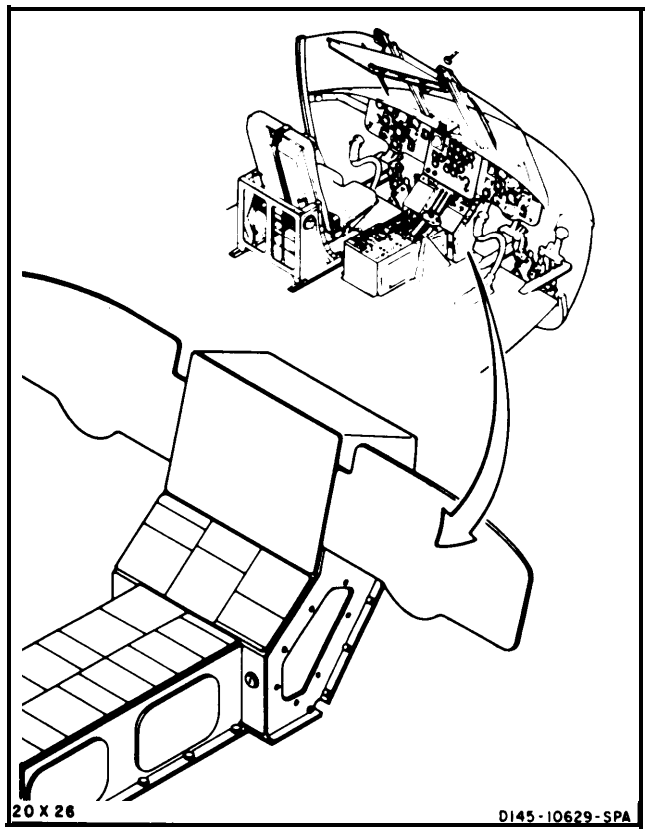
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

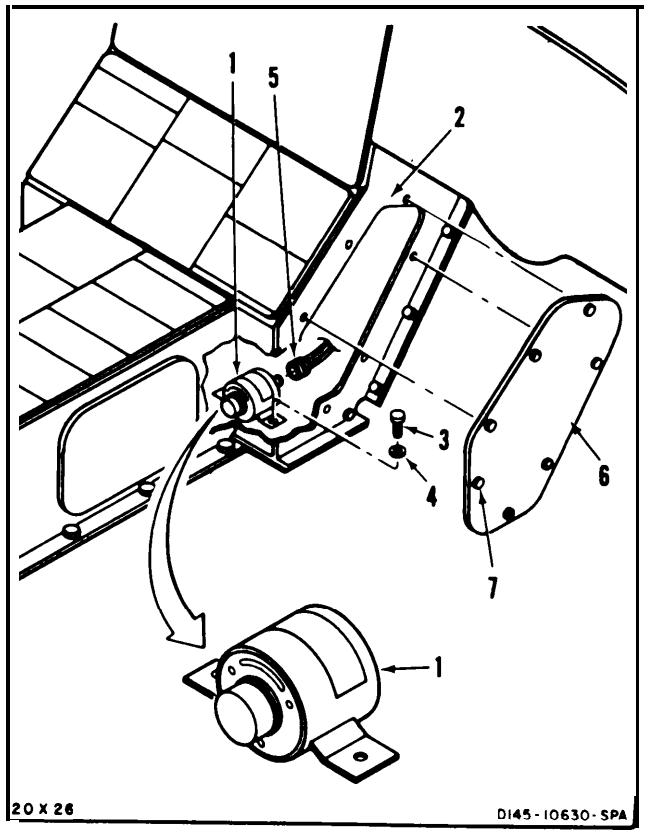
References:
TM 55-1520-240-23P



1. **Position thermistor control unit (1)** in console (2), receptacle facing forward.
2. **Install two screws (3)** and washers (4).
3. **Connect electrical connector (5).**

INSPECT

4. Position panel (6) on console (2). Tighten seven fasteners (7),



FOLLOW-ON MAINTENANCE:
Test and adjust fuel quantity indicator (Task 8-80.5).
Perform operational check of fuel quantity indicating system (TM 55-1520-240-T).

END OF TASK

8-80.1 REMOVE FUEL FLOW TRANSMITTER

INITIAL SETUP

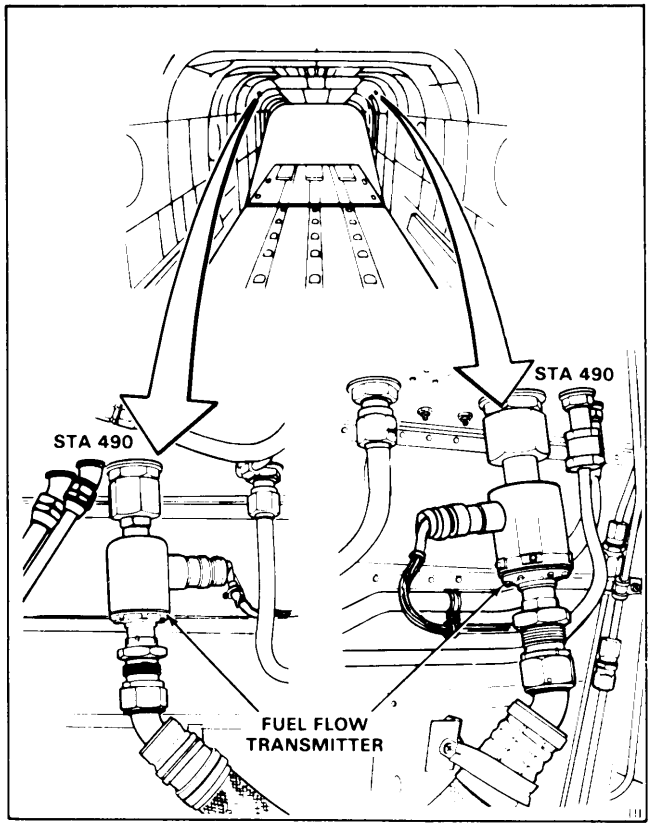
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

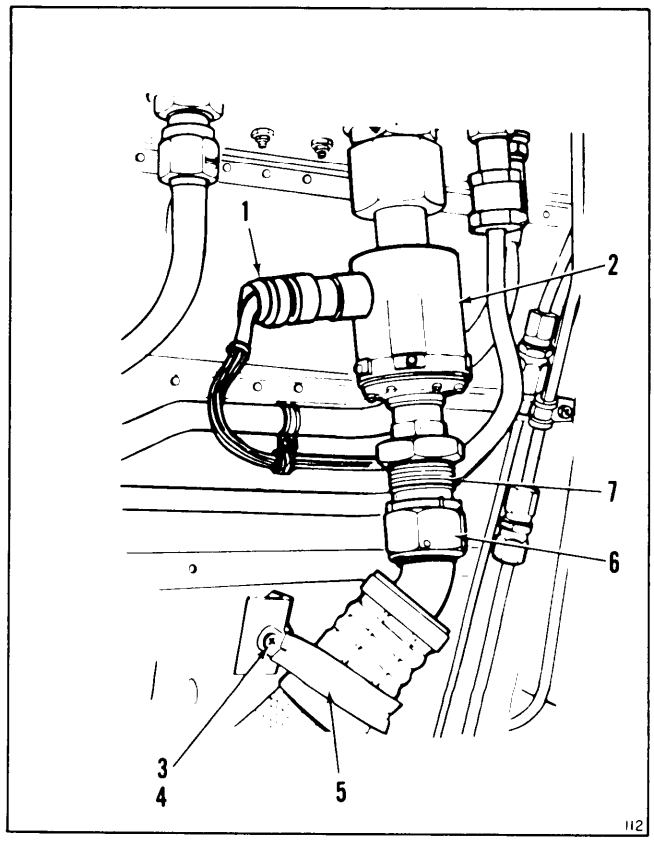
Equipment Condition:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is same to remove No. 1 or No. 2 transmitter. Removal of No. 1 transmitter is shown here.

1. **Disconnect electrical connector (1)** from transmitter (2).
2. Remove screw (3), nut (4), and clamp (5).
3. **Disconnect hose (6)** from union (7)



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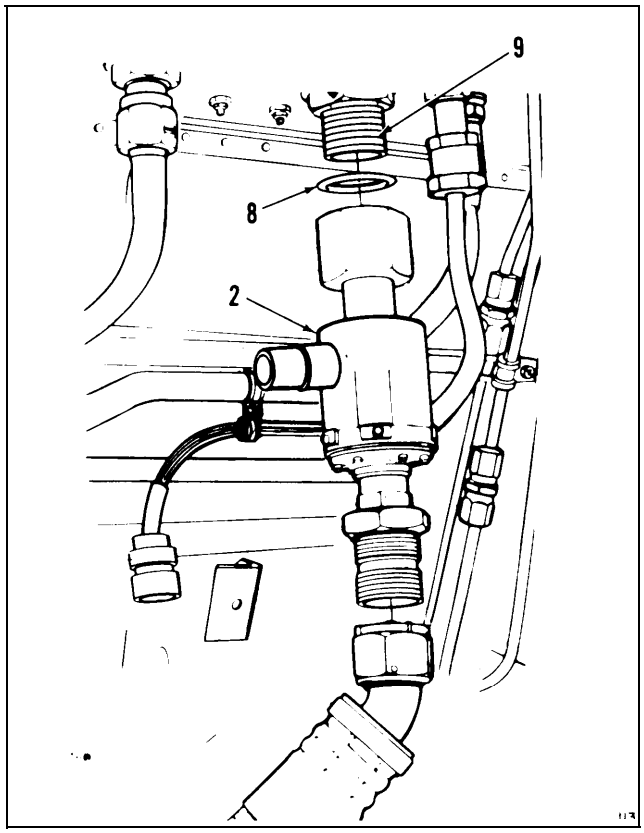
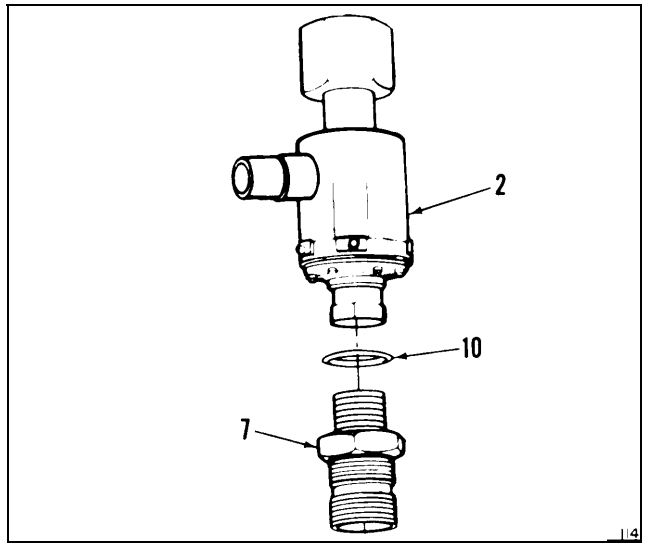
8-80.1 REMOVE FUEL FLOW TRANSMITTER (Continued) 8-80.1

4. **Remove transmitter (2)** and packing (8) from bushing (9).



5. If transmitter (2) will be replaced, remove union (7) and packing (10).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-80.2 INSTALL FUEL FLOW TRANSMITTER 8-80.2

INITIAL SETUP

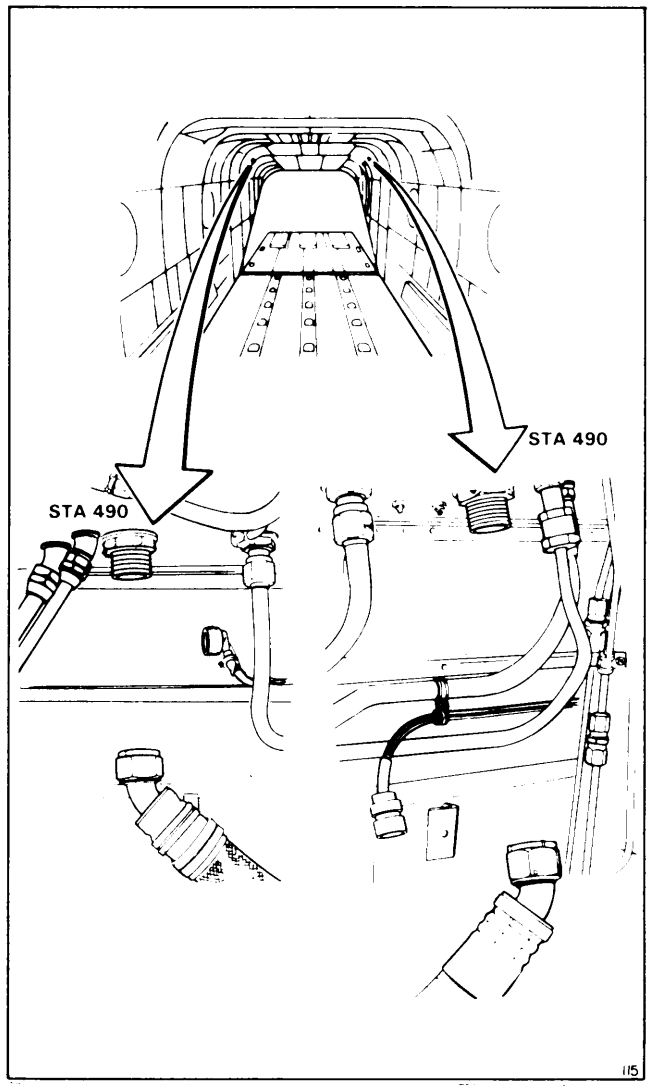
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
Packings

Personnel Required:
Medium Helicopter Repairer
Inspector

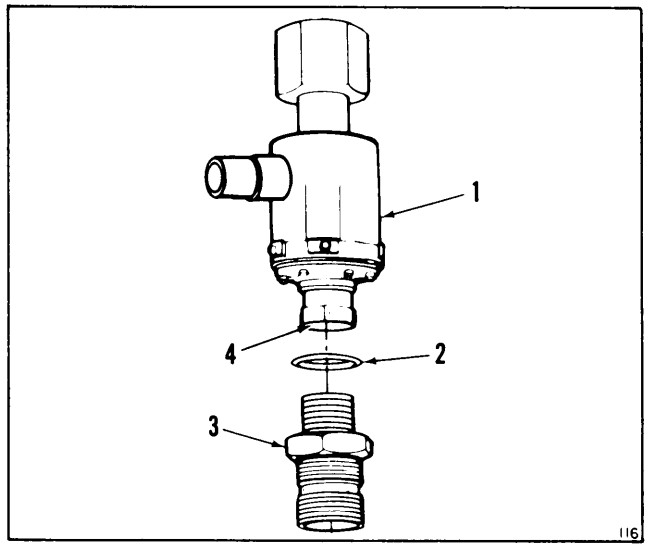
Equipment Condition:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



NOTE

Installation is the same for No. 1 and No. 2 transmitters. Installation of No. 1 transmitter is shown.

1. If transmitter (1) was replaced, install packing (2) and union (3) in inlet port (4).



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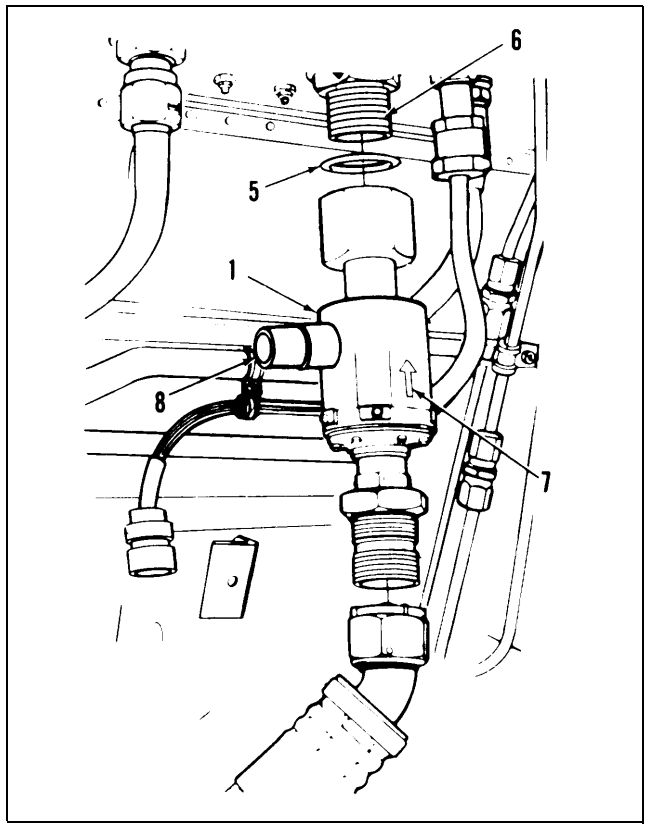
8-80.2 INSTALL FUEL FLOW TRANSMITTER (Continued) 8-80.2

2. **Install packing (5) and transmitter (1)** on bushing (6). Make sure flow arrow (7) points up and receptacle (8) is aft.

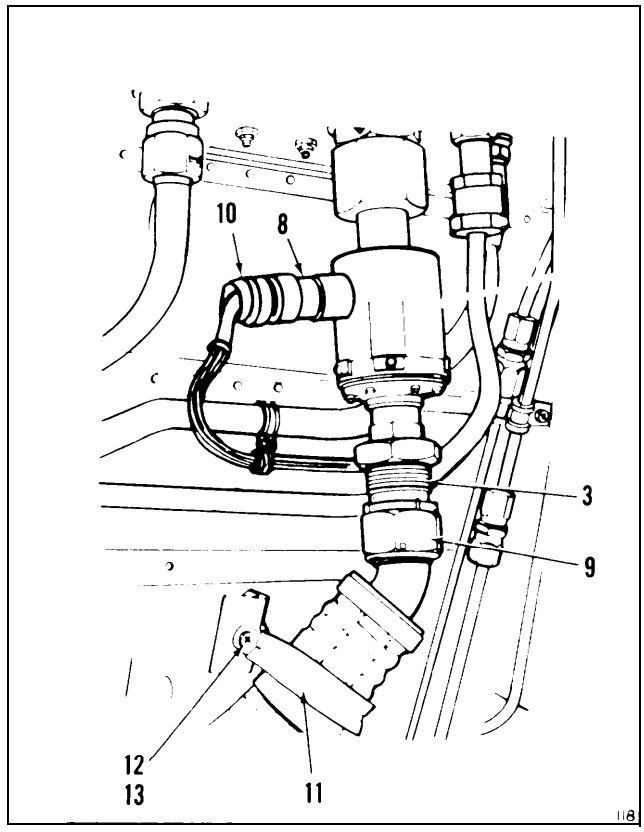


3. **Connect hose (9)** to union (3).
4. **Connect electrical connector (10)** to receptacle (8).
5. **Install clamp (11),** using screw (12) and nut (13).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of fuel flow system (TM 55-1520-240-T).



END OF TASK

8-80.3 REMOVE FUEL FLOW SYSTEM POWER SUPPLY 8-80.3

INITIAL SETUP

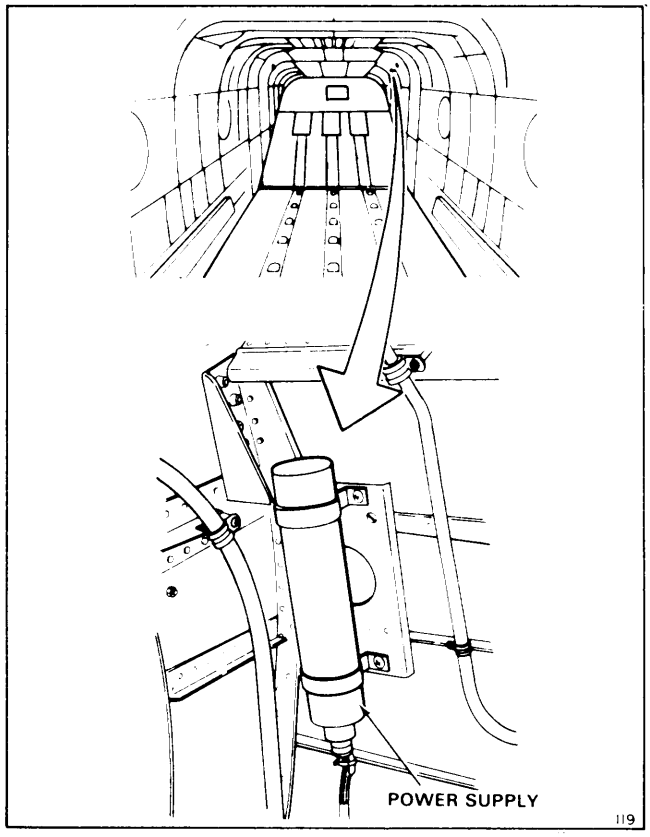
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Tools:
None

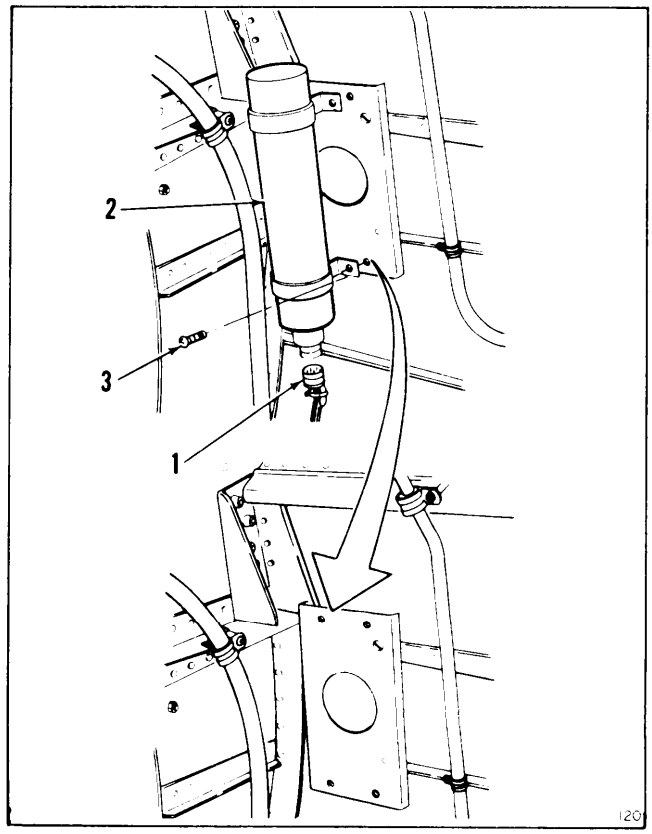
Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



1. **Disconnect electrical connector (1)** from power supply (2).
2. **Remove four screws (3)** and power supply (2).

FOLLOW-ON MAINTENANCE:
None



END OF TASK

8-80.4 INSTALL FUEL FLOW SYSTEM POWER SUPPLY 8-80.4

INITIAL SETUP

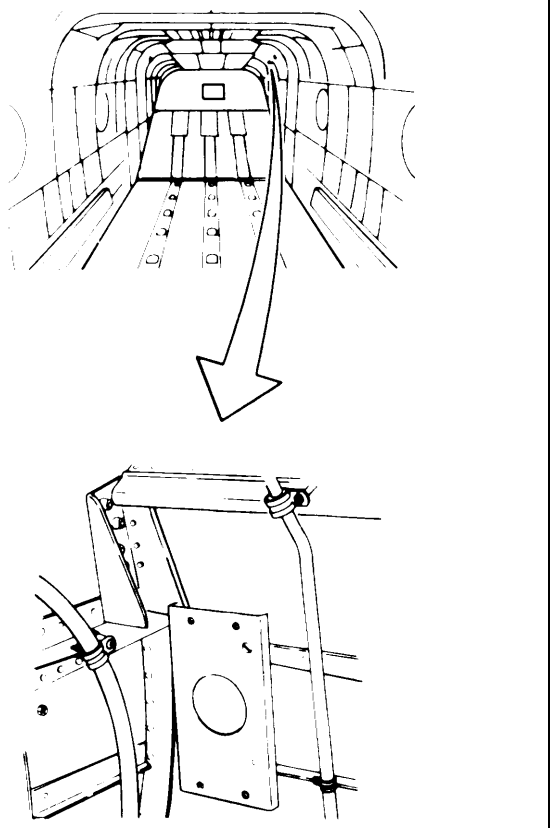
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



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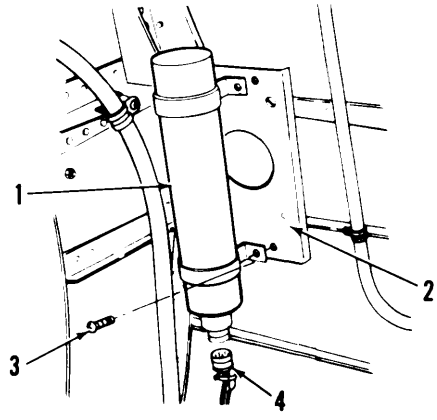
1. Position power supply (1) on panel (2). Install four screws (3).
2. Connect electrical connector (4).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of fuel flow system (TM 55-1520-240-T).



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END OF TASK

8-80.5 TEST AND ADJUST FUEL QUANTITY INDICATOR

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
AC Power Supply, 115 Volt 400 Hz
Test Set TF-20-1 (2 ea)
Test Cable (E43, Appx E)
50-Foot Extension Cord (2 ea)

Materials:

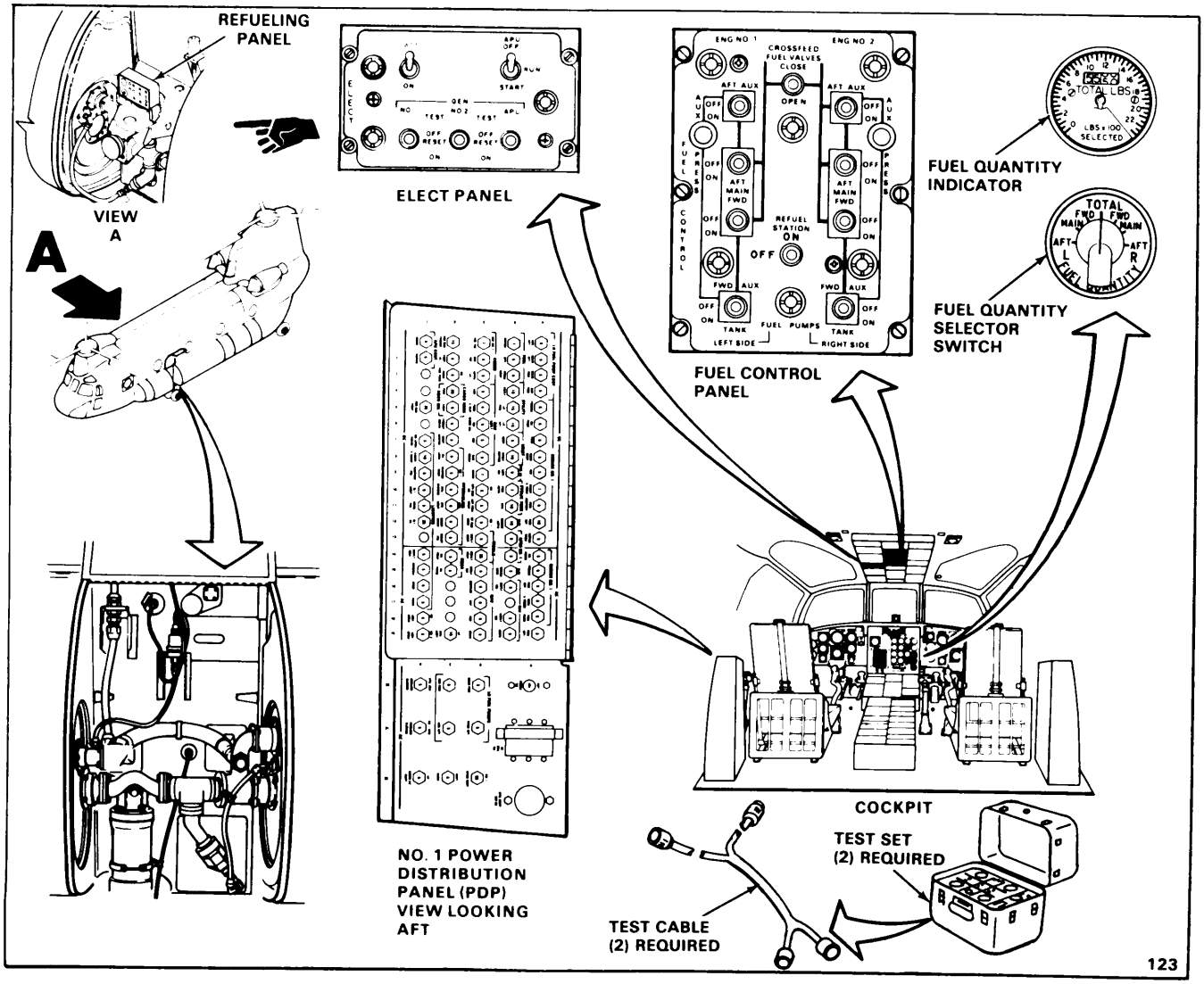
None

Personnel Required:

Aircraft Electrician (2)
Inspector

Equipment Condition:

Battery Connected (Task 1-100)
AC Electrical Power On (Task 1-67)
Fuel Tank Left and Right Forward Access Panel Open (Task 2-3.1)
Helicopter Defueled (Task 10-34 or 10-35)



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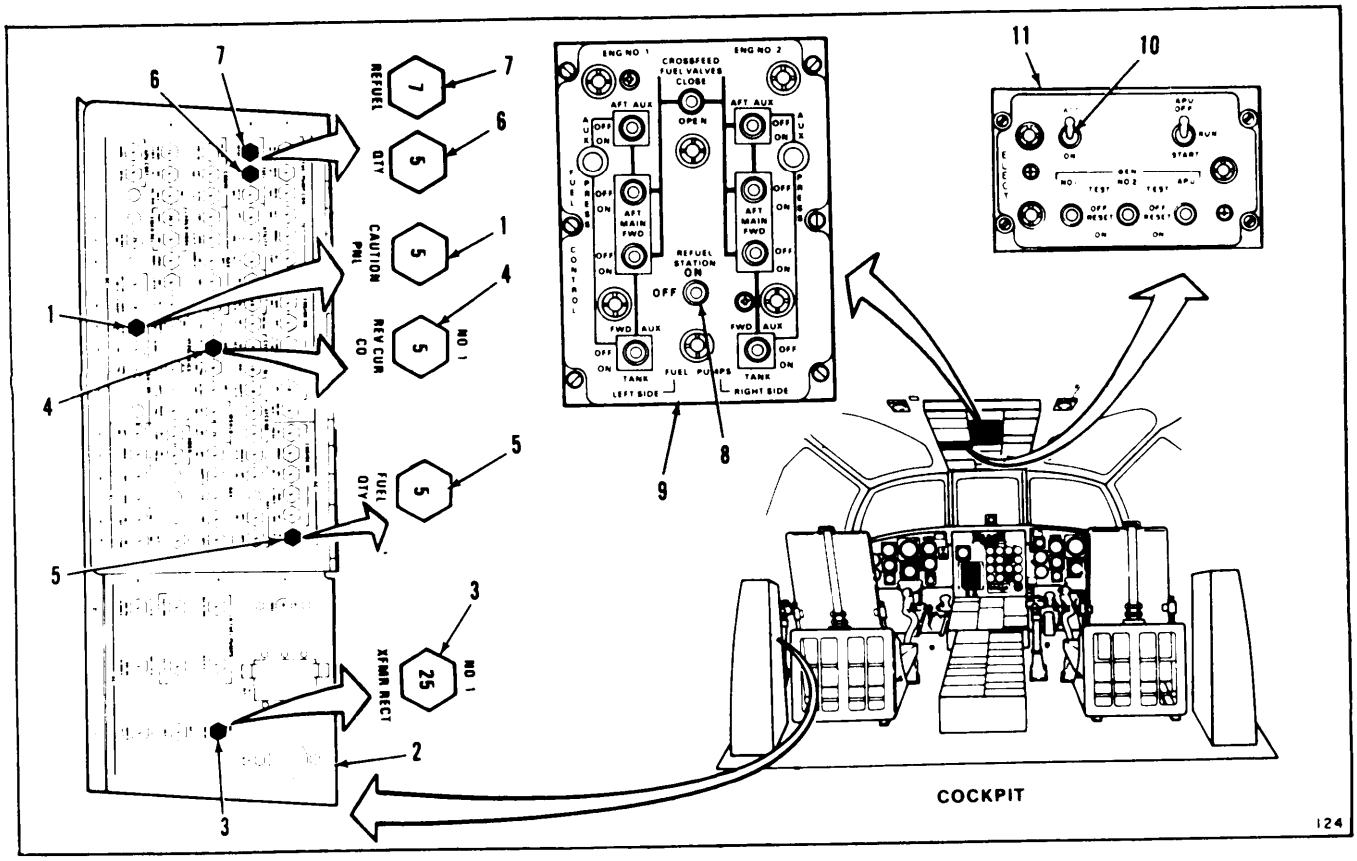
8-80.5 TEST AND ADJUST FUEL QUANTITY INDICATOR (Continued)

1. **Check CAUTION PNL circuit breaker (1)** on left power distribution panel (pdp) (2) is closed.
2. **Check NO. 1 XFMR RECT circuit breaker (3)** on left pdp (2) is closed.
3. **Check NO. 1 REV CUR CO circuit breaker (4)** on left pdp (2) is closed.
4. **Check FUEL QTY circuit breaker (5)** on left pdp (2) is closed.
5. **Check FUEL QTY CONTROL circuit breaker (6)** on left pdp (2) is closed.
6. **Check REFUEL circuit breaker (7)** on left pdp (2) is closed.

TEST TOTAL SYSTEM FUEL INDICATOR

7. **Set REFUEL STATION switch (8)** on FUEL CONTROL panel **(9) to OFF.**
8. **Set BATT switch (10)** on ELECT panel (n) **to ON.**



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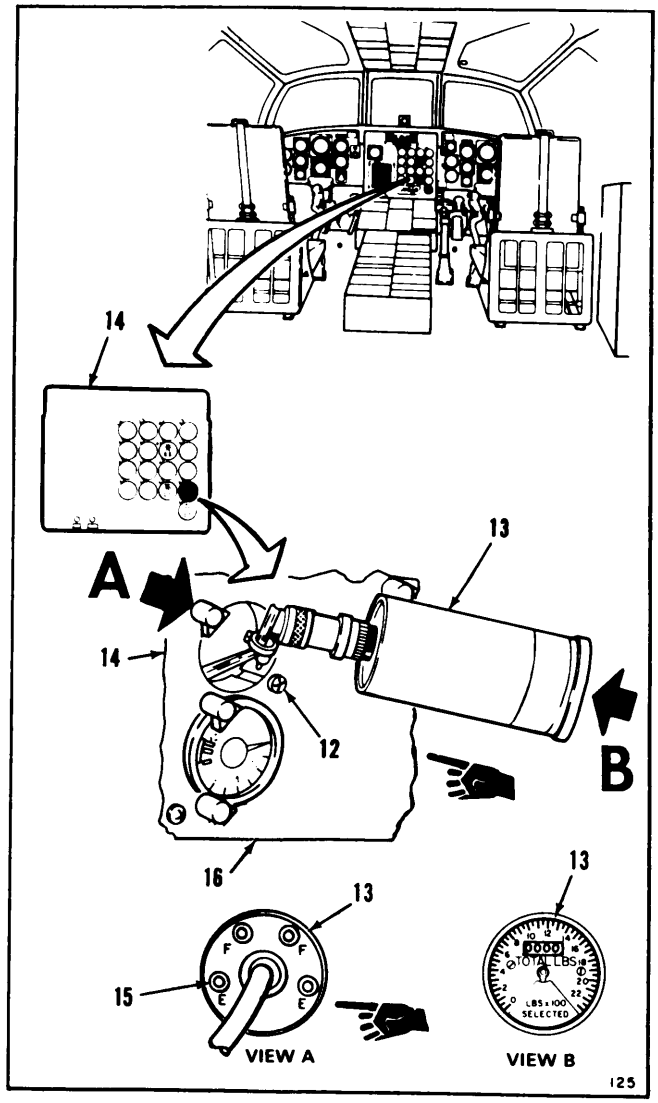
9. **Loosen screw (12).**

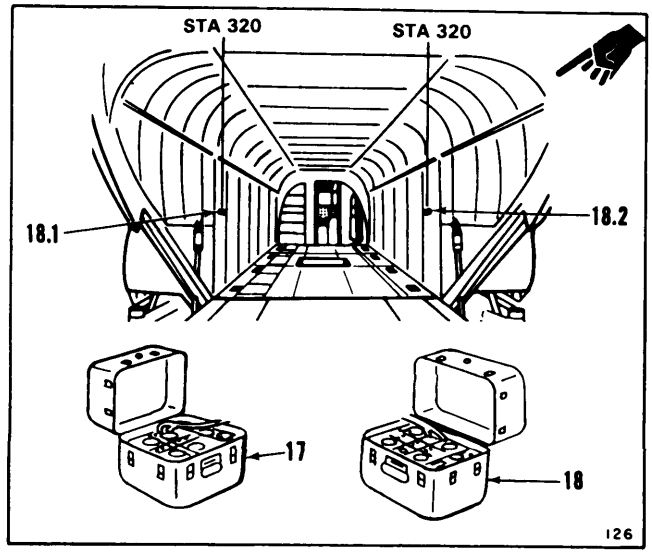
CAUTION

Do not disconnect connector from indicator. Indicator can be damaged.

10. Grasp **fuel quantity indicator (13)** at case rim and slide **from panel (14).**
11. **Turn E adjustment screw (15)** at back of indicator (13) until digital display indicates 0000 TOTAL LBS.
12. **Install indicator (13)** in panel (14) with display up and parallel to lower edge (16) of panel. Tighten screw (12).



13. Connect power cords from test sets (17 and 18) to receptacles (18.1 and 18.2) on each side of cabin interior at sta 320. Use extension cords.



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8-80.5 TEST AND ADJUST FUEL QUANTITY INDICATOR {Continued}

14. Calibrate test sets (17 and 18). (Refer to instructions in test sets.) Restrict calibration to zero and high.

14.1. Remove electrical power. Set BATTERY switch (10) on panel (11) to OFF.

CAUTION

Do not ground units or harness to aircraft. Instruments can be damaged.

15. Tag and **disconnect connector (19)** from receptacle (20) at forward end of access (21) to forward left tank (22).
16. **Connect connector (23)** of cable E43 (24) from test set (17) to receptacle (20).
17. **Connect connector (25)** of cable E43 (24) to connector (19).

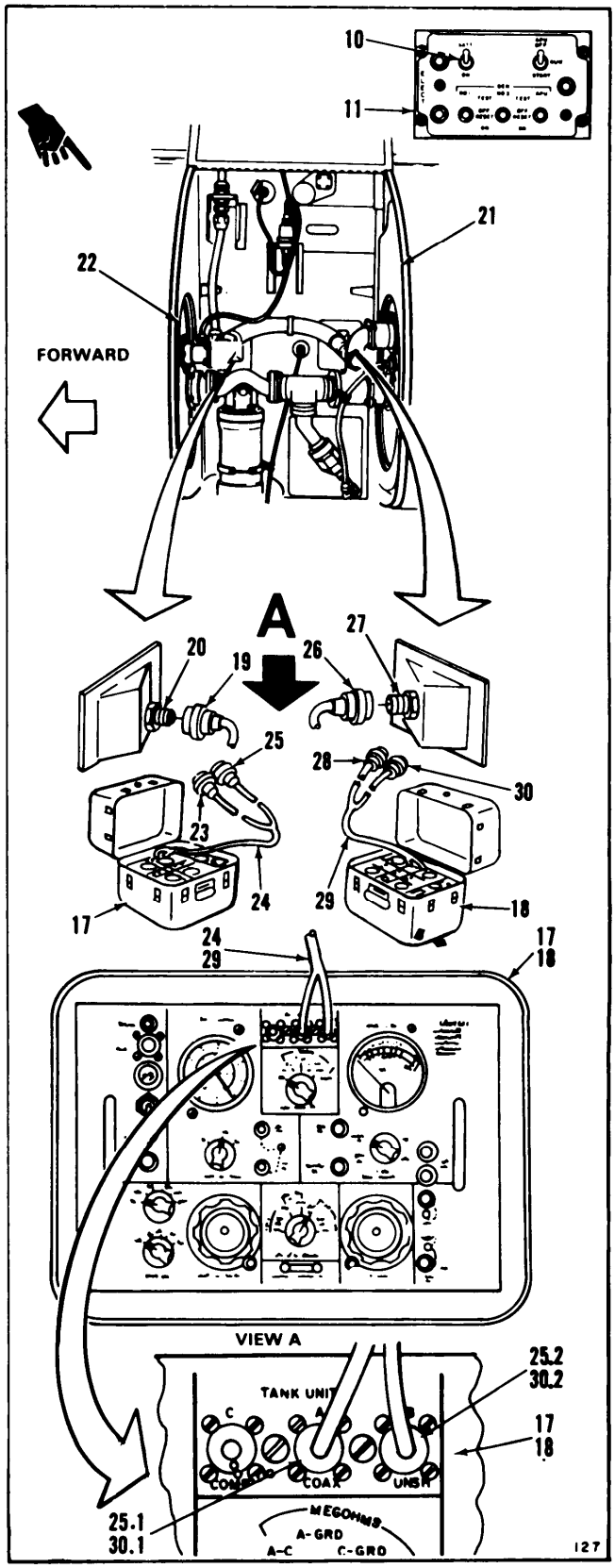
17.1. **Connect connector A (25.1)** to COAX receptacle of test set (17).

17.2. **Connect connector B (25.2)** to UNSH receptacle of test set (17).

18. Tag and **disconnect connector (26)** from receptacle (27) at aft end of access (21).
19. **Connect connector (28)** of cable E43 (29) from test set (18) to receptacle (27).
20. **Connect connector (30)** of cable E43 (29) to connector (26).

20.1. **Connect connector A (30.1)** to COAX receptacle of test set (18).

20.2. **Connect connector B (30.2)** to UNSH receptacle of test set (18).



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21. **Set FUNCTION SELECTOR switch (31)** of test set (17) **to TEST IND/PROBE SET.**
22. **Set CAP-RES CHECK switch (32) to CAP.**
23. **Set capacitance RANGE SELECTOR switch (33) to X10.**

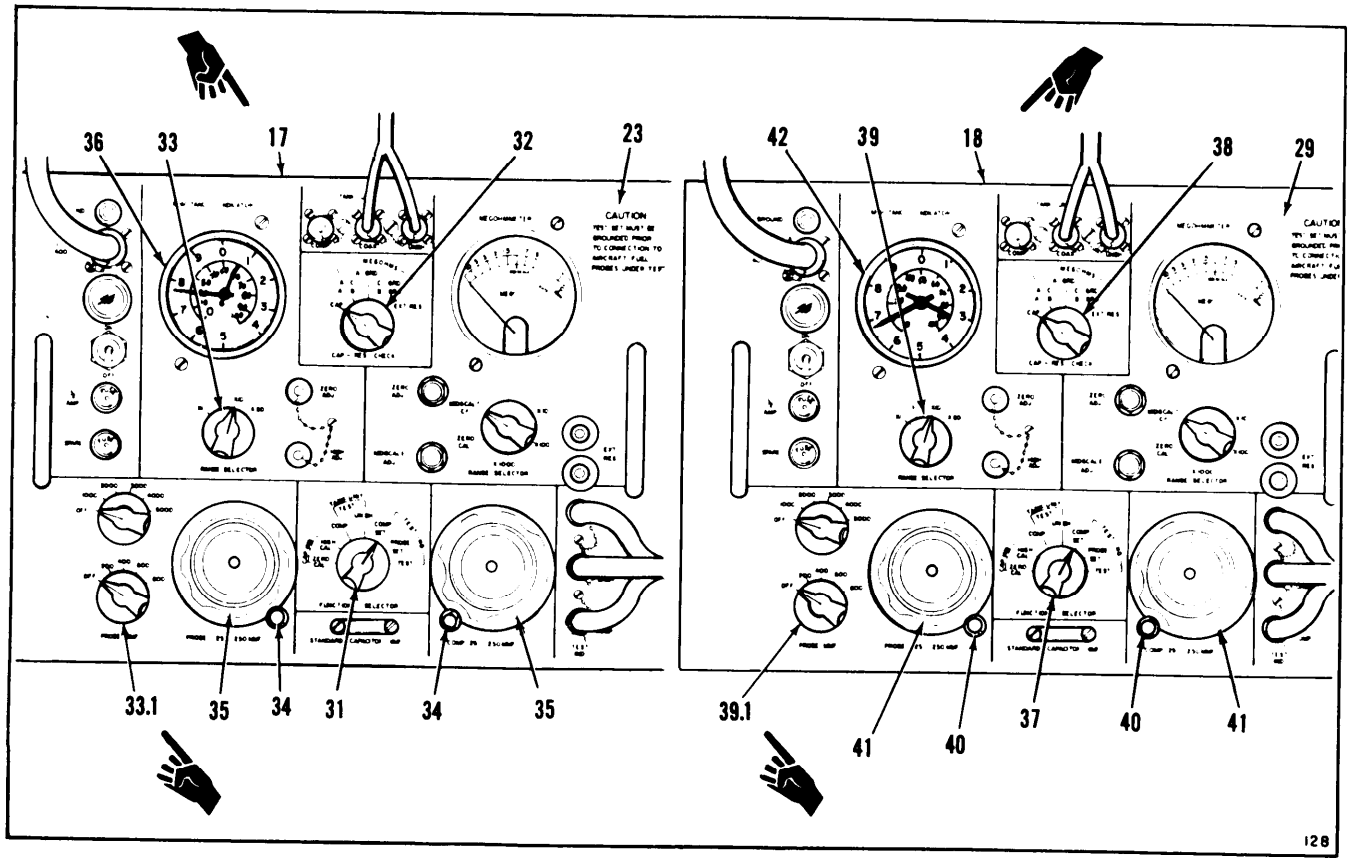
23.1. Set PROBE MMF switch (33.1) to 400.

24. **Loosen clamp (34) and turn PROBE knob (35)** until CAPACITANCE INDICATOR (36) indicates 579.16 mmf . Tighten clamp.
25. **Set FUNCTION SELECTOR switch (37)** of test set (18) **to TEST IND/PROBE SET.**
26. **Set CAP-RES CHECK switch (38) to CAP.**
27. **Set capacitance RANGE SELECTOR switch (39) to X10.**

27.1. Set PROBE MMF switch (39.1) to 800.

28. **Loosen clamp (40) and turn PROBE knob (41)** until CAPACITANCE INDICATOR (42) indicates 868.74 mmf . Tighten clamp.
29. Apply electrical ac power. (Task 1-67).

29.1. **Set FUNCTION SELECTOR switches (31 and 37)** on test sets (17 and 18) to **TEST.** Pointers on each CAPACITANCE indicator (36 and 42) will turn counter-clockwise, then stabilize.



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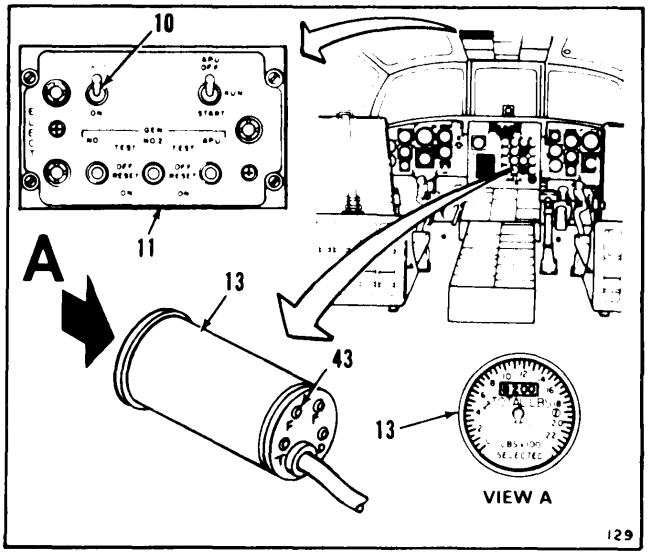
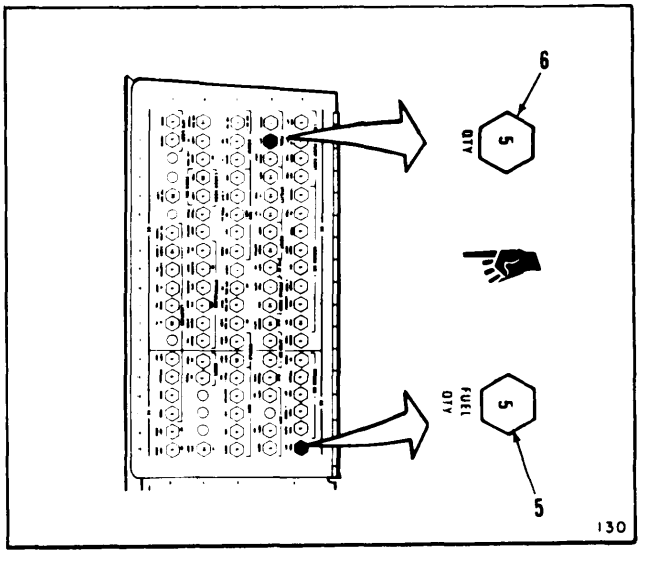
8-80.5 TEST AND ADJUST FUEL QUANTITY INDICATOR (Continued)

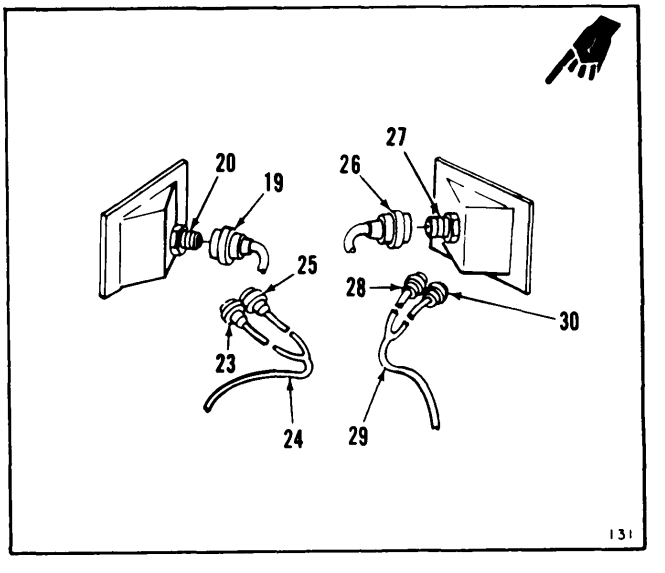
30. **Set switch (10)** on panel (11) **to ON.**
31. Remove indicator (13) (steps 9. and 10).
32. **Turn F adjustment screw (43)** at back of indicator (13) until digital display indicates 8200 TOTAL LBS
33. **Install indicator (13) (step 12).**



34. **Open FUEL QTY IND and FUEL QTY CONTROL circuit breakers (5 and 6).**



35. Working at forward left tank, **disconnect connector (30)** from connector (26).
36. **Disconnect connector (28)** from receptacle (27).
37. **Connect connector (26)** to receptacle (27).
38. **Disconnect connector (25)** from connector (19).
39. **Disconnect connector (23)** from receptacle (20).
40. **Connect connector (19)** to receptacle (20).



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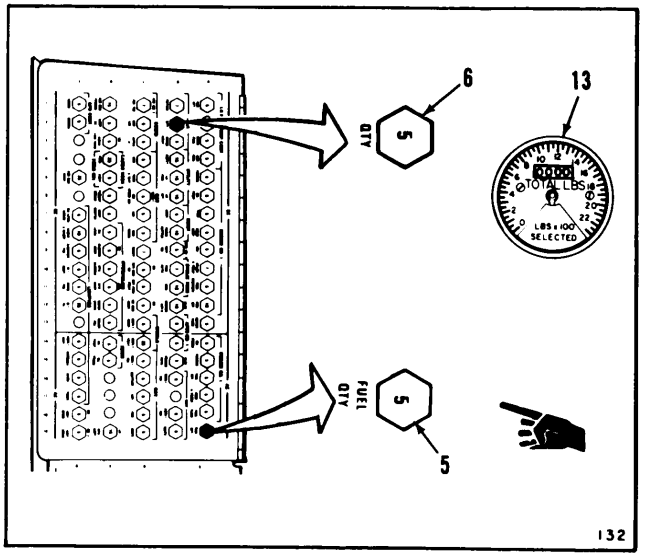
41. Working in cockpit, **close FUEL QTY IND and FUEL QTY CONTROL circuit breakers (5 and 6).**

42. **Check that display on indicator (13) indicates <u>0000 TOTAL LBS</u>** . If not, repeat steps 9 through 12.



TEST TOTAL SYSTEM PRESSURE REFUEL INDICATOR

43. **Set REFUEL STATION switch (8)** on panel (9) **in cockpit to ON.**

43.1. Go to refueling panel (43.1) in right forward wheel well.

43.2. **Set PWR ON switch (43.2)** on refueling panel (43.1) **to ON.**

44. **Check that digital display** on fuel quantity indicator (43.3) **is <u>0000 LBS.</u>** If it is not, do the following:

a. Loosen screw (43.4).

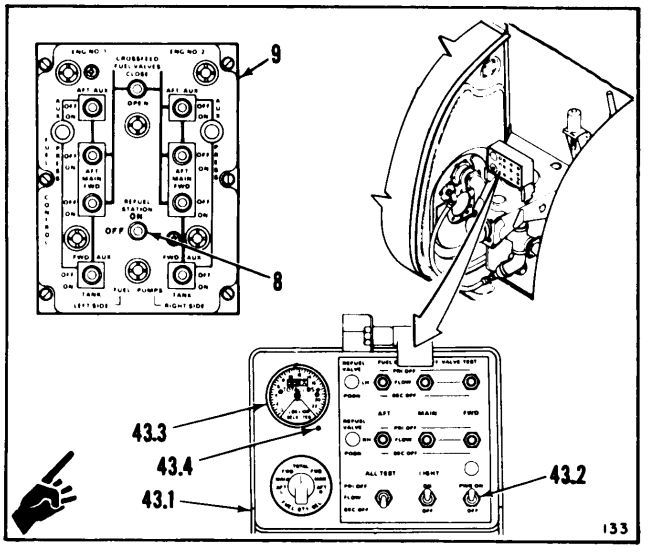
CAUTION

Do not disconnect connector from indicator. Indicator can be damaged.

b. Grasp fuel quantity indicator (43.3) at rim and slide it from refueling panel (43.1).

c. Repeat steps 11. and 12. for indicator (43.3).

45. **Repeat steps 15 through 30.**



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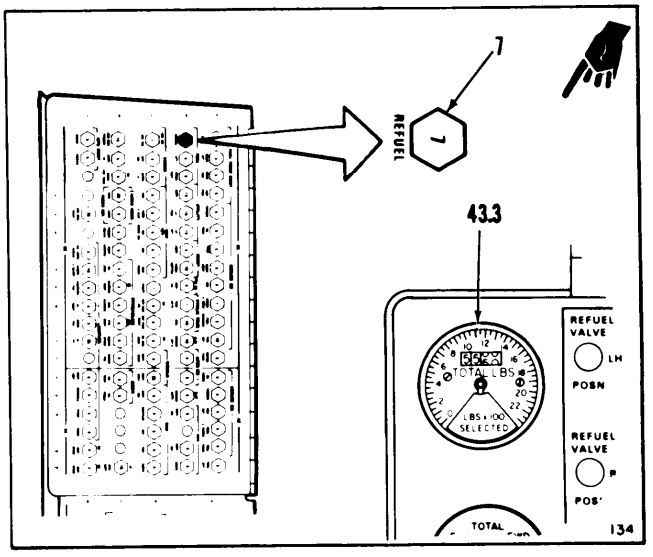
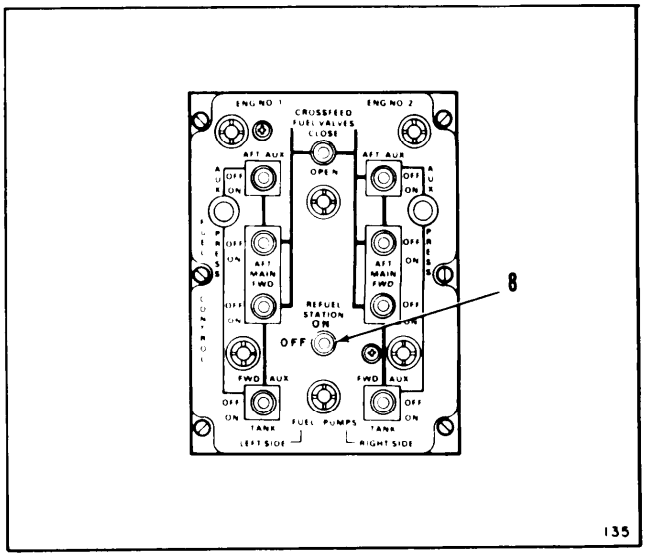
8-80.5 TEST AND ADJUST FUEL QUANTITY INDICATOR (Continued) 8-80.5

46. **Open REFUEL circuit breaker (7).**
47. **Repeat steps 35 through 40.**
48. **Close REFUEL circuit breaker (7).**
49. **Check that display on indicator (43.3)** indicates 0000 LBS . If not, repeat step 44.



50. **Set REFUEL STATION switch (8) to OFF.**



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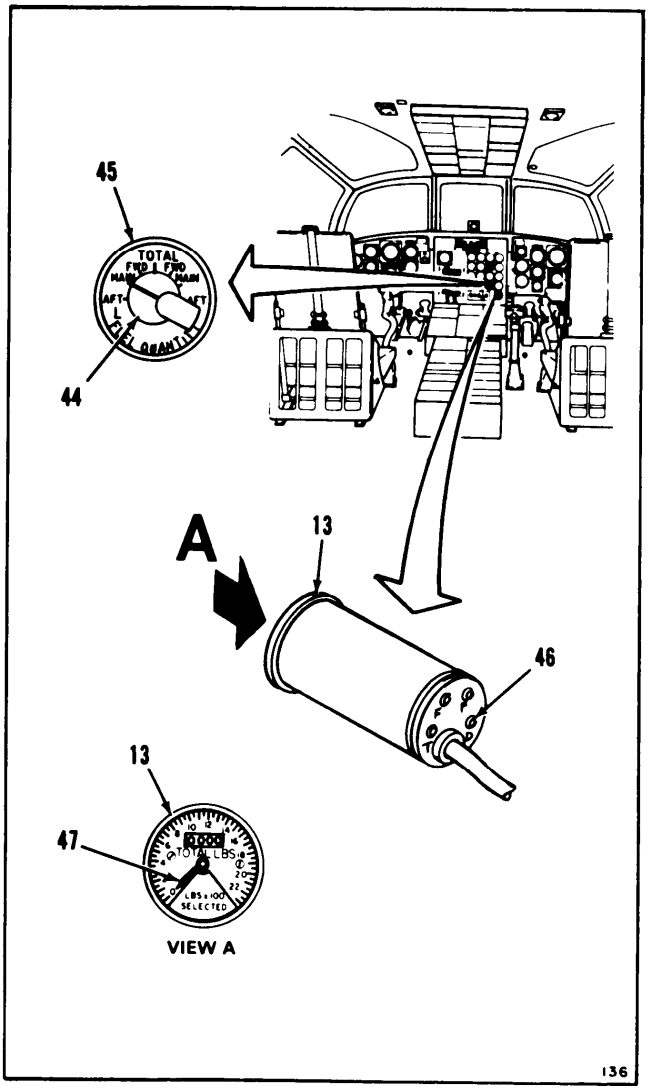
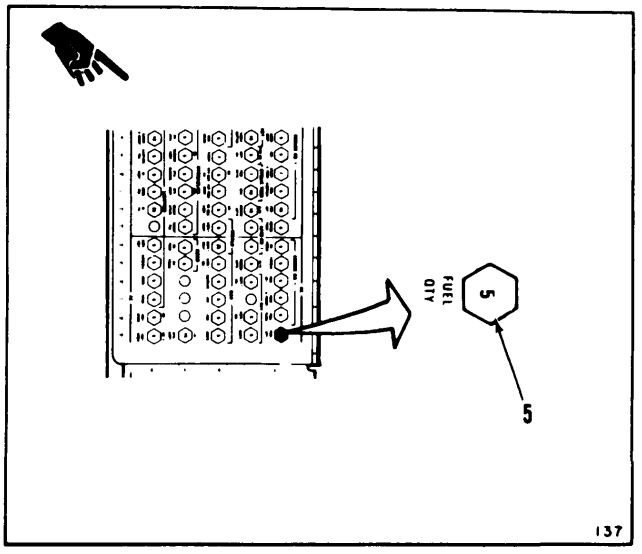
TEST SELECT SYSTEM FUEL INDICATOR

51. **Remove fuel quantity indicator (13) (steps 9 and 10).**
52. Have helper **set knob (44) of FUEL QUANTITY selector switch (45) to L MAIN.** Hold in position.
53. **Turn E adjustment screw (46)** on right side at back of indicator (13) until pointer (47) indicates 0 LBS.
54. **Install indicator (13) (step 12).**
55. **Set** and hold **knob (44) at L AFT position.** Pointer (47) shall indicate 0 LBS.
56. **Repeat step 55 for** positions LFWD, R FWD, R MAIN, and R AFT.
57. **Set knob (44) to TOTAL.** Pointer (47) shall not show.



58. **Open FUEL QTY circuit breaker (5).**
59. **Repeat steps 15 through 22.**



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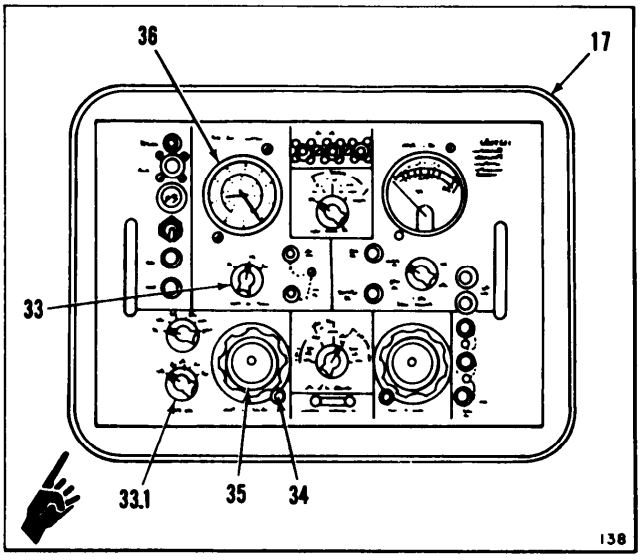
8-80.5 TEST AND ADJUST FUEL QUANTITY INDICATOR (Continued) 8-80.5

59.1. On test set (17), set RANGE SELECTOR switch (33) to X10. Set PROBE MMF switch (33.1) to OFF.

60. **Loosen clamp (34) and turn PROBE knob (35)** of test set (17) until CAPACITANCE INDICATOR (36) indicates 144.79 mmf. Tighten clamp.

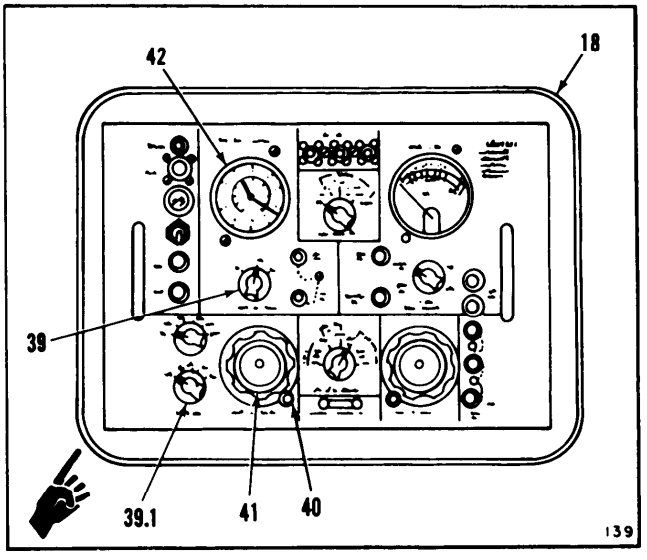


61. **Repeat steps 25 and 26 on test set (18).**

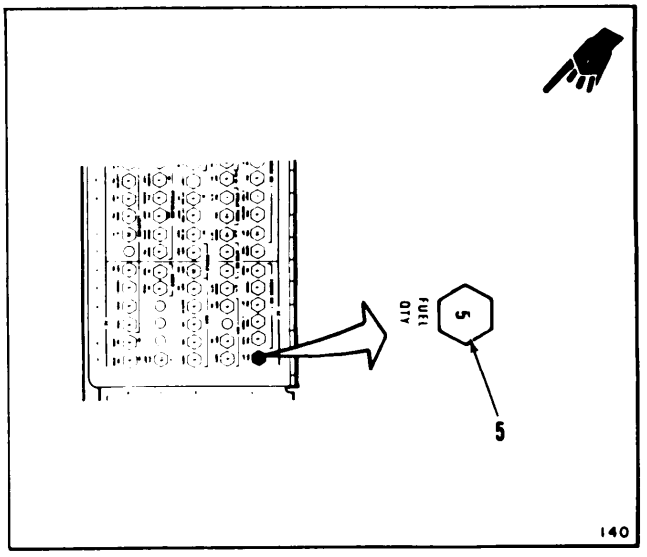
61.1. Set RANGE SELECTOR switch (39) to X10. Set PROBE MMF switch (39.1) to 400.

62. **Loosen clamp (40) and turn PROBE knob (41)** of test set (18), until CAPACITANCE INDICATOR (42) indicates 434.37 mmf. Tighten clamp.

63. **Apply ac electrical power (Task 1-67).**



64. **Close FUEL QTY circuit breaker (5).**



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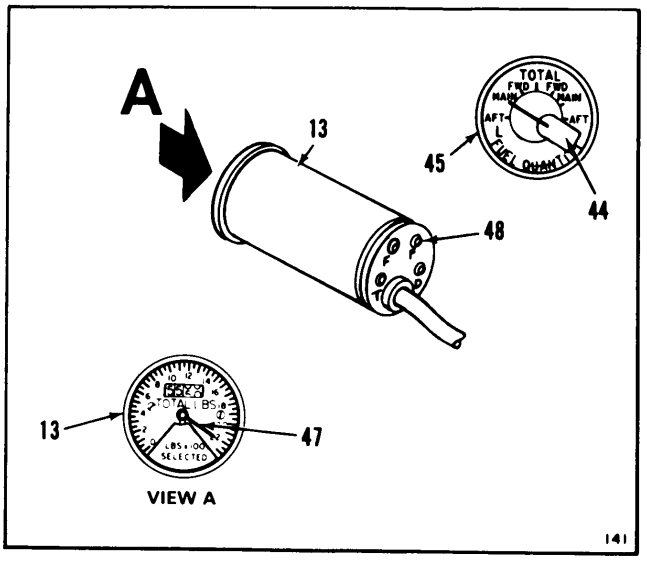
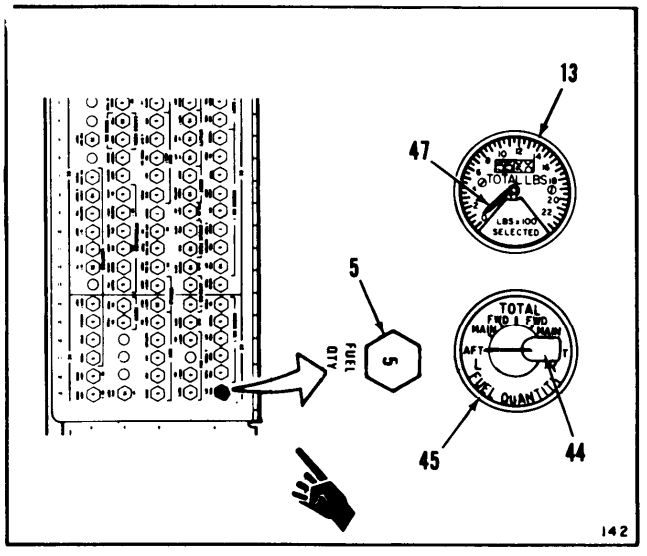
65. Remove indicator (13) (steps 9 and 10).
66. Have helper **set knob (44)** of switch (45) **to L MAIN.** Hold in position.
67. **Turn F adjustment screw (48)** on right side at back of indicator (13) until pointer (47) indicates 2200 LBS .
68. Install indicator (13) (step 12).
69. **Set knob (44)** of switch (45) **to L FWD.** Indicator shall indicate 950 LBS .

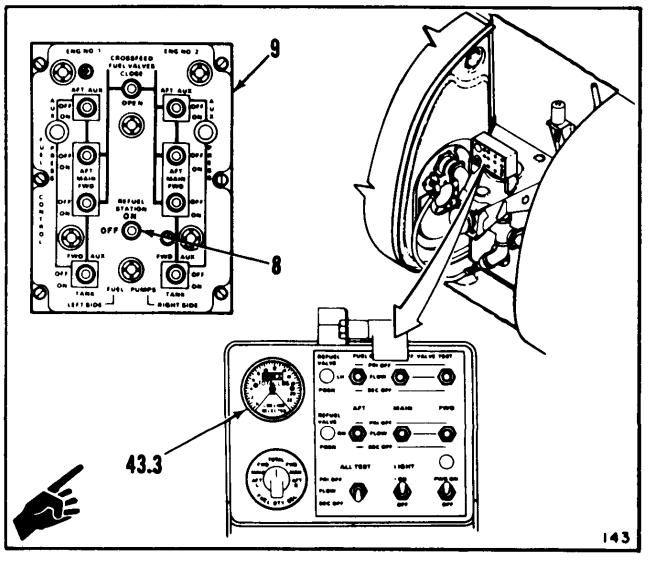


70. **Open FUEL QTY circuit breaker (5).**
71. **Repeat steps 35 through 40.**
72. **Set** and hold **knob (44) at L AFT** position, then L MAIN, L FWD, R FWD, R MAIN, and R AFT. Check that pointer (47) indicates 0 LBS at each position. If not, repeat steps 51 and 53 through 56.
73. **Close FUEL QTY IND circuit breaker (5).**
74. **Set knob (44) to TOTAL.** Pointer (47) shall not show.



CALIBRATE SELECT SYSTEM PRESSURE REFUEL INDICATOR

75. **Set REFUEL STATION** switch (8) on panel (9) **in cockpit to ON.**
76. **Check that pointer of indicator (43.3)** indicates 0 LBS . If not, repeat steps 43.2 through 44.



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77. **Open REFUEL circuit breaker (7).**

78. **Repeat steps 15 through 22, then steps 60 through 62.**

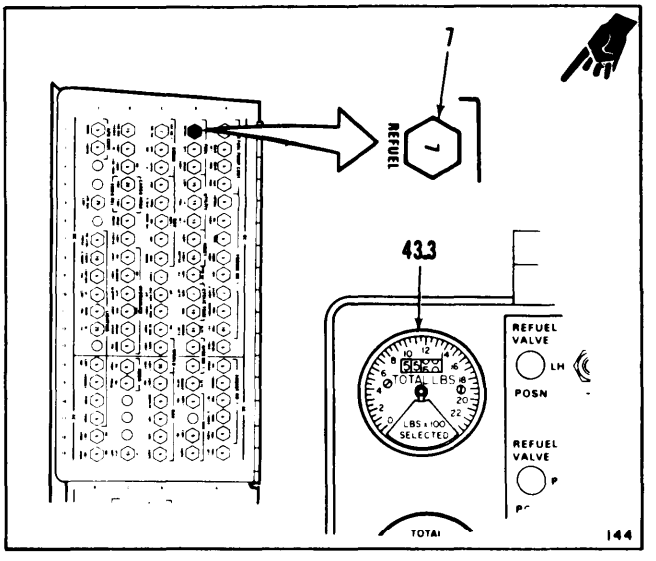
79. **Close REFUEL circuit breaker (7).**

Repeat steps 44.a and 44.b. Repeat steps 66 through 69 for fuel panel indicator 43.3.

81. **Open REFUEL circuit breaker (7).**

82. **Repeat steps 35 through 40 and step 72.**

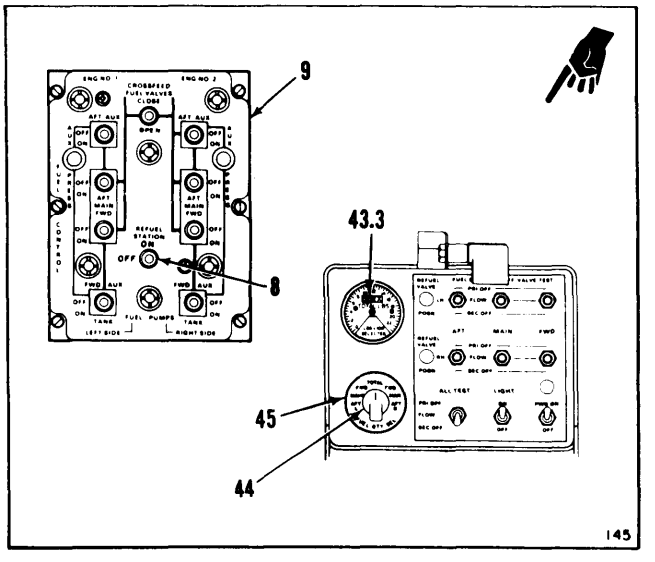
83. **Close REFUEL circuit breaker (7).**



84. Set knob (44) of switch (45) **to TOTAL.** Pointer of indicator (43.3) shall not show.

85. **Set REFUEL STATION** switch (8) on panel (9) **to OFF.**

INSPECT



FOLLOW-ON MAINTENANCE:

Remove ac electrical power (Task 1-67).

Close forward left and right fuel tank access panels (Task 2-3.1).

Refuel helicopter (Task 1-51).

END OF TASK

8-80.5.1 TEST AND ADJUST FUEL QUANTITY INDICATOR USING PSD 60-1AF FUEL QUANTITY TEST SET

8-80.5.1

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Fuel Quantity Test Set PSD60-1 AF
NSN 6625-01-297-5305
Fuel Quantity System "Dual T" cable
PSDAF-1 06
Hearing protectors
Fuel sump and drain equipment
Philips screwdriver No. 2
Jeweler's screwdriver

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

Equipment Condition:
Battery Connected (Task 1-100)
AC Electrical Power On (Task 1-67)
Fuel Tank Left and Right Forward Access Panel Open (Task 2-3.1)
Helicopter Defueled (Task 10-34 or 10-35)

SAFETY PRECAUTIONS REQUIRED WHEN TESTING AND/OR CALIBRATING FUEL QUANTITY SYSTEM

WARNING

DO NOT USE ANY FUEL QUANTITY TESTER OTHER THAN THE PSD60-1AF with this procedure. The PSD60-1 AF is battery-powered, and therefore inherently safe. Testers powered by 11 5VAC require voltage and ground continuity tests which are not required by the PSD60-1 AF.

WARNING

ALWAYS GROUND THE TESTER to a good, dean aircraft ground. DO NOT CONNECT ground wire behind circuit breaker panels or near any exposed power termination. Failure to comply could result in a fuel tank explosion or fire, and serious injury to personnel.

WARNING

NEVER CONNECT a fuel gauge or signal conditioner unit to an electrically live connector. Such practice may be a hazard to the aircraft and personnel, and may damage the gauge or SCU.

WARNING

If a circuit breaker pops during calibration or troubleshooting, a short circuit is indicated. Refer to FAULT ISOLATION PROCEDURES and correct fault before reapplying power.

WARNING

USE ONLY AUTHORIZED TEST EQUIPMENT to test, troubleshoot, and calibrate the fuel quantity system. Shop testers, including multimeters and meggers, are NOT CERTIFIED SAFE for use on any wiring to the fuel tank Failure to comply could result in a fuel tank explosion or fire, and serious injury to personnel.

WARNING

Always ground the aircraft under test to earth ground per approved procedures. Failure to comply could result in a fuel tank explosion or fire, and could result in serious injury to personnel.

CAUTION

- Do a Fuel Quantity Operations Test I/A/W/ TM 55-1520-240-T-2 task 8-11.3 before calibrating fuel quantity system.
- DO NOT attempt to calibrate a fuel quantity system that has a known failure.
- APU causes dangerous noise levels. Wear appropriate hearing protection.

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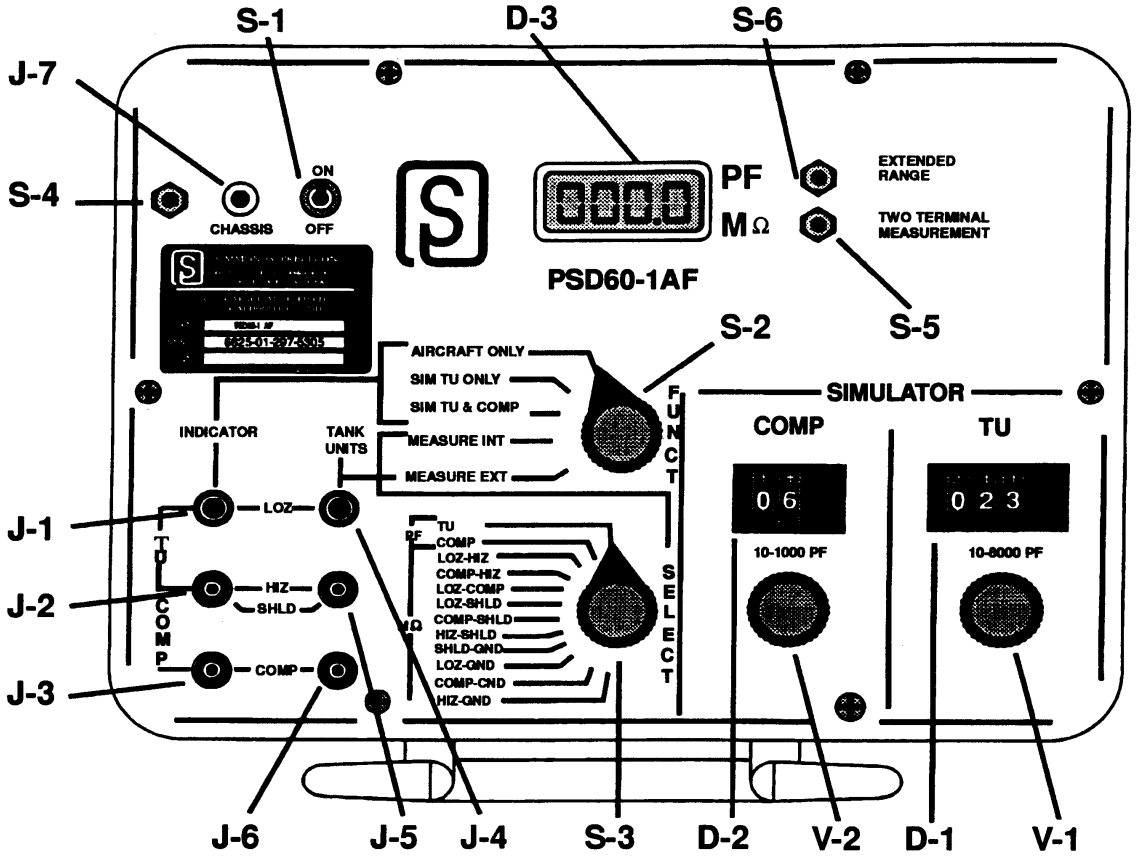
PART I CAUBRATION OF FUEL GAUGE DIAL INDICATION

1 Read and observe all safety precautions listed above.
2 Ground aircraft to earth ground per approved procedures.
3 Open right Forward Fuel Tank Access Panel.
4 Verify that the following breakers are closed:

-CAUTION PNL	on No 2 PDP
- XFMR RECT	on No 1 PDP
- REV CUR CO	on No 1 PDP
- FUEL QTY	on No 2 PDP
- FUEL QTY CONTROL	on No 2 PDP
- REFUEL	on No 2 PDP



J-1 LoZ output to indicator
J-2 HiZ output to indicator
J-3 Comp LoZ output to indicator
J-4 Tank Unit (TU) LoZ input
J-5 Tank Unit (TU) HiZ input
J-6 Compensator LoZ input
J-7 Airframe ground jack
V-1 TU simulator vernire
V-2 COMP simulator vernier
S-1 Power ON-OFF switch
S-2 FUNCTION select switch
S-3 Capacitance-Meg select switch
S-4 Lid-close power OFF switch
S-5 Press for two-terminal megger
S-6 X10 (high) range switch
D-1 Tank Unit simulator decade
D-2 Compensator simulator decade
D-3 Liquid Crystal Display (LCD)

Figure 1. PSD60-1AF tester

GO TO NEXT PAGE

8-80.5.1 TEST AND ADJUST FUEL QUANTITY INDICATOR USING PSD 60-1AF FUEL QUANTITY TEST SET (Continued) **8-80.5.1**

5 Connect fuel quantity tester CHASSIS jack J-7 to airfame ground between the Right Main and Right Forward Aux fuel tanks.

6 Lift to unlock tester power toggle switch and turn to ON (Figure 1)

7 Allow a 3-minute warmupIf words "LO BAT" appear in upper-left comer of LCD, replace batteries(Figure 2)

8 Connect PSDAF-106 cable lead marked "MAIN & AUX HIZ" to TANK UNITS HIZ terminal J-5 on tester(Figure 1)

9 Connect PSDAF-106 cable "MAIN LOZ" lead to tester TANK UNITS LOZ terminal J-4 on tester. (Figure 1)

10 Rotate tester FUNCT switch to MEAS EXT.(Figure 1)

11 Rotate tester SELECT switch to TU.

12 Read cable LOZ-HIZ capacitance displayed on LCD If capacitance exceeds .5 pf, repair or replace interface cable Record capacitance on worksheet line 1.

13 Subtract cable capacitance measured in step 12 above from **361.7 pf** Record result on worksheet line 2.

14 Disconnect interface cable MAIN & AUX HIZ and MAIN LOZ leads from tester TANK UNITS terminals.

15 Connect cable MAIN & AUX HIZ lead to INDICATOR HIZ terminal J-2 on left side of tester.

16 Connect cable MAIN LOZ lead to tester INDICATOR LOZ terminal J-1.

17 Connect cable MAIN CP lead to tester INDICATOR COMP terminal J-3.

18 Disconnect cable 300W7 (19-pin connector) from 057W2 at right MAIN tank access panel 114PS518.

19 Connect interface cable J-2 to connector disconnected from tank access panel 114PS518DO NOT CONNECT P-2 to 057W2 on tank

20 Rotate tester FUNCT switch to MEASURE INT.

21 Select “034" on TU decade D-1 (Figure 3)

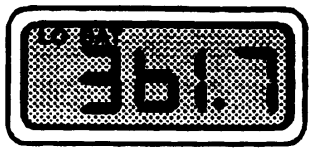


Figure 2. LO BAT Indication

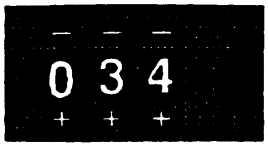


Figure 3. TU decade-Empty

GO TO NEXTPAGE

22 Adjust TU vernier V-1 until tester LCD reads simulated empty MAIN tank capacitance calculated in step 13 above (Worksheet line 2)

23 Rotate SELECT switch on tester to COMP.

24 Select "41" on COMP decade D-2(Figure 4)

25 Adjust COMP vernier V-2 until LCD reads 434.4 pf.

26 Rotate FUNCT switch on tester to SIM TU ONLY.

27 Disconnect aircraft wiring plug from fueling panel gauge Remove gauge from panel and reconnect aircraft plug to gauge.

28 Connect AGPU or turn ON APU.

29 Turn ON "REFUEL STATION" switch on cockpit Fuel Control Panel (Figure 5)

30 At refueling panel in right forward wheel well, turn PWR ON-OFF switch ON.

31 Select RIGHT MAIN tank on Fuel Quantity Selector switch at refueling panel (Figure 6)

NOTE

Refer to Figure 6 for location and identification of trimmers.

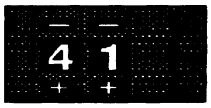


Figure 4. COMP decade

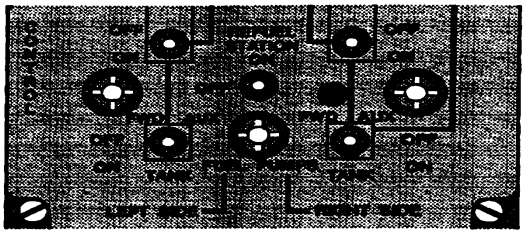


Figure 5. Fuel Control Panel

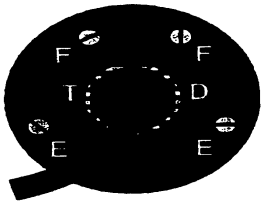


Figure 6. Trimmer Identification

GO TO NEXT PAGE

32 Adjust "E" trimmer, marked "D" for "Dial" indication, until gauge pointer reads **0 lb.** (Figure 7)

33 Rotate FUNCT switch on tester to SIM TU & COMP.

34 Adjust "F" trimmer, marked "D" for "Dial" indication, until gauge pointer reads 2200 lb.(Figure 8)

NOTE

Digital total fuel indication will display sum of fuel in all tanks, including 2200 lb. simulated in RIGHT MAIN.

35 Rotate FUNCT switch on tester back to SIM TU ONLY.

36 Readjust "E" trimmer for Dial indication, if necessary, to read 0 lb. on gauge.

37 Turn PWR switch on Refueling Panel OFF.

38 In cockpit, select RIGHT MAIN tank on Fuel Quantity Selector Switch (Figure 9)

39 Remove Fuel Quantity Indicator from instrument panel.

40 Adjust "E" trimmer, marked "D" for Dial indication, until gauge pointer reads 0 lb.

41 Rotate FUNCT switch on tester to SIM TU & COMP.

42 Adjust "FP trimmer, marked "D" for dial until gauge pointer reads 2200 lb.

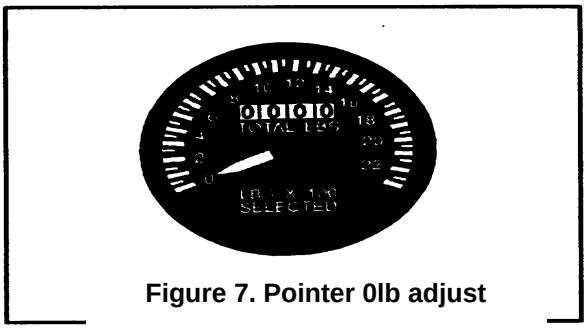


Figure 7. Pointer 0lb adjust

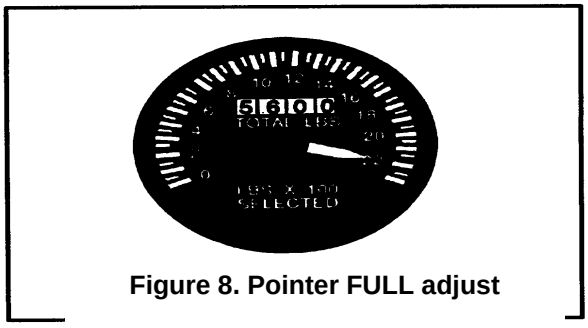


Figure 8. Pointer FULL adjust

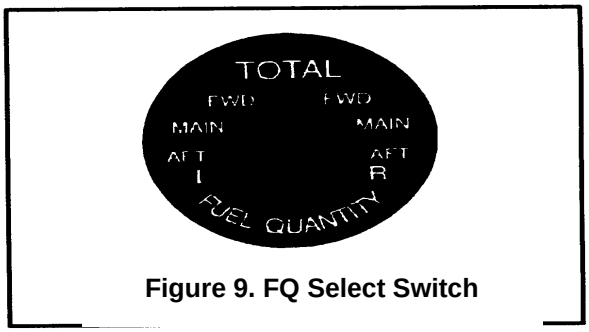


Figure 9. FQ Select Switch

GO TO NEXT PAGE

8-80.5.1 TEST AND ADJUST FUEL QUANTITY INDICATOR USING PSD 60-1AF FUEL QUANTITY TEST SET (Continued) **8-80.5.1**

43 Rotate FUNCT switch on tester back to SIM TU ONLY.

44 Adjust "E" trimmer, if necessary, until gauge pointer reads O lb.

45 If calibrating TOTAL FUEL function of gauge, proceed to PART II of this procedure.

46 In cockpit, pull FUEL QTY IND and FUEL QTY CONTROL circuit breakers.

47 Replace gauge in instrument panelRefer to task 8-80.5, step 12.

48 At refueling panel, replace gauge in panelRefer to task 8-80.5, step 12.

49 Disconnect PSDAF-106T cable from aircraft wiring, and from tester (Figure 10)

50 Reconnect aircraft wiring harness 300W7 to MAIN tank wall connector 057W2.

51 Turn tester OFF Disconnect ground lead and place in lid of tester.

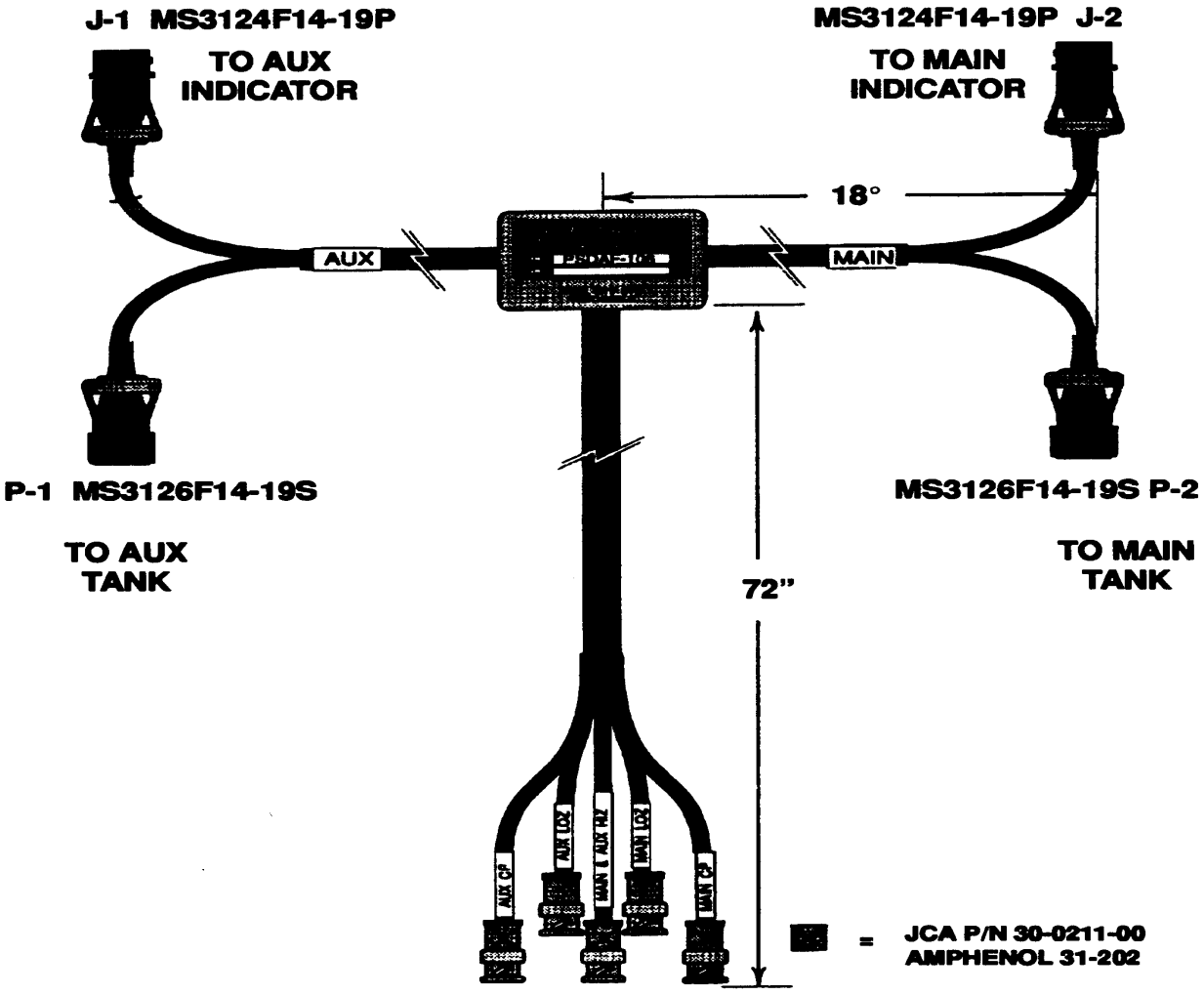


Figure 10. PSDAF-106"T" cable

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PART II. CALIBRATION OF DIGITAL TOTAL FUEL QUANTITY INDICATION

1 Read and observe all safety precautions listed above.

2 Ground aircraft to earth ground per approved procedure.

3 Open Left and Right Forward and Aft Fuel Tank access panels.

4 Disconnect the following connectors from the fuel tank acc33s panels 114PS518.

TANK	HARNFSS #	CONN #
- RIGHT MAIN	300W7	057W2
- LEFT MAIN	300W6	057W9
- FWD RT AUX	300W4	057W1
- FWD LT AUX	300W2	057W10
- AFT RT AUX	300W5	057W5
- AFT LT AUX	300W3	057W6

5 Verify that the following breakers are closed:

CIRCUIT BREAKER	PDP#
- CAUTION PANEL	No 2
- XFMR RECT	No 1
- REV CUR CO	No 1
- FUEL QTY	No 2
- FUEL QTY CONTROL	No 2
- REFUEL	No 2

6 Connect fuel quantity tester CHASSIS jack J-7 to airframe ground between the Right Main and Right Forward Aux fuel tanks.

7 Lift to unlock tester ON-OFF switch and turn to ON. If words "LO BAT" appear in upper left corner of LCD display, replace batteries (Figure 11)

8 Allow a 3-minute warm up before using tester to measure cable.

9 Connect PSDAF-106 cable "MAIN & AUX HIZ" lead to TANK UNITS HIZ terminal J-5 on tester. (Figure 1)

10 Connect PSDAF-106 cable "MAIN LOZ" lead to tester TANK UNITS LOZ terminal J-4.

11 Rotate tester FUNCT switch to MEASURE EXT.

12 Rotate tester SELECT switch to the TU.

13 Read and record cable LOZ-HIZ capacitance displayed on LCD If capacitance exceeds **.5 pf,** repair or replace interface cable.

14 Disconnect cable MAIN & AUX HIZ and MAIN LOZ leads from tester TANK UNITS terminals.

15 Connect MAIN & AUX HIZ lead to INDICATOR HIZ terminal J-2 on tester (Figure 1)

16 Connect MAIN LOZ lead to INDICATOR LOZ terminal J-1 on tester (Figure 1)

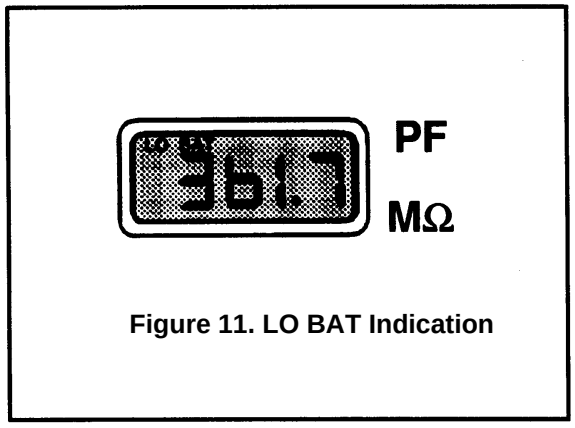

Figure 11. LO BAT Indication

GO TO NEXT PAGE

17 Connect AUX CP lead to INDICATOR COMP terminal J-3 on tester (Figure 1)

18 Rotate tester FUNCT switch to MEASURE INT

19 Select "070" on TU decade D-1 (Figure 12)

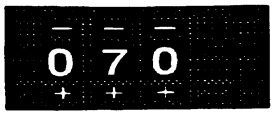

Figure 12. TU decade

20 Adjust TU vernier V-1 to read 723.4 pf on tester LCD (Figure 13)

21 Rotate SELECT switch on tester to COMP.

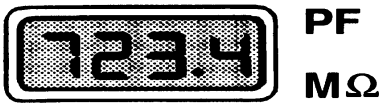

Figure 13. Two empty MAIN TANKS

22 Select "46" on COMP decade D-2 (Figure 14)

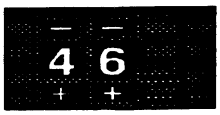

Figure 14. COMP decade

GO TO NEXT PAGE

8-80.5.1 TEST AND ADJUST FUEL QUANTITY INDICATOR USING PSD 60-1AF FUEL QUANTITY TEST SET (Continued) **8-80.5.1**

23 Adjust COMP vernier V-1 until LCD display reads **486.4 pf** (Figure 15)

24 Rotate tester FUNCT switch to SIM TU & COMP.

25 Disconnect cable 300W7 from right MAIN tank connector 057W2 at access panel 114PS518.

26 Connect PSDAF-106 cable J-2 to 300W7 plug disconnected above DO NOT connect P-2 to tank connector.

27 Disconnect 300W4 from RIGHT FWD AUX tank connector 057W1 at access panel 114PS518.

28 Connect PSDAF-106 cable J-1 to 300W4 plug disconnected above DO NOT connect P-1 to tank connector.

29 Rotate Fuel Quantity Select switch in cockpit to TOTAL (Figure 16)

30 Slide Fuel Quantity Indicator out of instrument panel in cockpit.

31 To identify trimmer adjustments (Figure 17)

32 Connect and power AGPU, or turn ON aircraft APU.

33 Adjust "E" trimmer marked 'T" for Total Fuel until digital total fuel indication reads **"0000".**

34 Verify that dial indication (pointer) is out of sight.

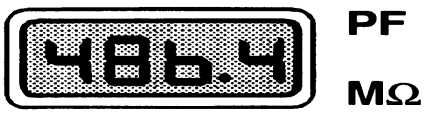

Figure 15. Four empty AUX TANKS

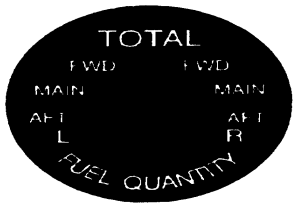

Figure 16. Select TOTAL

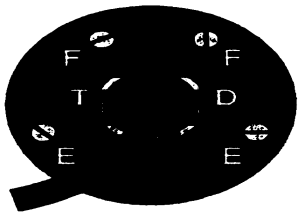

Figure 17. Trimmer Identification

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8-80.5.1 TEST AND ADJUST FUEL QUANTITY INDICATOR USING PSD 60-1AF FUEL QUANTITY TEST SET (Continued) **8-80.5.1**

35 On Fuel Control Panel, disconnect aircraft wiring plug from fuel gauge Remove gauge from panel and reconnect.

36 Rotate Fuel Quantity Select switch on Refueling Panel to TOTAL.

37 Turn REFUEL STATION ON-OFF switch on Fuel Control panel ON(Figure 18)

38 At Refueling Panel, switch PWR ON-OFF switch ON (Figure 19)

39 Adjust "E" trimmer marked "T" for Total Fuel until digital total fuel gauge reads "0000".

40 Verify that dial pointer is out of sight.

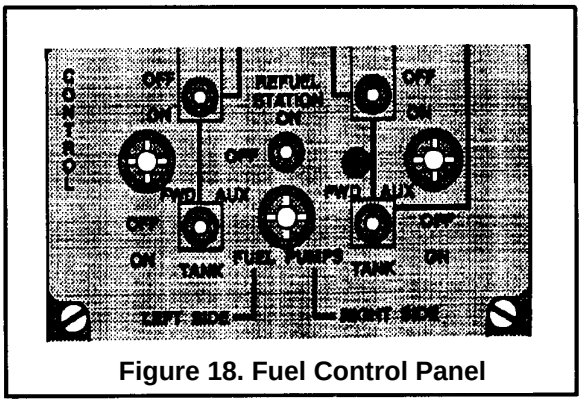

Figure 18. Fuel Control Panel

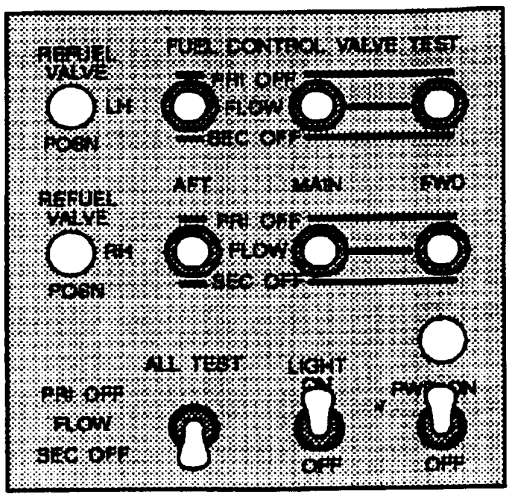

Figure 19. Refueling panel

GO TO NEXT PAGE

41 Rotate FUNCT switch on tester to MEASURE INT.

Figure 20. COMP decade

42 Adjust COMP decade D-2 to read "99W (Figure 20)

43 Adjust COMP vernier V-2 to read 1004.6 pf on tester LCD (Figure 21)

NOTE

This capacitance value equals four AUX tanks at 850 lb. ea. or a total of **3400 lb.**

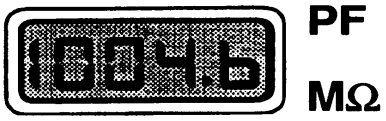

Figure 21. Four full AUX tanks

44 Rotate SELECT switch on tester to TU position.

Figure 22. TU decade

GO TO NEXT PAGE

45. Adjust TU decade D-1 to "157". (Figure 22)

46. Adjust TU vernier V-1 to read 1592.2 pf on tester LCD display. (Figure 23)

NOTE

This capacitance value equals two main tanks at 2200 lb ea. for total of **4400 lb.**

47. Rotate FUNCT switch on tester to SIM TU & COMP.

48. Adjust "F" trimmer marked T" on back of fueling panel gauge to read 7800 lb on gauge.

49. In cockpit, turn REFUEL STATION ON-OFF switch on Fuel Control Panel to OFF

50. Adjust "F trimmer marked "' on gauge until total reads "7800".

51. Repeat steps 18 thru 24.

52. Readjust "E" trimmer marked "" if necessary to read **"0000"** on gauge.

53. Turn Refuel Station ON-OFF switch ON.

54. Readjust "E" trimmer marked "T" on refueling panel gauge, if necessary, to read "0000".

55. Remove electrical power.

56. Replace gauge in instrument panel. Refer to task 8-80.5, step 12.

57. At refueling panel, replace gauge in panel. Refer to task 8-80.5, step 12.

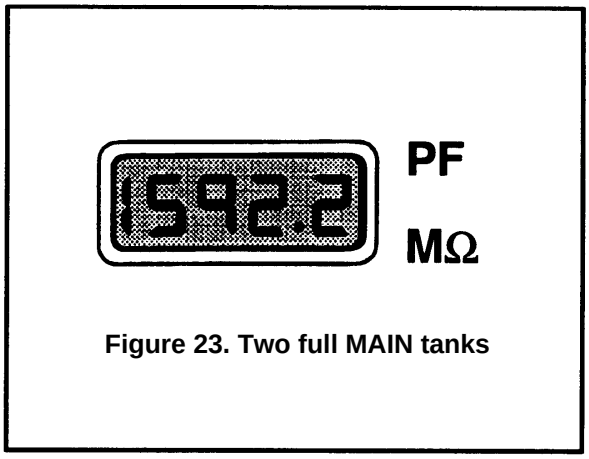

Figure 23. Two full MAIN tanks

GO TO NEXT PAGE

58. Disconnect PSDAF-106 “T” cable from 300W7 and 300W4. (Figure 10)

59. Reconnect harnesses 300W2 thru 300W7 as follows:

TANK	HARNESS #	TANK CONN #
RIGHT MAIN	-300W7	-057W2
LEFT MAIN	-300W6	-057W9
FWD RT AUX	-300W4	-057W1
FWD LT AUX	-300W2	-057W10
AFT RT AUX	-300W5	-057W5
AFT LT AUX	-300W3	-057W6

60. Turn tester OFF and store grounding cable harness in lid.

DIAL CALIBRATION - WORKSHEET	
	361.7 pf
1 Read and record cable LOZ-HIZ capacitance.....	_____pf
2 Subtract line 1 from 361.7pf. Result is	_____pf
3 Select SIM TU ONLY. Adjust "E" trimmer marked "D" for **0 lb**	_____lb
4 Select SIM TU & COMP. Adjust "F" trimmer marked "D" for **2200 lb**	_____lb
5 Select SIM TU ONLY. Readjust "E" trimmer as necessary for **0 lb**	_____lb

GO TO NEXT PAGE

PART III. TESTING AND TROUBLESHOOTING FUEL QUANTITY SYSTEM

SECTION A: MEASURING CAPACITANCE OF EMPTY TANKS

1. Read and observe all safety precautions listed at the beginning of this procedure.
2. Ground aircraft to earth ground per approved procedures.
3. Defuel tank to be measured. Completely drain pumps Failure to do so Invalidates measurements.
4. Open fuel tank access panel for tank to be measured.
5. Connect PSD60-1AF Fuel Quantity System tester CHASSIS jack J-7 to airframe ground between MAIN and AUX fuel tank (Figure 1)
6. Lift to unlock tester ON-OFF switch and turn ON. If words "LO BAT" appear in upper left comer of LCD, replace batteries. (Figure 24)
7. Allow tester to warm up for 3 minutes before taking any measurements.
8. Connect PSDAF-106 "T" cable lead marked "MAIN & AUX HIZ" to TANK UNITS HIZ terminal J-5 (Figure 10)

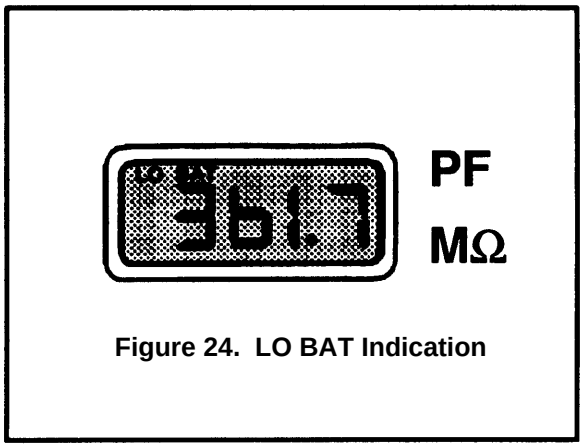

Figure 24. LO BAT Indication

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8-80.5.1 TEST AND ADJUST FUEL QUANTITY INDICATOR USING PSD8 60-1AF FUEL QUANTITY TEST SET (Continued) **80.5.1**

9 If measuring a MAIN TANK, connect "T" cable lead marked "MAIN LOZ" to TANK UNITS terminal J-4.

10 If measuring an AUX TANK, connect "T" cable lead marked "AUX LOZ" to TANK UNITS terminal J-4.

11 Rotate tester FUNCT switch to MEASURE EXT

12 Rotate tester SELECT switch to TU.

13 Read and record cable LOZ-HIZ capacitance displayed on LCD If capacitance is over **.5 pf,** repair or replace cable.

14 Disconnect fuel quantity system harness from tank wall connector listed below:

TANK	HARNESS#	PDP#	CONN#
- RIGHT MAIN	300W7	2	057W2
- LEFT MAIN	300W6	1	057W9
- FWD RT AUX	300W4	2	057W1
- FWD LT AUX	300W2	1	057W10
- AFT RT AUX	300W5	2	057W5
- AFT LT AUX	300W3	1	057W6

15 If measuring a MAIN TANK, connect "T“ cable P-1 to tank wall connector DO NOT connect J-1 to aircraft wiring connector.

16 If measuring an AUX TANK, connect "T" cable P-2 to tank wall connector DO NOT connect J-2 to aircraft wiring connector.

17 Read capacitance of "Tcable plus empty tank on tester LCD.

18 Subtract capacitance measured in step 13 from reading in step 17 This is actual empty tank capacitance Compare with Table I.

TABLE I - FUEL TANK CAPACITANCE VALUES

TANK	EMPTY MIN	EMPTY **NOMINAL**	EMPTY MAX	**ADDED NOMINAL**	**FULL NOMINAL**	READING IN LB
MAIN	360.7 pf	**361.7 pf**	367.9 pf	**434.4 pt**	**796.1 pf**	2200
AUX	120.2 pf	**121.6 pf**	122.7 pf	**144.8 pf**	**266.4 pf**	950

GO TO NEXT PAGE'-

SECTION B:MEASURING INSULATION RESISTANCE OF INTANK WIRING AND PROBES

1 Complete Section A, steps 1 through 11.

2 Rotate SELECT switch to LOZ-HIZ.

NOTE

The PSD60-1 AF tester indicates "over- range" above 10, 000 megohms by flashing three colons and displaying four zeros. (Figure 25)

3 Allow reading to stabilize for 30 seconds Verify that insulation resistance reading displayed is over **20 megohms**.

4 Rotate SELECT switch to COMP-HIZ.

5 Allow reading to stabilize for 30 seconds Verify that insulation resistance reading is over **20 megohms.**

6 Rotate SELECT switch counterclockwise, pausing for 30 seconds at each position Verify that reading in each remaining position is over 1 megohm.

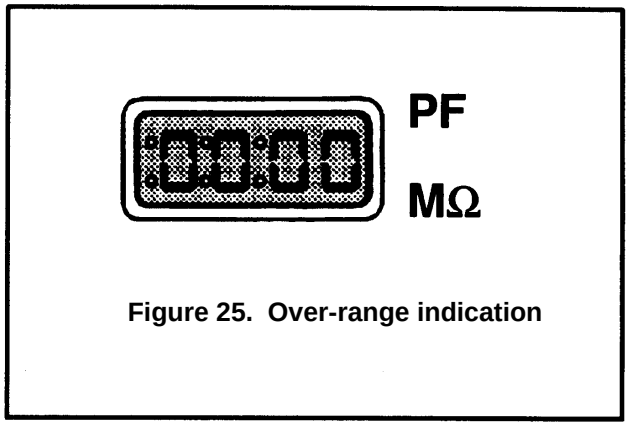

Figure 25. Over-range indication

SECTION C: CALIBRATE DIAL INDICATION TO ACTUAL EMPTY TANK

1 Complete Sections A and B.

2 Rotate FUNCT switch to MEASURE INT.

3 Rotate SELECT switch to TU.

4 Disconnect “T” cable from TANK UNITS terminals of tester.

5 Connect "T” cable lead marked "MAIN & AUX HIZ" to INDICATOR HIZ terminal J-2.

6 If calibrating a MAIN TANK, connect "T" cable MAIN LOZ lead to INDICATOR LOZ terminal J-1
DO NOT connect MAIN CP lead.

7 If calibrating an AUX TANK, connect "r cable AUX LOZ lead to INDICATOR LOZ terminal J-1. DO NOT connect AUX CP lead.

GO TO NEXTPAGE

8 Set the TU decade D-1 on tester to read "041" if calibrating a MAIN TANK, and to "011" if calibrating an AUX TANK (Figures 26 and 27)

9 Subtract cable LOZ-HIZ capacitance measured in Section A, step 13 from "ADDED" capacitance listed in Table I for this tank

10 Adjust TU vernier V-1 until LCD reads capacitance calculated in step 9.

11 Verify that P-2 is connected to tank-wall connector if calibrating a MAIN TANK, and that P-1 is connected if calibrating an AUX TANK.

12 Rotate FUNCT switch to AIRCRAFT ONLY.

13 If calibrating Refueling Panel gauge, disconnect plug from gauge, remove gauge from panel, and reconnect plug to gauge.

14 Connect and turn ON AGPU, or turn ON aircraft APU to supply electrical power.

15 Close the following circuit breakers:

- CAUTION PANEL
- XFMR RECT
- REV CUR CO
- FUEL QTY
- FUEL QTY CONTROL
-REFUEL

16 In cockpit, switch BATT switch on ELEC panel to ON.

17 If calibrating a Fueling Panel gauge, switch REFUEL STATION switch on cockpit Fuel Control Panel to ON Switch PWR ON-OFF switch on Refueling Panel to ON.

18 Select tank to be calibrated on Fuel Quantity Select switch.

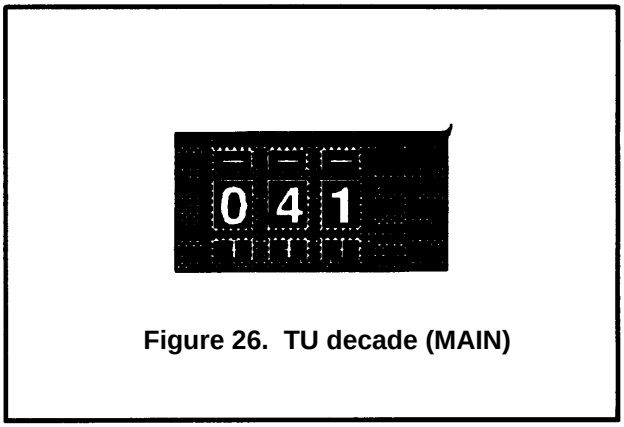

Figure 26. TU decade (MAIN)

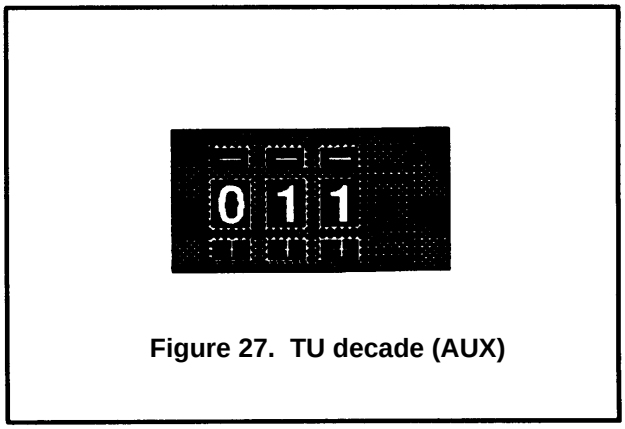

Figure 27. TU decade (AUX)

GO TO NEXT PAGE

19. Identify "E" and "F" trimmers marked "D" for DIAL indication. (Figure 28)

20. Adjust "E" trimmer marked "D" for DIAL until pointer on gauge reads 0 lb.

21. Rotate FUNCT switch on tester to SIM TU ONLY.

22. Adjust "F" trimmer marked "D" until pointer on indicator reads "READING IN LB" listed in Table I.

23. Rotate FUNCT switch back to AIRCRAFT ONLY.

24. Readjust "E" trimmer if necessary to make pointer return to 0 lb.

25. Turn tester power OFF

26. Pull FUEL QTY breaker. Turn OFF aircraft power.

27. Disconnect "T" cable from tester. Disconnect tester ground wire from aircraft and tester. Store in lid of tester.

28. Reinstall gauge per task 8-80.5, step 12.

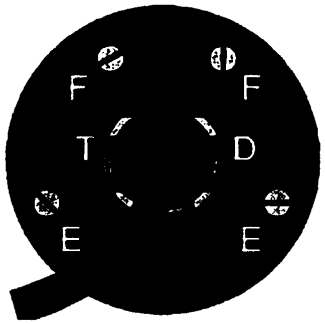

Figure 28. Trimmer identification

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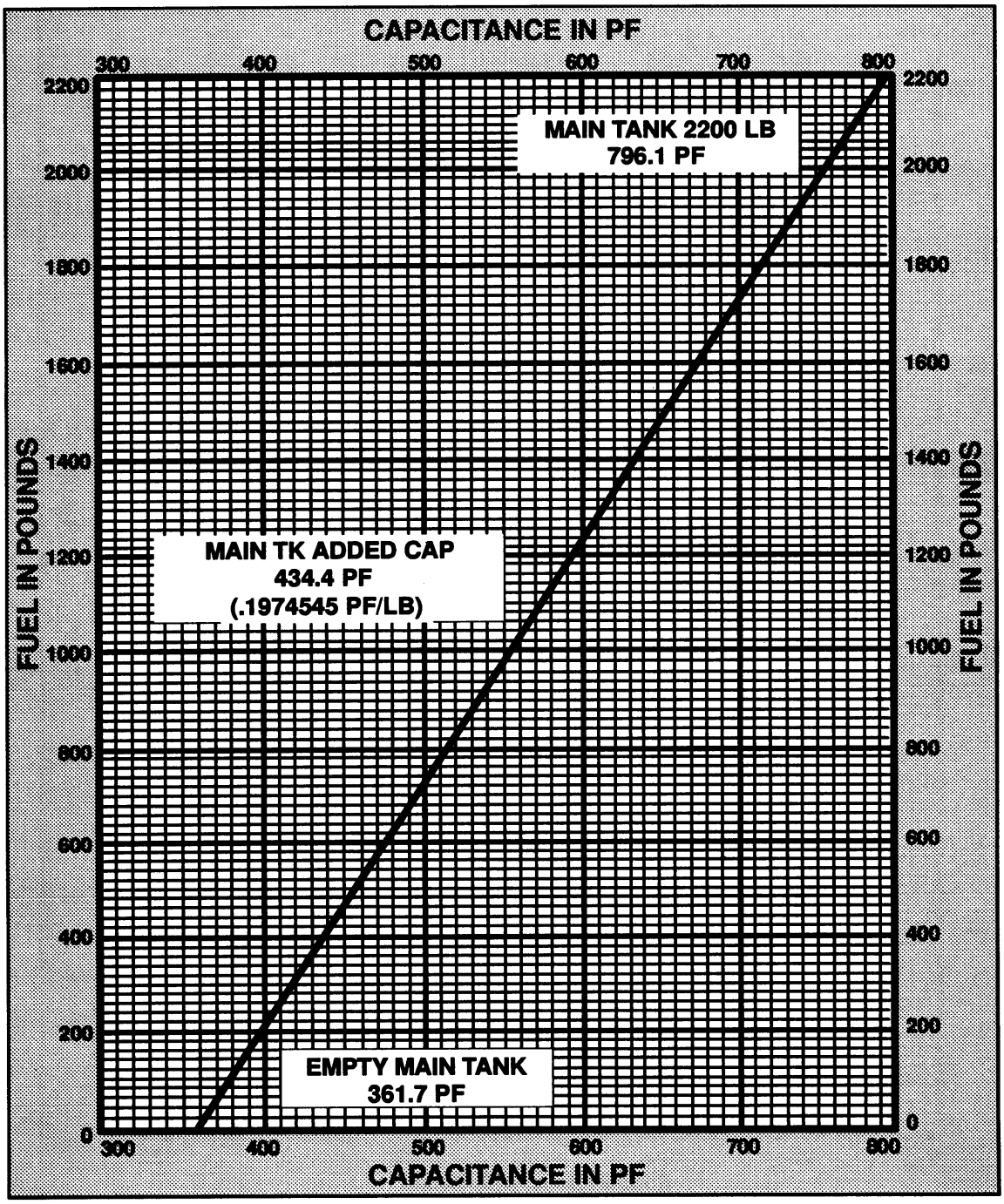

Graph I

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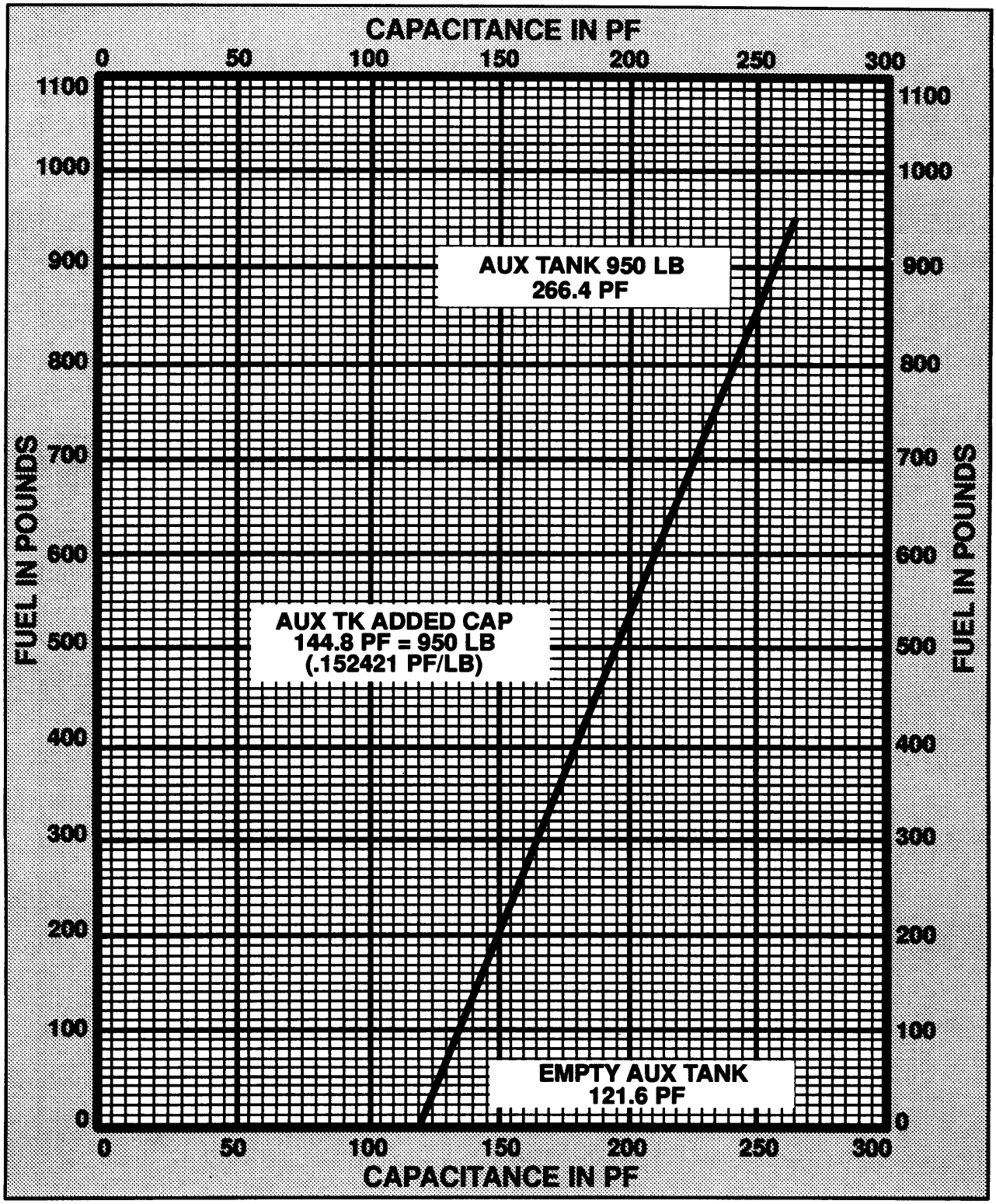


Graph II

END OF TASK

8-80.6 REMOVE FUEL QUANTITY SWITCH BOX 8-80.6

INITIAL SETUP

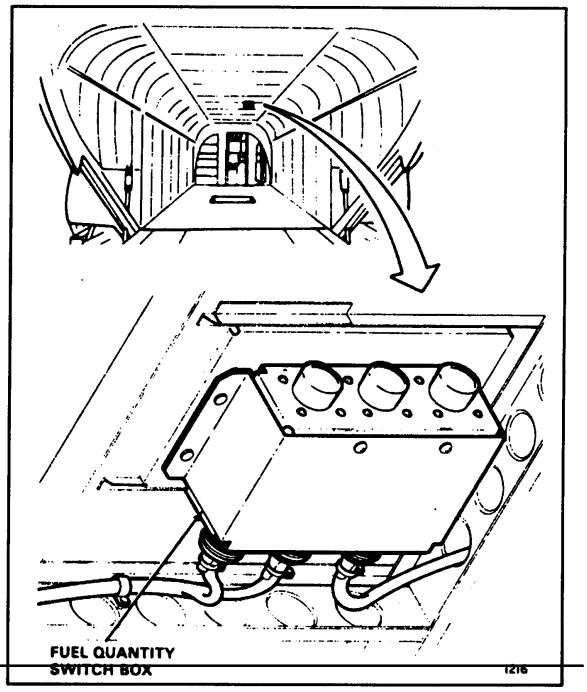
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

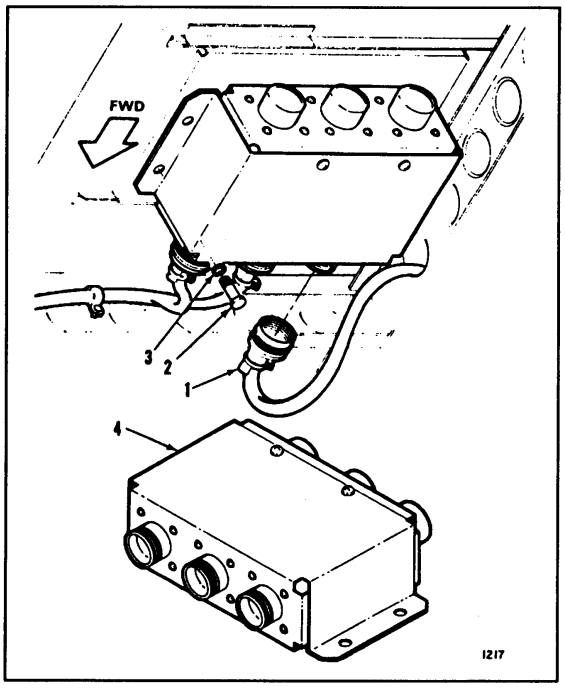
Materials:
None

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cabin Ceiling Acoustical Panels Removed
(Task 2-208)



1. **Disconnect three electrical connectors (1).**
2. Remove four screws (2) and washers (3).
   Remove switch box (4).



FOLLOW-ON MAINTENANCE
None

END OF TASK

8-80.7 DISASSEMBLE FUEL QUANTITY SWITCH BOX (AVIM) 8-80.7

INITIAL SETUP

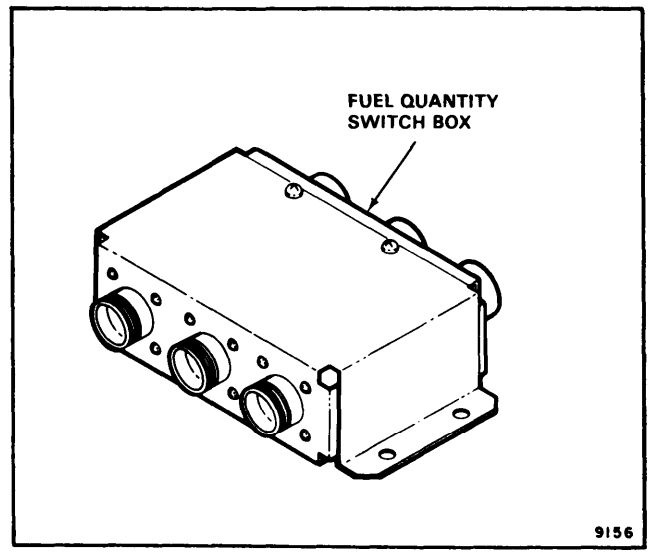
Applicable Configurations:
All

Tools:
Electrical Repairs Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Contact Removal/Insertion
Tool M81969/14-03

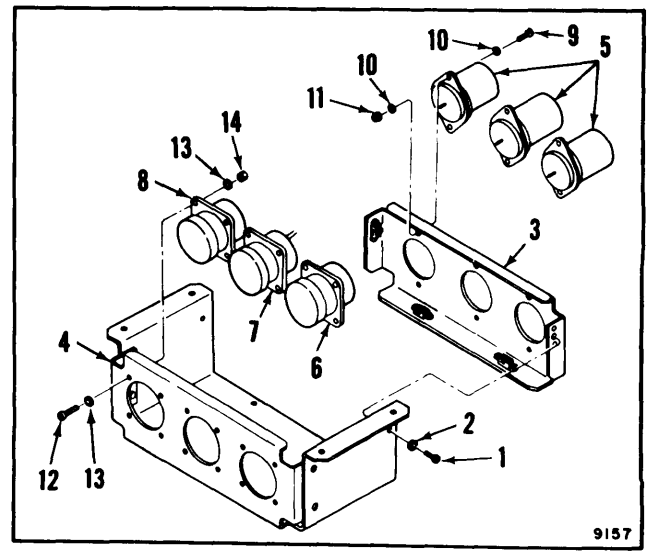
Materials:
Paper Tags (E264)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Off Helicopter Task



1. **Remove 4 screws (1)** and washers (2) and separate cover (3) from housing (4).
2. **Tag and unsolder wires from three relays (5). Tag and remove wires from three receptacles** (6), (7) and (8). Use contact removal/insertion tool.
3. **Remove six screws (9),** twelve washers (10) and six nuts (11), and separate 3 relays (5) from cover (3).
4. **Remove twelve screws** (12), twenty four washers (13), twelve nuts (14) and separate receptacles (6), (7) and (8) from housing (4).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-80.8 ASSEMBLE FUEL QUANTITY SWITCH BOX (AVIM) 8-80.8

INITIAL SETUP

Applicable Configurations:
All

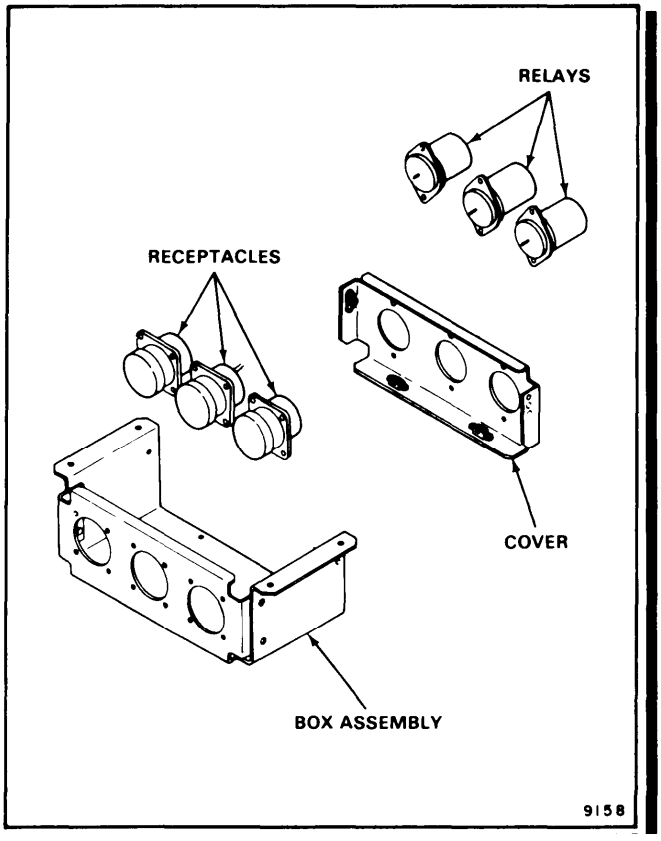
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Iron
Gun Type Heater
Contact/Removal Insertion Tool
M81969/14-03

Materials:
Flux (E178)
Solder (E360)
Tubing Heat Shrinkable (E431)

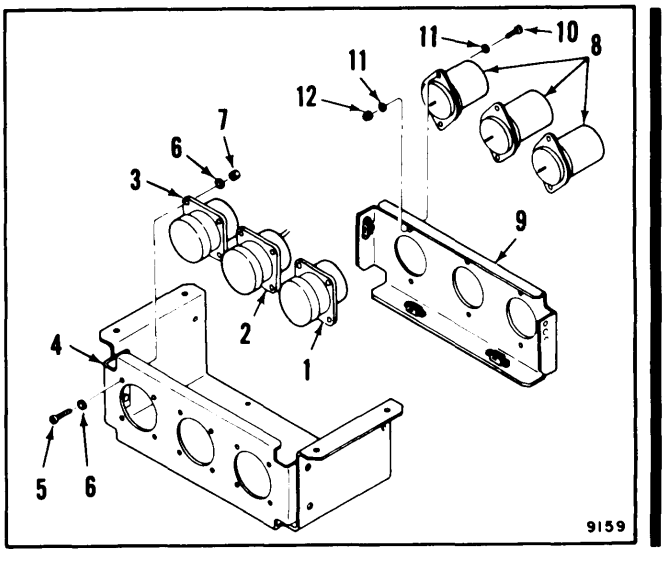
Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-24

Equipment Condition:
Off Helicopter



1. **Position three receptacles** (1), (2) and (3) in box assembly (4). **Install twelve screws (5),** twenty four washers (6), and twelve nuts (7).
2. **Position three relays (8)** in cover (9). **Install six screws (10),** twelve washers (11) and six nuts (12).
3. **Connect wires to three relays (8).** Refer to tags. Use solder (E360) and tubing (E431) (TM 55-1500-323-24).
4. **Connect wires to three receptacles (1), (2) and (3).** Refer to tags. Use contact removal/insertion tool (M81969/14-03) (TM 55-1500-323-24).
5. Remove tags.



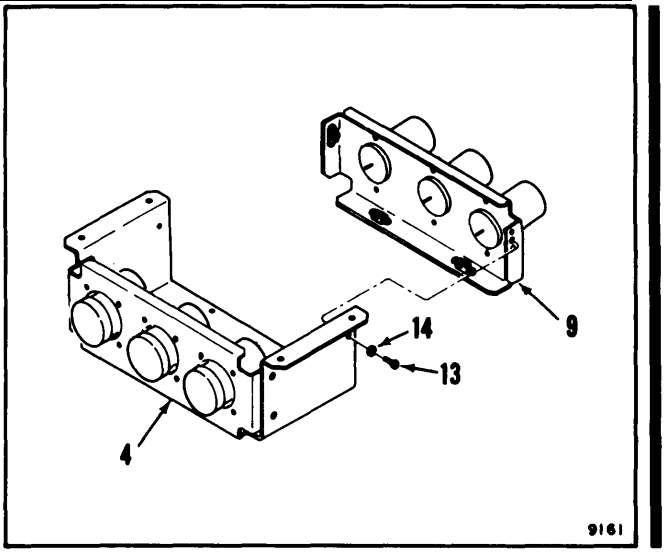
INSPECT

GO TO NEXT PAGE

8-80.8 ASSEMBLE FUEL QUANTITY SWITCH BOX (AVIM) (Continued)

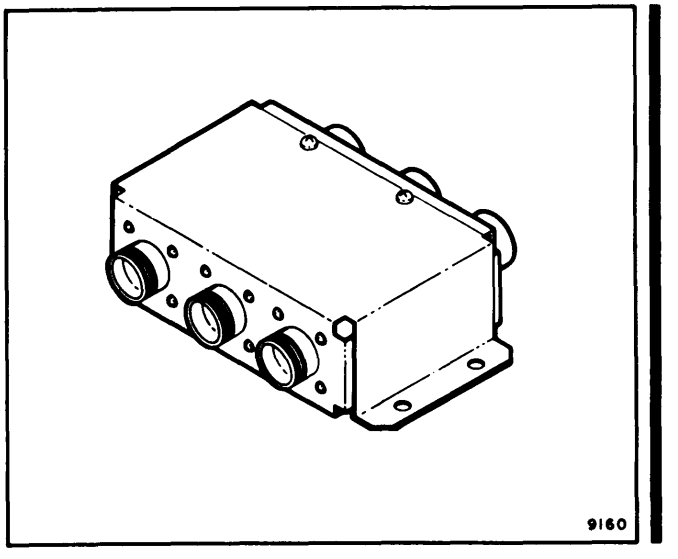
6. **Position cover (9) on box assembly (4). Install four screws (13)** and washers (14).

INSPECT



FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-80.9 INSTALL FUEL QUANTITY SWITCH BOX

INITIAL SETUP

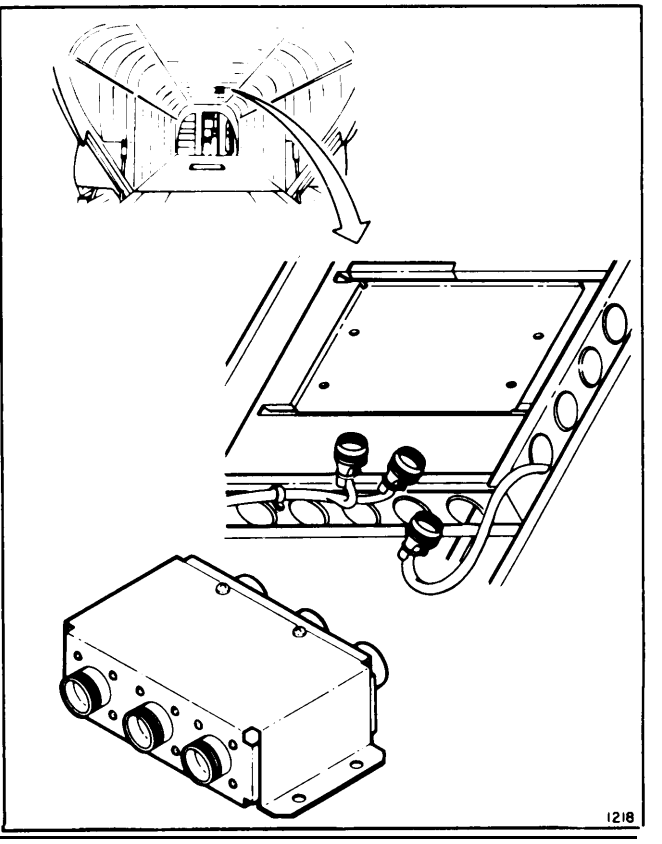
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



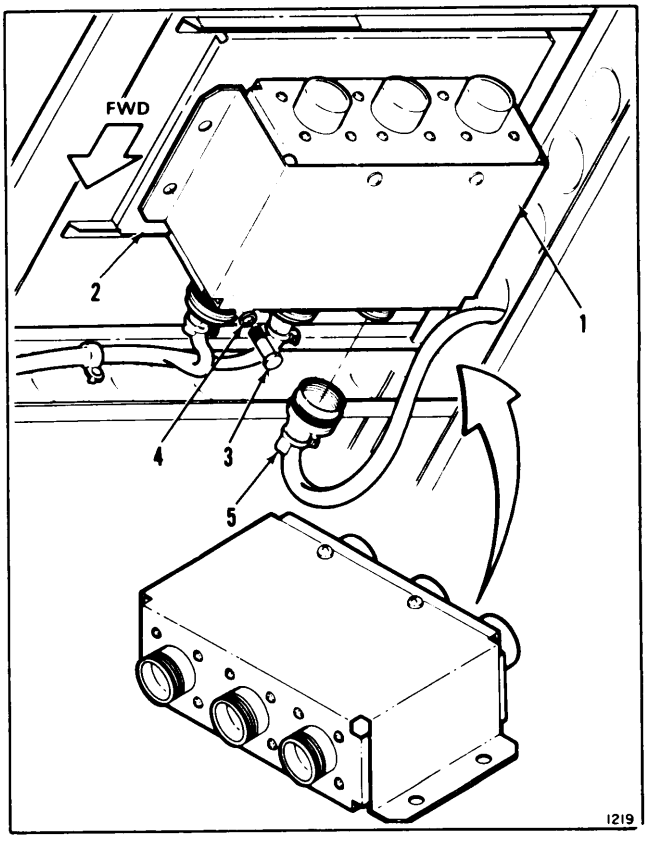
1. **Position fuel quantity switch box (1)** on mounting plate (2). **Install four screws (3)** and washers (4).
2. **Connect three electrical connectors (5).**

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of fuel quantity indicating system (TM 55-1520-240-T).

Install cabin ceiling acoustical panels (Task 2-210).



END OF TASK

8-81 REMOVE FUEL QUANTITY INDICATING SYSTEM TANK UNIT

INITIAL SETUP

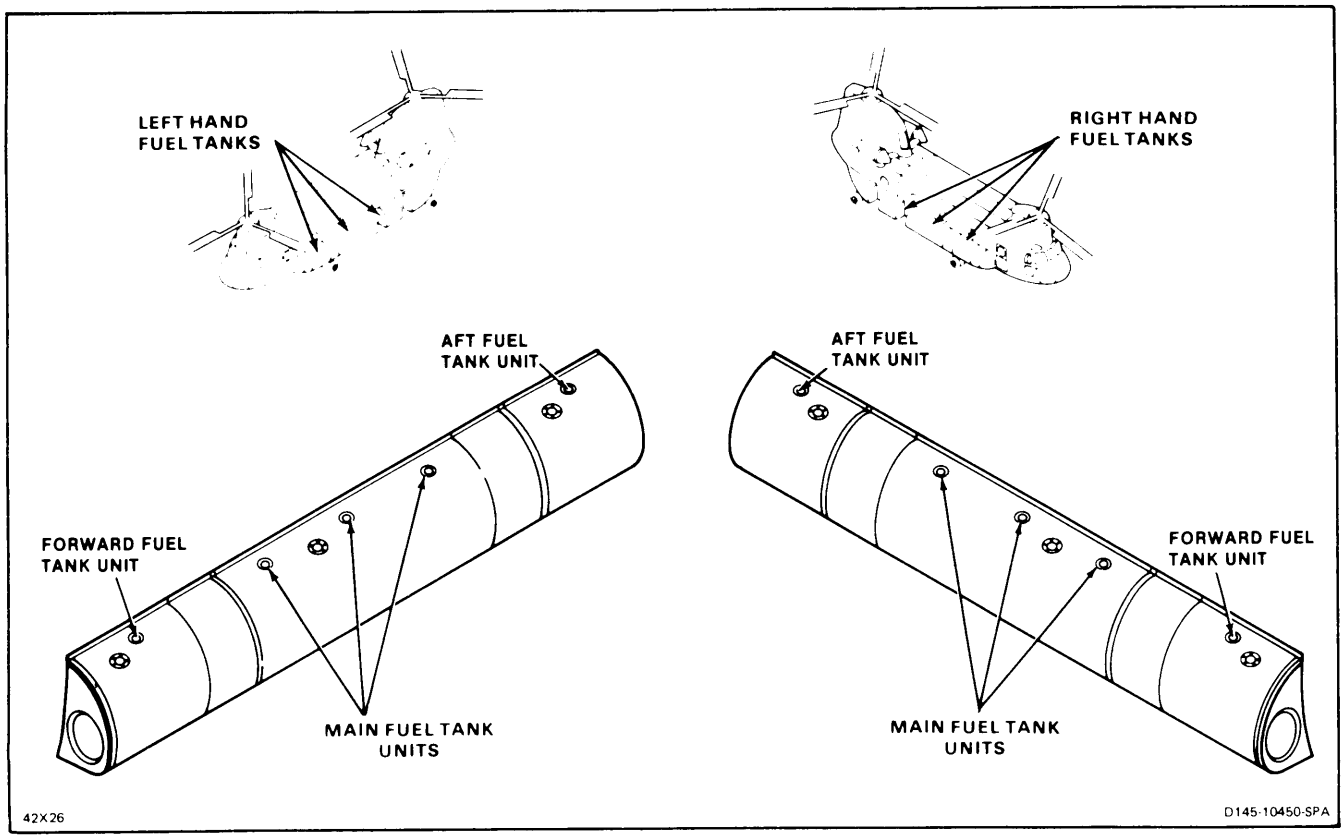
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Helicopter Grounded
Electrical Power Off
Hydraulic Power Off



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8-81 REMOVE FUEL QUANTITY INDICATING SYSTEM TANK UNIT (Continued)

NOTE

Procedure is same to remove any tank unit except where noted in task. Removal of left hand main center tank unit is shown here.

1. **Remove four bolts (1)** and washers (2).

NOTE

Forward and aft tanks have five bolts and washers,

2. Lift unit (3) from tank (4) until four terminals (5) are exposed. Loosen wire clamp (6). Tag and **disconnect four wires (7)** by loosening four screws (8). Tape wire ends. Secure wires to fuel tank.

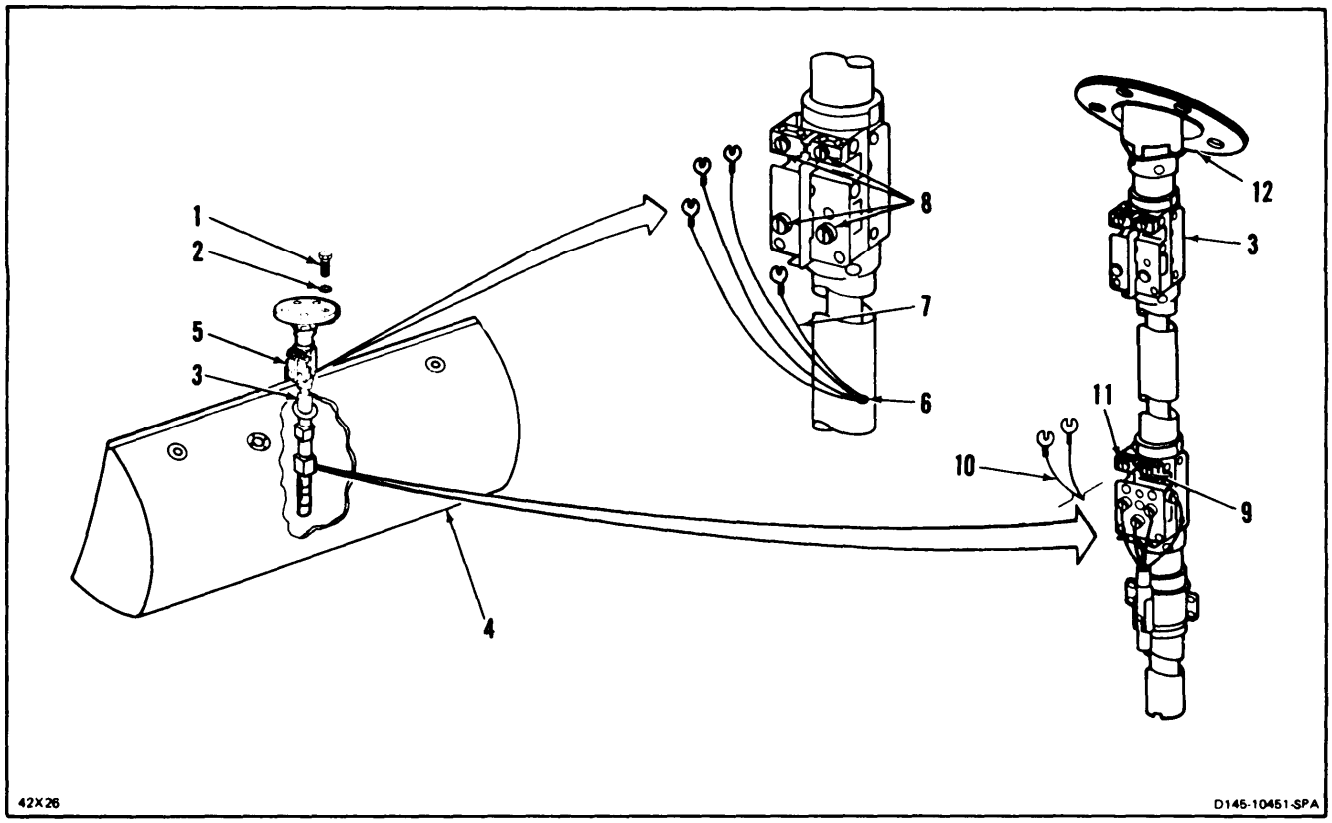
NOTE

Left hand main center tank unit and right hand main center tank unit have wires connected to the bottom of the unit.

3. Lift unit (3) out of tank (4) until two terminals (9) are exposed. Tag and **disconnect two wires (10)** by loosening two screws (11). Tape wire ends. Secure wires to fuel tank.
4. **Remove unit (3).**
5. **Remove gasket (12).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-82 INSTALL FUEL QUANTITY INDICATING SYSTEM TANK UNIT 8-82

INITIAL SETUP

Applicable Configurations:
All

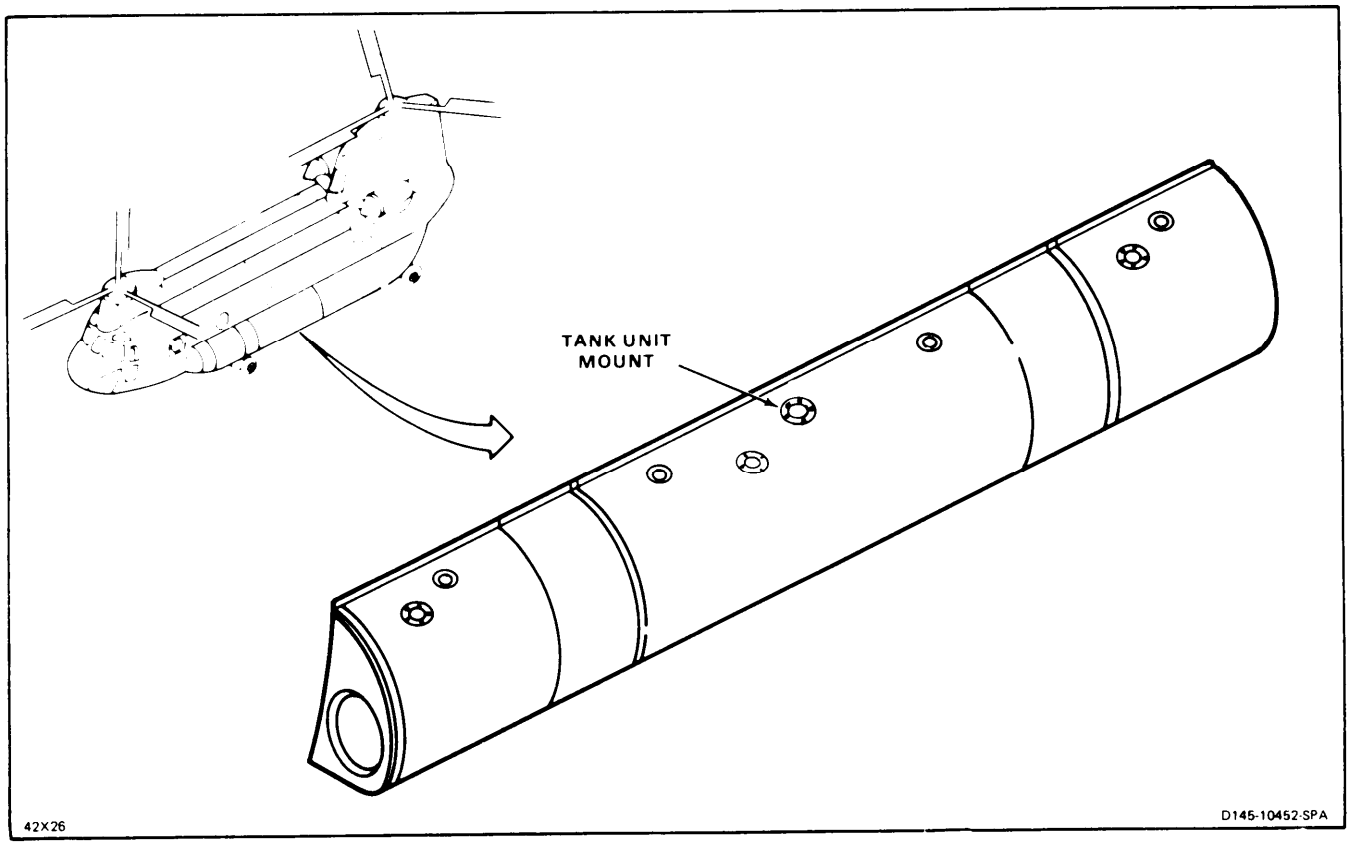
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds

Materials:
None

Parts:
Gasket

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



GO TO NEXT PAGE

8-82 INSTALL FUEL QUANTITY INDICATING SYSTEM TANK UNIT (Continued)

NOTE

Procedure is same to install any tank unit except where noted in task. installation of left hand main center tank unit is shown here.

1. **Install gasket (1)** on unit (2).

NOTE

Left hand main center tank unit and right hand main tank unit have wires connected to the bottom of the unit.

2. Insert unit (2) into tank (3) until bracket (4) is at top of tank. Remove tape and **install two wires (5)** to two terminals (6). Tighten two screws (7). Remove tags.
3. Lower unit (2) into tank (3) until bracket (8) is at top of tank. Remove tape and **connect four wires (9)** to four terminals (10). Tighten four screws (11), Remove tags.
4. Tighten clamp (12).
5. Lower unit (2) into tank (3). **Install four bolts (13)** and washers (14).

NOTE

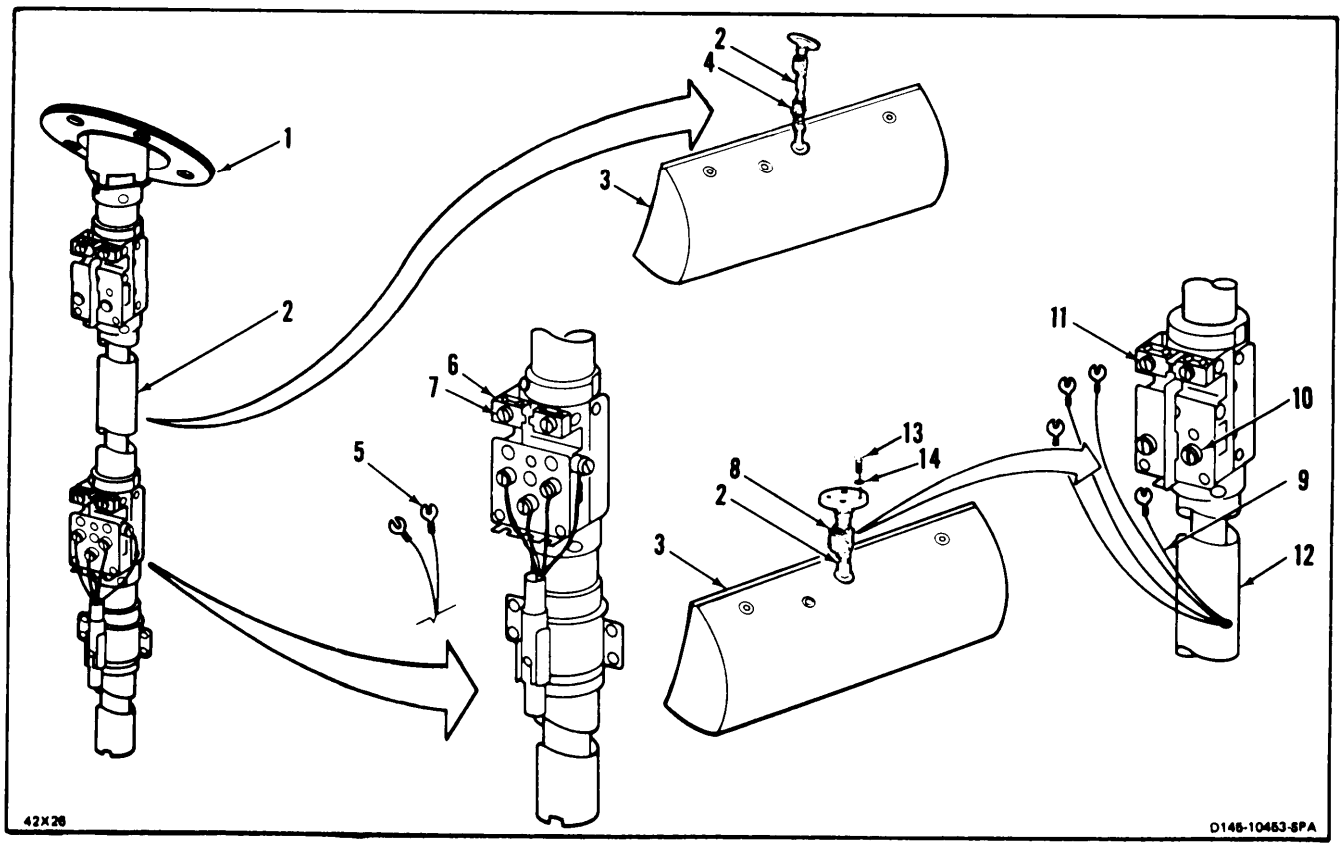
Forward and aft tanks have five bolts and washers.

6. **Torque four bolts (13) to 60 to 80 inch-pounds.**

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

8-82.1 REPLACE FUEL QUANTITY SYSTEM COAXIAL CONNECTOR CONTACTS

INITIAL SETUP

Applicable Configurations:

All

Tools:

Soldering Stand Assembly P/N 949649
AA-400 Super Heater, Heating Tool
979663 Mini Solder Sleeve Reflector
AD-1319 or AD-1494 Holding Fixture
AT-1319-19 Adapter
Solder Gun
Crimper, Inner Contact MH800, Locator K269
Crimper, Outer Contact WT440, DIE No. 4400
Insertion/Extraction Tool MS3447-12/M155-670-12
Air Pressure Supply, 0 to 100 PSI
Knife or razor blade

Materials:

Tubing, Heat Shrinkable (E431)
Solder (E360)

Parts:

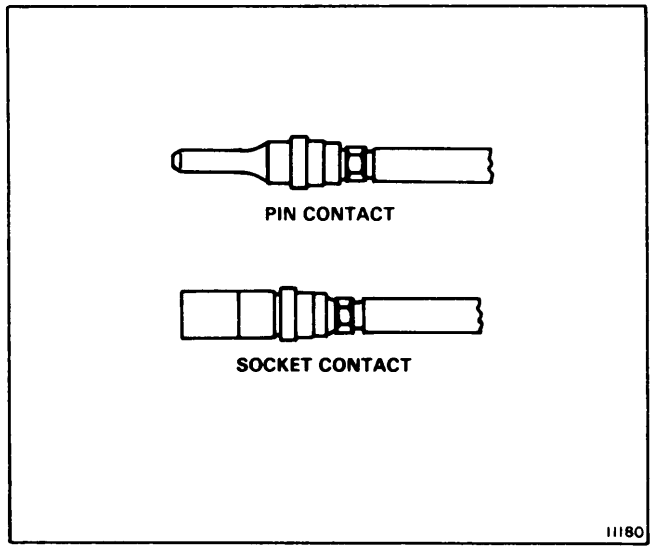
Solder Pins, Soldertact D-602-0094
Solder Sockets, Soldertact D-602-0095
Crimp Pins 10936
Crimp Sockets 10937

Personnel Required:

Aircraft Electrician
Inspector

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

This procedure describes two methods of contact replacement: the solder method and the crimp method. Soldering procedure is same for pin or socket contacts. Pin contacts are shown.

GO TO NEXT PAGE

8-82.1 REPLACE FUEL QUANTITY SYSTEM COAXIAL CONNECTOR 8-82.1 CONTACTS (Continued)

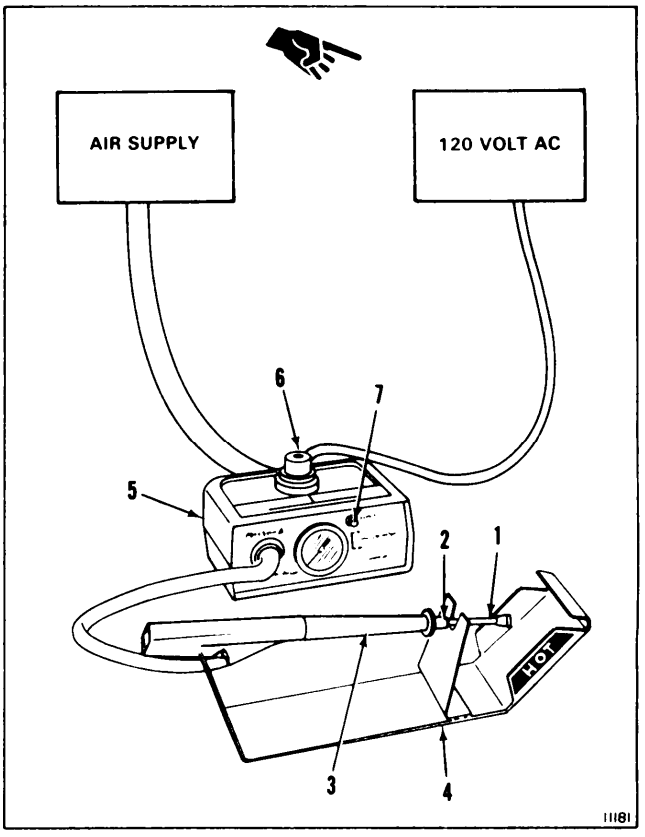
SOLDER METHOD CONTACT REPLACEMENT

Soldering Equipment Setup

WARNING

Do not touch soldering gun nozzle or tip. Tip temperature is more than 500°F. Serious burns could result if touched.

1. **Install reflector (1)** over nozzle (2) of gun (3).
2. **Place gun (3)** in stand (4).
3. **Attach heater (5)** to air supply. Using knob (6), adjust indicated air pressure to 30 psi.
4. **Attach heater** to 120 volts ac.
5. **Adjust air to 50 psi.** The heat light (7) on the heater (5) will come on.
6. Allow heat to stabilize for 1 minute. It may be necessary to readjust the air pressure to maintain 50 psi.



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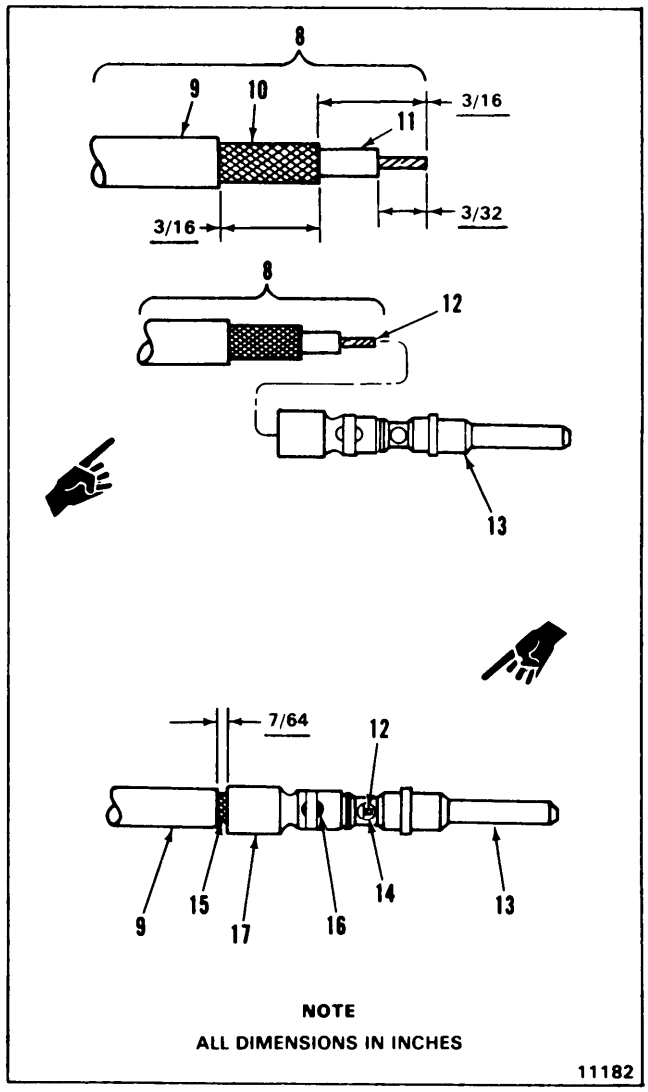
8-82.1 REPLACE FUEL QUANTITY SYSTEM COAXIAL CONNECTOR CONTACTS (Continued) 8-82.1

Cable Preparation

7. Prepare coaxial cable (8) by removing outer jacket (9), shield (10), and dielectric (11) to dimensions shown.
8. Tin coaxial cable center conductor (12). Use solder (E360).
9. Install contact (13) carefully over end of prepared cable (8). Push contact gently, while twisting it onto cable until it seats.
10. Check that the center conductor (12) is visible through the forward inspection hole (14). Also, check that the shield braid (15) is visible through the rear inspection window (16).
11. Check that the spacing between the end of the contact body (17) and the cable jacket insulation (9) does not exceed 7/64 inch.



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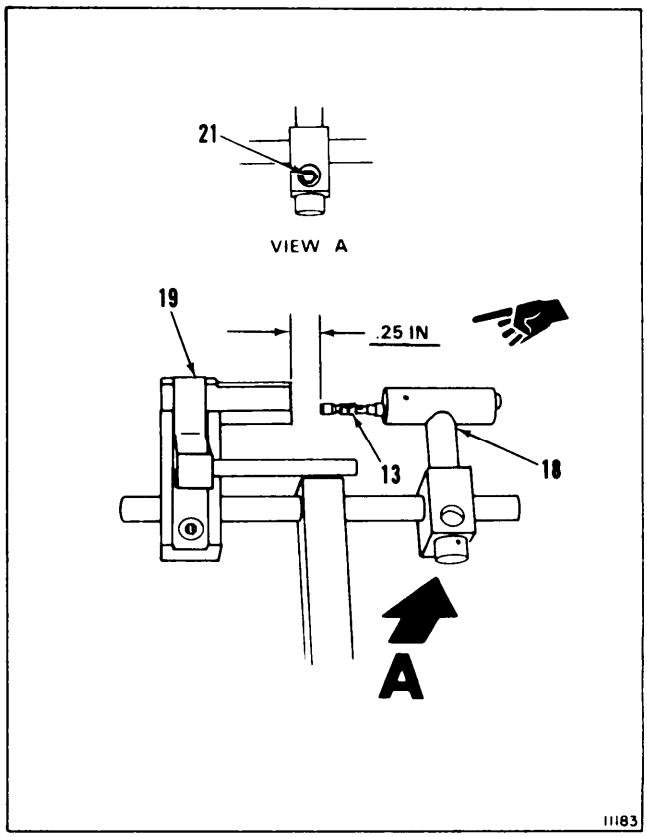
8-82.1 REPLACE FUEL QUANTITY SYSTEM COAXIAL CONNECTOR 8-82.1 CONTACTS (Continued)

Holding Fixture Setup

CAUTION

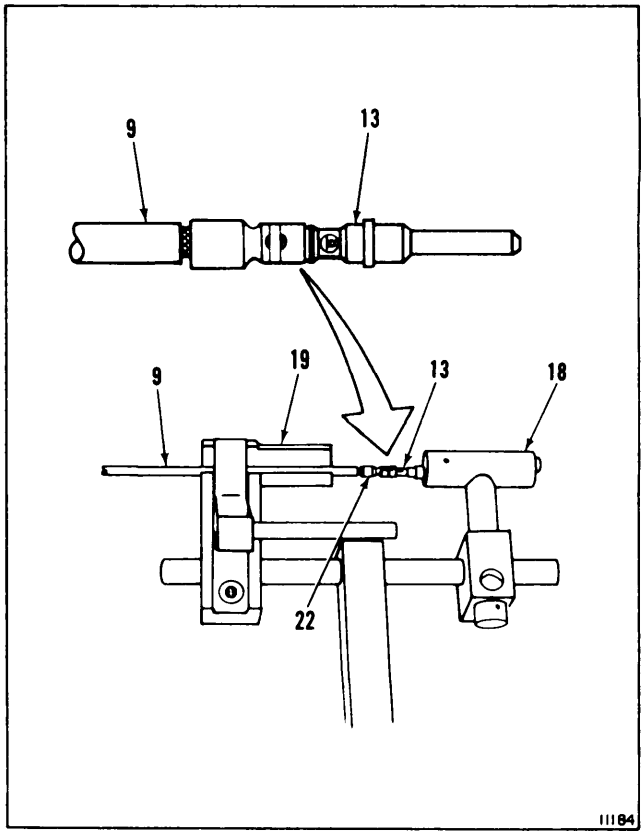
The holding fixture and adapter or the smaller holding tool must be used when soldering to prevent damage to contacts. When using the smaller holding tool, the cable must be secured to prevent cold solder joints.

12. **Install a contact (13)** into the appropriate end of the adapter (18). Pin contact into P end or socket contact into S end.
13. **Adjust adapter (18)** to give a setup dimension of about 0.25 inch from end of contact (13) to end of cable clamp (19).
14. **Tighten set screw (21)** on back of adapter (18). **Remove contact (13).**



Soldering Operation

15. **Position contact (13) and cable (9)** through cable clamp (19).
16. **Install heat shrink sleeving (22)** over end of cable (9).
17. Check that the cable (9) is fully inserted into the contact (13).
18. Insert the contact (13) fully into the adapter (18).
19. Check that the cable (9) is straight between the cable clamp (19) and the adapter (18).



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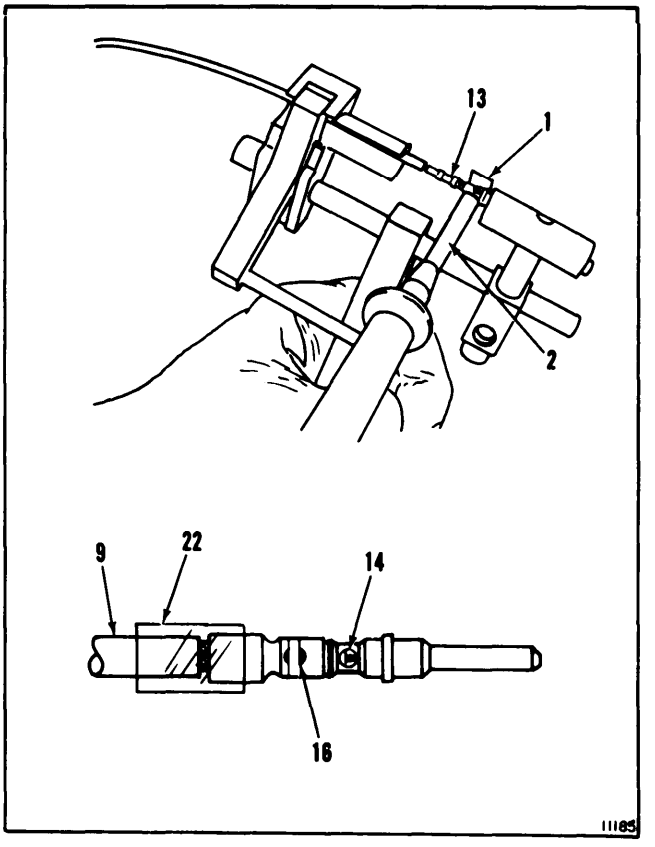
8-82.1 REPLACE FUEL QUANTITY SYSTEM COAXIAL CONNECTOR CONTACTS (Continued) 8-82.1

20. Position heat gun nozzle (2) and reflector (1) so that the contact (13) is in the hot air stream.
21. Direct heat around the front inspection window (14) and rear inspection window (16) until the solder preforms melt and flow onto the conductors, and the insulating sleeve (22) shrinks around the coaxial cable outer jacket (9).
22. Remove heat.

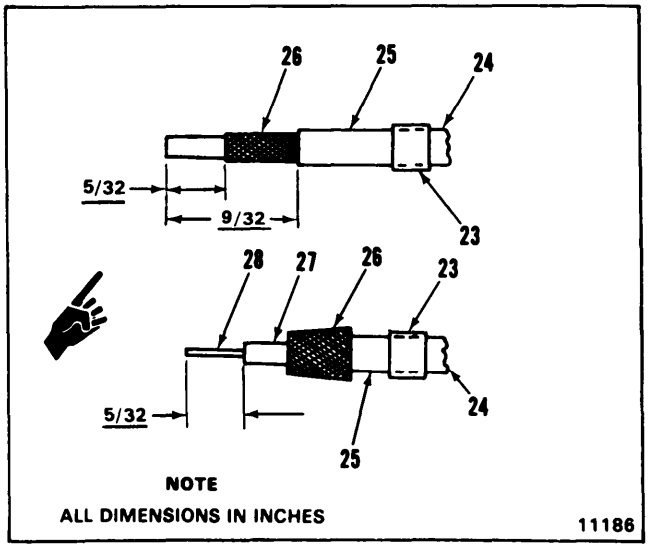
INSPECT



ASSEMBLY PROCEDURE FOR CRIMP TYPE CONTACT

Cable Preparation

23. **Install crimp sleeve (23)** over end of coaxial cable (24).
24. **Prepare coaxial cable (24)** by removing outer jacket (25) and shield (26) to dimensions shown.
25. **Fold back shield (26)** and **strip dielectric (27)** from inner conductor (28) to dimensions shown.



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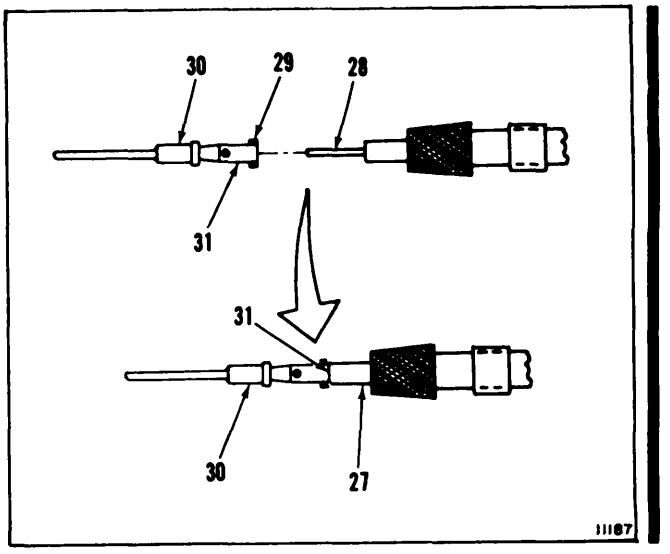
8-82.1 REPLACE FUEL QUANTITY SYSTEM COAXIAL CONNECTOR 8-82.1 CONTACTS (Continued)

26. **Install contact separator (29)** on inner contact (30) flush with end of wire barrel (31).

NOTE

If required, trim cable inner conductor in order to butt end of contact wire against cable dielectric before crimping.

27. Install inner contact (30) on inner conductor (28) with end of wire barrel (31) against dielectric (27).
28. Crimp inner contact (30). Use crimper MH800 with locator K269.



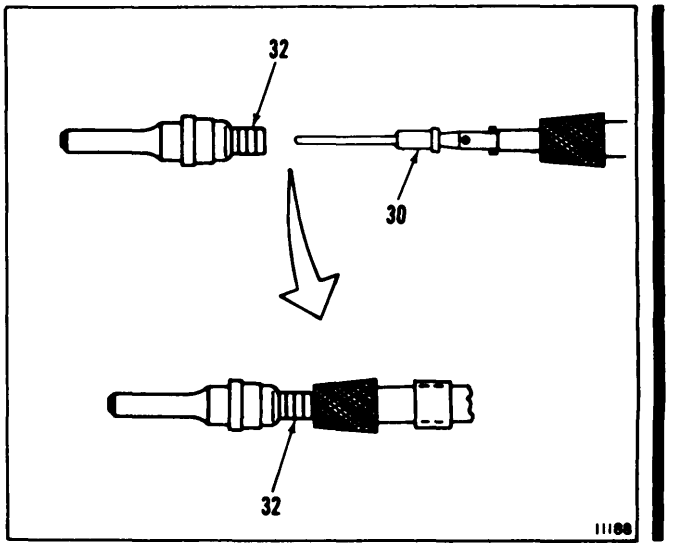
CAUTION

Do not exert more than 1 pound pressure to seat inner contact. Damage to contact could occur.

NOTE

After seating inner contact on cable, support contact and cable until crimp sleeve is installed to prevent strain on inner contact crimp joint.

29. Push inner contact (30) onto contact outer body (32) until inner contact seats.



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8-82.1 REPLACE FUEL QUANTITY SYSTEM COAXIAL CONNECTOR CONTACTS (Continued) 8-82.1

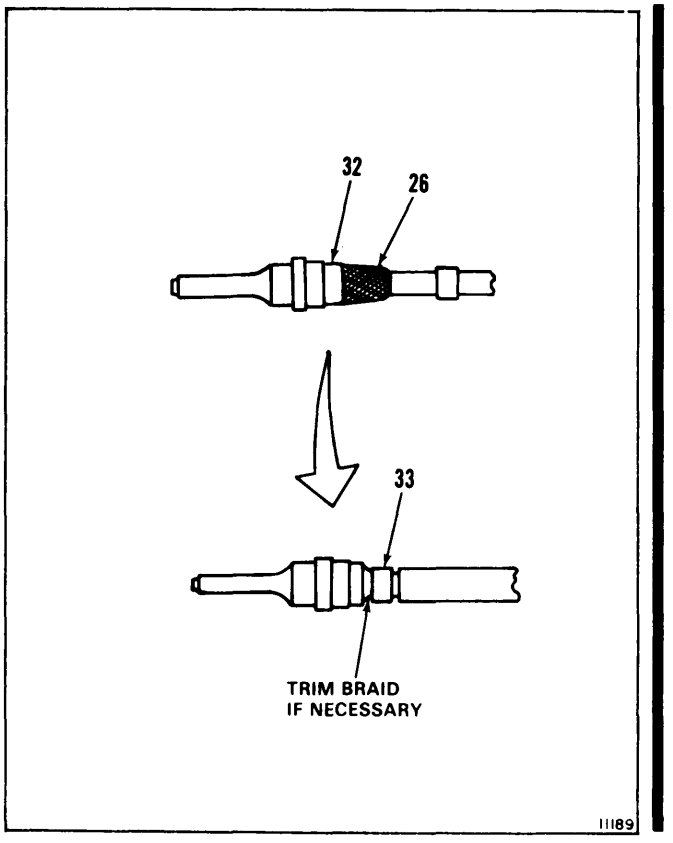
30. Fold cable outer braid (26) over back of contact (32).

NOTE

After crimping, trim any braid protruding from between crimp sleeve and contact shoulder as close to the sleeve as possible.

31. Slide crimp sleeve (33) forward over the exposed braid (26). Crimp the sleeve. Use crimper, Thomas and Betts WT440 and DIE4400 or equivalent.

INSPECT



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8-82. 1 REPLACE FUEL QUANTITY SYSTEM COAXIAL CONNECTOR CONTACTS (Continued) 8-82.1

ASSEMBLY PROCEDURE FOR CRIMP TYPE SOCKET

Prepare cable as shown in steps 21 through 25.

CAUTION

Do not exert more than 1 pound pressure to seat inner contact. Damage to contact could occur if more than 1 pound pressure is used.

NOTE

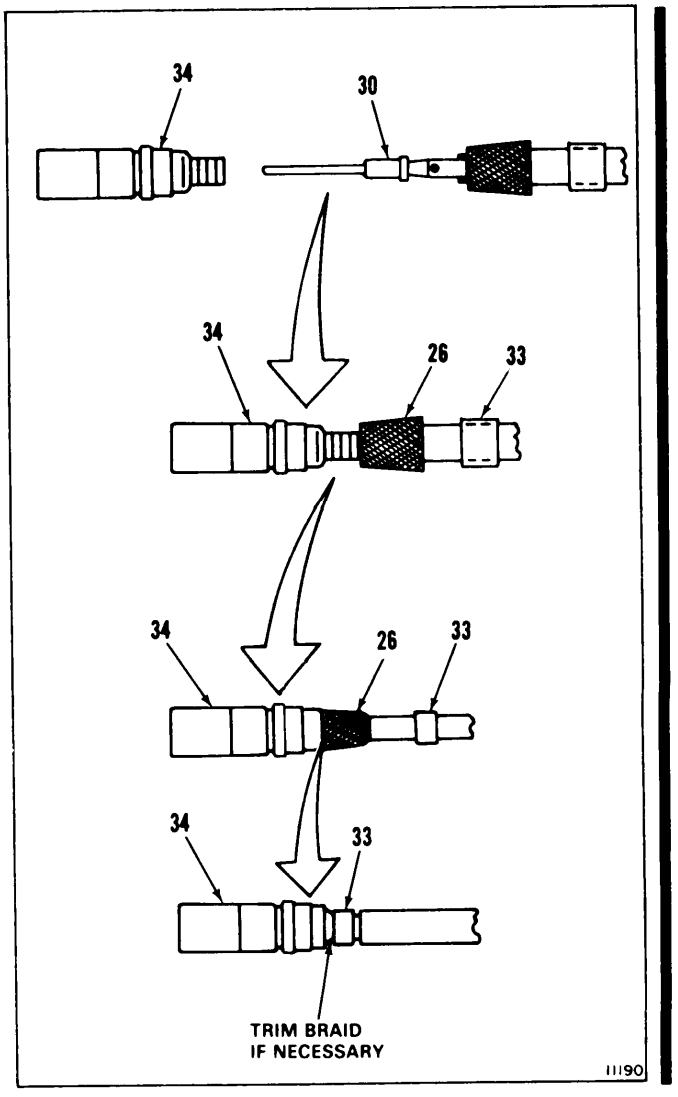
After seating inner contact, support contact cable assembly until crimp sleeve is installed to prevent strain on inner contact crimp joint.

32. Push inner contact (30) onto contact outer body (34) until inner contact seats.
33. Fold cable outer braid (26) over back of contact (34).

NOTE

After crimping, trim any braid protruding from between crimp sleeve and contact shoulder as close as possible.

34. Slide crimp sleeve (33) forward over the exposed braid (26). Crimp sleeve. Use crimper MH800.



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-83 TEST HYDRAULIC PRESSURE INDICATOR 8-83

INITIAL SETUP

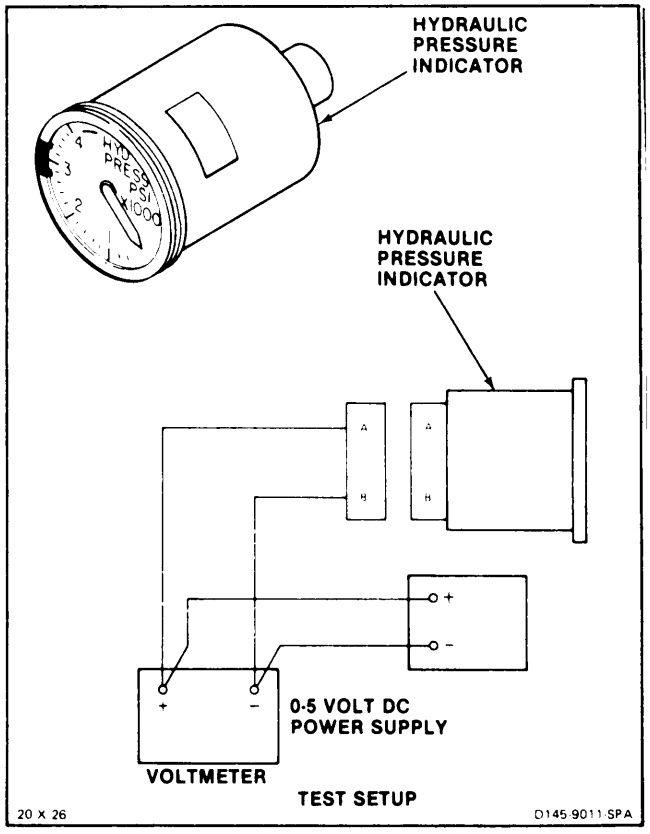
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
DC Power Supply, 0-5 volt
Connector MS3476W10-6S
Calibrated Voltmeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

Equipment Condition:
Off Helicopter Task
Test Setup



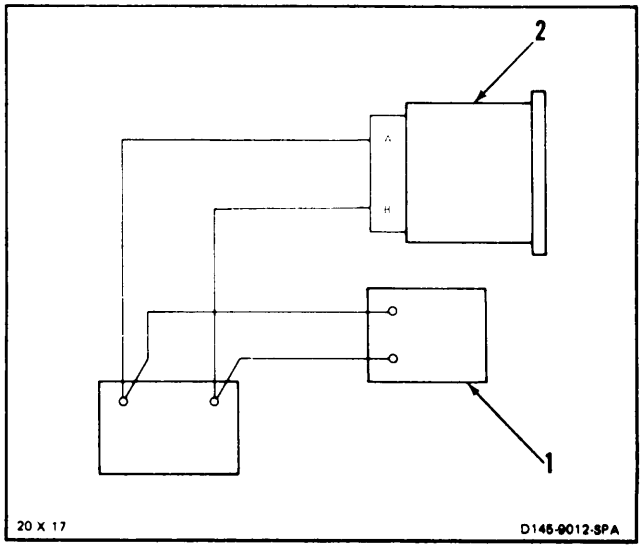
CAUTION

Be careful when handling indicator. Rough handling will damage indicator.

1. **Turn on and adjust dc power supply (1) to 0 volts.**
2. **Connect indicator (2) to test setup.**
3. **Adjust power supply** to settings listed. Indicater readings shall be as follows:

DC SOURCE VOLTAGE MIN	MAX	SCALE READING (PSI)
1.410	1.590	1000
2.410	2.590	2000
3.410	3.590	3000
4.410	4.590	4000

4. Adjust power supply (1) to 0 volts and shut down.
5. Disconnect indicator (2) from test setup.



FOLLOW-ON MAINTENANCE
None

END OF TASK

8-84 TEST HYDRAULIC RESERVOIR LEVEL INDICATORS 8-84

INITIAL SETUP

Applicable Configurations:
All

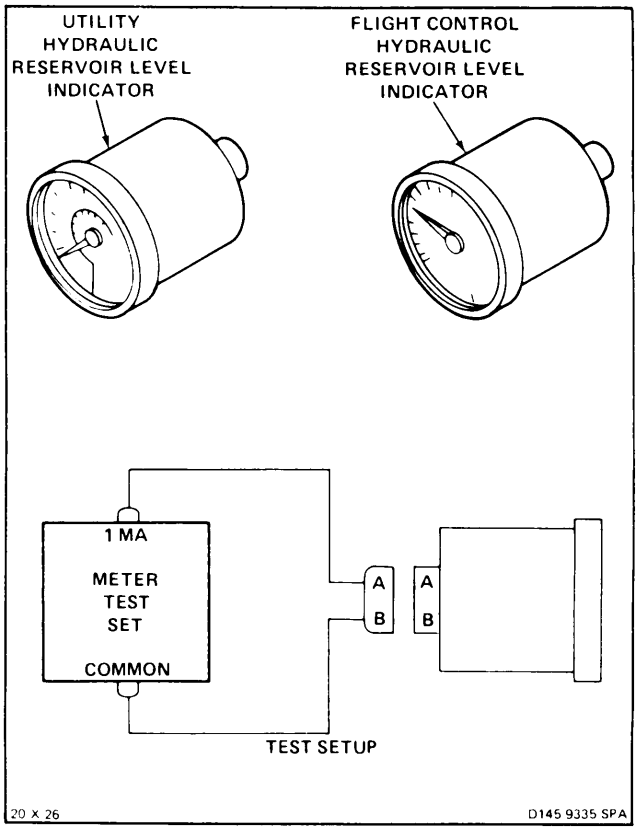
Tools
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Meter Test Set TS-682A/GSM-1
Connector MS3476W8-33S
Wire, No. 20, Unshielded

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 11-6625-277-14

Equipment Condition:
Off Helicopter Task
Electrical Test Setup

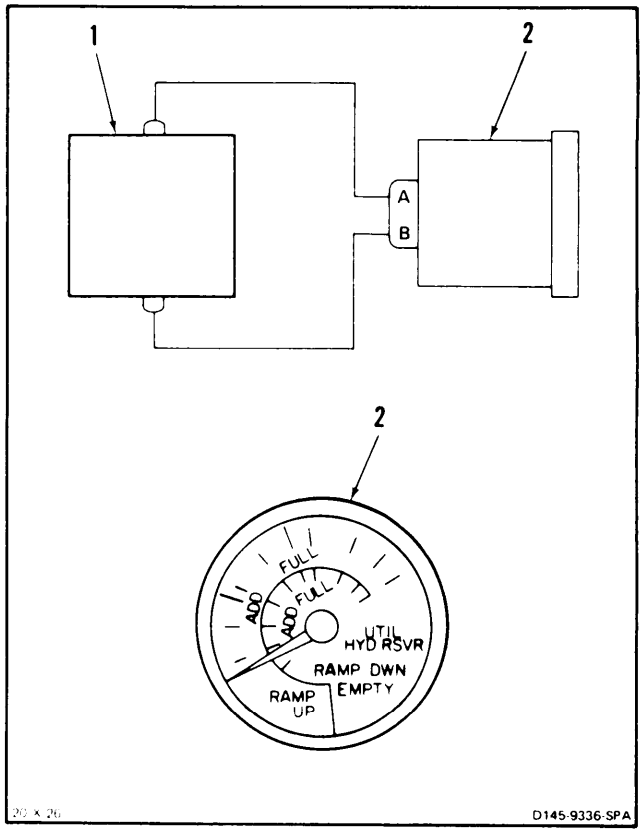


NOTE

Test setup is the same for both utility, hydraulic, or flight control reservoir indicators. If testing utility indicator, go to step 1, If testing flight control Indicator, go to step 6.

TEST UTILITY HYDRAULIC RESERVOIR INDICATOR

1. **Adjust meter test set (1)** to 0 milliamperes (TM 11-6625-277-14).
2. **Connect utility hydraulic reservoir indicator (2)** to test setup.
3. **Apply power to test setup and adjust meter test set (1)** (TM 11-6625-277-14). For indicator (2) outer scale marks, milliampere readings shall be as follows:



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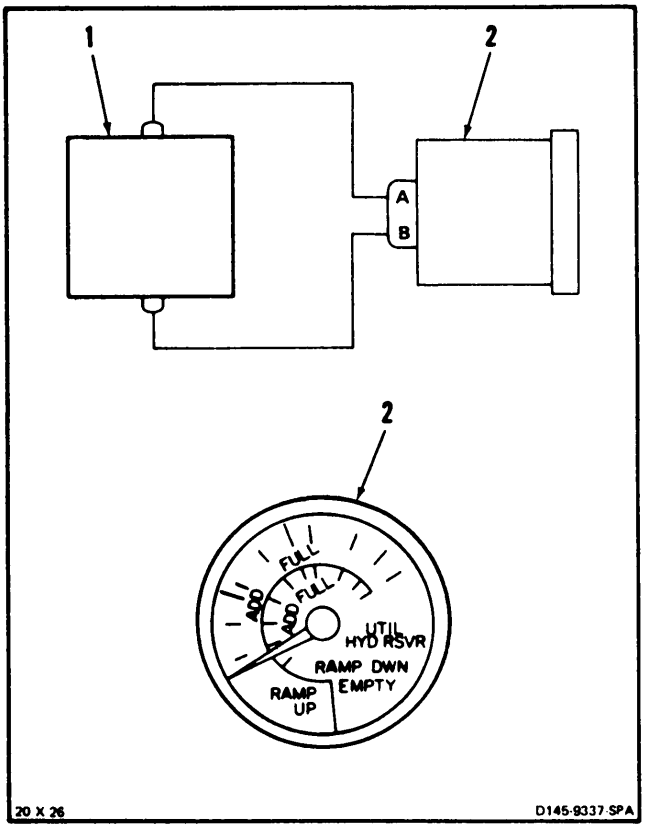
8-84 TEST HYDRAULIC RESERVOIR LEVEL INDICATORS (continued) 8-84

INDICATOR OUTER SCALE MARK	TEST SET MILLIAMPERE READING
1 (EMPTY)	0
2	.29
3	.38
4 (ADD)	.48
6	.48
6	.57
7 (FULL)	.65
8	.73
9	.82
10	.90
11	1.00

4. **Adjust test set (1)** to 0 milliamperes (TM 11-6625-277-14).
5. Disconnect indicator (2) from test setup.



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8-84 TEST HYDRAULIC RESERVOIR LEVEL INDICATORS (Continued)

TEST FLIGHT CONTROL HYDRAULIC RESERVOIR INDICATOR

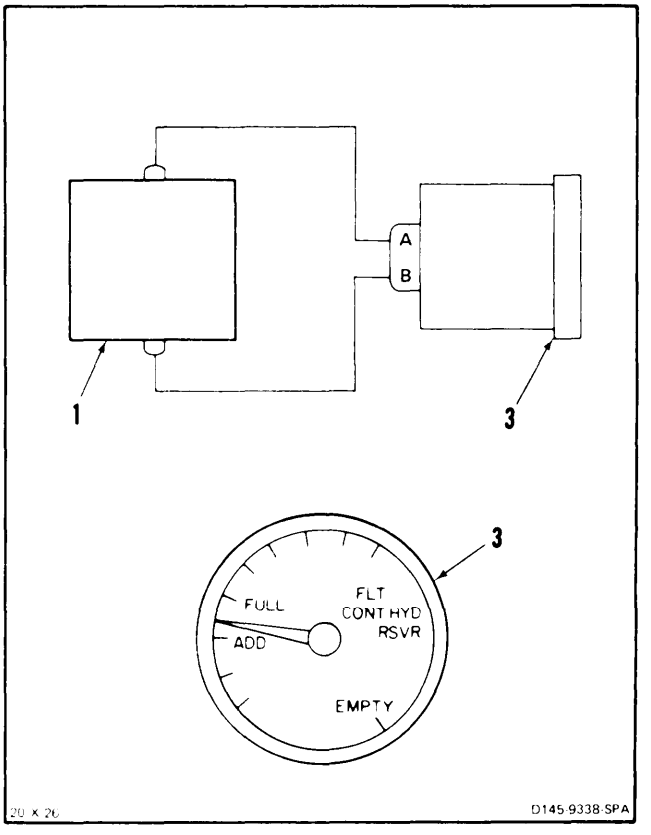
6. **Adjust meter test set (1)** to 0 milliamperes (TM 11-6625-277-14)
7. **Connect flight control hydraulic reservoir indicator (3)** to test setup
8. **Apply power** to test setup and **adjust meter test set** (TM 11-6625-277-14) For indicator scale marks, milliampere readings shall be as follows

INDICATOR SCALE MARKS	TEST SET MILLIAMPERE READING
1 (EMPTY)	0
2	.33
3	.41
4 (ADD)	.49
5 (FULL)	.58
6	.66
7	.74
8	.82
9	.90
10	1.00

9. **Adjust test set (1)** to 0 milliamperes (TM 11-6625-277-14)
10. Remove power from test setup
11. Disconnect indicator (3) from test setup

FOLLOW-ON MAINTENANCE

None



END OF TASK

8-85 TEST HYDRAULIC TEMPERATURE INDICATOR

INITIAL SETUP

Applicable Configurations:
All

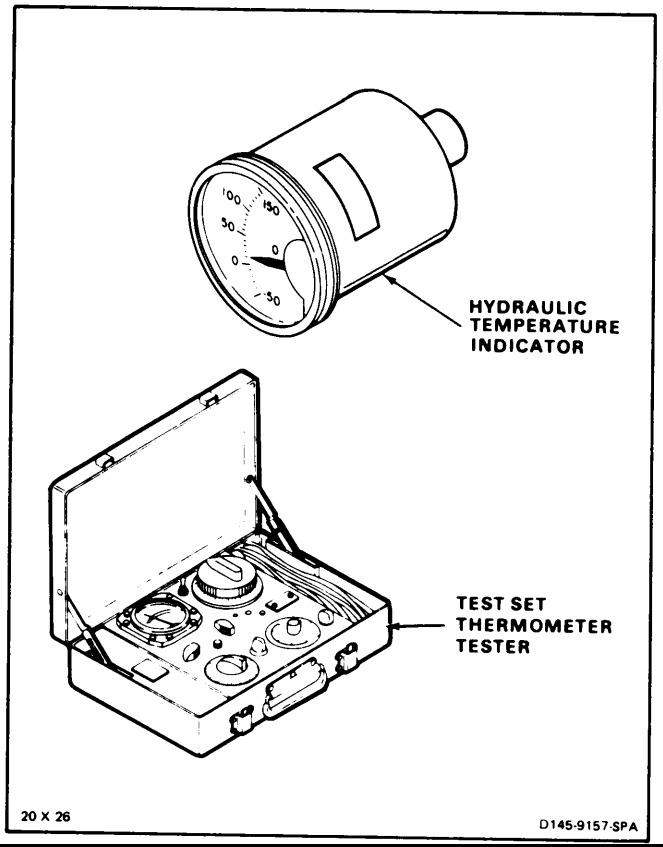
Tools:
Electrical Repairer's Tool Kit, NSN 6625-00-556-4915
Thermometer Tester, Electrical
Connector MS3476W10-6S
DC Power Supply, 0-50 Volt
Wire, No. 20, Unshielded
Multimeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

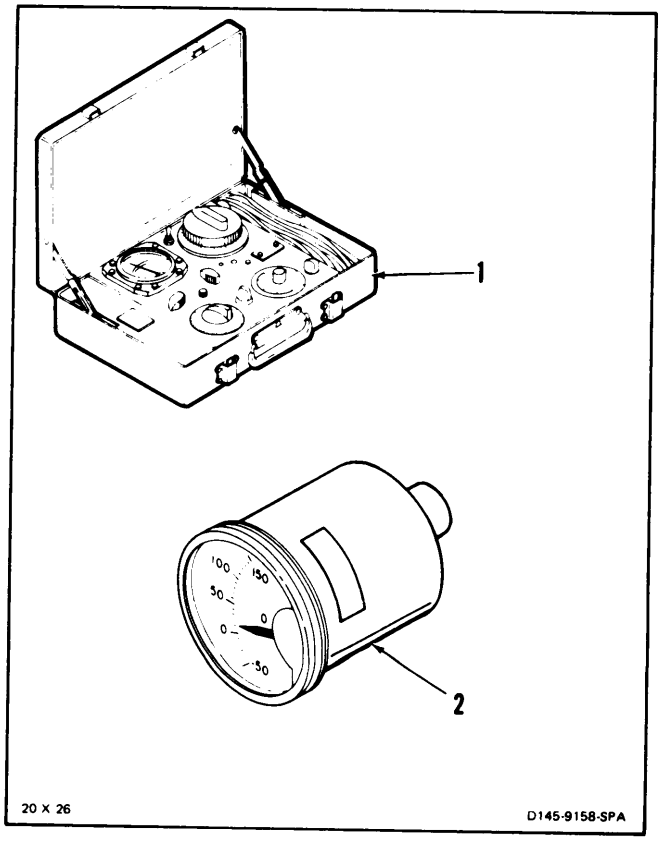
References:
TM 55-1 500-204-25/1
TM 55-6695-200-15

Equipment Condition:
Off Helicopter Task



1. Setup test set (1) (TM 55-6695-200-15).
2. **Connect indicator (2)** to test set.
3. **Perform scale error test** at 28.5 volts dc (TM 55-6695-200-15). Indictor readings shall be within tolerance as follows:

INDICATOR TEST POINT °C(°F)	TEST SET AT NORMAL VOLTAGE (28.5) RANGE °C (°F)
-70 (-94)	-66 to -74° (-86.8 to-101.2°)
-30 (-22)	-27 to -33° (-16.6 to -27.4°)
0 (32)	-2 to 2° (28.4 to 35.6°)
30 (86)	28 to 32° (82.4 to 89.6°)
79 (176)	78 to 82° (172.4 to 179.6°)
129 (248)	117 to 123° (242.6 to 253.4°)
150 (302)	146 to 154° (294.8 to 309.2°)



INSPECT

4. Disconnect indicator (2) from test set (1).

GO TO NEXT PAGE

8-85 TEST HYDRAULIC TEMPERATURE INDICATOR (Continued) 8-85

FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-86 REMOVE CENTER INSTRUMENT PANEL CLAMP MOUNTED INSTRUMENTS

INITIAL SETUP

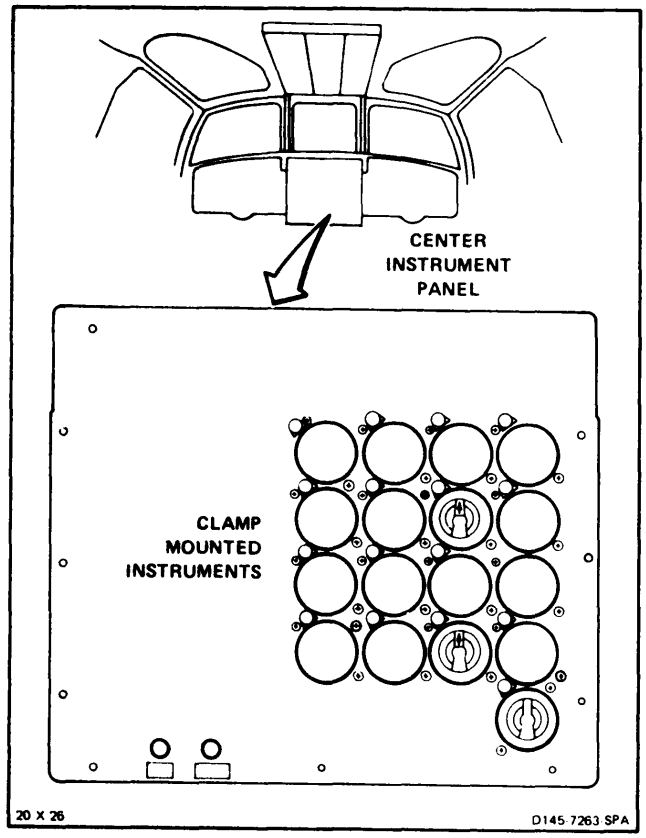
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

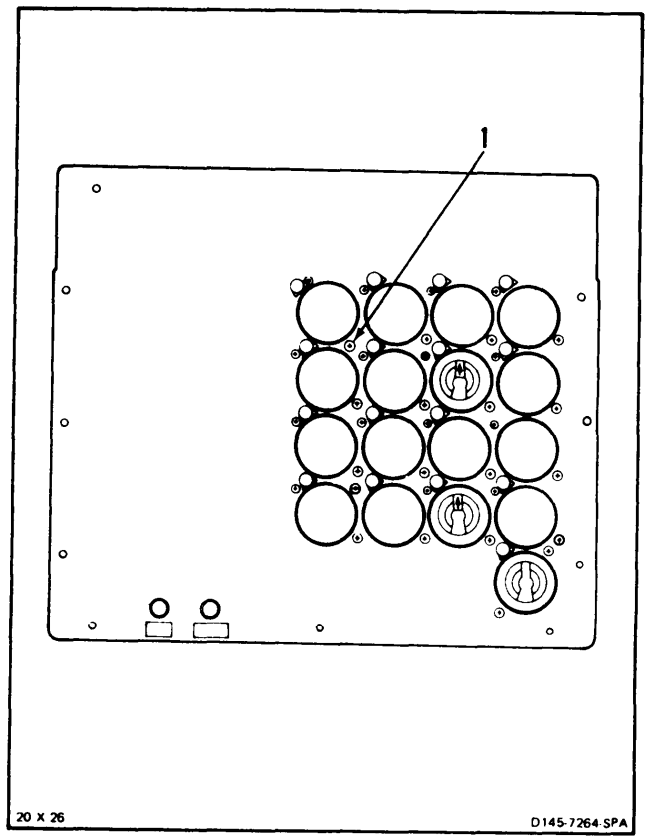
Personnel Required:
68F20 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is similar to remove the following center instrument panel components: No. 1 and 2 Gas Producer Tachometer, No. 1 and 2 PTIT Indicator, No. 1 and 2 Engine Oil Temperature Indicator, No. 1 and 2 Engine Oil Pressure Indicator, Transmission Oil Pressure Indicator, Transmission Oil Pressure Selector Switch, Transmission Oil Temperature Indicator, Transmission Oil Temperature Selector Switch, Forward Cyclic Trim Indicator, Aft Cyclic Trim Indicator, Fuel Flow Indicator, Fuel Quantity Indicator, and Fuel Quantity Selector Switch. Removal of No. 1 Gas Producer Tachometer is shown here.



1. **Loosen round tread clamp screw (1).**

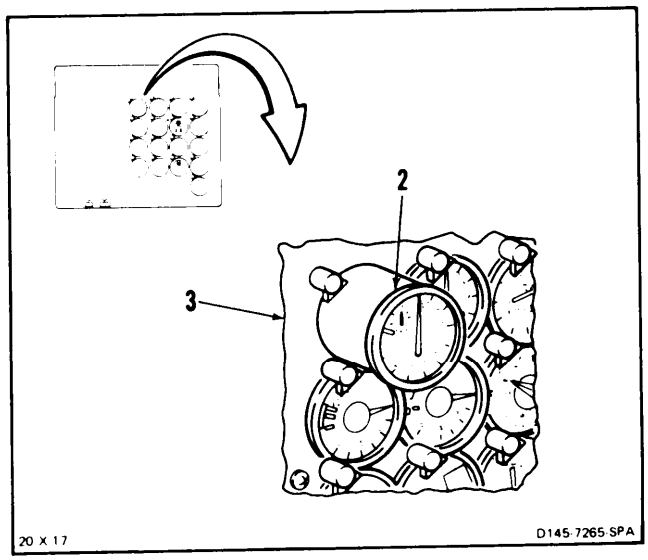
GO TO NEXT PAGE

8-86 REMOVE CENTER INSTRUMENT PANEL CLAMP MOUNTED INSTRUMENTS (Continued)

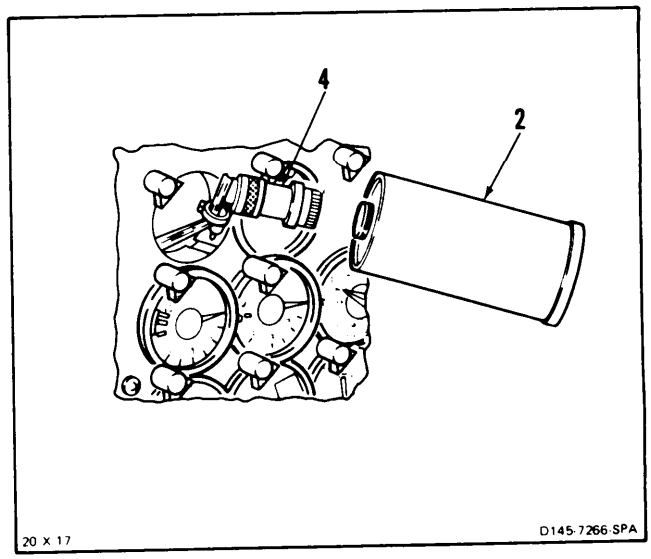
CAUTION

Be careful when handling instruments. Rough handling will damage instruments.

2. **Grasp instrument (2), at case rim, then pull out of panel (3).**

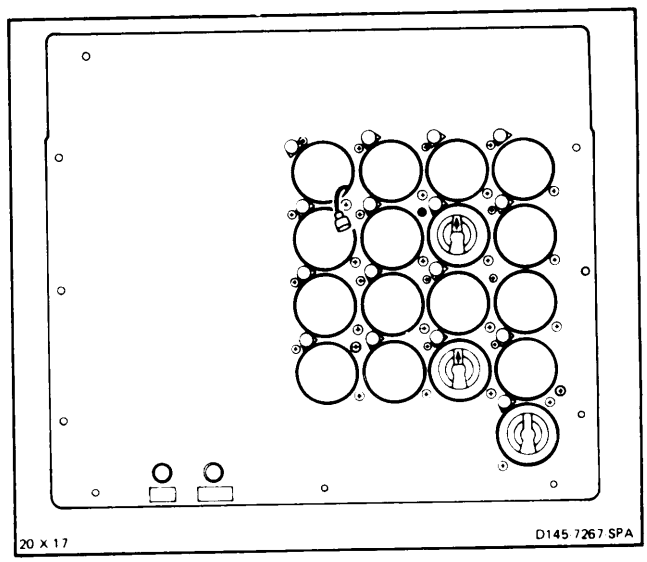


3. **Disconnect wire harness connector (4)** from instrument (2).



FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-87 INSTALL CLAMP MOUNTED INSTRUMENTS IN CENTER INSTRUMENT PANEL

INITIAL SETUP

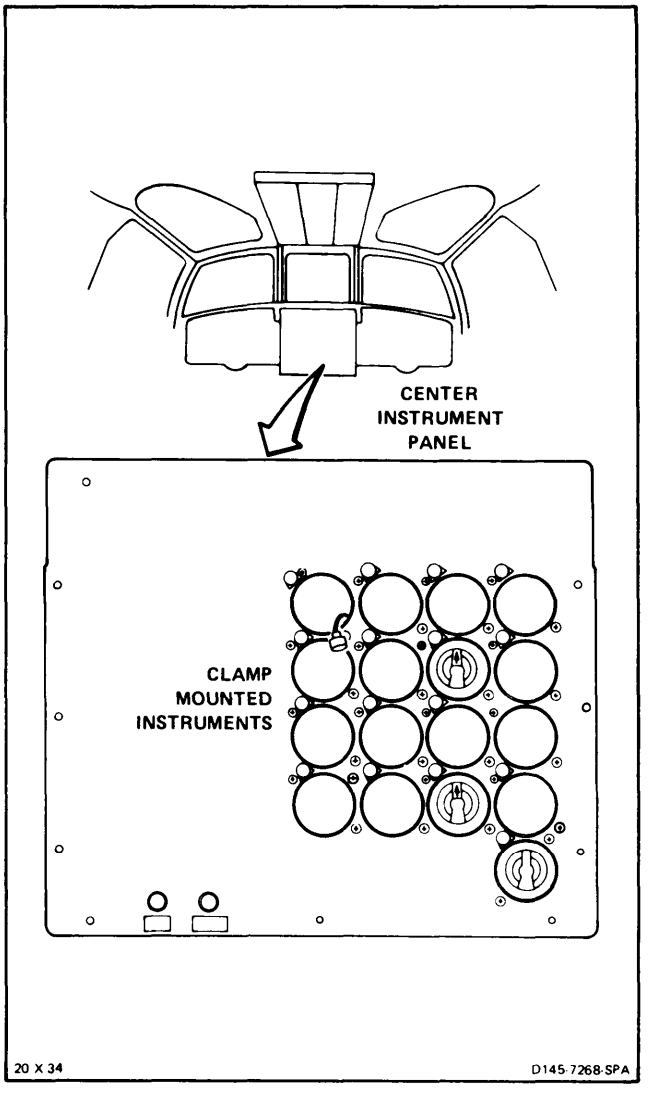
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Small Brush, Camel Hair

Materials:
Cloth (E120)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P
TM 55-1520-240-10
TM 55-6600-200-20
TM 55-1500-323-25



Be careful when handling instruments. Rough handling will damage instruments.

NOTE

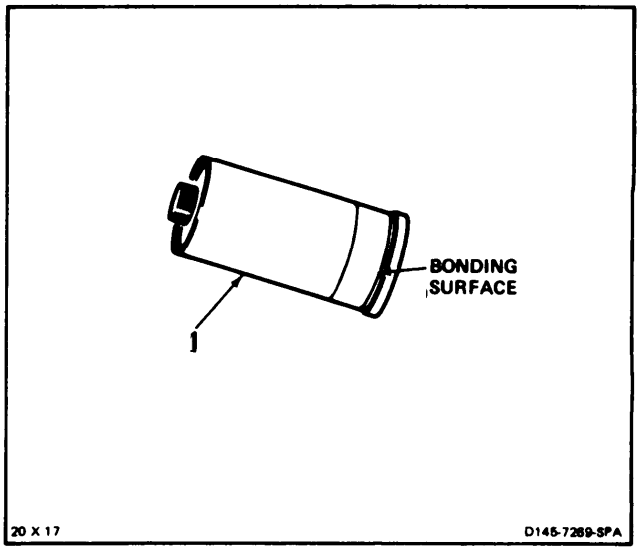
Procedure is similar to install the following center instrument panel components: No. 1 and No. 2 Gas Producer Tachometer, No. 1 and No. 2 PTIT Indicator, No. 1 and No. 2 Engine Oil Temperature Indicator, No 1 and No. 2 Engine Oil Pressure Indicator, Transmission Oil Pressure Indi -

GO TO NEXT PAGE

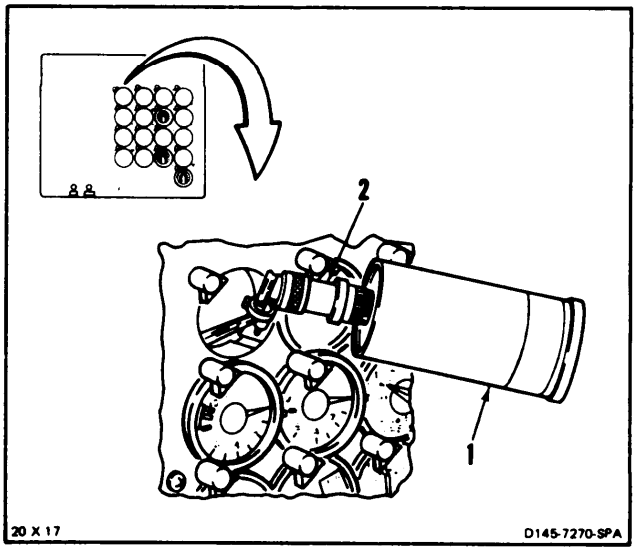
8-87 INSTALL CLAMP MOUNTED INSTRUMENTS IN CENTER INSTRUMENT PANEL (Continued)

cater, Transmission Oil Pressure Selector Switch, Transmission Oil Temperature Indicator, Transmission Oil Temperature Selector Switch, Forward Cyclic Trim Indicator, Aft Cyclic Trim Indicator, Fuel Flow Indictor, Fuel Quantity Indicator, and Fuel Quantity Selector Switch. Installation of No. 1 Gas Producer Tachometer is shown here.

1. **Clean bonding surface of instrument (1).** Use cloth (E120).
2. **Check instrument (1)** for range marks. Apply range marks and index mark to instrument, if required (TM 55-1520-240-10 and TM 55-6600-200-20).



3. **Connect wire harness connector (2)** to instrument (1).



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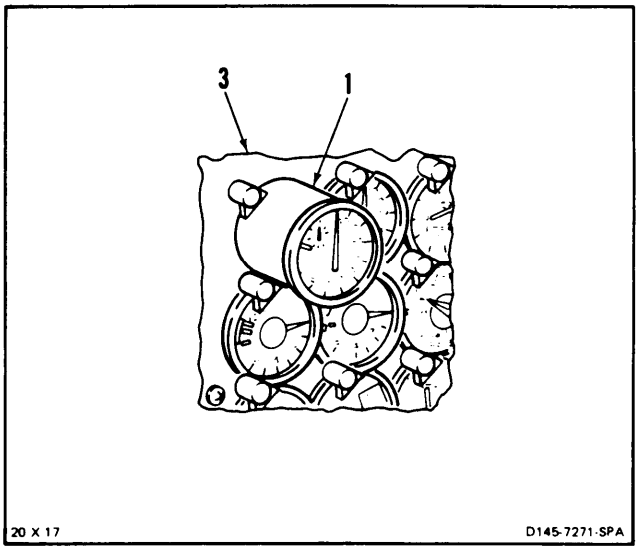
4. **Install instrument (1)** in panel (3). If installing PTIT indicator, engine oil temperature indicator, or engine oil pressure indicator, position noted graduation at 9 o'clock position as follows:

INDICATOR	GRADUATION LOCATED AT 9 O'CLOCK POSITION
PTIT	763°C
ENGINE OIL TEMPERATURE	88°c
ENGINE OIL PRESSURE	70 PSl



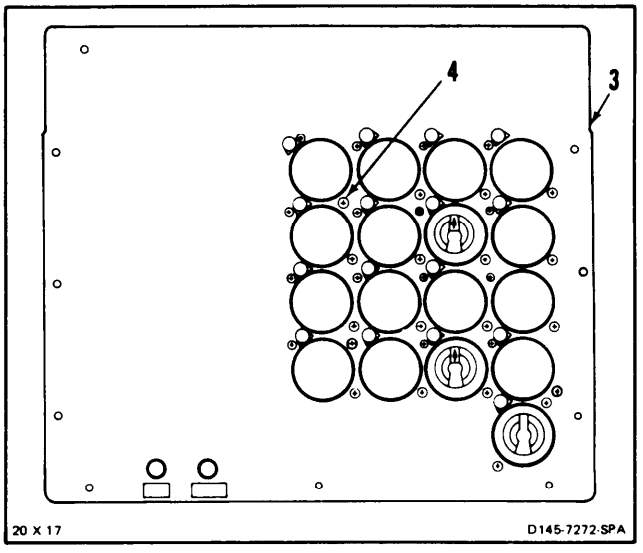
5. **Tighten round head clamp screw (4).**
6. Apply index mark, if required, from instrument (1) to panel (3), (TM 55-6600-200-20).

INSPECT

FOLLOW-ON MAINTENANCE:

If fuel quantity indicator was replaced, test and adjust (Task 8-80.5).

Perform operational check of affected system (TM 55-1520-240-T).



END OF TASK

8-88 REMOVE CLAMP MOUNTED INSTRUMENTS FROM PILOT'S OR COPILOT'S INSTRUMENT PANEL

INITIAL SETUP

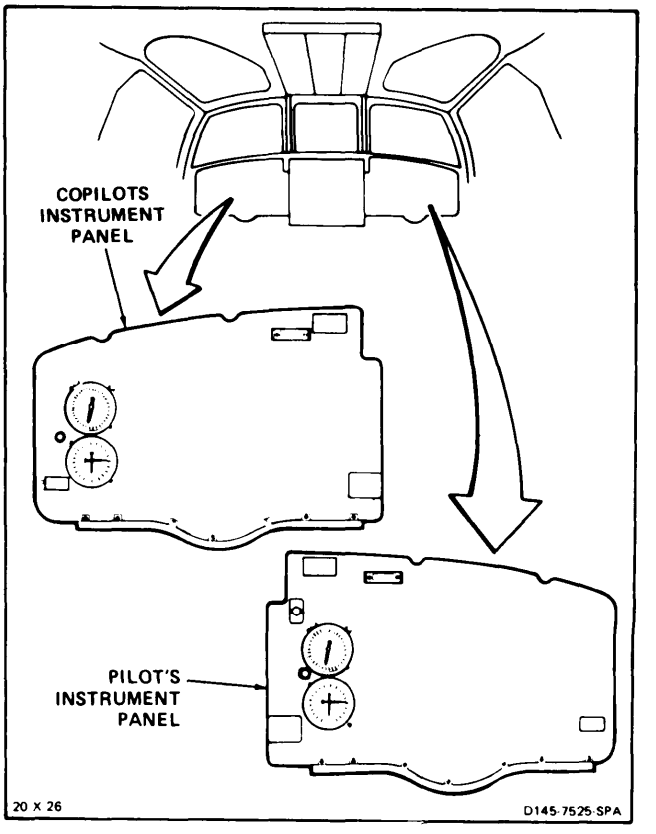
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

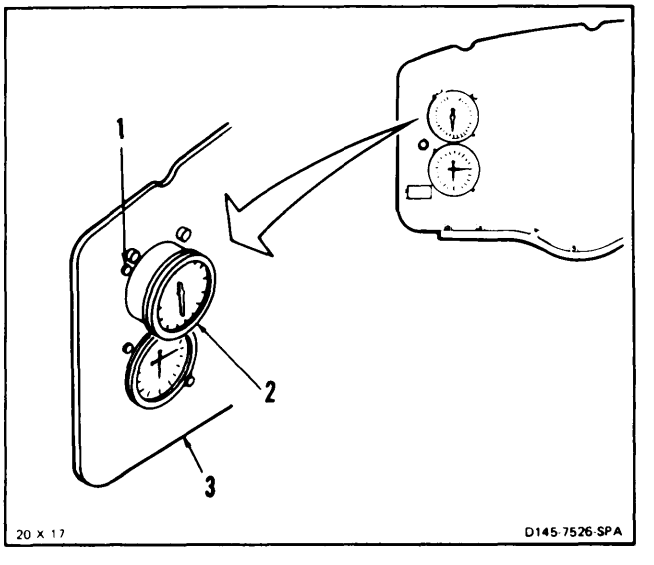
Procedure is similar for removing pilot's and copilot's Dual Torquemeter Indicator or Rotor Tachometer. Removal of copilot's Dual Torquemeter Indicator is shown here.

1. **Loosen round head clamp screw (1).**

CAUTION

Be careful when handling indicators. Rough handling will damage indicators.

2. Grasp indicator (2) at case rim then pull **indicater out of panel (3).**



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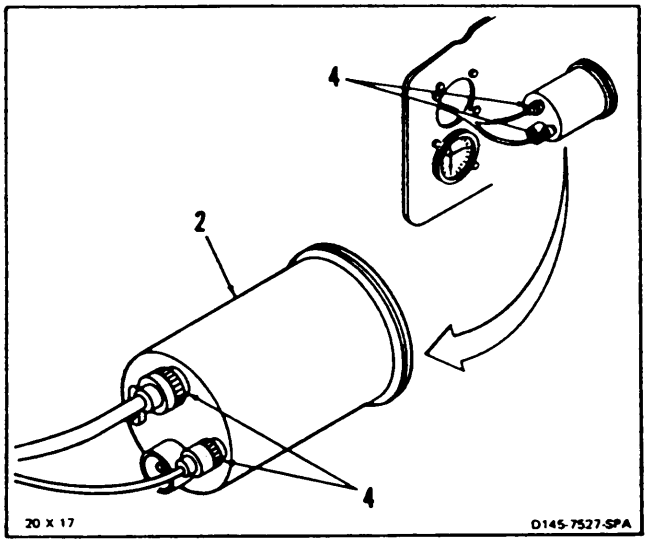
8-88 REMOVE CLAMP MOUNTED INSTRUMENTS FROM PILOT'S OR COPILOT'S INSTRUMENT PANEL (Continued)

3. **Disconnect wire harness connector (4)** (two connectors on Dual Torquemeter), from indicator (2).



FOLLOW-ON MAINTENANCE:

Zero adjust engine torquemeter indicator (Task 8-18.1).

END OF TASK

8-89 INSTALL CLAMP MOUNTED INSTRUMENTS IN PILOT'S OR COPILOT'S INSTRUMENT PANEL

INITIAL SETUP

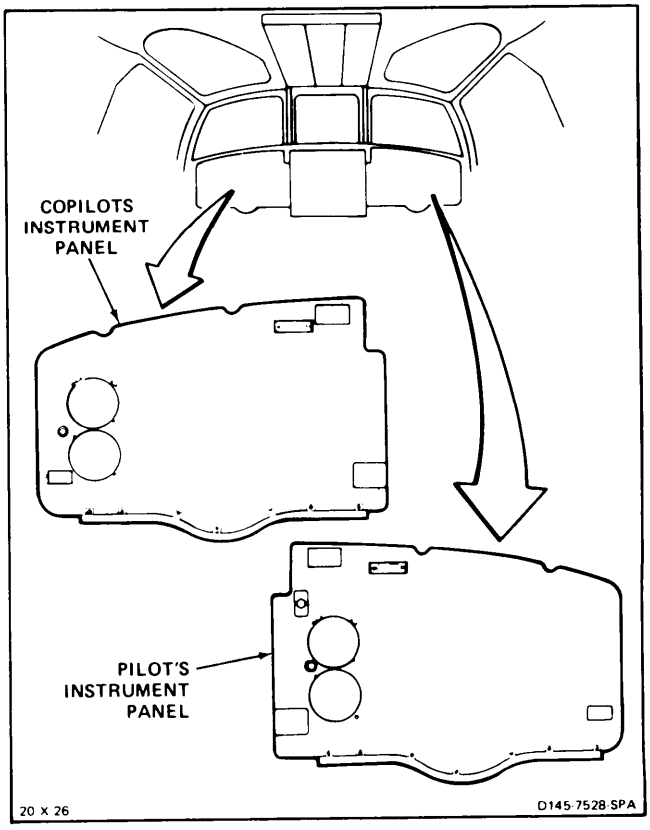
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Small Camel Hair Brush

Materials:
Cloth (E120)

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P
TM 55-1520-240-10
TM 55-6600-200-20
TM 55-1500-323-25



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8-89 INSTALL CLAMP MOUNTED INSTRUMENTS IN PILOT'S OR COPILOT'S INSTRUMENT PANEL (Continued)

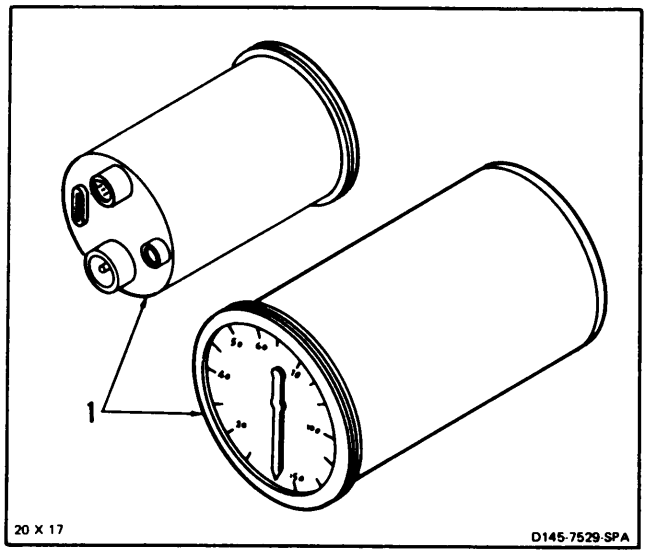
CAUTION

Be careful when handling indicators. Rough handling will damage indicators.

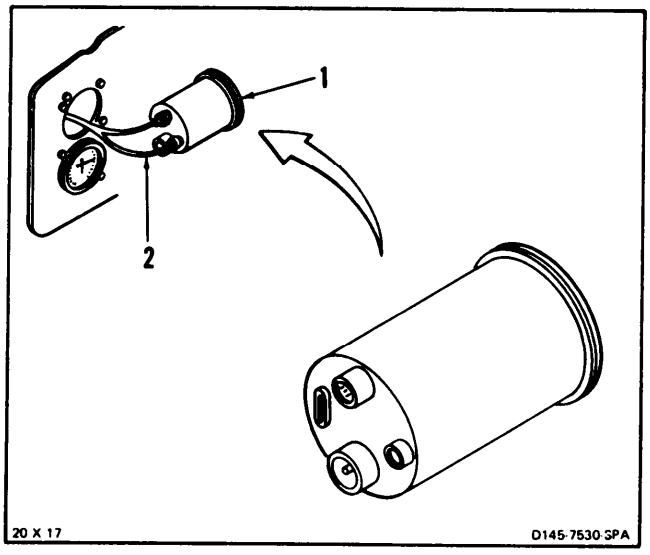
NOTE

Procedure is similar for installing pilot's and copilot's dual torquemeter indicator or rotor tachometer. Installation of copilot's dual torquemeter indicator is shown here.

1. **Clean bonding surface of indicator (1).** Use cloth (E120).
2. **Check indicator (1)** for range marks. Apply range marks and index mark to indicator if required (TM 55-1520-240-10 and TM 55-6600-200-20).



3. **Connect wire harness connector (2)** (two connectors on dual torquemeter) to indicator (1).



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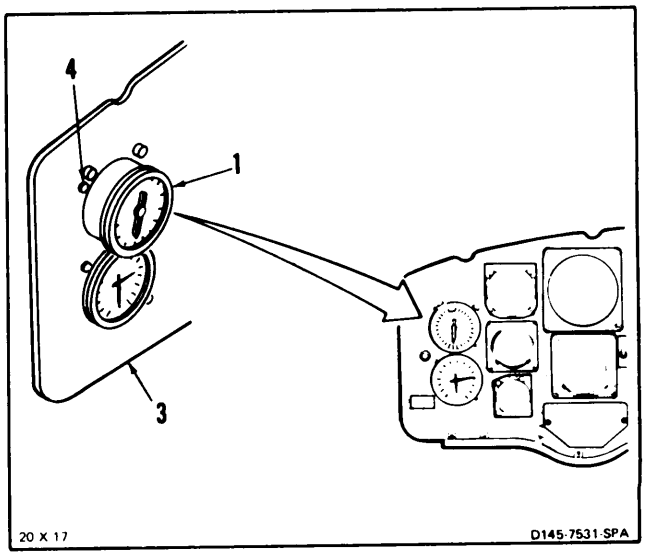
8-89 INSTALL CLAMP MOUNTED INSTRUMENTS IN PILOT'S OR COPILOT'S INSTRUMENT PANEL (Continued)

4. **Install indicator (1)** in panel (3).
5. Tighten round head clamp screw (4
6. Apply index mark from indicator (1) to panel (3) (TM 55-6600-200-20).

INSPECT



FOLLOW-ON MAINTENANCE:

Adjust zero (torquemeter indicator installation only).

Perform operational check of affected system (TM 55-1520-240-T).

END OF TASK

8-90 REMOVE FLANGE MOUNTED INSTRUMENTS — PILOT'S OR COPILOTS INSTRUMENT PANEL

INITIAL SETUP

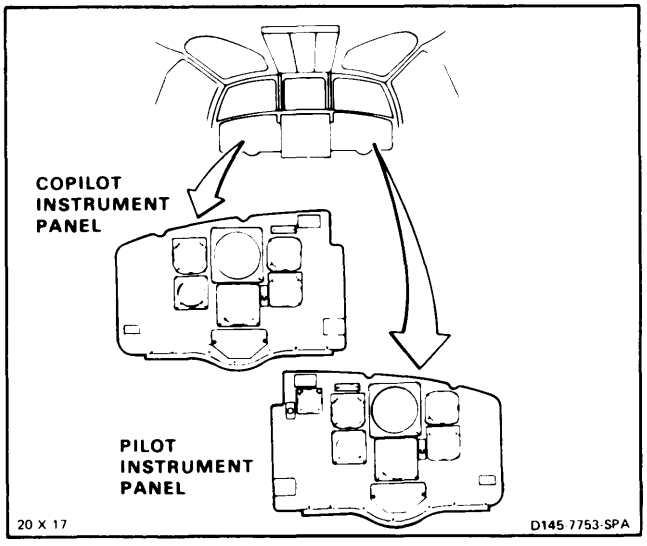
Applicable Configuration:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

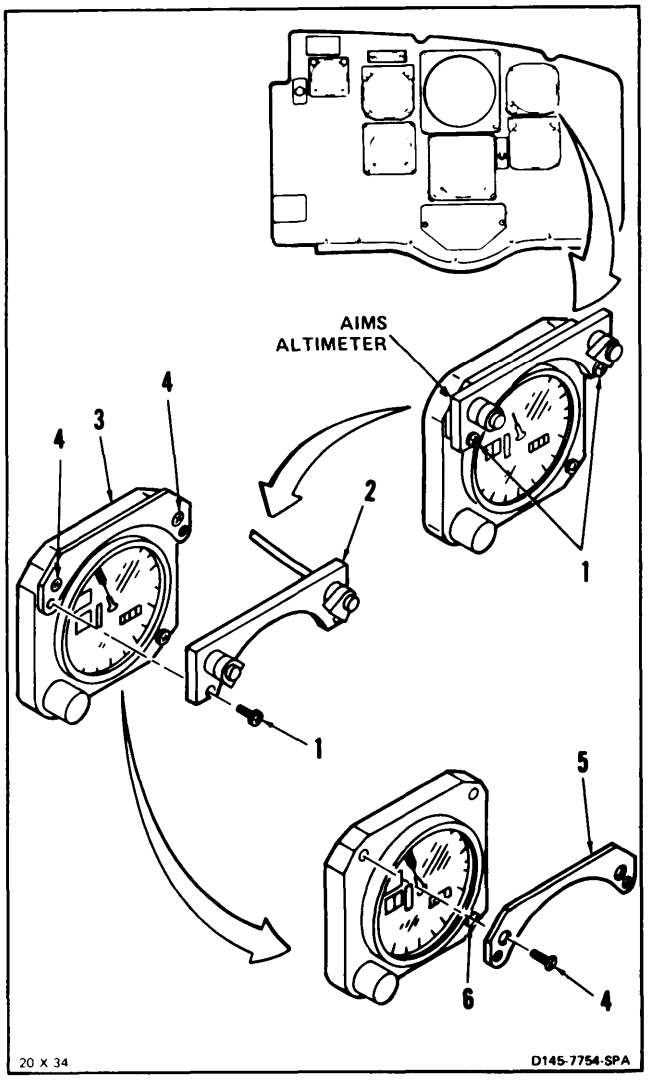
Personnel Required:
68F20 Aircraft Electrician
67U10 Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is similar for removing the Cruise Guide indicator and AIMS altimeter from the pilot's instrument panel, barometric altimeter from co-pilot's instrument panel, and the following instruments from both pilot's and copilot's instrument panels; Airspeed Indicator, Attitude Indicator, Vertical Velocity Indicator, Horizonal Situation Indicator, HSI mode select panel and Radar altimeter. When removing airspeed indicator, AIMS altimeter, Barometer altimeter or Vertical velocity indicator panel light must be removed before removing instrument. Removal of AIMS altimeter is shown here.



1. **Remove two screws (1).**

CAUTION

Do not cut or disconnect wire to lamp bracket.

2. Pull lamp bracket (2) aft and away from instrument (3).
3. **Remove two screws (4) and adaptor bracket (5).**
4. Remove screw (6) (or screws).

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8-90 REMOVE FLANGE MOUNTED INSTRUMENTS — PILOT'S OR COPILOTS INSTRUMENT PANEL (Continued)

CAUTION

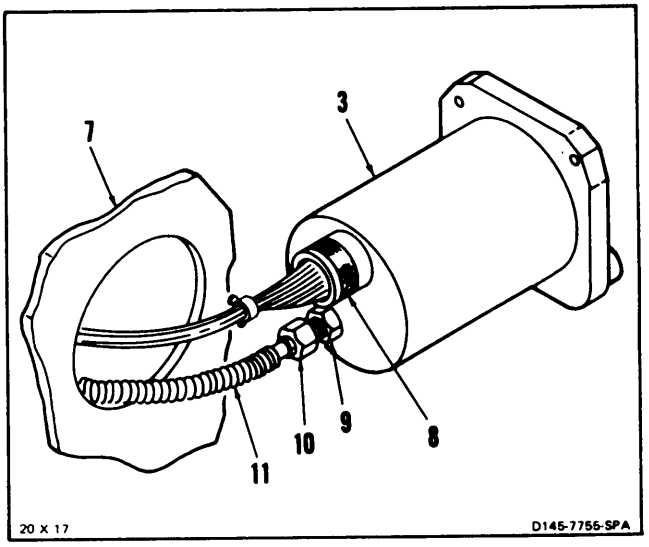
Be careful when handling indcator. Rough handling will damage indicator.

5. Slide indicator (3) aft, out of instrument panel (7).
6. **Disconnect electrical connector (8).**
7. Scribe a mark on fitting body (9) and fitting nut (10).

NOTE

Do not disconnect any serrated tube hose by pulling hose from compression sleeve fittings.

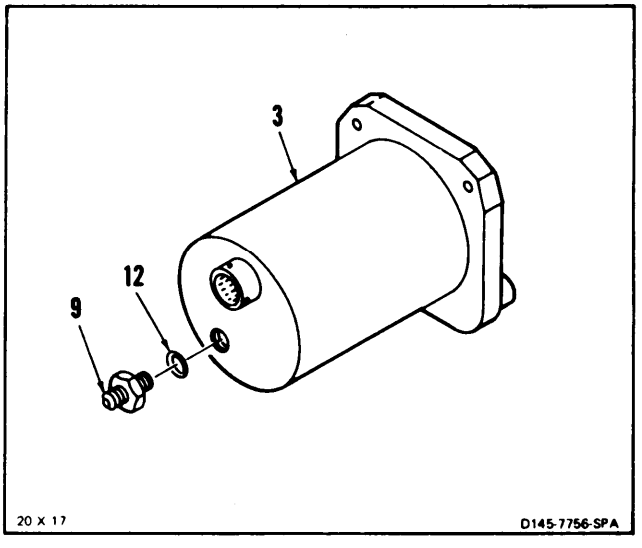
8. Have helper hold indicator. **Hold fitting body (9) with wrench and loosen fitting nut (10) with second wrench.**
9. **Remove fitting nut (10) and serrated tube hose (11) together.**



10. Tag and **remove fitting body (9)** from indicator (3).
11. **Remove packing (12)** from fitting body (9) (no packing on fittings with tapered pipe thread).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-91 INSTALL FLANGE MOUNTED INSTRUMENTS IN PILOTS OR COPILOTS INSTRUMENT PANEL

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Small Brush, Camel Hair

Materials:
Cloths (E120)

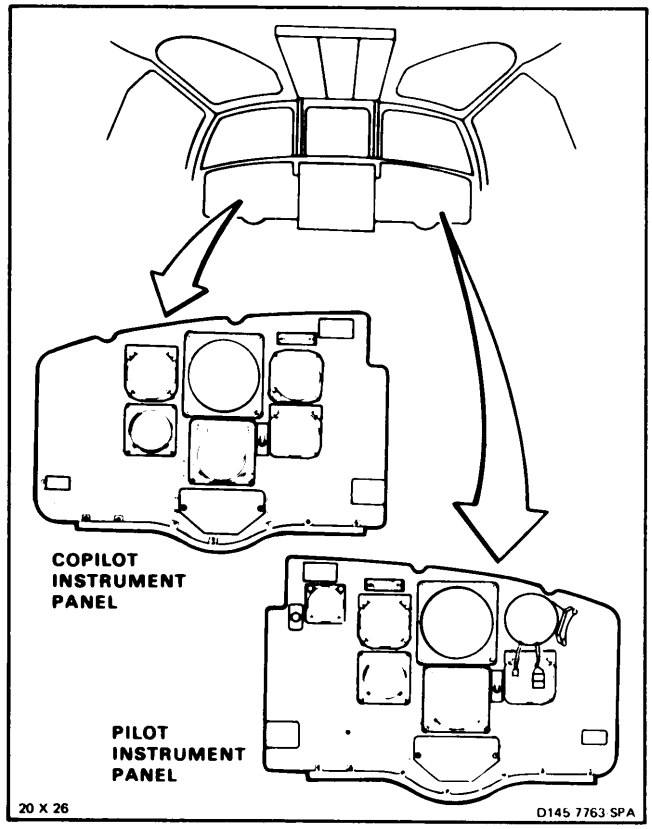
Personnel Required:
68F20 Aircraft Electrician
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-10
TM 55-1520-240-23
TM 55-1500-323-25
TM 55-6600-200-20

General Safety Instructions:

CAUTION

Be careful when handling indicators. Rough handling will damage indicator.



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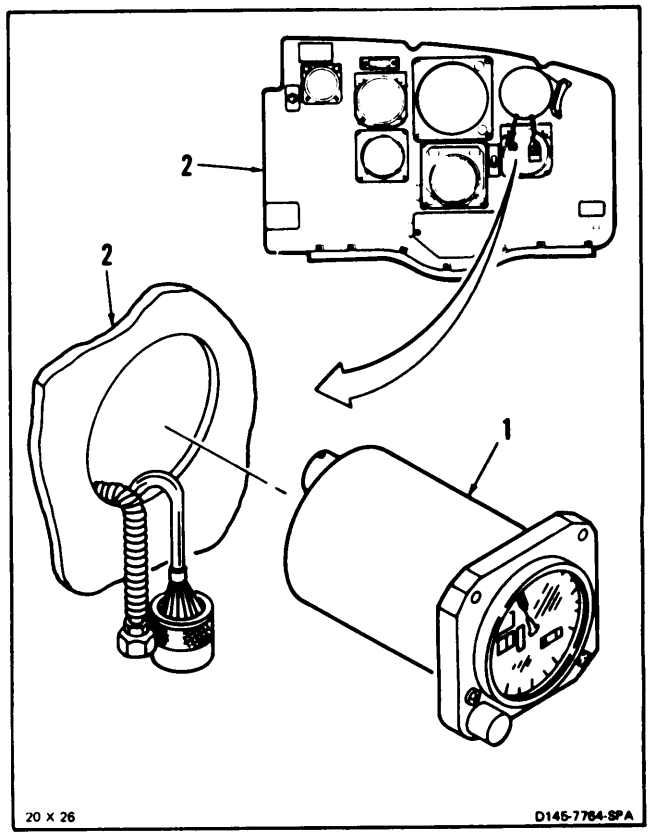
8-91 INSTALL FLANGE MOUNTED INSTRUMENTS IN PILOTS OR COPILOTS INSTRUMENT PANEL (Continued)

NOTE

Procedure is similar for installing the cruise guide indicator and AIMS altimeter in the pilot's instrument panel, the barometric altimeter in the copilot's instrument panel, and the following instruments in both pilot's and copilot's instrument panels: airspeed indicator, attitude indicator, vertical velocity indicator, horizontal situation, HSI mode select panel and radar altimeter. When installing airspeed indicator, AIMS altimeter. barometric altimeter, vertical velocity indicator, panel light must be installed. Installation of AIMS altimeter is shown here.

1. **Clean bonding surface** of indicator (1) and panel (2). Use cloth (E120).



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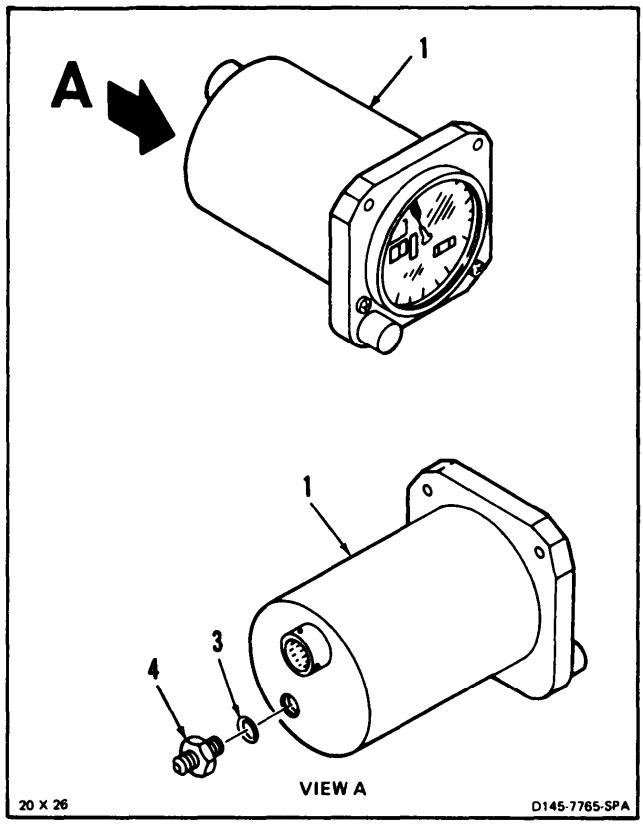
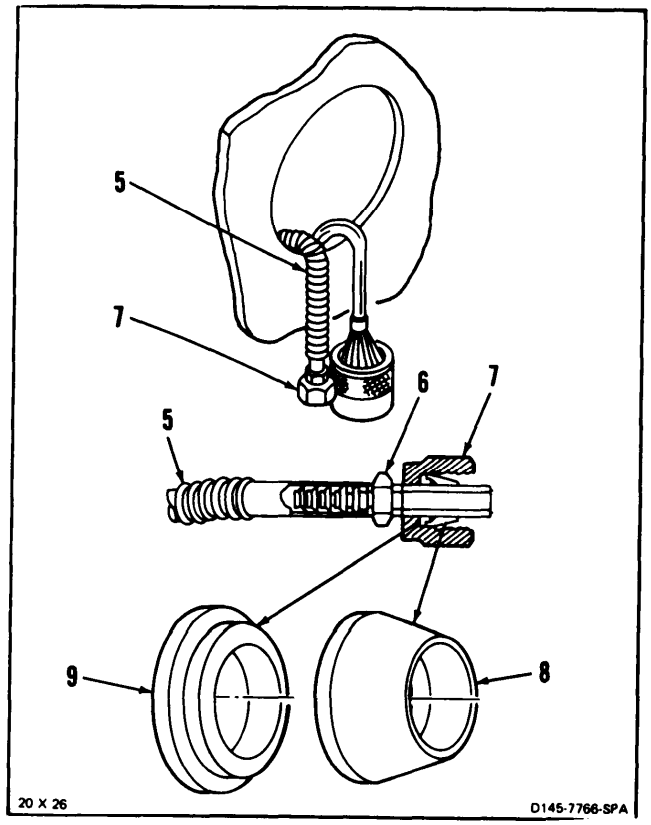
8-91 INSTALL FLANGE MOUNTED INSTRUMENTS IN PILOTS OR COPILOTS INSTRUMENT PANEL (Continued)

2. Check instrument (1). **Apply range marks and index mark** to indicator, if required (TM 55-1520-240-10 and TM 55-6600-200-20).
3. **Install packing (3)** on fitting body (4) (no packing on fittings with tapered pipe thread).
4. **Install fitting body** (4) in indicator (1).



5. Check serrated tubing hose (5). **Hose connector (8), nut (7), front ferrule (8), and roar ferrule (9) must be in place before concocting tubing hon.**



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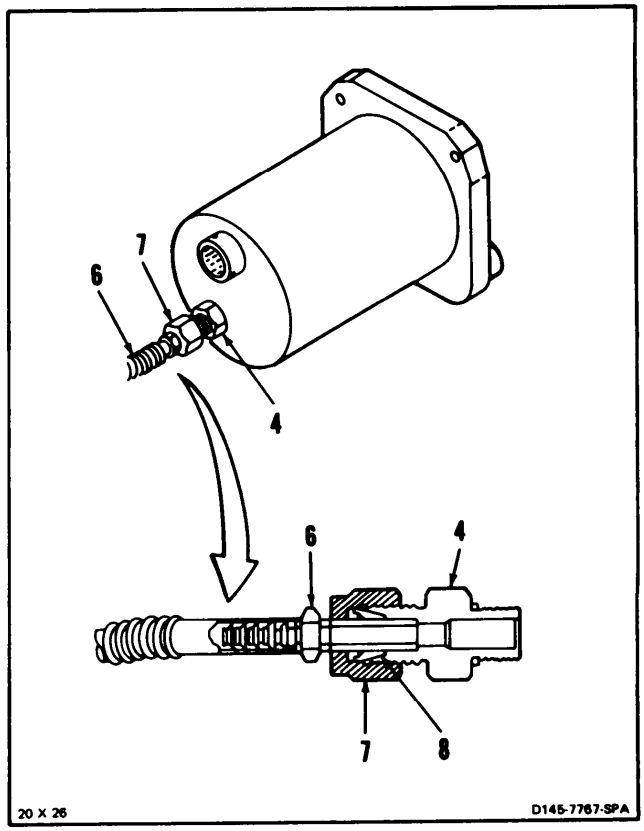
8-91 INSTALL FLANGE MOUNTED INSTRUMENTS IN PILOTS OR COPILOTS INSTRUMENT PANEL (Continued)

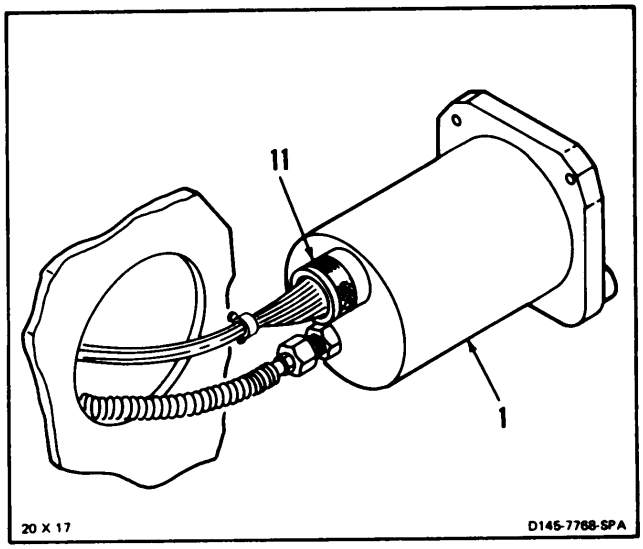
CAUTION

Do not let indicator hang unsupported from serrated tube how.

6. **Insert hose connector (6), nut (7) and ferrules (8 and 9) into fitting body (4).** Make sure front ferrule (7) is seated against fitting body (4).
7. Have helper hold indicator (1), push hose connector (6) firmly against fitting body (4) and **install fitting nut (7)** on fitting body. Tighten finger tight.
8. Hold fitting body (4) with wrench, using second wrench, tighten fitting nut (7) to scribe mark. **Snug nut dightiy.**



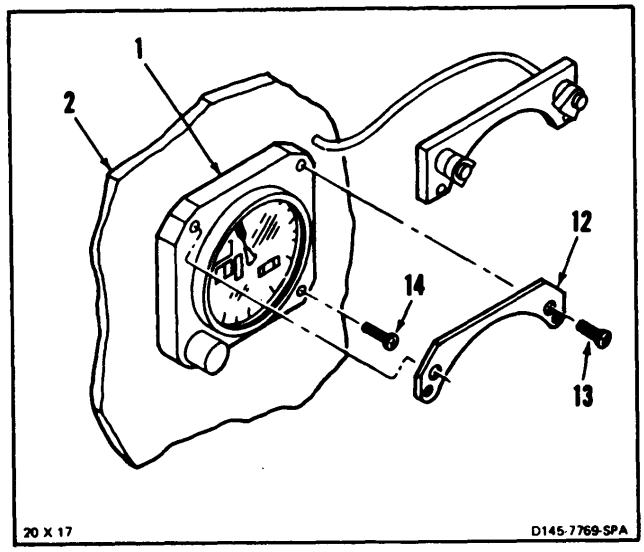
9. **Connect wire harness conrnctor (11)** to indicator (1).



GO TO NEXT PAGE

8-91 INSTALL FLANGE MOUNTED INSTRUMENTS IN PILOTS OR COPILOTS INSTRUMENT PANEL (Continued)

10. **Install indicator (1)** in instrument panel (2).
11. **Position adaptor bracket (12) over indicator (1).**
12. **Install two Screws (13).**
13. **Install remaining screw (14)** (or screws).

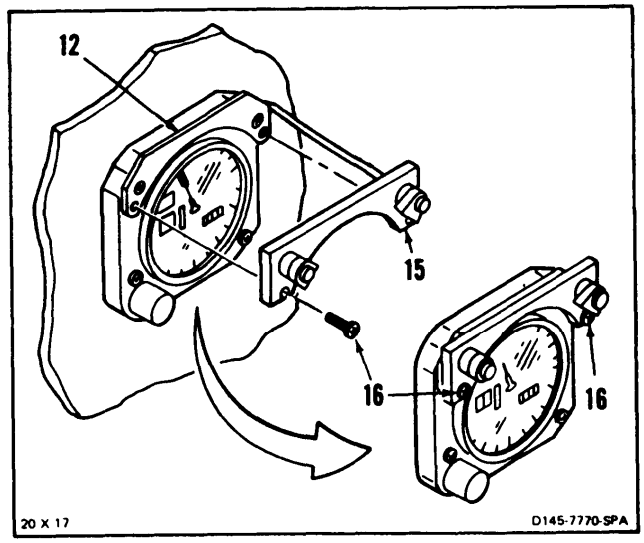


14. **Position panel light (15)** over adaptor bracket (12).
15. **Install two Screws (16).**
16. Apply index mark, if required, from indicator (1) to panel (2) (TM 55-6600-200-20).

FOLLOW-ON MAINTENANCE:

Perform operational check of affected system (TM 55-1520-240-T).

Perform operational check of instrument lights (TM 55-1520-240-T).



END OF TASK

8-92 REMOVE CLOCK 8-92

INITIAL SETUP

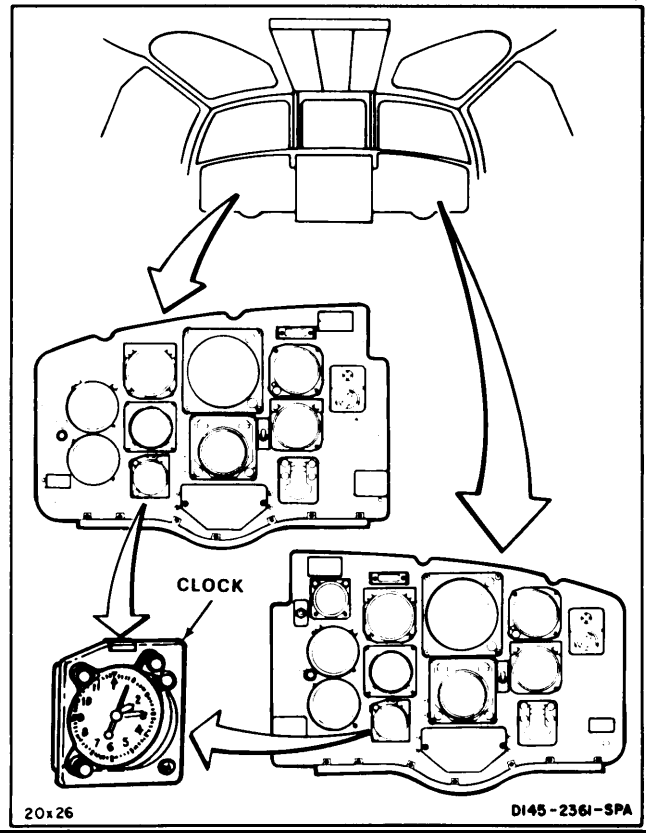
Applicable Configurations:
Without 17

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

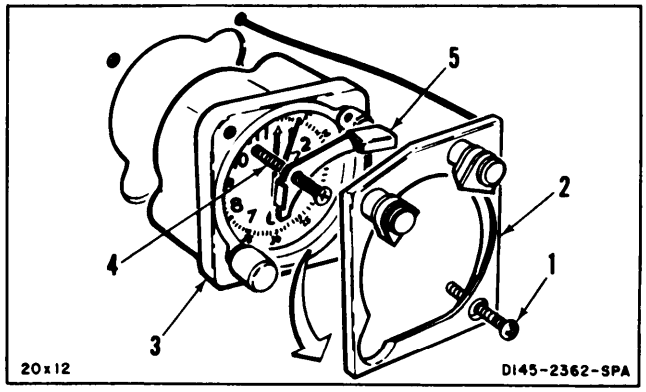


1. **Remove screw (1). Rotate light fixture (2)** down and aft, **away from clock (3).**

NOTE

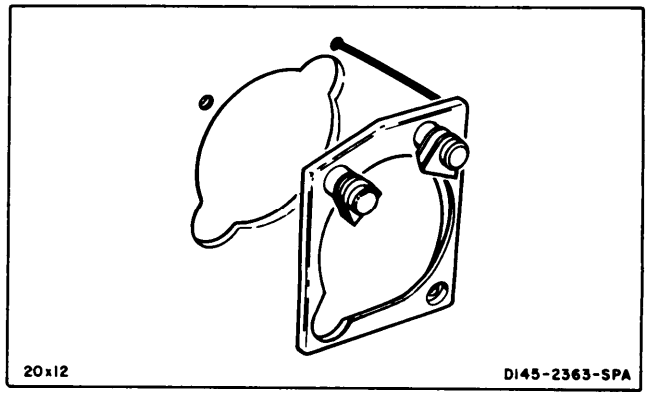
Do not cut or disconnect wire to light fixture.

2. **Remove screw (4) and bracket (5).**
3. **Remove clock (3).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-92.1 REMOVE CLOCK 8-92.1

INITIAL SETUP

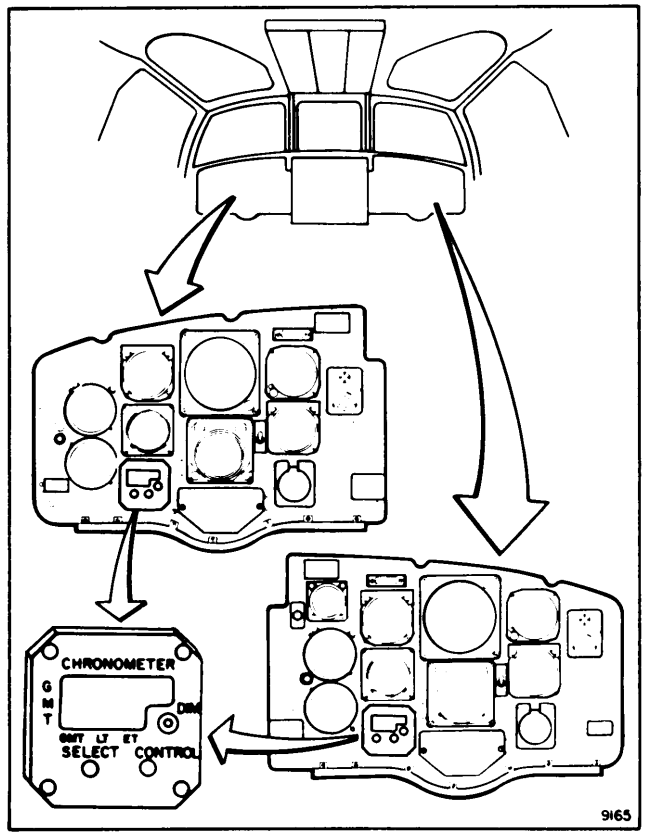
Applicable Configurations:
With 17

Tools:
Aircraft Mechanics Tool Kit
NSN 5180-00-323-4692

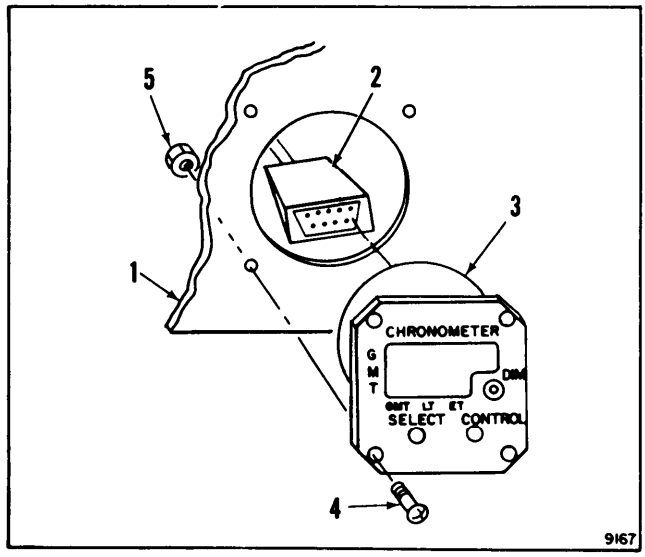
Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Reach up under instrument panel (1) and **disconnect connector** (2) from clock (3).
2. **Remove four screws (4) and nuts (5).**
3. Remove clock (3) from panel (1).



FOLLOW-ON MAINTENANCE:
None

GO TO NEXT PAGE

INITIAL SETUP

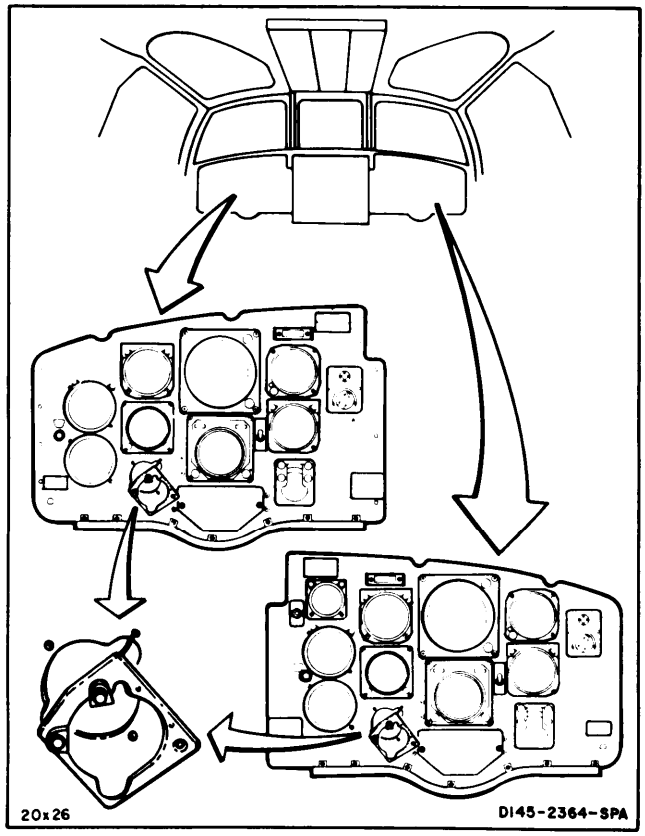
Applicable Configurations:
Without 17

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

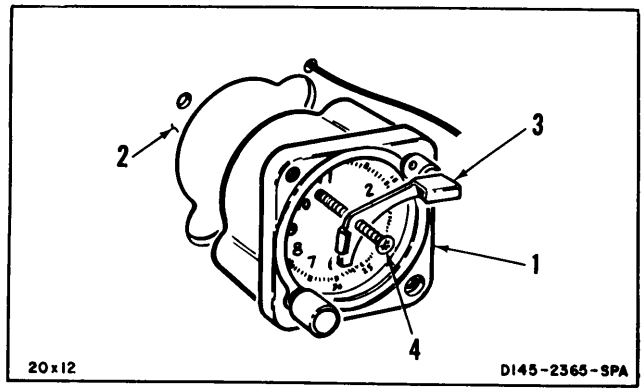
Materials:
None

Personnel Required:
Medium Helicopter Repairer
Inspector

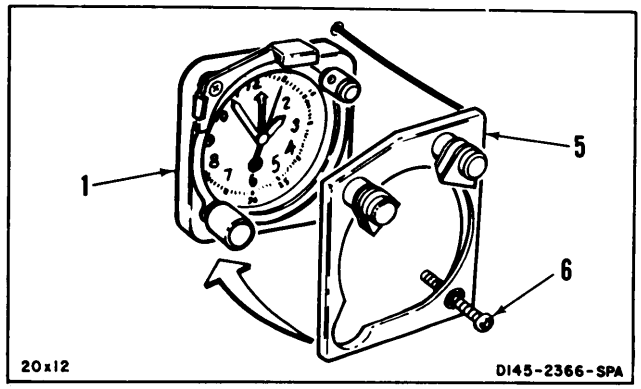
References:
TM 55-1520-240-23P



1. **Position clock (1)** in panel (2).
2. **Install bracket (3)** and flat head screw (4). Align lower edge of bracket with raised edge of clock face.



3. **Position light fixture (5).** Rotate light fixture up and forward onto clock (1). **Install screw (6).**

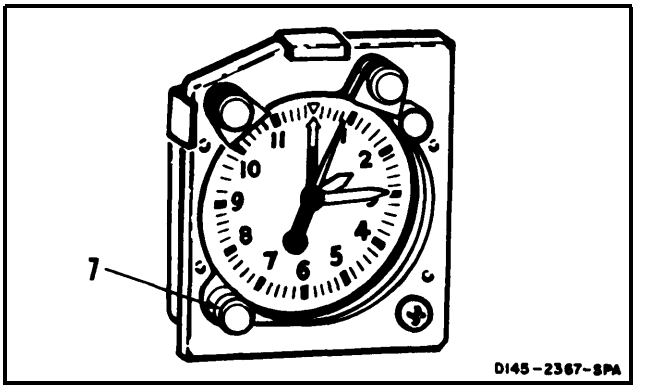


GO TO NEXT PAGE

8-93 INSTALL CLOCK (Continued)

4. To wind clock, turn knob (7) clockwise.
5. To set time, pull knob (7) out and turn.

INSPECT



FOLLOW-ON MAINTENANCE:

Perform cockpit lighting operational check (TM 55-1520-240-T).

END OF TASK

8-93.1 INSTALL CLOCK

INITIAL SETUP

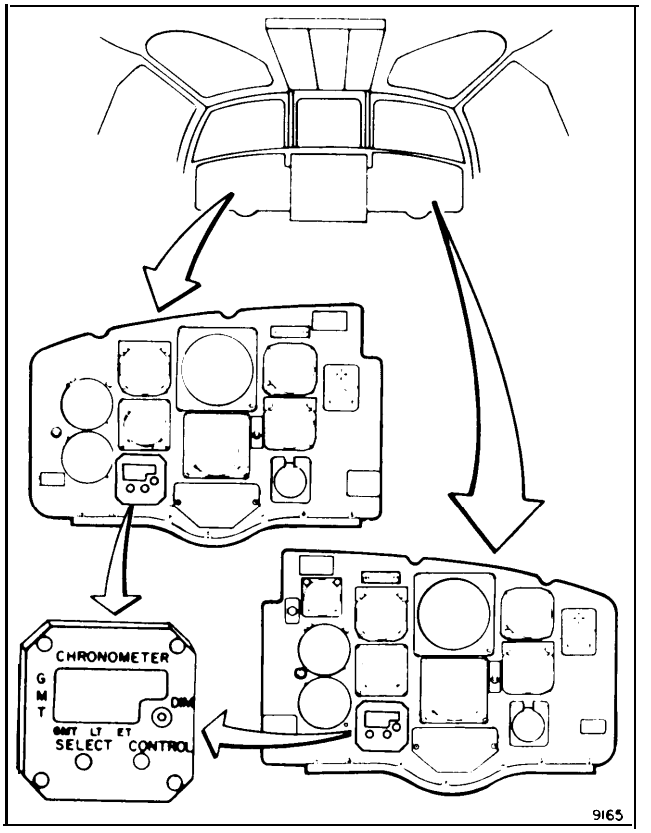
Applicable Configurations:
With 17

Tools:
Aircraft Mechanics Tool Kit
NSN 5180-00-323-4692

Materials:
Battery, AA Alkaline, 3-Year Life

Personnel Required:
Medium Helicopter Repairer

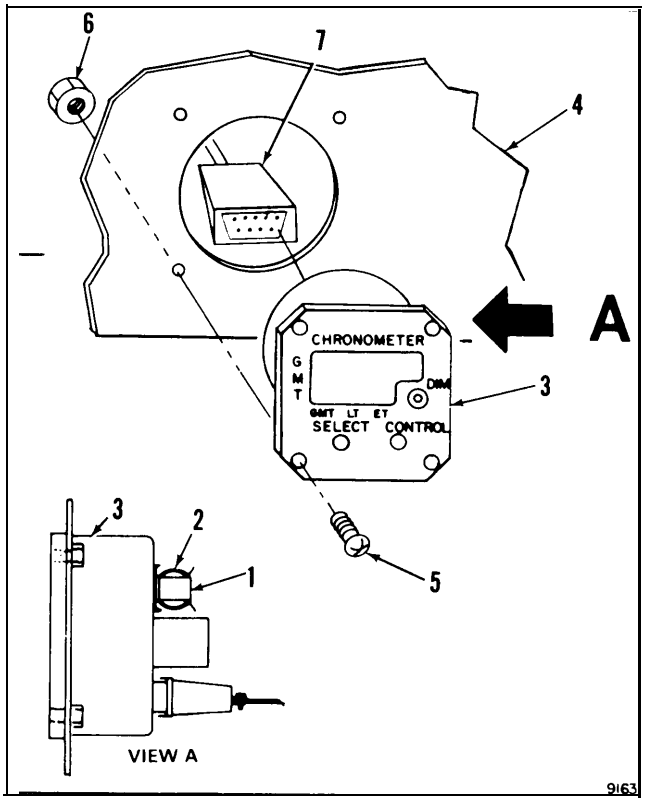
References:
TM 55-1520-240-23P



1. If needed, replace battery (1) in holder (2).
2. **Position clock (3) in panel (4).**
3. **Install four screws (5)** and nuts (6).
4. Reach up under panel (4) and **connect connector (7).**

FOLLOW-ON MAINTENANCE:

Perform operational check of clock (TM 55-1520-240-T)



END OF TASK

8-93.2 REMOVE ROTOR TACH CAPACITOR (AVIM) 8-93.2

INITIAL SETUP

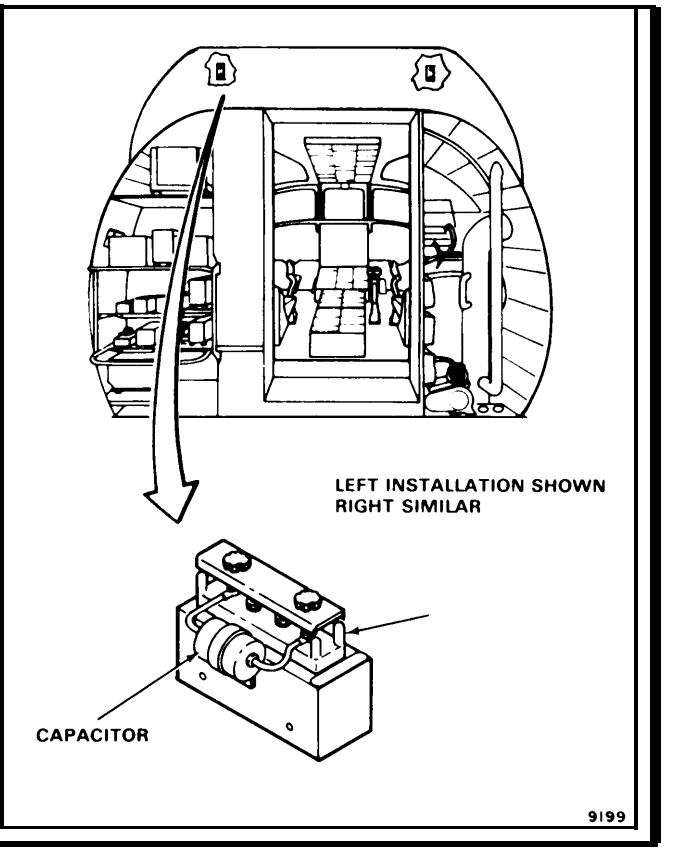
Applicable Configurations:
All

Tools:
Electrician Repairer's Tool Kit
NSN 5180-00-323-495

Materials:
None

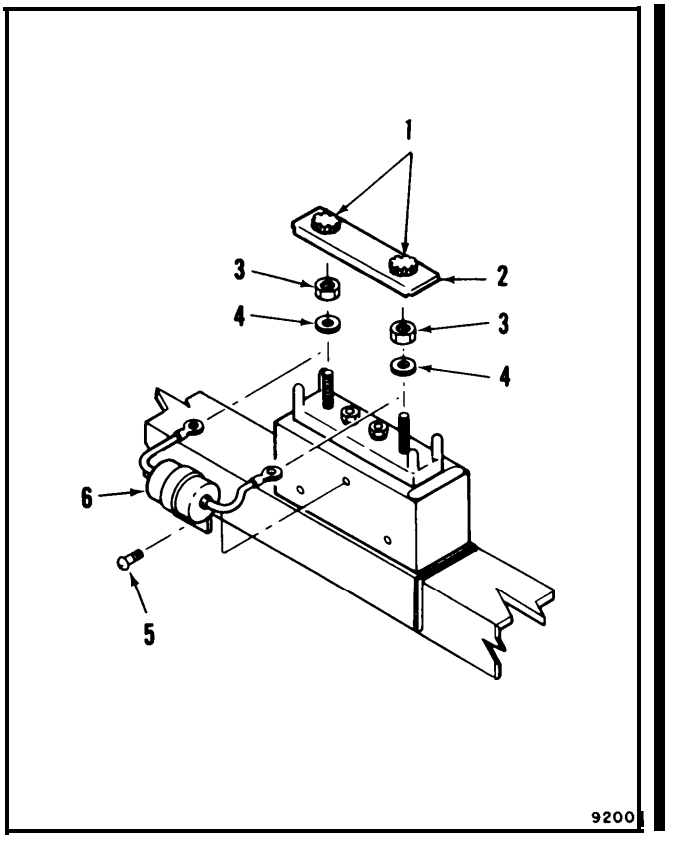
Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electric Power Off
Acoustic Blanket Removed (Task 2-208)



1. **Loosen two knobs** (1).
2. **Remove terminal board cover** (2).
3. **Remove two self locking nuts (3)** and washers (4).
4. **Remove screw (5) and capacitor (6).**

FOLLOW-ON MAINTENANCE:
None



END OF TASK

8-93.3 INSTALL ROTOR TACH CAPACITOR (AVIM)

INITIAL SETUP

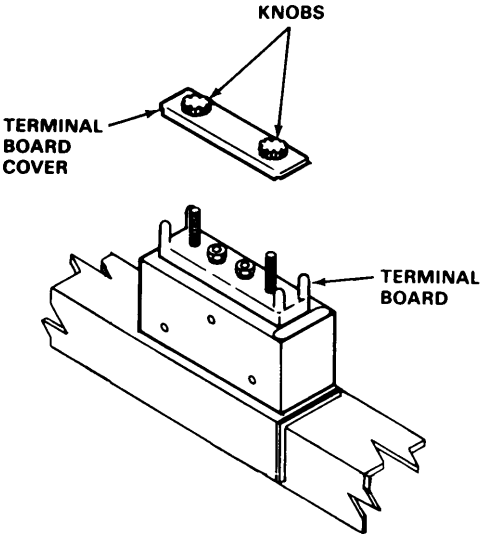
Applicable Configurations:
All

Tools:
Electrician Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

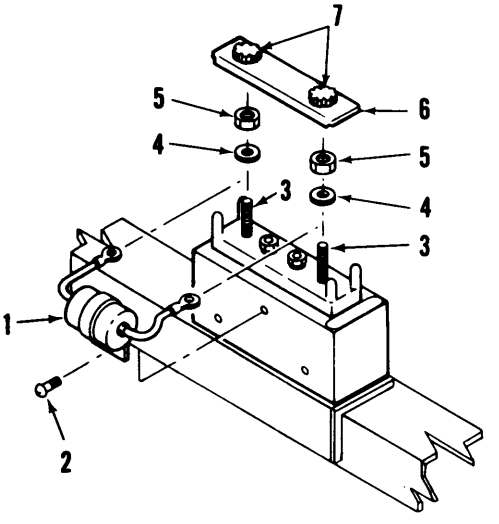
Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23P



1. **Position capacitor (1)** and attach with screw (2).
2. **Position capacitor terminals** on terminal board studs (3). **Install with washers (4) and nuts (5).**
3. **Position terminal board cover (6)** on studs (3). Tighten knobs (7).

INSPECT



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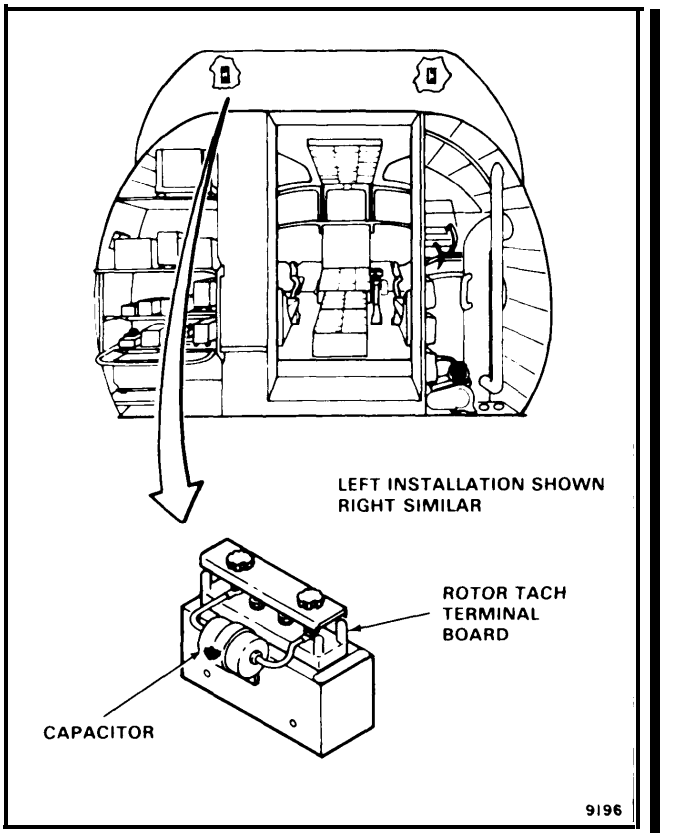
8-93.3 INSTALL ROTOR TACH CAPACITOR (AVIM) (Continued)

FOLLOW-ON MAINTENANCE:

Perform operational check of rotor tach system (TM 55-1520-240-T)



GO TO NEXT PAGE

8-94 REMOVE THERMOMETER (FAT GAGE)

INITIAL SETUP

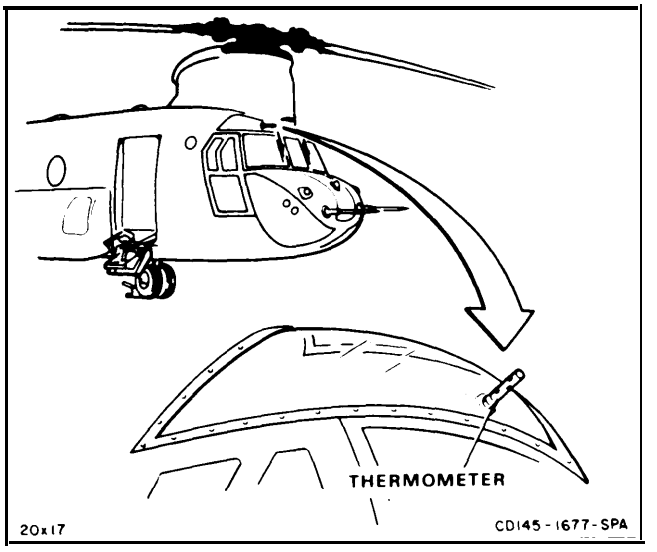
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692
Workstand

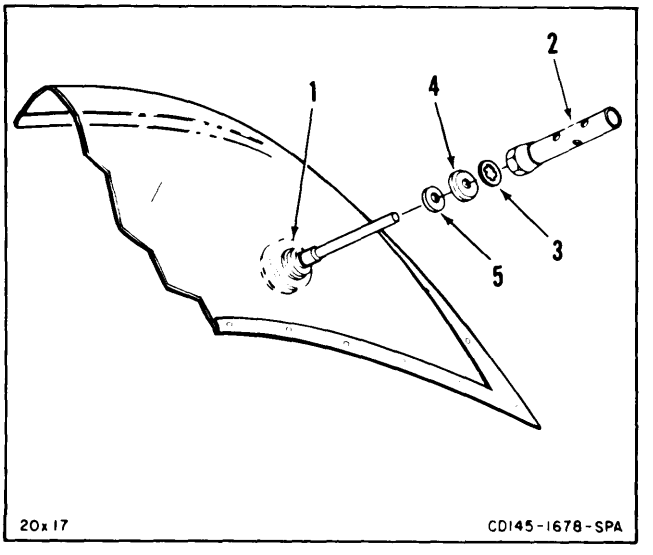
Materials:
None

Personnel Required:
67U10 Medium Helicopter Repairer (2)

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Have helper in cockpit hold thermometer (FAT gage) (1).
2. **Remove sunshield (2),** lockwasher (3), dished washer (4), and rubber washer (5).



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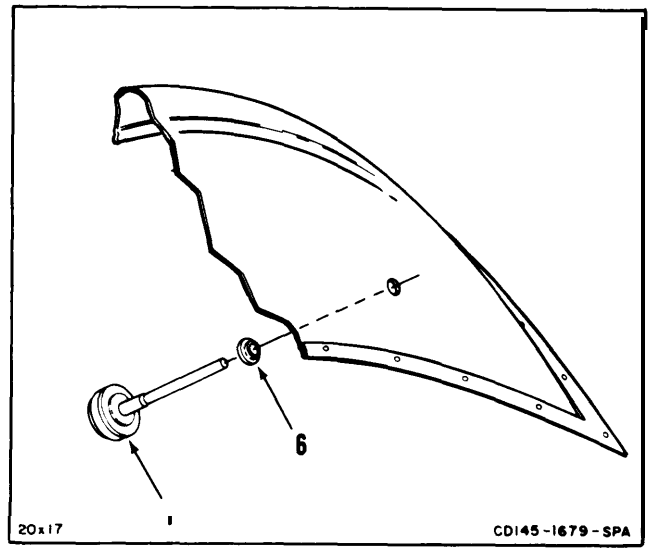
8-94 REMOVE THERMOMETER (FAT GAGE) (Continued) 8-94

3. Have helper **remove thermometer** (1) and rubber washer (6) from inside cockpit.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-95 TEST FREE AIR TEMPERATURE (FAT) INDICATOR 8-95

INITIAL SETUP

Applicable Configurations:
All

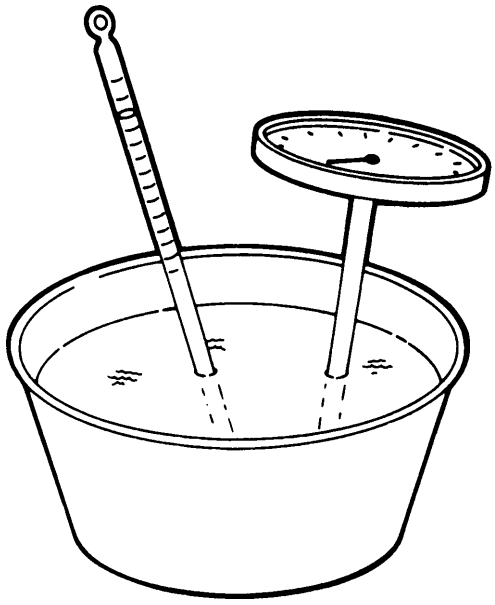
Tools:
Electrical Repair's Tool Kit,
NSN 5180-00-323-4915
Mercury Centigrade Thermometer
Container, Two Quart

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1500-204-25/1

Equipment Condition:
Off Helicopter Task



TEST SETUP

20 X 26 D145-8892-SP/

See TM 55-1500-204-25/1 for test instructions.

FOLLOW-ON MAINTENANCE:
None

END OF TASK

8-96 INSTALL THERMOMETER (FAT GAGE)

INITIAL SETUP

Applicable Configurations:
All

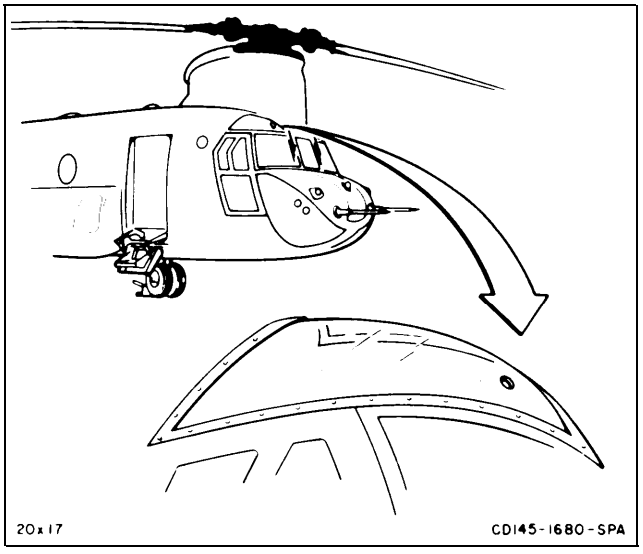
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Workstand

Materials:
Rubber Washer

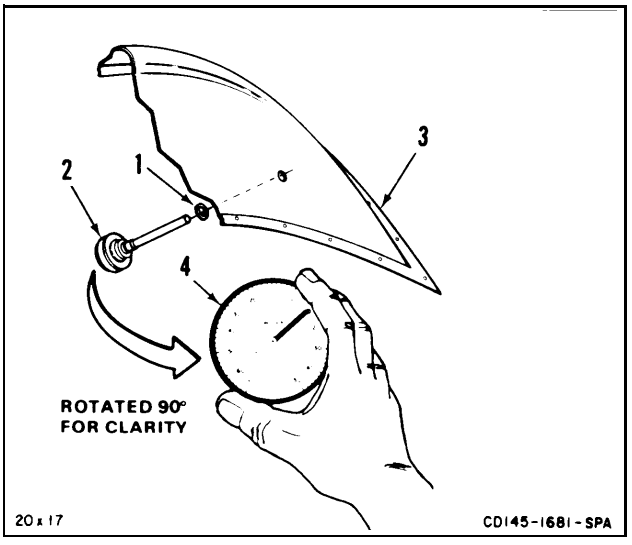
Personnel Required:
Medium Helicopter Repairer (2)
Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Thermometer Tested, TM 55-1500-204-25/1



1. Install rubber washer (1) on thermometer (FAT gage) (2).
2. Have helper, in cockpit, **install thermometer (2)** and washer (1) in hole in panel (3). Hold thermometer so dial (4) is in position shown.



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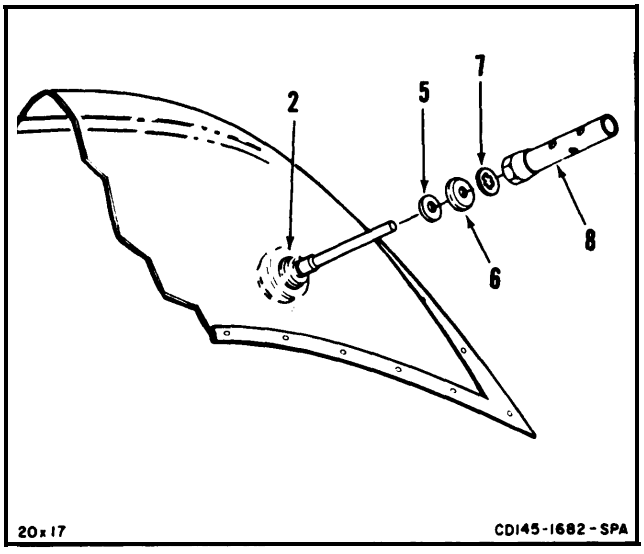
8-96S INSTALL THERMOMETER (FAT GAGE) (Continued)

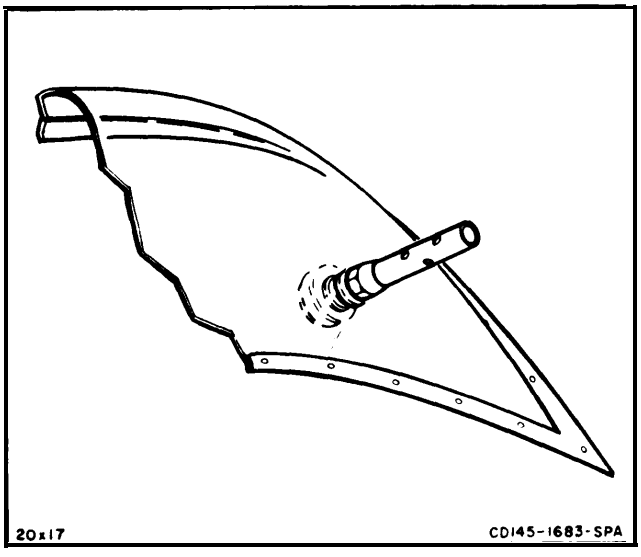
3. **Install** rubber washer (5), dished washer (6), lockwasher (7), and **sunshield (8)** on thermometer (2).



INSPECT

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-97 REMOVE CLAMP MOUNTED INSTRUMENTS FROM MAINTENANCE PANEL 8-97

INITIAL SETUP

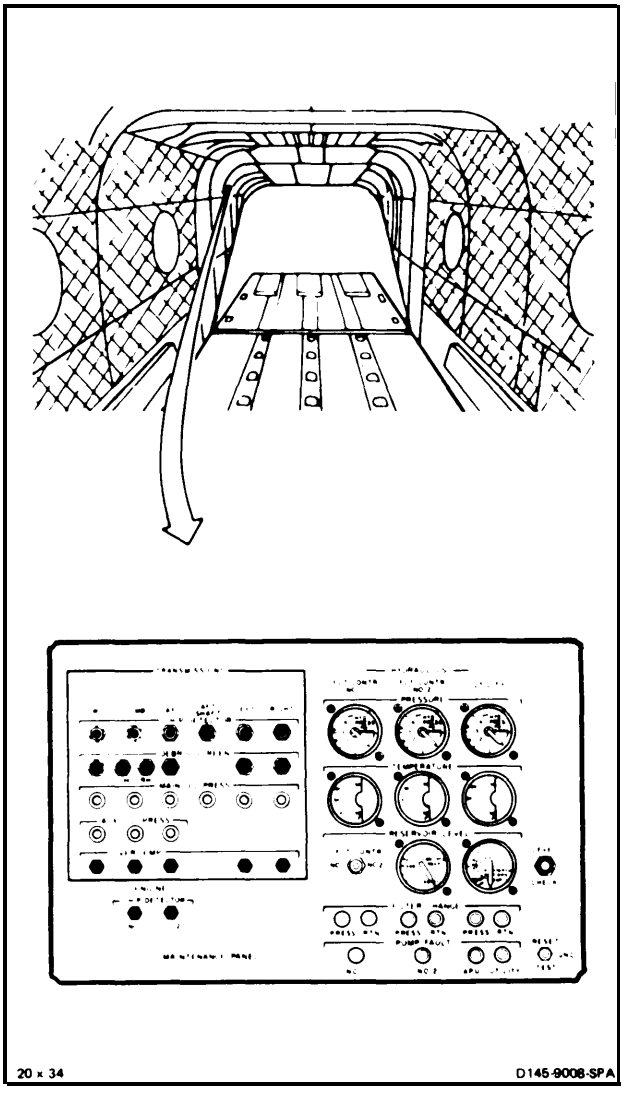
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

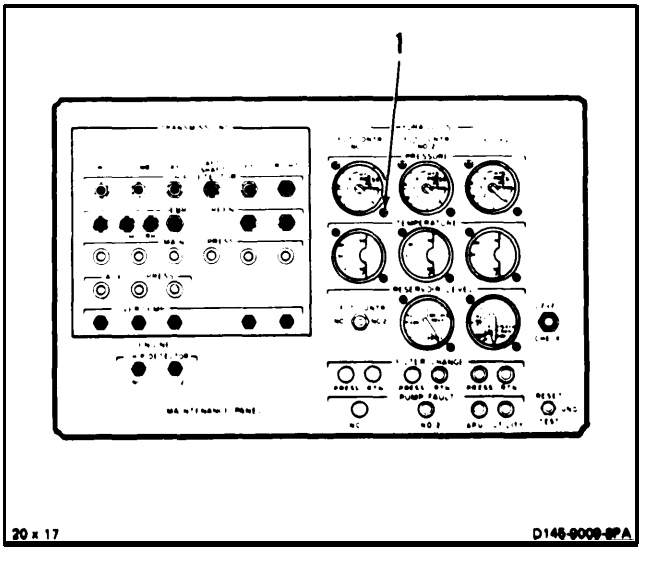
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)



NOTE

Procedure is the same for removing hydraulic pressure, temperature or reservoir level indicators from maintenance panel. Removal of No. 1 Flight Control Hydraulic Pressure indicator is shown here.

1. **Loosen round head clamp screw (1).**



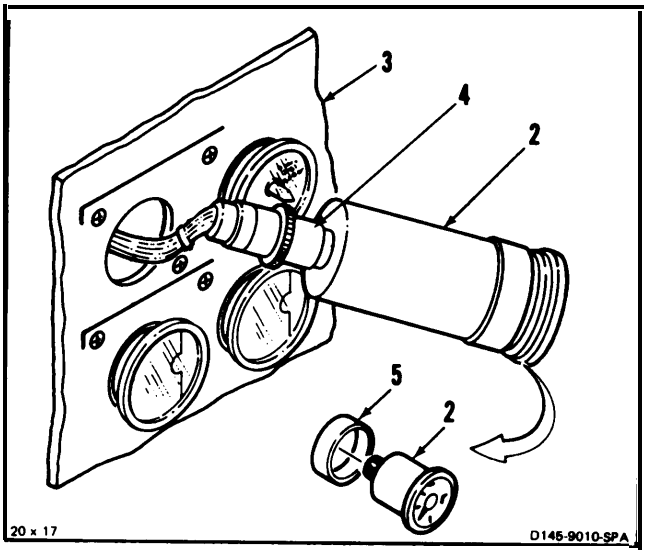
GO TO NEXT PAGE

8-97 REMOVE CLAMP MOUNTED INSTRUMENTS FROM MAINTENANCE PANEL (Continued)

CAUTION

Be careful when handling indicator. Rough handling will damage indicator.

2. Grasp indicator (2) at case rim and slide out of maintenance panel (3).
3. Disconnect wire harness connector (4) from indicator (2).
4. **Remove spacer (5)** from indicator (2).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-98 INSTALL CLAMP MOUNTED INSTRUMENTS IN MAINTENANCE PANEL

INITIAL SETUP

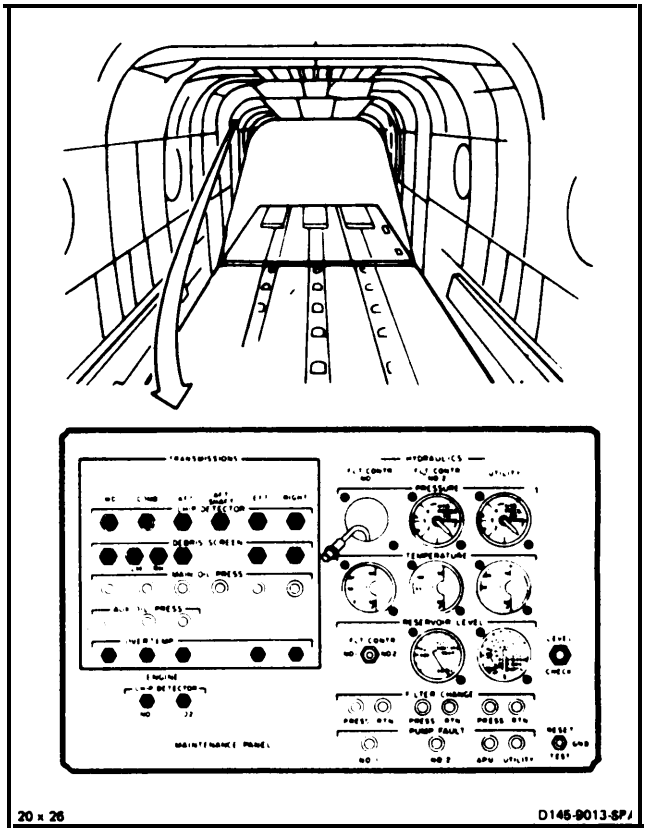
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Small Camel Hair Brush

Materials:
Cloth (E120)

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-10
TM 55-6600-200-20
TM 55-1500-323-25



GO TO NEXT PAGE

8-98 INSTALL CLAMP MOUNTED INSTRUMENTS IN MAINTENANCE PANEL (Continued) 8-98

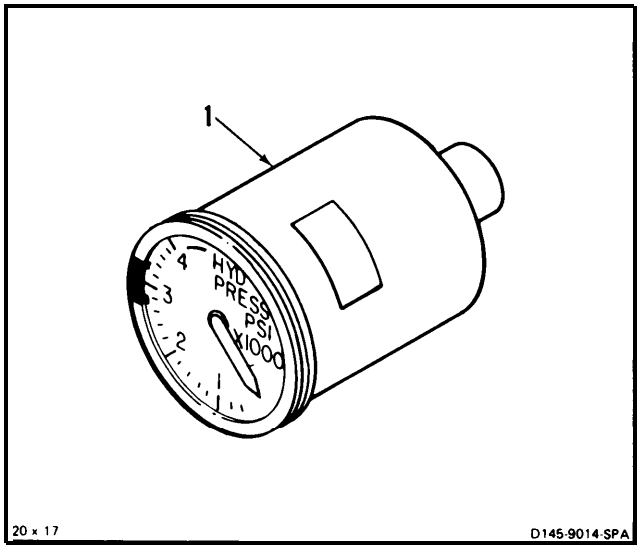
NOTE

Procedure is the same for installing hydraulic pressure, temperature, or reservoir level indicators in maintenance panel. Installation of No. 1 Flight Control Hydraulic Pressure Indicator is shown here.

CAUTION

Be careful when handling indicators. Rough handling will damage indicators.

1. **Clean bonding surface of indicator (1).** Use cloth (E120).
2. Check indicator (1) for range marks. **Apply range marks** and index mark to indicator if required (TM 55-1520-240-10 and TM 55-6600-200-20).



GO TO NEXT PAGE

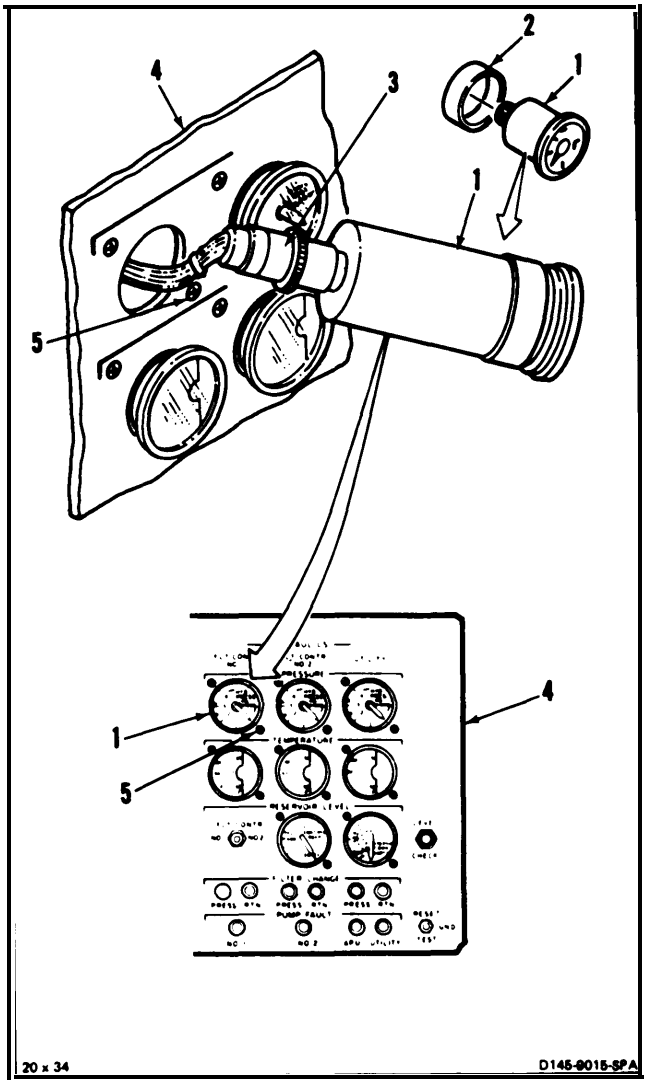
8-98 INSTALL CLAMP MOUNTED INSTRUMENTS IN MAINTENANCE PANEL (Continued)

3. **Install spacer (2)** on indicator (1).
4. **Connect wire harness connector (3)** to indicator (1).
5. **Install indicator (1)** in maintenance panel (4).
6. **Tighten** round head **clamp screw (5).**
7. Apply index mark, if required, from maintenance panel (3) to indicator (1) (TM 55-6600-200-20).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of affected system (TM 55-1520-240-T).



END OF TASK

8-99 REMOVE MAINTENANCE PANEL

INITIAL SETUP

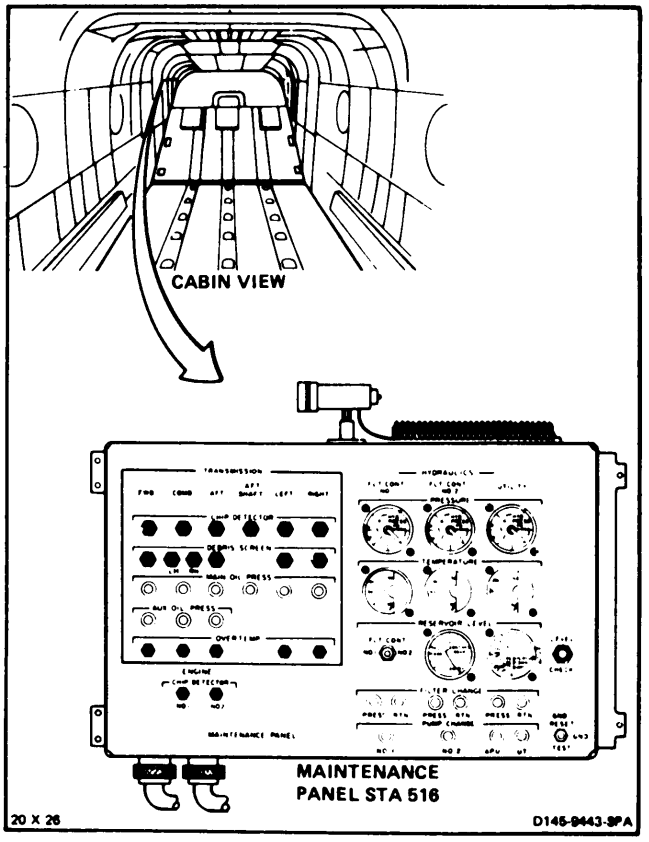
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (264)

Personnel Required:
68F20 Aircraft Electrician
67U10 Medium Helicopter Repairer

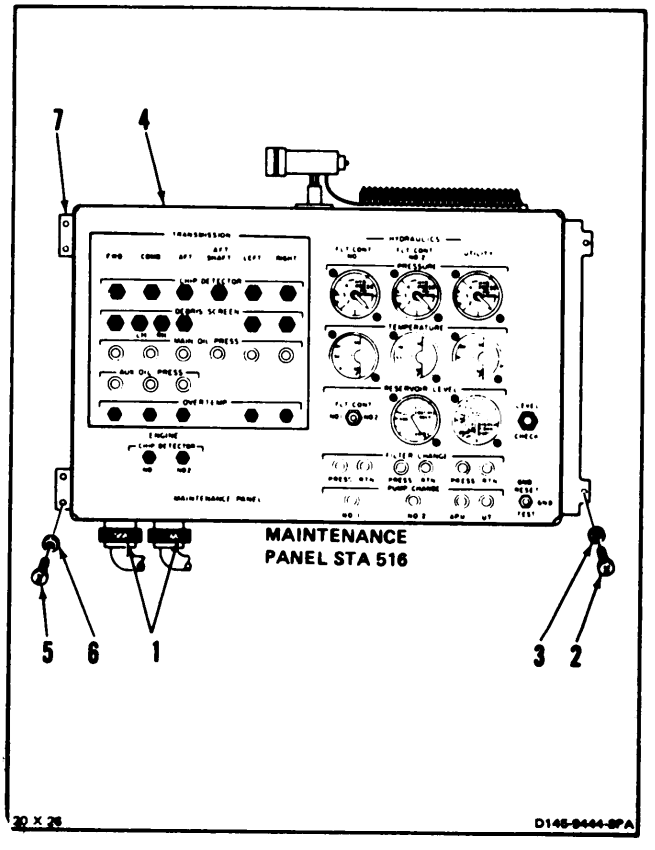
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)



1. **Tag and disconnect two wire harness connectors (1).**
2. **Remove two screws (2)** and washers (3) from right side of maintenance panel (4). Panel will swing out.
3. Have helper support maintenance panel (4).
4. **Remove four screw, (5)** and washers (6) from left side maintenance panel hinges (7).
5. **Remove maintenance panel (4).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-100 REMOVE HYDRAULIC MAINTENANCE PANEL COMPONENTS 8-100

INITIAL SETUP

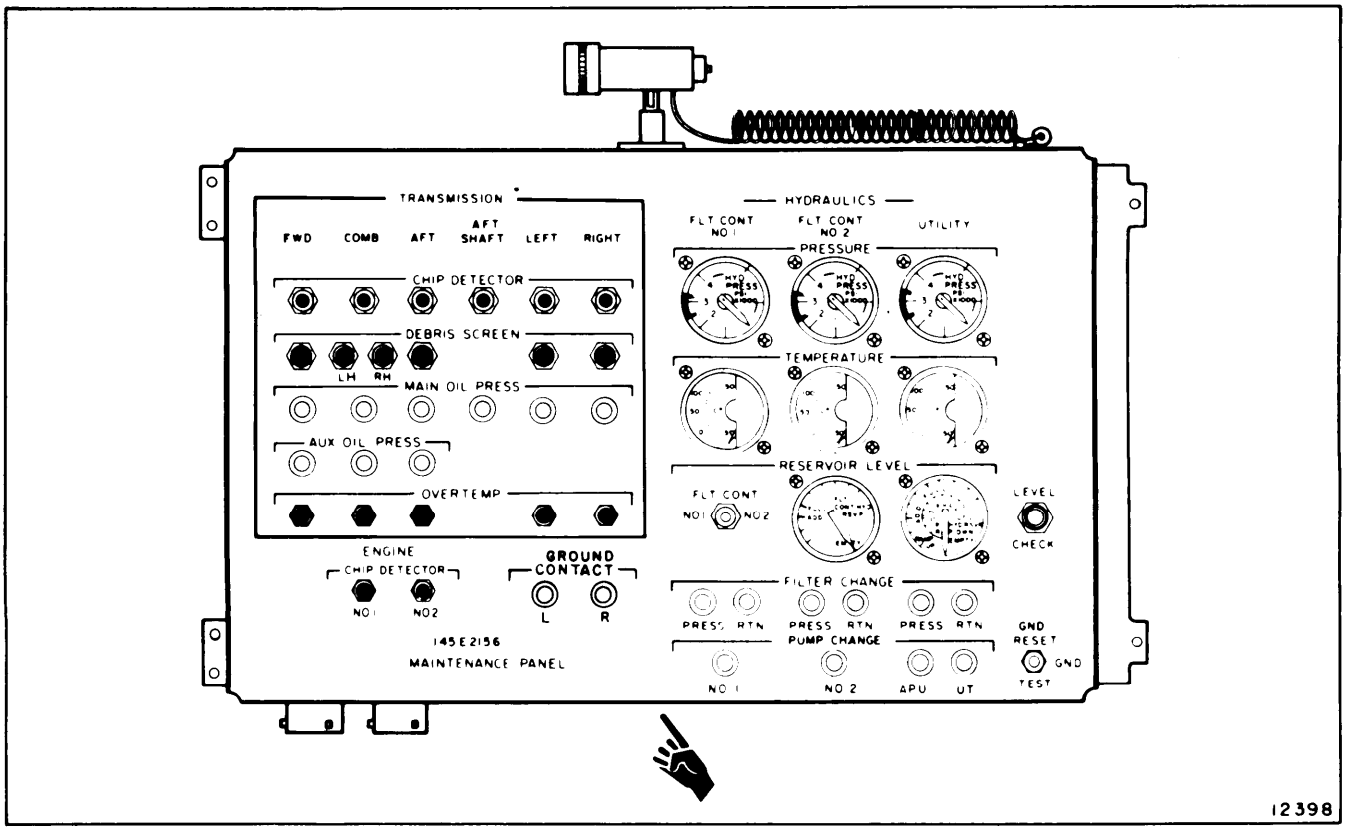
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Contact Insertion/Removal Tool M81969/14-02
Module Extraction Tool CTJ-R06
Module Extraction Tool CTJ-R12

Materials:
Paper Tags (E264)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Off Helicopter Task



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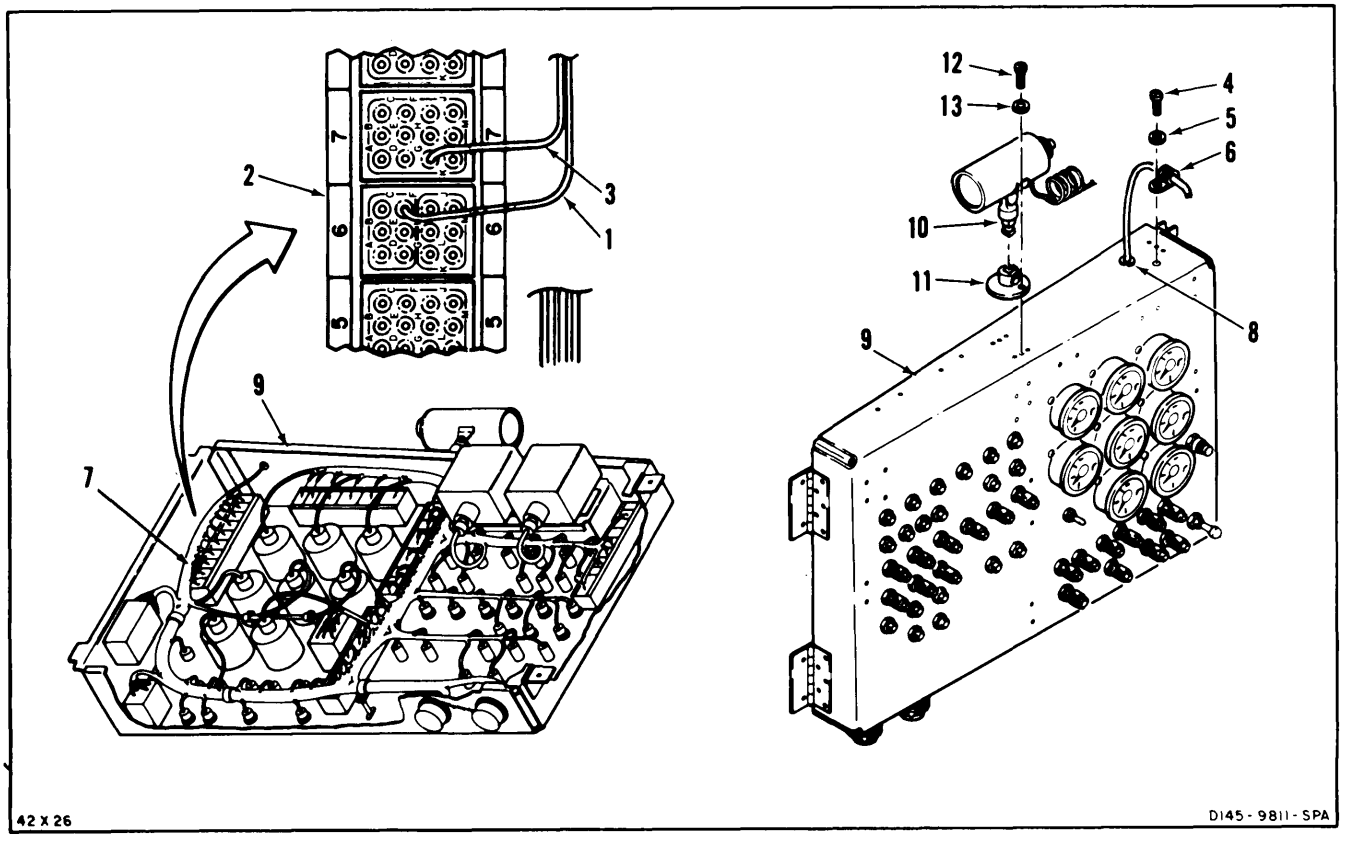
8-100 REMOVE HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

NOTE

Procedure is similar to remove like components. Task contains 12 separate removals.

1. Remove WORK LIGHT as follows:
   a. Tag and **disconnect white wire (1)** from TB4(2)6F. Use contact insertion/removal tool.
   b. Tag and **disconnect black wire (3)** from TB4(2)7G. Use contact insertion/removal tool,
   c. Remove screw (4), washer (5), and clamp (6).
   d. **Remove wires (1 and 3)** from wire harness (7). Remove lacing tape as necessary.
   e. Pull wires (1 and 3) through grommet (8).
   f. **Remove grommet (8)** from panel (9)
   g. **Remove work light (10)** from base (11).
   h. Remove two screws (12) and washers (13).
   i. Tag and **remove base (11)** from panel (9).



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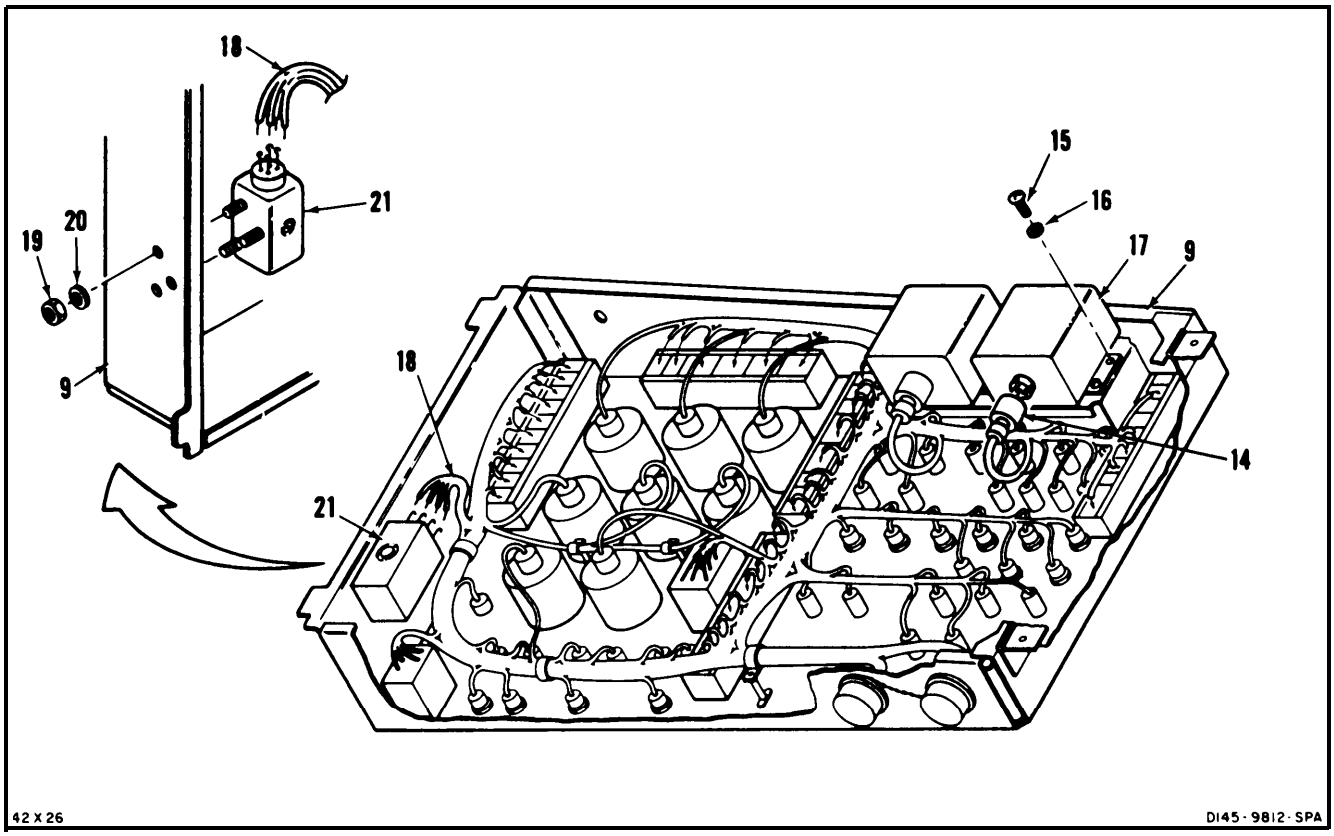
NOTE

Procedure to remove UTILITY or No. 1/No. 2 FLIGHT CONTROL hydraulic system level SIGNAL CONDITIONER is the same. Removal of UTILITY hydraulic system level SIGNAL CONDITIONER is shown here.

2. Remove UTILITY hydraulic system level SIGNAL CONDITIONER as follows:
   a. Tag and **disconnect wire harness connector (14).**
   b. Remove four screws (15) and washers (16).
   c. Tag and **remove signal conditioner (17)** from panel (9).
3. Remove aft transmission low oil pressure time delay relay as follows:
   a. Tag and **disconnect four wires (18).**
   b. Remove three nuts (19) and washers (20).
   c. Tag and **remove relay (21)** from panel (9).



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8-100 REMOVE HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued) 8-100

NOTE

Procedure is the same to remove HYDRAULIC PRESSURE, TEMPERATURE, and RESERVOIR LEVEL INDICATORS. Removal of No. 1 FLIGHT CONTROL HYDRAULIC PRESSURE INDICATOR is shown here.

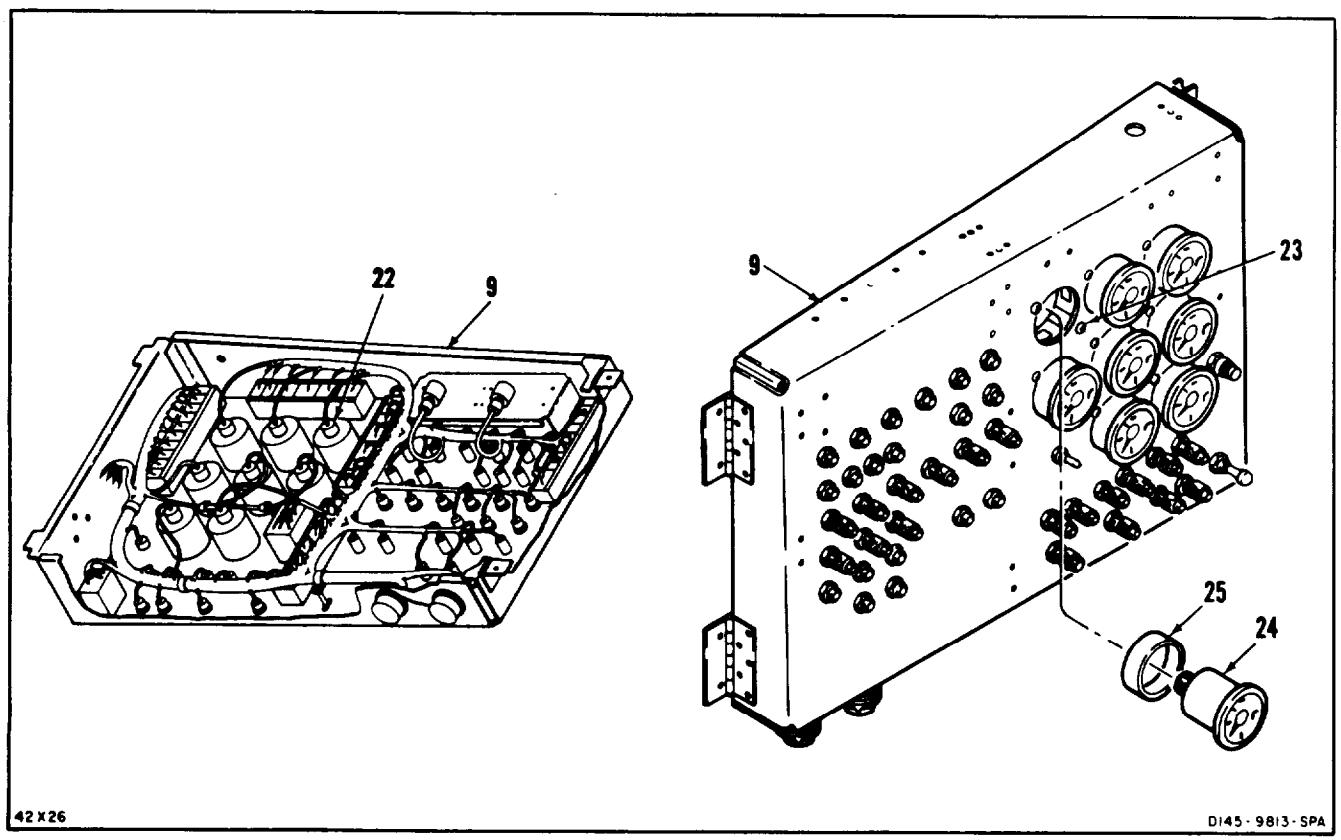
4. Remove NO. 1 FLIGHT CONTROL HYDRAULIC PRESSURE INDICATOR as follows:

a. Tag and **disconnect wire harness connectar (22).**

b. Loosen round head clamp screw (23).

c. Tag and **remove indicator (24)** from panel (9).

d. **Remove spacer (25)** from indicator (24).



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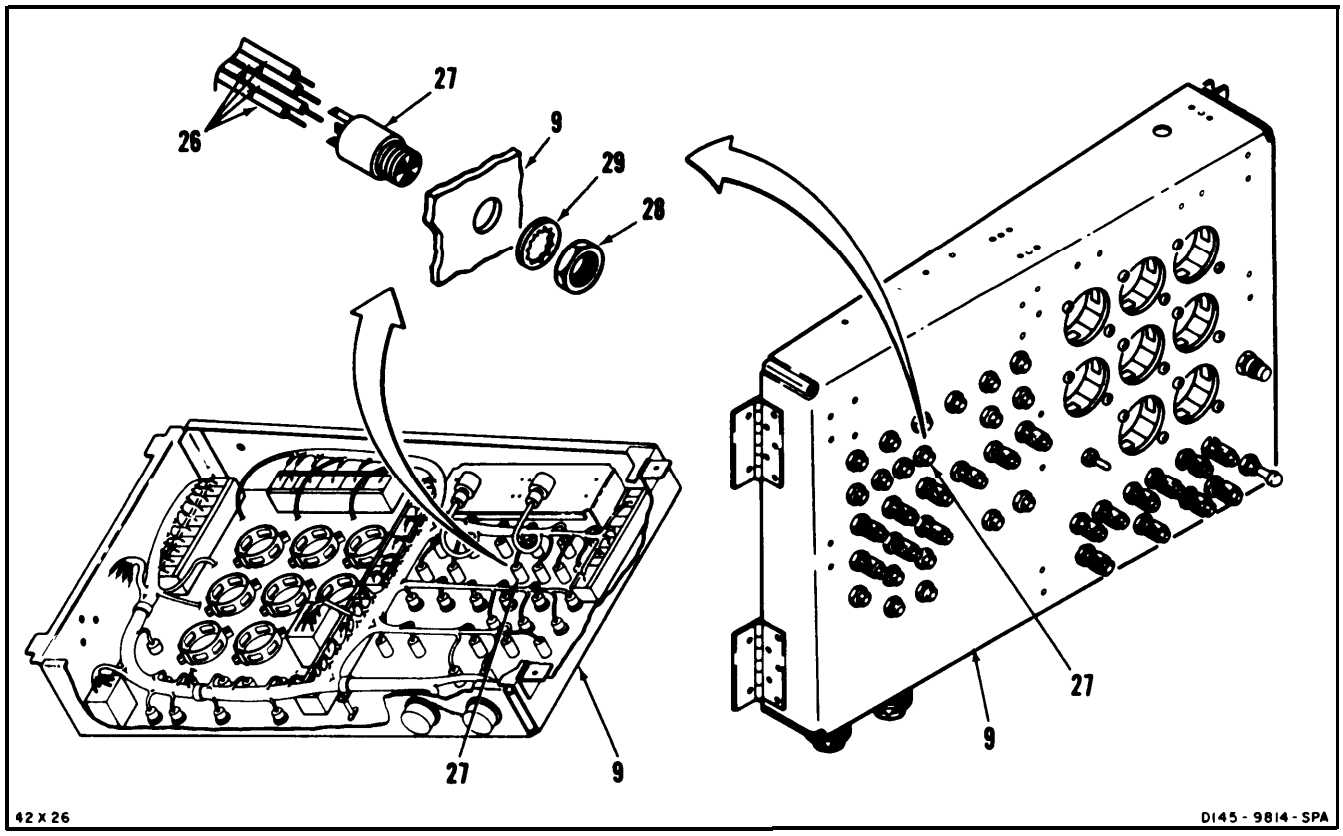
8-100 REMOVE HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued) 8-100

NOTE

Procedure is the same to remove TRANSMISSION CHIP DETECTOR, DEBRIS SCREEN, OVERTEMP, and ENGINE CHIP DETECTOR INDICATORS. Removal of AFT TRANSMISSION CHIP DETECTOR INDICATOR is shown here.

5. Remove AFT TRANSMISSION DEBRIS SCREEN INDICATOR as follows:
   a. Tag and **unsolder four wires (26)** from indicator (27). Remove lacing tape and shrink tubing as necessary.
   b. Remove nut (28) and lockwasher (29).
   c. Tag and **remove indicator (27)** from panel (9).



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8-100 REMOVE HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

NOTE

Procedure is the same to remove GND RESET/TEST and FLIGHT CONTROL HYDRAULIC RESERVOIR LEVEL SELECT SWITCH. Removal of GND RESET/TEST SWITCH is shown here.

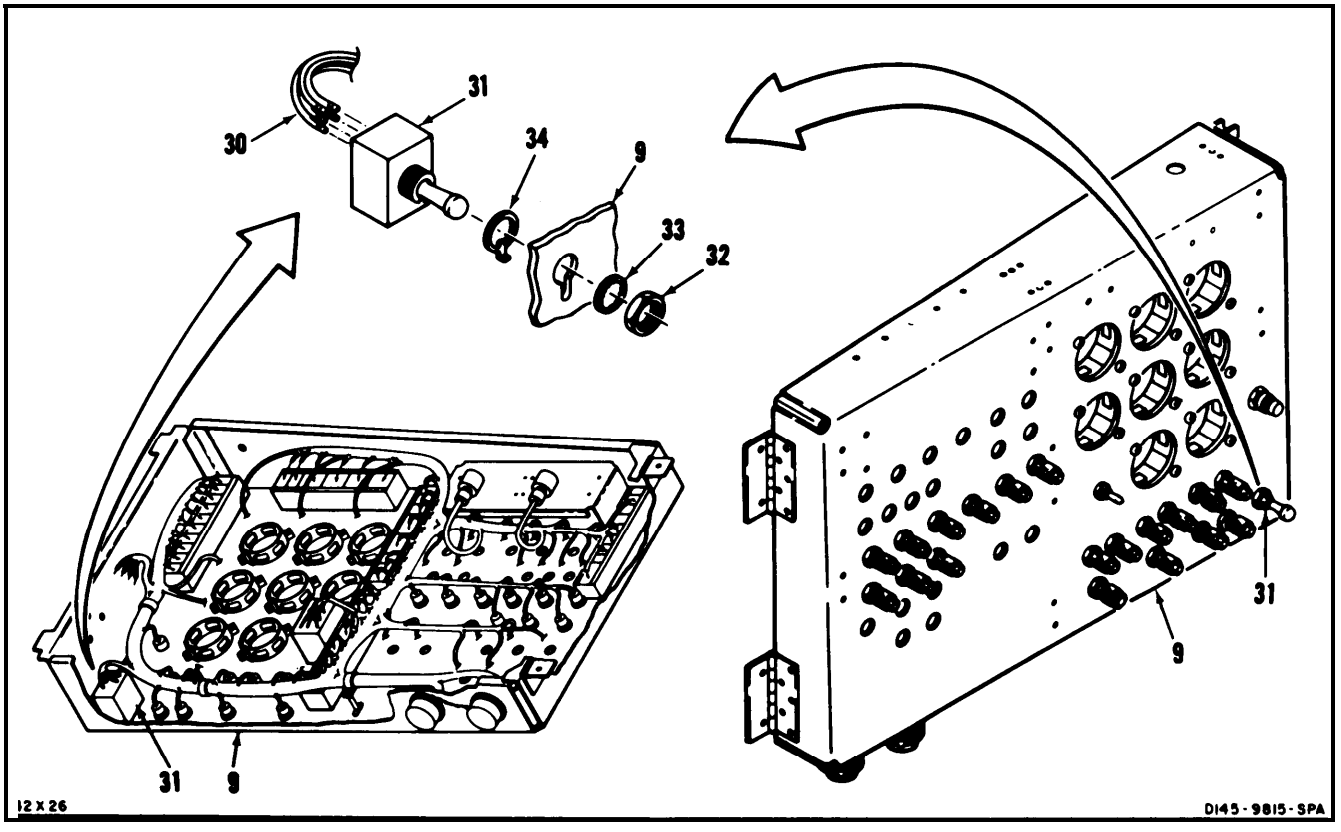
6. Remove GND RESET/TEST SWITCH as follows:

a. Tag and **remove five wires (30)** from switch (31). Use contact insertion/removal tool. Remove lacing tape as necessary.

b. Remove nut (32) and lockwasher (33) from switch (31).

c. Tag and **remove switch (31)** from panel (9).

d. Remove locking ring (34) from switch (31).



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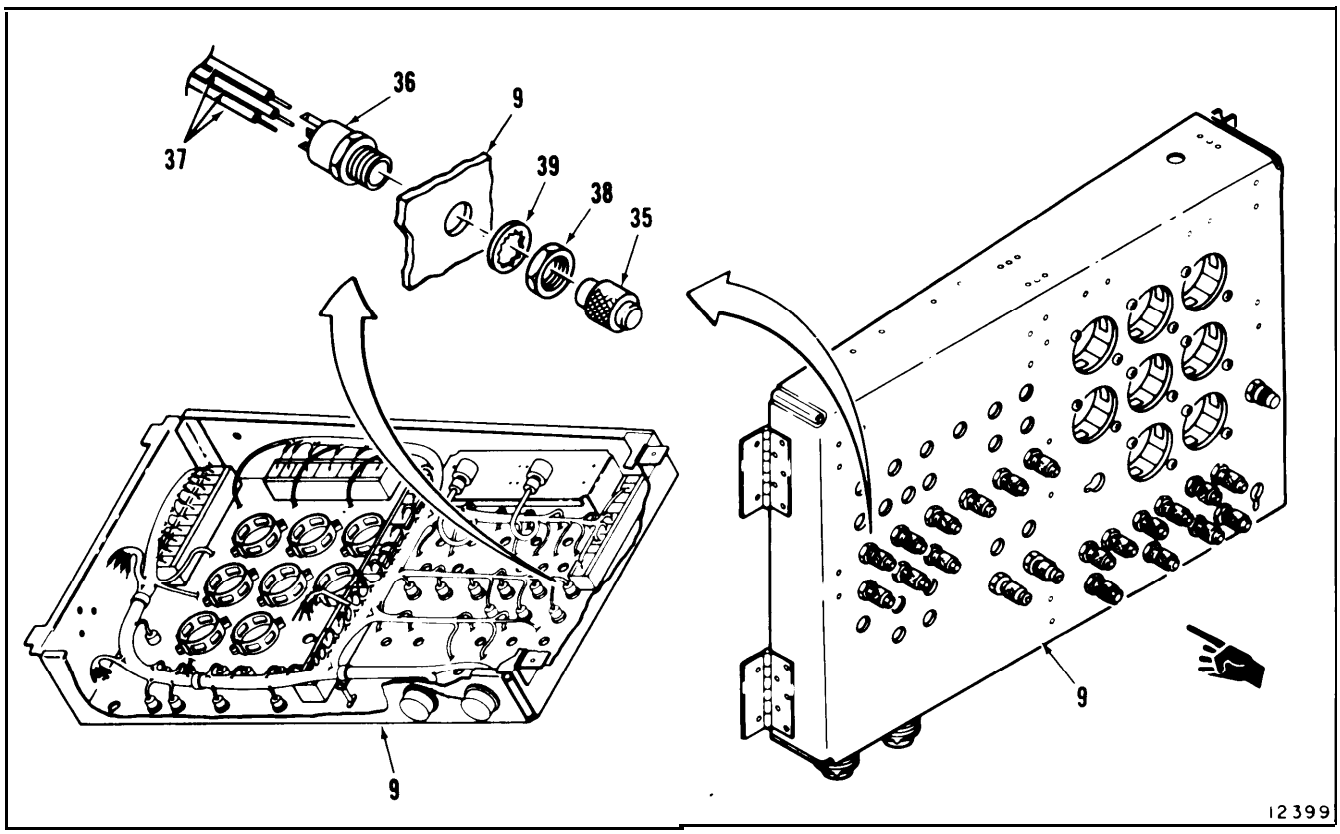
NOTE

Procedure is same to remove the TRANSMISSION MAIN OIL and AUX OIL PRESS, FILTER CHANGE, PUMP FAULT and, on helicopters with, 25, GROUND CONTACT indicator lights. Removal of the FWD TRANSMISSION AUX OIL PRESS indicator light is shown here.

7. Remove indicator light as follows:
   a. **Remove lens (35)** from light (36).
   b. Tag and **unsolder three wires (37)** from light (36). Remove lacing tape and shrink tubing as necessary.
   c. Remove nut (38) and lockwasher (39) from light (36).
   d. Tag and **remove light (36)** from panel (9).



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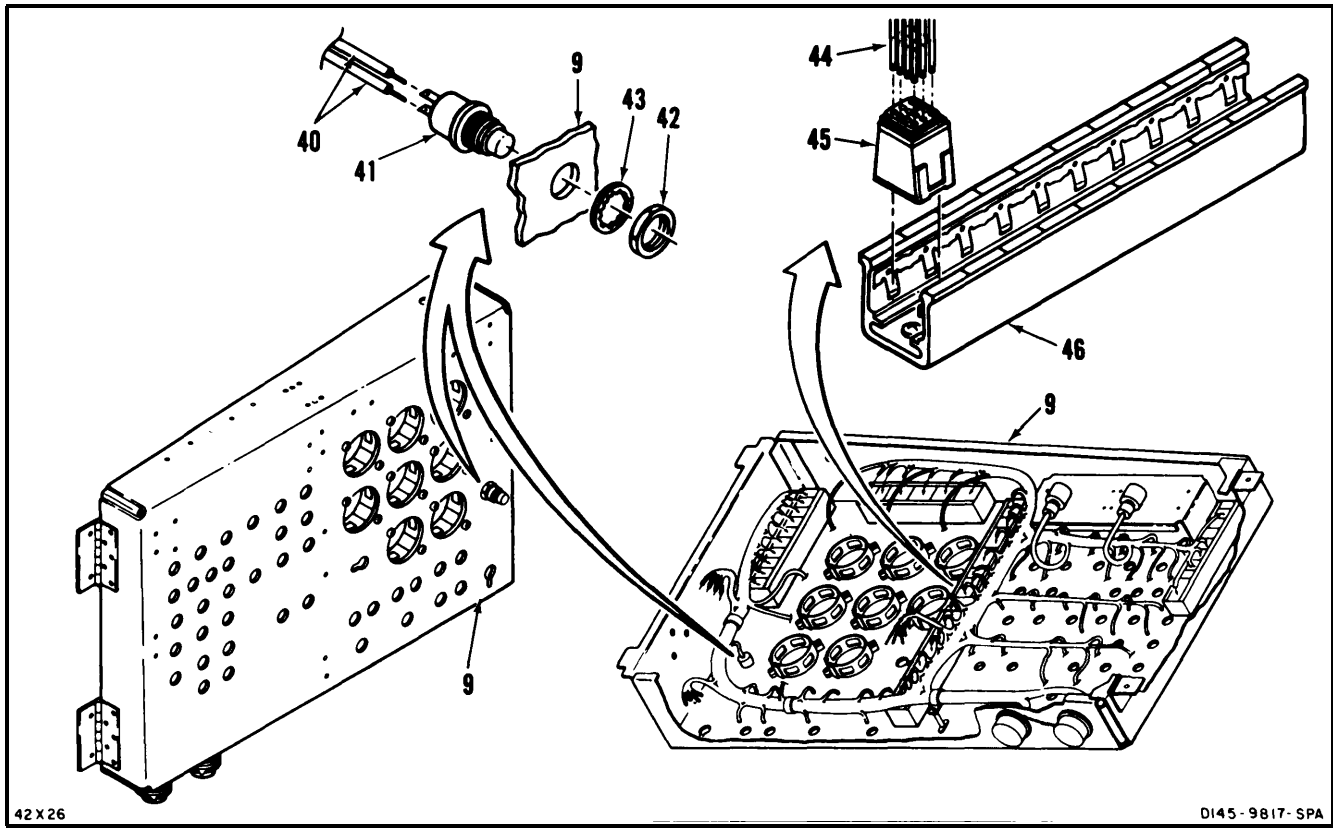
8-100 REMOVE HYDRAULIC MAINTENANCE PANEL COMPONENTS 8-100 (Continued)

8. Remove UTILITY HYDRAULIC RESERVOIR LEVEL check switch as follows:
   a. Tag and **unsolder two wires (40)** from switch (41). Remove lacing tape and shrink tubing as necessary,
   b. Remove nut (42) and lockwasher (43) from switch (41).
   c. Tag and **remove switch (41)** from panel (9).

NOTE

Procedure is the same to remove 30 terminal modules using the CTJ-R06 module extraction tool. Removal of 10 diode modules requires using the CTJ-R 12 module extraction tools. Removal of TB2-1 is shown here.

9. Remove TB2-1 terminal module as follows:
   a. Tag and **disconnect twelve wires (44)** from module (45). Use insertion/removal tool.
   b. Tag and **remove module (45)** from module mounting track (46). Use module extraction tool.



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10. Remove wire harness as follows:

    a. Remove lockwire. **Remove two nuts (47)** from wire **harness receptacles (48).**

    b. **Pull receptacles (48) out of panel (9).**

    c. Remove five screws (49) and washers (50) from five clamps (51).

    d. **Remove wire harness (52)** from panel (9).

    e. **Remove five clamps (51)** from wire harness (52).

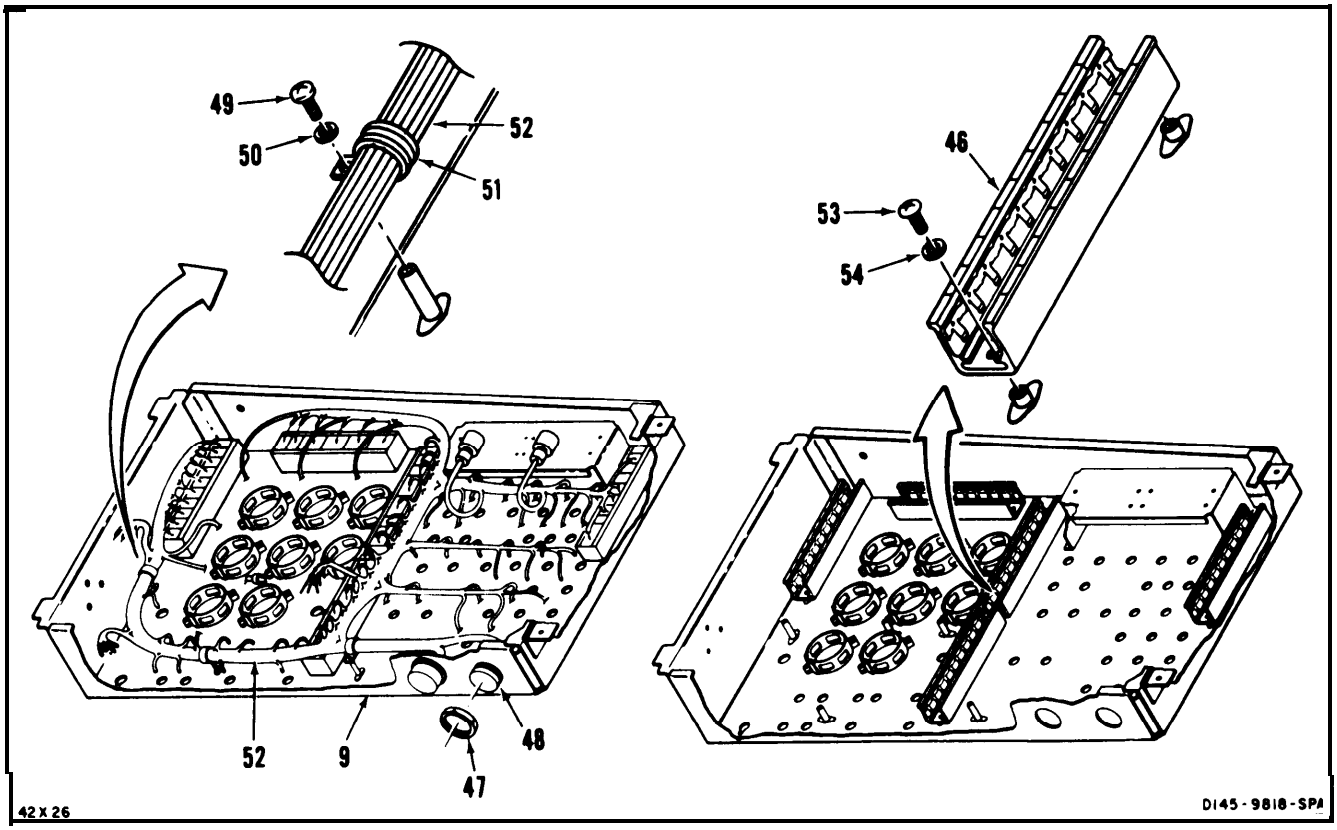
NOTE

Procedure is the same to remove five terminal board module mounting tracks. Removal of TB-2 is shown here.

11. Remove mounting track TB-2 is as follows:

    a. Remove two screws (53) and washers (54) from mounting track (46).

    b. Tag and **remove mounting** track (46).



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8-100 REMOVE HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

NOTE

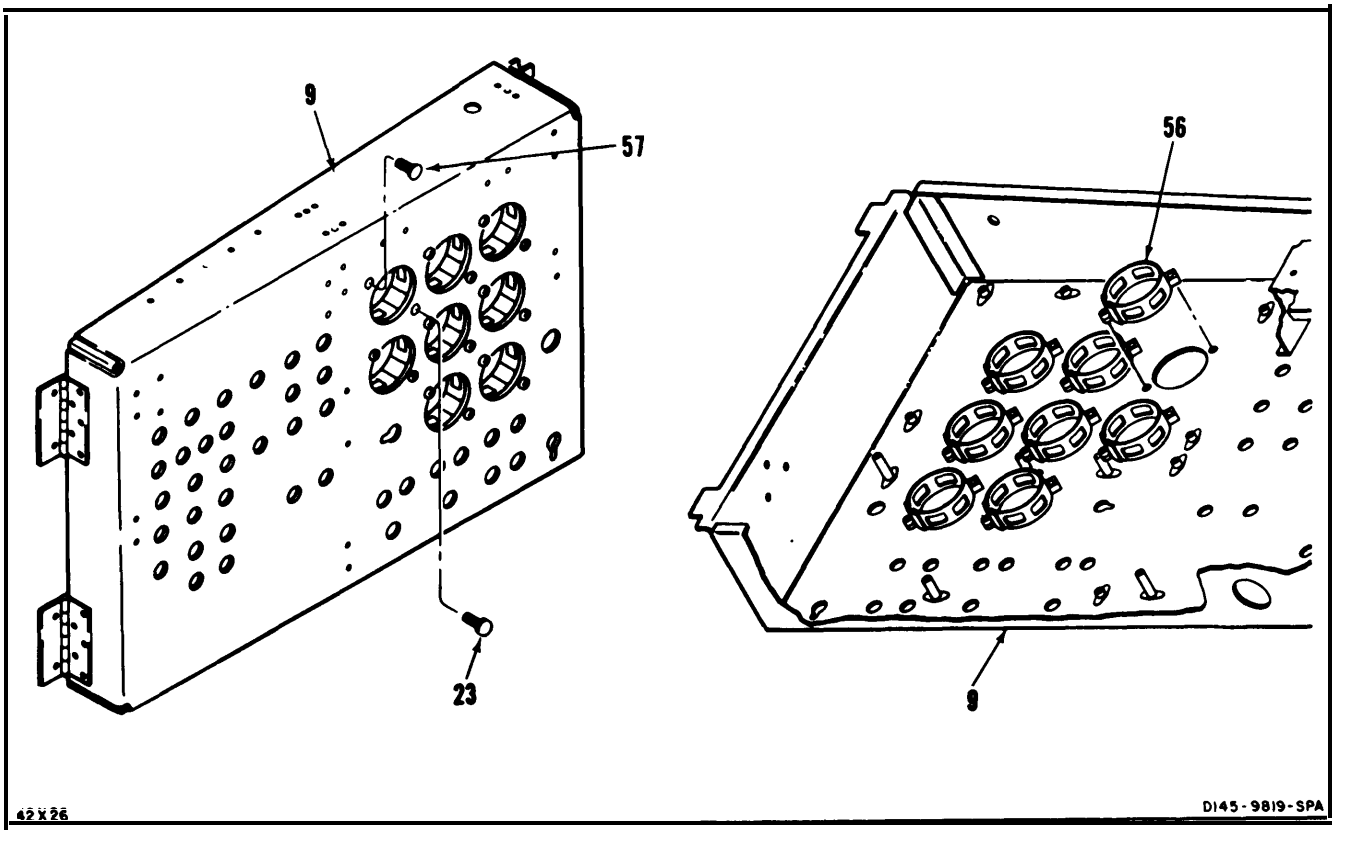
Procedure is the same to remove eight indicator mount clamps. Removal of No. 1 FLIGHT CONTROL HYDRAULIC PRESSURE INDICATOR MOUNT CLAMP is shown here.

12. Remove indicator mount clamp as follows:

a. Remove round head clamp screw (55) from clamp (56).

b. Remove flat head retainer screw (57) from clamp (56).

c. Tag and **remove clamp mount (56)** from panel (9).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS

INITIAL SETUP

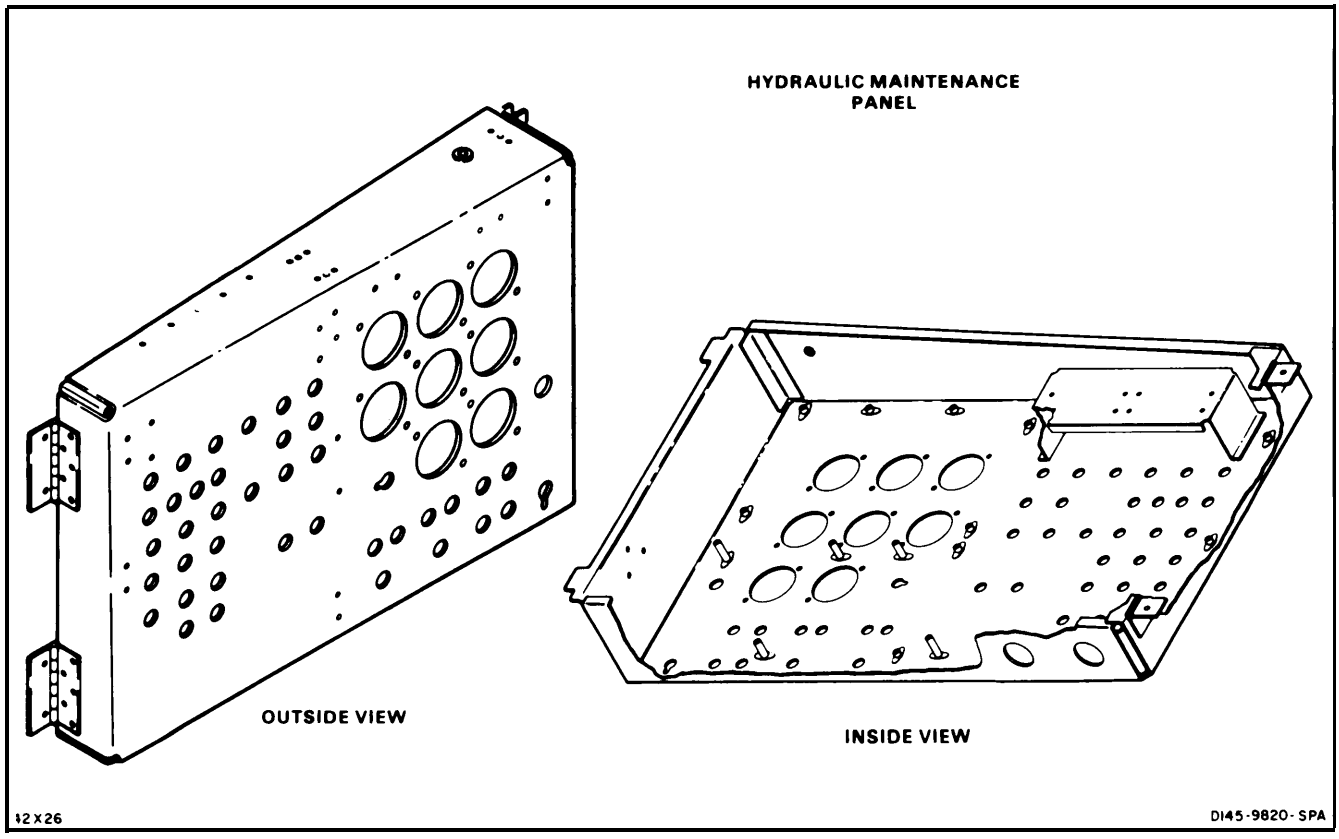
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Contact Insertion/Removal Tool M83723-31-20
Heat Gun

Materials:
Tape, Lacing (E403)
Tubing (E431)
Solder (E360)
Lockwire (E231)
Cloth (E120)

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P
TM 55-1520-240-10
TM 55-6600-200-20
TM 55-1500-323-25



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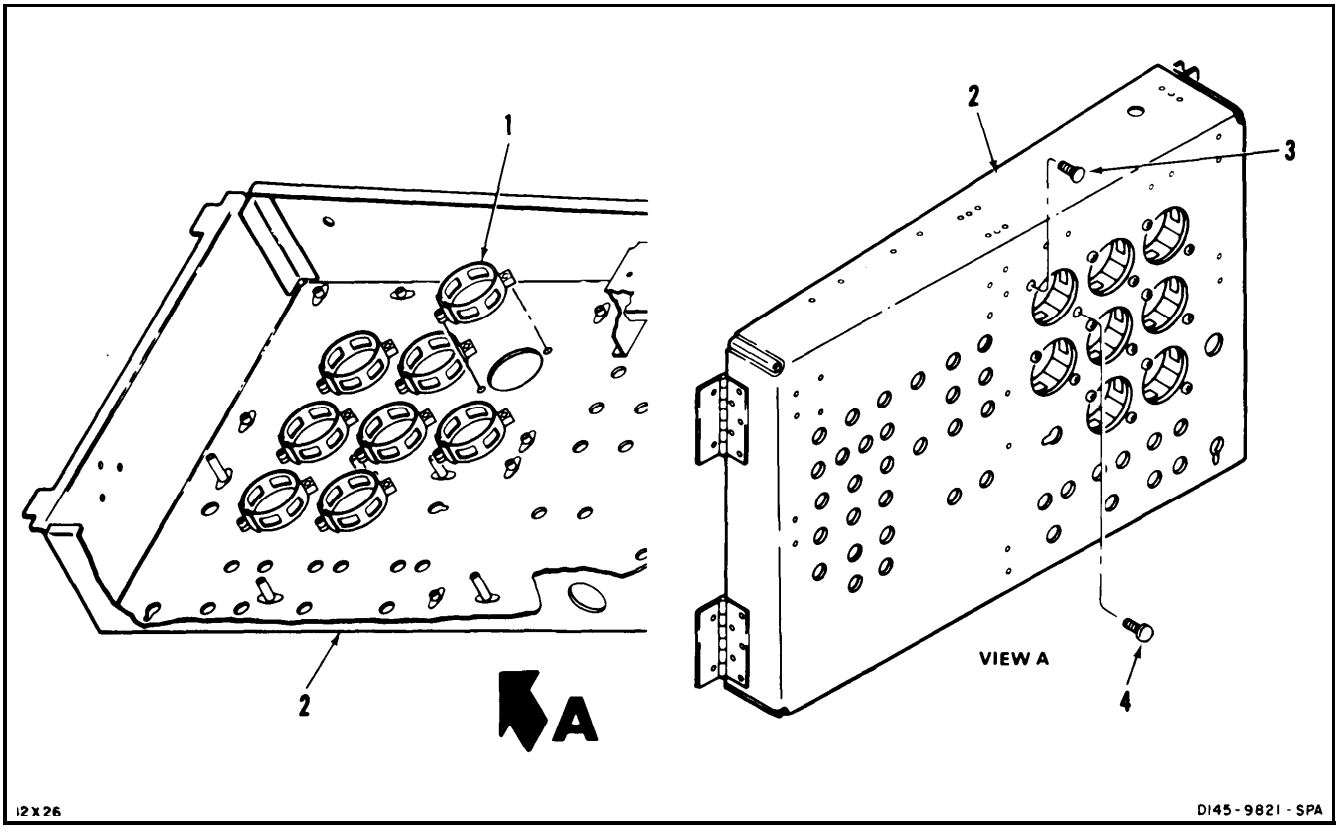
8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

NOTE

- Procedure is similar to install like components. Task contains 12 separate installations.
- Procedure is the same to install eight indicator mount clamps. Installation of No. 1 FLIGHT CONTROL HYDRAULIC PRESSURE INDICATOR mount clamp is shown here.

1. Install indicator mount clamp as follows:
   a. Remove tag and **position clamp (1)** in panel (2).
   b. **Install flathead retainer screw (3).**
   c. **Install round head clamp screw (4).** Do not tighten screw at this time.

INSPECT



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8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

NOTE

Procedures to install five terminal board mounting tracks are similar. Installation of TB1 is shown here.

2. Installation of TB1 mounting track is as follows:

   a. Remove tag and **position mounting track (5).** For TB1, numbers 1 through 10 must read left to right. For TB2 through TB5, numbers 1 through 10 must read bottom to top.

   b. **Install two screws (6)** and washers (7).

3. Install wire harness as follows:

   a. **Install all five clamps (8)** on wire harness (9).

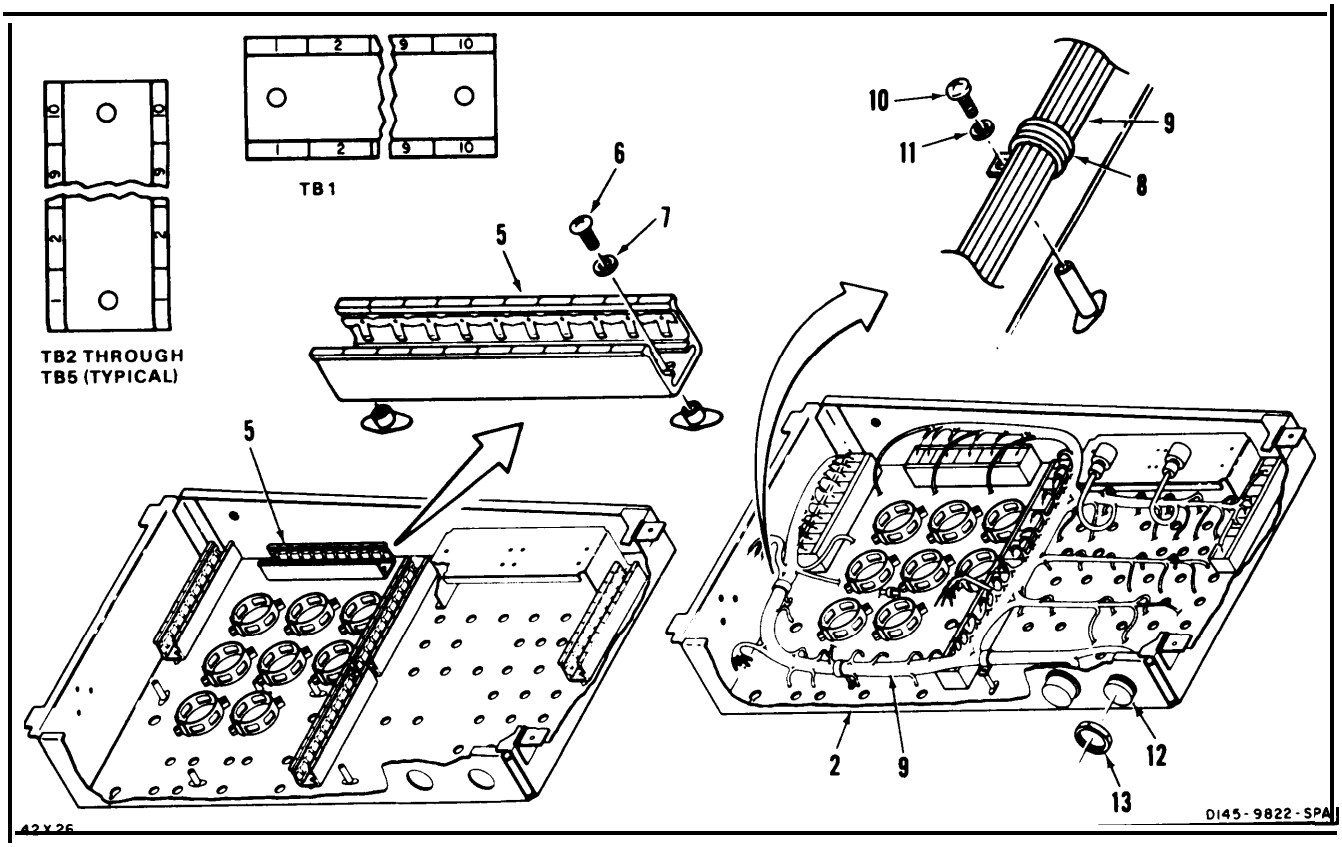
   b. **Position wire harness (9)** in panel (2).

   c. **Install five screws (10)** and washers (11).

   d. **Install wire harness receptacles (12)** in panel (2).

   e. **Install two nuts (13)** on receptacles (12). Lockwire nuts together. Use lockwire (E231).

INSPECT



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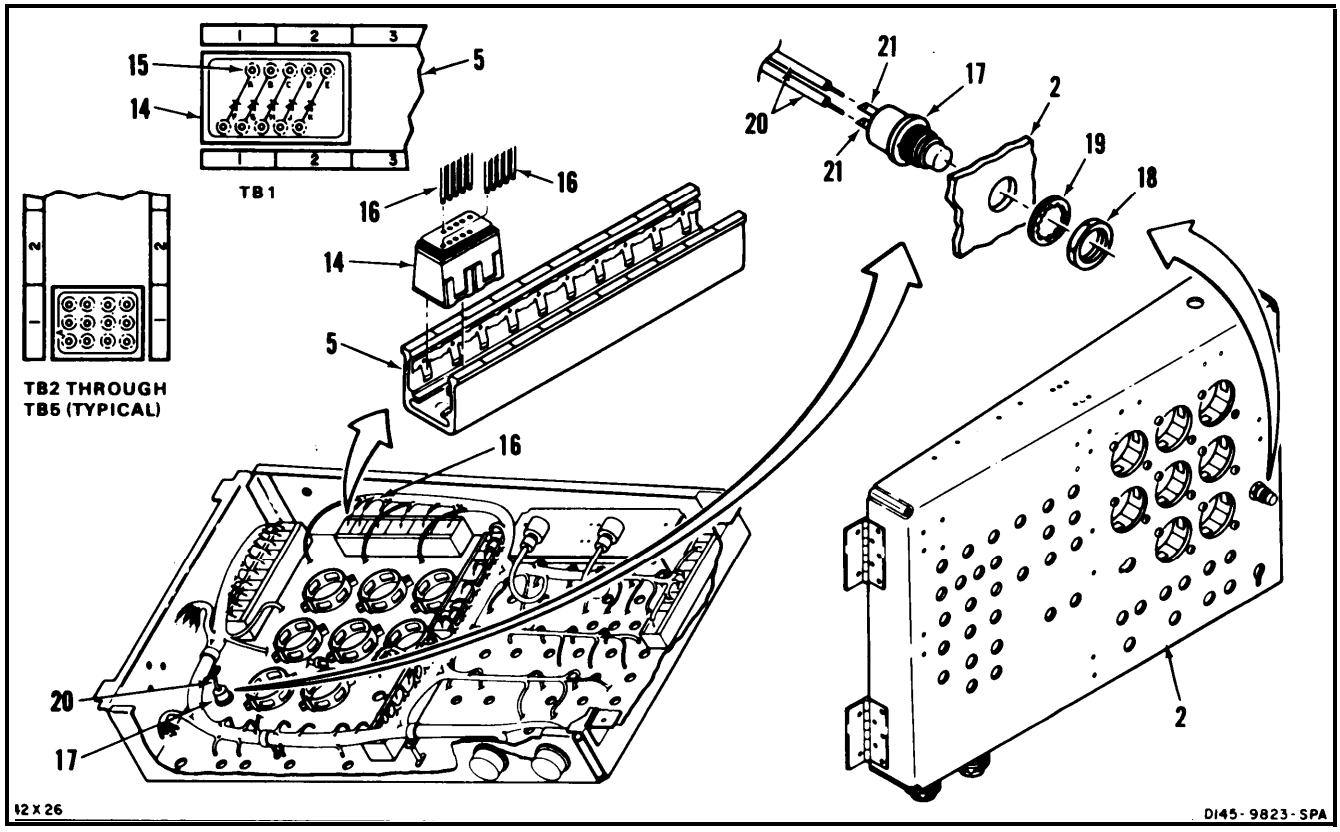
8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS (Contined)

NOTE

Procedure is the same to install 10 diode and 30 terminal modules. Installation of TB1-1/2 is shown here.

4. Install TB1-1/2 module as follows:
   a. **Install module (14)** in mounting track (5). Make sure A pin (15) location is at upper left. When installing modules in TB2 through TB5, make sure A pin location is at lower left.
   b. **Connect 10 wires (16)** to module (14). Use contact insertion/removal tool. Remove tags.
   c. Tie wires (16). Use lacing tape (E403) (TM 55-1500-323-25).
5. Install UTILITY HYDRAULIC RESERVOIR LEVEL check switch as follows:
   a. Remove tag and **install switch** (17) in panel (2) from inside.
   b. **Install nut (18)** and washer (19).
   c. Install tubing (E431) over wires (20).
   d. **Solder two wires (20)** to switch terminals (21). Use solder (E360). Remove tag.
   e. Slide tubing (E431) over switch terminals (21) and shrink with heat gun.
   f. Tie wires (20). Use lacing tape (E403) (TM 55-1500-323-25).



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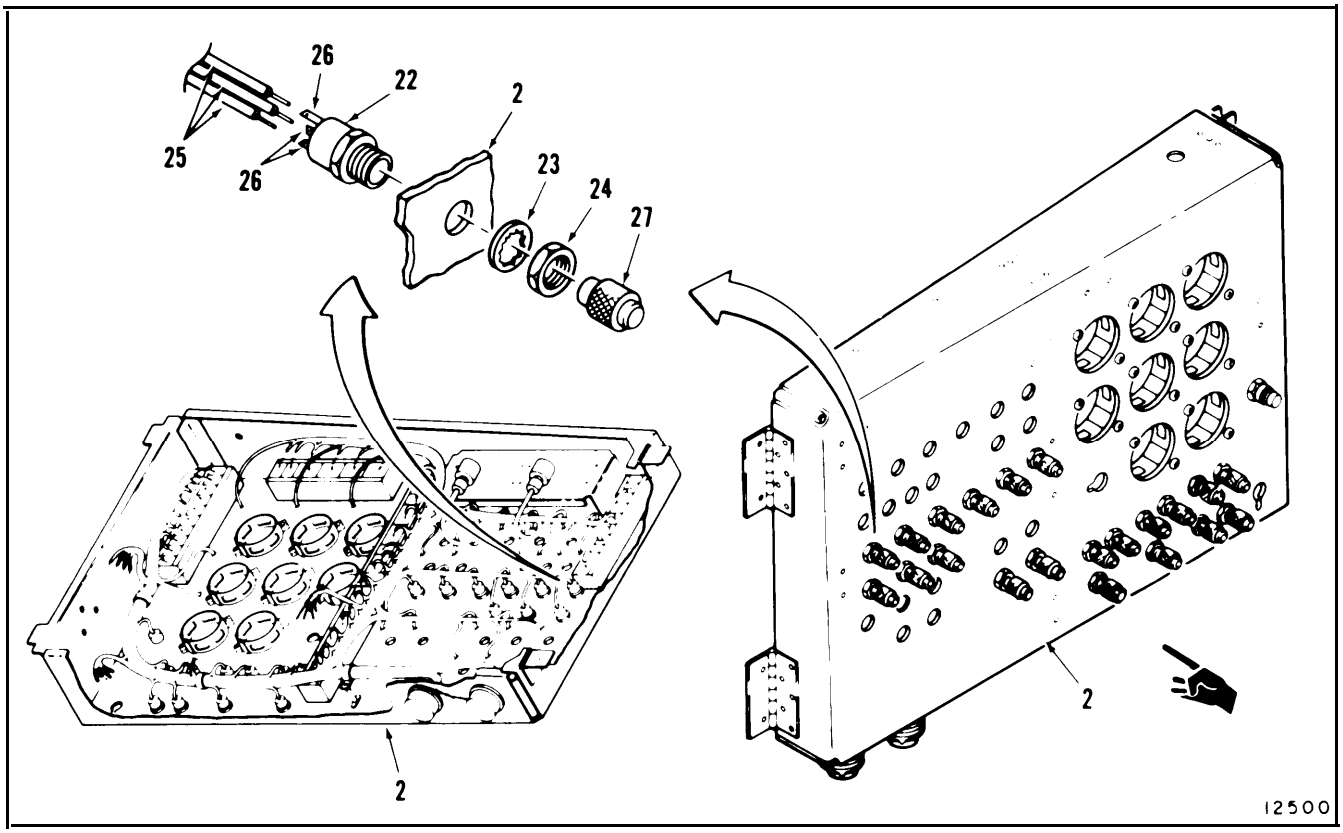
8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued) 8-101

NOTE

Procedure is the same to install the TRANSMISSION MAIN OIL and AUX OIL PRESS, FILTER CHANGE, PUMP FAULT, and, on helicopters with 25, GROUND CONTACT indicator lights. Installation of the FWD TRANSMISSION AUX OIL PRESS indicator light is shown here.

6. Install indicator light as follows:
   a. Remove tag and **install light base (22)** in panel (2) from inside.
   b. **Install lockwasher (23) and nut (24).**
   c. Install tubing (E431) over three wires (25).
   d. **Solder three wires (25)** to light terminals (26). Use solder (E360). Remove tags.
   e. Slide tubing (E431) over light terminals (26) and shrink with heat gun.
   f. Tie wires (25). Use lacing tape (E403) (TM 55-1500-323-25).
   g. **Install lens (27) on light base (22).**



8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

NOTE

Procedure is same to install GND RESET/TEST and FLIGHT CONTROL HYDRAULIC RESERVOIR LEVEL SELECT SWITCH. Installation of GND RESET/TEST SWITCH is shown here.

7. Install GND RESET/TEST SWITCH as follows:

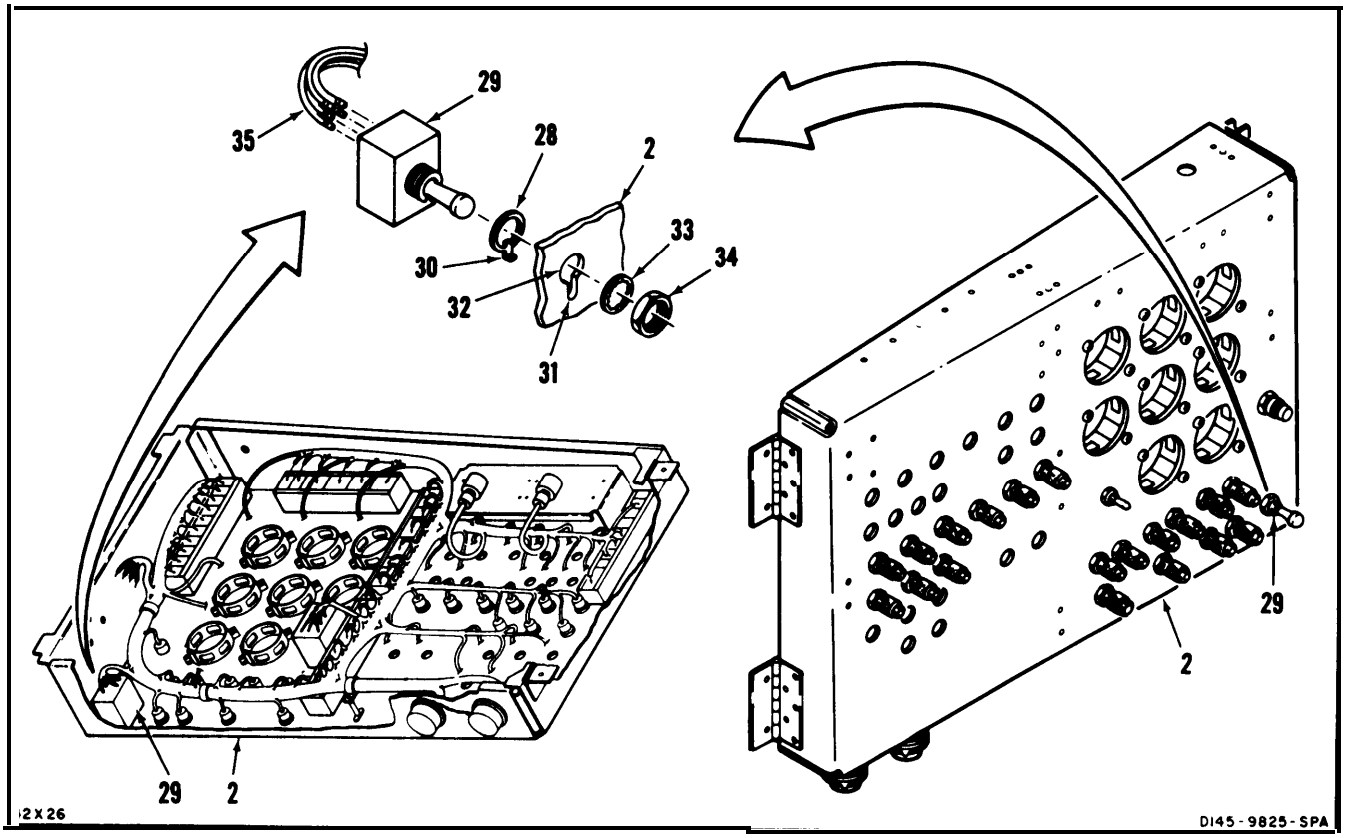
   a. **Install locking ring (28)** on switch (29). Make sure tab (30) of locking ring faces away from switch.

   b. Remove tag and **install switch (29)** in panel (2) from inside. Make sure that tab (30) of locking ring (28) is in locator notch (31) of switch mount hole (32).

   c. **Install lockwasher (33) and nut (34).**

   d. **Connect five wires (35).** Use contact insertion/removal tool. Remove tags.

   e. Tie wires (35), Use lacing tape (E403) (TM 55-1500-323-25).



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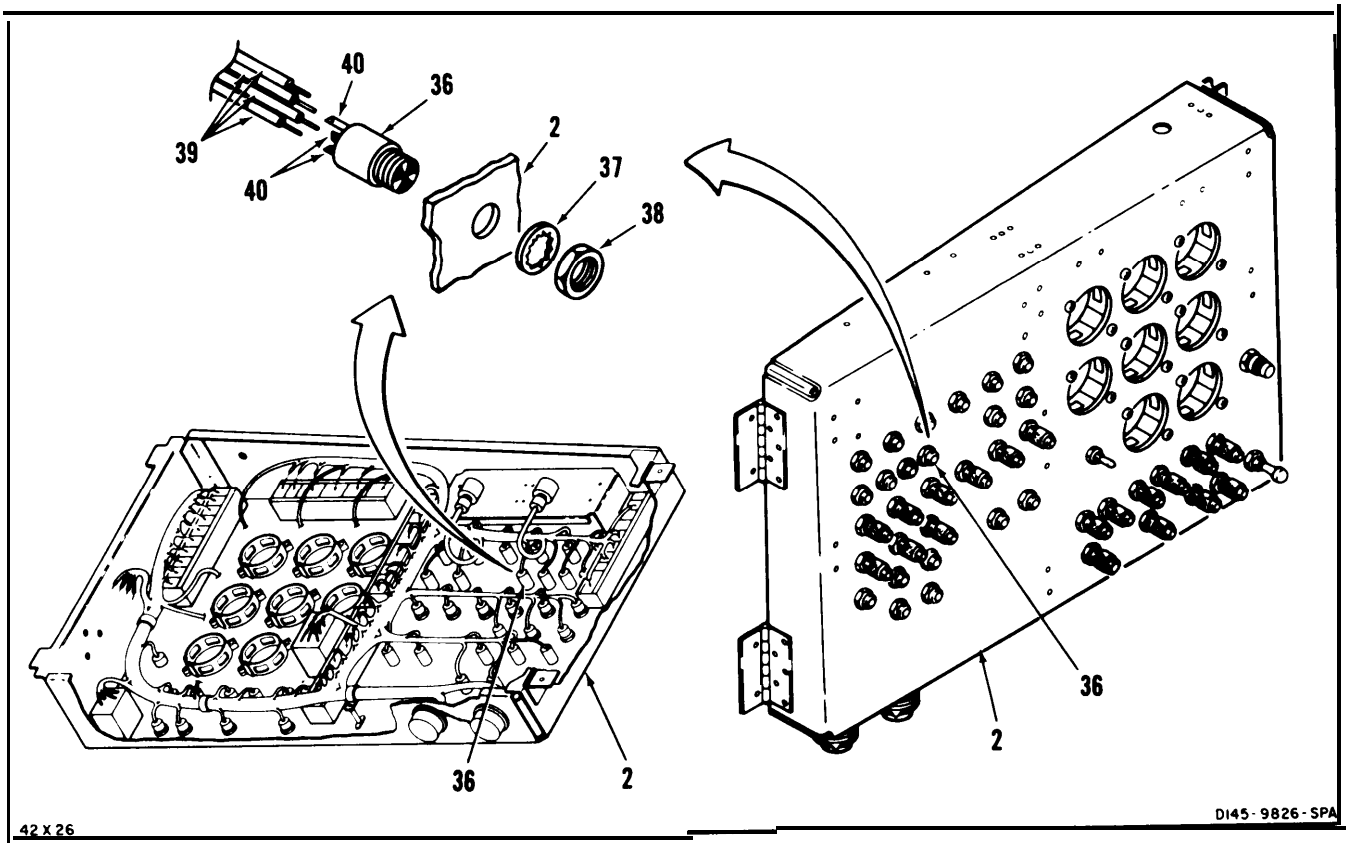
8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

NOTE

Procedure is the same to install TRANSMISSION CHIP DETECTOR, DEBRIS SCREEN, OVERTEMP, and ENGINE CHIP DETECTION INDICATORS. Installation of FORWARD TRANSMISSION CHIP DETECTOR INDICATOR is shown here.

8. Install FORWARD TRANSMISSION CHIP DETECTOR INDICATOR as follows:
   a. **Install indicator (36)** in panel (2) from inside.
   b. **Install lockwasher (37) and nut (38).**
   c. Install tubing (E431) over four wires (39).
   d. **Solder four wires (39)** to indicator terminals (40). Use solder (E360). Remove tags.
   e. Slide tubing (E431) over indicator for terminals (40) and shrink with heat gun.
   f. Tie wires (39). Use lacing tape (E403) (TM 55-1500-323-25).



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8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

NOTE

Procedure is the same to install HYDRAULIC PRESSURE TEMPERATURE and RESERVOIR LEVEL INDICATORS. Installation of No. 1 FLIGHT CONTROL HYDRAULIC PRESSURE INDICATOR is shown here.

9. Install No. 1 FLIGHT CONTROL HYDRAULIC PRESSURE INDICATOR as shown:

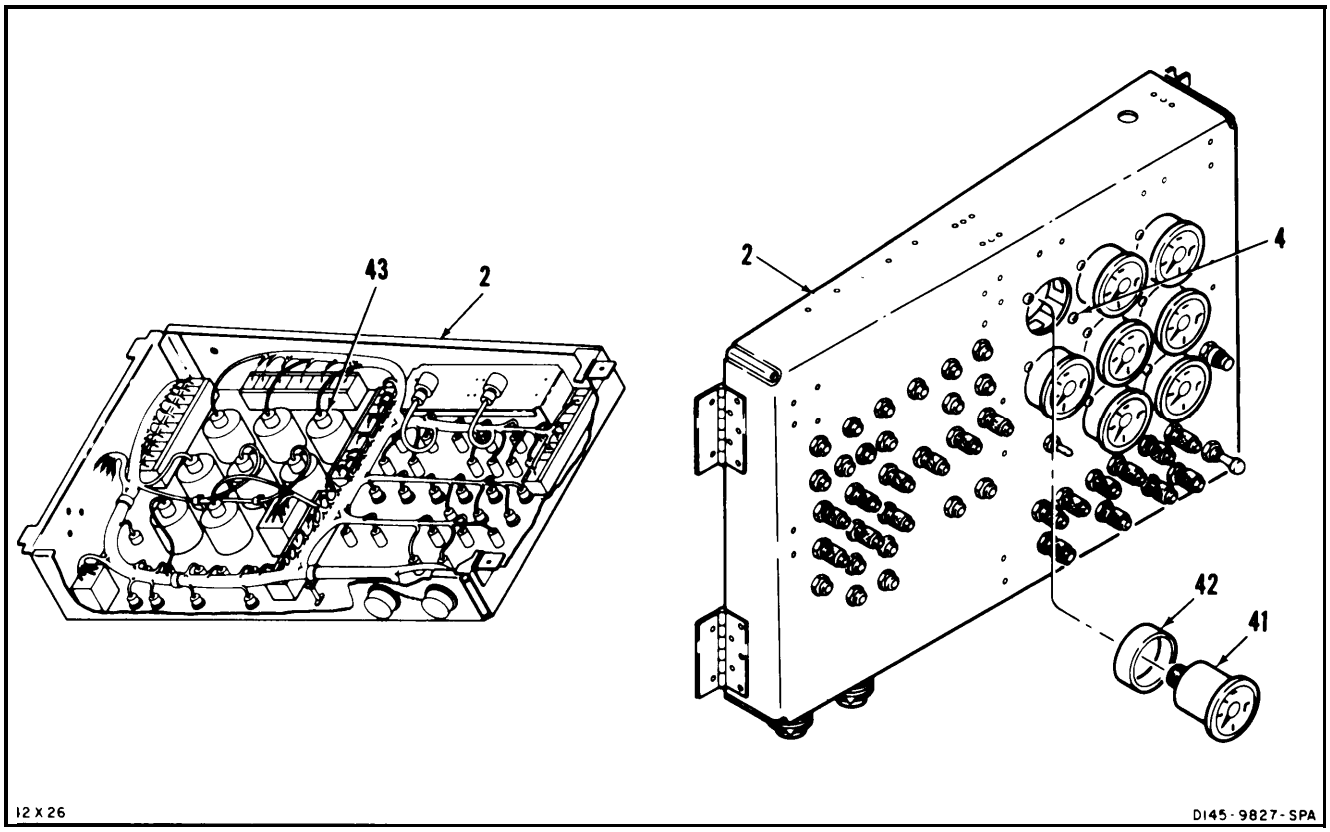
a. Clean bonding surface of indicator (41). Use cloth (E120).

b. **Install space (42)** on indicator (41).

c. Remove tag and **install indicator (41)** in panel (2) (TM 55-1520-240-10).

d. **Tighten** round head clamp **screw (4).**

e. **Connect electrical connector (43)** to indicator (41). Remove tag.



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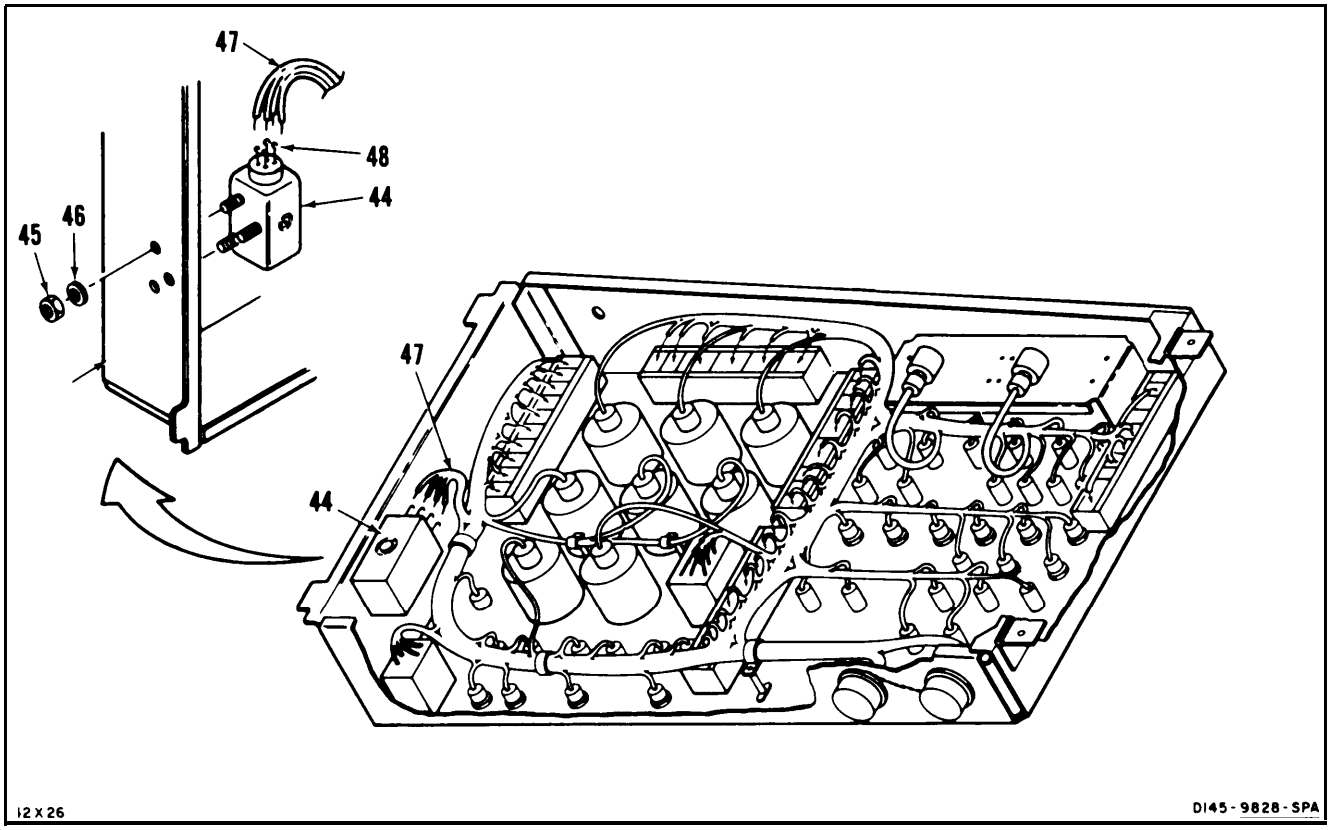
10. Install aft transmission low oil pressure time delay relay as follows:
    a. Remove tag and **install relay (44)** in panel (2).
    b. **Install three nuts (45) and washers (46).**
    c. Install tubing (E431) over four wires (47).
    d. **Solder four wires (47)** to relay terminals (48). Use solder (E360). Remove tags,
    e. Slide tubing (E368.1) over relay terminals (48) and shrink with heat gun.
    f. Tie wires (47), Use lacing tape (E403) (TM 55-1500-323-25).



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8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

NOTE

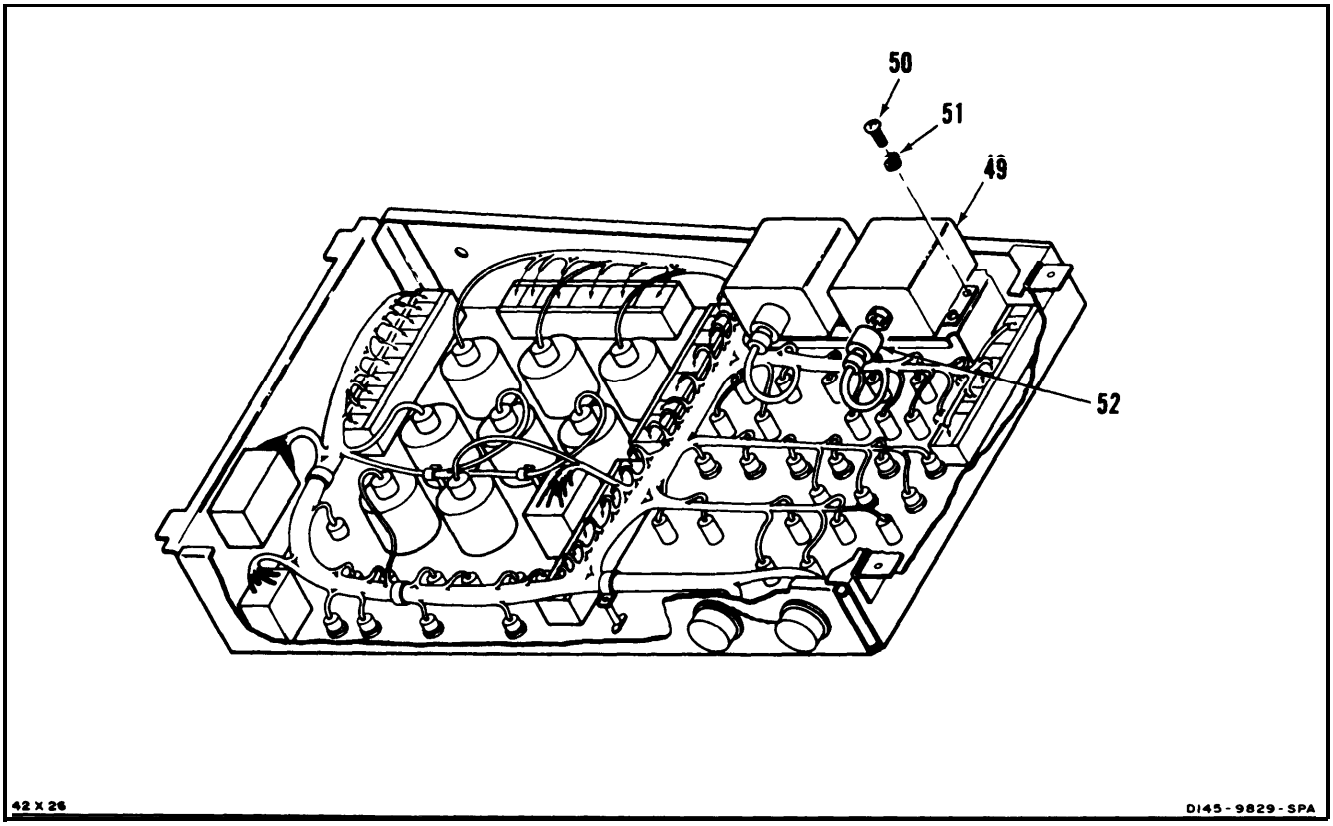
Procedure is the same to install UTILITY or No. 1/No. 2 FLIGHT CONTROL hydraulic system level SIGNAL CONDITIONER. Installation of UTILITY hydraulic system level SIGNAL CONDITIONER is shown here.

11. Install UTILITY hydraulic system level SIGNAL CONDITIONER as follows:

a. Clean bonding surfaces of signal conditioner (49). Use cloth (E120).

b. **Position signal conditioner (49) and install four screws (50)** and washers (51). Remove tag.

c. **Connect electrical connector (52)** to signal conditioner (49). Remove tag.



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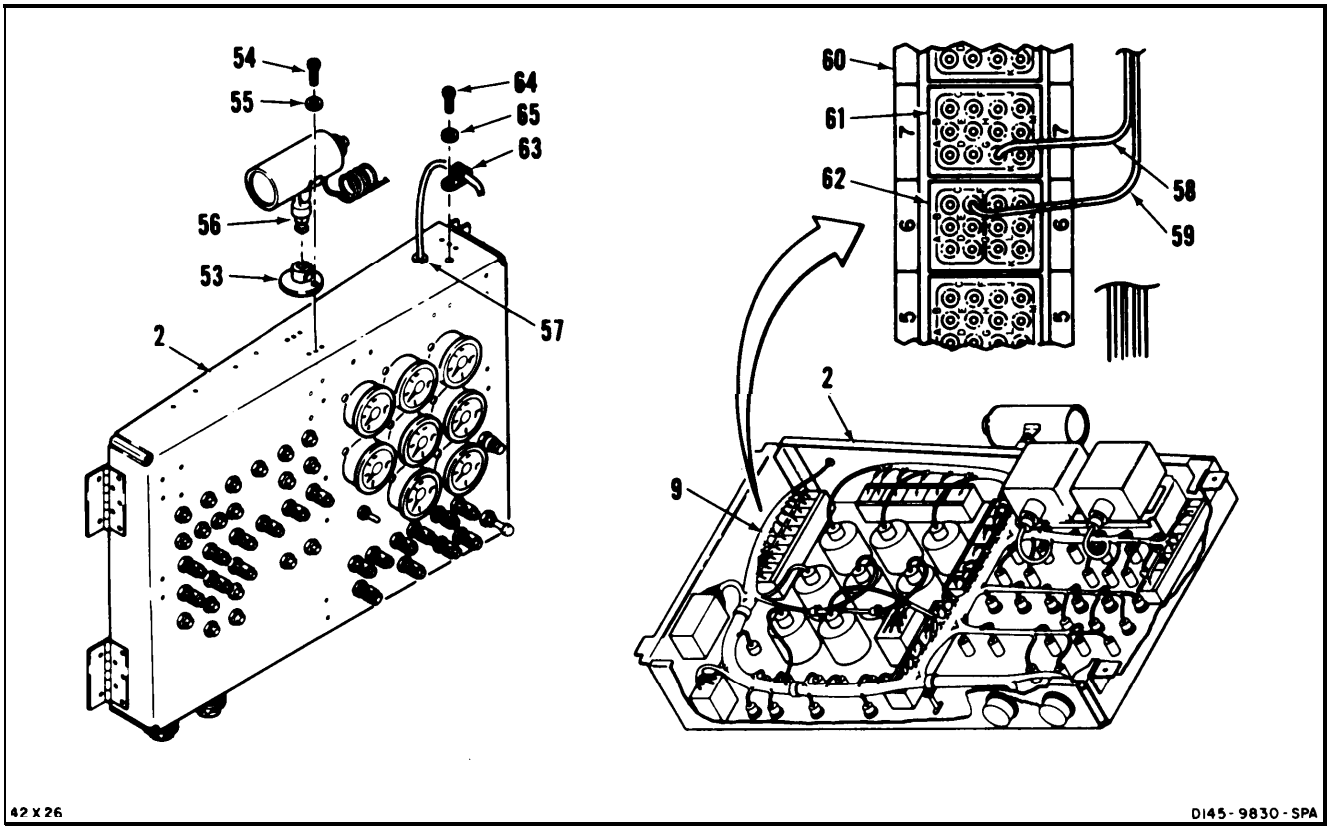
8-101 INSTALL HYDRAULIC MAINTENANCE PANEL COMPONENTS (Continued)

12. Install WORK LIGHT as follows:
    a. Remove tag and **position base (53)** on panel (2).
    b. **Install two screws (54)** and washers (55).
    c. **Install work light (56)** in base (53)
    d. **Install grommet (57)** in panel (2).
    e. Route two work light wires (58 and 59) through grommet (57).
    f. **Route black work light wire (58) to TB4 (60) module 7 (61). Insert wire into pin socket (7).** Use contact insertion/removal tool.
    g. **Route white work light wire (59) to TB4 (60) module 6 (62). Insert wire into pin socket F.** Use contact insertion/removal tool.
    h. **Position clamp (63) and install screw (64)** and washer (65).
    i. Tie work light wires (58 and 59) to wire harness (19). Use lacing tape (E403) (TM 55-1500-323-25).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-102 INSTALL HYDRAULIC MAINTENANCE PANEL 8-102

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Cloth (E120)
Dry Cleaning Solvent (E162)
Gloves (E186)

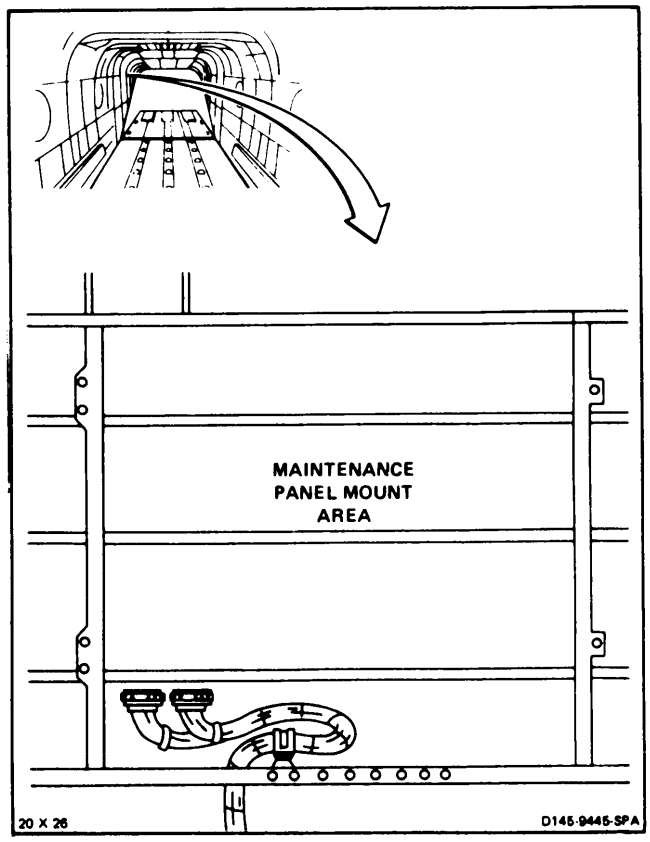
Personnel Required:
68F20 Aircraft Electrician
67U10 Medium Helicopter Repairer
67U30 Inspector

References:
TM 55-1520-240-23P

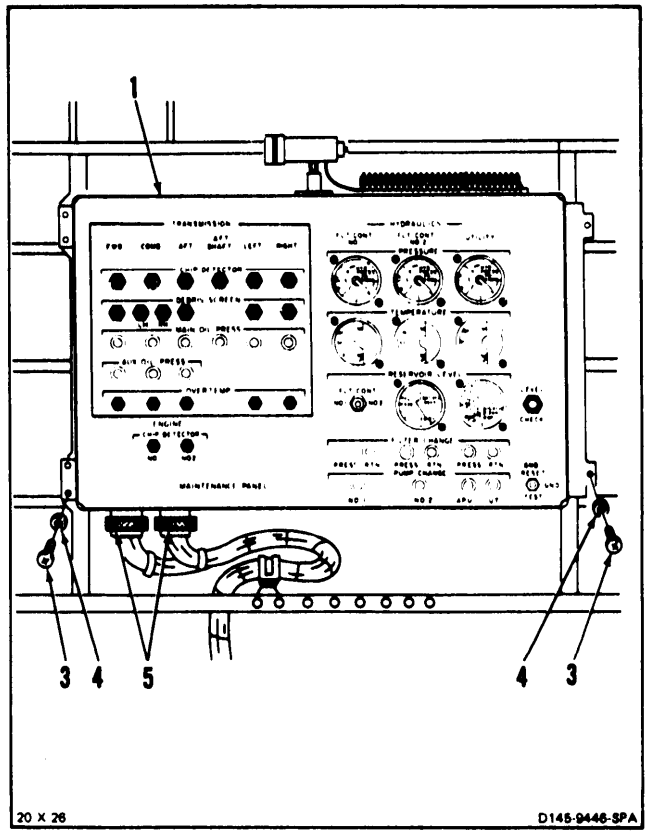
General Safety Instructions:

WARNING

Dry cleaning solvent (E162) is combustible and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



1. Clean bonding surfaces of maintenance panel (1). Use gloves (E186) and cloths (E120) (TM 55-1500-323-25).
2. **Position maintenance panel (1).** Have helper hold panel in position.
3. **Install six screws (3)** and washers (4).
4. **Connect two wire harness connectors (6).** Remove tags.



INSPECT

FOLLOW-ON MAINTENANCE:

Operational check of system (TM 55-1520-240-T).

END OF TASK

8-103 REMOVE PILOT'S INSTRUMENT PANEL

INITIAL SETUP

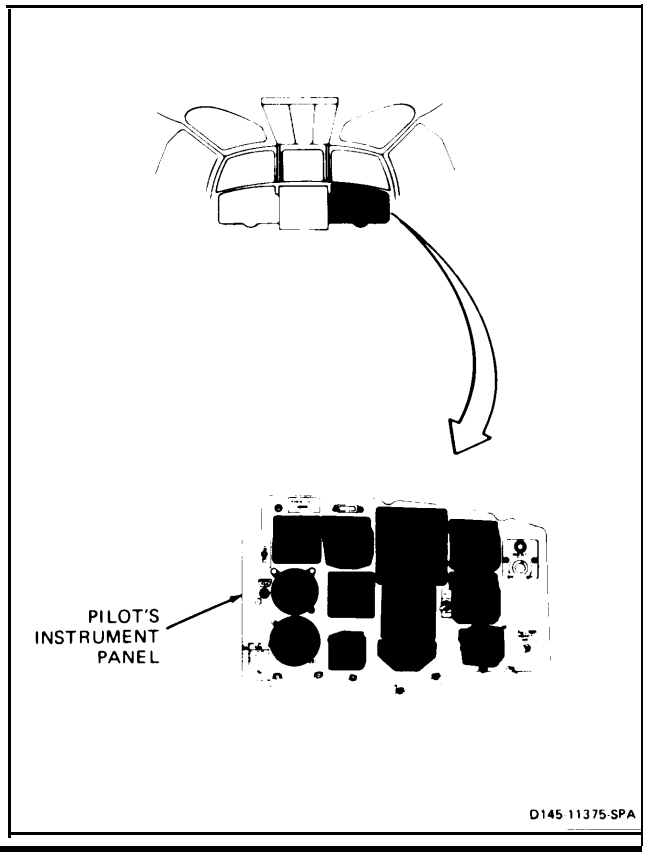
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool M83723-31-20

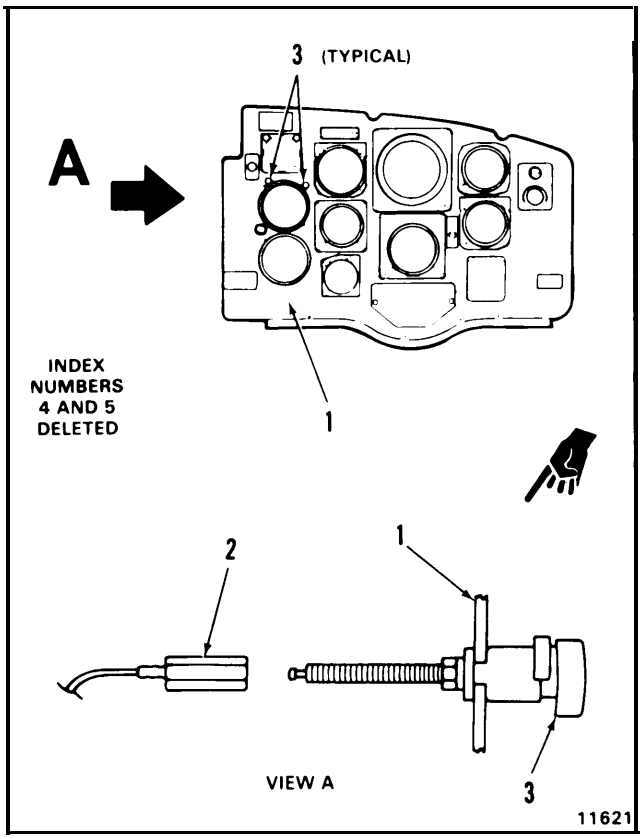
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Remove Emergency Power Light (Task 8-3)
Remove Clock (Task 8-92)
Remove Clamp Mounted Instruments on Pilot's Panel (Task 8-88)
Remove Flange Mounted Instruments on Pilot's Panel (Task 8-90)
Remove Turn and Slip Indicator (Task 8-44)
Remove Radar Altimeter (TM 11-1520-240-20)



1. Without 17, reach behind panel (1), tag and **disconnect wire (2)** from each postlight (3). Use tags E264. Tape wire ends with E385.
2. **With** 17 tag and **unscrew wire (2)** from each postlight (3). Tape screw thread ends. Use tape E385.



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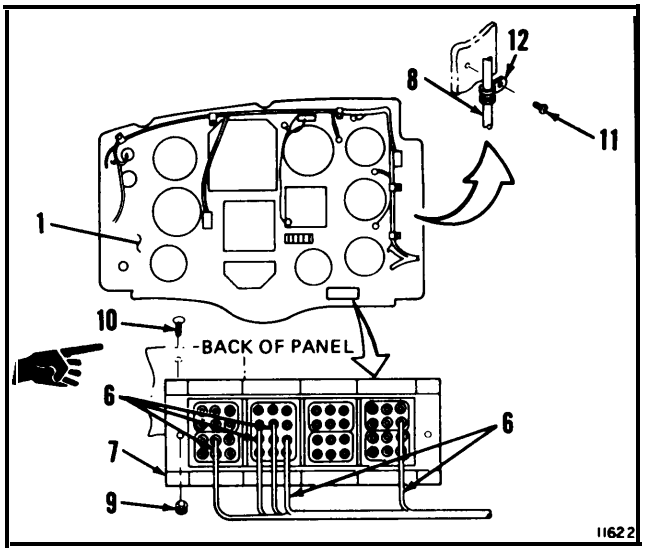
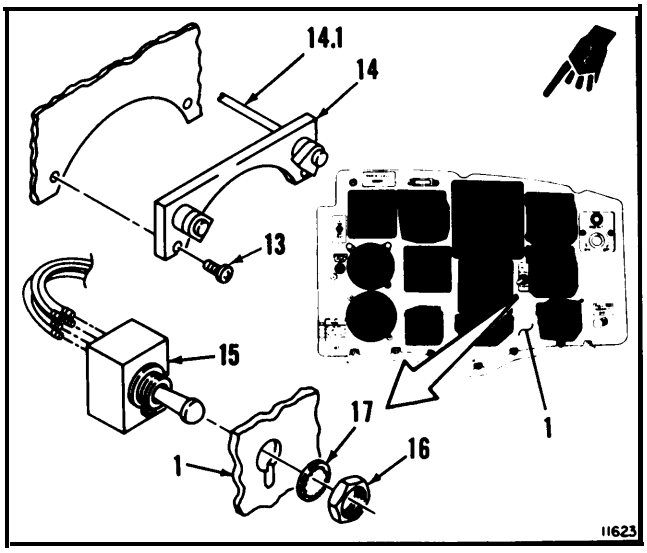
3. **Disconnect five wires (6)** from TB2 (7). Use contact insertion/removal tool.
4. Remove five wires (6) from wire harness (8).
5. **Remove module directly above each nut (9).** Use module extraction tool. Remove two screws (10), nuts (9) and **TB2 (7).**
6. Remove four screws (11) from four clamps (12).
7. **Move wire harness (8)** away from panel (1).



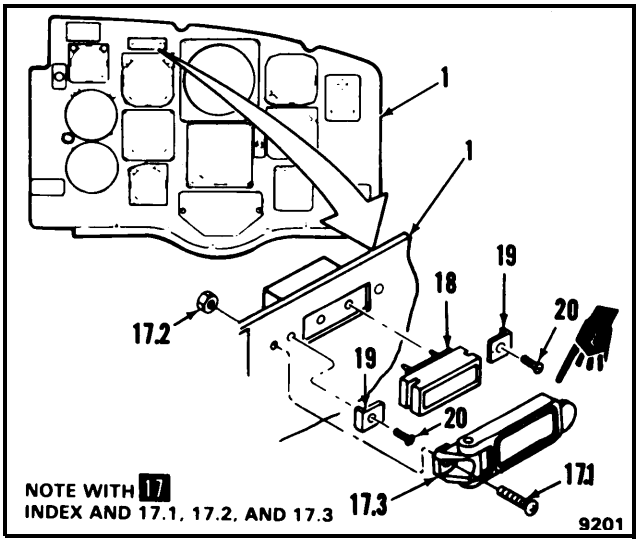
NOTE

Helicopters without q have three light fixtures. Helicopters with 17 have four light fixtures.

8. Remove two screws (13) from each light fixture (14). **Remove fixture** by cutting wire (14.1) and pulling end through panel (1). Tag fixture.
9. **Remove each of two switches (15)** by removing nut (16) and washer (17). Push switch through instrument panel (1).



10. With 17. Remove screw (17.1), nut (17.2), and filter cap (17.3).
11. **Remove light (18)** from two clips (19). **Remove** two screws (20) and two **clips** from panel (1).



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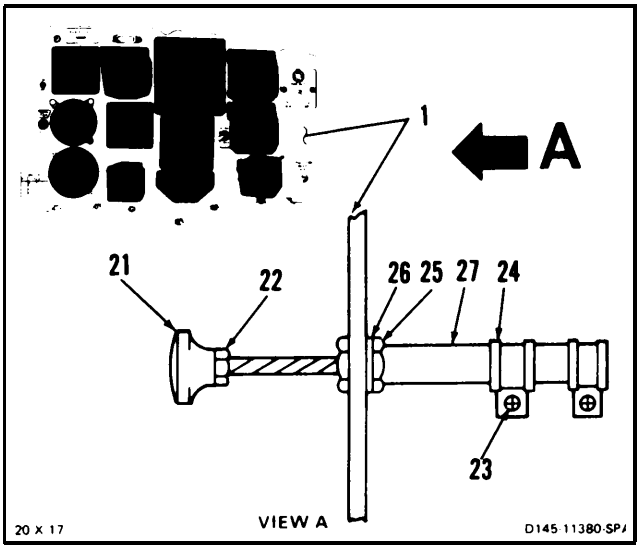
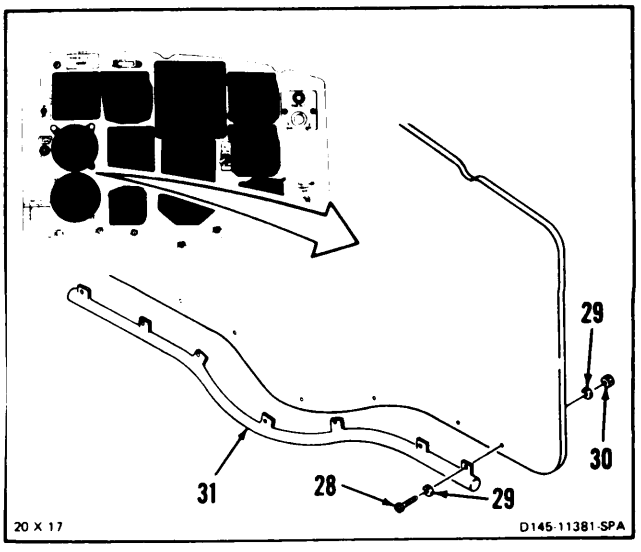
8-103 REMOVE PILOT'S INSTRUMENT PANEL (Continued) 8-103

12. **Remove knob (21) and nut (22).**

13. Loosen screw (23) on clamp (24). Loosen nut (25) and washer (26). **Slide tub (27) through panel (1).**



14. **Remove** 7 screws (28), 14 washers (29), 7 nuts (30), and **pad (31).**



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15. Without 17 **remove lens (32)** and lamp (33).

15.1 Loosen two setscrews (34) and **remove knob (35).**

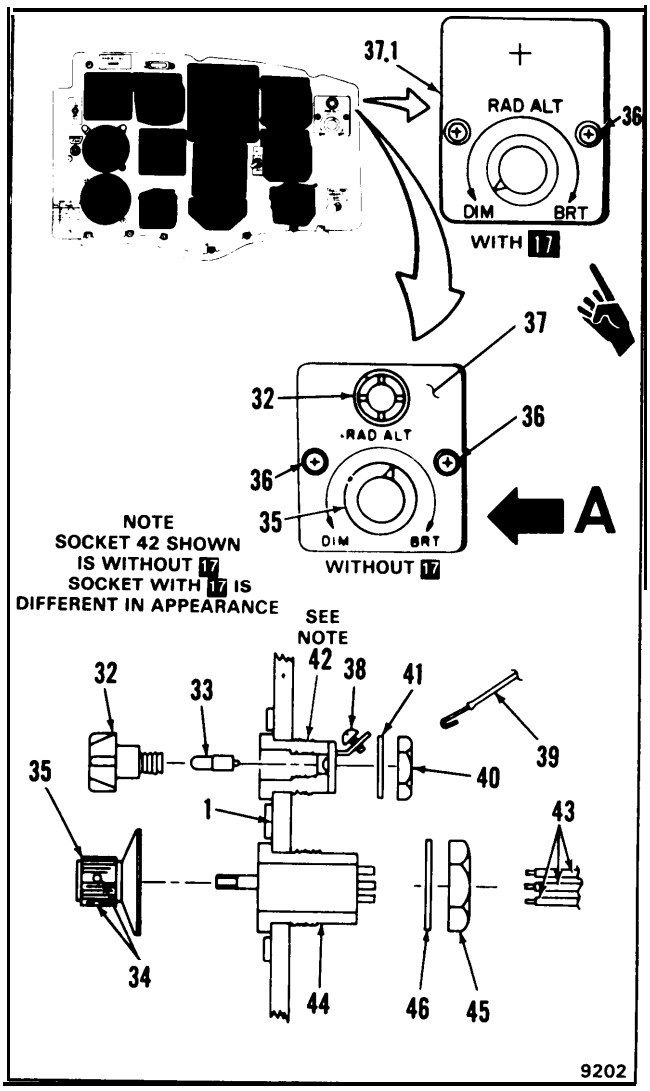
16. Remove two screws (36) and **remove panel (37) or (37.1).**

17. Loosen screw (38) and **remove wire (39).** Tape exposed end of wire. Use tape (E385).

18. **Remove** nut (40), washer (41) and **socket (42)** from panel (1).

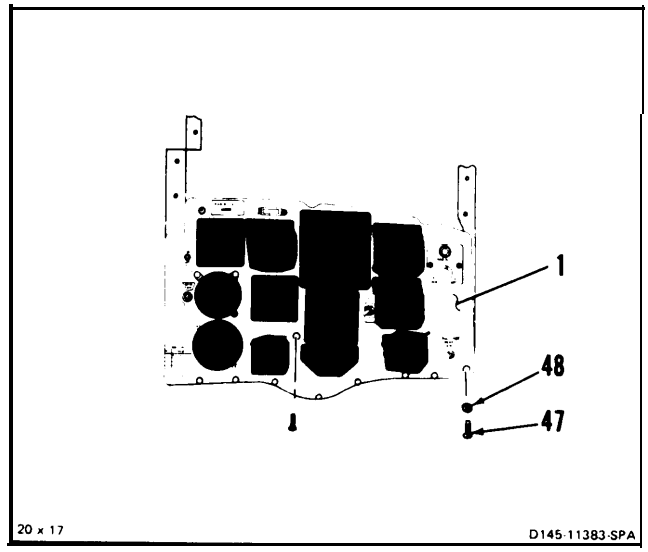
19. Tag and **disconnect three wires (43)** from rheostat (44). Tape exposed end of wire. Use tape (E385).

20. **Remove** nut (45), washer (46), and rheostat (44) from panel (1).



21. **Remove nine screws (47) and washers (48).**

22. **Remove panel (1).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-104 INSTALL PILOT'S INSTRUMENT PANEL

INITIAL SETUP

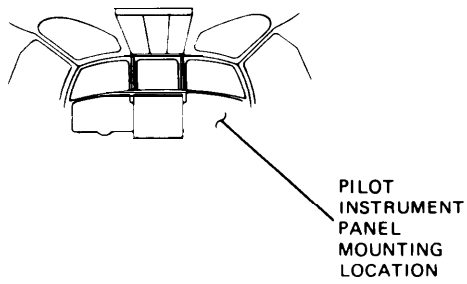
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool M83723-31-20

Materials:
None

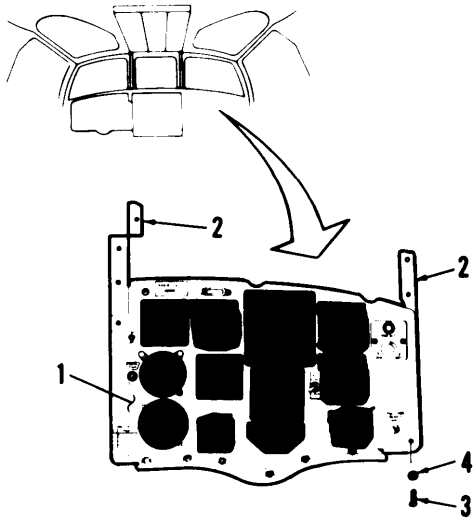
Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25



20 x 26 D145-11384-SPA

1. Position panel (1) on mounting brackets (2). **Install nine screws (3)** and washers (4).



20 x 26 D145-11385-SPA

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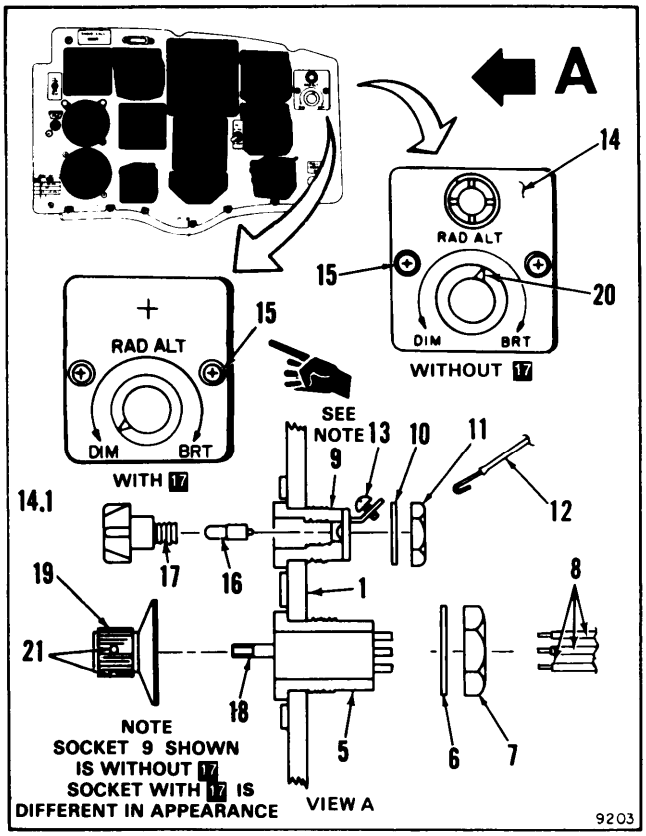
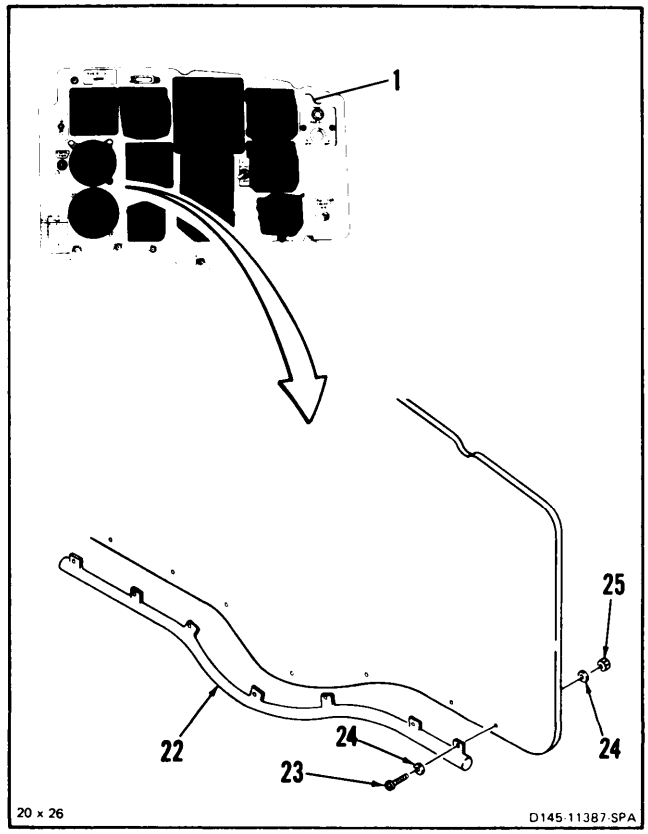
8-104 INSTALL PILOT'S INSTRUMENT PANEL (Continued) 8-104

2. **Position rheostat (5)** in panel (1). **install washer (6) and nut (7)** on rheostat. Remove tape and **connect three wires (8)** to rheostat (5). Remove tags.
3. Position socket (9) in panel (1). **Install washer (10) and nut (11)** on socket.
4. Remove tape and **connect wire (12)** to socket (9). **Tighten screw (13).**
5. **Position panel (14) or 14.1. Install two screws (15).**
6. Without 17 **Install lamp (16) and lens (17)** in socket (9).
7. Turn rheostat shaft (18) to left. **Position knob (19) on shaft (18)** so pointer (20) is on DIM. **Tighten two setscrews (21).**



8. **Position pad (22)** on panel **(1). Install 7 screws (23), 14 washers (24), and 7 nuts (25).**



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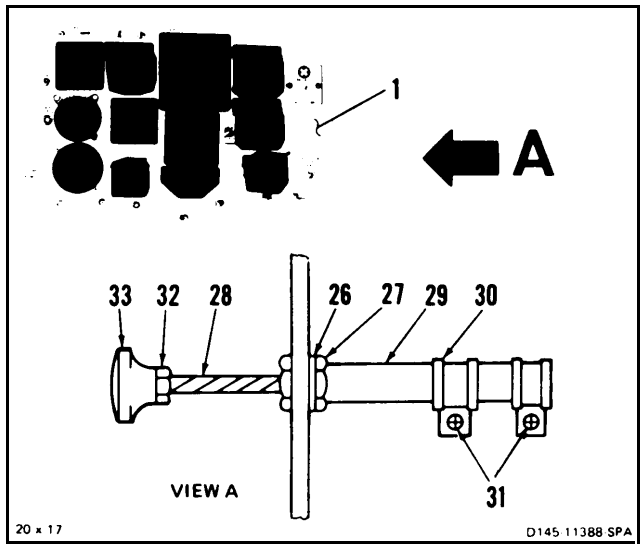
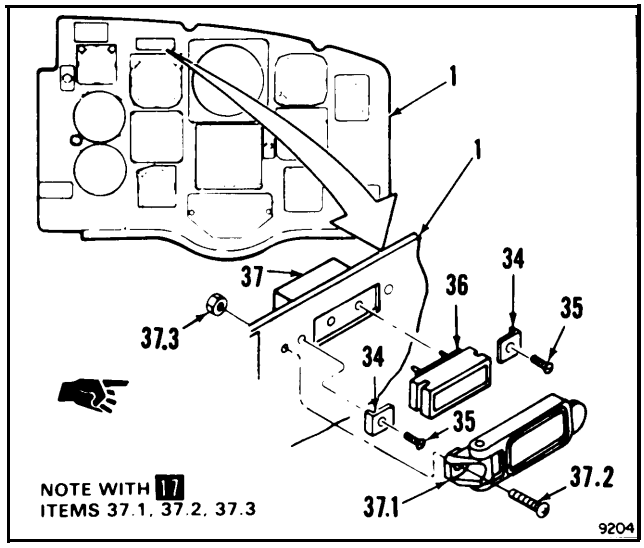
9. Position washer (26) and nut (27) on wire (28).
10. **Thread wire (28)** through tube (29) and slide tube through panel (1) into clamps (30).
11. Install washer (26) and nut (27) on tube (29). **Tighten screws (31)** on clamps (30).
12. **Install nut (32) and knob (33) on wire (28).**



13. **Position two clips (34)** on panel (1). **install two screws (35). Install light (36)** between two clips. Make sure light plugs into socket (37).

13.1 With 17. Position filter cap (37.1) on panel (1). Install screw (37.2) and nut (37.3).

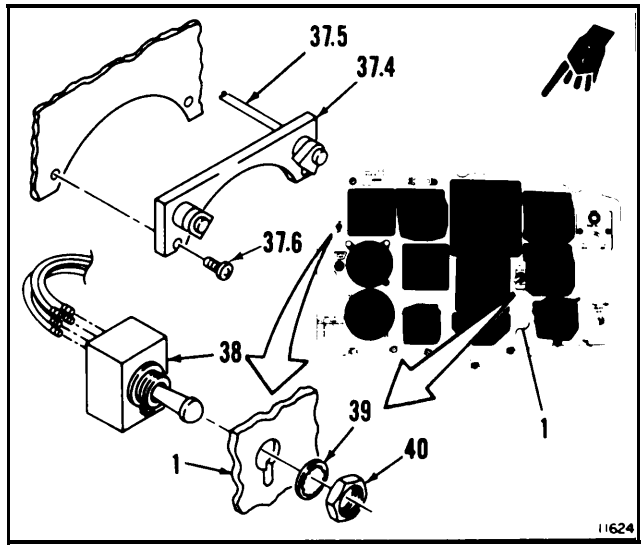


NOTE

Helicopters without 17 have three light fixtures on pilot's panel. Helicopters with 17 have four light fixtures.

13.2 **Install each light fixture (37.4)** by threading wire (37.5) through hole in panel (1). Install two screws (37.6). **Splice wire behind panel** (TM 55-1500-323-25).

14. **Position each of two switches (38)** in panel (1). **Install washer (39) and nut (40).**



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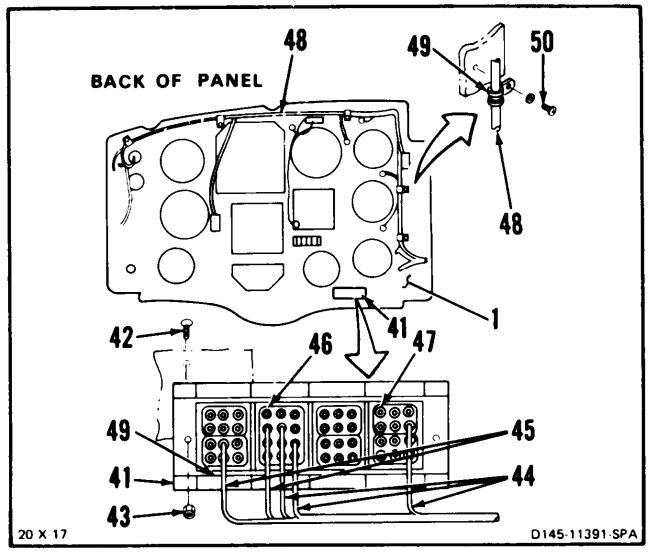
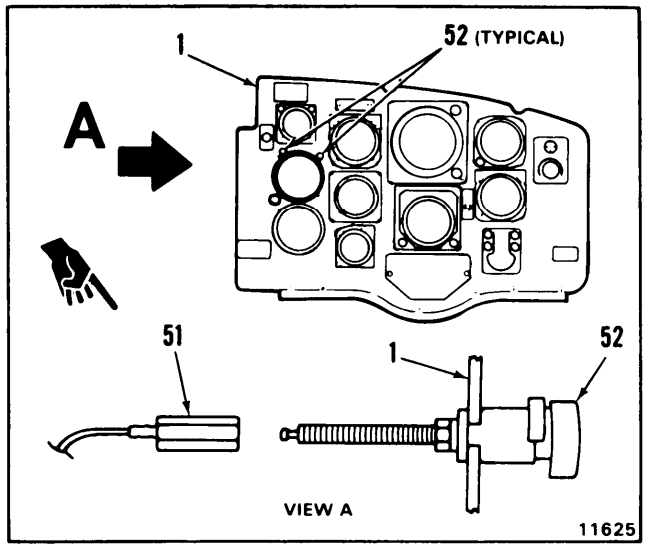
15. **Position TB2 (41)** on panel (1). **Install two screws (42) and nuts (43). Install module directly above each nut.**
16. Remove tape and insert three wires (44) and two wires (45) through holes in panel (1).
17. **Install three wires (44) in module (46) and two wires (45) in module (47).** Use contact insertion/removal tool.
18. Install five wires (44 and 45) in wire harness (48). **Position wire harness** on panel (1).
19. **Install four clamps (49)** with four screws (50).



20. **Without 17,** reach behind pane (1) and **connect wire (51) to each postlight assembly (52).**
21. With **17,** reach behind panel (1) and **screw wire (51) to each postlight assembly (52).**

INSPECT



FOLLOW-ON MAINTENANCE:

Install radar altimeter (TM 11-1520-240-20).

Install turn and slip indicator (Task 8-45).

Install flange mounted instruments on pilot panel (Task 8-91).

Install clamp mounted instruments on pilot panel (Task 8-89).

Install clock (Task 8-93).

Install emergency power light (Task 8-4).

Perform operational check of affected systems (TM 55-1520-240-T).

END OF TASK

8-105 REMOVE COPILOT'S INSTRUMENT PANEL 8-105

INITIAL SETUP

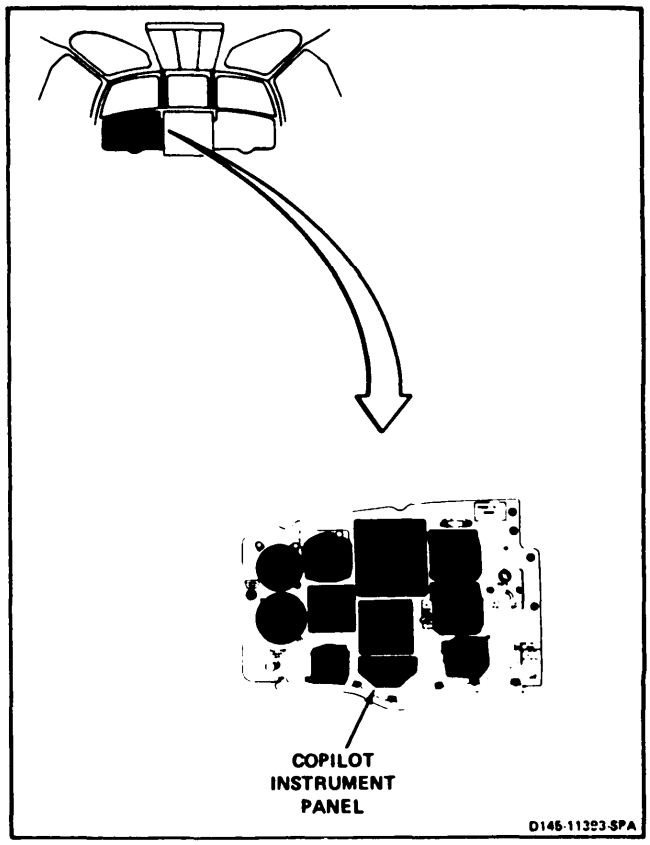
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool M83723-31-20

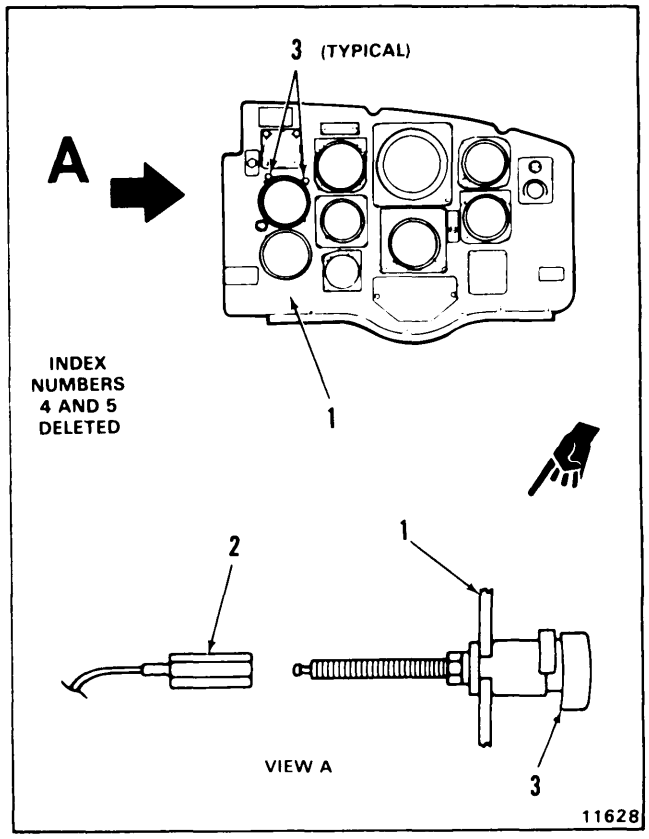
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Remove Emergency Power Light (Task 8-3)
Remove Clock (Task 8-92)
Remove Clamp Mounted Instruments on Copilot's Panel (Task 8-88)
Remove Flange Mounted Instruments on Copilot's Panel (Task 8-90)
Remove Turn and Slip Indicator (Task 8-44)
Remove Radar Altimeter (TM 11-1520-240-20)



1. Without 17 , reach behind panel (1), tag and **disconnect** wire (2) from each postlight (3). Use tags E264. Tape wire ends with E385.
2. With 17, tag and unscrew wire (2) from each postlight (3). Tape screw thread ends.



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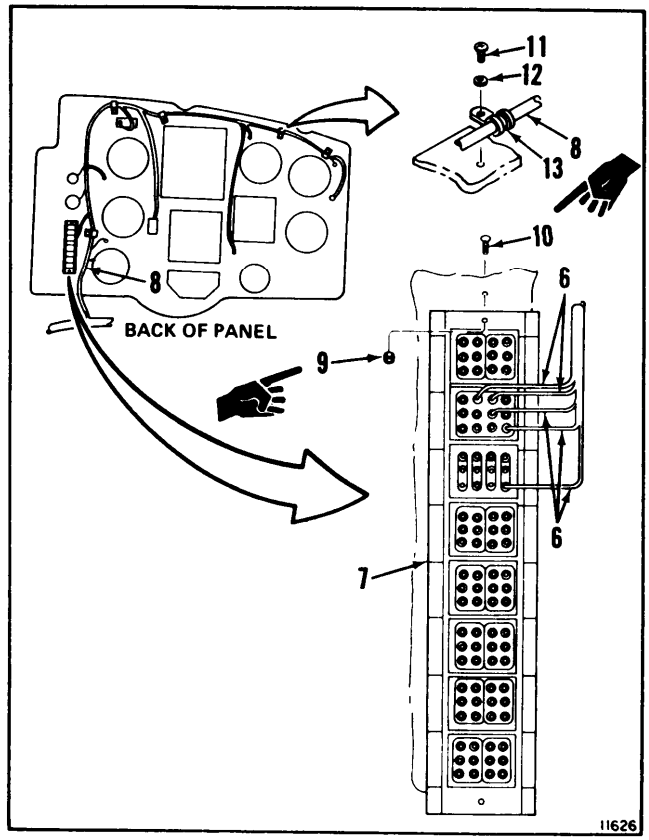
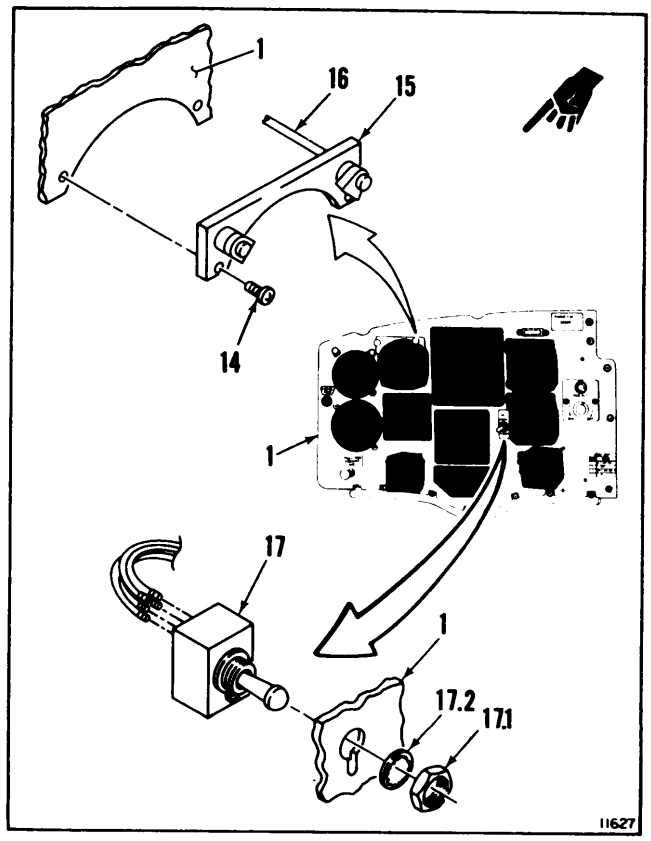
3. **Disconnect five wires (6)** from TB1 (7). Use contact insertion/removal tool.
4. **Remove** five **wires (6)** from wire harness (8).
5. **Remove module** directly above each nut (9), **Remove** two screws (10), nuts (9), and **TB1 (7).**
6. **Remove** five screws (11), washers (12), and **clamps (13).**
7. Move wire harness (8) away from panel (1).



NOTE

Helicopters without 17 have three light fixtures. Helicopters with 17 have four light fixtures.

8. Remove two screws (14) from each light fixture (15). **Remove fixture** by cutting wire (16) and pulling end through panel (1). Tag wire.
9. **Remove each of two switches (17)** by removing nut (17.1) and washer (17.2). Push switch through instrument panel (1).



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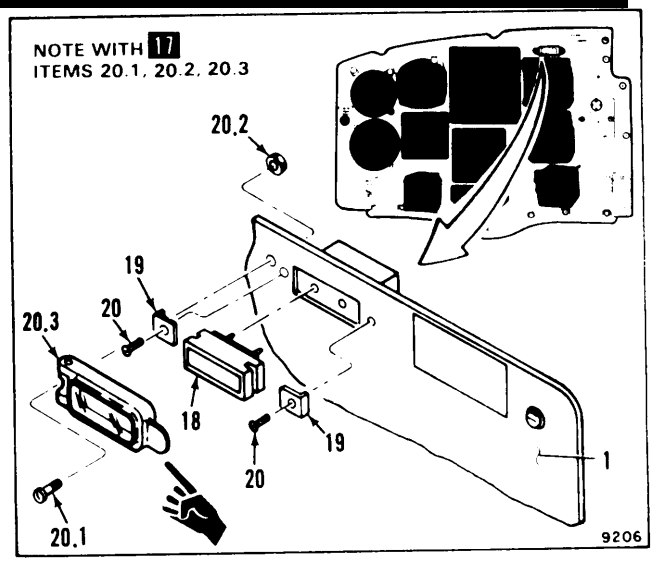
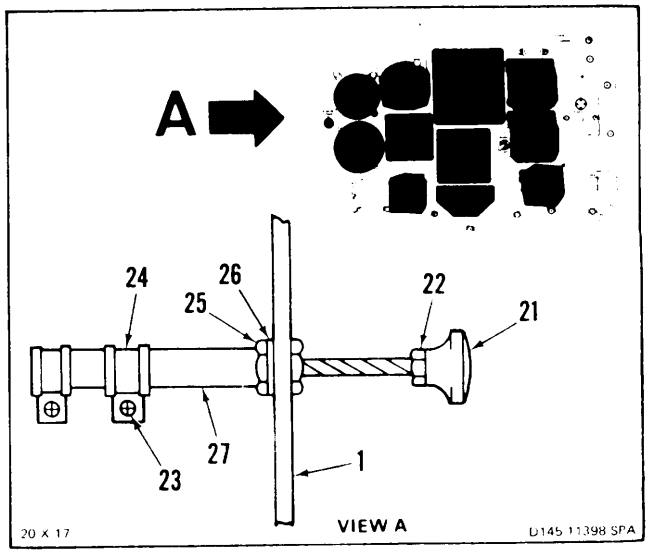
8-105 REMOVE COPILOT'S INSTRUMENT PANEL (Continued)

10. **Remove light (18)** from two clips (19).
11. Remove two screws (20) **and two clips,** from panel (1).

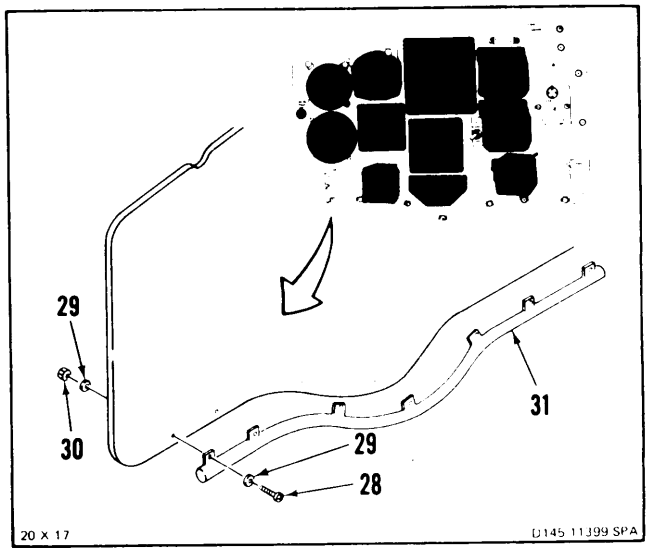
11.1 With 17. Remove screw (20.1) nut (20.2) and filter cap (20.3)



12. **Remove knob (21)** and nut (22).
13. Loosen screw (23) on clamp (24). Loosen nut (25) and washer (26). **Slide tube (27) through panel (1).**



14. **Remove** seven screws (28), 14 washers (29), seven nuts (30), and **pad (31).**



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15. Without 17.**Remove** lens (32) and lamp (33).

15.1 Loosen two setscrews (34) and **remove knob (35).**

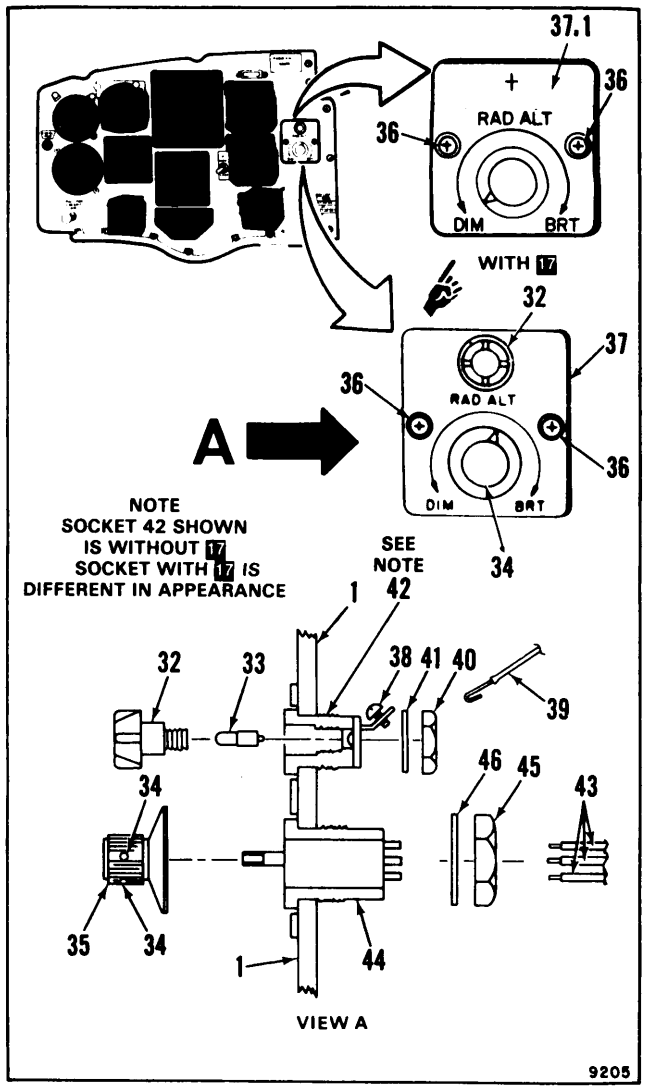
16. Remove two screws (36) and **remove panel (37) or (37.1).**

17. Loosen screw (38) and **remove wire (39).** Tape exposed end of wire. Use tape (E385).

18. **Remove** nut (40), washer (41), and **socket (42)** from panel (1).

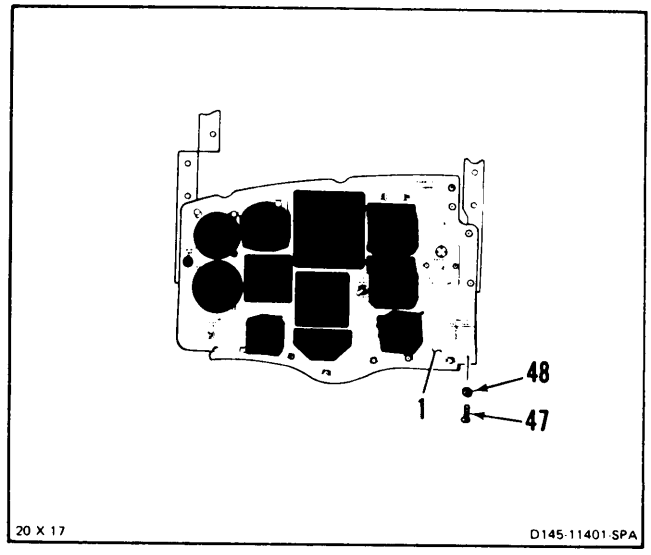
19. Tag and **disconnect three wires (43)** from rheostat (44). Tape exposed end of wire. Use tape (E385).

20. **Remove** nut (45), washer (46), and **rheostat (44)** from panel (1).



21. **Remove nine screws (47)** and washers (48).

22. **Remove panel (1).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-106 INSTALL COPILOT'S INSTRUMENT PANEL 8-106

INITIAL SETUP

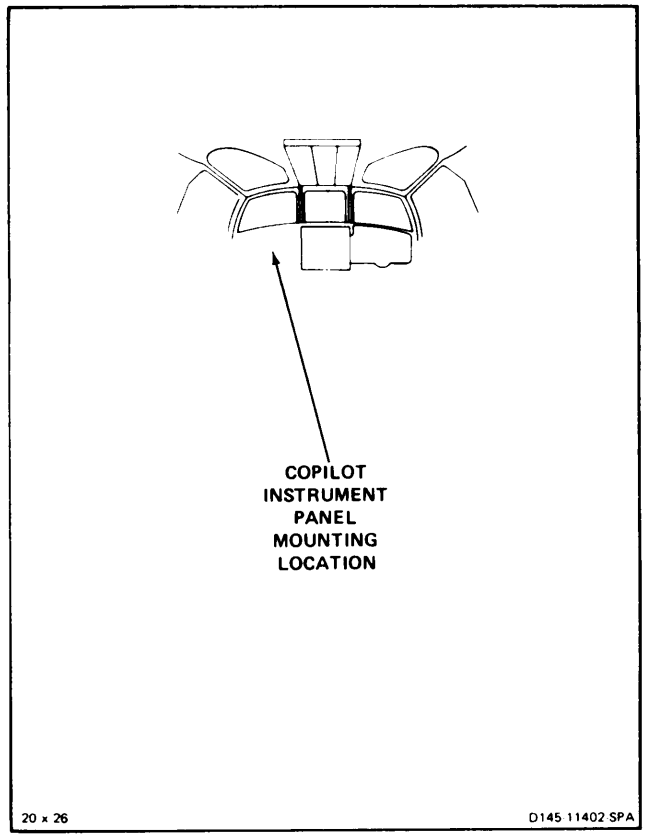
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool M83723-31-20

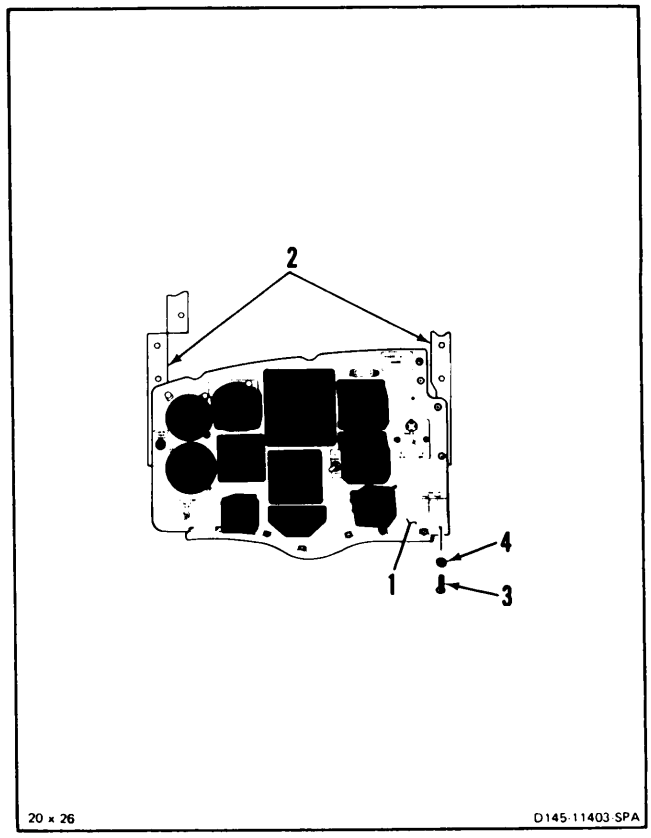
Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25



1. **Position panel (1)** on mounting brackets (2). **Install nine screws (3)** and washers (4).



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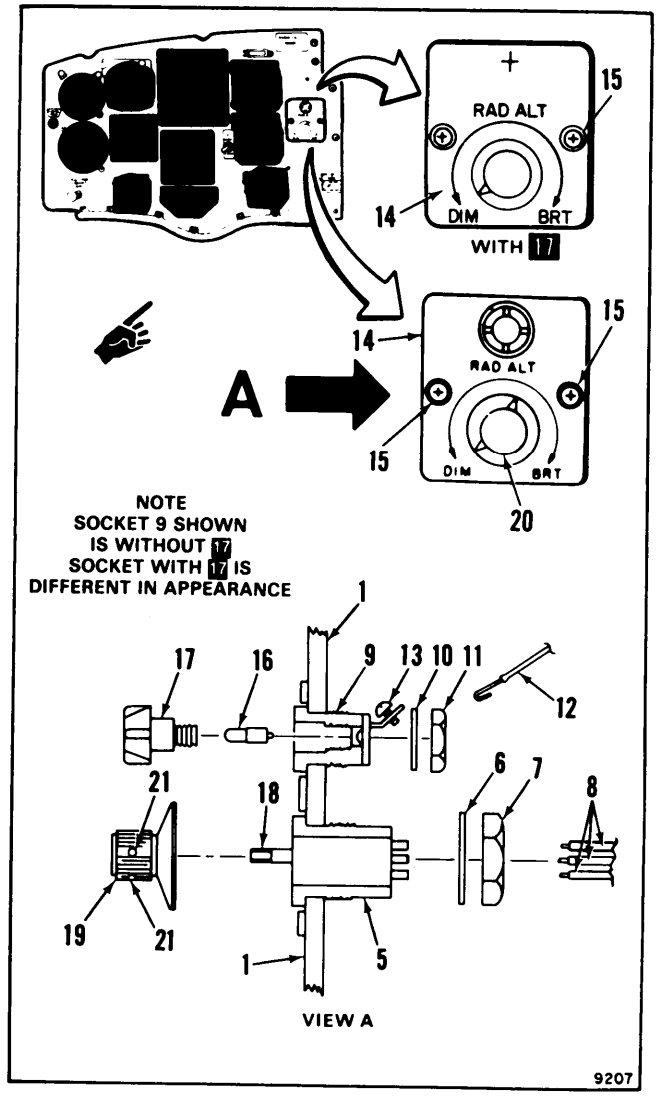
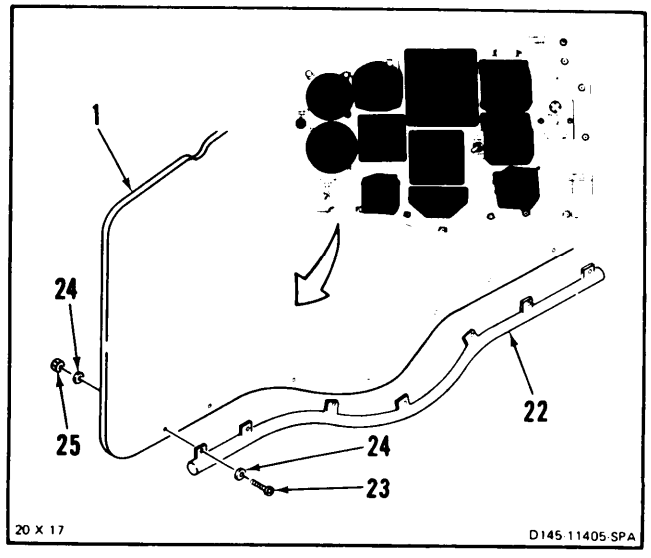
2. **Position rheostat (5)** in panel (1). **Install washer (6) and nut (7)** on rheostat.
3. Remove tape and **connect three wires (8)** to rheostat (5). Remove tags.
4. **Position socket (9)** in panel (1). **Install washer (10) and nut (11)** on socket.
5. Remove tape and **connect wire (12)** to socket (9). Tighten screw (13).
6. **Position panel (14) or (14.1).** Install two screws (15).
7. Without 17 **Install lamp (16) and lens (17)** in socket (9).
8. Turn rheostat shaft (18) to left. **Position knob (19)** on shaft so pointer (20) is on DIM. **Tighten two setscrews (21).**



9. **Position pad (22)** on panel (1). **Install seven screws (23),** 14 washers (24) and seven nuts (25).



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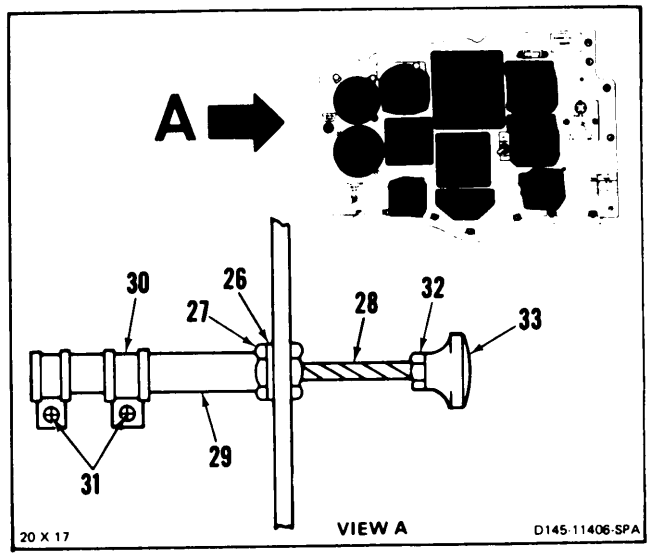
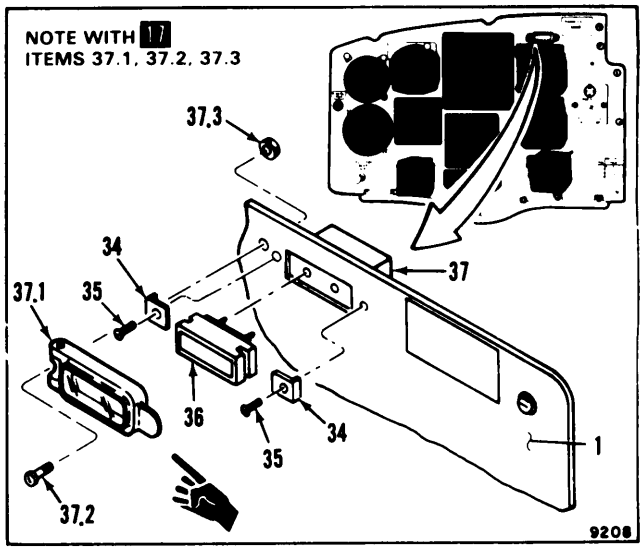
8-106 INSTALL COPILOT'S INSTRUMENT PANEL (Continued) 8-106

10. Place washer (26) and nut (27) on wire (28).
11. Thread wire (28) through tube (29) and **slide tube through panel (1)** into clamps (30).
12. **Install washer (26) and nut (27)** on tube (29). **Tighten screws (31)** on clamps (30).
13. **Install nut (32) and knob (33) on wire (28).**



14. **Position two clips (34)** on panel (1). Install two screws (35). **Install light (36)** betweeen two clips. Make sure light plugs into socket (37).

14.1 With 17. **Position filter cap (37.1)** on panel (1). **Install screw (37.2) and nut (37.3).**

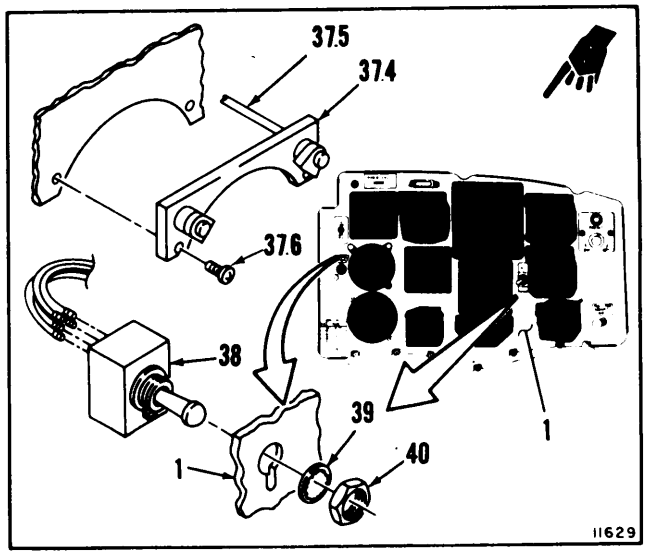


NOTE

Helicopters without 17 have two light fixtures on copilot's panel. Helicopters with 17 have four light fixtures.

14.2 **Install each light fixture (31.4)** by threading wire (37.5) through hole in panel (1). **Install two screws** (37.6). **Splice wire** behind panel. (TM 55-1500-323-25).

15. **Position switch (38)** in panel (1). **Install washer (39) and nut (40).**



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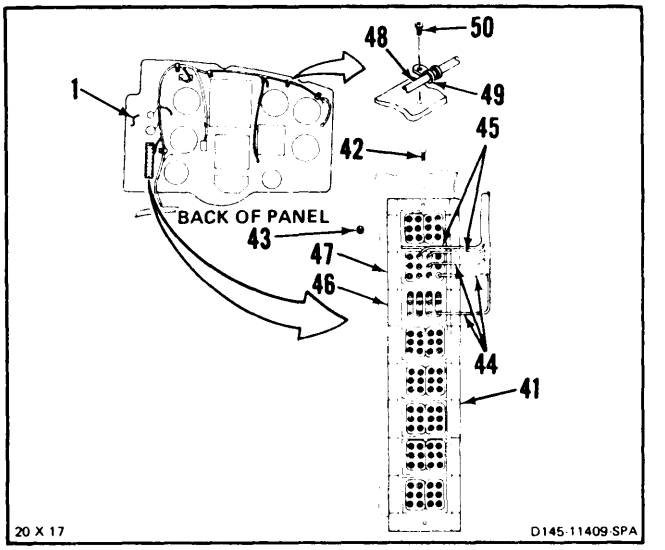
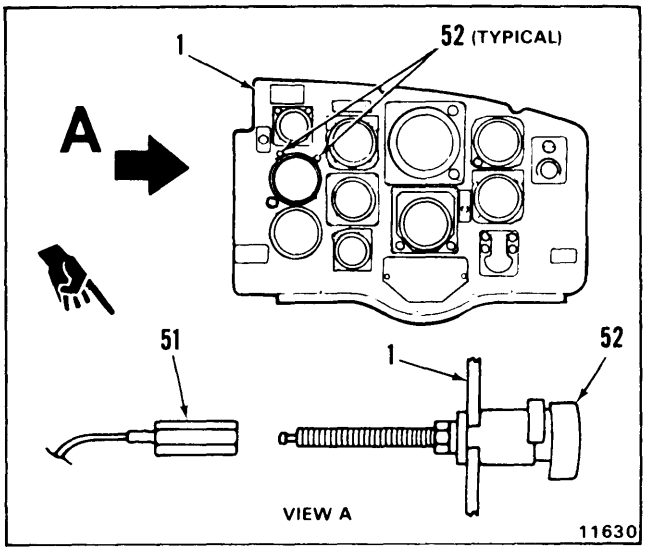
16. **Position TB1 (41)** on panel (1). **Install two screws (42) and nuts (43). Install module directly above each nut.**
17. Remove tags and insert three wires (44) and two wires (45) through holes in panel (1).
18. **Install three wires (44) in module (46)** and two wires (45) in module (47). Use contact insertion/removal tool.
19. **Install five wires (44 and 45) in wire harness (48).** Position wire harness on panel (1).
20. **Install five clamps (49)** with five screws (50).



21. **Without 17** reach behind panel (1) and **connect wire (51) to each postlight assembly (52).**
22. **With 17** reach behind panel (1) and screw **wire (51) to each postlight assembly (52).**

INSPECT



FOLLOW-ON MAINTENANCE:

Install radar altimeter (TM 11-1520-240-23).

Install turn and slip indicator (Task 8-45).

Install flange mounted instruments on copilot panel (Task 8-91).

Install clamp mount instruments on copilot panel (8-89).

Install clock (Task 8-93).

Install emergency panel light (Task 8-4).

Perform operational check of affected systems (TM 55-1520-240-T).

END OF TASK

8-107 REMOVE CENTER INSTRUMENT PANEL 8-107

INITIAL SETUP

Applicable Configurations:
All

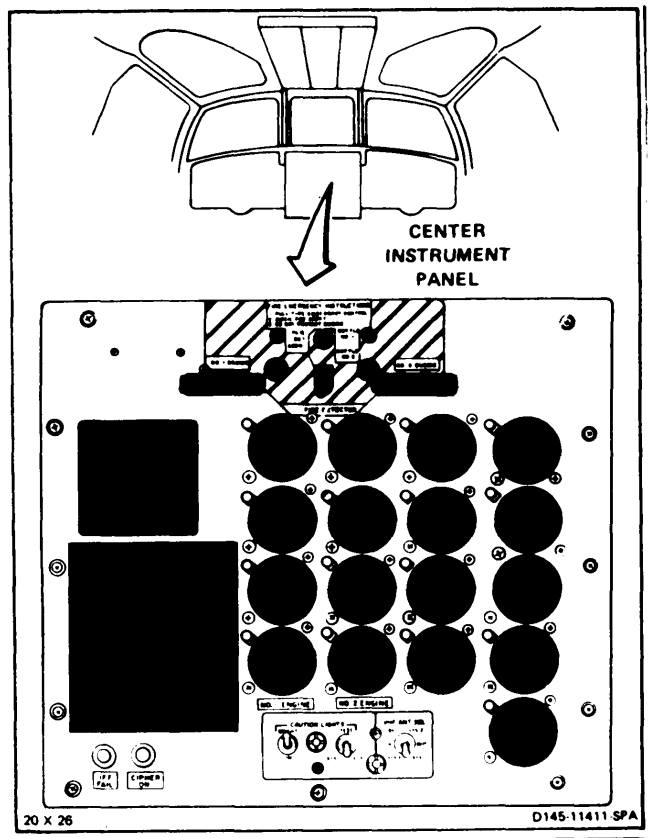
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Contact Insertion/Removal Tool M83723-31-20
Soldering Gun

Materials:
Paper Tags (E264).
Tape (E385)

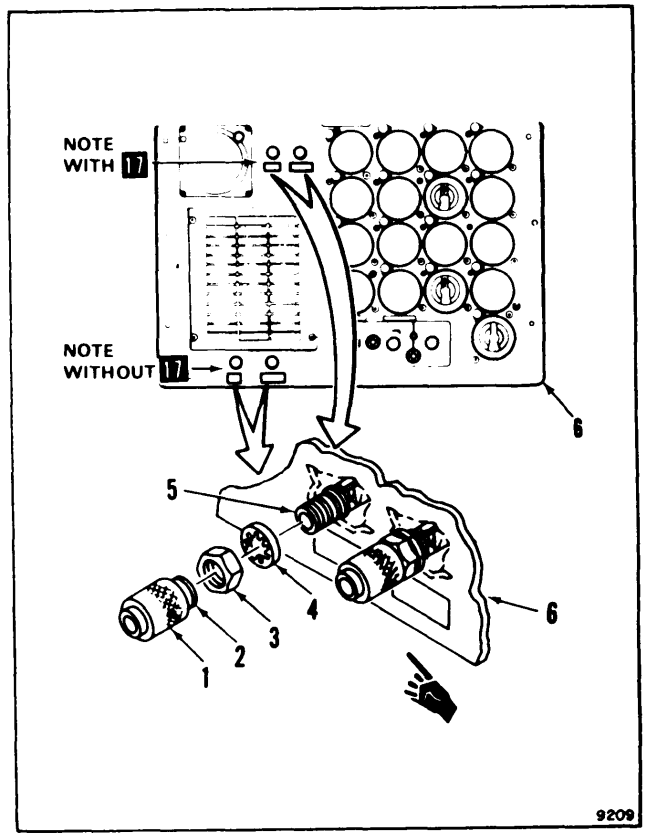
Personnel Required:
Aircraft Electrician

References:
TM 11-1520-240-23
TM 55-1500-323-25

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Clamp Mounted Instruments on Center Panel Removed (Task 8-86)
Master Caution Panel Removed (Task 9-128)
Fire Pull Control Removed (Task 12-15)
Fire Agent Switch Removed (Task 12-19)



1. **Remove two lenses (1)** and lamps (2).
2. **Remove nut (3) and washer (4)** from two light bases (5). Tag light bases. Push light bases through panel (6).



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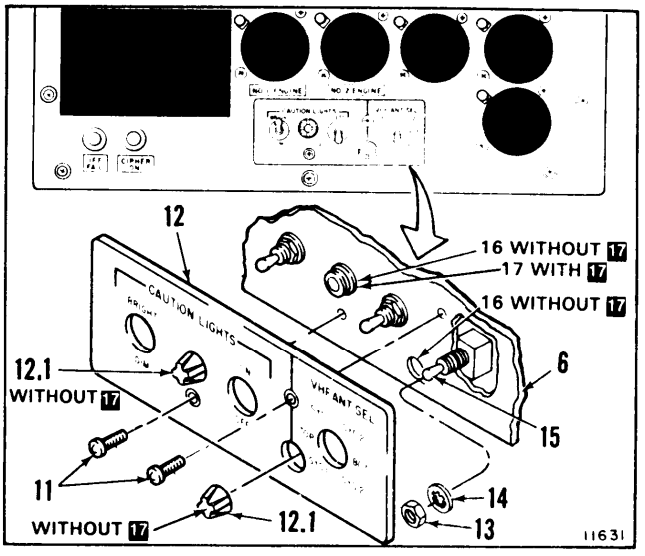
3. Remove two screws (11) from light plate (12). Without 17, remove two lens caps (12.1). **Remove plate.**
4. **Remove three nuts (13) and washers (14). Push** three **switches (15) through panel (6).** Tag switches.
5. **Without** 17 reach behind panel (6) and **unsolder wires from** each of two **light sockets (16).**

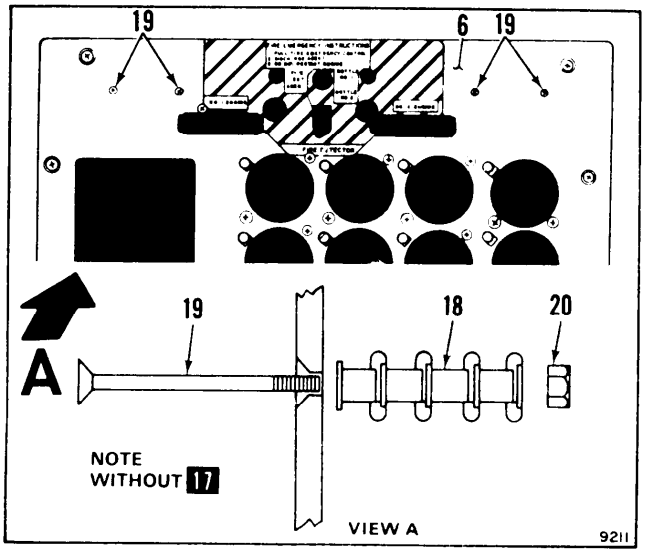
5.1. With 17, reach behind panel (6) and **disconnect wires from light socket (17).**



NOTE

Helicopters without 17 have resistor assemblies. Helicopters with 17 do not have resistor assemblies.

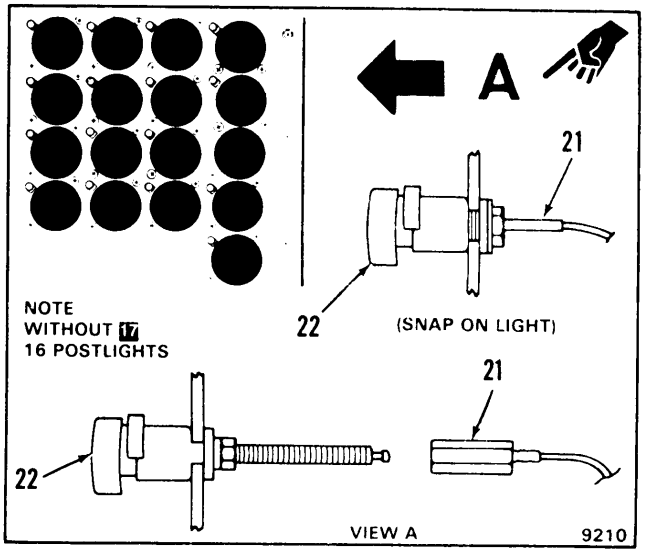
6. Without 17 Reach behind panel (6) and hold each of two resistor assemblies (18) in turn. **Remove two screws (19) and nut (20) from each assembly.** Tag resistor assemblies.



NOTE

Helicopters without 17 have 16 postlights. Helicopters with 17 have 17 or 21 postlights,

7. Without 17, **disconnect wire (21)** from each of 16 postlights (22). Tape wire ends.



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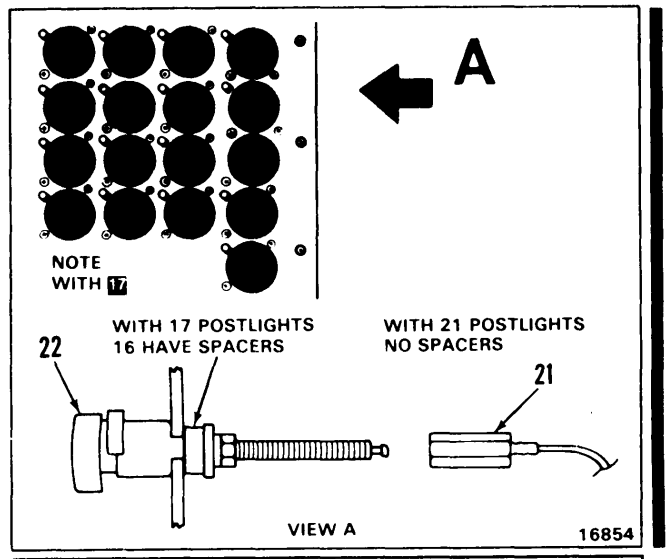
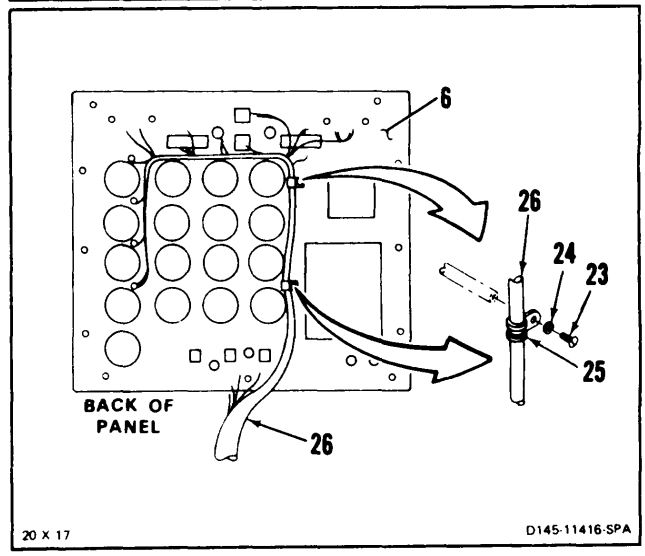
8-107 REMOVE CENTER INSTRUMENT PANEL (Continued) 8-107

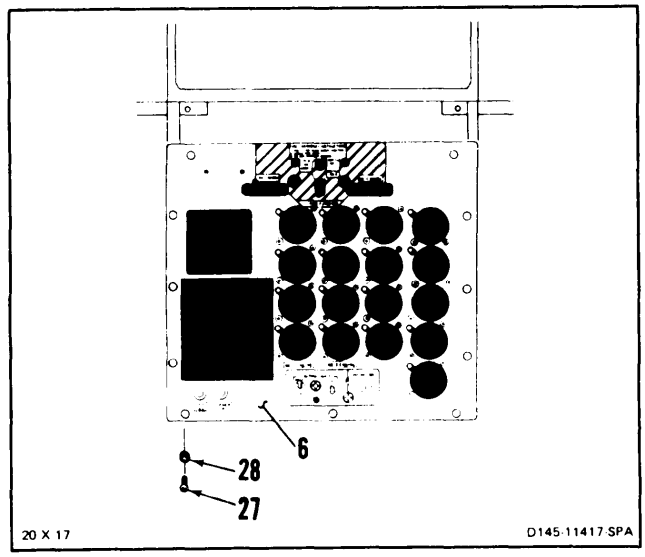
8. With 17 tag and **unscrew wire (21)** from each of 17 or 21 postlights (22). Use tags E264. Tape screw thread ends with tape E385.



9. Remove two screws (23) and washers (24). **Remove two clamps (25) and move wire harness (26)** away from panel (6).



10. **Remove 11 screws (27)** and washers (28).
11. **Remove panel (6).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-108 INSTALL CENTER INSTRUMENT PANEL

INITIAL SETUP

Applicable Configurations:
All

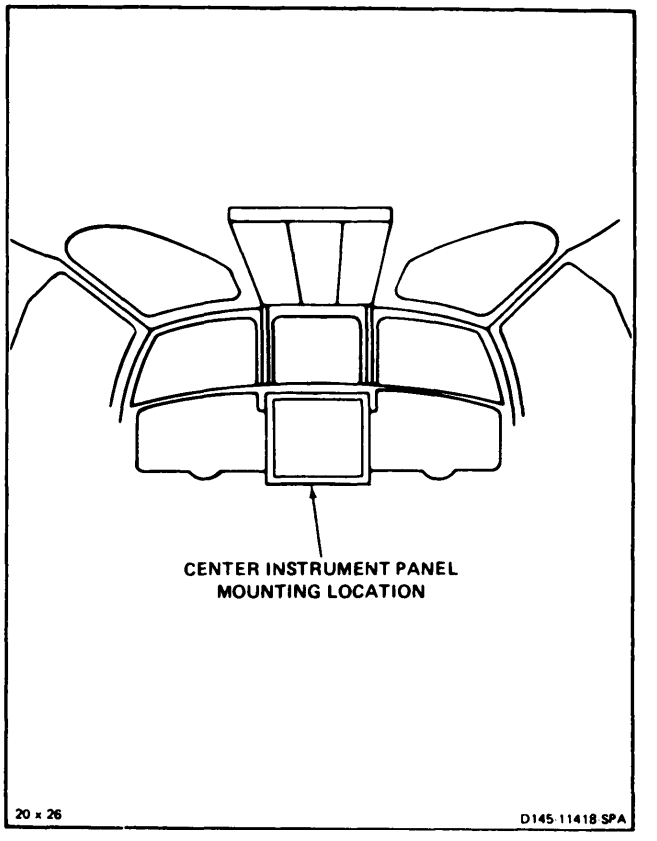
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

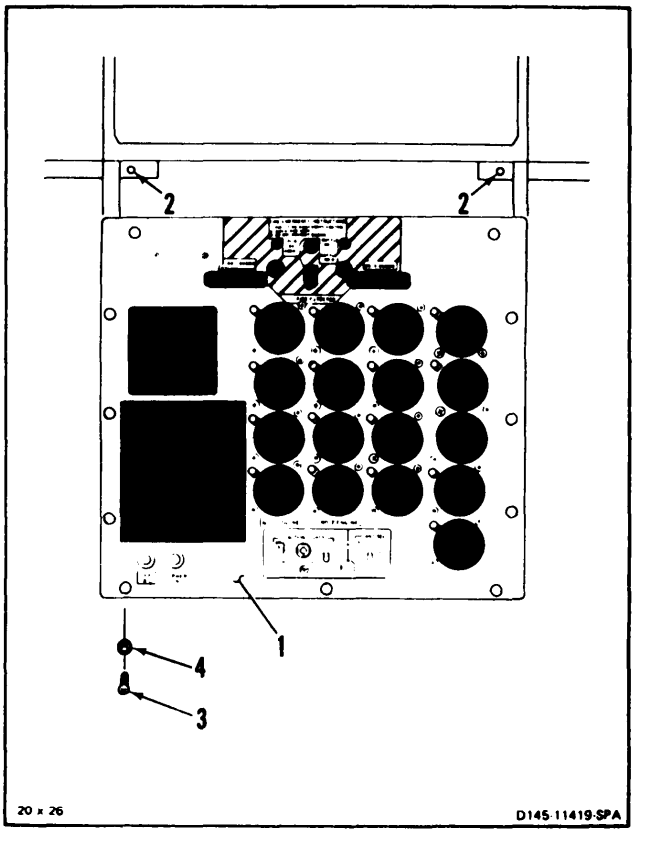
Parts:
Splices (2)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25



1. **Position panel (1)** on brackets (2). **Install 11 screws (3)** and washers (4).



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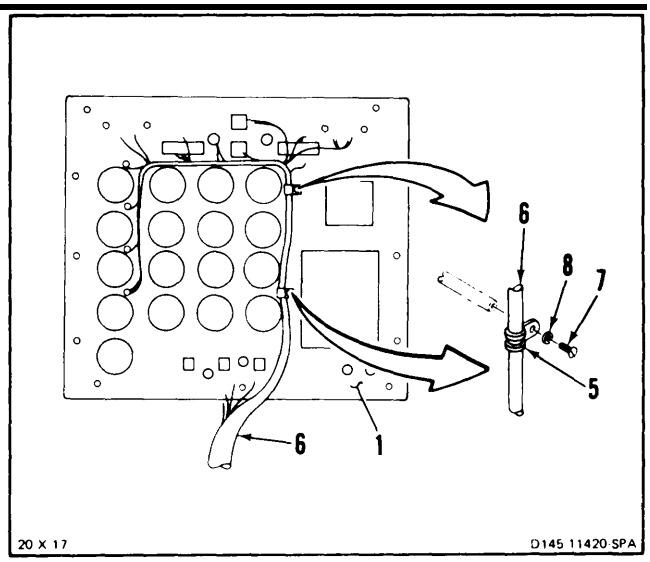
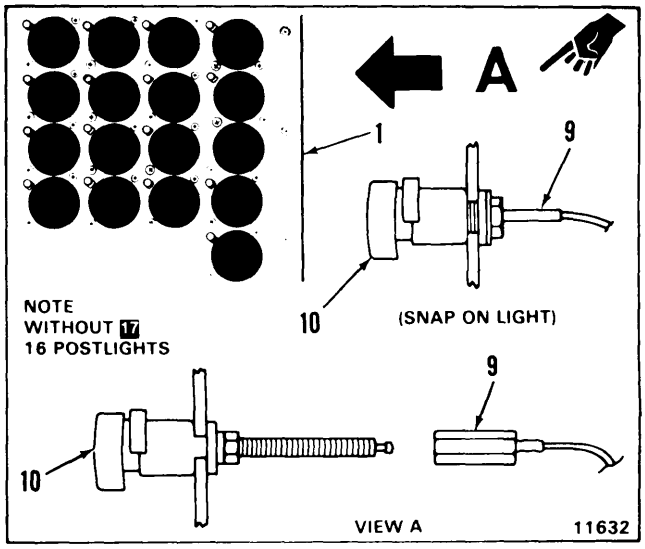
2. **Install two clamps (5)** on wire harness (6). Position wire harness on back of panel (1) and **install** two screws (7) and **washers (8).**



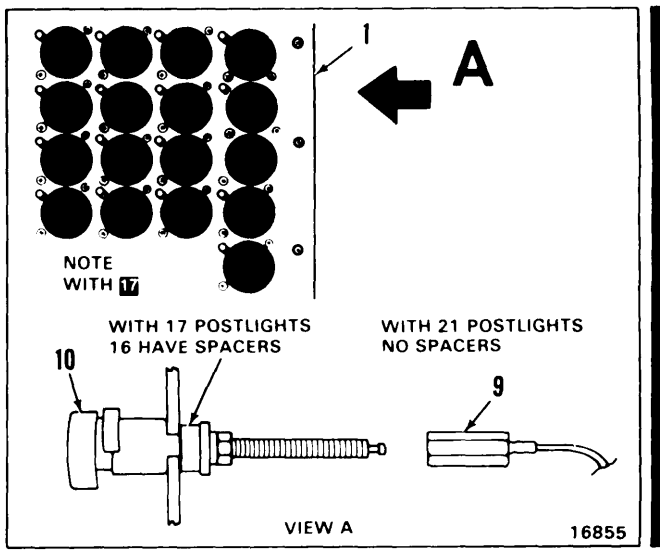
NOTE

Helicopters without 17 have 16 post lights. Helicopters with 17 have 17 or 21 post lights.

3. **Without** 17, reach behind panel (1) and **connect wire (9) to** 16 **postlight assemblies (10).**



4. **With** 17, reach behind panel (1) and **screw wire (9) to** 17 or 21 **postlight assemblies (10).**



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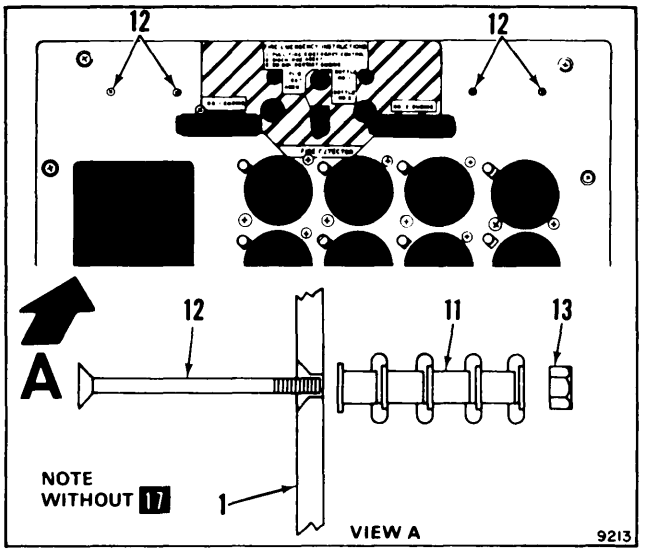
NOTE

Helicopters without 17 have resistor assemblies. Helicopters with 17 do not have resistor assemblies.

5. Without 17. Remove tags and **position two resistor** assemblies (11) on back of panel (1). **Install four screws (12) and nuts (13).**



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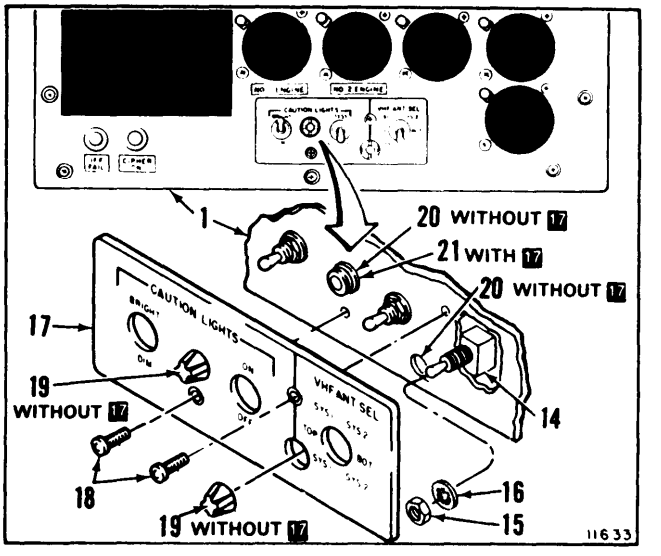
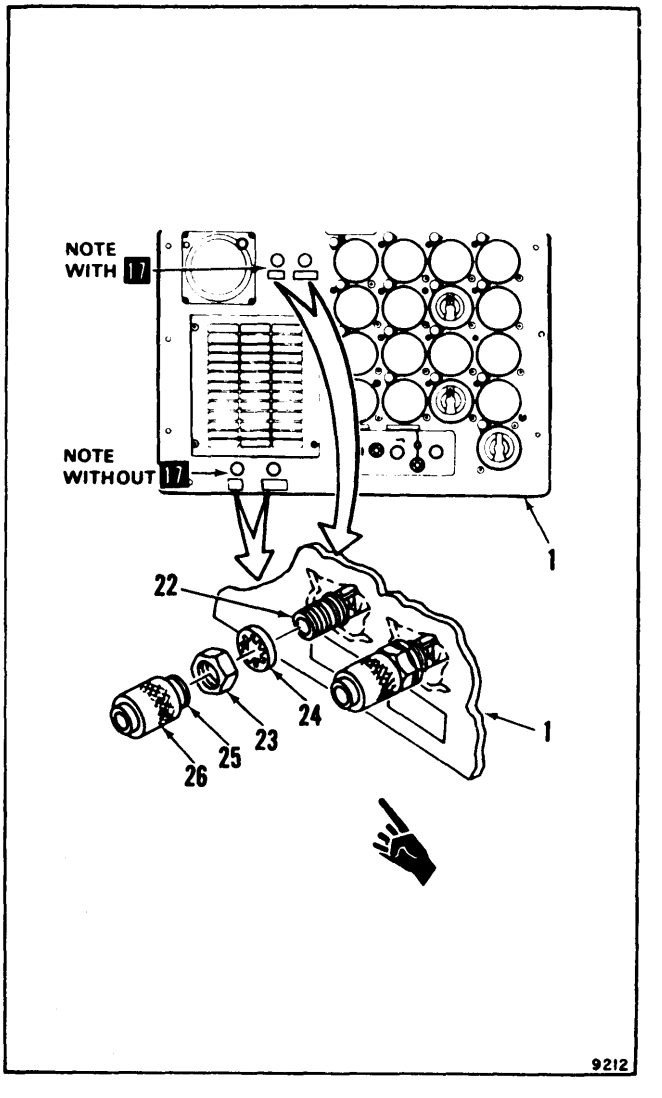
6. **Reach behind panel (1)** and **position three switches (14)** in panel (1). **Install three nuts (15) and washers (16).**
7. **Position light plate (17)** on panel (1). **Install two screws (18). Without 17, install two lens caps (19).**
8. **Without 17,** reach behind panel (1) and **solder wires to** each of **two light sockets (20).**
9. **With 17** reach behind panel (1) and **screw wires onto light socket (21).**



10. Reach behind panel (1) and **position two light bases (22)** in panel (1). **Install two nuts (23) and washers (24) on light bases.**
11. Install two lamps (25) in two lenses (26). **Install lenses** in two light bases (22).



INSPECT

FOLLOW-ON MAINTENANCE:

Install clamp mounted instruments in center panel (Task 8-87).

Install master caution panel (Task 9-131).

Install caution lights and VHF switch panel (Task 9-133).

Install fire pull control (Task 12-18).

Install fire agent switch (Task 12-20).

Perform operational check of affected systems (TM 55-1520-240-T).

END OF TASK

8-109 REMOVE MISCELLANEOUS LIGHTS FROM PILOT'S OR COPILOT'S INSTRUMENT PANEL

INITIAL SETUP

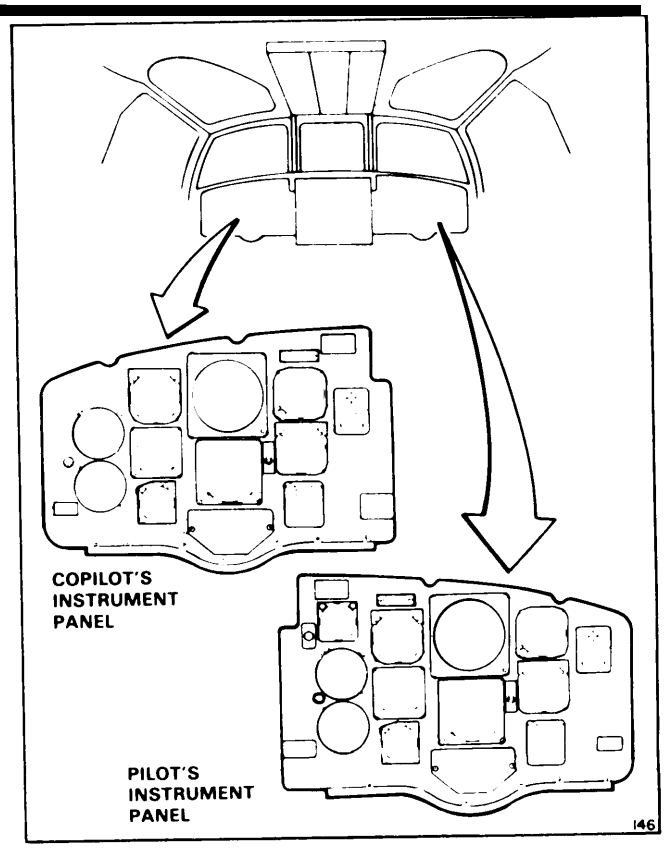
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool M83723-31-20

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

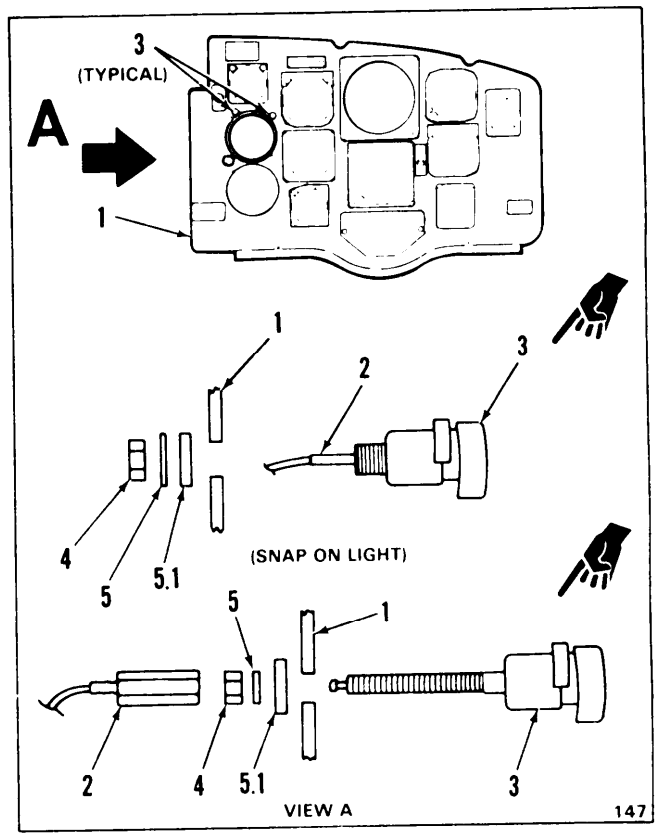
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is similar for removing pilot's and copilot's instrument panel lights. Removal of pilot's lights is shown here.

1. Without 17, reach behind panel (1), tag and **disconnect wire (2) from postlight (3).**
2. **With** 17 reach behind panel (1), tag and **unscrew wire (2) from postlight (3).**
3. **Remove** nut (4), washer (5), collar (5.1), and **postlight (3).**



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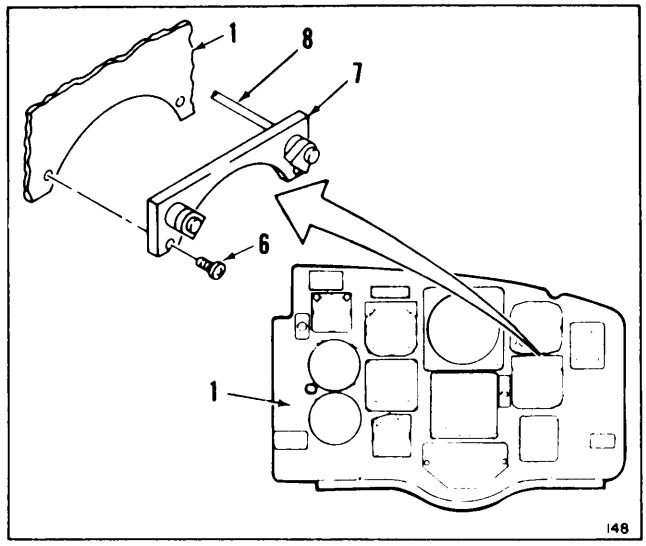
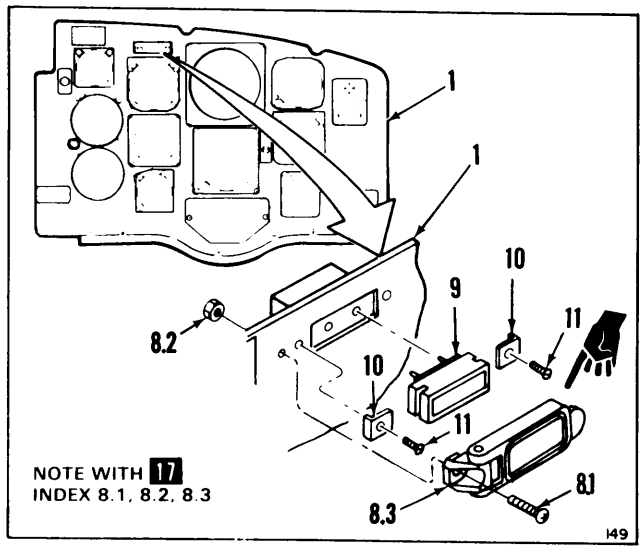
8-109 REMOVE MISCELLANEOUS LIGHTS FROM PILOT'S OR COPILOT'S INSTRUMENT PANEL (Continued)

4. **Remove two screws (6)** from each panel light fixture (7).
5. Remove light fixture (7) by removing wire (8) through panel (1). Tag fixtures.



6. With 17 . Remove screw (8 1), nut (8.2) and filter cap (8.3).
7. **Remove master caution light (9)** from two clips (10). **Remove** two screws (11) and two **clips** from panel (1).



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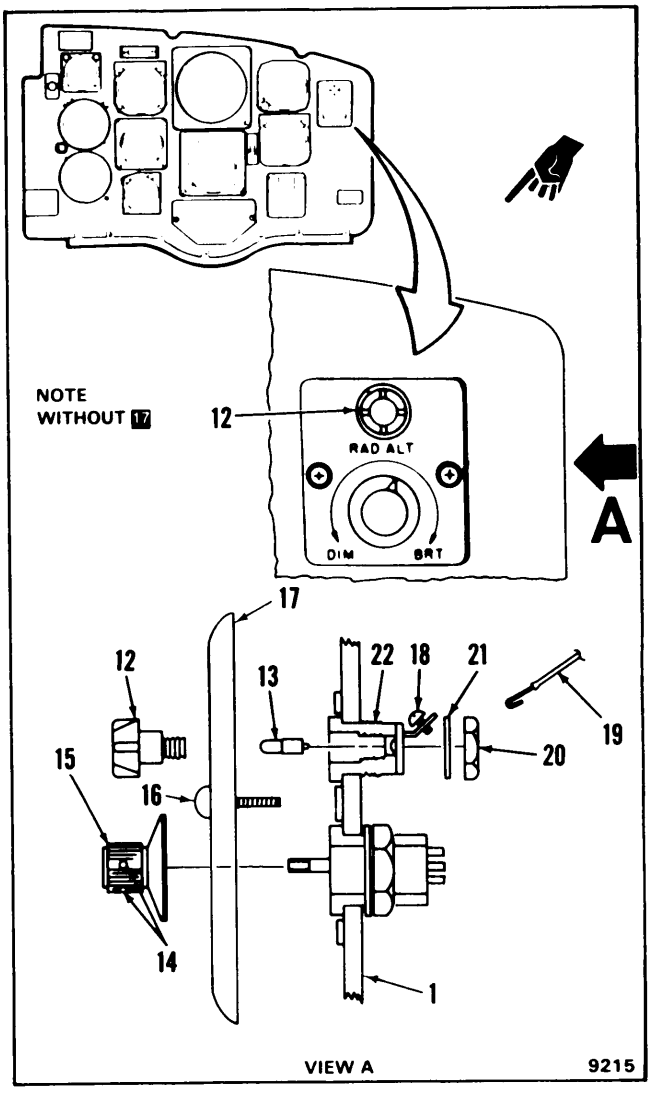
8-109 REMOVE MISCELLANEOUS LIGHTS FROM PILOT'S OR COPILOT'S INSTRUMENT PANEL (Continued)

NOTE

Steps 8. through 12. apply only to helicopters without 17 .

8. **Remove lens (12)** and lamp (13).
9. **Loosen two set screws (14)** and **remove knob (15).**
10. **Loosen two screws (16)** and **remove panel (17).**
11. **Loosen screw (18)** and **remove wire (19).** Tape exposed end of wire. Use tape (E385).
12. **Remove nut (20), washer (21),** and **socket (22)** from panel (1).



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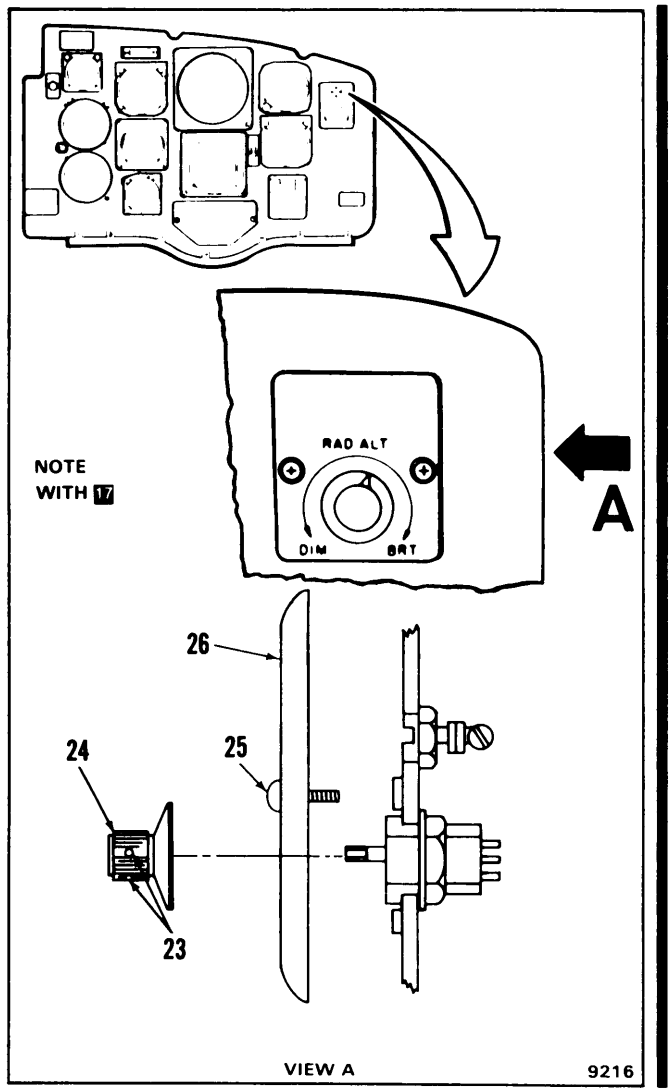
NOTE

Steps 13. and 14. apply only to helicopters with 17.

3. Loosen two set screws (23) and **remove knob (24).**
4. Loosen two screws (25) and remove light plate (26).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Contact Removal/Insertion Tool M83723-31-20

Materials:

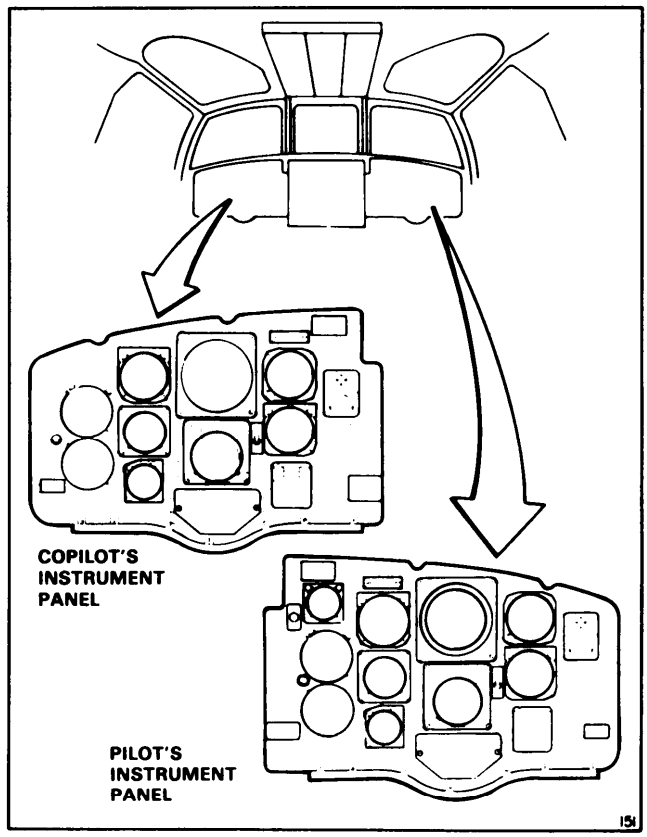
None

Personnel Required:

Aircraft Electrician
Inspector

References:

TM 55-1520-240-23P
TM 55-1500-323-25



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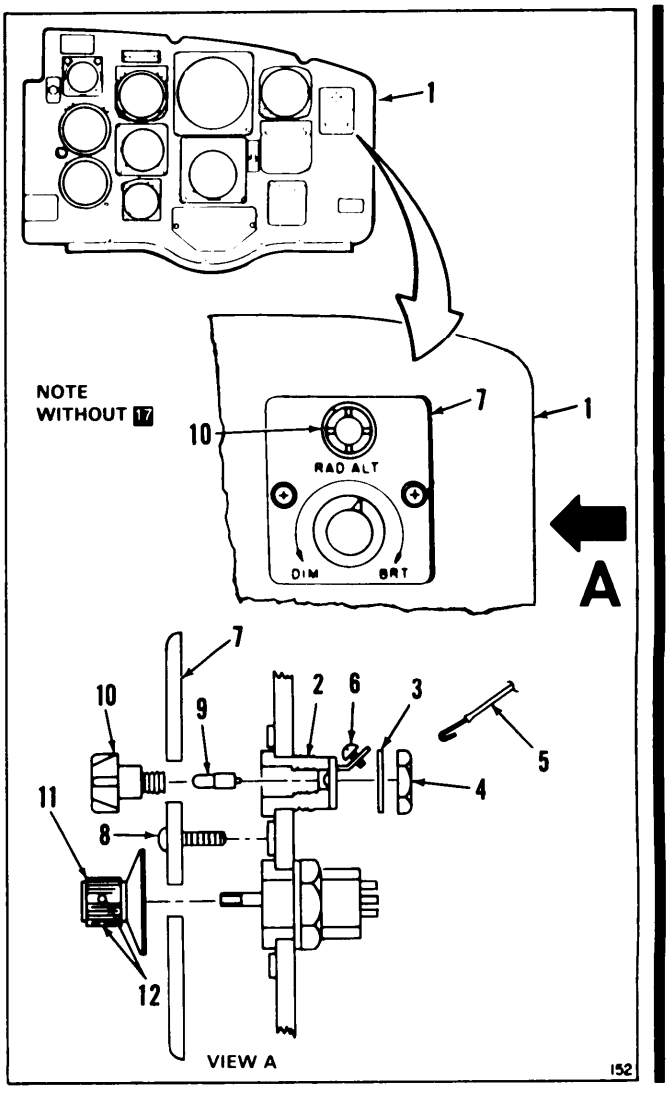
8-110 INSTALL MISCELLANEOUS LIGHTS ON PILOT'S OR COPILOT'S INSTRUMENT PANEL (Continued)

NOTE

- Procedure is similar for installing pilot's and copilot's instrument panel lights. Installation of pilot's lights is shown here.
- Steps 1. through 5. apply only to helicopters without 17.

1. Position socket (2) in panel (1). **Install washer (3) and nut (4)** on socket.
2. Remove tape and **connect wire (5)** to socket (2). **Tighten screw (6).**
3. **Install light plate (7)** and tighten two screws (8).
4. **Install lamp (9) and lens (10)** in socket.
5. **Install knob** (11) and **tighten two set screws (12).**



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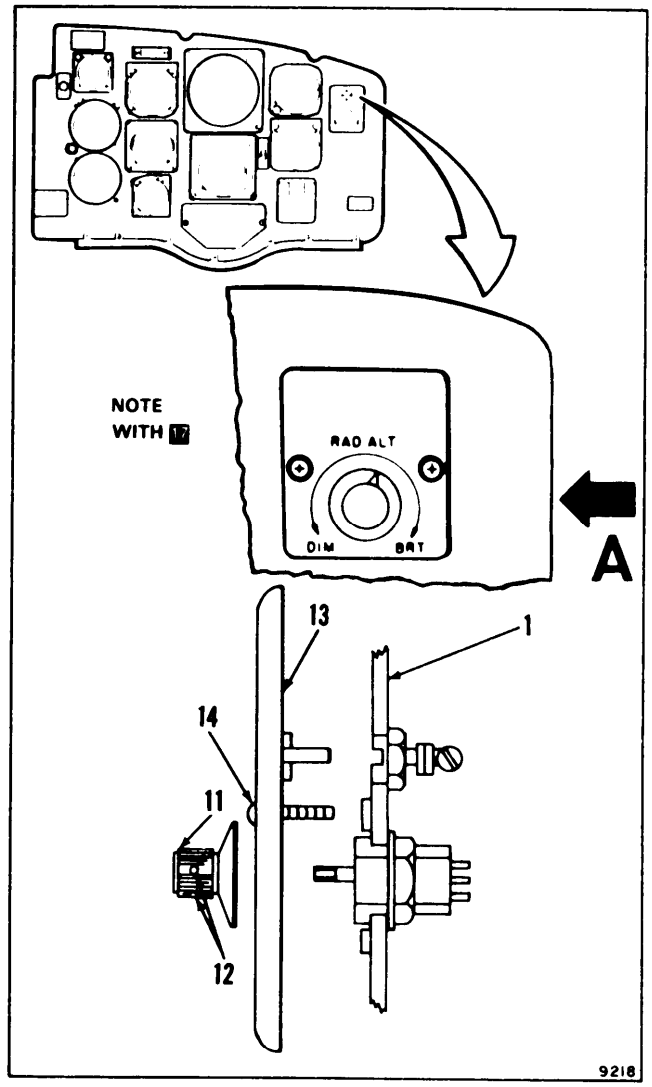
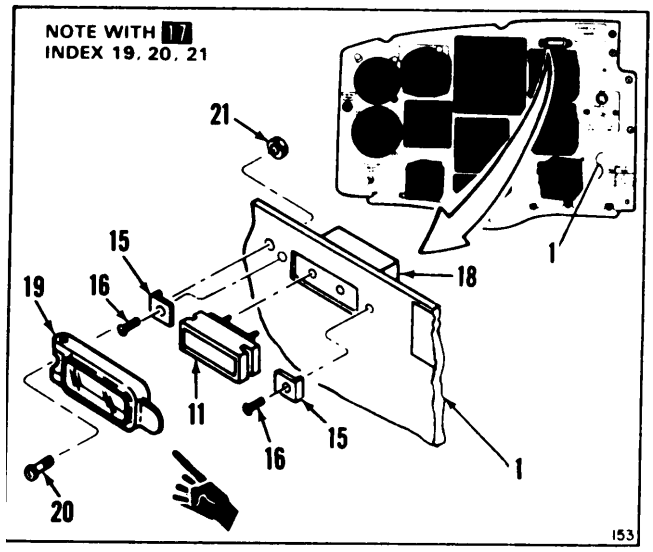
NOTE

Steps 6. and 7. apply only to helicopters with 17.

6. **Install light plate (13)** on panel (1) and **tighten two screws (14).**
7. **Install knob (11)** and **tighten two set screws (12).**



8. **Position two clips (15)** on panel (1). **install two screws (16). Install master caution light (17)** between two clips. Make sure light plugs into socket (18).
9. **With 17 Position filter (19) on panel (1). Install screw (20) and nut (21).**



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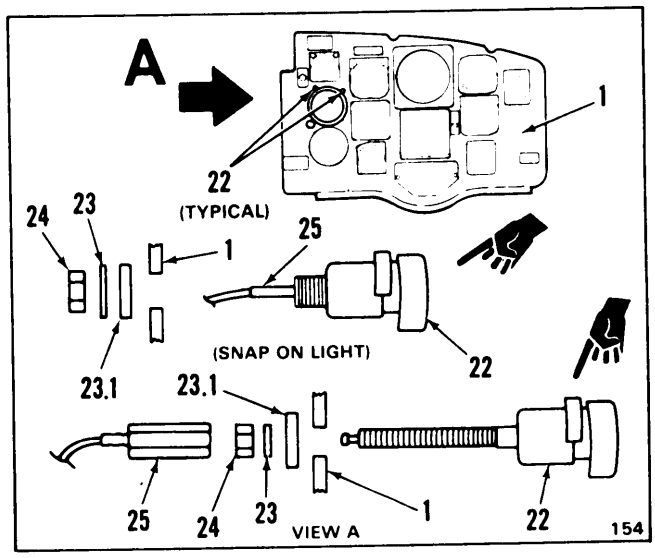
CAUTION

Do not overtorque nut (24). Tighten nut until snug only.

NOTE

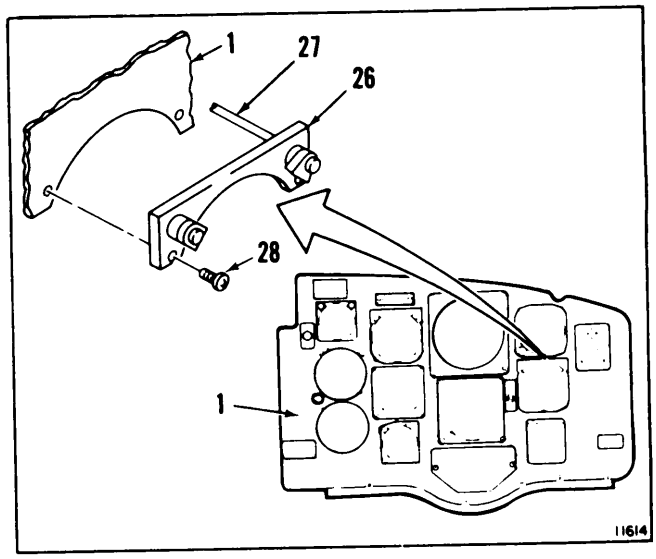
Light must be positioned as shown. Lights at turn and slip indicators require non-magnetic washers. If removed, NAS spacers must be used.



10. **Position postlight (22)** in panel (1). **Install washer (23), collar (23.1) and nut (24).**
11. **Without** 17 reach behind panel (1) and **connect wire (25) to postlight (22).**
12. **With** 17 reach behind panel (1) and **screw wire (25) into postlight (22).**

INSPECT

13. **Install light fixture (26) by threading wire (27) through hole in panel (1). Install two screws (28). Splice wire** behind panel (TM 55-1500-323-25).



FOLLOW-ON MAINTENANCE:

Perform operational check of affected systems (TM 55-1530-240-T).

END OF TASK

8-111 REMOVE MISCELLANEOUS LIGHTS FROM CENTER INSTRUMENT PANEL 8-111

INITIAL SETUP

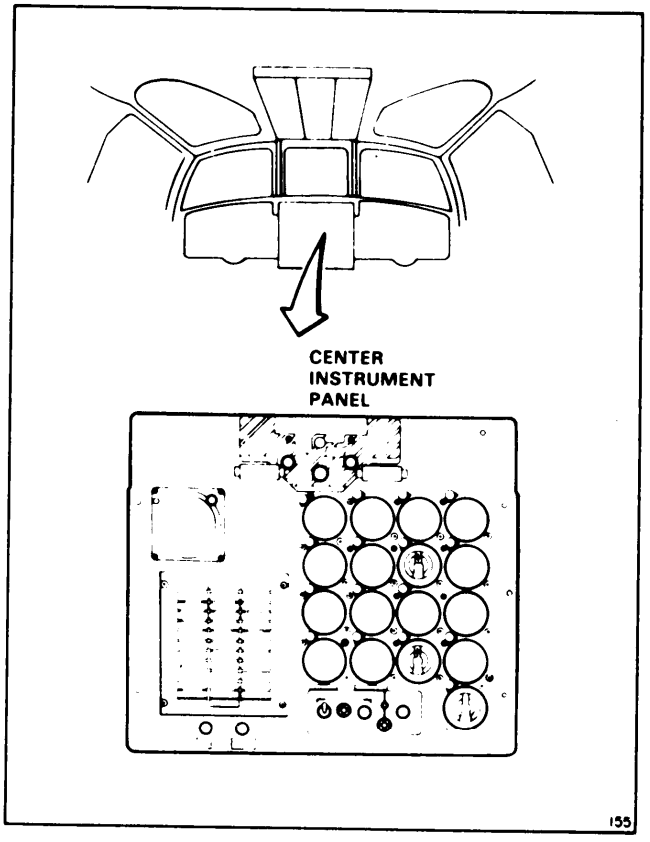
Applicable Configurations:
All

Tool's:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun

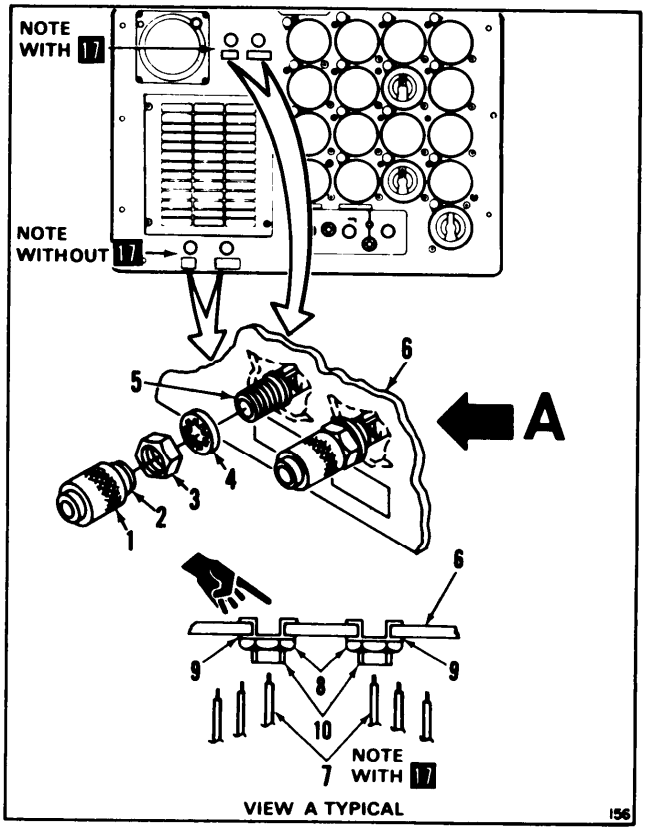
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. **Remove lens (1)** and lamp (2).
2. **Remove nut (3) and washer (4)** from light base (5). Tag light base. Push light base through panel (6).
3. Tag and cut wire (7). Cover exposed end of wire. Use tape (E385).
4. Remove two nuts (8) and washers (9). **Remove two sockets (10).**



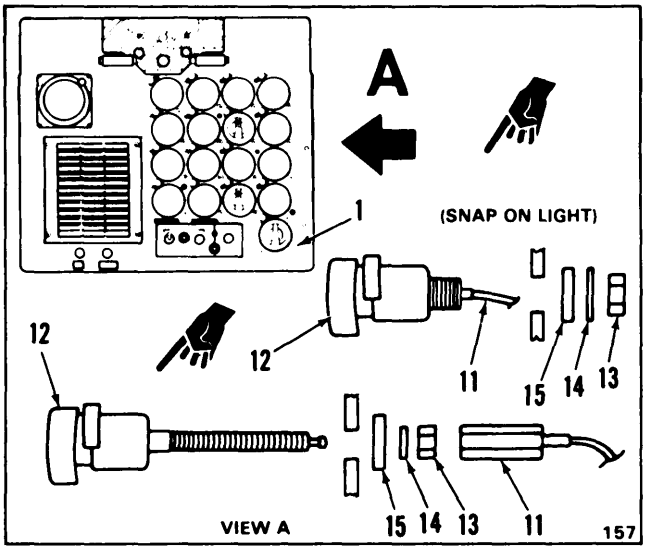
GO TO NEXT PAGE

8-111 REMOVE MISCELLANEOUS LIGHTS FROM CENTER INSTRUMENT PANEL (Continued) 8-111

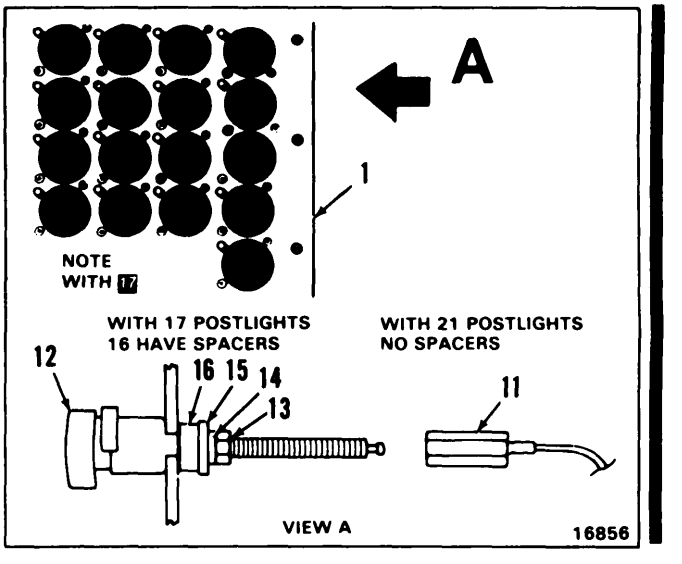
NOTE

Helicopters without 17 have 16 postlights. Helicopters with 17 have 17 or 21 postlights.

5. **Without 17** reach behind panel (1), tag and disconnect wire (11) from postlight (12). Use tags E264. Cover exposed ends of wires. Use tape (E385).
6. **Without 17, remove nut (13),** washer (14), and collar (15). **Remove postlight (12).**



7. **With 17** reach behind panel (1), tag and **unscrew wire (11)** from postlight (12).
8. **With 17, 17 postlights, remove nut (13),** washer (14), collar (15) and spacer (16) for sixteen postlight assemblies. Remove nut (13), washer (14), and collar (15) for the remaining assembly. **Remove postlight (12).**
9. With 17, 21 postlights, remove nut (13), washer (14), and collar (15) for twenty-one postlight assemblies.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

8-112 INSTALL MISCELLANEOUS LIGHTS ON CENTER INSTRUMENT PANEL

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Contact Removal/Insertion Tool,
M8723-31-20
Soldering Gun

Materials:

Solder (E360)

Parts:

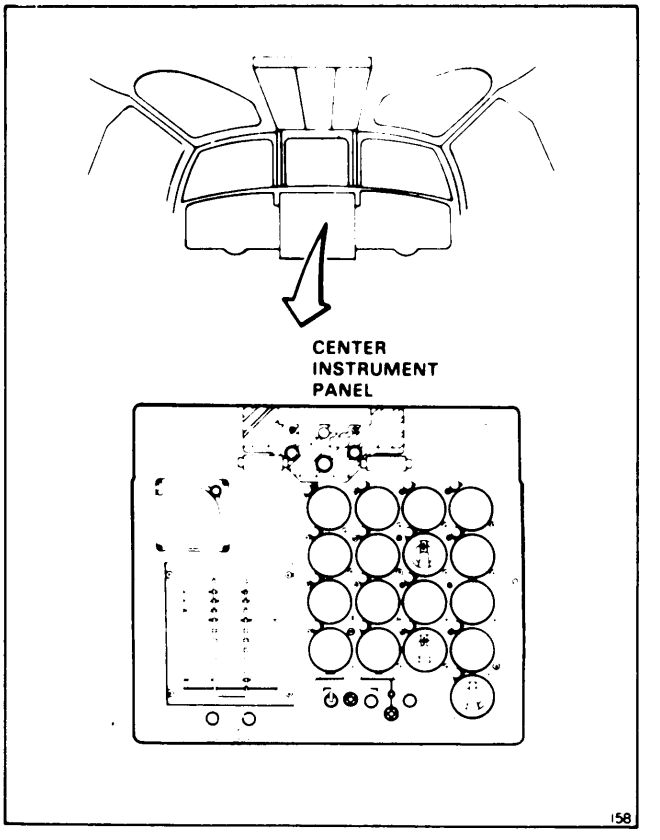
Splices (2)

Personnel Required:

Aircraft Electrician
Inspector

References:

TM 55-1520-240-T
TM 55-1500-323-25



CAUTION

Do not overtorque nut (6). Tighten until snug only.

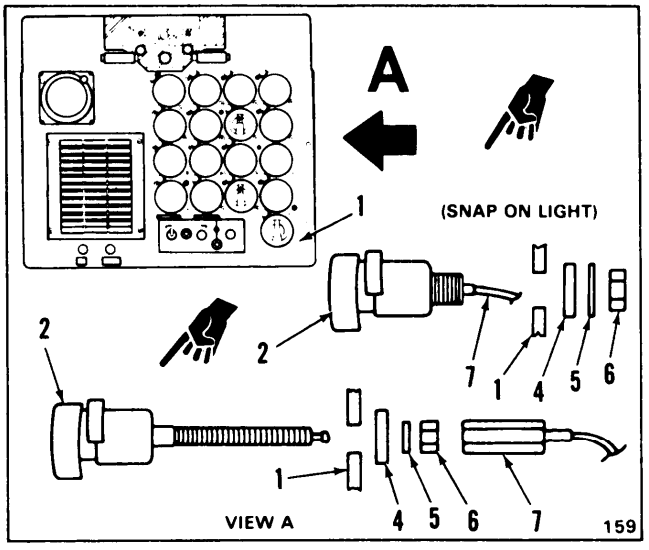
GO TO NEXT PAGE

8-112 INSTALL MISCELLANEOUS LIGHTS ON CENTER INSTRUMENT PANEL (Continued)

NOTE

Helicopters without 17 have 16 post lights. Helicopters with 17 have 17 or 21 post lights.

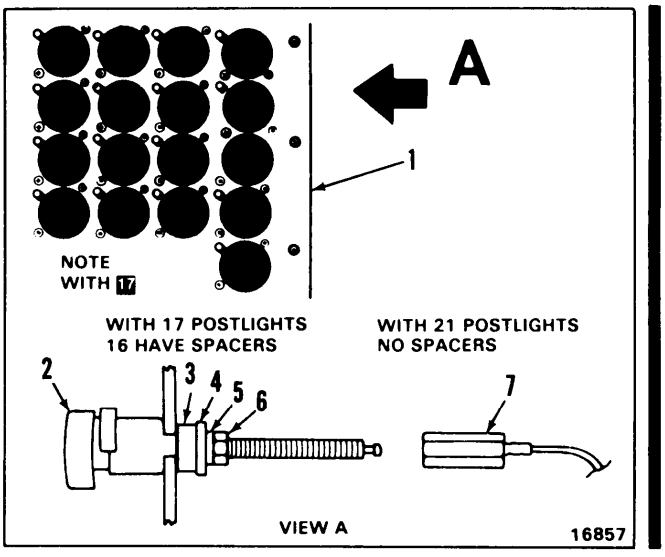
1. **Without 17 position postlight (2)** in panel (1). **Install collar (4), washer (5), and nut (6).**
2. **Without 17** reach behind panel (1) and **connect wire (7) to postlight (2).**



2.1. **With 17, 17 postlights, position postlight** (2) in panel (1). Install spacer (3), collar (4), washer (5) and nut (6) for sixteen postlight assemblies, Install collar (4), washer (5), and nut (6) for the remaining assembly.

2.2. **With 17, 21 postlights, position postlight (2)** in panel (1). Install collar (4), washer (5), and nut (6) for 21 postlight assemblies.

3. **With 17** reach behind panel (1) and **screw wire (7) onto postlight (2).**



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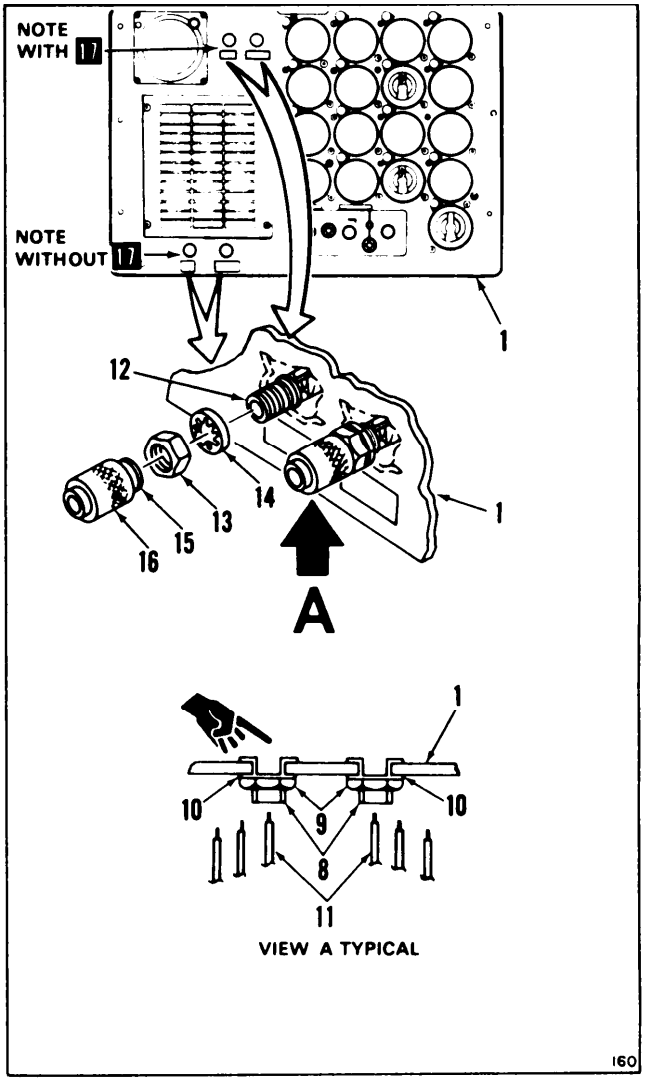
8-112 INSTALL MISCELLANEOUS LIGHTS ON CENTER INSTRUMENT PANEL (Continued)

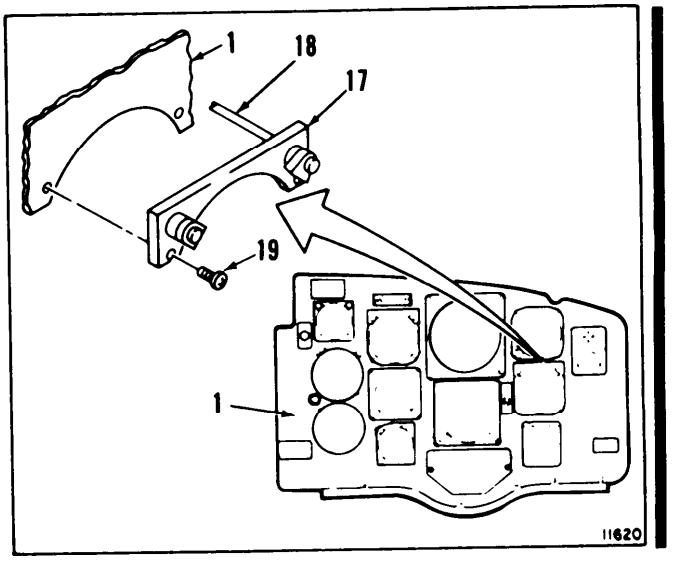
4. **Position socket (8)** in panel (1). **Install nut (9) and washer (10).**
5. Splice wires (11) to socket (8). (TM 55-1500-323-25).
6. Remove tag and **position light base (12)** in panel (1). **Install nut (13) and washer (14)** on light base.
7. Install lamp (15) in lens (16). **Install lens** in light base (12).



8. Install each light fixture (17) by threading wire (18) through hole in panel (1), Install two screws (19). Splice wire behind panel (TM 55-1500-323-25).

FOLLOW-ON MAINTENANCE:

Perform operational check of affected systems (TM 55-1520-240-T).



END OF TASK

8-113 REMOVE FIRE EMERGENCY AND MASTER CAUTION PANEL LIGHT PLATE ASSEMBLIES

INITIAL SETUP

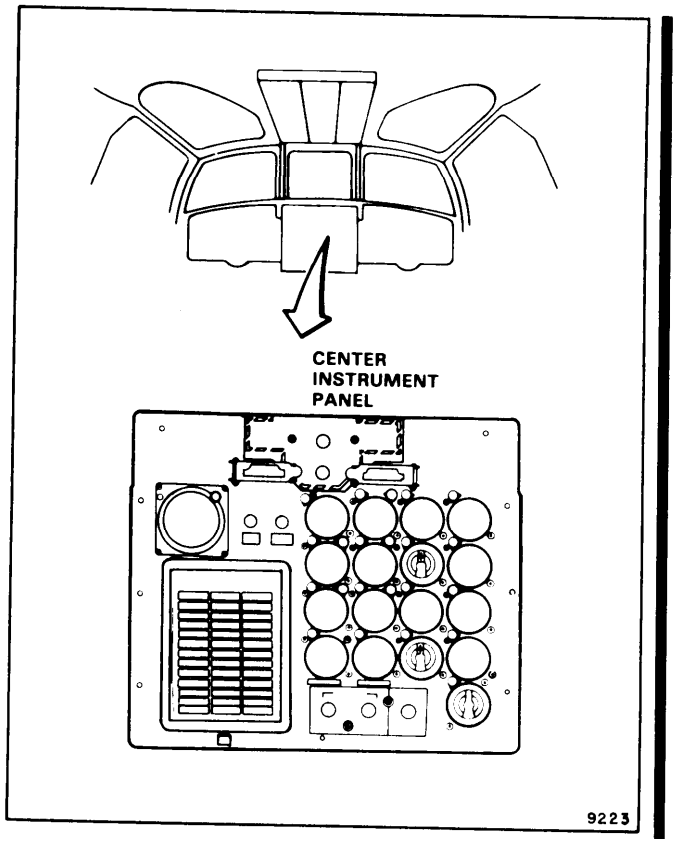
Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician

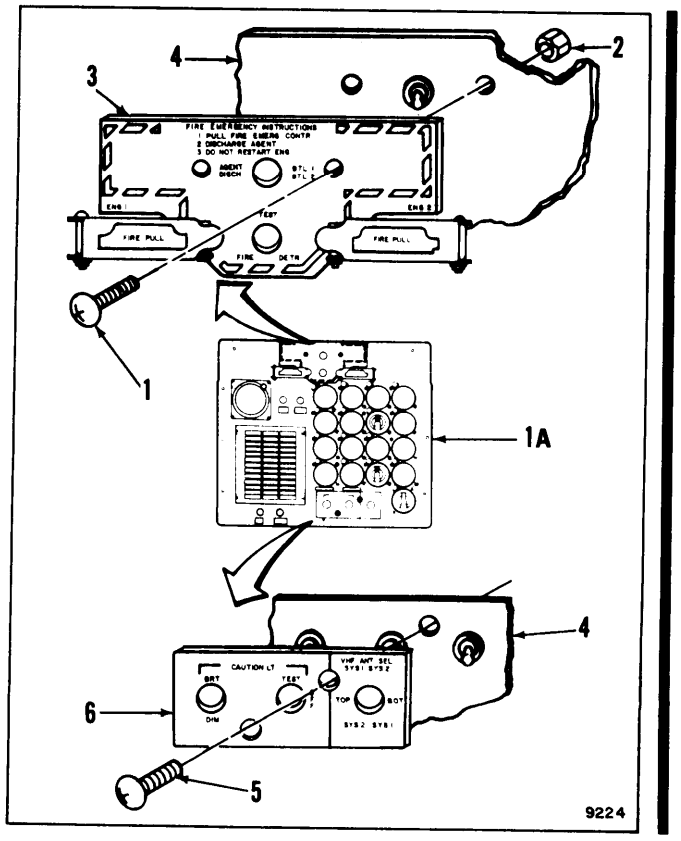
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. **Remove two screws (1) and nuts (2). Remove fire emergency plate (3) from instrument panel (4).**
2. **Remove two screws (5). Remove master caution panel light plate (6)** from instrument panel (4).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

8-114 INSTALL FIRE EMERGENCY AND MASTER CAUTION PANEL LIGHT PLATE ASSEMBLIES

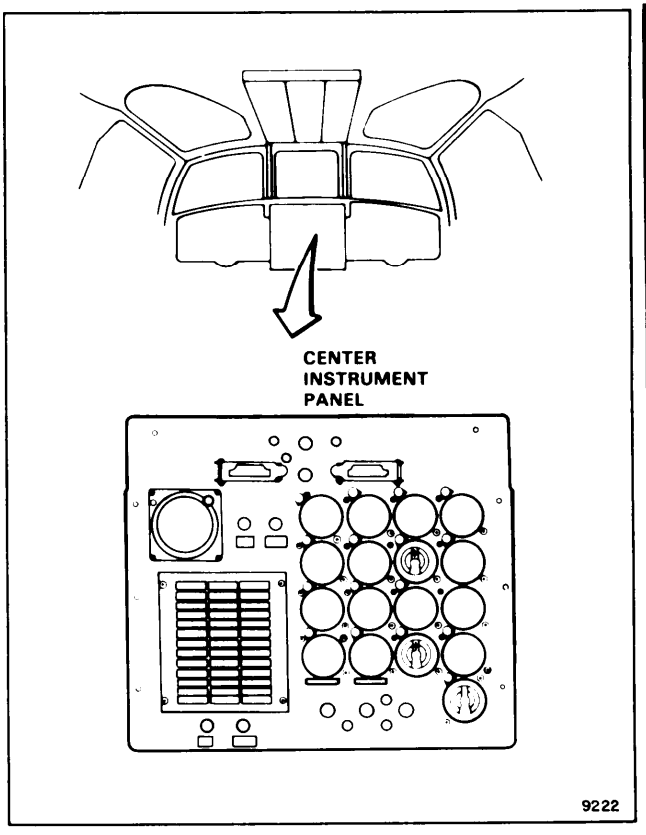
INITIAL SETUP

Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Personnel Required:
Aircraft Electrician
Inspector

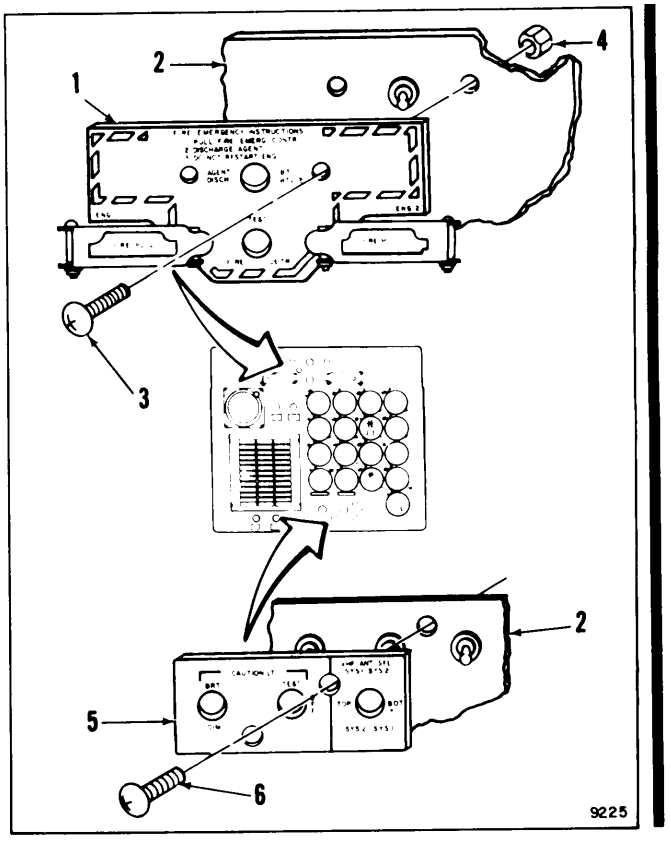
References:
TM 55-1500-323-25



1. **Install fire emergency plate (1)** on center instrument panel (2).
2. **Install two screws (3) and nuts (4).**
3. **Install master caution panel light plate (5)** on center instrument panel (2).
4. **Install two screws (6).**

INSPECT

FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T)



END OF TASK

CHAPTER 9
ELECTRICAL SYSTEMS

SECTION I
DIRECT CURRENT (DC) POWER DISTRIBUTION SYSTEM DESCRIPTION AND THEORY OF OPERATION

9-1 DIRECT CURRENT (DC) POWER DISTRIBUTION SYSTEM 9-1

DESCRIPTION

There are four sources of dc power for the helicopter: two 200-ampere **transformer-rectifiers** (for the No. 1 and No. 2 dc systems), an 11-ampere-hour **battery,** and **external dc power.** Each source provides 28-volt dc to one or more of five separate buses, located within the No. 1 and No. 2 power distribution panels (pdp). The buses distribute the power to all dc electrical components on the helicopter.

The No. 1 pdp contains buses for the **No. 1 dc system, battery** and **switched battery**, and half of the essential bus. The No. 2 pdp contains the **No. 2 dc system** bus and the other half of the **essential** bus.

During normal operation, power is available at all five buses. When only battery power is available, 28 volts dc is available at the battery, switched battery, and essential buses. When external dc power is applied, power is available at the No. 1, No. 2, essential, and switched battery buses. The battery bus is powered only by the battery.

The only control switch for the system is the battery on-off (BATT) switch on the overhead electrical panel in the cockpit. The master caution panel has lights to indicate the status of the system.

Most of the electrical connectors used on the aircraft have a fully-coupled indicator which is utilized to prevent over or under engagement of the connector by the installer, and is also utilized during inspection as a quick visual indication of proper installation. This indicator consists of three axial stripes, usually blue in color, placed on the plug shell which will aline with three corresponding stripes on the coupling ring when completely coupled. Do not over-tighten the coupling ring beyond the blue stripes.

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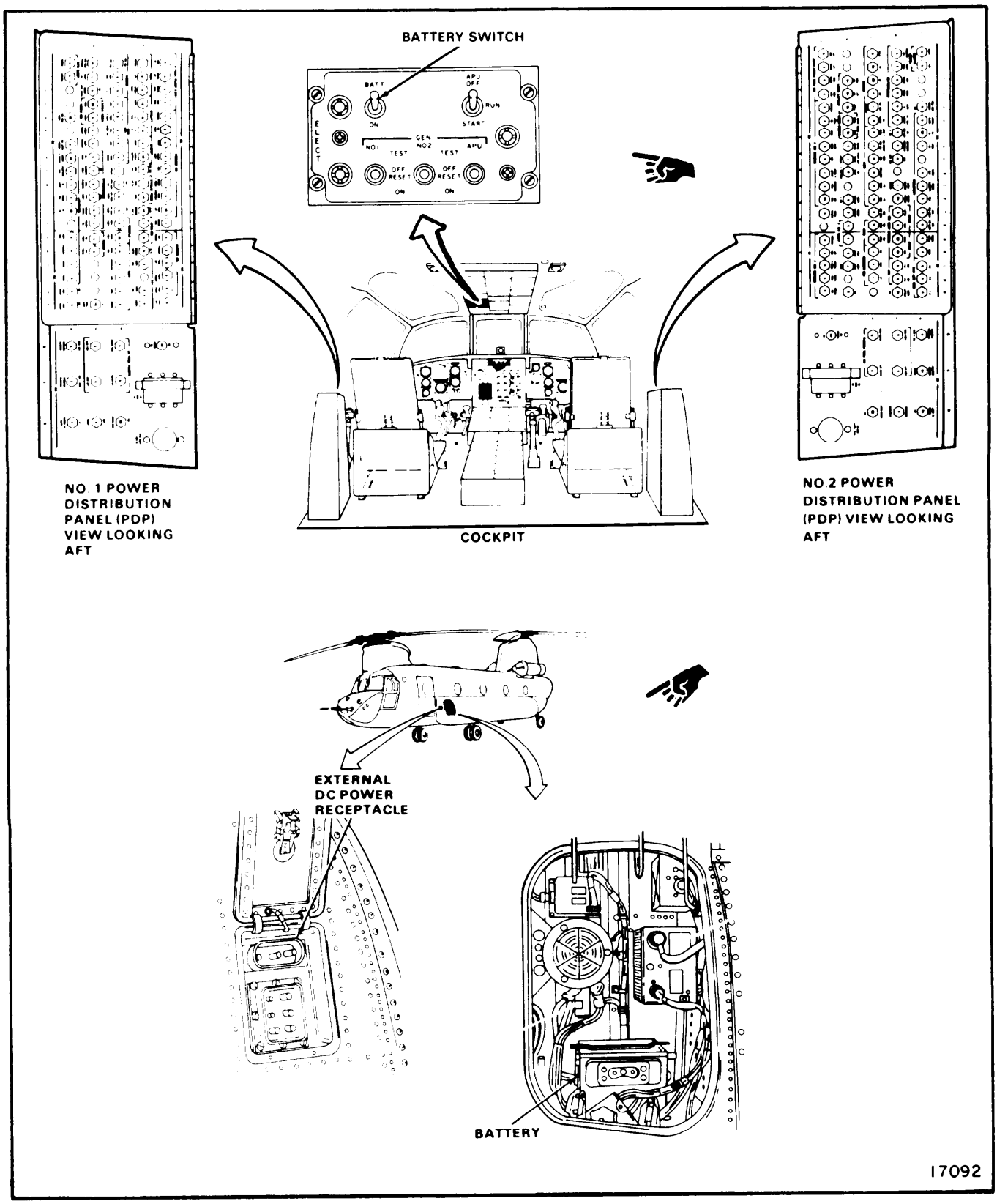
9-1 DIRECT CURRENT (DC) POWER DISTRIBUTION SYSTEM (Continued)



GO TO NEXT PAGE

DC POWER DISTRIBUTION

WITHOUT 74

NO. 1 DC BUS

AUX AFT LH FUEL PUMP CONT
MAIN AFT LH FUEL PUMP CONT
LH MAIN FWD FUEL PUMP CONT
LH AUX FWD FUEL PUMP CONT
ENGINE NO. 1 OIL TEMP
ENG NO. 1 ANTI-ICE
COPLT HSI MODE SEL
CHAFF
RAD WARN
ENGINE NO. 1 TORQUE
ENGINE NO. 1 TRIM
FUEL QTY
XFEED CONT
COPLT UTILITY
LH FWD UTILITY
LH AFT UTILITY
HOIST CONT
HOIST CABLE CUTTER
SLT FIL
SLT CONT
NVG FORM LIGHTING
NO. 1 BLOWER CONTROL
UTIL BLOWER CONTROL
UTIL SYS CONT
BRAKESTEER
MAINT PNL
FWD ACTR CYCLIC TRIM
MNL CYCLIC TRIM
CLTV DRIVER ACTR
AFCS NO. 1
ADF
VHF NO. 2 AM/FM COMM
NO. 1 DC BUS CONT
WSHLD COPLT CONT
ESS BUS CONT

NO. 2 **DC BUS**

RH FWD UTILITY RCPT
RH AFT UTILITY RCPT
PILOT UTILITY RCPT
CARGO HOOK NORM RLSE CONT
CARGO HOOK NORM RLSE PWR
BLADE TRACK
CYCLIC TRIM AFT ACTR
PLT HSI MODE SEL
AFCS NO. 2
HF
IFF
AIMS ALT
RADAR ALT
ENGINE NO. 2 TRIM
ENGINE NO. 2 ANTI-ICE
ENGINE NO. 2 TORQUE
KY28
HF
MSL DET SYS
DOPPLER
VHF HOM
ENGINE NO. 2 OIL TEMP
RH FUEL PUMP CONT FWD AUX
RH FUEL PUMP CONT FWD MAIN
RH FUEL PUMP CONT AFT MAIN
RH FUEL PUMP CONT AFT AUX
SLT FIL
SLT CONT
CKPT DIM CONT
INSTR FLOOD
POS LIGHTING
ANTI-COL TOP
ANTI-COL BOT
NAV CONT VGI
AVIONICS COOLING
CRUISE GUIDE
NO. 2 DC BUS CONT
OMEGA POWER
OMEGA TAS
MAINT PNL LTS
FLT CONT HYDRAULICS
HYDRAULICS FLUID TEMP
HYDRAULICS PRESSURE IND
PWR XFER
NO. 2 HYDRAULIC BLOWER
WSHLD ANTI-ICE CONT CTR
WSHLD ANTI-ICE CONT PILOT
WSHLD WIPER
CABIN HEATER CONT

ESSENTIAL BUS NO. 1 PDP

THRUST BRAKE
CAUTION PNL
UHF AM
LH INTPH
VOR
TURN & SLIP
NORM APU CONT
COPLT CLOCK
CONT AC
NO. 1 EMER ENG TRIM
CARGO HOOK EMERG REL PWR
CARGO HOOK EMERG REL CONT
ENGINE NO. 1 COND CONT
ENGINE NO. 1 IGN
ENGINE NO. 1 START &, TEMP
ENGINE NO. 1 FUEL SHUTOFF
ENGINE NO. 1 FIRE EXT
ROTOR TACH
ESS BUS FEEDER

NO. 2 PDP

PILOT CLOCK
ROTOR TACH
ENGINE NO. 2 FIRE EXT
ENGINE NO. 2 IGN
ENGINE NO. 2 FUEL SHUTOFF
ENGINE NO. 2 START & TEMP
ENGINE NO. 2 COND CONT
TURN & SLIP
RH INTPH
INST FLOOD LIGHTING
NO. 2 EMERG ENG TRIM
TROOP ALARM BELL
TROOP ALARM JUMP LT
VHF ANT SEL
VHF NO. 1 AM/FM
CKPT DOME LIGHTS

BATTERY BUS

HYDRAULICS OIL LEVEL
EMERG APU CONT

SWITCHED BATTERY BUS

CONT CENTER
CABIN & RAMP LIGHTING
OIL LEVEL CHECK LIGHTING
REFUEL
EMERG EXIT LIGHTS

GO TO NEXT PAGE

DC POWER DISTRIBUTION

WITH 74

NO. 1 DC BUS

AUX AFT LH FUEL PUMP CONT
MAIN AFT LH FUEL PUMP CONT
MAIN FWD LH FUEL PUMP CONT
AUX FWD LH FUEL PUMP CONT
ENGINE NO. 1 TORQUE
ENGINE NO. 1 OIL TEMP
FUEL QTY
FUEL XFEED CONT
COPLT UTILITY
LH FWD UTILITY
LH AFT UTILITY
HOIST CONT
HOIST CABLE CUTTER
MNL CYCLIC TRIM
FWD ACTR CYCLIC TRIM
CLTV DRIVER ACTR
AFCS NO. 1
VHF NO. 2 AM/FM COMM
COPLT HSI MODE SEL
ADF
RAD WARN
CHAFF
NO. 1 DC BUS CONT
WSHLD COPLT CONT
NO. 1 BLOWER CONTROL
UTIL BLOWER CONTROL
BRAKESTEER
MAINT PNL
ESS BUS CONT
SLT CONT
NVG FORM LIGHTING
SLT FIL
UTILITY SYS CONTROL

NO. 2 DC BUS

AUX FWD RH FUEL PUMP CONT
MAIN FWD RH FUEL PUMP CONT
MAIN AFT RH FUEL PUMP CONT
AUX AFT RH FUEL PUMP CONT
ENGINE NO. 2 TORQUE
ENGINE NO. 2 OIL TEMP
OMEGA TAS
ARN-148 PWR
RH FWD UTILITY RCPT
RH AFT UTILITY RCPT
PILOT UTILITY RCPT
CARGO HOOK NORM RLSE CONT
CARGO HOOK NORM RLSE PWR
BLADE TRACK
CYCLIC TRIM AFT ACTR
NO. 2 DC BUS CONT
CRUISE GUIDE
AFCS NO. 2
KY-28 POWER
PWR
ARC-199 HF
IFF
PLT HSI MODE SEL
VHF HOM
DOPPLER
AIMS ALT
RAD ALT
MSL CONT
NAV CONT VGI
NO. 2 HYDRAULIC BLOWER
PWR XFER
HYDRAULICS PRESS IND
HYDRAULICS FLUID TEMP
FLT CONT HYDRAULICS
MAINT PNL LTS
AVIONICS COOLING
CABIN HEATER CONT
WSHLD WIPER
WSHLD ANTI-ICE CONT PILOT
WSHLD ANTI-ICE CONT CTR
IFM
SLT FIL
SLT CONT
ARC-201 PWR
CKPT DIM COND
POS
ANTI COL TOP
ANTI COL BOT
INSTR FLOOD
OMEGA POWER

ESSENTIAL BUS NO. 1 PDP

RAMP EMER CONT
THRUSTBRAKE
UHF AM
INTPH LH
CPLT CLOCK
APU CONT NORM
LIGHTING CAUTION PNL
VOR
TURN & SLIP
CONT AC
CARGO HOOK EMER REL PWR
CARGO HOOK EMER REL CONT
ROTOR TACH
NO. 1 ENGINE COND CONT
NO. 1 ENGINE FUEL SHUTOFF
NO. 1 ENGINE START IGN
NO. 1 ENGINE TEMP
NO. 1 ENGINE FIRE EXT
ESS BUS FEEDER

NO. 2 PDP

VHF ANT SEL
VHF NO. 1 AM/FM
INTPH RH
PILOT CLOCK
INST FLOOD LIGHTING
CKPT DOME LIGHTING
NAV TURN & SLIP
TROOP ALARM BELL
TROOP ALARM JUMP LT
NO. 2 EMERG ENG TRIM
ROTOR TACH
NO. 2 ENGINE REV CONT
NO. 2 ENGINE FUEL SHUTOFF
NO. 2 ENGINE TEMP
NO. 2 ENGINE START IGN
NO. 2 ENGINE PRI CONT
NO. 2 ENGINE FIRE EXT

BATTERY BUS

HYDRAULICS OIL LEVEL
APU CONT EMERG

SWITCHED BATTERY BUS

CONT CENTER
CABIN & RAMP LIGHTING
OIL LEVEL CHECK LIGHTING
REFUEL
EMER EXIT LIGHTING

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Power Distribution Panels

Two power distribution panels (pdp) are the electrical load centers for the dc power distribution system. The panels contain circuit breakers and relays associated with both power systems.

The **No. 1 pdp** is outboard of the copilot seat on the left side of the cockpit. Its contents are associated with the No. 1 dc system. It services the left side of the helicopter.

The **No. 2 pdp** is outboard of the pilot seat on the right side of the cockpit. Its contents are associated with the No. 2 dc system. It services the right side of the helicopter.

The following major components are in one or both pdp:

- **Circuit Breakers** (No. 1 and No. 2 PDP): All of the helicopter dc circuit breakers are on one or the other pdp. All 5 through 50 ampere circuit breakers are single-hole mounted. The 70 ampere ac and 100 ampere dc bus tie circuit breakers are mounted with screws and washers.
- **Reverse Current Cutout (RCCO) Relays:** Each RCCO relay prevents its associated tr from connecting to the aircraft dc buses when that tr has low or no output.
- **TR Failure Relays:** If either transformer-rectifier fails, the associated tr failure relay opens, lighting a light on the master caution panel and energizing the dc bus tie relay in the No. 2 pdp.
- **DC Bus Tie Relay:** When the dc bus tie relay is energized, both the No. 1 and No. 2 dc buses are connected together so that they may be powered from a single tr or dc external power.
- **Switched Battery Bus Relay** (No. 1 PDP): The position of this relay determines whether the switched battery bus will be powered by the essential bus or the battery bus.
- **Essential DC Bus Relay** (No. 1 PDP): The position of this relay determines whether the essential dc bus will be powered by the No. 1 dc bus or the battery.
- **DC External Power Relay** (No. 1 PDP): When this relay is energized, external dc power is connected to the No. 1 dc bus.
- **External Power Control Relay** (No. 1 PDP): When external dc power is applied, this relay lights the EXT PWR light on the master caution panel and deenergizes the No. 1 and No. 2 RCCO relays. This arms the dc system for crosstie coupling between the No. 1 and No. 2 buses.
- **Reverse DC Polarity Protection (Blocking) Diode** (No. 1 PDP): This diode ensures that the external power and power control relays cannot be operated by external dc voltage of reversed polarity.
- **DC Utility Receptacle** (No. 1 and No. 2 PDP): This 28-volt receptacle accepts any plug-in dc accessory with a current rating of less than 15 amperes. Power for the No. 1 (copilot) and No. 2 (pilot) receptacles comes from the associated dc bus.

Cabin DC Utility Receptacles

There are 12 dc receptacles in the cabin, a set of three on each side of the cabin at sta 260 and 360, wl 0. The total current rating of the dc plug-in accessories per each side of the cabin must be less than 15 amperes.

Power for the left and right receptacles comes from the No. 1 and No. 2 dc buses, respectively. One 15-ampere circuit breaker serves each parallel-connected set of three receptacles.

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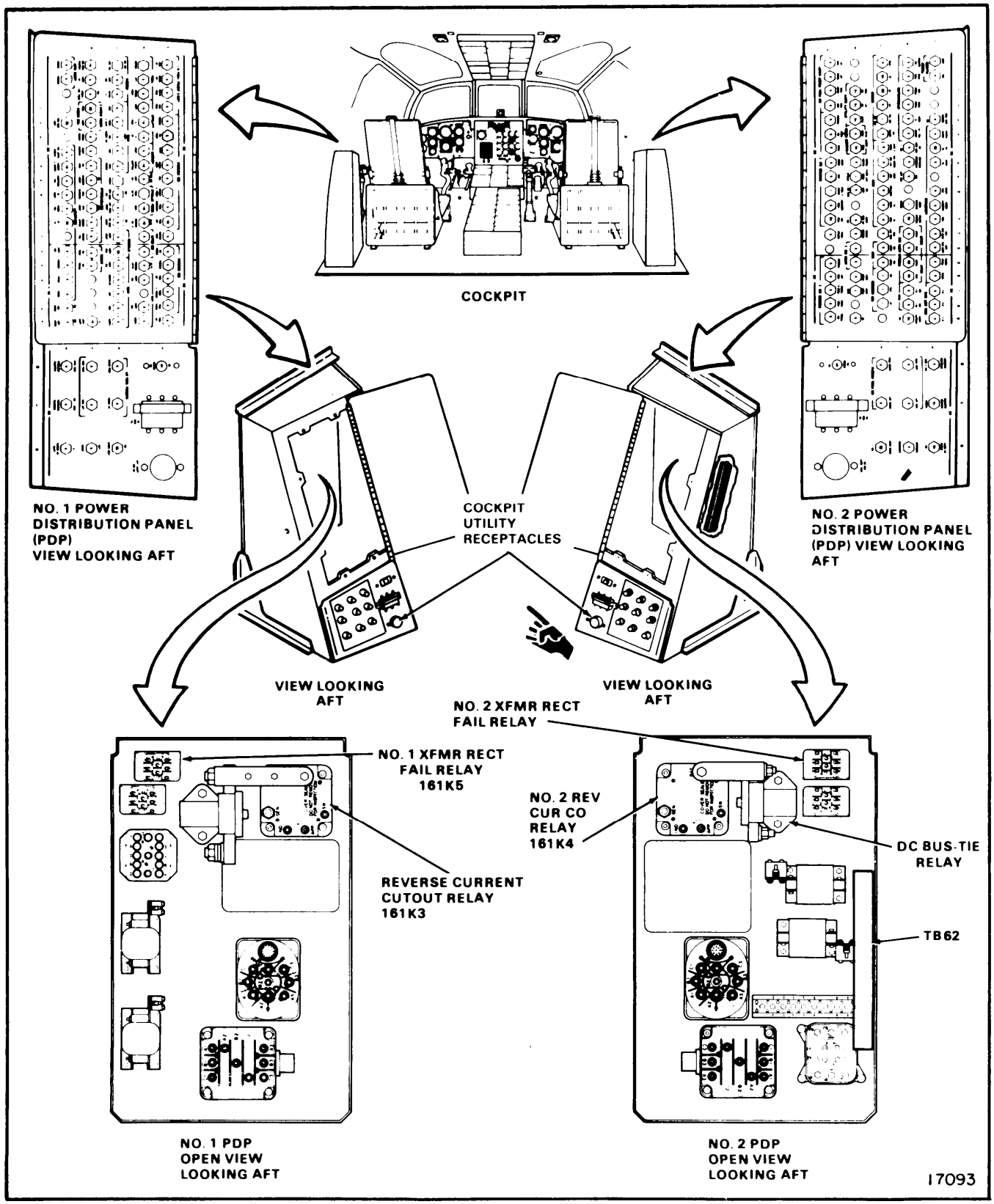
9-1 DIRECT CURRENT (DC) POWER DISTRIBUTION SYSTEM (Continued)



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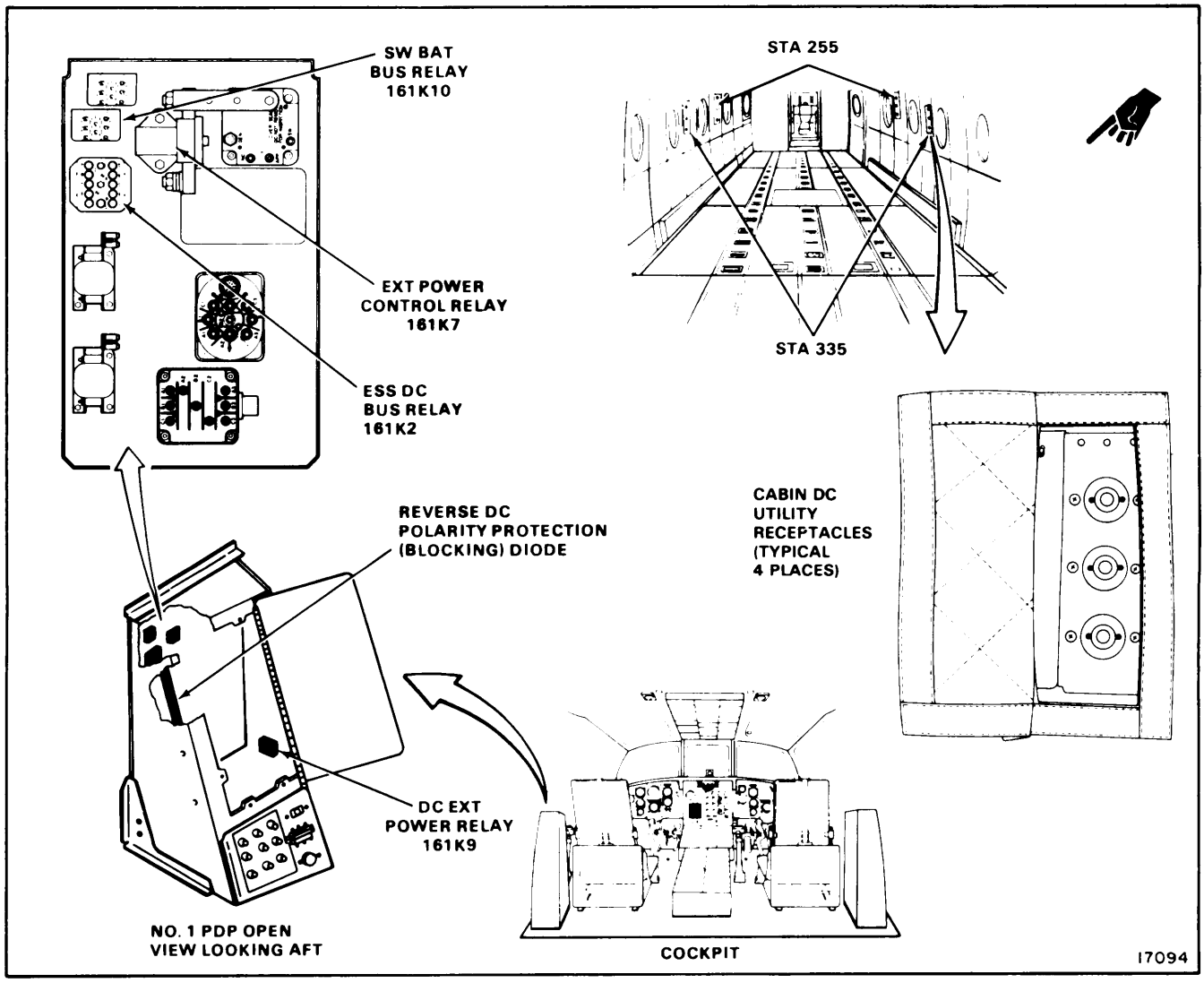
9-1 DIRECT CURRENT (DC) POWER DISTRIBUTION SYSTEM (Continued) 9-1



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Transformer-Rectifiers

Two transformer-rectifiers (tr) are the primary source of dc power on the helicopter. Each transforms 115/200-volt 400 Hz ac power to 48.5 volt ac and rectifies it to 28 volt dc. The No. 1 tr is located in the left electrical equipment pod with the battery and the battery charger. The No. 2 tr is in the right electrical equipment pod.

Each tr assembly consists of an input filter, a stepdown transformer, rectifiers, an output filter, a stepdown autotransformer and a control relay. An integral cooling fan draws air from inlets in the cabin at sta 176. Air from the pod is vented to the cabin near floor level.

The dc output of the tr is not regulated. Regulation is accomplished indirectly through regulation of the input voltage. Each tr is protected by its own reverse current cutout (RCCO) relay, located in the No. 1 or No. 2 power distribution panel.

If power from either of these primary dc power sources is interrupted, a light on the master caution panel (NO. 1 RECT OFF or NO. 2 RECT OFF) will come on.

Battery

The battery subsystem includes a 24-volt nickel-cadmium battery rated at 11 ampere hours, a battery charger, a relay, status lights, and a caution light on the master caution panel, The battery, charger, and relay are located in the left electrical pod.

When there is no other source of dc power, the battery, when plugged in, supplies the battery bus and the switched battery bus. When the cockpit battery switch is on, it also supplies the essential bus.

Battery Charger

The charger monitors and controls the state of charge of the battery. It is powered by 115/200-volt, 3-phase, 400 Hz ac from the No. 1 ac bus. A relay connects the battery to the charger and the essential dc bus when the battery switch on the cockpit overhead panel is on.

BATTERY charge status lights are in the left electrical pod. The CHARGING light indicates battery is on normal charge (battery is less than 80 percent charged). The CHARGE COMPLETE light indicates battery is on low charge (battery is more than 80 percent charged).

A BATT SYS MAL light on the master caution panel in the cockpit comes on and charging stops when one or more of the following conditions occur:

- Battery or charger overtemperature,
- Battery temperature sensor failure.
- Battery cell imbalance.
- Fault in charger circuits.

External Power

A dc external power receptacle accepts the cable from an external dc power supply cart to supply 28-volt dc power to the helicopter. The receptacle is located inside a hinged access door at the forward end of the left pod.

When an external source of dc power is used, the No. 1 and No. 2 transformer-rectifiers are automatically disconnected. Power from the external source is applied to the No. 1 and No. 2 dc buses and to the essential and switched battery buses. An EXT PWR light on the master caution panel comes on to indicate when external power is being used, and is powered through the dc external power relay.

The application of external dc power will not charge the battery.

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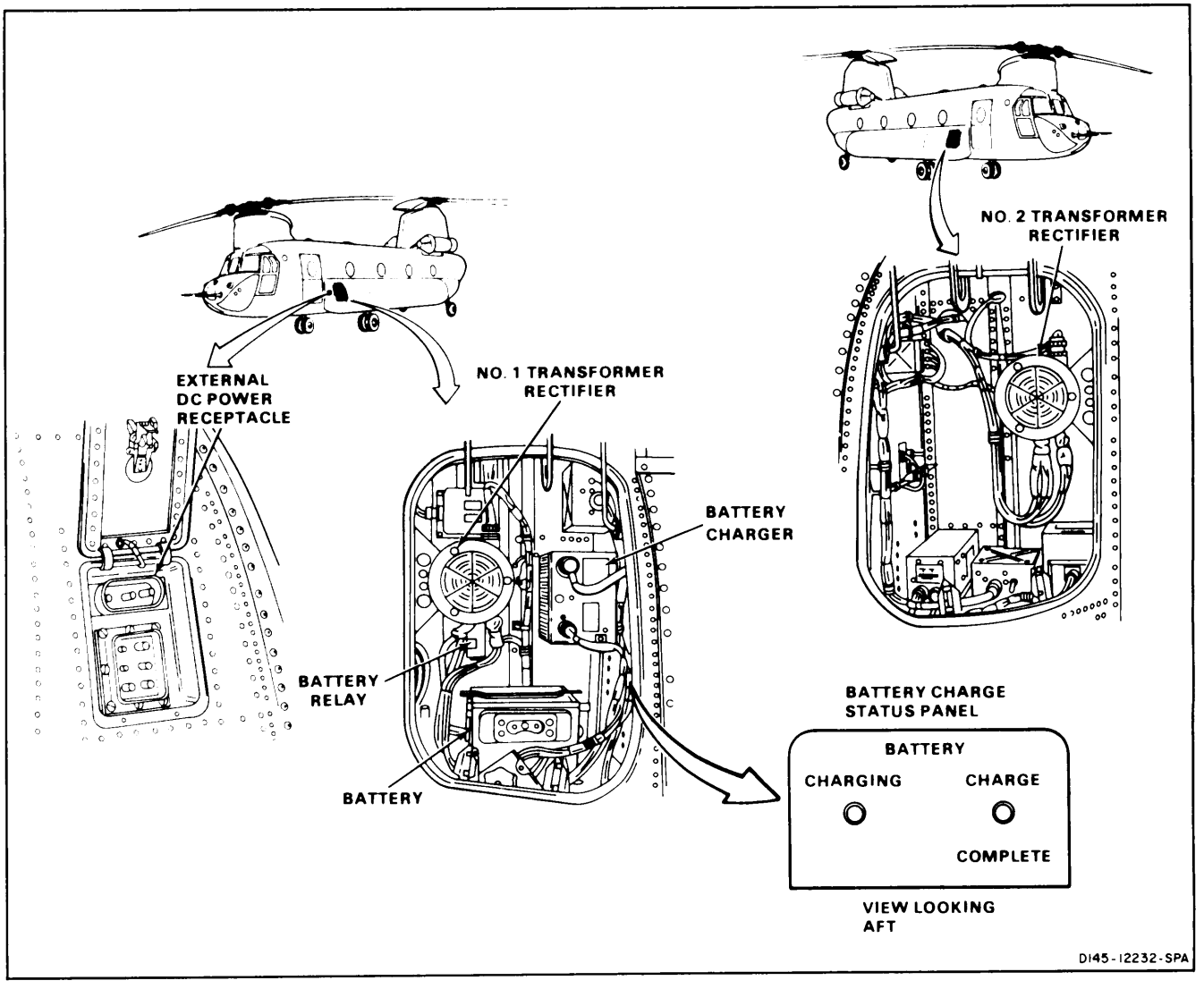
9-1 DIRECT CURRENT (DC) POWER DISTRIBUTION SYSTEM (Continued)



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9-1 DIRECT CURRENT (DC) POWER DISTRIBUTION SYSTEM (Continued) 9-1

THEORY OF OPERATION

When 115/200-volt 400 Hz ac power is available to the No. 1 and No. 2 transformer-rectifiers, the No. 1 and No. 2 dc power sources become available. Each source provides 28 volts dc to its respective dc bus and can supply up to 200 amperes.

RCCO Relay

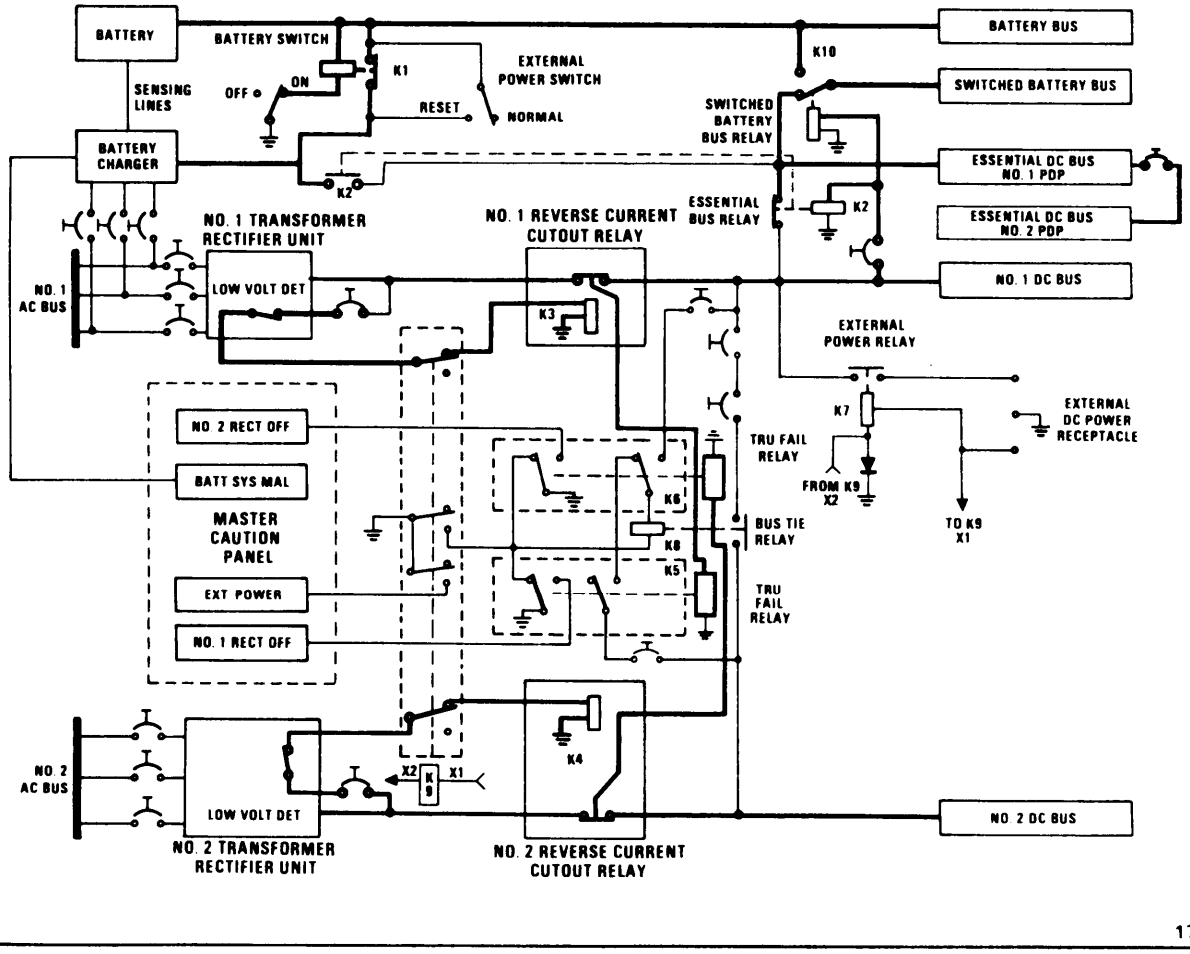
Each transformer-rectifier (tr) is protected against a reverse flow of current from the helicopter dc bus by a reverse current cutout (RCCO) relay. **Relay 161K3** protects the No. 1 tr and **relay 161K4** the No. 2 tr.

In normal operations, 28-volt dc power from the tr is routed from the GEN to the BATT terminals of the relay through an internal main contactor. The control of this internal main contactor is provided by a low voltage detection circuit within the tr.

If this low voltage detection circuit determines that tr output is acceptable, 28-volts dc is routed thru the tr to the APP terminal of the RCCO, energizing the internal main contactor and connecting the tr to the dc bus.

If this low voltage detector circuit determines that tr output is not acceptable, no tr output is applied to the RCCO APP terminal. As a result the internal main contactor is not energized isolating the tr from the dc bus. When this happens, **tr failure relay 161K5** (No. 1) or **161K6** (No. 2) is deenergized, lighting the relevant RECT OFF light on the master caution panel and **energizing dc bus tie relay 161K8.** Energizing 161K8 connects the No. 1 and No. 2 dc buses, allowing both to be powered by the operating tr.

DC SYSTEM LOGIC SCHEMATIC



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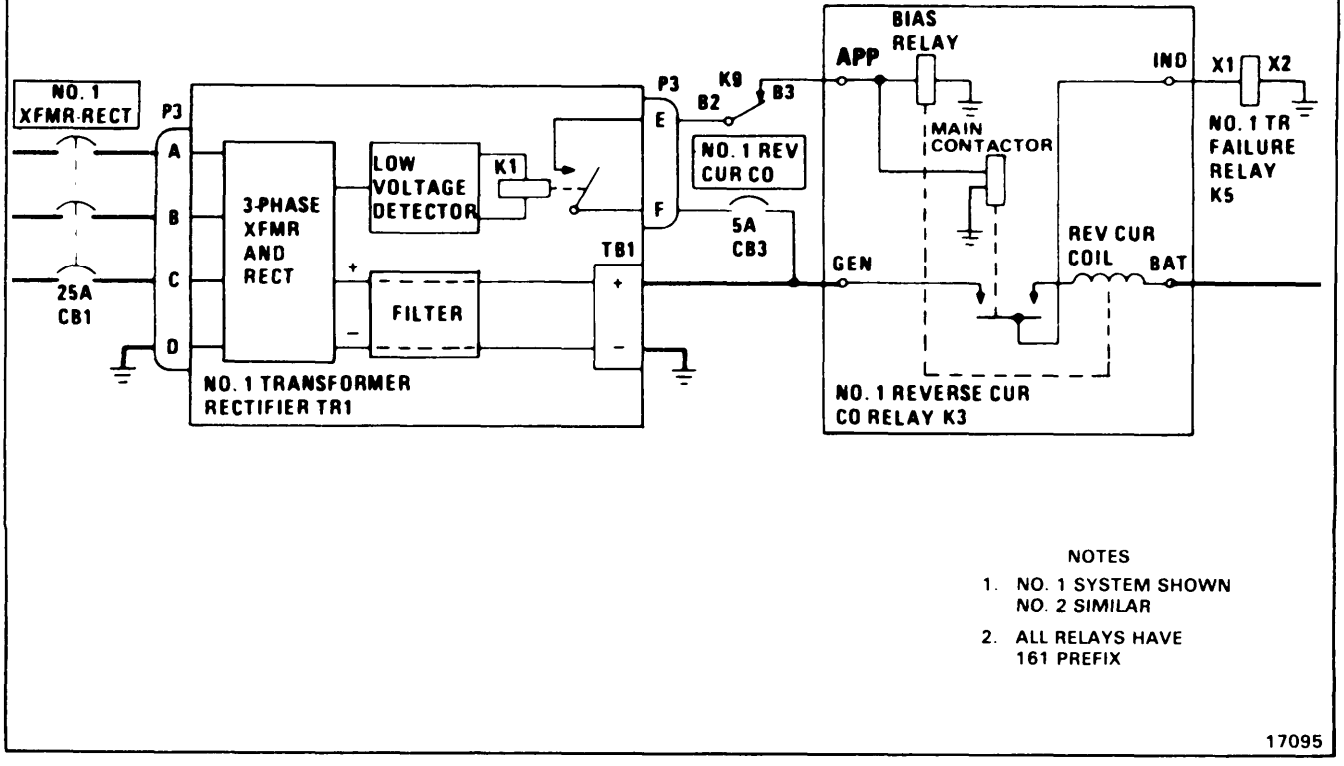
If the detection circuit determines that tr output is not acceptable, no output from the tr is applied to the APP RCCO, the internal main contactor is not energized, isolating the tr from the aircraft dc bus. When this happens, **tr failure relay 161K5** (No. 1) or **161K6** (No. 2) is deenergized, lighting the relevant RECT OFF light on the master caution panel and energizing **dc bus tie relay 161K8.** Energizer 161K8 connects the No. 1 and No. 2 dc busses, allowing both to be powered by the oper-sting tr.

TRANSFORMER-RECTIFIER/RCCO RELAY



NOTES

1. NO. 1 SYSTEM SHOWN NO. 2 SIMILAR
2. ALL RELAYS HAVE 161 PREFIX

17095

GO TO NEXT PAGE

Battery

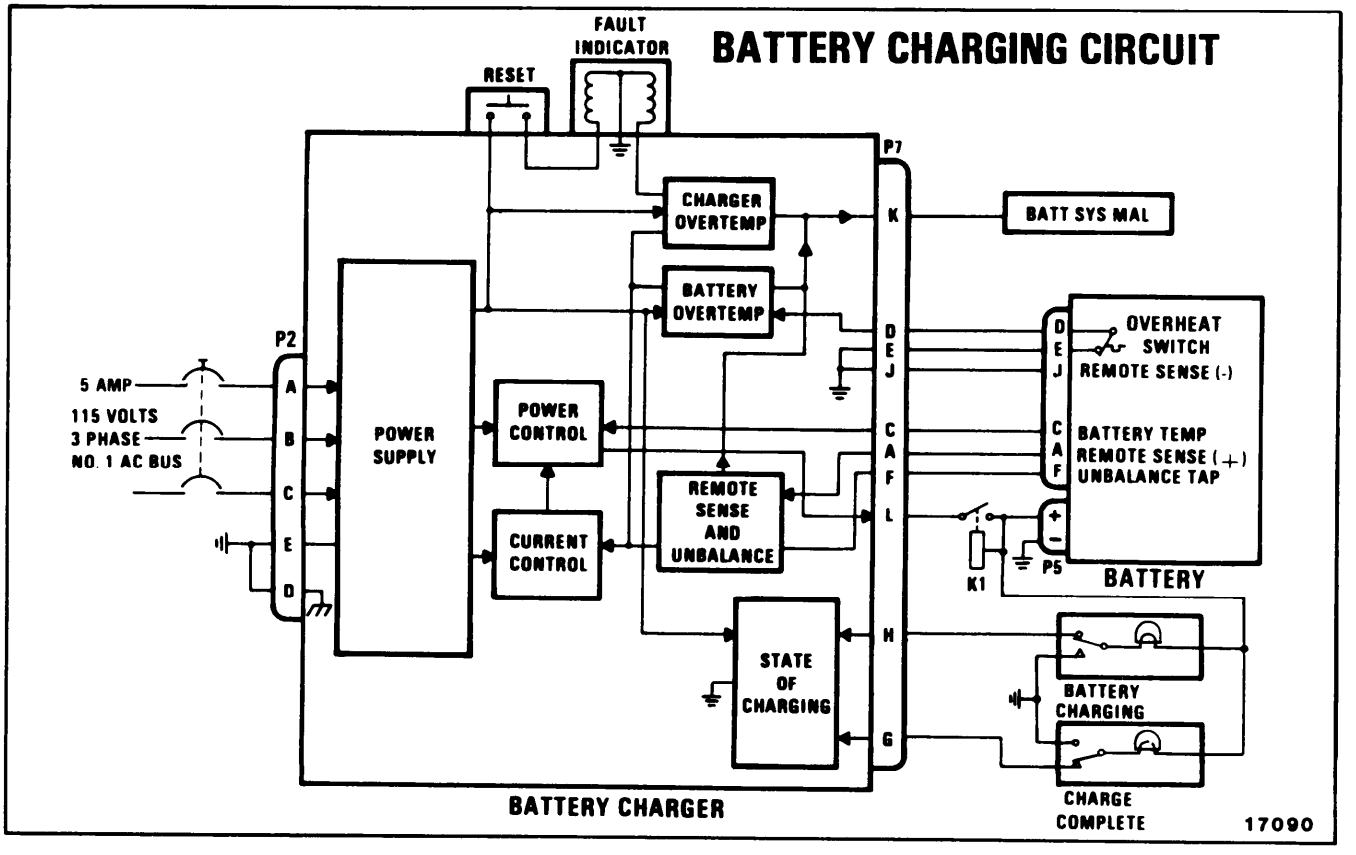
When the battery is connected, 24 volts dc is supplied directly to the battery bus. In addition, if the No. 1 dc bus is not powered, the battery provides 28 volts dc to the switched battery bus through **switched battery bus relay 161K10.** If the cockpit battery switch is on, 28 volts dc is also provided to the essential dc bus through **battery bus relay 161K1** and **essential dc bus relay 161K2.**

Battery Charger

When power is applied to the No. 1 ac bus the charger will charge the battery if there are no malfunctions in the system. It is a constant current charge (10-11 amps) and will continue until battery is more than 80 percent charged. At this point, the charger drops to very low current (0.04 amp), Normal charge (10-11 amps) will not start again until the battery voltage drops below approximately 80 percent of rated capacity.

The charger also has provision for low current charging (1.5 amp) for deeply discharged batteries, A charger failure will not damage or discharge the battery.

The charger can detect a battery overtemperature condition and will stop charging. Charging will not start again until battery cools and charger is manually reset or power is cycled off and on. The charger will operate at any frequency between 380 and 440 Hz.



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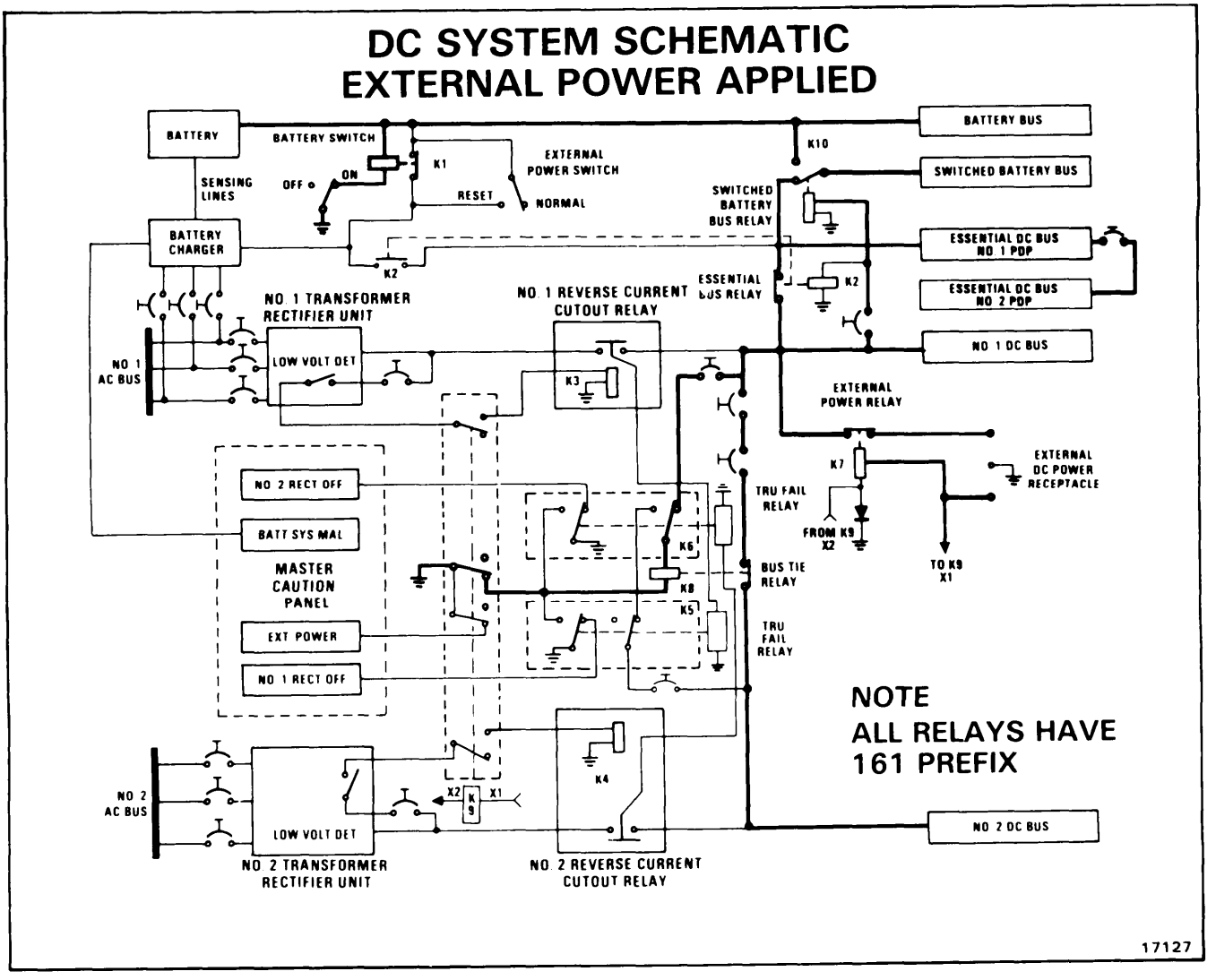
External Power

When external dc power is applied to the helicopter, **dc external power control relay 161K9** is energized. This disconnects the No. 1 and No. 2 transformer-rectifiers from their respective buses by deenergizing their respective RCCO relays. The energized power control relay also lights the EXT PWR light on the master caution panel.

At the same time, **dc external power relay 161K7** is energized to connect 28 volts dc from the external source to the No. 1 dc bus. This energizes **relay 161K2,** applying power to the essential dc bus, **bus tie relay 161K8,** powering the No. 2 bus, and energizes **relay 161K10,** applying power to the switched battery bus.



END OF TASK

SECTION II

DIRECT CURRENT (DC) POWER DISTRIBUTION SYSTEM

9-2 REMOVE TRANSFORMER RECTIFIER 9-2

INITIAL SETUP

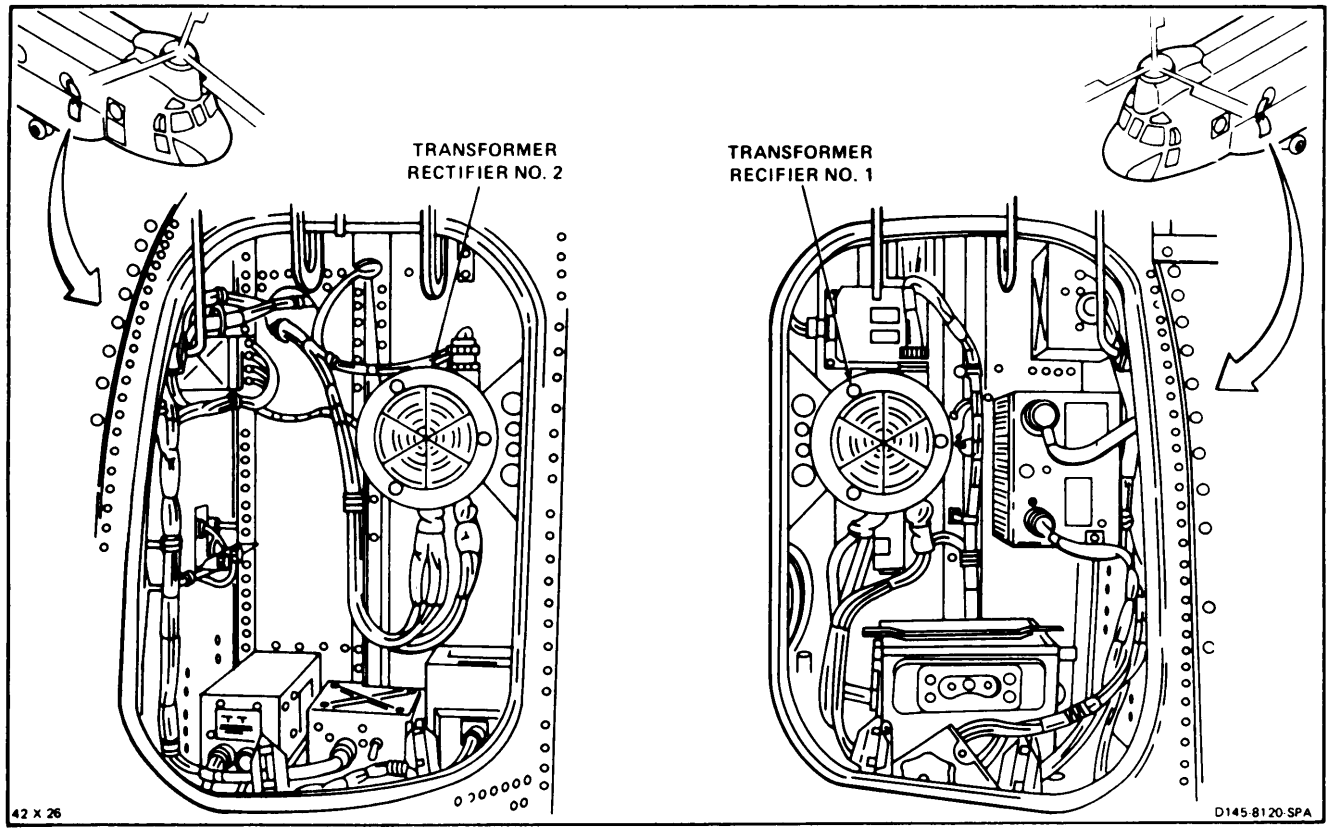
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Tags (E264)
Tape (E385)

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Right or Left Electrical Compartment Access Door Open (Task 2-2)



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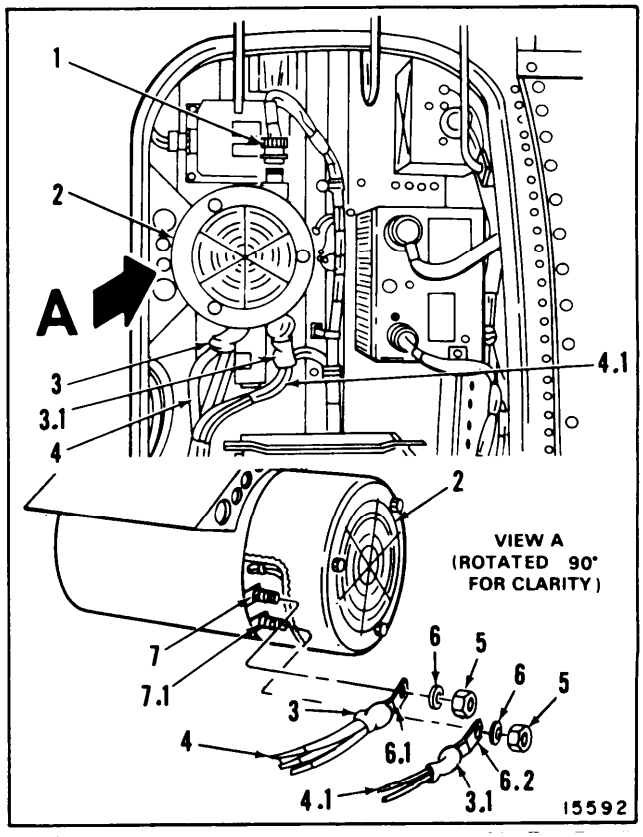
NOTE

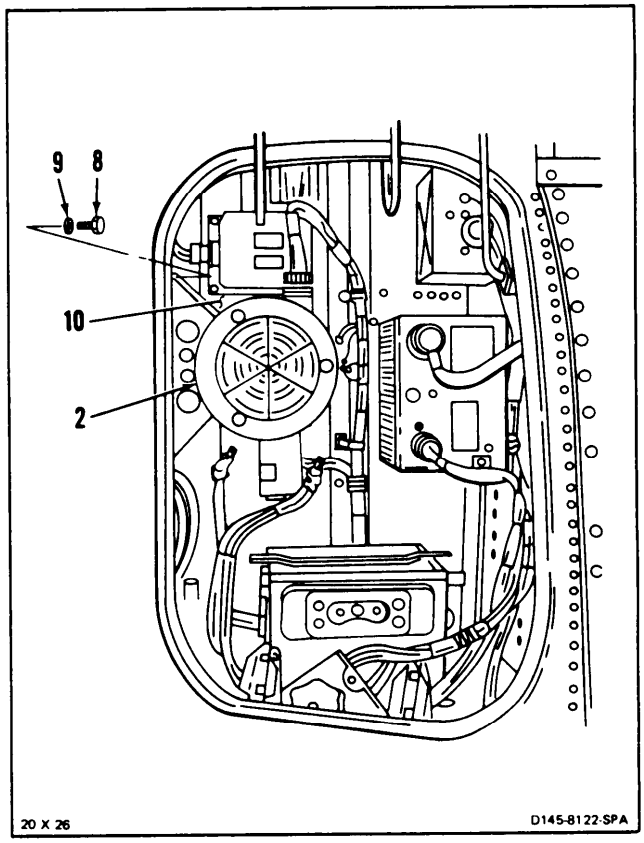
Procedure is same to remove transformer rectifier No. 1 or No. 2. Removal of transformer rectifier No. 1 is shown here.

1. **Disconnect plug (1)** from transformer rectifier (2).
2. Slide two boots (3 and 3.1) over wire bundles (4 and 4.1).
3. **Remove two nuts (5)** and washers (6).
4. Tag and **remove terminal (6.1) (with wire bundle (4) attached) from stud (7).** Use tags (E264).
5. Tag and **remove terminal (6.2) (with wire bundle (4.1) attached) from stud (7.1).** Use tags (E264).



6. **Remove four bolts (8)** and washers (9).
7. **Remove transformer rectifier (2)** from bracket (10).

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-2.1 REPLACE TRANSFORMER-RECTIFIER-TO-FUSELAGE SEAL 9-2.1

INITIAL SETUP

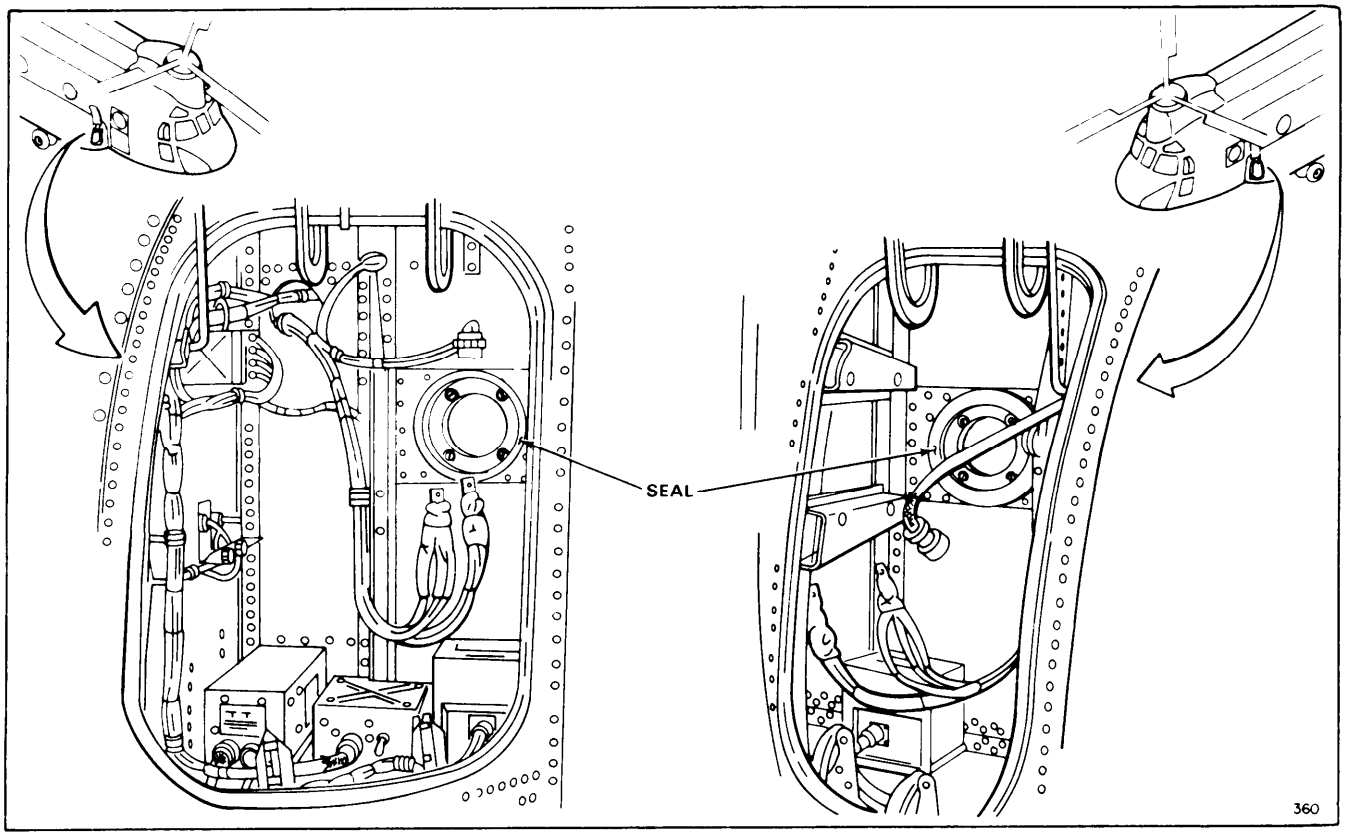
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Transformer-Rectifier Removed (Task 9-2)



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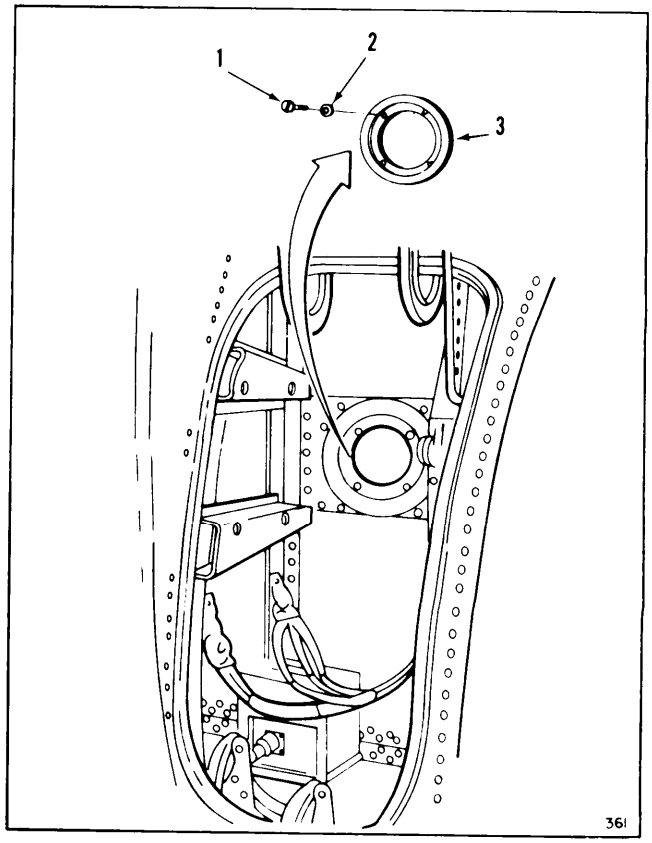
9-2.1 REPLACE TRANSFORMER-RECTIFIER-TO-FUSELAGE SEAL (Continued) 9-2.1

NOTE

Procedure is same to replace No. 1 or No. 2 seal. Replacement of No. 1 seal is shown here.

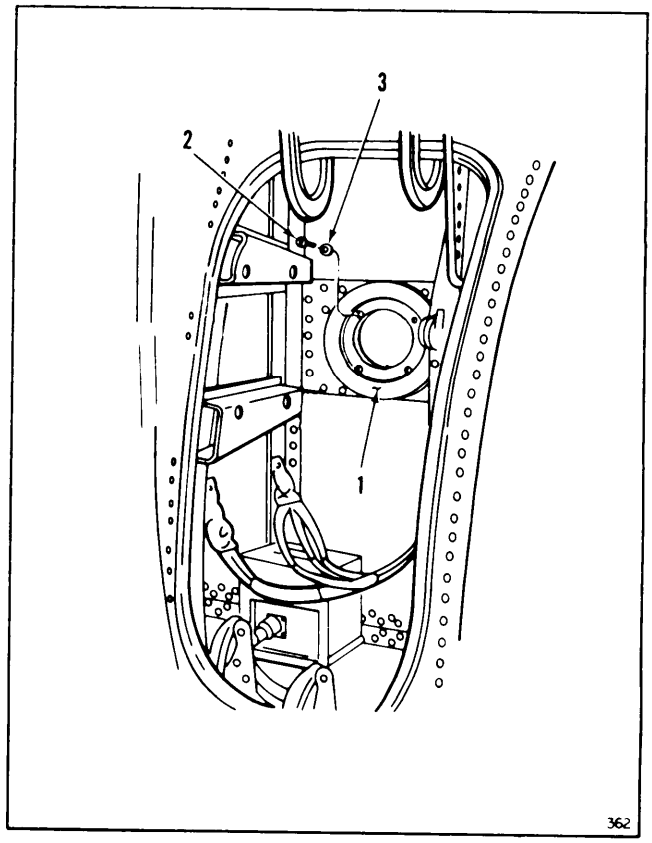
1. **Remove four screws (1) and** four washers (2) and **remove seal (3).**



2. **Position replacement seal (1)** on fuselage, flat side inboard.
3. **Install four screws (2)** and washers (3).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-3 INSTALL TRANSFORMER RECTIFIER

INITIAL SETUP

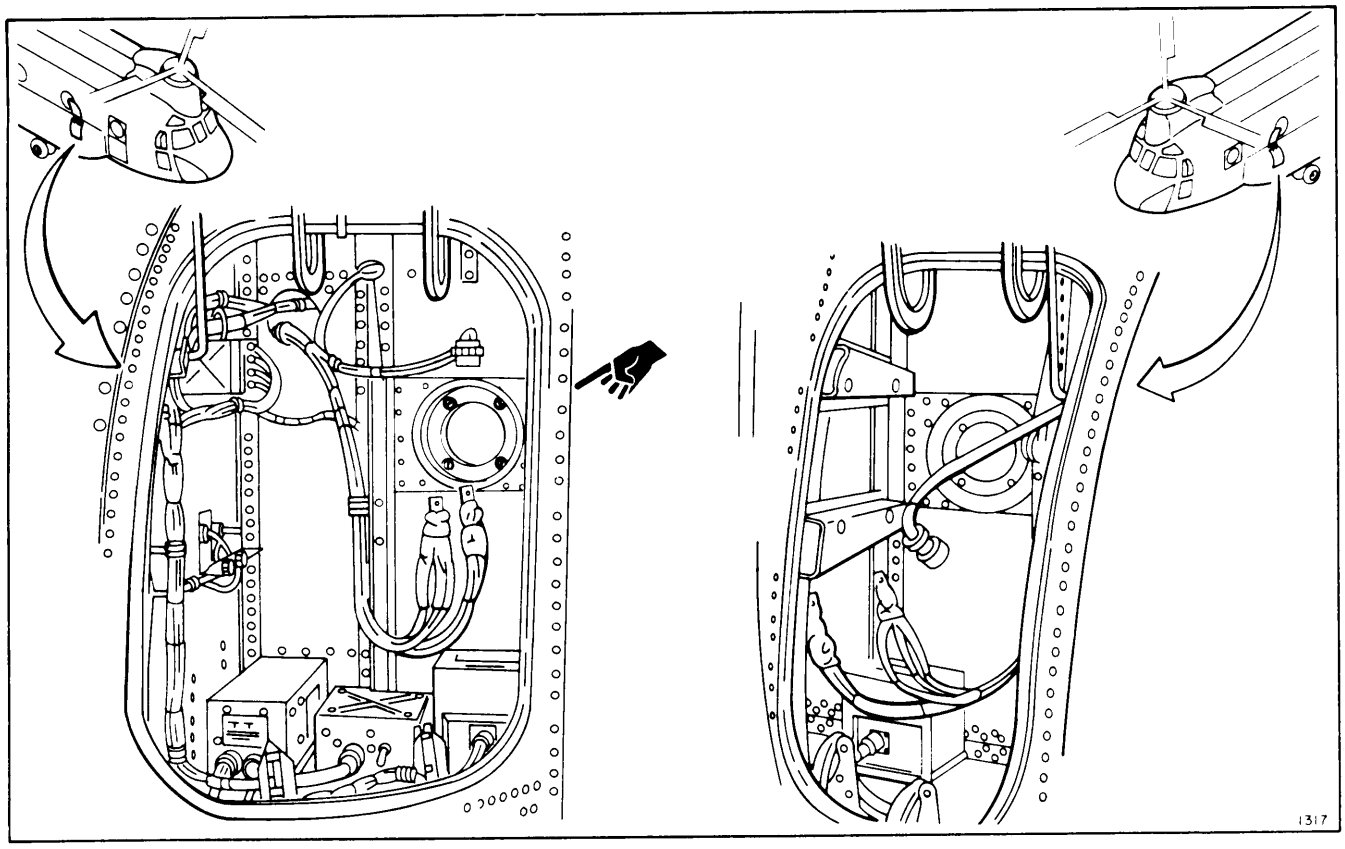
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



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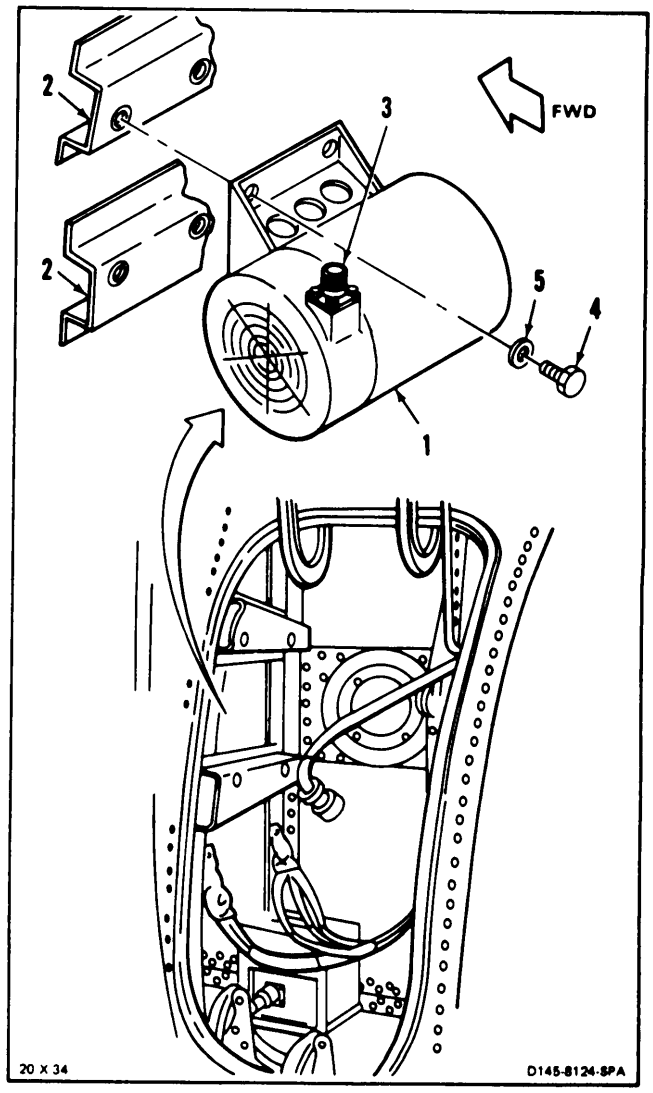
9-3 INSTALL TRANSFORMER RECTIFIER (Continued) 9-3

NOTE

Procedure is same to install transformer rectifier No. 1 or No. 2. Installation of transformer rectifier No. 1 is shown here.

1. **Position** transformer rectifier (1) on bracket (2) with receptacle (3) up.
2. **Install four bolts (4)** and washers (5) in transformer rectifier (1).



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9-3 INSTALL TRANSFORMER RECTIFIER (Continued)

3. **Connect plug (6)** to receptacle (3). Lockwire (E231) plug to receptacle.

CAUTION

Wire bundles must be on correct studs; otherwise fire and damage to component can result.

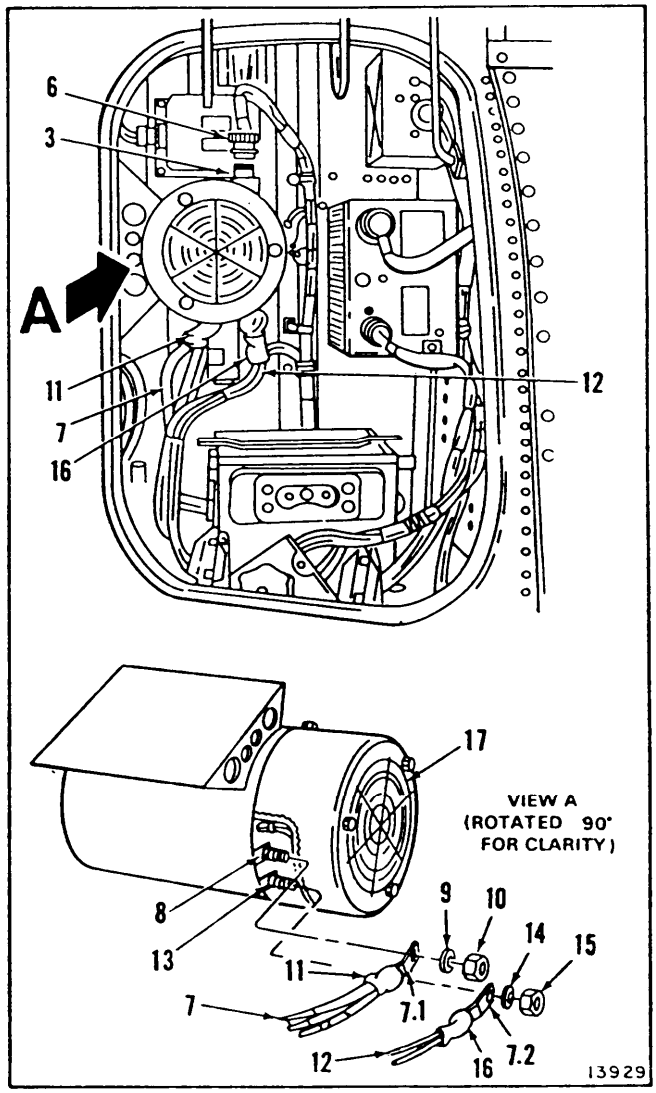
NOTE

When installing wire bundle (7 and 12), make certain that flange on bus bars (7.1 and 7.2) faces the rear of unit (inboard).

4. **Install bus bar (7.1)** with wire bundle (7) (attached) on stud (8). **Secure with washer (9) and nut (10).** Remove tag. Slide boot (11) over stud.

5. **Install bus bar (7.2)** with wire bundle (12) (attached) on stud (13). **Secure with washer (14) and nut (15).** Remove tag. Slide boot (16) over stud.

5. Check that there is no debris or obstruction on screen (17).

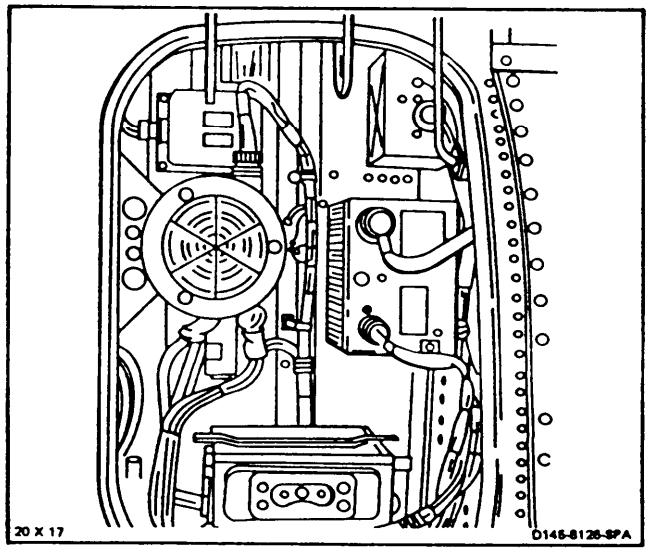


INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520 - 240-T).

Close left or right hand electrical compartment door (Task 2-2).



END OF TASK

9-4 REMOVE DC POWER RECEPTACLE

INITIAL SETUP

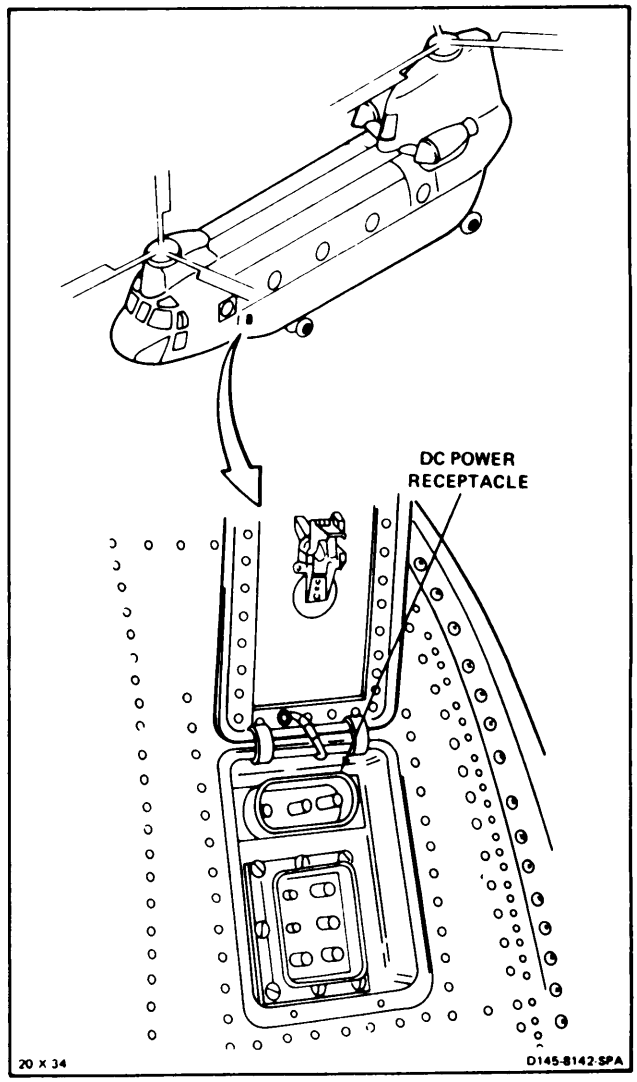
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

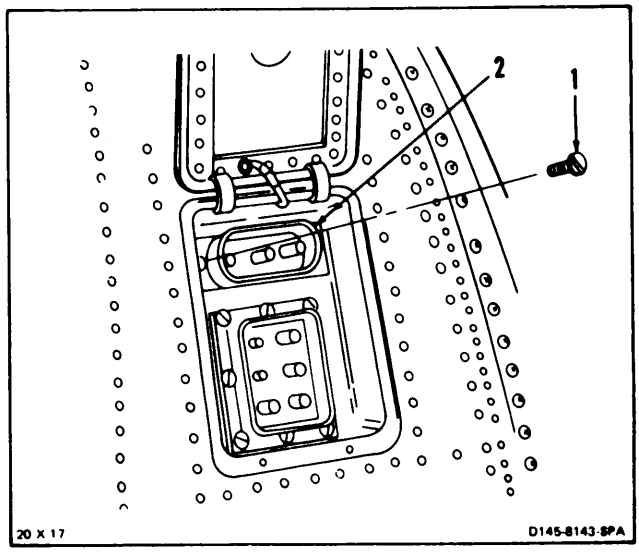
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
EXT PWR DC-AC Access Cover Open (Task 2-2)



1. Cut sealant away from two screws (1) of dc receptacle (2).
2. **Remove two screw (1)** from receptacle (2).



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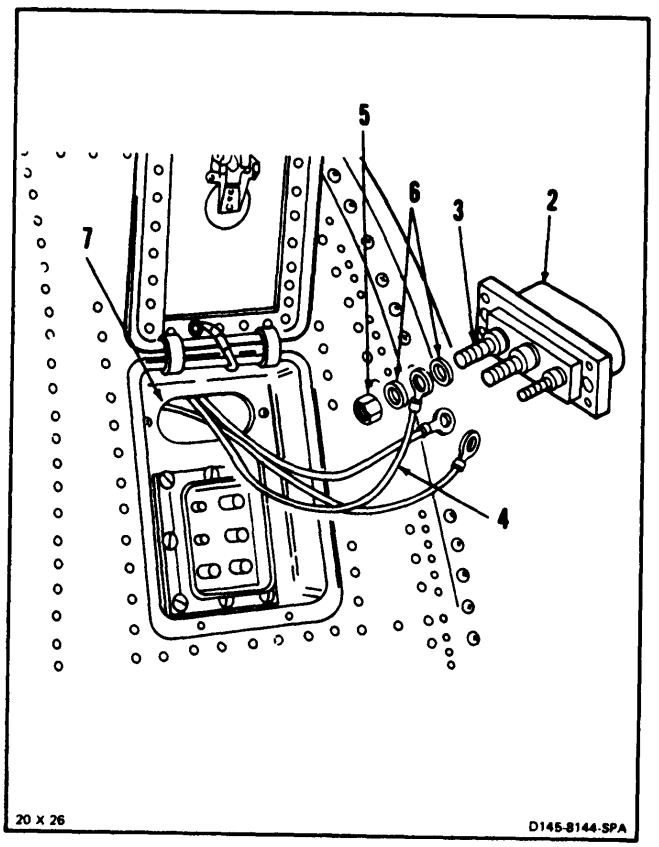
9-4 REMOVE DC POWER RECEPTACLE (Continued)

3. **Pull receptacle (2) outboard** for access to terminals (3).
4. Tag three wires (4). **Remove three nuts (5)** and washers (6) from terminals (3). Use tags (E264).
5. **Disconnect three wires (4)** from terminals (3). Remove receptacle (2).
6. Install washers (6) and nuts (5) loosely on terminals (3).
7. Tape ends of three wires (4). Use tape (E385).
8. Scrape sealant from receptacle (2) and hole (7).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-5 INSTALL DC POWER RECEPTACLE

INITIAL SETUP

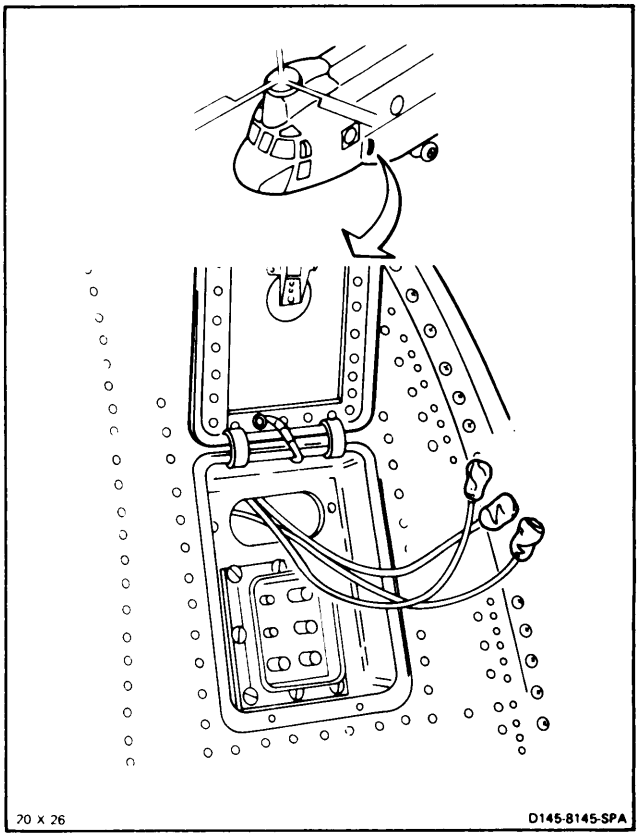
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Acetone (E20)
Sealant (E336)
Cloths (E120)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P

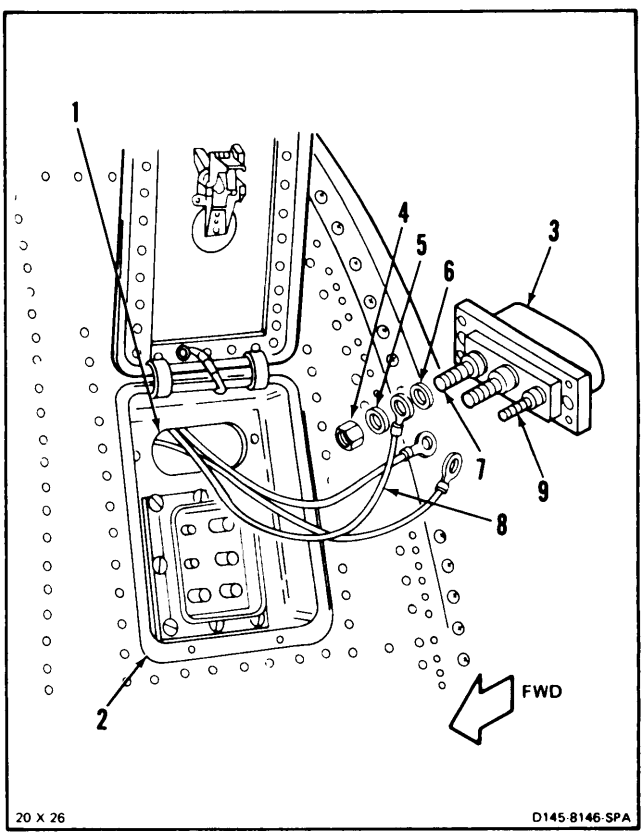


WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Use in well-ventilated area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean surfaces around hole (1) of box (2) and receptacle (3). Use acetone (E20) and cloths (E120). Wear gloves (E186).
2. Remove three nuts (4), washers (5), and washers (6) from terminals (7).
3. Remove tape from ends of three wires (8). **Connect wires** to terminals (7) of receptacle (3). **Install** three washers (6), washers (5), and **nuts (4)** on terminals. Remove tags from wires.
4. **Position receptacle (3),** small terminal (9) forward, in hole (1) of box (2).

INSPECT



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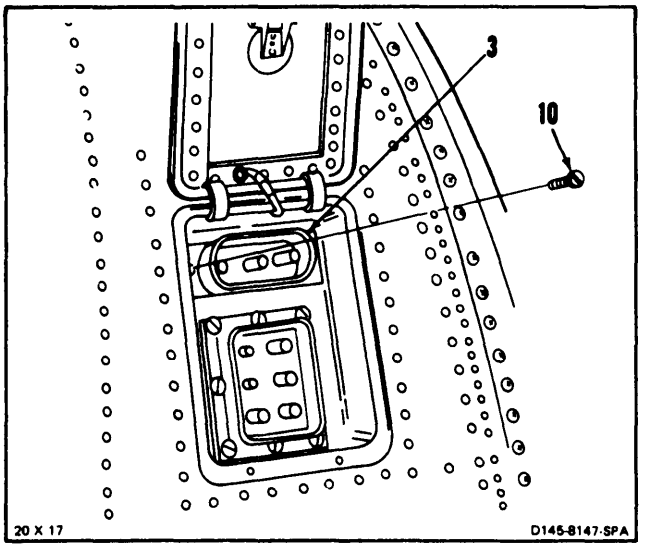
9-5 INSTALL DC POWER RECEPTACLE (Continued)

5. **Install two screws (10)** in receptacle (3).



WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In cam of contact, immediately flush skin or eyes, with water for at leaat 15 minutes. Get medical attention for eyes.

6. **Apply sealant to screws (10)** and edge of receptacle (3). Use sealant (E336). Wear gloves (E186).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Close EXT PWR DC-AC access cover (Task 2-2).

END OF TASK

9-6 REMOVE DC CABIN UTILITY RECEPTACLE

INITIAL SETUP

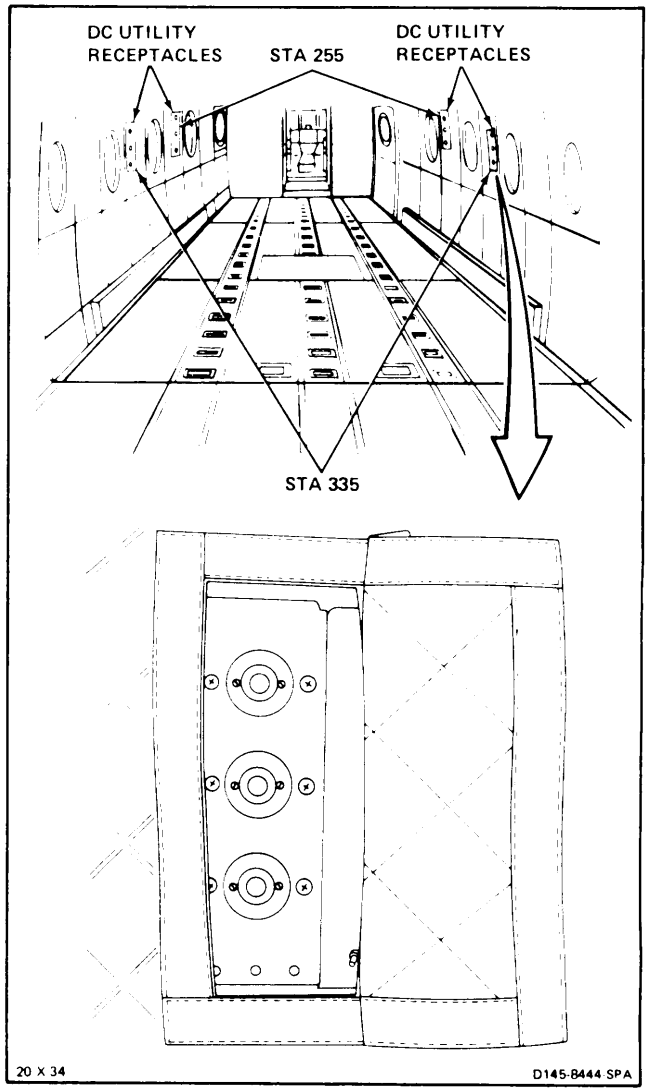
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

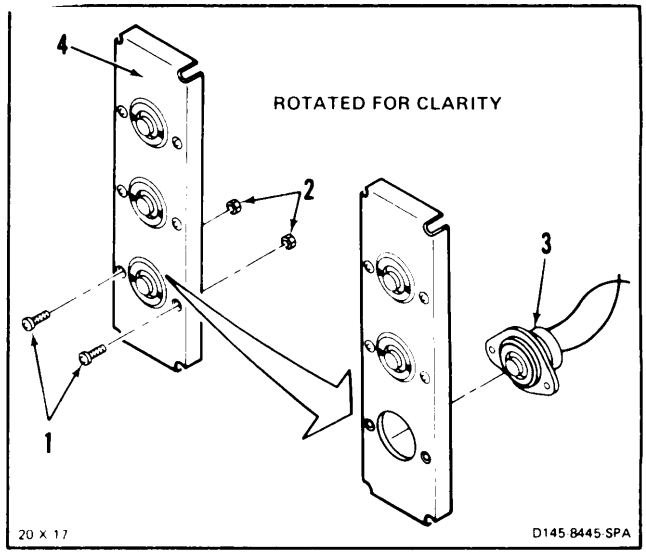
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Acoustical Blanket Removed (Task 2-208)



NOTE

Procedure is same to remove any dc utility receptacle:

1. **Remove two screws (1)** and nuts (2) from receptacle (3).
2. Pull receptacle (3) from back of panel (4).



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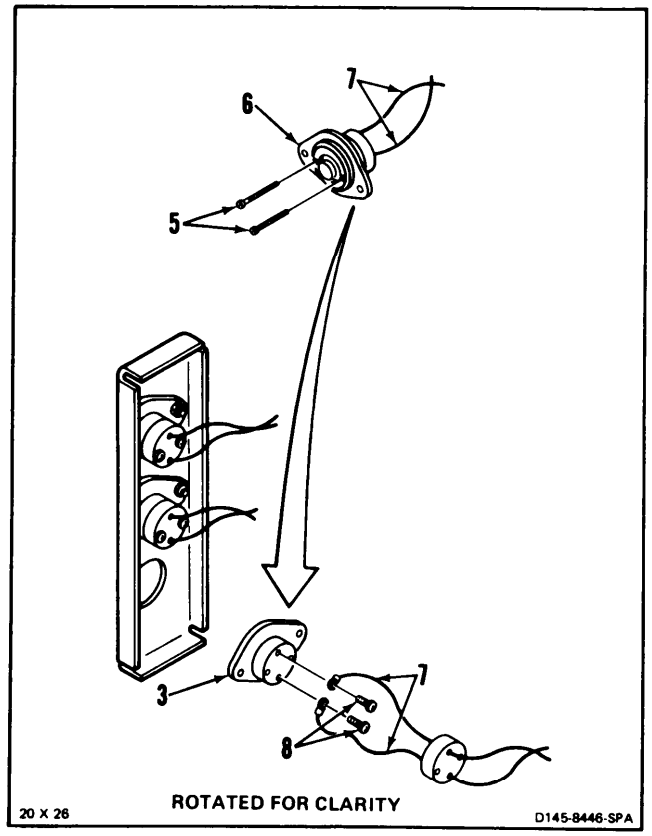
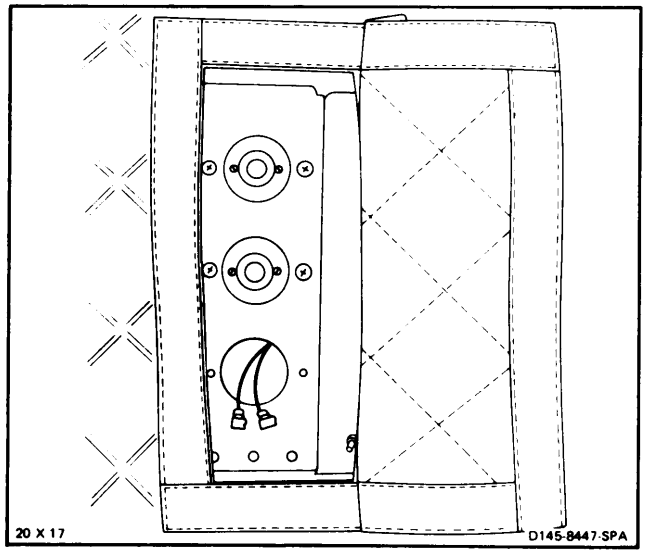
9-6 REMOVE DC CABIN UTILITY RECEPTACLE (Continued) 9-6

3. **Remove two screws (5)** from cover (6),
4. Slide cover (6) over two wires (7).
5. Tag and **disconnect two wires (7)** by removing two screws (8). Tape wire ends.
6. **Remove receptacle (3).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-7 INSTALL DC CABIN UTILITY RECEPTACLE

INITIAL SETUP

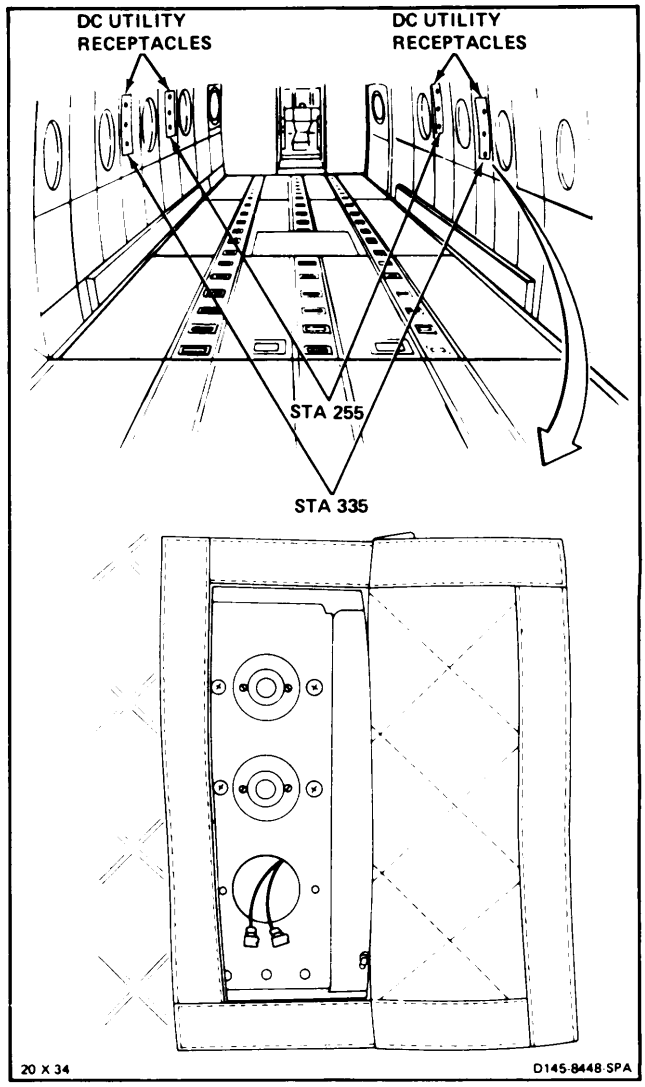
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



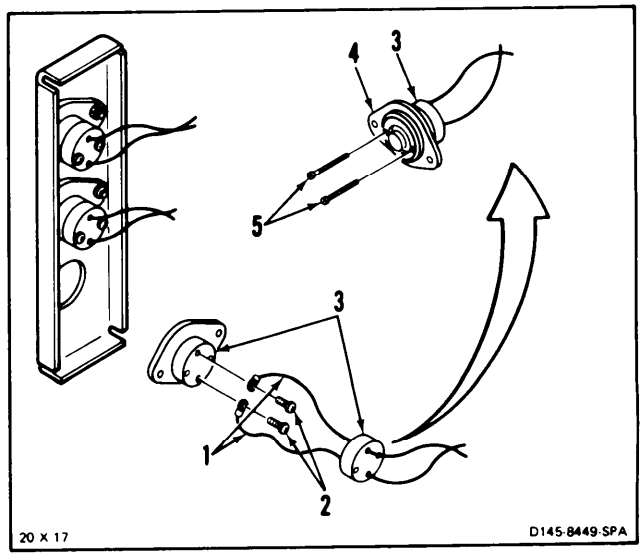
CAUTION

Positive wire must be connected to positive terminal; otherwise, damage to support equipment or fire may result.

NOTE

- Procedure is same to install any dc utility receptacle.
- Small terminal (brass colored) is positive.

1. Remove tape and **connect two wires (1)** by installing two screws (2). Remove tags.
2. **Position** cover (3) on receptacle (4). **Install two Screws (5).**



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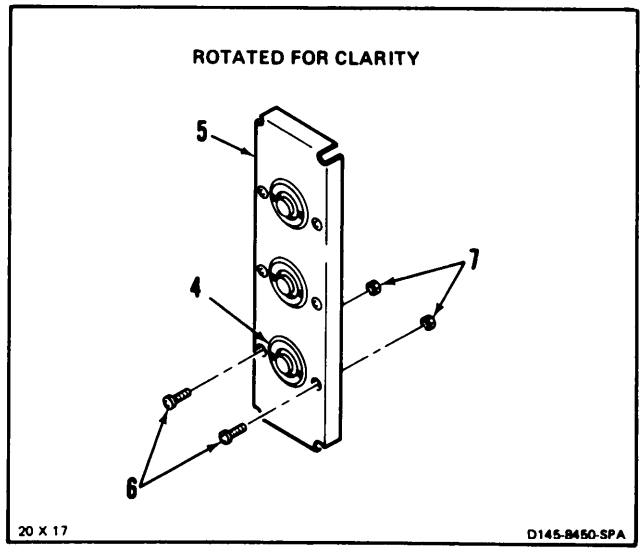
9-7 INSTALL DC CABIN UTILITY RECEPTACLE (Continued) 9-7

3. **Position** receptacle (4) on panel (5). **Install two screws (6)** and nuts (7).

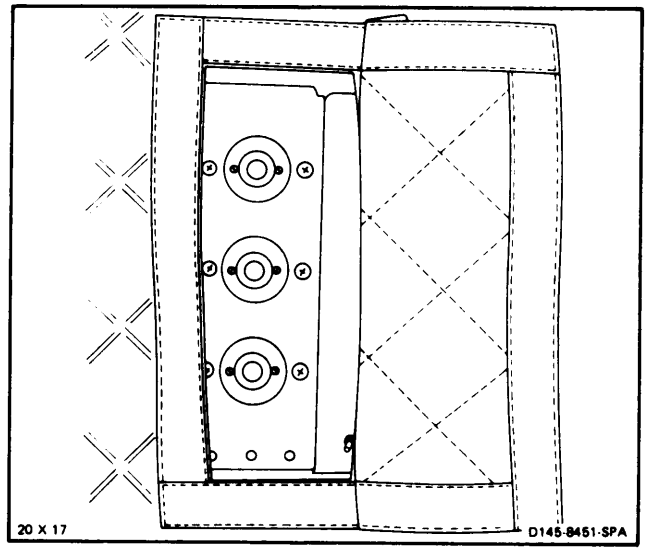


INSPECT

FOLLOW-ON MAINTENANCE:

Install acoustical blanket (Task 2-210).

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-8 REMOVE POWER DISTRIBUTION PANEL (PDP)

INITIAL SETUP

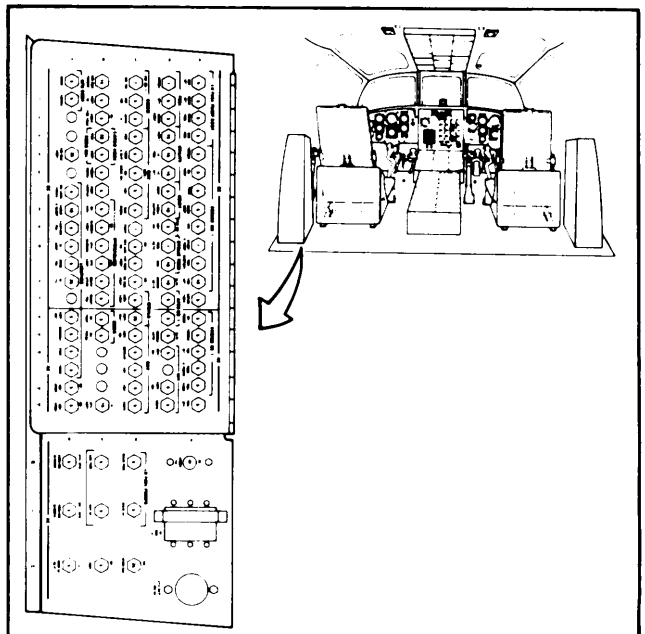
Applicable Configurations:
All

Tools:
Aircraft Electrical Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



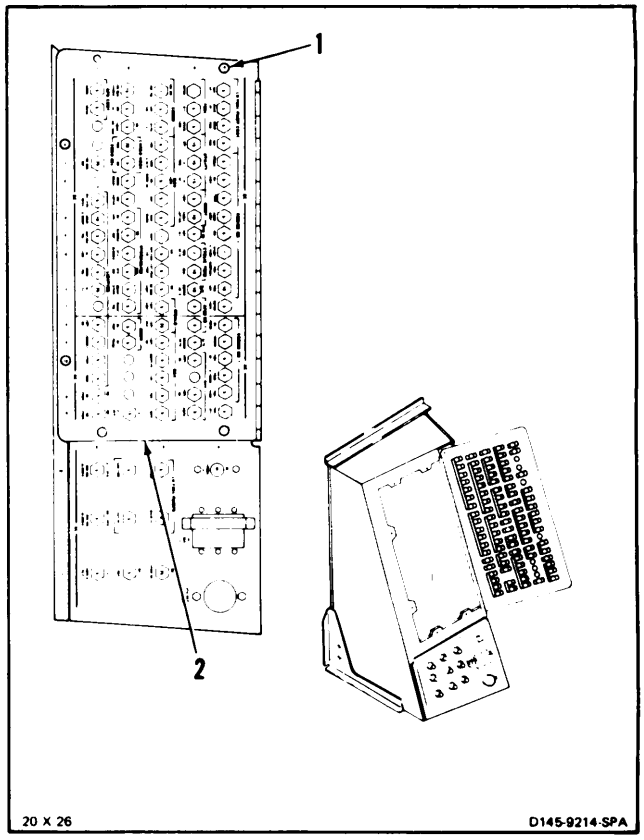
NO. 1 POWER DISTRIBUTION PANEL (PDP) VIEW LOOKING AFT

20 X 26 D145-9213-SPA

NOTE

Procedure is similar to remove No. 1 PDP or No. 2 PDP. Removal of No. 1 PDP is shown here.

1. Loosen six fasteners (1). Open panel (2).



20 X 26 D145-9214-SPA

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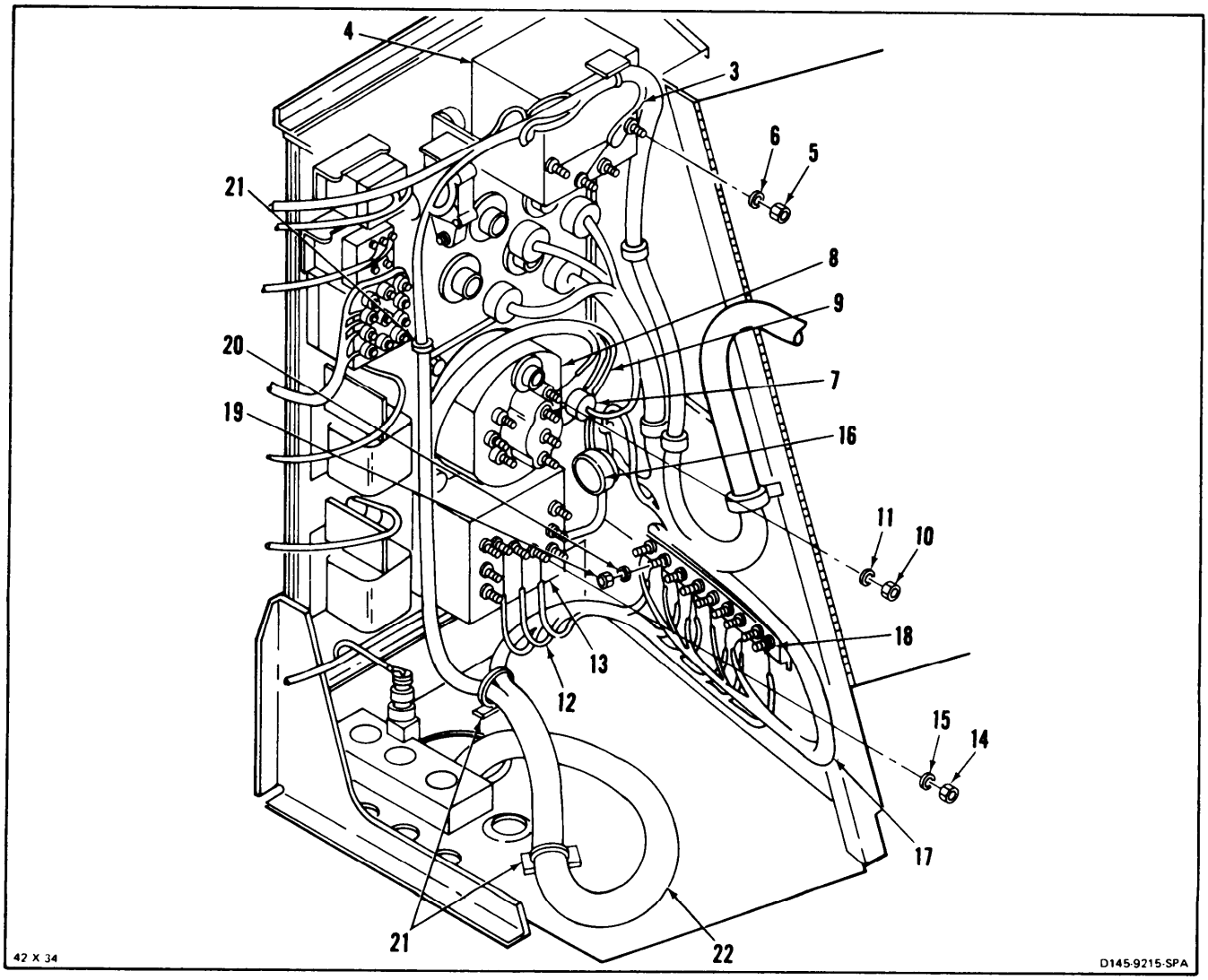
9-8 REMOVE POWER DISTRIBUTION PANEL (PDP) (Continued) 9-8

2. Tag and **disconnect six wires (3)** from relay (4) by removing five nuts (5) and washers (6). Tape wire ends. Use tags (E264) and tape (E385).
3. Tag and **disconnect electrical connector (7)** from relay (8).
4. Tag and **disconnect three wires (9)** from relay (8) by removing three nuts (10) and washers (11). Tape wire ends.
5. Tag and **disconnect three wires (12)** from relay (13) by removing three nuts (14) and washers (15).
6. Tag and **disconnect electrical connector (16)** from relay (13).
7. Tag and **disconnect wires (17)** from board TB50 (18) by removing 6 nuts (19) and washers (20). Tape wire ends. Lay harness aside.
8. Cut and **remove three straps (21)** securing bundle (22).



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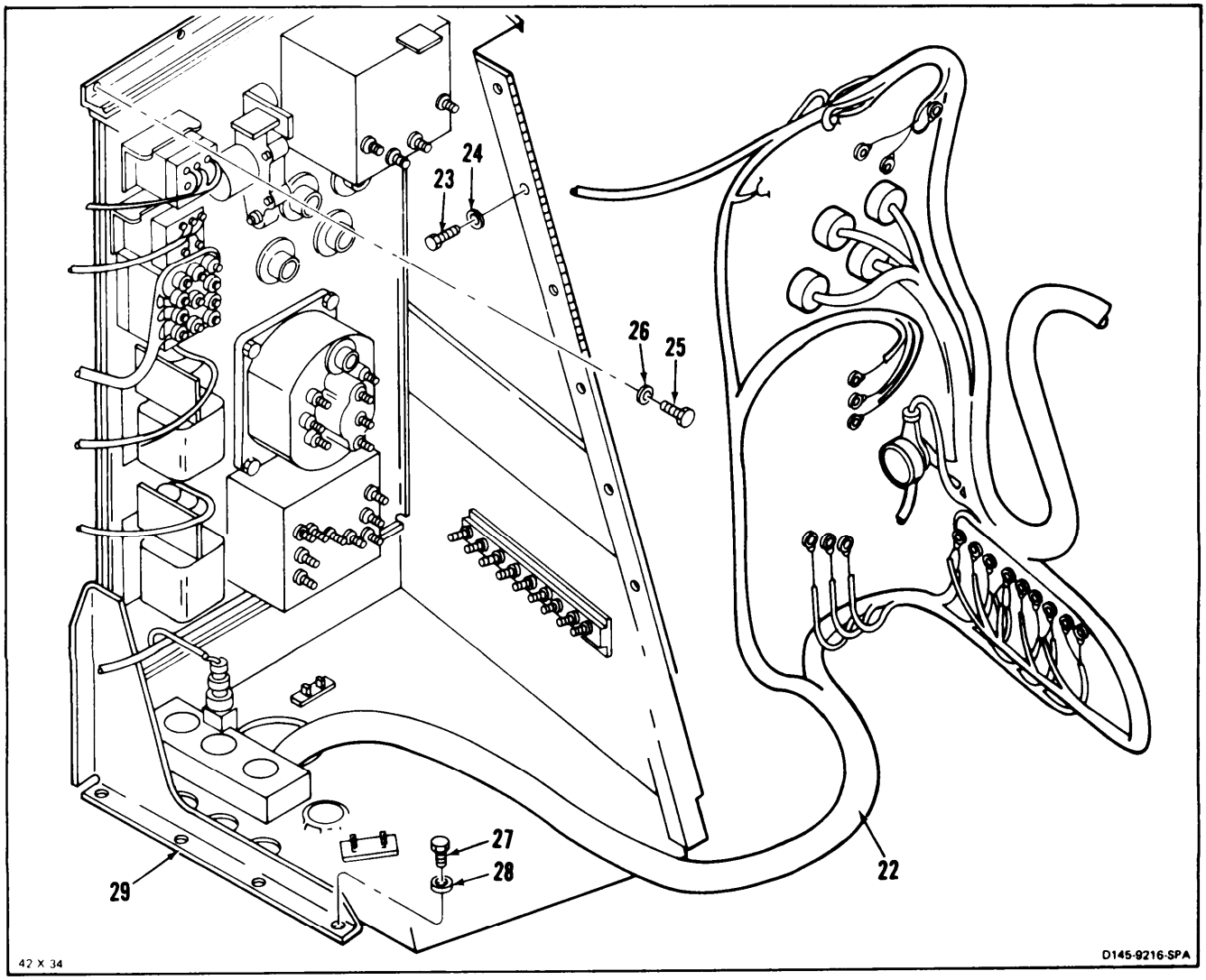
9-8 REMOVE POWER DISTRIBUTION PANEL (PDP) (Continued)

9. **Remove six bolts (23)** and washers (24)
10. **Remove four bolts (25)** and washers (26).
11. **Remove four bolts (27)** and washers (28)
12. Have helper feed cable (22) through base of PDP (29) **Remove PDP.**



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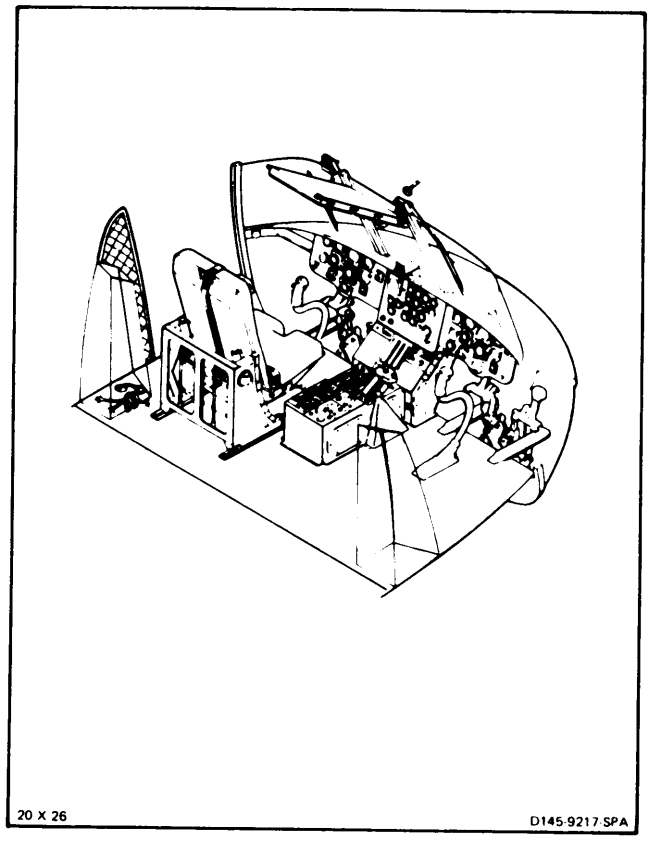
9-8 REMOVE POWER DISTRIBUTION PANEL (PDP) (Continued)

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-9 INSTALL POWER DISTRIBUTION PANEL (PDP) 9-9

INITIAL SETUP

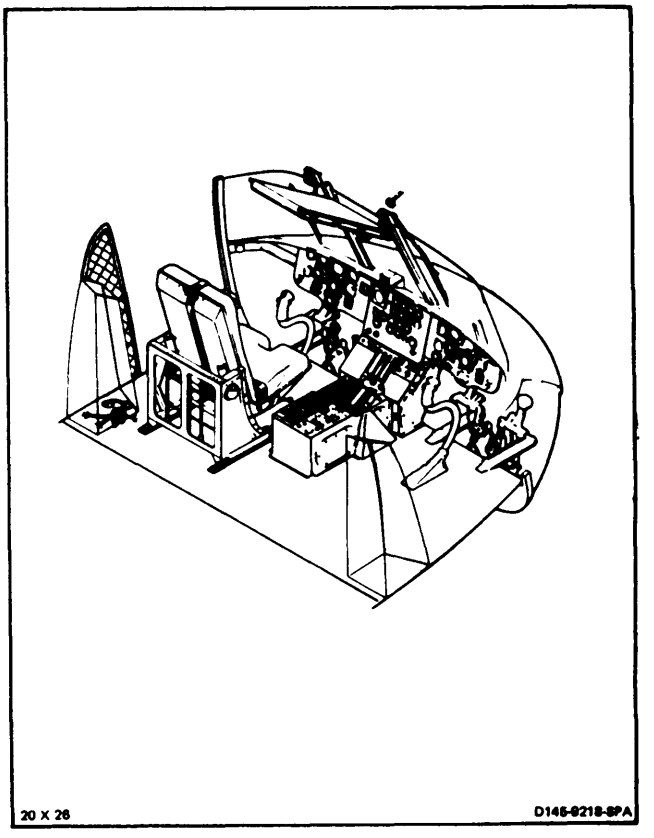
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915

Materials:
Strap (E374)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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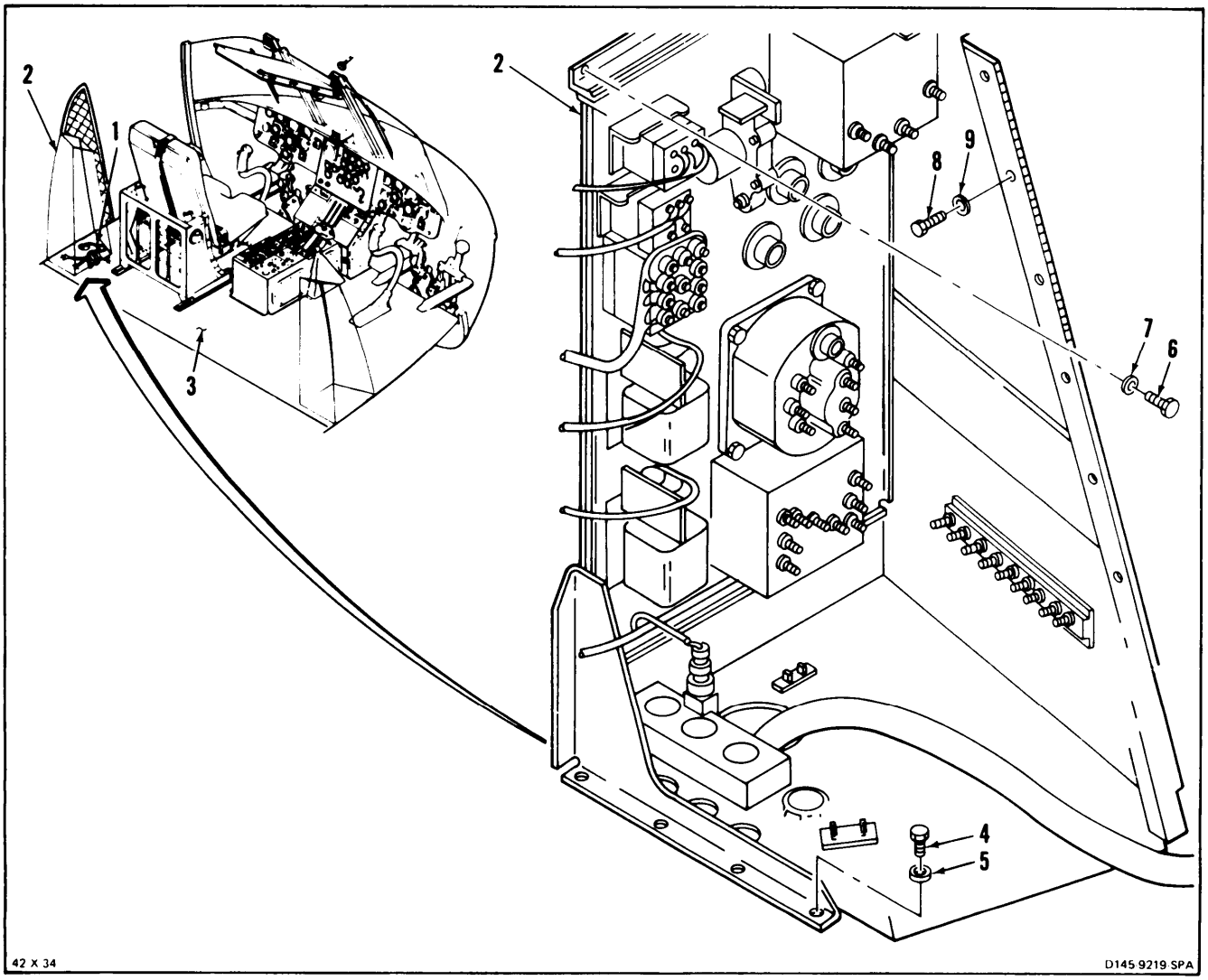
9-9 INSTALL POWER DISTRIBUTION PANEL (PDP) (Continued)

NOTE

Procedure is similar to install No. 1 PDP or No.2 PDP. Installation of No. 1 PDP is shown here.

1. Have helper feed cable (1) through base of PDP (2). **Position** PDP (2) on floor (3).
2. **Install four bolts (4)** and washers (5).
3. **Install four bolts (6)** and washers (7).
4. **Install six bolts (8)** and washers (9).



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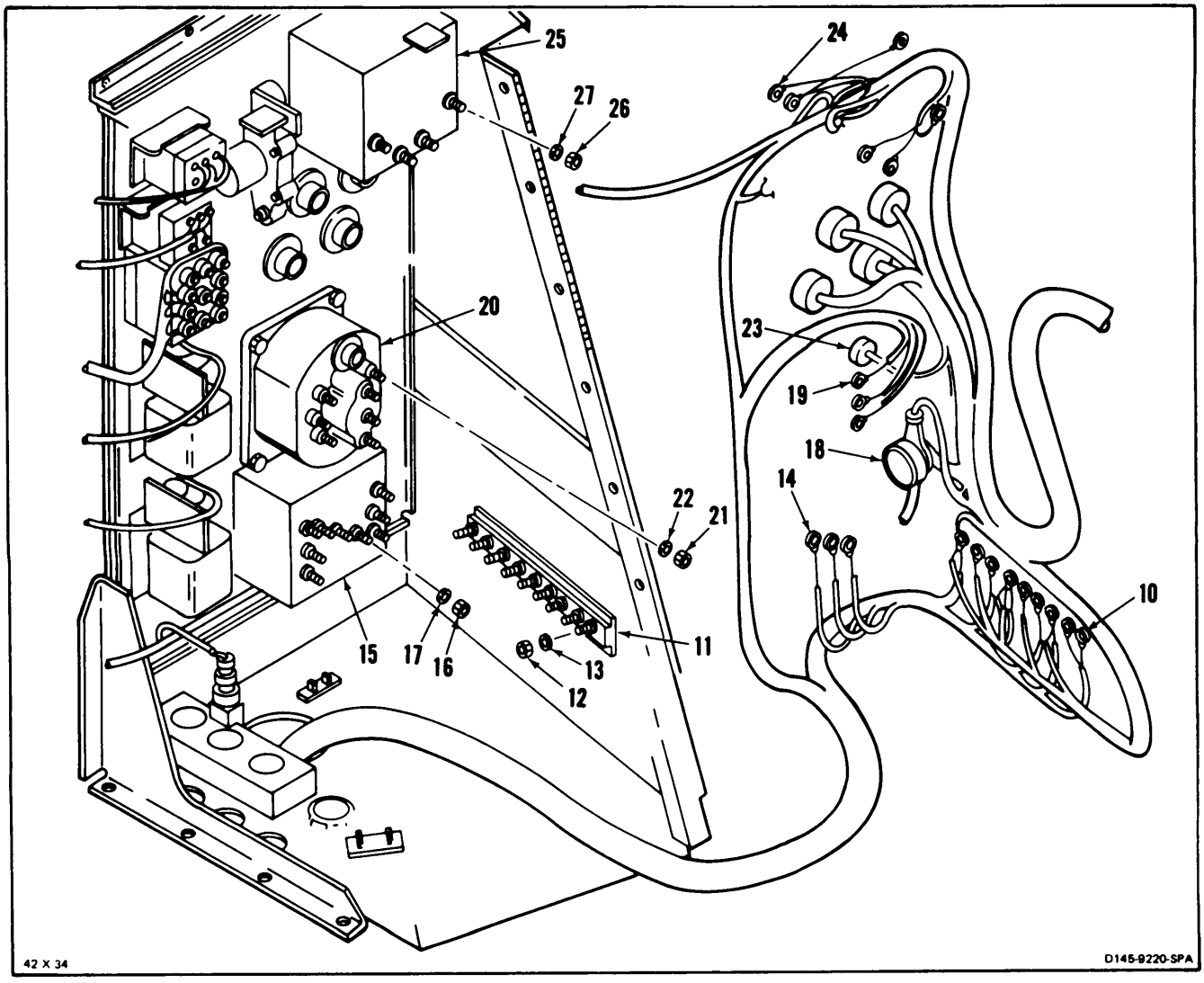
9-9 INSTALL POWER DISTRIBUTION PANEL (PDP) (Continued)

5. Remove tape. **Connect 10 wires (10)** to board TB50 (11) by installing 6 nuts (12) and washers (13). Remove tags.
6. Remove tape. **Connect three wires (14)** to relay 241K1 (15) by installing three nuts (16) and washers (17). Remove tags.
7. **Connect electrical connector (18)** to relay 241K1 (15).
8. Remove tape. **Connect three wires (19).** to relay 241K5 (20) by installing three nuts (21) and washers (22). Remove tags.
9. **Connect electrical connector** (23) to relay 241K5 (20). Remove tag.
10. Remove tape. **Connect six wires (24)** to relay 161K3 (25) by installing five nuts (26) and washers (27). Remove tags.



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9-9 INSTALL POWER DISTRIBUTION PANEL (PDP) (Continued)

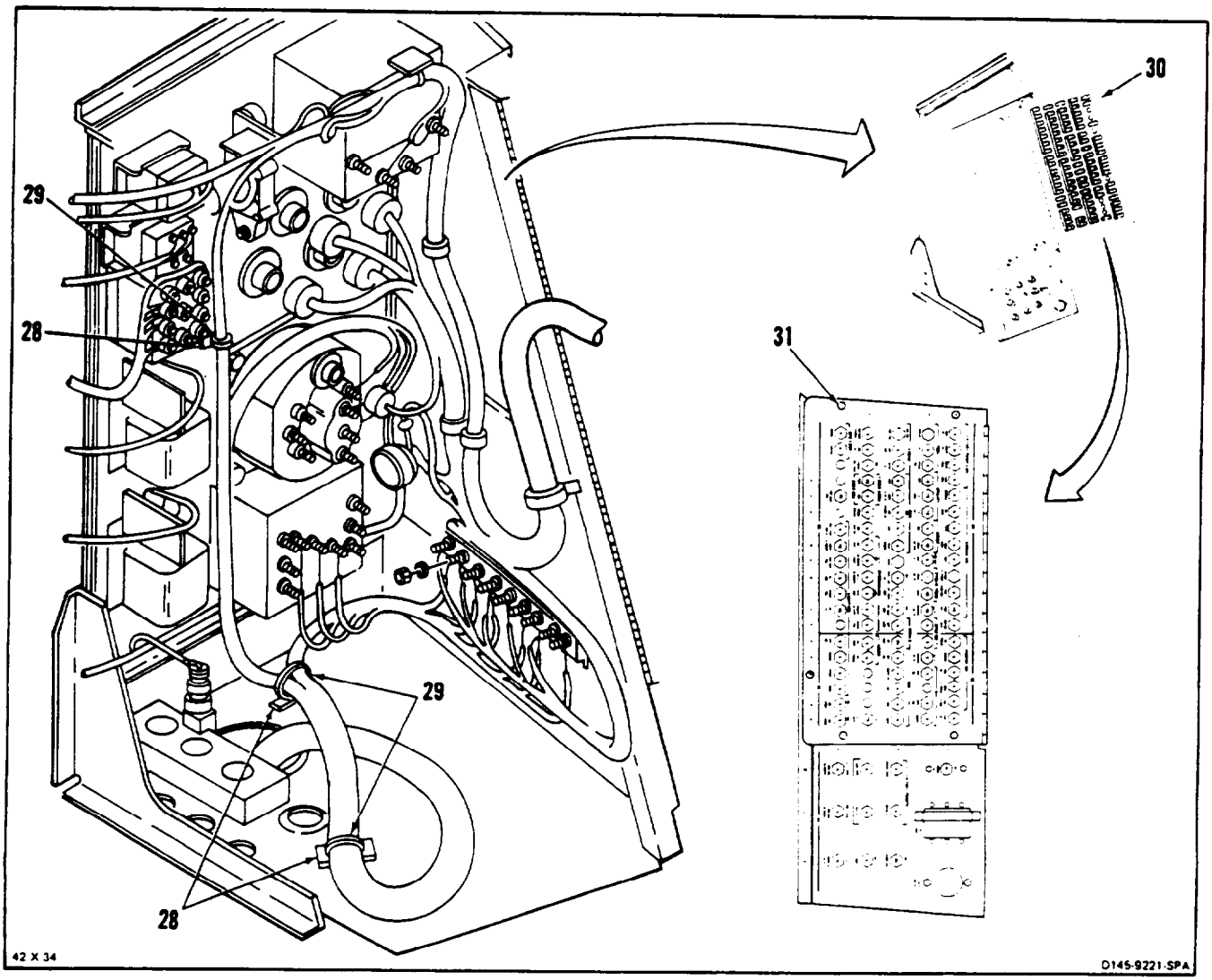
11. Position cable on three mounts (28). **Inatall three straps (29) (E374).**

INSPECT

12. Close panel (30). Tighten six fasteners (31).

FOLLOW-ON MAINTENANCE.

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-9.1 INSPECT CIRCUIT BREAKERS 9-9.1

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Electrical Tool Kit,
NSN 5180-00-323-4915

Personnel Required:
Aircraft Electrician

Equipment Required:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off

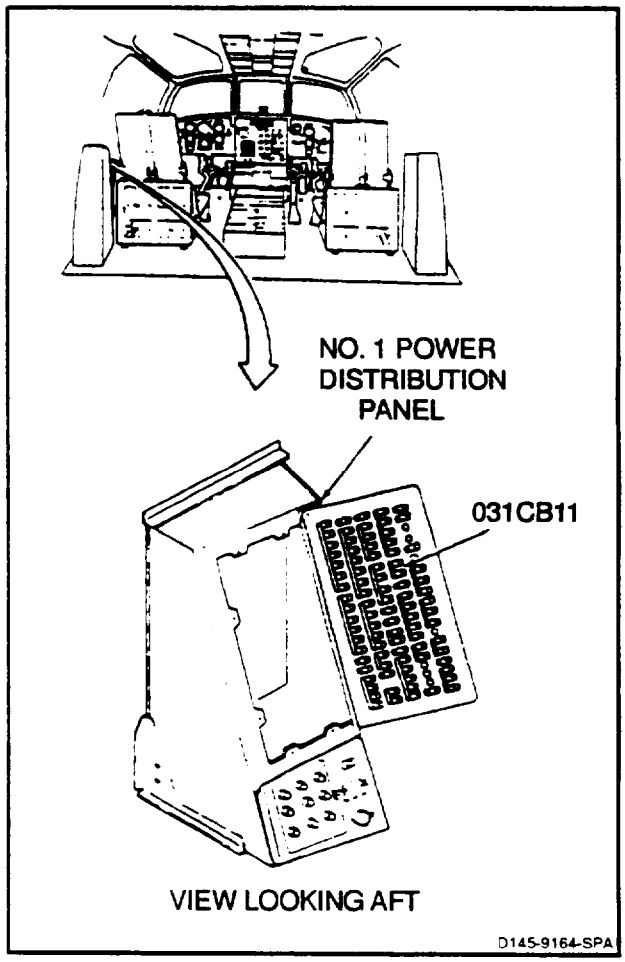
References:
TM 55-1500-323-24

1. Visually inspect all No. 1 and No. 2 PDP circuit breakers for evidence of water/moisture entry, arcing/burning, and corrosion.
2. Replace DC circuit breakers that show any evidence of arcing/burning or that show excessive corrosion in terminal contact areas (Tasks 9-10 and 9-11).

NOTE

Multi-phase (AC) circuit breakers are more susceptible to phase shorts due to corrosion forming a conductive path between case terminal and metal restraint pins.

3. Replace AC circuit breakers that show any evidence of water/moisture entry or arcing/burning. Pay particular attention to terminals, case seams, lower hardware, and case restraint pins for any signs of forming corrosion. As a general rule, corrosion in these areas shall require circuit breaker replacement (Tasks 9-10 and 9-11).
4. Replace any power distribution/feeder wire showing sign of fraying/chaffing or arcing/burning. Refer to TM 55-1500-323-24, Section 14.



FOLLOW-ON MAINTENANCE:
As required.

END OF TASK

9-10 REMOVE POWER DISTRIBUTION PANEL (PDP) CIRCUIT BREAKERS

INITIAL SETUP

Applicable Configurations:
All

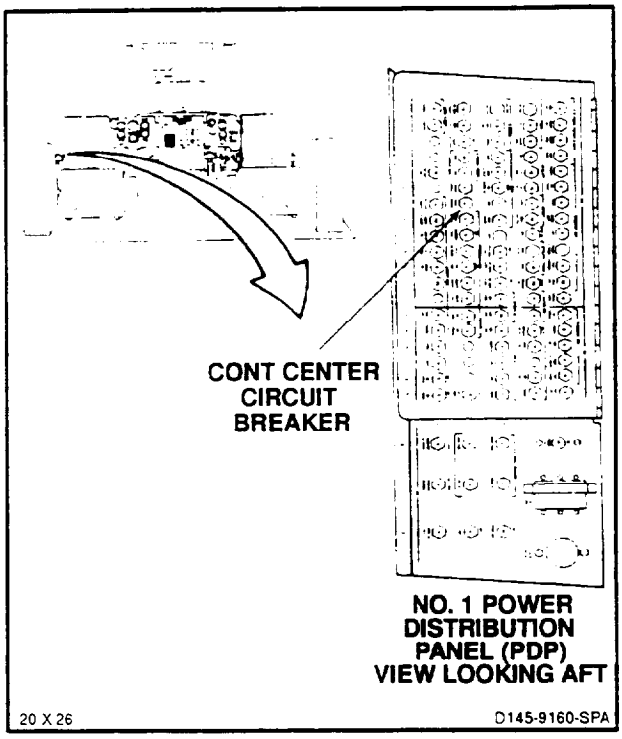
Tools:
Aircraft Electrical Tool Kit,
NSN 5180-00-323-4915

Materiels:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

Equipment Required:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

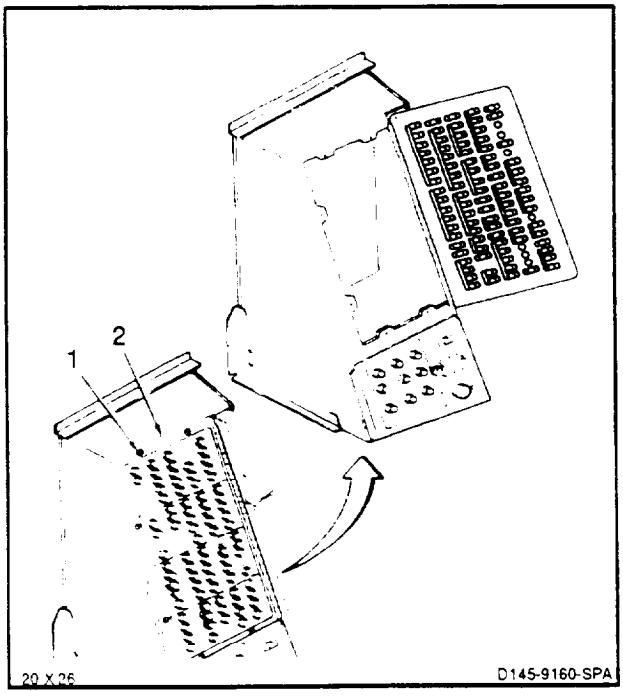
References:
TM 55-1520-240-23P



NOTE

Procedure to remove push-pull type circuit breakers from No. 1, No. 2 PDP is the same. Removal of CONT CENTER circuit breaker on No. 1 PDP is shown here.

1. Loosen six fasteners (1). Open panel (2).



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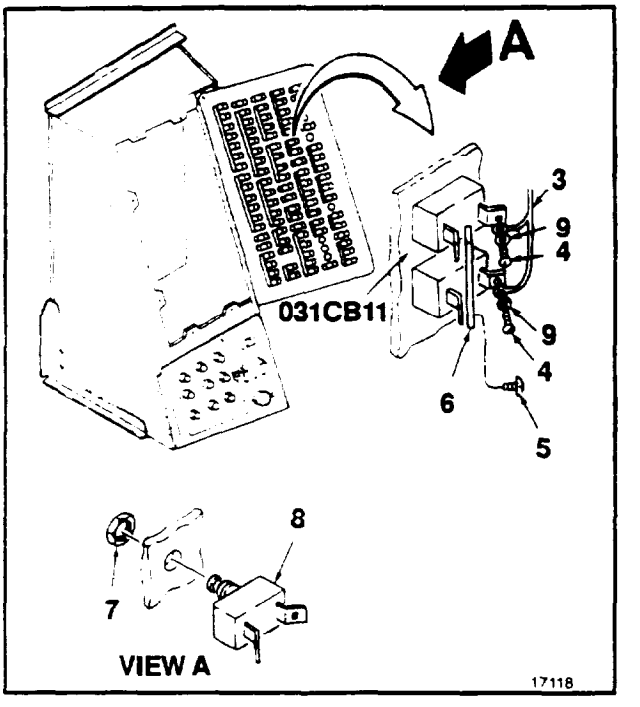
9-10 REMOVE POWER DISTRIBUTION PANEL (PDP) CIRCUIT BREAKERS (Continued)

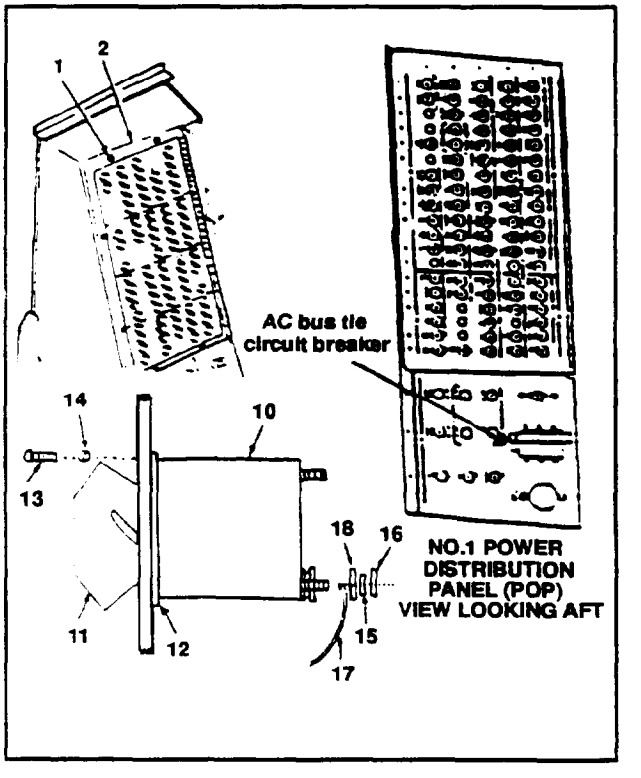
1. Tag and **disconnect two wires** (3) by removing two screws (4) and washers (9). Tape wire ends. Use tags (E264) and tape (E385).
2. **Remove screw (5).** Remove bus bar (6).
3. **Remove nut (7).** Remove circuit breaker (8).



NOTE

Procedure to remove bar type circuit breaker from No. 1, No. 2 PDP is the same. Removal of AC bus tie circuit breaker with boot and flange on No. 1 PDP is shown here.

1. Loosen six fasteners (1). Open panel (2).
2. Tag and disconnect six wires (17), by removing six nuts (16), lock washers (15), end washers (18). Tape wire ends. Use tags (E264) and tape (E385).
3. Remove six screws (13) with o-rings (14).
4. Remove circuit breaker (10), flange (12) and plastic boot (11).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-11 INSTALL POWER DISTRIBUTION PANEL (PDP) CIRCUIT BREAKERS

INITIAL SETUP

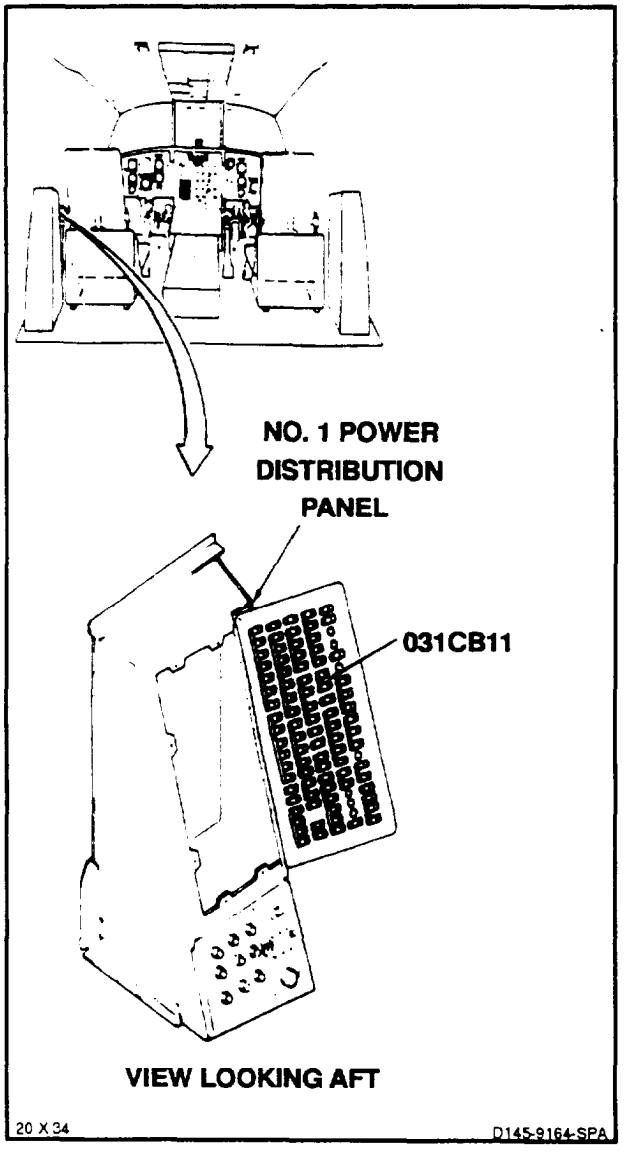
Applicable Configurations:
All

Tools:
Aircraft Electrical Tool Kit,
NSN 5180-00-323-4915

Material:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



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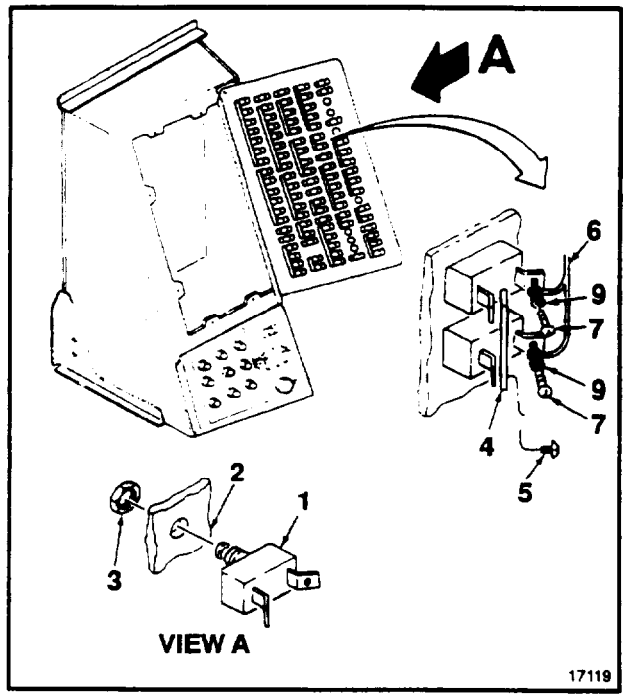
9-11 INSTALL POWER DISTRIBUTION PANEL (PDP) CIRCUIT BREAKERS (Continued) 9-11

NOTE

Procedure to install push-pull type circuit breakers on No. 1, No. 2 PDP is the same. Removal of CONT CENTER circuit breaker on No. 1 PDP is shown here.

1. **Position** circuit breaker (1) in panel (2). **Install nut (3).**
2. **Position** bus bar (4) on circuit breaker (1). **Install screw (5).**
3. Remove tape and **connect two wires (6)** by installing two washers (9) and two screws (7). Remove tags.

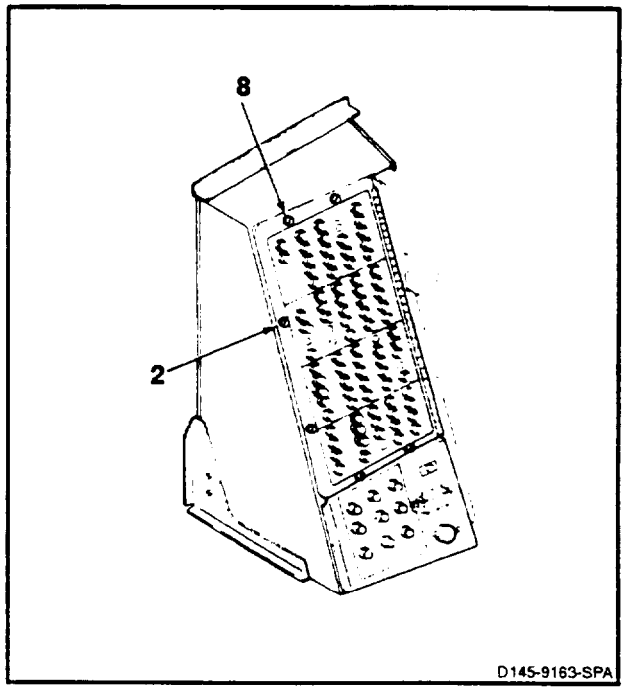


4. Close panel (2). Tighten six fasteners (8).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-11 INSTALL POWER DISTRIBUTION PANEL (PDP) CIRCUIT BREAKERS (Continued)

N O T E

Procedure to install gang bar type circuit breaker on No. 1, No. 2 PDP is the same. Removal of AC bus tie circuit breaker with boot and flange on No. 1 PDP is shown here.

1. Position plastic boot (11) through the PDP, inside circuit breaker opening.

NOTE

Ensure the molded word “ON” on the plastic boot is in proper alignment with the printed word “ON” on the circuit breaker.

2. Install the steel frame (12) with the flanged side facing FWD.

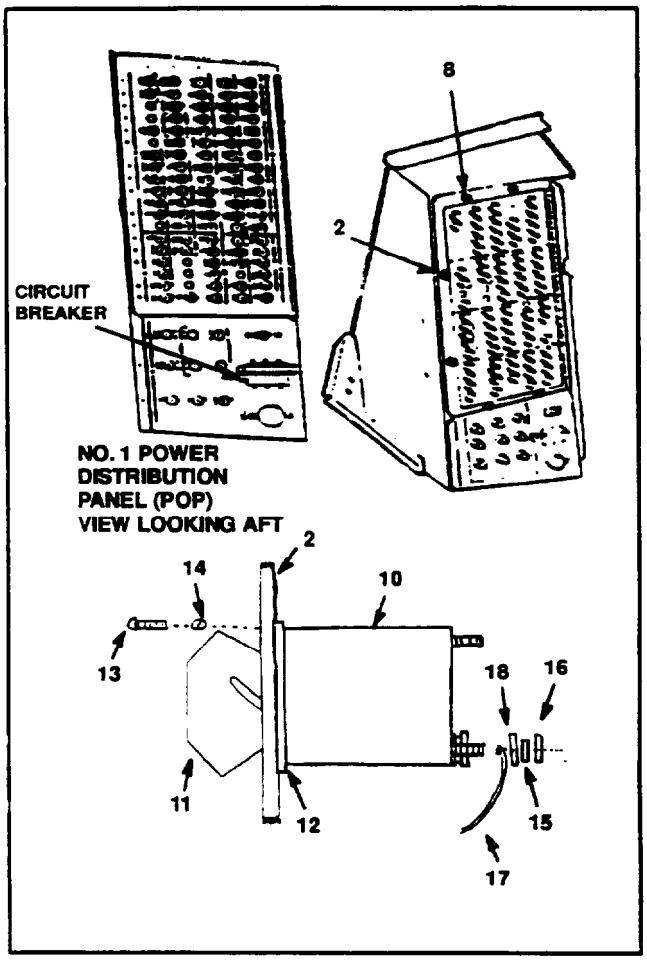
NOTE

To attain the proper seal, ensure that the flange is not installed upside down and that the plastic boot contact the flanged side of the steel frame symmetrically.

3. Install the circuit breaker (10) through the back side of PDP panel (2).
4. Install six screws (13) with o-rings (14).
5. Remove tape and connect wires (17). Remove tags.
6. Install six washers (18), lockwashers (15), and nuts (16).

INSPECT

7. Close panel (2). Tighten six fasteners (8).



FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T)

END OF TASK

9-12 REMOVE REVERSE CURRENT CUTOUT (RCCO) RELAY 9-12

INITIAL SETUP

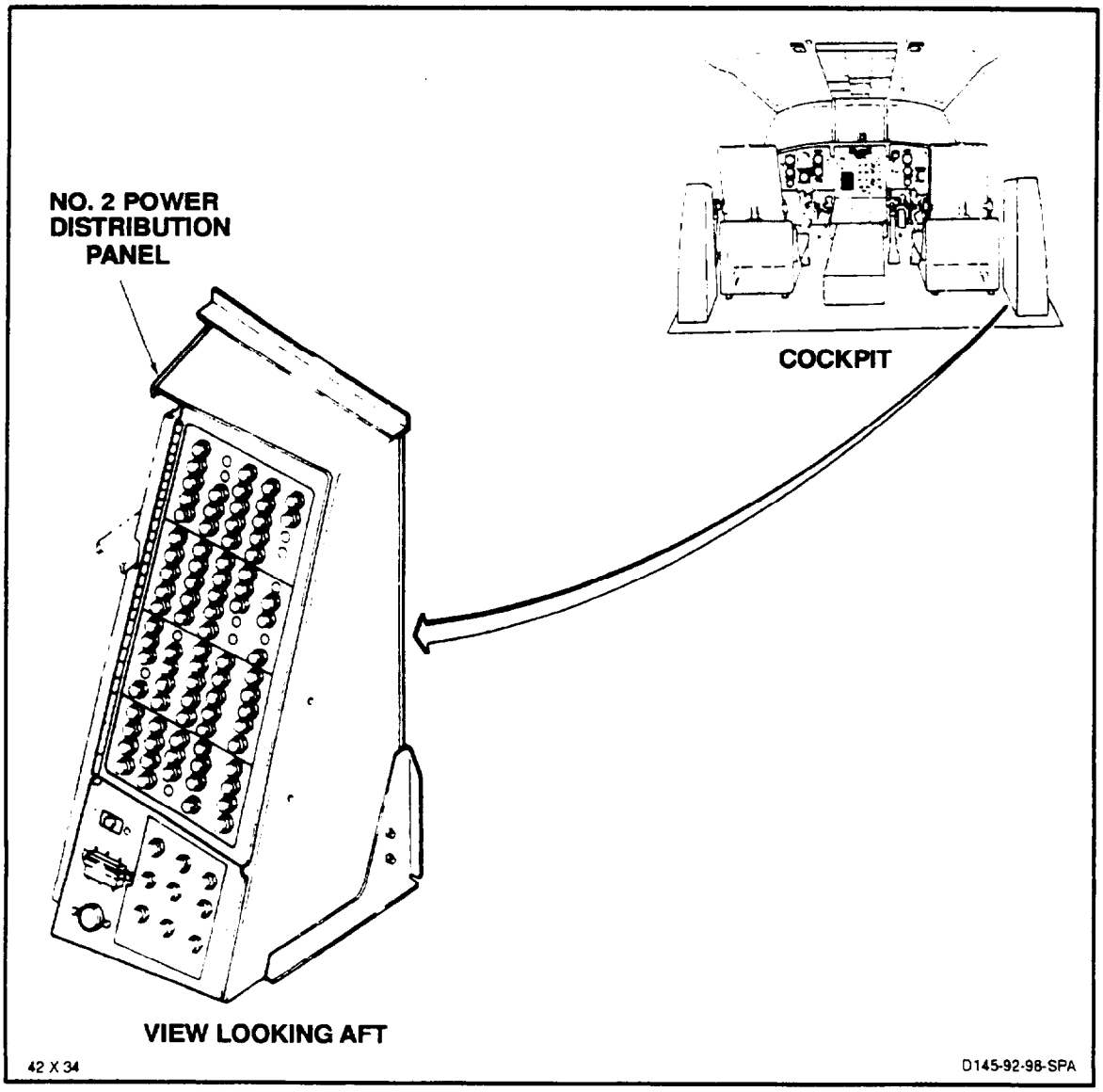
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5160-00-323-4915

Materials
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

Equipment Required:
Batter-y Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



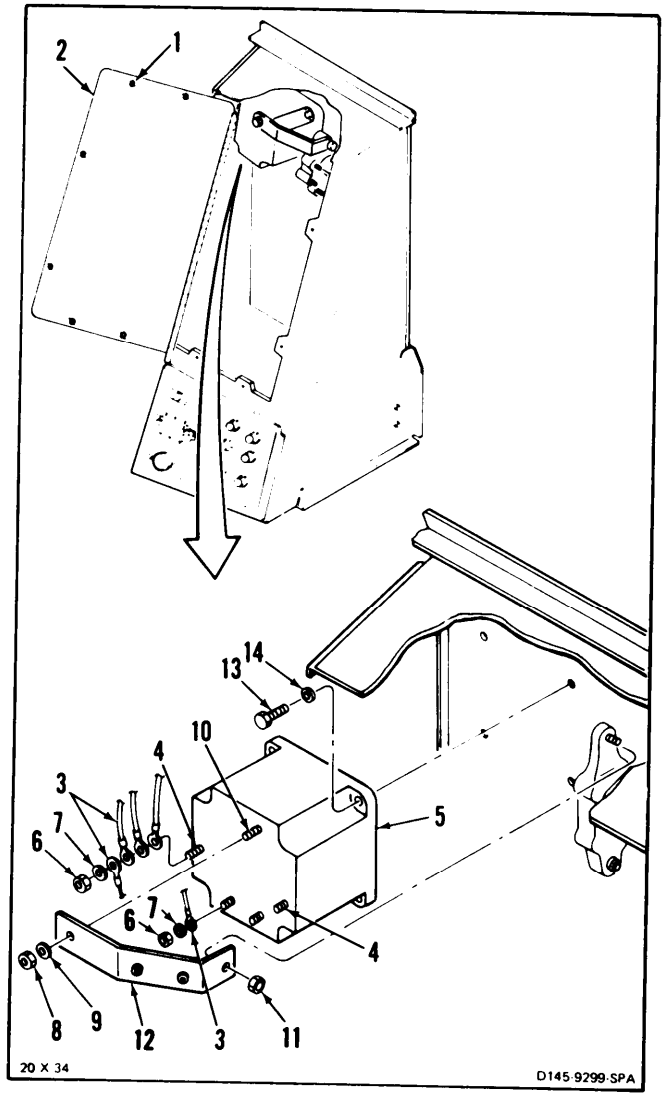
END OF TASK

9-12 REMOVE REVERSE CURRENT CUTOUT (RCCO) RELAY (Continued)

NOTE

Procedure is same for removal of reverse current cutout relay from No. 1 or No. 2 power distribution panel. Removal of RCCO relay from No. 2 power distribution panel is shown here.

1. **Loosen six fasteners (1) and open power distribution panel** door (2).
2. Tag and **disconnect seven wires (3)** from four terminals (4) on RCCO relay (5) by removing four nuts (6) and washers (7). Tape ends. Use tags (E264) and tape (E385).
3. **Remove nut (8) and washer (9)** from terminal (10).
4. **Loosen nut (11)** and move **bar (12)** to clear (5).
5. **Remove four bolts (13)** and washers (14). **Remove relay (5).**



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-13 INSTALL REVERSE CURRENT CUTOUT (RCCO) RELAY

INITIAL SETUP

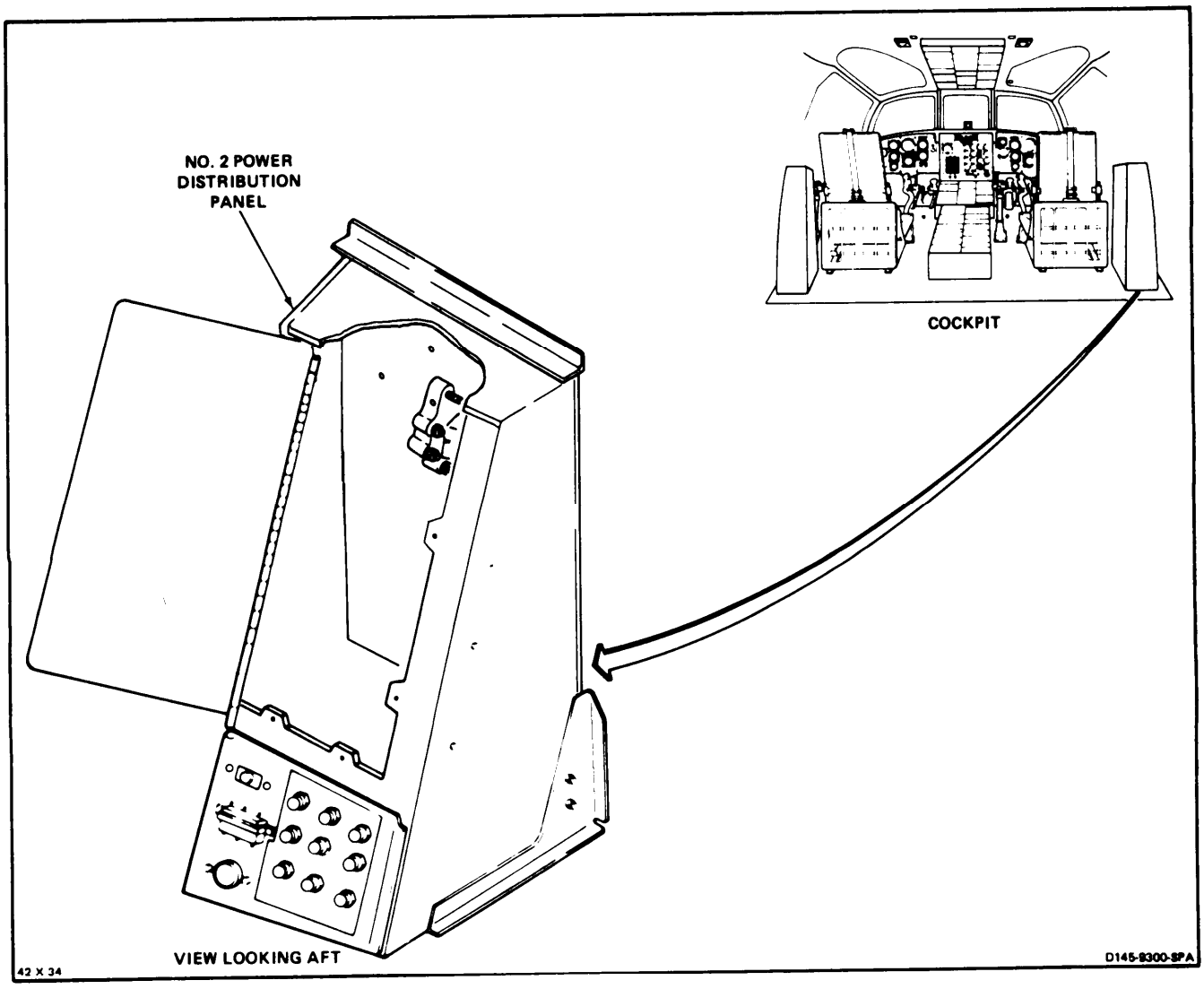
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Aircraft inspector

References:
TM 55-1520-240-23P



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9-13 INSTALL REVERSE CURRENT CUTOUT (RCCO) RELAY (Continued)

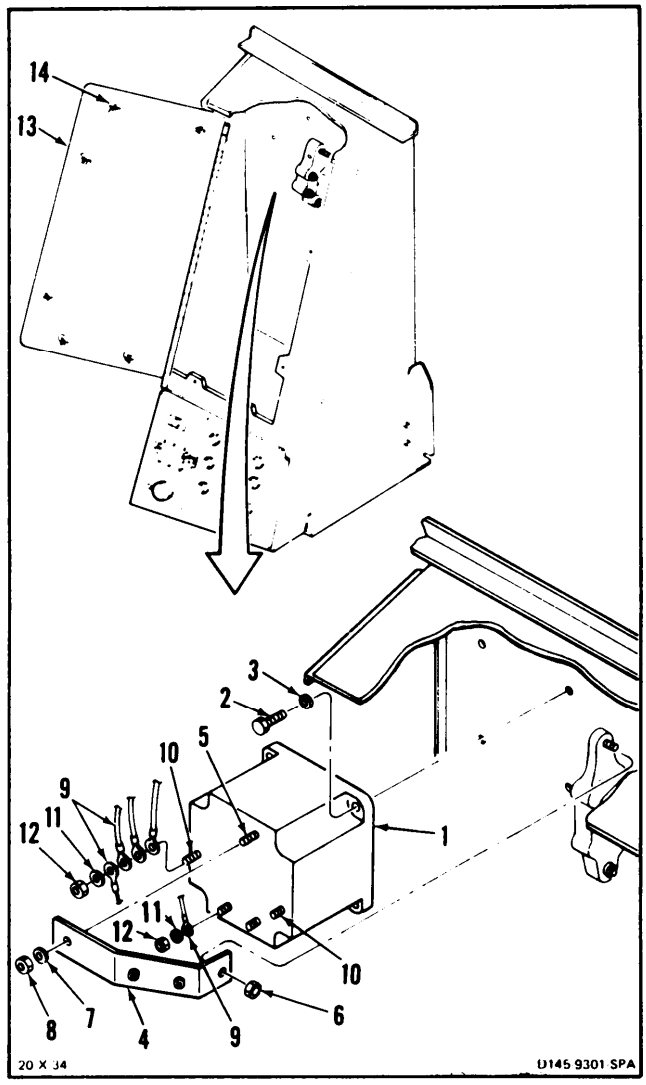
NOTE

Procedure is same for installation of reverse current cutout (RCCO) relay in No. 1 or No. 2 power distribution panel. Installation of RCCO relay in No. 2 power distribution panel is shown here.

1. **Position RCCO relay (1). Install four bolts (2)** and washers (3)
2. **Position bar (4)** on terminal (5) and **tighten nut (6).**
3. **Install washer (7) and nut (8)** on terminal (5).
4. Remove tape. **Connect seven wires (9)** to four terminals (10) by installing four washers (11) and nuts (12). Remove tags.

INSPECT

5. **Close panel (13). Tighten six fasteners (14).**



FOLLOW-ON MAINTENANCE:

Perform operational check of dc power system (TM 55-1520-240-T)

END OF TASK

9-14 REMOVE DC BUS TIE RELAY

INITIAL SETUP

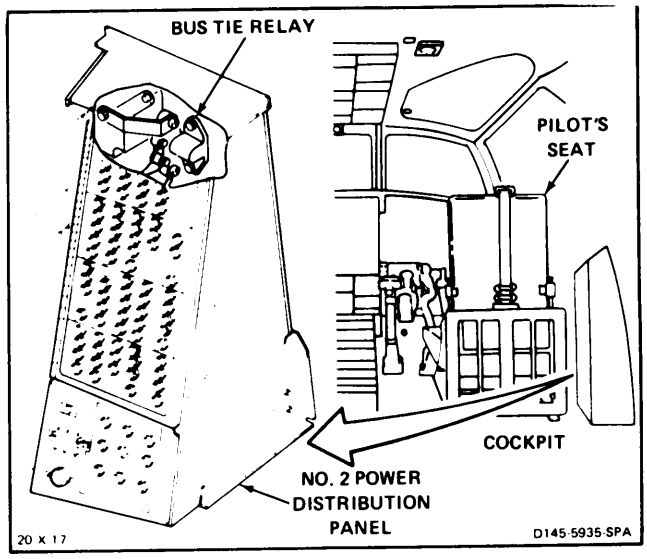
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

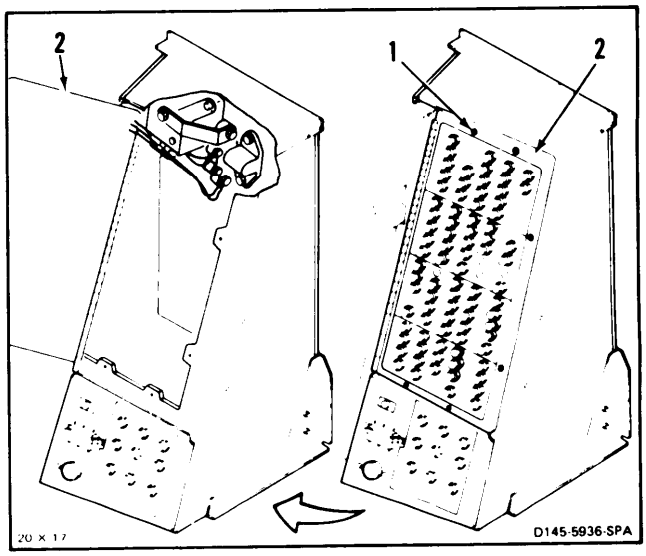
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

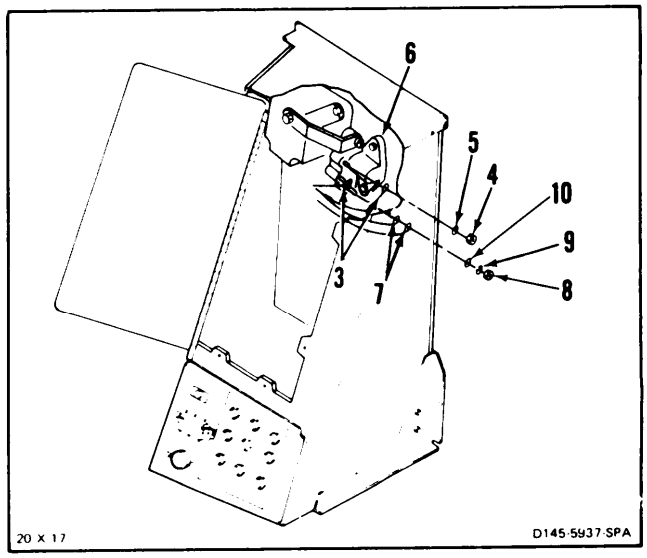
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Release SIX fasteners (1) in upper circuit breaker panel (2). **Open circuit breaker panel (2).**



2. Tag two wires (3). Remove nuts (4), and washers (5). **Disconnect wires** from bus tie relay (6). Use tags (E264). Tape exposed ends of wires. Use tape (E385).
3. Tag two wires (7). Remove nut (8), lockwasher (9), and washer (10). **Disconnect wires** from relay (6). Use tags (E264). Tape exposed ends of wires. Use tape (E385).



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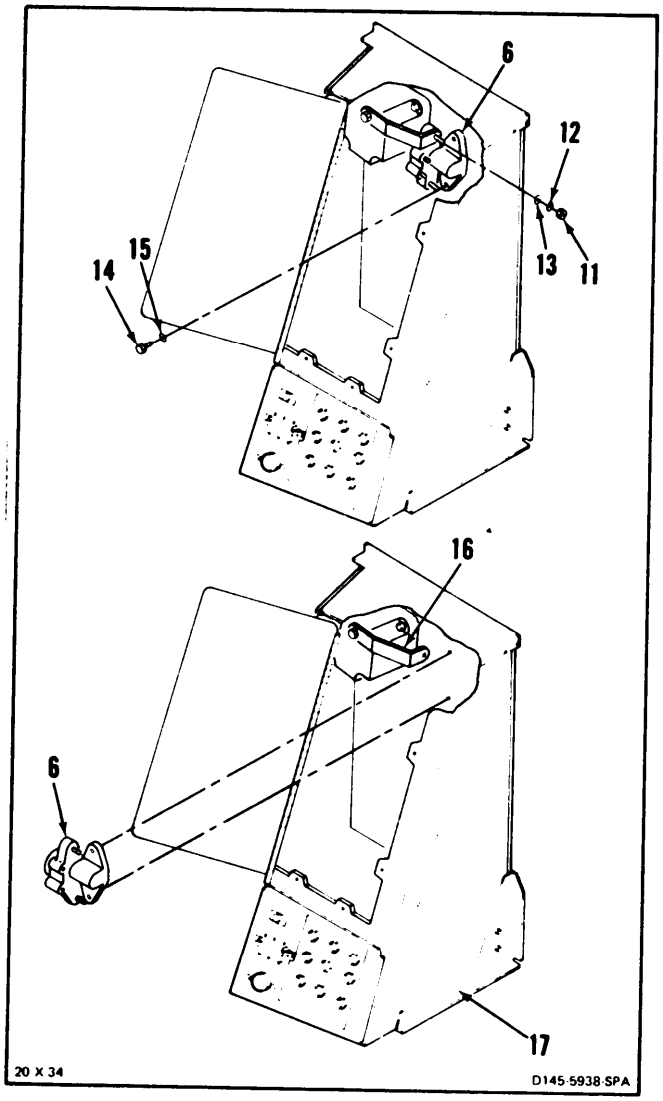
9-14 REMOVE DC BUS TIE RELAY (Continued)

4. **Remove nut (11),** lockwasher (12), and washer (13) from relay (6).
5. **Remove two bolts (14)** and washers (15) from relay (6).
6. Slide relay (6) to left until it clears tie bar (16). **Remove relay from power distribution panel (17).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-15 INSTALL DC BUS TIE RELAY

INITIAL SETUP

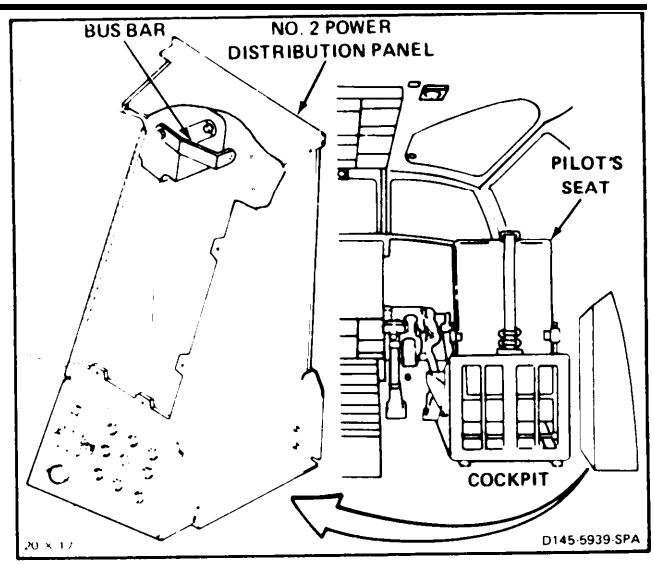
Applicable Configurations:
A I I

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

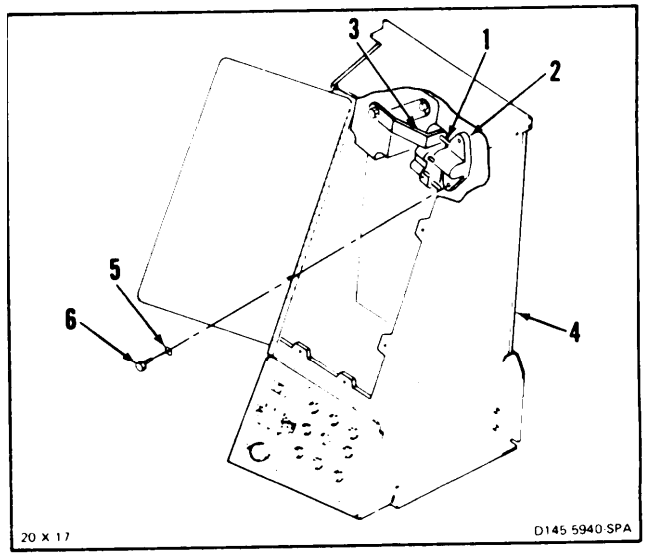
Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Position stud (1) of bus tie relay (2) in hole of bus bar (3).**

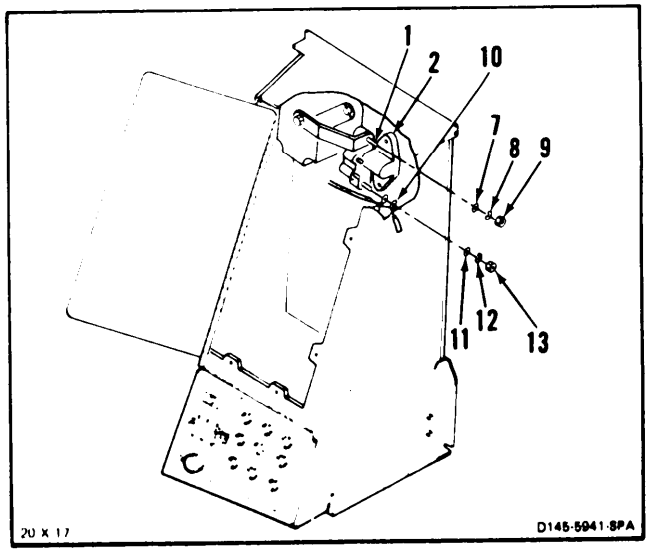
2. Align two mount holes in relay (2) with holes in power distribution panel (4) and **install two washers (5)** and **bolts (6).**



3. **Install** Washer (7), lockwasher (8), and **nut (9)** on stud (1).

4. Remove tape from ends of two wires (10).

5. **Connect wires (10)** to relay (2). Install washer (11), lockwasher (12), and nut (13).



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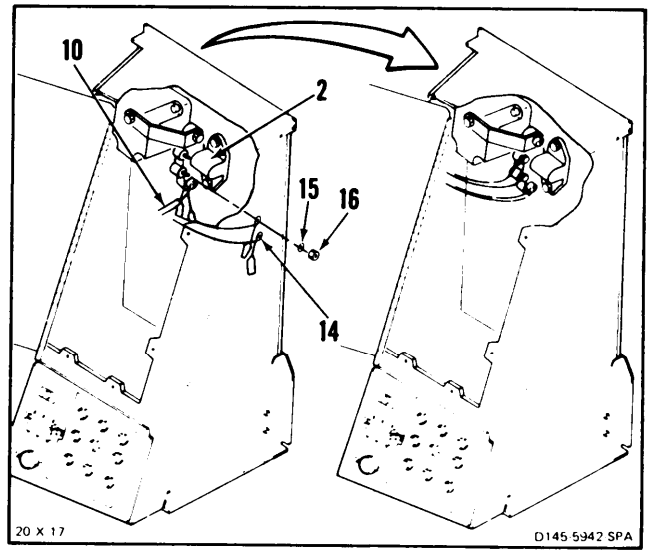
9-15 INSTALL DC BUS TIE RELAY (Continued)

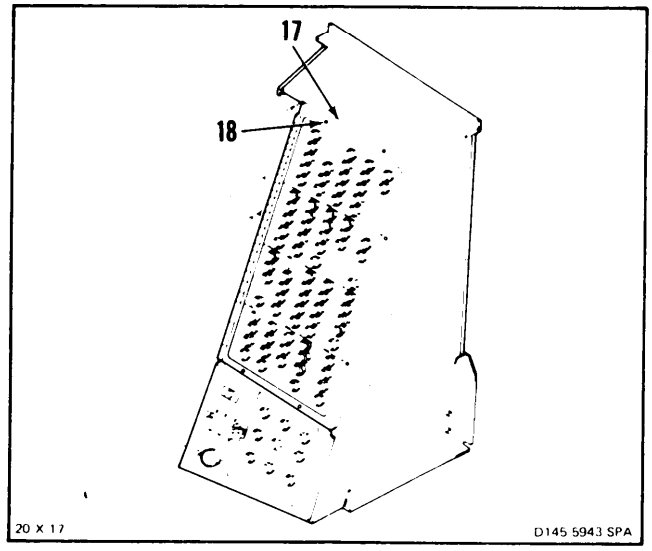
6. Remove tape from ends of two wires (14).
7. **Connect wires (14)** to relay (2). Install two washers (15) and nuts 16).

INSPECT

8. Remove tags from wires (10 and 14).



9. **Close upper circuit breaker panel (17).** Tighten six fasteners (18).



FOLLOW-ON MAINTENANCE:

Perform operational check of dc power system (TM 55-1520-240-T).

END OF TASK

9-16 REMOVE DC POWER SUPPLY (TR) FAIL RELAY

INITIAL SETUP

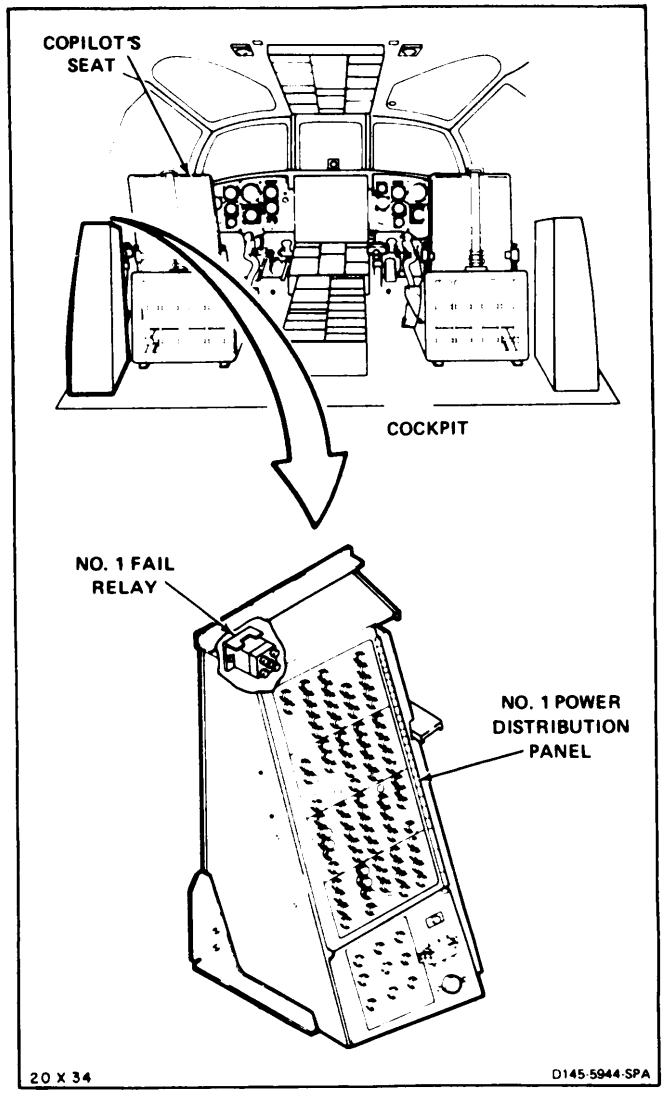
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

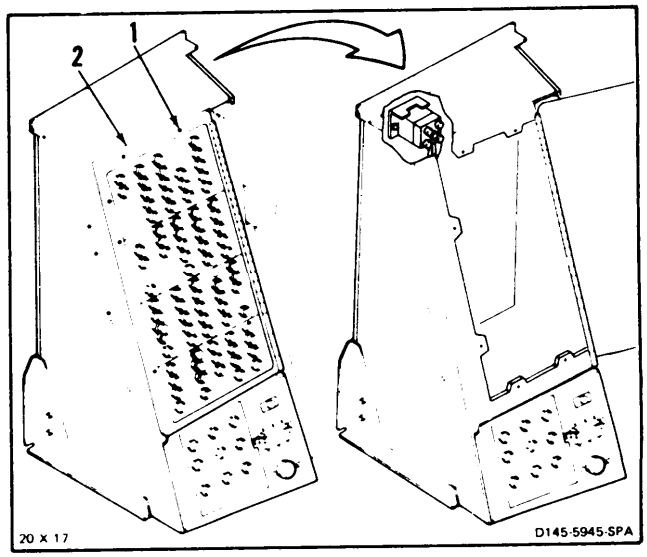
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is similar to remove No. 1 or No. 2 dc power supply (tr) fail relay. Differences are noted in text. Removal of No. 1 relay shown here.

1. Release six fasteners (1) in upper circuit breaker panel (2). **Open panel.**



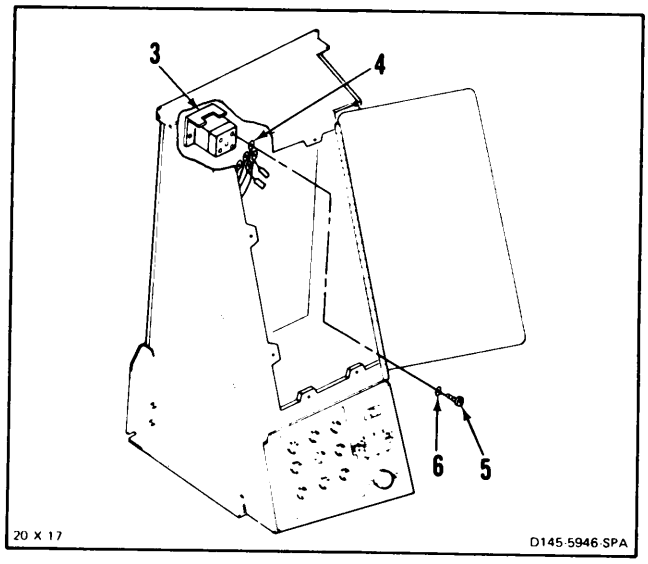
GO TO NEXT PAGE

9-16 REMOVE DC POWER SUPPLY (TR) FAIL RELAY (Continued)

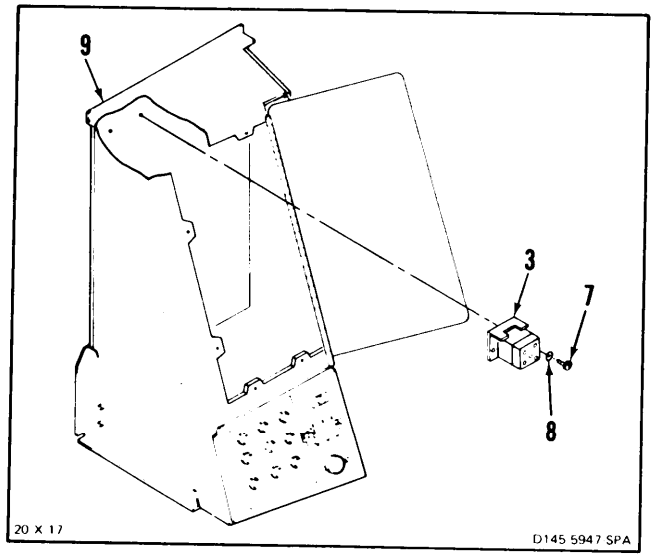
2. **For No. 1 relay (3),** tag nine wires (4). **Disconnect wires by removing seven screws (5), and lockwashers (6). Use tags (E264).**

3. **For No. 2 relay,** tag 10 wires (4). **Disconnect wire by removing eight screws (5) and lockwashars (6). Use tags (E264).**

4. Tape exposed ends of wires (4). Use tape (E385).



5. **Remove** two screws (7), washers (8), and **relay (3)** from power distribution panel (9).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-17 INSTALL DC POWER SUPPLY (TR) FAIL RELAY

INITIAL SETUP

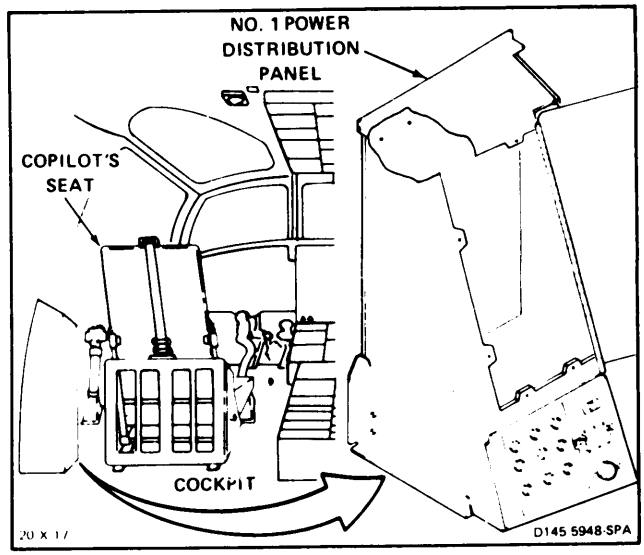
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

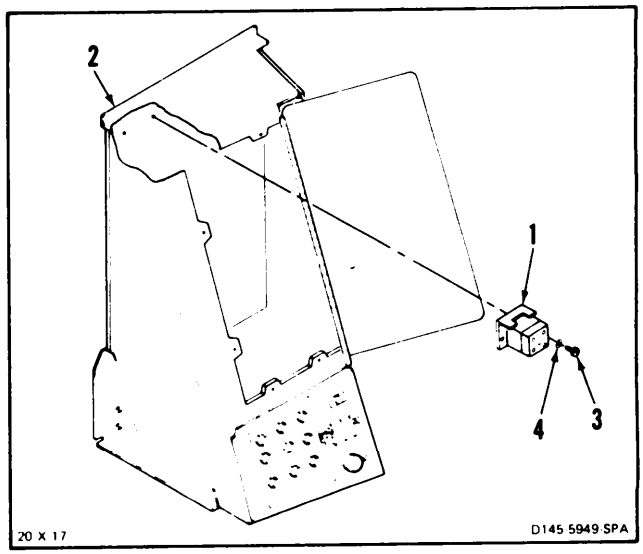
References:
TM 55-1520-240-23P



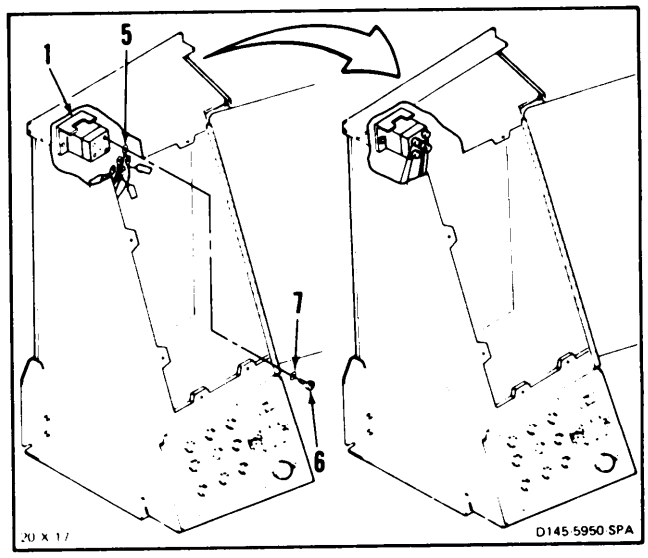
NOTE

Procedure is similar to install No. 1 or No. 2 dc power supply (tr) fail relay except as noted in text. No. 1 relay shown here.

1. **Position fail relay (1),** X2 terminal up, in No. 1 power distribution panel (2).
2. **Install two screws (3)** and washers (4).



3. Remove tape from ends of wires (5).
4. **For No. 1 relay (1) connect eight wires (5) by installing seven screws (6) and lockwaahers (7).** Remove tags.
5. **For No. 2 relay connect 10 wires (5) by installing eight screws (6) and lockwashers (7).** Remove tags.



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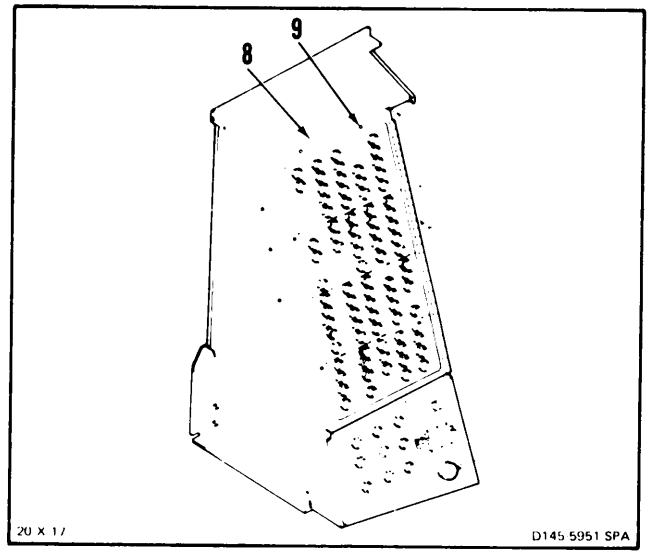
9-17 INSTALL DC POWER SUPPLY (TR) FAIL RELAY (Continued)

6. **Close circuit breaker panel (8).** Fasten six fasteners (9).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of dc power system (TM 55-1520-240-T).

END OF TASK

9-18 REMOVE SWITCHED BATTERY BUS RELAY

INITIAL SETUP

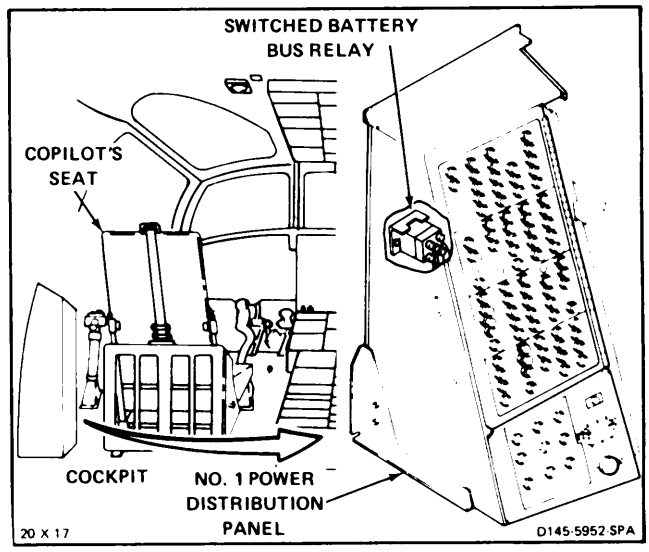
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

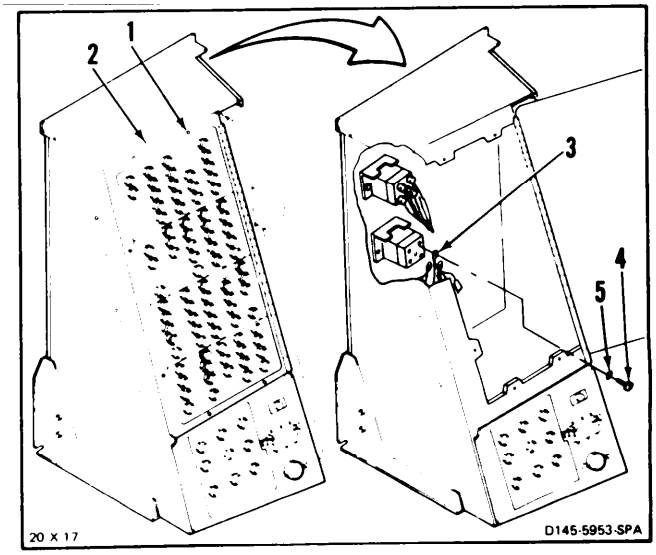
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

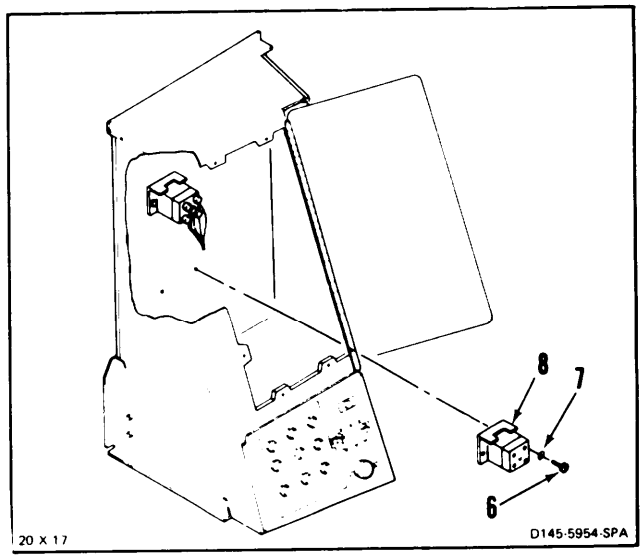
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Release six fasteners (1) in upper circuit breaker panel (2). **Open panel.**
2. Tag five wires (3). Remove five screws (4) and lockwashers (5). **Disconnect wires. Use tags (E284).**
3. Tape exposed ends of wires (3). Use tape (E385).



4. **Remove** two screws (6), washers (7), and **switched battery bus relay (8).**



FOLLOW-ON MAINTENANCE:

None

9-19 INSTALL SWITCHED BATTERY BUS RELAY

INITIAL SETUP

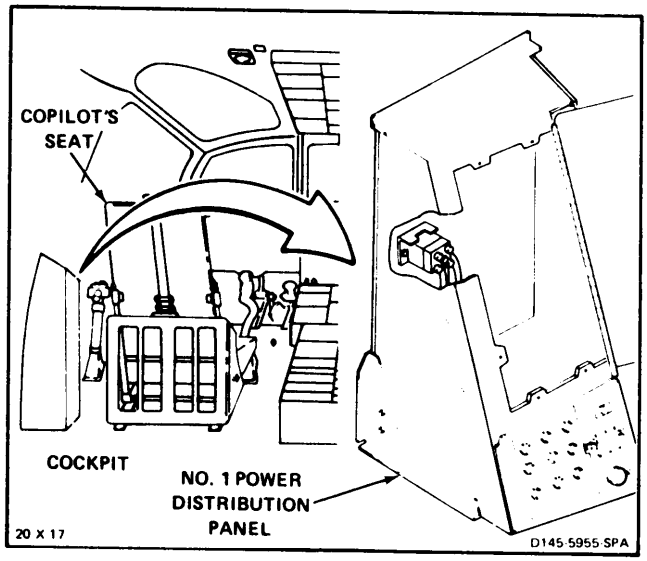
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

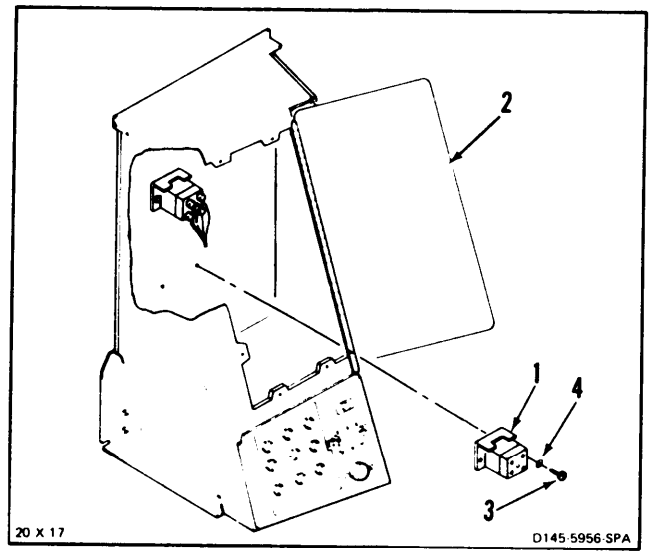
Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



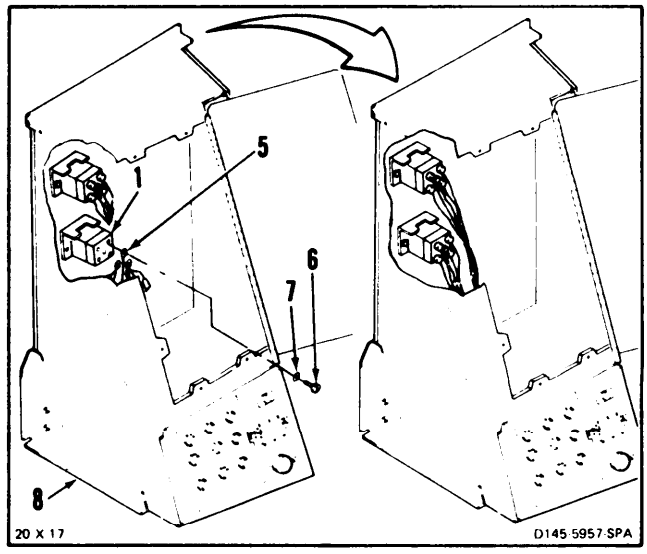
1. **Position switched battery bus relay (1),** X2 terminal up, in No. 1 power distribution

2. **Install two screws (3)** and washers (4).



3. Remove tape from ends of wires (5).

4. **Connect five wires (5)** to relay (1). Install five screws (6) and lockwashers (7). Remove tags.

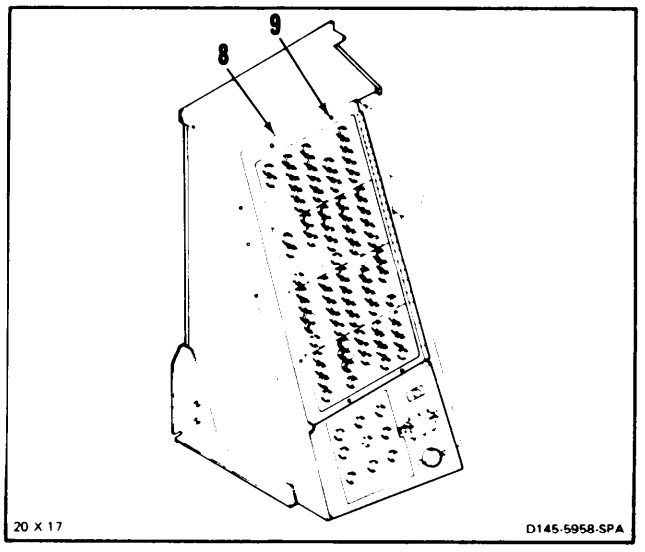


INSPECT

GO TO NEXT PAGE

9-19 INSTALL SWITCHED BATTERY BUS RELAY (Continued)

5. **Close circuit breaker panel (8).** Tighten SIX fasteners (9).



FOLLOW-ON MAINTENANCE:

Perform operational check of dc power system (TM 55-1520-240-T).

END OF TASK

9-20 REMOVE BATITERY RELAY

INITIAL SETUP

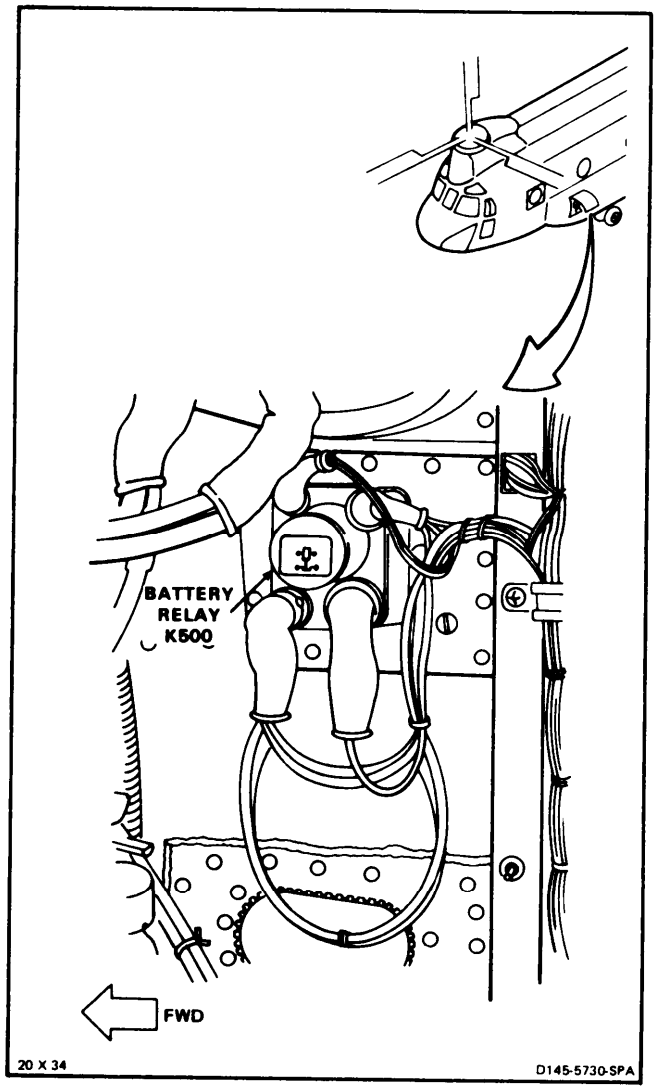
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Left Electrical Compartment Access
(Task 2-2)



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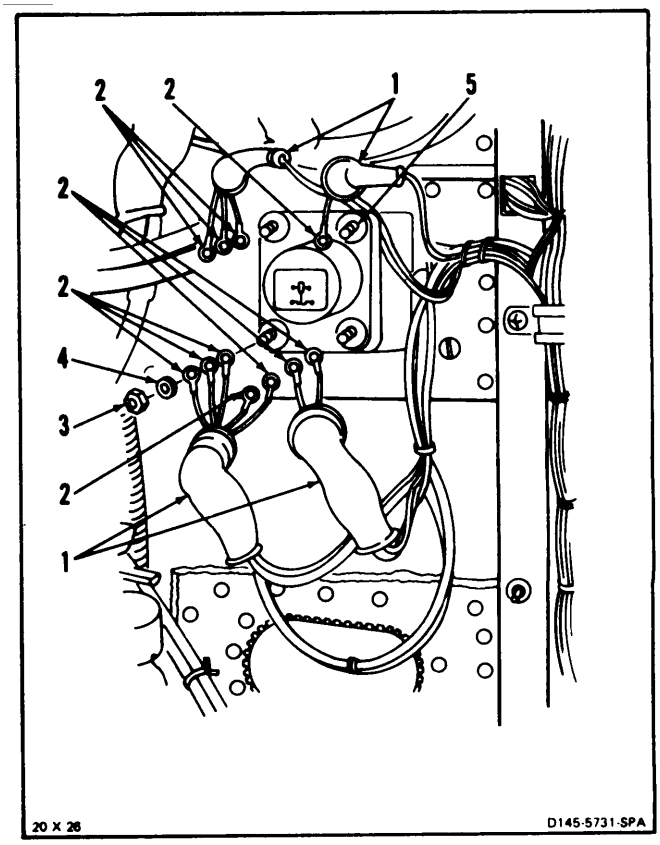
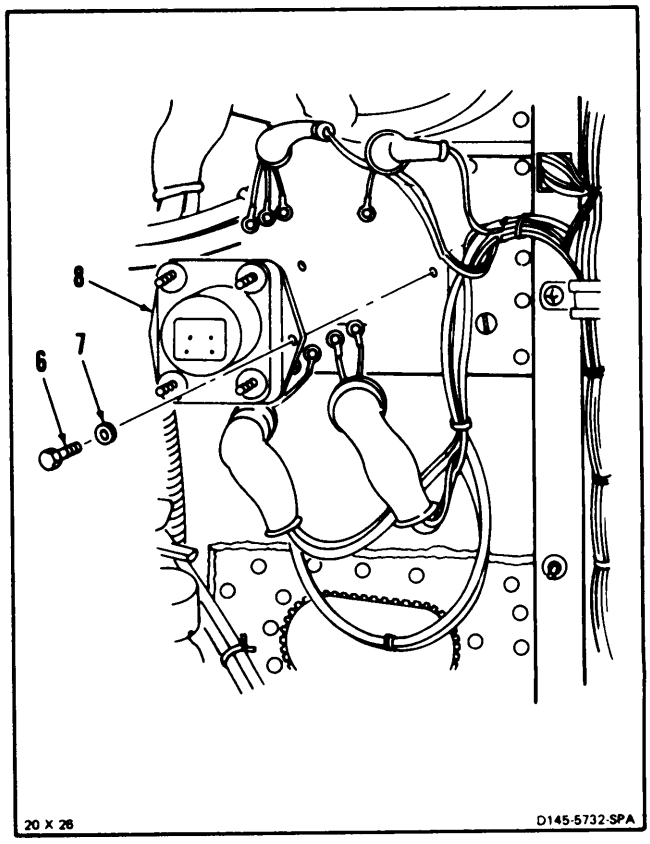
9-20 REMOVE BATTERY RELAY (Continued)

1. Slide back four boots (1) on 11 wires (2).
2. Tag wires (2). Remove four nuts (3) and washers (4) from studs (5). **Disconnect 11 wires. Use tags (E264).**
3. Tape ends of wires (2). Use tape (E385).



4. **Remove two bolts (6)** and washers (7).
5. **Remove relay (8).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-21 INSTALL BATTERY RELAY

INITIAL SETUP

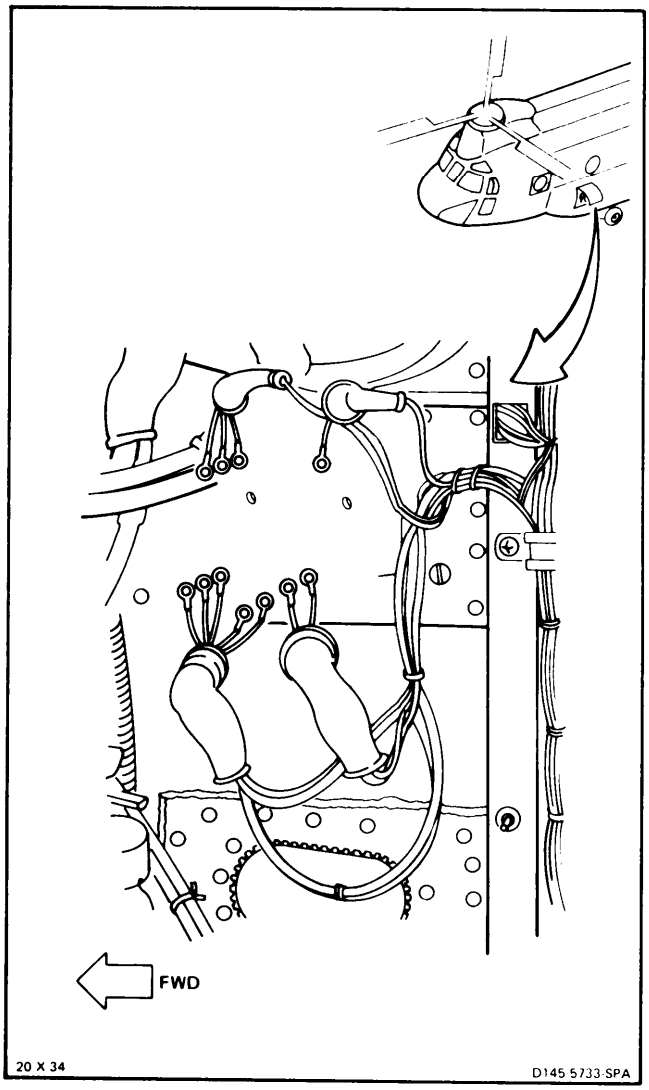
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

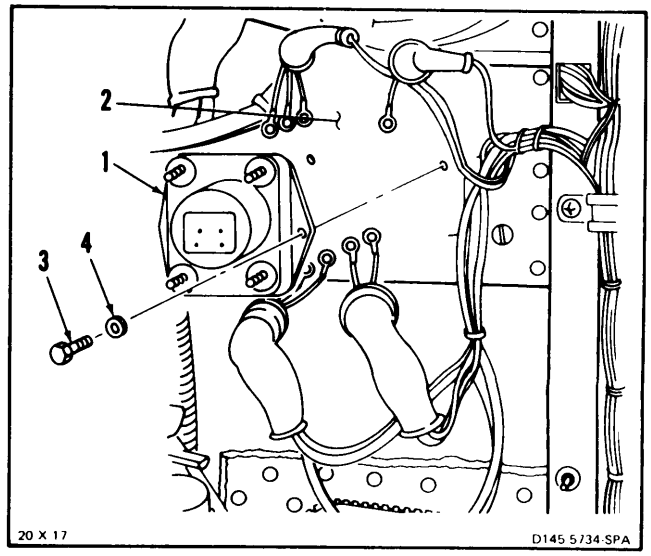
Materials:
None

Personnel Required:
68F10 Aircraft Electrican
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Position ralay (1) on structure (2). Install two bolts (3)** and washers (4).



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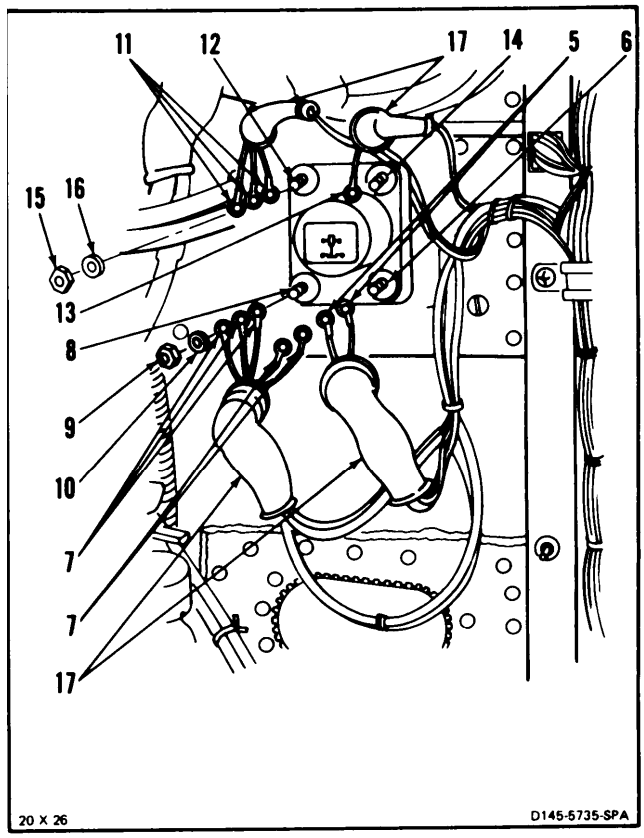
2. Remove tape and **connect two wires (5)** to terminal **A2** (6).
3. Remove tape and **connect five wires (7)** to terminal **A1** (8).
4. **Install two nuts (9)** and washers (10). Remove tags.
5. Remove tape and **connect three wires (11)** to terminal **X1** (12).
6. Remove tape and **connect wire (13)** to terminal **X2** (14).
7. **Install two nuts (15)** and washers (16). Remove tags.

INSPECT

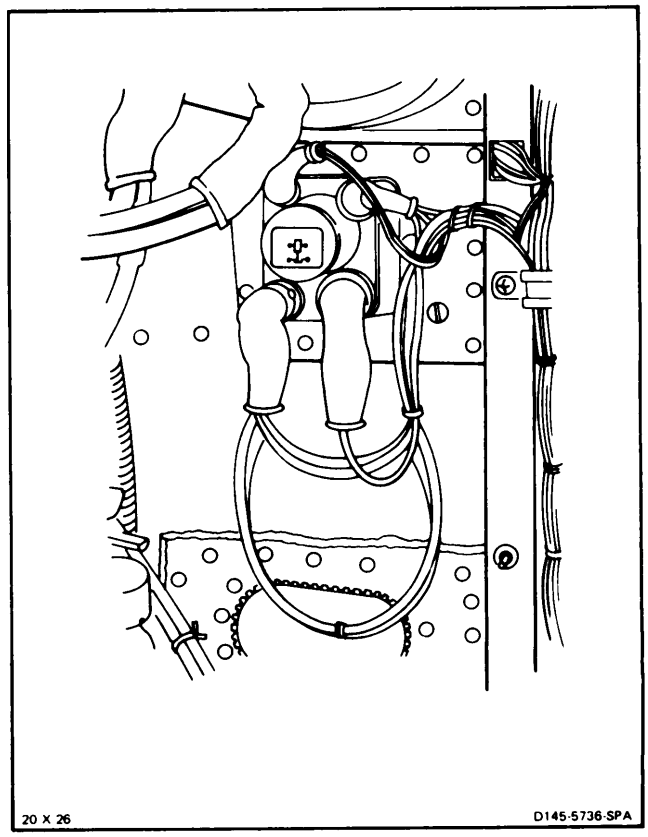
8. Slide four boots (17) over terminals (6, 8, 12,) and 14).



FOLLOW-ON MAINTENANCE:

Close left electrical compartment access door (Task 2-2).

Perform operational check of dc power system (TM 55-1520-240-T).



END OF TASK

9-22 REMOVE ESSENTIAL DC BUS RELAY

INITIAL SETUP

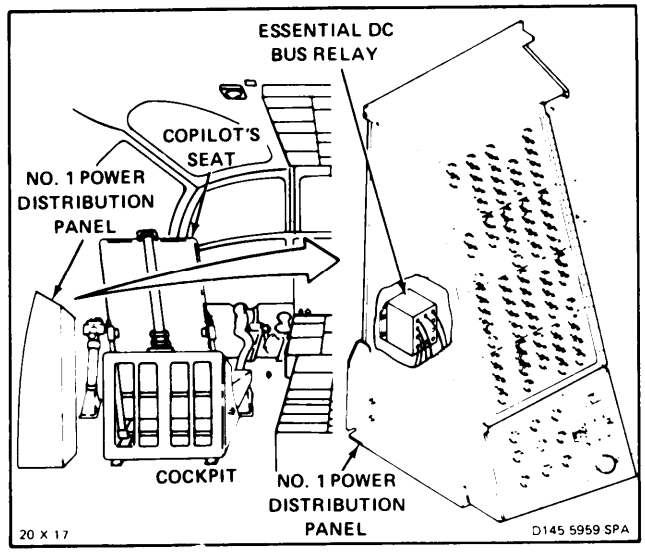
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

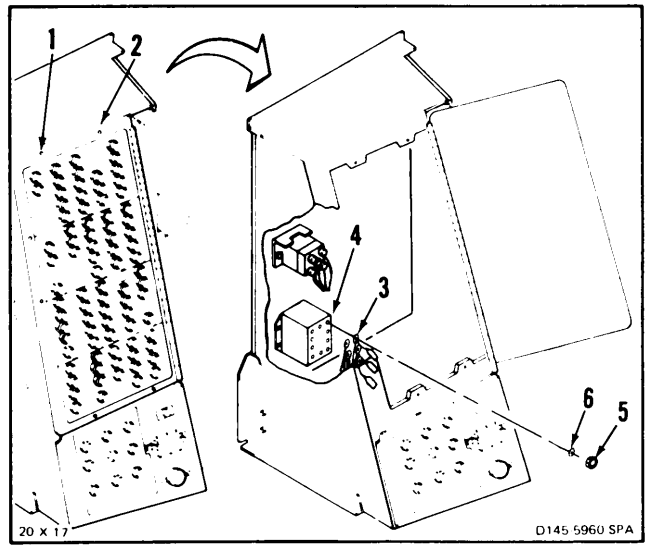
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

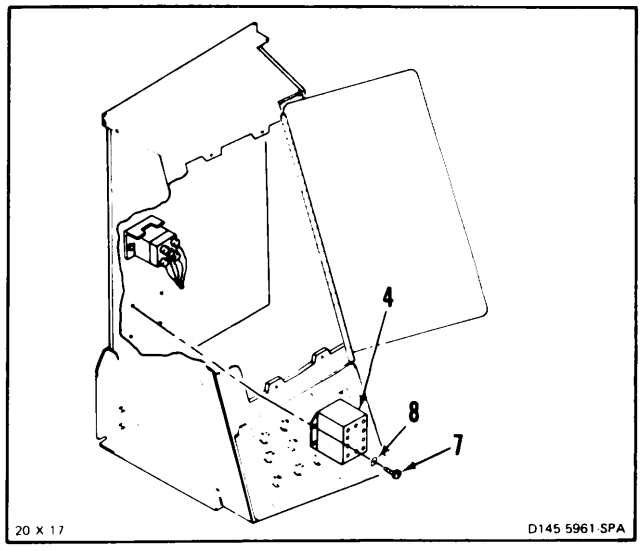
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Release six fasteners (1) in upper circuit breaker panel (2). **Open panel.**
2. Tag 11 wires (3) on essential dc bus relay (4). Remove eight nuts (5) and lockwashers (6). **Disconnect wires. Use tags (E284)**
3. Tape ends of wires (3). Use tape (E385).



4. **Remove four screws (7), washers (8), and relay (4).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-23 INSTALL ESSENTIAL DC BUS RELAY 9-23

INITIAL SETUP

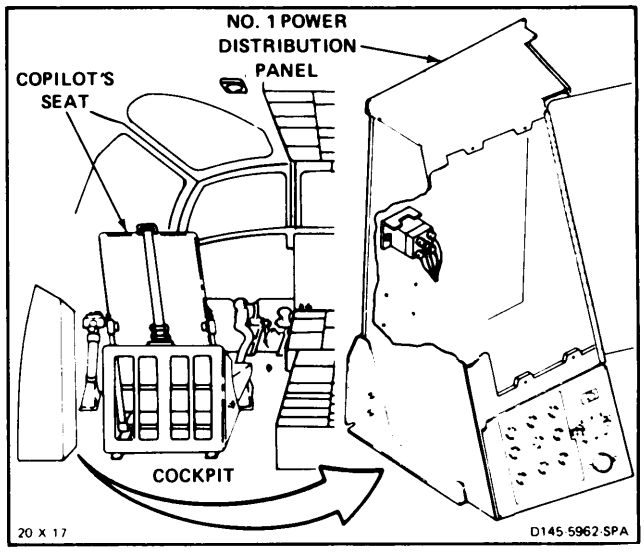
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

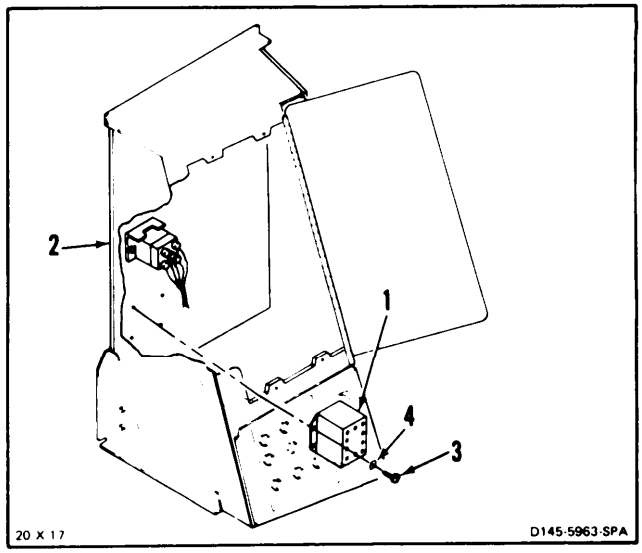
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P

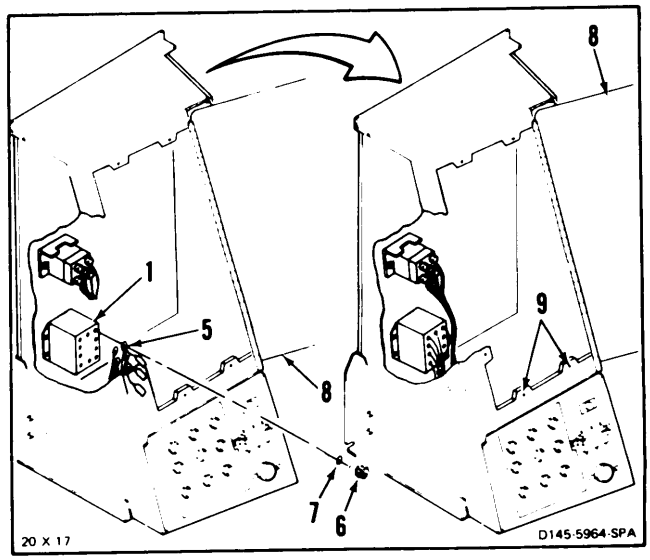


1. **Position essential dc bus relay (1) C2 terminal up,** in No. 1 power distribution panel (2).
2. Install four screws (3) and washers (4).



3. Remove tape from ends of 11 wires (5). **Connect 11 wires (5)** to relay (1). Install eight nuts (6) and lockwashers (7). Remove tags.

INSPECT



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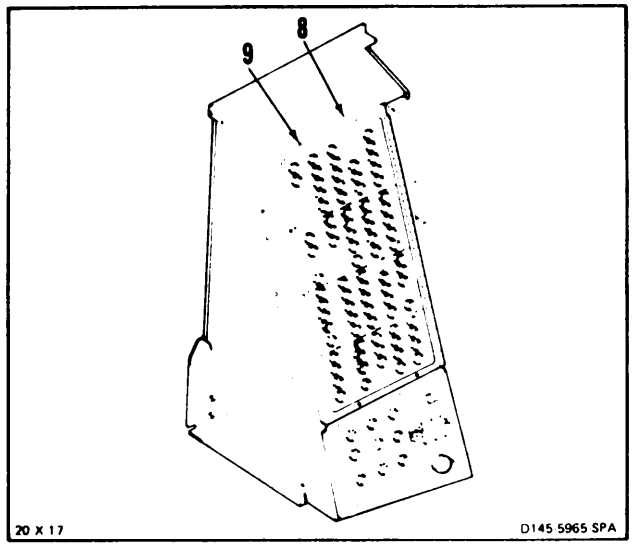
4. **Close circuit breaker panel (8). Tighten six fasteners (9).**



FOLLOW-ON MAINTENANCE:

Perform operational check of dc power system (TM 55-1520-240-T).

END OF TASK

9-24 INSPECT BATTERY SUMP JAR 9-24

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Rubber Gloves
Apron
Face Shield

Materials:

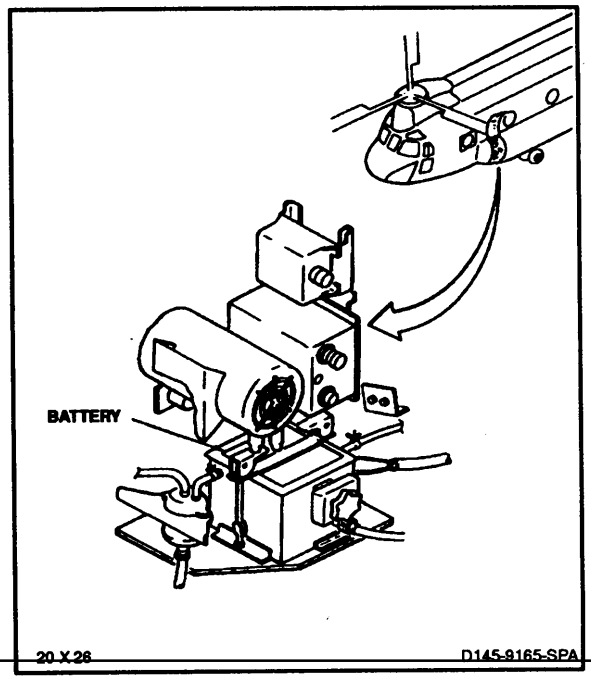
Boric Acid (E83)
Cloths (E135)

Personnel Required:

Aircraft Electrician

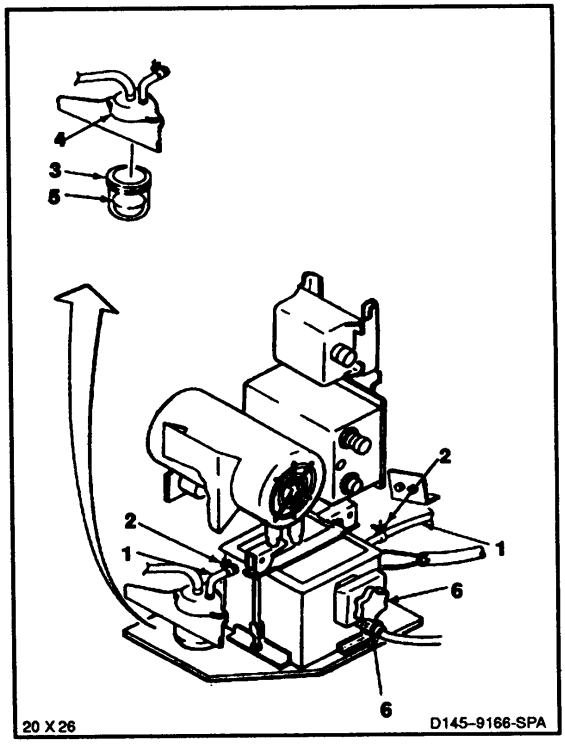
Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Left Electrical Compartment Access Door Open (Task 2-2)



WARNING

Wear rubber gloves, apron, and face shield when handling batteries. The potassium hydroxide In the battery electrolyte Is very corrosive. If any electrolyte is spilled on your clothing, hands, or on other material, immediately flood the affected area with cold water or boric acid solution. Consult a physician If your eyes are affected.



1. Check four vent hoses (1) for security. Tighten hose damps (2) if needed.

NOTE

The sump jar shall contain a water solution of 3 percent boric acid, by weight, sufficient to thoroughly soak the pad.

2. **Remove sump jar** (3) from cover (4). Check pad (5) for wetness. If needed, add 1 teaspoon of boric acid (E83) to thoroughly soaked pad. Use cloths (E135) for spilled fluid.
3. **Install sump jar** (3) on cover (4).
4. Check two electrical connectors (6) and four damps (2) for corrosion. Clean connectors if corroded.

FOLLOW-ON MAINTENANCE:

Close left electrical compartment access door (Task 2-2).

END OF TASK

9-25 REMOVE BATTERY

INITIAL SETUP

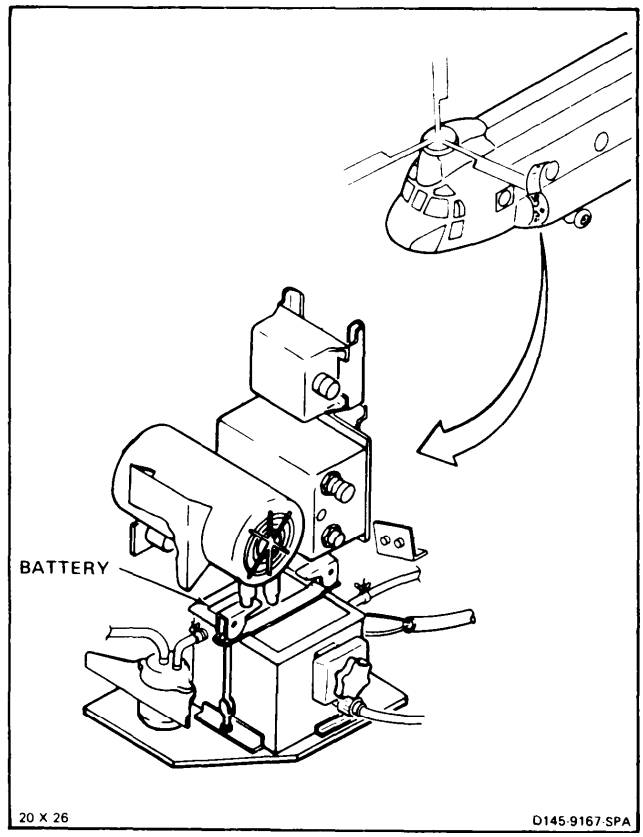
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Rubber Gloves
Apron
Face Shield

Materials:
Paper Tags (E264)

Personnel Required:
Medium Helicopter Repairer

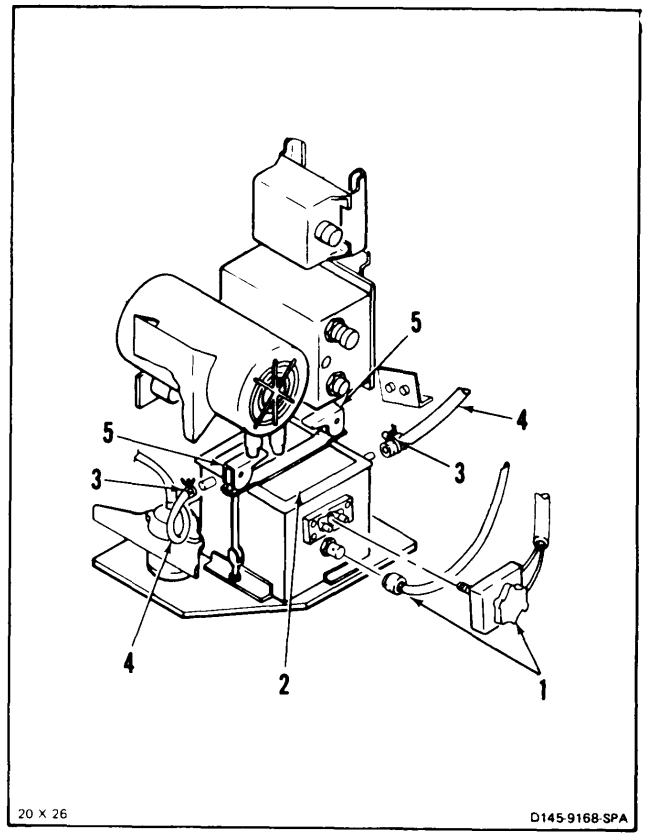
Equipment Condition:
Electrical Power Off
Hydraulic Power Off
Left Electrical Compartment Access Door Open (Task 2-2)



WARNING

Wear rubber gloves, apron, and face shield when handling leaking batteries. The potassium hydroxide in the battery electrolyte is very corrosive. If any electrolyte is spilled on your clothing, hands, or on other material, immediately flood the affected area with cold water or boric acid solution. Consult a physician if your eyes are affected.

1. Tag and **disconnect two electrical connectors (1)** from battery (2). Use tags (E264).
2. Loosen two wingnuts (3) on two lines (4). **Remove lines (4).**
3. Release two clamps (5). **Remove battery (2).**



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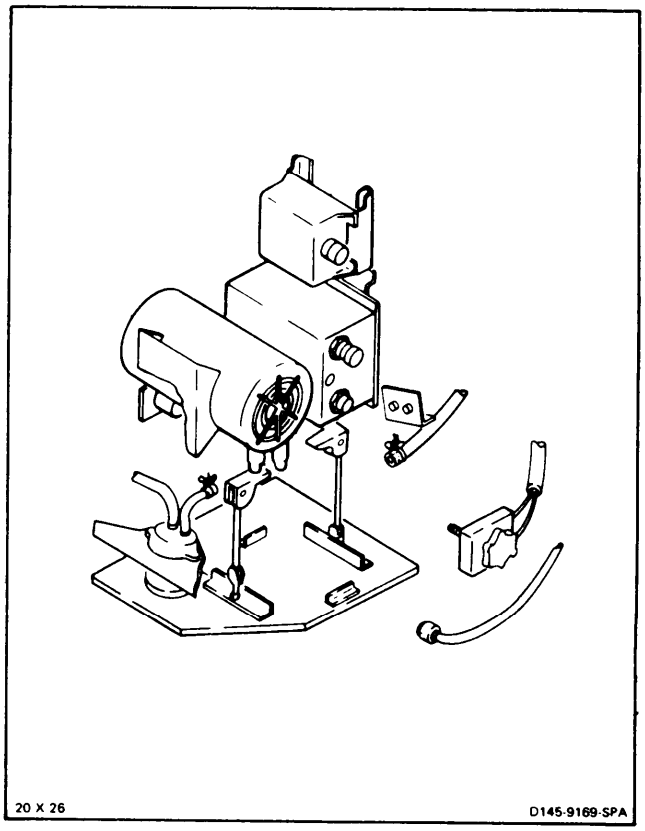
9-25 REMOVE BATTERY (Continued) 9-25

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-25.1 REMOVE BATTERY CABLE (AVIM)

INITIAL SETUP

Applicable Configurations:
All

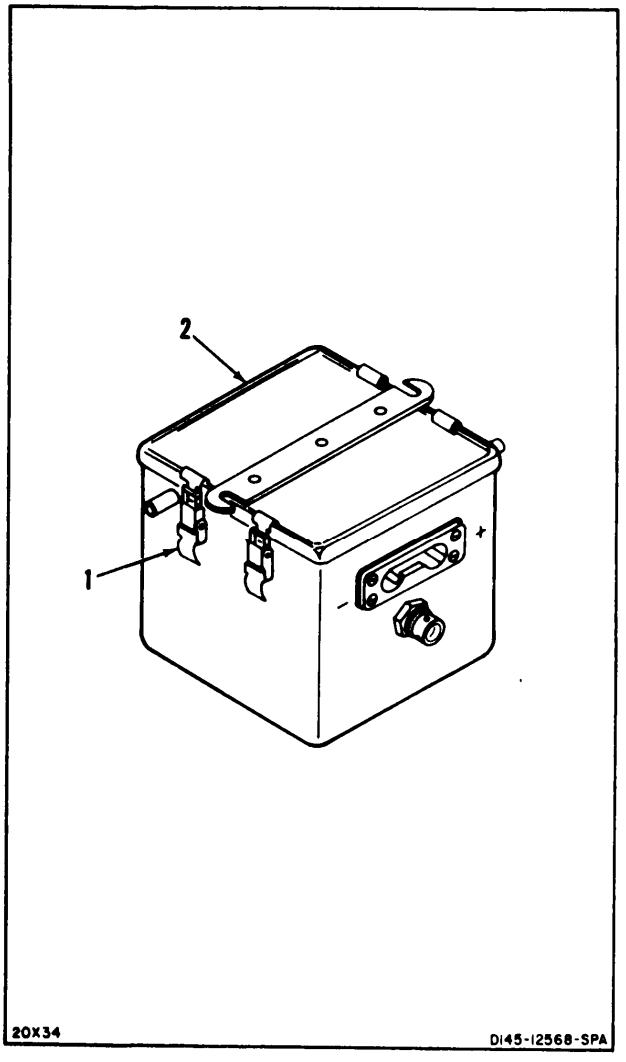
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Battery Service Tool Kit,
NSN 5180-00-542-5812

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 11-6140-203-14-2

Equipment Condition:
Off Helicopter Task



1. Release four **snap fastenars (1)** and remove battery **cover (2).**

CAUTION

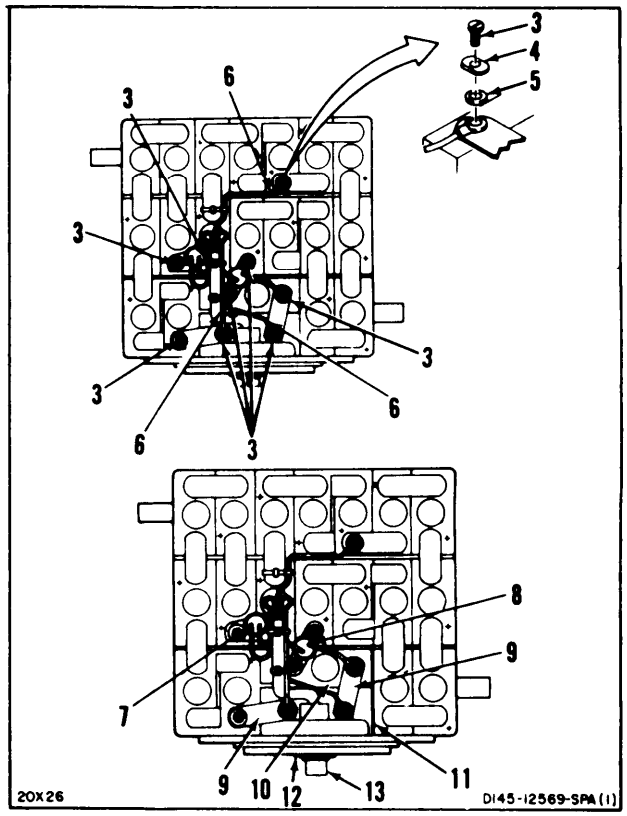
Do not use a discharge fixture device as specified in TM 11-6140-203-14-2, para 5-7(4). Fixture could cause damage to battery cable.

2. **Discharge battery** using resistor load method. Refer to TM 11-6140-203-14-2.

GO TO NEXT PAGE

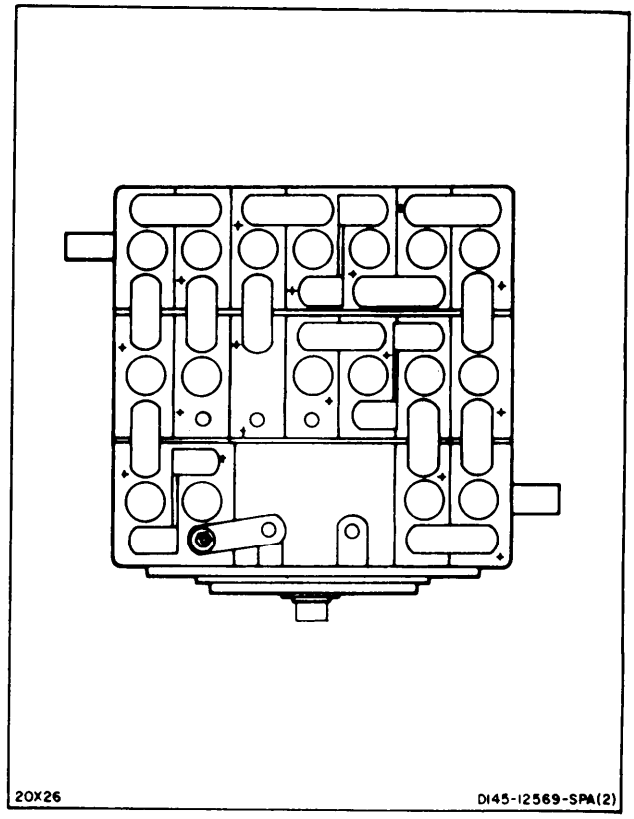
9-25.1 REMOVE BATTERY CABLE (AVIM) (Continued) 9-25.1

3. After battery is discharged, remove nine screws (3), nine washers (4), and nine spring washers (5) from the battery links.
4. Carefully **remove all cable connections (6)** from battery cell studs including battery temperature switch (7) and thermistor (8).
5. **Remove two battery cell links (9).**
6. **Remove battery cell (10).** Refer to TM 11-6140-203-14-1.
7. **Remove U-shaped plastic liner (11).**
8. Remove lockwire and retaining nut (12) from connector (13).



FOLLOW-ON MAINTENANCE:

Perform Serviceability Inspection (Task 9-25.2).



END OF TASK

9-25.2 REPAIR AND TEST BATTERY CABLE (AVIM) 9-25.2

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Battery Service Tool Kit,
NSN 5180-00-542-5812
Exhaust Gas Temperature Tester (BH-112JB-53)
BH22231 Heater Probe
Multimeter (2)
Insulation Breakdown Test Set (AN/GSM-6),
NSN 6625-00-5422-1331
Dial Indicating Scale, 0 to 10 Pounds
Compressed Air Source

Materials:
Boric Acid, ACS (E83)
Brush, Acid Swabbing (E86)
Cloth (E134)

Personnel Required:
Aircraft Electrician

References:
TM 11-6625-273-12
TM 11-6140-203-14-2
TM 55-4920-401-13 & P
TM 55-1500-323-25

Equipment Condition:
Off Helicopter Task

1. **Remove corrosion or foreign deposits** from terminals (1), thermal switch (2), thermistor (3), and insulation. Use a mixture of 3 percent by weight of boric acid (E83) and water, and a brush (E86).

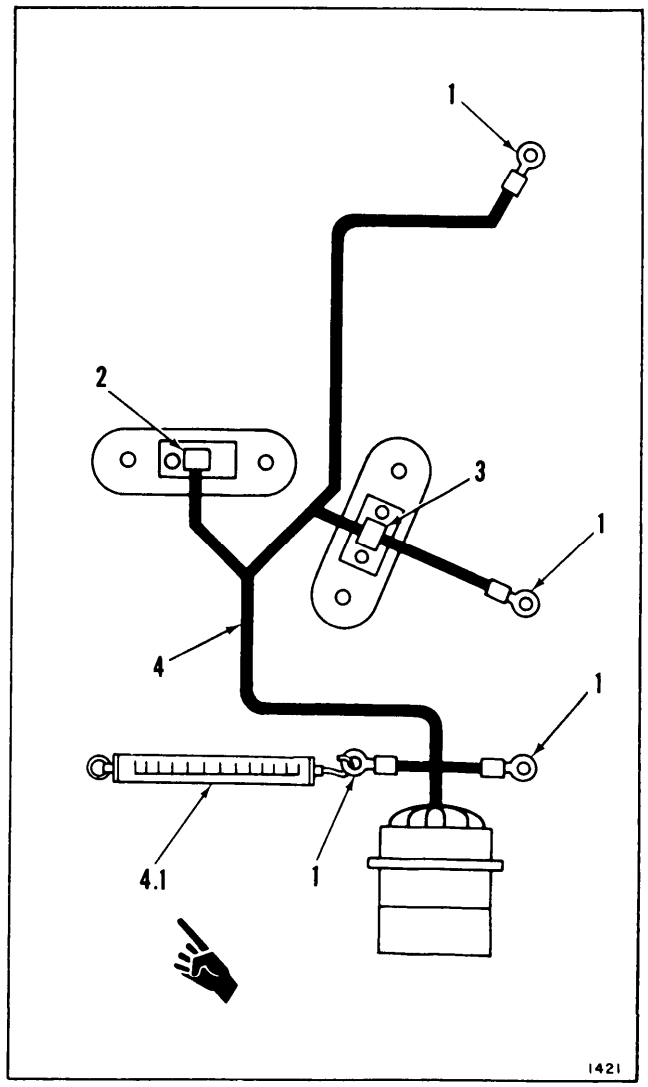
WARNING

Do not use more than 30 psi compressed air for cleaning purposes. Debris trajected under pressure can cause injury to eyes. Use source of compressed air under 30 psi and eye protection to prevent injury to personnel.

2. Thoroughly **clean off battery cable (4)** with tap water and brush (E86). Do not immerse harness assembly into water. Wipe harness with cloth (E134) and dry off with dry compressed air as necessary.

3. Use dial indicating scale (4.1). **Apply a 2.5 to 3.5 pounds pull** on each connection. If any terminal comes off, replace it. Refer to TM 55-1500-323-25.

4. **Check battery cable wires.** if any wire is damaged, replace battery cable.



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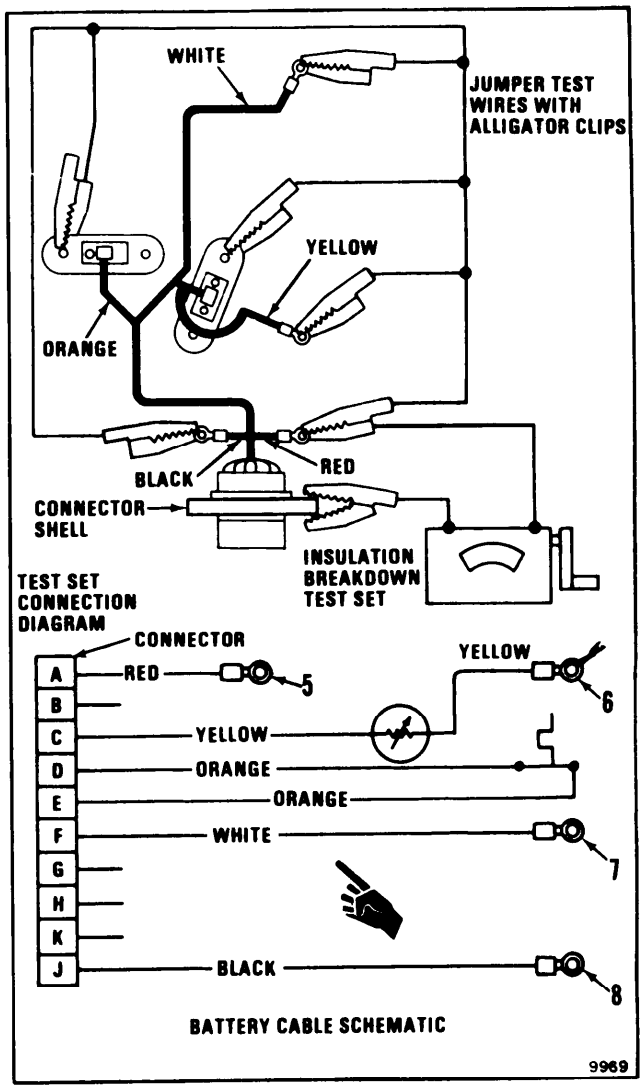
5. **Connect cable assembly** to insulation breakdown test set. Use jumper wires to connect all terminals and temperature devices together.
6. **Operate test set. Refer** to TM 11-6625-273-12. Resistance measurement must not be below 500,000-ohms. Discard battery cable that does not meet this requirement.
7. **Check continuity of battery cable** with a multimeter. Connect multimeter. Connect multimeter leads to connector pins and terminals as indicated and measure resistance value. Discard battery cable if values are not as shown.

Connector Pin	To	Connector Pin or Terminal	Resistance
Pin A		Terminal (5)	0 to 0.5-ohms
Pin C		Terminal (6)	See note
Pin D		Pin E	0 to 0.5-ohms
Pin F		Terminal (7)	0 to 0.5-ohms
Pin J		Terminal (8)	0 to 0.5-ohms

NOTE

At 50°F , resistance should be 1600 to 2400-ohms. At 75°F , resistance should be 800 to 1200-ohms. At 100°F, resistance should be 400 to 600-ohms.



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8. **Fasten temperature switch (8)** and thermistor (9) to heater probe (10). **Connect** heater **probe** to Exhaust Gas Temp. Tester. (Refer to TM 55-4920-401-13&P). Heat Detection System Check.

9. **Connect multimeter (11)** to connector pins D and E. **Set multimeter range** switch to RX1.

10. **Connect multimeter (12)** to connector pins A and C. **Set multimeter range** switch to RX100.

11. **Set Exhaust Gas Temperature Tester (13) c**ontrols for 140° F and set power switch to ON.

12. **Check multimeter (11) when tester (13) stabilizes at a temperature between 135° and 145°F.** Multimeter (11) reading shall change from continuity to infinity. If it does not change, discard battery cable.

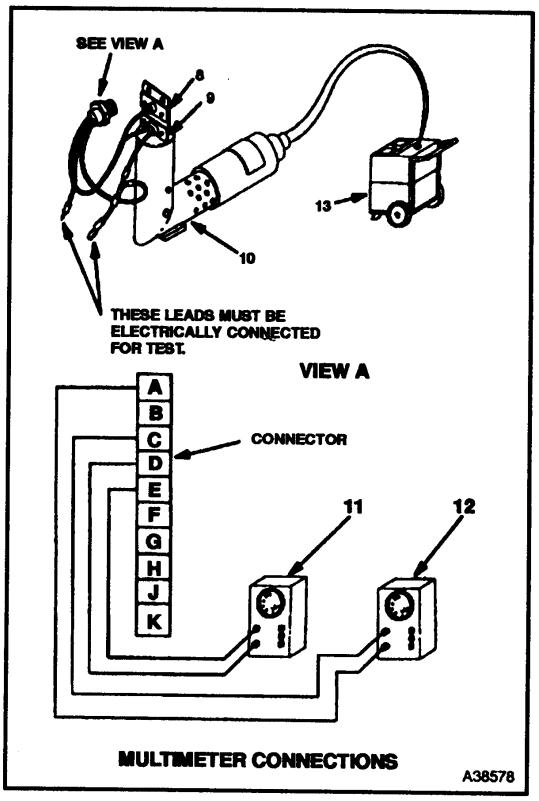
NOTE

The thermistor must be heat soaked and stabilized at 140° F prior to taking the multimeter reading.

13. Check multimeter (12) when tester (13) stabilizes at a temperature of 140°F. Multimeter (12) shall indicate between 200 and 300 ohms. If it does not, discard battery cable.

14. **Set Exhaust Gas Temperature Tester (13)** controls for 115°F.

15. **Check multimeter (12) when tester (13) stabilizes at a temperature of 1100 to 120°F**. Multimeter (12) reading shall change from infinity to continuity. If it does not, discard battery cable.



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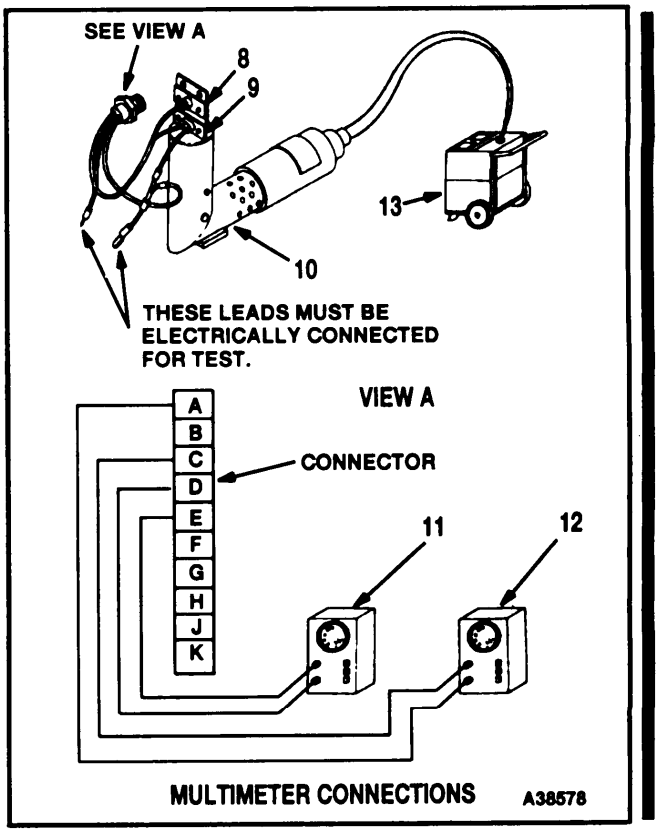
16. **Set tester (13) power switch to OFF.**
17. **Disconnect both multimeters (11 and 12)** from battery cable connector.

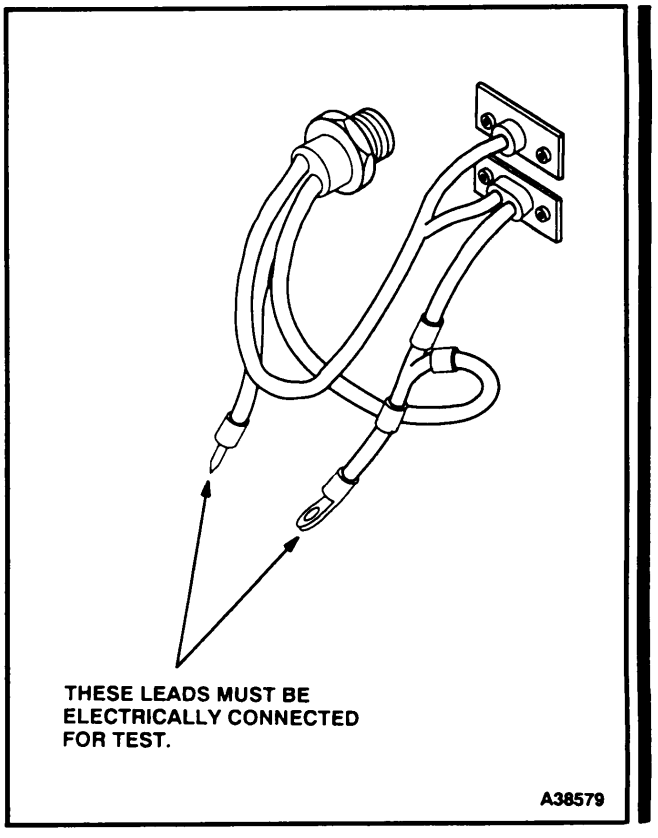
WARNING

Allow heater probe to cool before removing battery cable. Hot probe can burn hands and fingers. If personnel are burned while handling hot heater probe, seek medical attention immediately.

18. **Remove temperature switch (8) and thermister (9)** from heater probe (10).



FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-25.3 INSTALL BATTERY CABLE (AVIM)

INITIAL SETUP

Applicable Configurations:
All

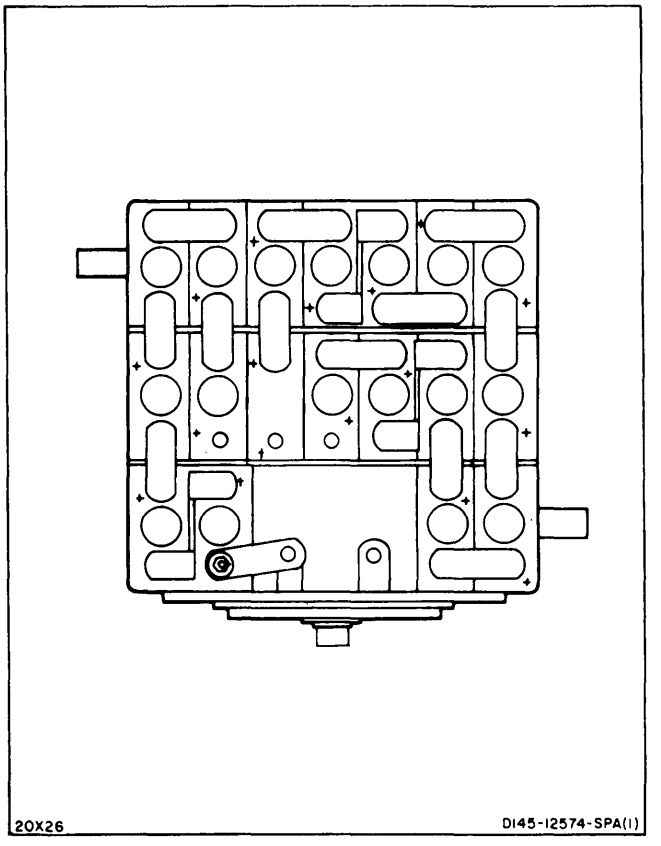
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Battery Service Tool Kit,
NSN 5180-00-542-5812

Materials:
Lockwire (E231)
Corrosion Preventive Compound (E153)

Personnel Required:
Aircraft Electrician

References:
TM 11-6140-203-14-2

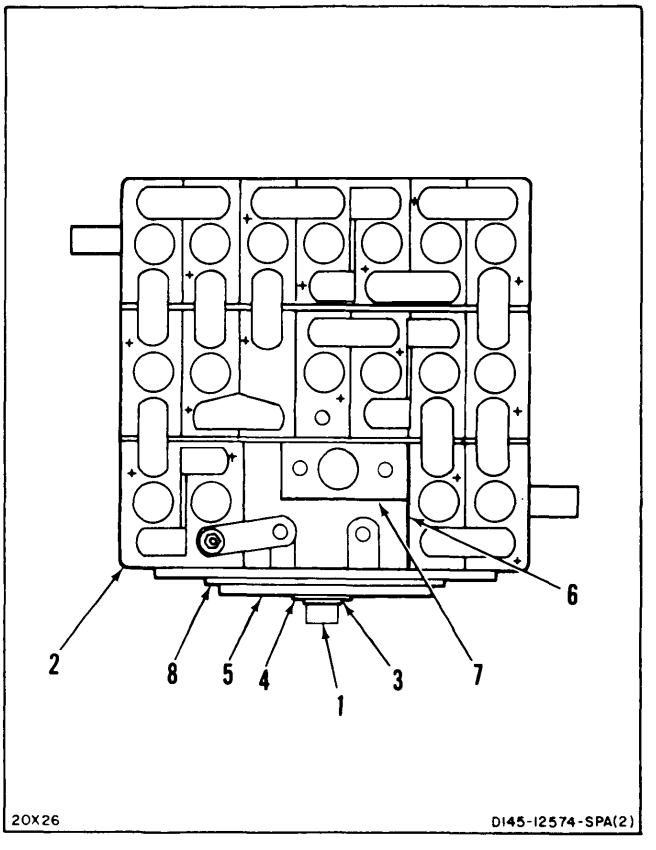
Equipment Condition:
Off Helicopter Task
Battery Cleaned, Discharged, and Shorting Strips Installed



1. **Remove all shorting strips.** Refer to TM 11-6140-203-14-2.
2. **Install connector (1) in hole in battery case (2).** Install locknut (3) and tighten to 50 to 60 inch-pounds.
3. **Lockwire nut (3)** to lockwire tab (5) on battery case. Use iockwire (E231).
4. **Install U-shaped liner (6).**
5. **Install battery cell (7).** Refer to TM 11-6140-203-14-2. Insure + terminal is directly behind + post on battery connector (8).

CAUTION

Improper installation or connection of cable assembly could result in damage to cable assembly and battery.



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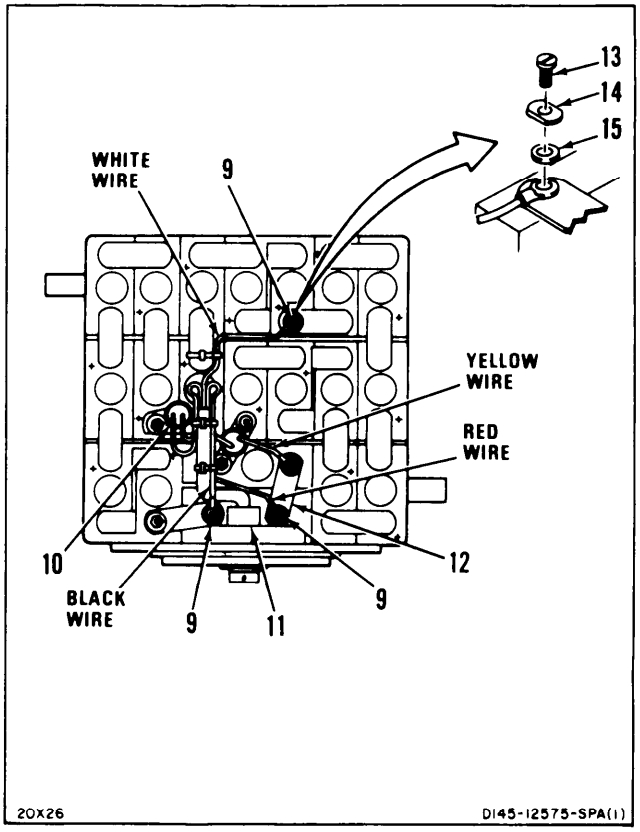
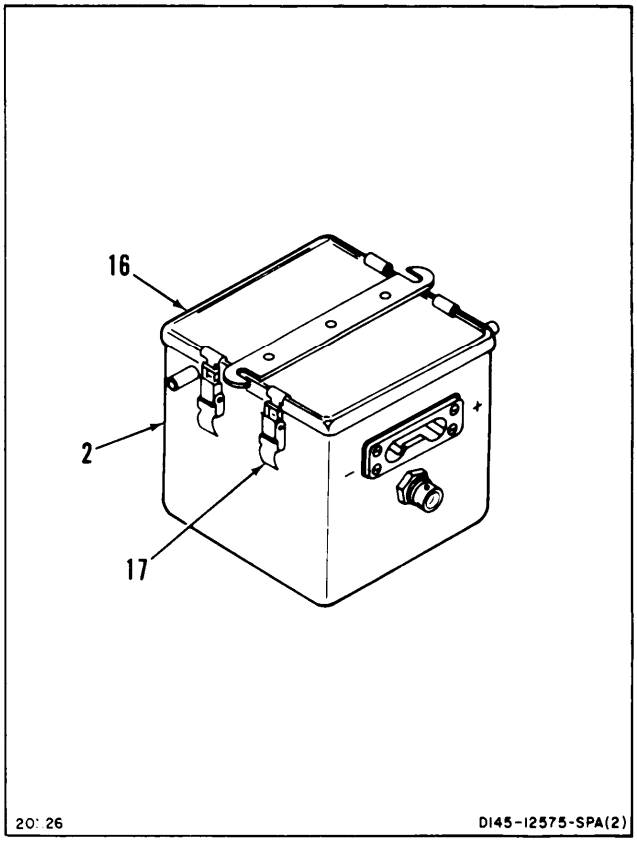
9-25.3 INSTALL BATTERY CABLE (AVIM) (Continued) 9-25.3

6. **Connect battery cable terminals (9)** to battery cells,
7. **Connect temperature switch (10)** and thermistor (11) to battery cells.
8. **Connect battery links (12)** to battery cells.
9. Secure all items in steps 6, 7, and 8 using nine screws (13), nine washers (14), and nine spring washers (15).
10. **Tighten battery terminal screws (13)** to 20 to 25 inch-pounds.
11. **Coat all cell terminals,** connections, and sensors with corrosion preventive compound (E153). Refer to TM 11-6140-203-14-2.
12. **Charge battery.** Refer to TM 11-6140-203-14-2.



13. Install cover (16) on battery case (2) and close snap locks (17) over cover.



FOLLOW-ON MAINTENANCE

None

END OF TASK

9-26 REPAIR BATTERY (AVIM)

INITIAL SETUP

Applicable Configurations:
All

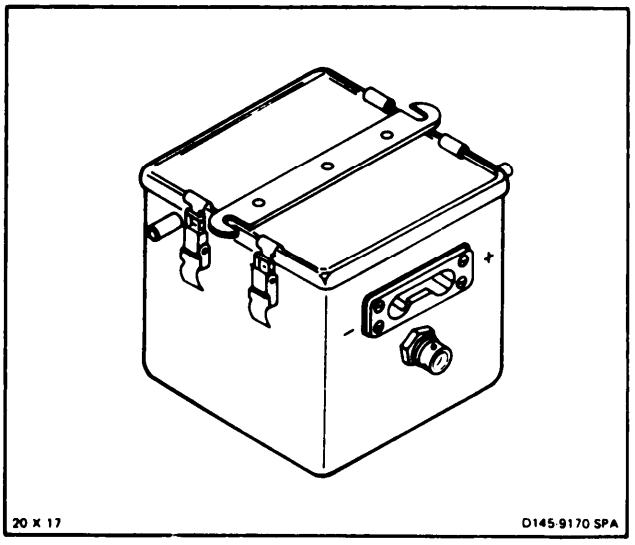
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F20 Aircraft Electrician

References:
TM 11-1520-240-20

Equipment Condition:
Off Helicopter Task



Repair battery (TM 11-1520-240-20).

FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-27 INSTALL BATTERY

INITIAL SETUP

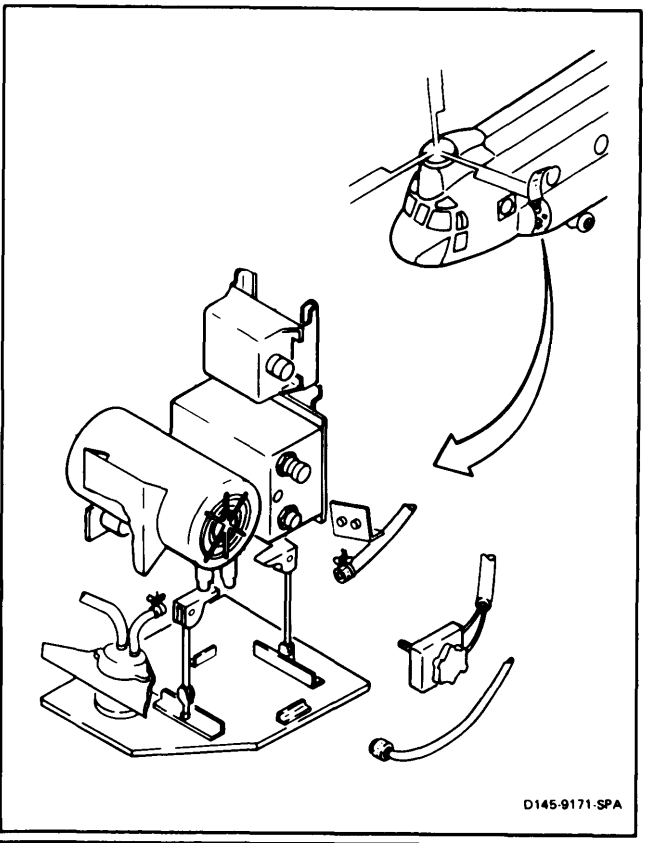
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Rubber Gloves
Apron
Face Shield

Materials:
None

Personnel Required:
Medium Helicopter Repairer
Inspector

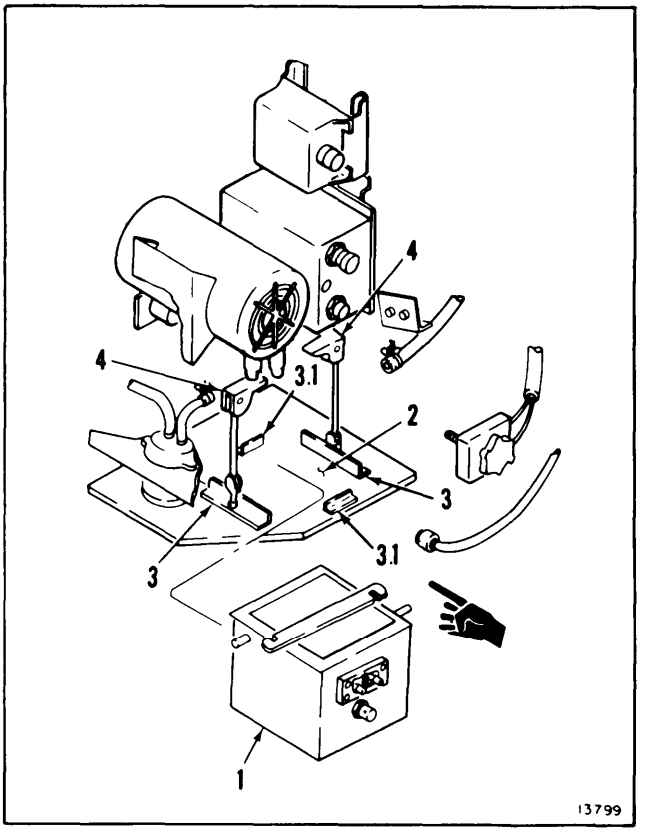
References:
TM 55-1520-240-23P



WARNING

Wear rubber gloves, apron, and face shield when handling batteries. The potassium hydroxide in the battery electrolyte is very corrosive. If any electrolyte is spilled on your clothing, hands, or on other material, immediately flood the affected area with cold water or boric acid solution. Consult a physician if your eyes are affected.

1. **Position** battery (1) on shelf (2) within two brackets (3) and two brackets (3.1).
2. **Position** two clamps (4) on battery (1). **Tighten clamps.**



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WARNING

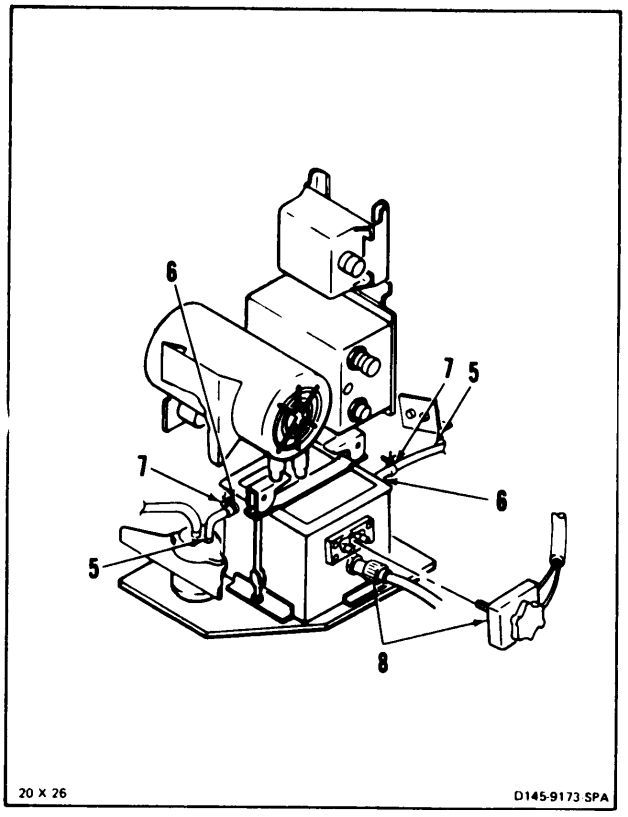
Failure to ensure that the battery sump jar and vent hoses are properly connected could result in hydrogen gas entering the pod and the cabin. Hydrogen gas can cause explosion or fire.

3. **Install two lines (5) to two vents (6).** Tighten wingnuts (7).

4. **Connect two electrical connectors (8) and (9).** Remove tags.

CAUTION

To prevent damage to the battery pins when connecting electrical connector (9), apply inward pressure as the knob is being tightened.



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Close left electrical compartment access door (Task 2-2).

END OF TASK

9-28 REMOVE BATTERY CHARGER

INITIAL SETUP

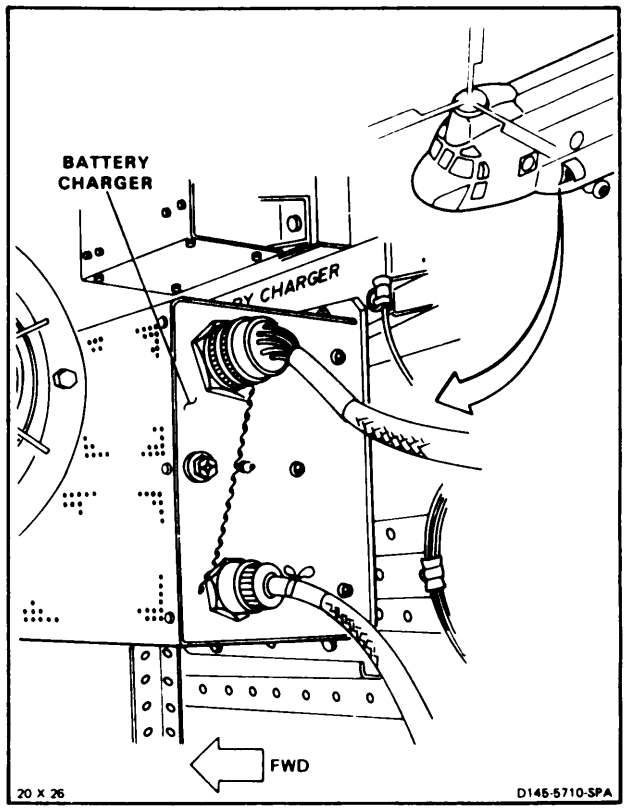
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

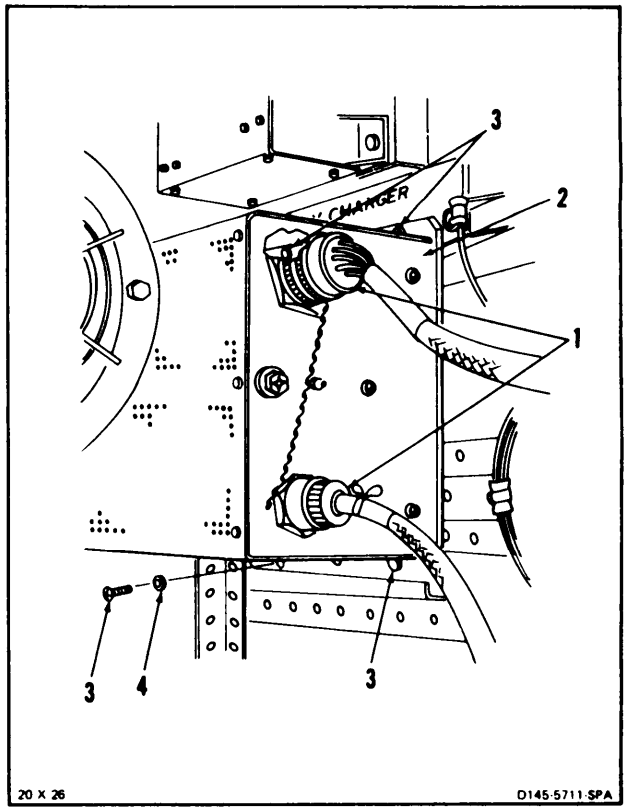
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrical

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Left Electrical Compartment
(Task 2-2)



1. Tag and **disconnect two electrical plugs (1)** from charger (2). Use tags (E264).
2. **Remove four screws (3)** and washers (4).
3. **Remove charger (2).**



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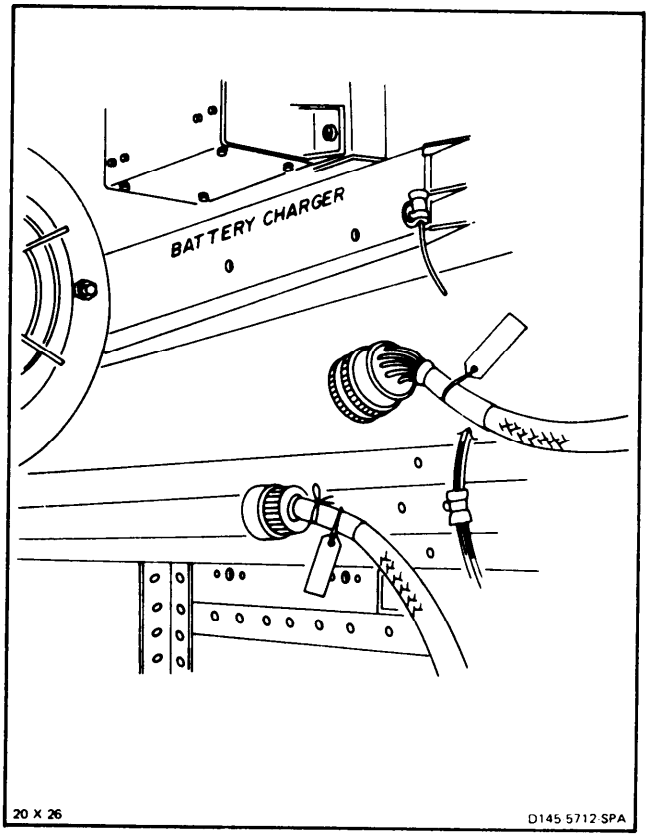
9-28 REMOVE BATTERY CHARGER (Continued)

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-29 INSTALL BATTERY CHARGER

INITIAL SETUP

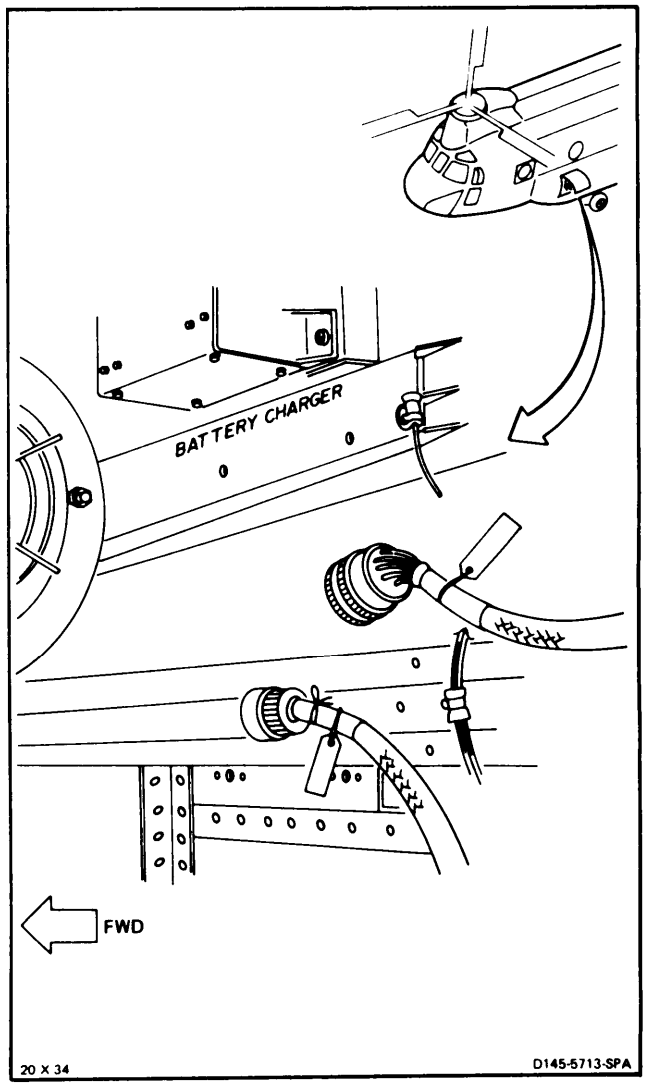
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F00 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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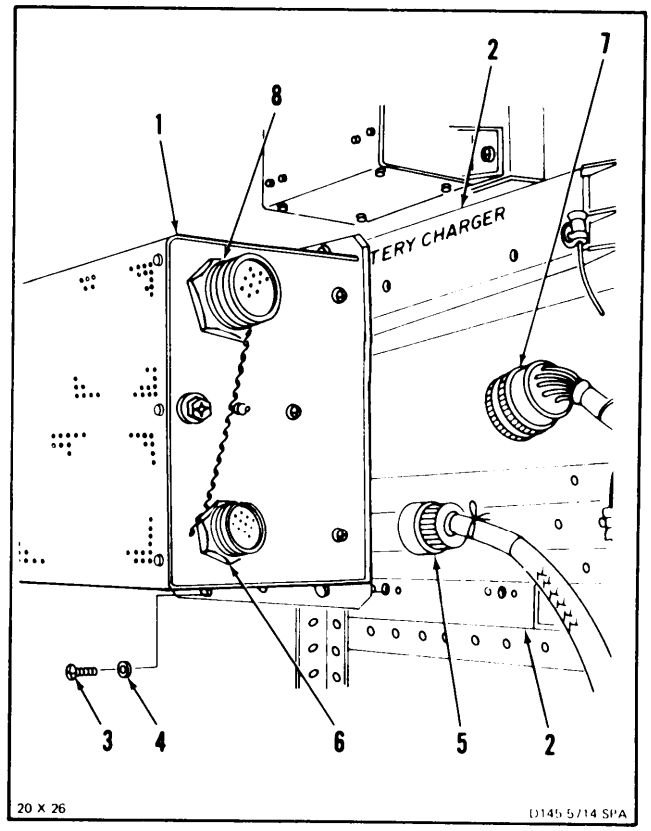
9-29 INSTALL BATTERY CHARGER (Continued)

1. **Position charger (1)** on brackets (2). **Install four screws (3)** and washers (4).
2. **Connect electrical plug (5)** to receptacle (6). Remove tag.
3. **Connect electrical plug (7)** to receptacle (8). Remove tag.

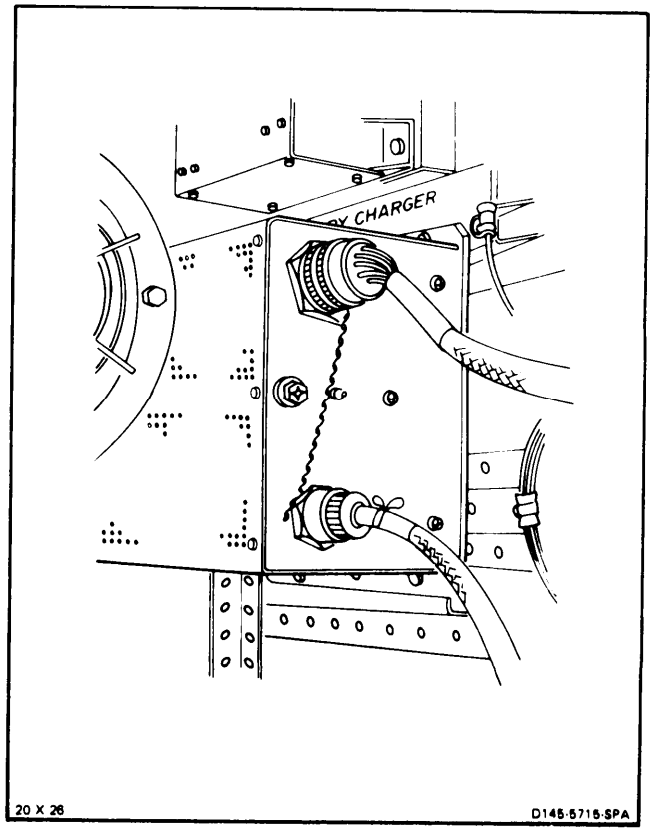
INSPECT



FOLLOW-ON MAINTENANCE:

Close left electrical compartment access door (Task 2-2).

Perform operational check of battery charger (TM 55-1520-240-T).



END OF TASK

SECTION III
ALTERNATING CURRENT (AC) POWER DISTRIBUTION SYSTEM DESCRIPTION AND THEORY OF OPERATION

9-30 ALTERNATING CURRENT (AC) POWER DISTRIBUTION 9-30

DESCRIPTION

Alternating current (ac) is the primary source of electrical power for the helicopter. The ac power distribution system has four power sources: two main generators, a secondary generator, and external power..

The two main generators are mounted on and driven by the aft transmission. The secondary generator is mounted on and driven by the auxiliary power unit. A receptacle for connecting external power to the helicopter is at the forward end of the left pod.

Each power source delivers 115-volt 3-phase power to one or both of two ac buses. The buses distribute the power to all ac electrical components on the helicopter. Each of the power sources has its own control unit, panel, or monitor that ensures that it is operating properly before its output is delivered to the buses.

During normal operation, with rotors turning minimum of 85 percent, the No. 1 generator, driven off the left side of the aft transmission, supplies power to the No. 1 ac bus. The No. 2 generator, driven off the right side of the transmission, powers the No. 2 bus. When either main generator is running, output from the auxiliary power unit (apu) and external power is blocked from the buses.

If the main generators are not operating, but the auxiliary power unit is running, the apu generator supplies power to both ac buses. When the apu generator is operating, the external power circuits are blocked from the ac bus. Only if both the main and the secondary generators are not operating can external power be used to supply the ac buses.

Control switches for each of the three generators are on the overhead ELECT panel in the cockpit. The master caution panel has lights to indicate the status of the system.

Most of the electrical connectors used on the aircraft have a fully-coupled indicator which is utilized to prevent over or under engagement of the connector by the installer, and is also utilized during inspection as a quick visual indication of proper installation. This indicator consists of three axial stripes, usually blue in color, placed on the plug shell which will align with three corresponding stripes on the coupling ring when completely coupled. Do not over-tighten the coupling ring beyond the blue stripes.

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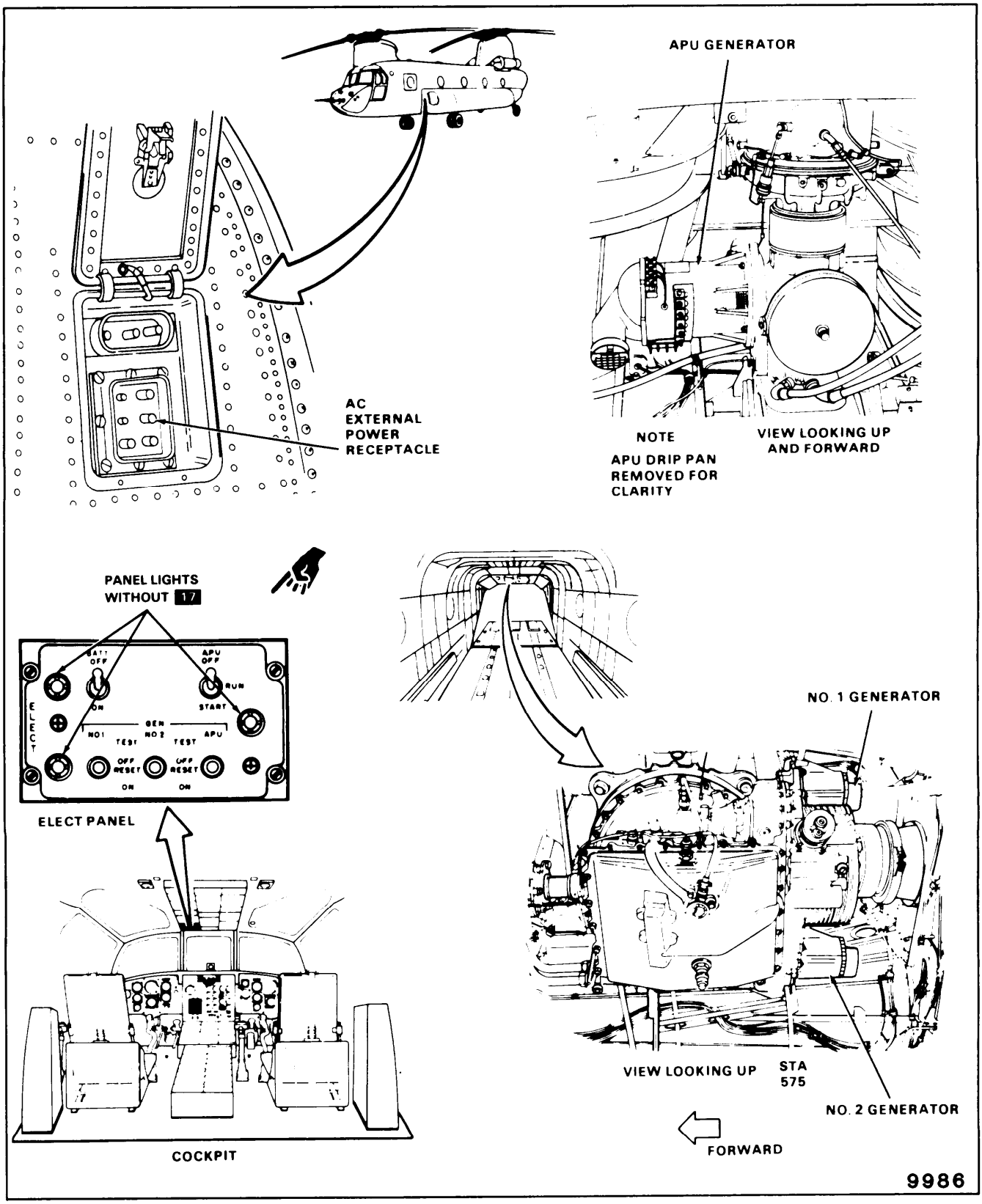
9-30 ALTERNATING CURRENT (AC) POWER DISTRIBUTION (Continued)



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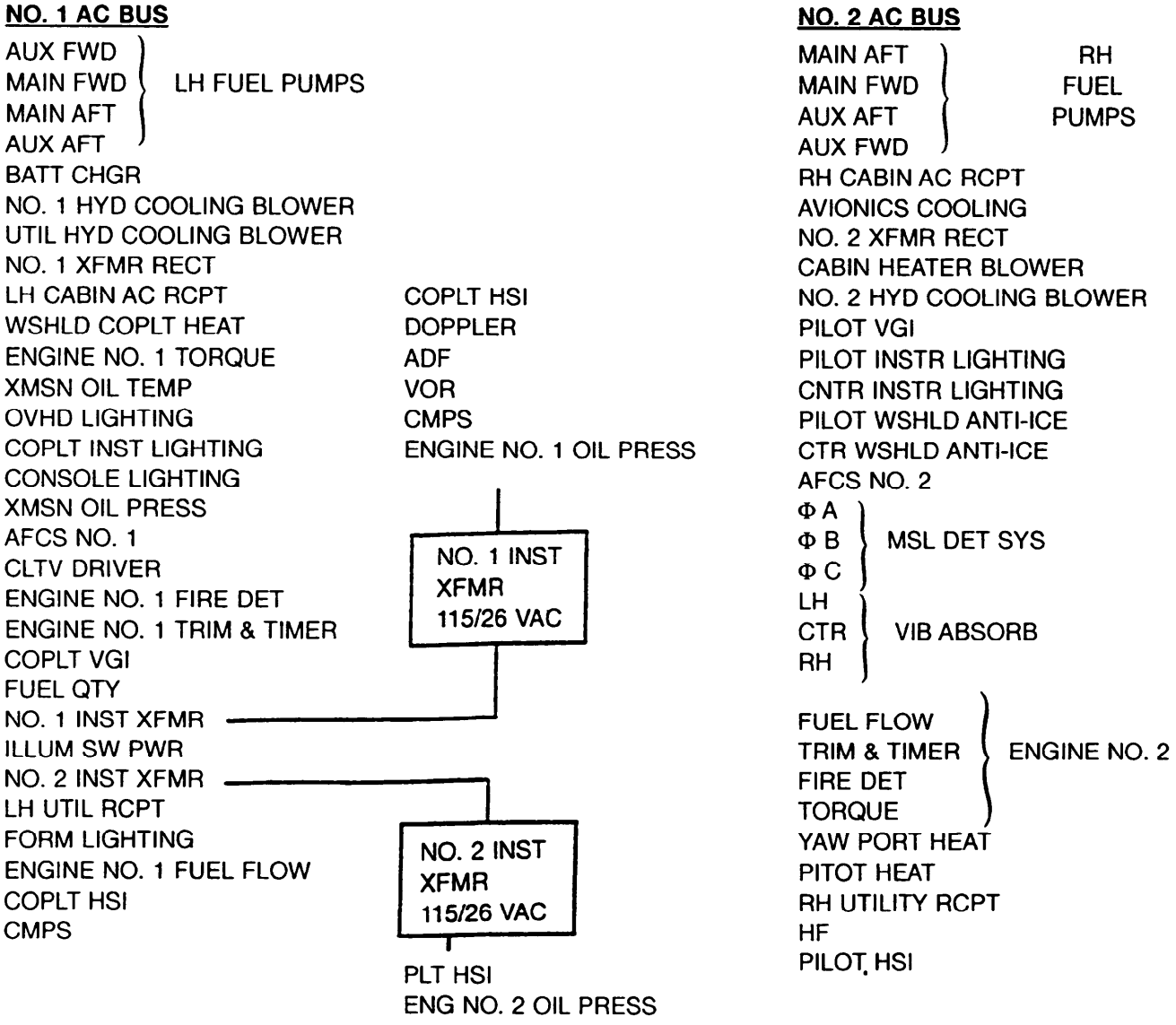
Without 74



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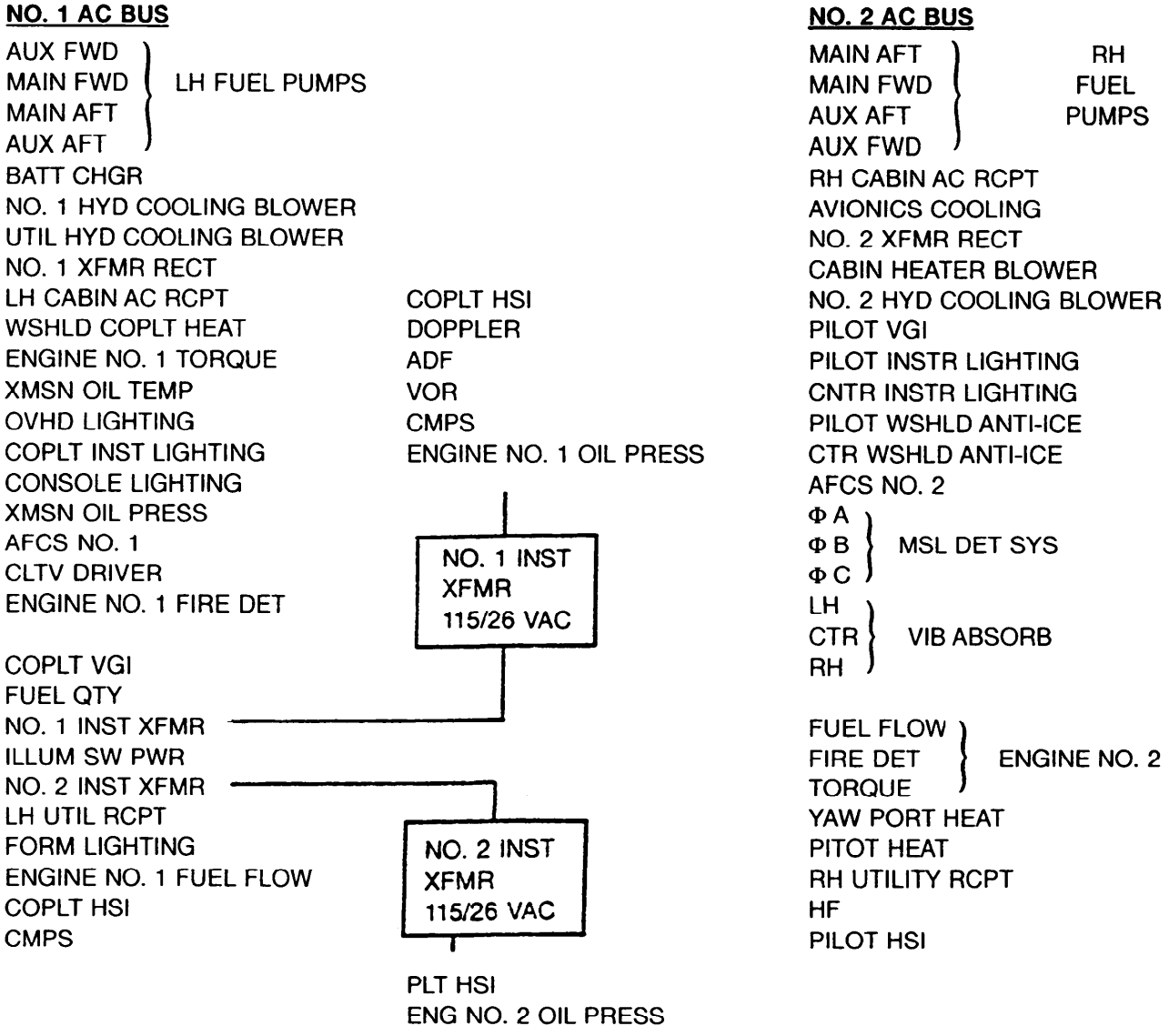
With **74**



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Main Ac Generator

Each of the two 40-kilovolt-ampere (kva) 3-phase 400 Hz ac generators (alternators) is mounted on and driven by the aft transmission. The generators are oil cooled and brushless. Phase rotation of the generators is A-B-C, with phase-to-phase potential of 208 volts, regulated to 200 volts. The phase-to-neutral (ground) potential is 120 volts, regulated to 115 volts. These generators produce all the ac power required for flight operation of the helicopter. Oil to cool windings and lubricate splines and bearings is provided by the main pump in the transmission oil system.

Apu Generator

A 20 kva 3-phase brushless generator (alternator) is mounted on and driven by the auxiliary power unit (apu). The generator is air cooled by a built-in fan. As with the main generators, phase rotation is A-B-C, with potential between phases of 208 volts, regulated to 200 volts. The potential between each phase and neutral (ground) is 120 volts, regulated to 115 volts. The apu generator provides helicopter electrical power during ground operations.

Generator Control Units

The ac electrical system has two main generator control units (gcu), one for each system. The No. 1 unit is located in the electrical compartment at the forward end of the left pod. The No. 2 unit is in the electrical compartment of the right pod.

Each gcu monitors its generator for undervoltage, overvoltage, underfrequency and feeder faults. It also regulates generator output voltage and controls the connection of the generator to the distribution system.

When an abnormal condition is detected, the generator is shut down and disconnected from the ac bus. The condition also trips an annunciator on the front panel of the gcu, changing the normal black flag to white. Each control unit is connected to the helicopter wiring through one plug and one receptacle.

Apu Generator Control Unit

The apu generator control unit (gcu) is located in the electrical compartment of the right pod, directly aft of the No. 2 gcu. It monitors and regulates generator output in the same manner as the gcu for each main generator.

The control unit is connected to the helicopter wiring through a receptacle (J9) on the front. A second receptacle (J6) is connected to a conversion plug to make the gcu compatible with the brushless apu generator.

External Power Monitor

An external power monitor is located in the electrical compartment of the left pod. It monitors the applied input from an external power source for correct voltage, frequency, and phase sequence. When an abnormal condition is detected, the external power is disconnected from the No. 1 and No. 2 ac buses.

The monitor is connected to the helicopter wiring through one receptacle.

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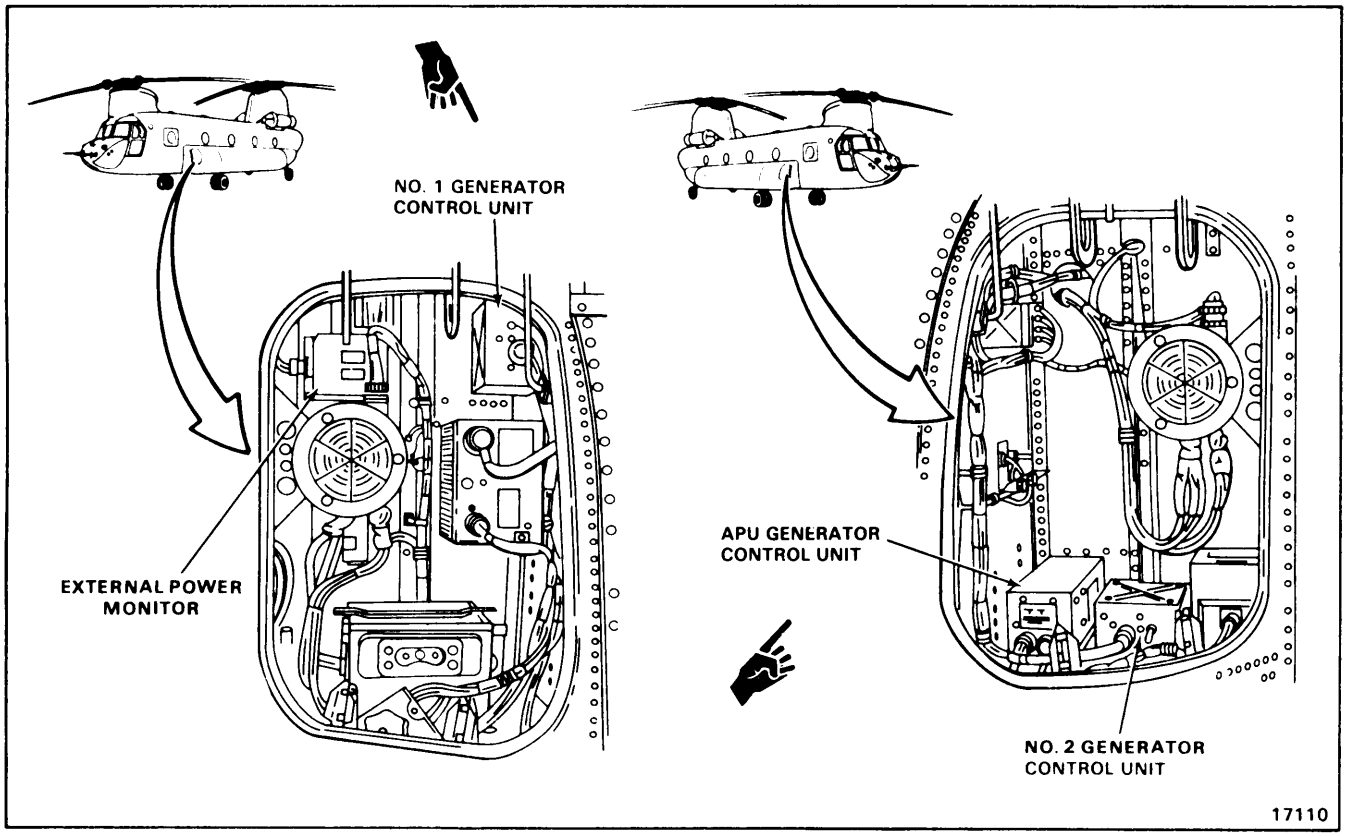
9-30 ALTERNATING CURRENT (AC) POWER DISTRIBUTION (Continued) 9-30



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Power Distribution Panels

Two power distribution panels (pdp) are the electrical load centers for the ac power distribution system. The panels contain circuit breakers, relays, and transformers associated with both power systems.

The **No. 1 pdp** is outboard of the copilot seat on the left side of the cockpit. Its contents are associated with the No. 1 ac system and it services the left side of the helicopter.

The **No. 2 pdp** is outboard of the pilot seat on the right side of the cockpit. Its contents are associated with the No. 2 ac system. It services the right side of the helicopter.

The following major components are in one or both pdp:

- **Circuit Breakers** (No. 1 and No. 2 PDP): All of the helicopter ac circuit breakers are on one or the other pdp. All 5 through 50 ampere circuit breakers are single-hole mounted. The 70 ampere ac and 100 ampere dc bus tie circuit breakers are mounted with screws, nuts, and washers.
- **Main Generator Current Transformer** (No. 1 and No. 2 PDP): Feeder current from the main generators passes through coils in the transformer, inducing voltages that are routed to the generator control unit, where they are used to detect ground fault currents.
- **Apu Generator Feeder Current Transformers** (No. 2 PDP): Feeder current from the apu generator passes through coils in the three current transformers, inducing voltages that are routed to the apu generator control unit in the right electrical compartment, where they are used to detect ground fault currents.
- **Instrument Transformer** (No. 1 and No. 2 PDP): This transformer steps down 115 vac to 26 vac to operate cockpit instruments.
- Lighting Transformer (No. 1 and No. 2 PDP): This transformer steps down 115 vac to 26 vac to operate instrument lamps. It is installed only on helicopters without 17 .
- **Generator Contactor** (No. 1 and No. 2 PDP): This contactor connects generator output to its associated ac bus. It also controls various monitoring and control functions through sets of auxiliary contacts.
- **External Power Contactor** (No. 1 PDP): When energized in one mode, this contactor connects ac external power to the No. 1 ac bus. In another mode, it provides part of the crosstie connection between No. 1 and No. 2 ac buses.
- **Apu Generator Contactor** (No. 2 PDP): When energized in one mode, this contactor connects power from the apu generator to the No. 1 ac bus. In another mode, it provides part of the crosstie connection between No. 1 and No. 2 when external power is applied.
- **Apu Generator Slave Relay** (No. 2 PDP): This relay disconnects the apu generator from the ac buses when either main generator is operating. It also provides a portion of the logic that determines the operating mode of the external power contactor and the apu generator contactor.

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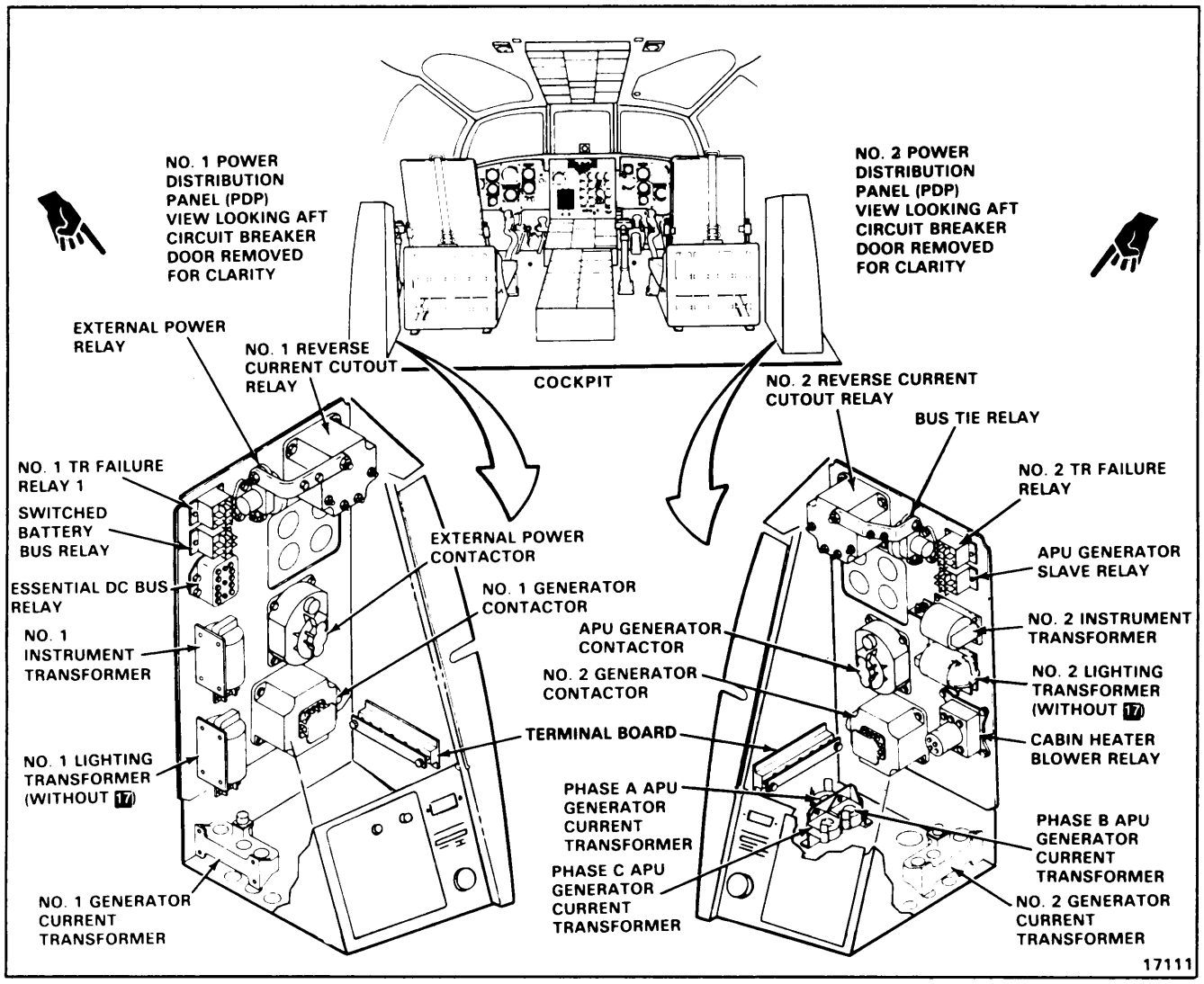

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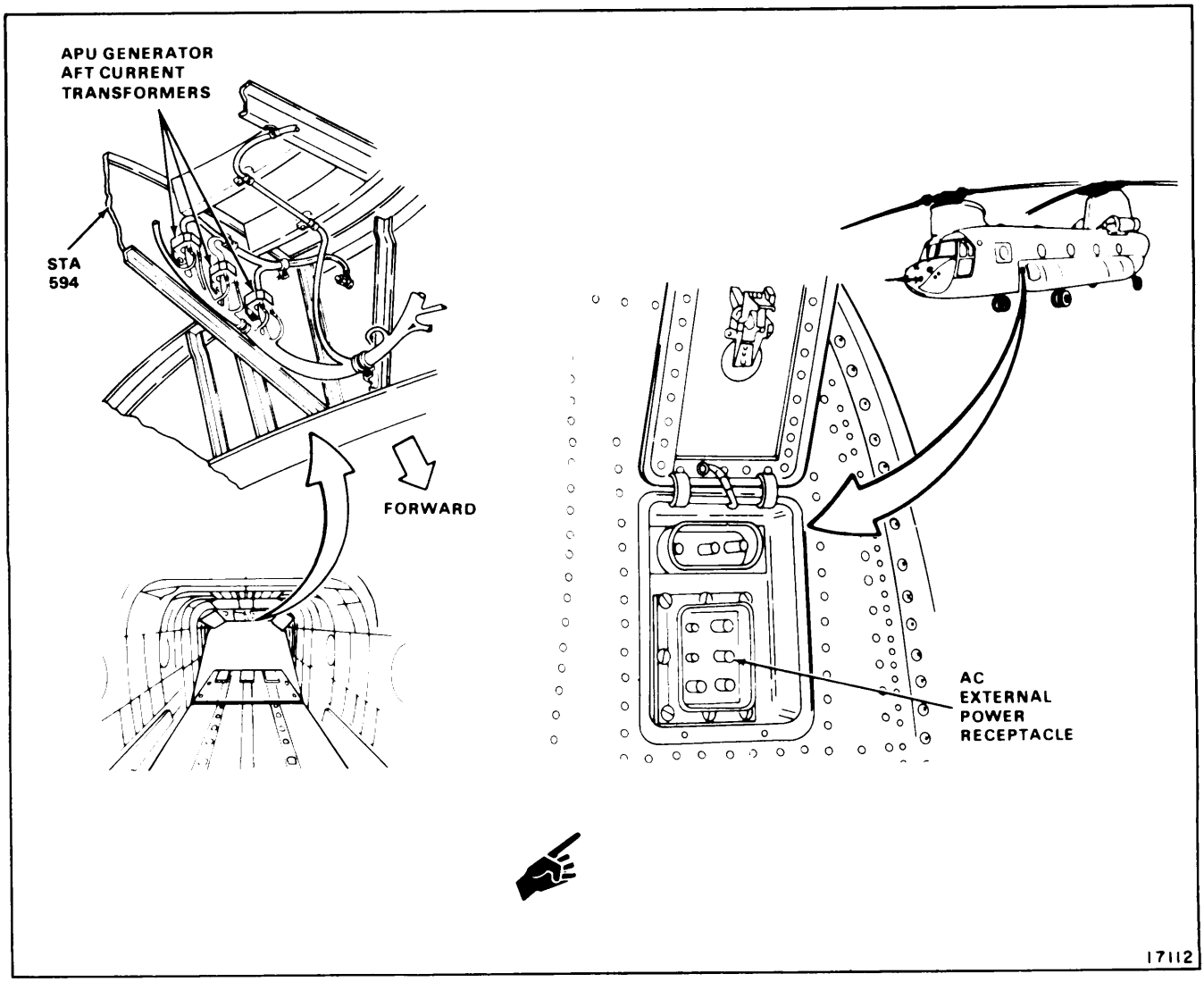
Apu Generator Return Current Transformers

Return current from the apu generator circuit passes through coils in three current transformers, inducing voltages that are routed to the apu gcu in the right pod, where they are used to detect ground fault currents. They work in conjunction with three feeder current transformers in the No. 2 pdp.

The three transformers are mounted on a bulkhead at sta 594, just forward of the apu generator.

External Power

An ac external power receptacle accepts the cable from a power supply cart to connect 115-volt ac 400 Hz power to the helicopter. The receptacle is located inside a hinged access door at the forward end of the left pod.



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THEORY OF OPERATION

The four sources of ac power for the helicopter have the following order of operation:

- When one or both engines are running, the No. 1 and No. 2 generators supply power to their respective buses. If either generator fails or is shut down, that source will be isolated from its bus and the remaining generator will then supply both buses through crosstie circuitry. With either or both of the main generators operating, the apu generator and the external power receptacle are disconnected from the buses and can supply no power.

- If the apu is operating while both engines are shut down or both generators are manually switched off, the apu generator is automatically connected to both ac buses. The external power receptacle remains disconnected from the buses.

- Only if both main generators and the apu generator are not operating is it possible to apply external power to the buses. If, while an external power source is connected, any of the three generators is turned on, the external power source will be disconnected at the buses.

- In all cases, the appropriate power source is connected to the buses by power contactors, operated by 28 volts dc.

Main AC Generator and Control Unit

Each of the generators consists of three units: a permanent magnet generator (pmg), a main exciter and rotor assembly, and the main generator stator windings.

The output of the pang is fed to a generator control unit (gcu) in one of the electrical equipment compartments. Sensing circuits in the gcu average the three phases of generator output voltage and apply this signal to an integral voltage regulator. The voltage regulator uses this signal to regulate the current applied to the generator exciter and rotor section, keeping output voltage between 113 and 117 volts.

If generator output voltage drops below 102 volts for more than five to seven seconds, or exceeds 122 to 125 volts for a period of time depending on the magnitude of the overvoltage, relays within the gcu will shut down the generator and deenergize generator contactor 241 K1 in the pdp, disconnecting the generator from the bus.

Similarly, if generator frequency drops below 330 Hz for three to seven seconds, a relay within the gcu will disconnect the generator from the system. However, the generator will continue to operate, and if frequency rises above 335 Hz, it will automatically be reconnected to the system.

If generator frequency drops below 320 Hz, the generator is disconnected from the bus and is also shut down. To get the generator back on line after it has been shut down, the generator control switch on the overhead ELECT panel in the cockpit must be cycled from ON to OFF/RESET to ON.

Apu Generator and Control Unit

The apu generator system is similar to that of each of the two main generators. The generator supplies power to the No. 1 and No. 2 ac buses when the main generators are not running. Like the main generators, it consists of three units: a permanent magnet generator (pmg), an exciter generator, and a main generator section.

The pmg is used to monitor generator frequency for input to the generator control unit. It supplies ac and dc power as soon as the generator begins turning. The ac terminals (P1-PN) provide a minimum of 20 volts at no load. The dc terminals (+ -) provide between 29 and 40 volts.

The exciter generator provides main generator section excitement and regulation. Terminals (F1 -A-) of the exciter section supply 3 to 14 volts during operation.

The main generator section supplies 115/200 volt, 400 Hz ac output to the apu contactor in the No. 2 power distribution panel. Cross-tie to the No. 1 pdp is through **external power control relay 241K5** in the No. 1 pdp.

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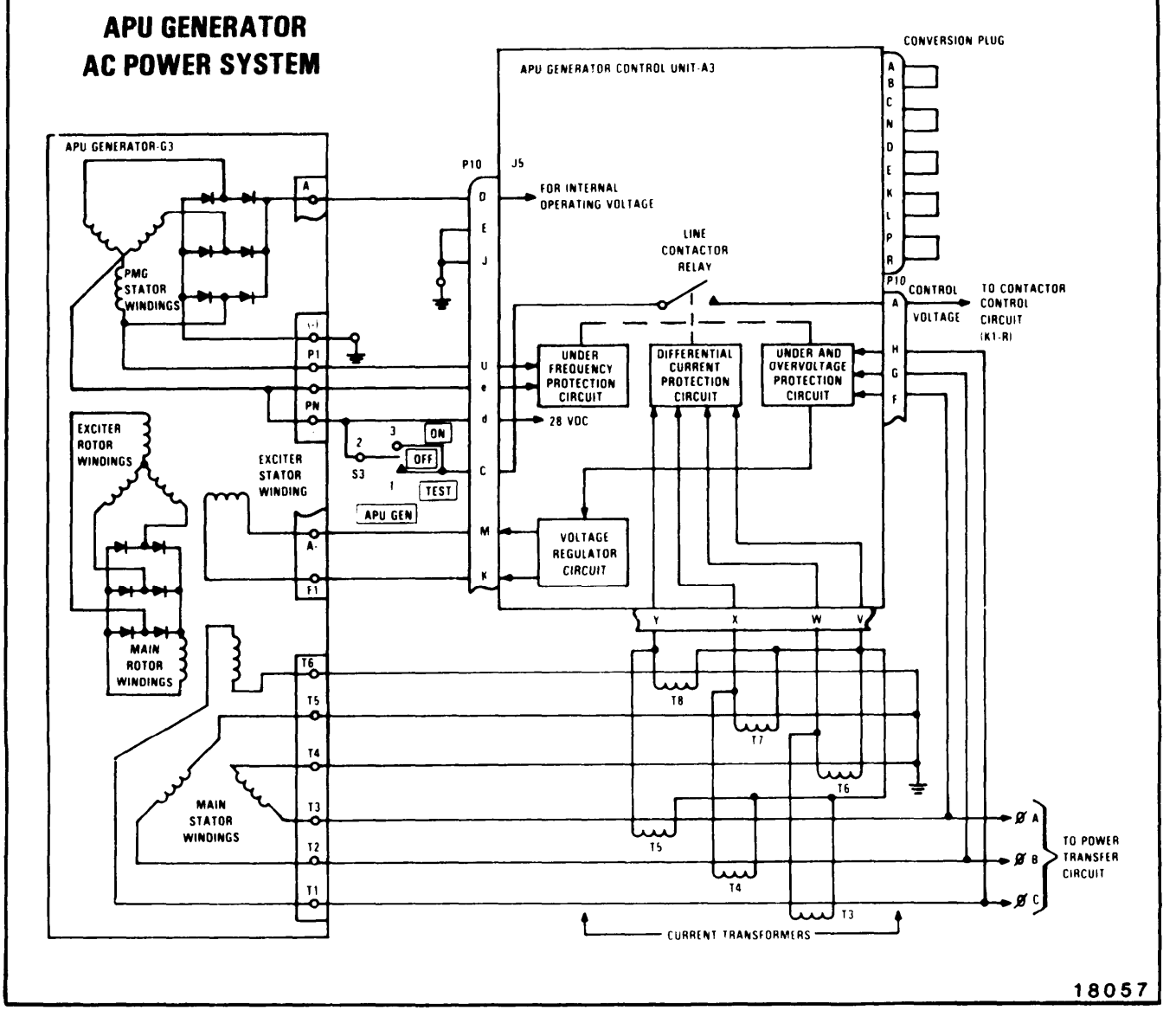
9-30 ALTERNATING CURRENT (AC) POWER DISTRIBUTION (Continued)

The generator control unit (gcu) is in the right electrical equipment pod. It receives input from the pmg section of the generator to monitor generator operation and regulate its output to between 113 and 117 volts. If generator frequency drops below 345 Hz, or if voltage exceeds 132 volts for more than three seconds or drops below 100 volts, relays within the gcu shut down the generator. At the same time, the gcu will deenergize a contactor in the No. 2 pdp to disconnect the generator from the bus.



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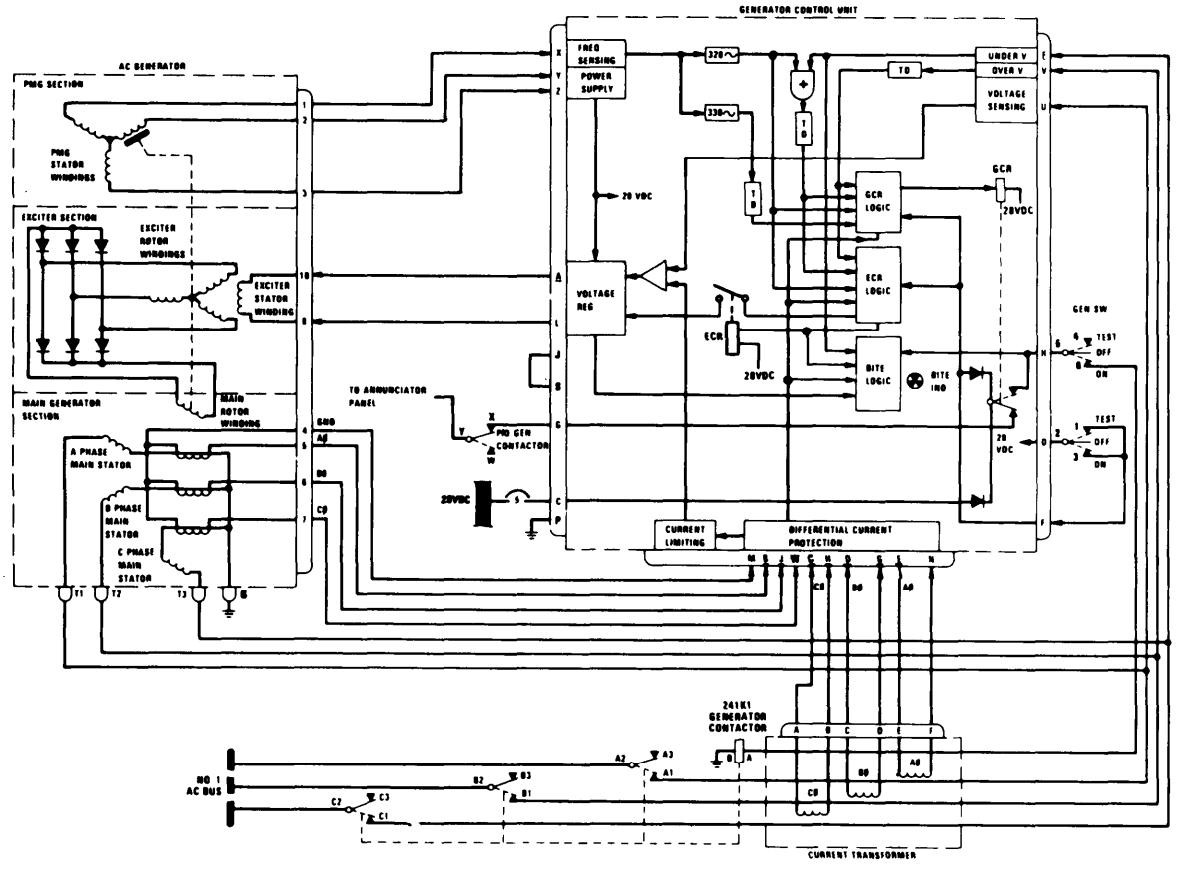
MAIN AC POWER GENERATING SYSTEM



17114

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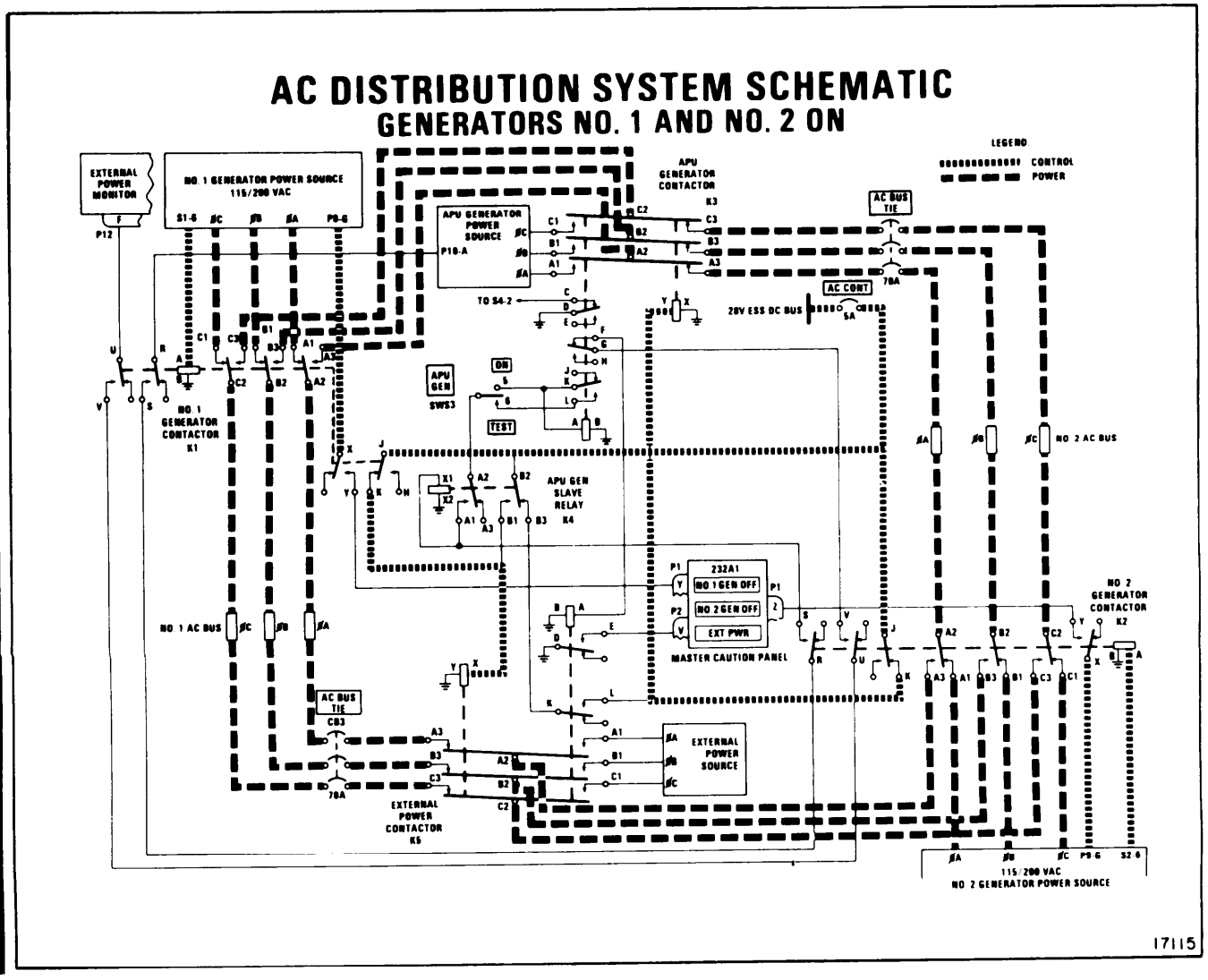
Normal Operation

When both main generator switches (GEN NO. 1 and GEN NO. 2) on the overhead ELECT panel are set to ON, 28 volts dc is applied to each **generator contactor 241K1 and 241K2** in the respective pdp. At the same time, 28 volts dc from the essential bus is applied to **apu generator contactor 241K3** in the No. 2 pdp, and external **power contactor 241K5** in the No. 1 pdp. This makes voltage available at the crosstie circuits so that if one generator fails, its bus will be supplied by the operating generator.

If either main generator fails or is shut down, the associated NO. 1 or NO. 2 GEN OFF light on the master caution panel will come on.



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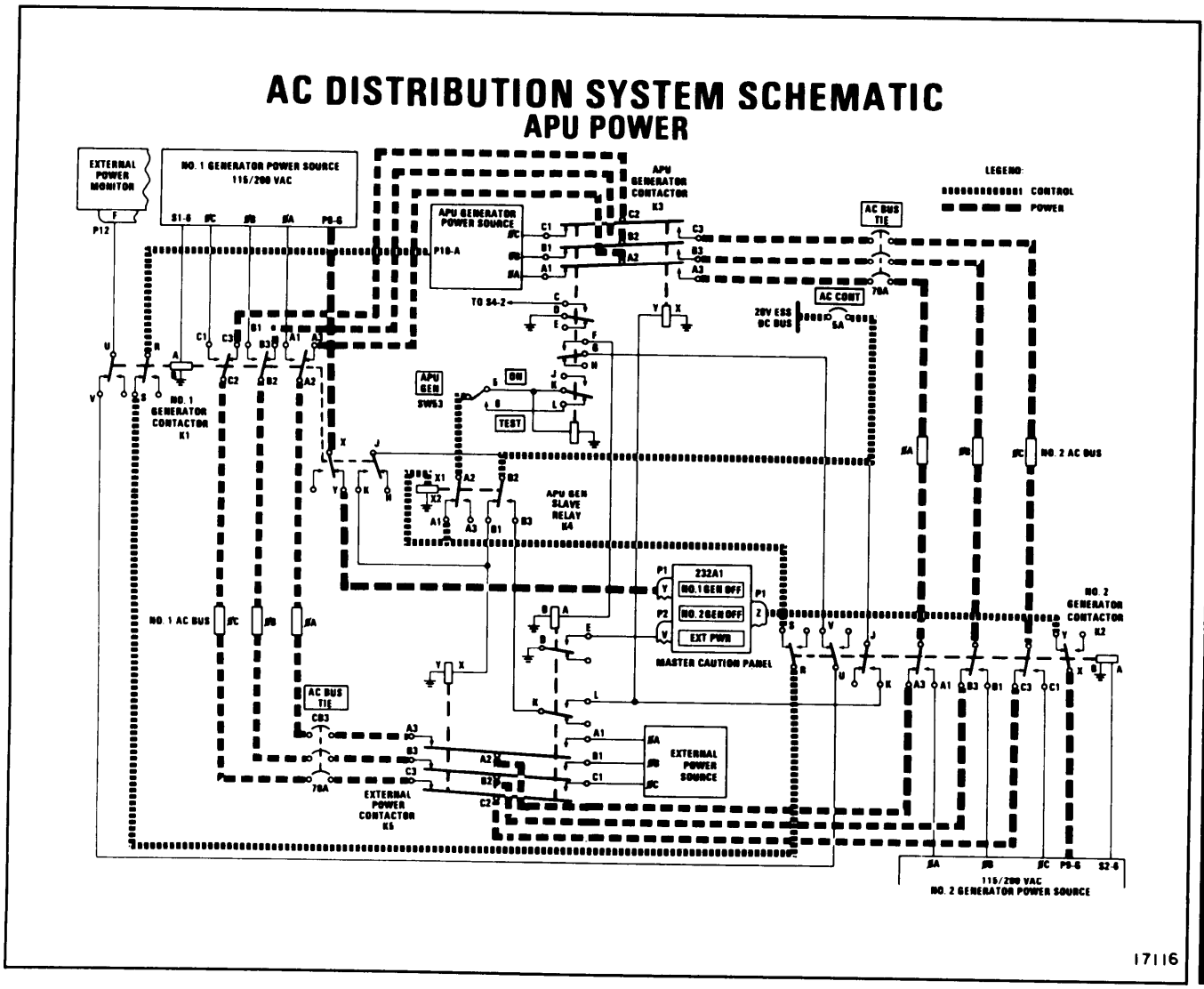
Apu Generator Operation

When the apu generator is operating, dc voltage is applied to **apu generator slave relay 241K4** through contacts of No. 1 and No. 2 **generator contractors 241K1** and **K2.** When 241K4 is energized, it puts dc voltage at the GEN APU switch on the overhead panel, It also energizes **external power contactor 241K5** with 28 volts dc from the essential bus.

Placing the GEN APU switch to ON energizes **apu generator contactor 241K3** to allow 115 volts ac from the apu generator to power the No. 1 and No. 2 ac buses.



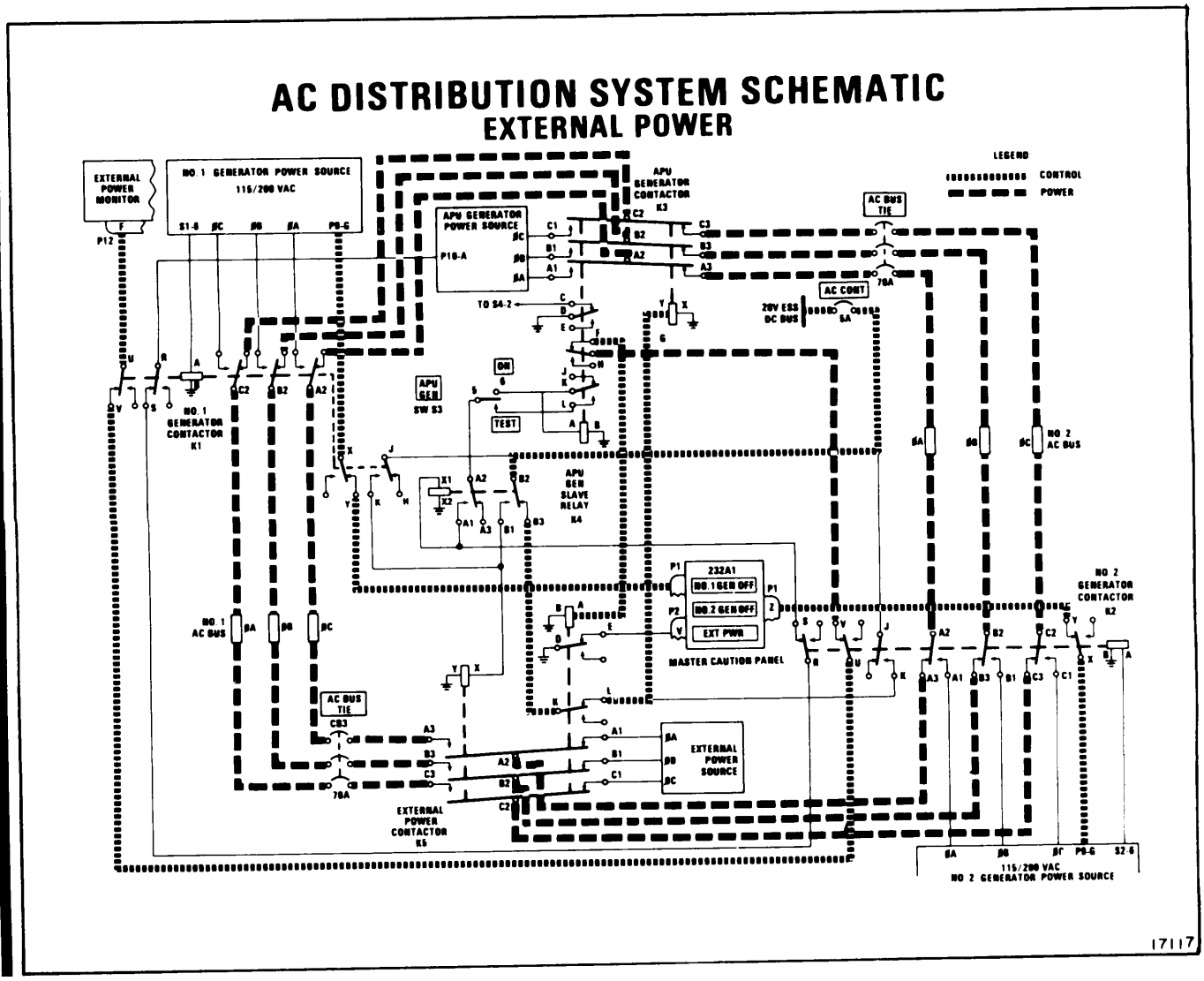
17116

External Power Operation

When an external power source is connected to the helicopter, the ground power monitor in the left electrical compartment checks that the source meets the proper input requirements. If it does, the monitor supplies 28 volts dc to energize **external power contactor 241K5.** This allows 28 volts dc from the essential bus to energize **apu generator contactor 241K3,** putting voltage from the external power source at the No. 1 and No. 2 buses.

When power is being supplied by external power, contactor 241K5 provides a ground to light the EXT PWR light on the master caution panel.

External power cannot be applied if the apu or main generators are operating.



END OF TASK

SECTION IV
ALTERNATING CURRENT (AC) POWER DISTRIBUTION SYSTEM

9-31 REMOVE MAIN AC GENERATOR 9-31

INITIAL SETUP

Applicable Configurations:
All

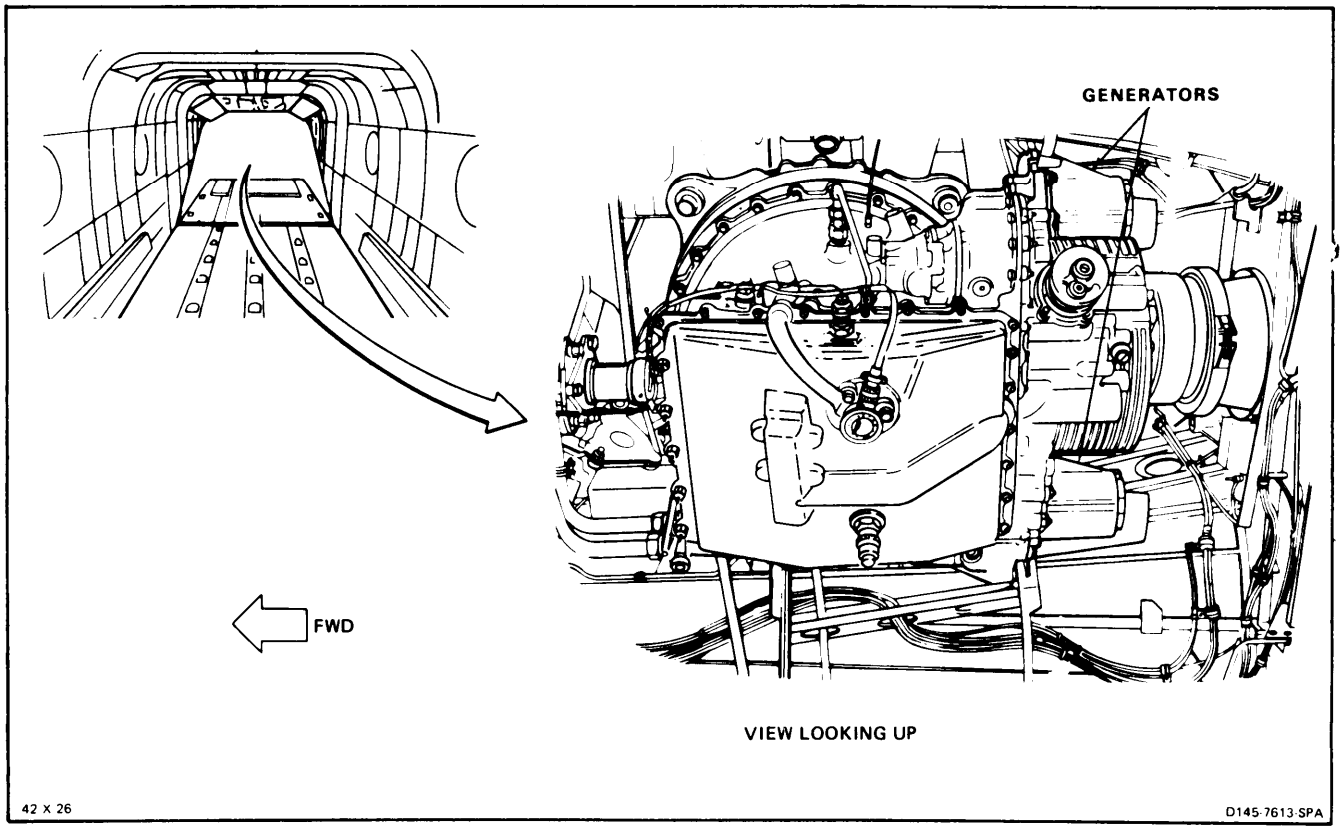
Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692
Workstand

Materials:
Tape (E385)
Paper Tags (E264)

Personnel Required:
Medium Helicopter Repairer

References:
Task 6-158.2

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Aft Transmission Drip Pan Removed (Task 2-3)
Transmission Open (Task 2-2)



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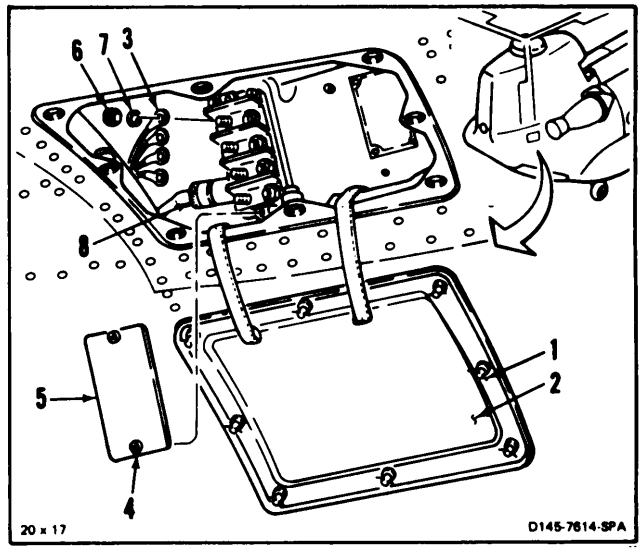
9-31 REMOVE MAIN AC GENERATOR (Continued) 9-31

NOTE

Procedures are same for No. 1 or No. 2 generator. No. 2 is shown.

1. Loosen eight fasteners (1) and remove panel (2) to gain access to No. 2 ac generator wiring (3).
2. Loosen two fasteners (4) and **remove terminal cover (5).**
3. Tag and **disconnect wiring (3)** by removing four nuts (6) and washers (7). Tape ends, Disconnect plug (8). Use tags (E264) and tape (E385).



WARNING

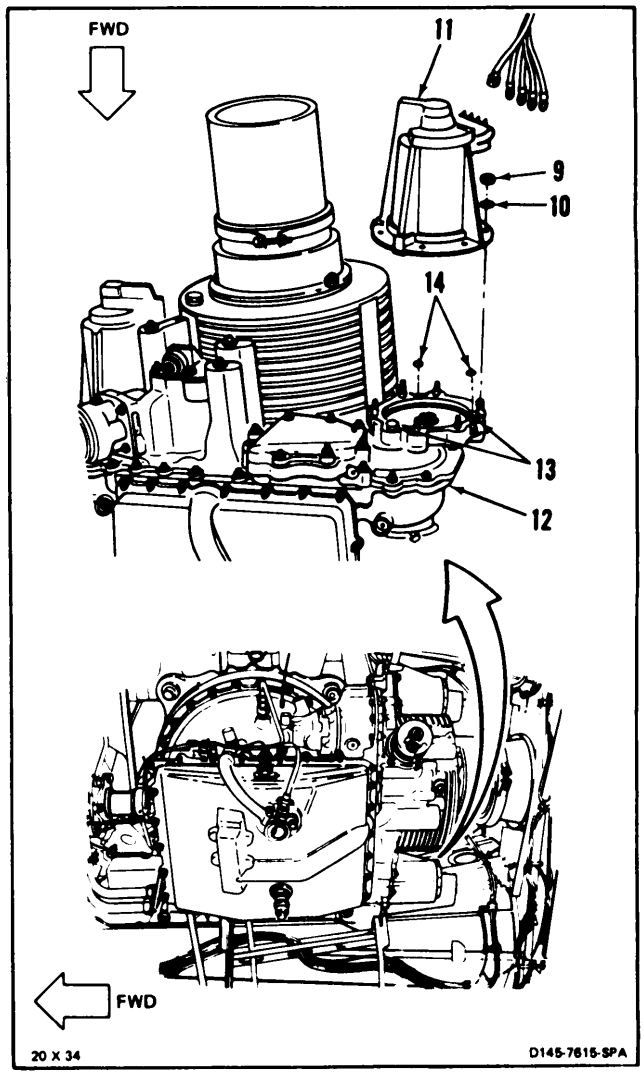
Generator is heavy and can injure personnel if it drops. Generator must be held firmly and moved carefully to prevent injury to personnel.

4. **Remove eight nuts (9)** and washers (10) from No. 2 ac generator (11).

CAUTION

Do not damage oil transfer tubes when removing generator.

5. Pull generator (11) straight back from transmission (12) and two oil transfer tubes (13). **Remove generator.**
6. **Remove packings (14)** from transfer tubes (13).
7. If generator (11) was removed because it failed, inspect generator oil screen (Task 6-158.2).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-101.2 INSTALL OVHD PANEL LTG POTENTIOMETER, LTG CONTROL TRANSFORMERS OR ROTARY SWITCH

INITIAL SETUP

Applicable Configurations:

With 17

Tools:

Electrical Repairer Tool Kit, NSN 5180-00-323-4915

Soldering Gun

Materials:

Solder (E360)

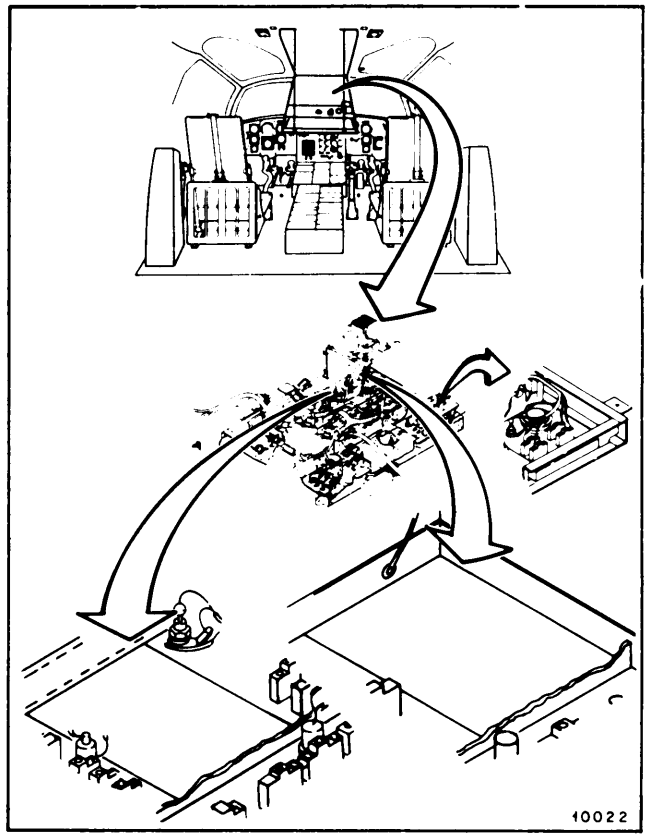
Personnel Required:

Aircraft Electrician

Inspector

References:

TM 55-1520-240-23P

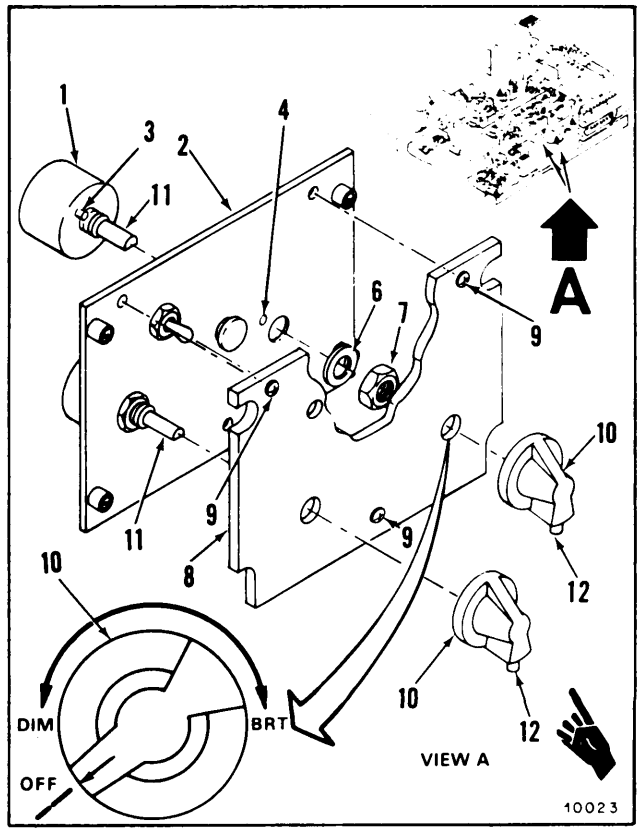


NOTE

Procedure is similar to install control transformers on PLT LTG, LTG, or CPLT LTG panels. Installation of PLT LTG panel control transformers and INTR LTG resistor is shown here.

Control Transformer-PLT LTG Panel

1. Position control transformer (1) in PLT LTG panel (2). Be sure pin (3) is in hole (4).
2. **Install washer (6) and nut (7)** on transformer (1).
3. Position panel (8) on panel (2). **Tighten three screws (9).**
4. **Install two knobs (10) on two shafts (11).** Be sure screws (12) contact flat part of shafts. Tighten screws.
5. Turn knobs (10) to OFF position.
6. Deleted.
7. Deleted.
8. Deleted.
9. Deleted.



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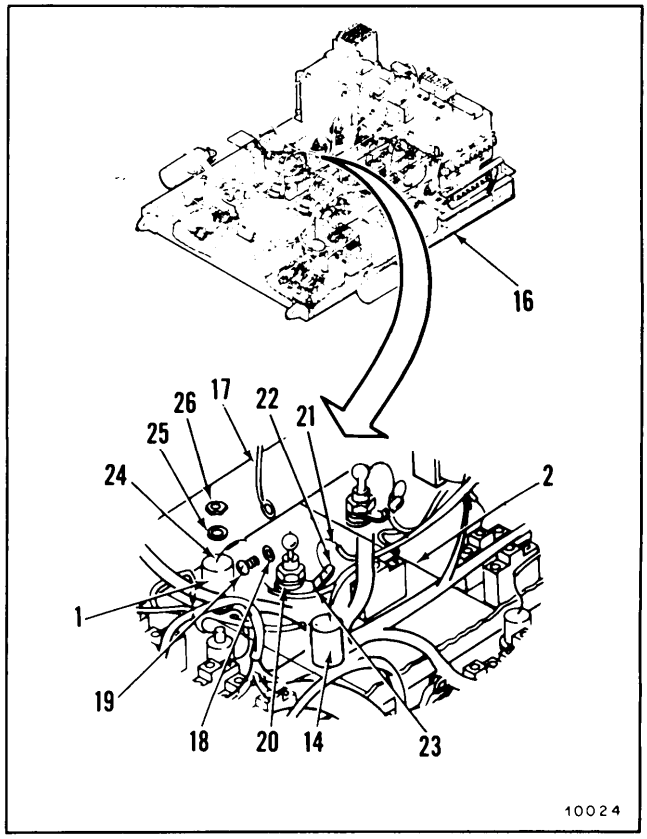
9-101.2 INSTALL OVERHEAD PANEL LIGHTING POTENTIOMETER, 9-101.2 LIGHTING CONTROL TRANSFORMERS, OR ROTARY SWITCH (Continued)

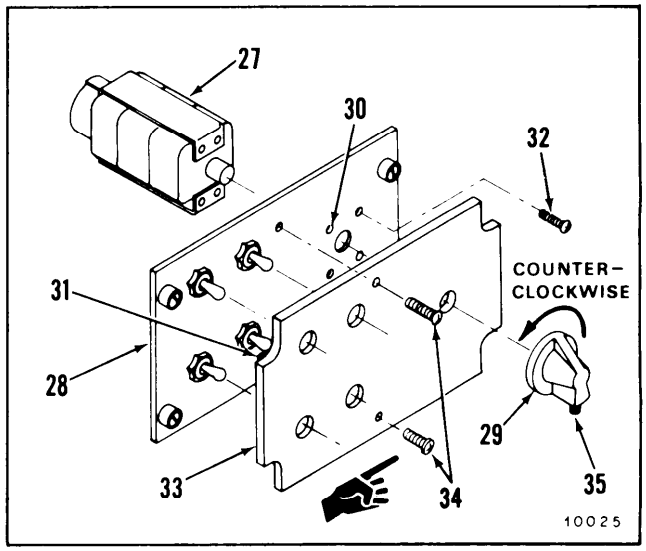
10. **Install panel (2)** in overhead panel (16).
11. Remove tape and install **wire (17),** washer (18) and screw (19) on light housing (20). Remove tag.
12. Remove tape and **install wire (21).** Solder wire end (22) onto terminal (23) of housing (20). Remove tag.
13. Remove tape and **install six wires (24),** washers (25), and nuts (26) on transformers (1 and 14). Remove tags.

INSPECT



Floodlighting Potentiometer — INTR LTG Panel

14. Position INTR LTG resistor (27) in INTR LTG panel (28).
15. Install knob (20) on resistor (27).
16. Hold resistor (27). Turn knob (29) fully counterclockwise.
17. Align resistor with holes (30), knob (29) pointing towards screw hole (31).
18. Remove knob (29).
19. **Install four screws (32)** in resistor (27).
20. **Install panel (33)** on panel (28), Tighten two screws (34).
21. **Install knob (29)** on resistor (27). Tighten screw (35).



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9-32 INSTALL MAIN AC GENERATOR

INITIAL SETUP

Applicable Configurations:
All

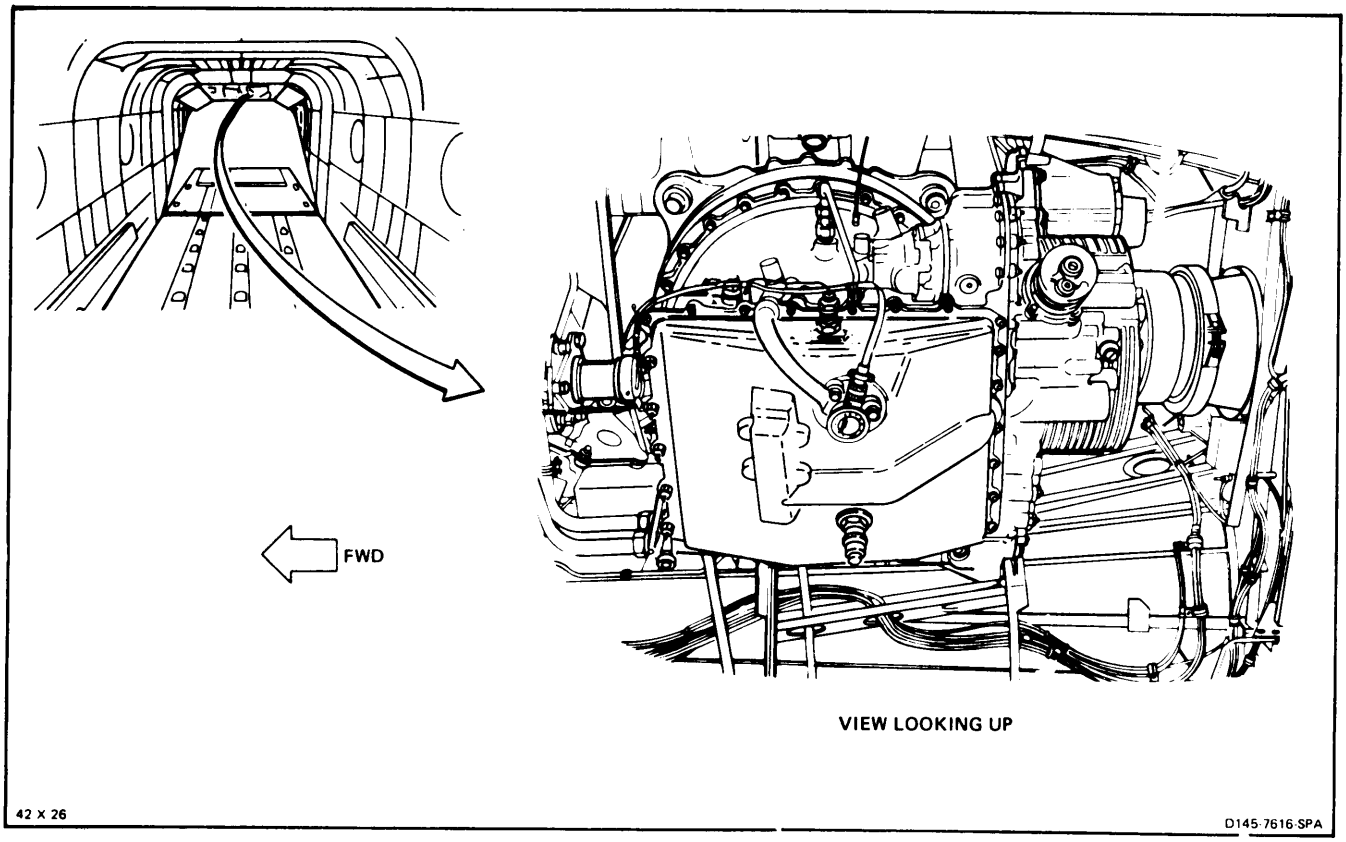
Toot's:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Torque Wrench, 30 to 150 Inch-Pounds
Workstand

Materials:
Oil (E254)

Parts:
Packings

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P



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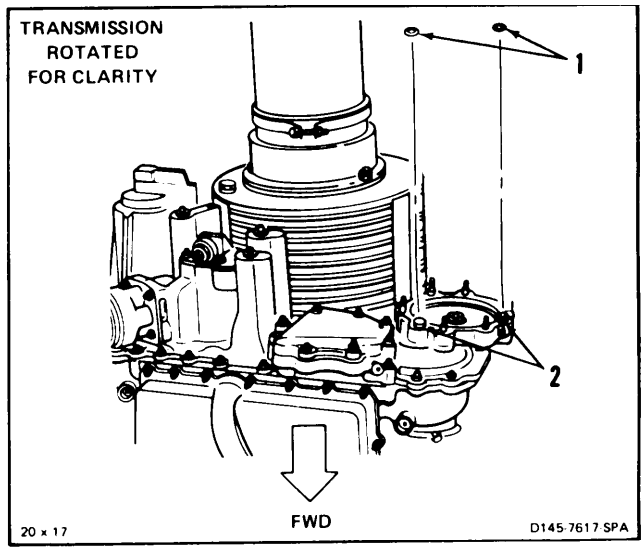
9-32 INSTALL MAIN AC GENERATOR (Continued)

NOTE

Procedures are same for No. 1 or No. 2 generator. No. 2 is shown.

1. Install new packings (1) on oil transfer tubes (2).



WARNING

Generator is heavy and can injure personnel if it drops. Generator must be held firmly and moved carefully to prevent injury to personnel.

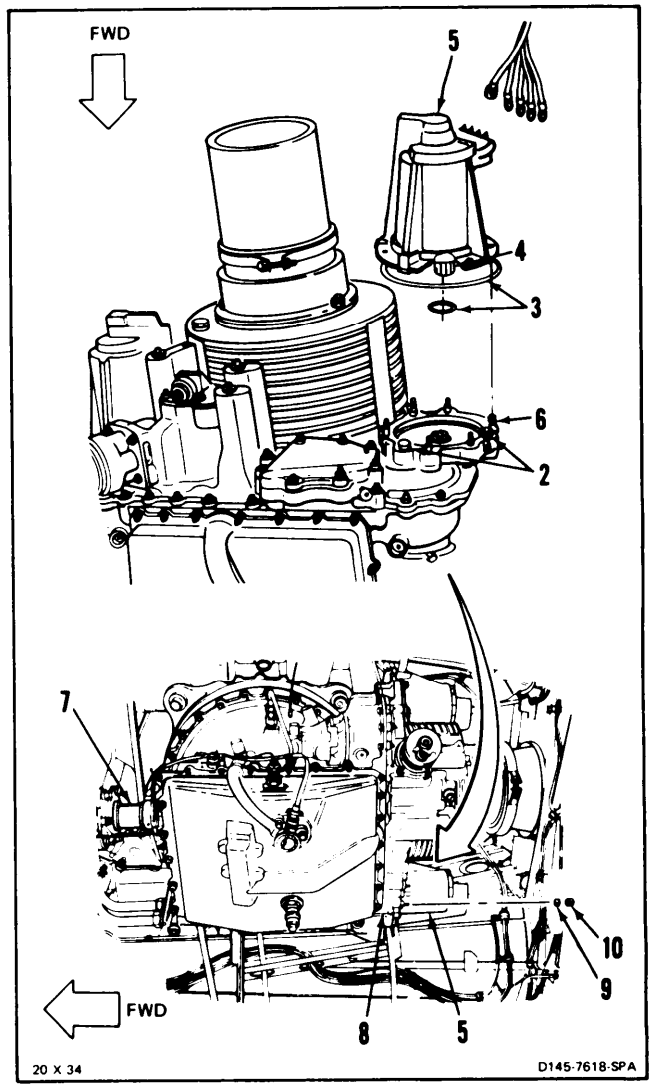
2. Install new packings (3) on generator shaft (4) and generator (5).

2.1. Lubricate splines of shaft (4) with oil (E254).

3. Align generator (5) with studs (6) and transfer tubes (2). If needed, turn adapter and plate assembly (7) to align with splines of shaft (4).

4, Position generator (5) on transmission (8).

5. **Install eight washers (9) and nuts (10). Torque nuts to 120 inch-pounds.**



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9-32 INSTALL MAIN AC GENERATOR (Continued)

6. **Connect plug (11).** Remove tag.
7. Remove tape and **install four wires (12),** on terminals (13) using four washers (14) and nuts (15).

INSPECT

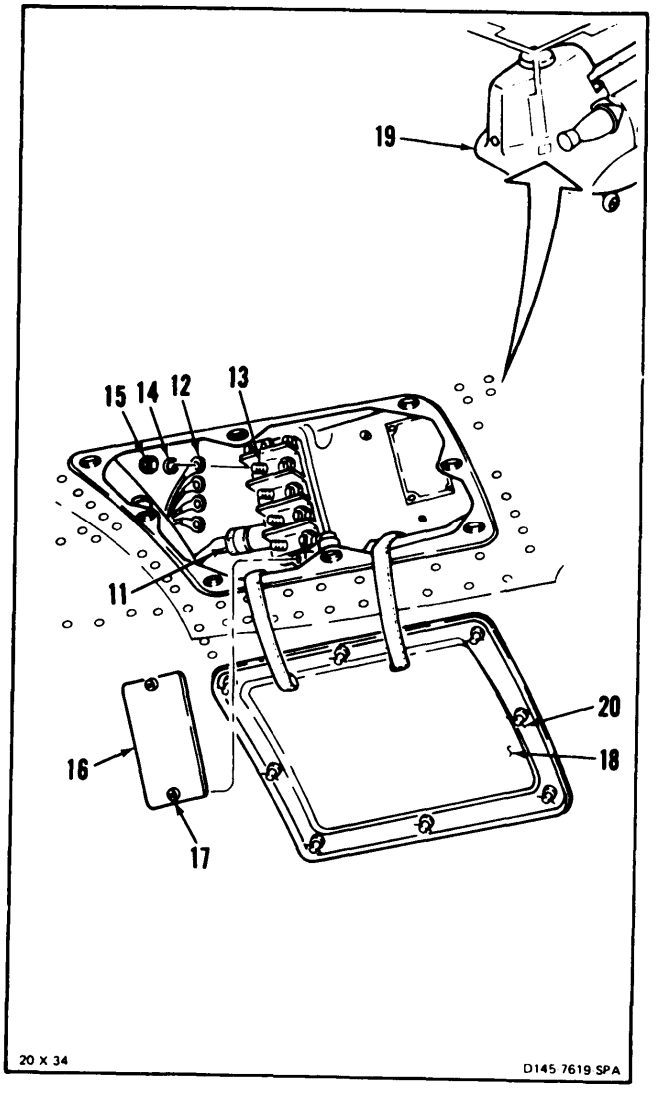
8. position terminal cover (16) on terminals (13) and tighten two fasteners (17).
9. Position panel (18) on helicopter (19) and tighten eight fasteners (20).

FOLLOW-ON MAINTENANCE:

Perform operational test (TM 55-1520-240-T).

Close transmission baffles. (Task 2-2.)

Install aft transmission drip pan (Task 2-3).



END OF TASK

9-33 REMOVE APU GENERATOR

INITIAL SETUP

Applicable Configurations:
All

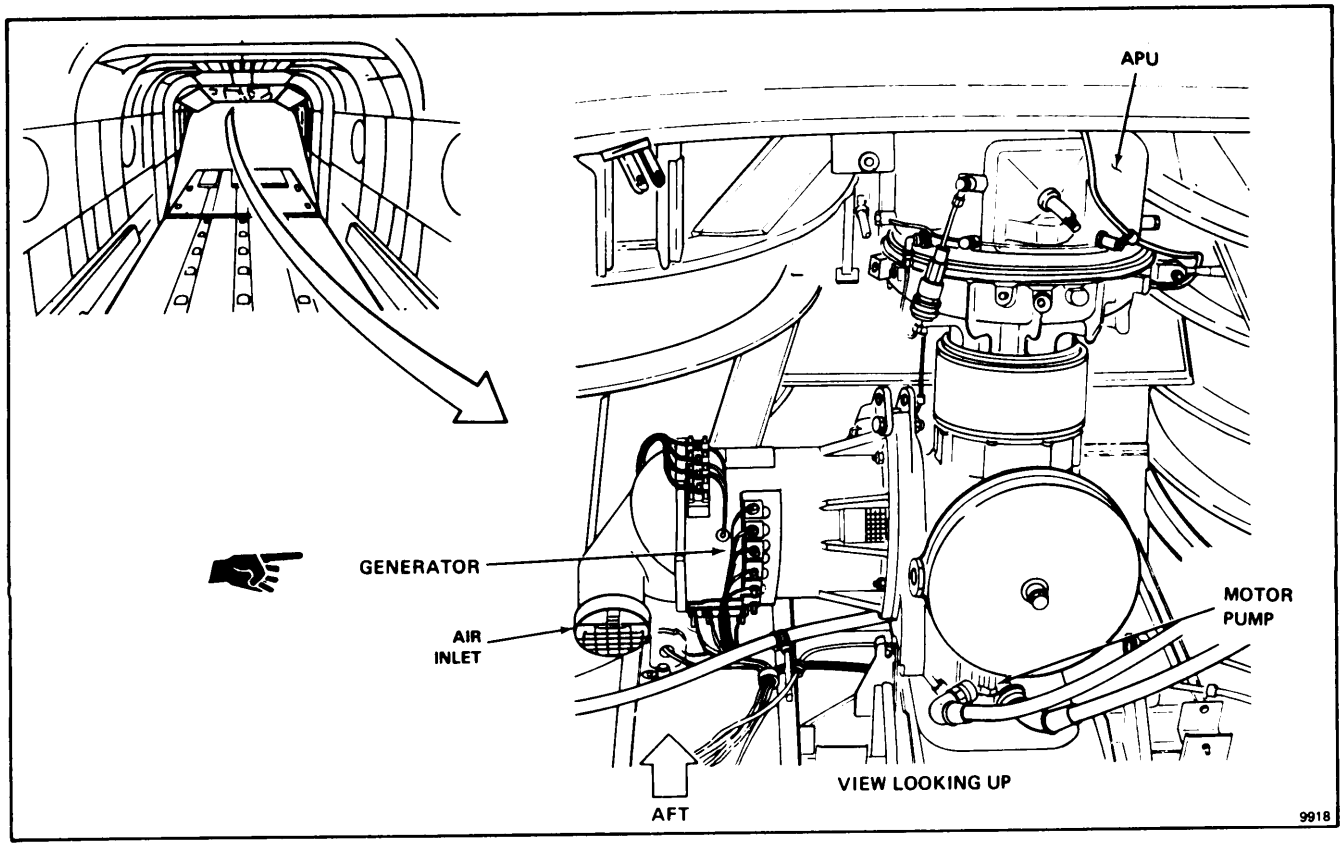
Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Workstand

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Medium Helicopter Repairer (2)

References:
TM 55-1520-240-10

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)
Apu Drip Pan Removed (Task 2-3)
Auxiliary Loading Ramp Extended (TM 55-1520-240- 10)



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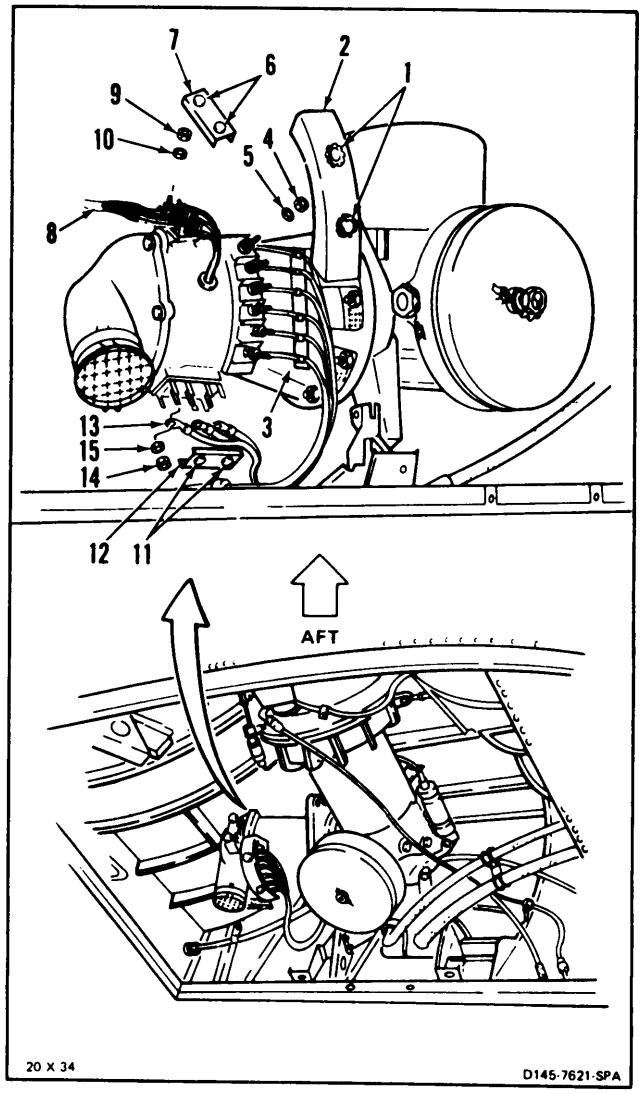
9-33 REMOVE APU GENERATOR (Continued)

1. Loosen two fasteners (1) and remove terminal cover (2). Tag and **disconnect six wlres (3)** by removing six nuts (4) and washers (5). Tape wire ends. Use tape (E385).
2. Loosen two fasteners (6) and **remove terminal cover (7).** Tag and **disconnect four wires (8)** by removing four nuts (9) and washers (10). Tape wire ends. Use tape (E385).
3. Loosen two fasteners (11) and **remove terminal cover (12).** Tag and **disconnect three wires (13).** by removing three nuts (14) and washers (15). Tape wire ends. Use tape (E385).



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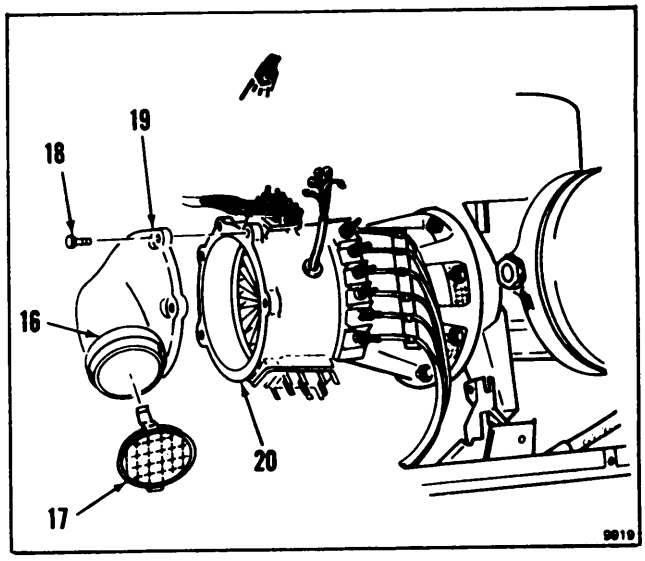
4. Loosen clamp (16) and remove screen (17).

NOTE

Top screw in air inlet is omitted to aid removal.

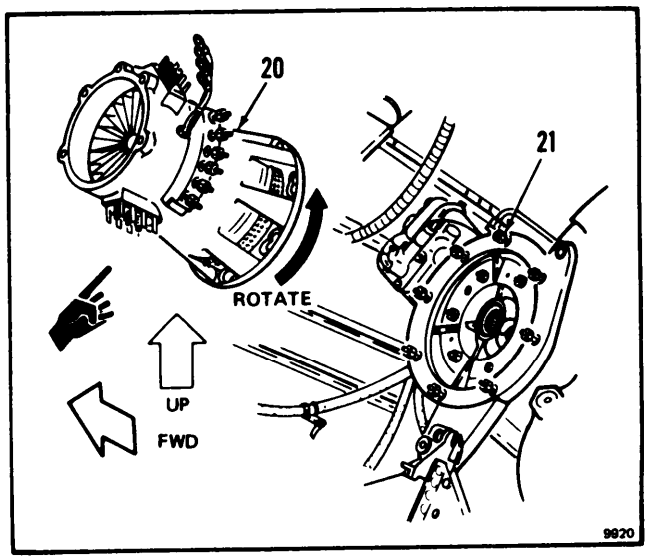
5. Remove lockwire, five screws (18), and air inlet (19) from generator (20).



WARNING

Apu generator is heavy and can injure personnel if it drops. Generator must be held firmly and moved carefully to prevent injury to personnel.

6. **Loosen eight nuts (21).** Rotate generator (20) counterclockwise and **remove generator.**



FOLLOW-ON MAINTENANCE:

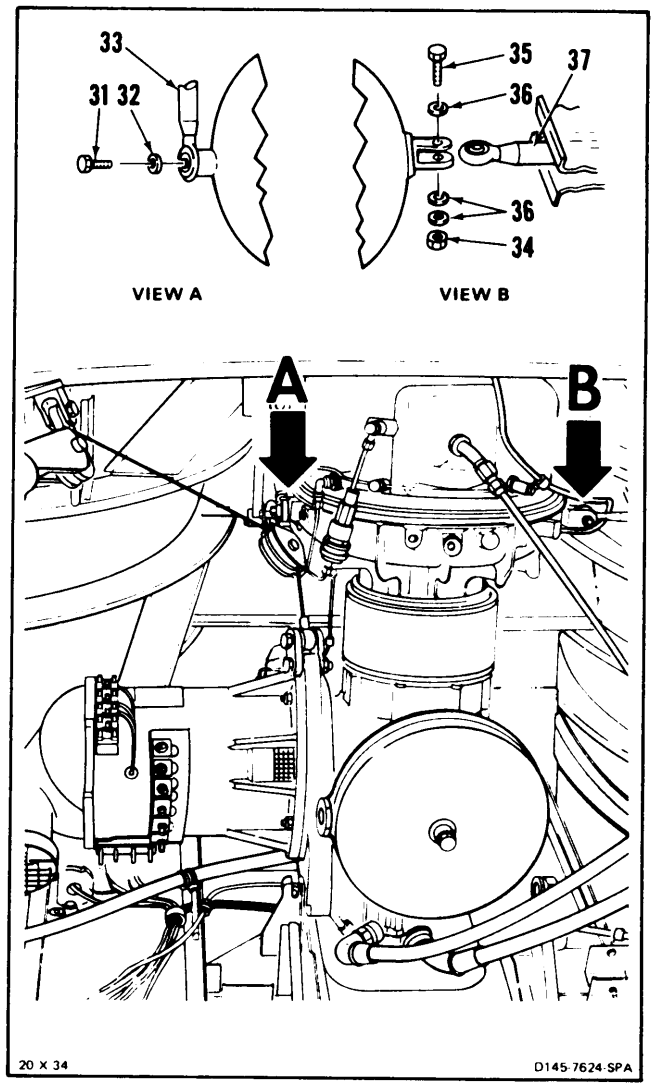
None

END OF TASK

9-33 REMOVE APU GENERATOR (Continued)

9. Remove lockwire, bolt (31), and washer (32) from link (33).

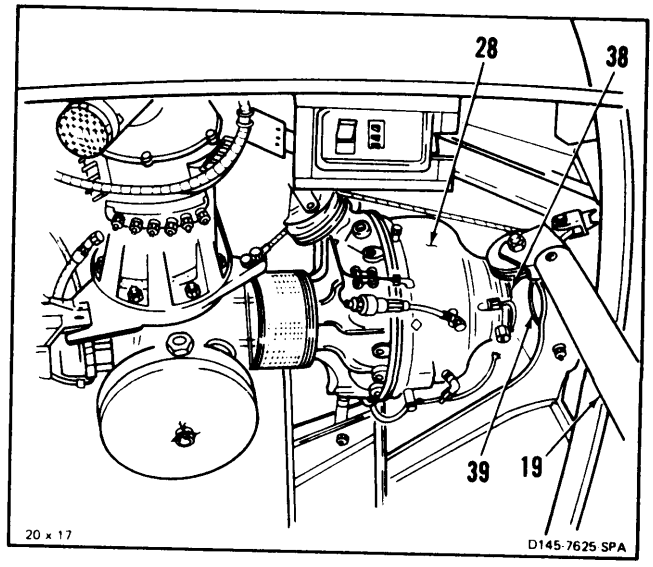
10. Remove nut (34), bolt (35), and three washers (36). Move link (37) away from mount.



NOTE

While lowering apu, be careful not to apply strain to hoses and wires which are still connected.

11. Operate hoist (19) to lower aft end (38) of apu (28) below edge of structure (39).



GO TO NEXT PAGE

9-33 REMOVE APU GENERATOR (Continued)

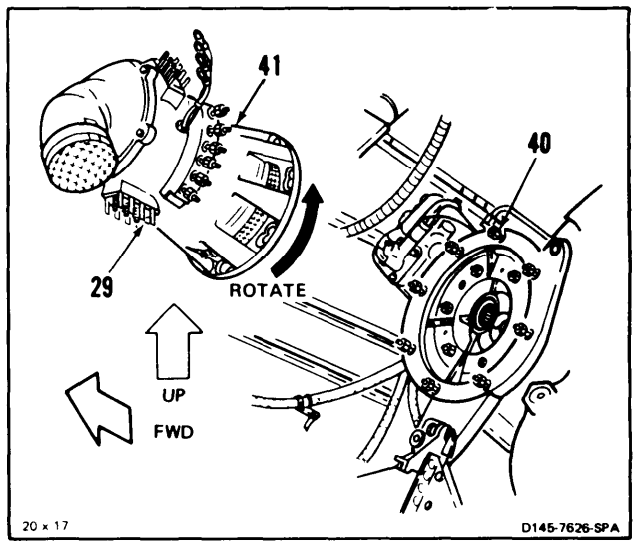
WARNING

Apu generator is heavy and can injure personnel if it drops. Generator must be held firmly and moved carefully to prevent injury to personnel.

12. **Loosen eight nuts (40).** Rotate generator (41) counterclockwise and **remove generator.**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-34 INSTALL APU GENERATOR

INITIAL SETUP

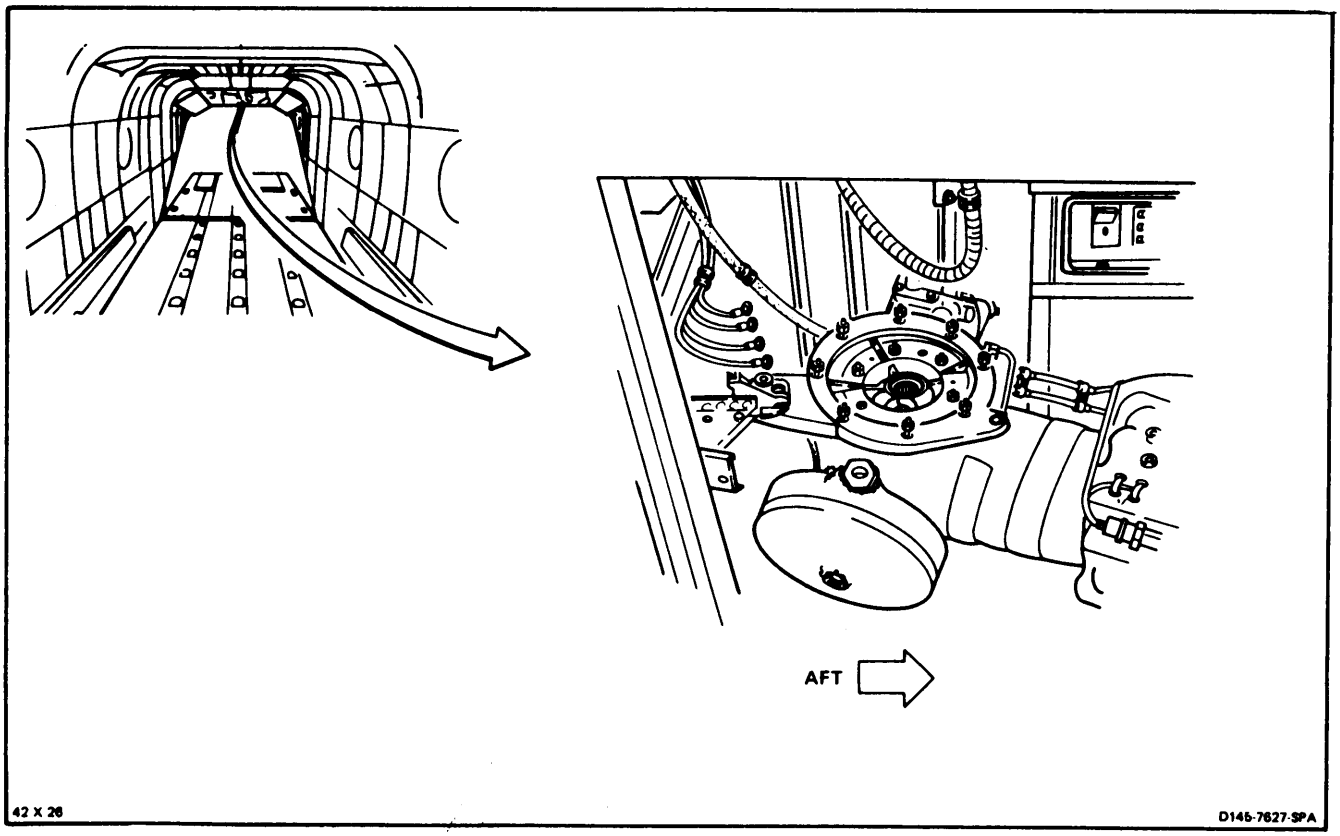
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-23-4692
Workstand

Materials:
Grease (E190)
Lockwire (E231)

Personnel Required:
Medium Helicopter Repairer (2)
Inspector

References:
TM 55-1520-240-23P
TM 55-1520-240-10



GO TO NEXT PAGE

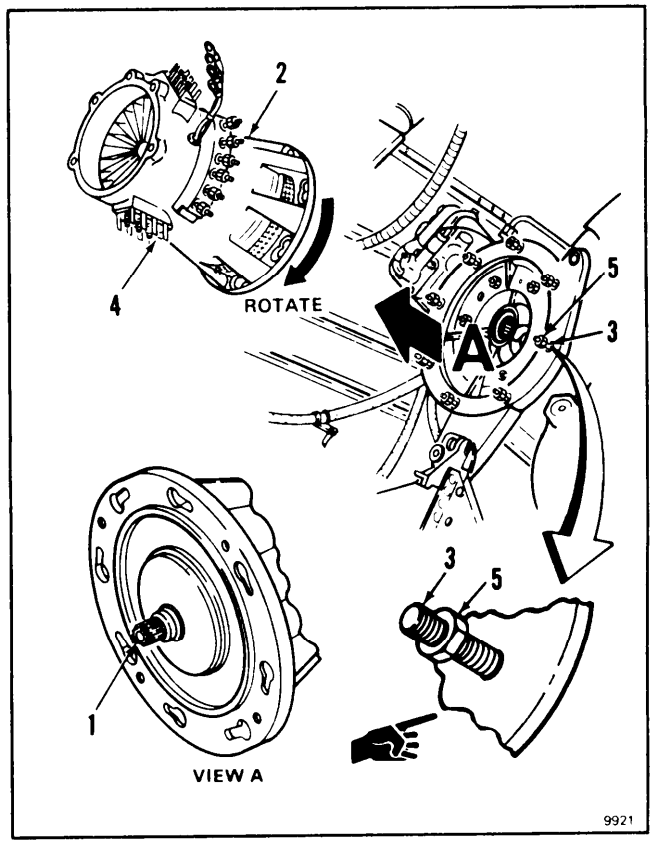
9-34 INSTALL APU GENERATOR (Continued)

1. Apply a light coating of grease (E190) to generator shaft splines (1).

WARNING

Apu generator is heavy and can injure personnel if it drops. Generator must be held firmly and moved carefully to prevent injury.

2. **Install generator (2)** over studs (3) with nuts (5), large terminal board (4) down. Rotate generator clockwise. Tighten nuts (5).



GO TO NEXT PAGE

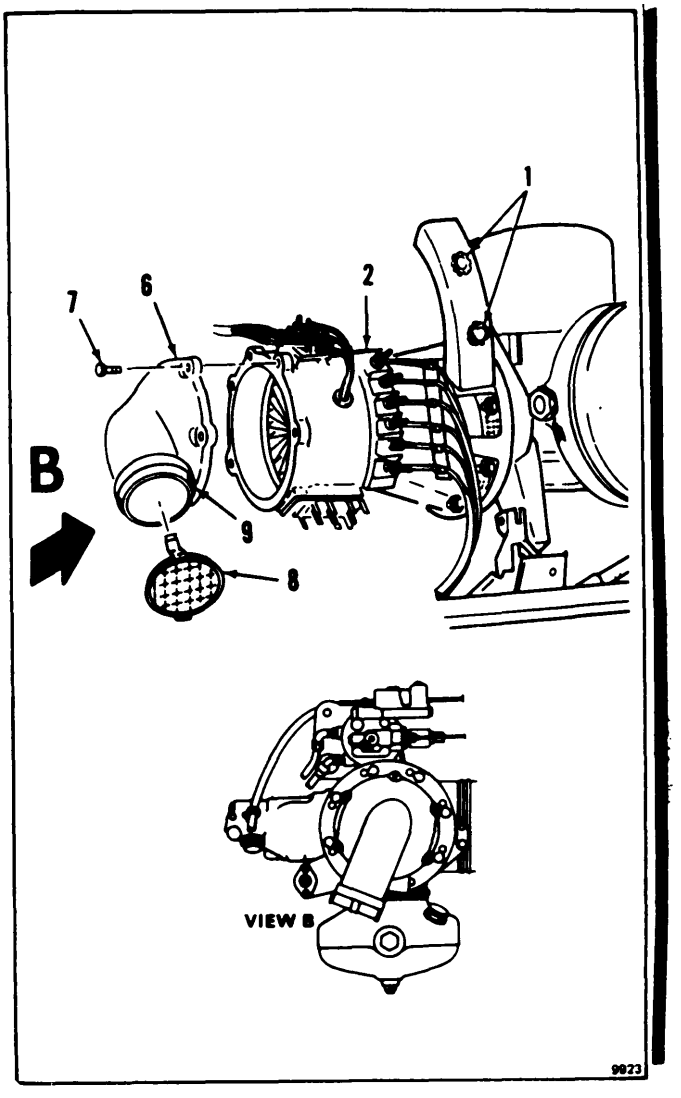
9-34 INSTALL APU GENERATOR (Continued)

3. Position air inlet (6) on generator (2) and install five screws (7).

NOTE

Top screw in air inlet is omitted.

4. Lockwire (E231) screws (7).
5. Install screen (8) and clamp (9).



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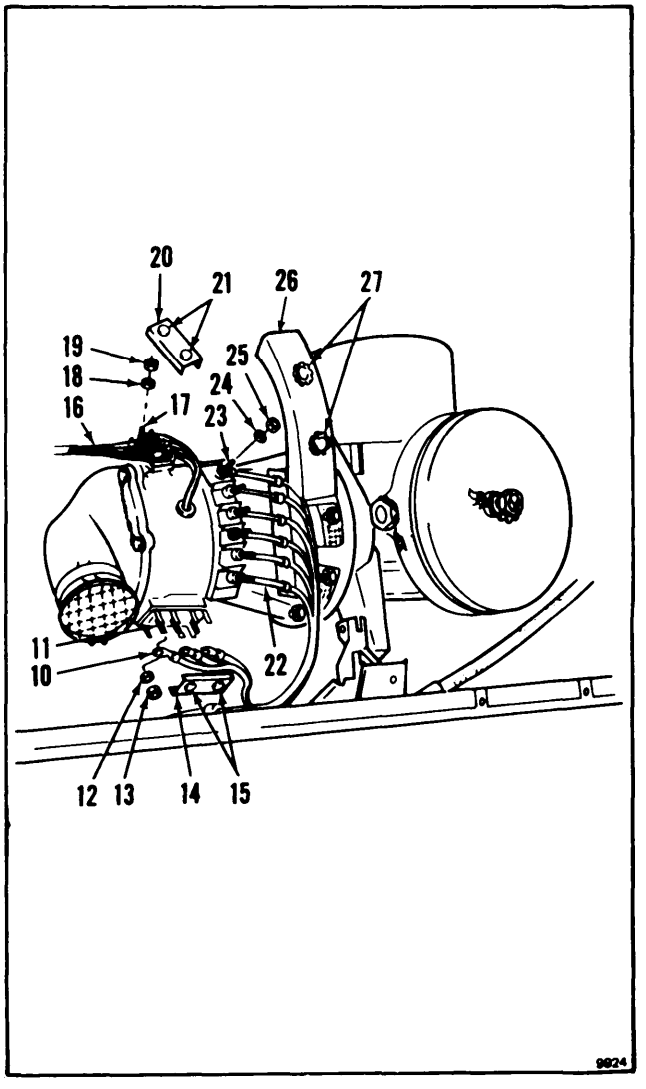
9-34 INSTALL APU GENERATOR (Continued) 9-34

6. Remove tape and **connect three wires (10)** to terminals (11) by installing three washers (12) and nuts (13). Remove tags.
7. Install terminal cover (14) and tighten two fasteners (15).
8. Remove tape and **connect four wires (16)** to terminals (17) by installing four washers (18) and nuts (19). Remove tags. **Install terminal cover (20)** and tighten two fasteners (21).
9. Remove tape and **connect six wires (22)** to terminals (23) by installing six washers (24) and nuts (25). Remove tags. **Install terminal cover (26)** and tighten two fasteners (27).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of generator (TM 55-1520-240-T).

Install apu drip pan (Task 2-3).

Fold auxiliary loading ramp (TM 55-1520-240-10).

Close cargo ramp (TM 55-1520-240-T).

END OF TASK

9-34.1 REMOVE APU FUEL SHUT-OFF RELAY

INITIAL SETUP

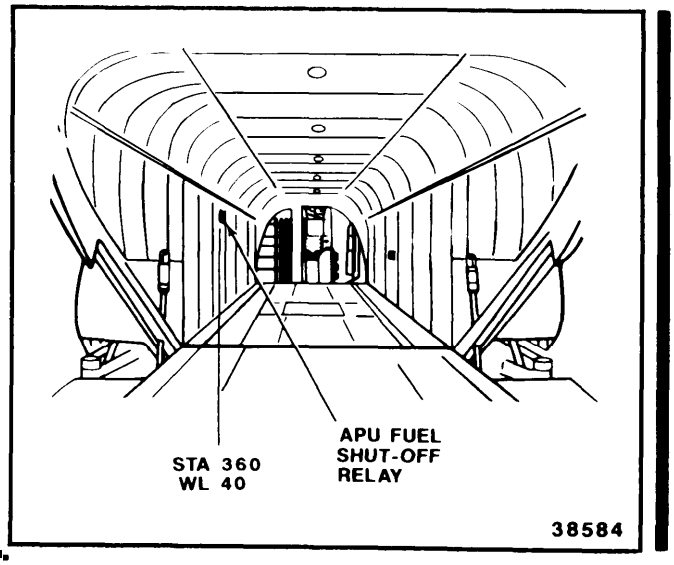
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

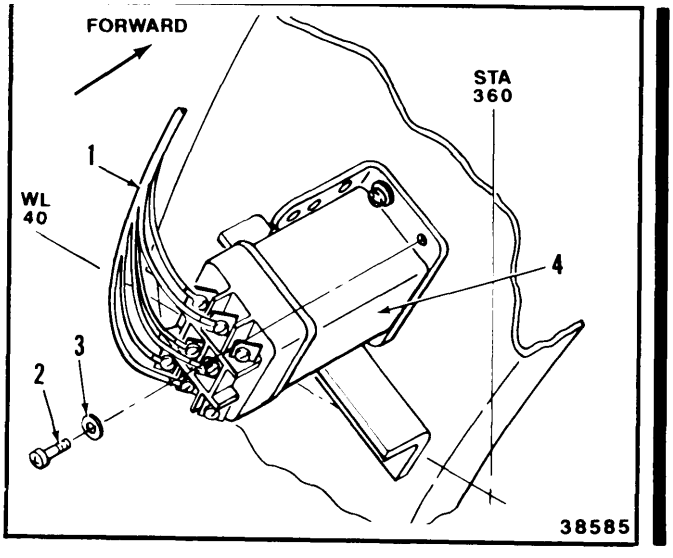
Materials:
Paper Tags (E264)

Pemonnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Cabin Acoustic Blanket Remove STA 360 (Task 2-208)



1. **Tag and disconnect** seven wires (1). Use tags (E264).
2. **Remove four screws** (2) and washers (3).
3. **Remove APU fuel shut-off relay** (4) from aircraft.



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-34.2 INSTALL APU FUEL SHUT-OFF RELAY 9-34.2

INITIAL SETUP

Applicable Configurations:
All

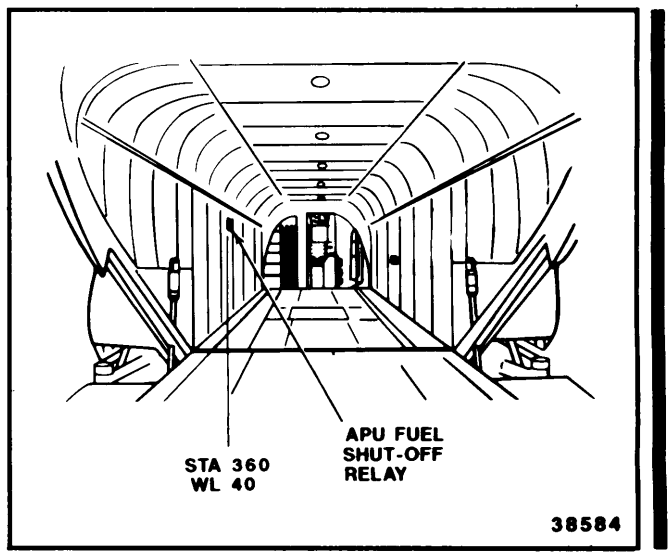
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Biddle Ohmmeter (T7) or Equivalent

Materials:
Cloths (E120)
Gloves (E184.1)
Naphtha (E245)

Personnel Required:
Aircraft Electrician

References:
TM 9-6625-975-35
TM 55-1500-323-24
TM 55-1500-343-23

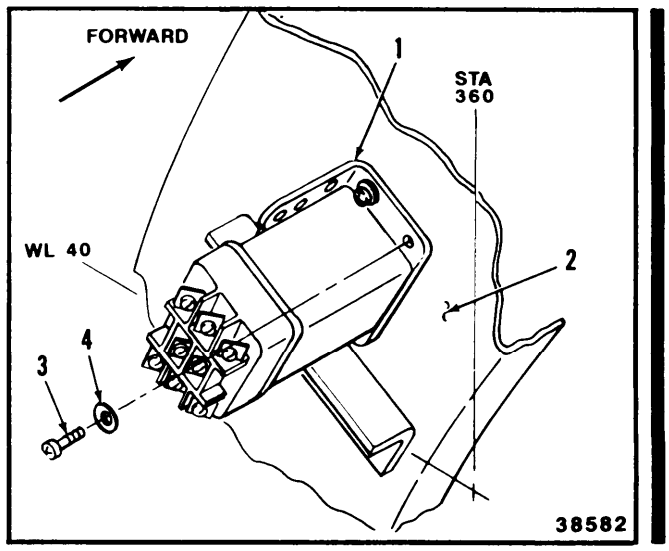
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Cabin Acoustic Blanket Removed STA 360 (Task 2-208)



WARNING

Allphatic naphtha (E245) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. in case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. **Clean bonding and grounding surfaces thoroughly** before installing APU fuel shut-off relay (1). Use naphtha (E245) and cloths (E120). Wear gloves (E184.1) and goggles.
2. **Install APU fuel shut-off relay** (1) on aircraft structure (2) with four screws (3) and washers (4).



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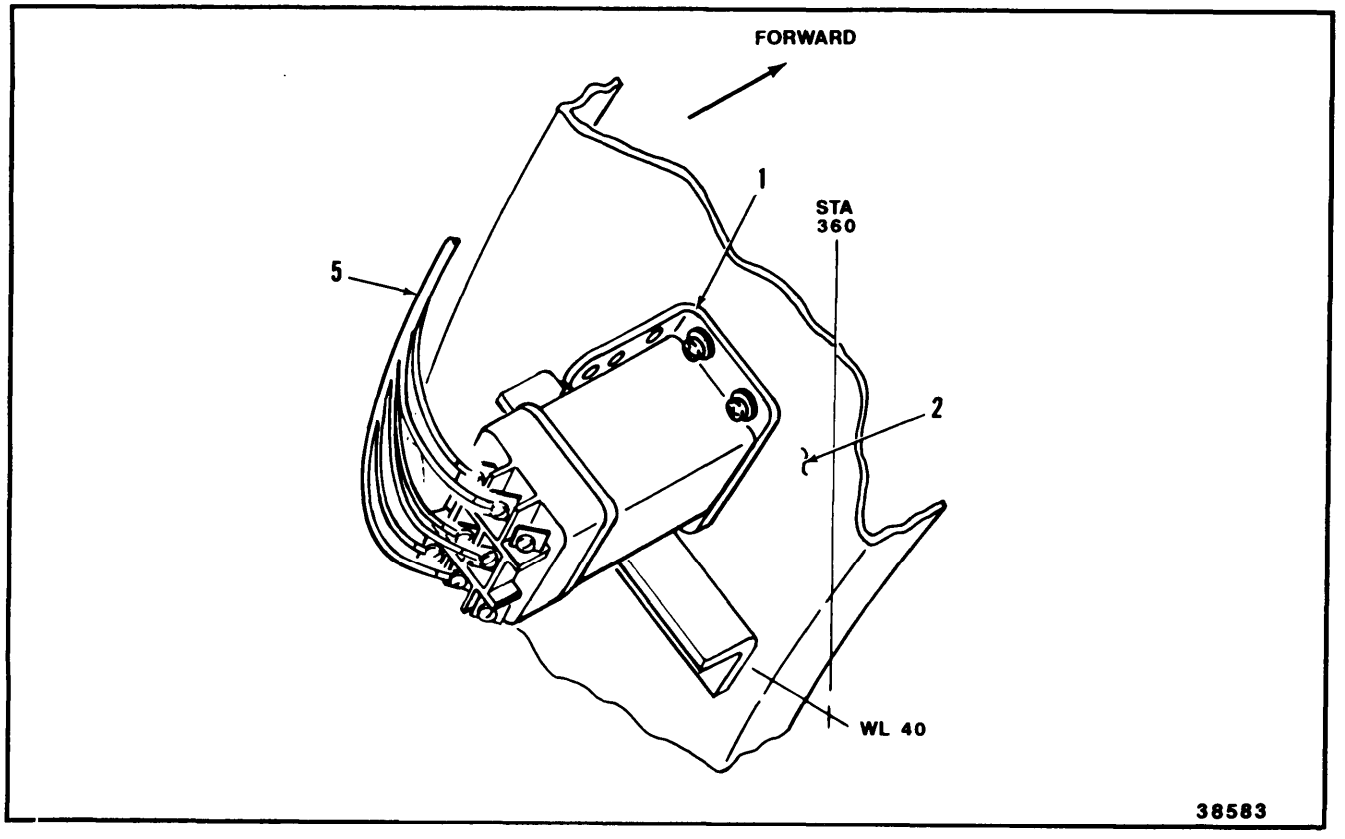
9-34.2 INSTALL APU FUEL SHUT-OFF RELAY (Continued) 9-34.2

3. **Perform bonding check** from relay (1) to structure (2). Use biddle ohmmeter (T7) or equivalent to test the resistance between the cleaned areas. **Resistance shall be 0.0025 ohms or less** (TM 9-6625-975-35 and TM 55-1500-323-24).
4. **Refinish** exposed surfaces in accordance with applicable corrosion control directives (TM 55-1500-343-23).
5. **Connect seven wires** (5) to relay (1). Remove and discard tags.

FOLLOW-ON MAINTENANCE:
Cabin Acoustic Blanket Installed STA 360 (Task 2-210)



END OF TASK

9-35 REMOVE GENERATOR CONTROL PANEL 9-35

INITIAL SETUP

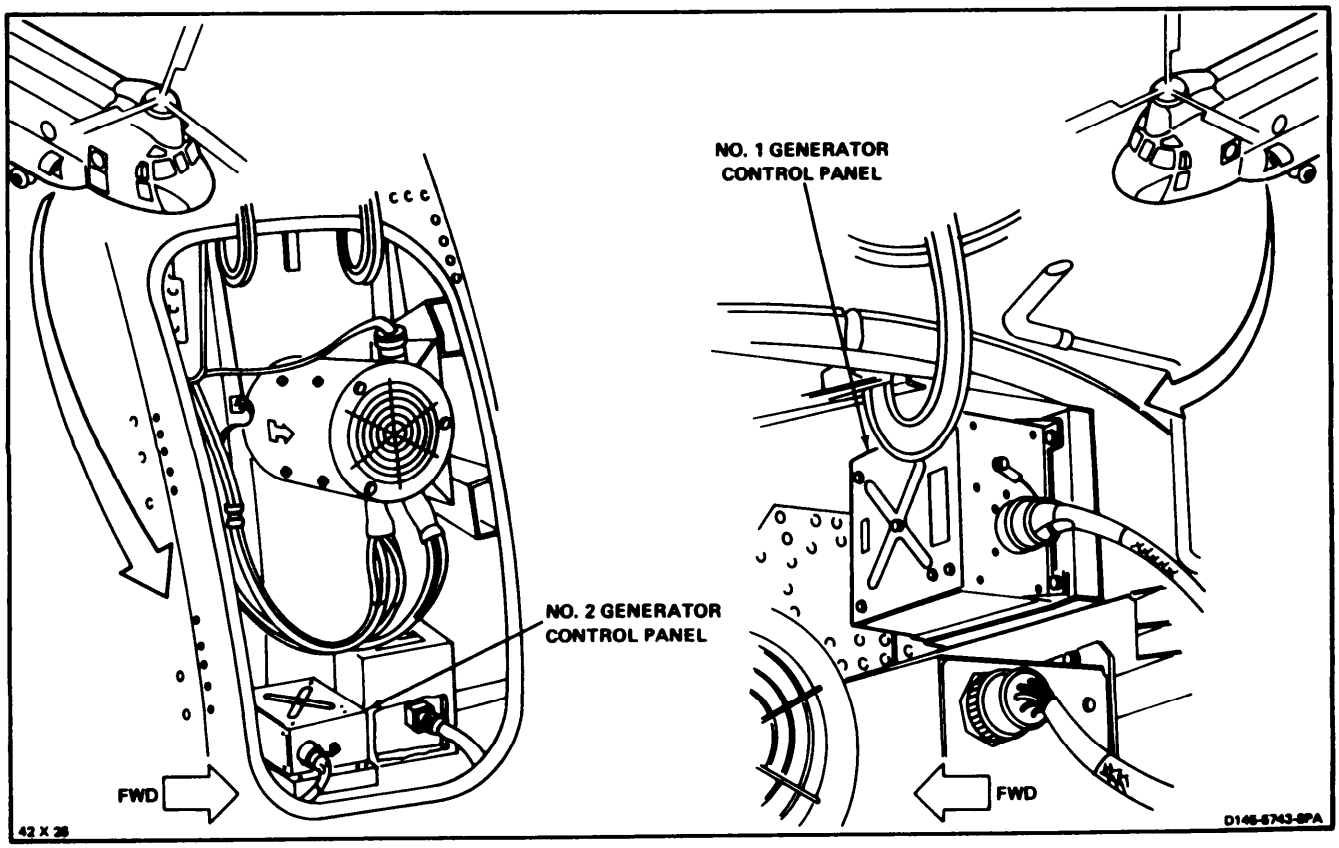
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Left or Right Electrical Compartment Access Door Open (Task 2-2)



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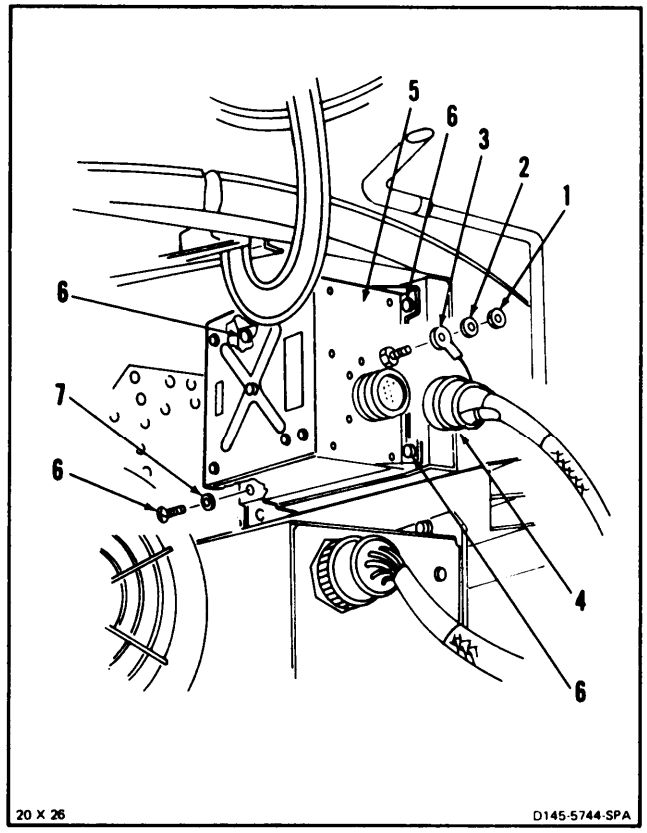
9-35 REMOVE GENERATOR CONTROL PANEL (Continued)

NOTE

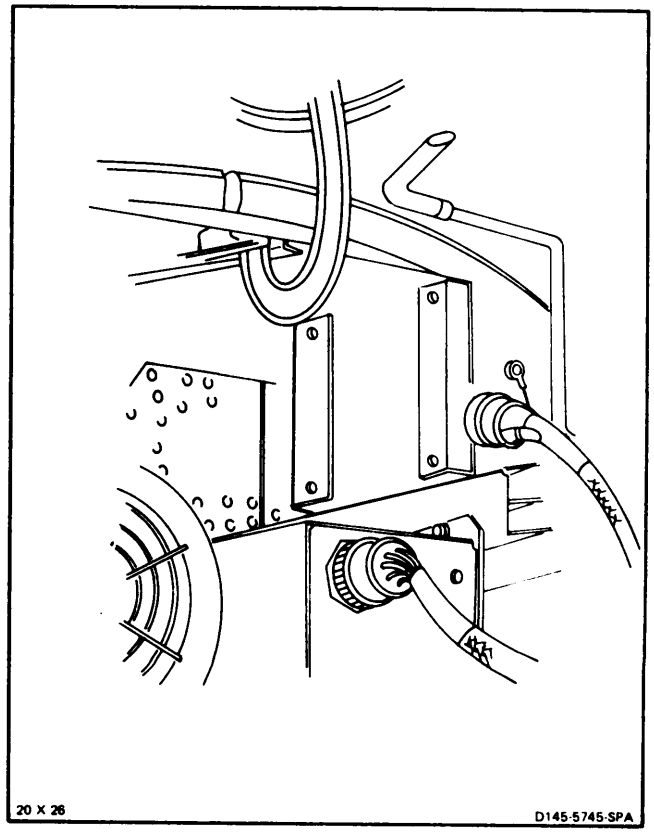
Procedure is same to remove No. 1 or No. 2 generator control panel. Removal of No. 1 panel is shown here.

1. Remove nut (1) and washer (2). **Disconmct wire (3).**
2. **Disconnect electrical connector (4)** from panel (5).
3. **Remove four screws (6)** and washers (7).
4. **Remove panel (5).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-36 INSTALL GENERATOR CONTROL PANEL

INITIAL SETUP

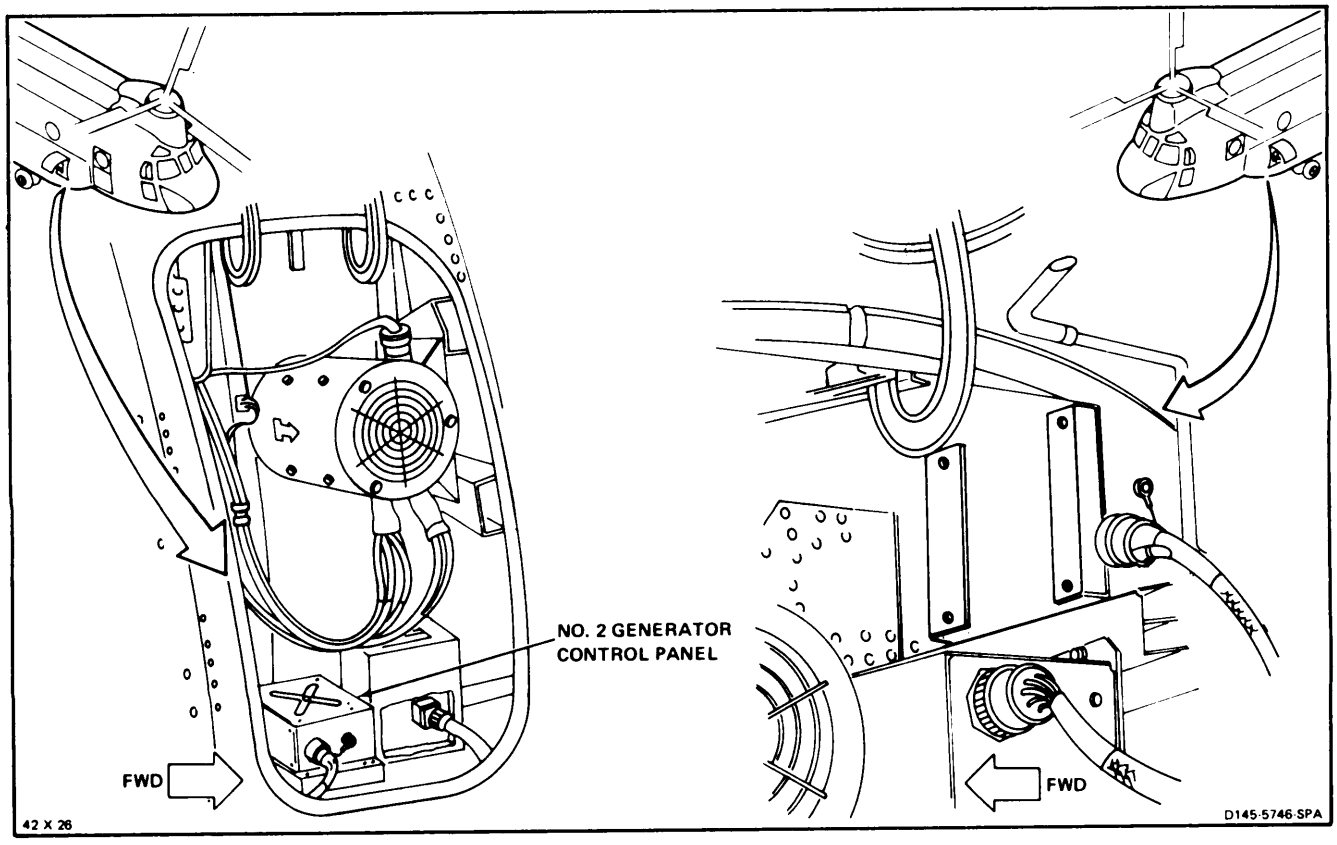
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 nspector

References:
TM 55-1520-240-23P



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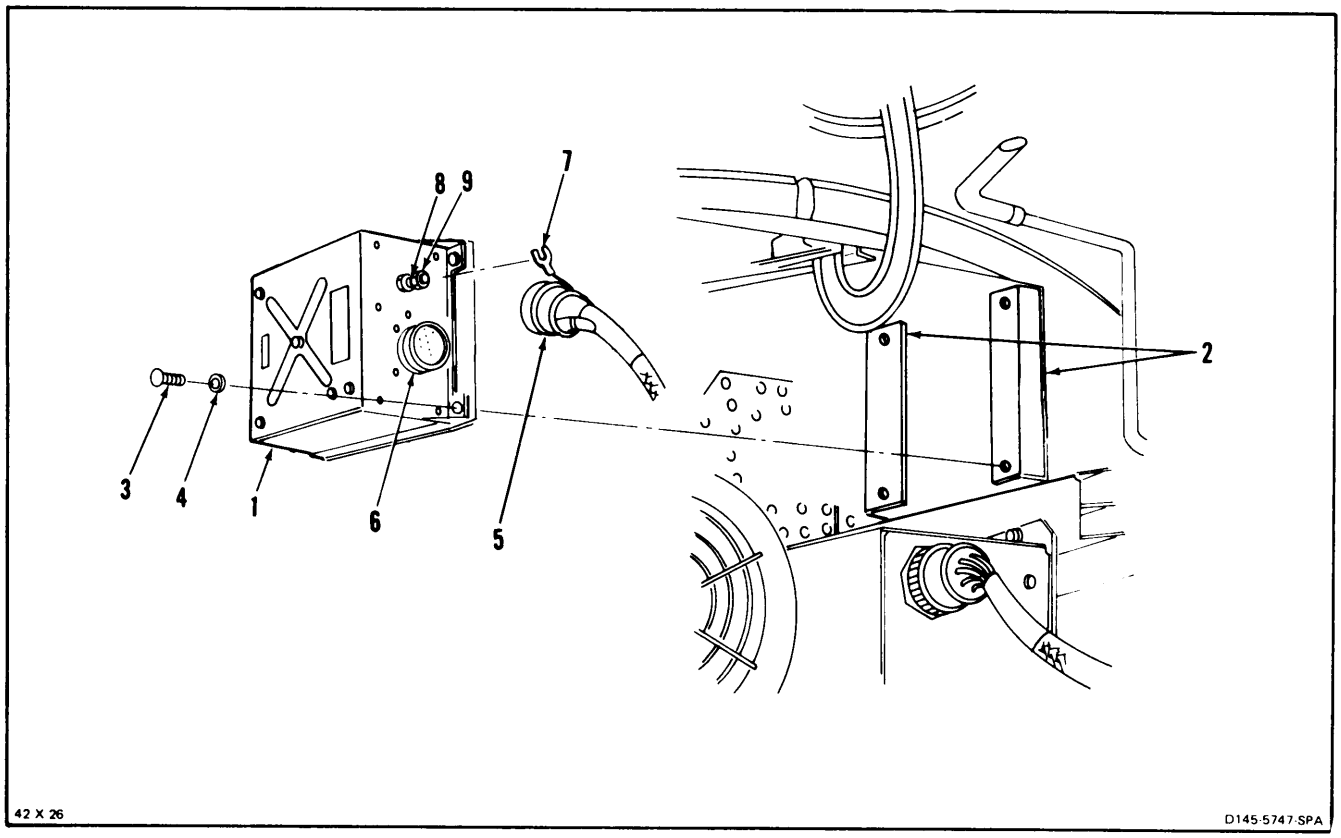
9-36 INSTALL GENERATOR CONTROL PANEL (Continued) 9-36

NOTE

Procedure is same to install No. 1 or No. 2 generator control panel. Installation of No. 1 is shown here.

1. **Position panel (1)** on brackets (2). **Install four screws (3)** and washers (4).
2. **Connect electrical connector (5)** to receptacle (6).
3 **Connect wire (7)** on stud (8). Tighten nut (9).

INSPECT



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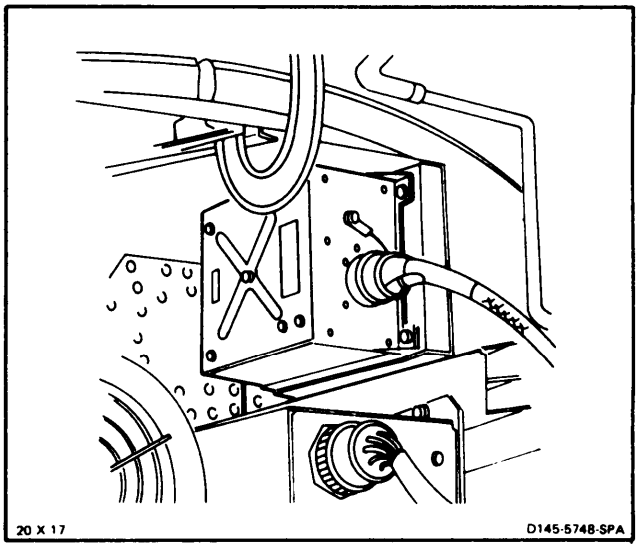
9-36 INSTALL GENERATOR CONTROL PANEL (Continued) 9-36

FOLLOW-ON MAINTENANCE:

Close left or right electrical compartment access door (Task 2-2).

Perform operational check of ac power system (TM 55-1520-240-T).



END OF TASK

9-36.1 REPLACE APU GENERATOR CONTROL PANEL

INITIAL SETUP

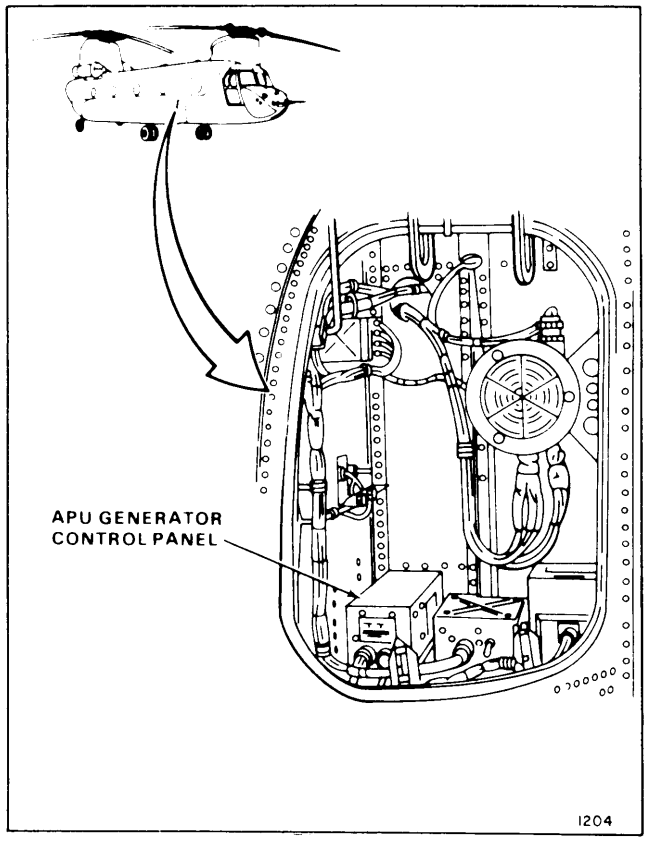
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

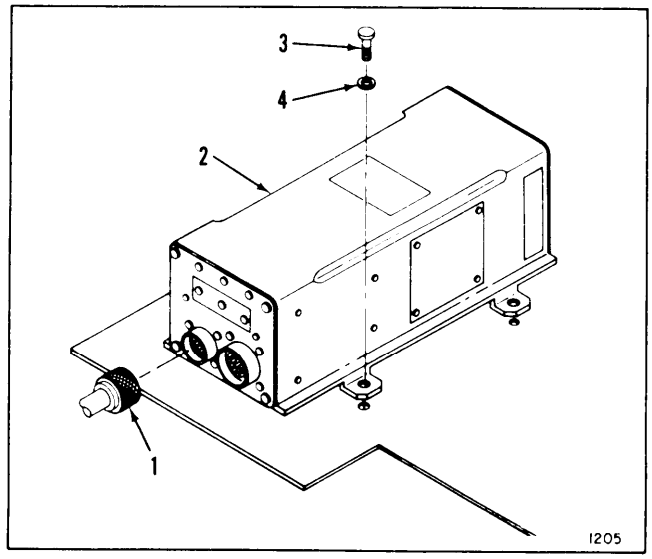
Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Right Electrical Compartment Access Door Open (Task 2-2)



1. **Disconnect electrical connector (1)** from control panel (2).
2. Remove four screws (3) and washers (4). **Remove panel (2).**

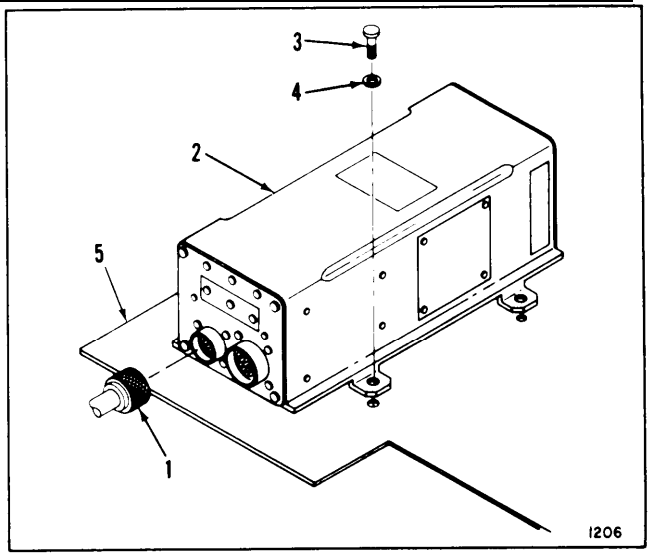


GO TO NEXT PAGE

9-36.1 REPLACE APU GENERATOR CONTROL PANEL (Continued) 9-36.1

3. **Position control panel (2)** on shelf (5). **Install four screws (3)** and washers (4).
4. **Connect electrical connector (1).**

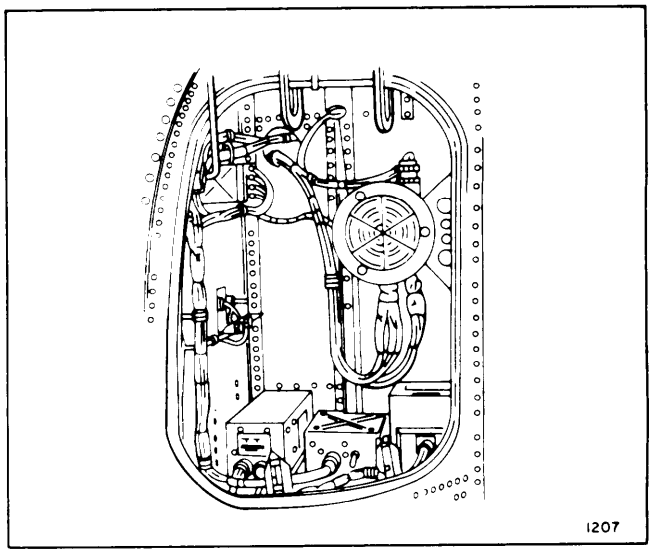
INSPECT



FOLLOW-ON MAINTENANCE:

Close right electrical compartment access door (Task 2-2).

Perform operational check of ac power system (TM 55-1520-240-T).



END OF TASK

9-37 REMOVE EXTERNAL POWER MONITOR

INITIAL SETUP

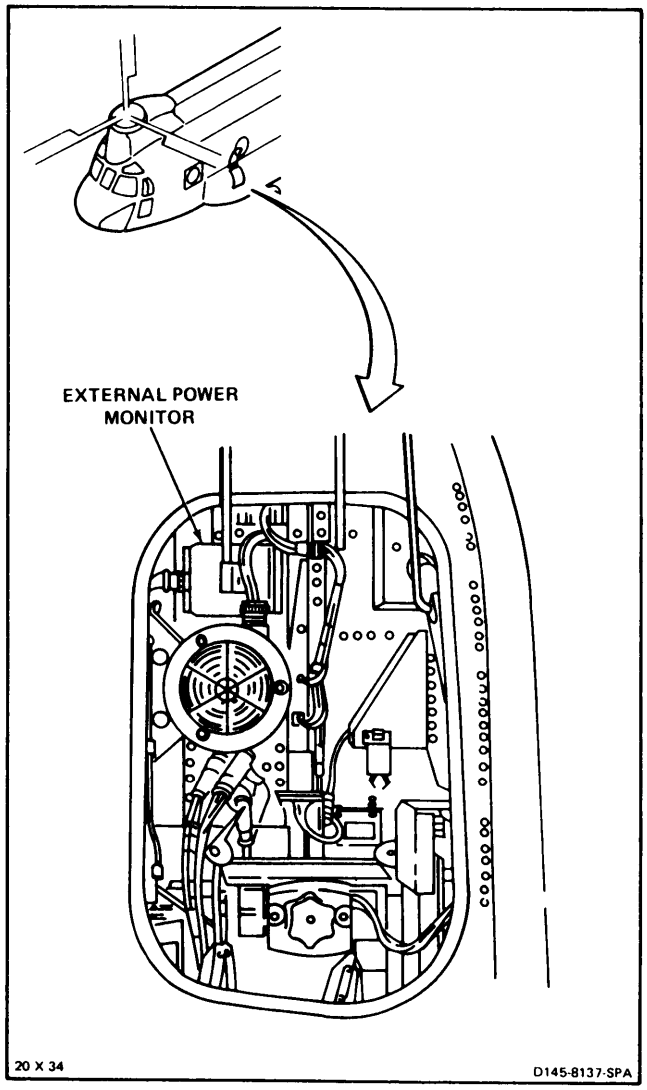
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

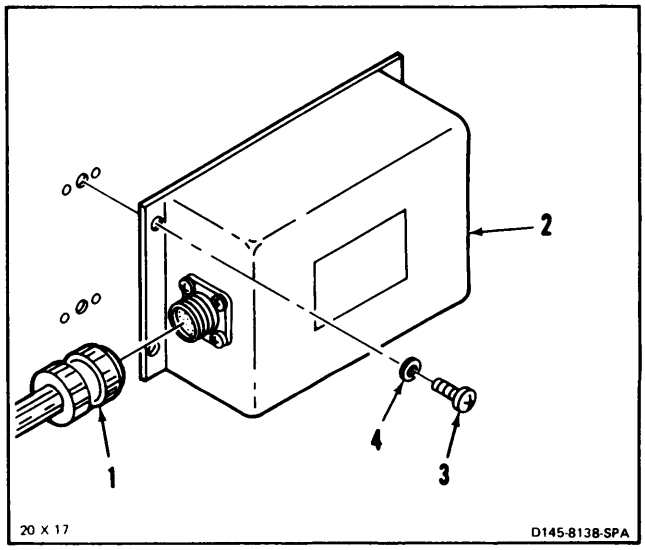
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Electrical Compartment Left Forward Access Cover Open (Task 2-2)



1. **Disconnect connector (1)** from external power monitor (2).
2. **Remove four screws (3)** and washers (4) from monitor (2). **Remove monitor.**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-38 INSTALL EXTERNAL POWER MONITOR

INITIAL SETUP

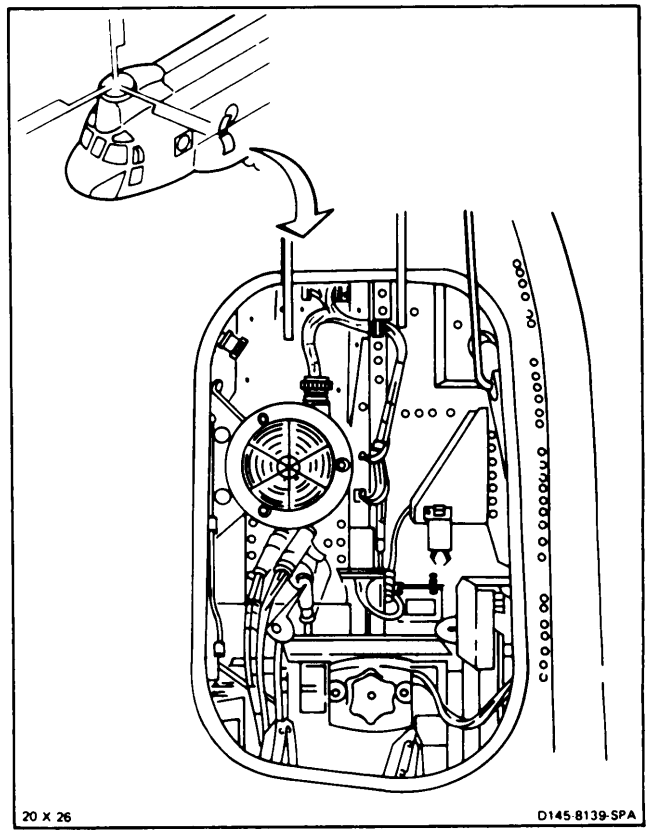
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

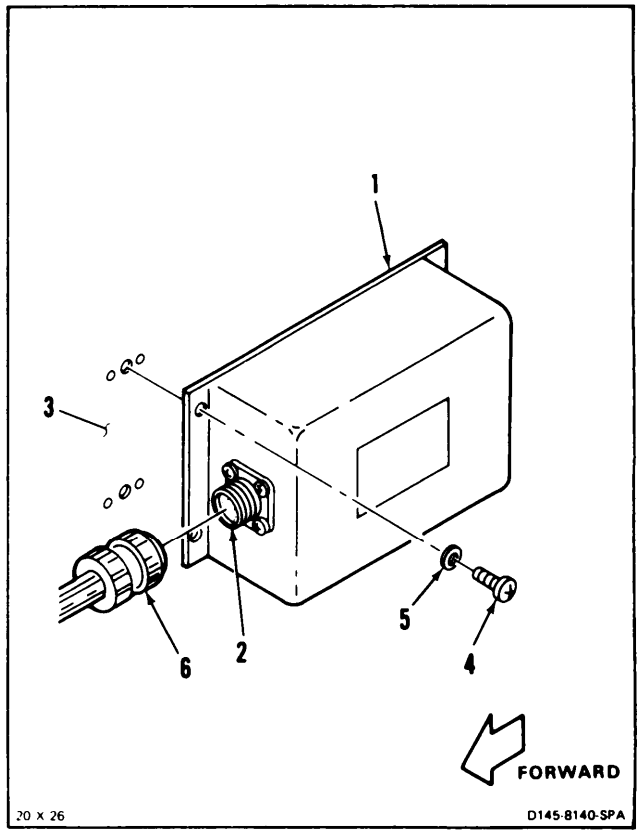
Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Position external power monitor (1),** receptacle (2) forward, on unboard panel (3) of electrical compartment upper forward side.
2. **Install four screws (4)** and Washers (5) in monitor (1).
3. **Connect connector (6)** to receptacle (2) of monitor (1).

INSPECT



GO TO NEXT PAGE

9-38.1 REPLACE EXTERNAL POWER CONTACTOR 9-38.1

INITIAL SETUP

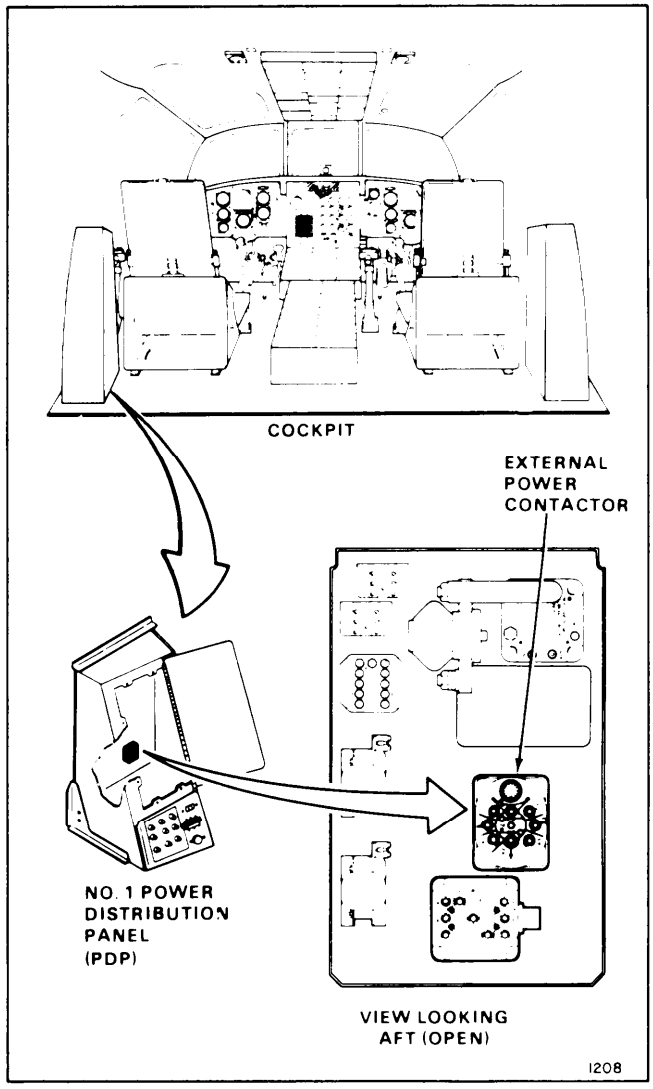
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician
Inspector

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



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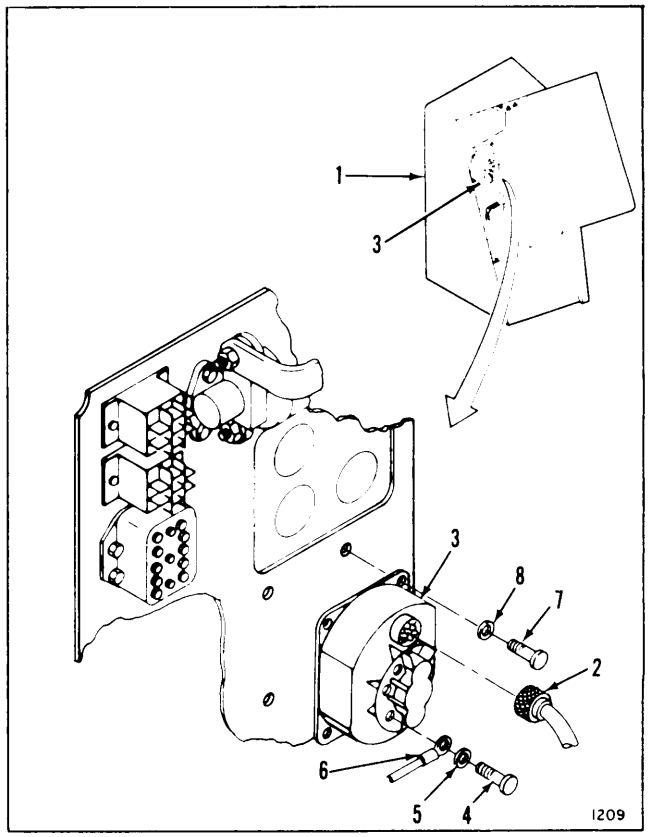
9-38.1 REPLACE EXTERNAL POWER CONTACTOR (Continued) 9-38.1

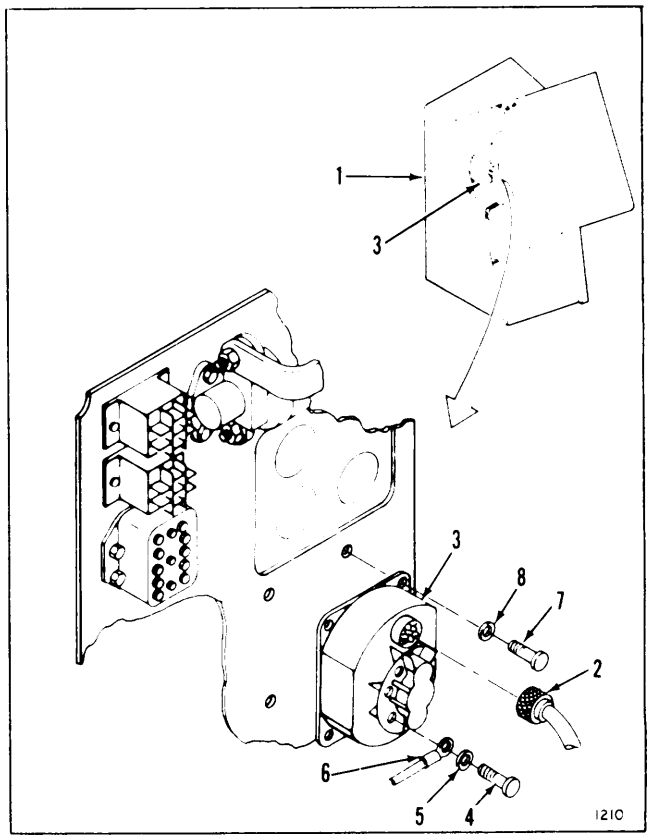
1. Open No. 1 power distribution panel (pdp) (1).
2. **Disconnect electrical connector (2)** from external power contactor (3).
3. Remove nine screws (4) and washers (5). Tag and **remove nine wires (6).** Use tags (E264). Tape ends of wires. Use tape (E385).
4. Remove four screws (7) and washers (8). **Remove contactor (3).**



5. **Position contactor (3)** on No. 1 pdp (1). **Install four screws (7),** and washers (8).
6. Remove tape from nine wires (6). **Position wires on contactor (3). Install nine** screws (4) and washers (5). Remove tags.
7. **Connect electrical connector (2).**

INSPECT

8. Close No. 1 pdp (1).



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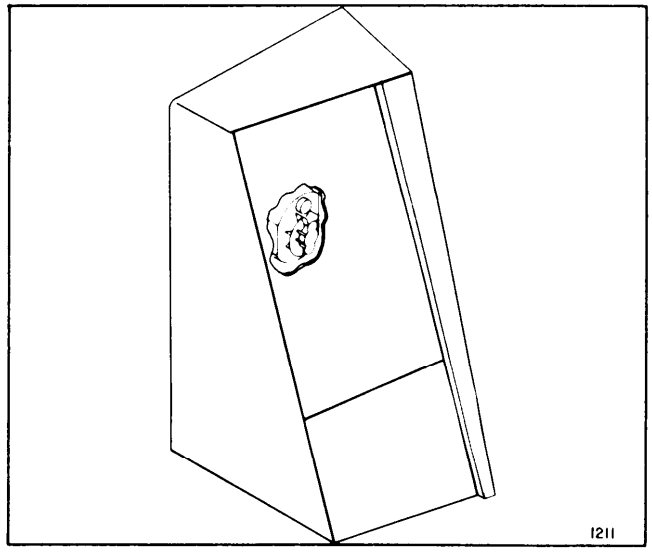
9-38.1 REPLACE EXTERNAL POWER CONTACTOR (Continued) 9-38.1

FOLLOW-ON MAINTENANCE:

Perform operational check of ac power system (TM 55-1520-240-T).



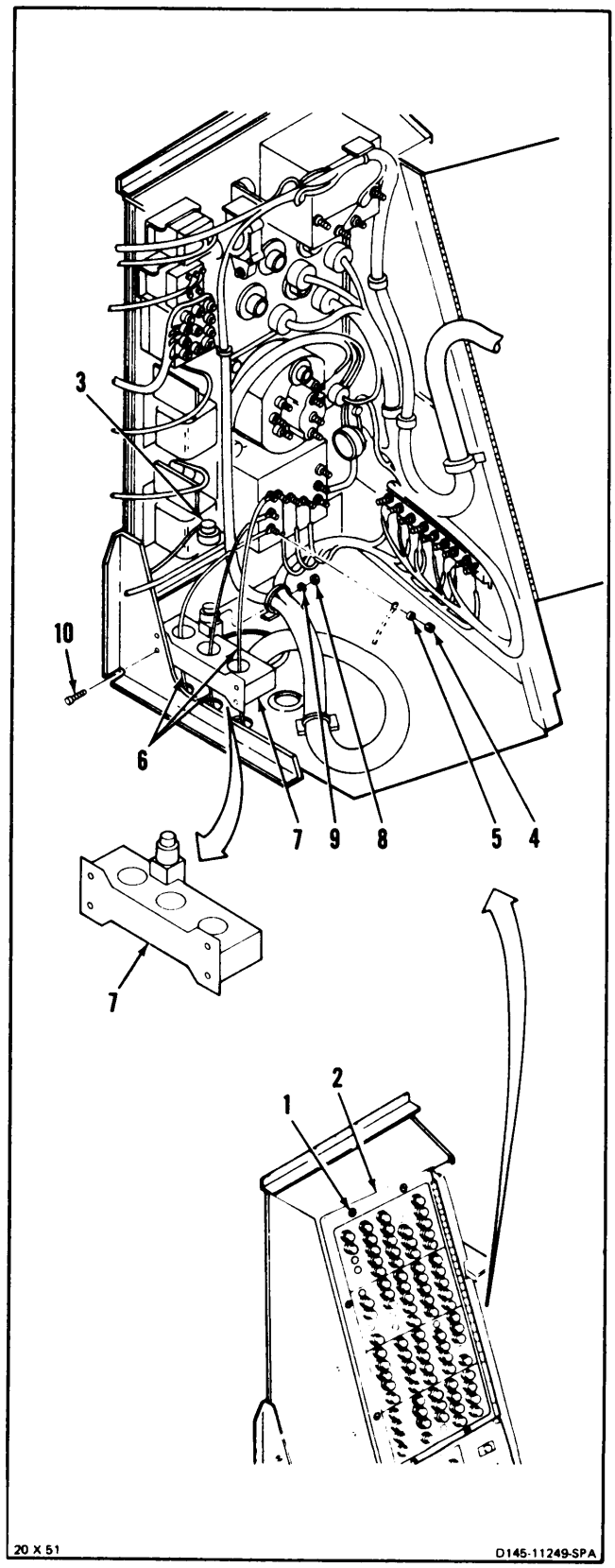
END OF TASK

9-39 REMOVE MAIN CURRENT TRANSFORMER (Continued) 9-39

NOTE

Procedure is same to remove main current transformer from either power distribution panel (pdp). Left-hand No. 1 pdp is shown here.

1. Loosen six fasteners (1). Open panel (2).
2. **Disconnect electrical connector (3).**
3. Remove three nuts (4) and washers (5). **Disconnect three wires (6).** Pull wires down through hole in transformer (7).
4. Tag wires (6). Wrap ends of wires. Use tape (E385).
5. Remove four nuts (8), washers (9), and bolts (10). **Remove transformer (7).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-40 INSTALL MAIN CURRENT TRANSFORMER 9-40

INITIAL SETUP

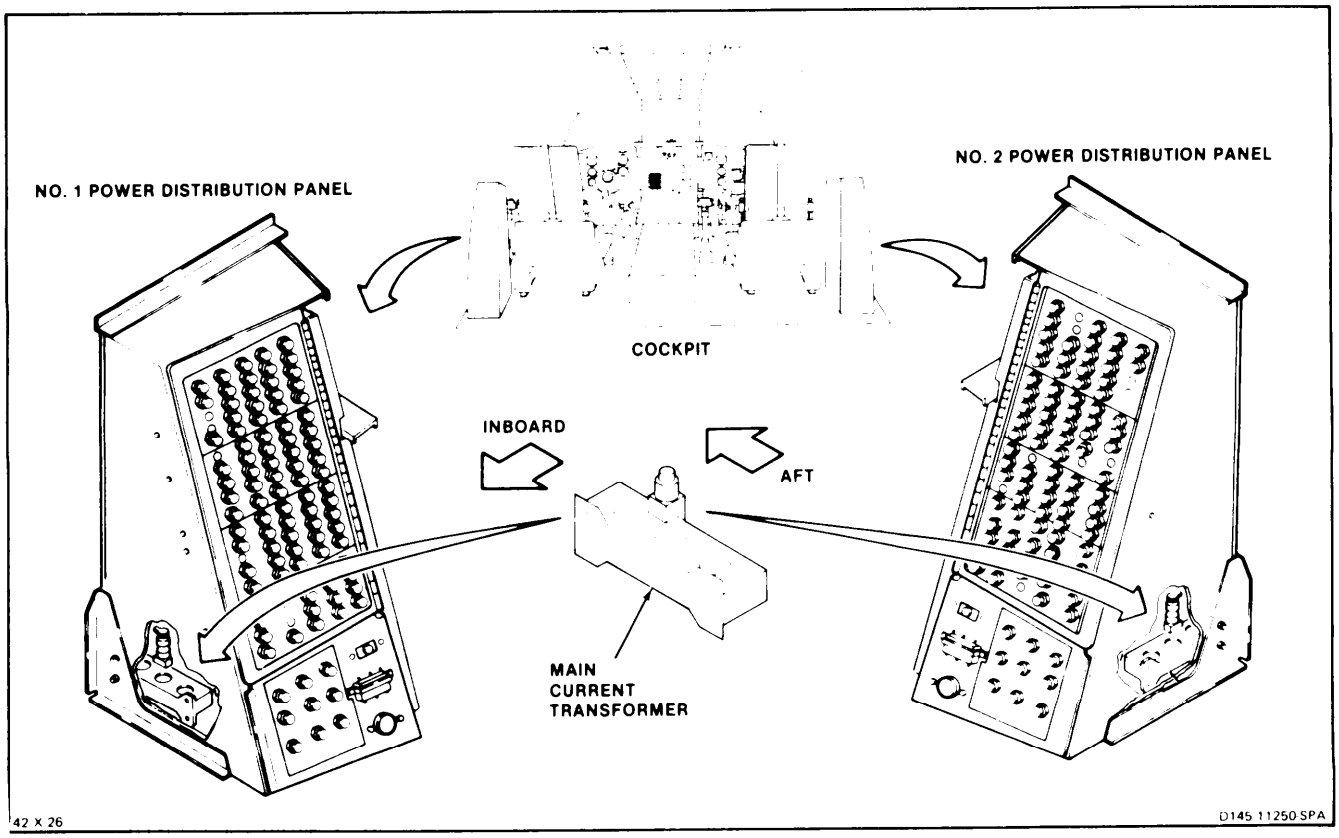
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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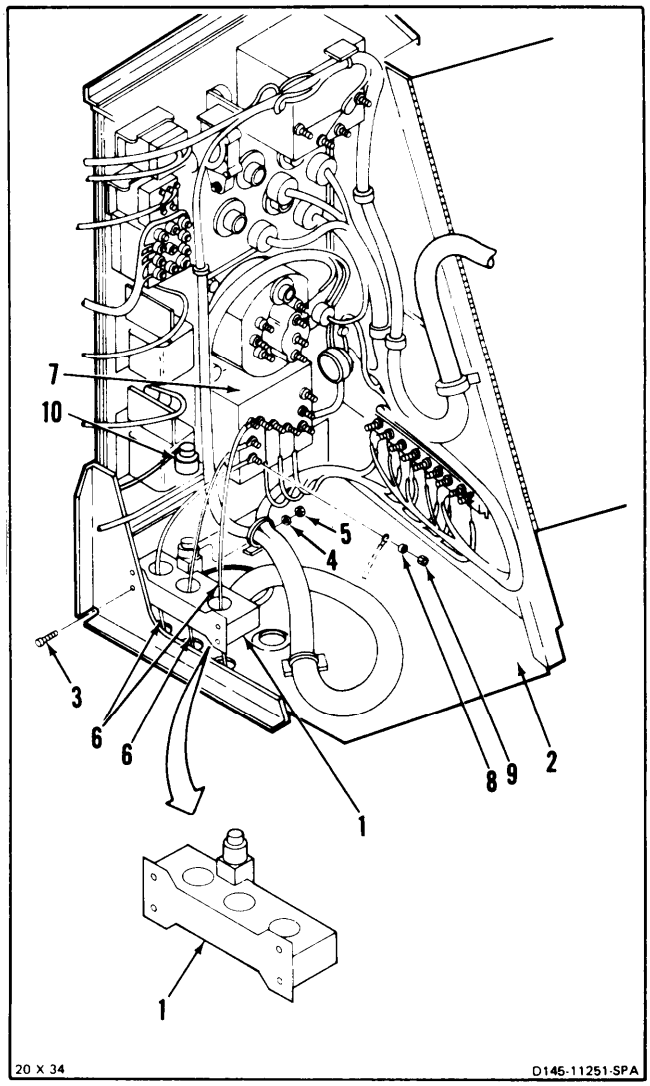
9-40 INSTALL MAIN CURRENT TRANSFORMER (Continued) 9-40

NOTE

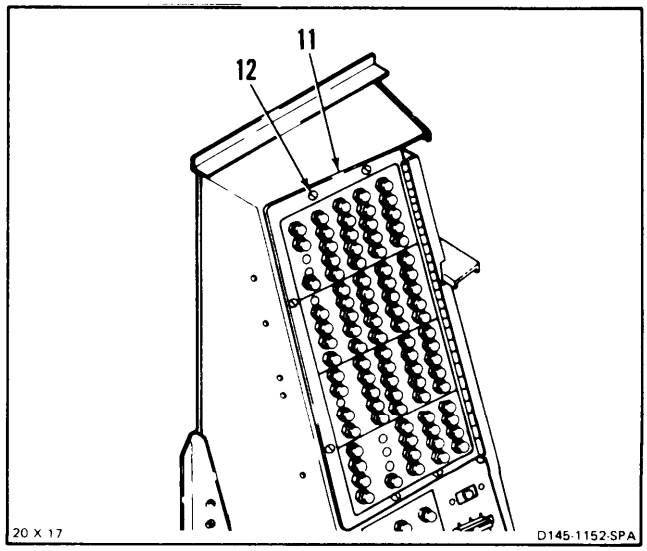
Procedure is same to install main current transformers in either power distribution panel (pdp). No. 1 left pdp is shown here.

1. **Position main current transformer (1)** in pdp (2). **Install four bolts (3),** washers (4) and nuts (5).
2. Pull wires (6) through holes in transformer (1).
3. Remove tag and tape from three wires (6).
4. **Connect three wires (6) to generator bus contactor (7).** Install three washers (8) and nuts (9).
5. **Connect electrical connector (10).**

INSPECT



6. **Close panel (11).** Secure six fasteners (12).



FOLLOW-ON MAINTENANCE:

Perform generator operational check (TM 55-1520-240-T).

END OF TASK

9-41 REMOVE APU GENERATOR CURRENT TRANSFORMER — AFT

INITIAL SETUP

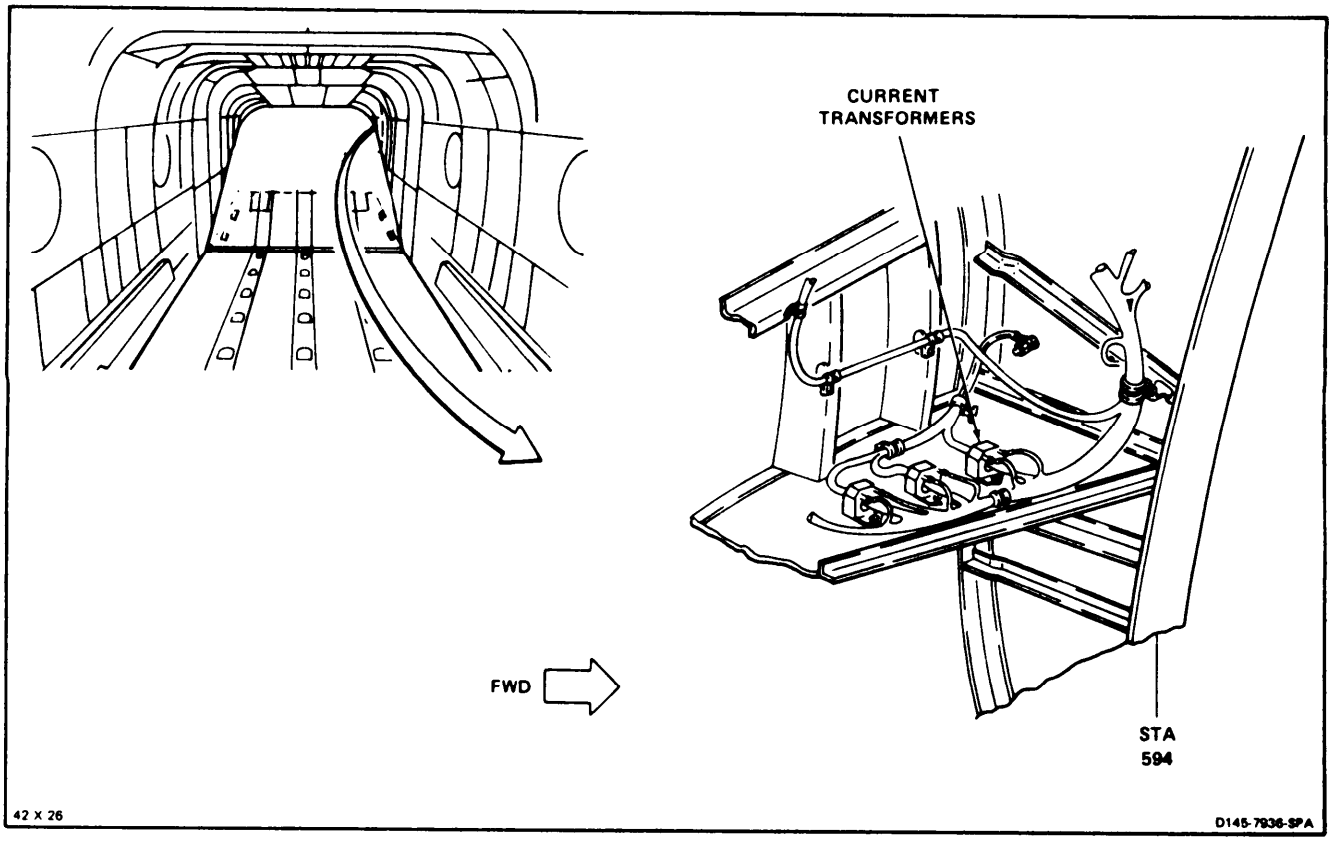
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Workstand

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)



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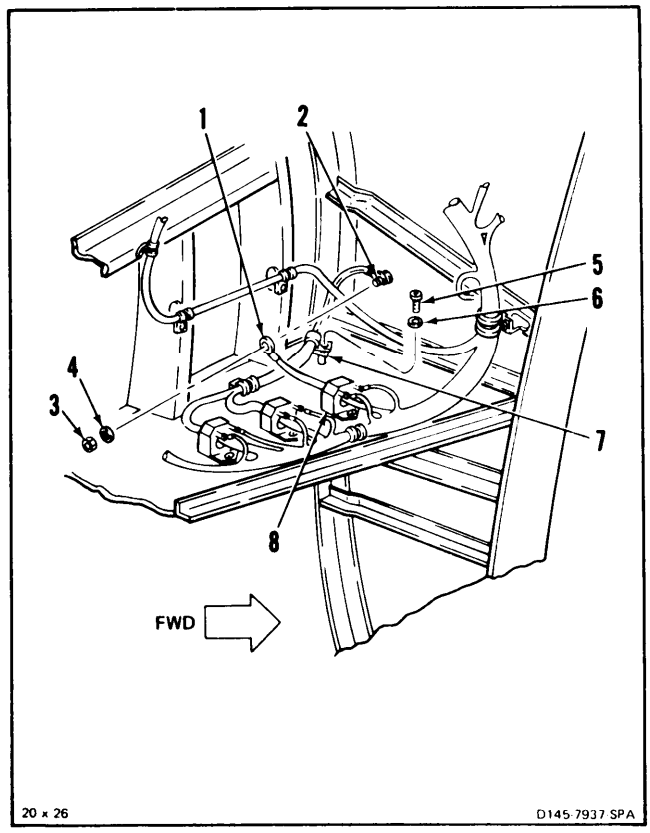
9-41 REMOVE APU GENERATOR CURRENT TRANSFORMER — AFT (Continued)

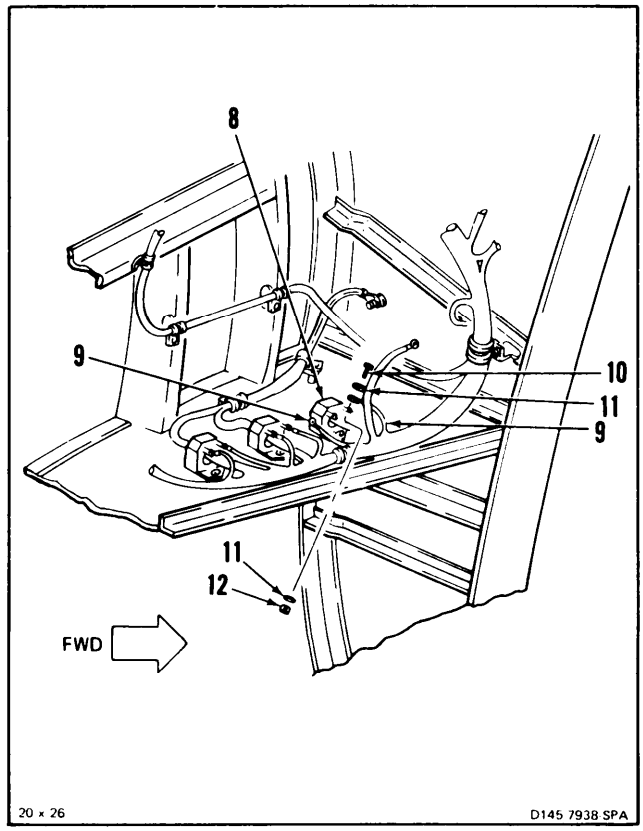
NOTE

Procedure is same for removal of three apu current transformers. Removal of one transformer is shown here.

1. Tag and **disconnect wire (1)** from ground stud (2) by removing nut (3) and washer (4). Tape end.
2. Remove screw (5) and washer (6) from clamp (7).
3. **Remove wire (1)** from clamp (7) and feed through transformer (8).



4. Tag and **disconnect two wires (9)** from transformer (8) by removing two screws (10), four washers (11), and two nuts (12). Tape ends.



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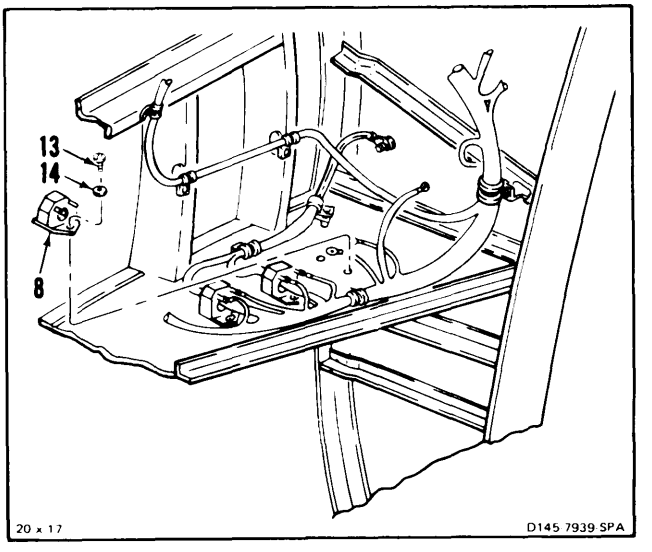
9-41 REMOVE APU GENERATOR CURRENT TRANSFORMER — AFT (Continued)

5. Remove two screws (13) and washers (14). **Remove transformer (8).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-42 INSTALL APU GENERATOR CURRENT TRANSFORMER — AFT

INITIAL SETUP

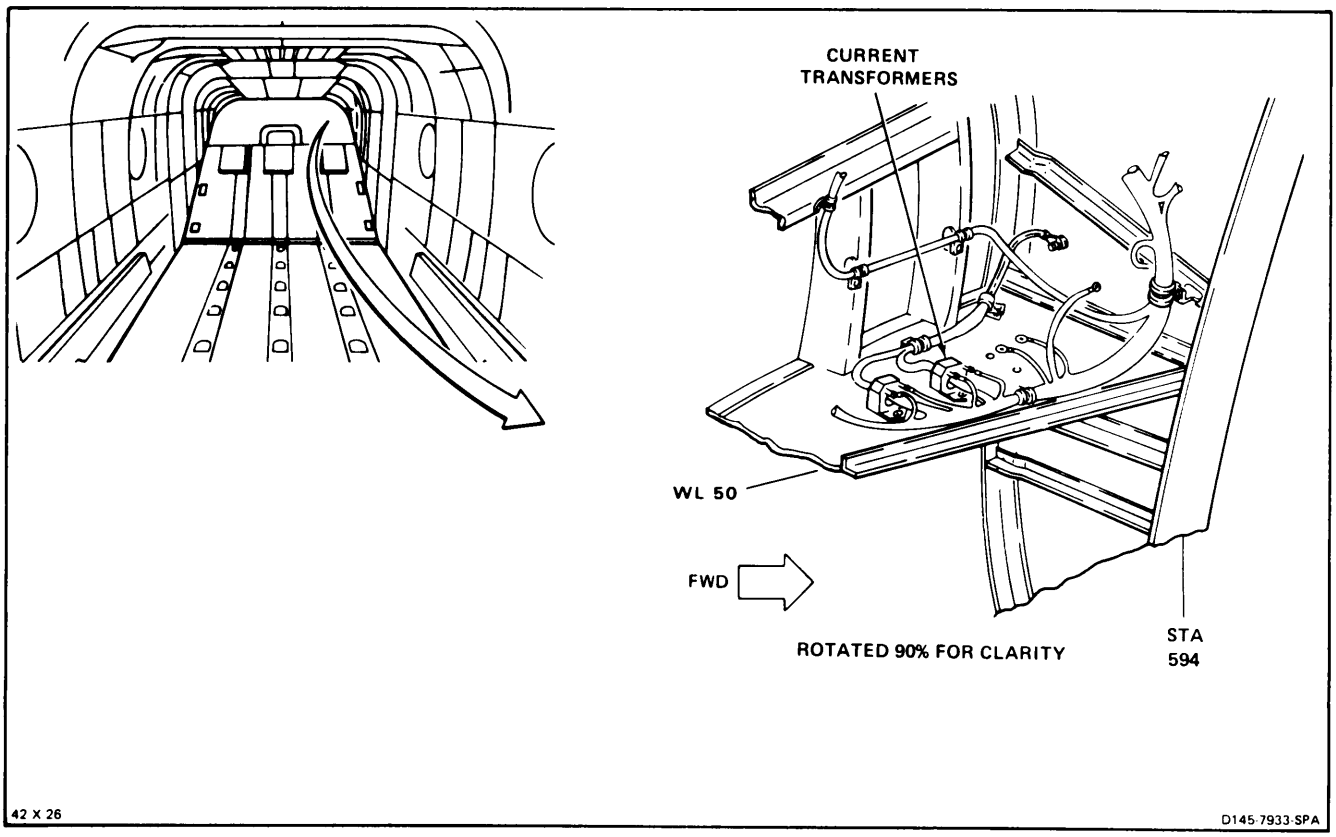
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Aircraft Inspector

References:
TM 55-1520-240-23P



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9-42 INSTALL APU GENERATOR CURRENT TRANSFORMER — AFT (Continued)

WARNING

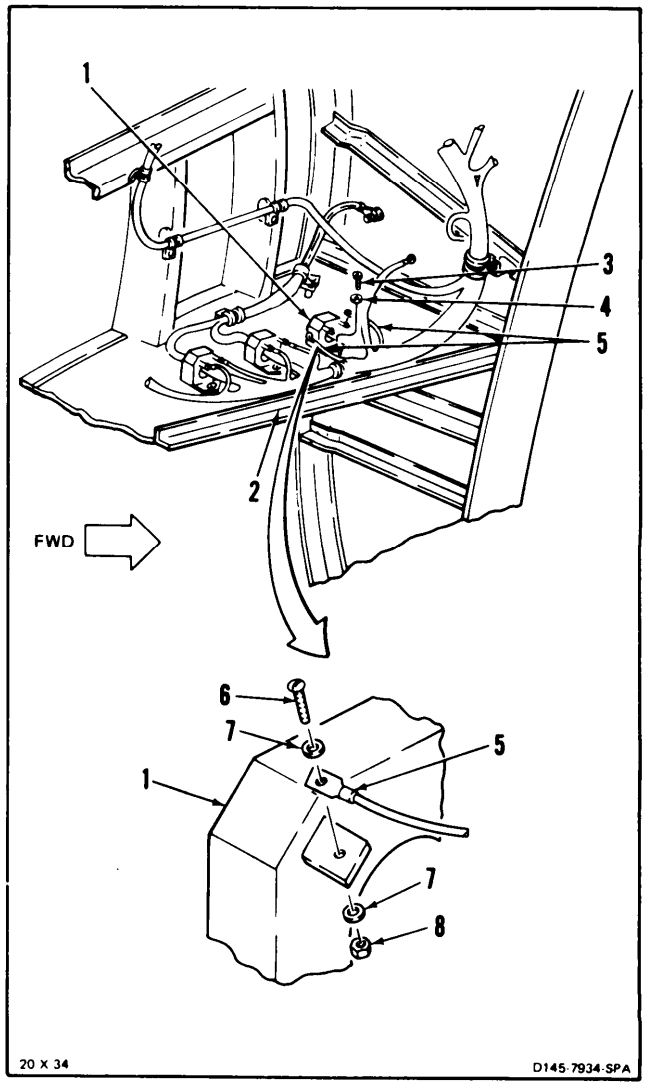
If current transformer is not positioned as shown with terminals facing away from ground stud, power feeders will overheat when a ground fault occurs resulting in a serious fire.

NOTE

Procedure is same for Installation of three apu current transformers installation of one transformer is shown here

1 **Position transformer (1)** on structure (2). **Install two screws (3)** and washers (4).

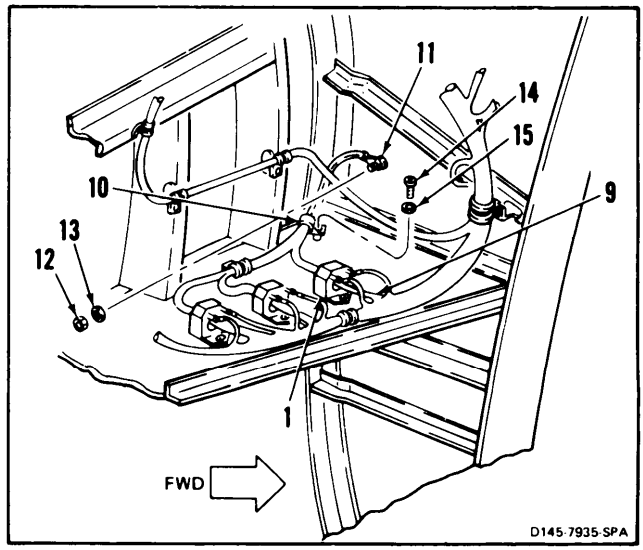
2 Remove tape and **connect two wires (5)** to transformer (1) by installing two screws (6), four washers (7), and two nuts (8). Remove tags.



3. Feed wire (9) through transformer (1) and clamp (10).

4. Remove tape and **connect wire (9)** to ground stud (11) by installing nut (12) and washer (13). Remove tags.

5. **Install screw (14)** and washer (15) **in clamp (10).**



FOLLOW-ON MAINTENANCE:

Perform operational check of apu generator (TM 55-1520-240-T).

Close cargo ramp (TM 55-1520-240-T).

END OF TASK

9-43 REMOVE APU GENERATOR CURRENT TRANSFORMER — FORWARD

INITIAL SETUP

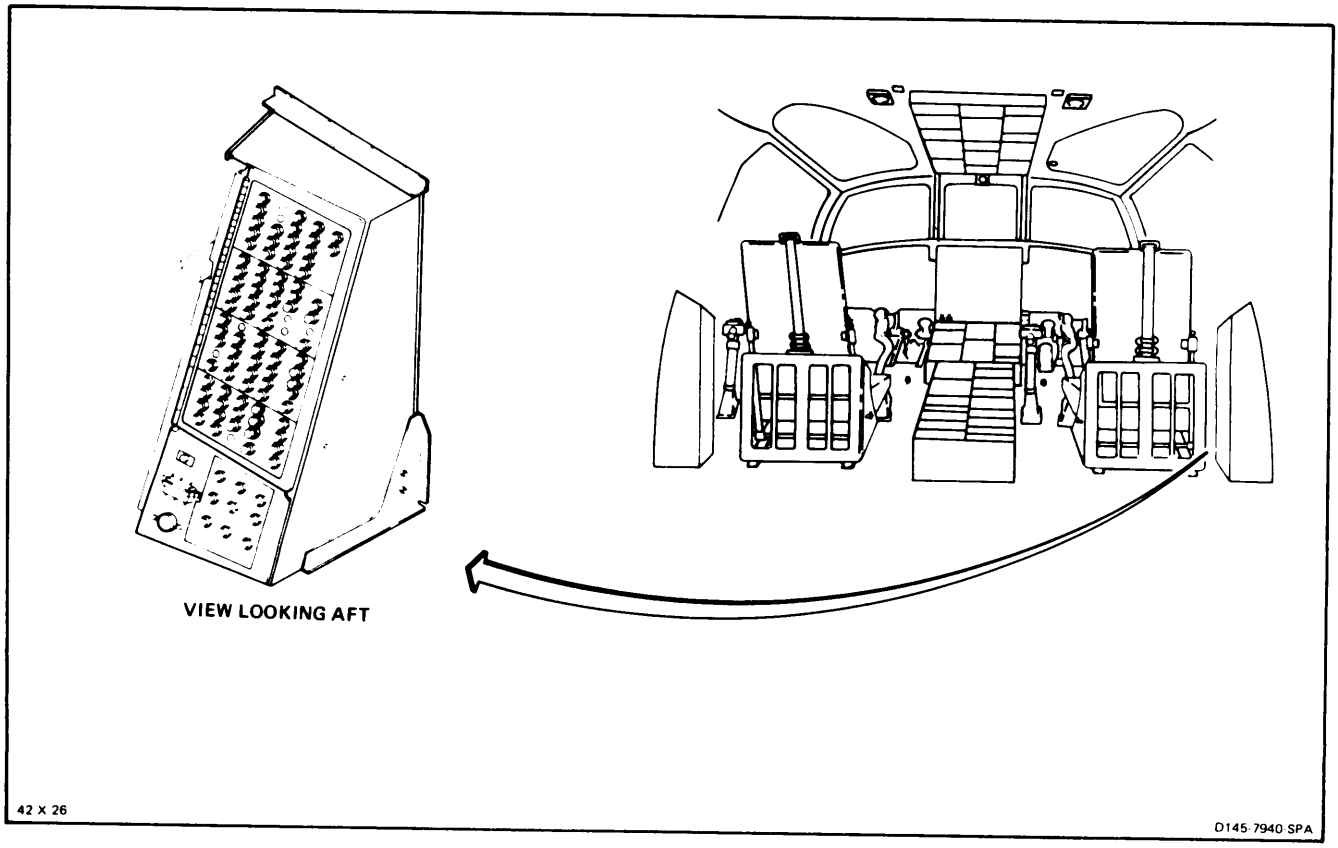
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 51 80-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Pressure Off



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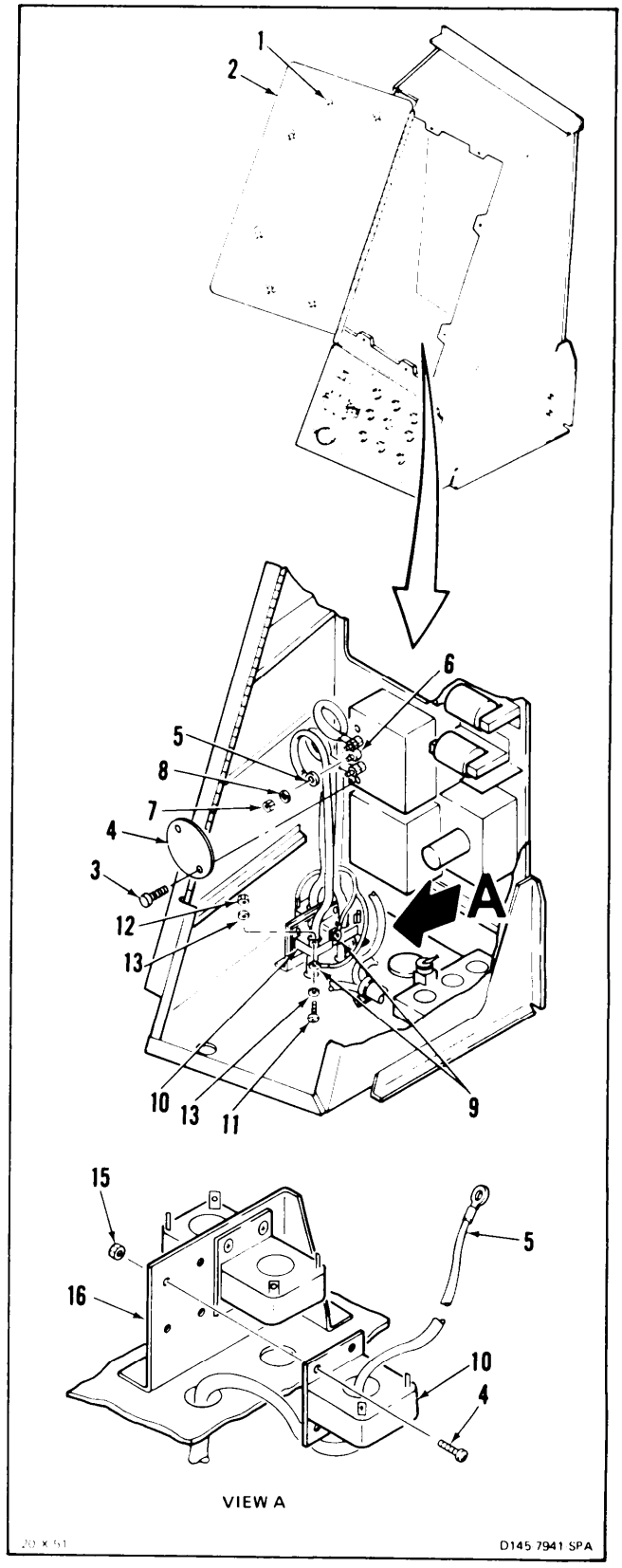
9-43 REMOVE APU GENERATOR CURRENT TRANSFORMER — FORWARD (Continued)

NOTE

Procedure is same for removal of three APU current transformers. Removal of one transformer is shown here.

1. Loosen six fasteners (1) and open power distribution panel door (2).
2. Remove two screws (3) and terminal cover (4). Tag and disconnect wire (5) from terminal (6) by removing nut (7) and washer (8). Tape ends. Use tape (E385).
3. Tag and **disconnect two wires (9)** from transformer (10) by removing two screws (11), two nuts (12), and four washers (13). Tape ends. Use tape (E385).
4. **Remove four screws (14) and nuts (15).** Feed wire (5) through transformer (10) and **remove transformer** from bracket (16).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-44 INSTALL APU GENERATOR CURRENT TRANSFORMER — FORWARD

INITIAL SETUP

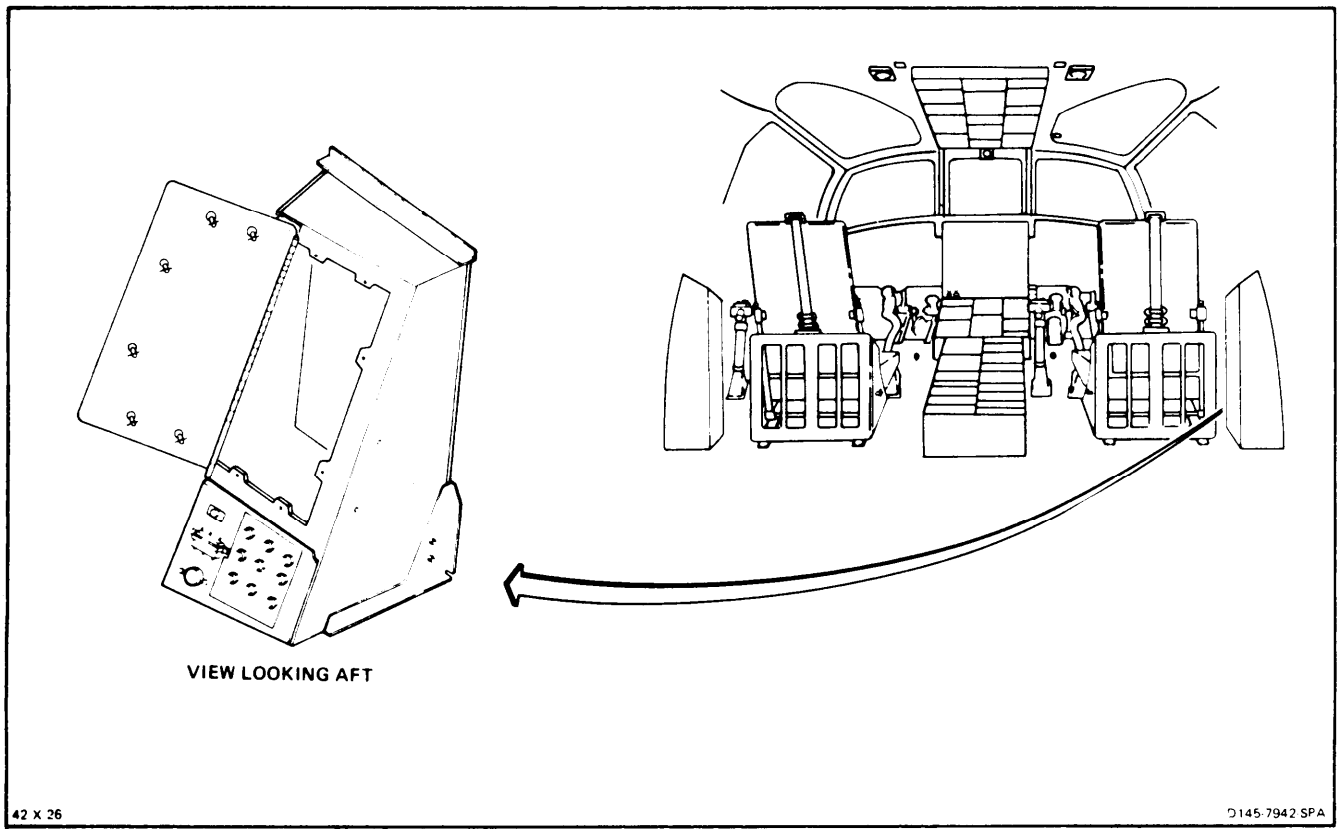
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 51 80-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Aircraft Inspector

References:
TM 55-1520-240-23P



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9-44 INSTALL APU GENERATOR CURRENT TRANSFORMER — FORWARD (Continued)

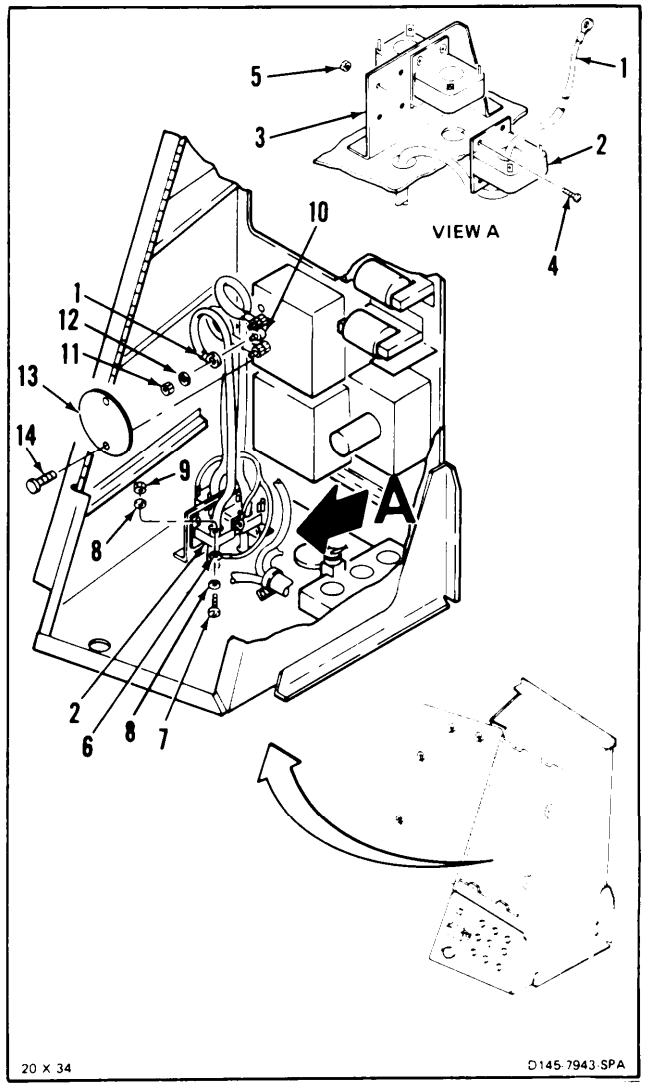
WARNING

Current transformer must be installed with terminals facing contactor (up). If installed in reverse, overcurrent protection system will not clear a ground fault and a fire will result.

NOTE

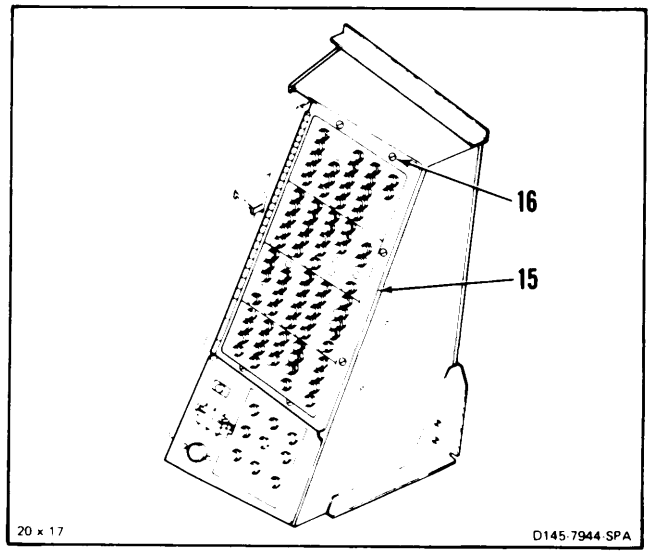
Procedure is same for installation of three apu current transformers. installation of one transformer is shown here.

1. Feed wire (1) through transformer (2). **Position transformer on bracket (3). Install four screws (4)** and nuts (5).
2. Remove tape and **connect two wires (6)** to transformers (2) by installing two screws (7), four washers (8), and two nuts (9). Remove tags.
3. Route wire (1) to terminal (10).
4. Remove tape. **Connect wire (1)** to terminal (10) and install nut (11) and washer (12). Install terminal cover (13) and two screws (14).



5. Close pdp door (15). Tighten six fasteners (16).

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check of generator (TM 55-1520-240-T).

END OF TASK

9-45 REMOVE INSTRUMENT TRANSFORMER

INITIAL SETUP

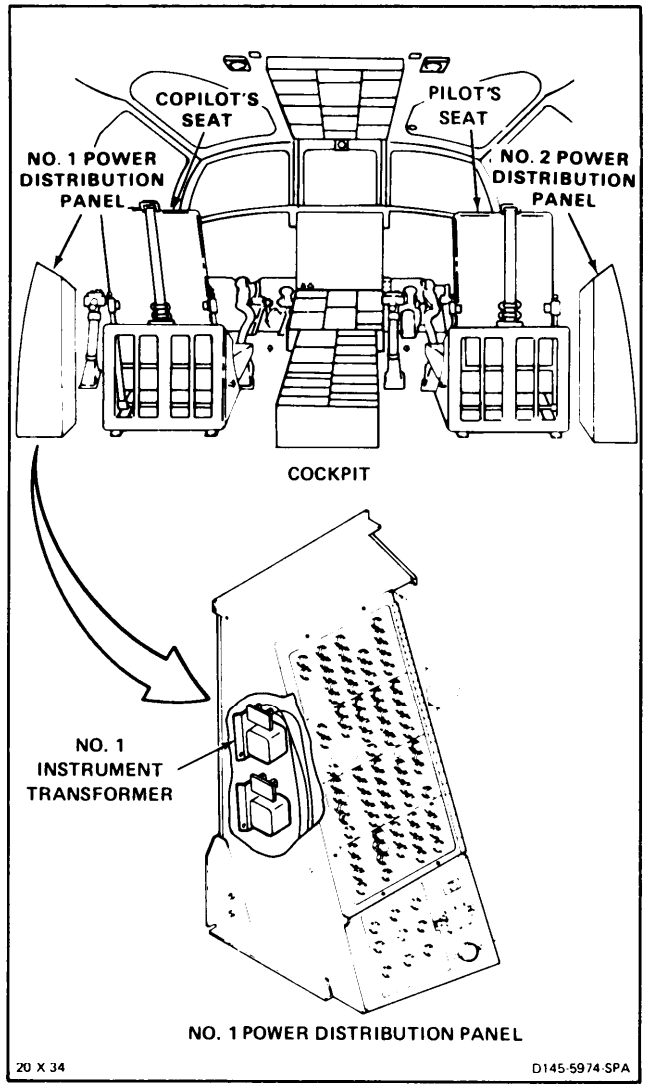
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

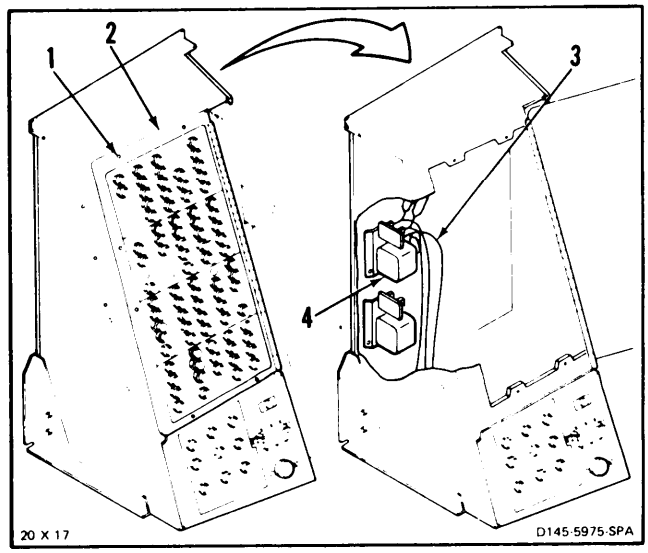
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is same to remove No. 1 or No. 2 instrument transformer. Removal of No. 1 instrument transformer is shown here.

1. Release six fasteners (1) in upper circuit breaker panel (2). **Open panel.**
2. Tag three wires (3) on No. 1 instrument transformer (4).



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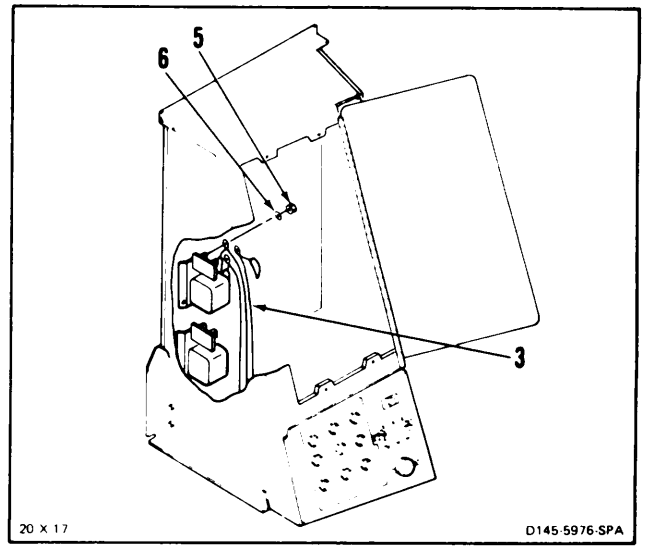
9-45 REMOVE INSTRUMENT TRANSFORMER (Continued) 9-45



3. Remove three nuts (5) and Iockwashers (6). **Disconnect three wires (3).**
4. Tape ends of wires 3). Use tape (E385).

5. **Remove** three screws (7), washers (8), and **transformer (4).**

FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-46 INSTALL INSTRUMENT TRANSFORMER

INITIAL SETUP

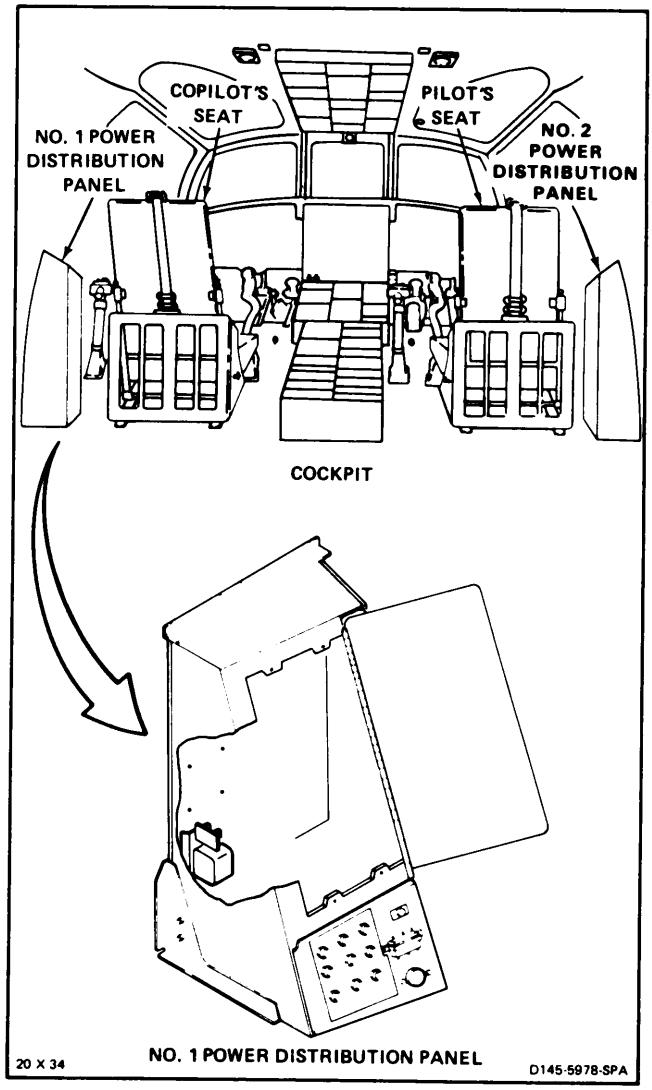
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

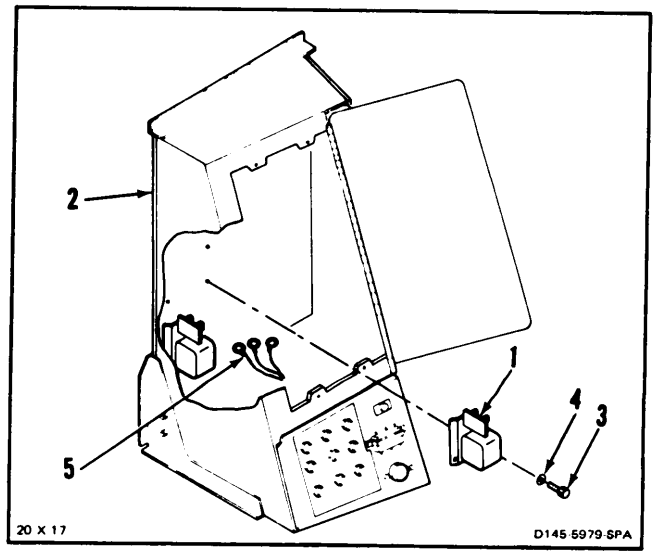
References:
TM 55-1520-240-23P



NOTE

Procedure is same to install No. 1 or No. 2 instrument transformer. installation of No. 1 instrument transformer is shown here.

1. **Position No. 1 instrument transformer (1)** in power distribution panel (2).
2. **Install three screws (3)** and washers (4).
3. Remove tape from ends of three wires (5).



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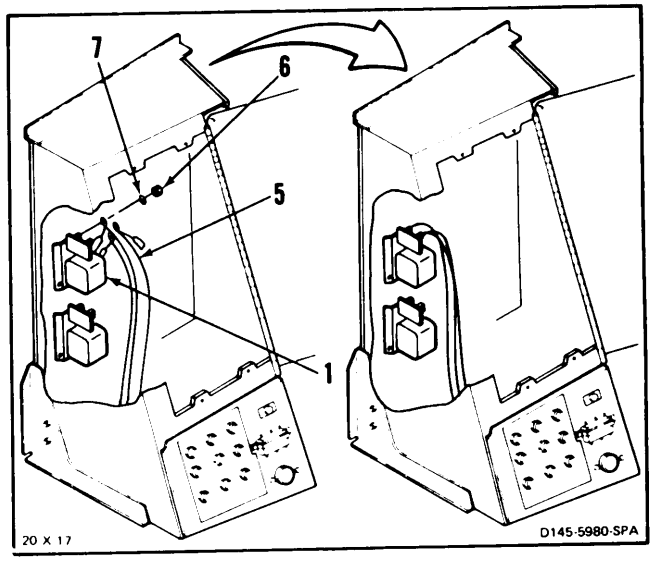
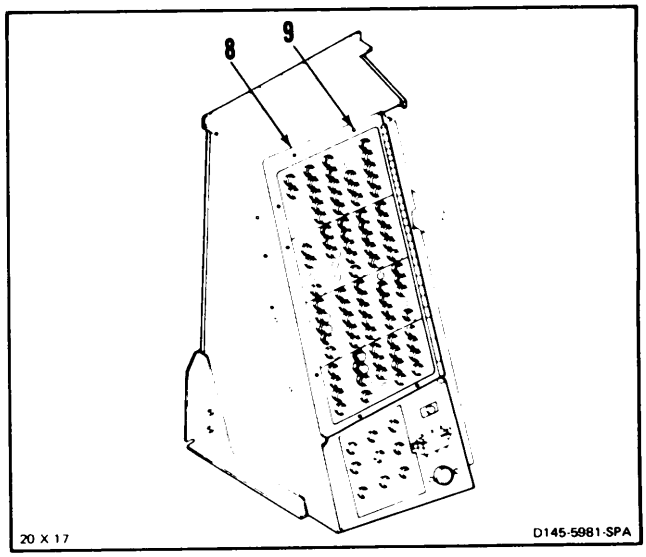
9-46 INSTALL INSTRUMENT TRANSFORMER (Continued

4. **Connect three wires (5)** to transformer (1) Install three nuts (6) and Iockwashers (7). Remove tags.

INSPECT



5. **Close circuit breaker panel (8).** Tighten six fasteners (9).



FOLLOW-ON MAINTENANCE:

For No. 1 instrument transformer, perform operational check of No. 1 engine oil pressure indicating system (TM 55-1520-240-T).

For No. 2 instrument transformer, perform operational check of No. 2 engine oil pressure indicating system (TM 55-1520-240-T).

END OF TEXT

9-46.1 REMOVE NOSE COMPARTMENT TRANSFORMERS

INITIAL SETUP

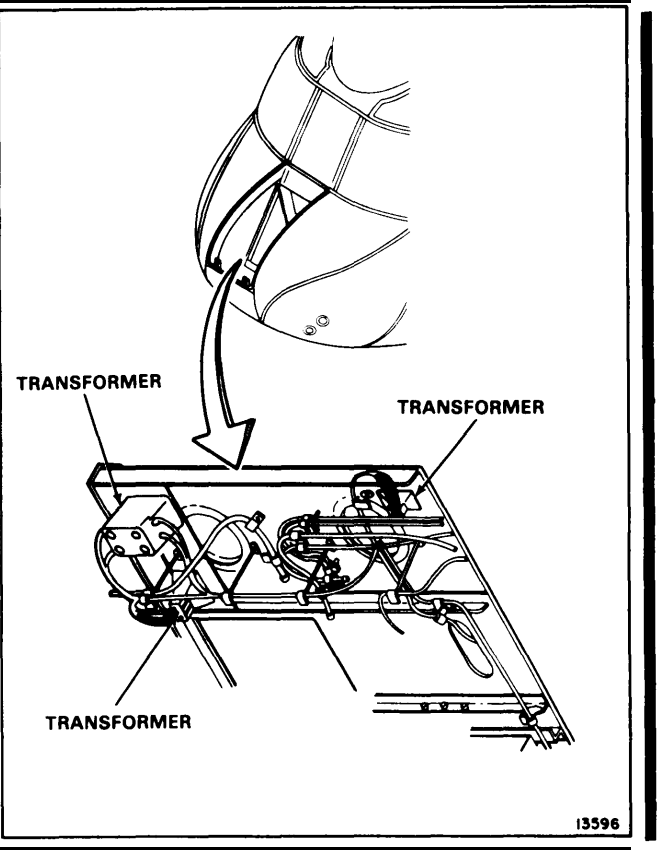
Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

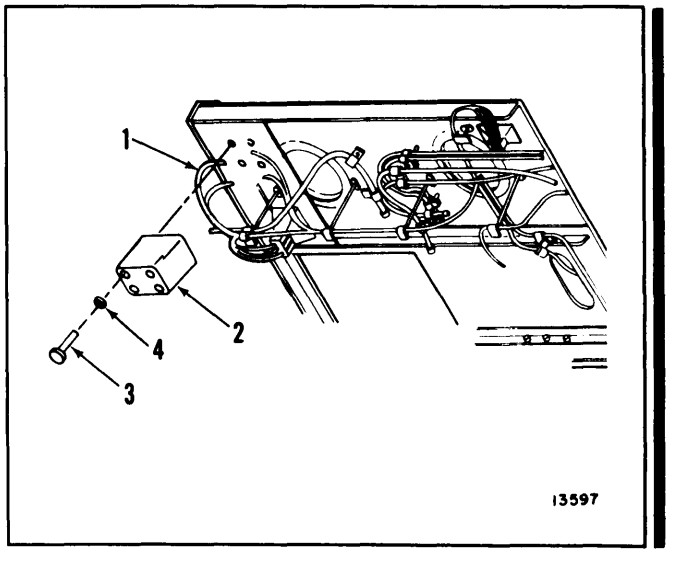
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Nose Dynamic Absorber Removed (Task 2-139)



NOTE

Procedures are same for removing all three transformers. Only one is shown being removed here.

1. Tag and **remove wires (1) from transformer (2).**
2. Tape wire ends. Use tape (E385).
3. **Remove four screws (3) and washers (4).**
4. **Remove transformer (2).**



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-46.2 INSTALL NOSE COMPARTMENT TRANSFORMERS 9-46.2

INITIAL SETUP

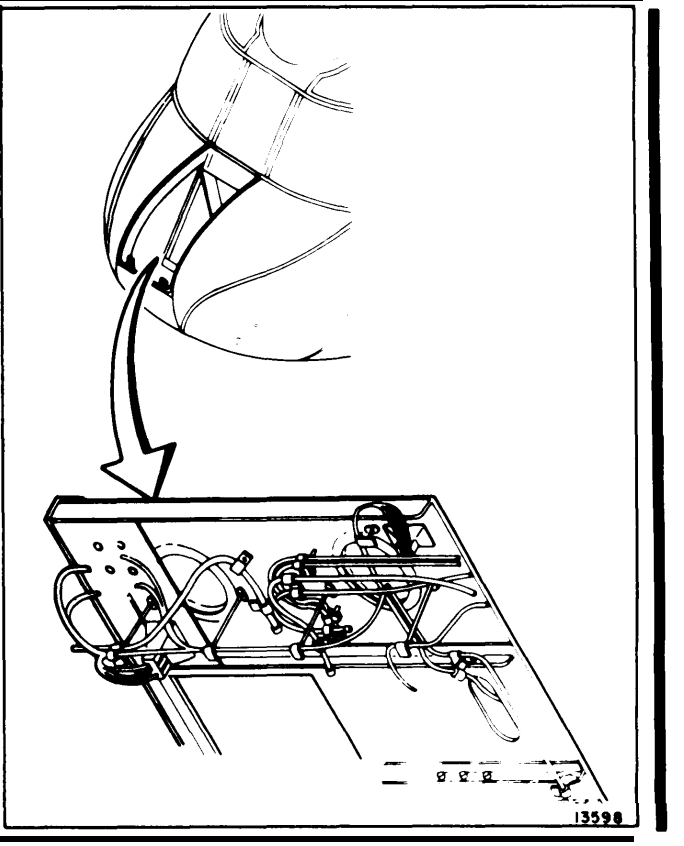
Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician

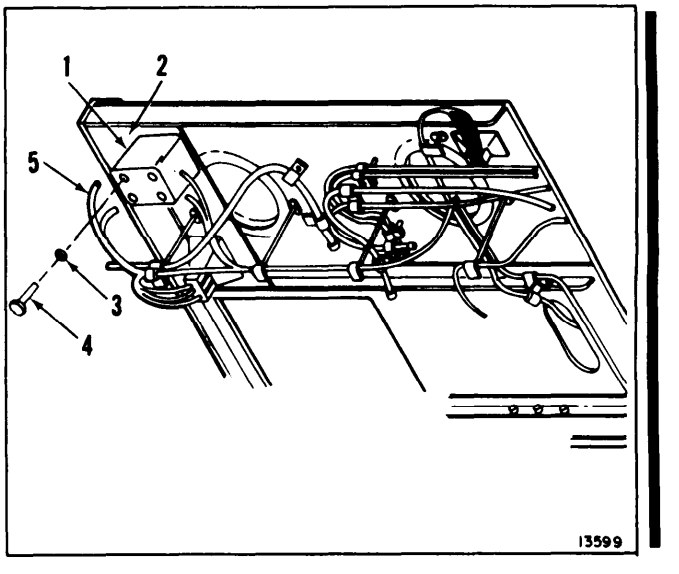
References:
TM 55-1520-240-23P



NOTE

Procedures are the same for installing all three transformers. Only one is shown being installed here.

1. **Position transformer (1) on support (2).**
2. **Install four washers (3) and screws (4).**
3. Remove tape from wire ends.
4. **Connect wires (5) to transformer (1)** and remove tags.



FOLLOW-ON MAINTENANCE:

Install nose dynamic absorber (Task 2-143)

END OF TASK

9-47 REMOVE AC POWER RECEPTACLE

INITIAL SETUP

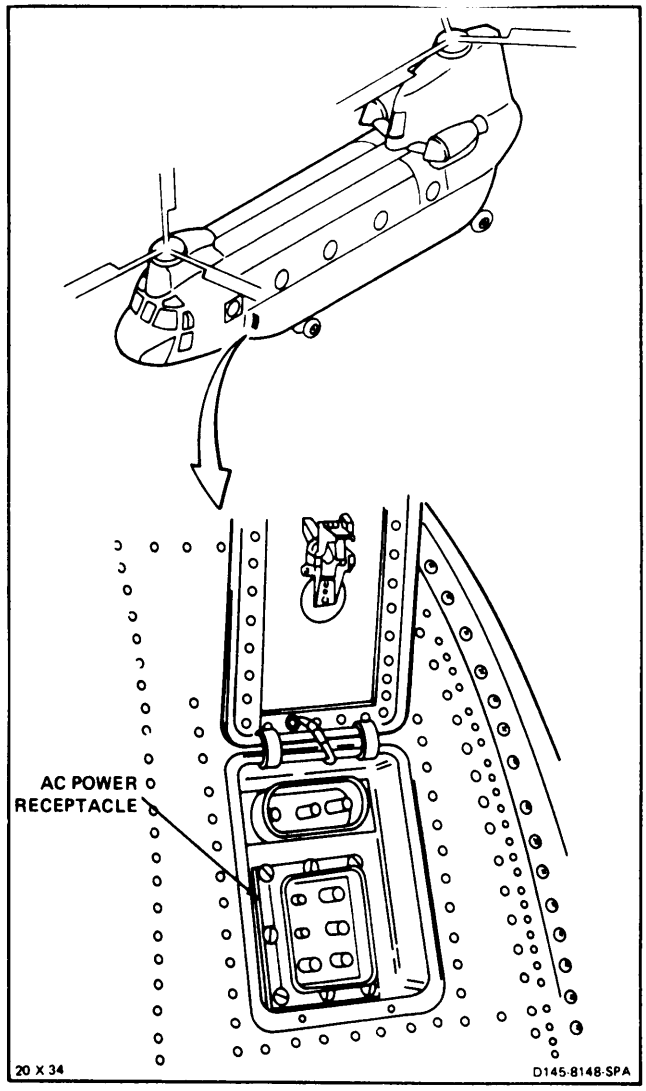
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

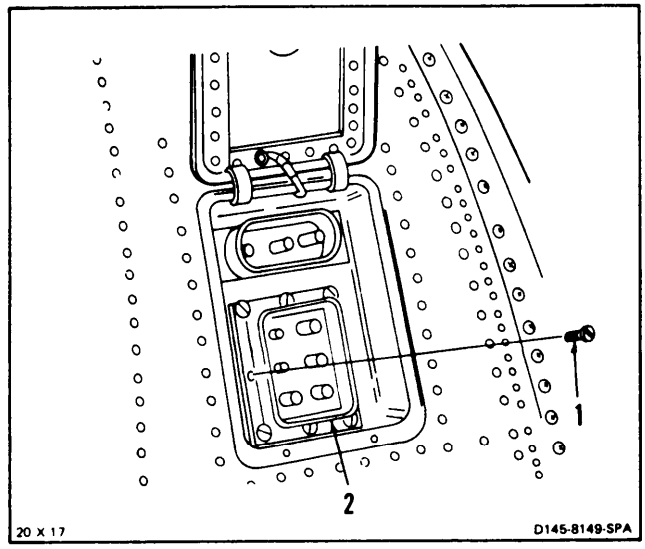
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
EXT PWR DC-AC Access Cover Open (Task 2-2)



1. Cut sealant away from eight screws (1) of ac receptacle (2).
2. **Remove eight screws (1)** from receptacle (2).



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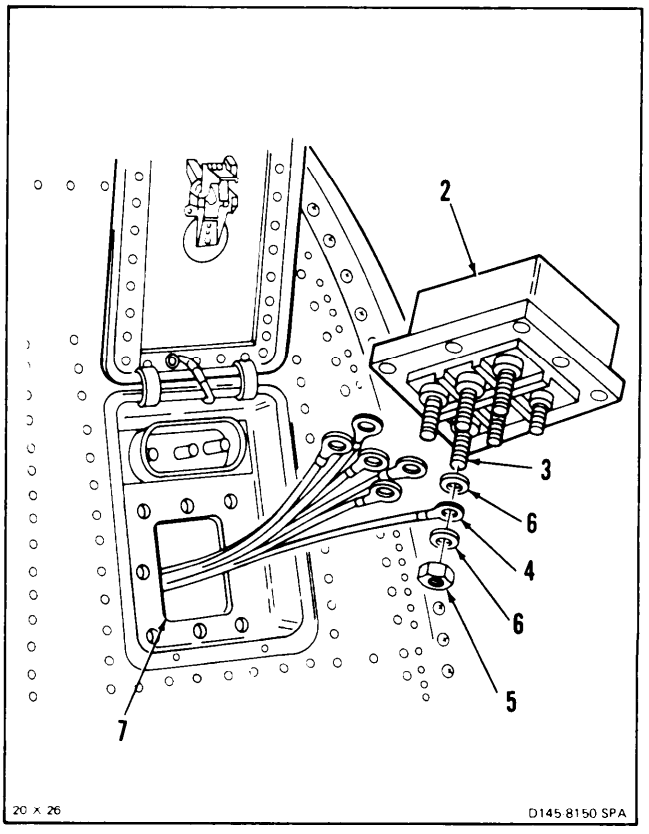
9-47 REMOVE AC POWER RECEPTACLE (Continued) 9-47

3. **Pull receptacle (2) outboard** for access to terminals (3).
4. Tag six wires (4). **Remove six nuts (5)** and washers (6) from terminals (3). Use tags (E264).
5. **Disconnect six wires (4)** from terminals (3). Remove receptacle (2).
6. Install washers (6) and nuts (5) loosely on terminals (3).
7. Tape ends of six wires (4). Use tape (E385).
8. Scrape sealant from around receptacle (2) and hole (7).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-48 INSTALL AC POWER RECEPTACLE

INITIAL SETUP

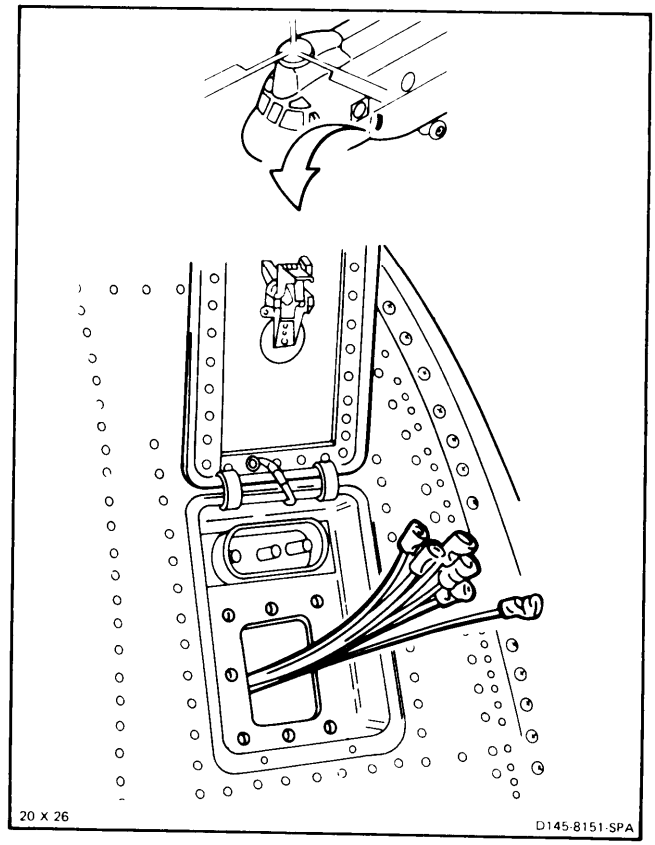
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Acetone (E20)
Sealant (E336)
Cloths (E120)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Use in well-ventilated area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean surfaces around hole (1) of box (2) and receptacle (3). Use acetone (E20) and cloths (E120). Wear gloves (E186).
2. Remove six nuts (4), washers (5) and washers (6) from terminals (7),
3. Remove tape from ends of six wires (8). **Connect wires** to terminals (7) of receptacle (3). **Install** six washers (6), washers (5) and **nuts (4)** on terminals. Remove tags from wires.

INSPECT

4. **Position receptacle (3),** two small terminals (7) up and forward, in hole (1) of box (2).

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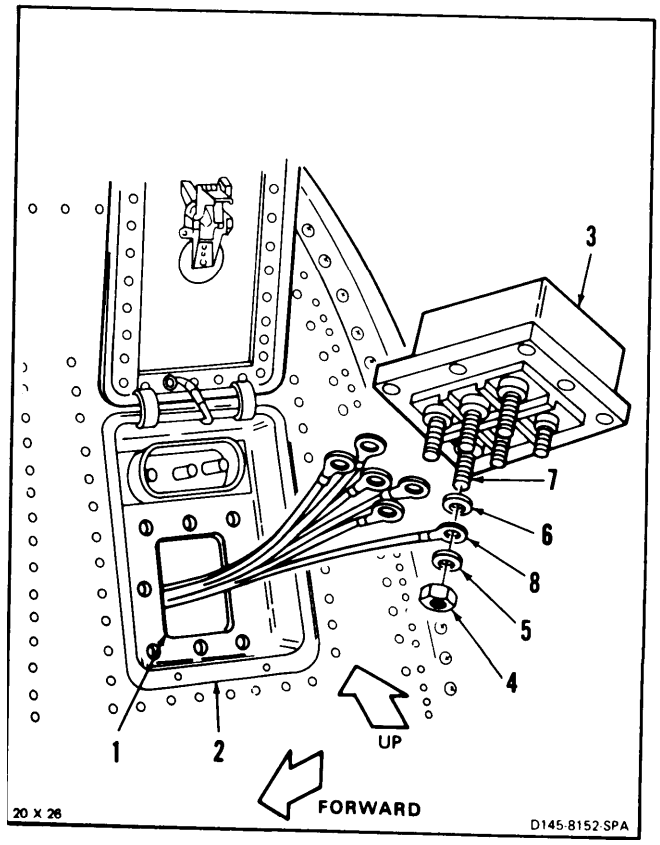
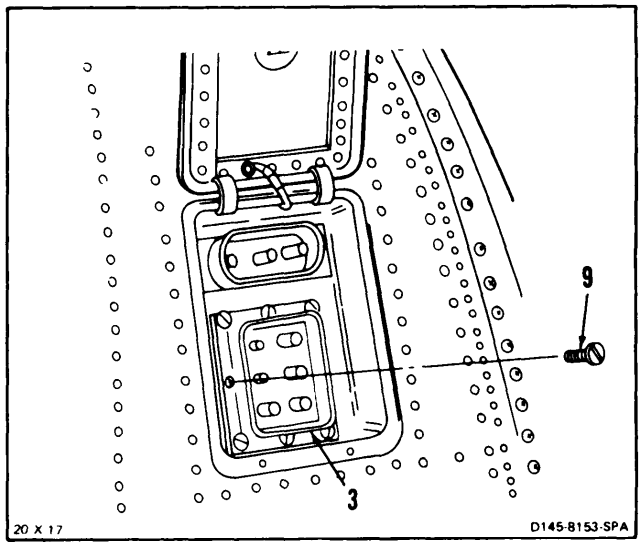




5. **Install eight screws (9)** in receptacle (3).

WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

6. **Apply sealant to eight screws (9)** and edge of receptacle (3). Use sealant (E336). Wear gloves (El 86).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Close EXT PWR DC-AC access cover (Task 2-2).

END OF TASK

9-49 REMOVE NO. 2 GENERATOR CONTACTOR

INITIAL SETUP

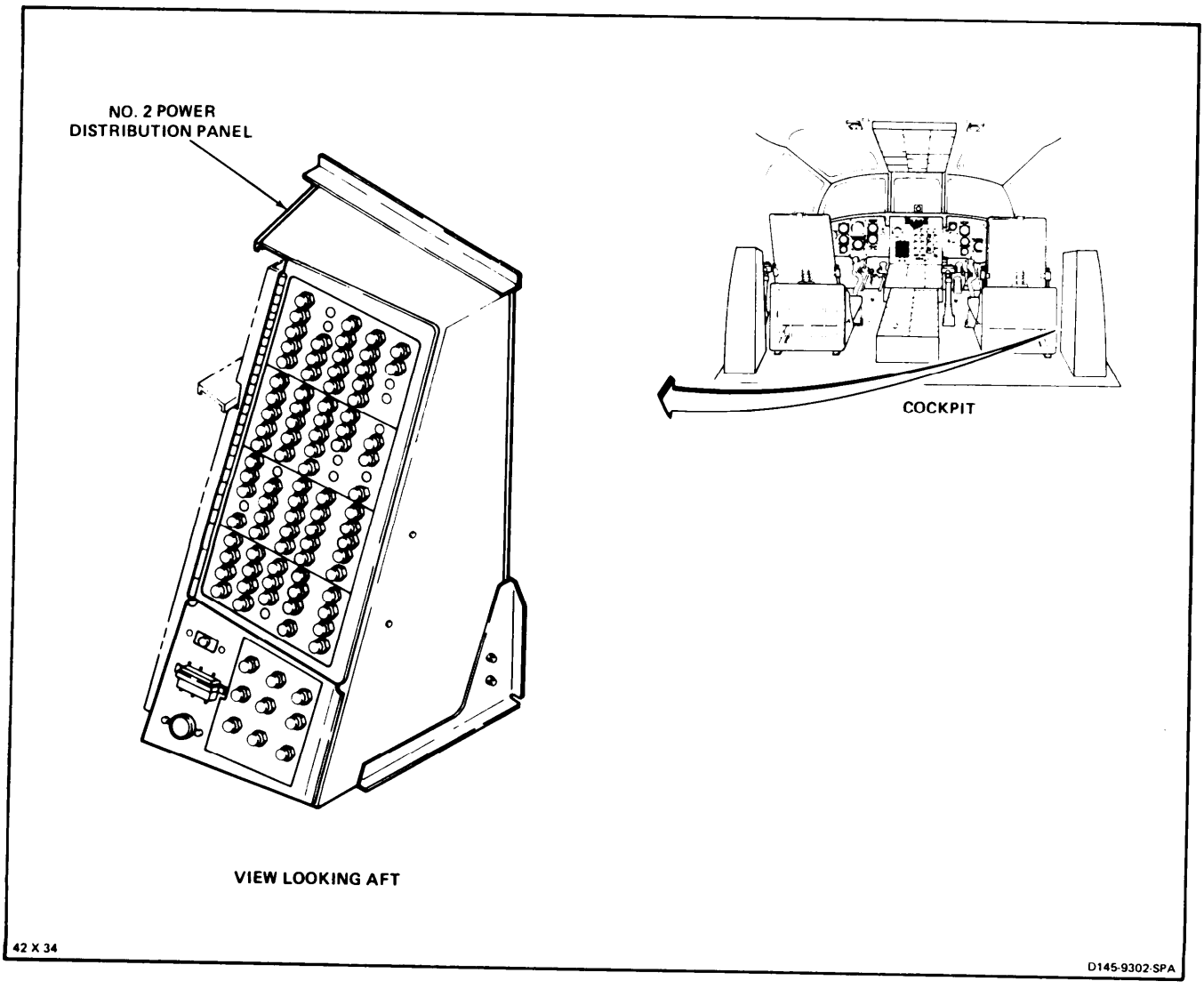
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



GO TO NEXT PAGE

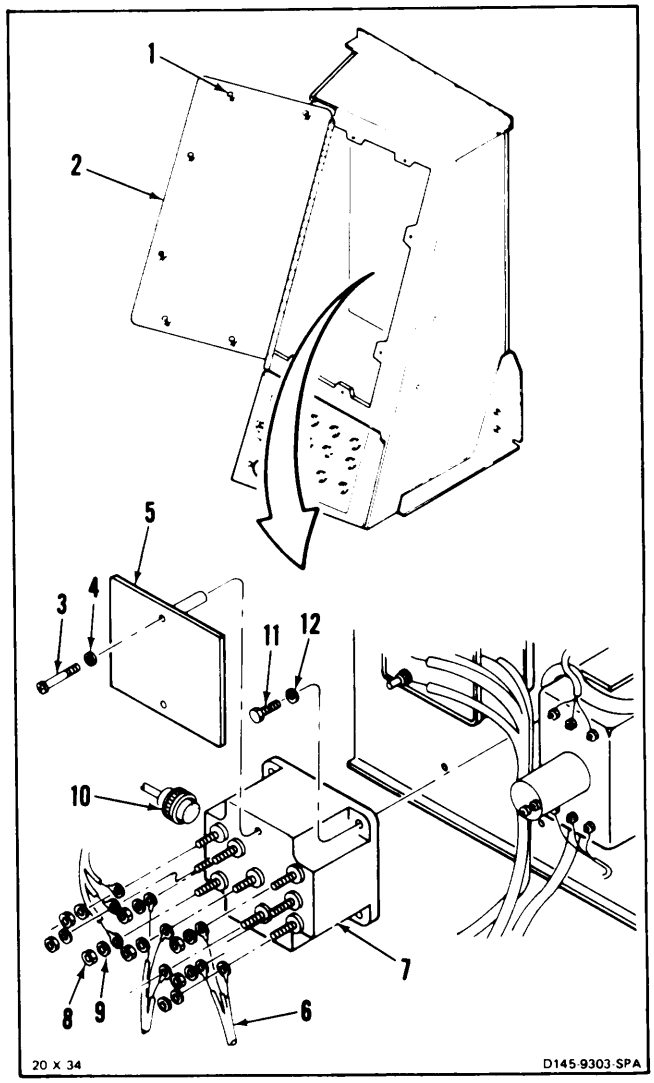
9-49 REMOVE NO. 2 GENERATOR CONTACTOR (Continued)

NOTE

Procedure is same for removal of generator contactor from No. 1 or No. 2 power distribution panel. Removal of generator contactor from No. 2 power distribution panel is shown here.

1. **Loosen six fasteners (1)** and **open** power distribution panel door (2).
2. **Remove two screws (3)** and washers (4). Remove contactor cover (5).
3. **Tag and disconnect nine wires (6)** from contactor (7) by removing nine nuts (8) and washers (9). Tape ends. Use tape (E385)
4. **Disconnect electrical connector (10).**
5. Remove four bolts (11) and washers (12). **Remove contactor (7).**

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-50 INSTALL NO. 2 GENERATOR CONTACTOR

INITIAL SETUP

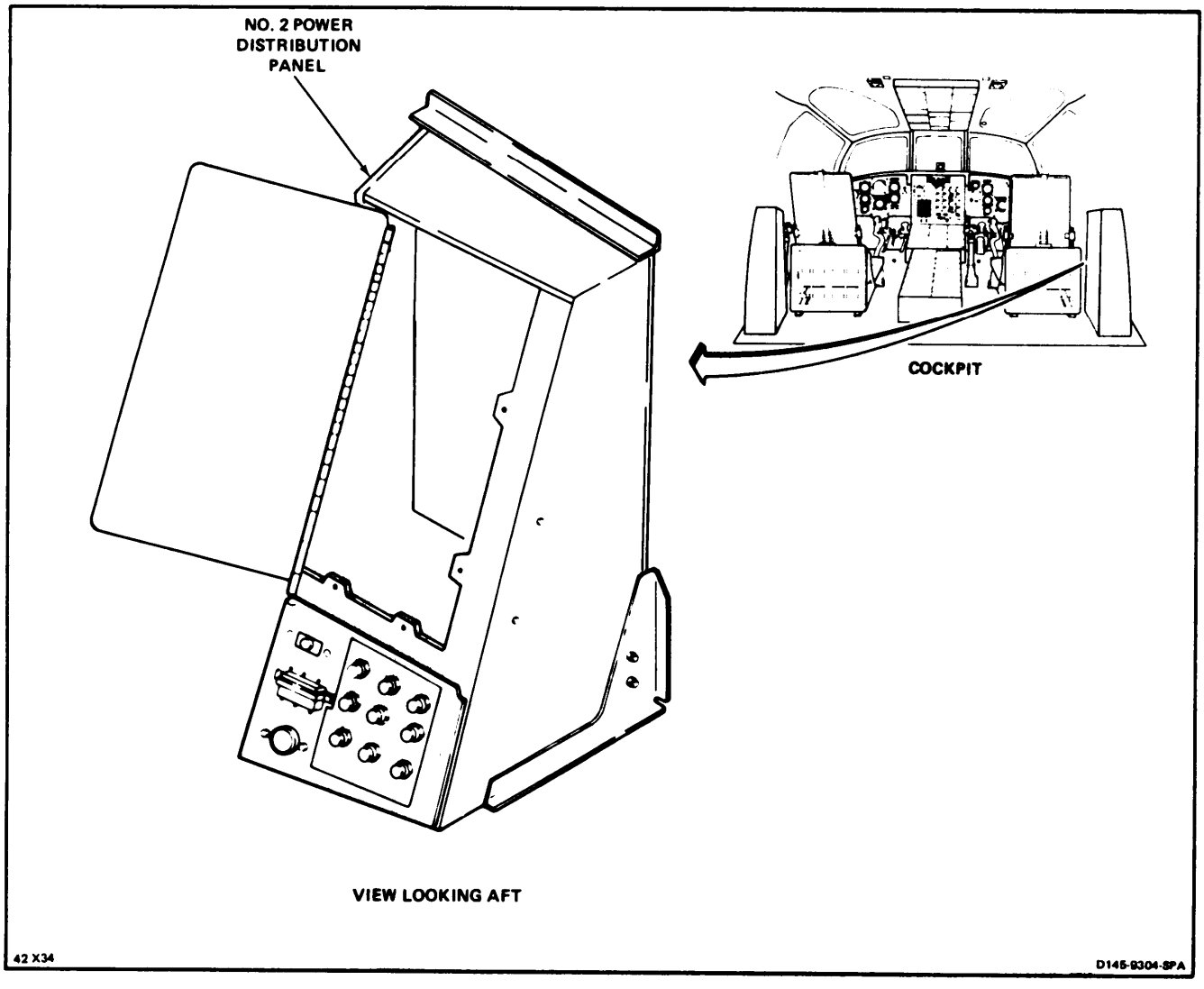
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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9-50 INSTALL NO. 2 GENERATOR CONTACTOR (Continued) 9-50

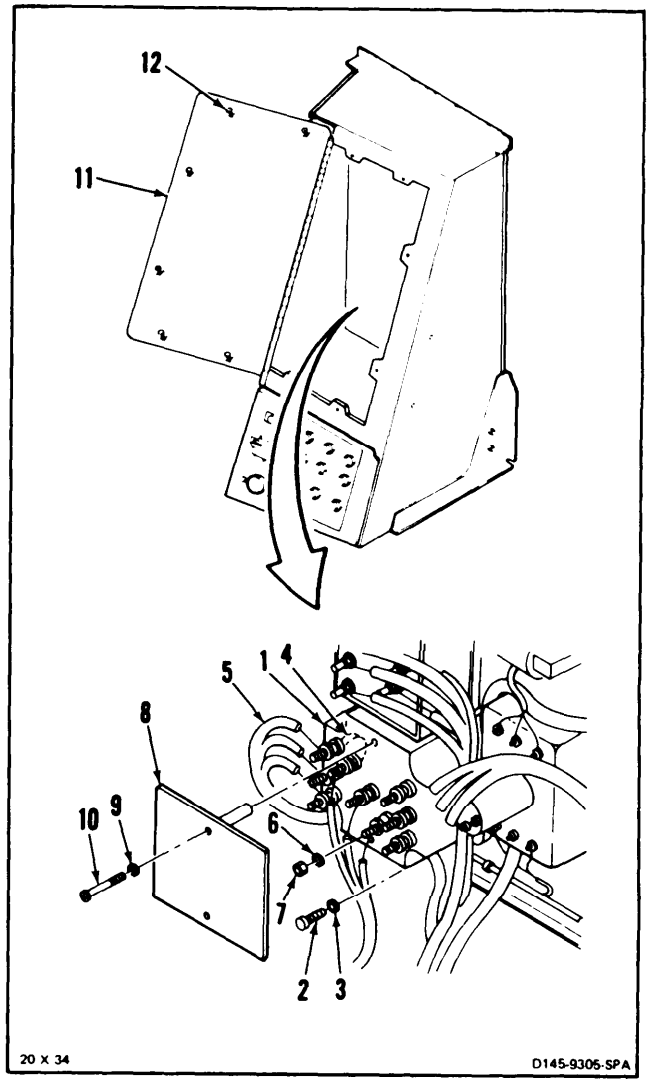
NOTE

Procedure is same for installation of generator contact in No. 1 or No. *2* power distribution panel. Installation of contactor in No. 2 power distribution panel is shown here.

1. **Position generator contactor (1).** Install four bolts (2) and washers (3).
2. **Connect** electrical **connector (4).**
3. Remove tape and **connect wires (5)** by installing washers (6) and nuts (7). Remove tags.
4. **Position contactor cover (8). Install two washers (9) and screws (10).**
5. **Close panel (11).** Tighten six fasteners (12).

FOLLOW-ON MAINTENANCE:

Perform operational check of generators (TM 55-1520-240-T).



END OF TASK

9-51 REMOVE APU GENERATOR CONTACTOR 9-51

INITIAL SETUP

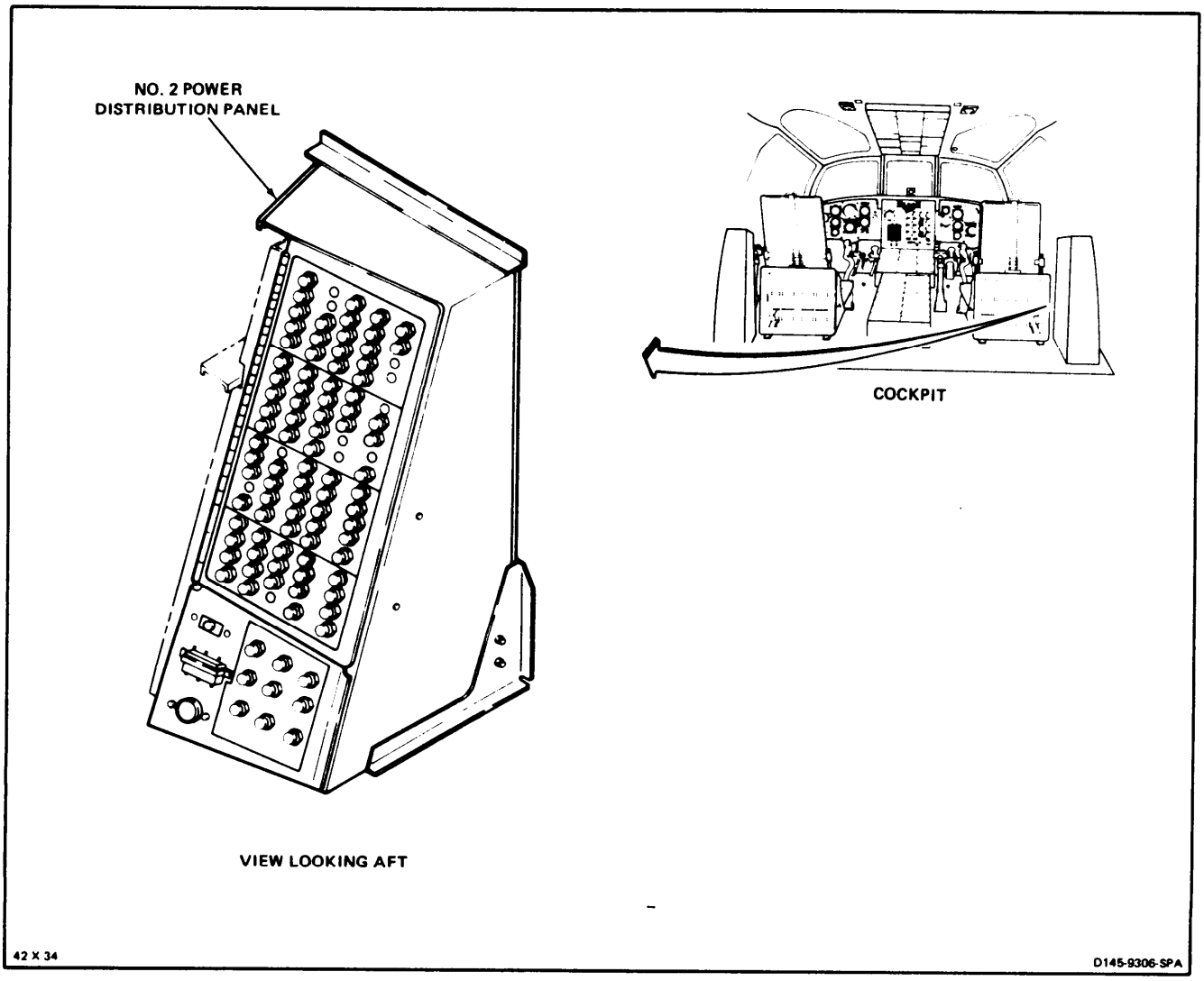
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



GO TO NEXT PAGE

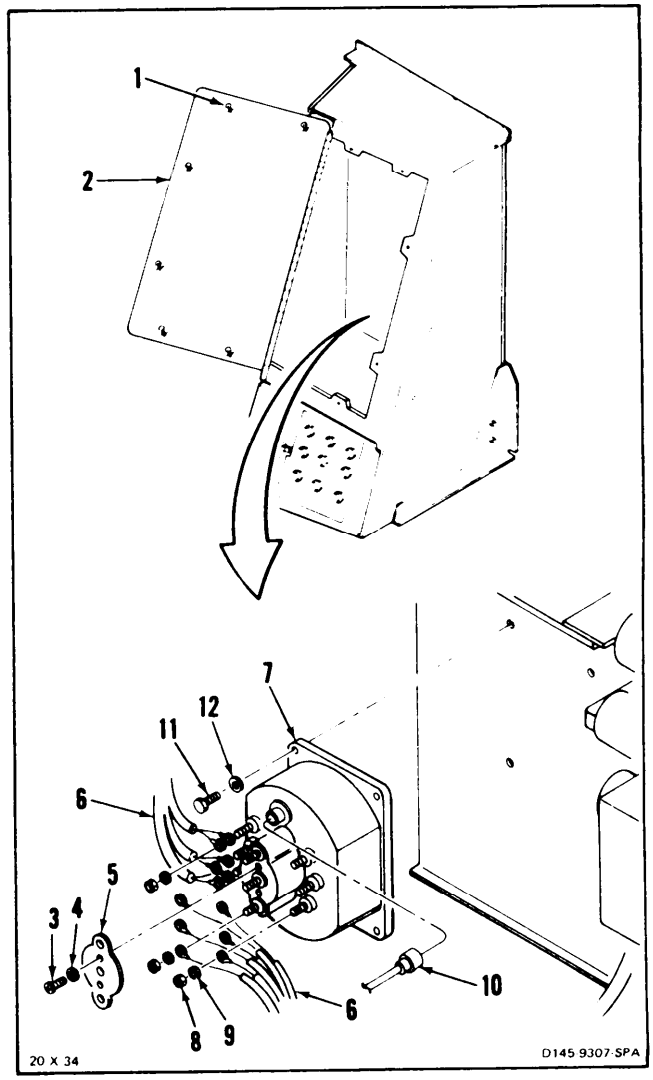
9-51 REMOVE APU GENERATOR CONTACTOR (Continued)

NOTE

Procedure is same for removal of APU Generator Contactor from No. 1 or No. 2 power distribution panel. Removal of APU Generator Contactor from No. 2 power distribution panel is shown here.

1. **Loosen six fasteners (1)** and **open** power distribution panel door (2).
2. Remove two screws (3) and washers (4) Remove contactor cover (5).
3. Tag and **disconnect 12 wires (6)** from contactor (7) by removing 9 nuts (8) and washers (9). Tape ends. Use tape (E385)
4. **Disconnect electrical connector (10).**
5. **Remove four bolts (11)** and washers (12) **Remove contactor (7).**

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-52 INSTALL APU GENERATOR CONTACTOR 9-52

INITIAL SETUP

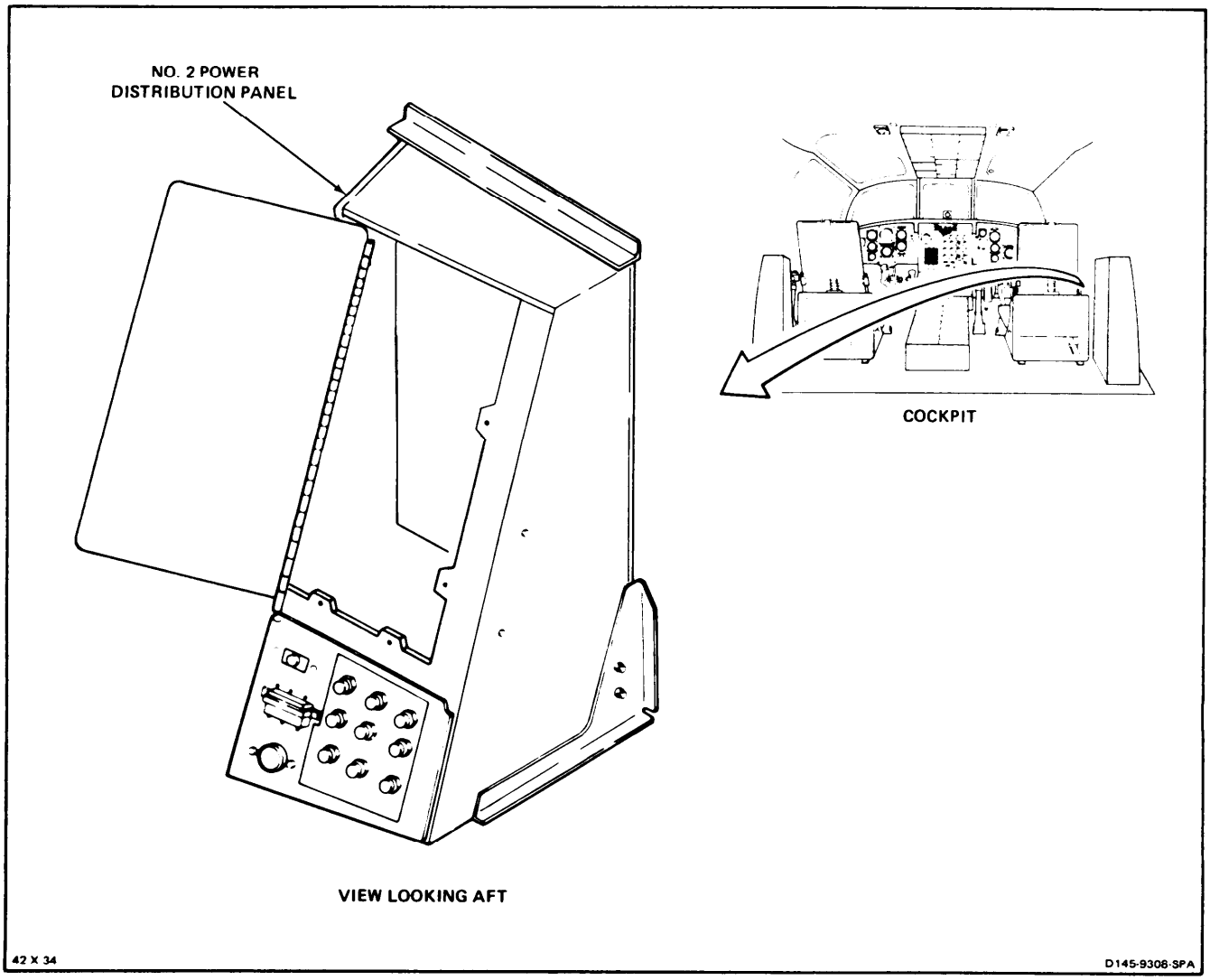
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Aircraft Inspector

References:
TM 55-1520-240-23P



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9-52 INSTALL APU GENERATOR CONTACTOR (Continued)

NOTE

Procedure is same for installation of APU Generator Contactor in No. 1 or No. 2 power distribution panel. Installation of contactor in No. 2 power distribution panel is shown here.

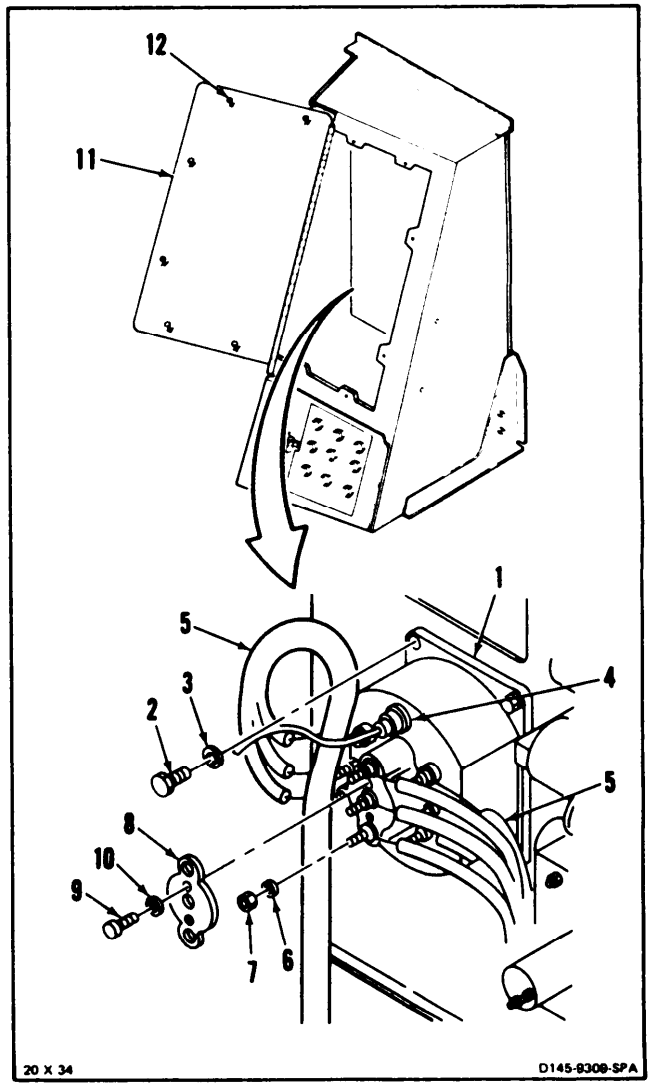
1. **Position generator contactor (1).** nstall four bolts (2) and washers (3).
2. **Connect** electrical **connector (4).**
3. Remove tape and **connect 12 wires (5)** by installing 9 washers (6) and nuts (7). Remove tags.
4. **Position contactor cover (8).** install two screws (9) and washers (10)

INSPECT

5. Close panel (11). Tighten six fasteners (12).

FOLLOW-ON MAINTENANCE:

Perform operational check of generators (TM 55-1520-240-T).



END OF TASK

9-52.1 REPLACE APU GENERATOR SLAVE RELAY 9-52.1

INITIAL SETUP

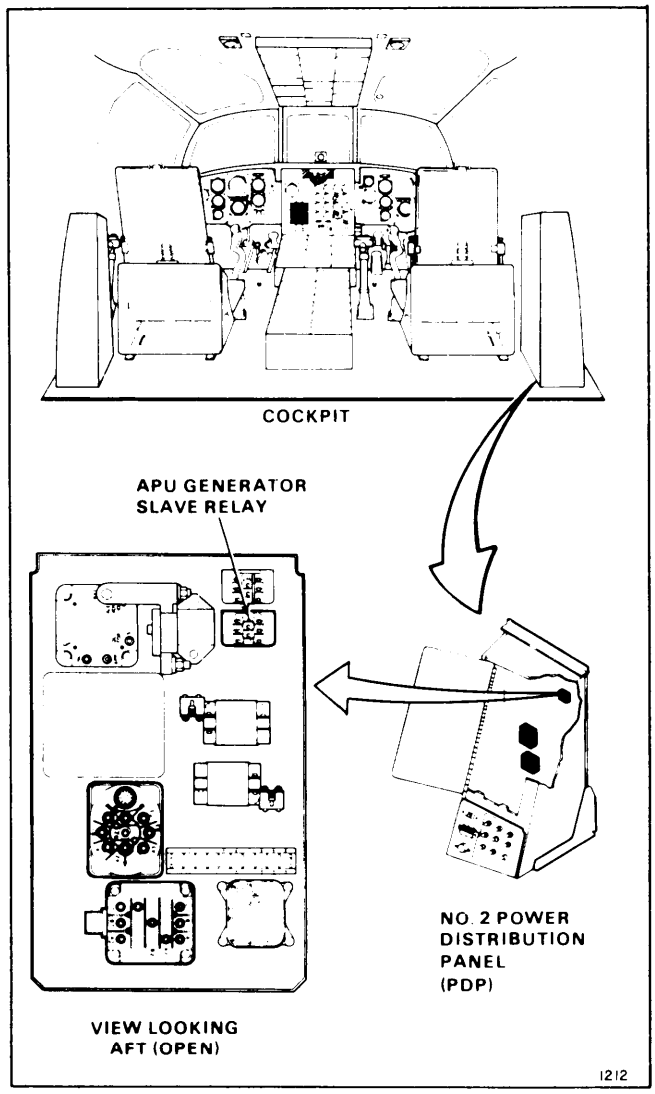
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician
Inspector

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



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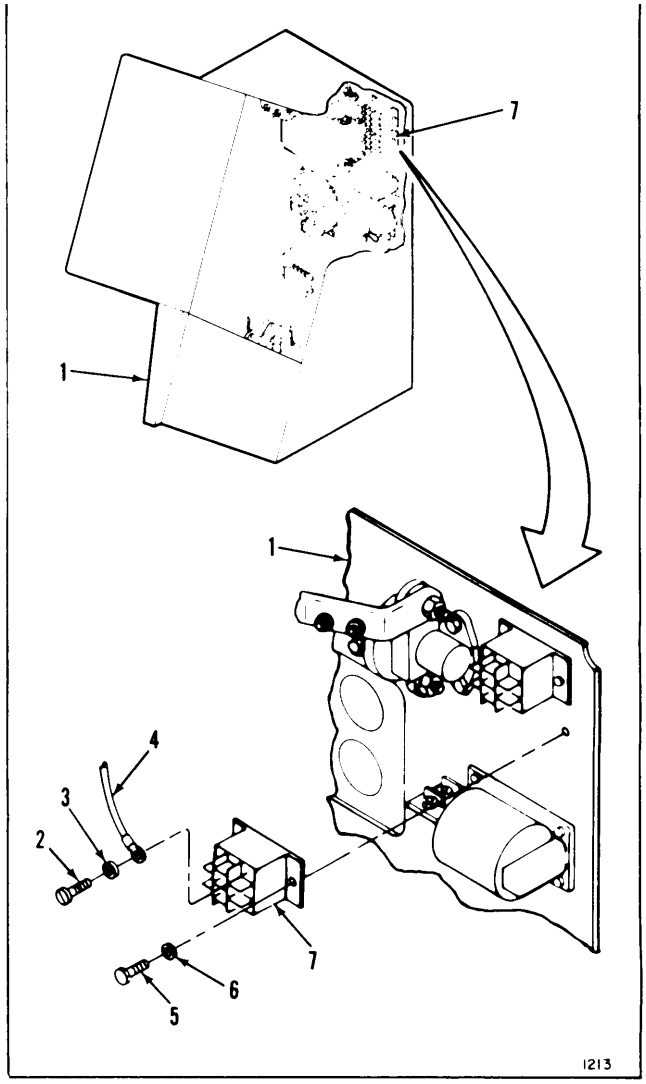
9-52.1 REPLACE APU GENERATOR SLAVE RELAY (Continued) 9-52.1

1. Open No. 2 power distribution panel (pdp) (1).
2. Remove eight screws (2) and washers (3). Tag and **remove eight wires (4).** Use tags (E264). Tape ends of wires. Use tape (E385).
3. Remove two screws (5) and washers (6). **Remove generator slave relay (7).**



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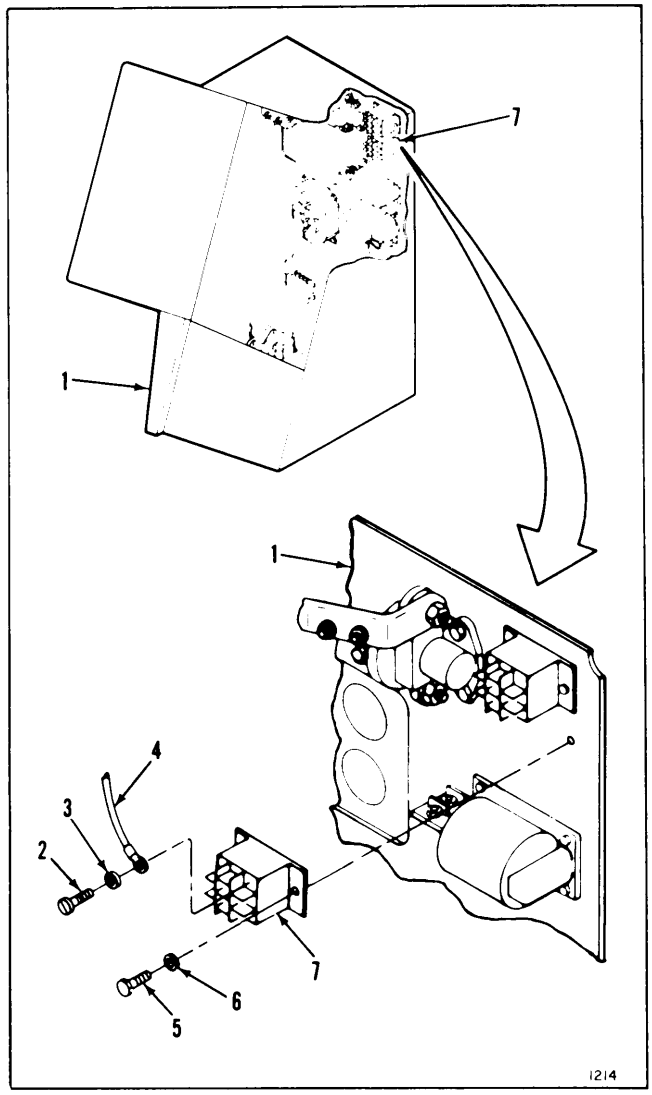
9-52.1 REPLACE APU GENERATOR SLAVE RELAY (Continued) 9-52.1

4. **Position relay (7)** on No. 2 pdp (1). **Install two screws (5)** and washers (6).
5. Remove tape from eight wires (4). **Position wires on relay (7). Install eight screws (2)** and washers (3). Remove tags.

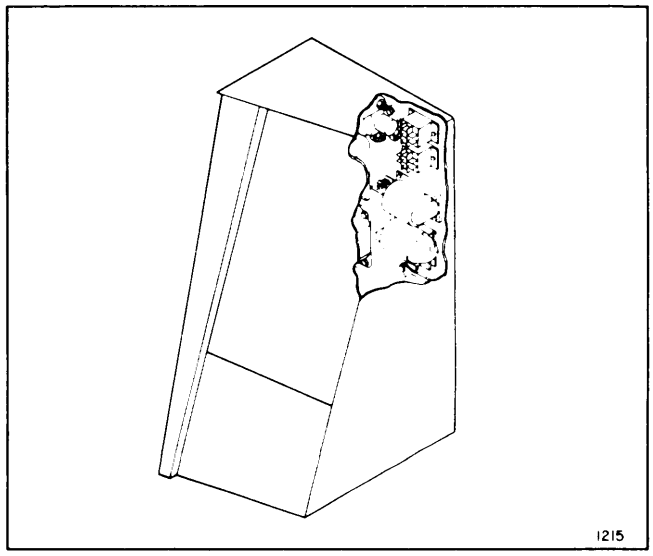
INSPECT

6. Close No. 2 pdp (1).



FOLLOW-ON MAINTENANCE:

Perform operational check of ac power system (TM 55-1520-240-T).



END OF TASK

9-53 REMOVE HEATER FAN RELAY 9-53

INITIAL SETUP

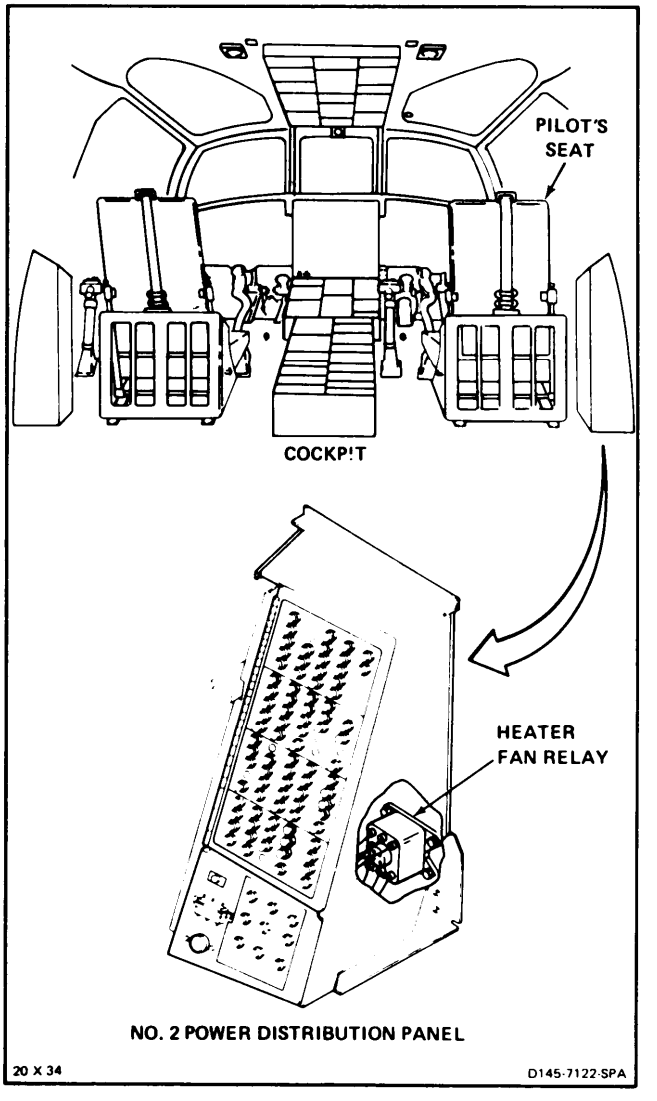
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

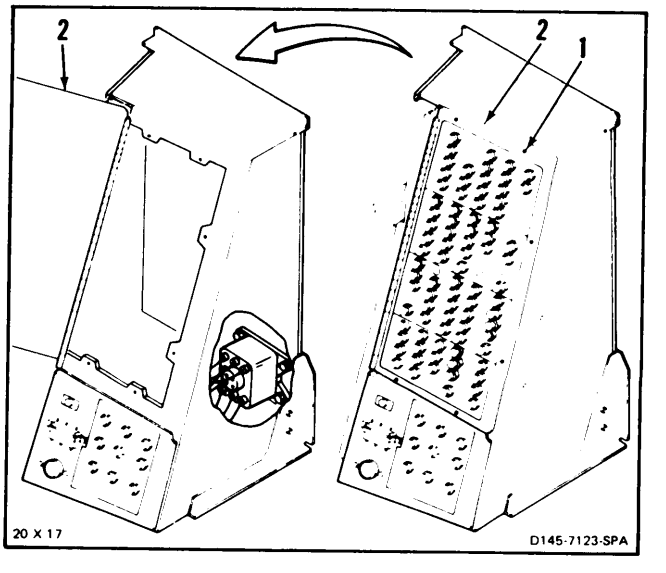
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



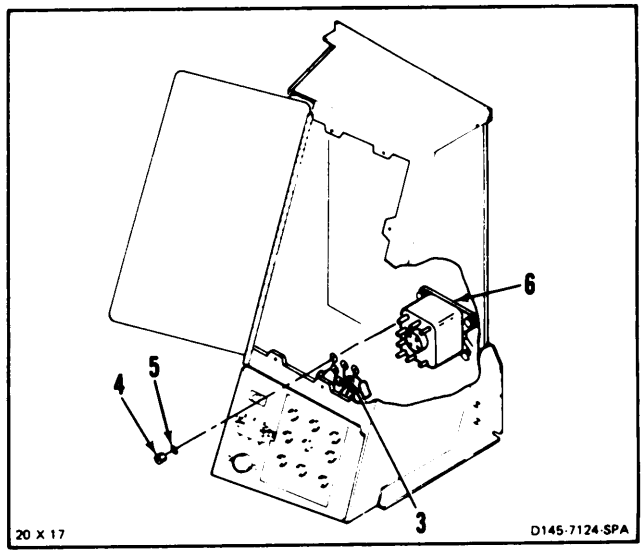
1. Release six fasteners (1) in upper circuit breaker panel (2). Open circuit breaker panel.



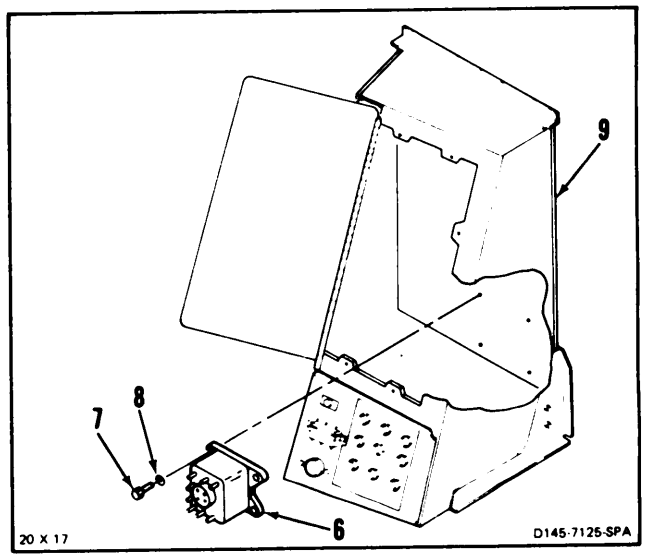
GO TO NEXT PAGE

9-53 REMOVE HEATER FAN RELAY (Continued)

2. Tag eight wires (3). **Remove eight** nuts (4), washers (5) and **wires** from heater fan relay (6). Tape exposed ends of wires. Use tags (E264) and tape (E385).



3. **Remove** four bolts (7), washers (8), and **heater fan relay (6)** from No. 2 power distribution panel (9).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-54 INSTALL HEATER FAN RELAY 9-54

INITIAL SETUP

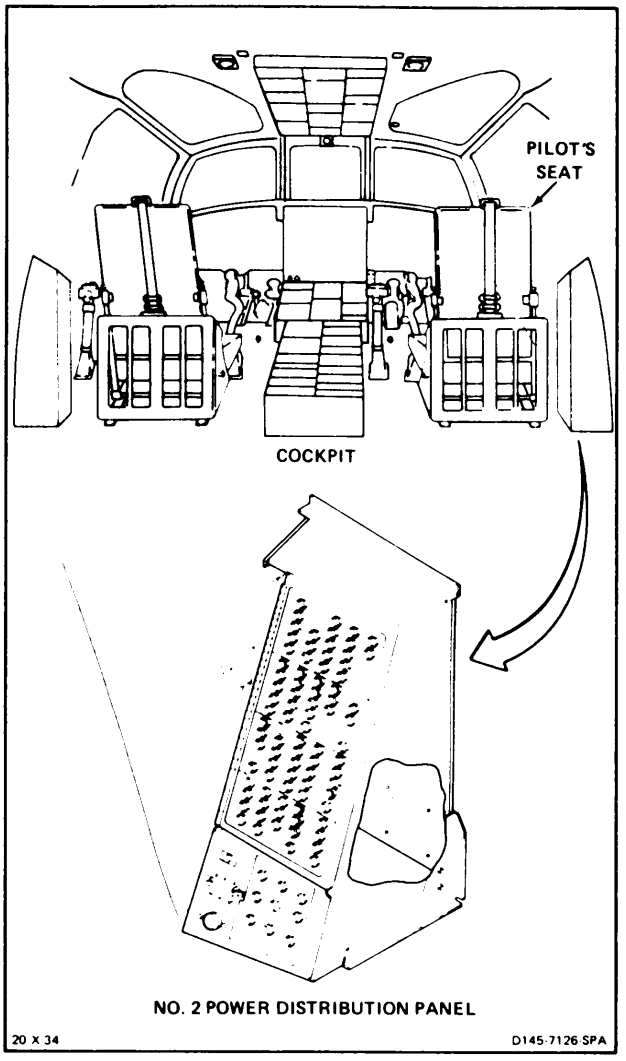
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials.
RTV 732, NSN 8040-00-877-9872 (E340)

Personnel Required:
Aircraft Electrical
Inspector

References:
TM 55-1520-240-23P



NOTE

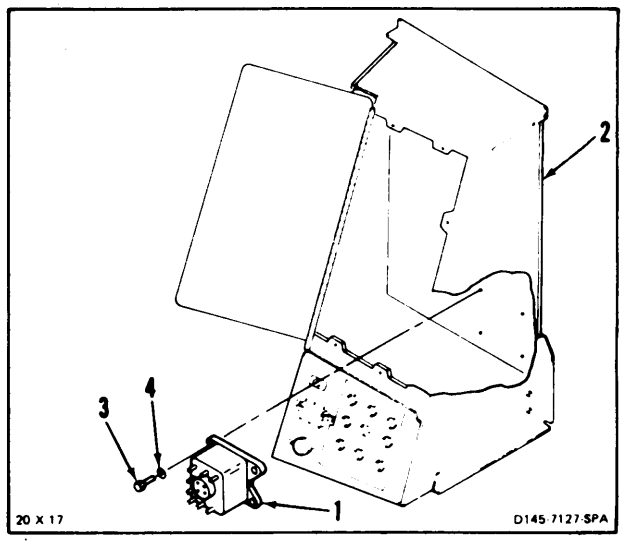
Before reinstalling heater fan relay, remove existing Diode Assy IN4005 from relay and reinstall on replacing heater fan relay. (Ref: MWO 55-1520-240-50-9).

INSTALLATION OF DIODE:

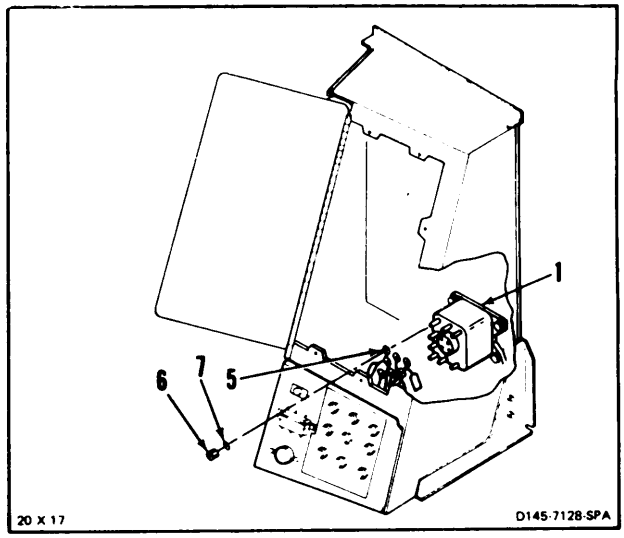
1. On Relay 082K1(1), remove attaching hardware from terminals X1 and X2, Connect the end of the Diode marked with band (Cathode) to terminal marked X1 and install attaching hardware. Connect opposite end of Diode to terminal marked X2 and install attaching hardware. Press Diode body down and in contact with relay case. Secure Diode to relay case using RTV silicone adhesive.

GO TO NEXT PAGE

2. **Position heater blower relay (1),** terminals A2, B2, and C2 facing up, in power distribution panel (2). **Install four bolts (3) and washers (4).**

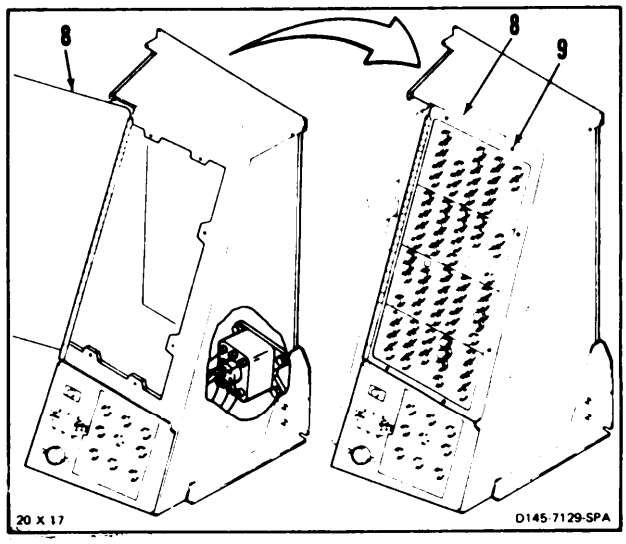


3. Remove tape from ends of wires (5). **Connect eight wires** to relay (1). Install eight nuts (6), and washers (7). Remove tags.



INSPECT

4. **Close upper circuit breaker panel (8).** Tighten six fasteners (9).



FOLLOW-ON MAINTENANCE:

Perform operational check of cabin heating system (TM 55-1520-240-T).

END OF TASK

*U.S.Government Printing Office:1996-552-046/40428

9-55 REMOVE AVIONICS COOLING FAN

INITIAL SETUP

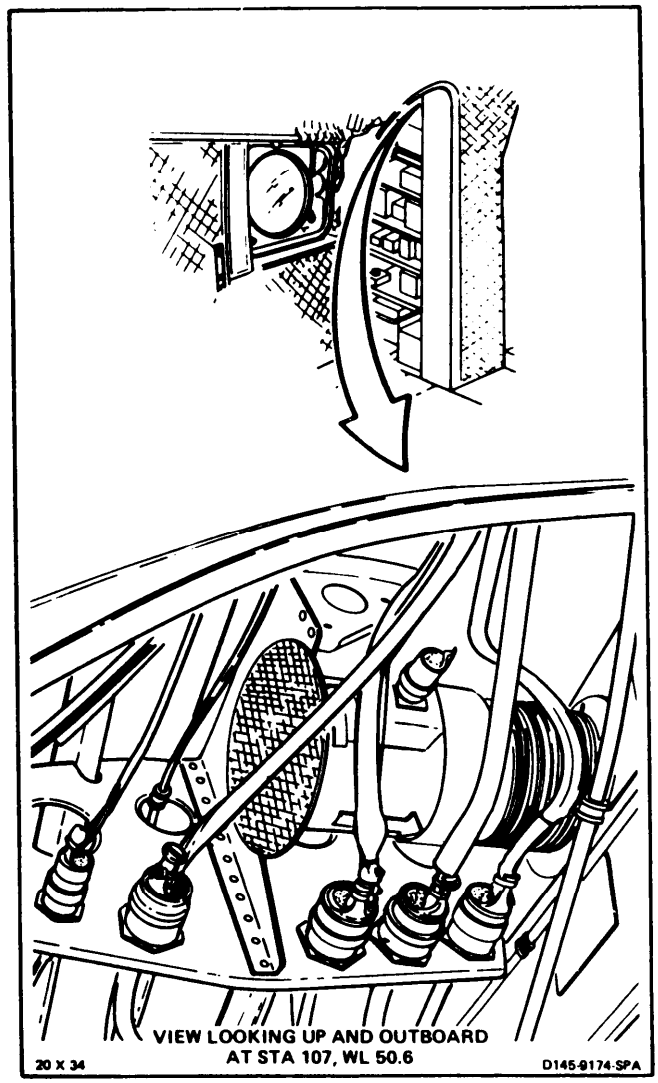
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

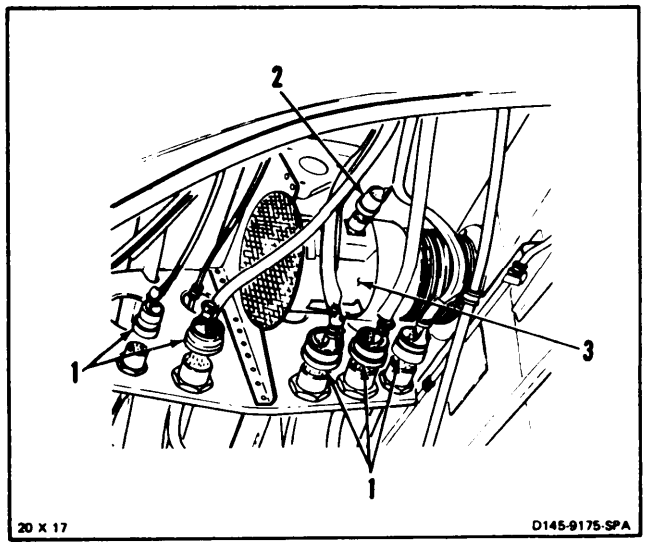
Materials:
Paper Tags (E264)

Personneld Required:
68F10 Aircraft Electrician

Equlpment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Avionics Compartment Acoustic Blanket Removed (Task 2-208)



1. Tag and **disconnect five connectors (1).**
2. Tag and **disconnect connector (2)** from cooling fan (3).



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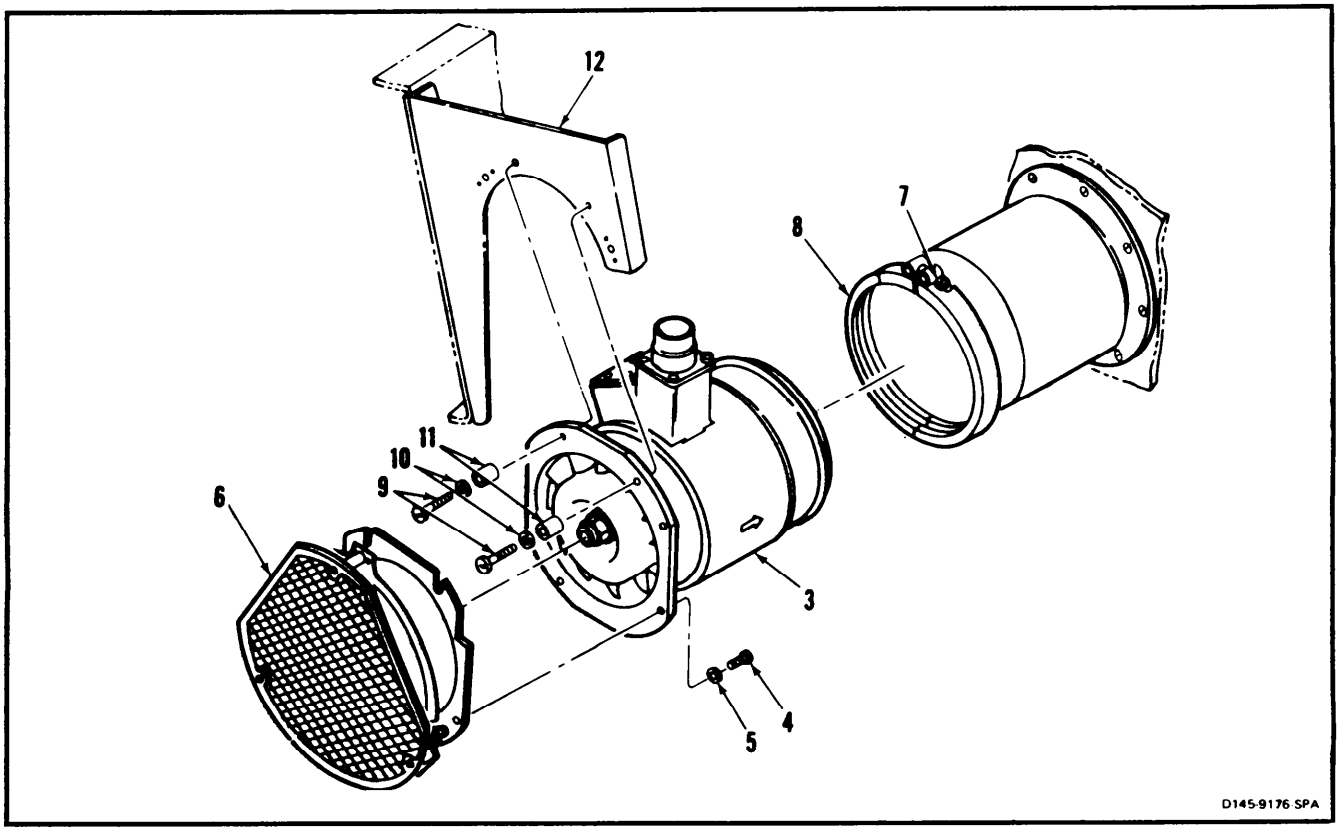
3. Remove six screws (4) and washers (5). **Remove bellmouth (6).**
4. Loosen nut (7) to open clamp (8).
5. **Remove four screws (9)** and washers (10), and two spacers (11).
6. **Remove fan (3)** from support bracket (12).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-59 INSTALL AVIONICS COOLING FAN

INITIAL SETUP

Applicable Configurations:

All

Tools:

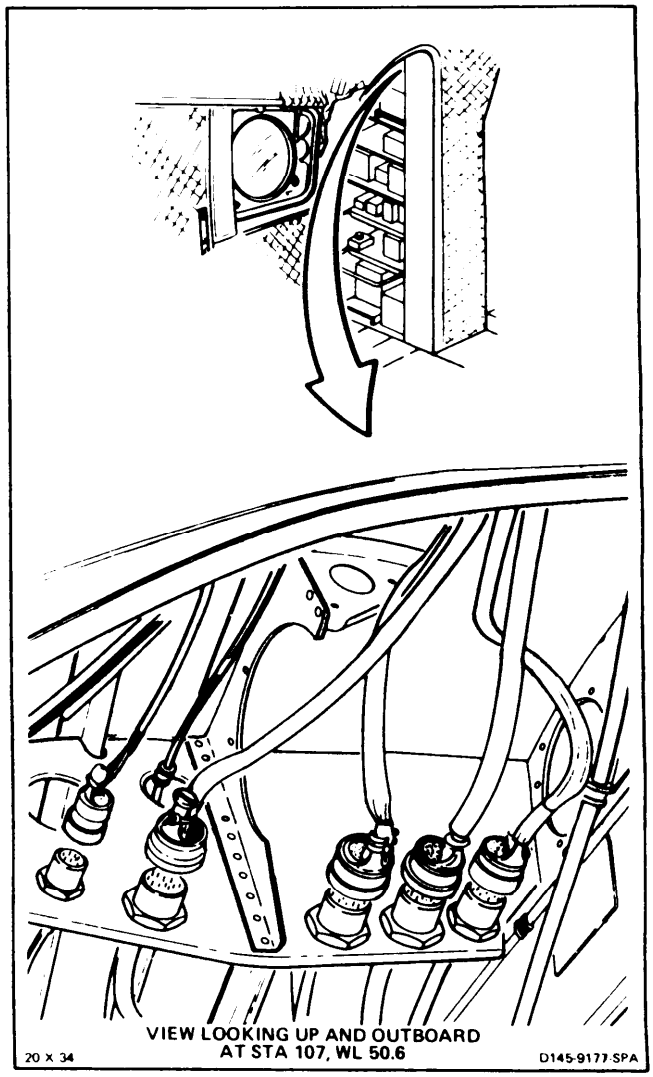
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:

None

Personnel Required:

Aircraft Electrician
Inspector



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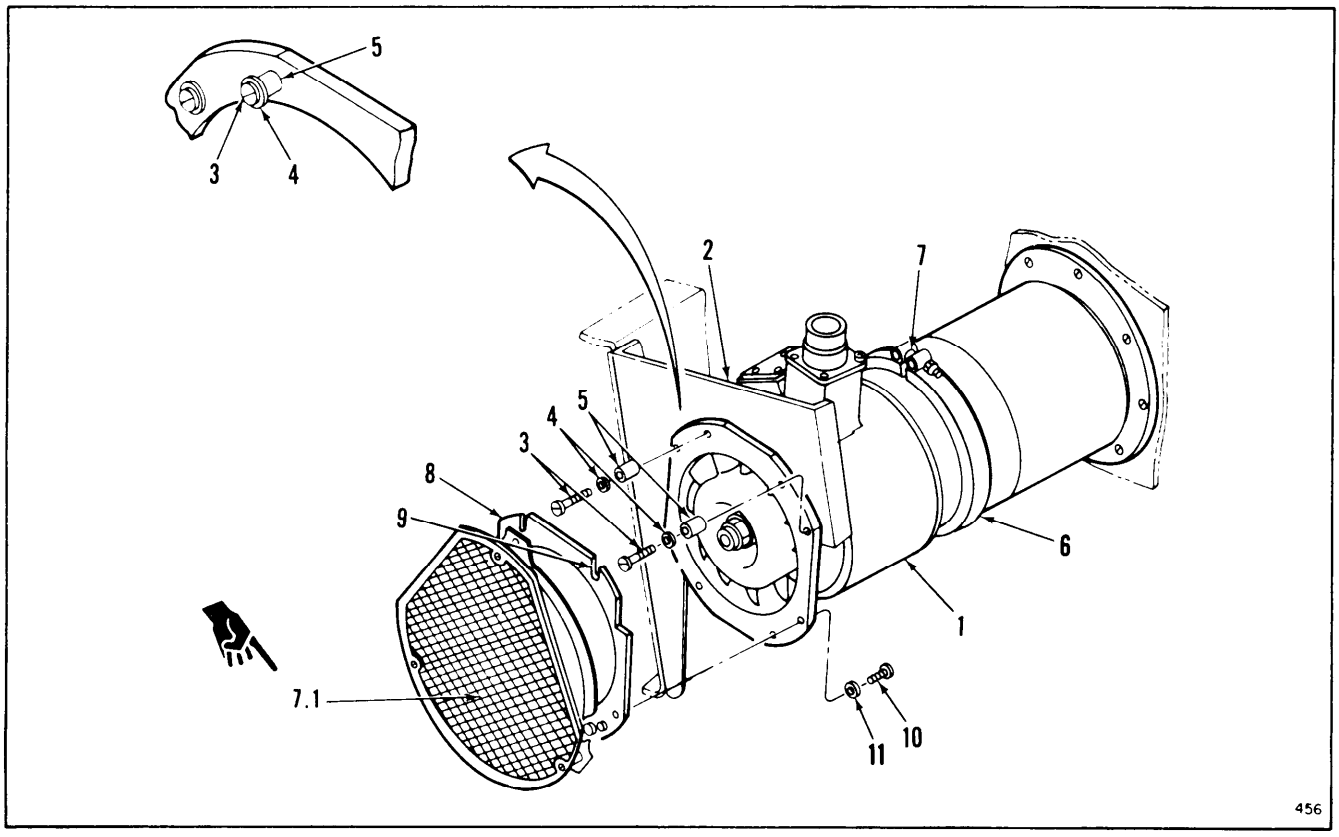
9-59 INSTALL AVIONICS COOLING FAN (Continued) 9-59

1. **Install fan (1)** in support bracket (2) using four screws (3) and washers (4), and two spacers (5).
2. Position clamp (6) and tighten nut (7).
3. Clean screen (7.1). Use a paint brush.

3.1. Inspect screen (7.1) for broken wires or wires broken away from bellmouth (8).

3.2. **Position bellmouth (8)** with two slots (9) under two washers (4).

4. **Install** four **screws (10) and washers (11).**



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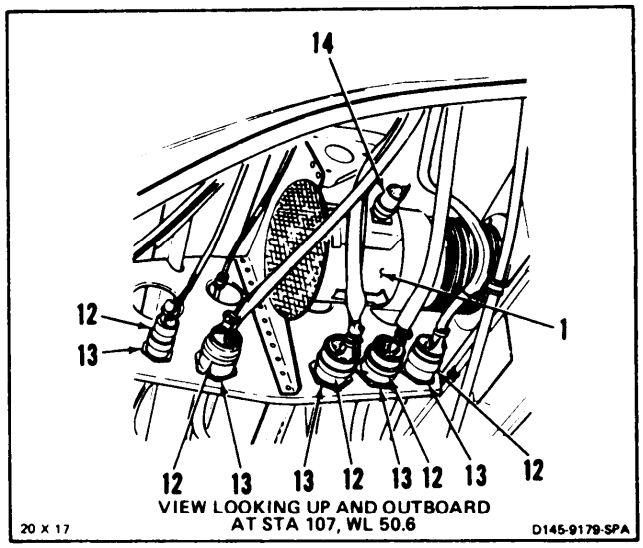
9-59 INSTALL AVIONICS COOLING FAN (Continued) 9-59

5. **Connect five electrical connectons (12)** to bulkhead connectors (13). Remove tags **and one electrical connector (14) to fan (1).**



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Install avionics compartment acoustical blankets (Task 2-210).

END OF TASK

SECTION V

LIGHTING SYSTEMS

DESCRIPTION AND OPERATION

One warning and 14 lighting systems are covered in this section. The emergency exits lights are covered in Chapter 17. The lighting systems are as follows:

1. Navigation (position) lights
2. Landing lights
3. Formation lights
4. Anticollision lights
5. Transmission oil level check light
6. Pilots instrument panel lights
7. Center instrument panel lights
8. Copilot's instrument panel lights
9. Overhead panel lights
10. Console lights
11. Secondary cockpit lights
12. Cockpit dome and utility lights
13. Cabin and ramp lights
14. Troop warning system

NAVIGATION (POSITION) LIGHT SYSTEM
WITHOUT 17

NOTE

All CH-47D aircraft are authorized for NVG use when delivered with the exception of aircraft S/N 8424187 and prior which are required to have MWO 55-1520-240-50-3.

Description

The navigation (position) lighting system includes three position lights, dimming resistors, and a switch. The red position light is on the left pod at sta 242. The green position light is on the right pod at sta 242. The white position light is on the tail at sta 627. Dc power is connected to the lights through the POSITION LIGHTS switch on the overhead panel which also controls their brightness.

Operation

1. Power for the position lights comes from the 28-volt No. 2 dc bus. When POS LIGHTING circuit breaker is dosed, 28-volt dc is applied to terminals 2 and 5 of POSITION LIGHTS switch S1.

2. When the switch is at BRT, 28-volt dc is applied directly to the three position lights. When the switch is at DIM, 28-volt dc is applied through dimming resistor R1 to the side position lights and through dimming resistor R2 to the tail position light.

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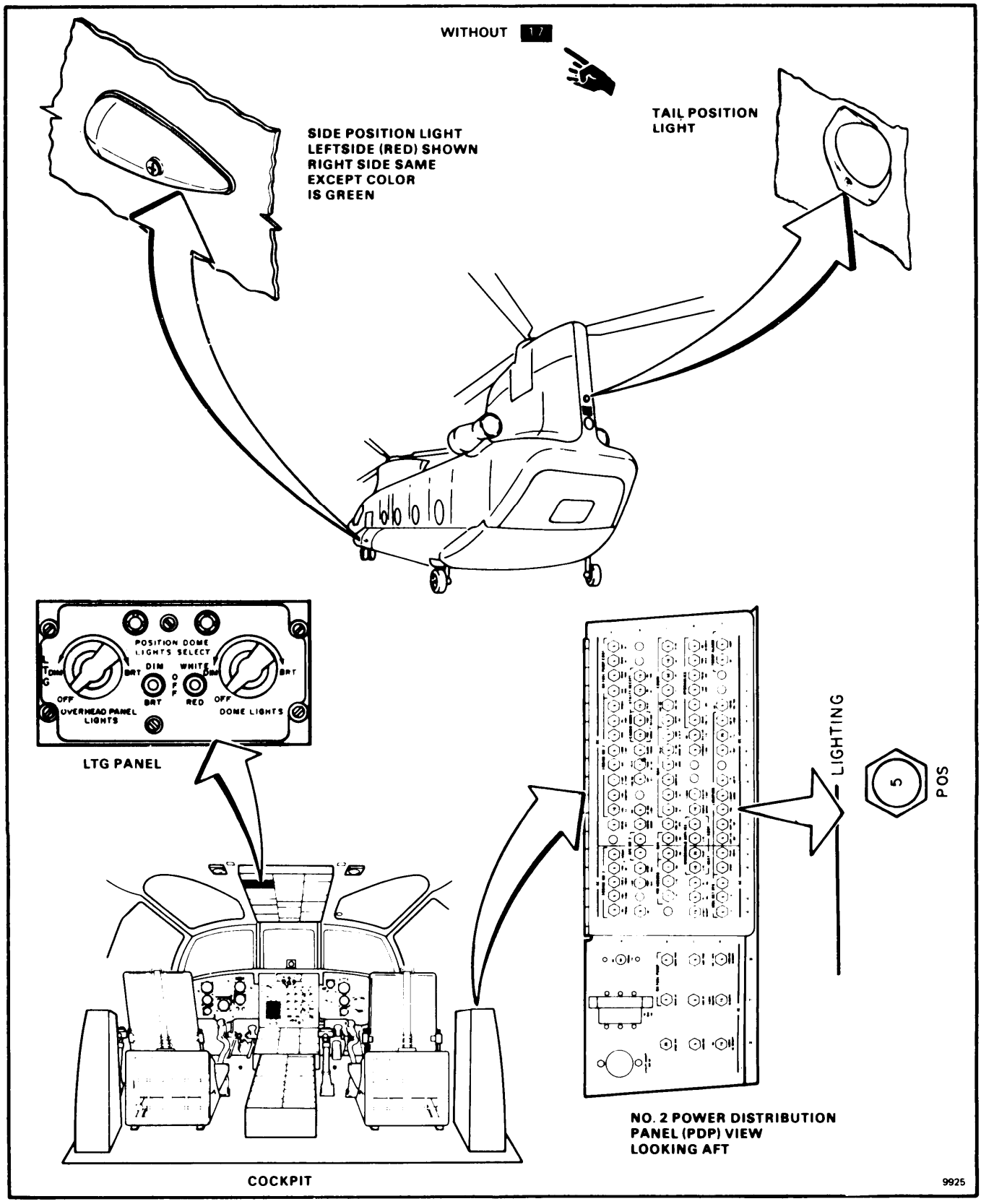

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NAVIGATION (POSITION) LIGHT SYSTEM WITH 17

Description

The navigation (position) lighting system includes three normal position lights, dimming resistors, and a switch. The red position light is on the left pod at sta 242. The green position light is on the right pod at sta 242. The white position light is on the tail at sta 627. Dc power is connected to the lights through the POS EXT LTG switch on the overhead panel which also controls their brightness.

Operation

1. Power for the position lights comes from the 28-volt No. 2 dc bus. When POS LIGHTING circuit breaker is closed, 28-volt dc is applied to terminals of POS EXT LTG switch.
2. When the switch is at BRT, 28-volt dc is applied directly to the three position lights. When the switch is at DIM, 28-volt dc is applied through dimming resistor R 1 to the side position lights and through dimming resistor R2 to the tail position light.

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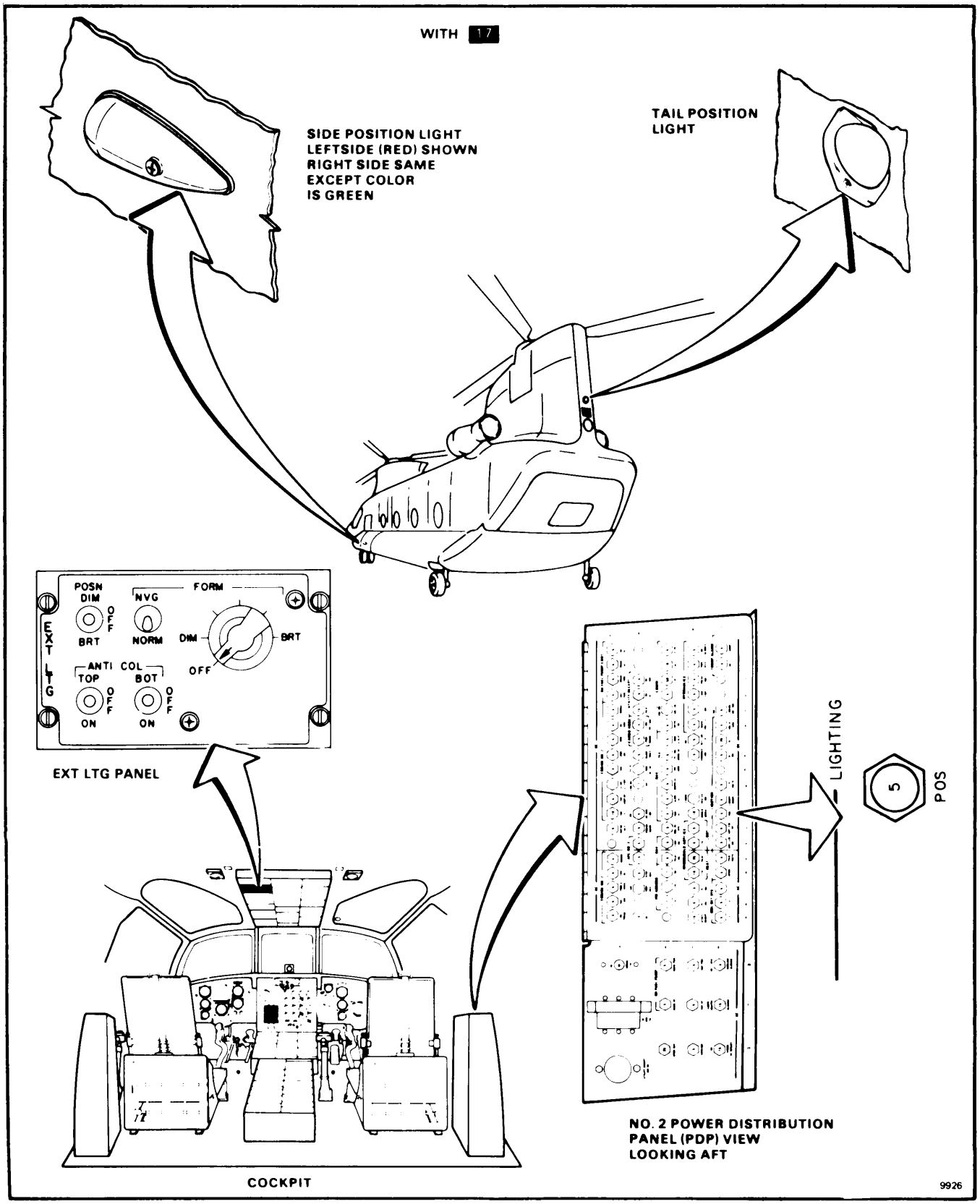

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LANDING LIGHT (SEARCHLIGHT) SYSTEM

Description

The helicopter landing light (searchlight) system includes two similar controllable lights. They are located on the underside of the cockpit on either side of the helicopter centerline at sta 65. Both light assemblies contain two motors that extend and rotate the light. The left light is controlled by the copilot and the right by the pilot.

Separate controls for each light consist of a switch and a control button on the operator's thrust control and a switch on the overhead LIGHTING panel. The overhead switch arms the motors. The switch on the thrust control turns the light on and off. The control button extends, rotates, and retracts the light.

On helicopters with 17, the left searchlight has a 150-watt lamp and a filter that provides infra-red lighting that is invisible to the naked eye. It is used for missions calling for night vision goggles (NVG). The right searchlight has a conventional 450-watt lamp. It is used during non-NVG missions.

Power to operate each light comes from the No. 1 (left light) or No. 2 (right light) 28 volt dc bus.

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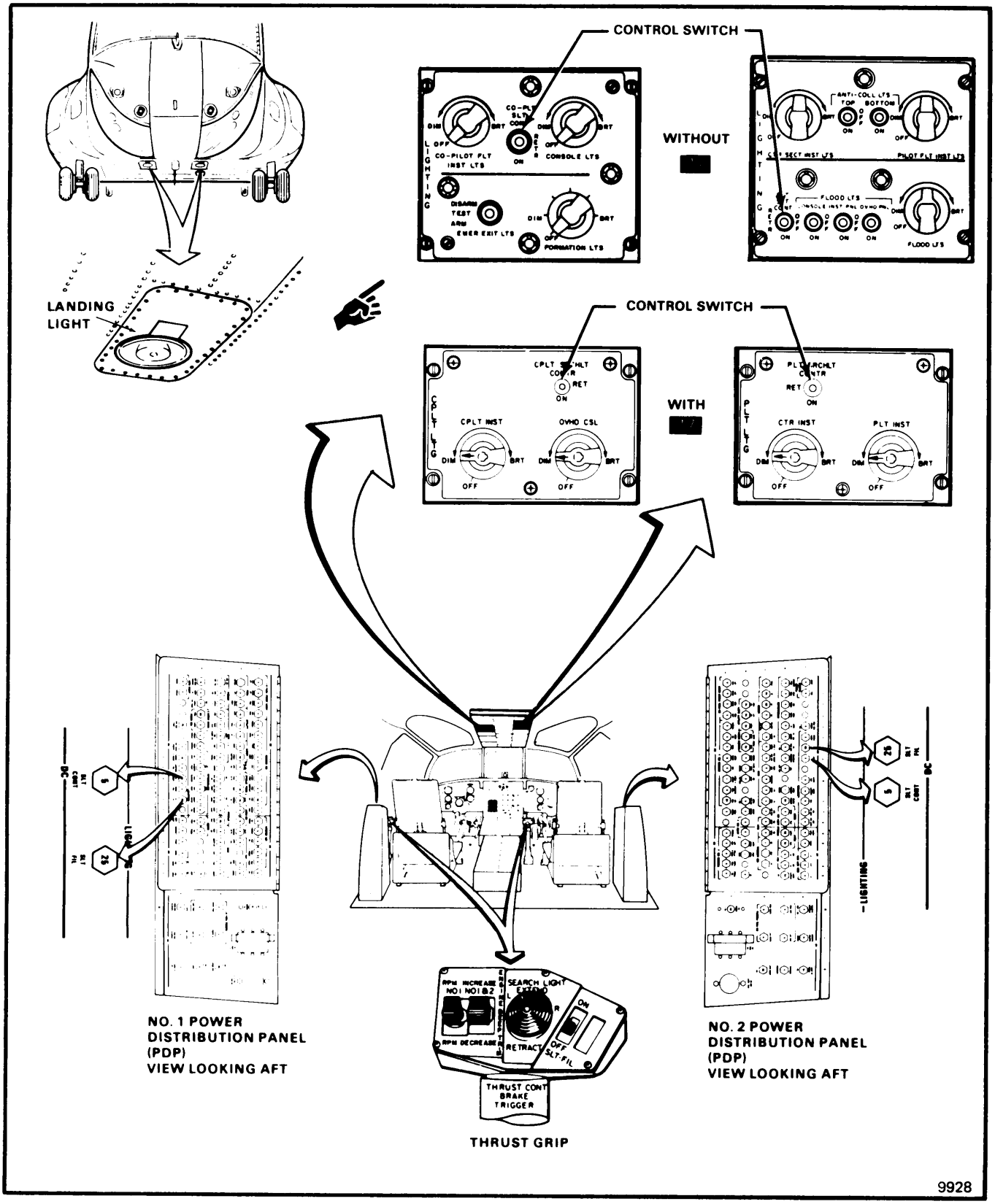

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Theory of Operation

Power to operate the lamp and motors of each searchlight assembly comes through a **SLT FIL LIGHTING circuit breaker** on the associated 28 volt dc bus. Control of the lamp and motors is through relays energized by power from the same bus through a **SLT CONT LIGHTING circuit breaker.**

With both circuit breakers in, turning the SLT FIL switch on the thrust lever to ON energizes a lamp relay to provide 28 volts dc to light the lamp. Turning the **control switch** on the overhead panel to ON arms the **SEARCHLIGHT control button** on the thrust lever. When it has been armed, moving the spring-loaded button to EXTEND, RETRACT, L, or R energizes one of four **relays** in the searchlight assembly. The energized relay puts power to one of the two **searchlight motors** to extend or retract the light or rotate it left or right.

Moving the switch on the overhead panel to RETR overrides the switch on the thrust lever. The light automatically retracts and rotates to point straight down, regardless of the thrust lever switch position. However, the light will remain lit until the SLT FIL switch is turned OFF.

Limit switches in the motor circuits open to cut power to the relevant motor when the light is fully extended or retracted with the lamp rotated to face downward.

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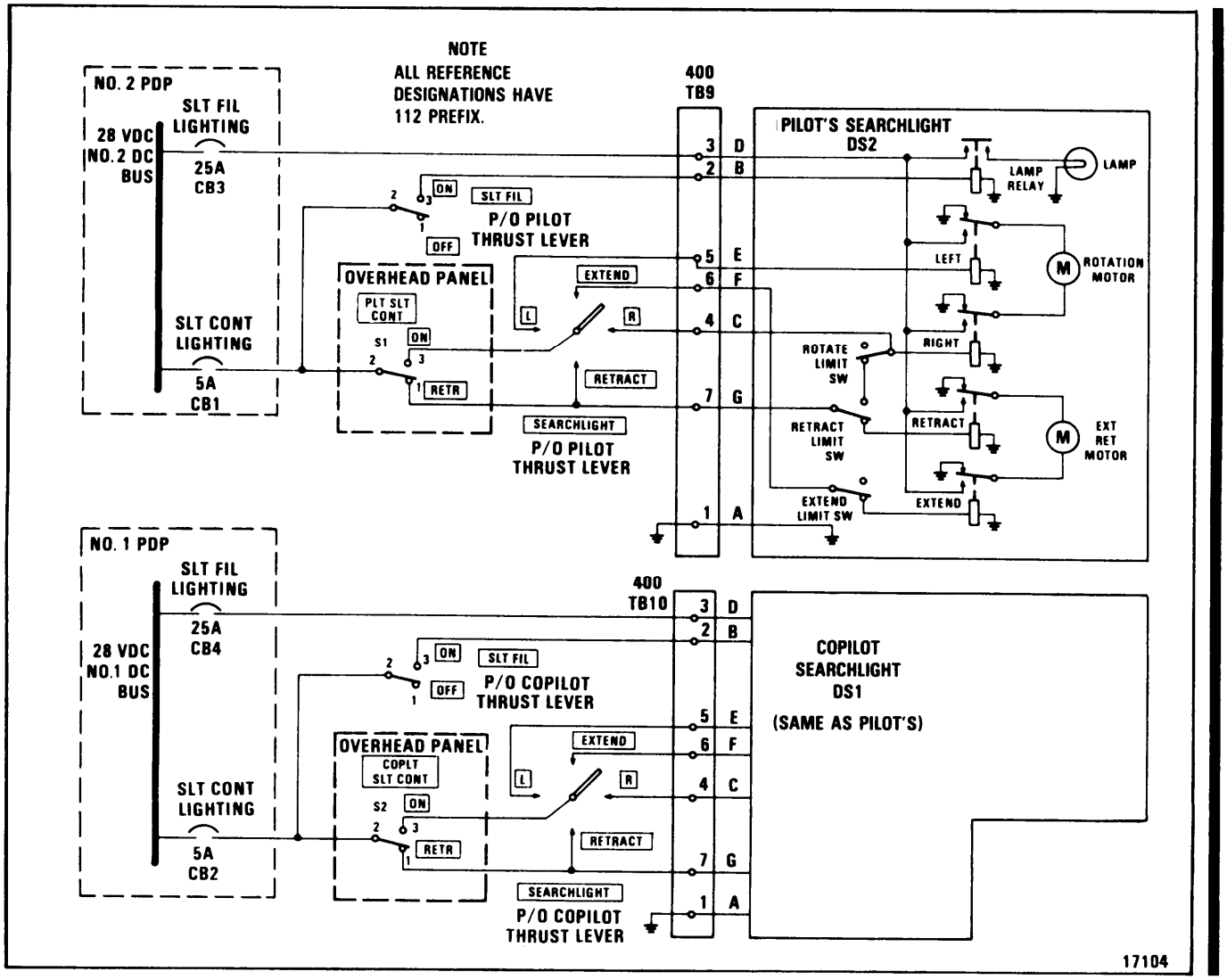

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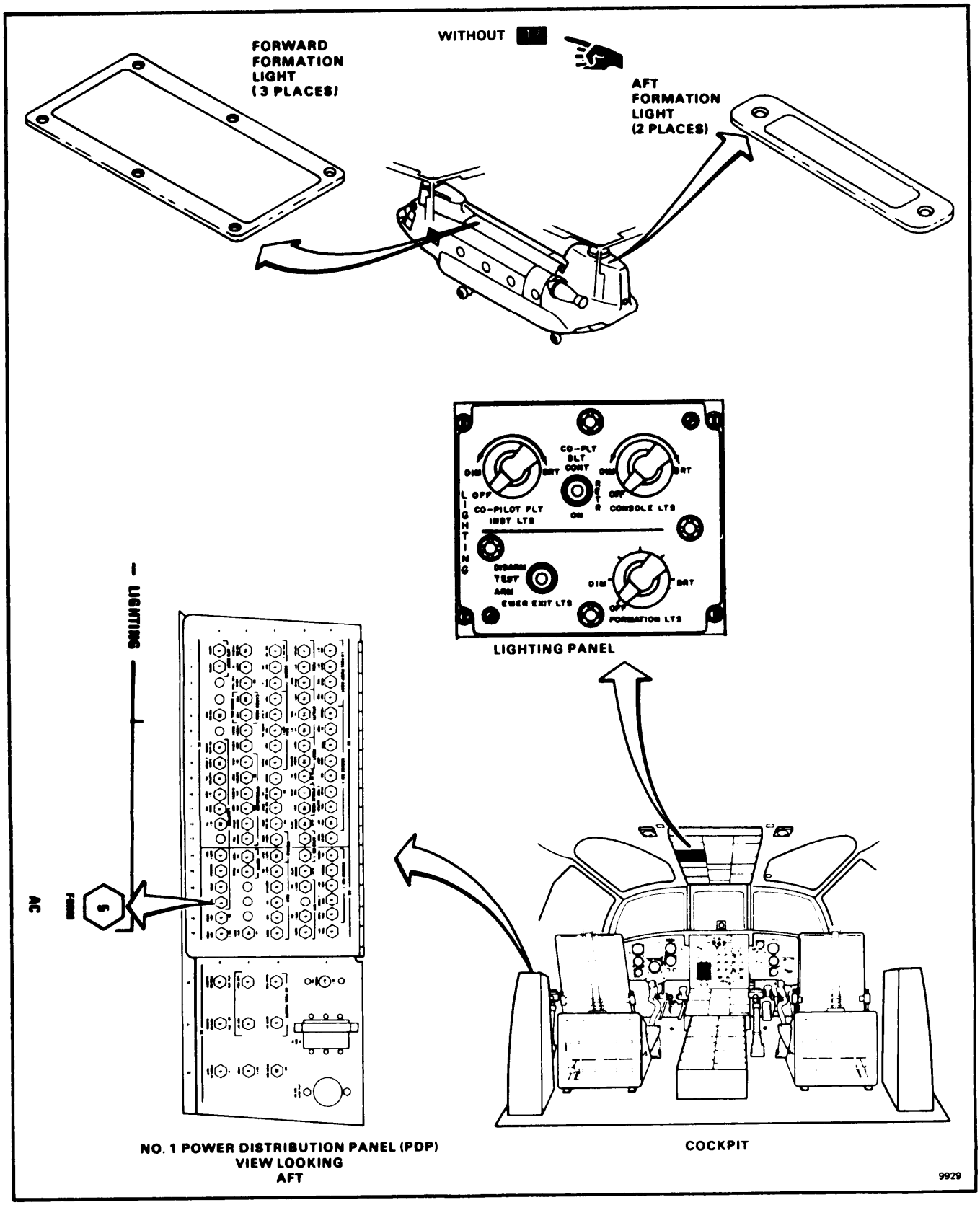

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FORMATION LIGHT SYSTEM WITH 17

Description

There are two formation light systems on the helicopter. One system provides infra-red (invisible to the unaided eye) NVG-compatible lighting. The other system provides normal lighting for non-NVG missions. A switch on the overhead panel selects NVG or NORM formation lighting and a FORM DIM-BRIGHT control is common to both systems. Each system includes four dimming resistors, also in the overhead panel.

1. There are eight NVG formation lights. Two are on the aft end of the forward transmission fairing. One is on each side between the first and second cabin windows. One is on each side aft of the fourth cabin window. One is on top of the pylon and one is on the aft end of the pylon. Each light contains two light emitting diodes connected in parallel.
2. The normal formation lights include five electroluminescent lights on top of the helicopter. Three lights are on the forward section of the helicopter and two lights are side-by-side on the pylon. In the forward group, one light is on the centerline at sta 200, the other two are 30 inches from the centerline on each side at sta 253.

Operation

1. When the FORM switch is at NVG, power for the eight formation lights comes from 28-volt No. 1 dc bus. When NVG FORM LIGHTING circuit breaker is closed, 28-volt dc is connected to the moving contact of the FORM DIM/BRIGHT control.
2. When the FORM control is at DIM, power is supplied through resistors, 113R5, 113R6, 113R7 and 113R8. Rotating the switch towards BRT drops resistor out of the circuit, until at the BRT position power is applied directly to the lights for maximum brightness.
3. Power for the normal formation lights comes from 115-volt No. 1 ac bus. When FORM LIGHTING circuit breaker is closed, 115-volt ac is connected to the moving contact of the FORM DIM/BRIGHT control.
4. When the FORM control is at DIM, power is applied to the lights through resistor R1. In the next three positions of the switch, power is applied to the lights through lower-value resistors. At each succeeding position, brightness of the lamps is increased. When the switch is at BRT, power is applied directly to the lights. In this position, the lights are at maximum brightness.

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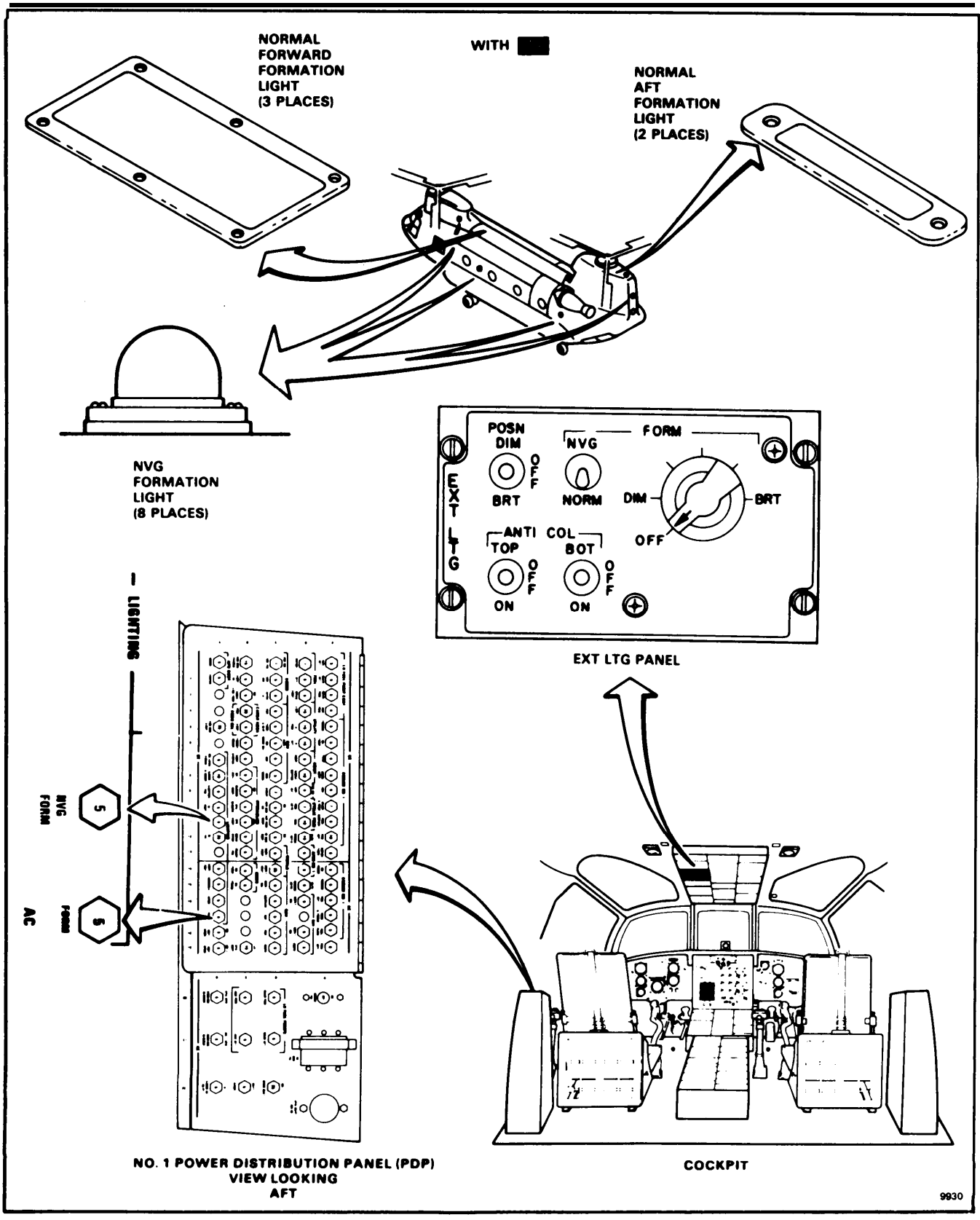

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ANTICOLLISION LIGHT SYSTEM

Description

The anticollision light system includes two anticollision lights, each controlled by an associated switch. One anticollision light is at the top of the pylon at sta 594 and the other anticollision light is on the helicopter bottom centerline at sta 290. Two ANTI-COL switches, TOP and BOTTOM, on the overhead panel turn their respective lights on or off.

Operation

1. Power for the anticollision lights comes from the 28-volt No. 2 dc bus. When ANTI-COL TOP LIGHTING circuit breaker is closed, 28-volt dc is applied to terminal 2 of TOP ANTI-COL switch. When ANTI-COL BOT LIGHTING circuit breaker is closed, 28-volt dc is applied to terminal 2 of BOTTOM ANTI-COL switch.
2. When TOP ANTI-COL switch is at ON, 28-volt dc from the switch operates the top anticollision light. When BOTTOM ANTI-COL switch is at ON, 28-volt dc from the switch operates the bottom anticollision light.

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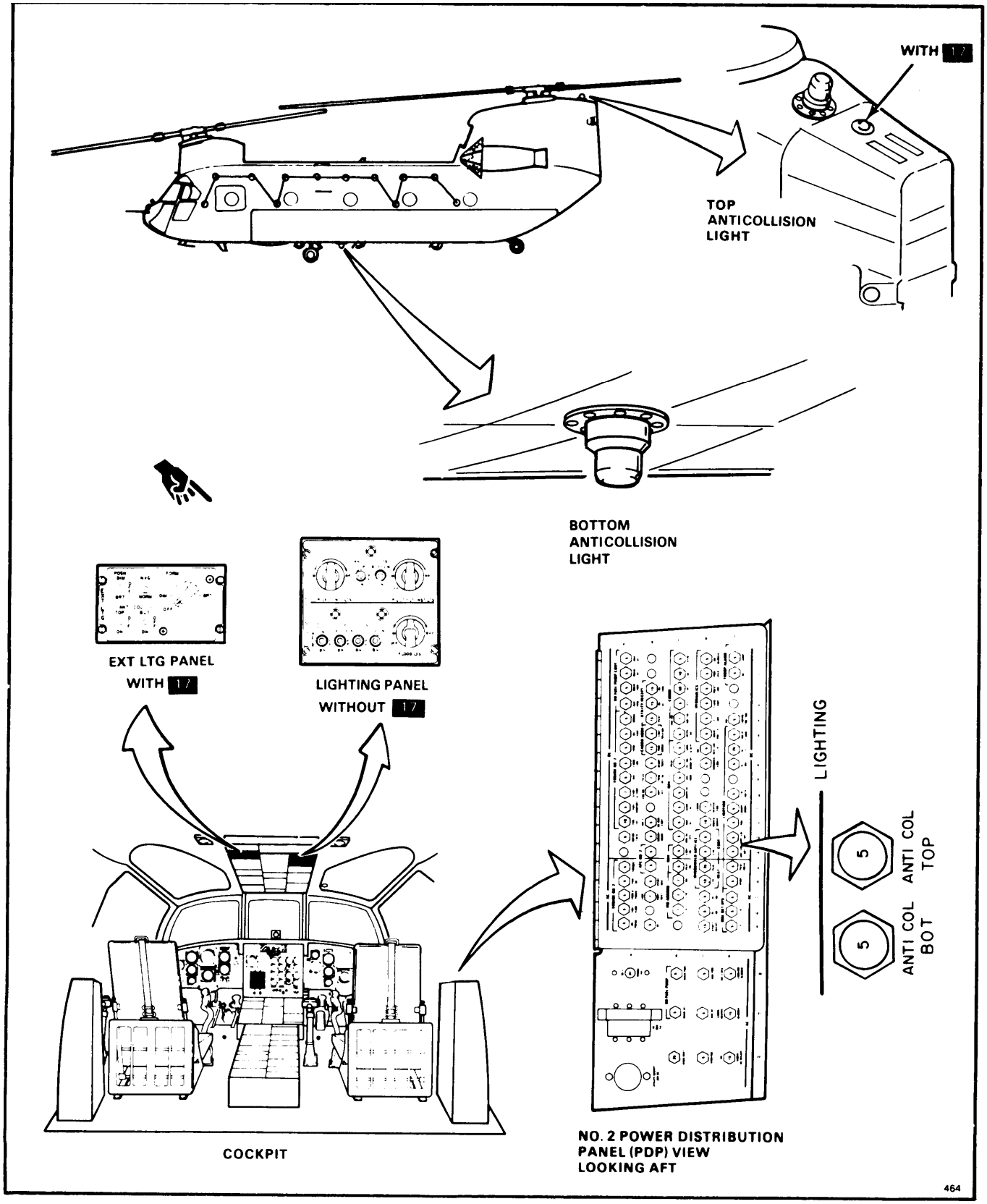

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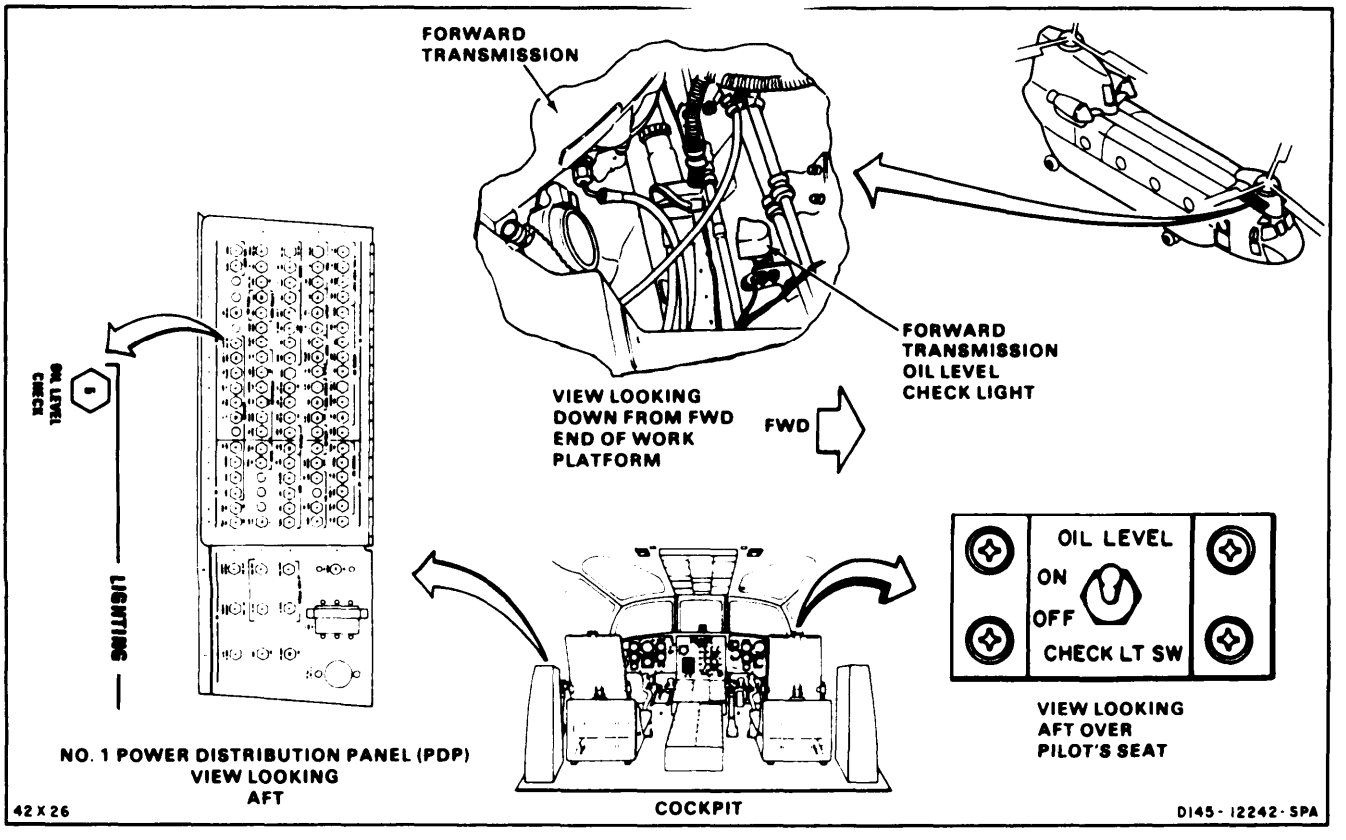
FORWARD TRANSMISSION OIL LEVEL CHECK LIGHT

Description

The transmission oil check light system includes a switch, and a light. It lights the oil level sight gage on the forward transmission. The switch, marked OIL LEVEL CHECK LT SW, is on a structural member above the pilot's seat. Power for the transmission oil level check light system comes from the 28-volt switched battery bus,

Operation

When OIL LEVEL CHECK LIGHTING circuit breaker is closed, 28-volt dc is applied to terminal 2 of OIL LEVEL CHECK LT SW. When the switch is at ON, 28-volt dc lights the forward transmission check light.



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PILOT'S FLIGHT INSTRUMENT PANEL LIGHT SYSTEM WITHOUT 17 AND 74

Description:

The pilot's flight instrument panel lights system contains a PILOT FLT INST LTS control, autotransformer, variable resistor, and lamps to light the instruments and the RAD ALT dimming panel. Panel lights illuminate the following instruments: clock, cruise guide indicator (cgi), rate of climb, turn and slip, course, airspeed indicators, and the dual engine torquemeter. The system also supplies 26 volts ac to the integral lamp in the vertical gyro indicator (vgi) and the standby compass and 5 volts ac to integral lamps in the aims altimeter, horizontal situation indicator (hsi), radar altimeter, and the rotor tachometer.

Operation:

Power for the system comes from No. 2, 26volt ac, lighting transformer. When the PILOT INSTR LIGHTING circuit breaker is closed, 26 volts ac is applied to the PILOT FLT INST LTS control which is used to vary the brightness of the lamps. Should a loss of 26 volts ac occur on the No. 2 26-volt ac bus, the lamps **for the turn and slip indicator can be controlled through the secondary cockpit lighting circuit.**

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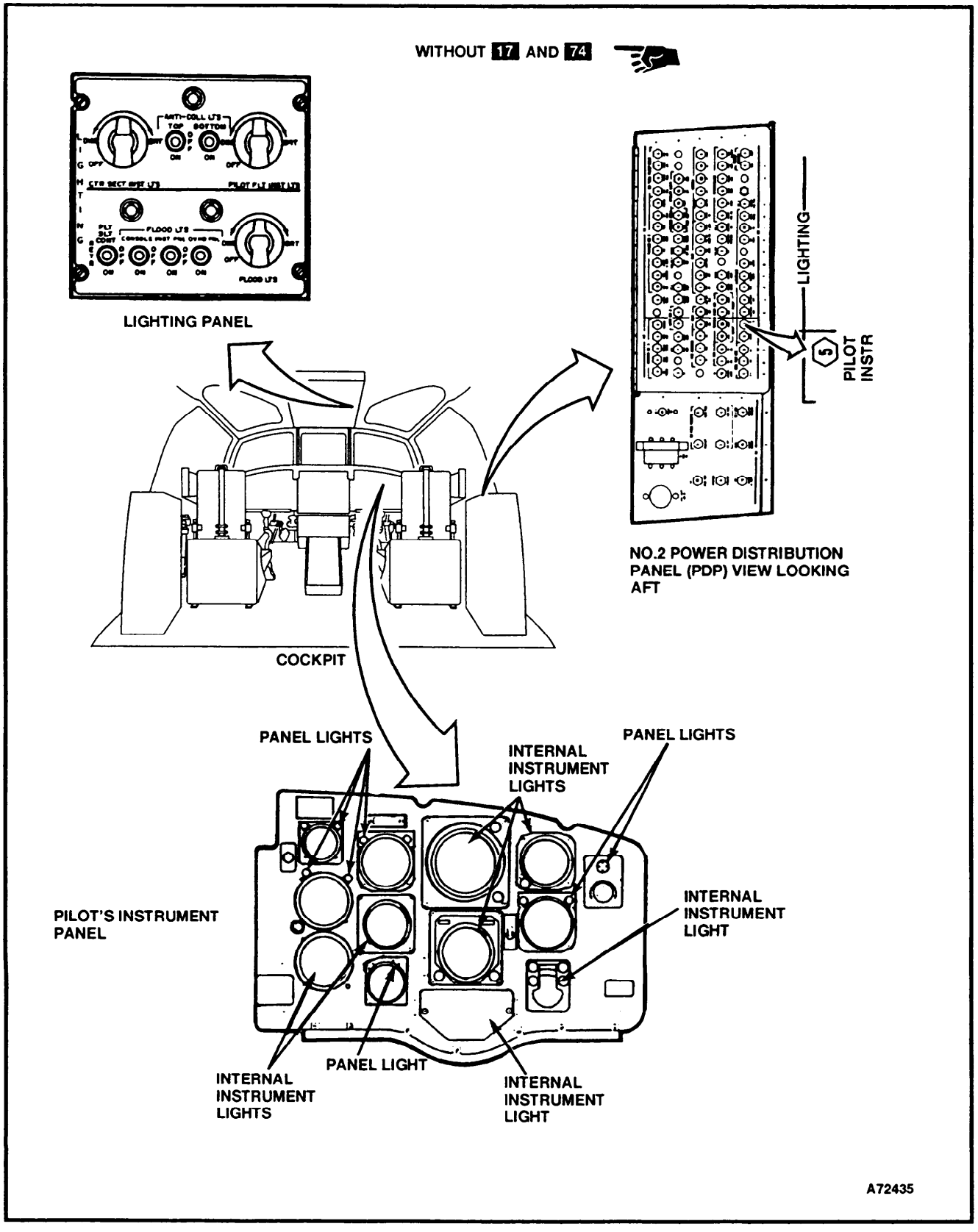

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PILOT'S FLIGHT INSTRUMENT PANEL LIGHT SYSTEM WITH 17 AND WITHOUT 74

Description:

The pilot's instrument panel light system includes a PLT INST LTG control, 0-115 volt variable transformer, 115 to 5volt autotransformer, and lamps to light the instruments and the RAD ALT dimming panel. Panel lights light the following instruments: cruise guide indicator (cgi), rate of climb, aims altimeter, rotor tachometer, airspeed indicator, and the dual engine torquemeter. Internal lights light the following instruments: turn and slip indicator (lightplate), RAD ALT DIM attitude indicator, horizontal situation indicator (hsi) and mode select panel (lightplate), radar altimeter, and attitude direction indicator.

The pilot's clock is lighted by a 28-volt dc circuit.

Operation:

Power for the 5-volt ac system comes from the 115-volt No. 2 ac bus. When the PILOT INSTR LIGHTING circuit breaker is closed, 115-volt ac is applied to the PILOT INST LTS control which varies the 5-volt output to vary the brightness of the lamps. When the control is turned from DIM, a switch arms a circuit in the secondary lighting circuit which turns on the floodlights in an ac power failure, and also provides dimming for pushbutton lighting in the cockpit.

When the PLT CLOCK circuit breaker is closed, 28-volt dc from No. 2 essential bus is routed to the clock.

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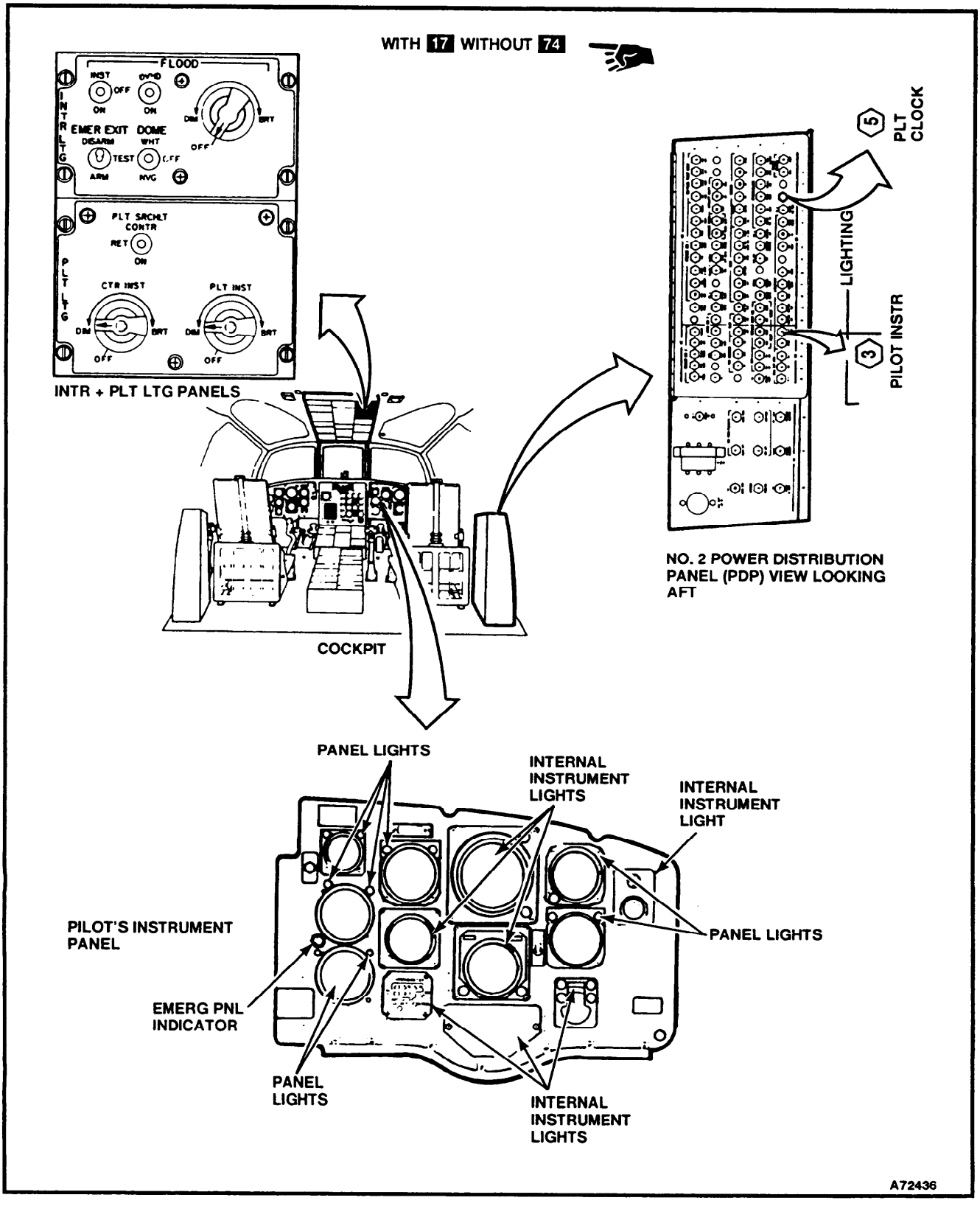

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PILOT'S FLIGHT INSTRUMENT PANEL LIGHT SYSTEM WITH 17 AND 74

Description:

The pilot's instrument panel light system includes a PLT INST LTG control, 0-115 volt variable transformer, 115 to 5volt autotransformer, and lamps to light the instruments and the RAD ALT dimming panel. Panel lights light the following instruments: cruise guide indicator (cgi), rate of climb, aims altimeter, rotor tachometer, and the airspeed indicator. Internal lights light the following instruments: turn and slip indicator (lightplate), RAD ALT DIM attitude indicator, horizontal situation indicator (hsi) and mode select panel (lightplate), radar altimeter, attitude direction indicator, and the dual engine torquemeter.

The pilot's clock is lighted by a 28-volt dc circuit.

Operation:

Power for the 5volt ac system comes from the 115-volt No. 2 ac bus. When the PILOT INSTR LIGHTING circuit breaker is closed, 115-volt ac is applied to the PILOT INST LTS control which varies the 5-volt output to vary the brightness of the lamps. When the control is turned from DIM, a switch arms a circuit in the secondary lighting circuit which turns on the floodlights in an ac power failure, and also provides dimming for pushbutton lighting in the cockpit.

When the PLT CLOCK circuit breaker is closed, 28-volt dc from No. 2 essential bus is routed to the clock.

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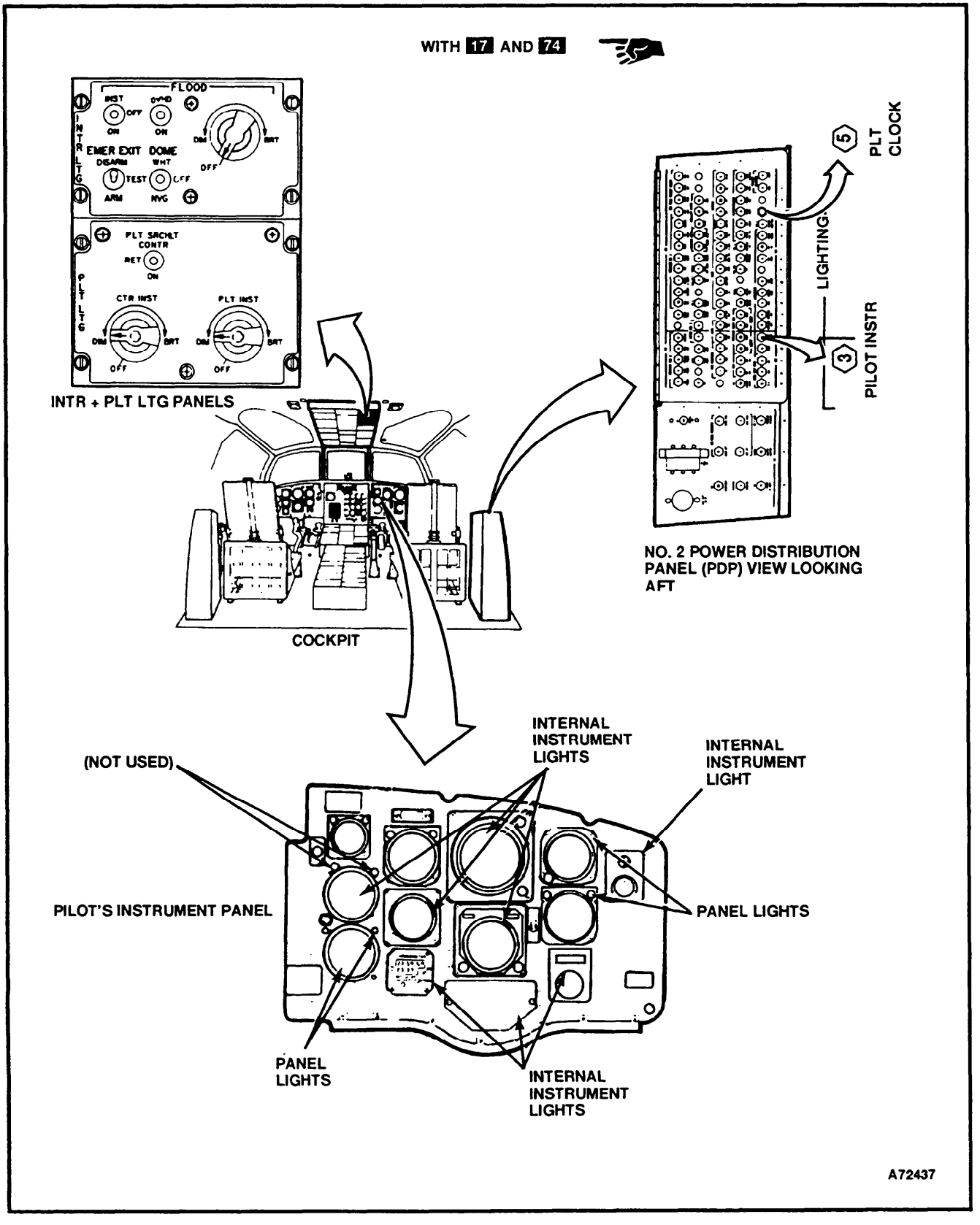

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CENTER FLIGHT INSTRUMENT PANEL LIGHTS SYSTEM WITHOUT 17 AND 74

Description:

The center flight instrument panel lighting system includes CTR SECT INST LTS control, adjustable resistor, and lamps to light the instruments and the FIRE DETECTOR panel. Panel lights illuminate the FIRE DETECTOR panel and 16 instruments and 3 controls.

Operation:

Power for the system comes from the 28-volt No. 2 dc bus. When CTR INSTR LIGHTING circuit breaker is closed, 28 volts is applied to CTR SECT INST LTS control which controls brightness of the lamps.

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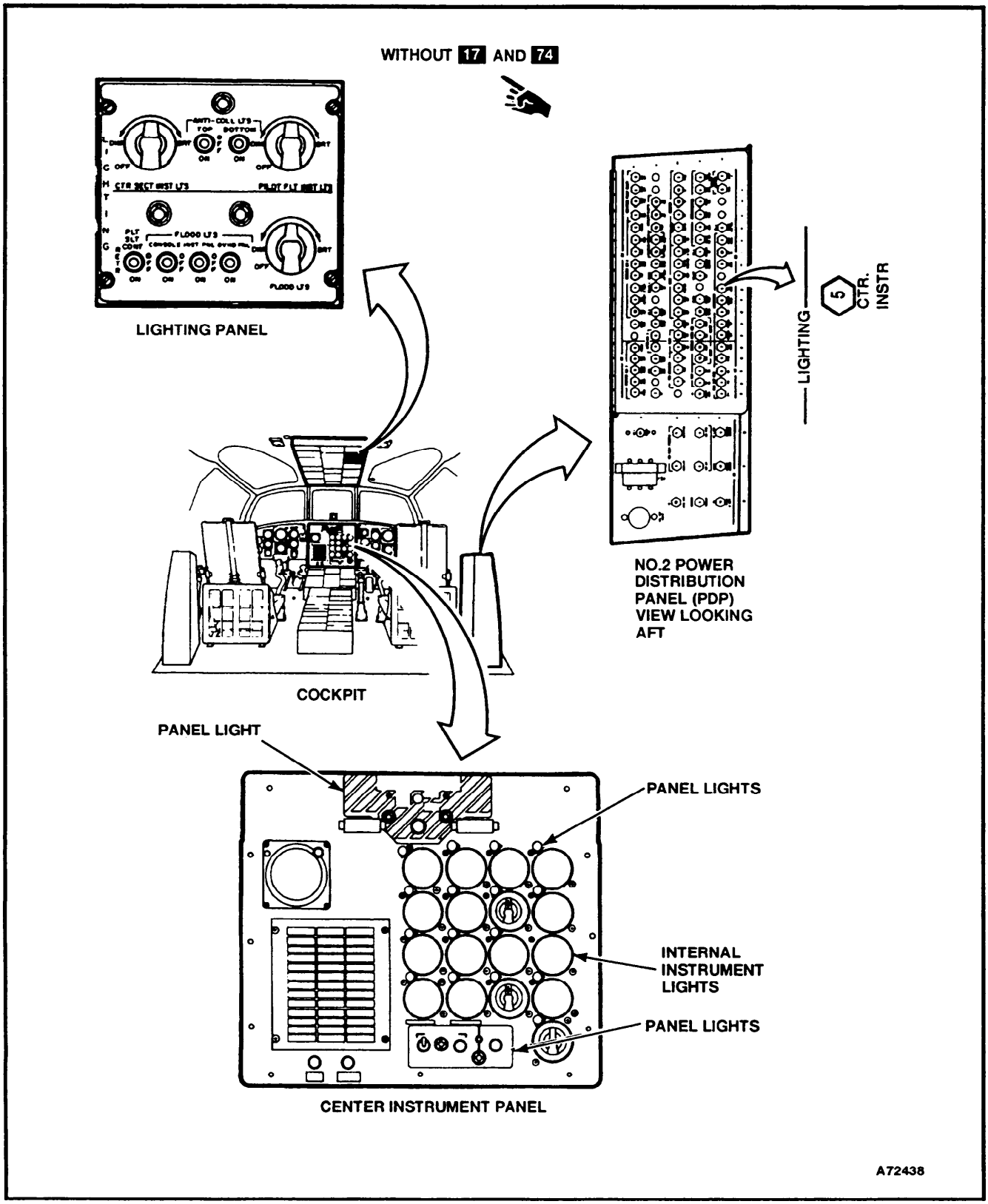

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CENTER FLIGHT INSTRUMENT PANEL LIGHTS SYSTEM WITH 17 AND WITHOUT 74

Description:

The center panel lighting system includes CTR INST LTG control 0-115 variable transformer, 0-115 volt variable transformer, 0-115 volt variable autotransformer, lamps to light 17 instruments, standby compass, and lightplates for FIRE DETECTOR panel, and CAUTION LIGHTS/VHF ANT SEL panel.

Operation:

Power for the system comes from the 115-volt No. 2 ac bus. When CTR INSTR LIGHTING circuit breaker is closed, 115-volt ac is applied to CTR INST LTG control which varies the 5-volt output to vary the brightness of the lamps and lightplates.

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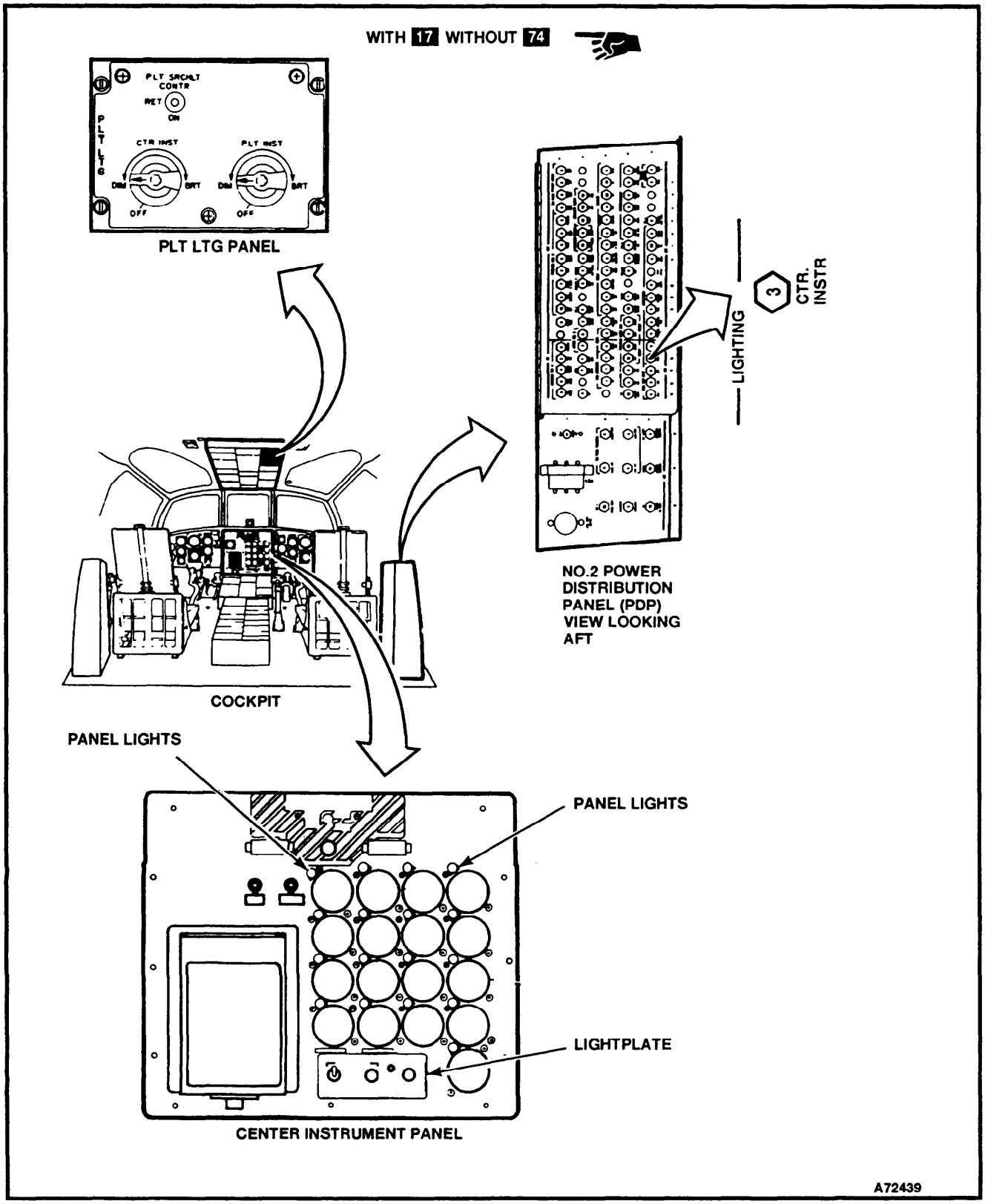

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CENTER FLIGHT INSTRUMENT PANEL LIGHTS SYSTEM WITH 17 AND 74

Description:

The center instrument panel lighting system includes CTR INST LTG control 0-115 variable transformer, 115 to 5-volt autotransformer, lamps to light 17 instruments, standby compass, and lightplates for FIRE DETECTOR panel, and CAUTION LT/VHF ANT SEL panel.

Operation:

Power for the system comes from the 115-volt No. 2 ac bus. When CTR INSTR LIGHTING circuit breaker is closed, 115-volt ac is applied to CTR INST LTG control which varies the 5-volt output to vary the brightness of the lamps and lightplates.

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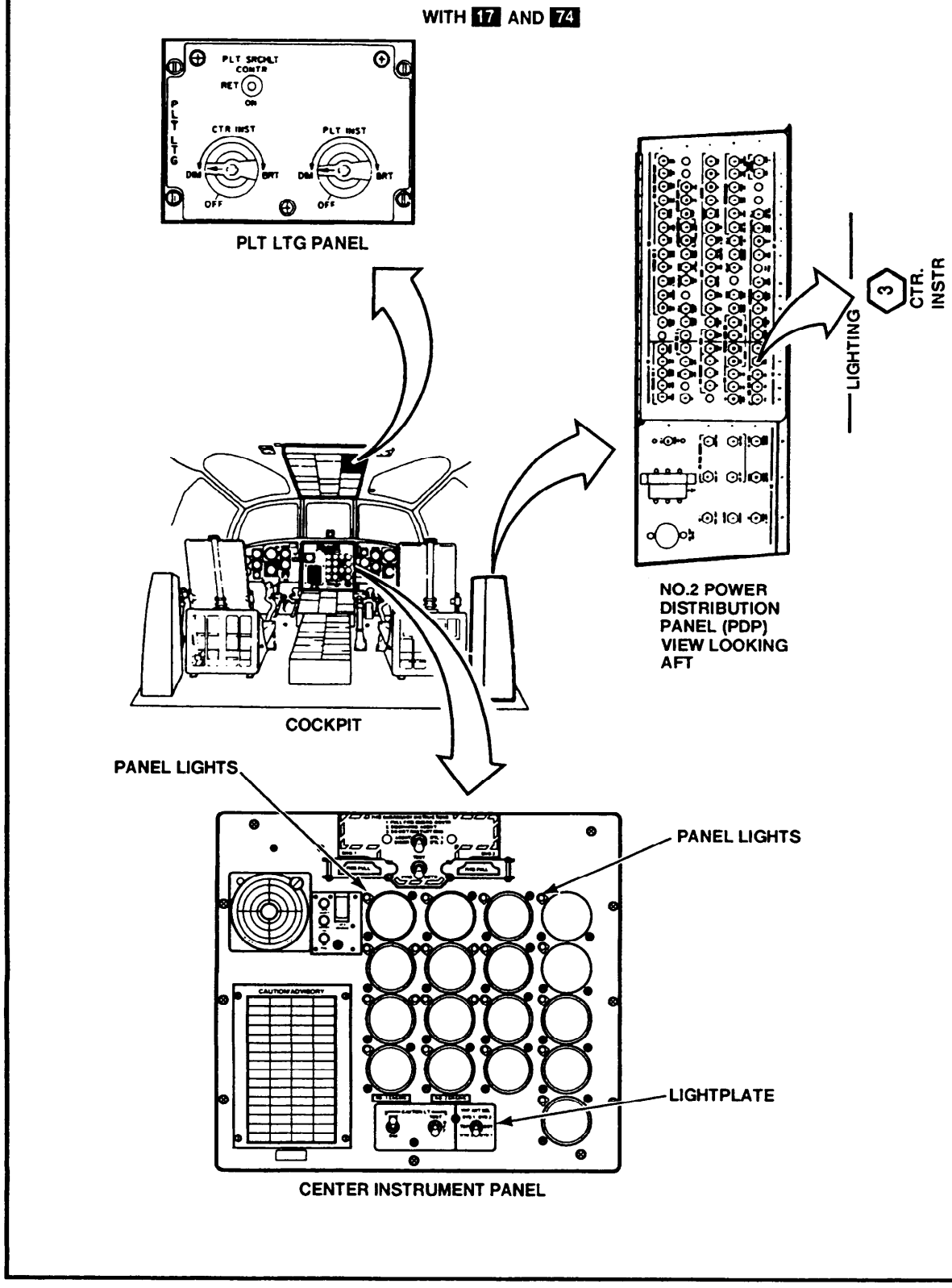

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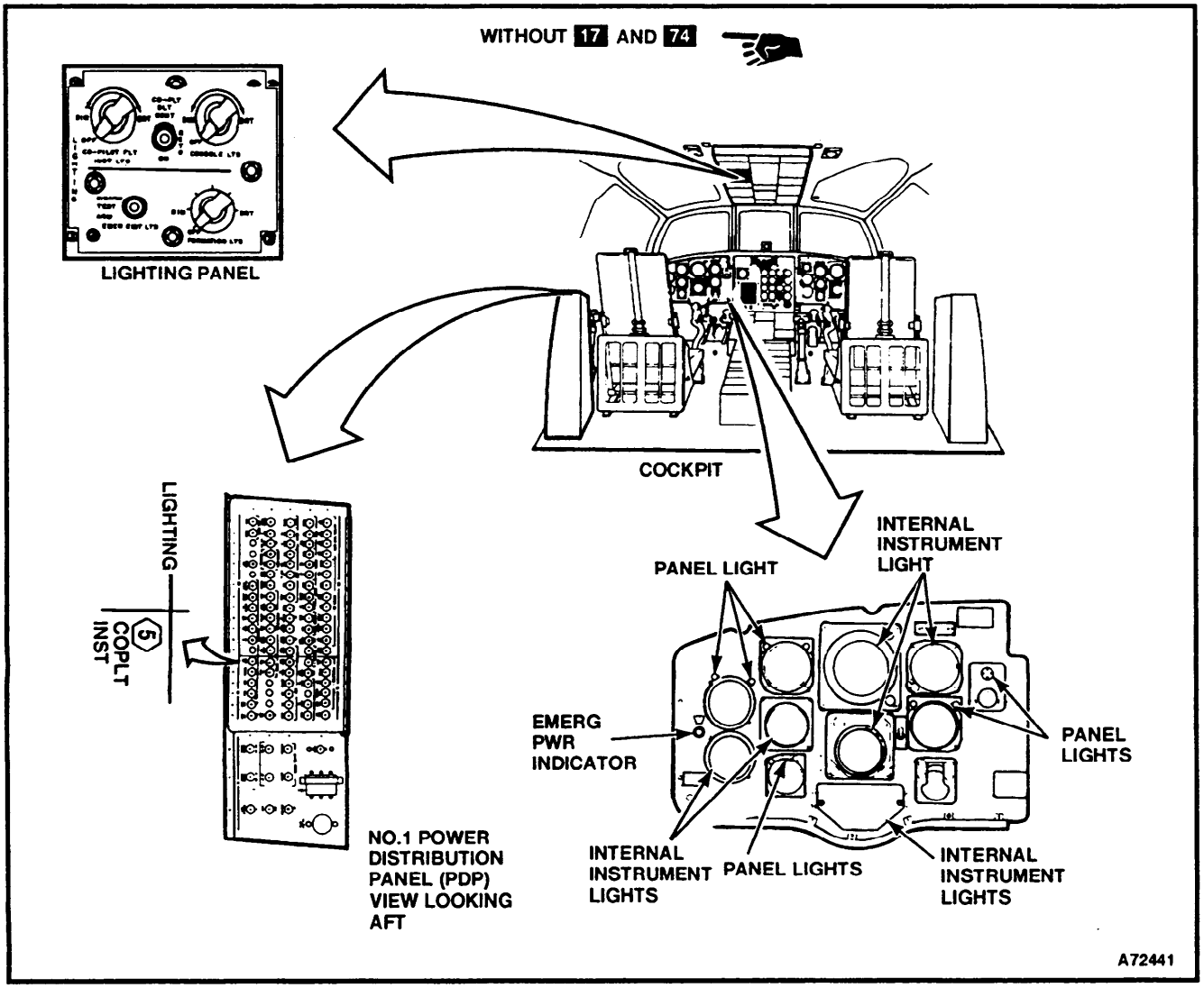
COPILOT'S FLIGHT INSTRUMENT PANEL LIGHTS SYSTEM WITHOUT 17 AND 74

Description:

The copilot's flight instrument panel lights system contains a CO-PILOT FLT INST LTS control, autotransformer, variable resistor, and lamps to light the instruments and the RAD ALT dimming panel. Shield lights illuminate the following instruments: clock, horizontal situation indicator (hsi), rate of climb, turn and slip, airspeed, and course indicators. Post lights illuminate the dual engine torquemeter. The system also provides 26 volts ac to the integral lamps in the vgi and 5 volts ac to the integral lamps in the aims altimeter, radar altimeter, and rotor tachometer.

Operation:

Power for the system comes from No. 1 26-volt ac lighting transformer. When COPILOT INSTR LIGHTING circuit breaker is closed, 26 volts ac is applied to the CO-PILOT FLT INST LTS control, which is used to vary the brightness of the lamps. Should a loss of 26 volts ac occur on the No. 1 26-volt ac bus, the lamps for the turn and slip indicator can be controlled through the secondary cockpit lighting circuit.



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COPILOT'S FLIGHT INSTRUMENT PANEL LIGHTS SYSTEM WITH 17 AND WITHOUT 74

Description:

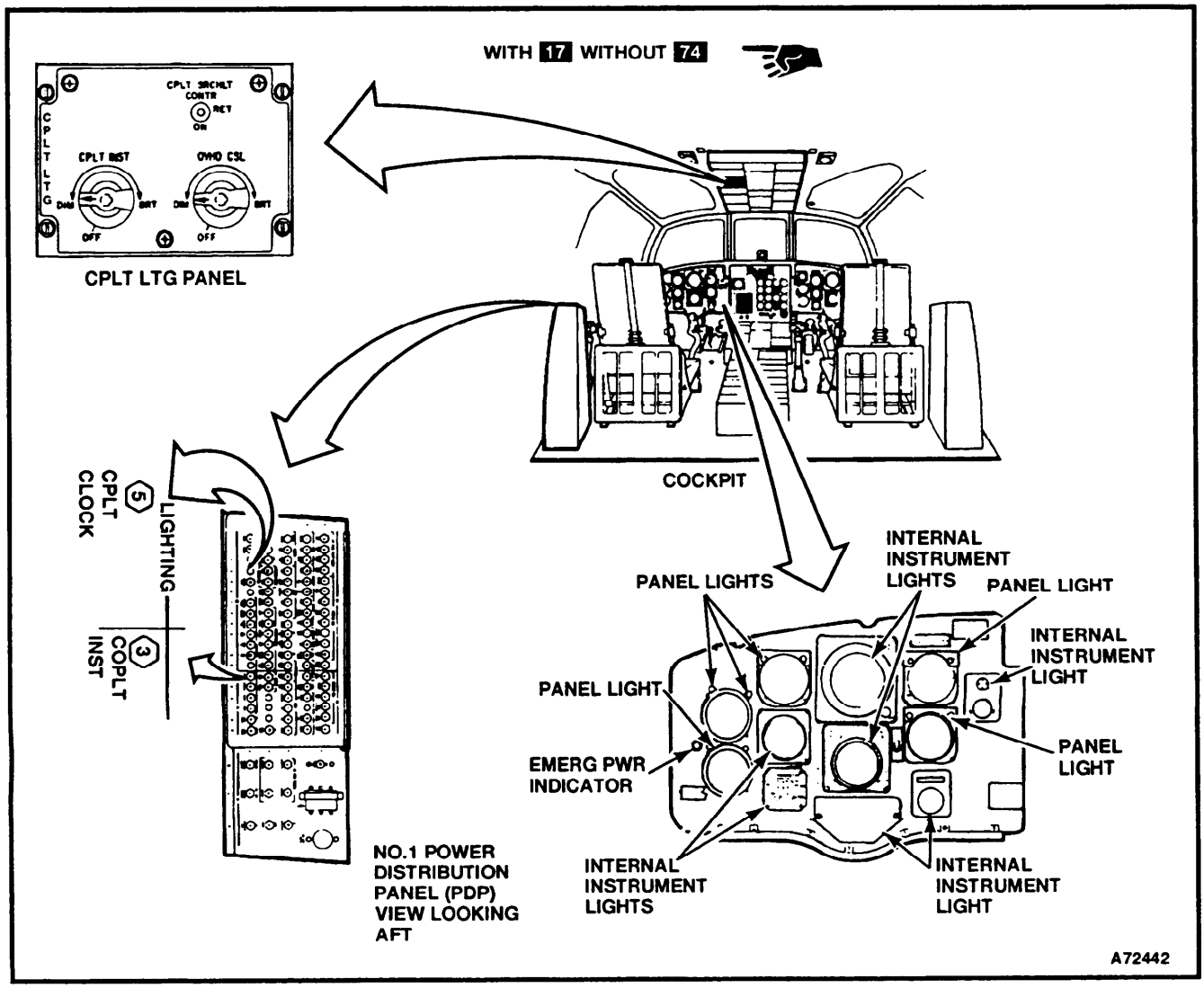
The copilot's instrument panel light system includes a CPLT INST LTG control 0-115 volt variable transformer, 115 to 5-volt autotransformer, and lamps to light the instruments and the RAD ALT dimming panel. Panel lights light the following instruments: aims altimeter, cruise guide indicator, rate of climb, airspeed indicators, rotor tachometer, and dual engine torquemeter. Internal lights light the following instruments: turn and slip indicator, RAD ALT DIM indicator (lightplate) attitude indicators, horizontal situation indicator (hsi) and mode select panel (lightplate), radar altimeter, and attitude direction indicator

The copilot's clock is lighted by a 28-volt dc circuit.

Operation:

Power for the 5-volt ac system comes from 115-volt No. 1 ac bus. When INSTR LIGHTING circuit breaker is closed, 115-volt ac is applied to the CPLT INST control, which varies the 5-volt output to vary the brightness of the lamps.

When the CPLT CLOCK circuit breaker is closed, 28-volt dc from No. 1 essential bus is connected to the clock.



COPILOT'S FLIGHT INSTRUMENT PANEL LIGHTS SYSTEM WITH 17 AND 74

Description:

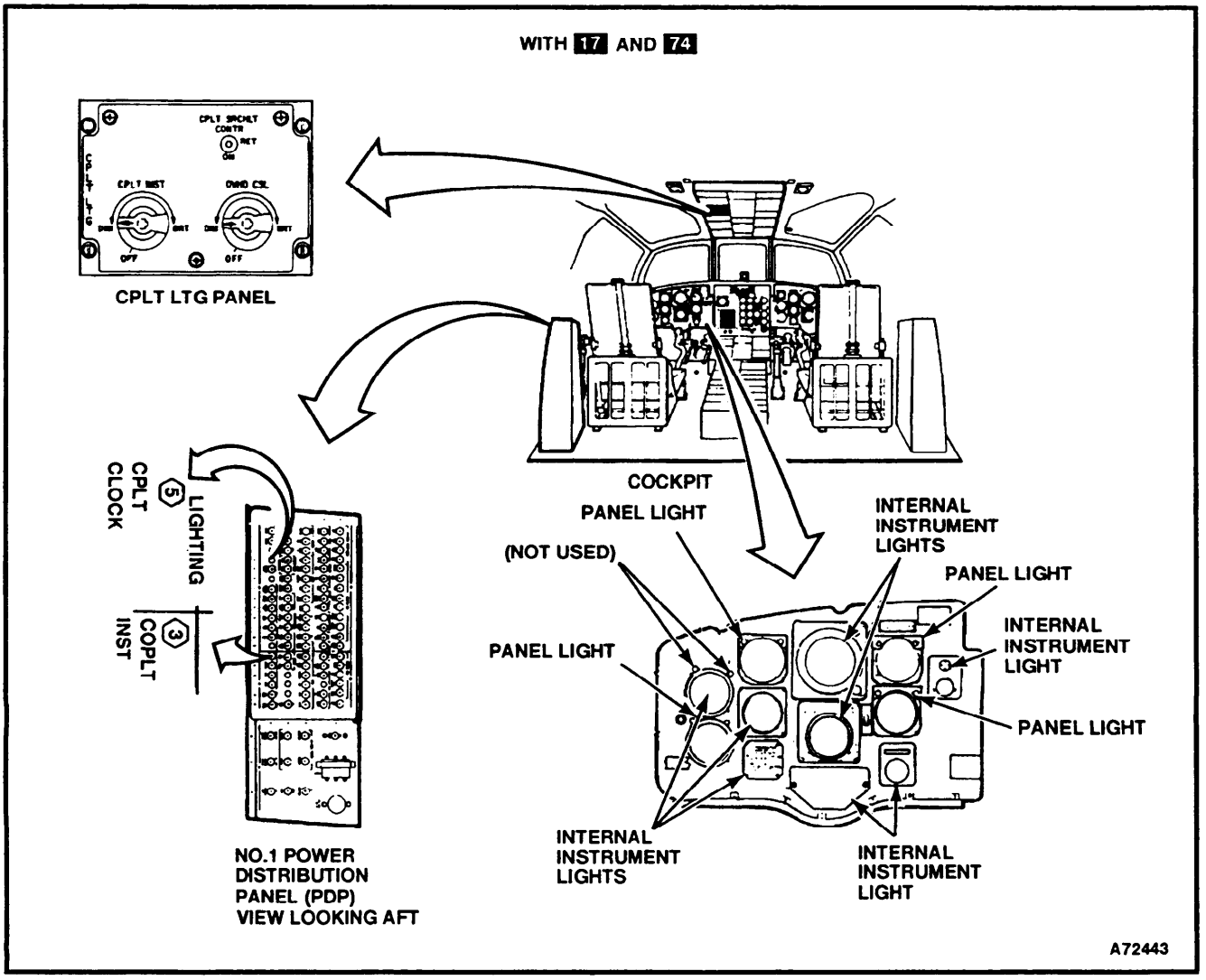
The copilot's instrument panel light system includes a CPLT INST LTG control 0-115 volt variable transformer, 115 to 5-volt autotransformer, and lamps to light the instruments and the RAD ALT dimming panel. Panel lights light the following instruments: aims altimeter, cruise guide indicator, rate of climb, airspeed indicators, and rotor tachometer. Internal lights light the following instruments: turn and slip indicator, RAD ALT DIM indicator (lightplate) attitude indicators, horizontal situation indicator (hsi) and mode select panel (lightplate), radar altimeter, attitude direction indicator, and dual engine torquemeter

The copilot's clock is lighted by a 28-volt dc circuit

Operation:

Power for the 5-volt ac system comes from 115-volt No. 1 ac bus. When INSTR LIGHTING circuit breaker is closed, 115-volt ac is applied to the CPLT INST control, which varies the 5-volt output to vary the brightness of the lamps.

When the CPLT CLOCK circuit breaker is closed, 28-volt dc from No. 1 essential bus is connected to the clock.



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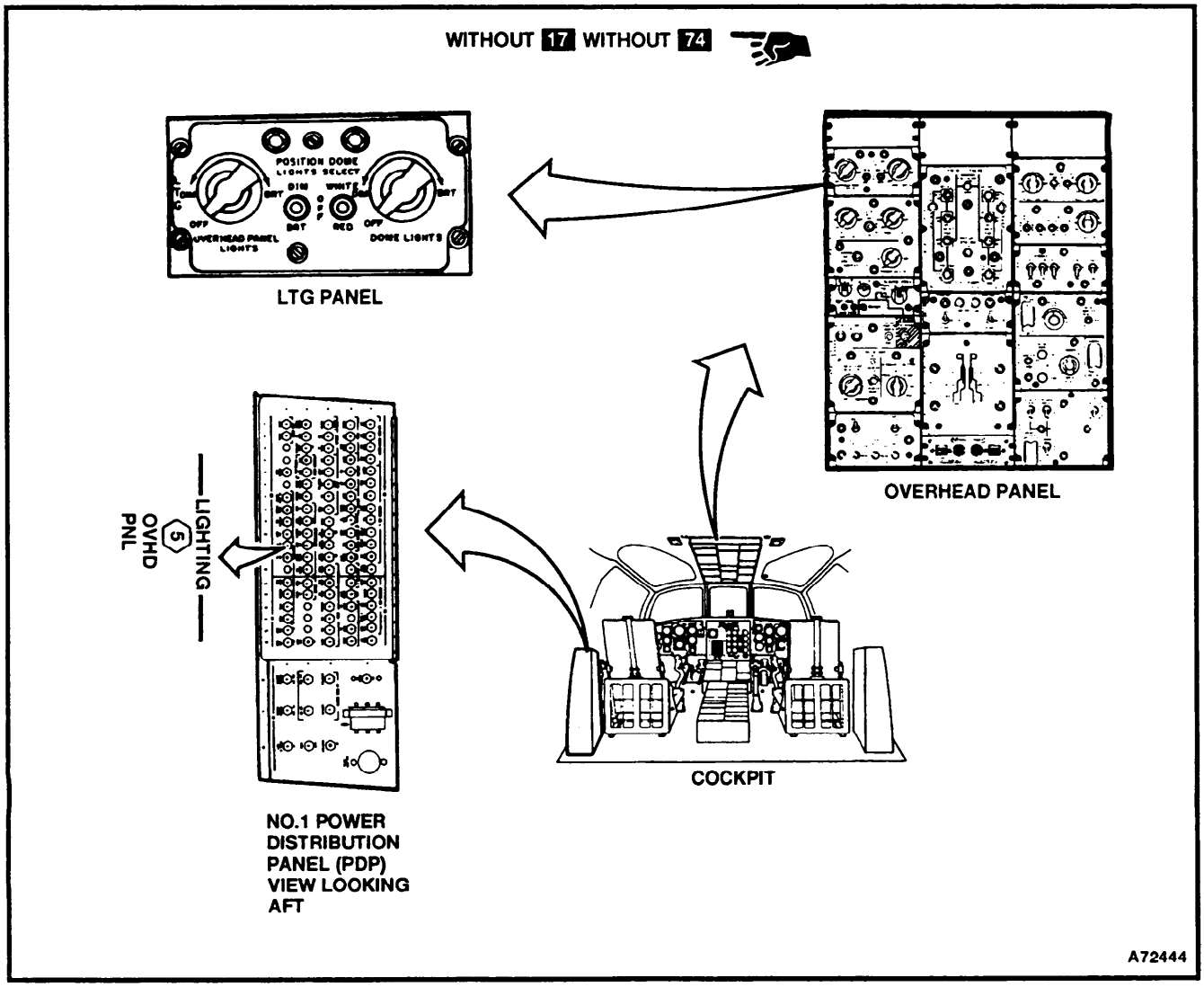
OVERHEAD PANEL LIGHTS SYSTEM WITHOUT 17 AND 74

Description:

The overhead panel lighting system includes 31 panel lights distributed among nine individual panels and an OVERHEAD PANEL LIGHTS control. The system also provides 28 volts dc to panel lights in engine control panel and hoist/cargo hook control panel.

Operation:

Power for the overhead panel lighting system comes from the 28-volt No. 1 dc bus. When OVHD PNL LIGHTING circuit breaker is closed, 28 volts dc is applied to OVERHEAD PANEL LIGHTS control which controls the brightness of the lamps.



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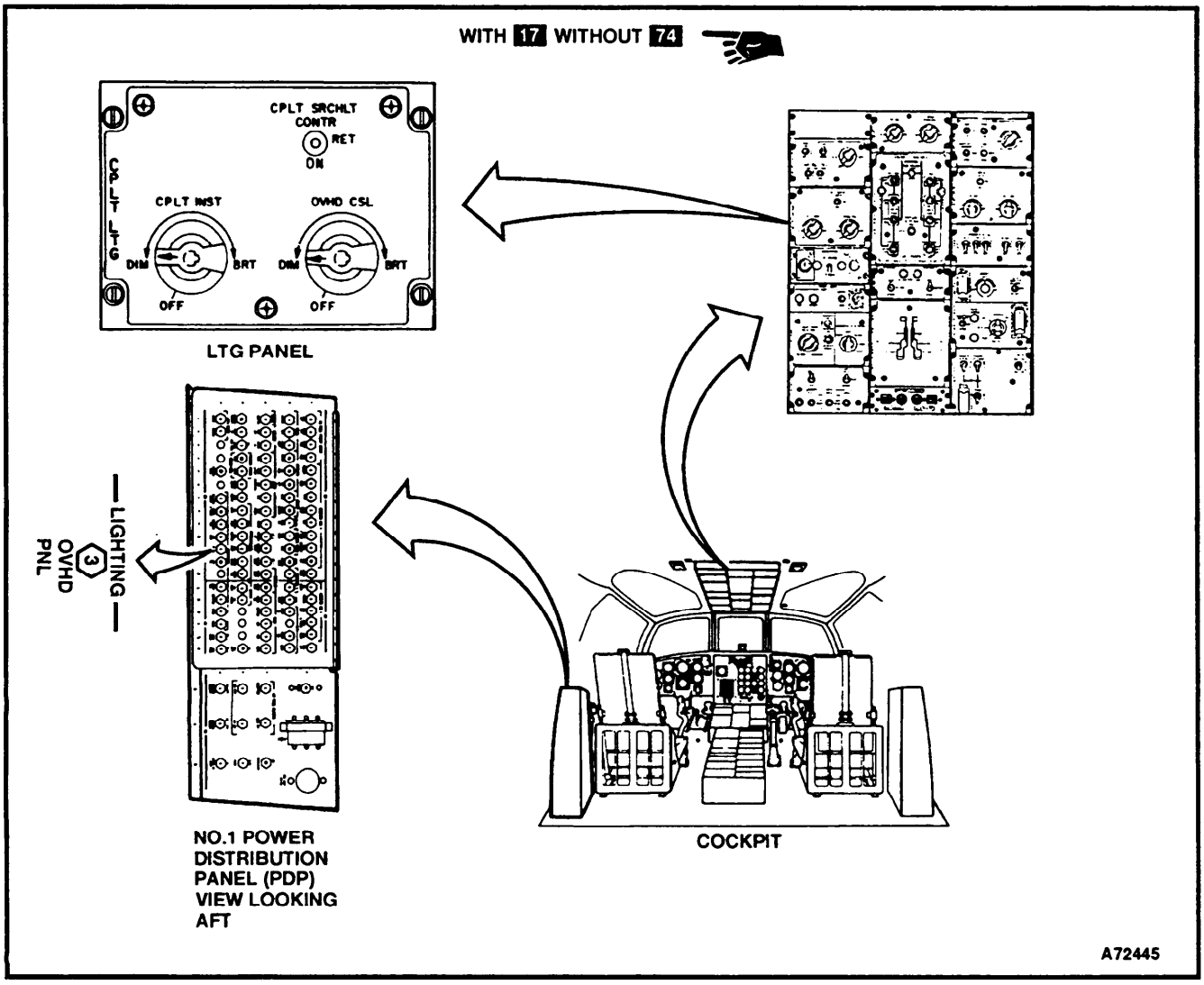
OVERHEAD PANEL LIGHTS SYSTEM WITH 17 AND WITHOUT 74

Description:

The overhead panel lighting system includes lightplates for 11 individual panels, an OVHD CSL DIM/BRT control (0-115 volt variable transformer), and a 115 to 5-volt autotransformer. The system also provides controlled ac from the DIM/BRT control to lightplates for the engine control and hoist/cargo hook control panels. Controlled 5-volt ac is provided to the compass controller.

Operation:

Power for the overhead panel lighting system comes from the 115-volt No. 1 ac bus. When OVHD PNL LIGHTING circuit breaker is closed, 115-volt ac is applied to OVHD CSL control which controls the brightness of the lamps. It also controls the level of the voltage fed to the compass controller from the 5-volt autotransformer.



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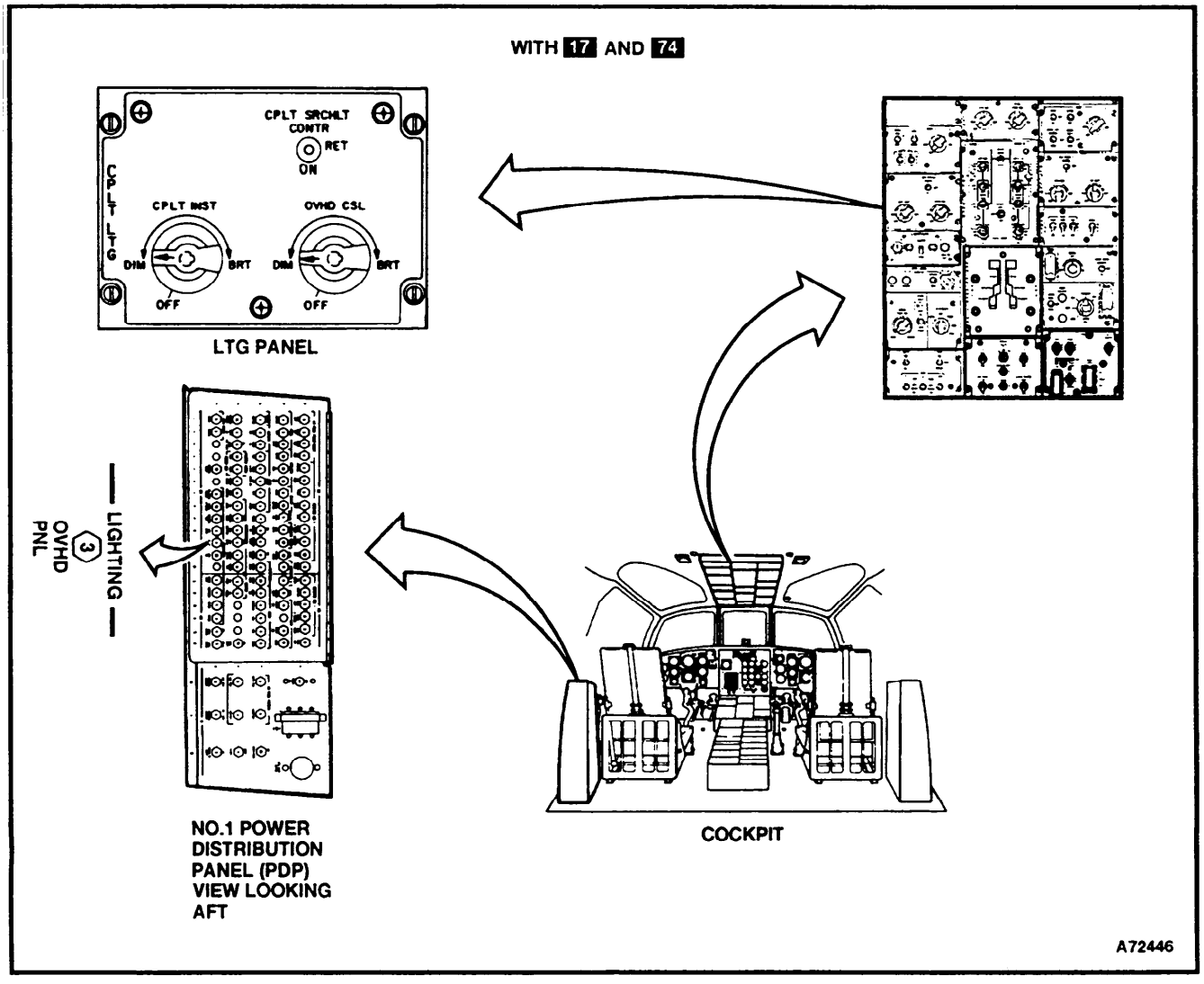
OVERHEAD PANEL LIGHTS SYSTEM WITH 17 AND 74

Description:

The overhead panel lighting system includes lightplates for 12 individual panels, an OVHD CSL DIM/BRT control (0-115 volt variable transformer), and a 115 to 5-volt autotransformer. The system also provides controlled ac from the DIM/BRT control to the lightplate for the hoist/cargo hook control panel. Controlled 5-volt ac is provided to the compass controller.

Operation:

Power for the overhead panel lighting system comes from the 115-volt No. 1 ac bus. When OVHD PNL LIGHTING circuit breaker is closed, 115-volt ac is applied to OVHD CSL control which controls the brightness of the lamps. It also controls the level of the voltage fed to the compass controller from the 5-volt autotransformer.



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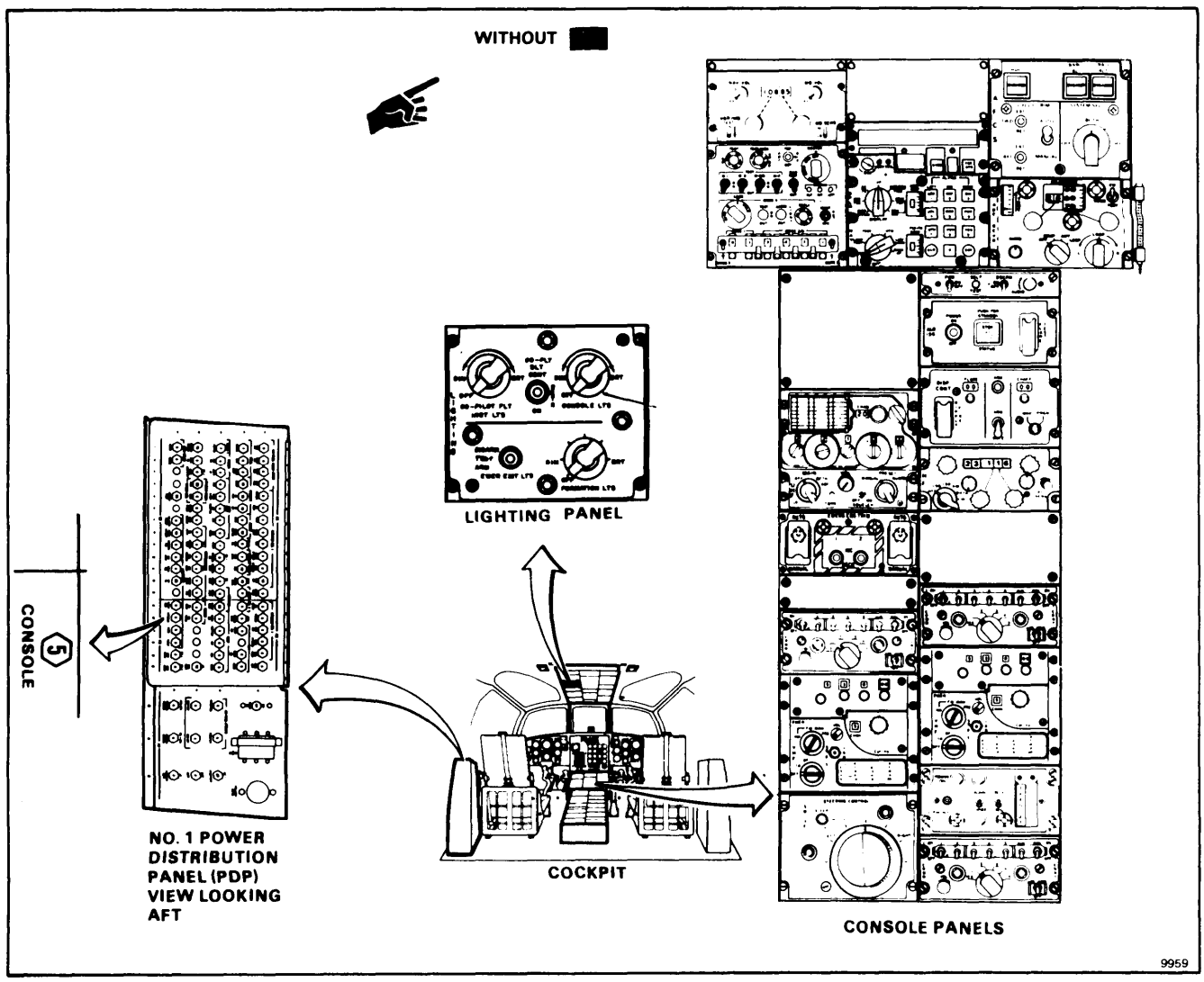
CONSOLE LIGHT SYSTEM WITHOUT 17

Description

The console lighting system provides 26 volts ac and 5 volts ac to the panel lights in the console. The system includes the CONSOLE LTS control and a 5-volt autotransformer. The autotransformer provides 5 volts and 1.5 volts ac through caution lights dimming relay to the AFCS control panel lights.

Operation

Power for the console lighting system comes from the 26-volt ac No. 1 bus. When CONSOLE LIGHTING circuit breaker is closed, 26 volts ac is applied to terminal 1, 2, and 3 of CONSOLE LTS control. When the control is set to BRT, 26 volts ac is applied to autotransformer and to the 26-volt lamps. All panel lights are simultaneously turned off or set to a level between dim and bright with the CONSOLE LTS control.



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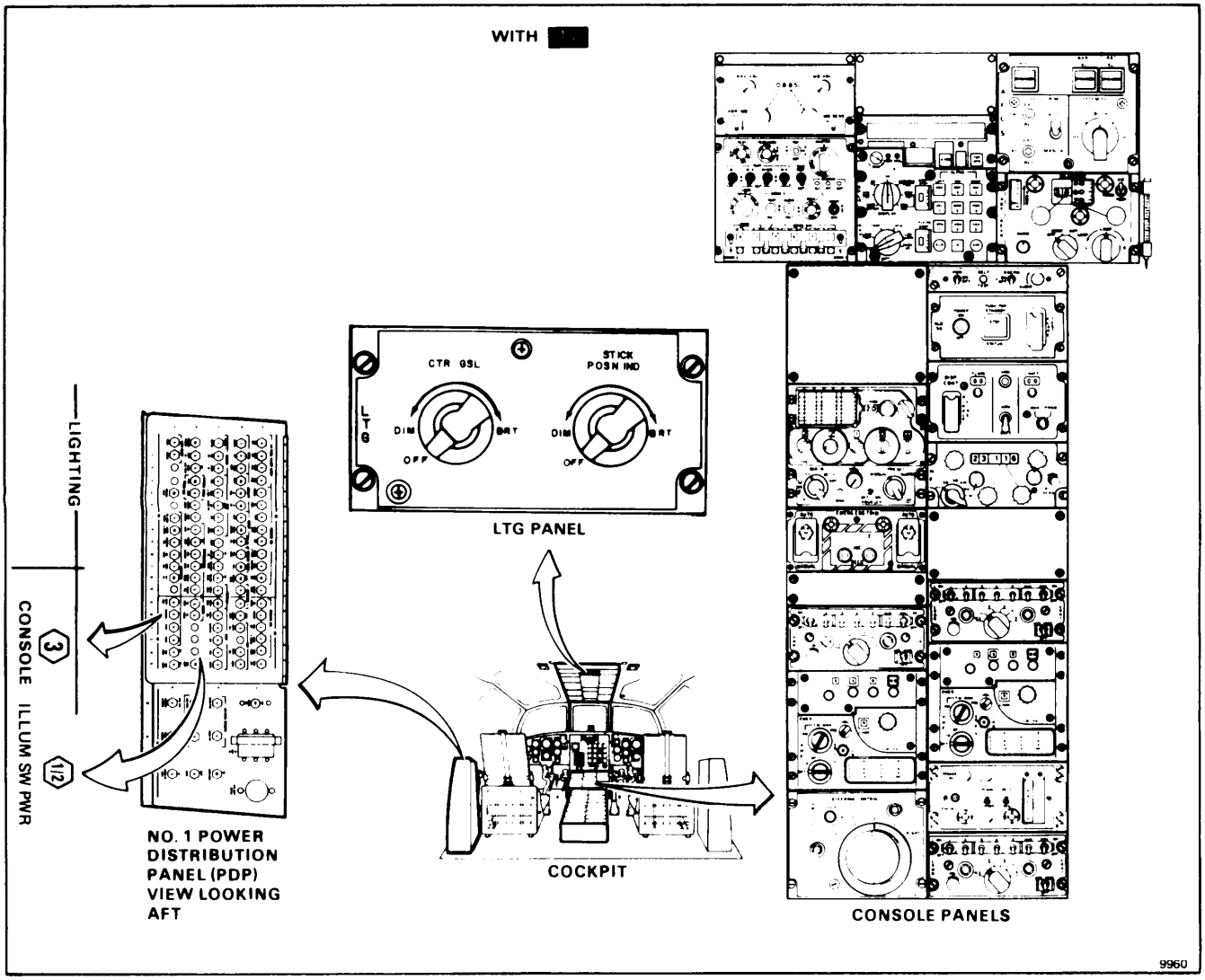
CONSOLE LIGHT SYSTEM WITH [redacted]

Description

The console lighting system provides controlled 28-volt ac and 5-volt ac to the panel lights in the console. It also provides controlled 3-volt or 5-volt ac to the lighted switches in the console and the instrument panels. The system includes the CTR CSL control and a STICK POSN IND control on the overhead panel, and three autotransformers in the console.

Operation

Power for console lighting system comes from the 115-volt No. 1 ac bus. When CONSOLE LIGHTING circuit breaker is closed, 115-volt ac is applied to the CTR CSL LTG control and the STICK POSN IND LTG controls. When turned from OFF, the STICK POSN IND LTG control supplies controlled 115-volt ac to the indicator. When turned from OFF, the CTR CSL LTG control supplies controlled 115-volt ac to a 115-28 volt autotransformer. The autotransformer supplies controlled 28-volt ac to a 28 volt autotransformer and to 14 control panels: ILS, UHF APR 39, ADF RCVR, HF, IFF EMER ENG TRIM, TSEC/KY-28, STEERING CONTROL, two VHF, and three COMM. The 26-5-volt autotransformer supplies controlled 5-volt ac to four panels: DPLR NAV, DISP CONT, AFCS, and MPS (ALQ-156). When the ILLUM SW PWR circuit breaker is closed, 115-volt ac is connected to an autotransformer with 5-volt and 3-volt outputs. The illuminated pushbutton lights dimming relay 232K3 selects one of these for the lighted switches in the AFCS and mode select panels (not shown).



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SECONDARY COCKPIT LIGHT SYSTEM WITHOUT 17

Description

The secondary cockpit lighting system provides lighting for the overhead panel, instrument panel, and console. The lighting system consists of 10 floodlights, two relays, three toggle switches, and a dimming control. Two of the floodlights provide lighting for the overhead panel, and eight provide lighting for the instrument panel, and console. The instrument panel and console floodlights are located under the glareshield. The system also includes an interlock circuit for pilot's and copilot's turn and slip indicator lights. The interlock circuit provides 28-volt dc, instead of 26-volt ac, if No. 1 ac bus or No. 1 dc bus is not powered. The secondary cockpit lighting system operates from the 28-volt essential dc bus.

Operation

1. When INSTR FLOODLIGHTING circuit breaker is closed, 28-volt dc power from the essential dc bus is connected to FLOOD LTS control. When the control is turned from OFF, power is connected through the control to pins 2 of INST PNL switch, CONSOLE switch, and OVHD PNL switch. When any switch is set to ON, power is applied to the respective floodlights. FLOOD LTS control provides on-off and brightness control of all the secondary cockpit lights.
2. During normal operation transfer relay K1 is operated when 115-volt ac is available from the No. 1 ac bus. Floodlight relay K2 is operated from the 28-volt No. 1 dc bus through NO. 1 DC BUS CONT circuit breaker and contacts of relay K1. This circuit provides 26-volt ac to the pilot's and copilot's turn and slip indicator lights.
3. If 28-volt dc is lost from the No. 1 dc bus, relay K2 releases. If 115-volt ac is lost from the No. 1 ac bus relay, K1 releases, causing relay K2 to release. With relay K2 released, the pilot's and copilot's turn and slip indicator lights are connected to the 28-volt essential dc bus. This connection is made through contacts of relay K2 and a switch on PILOTS FLT INST LTS control if PILOTS FLT INST LTS control is not positioned at OFF. Contacts of relay K2 also provide an alternate circuit for the instrument panel and overhead panel floodlights. This circuit is through the switch on control 121 R 1 and contacts of the relay. The circuit bypasses FLOOD LTS control, INST PNL switch, and OVHD PNL switch which will illuminate all secondary cockpit lighting..

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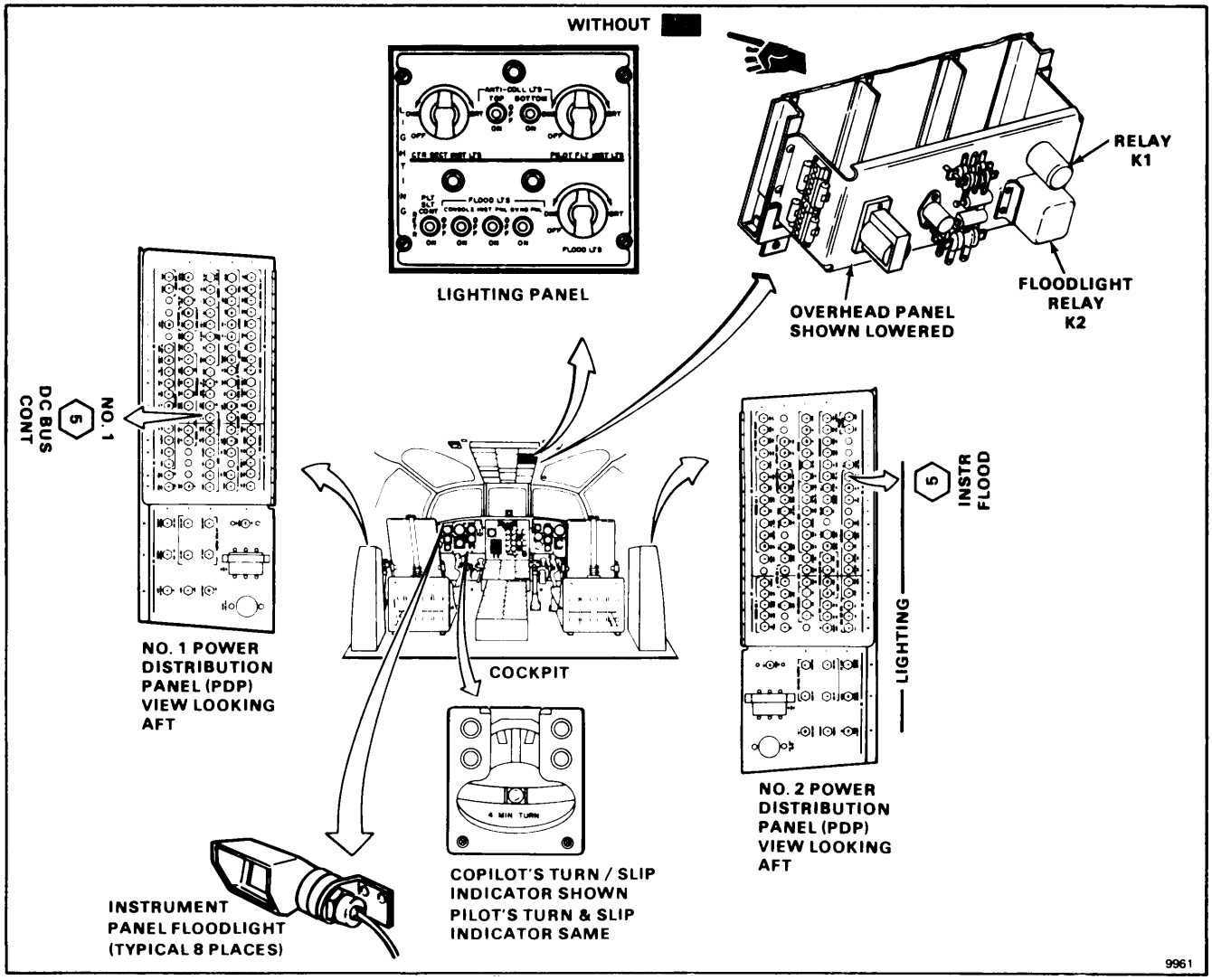

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SECONDARY COCKPIT LIGHT SYSTEM WITH 17

Description

The secondary cockpit lighting system provides lighting for the overhead panel, instrument panel, and console. The lighting system consists of eight floodlights, three relays, two toggle switches, and a dimming control. The relays and toggle switches are in the overhead panel. Two of the floodlights are on the overhead panel and six are on the instrument panel. An interlock turns on the floodlights if ac power or No. 1 dc bus were to fail, An ac power failure disables the normal instrument lights. The secondary cockpit lighting system operates from the 28-volt essential dc bus.

Operation

1. When INSTR FLOODLIGHTING circuit breaker is closed, 28-volt dc power from the essential dc bus is connected to FLOOD DIM/BRT control. When the control is turned from OFF, power is connected through the control to pins 2 of INST FLOOD and OVHD FLOOD light switches. When either switch is set to ON, power is applied to the respective floodlights. FLOOD DIM/BRT control provides on-off and brightness control for all secondary cockpit lights.
2. During normal operation, transfer relay K1 is operated when 115-volt ac is available from No. 1 ac bus. Floodlight relay K2 is operated from 28-volt No. 1 dc bus through NO. 1 DC BUS CONT circuit breaker and contacts of relay K 1.
3. If 28-volt dc is lost from No. 1 dc bus, relay K2 releases. If 115-volt ac is lost from No. 1 ac bus, relay K1 releases, causing relay K2 to release. When the pilot's INST DIM/BRT control on the PLT LTG panel is turned from OFF, control relay K3 is operated by 28-volt dc from the dc essential bus through the COCKPIT LIGHTS DIM CONT circuit breaker. Relay K3 arms a bypass circuit. If the FLOOD light switches were at OFF in an ac power failure, relay K3 bypasses the open FLOOD light switches and turns on the floodlights. Power to bypass the open switches is routed from the FLOOD DIM/BRT control through closed contacts A1-A2 of relay K3 and normal contacts D2-D3, C2-C3, and 92-93 of relay K2.

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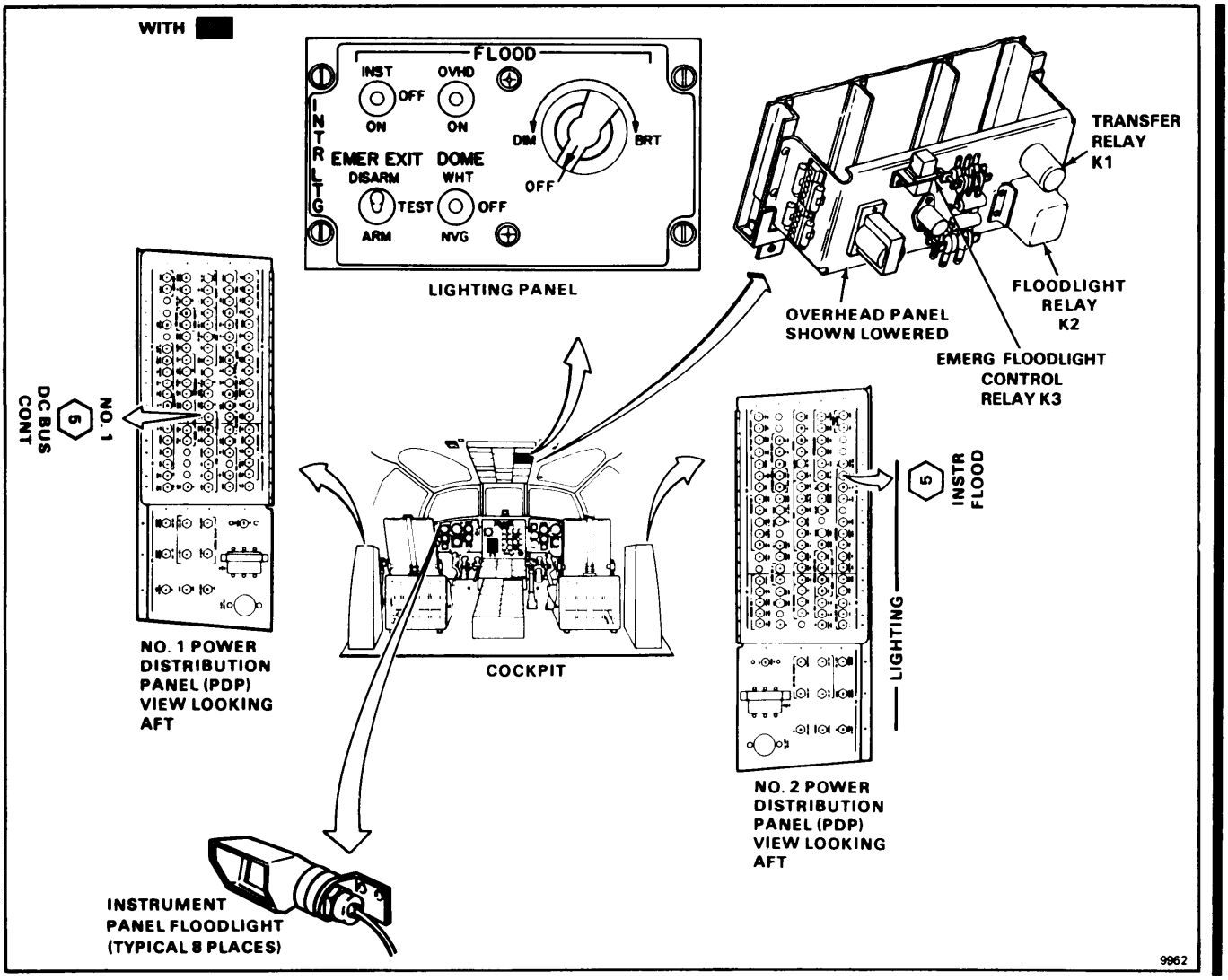

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COCKPIT DOME AND UTILITY LIGHT SYSTEM WITHOUT 17

Description

The cockpit dome and utility lighting system provides lighting for the cockpit section. This system includes two cockpit dome lights and two utility lights. The system operates from the 28-volt No. 2 dc bus.

Operation

When COCKPIT DOME circuit breaker is closed, 28 volts dc from No. 2 dc bus is applied to system switches or controls. When DOME SELECT switch is set to WHITE or RED, 28 volts dc is applied to DOME LIGHTS control. DOME LIGHTS control varies the brightness of the cockpit dome lights. 28 volts dc is also applied to each utility light. The brightness of each light is varied by an integral control.

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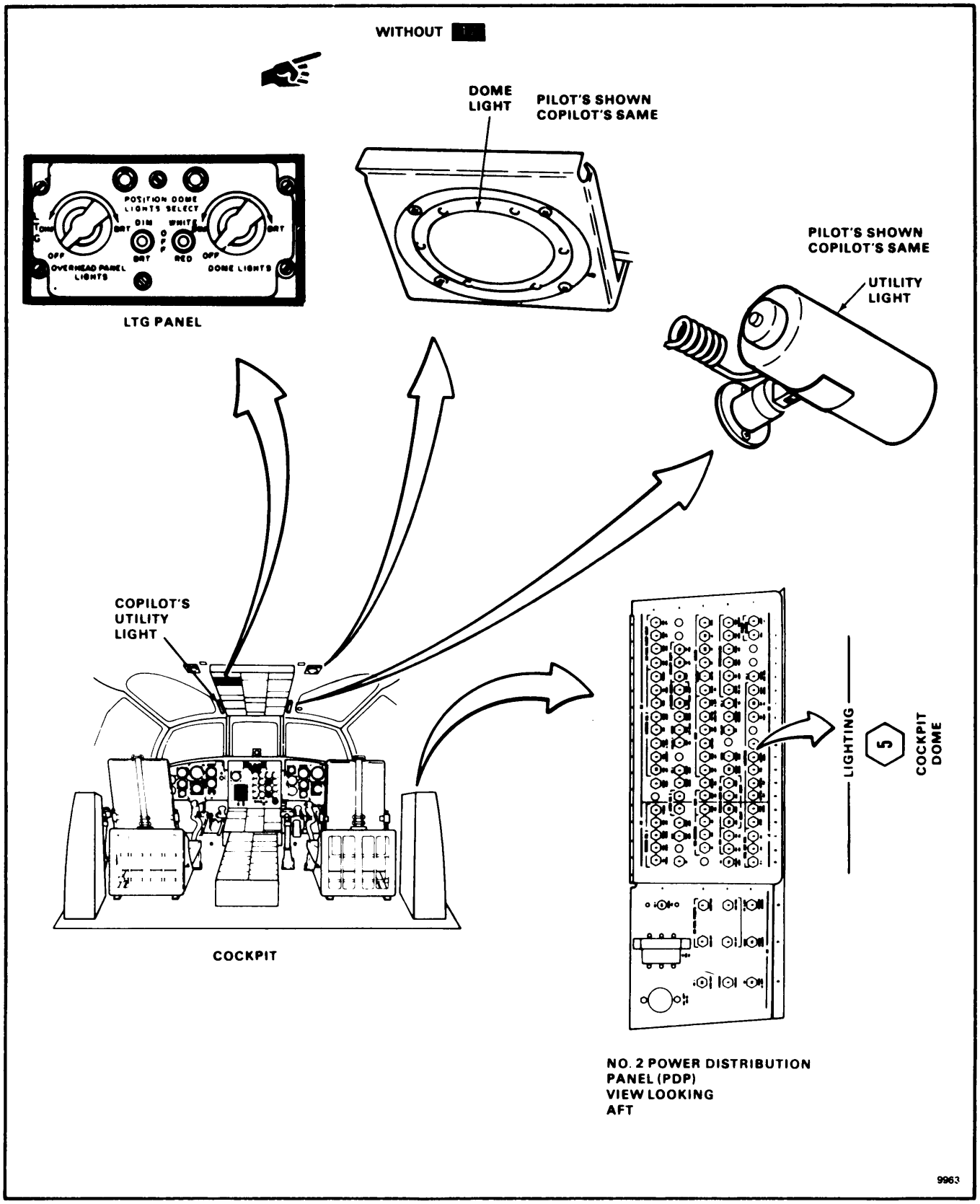

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COCKPIT DOME AND UTILITY LIGHT SYSTEM WITH 17 AND 53

Description

The cockpit dome and utility lighting system provides lighting for the cockpit. This system includes two cockpit dome lights, two utility lights, and a WHT/OFF/NVG three-position positive-locking select switch. This positive-locking switch prevents inadvertent white light (WHT) activation during NVG operation. The system operates from the 28-volt No. 2 dc essential bus.

Operation

When COCKPIT DOME circuit breaker is closed, 28 volts dc from No. 2 dc essential bus is applied to the moving contact of the WHT/OFF/NVG three-position positive-locking select switch and directly to the utility lights. When the select switch is at WHT, 28-volt dc is connected to the white lamps in the dome lights. When the switch is at NVG, 28-volt dc is connected to the “blue” lamps (inside each light, there is an NVG filter over the lamp). There is also an NVG filter over the lens of each utility light.

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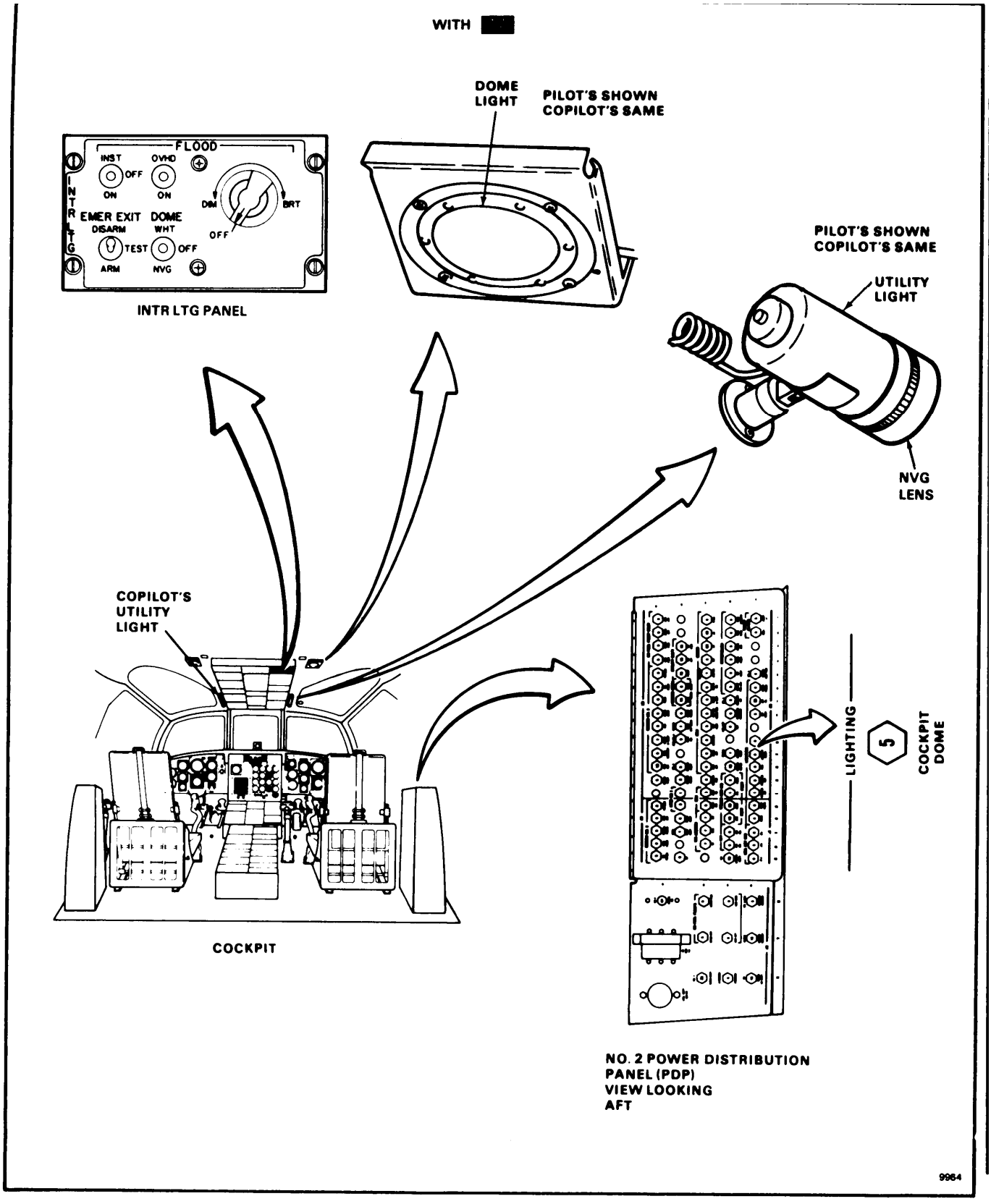

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CABIN AND RAMP LIGHTING SYSTEM WITHOUT 17

Description

The cabin and ramp lighting system provides white and red lighting for the cabin and ramp areas. The system includes five dome lights, two toggle switches, a pushbutton switch, and two relays. The system operates from the 28-volt dc switched battery bus.

Operation

1. When CABIN & RAMP LIGHTING circuit breaker is closed, 28 volts dc from the switched battery bus is applied to terminals B2 of red relay K1 and white relay K2. Both relays cannot be operated at the same time. When red relay K1 is operated, the 28 volts dc is applied through relay K1. This voltage lights the red lamp in each of the five dome lights. When white relay K2 is operated, the 28 volts dc is applied through relay K2. This voltage lights the white lamp in each of the five dome lights.
2. When both relays are released, the red and white lamps are out. When momentary WHT ON switch is pressed, 28 volts dc from the circuit breaker is applied to white relay K2. The relay energizing circuit is completed to ground through CABIN & RAMP LIGHTS switch. Contacts A1-A2 provide a holding circuit for relay K2. The holding circuit provides 28 volts dc for relay K2 through CAB & RAMP LTS switch. When the WHT ON switch is released, white-relay K2 remains energized until either CAB & RAMP LTS switch or CABIN & RAMP LIGHTS switch is set to ALL OFF.
3. When either CAB & RAMP LTS switch is momentarily set to RED ON, 28 volts dc is applied through a switch to terminal X1 of red relay K1. The relay control circuit is completed to ground through CABIN & RAMP LIGHTS switch. Contacts A1-A2 provide a holding circuit for relay K1. The holding circuit provides 28 volts dc for relay K1. When either switch is released, red relay K1 remains energized until either CAB & RAMP LTS switch is set to ALL OFF.
4. When the red lamps of the dome lights are on, 28 volts dc is applied to the troop warning system to dim the red and green jump lights.

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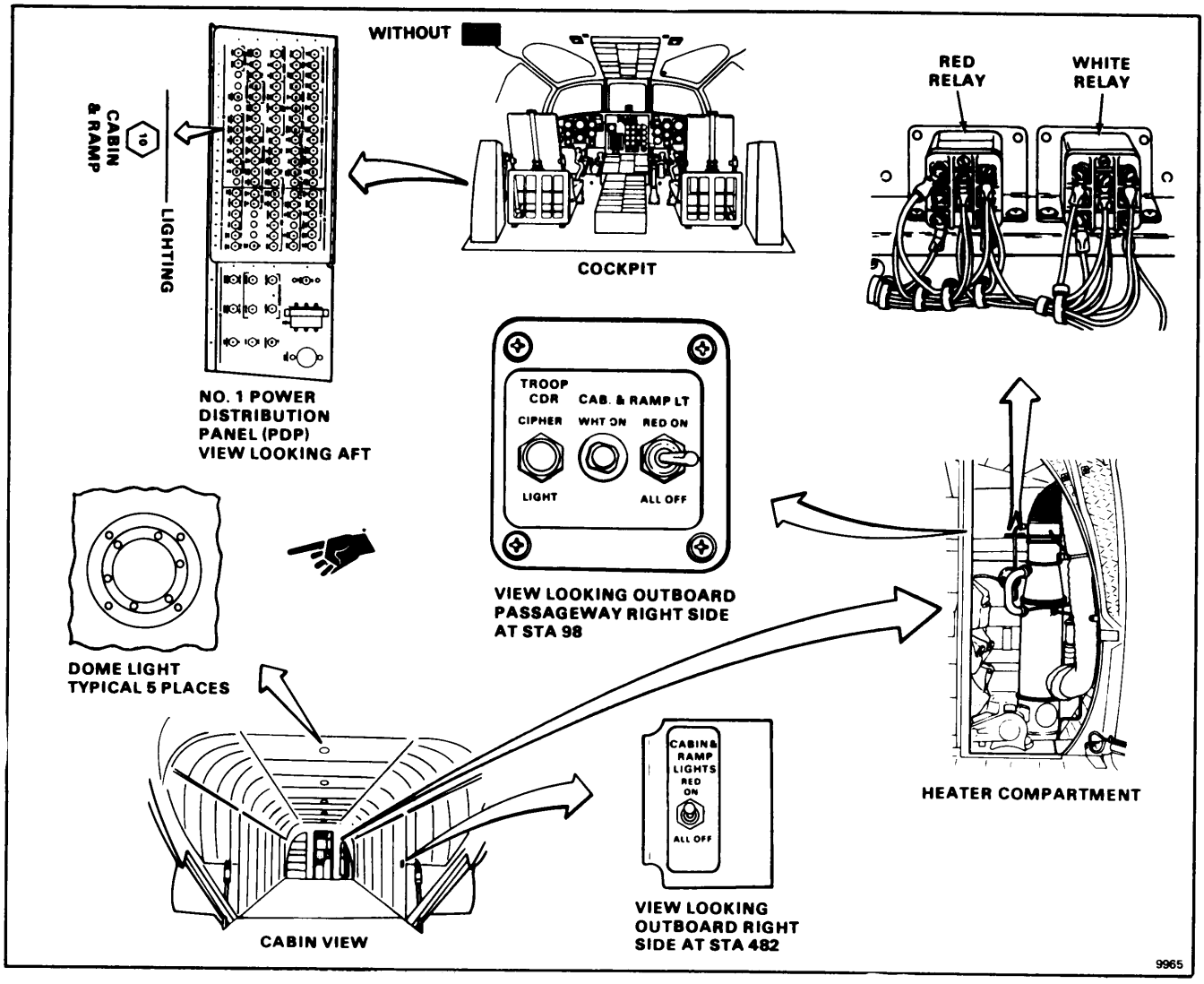

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CABIN AND RAMP LIGHTING SYSTEM WITH 17

Description

The cabin and ramp lighting system provides blue-green NVG or red lighting for the cabin and ramp areas. The system includes five dome lights, a RED/OFF/NVG select switch, and a dimming control. The system operates from the 28-volt dc switched battery bus.

Operation

1. When CABIN & RAMP LIGHTING circuit breaker is closed, 28-volt dc from the switched battery bus is applied to a moving contact of the RED/OFF/NVG select switch and to the dimming control.
2. When the switch is set to NVG, 28-volt dc is connected through the moving contact of the dimming control to the clear lamps in five dome lights. Inside the lights, there are NVG filters over the clear lamps.
3. When the switch is set to RED, 28-volt dc is connected through the moving contact of the dimming control to the red lamps in the five dome lights.
4. When the red lamps of the dome lights are on, 28 volts dc is applied to the troop warning system to dim the red and green jump lights.

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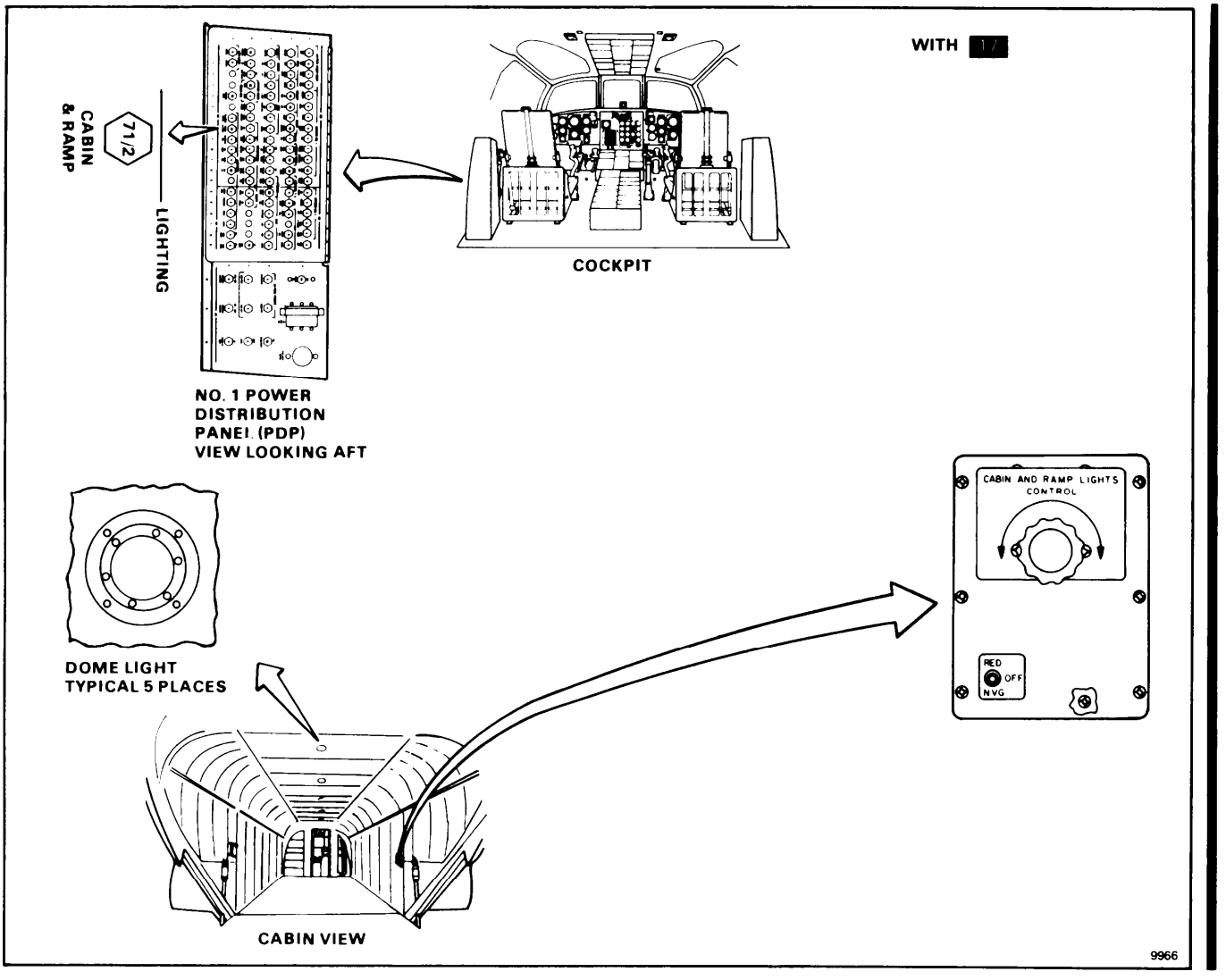

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TROOP WARNING SYSTEM WITHOUT 17

Description

The troop warning system provides visual and audible signals for the troops. The system has two troop warning boxes, one in the forward section of the cabin at sta 120 and the other in the ramp area at sta 575. The system also includes two indicator lights, two switches, and a relay in the overhead panel. The system operates from the 28-volt No. 2 dc bus.

Operation

1. When TROOP ALARM BELL circuit breaker is closed, 28 volts dc from No. 2 dc bus is applied to TROOP ALARM switch. When this switch is at ON, 28 volts dc sounds both alarm bells. The bells continue to sound until the switch is set to OFF.
2. When TROOP ALARM JUMP LT circuit breaker is closed, 28 volts dc from No. 2 dc bus is applied to TROOP JUMP LTS switch and to TROOP JUMP LTS indicator-switches. The 28 volts dc to the indicator-switches is used to test the lamps. When the lens on the indicator-switches are pressed, 28 volts dc lights the integral lamp.
3. There are two dimming relays in this system. Jump lights dimming relay controls the brightness of the jump lights in both troop warning boxes. Signal lights dimming relay controls the brightness of the TROOP JUMP LTS in the overhead panel. When either relay is released, its associated lights come on at full brightness. When either relay is operated, its associated lights come on at reduced brightness. These relays are coordinated with other systems to ensure that the jump lights are not bright when nearby lights are dim. When the red cabin and ramp dome lights are on, 28 volts dc from the cabin and ramp lighting system operates jump lights dimming relay. When the caution lights are set to DIM, 28 volts dc from the master caution panel circuit operates signal lights dimming relay. When TROOP JUMP LTS switch is set to RED, three red jump lights come on. When TROOP JUMP LTS switch is set to GREEN, three green jump lights come on.

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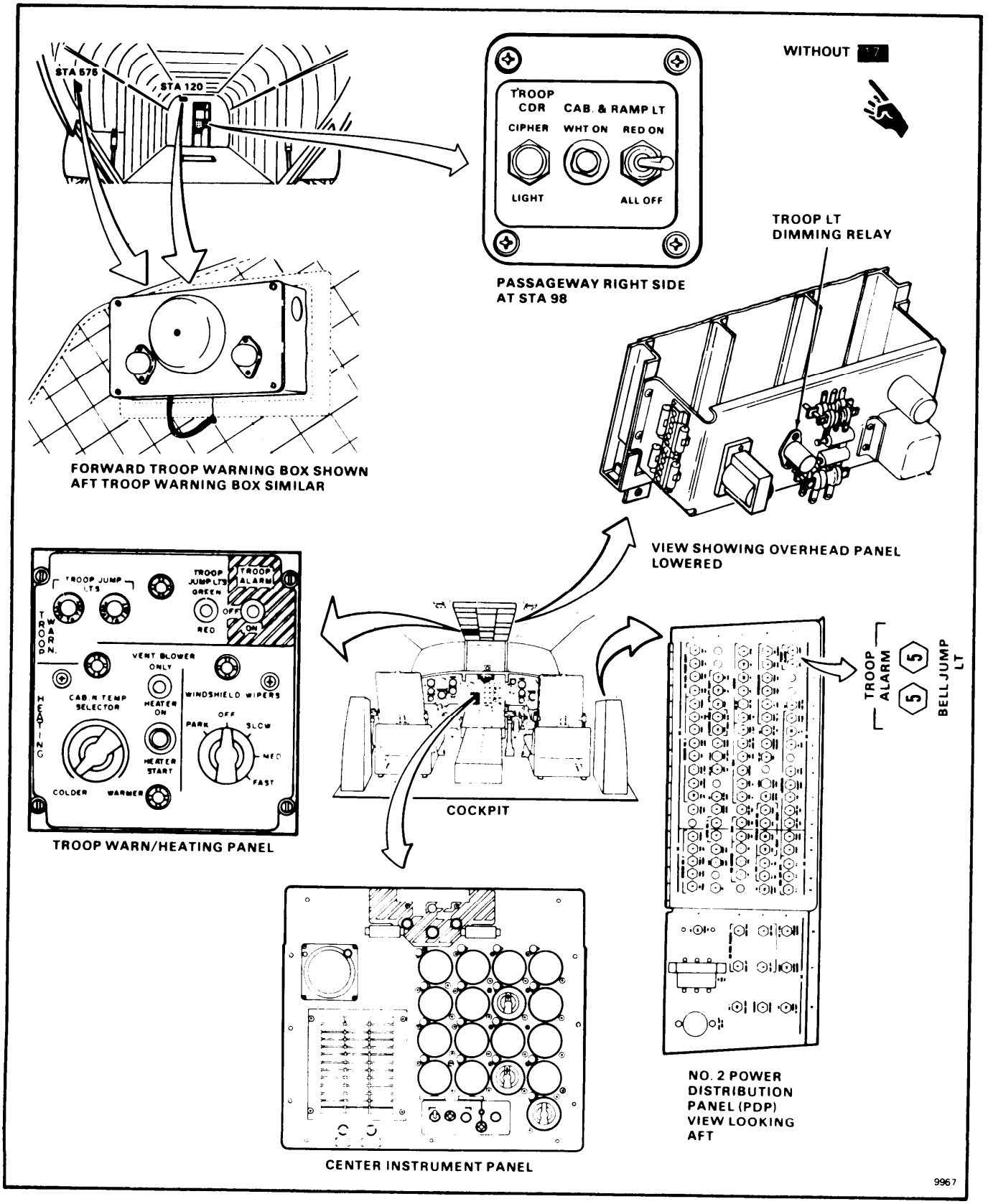

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TROOP WARNING SYSTEM WITH 17

Description

The troop warning system provides visual and audible signals for the troops. The system has two troop warning boxes, one in the forward section of the cabin at sta 120 and the other in the ramp area at sta 575. The system also includes two indicator lights, two switches, and a relay in the overhead panel. The indicator lights are blue-green NVG compatible. The lights in the troop warning boxes are normal red and green. The system operates from the 28-volt No. 2 dc bus.

Operation

1. When TROOP ALARM BELL circuit breaker is closed, 28 volts dc from No. 2 dc bus is applied to TROOP ALARM switch. When this switch is at ON, 28 volts dc sounds both alarm bells. The bells continue to sound until the switch is set to OFF.
2. When TROOP ALARM JUMP LT circuit breaker is closed, 28 volts dc from No. 2 dc bus is applied to TROOP JUMP LTS switch and to TROOP JUMP LTS indicator-switches. The 28 volts dc to the indicator-switches is used to test the lamps. When the lens on the indicator-switches are pressed, 28 volts dc lights the integral lamp.
3. There are two dimming relays in this system. Jump lights dimming relay controls the brightness of the jump lights in both troop warning boxes. Signal lights dimming relay controls the brightness of the TROOP JUMP LTS in the overhead panel. When either relay is released, its associated lights come on at full brightness. When either relay is operated, its associated lights come on at reduced brightness. These relays are coordinated with other systems to ensure that the jump lights are not bright when nearby lights are dim. When the red cabin and ramp dome lights are on, 28 volts dc from the cabin and ramp lighting system operates jump lights dimming relay. When the PILOT INST DIM/BRT control is moved away from the OFF position, the signal lights dimming relay is operated, unless the WHT-OFF-NVG DOME light switch is in the WHT position. When TROOP JUMP LTS switch is set to RED, three red jump lights come on. When TROOP JUMP LTS switch is set to GREEN, three green jump lights come on.

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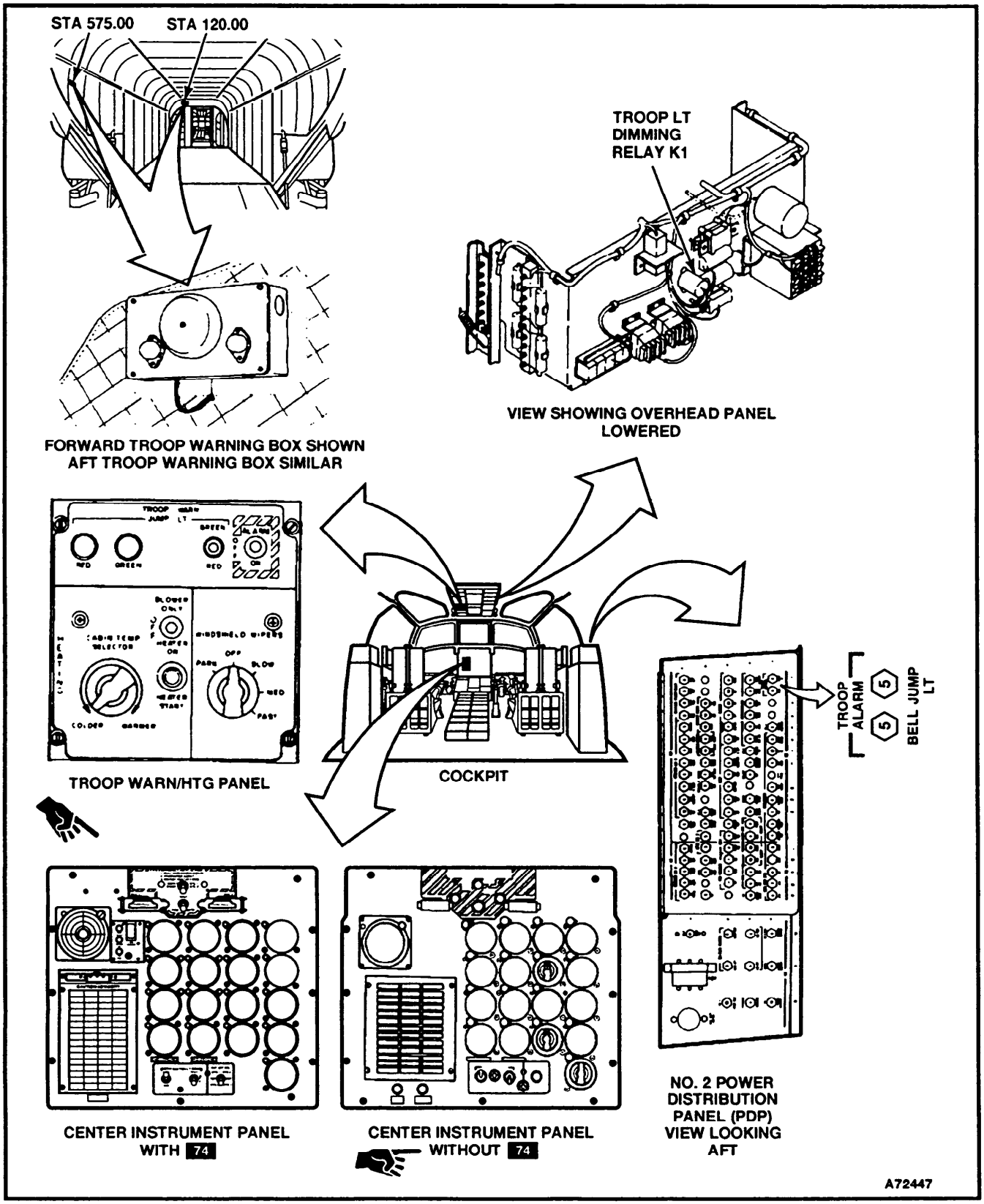

STA 575.00
STA 120.00
FORWARD TROOP WARNING BOX SHOWN
AFT TROOP WARNING BOX SIMILAR
TROOP LT
DIMMING
RELAY K1
VIEW SHOWING OVERHEAD PANEL
LOWERED
TROOP WARN/HTG PANEL
COCKPIT
TROOP
ALARM
5
5
BELL JUMP
LT
CENTER INSTRUMENT PANEL
WITH 74
CENTER INSTRUMENT PANEL
WITHOUT 74
NO. 2 POWER
DISTRIBUTION
PANEL (PDP)
VIEW LOOKING
AFT
A72447

END OF TASK

SECTION VI

LIGHTING SYSTEMS

9-61 REMOVE 26V LIGHTING TRANSFORMER

INITIAL SETUP

Applicable Configurations:

Without 17

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:

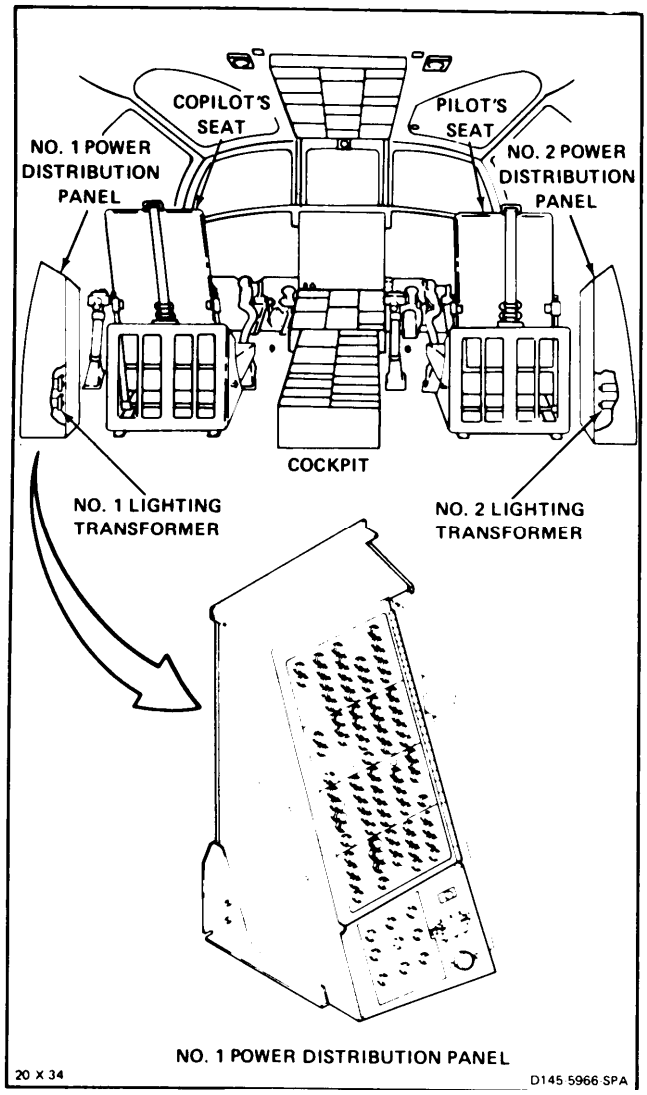
Paper Tags (E264)
Tape (E385)

Personnel Required:

Aircraft Electrician

Equipment Condition:

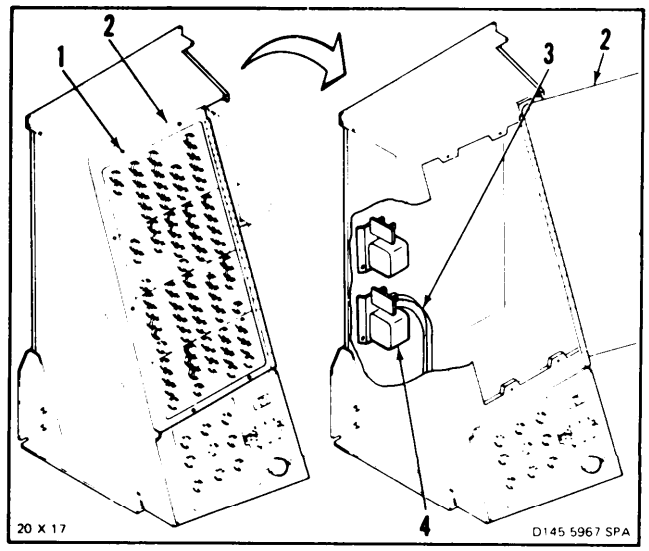
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is same to remove No. 1 or No. 2 lighting transformer. Removal of No. 1 lighting transformer is shown here.

1. Release six fasteners (1) in upper circuit breaker panel (2). **Open panel.**
2. Tag three wires (3) on No. 1 lighting transformer (4). Use tags (E264).



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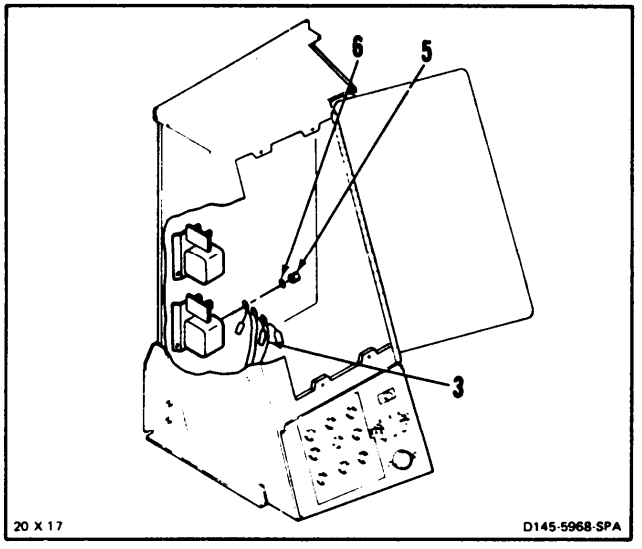
9-61 REMOVE 26V LIGHTING TRANSFORMER (Continued) 9-61

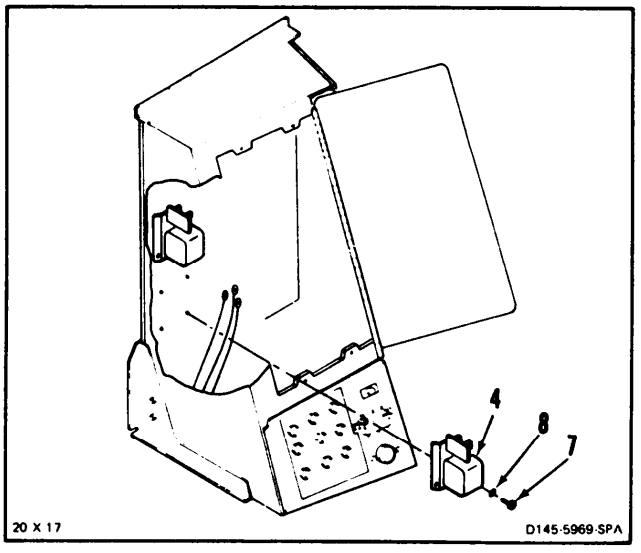
3. Remove three nuts (5) and Iockwashers (6). **Disconnect three wires (3).**
4. Tape ends of wires (3). Use tape (E385).



5. **Remove** three screws (7), washers (8) and **No. 1 lighting transformer (4).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-62 INSTALL 26V LIGHTING TRANSFORMER

INITIAL SETUP

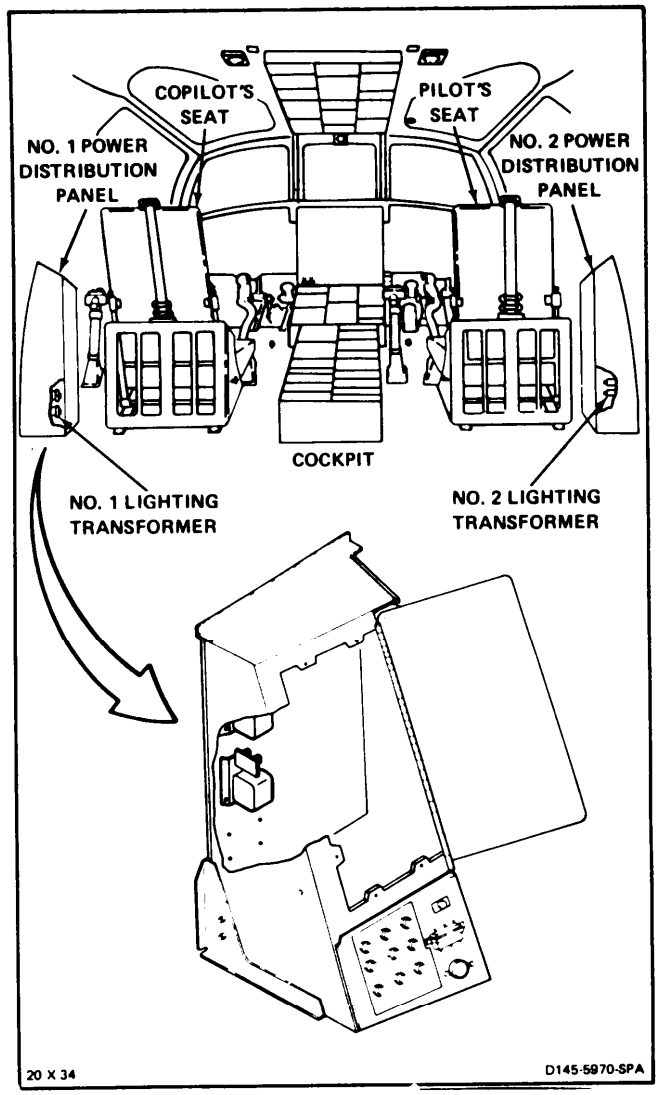
Applicable Configurations:
Without 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

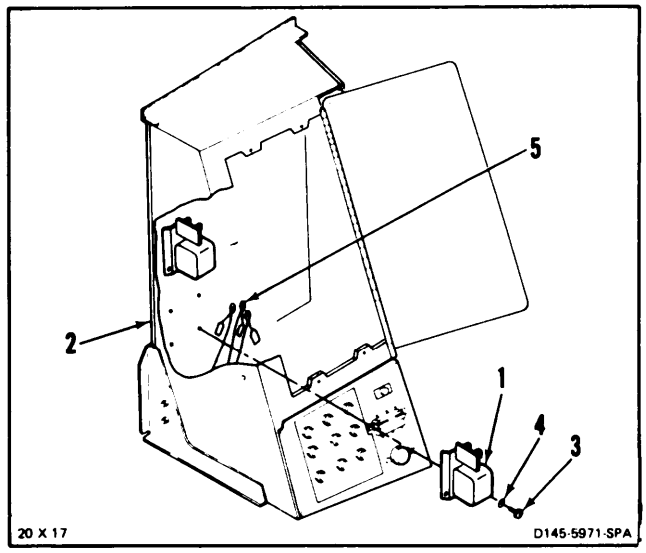
References:
TM 55-1520-240-23P



NOTE

Procedure is same to install No. 1 or No. 2 lighting transformer. Installation of No. 2 lighting transformer is shown here.

1. **Position No. 1 lighting transformer (1)** in No. 1 power distribution panel (2).
2. **Install three screws (3)** and washers (4).
3. Remove tape from ends of three wires (5).



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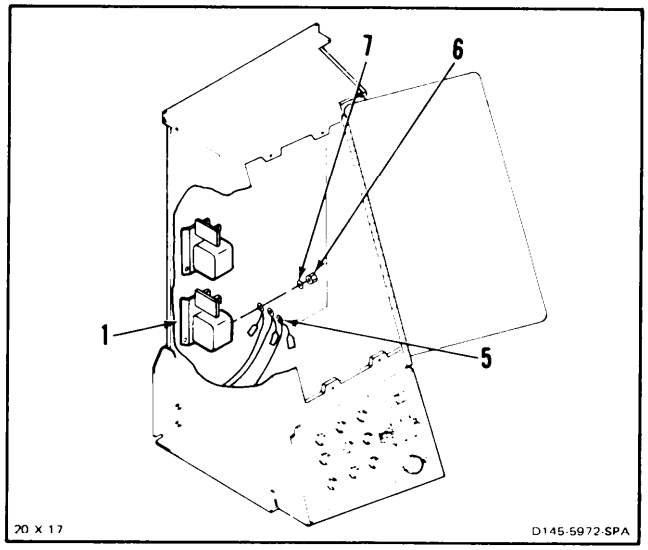
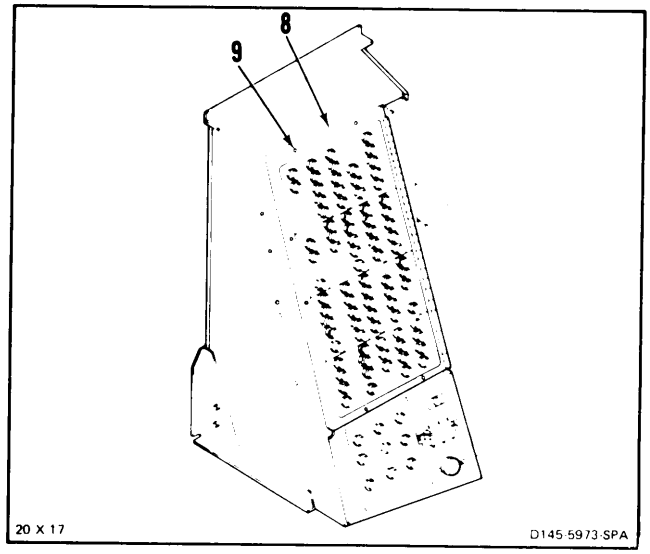
9-62 INSTALL 26V LIGHTING TRANSFORMER (Continued) 9-62

4. **Connect three wires (5)** to No. 1 lighting transformer (1) Install three nuts (6) and lockwashers (7). Remove tags.



5. **Close circuit breaker panel (8). Tighten six fasteners (9).**



FOLLOW-ON MAINTENANCE:

For No. 1 lighting transformer, perform operational check of copilot's flight instrument panel lights (TM 55-1520-240-T).

For No. 2 lighting transformer, perform operational check of pilot's flight instrument panel lights (TM 55-1520-240-T).

END OF TASK

9-63 REMOVE TAIL POSITION LIGHT

INITIAL SETUP

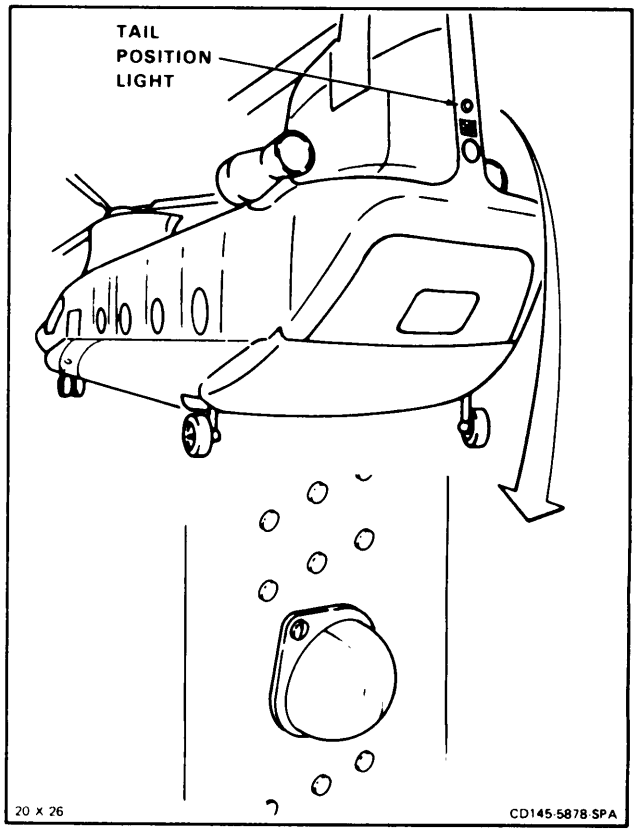
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Work Stand

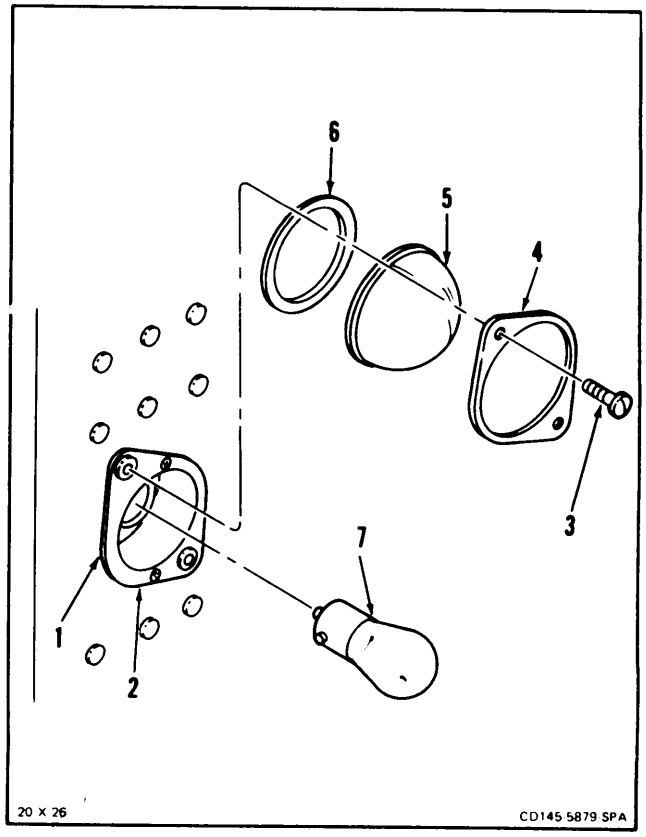
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. Cut through sealant (1) at edge of light (2).
2. **Remove two screws (3), lens retainer (4), lens (5), and seal (6).**
3. **Remove lamp (7)** from light (2).



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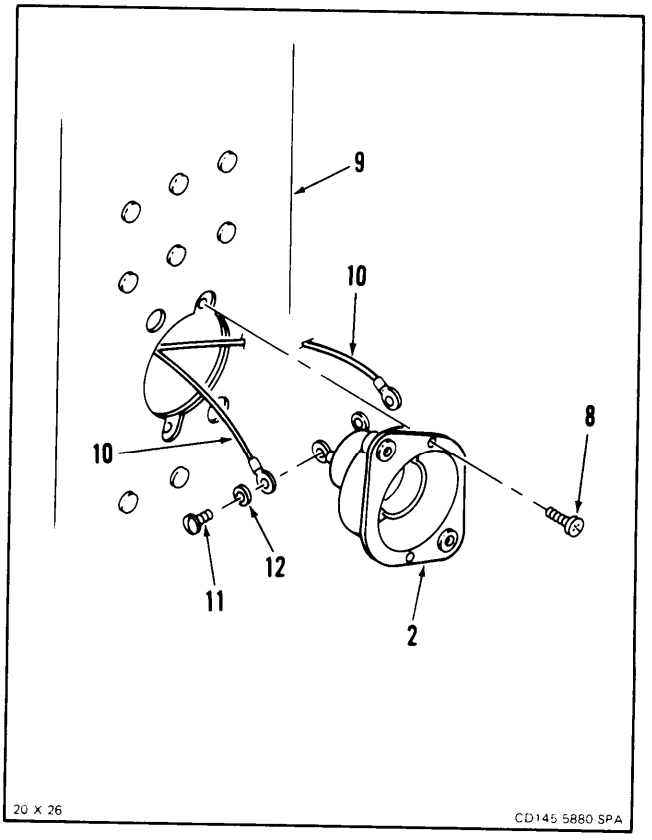
9-63 REMOVE TAIL POSITION LIGHT (Continued)

4. **Remove two screws (8). Withdraw light (2)** from structure (9),
5. Tag and **disconnet two wires** (10) by removing two screws (11) and washers (12). Tape ends. Use tape (E385).
6. **Remove light (2).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-64 INSTALL TAIL POSITION LIGHT

INITIAL SETUP

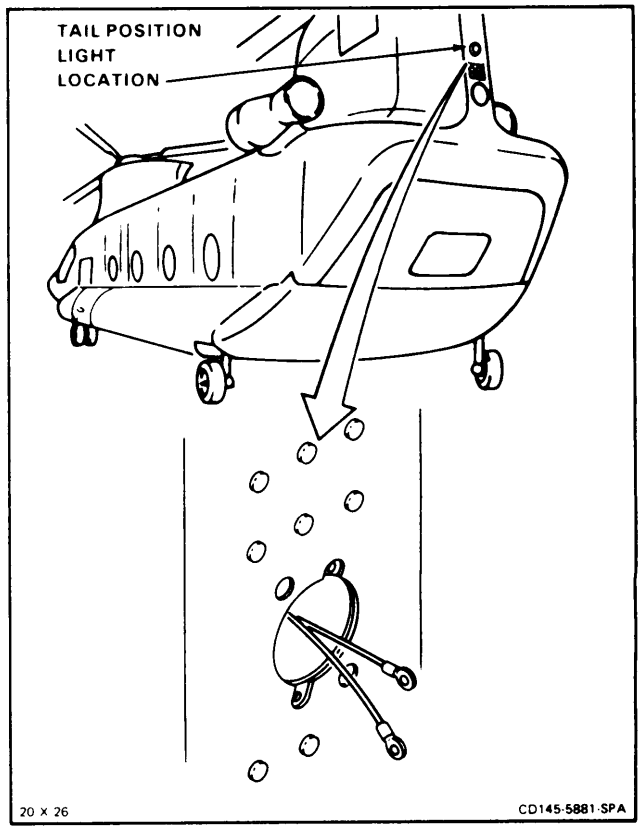
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

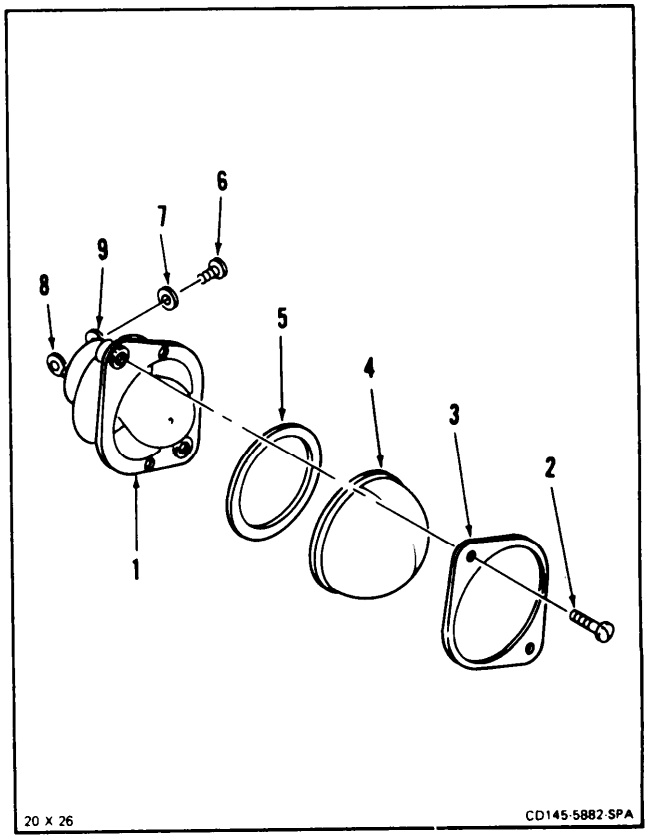
Materials:
Sealant (E336)
Acetone (E20)
Cloths (E120)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **If light (1) is replacement, do the following:**
   a. Remove two screws (2), retainer (3), lens (4), and seal (5) from light (1).
   b. Remove two screws (6) and washers (7) from terminals (8 and 9).



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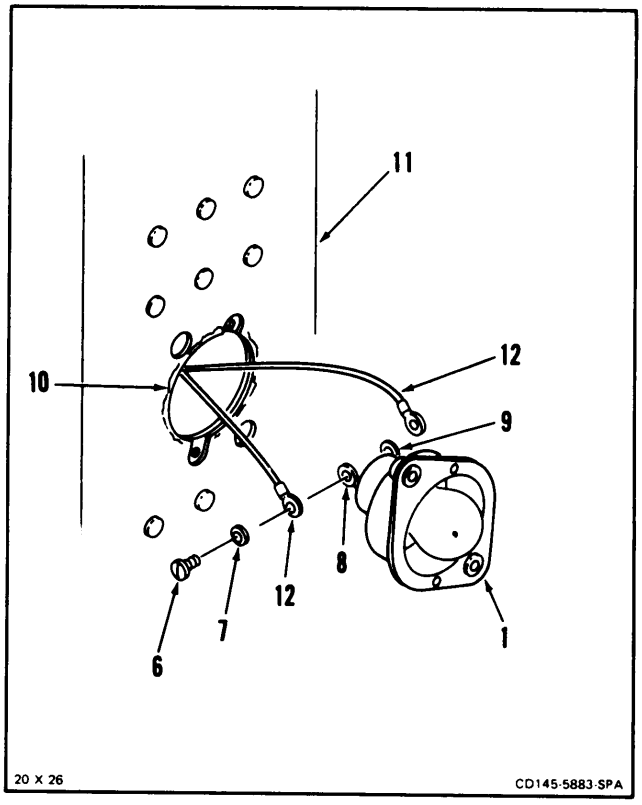
9-64 INSTALL TAIL POSITION LIGHT (Continued) 9-64

WARNING

Acetone (E20) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

2. Remove old sealant (10) from fuselage (11), Use acetone (E20). Wipe with cloth (E120). Wear gloves (E186).
3. Remove tape and **connect two wires (12)** to terminals (8 and 9). Install screws (6) and washers (7). Remove tags.



4. **Position light (1)** in fuselage (11) and in**stall two screws (13).**
5. **Install seal (5), lens (4), retaining ring (3) and two screws (2).**

WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

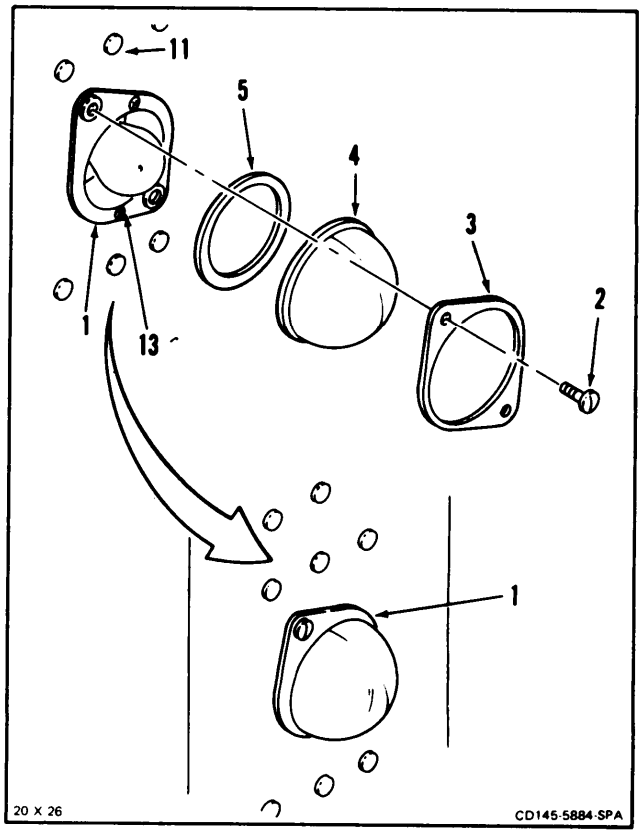
6. Seal outer edge of light (1). Use sealant (E336).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK



9-65 REPLACE TAIL POSITION LIGHT LAMP

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Work Stand

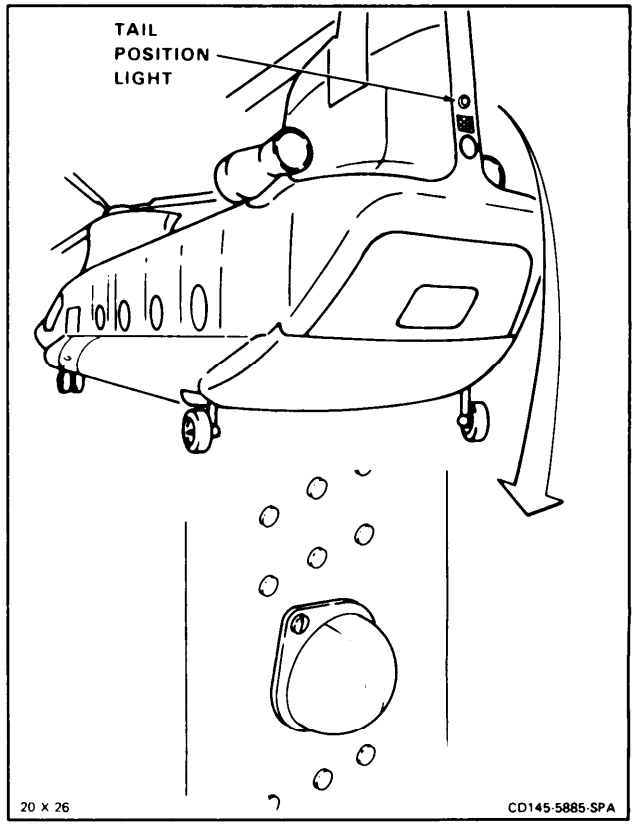
Materials:
None

Parts:
Lamp

Personnel Required:
68F10 Aircraft Electrician

References:
TM 55-1520-240-23P

Equipment Condition:
'Battery Disconnected (Task 1-39)
Electrical Power Off

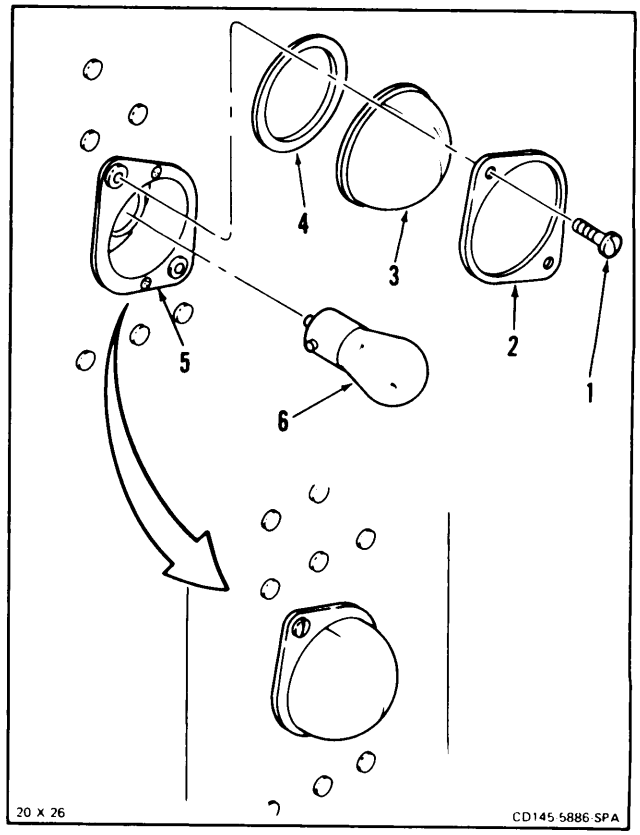


1. **Remove two screws (1), lens retainer (2), lens (3), and seal (4)** from light (5).
2. **Remove lamp (6).**
3. **Install new lamp (6).**
4. **Install seal (4). lens (3). retainer (2), and two Straws (1).**

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-66 REMOVE SIDE POSITION LIGHT

INITIAL SETUP

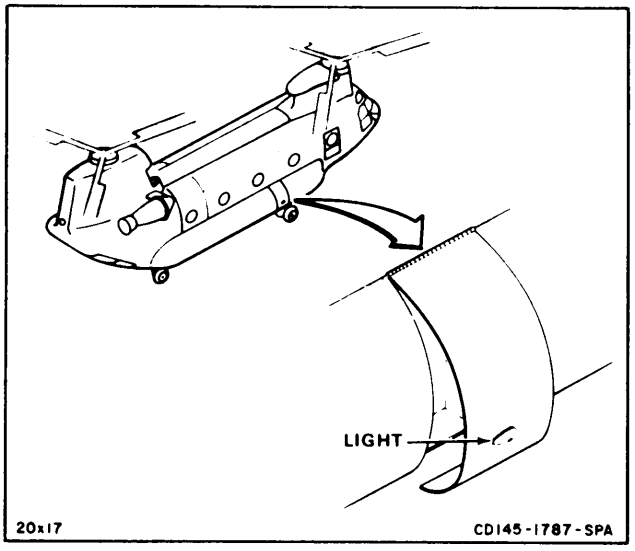
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit
NSN 5180-00-323-4915
Soldering Gun

Materials:
Tape (E397)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Forward Landing Gear Access Panel Open (Task 2-2)



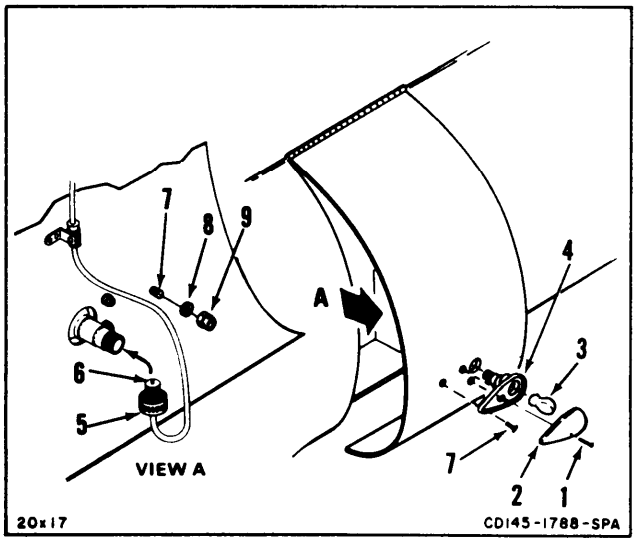
NOTE

Procedure is same for removing left or right position light. Right side light is shown here.

1. **Remove straw (1), lens (2), and lamp (3)** from light (4).
2. **Disconnect electrical socket (5)** from back of light.
3. **Unsolder wire (6)** from socket (5). Tape exposed end. Use tape (E397).
4. **Remove three** washers (8) and **nuts (9)** from screws (7).
5. **Remove** three screws (7) and **light (4).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-67 INSTALL SIDE POSITION LIGHT

INITIAL SETUP

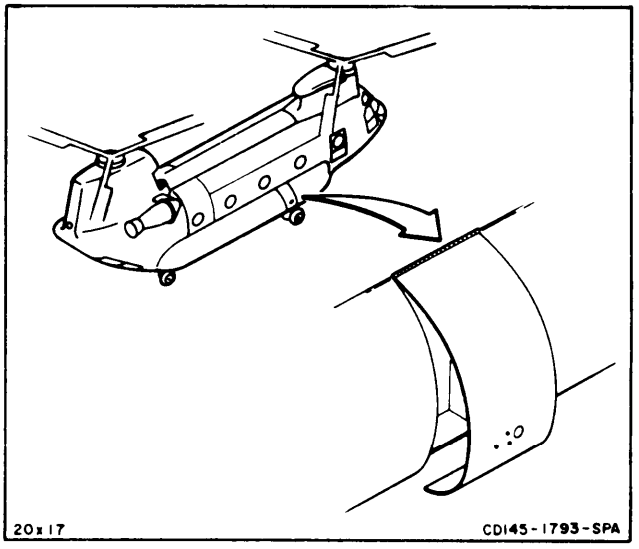
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Acetone (E20)
Sealant (E336)
Solder (E360)
Cloth (E120)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

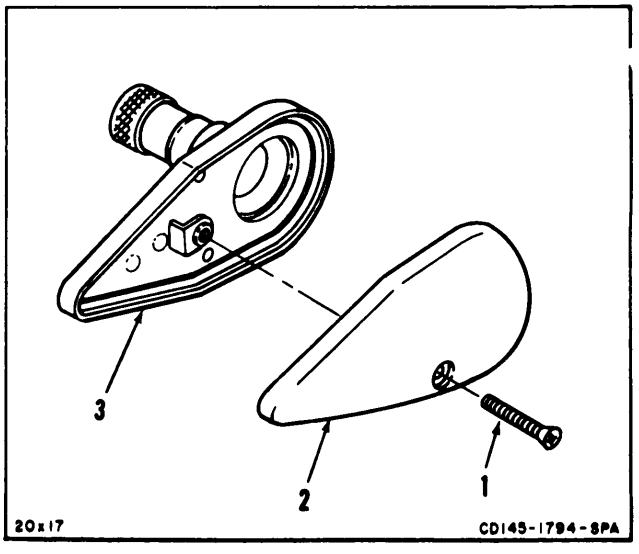
References:
TM 55-1520-240-23P



NOTE

Procedure is same for installing left or right position light. Right side light is shown here.

1. **Remove screw (1) and lens (2)** from light (3).



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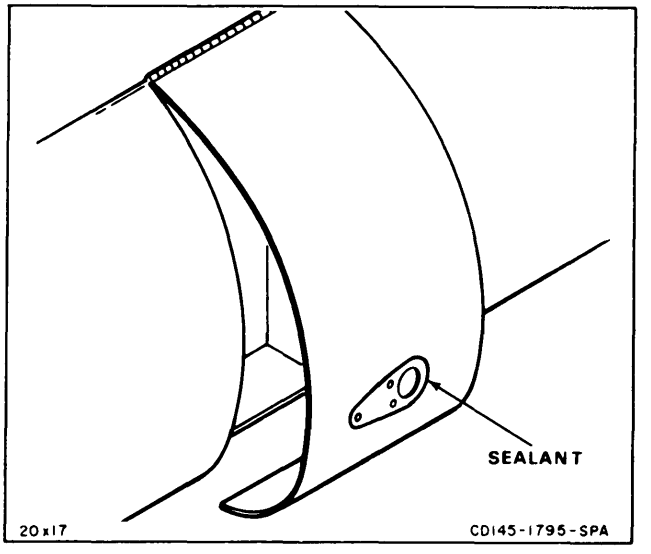
9-67 INSTALL SIDE POSITION LIGHT (Continued)

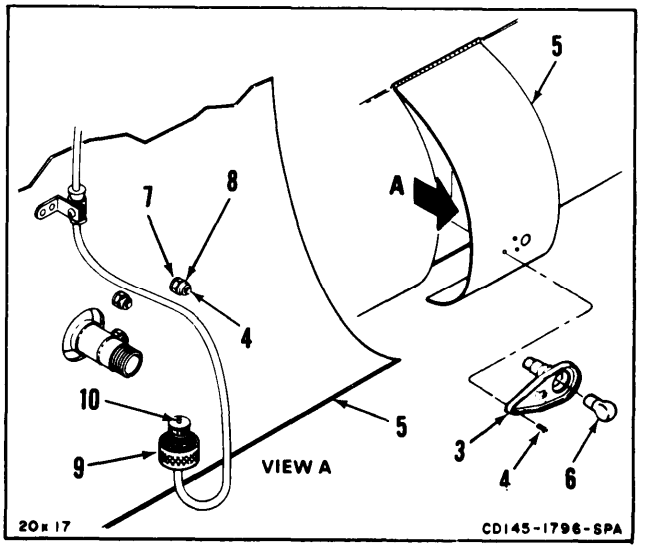
WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Use in well-ventilated area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

2. Remove old sealant from access panel. Use acetone (E20). Wipe with cloth (E120). Use gloves (E186).



3. **Install light (3)** and three screws (4) on panel (5). **Install lamp (6)** in light.
4. Install three washers (7) and **nuts (8)** on screws (4).
5. **Disconnect light socket (9).**
6. Insert wire (10) through back of socket (9). **Solder wire to socket.** Use solder (E360).



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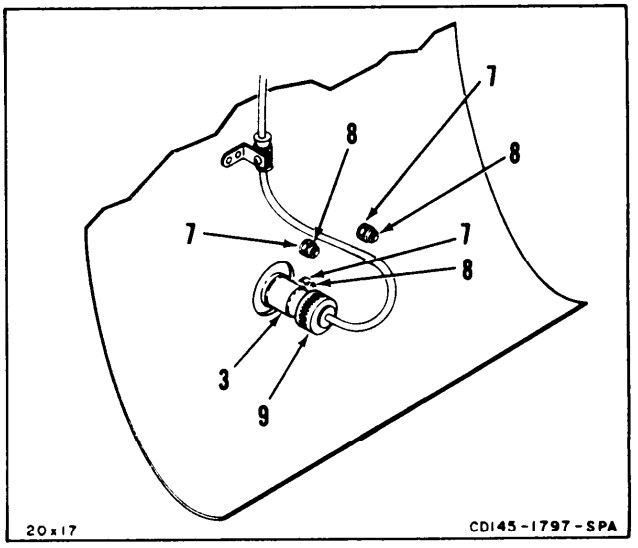
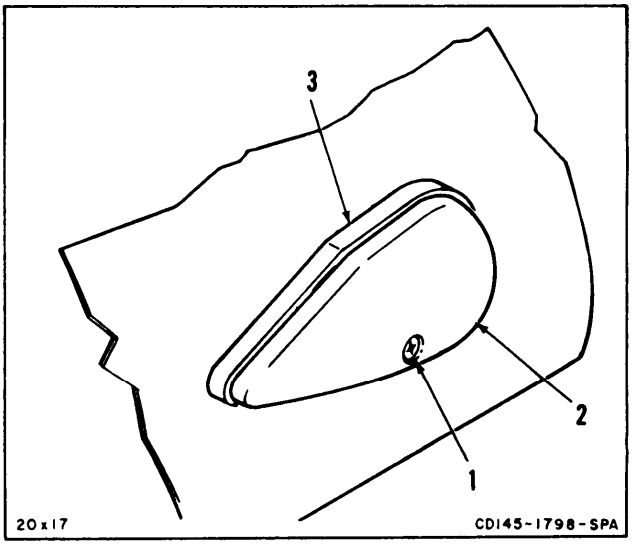
9-67 INSTALL SIDE POSITION LIGHT (Continued) 9-67

7. **Connect socket (9)** to light (3).
8. Seal back of light socket (9). Seal mounting washers (7) and nuts (8). Use sealant (E336).



9. **Install lens (2)** and screw (1).
10. **Seal outer edge of light (3).** Use sealant (E336). Wear gloves (E186).



FOLLOW-ON MAINTENANCE:

Close forward landing gear access panel (Task 2-2).

Check operation of side position light (TM 55-1520-240-T).

END OF TASK

9-68 REPLACE SIDE POSITION LIGHT LAMP

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit
NSN 5180-00-323-4692

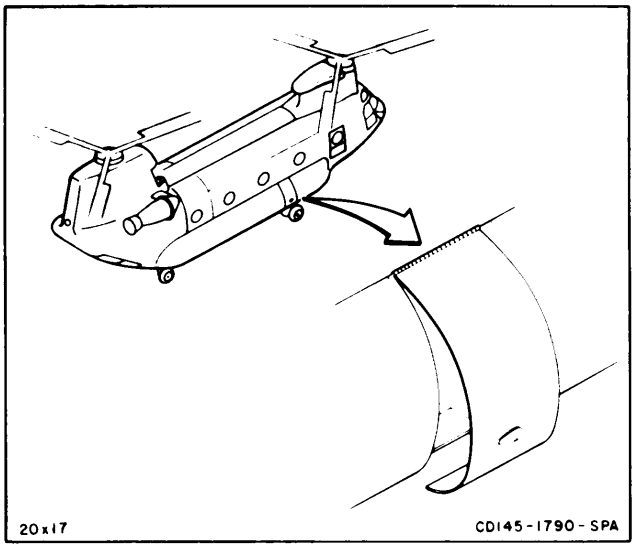
Materials:
Cloth (E120)

Parts:
Lamp

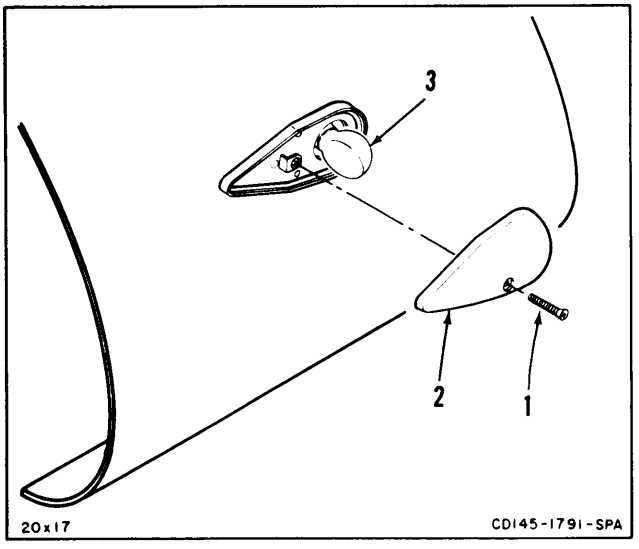
Personnel Required:
67U10 Helicopter Repairer

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Right Forward Landing Gear Panel Open (Task 2-2)



1. Remove lens retaining screw (1) and lens (2).
2. **Remove lamp (3). Install new lamp.**
3. Clean inside of lens (2). Use cloth (E120).



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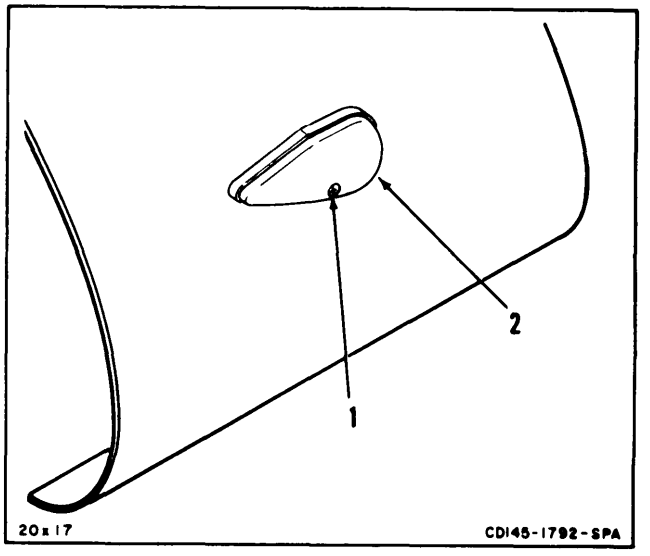
9-68 REPLACE SIDE POSITION LIGHT LAMP (Continued) 9-68

4. Position lens (2) and install retaining screw (1).

FOLLOW-ON MAINTENANCE:

Check operation of side position lamp (TM 55-520-240-T).



END OF TASK

9-69 REMOVE LANDING LIGHT

INITIAL SETUP

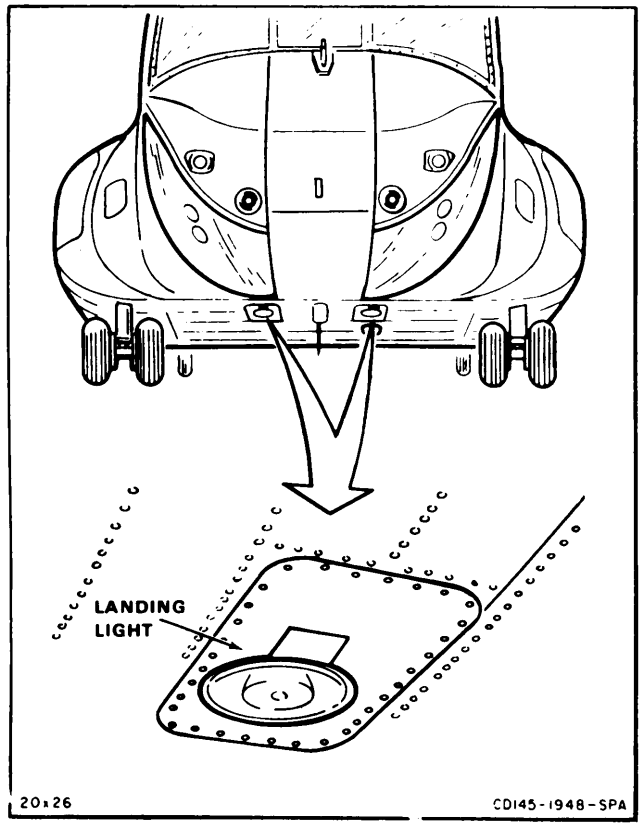
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Medium Helicopter Repairer (2)

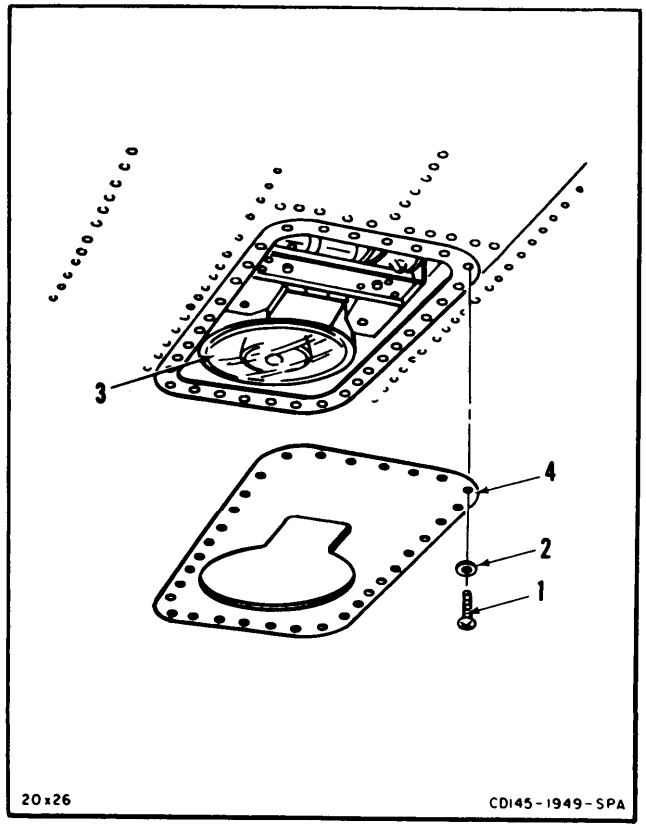
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



NOTE

Procedures are same for right or left landing light. Right light is shown here. With 17, the left landing light has NVG lamp and lens.

1. Remove 32 screws (1) and washers (2) from landing light (3) and housing (4).
2. **Remove housing (4).**



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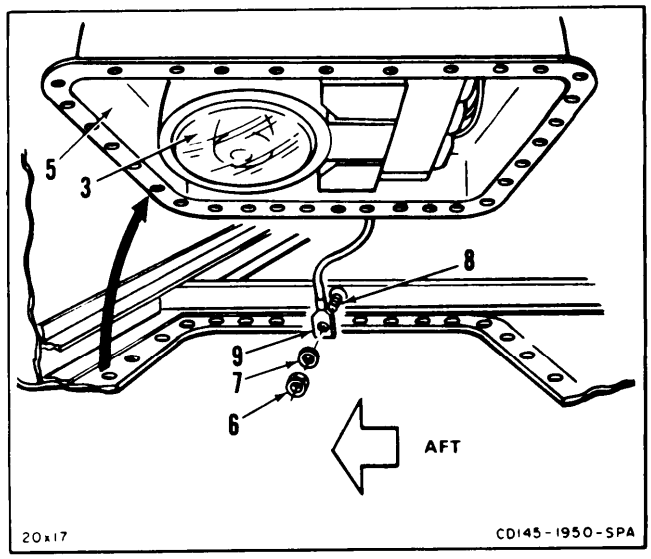
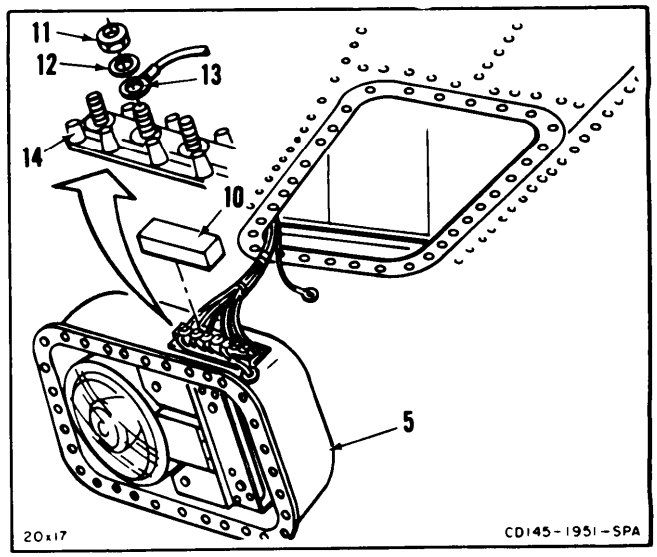
9-69 REMOVE LANDING LIGHT (Continued)

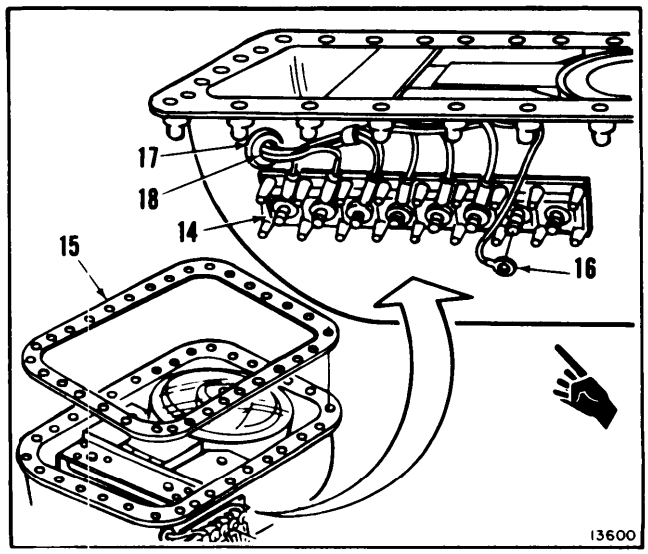
3. Tilt light (3) and housing assembly (5) to one side and hold up.
4. Remove nut (6) and washer (7) from ground stud (8). **Disconnect electrical lead (9).**



5. Lower housing assembly (5). Have helper support housing assembly so it does not hang.
6. **Remove terminal cover (10).**
7. Remove eight nuts (11) and washers (12). Tag and remove ten wires (13) from terminal board (14). Tape wires. Use tape (E385).
8. **Remove housing assembly (5).**



9. **Remove gasket (15).**
10. Tag and **disconnect seven wires (16)** from terminal board (14).
11. Cut sealant (17) away from edge of grommet (18). Use sharp knife.



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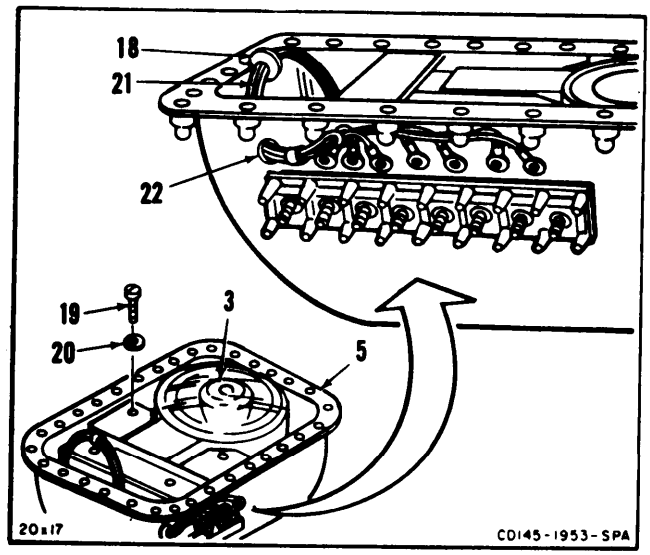
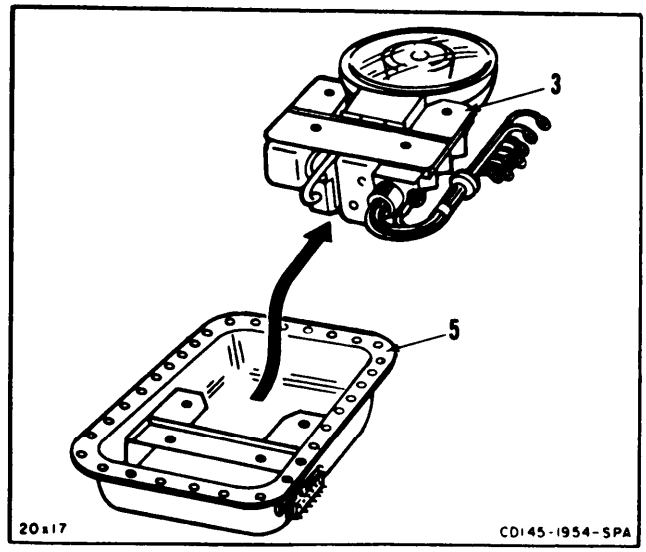
9-69 REMOVE LANDING LIGHT (Continued) 9-69

12. Remove four screws (19) and washers (20) from light (3) in housing assembly (5).

13. Guide harness (21) through hole (24) in housing assembly (5) **Remove grommet.** with harness.

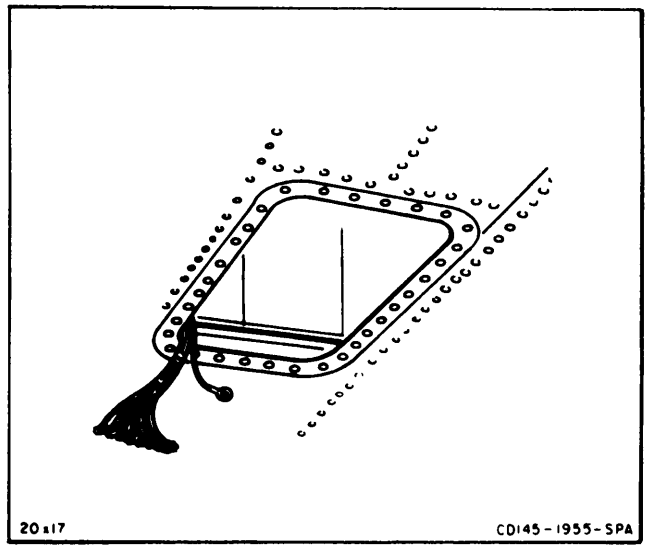


14. **Remove light (3)** from housing assembly (5).



FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-70 DISASSEMBLE LANDING LIGHT (AVIM)

INITIAL SETUP

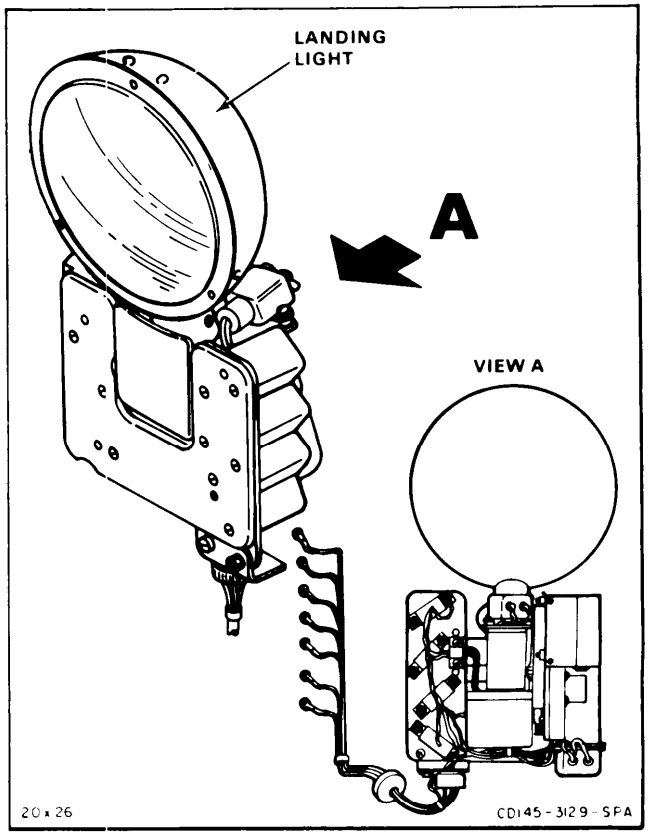
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)

Personnel Required:
Aircraft Electrician

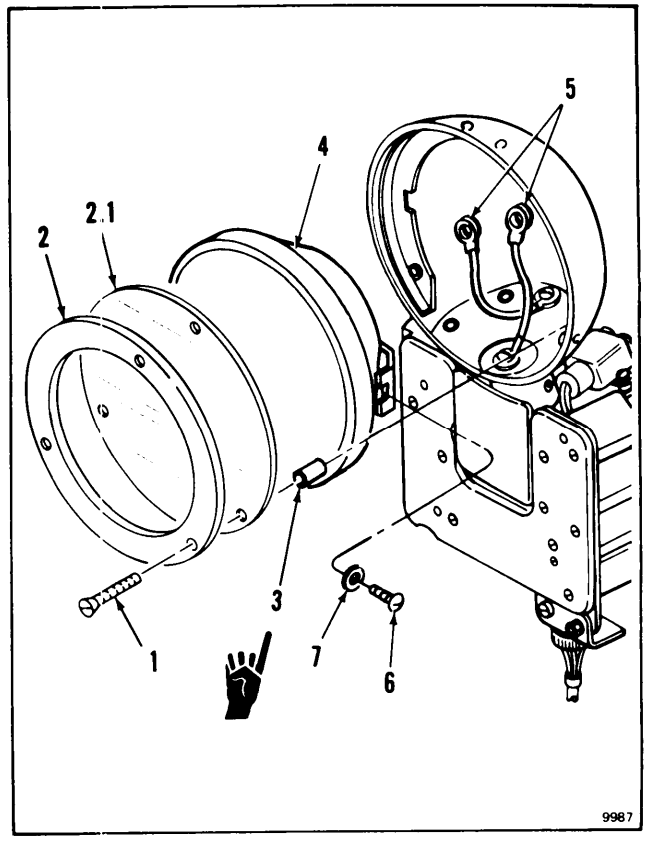
Equipment Condition:
Off Helicopter Task



NOTE

- Tag and disconnect wires only to the extent required to replace defective parts.
- Screws are captive in ring.
- On helicopters with 17, left landing light has NVG lamp and lens. NVG lens includes a retaining ring.

1. Loosen three screws (1). **Remove retaining ring (2) and NVG lens stowed (2.1)** with three screws and sleeves (3).
2. **Remove lamp (4).**
3. Tag and disconnect two wires (5) by removing two screws (6) and washers (7) from lamp (4).



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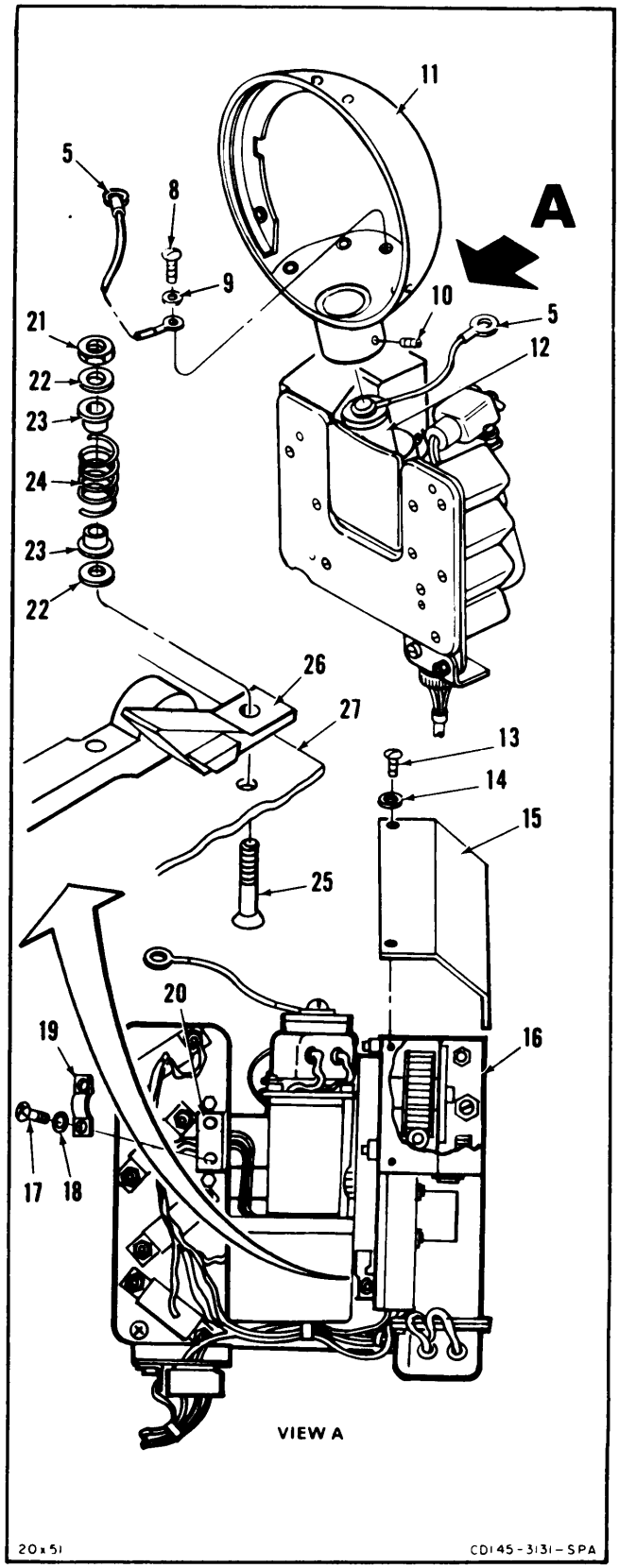
9-70 DISASSEMBLE LANDING LIGHT (AVIM) (Continued)

4. Remove screw (8) and washer (9). **Remove wire (5).**
5. **Remove set screw (10)** and canopy (11) from rotating mechanism (12).

NOTE

Light may have one or two set screws.

6. Remove four screws (13) and washers (14). Cut through sealer around edge of cover (15). **Remove cover** from gearbox (16).
7. Remove two screws (17) and washers (18). **Remove wire damp (19)** from block (20).
8. Remove nut (21), two washers (22), eyelets (23), and spring (24).
9. **Remove screw (25)** from bumper (26) and base (27).



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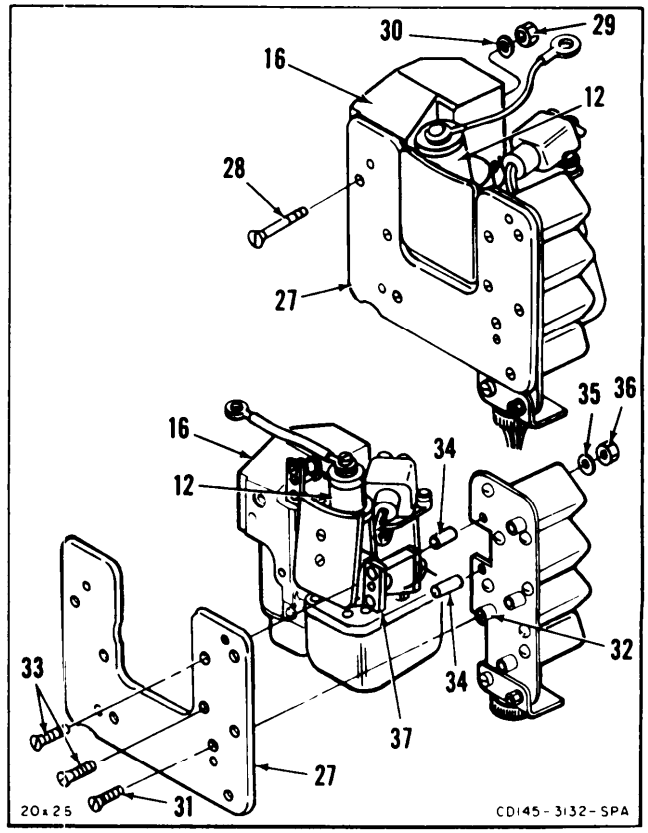
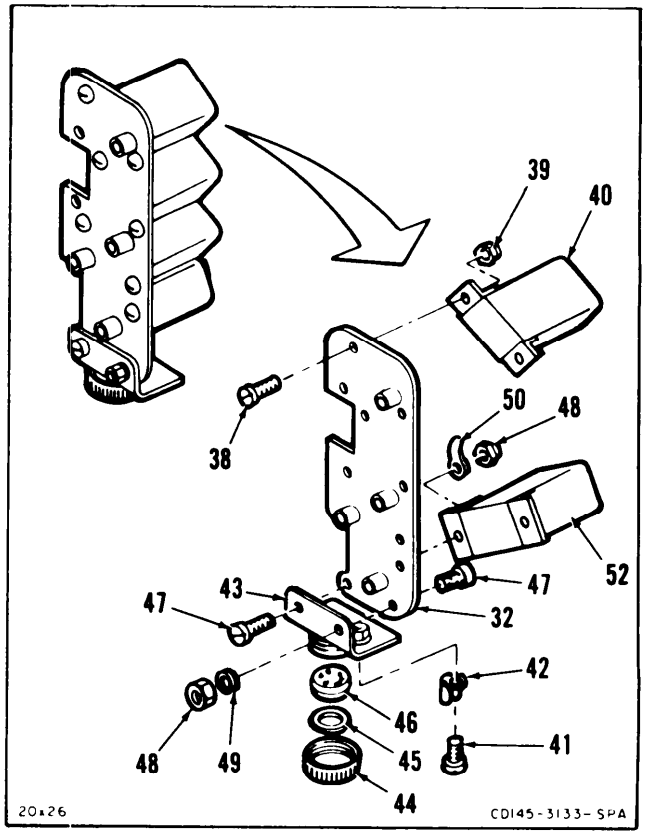
9-70 DISASSEMBLE LANDING LIGHT (AVIM) (Continued) 9-70

10. **Remove two screws (28),** nut (29), and washer (30) from gearbox (16) and base (27).
11. **Remove four screws (31)** from spacer (32) and base (27).
12. **Remove two screws (33),** spacers (34), washers (35), and nuts (36) from shaft and block (37), spacer (32) and base (27).
13. **Separate gearbox (16), rotating mechanism (12), and shaft and block (37) from spacer (32).**



14. Remove six screws (38) and nuts (39). **Remove three relays (40)** from spacer (32).
15. **Remove** screw (41) and **terminal lug (42)** from conduit bracket (43).
16. **Remove nut (44)** from bracket (43). **Remove** washer (45) and **rubber bushing (46).**
17. **Remove two screws (47)** and nuts (48). **Remove** washer (49) and **terminal (50).**
18. **Remove bracket (43) and relay (52)** from spacer (32).



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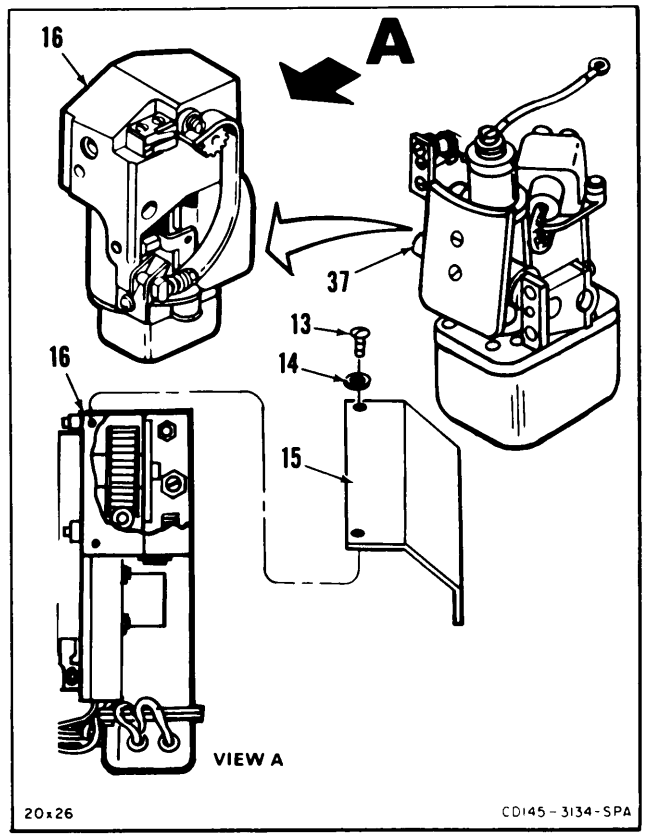
9-70 DISASSEMBLE LANDING LIGHT (AVIM) (Continued)

19. **Remove gearbox (16)** from end of shaft and block (37).

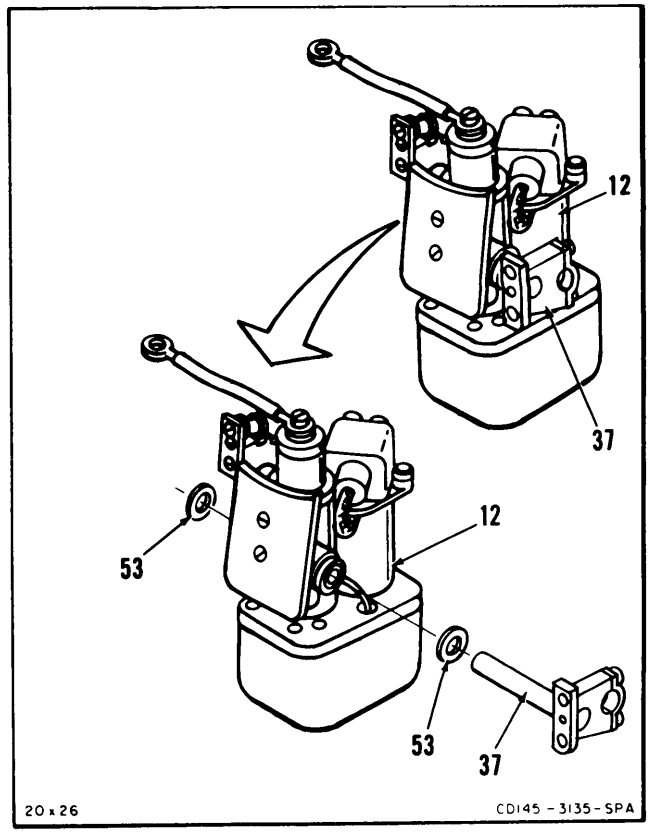
20. **Position cover (15)** on gearbox (16). **Install four screws (13)** and washers (14).



21. **Remove shaft and block (37)** and two extend pivot spacers (53) from rotating mechanism (12).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-71 DISASSEMBLE LANDING LIGHT EXTEND GEARBOX (AVIM)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Drill Press
Arbor Press
Spanner Wrench
Drill, 1/16-inch
Bearing Puller

Materials:

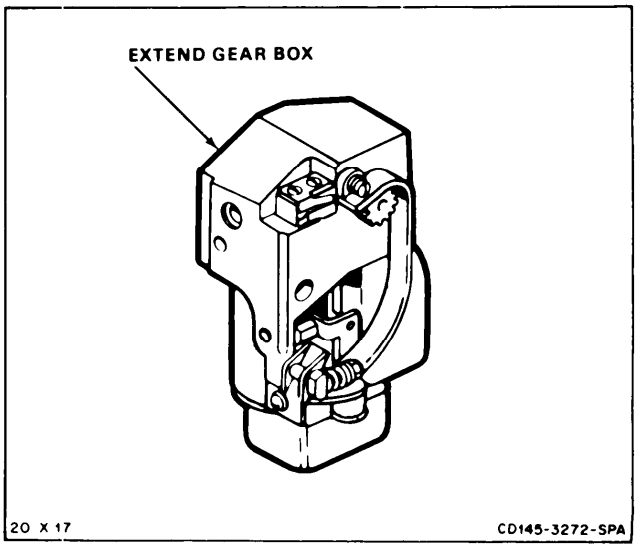
Paper Tags (E264)

Personnel Required:

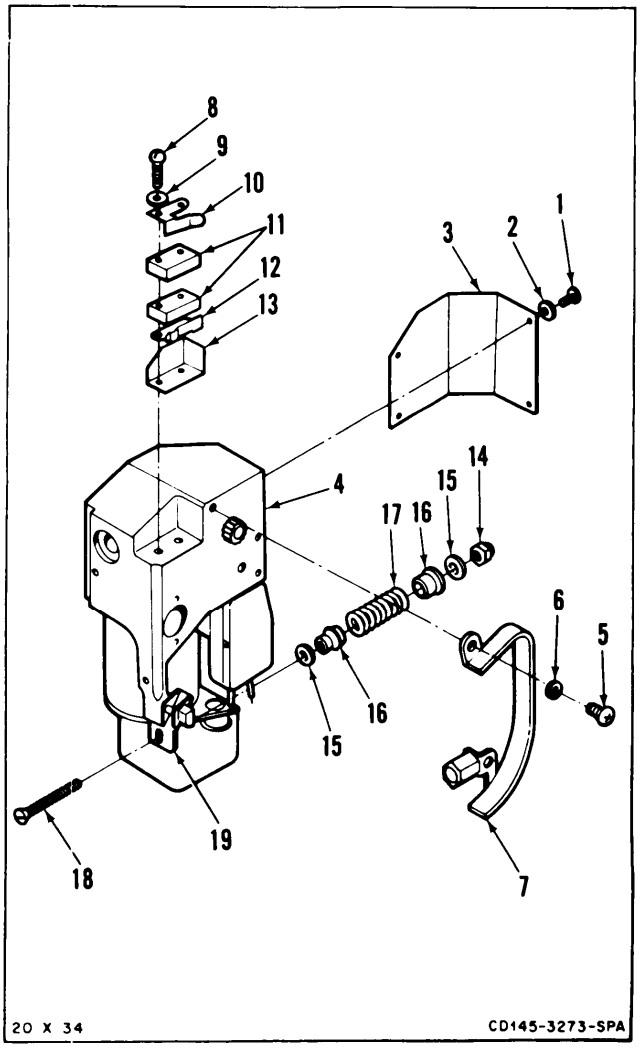
68F10 Aircraft Electrician (2)
44E10 Machinist

Equipment Condition:

Off Helicopter Task



1. Remove four screws(1) and washers (2). Cut through sealant and **remove cover (3)** from gearbox (4).
2. Remove two screws (5) and washers (6). **Remove gear cover (7).**
3. Remove two screws (8) and washer (9). **Remove retract switch actuator (10), two switches (11), extend switch actuator (12), and switch insulator (13).**
4. **Remove** nut (14), two washers (15), two eyelets (16), **and spring (17),** from screw (18). **Remove screw** from bumper (19).



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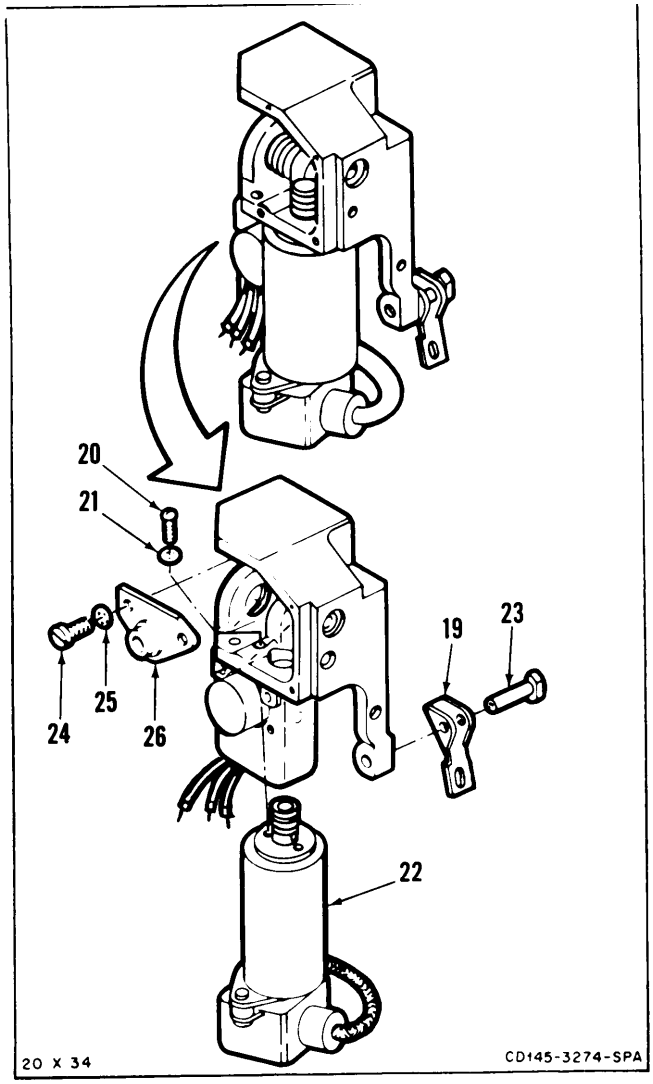
9-71 DISASSEMBLE LANDING LIGHT EXTEND GEARBOX (AVIM) (Continued)

5. Remove two screws (20) and washers (21).

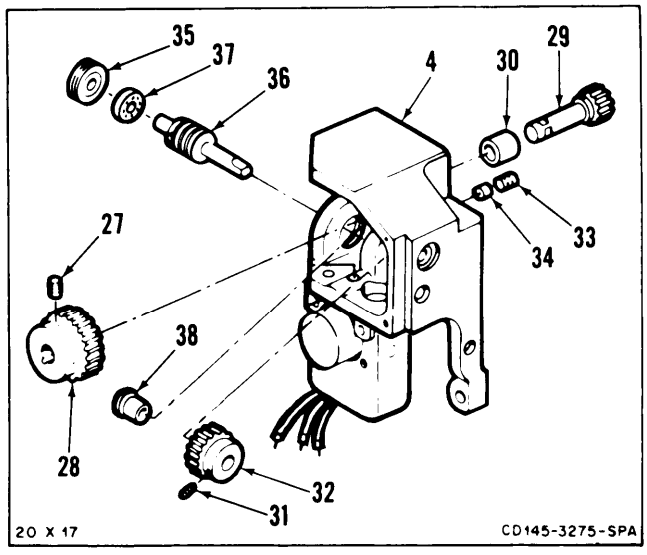
NOTE

Apply some side pressure to loosen sealant, when removing motor.

6. **Remove extend motor (22).**
7. Drill out end of bumper shaft (23) using 1/16-inch drill. **Remove shaft and bumper (19).**
8. Remove two screws (24) and Washers (25). **Remove bearing and bridge assembly (26).**



9. Remove two setscrews (27). **Remove gear (28).**
10. **Remove pinion gear and shaft (29).** Press bearing (30) from housing (4) using arbor press.
11. Remove two screws (31) from gear (32).
12. Remove setscrew (33) and nylon rod (34).
13. **Remove bearing thrust adjustment (35)** from gearbox (4) using spanner wrench.
14. **Remove worm and shaft assembly (36)** from gearbox (4).
15. **Remove thrust bearing (37)** from end of worm and shaft assembly (36).
16. **Remove gear (32)** from gearbox (4).
17. **Remove bearing sleeve (38)** from gearbox (4). Use bearing puller.



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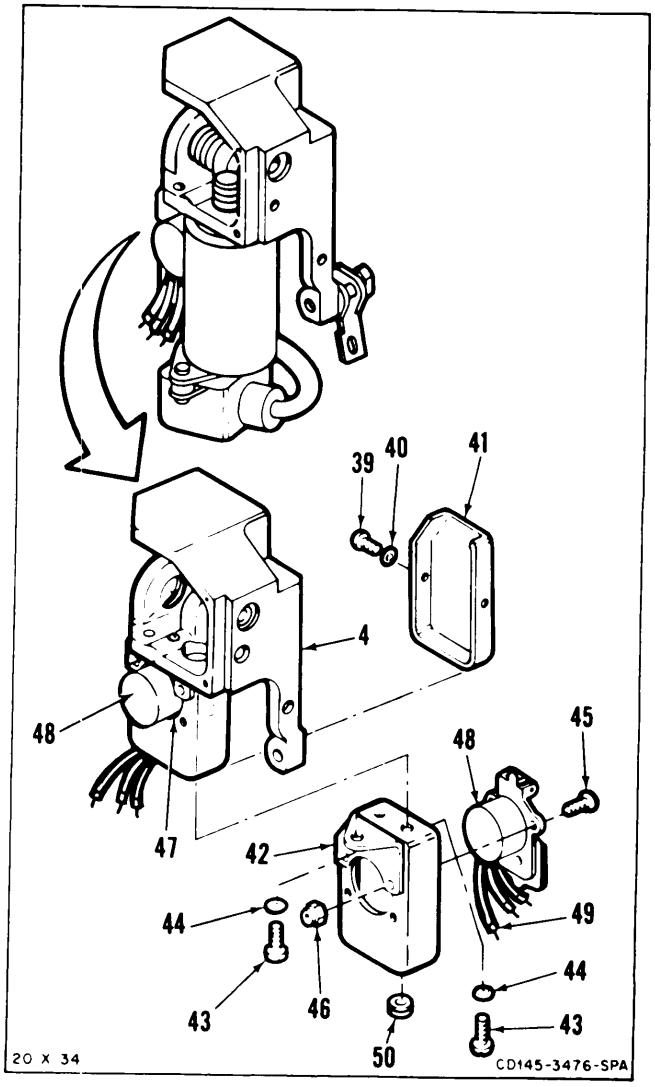
9-71 DISASSEMBLE LANDING LIGHT EXTEND GEARBOX (AVIM) (Continued)

18. Remove two screws (39) and washers (40). Cut through sealant at edge of cover (41) and housing (42). **Remove cover.**
19. Remove three screws (43) and washers (44). **Remove housing (42)** from gearbox (4).
20. Remove four screws (45) and nuts (46). Cut through sealant (47) around edge of relay (48) extending through housing (42).
21. Tag wires (49). Identify which side of housing (42) wires route through.
22. **Remove relay (48) and two grommets (50)** from housing (42).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-72 DISASSEMBLE LANDING LIGHT ROTATING MECHANISM (AVIM)

INITIAL SETUP

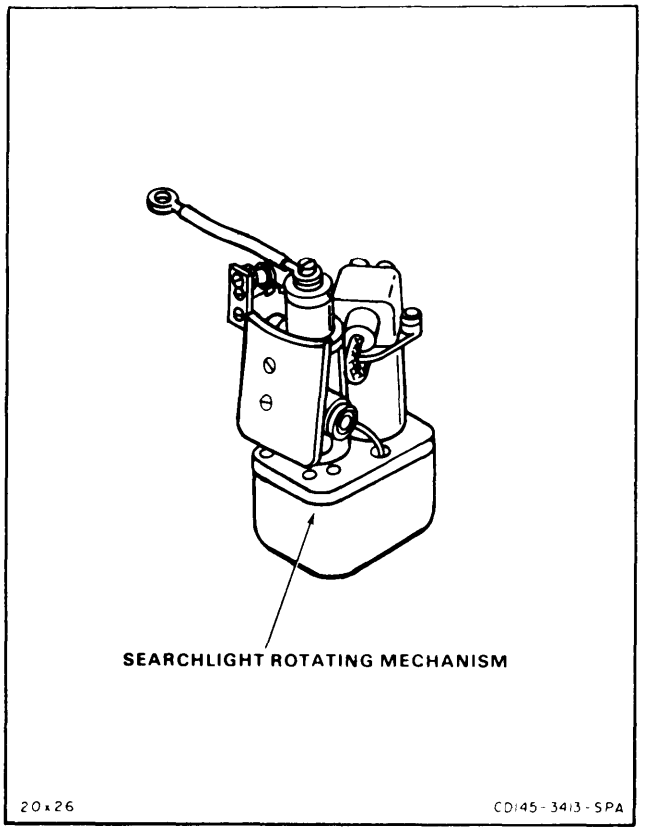
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Bearing Puller
Soldering Gun

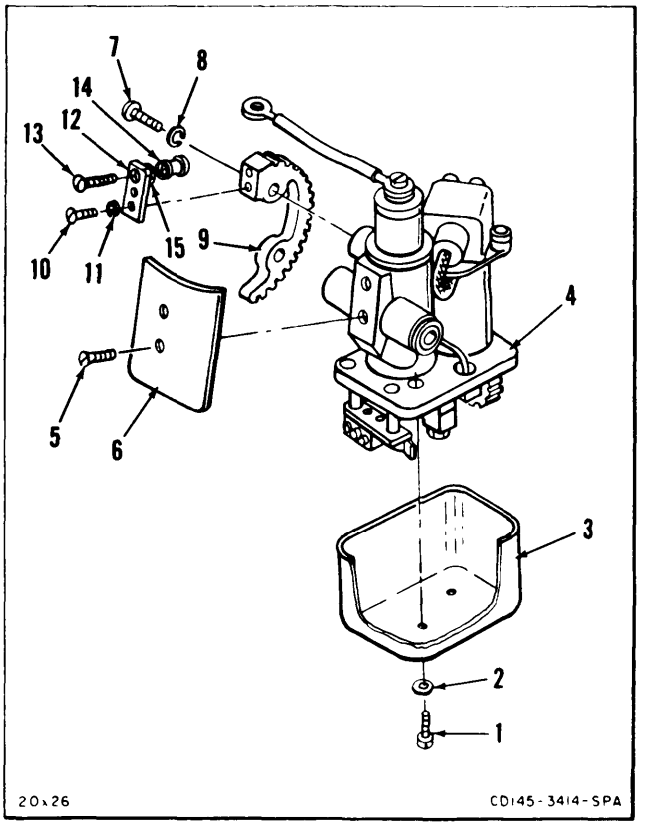
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician (2)

Equipment Condition:
Off Helicopter Task
Landing Light Disassembled (Task 9-70)



1. Remove two screws (1) and washers (2). Cut through sealant around edge of cover (3). **Remove cover** from rotating mechanism (4).
2. Remove two screws (5) and **cover (6).**
3. **Remove** two screws (7), washers (8), and **sector gear (9).**
4. **Remove** two screws (10), washers (11), and **actuator (12).**
5. **Remove** screw (13) and **button (14)** from actuator nut (15).



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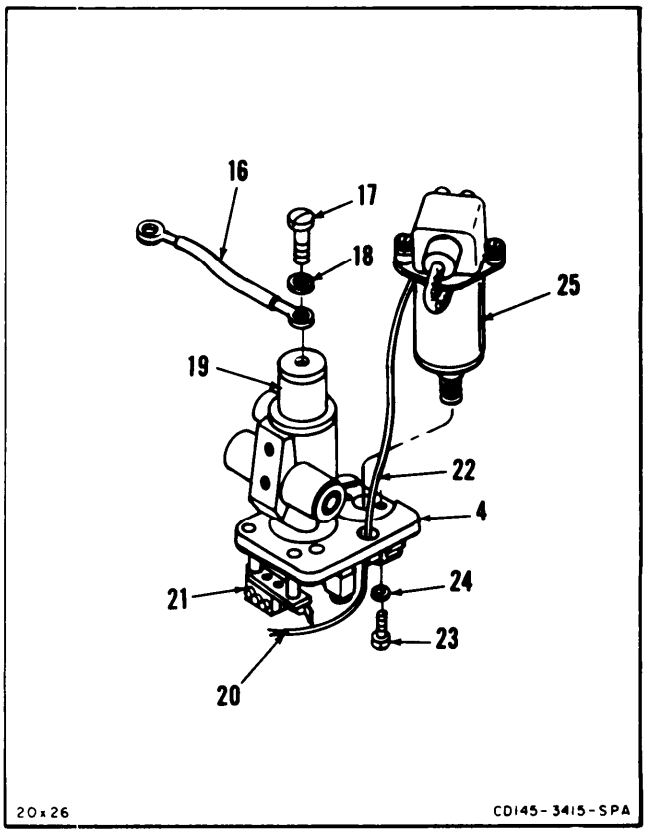
9-72 DISASSEMBLE LANDING LIGHT ROTATING MECHANISM (AVIM) (Continued) 9-72

6. Tag and **disconnect electrical lead (16)** by removing screw (17) and washer (18) from shaft (19). Install screw and washer on shaft.

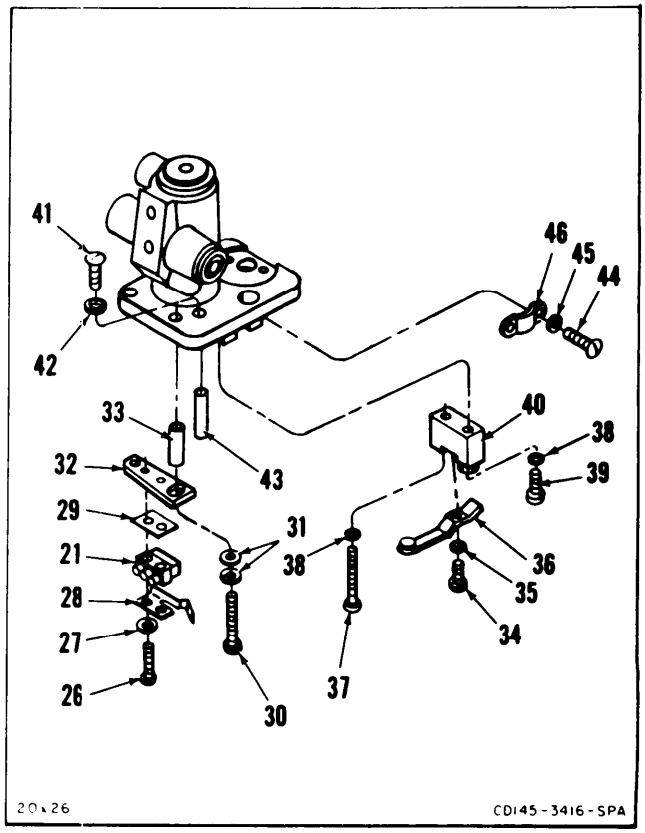
NOTE

Install screw and washer to retain pivot bus shaft and contact until rotate shaft is removed.

7. Tag and **unsolder two wires (20)** from rotate limit switch (21). Use soldering gun. Withdraw wire harness (22) through hole in rotating mechanism (4).
8. **Remove** two screws (23), washers (24) and **motor (25).**



9. **Remove** two screws 26), two washers (27), **adapter (28), switch (21), and insulator (29).**
10. **Remove** two screws (30), four washers (31), **adjusting plate (32),** and two posts (33).
11. **Remove** screw (34), washer (35), and **contact (36).**
12. Remove screw (37), two washers (38), and stud (39). **Remove insulator (40).**
13. **Remove** screw (41), washer (42), and **post (43).**
14. **Remove** two screws (44), washers (45), and **clamp (46).**



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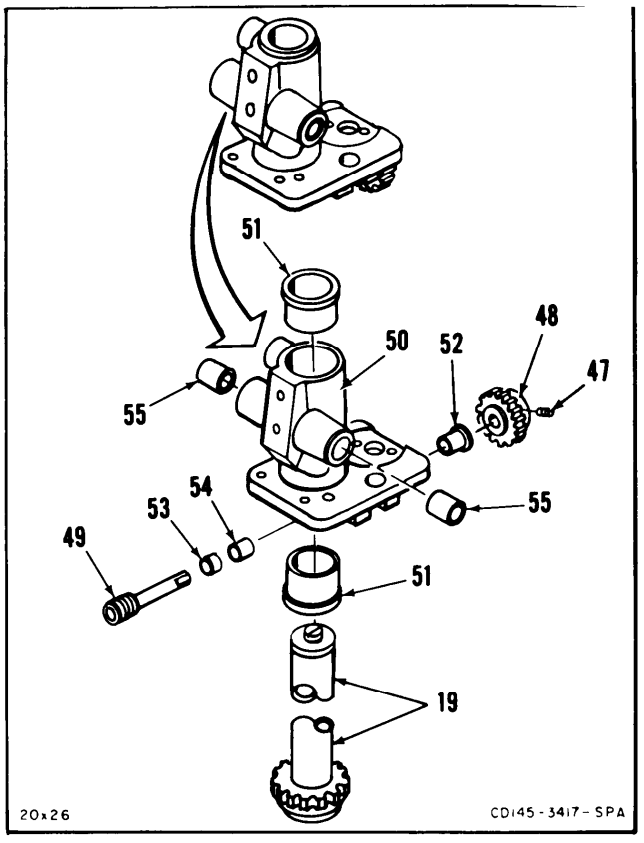
9-72 DISASSEMBLE LANDING LIGHT ROTATING MECHANISM (AVIM) (Continued) 9-72

15. **Remove** two setscrews (47), and **gear (48)** from worm and shaft assembly (49). **Remove worm and shaft.**
16. **Remove shaft (19)** from casting (50).
17. **Remove two bearings (51)** from casting (50). Use bearing puller.
18. **Remove bearing (52), bearing (53), spacer (54), and two bearings (55)** from casting (50). Use bearing puller.



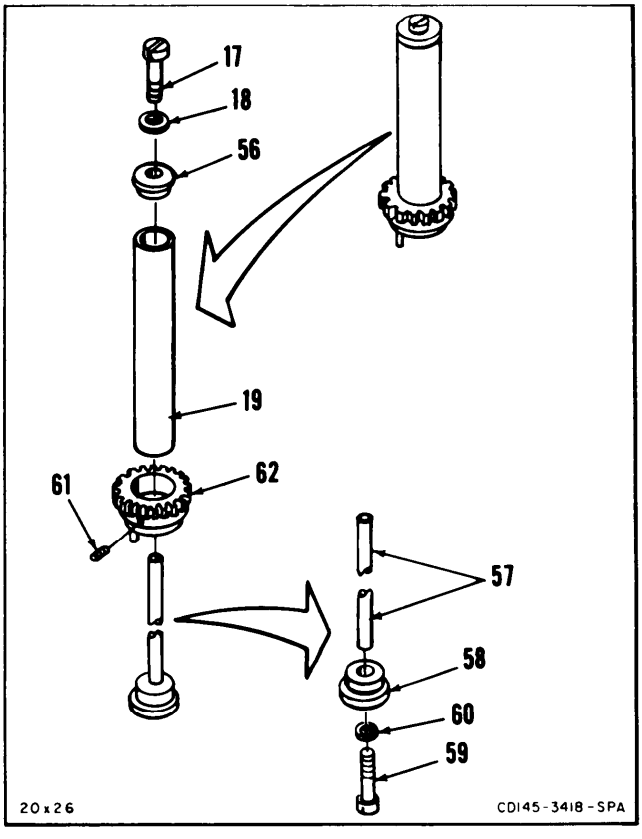
NOTE

Pivot bus shaft, with lower insulator, contact, washer and screw, can be removed from rotate shaft as a unit.

19. **Remove** screw (17), washer (18), and **insulator (56).**
20. **Remove pivot bus shaft (57)** with insulator (58) from rotate shaft (19).
21. **Remove** contact (59), washer (60), and **insulator (58)** from pivot shaft (57).
22. **Remove** two set screws (61) and **rotate control wheel** (62) from shaft (19).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-73 DISASSEMBLE LANDING LIGHT MOTOR (AVIM) 9-73

INITIAL SETUP

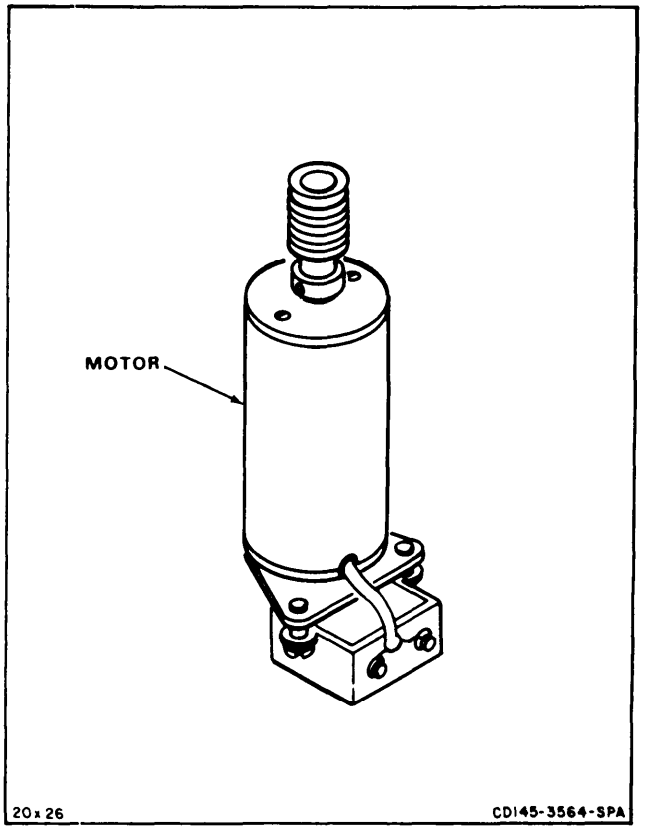
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN-5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

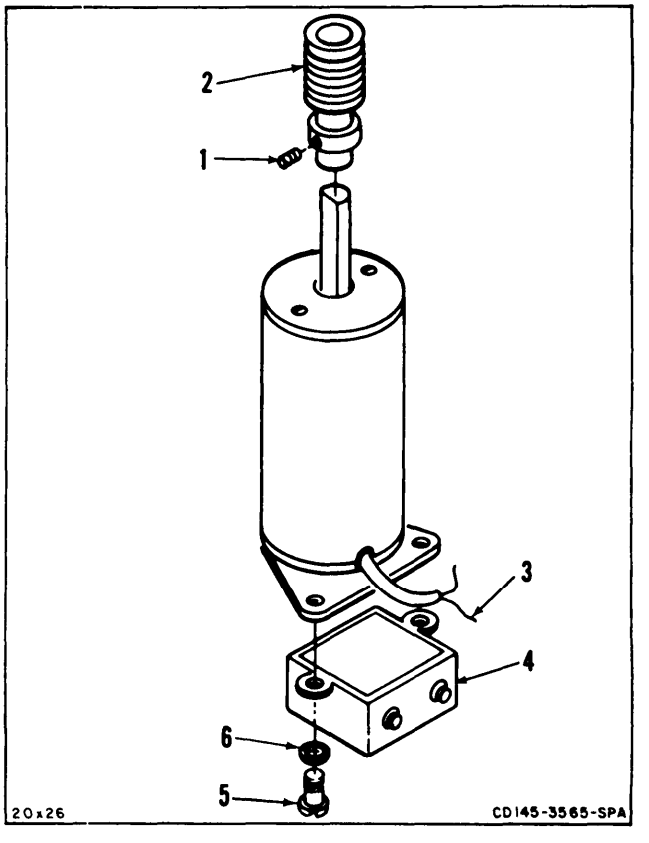
Equipment Condition:
Off Helicopter Task
Landing Light Motor Removed (Task 9-71)



NOTE

Disconnect wires only to the extent required to replace defective parts.

1. **Remove** two set screws (1) and **worm gear (2).**
2. Tag and **unsolder two wires (3)** from filter (4). **Remove** two screws (5), washers (6), and **filter.**



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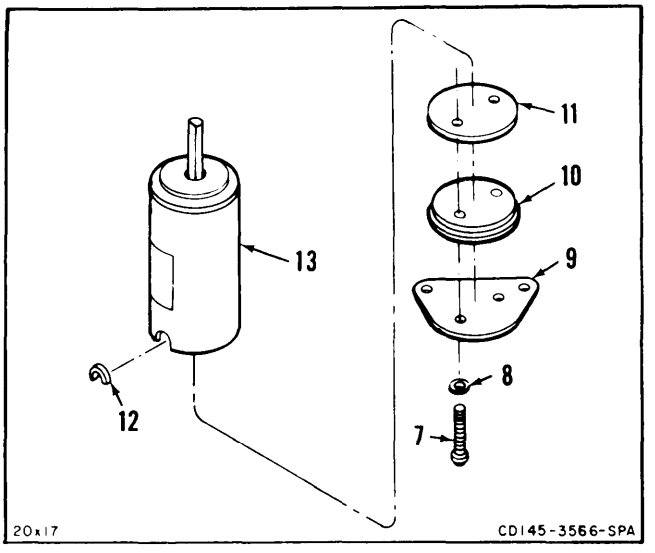
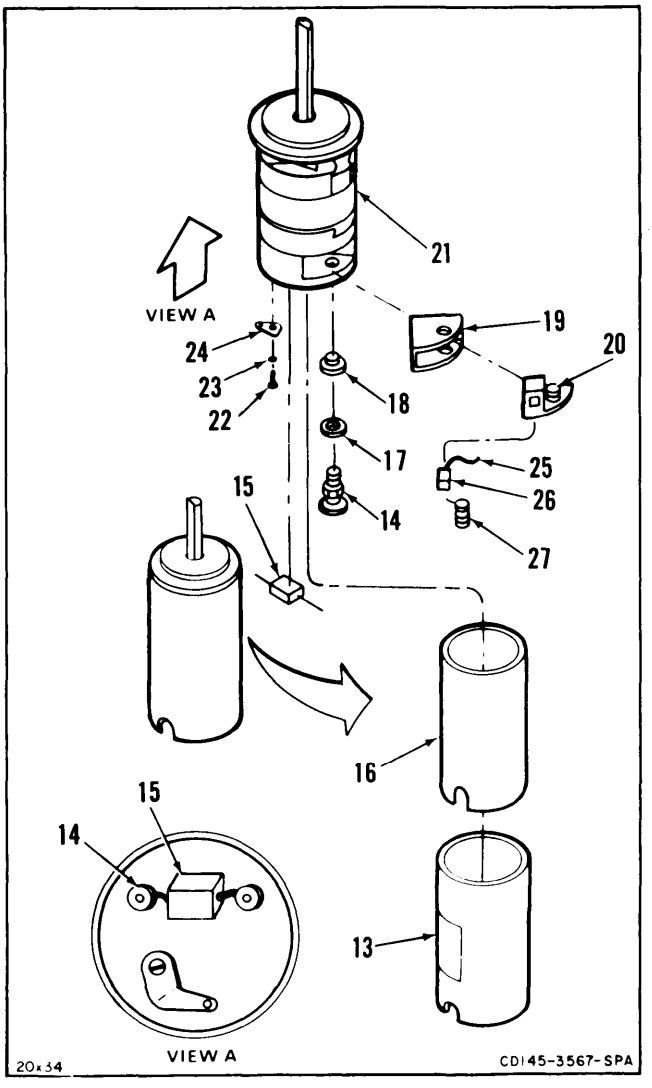
9-73 DISASSEMBLE LANDING LIGHT MOTOR (AVIM) (Continued) 9-73

3. Remove two screws (7) and lock washers (8).
4. Cut through sealant and **remove plate (9), cap (10), and insulator (11).**
5. **Remove grommet (12)** from cover (13).



6. Tag and unsolder wires from two terminals (14). **Remove capacitor (15).**
7. **Remove cover (13).**
8. **Remove insulator (16)** from cover (13).
9. **Remove two terminals (14).**
10. **Remove two** washers (17), washers (18), **insulators (19), and brush and spring holders (20)** from motor (21).
11. **Remove** screw (22), washer (23), and **terminal (24).**
12. Unsolder brush wires (25) from holders (20).
13. **Remove brushes (26) and springs (27).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-74 ASSEMBLE LANDING LIGHT MOTOR (AVIM) 9-74

INITIAL SETUP

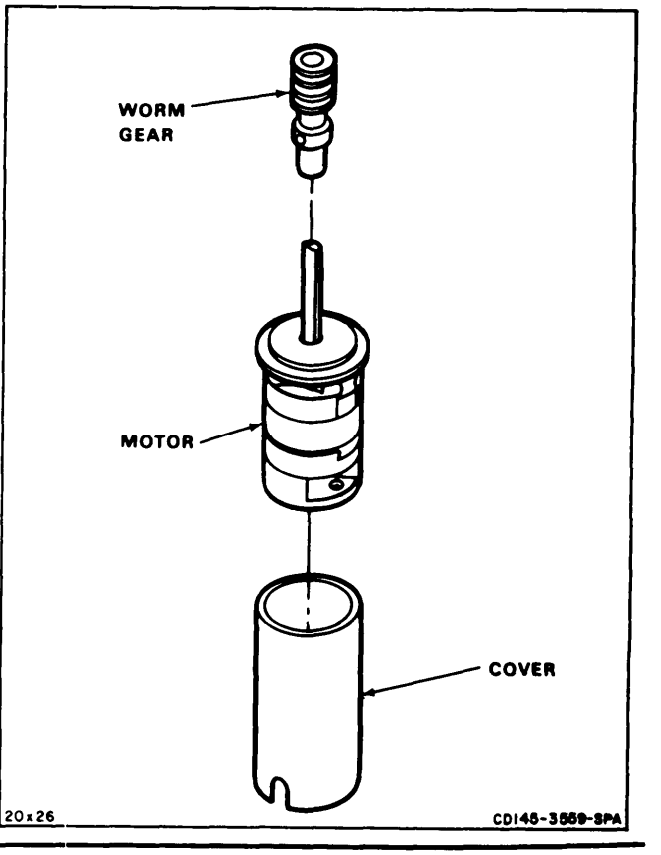
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

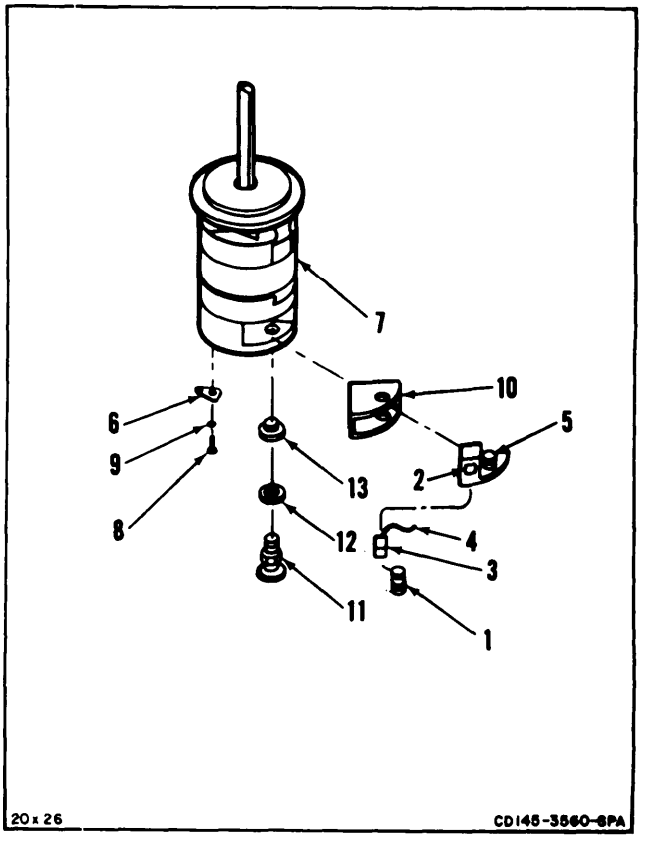
Materials:
Acetone (E20)
Sealant (E336)
Solder (E360)
Cloths (E120)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Install two springs (1)** in holders (2).
2. **Install two brushes (3)** in holders (2).
3. **Guide brush wires (4) through spring slots in brush and spring holders (2).** Chamfer on brush (3) shall face away from brush spring (1).
4. **Solder two wires (4)** to ends of posts (5) on holders (2). Use solder (E360).
5. **Install terminal (6)** on motor (7). Install screw (8) and washer (9).
6. **Position two holders (2) and insulators (10)** on motor (7).
7. **Install two terminals (11),** washers (12), and washers (13).



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9-74 ASSEMBLE LANDING LIGHT MOTOR (AVIM) (Continued)

8. **Connect capacitor (14)** across terminals (11). Do not solder.
9. Position insulator (15) inside cover (16). **Install insulator and cover** on motor (7).
10. **Install grommet (17)** in opening at end of cover (15).

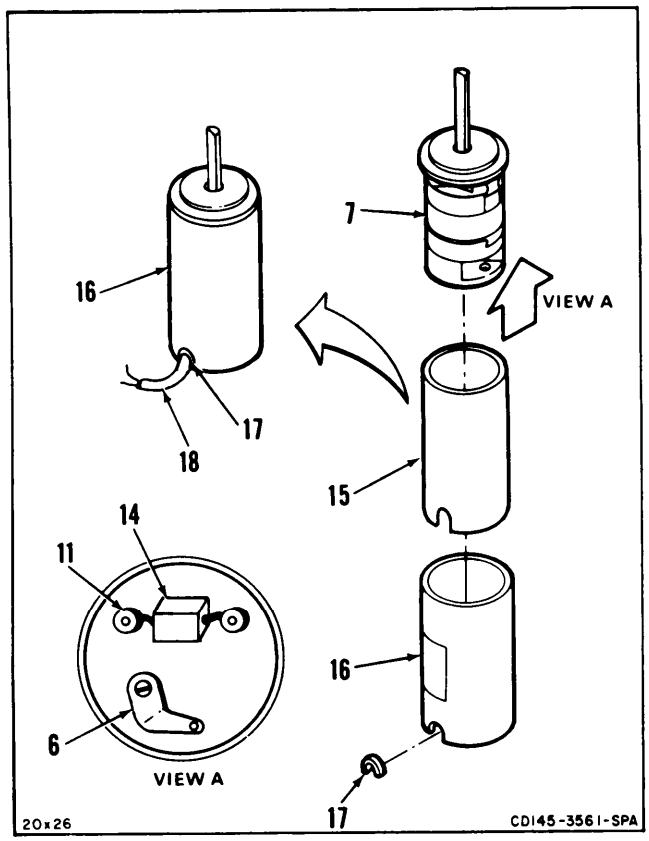
NOTE

Connect wiring that was disconnected during disassembly as tagged.

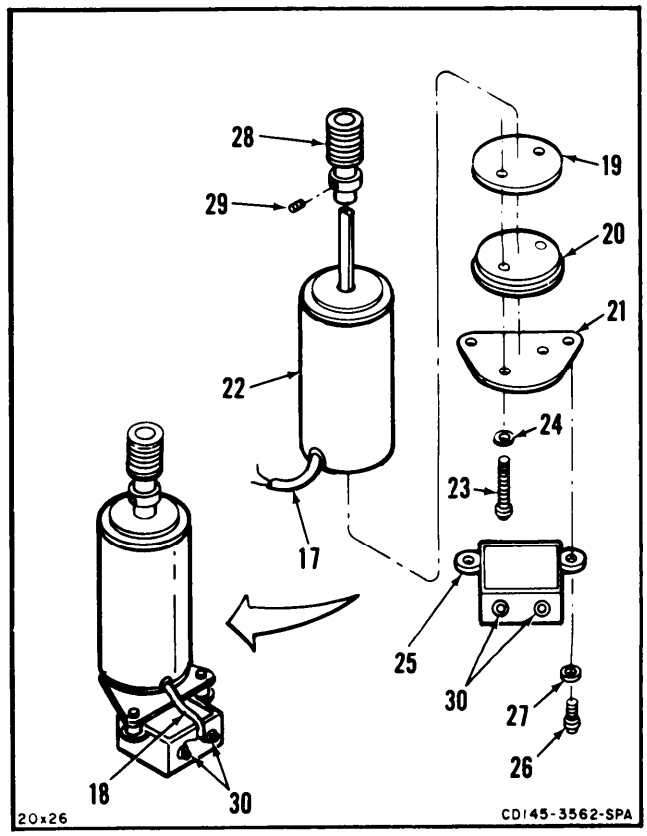
Solder motor wires and capacitor

11. **Solder motor wires and capacitor (14)** to terminals (11). Use solder (E360). Remove tags.
12. **Solder two shields** to terminal (6). Use solder (E360). Remove tags.
13. Guide motor filter wires (18) through grommet (17).

INSPECT



14. **Position insulator (19), cap (20), and plate (21)** on motor (22). **Install two screws (23)** and washers (24).
15. **Position filter (25)** on plate (21). **Install two screws (28)** and washers (27).
16. **Install worm gear (28)** and two set screws (29).
17. **Solder two wires (18)** to filter terminals (30). Use solder (E360). Remove tags.



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9-74 ASSEMBLE LANDING LIGHT MOTOR (AVIM) (Continued)

WARNING

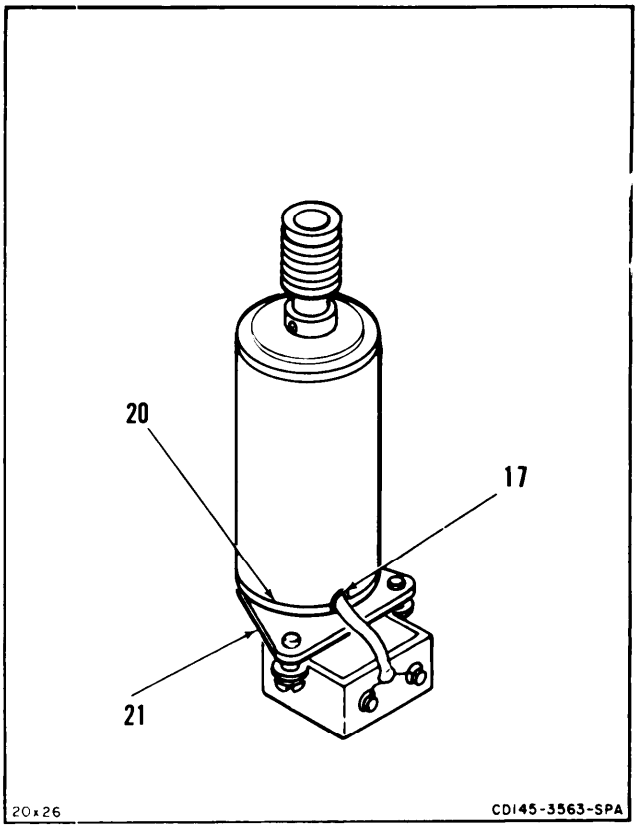
Acetone (E20) can form toxic vapors if exposed to flame. Use in well-ventilated area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

18. Clean edges of cap (20), plate (21), and grommet (17), Use acetone (E20). Use gloves (E186).

WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

19. Seal edges of cap (20), plate (21), and grommet (17). Use sealant (E336). Use gloves (E186).



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-75 ASSEMBLE LANDING LIGHT ROTATING MECHANISM (AVIM) 9-75

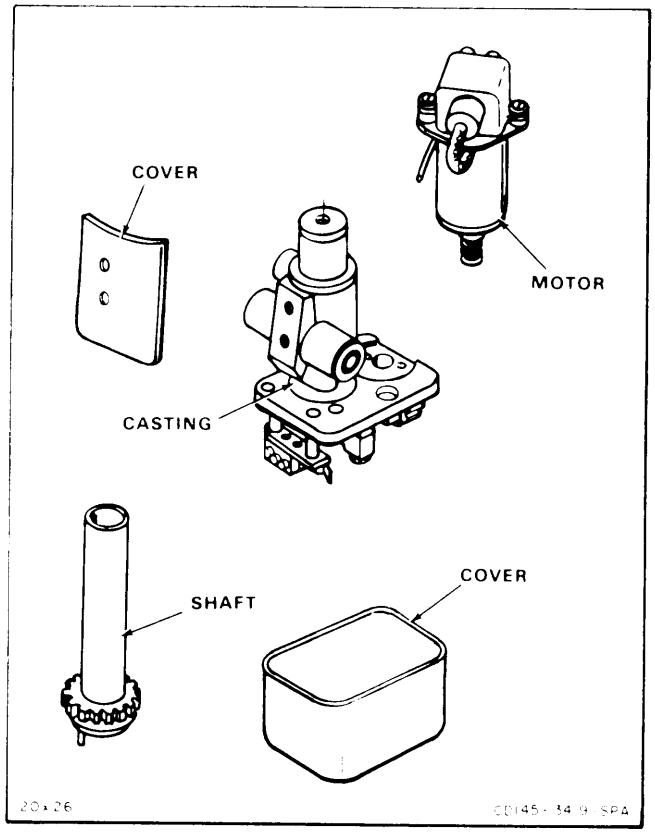
INITIAL SETUP

Applicable Configurations:
All

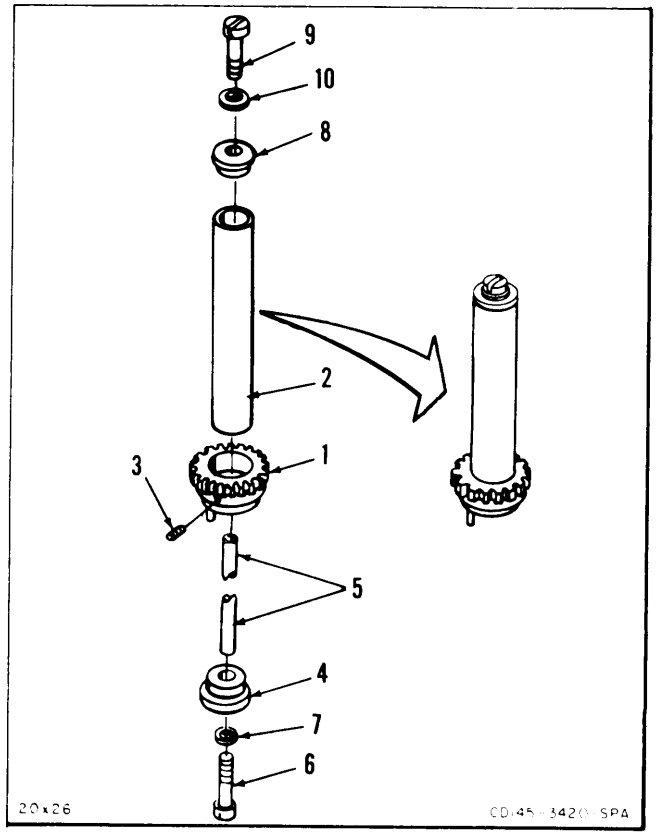
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Arbor Press
Soldering Gun

Materials:
Sealant (E336)
Solder (E360)
Acetone (E20)
Cloths (E120)
Lubricating Oil (E257)
Gloves (E186)

Personnel Required:
Aircraft Electrician
Machinist
Inspector



1. **Install rotate control wheel (1)** in shaft (2). Install two setscrews (3).
2. **Position insulator (4)** on pivot bus shaft (5). **Install contact (6),** and washer (7). **Position insulator (4), and pivot bus shaft (5)** inside shaft (2).
3. **Position insulator (8)** on shaft (2). **Install screw (9)** and washer (10).



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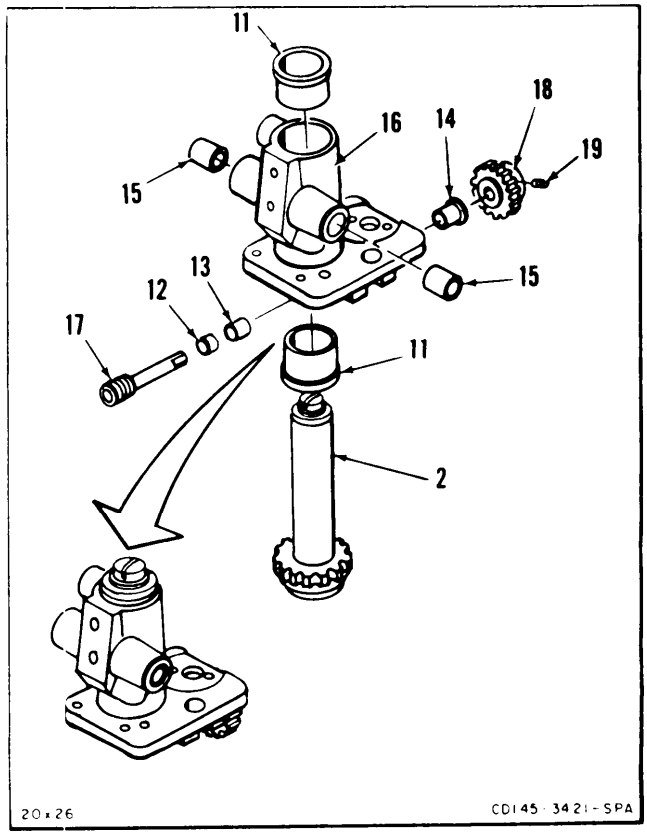
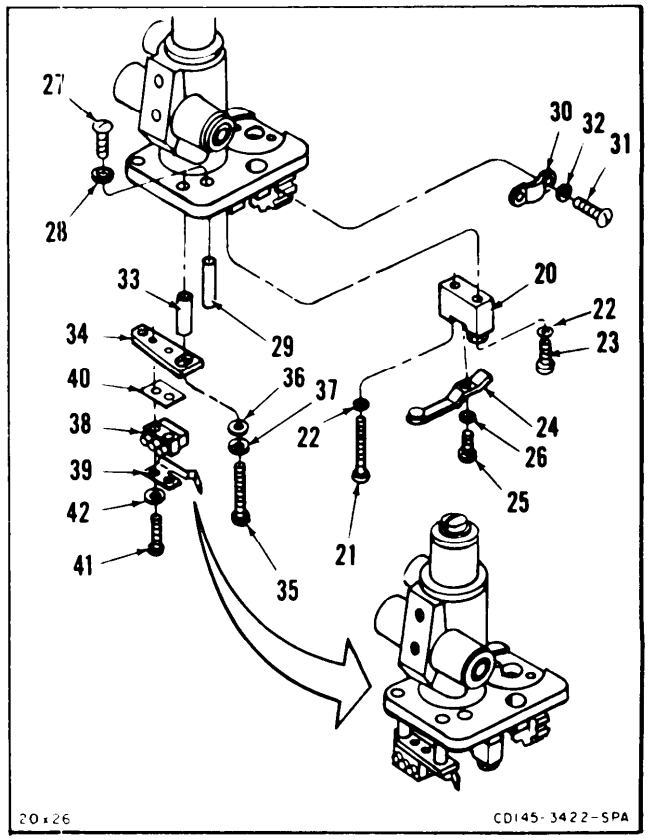
9-75 ASSEMBLE LANDING LIGHT ROTATING MECHANISM (AVIM) (Continued)

4. **Install two bearings (11).** Use arbor press.
5. **Install bearing (12), spacer (13), and bearing (14).** Use arbor press.
6. **Install two bearings (15).** Use arbor press.
7. Lubricate shaft (2) by coating lightly with oil. Use lubricating oil (E257). **Install shaft** in casting (16).
8. Lubricate worm and shaft (17) by coating lightly with oil. Use lubricating oil (E257). **Install worm and shaft** in casting (16).
9. Lubricate gear (18) by coating lightly with oil. Use lubricating oil (E257). **Install gear** on shaft end of worm and shaft (17), Install two setscrews (19).



10. **Install insulator (20),** screw (21), two washers (22), and stud (23).
11. **Install contact (24),** screw (25), and washer (26).
12. **Install** screw (27), washer (28), and **post (29).**
13. **Install clamp (30),** two screws (31), and washers (32).
14. **Install** two posts (33), **adjusting plate (34),** two screws (35), two flat washers (36), and two lock washers (37).
15. **Install switch (38), adapter (39), and insulator (40)** using two screws (41) and washers (42).



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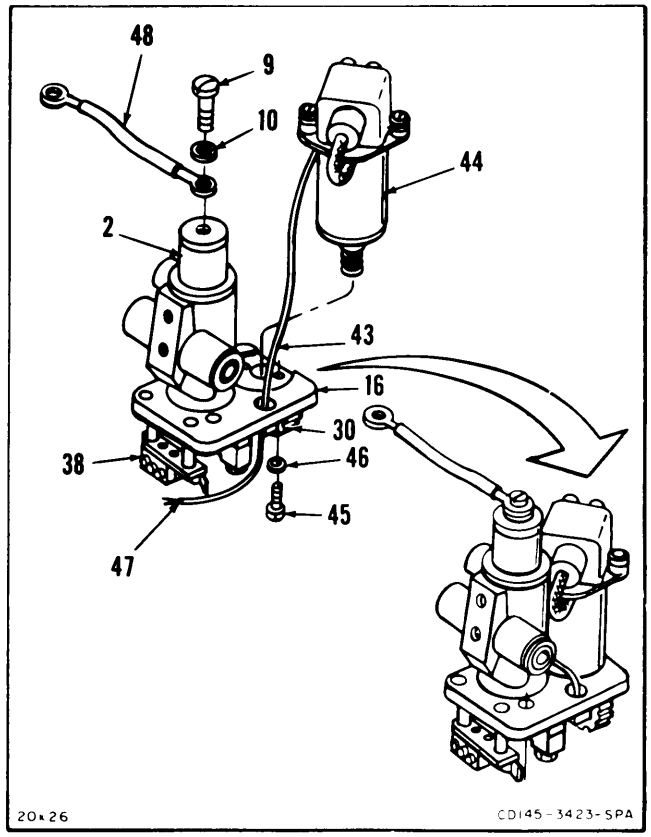
9-75 ASSEMBLE LANDING LIGHT ROTATING MECHANISM (AVIM) (Continued)

16. **Guide wire harness (43)** through hole in casting (16) and through clamp (30). **Position motor (44)** on casting and **install two screws (45)** and washers (46).
17. **Solder two wires (47)** to switch (38). Use solder (E360), Remove tags.
18. Remove screw (9) and washer (10). **Position electrical lead (48)** to top of shaft (2). **Install screw (9)** and washer (10). Remove tag.



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9-75 ASSEMBLE LANDING LIGHT ROTATING MECHANISM (AVIM) (Continued)

19. Install screw (49) through actuator nut (50) on actuator (51). **Install button (52)** as shown.
20. **Position actuator (51)** on sector gear (53). **Install two screws (54)** and washers (55).
21. **Position sector gear (53)** on rotating mechanism (56). **Install two screws (57)** and washers (58).

WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Use in well-ventilated area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

22. Clean mating surfaces of cover (59) and rotating mechanism (56). Use cloths (E120) and acetone (E20) Use gloves (E186).
23. **Install cover (59),** two screws (60) and washers (61).
24. **Install cover (62)** using two screws (63).

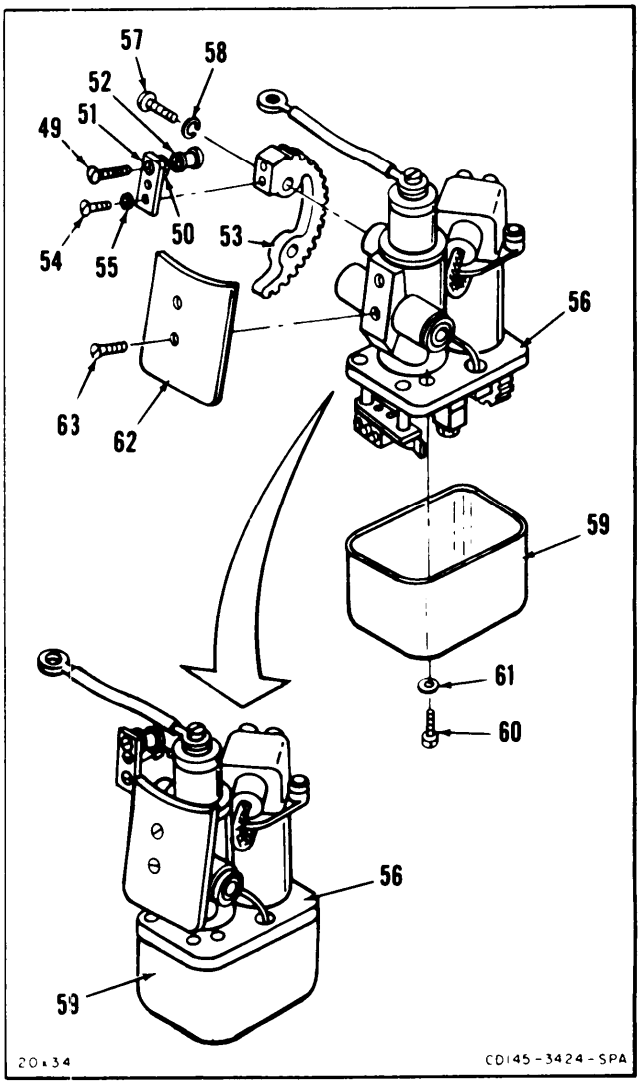
WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

25. **Seal outer edges of cover (59).** Use sealant (E336). Use gloves (E186).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-76 ASSEMBLE LANDING LIGHT EXTEND GEARBOX (AVIM) 9-76

INITIAL SETUP

Applicable Configurations:
All

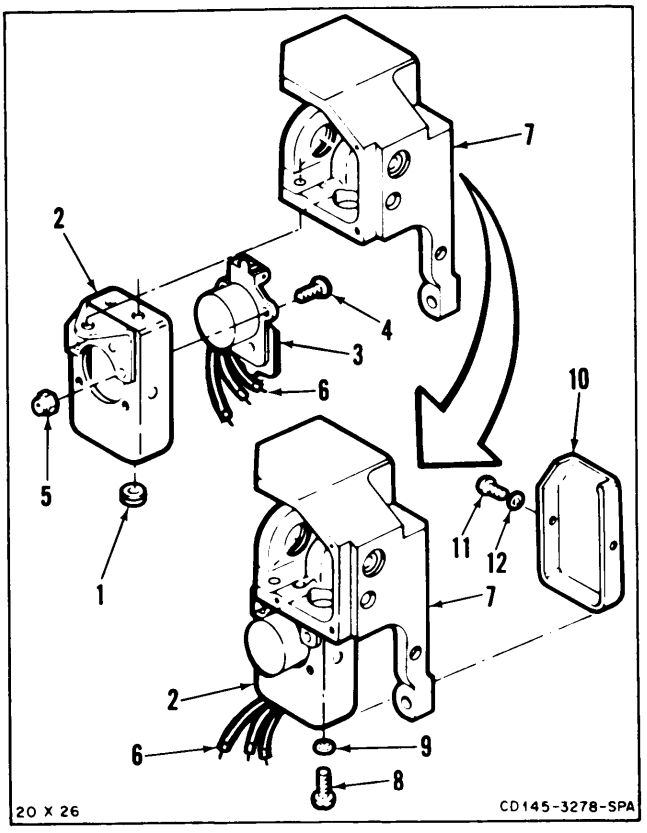
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Arbor Press
Spanner Wrench

Materials:
Acetone (E20)
Cloths (E120)
Sealant (E336)
Gloves (E186)

References:
TM 55-1520-240-23P

Personnel Required:
68F10 Aircraft Electrician (2)
45E10 Machinist
67U30 Inspector

1. **Install two rubber grommets (1)** in housing (2).
2. **Position relay (3)** in housing (2). **Install four screws (4)** and nuts (5). Route three wires (6) through two rubber grommets (1). Remove tags.
3. **Position relay housing (2)** on gearbox (7). **Install three screws (8)** and washers (9).
4. **Position cover (10)** on housing (2). **Install two screws (11)** and washers (12).



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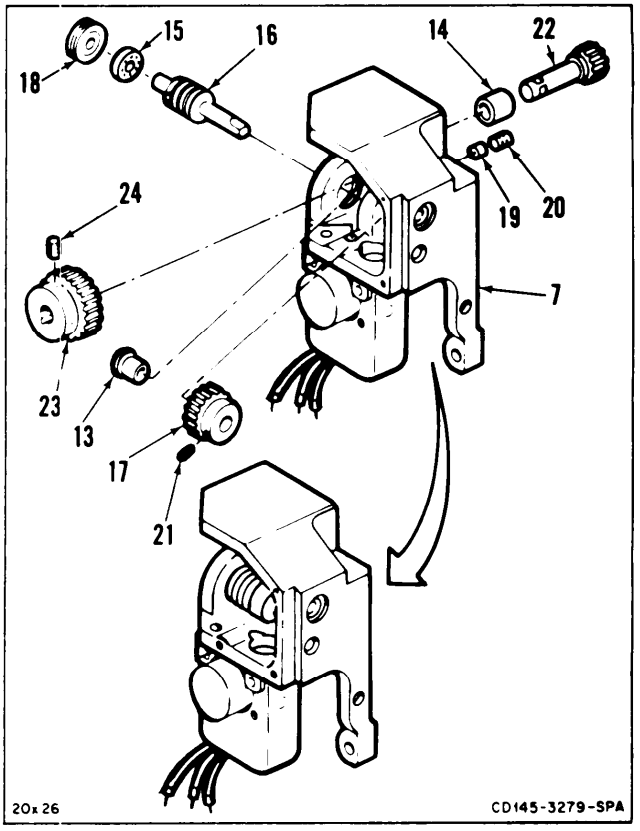
9-76 ASSEMBLE LANDING LIGHT EXTEND GEARBOX (AVIM) (Continued)

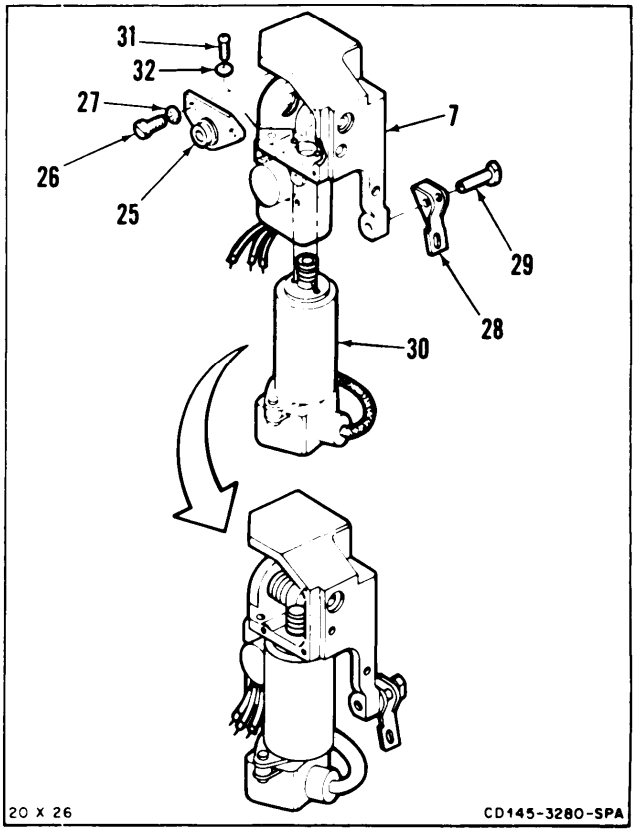
5. **Install bearing sleeve (13) and pinion shaft bearing (14)** in gearbox (7). Use arbor press.
6. **Install thrust bearing (15)** on end of Worm and shaft assembly (16).
7. **Install gear (17)** in gearbox (7) and hold in position. **Install worm and shaft (16)** into gearbox through bearing sleeve (13) and into gear.
8. **Install bearing thrust adjustment (18)** in gearbox (7). Tighten so that worm and shaft (16) turns freely with minimal end play. Use spanner wrench.
9. Install nylon rod (19) and set screw (20).
10. Install two setscrews (21) in gear (17).
11. **Install pinion gear and shaft (22)** in gearbox (7).
12. **Install gear (23)** on shaft (22). Install two setscrews (24) on gear.

INSPECT

13. **Position bearing and bridge assembly (25)** in gearbox (7). **Install two screws (26)** and washers (27).
14. **Install bumper (28) and bumper shaft (29).** Crimp end of bumper shaft, use arbor press.
15. **Position motor (30)** on gearbox (7). **Install two screws (31)** and washers (32).

INSPECT





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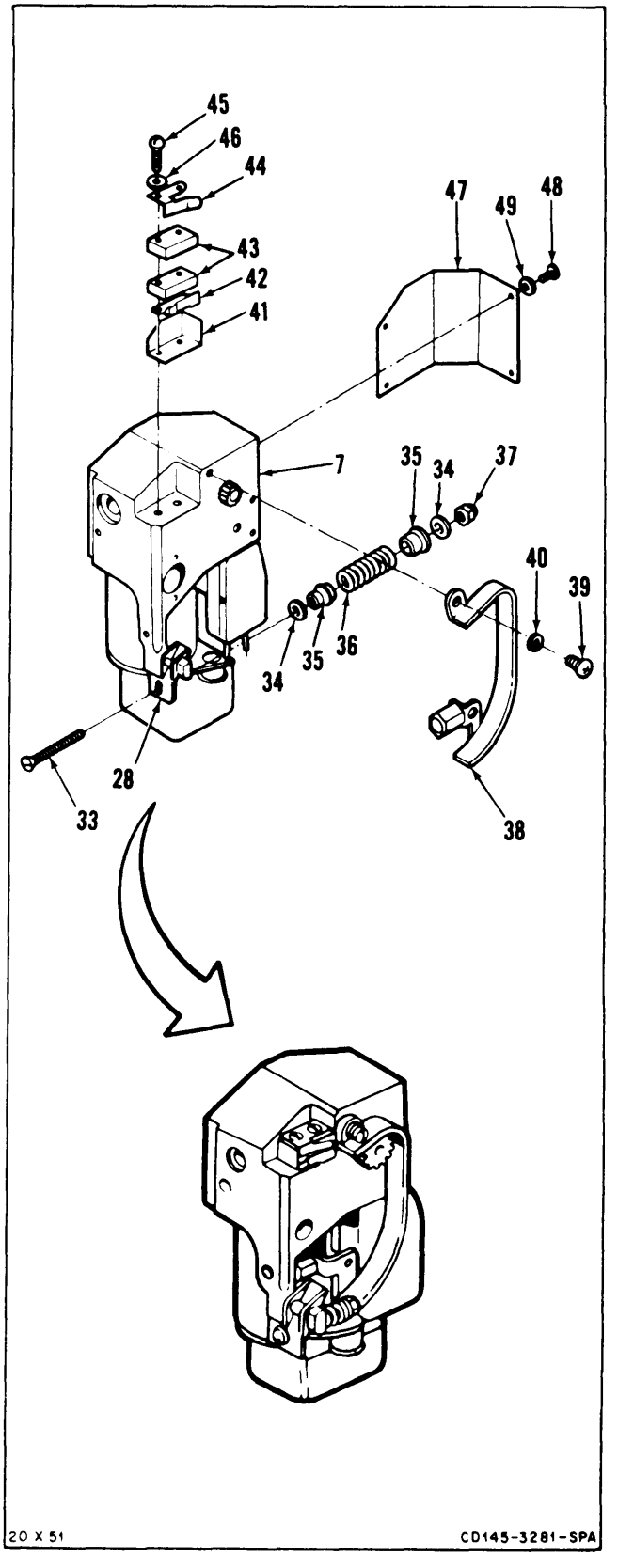
9-76 ASSEMBLE LANDING LIGHT EXTEND GEARBOX (AVIM) (Continued) 9-76

16. **Install screw (33)** through hole in bumper (28). **Install** two washers (34), eyelets (35), and **spring (36)** on screw. Install nut (37).

17. **Position gear cover (38)** on gearbox (7). **Install two screws (39)** and washers (40).

18. **Position switch insulator (41), extend switch actuator (42), two limit switches (43) and retract switch actuator (44)** on housing (7). **Install two screws (45)** and washer (46).

19. **Position gearbox cover (47). Install four screws (48)** and washers (49).



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9-76 ASSEMBLE LANDING LIGHT EXTEND GEARBOX (AVIM) (Continued)

WARNING

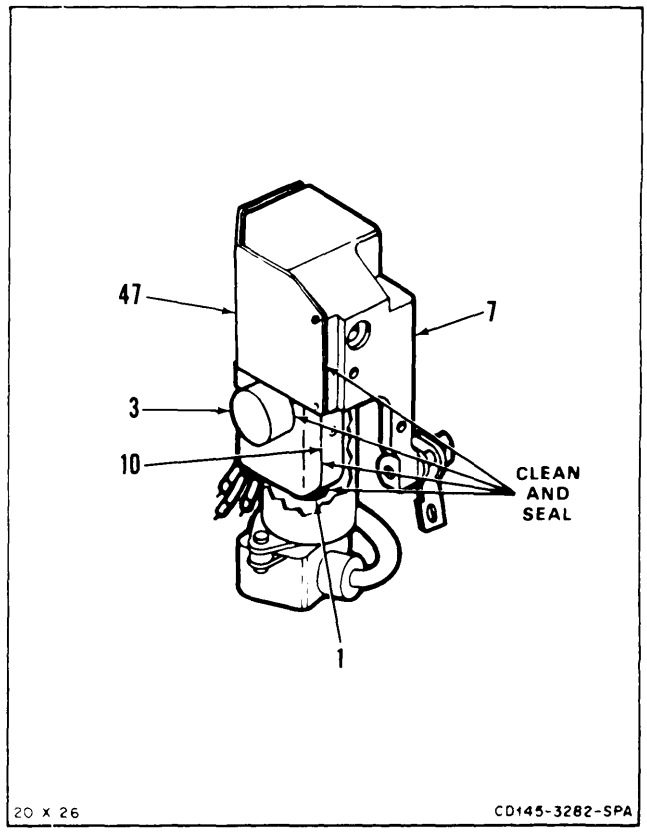
Acetone (E20) can form toxic vapors if exposed to flame. Use in well-ventilated area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

20. Clean mating edges of gearbox (7), gearbox cover (47), relay housing cover (10), relay (3), and two grommets (1). Use acetone (E20) and cloths (E120). Use gloves (E186).

WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

21. Seal edge of gearbox (7) and gearbox cover (47), relay housing cover (10), and edges of relay (3) which extend through relay housing cover. Use sealant (E336). Use gloves (E186).



INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-77 ASSEMBLE LANDING LIGHT (AVIM) 9-77

INITIAL SETUP

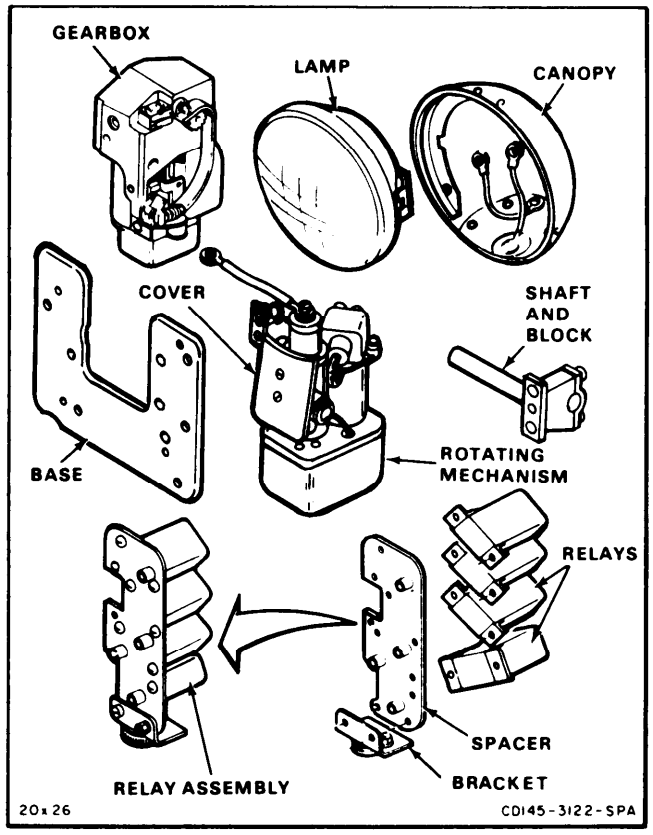
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

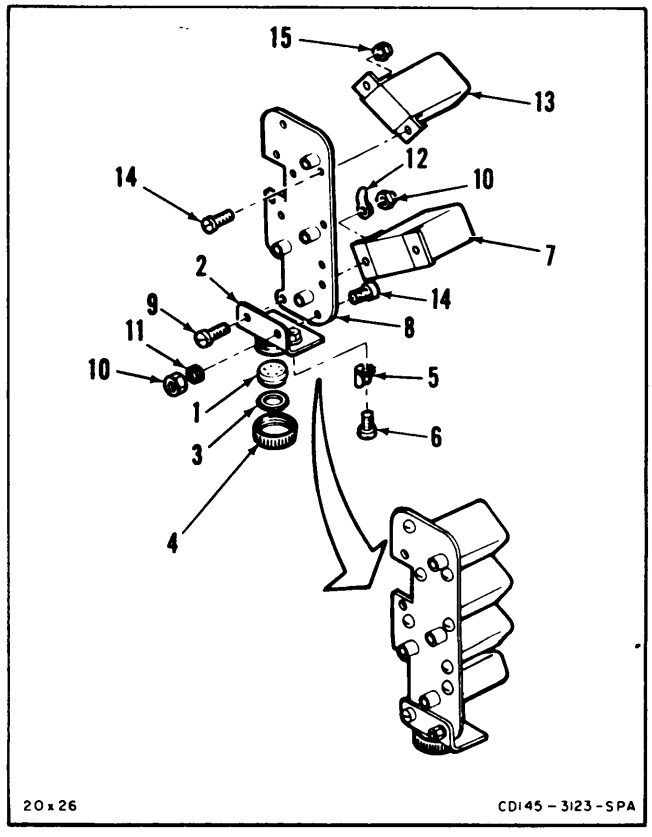
Materials:
Sealant (E336)
Enamel (Glyptal) (E164)
Sealant (E341)
Solder (E360)
Methyl Alcohol (E243)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician
68F30 Inspector

References:
TM 55-1520-240-23P
TM 55-1500-323-25



1. **Position rubber bushing (1)** in conduit bracket (2). **Install** washer (3) and **nut (4)** on bracket.
2. **Install terminal lug (5)** and screw (6) in bracket (2).
3. **Position conduit bracket (2) and relay (7)** on spacer (8).
4. **Install two screws (9),** nuts (10), washer (11), **and terminal (12).**
5. **Position three relays (13)** on spacer (8). **Install six screws (14)** and nuts (15).



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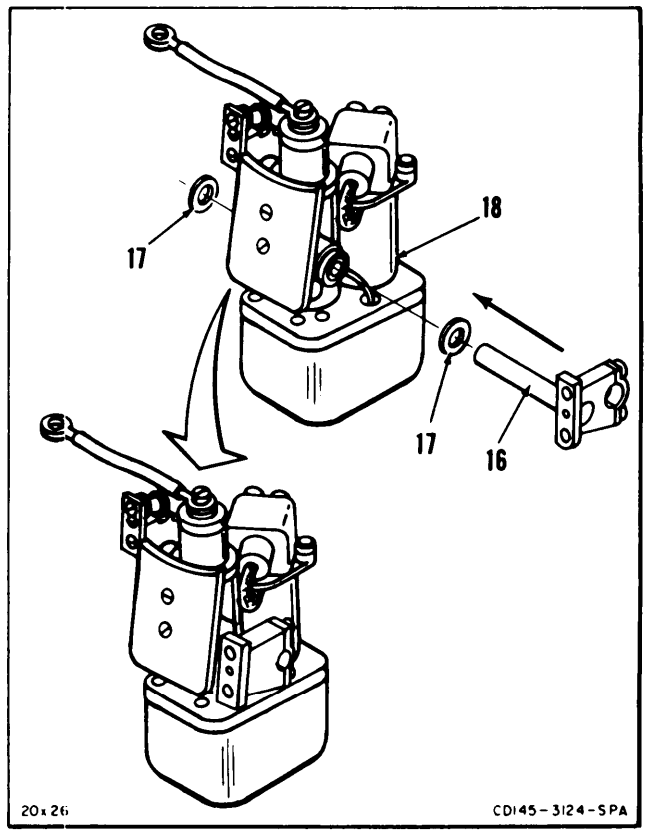
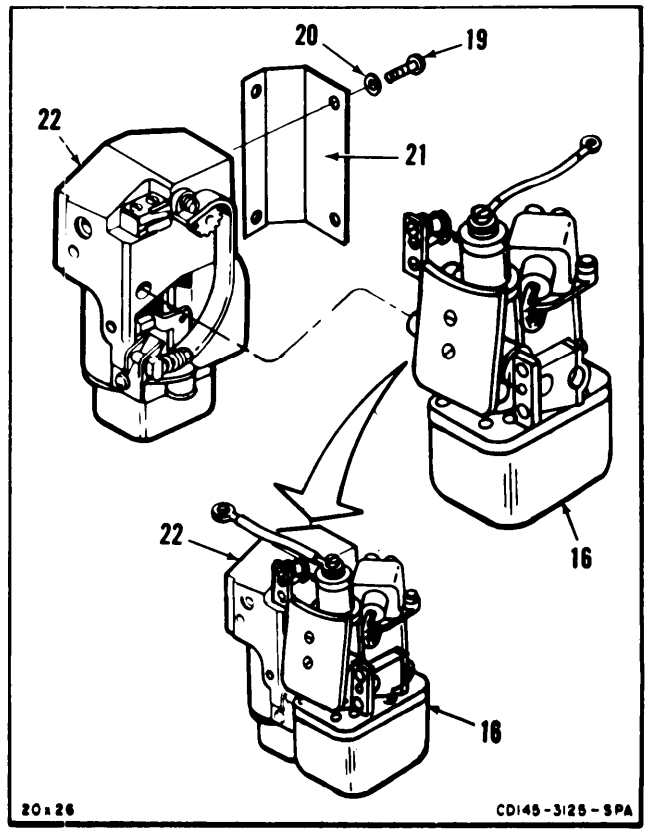
9-77 ASSEMBLE LANDING LIGHT (AVIM) (Continued) 9-77

6. **Install shaft and block** assembly (16) and two extend pivot spacers (17) on rotating mechanism (18).



7. **Remove** four screws (19), washers (20), and **cover (21)** from gearbox (22).
8. **position gearbox (22)** on end of shaft and block (16), as shown.



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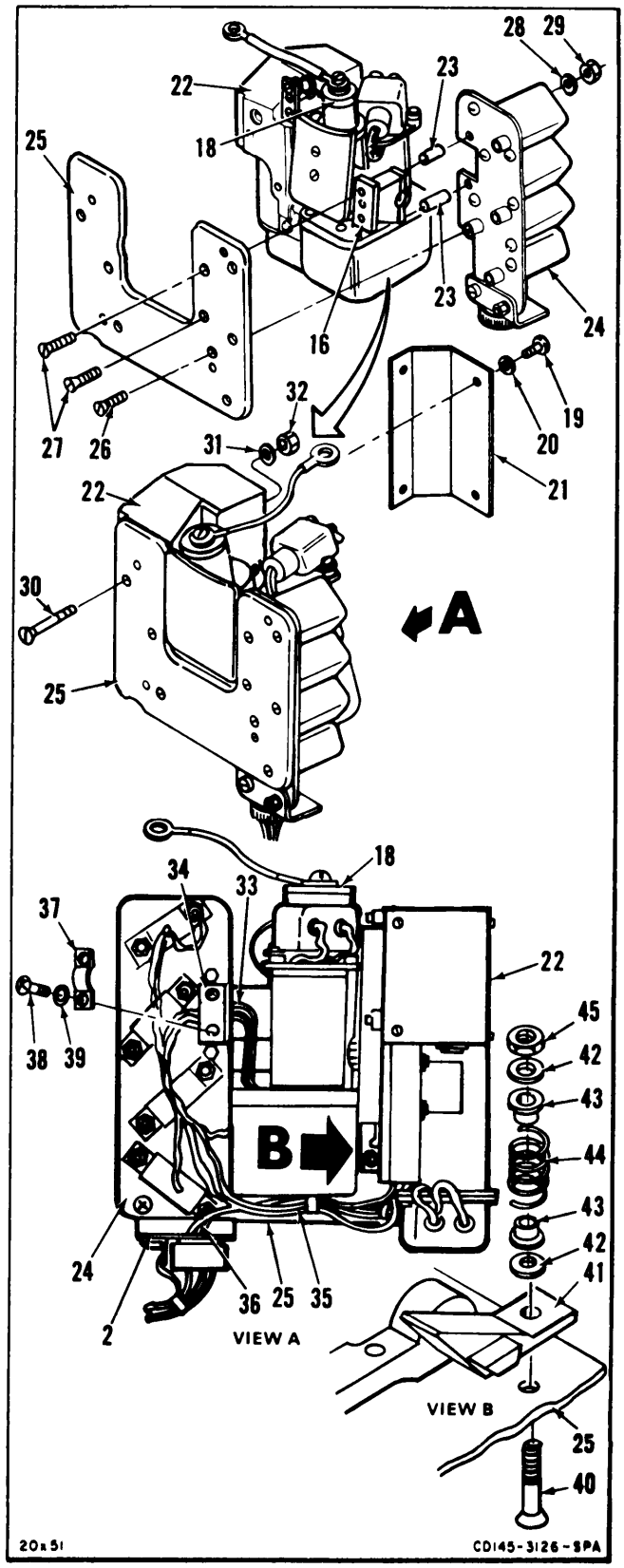
9-77 ASSEMBLE LANDING LIGHT (AVIM) (Continued) 9-77

9. **Position gearbox (22), rotating mechanism (18), shaft and block (16), two spacers (23), and relay assembly (24) on base (25).**
10. **Install four screws (26)** through relay assembly (24) and base (25). Seal screws with glyptal (E164).
11. **Install two screws (27)** through shaft and block assembly (16), two spacers (23), relay assembly (24), and base (25).
12. Install two washers (28) and nuts (29) on screws (27). Seal screws with glyptal (E164).
13. **Install two screws (30),** washer (31) and nut (32) or gearbox (22), and base (25). Seal screws with glyptal (E164).
14. **Route wires (33)** from rotating mechanism (18) through block (34).
15. **Route wires (35)** from gearbox (22) on base (25) to relay (24). Position wires along relay with wires (36) from conduit bracket (2).
16. **Position clamp (37)** on block (34). **Install two screws (38)** and washers (39).

NOTE

Connect wires that were disconnected during disassembly.

17. **Solder wires** to relays, using solder (E360). Remove tags. Clean solder joints with methyl alcohol (E243). Seal soldered connections with sealant (E341). Use gloves (E186).
18. **Install cover (21),** four screws (19) and washers (20). Seal around edge of cover. Use sealant (E336).
19. **Install screw (40)** through base (25) and bumper (41).
20. Install two washers (42), two eyelets (43), spring (44), and nut (45) on screw (40).



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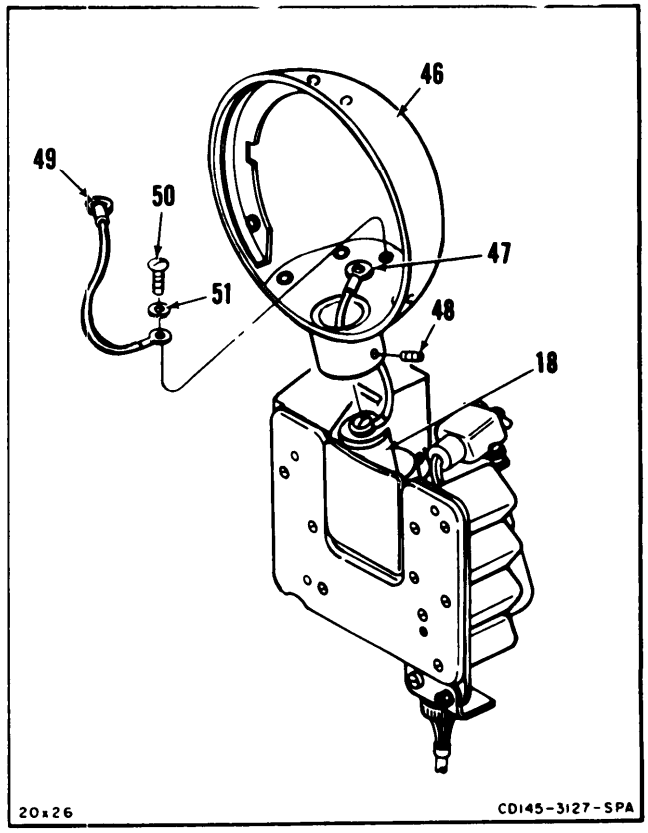
9-77 ASSEMBLE LANDING LIGHT (AVIM) (Continued) 9-77

21. **Position canopy (46)** on rotate mechanism (18) with wire (47) inside canopy. **Install set screw (48).**
22. **Connect wire (49)** to canopy (46) using screw (50) and washer (51). Remove tag.

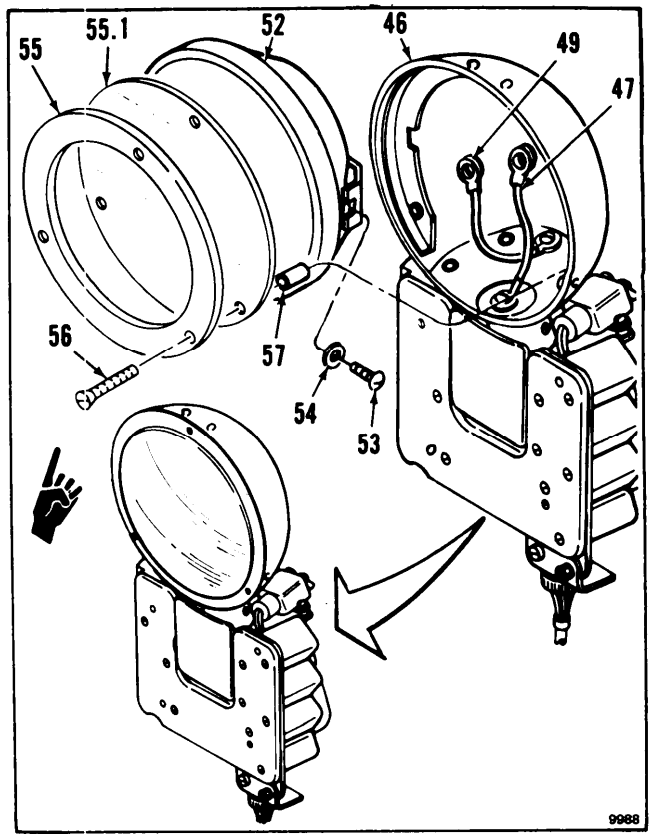


23. **Support lamp (52) at canopy (46).**
24. **Connect two wires (47 and 49)** to lamp (52). Install two screws (53) and washers (54).
25. **Position NVG or normal lamp (52) in canopy (46).**

NOTE

On helicopters with 17, left landing light has NVG lamp and lens.

26. **Install retaining ring (55) or NVG lens (55.1) and three screws (56)** and sleeves (57) in canopy (46). Tighten screws.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-78 TEST AND ADJUST LANDING LIGHT

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-003234915
Power Switch, Two-Position
Control Switch, Five Position
Terminal Board, Eight Terminal
DC Power Supply, 25 Ampere

Materials:
None

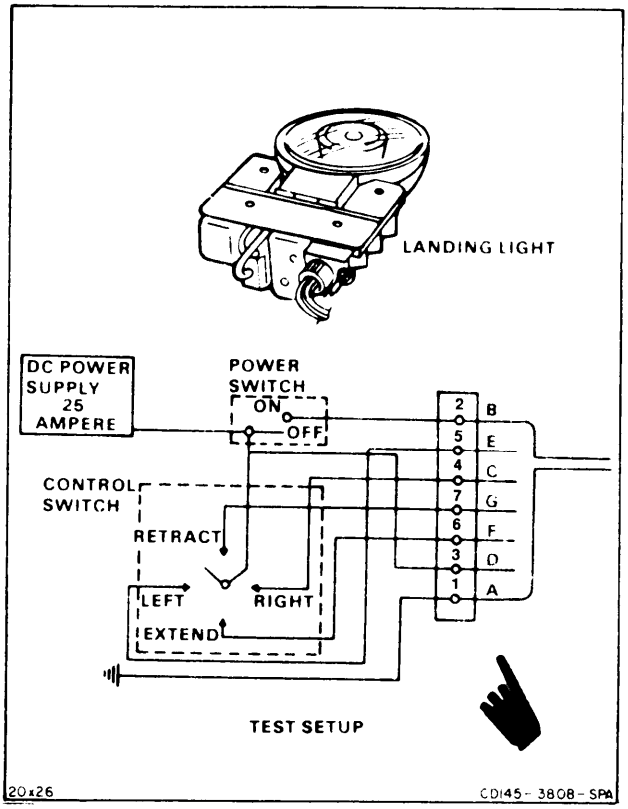
Personnel Required:
Aircraft Electrician (2)
Inspector

Equipment Condition:
Off Helicopter Task
Test Setup

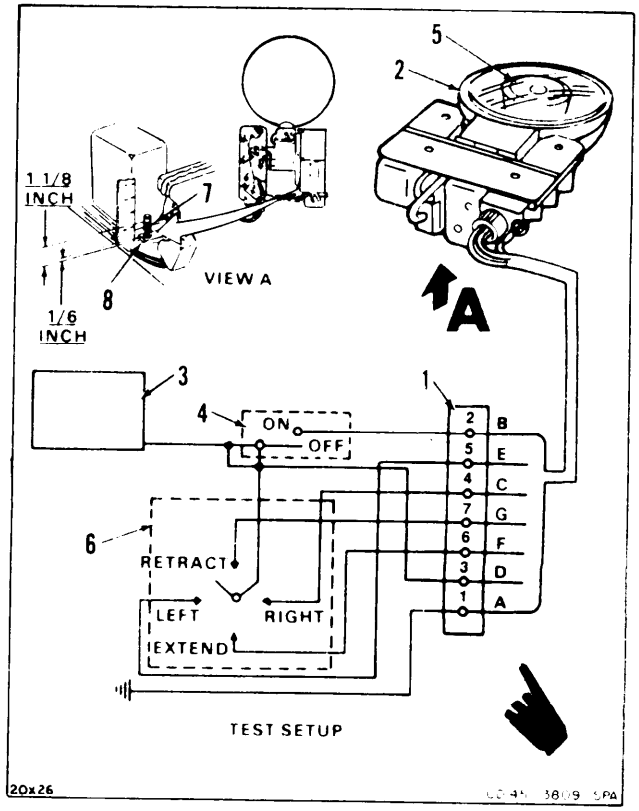
General Safety Instructions:

WARNING

Do not look into lighted NVG landing light. Infra-red light output can seriously injure eyes.



1. **Connect test setup (1)** to landing light (2).
2. Turn on power supply (3) **Adjust power supply output to 28 volt dc.**
3. **Set power switch (4) to on. Check lamp (5).** Lamp shall come on Check visually without 17. Check for heat output with 17.
4. **Set power switch (4) to off. Check Lamp** (5). Lamp shall go off. Check visually without 17. Check for heat output with 17.
5. **Set control switch (6) to EXTEND. Check light (2).** Light shall fully extend and stop.
6. **Measure length of spring (7). Record length.**
7. **Set control switch (6) to RETRACT. Check light (2).** Light shall fully retract and stop.



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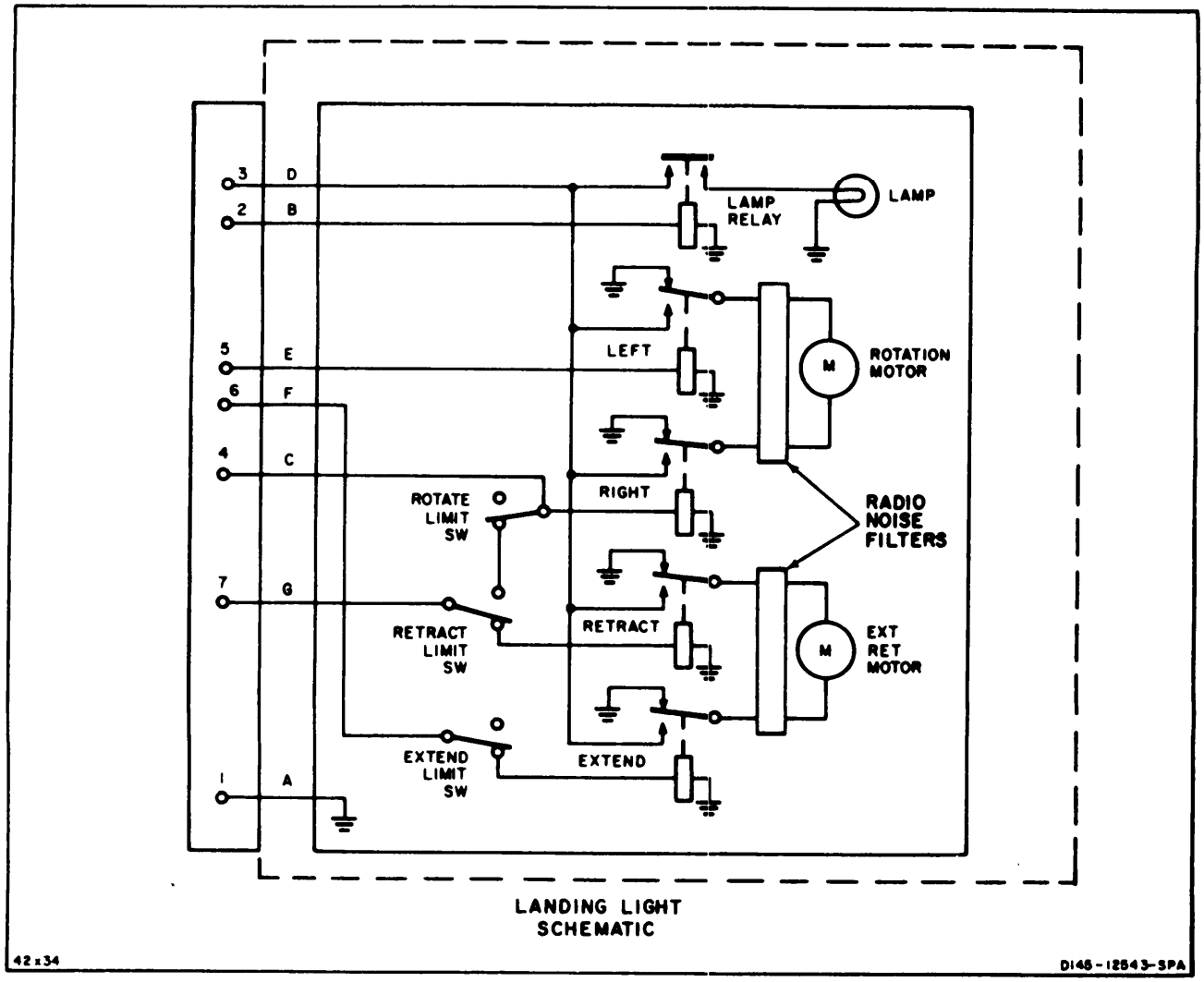
9-78 TEST AND ADJUST LANDING UNIT (Continued) 9-78



LANDING LIGHT
SCHEMATIC

GO TO NEXT PAGE

8. **Check bumper spring (7).** Bumper (8) shall have compressed bumper spring (7) 1/16-inch maximum. If spring is not compressed, adjust light as follows.

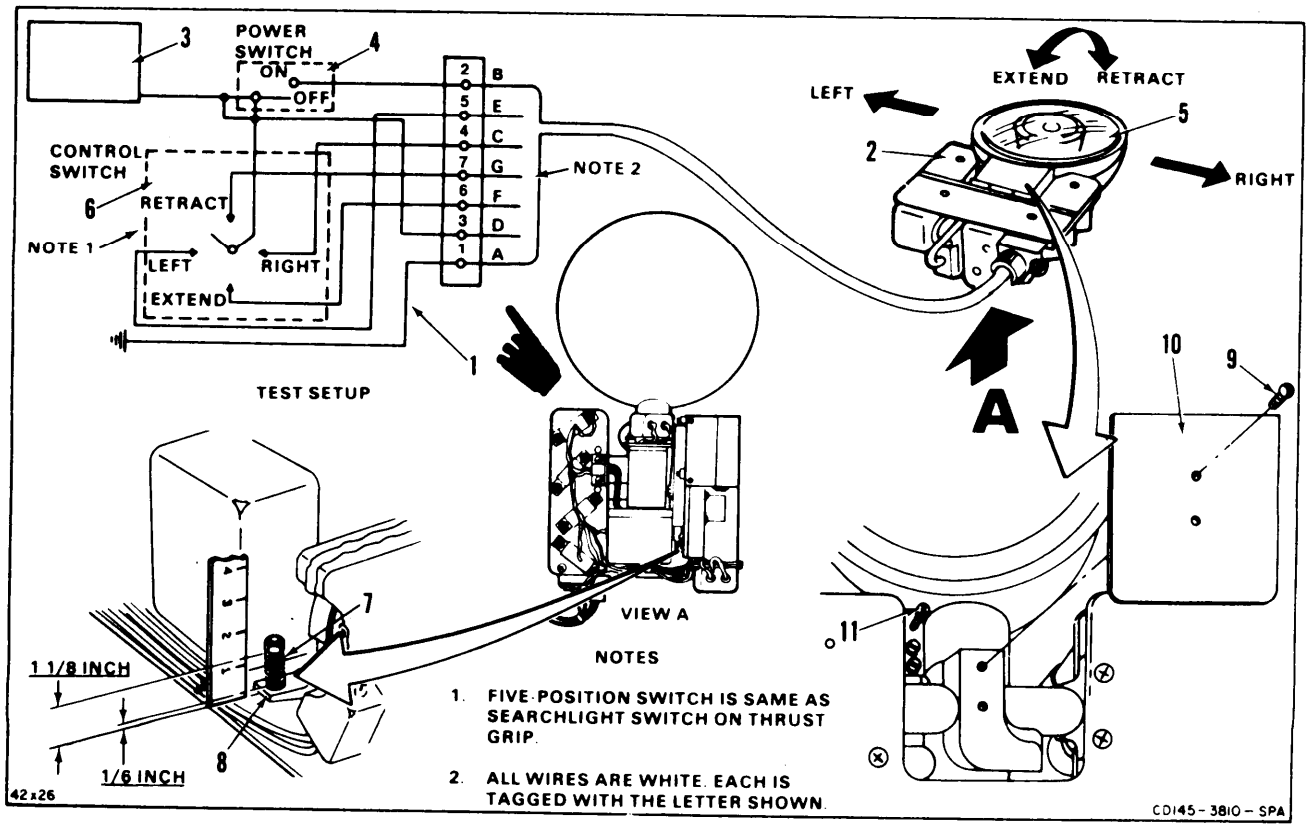
   a. Remove two screws (9) and coverplate (10).

   b. Turn adjustment screw (11) counter-clockwise to increase spring (7) compression. Turn adjustment screw clockwise to decrease spring compression.

   c. Set switch (6) to extend and retract three times.

   d. Check bumper (8) Bumper shall have compressed spring (7) 1/16-inch maximum. Readjust if necessary

   e. Position coverplate (10) and install two screws (9).



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9. **Set switch (6) to RIGHT. Check light (2).** Light shall rotate to right. Complete revolution to right shall take no longer than 40 seconds.

10. **Set switch (6) to LEFT. Check light (2).** Light shall rotate to left. Complete revolution to left shall take no longer than 40 seconds.

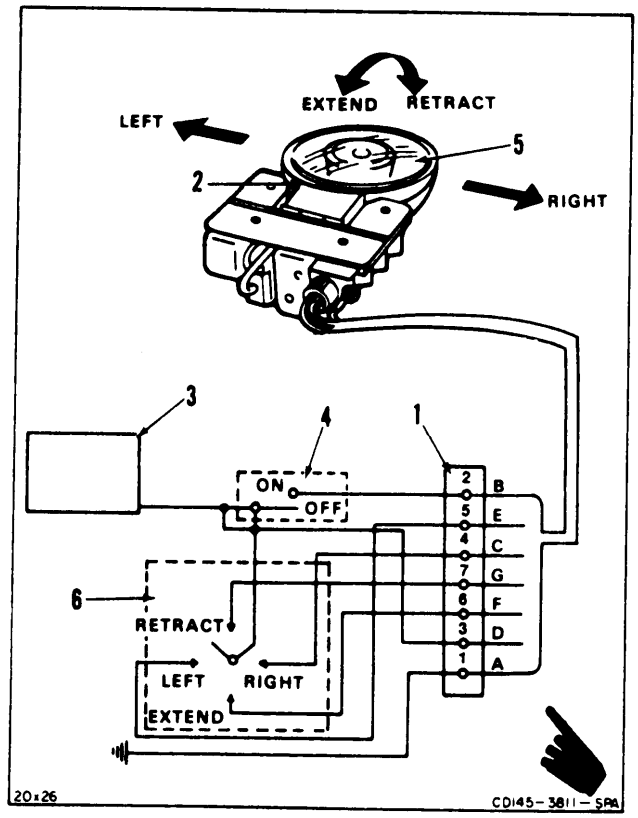
11. **Set switch (6) to EXTEND. Check light (2).** Light shall fully extend within 20 seconds.

12. **Set switch (6) to RETRACT. Check light (2).** Light shall fully retract within 20 seconds.

13. **Set switch (6) to EXTEND and fully extend light (2).**

14. **Set switch (6) to RIGHT or LEFT and partially rotate light (2).**

15. **Set switch (6) to RETRACT. Check light (2).** Light shall fully retract and rotate to stowed position.



INSPECT

16. Disconnect power supply (3)

17. Disconnect test setup (1)

FOLLOW-ON MAINTENANCE

None

END OF TASK

9-79 INSTALL LANDING LIGHT 9-79

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Acetone (E20)
Cloths (E120)
Sealant (E336)
Gloves (E186)
Tape (E385)

Parts:
Gasket
Grommet

Perisonnel Required:
Medium Helicopter Repairer (2)
Inspector

References:
TM 55-1520-240-23P

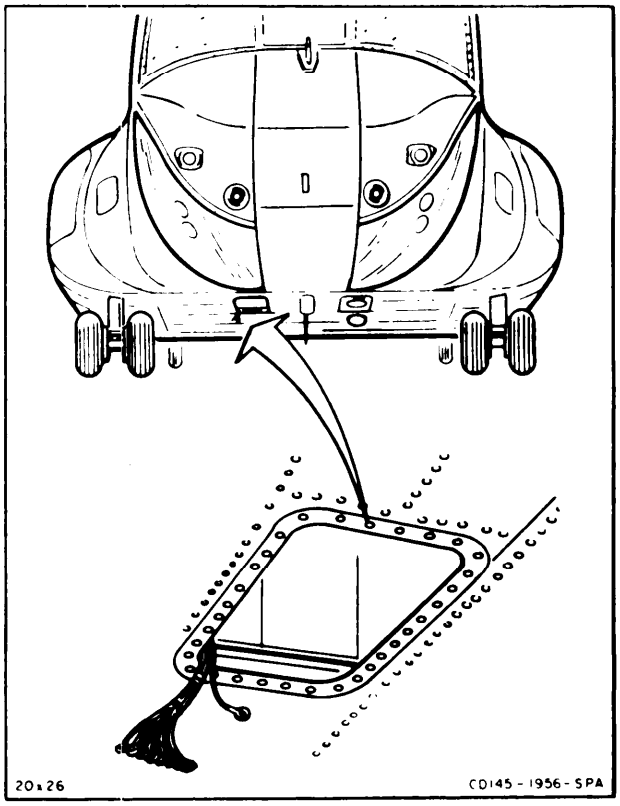
General Safety Instructions:

WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immadiately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Use in wall-ventilatod area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



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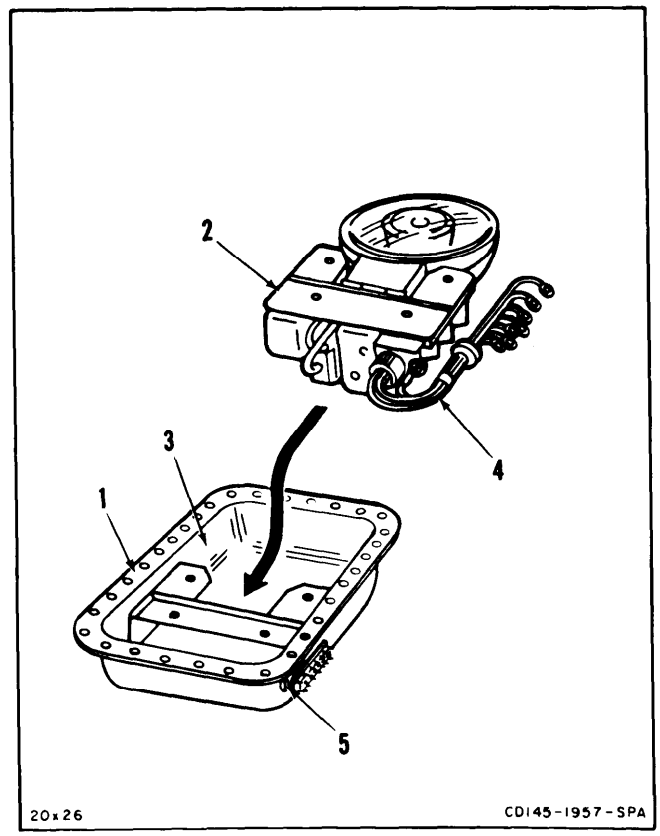
9-79 INSTALL LANDING LIGHT (Continued)

1. Clean old sealant from flange (1). Use acetone (E20) and cloths (E120). Use gloves (E186).

NOTE

With 17, left landing light has NVG lamp and lens.

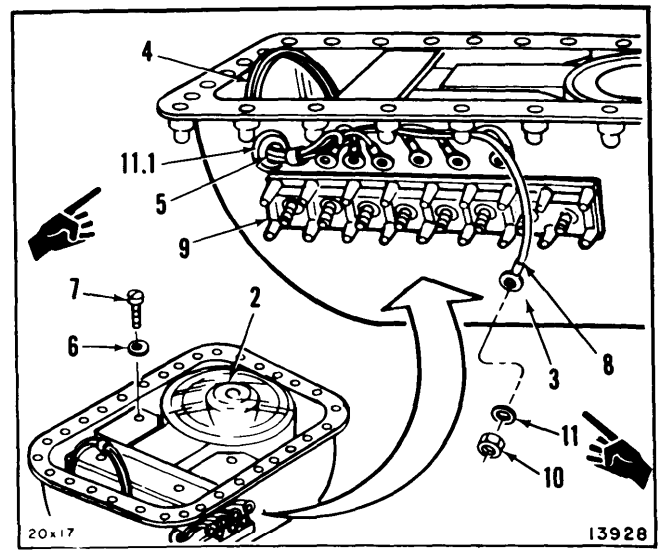
2. **Position light (2) in housing (3).** Make sure wiring harness (4) is aligned with hole (5).



3. Guide wiring harness (4) through hole (5) in side of housing (3).

INSPECT

4. **Install four washers (6) and screws (7)** in light (2).
5. Remove tape from seven wires (8). **Connect wires** to terminal board (9). Install seven nuts (10) and washers (11). Remove tags from wires.
6. **Install grommet (11.1).** Apply sealant (E336) around edge of grommet and wiring harness (4). Use gloves (E186).



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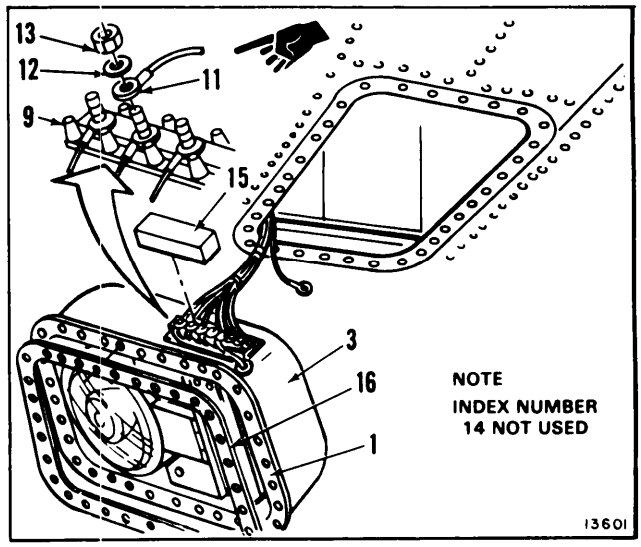
9-79 INSTALL LANDING LIGHT (Continued)

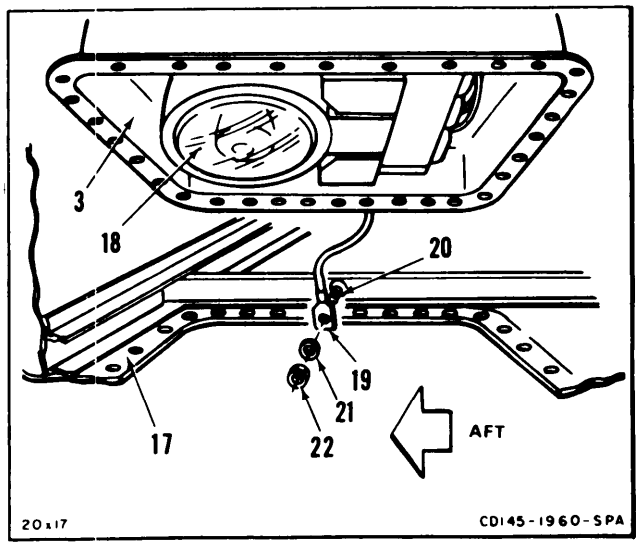
7. Have helper support housing (3) and **connect ten electrical wires (11)** to terminal board (9). Install washers (12) and nuts (13). Remove tags from wires.

INSPECT

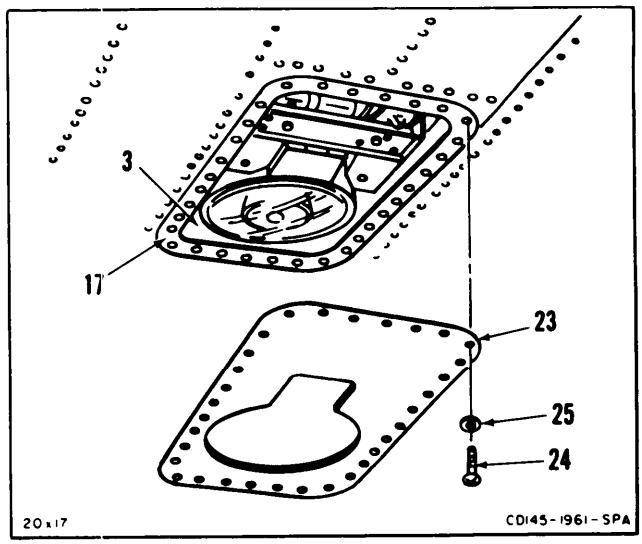
8. **Install terminal board cover (15).**
9. Apply sealant (E336) to both sides of gasket (16). **Install gasket** on flange (1). Use gloves (E186).



10. Tilt housing (3) to one side and guide it up and inside structure (17). Make sure lamp (18) is aft.
11. **Connect electrical lead (19)** to stud (20). Install washer (21) and nut (22).



12. **Position housing (3)** and align holes with mounting holes on structure (17).
13. **Position housing (23) and install 32 washers (25) and screws (24).**



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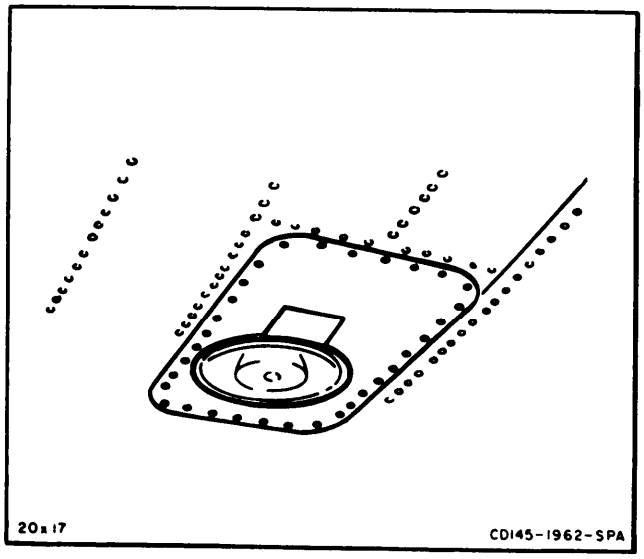
9-79 INSTALL LANDING LIGHT (Continued)

FOLLOW-ON MAINTENANCE:

Check operation of landing light (TM 55-1520-240-T).



END OF TASK

9-80 REMOVE LANDING LIGHT LAMP 9-80

INITIAL SETUP

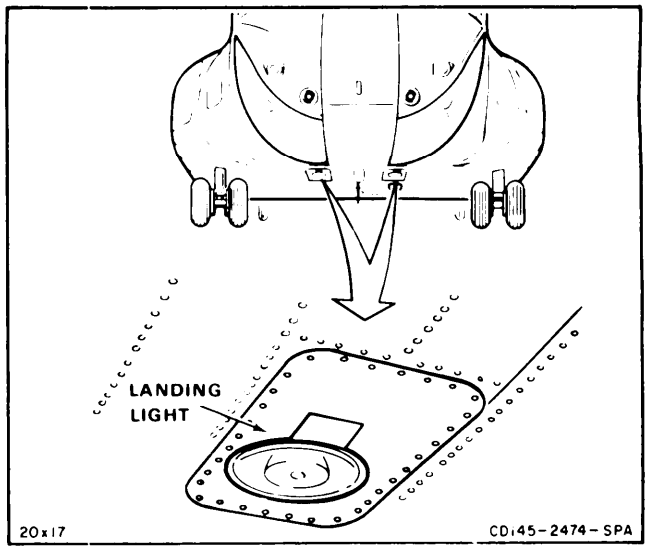
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Medium Helicopter Repairer

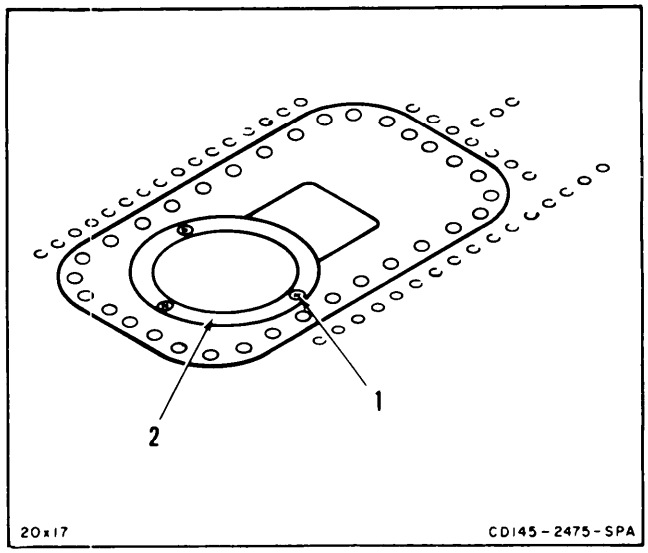
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



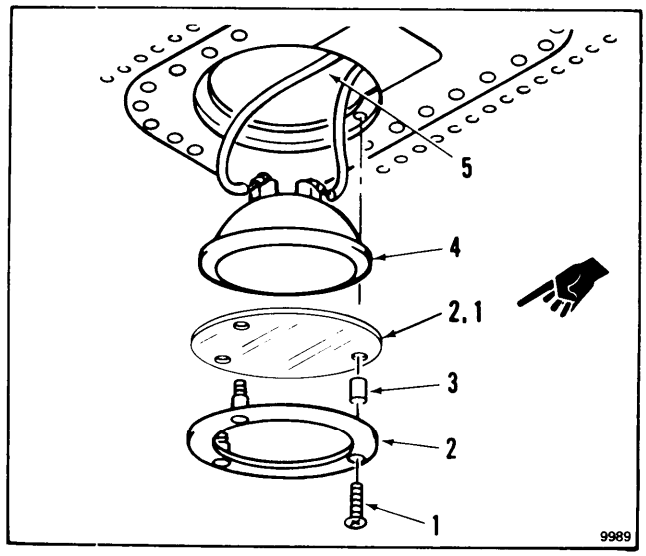
NOTE

Procedures are similar to remove left or right landing light lamp. Without 17, both lights are same. With 17, left light has NVG lens and lamp.

1. Loosen three screws (1) on retaining ring (2).



2. **Remove retaining ring (2) or NVG lens** (2.1), three screws (1), and sleeving (3) from lamp (4).
3. Lower lamp (4) from light (5).



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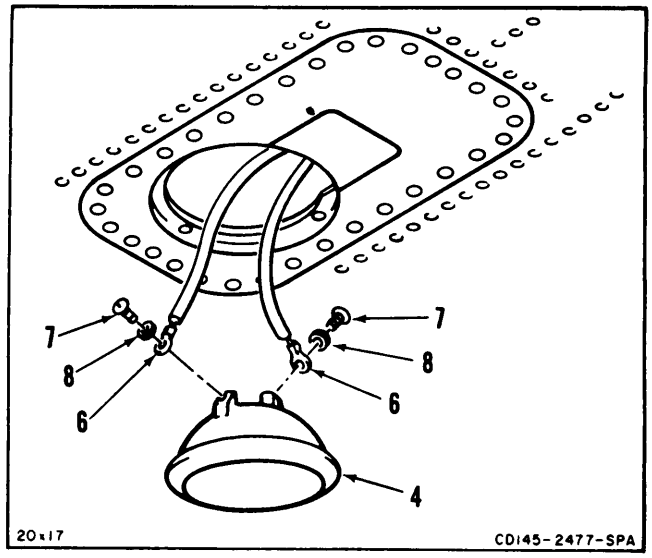
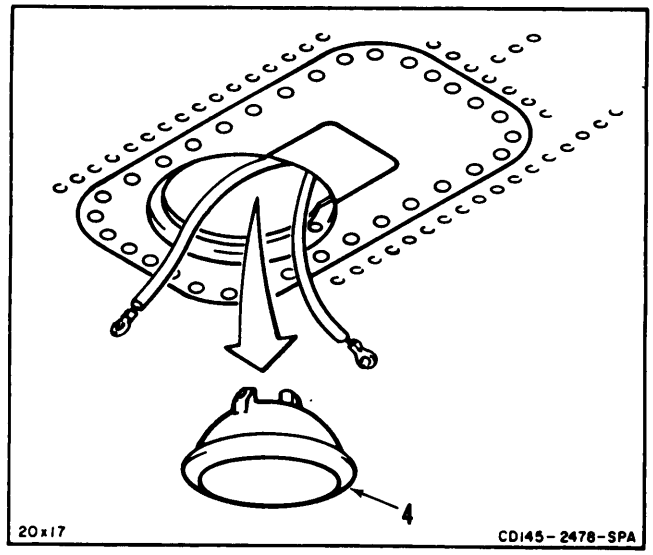
9-80 REMOVE LANDING LIGHT LAMP (Continued) 9-80

4. Tag two wires (6).

5. Remove two screws (7) and washers (8). **Disconnect two wires (6)** from lamp (4).

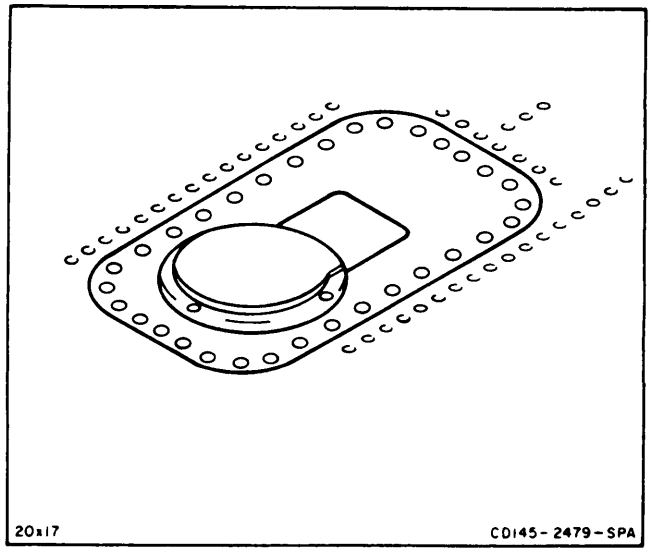


6. Tape exposed ends of wire. Use tape (E385). **Remove lamp (4).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-81 INSTALL LANDING LIGHT LAMP

INITIAL SETUP

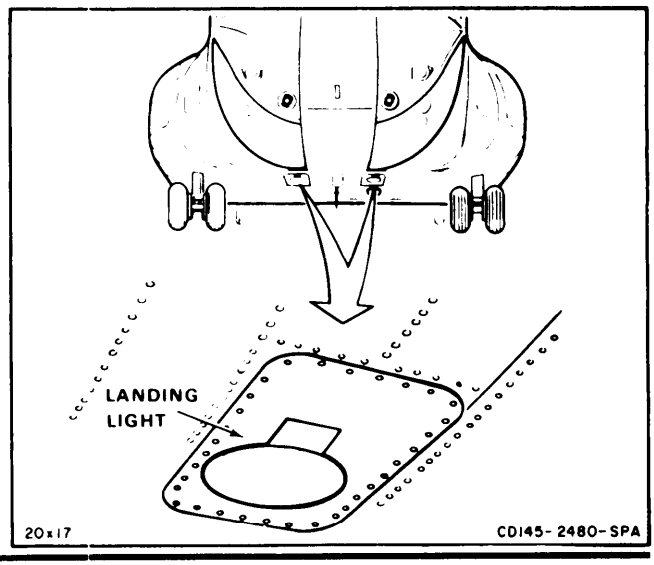
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

Personnel Required:
Medium Helicopter Repairer
Inspector

References:
TM 55-1520-240-23P

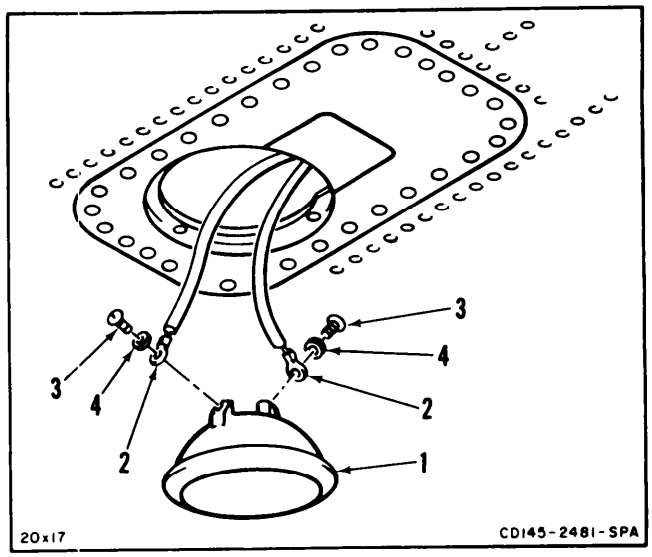


NOTE

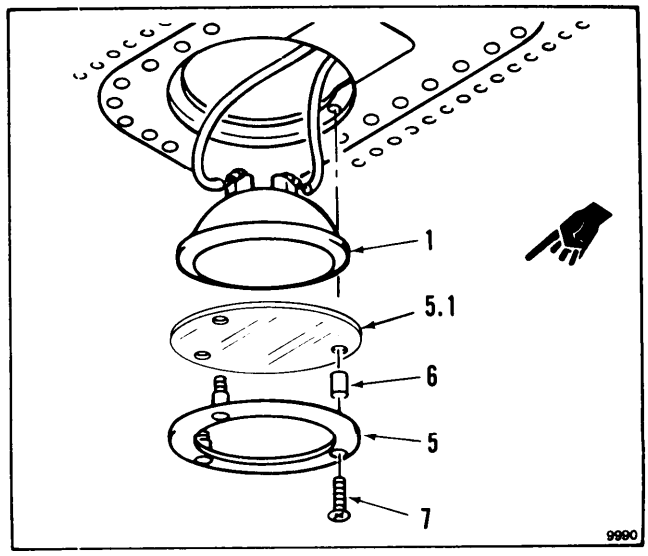
Procedures are similar to install left or right landing light lamp. Without 17, both lights are same. With 17, left light has NVG lens and lamp.

1. Remove tape, support lamp (1), and **connect two wires (2).** Install two screws (3), and washers (4). Remove tags.

INSPECT



2. **Position retaining ring (5) or NVG lens (5.1)** with three sleeves (6) and screws (7) aligned on lamp (1).



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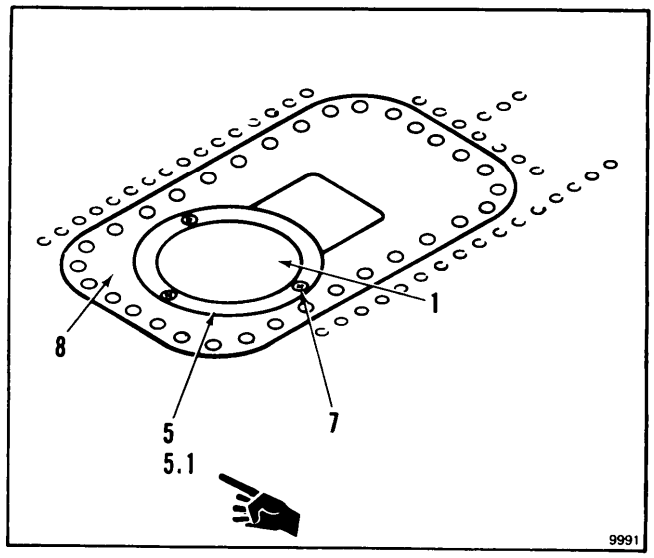
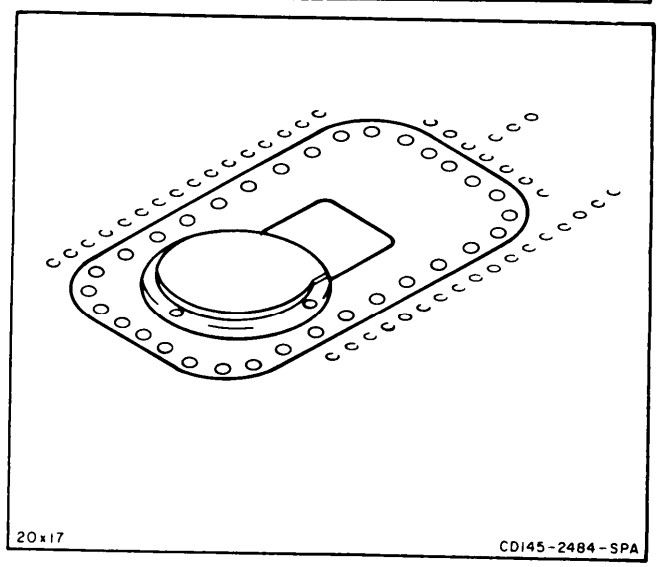
3. Install lamp (l), retaining ring (5) or NVG lens (5.1), and three screws (7) in light (8).

INSPECT





FOLLOW-ON MAINTENANCE:

Perform operational check of landing light (TM 55-1520-240-T).

END OF TASK

9-82 REMOVE FORWARD FORMATION LIGHTS 9-82

INITIAL SETUP

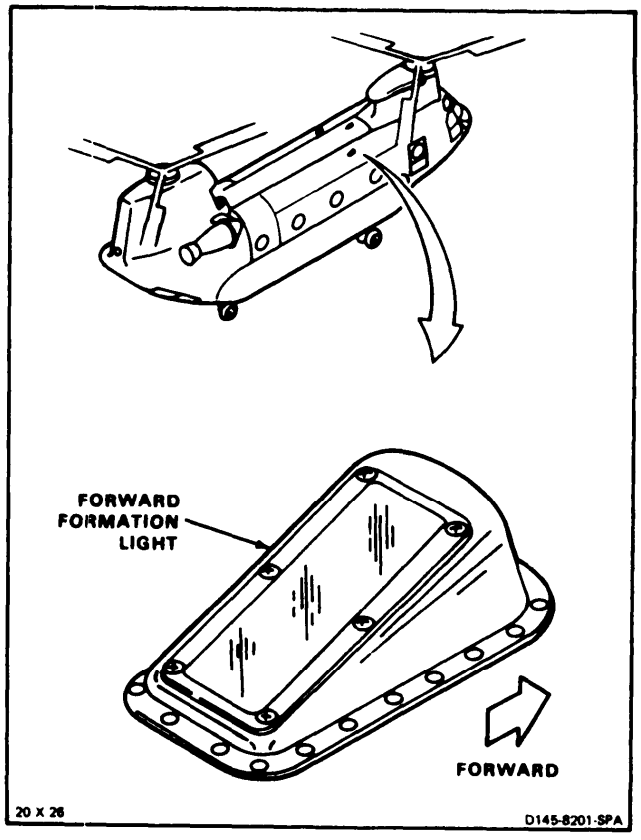
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

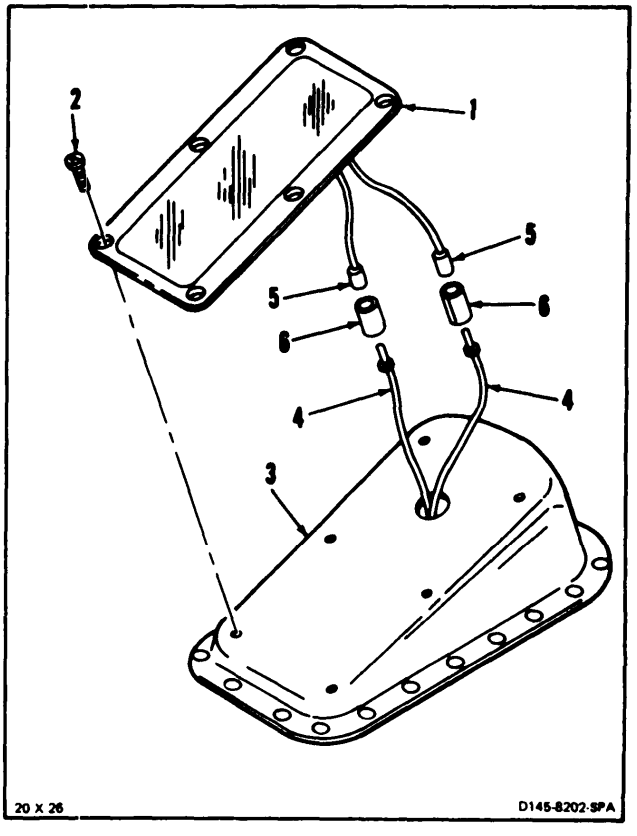
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. Cut sealant from edge of light (1), and six screws (2).
2. **Remove screws (2)** from light (1).
3. Pry light (1) from housing (3).
4. Pull two wires (4) from housing (3) until two connectors (5) are out of housing. Tag two wires. Use tags (E264).
5. Cut two sleeves (6) from connectors (5). **Disconnect connectors. Remove light (1).**
6. Tape ends of wires (4). Use tape (E385).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-83 REMOVE AFT FORMATION LIGHTS

INITIAL SETUP

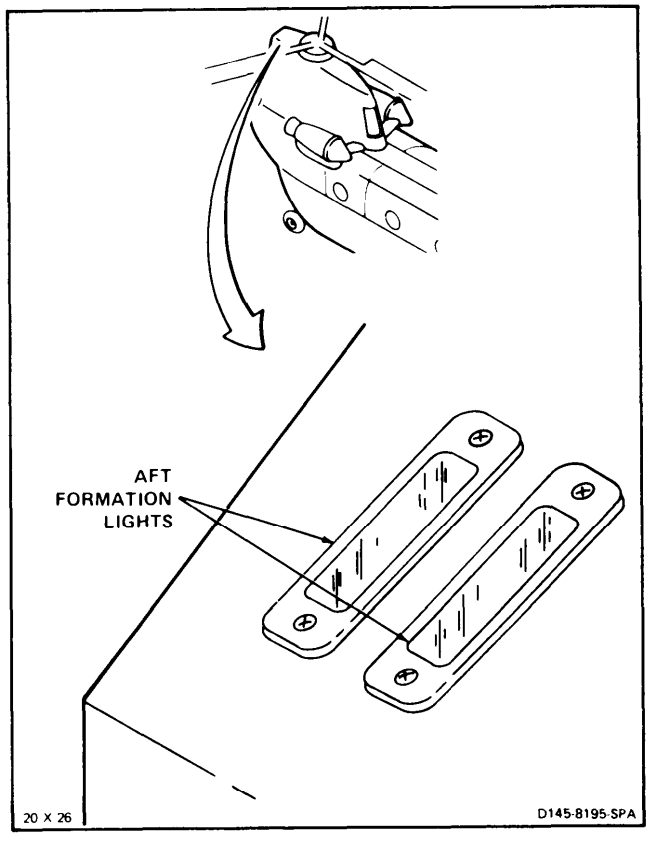
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Work Stand

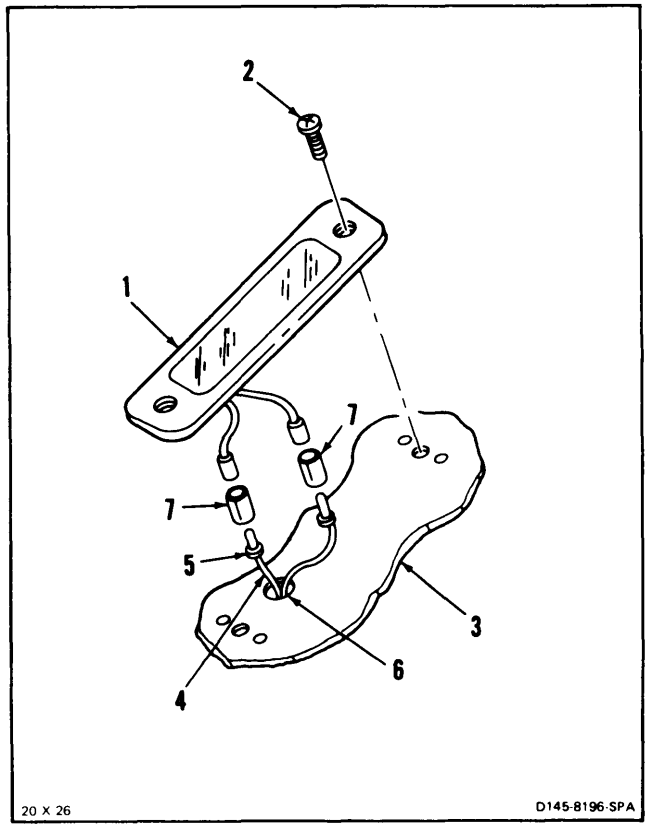
Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. Cut sealant from edge of light (1) and two screws (2).
2. **Remove screws (2)** from light (1).
3. Pry light (1) from structure (3).
4. Pull two wires (4) from structure (3) until two connectors (5) are out of hole (6), in structure. Tag two wires.
5. Cut two sleeves (7) from connectors (5). **Disconnect connectors. Remove light (1).**
6. Tape ends of wires (4). Use tape (E385).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-84 INSTALL FORWARD FORMATION LIGHTS

INITIAL SETUP

Applicable Configurations:
All

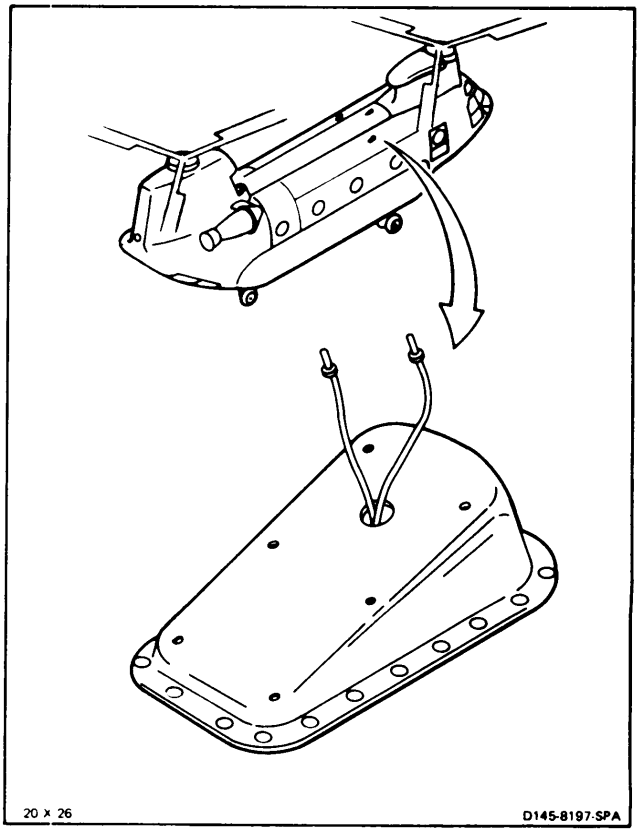
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Twine (E433)
Insulation Sleeving (E204)
Cloths (E120)
Acetone (E20)
Sealant (E336)
Gloves (E186)

Parts:
Electrical Connectors

Personnel Required:
68F110 Aircraft Electrician
67U30 Inspection

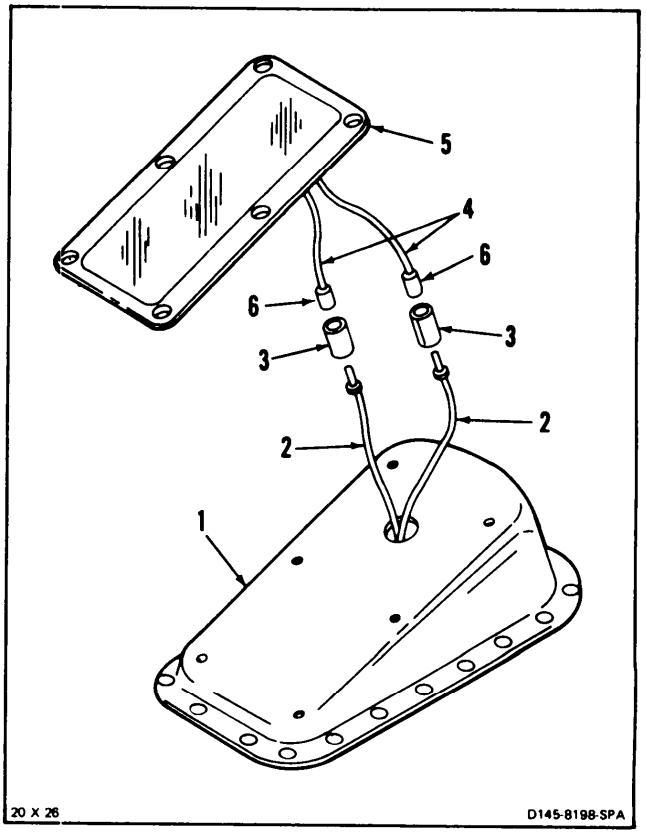
References:
TM 55-1520-240-23P



WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Use in well-ventilated area, away from open flame. In case of contact, immediately flush skin or eyes with water for at last 15 minutes. Get medical attention for eyes.

1. Clean sealant from top of housing (1). Use acetone (E20) and cloths (E120). Wear gloves (E186).
2. Remove tape from ends of two wires (2).
3. Cut two sleeves (3) about 1.5 inch long. Slide on two wires (4) of light (5). Use sleeving (E204).
4. **Connect wires (4)** to wires (2) with connectors (6). Remove tags.
5. Slide sleeves (3) over connectors (6). Tie ends of sleeves. Use twine (E433).

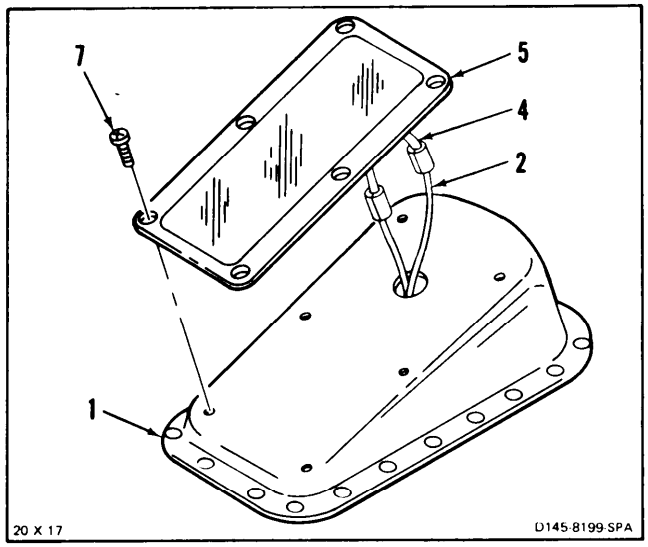


INSPECT

GO TO NEXT PAGE

9-84 INSTALL FORWARD FORMATION LIGHTS (Continued) 9-84

6. Slide wires (2 and 4) in housing (1). **Position light (5)** on housing. **Install six screws (7).**



WARNING

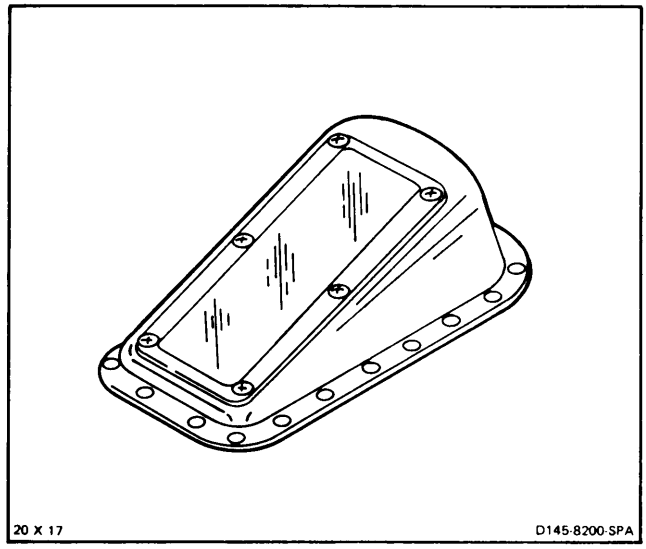
Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

7. **Apply sealant (E336)** to six screws (7) and edge of light (5) on housing (1). Wear gloves (E186).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-85 INSTALL AFT FORMATION LIGHTS

INITIAL SETUP

Applicable Configurations:
All

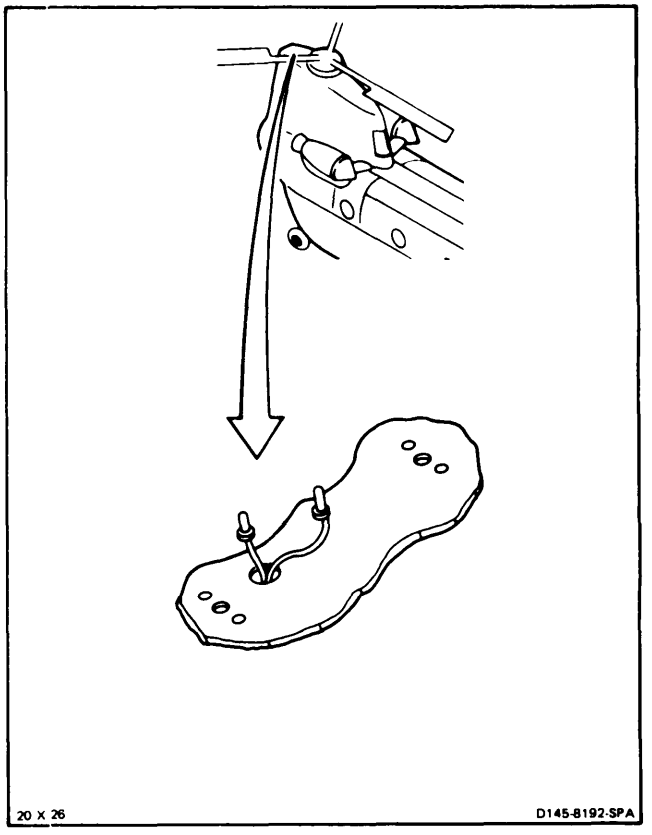
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-32-4915
Work Stand

Materials:
Twine (E43)
insulation Sleeving (E204)
Cloths (E120)
Acetone (E20)
Sealant (E336)
Gloves (E186)

Parts:
Electrical Connectors

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P

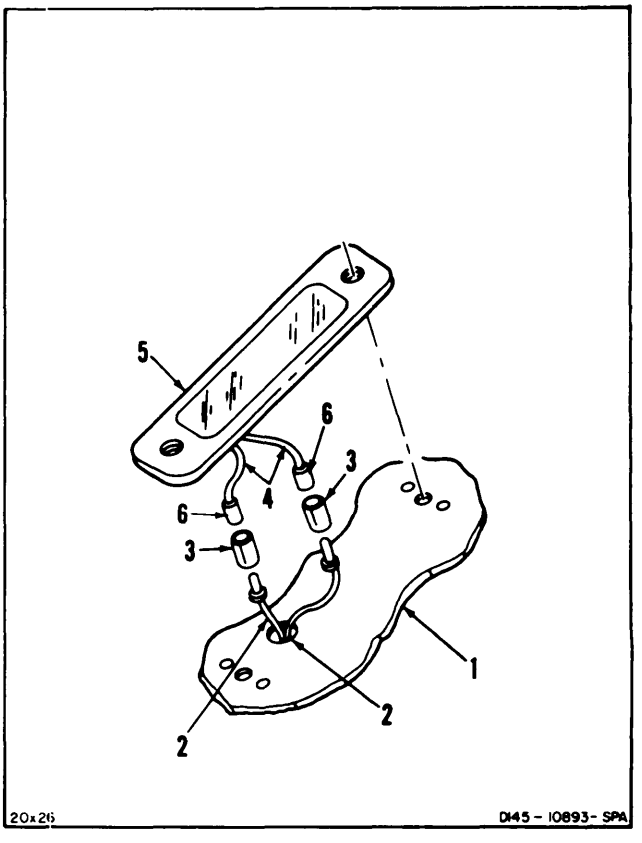


WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Use in well-ventilated area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean sealant from structure (1). Use acetone (E20) and cloths (E120). Wear gloves (E186).
2. Remove tape from ends of two wire (2).
3. Cut two sleeves (3) about 1.5 inch long. Slide two wires (4) of light (5) through sleeves. Use sleeving (E204).
4. **Connect wires (4) to wires (2)** with connectors (6). Remove tags.
5. Slide sleeves (3) over connectors (6). Tie ends of sleeves. Use twine (E433).

INSPECT



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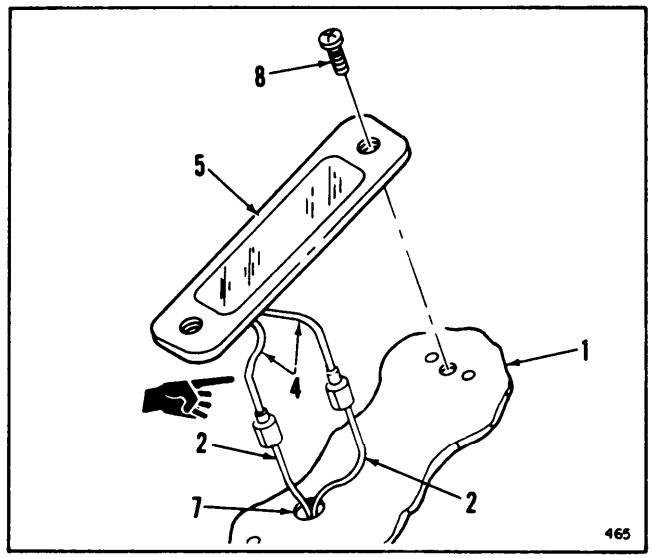
6. Slide wires (2 and 4) in hole (7) of structure (1). **Position light (5)** on structure. **Install two screws (8).**



WARNING

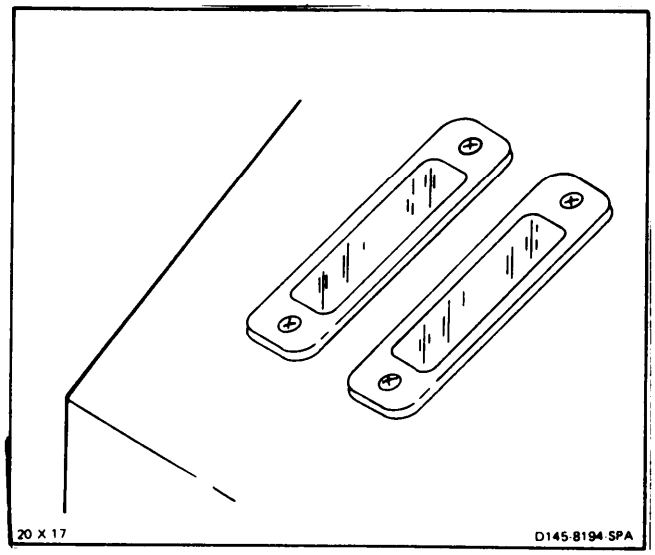
Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

7. **Apply sealant (E336)** to two screws (8) and edge of light (5) on structure (1). Wear gloves (E186).

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-85.1 REMOVE NVG FORMATION LIGHT 9-85.1

INITIAL SETUP

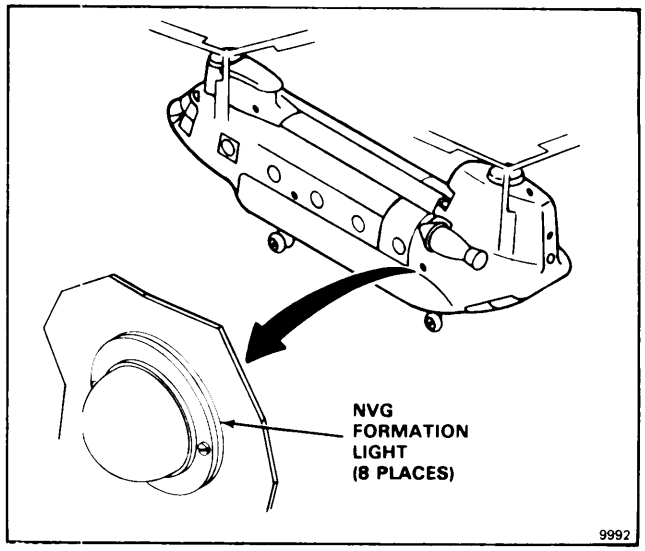
Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

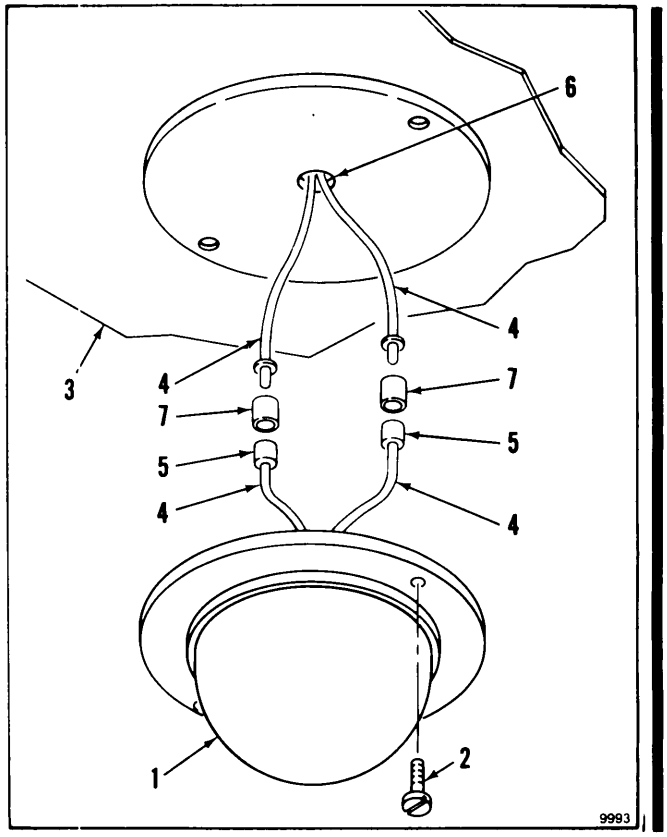
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



NOTE

Procedure is same to remove any light.

1. Cut sealant from edge of light (1) and screws (2).
2. Loosen two screws (2) and lift light (1) from fuselage (3).
3. Pull two wires (4) from structure (3) until two connectors (5) are out of hole (6) in structure. Tag two wires.
4. Cut two sleeves (7) from connectors (5). **Disconnect connectors. Remove light (1).**
5. Tape ends of wires (4). Use tape (E385).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-85.2 INSTALL NVG FORMATION LIGHT

INITIAL SETUP

Applicable Configurations:
With 17

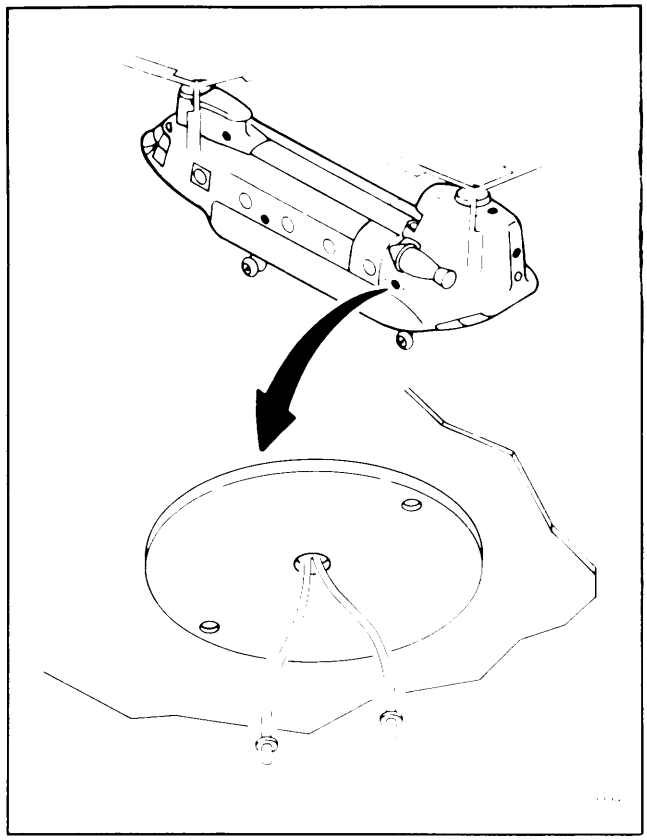
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Insulating Sleeving (E204)
Cloths (E120)
Twine (E433)
Acetone (E20)
Sealant (E336)
Gloves (E186)

Parts:
Wire Splices

Personnel Required:
Aircraft Electrician
Inspector

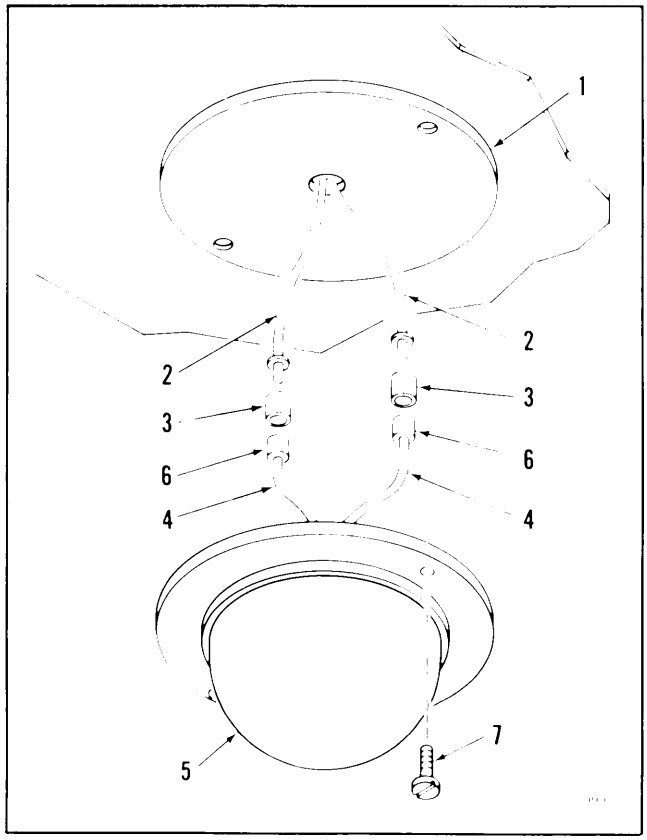
References:
TM 55-1520-240-23P



WARNING

Acetone (E20) is extremely flammable. It can be toxic. Avoid inhaling. Use only with adequate ventilation. Avoid contact with skin, eyes, or clothing. Keep away from heat, sparks, or open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean sealant from skin around doubler (1). Use acetone (E20) and cloths (E120), Wear gloves (E186).
2. Remove tape from ends of two wires (2). Cut two sleeves (3) about 1.5 inches long. Slide onto two wires (4) of light (5). Use sleeving (E204).
3. **Connect wires (4)** to wires (2) with connectors (6). Remove tags.
4. Slide sleeves (3) over connectors (6). Tie ends of sleeves. Use twine (E433).



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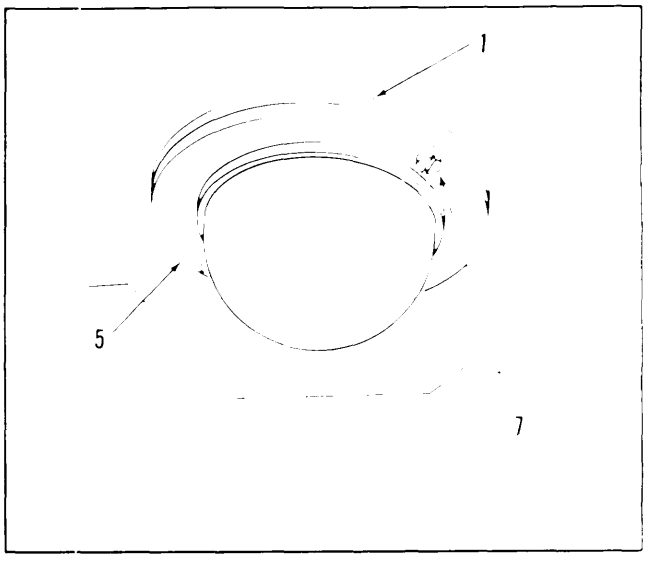
5. Position light (5) on doubler (l).
6. Tighten two screws (7).



WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

7. Apply sealant (E336) to two screws (7) and edge of light (5) at skin.

INSPECT

FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T).

END OF TASK

9-86 INSPECT ANTICOLLISION LIGHT

INITIAL SETUP

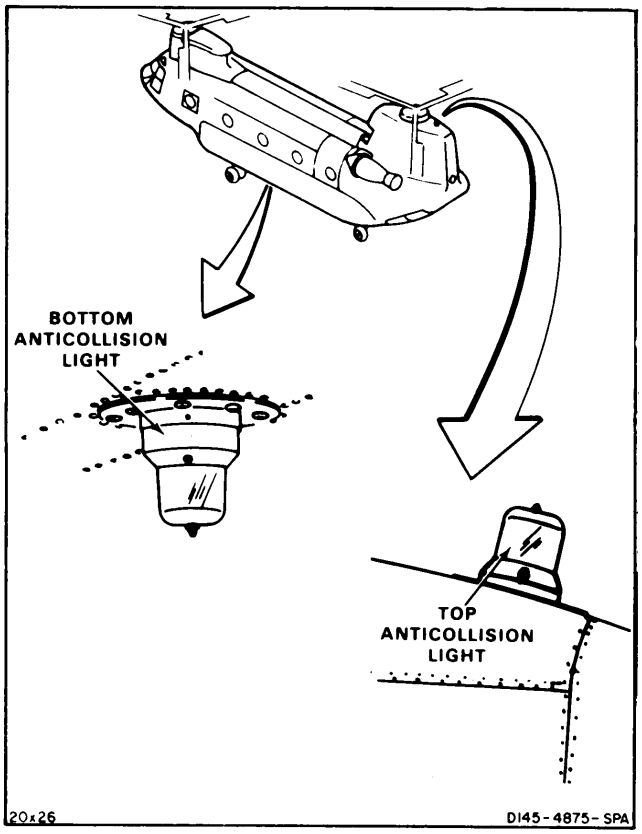
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:
Cloths (E120)

Personnel Required:
Aircraft Electrician
Inspector

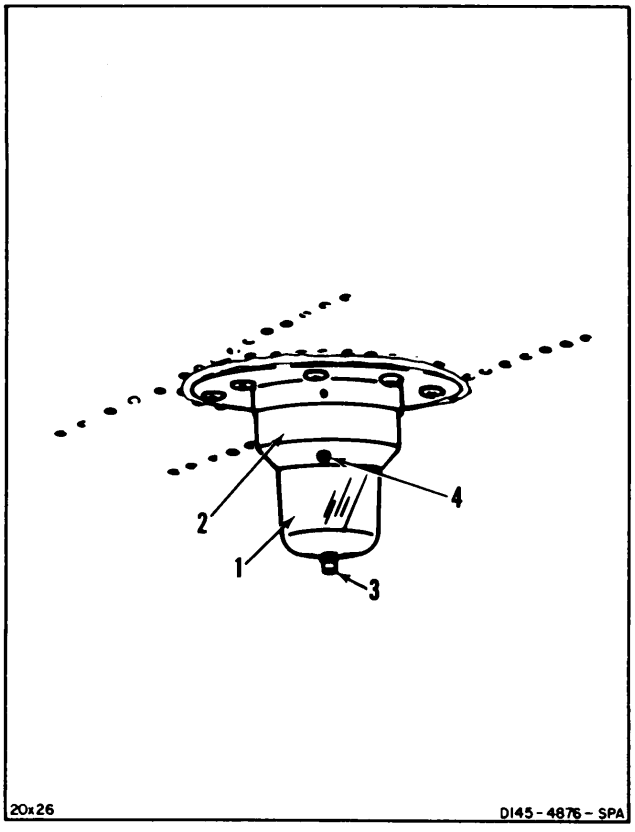
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



NOTE

Procedure is similar for top or bottom light, except where noted. Bottom light is shown here.

1. **Check that lens (1) is clean.** If lens is dirty, wipe off dirt with cloths (E120).
2. **Check lens (1) for cracks.** Lens shall not be cracked.
3. **Check that light (2) is mounted securely.**
4. **Check that lens (1) interior is free of moisture and that water drain screw (3) is tight. If bottom light has moisture, open drain screw (3), drain trapped moisture, tighten drain screw.**
5. Check holes (4) are sealed on bottom lights only.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-87 REMOVE ANTICOLLISION LIGHT

INITIAL SETUP

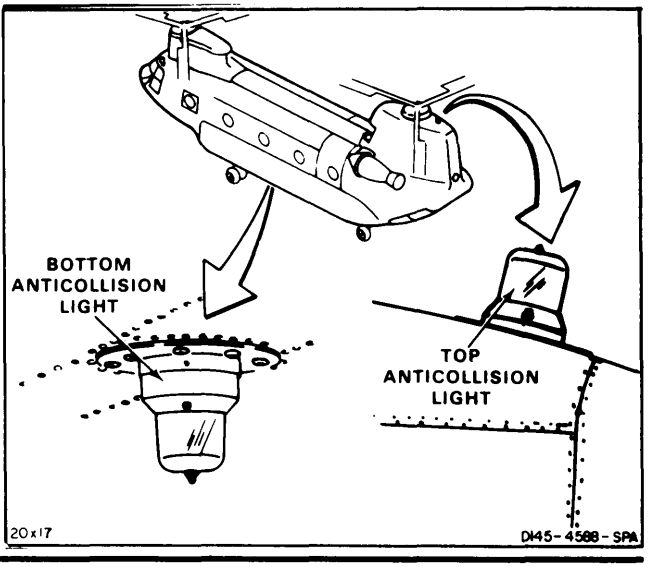
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Workstand

Materials:
None

Personnel Required:
Aircraft Electrician

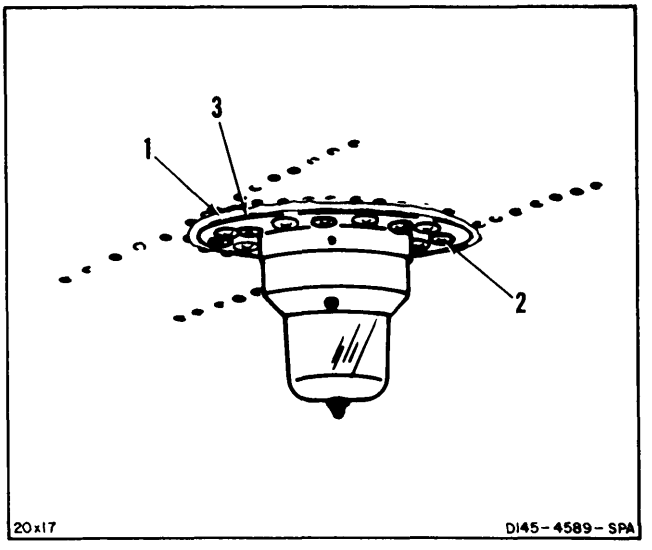
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



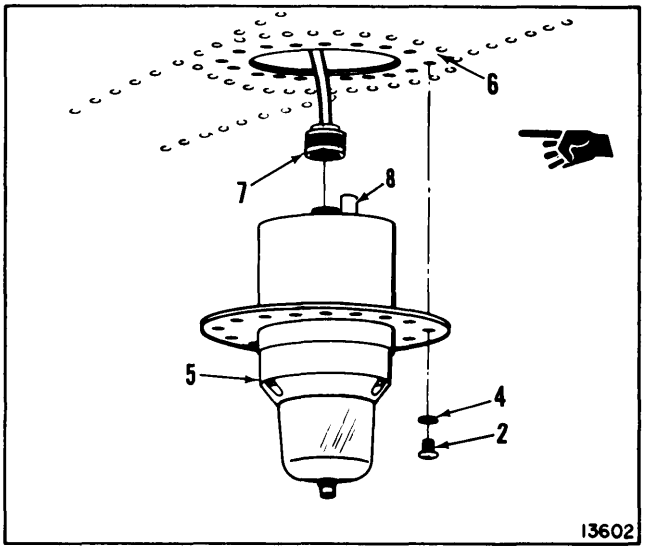
NOTE

Procedure is similar for removing top or bottom light. Removal of bottom light is shown here.

1. Cut sealant (1) from screws (2) and edge of flange (3).



2. **Remove 18 screws (2)** and washers (4).
3. Withdraw light (5) from fuselage (6).
4. Remove lockwire from connector (7). **Disconnect connector.**
5. **Remove light (5).**
6. On bottom light only, remove two pieces shrink tubing (8) from base of light.



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-88 DISASSEMBLE ANTICOLL9SION LIGHT (AVIM) 9-88

INITIAL SETUP

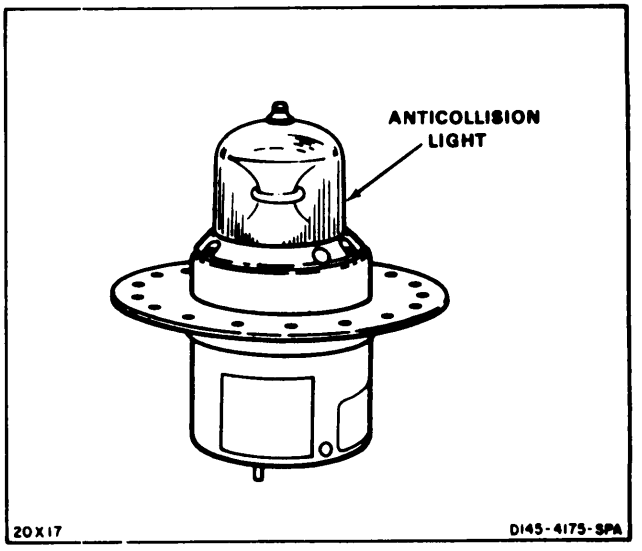
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

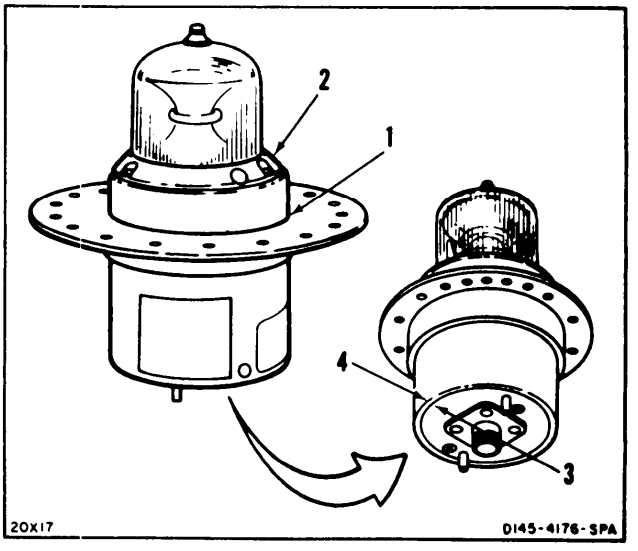
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

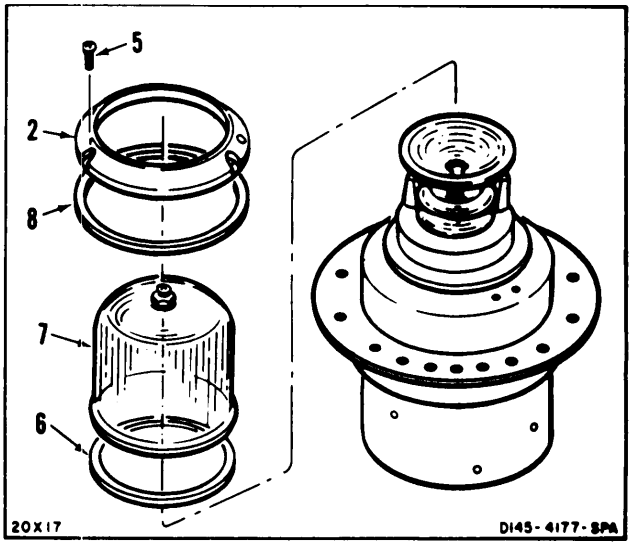
Equipment Condition:
Off Helicopter Task



1. **Cut through sealant** at edges of mounting flange (1), lens retainer (2), and mating edges of base (3) and case (4).



2. Remove three screws (5) from retainer (2). **Romove retainer,** gasket (6), **lens (7)** and gasket (8).



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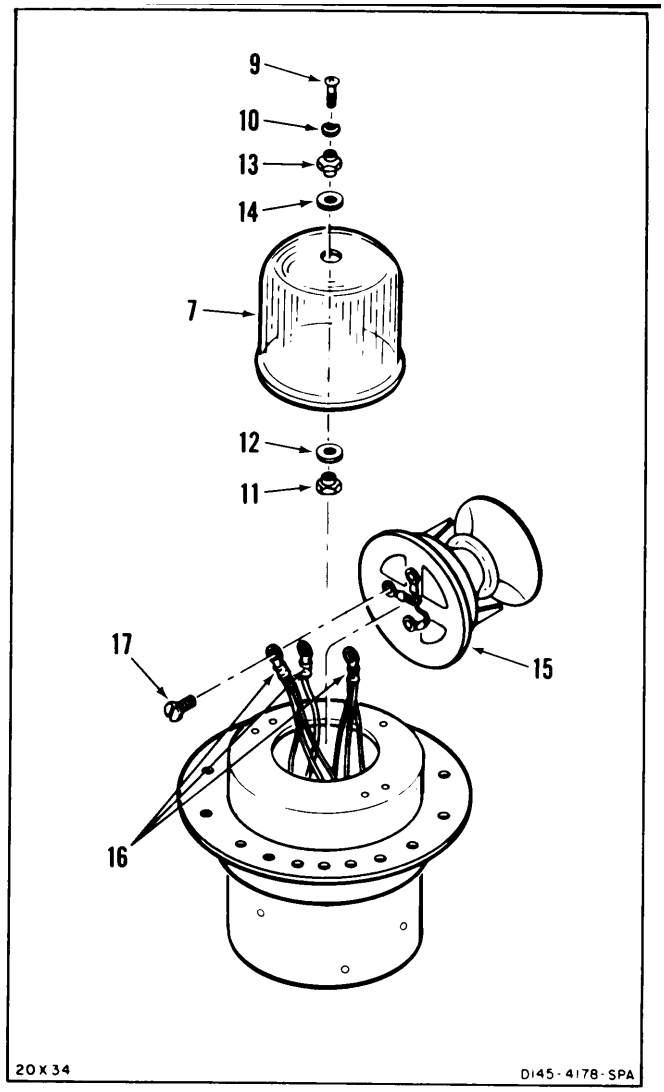
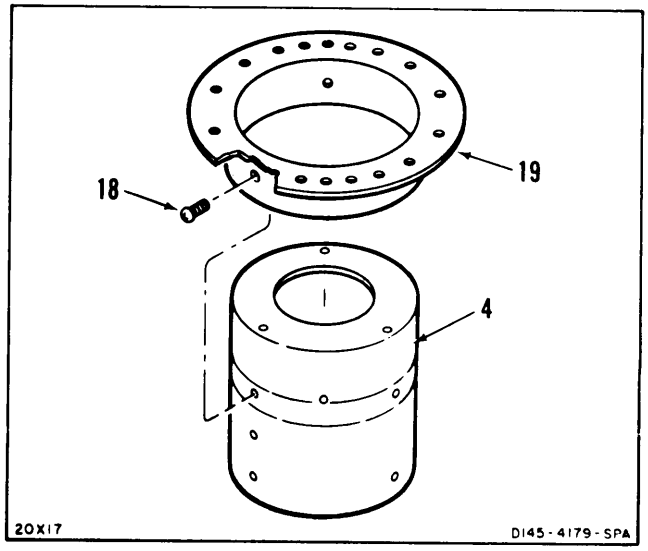
9-88 DISASSEMBLE ANTICOLLISION LIGHT (AVIM) (Continued)

3. Remove screw (9) and washer (10) from lens (7).
4. **Remove** insert (11), washer (12), **drain tube (13)** and washer (14).
5. **Withdraw lamp (15).** Tag and **disconnect seven wires (16)** by removing three screws (17).
6. Install three screws (17).



7. Cut away sealant from three screws (18). **Remove** three screws and **flange (19)** from case (4).



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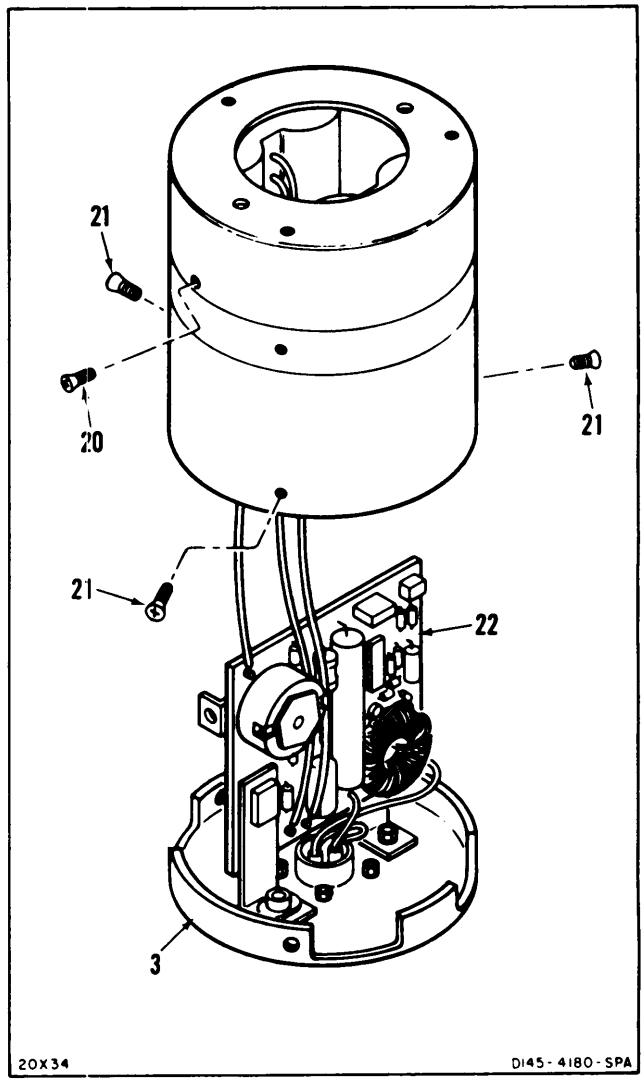
9-88 DISASSEMBLE ANTICOLLISION LIGHT (AVIM) (Continued)

8. Cut away sealant from screw (20). **Remove screw.**
9. Cut away sealant from three screws (21). **Remove three screws and pull out base (3)** with circuit board (22) attached.



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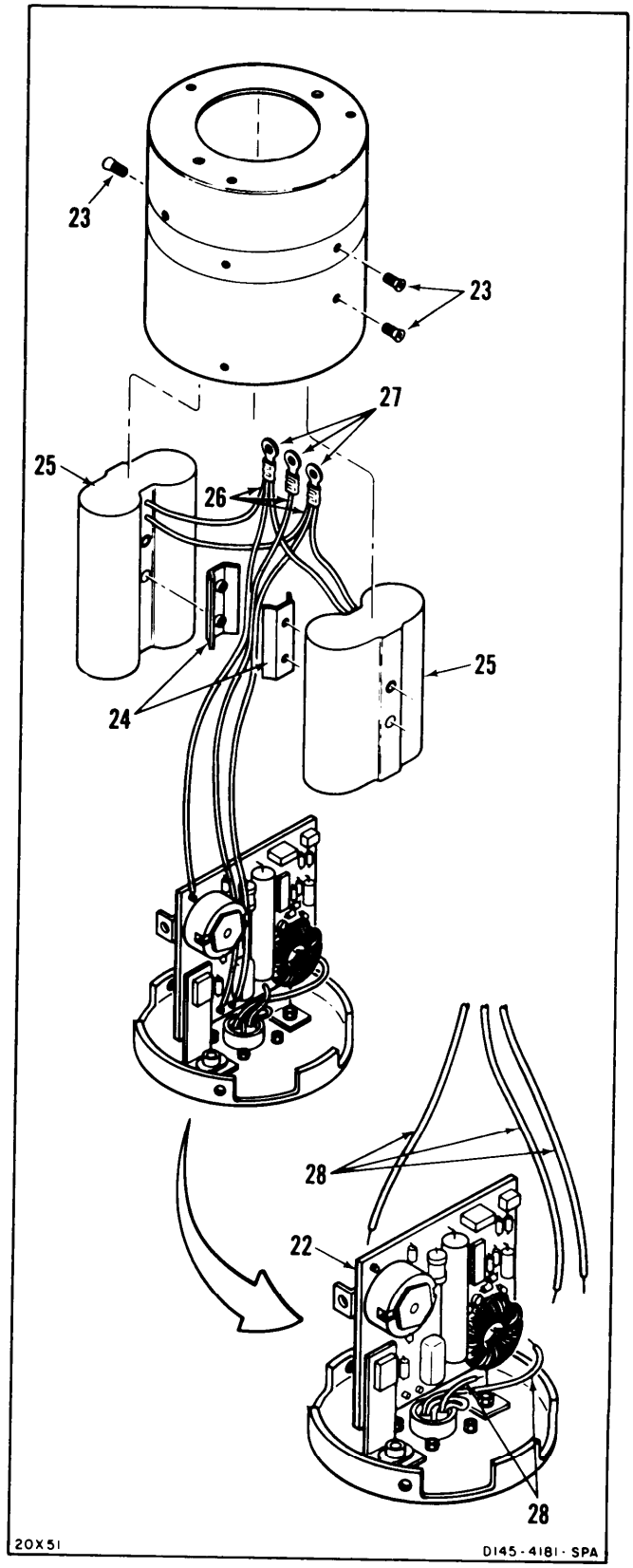
9-88 DISASSEMBLE ANTICOLLISION LIGHT (AVIM) (Continued)

10. Cut away sealant from three screws (23). **Remove three screws.**
11. **Remove two retainers (24) and electronic components (25).**
12. Tag and **disconnect six wires (26)** from three lug terminals (27).
13. Tag and **unsolder five wires (28)** from circuit board (22).



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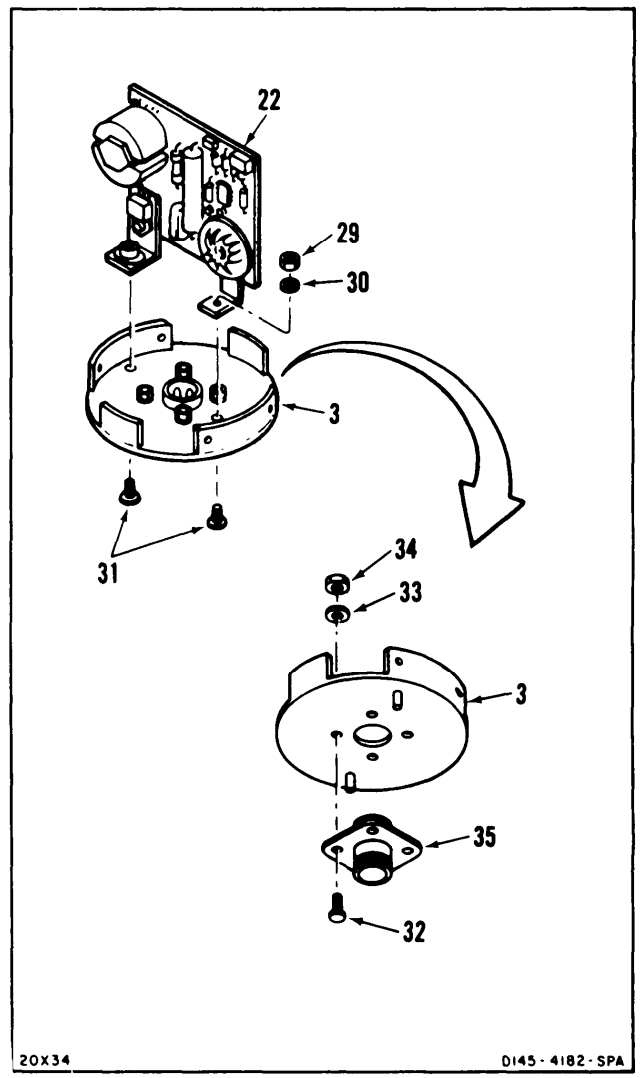
9-88 DISASSEMBLE ANTICOLLISION LIGHT (AVIM) (Continued)

14. Remove nut (29), washer (30) and two screws (31).
15. **Remove circuit board (22)** from base (3).
16. Cut away sealant from four screws (32). Remove four screws, washers (33) and nuts (34).
17. Cut away sealant from connector (35) and **remove connector.**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-89 ASSEMBLE ANTICOLLISION LIGHT (AVIM)

INITIAL SETUP

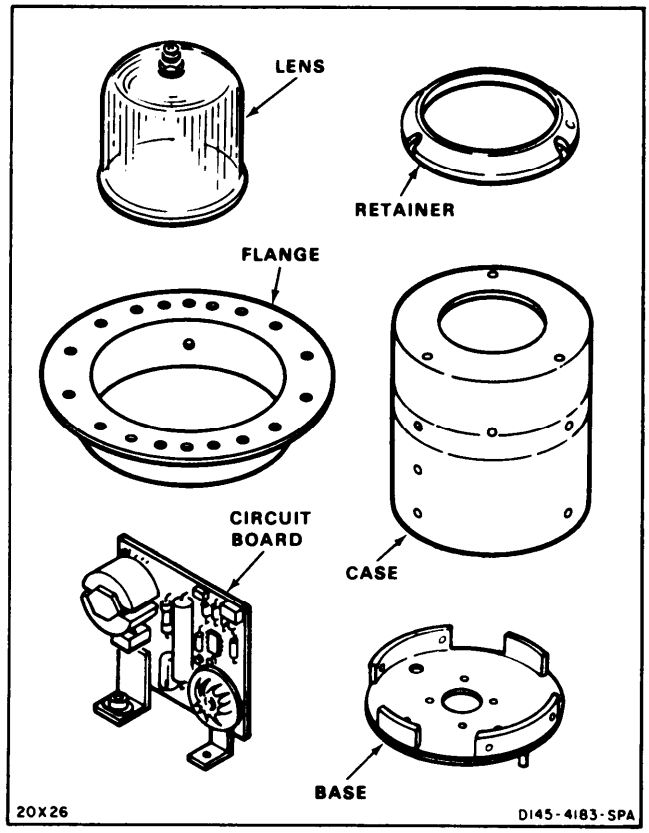
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

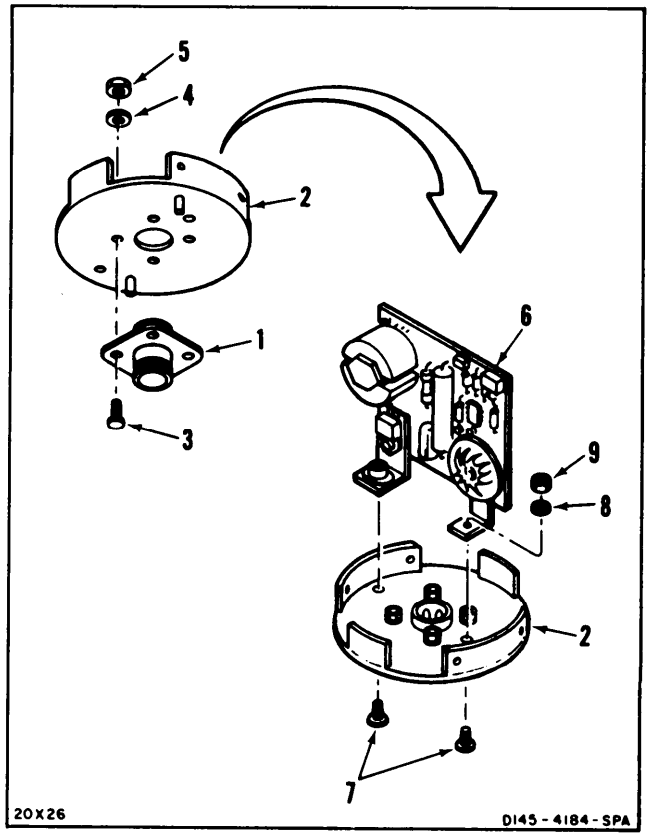
Materials:
Sealant (E336)
Solder (E360)
Acetone (E20)
Cloths (E120)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Position connector** (1) on base (2). **Install four straws (3),** washers (4), and nuts (5).
2. **Position circuit board (6)** on base (2). **Install two screws (7),** washer (8) and nut (9).



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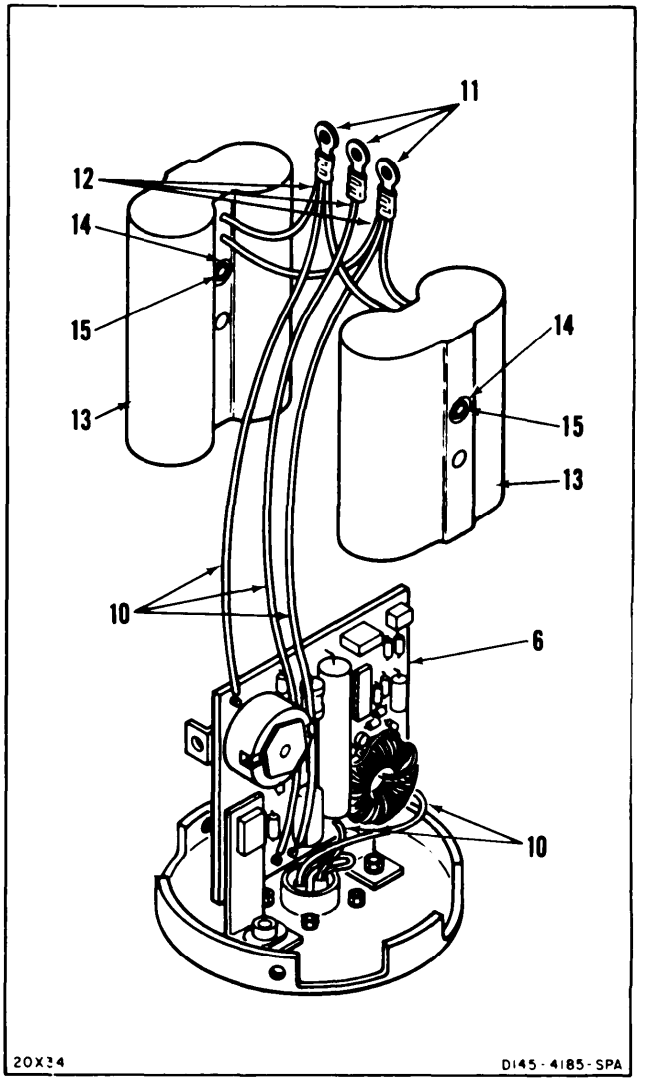
9-89 ASSEMBLE ANTICOLLISION LIGHT (AVIM) (Continued)

3. **Solder five wires (10)** to circuit board (6). Use solder (E360). Remove tags.
4. **Install three lug terminals (11)** on seven wires (12) from circuit board (6) and electronic components (13).
5. **Check mounting holes (14)** of two electronic components (13). Insulating sleeves (15) shall be installed.



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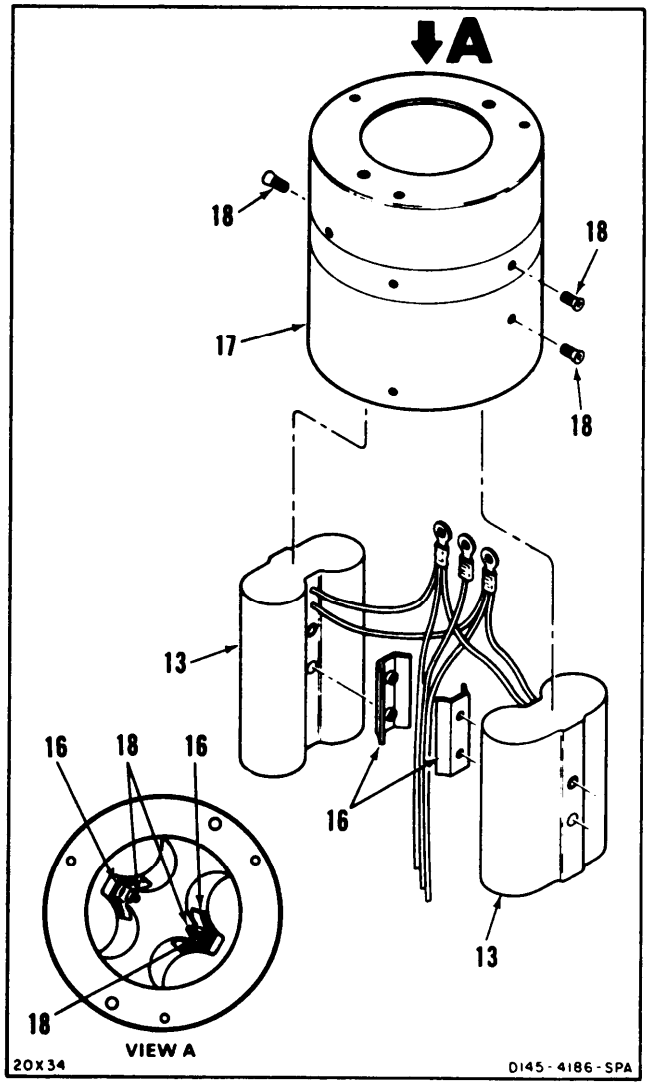
9-89 ASSEMBLE ANTICOLLISION LIGHT (AVIM) (Continued)

6. **Position two electronic components (13)** and retainers (16) in case (17). **Install three screws (18).**



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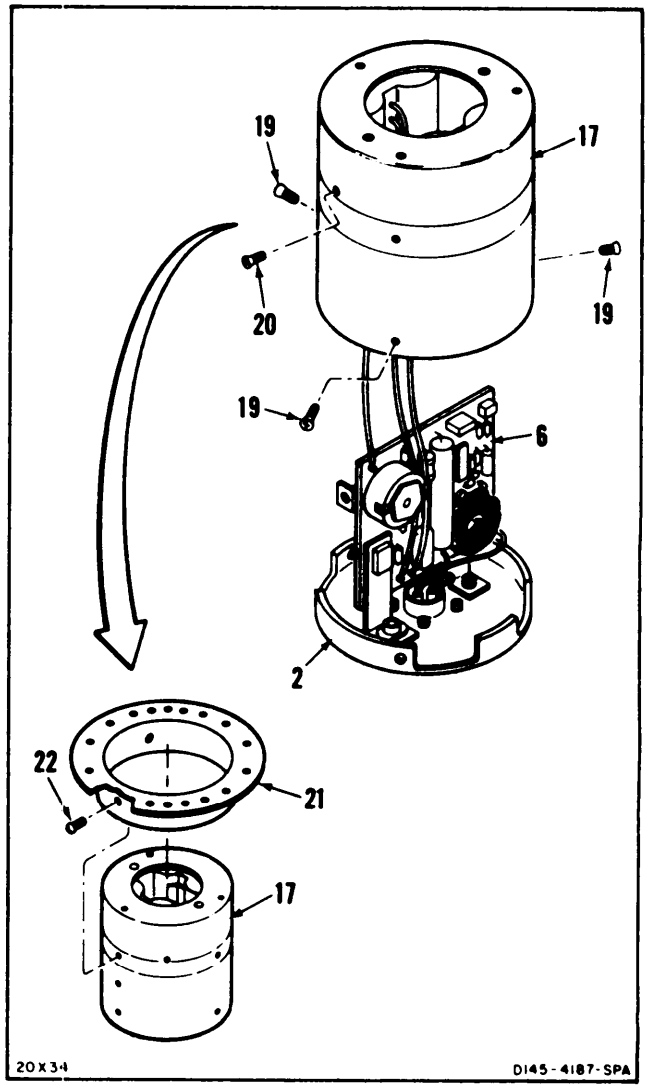
9-89 ASSEMBLE ANTICOLLISION LIGHT (AVIM) (Continued)

7. **Position base (2) with circuit board (6), in case (17). Install three screws (19) and screw (20).**
8. **Position flange (21)** on case (17). **Install three screws (22).**



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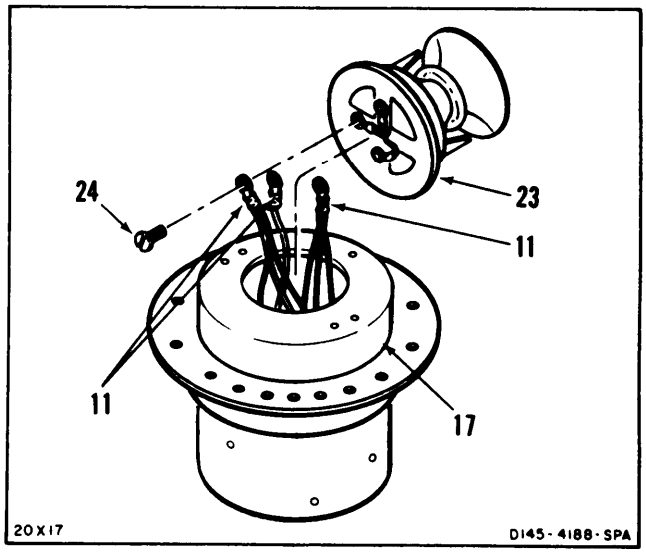
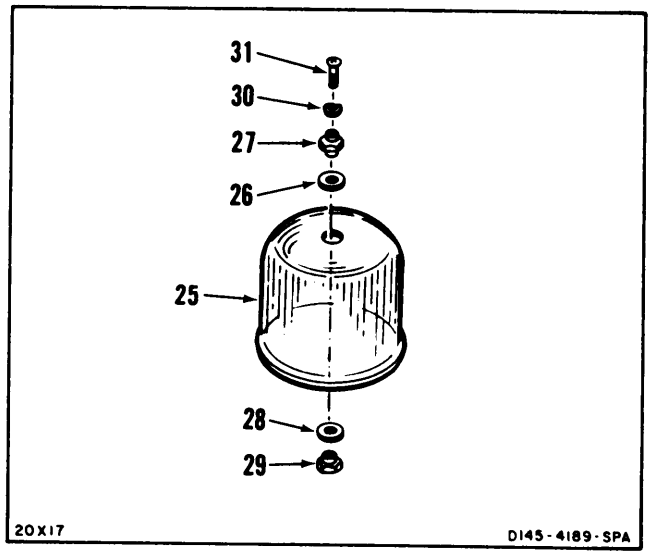
9-89 ASSEMBLE ANTICOLLISION LIGHT (AVIM) (Continued)

9. Support lamp (23) and remove three screws (24).
10. Position lamp (23) next to case (17).
11. **Connect three terminal lugs (11) to lamp (23).** Install three screws (24). Remove tags.



12. **Support lens (25)** and **install** washer (26), **drain tubs (27),** washer (28), and insert (29).
13. **Install** washer (30) and **screw (31)** in drain tube (27).



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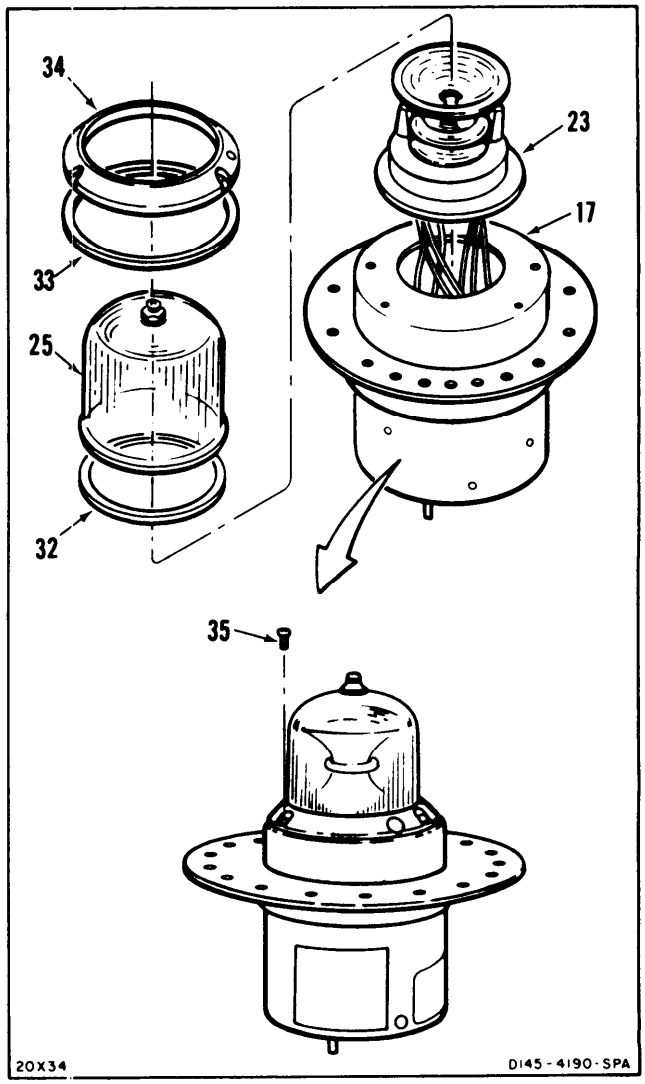
9-89 ASSEMBLE ANTICOLLISION LIGHT (AVIM) (Continued)

14. **Position lamp (23),** gasket (32), **lens (25),** gasket (33) and retainer (34) on case (17). **Install three screws (35).**



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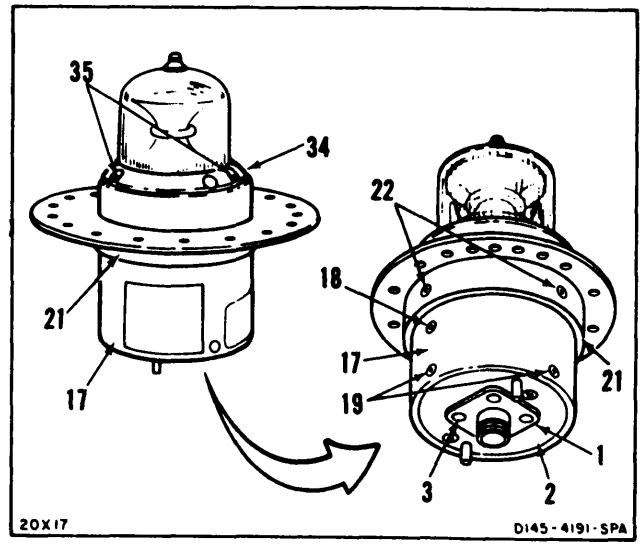
WARNING

Acatone (E20) can form toxic vapors if expo80d to flame. Use in well-ventilatod area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 rninutes. Get medical attention for eyes.

15. Clean edge of retainer (34) and case (17), edges of flange (21), case (17), base (2), and edges of connector (1). Clean all exposed screw heads (3, 18, 19, 22, and 35). Use cloths (E120) and acetone (E20). Wear gloves (E186).



WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

16. Seal edge of retainer (34) and case (17), edges of flange (21), case (17), base (2), and edges of connector (1). Seal all exposed screw heads (3, 18, 19, 22, and 35). Use sealant (E336).

INSPECT

FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-90 TEST ANTICOLLISION LIGHT (AVIM) 9-90

INITIAL SETUP

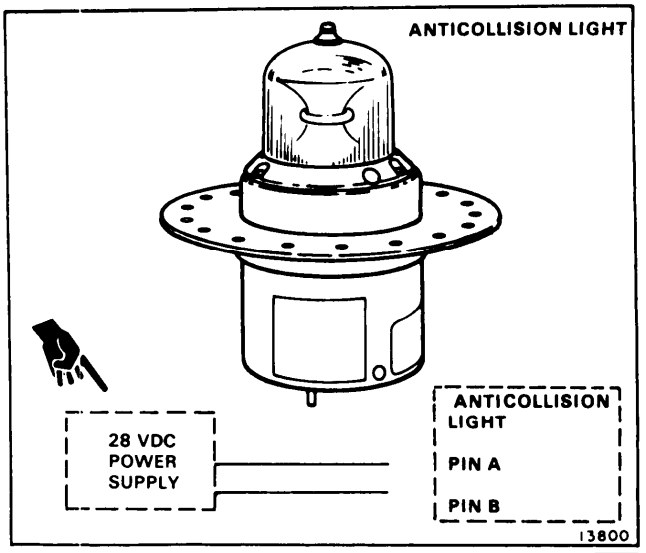
Applicable Configurations:
All

Tools:
Power Supply, 28 Vdc Capability
Stop Watch

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

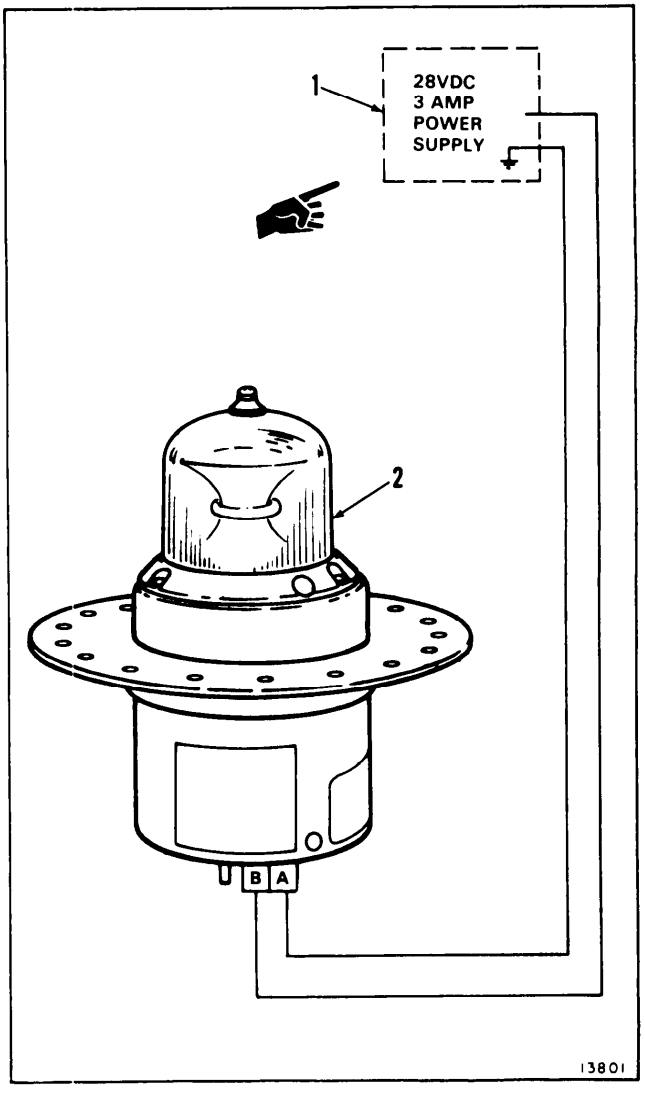
Equipment Condition:
Off Helicopter Task



1. **Connect power supply (1)** to anticollision light (2). Pin A is negative, Pin B is positive.
2. **Turn on power supply (1). Adjust power supply to 28 volts.**
3. Check light (2). Light shall flash at 40 to 60 times per minute.

INSPECT

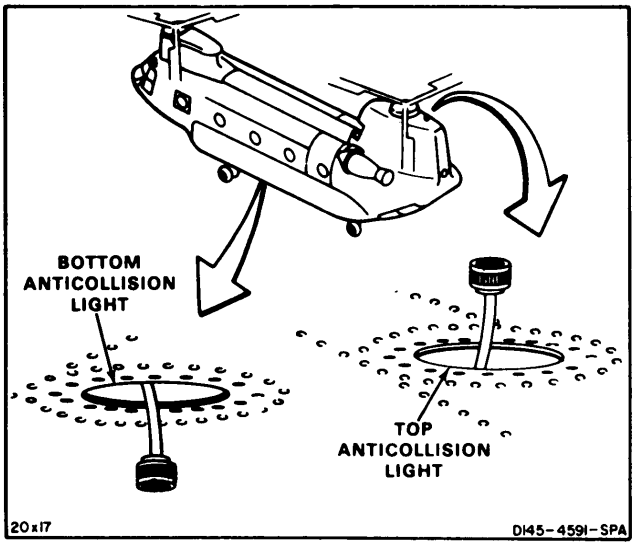
4. **Shut down power supply (1).**
5. Disconnect power supply (1) from anticollision light (2).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-91 INSTALL ANTICOLLISION LIGHT



INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Heat Gun
Workstand

Materials:
Acetone (E20)
Cloths (E120)
Sealant (E336)
Shrinkable Tubing (E431)
Gloves (E186)
Lockwire (E231)

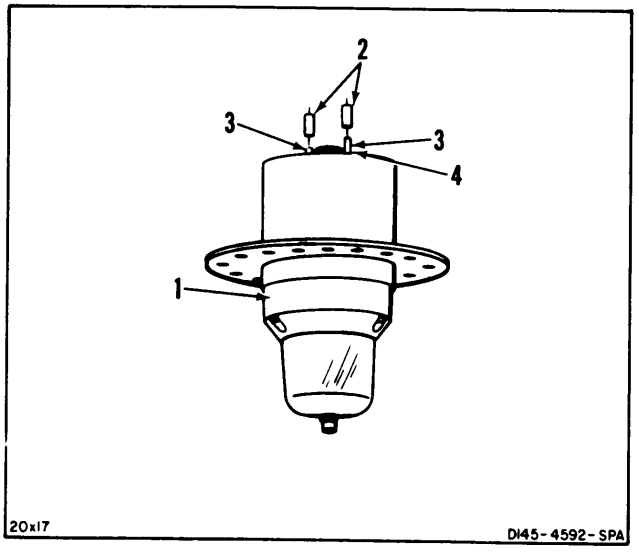
Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P

NOTE

Procedure is similar for installing top or bottom light, except where noted. Installation of bottom light is shown here.

1. Install shrinkable tubing (2) 3 inches long to extend two vent studs (3). Use shrinkable tubing (E431).
2. Shrink tubing (2) when it contacts vent (4). Use heat gun.



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9-91 INSTALL ANTICOLLISION LIGHT (Continued) 9-91

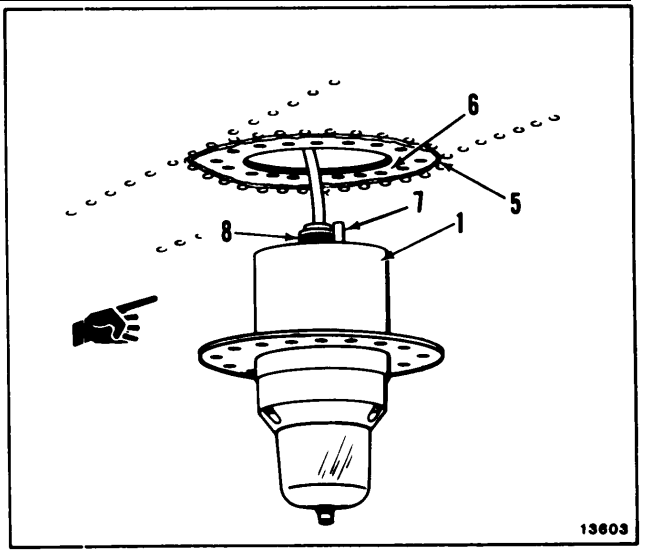
WARNING

Acetone (E20) can form toxic vapors if exposed to flame. Use in well-ventilated area, away from open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

3. For either light (1), clean old sealant (5) from fuselage (6). Use acetone (E20) and cloths (E120). Wear gloves (E 186).

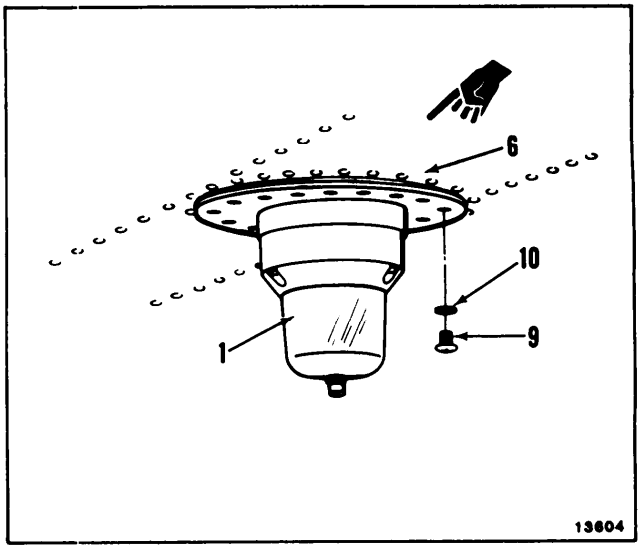
3.1. On bottom light only, **install two pieces of shrink tubing (7).**

4. Support light (1). **Connect connector (8)** to light. Lockwire (E231) connector to light.



5. **Position light (1)** on fuselage (6).

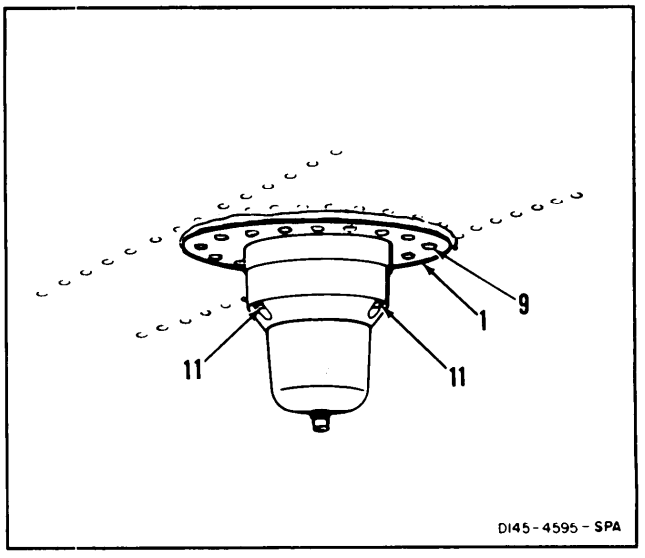
6. **Install 18 screws (9)** and washers (10).



WARNING

Sealant (E336) can irritate skin and cause burns. Avoid contact with skin, eyes, and clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

7. **Seal 18 screws (9) and edge of light (1). Remove decals and seal three drain holes (11).** Use sealant (E336). Wear gloves (E186).



INSPECT

FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T).

END OF TASK

9-92 REMOVE OIL LEVEL CHECK LIGHT 9-92

INITIAL SETUP

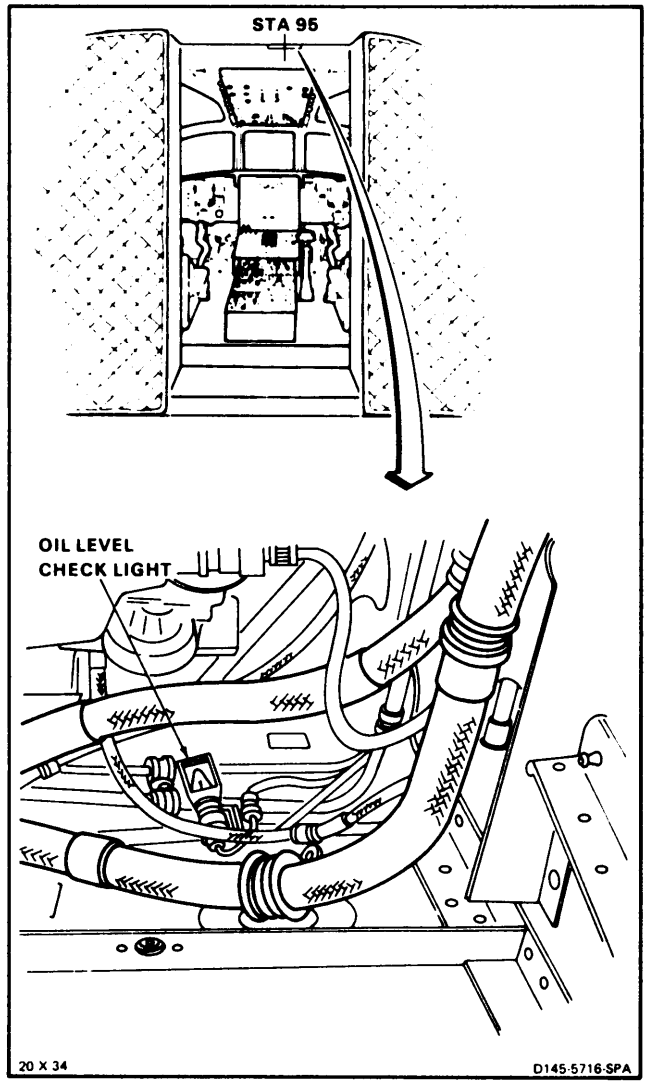
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Forward Transmission Drip Pan Removed (Task 2-3)



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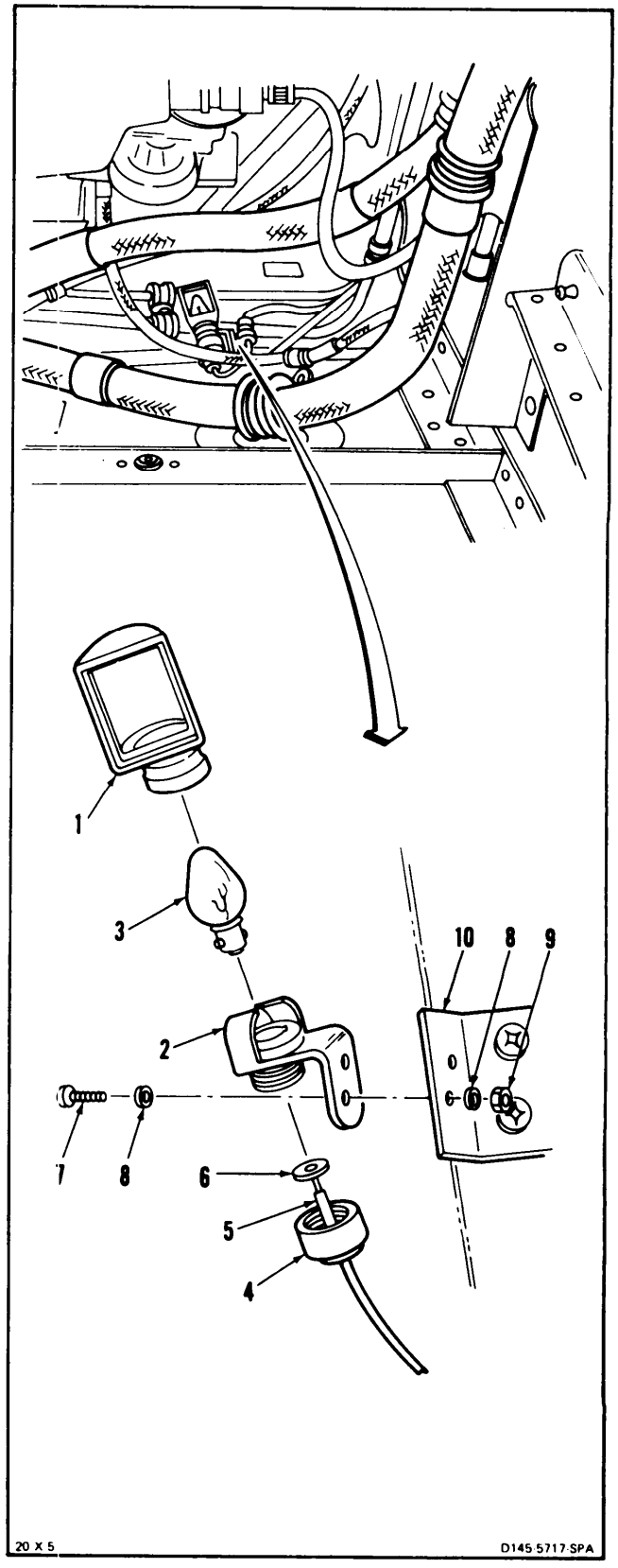
9-92 REMOVE OIL LEVEL CHECK LIGHT (Continued) 9-92

1. **Remove housing (1)** from light (2).
2. **Remove lamp (3)** from light (2). Retain lamp for installation.
3. Remove cover (4). **Unsolder wire (5)** from washer (6). Tape wire end. Use tape (E385).
4. **Remove two screws (7),** four washers (8), and two nuts (9).
5. **Remove cover (4)** from wire (5).
6. **Remove light (2)** from bracket (10).



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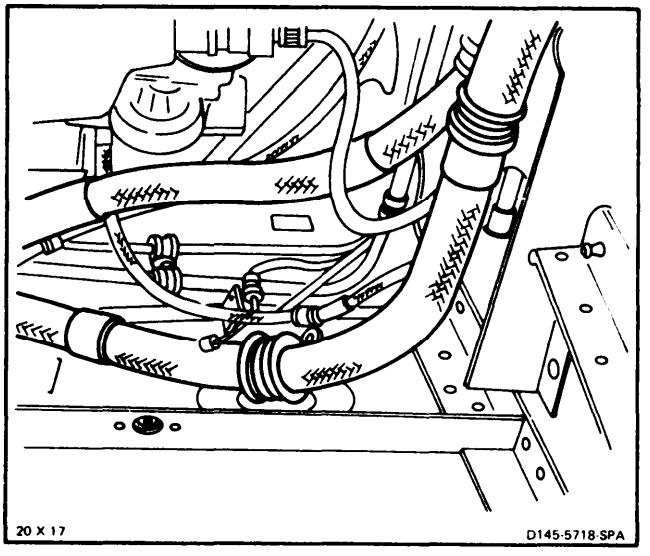
9-92 REMOVE OIL LEVEL CHECK LIGHT (Continued)

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-93 INSTALL OIL LEVEL CHECK LIGHT

INITIAL SETUP

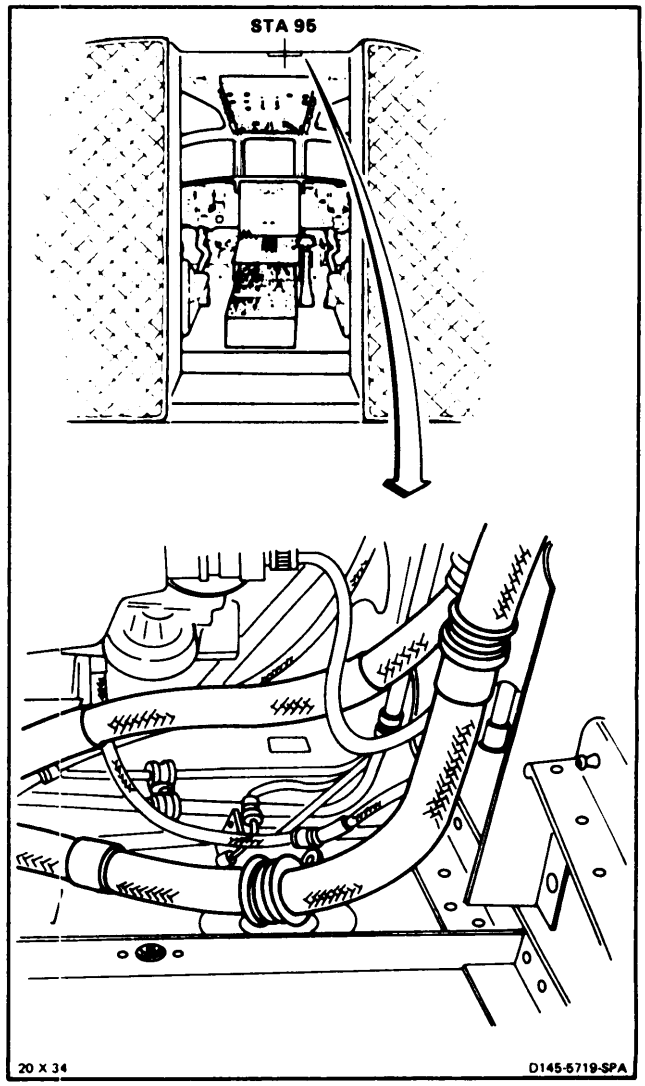
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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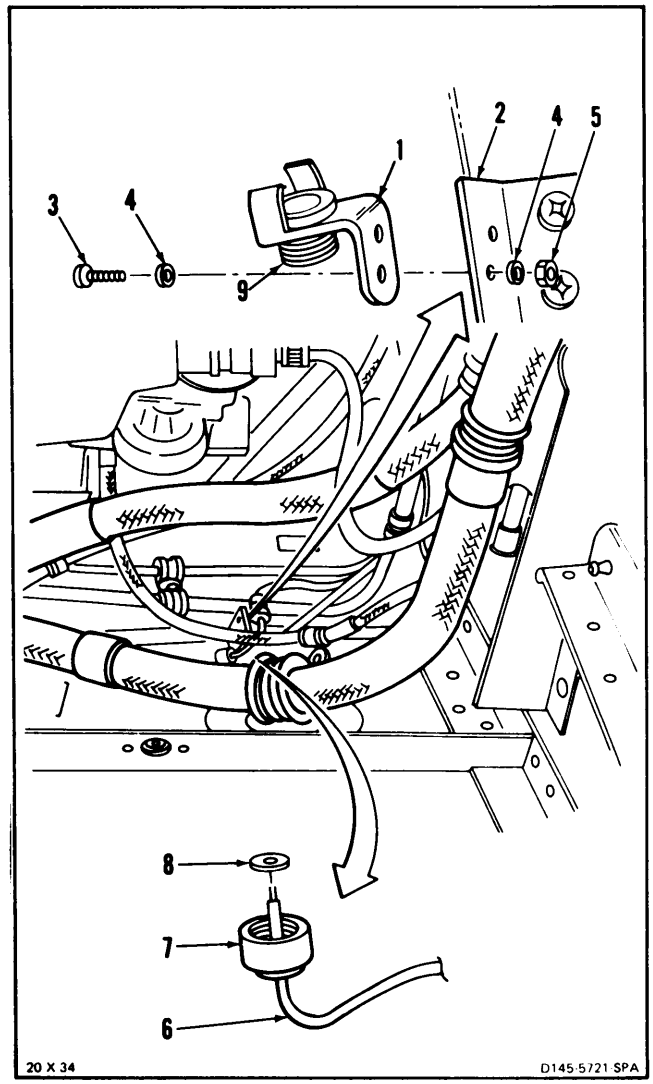
9-93 INSTALL OIL LEVEL CHECK LIGHT (Continued)

1. **Position** bracket (1) on support (2). **Install two screws (3),** four washers (4), and two nuts (5).
2. Insert wire (6) through cover (7).
3. Remove tape and **solder wire (6) to wafer (8).** Use solder (E360).
4. **Install cover (7)** on light (9).

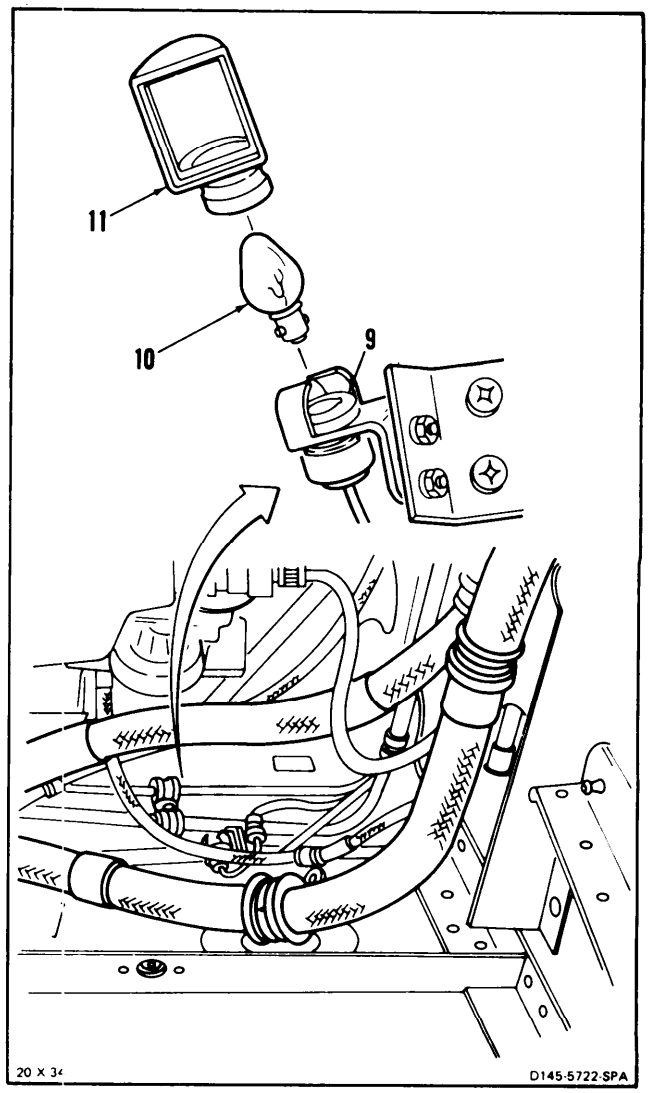


GO TO NEXT PAGE

9-93 INSTALL OIL LEVEL CHECK LIGHT (Continued) 9-93

5. **Install lamp (10) in fitting (9).**
6. **Install housing (11) on fitting (9).**

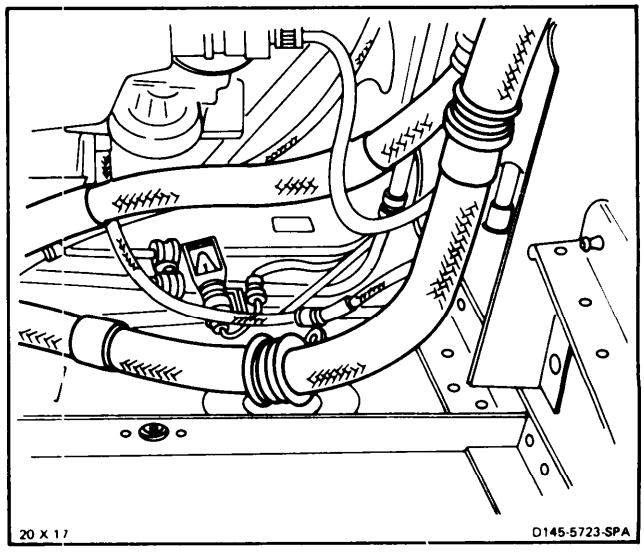
INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

Install forward transmission drip pan (9-3).



END OF TASK

9-94 REMOVE OIL LEVEL CHECK LIGHT SWITCH

INITIAL SETUP

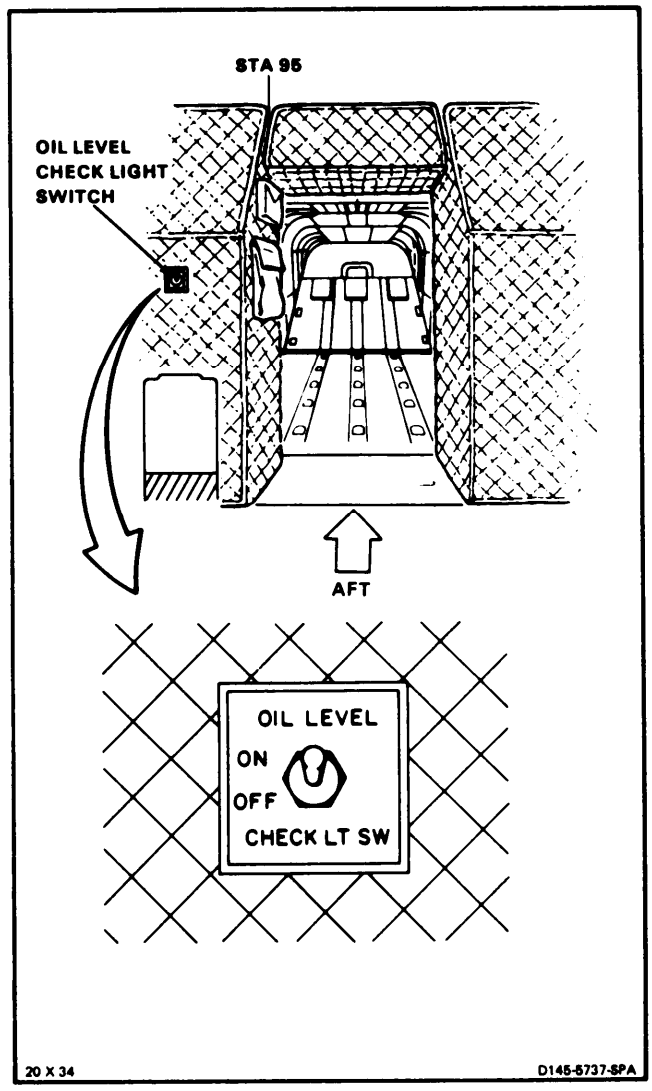
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task
Electrical Power Off



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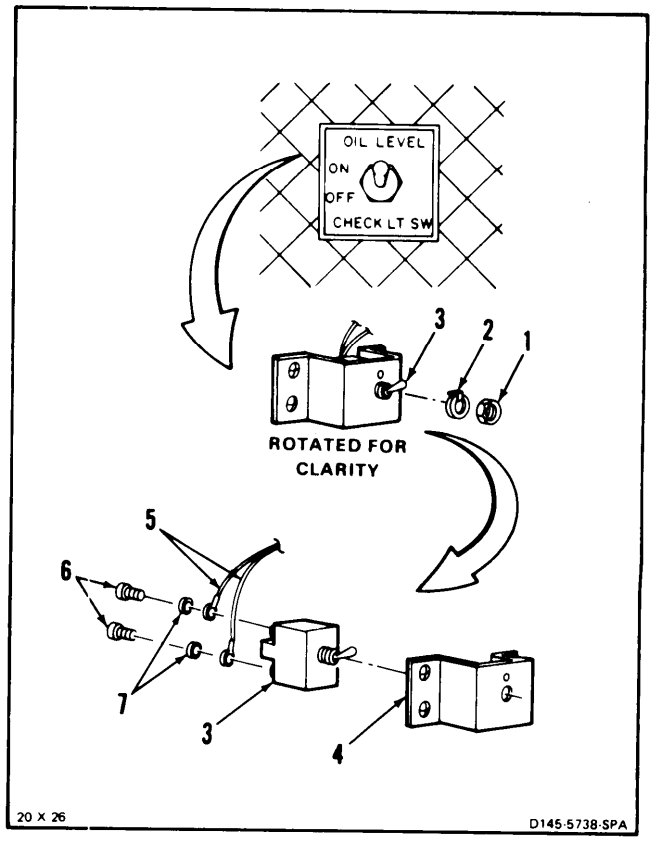
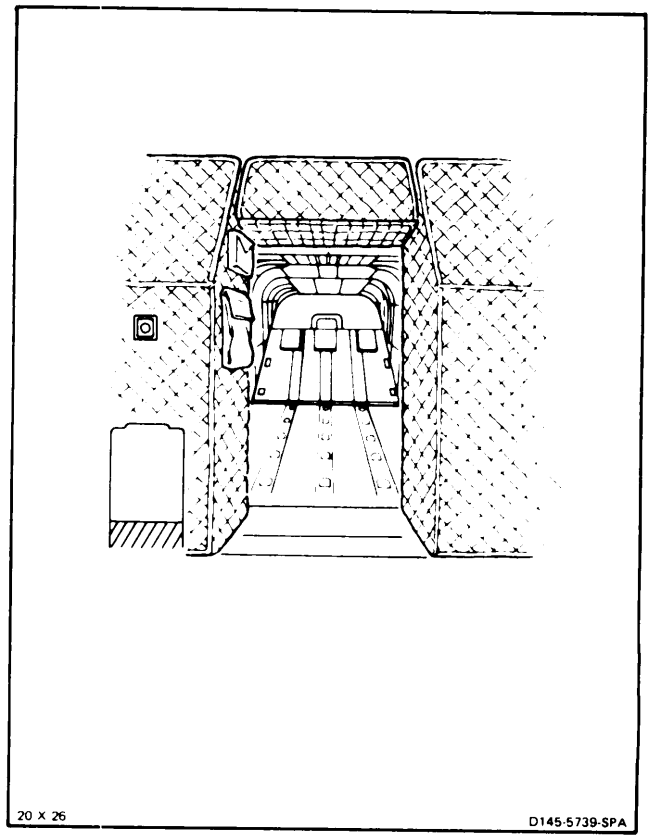
9-94 REMOVE OIL LEVEL CHECK LIGHT SWITCH (Continued) 9-94

1. **Remove nut (1)** and washer (2) from switch (3).
2. **Remove switch (3)** from bracket (4),
3. Tag two wires (5). Remove two screws (6) and washers (7). **Disconnect two wires.**
4. Tape ends of wires (5). Use tape (E385).



FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-95 INSTALL OIL LEVEL CHECK LIGHT SWITCH

INITIAL SETUP

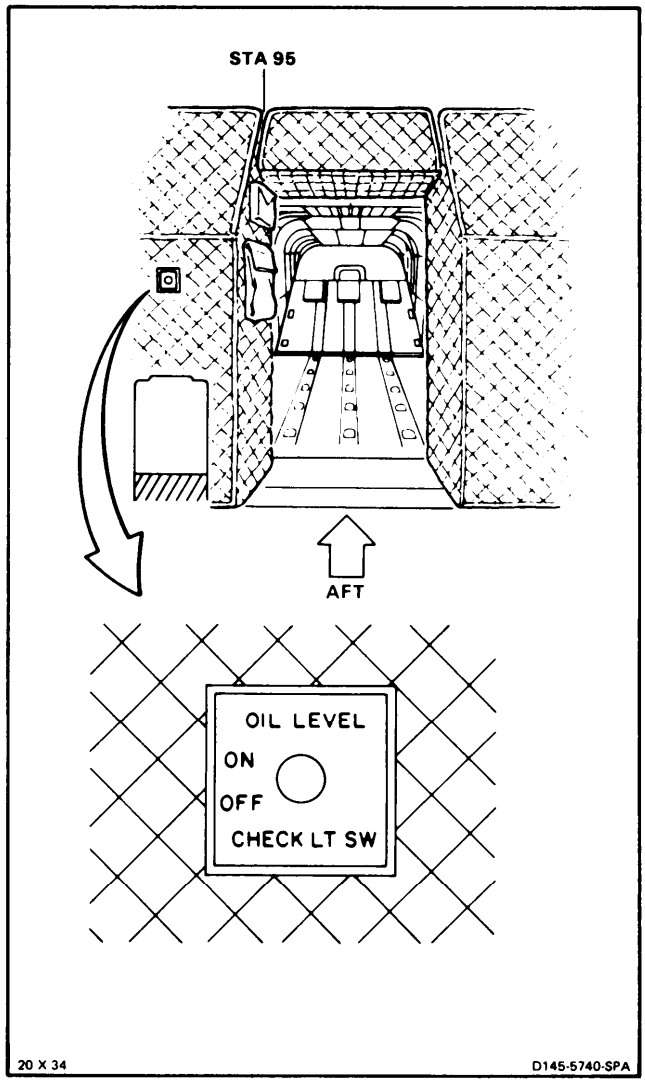
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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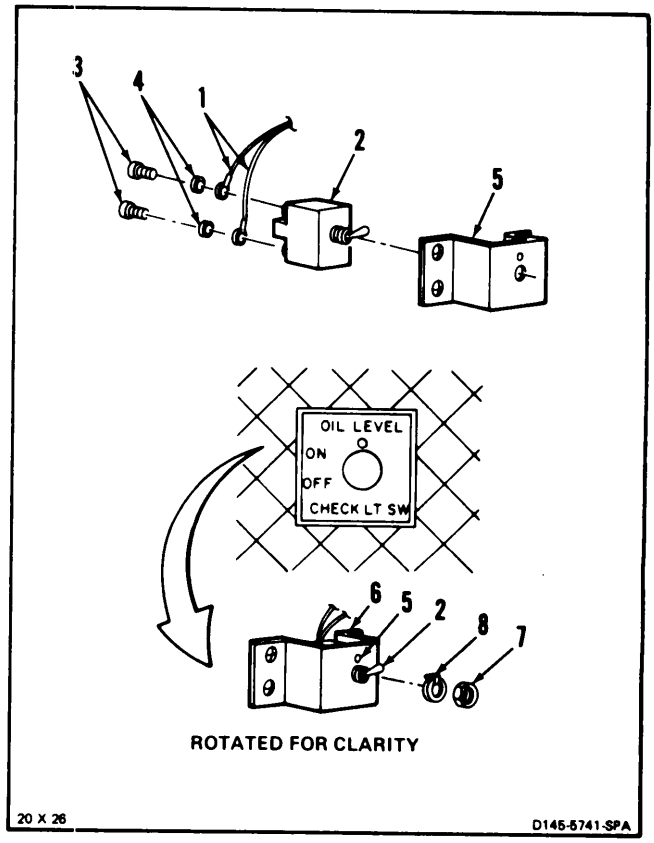
9-95 INSTALL OIL LEVEL CHECK LIGHT SWITCH (Continued)

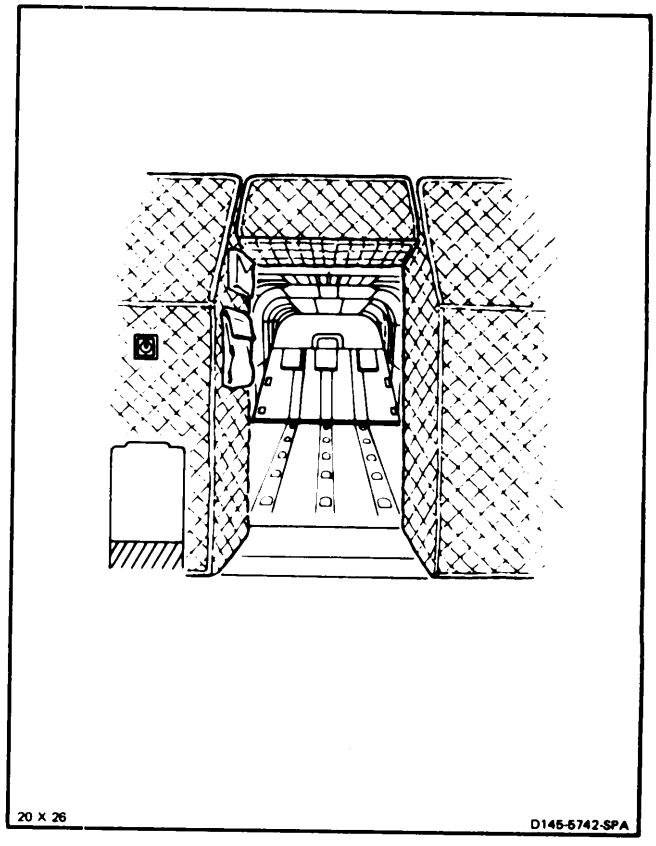
1. Remove tape from wires (1). **Connect two wires** to switch (2). Install two screws (3) and washers (4). Remove tags.
2. **Position switch (2),** tab (5) up, in bracket (6). **Install nut (7)** and washer (8).

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-96 REPLACE OVERHEAD PANEL LAMP

INITIAL SETUP

Applicable Configurations:

Without 17

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:

None

Parts:

Lamp

Personnel Required:

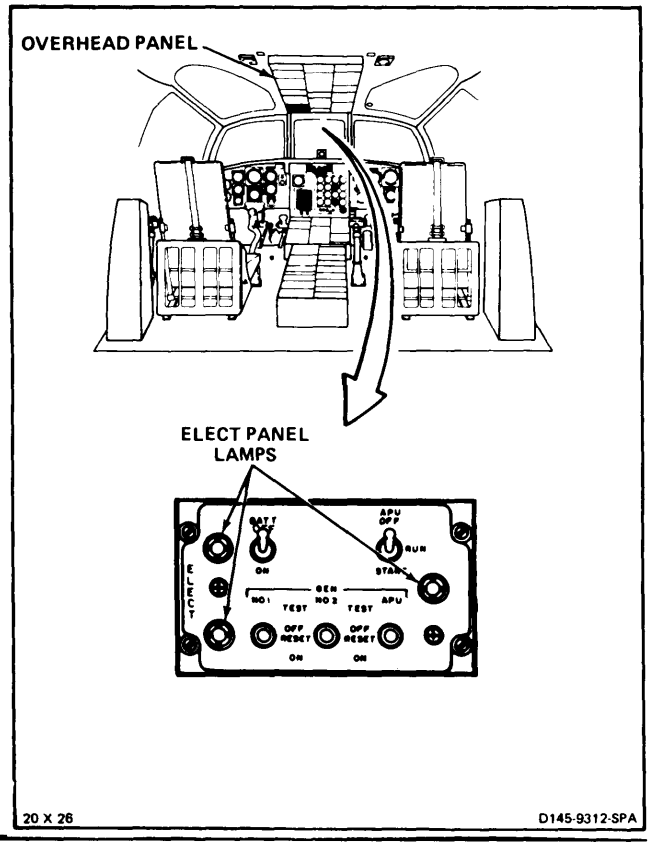
Aircraft Electrician

References:

TM 55-1520-240-23P

Equipment Condition:

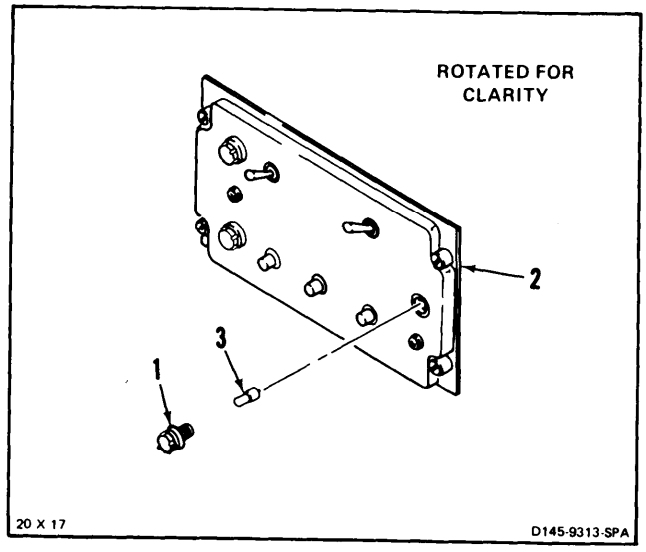
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is same to replace lamp in any overhead panel. ELECT panel lamp replacement is shown here.

1. Rotate lens (1). Remove cap from panel (2).
2. Remove lamp (3) from lens (1).
3. **Install new lamp (3)** in cap (1).
4. Install cap (1) in panel (2).



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

9-97 REMOVE OVERHEAD PANEL

INITIAL SETUP

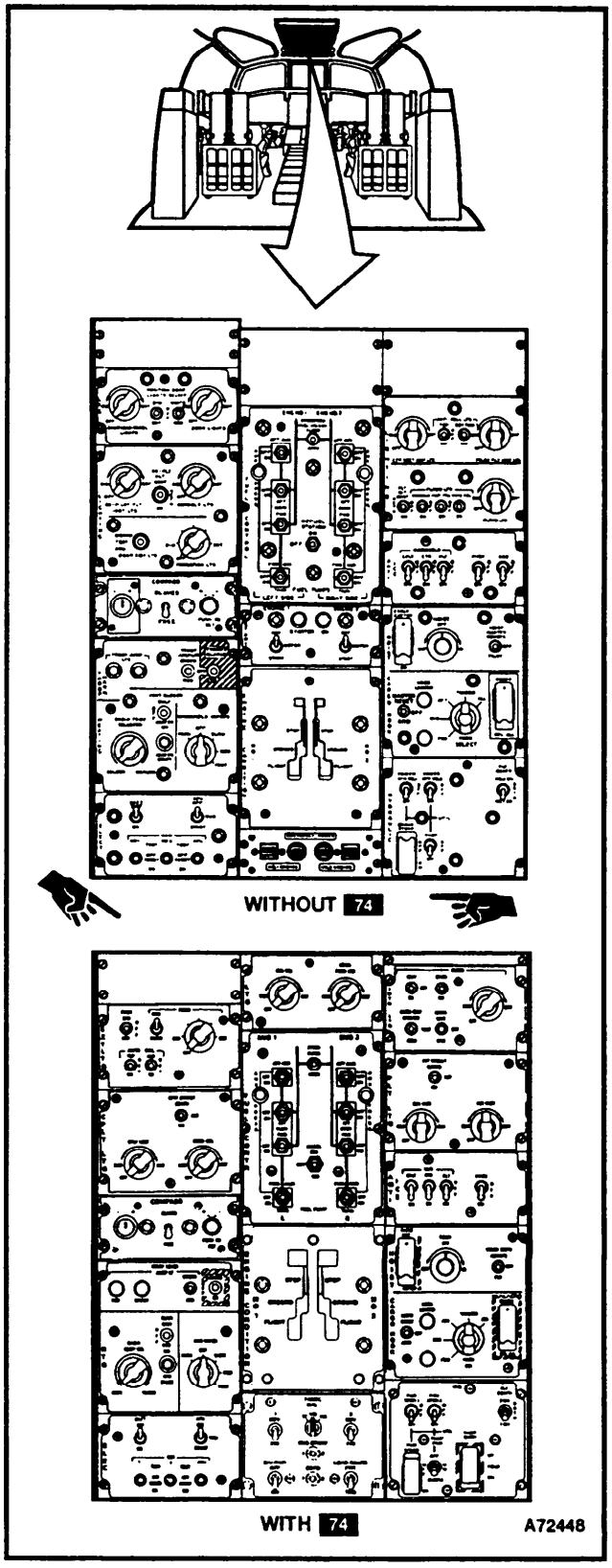
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E395)

Personnel Required;
Aircraft Electrician (2)

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



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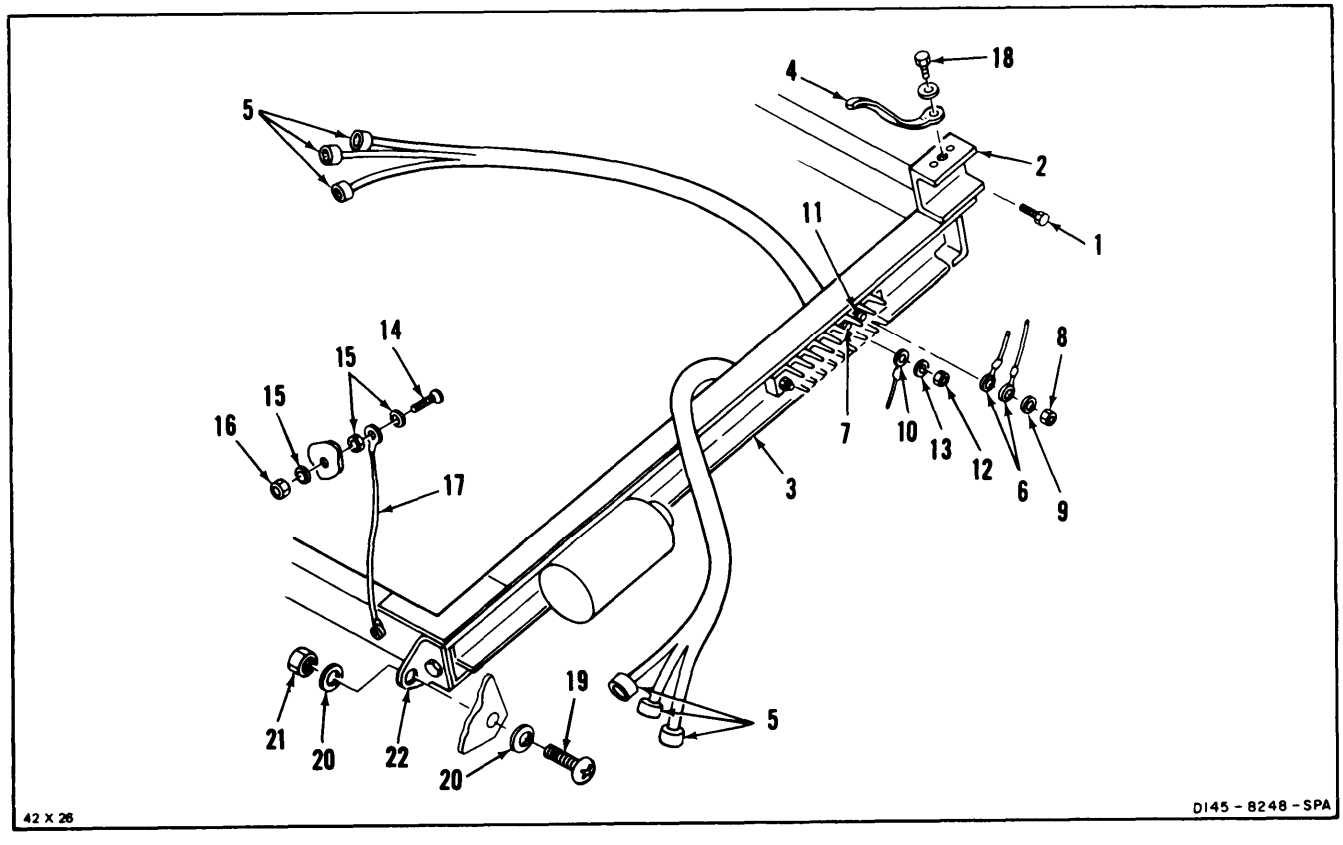
9-97 REMOVE OVERHEAD PANEL (Continued)

1. **Remove two bolts (1)** from brackets (2).
2. Pivot panel (3) down until strap (4) stops travel.
3. Tag and **disconnect six connectors (5).**
4. Tag and **disconnect two wires (6)** from terminal (7) by removing nut (8) and washer (9). Tape wire ends. Use tape (E395).
5. Tag and **disconnect wire (10)** from terminal (11) by removing nut (12) and washer (13). Tape wire ends. Use tape (E395).
6. **Remove screw (14),** three washers (15), and nut (16) from ground wire (17).
7. Have helper support panel (3). **Remove two bolts (18)** from strap (4).
8. **Remove two bolts (19),** four washers (20), and two nuts (21) from bracket (22).
9. Remove panel (3).



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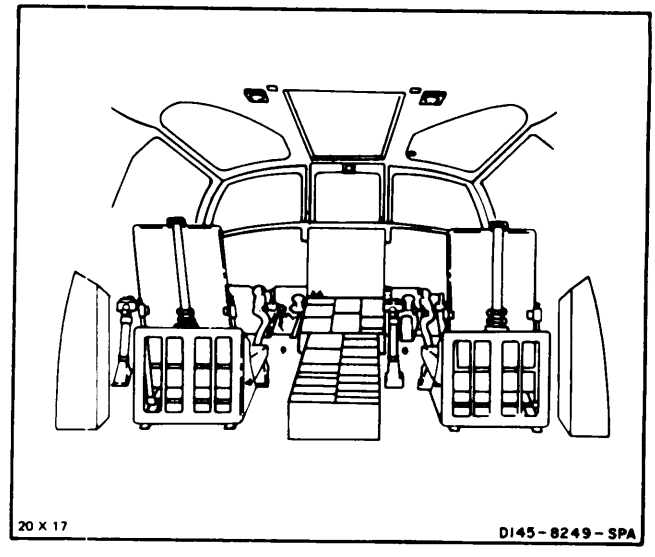
9-97 REMOVE OVERHEAD PANEL (Continued)

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-98 INSTALL OVERHEAD PANEL

INITIAL SETUP

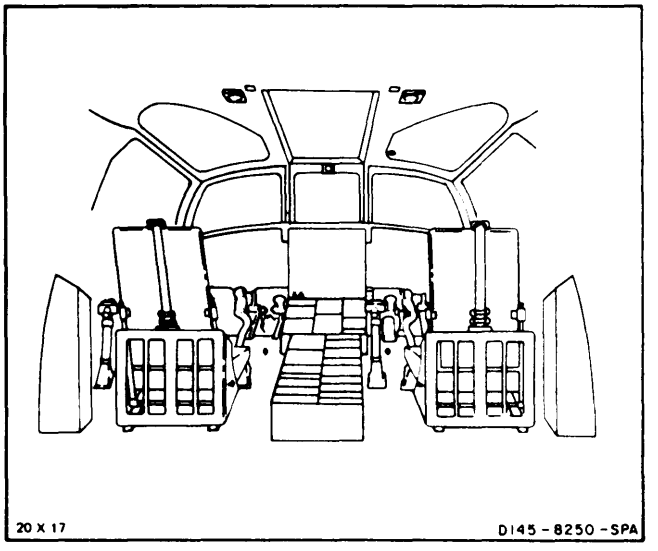
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

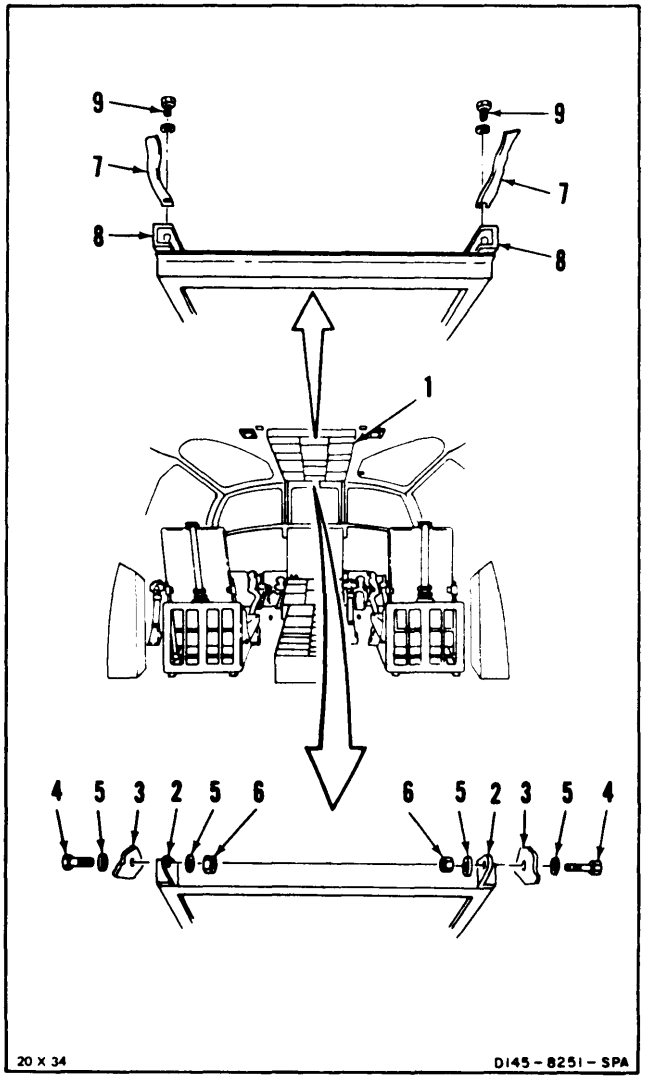
Materials:
None

Personnel Required:
68F10 Aircraft Electrician (2)
67U30 Inspector

References:
TM 55-1520-240-23P



1. Have helper support panel (1). Align brackets (2) with brackets (3). **Install two bolts (4),** four washers (5), and two nuts (6).
2. Have helper support panel (1). Align two straps (7) with brackets (8). **Install two bolts (9).**



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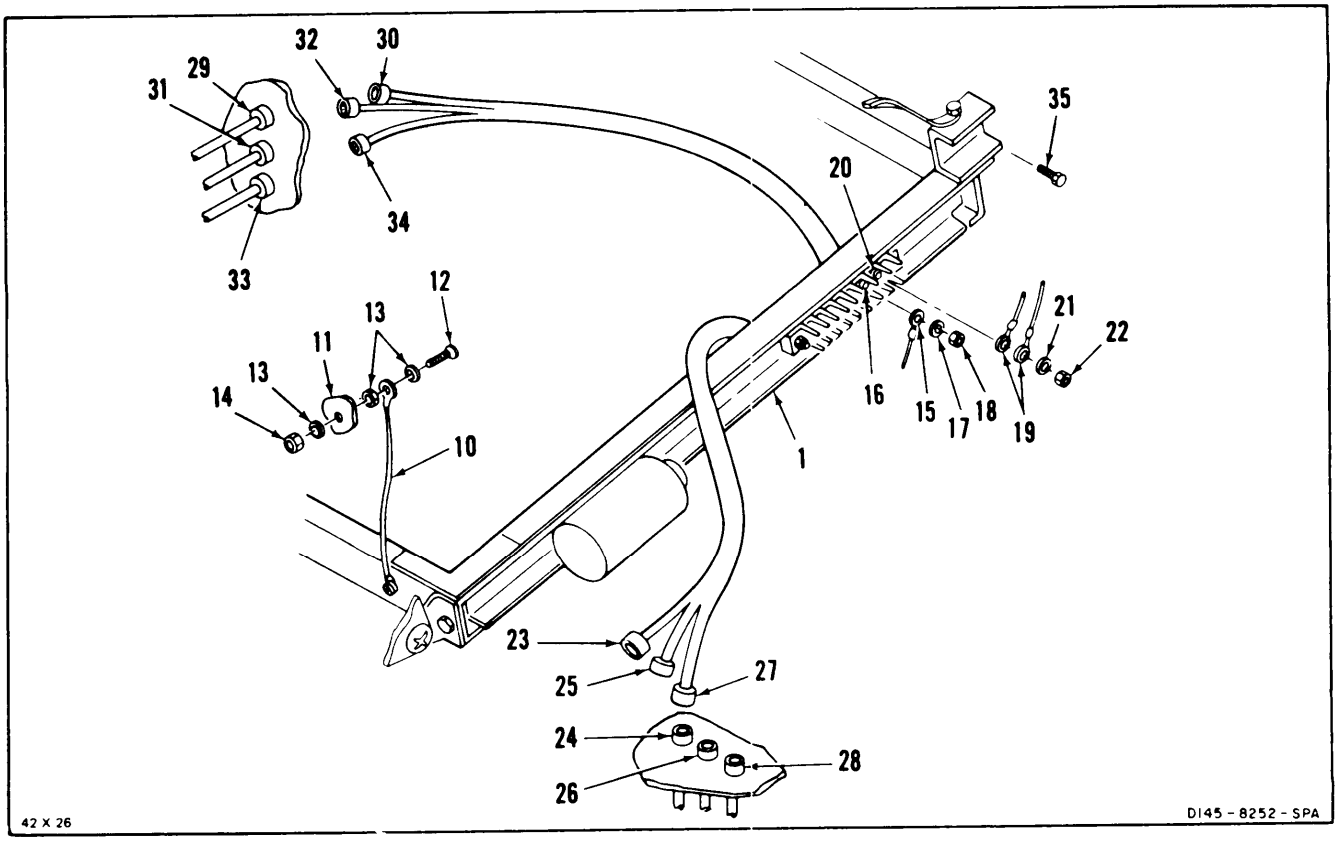
9-98 INSTALL OVER HEAD PANEL (Continued) 9-98

3. Connect ground wire (1 O) to structure (11). **Install screw (12),** three washers (13), and nut (14).
4. Remove tape and **install wire (15)** on terminal (16) using washer (17) and nut (18). Remove tag.
5. Remove tape and **install two wires (19)** on terminal (20) using washer (21) and nut (22). Remove tag.
6. **Connect connector (23)** to receptacle (24). Remove tag.
7. **Connect connector (25)** to receptacle (26). Remove tag.
8. **Connect connector (27)** to receptacle (28). Remove tag.
9. **Connect connector (29)** to receptacle (30). Remove tag.
10. **Connect connector (31)** to receptacle (32). Remove tag.
11. **Connect connector (33)** to receptacle (34). Remove tag.
12. Check all wire bundles in the vicinity of the overhead panel to ensure none are chafed. If chafing is noted, rewire the bundle. If rewiring will not correct the chafing, apply spiral wrap, NSN 9390-00-836-8493 or equivalent, to the chafed area of the bundle. If the insulation has been worn away to expose a conductor, replace affected components.
13. Pivot panel (1) up. **Install two bolts (35).**

INSPECT



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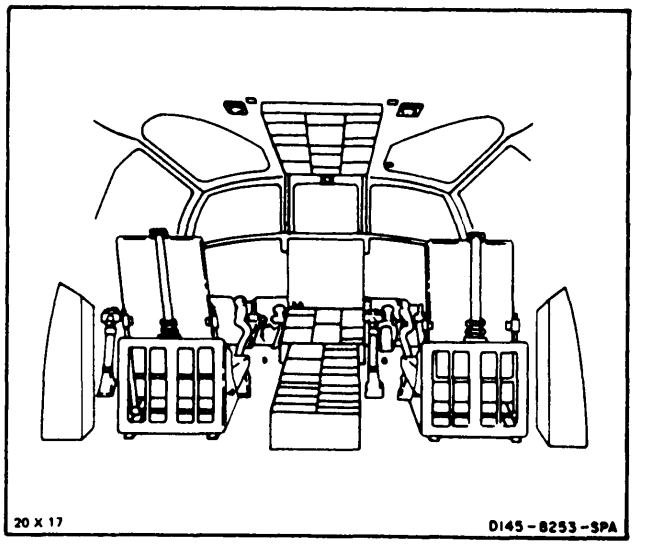
9-98 INSTALL OVERHEAD PANEL (Continued)

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-98.1 REMOVE OVERHEAD PANELS FROM PANEL 9-98.1

INITIAL SETUP

Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)
Tape (E395)

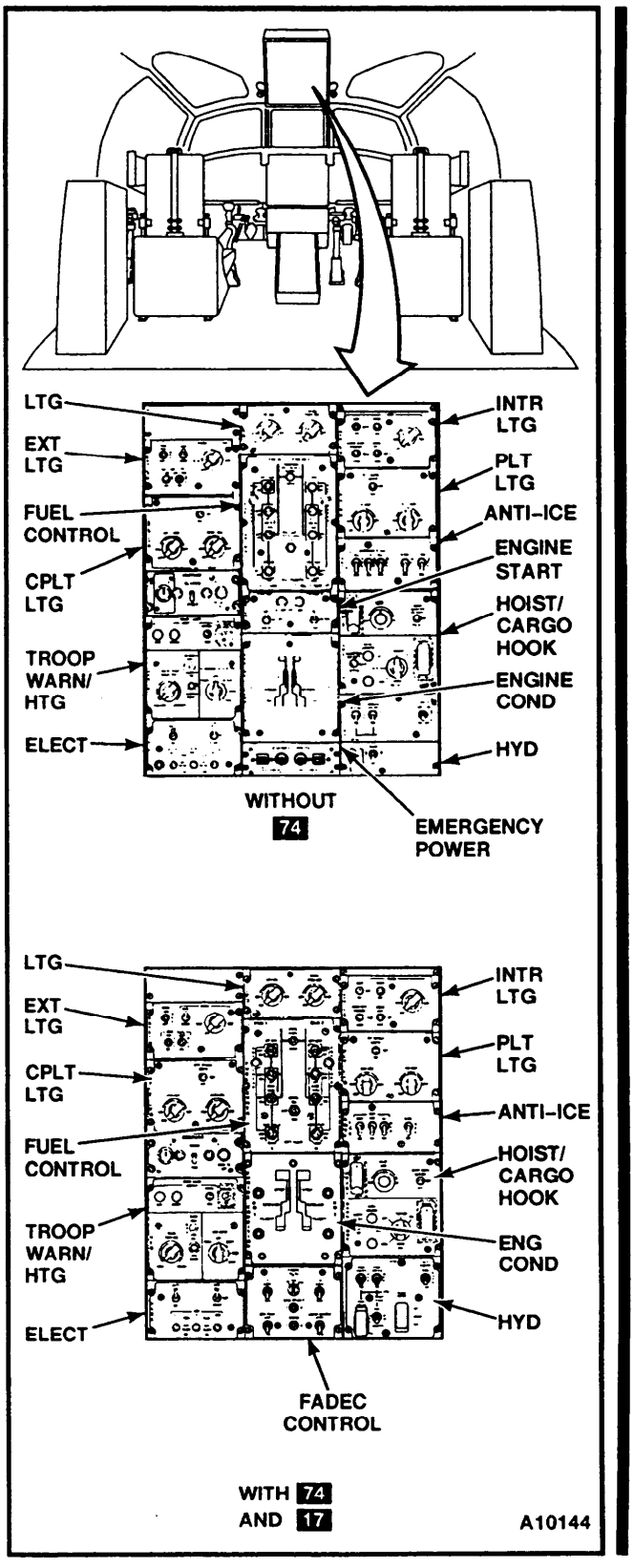
Personnel Required:
Aircraft Electrician

References:
TM 11-1520-240-23
Task 4-151

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

NOTE

On helicopters with 74, go to task 4-150 for removal of FADEC panel.



9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

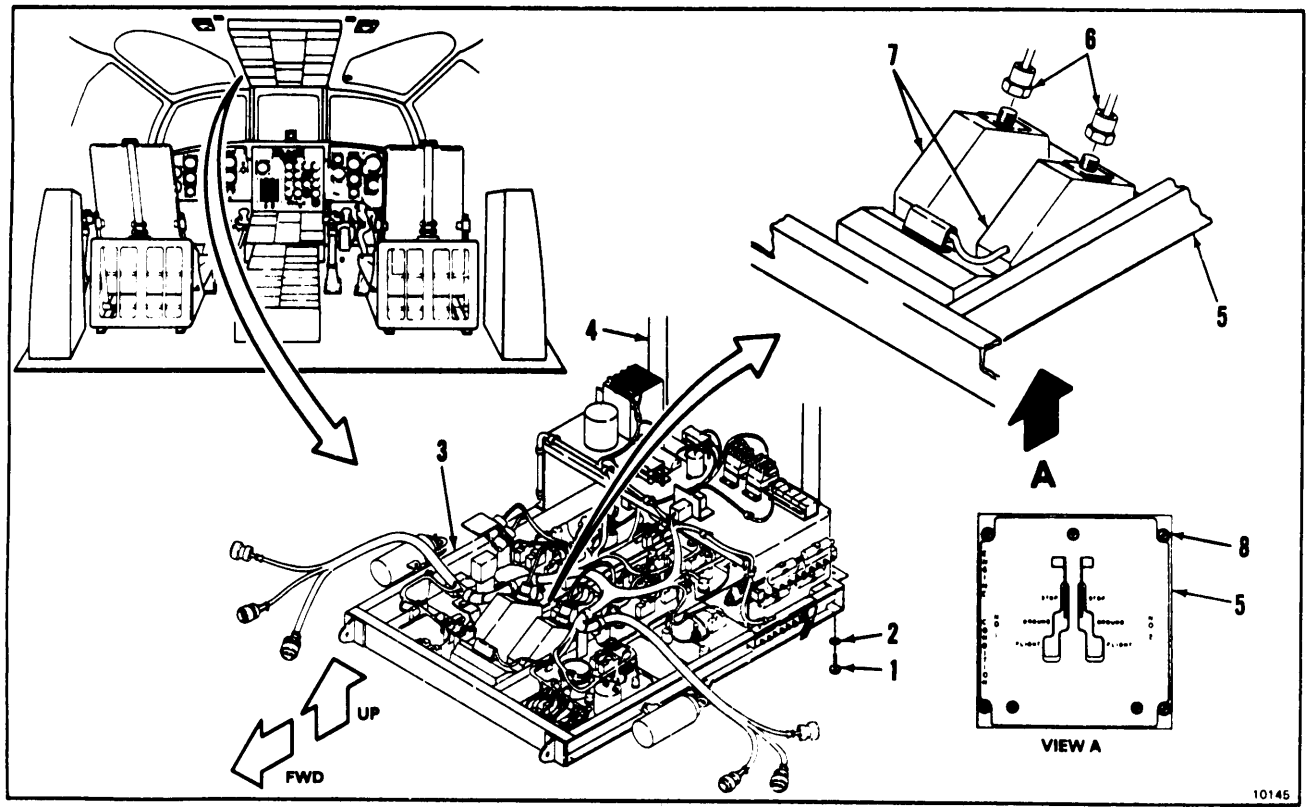
NOTE

The three plugs on each of two wire harnesses at the back of the panel do not have to be disconnected to lower the panel.

1. Remove two bolts (1) and washers (2), Lower panel (3) on straps (4).

ENG COND Panel

2. **Remove ENG COND panel (5)** as follows:
   a. Tag and **disconnect two electrical connectors (6) from engine controls (7).**
   b. Loosen four screws (8). **Remove panel** (6) from panel (3).



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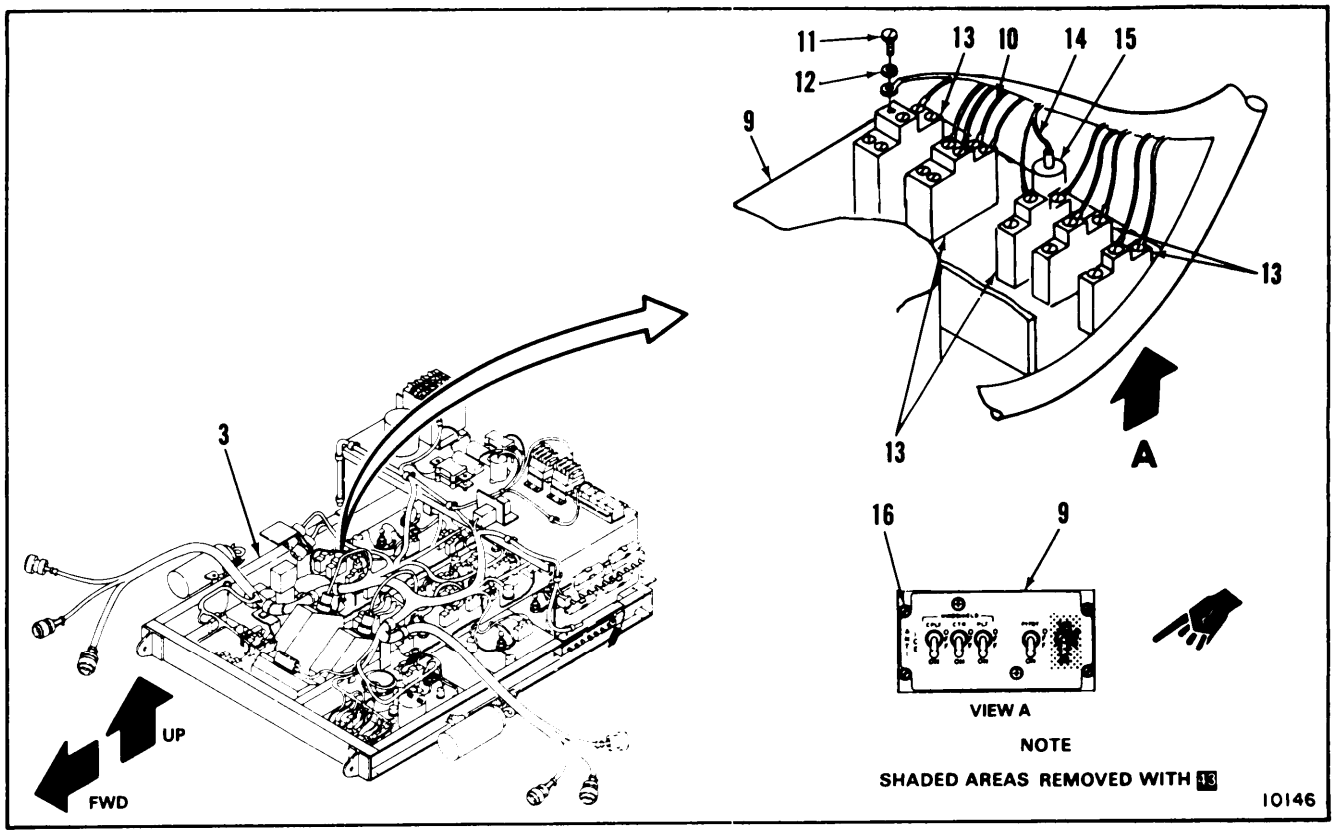
ANTI-ICE Panel

3. **Remove ANTI-ICE panel (9) as follows:**
   a. Tag and **disconnect 15 wires (10)** by removing screws (11) and washers (12) **from five switches (13).** Tape wire ends.
   b. Tag and **disconnect wire (14) from receptacle (15).** Tape wire ends.
   c. Loosen four screws (16). **Remove panel (9)** from panel (3).



9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

LTG Panel

4. **Remove LTG panel (17)** as follows:

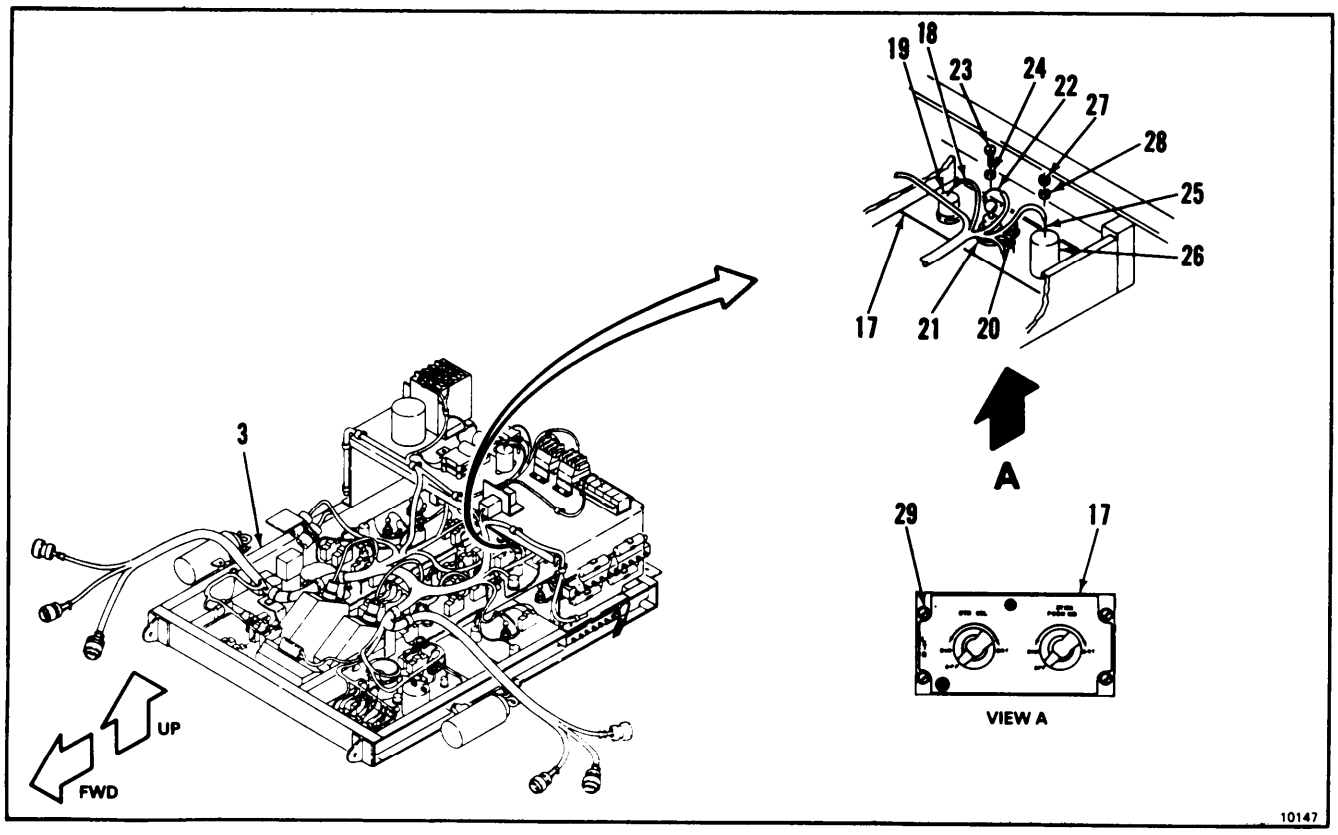
   a. Tag and **unsolder four wires (18) from potentiometer (19).** Tape wire ends.

   b. Tag and **disconnect wire (20) from receptacle (21).** Tape wire ends.

   c. Tag and **remove wire (22) from receptacle (21)** by removing screw (23) and washer (24). Tape wire end.

   d. Tag and **remove four wires (25) from transformer (26)** by removing four nuts (27) and washers (28). Tape wire ends.

   e. Loosen four screws (29). **Remove panel (17)** from panel (3).



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9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

EXT LTG Panel

5. **Remove EXT LTG panel (30)** as follows:

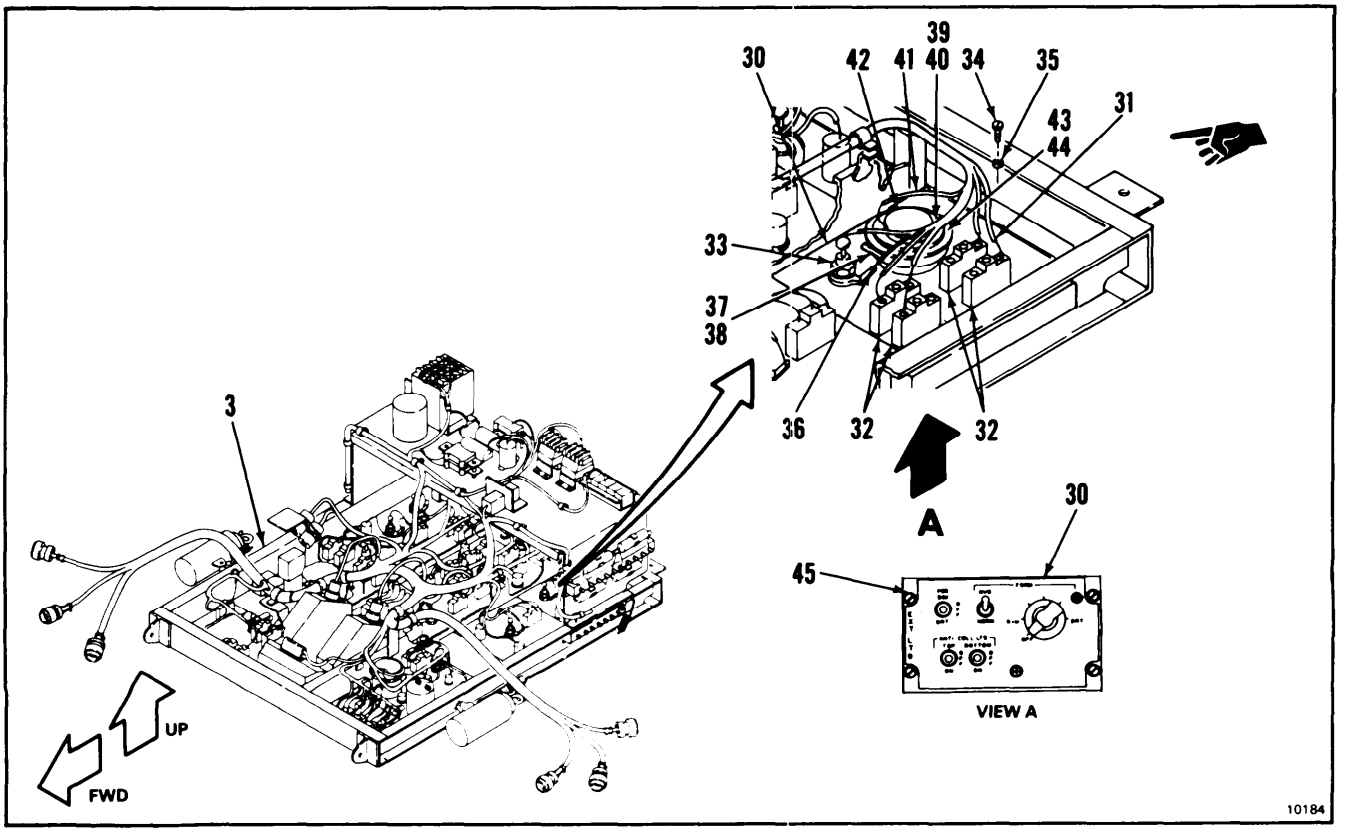
   a. **Tag and remove 18 wires (31) from four switches (32) and one receptacle (33)** by removing screws (34) and washers (35). Tape wire ends.

   b. Tag and **disconnect wire (36) from receptacle (33).** Tape wire end.

   c. Tag and **remove two wires (37) from four resistors (38)** by removing screws (39) and washers (40). Tape wire ends.

   d. Tag and **remove six wires (41) from** switch (42) by removing screws (43) and washers (44). Tape wire ends.

   e. Loosen four screws (45). **Remove panel (30)** from panel (3).



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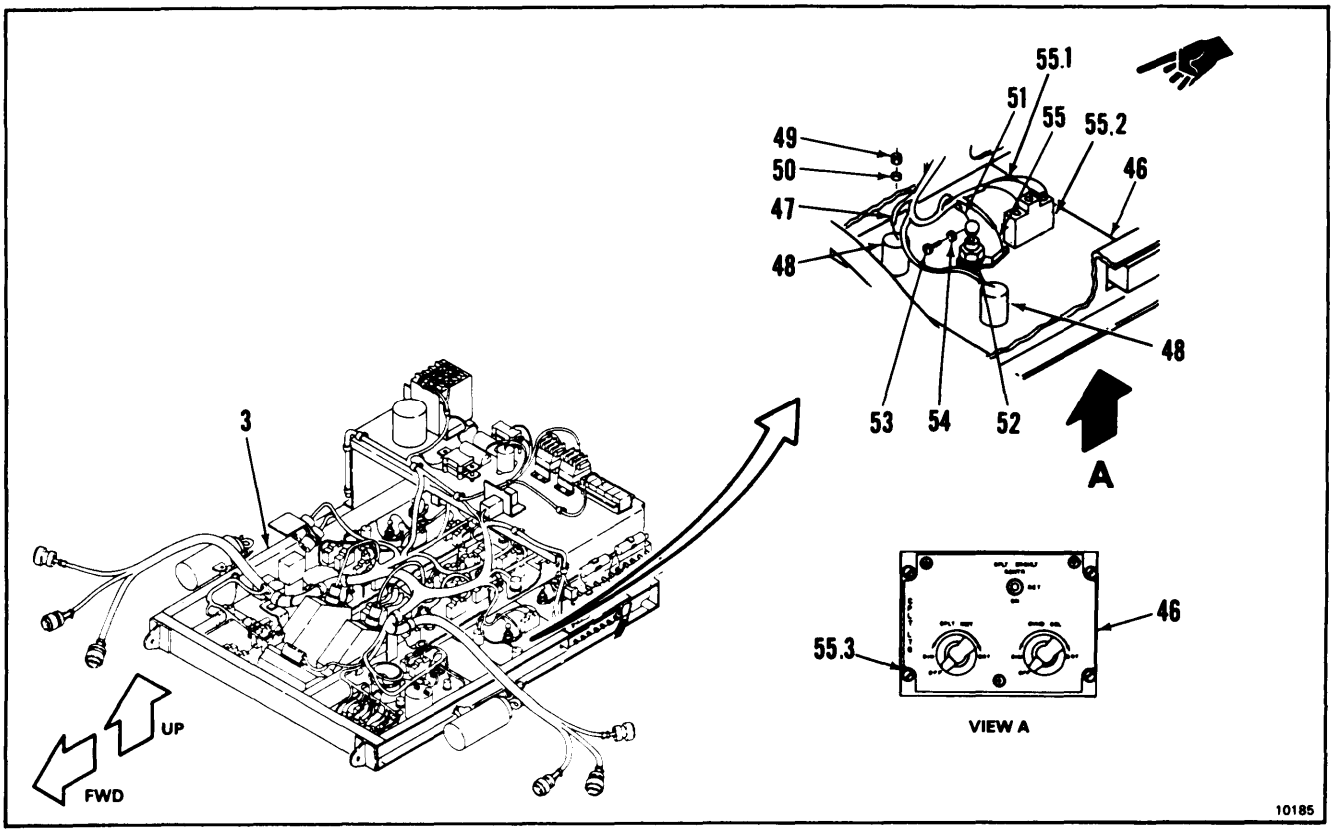
9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

CPLT LTG Panel

6. **Remove CPLT LTG panel (46)** as follows:
   a. Tag and **remove seven wires (47) from two transformers (48)** by removing nuts (49) and washers (50). Tape wire ends.
   b. Tag and **remove wire (51) from receptacle (52)** by removing screw (53) and washer (54). Tape wire end.
   c. Tag and **disconnect wire (55) from receptacle (52).** Tape wire end.
   d. Tag and remove three wires (55.1) from switch (55.2).
   e. Loosen four screws (55.3). **Remove panel (46)** from panel (3).

COMPASS Panel

7. **Remove COMPASS panel (TM 11-1520-240-20).**



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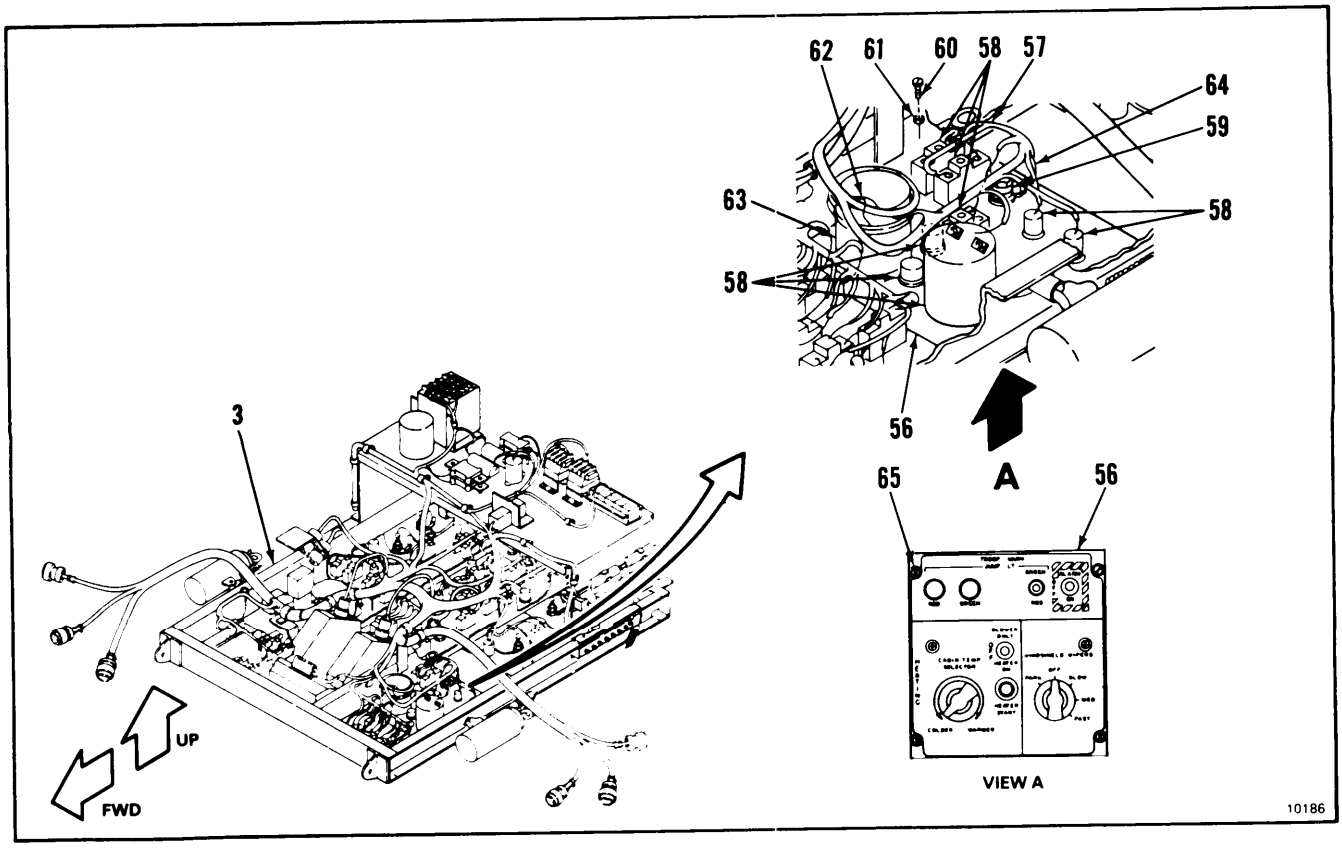
9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

TROOP WARN/HTG Panel

8. **Remove TROOP WARN/HTG panel (56)** as follows:
   a. Tag and **remove 26 wires (57) from eight switches (58)** and one receptacle (59) by removing screws (60) and washers (61). Tape wire ends.
   b. Tag and **unsolder six wires (62) from switch (63).** Tape wire ends.
   c. Tag and **disconnect wire (64) from receptacle (59).** Tape wire end.
   d. Loosen four screws (65). **Remove panel (56)** from panel (3).



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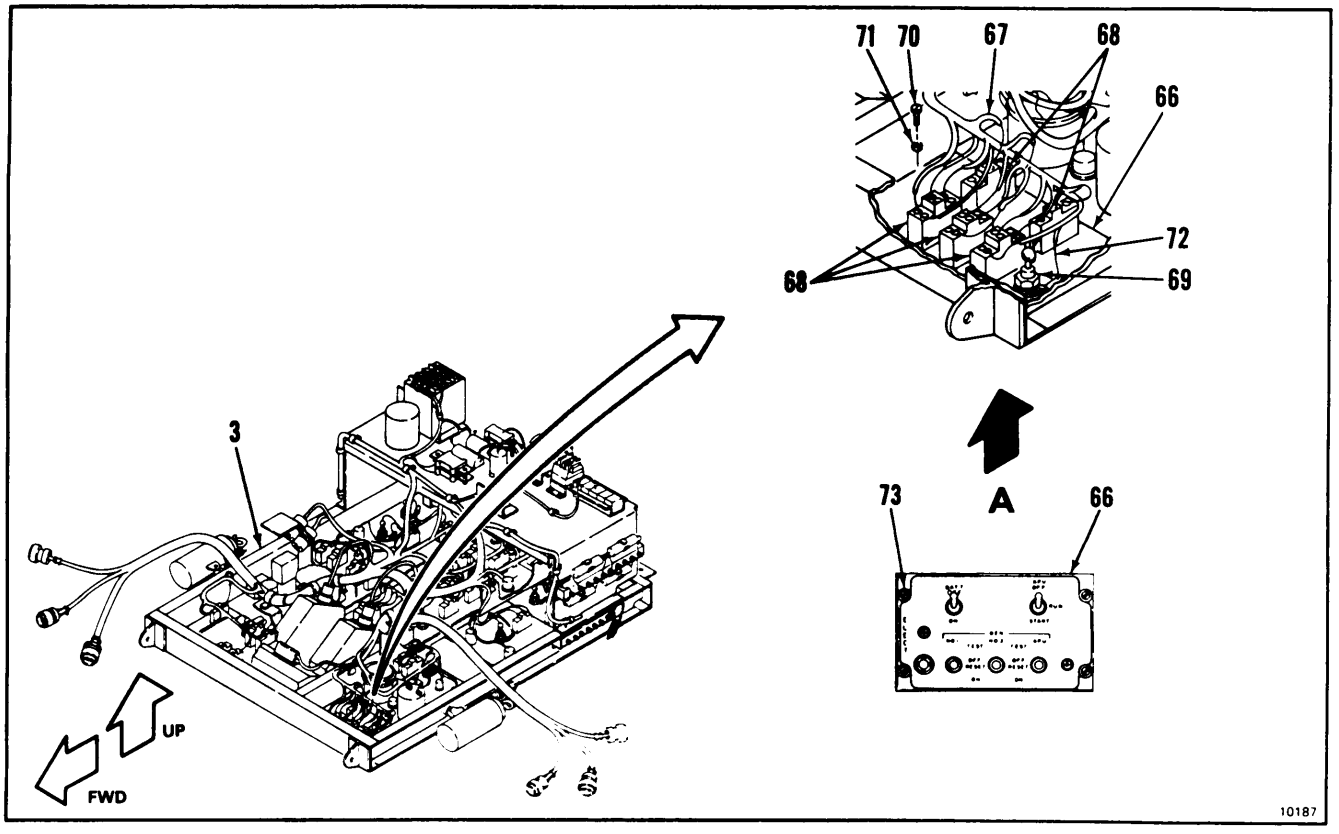
9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

ELECT Panel

9. **Remove ELECT panel (66)** as follows:
   a. Tag and **remove 23 wires (67) from five switches (68) and on. receptacle (69)** by removing screws (70) and washers (71). Tape wire ends.
   b. Tag and **disconnect wire (72) from receptacle (69).** Tape wire end.
   c. Loosen four screws (73). **Remove panel (66)** from panel (3).



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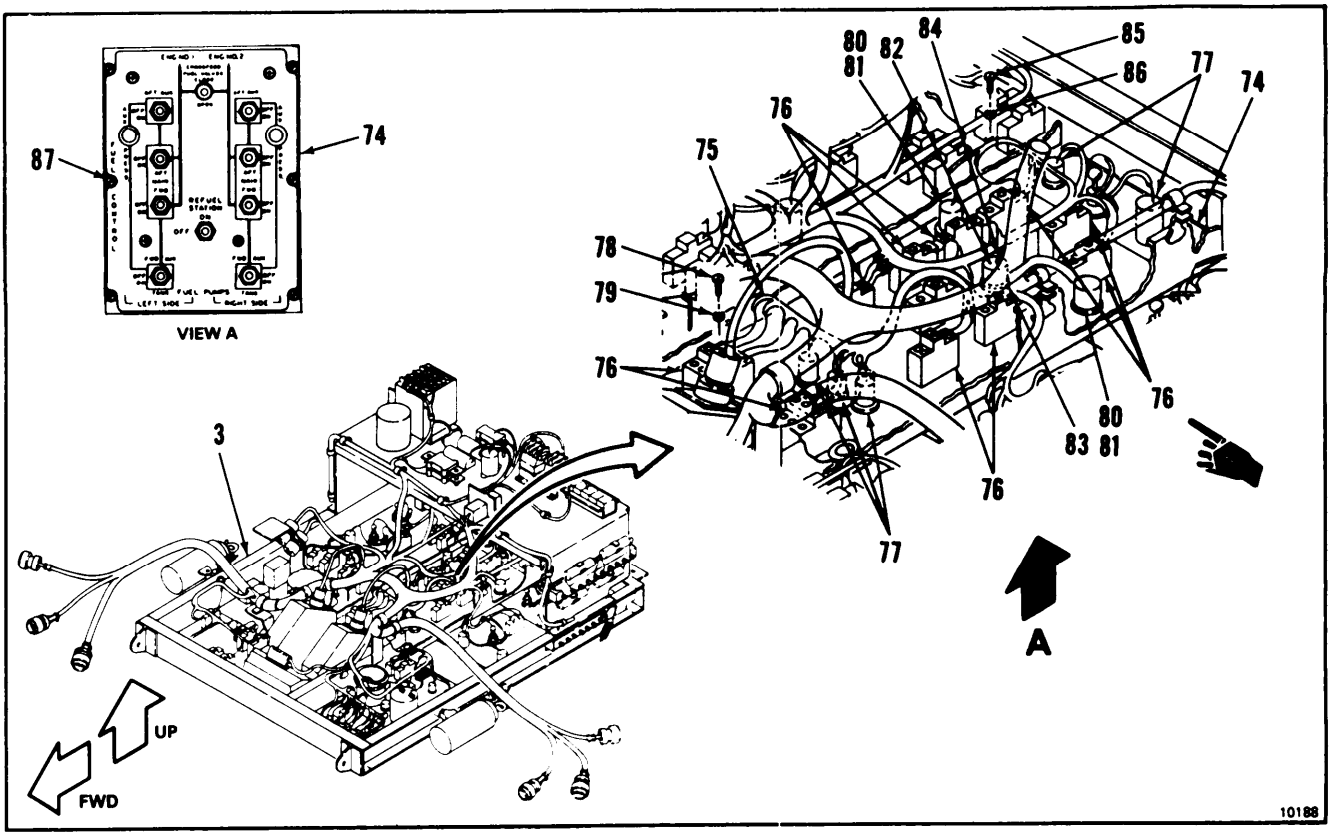
9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

FUEL CONTR Panel

10. **Remove FUEL CONTR panel (74)** as follows:
    a. Tag and **remove 34 wires (75) from 10 switches (76) and five receptacles (77)** by removing screws (78) and washers (79). Tape wire ends.
    b. Tag and **unsolder six wires (80) from two receptacles (81).** Tape wire ends.
    c. Tag and **disconnect wire (82) from receptacle (83).** Tape wire end.
    d. Tag and **remove wire (84) from receptacle (83)** by removing screw (85) and washer (86). Tape wire end.
    e. Loosen six screws (87). **Remove panel (74)** from panel (3).



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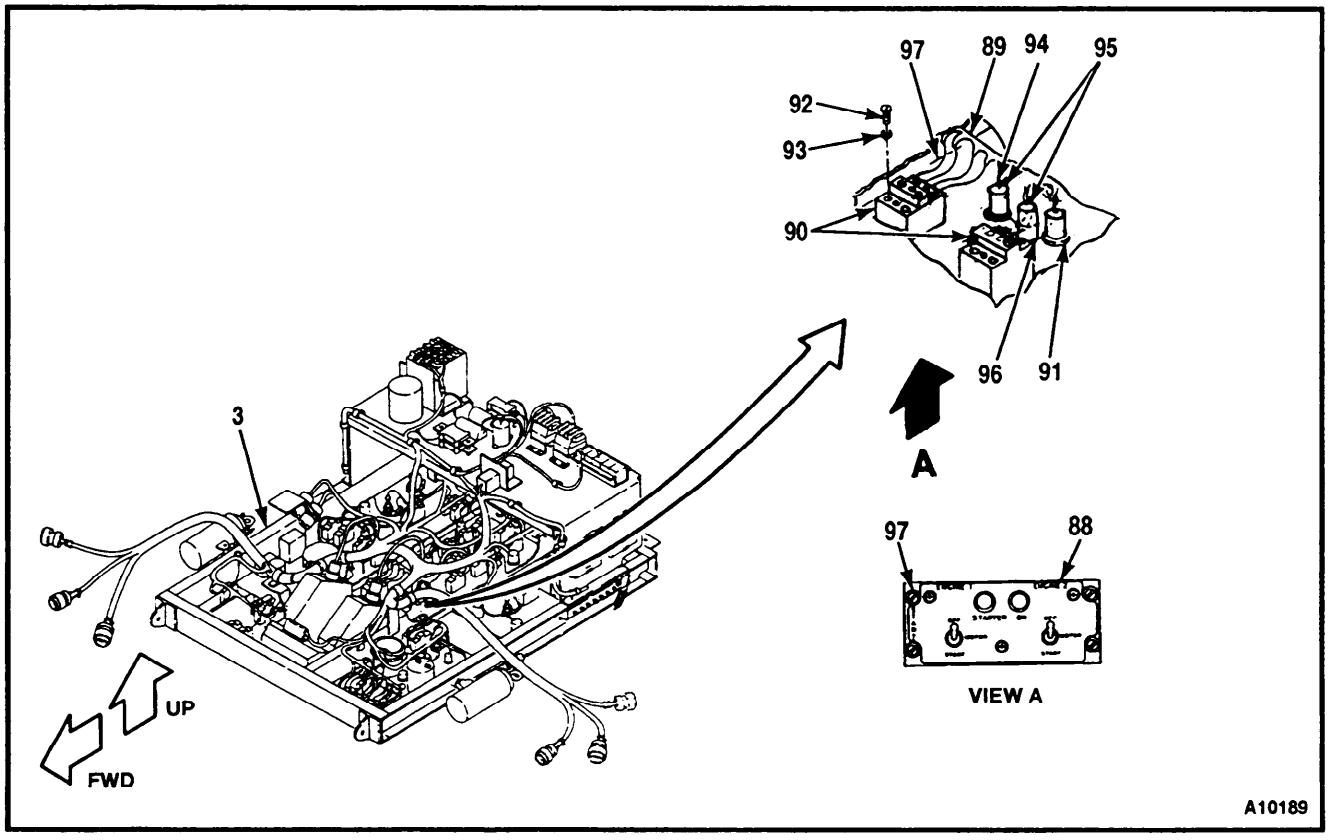
START Panel
Without 74

11. Remove START panel (88) as follows:
    a. Tag and remove 23 wires (89) from two switches (90) and one receptacle (91) by removing screws (92) and washers (93). Tape wire ends.
    b. Tag and unsolder six wires (94) from two lamps (95). Tape wire ends.
    c. Tag and disconnect wire (96) from recep tacle (91). Tape wire end.
    d. Loosen four screws (97). Remove panel (88) from panel (3).



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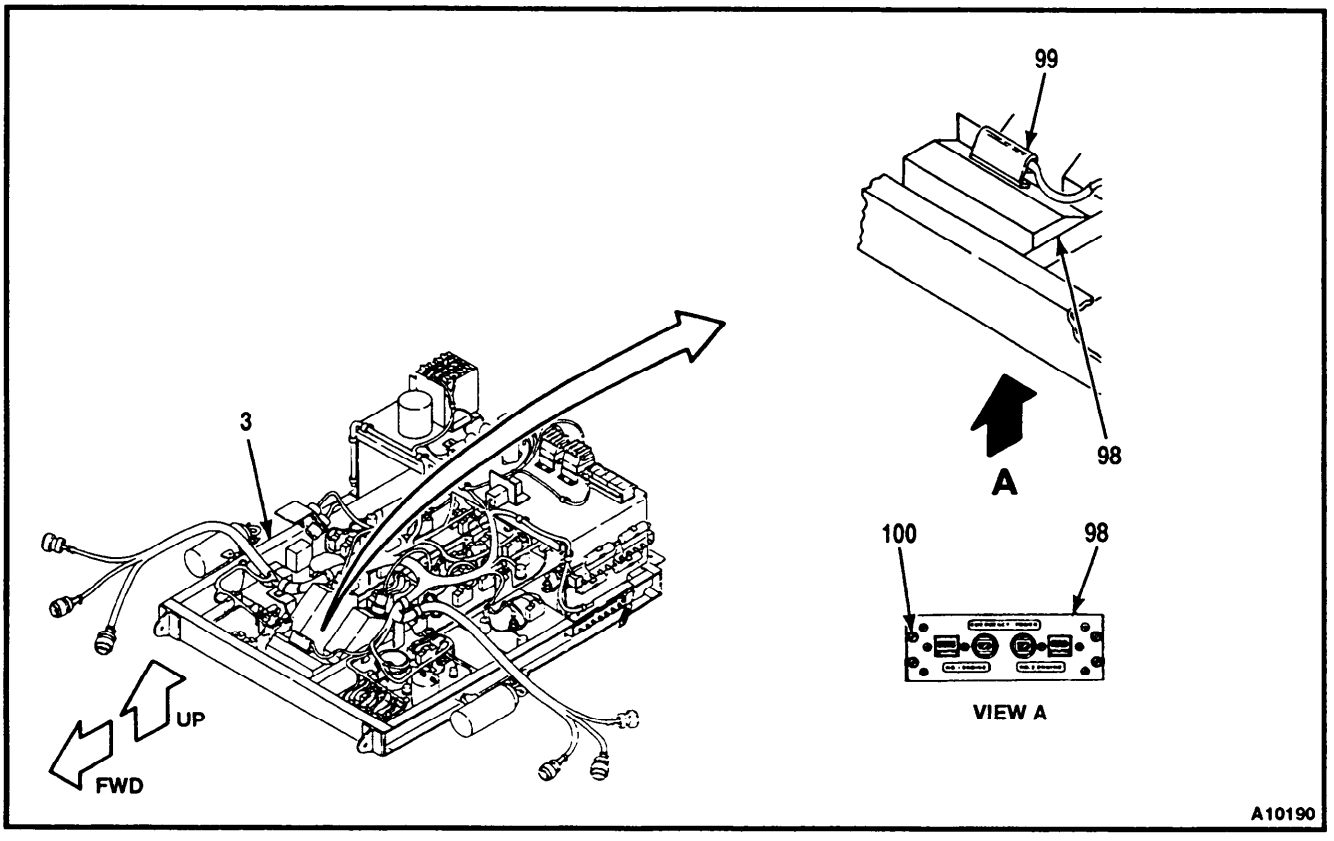
9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

EMERGENCY POWER Panel

Without 74

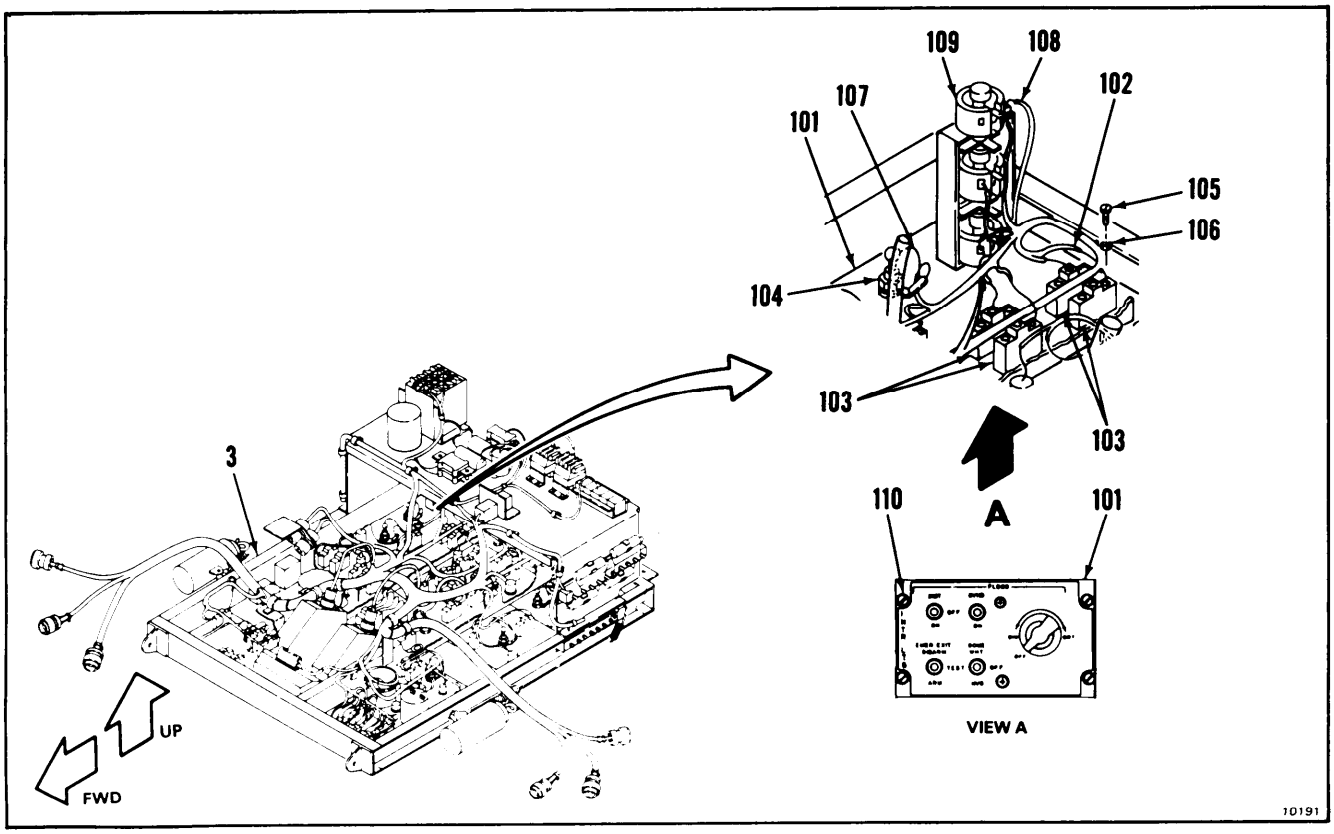
12. Remove EMERGENCY POWER panel (98) as follows:
    a. Tag and disconnect plug (99) from panel (98).
    b. Loosen four screws (100). Remove panel (98) from panel (3).



9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

INTR LTG Panel

13. **Remove INTR LTG panel (101)** as follows:
    a. Tag and **disconnect 17 wires (102) from four switches (103) and one receptacle (104)** by removing screws (105) and washers (106). Tape wire ends.
    b. Tag and **disconnect wire (107) from receptacle (104).** Tape wire end.
    c. Tag and **unsolder five wires (108) from potentiometer (109).** Tape wire ends.
    d. Loosen four screws (110). **Remove panel (101)** from panel (3).



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9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

PLT LTG Panel

14. **Remove PLT LTG panel (111)** as follows:

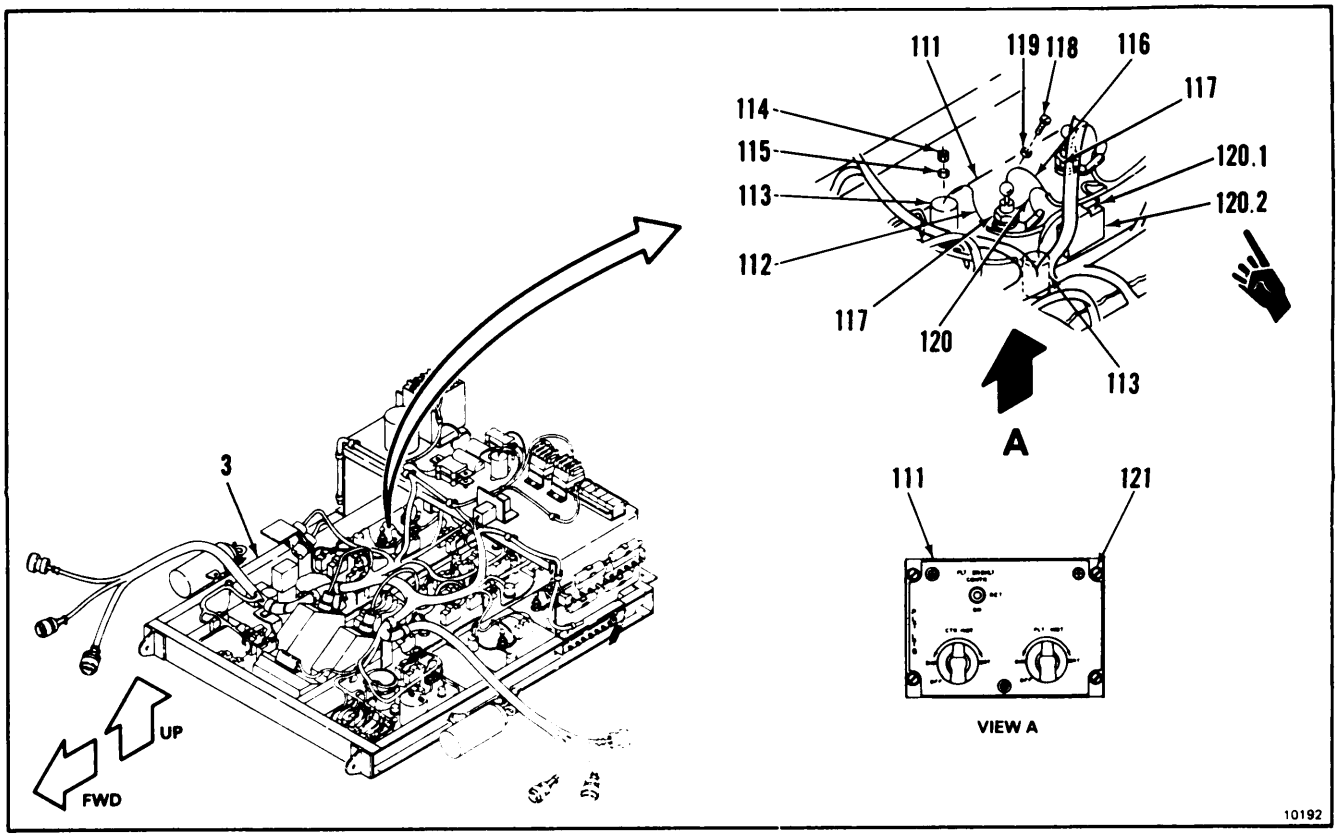
    a. Tag and **remove seven wires (112) from two transformers (113)** by removing nuts (1 14) and washers (1 15). Tape wire ends.

    b. Tag and **remove wire (116) from each of two receptacles (117)** by removing screw (118) and washer (119). Tape wire end.

    c. Tag and **disconnect wire (120) from receptacle (117).** Tape wire end.

    d. Tag and remove three wires (120.1) from switch (120.2).

    e. Loosen four screws (121). **Remove panel (111)** from panel (3).



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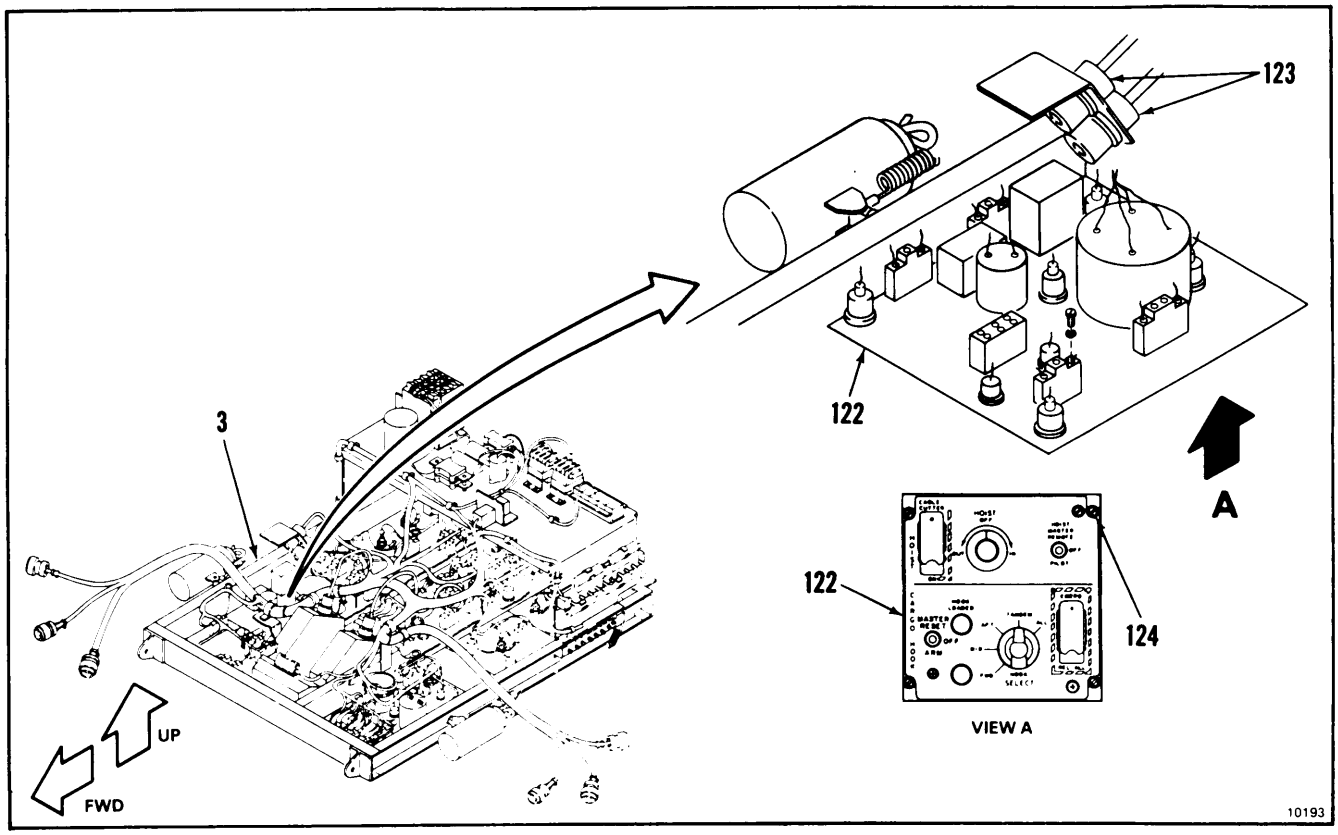
9-98.1 REMOVE OVERHEAD PANELS FROM PANEL (Continued) 9-98.1

HOIST/CARGO HOOK Panel

15. **Remove HOIST/CARGO HOOK panel (122)** as follows:
    a. Tag and disconnect **two plugs (123).**
    b. Loosen four screws (124). **Remove panel (122)** from panel (3).



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HYD Panel (Without 65)

16. Remove HYD panel (125) as follows:

a. Tag and **remove 17 wires (126) from five switches (127) and one receptacle (128)** by removing screws (129) and washers (130). Tape wire ends.

b. Tag and **disconnect ground wire (131) from receptacle (128)** by removing nut (133) and lockwasher (134) on receptacle (see Detail A). Tape wire ends.

c. Loosen four screws (132). **Remove panel (125).**

HYD Panel (Without 65)

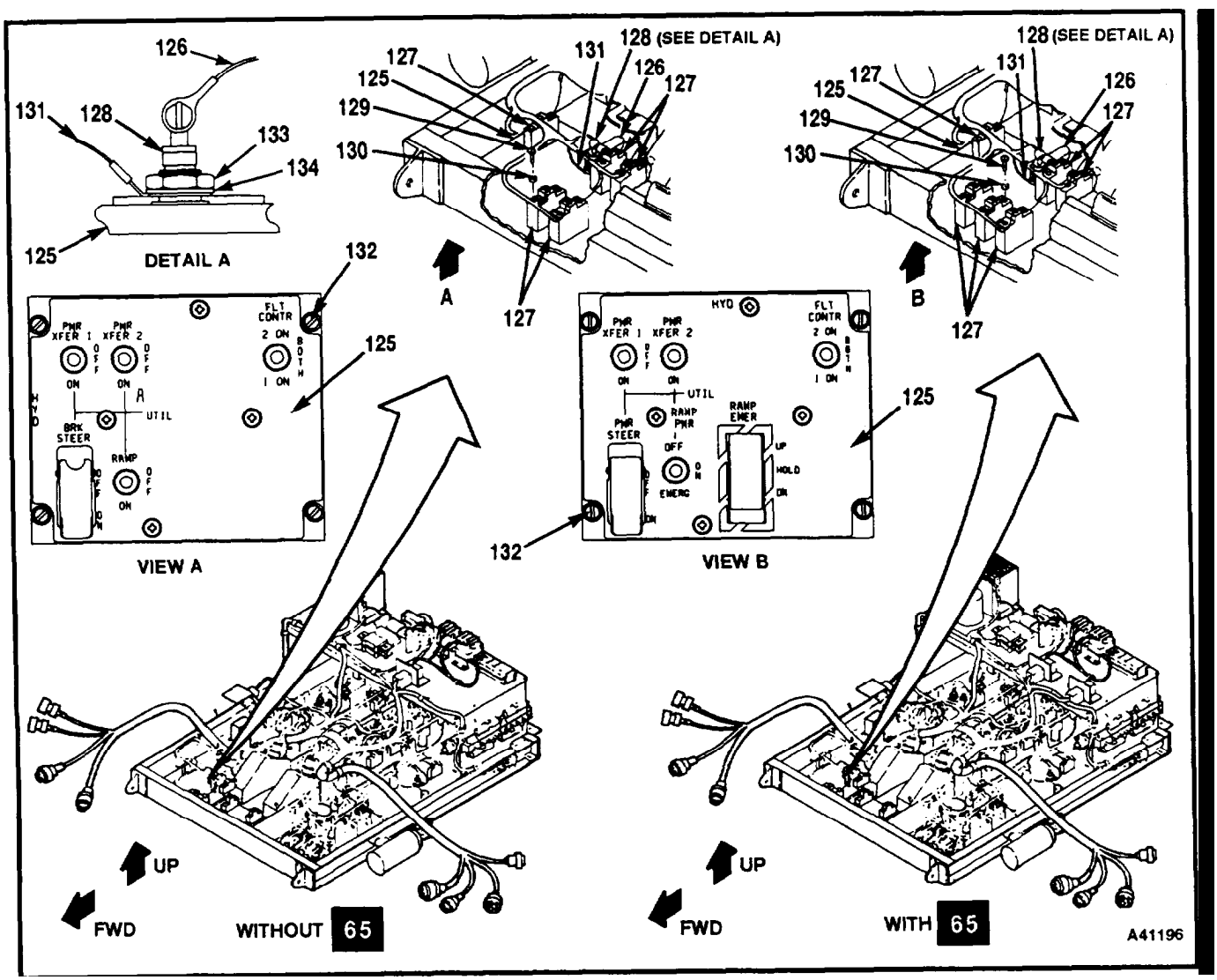
17. Remove HYD panel (125) as follows:

a. Tag and **remove 24 wires (126) from six switches (127) and one receptacle (128)** by removing screws (129) and washers (130). Tape wire ends.

b. Tag and **disconnect ground wire (131) from receptacle (128)** by removing nut (133) and lockwasher (134) (see Detail A). Tape wire ends.

c. Loosen four screws (132). **Remove panel (125).**

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-98.2 INSTALL OVERHEAD PANELS IN PANEL

INITIAL SETUP

Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

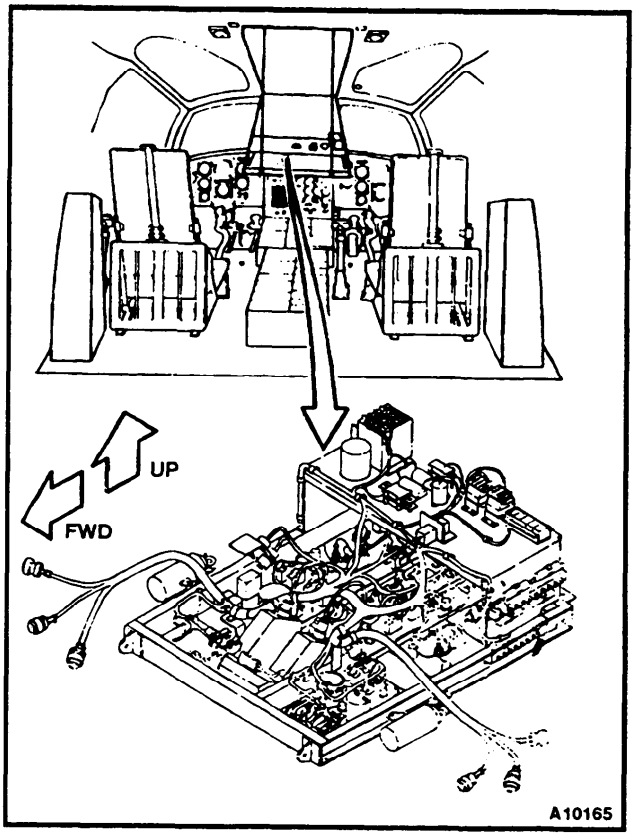
Materials:
Solder (E360)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 11-1520-240-23
Task 4-152

NOTE

On helicopters with 74, go to task 4-151 for installation of FADEC panel.



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9-98.2 INSTALL OVERHEAD PANELS IN PANEL (Continued) 9-98.2

CAUTION

Wires must not touch moving components; otherwise damage to wires or fire can result.

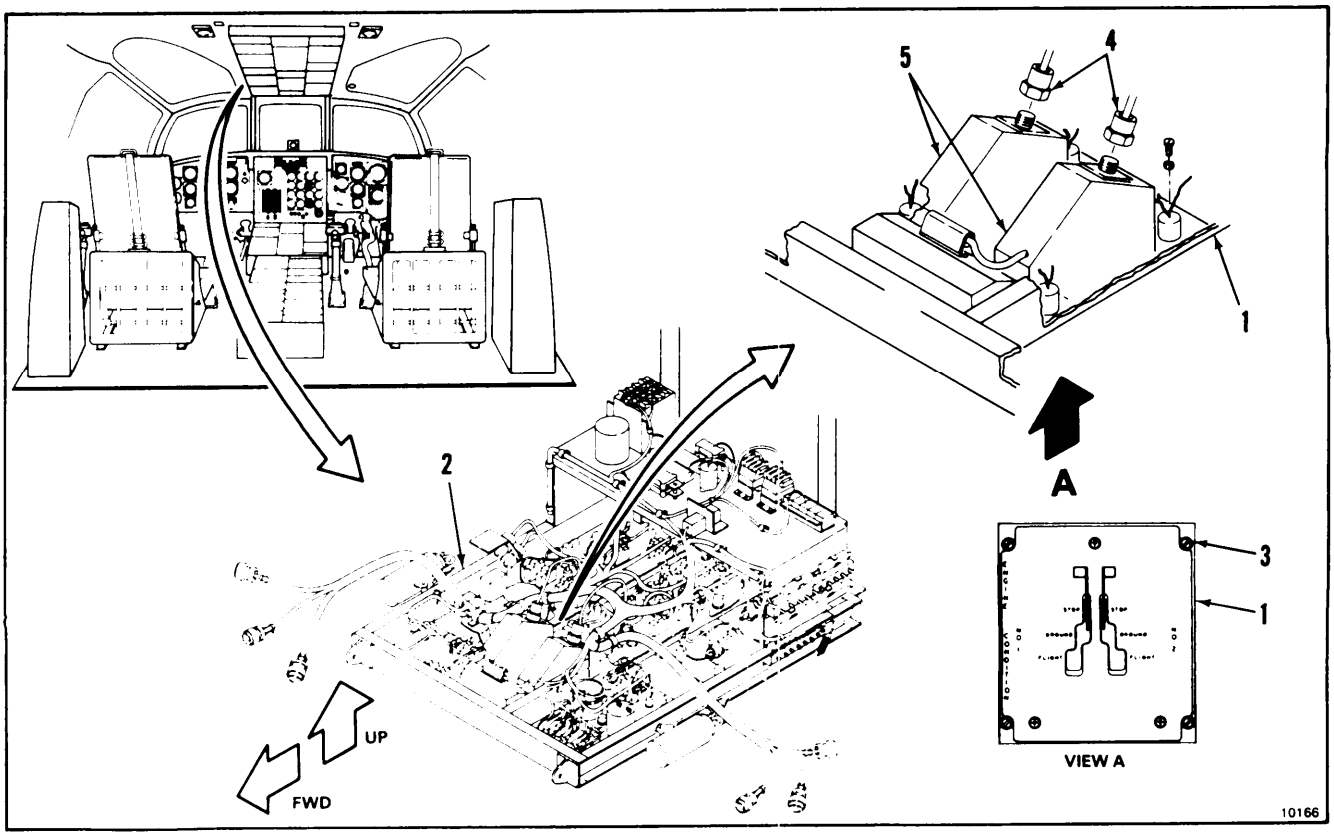
ENG COND Panel

1. **Install ENG COND panel (1)** as follows:
   a. **Position panel (1)** on panel (2). **Tighten four screws (3).**
   b. **Connect two electrical connectors (4)** to two engine controls (5). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 15.



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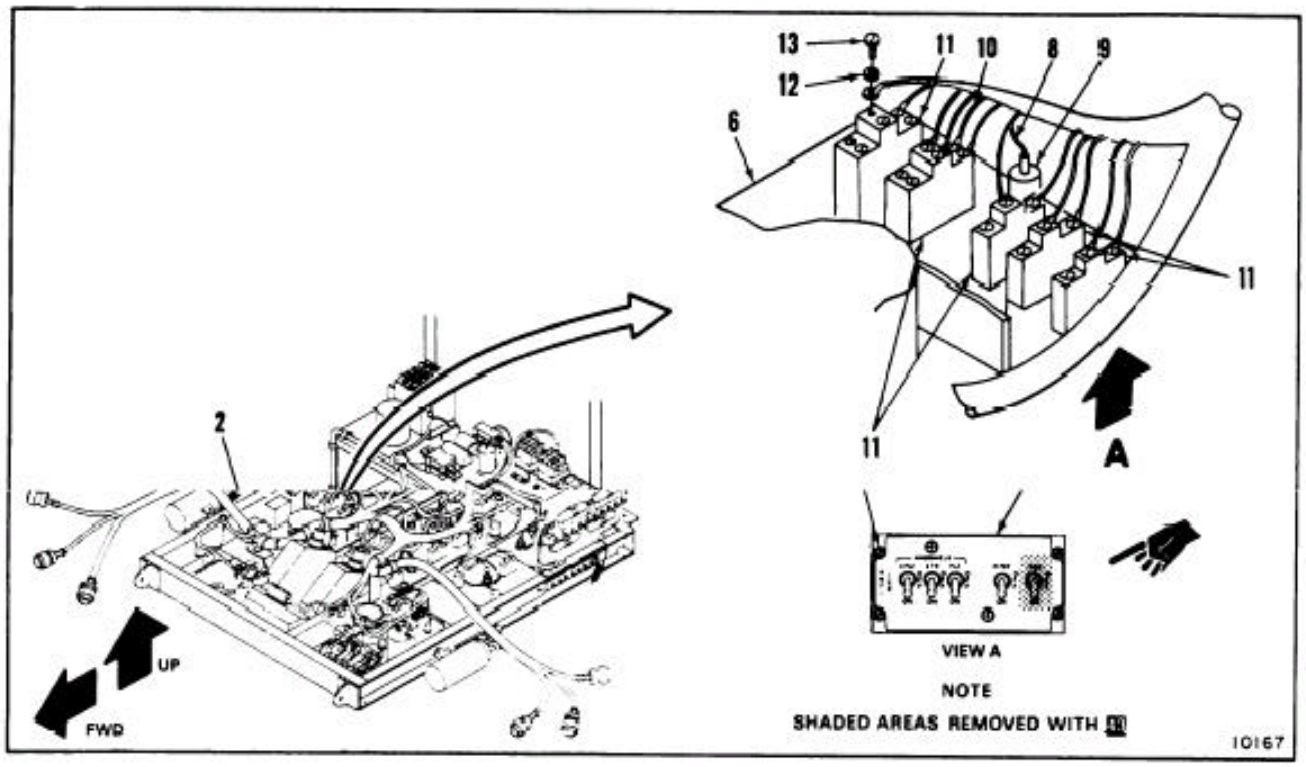
ANTI-ICE Panel

2. **Install ANTI-ICE panel (6)** as follows:
   a. **Position panel (6)** on panel (2). **Tighten four screws (7).**
   b. Remove tape. **Connect wire (8) to receptacle (9).** Remove tags.
   c. Remove tape. **Connect 15 wires (10) to five switches (11)** by installing washers (12) and screws (13). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 15.



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9-98.2 INSTALL OVERHEAD PANELS IN PANEL (Continued) 9-98.2

LTG Panel

3. **Install LTG panel (14)** as follows:

   a. **Position panel (14)** on panel (2). **Tighten four screws (15).**

   b. Remove tape. **Connect four wires (16) to transformer (17)** by installing washers (18) and nuts (19). Remove tags.

   c. Remove tape. **Connect one wire (20) to receptacle (21).** Remove tags.

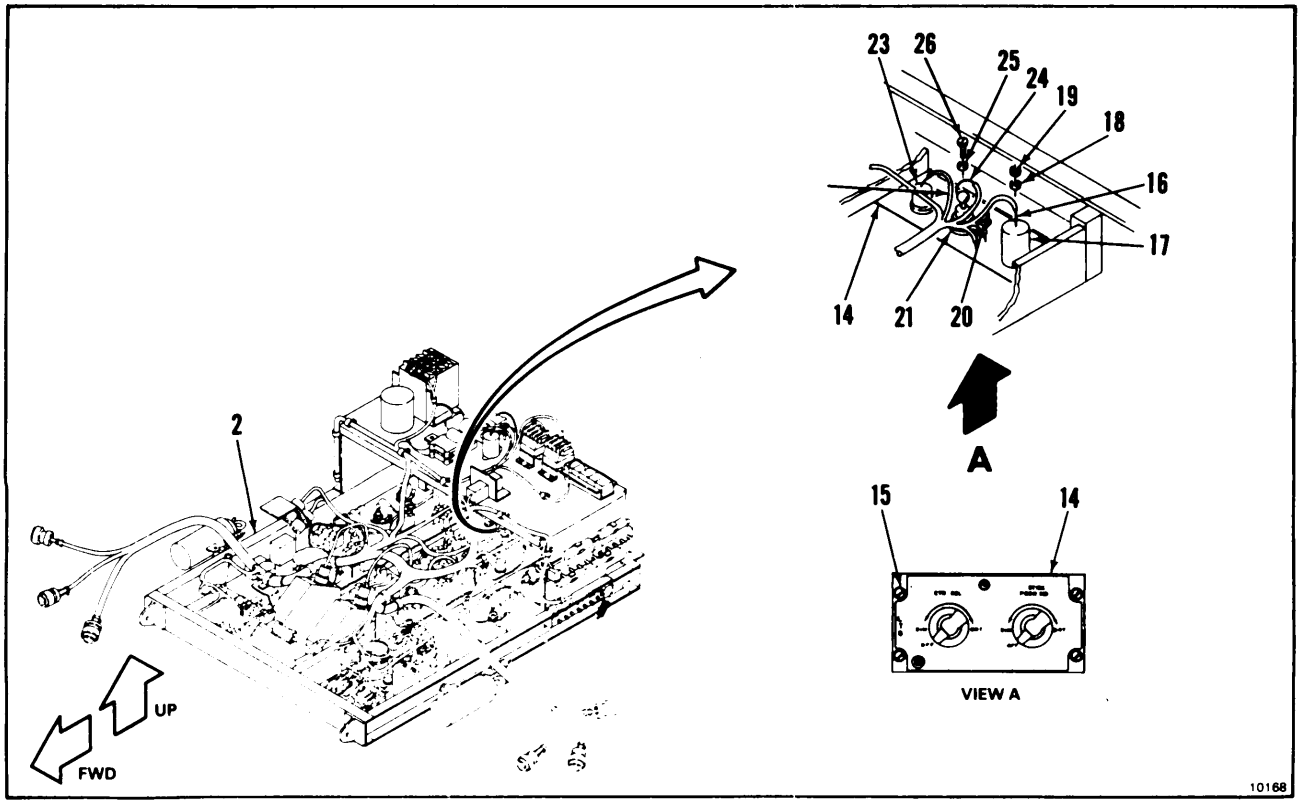
   d. Remove tape. **Connect and solder four wires (22) to potentiometer (23).** Use solder (E360). Remove tags.

   e. Remove tape and **install wire (24) to receptacle (21)** by installing washer (25) and screw (26). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



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9-98.2 INSTALL OVERHEAD PANELS IN PANEL (Continued) 9-98.2

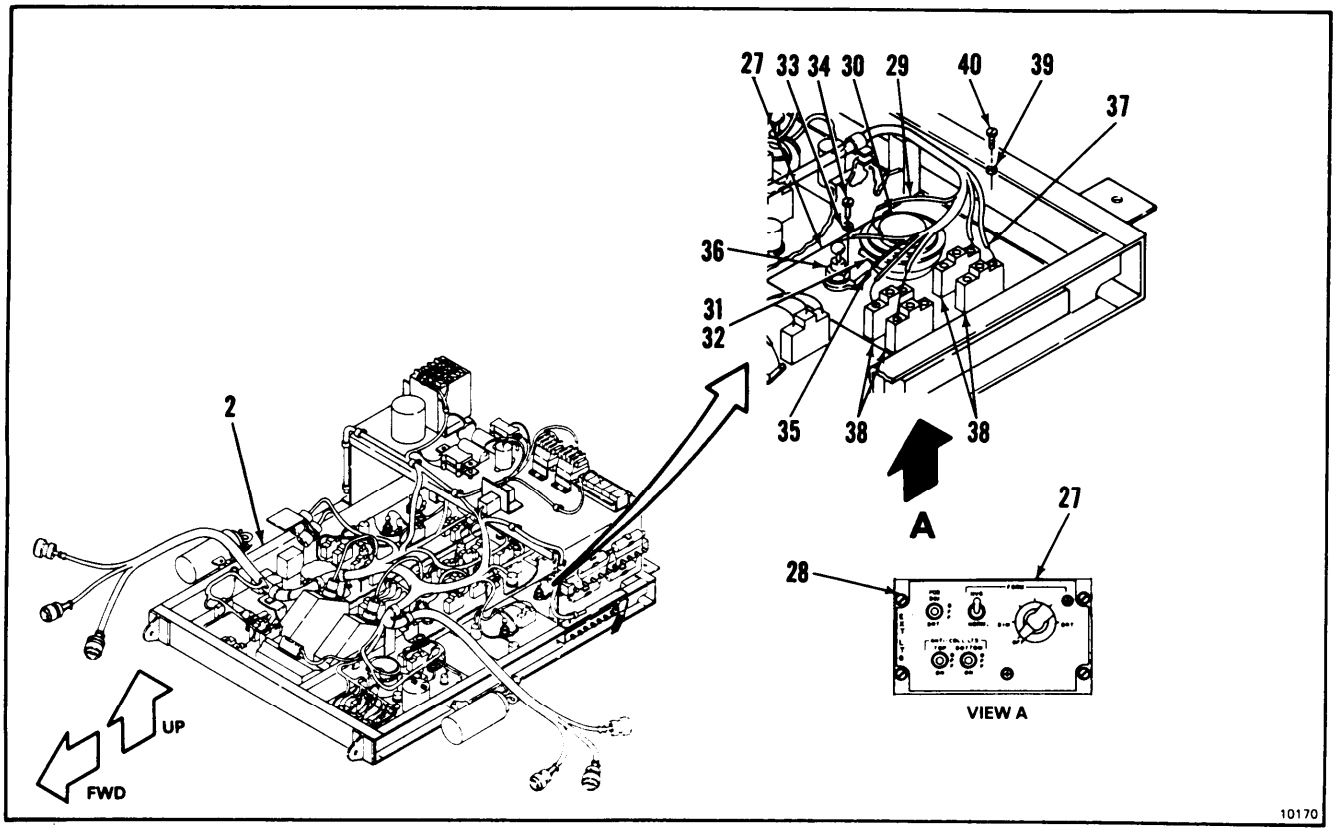
EXT LTG Panel

4. **Install EXT LTG panel (27)** as follows:
   a. **Position panel (27)** on panel (2). Tighten four screws (28).
   b. Remove tape. **Connect two wires (29) to switch (30).** Remove tags.
   c. Remove tape. **Connect six wires (31) to four resistors (32)** by installing washers (33) and screws (34). Remove tags.
   d. Remove tape. **Connect wire (35) to receptacle (37).** Remove tags.
   e. Remove tape. **Connect 18 wires (37) to four switches (38)** and one receptacle (36) by installing washers (39) and screws (40). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



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9-98.2 INSTALL OVERHEAD PANELS IN PANEL (Continued) 9-98.2

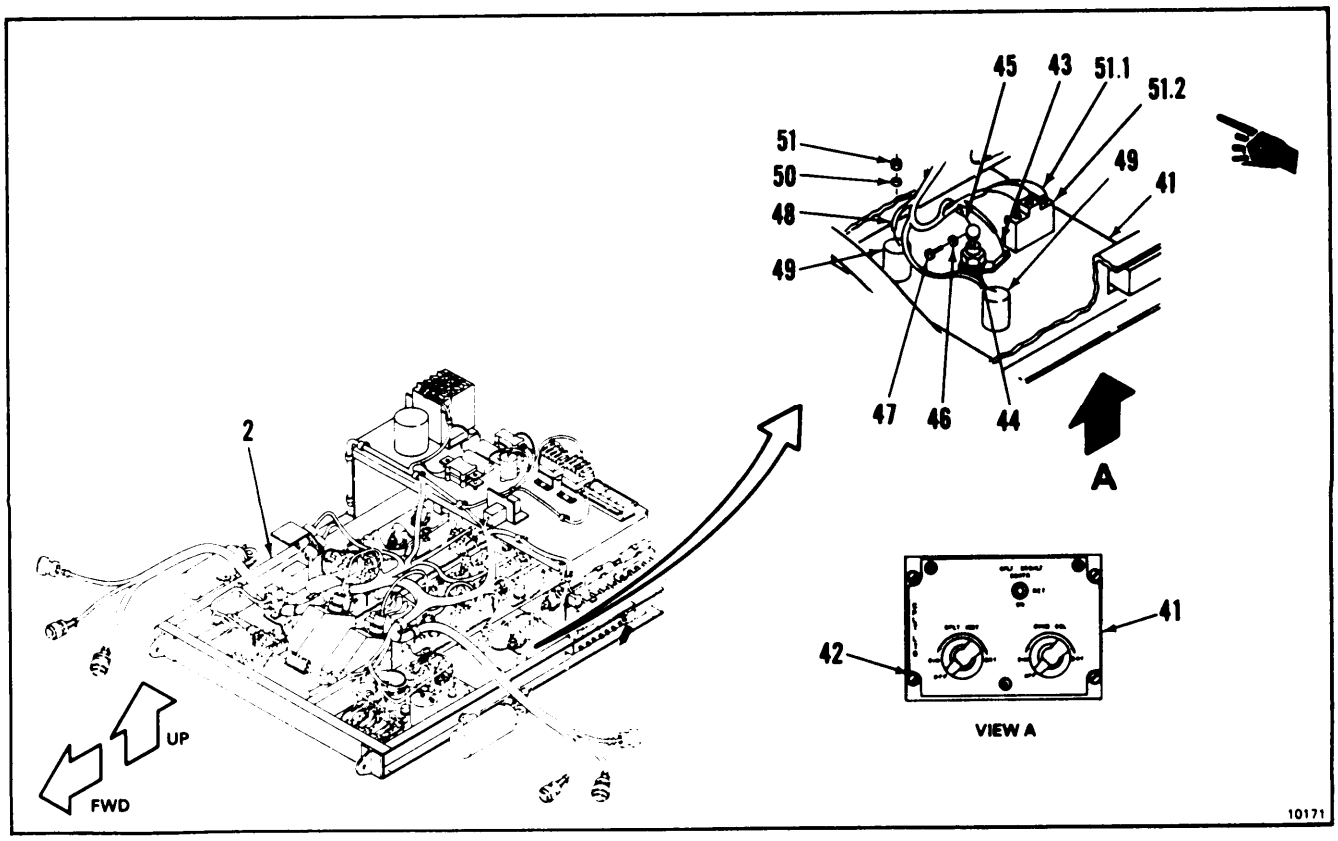
CPLT LTG Panel

5. **Remove CPLT LTG panel (41)** as follows:
   a. **Position panel (41)** on panel (2). Tighten four screws (42).
   b. Remove tape. **Connect wire (43) to receptacle (44).** Remove tags.
   c. Remove tape. **Connect wire (45) to receptacle (44)** by installing washer (46) and screw (47). Remove tape.
   d. Remove tape. **Connect seven wires (48) to two transformers (49)** by installing washers (50) and nuts (51). Remove tags.
   e. Connect three wires (51.1) to switch (51.2). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



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9-98.2 INSTALL OVERHEAD PANELS IN PANEL (Continued) 9-98.2

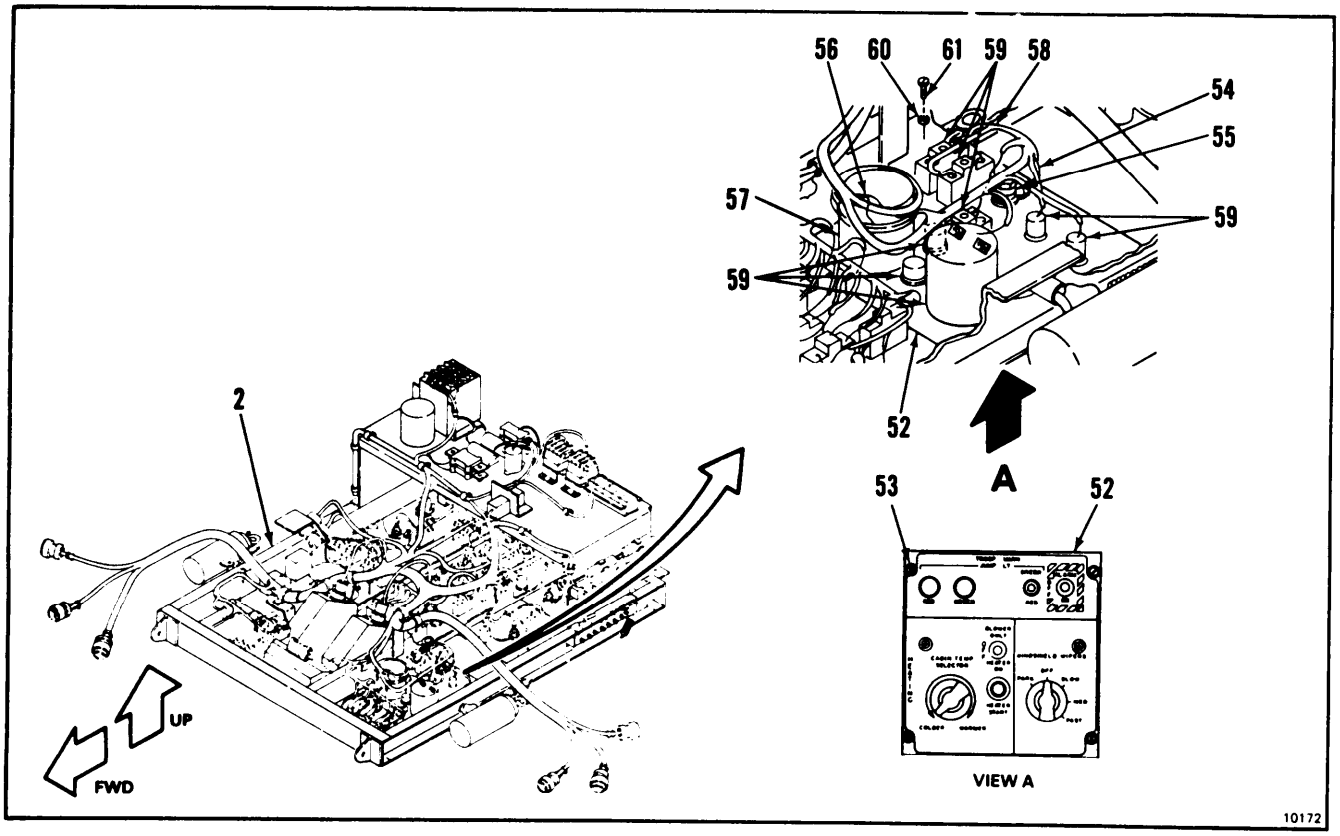
TROOP WARN/HTG Panel

6. **Install TROOP WARN/HTG panel (52)** as follows:
   a. **Position panel (52)** on panel (2). Tighten four screws (53).
   b. Remove tape. **Connect wire (54) to receptacle (55).** Remove tags.
   c. Remove tape. **Connect and solder six wires (56) to switch (57).** Use solder (E360). Remove tags.
   d. Remove tape. **Connect 26 wires (58) to eight switches (59) and one receptacle (55)** by installing washers (60) and screws (61). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



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9-98.2 INSTALL OVERHEAD PANELS IN PANEL (Continued) 9-98.2

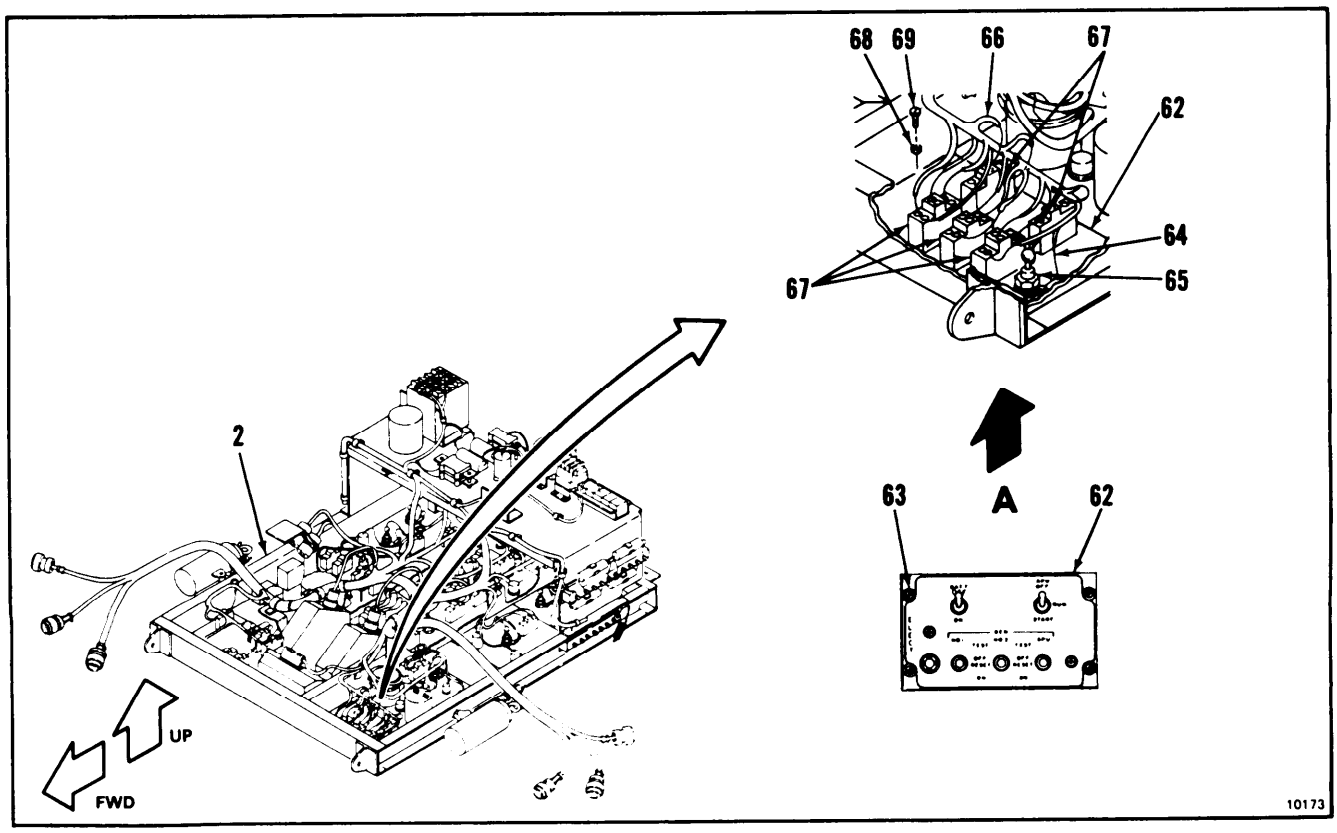
ELECT Panel

7. **Install ELECT panel (62)** as follows:
   a. **Position panel (62)** on panel (2). Tighten four screws (63).
   b. Remove tape. **Connect wire (64) to receptacle (65).** Remove tags.
   c. Remove tape. **Connect 23 wires (66) to five switches (67) and one receptacle (65)** by installing washers (68) and screws (69). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



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9-98.2 INSTALL OVERHEAD PANELS IN PANEL (Continued) 9-98.2

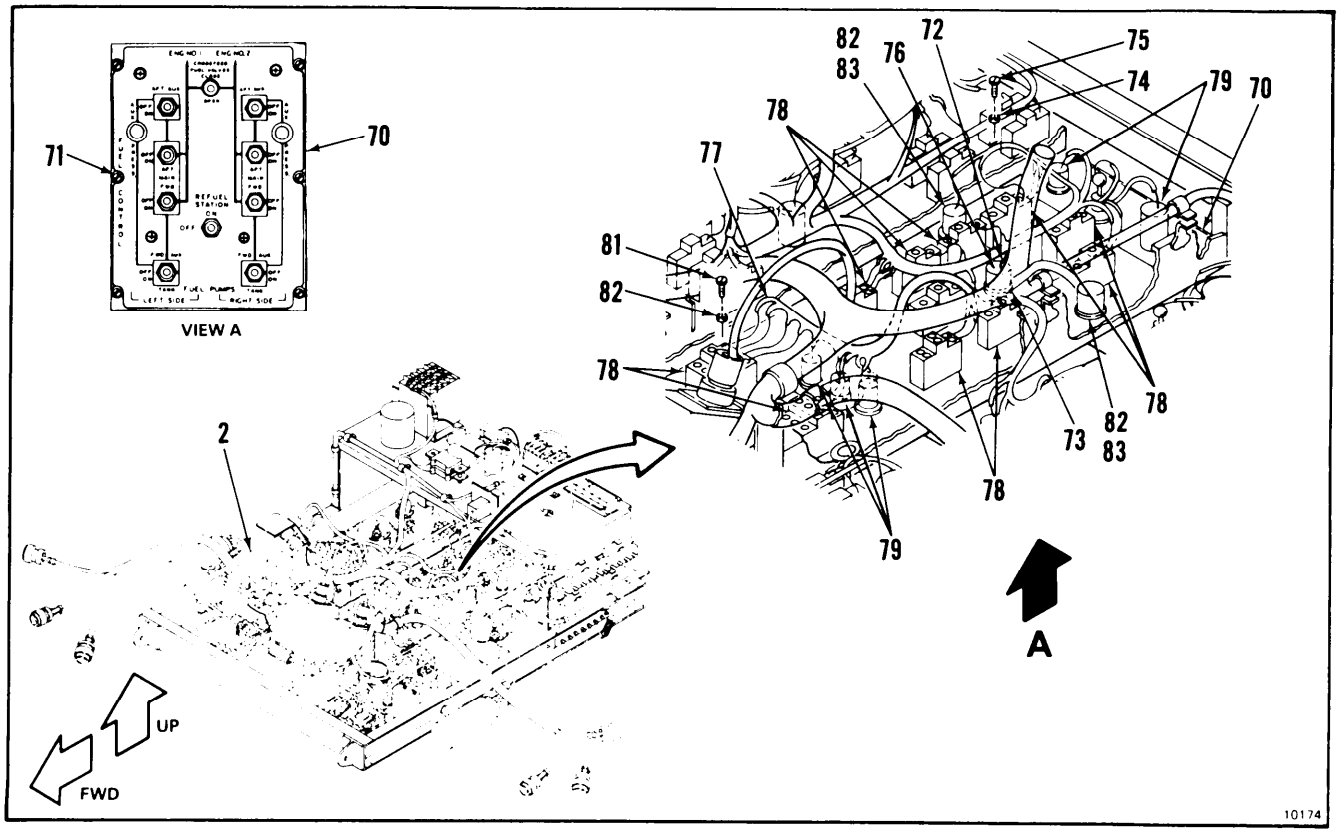
FUEL CONTR Panel

8. **Install FUEL CONTR panel (70)** as follows:
   a. **Position panel (70)** on panel (2). Tighten six screws (71).
   b. Remove tape. **Connect wire (72) to receptacle (73)** by installing washer (74) and screw (75). Remove tag.
   c. Remove tape. **Connect wire (76) to receptacle (73).** Remove tag.
   d. Remove tape. **Connect 40 wires (77) to 10 switches (78) and five receptacles (79)** by installing washers (80) and screws (81). Remove tags.
   e. Remove tape. **Connect and solder six wires (82) from two receptacles (83).** Use solder (E360). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



GO TO NEXT PAGE

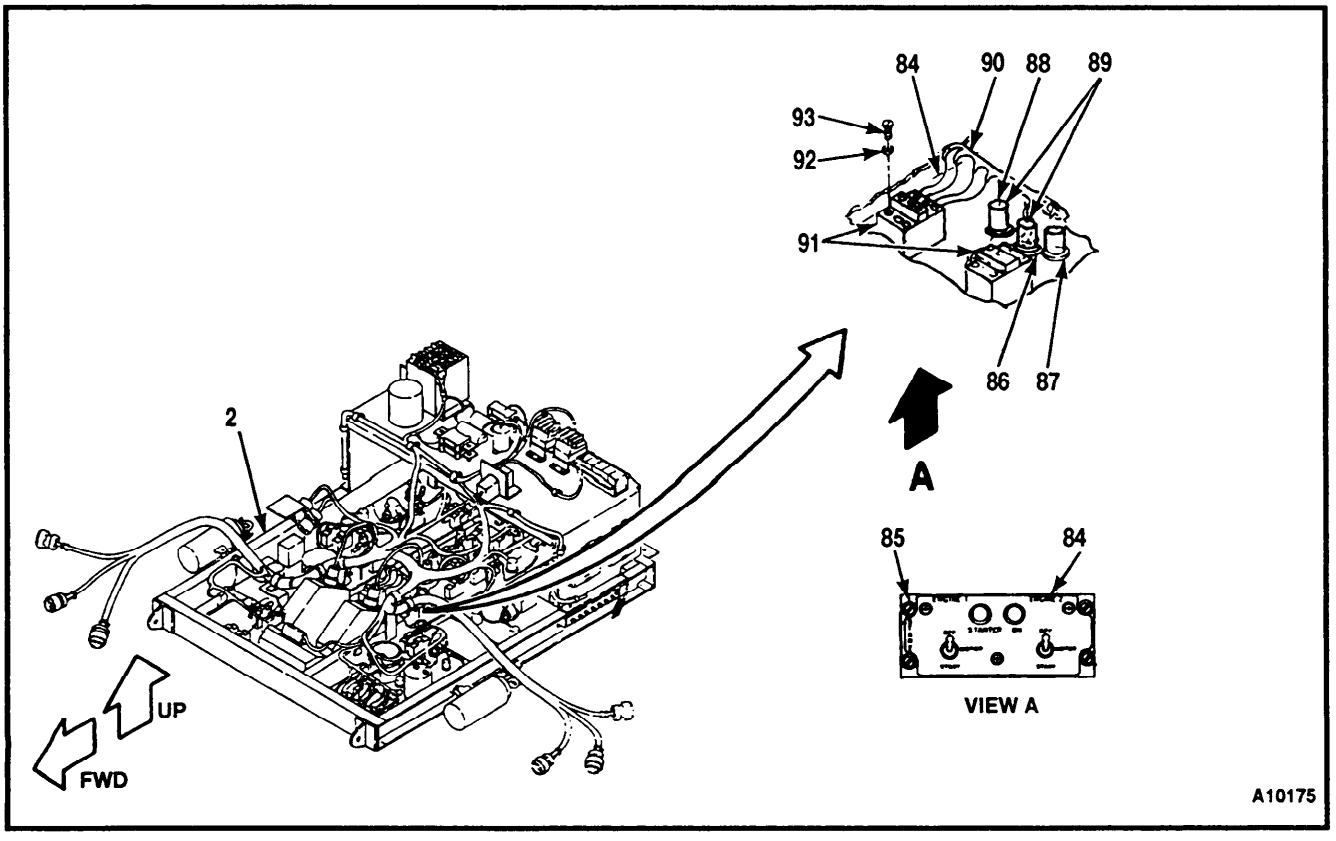
START Panel
Without 74

9. **Install START panel (84)** as follows:
   a. **Position panel (84)** on panel (2). Tighten four screws (85).
   b. Remove tape. **Connect wire (86) to receptacle (87).** Remove tag.
   c. Remove tape. **Connect and solder six wires (88) to two receptacles (89).** Use solder (E360). Remove tags.
   d. Remove tape. **Connect 23 wires (90) to two switches (91)** and one receptacle (87) by installing washers (92) and screws (93). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



EMERGENCY POWER Panel

Without

10. **Install EMERGENCY POWER panel (94)** as follows:

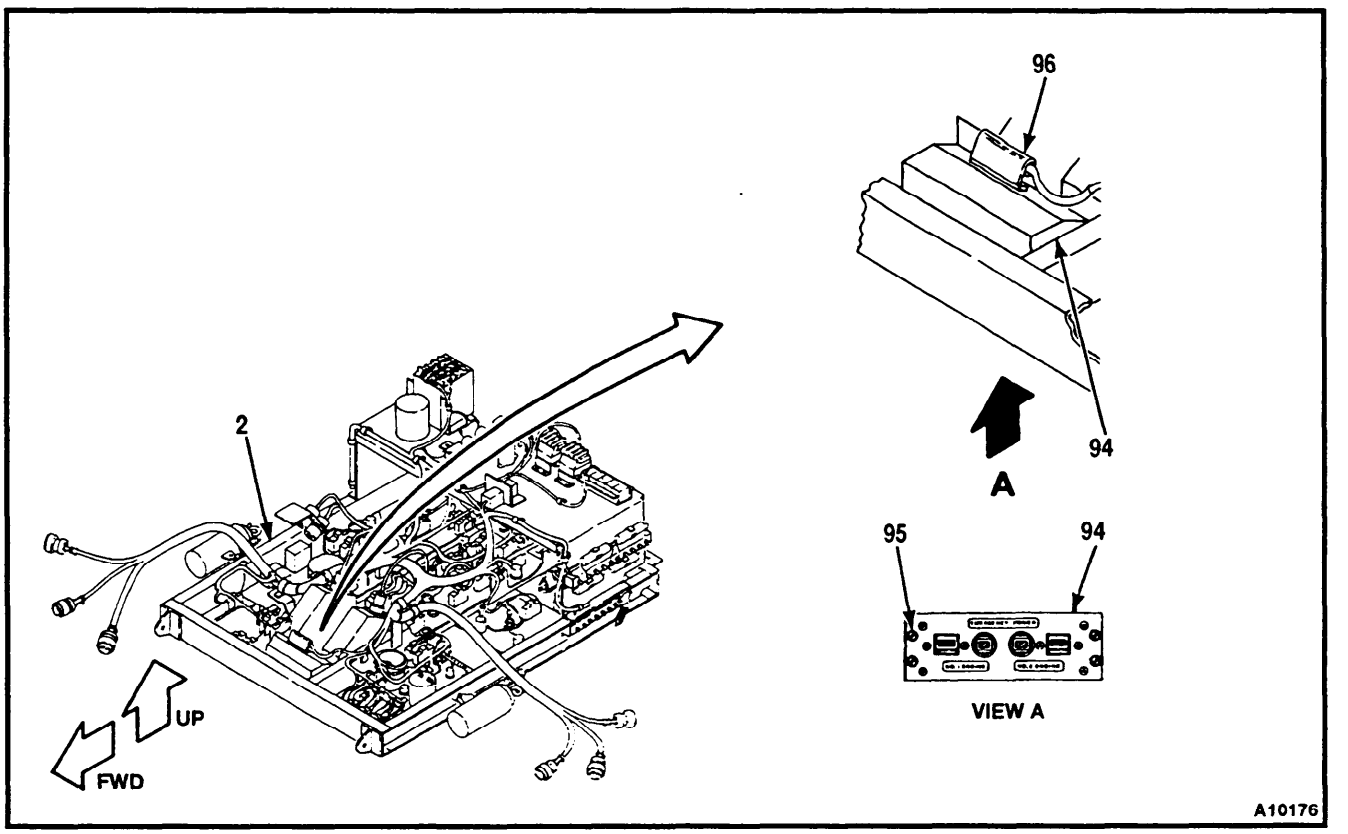
a. **Position panel (94)** on panel (2). Tighten four screws (95).

b. **Connect plug (96)** to panel (94).

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



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9-98.2 INSTALL OVERHEAD PANELS IN PANEL (Continued) 9-98.2

INTR LTG Panel

11. **Install INTR LTG panel (97)** as follows:

    a. **Position panel (97)** on panel (2). Tighten four screws (98).

    b. Remove tape. **Connect and solder five wires (99) to potentiometer (100).** Remove tags.

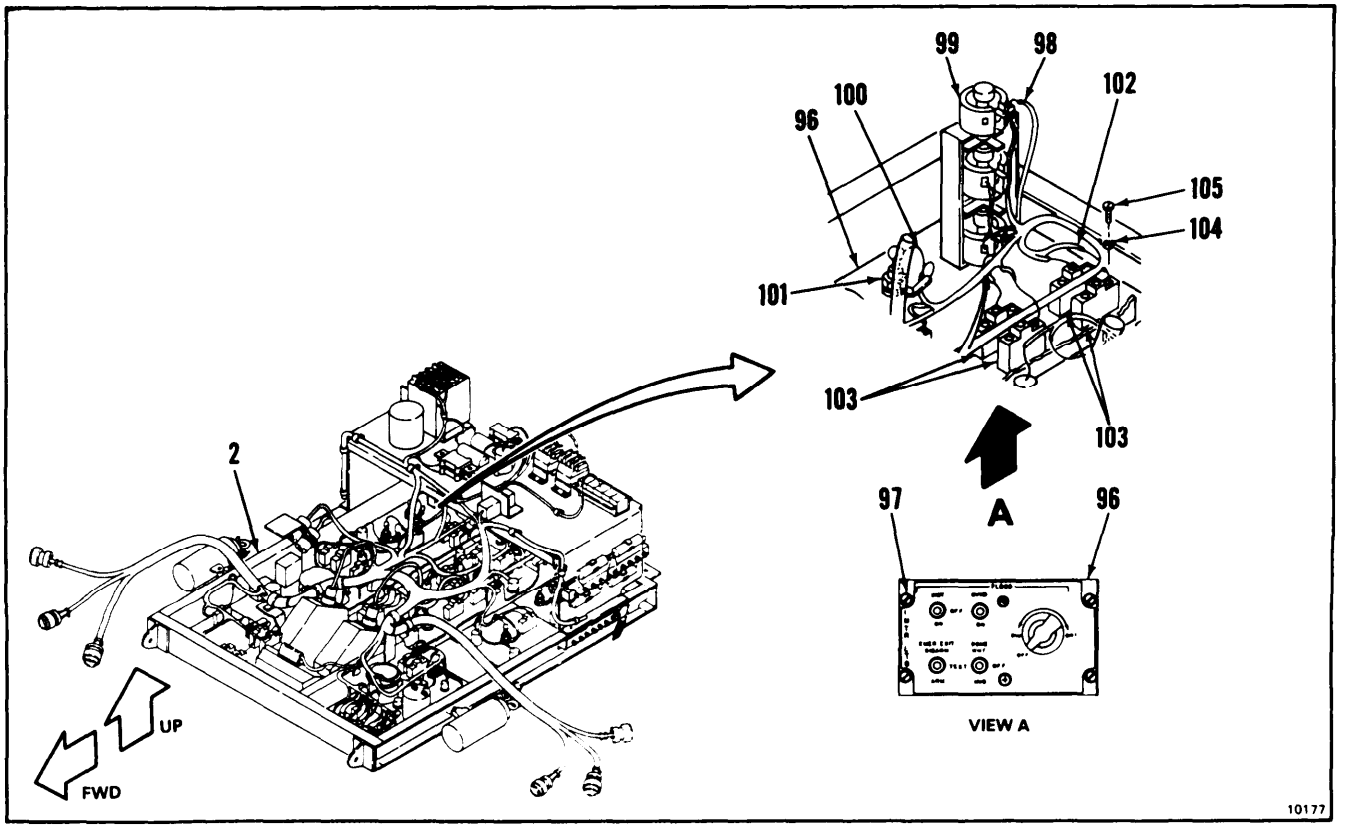
    c. Remove tape. **Connect wire (101) to receptacle (102).** Remove tag.

    d. Remove tape. **Connect 17 wires (103) to four switches (104) and one receptacle (102)** by installing washers (105) and screws (106). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



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9-98.2 INSTALL OVERHEAD PANELS IN PANEL (Continued) 9-98.2

PLT LTG Panel

12. **Install PLT LTG panel (107)** as follows:

    a. **Position panel (107)** on panel (2). Tighten four screws (108).

    b. Remove tape. **Connect wire (109) to each of two receptacles (110).** Remove tag.

    c. Remove tape. **Connect wire (111) to receptacle (110)** by installing washer (1 12) and screw (1 13). Remove tag.

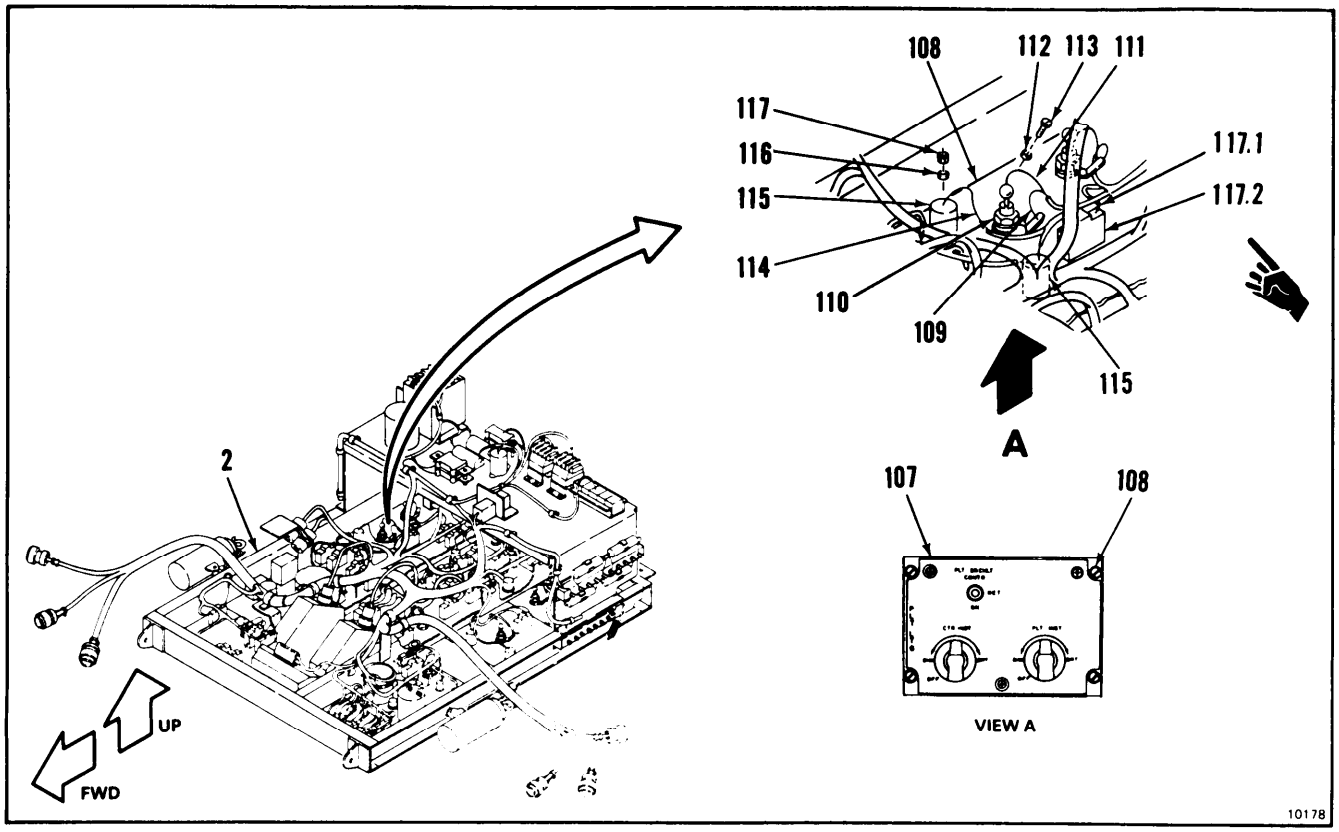
    d. Remove tape. **Connect seven wires (114) to two transformers (115)** by installing washers (116) and nuts (117). Remove tags.

    e. Connect three wires (117.1) to switch (117.2). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



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HOIST/CARGO HOOK Panel

13. **Install HOIST/CARGO HOOK panel (118)** as follows:

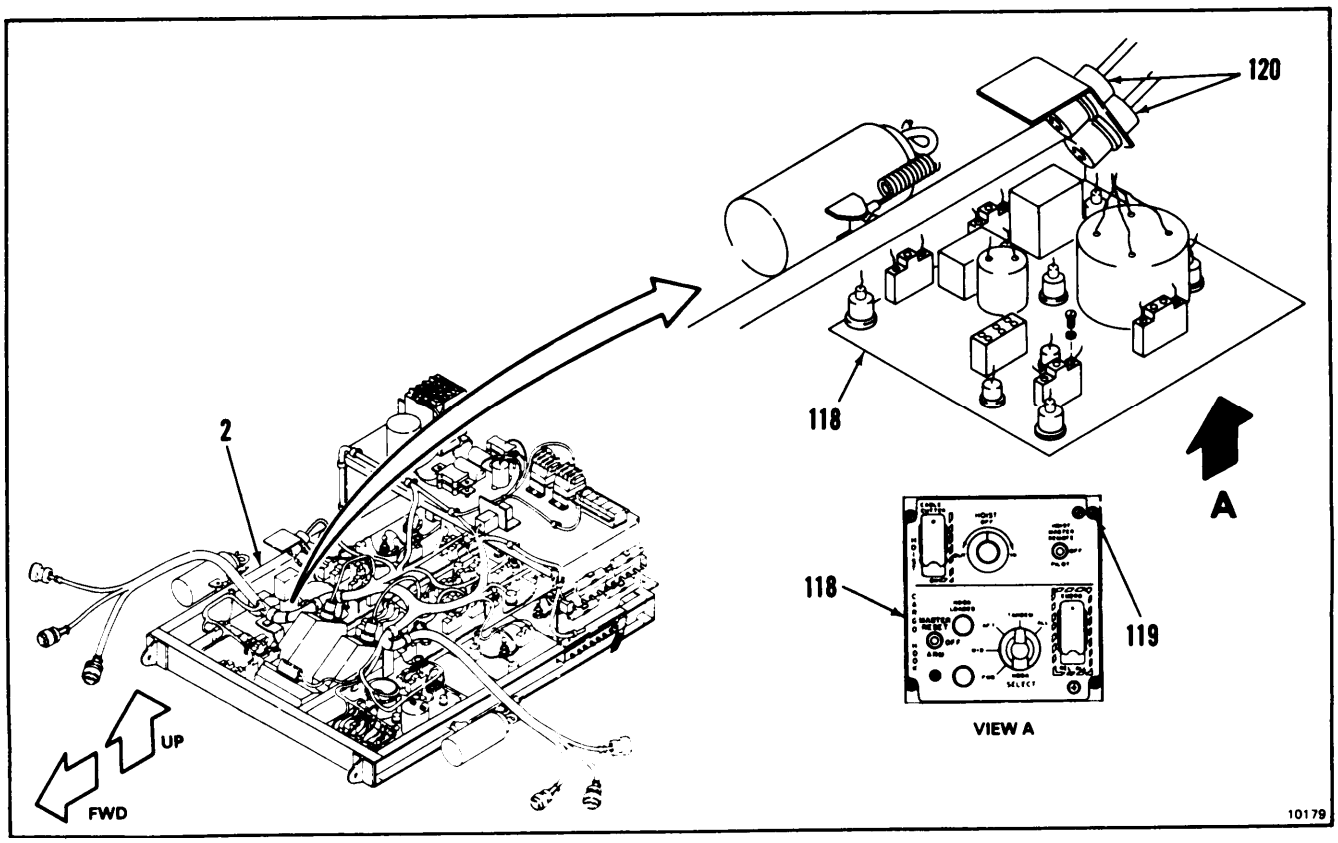
    a. **Position panel (118)** on panel (2). Tighten four screws (119).

    b. **Connect two plugs (120)** to panel (118). Remove tags.

INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



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HYDRAULIC Panel (Without 65)

14. Install HYDRAULIC panel (121) as follows:
    a. **Position panel (121)** on panel (2). Tighten four screws (122).
    b. Remove tape. **Install ground wire (123) on receptacle (124) with nut (124.1) and lockwasher (124.2).** Make sure wire terminal is against metal panel. Remove tag.
    c. Remove tape. **Connect 17 wires (125) to five switches (126) and one receptacle (124)** by installing washers (127) and screws (128). Remove tags.

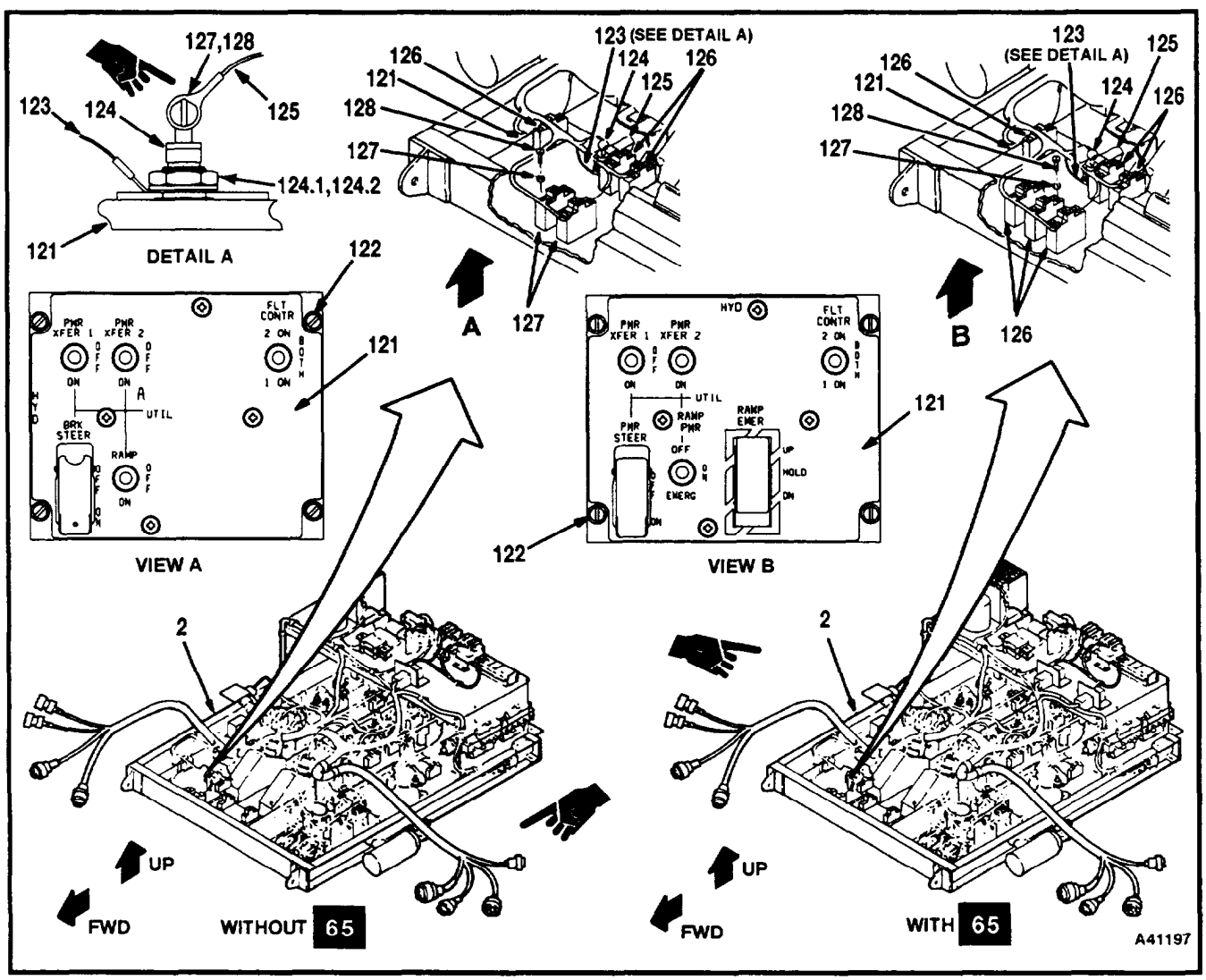
HYDRAULIC Panel (With 65)

14.1. Install HYDRAULIC panel (121) as follows:
    a. **Position panel (121)** on panel (2). Tighten four screws (122).
    b. Remove tape. **Install ground wire (123) on receptacle (124) with nut (124.1) and lockwasher (124.2).** Make sure wire terminal is against metal panel. Remove tag.
    c. Remove tape. **Connect 24 wires (125) to six switches (126) and one receptacle (124)** by installing washers (127) and screws (128). Remove tags.

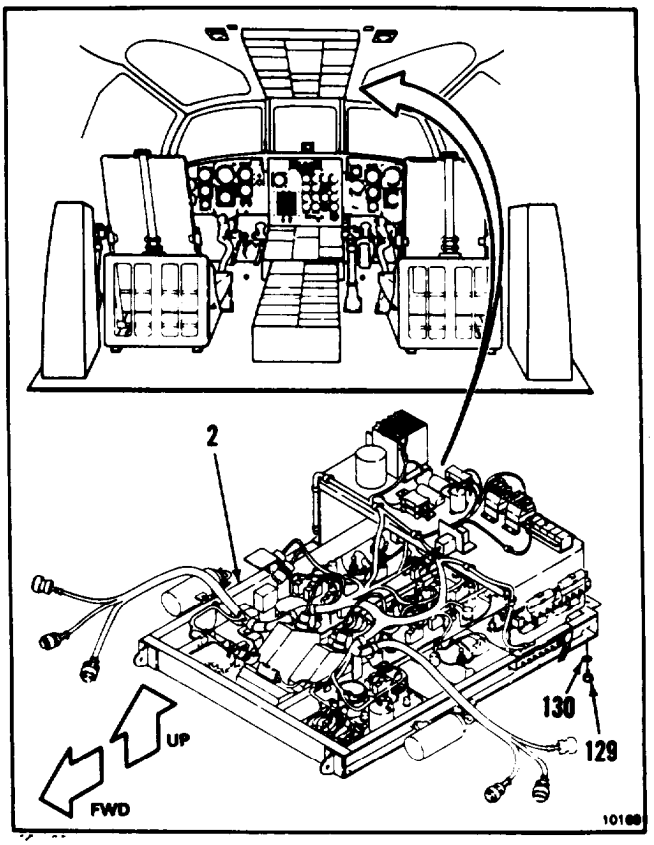
INSPECT

NOTE

If no other panels are to be replaced, go to step 15.



15. Raise panel (2). **Install two bolts (129)** and washers (130).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

INITIAL SETUP

Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun
Heat Gun

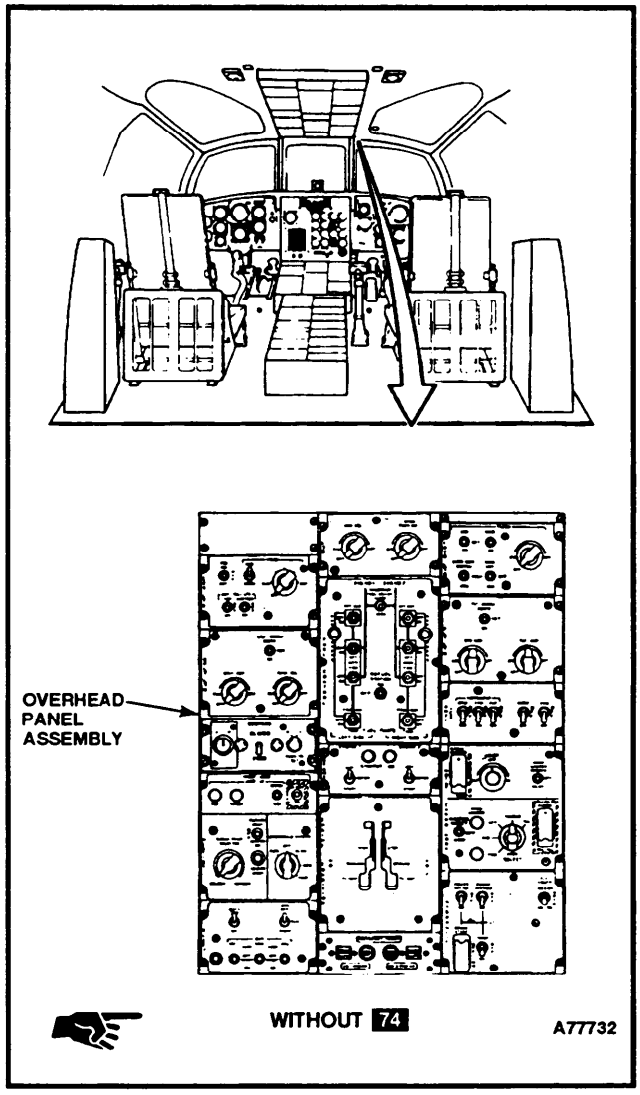
Materials:
Tape (E395)
Tags (E264)
Solder (E360)
Tubing (E431)

Personnel Required:
Aircraft Electrician

References:
Task 9-98.1
Task 9-98.2
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

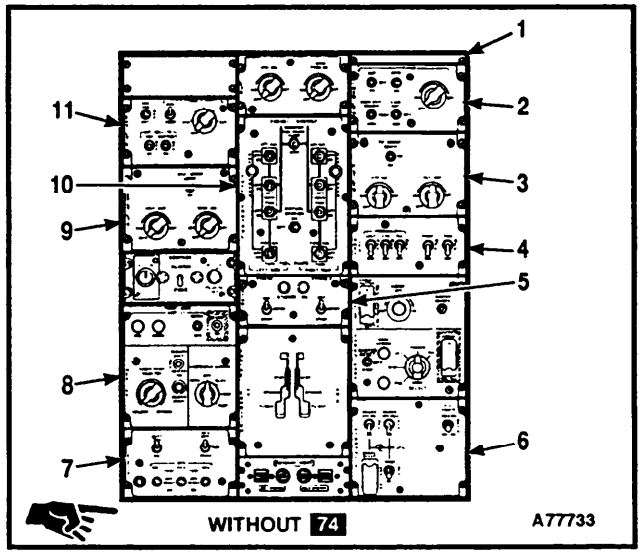
NOTE
FADEC panel, helicopters with 74 is repaired the same as panels shown.



1. On helicopters without 74, repair the following panels on overhead panel (1) by replacing individual defective components.

NOTE
Panels depicted are typical for use in identifying position of panels on overhead panel. HYD panel shown is on aircraft with 65. Refer to task 9-98.1 or 9-98.2 for HYD panel on aircraft without 65.

INTR LTG (2)	ELECT (7)
PLT LTG (3)	TROOP WARN/HEATING (8)
ANTI-ICE (4)	CPLT LTG (9)
ENGINE START (5)	FUEL CONTROL (10)
HYD (6)	EXT LTG (11)



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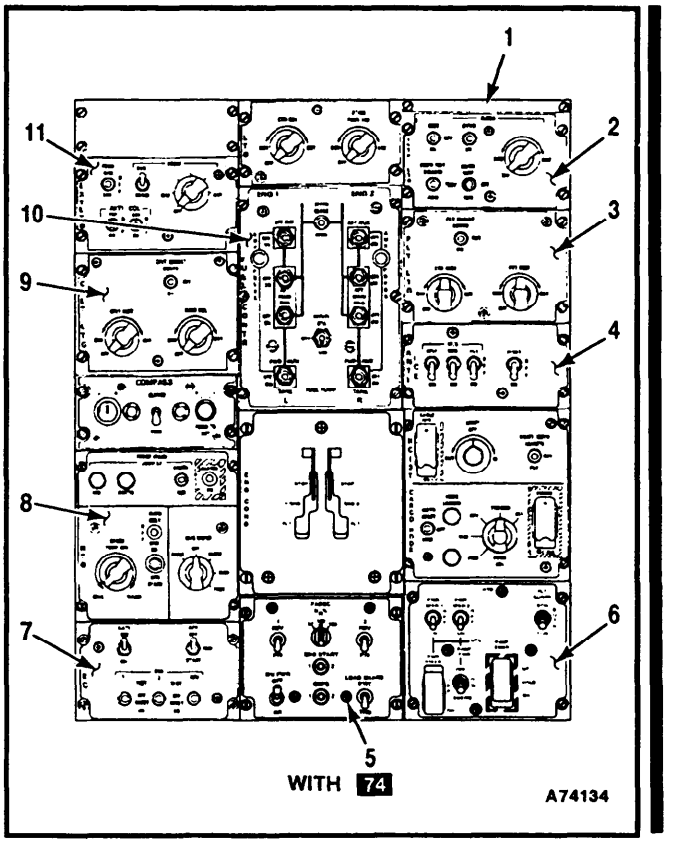
1.1. On helicopters with 74, repair the following panels on overhead panel (1) by replacing individual defective components:

INTR LTG (2)	ELECT (7)
PLT LTG (3)	TROOP WARN/HTG (8)
ANTI-ICE (4)	CPLT LTG (9)
FADEC (5)	FUEL CONTR (10)
HYD (6)	EXT LTG (11)



LIGHT PLATE

NOTE

The light plate on all panels is replaced in the same manner. TROOP WARN/ HEATING panel shown here.

2. **Remove lightplate (12)** as follows:

   a. If installed, **remove knobs (13)** by loosening setscrew (14). **Unscrew lamps (15).**

NOTE

White cross on face of lightplate indicates location of electrical plug.

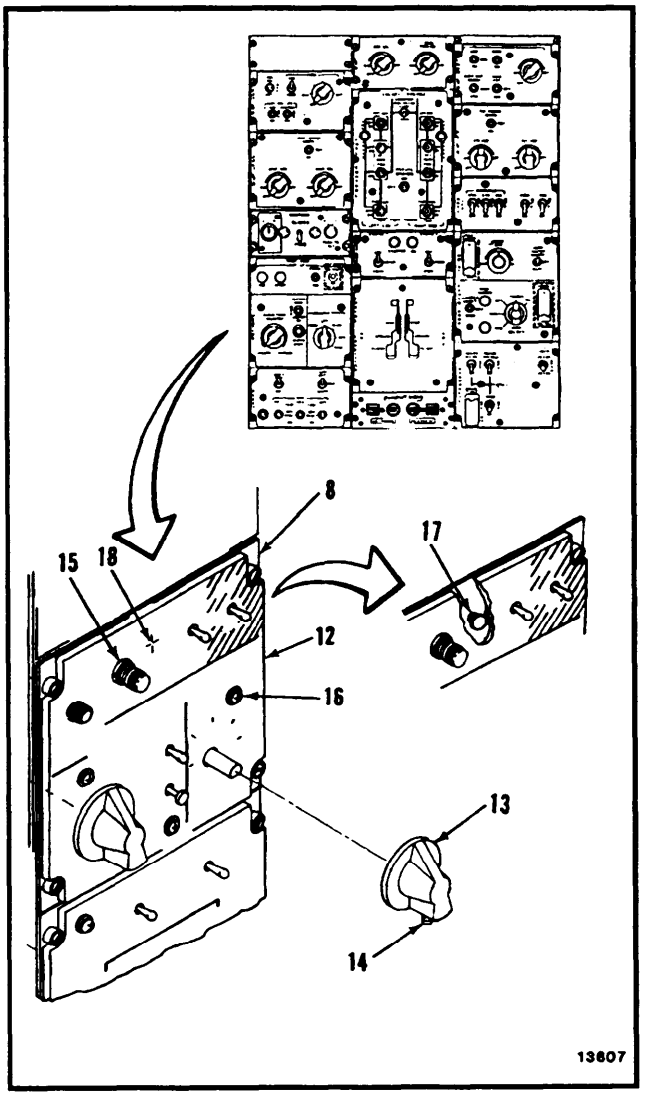
   b. Loosen captive screws (16). Carefully **pull lightplate (12) away from panel (8)** to separate lightplate from connector (17) behind white cross (18).

3. **Install lightplate (12)** as follows:

   a. **Align cross (18) on lightplate with connector (17). Push plug** behind cross into connector. **Press on cross** to ensure plug is seated.

   b. **Tighten captive screws (16).**

   c. If applicable, **install knobs (13).** Tighten knob setscrew (14). **Install lamps (15).**



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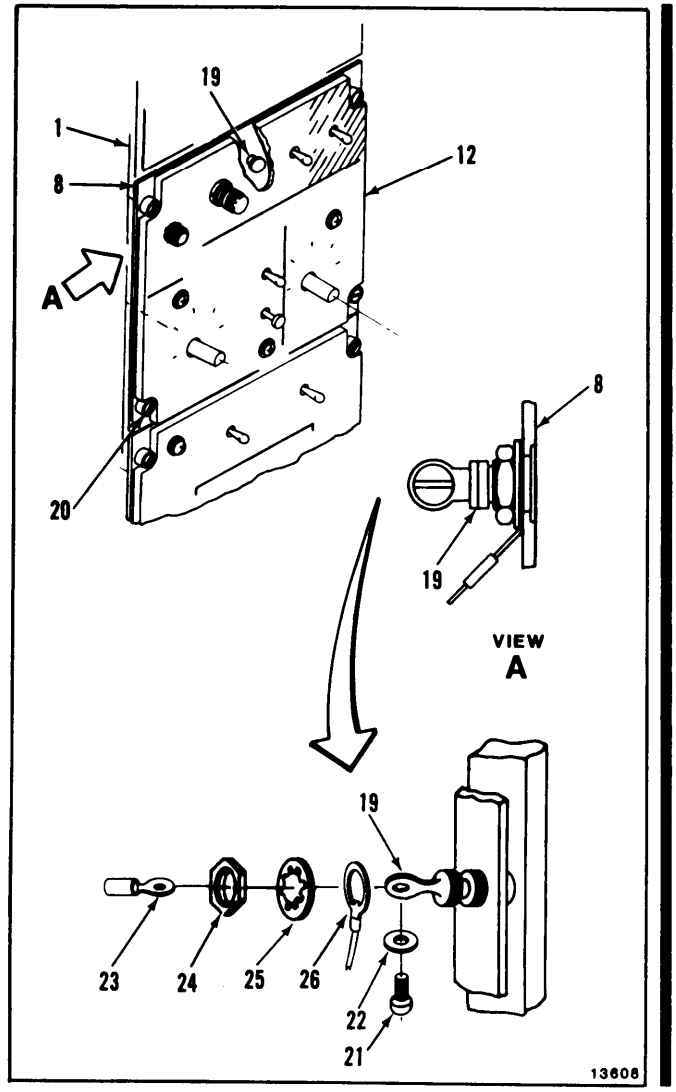
RECEPTACLE

NOTE

The receptacle in all panels is replaced in the same manner. TROOP WARN/HEATING panel shown here.

4. **Remove receptacle (19)** as follows:
   a. **Remove lightplate (12).** (Refer to step 2.)
   b. Turn fasteners (20) 1/4 turn counterclockwise. **Pull panel (8) away from overhead panel** (1) far enough to gain access to receptacle (19).
   c. Remove screw (21) and washer (22). **Remove wire (23).** Tag wire with tag (E264).
   d. **Remove** nut (24), lockwasher (25), and **ground lug (26).**
   e. **Remove receptacle (19)** from panel (8).
5. **Install receptacle (19)** as follows:
   a. **Insert a serviceable receptacle (19) in panel (8).**
   b. Inspect wire on ground lug (26). **Install lug, lockwasher (25), and nut (24)** on receptacle (19).
   c. Inspect wire (23). **Install wire,** washer (22), and screw (21). Remove tag.
   d. **Position panel (8) on overhead panel (1).** Turn fasteners (20) 1/4 turn clockwise to **secure panel.**
   e. **Install lightplate (12).** (Refer to step 3.)



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TOGGLE SWITCHES

NOTE

Toggle switches on all panels are replaced in the same manner. TROOP WARN/HEATING panel shown here.

6. **Remove switch (27)** as follows:

   a. **Remove lightplate (12).** (Refer to step 2.)

   b. Turn fasteners (20) 1/4 turn counterclockwise. **Pull panel (8) away from overhead panel (1)** far enough to gain access to switch (27).

   c. Tag wires (28). Use tags (E264). **Remove screws (29), washers (30), and wires.**

   d. **Remove nut (31), lockwasher (32), and locking ring (33)** from front of panel (8). **Remove switch (27)** from back of panel (8).

7. **Install switch (27)** as follows:

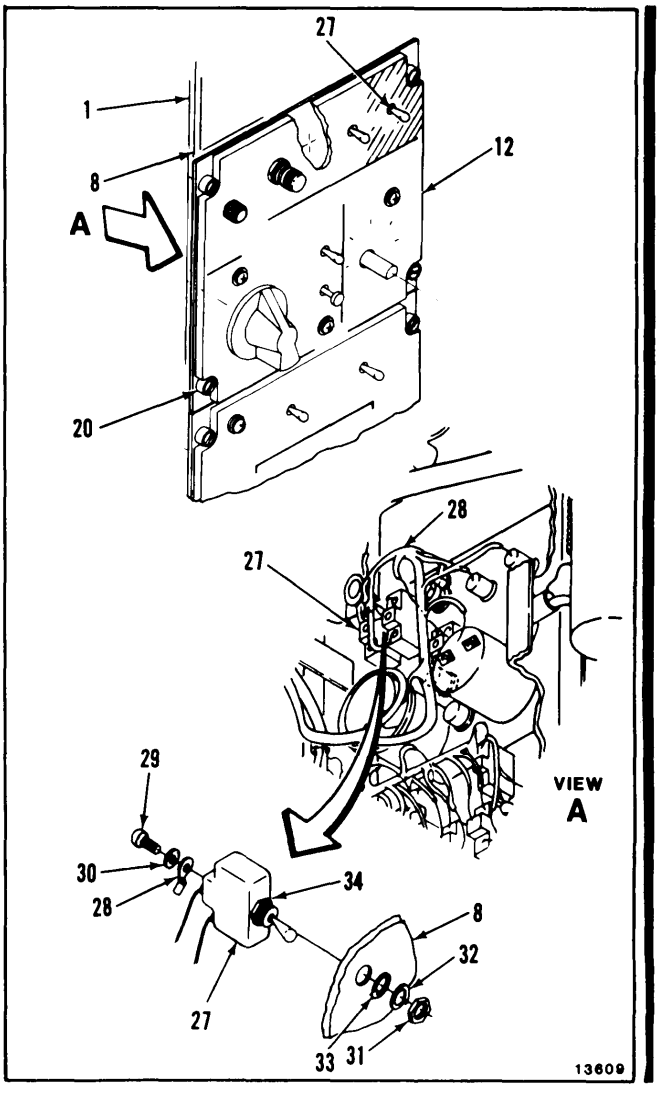
   a. Remove top nut (31), lockwasher (32), and locking ring (33) from serviceable switch (27). **Adjust locknut (34)** to same position as on removed switch.

   b. **Insert switch (27) through back of panel (8). Install locking ring (33), lockwasher (32), and nut (31)** from front of panel.

   c. Inspect wires (28). **Install wires, washers (30), and screws (29)** on switch (27). Remove tags.

   d. **Position panel (8)** on overhead panel (1). Turn fasteners (20) 1/4 turn clockwise to **secure panel.**

   e. **Install lightplate (12).** (Refer to step 3.)



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9-98.3 REPAIR OVERHEAD PANELS (Continued) 9-98.3

PRESS-TO-TEST LIGHT ASSEMBLIES

NOTE

Press-to-test light assemblies are on the FUEL CONTROL, ENGINE START, and TROOP WARN/HEATING panels. All are replaced in the same manner. TROOP WARN/HEATING panel shown here.

8. **Remove light assembly (35)** as follows:

   a. **Remove lightplate (12).** (Refer to step 2.)

   b. **Remove cap (36) and bulb (37).**

   c. Turn fasteners (20) 1/4 turn counter-clockwise. **Pull panel (8) away from overhead panel (1),** far enough to gain access to assembly (35).

   d. Tag wires (38). Use tags (E264). **Cut wires** close to soldered joints.

   e. **Remove nut (39)** at front of panel (8). **Remove assembly (35).**

9. **Install light assembly (35)** as follows:

   a. **Remove cap (36), bulb (37), and nut (39)** from serviceable assembly (35). **Adjust locknut (40)** to same position as on removed assembly.

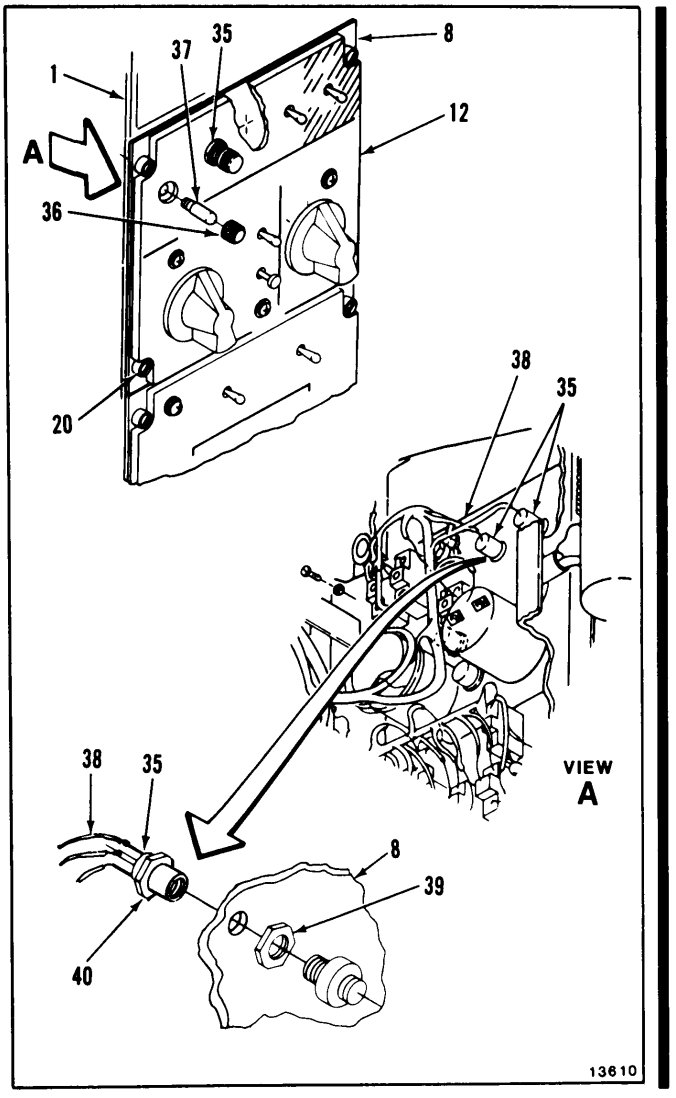
   b. **Insert assembly (35) through back of panel (8). Install nut (39)** from front of panel.

   c. **Solder wires (38)** to lugs on assembly (35). **Use heat-shrinkable tubing** over connections. Remove tags from wires.

   d. **Install bulb (37) and cap (36).**

   e. **Position panel (8)** on overhead panel (1). Turn fasteners (20) 1/4 turn clock-wise to **secure panel.**

   f. **Install lightplate (12).** (Refer to step 3.)



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-98.4 REMOVE OVERHEAD PANEL MODULE 9-98.4

INITIAL SETUP

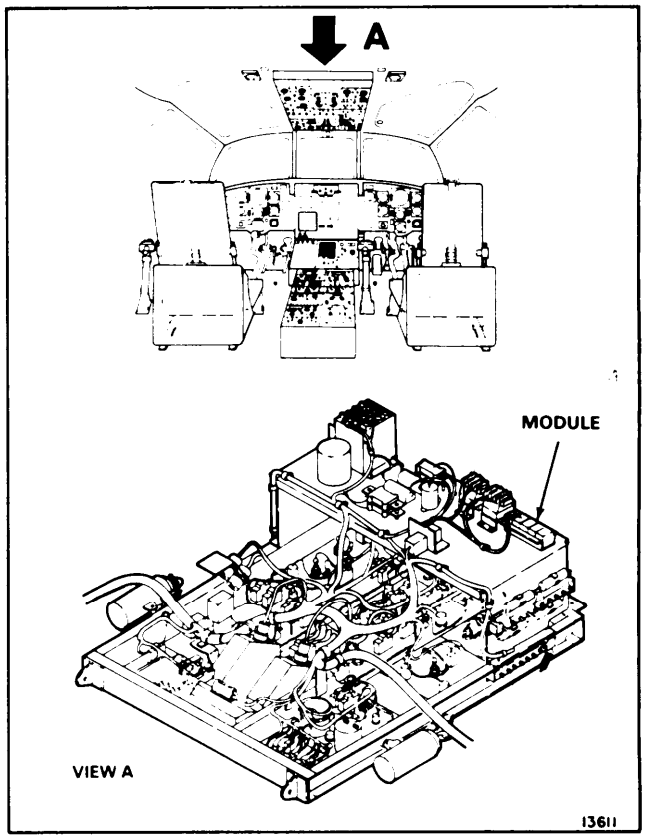
Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool
M83721-31-20
Module Extraction Tool CTJ-ROO

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

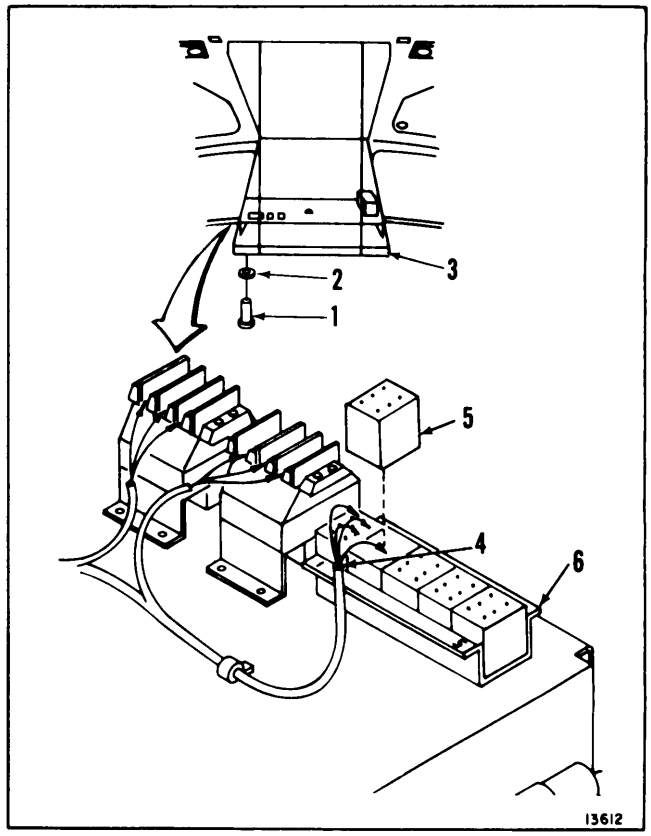
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. **Remove two bolts (1)** and washers (2) from panel (3). Lower panel.
2. Tag and **remove wires (4)** from module (5). Use contact insertion/removal tool.
3. Tape wire ends. Use tape (E385).
4. **Remove module (5)** from terminal rail (6). Use module extraction tool.

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-98.5 INSTALL OVERHEAD PANEL MODULE

INITIAL SETUP

Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool
M83723-31-30

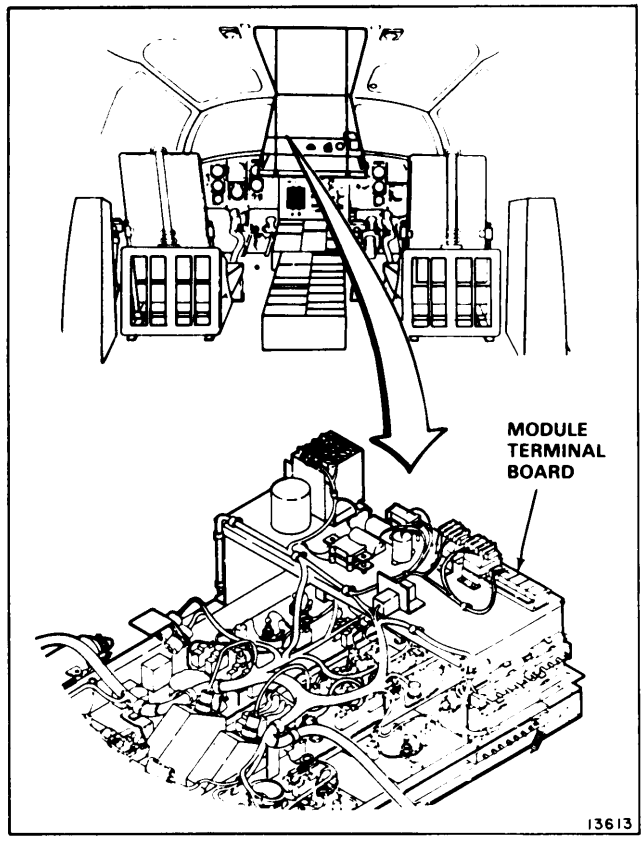
Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P

CAUTION

Wires must not touch moving components. Damage to wires or a short circuit can result.



NOTE

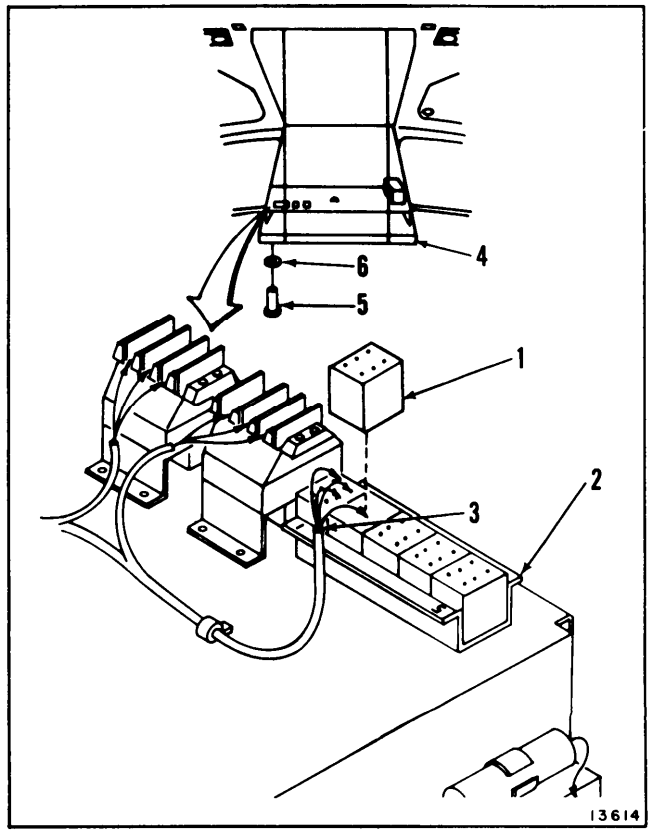
If a click is not heard, module is not seated.

1. Remove tape from wires (3).
2. **Install wires (3)** in module (1). Use a contact/insertion removal tool. Remove tags. **Inspect.**
3. **Install module (1)** by pressing it into terminal rail (2) until a click is heard.
4. Raise panel (4). **Install two bolts (5) and washers (6).**

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-99 REMOVE OVERHEAD PANEL PANELS

INITIAL SETUP

Applicable Configurations:

Without 17

Without 74

Tools:

Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Soldering Gun

Materials:

Paper Tags (E264)

Tape (E395)

Personnel Required:

Aircraft Electrician

References:

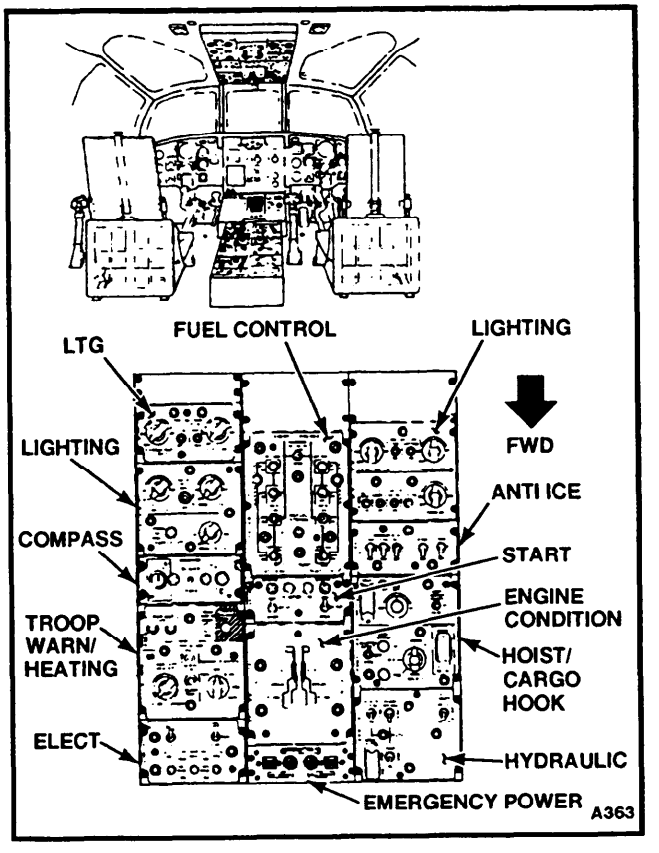
TM 11-1520-240-23

Equipment Condition:

Battery Disconnected (Task 1-39)

Electrical Power Off

Hydraulic Power Off



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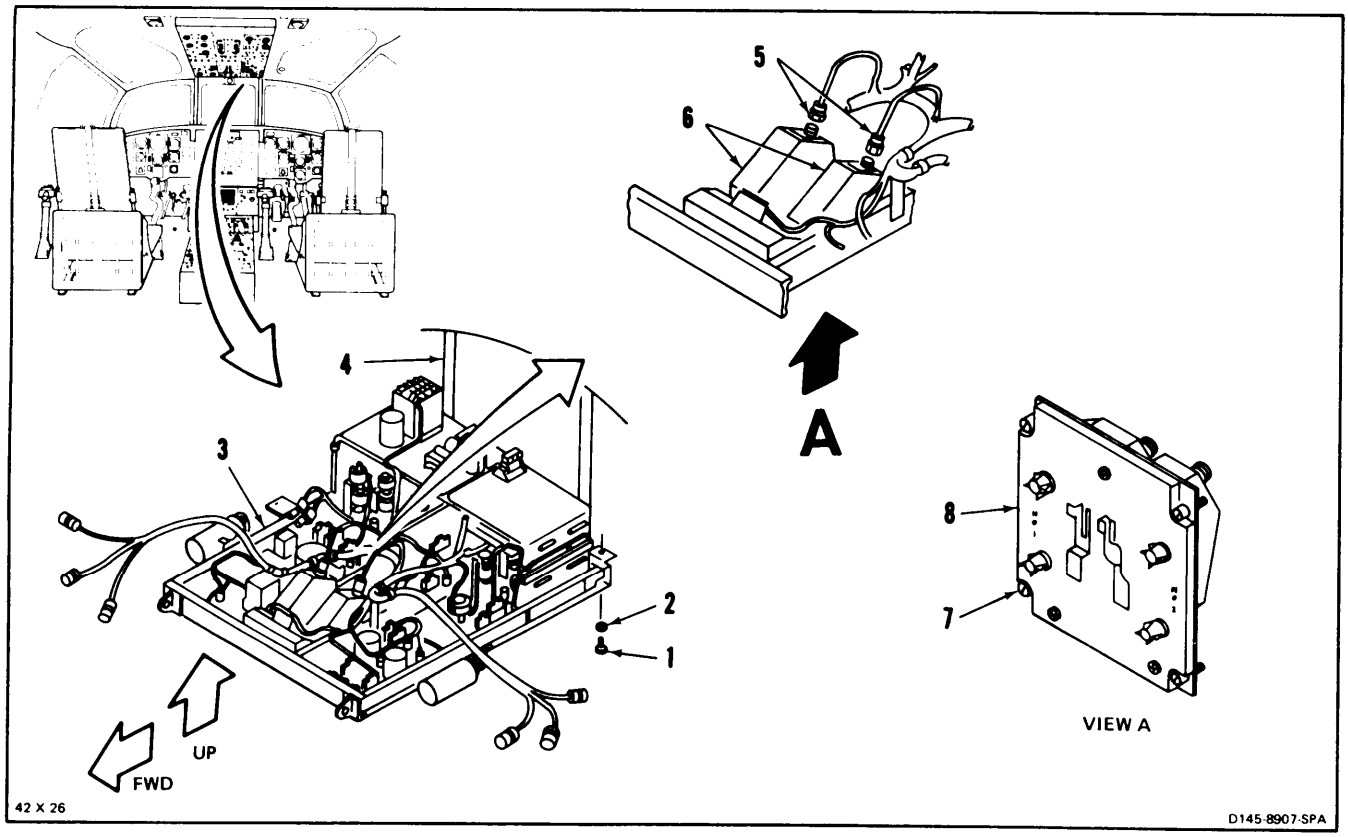
1. Remove two bolts (1) and washers (2). Lower panel (3) on straps (4).

ENGINE CONDITION Panel

2. Remove ENGINE CONDITION panel as follows:

a. Tag and **disconnect two electrical connectors (5) from engine controls (6).**

b. Loosen four screws (7). **Remove panel (8)** from panel (3).



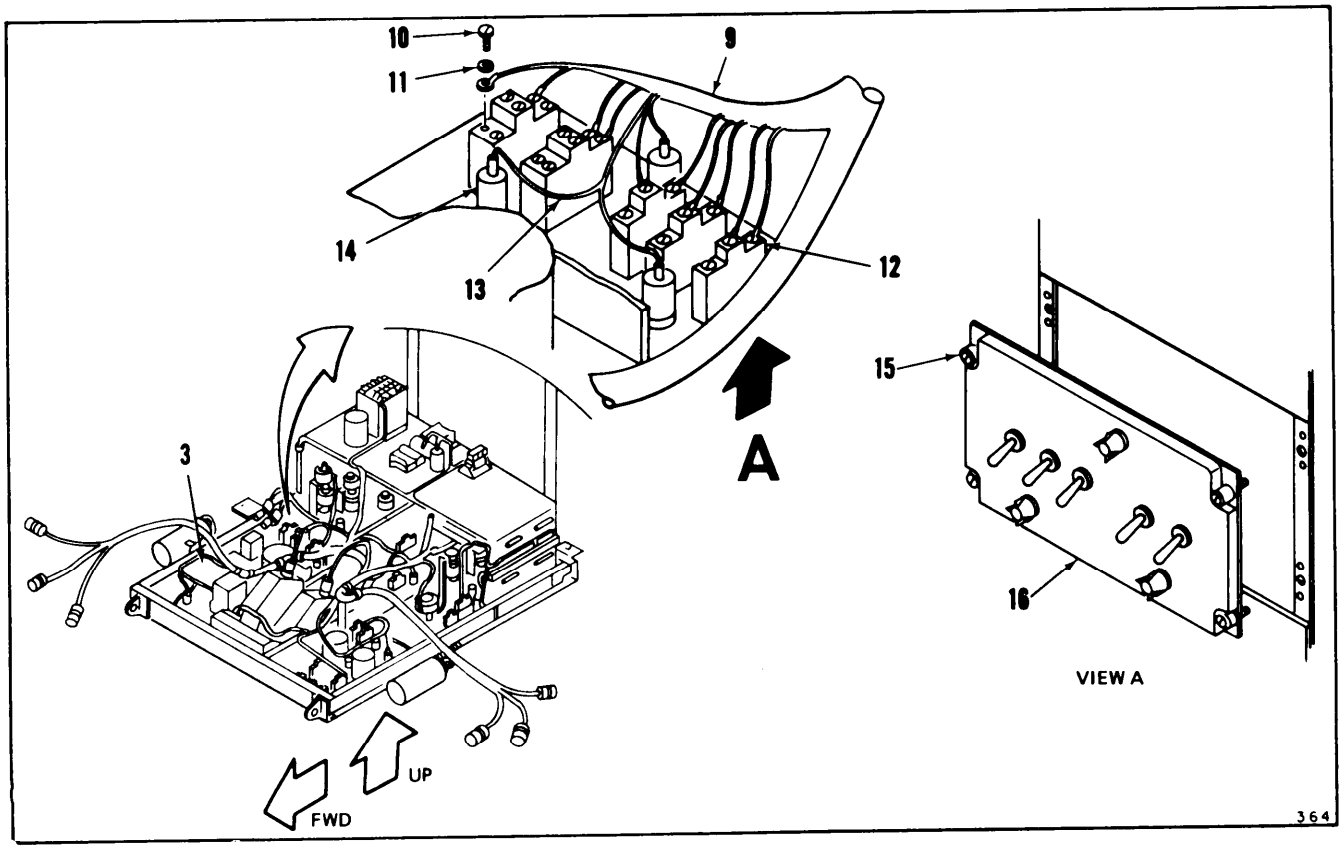
ANTI-ICE Panel

3. Remove ANTI-ICE panel as follows:

   a. Tag and **disconnect 10 wires (9)** by removing screws (10) and washers (11) from 5 switches (12). Tape wire ends.

   b. Tag and **unsolder three wires (13)** from three lamps (14). Tape wire ends.

   c. Loosen four screws (15). **Remove panel (16)** from panel (3).



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LTG Panel

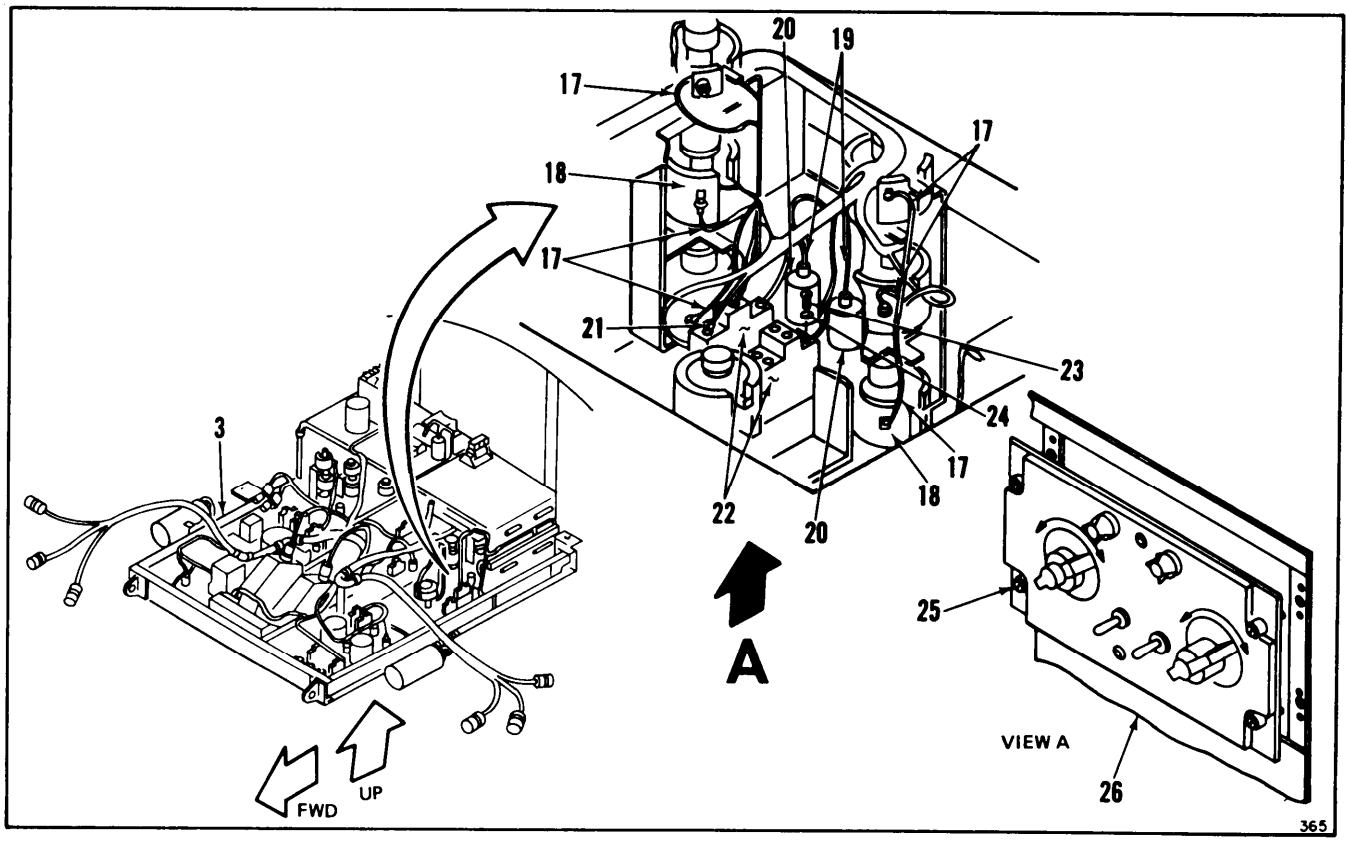
4. Remove LTG panel as follows:

   a. Tag and **unsolder 19 wires (17)** from two potentiometers (18). Tape wire ends.

   b. Tag and **unsolder two wires (19)** from two lamps (20). Tape wire ends.

   c. Tag and **remove 15 wires (21)** from two switches (22) by removing screws (23) and washers (24). Tape wire ends.

   d. Loosen four screws (25). **Remove panel (26)** from panel (3).



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9-99 REMOVE OVERHEAD PANEL PANELS (Continued) 9-99

LIGHTING Panel

5. Remove LIGHTING panel (27) as

   a. Tag and **disconnect nine wires (28)** from two switches (29) by screws (30) and washers (31). Tape wire ends.

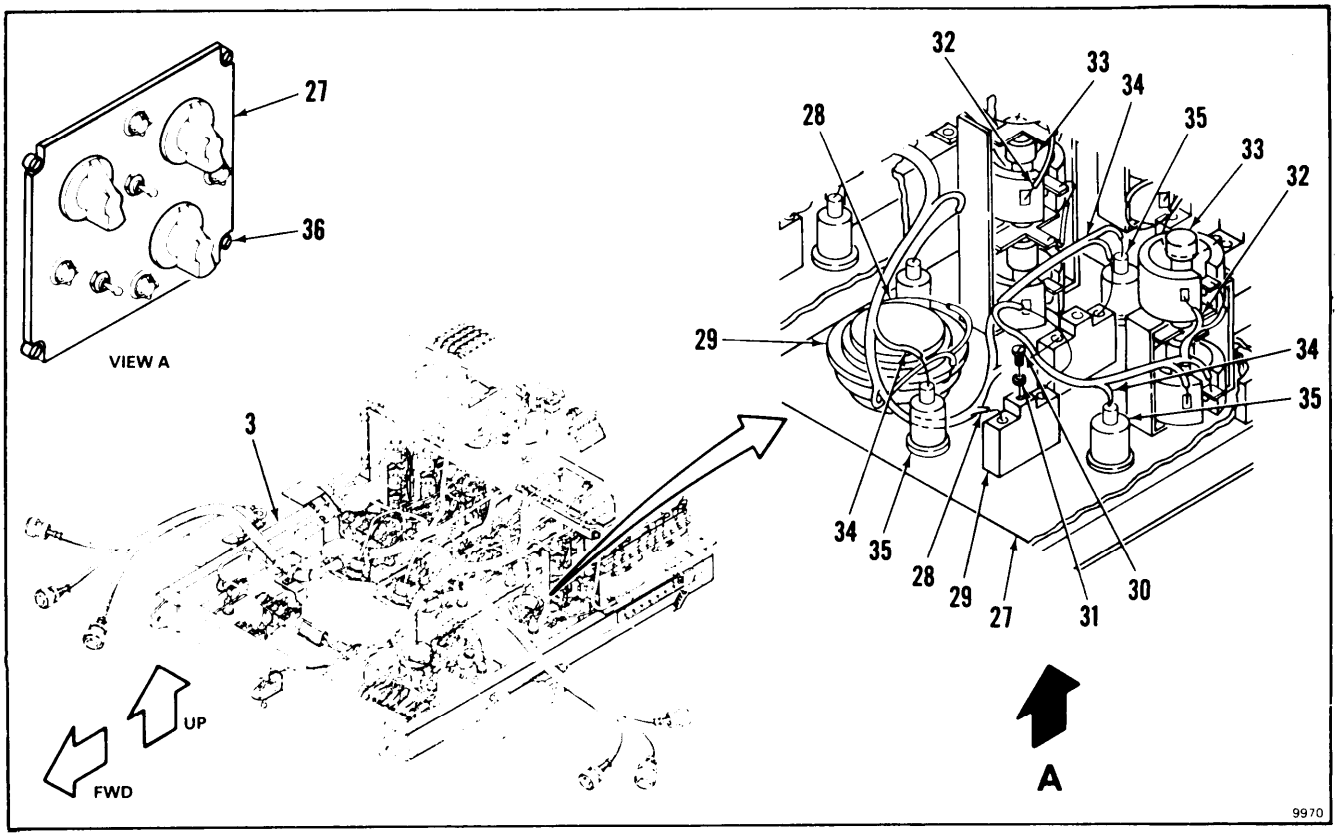
   b. Tag and **unsolder 16 wires (32)** from two potentiometers (33). Tape wire ends.

   c. Tag and unsolder five wires (34) from three lamps (35). Tape wire ends.

   d. Loosen four screws (36). Remove panel (27) from panel *(3).*

COMPASS Panel

6. Ref TM 11-1520-240-20



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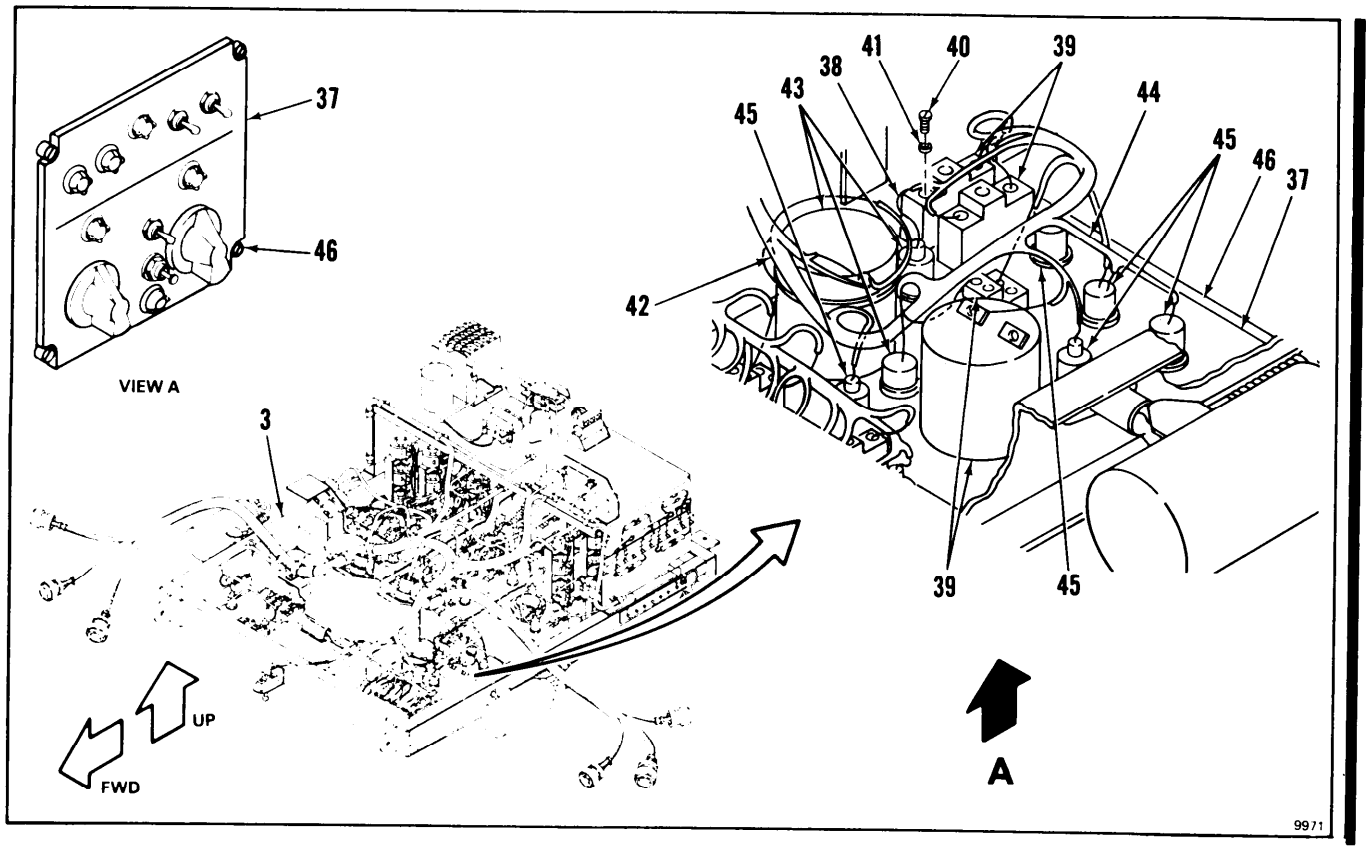
TROOP WARN/HEATING Panel

7. Remove TROOP WARN/HEATING panel (37) as follows:
   a. Tag and disconnect 12 wires (38) from four switches (39) by removing screws (40) and washers (41). Tape wire ends.
   b. Tag and unsolder eight wires (42) from three switches (43). Tape wire ends.
   c. Tag and unsolder six wires (44) from five lamps (45). Tape wire ends.
   d. Loosen four screws (46). Remove panel (37) from panel (3).



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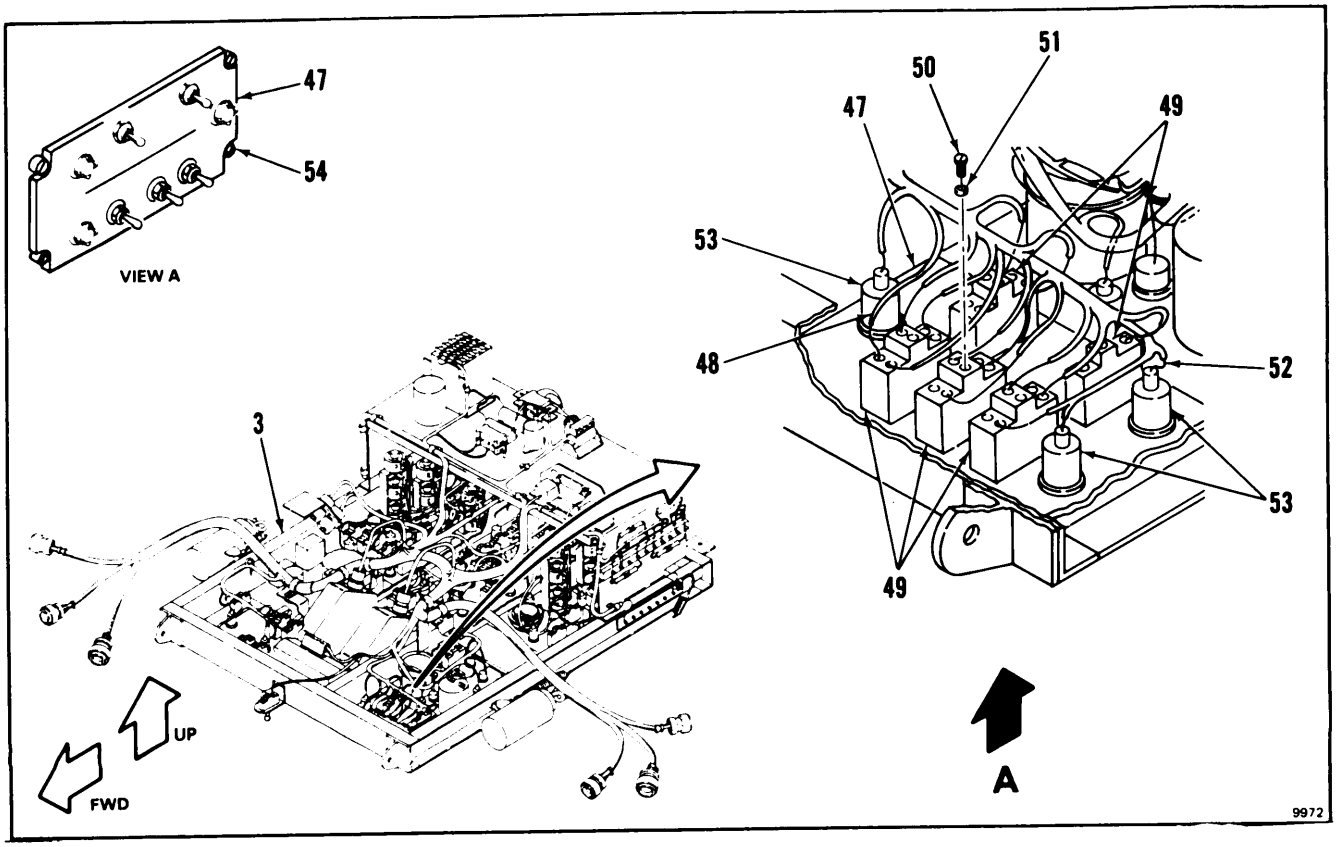
9-99 REMOVE OVERHEAD PANEL PANELS (Continued)

ELECT Panel

8. Remove ELECT panel (47) as follows:
   a. Tag and disconnect 26 wires (48) from five switches (49) by removing screws (50) and washers (51). Tape wire ends.
   b. Tag and unsolder five wires (52) from three lamps (53). Tape wire ends.
   c. Loosen four screws (54). Remove panel (47) from panel (3).



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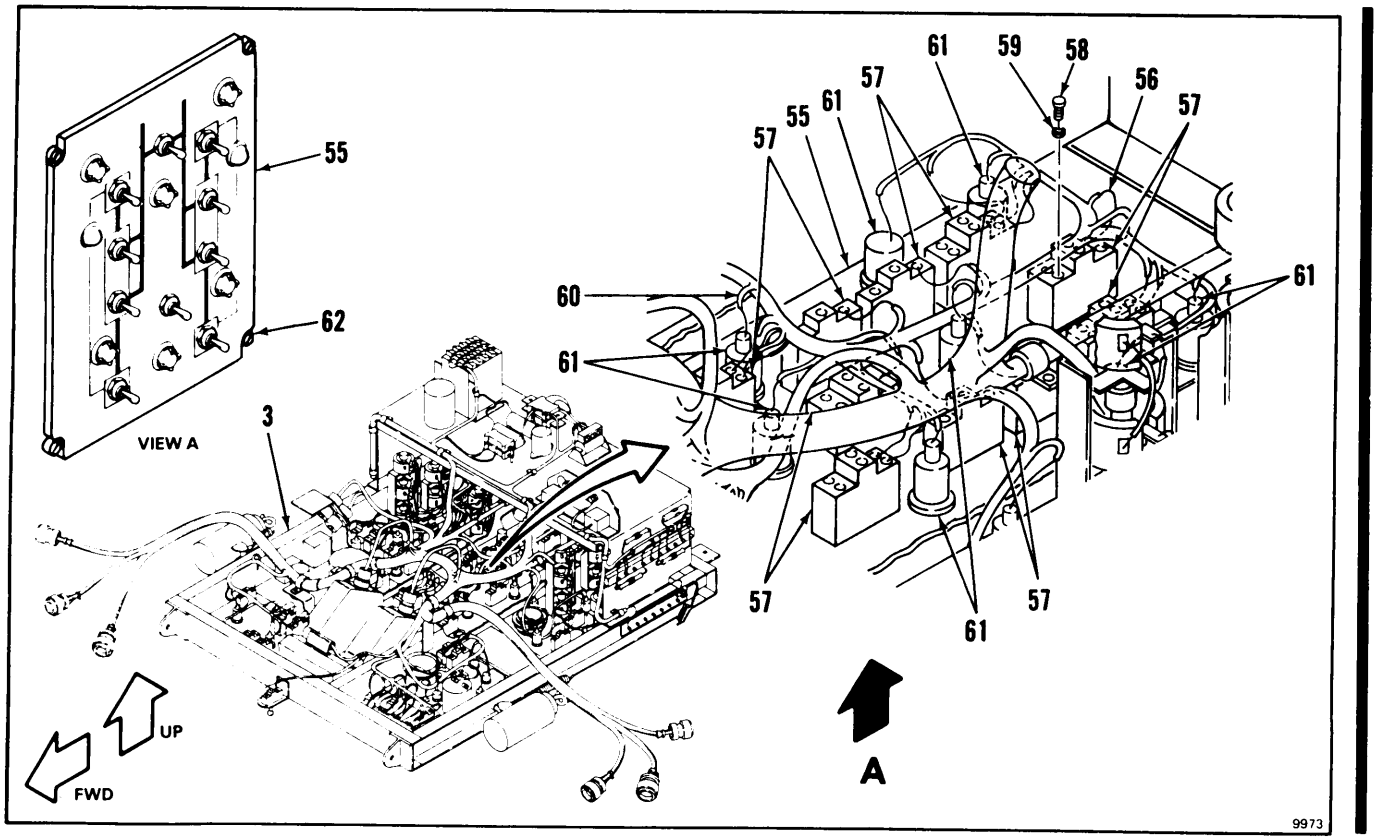
FUEL CONTROL Panel

9. Remove FUEL CONTROL panel (55) as follows:
   a. Tag and disconnect 35 wires (56) from 10 switches (57) by removing screws (58) and washers (59). Tape wire ends.
   b. Tag and unsolder 17 wires (60) from eight lamps (61). Tape wire ends.
   c. Loosen six screws (62). Remove panel (55) from panel (3).



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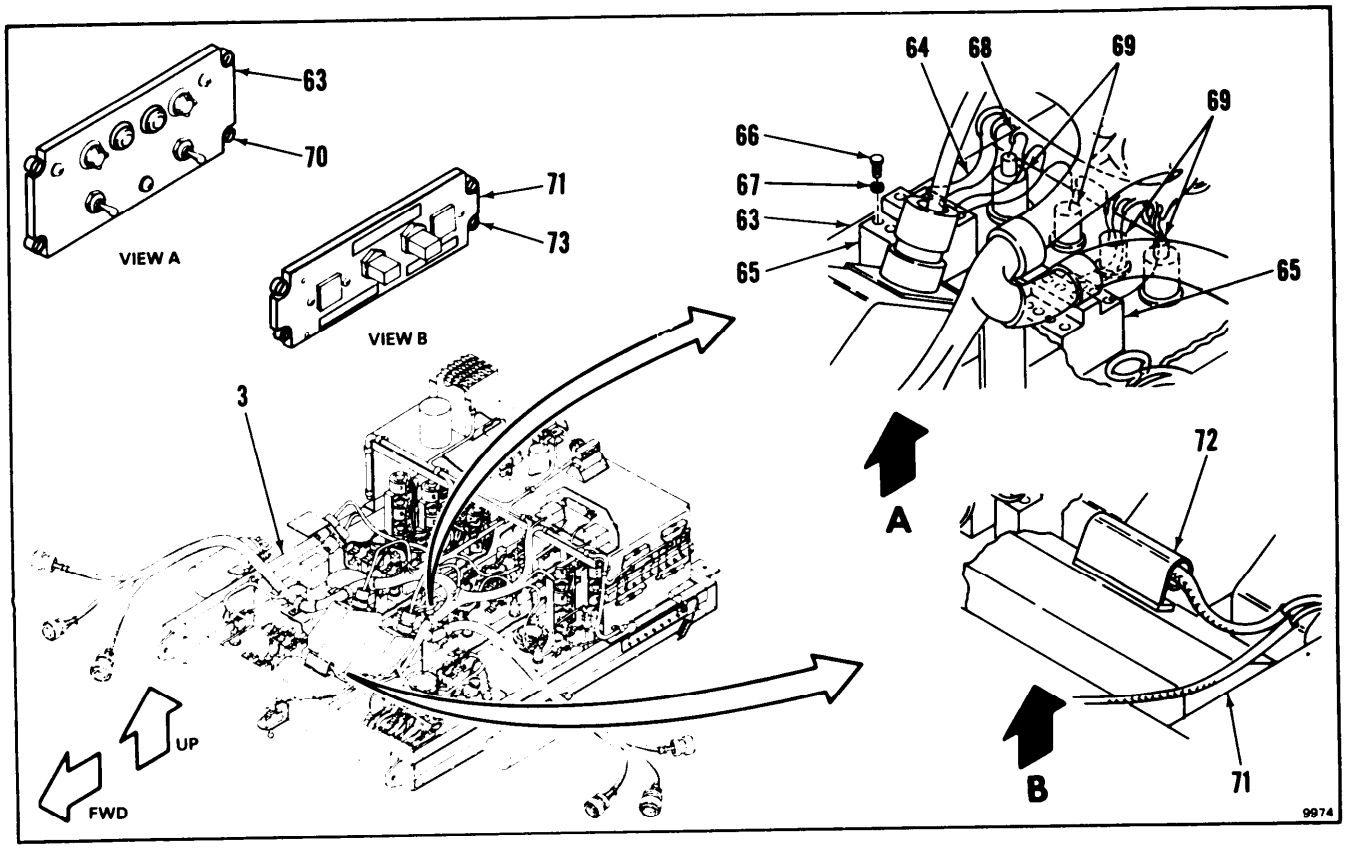
9-99 REMOVE OVERHEAD PANEL PANELS (Continued)

START Panel

10. Remove START panel (63) as follows:
    a. Tag and disconnect 22 wires (64) from two switches (65) by removing screws (66) and washers (67). Tape wire ends.
    b. Tag and unsolder nine wires (68) from four lamps (69). Tape wire ends.
    c. Loosen four screws (70). Remove panel (63) from panel (3).

EMERGENCY POWER Panel

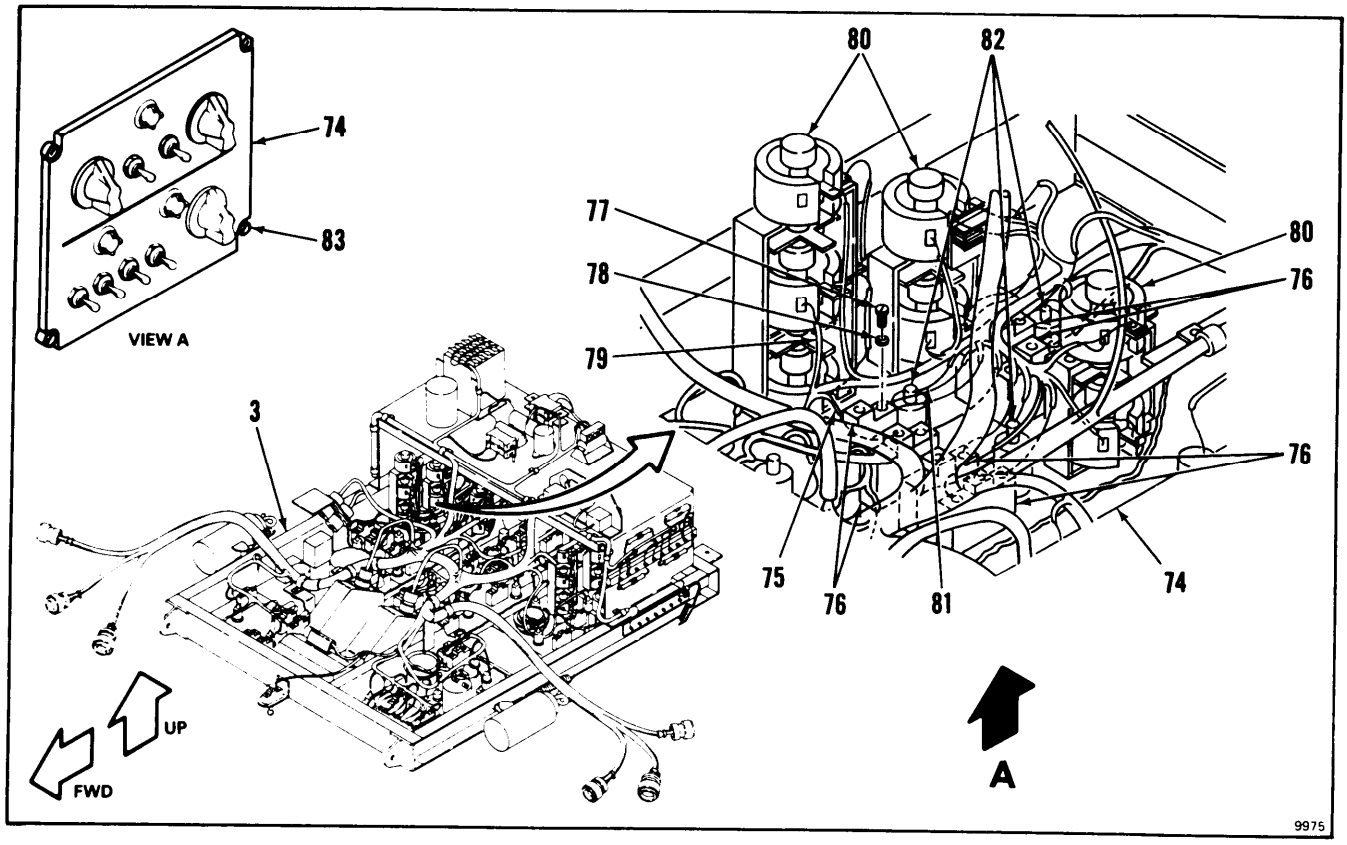
11. Remove EMERGENCY POWER panel (71) as follows:
    a. Tag and disconnect plug (72) from panel (71).
    b. Loosen four screws (73). Remove panel (71) from panel (3).



GO TO NEXT PAGE

LIGHTING Panel

12. Remove LIGHTING panel (74) as follows:
    a. Tag and disconnect 17 wires (75) from six switches (76) by removing screws (77) and washers (78). Tape wire ends,
    b. Tag and unsolder 25 wires (79) from three potentiometers (80). Tape wire ends.
    c. Tag and unsolder five wires (81) from three lamps (82). Tape wire ends.
    d. Loosen four screws (83). Remove panel (74) from panel (3).



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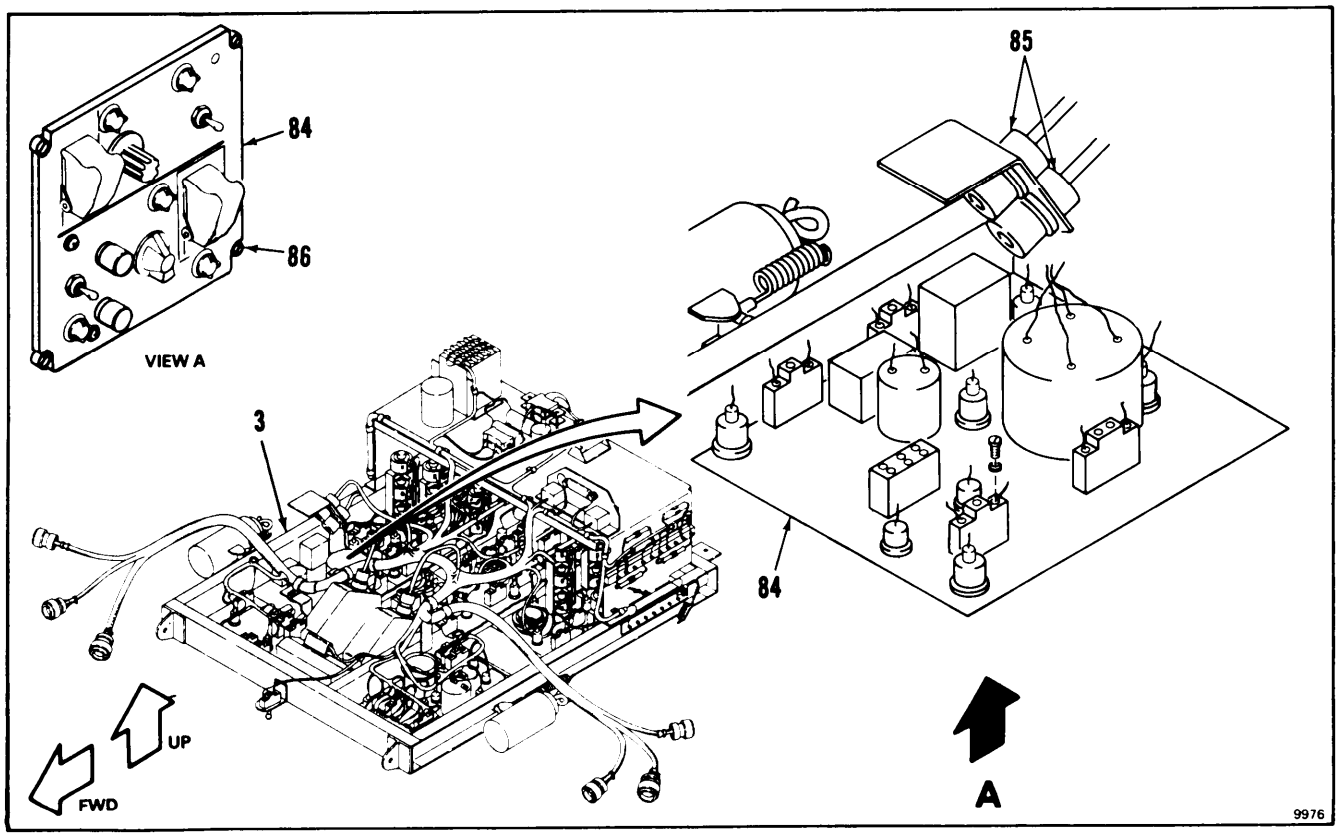
HOIST/CARGO HOOK Panel

13. Remove HOIST/CARGO HOOK panel (84) as follows:

a. Tag and disconnect two plugs (85).

b. Loosen four screws (86). Remove panel (84) from panel (3).



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HYDRAULIC Panel

14. Remove HYDRAULIC panel (87) as follows:

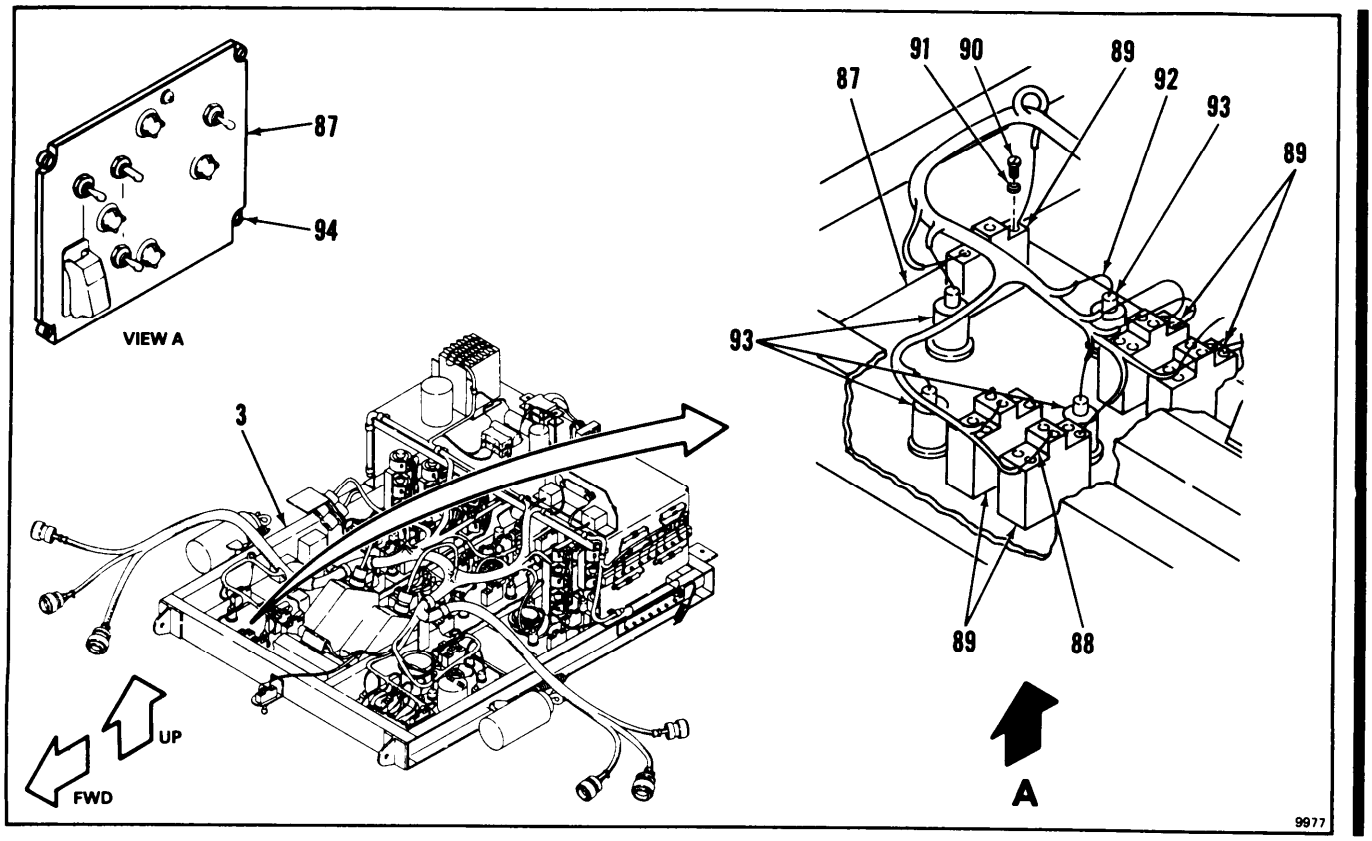
    a. Tag and disconnect 15 wires (88) from five switches (89) by removing screws *(90)* and washers (91). Tape wire ends.

    b. Tag and unsolder seven wires (92) from four lamps (93). Tape wire ends.

    c. Loosen four screws (94). Remove panel (87) from panel (3).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-99.1 DISASSEMBLE EMERGENCY POWER PANEL (AVIM)

INITIAL SETUP

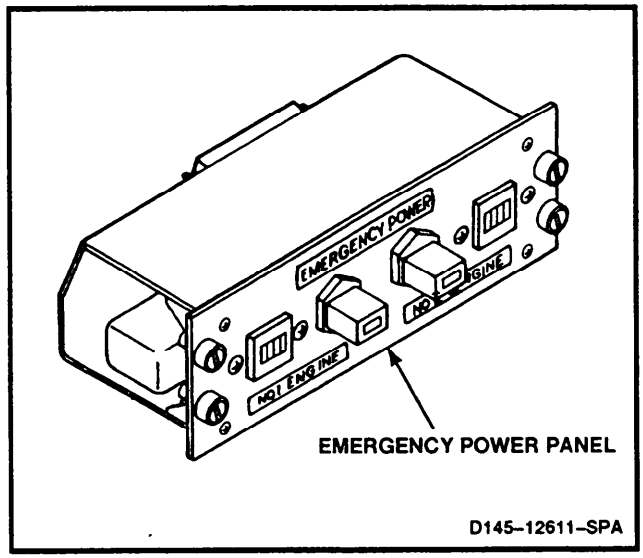
Applicable Configurations:
Without 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Iron

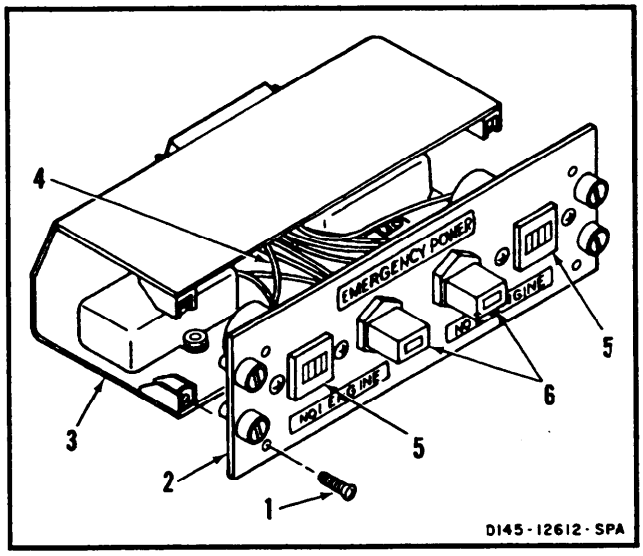
Materials:
Tags (E264)

Personnel Required:
Aircraft Electrician

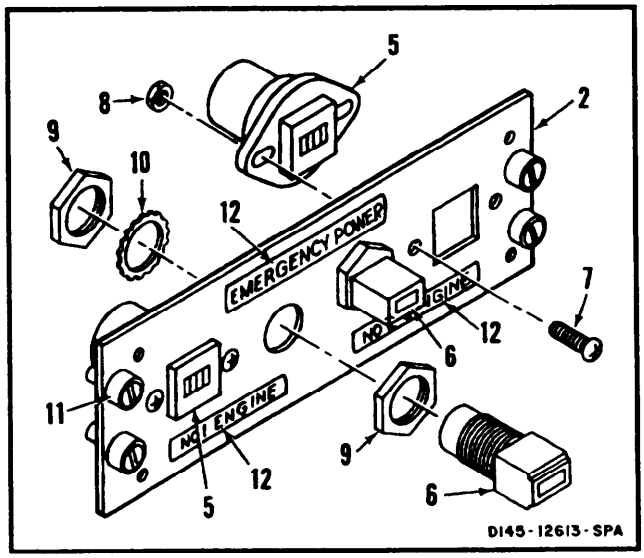
Equipment Condition:
Off Helicopter Task



1. **Remove four screws (1)** and separate panel (2) from housing (3).
2. Tag and **unsolder 10 wires (4)** from 2 timers (5) and 2 indicators (6).



3. **Remove four screws (7) and nuts (8). Remove two timers (5)** from panel (2).
4. **Remove nut (9)** and washer (10) from back of each indicator (6). **Remove two indicators (6)** from panel (2). Remove nut (9) from body of each indicator (6).
5. **Remove four turnlocks (11).**
6. **Remove three foil markers (12)** if damaged.



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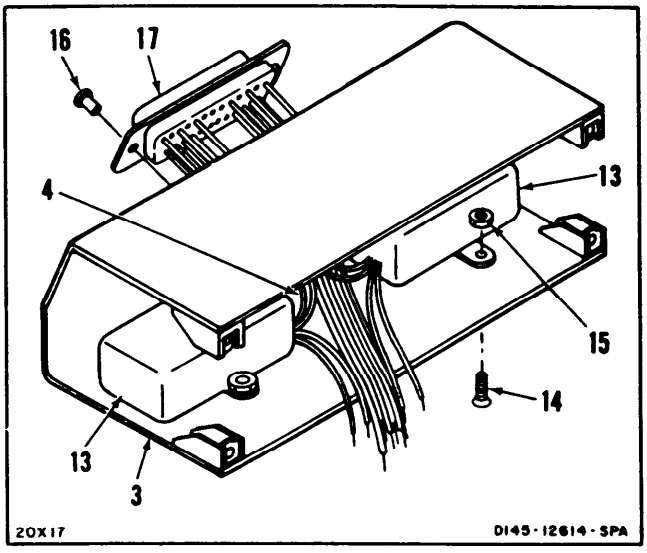
9-99.1 DISASSEMBLE EMERGENCY POWER PANEL (AVIM) (Continued)

7. Tag and **unsolder remaining eight wires (4)** from two relays (13).
8. **Remove four screws (14) and nuts (15). Remove two relays (13)** from housing (3).
9. Remove two posts (16). **Remove receptacle (17)** from housing (3).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Iron
Gun-Type Heater

Materials:

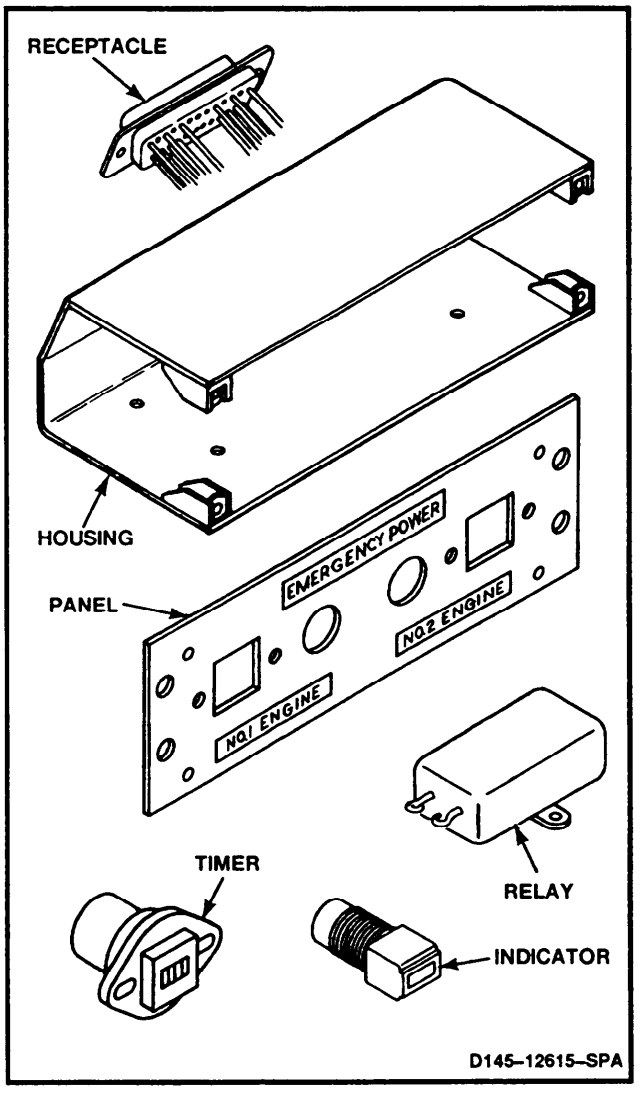
Flux (E178)
Solder (E360)
Tubing, Heat Shrinkable (E431)

Personnel Required:

Aircraft Electrician
Inspector

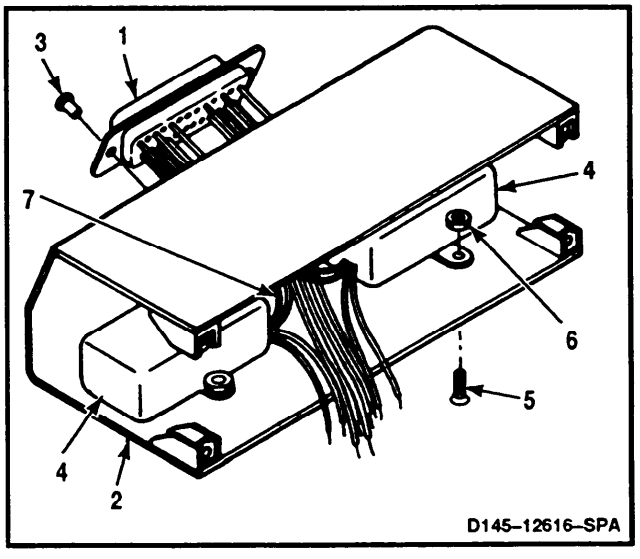
References:

TM 55-1520-240-23P
TM 55-1500-323-25



1. **Position receptacle (1)** in housing (2). **Install two posts (3).**
2. **Position two relays (4)** in housing (2). **Install four screws (5) and nuts (6).**
3. **Connect eight wires (7)** to relays (4). Use solder (E360) and tubing (E431) (TM 55-1500-323-25). Remove tags.

INSPECT



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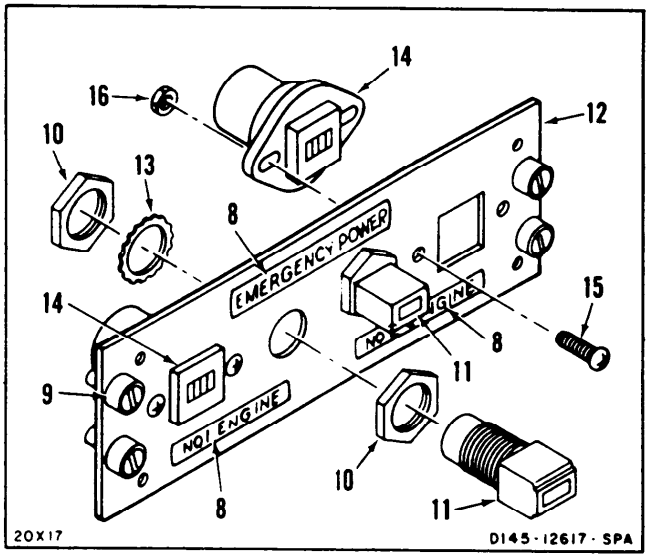
9-99.2 ASSEMBLE EMERGENCY POWER PANEL (AVIM) (Continued) 9-99.2

4. **Install three foil markers (8)** if needed.
5. **Install four turnlocks (9).**
6. Install one nut (10) on each indicator (11). **Position two indicators in panel (12)** and **install washer (13) and one more nut (10) on each indicator.**
7. **Position two timers (14) in back of panel (12). Install four screws (15) and nuts (16).**

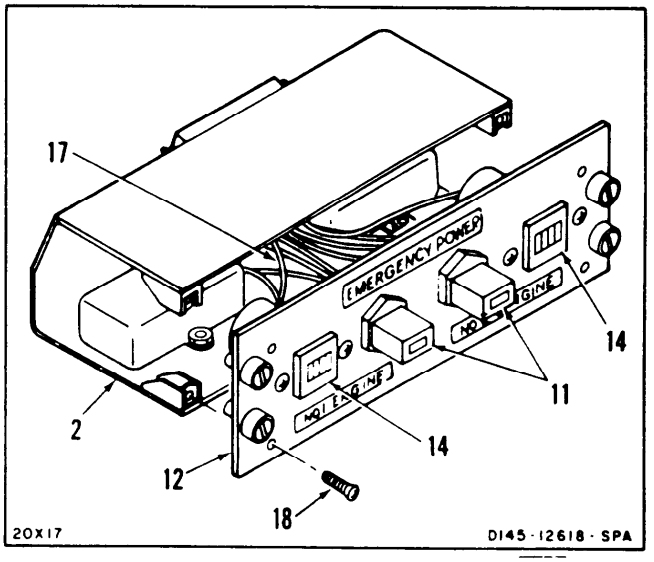


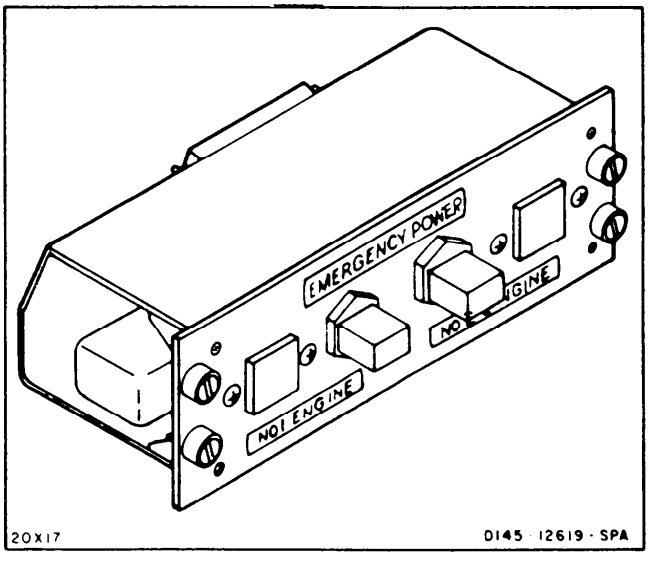
INSPECT

8. **Connect 10 wires (17)** to 2 timers (14) and 2 indicators (11). Use solder (E360) and tubing (E431) (TM 55-1500-323-25). Remove tags.

INSPECT

9. **Position panel (12) on housing (2). Install four screws (18).**





FOLLOW-ON MAINTENANCE:

Test emergency power panel (Task 9-99.3).

END OF TASK

9-99.3 TEST EMERGENCY POWER PANEL (AVIW) 9-99.3

INITIAL SETUP

Applicable Configurations:
All

Tools:
Power Supply, 28 Vdc
Power Supply, 115 Vat, 400 Hz

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
68F30 Inspector

Equipment Condition:
Off Helicopter Task

NOTE

Once a power connection is made, keep power applied until told to disconnect it.

NO. 1 ENGINE

1. **Apply 115 vac to pin 9 and ground to pin 22** of receptacle (1). Timer (2) shall not operate.
2. **Apply 28 vdc to pin 24 and ground to pin 23** of receptacle (1). Indicator (3) shall turn black.
3. **Remove 28 vdc from pin 24 only.** Indicator (3) shall stay black. **Apply 28 vdc to pin 25.**
4. **Apply 28 vdc to pin 11 and ground to pin 13** of receptacle (1). After 5 seconds indicator (3) shall become striped and timer (2) shall operate.
5. **Remove 28 vdc from pin 25 onlv.** Indicator (3) shall stay striped. Momentarily **apply 28 vdc to pin 24.** Indicator shall turn black and stay black.
6. Remove all power connections.

NO. 2 ENGINE

7. **Apply 115 vac to pin 5 and ground to pin 17** of receptacle (1). Timer (4) shall not operate.
8. **Apply 28 vdc to pin 15 and ground to pin 16** of receptacle (1). Indicator (5) shall turn black.
9. **Remove 28 vdc from pin 15 only.** Indicator (5) shall stay black. **Apply 28 vdc to pin 14.**
10. **Apply 28 vdc to pin 3 and ground to pin 1** of receptacle (1). After 5 seconds indicator (5) shall become striped and timer (4) shall operate.
11. **Remove 28 vdc from pin 14 only.** Indicator (5) shall stay striped. Momentarily **apply 28 vdc to pin 15.** Indicator shall turn black and stay black.
12. Remove all power connections.

FOLLOW-ON MAINTENANCE:

None

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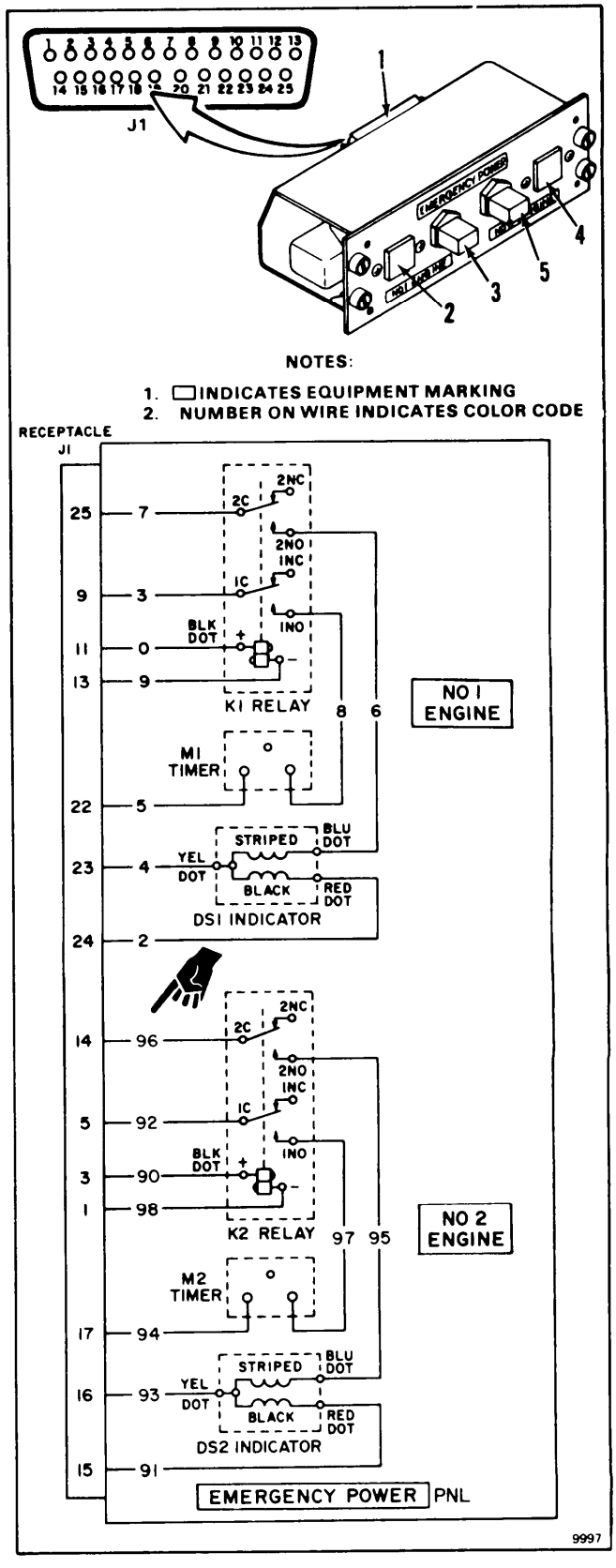
9-99.3 TEST EMERGENCY POWER PANEL (AVIM) (Continued) 9-99.3



END OF TASK

9-99.4 DISASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) 9-99.4

INITIAL SETUP

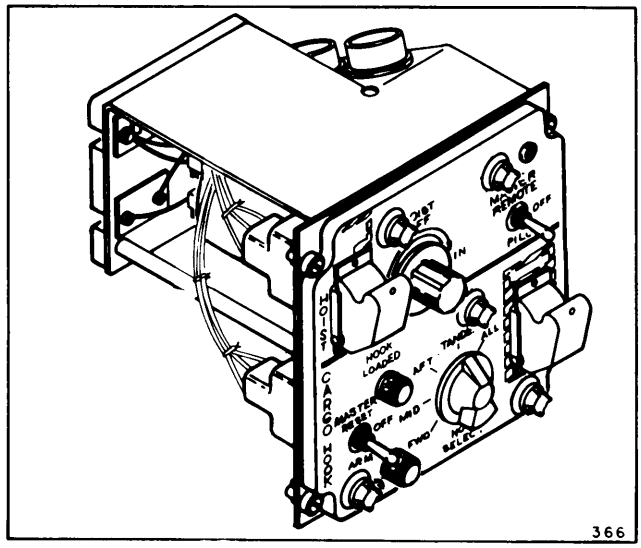
Applicable Configurations:
Without 17

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Iron
Drill
Twist Drill Set

Materials:
Tags (E264)

Personnel Required:
Machinist
Aircraft Electrician

Equipment Condition:
Off Helicopter Task



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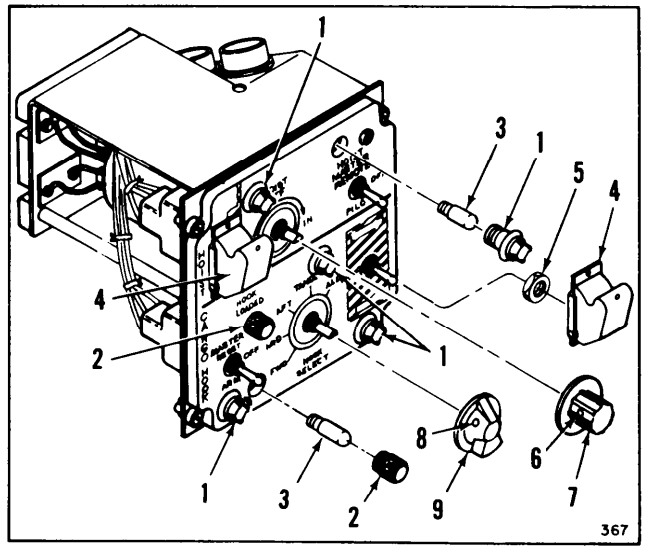
1. **Remove five lenses (1) and two indicator lenses (2).**
2. Remove seven lamps (3) from lenses (1 and 2).
3. Open both switch guards (4), remove nuts (5) and **remove two guards.**
4. **Loosen set screw (6)** on HOIST knob (7). **Remove knob.**
5. **Loosen set screw (8)** on HOOK SELECT knob (9). **Remove knob.**



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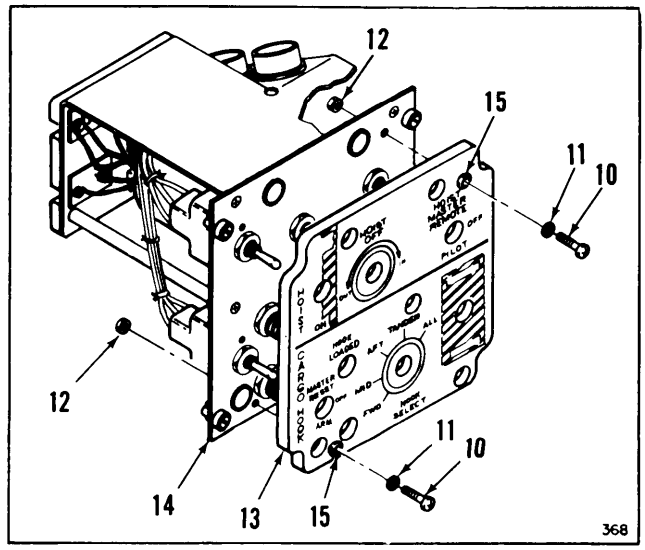
6. Remove two screws (10), washers (11), and nuts (12). **Remove plastic panel (13)** from housing (14).
7. Remove two grommets (15) from panel (13).



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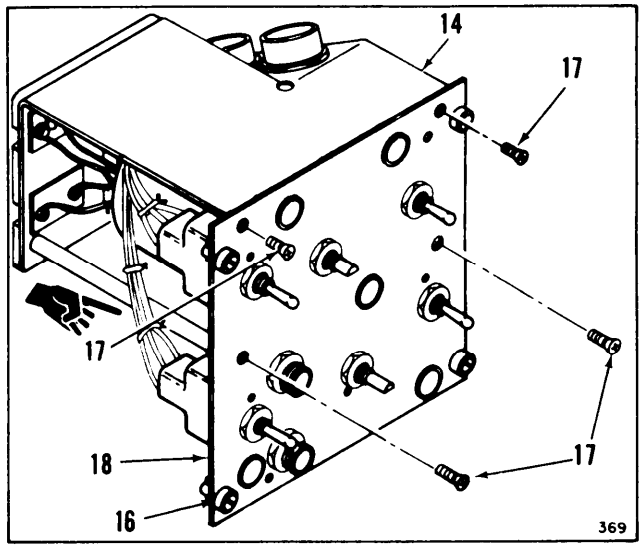
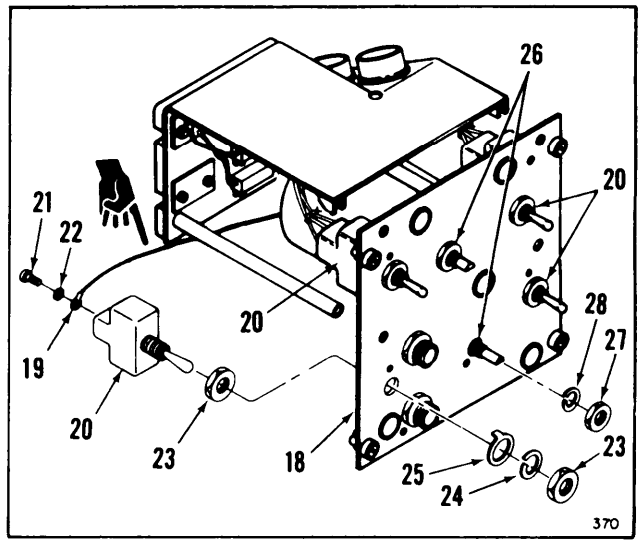
9-99.4 DISASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) (Continued)

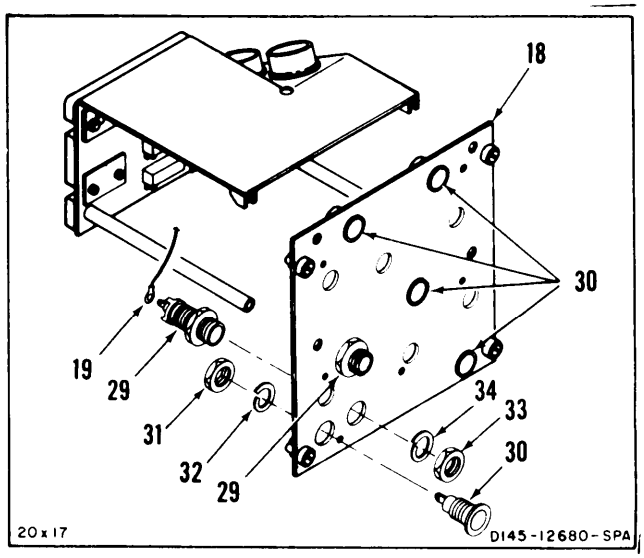
8. Remove four turnlocks (16).
9. **Remove four screws (17).** Pull metal panel (18) away from housing (14).



10. Tag and **disconnect wires (19) from four toggle switches (20)** by removing screws (21) and washers (22).
11. Remove four nuts (23), lockwashers (24), and lock ring (25). **Remove four toggle switches (20)** from panel (18). Remove nut from body of each switch.
12. Tag and **disconnect wires (19) from two rotary switches (26).**
13. Remove two nuts (27) and lock rings (28). **Remove two rotary switches (26)** from panel (18).



14. Tag and **disconnect wires (19) from two indicator lights (29) and five light assemblies (30).**
15. Remove five nuts (31) and lockwashers (32) from back of panel (18). **Remove five light assemblies (30).**
16. Remove two nuts (33) and lockwashers (34) from front of panel (18). **Remove two indicator lights (29).**
17. Remove panel (18).



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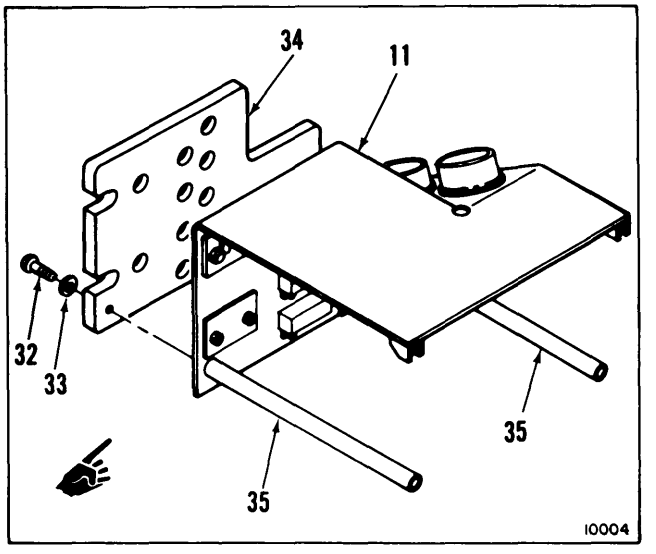
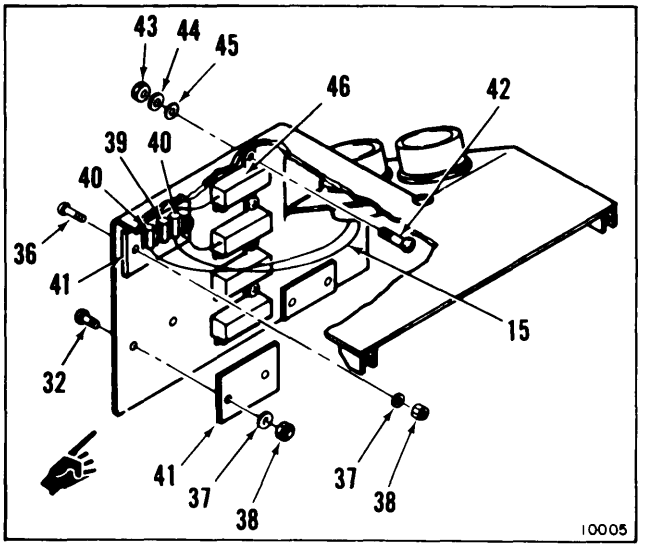
9-99.4 DISASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) (Continued) 9-99.4

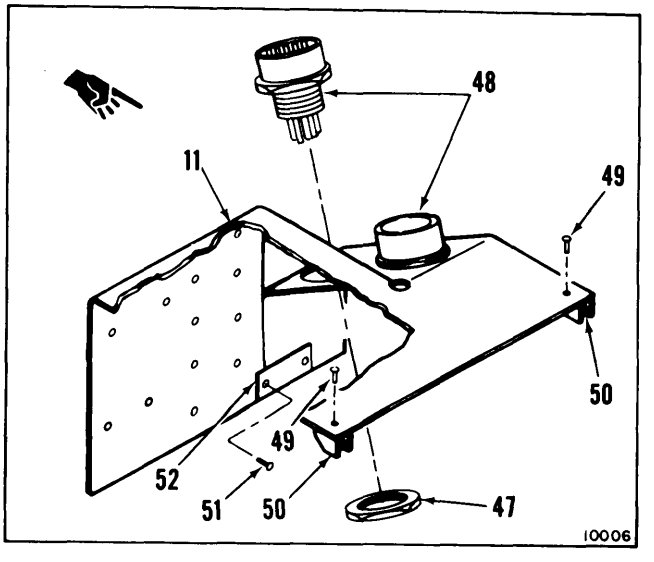
18. Remove two screws (32) and lockwashers (33) from back of housing (11). **Remove insulator (34) and two spacers (35).**



19. Tag and **unsolder wires (15)** as required,
20. Remove four screws (36), washers (37), and nuts (38). **Remove diode (39), two semiconductors (40) and two terminal boards (41).**
21. Remove eight screws (42), nuts (43), lockwashers (44), and flat washers (45). **Remove four resistors (46).**



22. **Remove** two jam nuts (47) and **two receptacles** (46) from housing (11).
23. **Remove** two rivets (49) and **two nut plates (50).**
24. **Remove** two rivets (51) and **brace (52).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-99.4.1 DISASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) 9-99.4.1

INITIAL SETUP

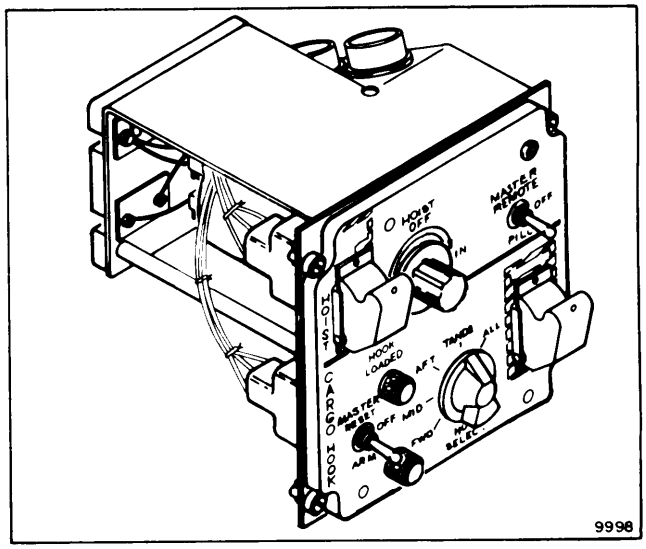
Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Iron
Drill
Twist Drill Set

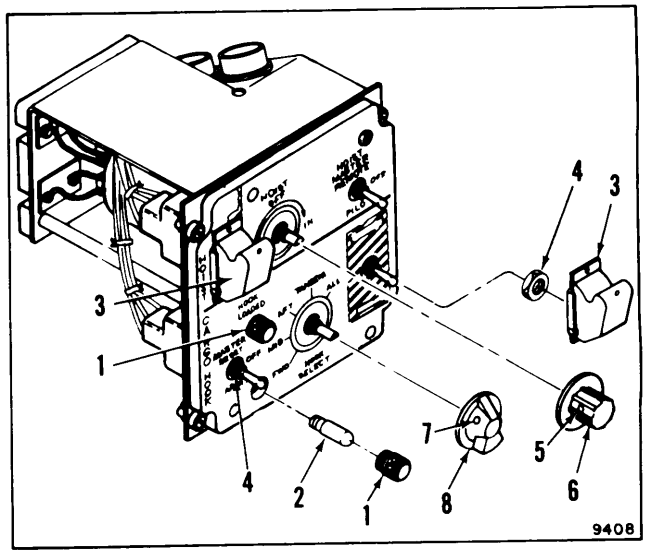
Materials:
Tags (E264)

Personnel Required:
Machinist
Aircraft Electrician

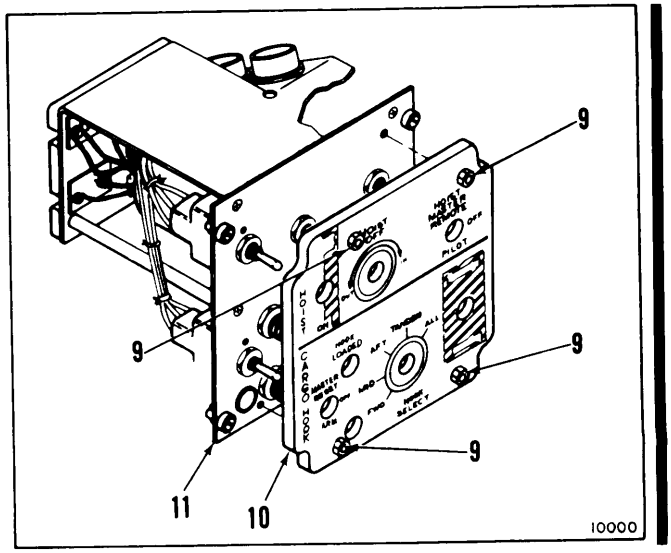
Equipment Condition:
Off Helicopter Task



1. **Remove two indicator lenses (1).**
2. Remove lamps (2) from lenses (1).
3. Open both switch guards (3), remove nuts (4), and **remove two guards.**
4. **Loosen set screw (5)** on HOIST knob (6). **Remove knob.**
5. **Loosen set screw (7)** on HOOK SELECT knob (8). **Remove knob.**



6. Loosen four captive screws (9).
7. **Remove plastic panel (10)** from housing (11).



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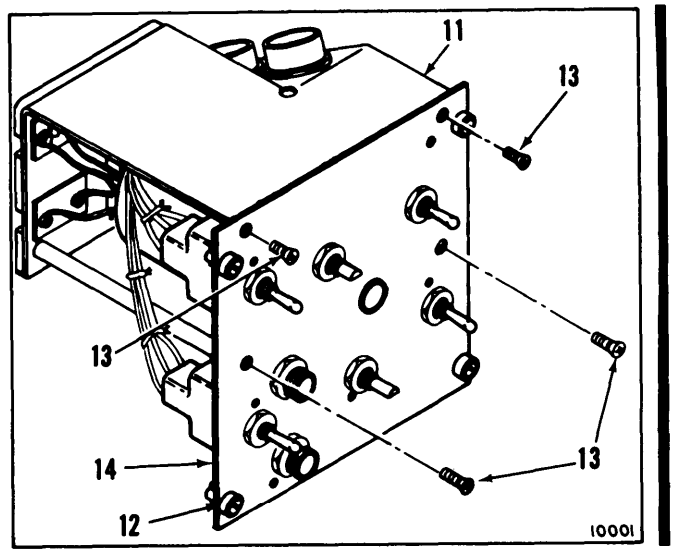
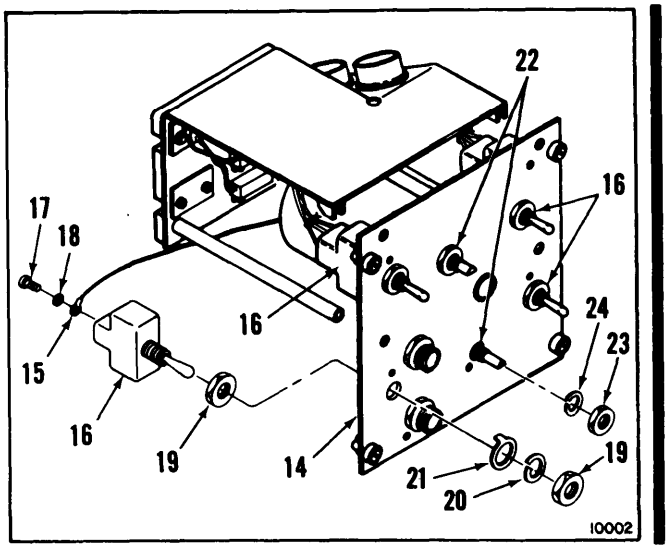
9-99.4.1 DISASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) (Continued)

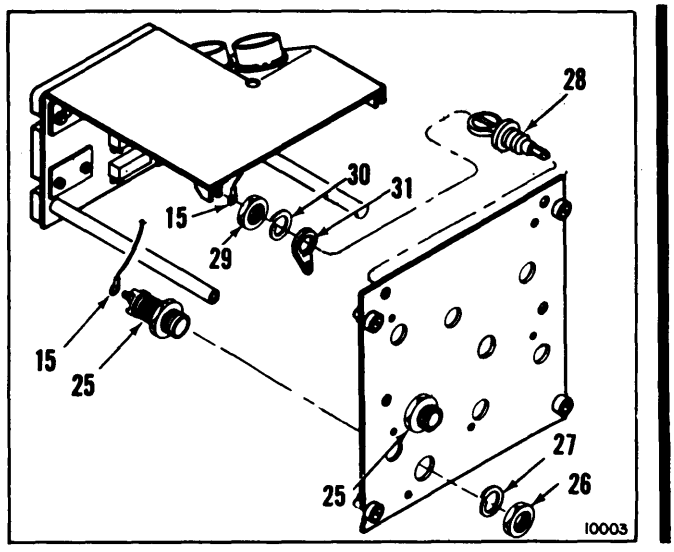
8. Remove four turnlocks (12).
9. **Remove four screws (13).** Pull metal panel (14) away from housing (11).



10. Tag and **disconnect wires (15) from four toggle switches (16)** by removing screws (17) and washers (18).
11. Remove four nuts (19), lockwashers (20), and lock ring (21). **Remove four toggle switches (16)** from panel (14). Remove nut from body of each switch.
12. Tag and **disconnect wires (15) from two rotary switches (22).**
13. Remove two nuts (23) and lock rings (24). **Remove two rotary switches (22)** from panel (14).



14. Tag and **disconnect wires (15) from two indicator lights (25).**
15. Remove two nuts (26) and lockwashers (27) from front of panel (14). **Remove two indicator lights (25).**
16. Tag and disconnect wires (15) from receptacle (28). Remove nut (29), lockwasher (30), terminal lug (31), and receptacle (28).
17. Remove panel (14).



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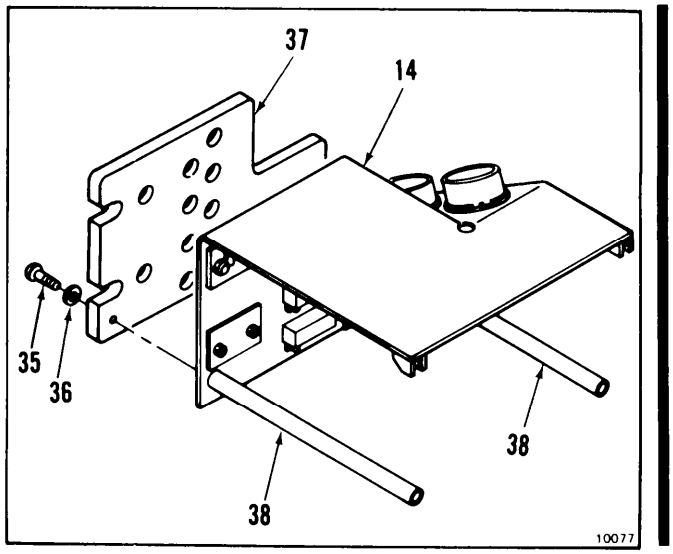
9-99.4.1 DISASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) 9-99.4.1 (Continued)

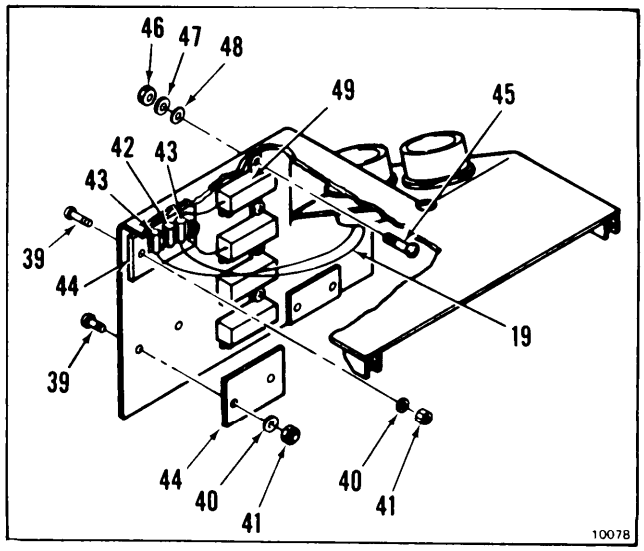
NOTE

Index numbers 32, 33, 34 not used.

18. Remove two screws (35) and lockwashers (36) from back of housing (14). **Remove insulator (37) and two spacers (38).**



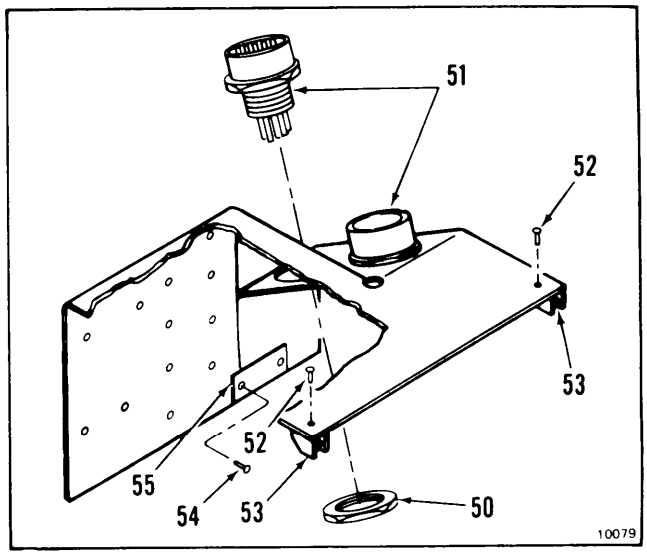
19. Tag and **unsolder wires (19)** as required.
20. Remove four screws (39), washers (40), and nuts (41). **Remove diode (42), two semiconductors (43) and two terminal boards (44).**
21. Remove eight screws (45), nuts (46), lockwashers (47), and flat washers (48). **Remove four resistors (49).**



22. **Remove** two jam nuts (50) and **two receptacles (51)** from housing.
23. **Remove** two rivets (52) and **two nut plates (53).**
24. **Remove** two rivets (54) and **brace (55).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-99.5 ASSEMBLE HOIST/CARGO HOOK PANEL (AVIM)

INITIAL SETUP

Applicable Configurations:
Without 17

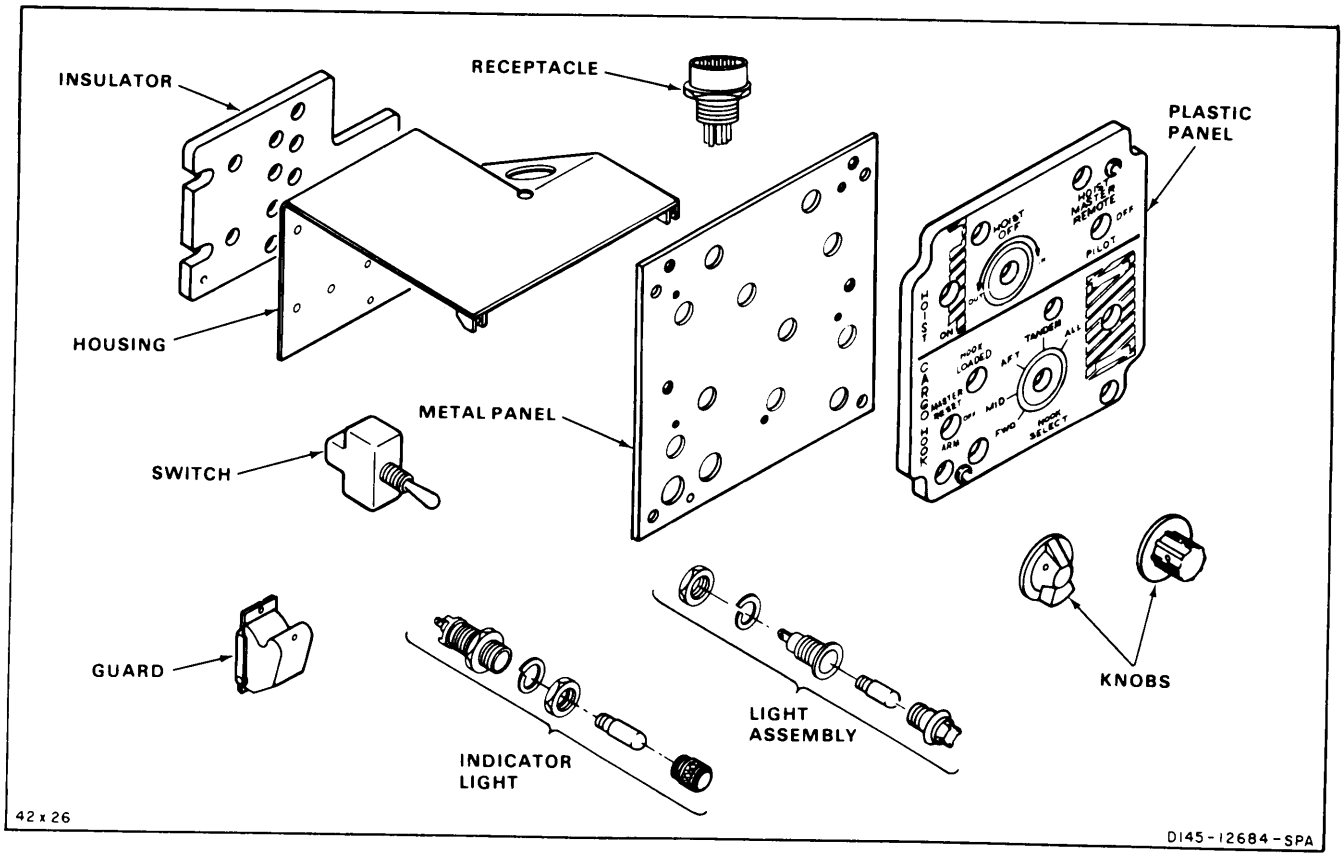
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Iron
Rivet Set
Gun-Type Heater

Materials:
Soldering Flux (E178)
Solder (E360)
Tubing, Heat Shrinkable (E431)
Heat Sink (E195)

Parts:
Rivets

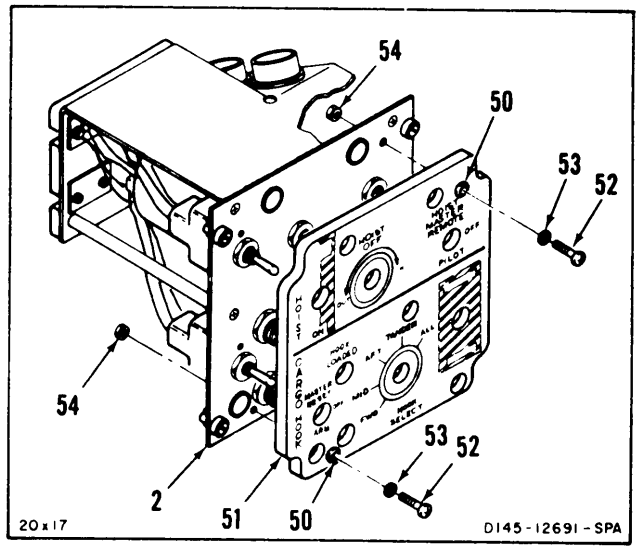
Personnel Required:
Machinist
Aircraft Electrician
Inspector

References:
TM 55-1500-323-25
TM 55-1520-240-23P
Task 9-99.6

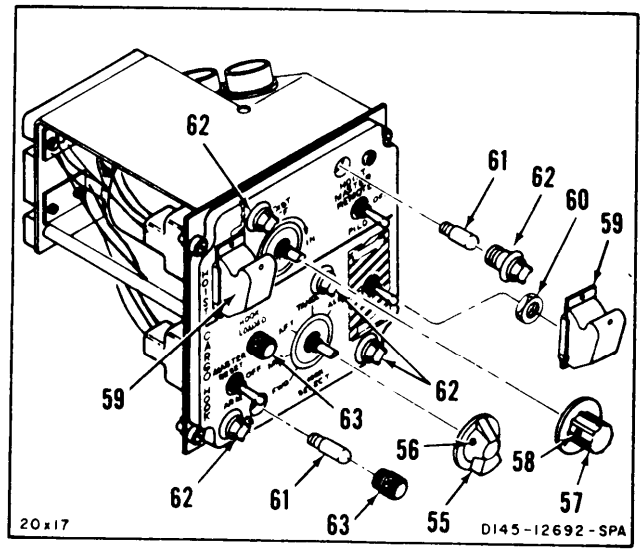


9-99.5 ASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) (Continued)

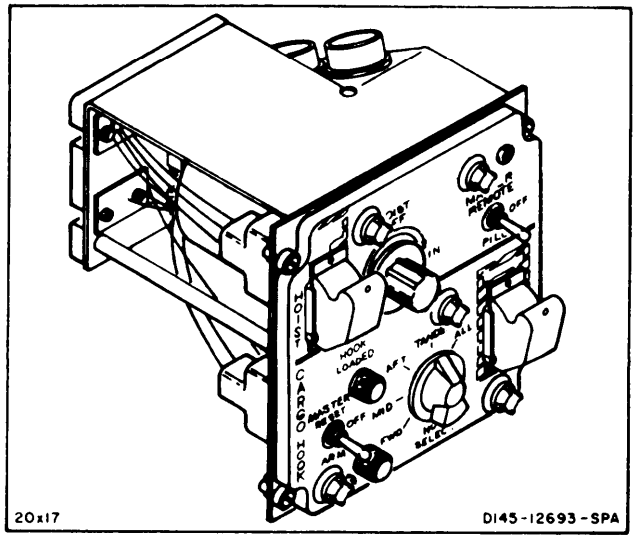
16. Install two grommets (50) in plastic panel (51).
17. Position panel (51) on housing (2). **Install two screws (52), washers (53), and nuts (54).**



18. **Install HOOK SELECT knob (55)** and tighten set screw (56),
19. **Install HOIST knob (57)** and tighten set screw (58).
20. Open both switch guards (59). **Install two guards** and nuts (60). Close guards.
21. **Install seven lamps (61)** in five lenses (62) and two indicator lenses (63).
22. **Install five lenses (62) and two indicator lenses (63).**



INSPECT



FOLLOW-ON MAINTENANCE:

Test hoist/cargo hook panel (Task 9-99.6).

END OF TASK

9-99.5.1 ASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) 9-99.5.1

INITIAL SETUP

Applicable Configurations:
With 17

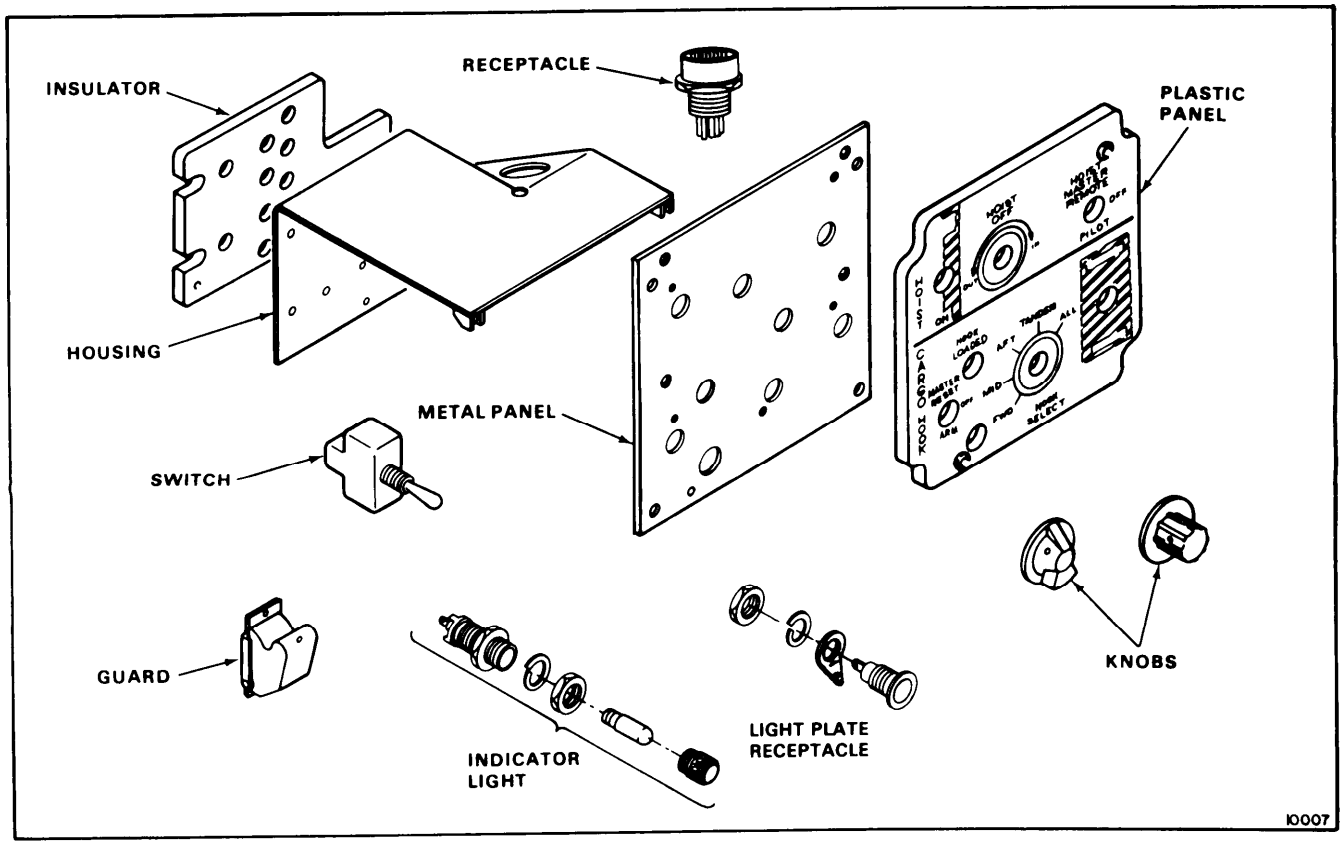
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Iron
Rivet Set
Gun-Type Heater

Materials:
Soldering Flux (E178)
Solder (E360)
Tubing, Heat Shrinkable (E431)
Heat Sink (E195)

Parts:
Rivets

Personnel Required:
Machinist
Aircraft Electrician
Inspector

References:
TM 55-1500-323-25
TM 55-1520-240-23P
Task 9-99.6



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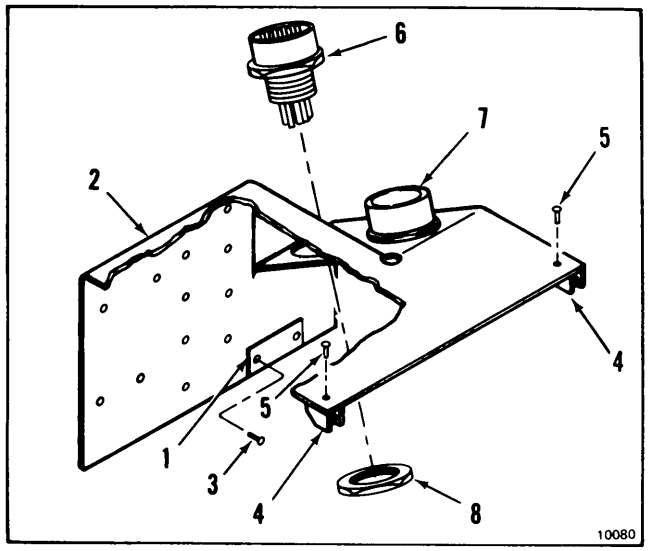
9-99.5.1 ASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) (Continued)

1. Position brace (1) on housing (2). **Install two rivets (3).**
2. Position two nut plates (4) and **install two rivets (5).**
3. **Install receptacles (6 and 7)** and install two jam nuts (87).



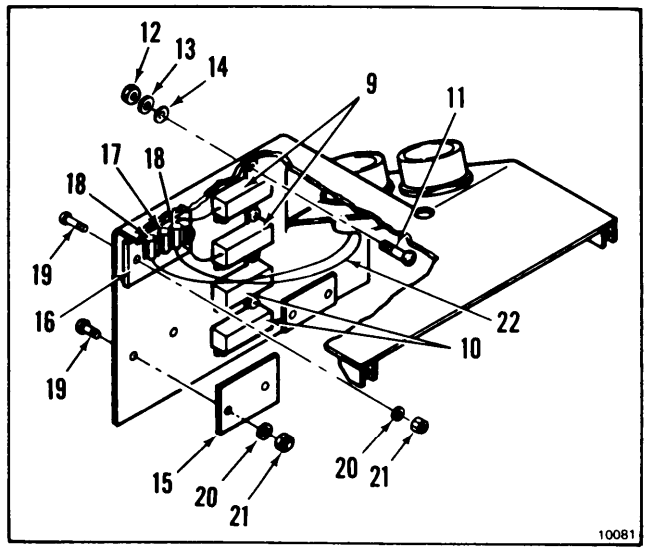
4. **Install two 187-ohm resistors (9), two 154-ohm resistors (10),** eight screws (11), nuts (12), lockwashers (13), and flat washers (14).
5. **Install two terminal boards (15 and 16), diode (17), two semiconductors (18),** four screws (19), washers (20), and nuts (21).

NOTE

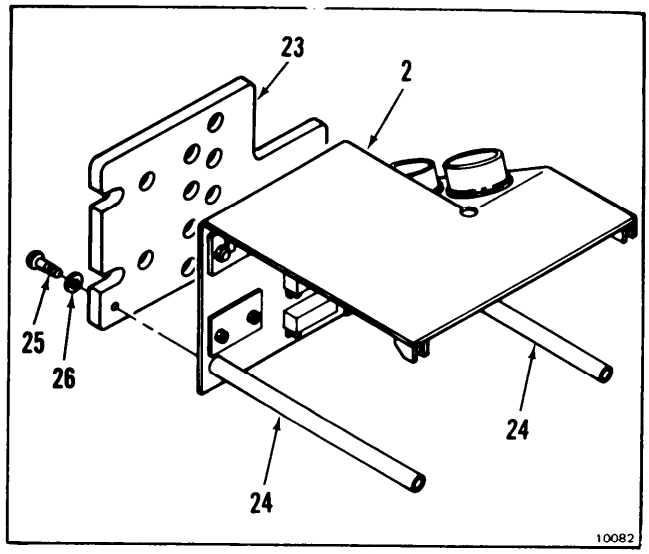
Wiring diagram is shown in Task 9-99.6.

6. Remove tags and **solder wires (22)** as required. Use solder (E360), heat sink (E 195), and tubing (E431) (TM 55-1500-323-25).

INSPECT



7. **Install insulator (23), two spacers (24),** screws (25), and lockwashers (26) on housing (2).



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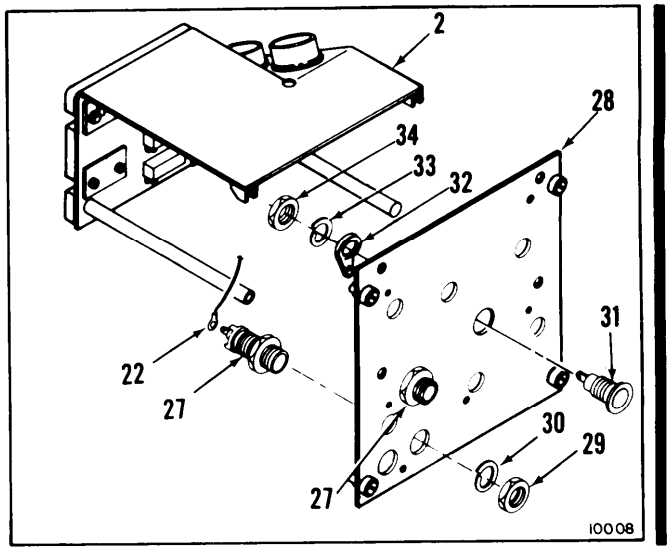
9-99.5.1 ASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) (Continued)

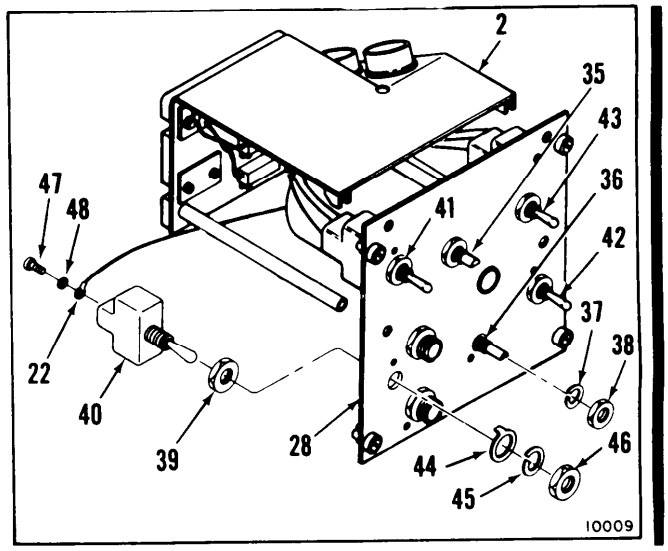
8. **Position two indicator lights (27)** through rear of metal panel (28) and **install two nuts (29)** and lockwashers (30).
9. **Position receptacle (31)** through front of panel (28) and **install terminal lug (32),** lockwasher (33), and nut (34).
10. Remove tags and **connect wires (22)** from housing (2) to two indicator lights (27).

INSPECT

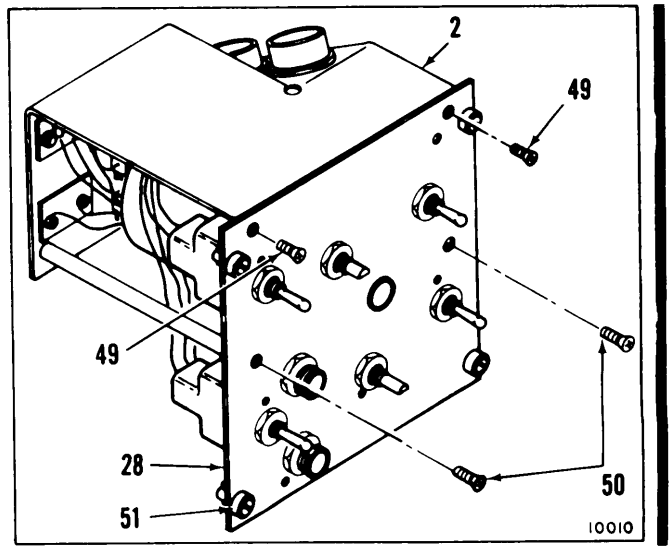


11. **Position two rotary switches (35 and 36)** through back of panel (28) and **install two lock rings (37) and nuts (38).**
12. Install one nut (39) each on body of four toggle switches (40, 41, 42, and 43). **Position four switches** through back of panel (28) and **install four lock rings (44), lockwashers (45), and nuts (46).**
13. Remove tags and **connect wires (22) to two rotary switches (35 and 36). Connect wires to four toggle switches (40, 41, 42, and 43)** by installing screws (47) and washers (48).

INSPECT



14. Position panel (28) on housing (2) and **install four screws (49 and 50).**
15. **Install four turnlocks (51).**



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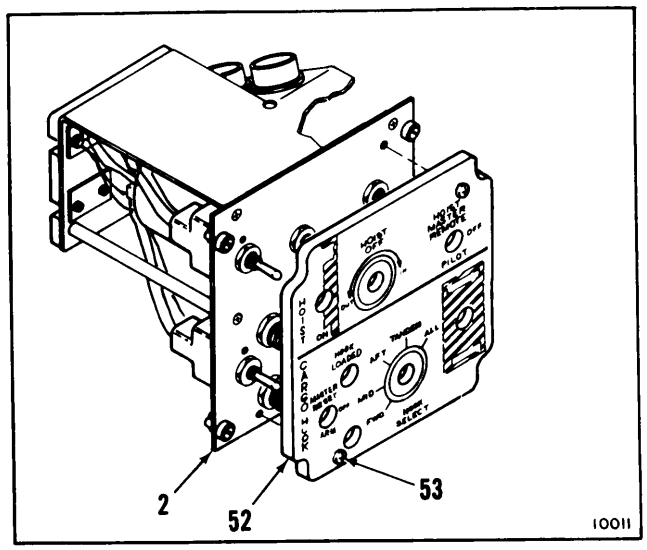
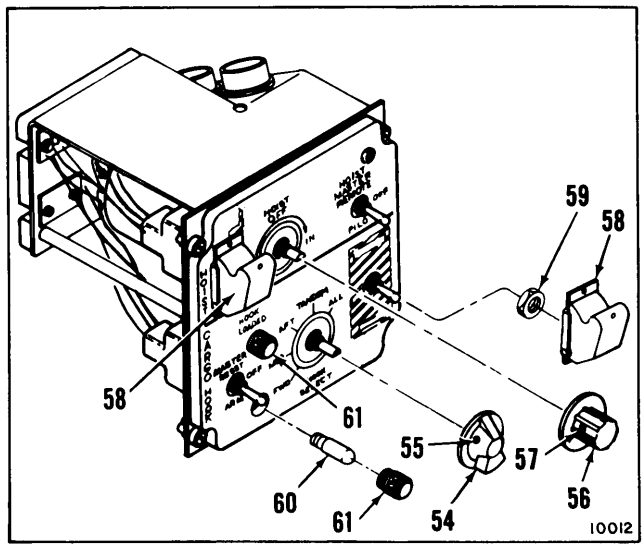
9-99.5.1 ASSEMBLE HOIST/CARGO HOOK PANEL (AVIM) (Continued) 9-99.5.1

16. Position panel (52) on housing (2). **Tighten four captive screws (53).**



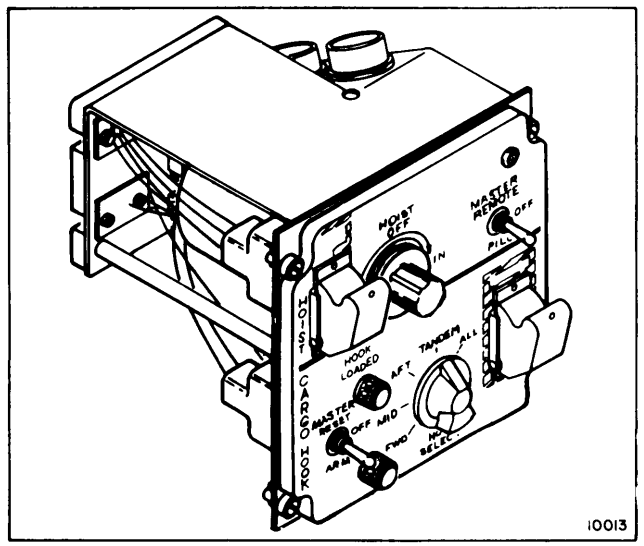
17. **Install HOOK SELECT knob (54)** and tighten set screw (55).
18. **Install HOIST knob (56)** and tighten set screw (57).
19. Open both switch guards (58). **Install two guards** and nuts (59). Close guards.
20. **Install two lamps (60)** in two indicator lenses (61).
21. **Install two indicator lenses (61).**

INSPECT



FOLLOW-ON MAINTENANCE:

Test hoist/cargo hook panel (Task 9-99.6).



END OF TASK

9-99.6 TEST HOIST/CARGO HOOK PANEL (AVIM) 9-99.6

INITIAL SETUP

Applicable Configurations:
All

Tools:
Power Supply, 28 VDC
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

Equipment Condition:
Off Helicopter Task

1. **Without 17 apply 28 vdc to pin E and ground to pin G** of receptacle J2. Five panel lights (1) shall come on.

1.1 **With 17 apply 115 vac to pin V(+) and S.** Lightplate (11.1) shall illuminate.

2. **Apply 28 vdc to pin C and around to pins F and L** of receptacle J2. HOOK LOADED lights (2) shall come on.

3. Remove ground from pins F and L and **apply ground to pin G.** Press both HOOK LOADED lights (2). Lights shall come on. Remove power.

4. **Test switches** as listed below. Use multimeter

Switch	Position	Receptacle	Pins	Meter Reading (Ohms)
CABLE CUTTER (3)	OFF	J1	A and H	No Continuity
	ON	J1	A and H	Continuity
EMERG Release (4)	Norm	J1	D and M	No Continuity
	Norm	J1	J and M	No Continuity
	REL ALL	J1	D and M	Continuity
	REL ALL	J1	D and J	Continuity
	REL ALL	J1	J and M	Continuity
HOIST MASTER (5)	PILOT			
HOIST Control (6)	OFF	J1	B and C	No Continuity
HOIST MASTER (5)	OFF			
HOIST Control (6)	Rotate Both Ways	J1	B and C	No Continuity
HOIST MASTER (5)	PILOT			
HOIST Control (6)	Rotate Both Ways	J1	B and C	Continuity
Cargo Hook MASTER (7)	ARM	J2	C and K	Continuity
	OFF	J2	C and K	Continuity
	RESET	J2	C and K	No Continuity
HOIST MASTER (5)	OFF	J1	E and G	No Continuity
	PILOT	J1	E and G	Continuity
	REMOTE	J1	E and G	Continuity
	REMOTE	J1	F and T	341 ± 15
HOIST MASTER (5)	PILOT			
HOIST Control (6)	Rotate from OUT almost to OFF	J1	T and B	341 ±15 at OUT 841 ± 65 short of OFF
HOIST MASTER (5)	PILOT			
HOIST Control (6)	Rotate from IN almost to OFF	J1	T and B	341 ±15 at IN 841 ±65 short of OFF

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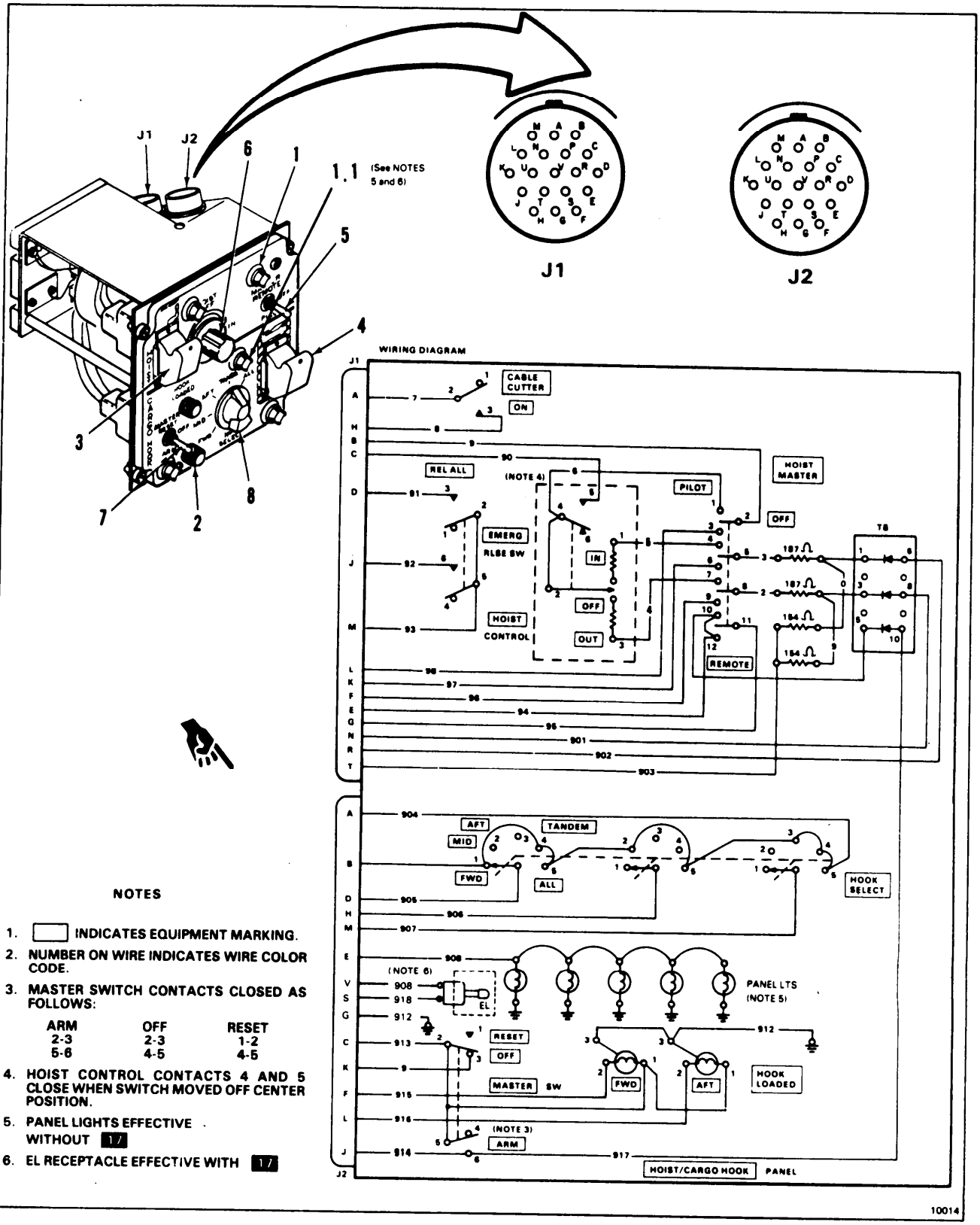
9-99.6 TEST HOIST/CARGO HOOK PANEL (AVIM) (Continued)



NOTES

1. [ ] INDICATES EQUIPMENT MARKING.
2. NUMBER ON WIRE INDICATES WIRE COLOR CODE.
3. MASTER SWITCH CONTACTS CLOSED AS FOLLOWS:

ARM	OFF	RESET
2-3	2-3	1-2
5-6	4-5	4-5

4. HOIST CONTROL CONTACTS 4 AND 5 CLOSE WHEN SWITCH MOVED OFF CENTER POSITION.
5. PANEL LIGHTS EFFECTIVE WITHOUT 17
6. EL RECEPTACLE EFFECTIVE WITH 17

10014

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9-99.6 TEST HOIST/CARGO HOOK PANEL (AVIM) (Continued) 9-99.6

Switch	Position	Receptacle	Pins	Meter Reading (Ohms)
HOIST MASTER (5)	PILOT	J1	B and L	No Continuity
	REMOTE	J1	B and L	Continuity
	PILOT	J1	K and T	No Continuity
	REMOTE	J1	K and T	341±15
N/A		J1	N (+) and T (-)	164 ± 15
(Diode Check)		J1	N (-) and T (+)	No Continuity
		J1	R (+) and T (-)	164±15
		J1	R (-) and T (+)	No Continuity
			J of J2 (+) and E of J1 (-)	65 ± 5
			J of J2 (–) and E of J1 (+)	No Continuity
HOOK SELECT (8)	FWD	J2	A and B	Continuity
	FWD	J2	B and D	Continuity
	MID	J2	B and D	No Continuity
	MID	J2	H and B	Continuity
	AFT	J2	B and D	No Continuity
	AFT	J2	B and H	No Continuity
	AFT	J2	B and M	Continuity
	TANDEM	J2	B and D	Continuity
	TANDEM	J2	B and H	No Continuity
	TANDEM	J2	B and M	Continuity
	ALL	J2	B and D	Continuity
	ALL	J2	B and H	Continuity
	ALL	J2	B and M	Continuity
N/A		J2	G and Case Grd	Continuity
Cargo Hook MASTER (7)	ARM	J2	C and J	Continuity
	OFF	J2	C and J	No Continuity

FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-100 INSTALL OVERHEAD PANEL PANELS

INITIAL SETUP

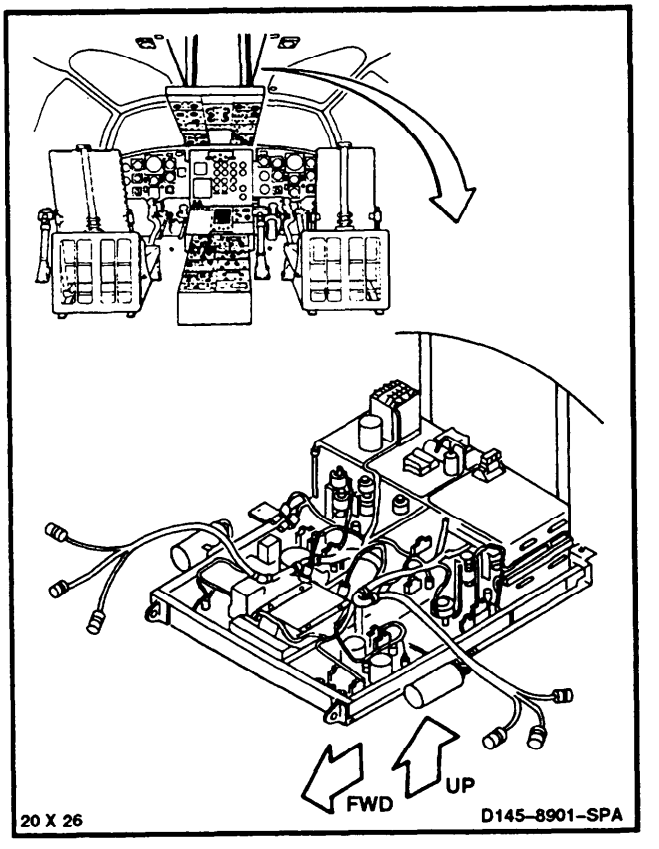
Applicable Configurations:
Without
Without

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 11-1520-240-23



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CAUTION

Wires must not touch moving components; otherwise damage to wires or fire can result.

ENGINE CONDITION Panel

1. Install ENGINE CONDITION panel as follows:

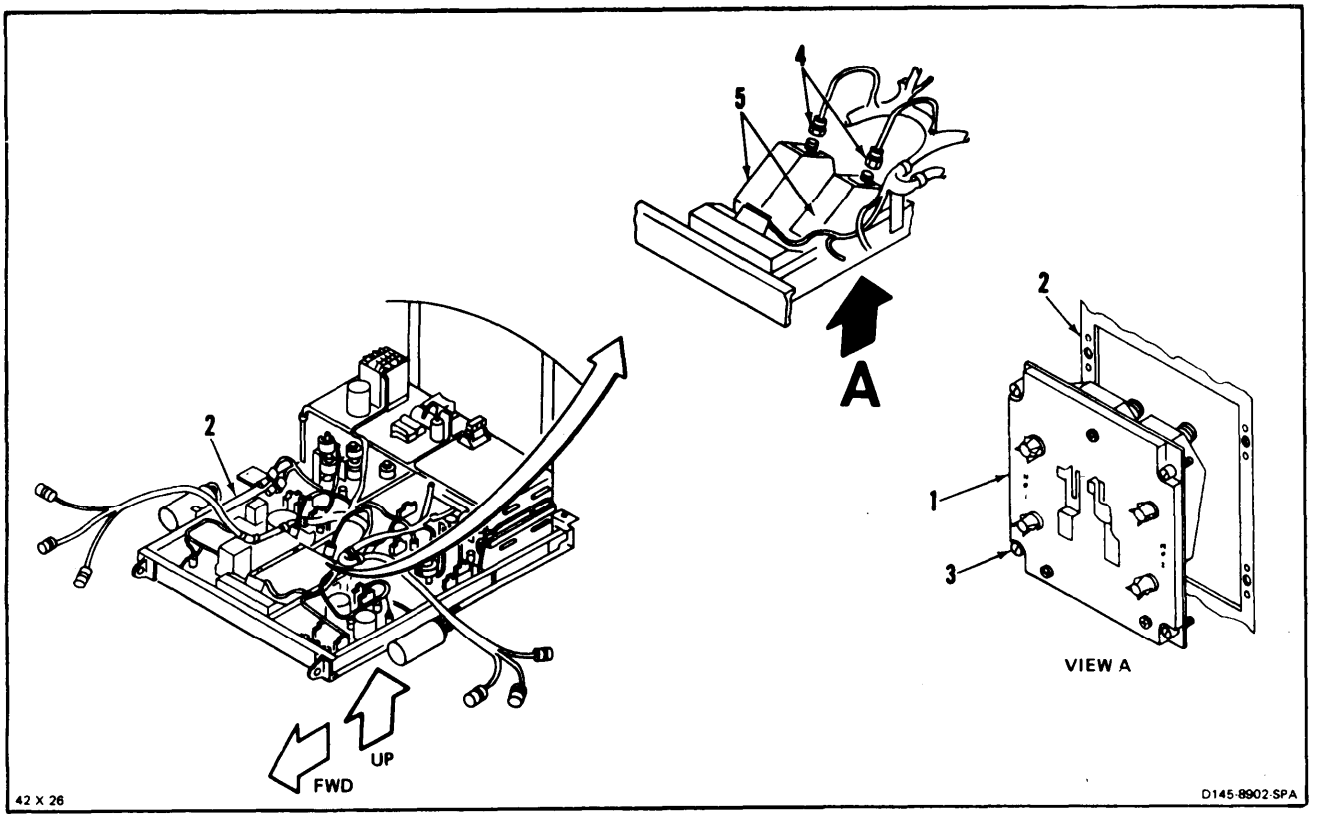
   a. **Position panel (1) on panel (2). Tighten four screws (3).**

   b. **Connect two electrical connectors (4)** to two engine controls (5). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 13.



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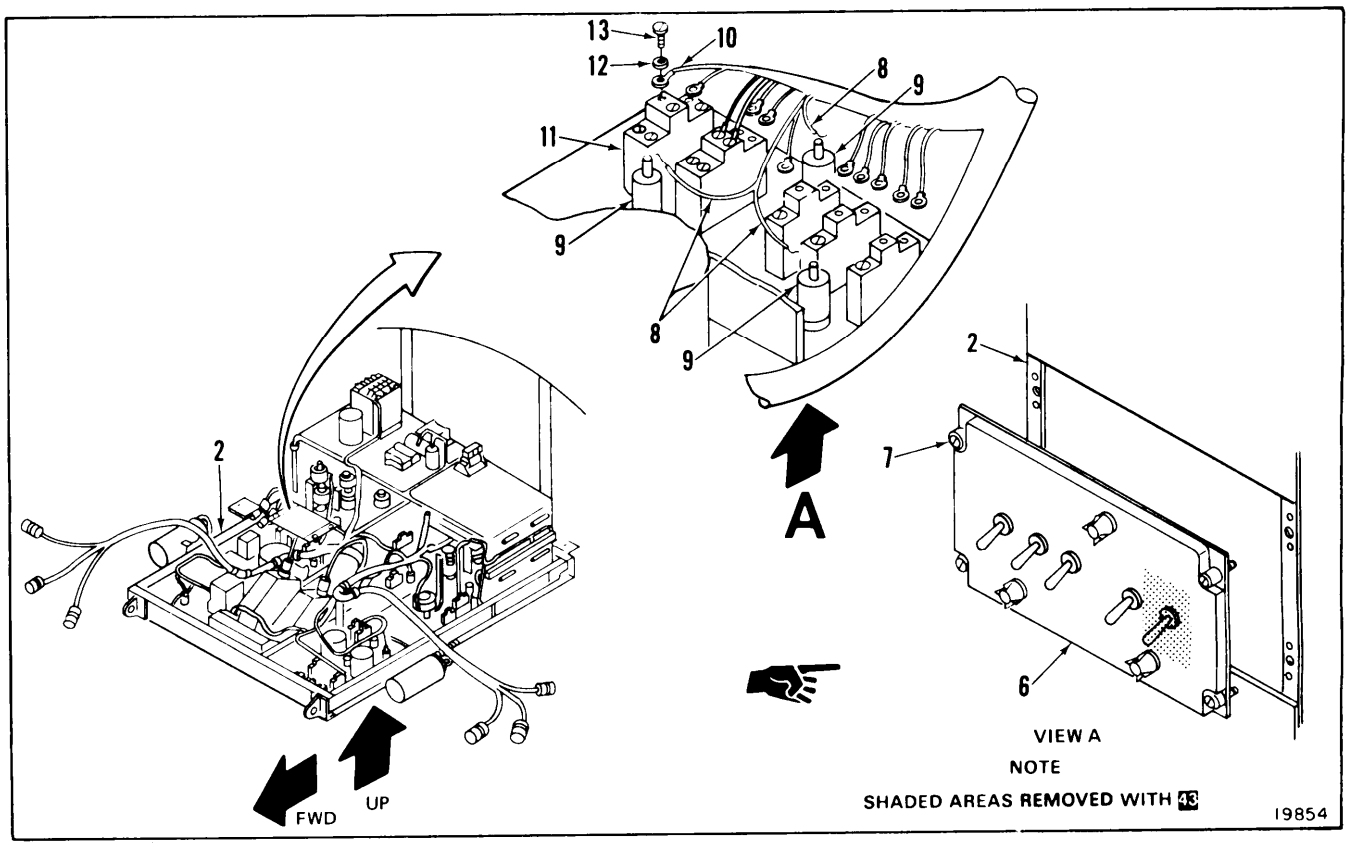
ANTI-ICE Panel

2. **Install ANTI-ICE panel** as follows:
   a. **Position panel (6)** on panel (2). **Tighten four screws (7).**
   b. Remove tape. **Connect and solder three wires (8) to three lamps (9).** Remove tags. Use solder (E360).
   c. Remove tape. **Connect 10 wires (10) to 5 switches (11)** by installing washers (12) and screws (13). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 13.



9-100 INSTALL OVERHEAD PANEL PANELS (Continued) 9-100

LTG Panel

3. install LTG panel as follows:

   a. **Position panel (14)** on panel (2). **Tighten four screws (15).**

   b. Remove tape. **Connect 15 wires (16)** to two switches (17) by installing washers (18) and screws (19). Remove tags.

   c. Remove tape. **Connect and solder two wires (20)** to two lamps (21). Remove tags. Use solder (E360).

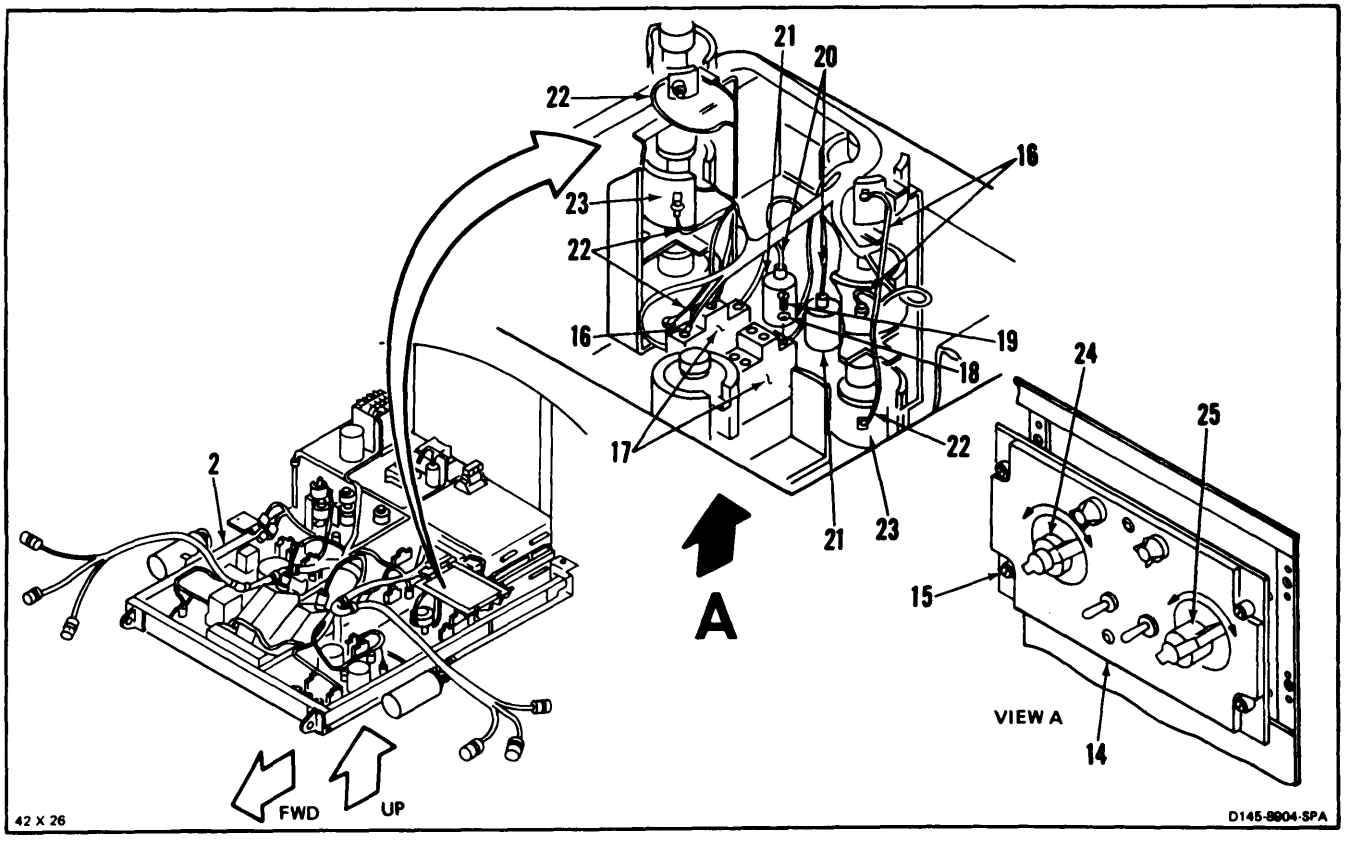
   d. Remove tape. **Connect and solder 19 wires (22)** to two potentiometers (23). Use solder (E360).

   e. Operate controls (24 and 25) through full range. Wires must not touch moving components.

INSPECT

NOTE

If no other panels are to be replaced, go to step 13.



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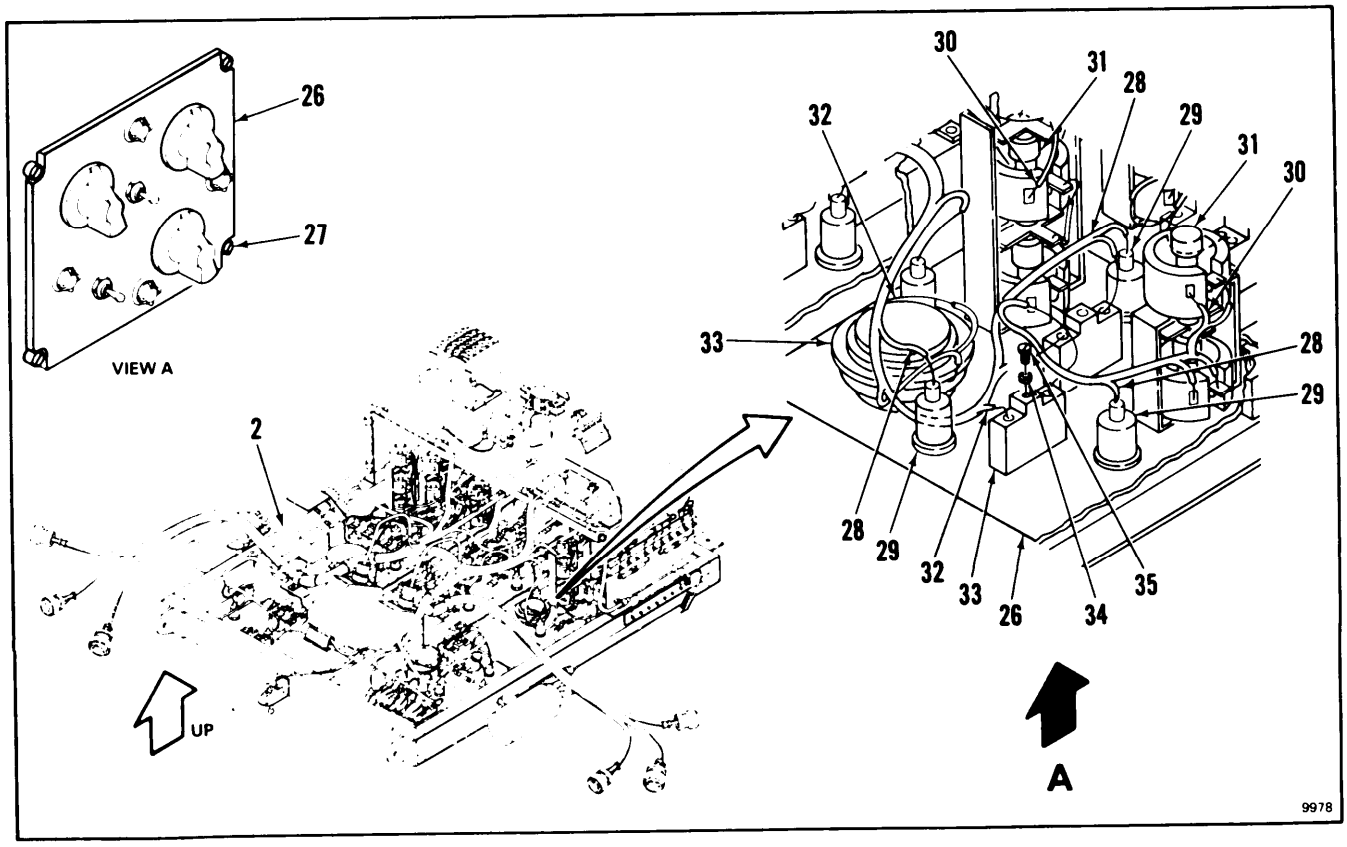
LIGHTING Panel

4. Install LIGHTING panel (26) as follows:
   a. Position panel (26) on panel (2). Tighten four screws (27).
   b. Remove tape. Connect and solder five wires (28) to three lamps (29). Remove tags.
   c. Remove tape. Connect and solder 16 wires (30) to two potentiometers (31) Remove tags.
   d. Remove tape. Connect nine wires (32) to two switches (33) by installing washers (34) and screws (35). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 13.



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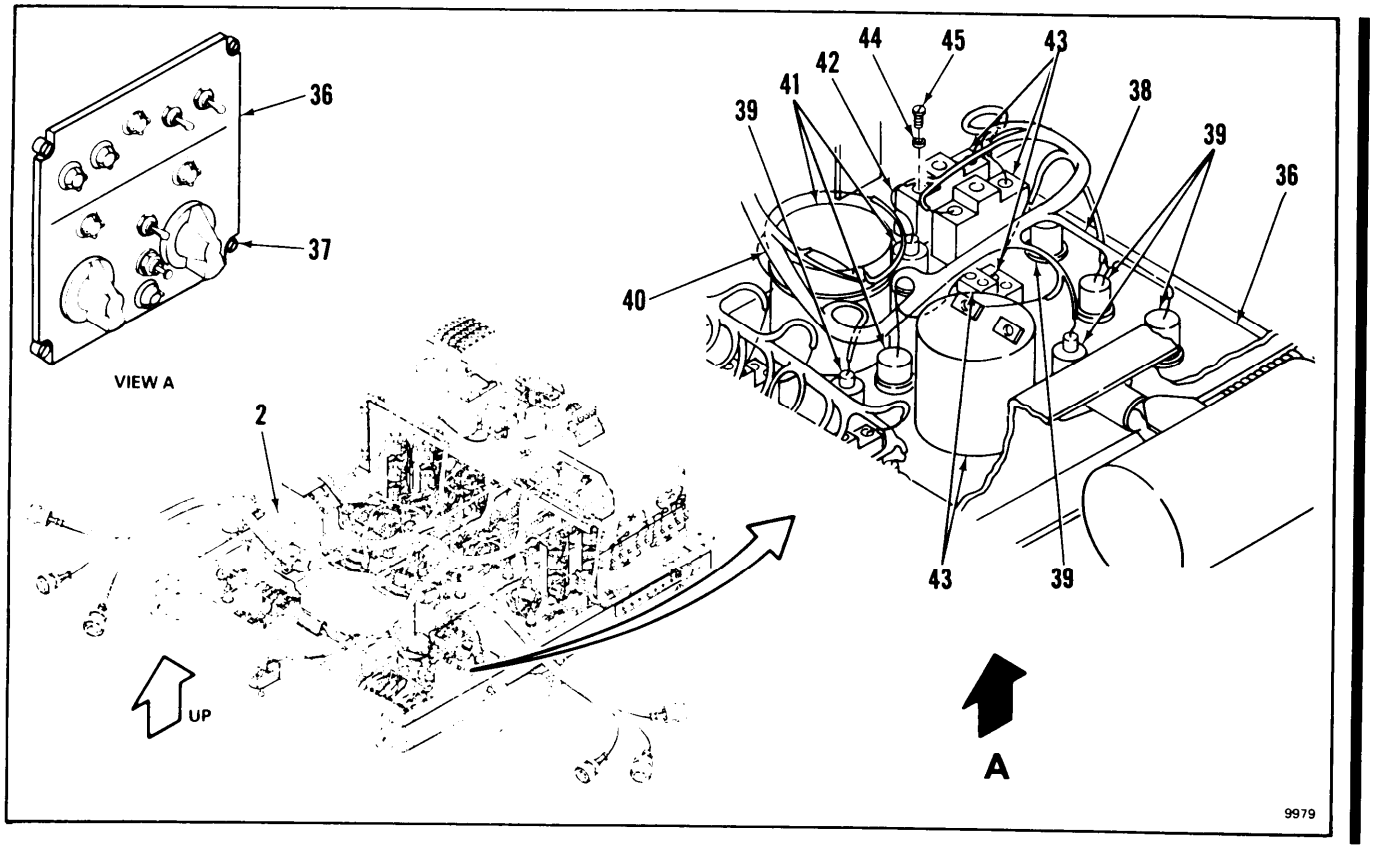
TROOP WARN/HEATING Panel

5. Install TROOP WARN/HEATING panel (36) as follows:
   a. Position panel (36) on panel (2). Tighten four screws (37).
   b. Remove tape. Connect and solder six wires (38) to five lamps (39). Remove tags.
   c. Remove tape. Connect and solder eight wires (40) to three switches (41). Remove tags.
   d. Remove tape. Connect 12 wires (42) to four switches (43) by installing washers (44) and screws (45). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 13.



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9-100 INSTALL OVERHEAD PANEL PANELS (Continued)

ELECT Panel

6. Install ELECT panel (46) as follows

   a. Position panel (46) on panel (2). Tighten four screws (47).

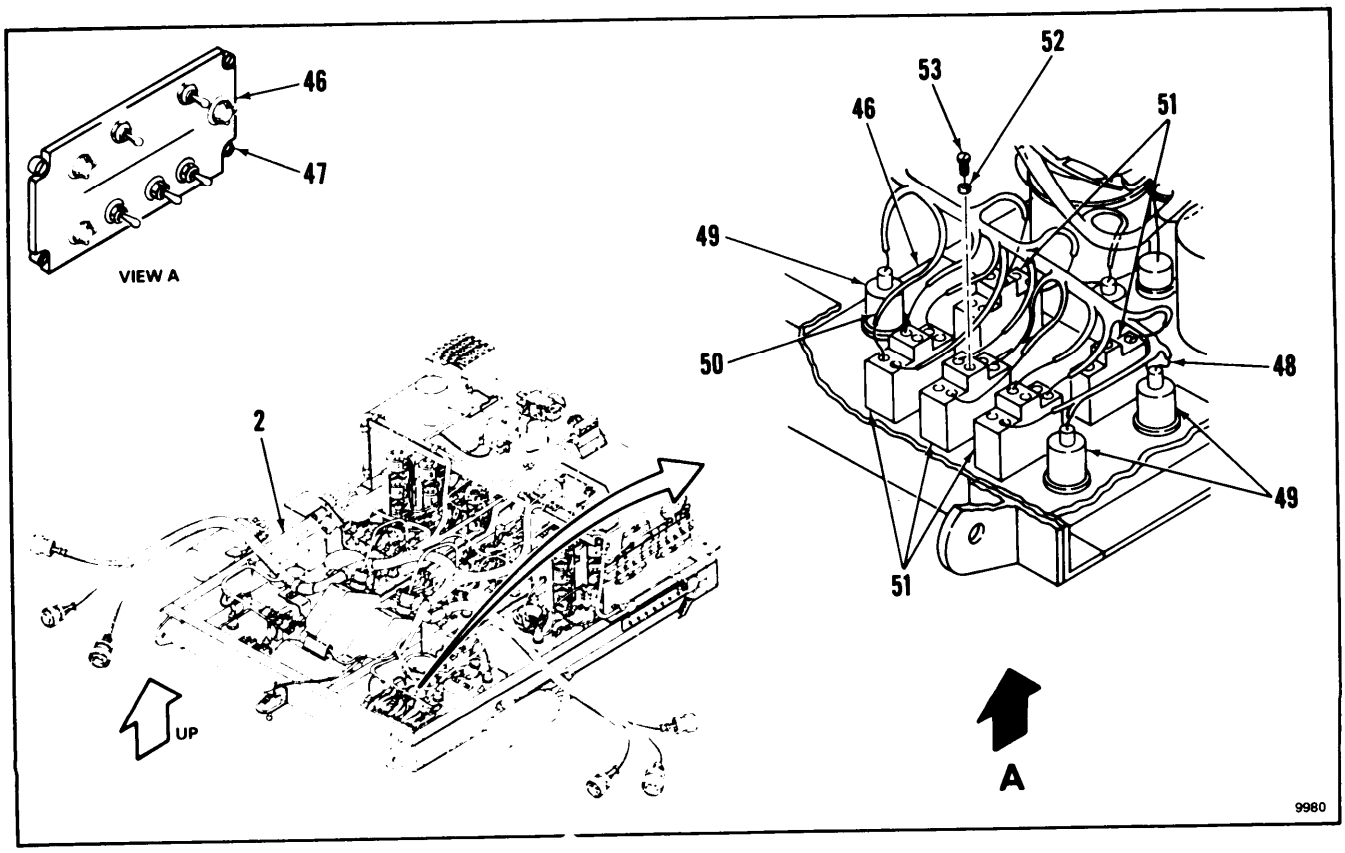
   b. Remove tape. Connect and solder five wires (48) to three lamps (49). Remove tags.

   c. Remove tape. Connect 26 wires (50) to five switches (51) by installing washers (52) and screws (53). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 13.



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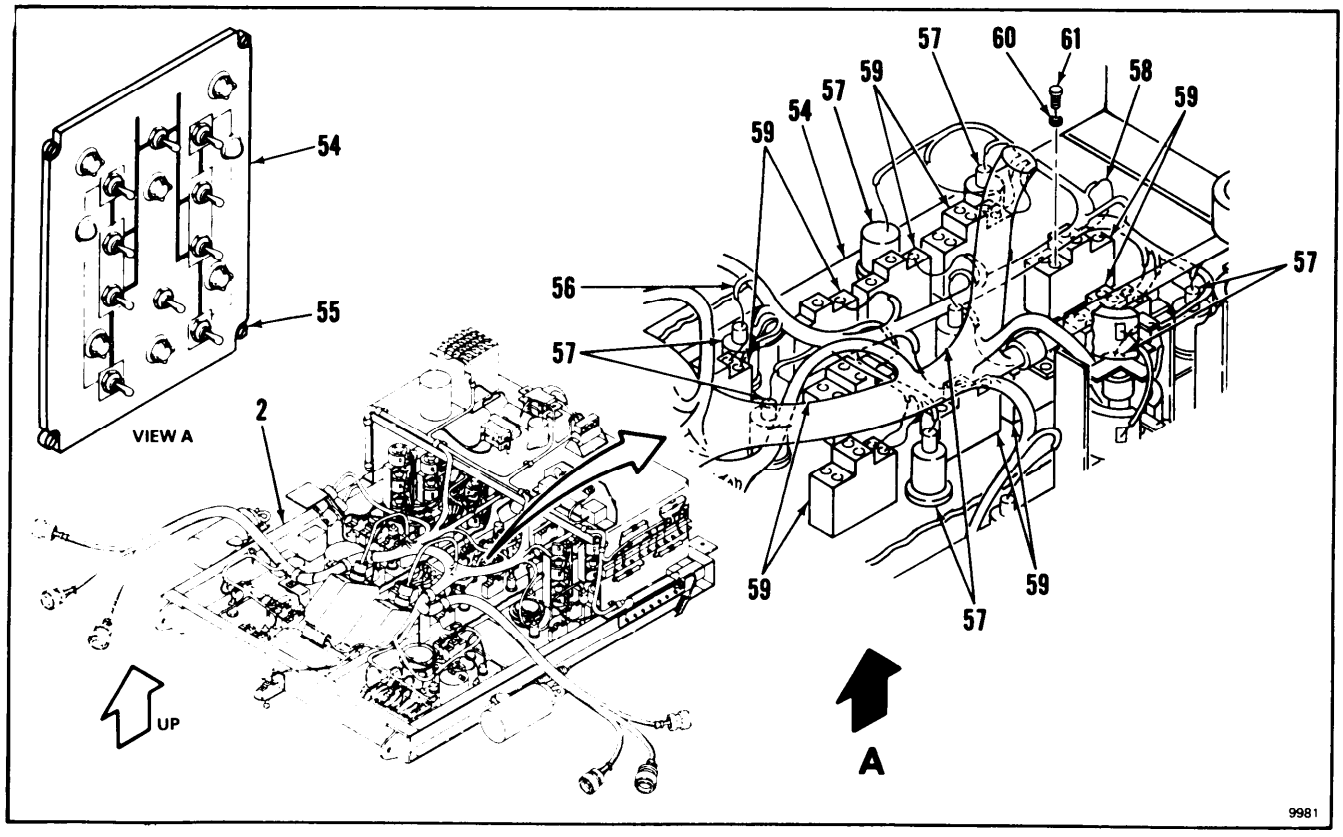
FUEL CONTROL Panel

7. Install FUEL CONTROL panel (54) as follows:
   a. Position panel (54) on panel (2). Tighten six screws (55).
   b. Remove tape. Connect and solder 17 wires (56) to eight lamps (57). Remove tags.
   c. Remove tape. Connect 35 wires (58) to 10 switches (59) by installing washers (60) and screws (61). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 13.



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9-100 INSTALL OVERHEAD PANEL PANELS (Continued)

START Panel

8. Install START panel (62) as follows:
   a. Position panel (62) on panel (2). Tighten four screws (63).
   b. Remove tape. Connect and solder nine wires (64) to four lamps (65). Remove tags.
   c. Remove tape. Connect 22 wires (66) to two switches (67) by installing washers (68) and screws (69). Remove tags.

INSPECT

NOTE

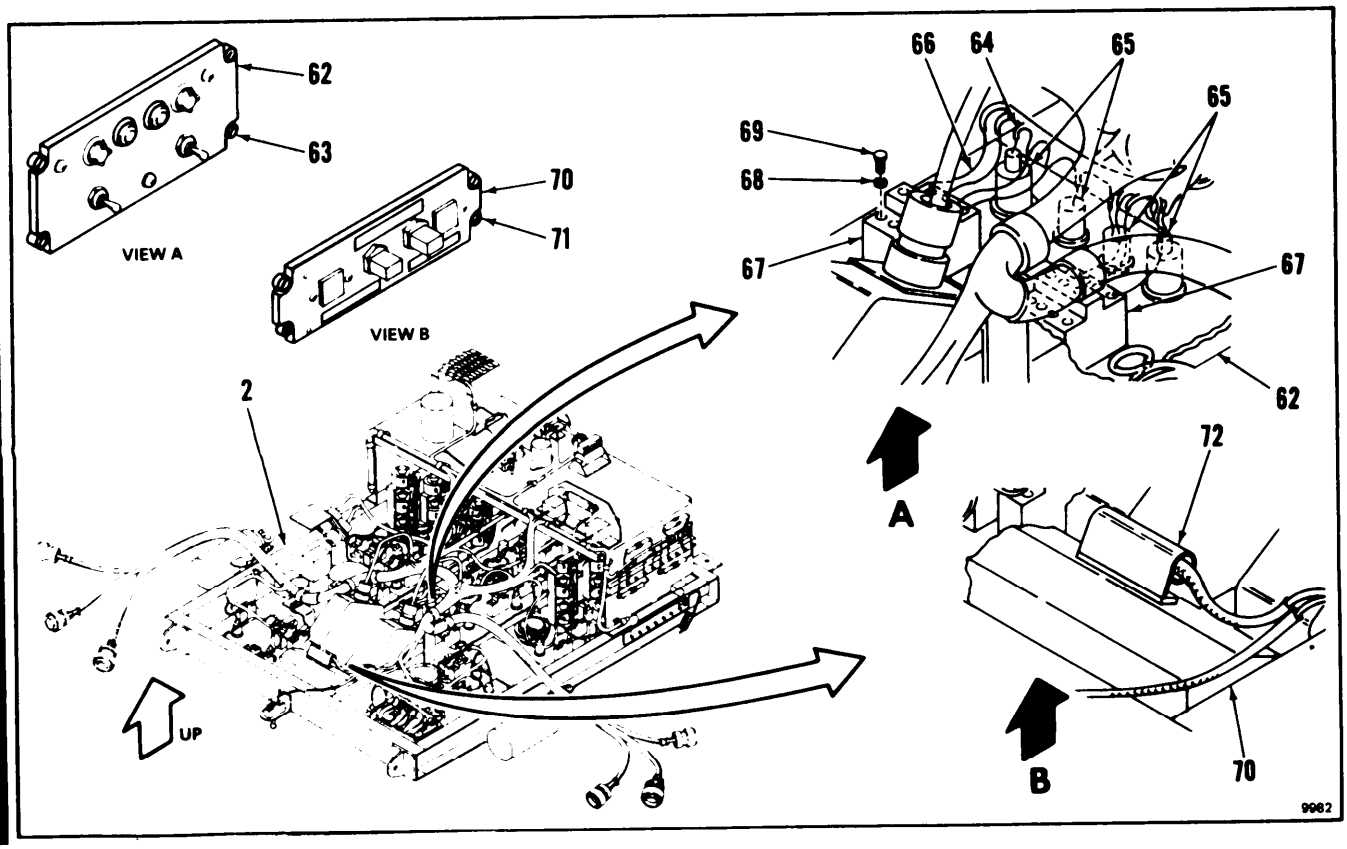
If no other panels are to be installed, go to step 13.

EMERGENCY POWER Panel

9. Install EMERGENCY POWER panel (70) as follows:
   a. Position panel (70) on panel (2). Tighten four screws (71).
   b. Connect plug (72) to panel (70). Remove tag.

NOTE

If no other panels are to be installed, go to step 13.



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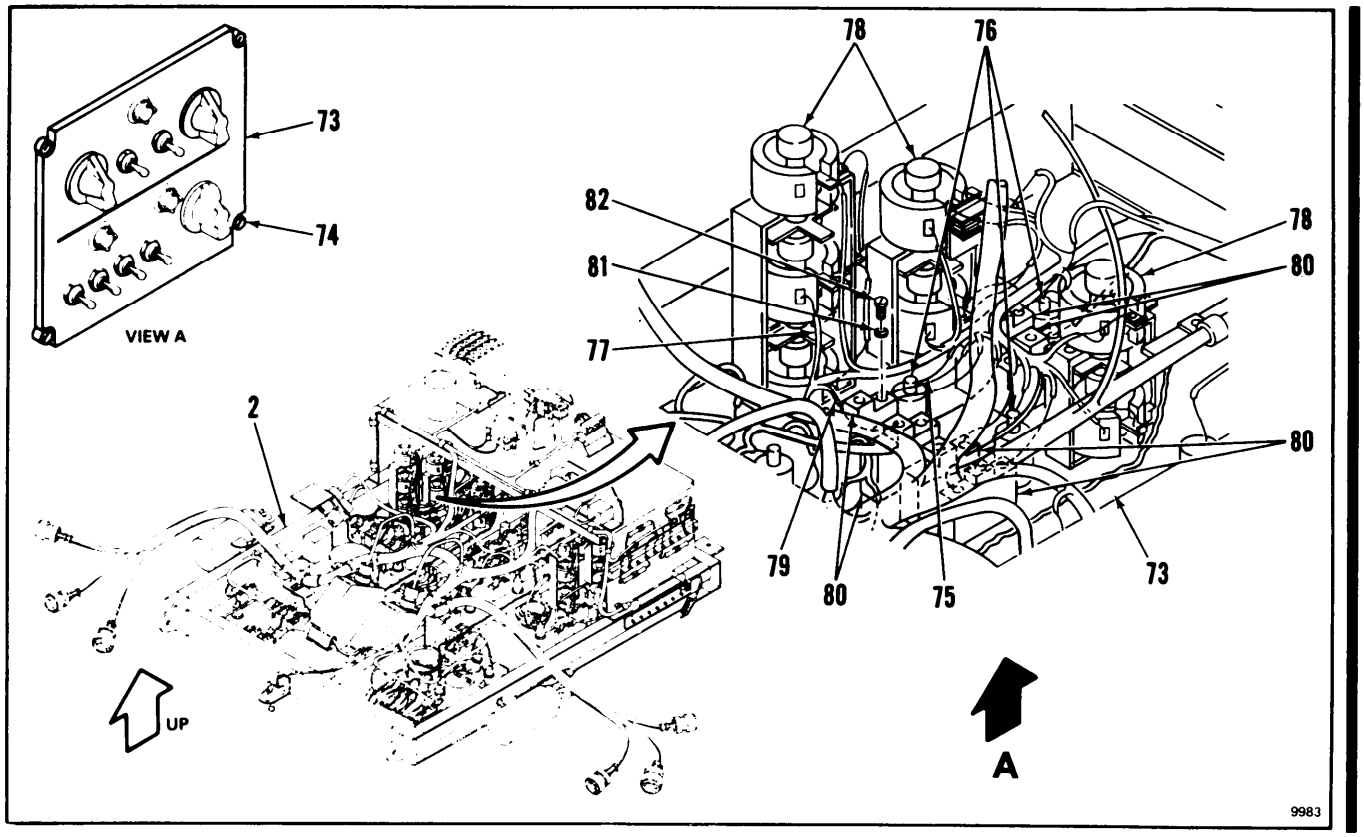
LIGHTING Panel

10. Install LIGHTING panel (73) as follows:
    a. Position panel (73) on panel (2). Tighten four screws (74).
    b. Remove tape. Connect and solder five wires (75) to three lamps (76). Remove tags.
    c. Remove tape. Connect and solder 25 wires (77) to three potentiometers (78). Remove tags.
    d. Remove tape. Connect 17 wires (79) to six switches (80) by installing washers (81) and screws (82). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 13.



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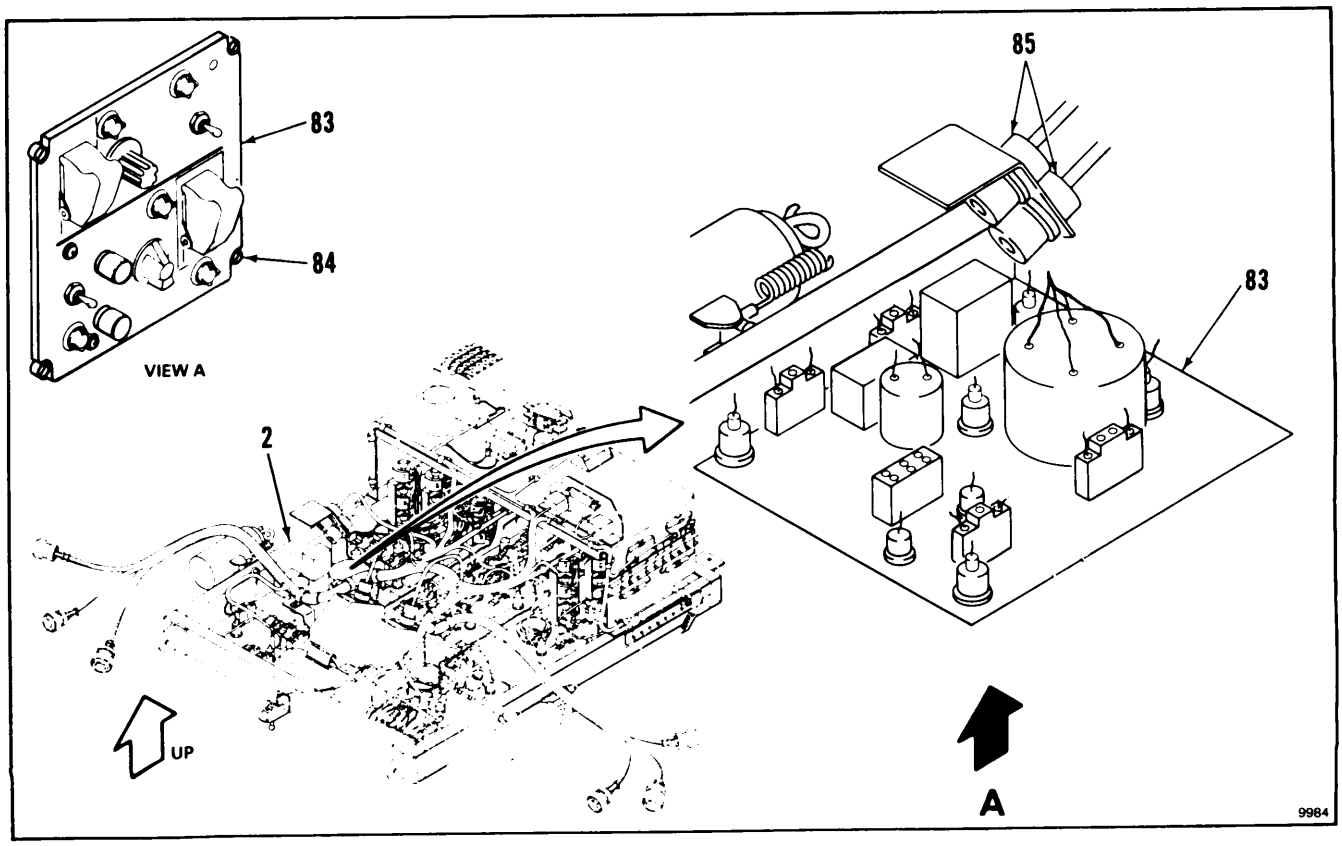
HOIST/CARGO HOOK Panel

11. Install HOIST/CARGO HOOK panel (83) as follows:
    a. Position panel (83) on panel (2). Tighten four screws (84).
    b. Connect two plugs (85) to panel (83). Remove tags.

INSPECT

NOTE

If no other panels are to be installed, go to step 13.



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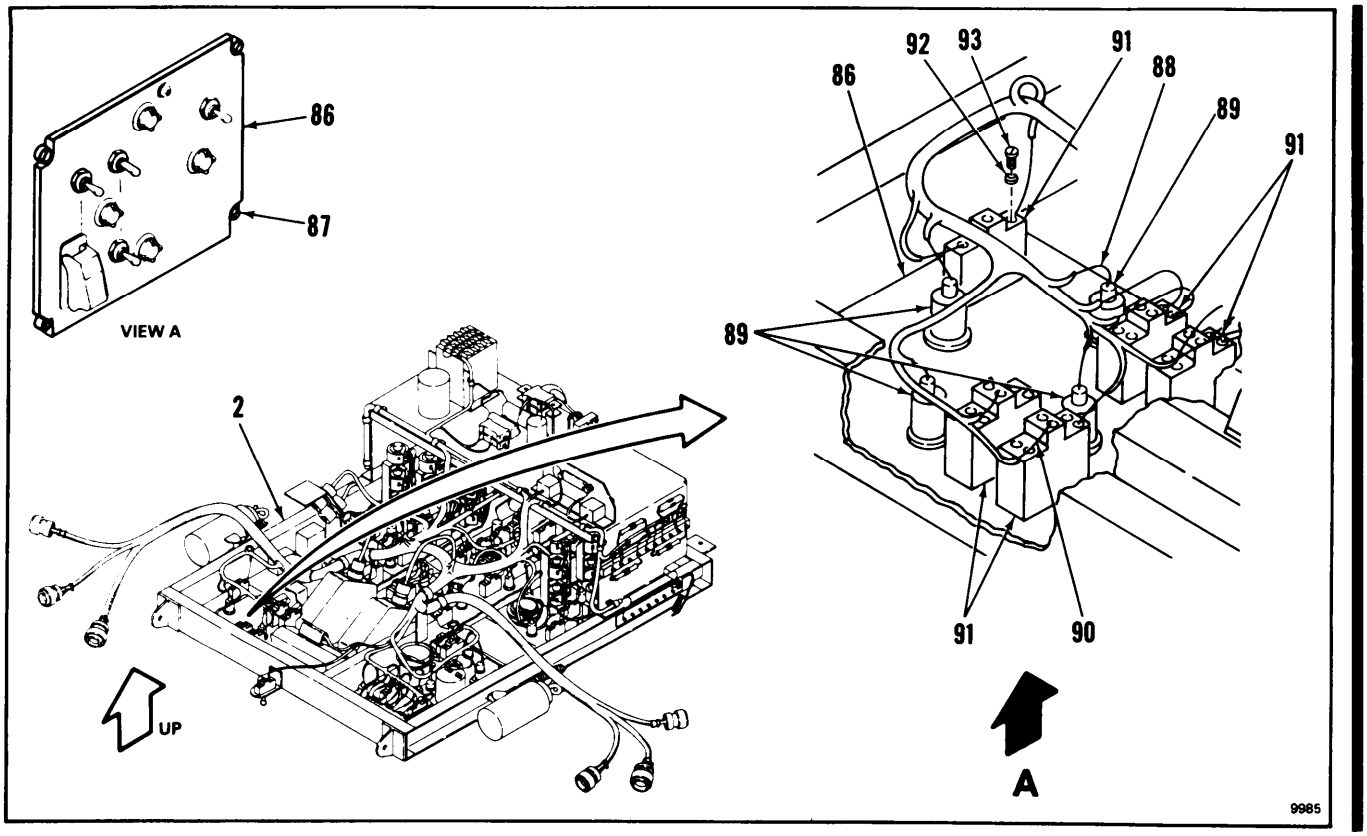
HYDRAULIC Panel

12. Install HYDRAULIC panel (86) as follows:
    a. Position panel (86) on panel (2). Tighten four screws (87).
    b. Remove tape. Connect and solder seven wires (88) to four lamps (89). Remove tags.
    c. Remove tape. Connect 15 wires (90) to five switches (91) by installing washers (92) and screws (93). Remove tags.

INSPECT

NOTE

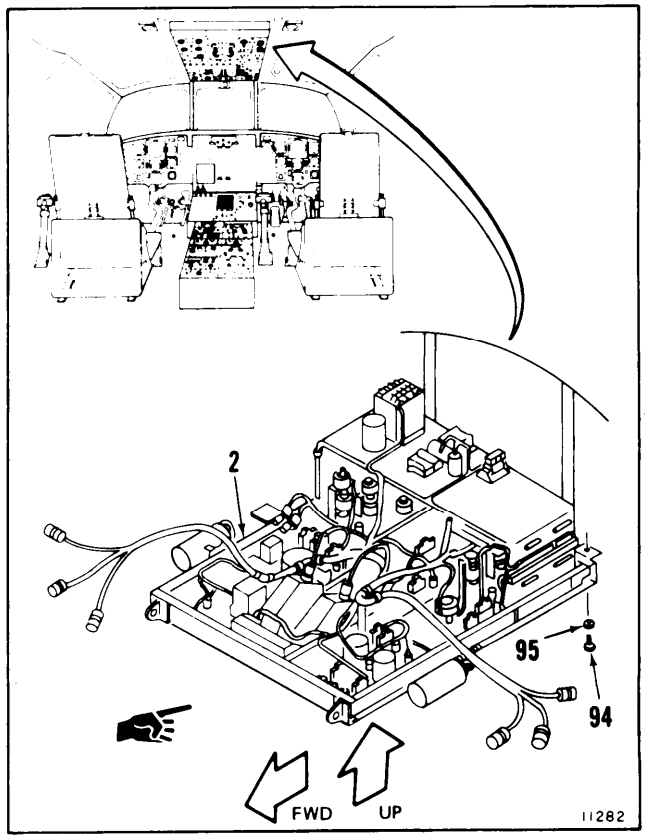
If no other panels are to be installed, go to step 13.



GO TO NEXT PAGE

13. Raise panel (2). **Install two bolts (94)** and washers (95).

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

9-100.1 REPLACE PRESS-TO-TEST LAMP FROM FUEL CONTROL PANEL 9-100.1

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

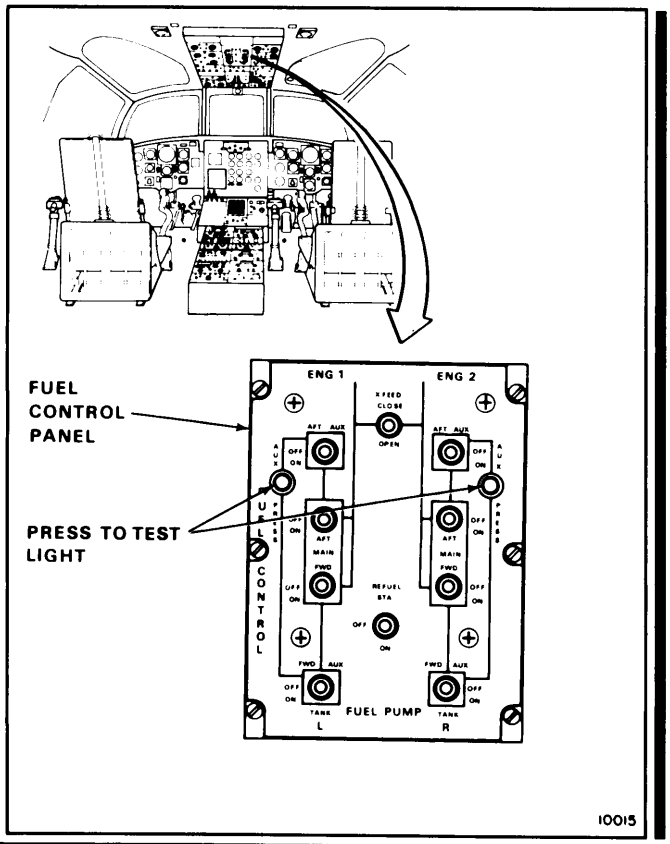
Materials:
None

Parts:
Lamp

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23P

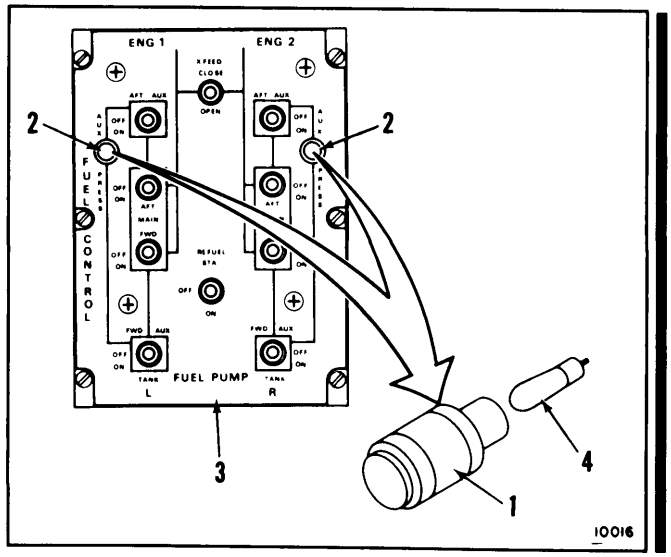
Equipment Condition:
Battery Disconnected (Task 1-39
Electrical Power Off
Hydraulic Power Off



NOTE

Replacement of press-to-test lamp in panel with 17 is shown here. Replacement of press-to-test lamp in panel without 17 is same.

1. Remove lens cap (1), turn counterclockwise, from press-to-test light (2) of FUEL CONTR panel (3).
2. Remove lamp (4) from cap (1).
3. **Install new lamp (4)** in cap (1).
4. Install cap (1), turn clockwise, in panel (3).



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

9-101 REMOVE OVERHEAD PANEL VARIABLE RESISTOR 9-101

INITIAL SETUP

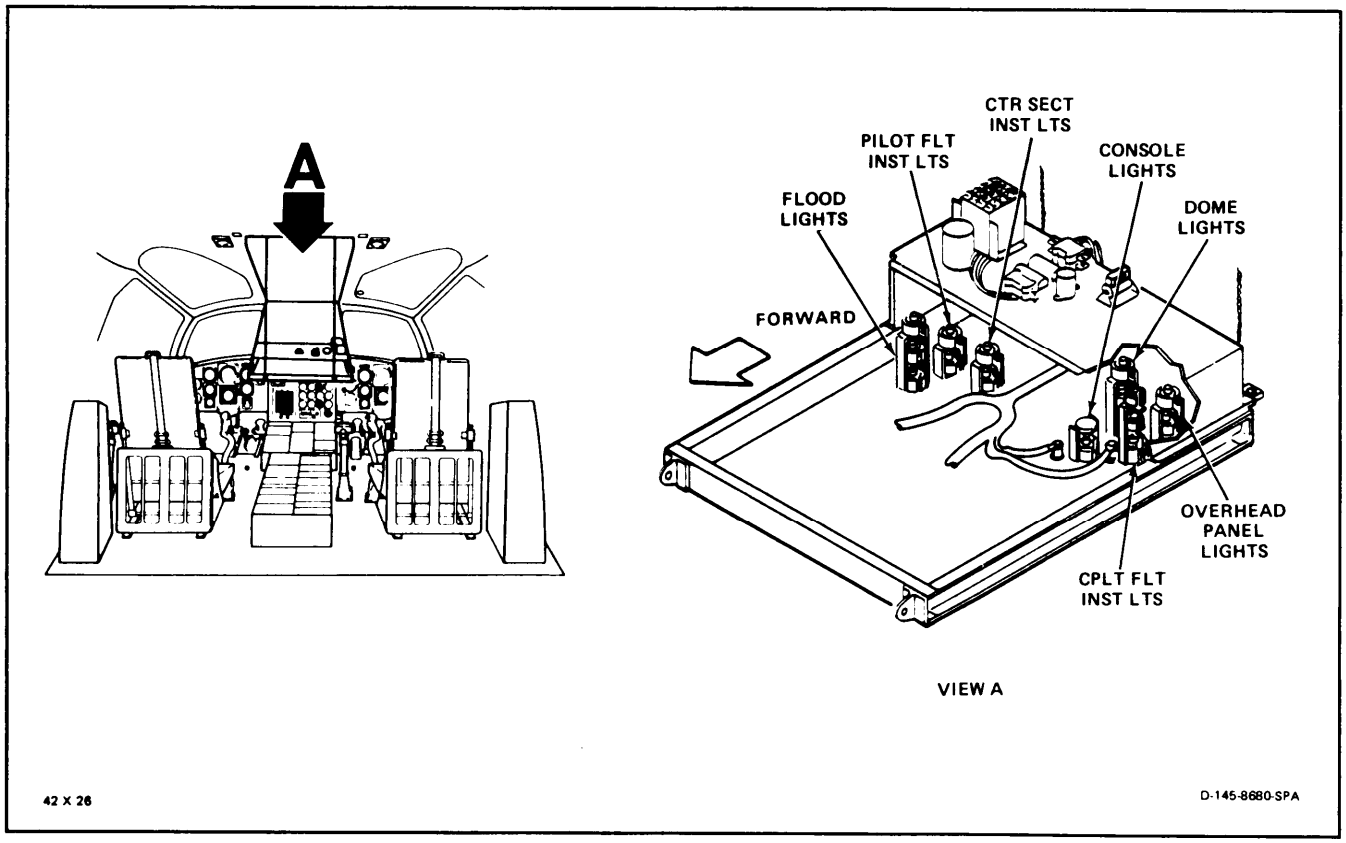
Applicable Configurations:
Without 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



GO TO NEXT PAGE

9-101 REMOVE OVERHEAD PANEL VARIABLE RESISTOR (Continued)

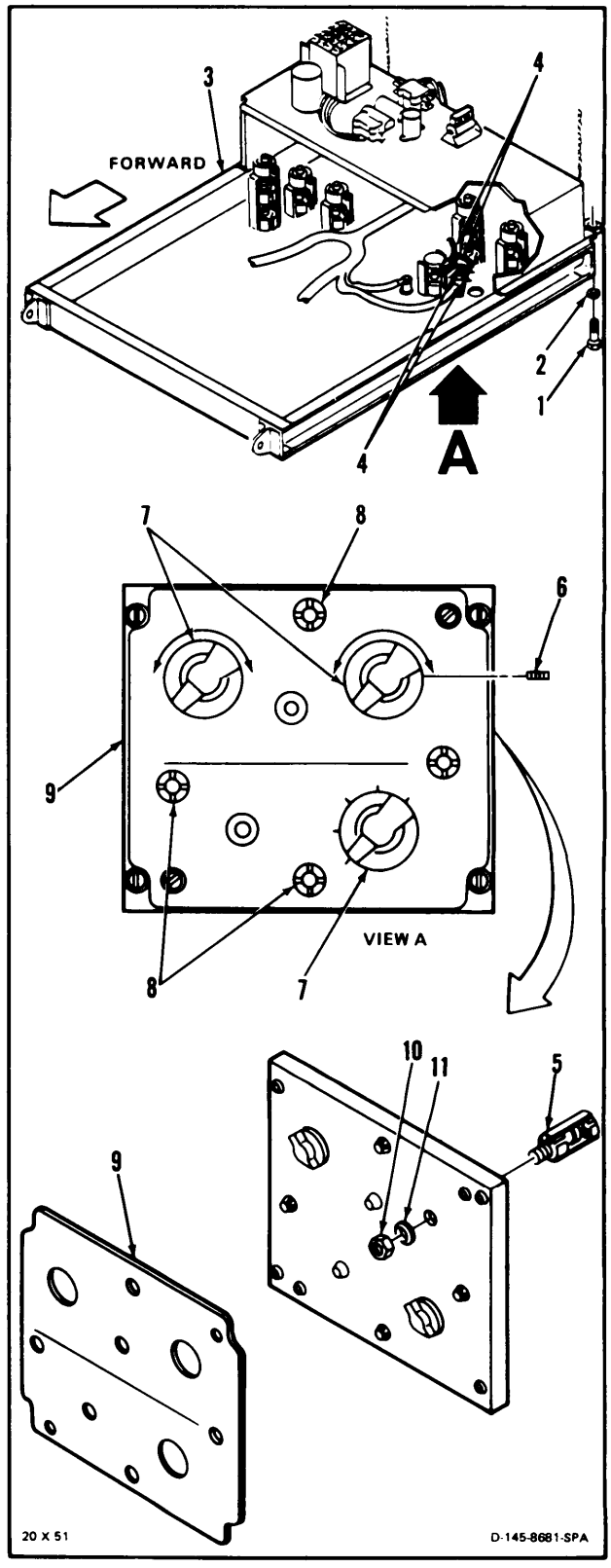
NOTE

Procedure is similar to remove CTR SECT INST LTS resistor, PILOT or COPILOT INST LTS resistor, FLOOD LTS resistor, CONSOLE LTS resistor, DOME LTS resistor, and OVERHEAD PANEL LIGHTS resistor. Removal of CONSOLE LTS resistor is shown here.

1. **Remove two bolts (1)** and washers (2) from panel (3). Lower panel.
2. Tag and **unsolder eight wires (4)** from resistor (5). Tape wire ends. Use tape (E395).
3. **Remove three screws (6)** from three knobs (7).
4. **Remove three knobs (7).**
5. **Remove three holders (8).**
6. **Remove panel (9)** from panel (10).
7. **Remove nut (11)** and washer (12) from resister (5).
8. **Remove resistor (5).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-101.1 REMOVE OVERHEAD PANEL LIGHTING POTENTIOMETER, LIGHTING CONTROL TRANSFORMER, OR ROTARY SWITCH

INITIAL SETUP

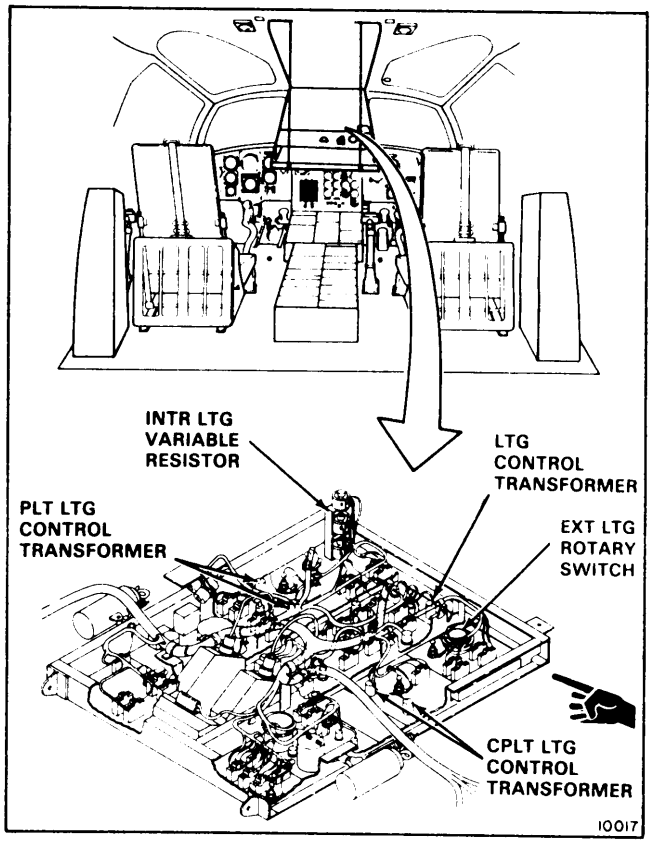
Applicable Configurations:
With 17

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)
Tape (E395)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



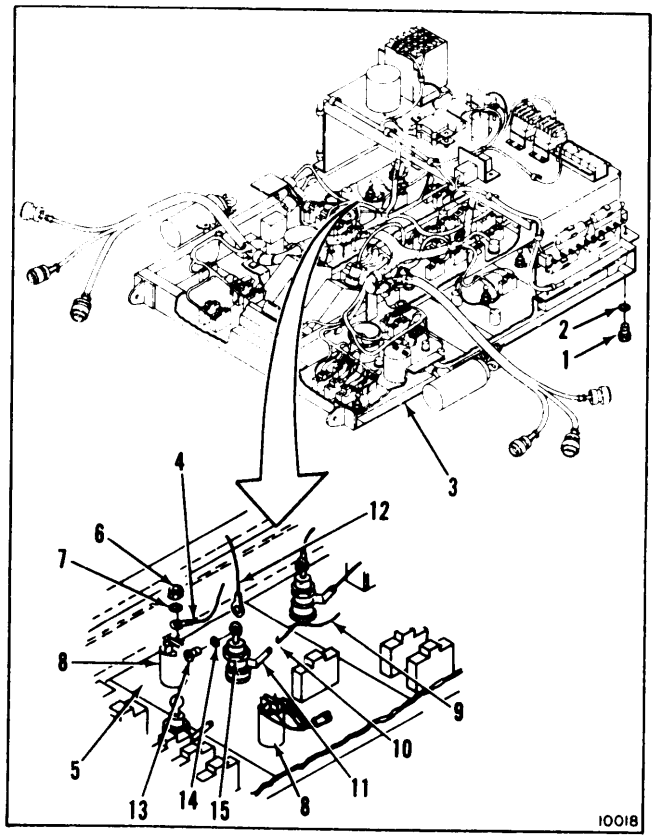
NOTE

Procedure is similar to remove control transformers from PLT LTG, LTG, or CPLT LTG panels. Removal of PLT LTG panel control transformer and INTR LTG resistor is shown here.

1. **Remove two bolts (1)** and washers (2) from overhead panel (3). Lower panel.

LTG Control Transformer

2. Identify six wires (4) of PLT LTG panel (5). Use tags (E264). Remove nuts (6) and washers (7) from two control transformers (8).
3. **Remove six wires (4).** Cover wire ends. Use tape (E395).
4. Identify wire (9). Use tag (E264), Unsolder wire end (10) from terminal (11). Cover wire end. Use tape (E395).
5. Identify wire (12) Use tag (E264). Remove screw (13) and washer (14) from light housing (15).
6. **Remove wire (12).** Cover wire end. Use tape (395).



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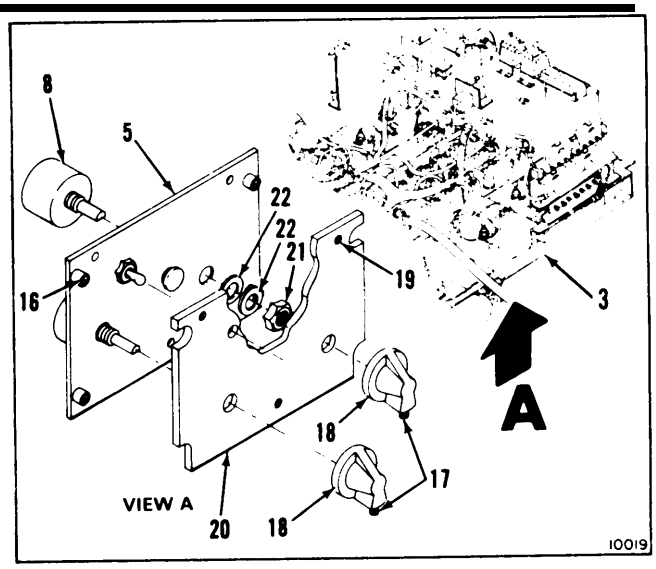
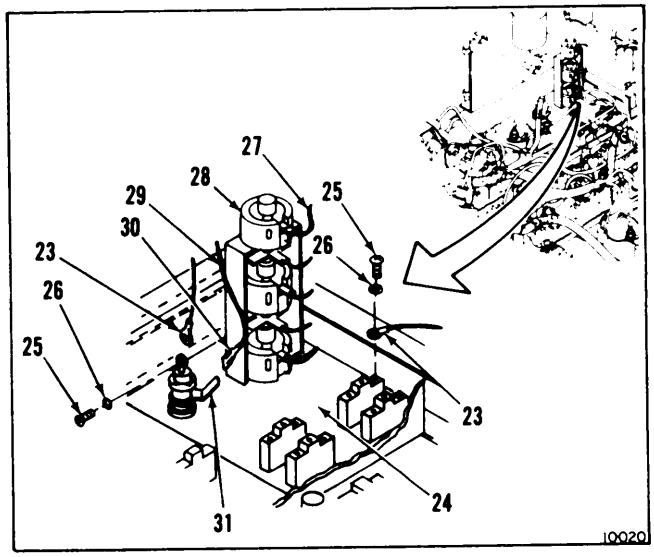
9-101.1 REMOVE OVERHEAD PANEL LIGHTING POTENTIOMETER, 9-101.1 LIGHTING CONTROL TRANSFORMER, OR ROTARY SWITCH (Continued)

7. Loosen four screws (16). **Remove panel (5)** from panel (3).
8. Loosen two screws (17). **Remove knobs (18).**
9. Loosen three screws (19) of panel (20).
10. **Remove panel (20).**
11. **Remove** nuts (21) and washers (22) from control **transformer (8).**
12. **Remove transformer (8).**

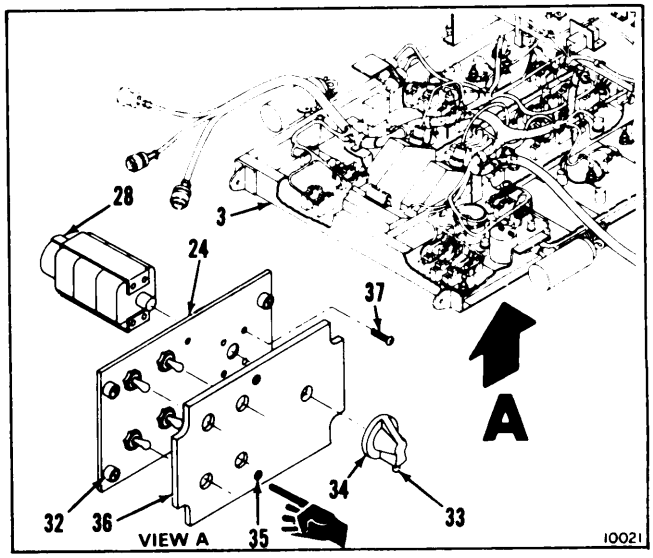


Floodlighting Potentiometer — INTR LTG Panel

13. Identify 16 wires (23) of INTR LTG panel (24) Use tags (E264). Remove screws (25) and washers (26).
14. **Remove 16 wires (23).** Cover wire ends. Use tape (E395).
15. Identify **five wires (27)** from INTR LTG variable resistor (28). Use tags (E264). Unsolder wires. Cover wire ends. Use tape (E395).
16. Identify one wire (29). Use tag (E264). Remove wire. Unsolder wire end (30) from terminal (31). Cover wire end. Use tape (E395).



17. Loosen four screws (32). **Remove panel (24)** from panel (3).
18. Loosen screw (33). **Remove knob (34).**
19. Loosen two screws (35) of panel (36).
20. **Remove panel (36).**
21. Remove four screws (37) from resistor (28).
22. **Remove resistor (28).**



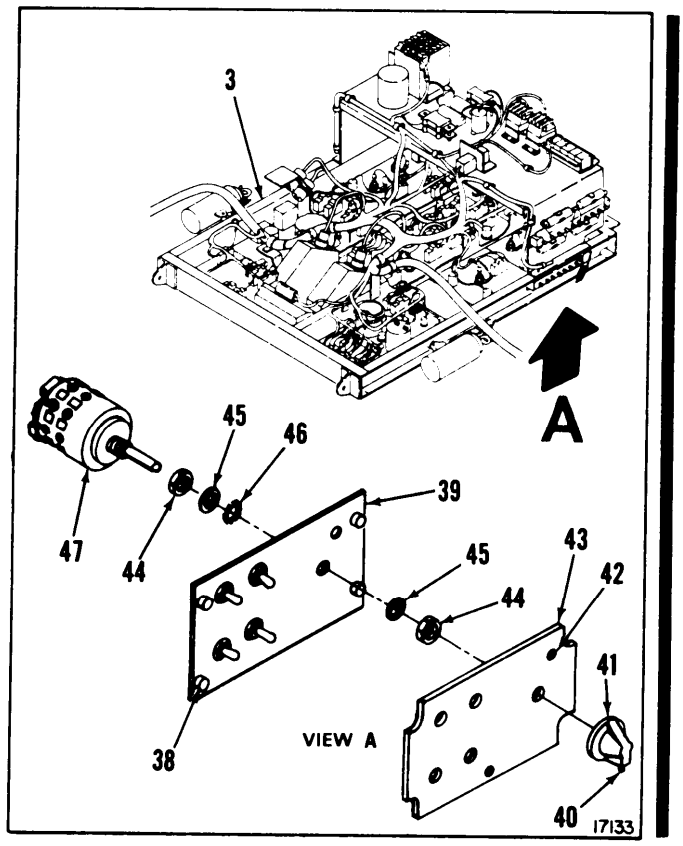
9-101.1 REMOVE OVERHEAD PANEL LIGHTING POTENTIOMETER, 9-101.1 LIGHTING CONTROL TRANSFORMER, OR ROTARY SWITCH (Continued)

Rotary Switch — EXT LTG Panel

23. Loosen four screws (38). **Lower panel (39)** from panel (3).
24. Loosen screw (40). **Remove knob (41).**
25. Loosen two screws (42). **Remove panel (43).**
26. Remove nut (44) and lockwasher (45) from rotary switch (47) shaft.

26.1. Remove rotary switch (47) from panel (39).

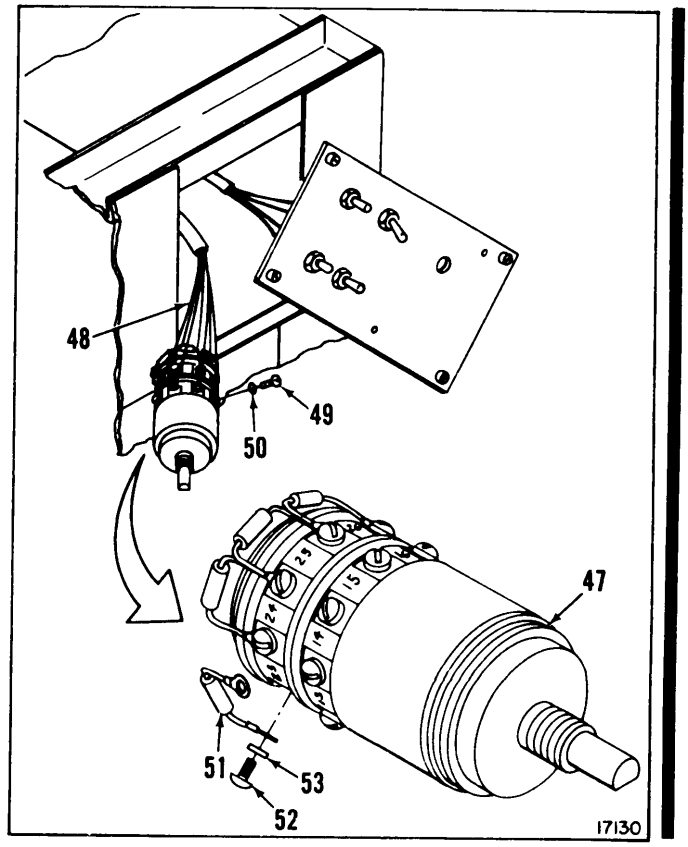
26.2. Remove lockring (46), lockwasher (45) and nut (44) from rotary switch (47) shaft.



27. Identify **eight wires (48)** on rotary switch (47). Use tags (E264).
28. Remove screws (49) and washers (50). **Remove wires (48).** Cover wire ends. Use tape (E395).
29. **Remove rotary switch (47).**
30. Identify **four resistors (51).** Use tags (E264).
31. Remove screws (52) and washers (53).
32. **Remove resistors (51).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-101.2 INSTALL OVERHEAD PANEL LIGHTING POTENTIOMETER, 9-101.2 LIGHTING CONTROL TRANSFORMERS, OR ROTARY SWITCH

INITIAL SETUP

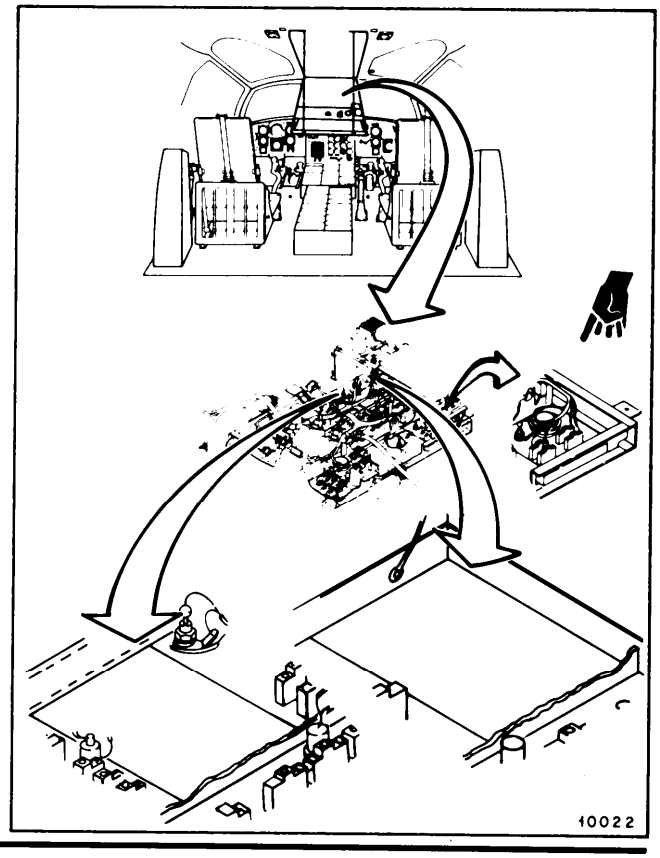
Applicable Configurations:
With 17

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
Aircraft Electrician
Inspector

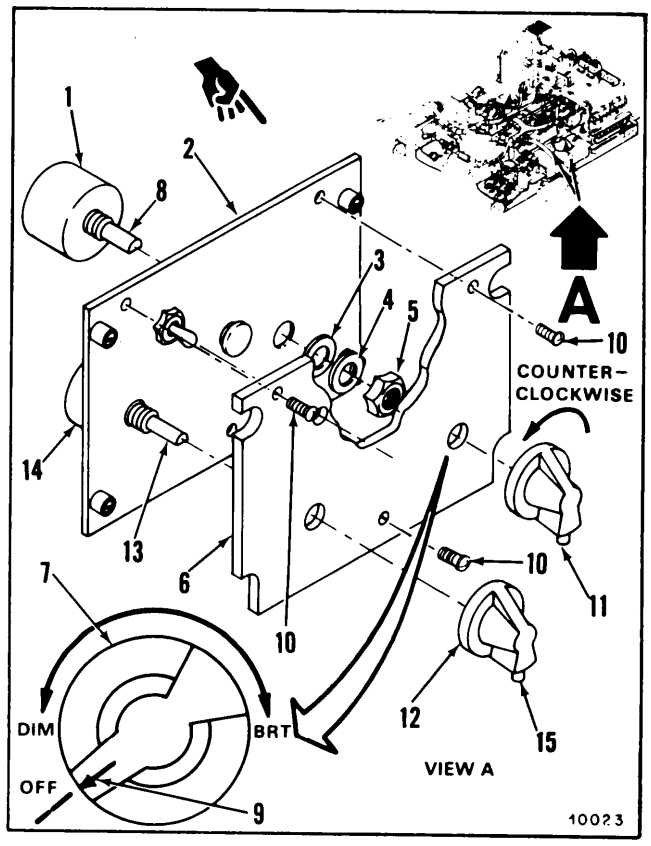
References:
TM 55-1520-240-23P



NOTE
Procedure is similar to install control transformers on PLT LTG, LTG, or CPLT LTG panels. Installation of PLT LTG panel control transformers and INTR LTG resistor is shown here.

Control Transformer — PLT LTG Panel

1. Position control transformer (1) in PLT LTG panel (2). Install two washers (3 and 4) and nut (5) on transformer. Do not tighten nut at this time.
2. Position panel (6) on panel (2).
3. Install knob (7) on shaft (8) of transformer (l).
4. Hold transformer (1). Turn knob (7) fully counterclockwise. Turn transformer until marker (9) on knob is pointing to OFF on panel (6).
5. Holding transformer (1), remove knob (7).
6. Remove panel (6). Tighten nut (5) and release transformer (1).
7. **Install panel (6)** on panel (2). Tighten three screws (10).
8. **Install knob (7)** on shaft (8) of transformer (1). Tighten screw (11).
9. **Install knob (12)** on shaft (13) of transformer (14). Tighten screw (15).



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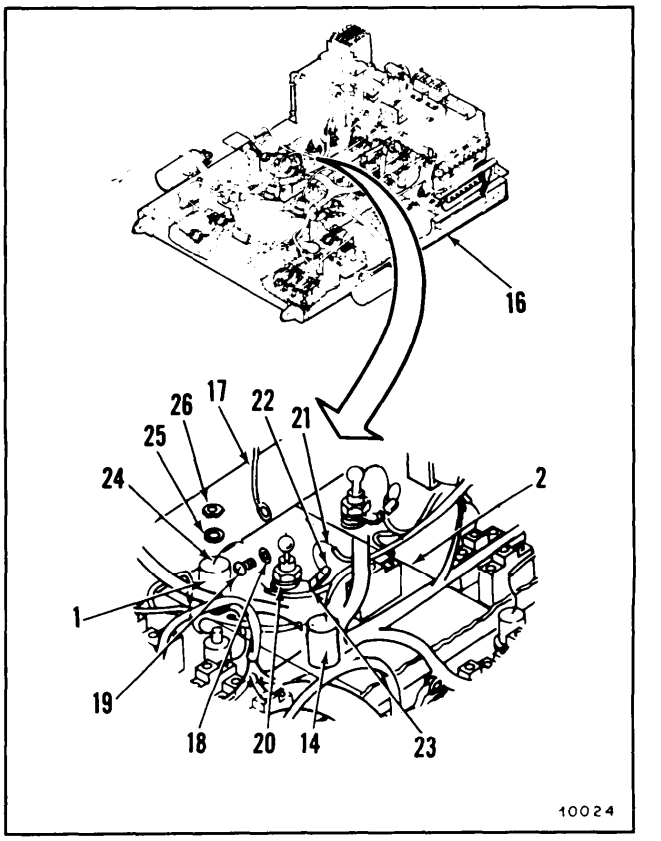
9-101.2 INSTALL OVERHEAD PANEL LIGHTING POTENTIOMETER, LIGHTING CONTROL TRANSFORMERS, OR ROTARY SWITCH (Continued) 9-101.2

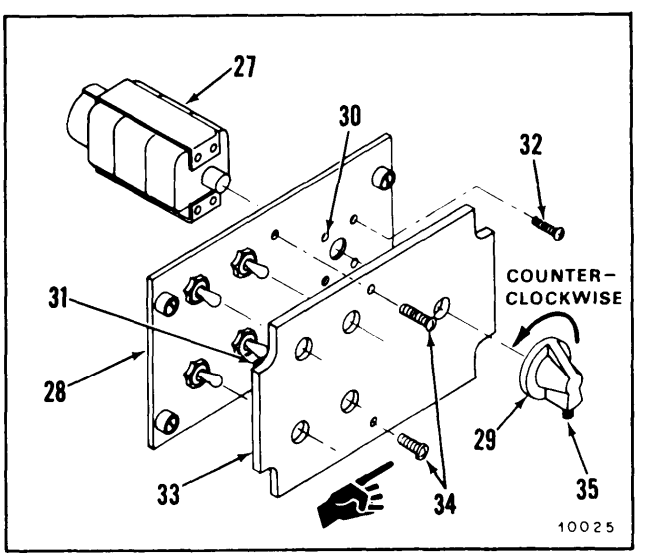
10. **Install panel (2)** in overhead panel (16).
11. Remove tape and **install wire (17),** washer (18) and screw (19) on light housing (20). Remove tag.
12. Remove tape and **install wire (21).** Solder wire end (22) onto terminal (23) of housing (20). Remove tag.
13. Remove tape and **install six wires (24),** washers (25), and nuts (26) on transformers (1 and 14). Remove tags.

INSPECT



Floodlighting Potentiometer — INTR LTG Panel

14. Position INTR LTG resistor (27) in INTR LTG panel (28).
15. Install knob (20) on resistor (27).
16. Hold resistor (27). Turn knob (29) fully counterclockwise.
17. Align resistor with holes (30), knob (29) pointing towards screw hole (31).
18. Remove knob (29).
19. **Install four screws (32)** in resistor (27).
20. **Install panel (33)** on panel (28). Tighten two screws (34).
21. **Install knob (29)** on resistor (27). Tighten screw (35).



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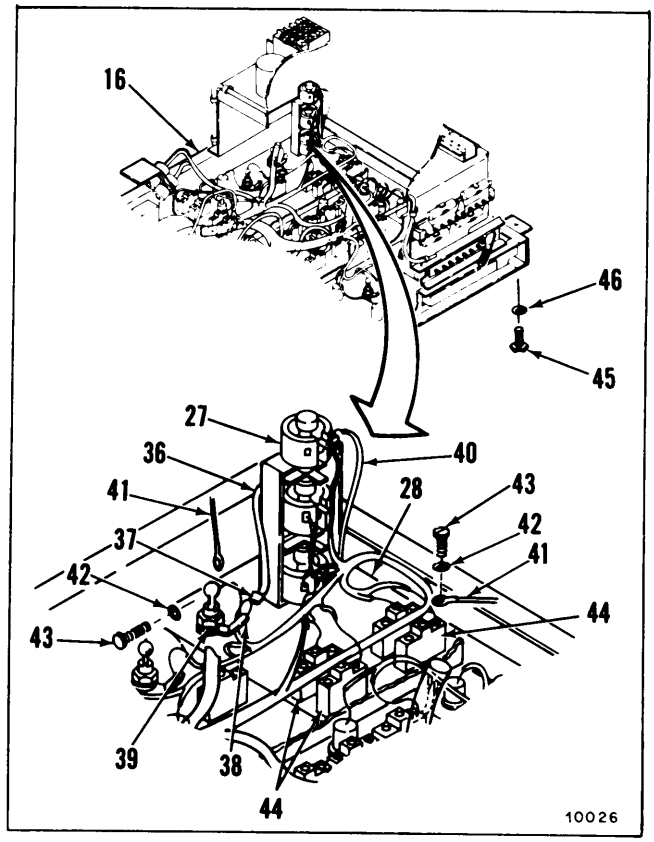
9-101.2 INSTALL OVERHEAD PANEL LIGHTING POTENTIOMETER, 9-101.2 LIGHTING CONTROL TRANSFORMERS, OR ROTARY SWITCH (Continued)

22. **Install panel (28)** in overhead panel (16).
23. Remove tape and **install wire (36).** Solder wire end (37) onto terminal (38) of light housing (39). Remove tag.
24. Remove tape and **solder five wires (40)** to resistor (27). Remove tags.
25. Remove tape and **install 16 wires (41),** washers (42) and screws (43) on four switches (44). Remove tags.

INSPECT

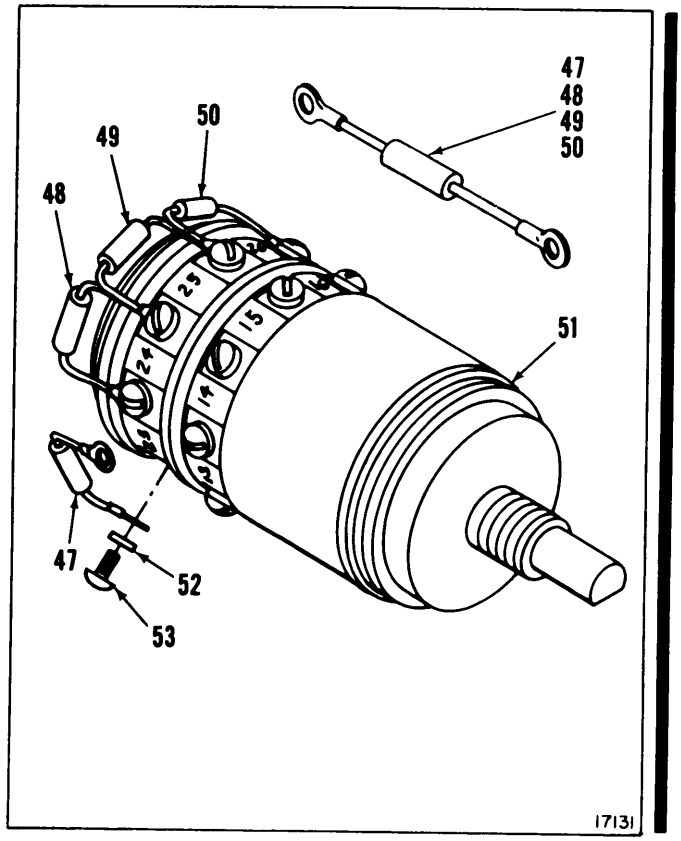
26. Raise panel (16). **Install two bolts (45)** and washer (46).



27. **Position resistor assemblies (47), (48), (49), and (50)** on rotary switch (51) as follows:

Part No.	Value	Between Terminals
(47) 145E2318-2	68,000 Ω,1W	22 and 23
(48) 145E2318-3	2700 Ω,1W	23 and 24
(49) 145E2318-4	470 Ω, 3W	24 and 25
(50) 145E2318-5	160 Ω,5W	25 and 26

28. **Install four resistors (47), (48), (49), and (50)** with five washers (52) and five screws (53) on rotary switch (51).



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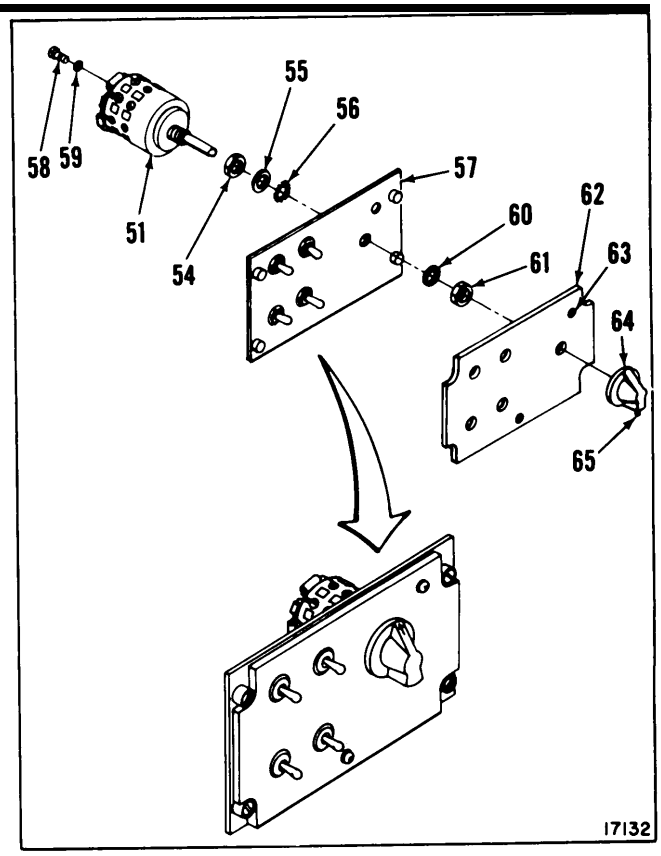
9-101.2 INSTALL OVERHEAD PANEL LIGHTING POTENTIOMETER, 9-101.2 LIGHTING CONTROL TRANSFORMERS, OR ROTARY SWITCH (Continued)

29. **Install nut (54),** washer (55), and lockring (56) on shaft of rotary switch (51).
30. Position rotary switch (51) in panel (57) with shaft flat opposite terminal 11. Engage bent tab of lockring (56) with locking hole in mounting panel.
31. **Install two limit screws (58)** and washers (59) into tapped holes on rear cover plate of switch between terminals 26 and 27 and between terminals 28 and 21.
32. **Install washer (60)** and nut (61) on shaft of rotary switch (51) and panel (57).
33. Install lighting panel (62) on panel (57) with two screws (63). Tighten screws.
34. **Install knob (64)** on rotary switch (51). Tighten screw (65).



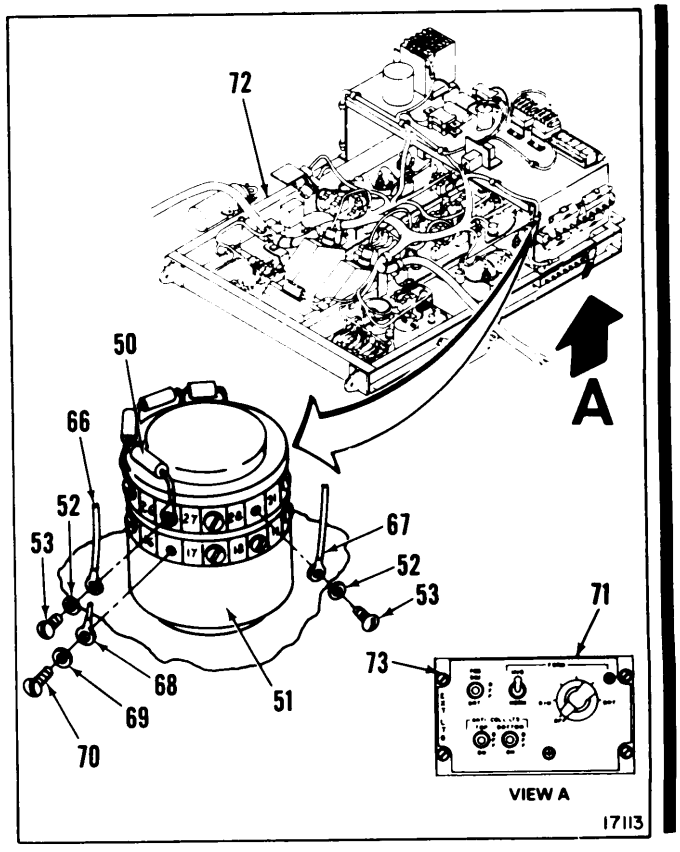
35. Remove tape and **install one wire (66)** with washer (52), screw (53), along with one end of the installed resistor (50) on terminal 26 of rotary switch (51).
36. Remove tape and **install one wire (67)** with washer (52) and screw (53) on terminal 21 of rotary switch (51).
37. Remove tape and **install six wires (68)** with washers (69) and screws (70) on first wafer of rotary switch (51). Remove tags.

INSPECT

38. **Install panel (71)** in overhead panel (72). Tighten four screws (73).

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-102 INSTALL OVERHEAD PANEL LIGHTING POTENTIOMETER 9-102

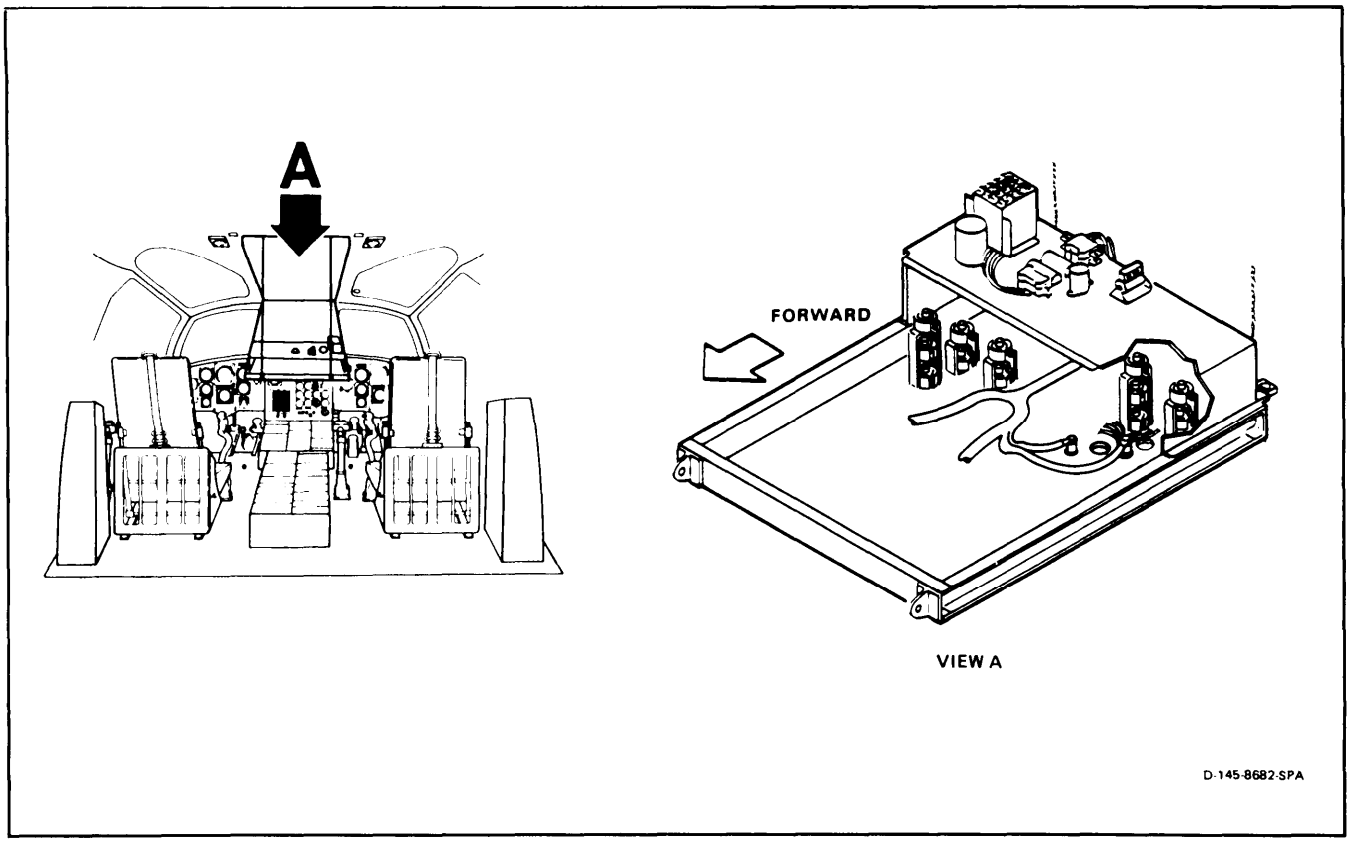
INITIAL SETUP

Applicable Configurations:
Without 17

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
Aircraft Electrician
Inspector



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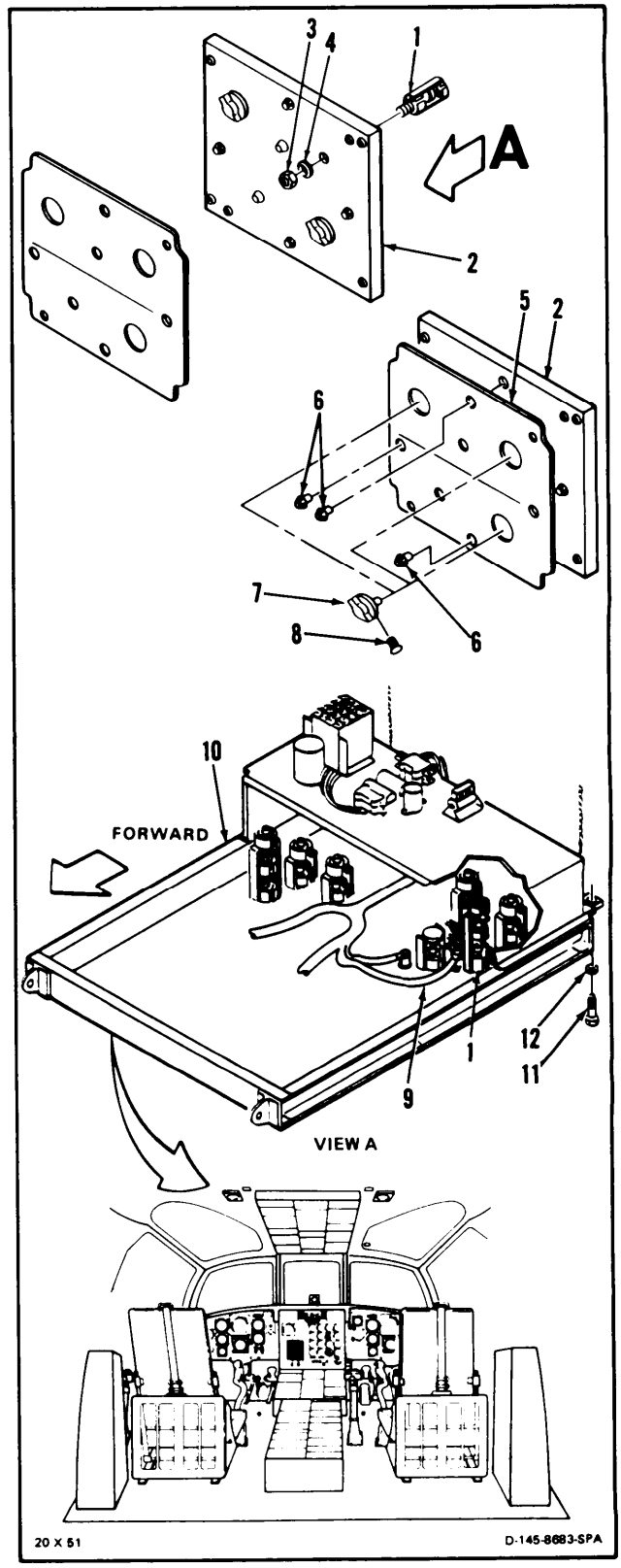
9-102 INSTALL OVERHEAD PANEL LIGHTING POTENTIOMETER (Continued) 9-102

NOTE

Procedure is similar to install CTR SECT INST LTS resistor, PILOT OR COPILOT INST LTS resistor, FLOOD LTS resistor, CONSOLE LTS resistor, DOME LTS resistor, and OVERHEAD PANEL LIGHTS resistor. Installation of CONSOLE LTS resistor is shown here.

1. **Position** resistor (1) in panel (2). **Install nut (3)** and washer (4).
2. **Position** panel (5) on panel (2). **Install three holders (6).**
3. **Install three knobs (7).** Tighten three screws (8).
4. Remove tape and **solder eight wires (9)** to resistor (1). Use solder (E360). Remove tags.
5. Raise panel (10). **Install two bolts (11)** and washers (12).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

9-103 REMOVE CONSOLE COMPONENTS 9-103

INITIAL SETUP:

Applicable Configurations:
All

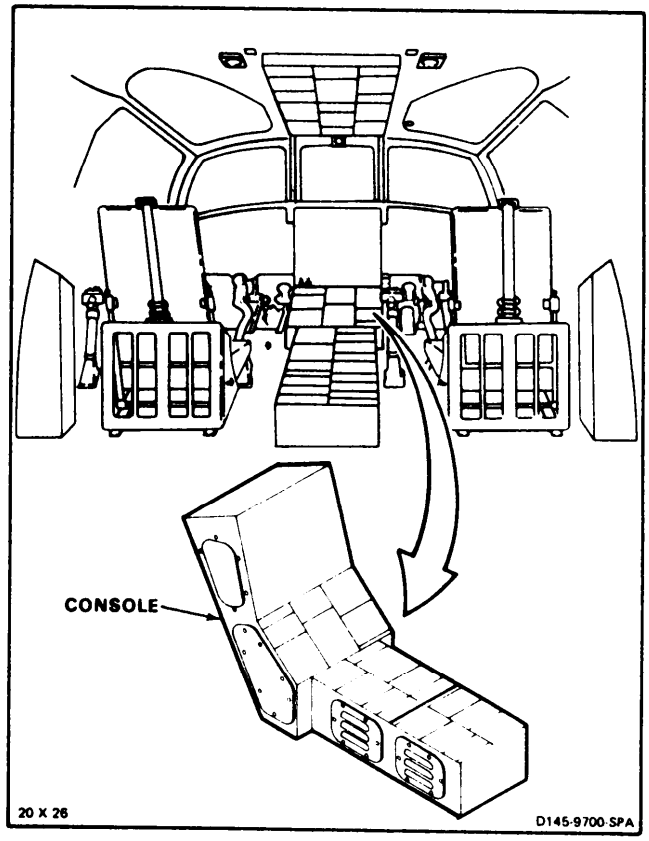
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
68F10 Aircraft Electrician

References:
Task 9-165

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

Procedure is similar to remove like components. Task includes four separate tasks.

1. Loosen seven fasteners (1). **Remove panel (2).**

NOTE

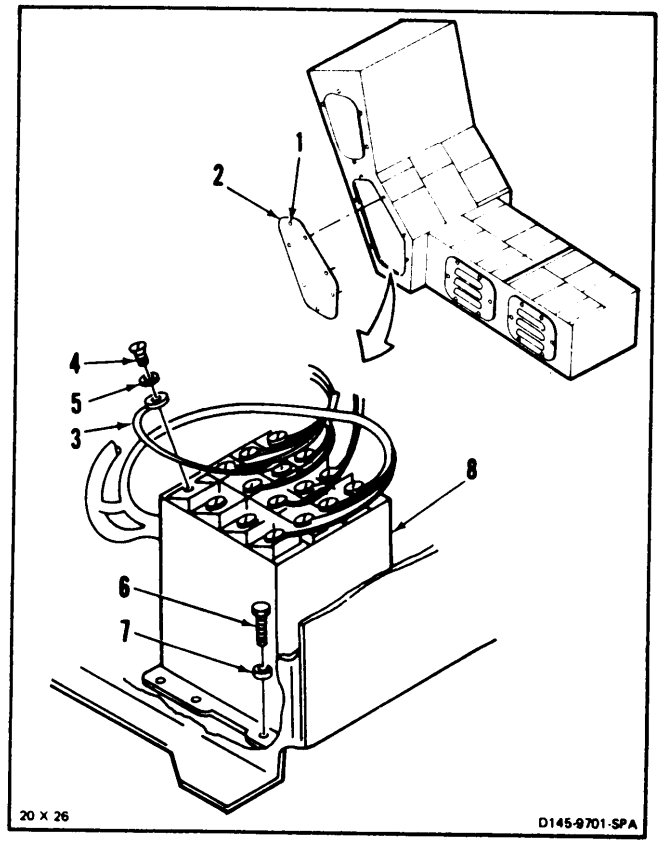
Procedure is similar to remove dimming lockout relay. Caution light dimming relay, power steering relay, co-pilot interphone key relay, and pilot interphone key relay. Pilot interphone key relay is shown here.

2. Remove pilot interphone key relay 232K2 as follows:

   a. Tag and **disconnect 13 wires (3)** by removing 13 screws (4) and washers (5). Tape wire ends.

   b. **Remove six bolts (6)** and washers (7).

   c. **Remove relay 232K2.**



GO TO NEXT PAGE

9-103 REMOVE CONSOLE COMPONENTS (Continued)

3. Loosen seven fasteners (1). **Remove panel (2).**

NOTE

Procedure is same to remove pilot or copilot lighting transformer. Pilot's lighting transformer is shown here.

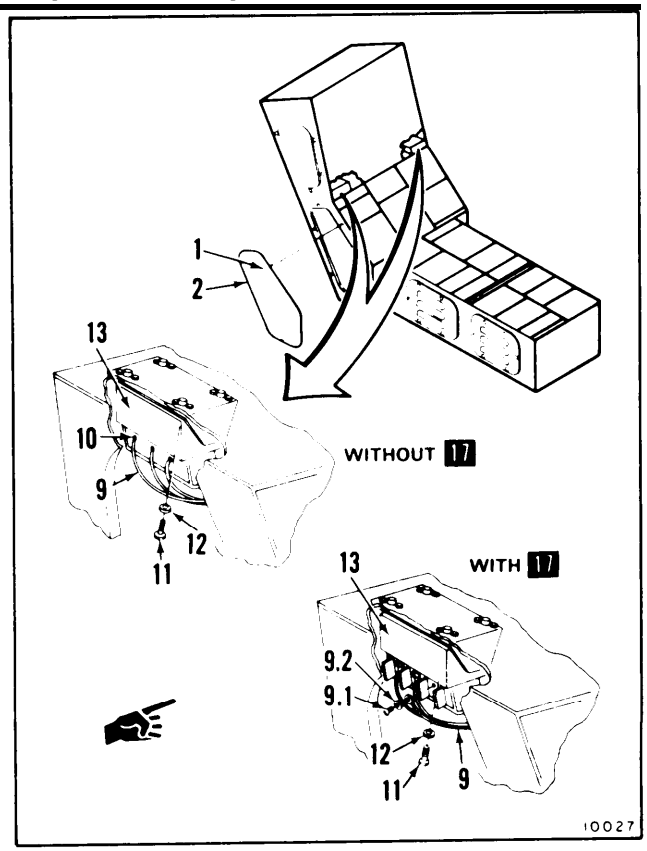
4. Remove pilot's lighting transformer as follows:

Without 17

a. Tag and **disconnect three wires (9)** by unsoldering from terminal (10). Tape wire ends. Use tape (E385).
b. **Remove four screws (11)** and washers (12).
c. **Remove transformer 122T1 (13).**

With 17

d. Tag and **disconnect three wires (9)** by removing screws (9.1) and washers (9.2) from terminal (10). Tape wire ends. Use tape (E385).
e. **Remove four screws (11)** and washers (12).
f. **Remove transformer 310-18742-01 (13).**

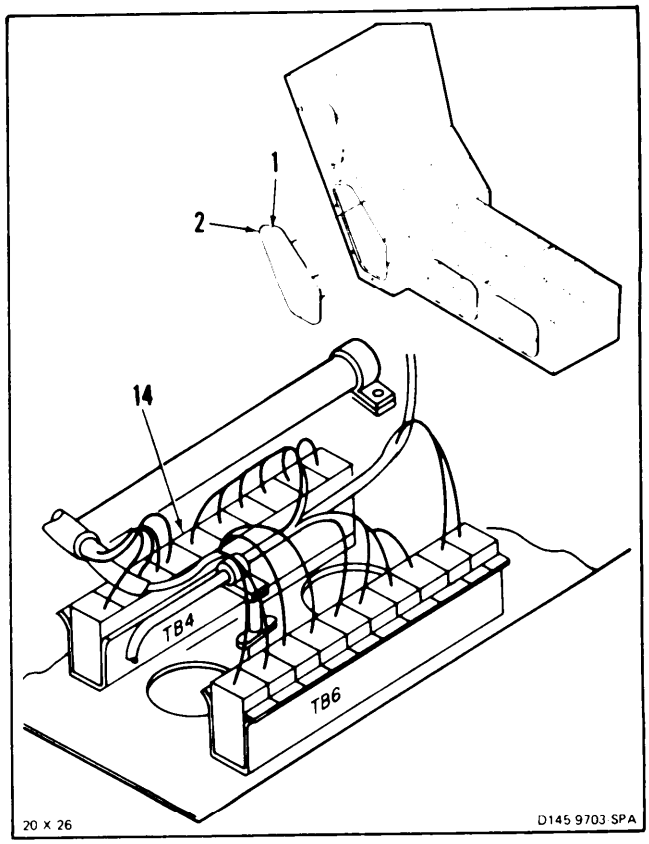


5. Loosen seven fasteners (1). **Remove panel (2).**

NOTE

Procedure is same to remove any terminal board module.

6. **Remove module (14)** (Task 9-1 65).

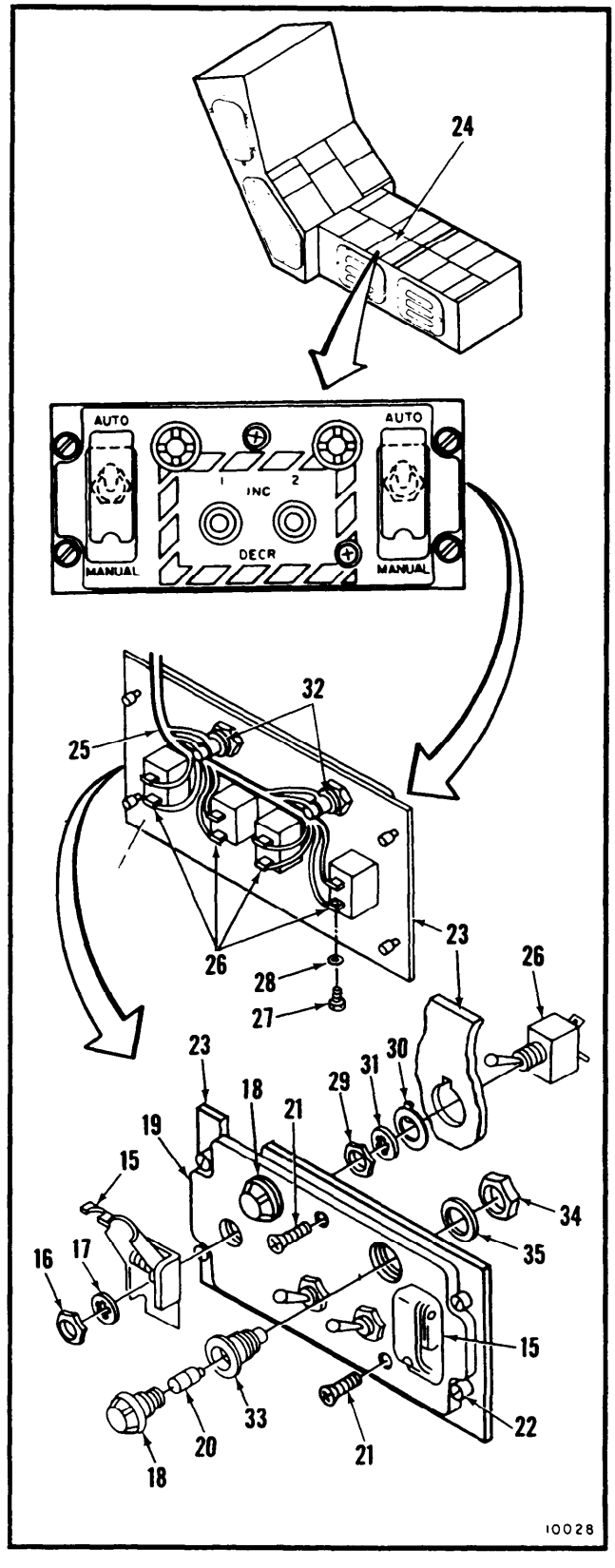


GO TO NEXT PAGE

7. On helicopters without 74, disassemble EMERG ENG TRIM panel as follows:
   a. Open two switch guards (15). **Remove** nut (16) and washer (17) from **switch guards.** Remove switch guards.
   b. Remove two lens (18) from panel (19).
   c. Remove two lamps (20) from lens (18).
   d. **Remove** two screws (21) from **panel (19).** Remove panel.
   e. Loosen four fasteners (22) on panel (23). **Lift EMERG ENG TRIM panel from console (24).**

NOTE
Do not lift panel by switches.

   f. Tag (E264) eight wires (25). **Remove wires from four switches (26)** by removing screws (27) and washers (28). Tape (E385) ends of wires.
   g. **Remove** nuts (29), lock rings (30), and lockwashers (31) from **switches (26).** Remove switches.
   h. Tag (E264) four wires (32) on two lamp receptacles (33). **Desolder wires from receptacles.** Tape (E385) ends of wires.
   i. **Remove** nuts (34) and washers (35) from **receptacles (33).** Remove receptacles.



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-104 INSTALL CONSOLE COMPONENTS

INITIAL SETUP

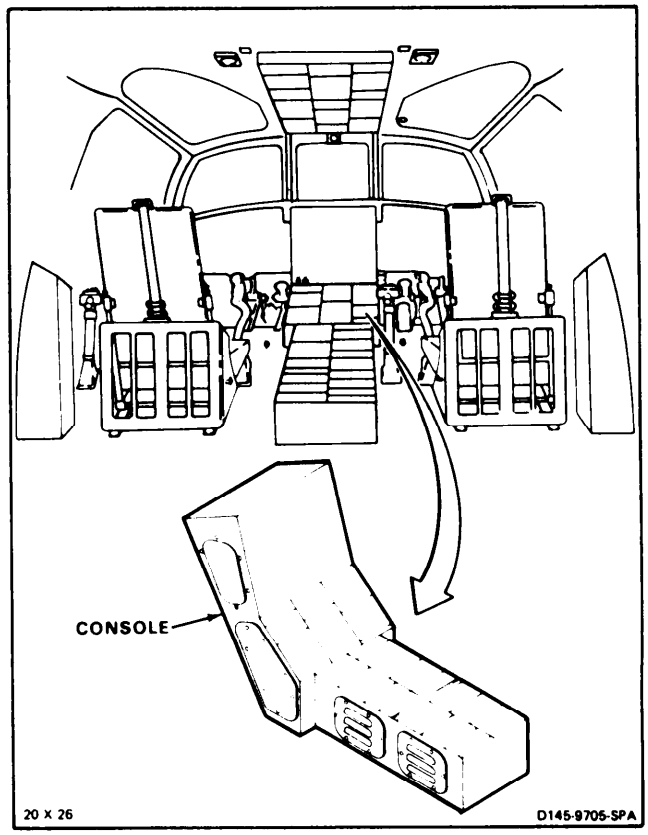
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P
Install Module (Task 9-166)



NOTE

Procedure is similar to install like components. Task includes four separate tasks.

1. Install pilot interphone key relay as follows:

   a. **Position** relay 232K2 (1) in console (2). **Install six bolts** (3) and washers (4).

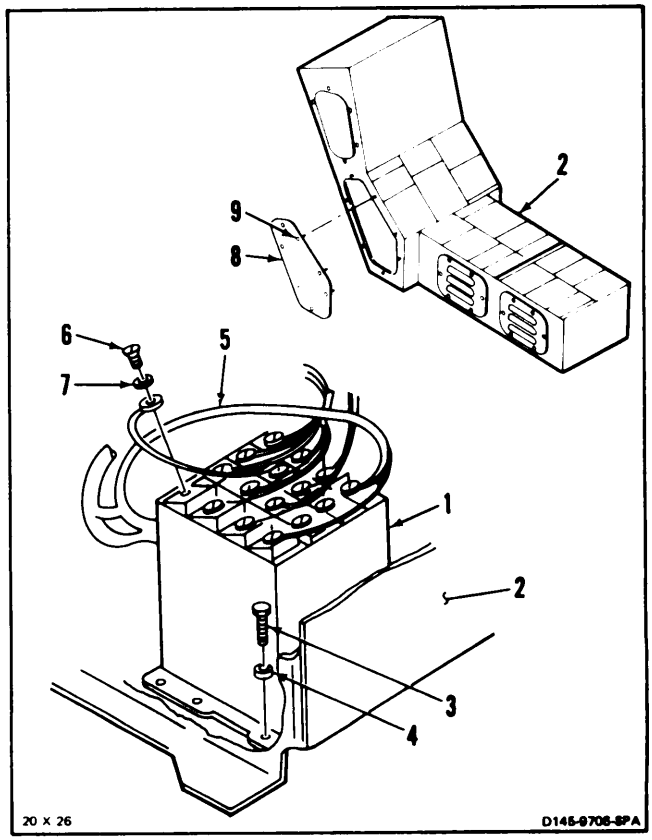
   b. Remove tape and **install 13 wires (5)** by installing 13 screws (6) and washers (7). Remove tags.

   c. **Position** panel (8) on **console (2). Tighten seven fasteners (9).**

INSPECT

NOTE

If no other components are being installed, go to FOLLOW-ON MAINTENANCE.



GO TO NEXT PAGE

2. Install pilot's lighting transformer as follows:

Without 17

a. **Position transformer 122T1 (10)** in console (2). **Install four screws (11)** and washers (12).

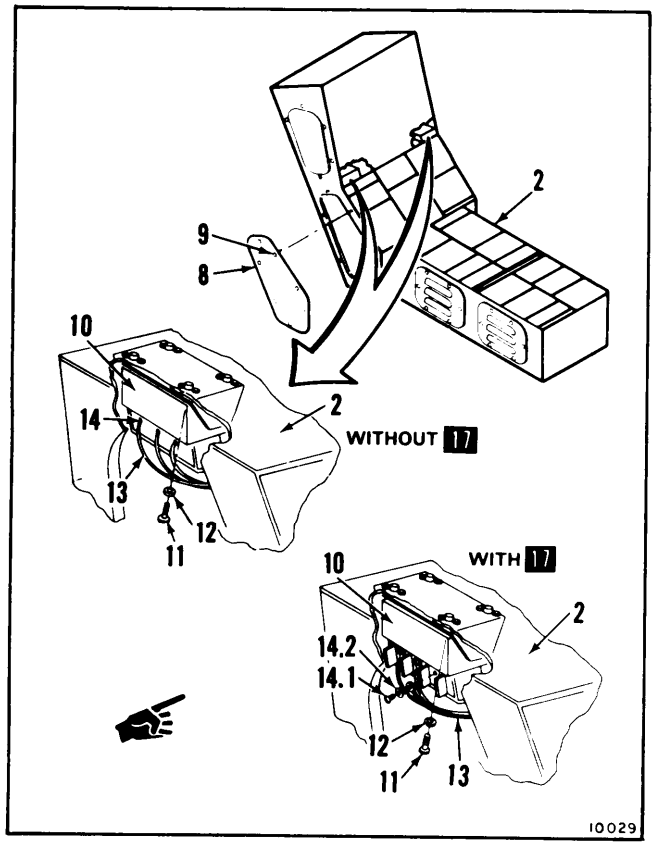
b. Remove tape and install three wires (13) by soldering to terminals (14). Use solder (E360). Remove tags.

With 17

c. **Position transformer 310-18742-01 (10)** in console (2). **Install four screws (11)** and washers (12).

d. Remove tape and **connect three wires (13)** by using screws (14.1) and washers (14.2), Remove tags.

e. **Position** panel (8) on console (2). **Tighten seven fasteners (9).**



INSPECT

NOTE

If no other components are being installed, go to FOLLOW-ON MAINTENANCE.

3. Install terminal board module as follows:

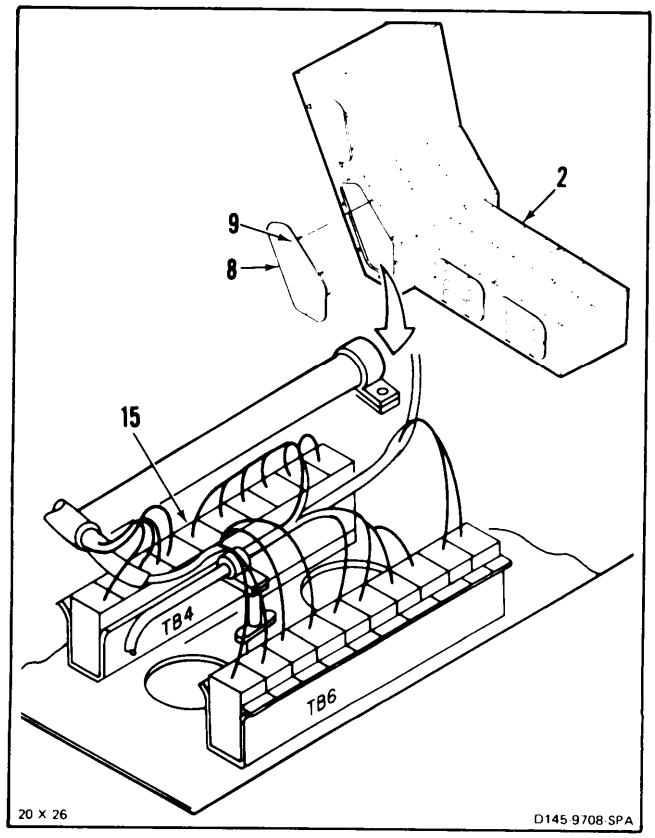
a. **Install module (15)** (Task 9-166).

b. **Position** panel (8) on console (2). **Tighten seven fasteners (9).**

INSPECT

NOTE

If no other components are being installed, go to FOLLOW-ON MAINTENANCE.



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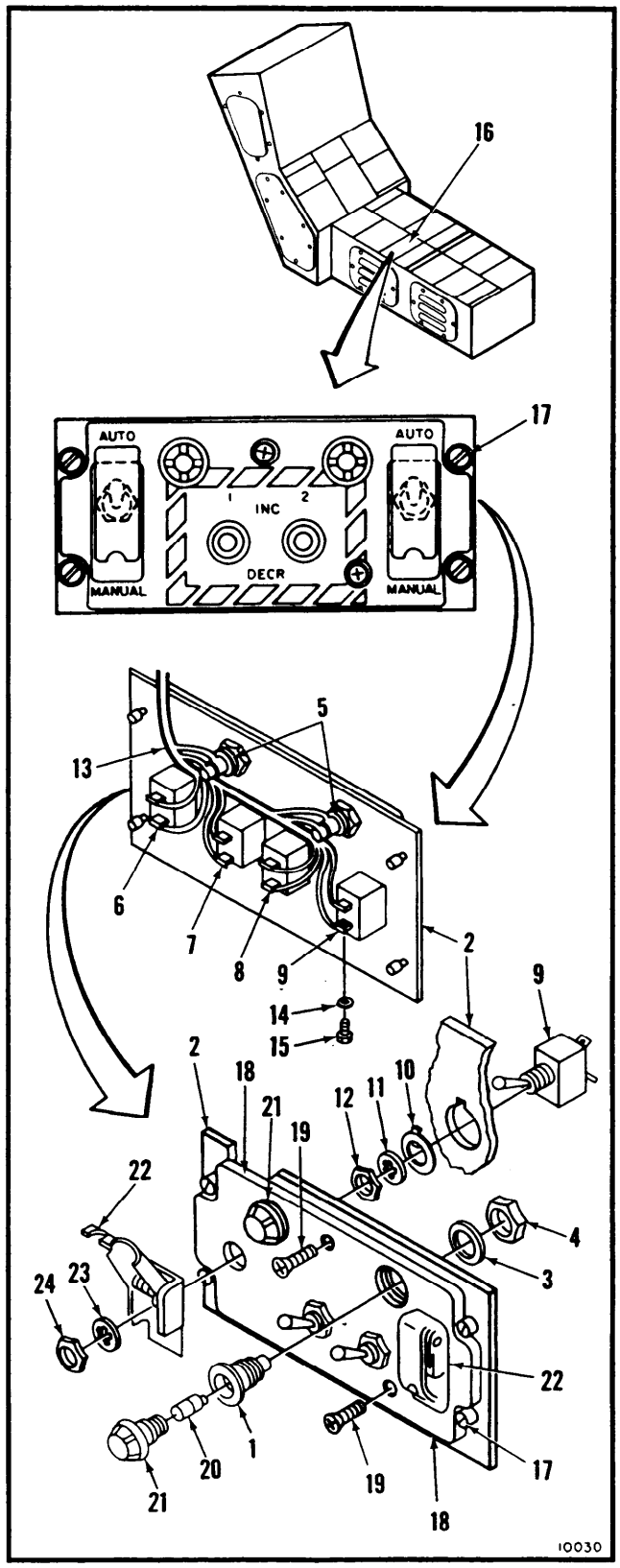
4. On helicopters without 74, assemble EMERG ENG TRIM panel as follows:
   a. **Position** two lamp **receptacles (1) in panel (2).** Install washers (3) and nuts (4) on receptacles.
   b. **Solder four wires (5) on receptacles (1).** Remove tags.
   c. **Position four switches (6, 7, 8 and 9) in panel (2).** Install lock rings (10), lockwasher (11) and nuts (12) on switches.
   d. **Connect eight wires (13) to four switches (6, 7, 8 and 9)** using washers (14) and screws (15). Remove tags.
   e. **Position EMERG ENG TRIM panel (2) in console (16).** Tighten four fasteners (17).
   f. **Position panel (18) on panel (2).** Install two screws (19) in panel (18).
   g. **Install two lamps (20)** in lens (21).
   h. **Install lens (21)** in receptacle (1).
   i. **Position switch guards (22) on switches (6 and 9).** Install washers (23) and nuts (24) on switches.

INSPECT

FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T).



END OF TASK

9-104.1 REPLACE OVERHEAD PANEL CONTROL TRANSFORMER FUSES

INITIAL SETUP

Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

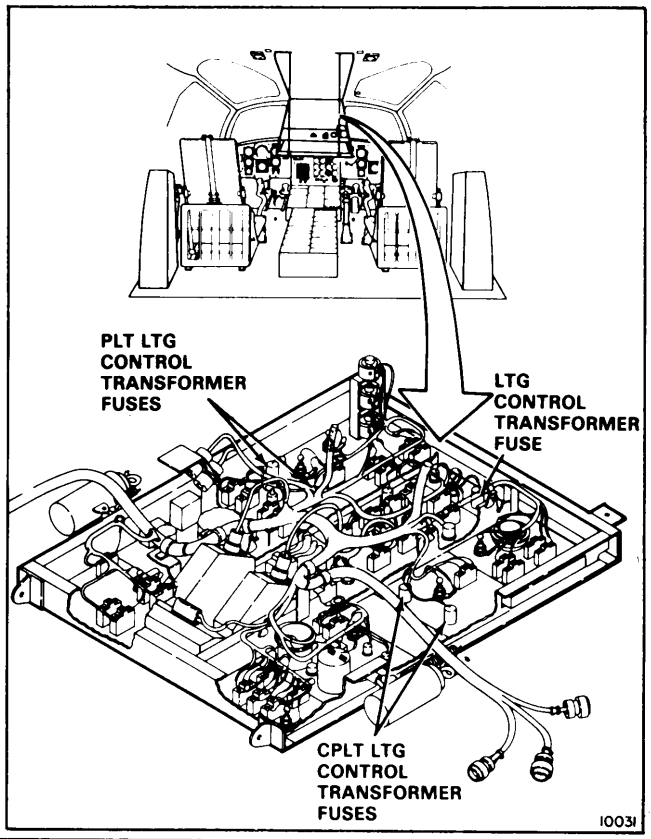
Materials:
None

Parts:
Fuses

Personnel Required:
Aircraft Electrician

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



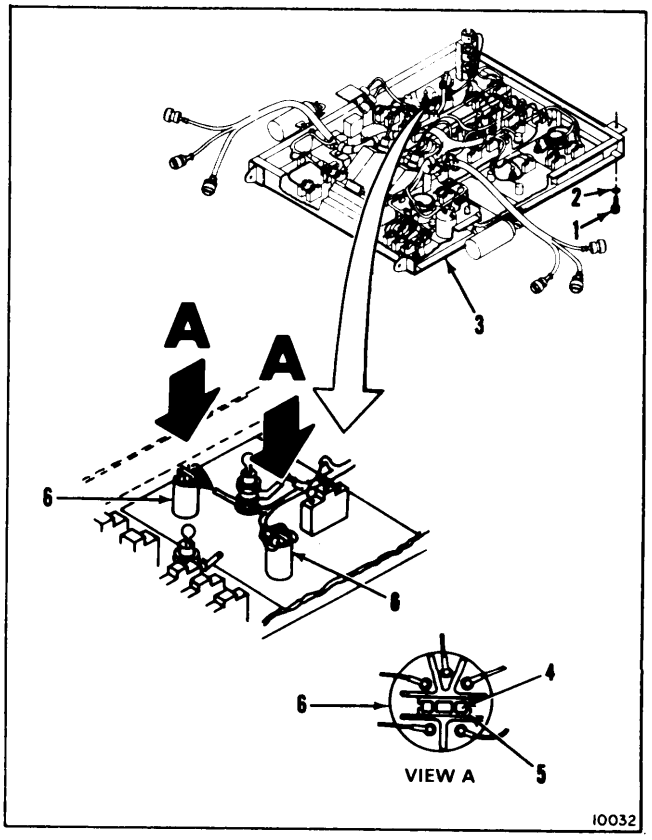
NOTE

Procedure is same to replace PLT LTG, LTG, and CPLT LTG panel control transformer fuses. Replacement of PLT LTG panel control transformer fuses is shown here.

1. **Remove two bolts (1)** and washers (2) from overhead panel (3). Lower panel.
2. **Remove fuses (4).** Pry fuse from fuse holder (5) of PLT LTG panel control transformer (6).
3. **Install new fuse (4)** in holder (5).
4. Raise panel (3). **Install two** washers (2) and **bolts (1).**

FOLLOW-ON MAINTENANCE:

Perform operational check of lights TM 55-1520-240-T).



END OF TASK

9-105 REMOVE FLOODLIGHT

INITIAL SETUP

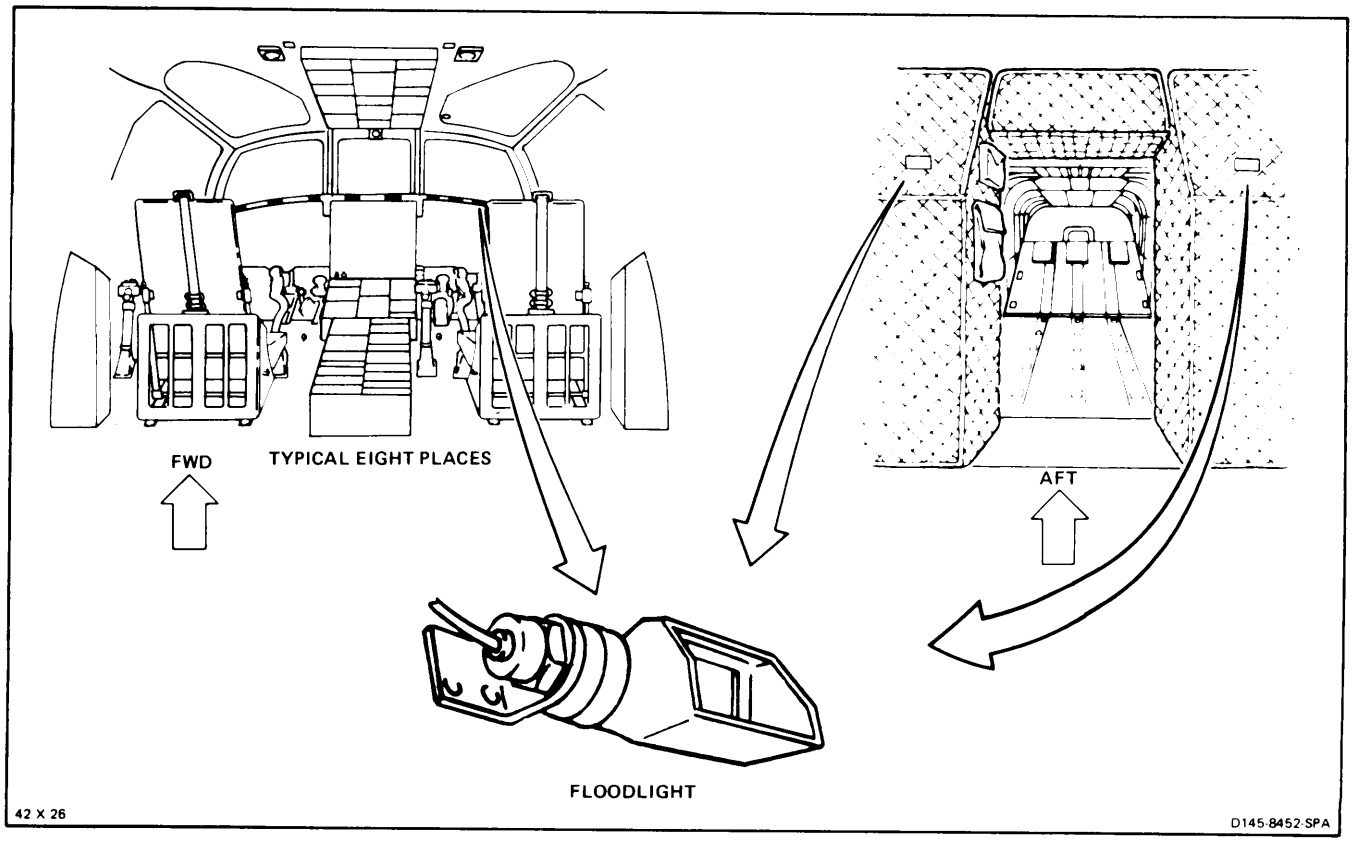
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
None

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



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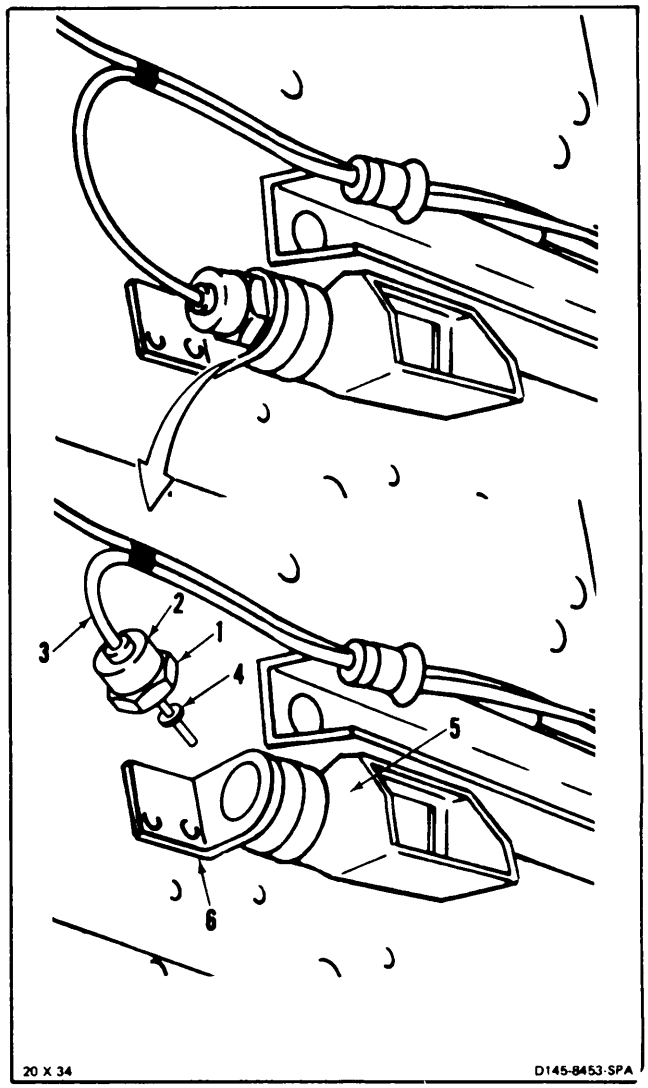
9-105 REMOVE FLOODLIGHT (Continued)

NOTE

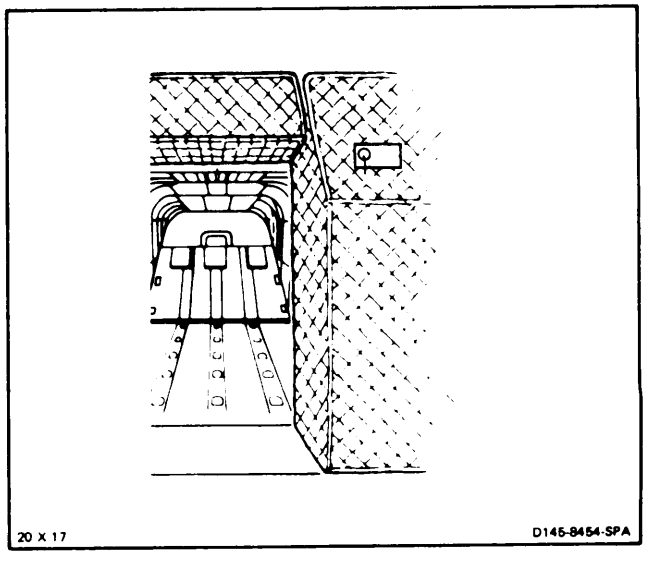
Procedure is same to remove any floodlight. Removal of copilot's overhead floodlight is shown here.

1. Loosen nut (1). Slide nut and cover (2) over wire (3).
2. **Unsolder wire (3)** from terminal (4).
3. **Remove nut (1)** and cover (2).
4. **Remove floodlight (5)** from bracket (6).



FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-106 INSTALL FLOODLIGHT

INITIAL SETUP

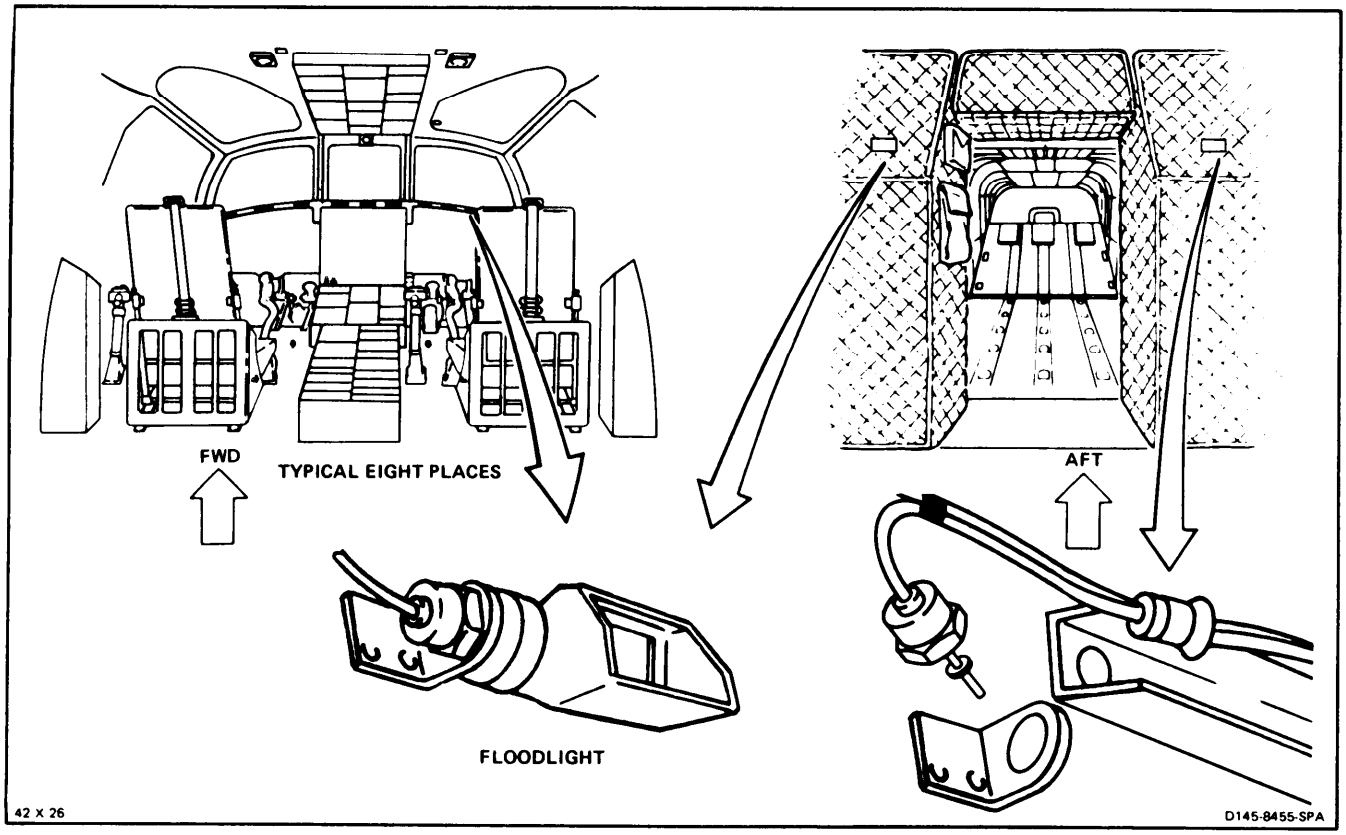
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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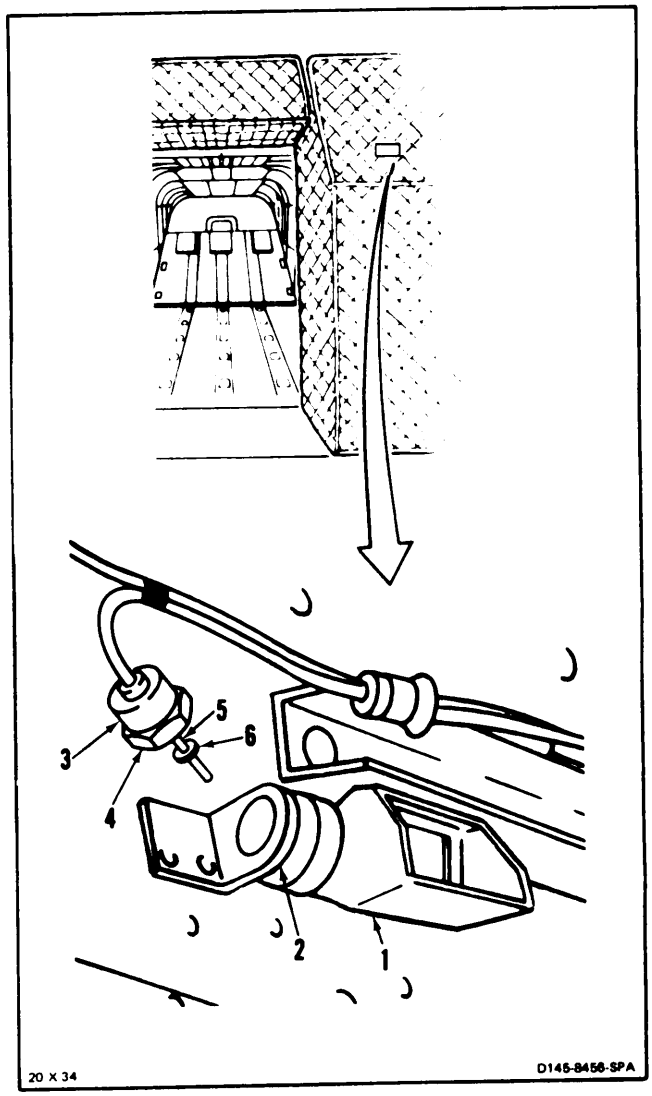
9-106 INSTALL FLOODLIGHT (Continued)

NOTE

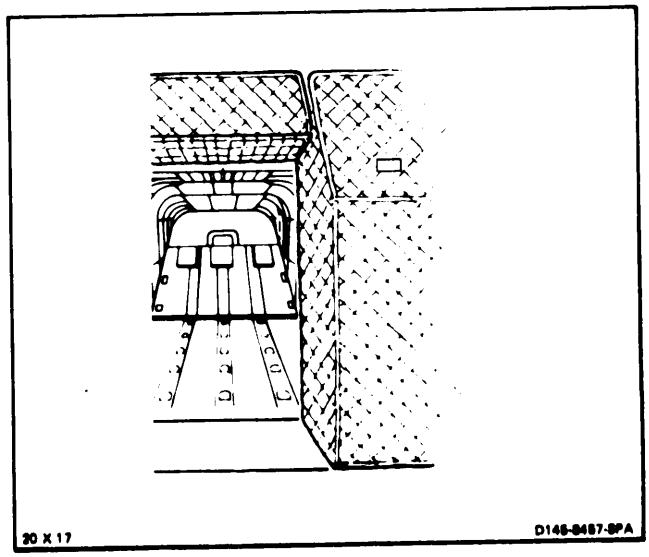
Procedure is same to install any floodlight. Installation of copilot's overhead floodlight is shown here.

1. **Position** floodlight (1) in bracket (2).
2. Slide cover (3) and nut (4) over wire (5).
3. **Solder wire (5)** to terminal (6).
4. **Install cover (3)** and nut (4) on floodlight (1).



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-107 REPLACE FLOODLIGHT LAMP

INITIAL SETUP

Applicable Configurations:
All

Tools:
None

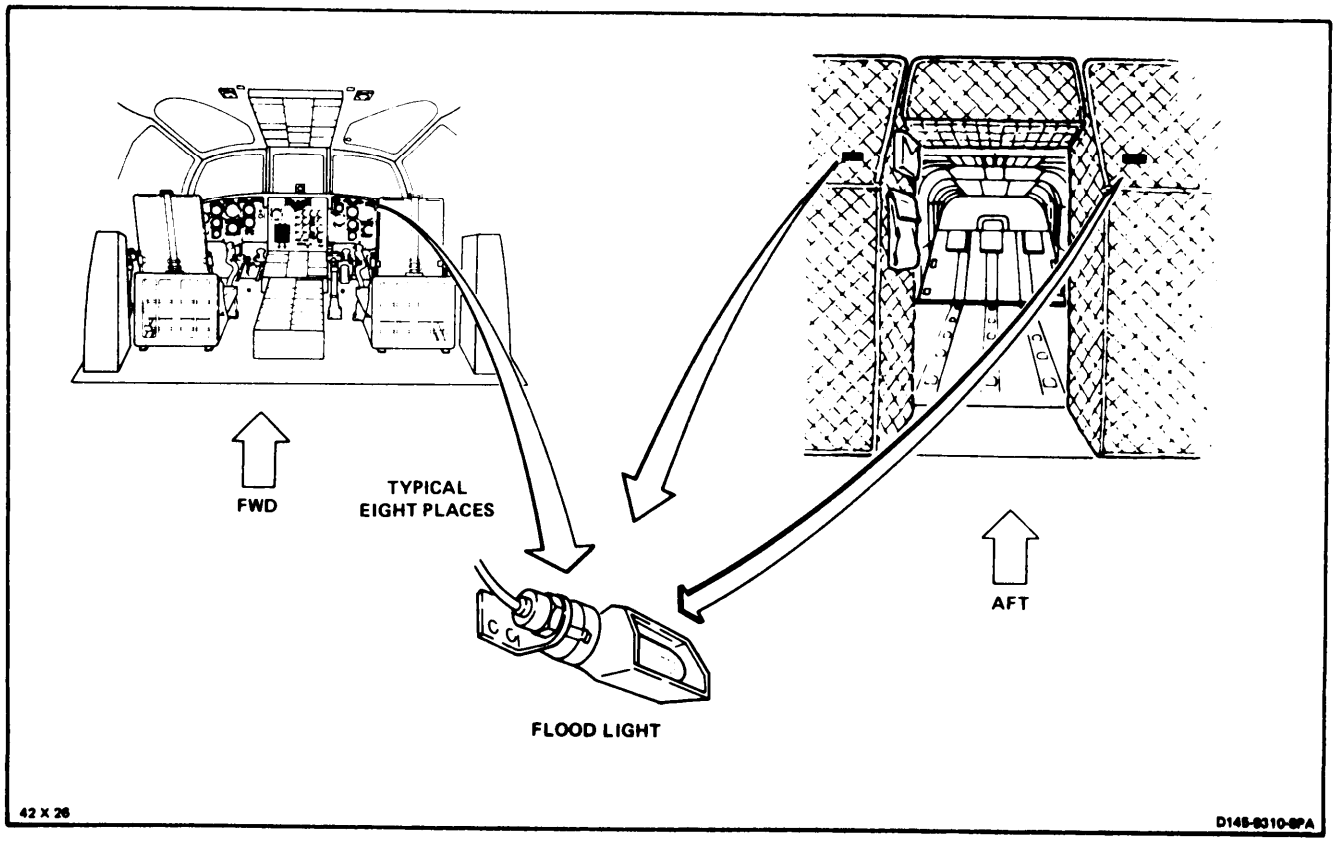
Materials:
None

Parts:
Lamp

Personnel Required:
68F10 Aircraft Electrician

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



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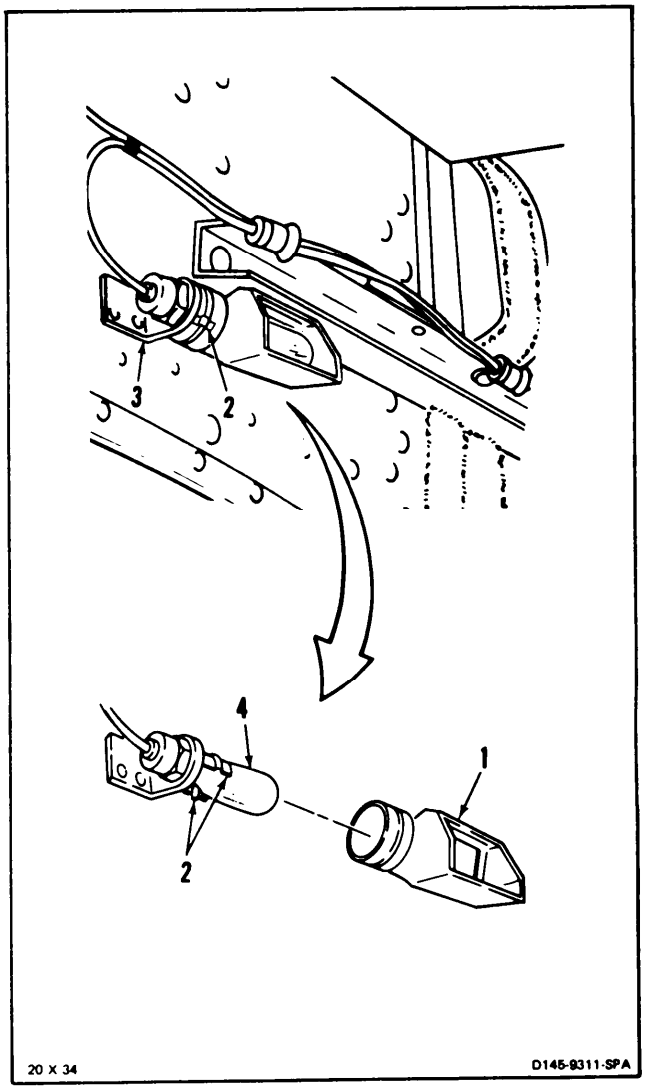
9-107 REPLACE FLOODLIGHT LAMP (Continued)

NOTE

- Without 17, floodlights have lamp MS25069-1495 and red diffusing glass.
- With 17, glareshield floodlights have lamps MS25231 -313 and NVG lens and overhead floodlights have lamps MS25069-1495X and NVG lens.

1. Pull housing (1) from two clips (2 on base (3). **Remove housing.**
2. **Remove lamp (4).**
3. **Install new lamp (4).**
4. **Install housing (1)** on base (3). Make sure two clips (2) snap in position.



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

9-108 REMOVE COCKPIT DOME LIGHT

INITIAL SETUP

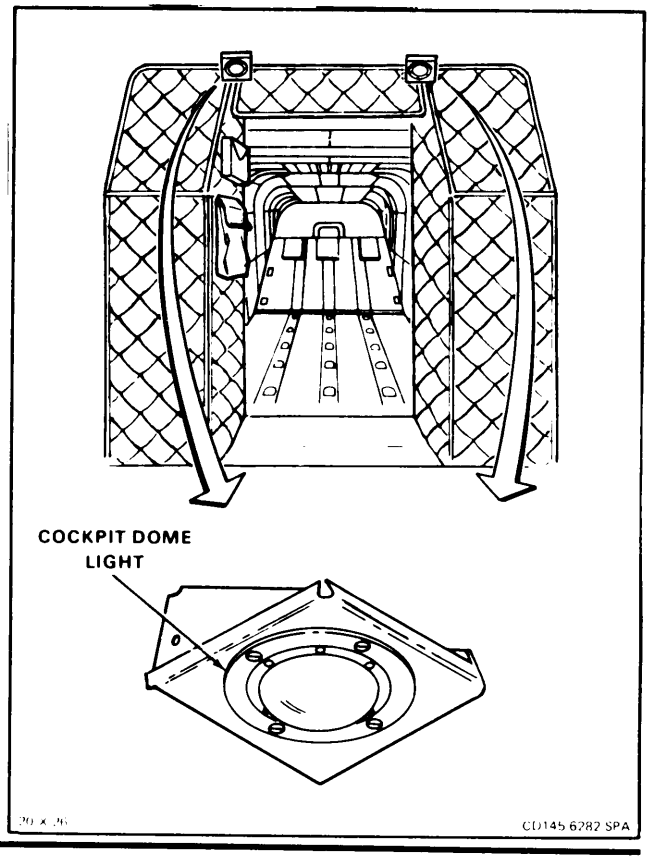
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Tape (E385)
Paper Tag (E264)

Personnel Required:
Aircraft Electrician

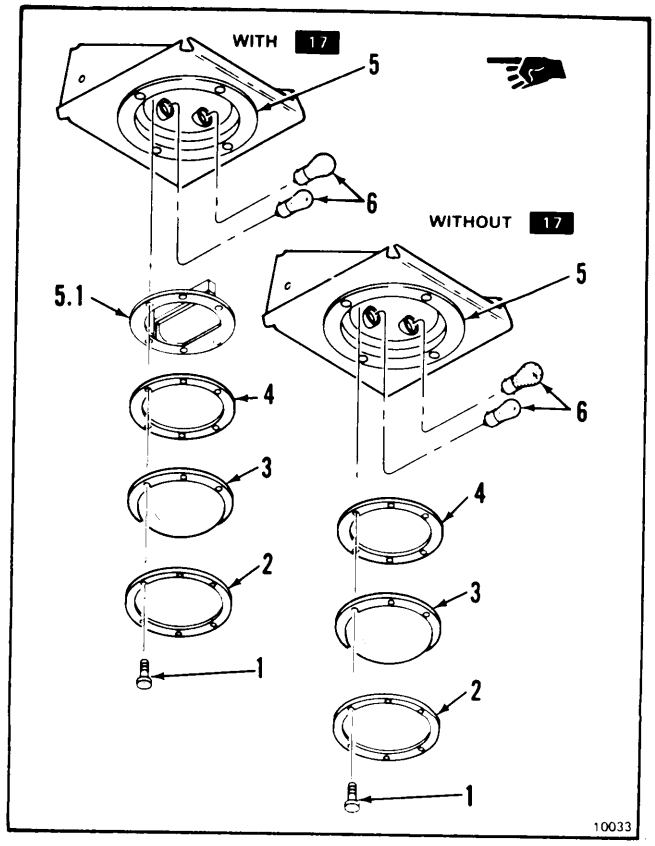
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

- Procedure is same to remove either cockpit dome light.
- Without 17, light has one clear, one red lamp.
- With 17, light has two cleat lamps and NVG filter which covers one.

1. **Remove** six screws (1), retainer (2), **lens (3), and gasket (4)** from housing (5). If installed, remove NVG filter (5.1),
2. **Remove two lamps (6).**



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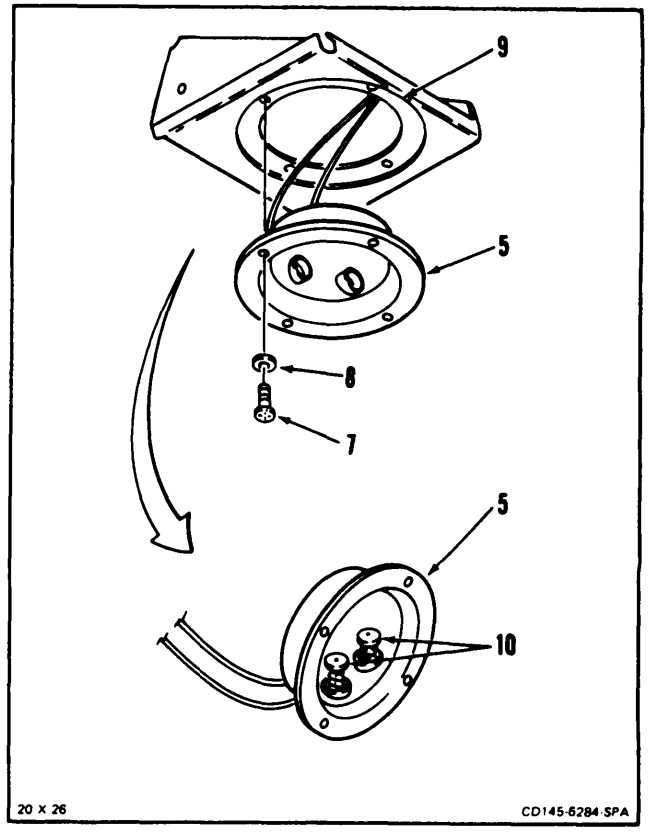
9-108 REMOVE COCKPIT DOME LIGHT (Continued) 9-108

3. **Remove four screws (7)** and washers (8). **Withdraw housing (5)** from structure (9).
4. Tag and **unsolder two wires (10).** Tape wire ends. Use tape (E385).
5. **Remove housing (5).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-109 REPLACE COCKPIT DOME LIGHT LAMP

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

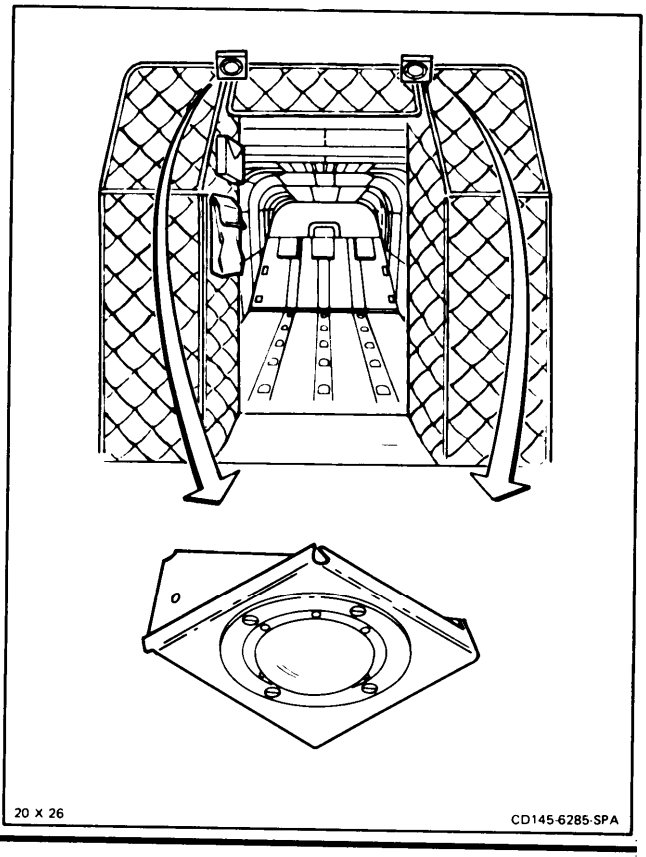
Materials:
None

Parts:
Lamp, Red
Lamp, Clear

Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23P

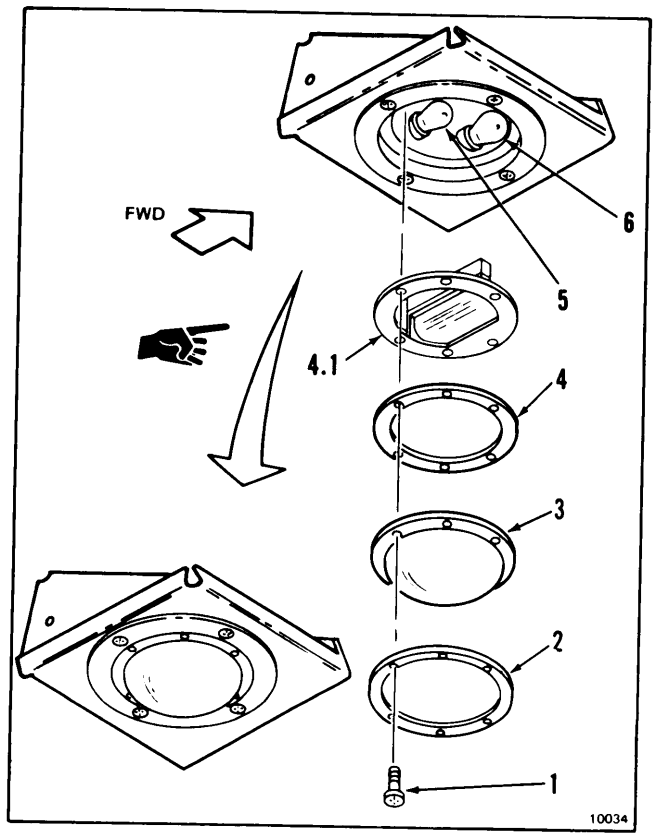
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



NOTE

- Procedure is same to replace lamp in either cockpit dome light.
- Without 17, light has one clear, one red lamp.
- With 17, light has two clear lamps and a blue NVG filter which covers one.

1. Remove six lens retaining screws (1). **Remove** retainer (2), **lens (3),** gasket (4), and NVG filter (4.1), if installed.
2. **Remove** defective **lamp (5 or 6).**
3. Install new lamp (5 or 6).
4. **Install** gasket (4), NVG filter (4.1), if installed, **lens (3), retainer (2),** and six screws (1).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of cabin lighting (TM 55-1520-240-T).

END OF TASK

9-110 INSTALL COCKPIT DOME LIGHT

INITIAL SETUP

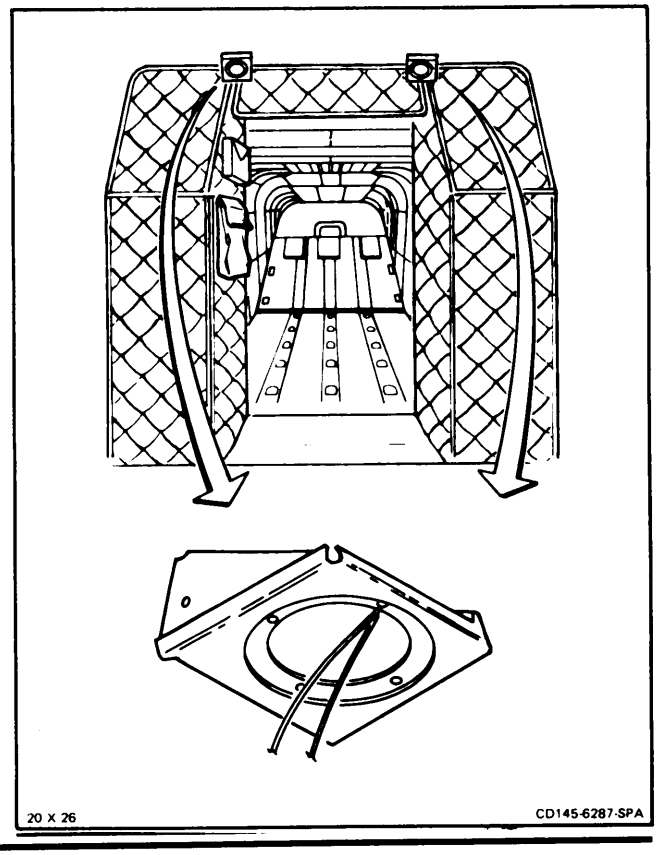
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
Aircraft Electrician
Inspector

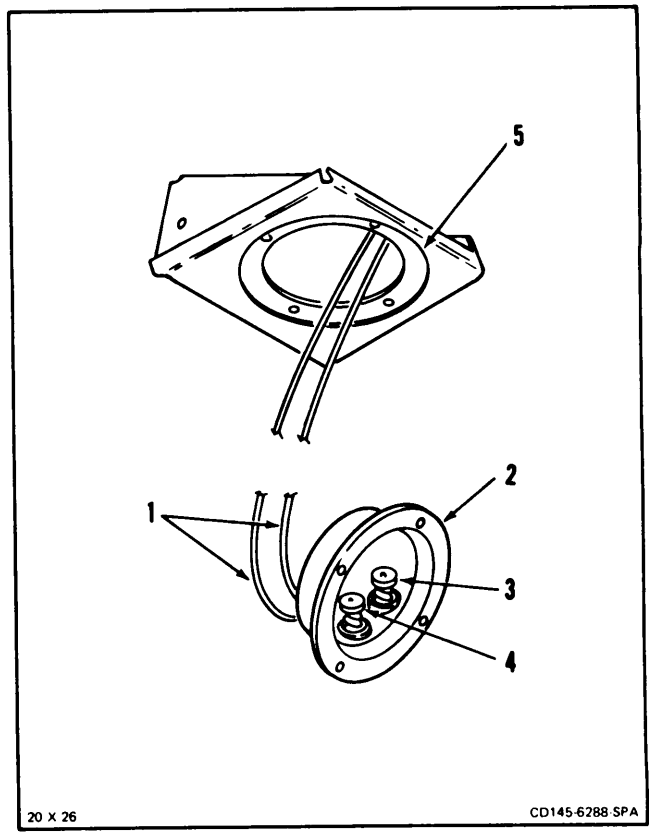
References:
TM 55-1520-240-23P



NOTE

- Procedure is same to install either cockpit dome light.
- Without **17**, light has one clear, one red lamp.
- With **17**, light has two clear lamps and NVG filter over one. Retainer screws are longer.

1. Remove tape from two wires (1). Route wires through hole in housing (2) and **solder wires** to sockets (3 and 4). Use solder (E360). Remove tags.



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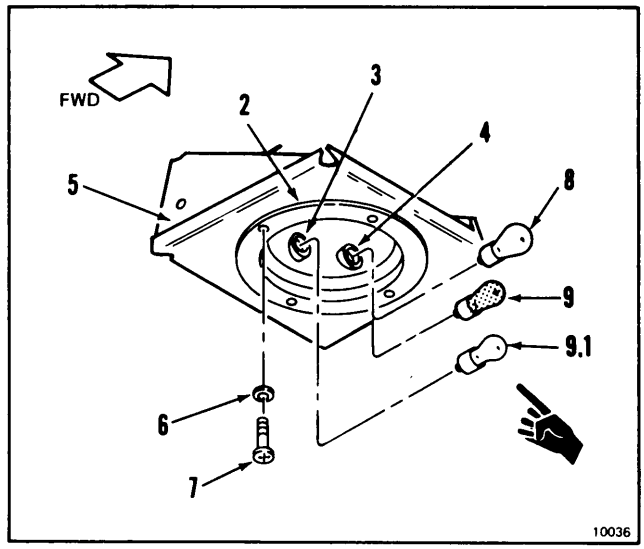
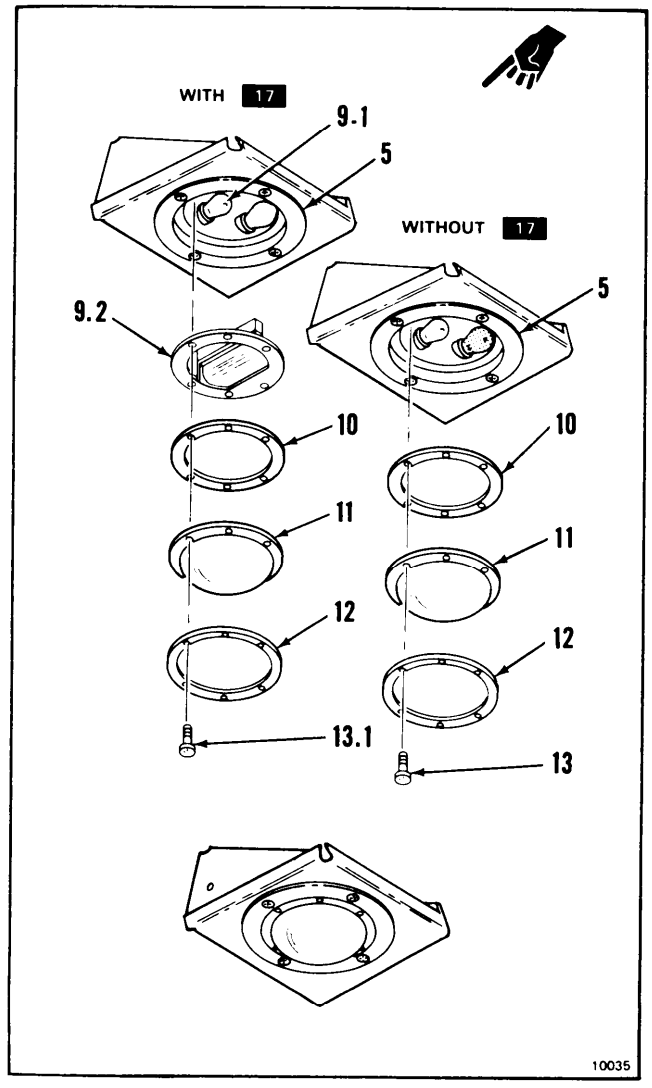
2. **Position housing (2)** on structure (5). **Install four washers (6) and screws (7).**
3. **Install lamp (8)** in socket (4).
4. Without 17, **install lamp (9)** in socket (3).
5. With 17, install lamp (9.1) in socket (3).



6. With 17, install NVG lens (9.2) over lamp (9.1).
7. Position gasket (10), **lens (11)** and retainer (12). **Install six screws (13 or 13.1).**



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of cabin lighting (TM 55-1520-240-T).

END OF TASK

9-111 REMOVE UTILITY LIGHT 9-111

INITIAL SETUP

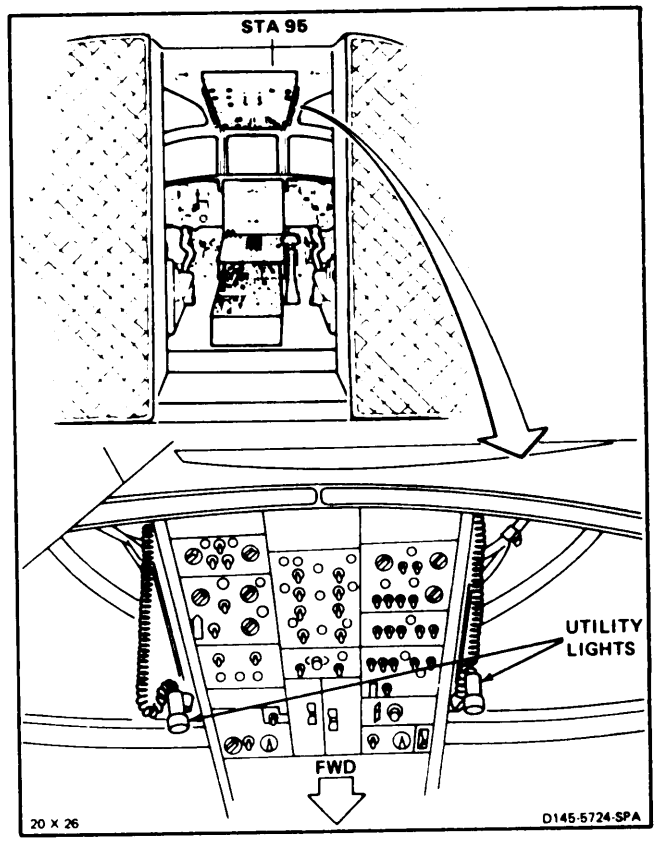
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39
Electrical Power Off



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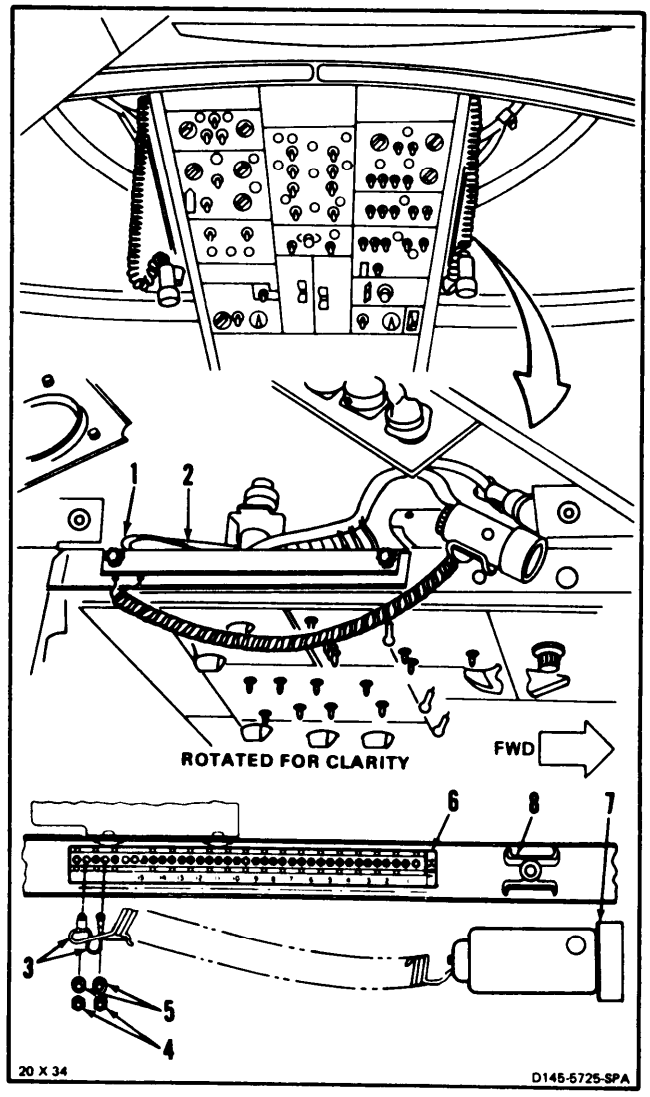
9-111 REMOVE UTILITY LIGHT (Continued)

NOTE

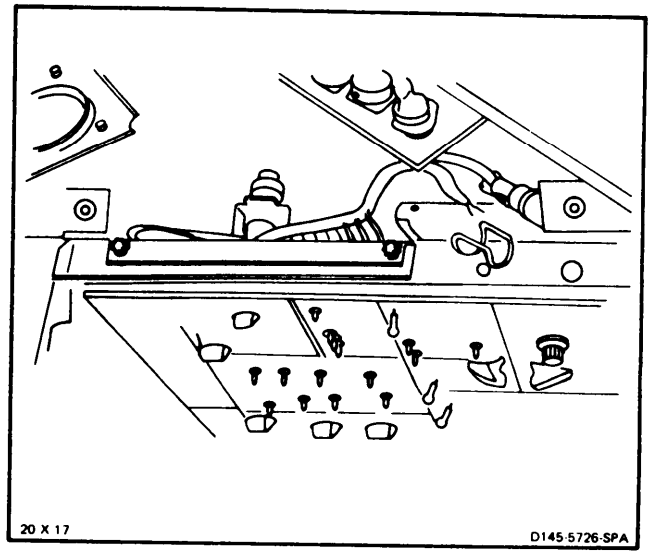
Procedure is same to remove pilot's or copilot's utility light. Removal of pilot's utility light is shown here.

1. **Remove two nut (1)** from cover (2).
2. **Remove cover (2).**
3. Tag two wires (3). Remove two nuts (4) and washers (5) from terminal board (6). **Disconnect two wire.**
4. **Remove light (7)** from mount (8).



FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-111.1 REPLACE UTILITY LIGHT LAMP OR LENS

INITIAL SETUP

Applicable Configurations:
All

Tools:
Snap Ring Pliers

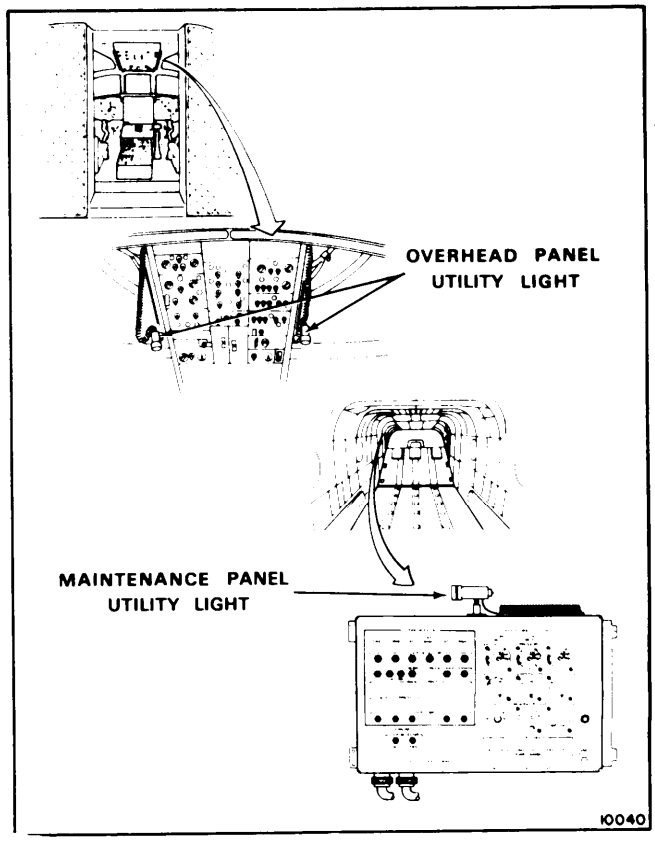
Materials:
None

Parts:
Lamp
Lens

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

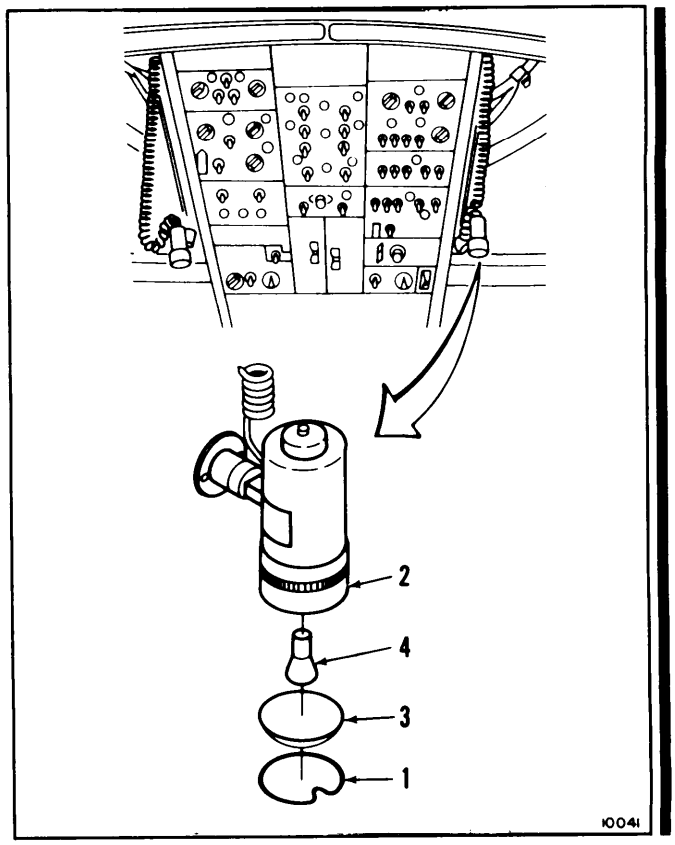


NOTE

Procedure is same to replace lamp or lens in overhead panel lights or maintenance panel light, for helicopters with or without 17. Replacement of overhead panel light lamp or lens is shown here.

Without 17

1. Remove snap ring (1) from adjustable housing (2). **Remove lens (3).** Use snap ring pliers.
2. Turn housing (2) until lamp (4) is fully extended.
3. **Replace lamp (4).**
4. Turn housing (2) to **retract lamp (4).**
5. **Install lens (3)** and ring (1) in housing (2).



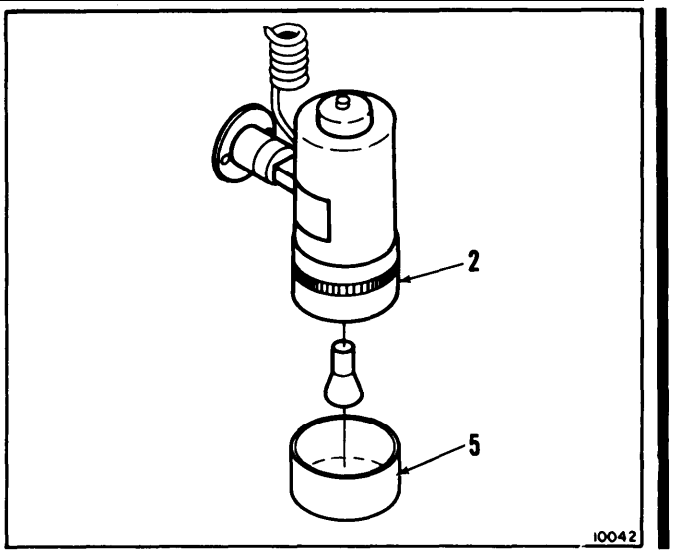
GO TO NEXT PAGE

9-111.1 REPLACE UTILITY LIGHT LAMP OR LENS (Continued) 9-111.1

With 17

6. Pry and **remove lens cap (5)** from housing (2).
7. **Repeat steps 2, 3, and 4.**
8. **Install lens cap (5)** on housing (2). Push cap fully onto housing.

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check of utility light (TM 55-1520-240-T).

END OF TASK

9-112 INSTALL UTILITY LIGHT

INITIAL SETUP

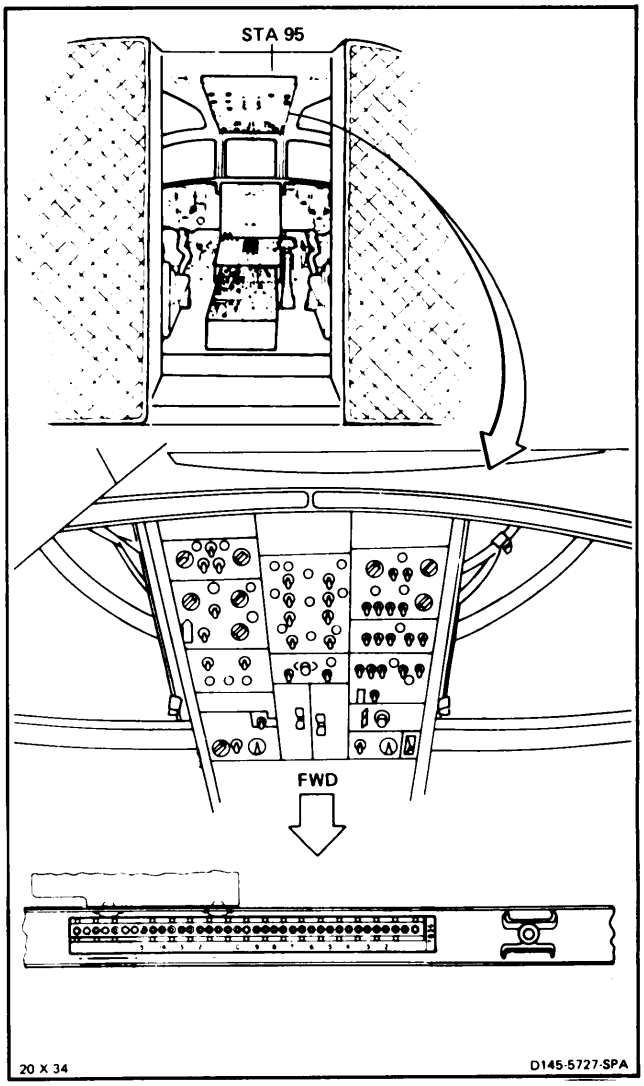
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

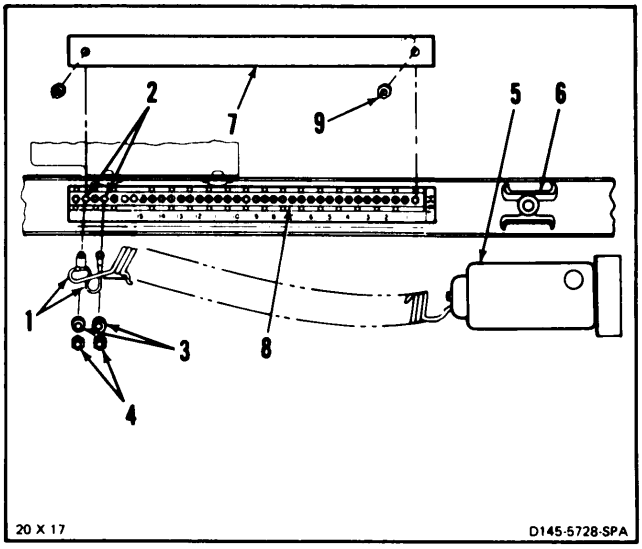
References:
TM 55-1520-240-23P



NOTE

Procedure is same to install pilot's or copilot's utility light. Installation of pilot's utility light is shown here.

1. **Connect two wires (1)** to terminals (2). Install two washers (3) and nuts (4). Remove tags.
2. **Install light (5)** in mount (6).
3. **Position** cover (7) on terminal board (8). **Install two nuts (9).**



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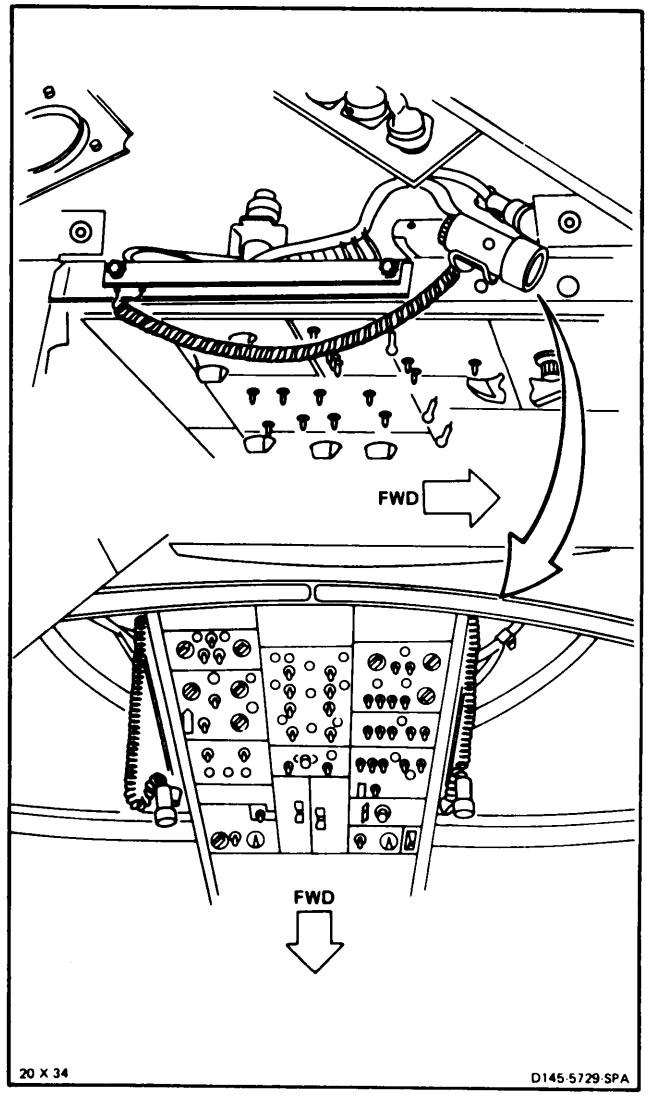
9-112 INSTALL UTILITY LIGHT (Continued)

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of utility lights (TM 55-1520-240-T).



END OF TASK

9-113 REPLACE CABIN/RAMP DOME LIGHT LAMPS 9-113

INITIAL SETUP

Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit, NSN 5180-00-323-4692
Workstand

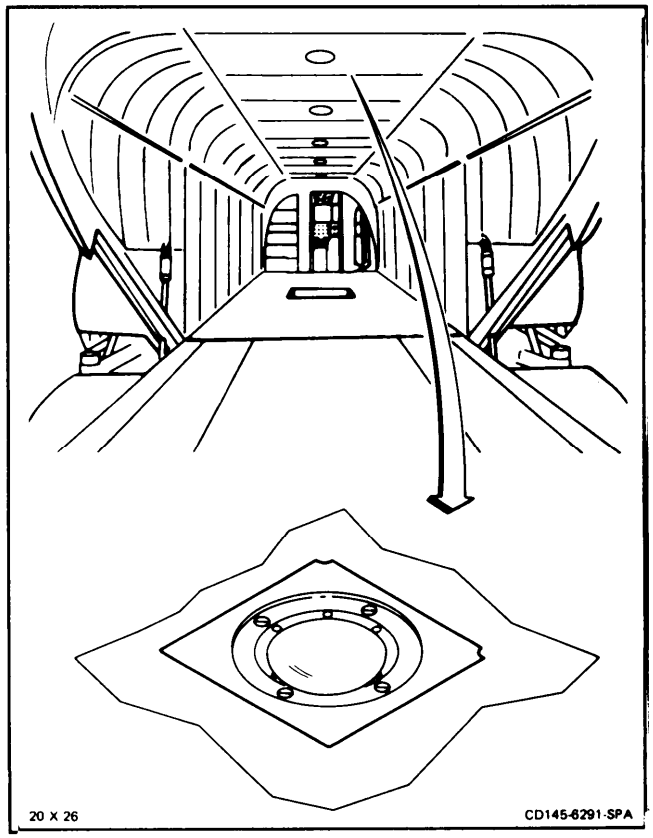
Materials:
None

Parts:
Lamp, Clear
Lamp, Red

Personnel Required:
Medium Helicopter Repairer

References:
TM 55-1520-240-23P

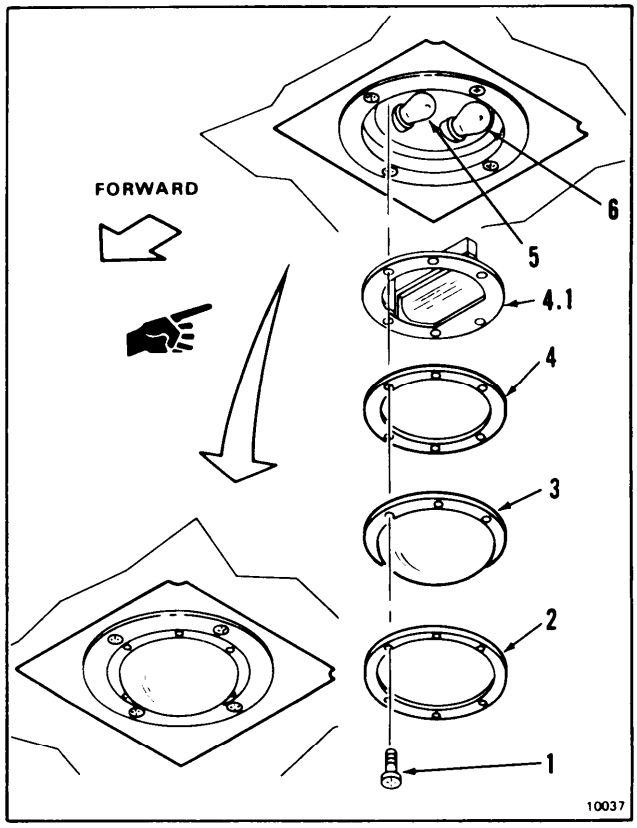
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Cargo Ramp Open and Level (TM 55-1520-240-T)



NOTE

- Procedure is same to replace lamps in cabin or ramp dome light.
- With 17, NVG filter covers clear lamp.

1. **Remove** six lens retaining screws (1), retainer (2), **lens (3),** and gasket (4).
2. With 17, remove NVG filter (4.1).
3. **Replace** defective lamp (5 or 6).
4. With 17, position NVG filter (4.1) over clear lamp (5).
5. **Install gasket (4), lens (3), retainer (2),** and **six screws (1).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-114 REMOVE CABIN/RAMP DOME LIGHT 9-114

INITIAL SETUP

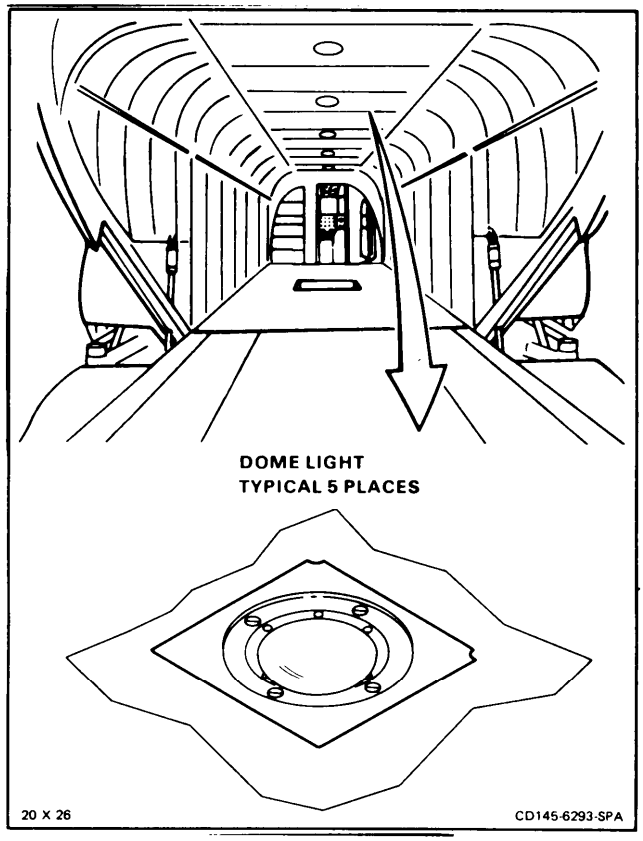
Applicable Configurations:
All

Tool's:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun
Workstand

Materials:
Tape (E385)
Paper Tag (E264)

Personnel Required:
Aircraft Electrician

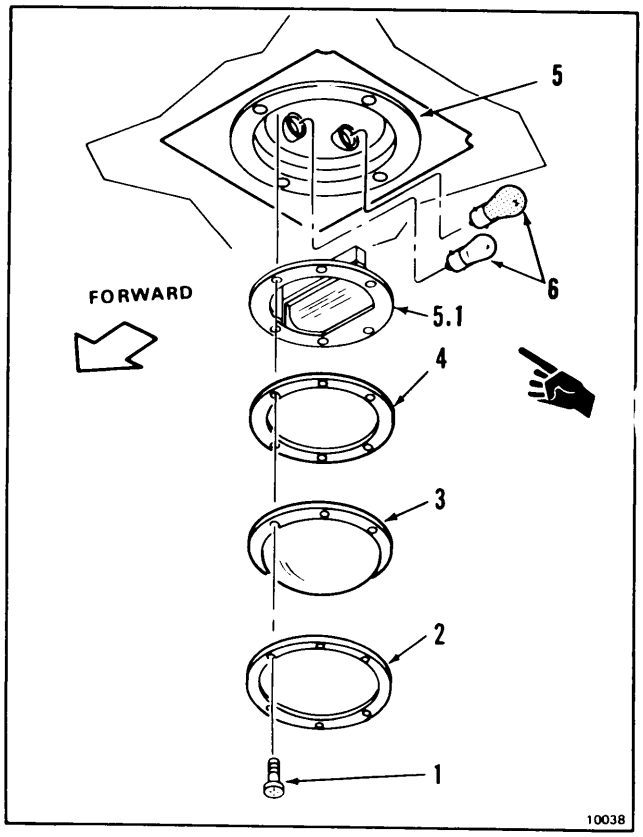
Equipment Condition:
Battery Disconnected (Task Electrical



NOTE

- Procedure is similar to remove cabin or ramp lights. Differences are noted in text.
- With 17, NVG filter covers clear lamp.

1. **Remove** six screws (1), retainer (2), **lens (3),** and gasket (4) from light (5).
2. With 17, remove NVG filter (5.1).
3. **Remove two lamps (6).**



GO TO NEXT PAGE

9-114 REMOVE CABIN/RAMP DOME LIGHT (Continued) 9-114

3. **For cabin location only,** remove four screws (7) and eight washers (8). **Withdraw housing (9)** from structure (10). **Remove four spring nuts (11)** and Washers (12) from structure (10).

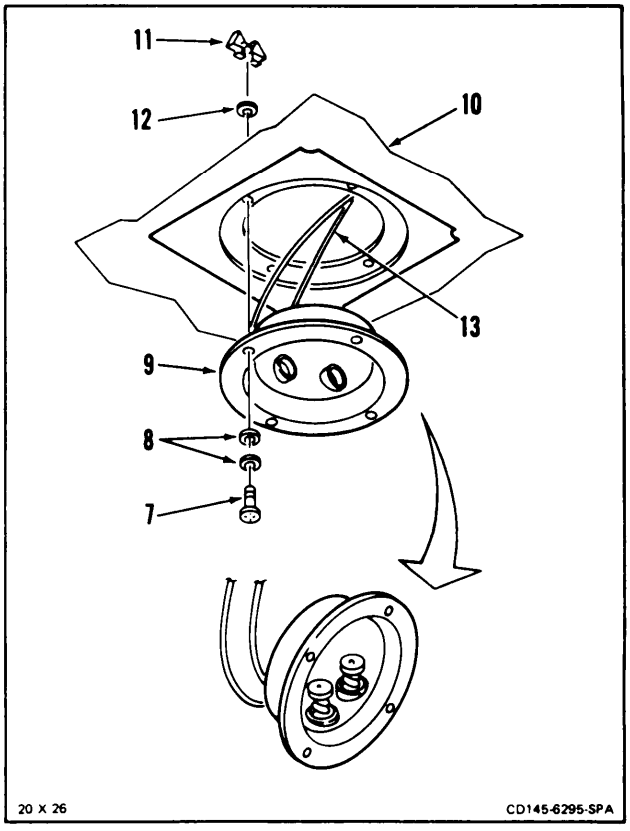
4. **For ramp location only,** remove four screws (7) and washers (8). **Withdraw housing (9)** from structure (10).

5. Tag and **unsolder two wires (13).** Tape ends. Use tape (E385).

6. **Remove housing (9).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-115 INSTALL CABIN/RAMP DOME LIGHT

INITIAL SETUP

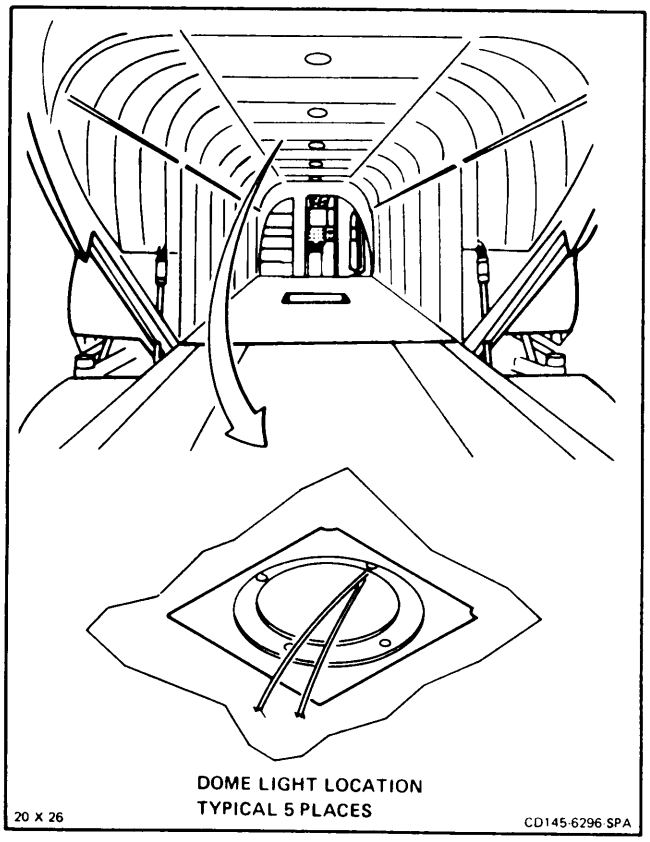
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

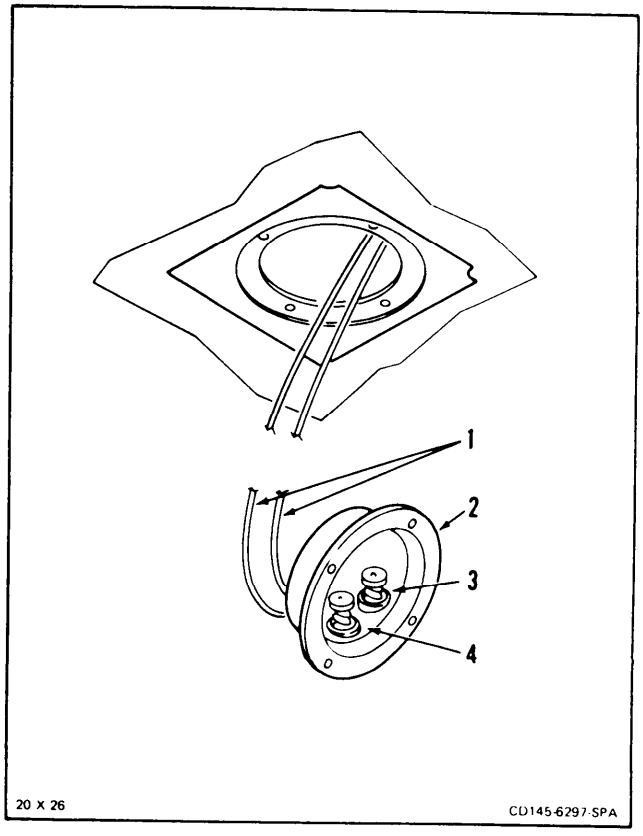
References:
TM 55-1520-240-23P



NOTE

Procedure is similar to install cabin or ramp lights. Differences are noted in text.

1. Remove tape from two wires (1). Route wires through hole in housing (2) and **solder wires** to sockets (3 and 4). Use solder (E360). Remove tags.



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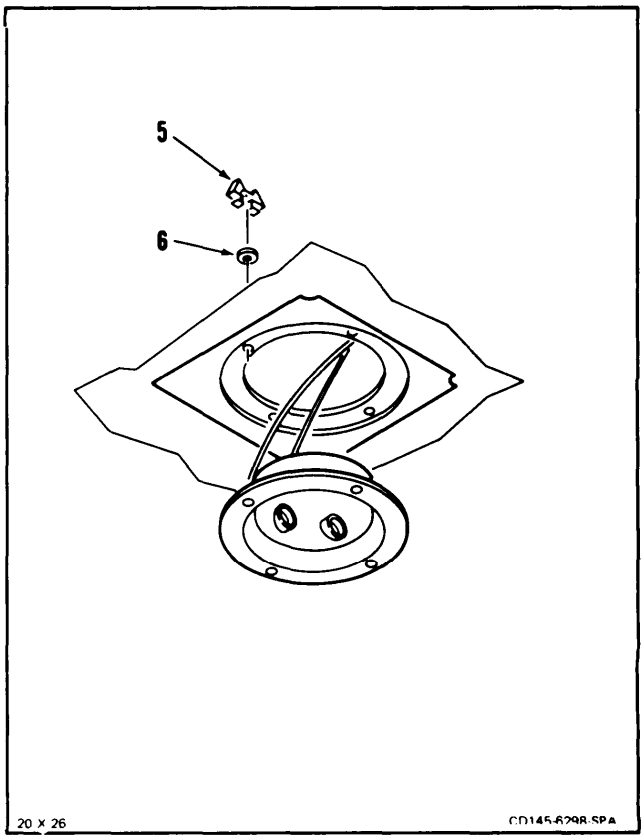
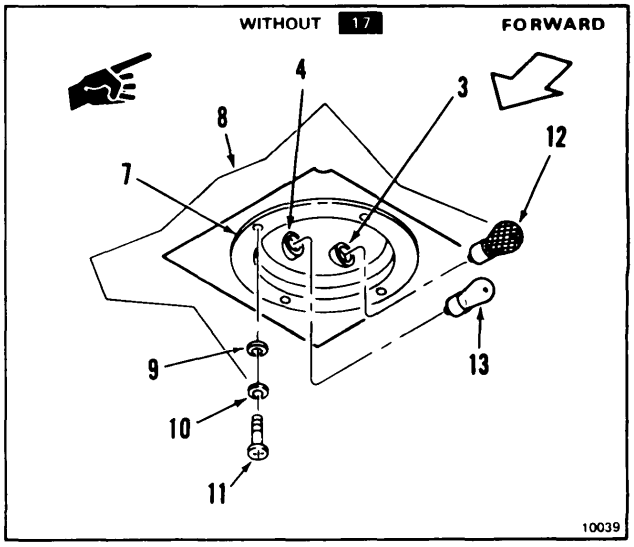
9-115 INSTALL CABIN/RAMP DOME LIGHT (Continued)

2. For cabin location only, **install four spring nuts (5)** and washers (6).



3. **For cabin location only, position housing (7)** in structure (8). **Install four** washers (9), washers (10) and **screws (11).**
4. **For ramp location only, position housing (7)** in structure (8). **Install four** washers (9) and screws (11).
5. **Install lamp (12)** in socket (3). **Install lamp (13)** in socket (4).



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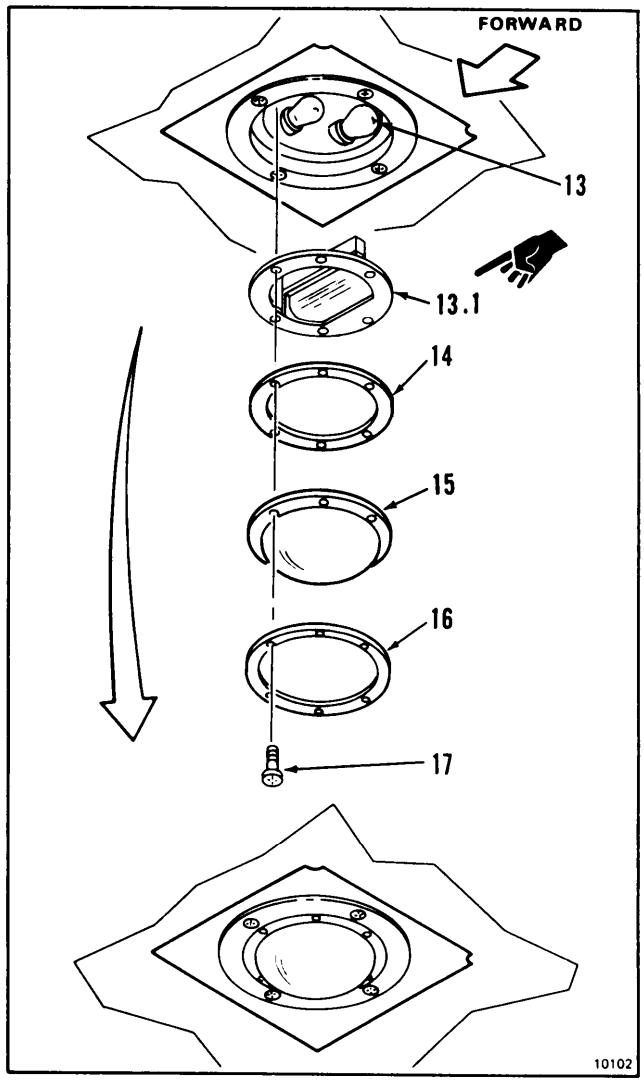
6. With **17**, position NVG filter (13.1) over lamp (13).
7. **Position** gasket (14), **lens (15),** and retainer (16). **Install six screws (17).**

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check of cabin lighting (TM 55-1520-240-T).

Close cargo ramp (TM 55-1520-240-T).

END OF TASK

9-116 REMOVE CABIN AND RAMP LIGHTING RELAYS 9-116

INITIAL SETUP

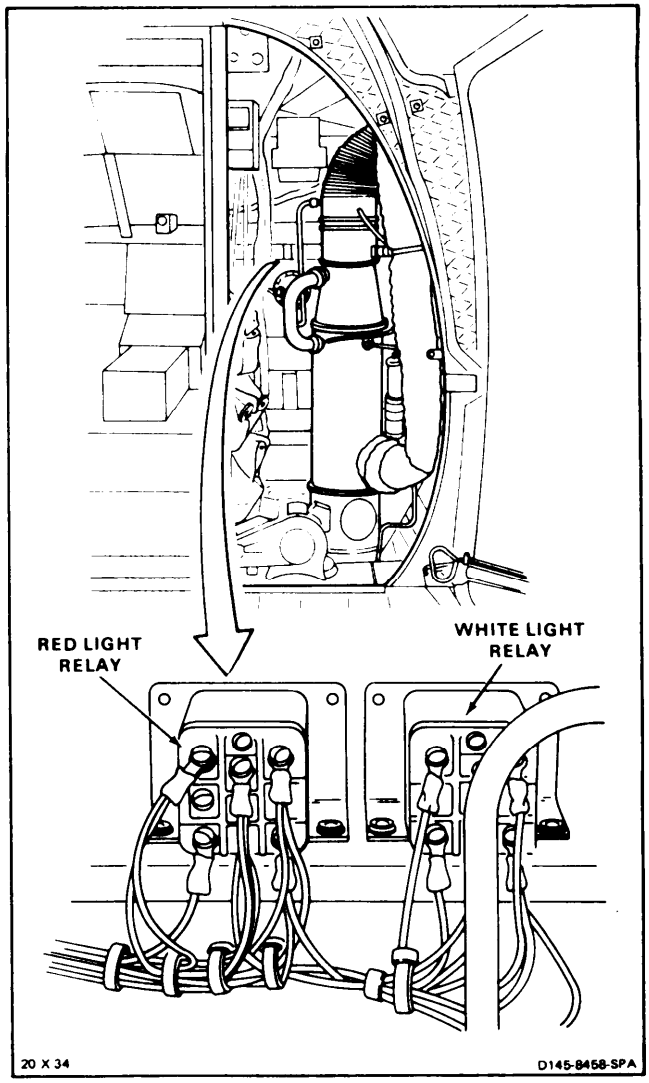
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Tape (E395)

Personnel Required:
68F10 Aircraft Electrician

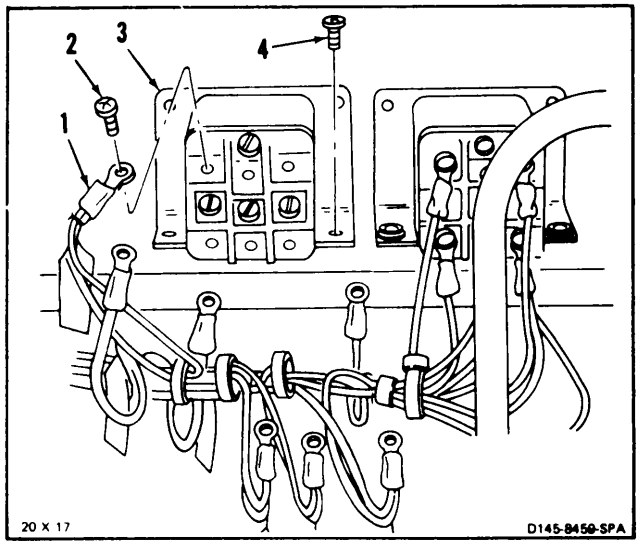
Equipment Condition:
Bittery Disconnected (Task 1-39)
Electrical Power Off
Heater Compartment Acoustic Blanket Removed (Task 2-208)



NOTE

Procedure is same to remove white light relay or red light relay. Removal of red light relay is shown here.

1. Tag and **disconnect eleven wires (1)** by removing six screws (2) from relay (3). Tape wire ends.
2. **Remove two screws (4).**
3. **Remove relay (3).**



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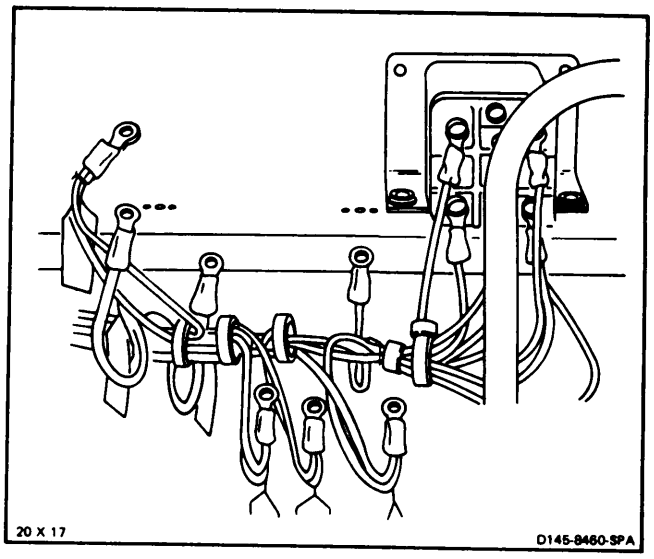
9-116 REMOVE CABIN AND RAMP LIGHTING RELAYS (Continued)

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-117 INSTALL CABIN AND RAMP LIGHTING RELAYS

INITIAL SETUP

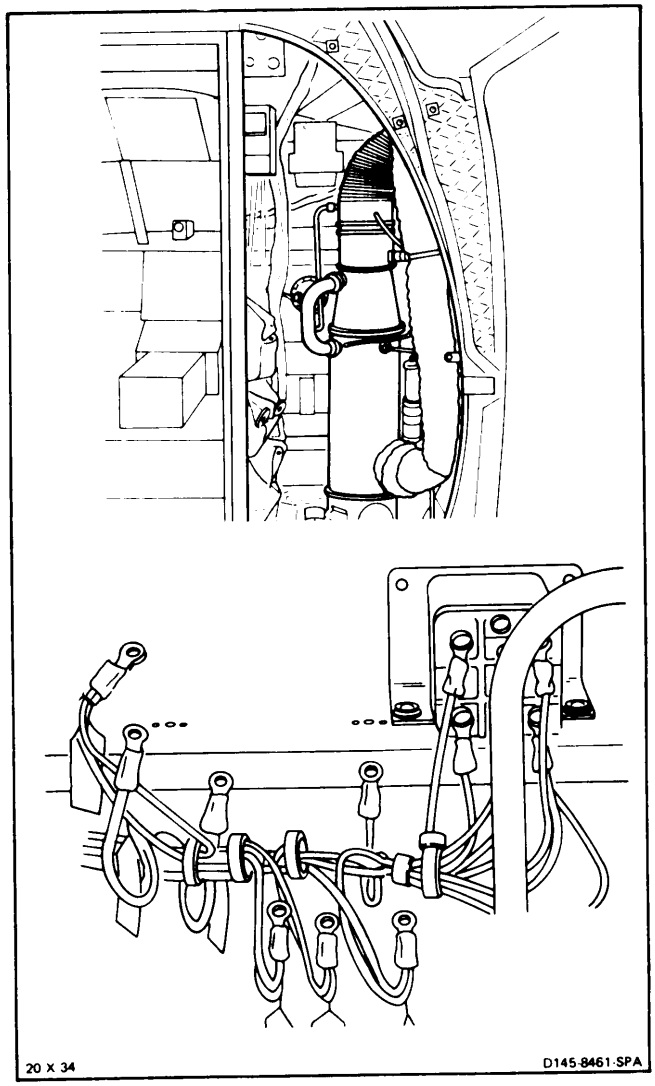
Applicable Configurations:
Without 17

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

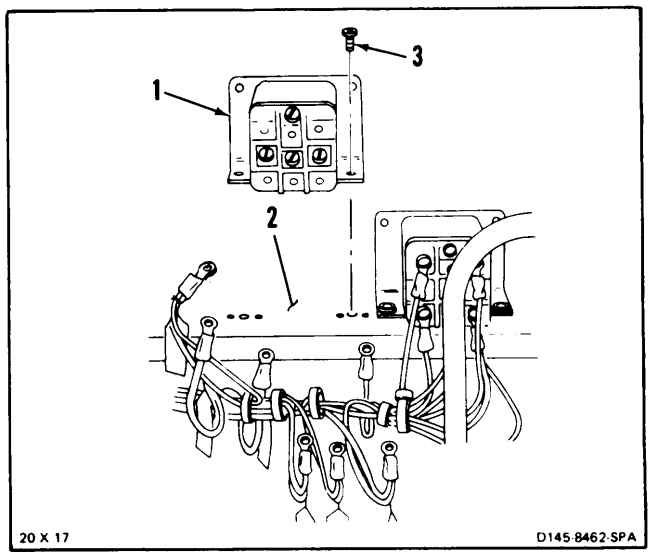
References:
TM 55-1520-240-23P



NOTE

Procedure is same to install white light relay or red light relay. Installation of red light relay is shown here.

1. **Position** relay (1) on structure (2). **Install two screws (3).**



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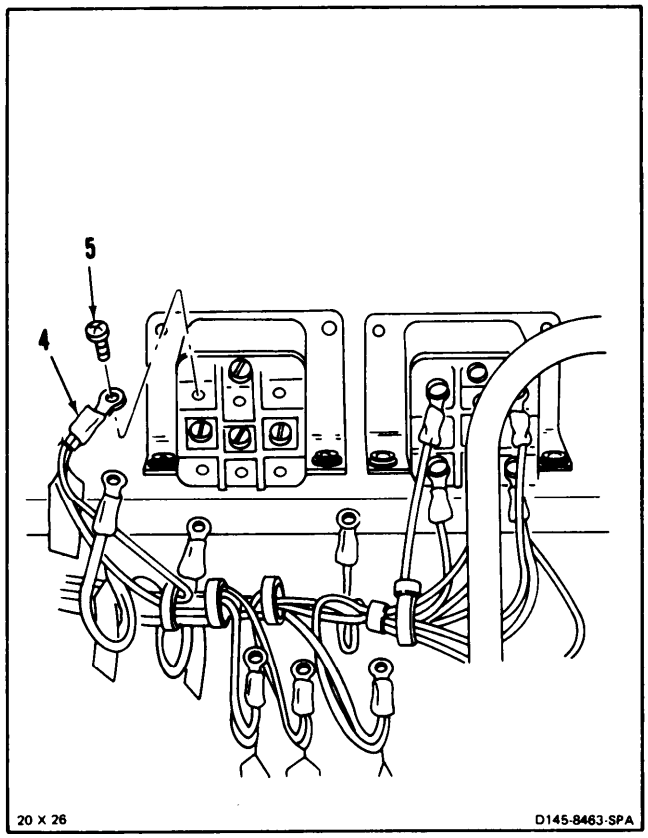
9-117 INSTALL CABIN AND RAMP LIGHTING RELAYS (Continued)

2. Remove tape and **install eleven wires (4)** using six screws (5). Remove tags.



INSPECT

FOLLOW-ON MAINTENANCE:

Install heater compartment acoustic blanket (Task 2-210).

Perform operational check (TM 55-1520-240-T).

END OF TASK

9-118 REMOVE TROOP WARNING BOX 9-118

INITIAL SETUP

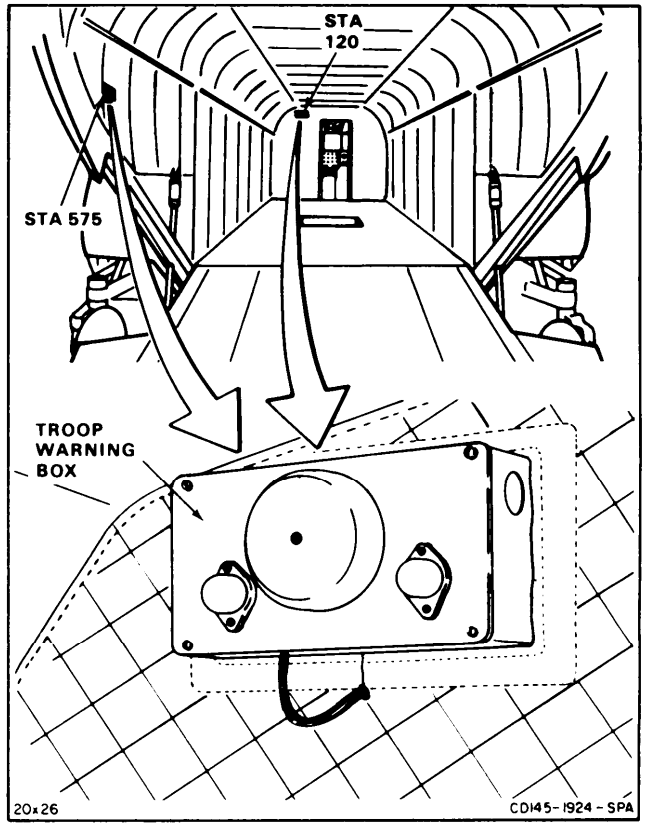
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Tape (E385)
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician (2)

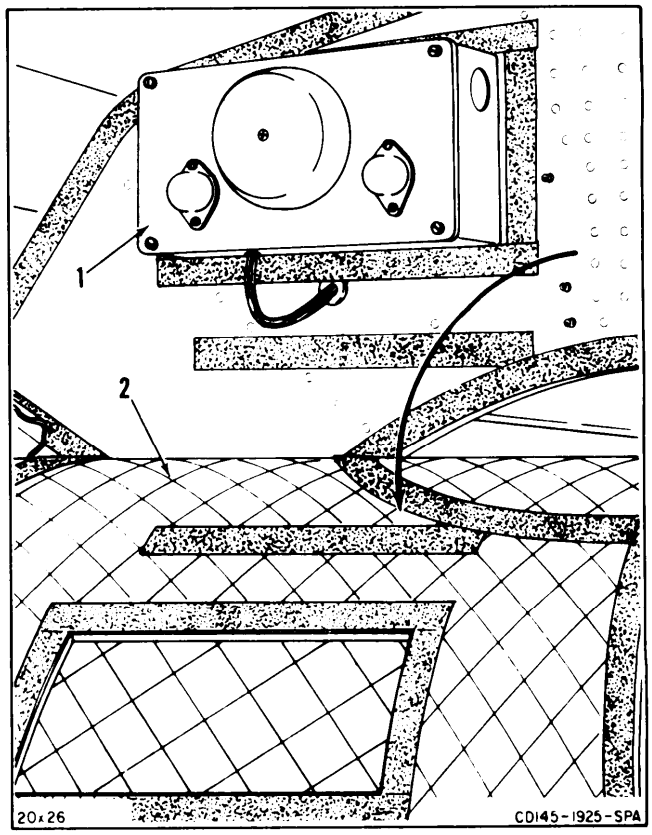
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



NOTE

Procedures are similar for removing forward or aft box. Forward box is shown here. When removing aft box (sta 575), do not perform steps 1., 11., and 12. Parts removed in steps 1., 11., and 12. are removed from forward box only.

1. On forward troop warning box (1) only, remove blanket (2) from around box.



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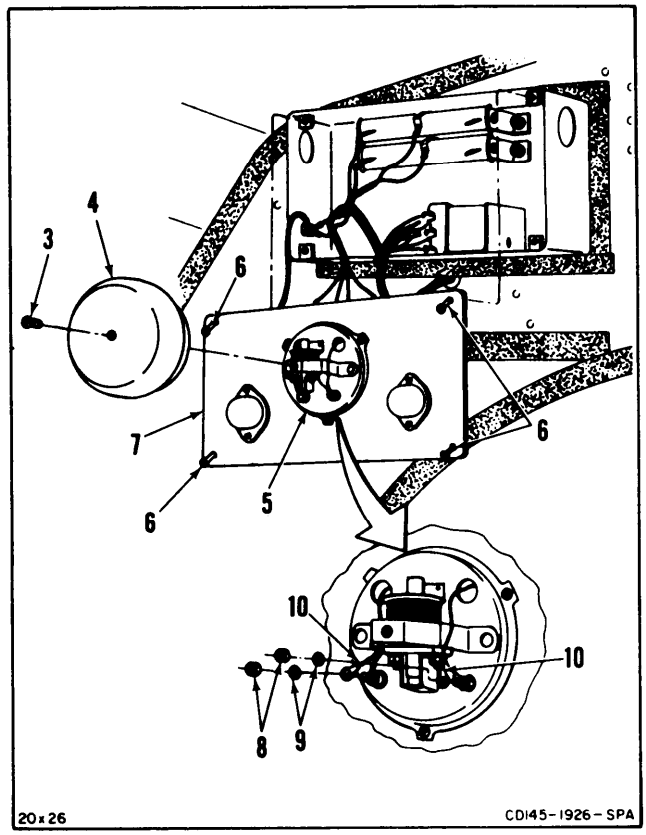
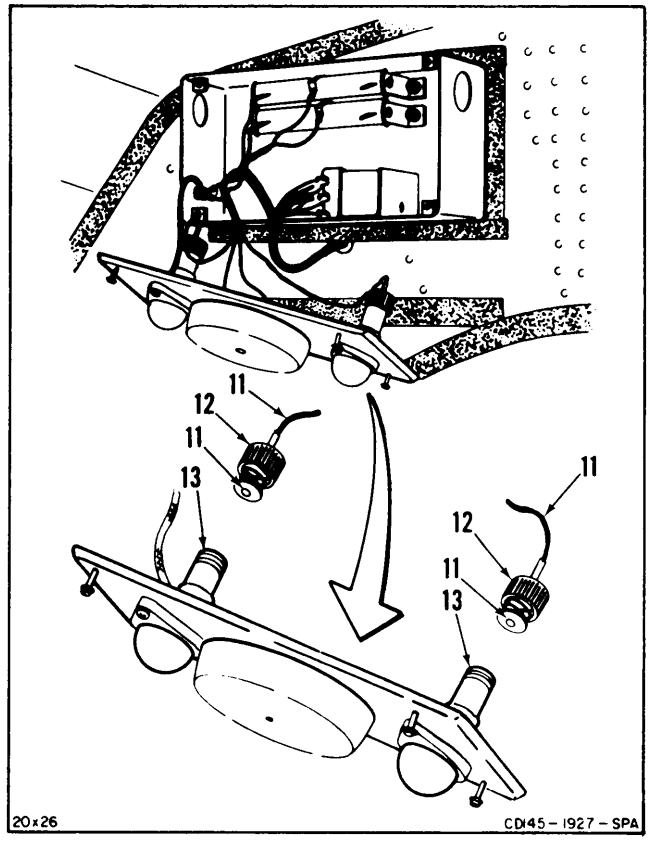
9-118 REMOVE TROOP WARN HUG BOX (Continued)

2. **Remove** screw (3) and **gong (4)** from bell (5).
3. Loosen four screws (6) and **remove cover (7).** Have helper hold cover.
4. **Remove two nuts (8)** and washers (9).
5. Tag and **disconnect three wires (10)** from bell (7). Tape exposed ends of wires. Use tape (E385).
6. Reinstall two washers (9) and nuts (8).
7. **Reinstall gong (6)** and screw (5).



8. Tag two wires (11) and **disconnect two connectors (12).**
9. **Unsolder two wires (11)** from two connectors (12). Tape exposed ends of wires. Use tape (E385).
10. **Reconnect two connectors (12)** to lights (13).



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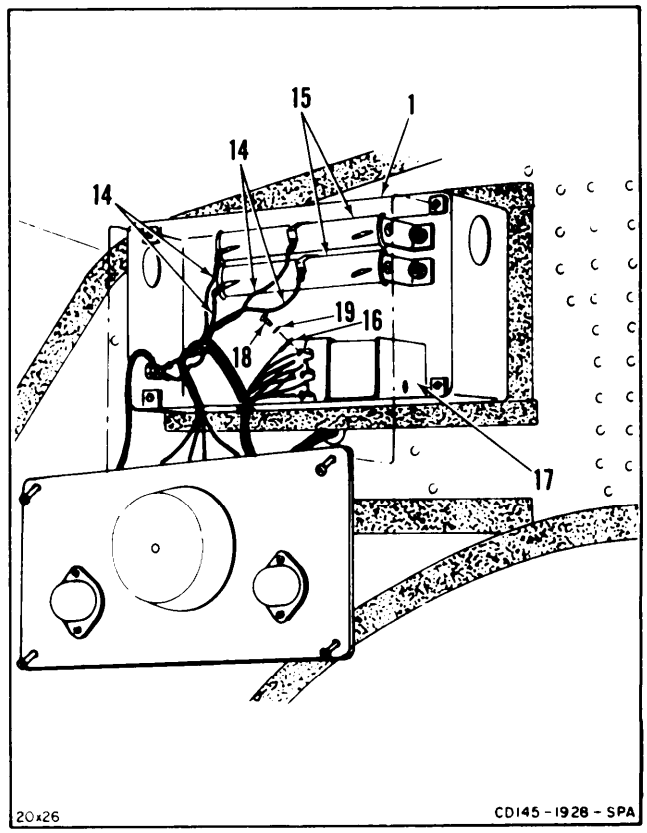
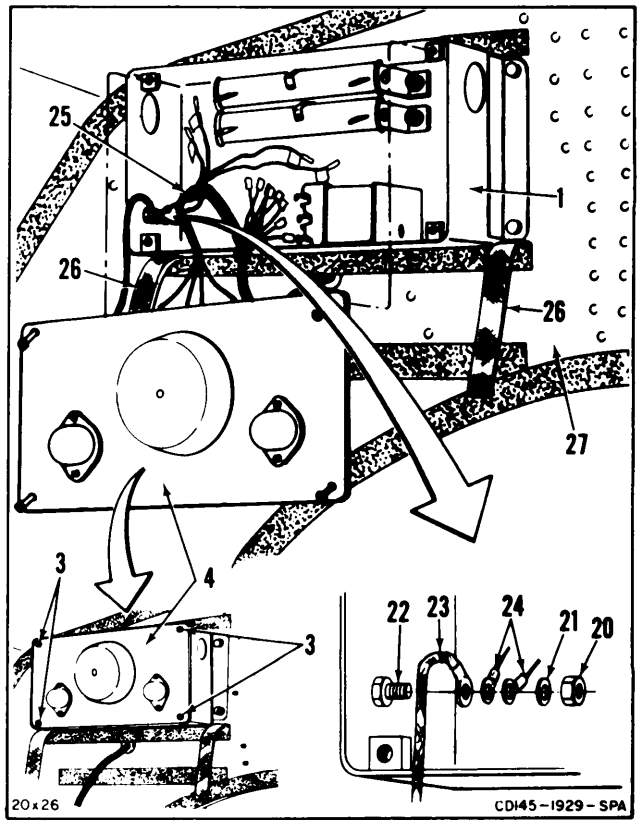
9-118 REMOVE TROOP WARNING BOX (Continued) 9-118

11. On forward box (1) only, tag and **unsolder four wires (14)** from resistors (15). Tape exposed ends of wires. Use tape (E385).
12. On forward box (1) only, tag and **disconnect 12 wire terminals (16)** from relay (17) by removing eight screws (18) and washers (19). Tape exposed ends of wires. Use tape (E385).
13. Reinstall eight washers (19) and screws (18) on relay (17).



14. Remove nut (20) and washer (21) from ground stud (22).
15. Tag and **disconnect two wires (24).** Tape ends. Use tape (E385). Electrical lead (23) shall stay on ground stud (22).
16. Install washer (21) and nut (20) on ground stud (22).
17. Carefully route wiring harness (25) clear of box (1).
18. **Remove pile tape (26)** from structure (27) on both sides of box (1).
19. Install cover (4) and tighten four screws (3).



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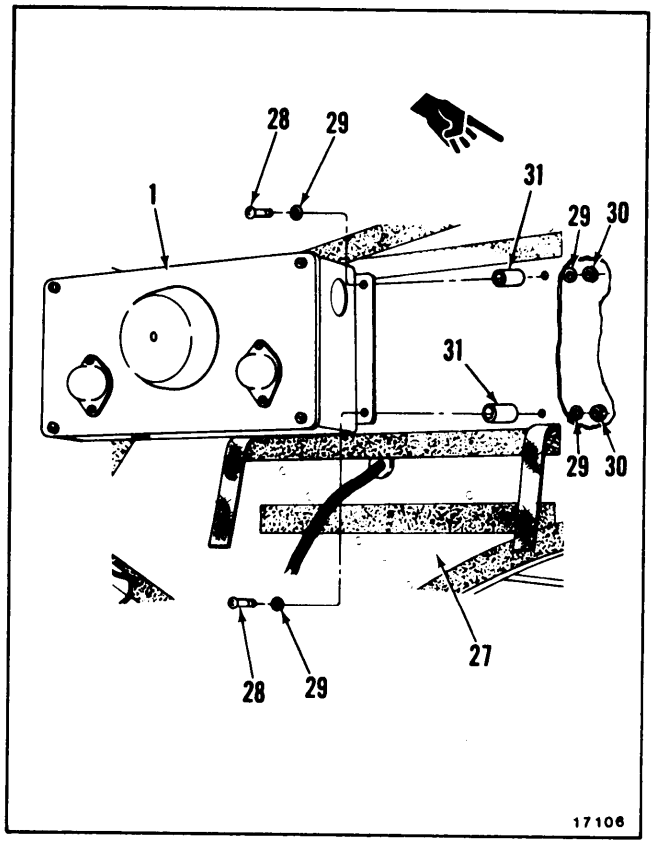
20. Remove screw (28), washer (29), spacer (31), washer (29), and nut (30) from box (1) and structure (27) in four
21. **Remove box (1).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-119 DISASSEMBLE TROOP WARNING BOX

INITIAL SETUP

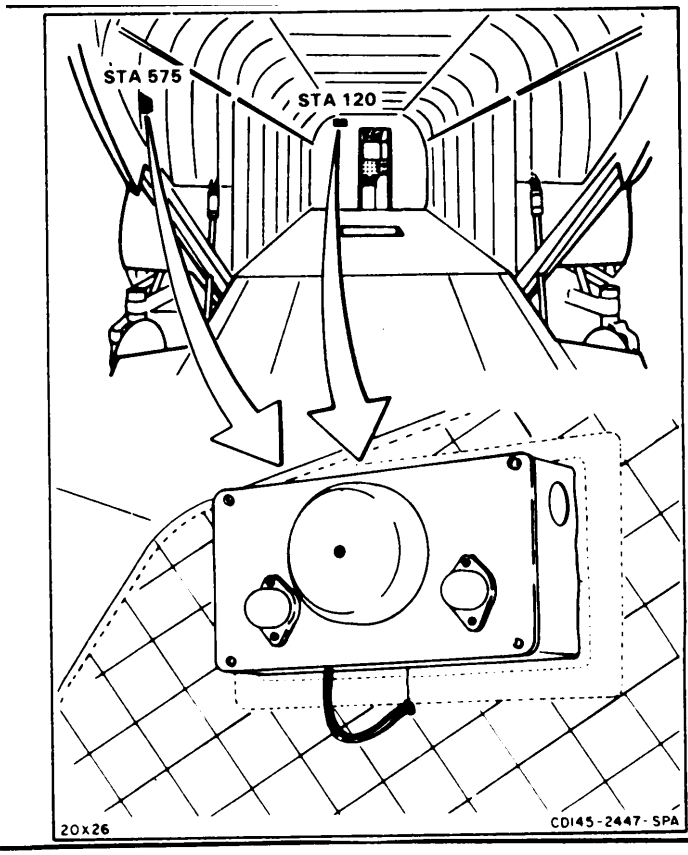
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Tape (E385)
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

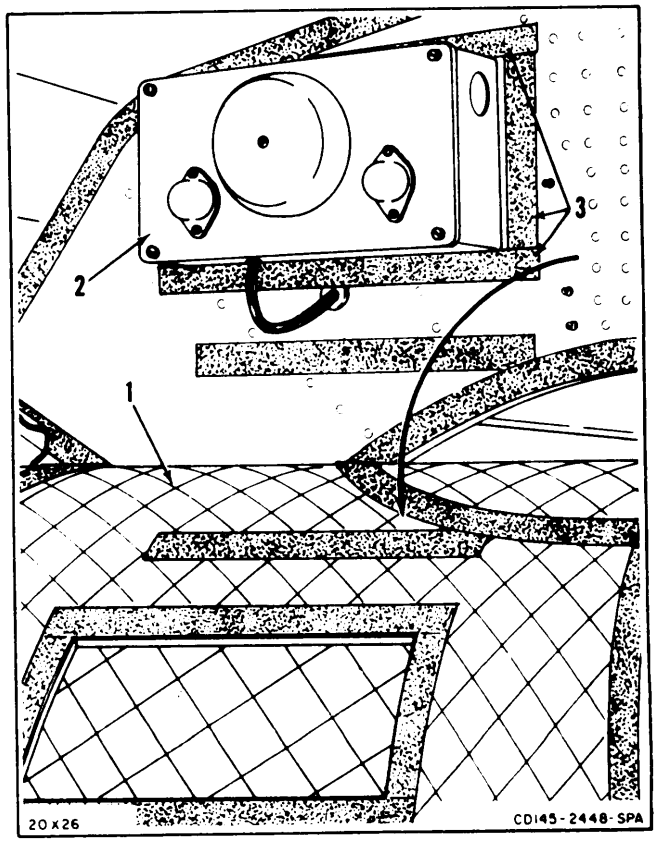
Equipment Condition:
Battery Disconnected (Task 1 -39)
Electrical Power Off



NOTE

Procedures are similar to disassemble forward or aft box. Forward box is shown here. When disassembling aft box (sta 575), do not perform steps 1., 17., and 20. Parts removed in steps 1., 17., and 20 apply to forward box only.

1. On forward box only, remove blanket (1) from troop warning box (2). Pull blanket away from pile tape (3).



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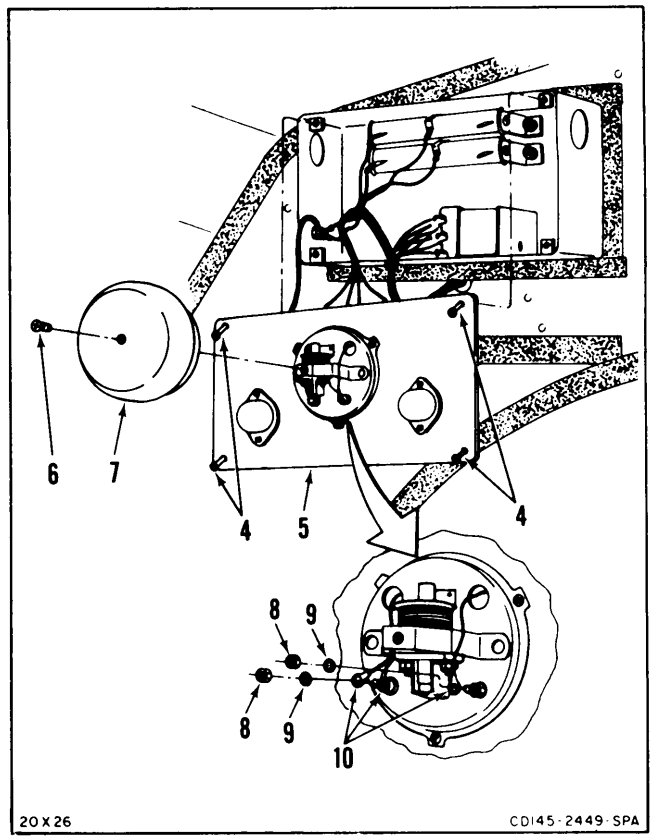
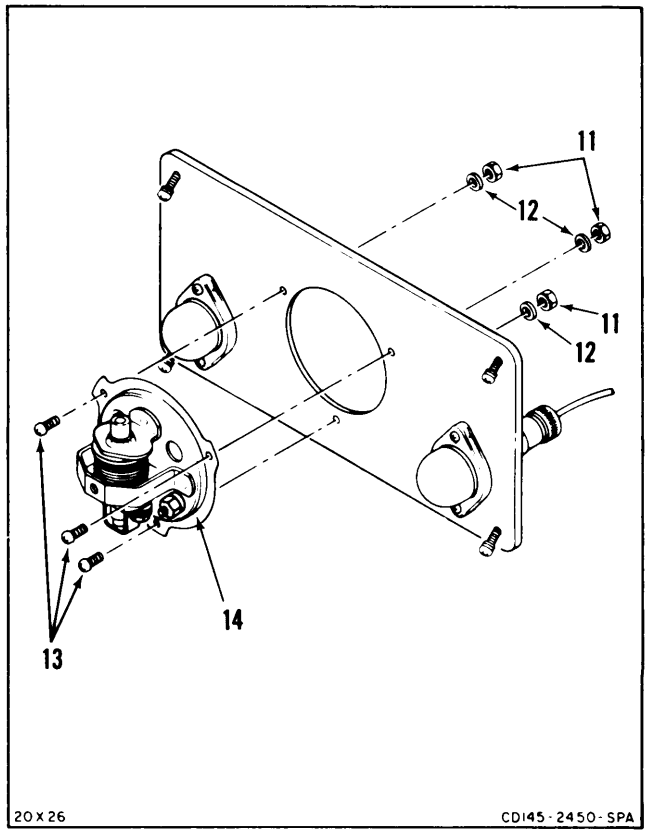
9-119 DISASSEMBLE TROOP WARNING BOX (Continued)

2. Loosen four screws (4) and **remove cover (5).** Have helper support cover.
3. **Remove** screw (6) and **gong (7).**
4. Remove two nuts (8), and washers (9).
5. Tag and **disconnect three wires (10).** Tape exposed end of wires. Use tape (E385).
6. Install two nuts (8) and washers (9).



7. Remove three nuts (11), washers (12), and screws (13).
8. **Remove bell (14).**



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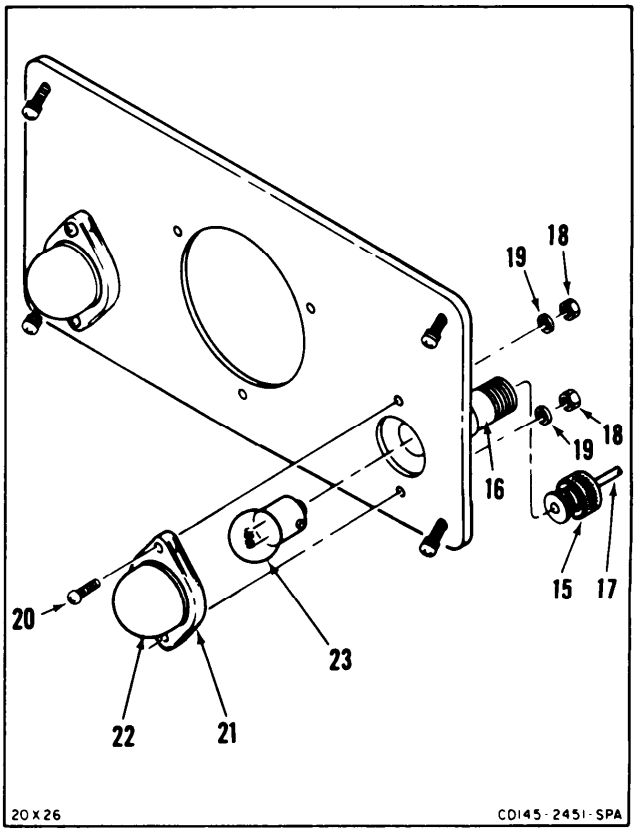
9-119 DISASSEMBLE TROOP WARNING BOX (Continued) 9-119

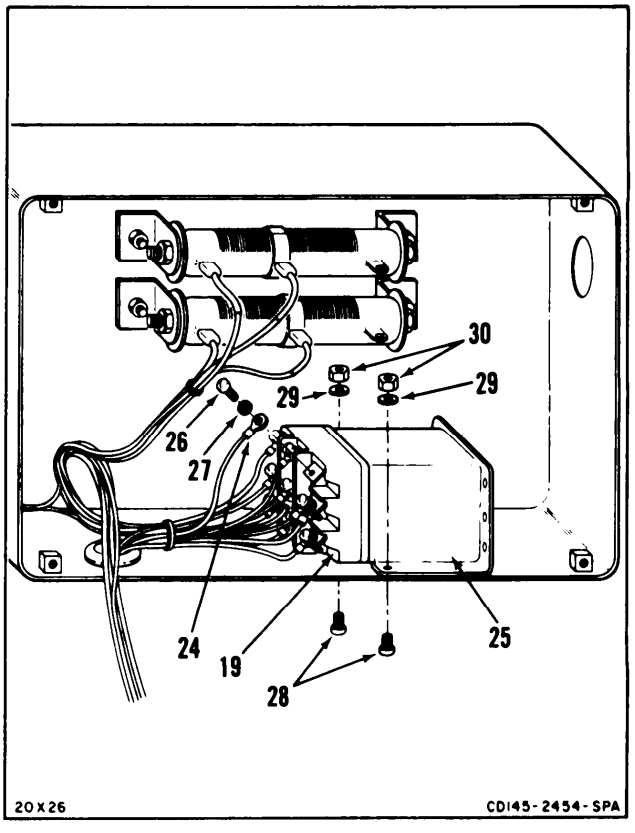
NOTE

Procedure is same to remove either light. To remove lamp only, go to step 11.

9. **Disconnect connector (15)** from light (16).
10. Tag and **unsolder wire (17)** from connector (15). Use soldering gun.
11. Remove two nuts (18), washers (19), and screws (20).
12. **Remove lamp (23).**
13. **Remove light (16).**
14. **Remove retainer (21) and lens (22).**



15. On forward box only, tag and **disconnect 12 wires (24)** from relay (25) by removing screws (26) and washers (27). Tape exposed ends. Use tape (E385).
16. **Remove two screws (28),** washers (29), and nuts (30).



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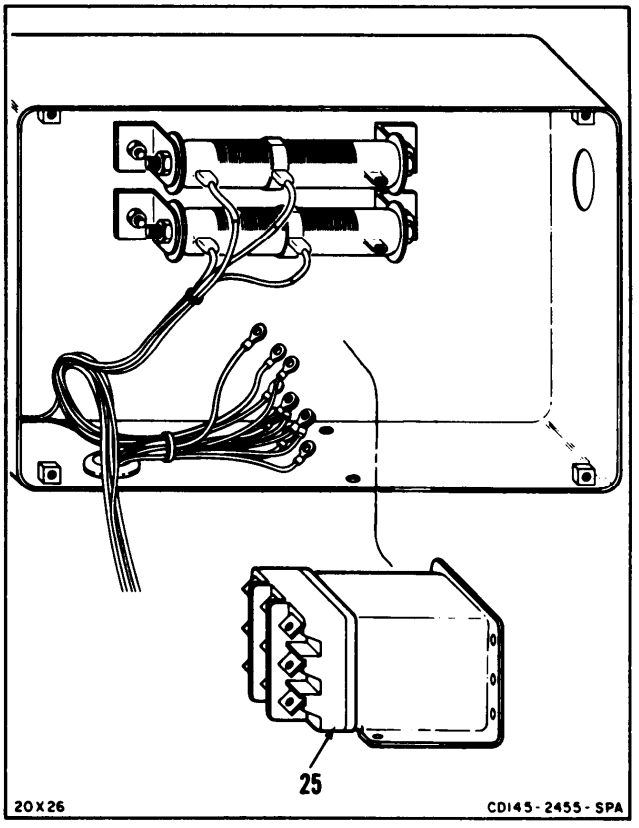
9-119 DISASSEMBLE TROOP WARNING BOX (Continued) 9-119

17. **Remove relay (25).**

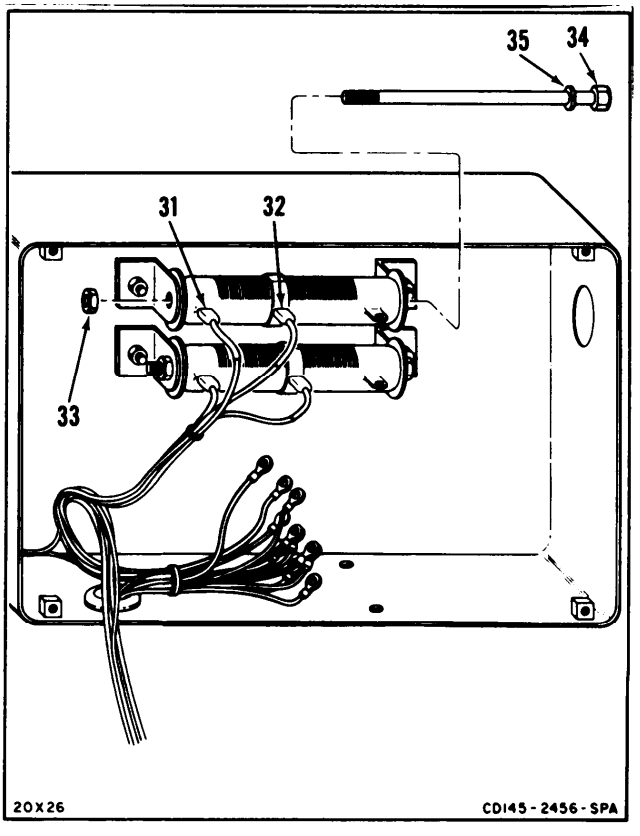


NOTE

Procedures are similar to remove upper or lower resistors. Upper resistor is shown here.

18. On forward box only, tag and **unsolder wires (31 and 32).** Tape exposed ends. Use tape (E385).

19. **Remove** nut (33), screw (34), and washer (35).



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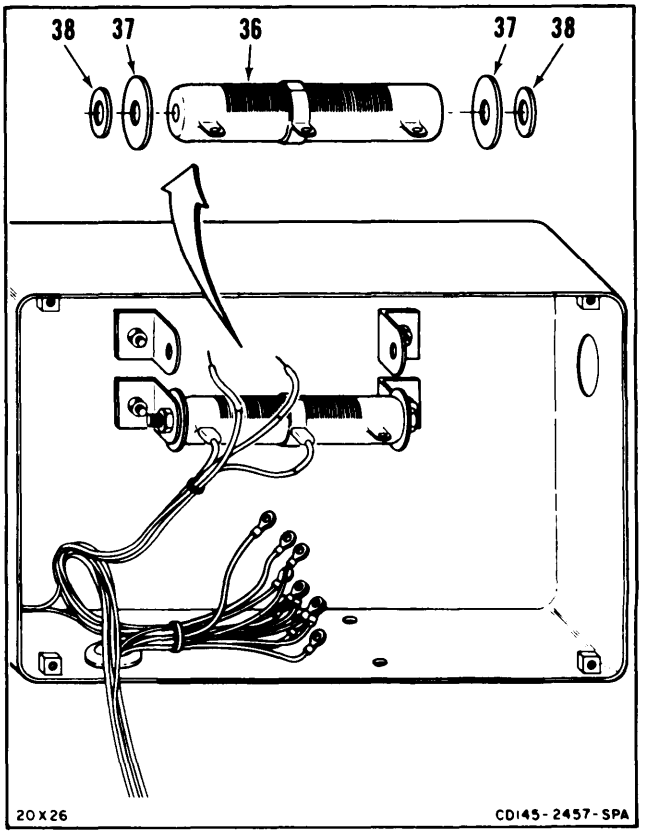
9-119 DISASSEMBLE TROOP WARNING BOX (Continued)

20. **Remove resistor (36),** two insulators (37), and washers (38).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-120 ASSEMBLE TROOP WARNING BOX

INITIAL SETUP

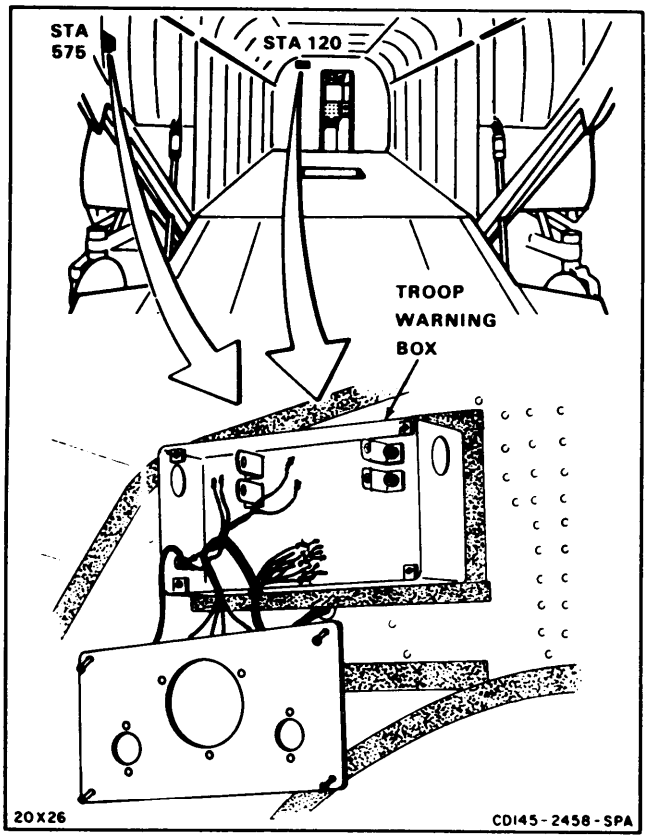
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

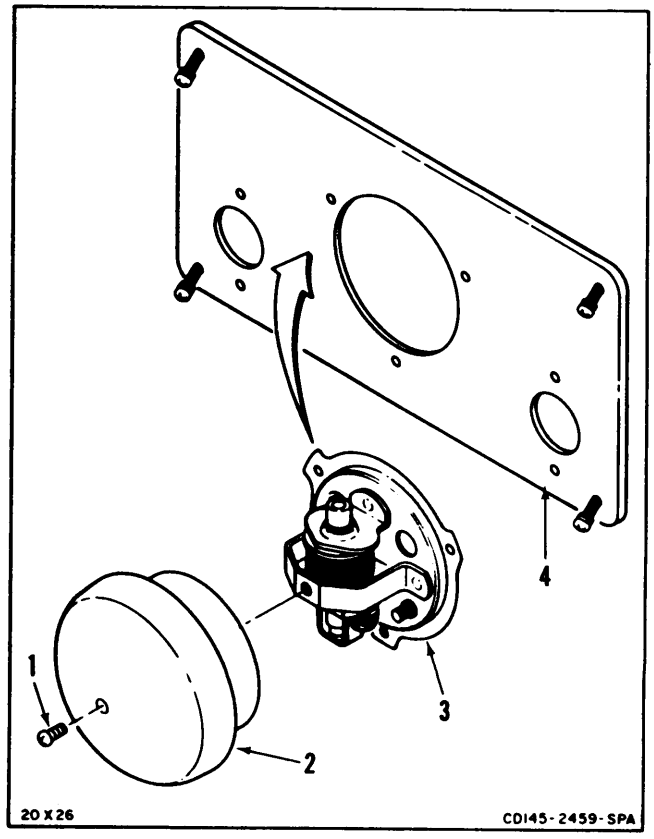
Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



NOTE

Procedures are similar to assemble forward or aft box. Forward box is shown here. When assembling aft box (sta 575), do not perform steps 14, 17, and 21. Parts installed in steps 14, 17, and 21 apply to forward box only.

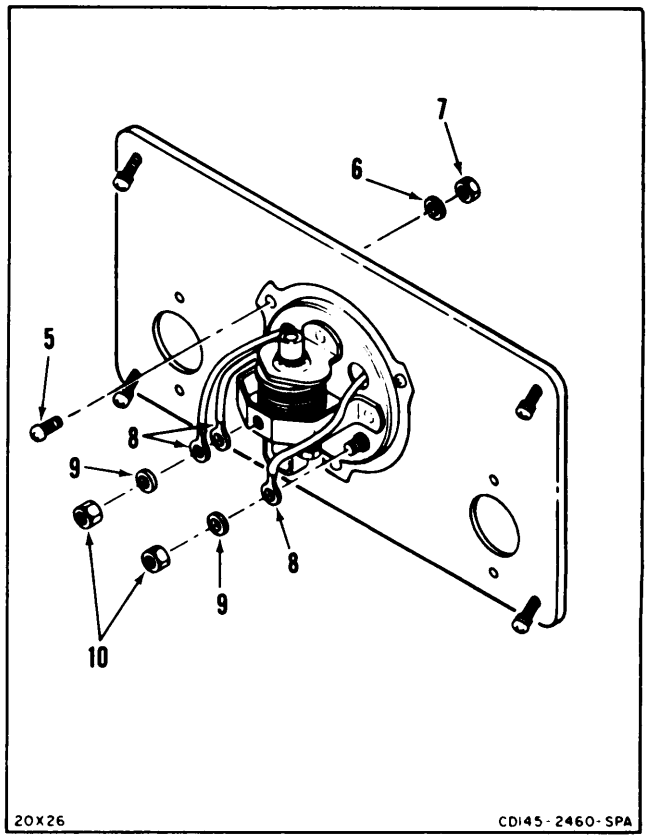


1. **Remove screw (1) and gong (2)** from bell (3).
2. **Position bell (3)** on cover (4).

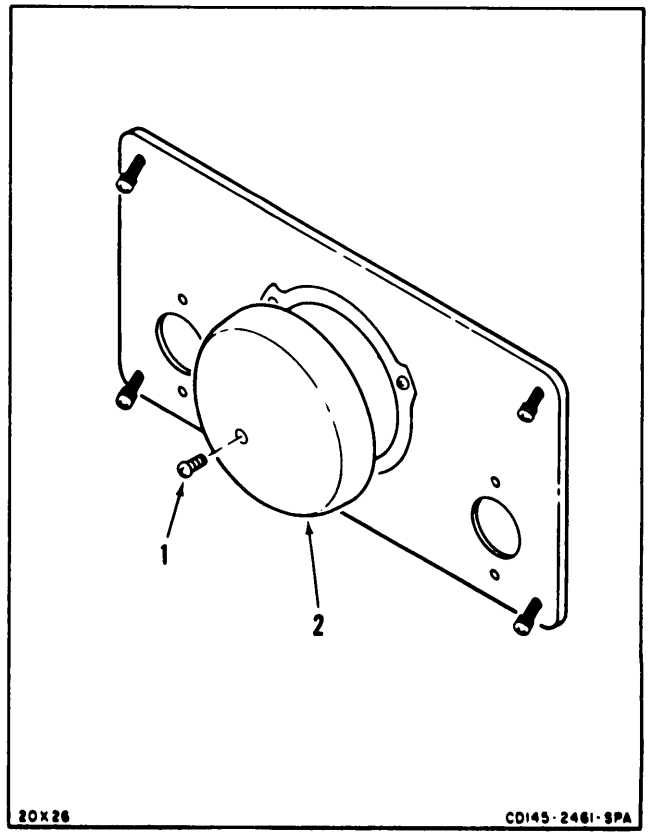
GO TO NEXT PAGE

9-120 ASSEMBLE TROOP WARNING BOX (Continued) 9-120

3. **Install three screws (5),** washers (6), and nuts (7).
4. Remove tape and **connect three wires (8).** Install two washers (9) and nuts (10). Remove tags.



5. **Install gong (2)** and screw (1).



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9-120 ASSEMBLE TROOP WARNING BOX (Continued) 9-120

NOTE

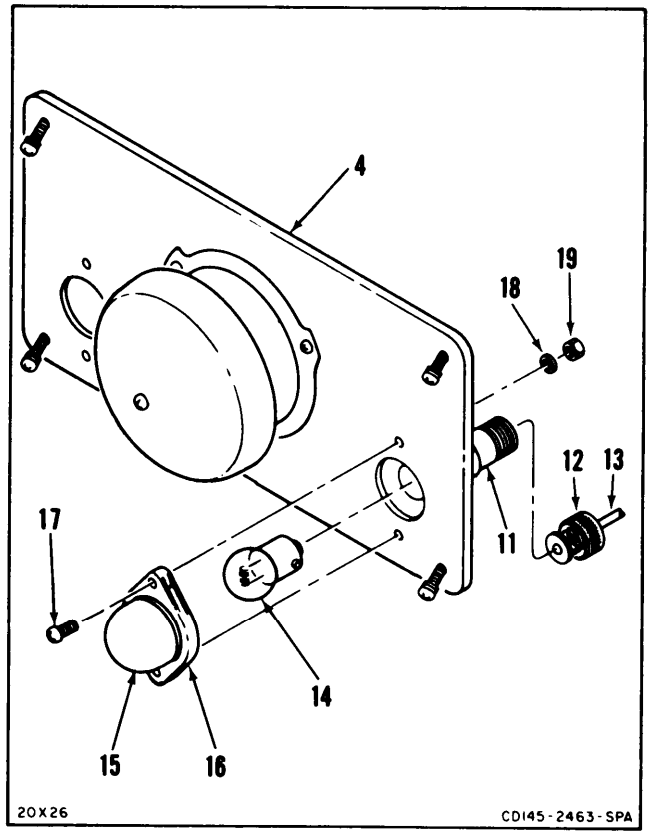
Procedure is same to install either light. To install lamp only, go to step 9.

6. **Position light (11)** in cover (4).
7. Remove tape and insert wire (13) through back of socket (12).
8. **Solder wire (13)** to socket (12). Use solder (E360). Remove tag.

NOTE

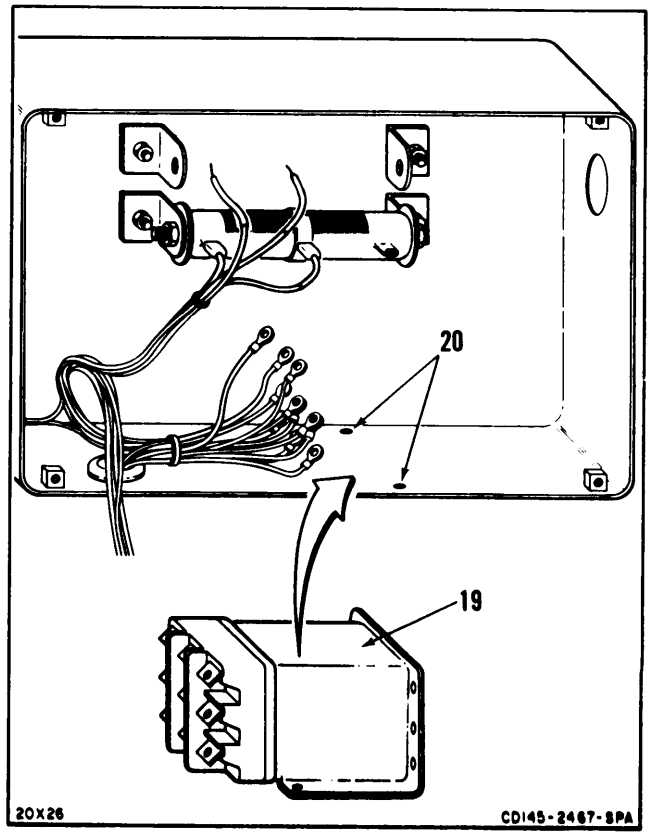
Procedure is same to install either lamp.

9. **Install lamp (14)** in light (11).
10. **Position lens (15)** and retainer (16), on cover (4).
11. **Install two screws (17),** washers 18) and nuts (19).
12. **Connect socket (12)** to light (11).



INSTALL RELAY

13. On forward box only, **position relay (19)** over two mounting holes (20).



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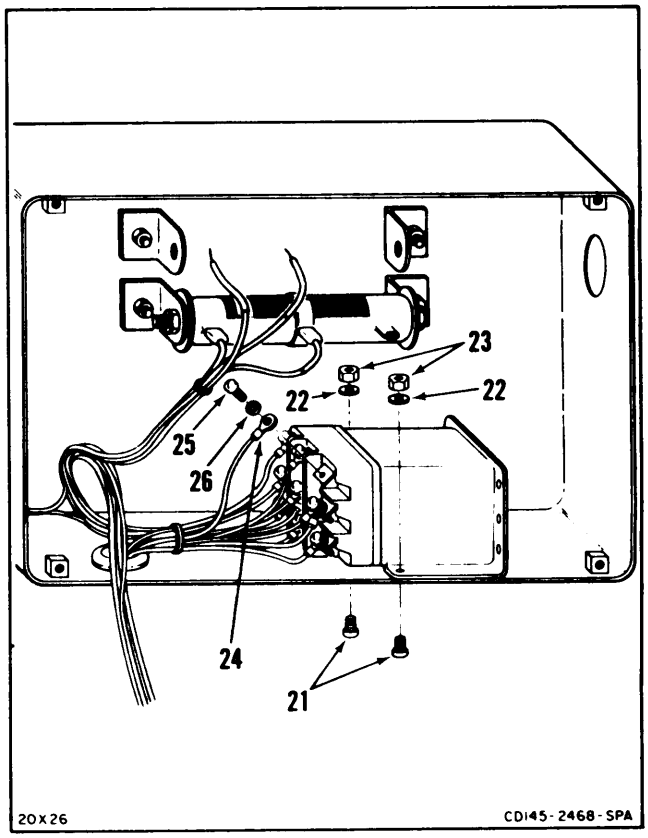
9-120 ASSEMBLE TROOP WARNING BOX (Continued)

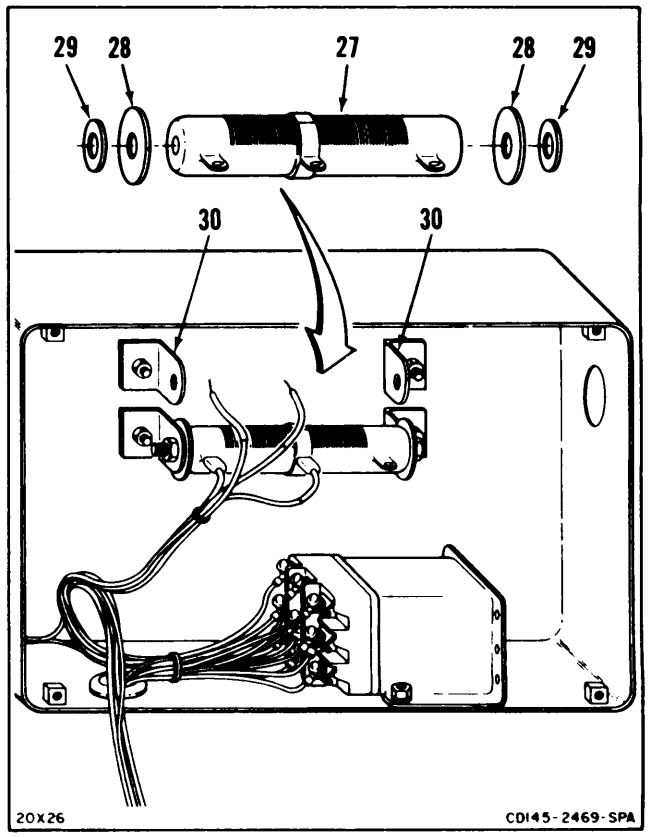
14. **Install two screws (21),** washers (22), and nuts (23).
15. Remove tape and **connect 12 wires (24).** Install screws (25) and washers (26). Remove tags.



NOTE

Procedures are similar to install upper or lower resistors. Upper resistor is shown here.

16. On forward box only, **position resistor (27),** two insulators (28), and washers (29), between brackets (30).



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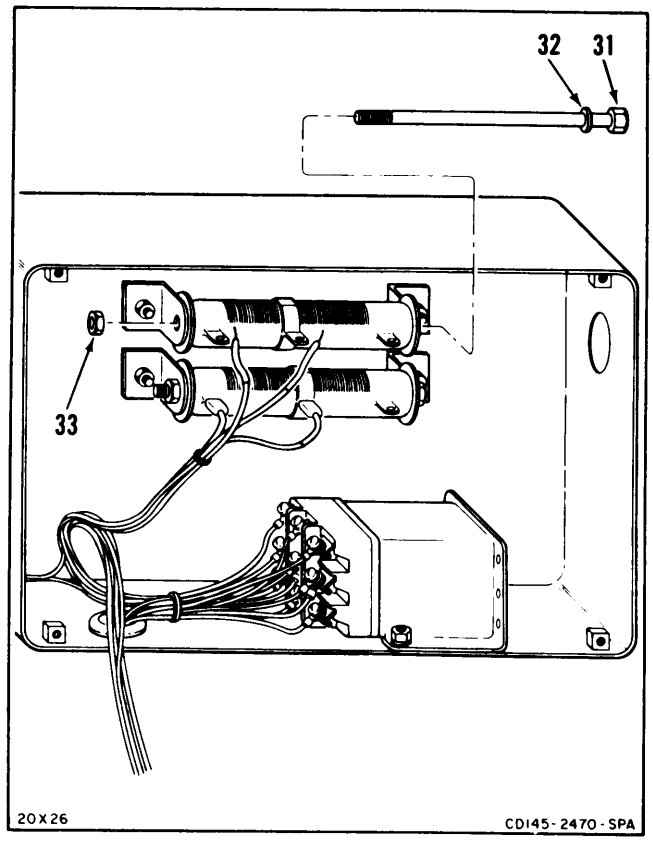
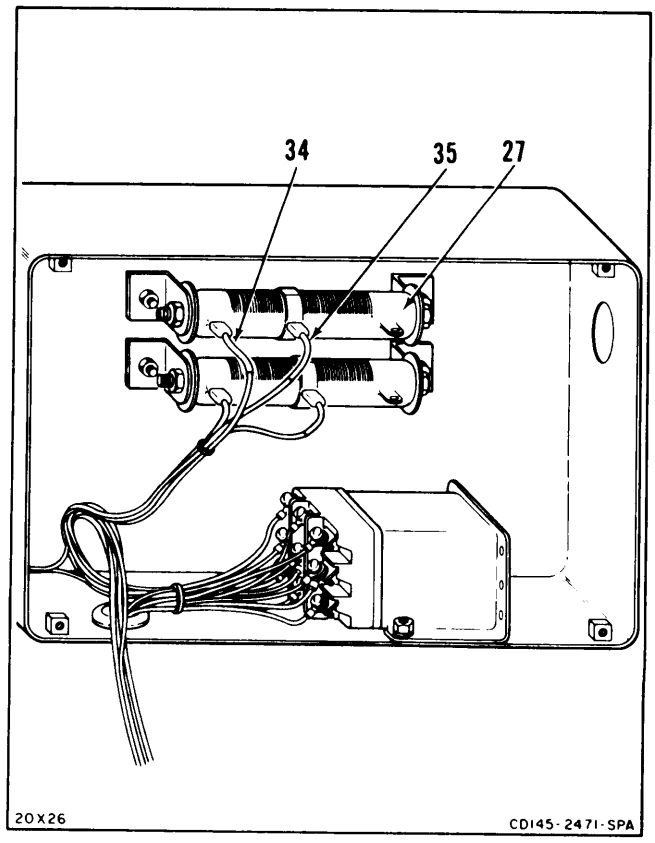
9-120 ASSEMBLE TROOP WARNING BOX (Continued) 9-120

17. **Install screw (31),** washer (32), and nut (33).



18. Remove tape and solder **wires (34 and 35)** to resistor (27). Use solder (E360). Remove tags.



INSPECT

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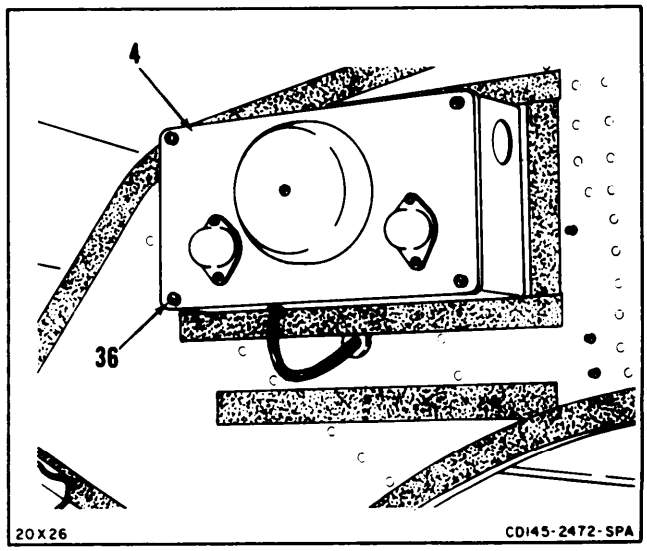
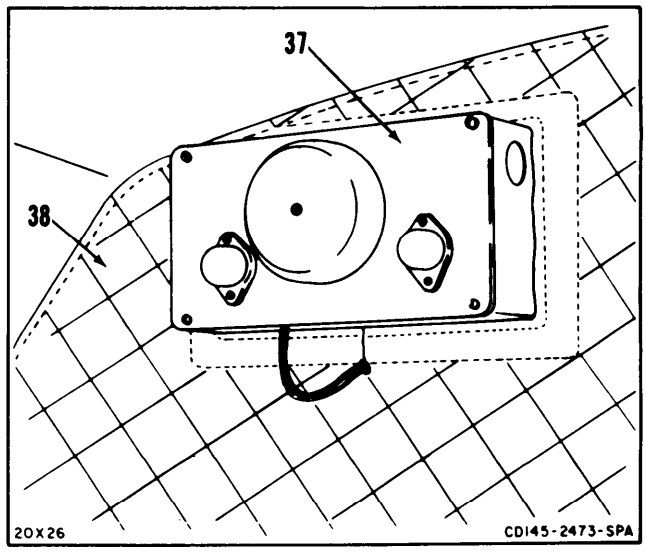
19. **Install cover (4)** and tighten four screws (36).



20. Forward box (37) only, **install blanket (38).**

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operation check (TM 55-1520-240-T).

END OF TASK

9-121 INSTALL TROOP WARNING BOX

INITIAL SETUP

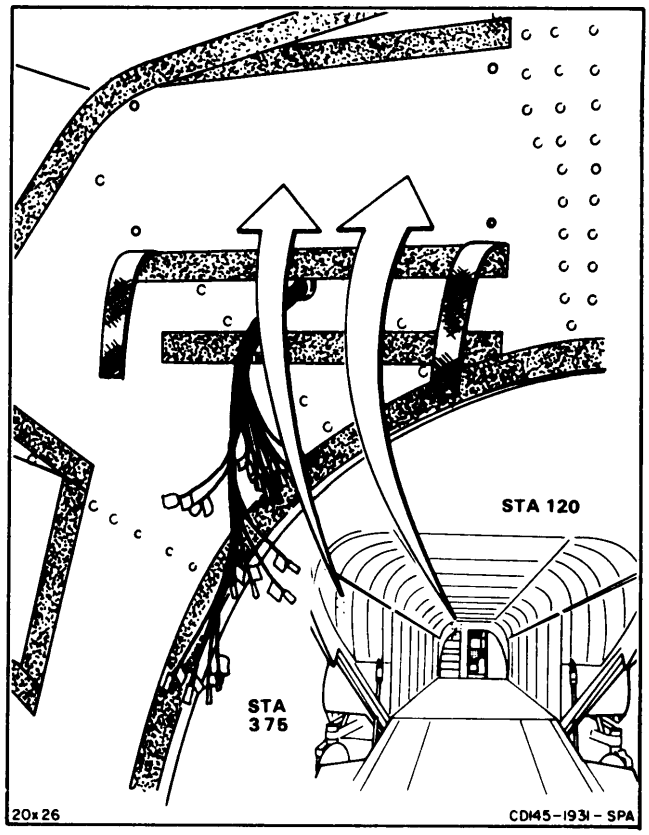
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Cement (E107)
Solder (E360)
Pile Tape (E402)
Gloves (E186)

Personnel Required:
Aircraft Electrician (2)
Inspector

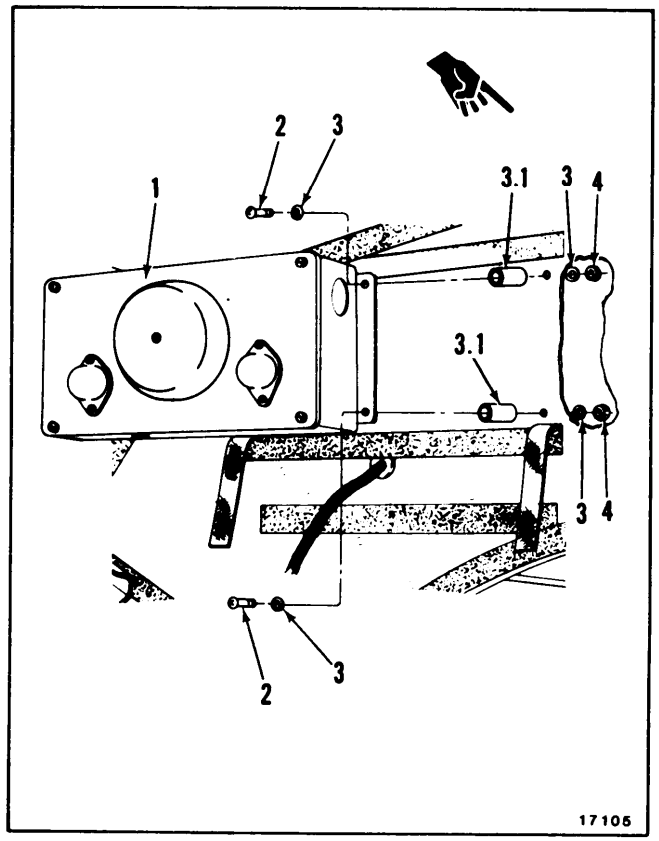
References:
TM 55-1520-240-23P



NOTE

Procedures are similar for installing forward or aft box. Forward box is shown here. When installing aft box (sta 575), do not perform steps 4. and 5. Parts installed in steps 4. and 5. are installed in forward box only.

1. **Position box (1)** and **install screw (2),** washer (3), spacer (3.1) between box and structure, washer (3), and nut (4) in four places.



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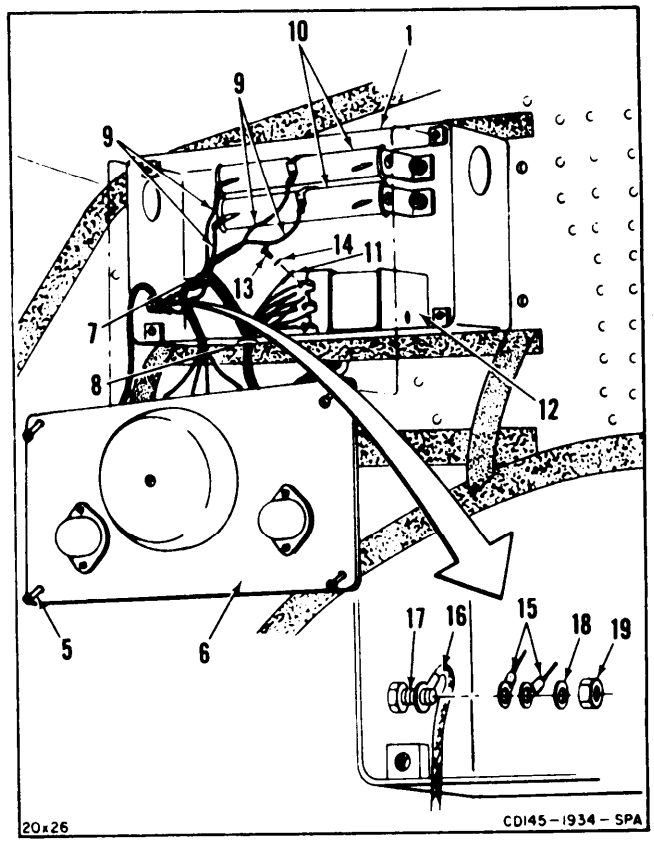
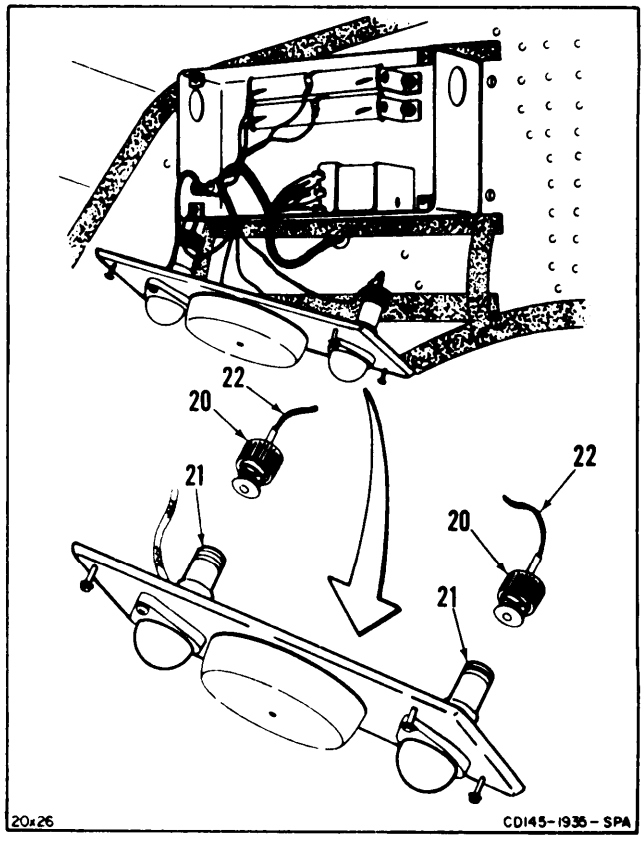
9-121 INSTALL TROOP WARNING BOX (Continued)

2. **Loosen four screws (5).** Have helper hold cover (6).
3. **Route harness (7) through lower grommet (8)** into box (1).
4. On forward box (1) only, remove tape and **solder four wires (9)** to resistors (10). Remove tags from wires.
5. On forward box (1) only, remove tape from wire terminals (11). **Connect 12 wire terminals** to relay (12). Install 12 screws (13) and washers (14). Remove tags from wires.
6. Remove nut (19) and washer (18) from ground stud (17).
7. Remove tape and **connect two wires (15) over electrical lead (16)** to ground stud (17). Install washer (18) and nut (19), Remove tags.



8. **Disconnect connectors (20)** from light (21).
9. Have helper hold connectors (20). Remove tape from wires (22) and **install wires** through back of connector.
10. **Solder wires (22)** to connector (20). Use solder (E360). Remove tags.
11. **Connect two connectors (20)** to lights (21).



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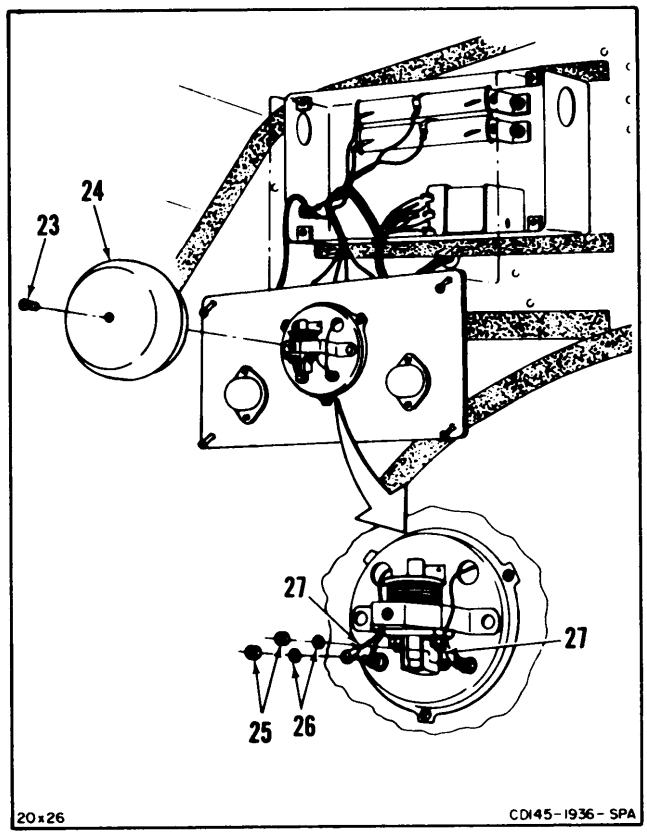
9-121 INSTALL TROOP WARNING BOX (Continued)

12. Remove screw (23) and **gong (24).**
13. Remove two nuts (26) and washers (27).
14. Remove tape and **connect three wires (25).** Install two nuts (26) and washers (27). Remove tags.
15. **Install gong (24)** and screw (23).

INSPECT

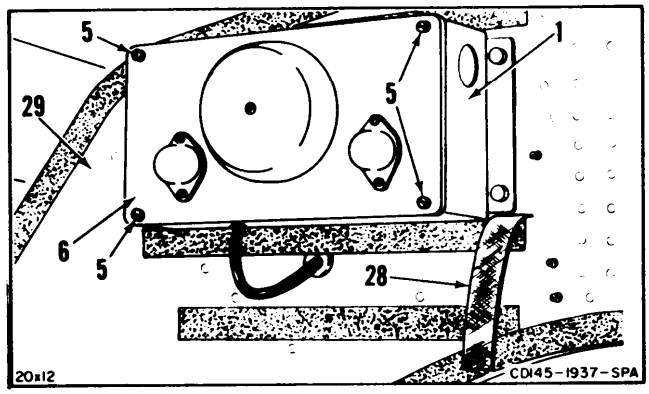


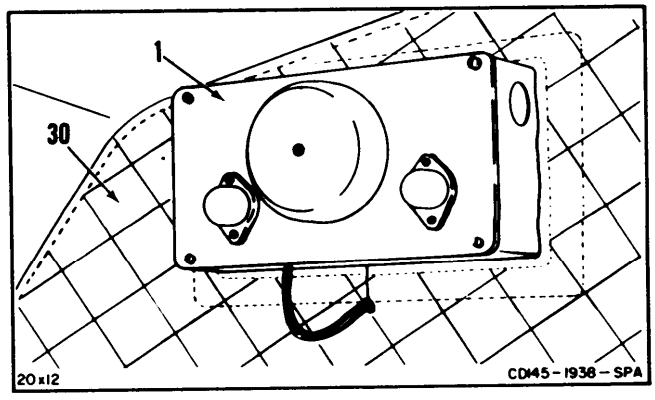
16. **Position cover (6)** on box (1) **and tighten four screws (5).**

WARNING

Cement (E107) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. Get medical attention for eyes.

17. Cut pile tape (28) (E402) to required length, and apply cement (E107) to back of tape. Use gloves (E186).
18. **Install pile tape (28)** (E402) on structure (29) as shown.
19. On forward box (1) only, install blanket (30) around box.





FOLLOW-ON MAINTENANCE:

Test operation of troop warning box (TM 55-1520-240-T).

END OF TASK

9-122 REMOVE TROOP/JUMP SIGNAL OR POSITION LIGHT DIMMING RESISTORS

INITIAL SETUP

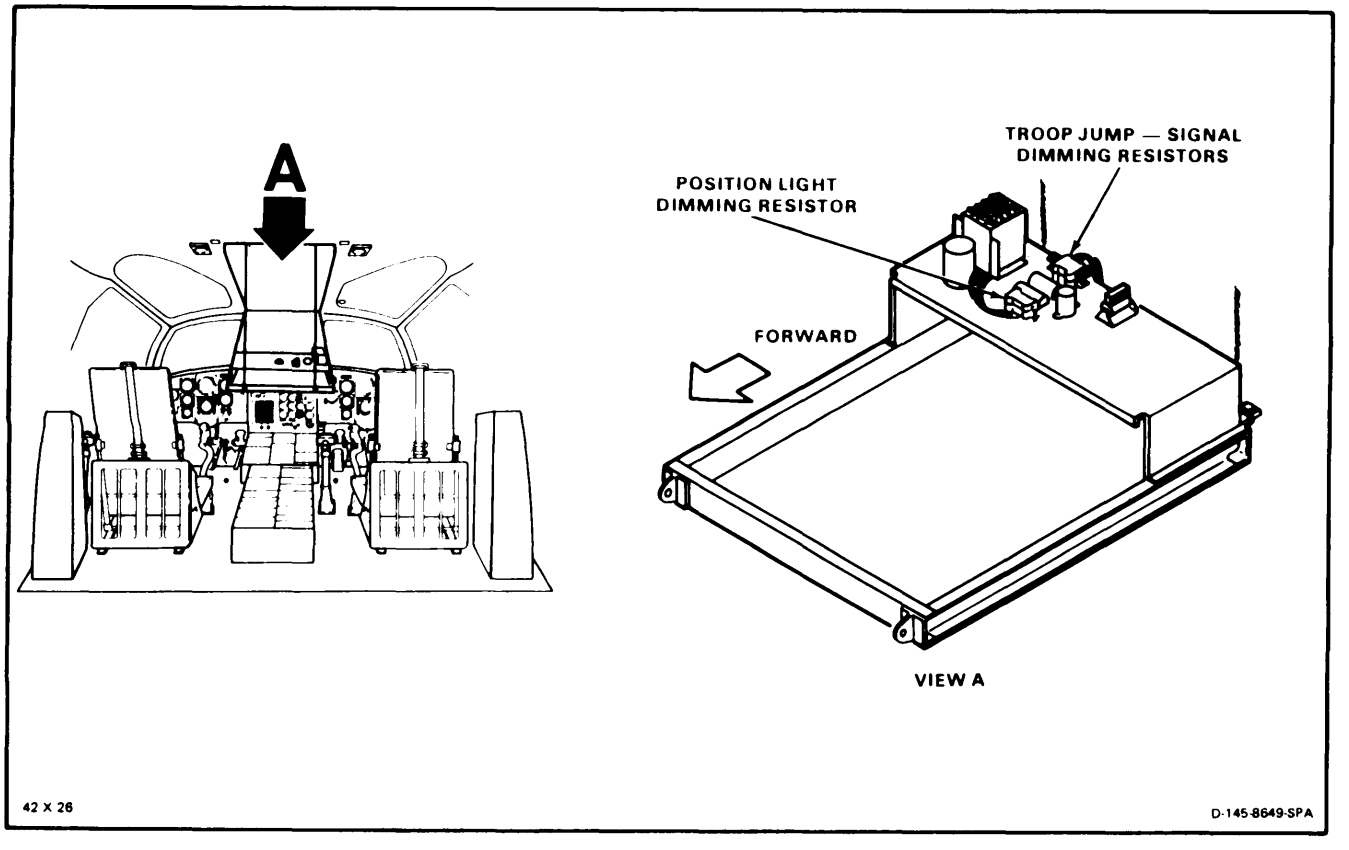
Applicable Configurations:
All

Tool's:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)
Tape (E395)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



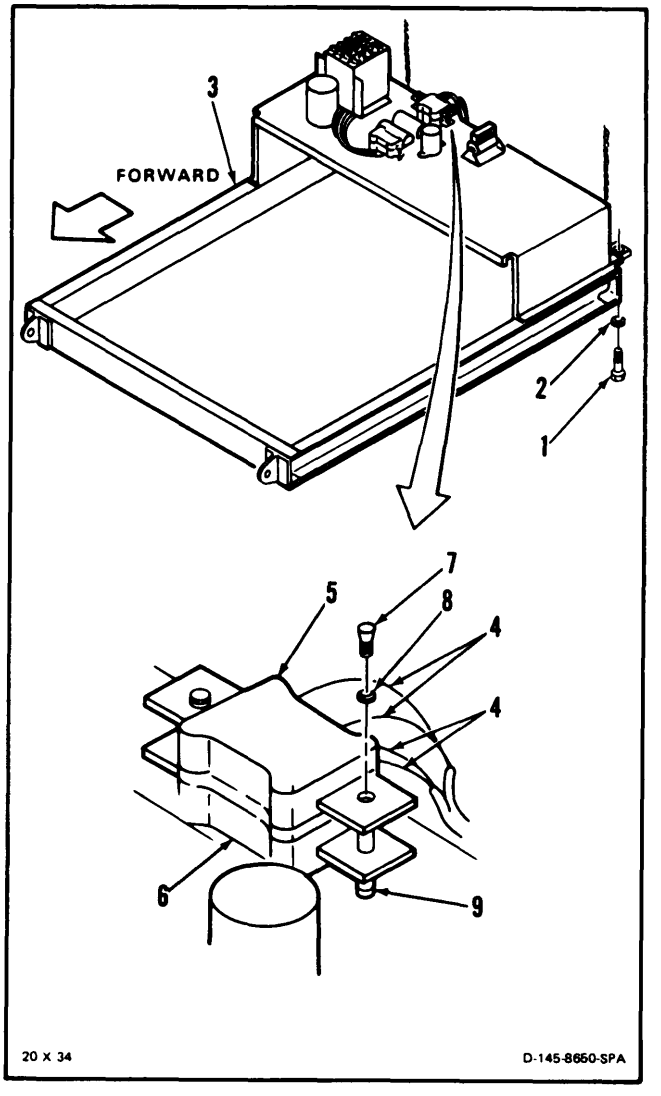
GO TO NEXT PAGE

9-122 REMOVE TROOP/JUMP SIGNAL OR POSITION LIGHT DIMMING RESISTORS (Continued)

NOTE

Procedure is same to remove troop/jump or position light dimming resistor. Removal of troop/jump dimming resistor is shown here

1. **Remove two bolts (1)** and washers (2) from panel (3). Lower panel.
2. Tag and **unsolder four wires (4)** from resistors (5 and 6). Tape wire ends.
3. **Remove two screws (7),** washers (8), and spacers (9).
4. **Remove two resistors (5 and 6).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-123 INSTALL TROOP/JUMP SIGNAL OR POSITION LIGHT DIMMING RESISTORS

INITIAL SETUP

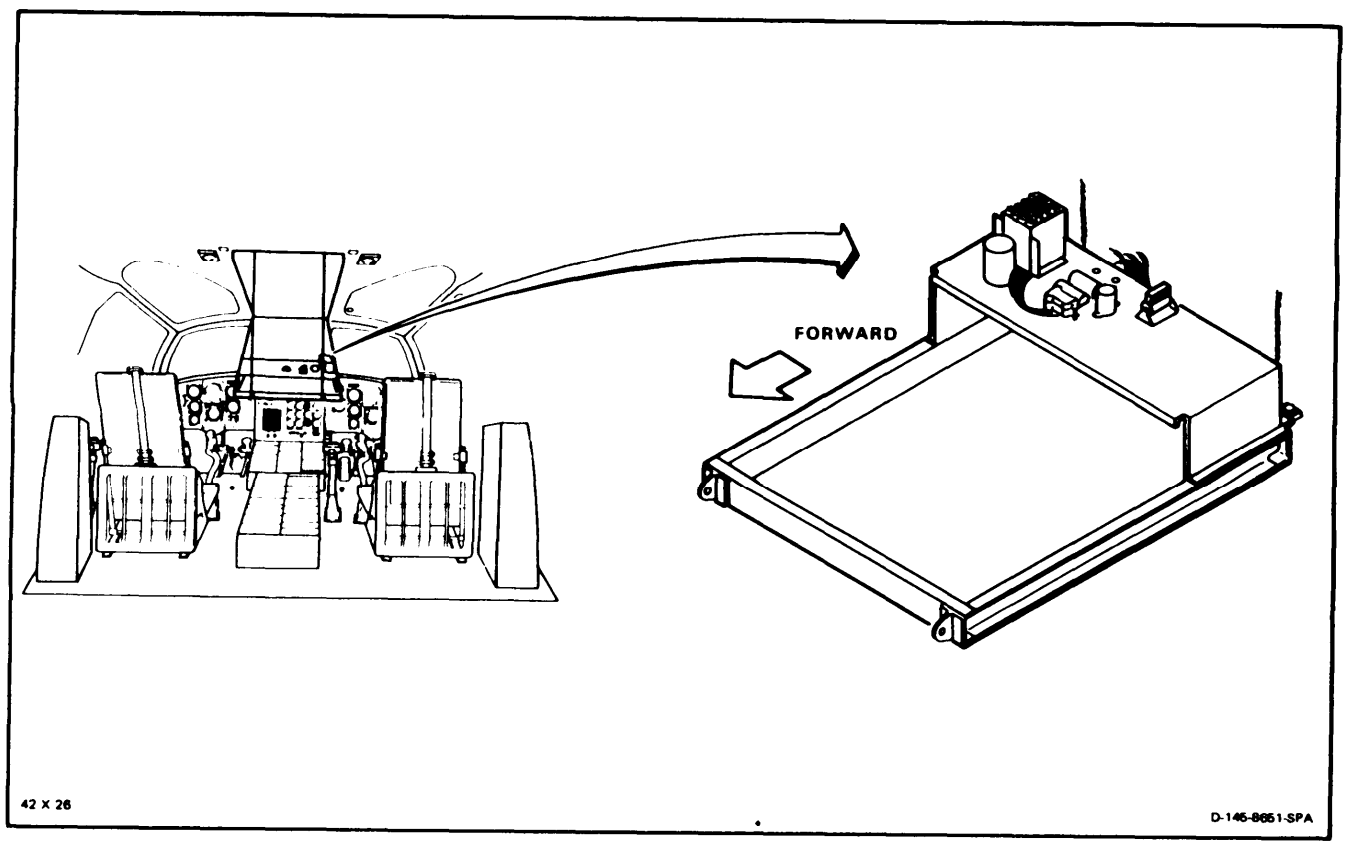
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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9-123 INSTALL TROOP/JUMP SIGNAL OR POSITION LIGHT DIMMING RESISTORS (Continued)

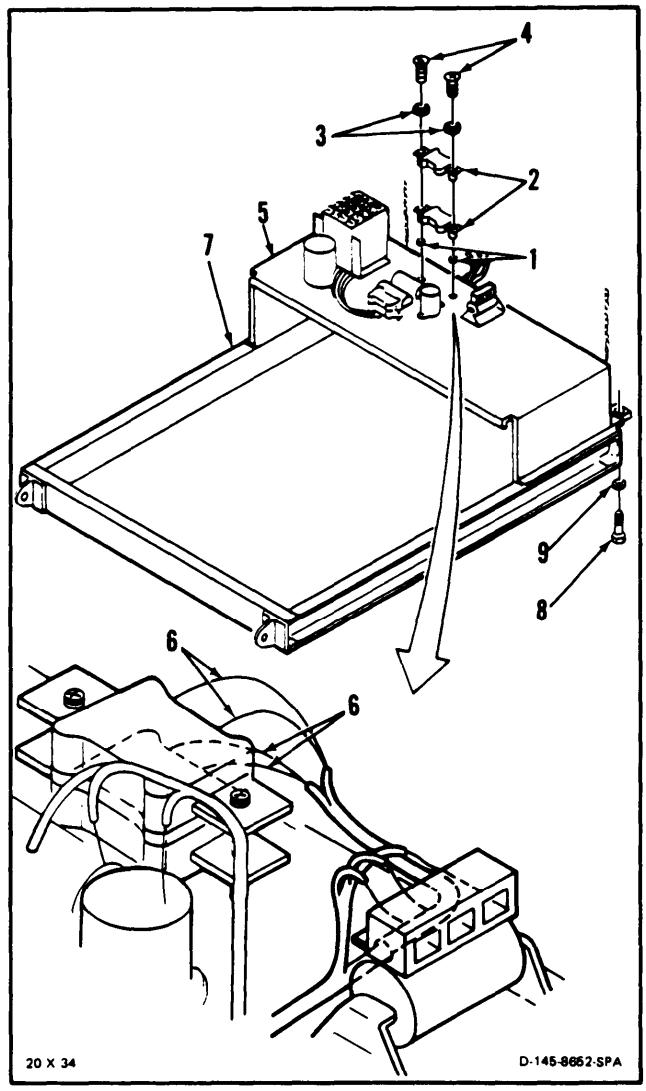
NOTE

Procedure is same to install troop/jump or position light dimming resistor. Installation of troop/jump dimming resistor is shown here.

1. **Install two spacers (1),** two resistors (2), washers (3), and screws (4) on panel (5).
2. Remove tape from four wires (6). **Solder wires to resistors (2).** Remove tags.

INSPECT

3. Raise panel (7). **Install two bolts (8)** and washers (9).



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

9-123.1 REMOVE OVERHEAD PANEL TRANSFORMERS AND RELAY

INITIAL SETUP

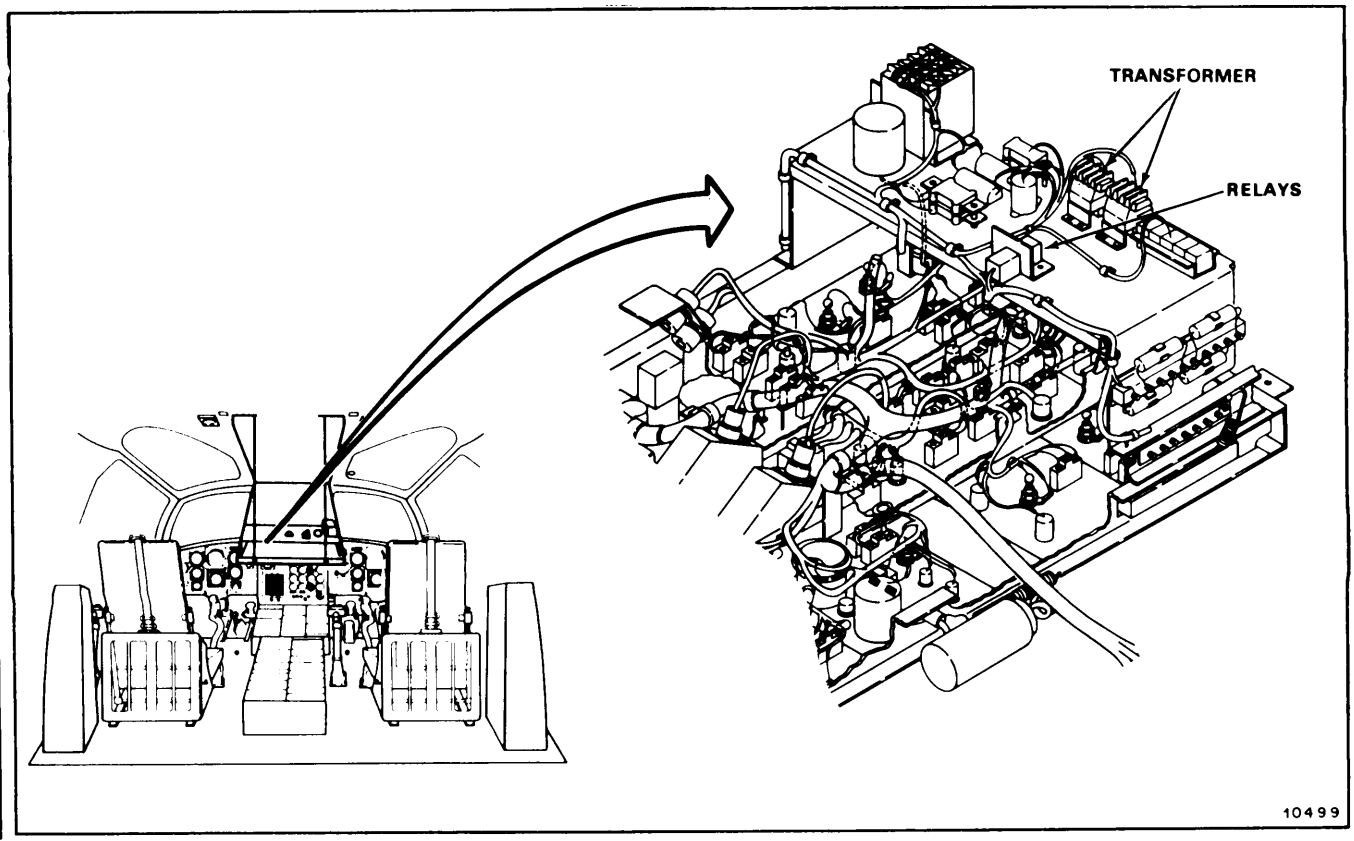
Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)
Tape (E395)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



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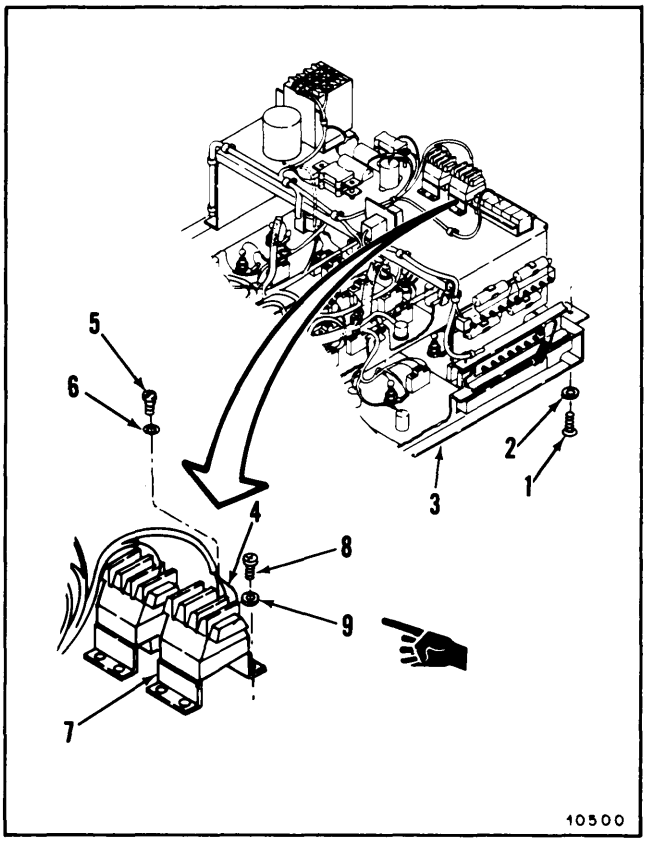
9-123.1 REMOVE OVERHEAD PANEL TRANSFORMERS AND RELAY (Continued)

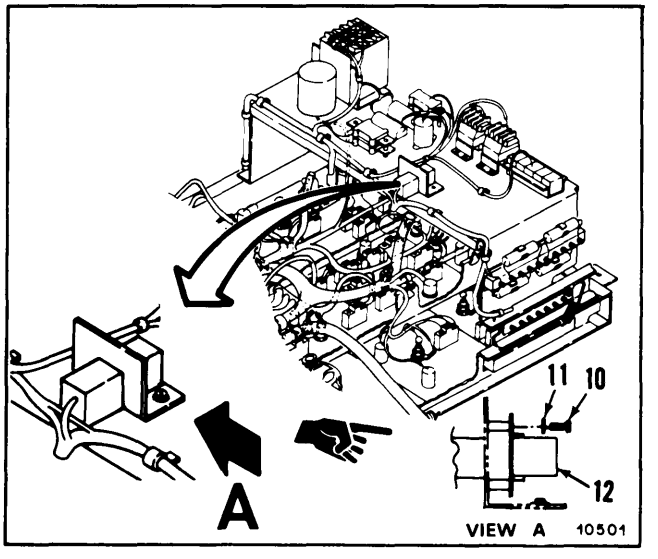
TRANSFORMER

1. **Remove two bolts (1)** and washers (2) from overhead panel (3). Lower panel.
2. **Tag three wires (4).** Use tags (E264). Remove three screws (5) and washers (6). Remove wires from transformer (7). Tape wire ends. Use tape (E395).
3. **Remove four screws (8)** and washers (9) from transformer (7). **Remove transformer.**



RELAY

4. **Remove three screws (10)** and washers (11) from relay (12) and holding hex nut. **Unplug relay.**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-123.2 INSTALL OVERHEAD PANEL TRANSFORMERS AND RELAY

INITIAL SETUP

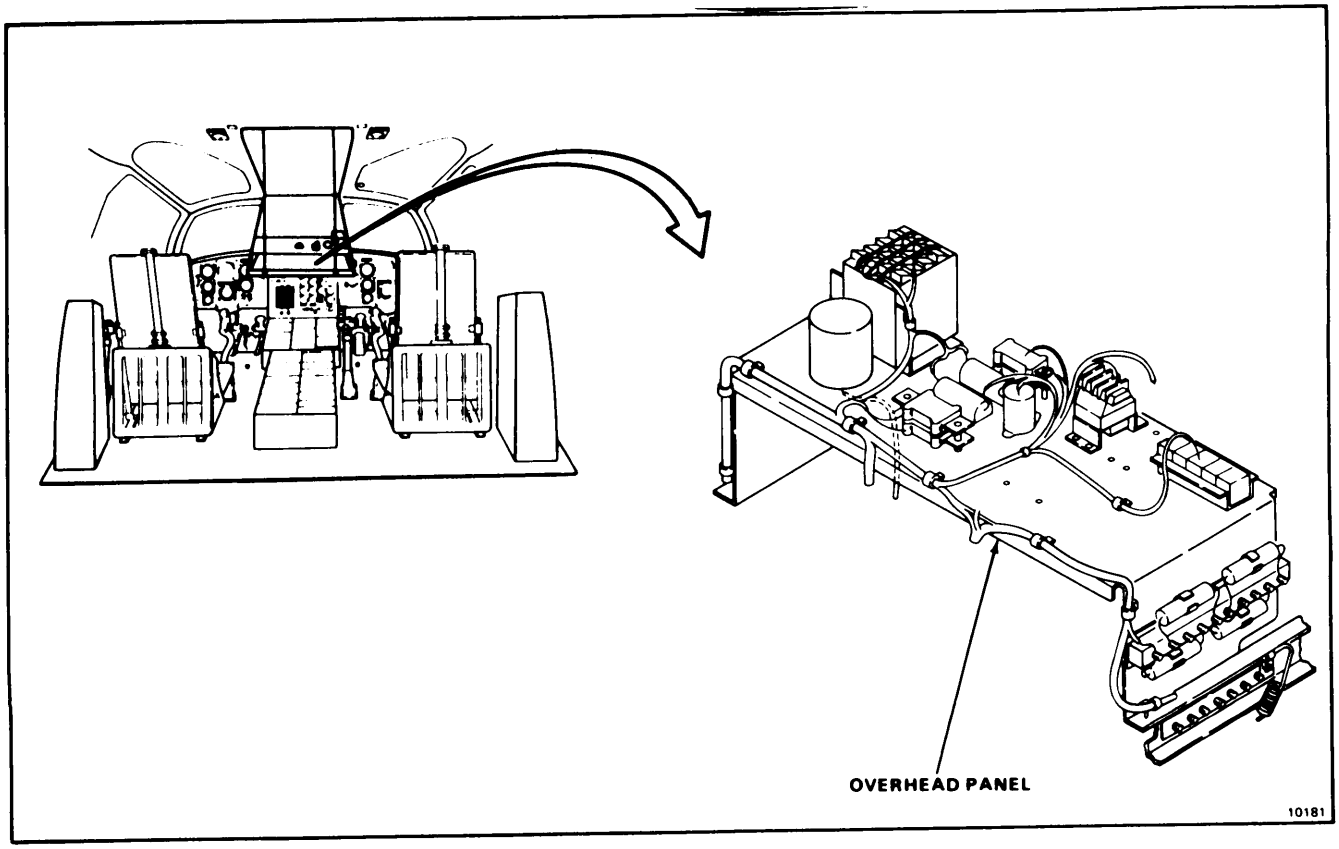
Applicable Configurations:
With 17

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



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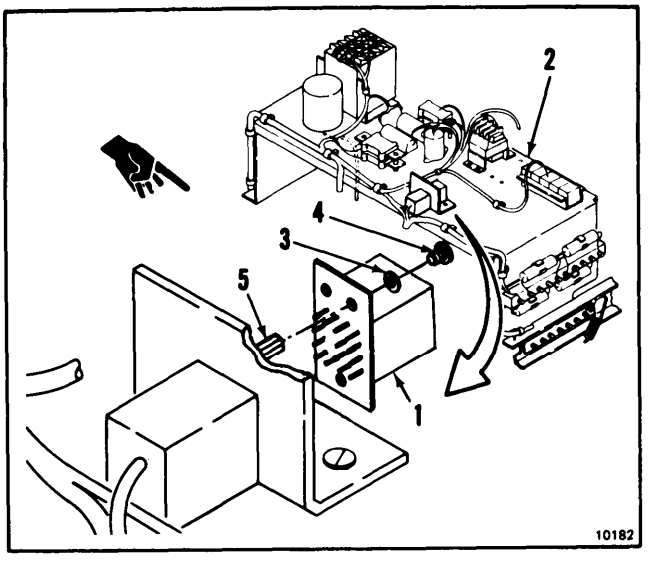
9-123.2 INSTALL OVERHEAD PANEL TRANSFORMERS AND RELAY (Continued)

RELAY

1. **Plug relay (1)** into socket on mounting bracket on overhead panel (2). **Install three washers (3) and screws (4) in relay** and standoff (5).
2. Deleted.

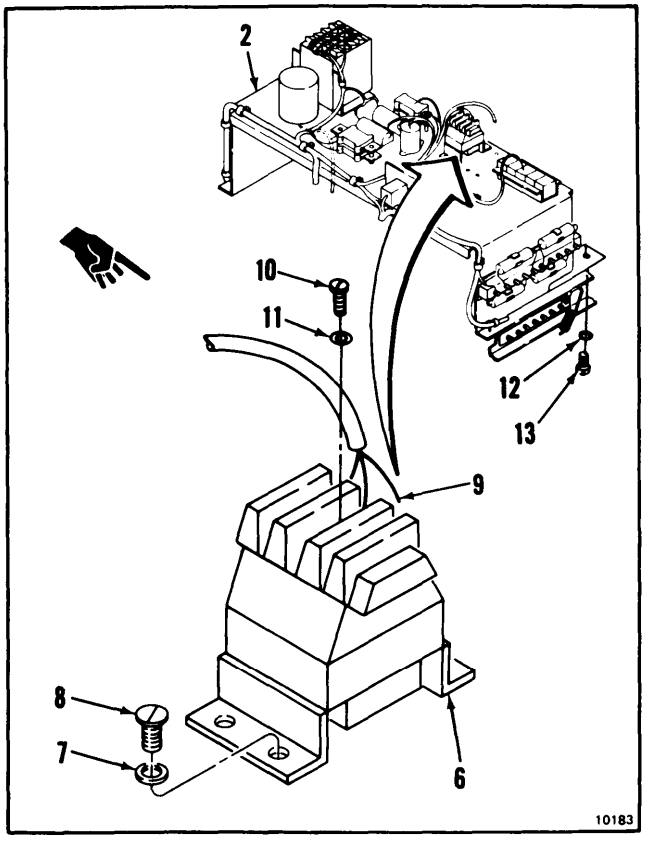


TRANSFORMERS

NOTE

Procedure is same to install either transformer.

3. Position transformer (6) on panel (2). **Install four washers (7) and screws (8) in transformer.**
4. Remove tape from three wires (9). **Connect wires** to transformer (6). Install screws (10) and washers (11). Remove tags.
5. **Raise panel (2).** Install two washers (12) and bolts (13) in panel.



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

9-124 ADJUST TROOP JUMP SIGNAL DIMING RESISTOR 9-124

INITIAL SETUP

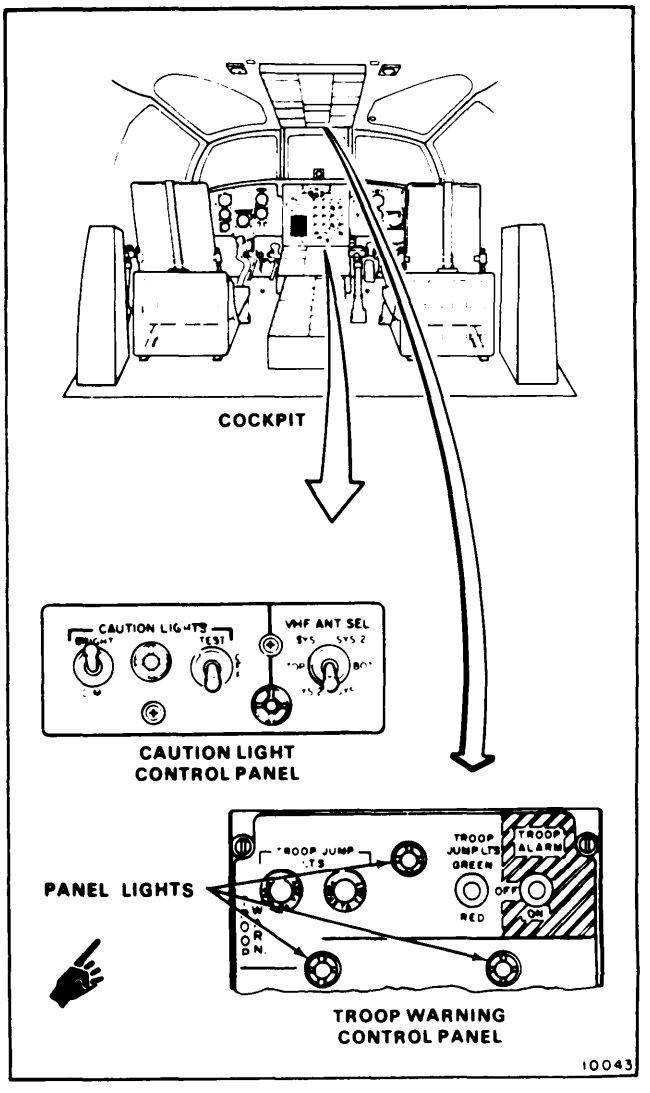
Applicable Configurations:
Without 17

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Multimeter

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

Equipment Condition:
Hydraulic Power Off
Electrical Power On
Battery Connected (Task 1-39)



GO TO NEXT PAGE

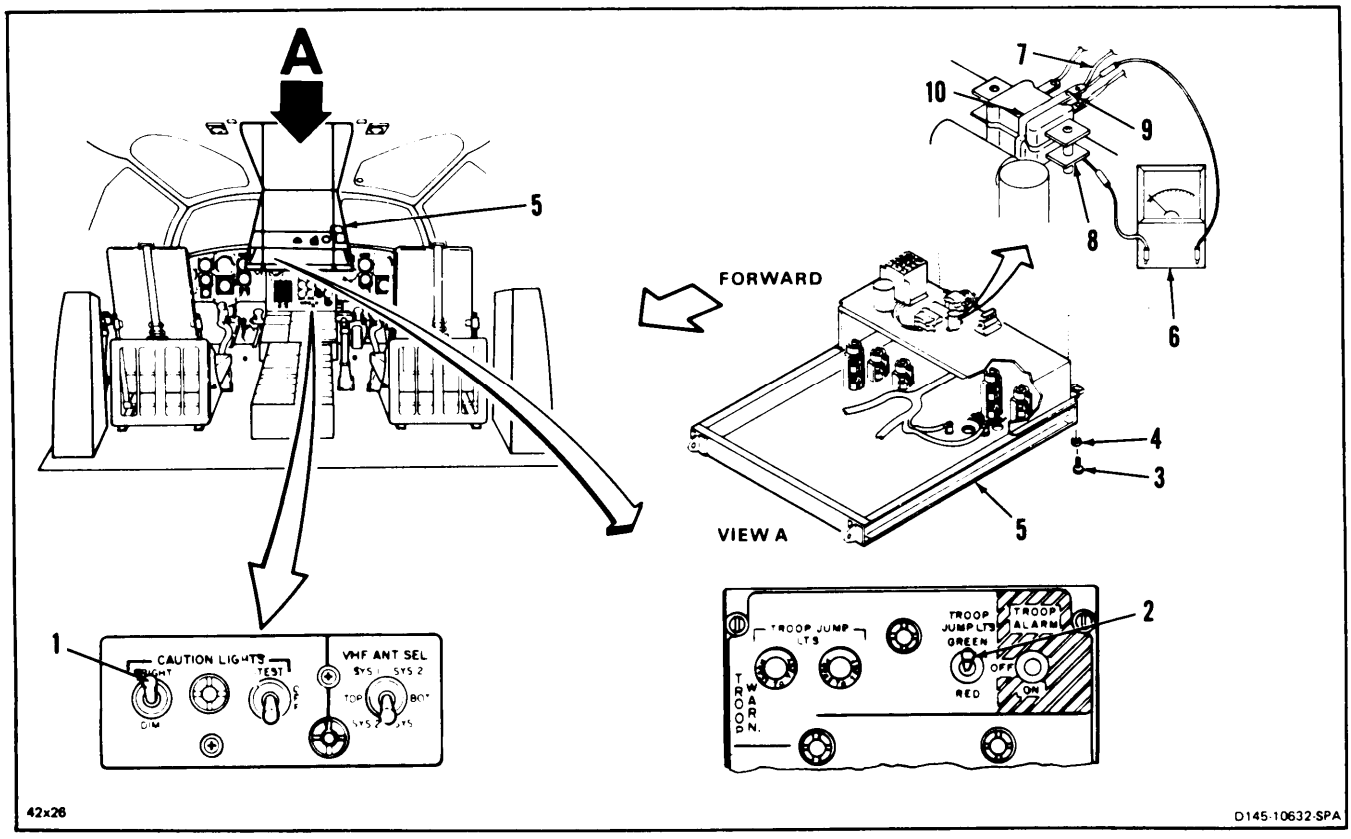
9-124 ADJUST TROOP JUMP SIGNAL DIMMING RESISTOR (Continued)

1. **Set caution light switch (1) to DIM.**
2. **Set troop jump light switch (2) to GREEN.**
3. **Remove two bolts (3)** and washers (4) from panel (5). **Lower panel.**

WARNING

Do not touch wires or circuits when adjusting resistors. Injury to personnel can occur.

4. **Connect multimeter (6)** to resistor terminal (7) and aircraft ground (8).
5. Loosen screw (9). **Move slider band (10)** until multi meter (6) indicates 14 to 16 volts.
6. Tighten screw (9). Disconnect multimeter (6).



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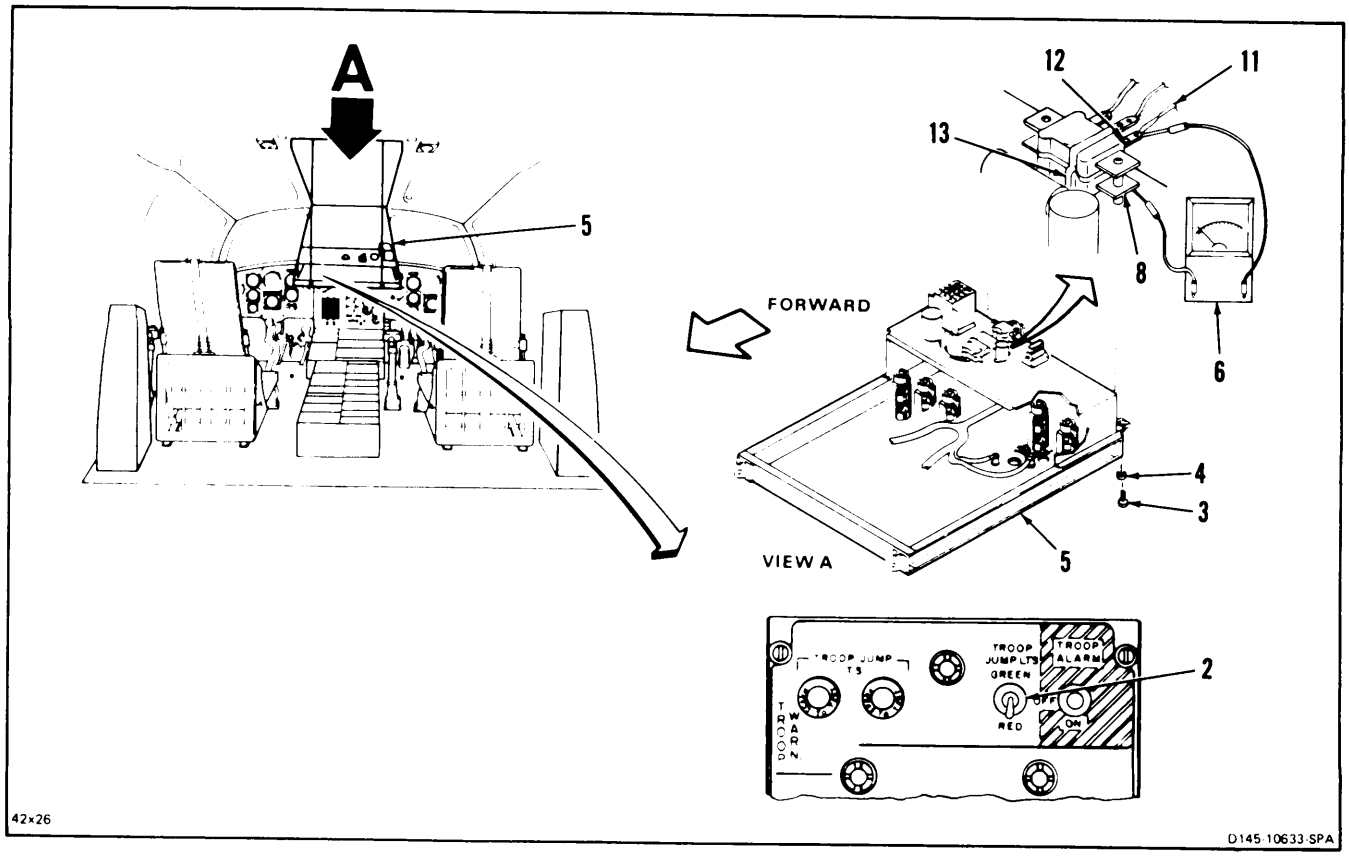
9-124 ADJUST TROOP JUMP SIGNAL DIMMING RESISTOR (Continued)

7. **Connect multimeter (6)** to resistor terminal (11) and aircraft ground (8).
8. **Set Troop JUMP LIGHT switch (2) to RED.**
9. Loosen screw (12) and **move slider band (13)** until multi meter (6) indicates 14 to 16 volts.
10. Tighten screw (12). Disconnect multimeter (6).
11. Raise panel (5) and **install two bolts (3) and washers (4).**
12. Shut down electrical power.
13. Disconnect battery.

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

INITIAL SETUP

Applicable Configurations:

With 17 and 74

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:

None

Personnel Required:

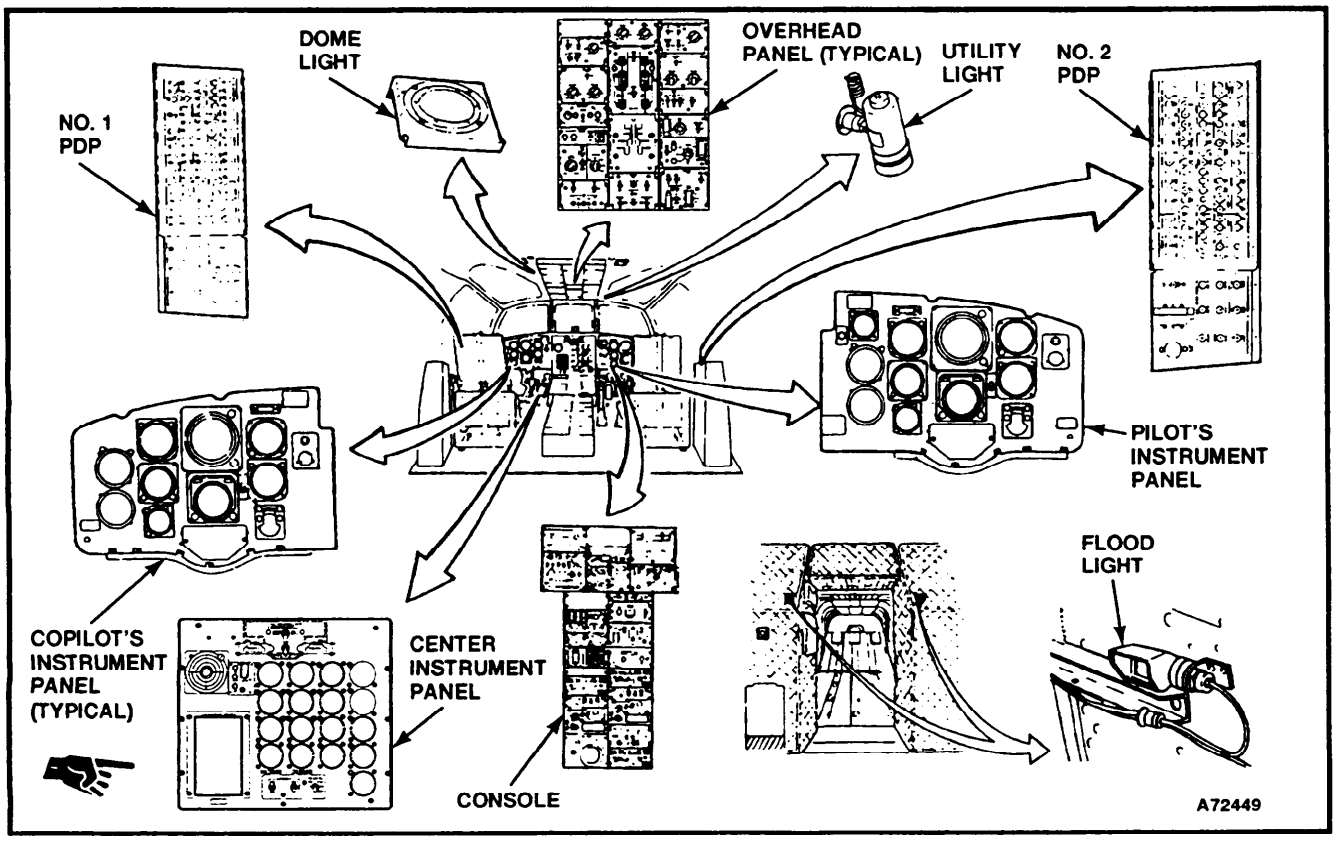
Aircraft Electrician
Inspector

References;

TM 11-1520-240-23
TM 55-1520-240-T

Equipment Condition:

Battery Connected (Task 1-39)
NO. 2 AC BUS TIE Circuit Breaker Closed
DC 2 CROSS TIE Circuit Breaker Closed
NO. 2 XFMR RECT Circuit Breaker Closed
NO. 2 REV CUR CO Circuit Breaker Closed
NO. 2 DC BUS CONT Circuit Breaker Closed
NO. 1 AC BUS TIE Circuit Breaker Closed
DC 1 CROSS TIE Circuit Breaker Closed
NO. 1 XFMR RECT Circuit Breaker Closed
NO. 1 REV CUR CO Circuit Breaker Closed
NO. 1 DC BUS CONT Circuit Breaker Closed
EXT PWR CONT Circuit Breaker Closed
CONT AC Circuit Breaker Closed
ESS BUS FEED Circuit Breaker Closed
CAUTION PNL Circuit Breaker Closed
XMSN OIL TEMP Circuit Breaker Closed
Battery Switch ON
External AC Power Applied (Task 1-37)
Cockpit Windows Covered with Blanket
Master Caution Panel NVG Filter Installed (Without 74)
Pilot's and Copilot's Master Caution Indicator NVG Filters Installed
Engine 1 and Engine 2 Fire Handle NVG Filters Installed
Passageway Blackout Curtain Closed



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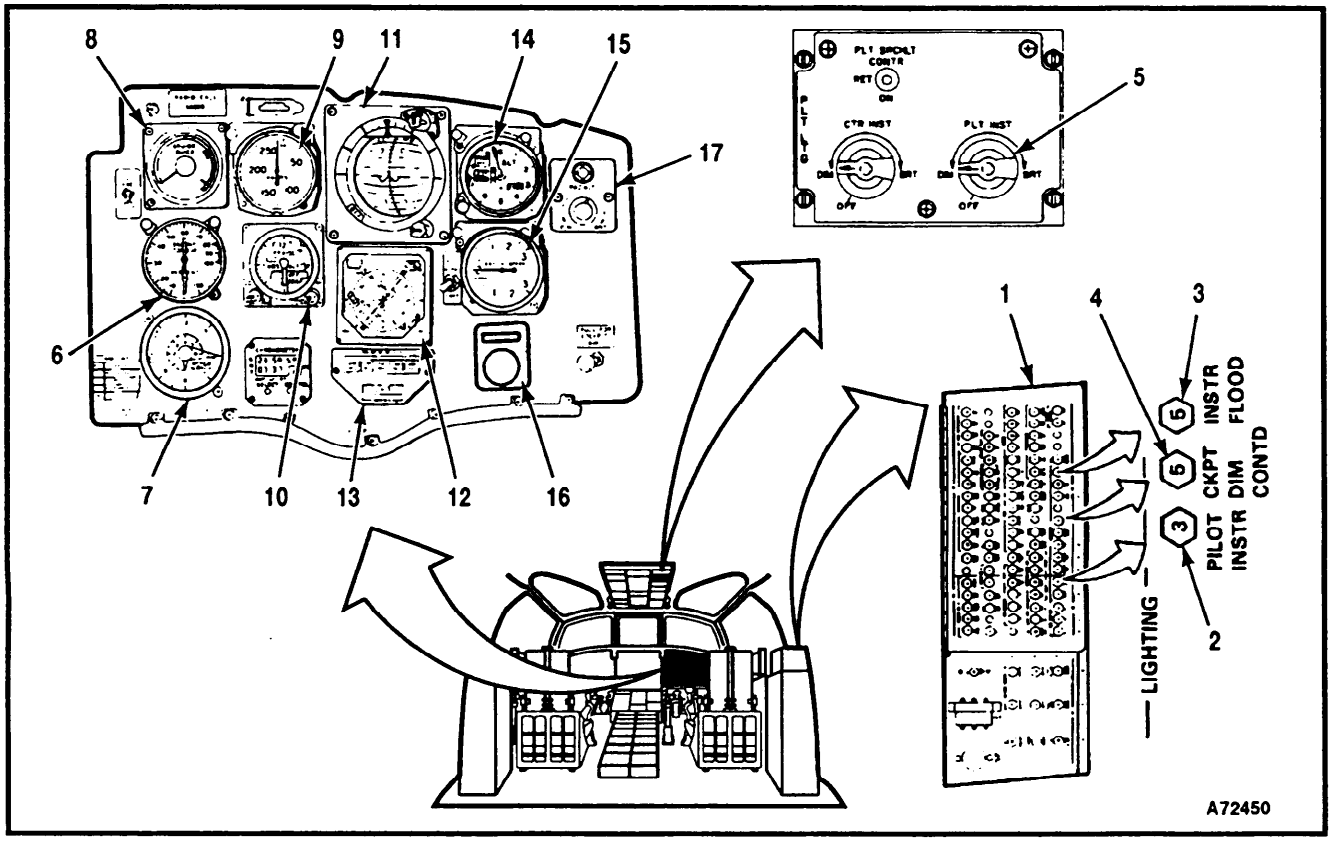
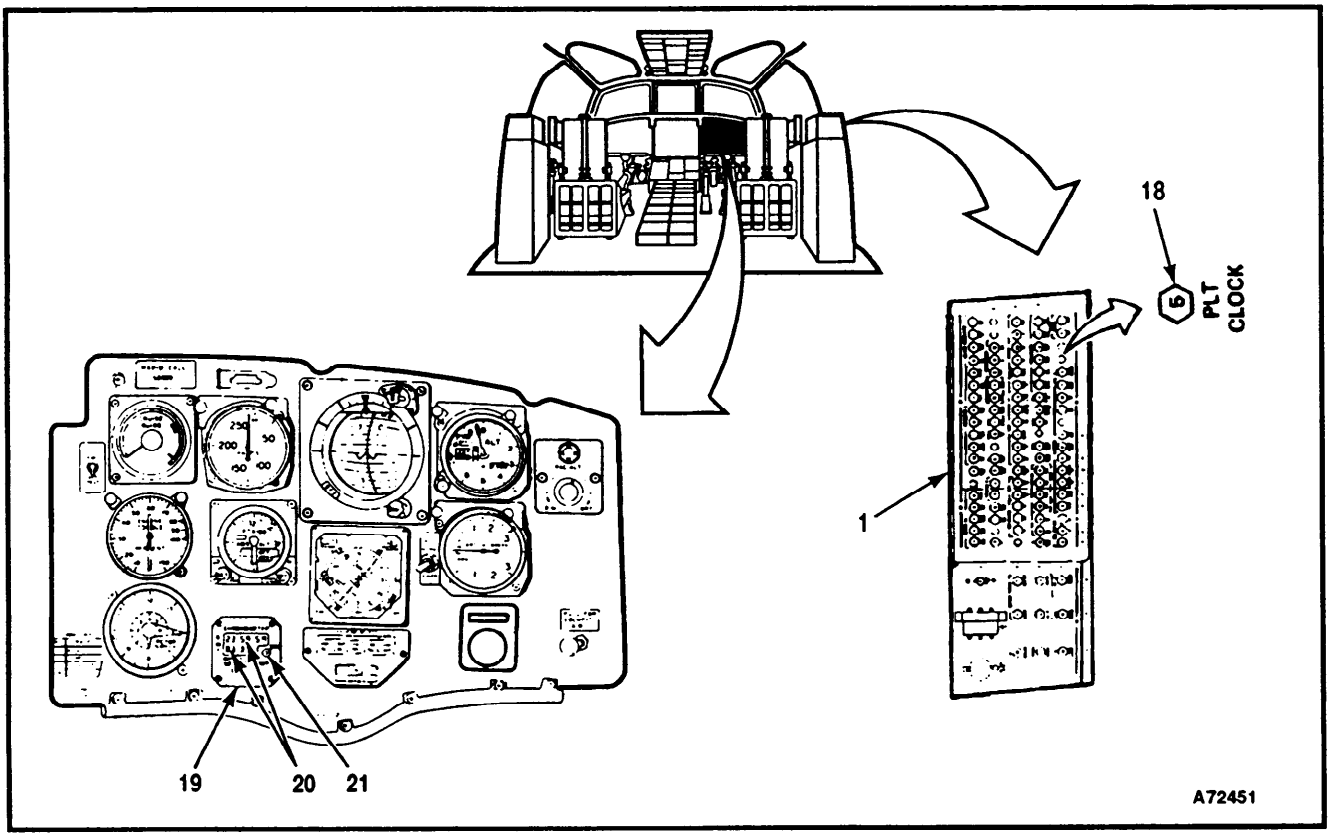
PILOT'S INSTRUMENT PANEL LIGHTS

1. While performing steps 2 through 4, check pilot's instrument lighting. There shall be no white light leaks from NVG blue/green color lights.
2. Close circuit breakers in No. 2 PDP (1) as follows:
   a. PILOT INSTR breaker (2).
   b. INTR FLOOD breaker (3).
   c. CKPT DIM CONT breaker (4).
3. Turn PLT INST control (5) to BRT. Check the following lights. Brightness shall increase evenly as control is turned and light color shall be blue/green.
   a. Torquemeter (6) has two post lights (Without 74) is internally lit (With 74).
   b. Rotor Tachometer (7) two post lights.
   c. Cruise Guide Indicator (8) two lights in brow.
   d. Airspeed Indicator (9) two lights in brow.
   e. Radar Altimeter (10) bezel light.
   1. Attitude Direction Indicator (11) bezel light.
   g. Horizontal Situation Indicator (12) bezel light.
   h. HSI Mode Select Panel (13) lightplate.
   i. Barometric Altimeter (14) two lights in brow.
   j. Rate of Climb Indicator (15) two lights in brow.
   k. Turn and Slip Indicator (16) bezel light.
   l. Radar Altimeter Lighting Control (17) lightplate.
   m. HSI Mode Select Panel (13) pushbutton function markings.
4. Turn control (5) to OFF. Check instrument and panel lights of step 3. They shall decrease in brightness as control is turned. When control is at OFF, panel lights shall be off.
5. Open circuit breakers (2, 3 and 4) in No. 2 PDP (1).



PILOT'S CHRONOMETER LIGHT

6. While performing steps 7 through 10, check lighting. There shall be no white light leaks from NVG blue/green lighting.
7. Close PLT CLOCK breaker (18) in No. 2 PDP (1).
8. Check pilot's CHRONOMETER (19). Upper and lower numbers (20) shall be visible and blue/green color lighting shall be on.
9. Turn DIM control (21) of chronometer (19). Check chronometer light. Light shall dim over full range of control.
10. Turn control (21) to brightest light position.
11. Open breaker (18) in No. 2 PDP (1). Check CHRONOMETER (19). Numbers (20) shall not be visible and light shall be out.



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9-124.1 LIGHT LEAK TEST (Continued) 9-124.1

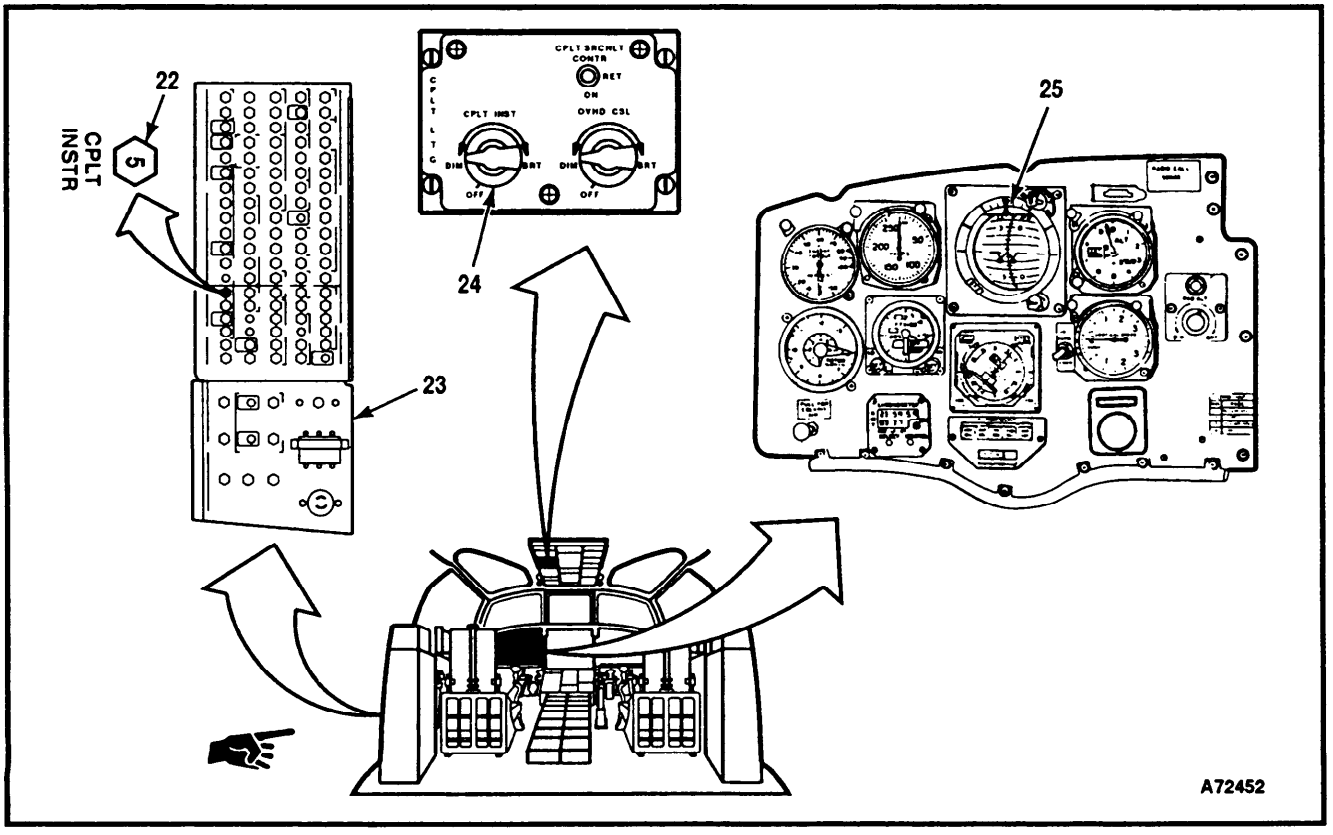
COPILOT'S INSTRUMENT PANEL LIGHTS

12. While performing steps 13 through 15, check copilot's instrument lighting. There shall be no white light leaks from NVG blue/green lighting.
13. Close CPLT INST LIGHTING circuit breaker (22) of No. 1 PDP (23).
14. Turn CPLT INST control (24) to BRT. Check lights given in step 3 of pilot's instrument panel (25). Brightness shall increase evenly as control is turned and light color shall be blue/green.

NOTE

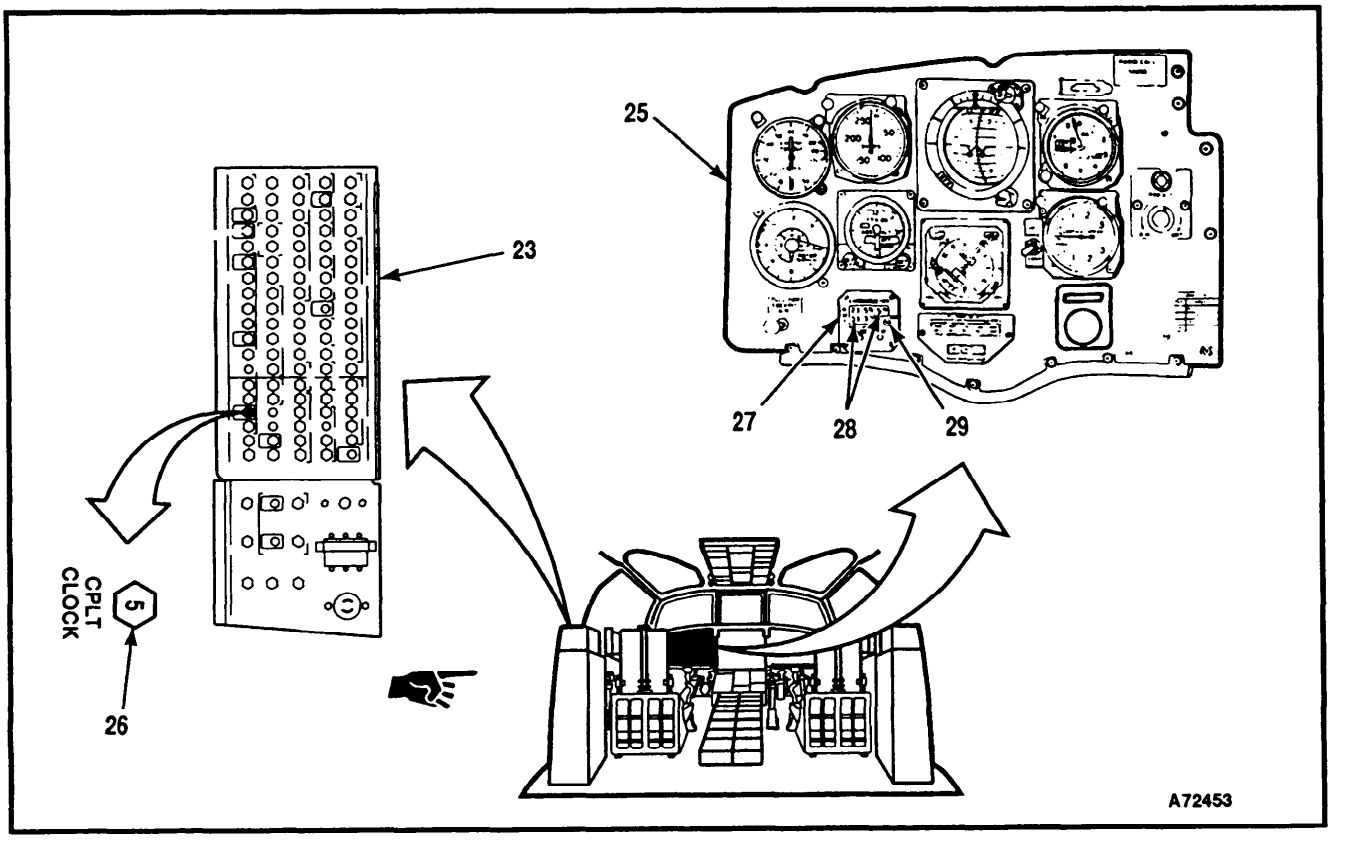
There is no cruise guide indicator on copilot's instrument panel.

15. Turn control (24) to OFF. Check instrument and panel lights of step 14. They shall decrease in brightness as control is turned. When control is at OFF, panel lights shall be off.
16. Open circuit breaker (22) in No. 1 PDP (23).



COPILOT'S CHRONOMETER LIGHT

17. While performing steps 18 through 21, check lighting. There shall be no white light leaks from NVG blue/green lighting.
18. Close CPLT CLOCK circuit breaker (26) in No. 1 PDP (23).
19. Check copilot's CHRONOMETER (27). Upper and lower numbers (28) shall be visible and blue/green. Color lighting shall be on.
20. Turn DIM control (29) of chronometer (27). Check chronometer light. Light shall dim over full range of control.
21. Turn control (29) to brightest light position.
22. Open breaker (26) in No. 1 PDP (23). Check CHRONOMETER (27). Numbers (28) shall not be visible and light shall be out.



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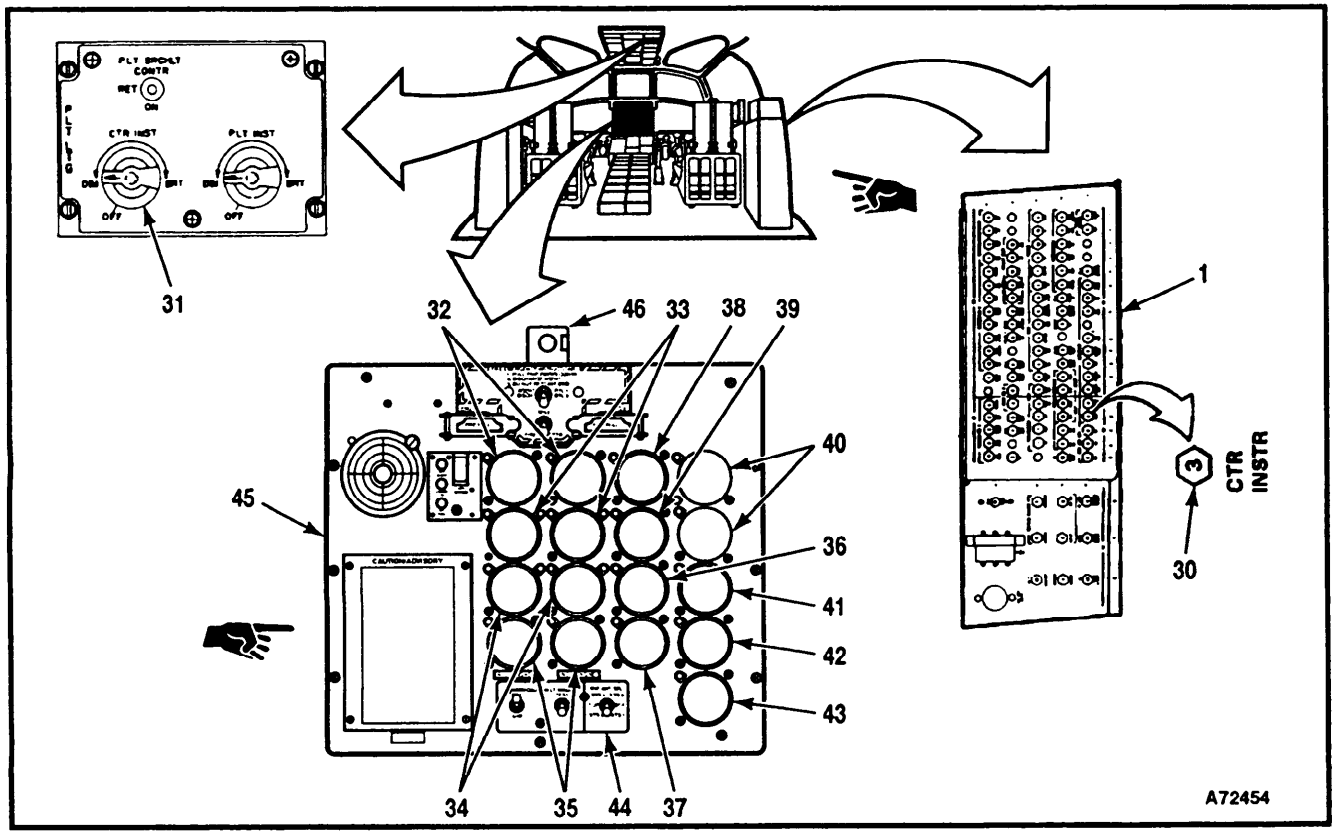
CENTER INSTRUMENT PANEL LIGHTS

23. While performing steps 24 through 26, check lighting. There shall be no white light leaks from NVG blue/green lighting.
24. Close CTR INSTR LIGHTING circuit breaker (30) in No. 2 PDP (1).
25. Turn CTR INST control (31) to BRT. Check the following lights. Brightness shall increase evenly as control is turned, and light color shall be blue/green.
    a. Two Gas Generator Tachometers (32) post lights.
    b. Four Power Turbine Inlet Temperature Indicators (33) post lights.
    c. Four Engine Oil Temperature Indicators (34) post lights.
    d. Two Engine Oil Pressure Indicators (35) post lights.
    e. XMSN Oil Temperature Indicator (36) post light.
    f. XMSN Oil Temperature Selector Switch (37) post light.
    g. XMSN Oil Pressure Indicator (38) post light.
    h. XMSN Oil Pressure Selector Switch (39) post light.
    i. Two Cyclic Trim Indicators (40) post lights.
    j. Fuel Flow Indicator (41) post light.
    k. Fuel Quantity Indicator (42) post light.
    l. Fuel Quantity Selector Switch (43) post light.
    m. Caution Panel/VHF Antenna Select Panel (44) lightplate.
    n. Fire Emergency Warning Panel (45) Lightplate.
    o. Two Standby Compass (46) post lights.
26. Turn control (31) to OFF. Check instrument panel lights of step 25. They shall decrease in brightness as control is turned. When control is at OFF, panel lights shall be off.
27. Open circuit breaker (30) of No. 2 PDP (1).



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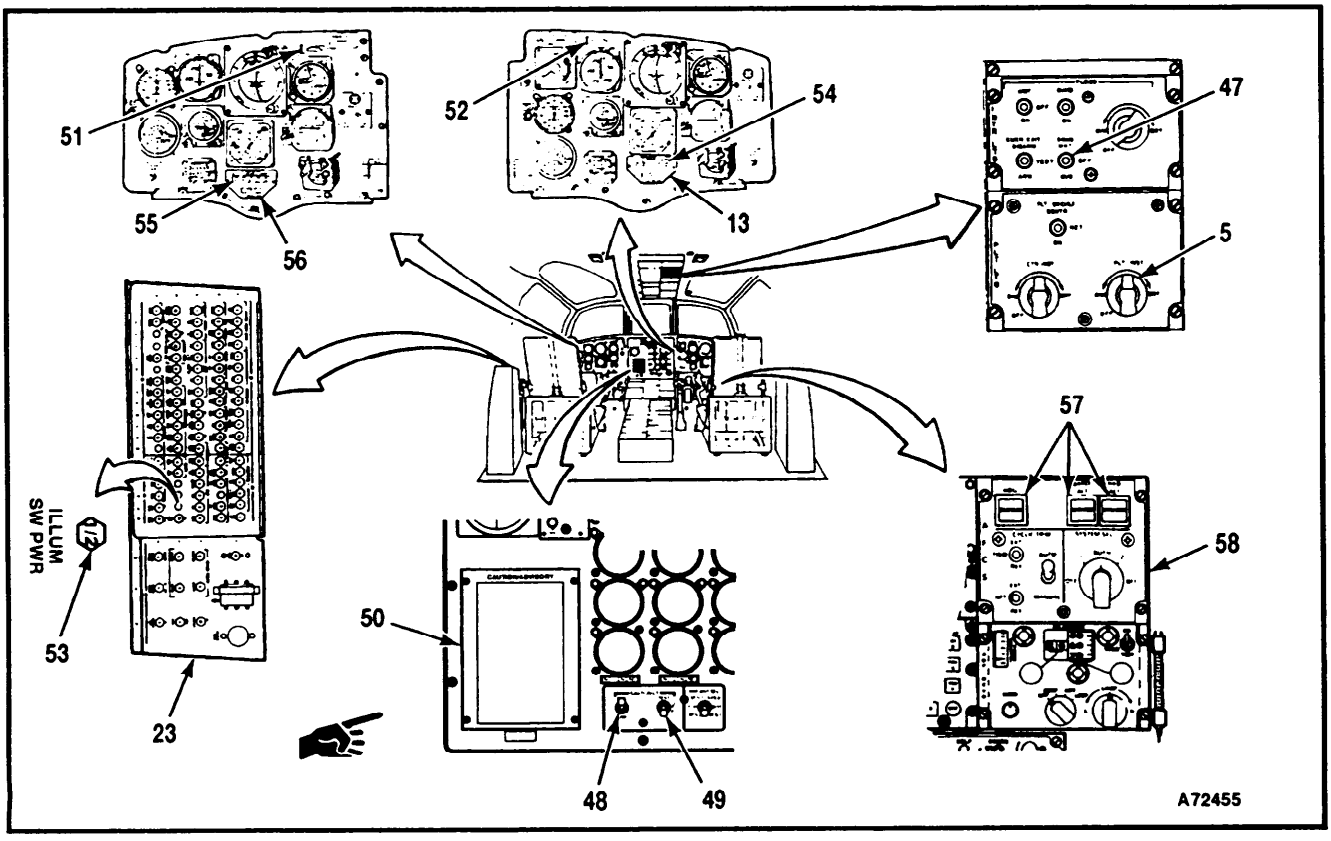
28. Set DOME LIGHTS switch (47) to OFF.
29. Set CAUTION LT DIM-BRT switch (48) to BRT.
30. Set and hold CAUTION LT TEST switch (49) at TEST. Check master caution panel (50). There shall be no white light leaks.
31. Check two master caution indicators (51 and 52). There shall be no white light leaks.
32. Release switch (49) to OFF position.
33. Close ILLUM SW PWR circuit breaker (53) in No. 1 PDP (23).
34. Check PLT INST control (5) is set to OFF.
35. Press five switches (54) of pilot's HSI mode select panel (13). There shall be no white light leaks when each switch light is on.
36. Repeat step 35 for five switches (55) of copilot's HSI panel (56).
37. Press three switches (57) of AFCS panel (58). There shall be no white light leaks when each switch light is on.
38. Open ILLUM SW PWR breaker (53) in No. 1 PDP (23).



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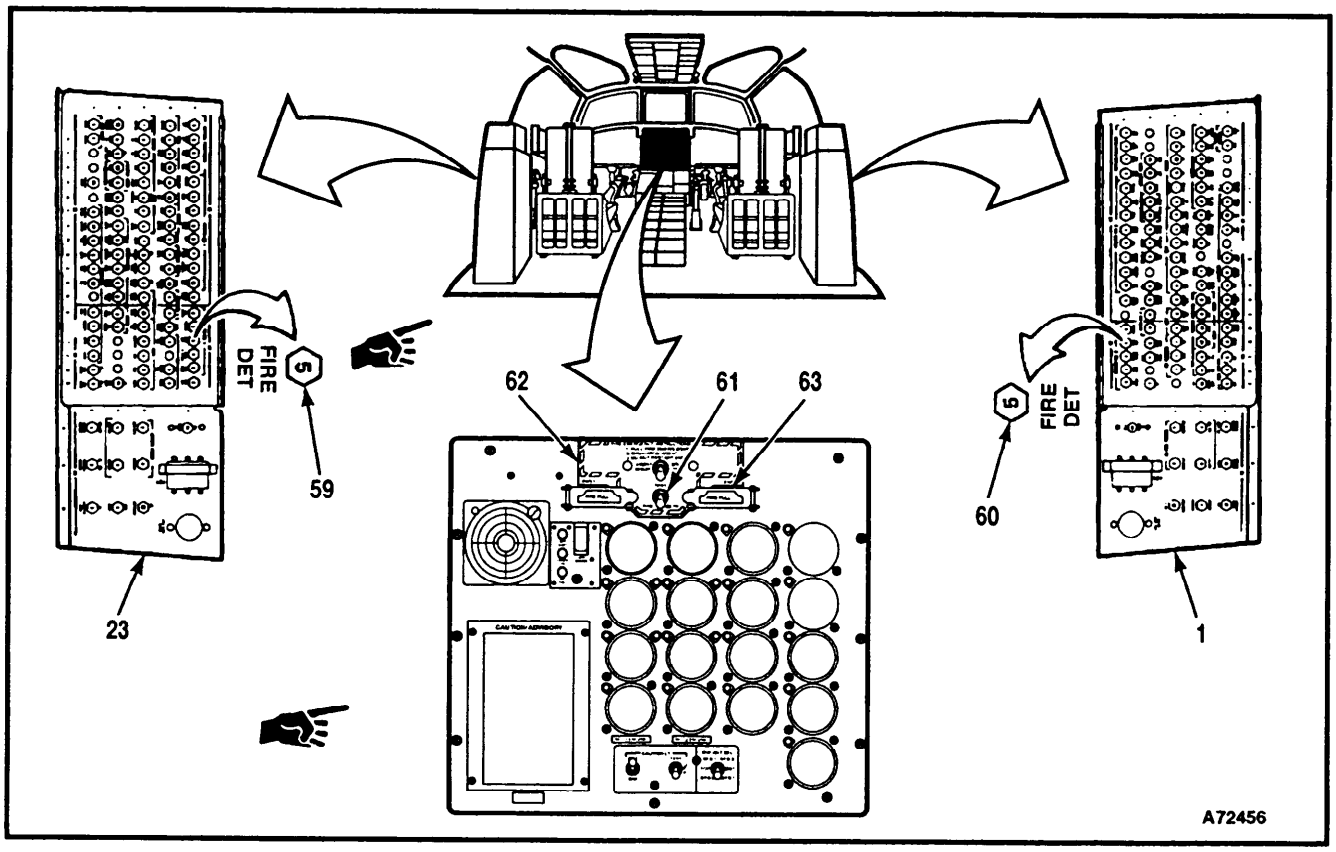
39. Close ENGINE NO. 1 FIRE DET circuit breaker (59) in No. 1 PDP (23).
40. Close ENGINE NO. 2 FIRE DET circuit breaker (60) in No. 2 PDP (1).
41. Set and hold tire detection test switch (61) to TEST Check No. 1 and No. 2 tire handles (62 and 63). There shall be no white light leaks.
42. Set switch (61) to OFF.
43. Open two circuit breakers (59 and 60).



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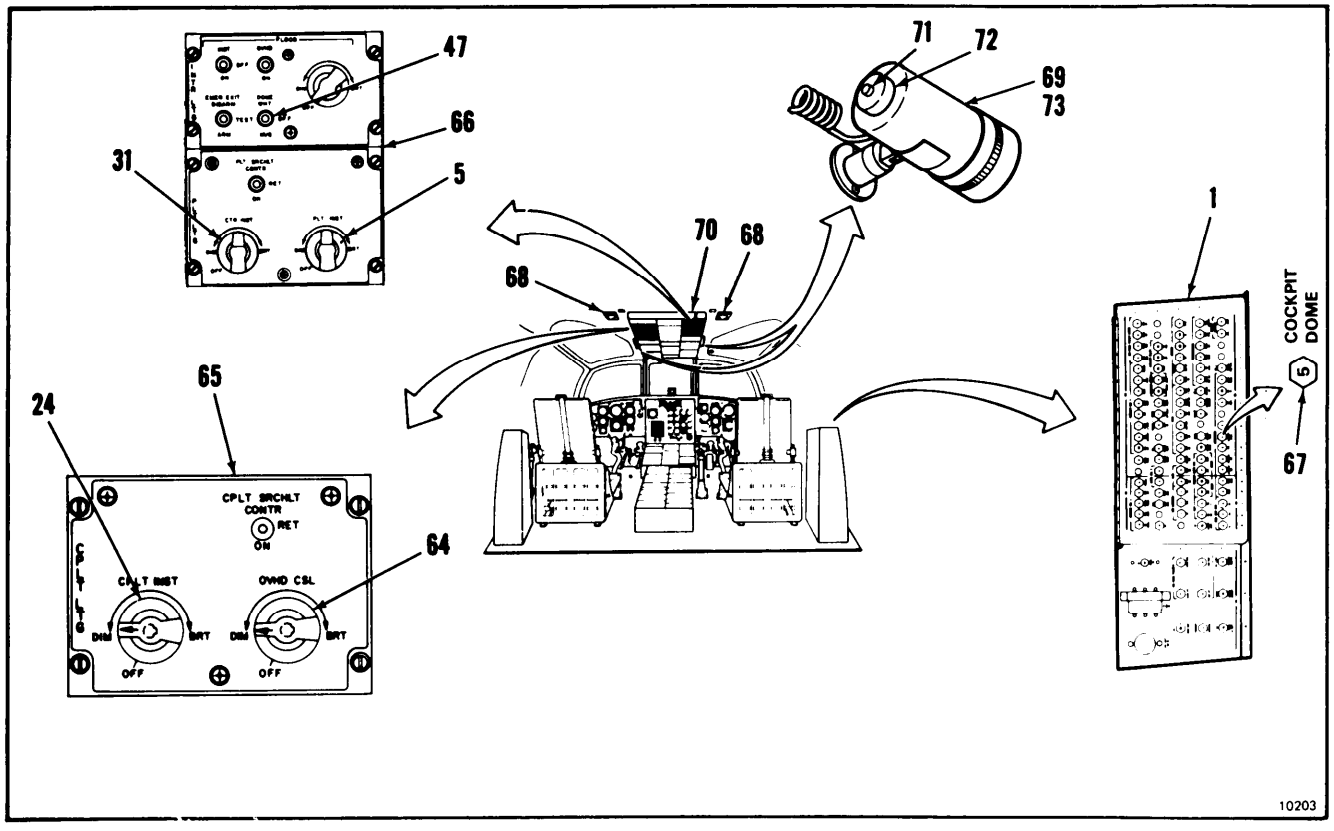
9-124.1 LIGHT LEAK TEST (Continued)

COCKPIT DOME AND UTILITY LIGHTS

44. Set cockpit DOME light switch (47) to OFF.
45. Set CPLT INST switch (24) and OVHD CSL switch (64) on CPLT LTG panel (65) to OFF.
46. Set CTR INST switch (31) and PLT INST switch (5) on PLT LTG panel (66) to OFF.
47. Close COCKPIT DOME LIGHTING circuit breaker (67) in No. 2 PDP (1).
48. Set switch (47) to WHT. Check pilot's and copilot's dome lights (68). Light color shall be white.
49. Set switch (47) to NVG. Check pilot's and copilot's dome lights (68). Light color shall be blue/green. No white light leaks.
50. Set switch (47) to OFF. Check pilot and copilot dome lights (68). They shall be off.
51. Remove pilot's utility light (69) from overhead panel (70). Press and release switch (71). Turn dimming control (72) through full on range. Check light. Light shall increase in brightness when control is turned and shall be blue/green in color. No white light leaks.
52. Turn control (72) to OFF. Press and release switch (71).
53. Install light (69) in panel (70).
54. Repeat steps 49, 50 and 51 for copilot's utility light (73).
55. Open circuit breaker (67) in No. 2 PDP (1).



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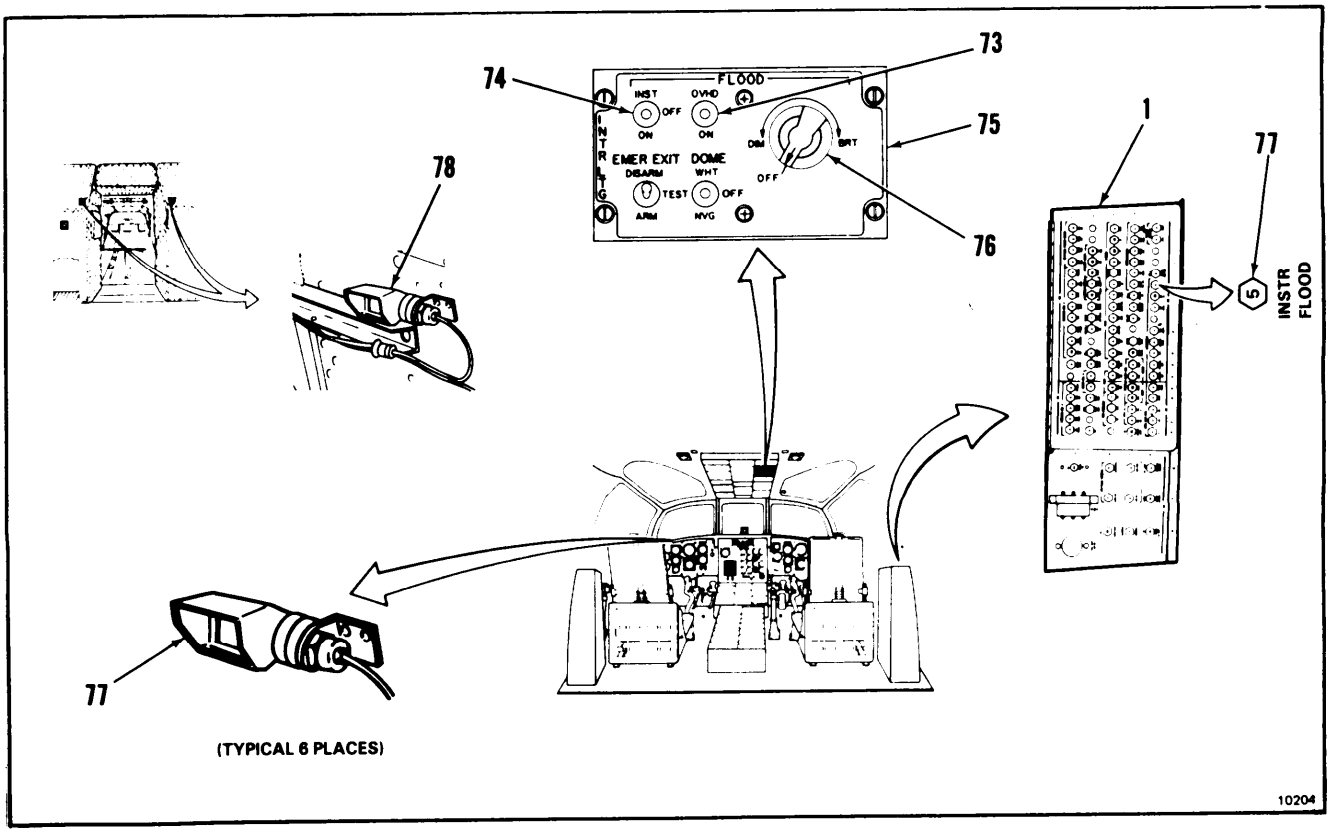
9-124.1 LIGHT LEAK TEST (Continued) 9-124.1

SECONDARY COCKPIT LIGHTS

56. Set OVHD and INST FLOOD switches (73 and 74) on INTR LTG panel (75) to OFF.
57. Turn FLOOD control (76) to OFF.
58. Close INSTR FLOOD LIGHTING circuit breaker (77) in No. 2 PDP (1).
59. Set switches (73 and 74) to ON.
60. Turn control (76) to BRT. Check the following lights. Brightness shall increase evenly as control is turned and light color shall be blue/green.
    a. Six instrument floodlights (77).
    b. Two overhead floodlights (78).
61. Set switch (73) to OFF. Floodlights (78) shall be OFF.
62. Set switch (73) to ON. Floodlights (78) shall be ON.
63. Set switch (74) to OFF. Floodlights (77) shall be OFF.
64. Set switch (74) to ON. Floodlights (77) shall be ON.
65. Turn control (76) to OFF. Check floodlights (77 and 78). Brightness shall decrease evenly as control is turned, and go off when control is at OFF.
66. Set switches (73 and 74) to OFF.
67. Open circuit breaker (77) in No. 2 PDP (1).



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DOPPLER SYSTEM LIGHTS

68. Set doppler system lights to ON (TM 11-1520-240-23). There shall be no white light leaks, displays only. Lightplate still green.
69. Set lights to OFF.

COUNTERMEASURE SYSTEM LIGHTS

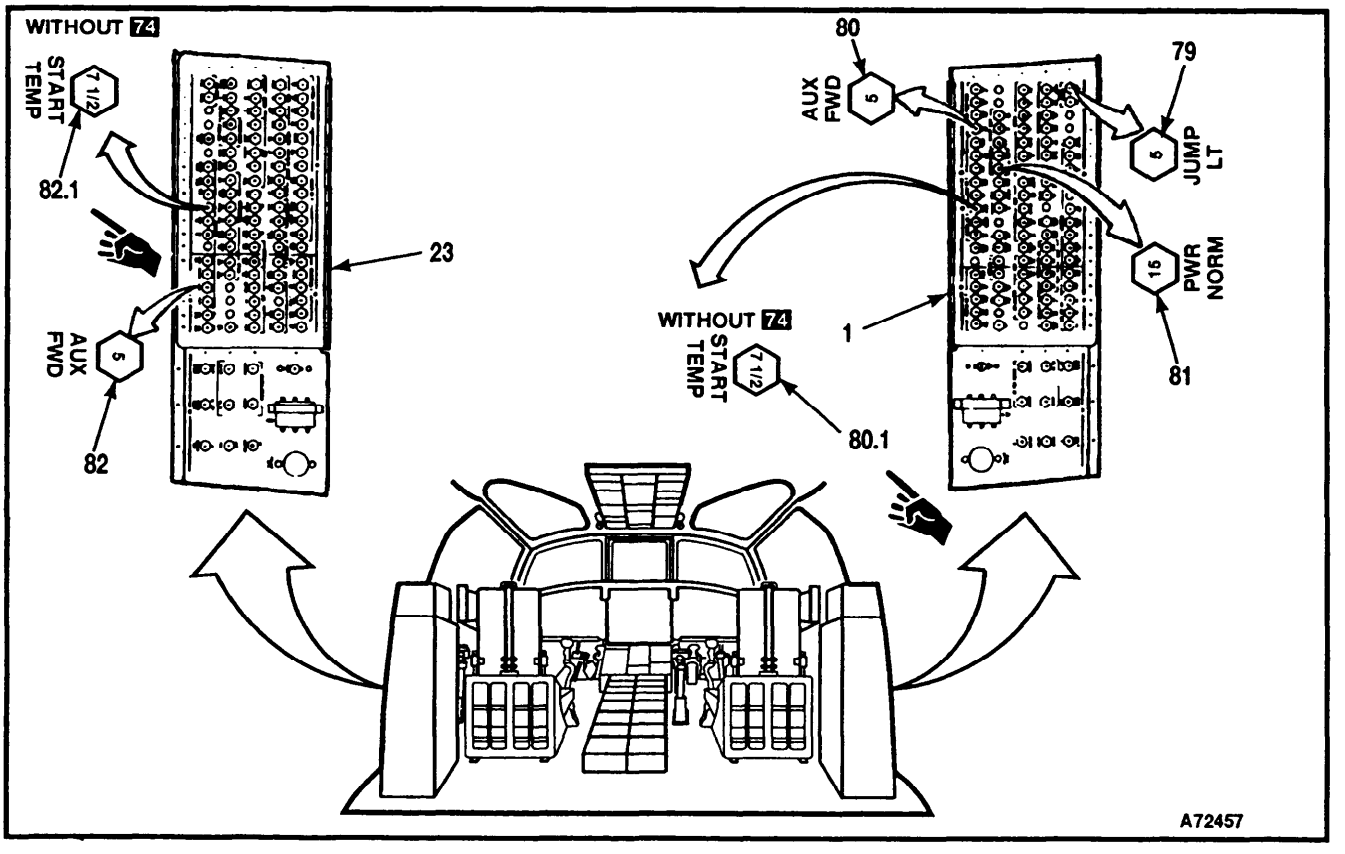
70. Set countermeasures system lights to ON (TM 11-1520-240-23). There shall be no white light leaks, push button on ALQ-156 only. Lightplate still green.
71. Set lights to OFF.

FLARE DISPENSER SYSTEM LIGHTS

72. Set flare dispenser system lights to ON (TM 11-1520-240-23). There shall be no white light leaks.
73. Set lights to OFF.

PRESS-TO-TEST LIGHTS

74. Close the following circuit breakers on the No. 2 PDP (1):
    a. TROOP JUMP LT (79).
    b. RH AUX FWD FUEL PUMP (80).
    c. ENG NO. 2 START AND TEMP (80.1) (Without 74).
    d. CARGO HOOK PWR NORM (81).
75. Close the following circuit breakers on the No. 1 PDP (23).
    a. LH AUX FWD FUEL PUMP (82).
    b. ENG NO. 1 START AND TEMP (82.1) (Without 74).



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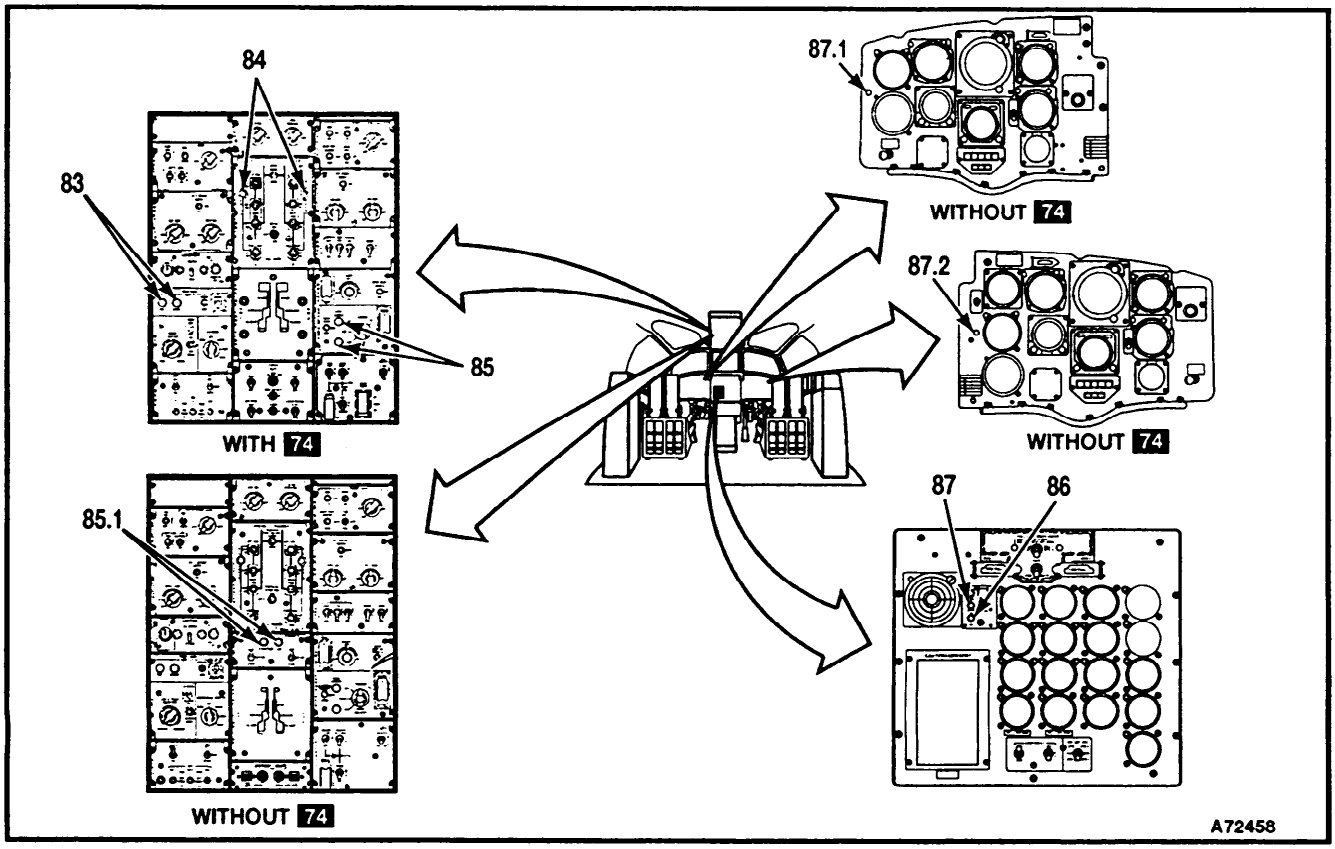
76. Apply power to press-to-test lamps of IFF system (TM 11-1520-240-23).
77. Apply power to press-to-test lamps of interphone system (TM 11-1520-240-23).
78. Press the following press-to-test lamps. There shall be no white light leaks.
    a. Overhead Panel:
        (1) Two lights (83) on TROOP WARN panel.
        (2) Two lights (84) on FUEL CONTROL panel.
        (3) Two lights (85) on CARGO HOOK panel.
        (4) Two lights (85.1) on START panel (Without 74).
    b. Center Instrument Panel:
        (1) IFF FAIL light (86).
        (2) CIPHER ON light (87).
    C. Copilot's instrument panel Emergency Power light (87.1) (Without 74).
    d. Pilot's instrument panel Emergency Power light (87.2) (Without 74).



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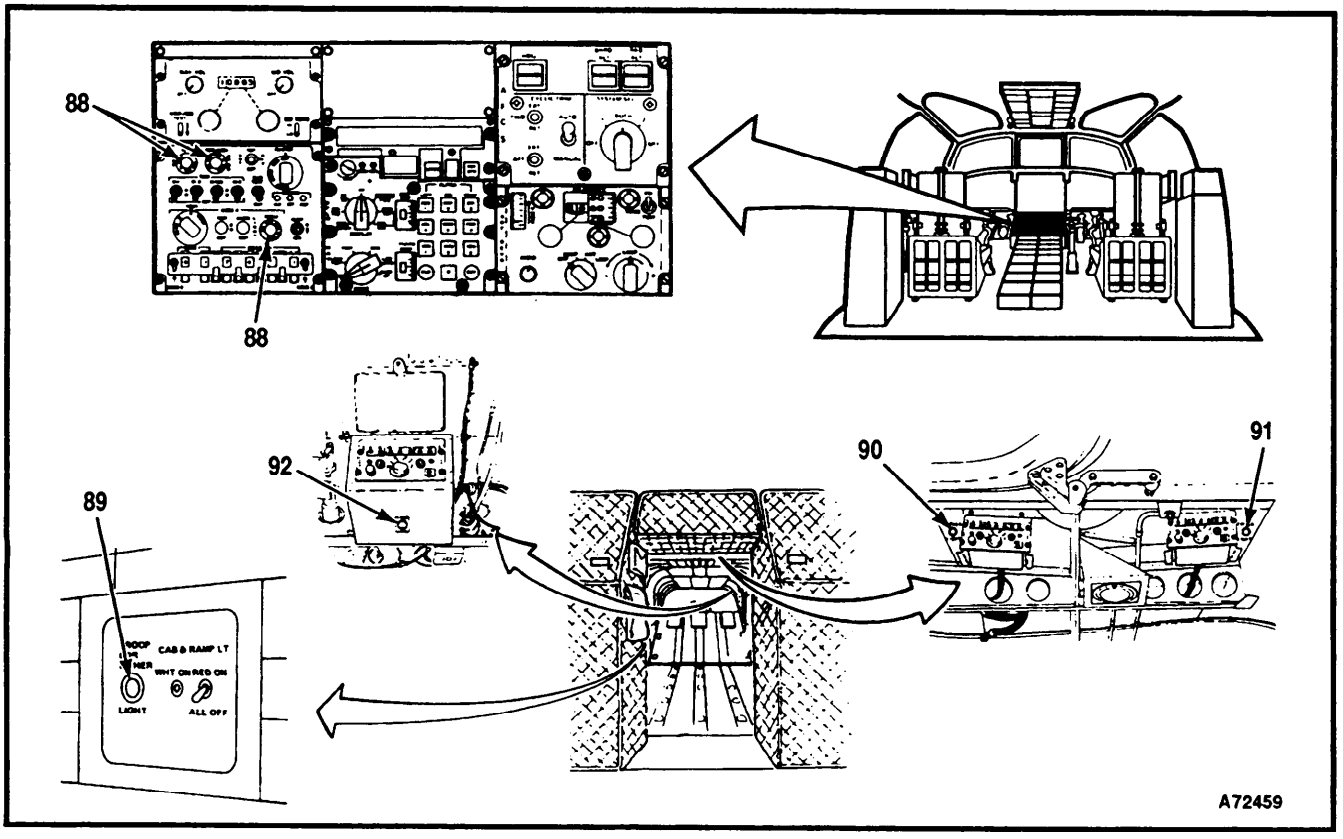
79. Press the following press-to-test lamp. There shall be no white light leaks:
    a. Console:
       Three lights (88) on IFF panel.
    b. Cockpit Passageway:
       Troop commander's cipher on light (89).
    c. Cabin:
       (1) Right gunner's cipher on light (90).
       (2) Left gunner's cipher on light (91).
       (3) Aft interphone (92).
80. Remove power from interphone system (TM 11-1520-240-23).
81. Remove power from IFF system (TM 11-1520-240-23).

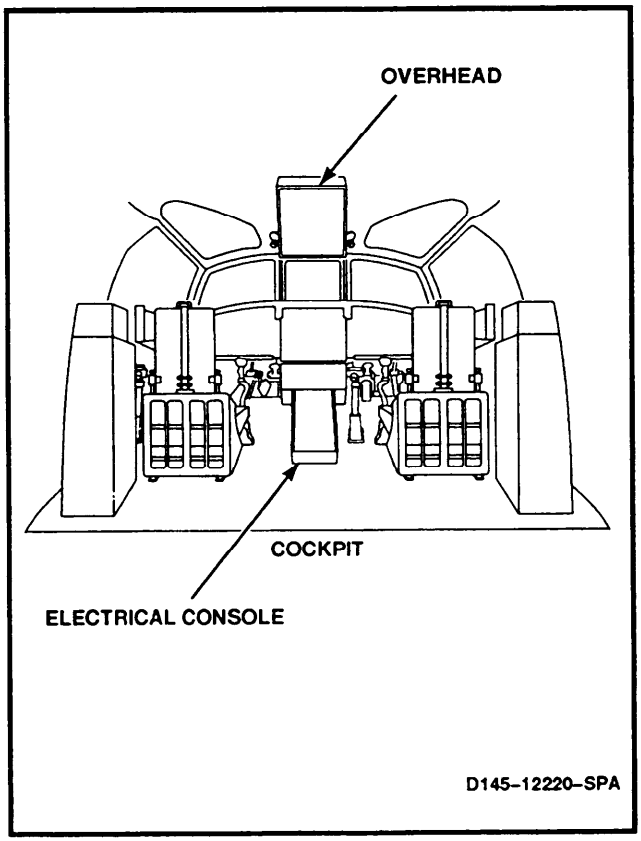
FOLLOW-ON MAINTENANCE:
Remove external AC power (Task 1-37).
Set battery switch to OFF.
Remove cockpit window covers.
Open passageway blackout curtain.
Disconnect battery (Task 1-39).
Open NO. 2 AC BUS TIE circuit breaker.
Open DC 2 CROSS TIE circuit breaker.
Open NO. 2 XFMR RECT circuit breaker.
Open NO. 2 REV CUR CO circuit breaker.
Open NO. 2 DC BUS CONT circuit breaker.
Open NO. 1 AC BUS TIE circuit breaker.
Open DC 1 CROSS TIE circuit breaker.
Open NO. 1 XFMR RECT circuit breaker.
Open NO. 1 REV CUR CO circuit breaker.
Open NO. 1 DC BUS CONT circuit breaker.
Open EXT PWR CONT circuit breaker.
Open CONT AC circuit breaker.
Open ESS BUS FEED circuit breaker.
Open CAUTION PNL circuit breaker.
Open XMSN OIL TEMP circuit breaker.



END OF TASK

Miscellaneous equipment includes all electrical equipment not covered under the AC and DC power and control system, and lighting. Following is a list of miscellaneous equipment.

a. Electrical console
b. Overhead panel
c. Master caution panel
d. Hoist operators panel
e. Winch control grip
f. Thrust control grips
g. Pitch and roll control grips
h. Emergency hook release relay box
i. Dual cargo hook release box
j. Apu electronic control unit (ESU)
k. Power steering control box
l. Three-phase utility receptacles
m. High density terminal junctions
n. Maintenance panel



Electrical Console

The electrical console is divided into two sections, located between the pilots seats. The center console and canted console contain various panel-mounted assemblies and 25 internally mounted electrical components such as relays, transformers, and resisters. The canted console supports the center instrument panel. Most of the panel-mounted assemblies are connected to helicopter wiring through connectors. The engine trim panel components (helicopters without 74) are connected directly to helicopter wiring.

Overhead Panel

The overhead panel is in the overhead above the electrical console. It includes front-mounted panels, utility lights, terminal boards, and rear mounted panels for resistors and relays. The overhead panel pivots down for maintenance. Downward travel of the panel is limited by two cloth straps. Each strap is connected between the side of the panel and an overhead structure. Front-mounted ENGINE CONDITION control, EMERGENCY POWER panel (helicopters without 74), FADEC panel (helicopters with 74) and HOIST/CARGO HOOK panel are connected to the overhead panel wiring through connectors. The other front-mounted panels and rear-mounted components are hard-wired to other components of the overhead panel.

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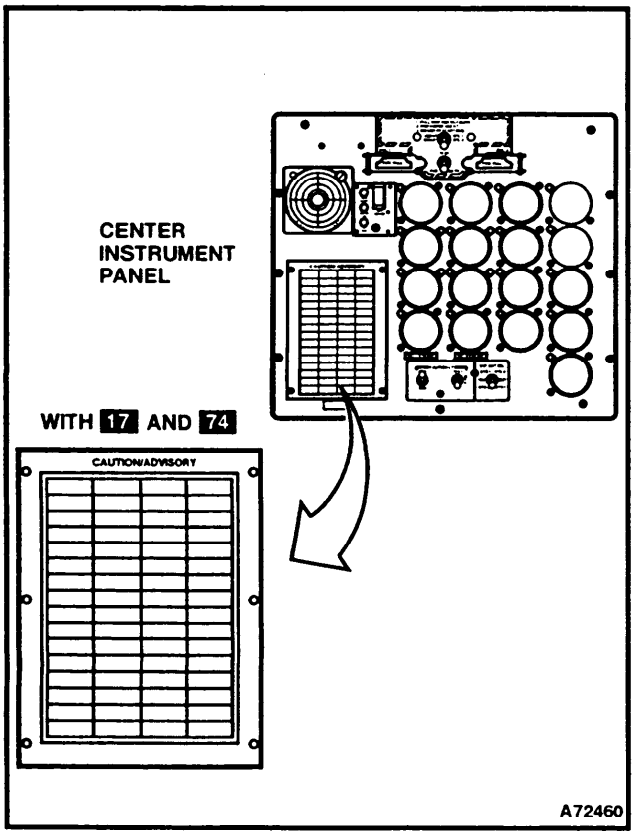
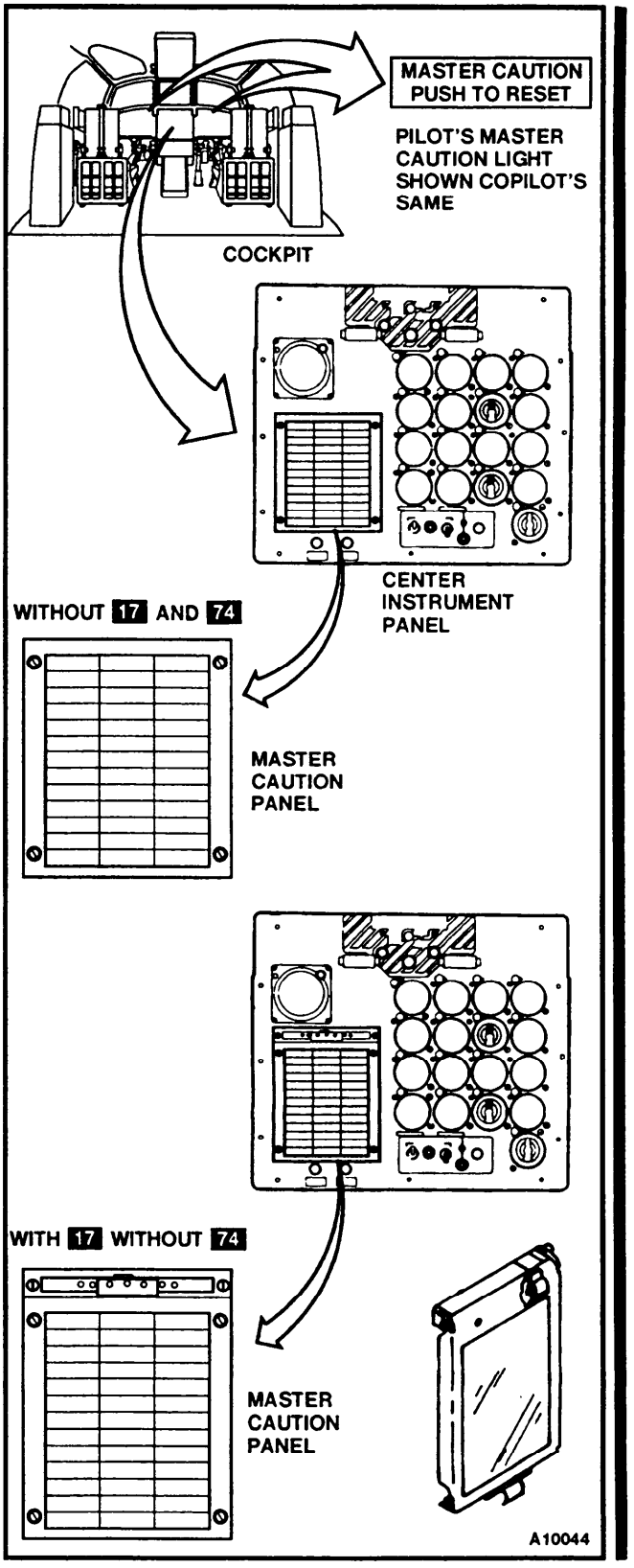
Master Caution Panel

The master caution system provides an indication when a sensor in any of 37 circuits (helicopter without 74), or 41 circuits (helicopters with 74) detects the operating condition or the abnormal condition which is being monitored. The sensor circuit lights the associated capsule in the master caution panel on the center instrument panel. When any capsule on the caution panel comes on, two MASTER CAUTION lights also come on. The MASTER CAUTION lights are on the pilot's and copilot's instrument panels. These lights have an integral switch that turns off both CAUTION lights when pressed but does not turn off the lighted capsule. The capsule remains on as long as the fault or the condition in the monitored circuit is present. All lamps in the system can be operated at full brightness (bright) or at a reduced brightness (dim). The system also has a test circuit that lights all lamps in the system. On helicopters with 17 and without 74, an NVG filter is stored on guides ides behind the instrument panel. When required, the filter is pulled out and down to cover the master caution panel. On helicopters with 74 the NVG filters are incorporated in the master caution panel light capsules.



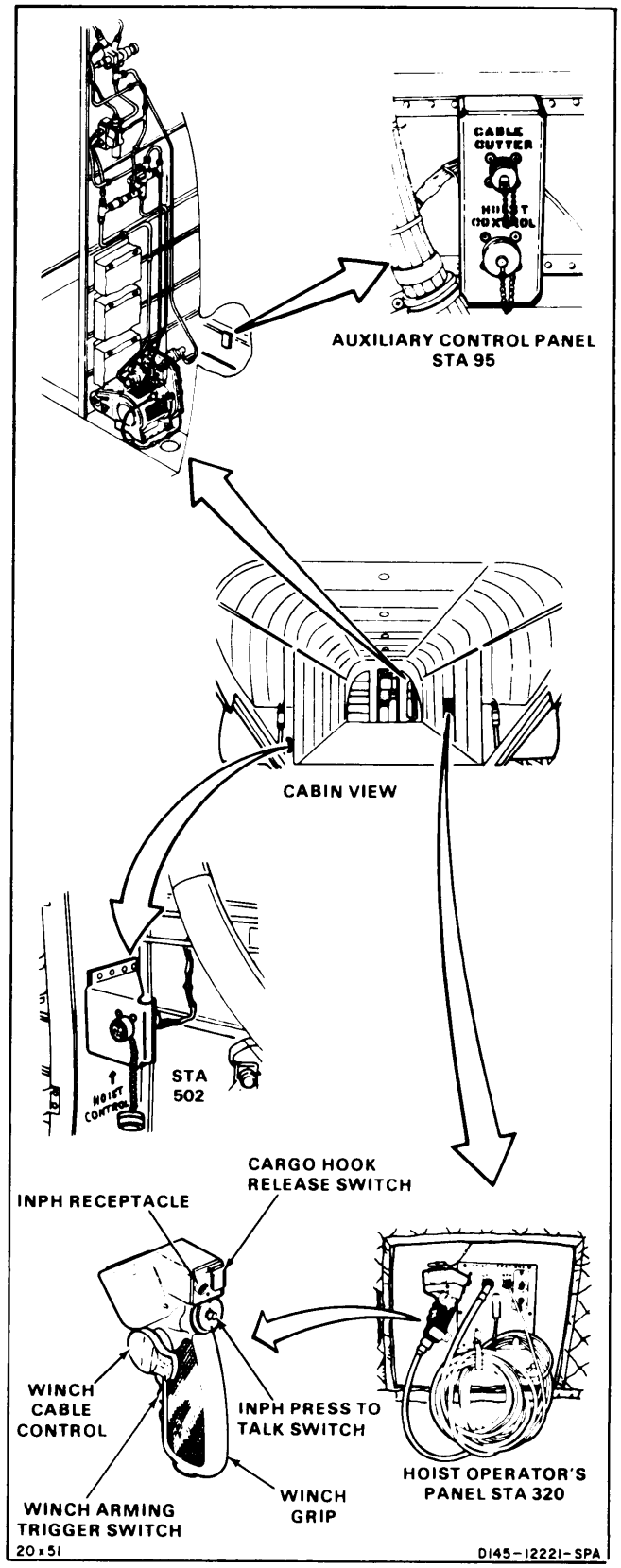


Hoist Operator's Panel

The hoist operator's panel is on the right side of the cabin at sta 320. The CARGO HOOK switch, the winch control grip receptacle, the hoist operator's HOT MIKE switch and the INPH jack are also on the panel. These last two components are part of the interphone system.

Winch Control Grip

The winch control grip and cable are used to control operation of the hoist system from any of three remote stations. The stations are the hoist operator's panel at sta 320, right side, hoist connector at sta 95, right side, and hoist connector at sta 502, left side. The control grip assembly has a winch arming trigger switch and a speed control. It also has cargo hook release, press to talk, and cable cutter switches.



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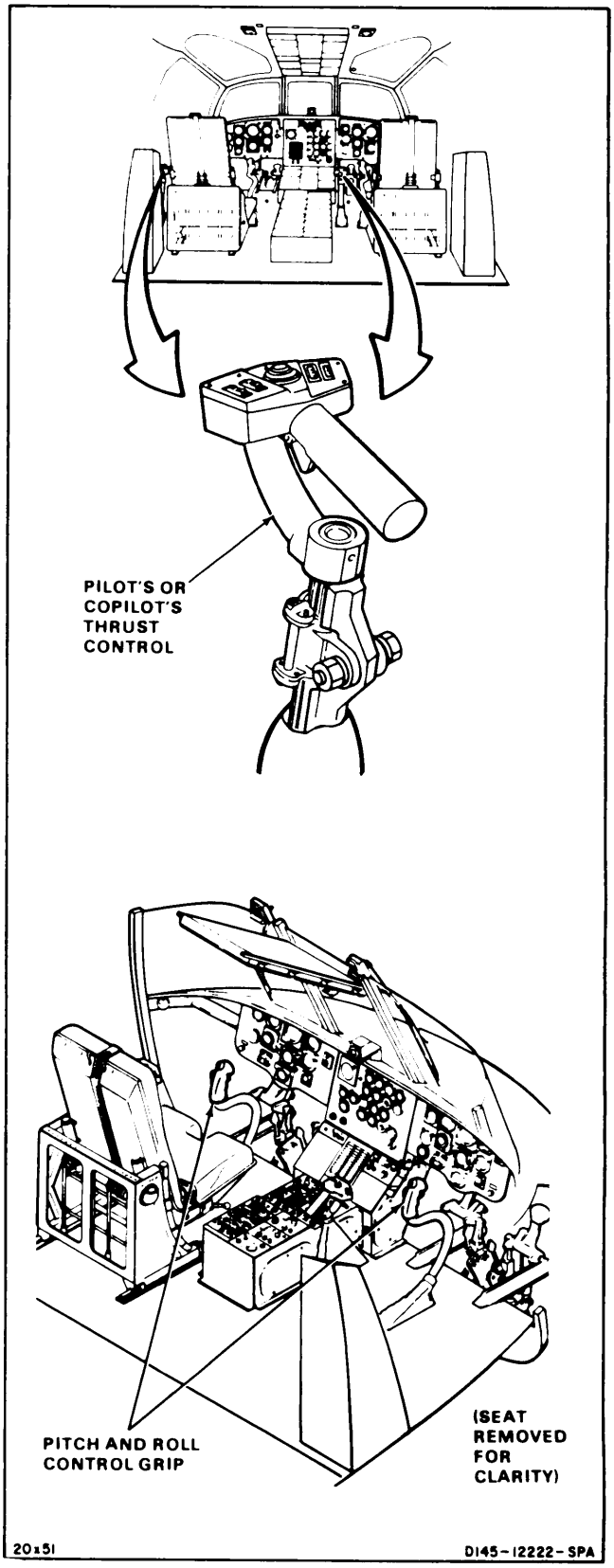
9-125 MISCELLANEOUS EQUIPMENT (Continued) 9-125

Thrust Control Grips

Two identical grips are bolted on the pilot's and copilot's thrust control levers. Each grip has a switch panel and a THRUST CONT BRAKE TRIGGER switch. The switch panel contains SEARCHLIGHT control switches and ENGINE BEEP TRIM switches. Switch wiring is routed through the grip and lever to a connector under the floor at sta 71. Plastic tubing protects the wiring.

Pitch and Roll Control Grips

Two identical grips are on the pilot's and copilot's pitch and roll control sticks. Each grip has an interphone-radio TRIGGER switch, CARGO HOOK RELEASE switch, FLARE DISPENSER switch, CENTERING DEVICE RELEASE switch and a pitch and roll trim control switch. The switch wiring terminates in a connector at sta 71. The grip is attached to the control stick by a screw.



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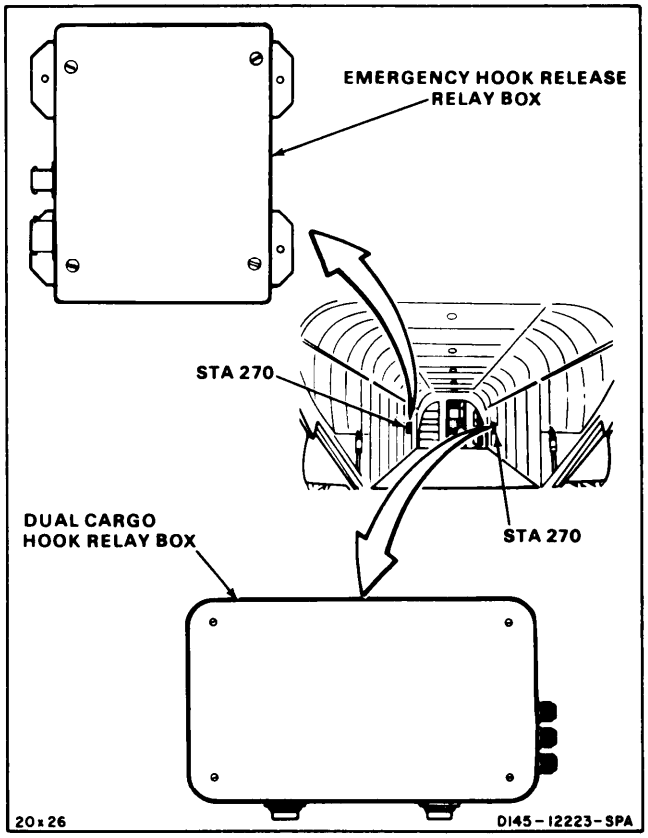
Emergency Hook Release Relay Box

The emergency hook release relay box is located on the left side at sta 270. The relay box contains 3 relays, 4 diodes, 3 resistors and a time delay relay which controls the operation of all three cargo hooks in the emergency mode. When the emergency release switch is set to RELEASE ALL, the forward and aft cargo hooks when loaded will open and close and remain unlatched for between 10 to 14 seconds. The mid cargo hook will open and remain open for between 10 to 14 seconds. Helicopter wiring is connected to box components through two plugs and receptacles.

Dual Cargo Hook Relay Box

The dual cargo hook relay box is located on the right side at sta 270. It contains relays, diodes, and PRESS-TO-TEST lamps. Helicopter wiring is connected to the box components through two plugs and two receptacles. The relay box controls the operation of all three cargo hooks in the normal mode of operation.



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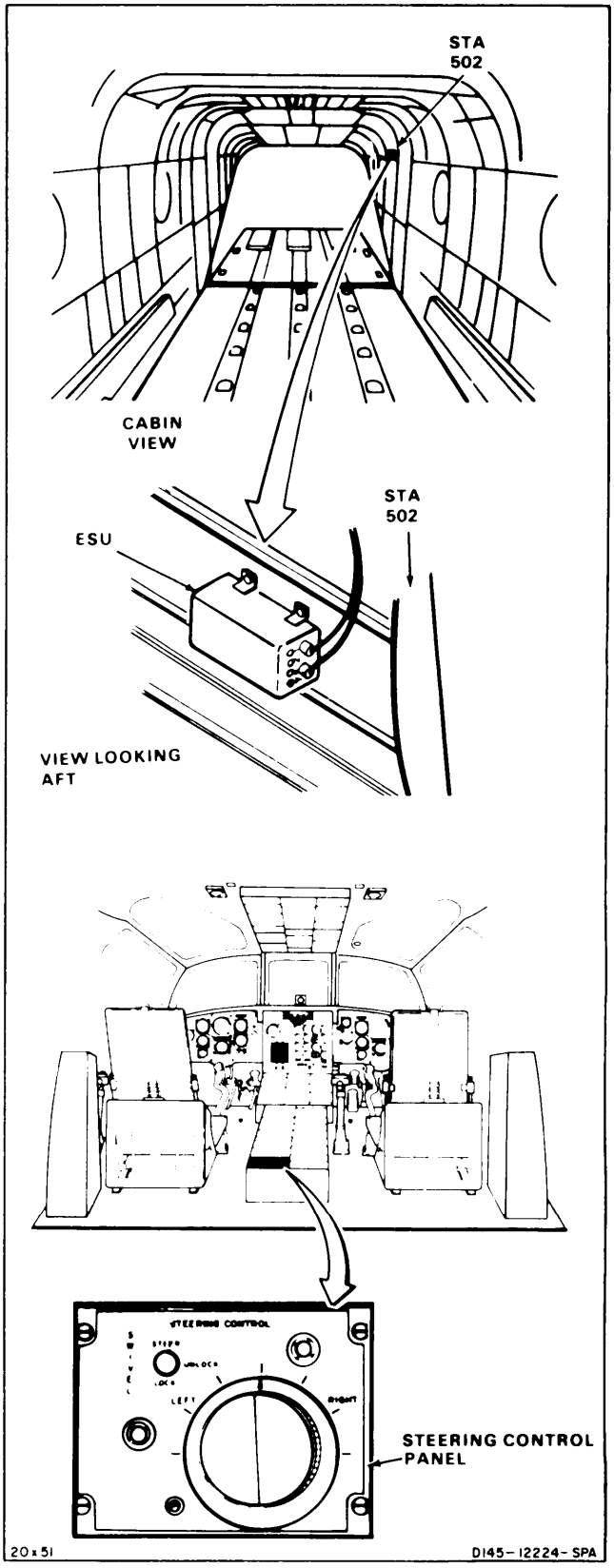
Apu Electronic Control Unit (ECU)

The control unit is on the left side at sta 502. Helicopter wiring is connected to the unit components through two connectors and receptacles. The control unit controls apu starting and operation. It also monitors the apu for overtemperature, overspeed, underspeed and the ecu internal circuits. Should a malfunction occur during start or while the apu is operating, the ecu will automatically shut down the apu. Four built in BITE indicators are located on the receptacle end of the esu and give a visual indication of failure mode.

Power Steering Control Box

The power steering control box is part of the power steering system. The control box is located in the console and is used to steer the helicopter while ground taxiing. When the SWIVEL switch is set to STEER and STEERING CONTROL knob is turned left or right, power is applied to a servovalve on the aft right landing gear which causes hydraulic pressure to flow to the power steering actuator which in turn cause the wheel to move left or right. This system eliminates the need to make pedal turns while ground taxiing. Power for the steering control box is from HYDRAULIC BRAKE STEER circuit breaker from the 28-volts dc No. 1 bus. The control box is connected to helicopter wiring through a connector and receptacle.



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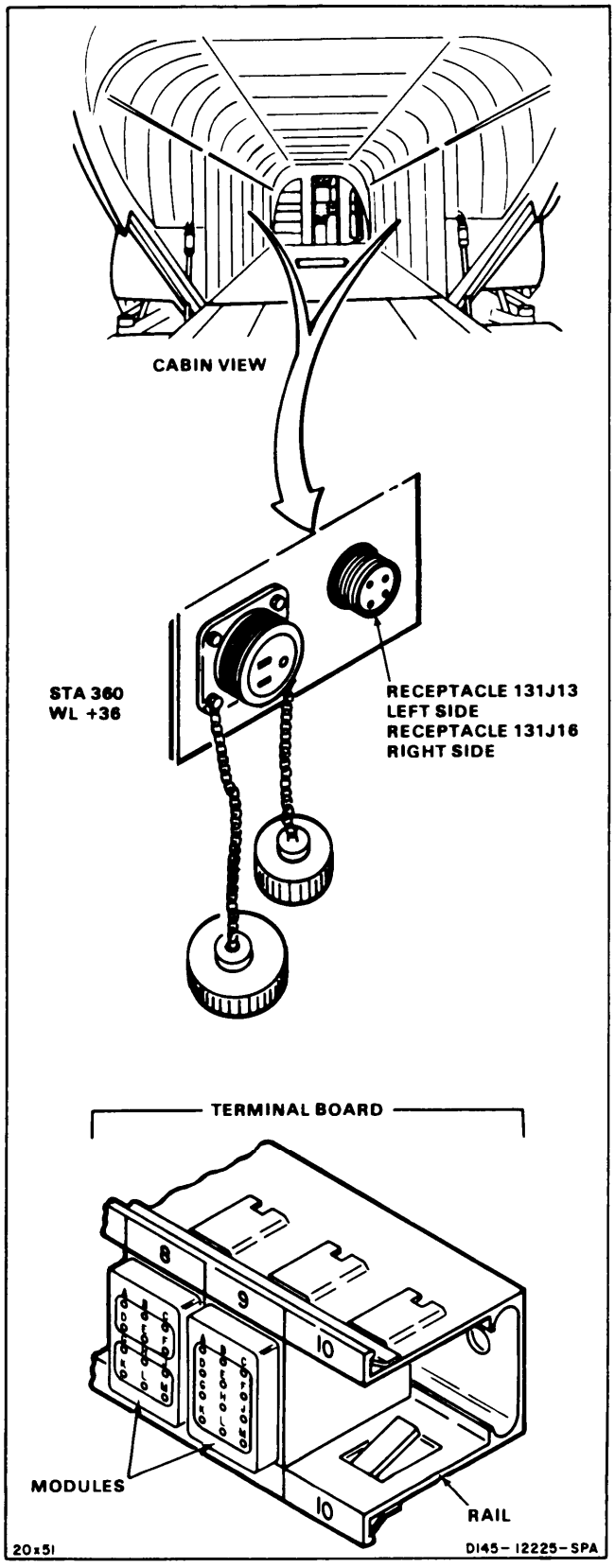
Three-Phase Utility Receptacles

Two three-phase 115/200 volt utility receptacles are on the right and left side of the cabin section at sta 360. Each receptacle is on a bracket that also contains a single-phase utility receptacle. Each receptacle has a screw on dust cover with a retaining chain. The right side receptacle 131J16 is powered from No. 2 ac bus through RH CABIN AC RECEPT circuit breaker. The left side receptacle 131J13 is powered from No. 1 ac bus through LH CABIN AC RECEPT circuit breaker.

High Density Terminal Junctions

Terminal junctions are used as terminal boards and ground devices and are located throughout the helicopter. A terminal board is composed of a rail and up to ten modules. The rail is U-shaped and contains ten slots with retaining clips for holding the modules in place. There are three types of modules each with 12 cavities. The modules contain either 1, 2, or 4 bus bars depending on their part number. The bus bars in the modules are used to connect wires together. The wires inserted into the cavities are terminated with a contact pin.



END OF TASK

SECTION VIII
MISCELLANEOUS EQUIPMENT

9-125.1 REMOVE CAUTION PANEL NVG FILTER

INITIAL SETUP

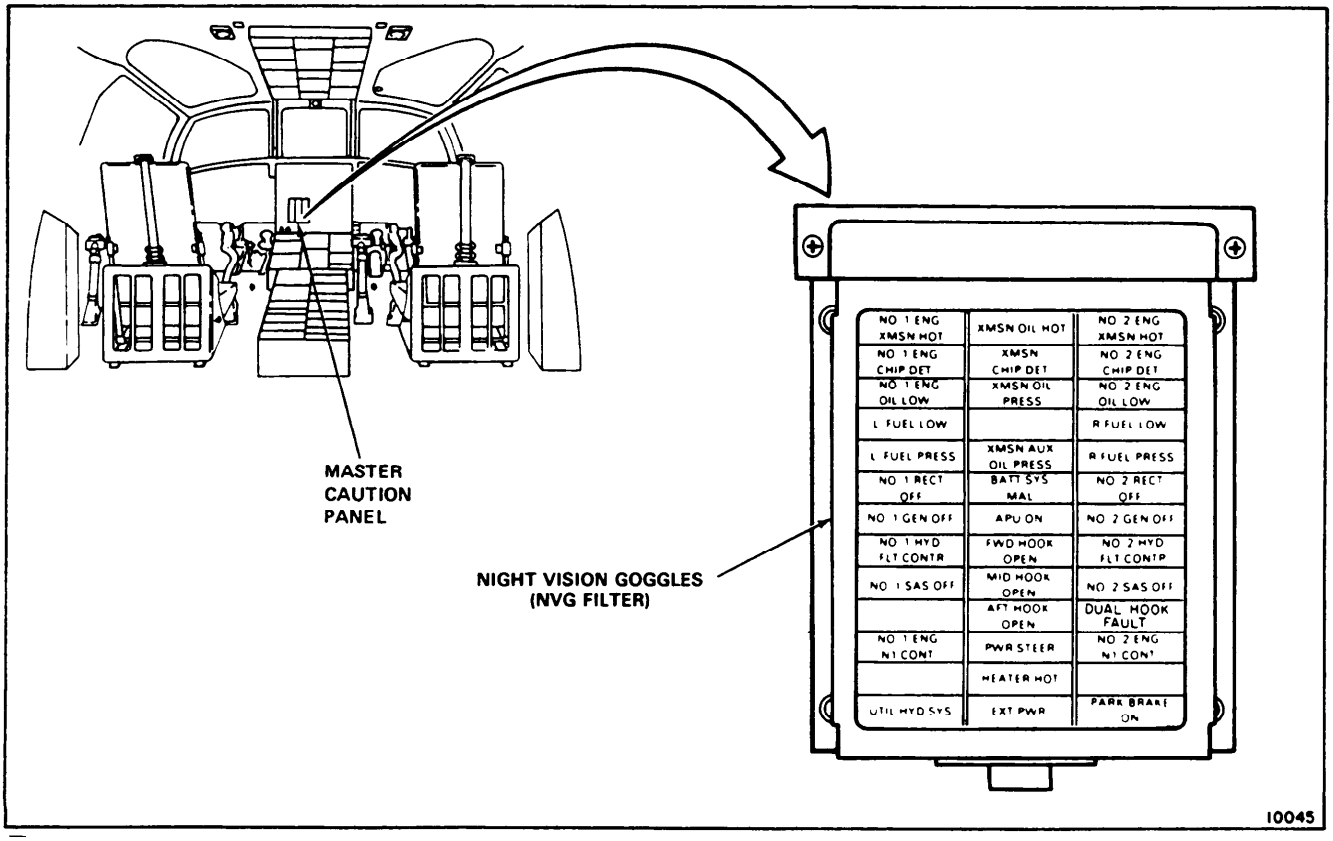
Applicable Configurations:
With 17 and Without 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



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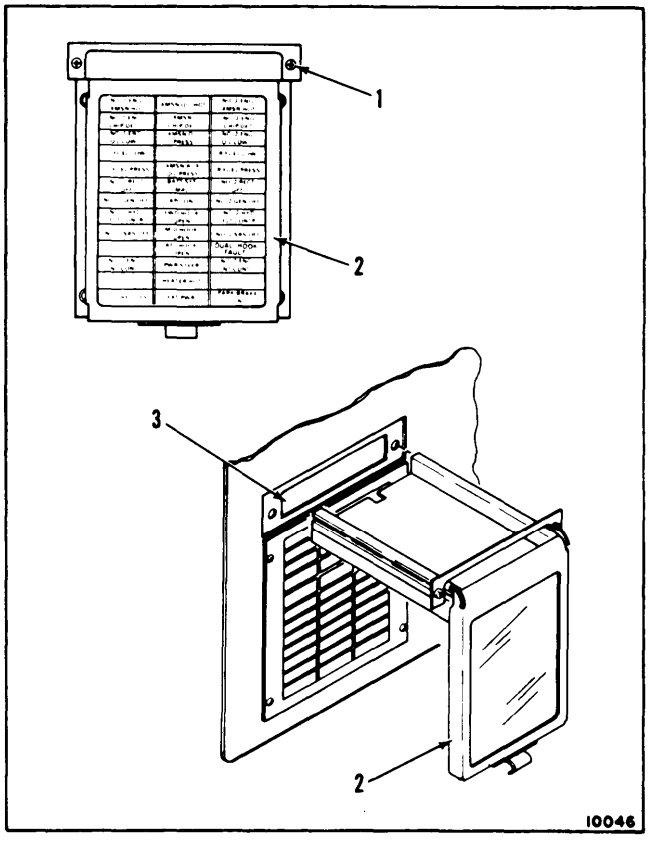
1. Remove two screws (1) from filter (2).
2. Pull filter (2) aft, away from opening (3).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-125.2 REPAIR OF CAUTION PANEL NVG FILTER

INITIAL SETUP

Applicable Configurations:
With 17 and Without 74

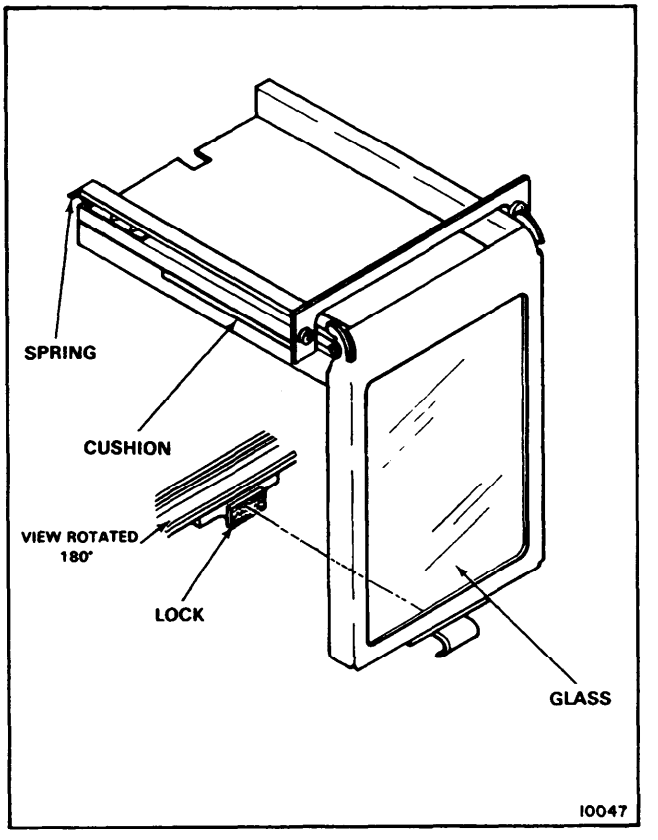
Tools:
Airframe Repairer's Tool Kit,
NSN 5180-00-323-4876
Drill
Twist Drill Set
Utility Knife

Materials:
Acetone (E20)
Sealant (E336)
Cloths (E120)
Tape (E402)
Gloves (E186)

Personnel Required:
Aircraft Structural Repairer

Equipment Condition:
Off Helicopter Task

General Safety Instructions:



WARNING

Acetone (E20) is extremely flammable. It can be toxic. Avoid inhaling. Use only with adequite ventilation. Avoid contact with skin, eyes, or clothing. Keep away from heat, sparks, or open flame. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

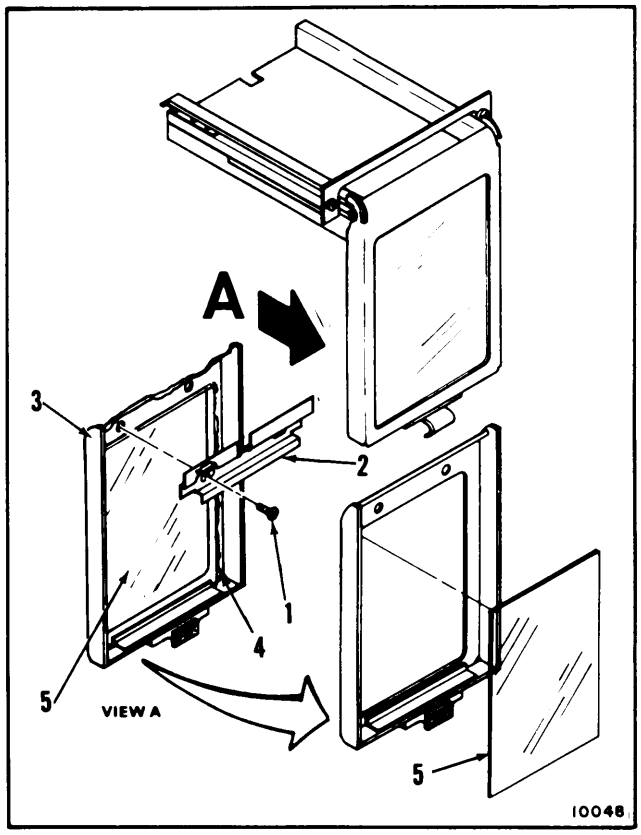
NOTE

Repair of the NVG caution panel filter is limited to replacement of four parts: glass, spring, cushion, and lock.

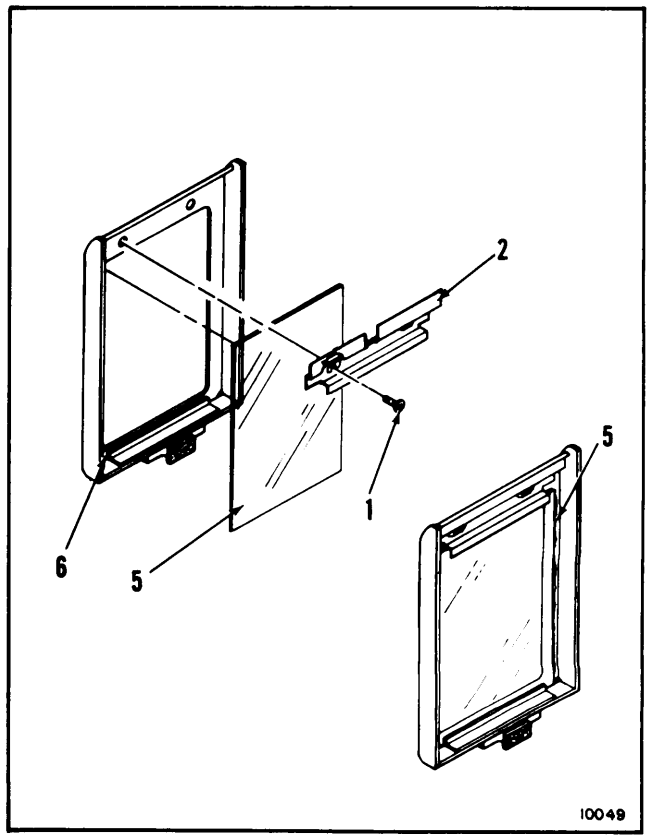
GO TO NEXT PAGE

REPLACE FILTER GLASS

1. Remove two screws (1) and retainer (2) from frame (3).
2. Remove sealant (4) from both sides of glass (5). Use a utility knife.
3. Remove glass (5).
4. Remove old sealant. Use acetone (E20) and cloths (E120).



5. Position replacement glass (5). Seat firmly in slot (6) in bottom of frame.
6. Position retainer (2) and install two screws (1).
7. Apply sealant (E336) to both sides of glass (5). Allow to cure 6 hours. Wear gloves (E186).



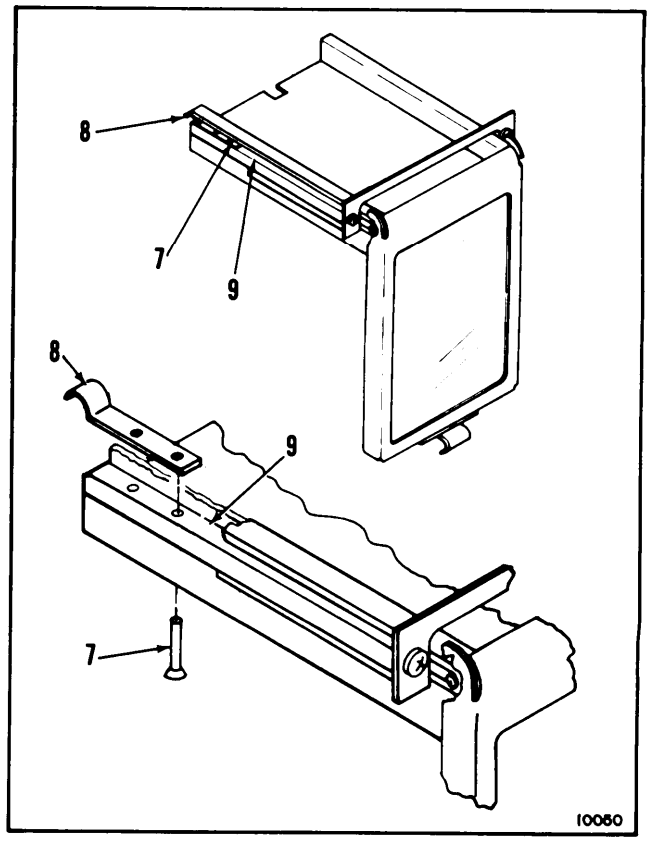
GO TO NEXT PAGE

REPLACE SPRING

NOTE

Procedure is same to replace either spring.

8. Drill out two rivets (7). Use a 3/32-inch drill, Remove spring (8) from support (9).
9. Position replacement spring (8) on support (9).
10. Install two 3/32 rivets (7), countersink at support (9).

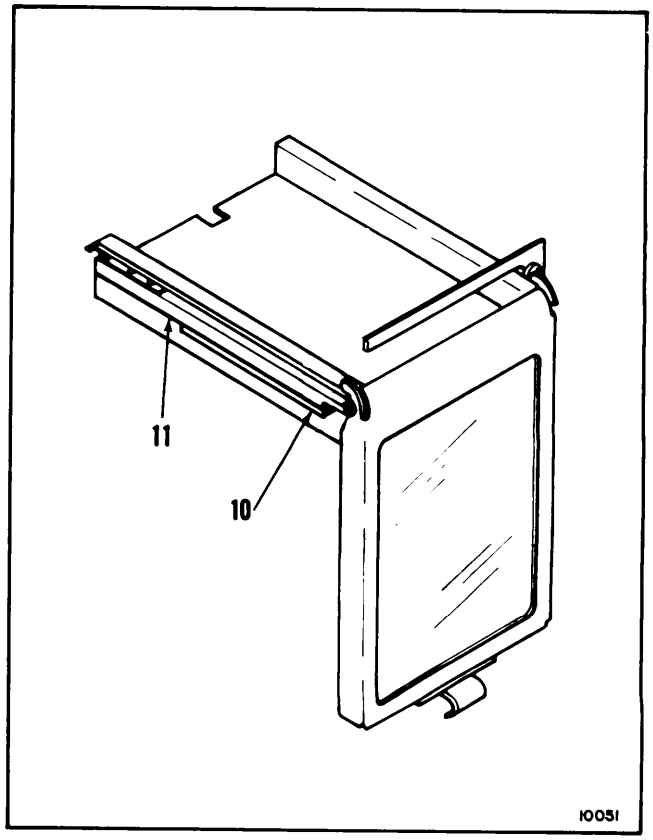


REPLACE CUSHION

NOTE

Procedure is same to replace either cushion,

11. Remove cushion (10) from track (11), Use a utility knife.
12. Remove old sealant. Use acetone (E20). Wear gloves (E186).



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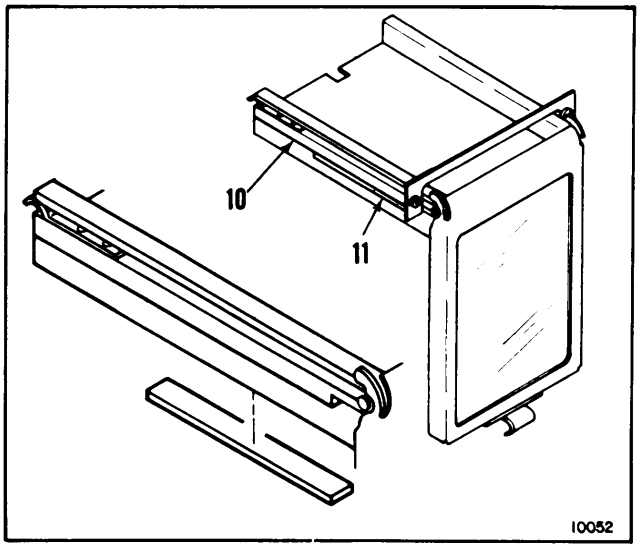
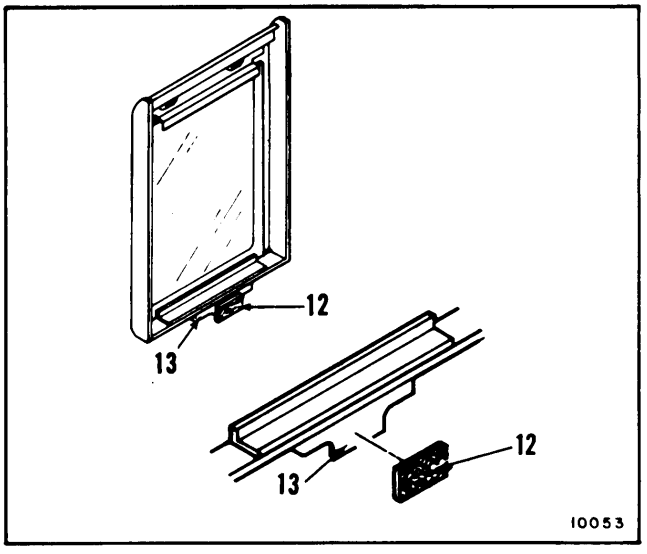
13. Coat replacement cushion (10) and faying area of track (11) with sealant (E336). Wear gloves (E186).
14. Press replacement cushion (10) on track (11). Cure for 6 hours.

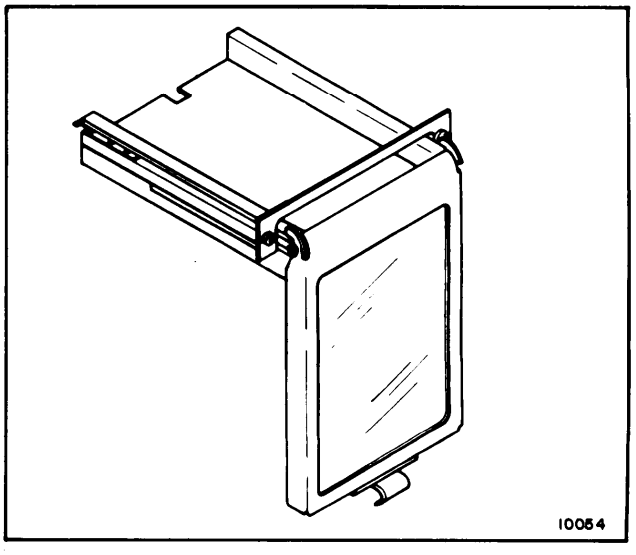


REPLACE LOCK

15. Remove lock (12) from grip (13). Use a utility knife.
16. Clean adhesive from grip. Use acetone (E20) wear gloves (E186).
17. Peel protective backing from lock (12). Position lock on grip (13) and press firmly. Allow to cure for 2 hours.



FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-125.3 INSTALL CAUTION PANEL NVG FILTER 9-125.3

INITIAL SETUP

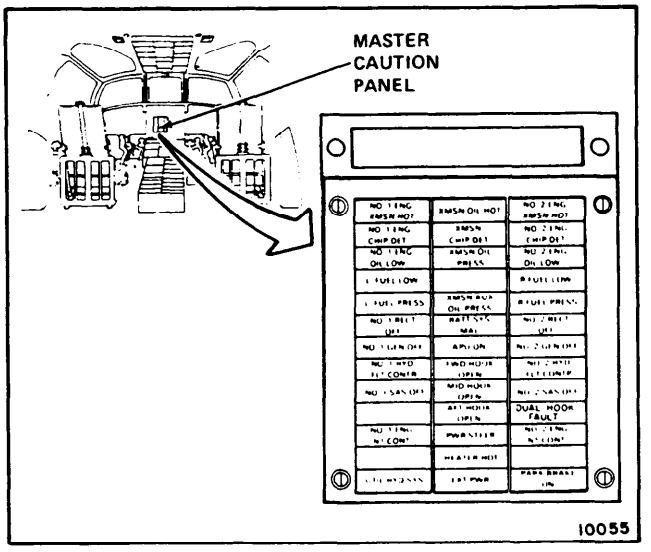
Applicable Configurations:
With 17 and Without 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

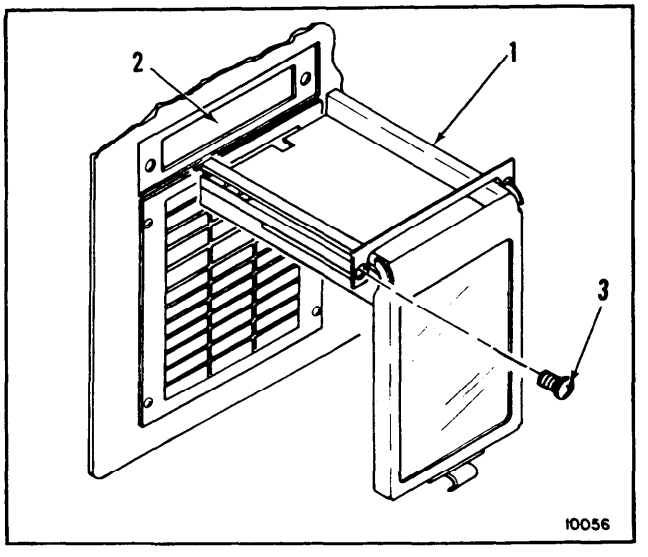
Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23 P

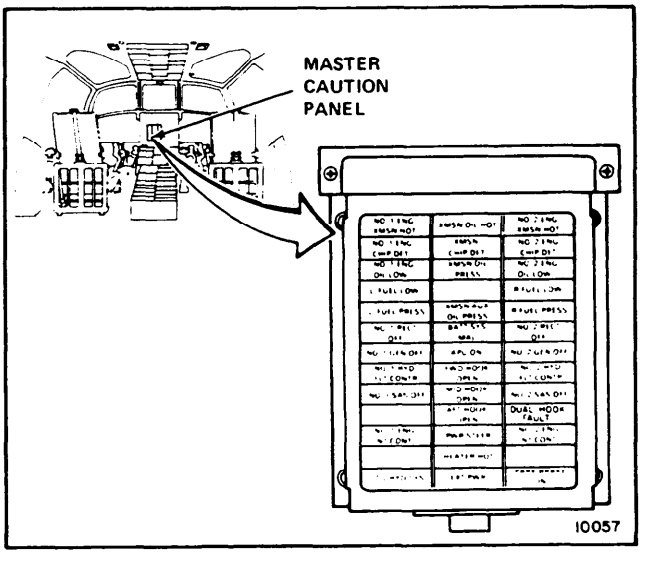


1. Slide tracks (1) into opening (2).
2. Align mounting holes and install screws (3).

INSPECT



FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-126 REMOVE MASTER CAUTION PANEL LAMP

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer Tool Kit,
NSN 5180-00-323-4915

Materials:

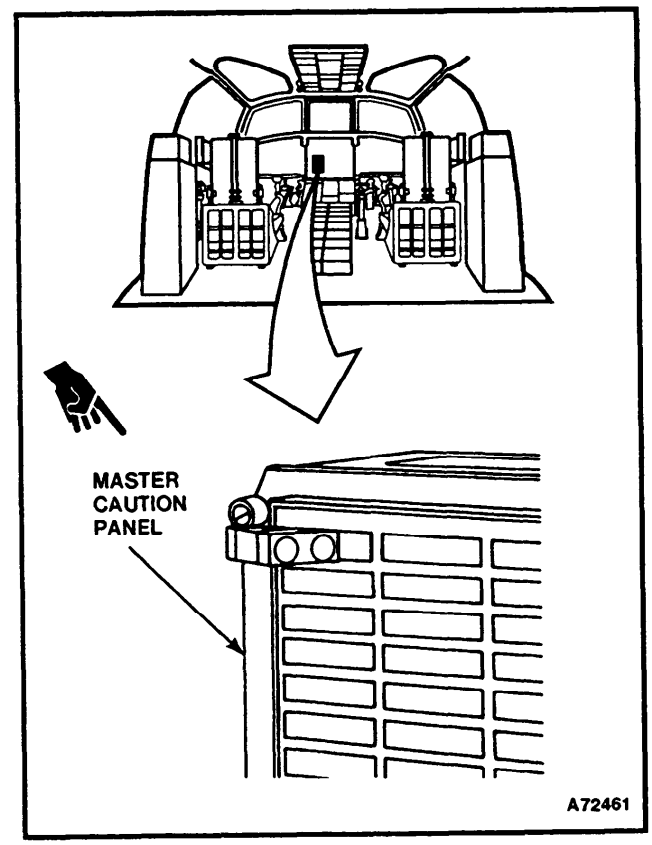
None

Personnel Required:

Aircraft Electrician

Equipment Condition:

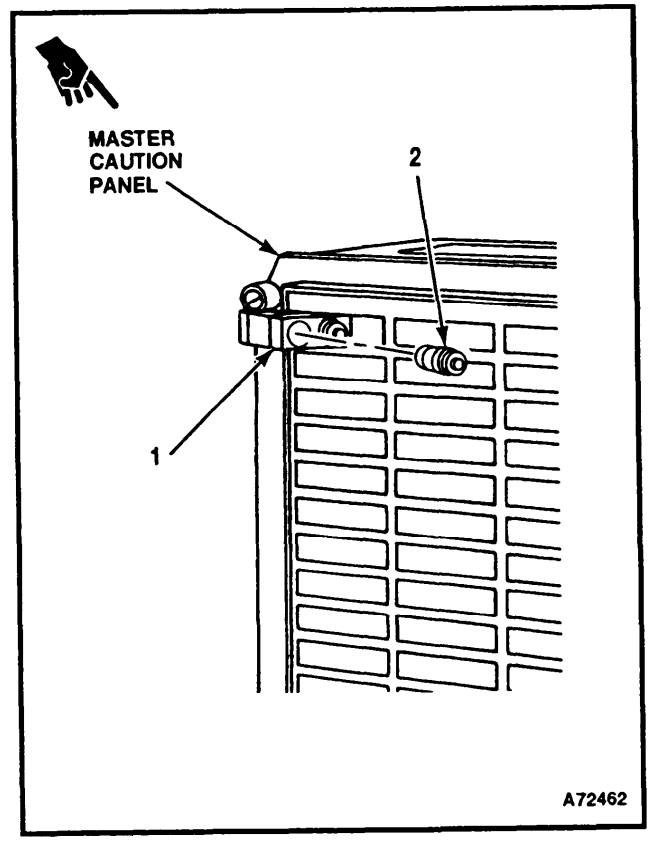
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
NVG Filter Stowed (With 17) (Task 9-125.1)



1. Press left side of capsule (1).
2. **Remove lamp (2)** from capsule (1).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-126.1 REMOVE MASTER CAUTION PANEL LAMP 9-126.1

INITIAL SETUP

Applicable Configurations:

With 74

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:

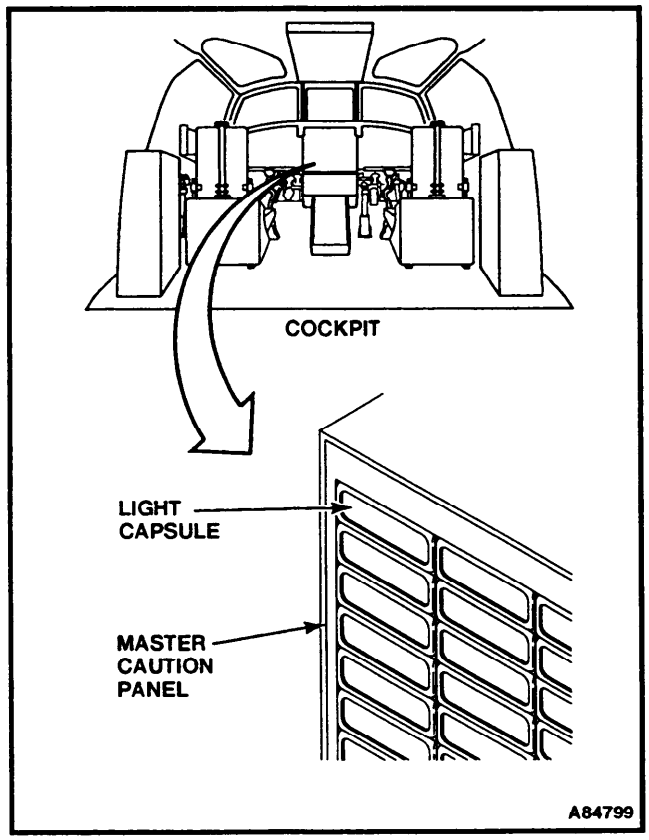
None

Personnel Required:

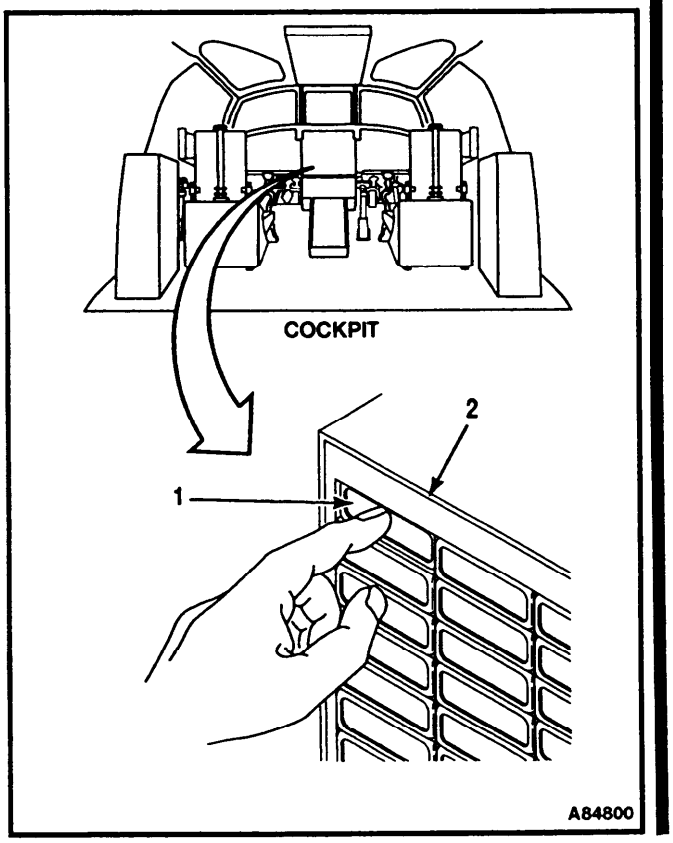
Aircraft Electrician

Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. **Depress capsule (1) to release it from the master caution panel (2).**



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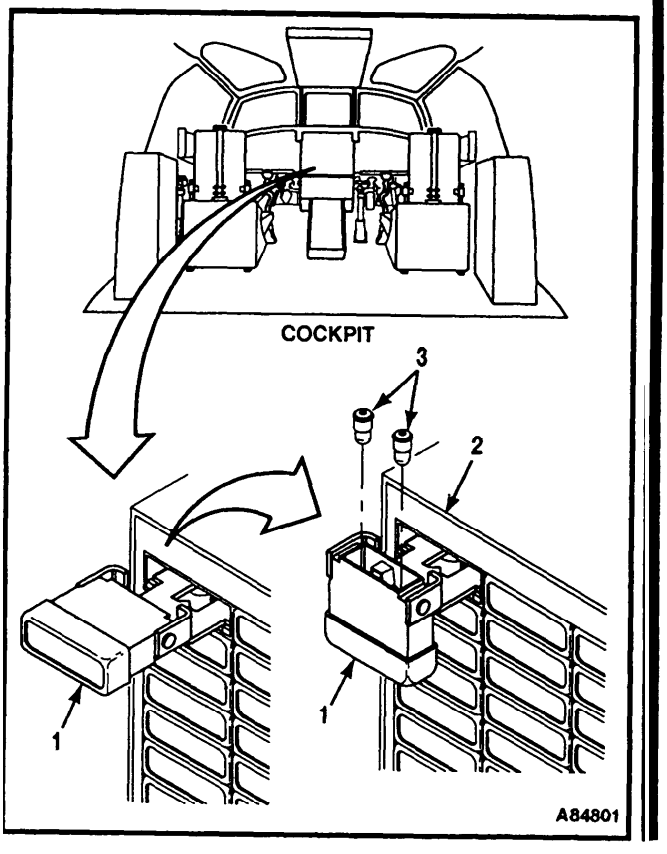
2. **Slide capsule (1) out and rotate the lamp housing** downward.
3. **Remove lamp(s) (3).**

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-127 INSTALL MASTER CAUTION PANEL LAMP

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:

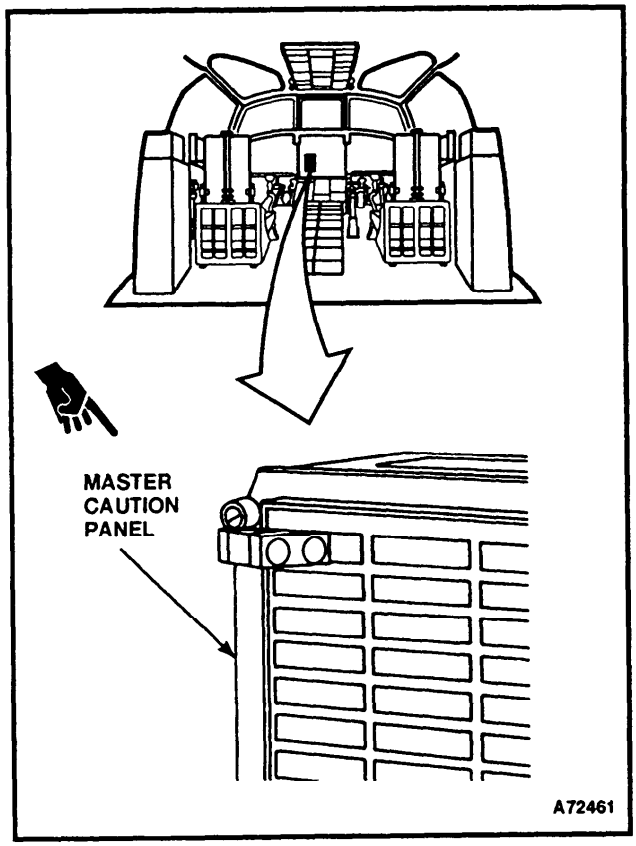
None

Personnel Required:

Aircraft Electrician
Inspector

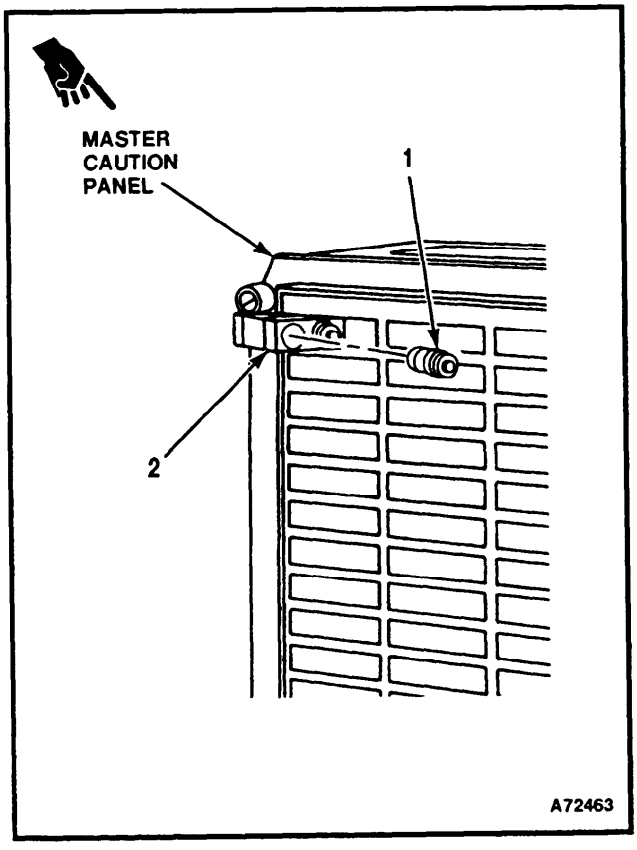
References:

TM 55-1520-240-23P



1. **Install lamp (1)** in capsule (2).
2. Press right side of capsule (2).

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

INITIAL SETUP

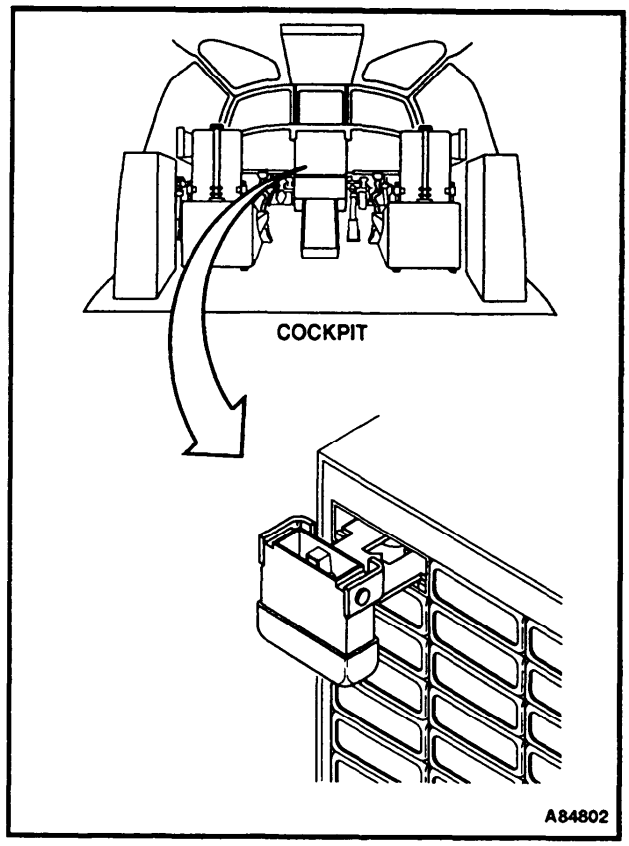
Applicable Configurations:
With 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

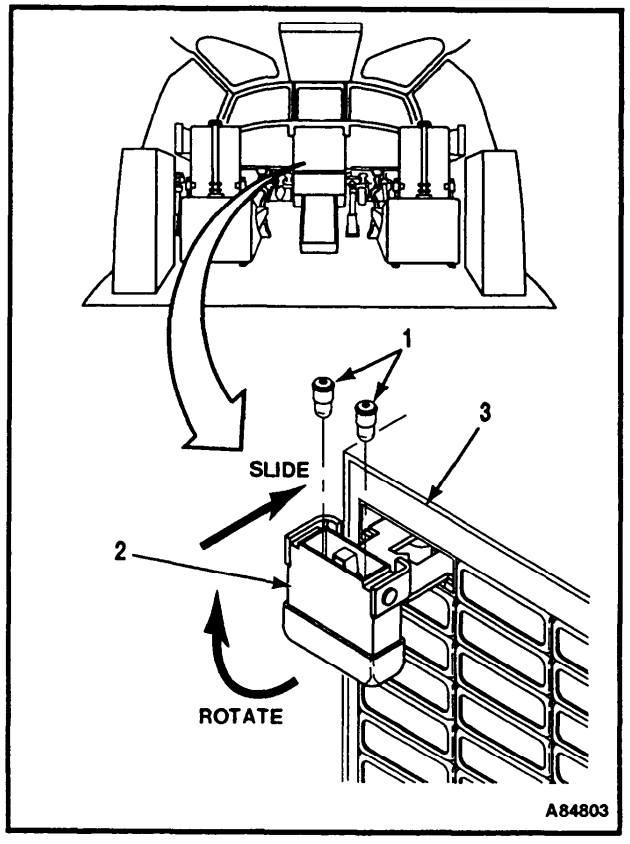
Personnel Required:
Aircraft Electrician
Inspector

References;
TM 55-1520-240-23P



1. **Install lamps (1)** in capsule (2). Ensure that the lamps are properly seated in capsule.
2. **Rotate capsule (2) upward and gently push it into master caution panel (3).**

INSPECT



FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T).

END OF TASK

9-128 REMOVE MASTER CAUTION PANEL 9-128

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer Tool Kit,
NSN 5180-00-323-4915

Materials:

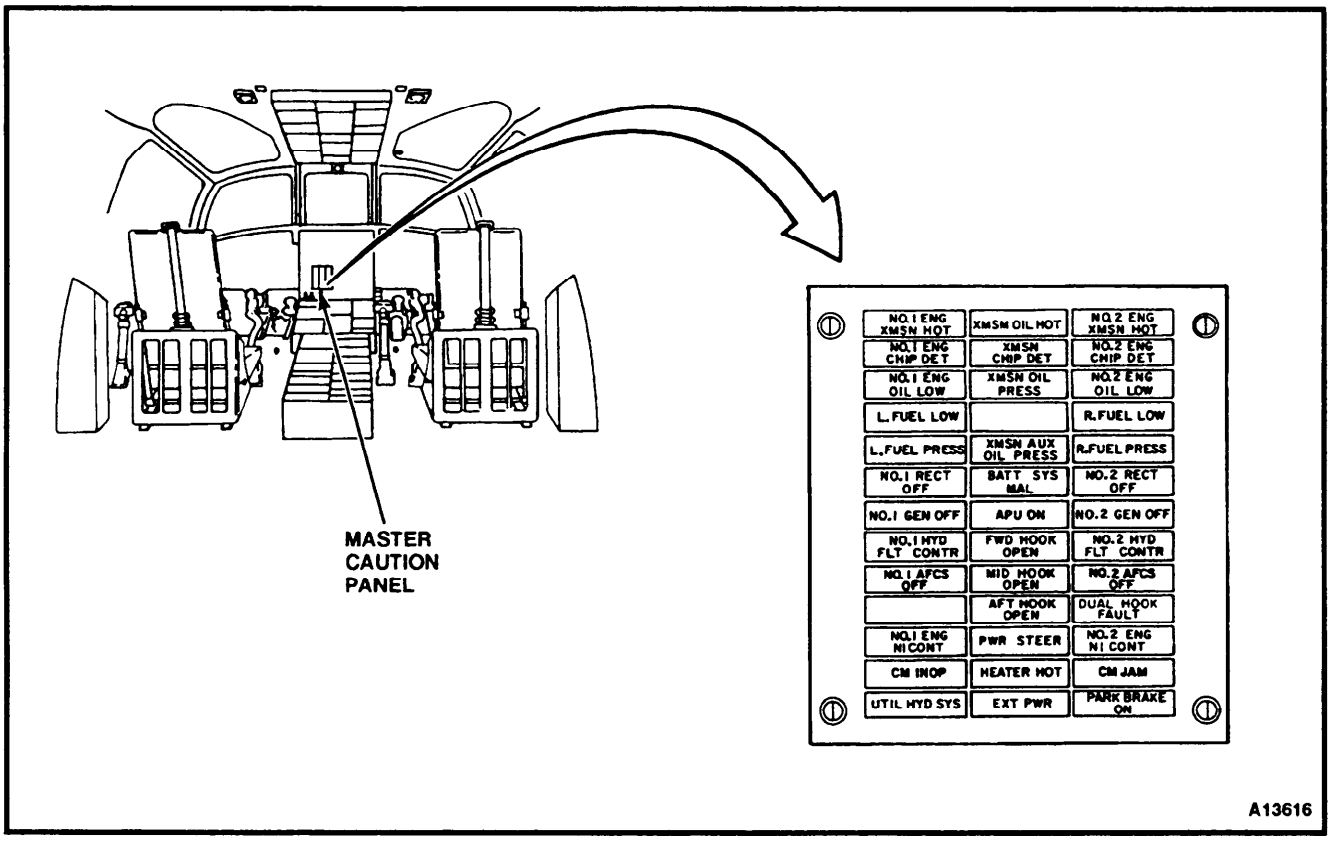
None

Personnel Required:

Aircraft Electrician

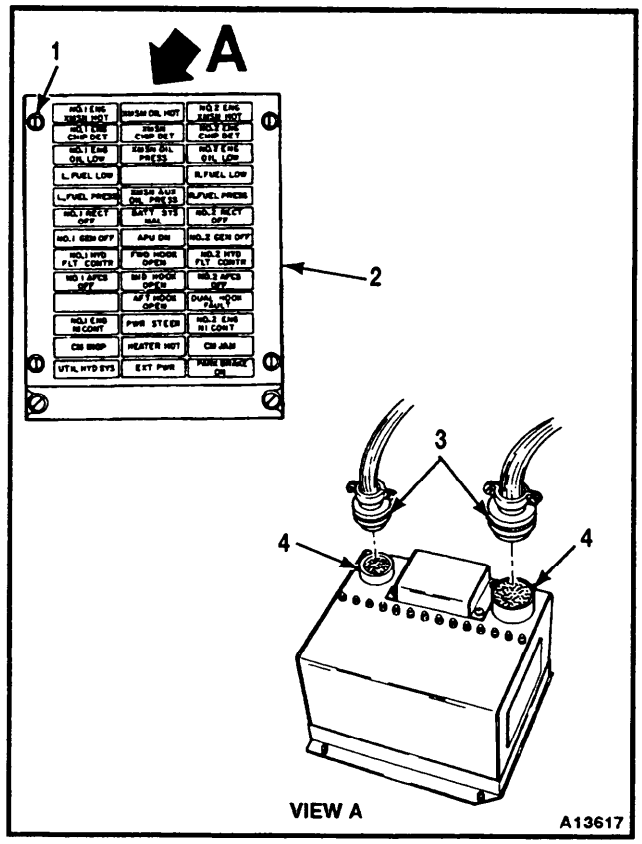
Equipment Condition:

Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

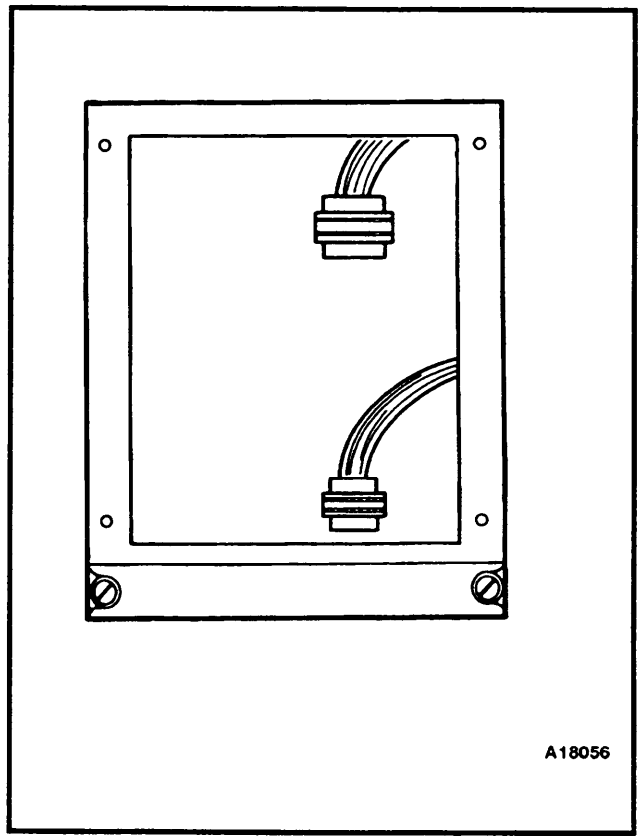


GO TO NEXT PAGE

1. Loosen four fasteners (1). Lift panel (2) out of center instrument panel.
2. **Disconnect two connectors (3)** from receptacles (4).
3. **Remove panel (2).**



FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-128.1 REMOVE MASTER CAUTION PANEL

INITIAL SETUP

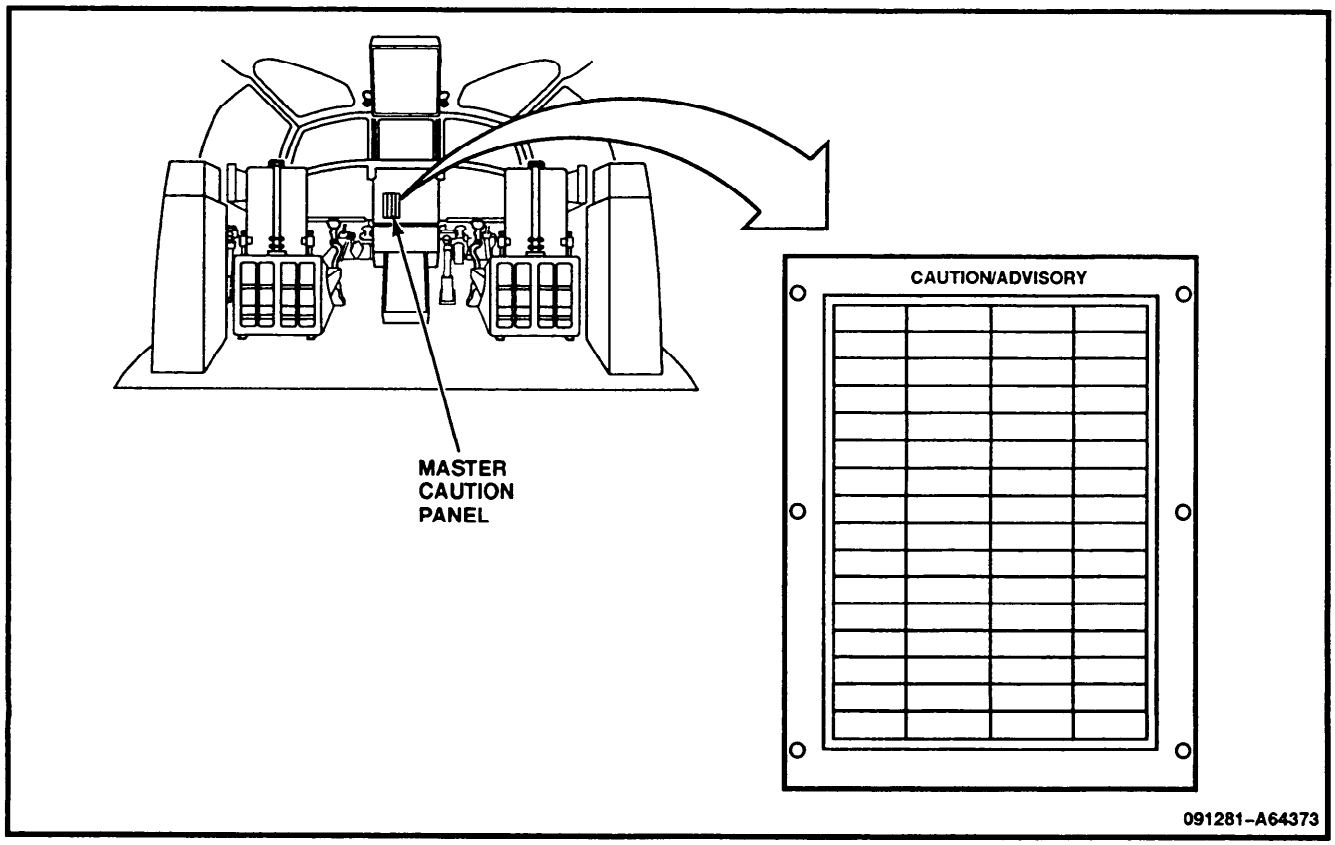
Applicable Configurations:
With 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)

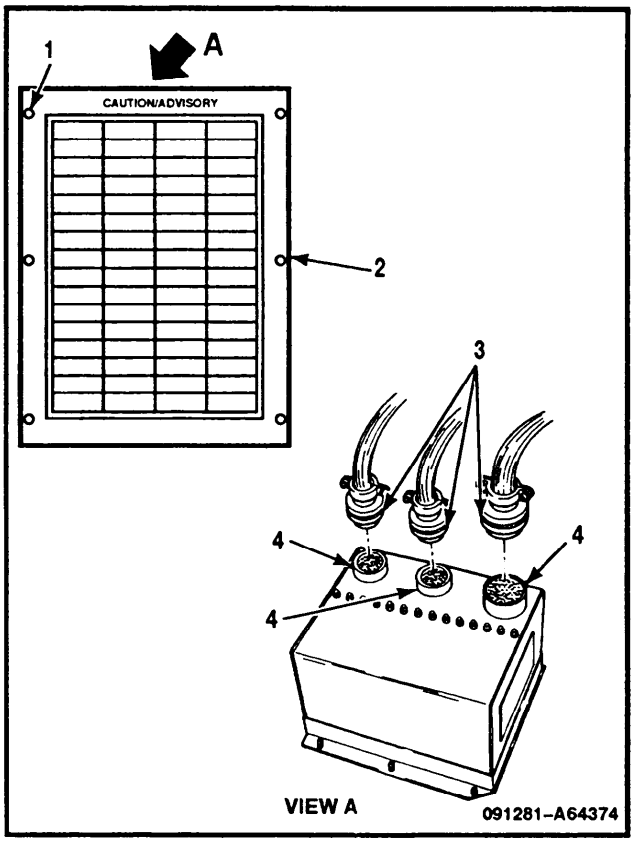
Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off

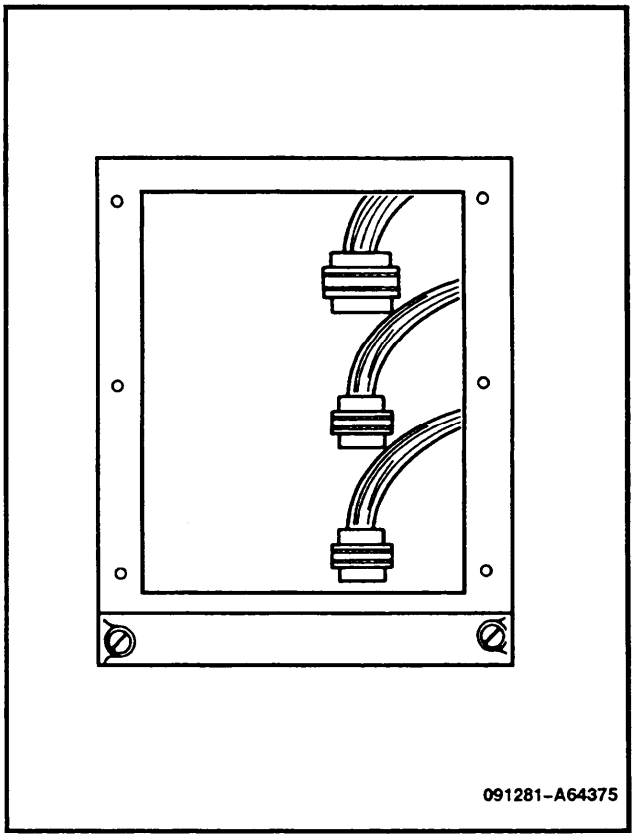


GO TO NEXT PAGE

1. **Loosen six fasteners (1).** Lift panel (2) out of center instrument panel.
2. **Tag and disconnect three connectors (3)** from receptacles (4).
3. **Remove master caution panel.**



FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-129 DISASSEMBLE MASTER CAUTION PANEL (AVIM) 9-129

INITIAL SETUP

Applicable Configurations:

Without 74

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:

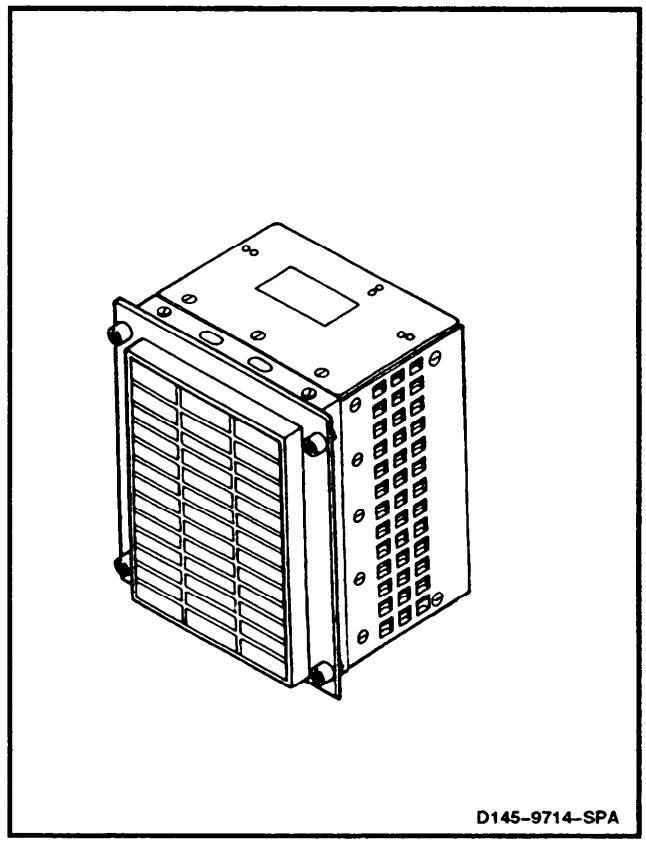
Paper Tags (E264)
Tape (E385)

Personnel Required:

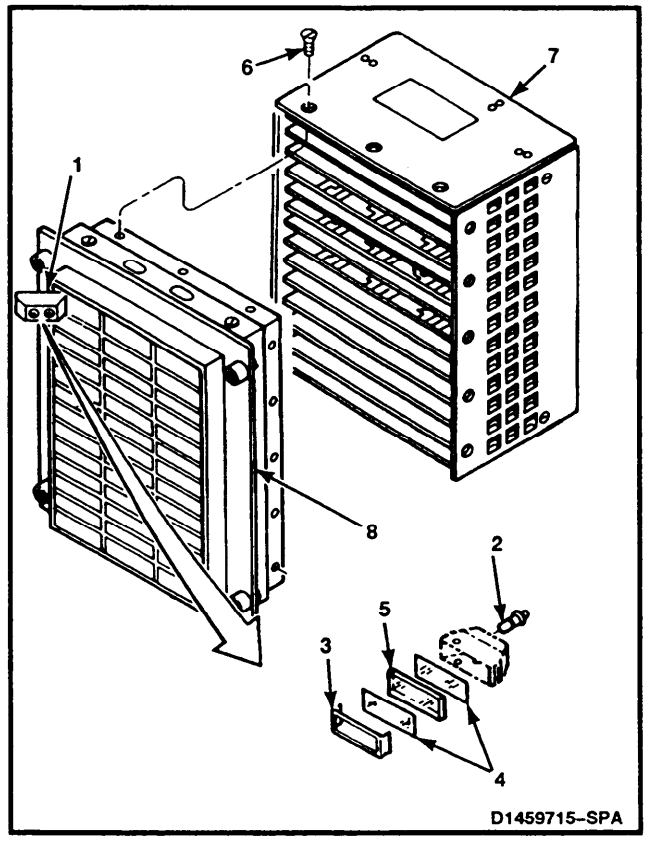
Aircraft Electrician

Equipment Condition:

Off Helicopter Task



1. Press left corner of 39 lenses (1). **Open lenses.**
2. **Remove 78 lamps** (2).
3. **Remove 39 retainers** (3).
4. **Remove 39 filters** (4).
5. Tag and **remove 39 lenses** (5).
6. **Remove 39 filters (4).**
7. **Remove 16 screws (6)** from housing (7).
8. Separate housing (7) from housing (8).



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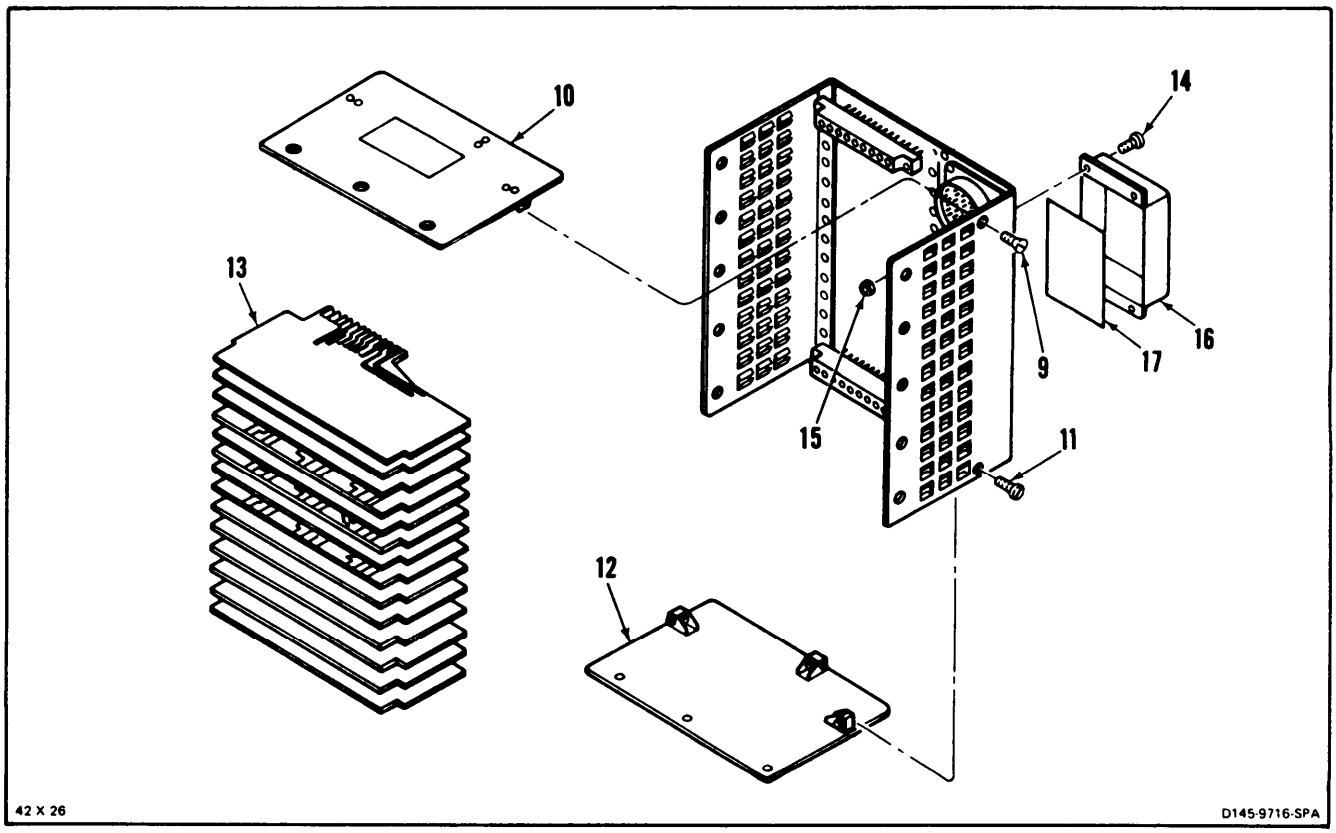
9-129 DISASSEMBLE MASTER CAUTION PANEL (AVIM) (Continued)

9. **Remove three screws (9)** from plate (10). Remove plate.
10. **Remove three screws (11)** from cover (12). Remove cover.
11. Tag and **remove 14 boards (13).**
12. **Remove four screws (14)** and nuts (15) from cover (16).
13. **Remove cover (16)** and insulator (17).



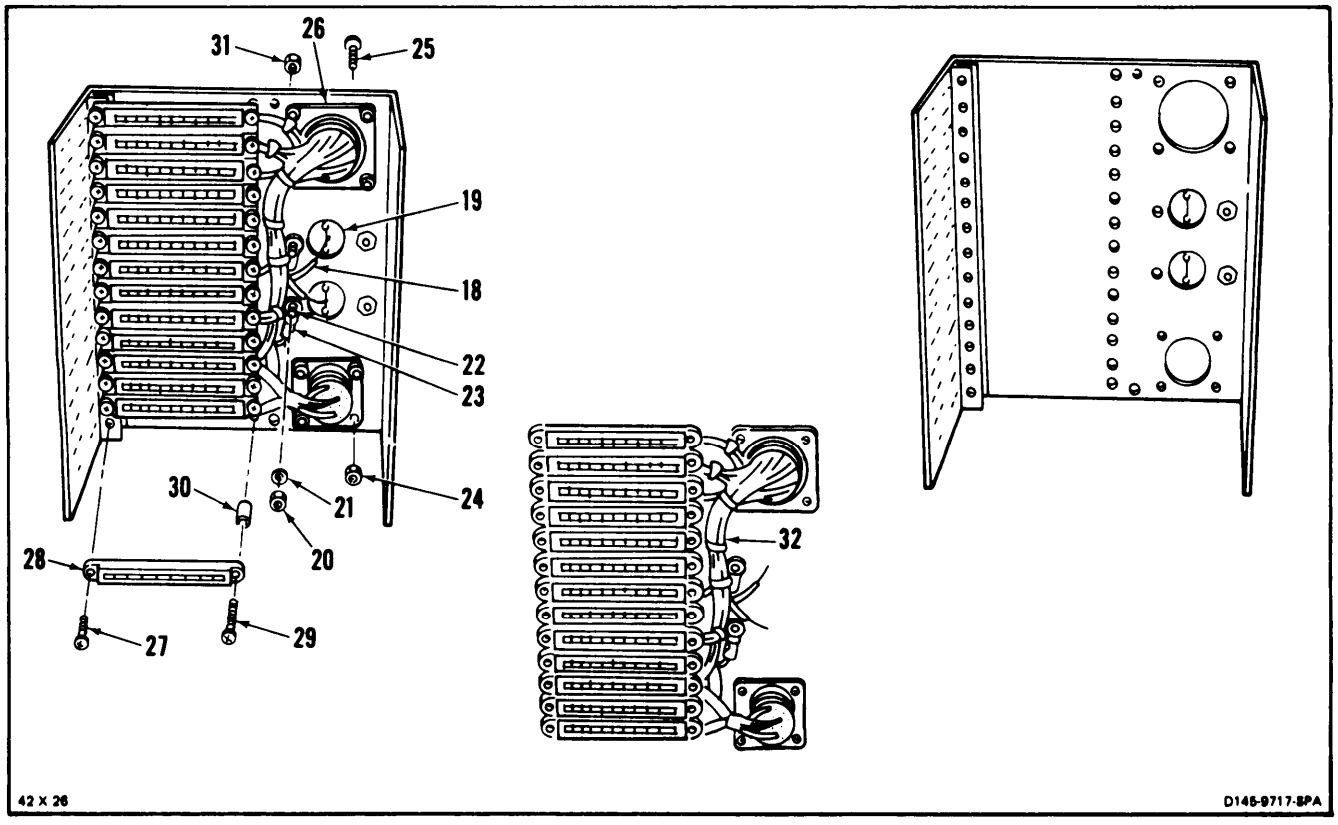
GO TO NEXT PAGE

9-129 DISASSEMBLE MASTER CAUTION PANEL (AVIM) (Continued) 9-129

14. Tag and **unsolder two wires (18)** from two semiconductors (1 9). Tape wire ends.
15. **Remove two nuts (20)** and washers (21) from two studs (22) Remove two wires (23).
16. **Remove eight nuts (24)** and screws (25) from two receptacles (26).
17. **Remove 14 screws (27)** from receptacles (28).
18. **Remove 14 screws (29),** spacers (30), and nuts (31) from receptacles (28).
19. **Remove harness (32).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

INITIAL SETUP

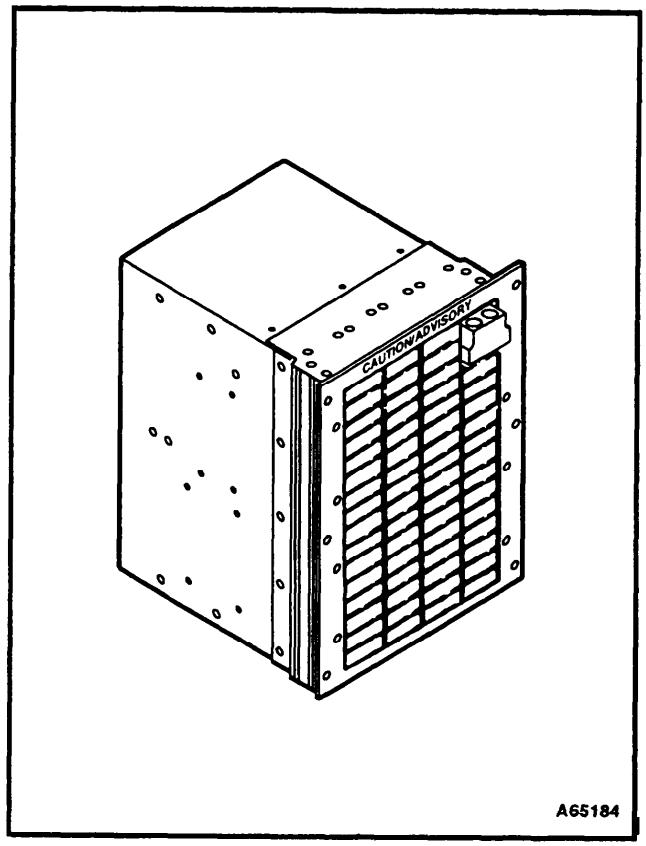
Applicable Configurations:
With 74

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915

Materials:
Paper Tags (E264)
Static Free Bags (E468)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Off Helicopter Task

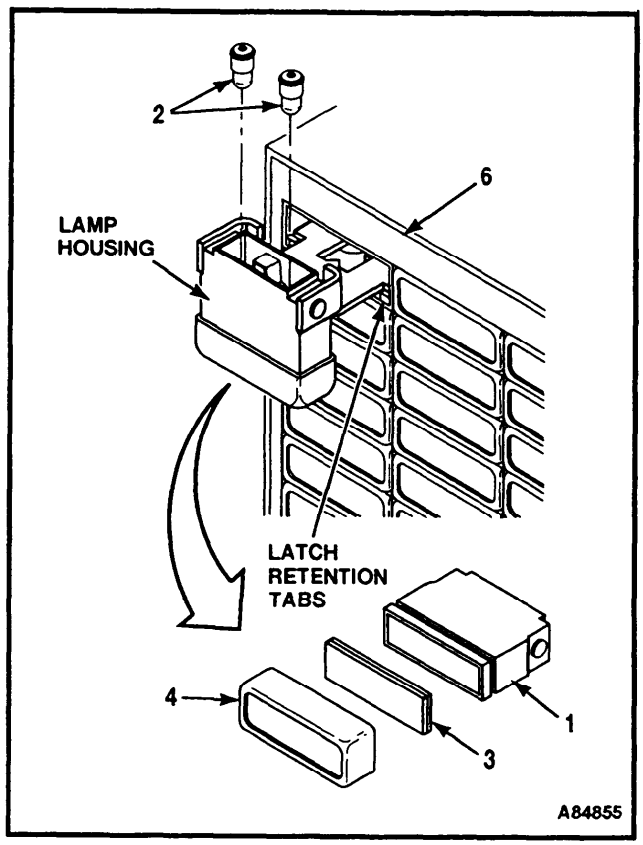


1. **Depress 64 capsules (1)** to release them from the master caution panel.
2. **Slide capsules (1) out and rotate the lamp housings** downward. **Remove 128 lamps (2).**

CAUTION

Use care when depressing the latch retention tabs. They are fragile and easily broken.

3. **Carefully depress the two latch retention tabs.** Use a small flat blade screwdriver. **Remove 64 capsules (1)** from light housing (6).
4. **Remove 64 legend caps (4) from the lamp housings. Remove 64 legend assemblies (3)** from legend caps (4).



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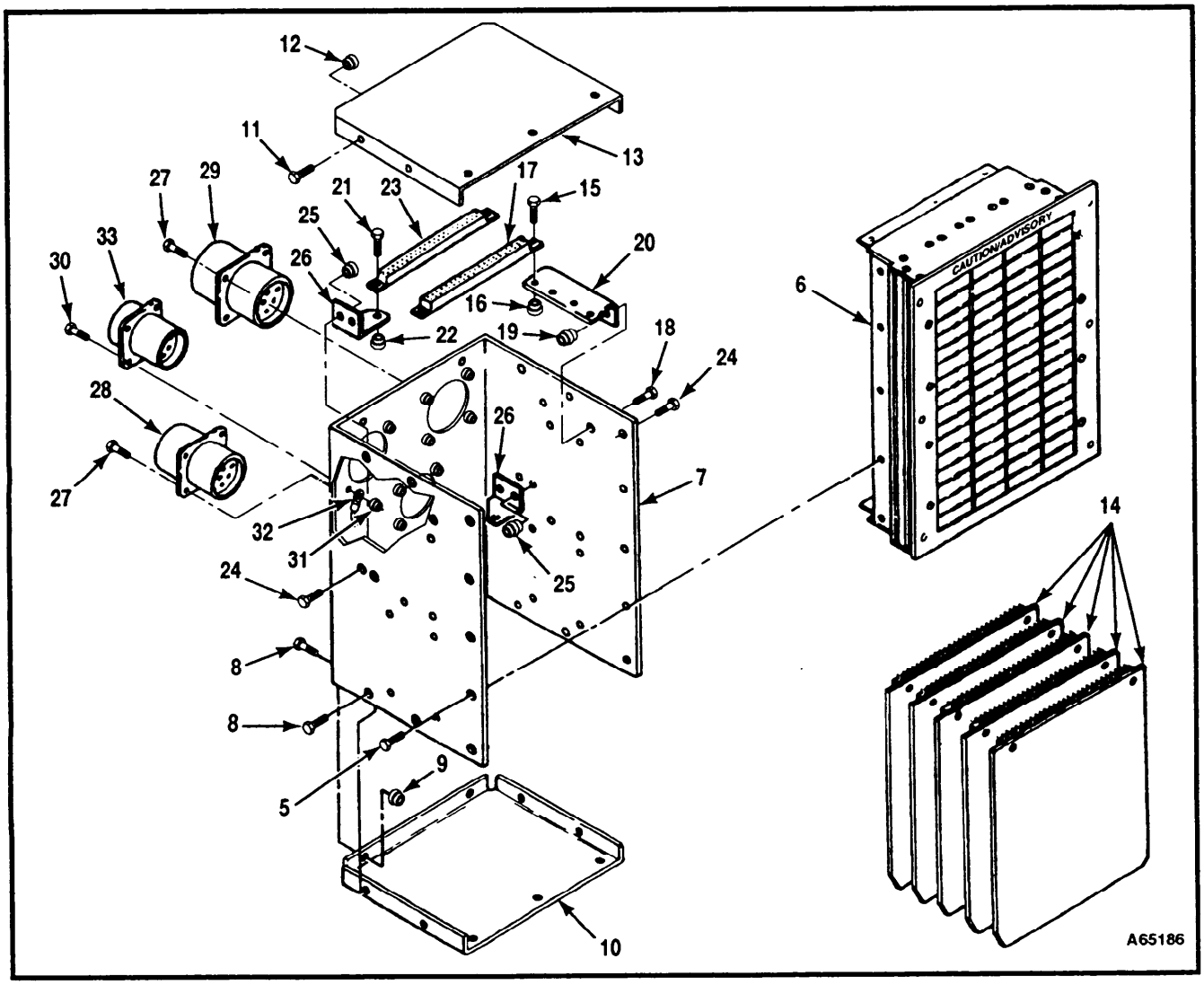
9-129.1 DISASSEMBLE MASTER CAUTION PANEL (AVIM) (Continued) 9-129.1

5. **Remove 16 screws (5)** from light housing (6).
6. **Separate light housing (6)** from housing (7).
7. **Remove six screws (8)** and six nuts (9) from bottom cover (10). Remove bottom cover (10) from housing (7).
8. **Remove six screws (11)** and nuts (12) from top cover (13). Remove top cover (13) from housing (7).
9. **Tag and remove five circuit card boards (14)** from housing (7). Use tag (E264).
10. **Place each circuit card board (14) in a static free bag.** Use bags (E468).
11. **Remove eight screws (15)** and nuts (16) from four pin connectors (17). Remove pin connectors.
12. **Remove four screws (18)** and nuts (19) from brackets (20). Remove brackets.
13. **Remove two screws (21)** and nuts (22) from pin connector (23). Remove pin connector.
14. **Remove four screws (24)** and nuts (25) from brackets (26). Remove brackets.
15. **Remove eight screws (27)** from connectors (28 and 29). Remove connectors from housing (7).
16. **Remove four screws (30)** and nuts (31) from terminal (32) and connector (33). Remove terminal and connector from housing (7).

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-129.2 ASSEMBLE MASTER CAUTION PANEL (AVIM) 9-129.2

INITIAL SETUP

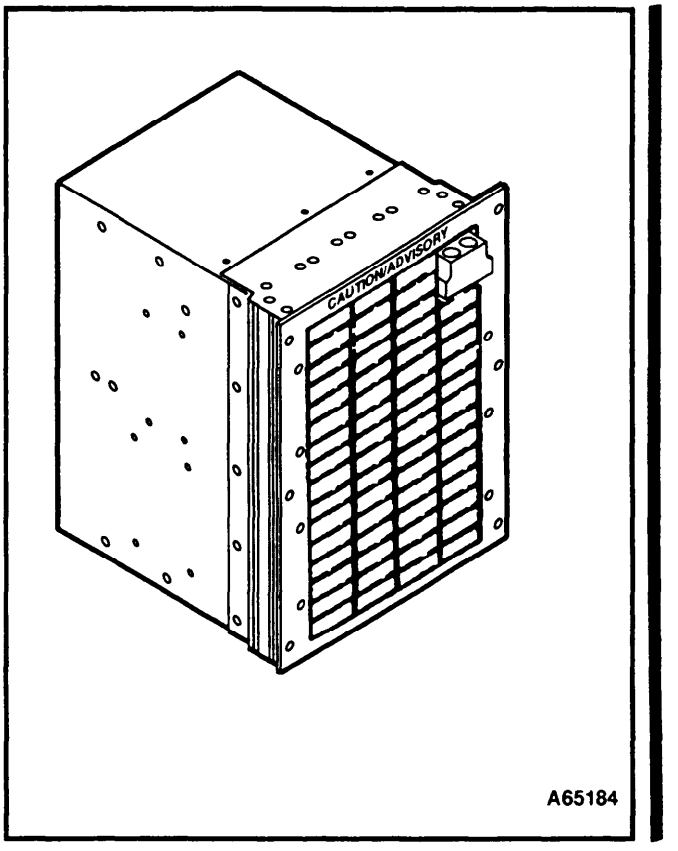
Applicable Configurations:
With 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



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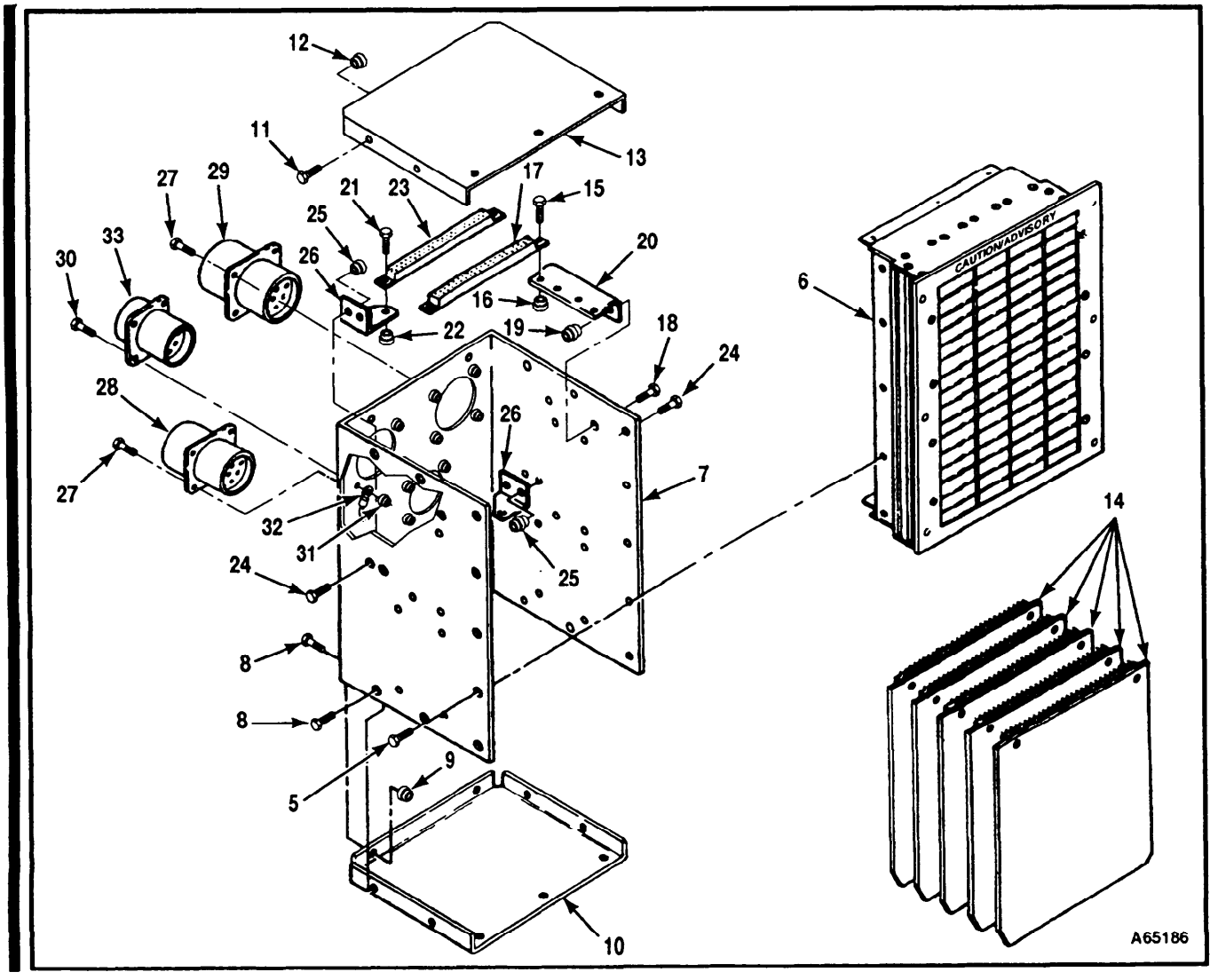
1. **Position terminal (32)** and connector (33) on housing (7). **Install four screws (30)** and nuts (31) in terminal (32) and connector (33).
2. **Position connectors (28 and 29)** on housing (7). **Install eight screws (27)** in two connectors (28 and 29).
3. **Position brackets (26)** on housing (7). **Install four screws (24)** and nuts (25) in brackets.
4. **Position pin connector (23)** on bracket (26). **Install two screws (21)** and nuts (22) in pin connector.
5. **Position brackets (20)** on housing (7). **Install four screws (18)** and nuts (19) in brackets.
6. **Position pin connectors (17)** on brackets (20). **Install eight screws (15)** and nuts (16) in pin connectors.
7. **Remove each circuit card board (14)** from static free bag.
8. **Remove tag and install circuit card boards (14)** into housing (7).
9. **Position top cover (13)** on housing (7). **Install six screws (11)** and nuts (12) in cover.
10. **Position bottom cover (10)** on housing (7). **Install six screws (8)** and nuts (9) in cover.
11. **Position light housing (6)** in housing (7).
12. **Install 16 screws (5)** in light housing.



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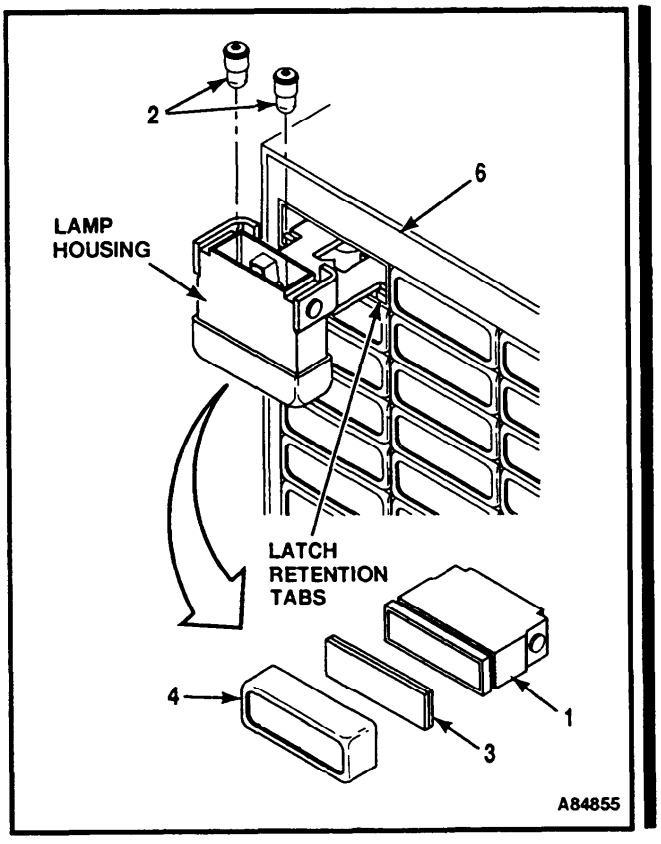
13. **Install 64 legend assemblies (3)** in legend caps (4). **Install 64 legend caps (4) in the lamp housings.**

CAUTION

Use care when depressing the latch retention tabs. They are fragile and easily broken.

14. **Carefully depress the two latch retention tabs.** Use a small flat blade screwdriver. **Install 64 capsules (1)** in light housing (6).
15. **Install 128 lamps (2)** in lamp housings.
16. **Rotate lamp housing upward and push into light housing (6).** Lamp housing should seat in capsule (1).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

INITIAL SETUP

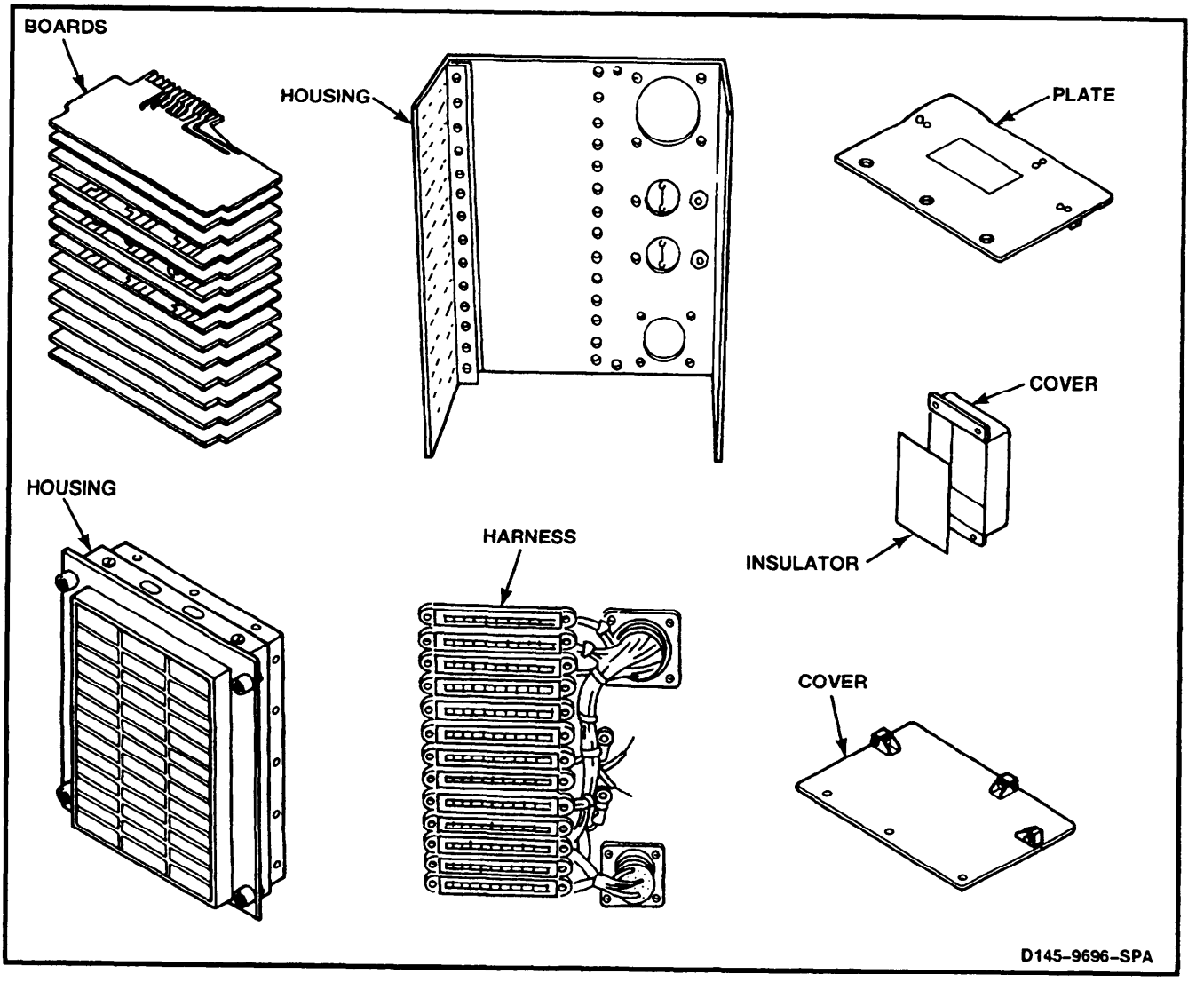
Applicable Configurations:
Without 74

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun

Materials:
Solder (E360)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



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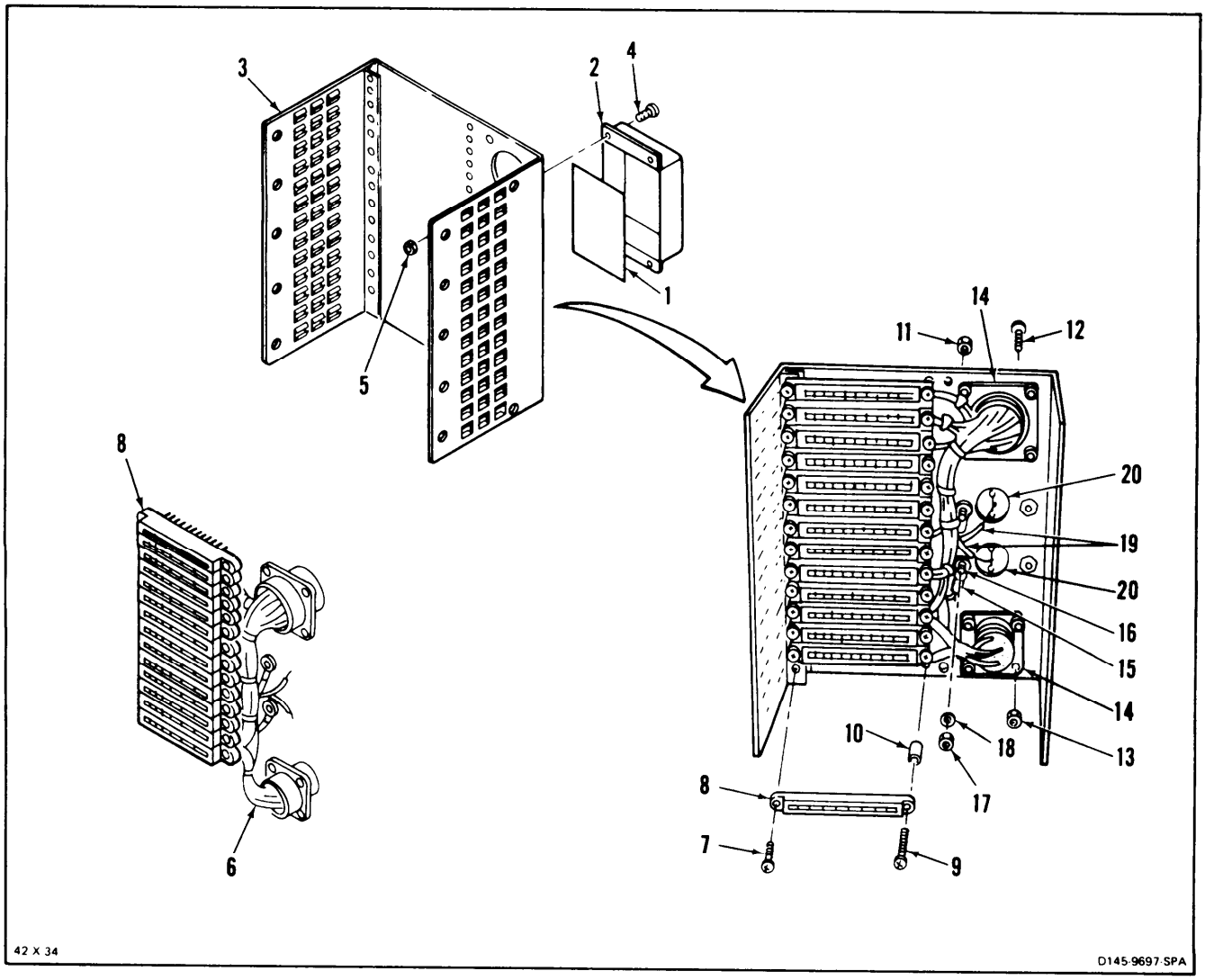
9-130 ASSEMBLE MASTER CAUTION PANEL (AVIM) (Continued) 9-130

1. Position insulator (1) and cover (2) on housing (3). **Install four screws (4) and nuts (5).**
2. Position harness (6) in housing (3). **Install 14 screws (7) in receptacles (8).**
3. **Install 14 screws (7),** spacers (10), and nut (11) in receptacles (8).
4. **Install eight screws (12)** and nuts (13) in two connectors (14).
5. Remove tape and **position** two wires (15) on studs (16). **Install two nuts (17) and washers (18).** Remove tags.
6. **Solder two wires (19)** to semiconductors (20). Remove tags.

INSPECT



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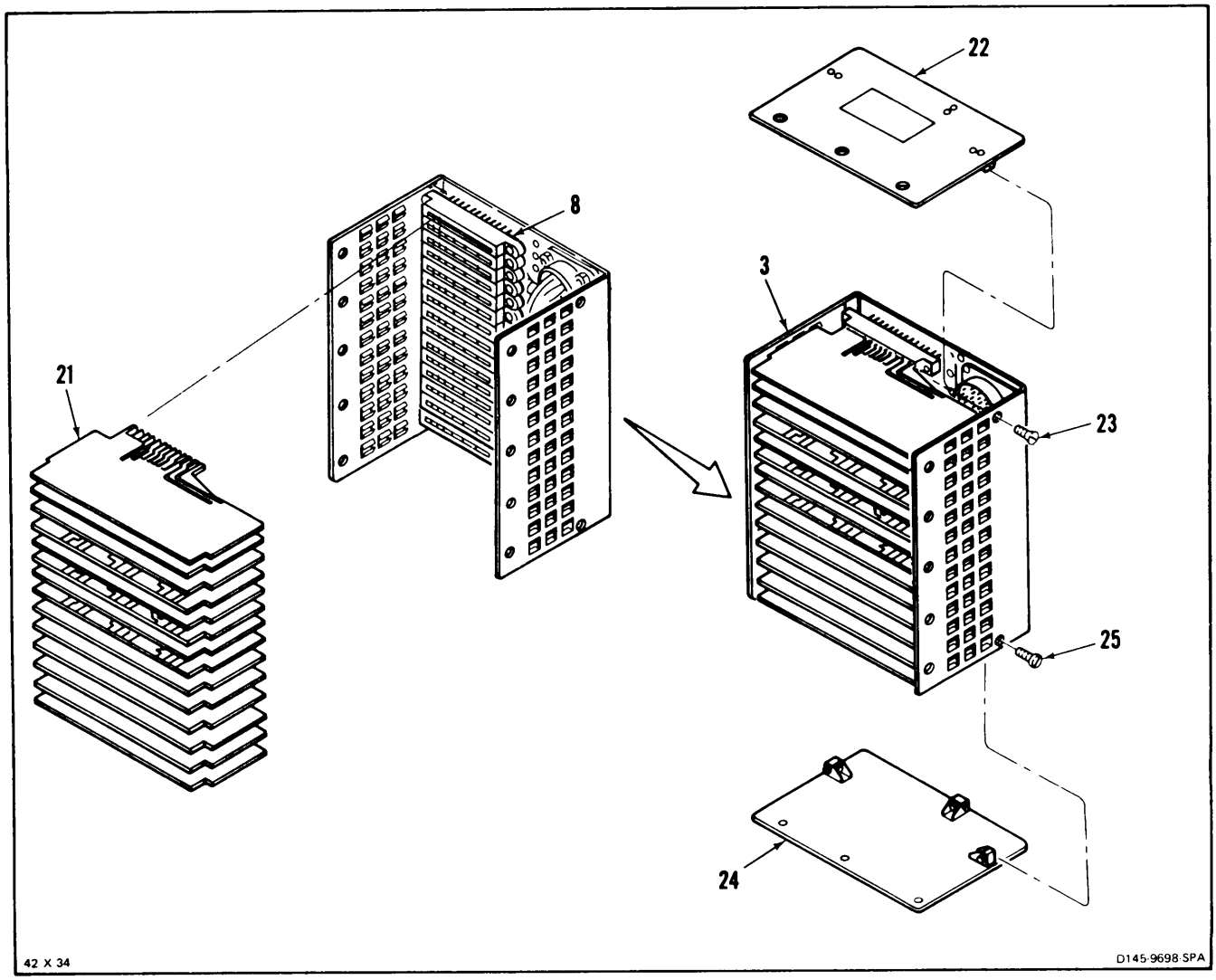
9-130 ASSEMBLE MASTER CAUTION PANEL (AVIM) (Continued)

7. **Install 14 boards (21)** in receptacles (8). Remove tags.
8. **Position** plate (22) on housing (3). **Install three screws (23)** in plate (22).
9. **Position** cover (24) on housing (3). **Install three screws (25)** in cover (24).



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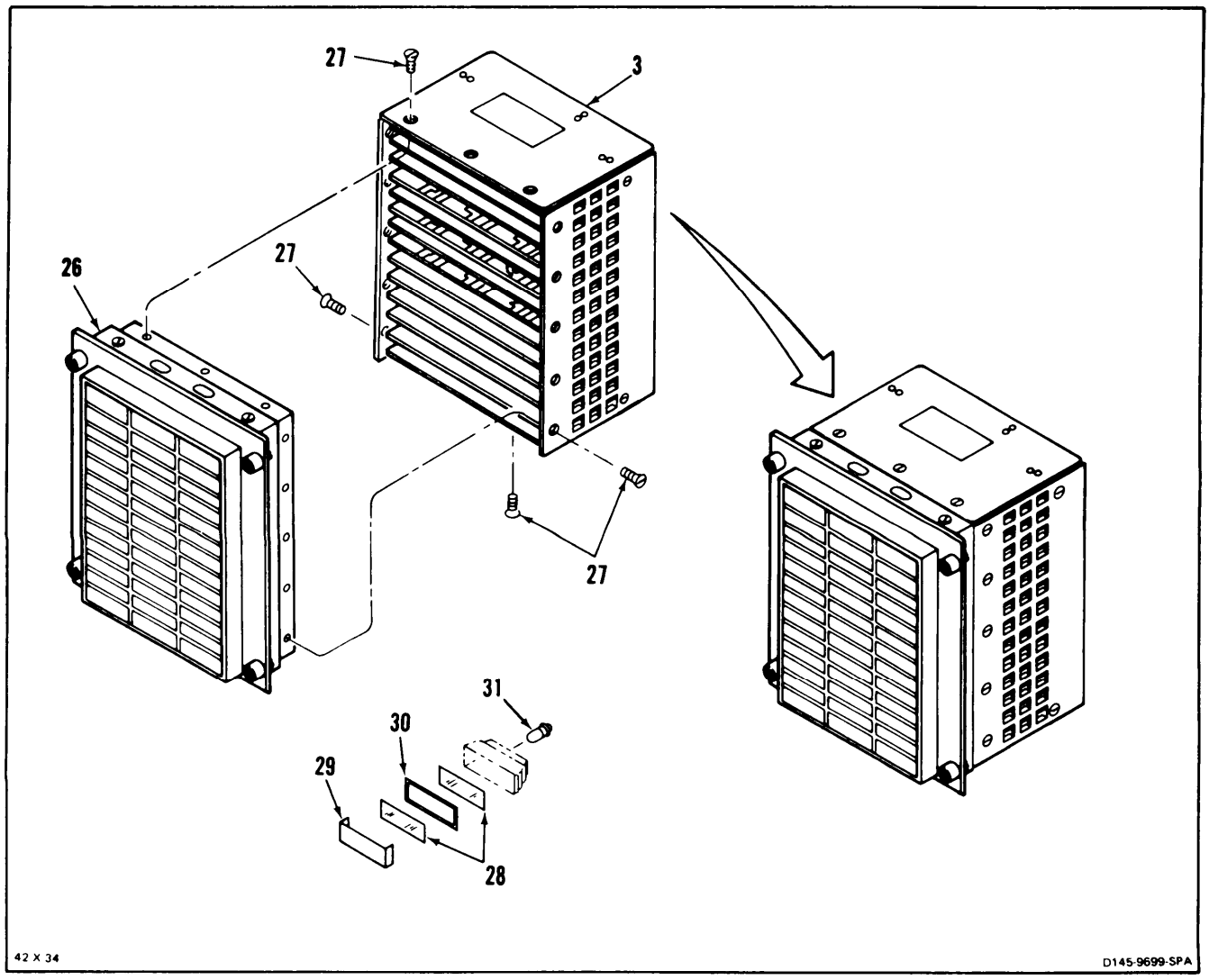
9-130 ASSEMBLE MASTER CAUTION PANEL (AVIM) (Continued)

10. **Position** housing (26) in housing (3). **Install 16 screws (27).**
11. **Install 39 filters (28)** in retainer (29).
12. **Install 39 lenses (30)** in retainers (29).
13. **Install 39 filters (28)** in retainer (29).
14. **Install 39 retainers (29).**
15. **Install 78 lamps (31).**

INSPECT

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-130.1 TEST MASTER CAUTION PANEL (AVIM) 9-130.1

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Dc Power Supply, 0 to 3) Vdc
Multi meter
Soldering Gun
Alligator Clip
Light Assembly, 28 Vdc 3)
Diode, 1N645
Fuse, 5 Amp
Switch, Single Pole, Single Throw (39 ea)
Switch, Double Pole, Single Throw (3 ea)
Switch, Single Pole, Momentary On, Pushbutton
P1 Connector MS3476W20-41S
P2 Connector MS3476W16-26S

Materials:
Solder (E360)

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23

Equipment Condition:
Off Helicopter Task
Test Setup

1. **Set test switches (1 through 42) to off.**
2. **Set test switch (43) to BRT.**
3. Connect master caution panel (44) to test setup and attach alligator clip to caution panel case.
4. Connect power supply (45) to DC(+) and DC(–) on test setup.
5. **Turn power supply (45) on.**
6. **Set test switch (40) to on. POWER lamp (46)** and **BRT lamp (47)** shall come on.

TEST NO. 1 CAPSULE

7. **Set test switch (43) to DIM. BRT indica-for** lamp (47) **shall go out.**
8. **Set test switch (1)** to **on. Capsule (48) shall** come on **dim. Master caution lamp (MCL) (49)** shall also come on.
9. **Press reset test switch (43). MCL lamp (49)** shall go **out.**
10. **Set test switch (1)** to **off. Capsule (48)** shall go **out.**
11. **Set test switch (43)** to **BRT. BRT indicator lamp (47)** shall come **on.**
12. **Set test switch (1)** to **on. Capsule (48)** and **MCL lamp (47)** shall come on **bright.**
13. **Set test switch (1)** to **off. Capsule (48)** and **MCL lamp (47)** shall go **out.**
14. Repeat steps 7 through 13 for switches (2 through 39) and capsules (50 through 87), then go to step 15.
15. **Set test switch (43)** to **DIM. BRT indicator lamp** shall go **out.**
16. **Set test switch (41)** to **on. MCL lamp (49)** and **all capsules (4% 50 through 87)** shall come on **dim.**

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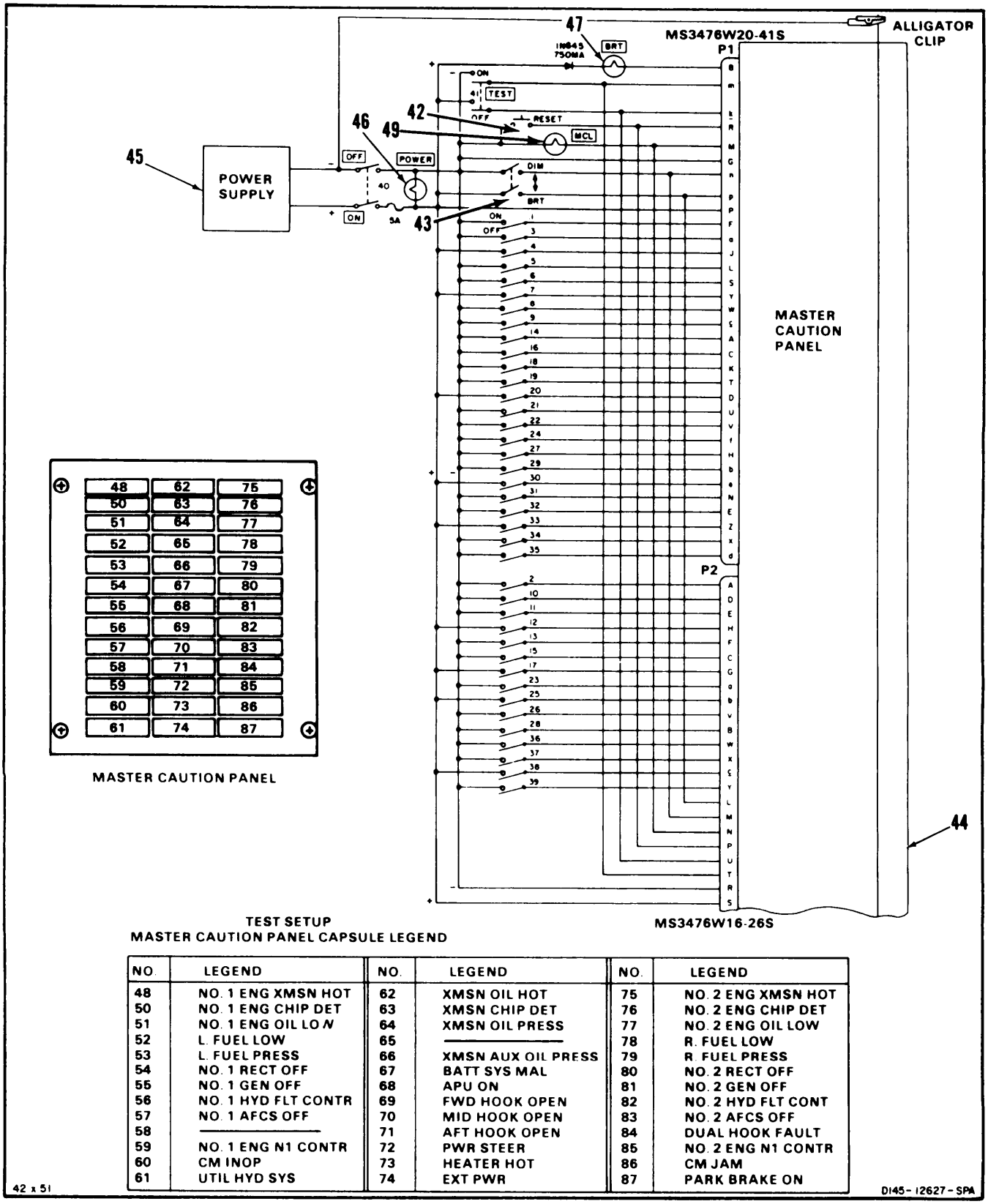
9-130.1 TEST MASTER CAUTION PANEL (AVM) (Continued) 9-130.1



MASTER CAUTION PANEL CAPSULE LEGEND

NO.	LEGEND	NO.	LEGEND	NO.	LEGEND
48	NO. 1 ENG XMSN HOT	62	XMSN OIL HOT	75	NO. 2 ENG XMSN HOT
50	NO. 1 ENG CHIP DET	63	XMSN CHIP DET	76	NO. 2 ENG CHIP DET
51	NO. 1 ENG OIL LOW	64	XMSN OIL PRESS	77	NO. 2 ENG OIL LOW
52	L. FUEL LOW	65	———	78	R. FUEL LOW
53	L. FUEL PRESS	66	XMSN AUX OIL PRESS	79	R. FUEL PRESS
54	NO. 1 RECT OFF	67	BATT SYS MAL	80	NO. 2 RECT OFF
55	NO. 1 GEN OFF	68	APU ON	81	NO. 2 GEN OFF
56	NO. 1 HYD FLT CONTR	69	FWD HOOK OPEN	82	NO. 2 HYD FLT CONT
57	NO. 1 AFCS OFF	70	MID HOOK OPEN	83	NO. 2 AFCS OFF
58	———	71	AFT HOOK OPEN	84	DUAL HOOK FAULT
59	NO. 1 ENG N1 CONTR	72	PWR STEER	85	NO. 2 ENG N1 CONTR
60	CM INOP	73	HEATER HOT	86	CM JAM
61	UTIL HYD SYS	74	EXT PWR	87	PARK BRAKE ON

42 x 51

D145-12627-SPA

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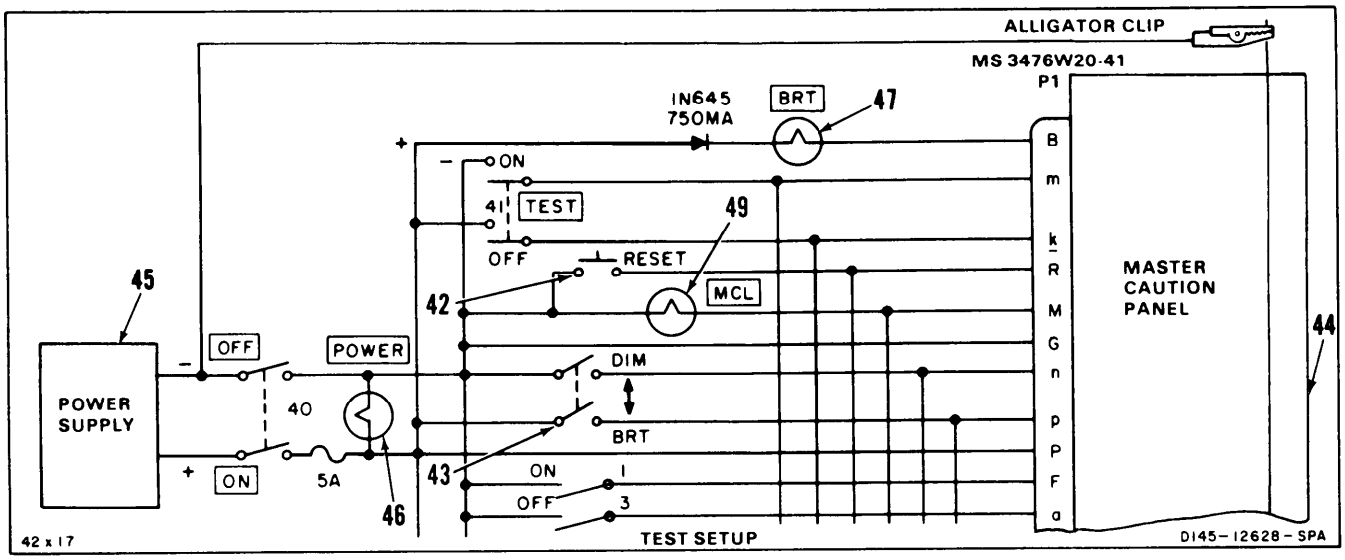
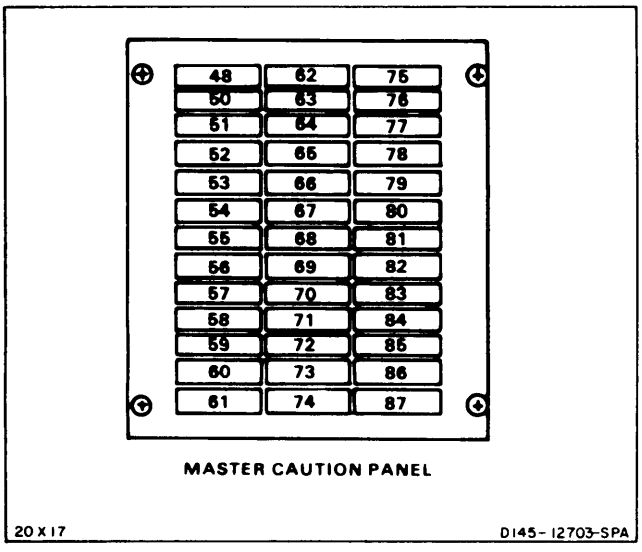
9-130.1 TEST MASTER CAUTION PANEL (AVIM) (Continued) 9-130.1

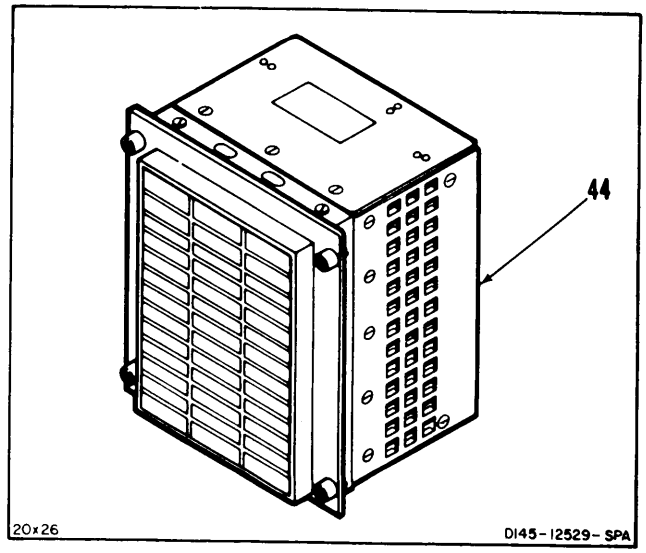
17. **Set test switch (43)** to **BRT. BRT indicator lamp (47)** shall come on. All **capsules (48, 50 through 87)** shall go **bright.**
18. Slowly reduce dc supply (45) voltage to 18 vdc. All capsules shall light dimmer as voltage is reduced to 18 vdc.
19. **Press reset test switch (42). MCL lamp (49)** shall go **out.**
20. **Set test switch (41) to off.** All **capsules (48, 50 through 87)** shall go **out.**
21. Turn off power supply (45).
22. Disconnect power supply (45) from test setup. Disconnect caution panel (44) from test setup.

FOLLOW-ON MAINTENANCE:

None







END OF TASK

INITIAL SETUP

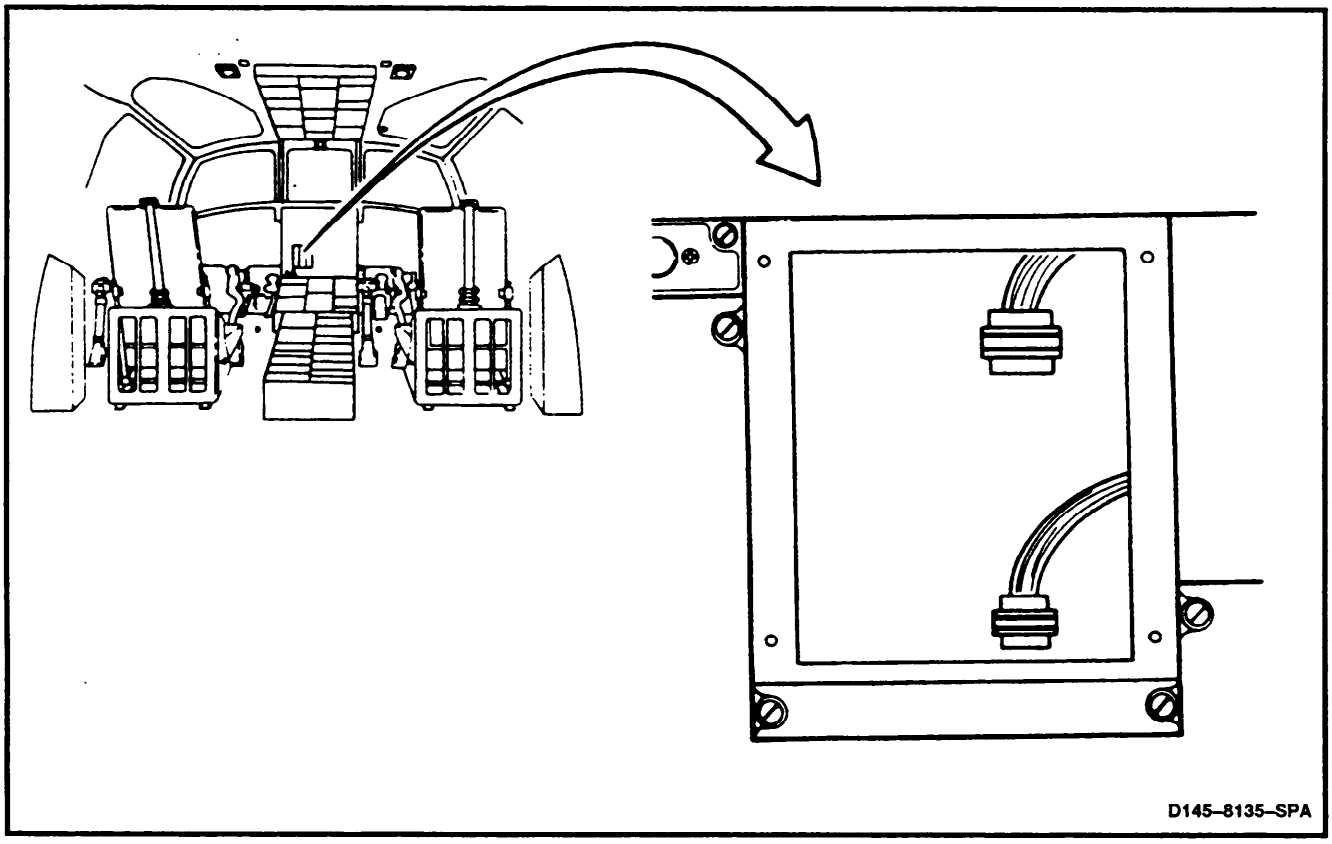
Applicable Configurations:
Without 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



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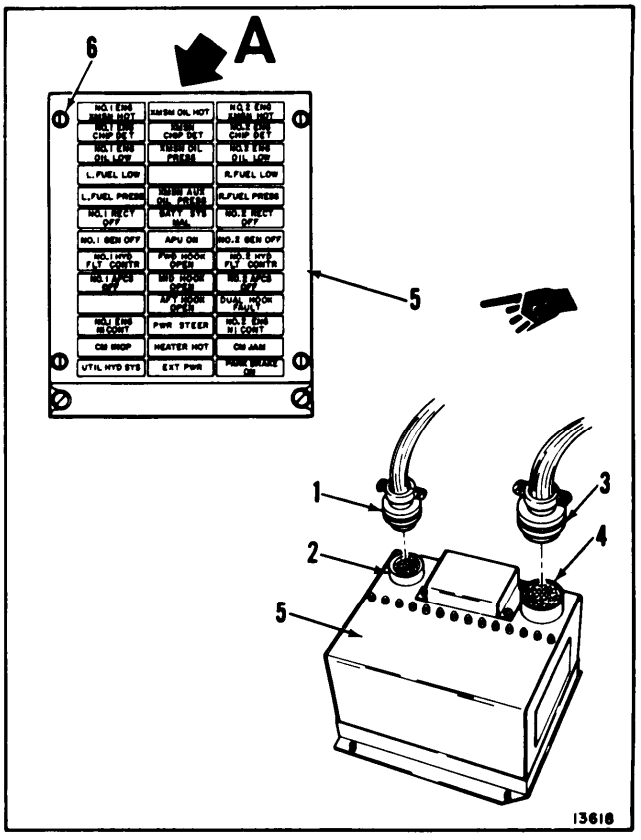
9-131 INSTALL MASTER CAUTION PANEL (Continued) 9-131

1. **Connect plug (1)** to receptacle (2).
2. **Connect plug (3)** to receptacle (4).
3. **Position panel (5)** to center instrument panel.
4. **Tighten four fasteners (6).**

INSPECT



FOLLOW-ON MAINTENANCE:

Install NVG Filter (With 17) (Task 9-125.3)
Perform operational check (TM 55-1520-240-T).

END OF TASK

9-131.1 INSTALL MASTER CAUTION PANEL

INITIAL SETUP

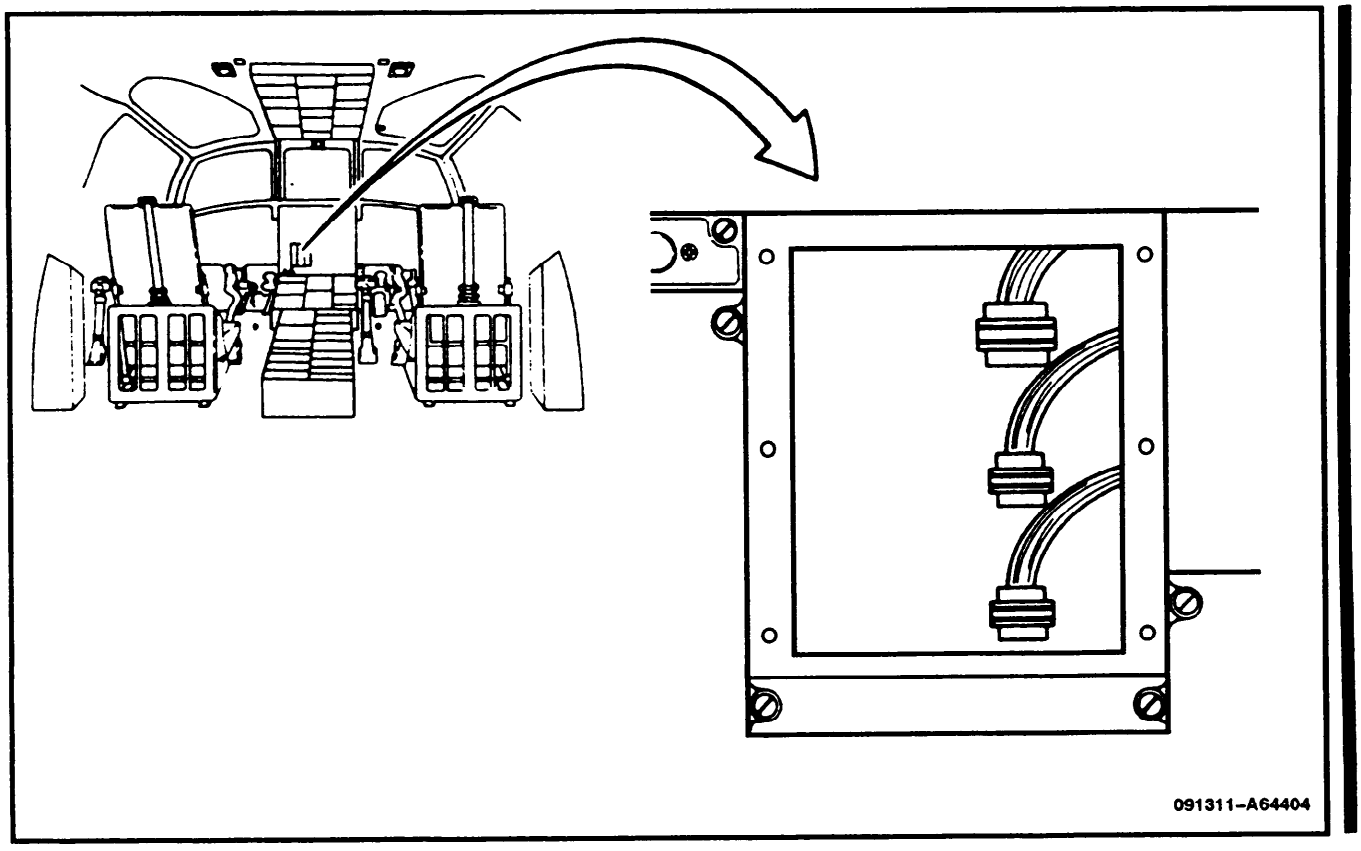
Applicable Configurations:
With 74

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



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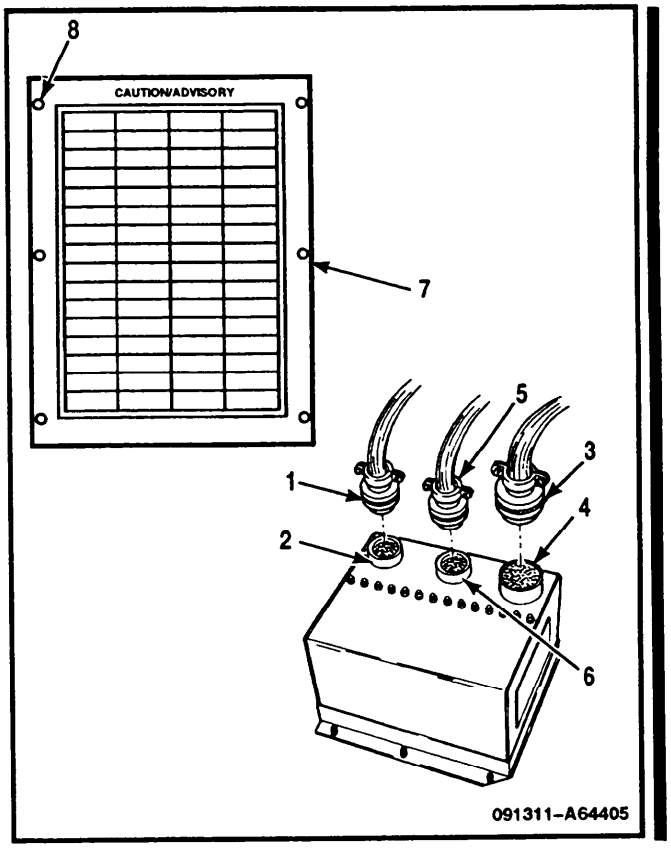
9-131.1 INSTALL MASTER CAUTION PANEL (Continued) 9-131.1

1. **Remove tag and connect plug (1)** to receptacle (2).
2. **Remove tag and connect plug (3)** to receptacle (4).
3. **Remove tag and connect plug (5)** to receptacle (6).
4. **Position panel (7)** to center instrument panel.
5. **Tighten six fasteners (8).**



FOLLOW-ON MAINTENANCE:
Perform operational check (TM 55-1520-240-T).

END OF TASK

9-132 REMOVE CAUTION LIGHTS AND VHF SWITCH PANEL

INITIAL SETUP

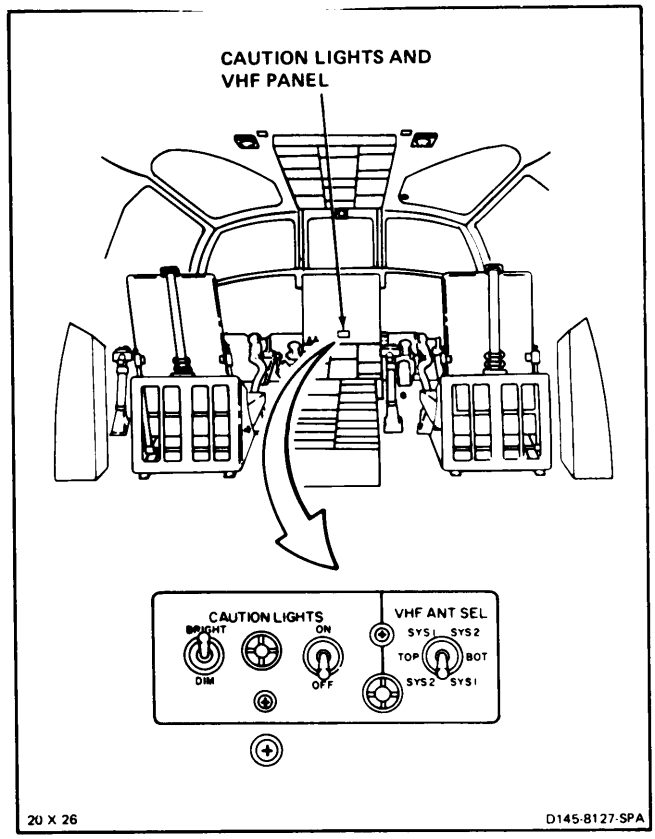
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

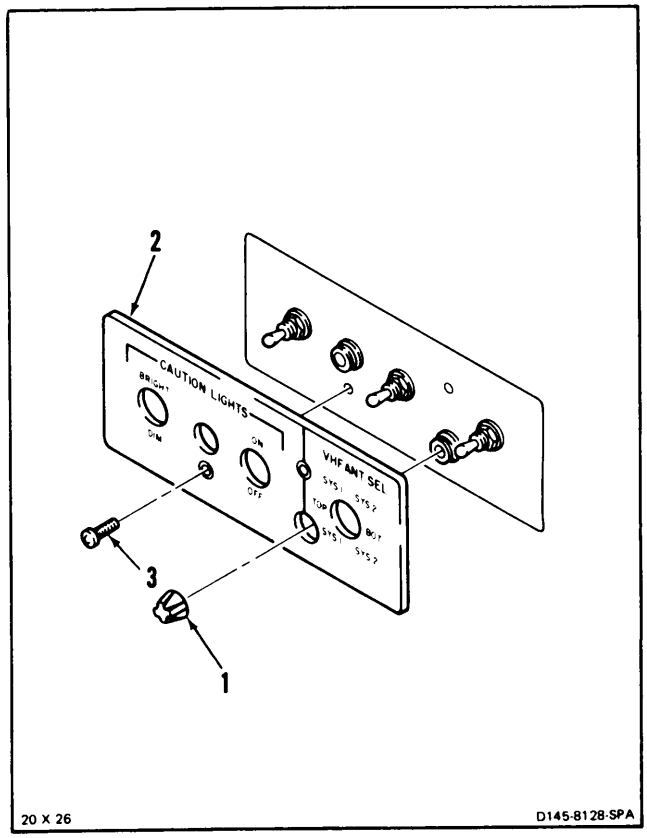
Materials:
None

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. **Remove two caps (1)** from Panel (2).
2. **Remove two screws (3).**
3. **Remove panel (2).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-133 INSTALL CAUTION LIGHTS AND VHF SWITCH PANEL 9-133

INITIAL SETUP

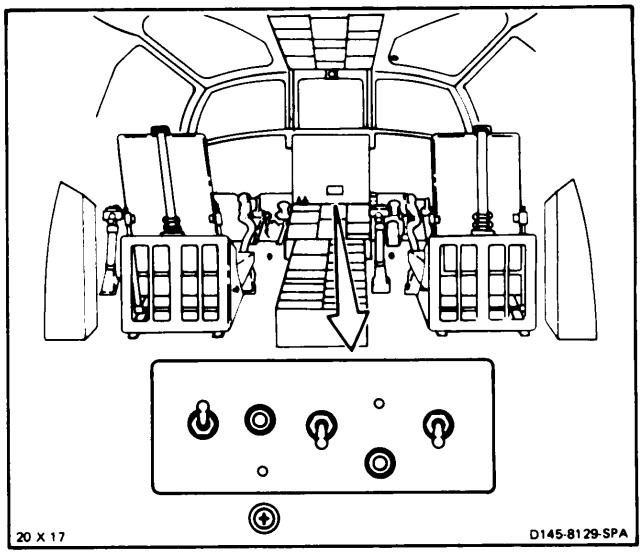
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

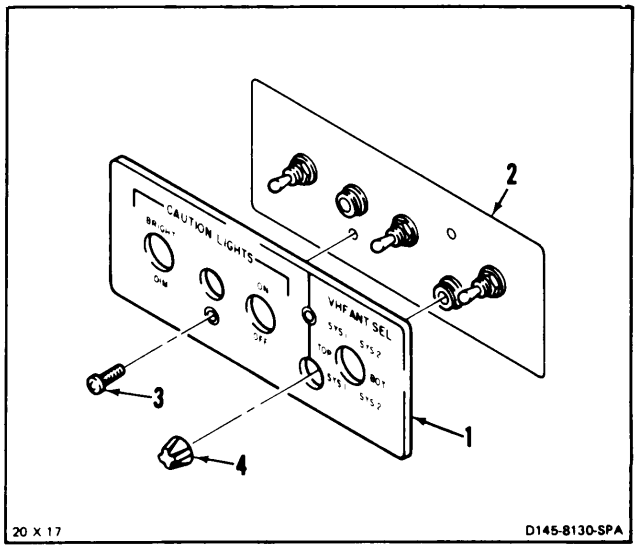
Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

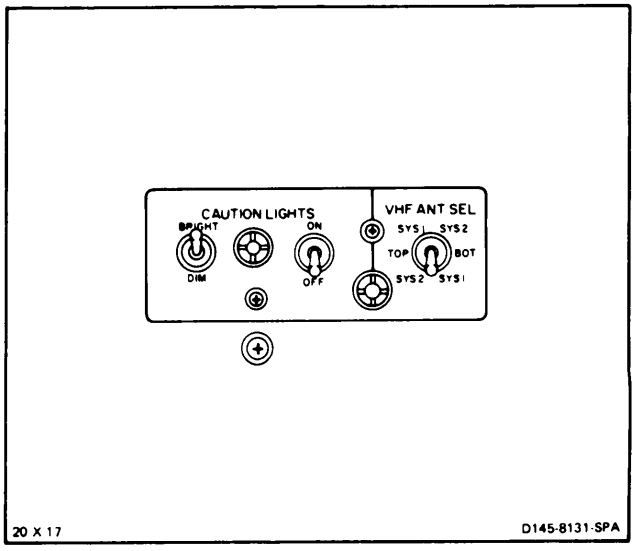
References:
TM 55-1520-240-23P



1. **Position panel (1)** on panel (2).
2. **Install two screws (3).**
3. **Install two caps (4).**

INSPECT





FOLLOW-ON MAINTENANCE:

None

END OF TASK

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool M83723-31-20

Materials:

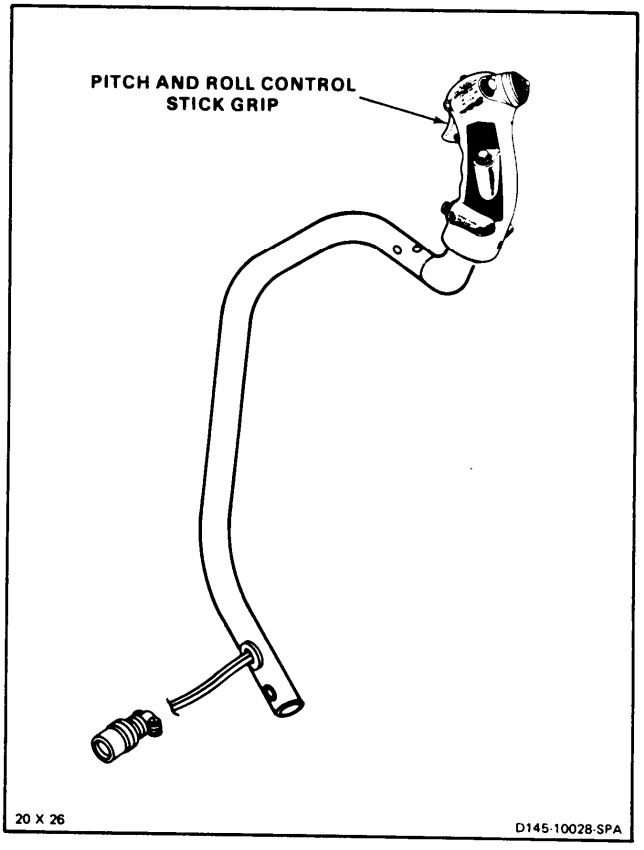
Paper Tags (E264)
Tape (E385)

Personnel Required:

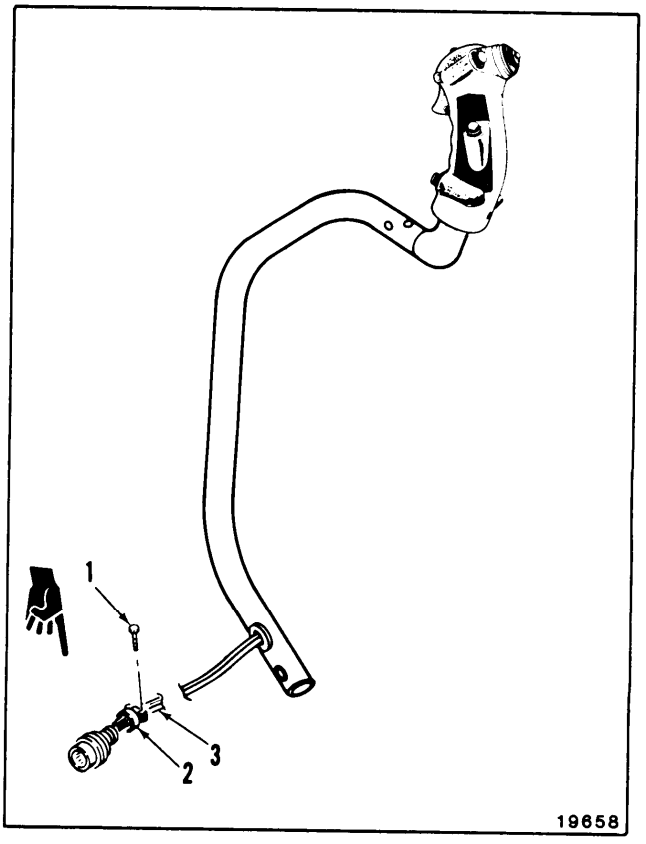
Aircraft Electrician

Equipment Condition:

Off Helicopter Task



1. **Remove two screws (1)** from backshell (2). Slide backshell over wires (3).



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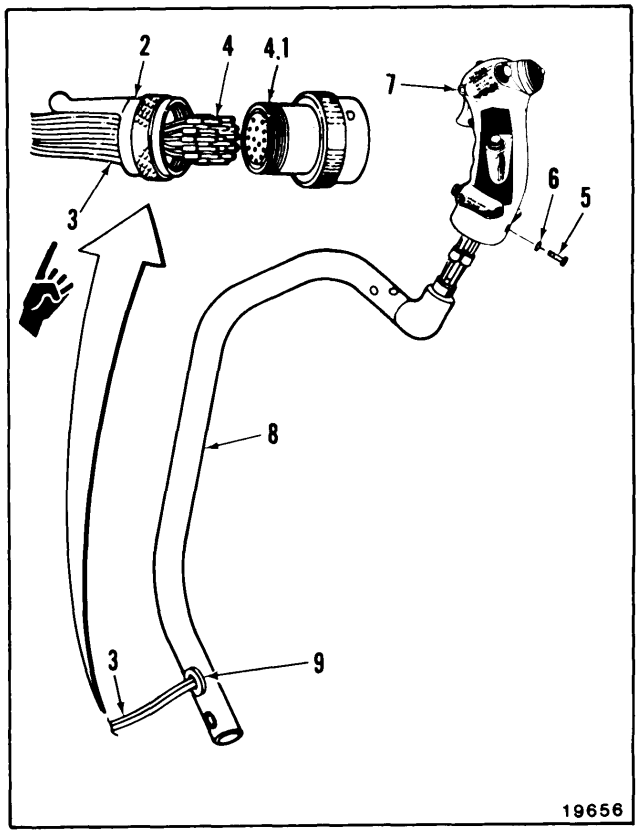
2. Disconnect and tag 15 contact pins (4) from connector (4.1). Use contact insertion/removal tool. Wrap tape tightly around bundle of contact pins for protection. Use tape (E385).
3. **Remove backshell (2)** from wires (3).
4. **Remove screw (5)** and washer (6) from grip (7).
5. **Remove grip (7)** while feeding 15 wires (3) through tube (8).
6. Remove grommet (9) from tube (8).

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-135 DISASSEMBLE PITCH AND ROLL CONTROL STICK GRIP (AVIM) 9-135

INITIAL SETUP

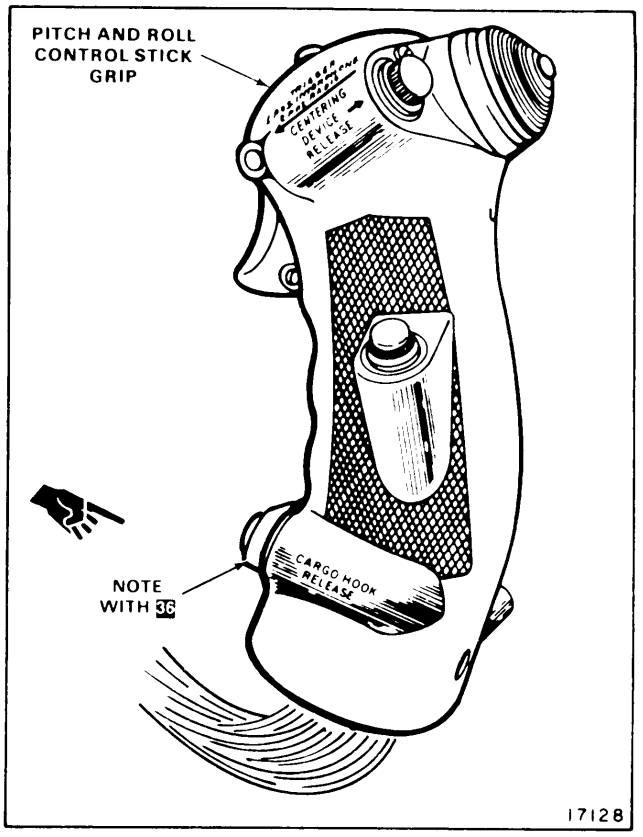
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit, NSN 5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Off Helicopter Task

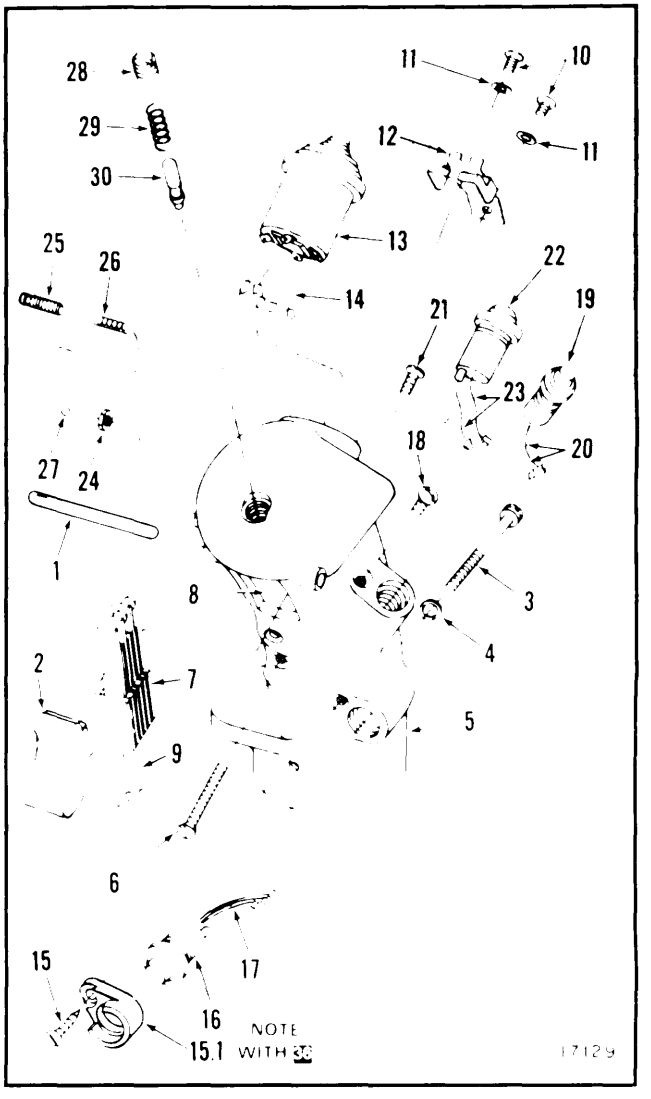


GO TO NEXT PAGE

1. **Remove pin (1)** from right side of trigger (2). Remove trigger.
2. **Remove screw (3)** and washer (4) from grip (5).
3. **Remove two screws (6).** Remove switch (7) through trigger opening (8).
4. Tag and **unsolder three wires (9)** from switch (7).
5. **Remove two screws (10)** and washers (11) from bracket (12).
6. **Remove bracket (12)** and switch (13).
7. Tag and **unsolder five wires (14)** from switch (13). Tape wire ends.
8. **Without 36, remove screws (15) from switch (16). Remove switch.**

8.1. **With 36, remove screw (15)** from switch ring guard (15.1) and switch (16), Remove switch ring guard and switch.

9. Tag and **unsolder three wires (17)** from switch (16). Tape wire ends.
10. **Remove screw (18)** from switch (19). Remove switch.
11. Tag and **unsolder two wires (20)** from switch (19). Tape wire ends.
12. **Remove screw (21)** from switch (22). Remove switch.
13. Tag and **unsolder two wires (23)** from switch (22). Tape wire ends.
14. Loosen nut (24). **Remove screw (25),** spring (26), and ball (27). Remove nut (24).
15. **Remove screw cap (28),** spring (29), and pin (30).



FOLLOW-ON MAINTENANCE:
None

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END OF TASK

9-136 ASSEMBLE PITCH AND ROLL CONTROL STICK GRIP (AVIM) 9-136

INITIAL SETUP

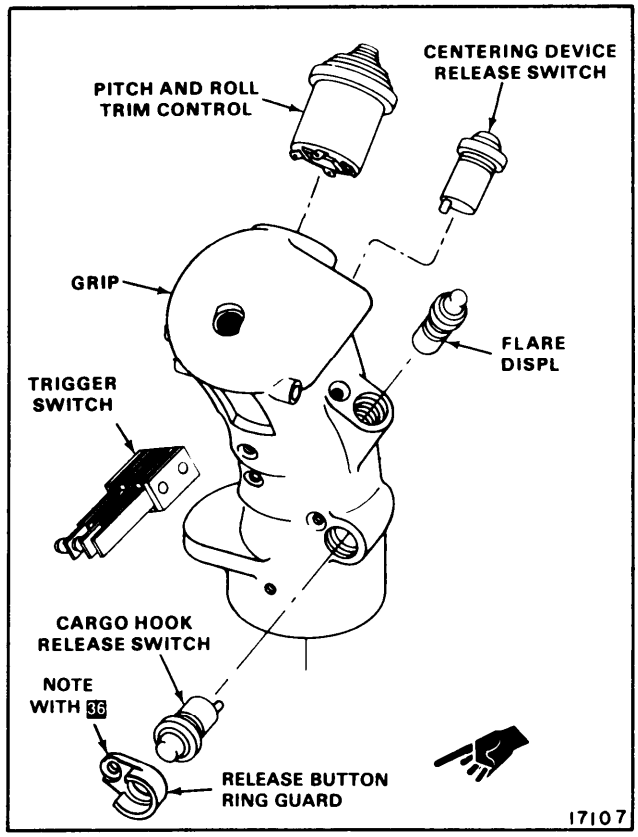
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Grease (E189)
Solder (E360)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



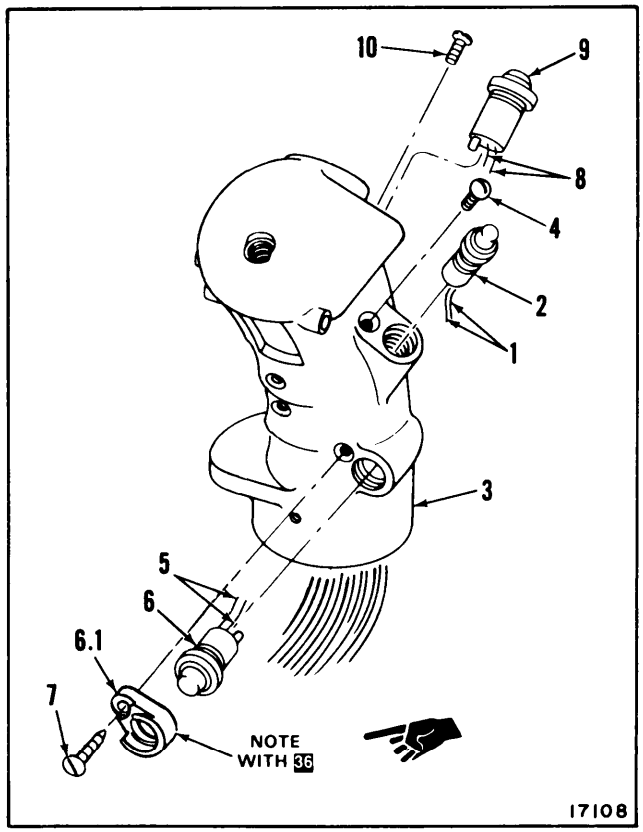
1. Remove tape and **solder two wires (1)** to switch (2). Remove tags. Use solder (E360).
2. **Position** switch (2) in grip (3). **Install screw (4).**
3. Remove tape and **solder two wires (5)** to switch (6). Remove tags. Use solder (E360).
4. **Position** switch (6) in grip (3). **Install screw (7).**

CAUTION

Take care not to overtorque screw (7) and strip thread.

4.1. With 36, **position** switch button ring guard (6.1) over switch (6). **Install screw (7).**

5. Remove tape and **solder two wires (8)** to switch (9). Remove tags. Use solder (E360).
6. **Position** switch (9) in grip (3). **Install screw (10).**



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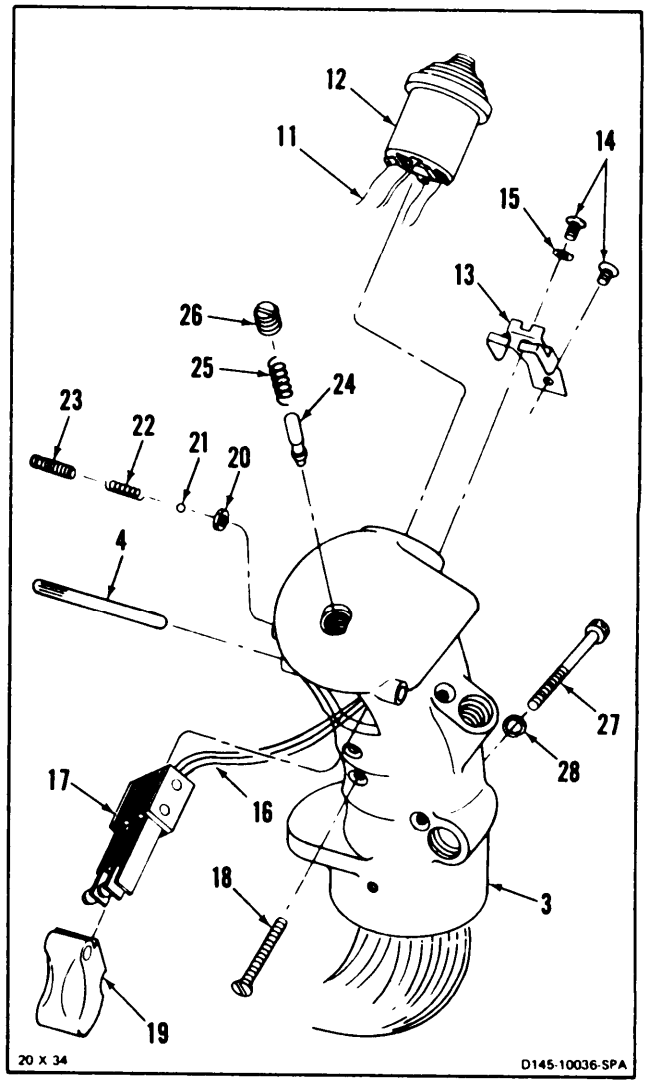
9-136 ASSEMBLE PITCH AND ROLL CONTROL STICK GRIP (AVIM) (Continued) 9-136

7. Remove tape and **solder five wires (11)** to switch (12). Remove tags. Use solder (E360).
8. **Position** switch (12) in grip (3). **Install bracket (13),** two screws (14), and washers (15).
9. Remove tape and **solder three wires (16)** to switch (17). Remove tags. Use solder (E360).
10. **Position** switch (17) in grip (3). **Install two screws (18).**
11. **Position** trigger (19) on switch (17). **Install pin (4).**
12. **Install nut (20)** loosely on grip (3).
13. **Install ball (21),** spring (22), and screw (23). Turn screw full clockwise then back out one and one half turns. **Tighten nut (20).**
14. Grease (E189) pin (24). **Install pin,** spring (25), and nut (26).
15. **Install screw (27)** and washer (28).

INSPECT



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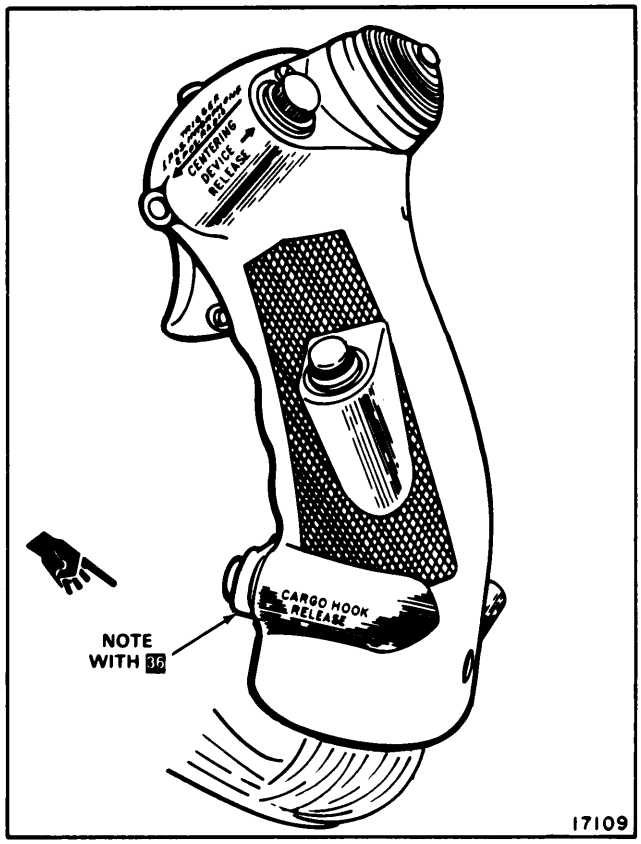
9-136 ASSEMBLE PITCH AND ROLL CONTROL STICK GRIP (AVIM) (Continued)

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-136.1 TEST PILOT'S OR COPILOT'S PITCH AND ROLL CONTROL STICK GRIP (AVIM) 9-136.1

INITIAL SETUP

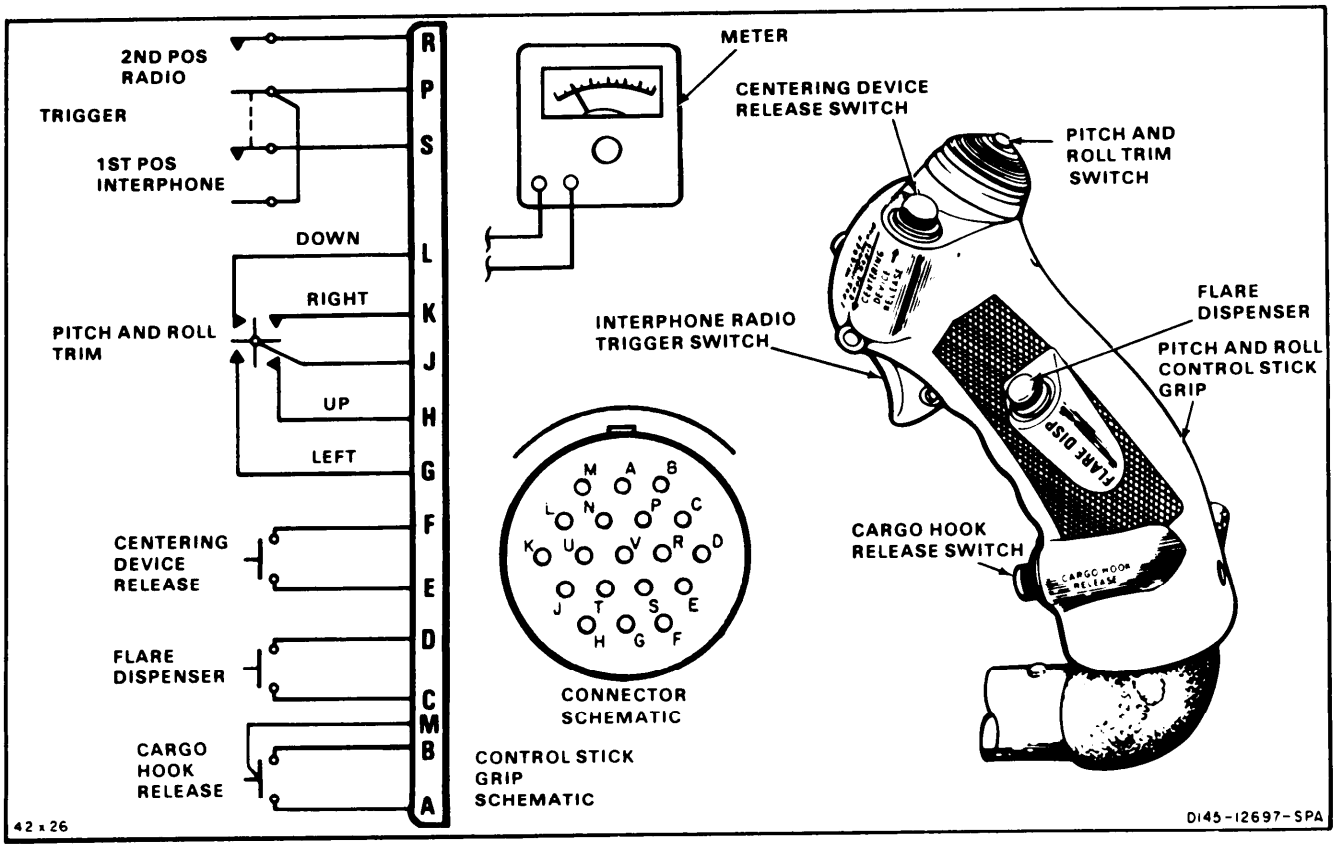
Applicable Configurations:
All

Tools:
Meter Simpson 260 or Equivalent

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
68F30 Inspector

Equipment Condition:
Off Helicopter Task



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9-136.1 TEST PILOT'S OR COPILOT'S PITCH AND ROLL CONTROL STICK GRIP (AVIM) (Continued)

1. **Test six switches (1, 2, 3, 4, and 5)** of pitch and roll control stick grip (6). Set meter (7) to RX1 and connect meter to wires of grip as listed below. Check meter indication.

NOTE

Connector pin letters are listed. Use letters to find wire numbers.

SWITCH	SWITCH POSITION	CONNECTOR PINS	METER INDICATION
INTERPHONE-RADIO TRIGGER (1)	Released	P and R	None
	Released	P and S	None
	Pressed to 1ST POS INTER PHONE	P and S	O ohm
		P and R	None
	Pressed to 2ND POS RADIO	P and S	None
		P and R	O ohm
PITCH AND ROLL TRIM (2)	Released	J and G	None
	Released	J and H	None
	Released	J and K	None
	Released	J and L	None
	Pressed LEFT	J and G	O ohm
	Pressed UP	J and H	O ohm
	Pressed RIGHT	J and K	O ohm
	Pressed DOWN	J and L	O ohm
CENTERING DEVICE RELEASE (3)	Released	F and E	None
	Pressed	F and E	O ohm
FLARE DISPENSER (4)	Released	D and C	None
	Pressed	D and C	O ohm
CARGO HOOK RELEASE (5)	Released	M and A	None
	Released	M and B	None
	Pressed	M and A	O ohm
	Pressed	M and B	O ohm

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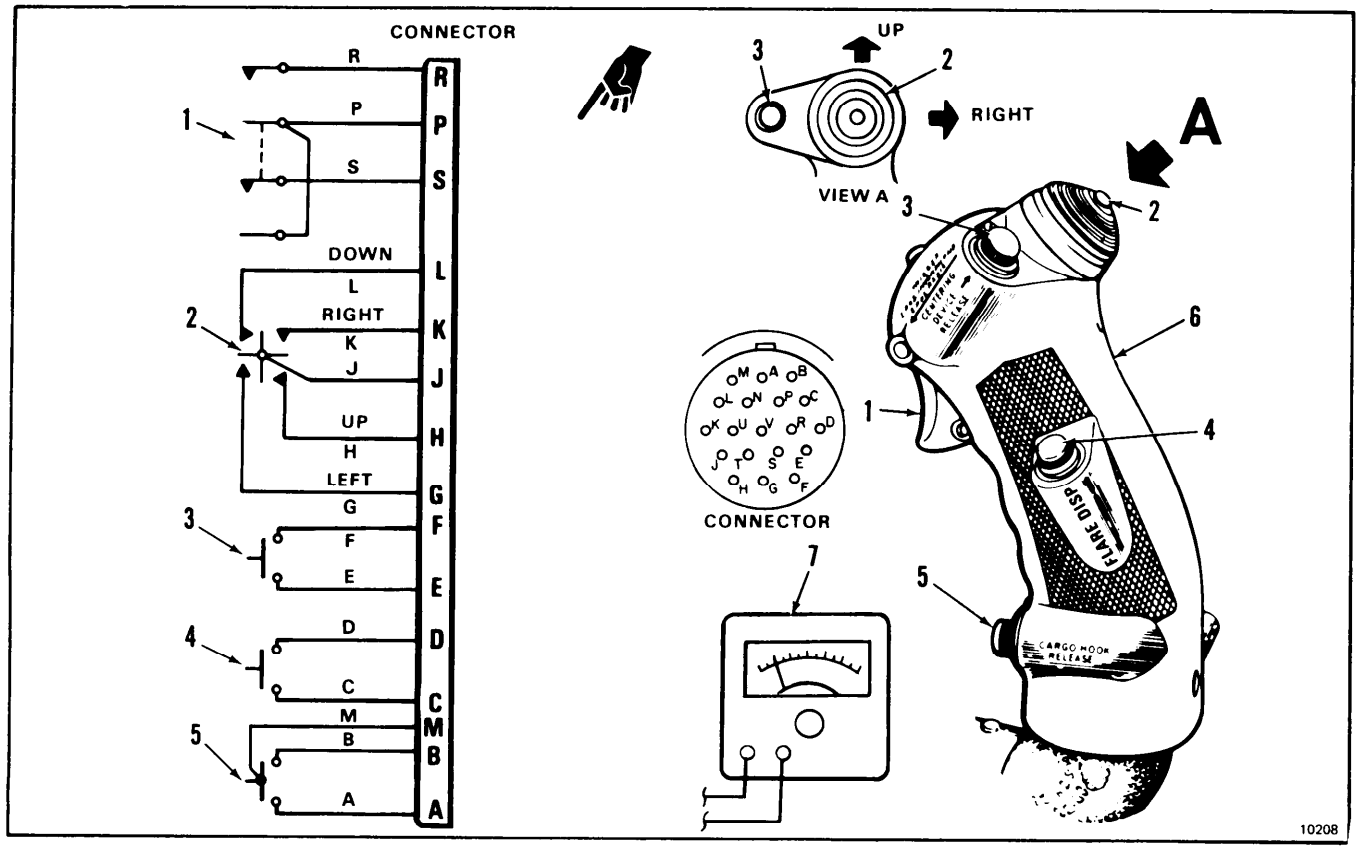
9-136.1 TEST PILOT'S OR COPILOT'S PITCH AND ROLL CONTROL STICK GRIP (AVIM) (Continued) 9-136.1



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-137 INSTALL PITCH AND ROLL CONTROL STICK GRIP 9-137

INITIAL SETUP

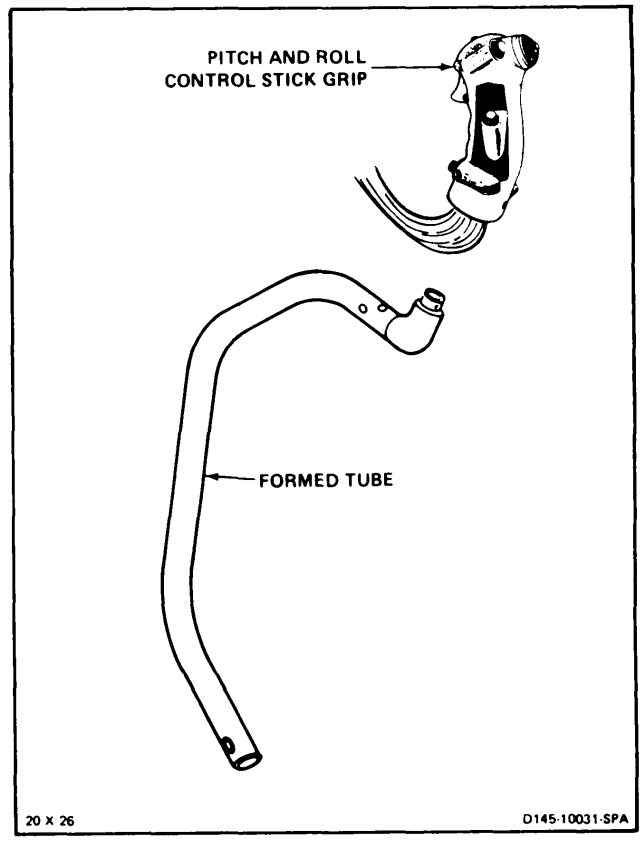
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Contact Insertion/Removal Tool M83723-31-20

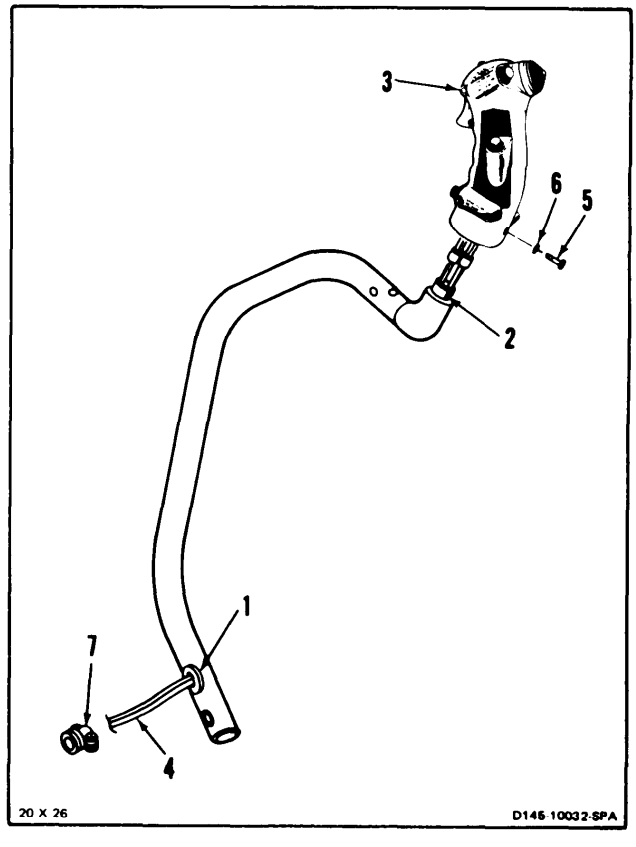
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. Install grommet (1) in tube (2).
2. Install grip (3) on tube (2) while feeding wires (4) through tube.
3. Install screw (5) and washer (6) in grip (2). Position screw through middle of wires (4).
4. Slide backshel (7) over wires (4).



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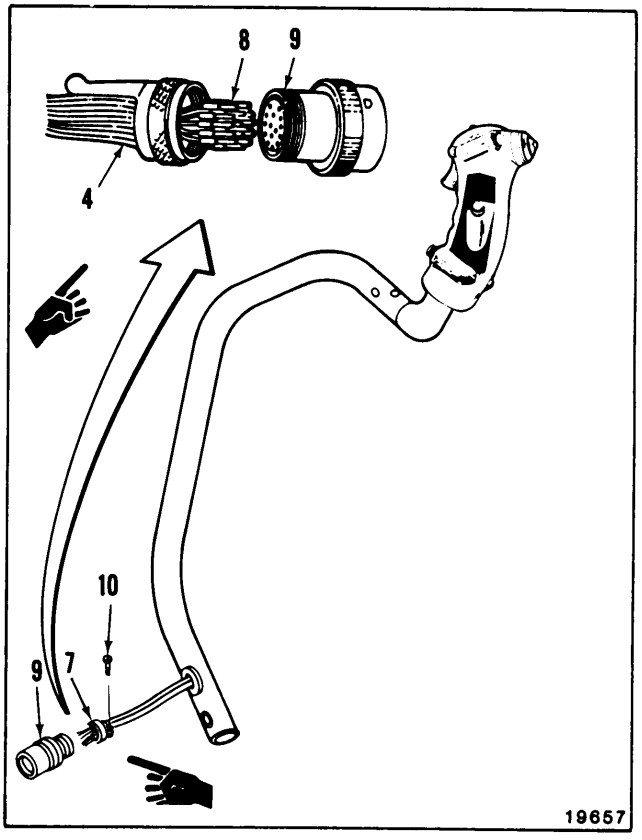
5. Remove tape from end of wires (4). **Clean all contact pins (8)** with dry cleaning solvent (E162) and cloth (E120). Wear goggles to protect eyes. Wear gloves (E186).
6. **Insert 15 contact pins (8)** into plug (9). Use inserter/extractor tool. Match letter on wire to letter on connector.
7. **Install backshell (7)** on plug (9)
8. **Install two screws (10)** in backshell (7).

INSPECT



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-138 REMOVE THRUST CONTROL GRIP

INITIAL SETUP

Applicable Configurations:
All

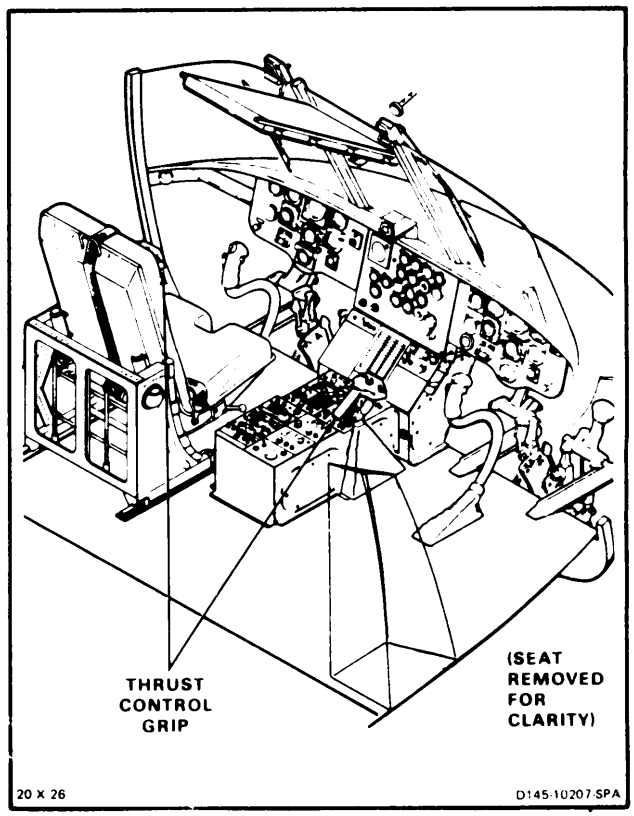
Tools:
None

Materials:
None

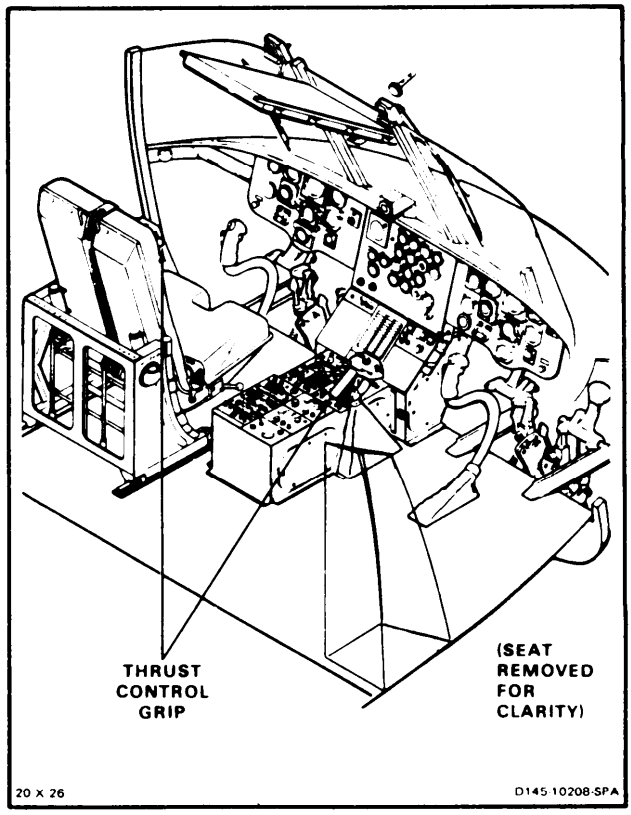
Personnel Required:
Aircraft Electrician

References:
Task 11-61
Task 11-62
Task 11-63

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Remove thrust control (Task 11-61 or 11-62).
2. Remove grip from thrust control

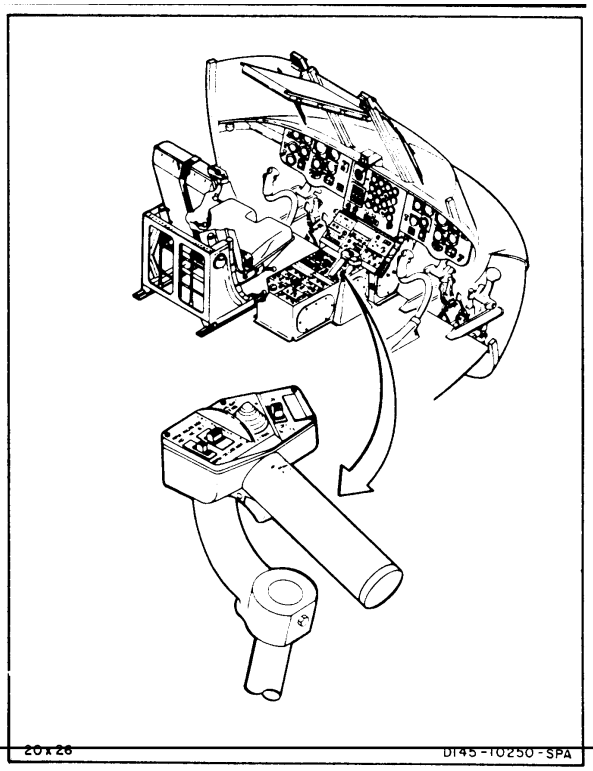


FOLLOW-ON MAINTENANCE:

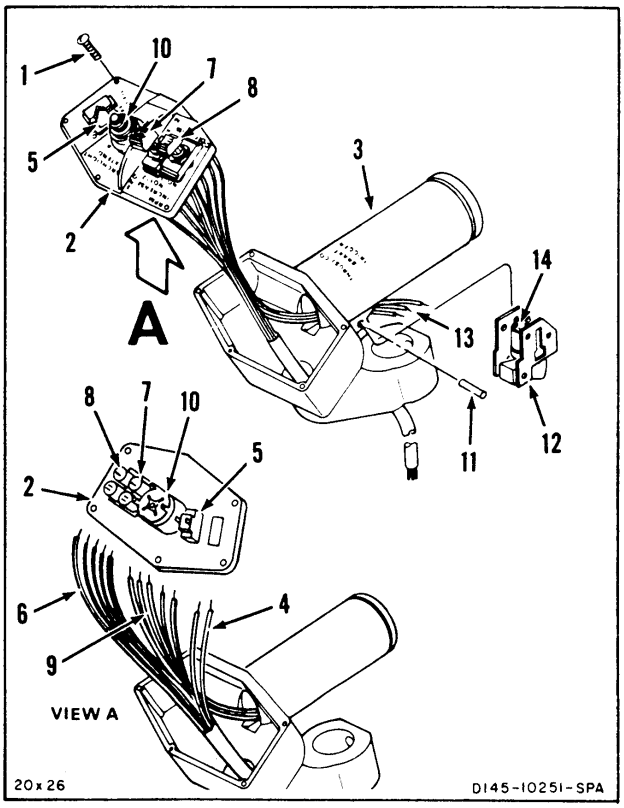
None

END OF TASK

INITIAL SETUP
Applicable Configurations:
Without 60
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Materials:
Tape (E385)
Paper Tags (E264)
Personnel Required:
Aircraft Electrician
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Remove five screws (1). **Remove switch panel (2)** from grip (3).
2. Tag and **unsolder two wires (4)** from switch (5). Tape ends (E385).
3. Tag and **unsolder five wires (6)** from switches (7 and 8). Tape ends (E385).
4. Tag and **unsolder five wires (9)** from switch (10). Tape ends (E385).
5. **Remove switch panel (2).**
6. **Remove pin (11) and switch assembly (12)** from grip (3).
7. Tag and **unsolder three wires (13)** from switch (14). Tape ends (E385).



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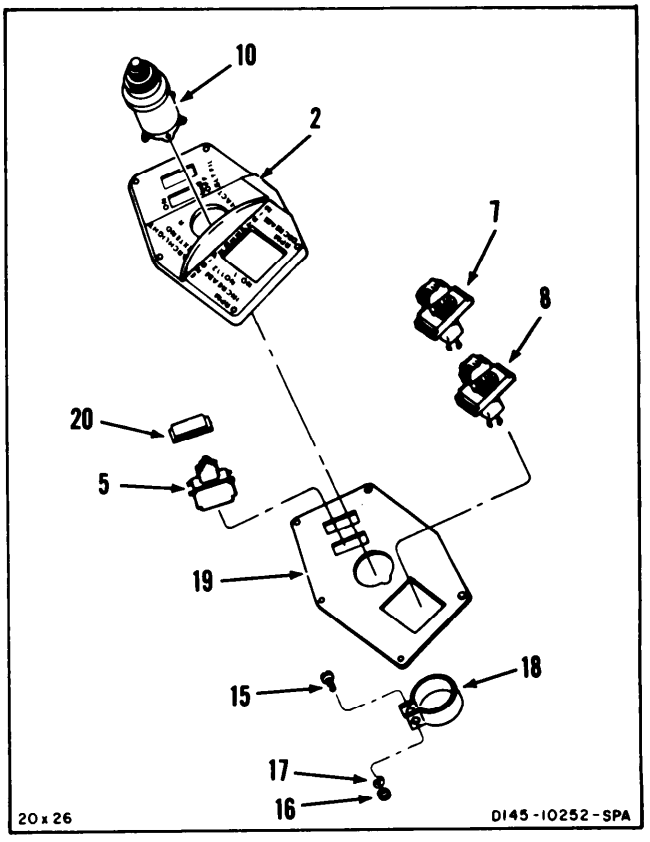
9-139 DISASSEMBLE THRUST CONTROL GRIP (Continued) 9-139

8. **Remove screw (15),** nut (16), washer (17), **and switch mounting clamp (18).**
9. **Remove switch (10)** from switch panel (2).
10. **Remove switch retaining plate (19)** from switch panel (2).
11. **Remove switches (5, 7, and 8),** and panel insert (20) from retaining plate (19).

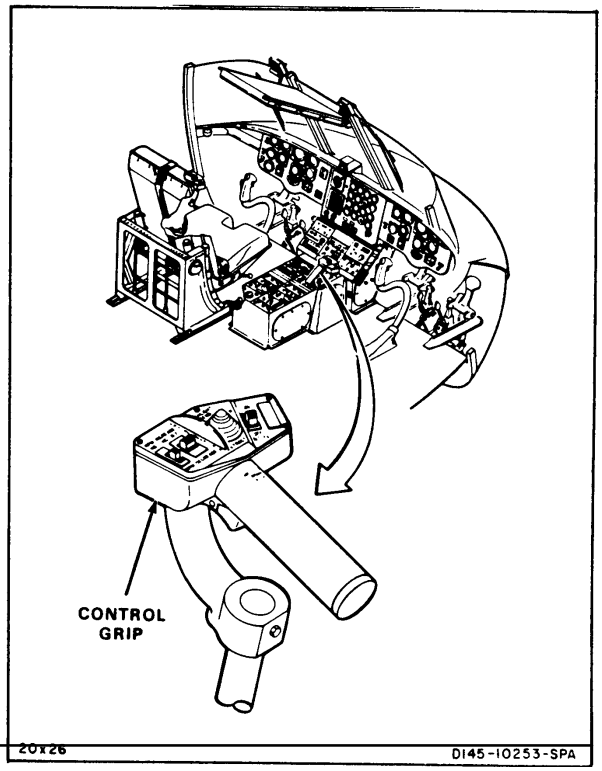


FOLLOW-ON MAINTENANCE:

None

END OF TASK

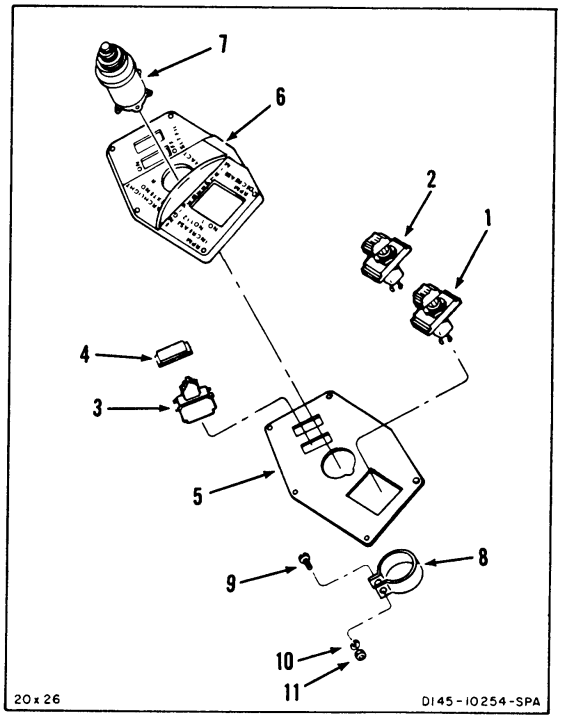
INITIAL SETUP
Applicable Configurations:
Without 60
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Materials:
Solder (E360)
Varnish (E435)
Gloves (E 186)
Personnel Required:
Aircraft Electrician
Inspector
References:
TM 55-1520-240-23P



1. **Position switches (1, 2, and 3) and insert (4)** on switch retaining plate (5).

2. **Position retaining plate (5)** with switches (1, 2, and 3) and insert (4) on switch panel (6).

3. **Push switch (7) through panel (6) and install clamp (8),** screw (9), washer (10), and nut (11).



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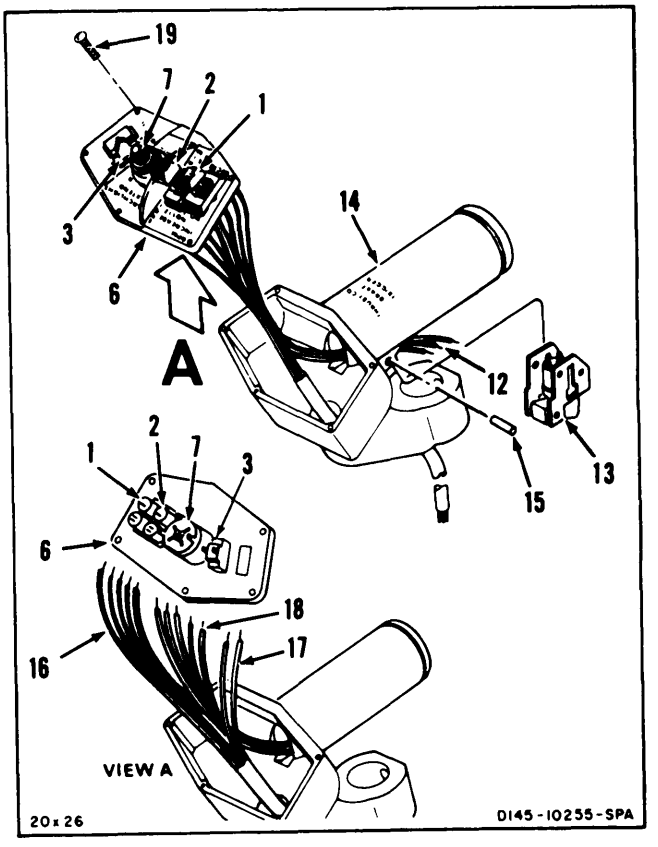
9-140 ASSEMBLE THRUST CONTROL GRIP (Continued)

4. Remove tape, **solder three wires (12)** to switch (13). Use solder (360), Remove tags.
5. Position switch (13) in thrust control grip (14). **Install pin (15).**
6. Remove tape. **Solder five wires (16)** to switches (1 and 2). Use solder (E360). Remove tags.
7. Remove tape, **solder two wires (17)** to switch (3). Use solder (E360). Remove tags.
8. Remove tape. **Solder five wires (18)** to switch (7). Use solder (E360). Remove tags.

WARNING

Varnish (E435) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



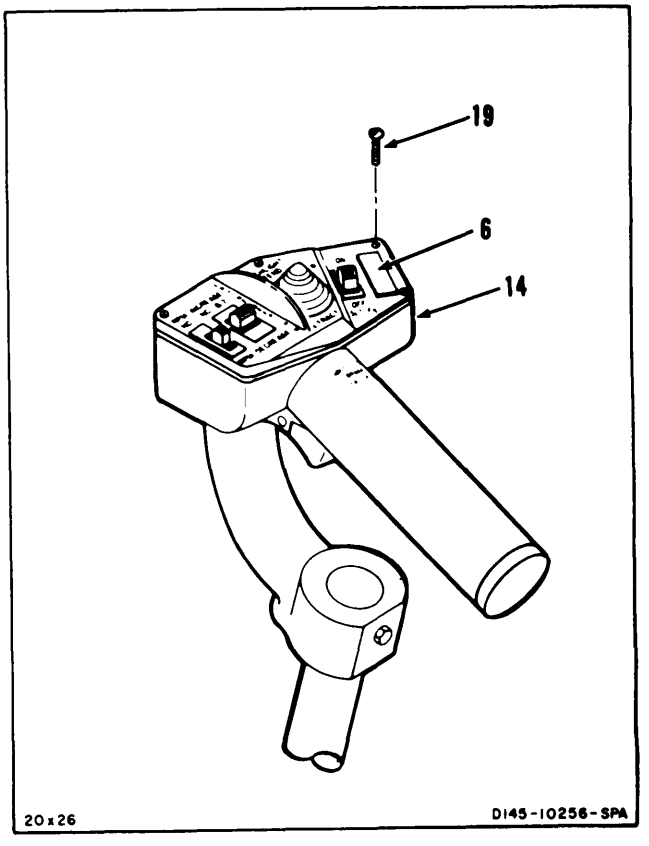
9. **Apply varnish (E435)** to all soldered joints. Wear gloves (E186).

INSPECT

10. **Position panel (6)** on grip (14). Install five screws (19).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-140.1 TEST THRUST CONTROL GRIP

INITIAL SETUP

Applicable Configurations:

Without 60 and 74

Tools:

Multimeter, Simpson 260 or Equivalent

Materials:

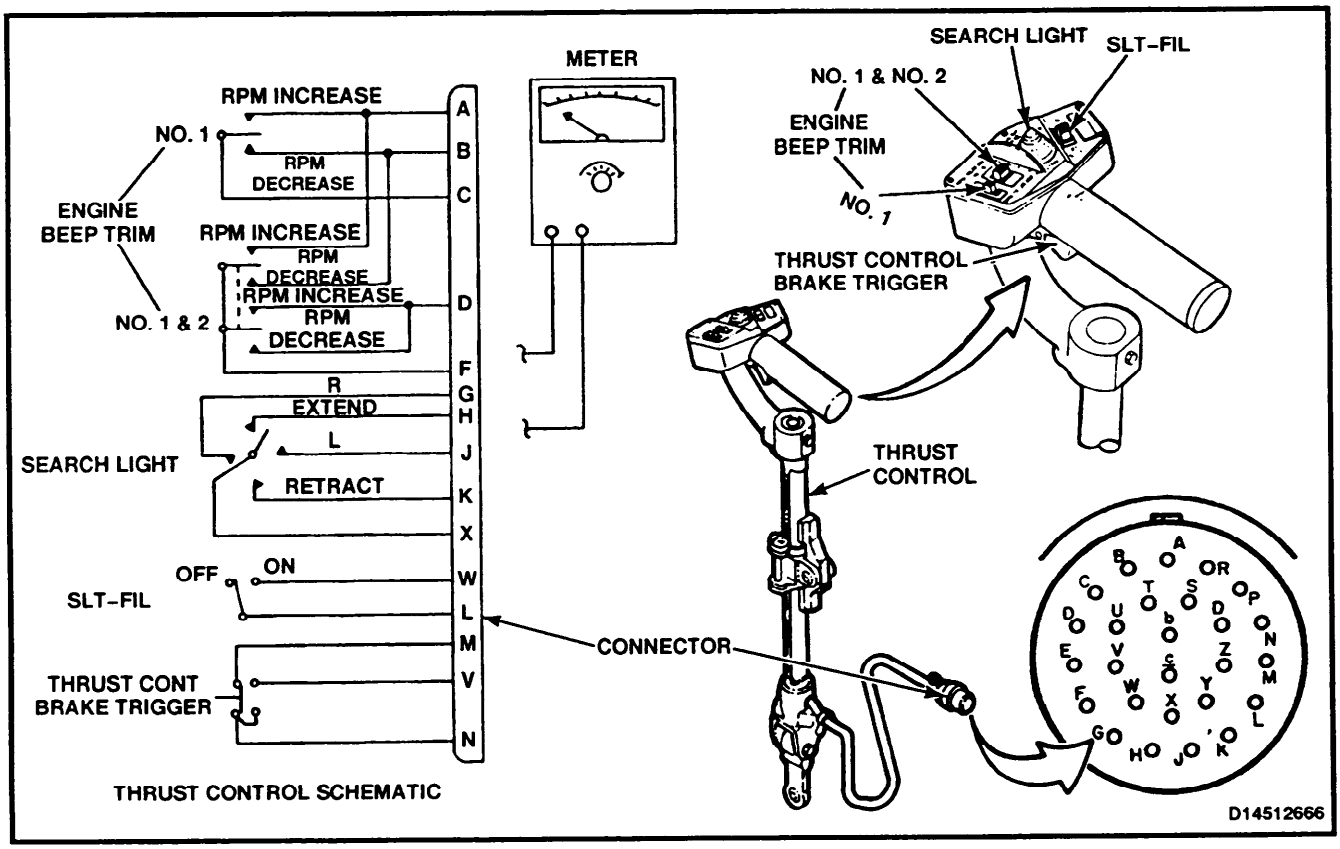
None

Personnel Required:

Aircraft Electrician
Inspector

Equipment Condition:

Off Helicopter Task



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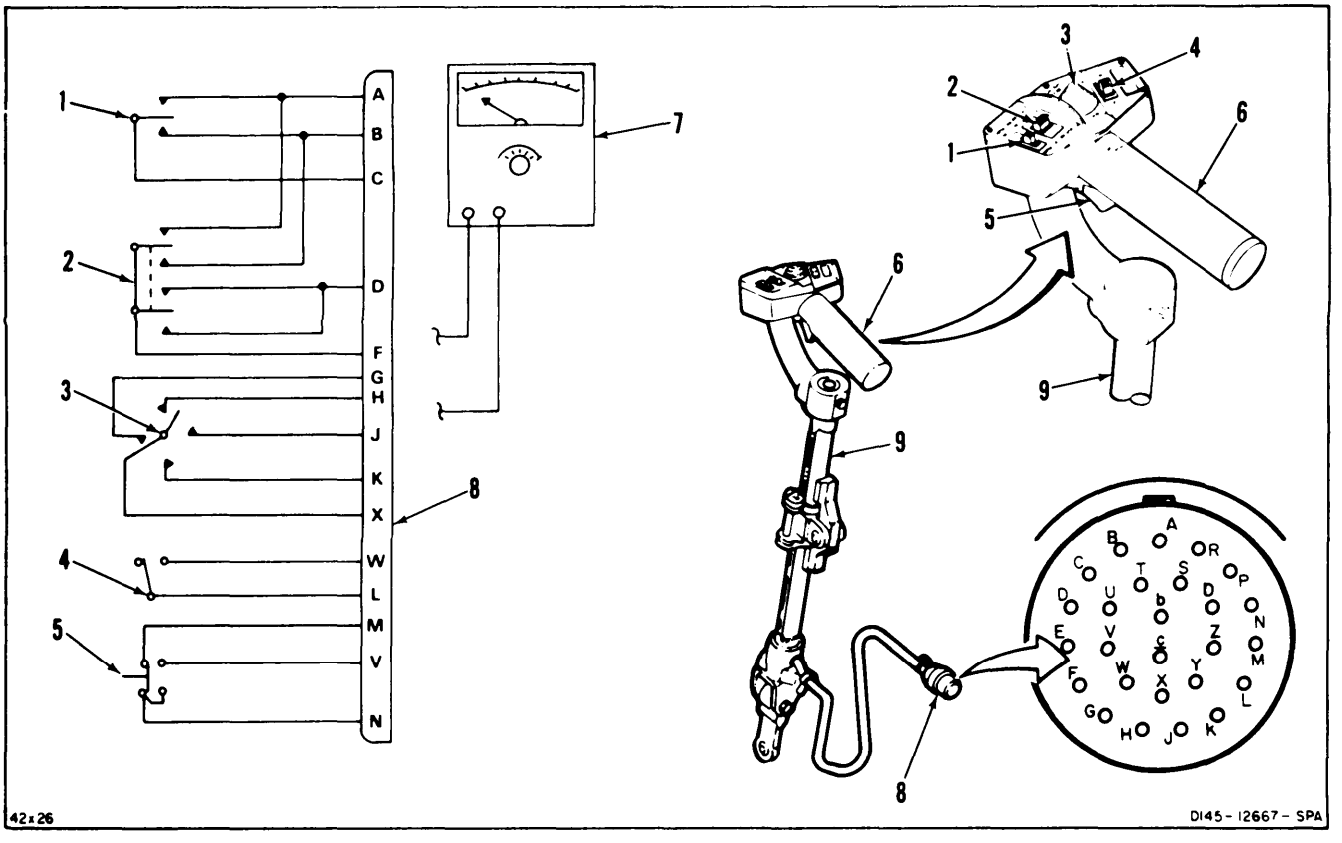
9-140.1 TEST THRUST CONTROL GRIP (Continued) 9-140.1

1. **Test five switches (1, 2, 3, 4, and 5)** of thrust control grip (6). Set meter (7) to R x 1 and connect meter to pins of connector (8) listed below. Check meter indication.
2. **Connect meter (7) between pin A and shaft (9).** Check meter indication. There shall be no indication.
3. Repeat step 2 for pins B, C, D, F, G, H, J, K, X, W, L, M, V, and N.

SWITCH	SWITCH POSITION	CONNECTOR PINS	METER INDICATION
ENGINE BEEP TRIM NO. 1 (1)	RPM INCREASE	A and C	0 ohm
	RPM DECREASE	B and C	0 ohm
	Center	A and C then B and C	Inf
ENGINE BEEP TRIM NO. 1 & NO. 2 (2)	RPM INCREASE	F and A then F and D	0 ohm
	RPM DECREASE	F and B then F and D	0 ohm
SEARCH LIGHT (3)	EXTEND	X and H	0 ohm
	RETRACT	X and K	0 ohm
	L	X and J	0 ohm
	R	X and G	0 ohm
	Center	X and G, then X and H, then X and J, then X and K	Inf
SLT-FIL (4)	ON	L and W	0 ohm
	OFF	L and VU	Inf
THRUST CONT BRAKE TRIGGER (5)	Released	M and N	0 ohm
	Released	N and V	Inf
	Pressed	N and V	0 ohm
	Pressed	N and M	Inf

INSPECT



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-140.2 DISASSEMBLE THRUST CONTROL GRIP 9-140.2

INITIAL SETUP

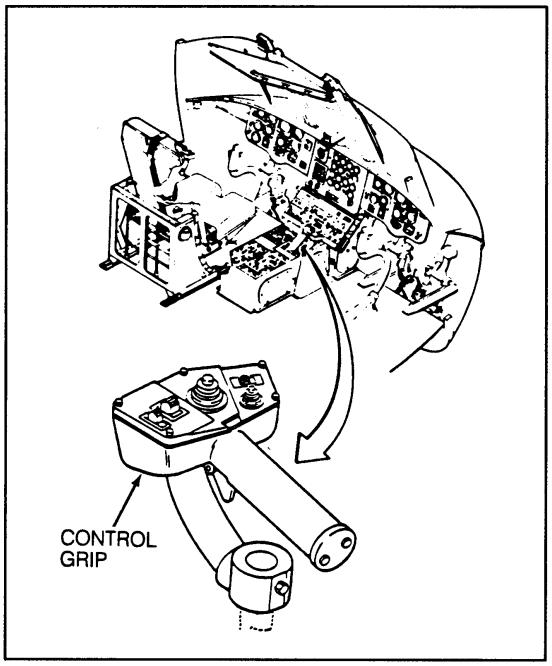
Applicable Configurations:
With 60

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

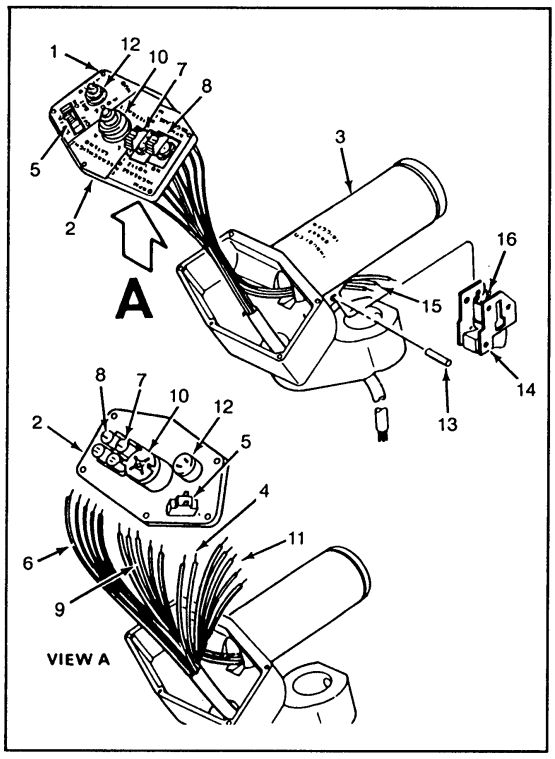
Materials:
Tape (E385)
Paper Tags (E264)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Remove five screws (1). **Remove switch panel (2)** from grip (3).
2. Tag and **unsolder two wires (4) f**rom switch (5). Tape ends (E385).
3. Tag and **unsolder five wires (6)** from switches (7) and (8). Tape ends (E385).
4. Tag and **unsolder five wires (9)** from switch (10). Tape ends (E385).
5. Tag and **unsolder five wires (11)** from switch (12). Tape ends (E385).
6. **Remove switch panel (2).**
7. **Remove pin (13) and switch assembly (14)** from grip (3).
8. Tag and **unsolder three wires (15)** from switch (16). Tape ends.



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9-140.2 DISASSEMBLE THRUST CONTROL GRIP 9-140.2

9. **Remove screw (17),** nut (18), washer (19) and **switch mounting clamp (20).**

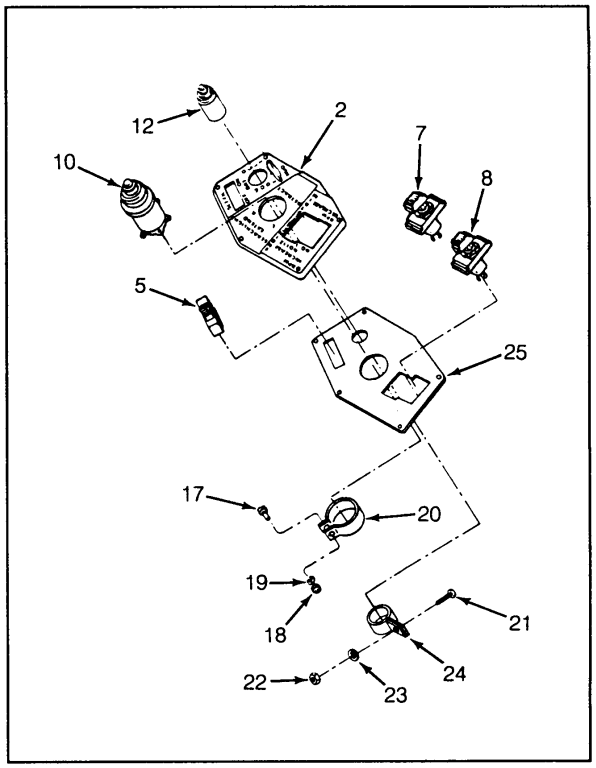
10. **Remove switch (10)** from switch panel (2).

11. **Remove screw (21),** nut (22), washer (23) and **switch mounting clamp (24).**

12. **Remove switch (12)** from switch panel (2).

13. **Remove switch retaining plate (25)** from switch panel (2).

14. **Remove switches (5, 7, and 8)** from retaining plate (25).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-140.3 ASSEMBLE THRUST CONTROL GRIP 9-140.3

INITIAL SETUP

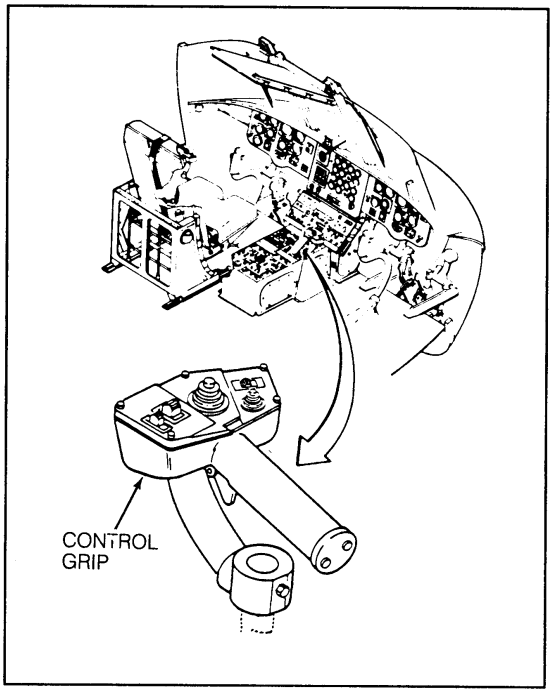
Applicable Configurations:
With 60

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

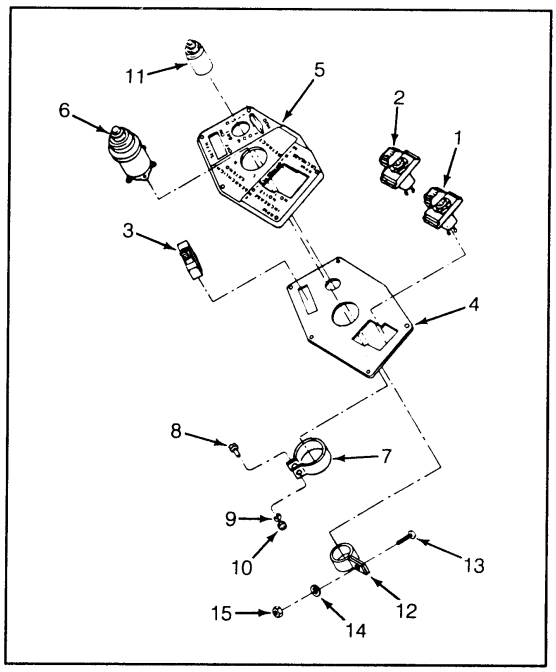
Materials:
Solder (E360)
Varnish (E435)
Gloves (El 86)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



1. **Position switches (1, 2, and 3)** on switch retaining plate (4).
2. **Position retaining plate (4)** with switches (1, 2 and 3) on switch panel (5).
3. **Push switch (6) through switch panel (5) and install clamp (7)**, with screw (8), washer (9) and nut (10).
4. **Push switch (11) through panel (5) and install clamp(12)**, with screw (13), washer (14) and nut (15).



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5. Remove tape, **solder three wires (16)** to switch (17). Use solder (E360). Remove tags.

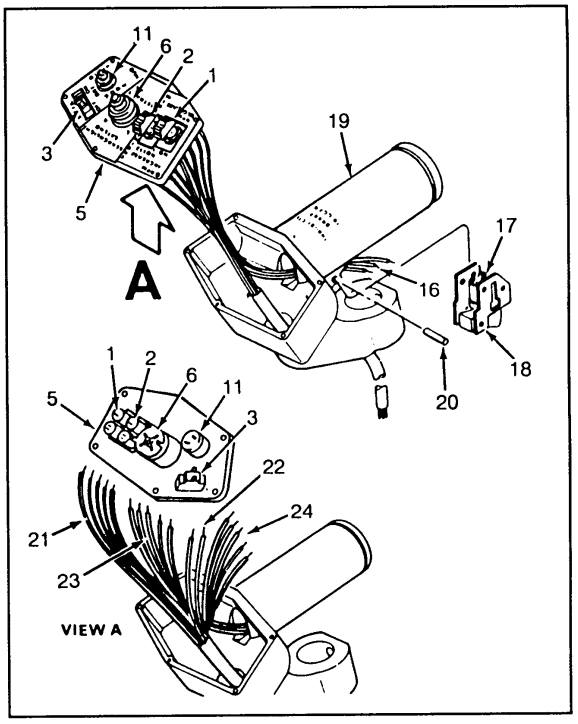
6. Position switch assembly (18) in thrust control grip (19). **Install pin (20).**

7. Remove tape, **solder five wires (21)** to switches (1 and 2). Use solder (E360). Remove tags.

8. Remove tape, **solder two wires (22)** to switch (3). Use solder (E360). Remove tags.

9. Remove tape, **solder five wires (23)** to switch (6). Use solder (E360). Remove tags.

10. Remove tape, **solder five wires (24)** to switch (11). Use solder (E360). Remove tags.



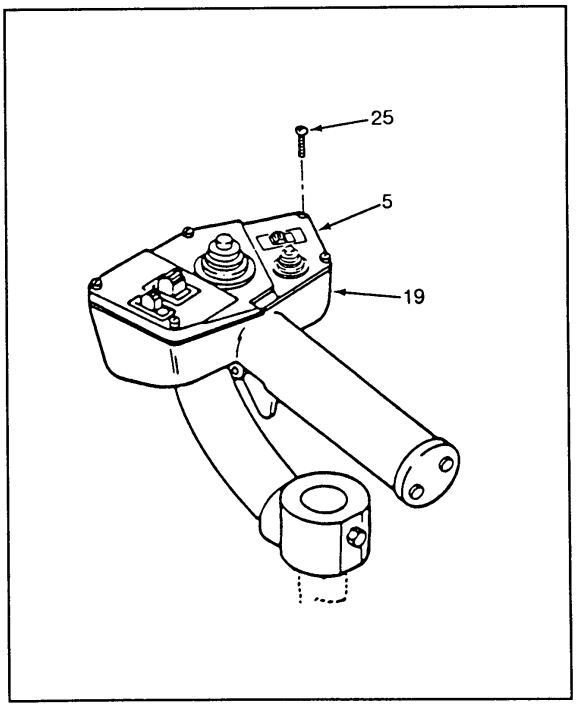
WARNING

Varnish (E435) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

10. **Apply varnish (E435)** to all soldered joints. Wear gloves (E186).

INSPECT

11. **Position switch panel (5)** on grip (19). Install five screws (25).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-140.4 TEST THRUST CONTROL GRIP

INITIAL SETUP

Applicable Configurations:

With 60 and Without 74

Tools:

Meter, Simpson 260 or Equivalent

Materials:

None

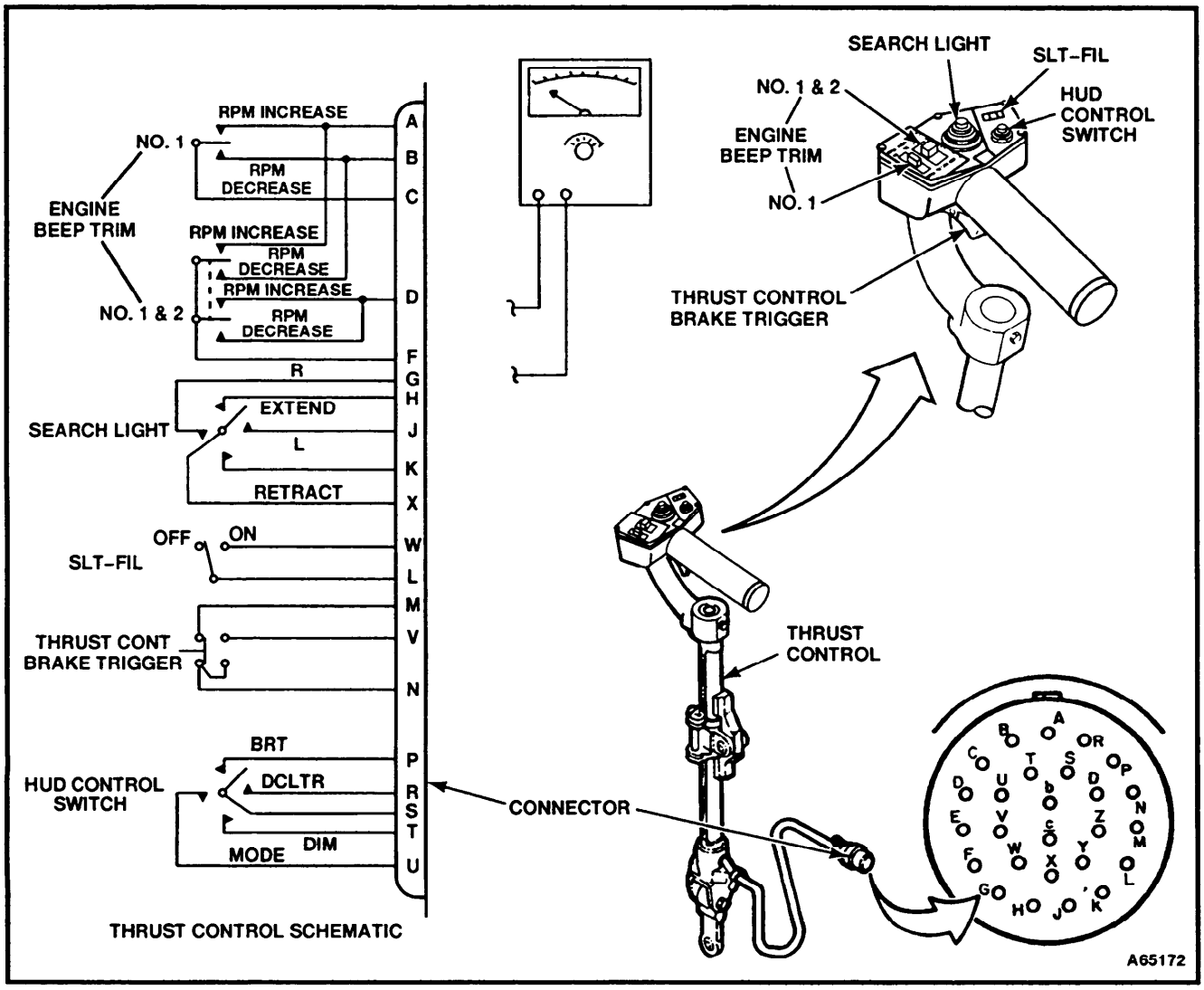
Personnel Required:

Aircraft Electrician

Inspector

Equipment Condition:

Off Helicopter Task



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9-140.4 TEST THRUST CONTROL GRIP (Continued) 9-140.4

1. **Test six switches (1, 2 3, 4, 5 and 6)** of thrust control grip (7). Set meter (8) to RX 1 and connect meter to pins of connector (9) listed below. Check meter indication.

2. **Connect meter (8) between pin A and shaft (10).** Check meter indication. There shall be no indication.

3. Repeat step 2 for pins B, C, D, F, G, H, J, K, X, W, L, M, N, P, R, S, T, AND U.

SWITCH	SWITCH POSITION	CONNECTOR PIN	METER INDICATION
ENGINE BEEP TRIM NO. 1 (1)	RPM INCREASE	A and C	0 ohm
RPM DECREASE		B and C	0 ohm
	Center	A and C then B and C	None
ENGINE BEEP TRIM NO. 1 & NO. 2 (2)	RPM INCREASE	F and A then F and D	0 ohm
	RPM DECREASE	F and B then F and D	0 ohm
SEARCH LIGHT (3)	EXTEND	X and H	0 ohm
	RETRACT	X and K	0 ohm
	L	X and J	0 ohm
	R	X and G	0 ohm
	Center	X and G, then X and H, then X and J, then X and K	None
SLT-FIL (4)	ON	L and W	0 ohm
	OFF	L and W	None
THRUST CONT BRAKE TRIGGER (5)	Released	M and N	0 ohm
	Released	N and V	None
	Pressed	N and V	0 ohm
	Pressed	N and M	None
HUD CONTROL SWITCH (6)	BRT	P and S	0 ohm
	DCLTR	R and S	0 ohm
	DIM	T and S	0 ohm
	MODE	U and S	0 ohm
	Center	P and S, the R and S, then T and S, then U and S	0 ohm

INSPECT

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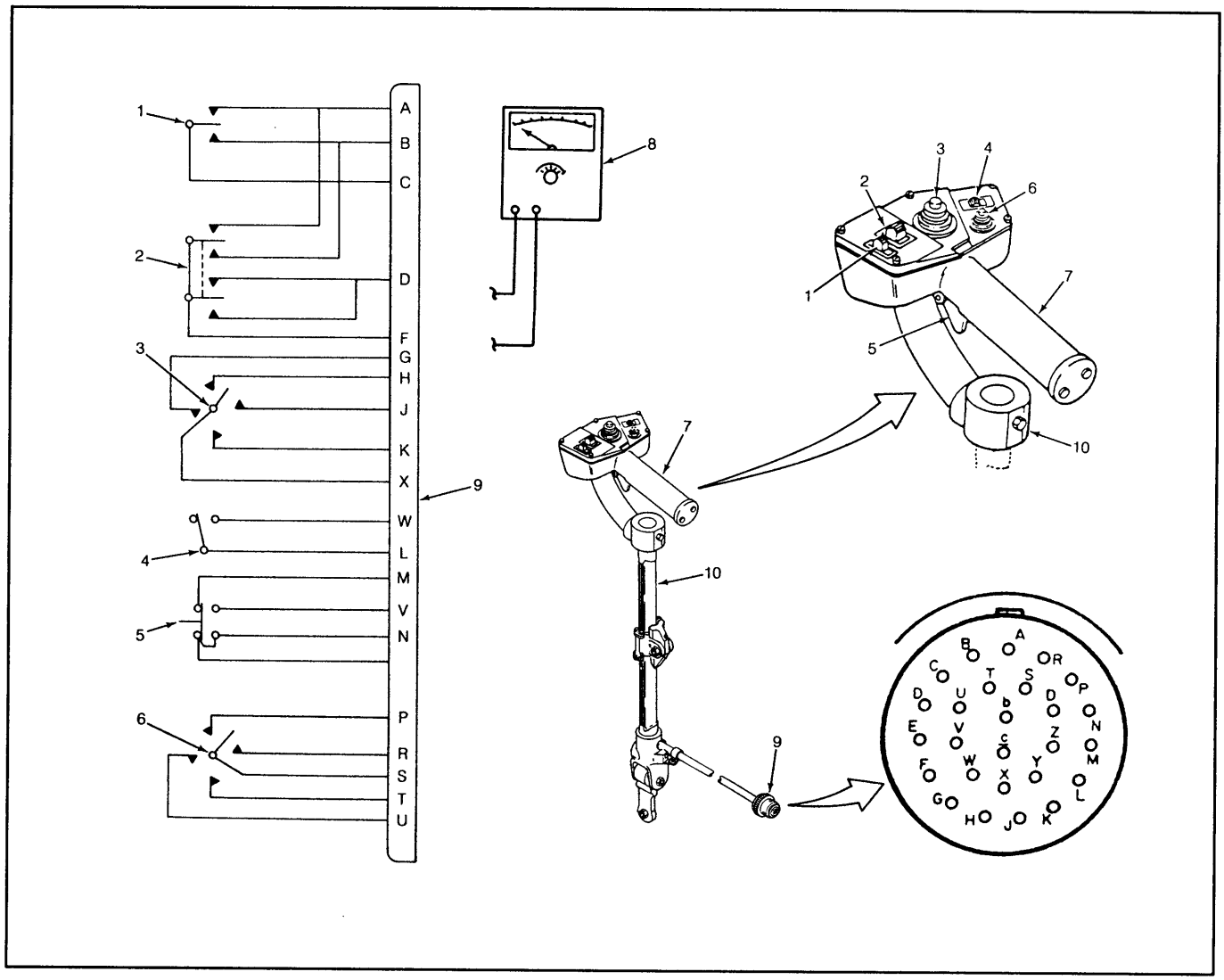


FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-140.5 TEST THRUST CONTROL GRIP 9-140.5

INITIAL SETUP

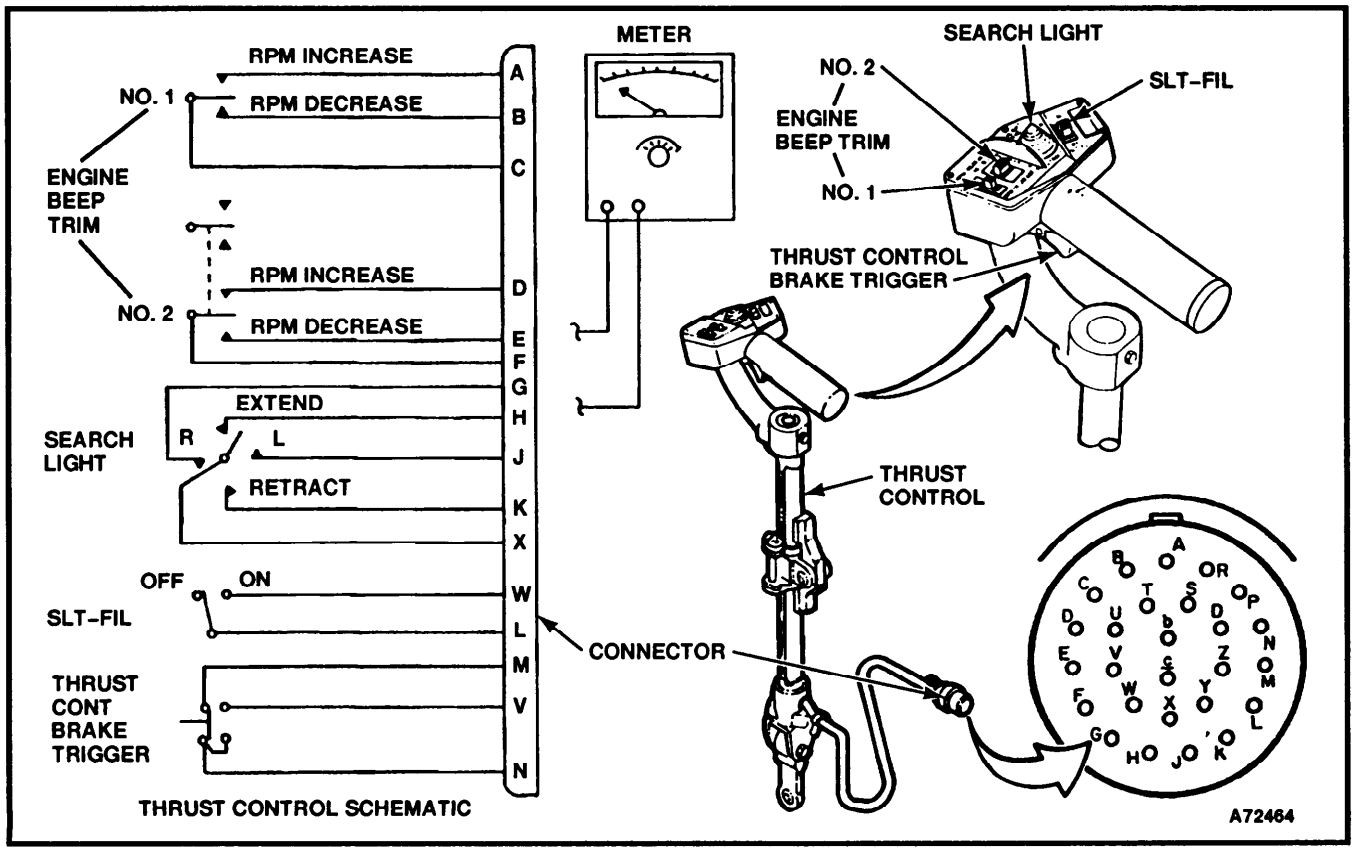
Applicable Configurations:
Without 60 and With 74

Tools:
Multimeter, Simpson 260 or Equivalent

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

Equipment Condition:
Off Helicopter Task



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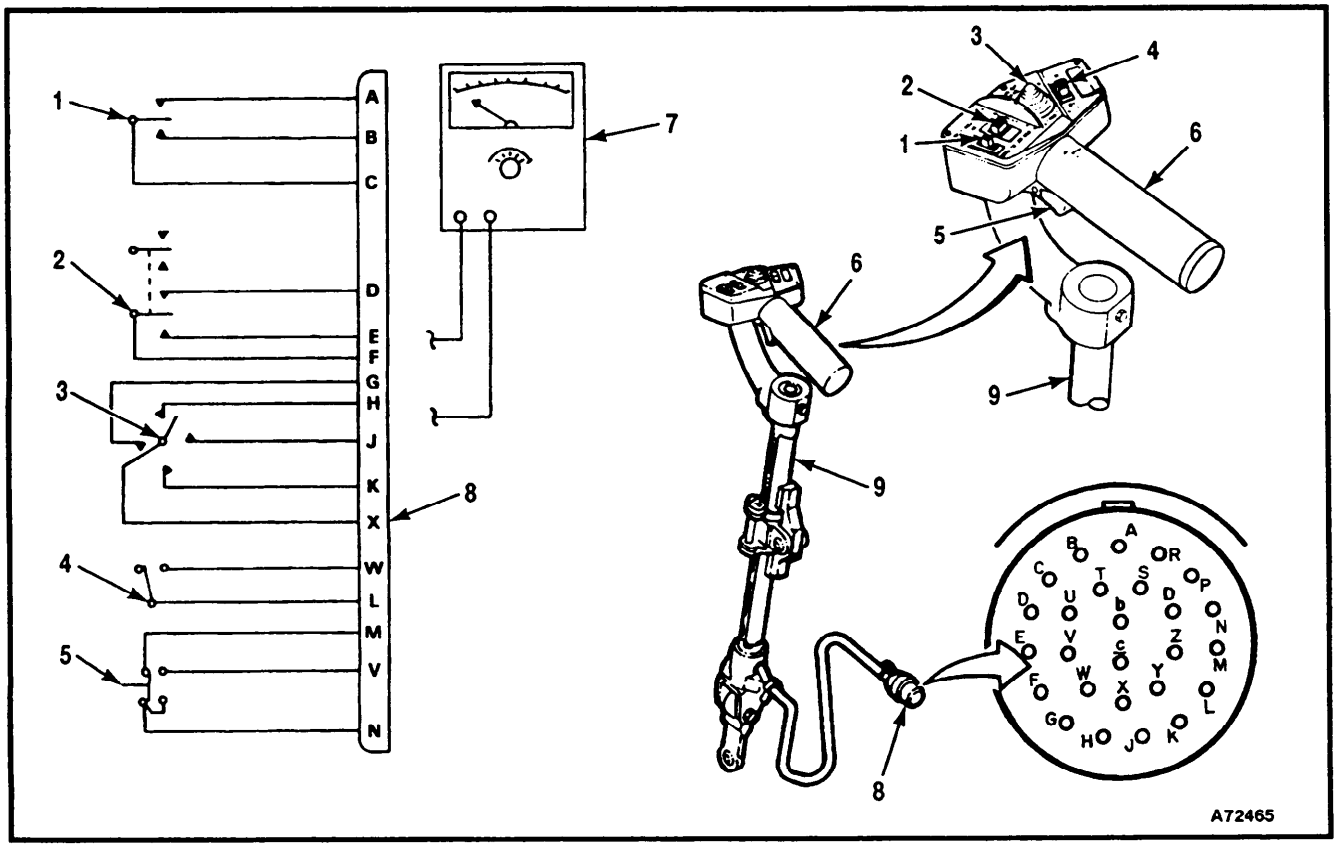
9-140.5 TEST THRUST CONTROL GRIP (Continued) 9-140.5

1. **Test five switches (1, 2, 3, 4, and 5)** of thrust control grip (6). Set meter (7) to R x 1 and connect meter to pins of connector (8) listed below. Check meter indication.
2. **Connect meter (7) between pin A and shaft (9).** Check meter indication. There shall be no indication.
3. Repeat step 2 for pins B, C, D, E, F, G, H, J, K, X, W, L, M, V, and N.

SWITCH	SWITCH POSITION	CONNECTOR PINS	METER INDICATION
ENGINE BEEP TRIM NO. 1 (1)	RPM INCREASE	A and C	0 ohm
	RPM DECREASE	B and C	0 ohm
	Center	A and C then B and C	Inf
ENGINE BEEP TRIM NO. 2 (2)	RPM INCREASE	F and D	0 ohm
	RPM DECREASE	F and E	0 ohm
SEARCH LIGHT (3)	EXTEND	X and H	0 ohm
	RETRACT	X and K	0 ohm
	L	X and J	0 ohm
	R	X and G	0 ohm
	Center	X and G, then X and H, then X and J, then X and K	Inf
SLT-FIL (4)	ON	L and W	0 ohm
	OFF	L and W	Inf
THRUST CONT BRAKE TRIGGER (5)	Released	M and N	0 ohm
	Released	N and V	Inf
	Pressed	N and V	0 ohm
	Pressed	N and M	Inf

INSPECT



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-140.6 TEST THRUST CONTROL GRIP 9-140.6

INITIAL SETUP

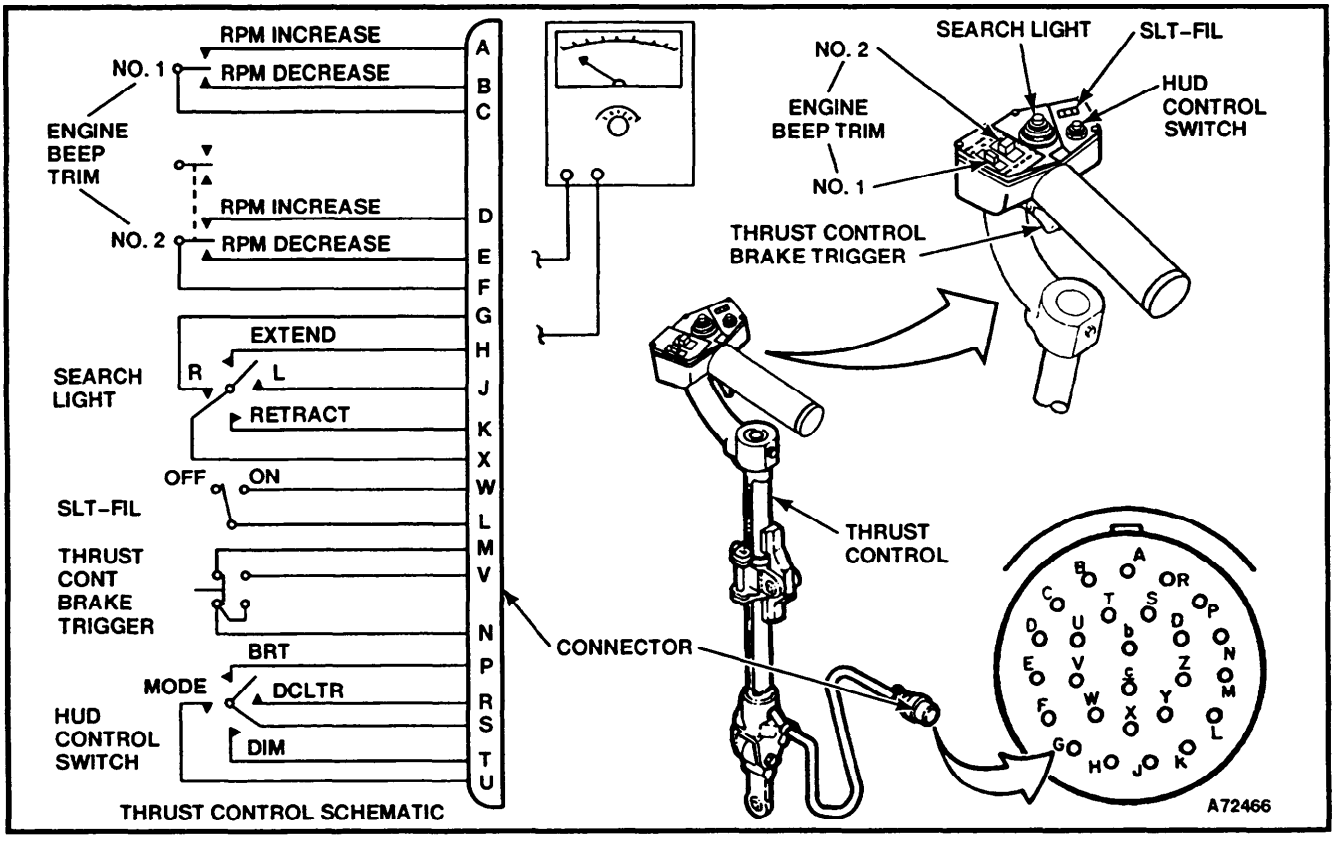
Applicable Configurations:
With 60 and 74

Tools:
Meter, Simpson 260 or Equivalent

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

Equipment Condition:
Off Helicopter Task



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9-140.6 TEST THRUST CONTROL GRIP (Continued) 9-140.6

1. **Test six switches (1, 2, 3, 4, 5, and 6)** of thrust control grip (7). Set meter (8) to R x 1 and connect meter to pins of connector (9) listed below. Check meter indication.
2. **Connect meter (7) between pin A and shaft (10).** Check meter indication. There shall be no indication.
3. Repeat step 2 for pins B, C, D, E, F, G, H, J, K, X, W, L, M, N, P, R, S, T, and U.

SWITCH	SWITCH POSITION	CONNECTOR PINS	METER INDICATION
ENGINE BEEP TRIM NO. 1 (1)	RPM INCREASE	A and C	0 ohm
	RPM DECREASE	B and C	0 ohm
	Center	A and C then B and C	None
ENGINE BEEP TRIM NO. 2 (2)	RPM INCREASE	F and D	0 ohm
	RPM DECREASE	F and E	0 ohm
SEARCH LIGHT (3)	EXTEND	X and H	0 ohm
	RETRACT	X and K	0 ohm
	L	X and J	0 ohm
	R	X and G	0 ohm
	Center	X and G, then X and H, then X and J, then X and K	None
SLT-FIL (4)	ON	L and W	0 ohm
	OFF	L and W	None
THRUST CONT BRAKE TRIGGER (5)	Released	M and N	0 ohm
	Released	N and V	None
	Pressed	N and V	0 ohm
	Pressed	N and M	None
HUD CONTROL SWITCH (6)	BRT	P and S	0 ohm
	DCLTR	R and S	0 ohm
	DIM	T and S	0 ohm
	MODE	U and S	0 ohm
	Center	P and S, then R and S, then T and S, then U and S	0 ohm

INSPECT

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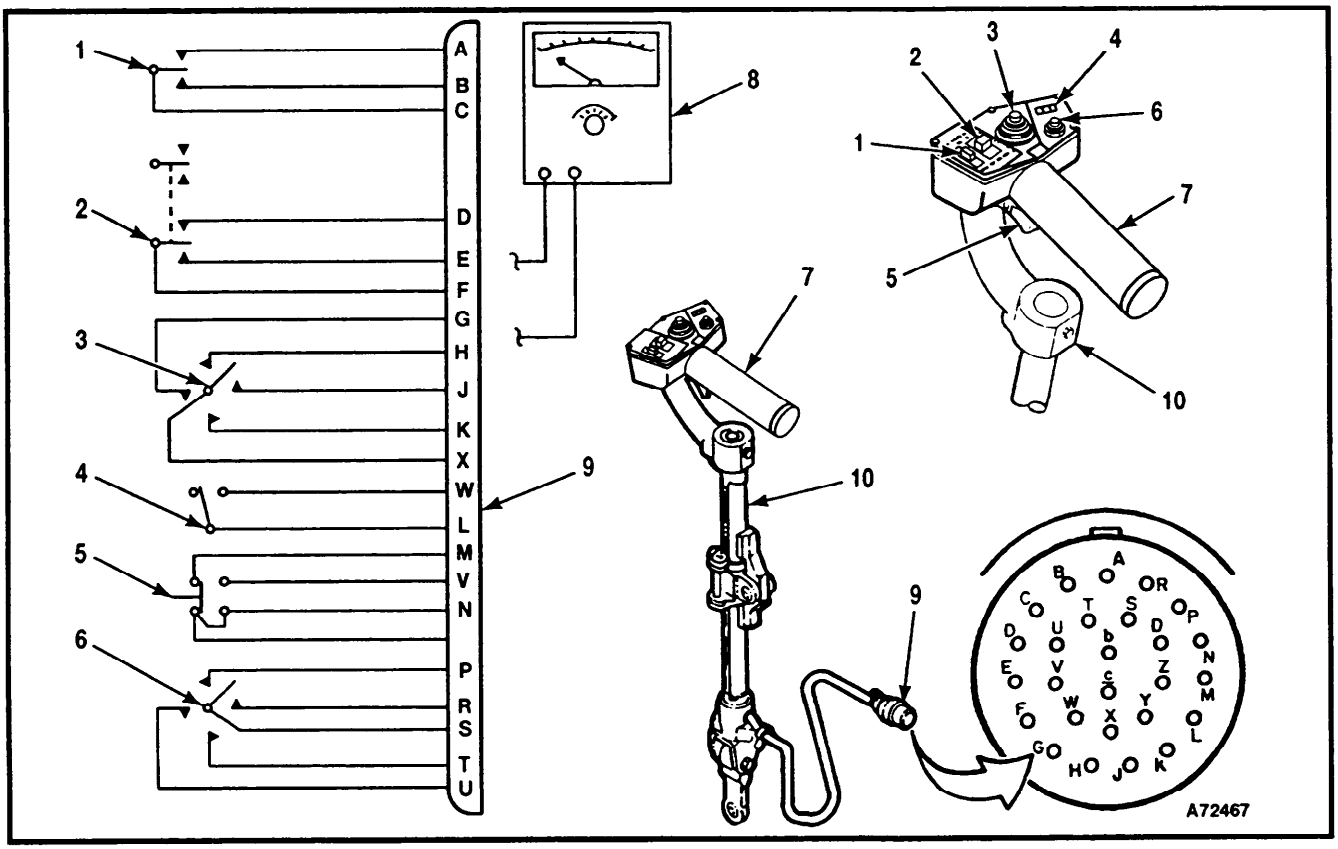


FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-141 INSTALL THRUST CONTROL GRIP

INITIAL SETUP

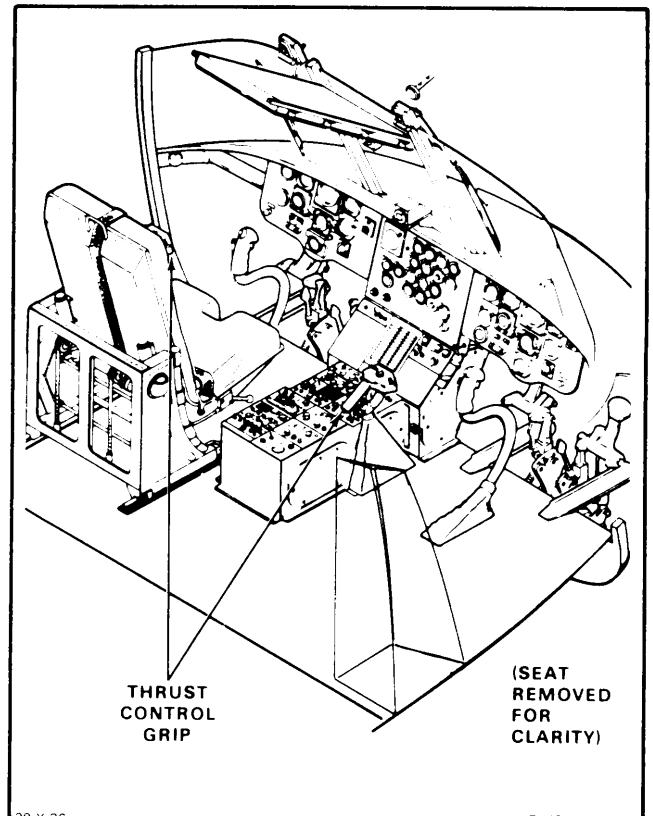
Applicable Configurations:
All

Tools:
None

Materials:
None

Personnel Required:
Aircraft Electrician

References:
Task 11-65
Task 11-66
Task 11-67



1. Install grip on thrust control (Task 11-65).
2. Install thrust control (Task 11-66 or 11-67).

FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-142 REMOVE POWER STEERING CONTROL BOX

INITIAL SETUP

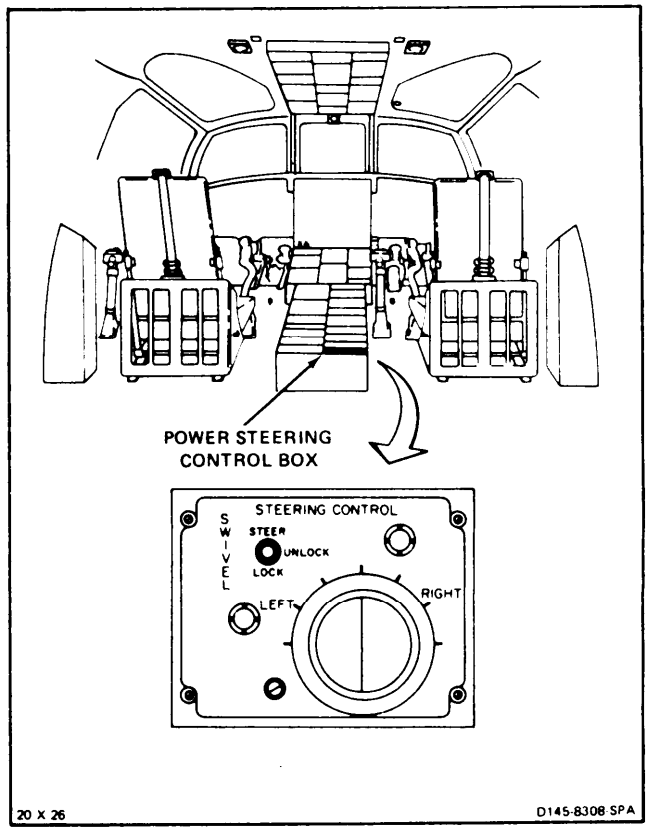
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 51 80-00-323-4915

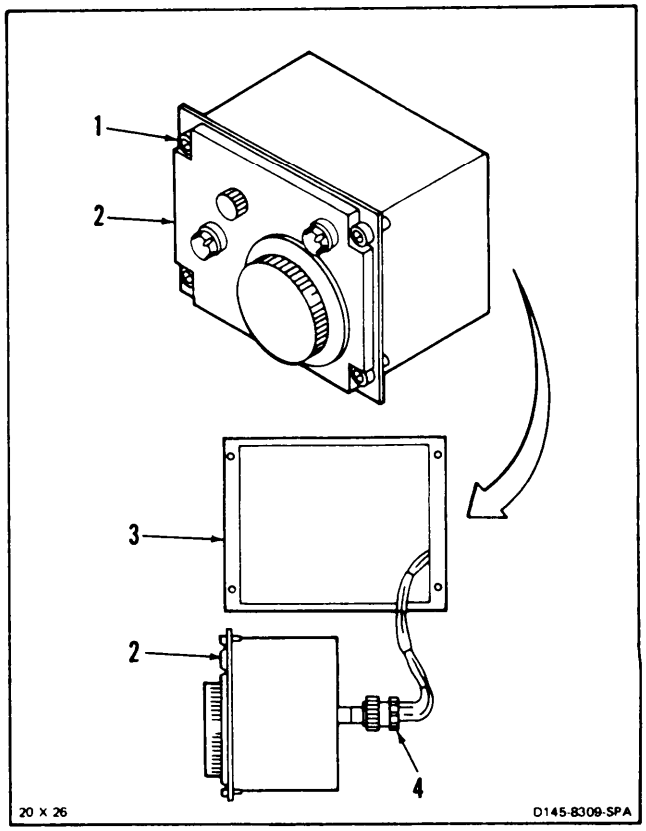
Materials:
None

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Loosen four fasteners (1). Lift box (2) out of console (3).
2. **Disconnect electrical connector (4)** from box (2).
3. **Remove box (2).**



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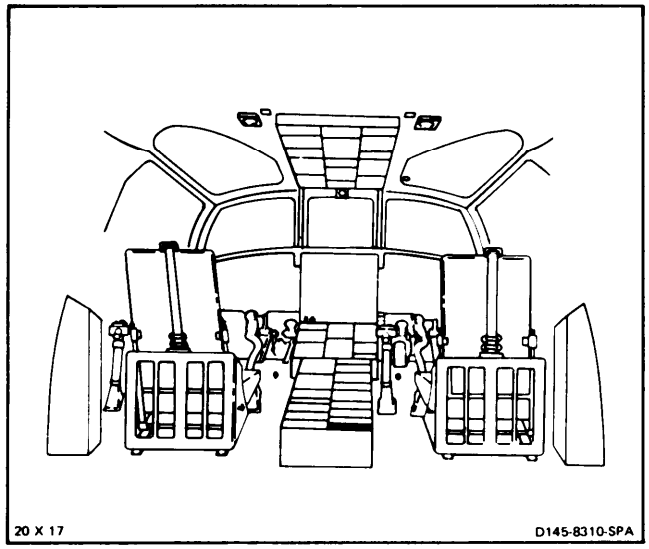
9-142 REMOVE POWER STEERING CONTROL BOX (Continued) 9-142

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-143 DISASSEMBLE POWER STEERING CONTROL BOX (AVIM)

INITIAL SETUP

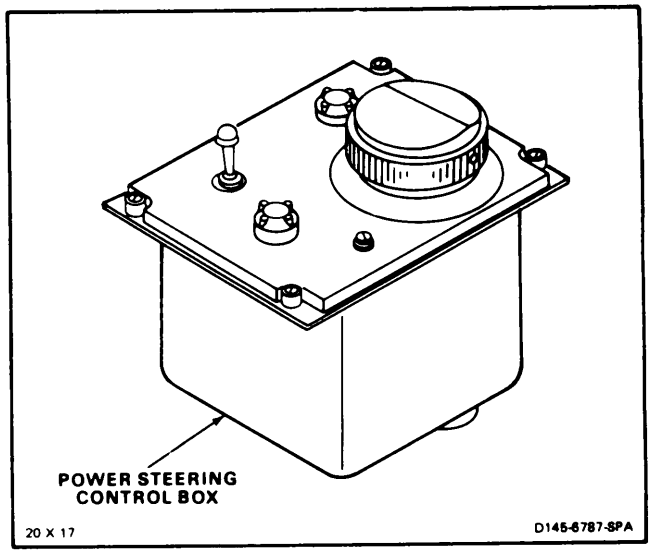
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun
Contact Removal/Insertion Tool M81969/14-03

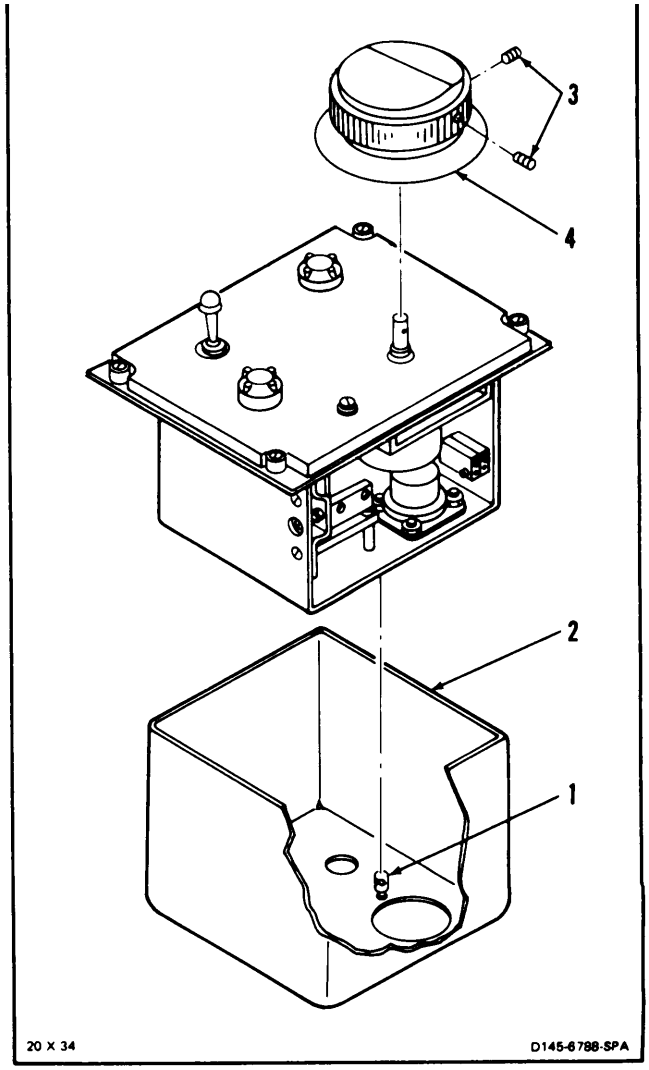
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

Equipment Condition:
Off Helicopter Task



1. Loosen fastener(1) and **remove cover (2).**
2. Remove two screws (3). **Remove knob (4).**



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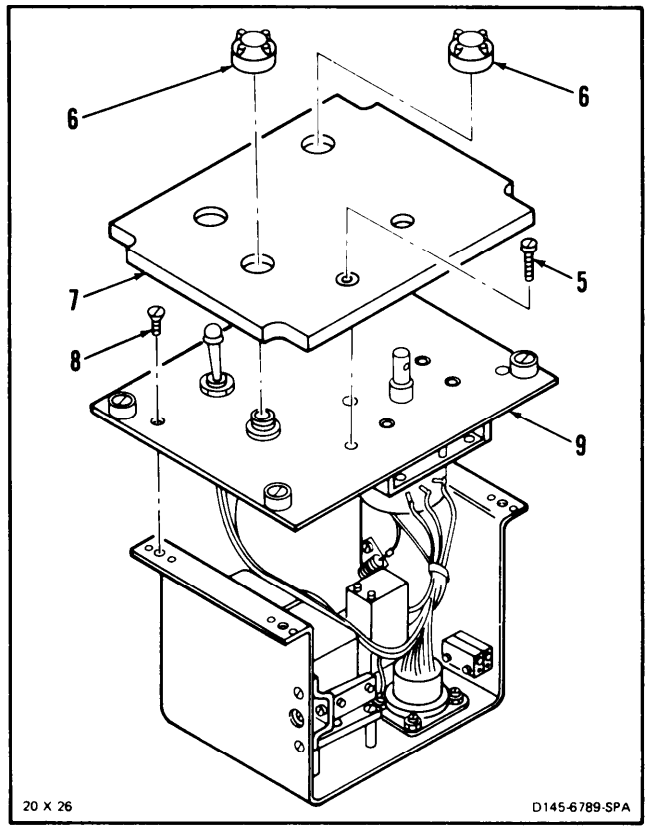
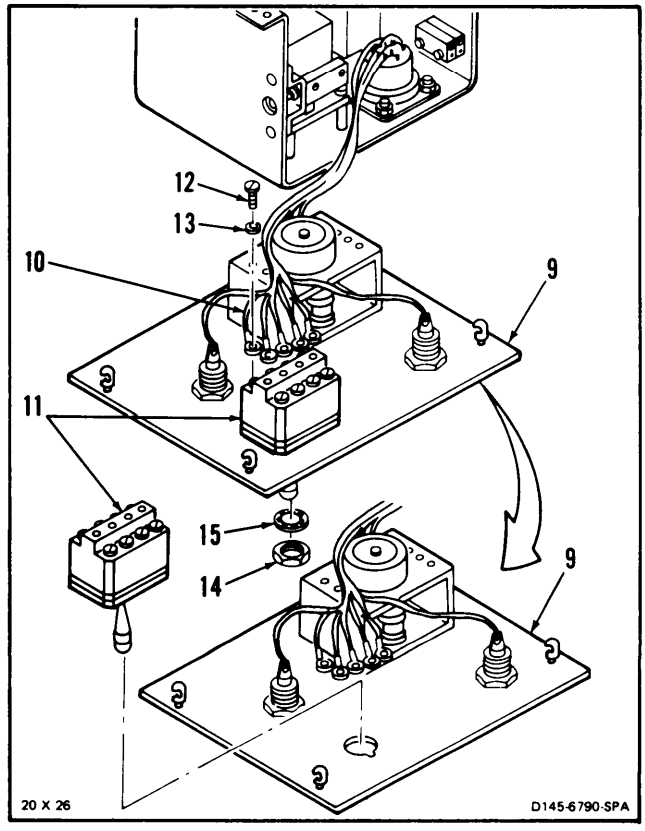
9-143 DISASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued)

3. Remove screw (5) and two lamp holders (6). **Remove panel (7).**
4. **Remove four screws (8)** from top plate (9). **Remove plate (9).**



5. Tag and **disconnect five wires (10)** from switch (11) by removing six screws (12) and washers (13).
6. Remove nut (14) and washer (15). **Remove switch (11)** from plate (9).



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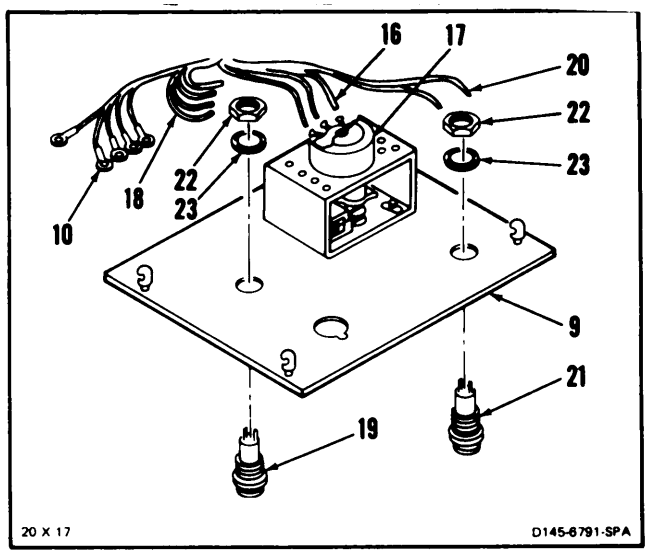
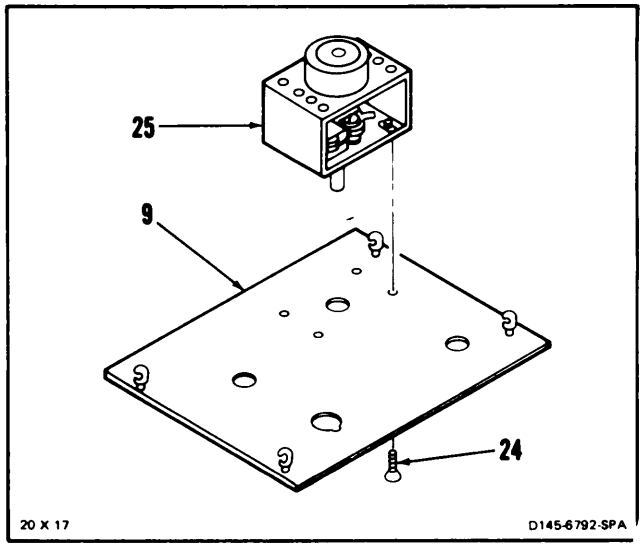
9-143 DISASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued) 9-143

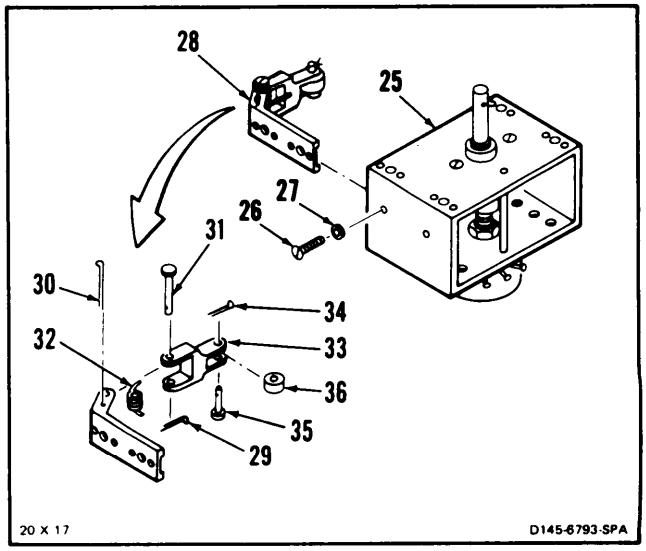
7. Tag and **unsolder three wires (16)** from resistor (17).
8. Tag and **unsolder four wires (18)** from light socket (19).
9. Tag and **unsolder two wires (20)** from light socket (21).
10. Remove two nuts (22) and washers (23) from light sockets (19 and 21). **Remove light sockets.**



11. Remove four screws (24) from cam housing (25). **Remove cam housing** from plate (9).



12. Remove two screws (26) and washers (27).
13. **Remove bracket assembly (28)** from housing (25).
14. Remove Wm cotter pins (29 and 30), pin (31), **spline (32) and roller link (33).**
15. **Remove** cotter pin (34), pin (35) and **roller (36).**



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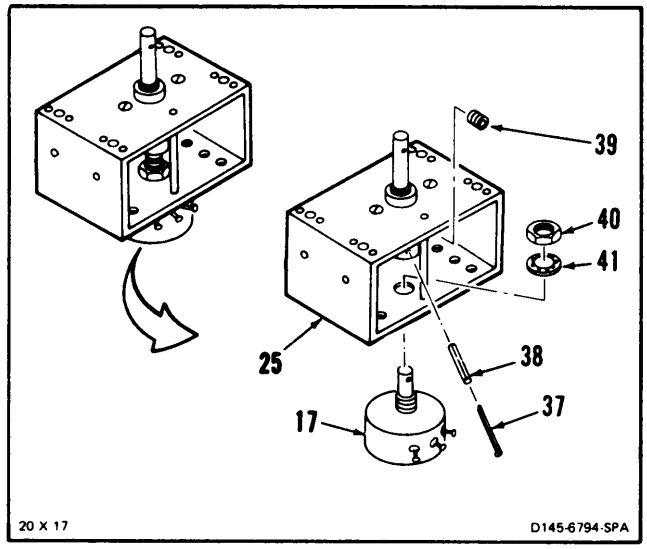
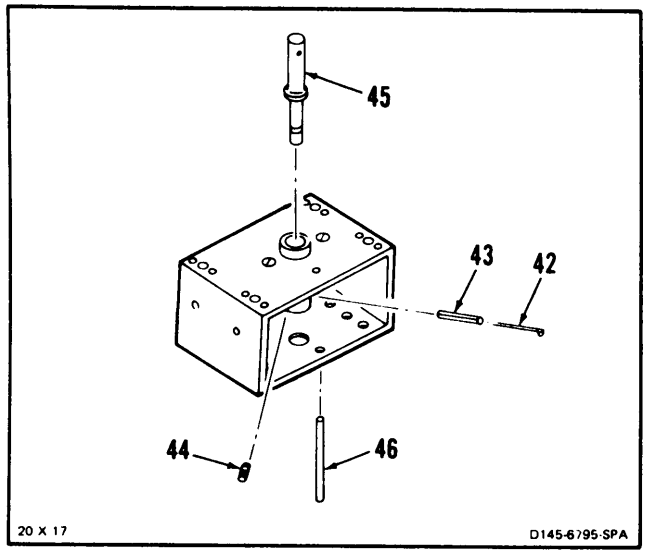
9-143 DISASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued)

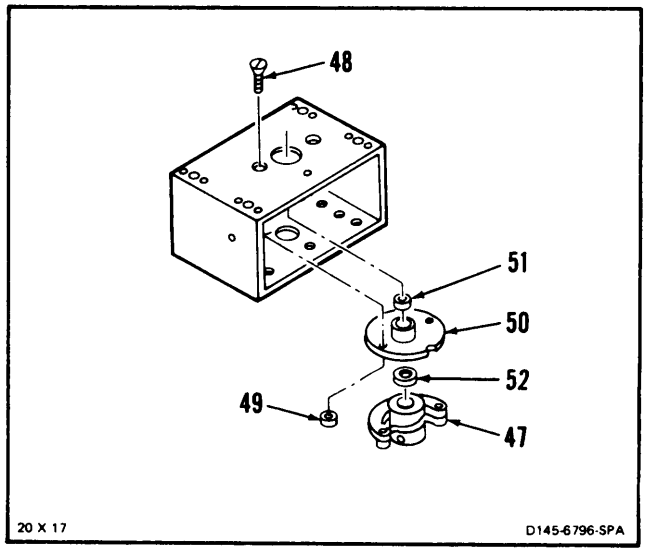
16. Remove cotter pin (37), roll pin (38) and screw (39).
17. Remove nut (40) and washer (41).
18. **Remove resistor (17)** from housing (25).



19. Remove cotter pin (42), roll pin (43) and screw (44).
20. **Remove shoulder pin (45)** and pin (46).



21. **Remove cam (47).** Remove two screws (48) and nuts (49).
22. **Remove sleeve bushing (50), bearing (51), and bushing (52).**



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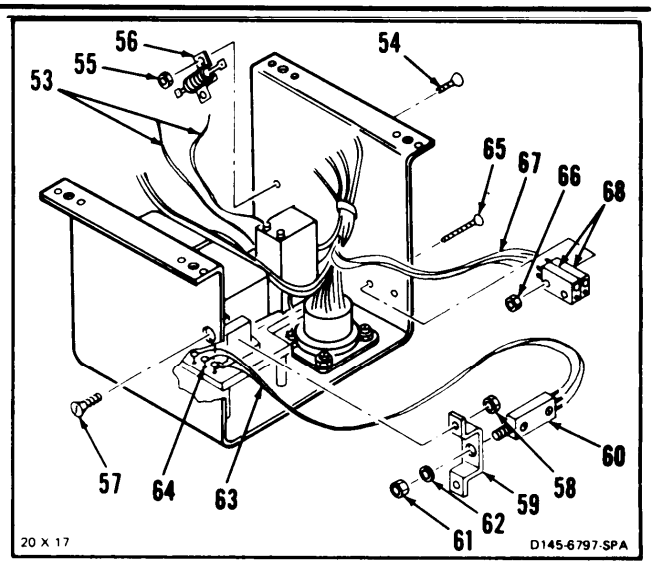
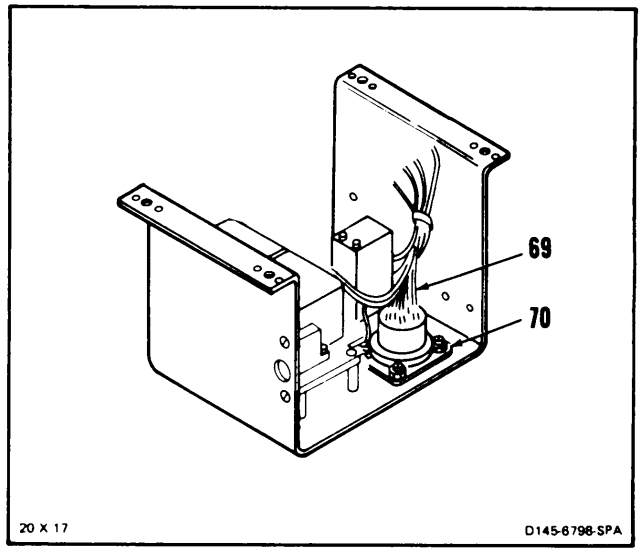
9-143 DISASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued)

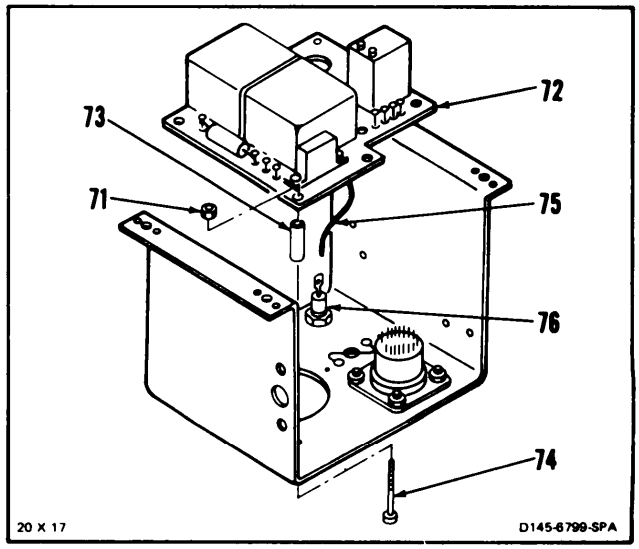
23. Tag and **unsolder two wires (53).**
24. Remove two screws (54) and nuts (55). **Remove resistor (56).**
25. Remove two screws (57) and nuts (58). **Remove bracket (59) and potentiometer (60).**
26. Remove nut (61) and washer (62). **Remove potentiometer (60) from bracket (59).**
27. Tag and **unsolder three wires (63)** from terminals (64).
28. Remove two screws (65) and nuts (66). Tag and **unsolder six wires (67). Remove two resistors (68).**



29. Tag and **remove 16 wires (69)** from connector (70). Use contact tool.



30. Remove five nuts (71). **Remove plate assembly** (72). Remove five spacers (73) and screws (74).
31. Tag and **unsolder wire (75)** from diode (76).



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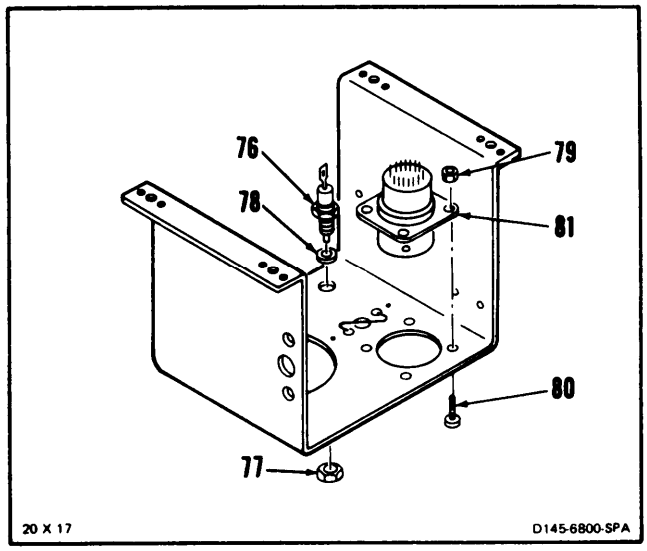
9-143 DISASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued)

32. Remove nut (77). **Remove diode (76)** and washer (78).
33. Remove four nuts (79) and screws (80). **Rornove connector (81).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-144 ASSEMBLE POWER STEERING CONTROL BOX (AVIM)

INITIAL SETUP

Applicable Configurations:
All

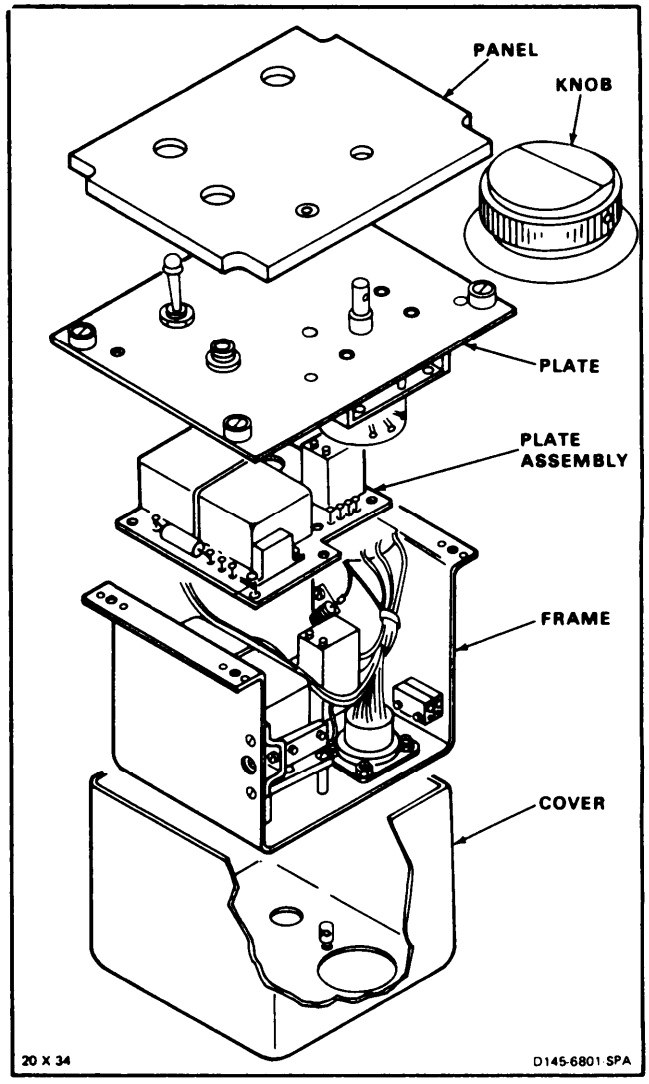
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun
Contact Removal/Insertion Tool M81969/14-03

Materials:
Solder (E360)

Parts:
Cotter Pins

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



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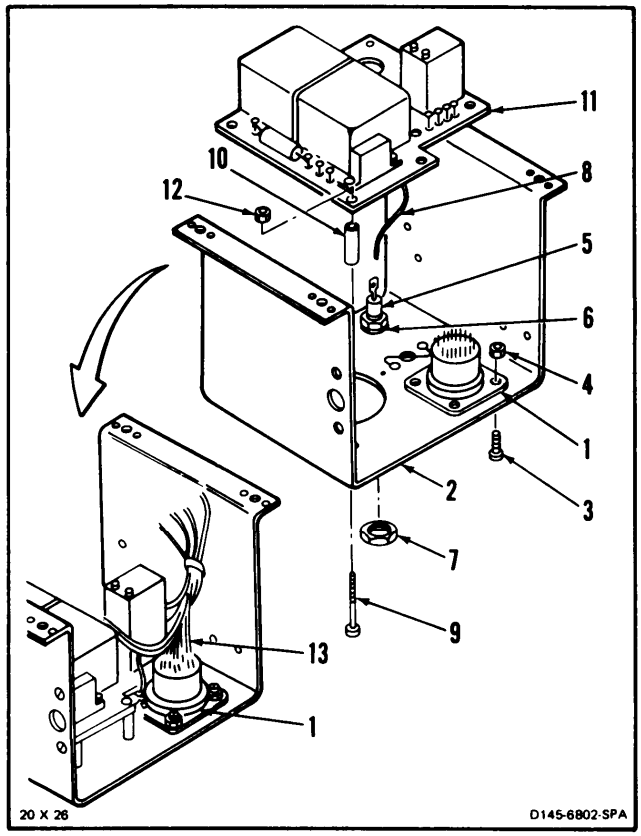
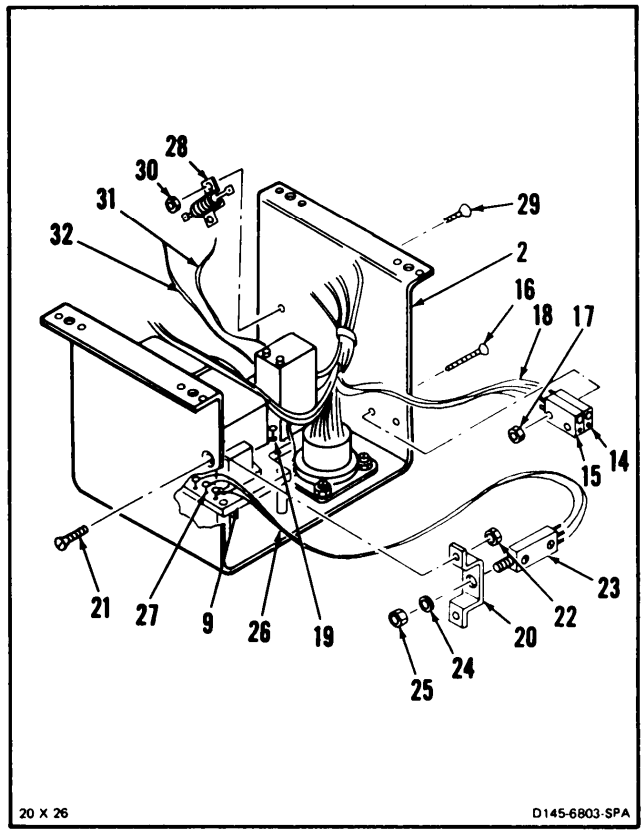
9-144 ASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued)

1. **Position connector (1)** on frame (2). **Install four screws (3)** and nuts (4).
2. **Position diode (5)** and washer (6) on frame (2). **Install nut (7).**
3. **Solder wire (8)** to diode (5). Use solder (E360).
4. **Install five screws (9) and spacers (10)** in frame (2). **Position plate assembly (11)** on five screws and spacers. **Install five nuts (12)** on screws (9).
5. **Install 16 wires (13)** in connector (1). Use contact tool.



6. **Position two resistors (14 and 15)** on side of frame (2). **Install two screws (16)** and nuts (17).
7. **Solder six wires (18)** to terminals (19) on plate assembly (9). Use solder (E360). Remove tags.
8. **Position bracket (20)** on frame (2). **Install two screws (21)** and nuts (22).
9. **Position potentiometer (23)** on bracket (20). **Install** washer (24) and **nut (25).**
10. **Solder three wires (26)** to terminals (27) on plate assembly (9). Use solder (E360). Remove tags.
11. **Position resistor (28)** on frame (2).
12. **Install two screws (29)** and nuts (30).
13. **Solder two wires (31 and 32)** to resistor. Use solder (E360). Remove tags.



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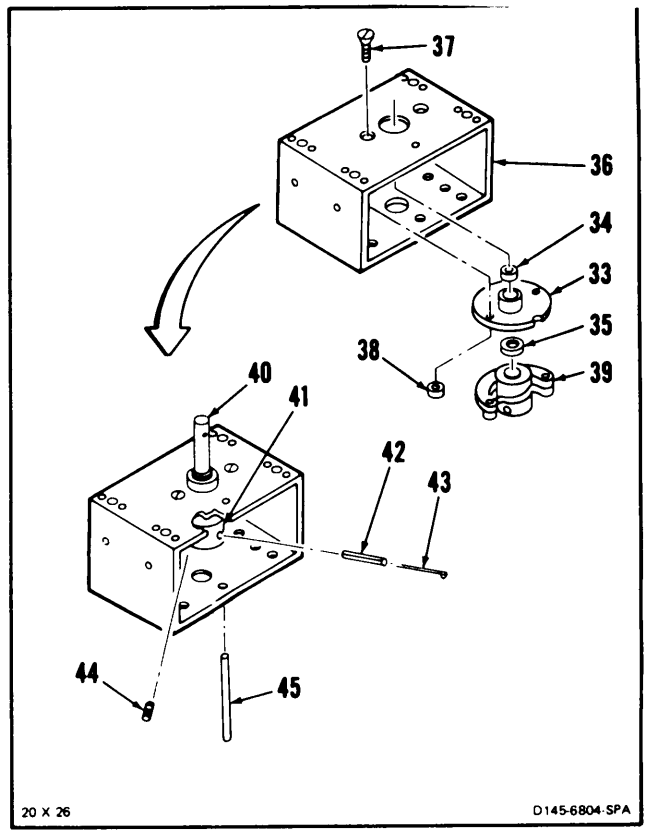
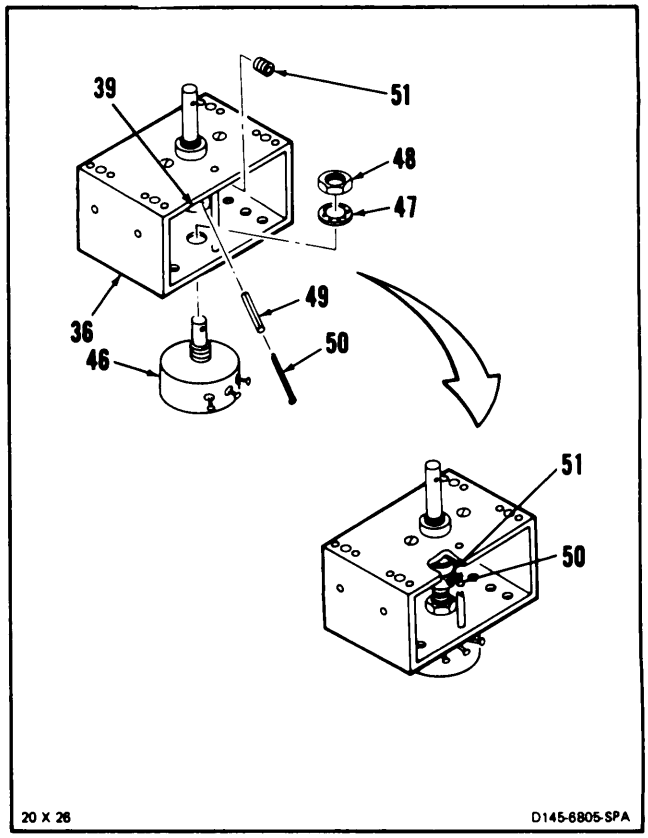
9-144 ASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued)

INSPECT

14. **Position sleeve bushing (33),** bearing (34) and bushing (35) in housing (36). **Install two screws (37)** and nuts (38).
15. **Position cam (39) and install shoulder pin (40).**
16. Align holes (41) in shoulder pin (40) and cam (39). **Install roll pin (42)** and cotter pin 43). **Install screw (44).**
17. **Install pin (45).**



18. **Position resistor (46)** in housing (36).
19. **Install** washer (47) and **nut (48).**
20. Align hole in shaft of resistor (46) and cam (39). **Install roll pin (49)** and cotter Pin (50). **Install screw (51).**



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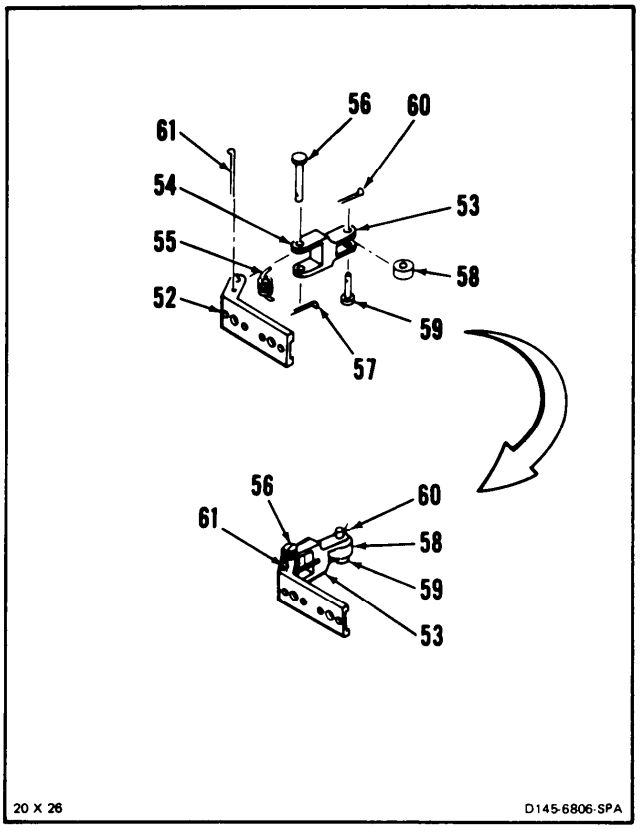
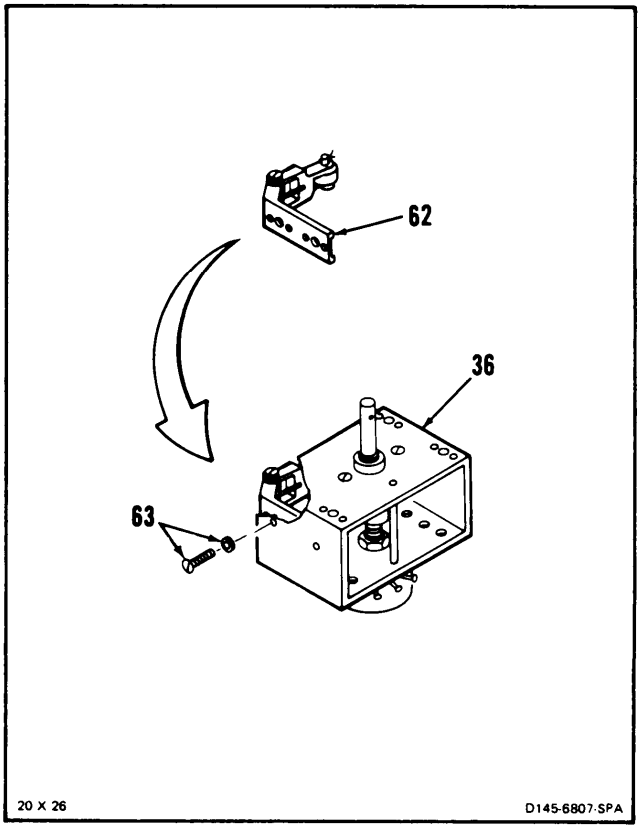
9-144 ASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued) 9-144

21. **Position bracket (52)** and roller link (53) with holes (54) aligned. **Position spring (55)** and **install pin (56)** and cotter pin (57).
22. **Position roller (58)** in roller link (53) and **install pin (59).** Install cotter pin (60).
23. Install cotter pin (61).



24. **Position bracket assembly (62)** in cam housing (36). **Install two screws and washers (63).**

INSPECT



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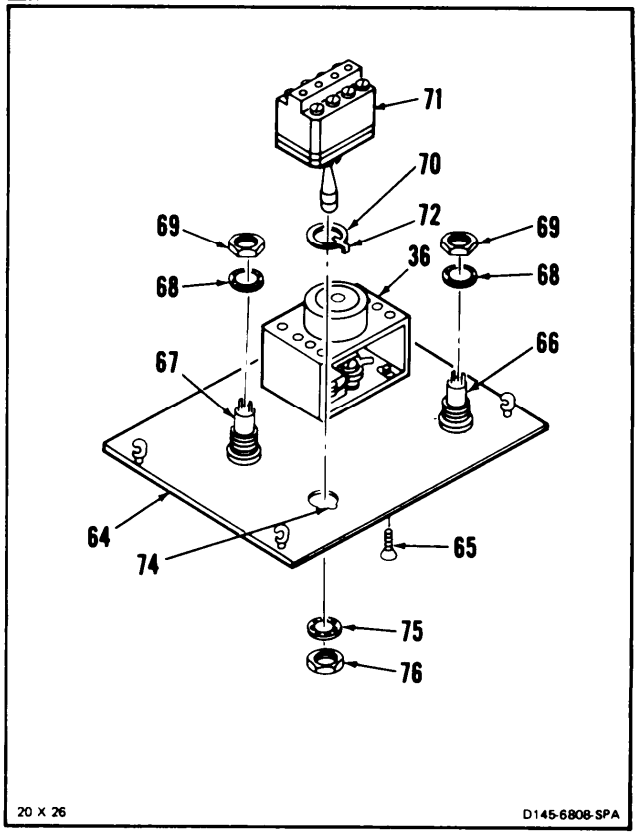
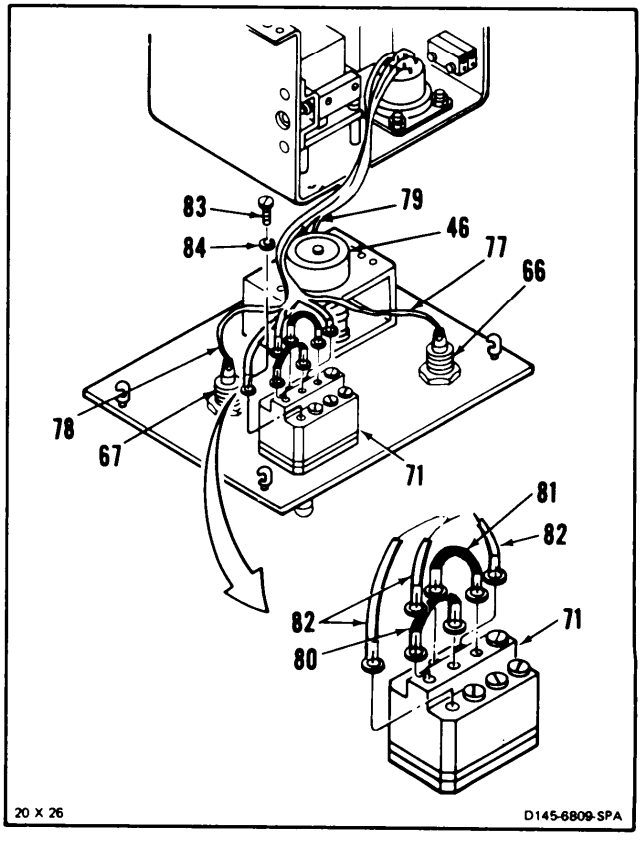
9-144 ASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued)

25. **Position cam housing (36)** on plate (64). **Install four screws (65).**
26. **Install two light sockets (66 and 67)** through plate (64). **Install two** washers (68) and **nuts (69)** on light sockets.
27. Install washer (70) on switch (71).
28. **Install switch (71)** with tab (72) on washer (70) positioned in alignment hole (74) in plate (64).
29. Install washer (75) and nut (76) on switch (71).



30. **Solder four wires (77)** to light socket (66). **Solder two wires (78)** to light socket (67). Use solder (E360). Remove tags,
31. **Solder three wires (79)** to resistor (46). Use solder (E360). Remove tags.
32. **Install two jumper wires (80 and 81)** and three wires (82) to switch (71) using six screws (83) and washers (84). Remove tags.

INSPECT



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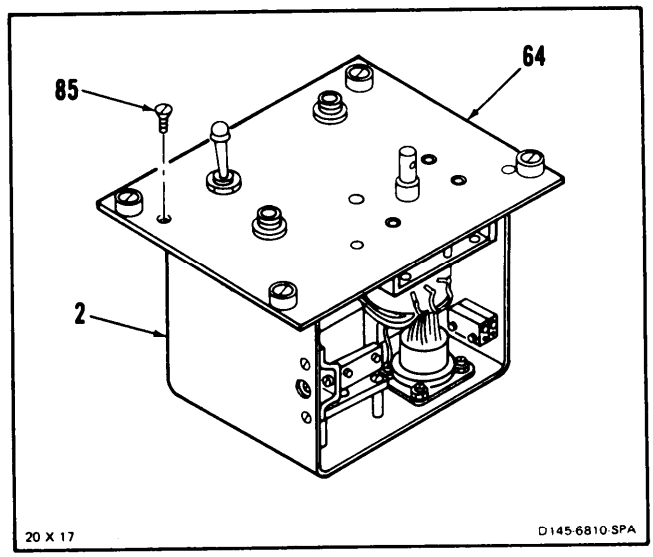
9-144 ASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued)

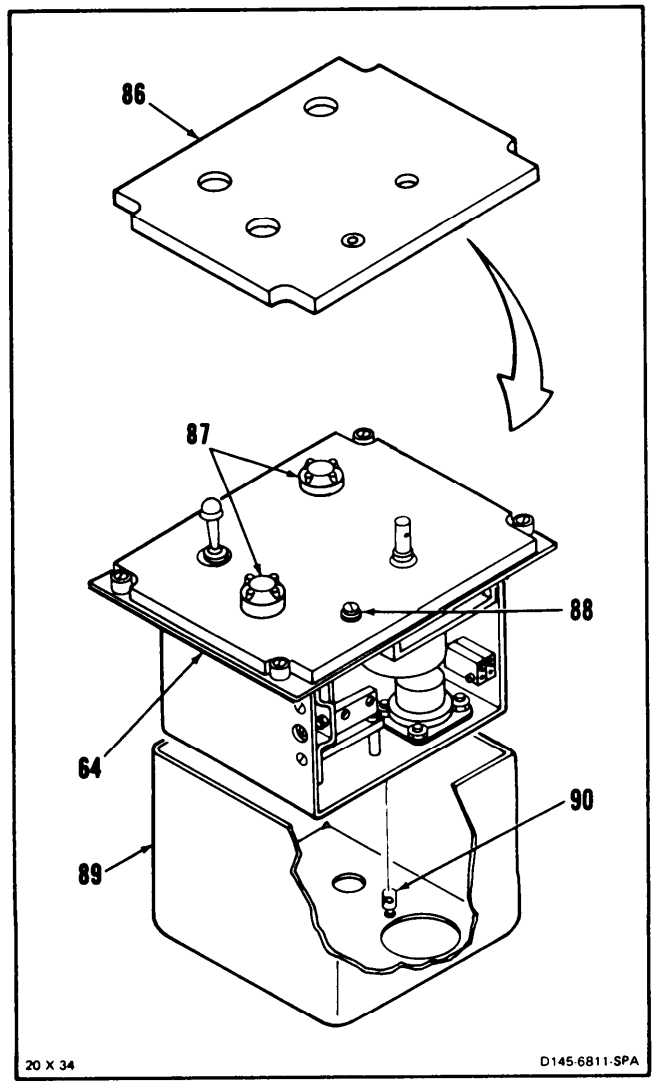
33. **Position plate (64)** frame (2). **Install four screws (85).**



34. **Position panel (86)** on top plate (64). Install two lamp holders (87) and screw (88).

35. **Install cover (89).** Tighten fastener (90).

INSPECT



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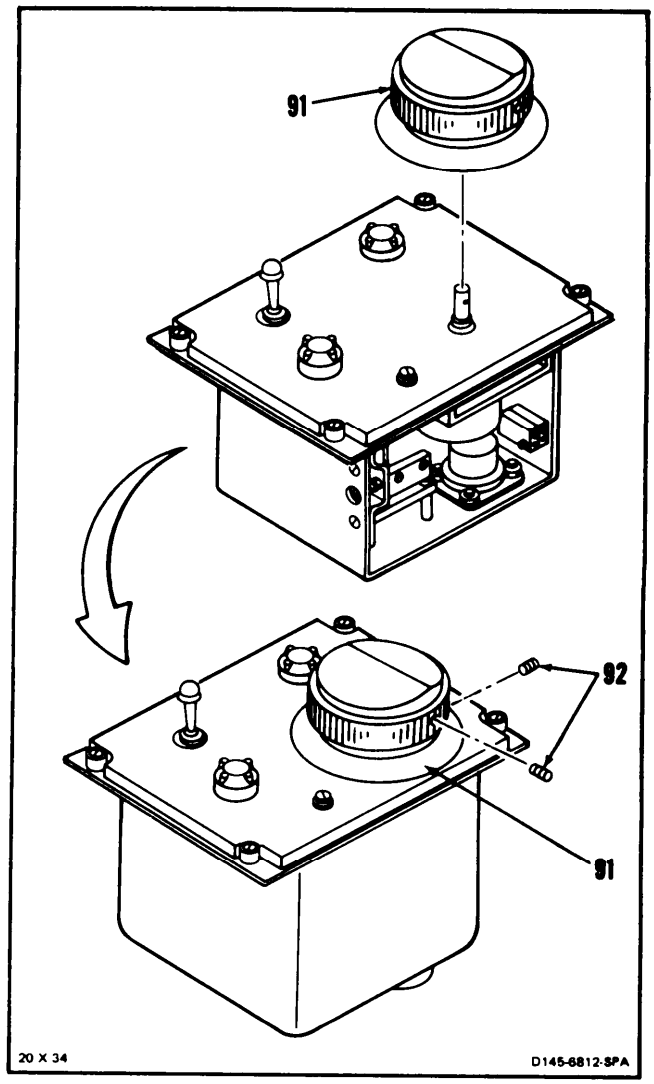
9-144 ASSEMBLE POWER STEERING CONTROL BOX (AVIM) (Continued)

36. **Install knob (91)** and two screws (92).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-145 TEST AND ADJUST POWER STEERING CONTROL BOX (AVIM)

INITIAL SETUP

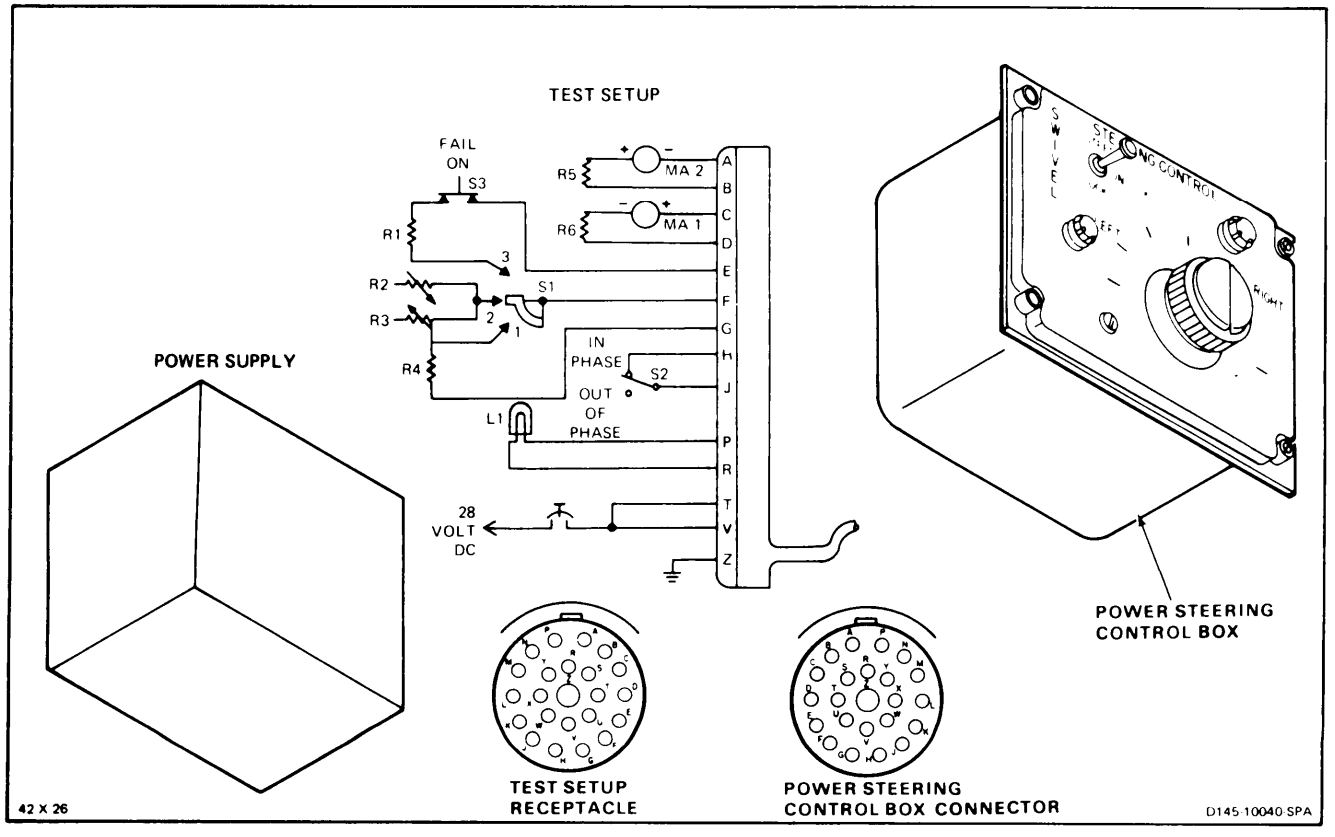
Applicable Configurations:
All

Tools:
R1, R4, Resistor, 250 Ohms ±12, 1/2 Watt (2)
R3, Resistor, 500 Ohms, Variable, 1/2 Watt
R2, Resistor, 200 Ohms, Variable 1/2 Watt
R5, R6, Resistor, 1000 Ohms ±50, 1/2 Watt (2)
Circuit Breaker, 5 Amp
S1 Switch, Three Pole Rotary
S2 Switch, Single Pole
S3 Switch, Momentary
Milliammeter Simpson, 1227C or Equivalent (2 ea)
Light Assembly, 28 VDC
Connector Bendix SPO6SE-16-23S
DC Power Supply 0-28 Volts

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

Equipment Condition:
Off Helicopter Task
Test Setup



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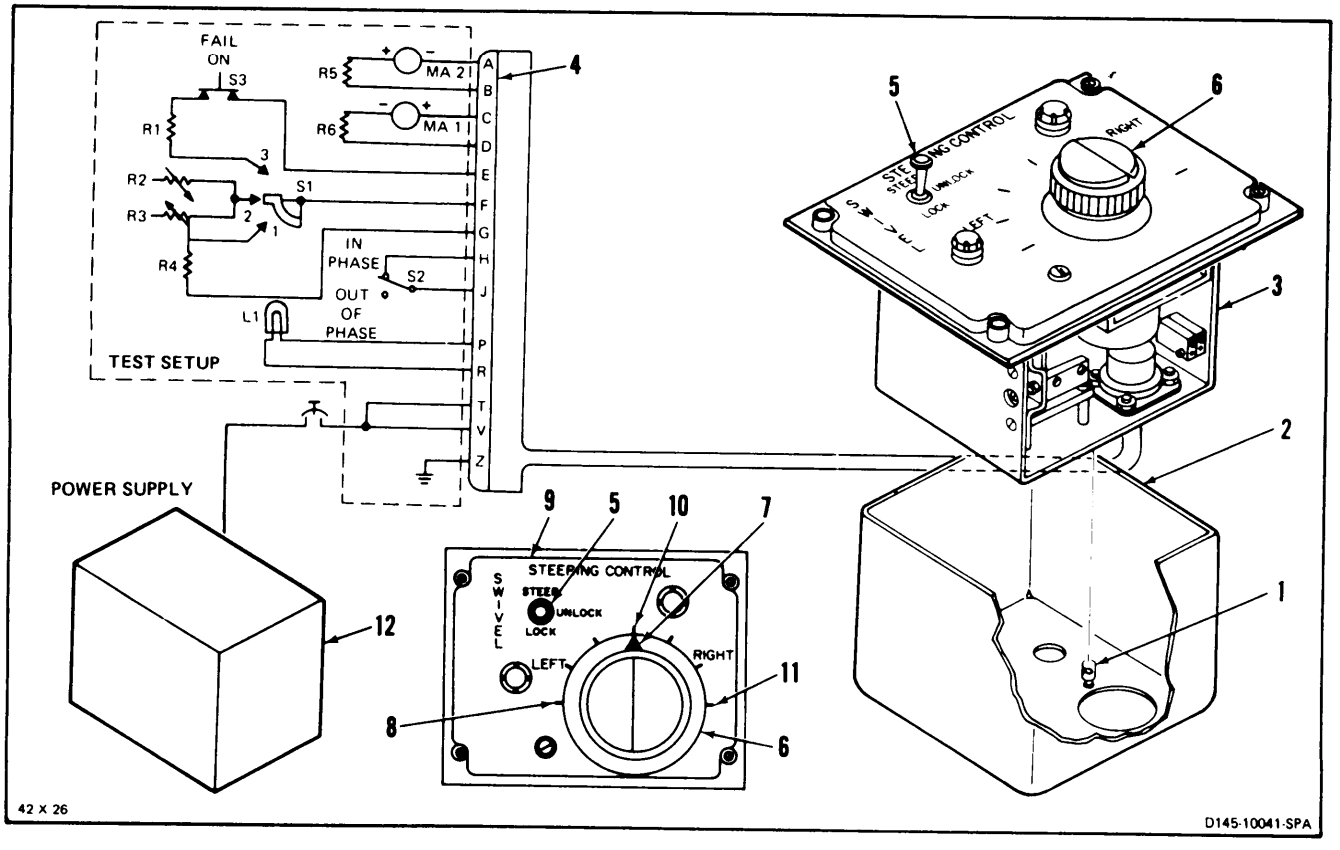
9-145 TEST AND ADJUST POWER STEERING CONTROL BOX (AVIM) (Continued)

1. Loosen fastener (1) and remove control box cover (2) from steering control box (3).
2. **Connect test setup (4)** to steering control box (3).
3. **Set LOCK-UNLOCK-STEER switch (5)** on control box (3) **to LOCK.**
4. **Turn control knob (6) fully to LEFT. Check knob position.** Pointer (7) shall be aligned with mark (8) on panel (9).
5. **Release knob (6). Check knob position.** Pointer (7) on knob will be aligned with mark (10).
6. **Turn control knob (6) fully to right. Check knob position pointer** (7) shall be aligned with mark (11).
7. **Release knob (6). Check knob position.** Pointer (7) shall be aligned with mark (10).
8. **Connect power supply (12)** to test setup (4).



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9-145 TEST AND ADJUST POWER STEERING CONTROL BOX (AVIM) (Continued)

9. **Set switches on test set** as follows:

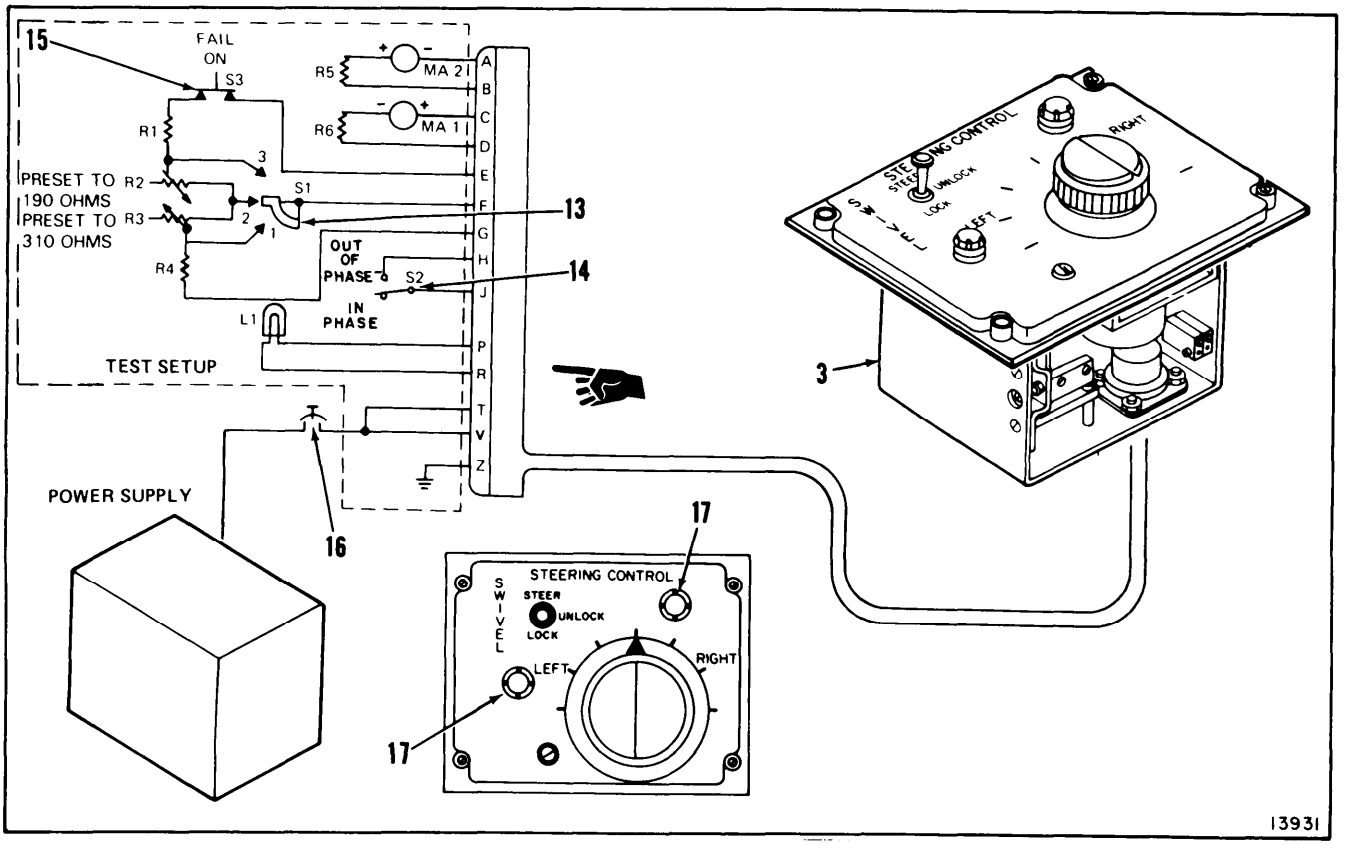
   a. Set switch S1 (13) to position 2.

   b. Set switch S2 (14) to IN-PHASE.

   c. Set switch S3 (15) to ON.

10. **Close circuit breaker (16)** and apply 28 volt dc to test setup.

11. **Check panel edge lights (17)** on control box (3). Lights shall come on.



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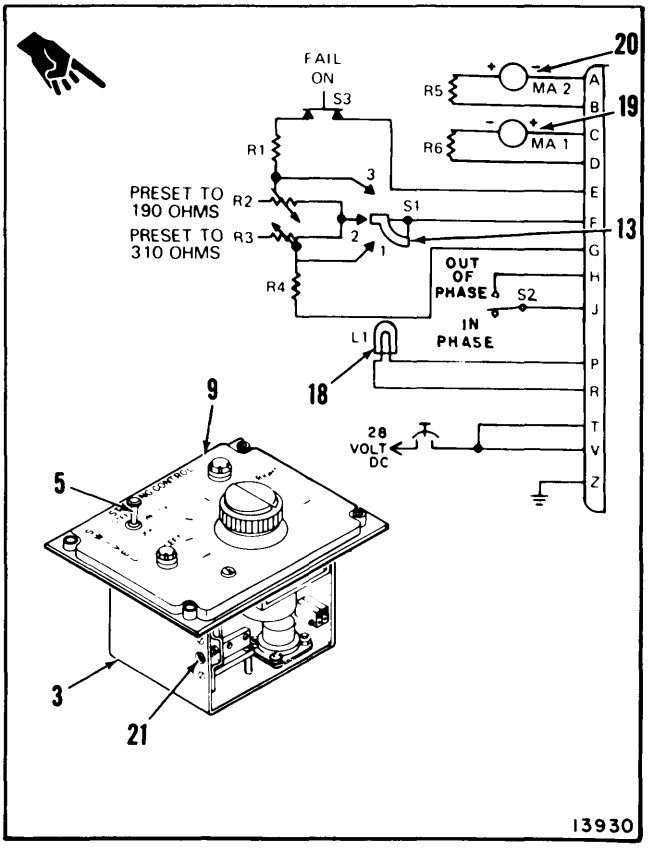
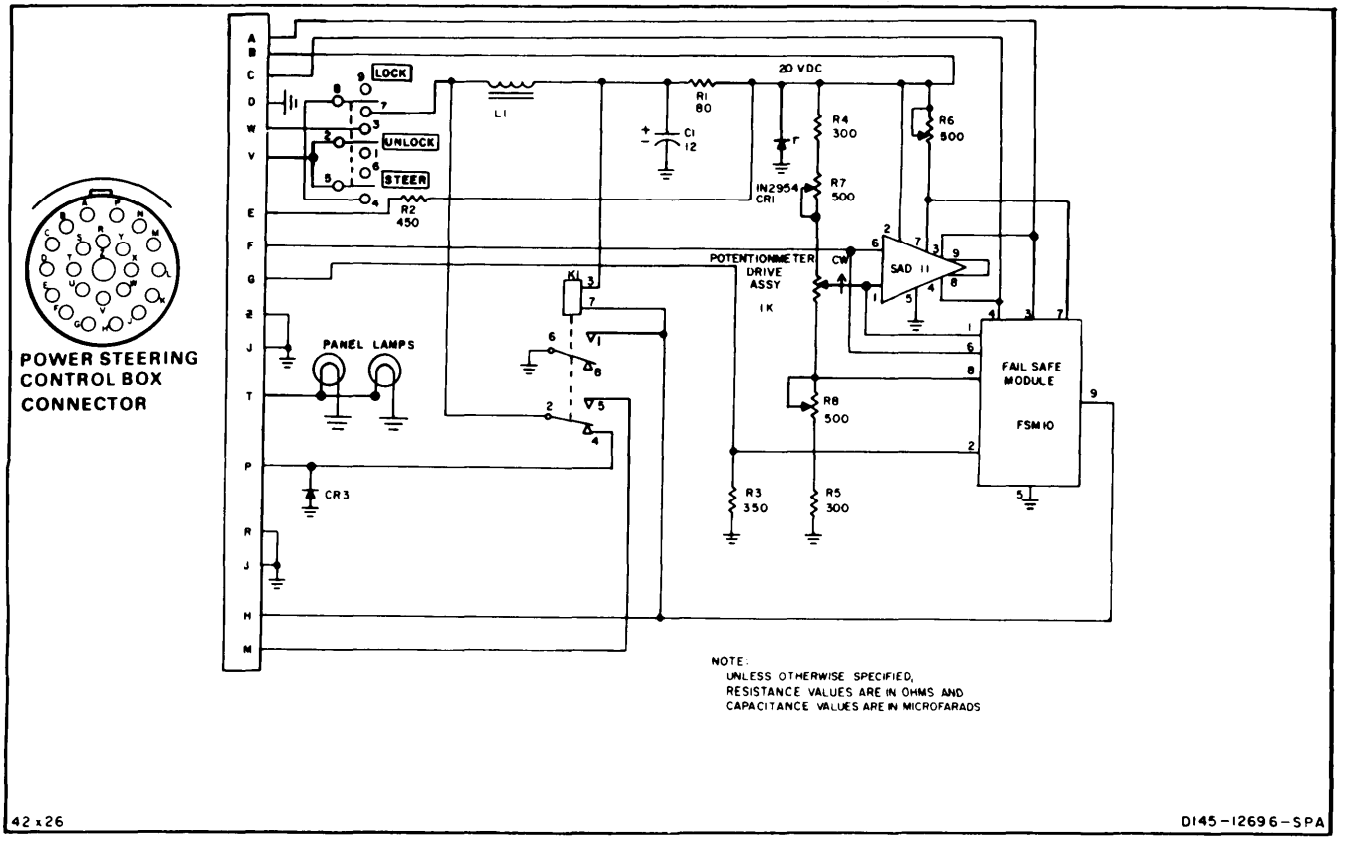
12. **Set SWIVEL SWITCH (5)** on panel (9) to **STEER. Check lamp (18).** Lamp shall come on.
13. **Check meters MA1 (19) and MA2 (20).** Meters shall indicate 0 to 1 milliampere (ma). If meters do not indicate 0 to 1 ma, **adjust screw (21) of control box (3) as necessary until both meters indicate less than 1 ma.**
14. **Set switch S1 (13) to 1. Check meter (19).** Meter shall indicate about 10 ma. **Check meter (20).** Meter shall indicate less than 1 ma.





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15. **Slowly turn knob (6)** RIGHT 45 degrees. **Check meters (19 and 20).** Meter (19) shall return to below 1 ma. Meter (20) shall remain below 1 ma.

16. **Continue turning knob (6)** slowly RIGHT until mechanical stop is reached. **Check meters (19 and 20).** Meter (19) shall read less than 1 ma. Meter (20) shall indicate about 10 ma.

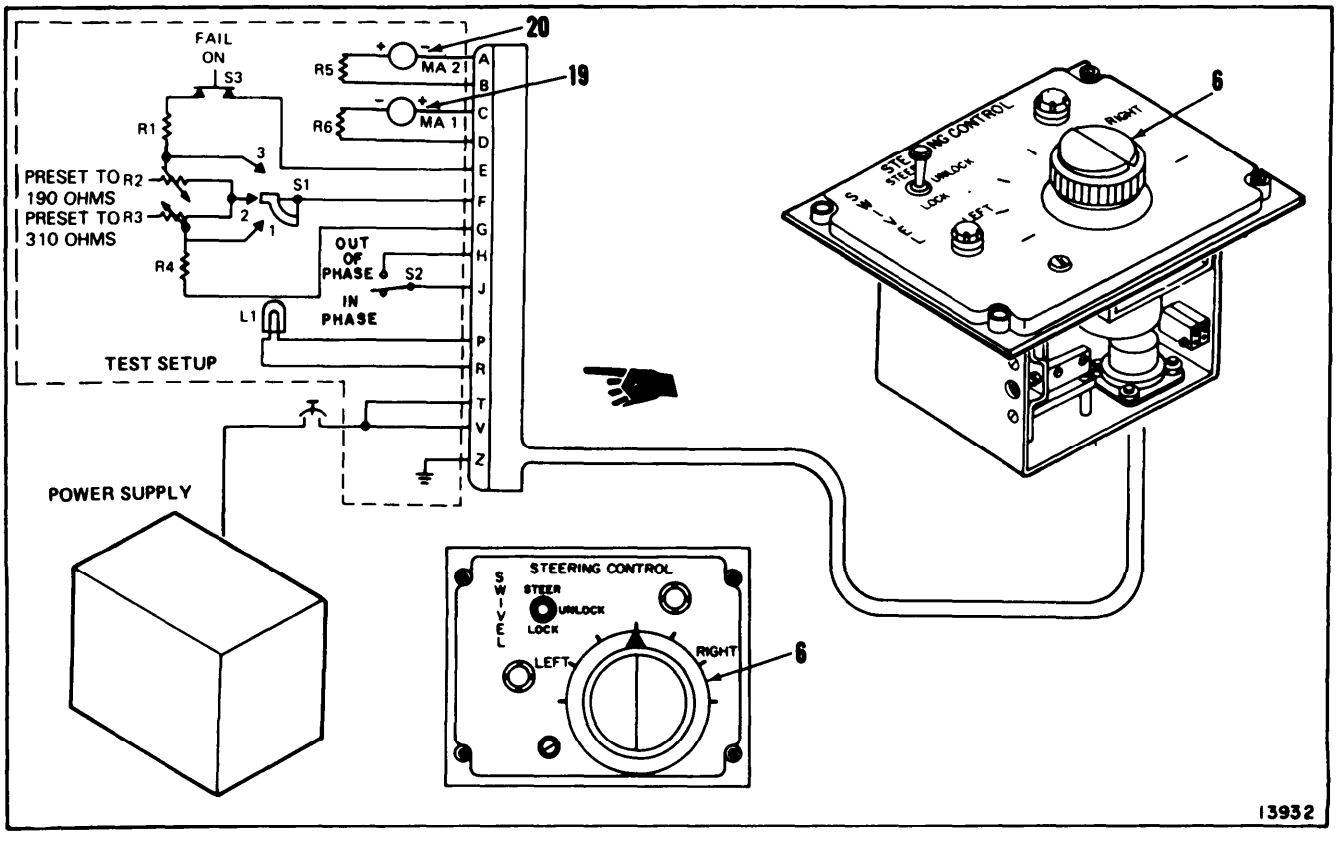
NOTE

During knob rotation, meter movement shall be free of erratic movement.

17. Allow knob (6) to return slowly to neutral position. **Check meter (19 and 20).**

    a. Meter (19) shall indicate 10 ma when knob is about 45 degrees and shall remain at that reading when the knob is at neutral position.

    b. Meter (20) shall indicate less than 1 ma as the knob passes the 45 degree position and retain this reading when the knob is at neutral.



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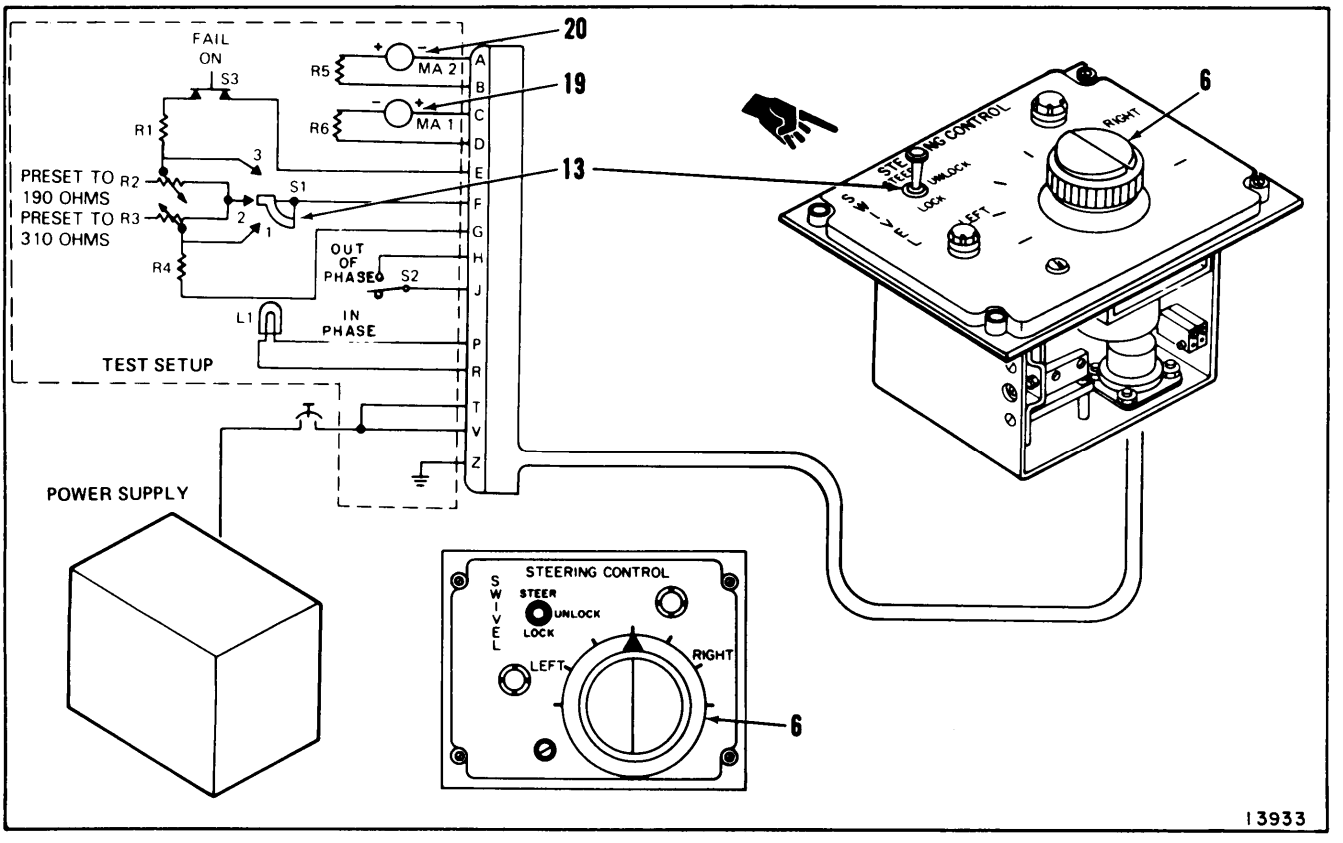
9-145 TEST AND ADJUST POWER STEERING CONTROL BOX (AVIM) (Continued) 9-145

18. **Set switch S1 (13) to 2 (UNLOCK). Check meters (19 and 20).** Meters shall **indicate less than 1 ma.**

19. **Set switch S1 (13) to 3 (STEER). Check meters (19 and 20).** Meter (19) shall indicate less than 1 ma. Meter (20) shall indicate about 10 ma.

20. **Slowly turn knob (6) LEFT 45 degrees.** Check meters (19 and 20). Meter (19) shall remain below 1 ma. Meter (20) shall return to less than 1 ma.

21. **Continue turning knob (6)** slowly LEFT until mechanical STOP is reached. **Check meters (19 and 20).** Meter (19) shall indicate about 10 ma. Meter (20) shall indicate less than 1 ma.

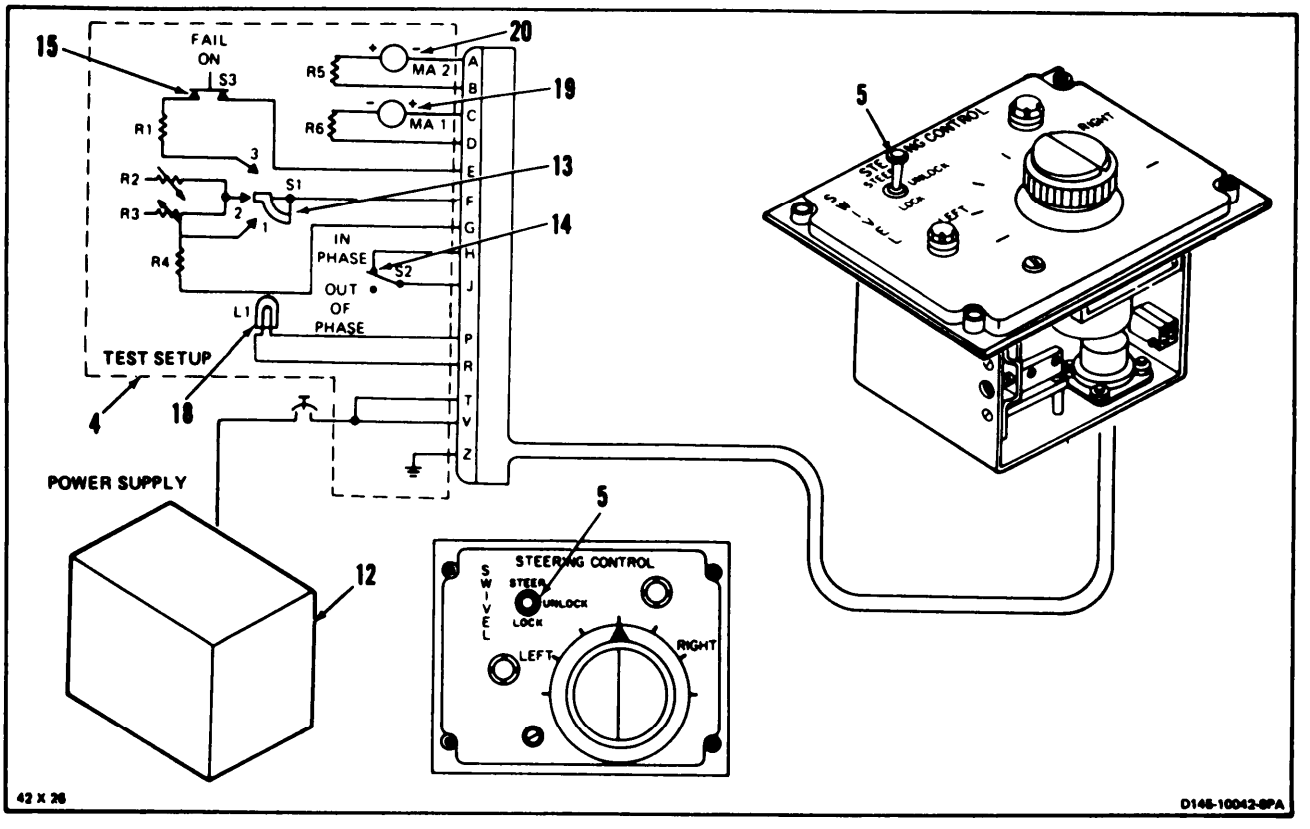


9-145 TEST AND ADJUST POWER STEERING CONTROL BOX (AVIM) (Continued)

22. **Allow knob (6) to return slowly to neutral position. Check motor (19 and 20).**
    a. Meter (19) shall indicate less than 1 ma when knob is about 45 degrees.
    b. Meter (20) shall indicate 10 ma as the knob passes the 45 degree position and remain at that reading when the knob is at neutral.
23. **Set switch (13) to 2.** Check meters (19 and 20). Meters shall indicate between 0 and 1 ma.
24. **Set switch (15)** to fail. **Check lamp (18).** Lamp shall go out.
25. **Set switch (5)** on control box to LOCK, then STEER. **Check lamp (18).** Lamp shall come on and stay on.
26. Repeat steps 24 and 25.
27. **Set switch (14)** to OUT OF PHASE, then to IN PHASE. **Check lamp (18).** Lamp shall go out and stay out.
28. Repeat step 25.
29. Repeat step 27.
30. Repeat step 25.

INSPECT

31. Shut down power supply (12).
32. Disconnect test setup (4).



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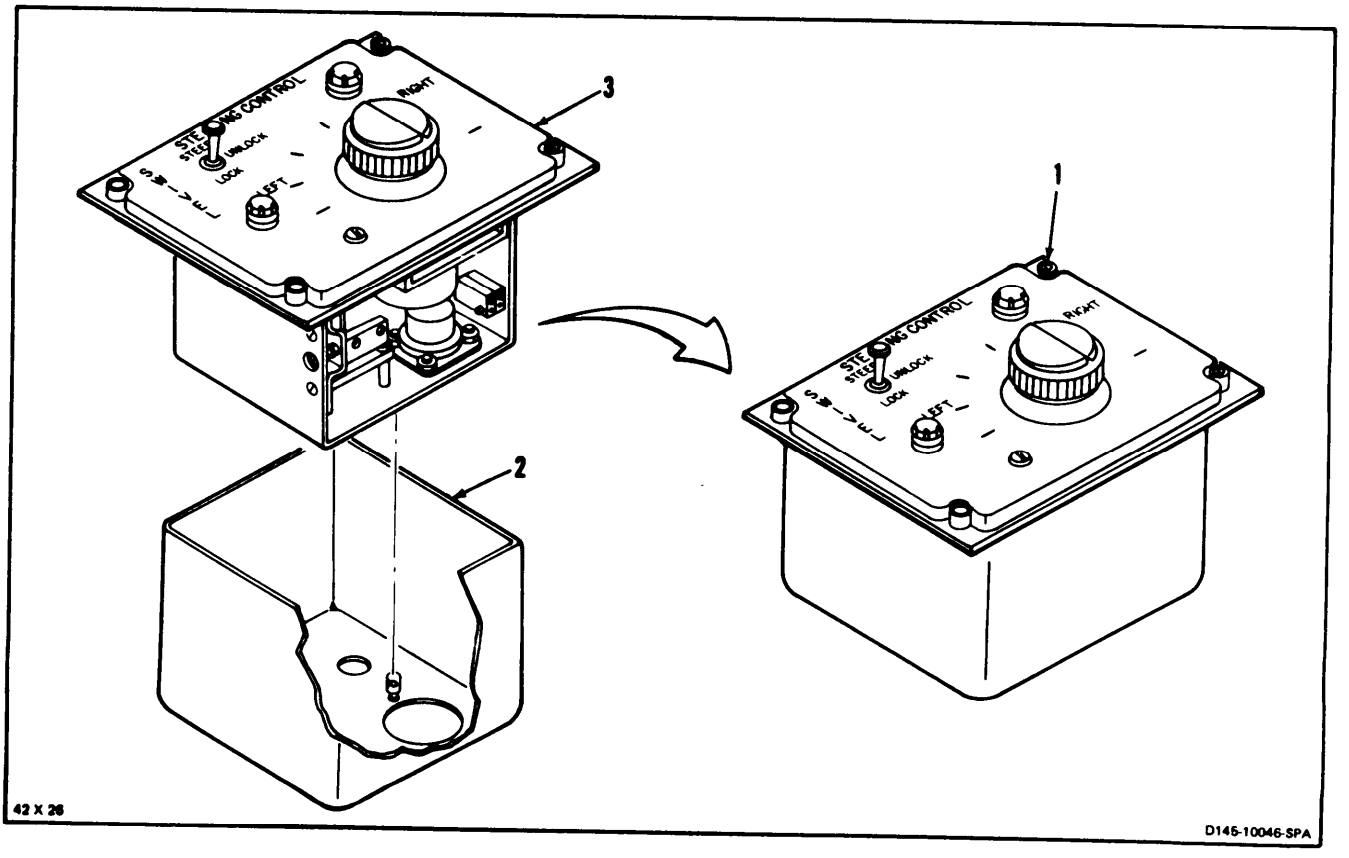
33. **Position control box cover (2)** on steering control box (3). **Tighten fastener (1).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-146 INSTALL POWER STEERING CONTROL BOX 9-146

INITIAL SETUP

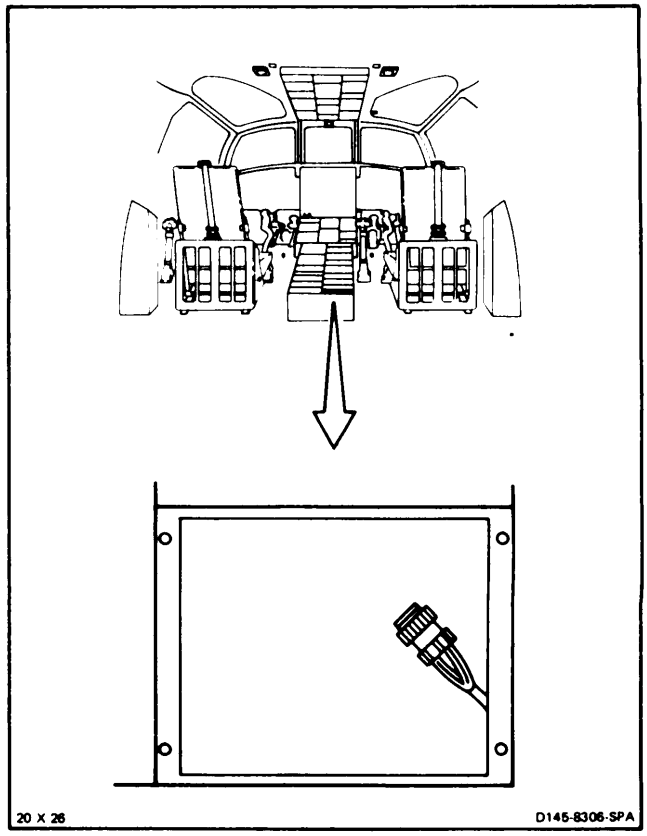
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
None

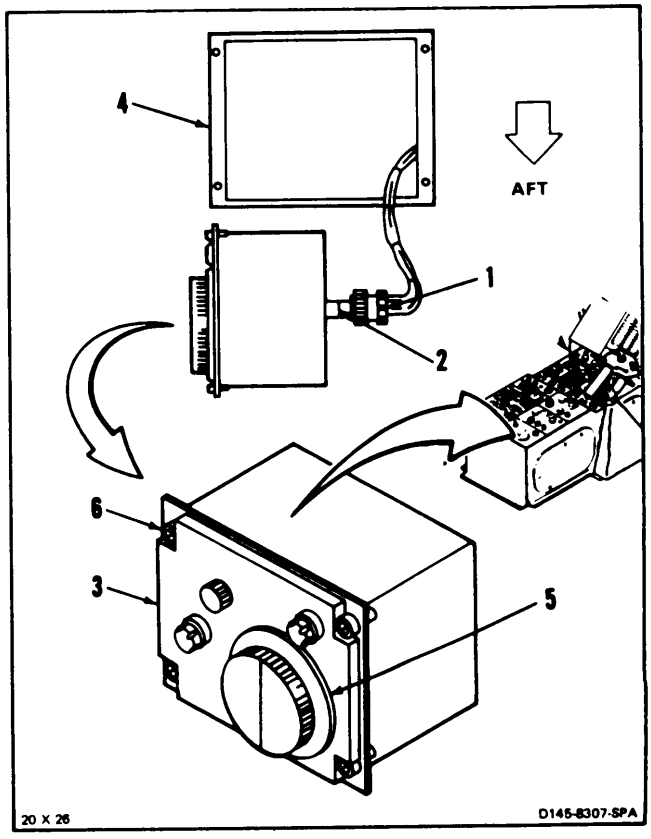
Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Connect electrical connector (1)** to receptacle (2).
2. **Position box (3)** on console (4) with knob (5) aft.
3. Tighten four fasteners (6).

INSPECT



FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).

END OF TASK

9-146.1 CHECK AND ADJUST POWER STEERING CONTROL BOX ON AIRCRAFT (AVIM)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit,
NSN 5180-00-323-4915
Aircraft Mechanic Tool Kit,
NSN 5180-00-323-4692
Electrical Power Supply, 115/200 Volt, 3-Phase Grounded Neutral, 400 Hz AC
Hydraulic Power Supply External System Jack 1214-151, or Equal
Multimeter

Materials:

None

Personnel Required:

Aircraft Electrician
Medium Helicopter Repairer
Inspector

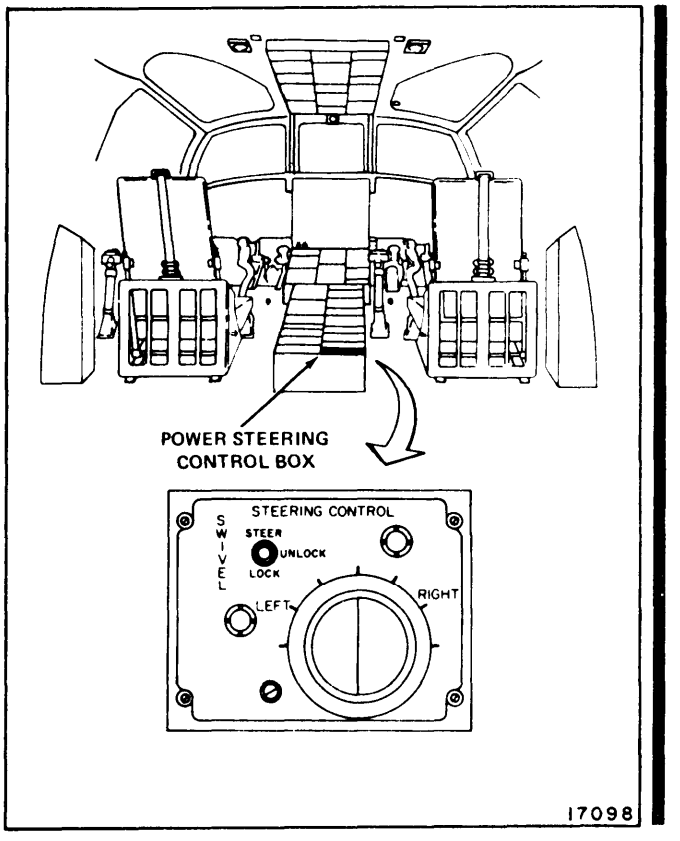
Equipment Condition:

Electrical Power Off
Hydraulic Power Off
In Sheltered Area

General Safety Instructions:

WARNING

Exercise care when working near the aft right wheel. Sudden wheel movement can cause injury.



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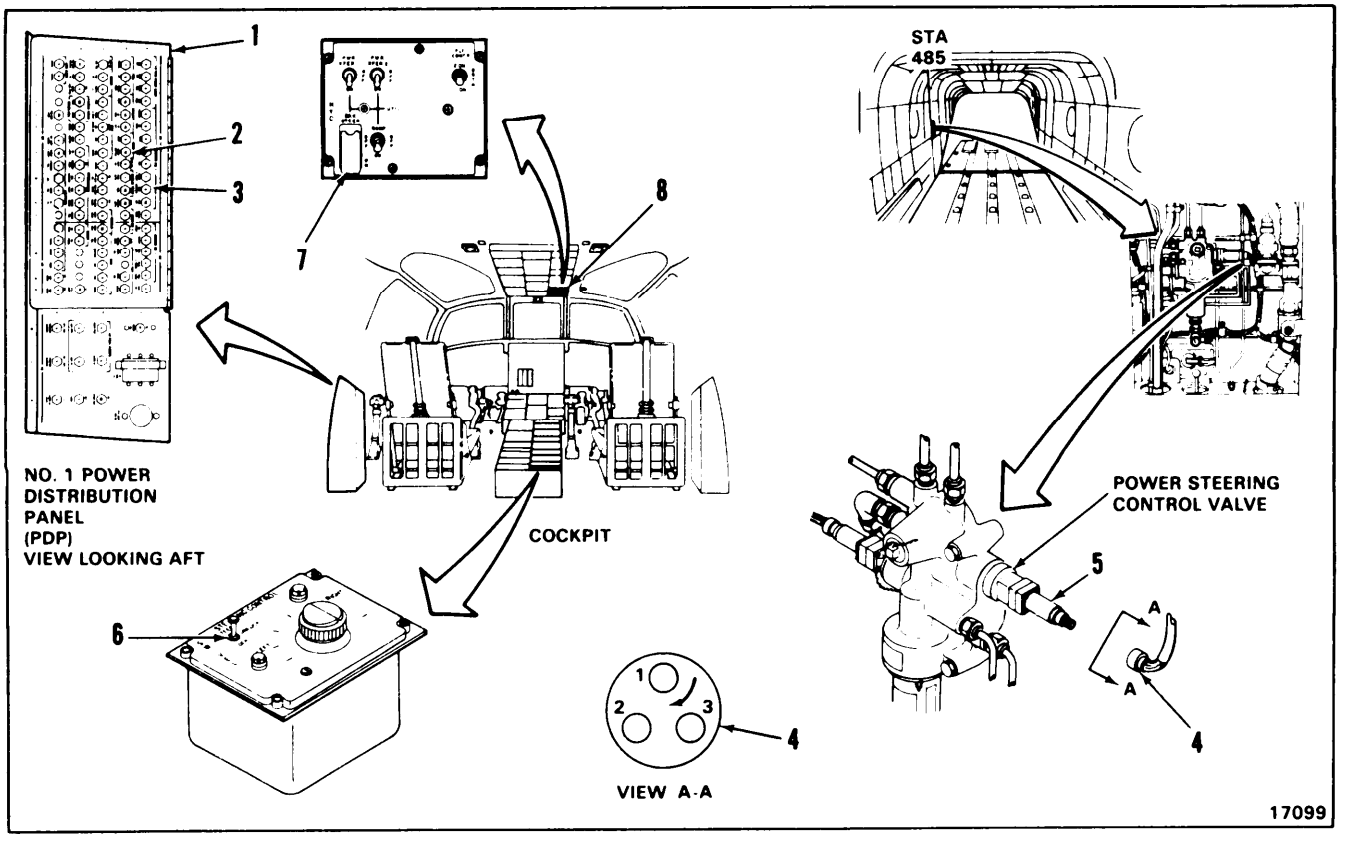
9-146.1 CHECK AND ADJUST POWER STEERING CONTROL BOX ON AIRCRAFT (AVIM) (Continued) 9-146.1

Wiring and Circuit Check

1. On No. 1 PDP (1), **close (push in) BRAKES & STEERING (2)** and **CAUTION PANEL (3)** circuit breakers.
2. **Disconnect connector (4)** from valve (5).
3. **Set the LOCK-UNLOCK-STEER switch (6)** to LOCK.
4. **Apply** external electric power (Task 1-37).
5. Measure voltage between contacts 1 and 3 of connector (4). There shall be bus voltage of approximately 28 volts dc.
6. Measure voltage between contacts 2 and 3 of connector (4). There shall be no voltage.
7. **Set LOCK-UNLOCK-STEER switch (6)** to UNLOCK.
8. Measure voltage between contacts 1 and 3 of connector (4). There shall be no voltage.
9. On No. 1 PDP (1), **open** (pull out) **BRAKES & STEERING** (2) circuit breaker.
10. **Connect** connector (4) to valve (5).
11. **Set LOCK-UNLOCK-STEER switch (6)** to UNLOCK.
12. On No. 1 PDP (1), close (push in) **BRAKES & STEERING (2)** circuit breaker.
13. Turn on BRK STEER switch (7) in overhead HYD panel (8).
14. **Set LOCK-UNLOCK-STEER switch (6)** to LOCK.



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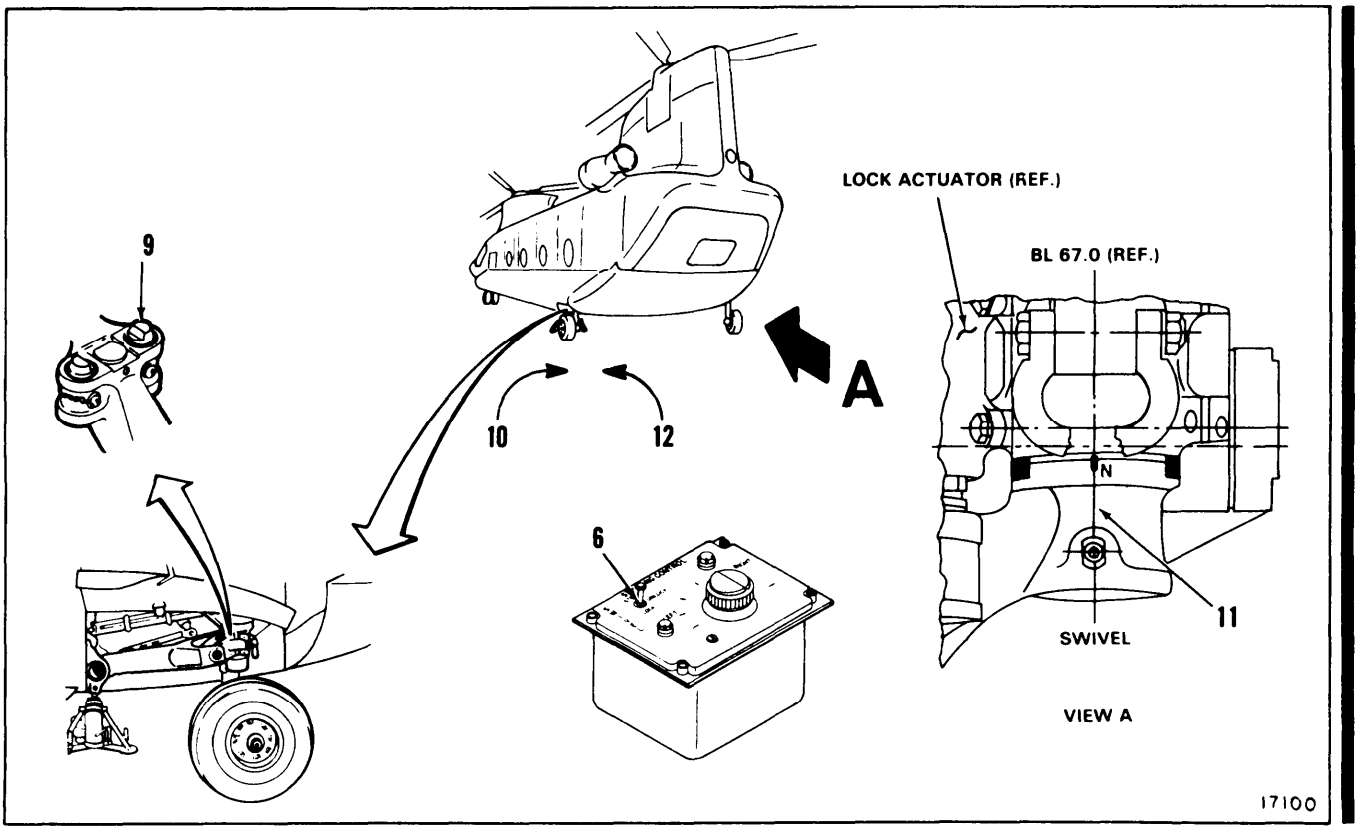
9-146.1 CHECK AND ADJUST POWER STEERING CONTROL BOX ON AIRCRAFT (AVIM) (Continued) 9-146.1

System Operation Check and Adjustment

15. **Jack aft end** of helicopter (Task 1-24).
16. **Connect** external hydraulic power supply (Task 1-38).
17. Check that swivel locks on both aft wheels are locked (TM 55-1520-240-T).
18. **Set** the LOCK-UNLOCK-STEER switch (6) to UNLOCK.
19. **Check** that swivel locks (9) on both aft wheels are **unlocked** (TM 55-1520-240-T).
20. **Manually swivel left aft wheel clockwise** approximately 90° (10). Release it.
21. Set the LOCK-UNLOCK-STEER switch (6) to LOCK and check that:
    a. Wheel returns to neutral (11).
    b. Swivel lock engages and locks wheel in trail aft position.
22. **Set** the LOCK-UNLOCK-STEER switch (6) to UNLOCK. Swivel lock shall unlock.
23. **Manually swivel** left aft wheel counter-clockwise approximately 90° (12). Release it.
24. Set the LOCK-UNLOCK-STEER switch (6) to LOCK and check that:
    a. Wheel returns to neutral (11).
    b. Swivel lock engages and locks wheel in trail aft position.



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9-146.1 CHECK AND ADJUST POWER STEERING CONTROL BOX ON AIRCRAFT (AVIM) (Continued)

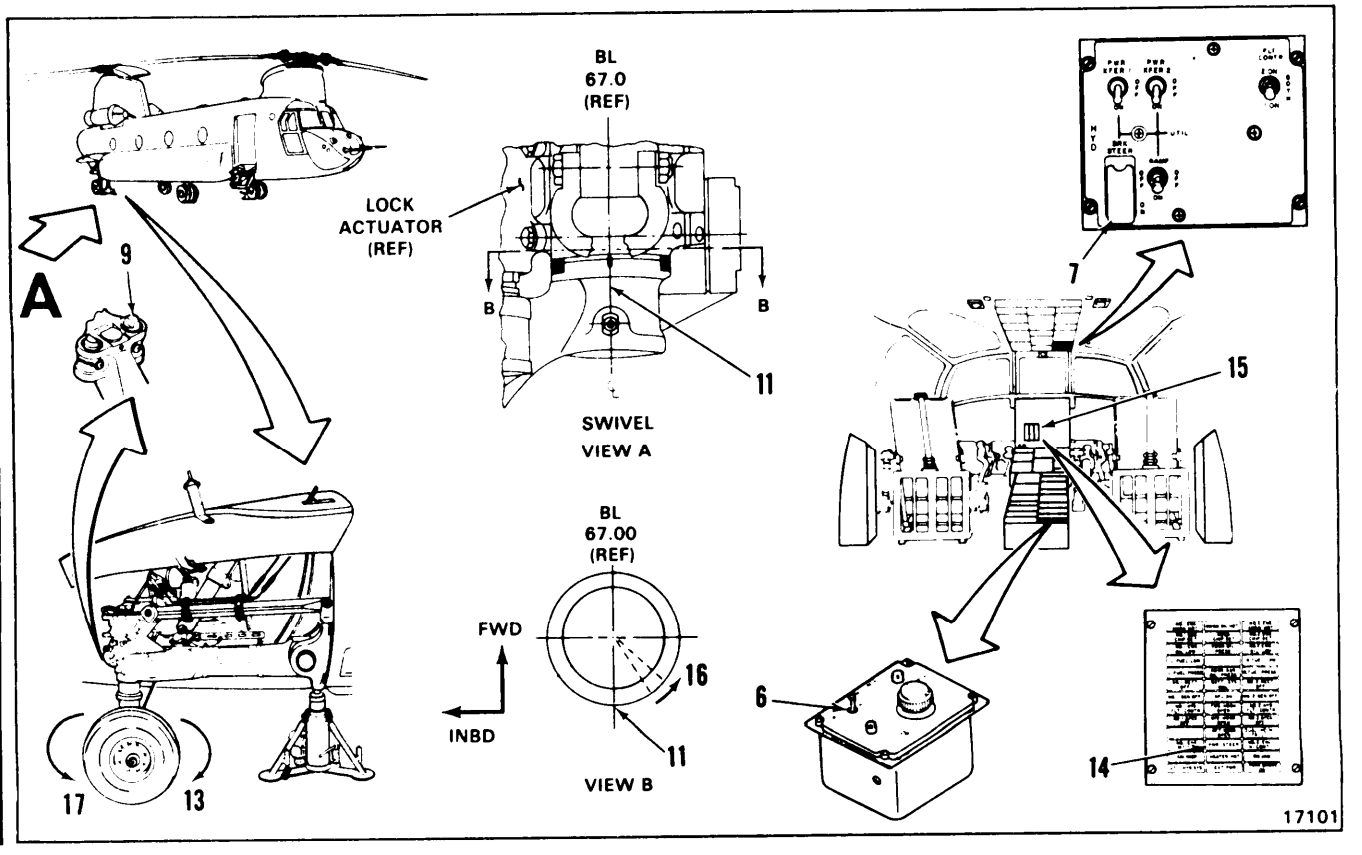
Electrical Zero Adjustment

25. **Paint a thin vertical red line "N" (11)** on the right aft landing gear. Make line from 1/2 inch above to 1/2 inch below swivel bushing shoulder.
26. **Set** LOCK-UNLOCK-STEER switch (6) to UNLOCK.
27. **Set** BRK STEER switch (7) to OFF and **set** LOCK-UNLOCK-STEER switch (6) to STEER.
28. **Manually swivel** right aft wheel clockwise (13) until the PWR STEER caution light (14) on CAUTION PANEL (15) illuminates.

NOTE

Dimensions are measured from neutral position on circumference of swivel housing.

29. Measure difference between line "N" on swivel fork (16) and line "N" on housing (11) when CAUTION PANEL (15) illuminates.
30. Panel shall illuminate when line (16) is within 2-3/16 to 2-1 5/32 inches from line (11).
31. **Set** BRK STEER switch (7) to ON and **set** LOCK-UNLOCK-STEER switch (6) to LOCK.
    a. Check that wheel returns to within 1/4 inch of lock position.
    b. Check that swivel lock (9) extends to lock position.
32. **Set** LOCK-UNLOCK-STEER switch (6) to UNLOCK.
33. Check that swivel lock (9) is unlocked.
34. **Set** BRAKE STEER switch (7) to OFF and set LOCK-UNLOCK-STEER switch (6) to STEER.
35. **Manually swivel** right aft wheel counterclockwise (17) until PWR STEER caution light (14) on CAUTION PANEL (15) illuminates.



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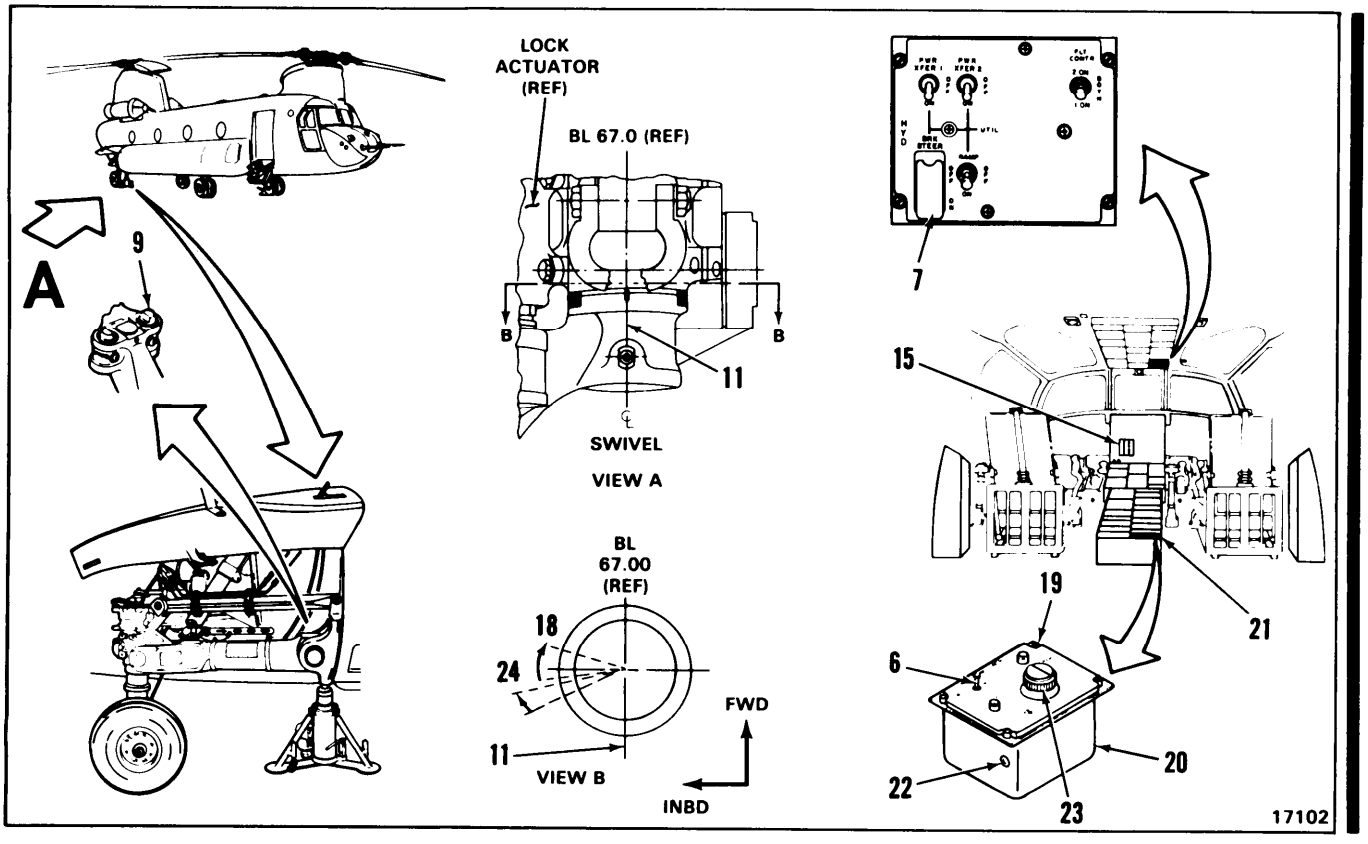
9-146.1 CHECK AND ADJUST POWER STEERING CONTROL BOX ON AIRCRAFT (AVIM) (Continued) 9-146.1

36. Measure difference between line “N” on swivel fork (18) and line “N” on housing (11) when CAUTION PANEL (15) illuminates.
37. Panel (15) shall illuminate when line (18) is within 3-3/ 16 to 3-13/16 inches from line (11).
38. **Set** BRK STEER switch (7) to ON and **set** LOCK-UNLOCK-STEER switch (6) to LOCK.
    a. Check that wheel returns to within 1/4 inch of lock position.
    b. Check that swivel lock (9) extends to lock position.
39. **Set** LOCK-UNLOCK-STEER switch (7) to UNLOCK.
40. Check that swivel lock (9) is unlocked.
41. **Set** LOCK-UNLOCK-STEER switch (7) to STEER.
42. **Loosen fasteners (19). Remove** power steering box (20) from console (21).
43. Check right aft wheel for drifting clockwise or counterclockwise from neutral position.
44. **Turn adjust-screw (22)** in half turn increments in the required direction to bring upper and lower line “N” (11) together.
45. Maintain hand pressure on wheel to simulate ground friction and prevent overtravel while performing step 46.
46. **Monitor** right aft wheel and **rotate** steering control knob (23) clockwise 90° and **hold.**
    a. Check that wheel rotates counterclockwise and line “N” on fork (24) stops within 2-11 /16 to 3-1/8 inches of line “N” on housing (11).
    b. Check that rotation is smooth and does not exceed 7 seconds.



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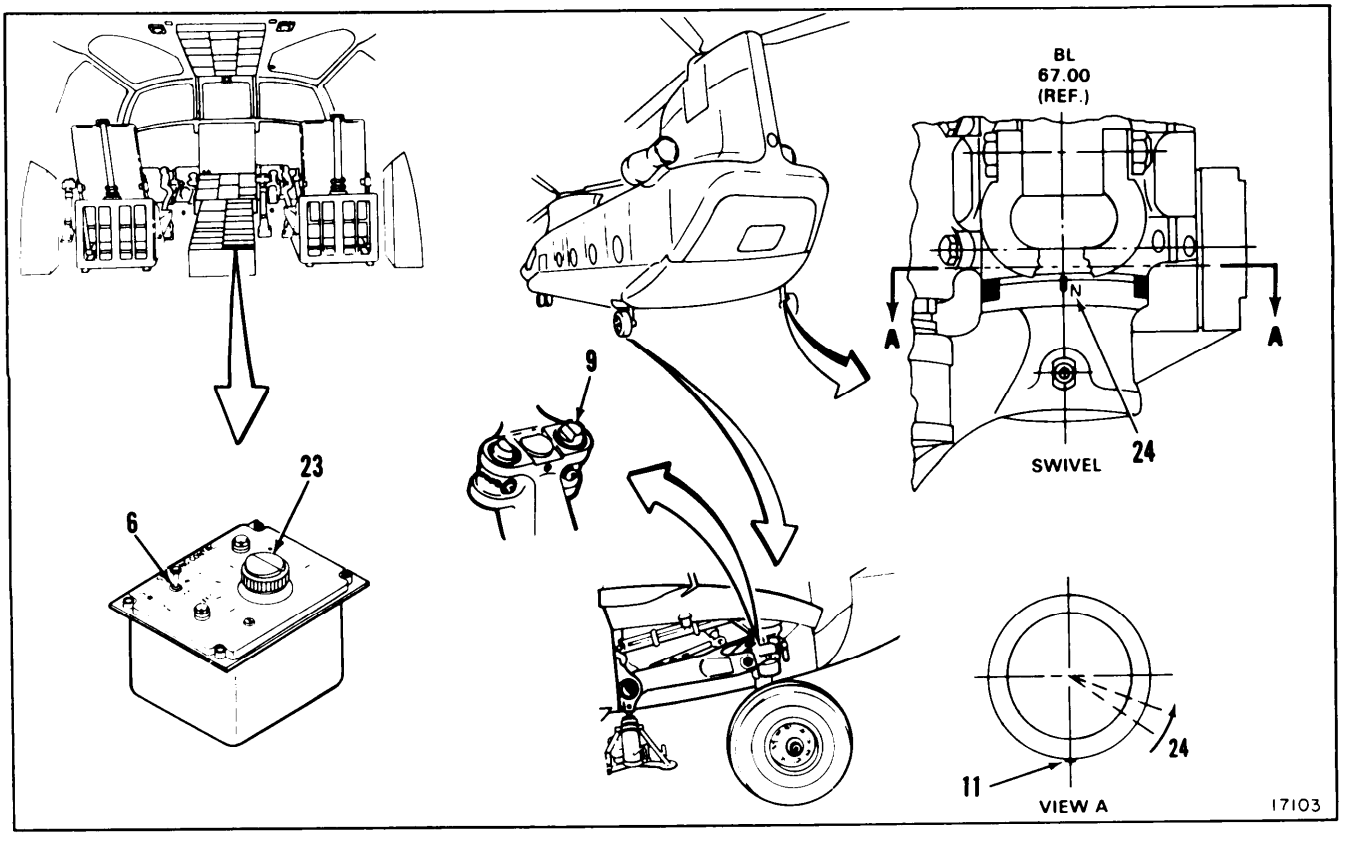
9-146.1 CHECK AND ADJUST POWER STEERING CONTROL BOX ON AIRCRAFT (AVIM) (Continued) 9-146.1

47. **Stand clear** of wheel and **release** steering control knob (23).
    a. Check that steering control knob and right aft wheel return smoothly to neutral position.
    b. Check that travel time does not exceed 7 seconds.
48. Maintain hand pressure on wheel to simulate ground friction and prevent overtravel while performing step 49.
49. **Monitor** right aft wheel and **rotate** steering control knob (23) counterclockwise 90" and **hold.**
    a. Check that wheel rotates clockwise and line "N" on fork (24) stops within 1-1 5/16 to 2-5/32 inches of line "N" on housing (11).
    b. Check that rotation is smooth and does not exceed 5 seconds.
50. **Stand clear** of wheel and **release** steering control knob (23).
    a. Check that steering control knob and right aft wheel return smoothly to neutral position.
    b. Check that travel time does not exceed 5 seconds.
51. Repeat steps 45 through 50.
52. **Set** LOCK-UNLOCK-STEER switch (6) to LOCK.
53. Check that swivel lock (9) is locked.

FOLLOW-ON MAINTENANCE:

None



END OF TASK

☆U.S. GOVERNMENT PRINTING OFFICE: 1989 654-127/00048

9-147 REMOVE EMERGENCY HOOK RELEASE RELAY BOX

INITIAL SETUP

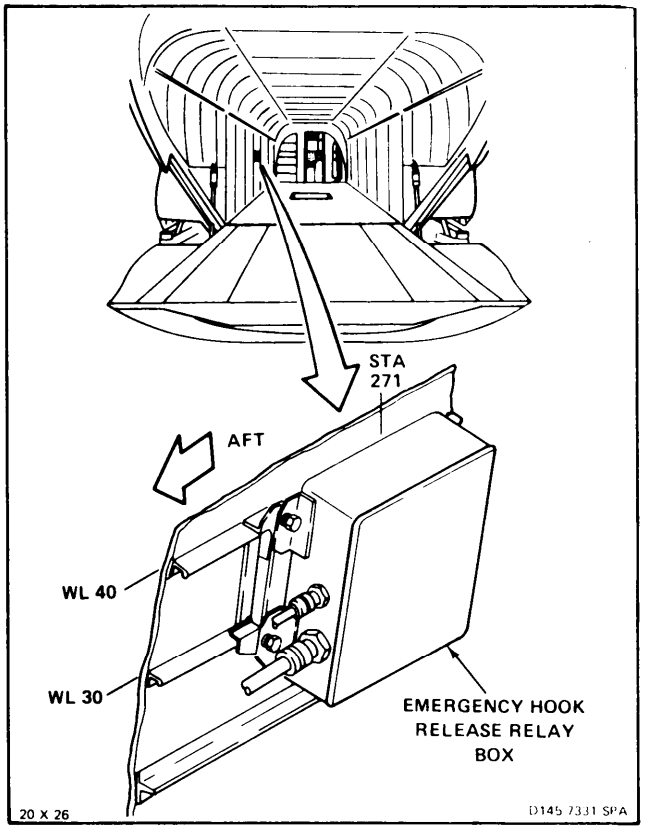
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician

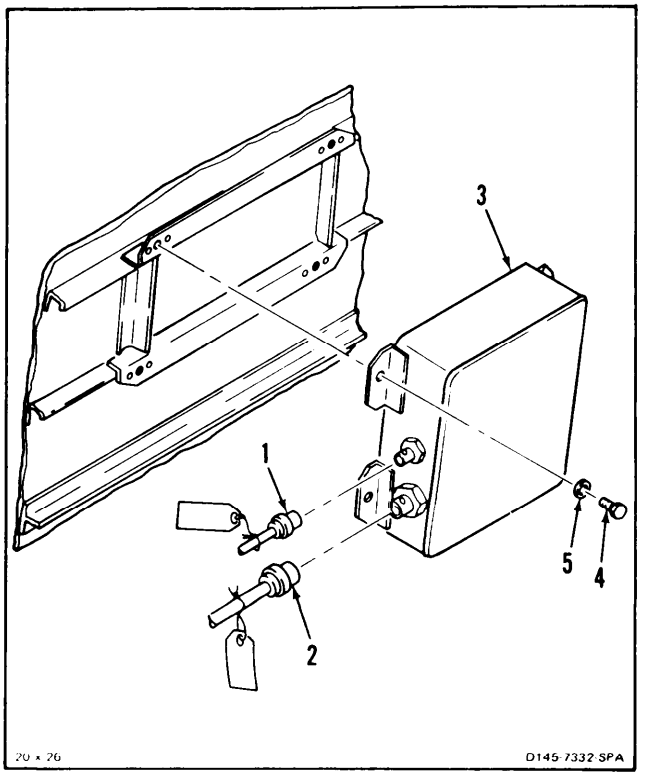
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Tag and **disconnect two electrical connectors (1 and 2)** from emergency hook release relay box (3).
2. **Remove** four bolts (4), washers (5), and **relay box (3).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-148 DISASSEMBLE EMERGENCY HOOK RELEASE RELAY BOX (AVIM)

INITIAL SETUP

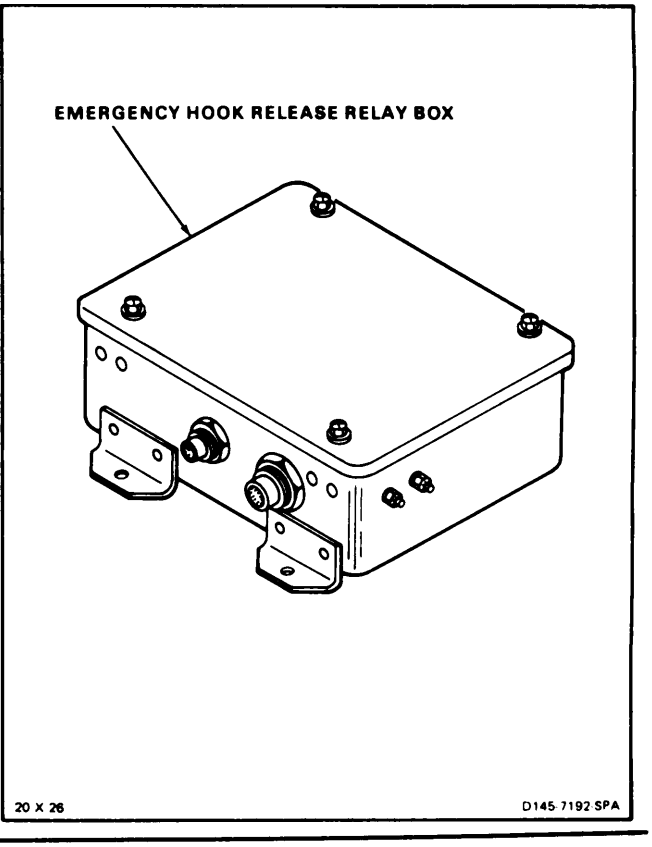
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 51 80-00-323-4915
Contact Removal/Insertion Tool, M83723/20
Contact Removal/Insertion Tool, M81969/14-03
Heat Sink,
NSN 3439-00-973-2249
Soldering Gun

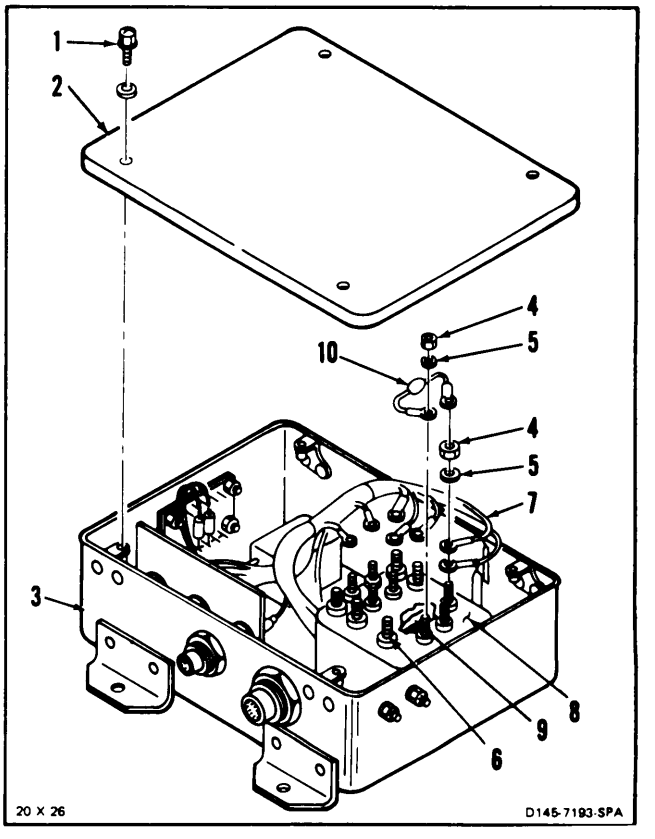
Materials:
Paper Tags (E264)

Personnel Required:
68F20 Aircraft Electrician

Equipment Condition:
Off Helicopter Task



1. Remove four screws (1). **Remove cover (2)** from box (3).
2. **Remove 12 nuts (4) and washers (5)** from relay (6).
3. Tag and **disconnect 22 wires** (7) from relay (8).
4. Cut through coating (9); use sharp knife. **Remove diode (10).**



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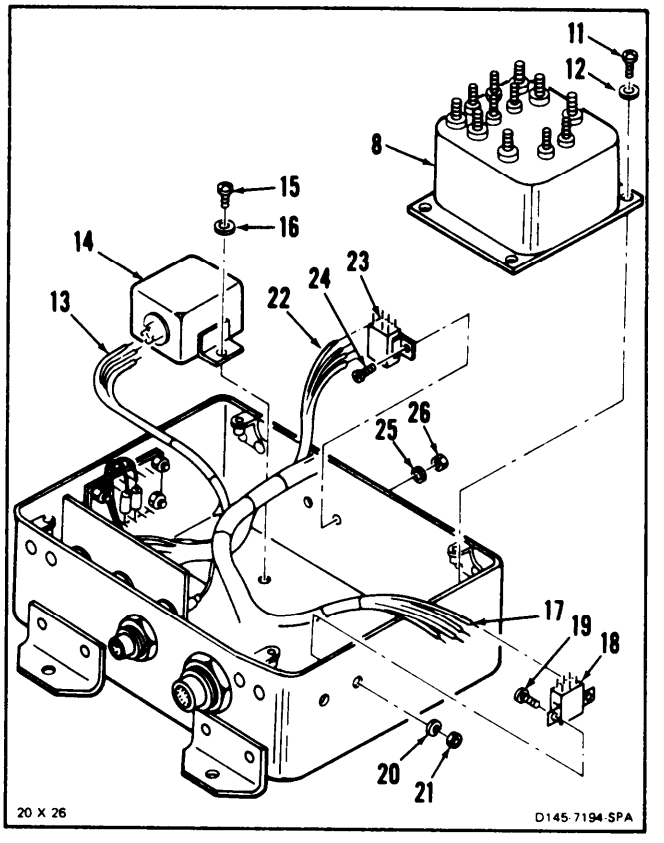
9-148 DISASSEMBLY EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued) 9-148

5. Remove four screws (11) and washers (12). **Remove relay (8).**
6. Tag and **unsolder six wires (13)** from relay (14).
7. Remove two screws (15) and washers (16). **Remove relay (14).**
8. Tag and **unsolder five wires (17) from relay (18). Remove two screws (19), washers (20), and nuts (21).**
9. **Remove relay (18).**
10. Tag and **unsolder five wires (22)** from relay (23).
11. Remove two screws (24), washers (25), and nuts (26). **Remove relay (23).**



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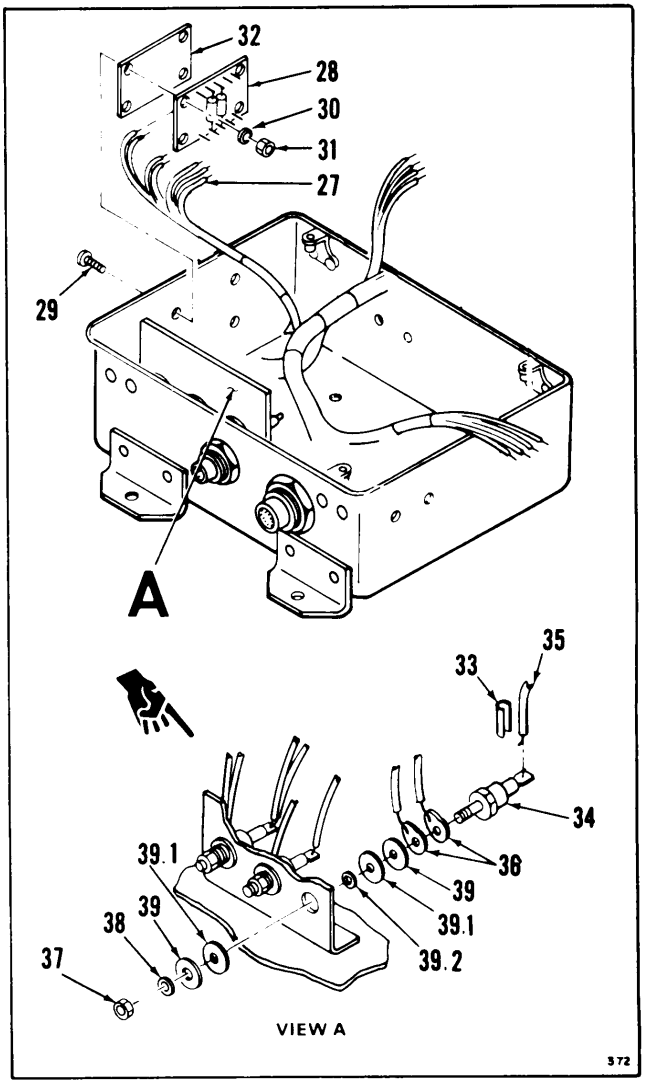
9-148 DISASSEMBLE EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued)

12. Tag and unsolder three wires (27) from terminal board (28).
13. Remove four screws (29), washers (30), and nuts (31). **Remove terminal board (28)** and insulator (32).
14. **Remove insulation sleeving (33)** from three diodes (34). Cut sleeving with sharp knife.
15. **Unsolder four wires (35)** from three diodes (34). Use soldering gun and heat sink.
16. Tag five wires (36).
17. **Remove three nuts (37),** lockwashers (38), steel washers (39), and mica washers (39.1) from three diodes (34).
18. **Remove three diodes (34),** Teflon spacers (39.2), mica washers (39.1), steel washers (39), **and wires (36).**



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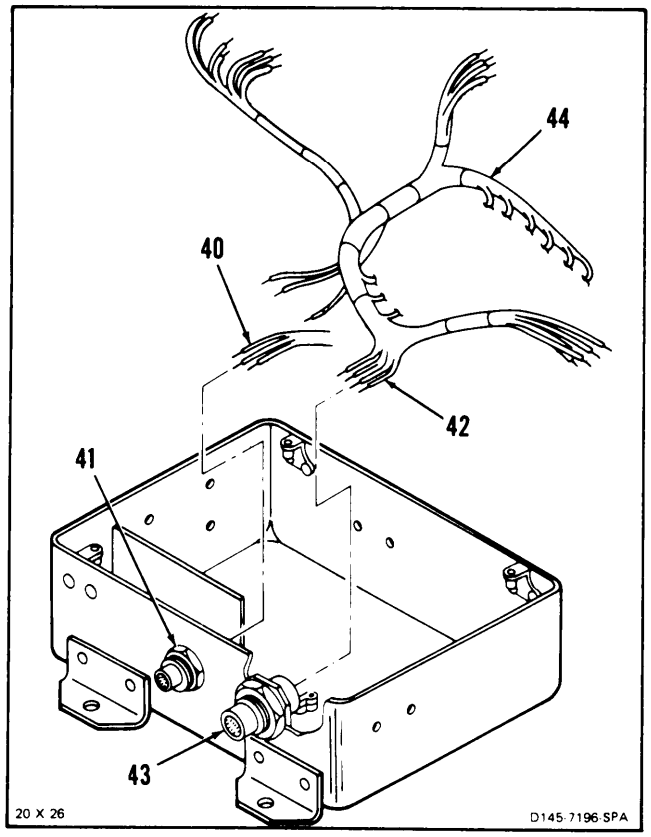
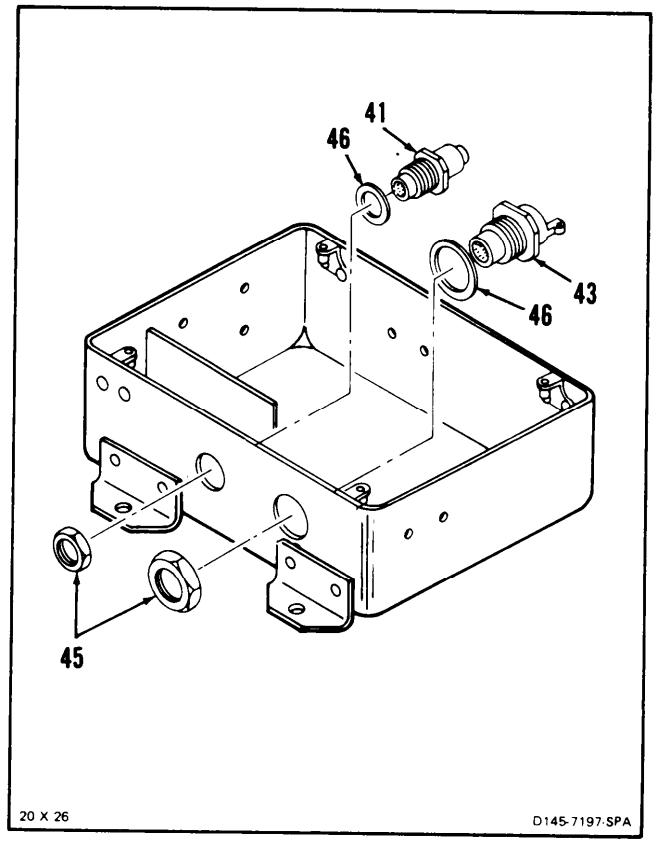
19. Tag and **remove six wires (40) from connector (41). Use contact removal tool.**
20. Tag and **remove eight wires (42)** from connector (43). Use contact removal tool.
21. **Remove wire harness (44).**



22. **Remove lockwire** from nuts (45).
23. **Remove two** nuts (45), **connectors (41 and 43)** and two packings (46).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-149 ASSEMBLE EMERGENCY HOOK RELEASE RELAY BOX (AVIM)

INITIAL SETUP

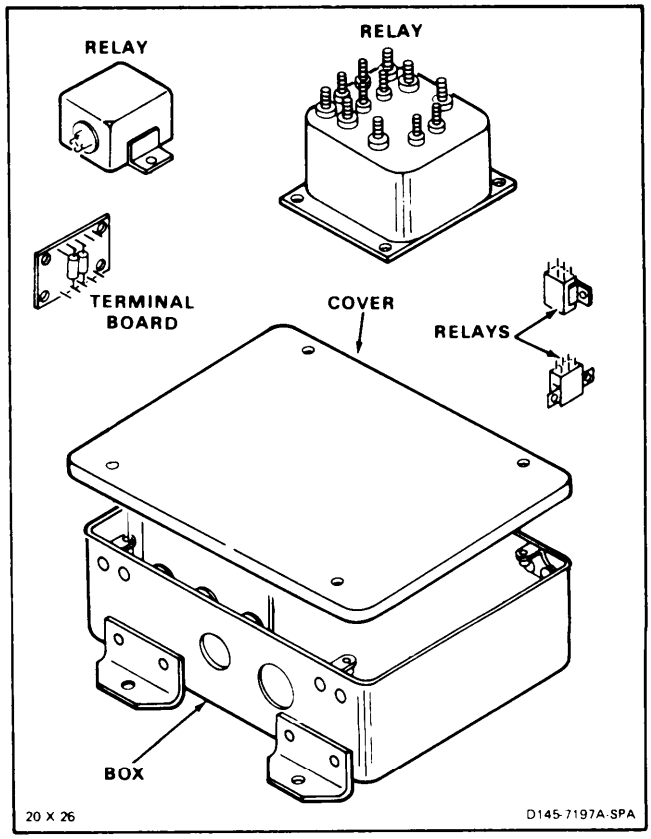
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Contact Removal/Insertion Tool, M83723-31/20
Contact Removal/Insertion Tool, M8 1969/ 14-03
Heat Gun

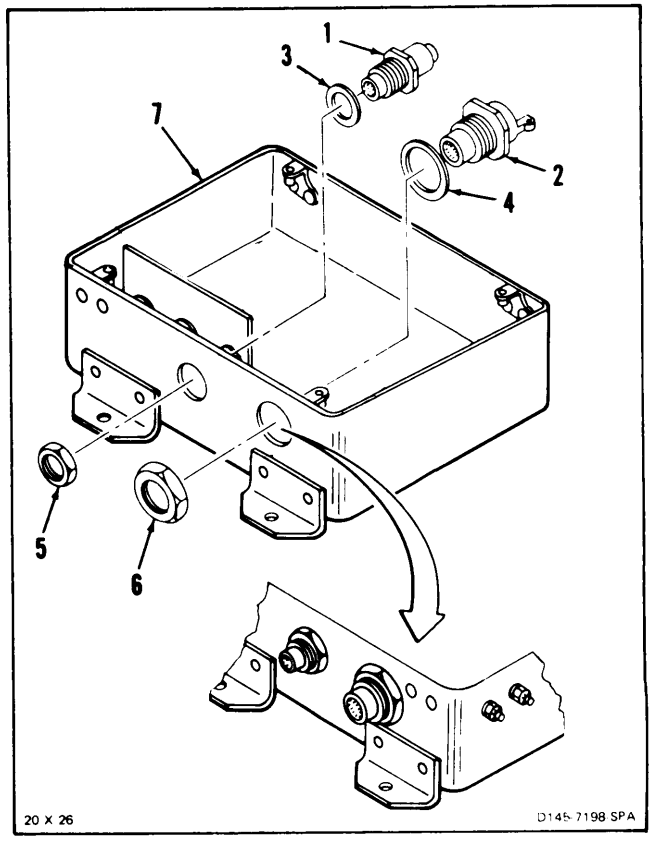
Materials:
Protective Coating EC1103 (E305)
Lockwire (E231)
Solder (E360)
Insulation Sleeving (E204)
Heat Sink Compound (E173)

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



1. **Install two connectors (1 and 2),** packings (3 and 4), and nuts (5 and 6) on box (7).
2. Lockwire two nuts (5 and 6). Use lockwire (E231).



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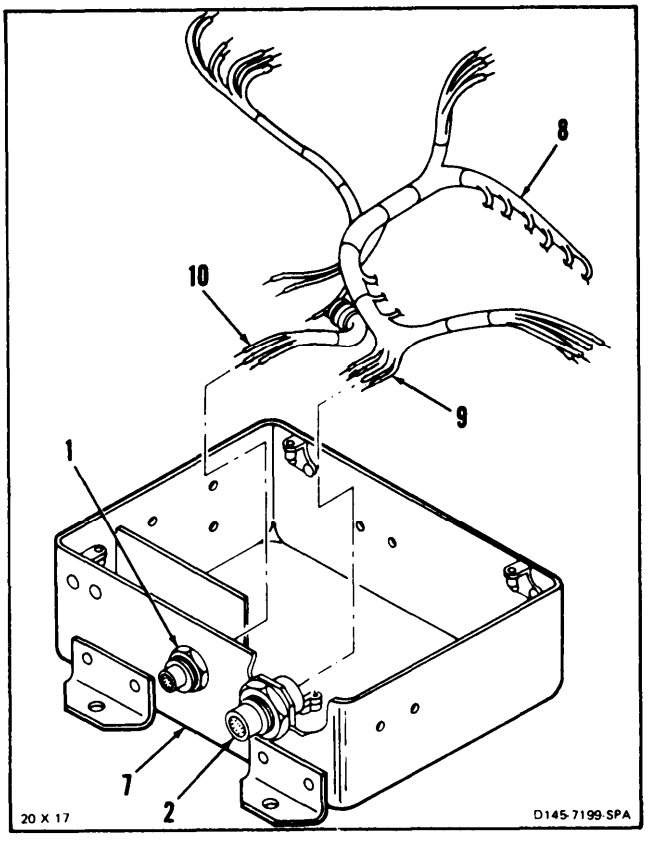
9-149 ASSEMBLE EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued)

3. Position harness (8) in box (7) and **connect eight wires (9)** to connector (2). Use insertion tool. Remove tags.
4. **Connect six wires (10)** to Connector (1). Use insertion tool. Remove tags.



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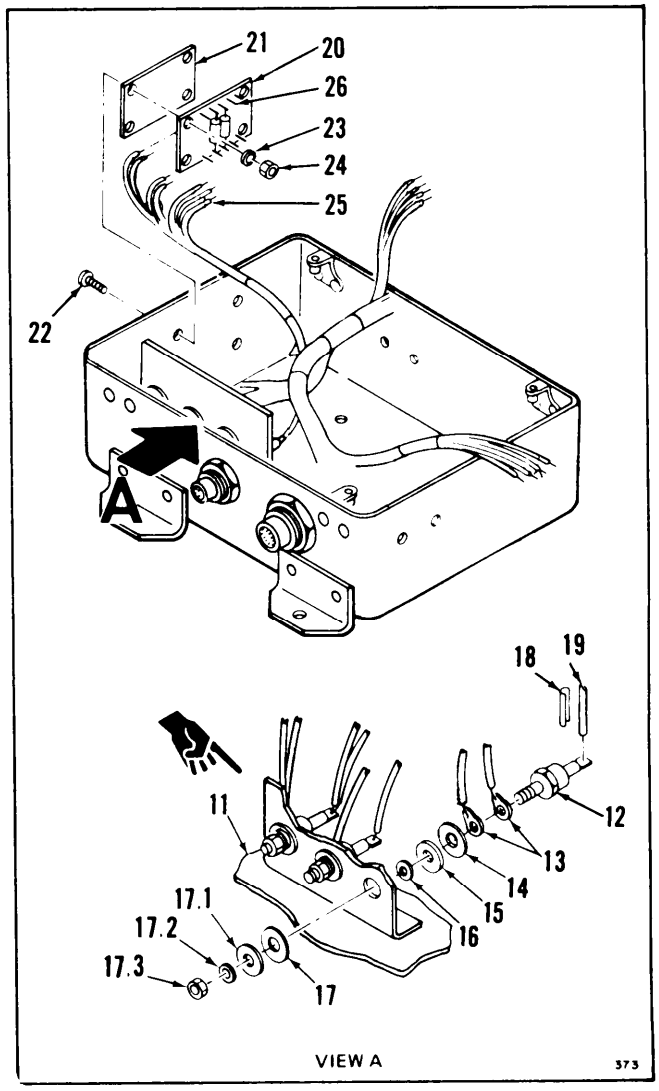
9-149 ASSEMBLE EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued)

5. Apply heat sink compound (E173) to support (11).
6. Install three diodes (12), five wires (13), three steel washers (14), mica washers (15), and Teflon spacers (16) in support (11).

6.1. Install three mica washers (17), steel washers (17.1), Iockwashers (17.2), and nuts (17.3).

7. Install sleeving (18) over four wires (19).
8. Connect four wires (19) to three diodes (12). Use solder (E360). Remove tags.
9. Position insulation sleeving (18) against diode (12). Shrink sleeving with heat gun.
10. **Position terminal board (20)** and insulator (21). **Install four screws (22), washers (23) and nuts (24).**
11. **Solder three wires (25)** to terminals (26). Use solder (E360). Remove tags.



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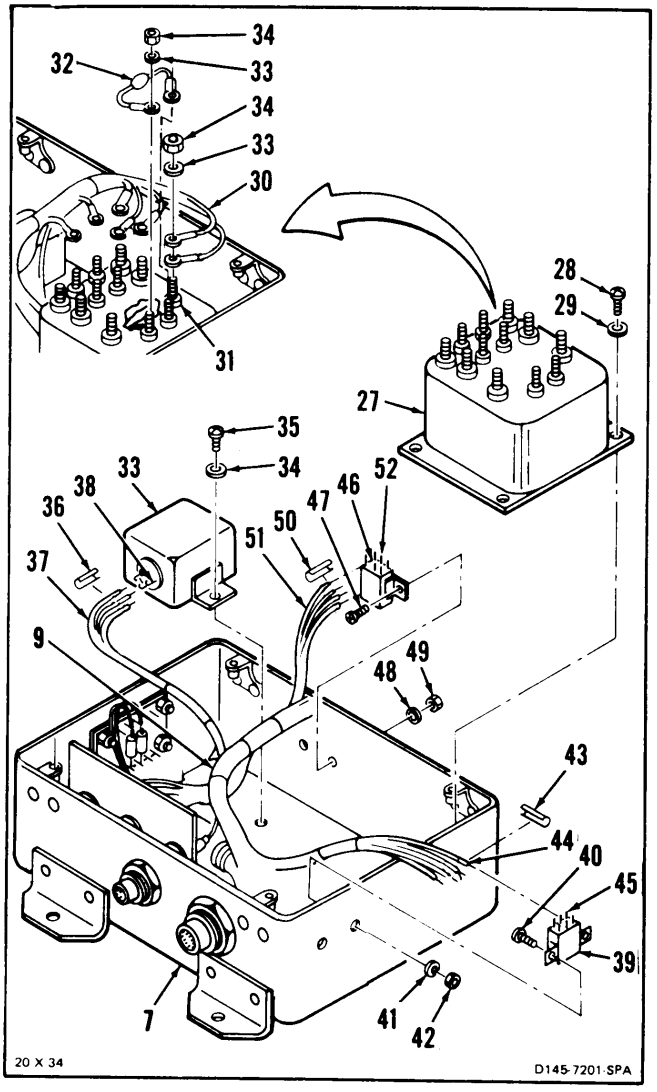
9-149 ASSEMBLE EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued)

12. **Position relay** (27) in box (7).
13. **Install** harness (9) and relay (27).
14. **Install four screws (28)** and washers (29).
15. **Connect 22 wires (30)** on terminals (31). Remove tags.
16. **Connect diode (32). Install** 12 washers (33) and **nuts (34).**
17. Cement diode (32) to relay (27). Use protective coating (E305).
18. **Install relay (33),** two washers (34) and screws (35).
19. Install insulation sleeving (36) on wires (37). Use insulation sleeving (E204).
20. **Solder six wires (37)** to terminals (38). Use solder (E360). Remove tags.
21. Position insulation sleeving (36) against relay. Shrink sleeving with heat gun.
22. **Position relay (39). Install two screws (40),** washers (41) and nuts (42).
23. Install insulation sleeving (43) on five wires (44). Use insulation sleeving (E204).
24. **Solder five wires (44)** to terminals (45). Use solder (E360).
25. Position sleeving (43) against relay (39). Shrink sleeving with heat gun.
26. **Position relay (46)** on box (7). **Install two screws (47),** washers (48) and nuts (49).
27. Install insulation sleeving (50) on five wires (51). Use insulation sleeving (E204).
28. **Solder wires (51)** to terminals (52). Use solder (E360).
29. Position sleeving (50) against relay (46). Shrink sleeving with heat gun.



INSPECT

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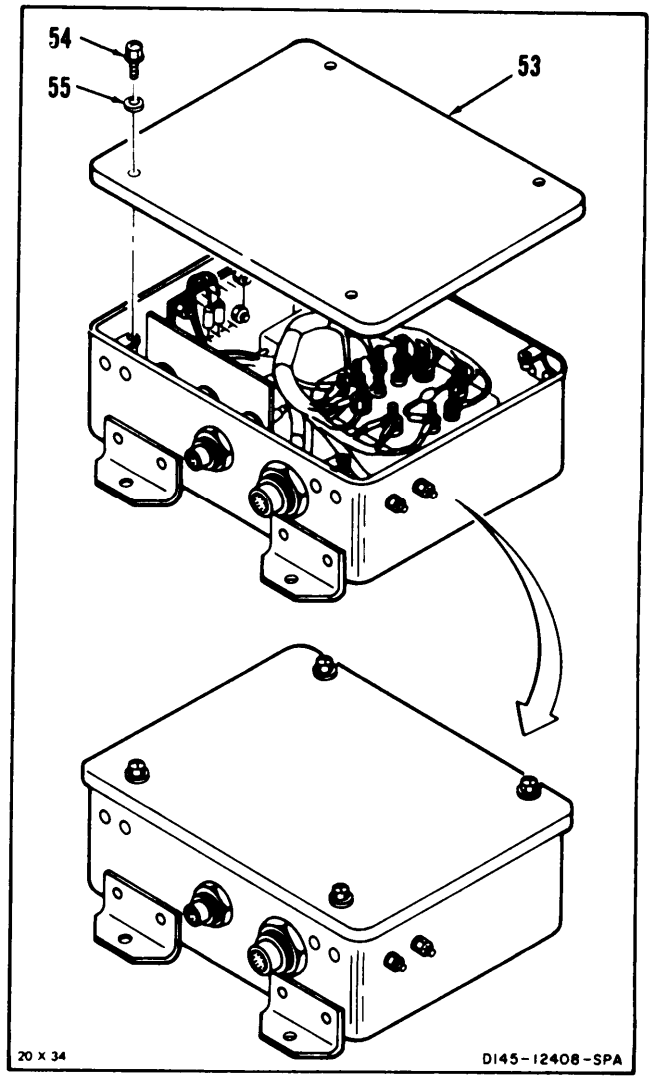
9-149 ASSEMBLE EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued) 9-149

30. **Install cover (53).** Install four screws (54) and washers (55).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-149.1 TEST EMERGENCY HOOK RELEASE RELAY BOX (AVIM)

INITIAL SETUP

Applicable Configurations:
All

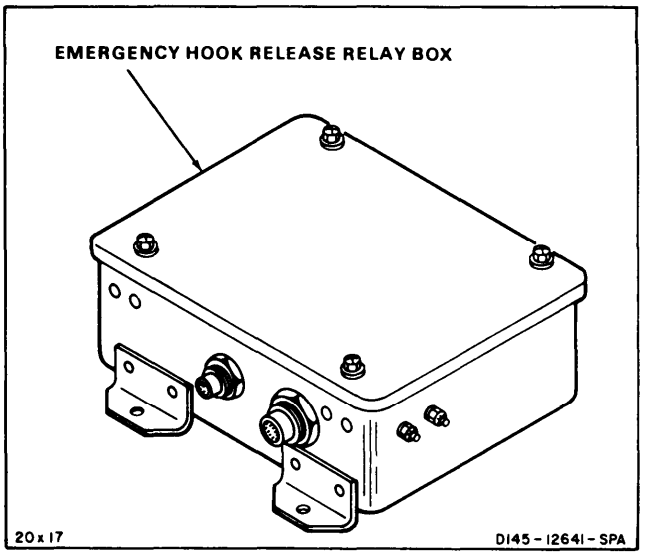
Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Multimeter
Power Supply, 28 Vdc
Stopwatch

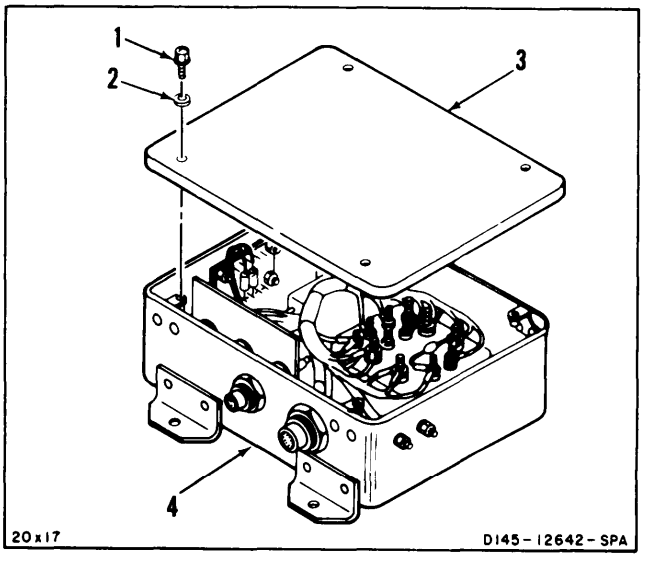
Materials:
None

Personnel Required:
68F20 Aircraft Electrician
68F30 Inspector

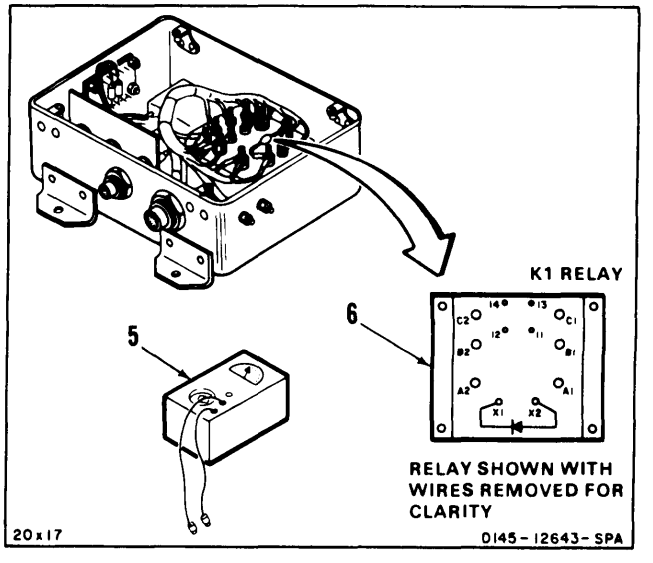
References:
TM 55-1520-240-23

Equipment Condition:
Off Helicopter Task





1. Remove four screws (1) and four washers (2). **Remove cover (3)** from box (4).



2. **Connect multimeter (5) set to RX1 between terminals 13 and 14 and X1 and 12 on relay (6).** Multimeter shall indicate continuity.

3. **Connect multimeter (5) set to RX1 between terminals 11 and 12, C1 and C2, B1 and B2, and A1 and A2 on relay (6).** Multi meter shall indicate open.

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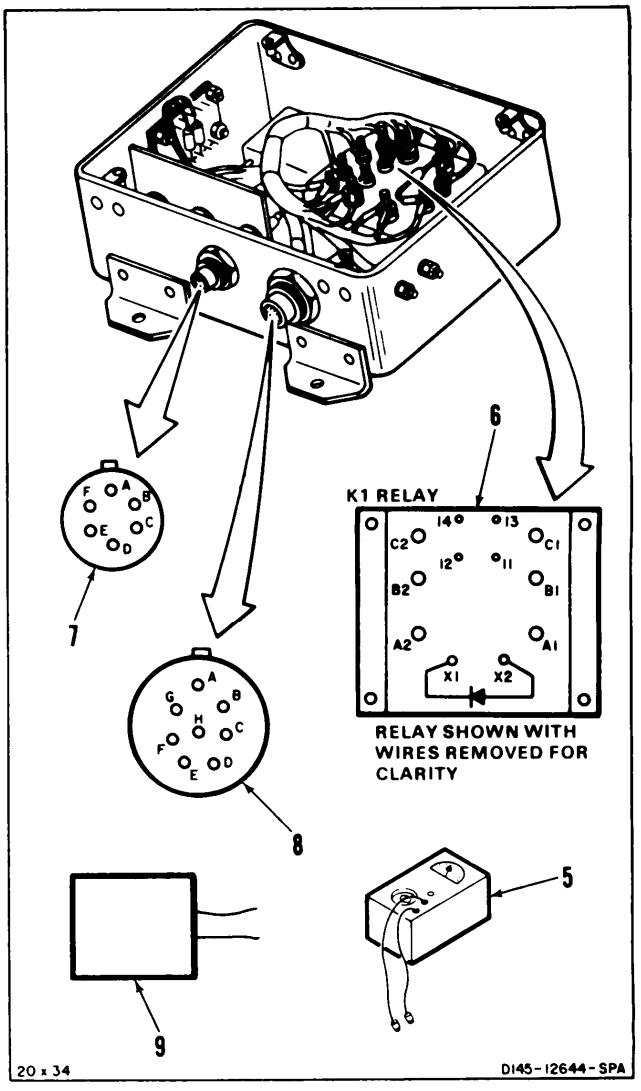
9-149.1 TEST EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued)

4. **Connect multimeter (5) set to RX1 between receptacle (7) pin E and receptacle (8) pin E.** Multi meter shall indicate continuity.
5. **Connect power supply (9) to receptacle (7) pins B(+) and C(-).**
6. **Connect multimeter (5) set to RX1 between terminals C1 and C2, 11 and 12, B1 and B2, and A1 and A2 on relay (6).** Multi meter shall indicate open.
7. **Turn power supply (9) on.** Multimeter shall indicate continuity for terminal pairs in step 6.
8. **Turn power supply (9) off** and disconnect power supply from receptacle (7).
9. **Connect multimeter (5) set to RX1 between relay (6) terminals C1(+) and receptacle (8) pin A(–).** Multi meter shall indicate between 6 and 9 ohms.
10. **Connect multimeter (5) set to RX1 between relay (6) terminal C1(-) and receptacle (8) pin A(+).** Multi meter shall indicate open.
11. **Connect multimeter (5) set to RX1 between relay (6) terminal C1(+) and receptacle (8) pin B(–).** Multimeter shall indicate between 6 and 9 ohms.
12. **Connect multimeter (5) set to RX1 between relay (6) terminal C1(-) and receptacle (8) pin B(+).** Multimeter shall indicate open.
13. **Connect multimeter (5) set to RX1 between relay (6) terminal C(+) and receptacle (8) pin C(–).** Multimeter shall Indicate between 6 and 9 ohms.
14. **Connect multimeter (5) set to RX1 between relay (6) terminal C1(-) and receptacle (8) pin C(+).** Multimeter shall indicate open.
15. **Connect multimeter (5) set to RX10 between receptacle (8) pins A and D and C and D.** Multi meter shall indicate between 460 and 660 ohms on each pair of pins.



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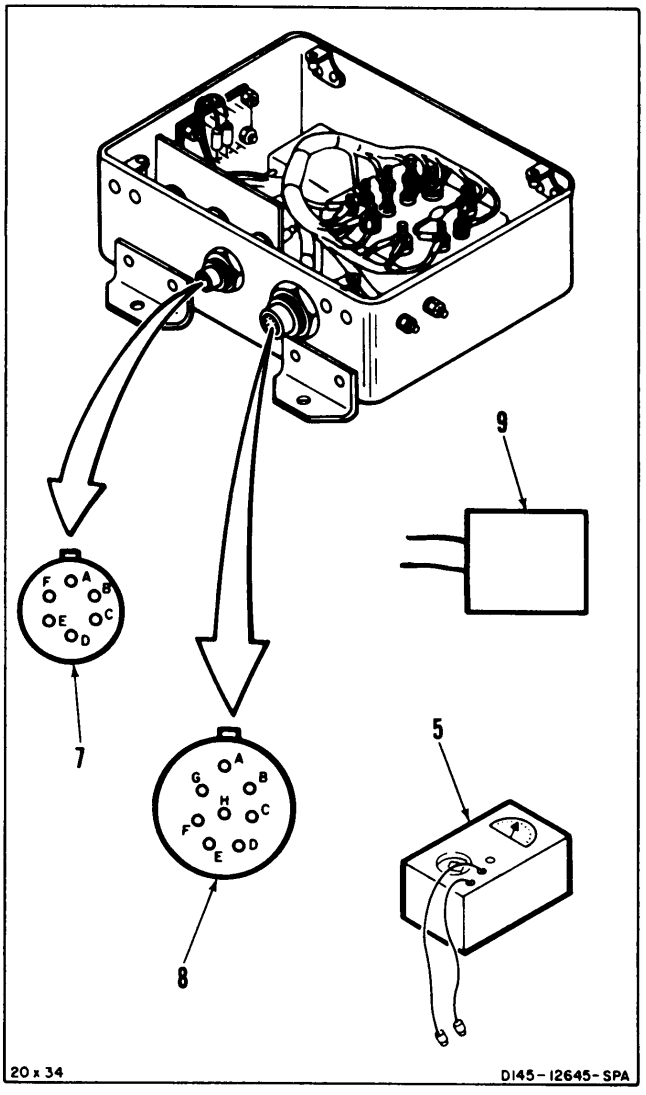
9-149.1 TEST EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued)

16. **Connect multimeter (5) set to RX100 between receptacle (8) pin F and G and E and H.** Mulimeter shall indicate between 1040 and 1560 ohms on each pair of pins.
17. **Connect multimeter (5) set to RX1 between receptacle (7) pins F and D.** Multimeter shall indicate continuity.
18. **Connect power supply (9) to receptacle (8) pins G(+) and F(-).**
19. **Connect multimeter (5) set to RX1 between receptacle (7) pins F and D.**
20. **Turn power supply (9) on.** Multimeter shall indicate continuity.
21. **Turn power supply (9) off.**
22. **Connect power supply (9) to receptacle (8) pins H(+) and E(-).**
23. Repeat step 19 through 21. Then go to step 24.
24. Connect jumper wire between receptacle (8) pins G and H and a jumper wire between pins F and E.
25. **Connect power supply (9) to receptacle (8) between jumpers at pins G and H(+) and F and E(–).**
26. Repeat step 19.
27. **Turn power supply (9) on.** Multimeter shall indicate open.



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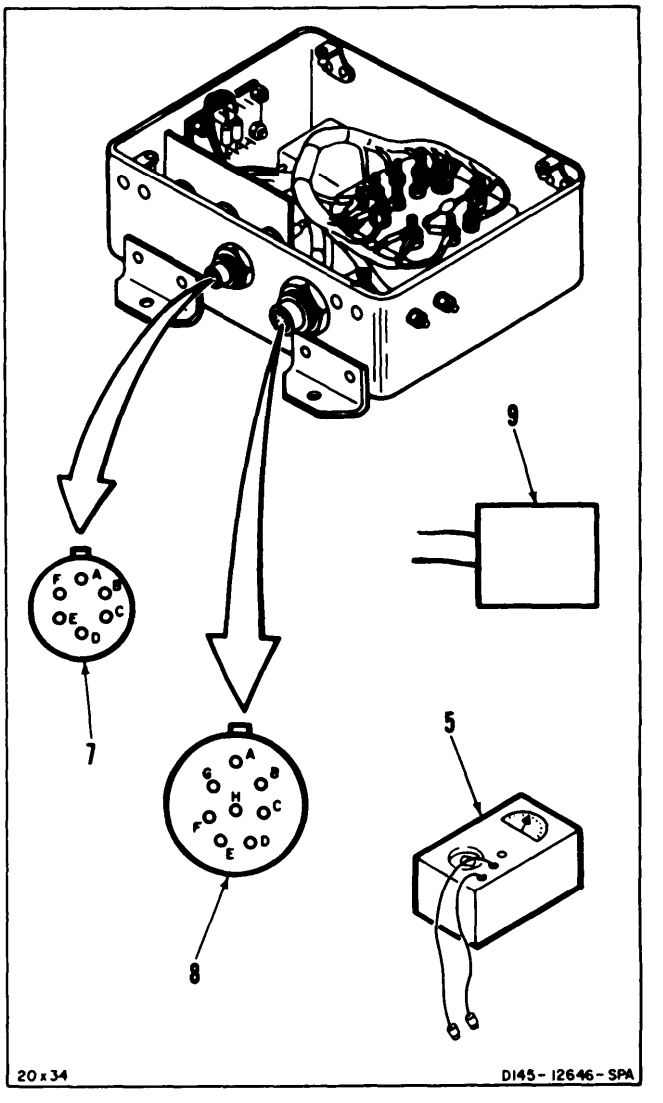
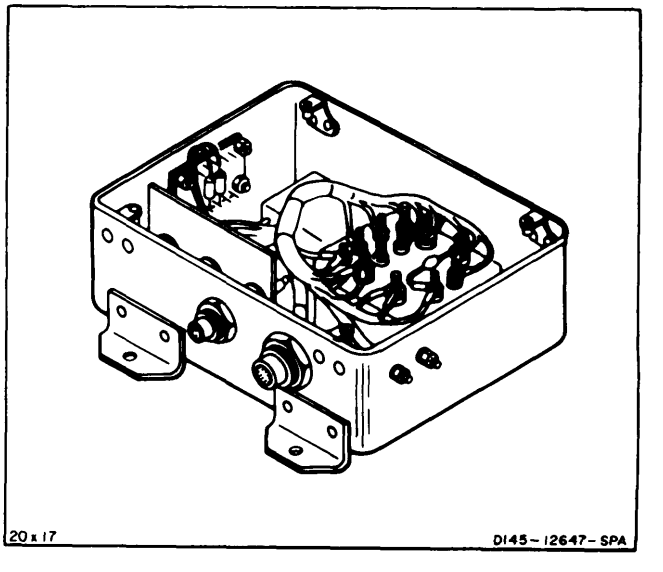
9-149.1 TEST EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued)

28. **Turn power supply (9) off.**
29. **Connect power supply (9) to receptacle (8) pin D(+) and receptacle (7) pin C(-).**
30. **Connect multimeter (5) set to DC between receptacle (8) pin 8(+) and receptacle (7) pin C(-).**
31. Connect a jumper between pins A and B on receptacle (7).
32. **Turn power supply (9) on.**
33. **Momentarily apply + 28VDC to jumper on receptacle (7).** Multi meter shall indicate 28VDC 8 to 12 seconds after 28VDC has been removed from receptacle (7) pins A and B.



INSPECT

34. **Turn power supply (9) off.** Disconnect power supply from receptacles (7 and 8).
35. Disconnect multimeter (5) from receptacles (7 and 8).



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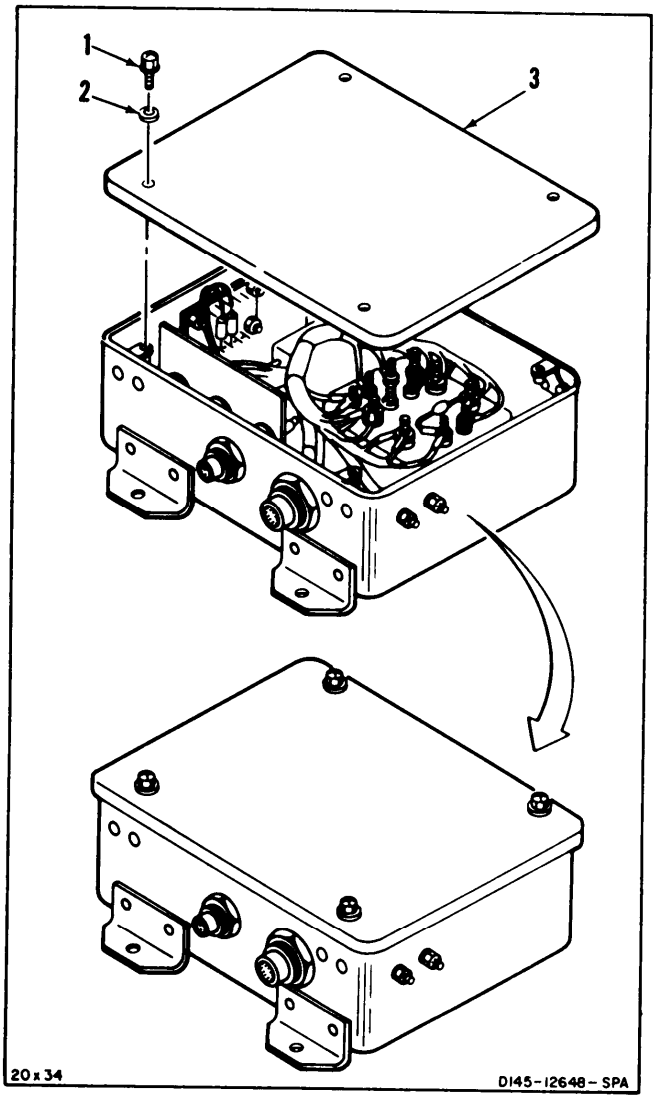
9-149.1 TEST EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued)

36. **Install cover (3).** Install four screws (1) and four washers (2).

FOLLOW-ON MAINTENANCE:

None



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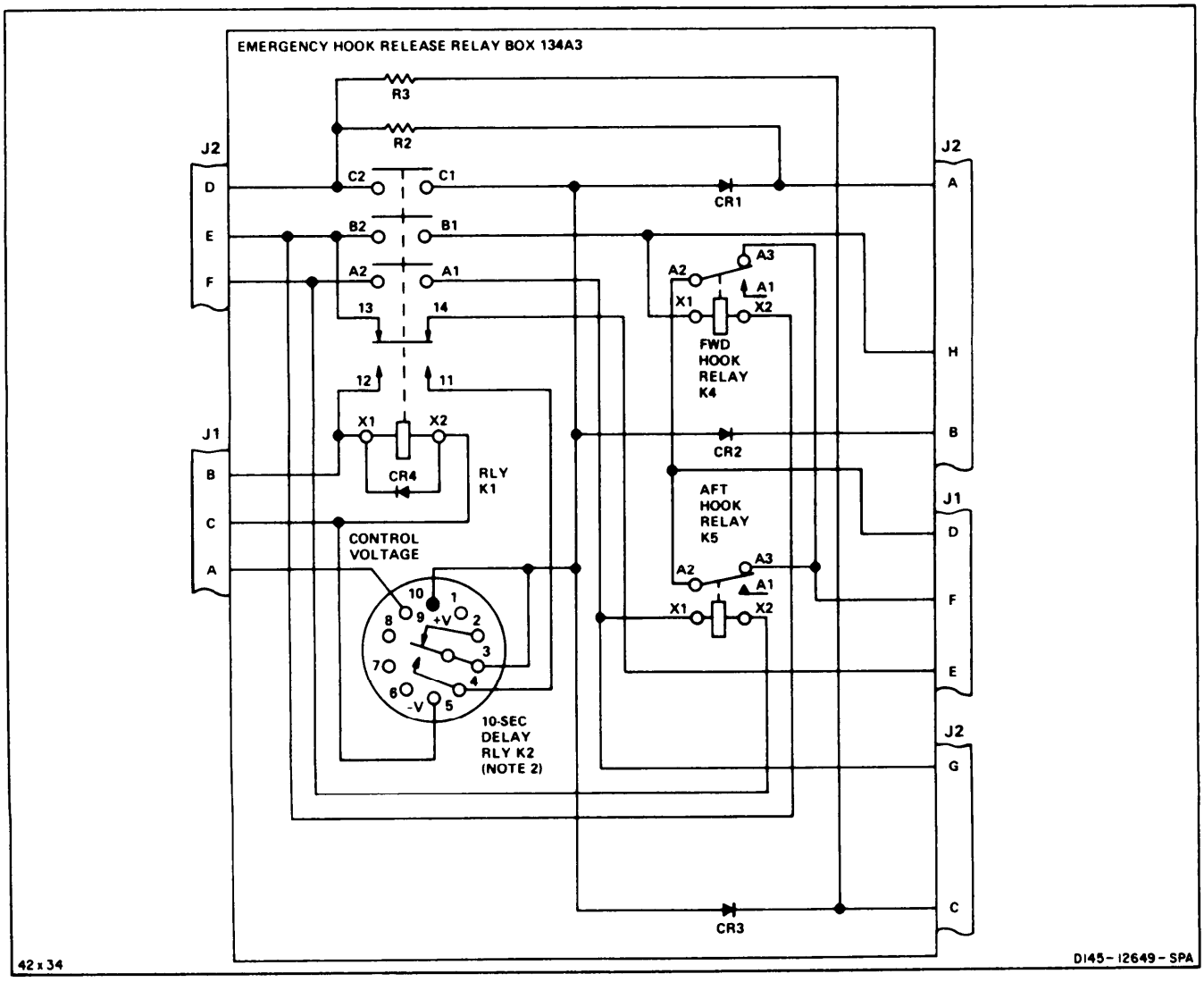
9-149.1 TEST EMERGENCY HOOK RELEASE RELAY BOX (AVIM) (Continued)



END OF TASK

9-150 INSTALL EMERGENCY HOOK RELEASE RELAY BOX

INITIAL SETUP

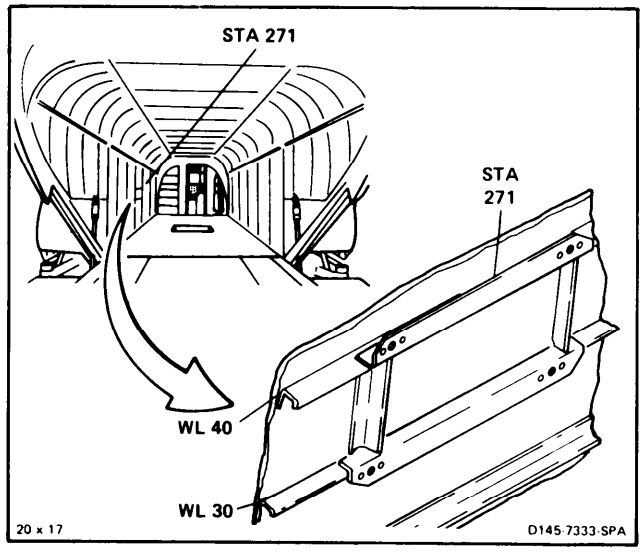
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 51 80-00-323-4915

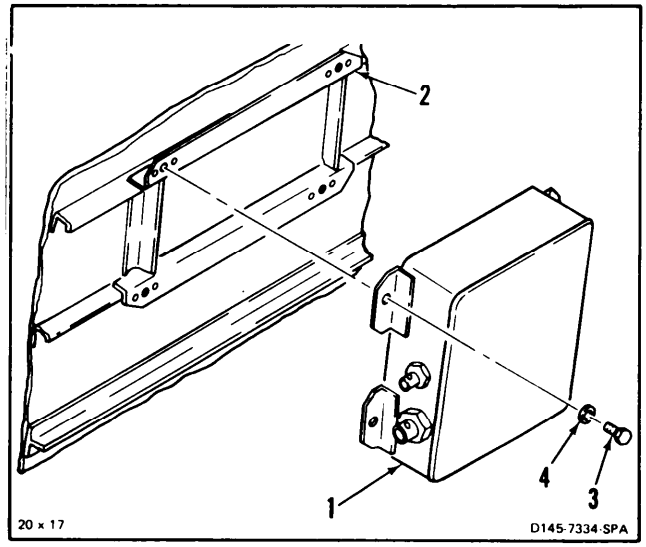
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Position relay box (1)** on structure (2). **Install four bolts (3)** and washers (4).

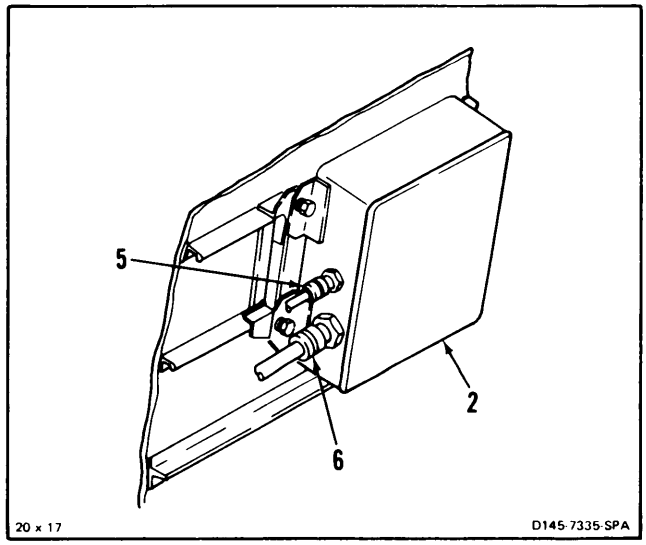


2. **Connect two electrical connectors (5 and 6)** to relay box (2). Remove tags.

INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of external cargo hook system (TM 55-1520-240-T).



END OF TASK

9-151 REMOVE CARGO HOOK RELEASE RELAY BOX

INITIAL SETUP

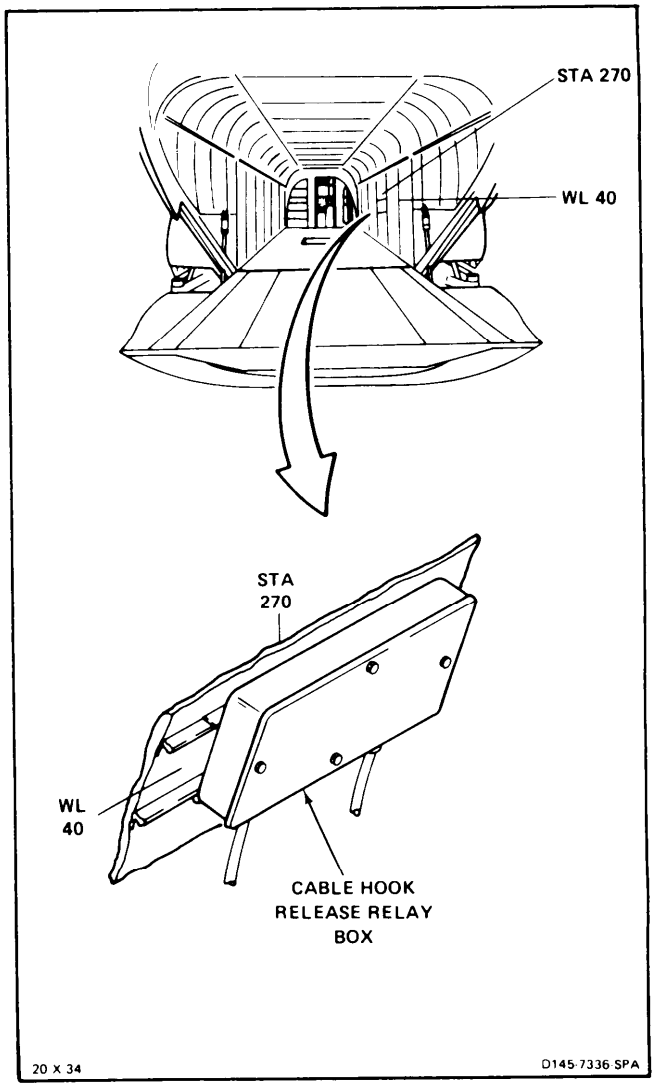
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

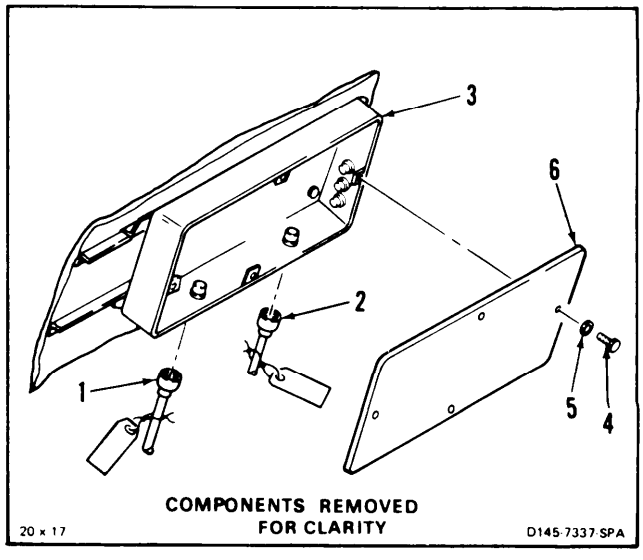
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off



1. Tag and **disconnect two electrical connectors (1 and 2)** from cargo hook relay box (3).
2. **Remove** four bolts (4), washers (5), and **cover (6)** from relay box (3).



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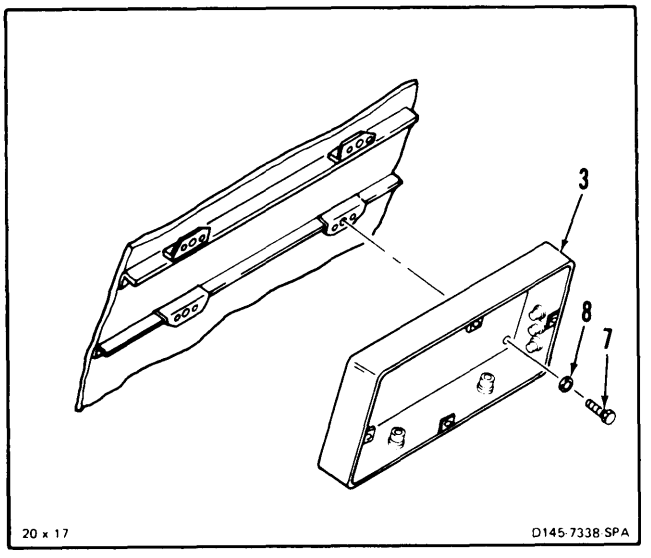
9-151 REMOVE CARGO HOOK RELEASE RELAY BOX (Continued)

3. **Remove** four bolts (7), washers (8), and **relay box (3).**



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-152 DISASSEMBLE DUAL HOOK RELAY BOX (AVIM) 9-152

INITIAL SETUP

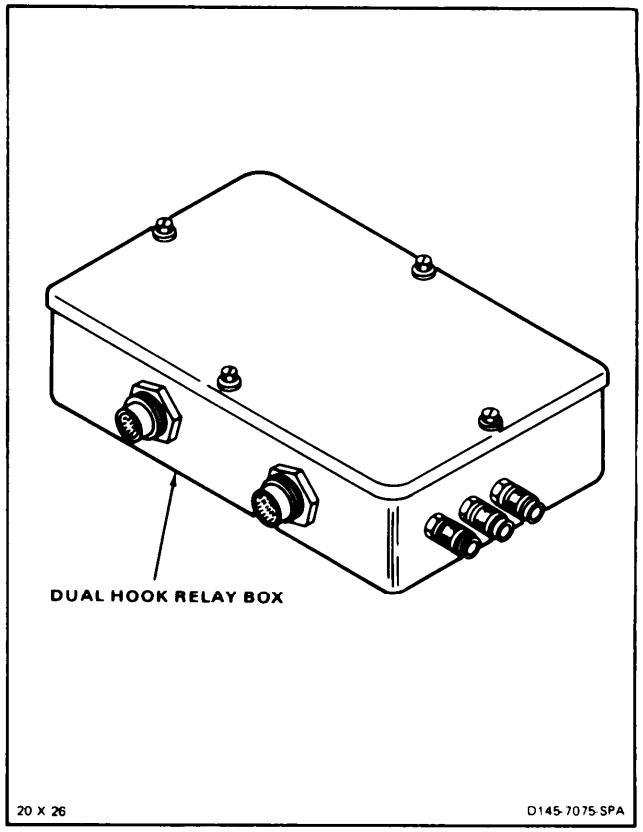
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Contact Removal/Insertion Tool, MS3447-20

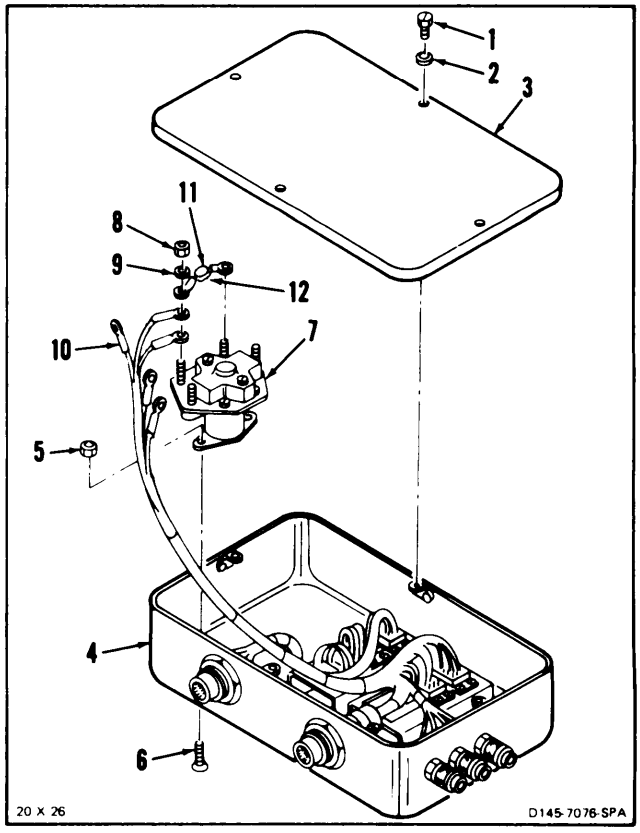
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician

Equipment Condition:
Off Helicopter Task



1. Remove four screws (1) and washers (2). **Remove cover** (3) from box (4).
2. Remove two nuts (5) and screws (6), **Remove relay (7)** from box (4).
3. Remove four nuts (8) and washers (9) from relay (7). Tag and **disconnect seven wires (10) and diode (11)** from relay (7).
4. Cut through protective coating (12) and **remove diode (11).**



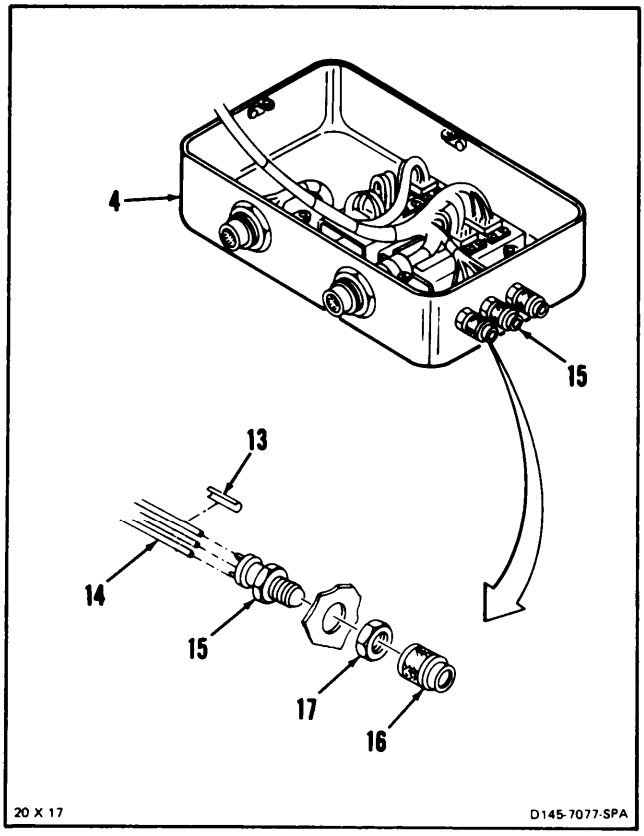
GO TO NEXT PAGE

9-152 DISASSEMBLE DUAL HOOK RELAY BOX (AVIM) (Continued)

NOTE

Procedure is same to remove all three lights. Removal of one light is shown here.

5. **Cut and remove insulation sleeving (13)** from three wires (14) on light (15). Use sharp knife.
6. Tag and **solder three wires (14)** from light (15).
7. **Remove lens (16), nut (17)** and light (15) from box (4).
8. **Repeat steps 5 thru 7 for other two lights (15).**



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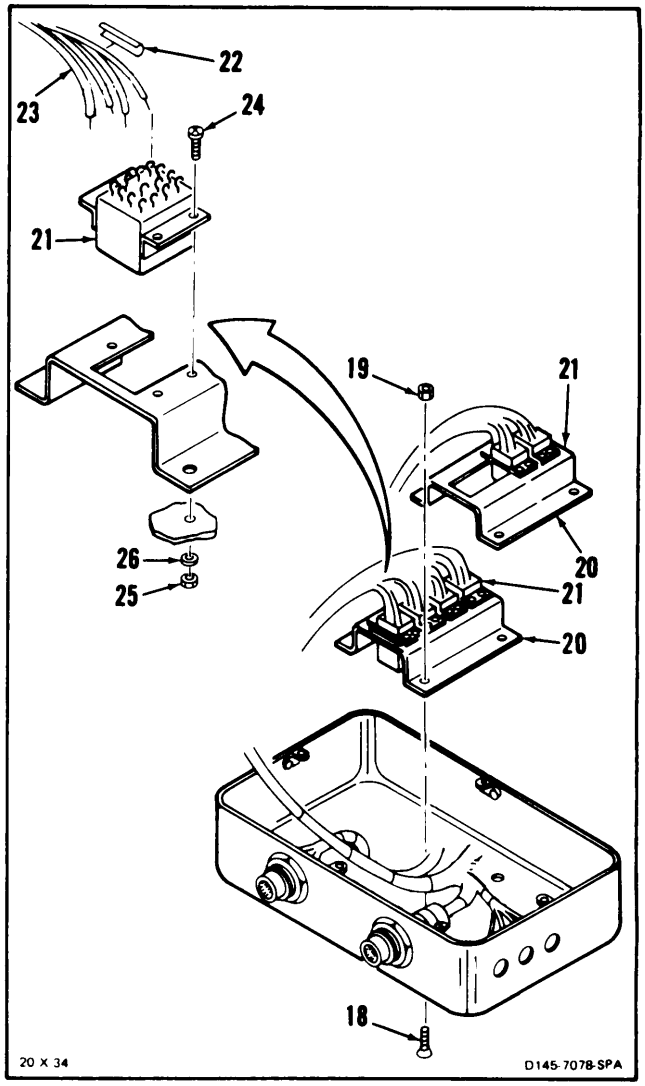
9-152 DISASSEMBLE DUAL HOOK RELAY BOX (AVIM) (Continued)

9. Remove nine screws (18) and nuts (19).
10. **Remove two relay brackets (20)** with relays (21).

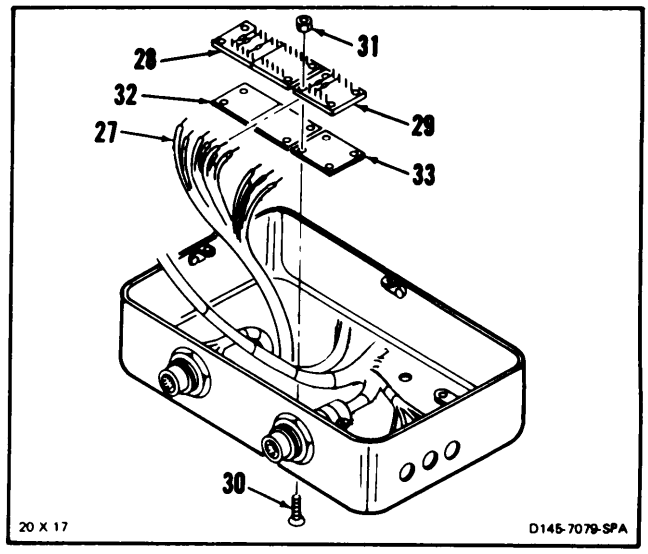
NOTE

Procedure is same to remove all six relays. Removal of one relay is shown here.

11. **Cut and remove insulation sleeving (22)** from wires (23). Use sharp knife.
12. Tag and **unsolder six wires (23)** from relay (21).
13! Remove three screws (24), nuts (25), and washers (26). **Remove relay (21).**
14. **Repeat steps 9 thru 13 for remaining** five relays (21).



15. Tag and **unsolder 51 wires (27)** from terminal boards (28) and (29).
16. **Remove six screws (30) and nut (31).**
17. **Remove terminal boards (28 and 29) and insulators (32 and 33).**



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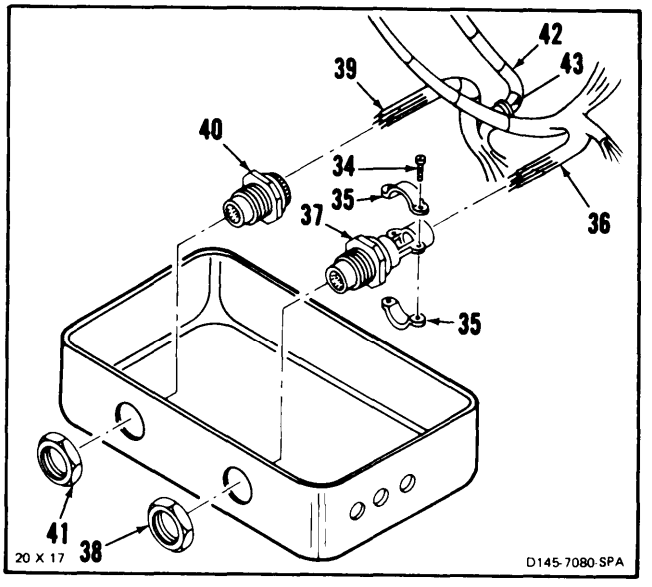
9-152 DISASSEMBLE DUAL HOOK RELAY BOX (AVIM) (Continued)

18. **Remove** two screws (34) and **strain relief (35).**
19. Tag and **disconnect 17 wires (36)** from connector (37). Use contact tool.
20. **Remove** nut (38) and **connector (37).**
21. Tag and **disconnect seven wires (39)** from-connector (40). Use contact tool.
22. **Remove nut (41) and connector (40).**
23. **Remove harness (42)** and clamp (43)



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-153 ASSEMBLE DUAL HOOK RELAY BOX (AVIM) 9-153

INITIAL SETUP

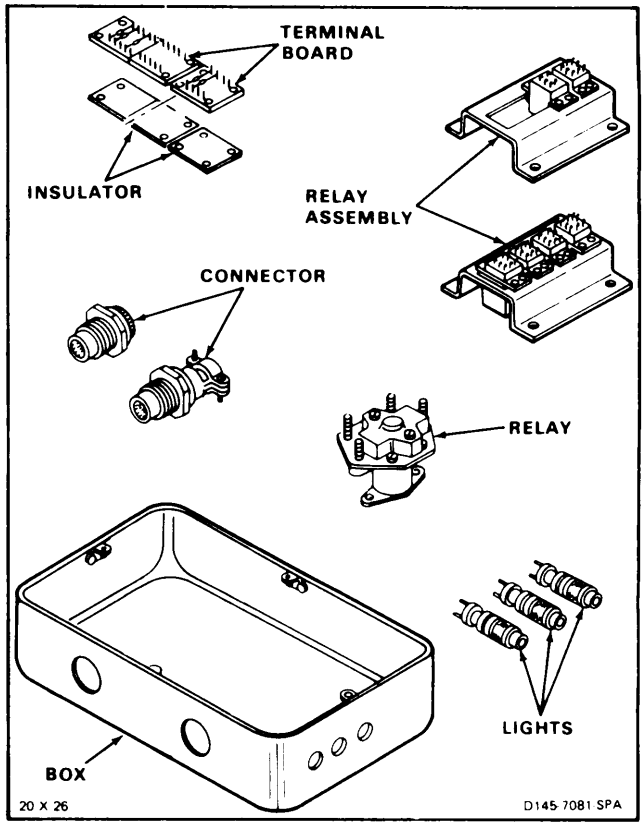
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit, NSN 5180-00-323-4915
Soldering Gun
Contact Removal/Insertion Tool, M83723-31-20
Heat Gun

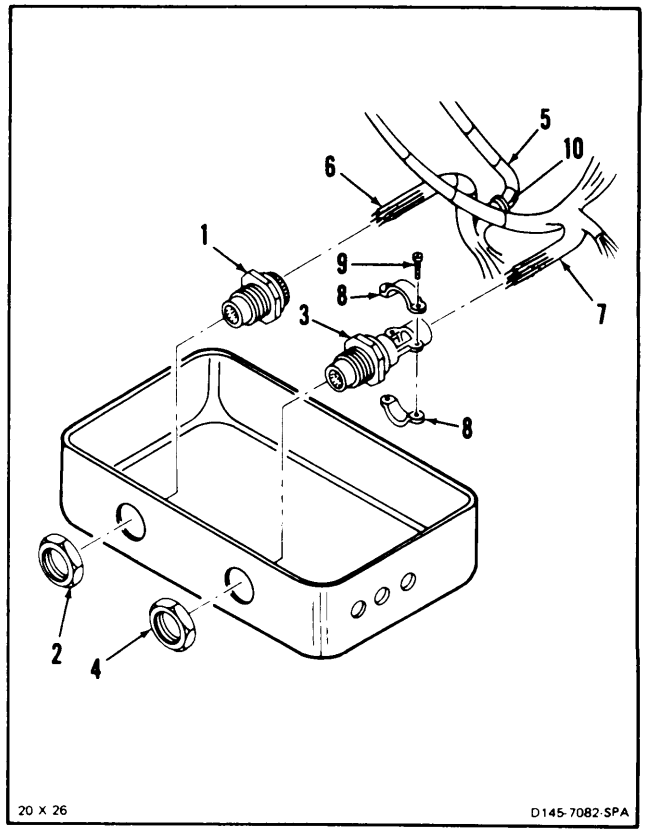
Materials:
Protective Coating (E305)
Solder (E360)
Shrinkable Tubing (E431)

Personnel Required:
68F10 Aircraft Electrician
68F20 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Install connector (1)** and nut (2), key up.
2. **Install connector (3)** and nut (4), key up.
3. **Position harness (5). Connect** seven **wires (6)** to connector (1). Use contact tool. Remove tags.
4. **Connect** 17 **wires (7)** to connector (3). Use contact tool. Remove tags.
5. **Install strain relief (8)** and two screws (9).
6. **Position clamp (10)** on harness (5).



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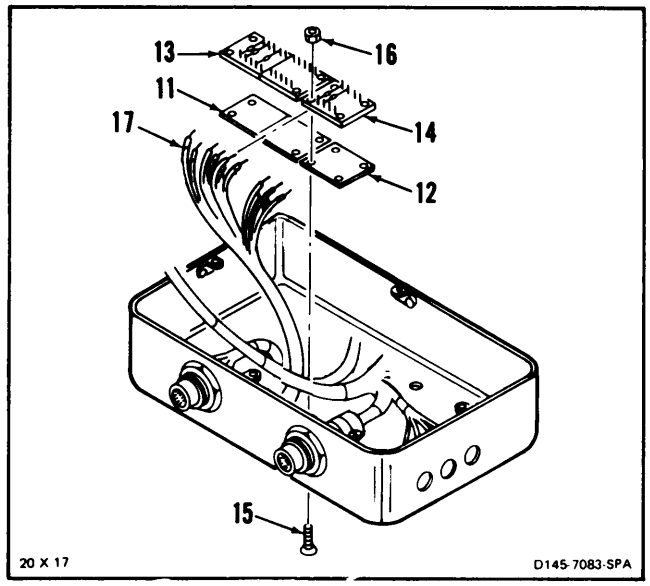
9-153 ASSEMBLE DUAL HOOK RELAY BOX (AVIM) (Continued) 9-153

7. **Position insulators (11 and 12) and terminals boards (13 and 14).**
8. **Install six screws (15)** and nuts (16).
9. Solder 51 wires (17) to terminal boards (13 and 14). Use solder (E360). Remove tags.

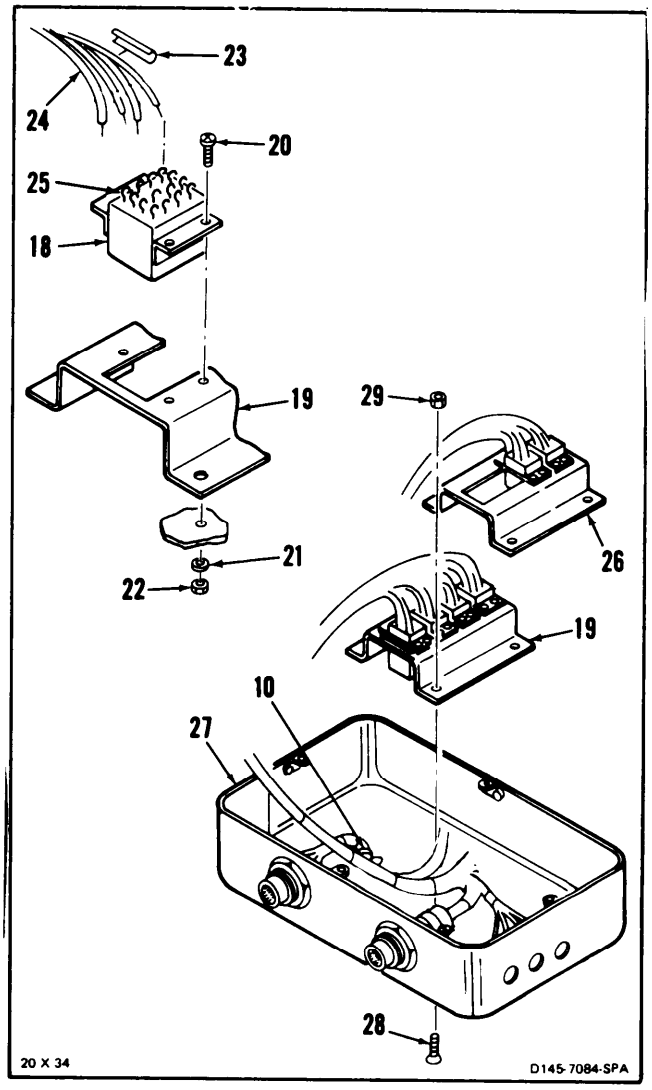
INSPECT



NOTE

Procedure is same to install all six relays. Installation of one relay is shown here.

10. Position relay (18) in bracket (19). **Install three screws (20) washers (21) and nuts (22).**
11. Position tubing (23) on wires (24). Use shrinkable tubing (E431).
12. **Solder six wires (24)** to relay (18). Use solder (E360). Remove tags.
13. Slide tubing (23) over relay pins (25). Shrink tubing with heat gun.
14. **Repeat steps 10 thru 13 for other five relays (18).**
15. **Position two relay brackets (19 and 26)** and clamp (10) in box. **Install nine screws (28)** and nuts (29).



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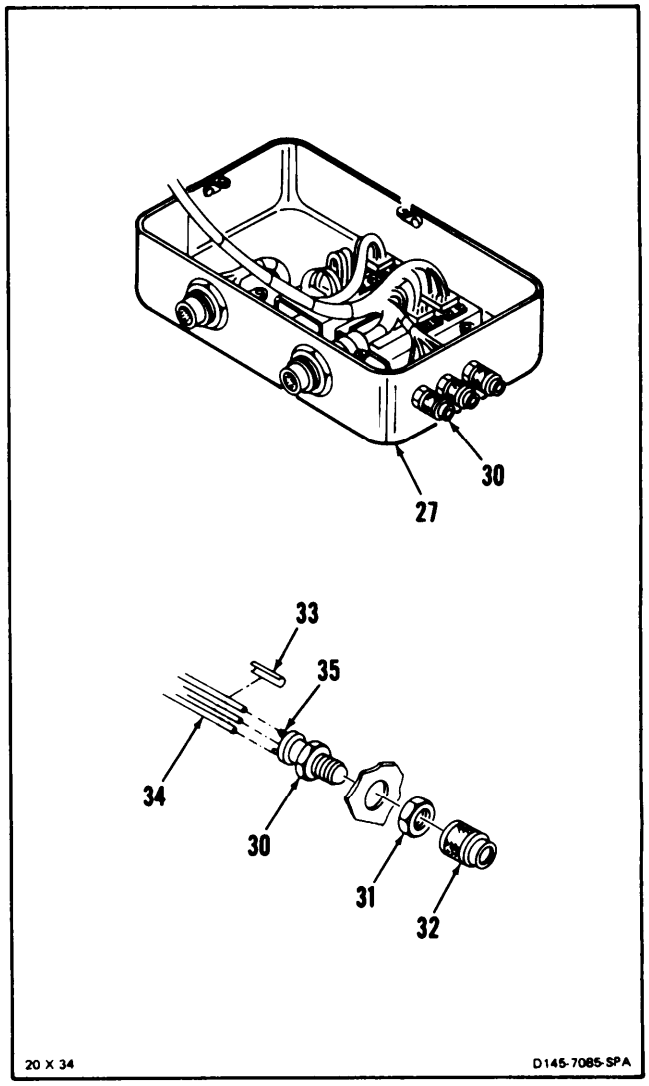
9-153 ASSEMBLE DUAL HOOK RELAY BOX (AVIM) (Continued)

NOTE

Procedure is same to install all three lights. Installation of one light is shown here.

16. **Install light (30) and nut (31)** in box (27).
17. **Install lens (32).**
18. **Position tubing (33)** on wires (34). Use shrinkable tubing (E431).
19. **Solder three wires (34)** to light (30). Use solder (E360). Remove tags.
20. Slide tubing (33) over terminals (35). Shrink tubing with heat gun.
21. **Repeat steps 16 thru 20 for other three lights (30).**



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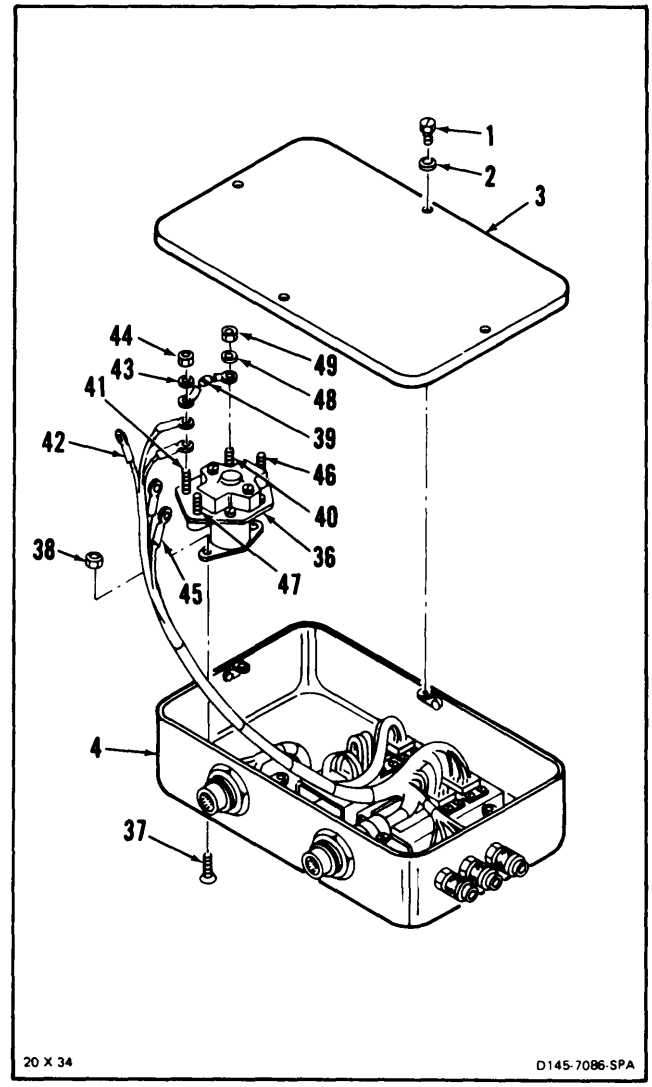
9-153 ASSEMBLE DUAL HOOK RELAY BOX (AVIM) (Continued)

22. **Position relay (36). Install two screws (37)** and nuts (38).
23. **Connect diode (39)** between terminals (40 and 41), band towards terminal (41).
24. **Connect four wires (42)** to terminals (40 and 41) by installing two washers (43) and nuts (44). Remove tags.
25. **Connect three wires (45)** to terminals (46 and 47) by installing two washers (48) and nuts (49). Remove tags.
26. Connect diode (39) to relay (36). Use protective coating (E305).

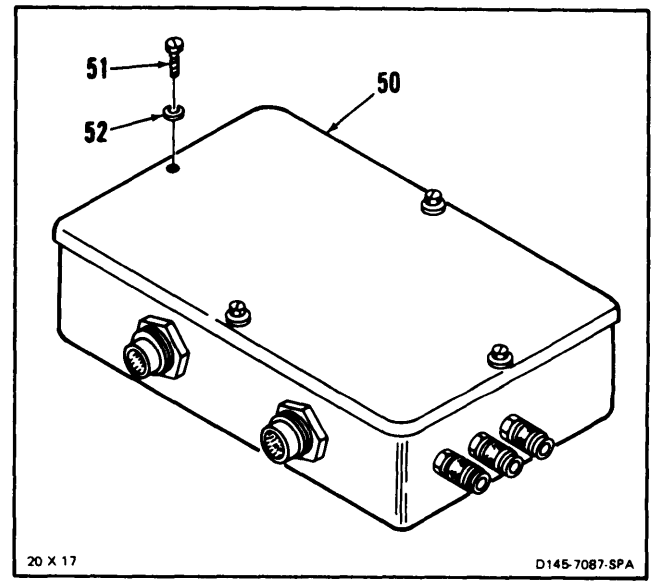
INSPECT



27. **Install cover (50),** four screws (51) and washer (52).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-153.1 TEST DUAL HOOK RELAY BOX (AVIM) 9-153.1

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Power Supply, 28 Vdc
Multimeter

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
68F30 Inspector

References:
TM 55-1500-323-25

Equipment Condition:
Off Helicopter Task

1. **Perform continuity checks** as listed:

Receptacle	Pins	Meter Reading
J2	R and B	Continuity
	J2-a and J1-E	Continuity
J2	L(+) and b(-)	No Continuity
J1	B and E	No Continuity
J2	C and b	No Continuity
J1	G and D	No Continuity
J2	V and Y	No Continuity
J2	V(+) and A(-)	No Continuity
J2	V and W	No Continuity
J2	V and U	No Continuity

NOTE

Once a power connection is made, keep power applied until told to disconnect it.

2. **Apply 28 vdc to J2-D and ground to J1-B.**
   a. There shall be 0 vdc across F(+) and B(-) of J1.
   b. There shall be 0 vdc across C(+) and B(-) of J1.
   c. There shall be 0 vdc across J2-G(+) and J1-B(-).
3. **Apply 28 vdc to J2-J and J1-A and ground to Z of J2.** There shall be 28 vdc across F(+) and B(–) of J1 and indicator light DS3 (1) shall come on.
4. **Apply 28 vdc to N of J2.**
   a. There shall be 28 vdc across C(+) and B(-) of J1.
   b. There shall be no continuity between R and B of J2.
5. **Apply 28 vdc to L of J2.**
   a. There shall be 28 vdc across J2-G(+) and J1-B(-).
   b. There shall be 28 vdc across J2-b(+) and J1-B(-).

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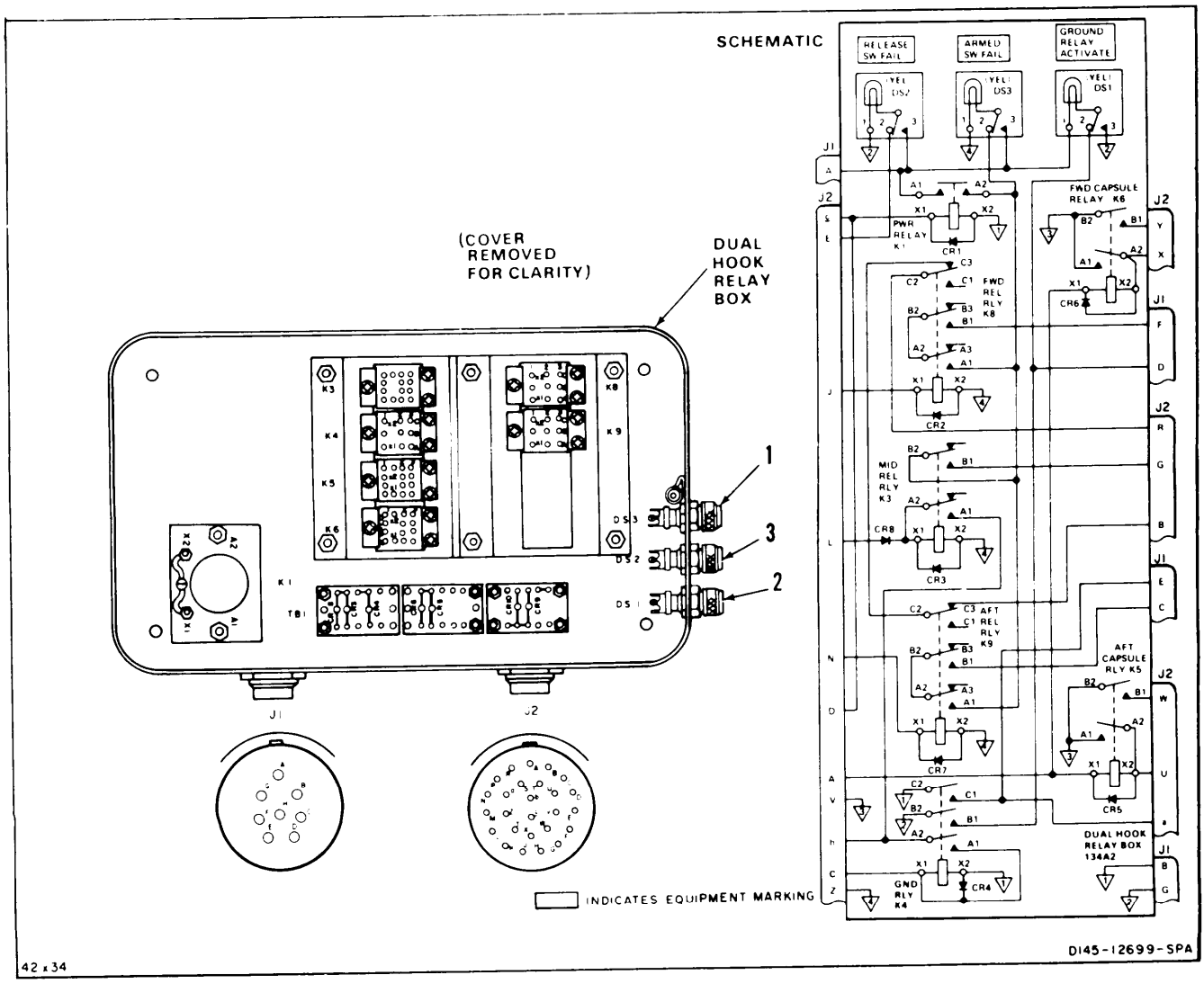
9-153.1 TEST DUAL HOOK RELAY BOX (AVIM) (Continued)



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9-153.1 TEST DUAL HOOK RELAY BOX (AVIM) (Continued)

6. **Remove 28 vdc from L of J2 only and apply to C of J2.**
   a. There shall be 28 vdc across J2-b(+) and J1-B(-).
   b. There shall be **continuity** between J1 -B and J2-a.
7. **Apply ground to G of J1.** There shall be **continuity** between G and D of J1 and indicator light DS1 (2) shall come on.
8. **Apply 28 vdc to E of J2.** Indicator light DS2 (3) shall come on.
9. **Press three lights (1, 2, and 3).** Lights shall come on.
10. **Apply 28 vdc to A and ground to V of J2. Apply and remove ground to U of J2.** There shall be **continuity** between W and U of J2.
11. **Apply and remove ground to X of J2.** There shall be **continuity** between X and Y of J2.
12. Remove all power connections.

FOLLOW-ON MAINTENANCE:

None

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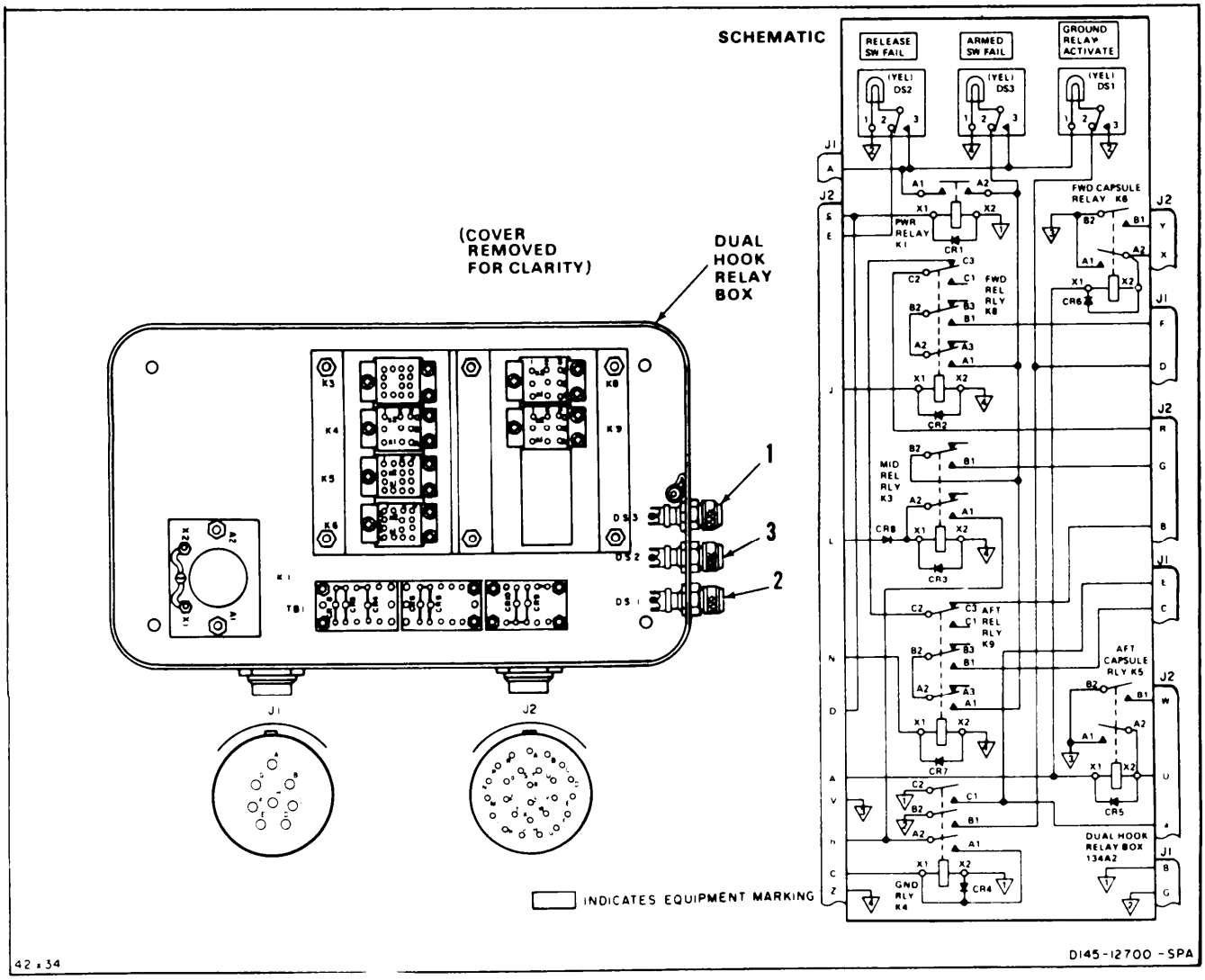
9-153.1 TEST DUAL HOOK RELAY BOX (AVIM (Continued)



END OF TASK

9-154 INSTALL CARGO HOOK RELEASE RELAY BOX

INITIAL SETUP

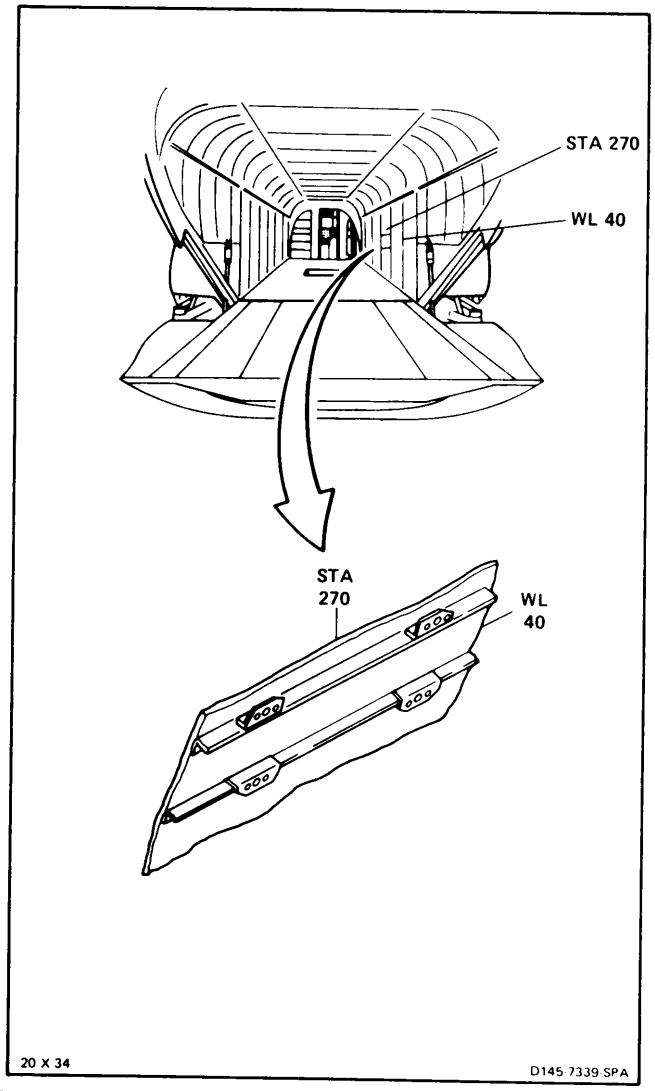
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool
NSN 5180-00-323-49

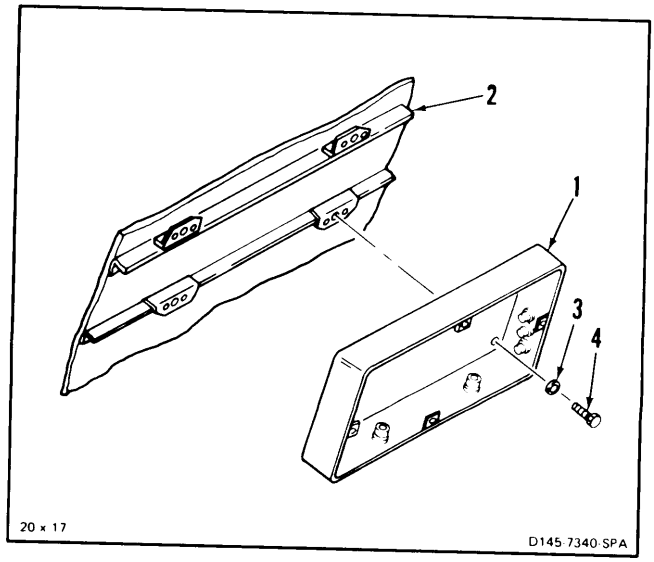
Materials:
Cloths (E135)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Position relay box (1)** on structure (2). **Install** washers (3) and bolts (4).



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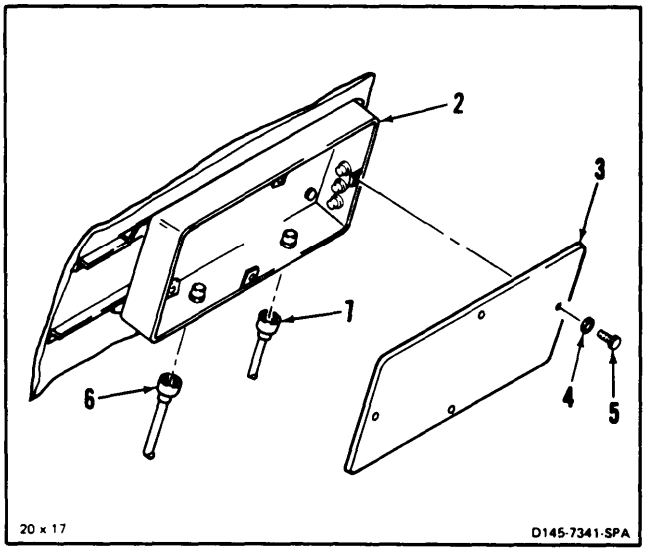
9-154 INSTALL CARGO HOOK RELEASE RELAY BOX (Continued)

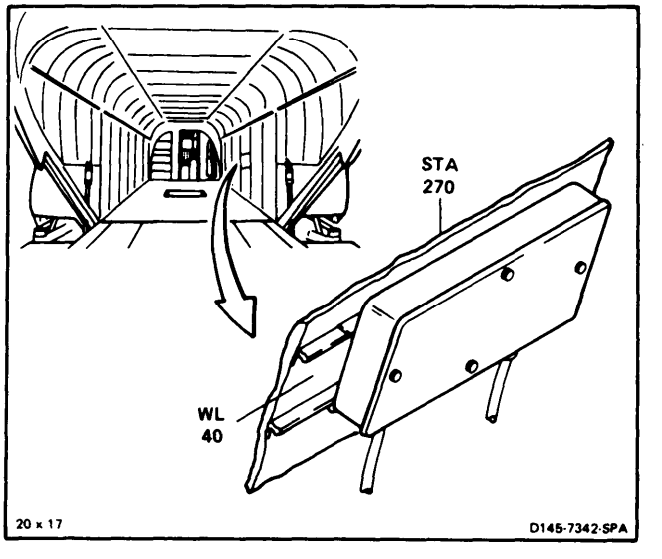
2. **Install cover (3),** four washers (4) and bolts (5) on relay box (2).
3. **Connect two electrical connectors (6 and 7)** to relay box (2). Remove tags.



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of external cargo hook system (TM 55-1520-240-T).



END OF TASK

9-155 REMOVE HOIST OPERATOR'S PANEL

INITIAL SETUP

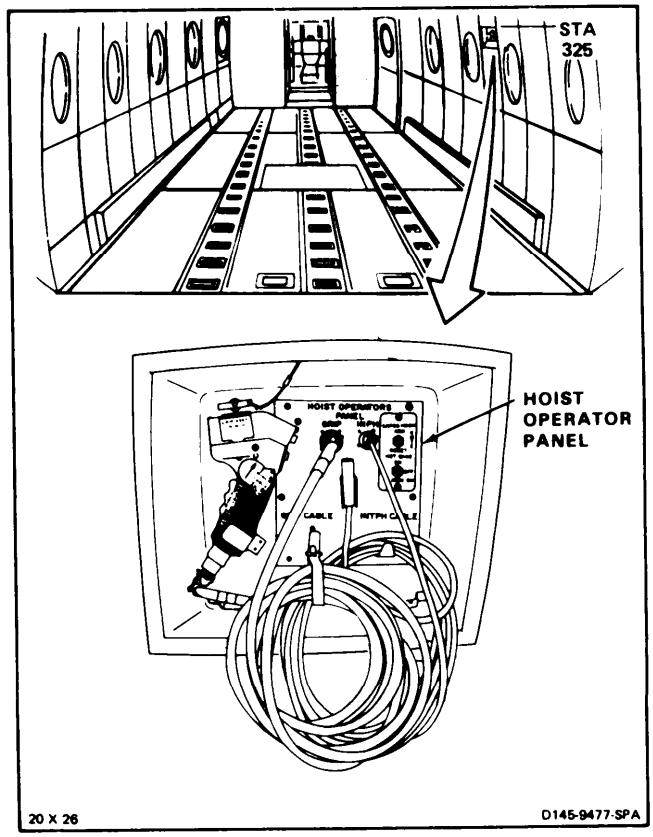
Applicable Configurations:
All

Tools:
Aircraft Electrical Tool Kit,
NSN 5180-00-323-4915

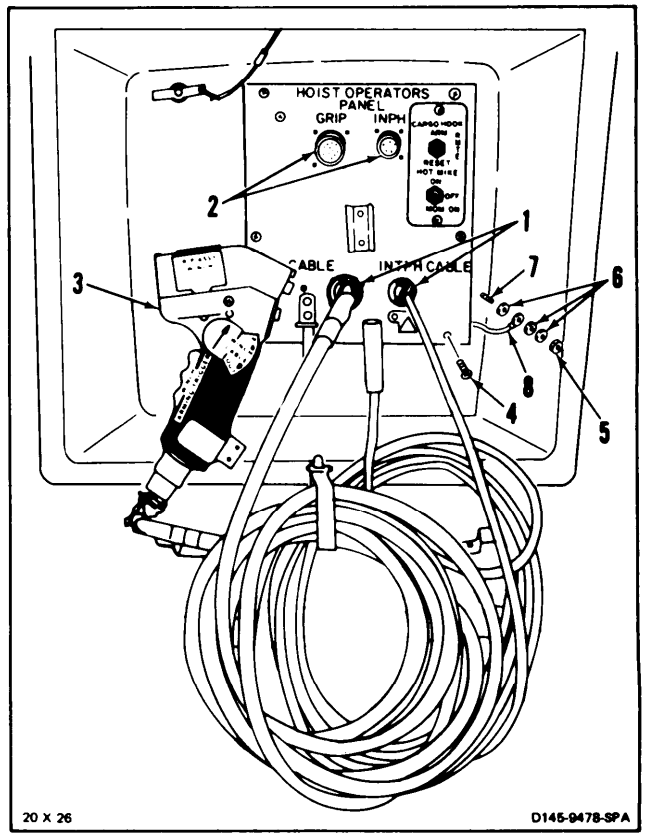
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Acoustical Blanket Removed (Task 2-208)



1. Tag and **disconnect two electrical connectors (1)** from two receptacles (2).
2. **Remove grip (3).**
3. **Remove six screws (4).**
4. **Remove nut (5)** and three washers (6) from stud (7).
5. **Disconnect jumper (8).**



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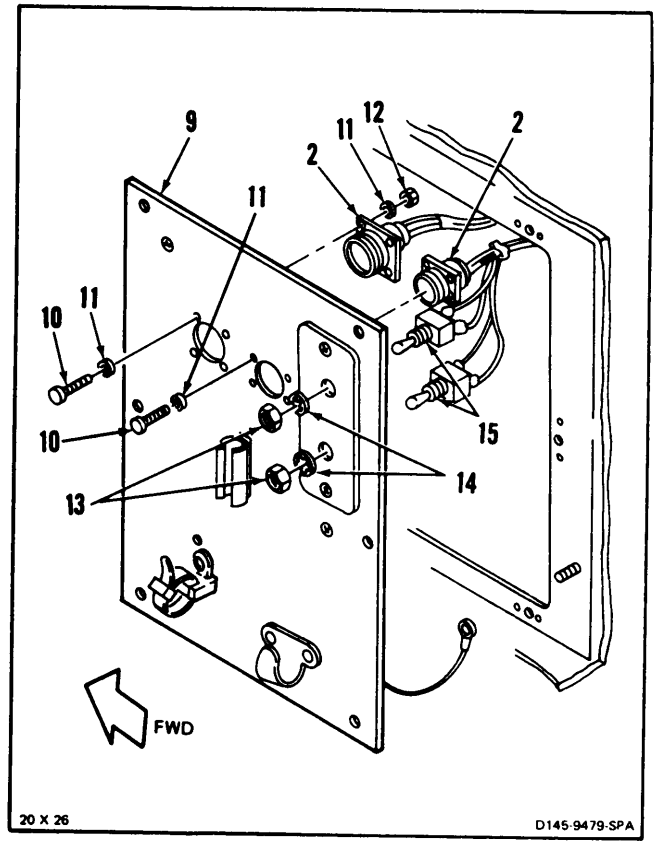
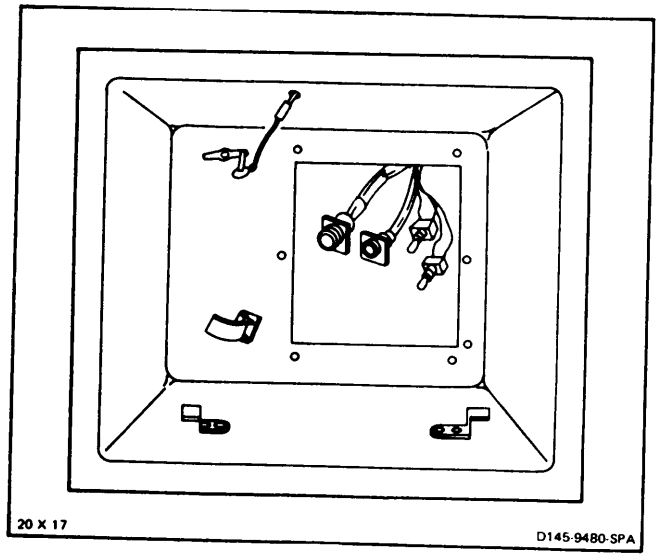
9-155 REMOVE HOIST OPERATOR'S PANEL (Continued) 9-155

6. Tilt panel (9) forward. **Remove eight screws (10),** 16 washers (11), and eight nuts (12) from receptacles (2). Tag receptacle.
7. **Remove two nuts (13)** and washers (14). Tag and **remove two switches (15).**
8. **Remove panel (9).**



FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-156 REPAIR HOIST OPERATOR'S PANEL

INITIAL SETUP

Applicable Configurations:
All

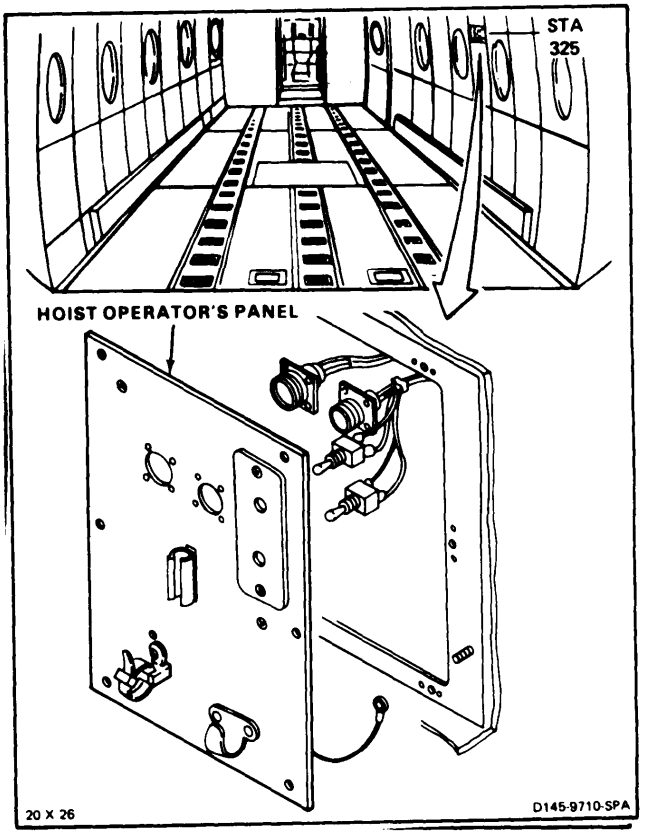
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Heat Gun

Materials:
Cloths (E120)
Methyl-Ethyl-Ketone (E244)
Paper Tags (E264)
Gloves (E186)

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

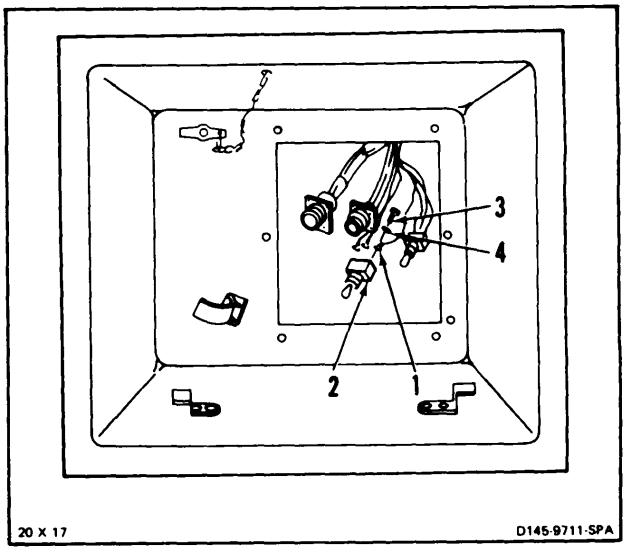
References:
TM 55-1520-240-23P

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off
Hydraulic Power Off
Hoist Operator's Panel Removed (Task 9-155)



NOTE

- Repair hoist operator's panel only to the extent required.
- Procedure is same to replace CARGO HOOK or HOT MIKE switch. CARGO HOOK switch is shown here.



1. Remove CARGO HOOK switch as follows:
   a. Tag and **disconnect three wires (1)** from switch (2) by removing three screws (3) and washers (4).
   b. **Remove switch (2).**
   c. **Connect three wires (1)** to new switch (2) by installing three screws (3) and washers (4).

INSPECT

GO TO NEXT PAGE

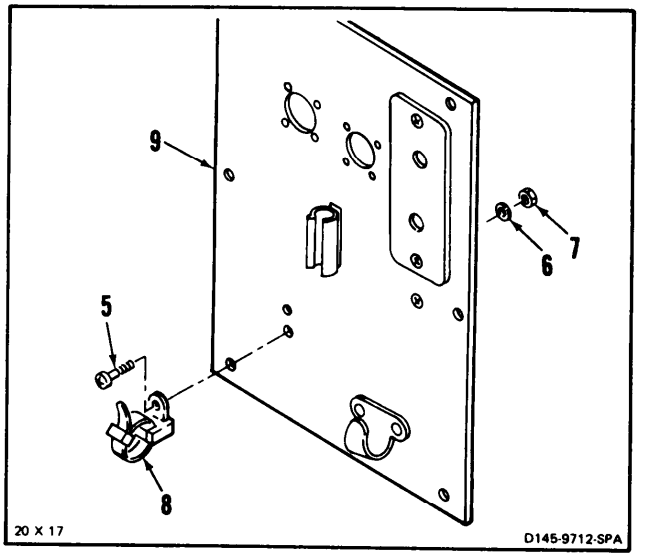
9-156 REPAIR HOIST OPERATOR'S PANEL (Continued) 9-156

2. Replace strap assembly as follows:

   a. **Remove screw (5),** washers (6), and nut (7) from strap (8).

   b. **Remove strap (8).**

   c. **Position** new strap (8) on panel (9). **Install screw (5),** washer (6), and nut (7).



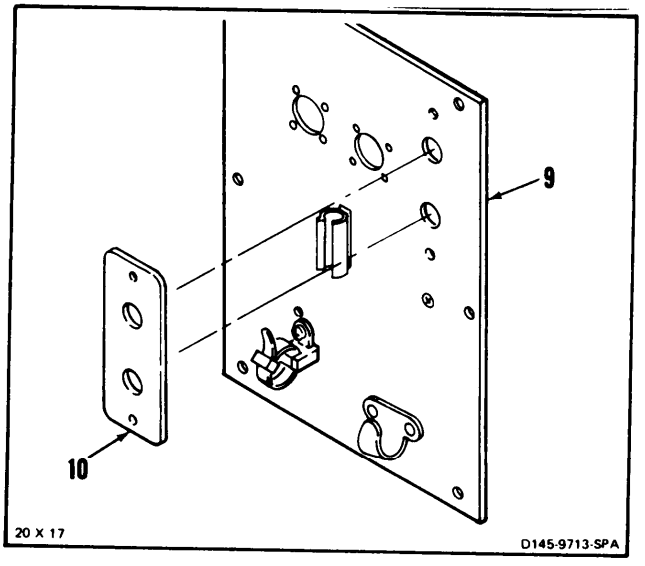
INSPECT

3. Replace decal as follows:

   a. Heat decal (10). **Remove decal.**

WARNING

Methyl-ethyl-ketone (E244) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



   b. Clean panel (9) decal surface with methyl-ethyl-ketone (E244). Use cloths (E120) to clean. Wear gloves (E186).

   c. Peel protective backing from new decal (10). **Install decal on parel (9).**

INSPECT

FOLLOW-ON MAINTENANCE:

Install hoist operator's panel (Task 9-157).

END OF TASK

9-157 INSTALL HOIST OPERATOR'S PANEL

INITIAL SETUP

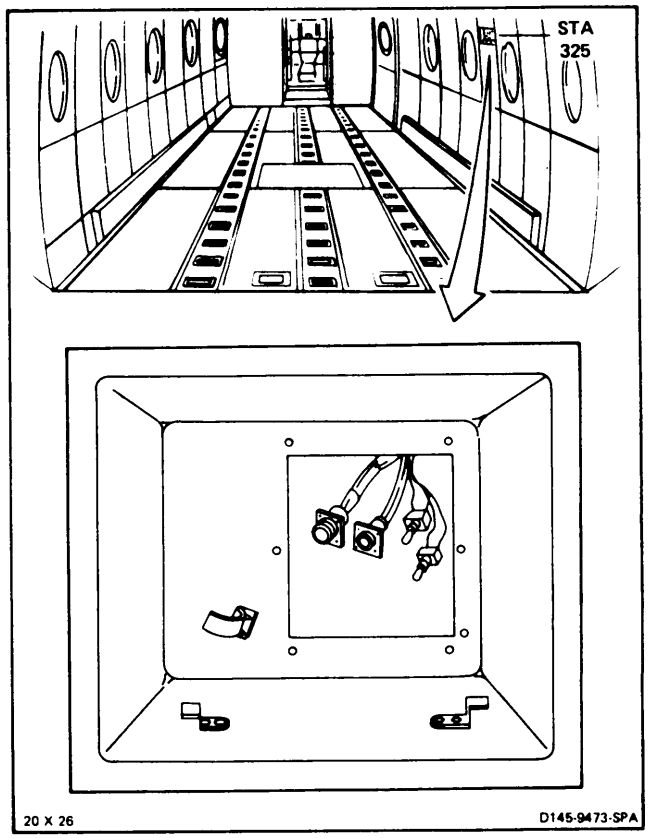
Applicable Configurations:
All

Tools:
Aircraft Electrical Tool Kit,
NSN 5180-00-323-4915

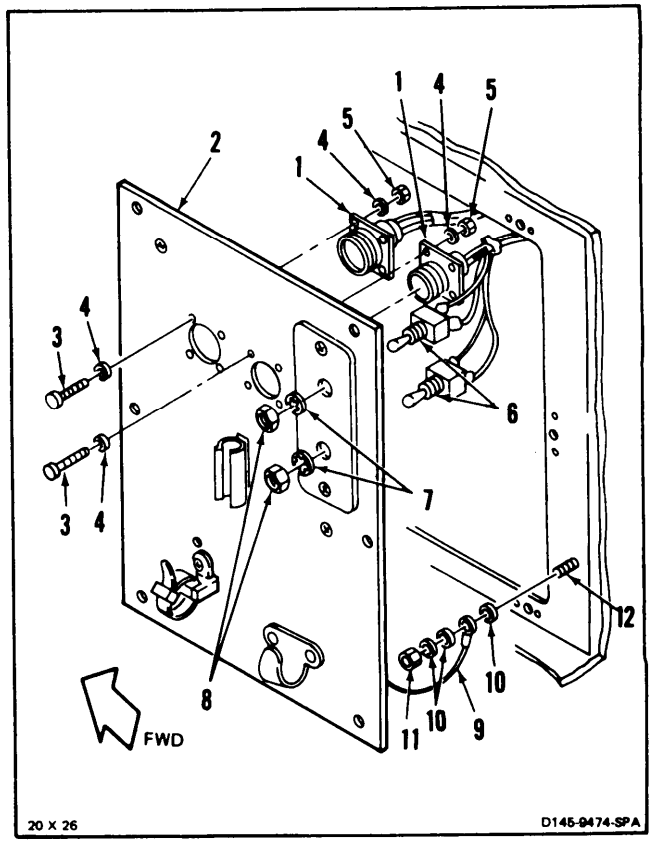
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Position** electrical receptacles (1) on rear of panel (2). **Install eight screws (3),** 16 washers (4), and eight nuts (5). Remove tags.
2. **Position** two switches (6) on rear of panel (2). **Install two washers (7)** and nuts (8). Remove tags.
3. **Install jumper (9),** three washers (10), and nut (11) on stud (12).



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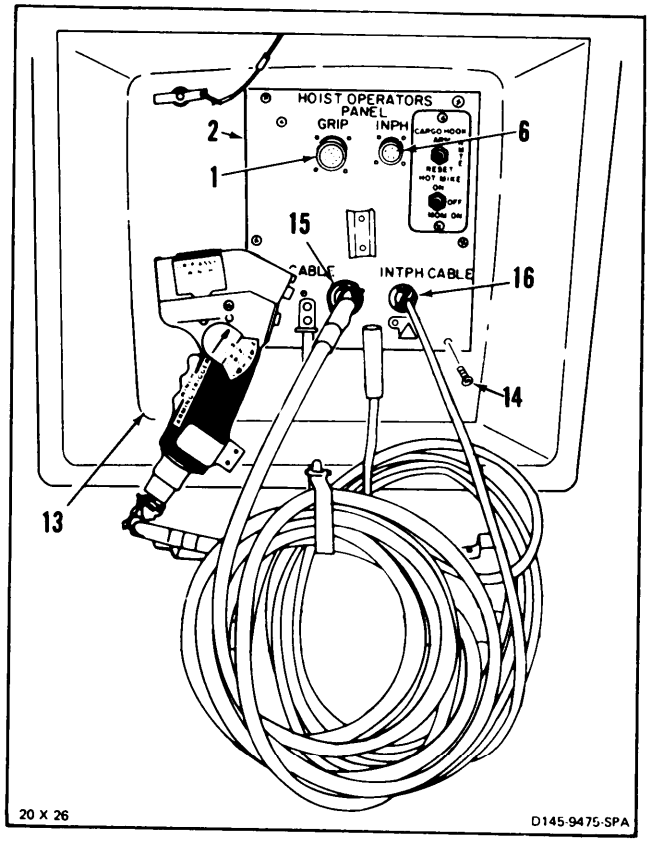
9-157 INSTALL HOIST OPERATOR'S PANEL (Continued) 9-157

4. **Position** panel (2) on structure (13). **Install six screws (14).**
5. **Connect electrical connector (15)** to receptacle (1).
6. **Connect cable (16)** to receptacle (6).

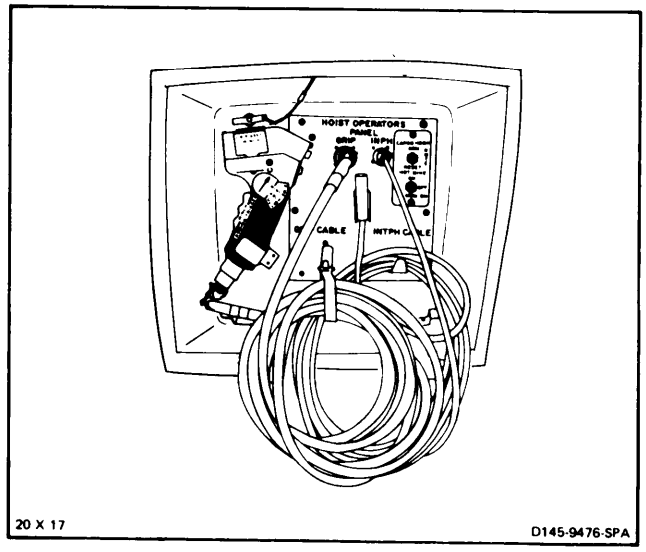
INSPECT



FOLLOW-ON MAINTENANCE:

Install acoustical blanket (Task 2-2 10).

Perform operational check (TM 55-1520-240-T).



END OF TASK

9-158 REMOVE WINCH CONTROL GRIP

INITIAL SETUP

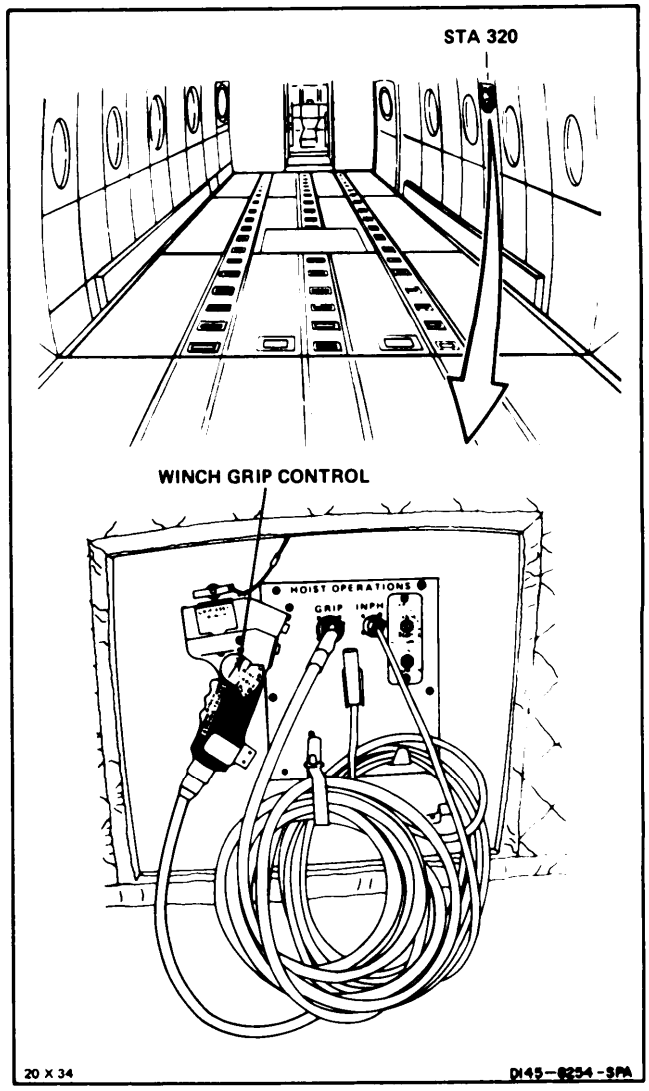
Applicable Configurations:
AII

Tools:
Electrical Repairer's Tool Kit,
NSN 51 80-00-323-4915

Materials:
None

Personnel Required:
68F10 Aircraft Electrician

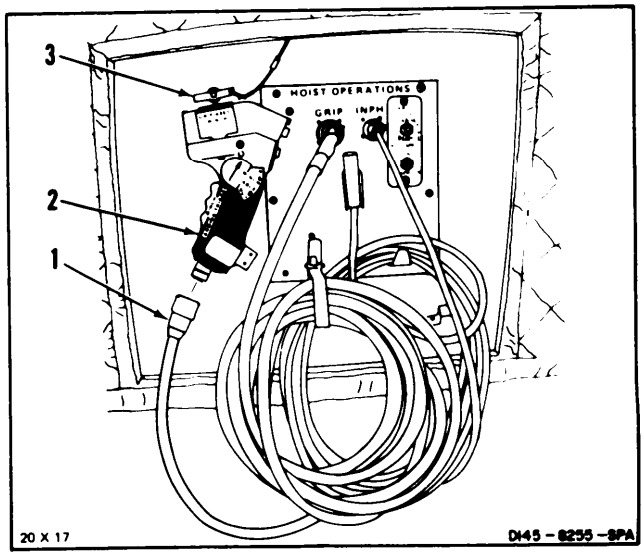
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. **Disconnect electrical connector (1)** from grip (2).
2. **Remove pin (3).**
3. **Remove grip (2).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-159 DISASSEMBLE WINCH CONTROL GRIP (AVIM) 9-159

INITIAL SETUP

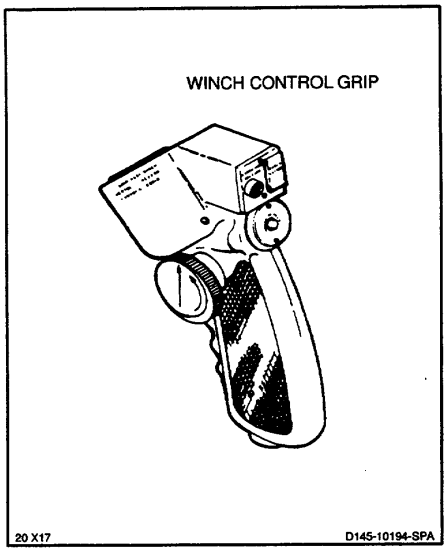
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun

Materials:
Paper Tags (E264)
Guard (E-311, Appx E) If Installed

Personnel Required:
Aircraft Electrician

Equipment Condition:
Off Helicopter Task



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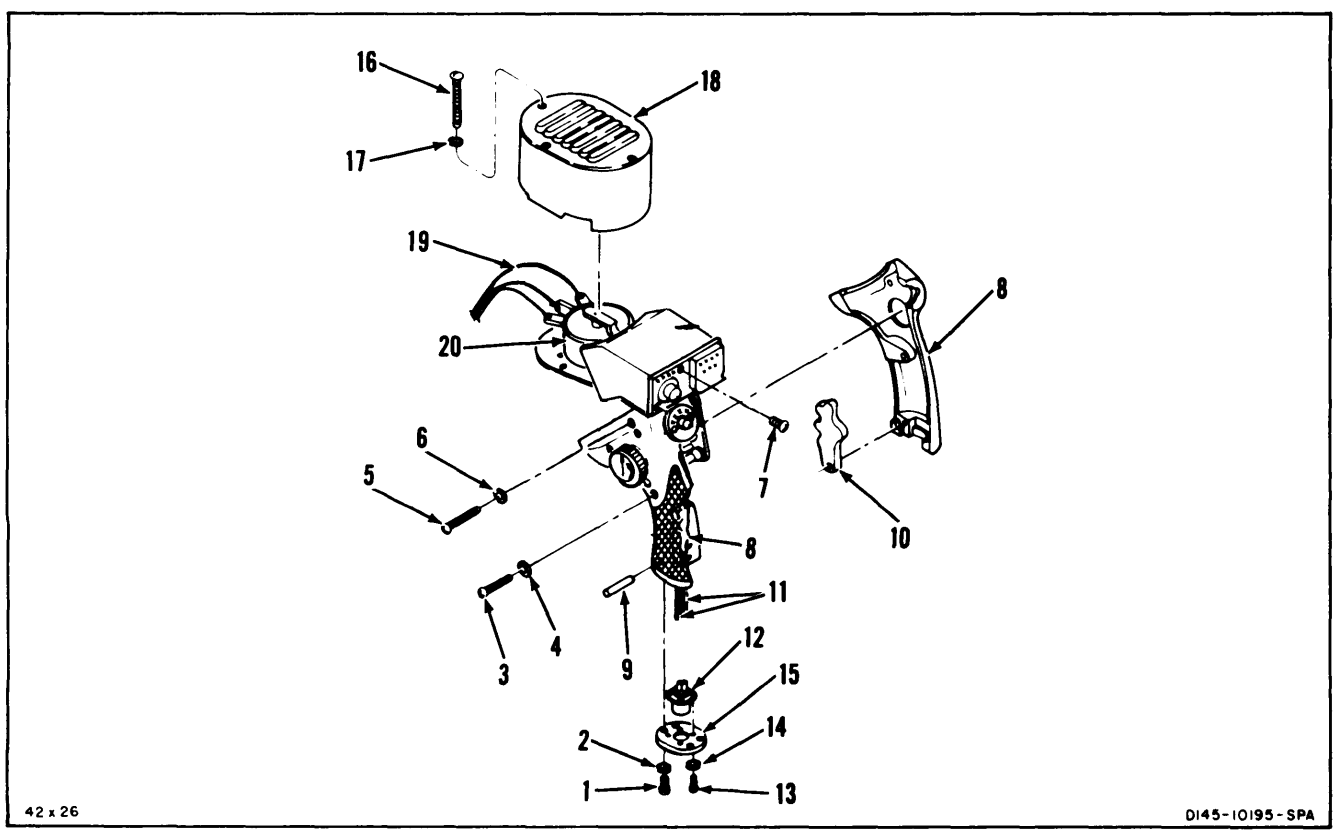
9-159 DISASSEMBLE WINCH CONTROL GRIP (AVIM) (Continued)

1. **Remove four screws (1)** and washers (2).
2. **Remove screw (3)** and washer (4).
3. **Remove screw (5)** and washer (6).
4. **Remove screw (7)** from handle (8).
5. **Remove left half of handle (8).**
6. **Remove pin (9)** and trigger (10)
7. Tag and **unsolder 12 wires (11)** from connector (12).
8. **Remove four screws (13)** and washers (14).
9. **Remove connector (12)** and cover (15).
10. **Remove three screws (16)** and washers (17).
11. **Remove cover (18).**
12. Tag and **unsolder five wires (19)** from switch (20).



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9-159 DISASSEMBLE WINCH CONTROL GRIP (AVIM) (Continued) **9-159**

13. Tag and unsolder two wires (21) from switch (22).

14. **Remove screw (23)** from plate (24).

15. **Remove switch (22),** plate (24) and bracket (25).

NOTE

Cargo hook release guard (E311, Appx E) must be installed on winch control grips that do not have a raised guard as part of the retainer and guard assy (28).

16. Remove three screws (27) from guard (28) and cargo hook release switch guard (E311, Appx E) if installed.

17. **Remove guard (28)** and bushing (29).

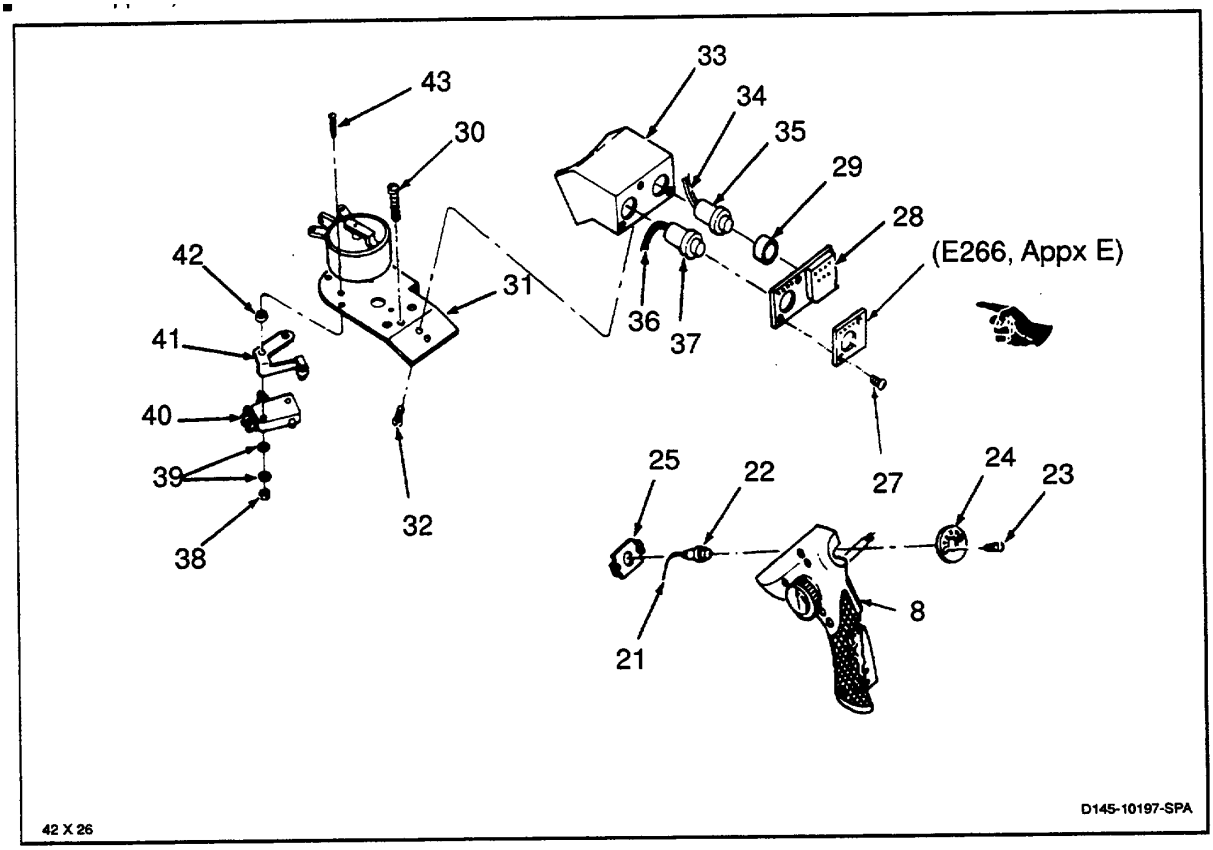
18. **Remove screw (30)** from handle (8). Remove plate (31).

19. **Remove two screws (32)** from housing (33).

20. Turn housing over. Tag and **unsolder two wires (34)** from switch (35). Remove switch.

21. Tag and **unsolder three wires (36)** from switch (37). Remove switch and housing (33).

22. **Remove nut (38),** two washers (39), switch (40), arm (41), spacer (42), and screw (43) from plate (31).



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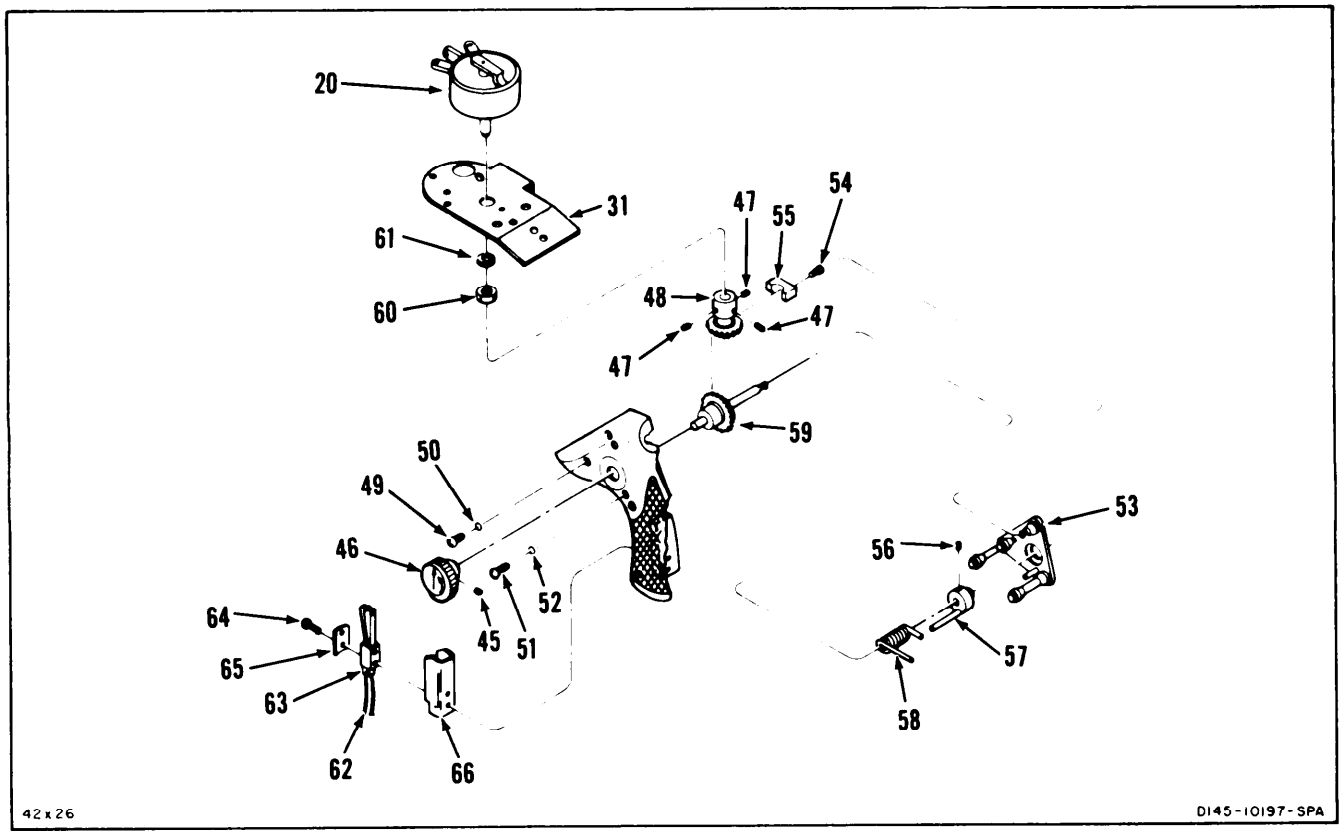
9-159 DISASSEMBLE WINCH CONTROL GRIP (AVIM) (Continued)

23. **Remove screw (45)** from knob (46). Remove knob.
24. **Remove three screws (47)** and gear (48).
25. **Remove screw (49)** and washer (50).
26. **Remove screw (51)** and washer (52). Remove plate (53).
27. **Remove two screws (54)** from bearing (55). Remove bearing.
28. **Remove screw (56).** Remove bushing (57) and spring (58) from shaft (59).
29 **Remove nut (60)** and washer (61). Remove switch (20).
30 Tag and **unsolder two wires (62)** from switch (63).
31 **Remove two screws (64).** Remove plate (65), switch (63) and insulator (66).

FOLLOW-ON MAINTENANCE:

None



END OF TASK

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Feeler Gage 5210-00-221-1999
Push-Pull Indicating Scale

Materials:

Insulation Sleeving (E204)
Varnish (E435)
Zinlac (E456)
Twine (E433)
Gloves (E1 86)
Guard (E-311, Appx E) If Installed

Personnel Required:

Aircraft Electrician
Inspector

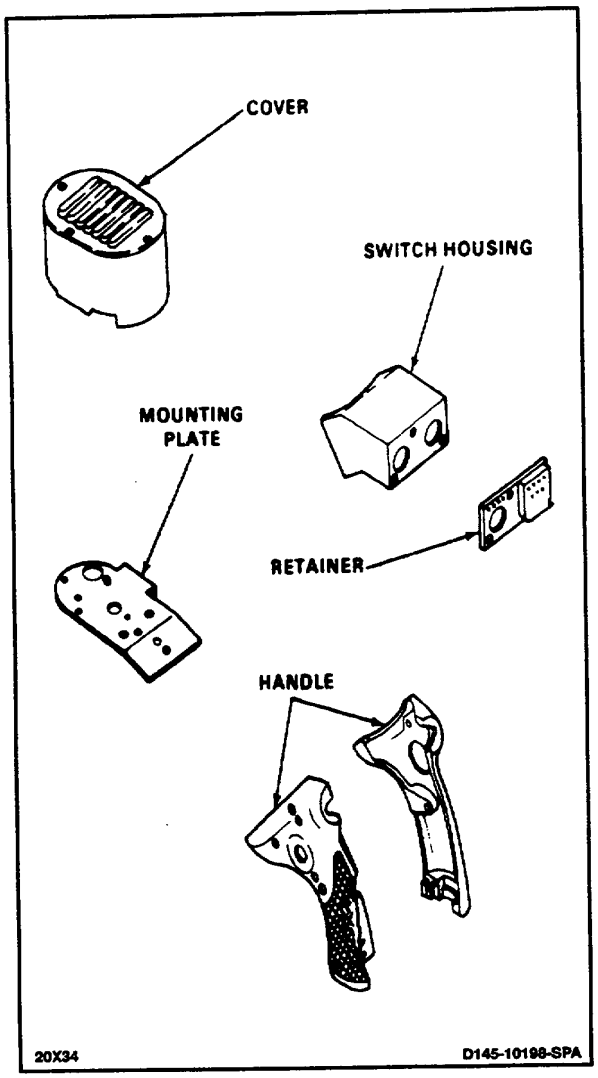
References:

TM 55-1520-240-23P

General Safety Instructions:

WARNING

Varnish (E435) is flammable and toxic. It can irritate skin and cause burns. Use only with adequate ventilation, away from heat or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



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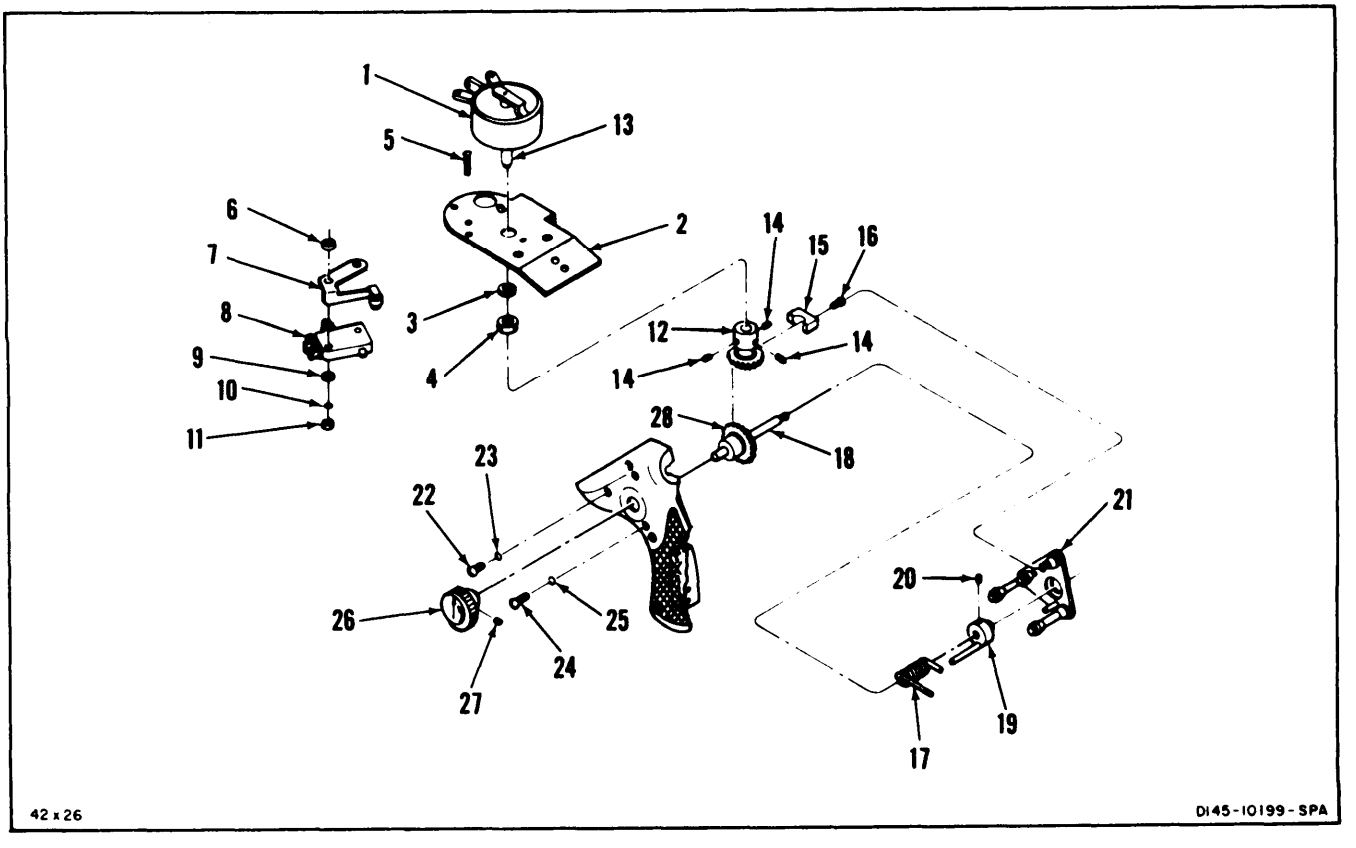
9-160 ASSEMBLE WINCH CONTROL GRIP (AVIM) (Continued) 9-160

1. **Position** switch (1) on plate (2). **Install washer (3)** and nut (4).
2. **Install screw (5),** spacer (6), arm (7), switch (8), washer (9), lockwasher (10), and nut (11) on plate (2).
3. **Position** gear (12) on shaft (13). **Install three screws (14)** loosely.
4. **Position** bearing (15) to gear (12). **Install two screws (16).**
5. **Install spring (17)** with longer tang towards shaft gear (18).
6. **Install shaft (19)** on shaft (18). Install screw (20). **Position** plate (21) on shaft (19).
7. **Position** shaft (19) in handle. **Install screw (22),** washer (23), screw (24), and washer (25).
8. **Position knob (26) on shaft (18). Install screw (27).**
9. Set knob to OFF. Mate shaft (18), gear (28) to gear (1 2). Check groove in gear (12) is engaged by roller of arm (7).
10. Set switch (1) to mid-range. **Tighten three screws (14).**
11. Adjust bearing (12) for proper mesh by adjusting screws (16). Coat screws with Zinlac (E456).



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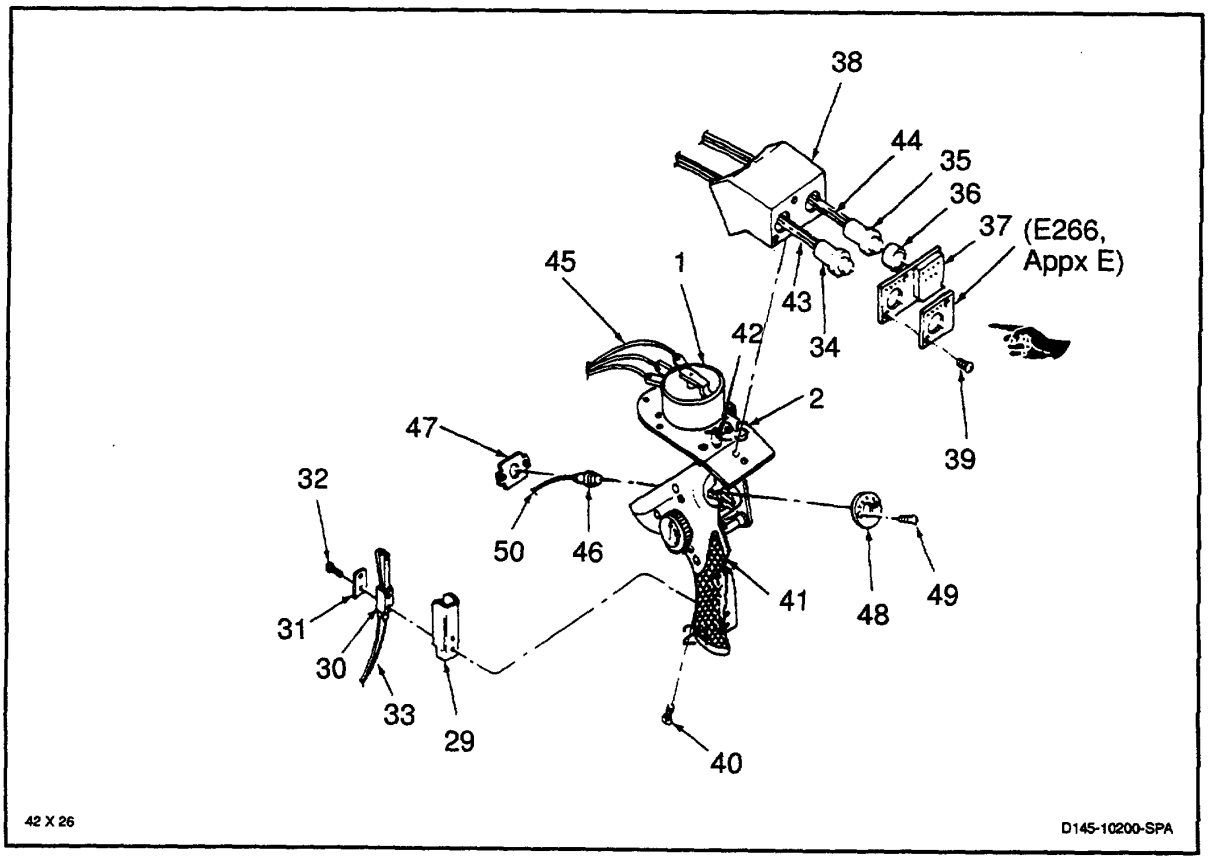
12. **Position** insulator (29), switch (30), and plate (31) in handle. Install two screws (32).
13. **Solder two wires (33)** to switch (30). Remove tags. Tie wires where they run past gears using twine (E433). Coat switch connection with varnish (E435). Wear gloves (E186).

NOTE

Cargo hook release guard (E311, Appx E) must be installed on winch control grips that do not have a raised guard as part of the retainer and guard assy (37).

14. Position two switches (34 and 35), bushing (36) and retainer (37) and cargo hook release switch guard (E311, Appx E), if required, in housing (38). **Install three screws (39).**
15. **Position** housing (38) on plate (2). **Install two screws (40).**
16. **Position** plate (2) on left handle (41). Install screws (42).
17. **Solder three wires (43)** to switch (34). Remove tags. Coat switch connections with varnish (E435). Wear gloves (E186).
18. **Solder two wires (44)** to switch (35). Remove tags. Coat switch connections with varnish (E435). Wear gloves (E186).
19. **Solder five wires (45)** to switch (1). Remove tags. Coat switch connections with varnish (E435). Wear gloves (E186).
20. **Position switch (46),** bracket (47), and plate (48) to handle (41). **Install screw (49).**
21. **Solder two wires (50)** to switch (46). Remove tags. Coat switch connections with varnish (E435). Wear gloves (E186).



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9-160 ASSEMBLE WINCH CONTROL GRIP (AVIM) 9-160 (Continued)

22. **Position** trigger (51) in right handle (56). **Install pin (52).**
23. Adjust rear contact (53) gap to 0.060 inch minimum to front contact (54).
24. Using push-pull indicating scale (55) against the trigger (51), apply a pressure of 6 to 8 ounces. Switch (30) shall activate. If not within 6 to 8 ounce range, repeat step 23.

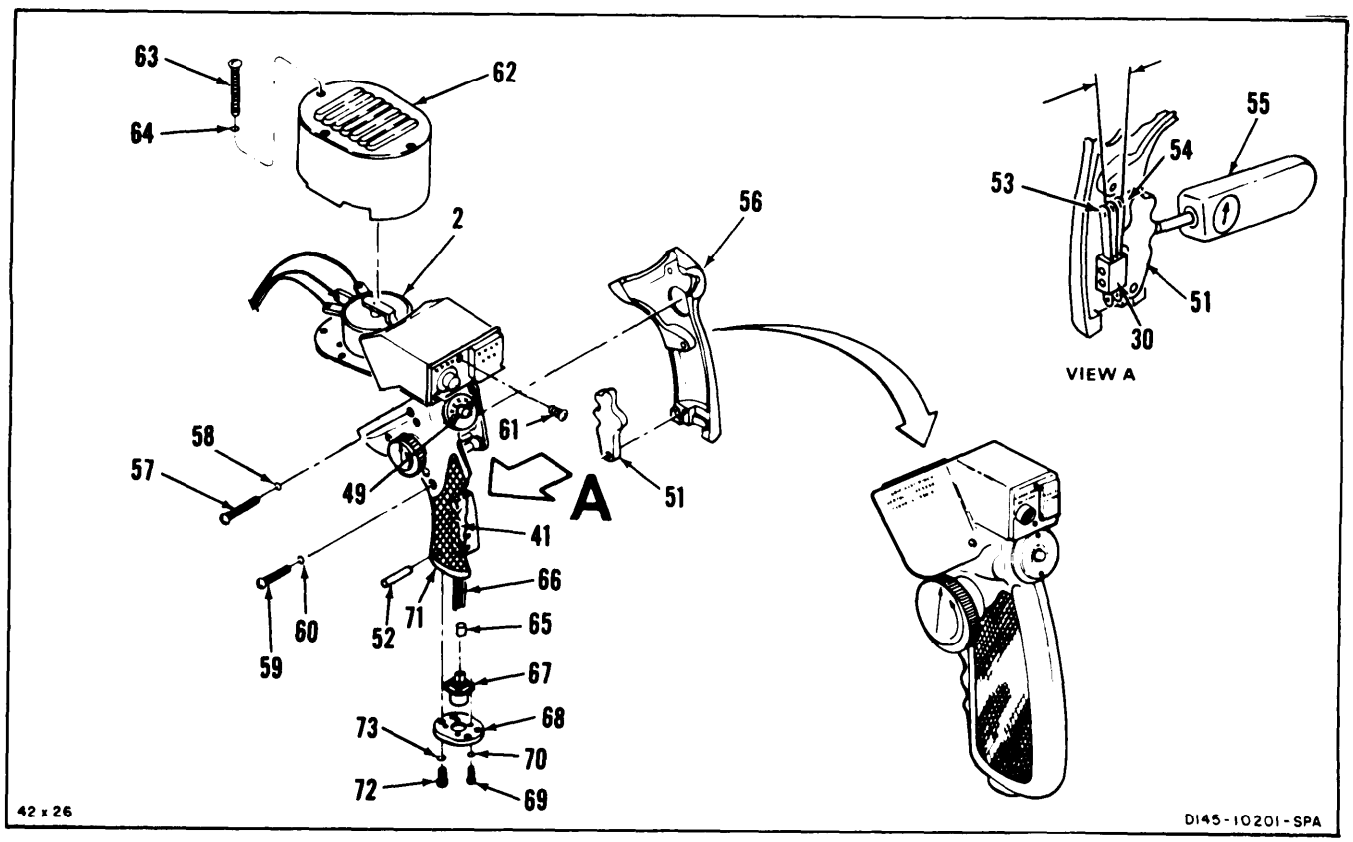
INSPECT

25. **Position** right handle (56) to left handle (41). **Install screw (57),** washer (58), screw (59), and washer (60).
26. **Install screw (61)** in plate (48).
27. **Position** cover (62) on plate (2). **Install three screws** (63) and washers (64).
28. **Install sleevings (E204) (65) on 12 wires (66).**
29. Remove tape and **solder twelve wires (66)** to receptacle (67). Remove tags. Coat receptacle connections with varnish (E435). Slide twelve sleeves (65) over receptacle connections. Wear gloves (E186).
30. **Position** receptacle (67) to cover (68). **Install four screws (69)** and washers (70).
31. Position cover (68) in opening (71). **Install four screws** (72) and washers (73).

INSPECT

FOLLOW-ON MAINTENANCE:

Test winch control grip (Task 9-1 61).



END OF TASK

9-161 TEST WINCH CONTROL GRIP (AVIM)

INITIAL SETUP

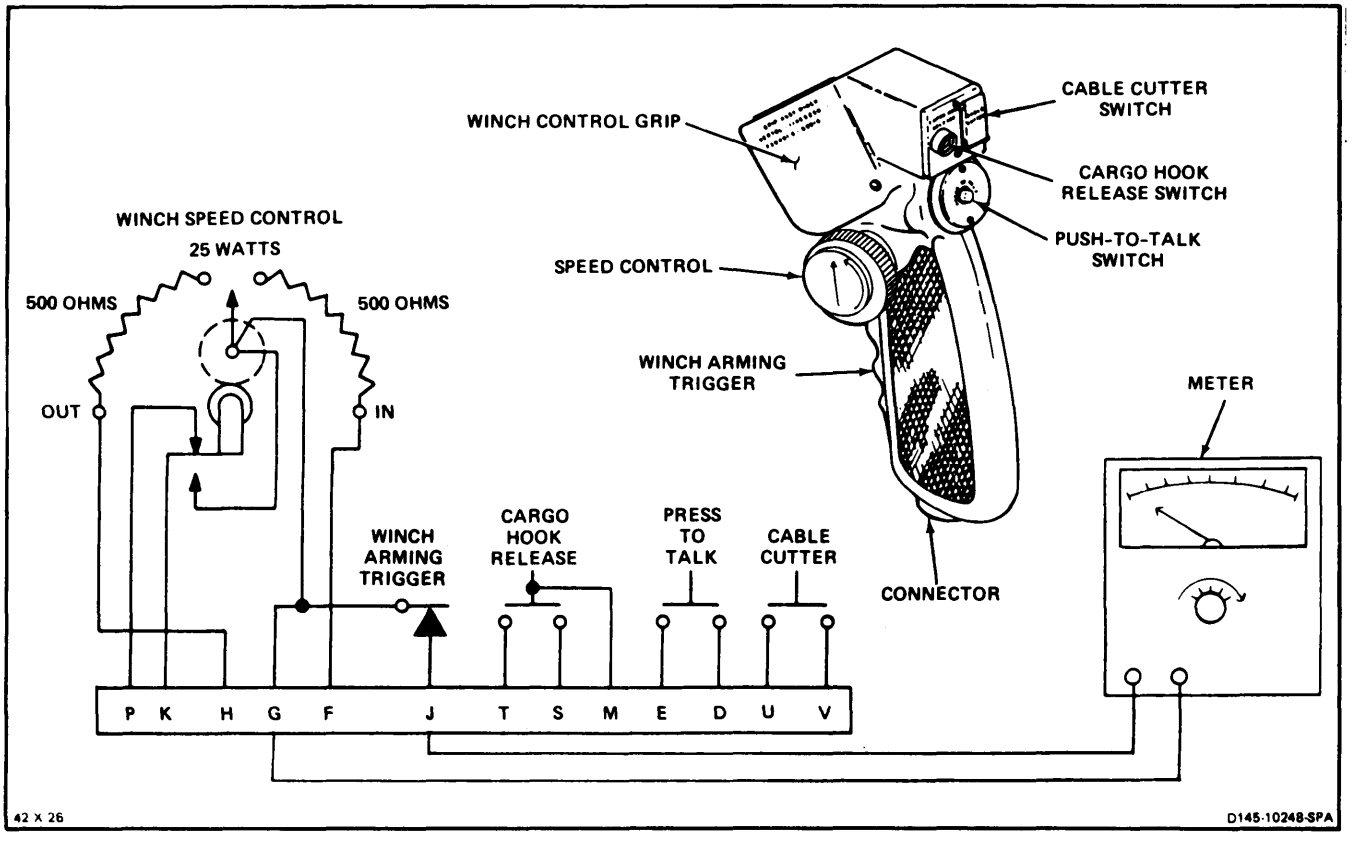
Applicable Configurations:
All

Tools:
Meter, Simpson 260 or Equivalent

Materials:
None

Personnel Required:
68F20 Aircraft Electrician
67U30 Inspector

Equipment Condition:
Off Helicopter Task



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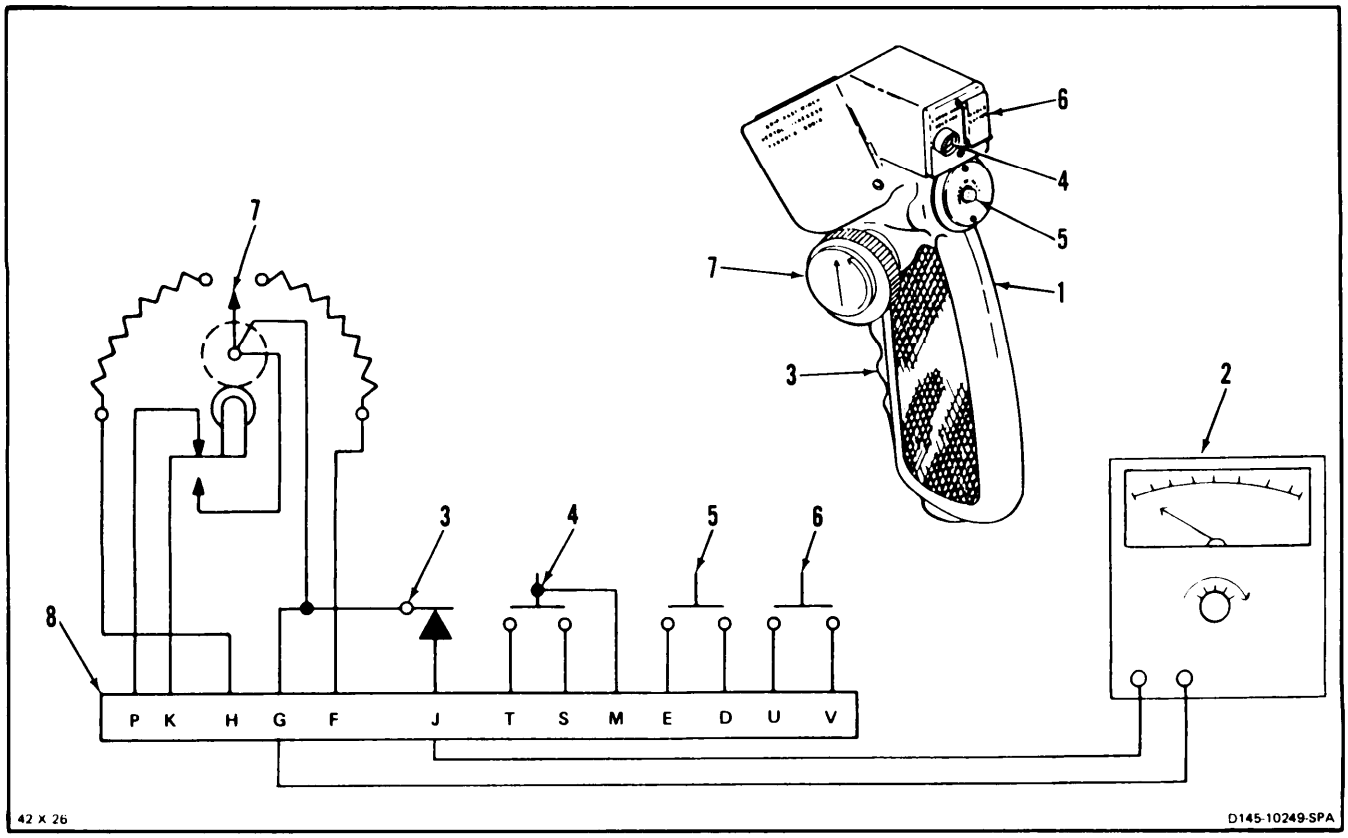
9-161 TEST WINCH CONTROL GRIP (AVIM) (Continued) 9-161

1. Test grip (1) switches using meter (2). Connect meter to pins listed below and observe meter indications.

SWITCH	SWITCH POSITION	CONNECTOR PINS	METER INDICATION
WINCH ARMING Trigger (3)	PRESSED	G and J	Zero ohm
	RELEASED	G and J	Infinity
CARGO HOOK RELEASE (4)	PRESSED	T and S	Zero ohm
	RELEASED	T and S	Infinity
PUSH-TO-TALK (5)	PRESSED	E and D	Zero ohm
	RELEASED	E and D	Infinity
CABLE CUTTER (6)	PRESSED	U and V	Zero ohm
	RELEASED	U and V	Infinity
WINCH SPEED CONTROL (7)	OFF	H and G	Infinity
		G and F	Infinity

2. Slowly turn WINCH SPEED CONTROL (7) towards IN until meter (2) indicates 450 to 550 ohms. Meter deflection shall be smooth.

3. Slowly release WINCH SPEED CONTROL (7) towards IN. Observe meter (2) indicates resistance decreases smoothly to 0 to 1 ohm. with control centered OFF.



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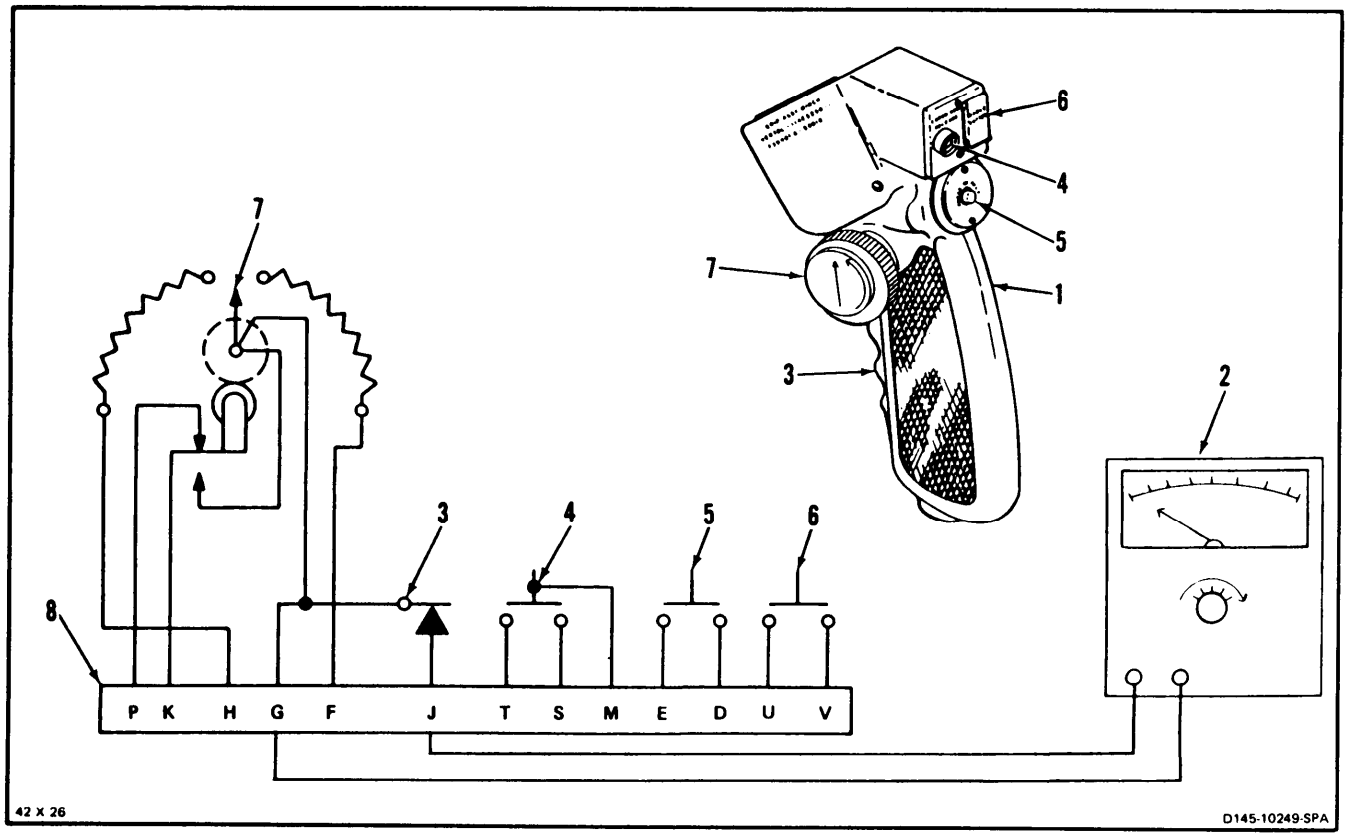
4. **Connect meter (2)** to pins J and K of nonnector (8). Repeat step 2.
5. Press WINCH ARMING trigger (3). Read meter (2). Reading shall be 0 ohm. Release trigger and control (7).
6. **Connect meter (2)** to G and H of connector (8).
7. Slowly turn WINCH SPEED CONTROL (7) towards OUT until meter (2) indicates 450 to 550 ohms.
8. Slowly release WINCH SPEED CONTROL (7) towards OUT. Observe meter (2) indicates resistance decreases smoothly to 0 to 1 ohm. with control centered OFF.
9. **Connect meter (2)** to pins J and K of connector (8). Repeat step 7.
10. Press WINCH ARMING trigger (3). Read meter (2). Reading shall be 0 ohm. Release trigger and control (7).

INSPECT

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-162 INSTALL WINCH CONTROL GRIP

INITIAL SETUP

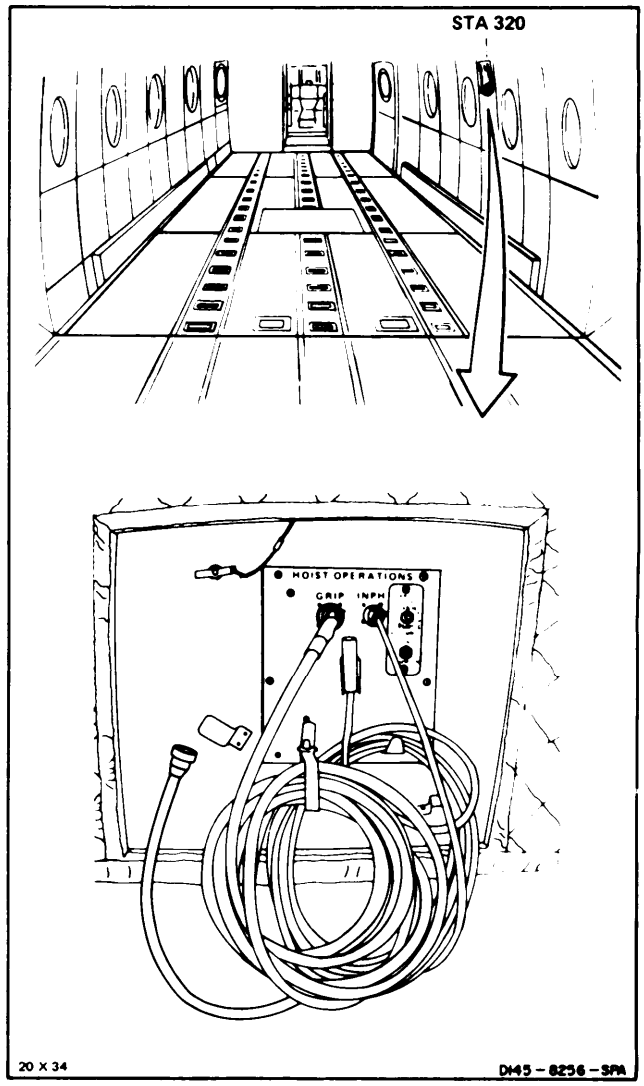
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 51 80-00-323-4915

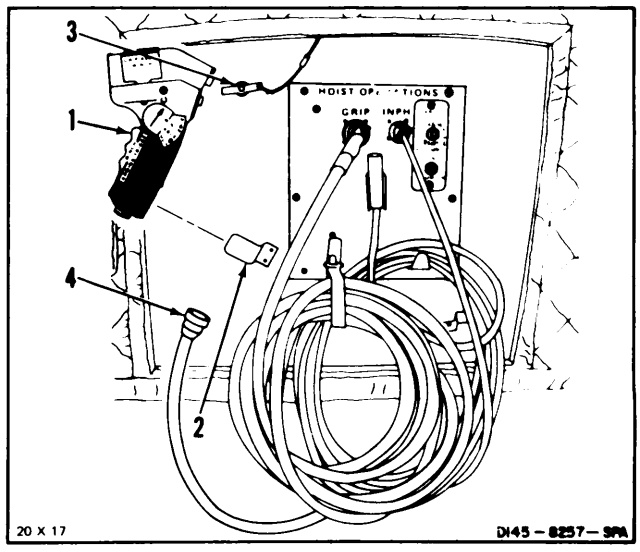
Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Inspector

References:
TM 55-1520-240-23P



1. **Install grip (1)** in bracket (2).
2. **Install pin (3)** in grip (1).
3. **Connect electrical connector (4)** to grip (1).



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520 240-T).

END OF TASK

9-162.1 REMOVE FUZZ BURNOFF POWER MODULE

INITIAL SETUP

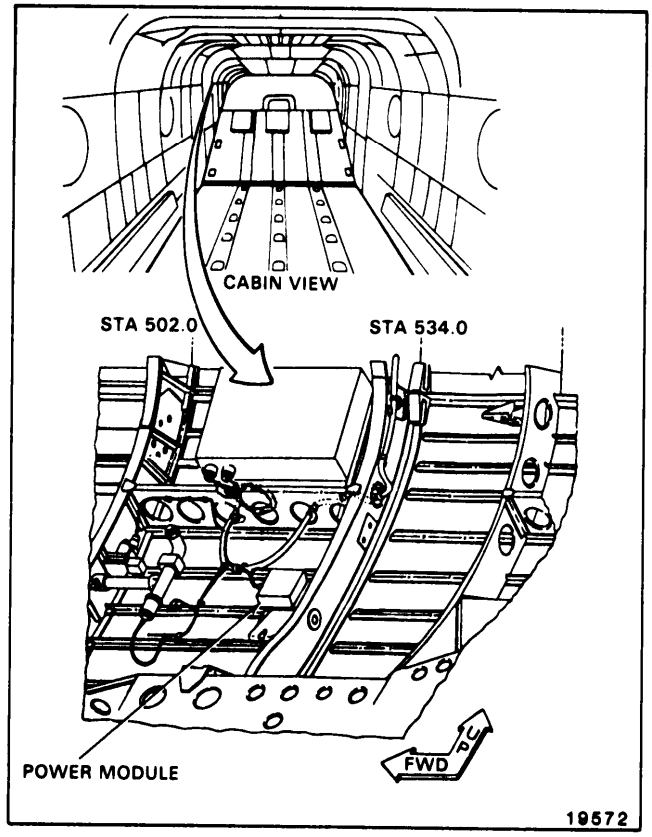
Applicable Configurations:
With 37

Tools:
Electrical Repairer Tool Kit
NSN 5180-00-323-4915

Materials:
None

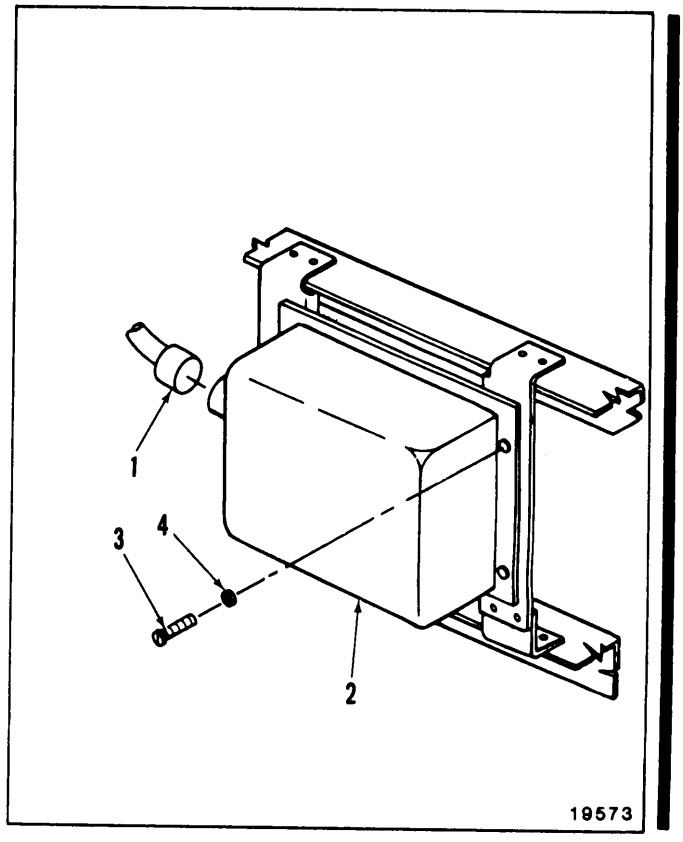
Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected
Electrical Power Off
Hydraulic Power Off



1. **Disconnect electrical connector (1)** from module (2).
2. **Remove four screws (3)** and washers (4) from module (2). **Remove module.**

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-162.2 INSTALL FUZZ BURNOFF POWER MODULE

INITIAL SETUP

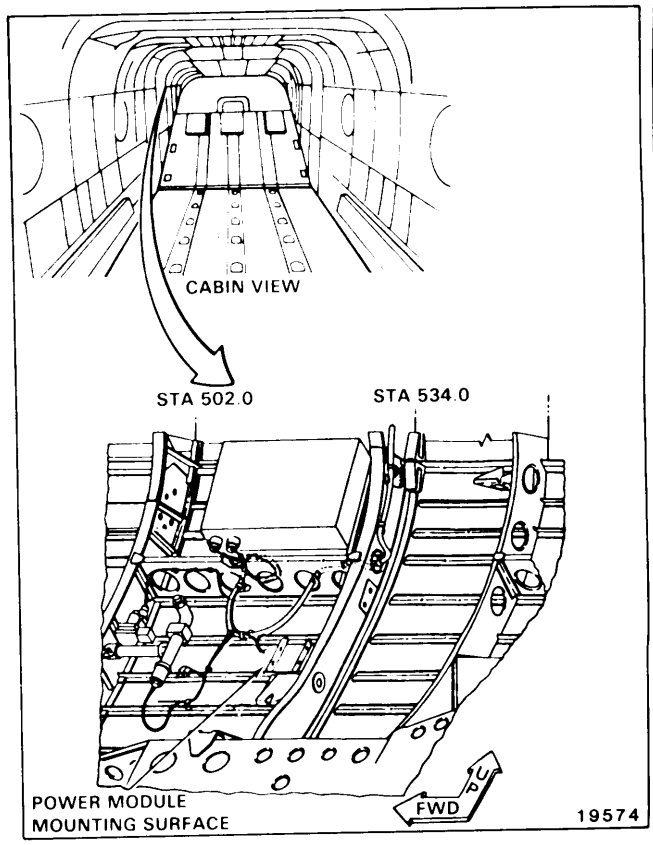
Applicable Configurations:
With 37

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

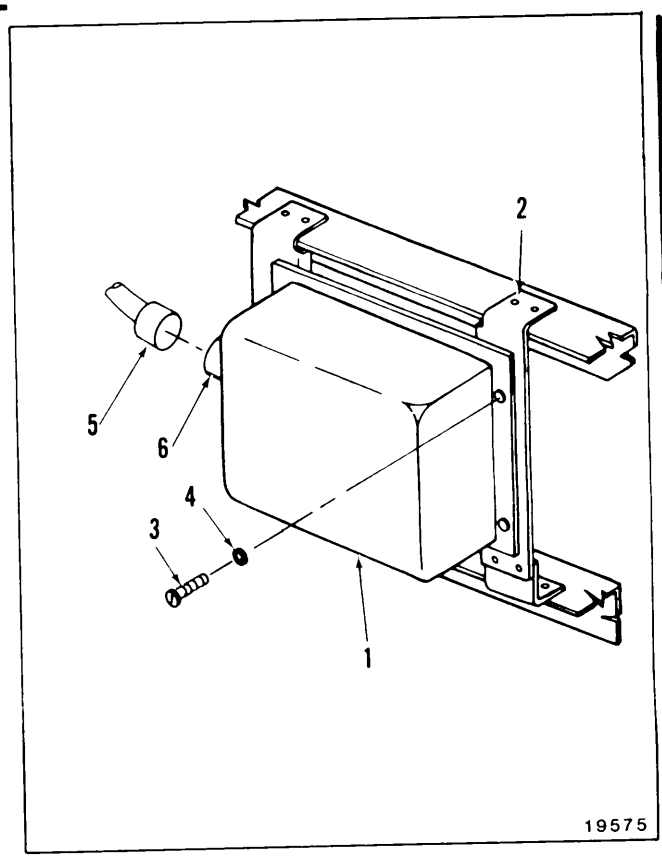
References:
TM 55-1520-240-23P



1. **Position module (1)** against angle assemblies (2). **Install four screws (3)** and washers (4).
2. **Connect electrical connector (5)** to receptacle (6).

INSPECT

FOLLOW-ON MAINTENANCE:
Perform operational check of chip burnoff system (TM 55-1520-240-T).



END OF TASK

*U.S. Government Printing Office:1990-754-030/25648
PIN:053345-010

9-163 REMOVE APU ELECTRONIC CONTROL UNIT

INITIAL SETUP

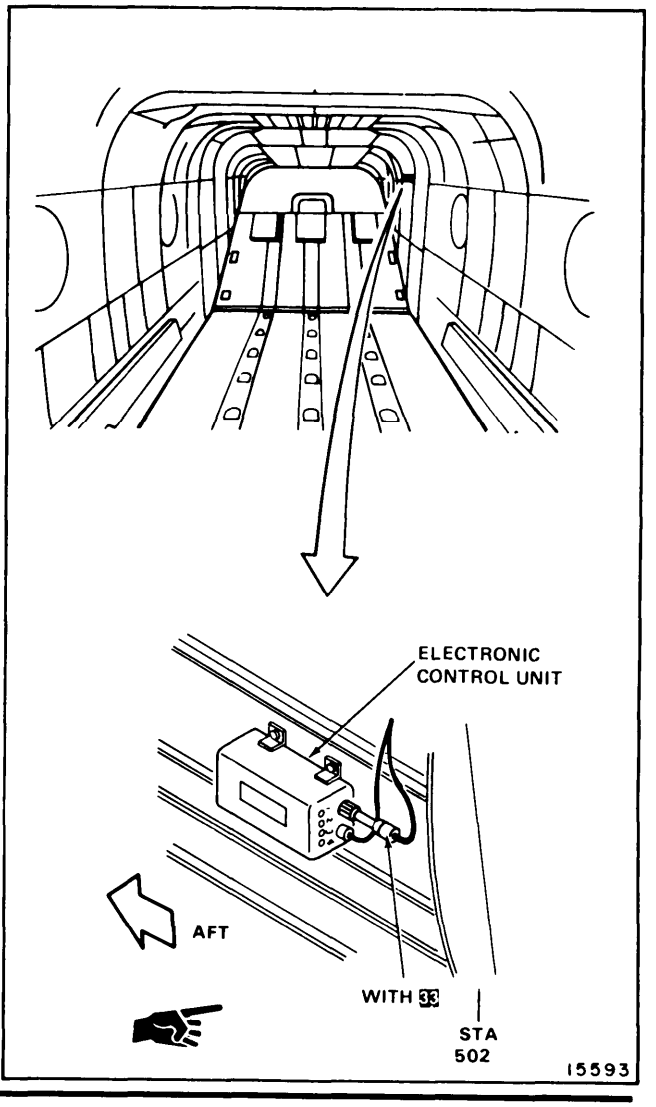
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915

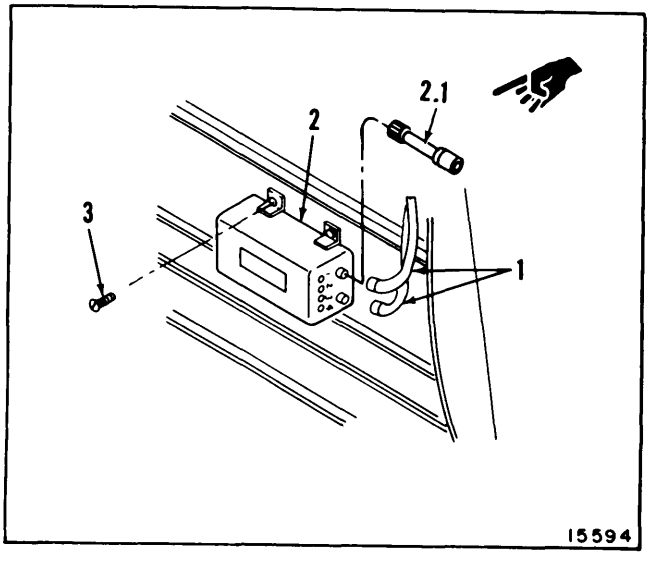
Materials:
Paper Tags (E264)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. Tag and **disconnect two electrical connectors (1)** from unit (2).
1.1 With 33 only, remove cable adapter (2.1).
2. **Remove four screws (3).**
3. **Remove unit (2).**



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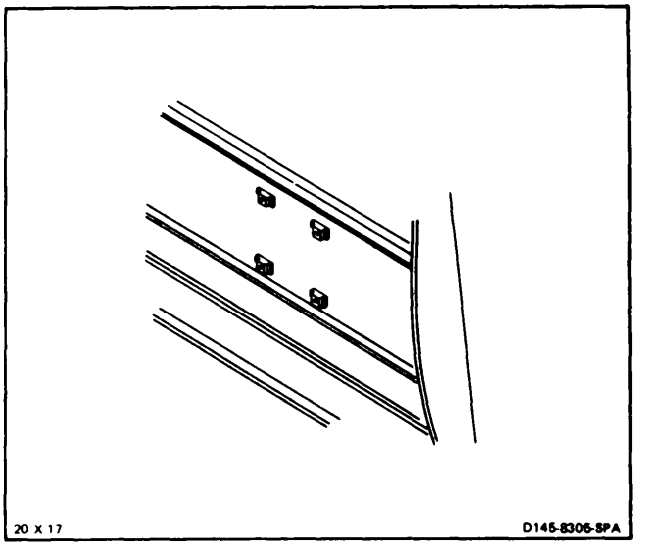
9-163 REMOVE APU ELECTRONIC CONTROL UNIT (Continued)

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-164 INSTALL APU ELECTRONIC CONTROL UNIT

INITIAL SETUP

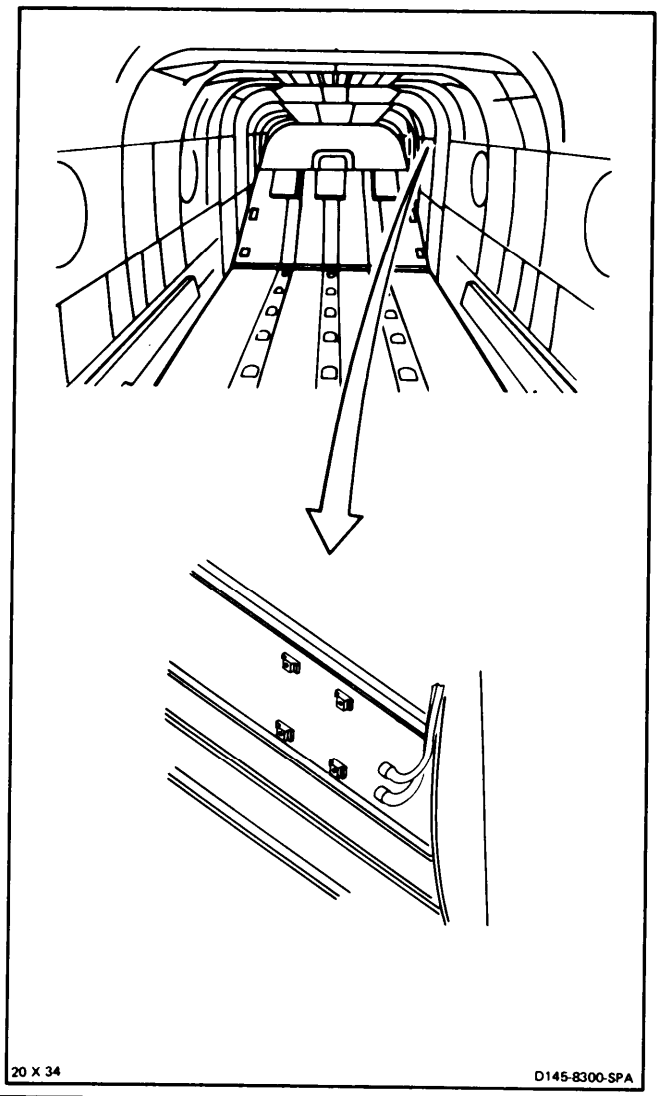
Applicable Configurations:
All

Tools:
Electrical Repairer Tool Kit,
NSN 5180-00-323-4915

Materials:
None

Personnel Required:
Aircraft Electrician
Inspector

References:
TM 55-1520-240-23P



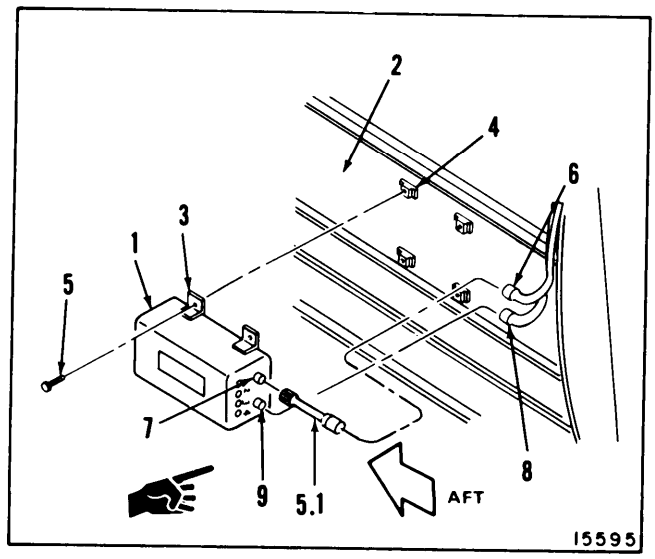
1. **Position unit 1** on structure (2). Align brackets (3) with nutplates (4). **Install four screws (5).**

1.1 With 33 only install cable adapter (5.1).

2. **Connect electrical connector (6)** to receptacle (7). Remove tag.

3. **Connect electrical connector (8)** to receptacle (9). Remove tag.

INSPECT



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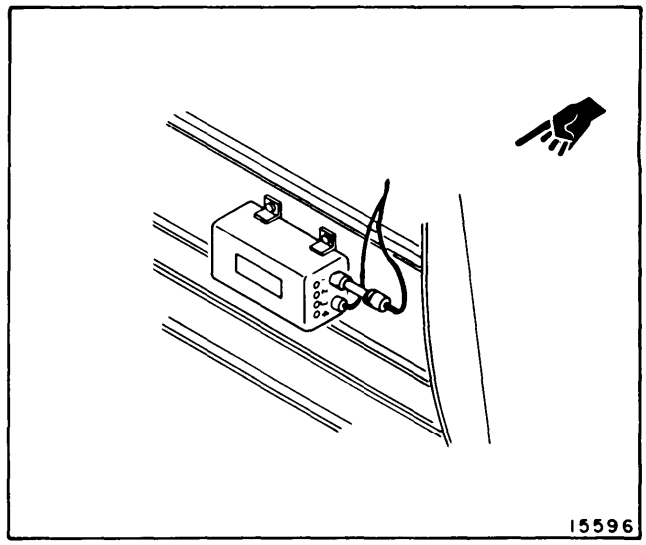
9-164 INSTALL APU ELECTRONIC CONTROL UNIT (Continued) 9-164

FOLLOW-ON MAINTENANCE:

Perform operational check (TM 55-1520-240-T).



END OF TASK

✪ U. S. GOVERNMENT PRINTING OFFICE: 1988 554-120/60165

9-164.1 REMOVE FUEL QUANTITY INVERTER

INITIAL SETUP

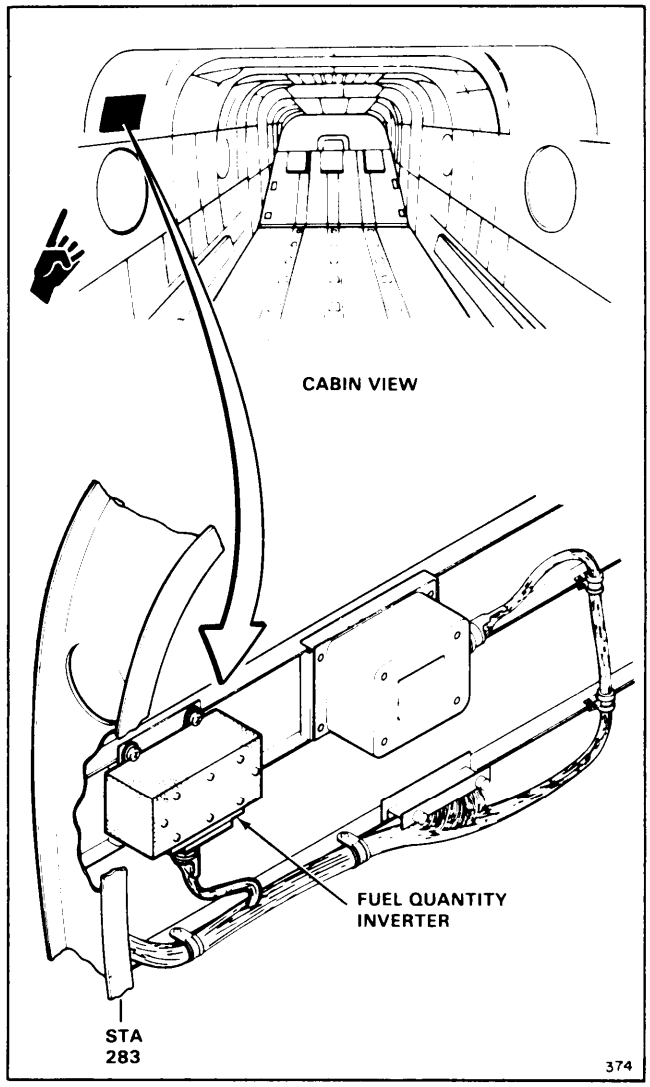
Applicable Configurations:
All

Tools:
Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:
None

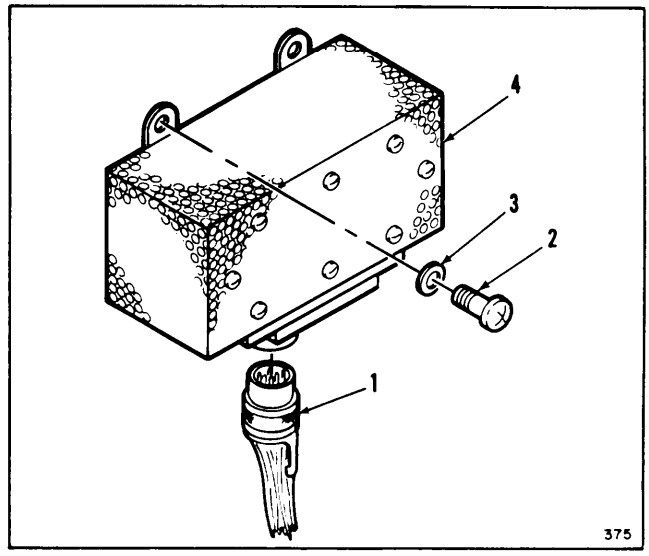
Personnel Required:
Medium Helicopter Repairer

Equipment Condition:
Battery Disconnected
Electrical Power Off



1. **Disconnect electrical connector (1).**
2. **Remove four screws (2),** four washers (3), **and inverter (4).**

FOLLOW-ON MAINTENANCE:
None



END OF TASK

9-164.2 INSTALL FUEL QUANTITY INVERTER

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic's Tool Kit,
NSN 5180-00-323-4692

Materials:

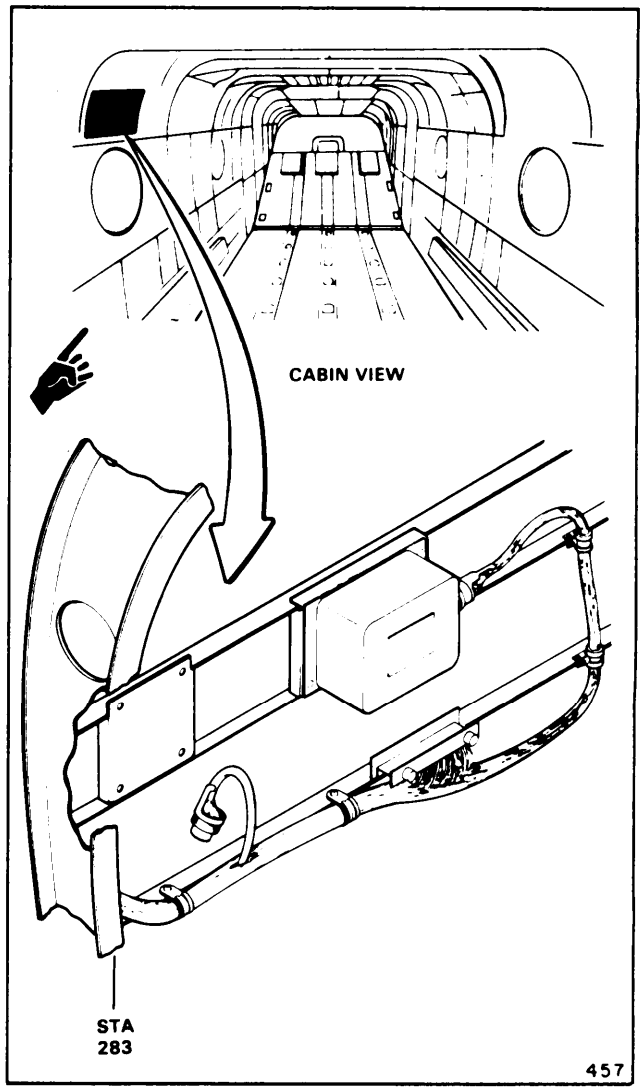
None

Personnel Required:

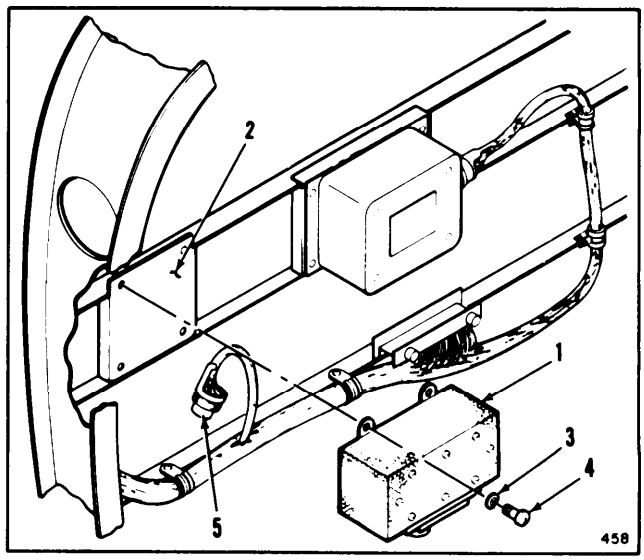
Medium Helicopter Repairer

Equipment Condition:

Battery Disconnected
Electrical Power Off



1. **Position inverter (1)** on bracket (2).
2. **Install four** washers (3) and **screws (4).**
3. **Connect electrical connector (5).**



FOLLOW-ON MAINTENANCE:

Perform operational check of single ing system (TM 55-1520-240-T).

END OF TASK

9-164.3 REMOVE FUEL PRE-CHECK PANEL

INITIAL SETUP

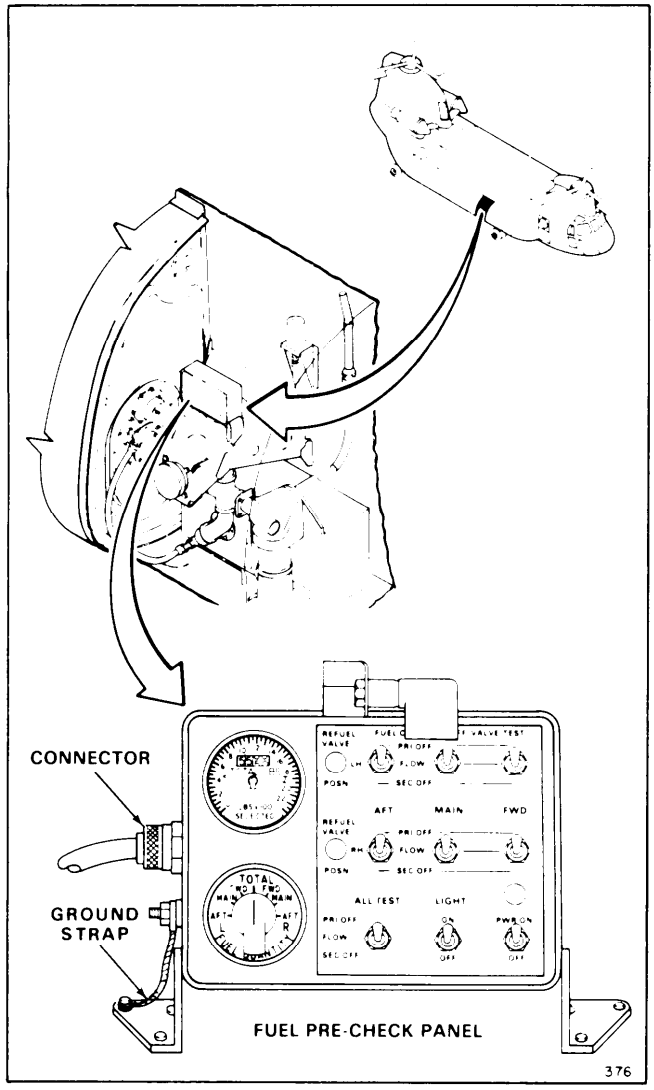
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

Materials:
Paper Tags (E264)

Personnel Required:
Aircraft Electrician

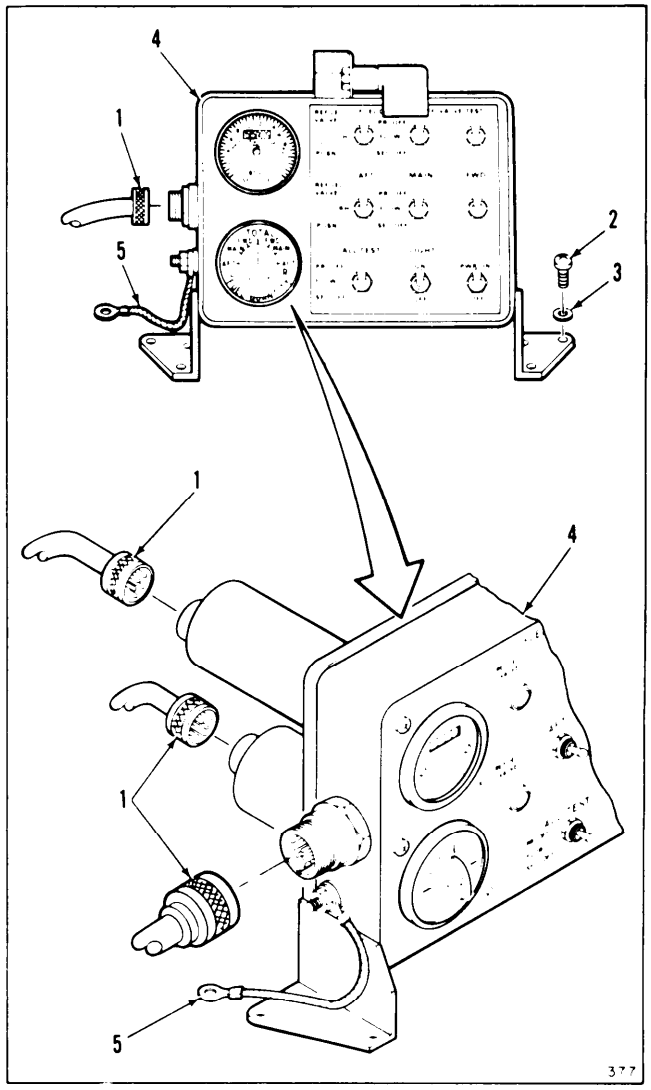
Equipment Condition:
Battery Disconnected
Electrical Power Off
Forward Right Landing Gear Access Panel Open



GO TO NEXT PAGE

9-164.3 REMOVE FUEL PRE-CHECK PANEL (Continued) 9-164.3

1. **Disconnect three electrical connectors (1).** Tag wires. Use tags (E264).
2. **Remove six screws (2)** and washers (3).
3. **Remove panel (4)** with bonding cable (5) attached.



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9-164.3 REMOVE FUEL PRE-CHECK PANEL (Continued) 9-164.3

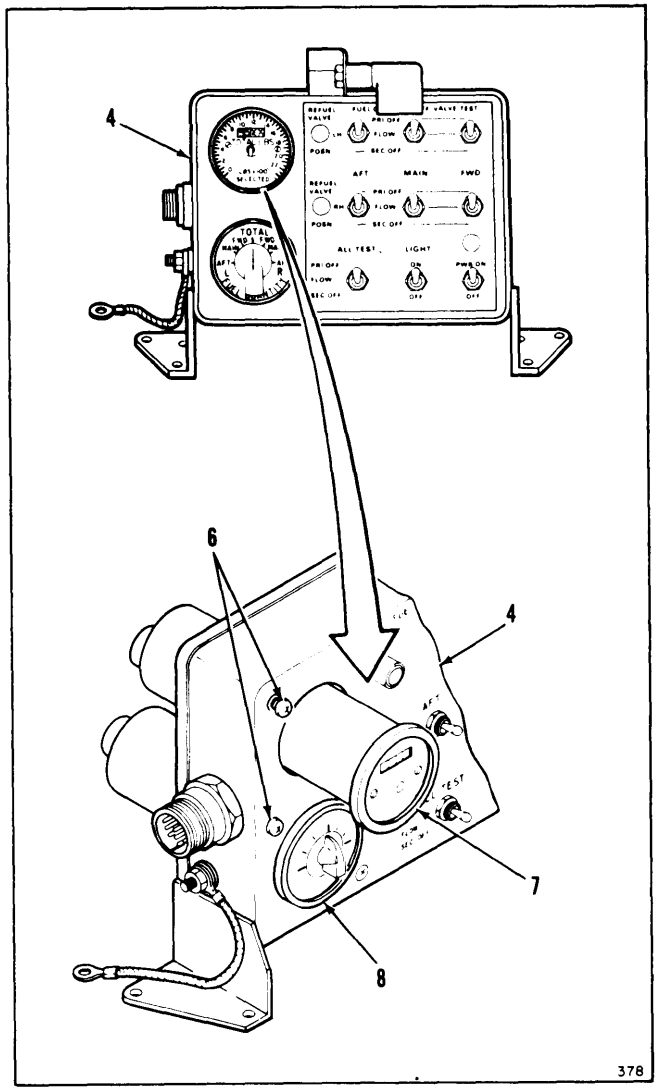
4. If fuel pre-check panel is to be replaced, do the following:

   a. **Loosen round head clamp screw (6).**

   CAUTION

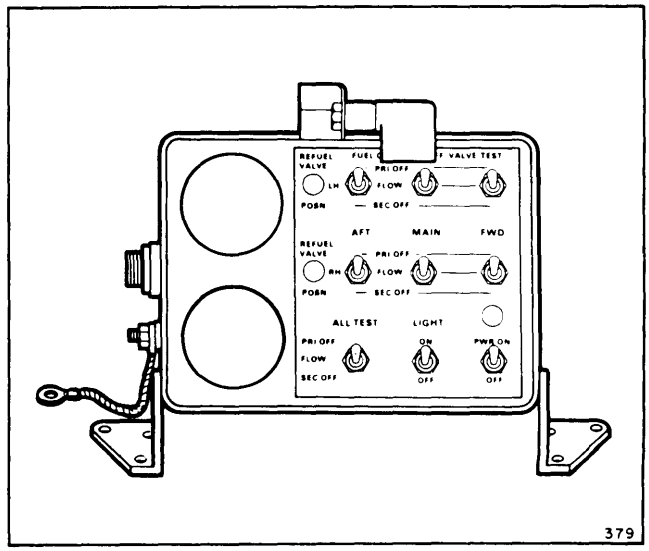
   Be careful when handling indicator and switch. Rough handling will damage parts.

   b. Grasp indicator (7) or switch (8) at case rim, then pull **out of panel (4).**



FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-164.4 DISASSEMBLE FUEL PRE-CHECK PANEL

INITIAL SETUP

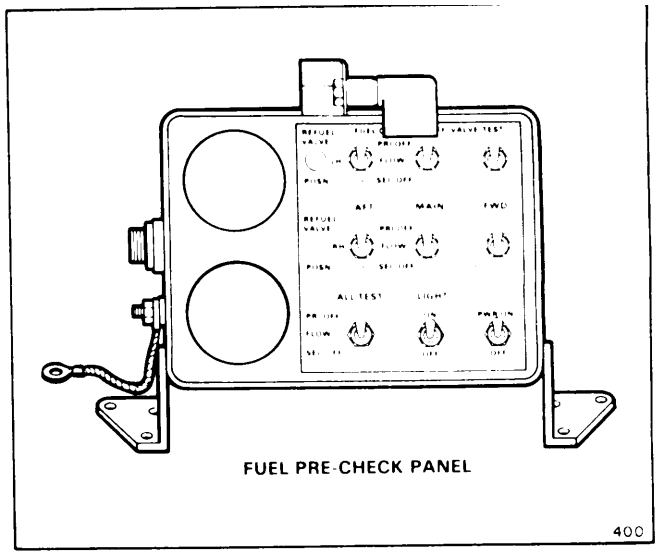
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool M83723-31-20
Heat Sink

Materials:
Tags (E264)
Tape (E385)

Personnel Required:
Aircraft Electrician

Equipment Condition:
Off Helicopter Task



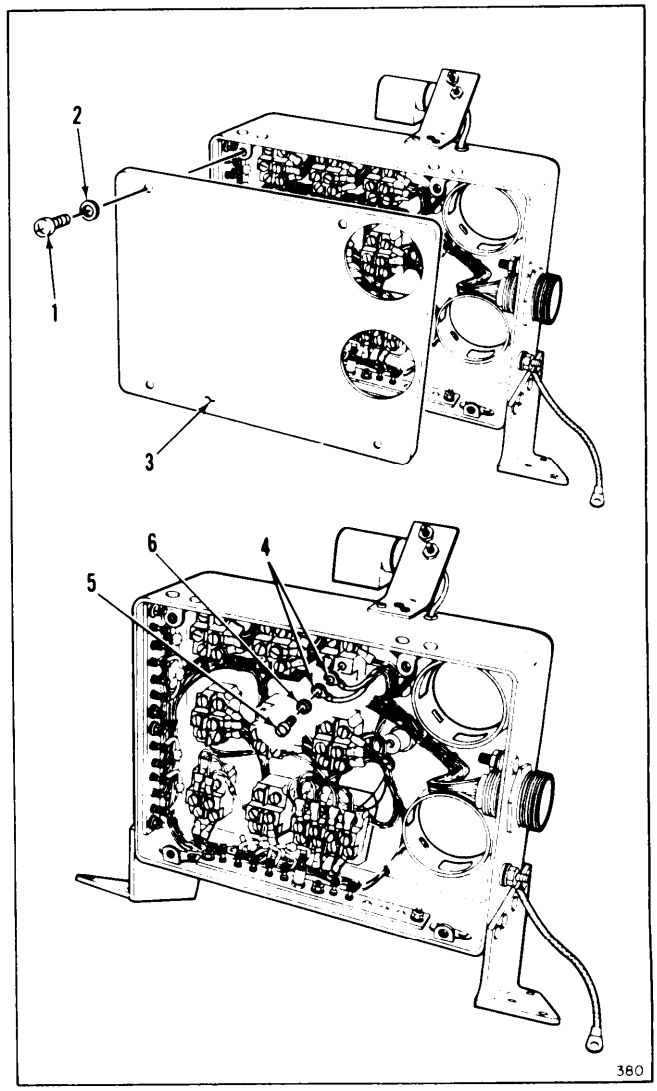
1. Remove four screws (1) and washers (2) and remove cover (3).

REMOVE SWITCH

NOTE

Procedure is same to remove nine toggle switches. Removal of LH FUEL CELL SHUTOFF VALVE switch is shown here.

2. Tag six wires (4). Use tags (E264).
3. **Disconnect six wires (4)** by removing three screws (5) and washers (6).



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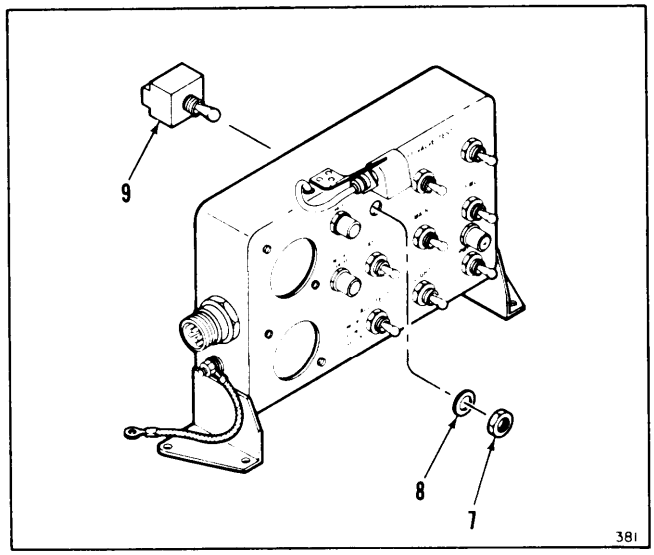
9-164.4 DISASSEMBLE FUEL PRE-CHECK PANEL (Continued)

4. **Remove nut (7),** washer (8) **and switch (9).**

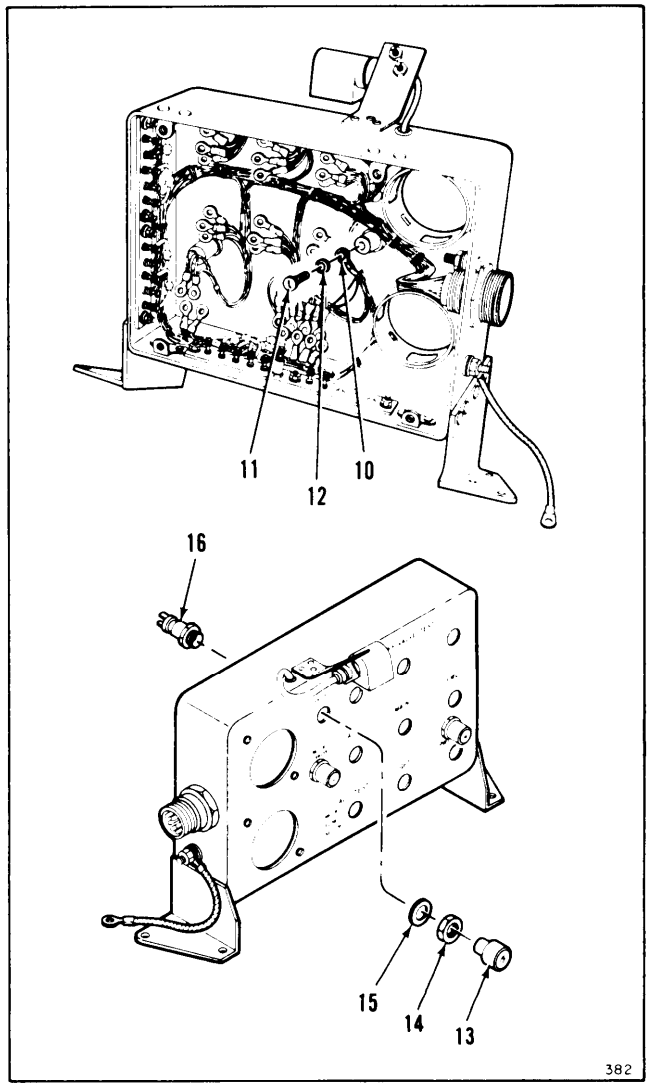


REMOVE INDICATOR LIGHT

NOTE

Procedure is same to remove three indicator lights. Removal of LH REFUEL VALVE light is shown here.

5. Tag three electrical wires (10).
6. **Disconnect three wires (10)** by removing two screws (11) and washers (12).
7. **Remove lens cap (13), nut (14), washer (15), and lampholder (16).**



GO TO NEXT PAGE

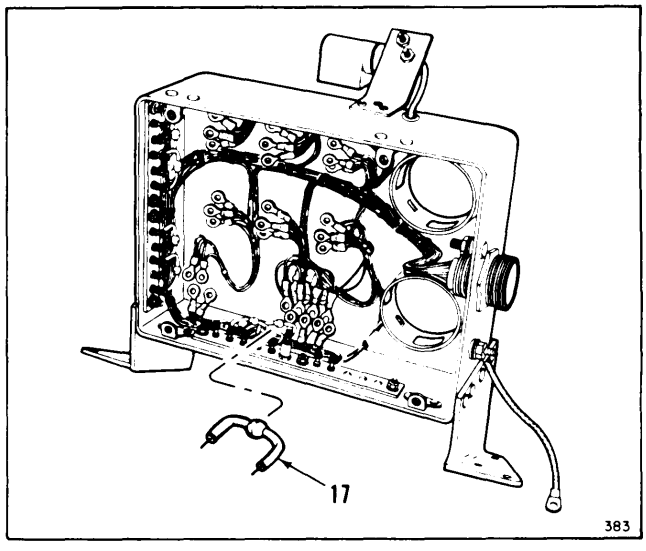
9-164.4 DISASSEMBLE FUEL PRE-CHECK PANEL (Continued)

REMOVE DIODE

NOTE

Procedure is similar to remove eight diodes.

8. Tag diode (17), noting polarity. Use tags (E264).
9. **Disconnect wires of diode (17).** Use heat sink.
10. **Remove diode (17).**



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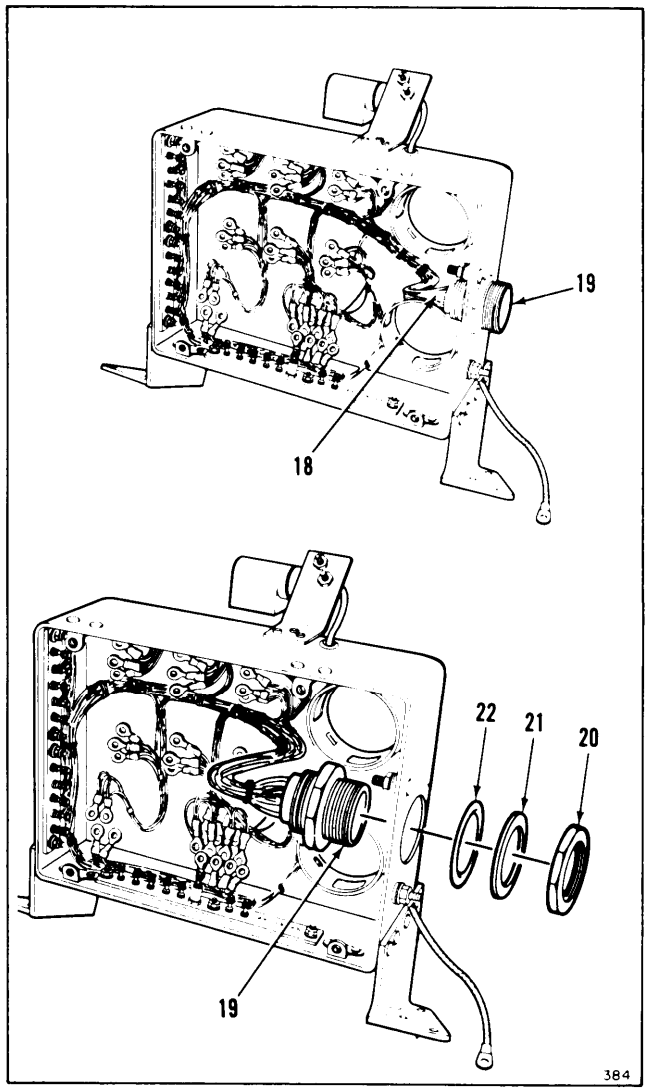
9-164.4 DISASSEMBLE FUEL PRE-CHECK PANEL (Continued) 9-164.4

REMOVAL OF RECEPTACLE

11. Tag 24 wires (18) to receptacle (19). Use tags (E264). **Disconnect 24 wires (18).** Use contact insertion/removal tool.
12. **Remove nut (20),** washer (21), and packing (22). **Remove receptacle (19).**



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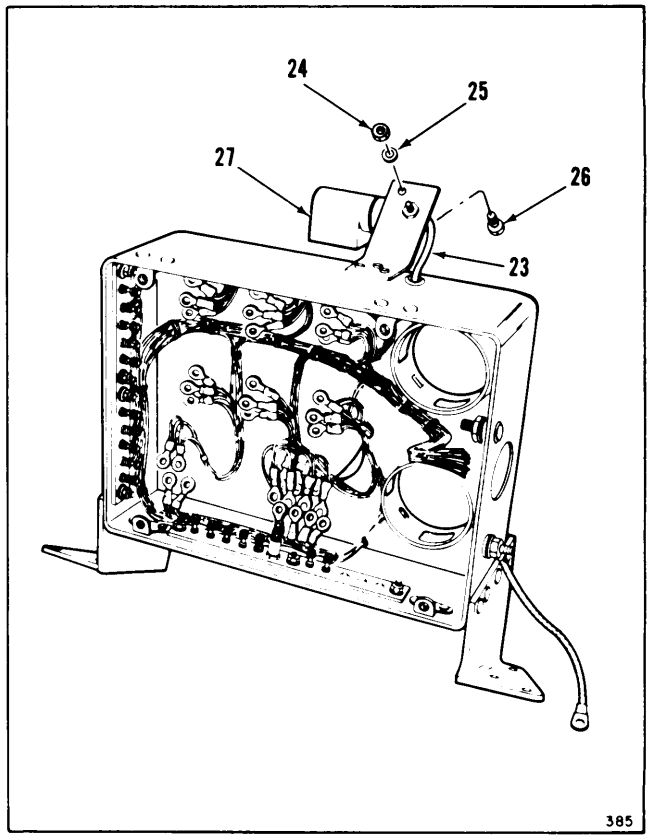
9-164.4 DISASSEMBLE FUEL PRE-CHECK PANEL (Continued) 9-164.4

REMOVE FLOODLIGHT

13. **Disconnect wire (23).**
14. **Remove two nuts (24),** washers (25), **and screws (26).**
15. **Remove light (27).**

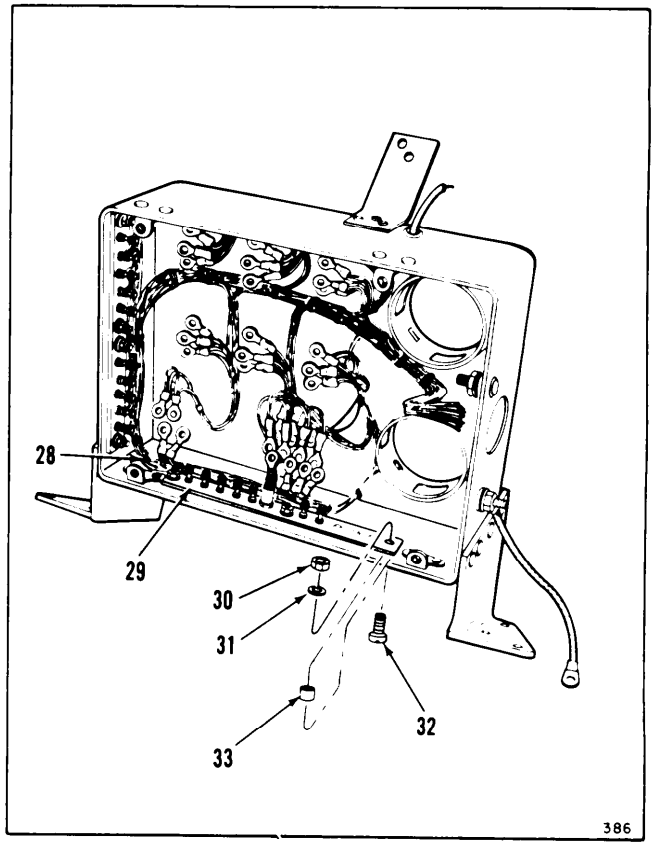


REMOVE TERMINAL BOARD

NOTE

Procedure is similar to remove two terminal boards. Removal of terminal board TB1 is shown here.

16. Tag and **disconnect 10 wires (28)** from terminal board TB1 (29). Use a heat sink.
17. **Remove four nuts (30), washers (31), screws (32), and spacers (33). Remove terminal board (29).**



GO TO NEXT PAGE

REMOVE CLAMP

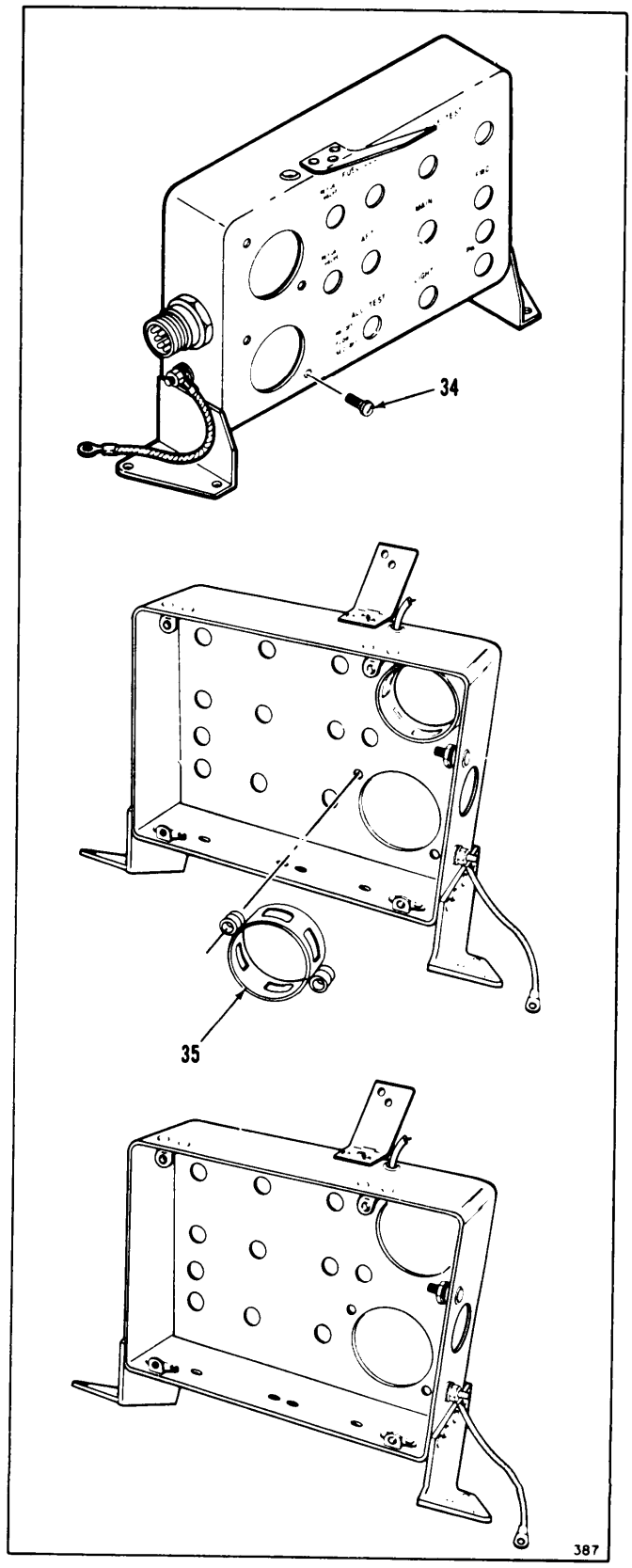
NOTE

Procedure is same to remove two clamps.

18. **Remove two screws (34).**
19. **Remove clamp (35).**

FOLLOW-ON MAINTENANCE:

None



END OF TASK

9-164.5 ASSEMBLE FUEL PRE-CHECK PANEL

INITIAL SETUP

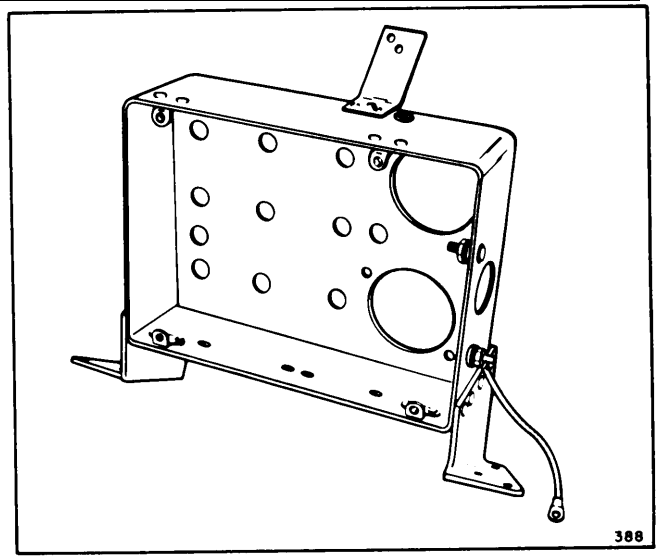
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Soldering Gun
Heat Sink
Contact Insertion/Removal Tool M83723-31-20

Materials:
Solder (E319)

Personnel Required:
Aircraft Electrician
Inspector

Equipment Condition:
Off Helicopter Task

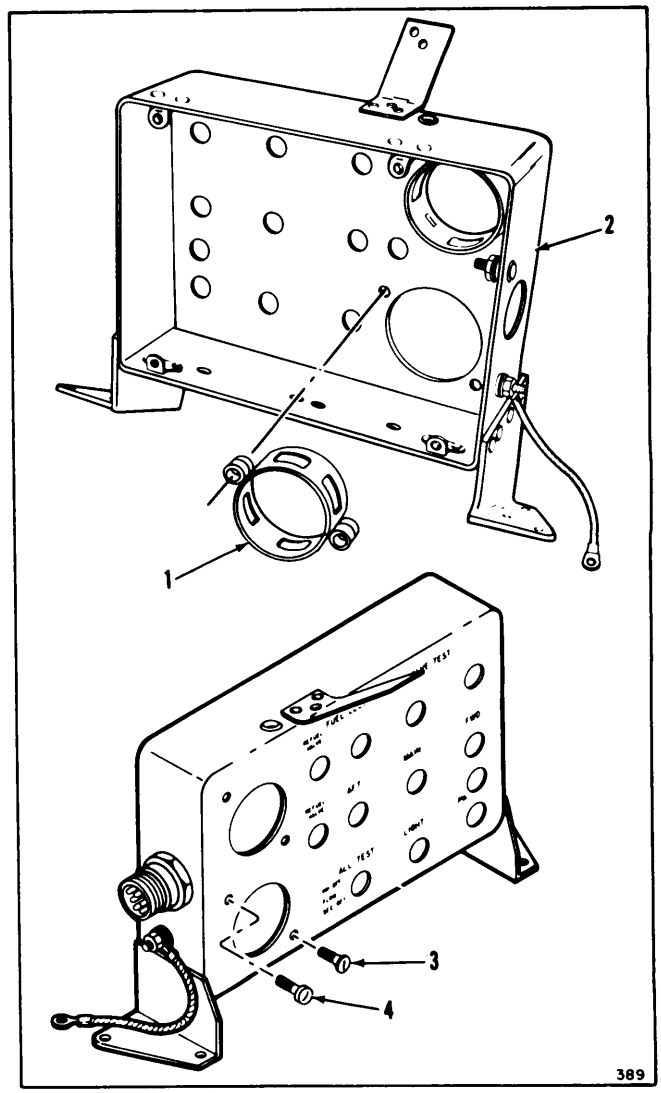


INSTALL CLAMP

NOTE

Procedure is same to install two clamps.

1. **Position clamp (1)** on panel (2).
2. **Install flat-head retaining screw (3).**
3. **Install round head adjusting screw (4).**



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*U.S. GOVERNMENT PRINTING OFFICE: 1987 754-122/40062

INSTALL TERMINAL BOARD

NOTE

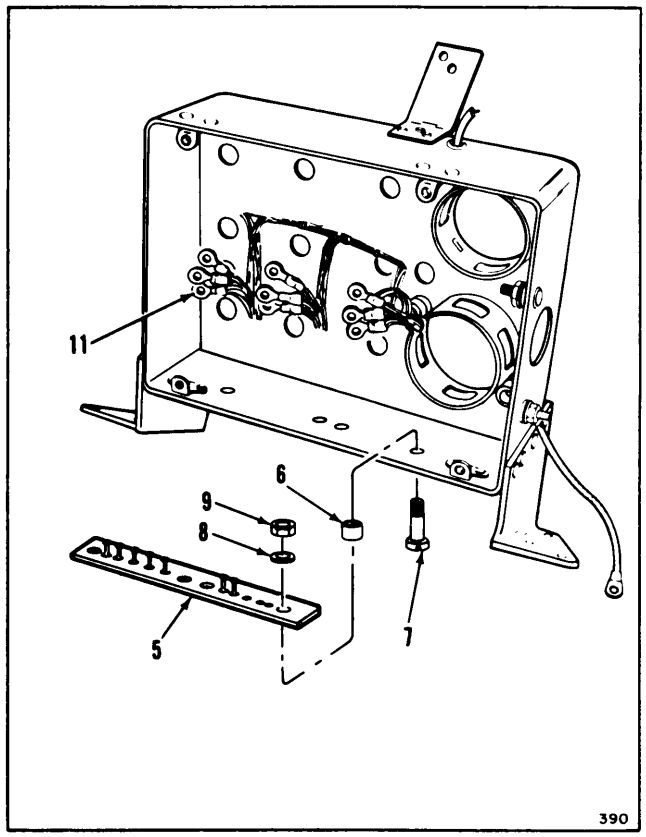
Procedure is similar to install two terminal boards. Installation of terminal board TB1 is shown here.

4. **Position terminal board (5).**

NOTE

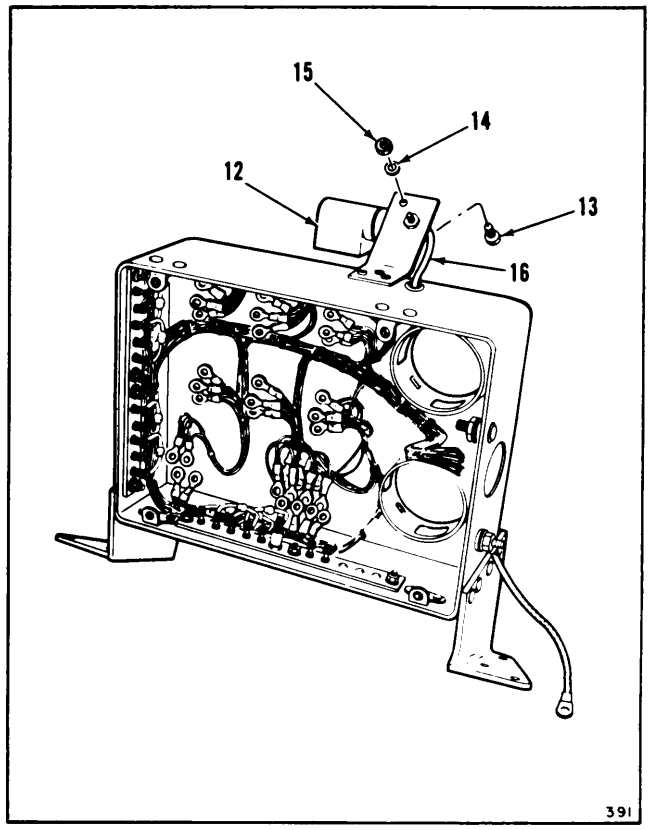
If holes in box are elongated, add washer under head of screw.

5. **Install four spacers (6), screws (7), washers (8), and nuts (9).**
6. **Connect 10 wires (11).** Use a heat sink. Use solder (E319).



INSTALL FLOODLIGHT

7. **Position light (12). Install two screws (13), washers (14), and nuts (15).**
8. **Connect wire (16).** Use solder (E319).



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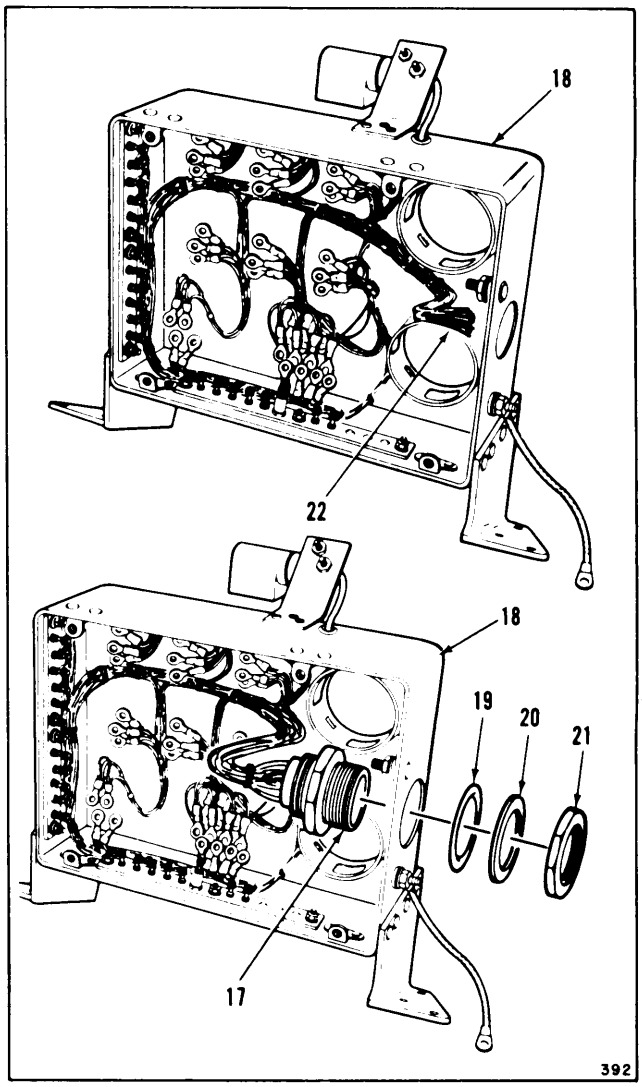
9-164.5 ASSEMBLE FUEL PRE-CHECK PANEL (Continued) 9-164.5

INSTALL RECEPTACLE

9. **Position receptacle (17)** in panel (18). **Install** packing (19), washer (20), and **nut (21).**
10. **Connect 24 wires (22).** Use insertion/removal tool. Remove tags.



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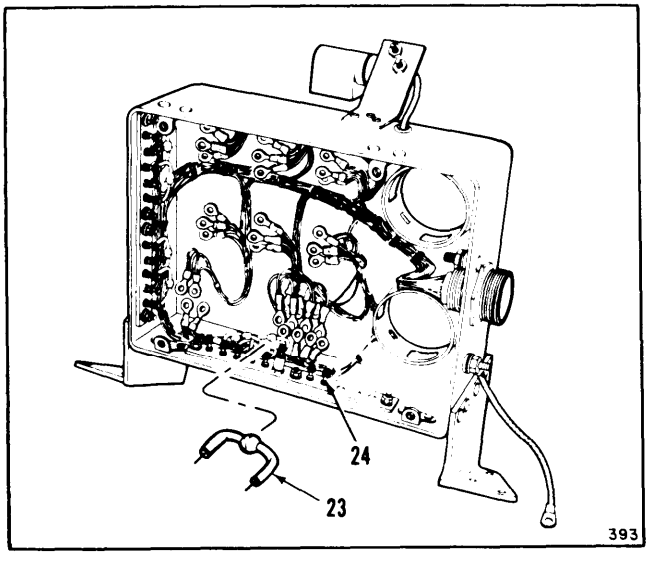
9-164.5 ASSEMBLE FUEL PRE-CHECK PANEL (Continued)

INSTALL DIODE

NOTE

Procedure is similar to install eight diodes.

11. **Connect diode (23)** to terminals (24). Observe polarity. **Use heat sink.** Use solder (E319).
12. Remove tags.



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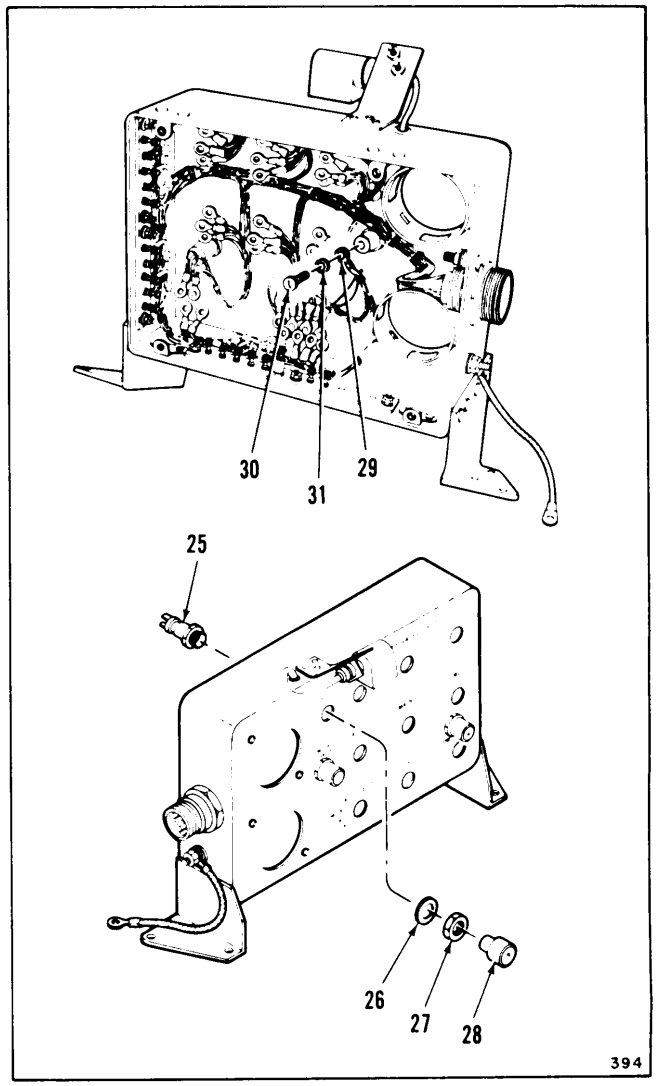
9-164.5 ASSEMBLE FUEL PRE-CHECK PANEL (Continued) 9-164.5

INSTALL INDICATOR LIGHT

NOTE

Procedure is same to install three indicator lights. Installation of LH REFUEL VALVE light is shown here.

13. **Install lampholder (25),** washer (26), **and nut (27). Install lens cap (28).**
14. **Connect three wires (29)** by installing two screws (30) and washers (31).



9-164.5 ASSEMBLE FUEL PRE-CHECK PANEL {Continued] 9-164.5

INSTALL SWITCH

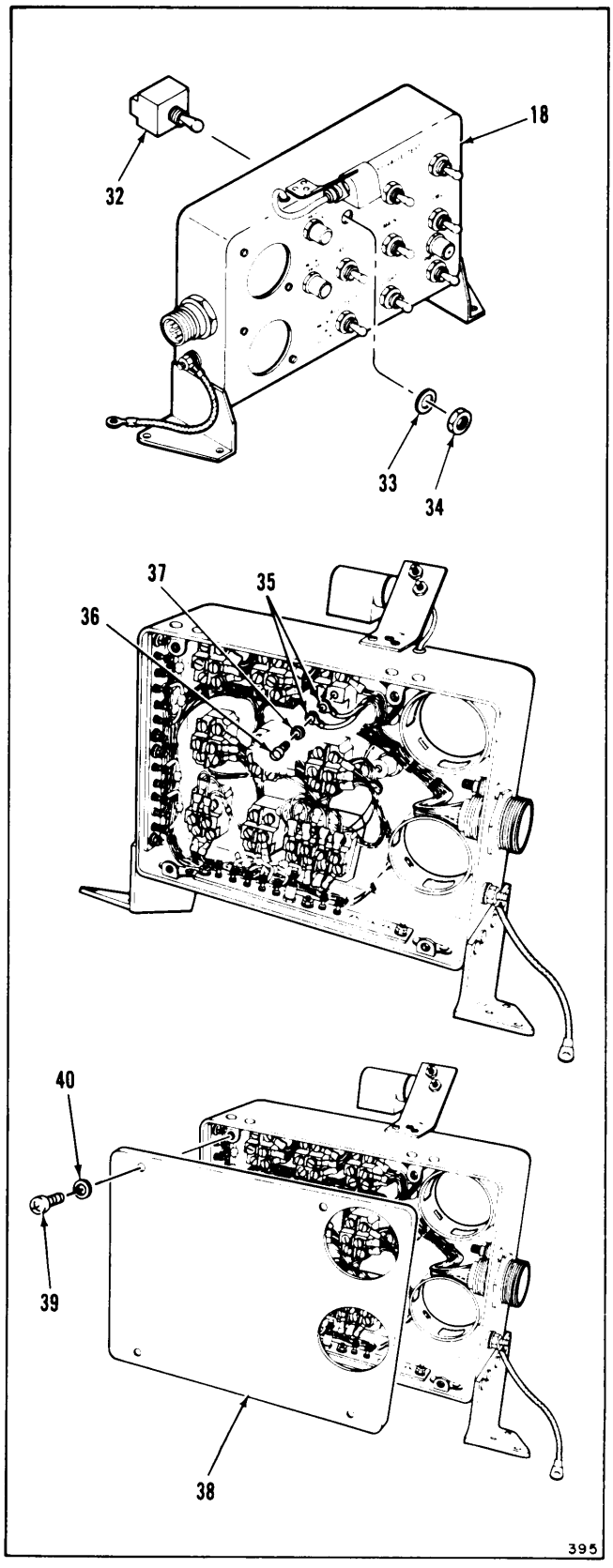
NOTE

Procedure is similar to install nine switches. Installation of LH FUEL CELL SHUTOFF VALVE switch is shown here.

15. **Position switch (32)** in panel (18). **Install washer (33) and nut (34).**
16. **Connect six wires (35)** by installing three screws (36) and washers (37).
17. Remove tags.

INSPECT

18. **Position cover (38)** on panel (18). **Install four screws (39)** and washers (40).



FOLLOW-ON MAINTENANCE:

None

END OF TASK

9-164.6 INSTALL FUEL PRE-CHECK PANEL 9-164.6

INITIAL SETUP

Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915

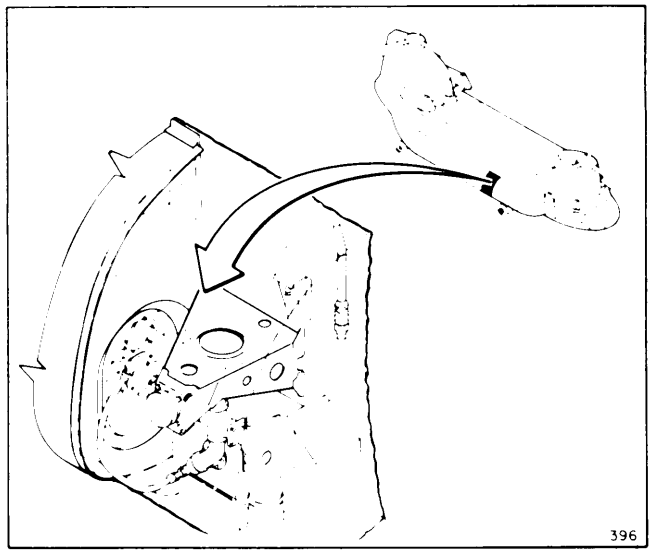
Materials:
None

Personnel Required:
Aircraft Electrician

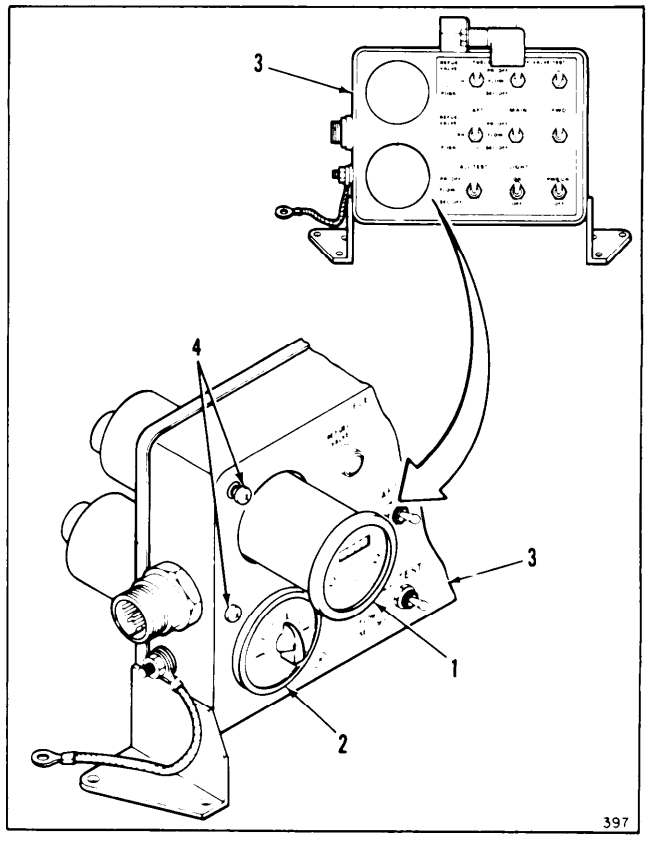
General Safety Instructions:

CAUTION

Be careful when handling indicators. Rough handling will damage indicators.



1. **If indicator (1) and switch (2) were removed, install them** in panel (3).
2. **Tighten** round head clamp **screw (4).**



GO TO NEXT PAGE

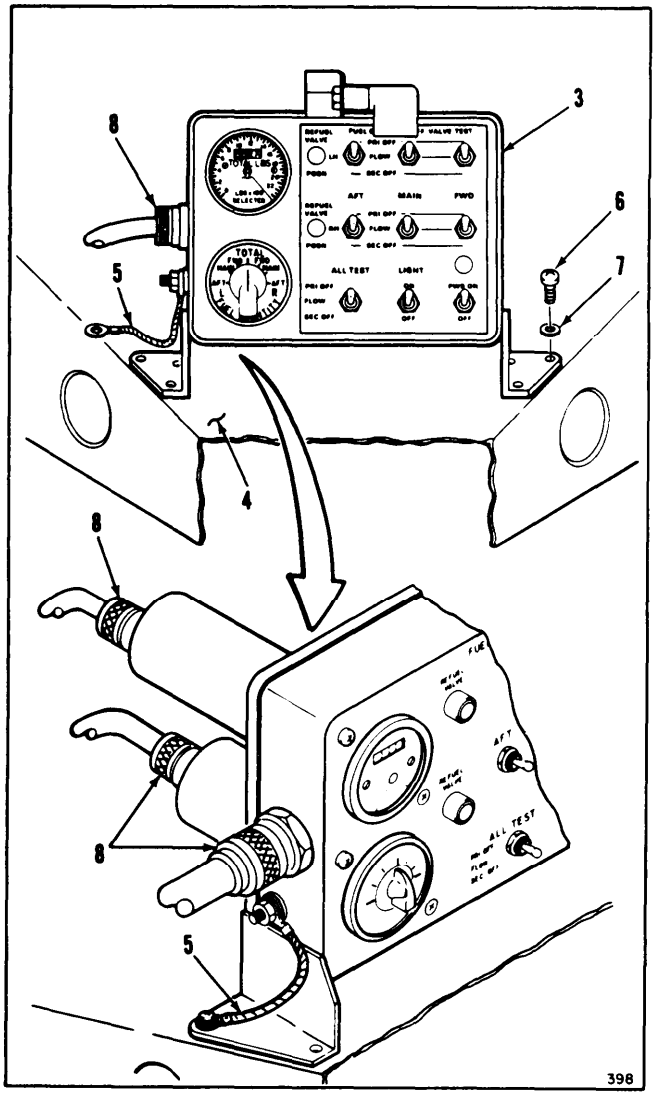
3. **Position pre-check panel (3)** on support (4).
4. **Attach bonding jumper (5)** with one bolt (6) and washer (7). Install the other five bolts (6) and washers (7).
5. **Connect** three **electrical connectors (8).**

INSPECT

FOLLOW-ON MAINTENANCE:

Test and Adjust Fuel Quantity Indicator (Task 8-80.5).

Perform operational check of single point refueling system (TM 55-1520-240-T),



END OF TASK

★U.S GOVERNMENT PRINTING OFFICE 1992 -654 -029/65066

9-165 REMOVE TERMINAL BOARD MODULE

INITIAL SETUP

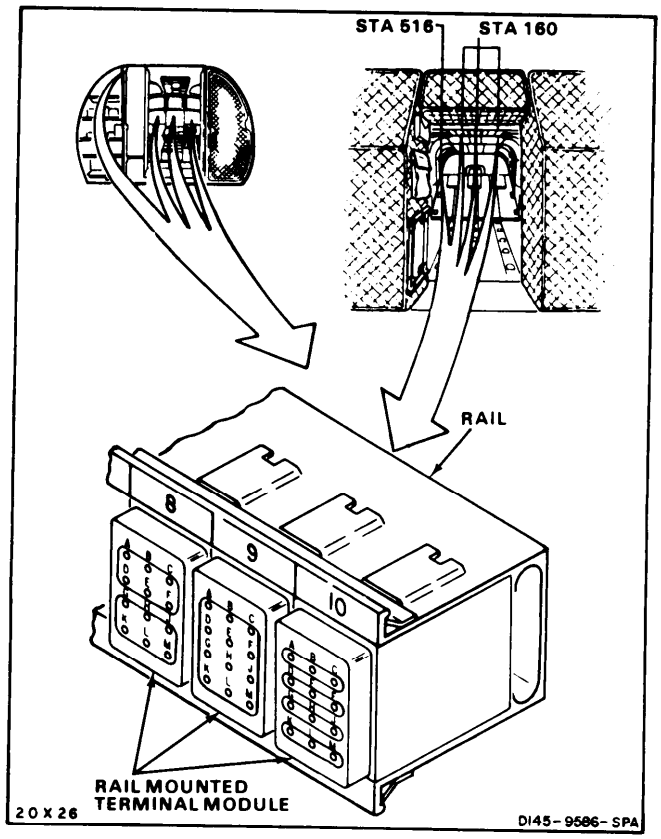
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool
Module Extraction Tool

Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician

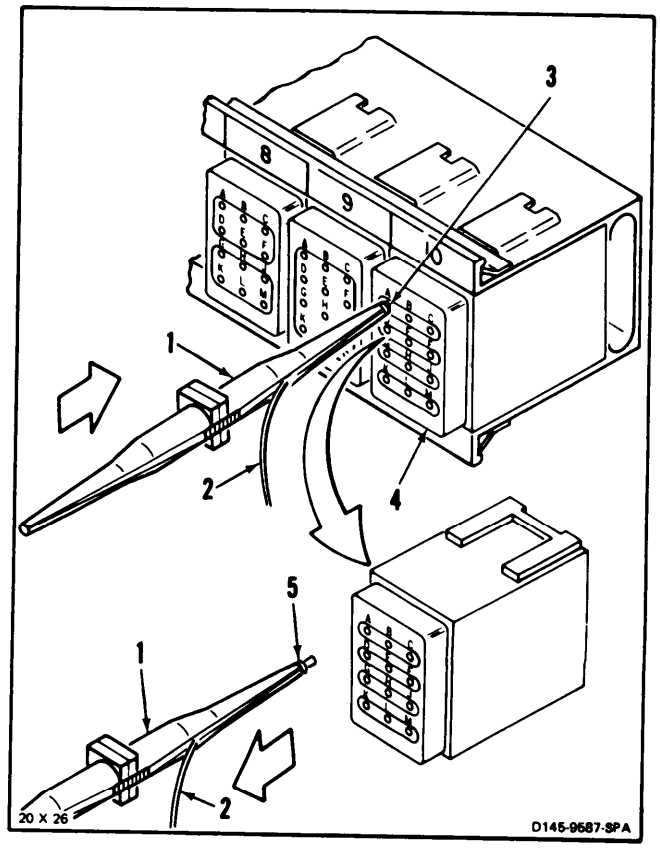
Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



NOTE

Module can be removed with or without wires attached.

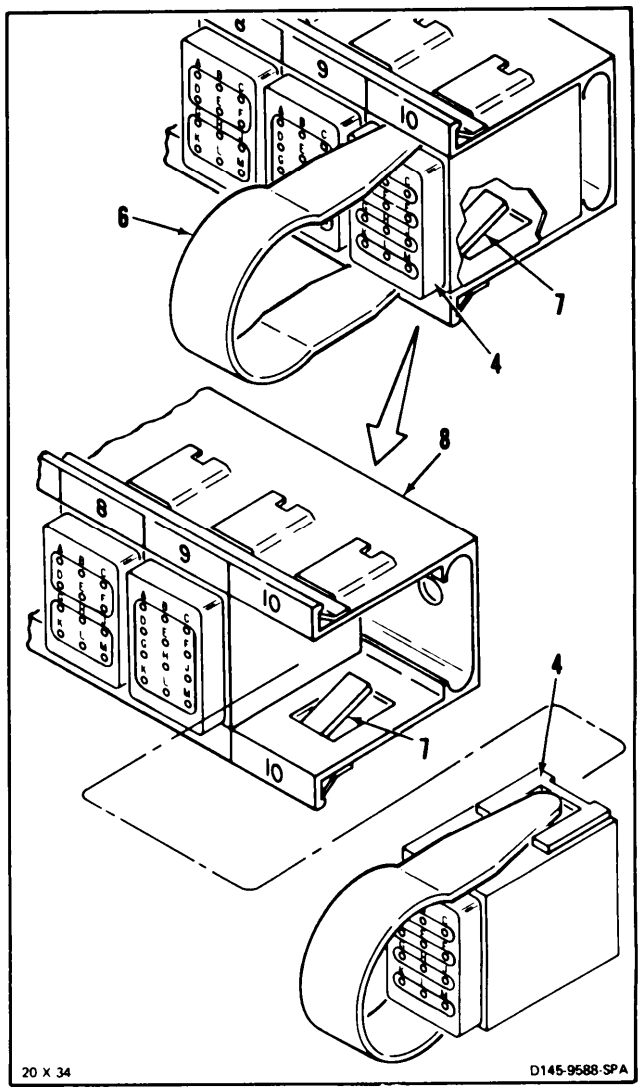
1. **Tag wires** to be removed.
2. **Slide end of removal tool (1) over wire (2)** and into cavity (3) in module (4).
3. **Remove tool (1), wire (2) and contact (5).**



GO TO NEXT PAGE

9-165 REMOVE TERMINAL BOARD MODULE (Continued) 9-165

4. **Insert** ends of **module extraction tool (6)** into slots on module (4).
5. **Push tool (6)** towards module (4) **and release retaining clips (7).**
6. **Pull module (4) and tool (6) from rail (8).**



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-166 INSTALL TERMINAL BOARD MODULE

INITIAL SETUP

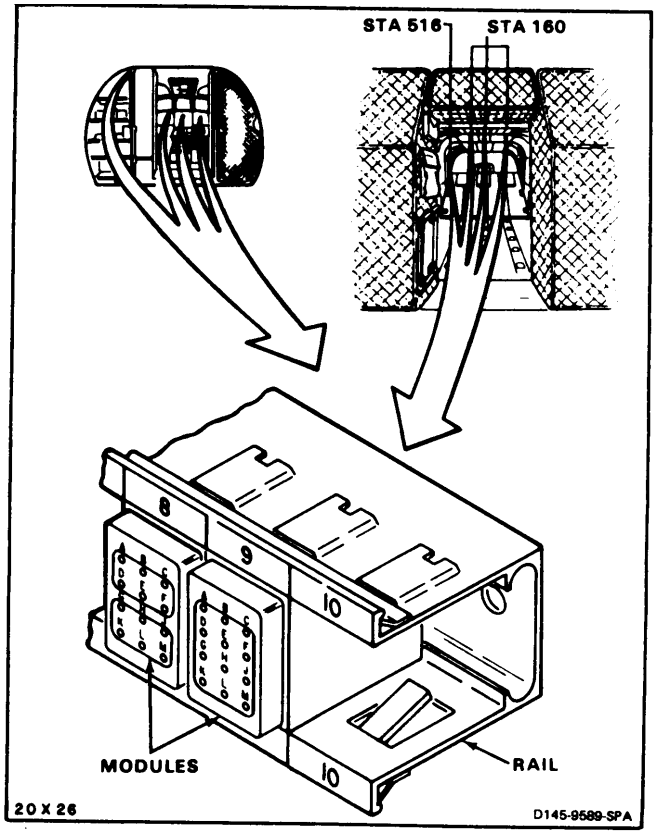
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Aircraft Inspector

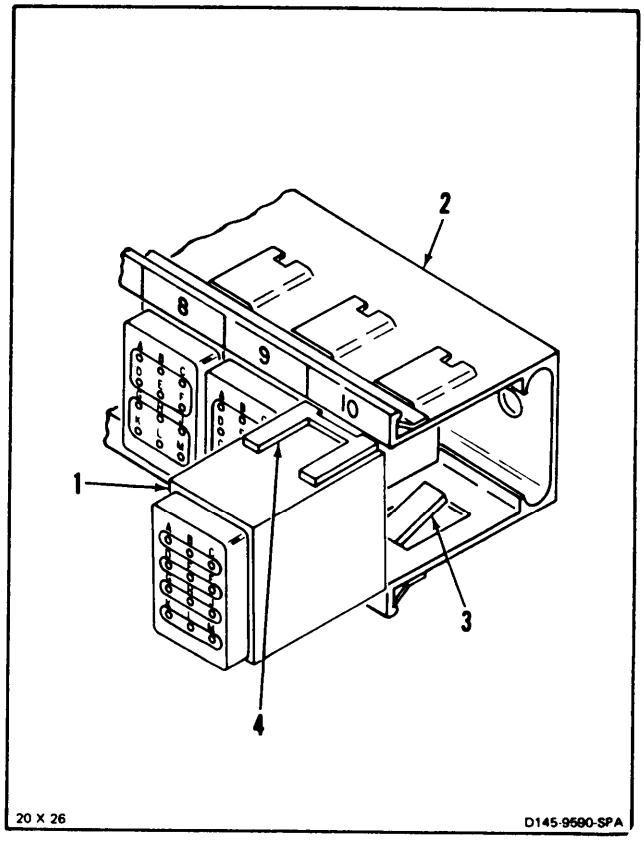
References:
TM 55-1520-240-23P



NOTE

Module can be installed with or without wires.

1. Install module (1) in rail (2). Make sure clips (3) snap into notches (4).



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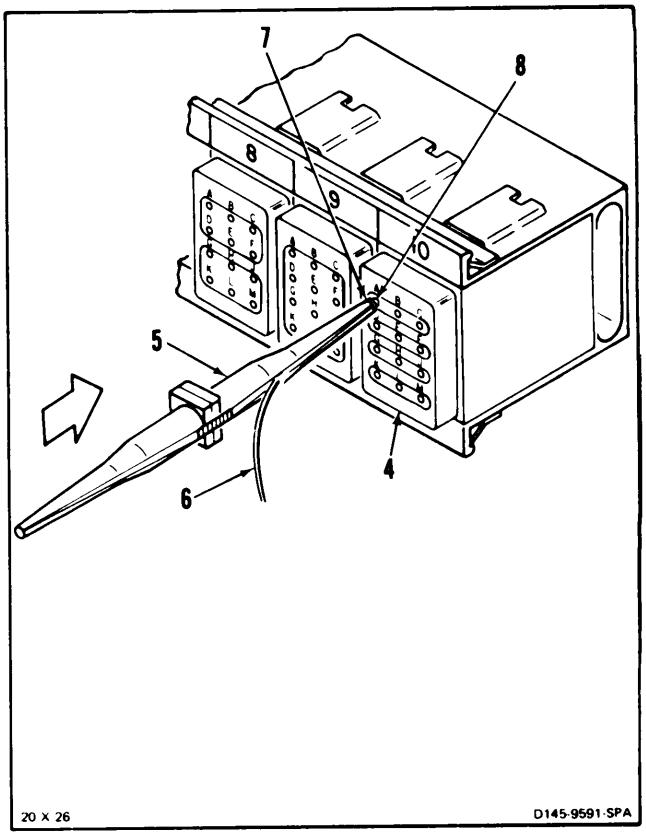
9-166 INSTALL TERMINAL BOARD MODULE (Continued)

2. **Slide end of insertion tool (5) over wire (6)** and position contact (7) against tip of insertion tool.
3. **Push contact (7) into cavity (8)** until contact snaps into place.
4. **Remove insertion tool (5).**



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of system (TM 55-1520-240-T).

END OF TASK

9-167 REMOVE GROUND DEVICE MODULE

INITIAL SETUP

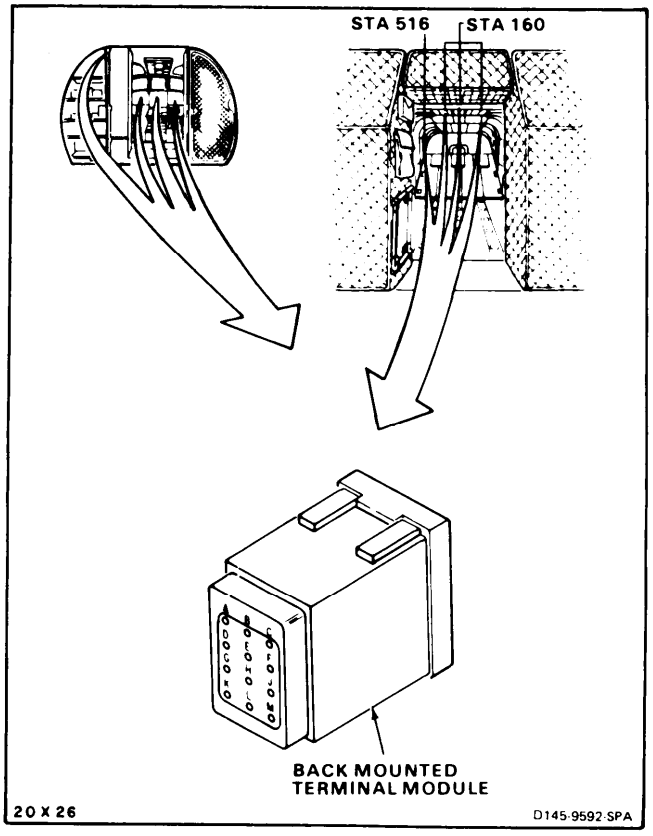
Applicable Configurations:
All

Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool

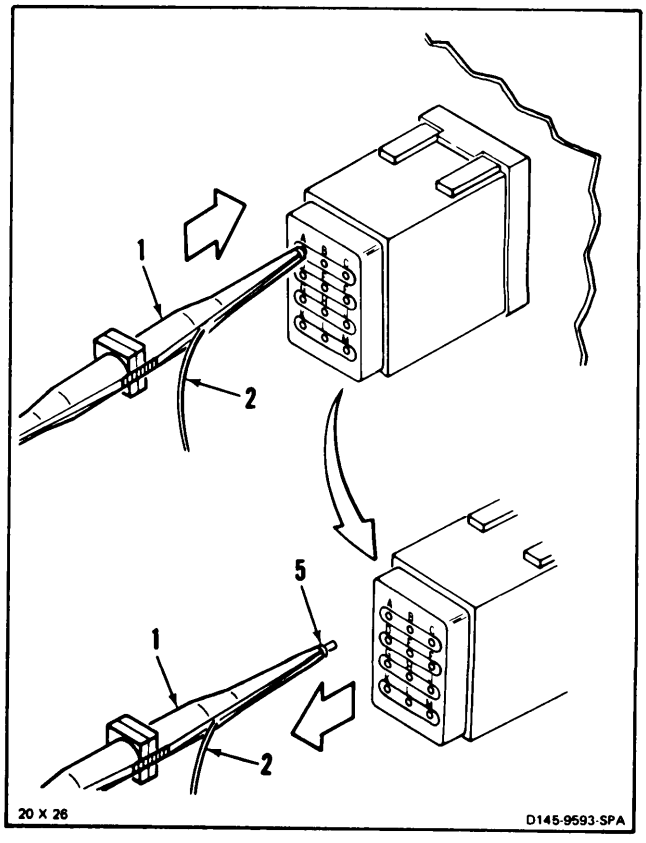
Materials:
Paper Tags (E264)

Personnel Required:
68F10 Aircraft Electrician

Equipment Condition:
Battery Disconnected (Task 1-39)
Electrical Power Off



1. **Tag wires** to be removed.
2. **Slide end of removal tool (1) over wire (2)** and into cavity (3) in module (4).
3. **Remove tool (1), wire (2), and (5).**



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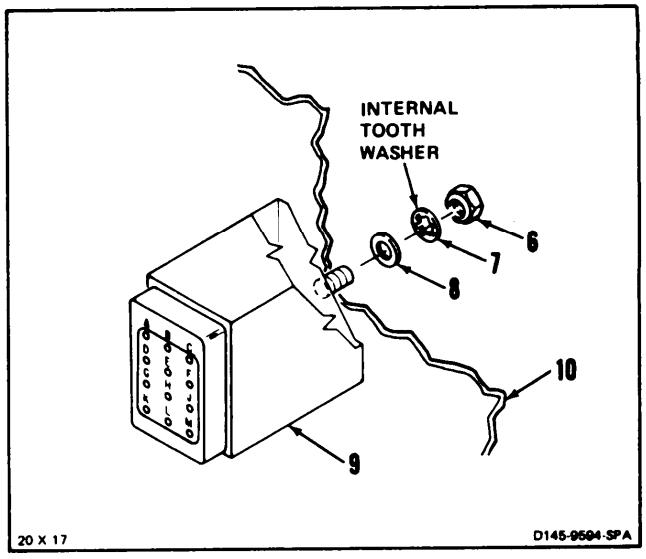
4. **Remove nut (6),** and two washers (7) and (8).
5. Remove module (9) from structure (10).



FOLLOW-ON MAINTENANCE:
None

END OF TASK

9-168 INSTALL GROUND DEVICE MODULE

INITIAL SETUP

Applicable Configurations:
All

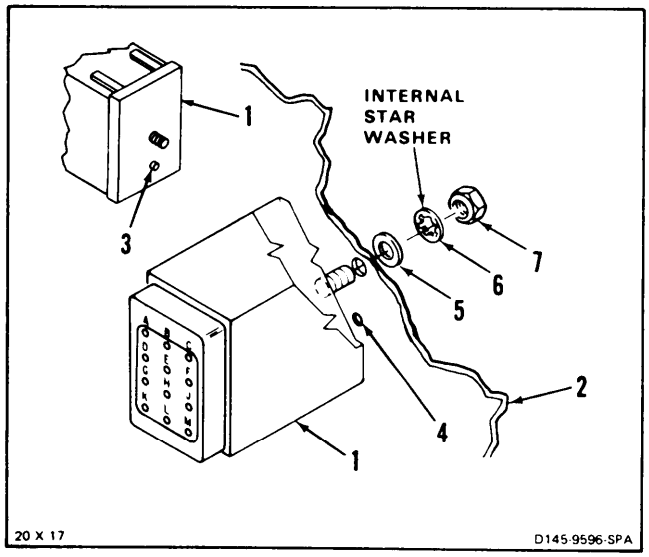
Tools:
Electrical Repairer's Tool Kit,
NSN 5180-00-323-4915
Contact Insertion/Removal Tool

Materials:
None

Personnel Required:
68F10 Aircraft Electrician
67U30 Aircraft Inspector

References:
TM 55-1520-240-23P

1. **Position module (1)** on structure (2). Make sure tab (3) of module engages locator hole (4) of structure (2).
2. **Install** washer (5), **washer (6), and nut (7).**



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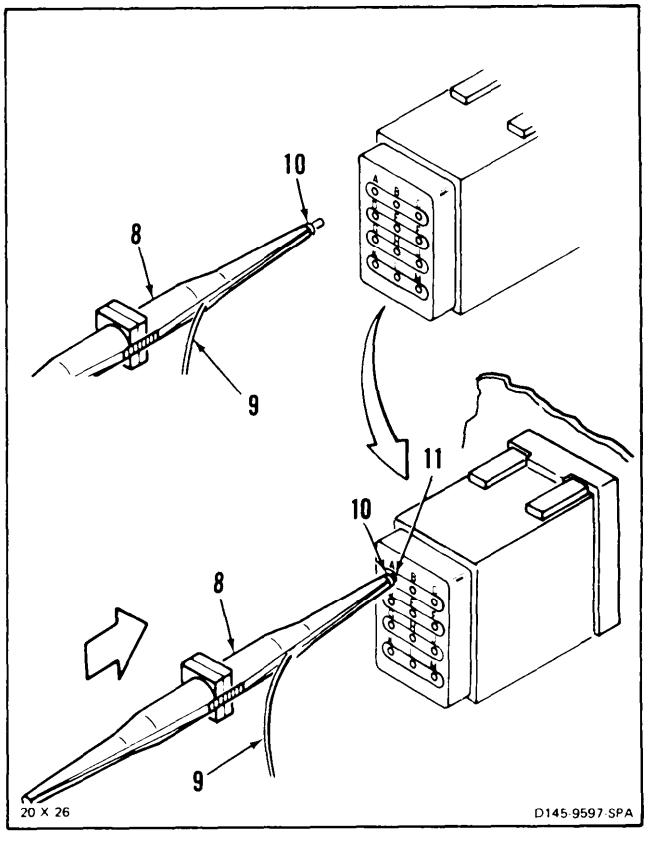
3. Slide end of insertion tool (8) over wire (9) and position contact (10) against tip of Insertion tool.
4. **Push contact (10) into cavity (11)** until contact snaps into place.
5. **Remove insertion tool (8).**



INSPECT

FOLLOW-ON MAINTENANCE:

Perform operational check of system (TM 55-1520-240-T).

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END OF TASK

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By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

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To: ls-lp@redstone.army.mil
Subject: DA Form 2028
1. **From:** Joe Smith
2. Unit: home
3. **Address:** 4300 Park
4. **City:** Hometown
5. **St:** AL
6. **Zip:** 77777
7. **Date Sent:** 19-OCT-93
8. **Pub No:** 55-2840-229-23
9. **Pub Title:** TM
10. **Publication Date:** 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. **Submitter Fname:** Joe
14. Submitter Mname: T
15. **Submitter Lname:** Smith
16. **Submitter Phone:** 123-123-1234
17. **Problem:** 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. **Text:**

This is the text for the problem below line 27.

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)
CDR, 1st Bn, 65th ADA
ATTN: SP4 John Doe
Key West, FL 33040

DATE SENT
14 January 1979

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 9-1430-550-34-1	7 Sep 72	Unit of Radar Set AN/MPQ-50 Tested at the HFC

BE EXACT. PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
9-19		9-5	
21-2	step 1C		21-2

SAMPLE

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

"B" Ready Relay K11 is shown with two #9 contacts. That contact which is wired to pin 8 of relay K16 should be changed to contact #10.

Reads: Multimeter B indicates 600 K ohms to 9000 K ohms.

Change to read: Multimeter B indicates 600 K ohms minimum.

Reason: Circuit being checked could measure infinity. Multimeter can read above 9000 K ohms and still be correct.

NOTE TO THE READER:

Your comments will go directly to the writer responsible for this manual, and he will prepare the reply that is returned to you. To help him in his evaluation of your recommendations, please explain the reason for each of your recommendations, unless the reason is obvious.

All comments will be appreciated, and will be given immediate attention. Handwritten comments are acceptable.

For your convenience, blank "tear out" forms, preprinted, addressed, and ready to mail, are included in this manual.

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE
SP4 John Doe, Autovon 222-222	

DA FORM 1 JUL 79 2028-2

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DEPARTMENT OF THE ARMY

COMMANDER
US ARMY AVIATION AND MISSILE COMMAND
ATTN AMSAM-MMC-LS-LP
REDSTONE ARSENAL AL 35898-5230

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = . 15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigrams = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = 34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 38.82 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = 155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2,47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61,02 cu. inches
1 cu meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	3.94
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1,094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2,113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2,205
pound-feet	newton-meters	1.365	metric tons	short tons	1.102
pound-inches	newton-meters	.11375			

Temperature (Exact)

°F Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C