TO: ALL HOLDERS OF AFT AIRSTAIRS MECHANISM REDUCTION GEARBOX ASSEMBLY OVERHAUL MANUAL, 52-65-01

REVISION NO. 3, DATED MAR 1/99

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D&O	D/Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Updated the refinish section					X								

AFT AIRSTAIRS MECHANISM REDUCTION GEARBOX ASSEMBLY

52-65-01

BOEING P/N 65-58116-3 AND -4

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 30012-15	Mar 10/70

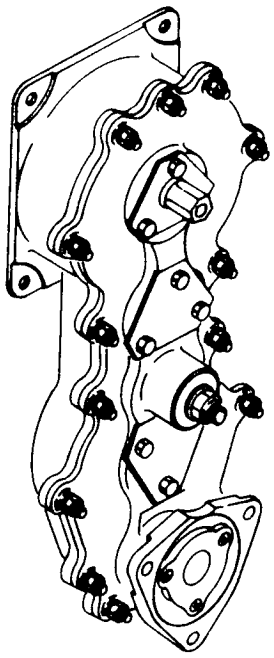
LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

	PAGE	DATE	PAGE	DATE	PAGE	DATE
	52-65-01					
	T-1	Mar 10/70				
	T-2	BLANK				
*	LEP-1	Mar 1/99				
	LEP-2	BLANK				
	T/C-1	Dec 10/71				
	T/C-2	BLANK				
	1	Mar 10/70				
	2	Aug 15/67				
	3	Dec 10/71				
*	4	Mar 1/99				
	5	Dec 10/71				
	6	Dec 10/71				
	6A	Dec 10/71				
	6B	Dec 10/71				
	6C	Dec 10/71				
	6D	Dec 10/71				
	7	BLANK				
	8	Mar 10/70				
	9	Mar 10/70				
	10	Mar 10/70				

TABLE OF CONTENTS

AFT AIRSTAIRS MECHANISM REDUCTION GEARBOX ASSEMBLY
Boeing Part Numbers: 65-58116-3 and -4



Aft Airstairs Mechanism Reduction Gearbox Assembly
Figure 1

1. DESCRIPTION AND OPERATION

A. Description

The aft airstairs mechanism reduction gear box assembly is basically a two-piece housing containing two interconnected sets of spur gears. The primary set of gears is used during mechanical operation of the airstairs and provides a 2 to 1 speed reduction. The second set of gears provides andadditional 4 to 1 reduction for manual operation of the airstairs.

B. Operation

The aft airstairs mechanism gearbox assembly is normally driven by a reversible three-phase 115 volt ac power unit, which drives two interconnected gearboxes, centrifugal governor, and transmission units. The gearbox extends and retracts the aft airstairs.

C. Leading Particulars

Length -- 15 inches
Width -- 6.53 inches
Height -- 7.0 inches
Weight -- 5 pounds

2. DISASSEMBLY (See figure 2.)

A. Remove bolts (1), nuts (2) and washers (3).

B. Carefully separate cover (5) from housing (29).

CAUTION: WHEN COVER IS REMOVED, INTERNAL COMPONENTS OF GEARBOX WILL BE LOOSE. TAKE CARE TO PREVENT DAMAGE TO THESE PARTS.

C. Remove bolts (6), washers (7) and retainer (8) from cover.

D. Remove bolts (9), washers (10) and retainers (11) from cover.

E. Remove bolts (12) and retainer (13) from cover.

F. Hold shaft (24) with wrench and remove nut (15) and washer (16).

G. Withdraw shaft (24) from cover and remove gear (23) from shaft.

H. Remove bearing (17) and spacer (18) from cover.

NOTE: Do not remove insert (14) from cover (5) unless replacement is necessary.

J. Remove bearings (19 and 20).

K. Remove gear (21), gear (22), gear (23), gear (25) and shaft (26).

L. Remove bearings (27 and 28) from housing (29).

3. CLEANING (See figure 2.)

A. General

(1) Wash and rinse all parts, except bearings, in dry cleaning solvent, Specification P-D-680, or equivalent.

(2) Clean all bores, holes, threads, passages, and chambers using stiff bristle brush.

(3) Dry parts with clean, lint-free cloth, or moisture-free air.

(4) For further information, refer to 20-30-03, General Cleaning Procedures.

B. Bearings

(1) Clean all bearings per 20-30-01, Cleaning and Relubricating Antifriction Bearings.

4. INSPECTION/CHECK (See figure 2.)

A. Visually examine all metal parts for nicks, cracks, burrs, and corrosion using strong light and minimum of 10-power magnification.

B. Visually examine all threads for cross-threading or stripping.

C. Examine all plated and painted surfaces for blistering or flaking.

D. Check bearings for roughness, binding, and excessive radial or axial play.

E. Examine all gear teeth for abnormal wear pattern. Wear pattern must be smooth and centered on all gear teeth.

5. REPAIR (See figure 2.)

A. Repair

(1) Remove minor scratches, nicks, and corrosion by polishing with 220 grit or finer abrasive cloth. Refinish as required for protection against corrosion.

(2) Repair minor defects on splines and gear teeth by light filing or using an abrasive.

(3) Chase or file minor thread damage.

B. Refinish

NOTE: Refer to Subject 20-30-02 for stripping of protective finishes and to Subject 20-41-01 for decoding of F and SRF finish codes and their BAC equivalents.

(1) If plated or painted surfaces are worn or chipped, refinish parts listed as indicated.

(a) Cover (5) -- Apply F-2.26 on all exterior and interior surfaces plus SRF-12.205 on exterior surfaces only. Omit primer from faying surfaces for housing (29) and retainers (8, 11).

(b) Retainers (8, 11) -- Apply SRF-2.30 all over except omit primer from faying surfaces.

(c) Retainer (13) -- Apply SRF-2.30 all over except omit primer on 0.901-inch diameter holes and faying surfaces.

(d) Spacer (18) -- Apply SRF-2.26 all over.

(e) Gear (21) -- Apply F-15.23 all over, except gear teeth and 0.50-inch diameter hole, except 0.0002-0.0003 single plating thickness on splines.

(f) Gear (22) -- Apply F-15.23 all over except gear teeth and .437 diameter hole.

(g) Gear (23) -- Apply F-15.23 all over, except gear teeth, except 0.000-0.0003 single plating thickness on splines.

(h) Shaft (24) -- Apply F-15.02 all over, except 0.375-inch diameter hole, except 0.0002-0.0003 single plating thickness on splines and threads.

(i) Gear (25) -- Apply F-15.23 all over, except gear teeth and 0.312-inch diameter hole, except 0.0002-0.0003 single plating thickness on splines.

(j) Shaft (26) -- Apply F-15.23 all over, except gear teeth and 0.4705-inch diameter hole, except 0.0002-0.0003 single plating thickness on splines.

(k) Housing (29) -- Apply F-2.26 on all exterior and inter surfaces, plus SRF-12.205 on exterior surfaces only. Omit primer from faying surface for cover (5) and from face of flange round output shaft.

C. Replacement

(1) Replace any parts damaged beyond minor or refinish.

(2) Replace any bearing with radial play in excess of 0.0002 inch.

6. ASSEMBLY (See figure 2.)

A. Preassemble cover.

(1) Butter lube teeth of one gear (23) and splines of shaft (24) with grease MIL-G-23827A.

(2) Place gear (23), bearing (19), and spacer (18) on shaft (24).

(3) Insert built-up shaft into cover (5).

(4) Install bearing (17) on shaft (24) and into cover.

(5) Install washer (16) and nut (15) on shaft (24). Hold shaft with wrench while tightening nut.

B. With housing laid flat and open side up, install bearings (27 and 28) into bores of housing.

C. Butter lube teeth and splines of gears (21, 22 and 25) and shaft (26) with grease MIL-G-23827A, install gears and shaft into bearings (27 and 28).

D. Butter lube teeth and splines of remaining gear (23) with grease MIL-G -23827A and install on gear (25).

E. Carefully position cover (5) over shafts and mate with housing making sure dowel pin (4) is engaged in holes in cover.

NOTE: Rotate nut (15) to mesh gear on shaft (24) with remaining gears.

F. Install bolts (1), washers (3), and nuts (2).

G. Install bearings (19 and 20) into bores of cover and onto shafts.

H. Install retainer (13) with bolts (12).

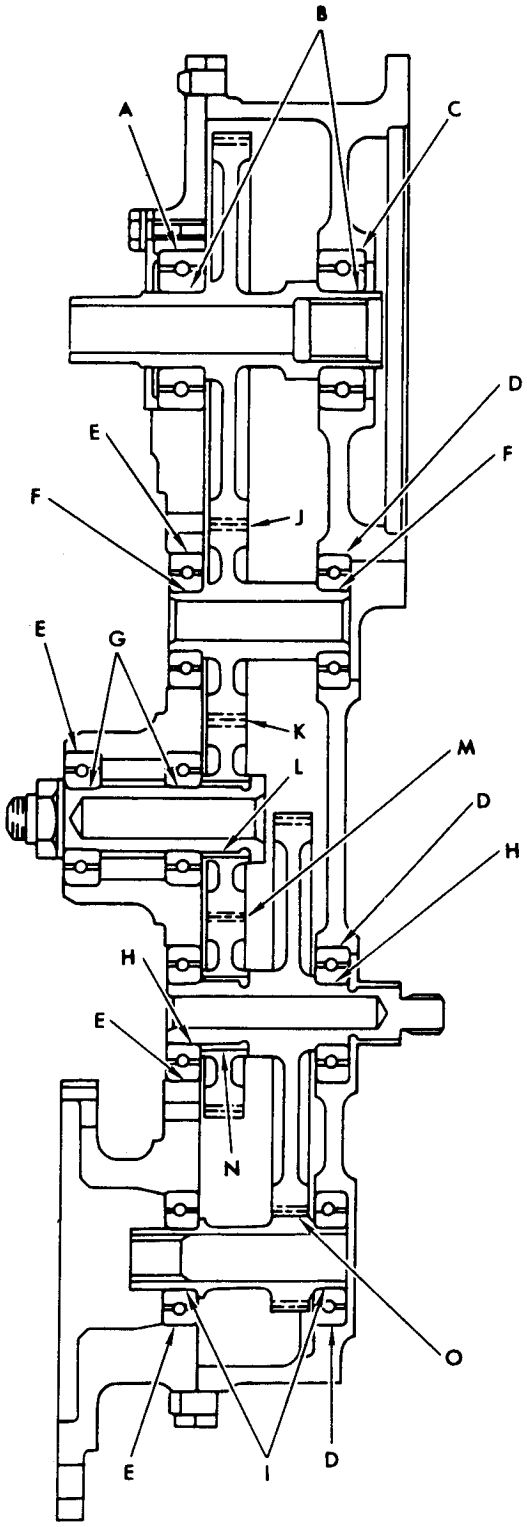
I. Install retainers (11) with bolts (9) and washers (10).

J. Install retainer (8) with bolts (6) and washers (7).

7. FITS AND CLEARANCES

A. The fits and clearances table lists design dimensions and service wear limits for close tolerance parts of the assembly that are subject to wear or corrosion. Unless otherwise specified, parts should be returned to the design dimensions whenever rework is accomplished.

B. Clearances are given to aid assembly of the components. The values given in the Maximum Allowable Clearance column are the maximum permitted to ensure proper functioning of the unit. If assembled parts fail to meet this requirement, one or more of the parts must be rejected. Parts that are rejected should be reworked if within the rework limits given in the Repair procedure; if not within rework limits, the parts should be scrapped. It is recommended that the design clearances be used as the guiding assembly criteria when newly reworked parts are assembled.



Fits and Clearances
Figure 1A (Sheet 1)

		Design Dimensions				Service Wear Limits		
Ref Letter Fig.	Mating Item No. Fig. 2	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 5 OD 20	1.6535 1.6530	1.6545 1.6535	0.000	0.0015	1.6530	1.6555	0.0025
B	ID 20,27 OD 21	0.7870 0.7872	0.7874 0.7878	-0.0008	0.0002	0.7870	0.7874	0.0004
C	ID 29 OD 27	1.6535 1.6530	1.6545 1.6535	0.000	0.0015	1.6530	1.6555	0.0025
D	ID 29 OD 28	1.3750 1.3745	1.3759 1.3750	0.000	0.0014	1.3745	1.3770	0.0025
E	ID 5 OD 17,19	1.3750 1.3745	1.3759 1.3750	0.000	0.0014	1.3745	1.3770	0.0025
F	ID 19,28 OD 22	0.6250 0.6247	0.6255 0.6250	0.000	0.0008	0.6240	0.6255	0.0015
G	ID 17,19 OD 24	0.6250 0.6247	0.6255 0.6250	0.000	0.0008	0.6240	0.6255	0.0015
H	ID 19,28 OD 25	0.6250 0.6247	0.6255 0.6250	0.000	0.0008	0.6240	0.6255	0.0015
I	ID 19,28 OD 26	0.6250 0.6247	0.6255 0.6250	0.000	0.0008	0.6240	0.6255	0.0015

Ref Letter Fig.	Mating Item No. Fig. 2	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
J	21 22			0.002 *[1]	0.004 *[1]			0.006 *[1]
K	22 23			0.002 *[1]	0.004 *[1]			0.006 *[1]
L	23 24			0.000 *[2]	0.0026 *[2]			0.0040 *[2]
M	23 UPPER 23 LOWER			0.002 *[1]	0.004 *[1]			0.006 *[1]
N	23 25			0.000 *[2]	0.0026 *[2]			0.0040 *[2]
O	25 26			0.002 *[1]	0.004 *[1]			0.006 *[1]

*[1] Gear backlash measured along pitch diameter

*[2] Spline backlash measured along pitch diameter

Fits and Clearances
Figure 1A (Sheet 3)

8. TESTING (See figure 2.)

A. Test Equipment

(1) Splined coupling wrenches to hold input and output splines.

B. Preparation for Test

(1) Place gearbox in vise or other adequate holding device.

C. Operational Tests

(1) Check that gears and bearings are free running with no evidence of binding in any position.

(2) Check total gearbox backlash as follows:

(a) Hold output shaft stationary.

(b) Measure backlash at input shaft, backlash must not exceed 0.060 inch measured on a 0.50-inch radius.

(3) Breakaway torque required to initiate backdriving shall not exceed 1.5 pound-inches applied at hexagon on output shaft (21) in either clockwise or counterclockwise direction.

9. TROUBLE SHOOTING (See figure 2.)

	Trouble	Possible Cause	Correction
A.	Binding or rough movement	Improperly installed components, broken bearings	Disassemble and check, check bearings and replace as necessary
B.	Backlash excessive	Worn gear teeth or splines	Disassemble and check, replace as necessary

10. STORAGE INSTRUCTIONS

A. Grease open end splines with rust preventive grease.

B. Wrap assembly in vapor barrier paper and tape securely. Tag and mark with test date.

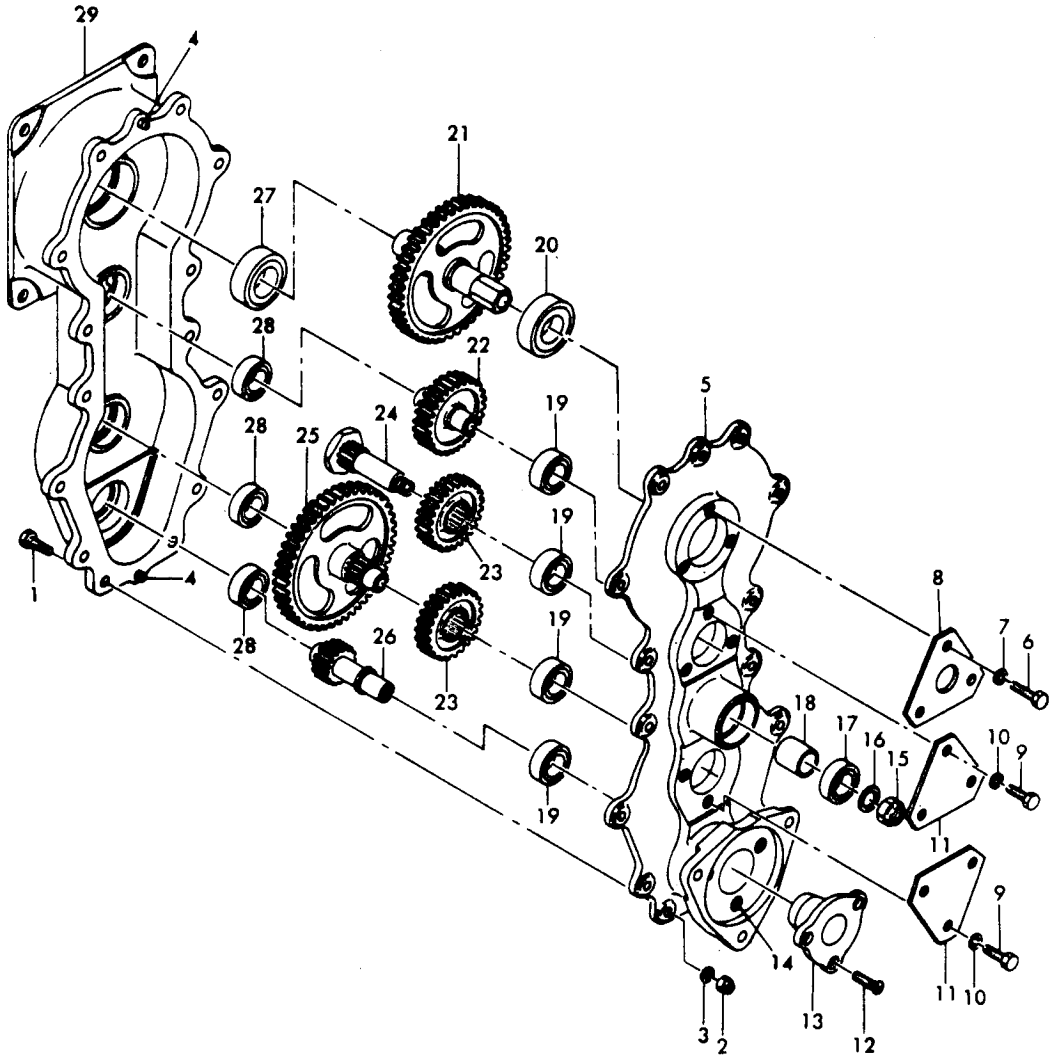
C. For further information, refer to 20-44-02, Temporary Protective Coating.

11. SPECIAL TOOLS, FIXTURES AND EQUIPMENT

None .

12. ILLUSTRATED PARTS LIST

A. Exploded View



Aft Airstairs Mechanism Reduction Gearbox Assembly
Figure 2

B. Group Assembly Parts List

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
2-	65-58116-1		Deleted		
	65-58116-3		AFT AIRSTAIRS MECHANISM REDUCTION GEARBOX ASSEMBLY		
	65-58116-4		AFT AIRSTAIRS MECHANISM REDUCTION GEARBOX ASSEMBLY		
1	NAS1104-6		. BOLT.		14
2	BACN10JC4		. NUT (replaces NAS679A4W).		14
3	AN960-416L		. WASHER		14
4	NAS607-4-4		. PIN, Dowel.		2
5	65-55735-1		. COVER		1
6	NAS1103-2		. BOLT.		3
7	AN960-10L		. WASHER.		3
8	69-45169-2		. RETAINER, Bearing		1
9	NAS1103-2		. BOLT.		6
10	AN960-10L		. WASHER.		6
11	69-45169-1		. RETAINER, Bearing		2
12	NAS514P1032-8		. BOLT.		3
13	69-45161-1		. RETAINER, Bearing		1
14	MS21209F1-20		. INSERT.		12
15	BACN10JC7		. NUT (replaces NAS679A7)		1
16	AN960-716		. WASHER.		1
17	BACB10A518H		. Deleted		
17	S7KDD		. BEARING, V21335	a	1
17	S7KDDFS160		. BEARING, V21335	b	1
18	69-45162-1		. SPACER.		1
19	BACB10A518H		. Deleted		
19	S7KDD		. BEARING, V21335	a	4
19	S7KDDFS160		. BEARING, V21335	b	4
20	BACB10A131H		. Deleted		
20	104KSFF		. BEARING, V38443	a	1
20	9104KDDFS160		. BEARING, V21335	b	1
21	65-55733-1		. Deleted		
21	65-55733-3		. GEAR, Output.		1
22	69-44625-1		. GEAR, Idler		1
23	69-44666-1		. GEAR, Idler		2
24	69-45141-1		. SHAFT, Gear		1
25	65-55736-1		. GEAR, Intermediate.		1
26	69-44626-1		. SHAFT, Geared input		1
27	BACB10A131H		. Deleted		
27	104KSFF		. BEARING, V38443	a	1
27	9104KDDFS160		. BEARING, V21335	b	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
2-					
28	BACB10A518H		. Deleted		
28	S7KDD		. BEARING, V21335	a	3
28	S7KDDFS160		. BEARING, V21335	b	3
29	65-55734-1		. HOUSING		1

a used on 65-58116-3
b used on 65-58116-4

VENDOR CODE

Code	Name and Address
V21335	Textron Inc. Fafnir Bearing Company Division 37 Booth Street New Britain, Connecticut 06050
V38443	Marlin-Rockwell Co. 402 Chandler Street Jamestown, New York 14701