STANDARD OVERHAUL PRACTICES MANUAL

LUBRICATION

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STANDARD OVERHAUL PRACTICES MANUAL

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To: All holders of LUBRICATION 20-50-07.

Attached is the current revision to this STANDARD OVERHAUL PRACTICES MANUAL

The STANDARD OVERHAUL PRACTICES MANUAL is furnished either as a printed manual, on microfilm, or digital products, or any combination of the three. This revision replaces all previous microfilm cartridges or digital products. All microfilm and digital products are reissued with all obsolete data deleted and all updated pages added.

For printed manuals, changes are indicated on the List of Effective Pages (LEP). The pages which are revised will be identified on the LEP by an R (Revised), A (Added), O (Overflow, i.e. changes to the document structure and/or page layout), or D (Deleted). Each page in the LEP is identified by Chapter-Section-Subject number, page number and page date.

Pages replaced or made obsolete by this revision should be removed and destroyed.

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Location of Change	Description of Change
	NO HIGHLIGHTS

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A = Added, R = Revised, D = Deleted, O = Overflow

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All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

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Revision		Filed	
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INTRODUCTION

1. General

A. The instructions in this manual tell how to do standard shop procedures during maintenance functions from simple checks and replacement to complete shop-type repair.

B. This manual is divided into separate sections:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) Effective Pages

(5) Contents

(6) Revision Record

(7) Record of Temporary Revisions

(8) Introduction

(9) Procedures

C. Refer to SOPM 20-00-00 for a definition of standard industry practices, vendor names and addresses, and an explanation of the True Position Dimensioning symbols used.

D. The data is general. It is not about all situations or specific installations. Use it as a guide to help you write minimum standards.

E. If the component overhaul instructions are different from the data in this subject, use the component overhaul instructions.

LUBRICATION

1. INTRODUCTION

A. The data in this subject comes from Boeing Process Specification BAC5008. The airline has a copy of the Boeing Process Specification Manual.

B. The data is general. It is not about all situations or specific installations. Use it as a guide to help you write minimum standards.

C. Refer to SOPM 20-00-00 for a list of all the vendor names and addresses.

2. MATERIALS

A. Solvents (SOPM 20-60-01)

(1) Dry Cleaning or Stoddard – P-D-680

(2) Kerosene – VV-K-211

(3) General Purpose Cleaning – Aliphatic naphtha TT-N-95

(4) Presealing Cleaning – BMS 11-7

(5) 1, 1, 1 - Trichloroethane (Methyl Chloroform) – MIL-T-81533

(6) Freon TF

B. Oils and Greases (SOPM 20-60-03)

C. Anti-Seize Thread Compounds (SOPM 20-60-03)

(1) BMS 3-28 (Replaces AMS 3080 and TT-A-580)

(2) Graphite - Petrolatum base – MIL-T-5544

(3) Molybdenum-Disulfide base – MIL-T-83483

(4) Never-Seez Pure Nickel Special (replaces Ease-Off 990 and Fel-Pro C-200)

D. Miscellaneous Materials

(1) Soft bristle brushes

(2) Paper wipers

(3) Cloth wipers

3. PART PREPARATION

WARNING: SOME OF THE MATERIALS USED IN THIS PROCEDURE ARE TOXIC AND FLAMMABLE. DO NOT BREATHE VAPORS OR GET THE MATERIALS ON YOUR SKIN. REFER TO INDUSTRIAL HYGIENE/SAFETY/FIRE ORGANIZATIONS FOR SAFE OPERATION.

A. Examine ferrous parts for remaining magnetism before you clean them for lubrication. Demagnetize the parts if they have more than 3 oersteds (2 gauss) of magnetism.

B. Clean bearings, bearing surfaces (such as splines, gears, cams, chains, shafts) and all adjacent surfaces before lubrication. Clean with clear, grit-free solvents.

C. Clean adjacent surfaces with a vacuum or solvent.

D. Clean antifriction bearings per SOPM 20-30-01.

4. APPLICATION PROCEDURES

A. General

(1) Keep lubricants in tightly covered containers made of nonabsorbent material. Label all containers, guns, dispensers, etc. Be careful to keep dust or other unwanted matter out when containers are open.

(2) Visually examine all bearings and bearing surfaces to sure they are clean before you apply lubricant.

(3) During and after lubrication, give protection to all parts and assemblies from contamination by dirt, filings, or other unwanted matter.

(4) Apply all lubricants smoothly. Do not use too much. Do not lubricate parts which are supplied lubricated.

(5) Do not mix greases of different vendors of the same specification or of different specifications. Different vendors use different ingredients to make their product agree with the specification, which could cause problems if the products are mixed. Also, greases of different specifications could have very different chemical and physical properties.

(6) When you change greases, use these precautions:

(a) Remove all of the old grease from the bearing surfaces or internal cavities of the lubricated mechanism before you apply the new grease.

(b) If complete removal of the old grease is not possible or practical, slowly pump in the new grease until all of the old grease is out of the mechanism. This will usually replace approximately 90% of the old grease. This is also the same procedure as when you replace old grease with new grease of the same product.

B. Greases

(1) Antifriction bearings – Clean and lubricate per SOPM 20-30-01.

(2) Plain spherical bearings (without teflon or other self-lubricating liners) – Lubricate the bearing bore and spherical surfaces immediately before pin or bolt installation.

(3) Universals – Fill to one-third capacity immediately before installation of the grease boot.

(4) Gearboxes – Fill to one-third capacity unless the overhaul instructions specify are different. If "butter lubricate" is specified, apply a thin layer of grease to the contact surfaces of the gear teeth.

(5) Actuating screws – Lubricate with a thin layer coat of grease. Operate the mechanism through two cycles and then wipe off unwanted lubricant collected by the nut.

(6) Flexible shafts, tachometer shafts – Wipe the shafts dry with a dry cloth to remove dirt, sand, shavings, etc. Then apply a thin layer of grease.

(7) Chains, sprockets, pinned joints, latches, hinges, splines, etc. – Apply a thin layer of grease immediately before assembly.

(8) Control cables (carbon steel only, not CRES) – Use BMS 3-24 or Aeroshell 16 grease only and apply as follows:

(a) Wipe the full length of the cable with a clean, dry cloth to remove unwanted matter. Do not solvent degrease or use a cloth wet with solvent.

(b) After swaging (SOPM 20-50-16), apply grease to the full length of the cable, but not clad areas, with a minimum quantity of grease sufficient only to put a continuous, thin visible ribbon of grease in the cable grooves. A smooth fillet of grease must cover the line of contact between adjacent wires. Apply the grease by hand or applicator. Do not thin the grease with heat or solvents.

(c) To make sure there is sufficient grease on the cable, locally touch a clean paper wiper to the cable and then look for grease on the wiper. Do not slide the wiper along the cable. You can also examine the cable directly with magnification (5 to 10X) when there is sufficient grease remaining to make its typical color visible.

(d) If the cable gets contamination during overhaul operations, wipe off the unwanted matter with a clean dry cloth. Then immediately reapply the grease again.

(9) Fasteners – Apply BMS 3-24 grease to all mating surfaces and the fasteners before you install removable fasteners.

C. Oils

(1) Universal joints – Lubricate exposed universals with a brush or squirt can.

(2) Chains, sprockets, pinned joints, latches, hinges, splines, etc. – Dip in, brush on, or use squirt can to apply lubricant to the parts.

(3) Leather oil seals – Soak the seals for a minimum of 24 hours at room temperature (approximately 70°F or 20°C) in the specified oil, before assembly. Use a cone to install leather seals on all shafts, with or without chamfered ends.

(4) Gearboxes – Fill to the level specified by the overhaul instructions.

(5) Sintered metal bearings – Lubricate the bearings and mating shaft surfaces with a thin layer of oil at assembly.

(6) Instrument bearings (that are not sealed) – Apply a thin layer of oil.

CAUTION: COMPONENTS OR SYSTEMS THAT USE BMS 3-11 HYDRAULIC FLUID MUST USE ONLY THOSE LUBRICANTS APPROVED TO BE USED WITH BMS 3-11 HYDRAULIC FLUID.

(7) During assembly of components or subassemblies, apply a thin layer of the specified hydraulic fluid or lubricant of the system in which the components will be installed, or an approved lubricant for that system, unless the overhaul instructions tell you to install the parts without lubrication.

D. Antiseize Thread Compounds

(1) You can use MIL-T-5544, MIL-T-83483, and BMS 3-28 compounds, but use only BMS 3-28 if the compound could touch aluminum or magnesium parts. You can use MIL-T-5544, MIL-T-83483, and BMS 3-28 on titanium alloys at all temperatures up to maximums of 1000°F, 700°F, and 350°F, respectively.

(a) Put a small amount of the compound on the bristles of a small brush.

(b) Apply a thin layer of the compound to the end threads of the male fittings.

(2) Bostik Never-Seez Pure Nickel Special replaces Ease-Off 990 and Fel-Pro C-200, because Ease-Off 990 and Fel-Pro C-200 contain lead which could cause liquid metal embrittlement in nickel base alloys. You can use Never-Seez Pure Nickel Special up to 1400°F, and you can use it on and near titanium. You can apply this compound to individual parts at the time of installation and then let it cure at the operating temperature of the assembly.

(a) To prepare individual coated parts for storage, first heat the parts to 140-200°F. Then use a brush to apply Never-Seez Pure Nickel Special. After coating, heat the parts to 550°F, hold at this temperature for 30 minutes, then let the parts cool.

(b) To prepare coated parts that will be assembled before storage, apply a layer of the antiseize compound to the mating surfaces, assemble them, tighten them by the overhaul instructions, then put them away without more treatment. Do not clean or preserve the prepared parts with petroleum compounds.