TO: ALL HOLDERS OF CF6-80C THRUST REVERSER COWL OPENING SYSTEM
AUXILIARY RESERVOIR ASSEMBLY COMPONENT MAINTENANCE MANUAL 78-31-09

REVISION NO. 4 DATED SEP 01/94

HIGHLIGHTS

Pages which have been added or revised are outlined below together with the highlights of the revision. Remove and insert the affected pages as listed and enter Revision No. and date on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
1004	Changed Figure 1 to show correct O-ring shape and item number.
1005	Changed quantity of part number S30662-0218N99 from 2 to 1 and nomenclature in IPL.

CF6-80C T/R COWL OPENING SYSTEM
AUXILIARY RESERVOIR ASSEMBLY

PART NUMBER 315U2027-1

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

REVISION RECORD

- Retain this record in front of manual. On receipt of revision, insert revised pages in the manual, and enter revision number, date inserted and initial.

REVISION NUMBER	REVISION DATE	DATE FILED	BY	REVISION NUMBER	REVISION DATE	DATE FILED	BY

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
767-78-0029		PRR B11709-1R	JAN 01/92

PAGE	DATE	CODE
78-31-09		
TITLE PAGE		
1	OCT 10/86	01
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REVISION RECORD		
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* = REVISED, ADDED OR DELETED

COMPONENT
MAINTENANCE MANUAL

TABLE OF CONTENTS

*[1] Special instructions not required. Use standard industry practices.

INTRODUCTION

The instructions in this manual provide the information necessary to perform maintenance functions ranging from simple checks and replacement to complete shop-type repair.

This manual is divided into separate sections:

1. Title Page
2. Record of Revisions
3. Temporary Revision & Service Bulletin Record
4. List of Effective Pages
5. Table of Contents
6. Introduction
7. Procedures & IPL Sections

Refer to the Table of Contents for the page location of applicable sections.

The beginning of the REPAIR section includes a list of the separate repairs, and a list of applicable standard Boeing practices.

An explanation of the use of the Illustrated Parts List is provided in the Introduction to that section.

All weights and measurements used in the manual are in English units, unless otherwise stated. When metric equivalents are given they will be in parentheses following the English units.

Design changes, optional parts, configuration differences and Service Bulletin modifications create alternate part numbers. These are identified in the Illustrated Parts List (IPL) by adding an alphabetical character to the basic item number. The resulting item number is called an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless otherwise indicated.

Verification:

Disassembly
Assembly

CF6-80C THRUST REVERSER COWL OPENING SYSTEM AUXILIARY RESERVOIR ASSEMBLY

DESCRIPTION AND OPERATION

1. Description

   A. The auxiliary reservoir assembly is composed of a cylindrical reservoir, a piston, two end caps and associated components.

2. Operation

   A. The reservoir provides hydraulic fluid to the cowl opening actuators in the event the cowl is opened without the aid of a hydraulic pump. The reservoir also restricts the flow, allowing the cowl to close at a constant rate.

3. Leading Particulars (approximate)

   Length -- 10 inches
   Diameter -- 2 inches

TESTING AND TROUBLE SHOOTING

1. Functional Test

   A. Prior to installation of end cap assembly (5) functional test with reservoir empty by applying an axial load of 8 pounds maximum on piston. Piston shall move smoothly over full stroke in each direction.

2. Proof Pressure Test

   A. Pressurize reservoir with oil at a fluid and ambient temperature of 60-120°F to a pressure of 5200-5300 psig for 3 minutes. Repeat pressure test at 5 psig for 3 minutes. There shall be no leakage, failure, or distortion of parts.

DISASSEMBLY

NOTE: See Testing and Trouble Shooting to establish the condition of the component or most probable cause of its malfunction. This is to determine the extent of disassembly required without completely tearing down and rebuilding the component.

1. Use standard industry practices to disassemble this component.

CHECK

1. Check all parts for obvious defects in accordance with standard industry practices.

2. Magnetic particle check per 20-20-01 -- spacer (10, IPL Fig. 1).

3. Penetrant check per 20-20-02 end cap assembly (5), cap (20), piston (40), and reservoir (45).

REPAIR - GENERAL

1. Content

   A. Repair, refinish, and replacement procedures are included in separate repair sections as follows:

P/N	NAME	REPAIR
W315T3806	END CAP ASSY	1-1
315U2026	RESERVOIR	2-1
315U2027	RESERVOIR ASSY	3-1
---	MISC PARTS REFINISH	4-1

2. Standard Practices

   A. Refer to the following standard practices, as applicable, for details in individual procedures.

   20-30-03 General Cleaning Procedures
   20-41-02 Application of Chemical and Solvent Resistant Finishes
   20-43-01 Chromic Acid Anodizing
   20-50-02 Installation of Safetying Devices
   20-50-03 Bearing Installation and Retention
   20-50-05 Application of Aluminum Foil and Other Markers
   20-50-06 Installation of O-Rings and Teflon Seals
   20-50-12 Application of Adhesives

3. Materials

   A. Adhesive -- BMS 5-126 (Ref 20-60-04)

   B. Enamel -- BMS 10-11, type 2 (Ref 20-60-02)

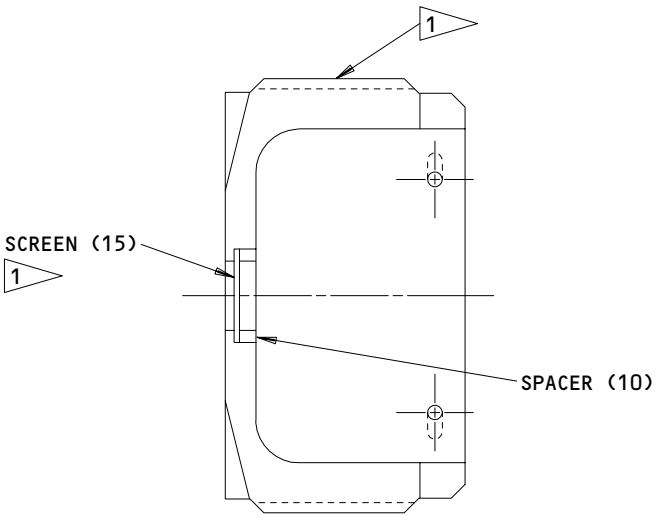
   C. Primer -- BMS 10-11, type 1 (Ref 20-60-02)

   D. Sealant -- BMS 5-95 (Ref 20-60-04)

END CAP ASSEMBLY - REPAIR 1-1

W315T3806-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, Fig. 601.



REFINISH

CHROMIC ACID ANODIZE AND APPLY
ONE COAT BMS 10-11, TYPE 1
PRIMER TO EXTERIOR ONLY.

MATERIAL: AL ALLOY

ITEM NUMBERS REFER TO FIG. 1

1 OMIT PRIMER FROM INDICATED SURFACES

W315T3806-1

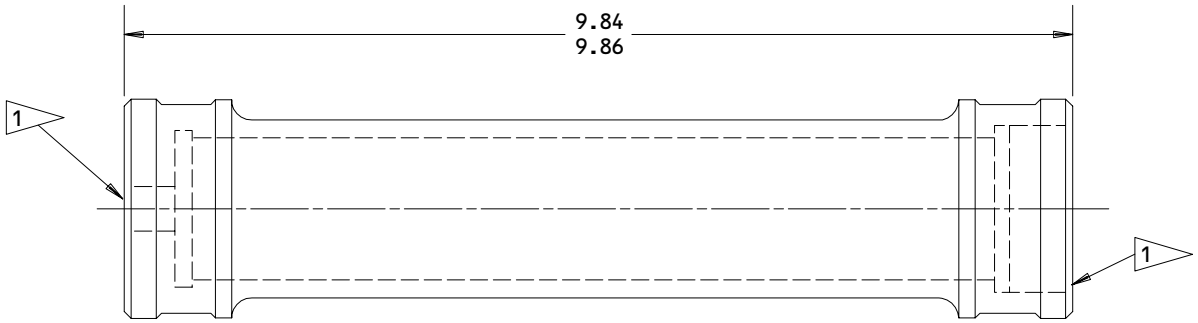
End Cap Assembly Refinish
Figure 601

231118

RESERVOIR - REPAIR 2-1

315U2026-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, Fig. 601.



REFINISH

CHROMIC ACID ANODIZE AND APPLY
ONE COAT BMS 10-11, TYPE 1
PRIMER TO EXTERIOR ONLY.

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

1 OMIT PRIMER FROM INDICATED SURFACES

315U2026-1

Reservoir Refinish
Figure 601

231119

RESERVOIR ASSEMBLY - REPAIR 3-1

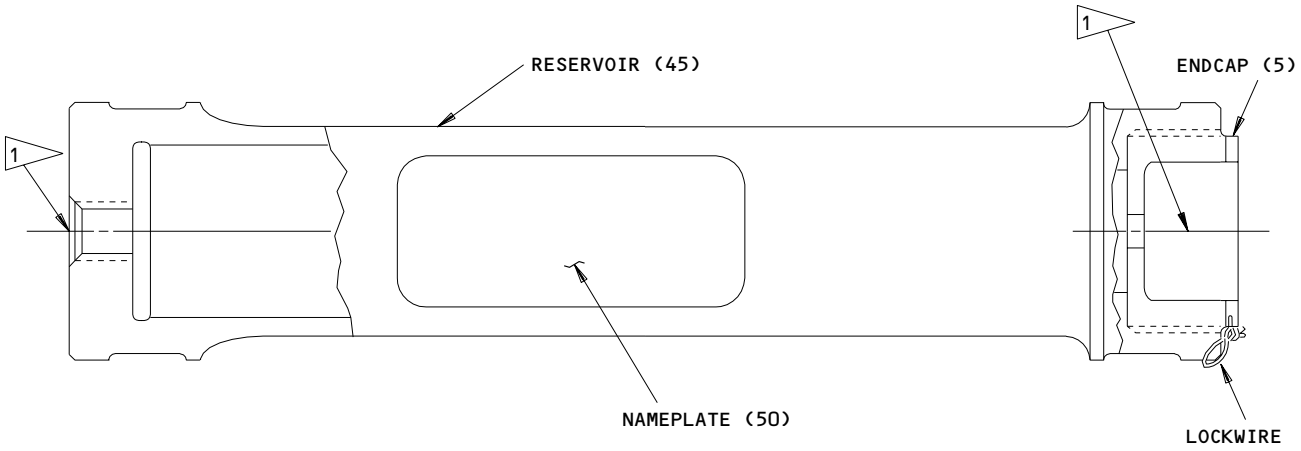
315U2027-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may require only restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Nameplate Replacement (IPL Fig. 1)

   A. Remove nameplate (50) prior to Refinish (Fig. 601).

   B. After Refinish apply nameplate (50) per 20-50-05 and bond per 20-50-12, type 38.



REFINISH

APPLY ONE COAT BMS 10-11, TYPE 1 PRIMER AND ONE COAT BMS 10-11, TYPE 2 ENAMEL COLOR BAC 702 WHITE TO EXTERIOR SURFACES ONLY. DO NOT PAINT THREADS OR ORIFICES INDICATED BY 1.

1 DO NOT PAINT THIS SURFACE

ITEM NUMBERS REFER TO FIG. 1

315U2027-1

Nameplate Replacement
Figure 601

231124

MISCELLANEOUS PARTS REFINISH - REPAIR 4-1

1. Repair of parts listed in Fig. 601 consists of restoration of original finish.

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Spacer (10)	15-5PH CRES 150-170 ksi	Passivate (F-17.09)
Cap (20), piston (40)	Al alloy	Chromic acid anodize per 20-43-01 (F-17.02)

Refinish Details
Figure 601

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

A. Lubricant -- MIL-L-7870

B. Lockwire -- MS20995C32

C. Sealant -- BMS 5-95 (Ref 20-60-03)

2. Assembly

A. Use standard industry practices for assembly of this component in addition to the following procedures:

(1) Lubricate seals with engine lubricating oil MIL-L-7870 and install per 20-50-06.

(2) Apply BMS 5-95 sealant to threads of end cap assembly (5) and torque to 1200-1300 pound-inches.

(3) Lockwire per 20-50-02 using the double twist method.

FITS AND CLEARANCES

ITEM NO. FIG. 1	NAME	TORQUE	
		POUND-INCHES	POUND-FEET
5	End cap assy	1200-1300	

Torque Table
Figure 801

ILLUSTRATED PARTS LIST

1. This section lists and illustrates replaceable or repairable component parts. The Illustrated Parts Catalog contains a complete explanation of the Boeing part numbering system.

2. Indentures show parts relationships as follows:

    Assembly
      Detail Parts for Assembly
      Subassembly
      Attaching Parts for Subassembly
        Detail Parts for Subassembly

    Detail Installation Parts (Included only if installation parts may be returned to shop as part of assembly)

3. One use code letter (A, B, C, etc.) is assigned in the EFF CODE column for each variation of top assembly. All listed parts are used on all top assemblies except when limitations are shown by use code letter opposite individual part entries.

4. Letter suffixes (alpha-variants) are added to item numbers for optional parts, Service Bulletin modification parts, configuration differences (Except left- and right-hand parts), product improvement parts, and parts added between two sequential item numbers. The alpha-variant is not shown on illustrations when appearance and location of all variants of the part is the same.

5. Service Bulletin modifications are shown by the notations PRE SB XXXX and POST SB XXXX.

    A. When a new top assembly part number is assigned by Service Bulletin, the notations appear at the top assembly level only. The configuration differences at detail part level are then shown by use code letter.

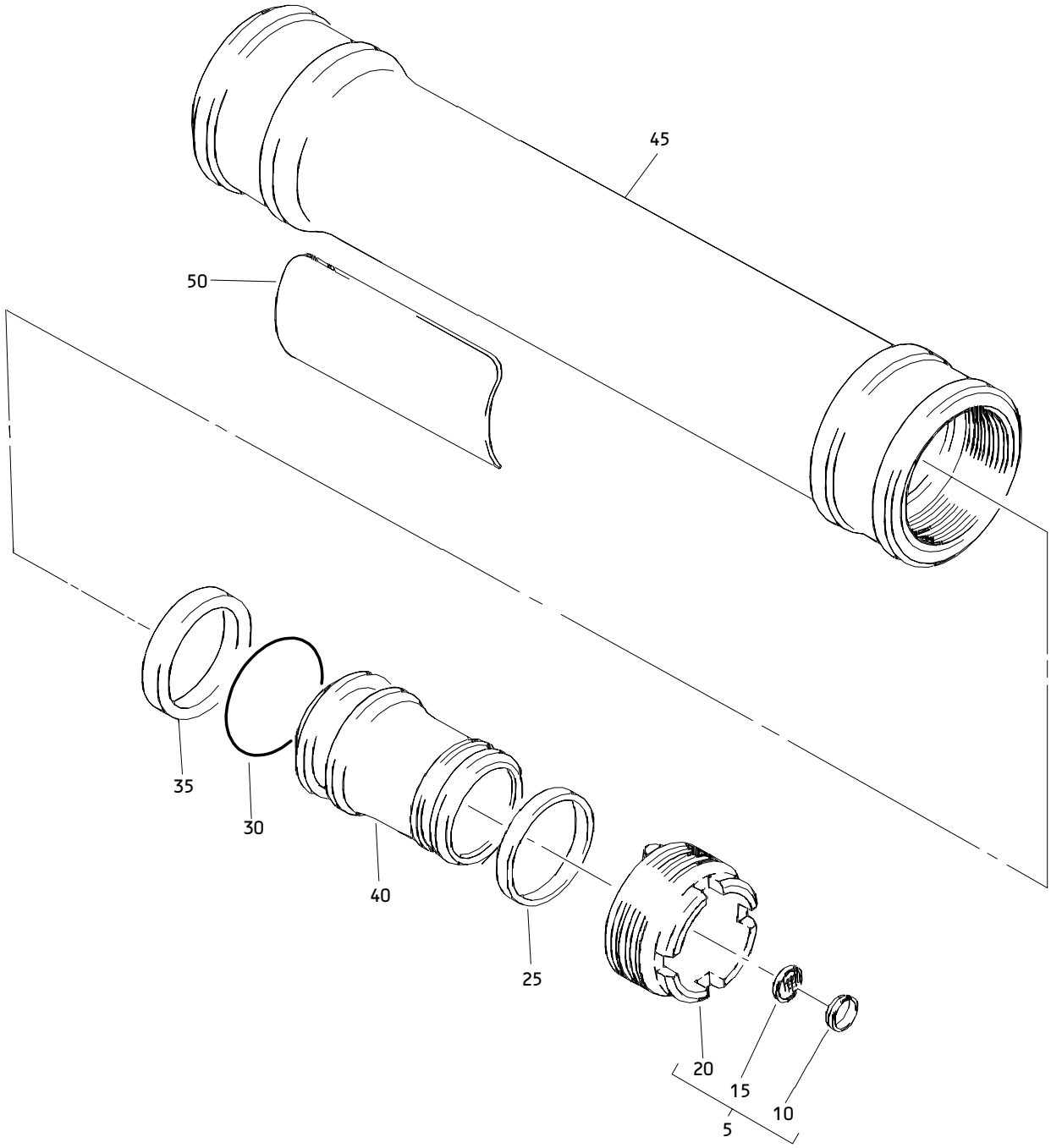
    B. When the top assembly part number is not changed by the Service Bulletin, the notations appear at the detail part level.

6. Parts Interchangeability

Optional (OPT)	The parts are optional to and interchangeable with other parts having the same item number.
Supersedes, Superseded By (SUPSDS, SUPSD BY)	The part supersedes and is not interchangeable with the original part.
Replaces, Replaced By (REPLS, REPLD BY)	The part replaces and is interchangeable with, or is an alternate to, the original part.

VENDORS

10989 MECTRON INDUSTRIES INCORPORATED SUB OF PALL CORP
330 TURNBULL CANYON ROAD PO BOX 3391
CITY OF INDUSTRY, CALIFORNIA 91745



CF6-80C Thrust Reverser Cowl Opening System Auxiliary Reservoir Assembly
Figure 1

U10682

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	315U2027-1		RESERVOIR ASSY-CF6-80C THRUST REVERSER COWL OPENING SYS AUX (PRE SB 767-78-0029)		RF
5	W315T3806-1		.CAP ASSY-END		1
10	W315T3809-2		..SPACER		1
15	20001-400-200		..SCREEN- (V10989)		1
20	W315T3806-2		..CAP		1
25	W315T3810-1		.BEARING-PISTON		1
30	M25988-1-218		.SEAL-O-RING		1
35	S30662-0218N99		.SEAL		1
40	W315T3804-2		.PISTON		1
45	315U2026-1		.RESERVOIR		1
50	BAC27TPP0291		.NAMEPLATE		1