COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

FLOW CONTROL TEE ASSEMBLY

PART NUMBER 315A1802–1, –2, –4

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COMPONENT MAINTENANCE MANUAL

Revision No. 11
Jul 01/2009

To: All holders of FLOW CONTROL TEE ASSEMBLY 78-34-03.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

The COMPONENT MAINTENANCE 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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TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
737-78A1055		PRR 35090	OCT 01/92
767-78A0064			JAN 01/93
767-78A0065			JAN 01/93
757-78A0029			APR 01/93

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.

Revision		Filed	
Number	Date	Date	Initials

Revision		Filed	
Number	Date	Date	Initials

Revision		Filed		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

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When the temporary revision is incorporated or cancelled, and the pages are removed, enter the date the pages are removed and the initials of the person who removed the temporary revision.

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

INTRODUCTION

1. General

A. The instructions in this manual supply the data necessary to do the maintenance functions together with the test, fault isolation, repair, and replacement of the defective parts.

B. This manual is divided into different parts:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) List of Effective Pages

(5) Table of Contents

(6) Temporary Revision & Service Bulletin Record

(7) Record of Revisions

(8) Record of Temporary Revisions

(9) Introduction

(10) Procedures & IPL Sections

C. Components that can be repaired have a different repair number for each specified repair. To find the repair number location of a component, look in the Repair-General procedure at the beginning of the REPAIR section. The Repair-General procedure also has an explanation of the True Position Dimension symbols used.

D. All dimensions, measures, quantities and weights included are in English units. When metric equivalents are given they will be in the parentheses that follow the English units.

E. The introduction to the Illustrated Parts List (IPL) shows how the IPL data is used.

F. Design changes, optional parts, configuration differences and Service Bulletin modifications may cause different part numbers. These part numbers are identified in the IPL with an alphabetical letter which is added to the end of the basic item number. This new item number is referred to as an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless shown differently.

G. The tool reference numbers found in the individual procedures and in the Special Tools, Fixtures, and Equipment section are used to identify if a tool is a standard tool (STD-XXXX), a commercial tool (COM-XXXX), or a Special Tool (SPL-XXXX). This reference number is also used to distinguish between tools with similar names in the same procedure. These reference numbers are for use in the documentation only. They are not to be used for ordering tools.

FLOW CONTROL TEE ASSEMBLY - DESCRIPTION AND OPERATION

1. **Description**

   A. The tee assembly consists of a tee housing, two poppets, two adapters, and a union.

2. **Operation**

   A. The tee assembly acts as a check-valve to control flow in the thrust reverser hydraulic system.

3. **Leading Particulars (Approximate)**

   A. Length – 6 inches

   B. Height – 4 inches

   C. Width – 1 inch

TESTING AND FAULT ISOLATION

1. General

A. This procedure has the data necessary to do a test of the mechanism after an overhaul or for fault isolation.

B. Refer to the Standard Overhaul Practice Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Refer to IPL Figure 1 for item numbers.

2. Equipment

NOTE: Equivalent substitutes can be used.

A. Tooling

CAUTION: DO NOT USE COMPRESSED AIR. DAMAGE TO EQUIPMENT MAY OCCUR.

(1) Test Fixture, see TESTING AND FAULT ISOLATION, Figure 101 for schematic.

3. Proof Pressure Test

A. Procedure

(1) Close the ball valves of the 90-degree port and the straight port to block the flow through the actuator ports.

(2) Apply 4500 psi hydraulic pressure to the inlet port for 2 minutes.

(3) Examine to make sure there are no external leaks, permanent damage, or loose parts.

4. Deploy Flow Test (TESTING AND FAULT ISOLATION, Figure 101)

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00153	Fluid - Hydraulic, Erosion Arresting, Fire Resistant	BMS3-11 Type IV (interchange˜ able & intermixable with Type V)

B. Procedure

(1) Close the ball valve to the 90-degree port.

(2) Set a flow of 8.0 ±0.03 gpm through the straight port.

(3) The pressure of gage G1 must equal 1500 ±100 psi.

(4) Record the differential pressure, P1, between gage G3 and gage G1 (P1 = G3 - G1) for the straight port. The differential pressure, P1, for the flow-control tee-assembly must be as follows:

Table 101:

Item number for flow-control tee-assembly (IPL, Fig. 1)	Differential pressure, P1 (psi)
1	340 to 460
1A	270 to 360

Item number for flow-control tee-assembly (IPL, Fig. 1)	Differential pressure, P1 (psi)
1B	400 to 500

(5) Open the ball valve of the 90-degree port.

(6) Close the ball valve of the straight port.

(7) Set a flow of 8.0 ±0.03 gpm through the 90-degree port.

(8) The pressure at gage G2 must equal 1500 ±100 psi.

(9) Record the differential pressure, P2, between gage G3 and gage G2 (P2 = G3 - G2) for 90-degree port. The differential pressure, P2, for the flow-control tee-assembly must be as follows:

Table 102:

Item number for flow-control tee-assembly (IPL, Fig. 1)	Differential pressure, P2 (psi)
1	340 to 460
1A	270 to 360
1B	400 to 500

(10) Replace the flow-control tee-assembly if the differential pressures, P1 and P2, are different from each other by more than 60 psi.

(11) Flush and not fully fill the unit with fluid, D00153 when the tests are done.

5. Stow Flow Test (TESTING AND FAULT ISOLATION, Figure 101)

A. Procedure

(1) Close the ball valve of the straight port.

(2) Set a flow of 4.0 ±0.03 gpm through the 90-degree port.

(3) The pressure at gage C3 must be less than 100 psi.

(4) Record the pressure, P3, at gage G2. The pressure, P3, for the flow-control tee-assembly must be as follows:

Table 103:

Item number for flow-control tee-assembly (IPL, Fig. 1)	Pressure, P3 (psi)
1	780 to 930
1A	590 to 740
1B	200 to 300

(5) Open the ball valve of the straight port.

(6) Close the ball valve of the 90-degree port.

(7) Set a flow of 4.0 ±0.03 gpm through the straight port.

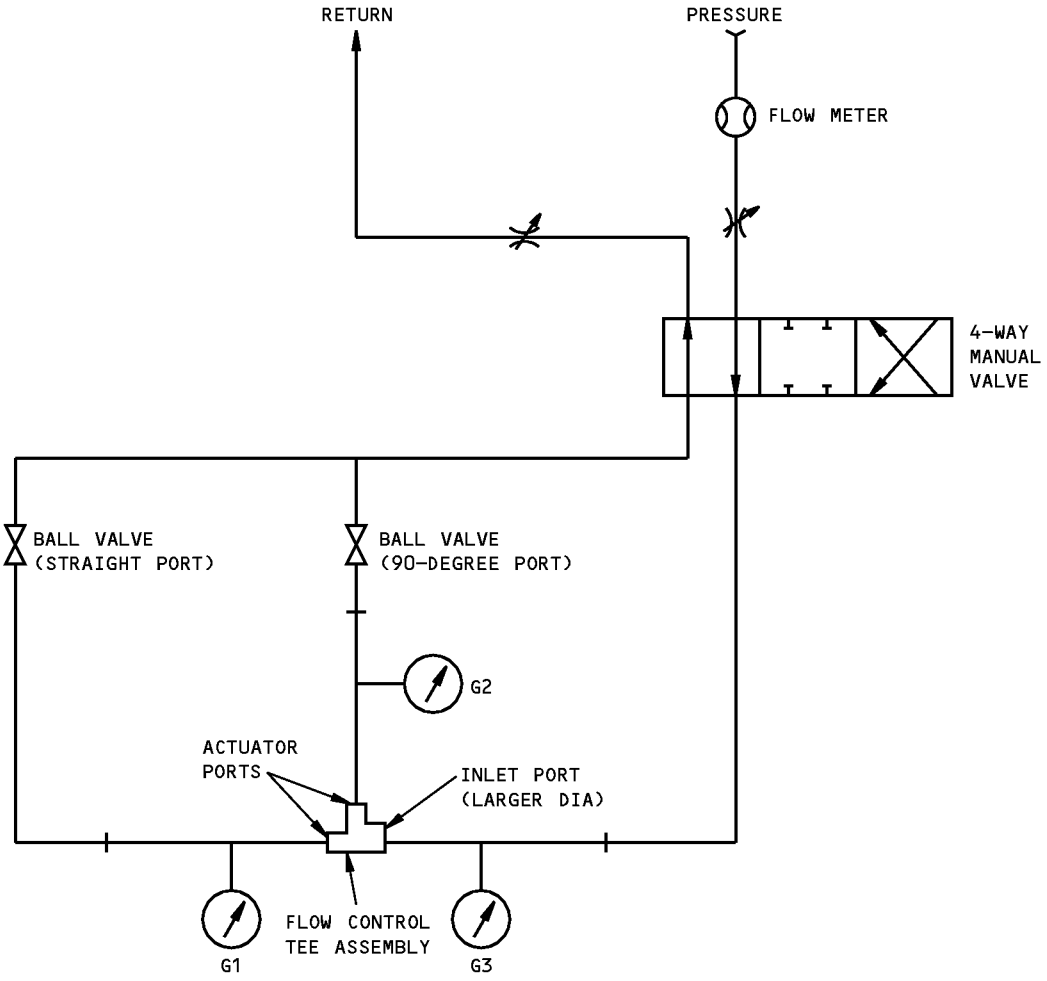
(8) The pressure at gage G2 must be less than 100 psi.

(9) Record the pressure, P4, at gage G1. The pressure, P4, for the flow-control tee-assembly must be as follows:

Table 104:

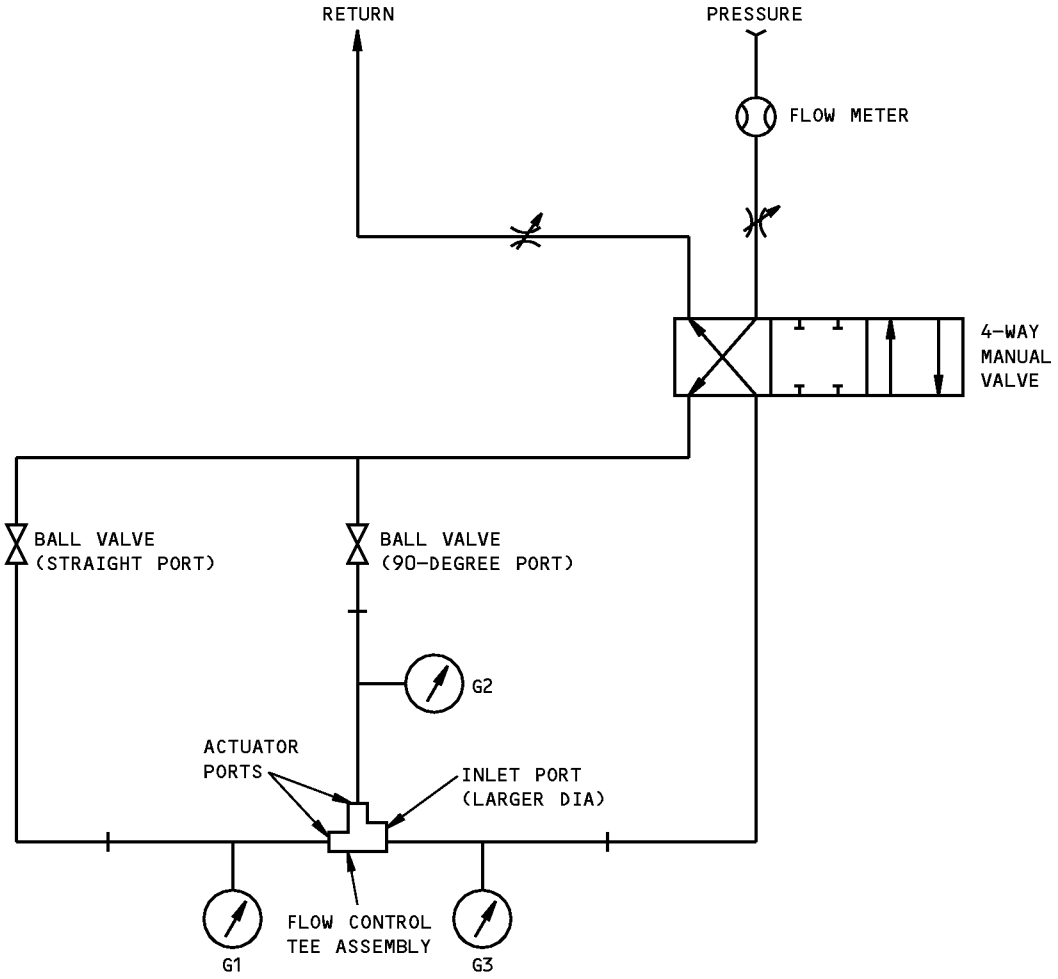
Item number for flow-control tee-assembly (IPL, Fig. 1)	Pressure, P4 (psi)
1	780 to 930
1A	590 to 740
1B	200 to 300

(10) Replace the flow-control tee-assembly if the differential pressures, P3 and P4, are different from each other by more than 80 psi.



DEPLOY FLOW

Test Setup
Figure 101 (Sheet 1 of 2)



Test Setup
Figure 101 (Sheet 2 of 2)

DISASSEMBLY

1. General

A. This procedure has the data to disassemble the flow control tee assembly.

B. Disassemble this component only as necessary to complete fault isolation, determine the serviceability of parts, perform required repairs, and restore the unit to serviceable condition.

2. Disassembly

A. Procedure

(1) Disassemble this component using standard industry practices.

(NOT APPLICABLE)

CHECK

1. General

A. This procedure has the data necessary to find defects in the material of the specified parts.

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Refer to IPL Figure 1 for item numbers.

2. Check

A. References

Reference	Title
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-20-02	PENETRANT METHODS OF INSPECTION

B. Procedure

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

(2) Magnetic particle check per SOPM 20-20-01 the following items:

(a) Tee (25)

(b) Poppet (20)

(3) Penetrant check per SOPM 20-20-02 the following items:

(a) Adapter (5)

REPAIR

1. **Content**

   A. Instructions for repair, refinish, and replacement of the specified subassembly parts are included in each repair when applicable:

Table 601:

P/N	NAME	REPAIR
315A1845	POPPET	1-1
BAC27DTR8	NAMEPLATE	2-1
BAC27DTR10	NAMEPLATE	2-1
- - - -	MISCELLANEOUS PARTS REFINISH	3-1

2. **Standard Practices**

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

      (1) SOPM 20-20-01 Magnetic Particle Inspection

      (2) SOPM 20-30-01 Cleaning and Lubing Antifriction Bearings

      (3) SOPM 20-30-03 General Cleaning Procedures

      (4) SOPM 20-50-05 Application of Aluminum Foil and Other Markers

      (5) SOPM 20-50-06 Installation of O-Rings and Teflon Seals

      (6) SOPM 20-50-12 Application of Adhesives

      (7) SOPM 20-60-02 Finishing Materials

3. **Materials**

   NOTE: Equivalent substitutes can be used.

   A. Sealant – sealant, A50071 Type 41 SOPM 20-60-02

POPPET - REPAIR 1-1

315A1845–3, –4

1. General

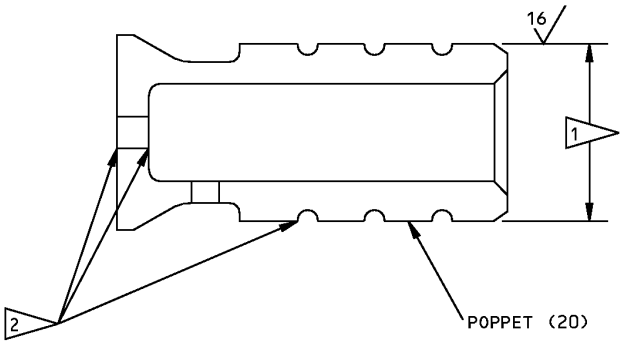
A. This repair gives the data that is necessary to repair and refinish the poppet.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

C. Refer to IPL Figure 1 for item numbers.

2. Refinish (REPAIR 1-1, Figure 601)

A. Repair consists of restoration of original finish. Refer to Refinish instructions, REPAIR 1-1, Figure 601.



REFINISH

1 GAS NITRIDE INDICATED DIAMETER 0.004–0.008 INCH DEEP, CASE HARDNESS RHN 93 MINIMUM CORE STRENGTH 150 KSI MIN. DO NOT NITRIDE CIRCUMFERENTIAL GROOVES.

2 CORNERS TO REMAIN SHARP. DEBURR BUT DO NOT BREAK EDGES.

REPAIR

REF 1 AND 2

125 ALL MACHINED SURFACES EXCEPT AS NOTED

MATERIAL: NITRALLOY 135

315A1845-3,-4 Poppet Repair and Refinish
Figure 601

NAMEPLATE - REPAIR 2-1

BAC27DTR8, BAC27DTR10

1. General

A. This repair gives the data that is necessary to repair and refinish the nameplate.

B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

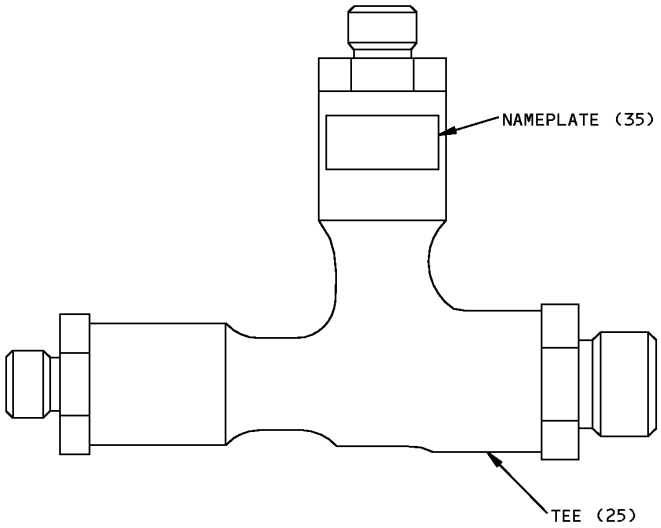
C. Refer to REPAIR-GENERAL, Paragraph 3. for the description of the Material codes identified in this procedure.

D. Refer to IPL Figure 1 for item numbers.

2. Nameplate Replacement

A. Install new nameplate (35) per REPAIR 2-1, Figure 601.

B. Bond nameplate (35) per SOPM 20-50-12, using sealant, A50071.



BAC27DTR8 BAC27DTR10 Nameplate Replacement
Figure 601

MISCELLANEOUS PARTS REFINISH - REPAIR 3-1

1. General

   A. This repair has the data that is necessary to refinish the parts which are not given in the specific repairs.

   B. Refer to REPAIR-GENERAL, Paragraph 2. for the Standard Overhaul Practices Manual (SOPM) subjects identified in this procedure.

   C. Refer to IPL Figure 1 item numbers.

2. Refinish

   A. Repair of parts listed in REPAIR 3-1, Table 601 consists of restoration of the original finish.

Table 601: Refinish Details

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Tee (25)	15-5PH CRES	Passivate (F-17.09)
Adapter (5)	303 CRES	Passivate (F-17.09)

ASSEMBLY

1. General

A. This procedure contains the data necessary to assemble the flow control tee assembly.

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

2. Assembly

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
D00153	Fluid - Hydraulic, Erosion Arresting, Fire Resistant	BMS3-11 Type IV (interchange˜able & intermixable with Type V)
D50097	Lubricant - Assembly, MSC352	

B. References

Reference	Title
SOPM 20-50-06	INSTALLATION OF O-RINGS AND TEFLON SEALS

C. Procedure

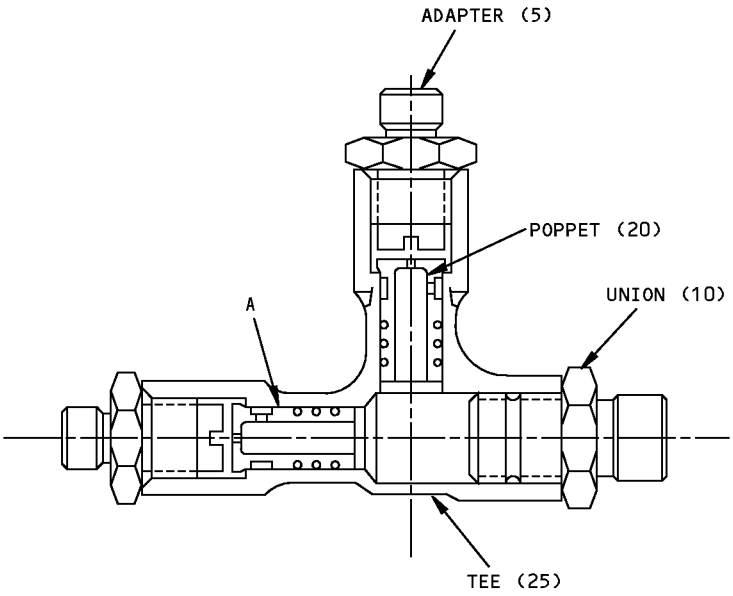
(1) Use standard industry practices and those listed below in order to assemble this component.

(a) Lightly lubricate O-rings at assembly with fluid, D00153 or lubricant, D50097 per SOPM 20-50-06.

(b) Install seals per SOPM 20-50-06.

FITS AND CLEARANCES

FITS AND CLEARANCES



Ref Letter Fig.801	Mating Item No. IPL Fig.1	Design Dimension				Service Wear Limit		
		Dimension		Assembly Clearance		Dimension		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
A	ID 25	0.5045	0.5055	0.0005	0.0025		0.5079	0.0039
	OD 20	0.5030	0.5040			0.5016		

*[1] NEGATIVE VALUES DENOTE INTERFERENCE FIT

ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801

(NOT APPLICABLE)

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ILLUSTRATED PARTS LIST

1. Introduction

A. The Illustrated Parts List (IPL) contains an illustration and a list of component parts you can repair or replace. The Illustrated Parts Catalog (IPC) shows how to use the Boeing part number system.

B. This shows how parts are related: The relation of each item to its next higher assembly (NHA) is shown in the NOMENCLATURE column. Use the indenture system that follows:

1 2 3 4 5 6 7

. Assembly

. Attaching parts for assembly

. . Detail parts for assembly

. . Subassembly

. . Attaching parts for subassembly

. . . Detail parts for subassembly

. . . Sub-subassembly

. . . Attaching parts for subassembly

. . . . . Details parts for sub-subassembly

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

C. Each top assembly is given one use code letter (A, B, C, etc.) in the USAGE CODE column. All subsequent component parts in the list can have one or more of the use code letters to show effectivity to top assemblies. A component part without a use code applies to all top assemblies.

D. An alphabetical letter is added after the item number for optional parts, parts changed by a Service Bulletin, configuration differences (except left-handed and right-handed parts), last engineering releases, and parts added between item numbers in a sequence. The alphabetical letter will not be shown on the illustration for equivalent parts of the same part number.

E. Color-coded parts are identified with a single digit alpha following the dash number or with ''SP'' suffix. If the ''SP'' suffix is used, it represents consolidation of all color codes applicable for a given usage which are not separately listed. Orders for color-coded parts should include the registry number of the airplane for which the parts are ordered.

F. If a part number is 15 characters long but will not fit in the part number column, the part number will be displayed with a ''~'' at the end of the line and will be continued on the next line. The ''~'' denotes that the part number continues on the next line.

G. Parts changed by a Service Bulletin are shown by PRE SB XXXX and POST SB XXXX added to the NOMENCLATURE column.

(1) When a new top assembly is added by a Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the top assembly level only. The configuration differences at the detail part level are shown by use code letters.

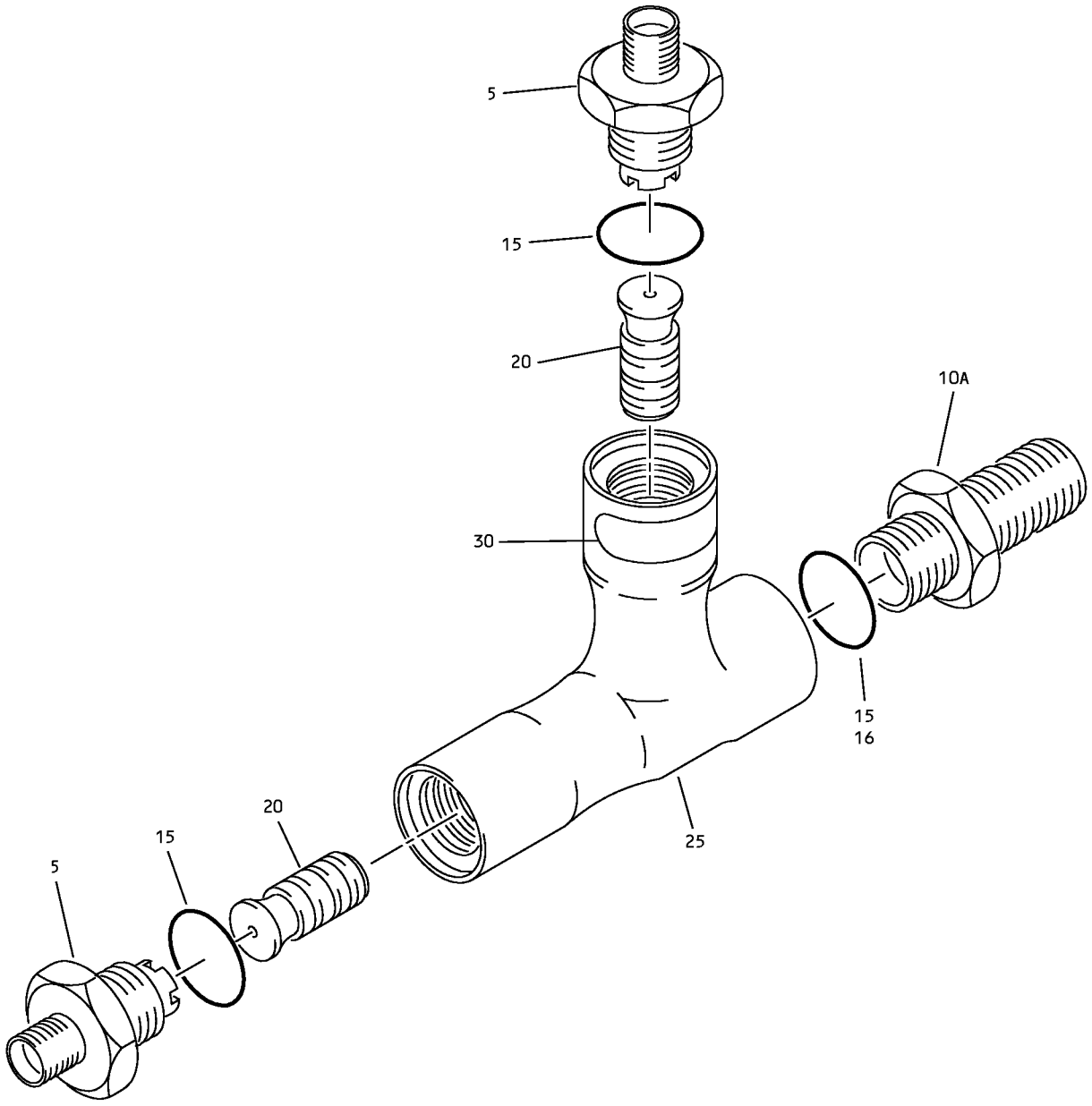
(2) When the top assembly part number is not changed by the Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the detail level.

H. Interchangeable Parts

Optional (OPT)	The part is optional to and interchangeable with other parts that have the same item number.
Replaces, Replaced by and not interchangeable with (REPLACES, REPLACED BY AND NOT INTCHG/W)	The part replaces and is not interchangeable with the initial part.
Replaces, Replaced by (REPLACES, REPLACED BY)	The part replaces and is interchangeable with, or is an alternative to, the initial part.

NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
315A1802-1		1	1	RF
315A1802-2		1	1A	RF
315A1802-4		1	1B	RF
315A1830-1		1	25	1
315A1830-2		1	25A	1
315A1845-3		1	20	2
315A1845-4		1	20A	2
315A1845-6		1	20B	2
315A1855-1		1	5	2
BAC27DTR0010-1		1	30	1
BAC27DTR0010-2		1	30A	1
BAC27DTR0010-4		1	30B	1
MS21902J10		1	10B	1
MS21924-8		1	10A	1
NAS1612-10		1	16	1
NAS1612-8		1	15	2
		1	15A	3



Flow Control Tee Assembly
IPL Figure 1

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1	315A1802-1		FLOW CONTROL TEE ASSY	A	RF
–1A	315A1802-2		FLOW CONTROL TEE ASSY	B	RF
–1B	315A1802-4		FLOW CONTROL TEE ASSY (PRE ALERT SB 767-78A0064) (PRE ALERT SB 767-78A0065)	C	RF
5	315A1855-1		. ADAPTER		2
10	MS21924-10		DELETED		
10A	MS21924-8		. UNION	B, C	1
–10B	MS21902J10		. UNION	A	1
15	NAS1612-8		. O-RING	A	2
–15A	NAS1612-8		. O-RING	B, C	3
16	NAS1612-10		. O-RING	A	1
20	315A1845-3		. POPPET (PRE ALERT SB 737-78A1055)	A	2
–20A	315A1845-4		. POPPET (PRE ALERT SB 757-78A0029)	B	2
–20B	315A1845-6		. POPPET	C	2
25	315A1830-1		. TEE (PRE ALERT SB 737-78A0055) (REWORKED BY SERVICE BULLETIN. NO EQUIVALENT PART NUMBER REPLACEMENT. AFTER REWORK, THE METALCAL MARKER IS REMOVED BUT THE STAMPED NUMBER IS LEFT IN PLACE)	A	1
–25A	315A1830-2		. TEE (PRE ALERT SB 757-78A0029) (REWORKED BY SERVICE BULLETIN. NO EQUIVALENT PART NUMBER REPLACEMENT. AFTER REWORK, THE METALCAL MARKER IS REMOVED BUT THE STAMPED NUMBER IS LEFT IN PLACE)	B, C	1
30	BAC27DTR0010-1		. NAMEPLATE (PRE ALERT SB 737-78A0055)	A	1
–30A	BAC27DTR0010-2		. NAMEPLATE (PRE ALERT SB 757-78A0029)	B	1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–30B	BAC27DTR0010-4		. NAMEPLATE	C	1

–Item not Illustrated