TO: ALL HOLDERS OF FLOW CONTROL TEE ASSEMBLY COMPONENT MAINTENANCE MANUAL, 78-34-03

REVISION NO. 7 DATED APR 01/93

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
TR & SB RECORD	Incorporated Service Bulletin 757-78A0029 which called attention to the rework of the poppet.
1	
1003	

FLOW CONTROL TEE ASSEMBLY

PART NUMBER 315A1802-1,-2,-4

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

BOEING
COMPONENT
MAINTENANCE MANUAL

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
737-78A1055		PRR 35090	OCT 01/92
767-78A0064			JAN 01/93
767-78A0065			JAN 01/93
757-78A0029			APR 01/93

PAGE	DATE	CODE
78-34-03		
TITLE PAGE		
1	APR 10/86	01
2	BLANK	
REVISION RECORD		
1	APR 10/86	01
2	BLANK	
TR & SB RECORD		
*1	APR 01/93	01.1
2	BLANK	
LIST OF EFFECTIVE PAGES		
*1	APR 01/93	01
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1	JUL 01/91	01.1
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802	BLANK	
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1001	APR 10/86	01
1002	OCT 01/92	01.1
*1003	APR 01/93	01.1
1004	BLANK	

* = REVISED, ADDED OR DELETED

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*[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. An asterisked flagnote *[ ] in place of the page number indicates that no special instructions are provided since the function can be performed using standard industry practices.

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.

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)

   Length -- 6 inches
   Height -- 4 inches
   Width -- 1 inch

TESTING AND TROUBLE SHOOTING

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

1. Equipment

NOTE: Equivalent substitutes can be used.

A. Use BMS 3-11, type IV, hydraulic fluid. Fluid temperature must be 60 to 140°F. Ambient temperature must be 60 to 120°F.

B. Test Fixture, see Fig. 101 for schematic.

2. Proof Pressure Test

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

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

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

3. Deploy Flow Test (Fig. 101 and IPL Fig. 1)

A. Close the ball valve to the 90-degree port.

B. Set a flow of 8.0 ±0.03 gpm through the straight port.

C. The pressure of gage G1 must equal 1500 ±100 psi.

D. 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:

Item number for flow-control tee-assembly (IPL, Fig. 1)	Differential pressure, P1 (psi)
1	340 to 460
1A	270 to 360
1B	400 to 500

E. Open the ball valve of the 90-degree port.

F. Close the ball valve of the straight port.

G. Set a flow of 8.0 ±0.03 gpm through the 90-degree port.

H. The pressure at gage G2 must equal 1500 ±100 psi.

I. 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:

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

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

K. Flush and not fully fill the unit with BMS 3-11, type IV, hydraulic fluid when the tests are done.

4. Stow Flow Test (Fig. 101 and IPL Fig. 1)

A. Close the ball valve of the straight port.

B. Set a flow of 4.0 ±0.03 gpm through the 90-degree port.

C. The pressure at gage C3 must be less than 100 psi.

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

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

E. Open the ball valve of the straight port.

F. Close the ball valve of the 90-degree port.

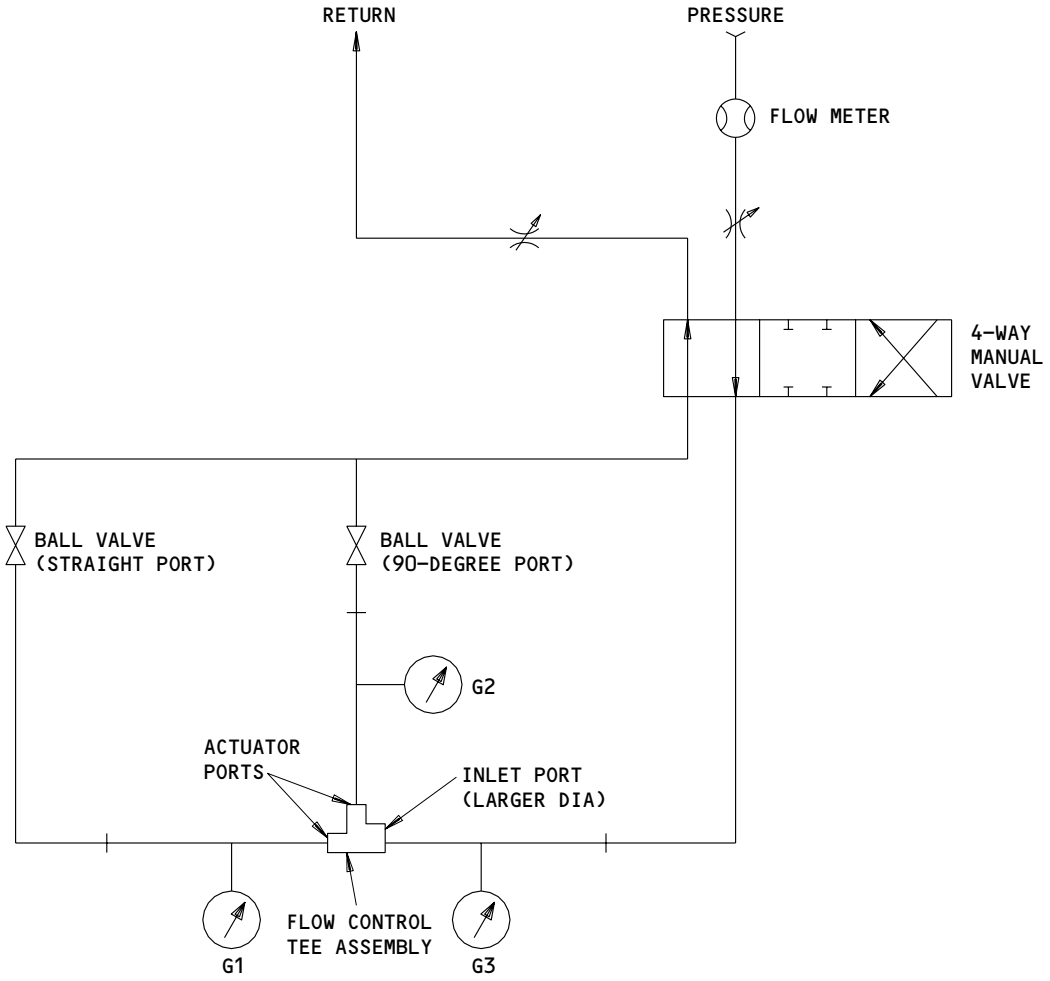
G. Set a flow of 4.0 ±0.03 gpm through the straight port.

H. The pressure at gage G2 must be less than 100 psi.

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

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

J. 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)

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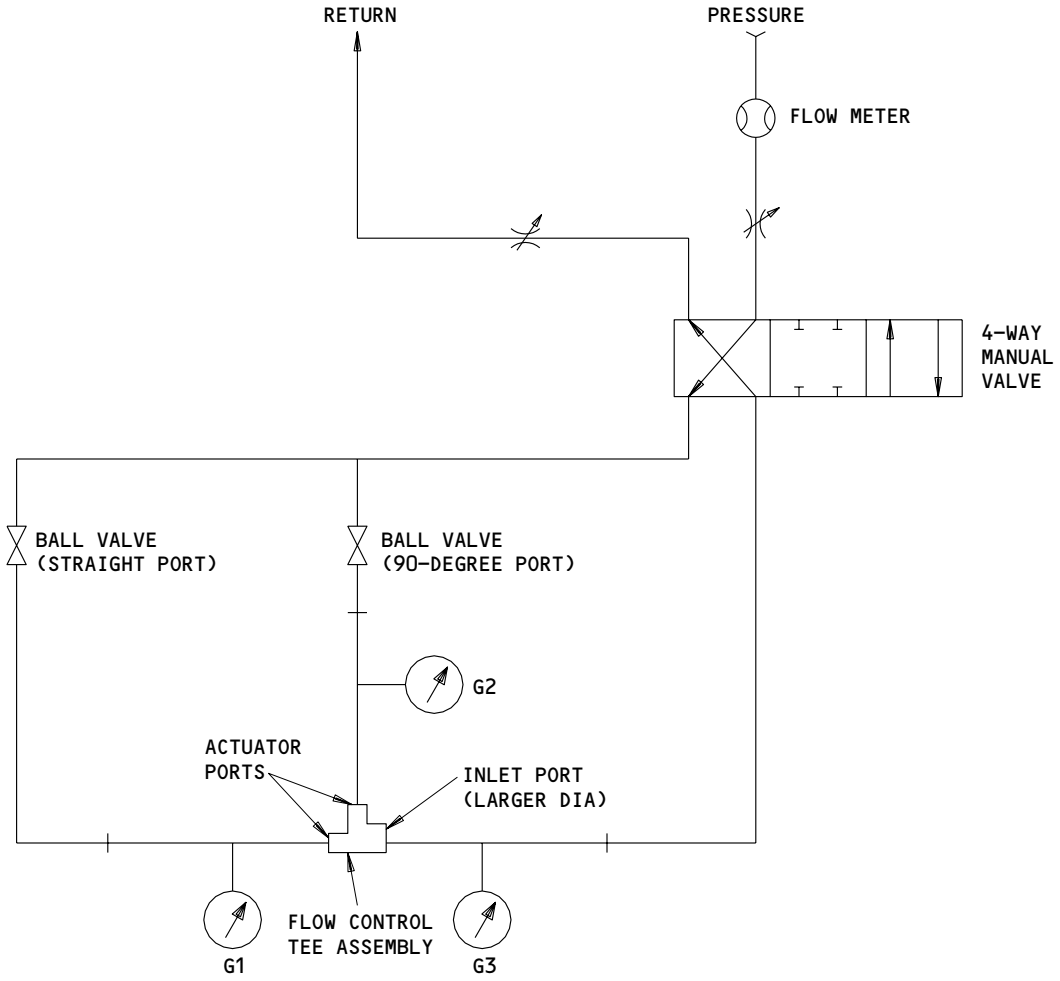


STOW FLOW
Test Setup
Figure 101 (Sheet 2)

DISASSEMBLY

NOTE: 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.

1. Disassemble this component using standard industry practices.

CHECK

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

2. Magnetic particle check per 20-20-01 -- tee (25, IPL Fig. 1), poppet (20).

3. Penetrant check per 20-20-02 -- adapter (5).

REPAIR - GENERAL

1. Content

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

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

2. Standard Practices

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

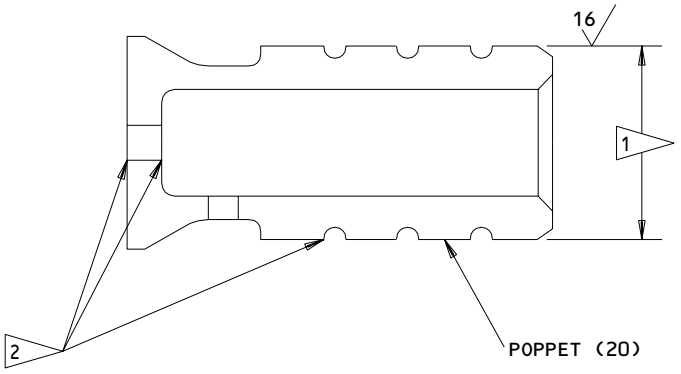
   20-20-01 Magnetic Particle Inspection
   20-30-01 Cleaning and Lubing Antifriction Bearings
   20-30-03 General Cleaning Procedures
   20-50-05 Application of Aluminum Foil and Other Markers
   20-50-06 Installation of O-Rings and Teflon Seals
   20-50-12 Application of Adhesives

POPPET - REPAIR 1-1

315A1845-3, -4

1. Refinish (Fig. 601)

   A. Repair consists of restoration of original finish. Refer to Refinish instructions, Fig. 601, and to REPAIR-GEN for list of applicable standard practices.



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

209433

NAMEPLATE - REPAIR 2-1

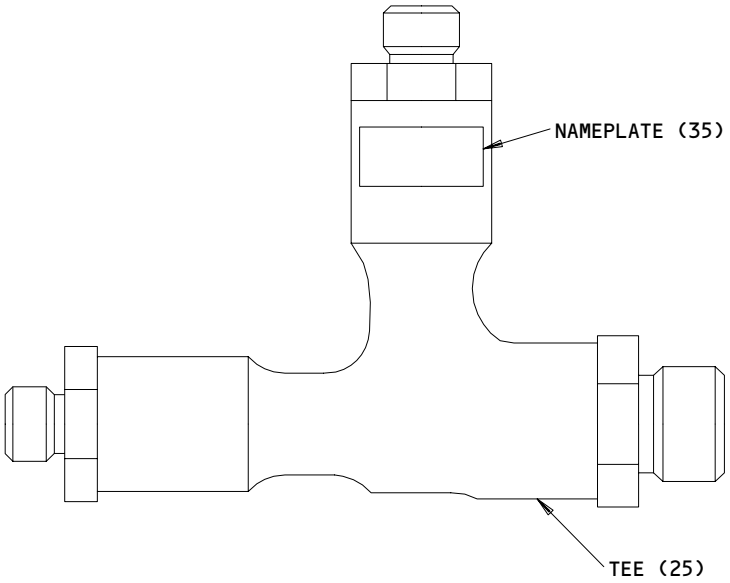
BAC27DTR8
BAC27DTR10

NOTE: Refer to REPAIR-GEN for list of applicable standard practices and to IPL Fig. 1 for item numbers.

1. Nameplate Replacement

A. Install new nameplate (35) per Fig. 601.

B. Bond nameplate (35) per 20-50-12, type 41.



BAC27DTR8
BAC27DTR10
Nameplate Replacement
Figure 601

209434

MISCELLANEOUS PARTS REFINISH - REPAIR 3-1

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

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

Refinish Details
Figure 601

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

A. Lubricant -- Skydrol, MCS352 (Ref 20-60-03)

B. Hydraulic Fluid -- BMS 3-11, Type 4 fluid

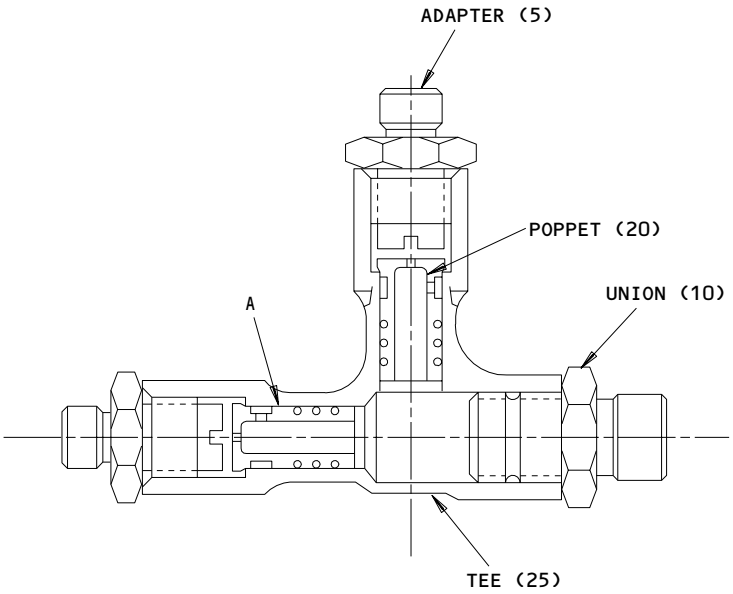
2. Assembly

A. Use standard industry practices and those listed below in order to assemble this component.

(1) Lightly lubricate O-rings at assembly with hydraulic fluid or lubricant per 20-50-06.

(2) Install seals per 20-50-06.

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	0.5016	0.5079	0.0039
	OD 20	0.5030	0.5040					

*[1] NEGATIVE VALUES DENOTE INTERFERENCE FIT

ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
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.

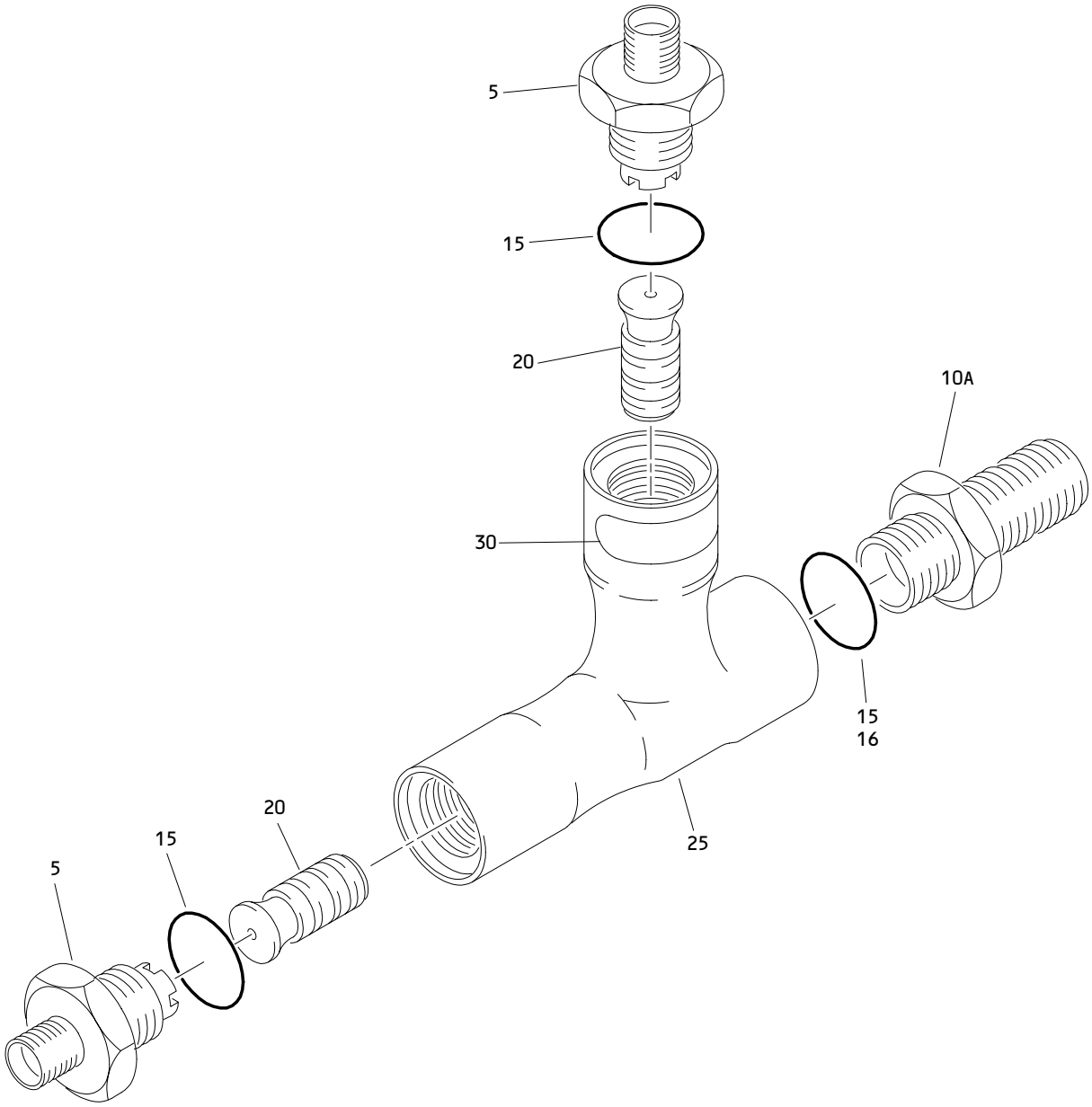
5. Service Bulletin modifications are shown by the notations PRE SB XXXX and POST SB XXXX.

    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.



Flow Control Tee Assembly
Figure 1

U8711

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-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 SB 767-78A0064) (PRE SB 767-78A0065)	C	RF
5	315A1855-1		.ADAPTER		2
10	MS21924-10		DELETED		
10A	MS21924-8		.UNION	BC	1
-10B	MS21902J10		.UNION	A	1
15	NAS1612-8		.O-RING	A	2
-15A	NAS1612-8		.O-RING	BC	3
16	NAS1612-10		.O-RING	A	1
20	315A1845-3		.POPPET (PRE SB 737 78A1055)	A	2
-20A	315A1845-4		.POPPET (PRE SB 757 78A0029)	B	2
-20B	315A1845-6		.POPPET	C	2
25	315A1830-1		.TEE *[1] (PRE SB 737 78A0055)	A	1
-25A	315A1830-2		.TEE *[1] (PRE SB 757 78A0029)	BC	1
30	BAC27DTR0010-1		.NAMEPLATE (PRE SB 737 78A0055)	A	1
-30A	BAC27DTR0010-2		.NAMEPLATE (PRE SB 757 78A0029)	B	1
-30B	BAC27DTR0010-4		.NAMEPLATE	C	1

*[1] REWORKED BY SERVICE BULLETIN. NO EQUIVALENT PART NUMBER REPLACEMENT. AFTER REWORK, THE METALCAL MARKER IS REMOVED BUT THE STAMPED NUMBER IS LEFT IN PLACE.