

 **BOEING**
COMPONENT
MAINTENANCE MANUAL

TO: ALL HOLDERS OF THE T/R DIRECTIONAL FLOW VALVE ASSEMBLY COMPONENT
MAINTENANCE MANUAL 78-34-04

REVISION NO. 1 DATED MAR 01/99

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

101-102

Clarified STOW FLOW TEST procedure.

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HIGHLIGHTS

01.1

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DIRECTIONAL FLOW VALVE ASSEMBLY

PART NUMBERS 315T3056-1,-2

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

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TITLE PAGE

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01

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



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TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
747-78A0064 747-78A0065		PRR 12489R PRR 12489R	JAN 01/93 JAN 01/93

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TR & SB RECORD

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78-34-04			REPAIR-GENERAL		
			601	JAN 01/93	01
			602	BLANK	
TITLE PAGE			REPAIR 1-1		
1	JAN 01/93	01	601	JAN 01/93	01
2	BLANK		602	BLANK	
REVISION RECORD			REPAIR 2-1		
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2	BLANK		602	BLANK	
TR & SB RECORD			ASSEMBLY		
1	JAN 01/93	01	701	JAN 01/93	01
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LIST OF EFFECTIVE PAGES			ILLUSTRATED PARTS LIST		
*1	MAR 01/99	01	1001	JAN 01/93	01
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*102	MAR 01/99	01.1			
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* = REVISED, ADDED OR DELETED

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Assembly.	701
Fits and Clearances * [2]	
Special Tools (not applicable)	
Illustrated Parts List.	1001

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

* [2] Not Applicable

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 | 4. List of Effective Pages |
| 2. Record of Revisions | 5. Table of Contents |
| 3. Temporary Revision &
Service Bulletin Record | 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, a list of applicable standard Boeing practices, and an explanation of the True Position Dimensioning symbols used.

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.

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INTRODUCTION

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DIRECTIONAL FLOW VALVE ASSEMBLY
DESCRIPTION AND OPERATION

1. Description

A. The valve assembly consists of a body which houses four restrictor valves. Seven external ports of the body are provided with male fittings for connection of hydraulic lines. The body has three lugs each with mounting hole to accept 0.25 inch diameter bolt or stud.

2. Operation

A. The valve assembly is designed to balance flow to two similar external hydraulic devices. It is used to provide a synchronization of operations such as extend rate and retract rate for linear hydraulic actuators of the thrust reverser.

3. Leading Particulars (approximate)

Length -- 4.0 inches
Height -- 5.5 inches
Width -- 5.5 inches
Weight -- 5 pounds

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DESCRIPTION & OPERATION

01

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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 120°F.

2. Proof Pressure Test

A. Apply 4500 psi to all ports of the valve assembly at the same time and maintain for two minutes.

B. Make sure there are no external leaks, permanent damage, or loose parts.

3. Deploy Flow Test (Fig. 101)

| A. Plug the EXT2 port and apply 1400 psid between PRESS A port and EXT1 port.

B. Minimum flow rate shall be 9.5 gpm.

| C. Plug the EXT1 port and apply 1400 psid between PRESS A port and EXT2 port.

D. Minimum flow rate shall be 9.5 gpm.

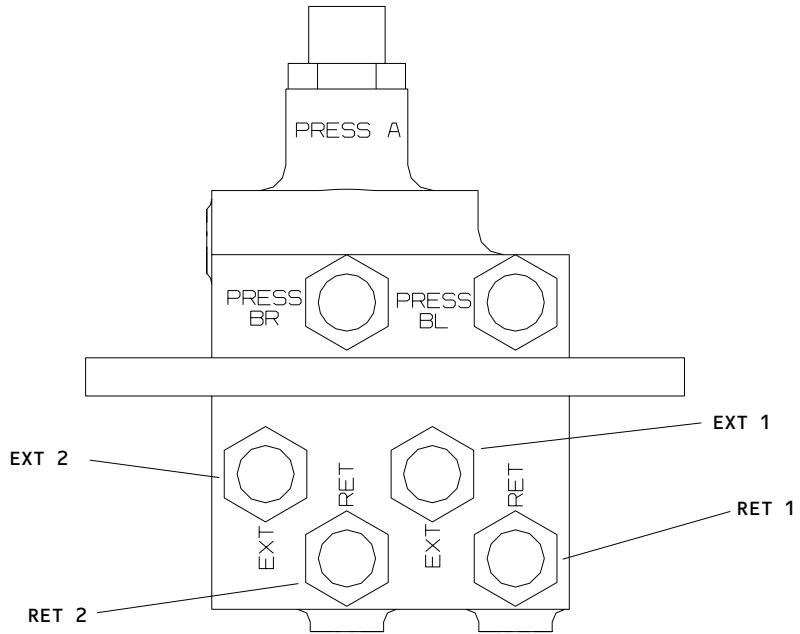
4. Stow Flow Test (Fig. 101)

| A. Apply 1700 psid between PRESS BL port and the RET1 port.

B. Minimum flow rate shall be 4.5 gpm.

| C. Apply 1700 psid between PRESS BR port and the RET2 port.

D. Minimum flow rate shall be 4.5 gpm.



Functional Hydraulic Schematic
Figure 101

B34525



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.

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DISASSEMBLY

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CHECK

1. Make sure all parts do not have obvious defects in accordance with standard industry practices.
2. Do a magnetic particle check per 20-20-01 -- unions (40, 45).

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CHECK

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REPAIR-GENERAL

1. Content

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

<u>P/N</u>	<u>NAME</u>	<u>REPAIR</u>
315T3056-3	BODY	1-1
-	MISC PARTS REFINISH	2-1

2. Standard Practices

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

20-30-02 Stripping of Protective Finishes
20-30-03 General Cleaning Procedures
20-41-01 Decoding Table for Boeing Finish Codes
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

NOTE: Equivalent substitutes may be used.

- A. Enamel -- BMS 10-11, Type 2 (Ref 20-60-02)
B. Primer -- BMS 10-11, Type 1 (Ref 20-60-02)

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REPAIR-GENERAL

01

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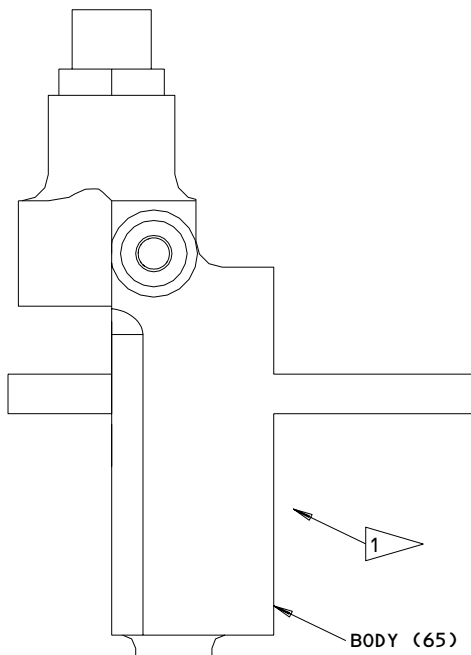
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BODY - REPAIR 1-1

315T3056-3

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

CHROMIC ACID ANODIZE (F-17.04) ALL OVER.
APPLY ONE COAT BMS 10-11, TYPE 1 PRIMER
PER 20-41-02 (F-20.02), THEN APPLY ONE
COAT BMS 10-11, TYPE 2 ENAMEL COLOR 702
WHITE PER 20-41-02 (F-21.17). OMIT PRIMER
AND PAINT FROM HOLES, THREADS, CHAMFERS, AND
SPOTFACES.

1 MASK HOLES BEFORE APPLYING PRIMER AND PAINT.

REPAIR

125 / ALL MACHINED SURFACES

SHOT PEEN PER 20-10-03:
230-550 SHOT NUMBER
0.014A INTENSITY
COVERGE 2.0 MANUAL/1.0 AUTOMATIC

MASK ALL HOLES, THREADS, AND CHAMFERS
PRIOR TO SHOT PEEN.

ITEM NUMBERS REFER TO IPL FIG. 1

Body Refinish
Figure 601

MISCELLANEOUS PARTS REFINISH – REPAIR 2-1

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

IPL FIG. & ITEM	MATERIAL	FINISH
<u>Fig. 1</u> Union (40, 45)	15-5 PH CRES HT 150-170 KSI	Prepare surface and passivate (F-17.09).

Refinish Details
 Figure 601

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REPAIR 2-1

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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 (Ref 20-60-03)
- C. Sealant -- BMS 5-95 (Ref 20-60-04)

2. Assembly

- A. Use standard industry practices and those listed below to assemble this component.
 - (1) Lubricate O-ring packings (10, 50) at assembly with lubricant per 20-50-06.
 - (2) Install O-rings packings (50) per 20-50-06.
 - (3) Lubricate threads of unions (35), and unions (40 or 45) with lubricant. Install unions and tighten to 160-170 pound-inches.
 - (4) Install O-ring packing (10) per 20-50-06.
 - (5) Lubricate threads of union (5) with lubricant. Install union and tighten to 265-295 pound-inches.
 - (6) Install restrictor valves (25) onto lower unions (35).
 - (7) Install restrictor valves (30) onto unions (40 or 45).
 - (8) If necessary, install pins (15, 55) and plugs (20, 60) per 20-50-04 then fill flush with BMS 5-95 sealant.

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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.

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VENDORS

99240 CRISSAIR, INCORPORATED
 38905 10TH STREET EAST
 PALMDALE, CALIFORNIA 93550-3415

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PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
BACP20AX31DA		1	60	5
BACP20AX31DAP		1	55	5
BACP20AX43DA		1	20	1
BACP20AX43DAP		1	15	1
MS21902J6		1	35	4
MS219028J		1	5	1
NAS1612-6		1	50	6
NAS1612-8		1	10	1
315T3056-1		1	1	RF
315T3056-2		1	1A	RF
315T3056-3		1	65	1
315T3057-1		1	40	2
315T3057-2		1	45	2
9R3524		1	30	2
9R3526		1	25	2

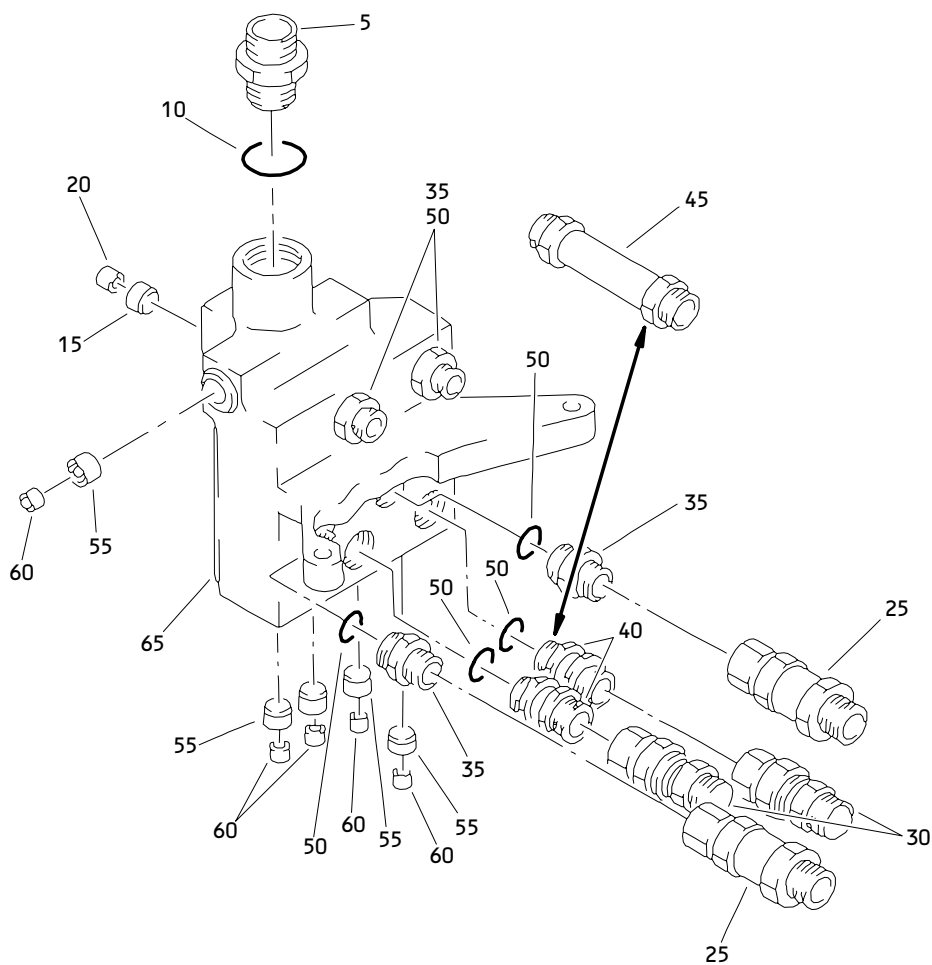
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ILLUSTRATED PARTS LIST

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Directional Control Valve Assembly
 Figure 1

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FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01- -1	315T3056-1		VALVE ASSY-DIRECTIONAL FLOW (POST SB 747-78A0065)	A	RF
-1A	315T3056-2		VALVE ASSY-DIRECTIONAL FLOW (POST SB 747-78A0064)	B	RF
5	MS219028J		.UNION		1
10	NAS1612-8		.PACKING-O-RING		1
15	BACP20AX43DAP		.PIN		1
20	BACP20AX43DA		.PLUG		1
25	9R3526		.RESTRICTOR-VALVE (V99240)		2
30	9R3524		.RESTRICTOR-VALVE (V99240)		2
35	MS21902J6		.UNION		4
40	315T3057-1		.UNION	A	2
45	315T3057-2		.UNION	B	2
50	NAS1612-6		.PACKING-O-RING		6
55	BACP20AX31DAP		.PIN		5
60	BACP20AX31DA		.PLUG		5
65	315T3056-3		.BODY		1

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