PNEUMATIC ACTUATOR ASSEMBLY

49-50-01

BOEING P/N 65-50949-1, -3, -5
65-78987-9

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

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LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision

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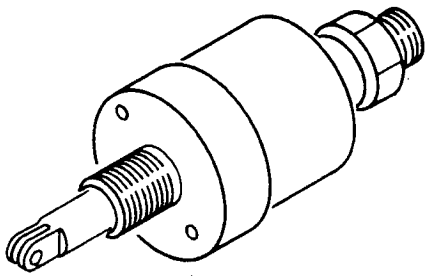
PNEUMATIC ACTUATOR ASSEMBLY



Pneumatic Actuator Assembly
Figure 1

1. DESCRIPTION AND OPERATION

A. Description

(1) The pneumatic actuator assembly is a compressed air-operated unit which consists of an inlet fitting, piston, cylinder, spring and seals. Its function is to open and close a valve assembly in the duct of the auxiliary power unit cooling air system.

B. Operation

(1) The pneumatic actuator assembly is connected through a linkage arm to a valve assembly in the air duct. When air pressure is applied to the inlet port of the actuator the piston extends opening the valve. When the air pressure is released, the spring in the actuator retracts the piston closing the valve.

C. Leading Particulars

Length (retracted) -- 4.0 inches (approximately)
Length (extended) -- 4.5 inches (approximately)
Operating pressure -- 5 psi
Weight -- 1.06 pounds

2. DISASSEMBLY (See figure 6.)

A. Remove cap (1 or 1A), spring (2) and piston (3 or 3A).

B. Remove ring (4) from piston.

C. Remove union (5) and gasket (6), or gasket (8), nut (9) and elbow (10) from cylinder (7).

3. CLEANING (See figure 6.)

A. Wash all metal parts with dry cleaning solvent, Specification P-D-680, or equivalent.

B. Use a stiff-bristle brush to remove stubborn accumulations of foreign matter.

C. Rinse and dry thoroughly using clean, moisture-free compressed air or clean, lint-free cloth.

D. For further information, refer to 20-30-03, General Cleaning Procedures.

4. INSPECTION/CHECK (See figure 6.)

A. Visual Check

(1) Visually examine all metal parts for cracks, burrs, pitting and corrosion using strong light and a minimum of 10-power magnification.

(2) Examine all threaded areas for cross-threading and stripping.

(3) Check all plated surfaces for blistering, flaking and continuity of plated surface.

(4) Examine packing groove on piston (3 or 3A) for damage or obstructions.

B. Special Check

(1) If visual examination discloses evidence of defects, perform a fluorescent dye penetrant check on cap (1 or 1A), piston (3 or 3A) and cylinder (7).

(2) Check spring (2) in accordance with the spring data given below.

(a) Free length -- 1.81 inches

(b) Maximum checkload 5.4 pounds compressed to 1.00-inch length.

(c) Minimum checkload 1.34 pounds compressed to 1.61-inch length.

(3) Check all parts for wear in accordance with limits and requirements given in figure 4.

5. REPAIR (See figure 6.)

A. Repair

(1) Remove minor scratches, nicks, pitting and corrosion by polishing with 220-grit or finer aluminum oxide cloth. Maintain limits and dimensions given in figure 4.

(2) Clean up minor defects on threads with fine file or thread chaser.

(3) Repair the following parts as required. (See figure 2.)

(a) Piston (3 or 3A) -- Worn OD that mates with cylinder (7).

1) Machine piston OD as required to clean up. Do not exceed 1.2170-inch minimum rework diameter.

2) Build up with plasma flame sprayed steel, BMS 10-67, Type 8, per 20-10-05.

3) Grind to dimension and finish shown in figure 2 per 20-10-04.

(b) Cylinder (7) -- Worn ID

1) Machine as required to clean up. Do not exceed maximum allowable rework diameter of 1.2800 inches.

2) Build up with hard chrome plate per 20-42-03.

3) Grind to finish and dimension shown in figure 2 per 20-10-04.

NOTE: After any rework, clean part thoroughly and refinish as required.

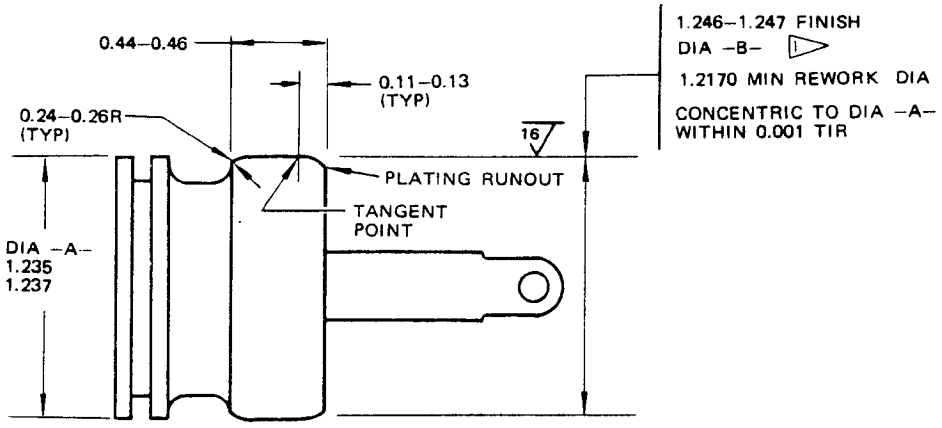
B. Refinish

NOTE: Refer to 20-30-02 for stripping of protective finishes and to 20-41-01 for decoding F and SRF symbols and their BAC equivalents.

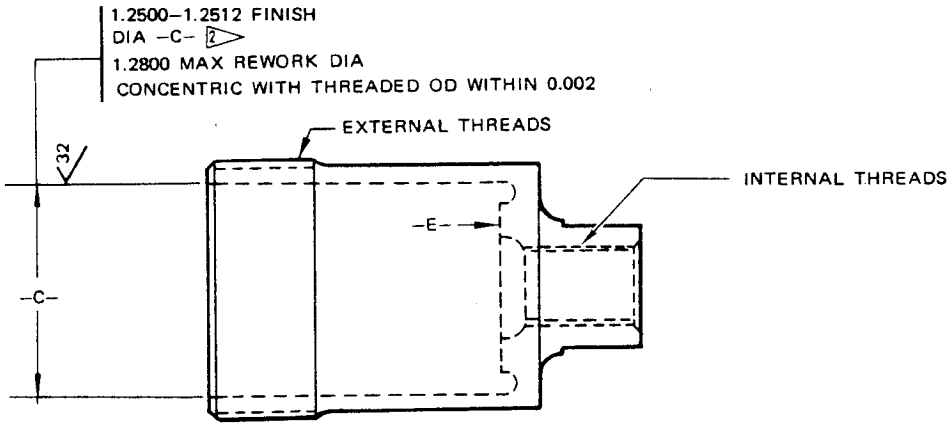
(1) If plated or painted surfaces are worn or chipped, refinish parts listed below as required.

(a) Cap (1) -- Apply F-8.07 all over.

(b) Cylinder (7) and piston (3 and 3A) -- See figure 2.



PISTON (3 AND 3A)



CYLINDER (7)

REFINISH

PASSIVATE (F-8.07) PISTON AND CYLINDER ALL OVER. CHROME PLATE DIA –C– AND SURFACE –E– (PLATING OVER-RUN ON ADJACENT SURFACES IS ACCEPTABLE) SILVER PLATE THREADED AREAS ON CYLINDER

REPAIR

DIMENSIONS NOTED BY 1 2

MATERIAL: STEEL (110–170 KSI)

1 BUILD UP WITH STAINLESS STEEL AISI 316 PLASMA FLAME SPRAY (REFER TO 20-10-05), BMS 10-67, TYPE 8 AND MACHINE TO FINISH AND DIMENSIONS SHOWN.

2 BUILD UP WITH HARD CHROME PLATE (REFER TO 20-42-03) AND GRIND TO FINISH AND DIMENSIONS SHOWN.

BREAK SHARP EDGES 0.005-0.010R
ALL DIMENSIONS IN INCHES

Piston and Cylinder-Repair and Refinish
Figure 2

C. Replacement

(1) Replace lockwire at each overhaul.

(2) Replace all parts damaged beyond simple repair.

(3) Replace ring (4) and gasket (6 or 8) at each overhaul.

(4) Replace spring (2) if it fails to meet the requirements in paragraph 4.B.(2).

6. ASSEMBLY (See figure 6.)

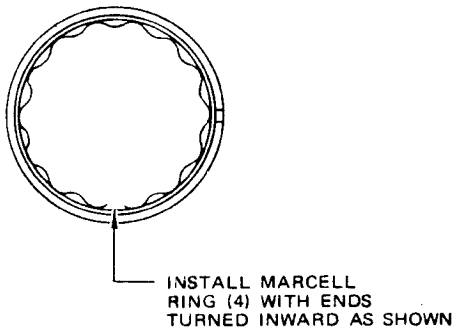
A. Install union (5) and gasket (6), or gasket (8), nut (9) and elbow (10) on cylinder (7).

B. Install Marcell ring (4) on piston (3 or 3A) as shown per figure 3.

C. Install piston (3 or 3A) in cylinder (7) and place spring (2) over shaft of piston (3 or 3A).

D. Install cap (1 or 1A) on cylinder (7).

E. Lockwire cap (1A) to cylinder (7), P/N 65-66209-1 using double-twist method.



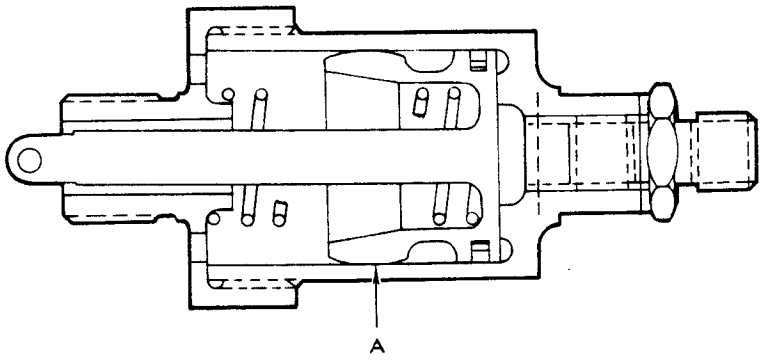
Assembly Diagram
Figure 3

7. FITS AND CLEARANCES

A. The fits and clearances table lists design dimensions and service wear limits for close tolerance parts of the assembly that are subject to wear or corrosion. Unless otherwise specified, parts should be returned to the design dimensions whenever rework is accomplished.

B. Clearances are given to aid assembly of the components. The values given in the Maximum Allowable Clearance column are the maximum permitted to ensure proper functioning of the unit. If assembled parts fail to meet this requirement, one or more of the parts must be rejected. Parts that are rejected should be reworked if within the rework limits given in the Repair procedure; if not within rework limits, the parts should be scrapped. It is recommended that the design clearances be used as the guiding assembly criteria when newly reworked parts are assembled.

Ref Letter Fig. 4	Mating Item No. Fig. 6		Design Dimensions				Service Wear Limits		
			Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
			Min	Max	Min	Max	Min	Max	
A	ID	7	1.2500	1.2512	0.0030	0.0052		1.2574	0.0104
	OD	3, 3A	1.2460	1.2470			1.2396		



Fits and Clearances
Figure 4

8. TESTING

A. Test Equipment

(1) Test stand capable of delivering clean, dry compressed air up to 5 psi and a pressure gauge for determining the pressure.

B. Functional Test

(1) Apply 4.5 to 5.5 psi air pressure to actuator inlet port. The actuator piston should move to the fully extended position smoothly and without binding.

(2) Release air pressure. The actuator spring shall return the piston to fully retracted position smoothly and without binding.

Test Phase	Limits
Apply 4.5 to 5.5 psi air pressure to actuator inlet port	Piston should fully extend smoothly and without binding
Release air pressure	Piston should fully retract smoothly and without binding

Test Limits
Figure 5

9. TROUBLE SHOOTING (See figure 6.)

A. Trouble during test after overhaul.

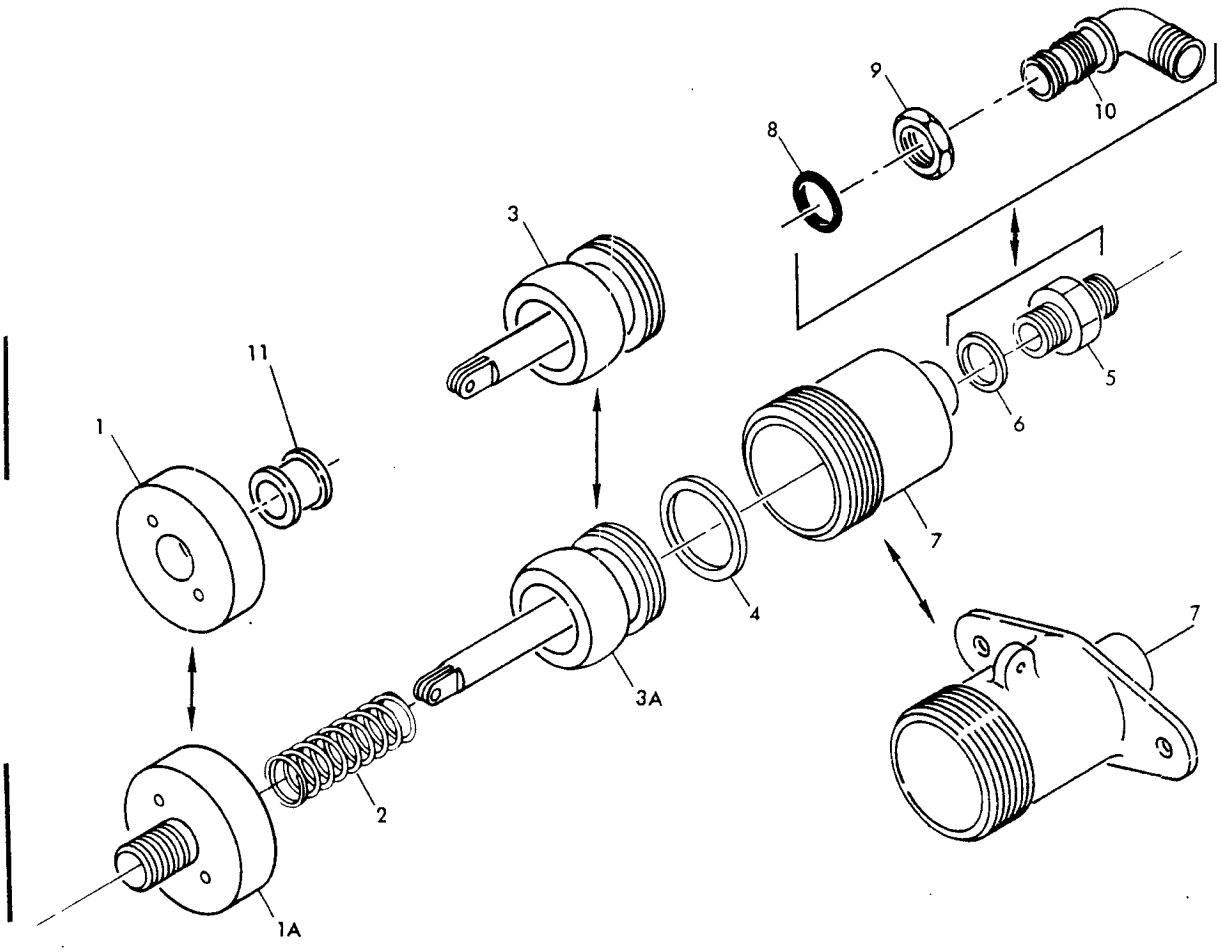
	Trouble	Possible Cause	Correction
(1)	Piston (3 or 3A) binds or operates roughly	Foreign matter between sliding surfaces	Disassemble unit and clean as required
		Improperly installed ring (4)	Install new ring (4)

10. STORAGE INSTRUCTIONS

A. Wrap unit in vapor barrier paper. Mark or tag unit with identification and test date.

B. For further information, refer to 20-44-02, Temporary Protective Coatings.

11. ILLUSTRATED PARTS LIST



Pneumatic Actuator Assembly
Figure 6

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
6-					
	65-50949-1		PNEUMATIC ACTUATOR ASSY	A	
	65-50949-3		PNEUMATIC ACTUATOR ASSY	B	
	65-50949-5		PNEUMATIC ACTUATOR ASSY	C	
	65-78987-9		PNEUMATIC ACTUATOR ASSY (SB 49-1012)	D	
1	69-37913-1		. CAP	AD	1
1A	65-66219-2		. CAP	BC	1
2	69-37911-2		. SPRING		1
3	65-59389-1		. PISTON	AD	1
3	69-37912-1		. PISTON (OPT)	AD	1
3A	65-59389-3		. PISTON	BC	1
3A	69-37912-2		. PISTON (OPT)	BC	1
4	ABA6776		. RING, V71687		1
5	MS21902-4C		. UNION	ABD	1
6	AN901-4C		. GASKET	ABD	1
7	65-50933-1		. CYLINDER	AD	1
7	65-66209-1		. CYLINDER	BC	1
8	MS28778-4		. GASKET	C	1
9	AN924-4J		. NUT	C	1
10	MS21908J4		. ELBOW	C	1
11	69-61703-1		. BUSHING (ADDED BY SB 49-1012)	D	1

VENDORS

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