TO: ALL HOLDERS OF GALLEY DOOR SNUBBER ASSEMBLY OVERHAUL MANUAL, 52-11-01

REVISION NO. 18, DATED JUL 1/06

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D&O	D/Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Added a note to Figure 5 to clarify the use of the Acceptance Limit Lines								X					
Clarified and updated callouts												X	

GALLEY DOOR SNUBBER ASSEMBLY

52-11-01

BOEING P/N 65-2346-1, -3 thru -5

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		22248	Dec 1/66

LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

	PAGE	DATE	PAGE	DATE	PAGE	DATE
	52-11-01					
	T-1	Sep 5/89				
	T-2	BLANK				
*	LEP-1	Jul 1/06				
	LEP-2	BLANK				
	T/C-1	May 10/86				
	T/C-2	BLANK				
	1	Jan 5/74				
	2	Jul 1/00				
	2A	Dec 1/95				
	2B	Dec 1/95				
	3	Dec 1/95				
	4	Dec 1/95				
	5	Nov 1/05				
	6	Jan 5/74				
	7	Nov 1/05				
*	8	Jul 1/06				
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	10	Nov 1/05				
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*	13	Jul 1/06				
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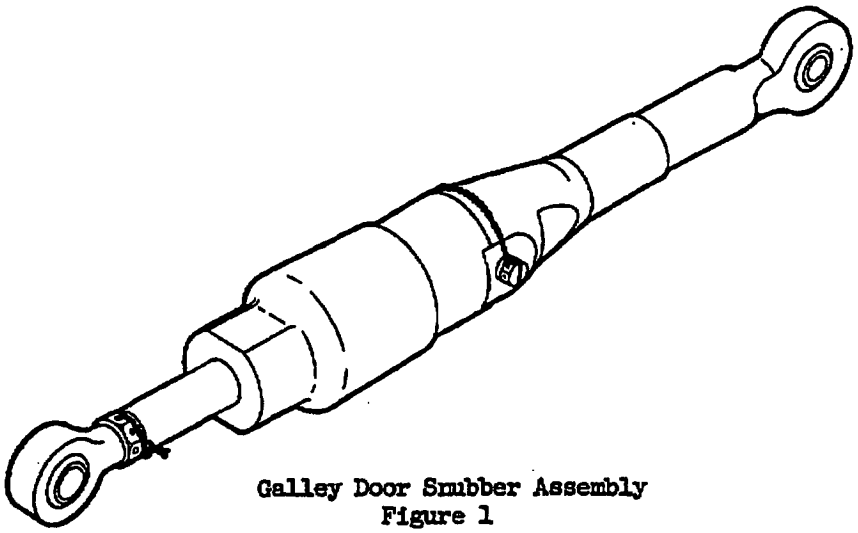
*[1] Special instructions not required. Use standard industry practices.

GALLEY DOOR SNUBBER ASSEMBLY



Galley Door Snubber Assembly
Figure 1

1. DESCRIPTION AND OPERATION

A. Description

(1) The snubber consists of an oil filled cylinder, one end of which has a rod end type bearing. The opposite end of the cylinder has a cap through which passes a plunger. The plunger has a piston type end operating within the cylinder and a rod end for attachment to the structure. A spring-loaded piston operates within the bore of the plunger to give additional snubbing action.

B. Operation

(1) Oil flowing through calibrated orifices in the plunger restricts extension and retraction of the assembly, damping opening and closing movements of the door.

C. Leading Particulars

Length (between bearing centerlines)
Extended -- 11 inches (approximately)
Retracted -- 9 inches (approximately)
Weight -- 2 pounds (approximately)

2. DISASSEMBLY

A. Disassemble using standard industry procedures, observing the following:

(1) Remove items (23 thru 25, Fig. 8) and drain hydraulic fluid as first step.

(2) Rap plunger (13) sharply against wood block to remove piston (10).

3. INSPECTION/CHECK

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

B. Check springs (9), and (16) for roundness by rolling on flat surface. There must be no wobble. Check each spring in accordance with Fig. 2. No permanent set shall result from test load.

C. If visual examination discloses evidence of defects in any of the parts listed, perform the following check:

(1) Magnetic particle check per SOPM 20-20-01 -- cap (4), cylinder (22), springs (9, 16), piston (10) and plunger (13).

D. Check parts listed in Fig. 4 for wear beyond specified limit.

Item No. Fig. 8	Test Length (Inches)	Allowable Load Limits (Pounds)
9	0.80	5.4 to 6.4
16	0.84	18 to 22

Spring Check Data
Figure 2

4. REPAIR

A. Repair (Fig. 8)

(1) Repair of plunger (13)

(a) Galling, scoring and wear on 0.4950-, 0.8700-, and 0.498-inch diameters may be removed by machining plunger down to allowable minimum diameters of 0.4760, 0.8510, and 0.4780 inch respectively.

NOTE: Plungers 69-49964-1 and -2 are CRES, 17-4PH, 180-200 ksi; plungers 90-7819, -1, are AMS 4130 steel, 125-145 ksi.

(b) For plungers 69-49964-1 and -2 (only), stress relieve the plungers at 350-400°F for a minimum of four hours.

(c) Magnetic particle examine the plungers (13) as specified in 20-20-01, class C.

(d) Shot peen all of the surfaces to be chrome plated as specified in 20-10-03; intensity 0.005-0.010, coverage 2.0, overspray is allowed. The edge radius is to be 0.01 inch maximum.

(e) Build up the machined areas of the plunger with hard chrome plate as specified in 20-42-03; edge taper to be 0.005 inch minimum.

(f) For plungers 69-49964-1 and -2 (only), post plate bake the plungers at 350-400°F for a minimum of four hours.

(g) Grind the plungers (13) to get the design dimensions specified in Figure 4 and to get an 8 microinch Ra finish. Rework diameters must be concentric within 0.002 inch total indicated reading.

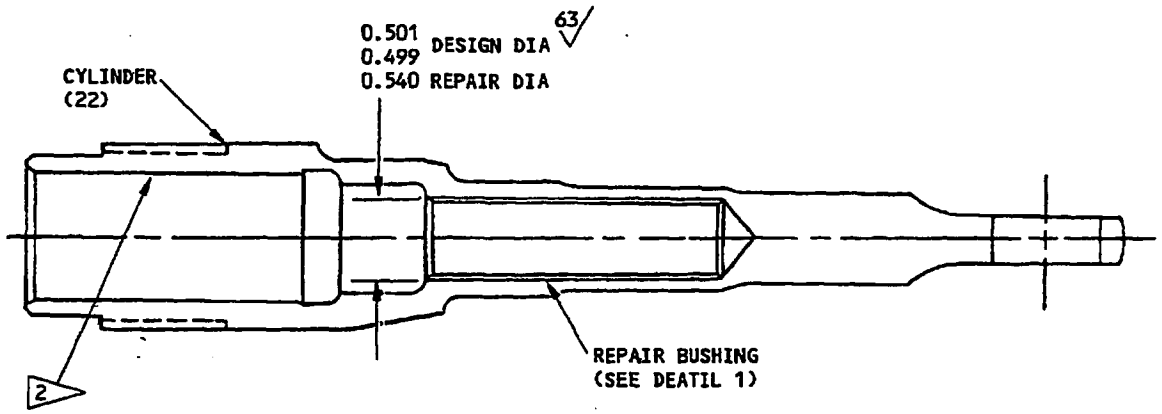
(h) Magnetic particle examine the plungers (13) as specified in 20-20-01, class C.

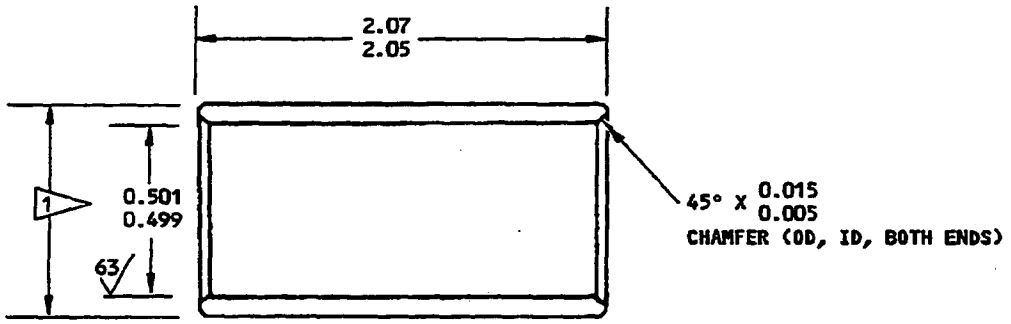
(2) Repair of cylinder (22) (Fig. 2A).

(a) Machine cylinder bore to repair diameter indicated.

(b) Manufacture repair bushing to dimension and finish shown.

(c) Install bushing using shrink fit method per 20-50-03.





REPAIR BUSHING
DETAIL 1

REFINISH

CYLINDER (22) - CADMIUM PLATE EXTERIOR SURFACES PER 20-42-05, TYPE 2, CLASS 1 (F-1.1930) EXCEPT BEARING HOLE. BAKE FOR A MINIMUM OF 3 HOURS AT 350-400° F AFTER PLATING.

MATERIAL: CYLINDER - AMS 4340 STEEL (125-140 KSI)

BUSHING - 15-5PH CRES (140-160 KSI)

125 ALL MACHINED SURFACES EXCEPT AS NOTED

ALL DIMENSIONS ARE IN INCHES

1 BUSHING OD EQUAL TO REPAIR DIA PLUS 0.0005-0.001 INTERFACE

2 8 (66-2527-3 ONLY)

16 (66-2527-1 ONLY)

66-2527-1,-3

Cylinder Repair
Figure 2A

F31261

B. Refinish (Fig. 8)

NOTE: Refer to 20-30-02 for stripping of protective finishes, and to 20-41-01 for explanation of F and SRF finish codes.

(1) Cap (4) -- Cadmium plate exterior surfaces per 20-42-05, type 2, class 1 (F-1.1930). Bake for a minimum of 3 hours at 350 to 400°F after plating. Material: AMS 4130 steel, 125-145 ksi.

(2) Cylinder (22) -- See Fig. 2A.

C. Replacement (Fig. 8)

(1) Replace worn or scored rod end bearing (1).

(2) If bearing (21) requires replacement, apply light film of grease, MIL-G-23827, to outside diameter of bearing (21) and respective inside diameter of cylinder (22). Press bearing into rod end of cylinder so that bearing is centered with equal depth on both sides. Ball-stake bearing to a depth of 0.015-0.020 inch in five places on both sides equally spaced between old staking points (Ref 20-50-03). After staking, bearing must rotate freely through full range of misalignment.

(3) Replace all packings and backup rings at each overhaul.

5. ASSEMBLY

A. Preassembly (Fig. 8)

(1) Prior to assembly immerse packings (6, 8, 12, 15, and 18), backup rings (5, 7, 11, 14, and 17) and channel seal (14) in hydraulic fluid, MIL-H-5606 or equivalent.

B. Reassembly (Fig. 8)

NOTE: Prior to assembly, plunger (13) can be identified using Fig. 3A. Cylinder (22) can be identified by surface roughness of bore, P/N 66-2527-3 - 8 microinches and P/N 66-2527-1 - 16 microinches.

(1) Preassemble items (13 thru 18) as a unit.

(2) Preassemble items (10 thru 12) as a unit.

(3) Insert packings (6 and 8) and backup rings (5 and 7) into cap (4).

NOTE: Make certain that backup ring (7) is installed nearer 0.303 inch diameter opening of cap (4) than is packing (8) to prevent leakage. Cap (4) with 0.270-inch packing groove is preferred to one with 0.188-inch groove on interior 1.302-inch diameter.

(4) Using bath of hydraulic fluid, MIL-H-5606, submerge cylinder assembly (19) and fit preassembled units. Leave plunger (13) in centered position. Ensure complete expulsion of air from unit during assembly.

NOTE: Complete expulsion of air during assembly is essential for proper operation of snubber.

(5) Flat washer (24) and fluid washer seal (25) must be slipped onto screw (23) completely before screw (23) is inserted into cylinder assembly (19). Tighten screw (23) securely prior to removing unit from oil.

NOTE: Avoid transferring any seal remnants into hydraulic fluid.

(6) Remove unit from oil bath. Secure cylinder assembly (19) in vise and tighten cap (4) to 160-190 lb-in.

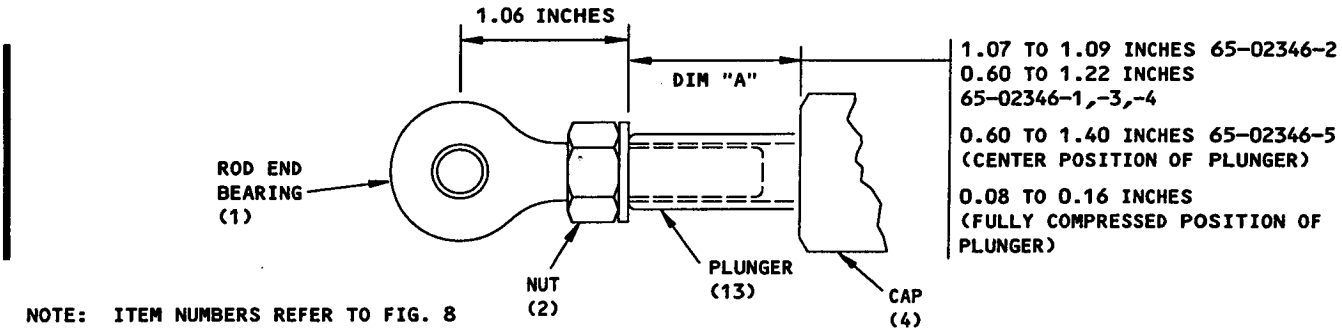
(7) Drain excess oil from cylinder assembly (19) by compressing plunger (13) until just clear of cylinder (22) vent holes. Apply compressed air to one vent blowing all oil out opposite vent.

(8) Install spring (9), lockwasher (3), nut (2), and rod end bearing (1) to plunger (13).

Note: Set dimension approximately 1.06 inches from the center of rod end bearing (1) to contact surface of nut (2) and plunger (13) (Fig. 3).

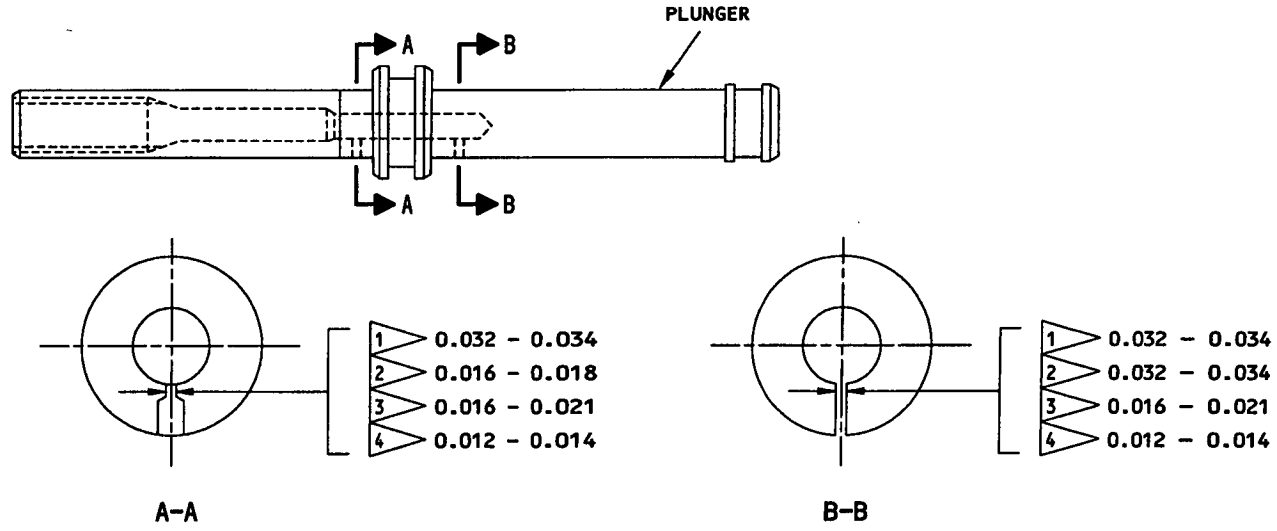
(9) After the test procedures have been done, lockwire nut (2) to lockwasher (3) and screw (23) to cap (4). Use lockwire MS20995C32, MS20995N32, MS20995F41, or MS20995-AA41 and the double twist method as specified in 20-50-02.

(10) Install markers (26 and 27) if they have been removed (Ref. 20-50-05).



NOTE: ITEM NUMBERS REFER TO FIG. 8

Assembly Procedures
Figure 3



SNUBBER ORIFICE DIAMETER

1 90-7819
2 90-7819-1
3 69-49964-1
4 69-49964-2

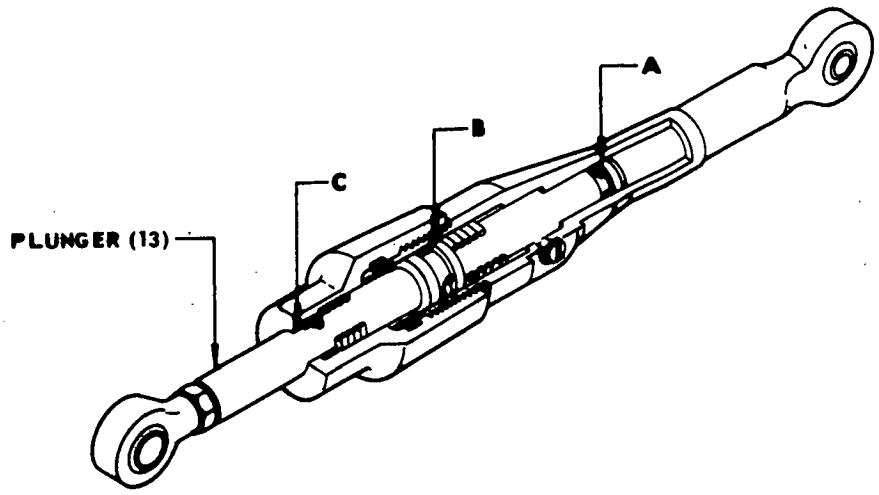
MATERIAL:
90-7819 - AMS 4130 STEEL (125-140 KSI)
69-49964 - CRES 17-4 PH (180-200 KSI)

ALL DIMENSIONS ARE IN INCHES

Plunger Details
Figure 3A

6. FITS AND CLEARANCES

Ref Letter Fig. 4	Mating Item No. Fig. 8	Design Dimensions: Dimensions (inches) Min	Design Dimensions: Dimensions (inches) Max	Design Dimensions: Assembly Clearance (inch) Min	Design Dimensions: Assembly Clearance (inch) Max	Service Wear Limits: Dimension Limits (inches) Min	Service Wear Limits: Dimension Limits (inches) Max	Service Wear Limits: Maximum Allowable Clearance (inch)
A	ID 22	0.499	0.501	0.003	0.007	--	0.503	0.0095
	OD 13	0.494	0.496			0.4935	--	
B	ID 22	0.874	0.876	0.003	0.007	--	0.878	0.0095
	OD 13	0.869	0.871			0.8685	--	
C	ID 4	0.502	0.504	0.004	0.007	--	0.506	0.0095
	OD 13	0.497	0.498			0.4965	--	



Fits and Clearances
Figure 4

7. TESTING

A. Test Equipment

NOTE: Equivalent test equipment can be used.

(1) Test Jig, F70339-41 (supersedes TSJ90-10072-1)

B. Preparation for Test

(1) Install unit in the test jig.

(2) Ignore the setup dimensions if you use the TSJ90-10072-1 test jig.

(3) Conduct tests at room temperature.

C. Air Check (Fig. 8)

(1) Fully compress plunger (13) and release it, then fully extend plunger (13) and release it. Plunger should return slowly to center position, from either compressed or extended position (Fig. 3).

NOTE: If plunger returns immediately to center position, it may have air in it. It should be refilled with hydraulic fluid by reassembling in oil bath.

D. Spring Test

(1) Extend plunger (13) to its fully extended position and release it. Plunger should start to return immediately, and should return to center position within 30 seconds (Fig. 3).

(2) Repeat test compressing plunger (13).

E. Oil Check

NOTE: For this check only, center position of plunger (dimension A, Fig. 3) should be 1.07 to 1.09 inches.

(1) Starting with unit in center position, apply constant extend or compress force of 40 to 45 pounds to rod end bearing (1). Measure time required to reach fully extended or compressed position. Release rod end bearing (1).

(2) Repeat test using constant extend or compress force of 55 to 60 pounds.

(3) Plot two points obtained in these steps and draw a straight line through these points to touch the load limit lines A and B, Fig. 5.

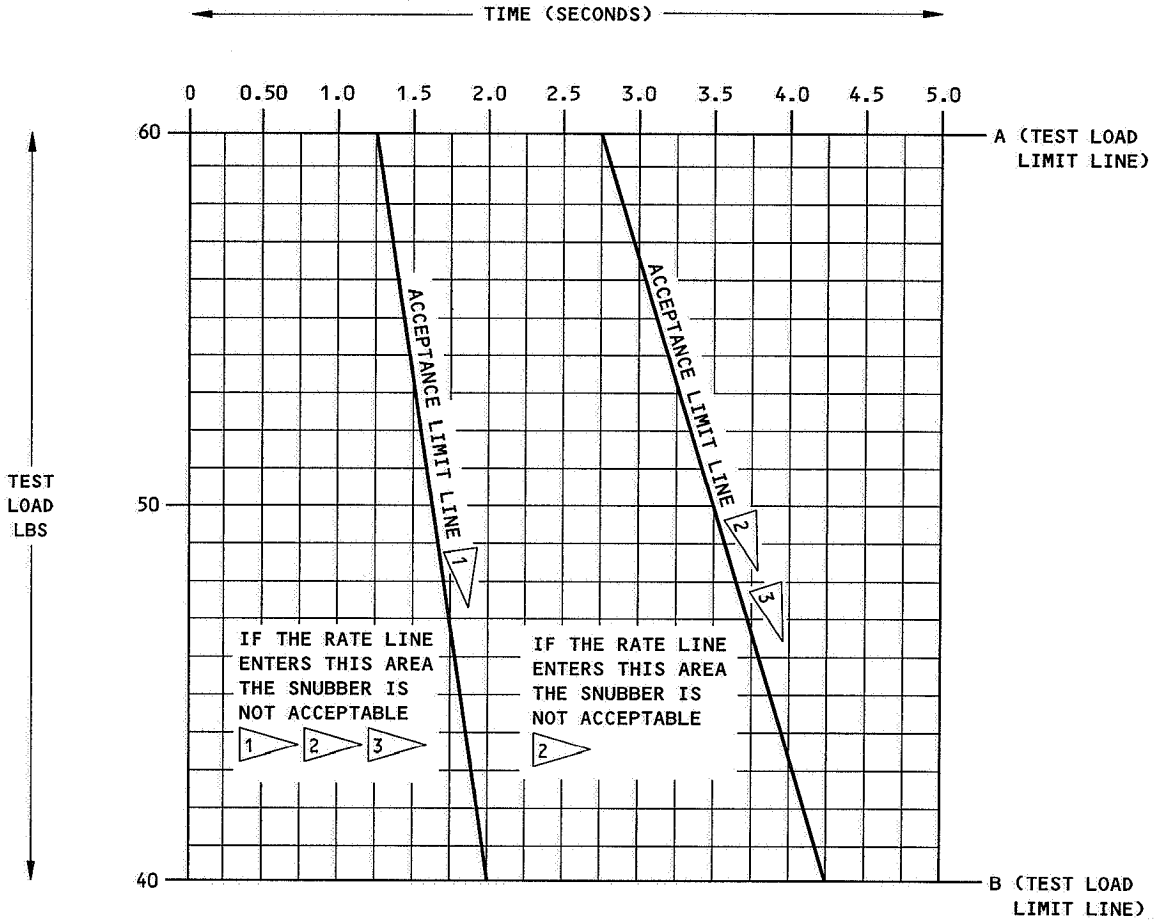
NOTE: This line is the rate line.

(4) Unit is acceptable if the rate line that is drawn is on, or to right of the applicable "acceptable limit line." Unit is not acceptable if the rate line is to left or crosses the acceptable limit line.

(5) If snubber appears to bind or stick under load, recheck spring action.

(6) Cycle snubber several times. There should be no soft spots during operation.

(7) Check assembly for evidence of leakage. There should be none.



1 FOR SNUBBER ASSEMBLIES 65-2346-1, -3, -4 WITH PLUNGERS 90-7819, 90-7819-1, OR 69-49964-1, -2 SEE NOTE.

2 FOR SNUBBER ASSEMBLIES 65-2346-5

3 FOR SNUBBER ASSEMBLIES 65-2346-1, -3, -4 WITH PLUNGER 69-49964-2 (PREFERRED) SEE NOTE.

NOTE:

THE RATE LINE FOR SNUBBER ASSEMBLIES 65-2346-1, -3, -4 THAT HAVE THE IMPROVED 69-49964-2 PLUNGER INSTALLED SHOULD BE ON, OR TO THE RIGHT OF, THE 2 3 ACCEPTANCE LIMIT LINE. HOWEVER, AS LONG AS THE 65-2346-1, -3, -4 SNUBBER ASSEMBLIES SATISFY THE LOWER 1 ACCEPTANCE LIMIT LINE, THEY CAN BE CONSIDERED ACCEPTABLE FOR USE.

Acceptance Test Limits
Figure 5

K48522

Test Phase	Limit
Air Check:	
Fully compress plunger (13) and release it. Fully extend plunger (13) and release it.	Plunger (13) should return slowly to center position.
Spring Test:	
Fully extend, then fully compress plunger (13).	Plunger (13) should start to return immediately and return to center position within 30 seconds each time.
Oil Check:	
1. Set plunger (13) at center position (1.07 to 1.09 inches). Apply force of 40 to 45 pounds to fully compress or extend plunger. Release plunger and record time for plunger to reach fully extended or compressed position.	Plot two points on Fig. 5 and draw a straight line through these points to touch the test load limit lines A and B. This is the rate line. Unit is acceptable if the rate line is on, or to right of the applicable "acceptable limit line".
2. Repeat with a force of 55 to 60 pounds.	

Test Limits
Figure 6

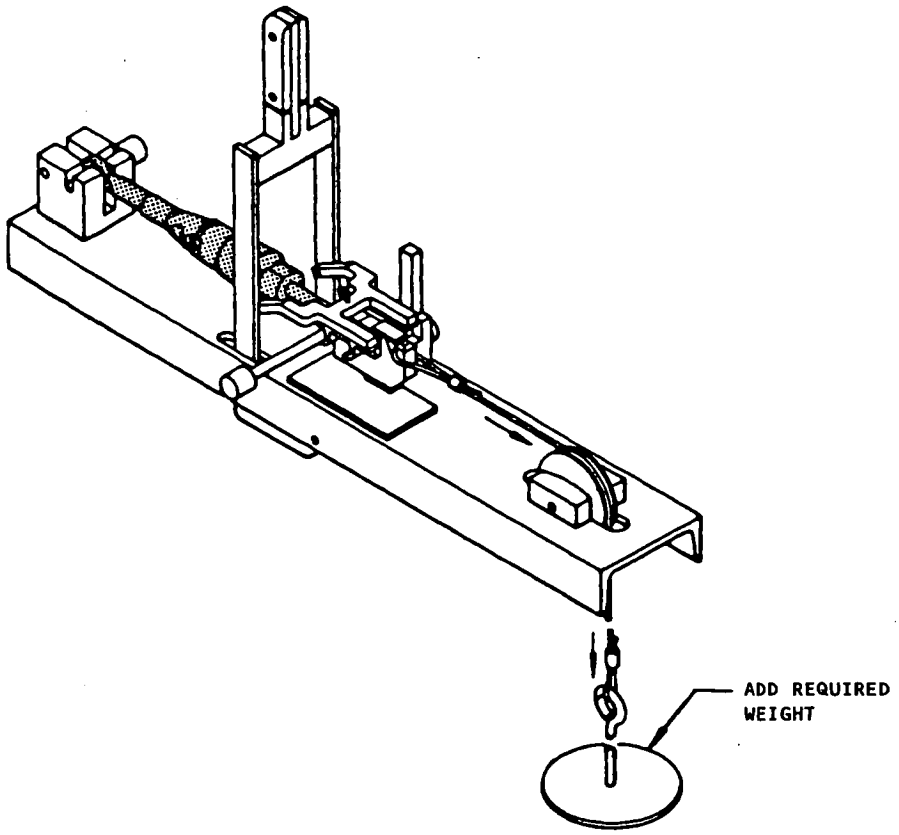
8. TROUBLE SHOOTING

A. Trouble During Test After Overhaul (Fig. 8)

	Trouble	Possible Cause	Correction
(1)	When plunger (13) is compressed or extended, there is rapid return to center position	Unit may have air in it	Refill unit with hydraulic fluid
(2)	Plunger (13) does not return to center position within 30 seconds when fully extended or compressed.	Defective springs (9 or 16)	Replace defective springs
(3)	Unit does not meet specification per Fig. 5	Improperly installed packings (12 and 15), backup rings (11 and 14) or foreign matter between sliding surfaces	Replace packings and backup rings, clean, and reinstall.
(4)	Soft spots during operation	Air in snubber	Disassemble and reassemble in nonaerated oil

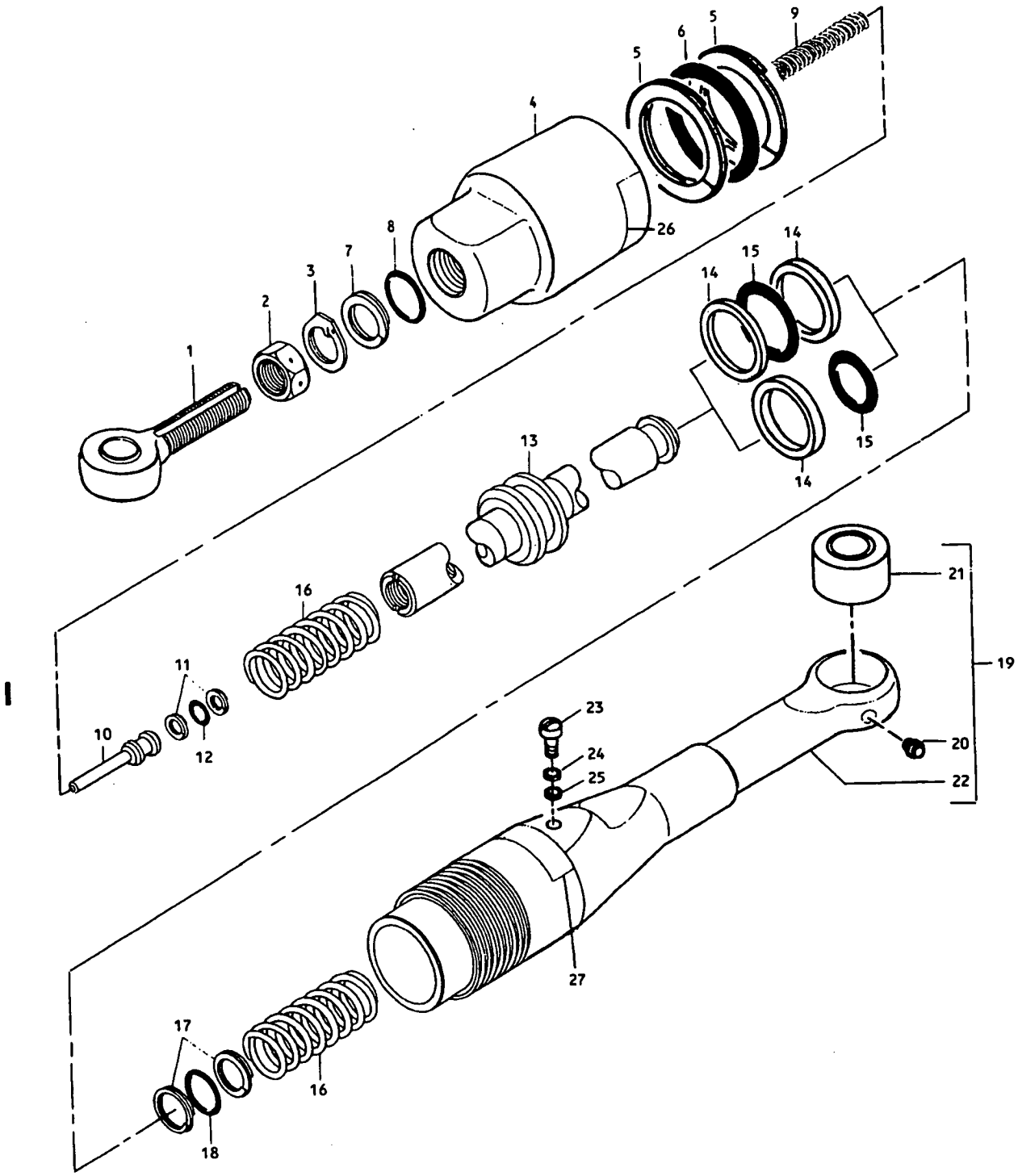
9. SPECIAL TOOLS, FIXTURES AND EQUIPMENT

A. Test Jig -- F70339-41 (supersedes TSJ90-10072-1)



Test Jig for Door Snubber
Figure 7

10. ILLUSTRATED PARTS LIST



Galley Door Snubber Assembly
Figure 8

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
8-					
	65-2346-1		SNUBBER ASSY, GALLEY DOOR	A	
	65-2346-3		SNUBBER ASSY, GALLEY DOOR	B	
	65-2346-4		SNUBBER ASSY, GALLEY DOOR	C	
	65-2346-5		SNUBBER ASSY, GALLEY DOOR	D	
1	BACB10A421L		. BEARING, ROD END		1
2	NAS509-6		. NUT		1
3	NAS513-6		. WASHER, LOCKING		1
4	66-2540-1		. CAP		1
5	MS28782-20		. RING, BACKUP		2
6	AN6227B20		. PACKING, O-RING (REPLD BY MS28775-215)		1
6	MS28775-215		. PACKING, O-RING (REPLS AN6227B20) (REPLD BY M83461-1-215)		1
6	M83461-1-215		. PACKING, O-RING (REPLS MS28775-215)		1
7	MS28782-10		. RING, BACKUP		1
8	AN6227B10		. PACKING, O-RING (REPLD BY MS28775-112)		1
8	MS28775-112		. PACKING, O-RING (REPLS AN6227B10) (REPLD BY M83461-1-112)		1
8	M83461-1-112		. PACKING, O-RING (REPLS MS28775-112)		1
9	63-1632		. SPRING (OPT TO 63-1632-1)		1
9	63-1632-1		. SPRING		1
10	63-1625		. PISTON	AB	1
10	63-1625		. PISTON	CD	1
10	63-1625-1		. PISTON (OPT TO 63-1625)	CD	1
11	MS28782-1		. RING, BACKUP		2
12	AN6227B1		. PACKING, O-RING (REPLD BY MS28775-006)		1
12	MS28775-006		. PACKING, O-RING (REPLS AN6227B1) (REPLD BY M83461-1-006)		1
12	M83461-1-006		. PACKING, O-RING (REPLS MS28775-006)		1
13	90-7819		. PLUNGER (OPT)	A	1
13	90-7819-1		. PLUNGER (OPT)	B	1
13	69-49964-1		. PLUNGER (OPT)	C	1
13	69-49964-2		. PLUNGER (PREF)	ABC	1
13	69-49964-2		. PLUNGER	D	1
14	MS28782-13		. RING, BACKUP	A	2
14	S12716-115		. SEAL, CHANNEL (V97820)	BCD	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
8-					
15	AN6227B13		. PACKING, O-RING (REPLD BY MS28775-115)		1
15	MS28775-115		. PACKING, O-RING (REPLS AN6227B13) (REPLD BY M83461-1-115)		1
15	M83461-1-115		. PACKING, O-RING (REPLS MS28775--115)		1
16	63-2364		. SPRING		2
17	MS28774-012		. RING, BACKUP		2
17	MS28782-7		. RING, BACKUP (OPT TO MS28774-012)		2
18	AN6227B7		. PACKING, O-RING (REPLD BY MS28775-012)		1
18	MS28775-012		. PACKING, O-RING (REPLS AN6227B7) (REPLD BY M83461-1-012)		1
18	M83461-1-012		. PACKING, O-RING (REPLS MS28775-012)		1
19	66-2527		. CYLINDER ASSY	AB	1
19	66-2527-2		. CYLINDER ASSY	CD	1
20	NAS516-1		. . FITTING, LUBRICATOR		1
21	BACB10W3M		. . BEARING (SUPSDS BACB10A358GCM2)		
22	66-2527-1		. . CYLINDER (USED ON 66-2527)		1
22	66-2527-3		. . CYLINDER (USED ON 66-2527-2)		1
23	AN501A10-4		. SCREW		1
24	AN960-10L		. WASHER		1
25	BACS11S23A1		. SEAL, FLUID WASHER (PREF)	AB	1
25	BACS11U1SH		. SEAL, FLUID WASHER (OPT)	AB	1
25	BACS11S23A1		. SEAL, FLUID WASHER	CD	1
25	NAS1598-3R		. SEAL, FLUID WASHER (OPT TO BACS11S23A1)	CD	1
26	BACM10A20-16BM		. MARKER, FOIL	A	1
27	BACM10L10-1BXK		. MARKER, FOIL		1

VENDORS

V97820 W.S. SHAMBAN AND CO., 711 MITCHELL RD., NEWBURY PARK, CA 91320