TO: ALL HOLDERS OF GROUND SPOILER LOCKING ACTUATOR ASSEMBLY OVERHAUL MANUAL, 27-60-32

REVISION NO. 25, DATED NOV 1/08

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
Updated magnetic and penetrant parts list				X									
Update finish code					X								

GROUND SPOILER LOCKING ACTUATOR ASSEMBLY

27-60-32

BOEING P/N 65-44851-3 thru -7,-10,-12,-13,-14

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 30668	Nov 15/67
		PRR 31309	Feb 15/69
		PRR 32112	Mar 10/72
		PRR 32121-10	Mar 10/72
27-1080		PRR 32487	Jul 5/76
		PRR 33069	Jan 5/82
		PRR 33247	Jan 5/83
27-1119			Dec 5/83
		PRR 34031	Mar 5/87
		PRR 35005-73	Dec 1/94

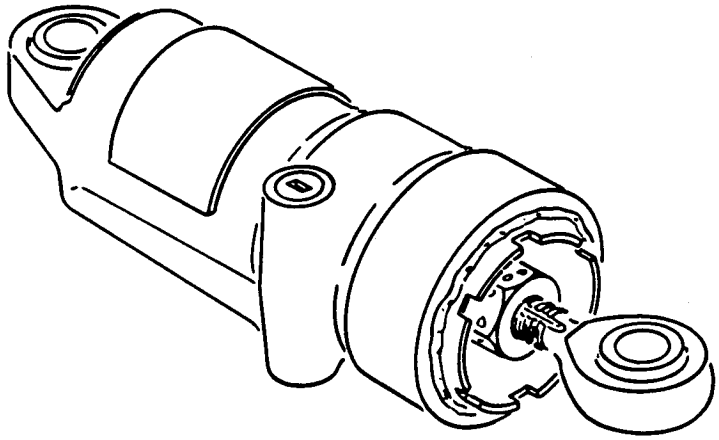
LIST OF EFFECTIVE PAGES

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

	PAGE	DATE	PAGE	DATE	PAGE	DATE
	27-60-32		1109	Nov 1/07		
	T-1	Jun 1/95	1110	Nov 1/99		
	T-2	BLANK				
*	LEP-1	Nov 1/08				
	LEP-2	BLANK				
	T/C-1	Nov 15/67				
	T/C-2	BLANK				
	1	Jan 5/79				
	2	BLANK				
	101	Dec 1/94				
	102	BLANK				
	201	Nov 15/67				
	202	BLANK				
*	301	Nov 1/08				
	302	BLANK				
	401	Mar 1/00				
	402	Jun 5/86				
	403	Dec 1/94				
*	404	Nov 1/08				
	405	Jun 5/86				
	406	BLANK				
	501	Mar 1/00				
	502	Sep 5/85				
	503	Nov 1/07				
	504	BLANK				
	601	Dec 1/94				
	602	Jun 5/86				
	701	Jul 1/04				
	702	Mar 25/74				
	703	Mar 25/74				
	704	BLANK				
	801	Sep 5/91				
	802	BLANK				
	901	Nov 15/67				
	902	BLANK				
	1001	Mar 1/05				
	1002	BLANK				
	1101	Nov 15/67				
	1102	Jun 1/94				
	1103	Nov 1/99				
	1104	Nov 1/07				
	1105	Nov 1/07				
	1106	Mar 5/89				
	1107	Nov 1/99				
	1108	Nov 1/07				

TABLE OF CONTENTS

GROUND SPOILER LOCKING ACTUATOR ASSEMBLY



Ground Spoiler Locking Actuator Assembly
Figure 1

DESCRIPTION AND OPERATION

1. The ground spoiler locking actuator consists of a housing and a piston. The housing has two control ports and a lug fitted with a spherical bearing. The housing has two control ports and a lug fitted with a sperical bearing. The piston contains a mechanical locking device, and a rod end assembly with a spherical bearing.

2. The unit positions the ground spoiler panel. Retraction of the piston raises the panel. When the piston extends, keys of the locking device extend into a locking ring and prevent the piston from moving further (holding the spoiler panel in position). Application of hydraulic pressure to the retract port, in an amount depending on the aerodynamic load on the panel, unlocks the actuator.

3. Leading Particulars (approximate)

   Length (overall) -- 9 inches (retracted); 10.7 inches (extended)
   Height (overall) -- 2.8 inches
   Width (overall) -- 2.5 inches
   Weight -- 3.2 pounds.

DISASSEMBLY

1. Disassemble 65-44851-3 thru -7, -13, -14 assemblies (Fig. 1101)

   A. Extend piston. Loosen nut (2) and remove key (1). Screw out rod end assembly (3) from piston rod.

   B. Remove lockwire. Using wrench, F80106-1, or equivalent, remove nut (6) from housing (32). Pull out piston assembly (23) together with ring (26) and end bearing (13) from housing.

      NOTE: Do not disassemble housing assembly (28) unless necessary for repair or replacement.

   C. Remove ring (26) from piston assembly (23) and disassemble parts (7 thru 13).

   D. Push out rivet (15), unscrew plug (24), and remove spring (16).

   E. Tap piston lightly on soft surface block to free ram (19). Remove ring (26), keys (14), and disassembly parts (16 thru 21).

      NOTE: Keep plug (24) and piston (25) together as a matched set.

2. Disassemble 65-44851-10,-12 assemblies (Fig. 1102)

   A. Extend piston. Loosen nut (2) and remove key (1). Remove rod end assembly (3) from piston (25).

      NOTE: Do not remove bearing (4) from rod end (5) unless repair or replacement is necessary.

   B. Remove lockwire. Using wrench, F80106-1, or equivalent, remove nut (6) from housing assembly (28). Remove piston rod (25) and attach parts from housing assembly (28).

      NOTE: Do not disassemble housing assembly (28) unless necessary for repair or replacement.

   C. Remove parts (7 thru 10), bearing (13) and lockring (26) from piston (25). Remove parts (11, 12) from bearing.

   D. Bend key (15A) out of slot in retainer (24) and unscrew retainer (24). Remove spring (16), lock piston (19) with rollers (16A) from piston (25). Remove rollers (16A) from lock piston (19). Remove parts (24A thru 24D) from retainer.

   CAUTION: PAWLS (14) ARE MATCHED PARTS AND MUST BE KEPT TOGETHER TO ENSURE PROPER OPERATION AFTER ASSEMBLY.

   E. Remove pawls (14) from piston (25). Remove parts (20, 21) from piston.

CLEANING

1. General

   A. Wash all metal parts except bearings (4 and 31, figure 1101) with dry cleaning solvent, Federal Specification P-D-680.

   B. Clean all bores, holes, threads, and passages with stiff bristle brush to remove stubborn accumulations of foreign matter.

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

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

2. Bearings

   A. Clean teflon-lined bearings (4 and 31) according to instructions per Subject 20-30-01.

INSPECTION/CHECK

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

2. Magnetic particle check per SOPM 20-20-01 -- Locking key (1, Fig. 1101 and 1102), rod end (5, Fig. 1101 and 1102), pawl (14, Fig. 1102), piston (25, Fig. 1101), and housing (32, P/N 65-44947-16, Fig. 1101 and 1102).

3. Penetrant per SOPM 20-20-02 check -- Nut (6, Fig. 1101 and 1102), seal retainer (8, Fig. 1101), end bearing (13, Fig. 1101 and 1102), plug (24, Fig. 1101), and housing (32, P/N 65-44947-2, -4, -6, -9, -11, -14, Fig. 1101 and 1102).

4. Depth of defects on contact surfaces of keys (14, Fig. 1101) and ram (19, Fig. 1101) must not exceed 0.005 inch, and surfaces must be smooth within 16 microinches with no protrusions.

5. Check that load is 19-21 lbs. at 1.120-inch length for spring (16, Fig. 1101).

6. Check spring (16, Fig. 1102)

   A. Compress spring to 1.03 inch. Check that load is 29.64-32.76 lbs.

   B. Compress spring to 1.26 inch. Check that load is 14.22-17.38 lbs.

REPAIR

1. Repair (Fig. 1101)

   A. Except on keys (14) and ram (19), remove scratches, nicks, and corrosion by polishing with 220-grit or finer aluminum oxide abrasive cloth. Refinish as necessary for protection against corrosion.

   B. For keys (14) and ram (19), remove only protruding material and buff to smooth finish. Do not remove defects by polishing or blending out completely.

   C. Piston (25) may be reworked if worn beyond wear limits given in Fig. 601, Fits and Clearances, as follows: (Refer to SOPM 20-10-01, Repair and Refinish of High Strength Steel Parts, and SOPM 20-10-04, Grinding of Chrome Plated Parts.)

      (1) Machine OD of piston lands to not less than 1.47 inches. Build up with hard chrome plate per SOPM 20-42-03 and machine to 1.4865-1.4875-inch diameter and 8-microinch finish. Diameter must be concentric within 0.001 inch FIM to piston rod OD.

      (2) Clean up piston rod OD to not less than 0.740 inch minimum. Build up with hard chrome plate per SOPM 20-42-03 and machine to 0.747-0.748-inch diameter and 8-microinch finish. Piston rod OD must be concentric within 0.001 inch FIM to OD of lands.

   D. Barrel of housing assembly (65-44947-5, -8, -10) may be reworked as follows:

      NOTE: This method allows repair of barrels which have bare or hard anodized bores, providing wear does not exceed 1.607-1.609 inch repair diameter.

      (1) Plug all passages to prevent or minimize contaminant entry into actuator.

      (2) Machine bore (diameter C, Fig. 401) and counterbore to dimensions shown to remove defects. Maintain surface finish of 32-microinch finish or better.

      (3) Hone 1.607-1.609 inch diameter bore to obtain 0.0015-0.0020 inch interference fit to actual sleeve O.D. Keep housing and sleeve as a matched set.

      (4) Thoroughly clean barrel per SOPM 20-30-03 to remove grease, oil, and solid contaminants. Flush all passages to remove chips.

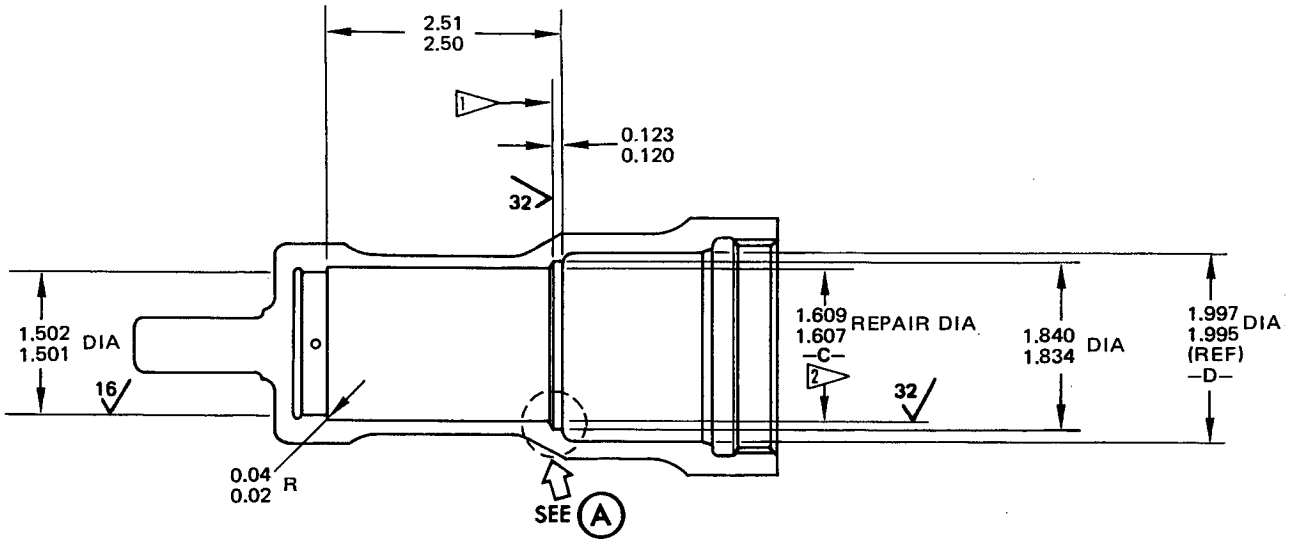
      (5) Penetrant check barrel per SOPM 20-20-02.

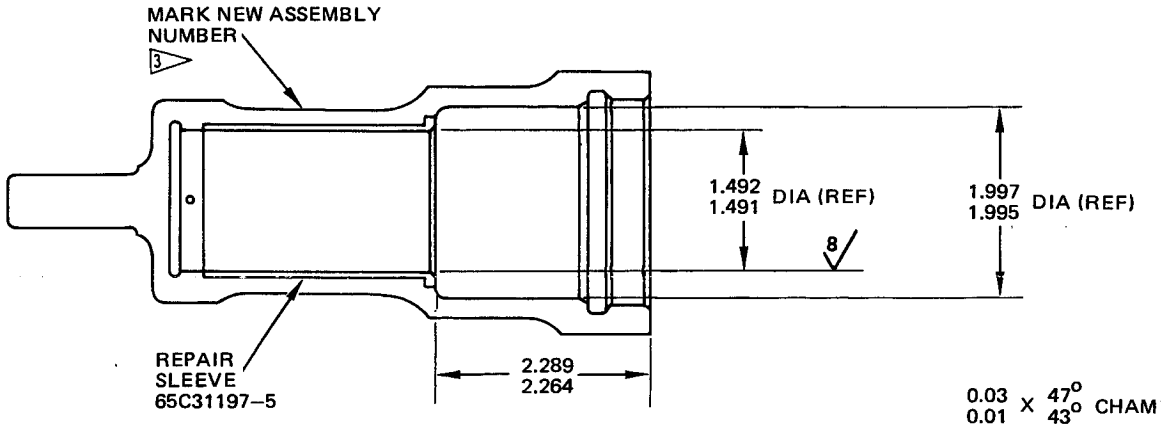
      (6) Alodine reworked surfaces of barrel per SOPM 20-43-03, Type II.

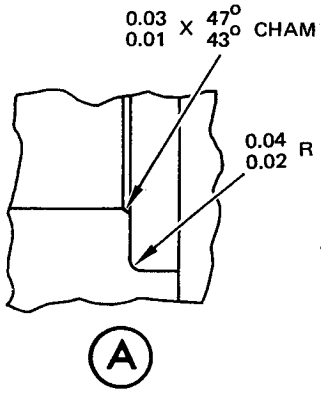
(7) Heat housing to 250°F; cool sleeve to -65°F, then install sleeve in housing. Check that sleeve has completely and firmly bottomed on internal shoulder of housing.

(8) Hone sleeve to dimension and finish noted. Clean bore per 20-30-03; dry thoroughly, then oil bore with BMS 3-11 hydraulic fluid.

(9) Vibro engrave new assembly number on housing assembly; locate approximately as shown.







REFINISH

SLEEVE: CADMIUM PLATE PER 20-42-05, TYPE II, CLASS III, 0.0002-0.0003 INCH THICK.
HOUSING: FLASH HARD ANODIZE 0.0002-0.0003 INCH THICK AND SODIUM DICHROMATE SEAL.
APPLY ONE COAT PRIMER, BMS 10-11, TYPE I (F-20.02) AND ENAMEL, BMS 10-60, BAC707 GRAY GLOSS (SRF-14.9813) ON EXTERIOR SURFACES; OMIT PRIMER AND ENAMEL FROM OPEN HOLES AND PORT FACES.

1 PERPENDICULAR TO -C- WITHIN 0.0010

2 TOTAL RUNOUT WITH RESPECT TO -D- TO BE WITHIN 0.001

3 65C31197-7 FROM 65-44947-5
65C31197-8 FROM 65-44947-8
65C31197-9 FROM 65-44947-10

REPAIR

REF 1 2 3

MATERIAL:

HOUSING: AL ALLOY
SLEEVE: 4330 STL
(OPT: 4130 STL)
150-170 KSI

ALL DIMENSIONS ARE IN INCHES

65C31197-7, -8, -9 HOUSING ASSY

Housing Bore Repair and Refinish
Figure 401

2. Refinish (Fig. 1101, 1102)

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

A. Locking key (1) -- Cadmium plate (F-1.1923) all over. Material: Steel, 4340, 125-145 ksi.

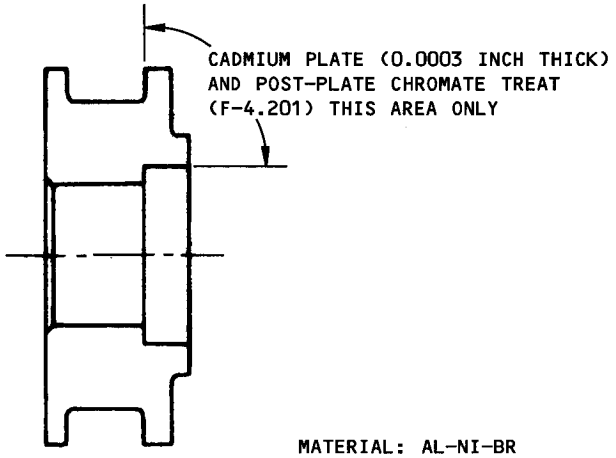
B. Nut (6), seal retainer (8), plug (24, Fig. 1101) -- Chromic acid anodize (F-2.26) all over. Material: Al alloy.

C. End bearing (13) -- See Fig. 402.

D. Housing (32, all except 65-44947-11, -14, -16) -- Hard anodize (F-2.204) 0.0002 to 0.0003 inch thick on exterior surfaces and sodium dichromate seal per MIL-A-8625. Apply primer BMS 10-11, Type 1 (SRF-12.205) and enamel (SRF-14.9813) on exterior surfaces. Material: Al alloy.

E. Housing (32, 65-44947-11,-14) -- Sulfuric acid hard anodize (F-17.06) on 1.491 in. dia. bore only. Flash hard anodize 0.0002 to 0.0003 in. thick and sodium dichromate seal per MIL-A-8625 all other surfaces. Material: Al alloy.

F. Housing (32, 65-44947-16) -- Finish (F-17.25). Material: 15-5PH CRES.



END BEARING (13)

Refinish Diagram
Figure 402

1581139

3. Replacement

A. Replace all O-rings and cap packing rings (17 and 20) at each overhaul.

B. Replace parts found unserviceable or which are damaged beyond simple repair.

C. If one of spherical bearings (4 or 31) needs replacement, follow instructions given in Subject 20-50-03.

D. Install pin (30) and plug (29) per 20-50-04 except minimum depth requirement does not apply.

ASSEMBLY

1. Lightly lubricate all packings, backup rings and cap packing rings with BMS 3-11 hydraulic fluid or Skydrol Assembly Lube MCS 352 as parts are installed and assembled (SOPM 20-50-06).

2. Assemble 65-44851-3 thru -7, -13, -14 assemblies.

   A. Install packing (21) and cap packing ring (20) on piston (25).

   B. Install O-ring (18) and cap packing ring (17) on ram (19).

   C. Insert keys (14) in piston (25) with chamfered edges toward ring groove in piston as shown in Fig. 601. Install ring (26) over keys and piston, with large chamfer on ring (26) outer diameter towards large end of piston (25).

      NOTE: Flanged ID of ring will not slide over piston beyond key area (Fig. 601).

   D. Install ram (19) and spring (16) in piston. Screw plug (24) into piston until holes for rivet (15) are aligned. If a new plug (24) is used, install plug and torque to 100-120 lb-in. Drill a 0.130-0.132 inch hole using the hole in the piston (25) as a guide. Push rivet (15) into hole until ends are flush to 0.020 inch below surface. Roll swage rivet 60° both ends.

   E. Slide piston assembly (23) with ring (26) into cylinder bore of housing until piston assembly bottoms.

      NOTE: If parts are installed with keys extending into large ID of ring (26), piston will be in fully extended position.

   F. Install packing (11) and backup rings (12) on bearing (13). Slide bearing into cylinder bore until bottomed.

   G. Assemble packing (10), teflon seal (9), (thin end towards packing) seal retainer (8), and scraper (7) on piston rod and slide into position.

   H. Thread nut (6) into housing (32) to engage approximately two threads and apply a light coating of grease to exposed threads of nut. Screw nut into housing and tighten to 1000-1200 lb-in. using tool F80106-1. After completion of testing and lockwiring (per SOPM 20-50-02), wipe off excess grease and clean contact area between nut and housing with solvent. Apply a bead of sealant to contact area and allow to cure. Check that sealant has bonded to the surfaces.

      NOTE: If piston is extended more than 1.70 inches from full retracted position, piston will lock. It can be retracted only by applying hydraulic pressure to the retract port (Ref TESTING).

I. Thread nut (2) onto rod end assembly (3). Thread rod end assembly into piston (25) to engage approximately two threads and apply a light coating of grease to the exposed threads of rod end. Screw rod end assembly into piston rod until distance of 7.54 inches between centerlines of bores of bearings (4, 31) is obtained, (piston fully retracted, and slot in rod end aligned with slot in piston rod). Insert locking key (1) in slot. Tighten nut (2) to 300 lb-in. maximum. After completion of testing and lockwiring (per 20-50-02) wipe off excess grease and clean contact area between rod end, nut and piston assembly with solvent. Apply a bead of sealant to contact area and allow to cure. Check that sealant has bonded to the surfaces.

3. Assemble 65-44851-10, -12 assemblies

A. Install rollers (16A) in slot in lock piston (19). Insert lock piston (19) into piston (25). Install pawl (14) in slots in piston (25).

B. Install packings and back-up rings (20, 21, 24A thru 24D) on piston (25) and retainer (24).

C. Install spring (16) in lock piston (19) install key (15A) in piston (25) slot and install retainer (24) on piston (25). Tighten retainer to 90-100 lb-in. Back off retainer as required to align key (15A) with slot in retainer, bend key into slot of retainer.

D. Install packing (11) and back-up rings (12) on bearing (13). Slide lockring (26) and bearing on piston (25). Assemble parts (7 thru 10) on piston and slide nut (6) on piston.

E. Slide piston (25) with attached parts into housing assembly (28) until bottomed.

F. Thread nut (6) into housing (32) to engage approximately two threads and apply a light coating of grease to exposed threads of nut. Screw nut into housing and tighten to 1000-1200 lb-in. using tool F80106-1. After completion of testing and lockwiring (per 20-50-02), wipe off excess grease and clean contact area between nut and housing with solvent. Apply a bead of sealant to contact area and allow to cure. Check that sealant has bonded to the surfaces.

G. Thread nut (2) onto rod end assembly (3). Thread rod end assembly into piston (25) to engage approximately two threads and apply a light coating of grease to the exposed threads of rod end. Screw rod end assembly into piston rod until distance of 7.54 inches between centerlines of bores of bearings (4, 31) is obtained, (piston fully retracted, and slot in rod end aligned with slot in piston rod). Insert locking key (1) in slot. Tighten nut (2) to 300 lb-in. maximum. After completion of testing and lockwiring (per SOPM 20-50-02) wipe off excess grease and clean contact area between rod end, nut and piston assembly with solvent. Apply a bead of sealant to cantact area and allow to cure. Check that sealant has bonded to the surfaces.

NOTE: Optional procedure to prevent corrosion to piston (25) and rod end assembly (3), consists of completely filling piston (25) cavity with grease before inserting rod end assembly (3) into piston (25).

4. Material

A. Hydraulic fluid -- BMS 3-11 (SOPM 20-60-03)

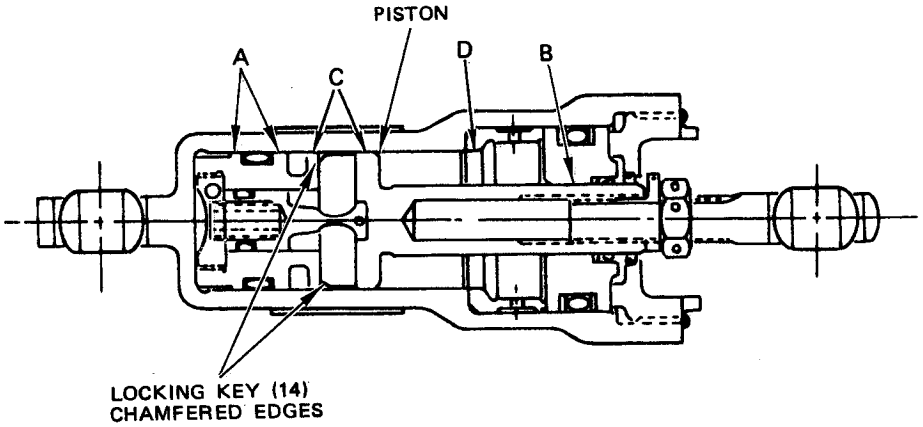
B. Assembly Lube MCS 352 -- Monsanto Chemical Corporation, St. Louis, Missouri

C. Grease -- Batco 8401 No. 1 (No. 2 Optional) (SOPM 20-60-03)

D. Sealant -- BMS 5-26 Type 2 Class B - 1/2 (Class B-2 Optional) or BMS 5-95, Type 1, Class B-1/2 or BMS 5-95, Type 1, Class B-2 (SOPM 20-60-01)

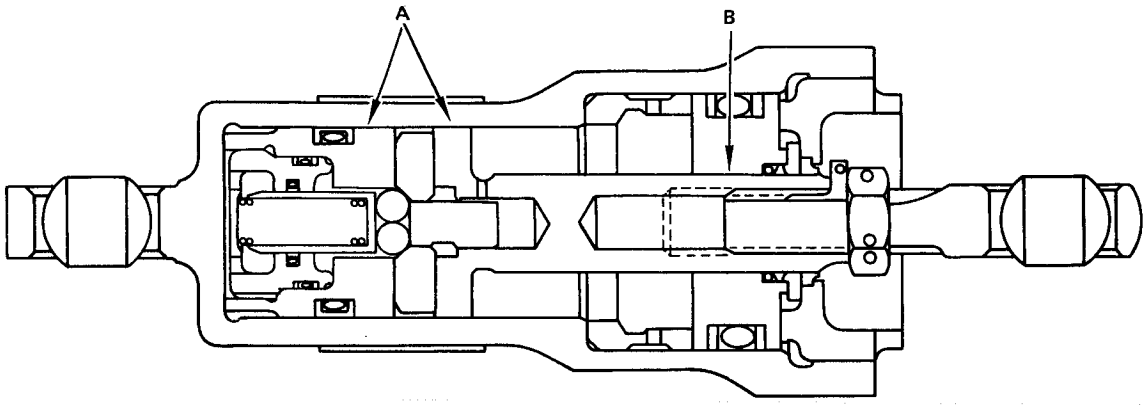
E. Solvent -- Series 92 (SOPM 20-30-92)

FITS AND CLEARANCES



65-44851-3 THRU -7,-13,-14

		Design Dim				Service Wear Limits		
Ref. Letter Fig.601	Mating Index No. Fig.1101	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min.	Max.	Min.	Max.	Min.	Max.	
A	ID 32	1.4910	1.4920	0.0035	0.0055		1.4935	0.0060
	OD 25	1.4865	1.4875			1.4850		
B	ID 13	0.7490	0.7510	0.0010	0.0040		0.7530	0.0050
	OD 25	0.7470	0.7480			0.7440		
C	ID 32	1.491	1.492	0.023	0.028			
	OD 25	1.464	1.468					
D	ID 26	1.483	1.485	0.015	0.021			
	OD 25	1.464	1.468					



65–44851–10, –12

Ref. Letter Fig.602	Mating Index No. Fig.1102	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 32	1.4910	1.4920	0.0020	0.0040			
	OD 25	1.488	1.489					
B	ID 13	0.7490	0.7510	0.0020	0.0060			
	OD 25	0.745	0.747					

All dimensions are in inches

TESTING

1. Test equipment.

   A. Test bench capable of delivering graduated hydraulic pressure up to 5400 psi.

   B. Suitable tool to apply 6000-pound compression load to piston rod.

2. Preparation for test.

   A. Connect actuator to hydraulic supply.

   B. Bleed all air from unit by cycling piston.

   C. Tests shall be conducted at room temperature with Skydrol 500. Use of Skydrol 7000 is optional.

   D. Tests shall be conducted in the sequence shown below.

WARNING: DO NOT APPLY COMPRESSED AIR TO PORTS AT ANY TIME.

DO NOT CYCLE UNIT AT PROOF PRESSURE.

3. Functional tests.

   A. Proof pressure test.

      (1) With retract port (figure 701) open and piston fully extended, apply 5400 psi hydraulic pressure to extend port for two minutes.

      (2) Reduce pressure to 3 to 7 psi and hold for two minutes. There shall be no leakage, failure, or permanent set.

      (3) Repeat steps (1) and (2) with extend port open, piston fully retracted and hydraulic pressure on retract port.

      NOTE: To retract piston, unit must be unlocked by applying hydraulic pressure to retract port.

   B. Leakage test.

      (1) Cycle unit 25 times with 3000 psi hydraulic pressure.

      (2) External leakage shall not exceed one drop.

C. Stroke test.

(1) Cycle unit with 3000 psi hydraulic pressure.

(2) Stroke shall be 1.71 to 1.73 inches.

D. Unlock pressure test.

(1) Fully extend unit and reduce hydraulic pressure to zero. Apply 6000-pound compression load to piston rod. Check that piston remains locked.

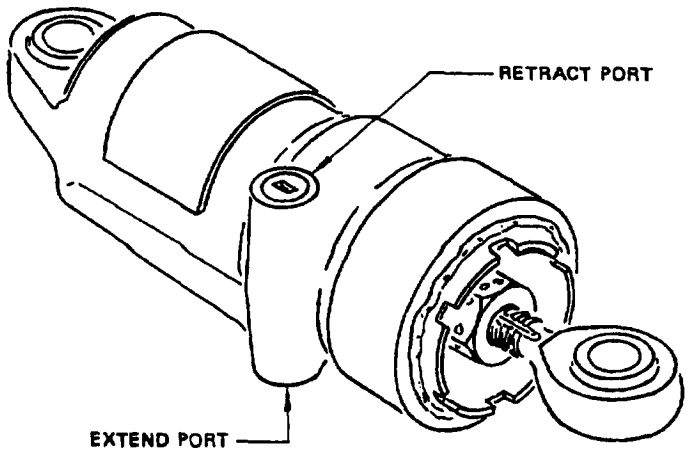
(2) Reduce compression load to 3000 pounds. Apply slowly increasing hydraulic pressure to retract port. Check that piston unlocks and retracts at pressure not exceeding 1000 psi.

(3) Fully extend unit and reduce compression load to zero. Apply slowly increasing hydraulic pressure to the retract port. Check that piston unlocks at 70 psi minimum.

E. Preparation for storage.

(1) After test completion, partially fill unit with BMS 3-11 hydraulic fluid. If Skydrol 7000 was used for testing, unit must be drained thoroughly before partially filling with BMS 3-11.

(2) Cap or plug ports with packings, and plugs, or caps resistant to BMS 3-11 fluids.



Port Identification
Figure 701

Test Phase	Limits
Proof Pressure Test	
Open retract port and fully extend piston. Apply 5400 psi to extend port for 2 minutes. Reduce pressure to 3 to 7 psi and hold for two minutes. Repeat with extend port open, piston fully retracted and pressure applied to retract port.	There shall be no leakage, failure, or permanent set.
NOTE: To retract piston, unit must be unlocked by applying pressure to retract port.	
Leakage Test	
Cycle unit 25 times.	External leakage shall not exceed 1 drop.
Stroke Test	
Cycle unit with 3000 psi.	Stroke shall be 1.71 to 1.73 inches.
Unlock Pressure Test	
Fully extend unit and reduce pressure to zero. Apply 6000 pound compression load to piston rod.	Piston shall remain locked.
Reduce compression load to 3000 pounds. Apply slowly increasing hydraulic pressure to retract port.	Piston shall unlock and retract at pressure not exceeding 1000 psi.
Fully extend unit and reduce compression load to zero. Apply slowly increasing hydraulic pressure to retract port.	Piston shall unlock at 70 psi minimum.

TROUBLE SHOOTING

1. Trouble during test after overhaul.

Trouble	Possible Cause	Correction
A. Leakage on scaled housing thread end or around piston rod	Faulty or defective O-ring (10 or 11), or foot seal (9)	Disassemble, inspect, replace
B. Piston does not lock	Defective spring (16), excessive friction between ram (19) and piston bore	Disassemble, inspect, repair or replace
C. Too much internal piston leakage	Cap rings (20) scratched, damaged or defective before insertion. Seals not seated properly on piston (25). Surface finish on inner housing (32) wall not 8-microinch or better. Unsatisfactory surface on the bevelled edges of the opened end inner wall housing which damage cap rings (20) when inserted (Ref Fig. 401, View (A) of REPAIR).	Disassemble, inspect, repair or replace

STORAGE INSTRUCTIONS

1. Partially fill unit with Skydrol 500 hydraulic fluid. Plug ports with Skydrol resistant packings and plugs.

2. Wrap unit in vapor barrier paper. Attach tag showing test date and cure date for packings. Tag should carry the following information: "This unit contains Skydrol 500 hydraulic fluid."

3. For further information, refer to "Temporary Protective Coatings," Subject 20-44-02.

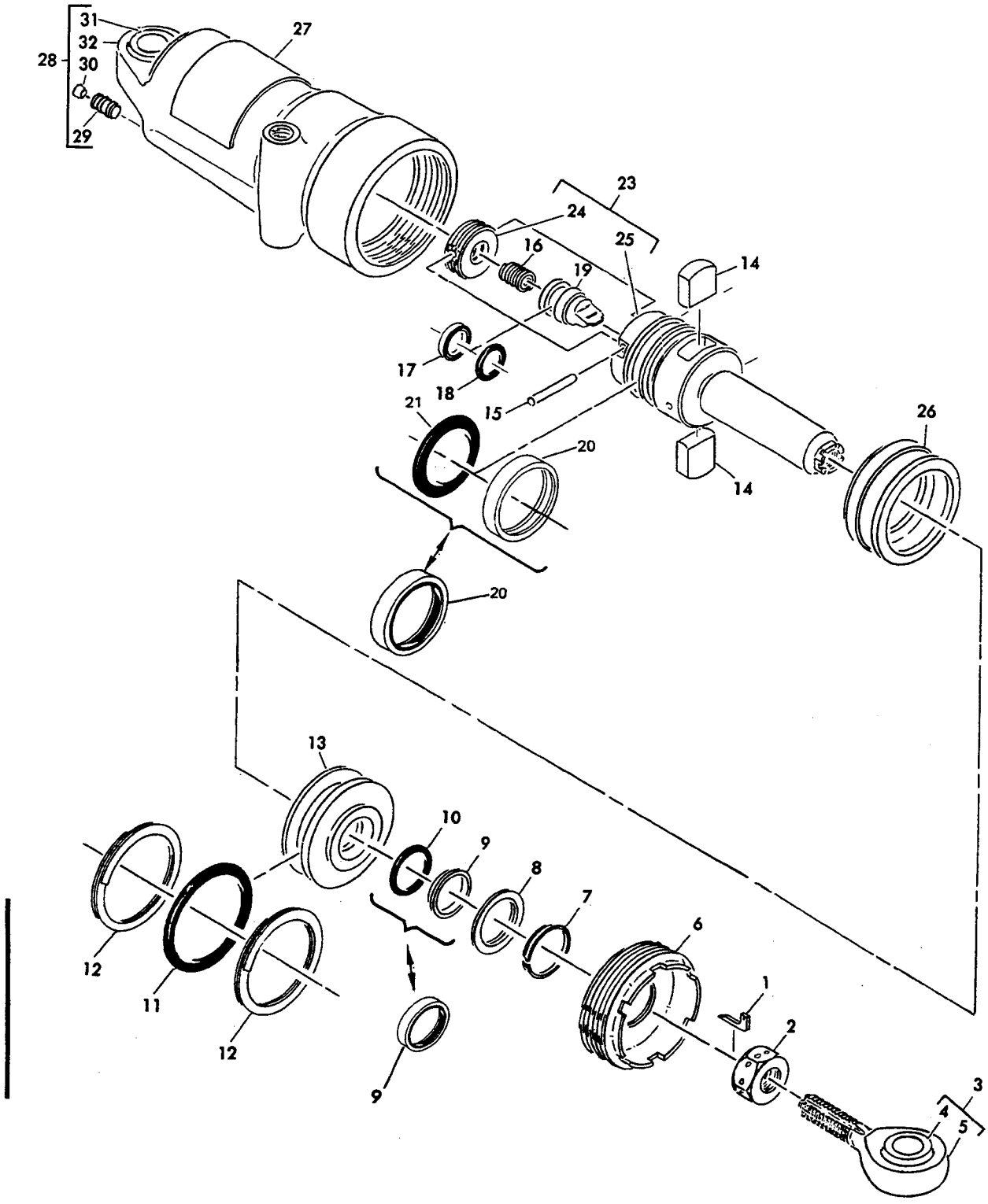
SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

1. Tool to apply 6000-pound compression load to piston rod.

2. Wrench, Lug Spanner -- F80106-1

ILLUSTRATED PARTS LIST

THIS PAGE
INTENTIONALLY
LEFT BLANK



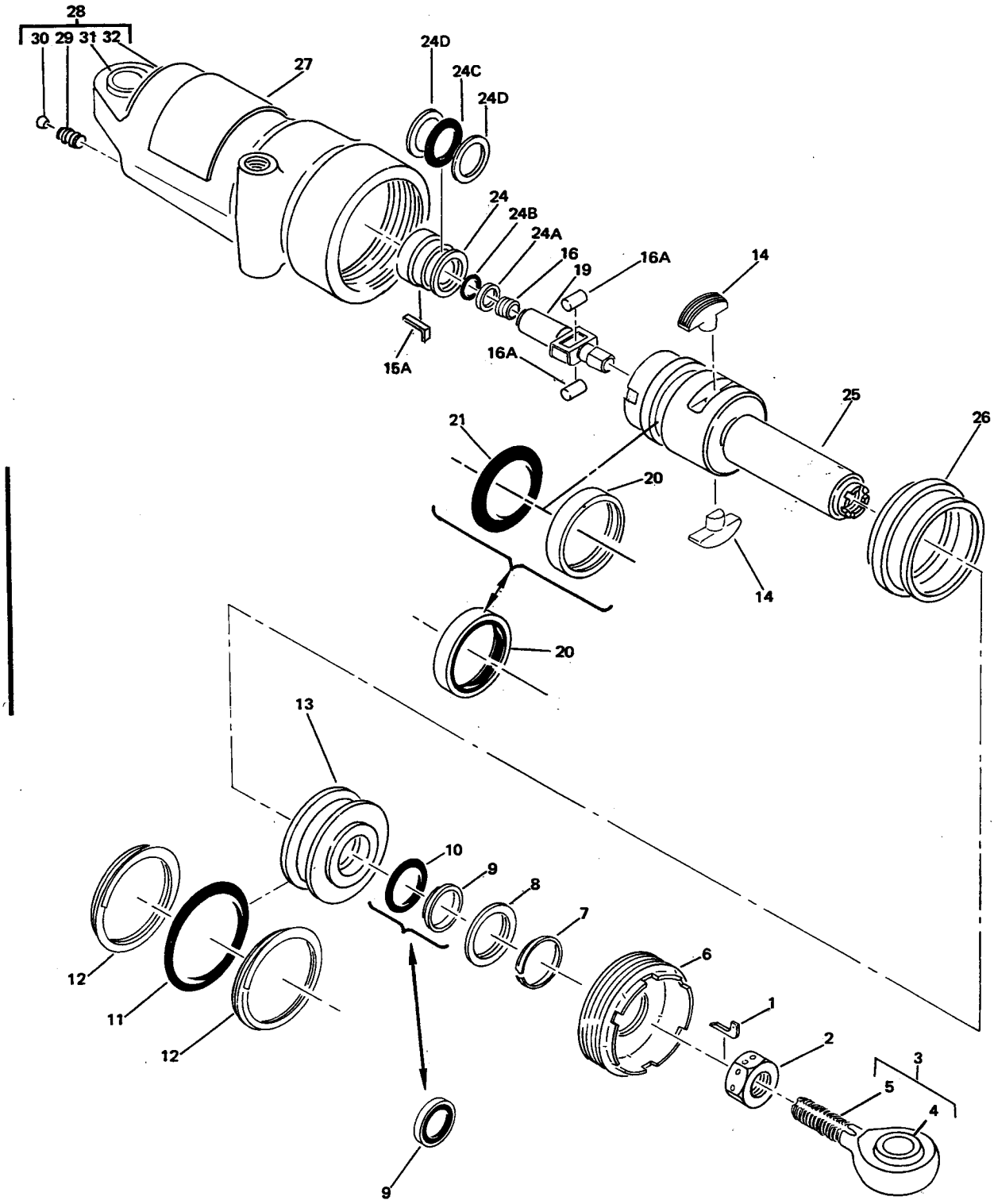
Ground Spoiler Locking Actuator Assembly
Figure 1101

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
	65-44851-3		GROUND SPOILER LOCKING ACTUATOR ASSY	A	RF
	65-44851-4		GROUND SPOILER LOCKING ACTUATOR ASSY	B	RF
	65-44851-5		GROUND SPOILER LOCKING ACTUATOR ASSY	C	RF
	65-44851-6		GROUND SPOILER LOCKING ACTUATOR ASSY	D	RF
	65-44851-7		GROUND SPOILER LOCKING ACTUATOR ASSY (SB 27-1080)	E	RF
	65-44851-13		GROUND SPOILER LOCKING ACTUATOR ASSY	F	RF
	65-44851-14		GROUND SPOILER LOCKING ACTUATOR ASSY	G	RF
1	69-35959-1		. KEY, LOCKING		1
2	NAS509-8		. NUT	A	1
2	NAS1423-8		. NUT	B-G	1
3	69-35958-1		. ROD END ASSY	A-G	1
3	69-35958-3		. ROD END ASSY (OPT)	ABCE	1
3	69-35958-5		. ROD END ASSY (OPT)	A-G	1
3	69-35958-7		. ROD END ASSY (OPT)	ABCE	1
4	ABWT8V103		. . BEARING, VS0352 *[1] (USED ON 69-35958-1, -3)		1
4	BLFR8-026		. . BEARING, V81376 *[1] (USED ON 69-35958-1, -3)		1
4	KSBN8-21		DELETED		
4	NHSB8V202		. . BEARING, V15860 *[1] (USED ON 69-35958-1, -3)		1
4	SBS16ATC32-2		. . BEARING, V21335 *[1] (USED ON 69-35958-1, -3)		1
4	WRG8BACH		. . BEARING, V73134 *[1] (USED ON 69-35958-1, -3)		1
4	YTA145		. . BEARING, V77896 *[1] (USED ON 69-35958-1, -3)		1
4	03-730-0500		. . BEARING, V09455 *[1] (USED ON 69-35958-1, -3)		1
4	ADSB8V202		. . BEARING, V15860 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
4	KSC129908P		. . BEARING, V50632 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
4	WHT8V101		. . BEARING, VS0352 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
4	WRRG8BACH		. . BEARING, V73134 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
4	03-826-08E003		. . BEARING, V09455 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
5	69-35958-2		. . ROD END (USED ON 69-35958-1)		1
5	69-35958-4		. . ROD END (USED ON 69-35958-3)		1
5	69-35958-6		. . ROD END (USED ON 69-35958-5)		1
5	69-35958-8		. . ROD END (USED ON 69-35958-7)		1
6	69-35962-1		. NUT *[6]		1
6	69-35962-2		. NUT *[7]		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
7	BACS34A5A		. SCRAPER		1
8	69-35961-1		. RETAINER, SEAL		1
9	S33121-116H5		. SEAL, V97820 (USED WITH NAS1611-116) (PREF)		1
9	S33121-116H99		. SEAL, V97820 (USED WITH NAS1611-116) (OPT)		1
9	BACS11AA116A		. SEAL, TEFLON (USED WITH NAS1611-116) (OPT)		1
9	GTC5394C116		. SEAL ASSY, V72902 (OPT)		1
10	NAS1611-116		. PACKING, O-RING (USED WITH S33121-116H5, S33121-116H99, BACS11AA116A)		1
11	NAS1611-326		. PACKING, O-RING		1
12	MS28782-29		. RING, BACKUP		2
13	69-35960-1		. BEARING		1
14	1165-13		. KEY, V60029		2
15	1165-17		. RIVET, V60029		1
16	1165-14		. SPRING, V60029		1
17	69-54540-112		. RING, CAP PACKING		1
18	NAS1611-112		. PACKING, O-RING		1
19	1165-15		. RAM, V60029	A-D	1
19	1165-020		. RAM, V60029	EFG	1
20	69-54540-218		. RING, CAP PACKING (USED WITH NAS1611-218)		1
20	7218MT952T		. SEAL, V72902 (OPT TO 69-54540-218 WITH NAS1611-218 TOGETHER)		1
21	NAS1611-218		. PACKING, O-RING (USED WITH 69-54540-218)		1
22	MS16562-10		DELETED		
23	1165-16		. PISTON ASSY, V60029		1
24	69-35963-1		. . PLUG, RETAINING		1
25	1165-11		. . PISTON, V60029		1
26	1165-12		. RING, V60029		1
27	BAC27DHY14		. NAMEPLATE		1
27	BAC27DHY359		. NAMEPLATE (OPT)		1
28	65-44947-15		. HOUSING ASSY (PREF)	A-F	1
28	65-44947-13		. DELETED		
28	65-44947-1		. HOUSING ASSY *[8]	A	1
28	65-44947-5		. HOUSING ASSY *[8]	B	1
28	65-44947-8		. HOUSING ASSY *[8]	C	1
28	65-44947-10		. HOUSING ASSY *[8]	DE	1
28	65C31197-7		. HOUSING ASSY *[3] *[8]	B	1
28	65C31197-8		. HOUSING ASSY *[4] *[8]	C	1
28	65C31197-9		. HOUSING ASSY *[5] *[8]	DE	1
28	65-44947-13		. HOUSING ASSY *[8]	F	1
28	65-44947-15		. HOUSING ASSY *[9]	G	1
28	65-44947-15		. HOUSING ASSY (OPT) *[9]	A-F	1
29	BACP20AX18DAP		. . PLUG		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
30	BACP20AX18DA		. . PIN		1
31	ABWT8V103		. . BEARING, VS0352 *[1]		1
31	BLFR8-026		. . BEARING, V81376 *[1]		1
31	KSBN8-21		DELETED		
31	NHSB8V202		. . BEARING, V15860 *[1]		1
31	SBS16ATC32-2		. . BEARING, V21335 *[1]		1
31	WRG8BACH		. . BEARING, V73134 *[1]		1
31	YTA145		. . BEARING, V77896 *[1]		1
31	03-730-0500		. . BEARING, V09455 *[1]		1
31	ADSB8V202		. . BEARING, V15860 *[2]		1
31	KSC129908P		. . BEARING, V50632 *[2]		1
1	WHT8V101		. . BEARING, VS0352 *[2]		1
31	WRRG8BACH		. . BEARING, V73134 *[2]		1
31	03-826-08E003		. . BEARING, V09455 *[2]		1
32	65-44947-16		. . HOUSING (USED ON 65-44947-15)		1
32	65-44947-14		. . HOUSING (USED ON 65-44947-13)	F	1
32	65-44947-2		. . HOUSING (USED ON 65-44947-1)	A	1
32	65-44947-4		. . HOUSING (OPT)(USED ON 65-44947-1)	A	1
32	65-44947-6		. . HOUSING (USED ON 65-44947-5)	B	1
32	65-44947-9		. . HOUSING (USED ON 65-44947-8)	C	1
32	65-44947-11		. . HOUSING (USED ON 65-44947-10)	DE	1

*[1] BOEING 10-60545-140S (REPLD BY 10-60545-140SA)
*[2] BOEING 10-60545-140SA (REPLS 10-60545-140S)
*[3] REPAIR ASSY MADE FROM HOUSING ASSY 65-44947-5 AND SLEEVE 65C31197-5
*[4] REPAIR ASSY MADE FROM HOUSING ASSY 65-44947-8 AND SLEEVE 65C31197-5
*[5] REPAIR ASSY MADE FROM HOUSING ASSY 65-44947-10 AND SLEEVE 65C31197-5
*[6] USED ON HOUSING ASSEMBLIES 65-44947-1, -5, -8, -10, -13 AND 65C31197-7, -8, -9
*[7] USED ON HOUSING ASSEMBLY 65-44947-15
*[8] USED WITH NUT 69-35962-1
*[9] USED WITH NUT 69-35962-2



Ground Spoiler Locking Actuator Assembly
Figure 1102

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1102-					
	65-44851-10		ACTUATOR ASSY, GROUND SPOILER LOCKING	A	RF
	65-44851-12		ACTUATOR ASSY, GROUND SPOILER LOCKING (SB 27-1119)	B	RF
1	69-35959-1		. KEY, LOCKING		1
2	NAS1423-8		. NUT		1
3	69-35958-1		. ROD END ASSY	A	1
3	69-35958-3		. ROD END ASSY	B	1
3	69-35958-5		. ROD END ASSY (OPT)	A	1
3	69-35958-7		. ROD END ASSY (OPT)	B	1
4	ABWT8V103		. . BEARING, VS0352 *[1] (USED ON 69-35958-1, -3)		1
4	BLFR8-026		. . BEARING, V81376 *[1] (USED ON 69-35958-1, -3)		1
4	KSBN8-21		DELETED		1
4	NHSB8V202		. . BEARING, V15860 *[1] (USED ON 69-35958-1, -3)		1
4	SBS16ATC32-2		. . BEARING, V21335 *[1] (USED ON 69-35958-1, -3)		1
4	WRG8BACH		. . BEARING, V73134 *[1] (USED ON 69-35958-1, -3)		1
4	YTA145		. . BEARING, V77896 *[1] (USED ON 69-35958-1, -3)		1
4	03-730-0500		. . BEARING, V09455 *[1] (USED ON 69-35958-1, -3)		1
4	ADSB8V202		. . BEARING, V15860 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
4	KSC129908P		. . BEARING, V50632 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
4	WHT8V101		. . BEARING, VS0352 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
4	WRRG8BACH		. . BEARING, V73134 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
4	03-826-08E003		. . BEARING, V09455 *[2] (USED ON 69-35958-1, -3, -5, -7)		1
5	69-35958-2		. . ROD END	A	1
5	69-35958-4		. . ROD END	B	1
5	69-35958-6		. . ROD END	A	1
5	69-35958-8		. . ROD END	B	1
6	69-35962-1		. NUT *[4]		1
6	69-35962-2		. NUT *[5]		1
7	BACS34A5A		. SCRAPER		1
8	69-35961-1		. RETAINER		1
9	S33121-116H5		. SEAL V97820 (USED WITH NAS1611-116) (PREF)		1
9	S33121-116H99		. SEAL V97820 (USED WITH NAS1611-116) (OPT)		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1102-					
9	BACS11AA116A		. SEAL (USED WITH NAS1611-116)(OPT)		1
9	GTC5394C116		. SEAL ASSY, V72902 (OPT)		1
10	NAS1611-116		. PACKING (USED WITH S33121-116H5, S33121-116H99, BACS11AA116A)		1
11	NAS1611-326		. PACKING		1
12	MS28782-29		. RING, BACK-UP		2
13	69-35960-1		. BEARING		1
14	1211243-207		. PAWL, V98391 (MATCHED SET)		2
15	1211243-212		DELETED		
15A	1211243-230		. KEY, RETAINING V98391		1
16	1211243-209		. SPRING, V98391		1
16A	1211243-208		. ROLLER, V98391		2
19	1211243-205		. PISTON, LOCK, V98391		1
20	69-54540-218		. RING, CAP PACKING (USED WITH NAS1611-218)		1
20	7218MT952T		. SEAL, V72902 (OPT TO 69-54540-218 WITH NAS1611-218 TOGETHER)		1
21	NAS1611-218		. PACKING (USED WITH 69-54540-218)		1
24	1211243-206		. RETAINER, V98391		1
24A	S12066-014		. RING, V97820		1
24B	MS28775-015		DELETED		
24B	NAS1611-015		. PACKING		1
24C	MS28775-021		DELETED		
24C	NAS1611-021		. PACKING		1
24D	MS28774-021		. RING, BACK-UP		2
25	1211243-202		. PISTON, V98391		1
26	1211243-210		. RING, LOCK, V98391		1
27	BAC27DHY14		DELETED		
27	1211243-211		. NAMEPLATE, V98391		1
28	65-44947-15		. HOUSING ASSY (OPT) *[7]		1
28	65-44947-13		DELETED		
28	65-44947-10		. HOUSING ASSY *[6]		1
28	65C31197-9		. HOUSING ASSY *[3] *[6]		1
29	BACP20AX18DAP		. . PLUG		1
30	BACP20AX18DA		. . PIN		1
31	ABWT8V103		. . BEARING, VS0352 *[1]		1
31	BLFR8-026		. . BEARING, V81376 *[1]		1
31	KSBN8-21		DELETED		1
31	NHSB8V202		. . BEARING, V15860 *[1]		1
31	SBS16ATC32-2		. . BEARING, V21335 *[1]		1
31	WRG8BACH		. . BEARING, V73134 *[1]		1
31	YTA145		. . BEARING, V77896 *[1]		1
31	03-730-0500		. . BEARING, V09445 *[1]		1
31	ADSB8V202		. . BEARING, V15860 *[2]		1
31	KSC129908P		. . BEARING, V50632 *[2]		1
31	WHT8V101		. . BEARING, VS0352 *[2]		1
31	WRRG8BACH		. . BEARING, V73134 *[2]		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1102-					
31	03-826-08E003		. . BEARING, V09455 *[2]		1
32	65-44947-16		. . HOUSING (USED ON 65-44947-15)		1
32	65-44947-14		DELETED		
32	65-44947-11		. . HOUSING (USED ON 65-44947-10)		1

*[1] BOEING 10-60545-140S (REPLD BY 10-60545-140SA)
*[2] BOEING 10-60545-140SA (REPLD 10-60545-140S)
*[3] REPAIR ASSY MADE FROM HOUSING ASSY 65-44947-10 AND SLEEVE 65C31197-5
*[4] USED ON HOUSING ASSEMBLIES 65-44947-10 AND 65C31197-9
*[5] USED ON HOUSING ASSEMBLY 65-44947-15
*[6] USED WITH NUT 69-35962-1
*[7] USED WITH NUT 69-35962-2

VENDORS

VS0352	NIPPON MINIATURE BEARING CO., LTD., TOKYO JAPAN
V09455	BMF TRANSPORT DYNAMICS CORP., 3131 W. SEGERSTROM AVE., P.O. BOX 1953, SANTA ANA, CALIFORNIA 92702-1953. FORMERLY LEAR SIEGLER, INC., TRANSPORT DYNAMICS DIV.
V15860	NEW HAMPSHIRE BALL BEARINGS, INC., ASTRO DIVISION, 155 LEXINGTON AVE., LACONIA, NEW HAMPSHIRE 03246-2937
V21335	TORRINGTON CO., FAFNIR BEARING DIV., 59 FIELD ST., TORRINGTON, CONNECTICUT 06790-4942
V50632	KAMATICS CORP., 1335 BLUE HILLS RD., BLOOMFIELD, CONNECTICUT 06002-1304
V60029	HYDRAULIC UNITS INC., SUBSIDIARY OF DOWTY AEROSPACE, 1700 BUSINESS CENTER DR., DUARTE CALIFORNIA 91010-2859 (FORMERLY RONSON HYDRAULIC UNITS CORP. V94641)
V72902	GREENE, TWEED AND CO., INC., 25 ENGERMAN AVE., DENTON, MARYLAND 21629
V73134	IMO INDUSTRIES, INC., HEIM BEARING DIV., 60 ROUND HILL RD., P.O. BOX 430, FAIRFIELD, CONNECTICUT 06430
V77896	REXNORD, INC., BEARING OPERATION, 2400 CURTIS ST., DOWNERS GROVE, ILLINOIS 60515-4005
V81376	SOUTHWEST PRODUCTS CO., 2240 BUENA VISTA ST., IRVINDALE, CALIFORNIA 91706
V97820	BUSAK AND SHAMBAN, INC., BEARING DIV., 711 MITCHELL RD., P.O. BOX 665, NEWBURY PARK, CALIFORNIA 91320-2214
V98391	ARKWIN INDUSTRIES INC., 686 MAIN ST., WESTBURY, NEW YORK 11590-5018