TO: ALL HOLDERS OF TRAILING EDGE FLAP DRIVE TRANSMISSION ASSEMBLIES NO. 3 AND 6 OVERHAUL MANUAL, 27-55-57

REVISION NO. 32, DATED MAR 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
Quantity of BACB30US4K5 bolts (51A) increased to 6												X	

TRAILING EDGE FLAP DRIVE TRANSMISSION ASSEMBLIES NOS. 3 AND 6

27-55-57

BOEING P/N 65-50303-2, -3, -4
65-50306-2, -3, -4
65-50323-1 thru -6
65-50326-1 thru -6

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 30472	Feb 15/68
		PRR 31581	Nov 10/69
27-1015, Rev 2		PRR 31291	Mar 10/70
		PRR 31291-1	Mar 10/70
		PRR 32039	Dec 25/72
27-1069		PRR 32358	Dec 25/75
		PRR 33451	Dec 5/83
		PRR 34103-1	Sep 5/87

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
	27-55-57			505	Jan 5/77			
	T-1	Sep 5/87		506	Jan 5/77			
	T-2	BLANK		507	Sep 5/84			
*	LEP-1	Mar 1/08		508	Sep 1/96			
	LEP-2	BLANK		509	Jul 5/82			
	T/C-1	Dec 10/70		510	Jun 5/88			
	T/C-2	BLANK		511	Sep 1/96			
	1	Sep 25/74		512	Mar 10/70			
	2	Mar 10/70		513	Dec 10/70			
	101	Sep 5/88		514	Dec 10/70			
	102	Jan 5/77		515	Mar 10/70			
	103	Mar 10/70		516	BLANK			
	104	BLANK		601	Dec 10/70			
	201	May 15/69		602	Dec 10/70			
	202	BLANK		603	Mar 5/88			
	301	Mar 1/04		604	Sep 25/74			
	302	BLANK		605	Jul 5/76			
	401	Jun 1/96		606	BLANK			
	402	Jun 1/94		701	Nov 1/98			
	402A	Mar 1/04		702	Mar 1/05			
	402B	Mar 1/04		703	Jul 5/77			
	403	Sep 5/86		704	Mar 25/74			
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	405	Dec 25/75		802	BLANK			
	406	Dec 25/75		901	Dec 10/70			
	407	Dec 5/84		902	BLANK			
	408	Dec 5/87		1001	Sep 5/92			
	409	Dec 5/87		1002	BLANK			
	410	Sep 5/84		1101	Jul 5/82			
	411	Mar 1/05		1102	Mar 5/93			
	412	Jun 25/73		1103	Jun 5/89			
	413	Jun 25/73		1104	Mar 1/05			
	414	Mar 5/86	*	1105	Mar 1/08			
	415	Jun 1/96		1106	Mar 1/05			
	416	Mar 1/04		1107	Mar 1/05			
	416A	Mar 1/04		1108	Sep 5/92			
	416B	BLANK						
	417	Jun 1/96						
	418	Jun 1/96						
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	503	Jun 1/97						
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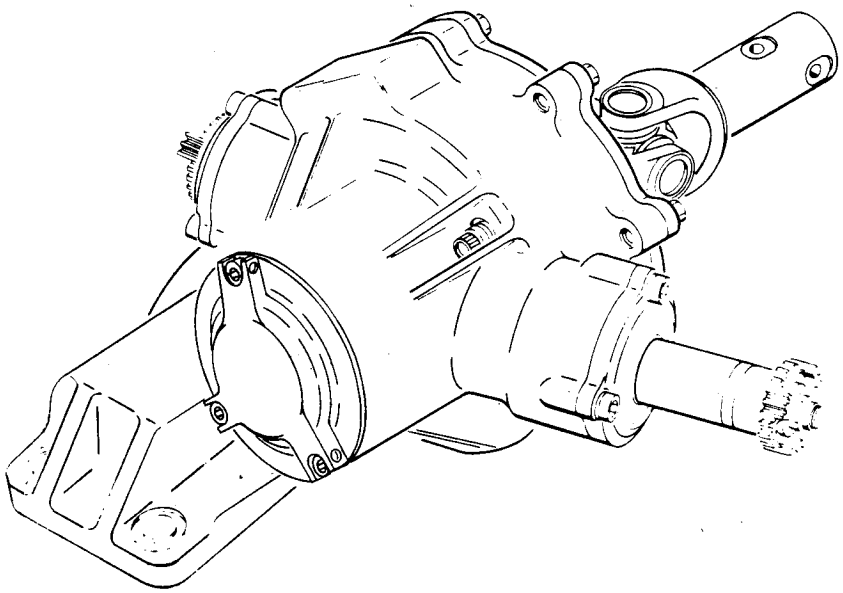
TRAILING EDGE FLAP DRIVE TRANSMISSION ASSEMBLIES NOS. 3 AND 6



Trailing Edge Flap Drive Transmission Assemblies Nos. 3 and 6
Figure 1

DESCRIPTION AND OPERATION

1. Description

   A. The trailing edge flap drive transmission assemblies Nos. 3 and 6 consist of a transmission gearbox, a torque brake assembly, and a universal joint. The gearbox is a sealed unit filled with hydraulic fluid, and contains two pinion bevel gears mating with inner and outer beveled ring gears. The torque brake consists of a spring pack assembly, a coupling, two supports and a housing. The spring pack contains a mated set of wound springs, input sleeves, and two silver-plated rings which act as bearings. The universal joint assembly includes an output shaft, and a trunnion cross and yoke arrangement to transmit loads to a ball nut and screw actuator.

2. Operation

A. The flap transmission assemblies convert flap torque tube rotation into linear motion to extend or retract the trailing edge flap. Flap drive torque tubes are driven by hydraulic or alternate electrical power and attach to input couplings on the gearbox. If a flap jams, excessive torque on the ball nut and screw actuator causes the torque brake spring pack to expand and bind against the housing. The universal joint allows vertical and horizontal angular deflection of the jackscrew during flap operation. The assemblies are located outboard on the inboard flaps.

3. Leading Particulars

Width -- 15.00 inches
Length -- 15.50 inches
Height -- 8.75 inches
Weight -- Assemblies P/N 65-50303-( ) and 65-50306-( ) -- 34.2 pounds (wet)
Assemblies P/N 65-50323-( ) and 65-50326-( ) -- 35.1 pounds (wet)

DISASSEMBLY

1. General (Fig. 1101)

   A. Lock universal joint (87) to prevent any motion. Using Splined Coupling Wrench, F71228-500 or equivalent, to hold couplings (5, 12), remove nuts (3, 10), washers (4, 11) and couplings (5, 12). Apply a 20 lb-in., torque to gear not being checked, and measure backlash at pitch diameters of splines on gears (37, 47). See Fig. 601 for backlash limits and dimension of pitch diameter.

   B. Remove all lockwire.

   C. Remove plugs (1), packings (2), and drain hydraulic fluid from the assembly.

2. Disassemble universal joint assembly (87).

   A. Remove nut (88) and bolt (90).

   B. Push spacer (92) from pin (91). Remove pin (91) from yoke (93) and cross (96).

      NOTE: Do not remove bushings (95) from yoke (93) or shaft (94) unless necessary for inspection or replacement.

   C. If installed, remove placard (89) from yoke (93) and discard.

3. Remove shaft (94).

   A. Remove bolts (16), washers (17) and cover (19). Remove O-ring (20) from cover (19).

   B. Straighten tang of washer (22). Using Wrench Adapter ST6105-3, remove nut (21), washer (22) and washer (23). Discard washer (22). Tap end of shaft (94) and remove shaft from transmission assembly.

4. Remove gears (52, 54).

   A. Remove bolts (24), washers (25) and cover (86) from housing (82). Remove O-ring (26) from cover (86).

   B. Remove shim (57), spacer (58), bearing (59) and seal (60) from cover (86). Measure and note thickness of shim (57) to facilitate reassembly.

C. Pull assembled items (27, 49 thru 56, 68) from housing (82). Use needle-nosed pliers to bend up one end of ring (27) and work ring around grooves in driver (55) or gear (52) and coupling (68) until ring is free. Pull coupling (68) from assembled parts.

NOTE: Coupling (68) is part of torque brake assembly (67).

D. Remove bearing (48), nuts (49), washers (50), and bolts (51). Separate gears (52 and 54), driver (55) (if used), shim (53), and bearing (56). Measure and note thickness of shim (53) to facilitate reassembly.

5. Remove and disassemble torque brake assembly (67).

A. Remove nuts (63), washers (64), seals (65), and bolts (66). Position housing with flange of support (69) downward. Push components of torque brake assembly (67) from housing.

B. Lift supports (69, 70) from housing (78). Carefully remove rings (72).

C. Place torque brake assy (67) on arbor press and support housing (78) to provide clearance for internal parts. Disassemble torque brake by pressing on sleeve (73) until sleeve and spring pack assy (71) are free of housing. Remove ring (72) from housing. Tap ring (72) with plastic mallet until free from spring pack (71). Remove shims (75).

NOTE: There may be up to two shims in each end, or no shims at all installed. Note number, location and thickness of shims to facilitate re-assembly.

D. Install spring pack assy (71) into Spring Expansion Fixture, ST6107 (Fig. 502). If necessary, tap spring pack assy with a soft drift until spring turns are aligned with fixture spring stops, ST6107-( ). Move stops inward to position them for spring engagement and lock them in this position. Rotate fixture drive shaft until stops contact spring set ends and continure to wind springs until adapter (76) is free. Remove adapter (76) and sleeves (73, 74).

E. Rotate fixture drive shaft in reverse to unwind spring until spring stops are free of spring ends.

F. Loosen all four spring stops and move outward clear of spring set. Remove spring set from fixture by tapping lightly with plastic mallet.

NOTE: Spring set (77) is a matched assembly. Identify as matched parts.

6. Remove adapter (61) and bearing (62) from housing (82). Remove bearing (62) from adapter (61).

7. Remove shim (79) from housing (82). Measure and note thickness of shim (79) to facilitate reassembly.

8. Disassemble gear (47).

   A. Remove gear (47) and bearing (46).

   B. Remove bolts (38), washers (39), retainer (39A) (if used), retainer (40) and attached parts, and shim (43).

   C. Remove seal (42) from retainer (40). On assemblies P/N 65-50323-( ) and 65-50326-( ), remove sleeve (42A), ring (42B), shim (42C) and bearing (44) from retainer (40).

   D. Remove packing (41) from housing (82) and, if used, packing (42D) from sleeve (42A). Measure and record thickness of shims (42C and 43) to facilitate reassembly.

9. Disassemble gear (37).

   A. Remove gear (37) and bearing (36).

   B. Remove bolts (28), washers (29), retainer (29A) (if used), retainer (30) and attached parts, and shim (33).

   C. Remove seal (32) from retainer (30). On assemblies P/N 65-50323-( ) and 65-50326-( ) remove sleeve (32A), ring (32B), shim (32C) and bearing (34) from retainer (30).

   D. Remove packing (31) from housing (82) and, if used, packing (32D) from sleeve (32A). Measure and record thickness of shims (32C and 33) to facilitate reassembly.

10. Do not remove nameplate (80), bushings (83 and 84) or inserts (85) from housing (82) unless repair or replacement is required.

CLEANING

1. General

   A. Wash and rinse all metal parts, except bearings (34, 36, 44, 46, 48, 56, 59, and 62, figure 1101) in dry cleaning solvent, Specification P-D-680 or equivalent.

   B. Use a stiff bristle brush to remove accumulation of foreign matter.

   C. Dry with a clean, lint-free cloth or with moisture-free air.

2. Bearings

   A. Clean bearings (34, 36, 44, 46, 48, 56, 59, and 62, figure 1101), per Subject 20-30-01.

INSPECTION/CHECK

1. Check all parts for obvious defects in accordance with standard industry practices. Refer to Fits and Clearances for design dimensions and wear limits.

2. Penetrant check per 20-20-02 -- covers (19, 86), retainers (29A, 39A), housing (82).

3. Magnetic particle check per 20-20-01 -- washers (4, 11, 23), couplings (5, 12, 68), gears (37, 47, 52, 52A, 54, 54A), driver (55), adapters (61, 76), supports (69, 70), rings (72), sleeves (32A, 42A, 73, 74), spring set (77), housing (78), bolt (90), pin (91), spacer (92), yoke (93), shaft (94), cross (96).

REPAIR

1. Repair

A. Repair minor defects in accordance with standard industry practices. Refer to 20-10-01 for applicable instructions for rework and repair of high strength steel parts (180 ksi and above).

B. Cross (96) (Fig. 401) ID's for bolt (90), spacer (92) and pin (91).

(1) Machine as required to remove defects, observing 0.8631 max rework diameter. Machined finish to be at least 63 microinch. No step or mismatch allowed.

(2) Shot peen using size and intensity specified.

(3) Nickel plate per 20-42-09, 0.004-0.006 single plate thickness.

(4) Chrome plate per 20-42-03.

(5) Machine to design diameter of 0.8322-0.8331 per 20-10-04. Total plating thickness (nickel and chrome) after machining to be 0.015 max. Machined finish to be at least 63 microinch.

(6) Magnetic particle examine per 20-20-01.

C. Repair bolt (90), pin (91), spacer (92) and cross (96) exterior dimensions - (Fig. 401)

(1) Machine, as required within rework limits shown, to remove corrosion or defects. Observe surface finish requirements. Remove burrs and sharp edges. Smoothly blend all mismatch areas.

(2) Stress relieve per Fig. 404

(3) Shot peen using shot size and intensity indicated.

(4) Restore reworked surface, unless otherwise noted, by plating and machining to design dimensions and finish noted.

D. Shaft (94)

(1) Bearing and seal O.D. (P/N 69-52407-1, -2, -3)

(a) Magnetic particle examine per 20-20-01.

(b) Machine as required to remove defects, observing 1.3465 min rework diameter. Maintain 63-microinch surface finish and 0.12-inch fillet radius.

(c) Stress relieve per Fig. 404.

(d) Shot peen machined area using size and intensity specified.

(e) Chrome plate per 20-42-03. Stop plating at least 0.03 inch from start of fillet radius.

(f) Machine to design diameter of 1.3769-1.3774 inches per 20-10-04. Surface finish must be 8 microinch or better.

(g) Magnetic particle examine per 20-20-01.

(h) Refinish the shaft (94) as specified in Fig. 403.

(2) Trunnion holes

(a) Magnetic particle examine per 20-20-01.

(b) Machine bores as required to remove defects, observing 1.0067 max rework diameter. Maintain perpendicularity as noted, and surface finish of at least 63 microinch.

(c) Stress relieve per Fig. 404.

(d) Shot peen machined area using size and intensity specified.

(e) Chrome plate per 20-42-03.

(f) Machine to design dia of 0.9991-0.9999 and surface finish of at least 63 microinch. Remaining plate thickness to be 0.002 inch min.

(g) Magnetic particle examine per 20-20-01.

(h) Refinish the shaft (94) as specified in Fig. 403.

E. Repair gears (37, 47).

(1) Grind 0.970-inch OD per 20-10-01 to a surface finish of 8 microinches, as required to remove wear or defects. Do not exceed minimum rework diameter of 0.966 inch.

F. Repair rings (72).

(1) Grind per 20-10-01 worn 3.519-inch OD to a surface finish of 16 microinches, to remove wear or defects.

G. Torque Brake Rework (67) (Fig. 402)

CAUTION: REWORK PER FOLLOWING PROCEDURES MAY AFFECT INTERCHANGEABILITY IN ANY FUTURE OVERHAUL OR REPLACEMENT.

(1) To shift torque lockout level to a higher value, machine housing (78) surface as indicated on repair figure. Maintain finish and dimensions shown.

(2) To shift torque lockout level to a lower value,

(a) Machine spring set (77) and stress relieve as indicated (note amount of material removed).

(b) Buildup OD of sleeve with chrome plate as required to obtain finish diameter (after machining) equal to original OD plus amount that ID of spring set (77) was increased (+0.0000/ -0.0005). A shift of torque lockout level relatively affects maximum or minimum lockout levels a corresponding amount.

H. Yoke (93) Rework

(1) Attachment bolt hole rework

(a) Machine attachment bolt holes to 0.3432-0.3442 per 20-10-02. Break sharp edges of reworked holes 0.003-0.020.

(b) Attach tag to reworked yoke, stating "Bolt holes are oversize. Use oversize bolts, NAS3005E23 or equivalent, to attach ballscrew. Bolt holes in ballscrew must be 0.3432-0.3442 in. dia to match."

(2) Yoke ID corrosion removal (Fig. 402A)

(a) Magnetic particle examine per 20-20-01.

(b) Machine yoke ID as required, within repair limit, to remove defects. Finish should be 63 microinches or better. No step or mismatch is allowed.

(c) Shot peen machined area using size and intensity specified.

(d) Build up ID with chrome plate per 20-42-03.

(e) Grind ID to design diameter and finish noted.

(f) Magnetic particle examine per 20-20-01.

I. Sleeve repair (42A) -- Fig. 402B.

(1) Seal surface seal surface contact area

(a) Machine seal diameter to remove defects per 20-10-02, repair limit 1.100 minimum diameter.

(b) Stress relieve ref. Fig. 404.

(c) Magnetic particle examine per 20-20-01.

(d) Build up seal diameter with chrome plate per 20-42-03.

(e) Grind to design diameter of 1.126-1.128 per 20-10-04, surface finish must be 8 microinch or better.

(f) Refinish the sleeve (42A) as shown in Fig. 402B.

2. Refinish

NOTE: Refer to 20-41-01 for explanation of F and SRF finish codes and to 20-30-02 for stripping of protective coatings; and to Aeronautical Material Specifications for AMS references.

A. Washers (4, 11) -- Cadmium-titanium plate (F-1.18) all over. Material: 4130 steel (120-150 ksi)

B. Couplings (5, 12), retainers (30, 40), sleeves (32A), gears (37, 47), shaft (94) -- Fig. 403.

C. Cover (19) -- Chromic acid or sulfuric acid anodize (F-17.05). Apply one layer of primer, BMS 10-11, type 1 (F-20.02) on external surfaces only. Material: Alum alloy

D. Deleted.

E. Spacer (58) -- Anodize (AMS 2470). Material: Alum alloy

F. Retainers (29A, 39A) -- Chromic acid or sulfuric acid anodize (F-17.05). Apply one layer of primer, BMS 10-11, type 1 (F-20.02). Material: Al alloy

G. Housing (78) -- Fig. 402

H. Housing (82: 65-50263-1 thru -4) -- Anodize (AMS 2470) plus primer, BMS 10-11, type 1 (SRF-12.205) and enamel, BMS 10-11, type 2 gray (SRF-12.63) on all external, nonmachined, surfaces. Material: Al alloy

I. Cover (86: 65-50266-1, 65-82783-1) -- Anodize (AMS 2470) plus primer BMS 10-11, type 1 (SRF-12.205) and enamel, BMS 10-11, type 2 gray (SRF-12.63) on all external surfaces and smallest ID. Material: Al alloy

J. Bolt (90), pin (91), spacer (92), cross (96) -- Fig. 401.

K. Spring set (77) -- Fig. 402

L. Yoke (93) -- Fig. 402A

M. Cover (86: 65-50266-2) -- Chromic acid or sulfuric acid anodize (F-17.05). Apply one layer of BMS 10-11, type 1 primer (F-20.02) on all external surfaces and smallest ID. Material: Al alloy.

N. Housing (82: 65-50263-5, -6) -- Chromic acid or sulfuric acid anodize (F-17.05). Apply one layer of BMS 10-11, type 1 primer (F-20.02) to all external, nonmachined surfaces. Material: Al alloy.

O. Sleeve (42A) -- Fig. 402B

3. Replacement (Fig. 1101)

A. Replace all packings, seals, and backup rings.

B. Inserts (85) --

(1) Remove damaged insert.

(2) Clean and check threads in bore of housing.

(3) Apply primer, BMS 10-11, type 1, to bore of housing (82) and to insert (85). Install insert 3/4 to 1-1/2 turns below surface of housing while primer is wet. Remove tang.

C. Nameplate (80) --

(1) Using suitable knife or scraper, remove old nameplate (80).

(2) Remove old adhesive using paint remover. Wipe all traces of adhesive and paint remover from housing with a clean cloth soaked with water.

(3) Stamp new nameplate as required and bend to contour of housing.

(4) Clean faying surfaces of housing (82) and nameplate (80) with a clean cloth moistened with methyl ethyl ketone. Wipe dry with a clean dry cloth.

(5) Cement nameplate to housing per 20-50-12, type 54, grade 1.

D. Bushings (95)

(1) If installed bushings meet Inspection/Check requirements, and the service wear limits are less than those shown in Fig. 601, mark position of bushings (95) in yoke (93) and shaft (94), rotate bushings 180 degrees, and reinstall per 20-50-03 using wet BMS 10-11, type 1, primer.

(2) If bushings are damaged, or worn beyond limits shown in Fig. 601, install new bushings in yoke (93) and/or shaft (94) using wet BMS 10-11, type 1, primer per 20-50-03.

4. Materials

A. Primer -- BMS 10-11, type 1 (Ref 20-60-02)

B. Paint Remover -- Turco 4669 (Ref 20-60-01)

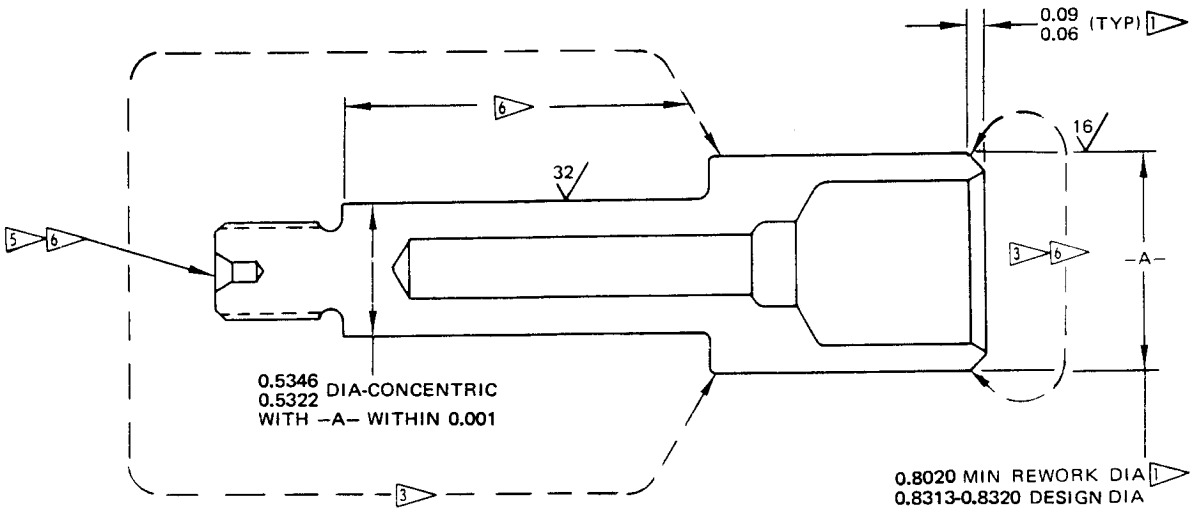
C. Adhesive -- BMS 5-25, grade 1 (Ref 20-50-12)

D. Solvent -- Methyl ethyl ketone, TT-M-261 (Ref 20-60-01)

E. Enamel -- BMS 10-60, BAC707 gray (Ref 20-60-02)

F. Enamel -- BMS 10-60, type 1 black (Ref 20-60-02)

G. Topcoating -- Clear Skydrol-resistant, Type 41 (Ref 20-60-02)



REFINISH

CHROME PLATE (F-15.04) DIA -A- CADMIUM
TITANIUM PLATE ALL OTHER SURFACES
PER 3 APPLY PRIMER AND PAINT
PER 6

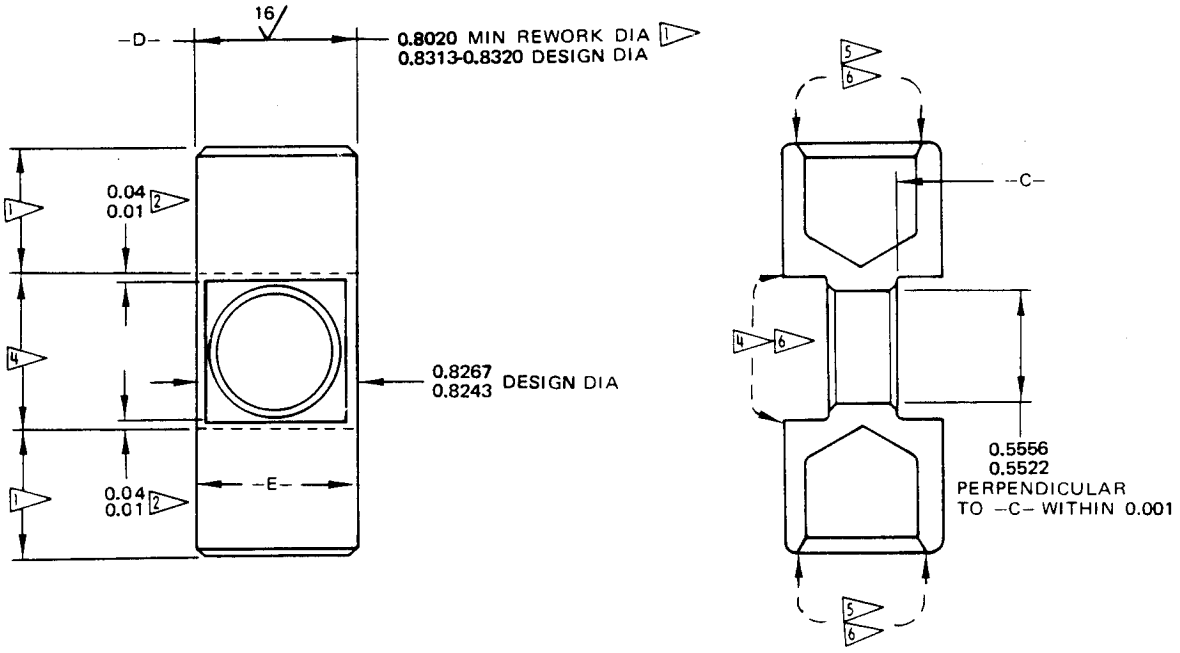
REPAIR

AS NOTED BY 1 2

SHOT PEEN: (20-10-03)
0.017-0.033 SHOT SIZE
0.015 A2 INTENSITY

MATERIAL: (69-52431-2) MOD H-11 STEEL (RC 54-56)
(65-76607-1) 4340M STEEL (275-300 KSI)

BOLT (90)



REFINISH

CHROME PLATE (F-15.04) DIAS -D- AND -E-
CADMIUM-TITANIUM PLATE ALL OTHER
SURFACES PER 4 APPLY PRIMER AND
PAINT PER 6

REPAIR

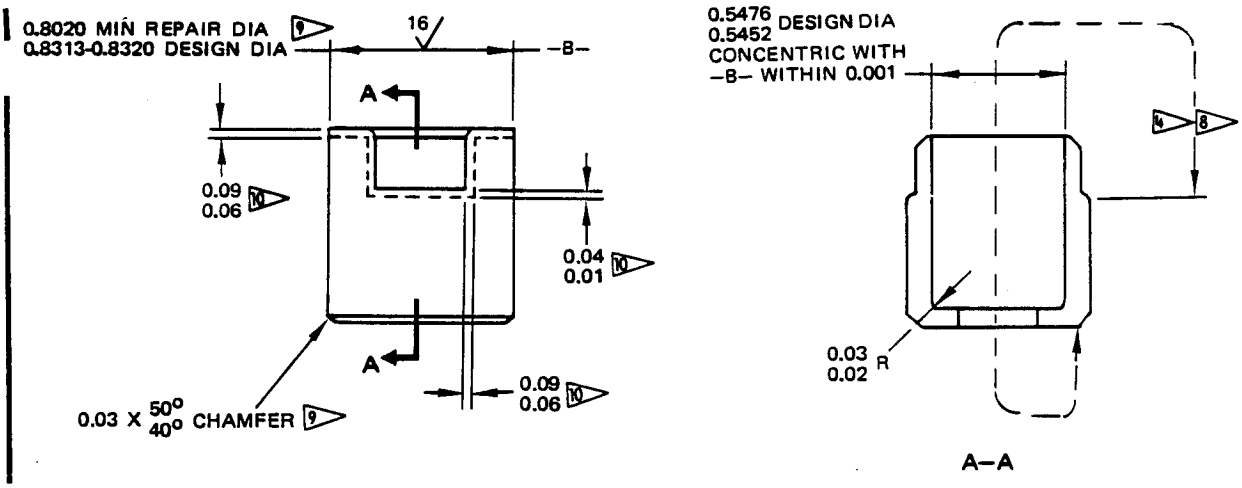
AS NOTED BY 1 2

SHOT PEEN: (20-10-03)

0.017–0.033 SHOT SIZE.
0.015 A2 INTENSITY

BREAK SHARP EDGES 0.005–0.015R
MATERIAL: (69-60057-1, 69-52424-1)
MOD H-11 STEEL (RC 54-56)
(69-60057-2) 4340M STEEL
(270–300 KSI)

PIN (91)



REFINISH

CHROME PLATE (F-15.04) DIA -B-. CADMIUM TITANIUM PLATE ALL OTHER SURFACES PER 4.

APPLY PRIMER PER 8

REPAIR

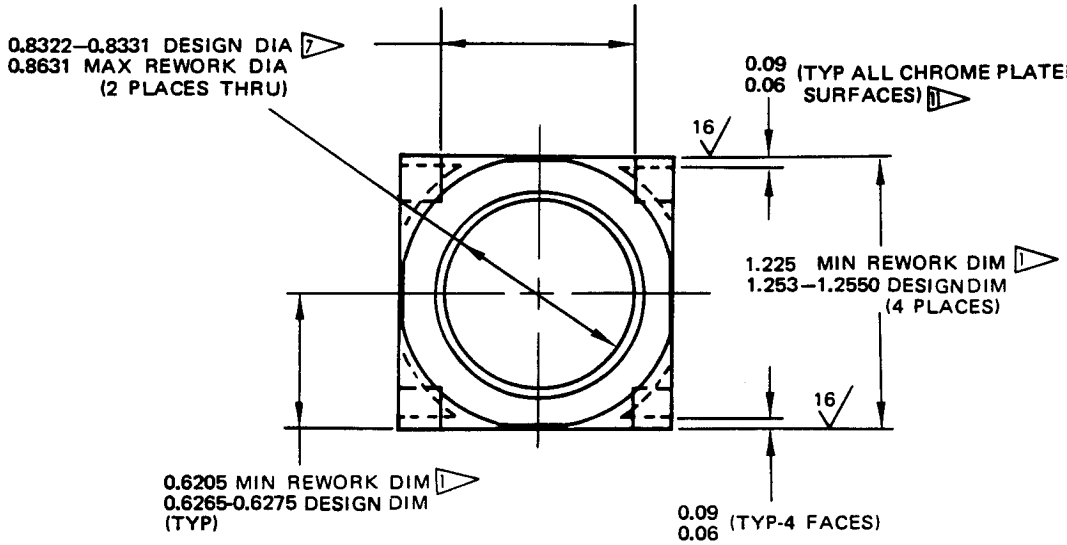
AS NOTED BY 9 10

SHOT PEEN: (20-10-03)
0.017-0.033 SHOT SIZE
0.015 A2 INTENSITY

BREAK SHARP EDGES 0.005-0.015R

MATERIAL: (69-60053-1, 69-52426-1) MOD H-11 STEEL (RC 54-56)
(69-60053-2) 4340M STEEL (270-300 KSI)

SPACER(92)



REFINISH

CHROME PLATE (F-15.04) OUTER SURFACES PER F-1.842 (0.003–0.005 PLATE THICKNESS)

REPAIR

AS NOTED BY 1

SHOT PEEN: (20-10-03)

0.017–0.033 SHOT SIZE
0.012 A2 INTENSITY

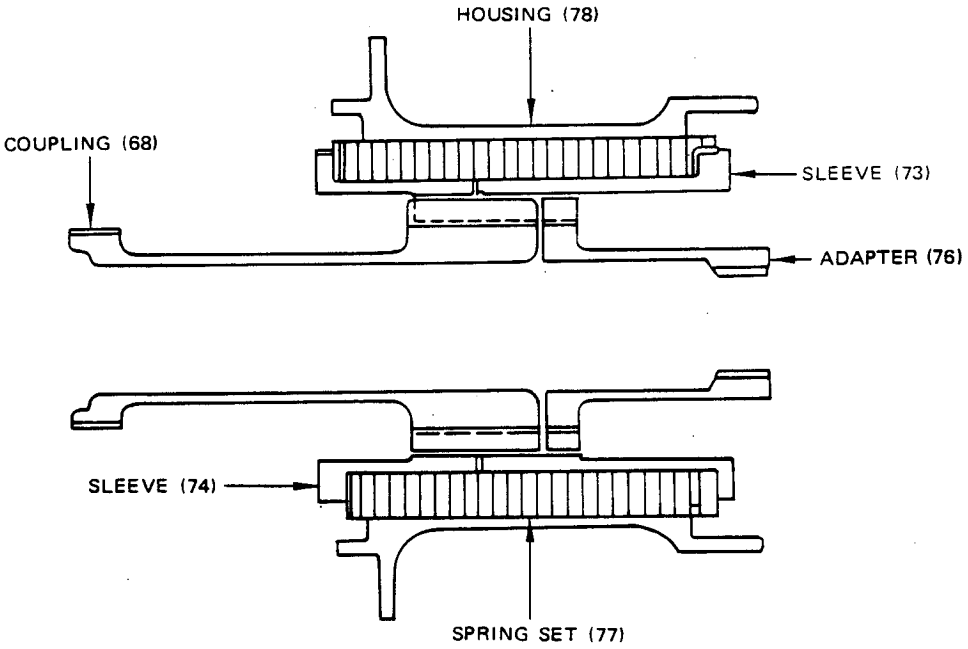
BREAK SHARP EDGES

MATERIAL: (69-52408-1) MOD H-11 STEEL (RC 54-56)
(69-60059-1) 15-5PH CRES (150–170 KSI)

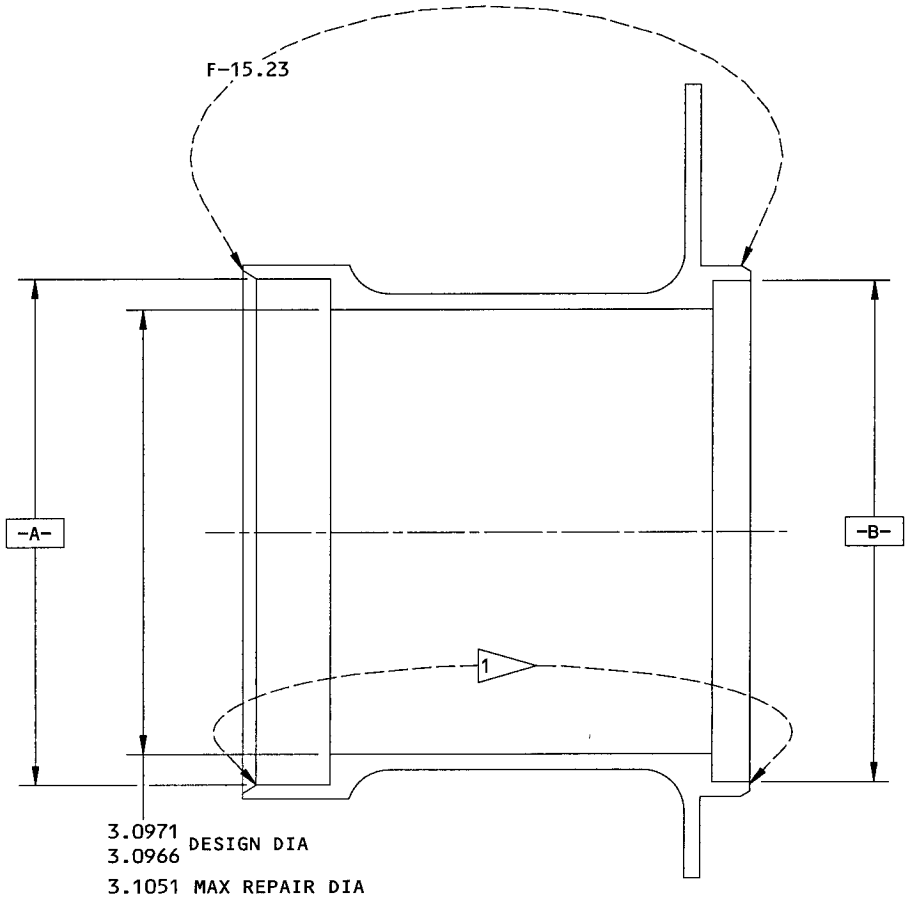
CROSS (96)

1. BUILD UP WITH CHROME PLATE (REFER TO 20-42-03) AND GRIND TO FINISH AND DIMENSIONS SHOWN. OBSERVE PLATING RUNOUT AS NOTED.
2. CHROME PLATE RUNOUT
3. CADMIUM-TITANIUM PLATE (F-1.18) 0.0003–0.0005 THICKNESS (20-42-02)
4. CADMIUM-TITANIUM PLATE (F-1.181) 0.0005–0.0007 THICKNESS (20-42-02)
5. CADMIUM-TITANIUM PLATE THROW IN PREFERRED IN THESE AREAS.
6. AFTER PLATING APPLY PRIMER (SRF-12.205) BMS 10-11, TYPE 1 AND PAINT (SRF-12.63) BMS 10-11, TYPE 2.
7. BUILD UP WITH NICKEL PLATE (20-42-09) (0.004–0.006 THICK) AND CHROME PLATE (20-42-03) AND MACHINE TO DESIGN DIMENSIONS SHOWN. TOTAL PLATE THICKNESS AFTER MACHINING TO BE 0.015 MAX.
8. APPLY ONE COAT PRIMER, BMS 10–11, TYPE 1 PER 20–41–02.
9. CHROME PLATE 0.003–0.005 THICK PER 20–42–03.
10. CHROME PLATE RUNOUT. AREA NOT CHROME PLATED MUST BE PLATED AND PRIMED PER 4 AND 8
11. CHROME PLATE STOP–OFF AREA

ALL DIMENSIONS ARE IN INCHES



TORQUE BRAKE ASSEMBLY (67)



REFINISH (OPTIONAL)

CADMIUM PLATE (F-15.23) EXTERIOR SURFACES AS NOTED.

1 CARBURIZED, 0.025-0.035 DEEP

REPAIR

MACHINE ID AS REQUIRED TO INCREASE TORQUE SETTING DESIRED AMOUNT (TORQUE SETTING INCREASES 5.0 INCH POUNDS FOR EACH 0.001 INCREASE OF ID.)

MATERIAL: 9310 STEEL PER AMS 6265
RC 32-43 CORE HARDNESS
CARBURIZED, RC 60 MINUTES AS NOTED

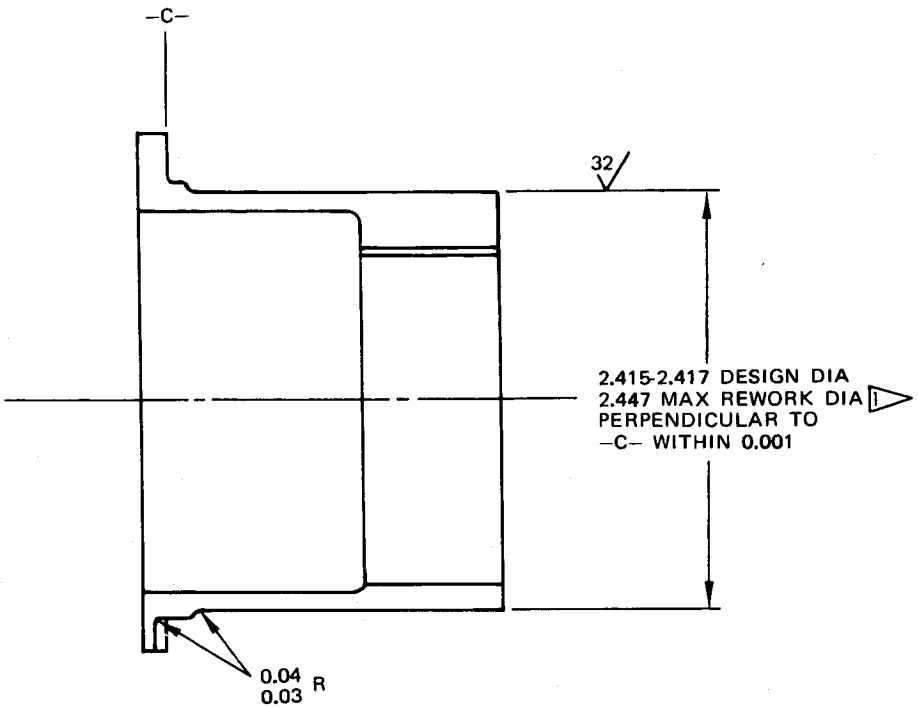
BREAK SHARP EDGES 0.003-0.020 R

ALL DIMENSIONS ARE IN INCHES

TORQUE BRAKE HOUSING (78)

Torque Brake - Rework
Figure 402 (Sheet 2)

D39389



REPAIR

AS NOTED BY 1

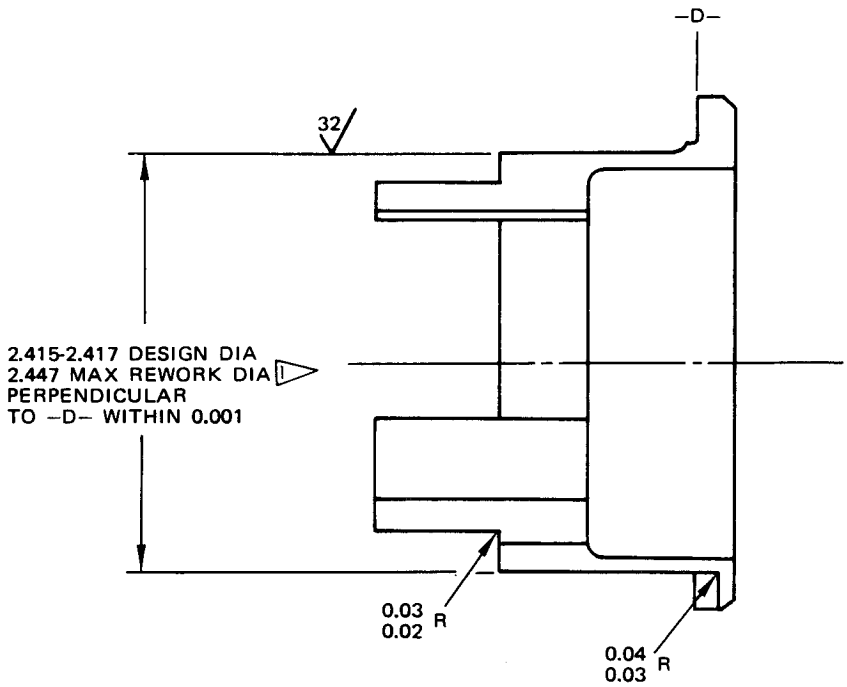
MATERIAL: STEEL (HT 290-300 KSI)

BREAK SHARP EDGES 0.005-0.015R

SHOT PEEN: (REFER TO 20-10-03)

0.010-0.019 SHOT SIZE
0.012-0.015 A2 INTENSITY

SLEEVE (73)



REPAIR

AS NOTED BY 1

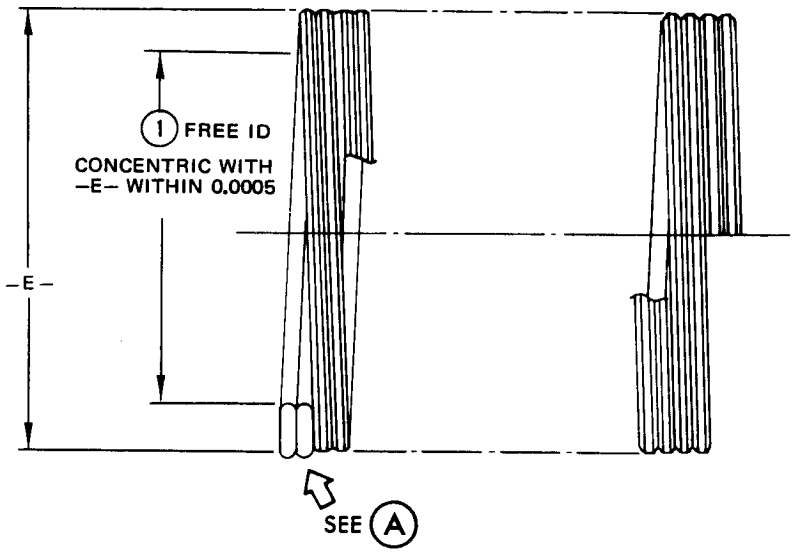
MATERIAL: STEEL (HT 290-300 KSI)

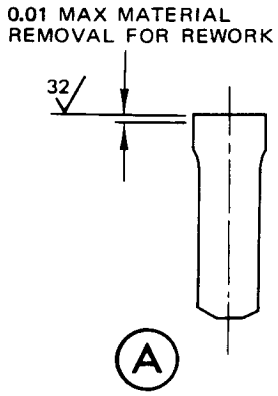
BREAK SHARP EDGES 0.005-0.015R

SHOT PEEN: (REFER TO 20-10-03)

0.010-0.019 SHOT SIZE
0.012-0.015 A2 INTENSITY

SLEEVE (74)





REFINISH

CADMIUM-TITANIUM PLATE ID AND SPRING FLANKS PER 20-42-02

REWORK

1. MACHINE ID AS REQUIRED TO DECREASE TORQUE LEVEL BY DESIRED INCREMENT (VALUE DECREASES 1.8 POUND-INCHES FOR 178359-1 AND 2.3 POUND-INCHES FOR 176661 FOR EACH 0.001 INCREASE OF ID)
2. STRESS RELIEVE IN FOLLOWING ORDER:
   A. 320°-330°F FOR 1 HOUR
   B. 625°-675°F FOR 1 HOUR
   C. 920°-930°F FOR 2 HOURS
   D. AIR COOL AT 65°-75°F

MATERIAL: STEEL (HT 290-300 KSI)

BREAK SHARP EDGES 0.005-0.015R

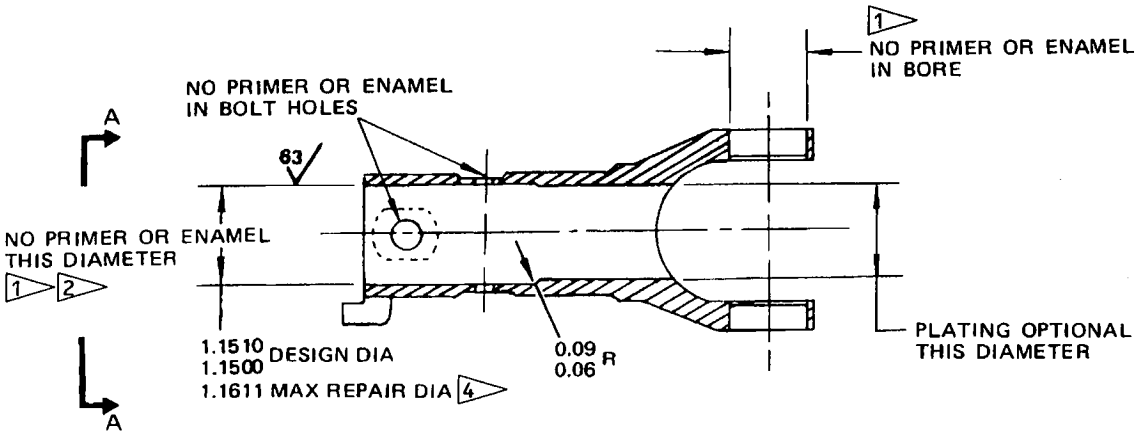
SPRING SET (77)

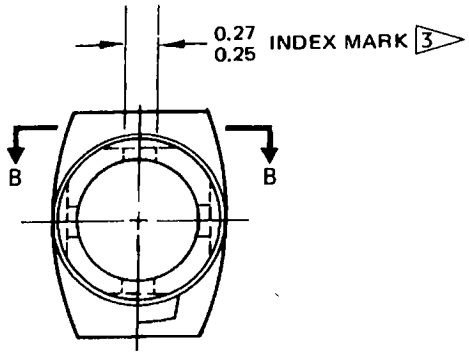
		①
178359-1	DESIGN DIM.	2.364 2.363
	REWORK LIMIT	2.384
176661	DESIGN DIM.	2.348 2.347
	REWORK LIMIT	2.368

ALL DIMENSIONS ARE IN INCHES

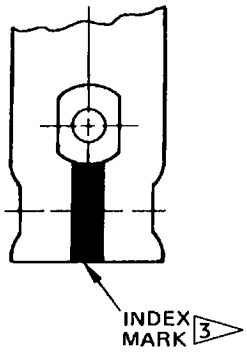
1 BUILD UP WITH HARD CHROME PLATE (REFER TO 20-42-03) AS REQUIRED TO OBTAIN FINISH DIA (AFTER MACHINING) EQUAL TO MEASURED OD PLUS AMOUNT THAT ID OF SPRING SET (77) WAS INCREASED (+ 0.0000,-0.0005)

2 NOTE AMOUNT ID IS INCREASED TO DETERMINE REWORK OF SLEEVES (73, 74)





A–A



B–B

REFINISH

CADMIUM-TITANIUM ALLOY PLATE (F-15.01) ALL OVER EXCEPT AS NOTED. APPLY TWO COATS PRIMER, BMS 10-11, TYPE 1 (F-20.03) ALL OVER EXCEPT AS INDICATED. ON 69-52420-1 ONLY, APPLY ONE LAYER OF BMS 10-60, BAC707 GRAY GLOSS ENAMEL (SRF-14.9813) ALL OVER EXCEPT AS INDICATED.

1 CADMIUM-TITANIUM PLATE 0.0003-0.0005 THICK

2 NO CADMIUM-TITANIUM PLATING THIS DIAMETER (69-52420-1)

3 APPLY BLACK ENAMEL, BMS 10-60, TYPE 1, IN LOCATION SHOWN. TOPCOAT PER 20-44-01, TYPE 41.

4 BUILD UP WITH HARD CHROME PLATE AND GRIND TO FINISH AND DIMENSIONS SHOWN. MAINTAIN 0.06-0.09 RADIUS IN TRANSITION. NO STEP OR MISMATCH ALLOWED. STOP CHROME PLATE 0.03 MINIMUM BEFORE 0.06-0.09 RADIUS

REPAIR

(69-52420-3,-5,-7,-11 ONLY)

REF 4

SHOT PEEN (REF 20-10-03)

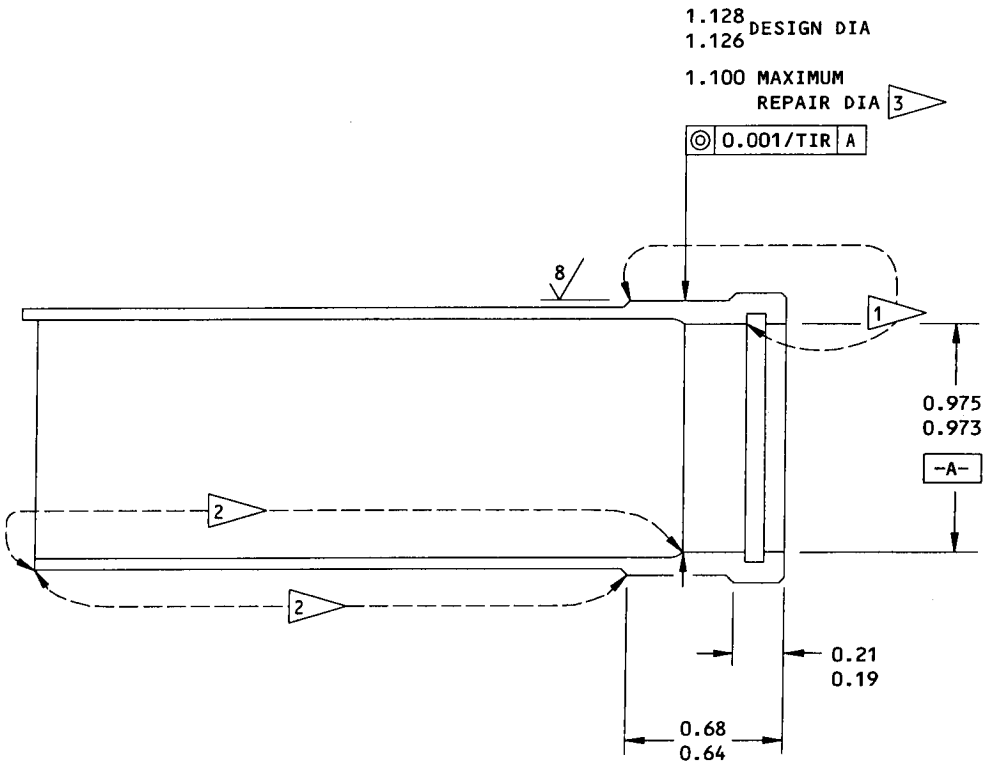
0.007-0.017 SIZE
0.008 A2 INTENSITY
2.0 COVERAGE

MATERIAL:
(69-52420-1,-3) MOD H-11 STEEL (RC 54-56)
(69-52420-5,-7,-11) 4340M STEEL (270-300 KSI)

YOKE (93)

Yoke Repair
Figure 402A

F80714



REFINISH

CADMIUM PLATE (F-1.103) EXCEPT AS NOTED.
APPLY ONE COAT PRIMER, BMS 10-11, TYPE 1
(F-20.02) AS NOTED

REPAIR

REF 3

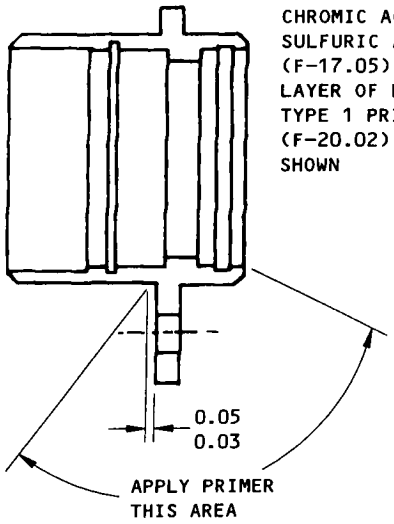
MATERIAL: 4330 STEEL
RC 32-38 (150-170 KSI)

1. NO CADMIUM PLATING THESE SURFACES.
2. APPLY PRIMER THESE SURFACES.
3. BUILD UP WITH CHROME PLATE AND MACHINE TO THE DESIGN DIMENSIONS. FINISH AS SHOWN.

SLEEVE (42A)

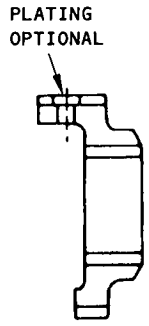
Sleeve Repair
Figure 402B

W78337



MATERIAL: AL ALLOY

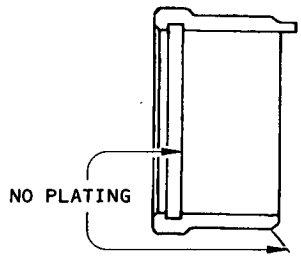
RETAINER (30,40)



F-1.18, AS NOTED

MATERIAL: 4340 STEEL (RC 32-40)

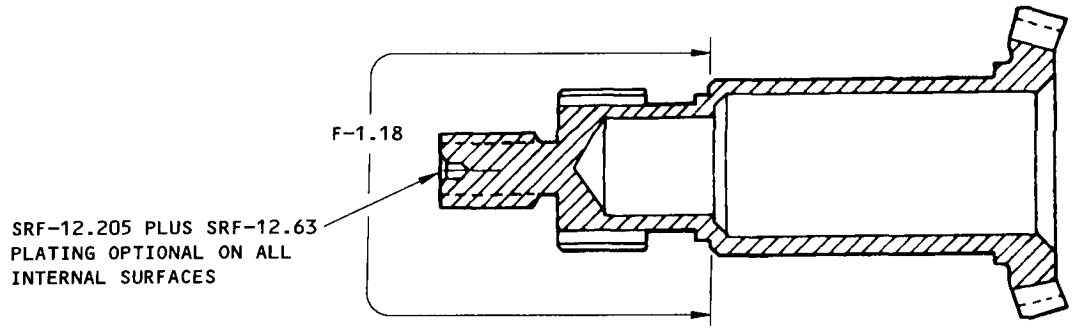
COUPLINGS (5,12)



F-1.1923, EXCEPT AS NOTED

MATERIAL: 4340 STEEL (RC 32-38)

SLEEVE (32A)

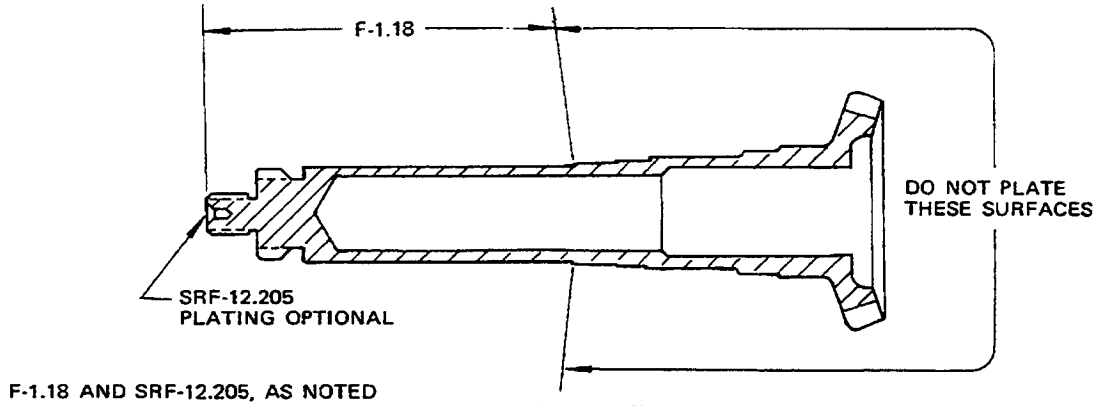


F-1.18 AND SRF-12.205 PLUS SRF-12.63, AS NOTED

MATERIAL: (69-52412-1,-2) MOD H-11 STEEL (RC 54-56
(69-52412-3) 4340M STEEL (270-300 KSI)

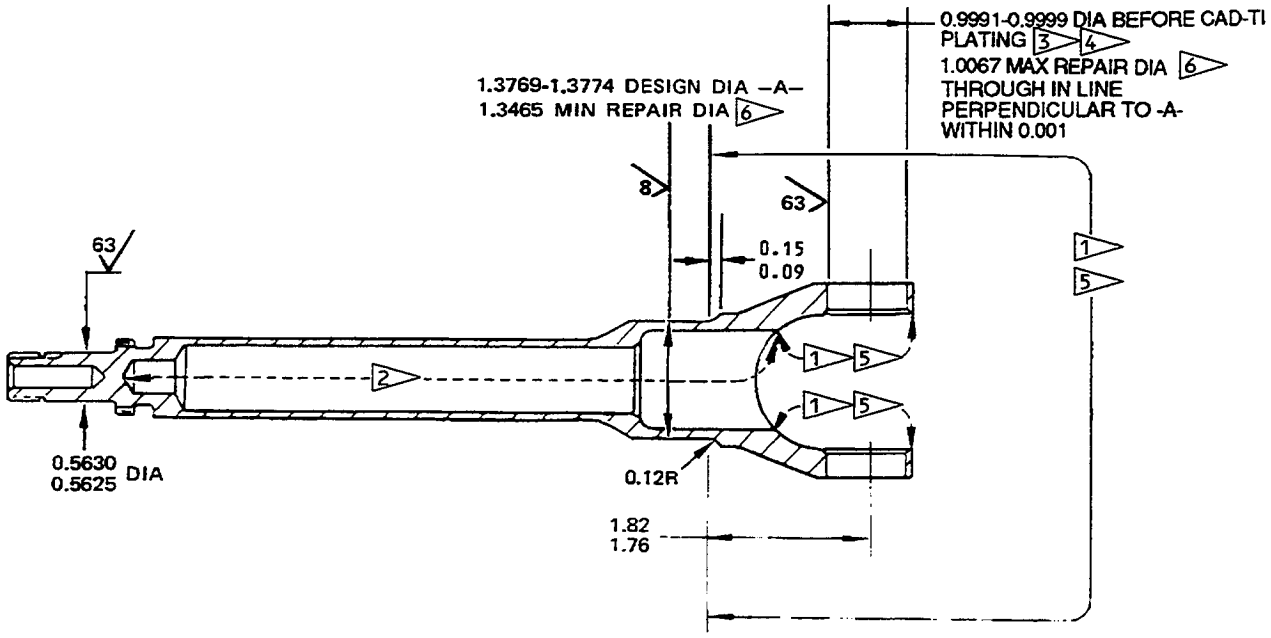
GEAR (37)

Refinish Diagram
Figure 403 (Sheet 1)



F-1.18 AND SRF-12.205, AS NOTED
MATERIAL: (69-52417-1, -2) MOD H-11 STEEL (RC 54-56)
(69-52417-3) 4340M STEEL (270–300 KSI)

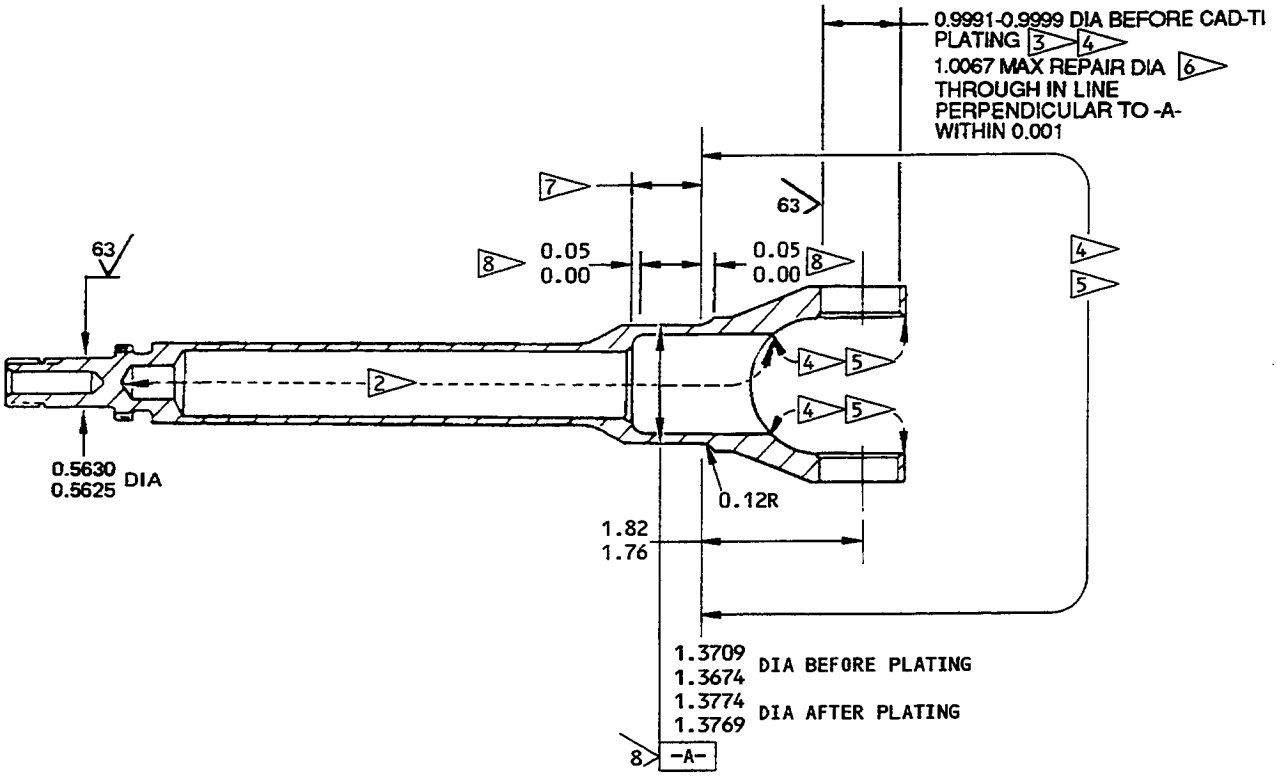
GEAR (47)



69-52407-1,-2,-3
SHAFT (94)

Refinish Diagram
Figure 403 (Sheet 2)

F78953



69-52407-4
SHAFT (94)

REFINISH

CADMIUM-TITANIUM PLATE (F-15.01 AND APPLY FINISH TO THE AREAS SHOWN. APPLY BMS 10-11, TYPE I, PRIMER AS SHOWN.

1> CADMIUM-TITANIUM PLATE (F-15.01) AREA SHOWN

2> CADMIUM-TITANIUM PLATE (F-15.01) ON THESE SURFACES IS OPTIONAL. APPLY TWO COATS OF BMS 10-11, TYPE 1 PRIMER (F-20.03) TO AREA SHOWN

3> DO NOT PUT PRIMER ON THIS SURFACE.

4> CADMIUM-TITANIUM PLATE (F-15.01) TO A THICKNESS OF 0.0003-0.0005 IN THIS AREA.

5> APPLY ONE COAT OF BMS 10-11, TYPE 1 PRIMER (F-20.02) TO THE AREA SHOWN

6> BUILD UP WITH CHROME PLATE (20-42-03) AND MACHINE TO THE DESIGN DIMENSIONS. FINISH AS SHOWN

7> CHROME PLATE (20-42-03) AND MACHINE TO DIMENSIONS SHOWN

8> CHROME RUNOUT AREA

REPAIR

REF 6>

SHOT PEEN (20-10-03):

0.017-0.039 SHOT SIZE
0.016 A2 INTENSITY

MATERIAL:

(69-52407-1) MOD H-11 STEEL (RC 54-56)
(69-52407-2) 4340M STEEL (270-300 KSI)
(69-52407-3) 4340M STEEL (270-300 KSI)
(69-52407-4) 4340M STEEL (270-300 KSI)

ALL DIMENSIONS ARE IN INCHES

BREAK SHARP EDGES 0.003-0.020R

Refinish Diagram
Figure 403 (Sheet 3)

F79008

Index No. Fig. 1101	Part Number	Part Name	Material	Tensile Strength (ksi)	Stress Relief After Base Material Rework*	
					Temperature (°F)	Time (Hours)
37	69-52412-1	Gear	S.A.E. H-11**	275 to 300	850 to 900	4
47	69-52417-1,-2	Gear				
72	17-6643-3	Ring				
90	69-52431-2	Bolt				
	65-76607-1		S.A.E. 4340 modified	275 to 300	500 to 550	4
91	69-52424-1 69-60057-1	Pin	S.A.E. H-11**	275 to 300	850 to 900	4
92	69-52426-1 69-60053-1	Spacer	S.A.E. H-11**	275 to 300	850 to 900	4
94	69-52407-1	Shaft				
94	69-52407-2,-3,-4	Shaft	S.A.E. 4340 modified	270 to 300	500 to 550	4
96	69-52408-1	Cross	S.A.E. H-11**	275 to 300	850 to 900	4
42A	69-52474-1	Sleeve	S.A.E. 4330M modified	150 to 170	350 to 400	4

* After stress relieving, air cool part at 65°F-75°F and magnetic particle examine per 20-20-01.

** AMS 6487 is the closest equivalent aeronautical material specification.

Stress Relief Data
Figure 404

ASSEMBLY

1. General

   A. Immerse all packings and internally installed parts in hydraulic fluid, Specification MIL-H-5606. These parts are installed wet. Use of MIL-G-7711 grease is optional for packings and seals.

   B. Apply primer, Specification BMS 10-11, type 1 on faying surfaces, from O-ring groove to outer edge, where required by reassembly procedures. Mate and install while primer is wet. Do not allow primer in O-ring grooves, on packings, or on sealing surfaces.

   C. Apply primer, Specification BMS 10-11, type 1 to shank and threads of bolts, where required by reassembly procedures, and install while primer is wet.

2. Assembly (Fig. 1101)

   A. Assemble gear (47)

      (1) On assemblies P/N 65-50303-( ) and 65-50306-( ):

         (a) Refer to figure 504, diagram No. 4, and determine thickness of shim (43).

         (b) Insert packing (41) into housing (82).

         (c) Install bearing (46) on gear (47) and insert assembled unit in housing (82) until bearing fits inside housing bore.

            NOTE: Install gear through opening for cover (86).

         (d) Fill grooves in retainer (40) with Sealant BMS 5-95. Insert seal (42) in retainer. Apply light film of lubricant to surfaces of seal and install bearing (44).

         (e) Apply primer, BMS 10-11, type 1 to mounting surfaces of retainer (40) and housing (82). Prevent primer from entering O-ring (41) groove.

(f) Install shim (43), retainer (40) and assembled parts in housing (82), using washers (39) and bolts (38). Tighten bolts to a torque range of 80 to 100 pound-inches. Check for free rotation of gear (47).

(2) On assemblies P/N 65-50323-( ) and 65-50326-( ):

(a) Select shim (42C) to provide 0.000- to 0.003-inch axial end play of bearing (44) between retainer (40) shoulder and retaining ring (42B), and assemble these parts as a unit.

(b) Insert packing (41) in housing (82) and O-ring (42D) in sleeve (42A).

(c) Install bearing (46) on gear (47) and insert assembled unit in housing (82) until bearing fits inside housing bore.

NOTE: Install gear through opening for cover (86).

(d) Refer to figure 504, diagram No. 4, and determine thickness shim (43).

(e) Apply primer, BMS 10-11, type 1 to mounting surfaces of retainer (40) and housing (82). Prevent primer from entering O-ring (41) groove.

(f) Install shim (43), retainer (40) and assembled parts in housing (82).

(g) Install sleeve (42A) over gear (47) shaft. Fill grooves in retainer (40) with Sealant BMS 5-95. Insert seal (42) in retainer and over sleeve (42A).

(h) Install retainer (39A) using washers (39) and bolts (38). Tighten bolts to a torque range of 80 to 100 pound-inches.

B. Assemble gear (37)

(1) On assemblies P/N 65-50303-( ) and 65-50306-( ):

(a) Refer to figure 504, diagram No. 3, and determine thickness of shim (33).

(b) Insert packing (31) into housing (82).

(c) Install bearing (36) on gear (37), and insert assembled unit in housing (82) until bearing fits inside housing bore.

NOTE: Install gear through opening for cover (86).

(d) Fill grooves in retainer (30) with Sealant BMS 5-95. Insert seal (32) in retainer . Apply light film of lubricant to surfaces of seal and install bearing (34).

(e) Apply primer, BMS 10-11, type 1 to mounting surfaces of retainer (30) and housing (82). Prevent primer from entering packing (31) groove.

(f) Install shim (33), retainer (30) and assembled parts in housing (82), using washers (29) and bolts (28). Tighten bolts to a torque range of 80 to 100 pound-inches. Check for free rotation of gear (37).

(2) On assemblies P/N 65-50323-( ) and 65-50326-( ):

(a) Select shim (32C) to provide 0.000- to 0.003-inch axial end play of bearing (34) between retainer (30) shoulder and ring (32B) and assemble these parts as a unit.

(b) Insert packing (31) in housing (82) and O-ring (32D) in sleeve (32A).

(c) Install bearing (36) on gear (37) and insert assembled unit in housing (82) until bearing fits inside housing bore.

NOTE: Install gear through opening for cover (86).

(d) Refer to figure 504, diagram No. 3, and determine thickness of shim (33).

(e) Apply primer BMS 10-11, type 1 to mounting surfaces of retainer (30) and housing (82). Prevent primer from entering packing (31) groove.

(f) Install shim (33), retainer (30) and assembled parts in housing (82).

(g) Install sleeve (32A) over gear (37) shaft. Fill grooves in retainer (30) with sealant BMS 5-95. Insert seal (32) in retainer and over sleeve (32A).

(h) Install retainer (29A) using washers (29) and bolts (28). Tighten bolts (28) to 80-100 lb-in.

C. Assemble and install torque brake assembly (67) as follows:

(1) Position ends of springs in spring set (77) approx. 180° apart.

NOTE: Spring set consists of two matched springs coiled together.

(2) Coat spring set (77) with hydraulic fluid, MIL-H-5606 and place in Spring Expansion Fixture, ST6107 (Fig. 501).

(3) Move fixture spring stops, ST6107-( ), inward so that stops will contact spring ends when springs are wound. Snug all four stops sufficently to hold yet permit movement by tapping with aluminum drift.

(4) Wind up spring by rotating fixture drive shaft with socket wrench until OD of spring set (77) snugs against fixture sleeve, ST6107-10. Lock drive shaft in this position with lock screws.

(5) Using an aluminum drift tap all four spring ends axially to snug spring coils together.

(6) Using an aluminum drift tap fixture spring stops outward, on left side of fixture, just far enough to clear flange of sleeve (73). Insert sleeve into spring set until flange is properly seated.

(7) Using an aluminum drift tap fixture spring stops outward, on right side of fixture, just far enough to clear flange of sleeve (74). Insert sleeve into spring set until flange is properly seated.

(8) Insert adapter (76) into sleeve (74) partially engaging lugs, leaving adapter splined end protruding outward on right side, approx. 1.0 inch from sleeve flange. Support adapter (76), and unlock fixture drive with allen wrench until adapter (76) is held firmly by both sleeves (73, 74).

(9) Loosen spring stops on both sides of fixture and move stops outward to clear spring pack assy.

(10) Remove spring pack assy from fixture, tapping with an aluminum drift. Do not drop spring pack as re-assembly may be necessary.

(11) Deleted

(12) Deleted

(13) Deleted

NOTE: A light plastic drift may be used to force pack from jig. Do not permit spring pack to drop.

(14) Place assembled parts in arbor press. Protect flanged faces of sleeves (73, 74) and apply an end load of 300-500 pounds to stack springs tight.

(15) Install rings (72) over spring set and press down to remove clearance and end play.

(16) Measure stacked height of assembled parts. Select shims (75) to provide dimension of 3.053-3.064 inches for 176663 and 3.018-3.030 inches for 178360-1 after installation. Remove end rings (72) and install shims as shown in Fig. 503. Shims used on same end of assembly are to be identical at two places 180 degrees opposite. Use the least quantity of shims required by selecting the larger sizes of shims. The dimension may be met without requiring shims, or with shims at one end only. When more than one shim is required, use same thickness at each end within 0.01 inch. Two shims may be stacked together to increase range. Maximum permissible shimming is 0.09 inch at each end (one 0.04-inch shim and one 0.05-inch shim). Trim ends of stacked shims as required so they do not protrude beyond spring O.D.

(17) Install one ring (72) over spring on sleeve (73) end. Slide other end of pack into housing (78), and press the remaining ring (72) over spring set (77) and into housing ID.

(18) Tap support (70) over aft end of torque brake housing (78), aligning slots in ring with tangs on housing.

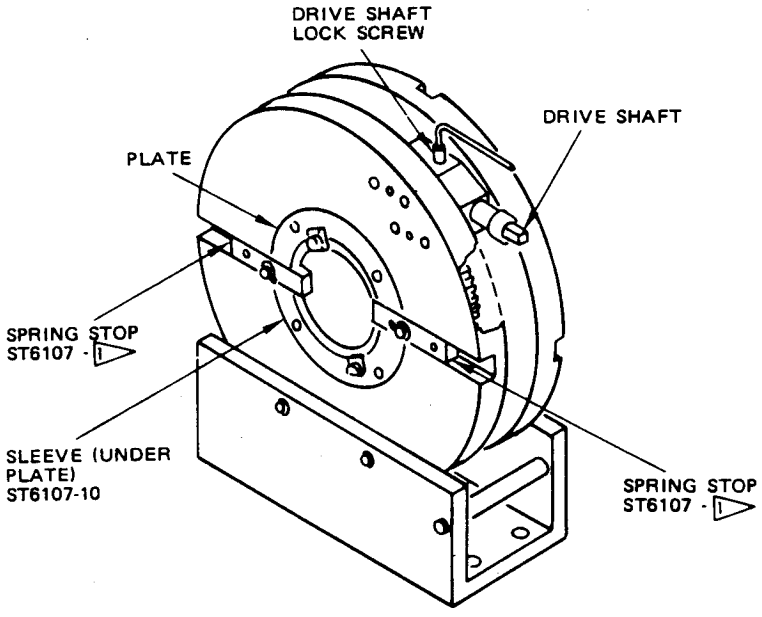
(19) Invert assembled parts with flange of housing (78) upward, and tap support firmly onto housing. Turn assembled units so that support (69) is on bottom and rests on a small 2-inch thick block of wood.

(20) Install bearing (62) on adapter (61). Refer to figure 504, diagram No. 5 and determine thickness of shim (79).

(21) Install shim (79), bearing (62), and adapter (61) in housing (82).

(22) Place torque brake components over inverted housing assembly (81), until parts are seated. Align bolt holes in support flange.

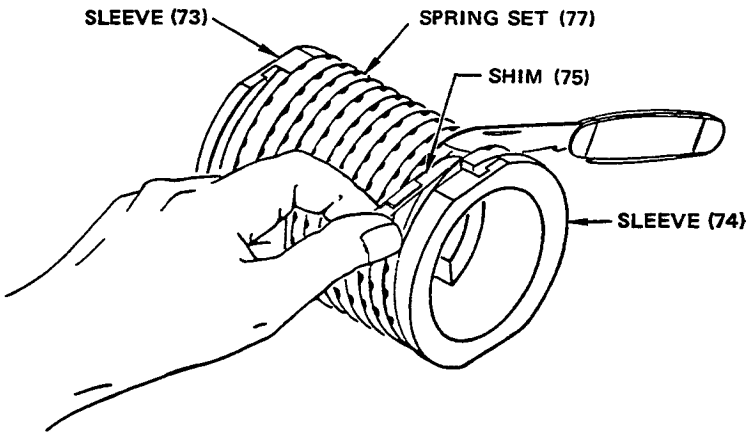
(23) Insert bolts (66) through flange of support (69). Install seals (65), washers (64), and nuts (63). Tighten nuts (63) to 180-250 lb-in.



1 ST6107-13 FOR TORQUE BRAKE ASSY, 176667
ST6107-14 FOR TORQUE BRAKE ASSY, 178366-1

Spring Expansion Fixture, ST6107
Figure 501

Figure 502 Deleted



Spring Pack Shim Installation
Figure 503

D. Install components in cover (86).

(1) Fill groove in cover with Sealant BMS 5-95. Insert seal (60) in cover. Apply light film of lubricant to sealing surface of seal.

(2) Press bearing (59) into cover (86).

(3) Install spacer (58) to cover (86) over bearing (59).

E. Assemble gears (54 and 52).

(1) Press bearing (48) on driver (55) or gear (52) at internal spline end. Check that bearing is firmly seated on shoulder of driver or gear.

(2) Place driver (55) or gear (52) and bearing (48) in cover (86) ID. Determine thickness of shim (57) required as shown on figure 504, diagram No. 1.

(3) Remove driver or gear, and bearing, install shim (57) on spacer (58), and reinstall driver or gear, and bearing.

(4) See figure 504, diagram No. 2, and calculate thickness of shim (53) required.

(5) Install shim (53) between gears (54 and 52). If used, place parts on driver (55) and installed bearing (49).

(6) Apply primer BMS 10-11, type 1 to shank and threads of bolts (51). Install bolts through gear (54), shim (53), gear (52) and/or driver (55). Install washers (50). Install nuts (49) and tighten to a torque range of 90 to 125 pound-inches.

(7) Place assembled unit in suitable press. Apply light coating of hydraulic fluid, MIL-H-5606 to bearing rings and install bearing (56) on driver (55) or gear (52). Ensure that bearing is firmly seated.

F. Insert coupling (68) into assembled units (56 through 49). Align gaps in teeth between coupling (68) and driver (55) or gear (52). Open coils of ring (27) and feed end into ring recess in a clockwise direction, until entirely installed in grooves and coupling and driver or gear are locked together.

G. Install assembled parts (68, 56 thru 48, 27) into transmission housing. Ears on end of coupling (68) must align with valleys of ID of sleeve (74) and align with ears on adapter (76).

(1) Press down evenly around gear (54) to seat units. If necessary, tap driver (55) or gear (52) with plastic drift to mesh gear teeth. Assembled unit must rotate evenly and freely before installing cover (86).

(2) Check assembly backlash of gear (47) and gear (37) with ring gears (52, 54). See Fig. 601 for backlash limits. Check backlash at a minimum of 4 equally spaced positions in one full rotation of output shaft (94).

(3) Slowly rotate gear (47) through 4 turns with a torque wrench and note any variations in torque greater than 3 lb-in. Check backlash at any such points of high or low torque.

H. Lubricate O-ring (26) and place in sealing groove of cover (86).

I. Apply primer, BMS 10-11, type 1 to mating surfaces of cover (86) and housing assembly (81). Do not allow primer to enter O-ring groove. Install cover and attached parts on housing assembly. Install washers (25) and bolts (24). Tighten bolts (24) to 80-100 lb-in.

J. Assemble universal joint (87) and cover (19).

(1) Insert shaft (94) firmly into housing (82).

(2) Install washer (23) on splined end of shaft (94).

CAUTION: DO NOT RE-USE OLD LOCKWASHER (22), OR FAILURE OF TANGS & LOSS OF NUT RETENTION MAY OCCUR.

(3) Install new lockwasher (22) and nut (21). Tighten nut (21) to 200-240 lb-in., using Wrench Adapter ST6105-3. Bend tangs of lockwasher (22) to secure nut (21).

(4) Lubricate packing (20) and install in groove of cap (19). Apply primer, BMS 10-11, type 1 to mating surfaces of cap and housing (82). Assemble cap to housing. Do not allow primer to enter O-ring groove.

(5) Install washers (17) and bolts (16). Tighten bolts to 80-100 lb-in.

(6) Coat shank of bolt (90) and threads of nut (88) with MIL-C-11796, corrosion preventive compound. Position yoke (93) on cross (96) and install pin (91), bolt (90), spacer (92) and nut (88). Tighten nut (88) as follows:

(a) The self-locking mechanism of the nut must develop a torque between 25 and 100 pound-inches, at room temperature, with no axial load on the nut and the thread fully engaged. The full chamfer of the bolt thread must protrude beyond the locking mechanism of the nut.

(b) Tighten nut to 170-200 pound-inches.

(c) Deleted.

K. Install external components on gear (37).

(1) Install coupling (12) on gear (37).

(2) Install washer (11) on shaft of gear (37). Install nut (10), and holding coupling (12) with Splined Coupling Wrench F71228-500, or equivalent, tighten nut (10) to a torque range of 160 to 190 pound-inches.

L. Install external components on gear (47).

(1) Install coupling (5) on gear (47). Install washer (4) on gear (47). Install nut (3), and holding coupling (5) with Splined Coupling Wrench F71228-500, or equivalent, tighten nut (3) to a torque range of 160 to 190 pound-inches.

NOTE: Hold components from turning by inserting a plastic rod through universal joint.

M. Lubricate packing (2) and install packing (2) and plug (1) in filler port nearest the universal joint assembly. Lockwire plug (1) to cover (86).

N. After testing, lockwire bolts (24), bolts (16, 28, 38) and plugs (1) using double-twist method (Ref 20-50-02).

O. Service transmission assembly.

(1) Position assembly with longitudinal axis of universal joint assembly (87) 13.25 degrees above true horizontal at yoke end.

(2) Fill transmission assembly with hydraulic fluid to level of filler port lip. Nominal capacity is 46 ounces. Install packing (2) and plug (1).

(3) Apply Glyptal across exposed bolt threads and nuts, and to lockwire ends, fasteners and plugs, as applicable.

(4) Repair or touch up any damaged or omitted finished surface.

3. Materials

A. Hydraulic Fluid -- MIL-H-5606 (Ref 20-60-03)

B. Primer -- BMS 10-11, type 1 (Ref 20-60-02)

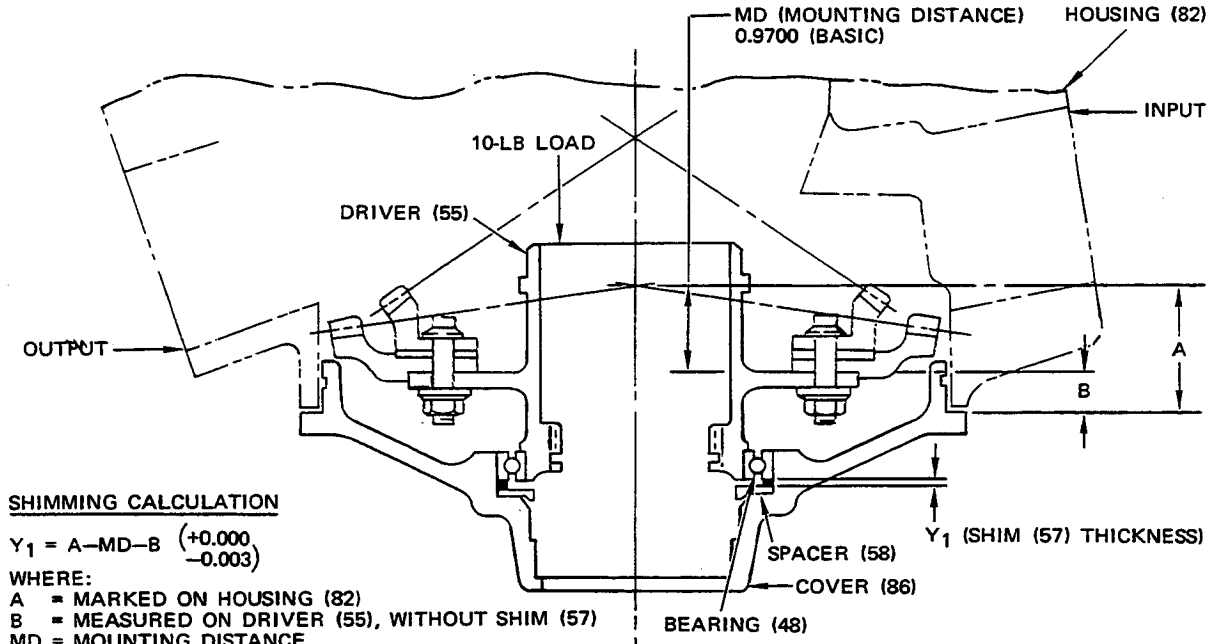
C. Grease -- MIL-G-23827 (Ref 20-60-03)

D. Sealant -- BMS 5-95 (Ref 20-60-04), replaces Permatex No. 2

E. Paint -- Glyptal (General Electric Co., Insulating Materials Department, Downey, California)

F. Corrosion Preventive Compound -- MIL-C-11796, class 3 (Ref 20-60-03)

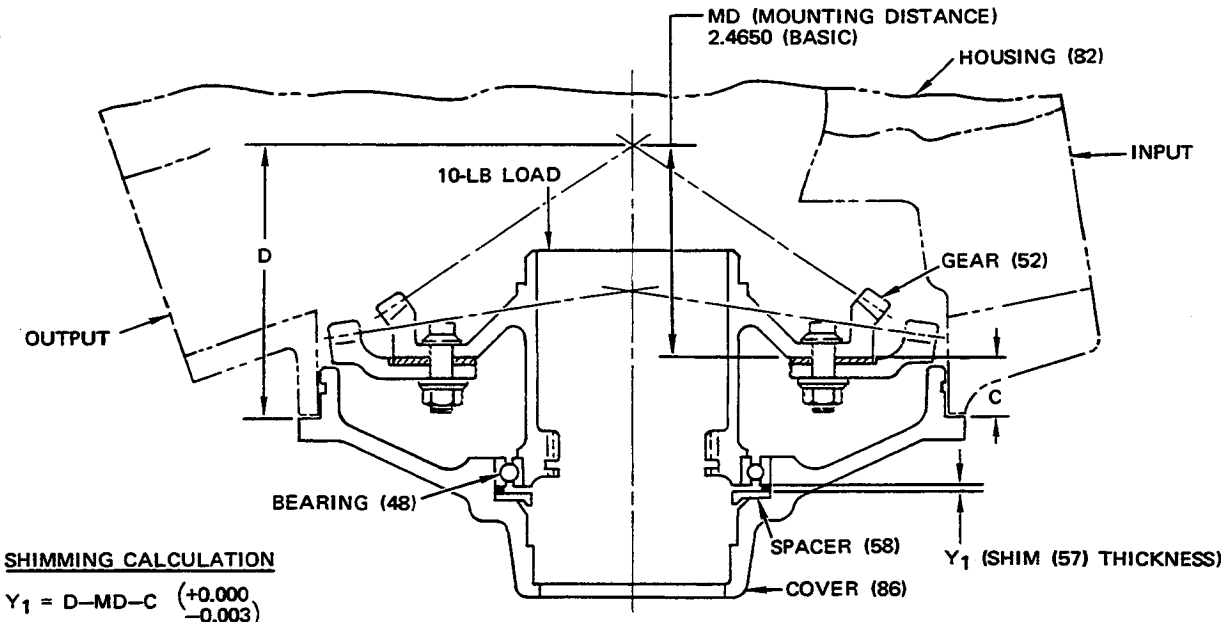
G. Lockwire -- MS20995C32, MS20995F32, or MS20995NC32



USED FOR ASSEMBLIES THAT USE DRIVER (55, P/N 65-50272-1)

NOTE: ALL DIMENSIONS ARE IN INCHES

DIAGRAM NUMBER 1A

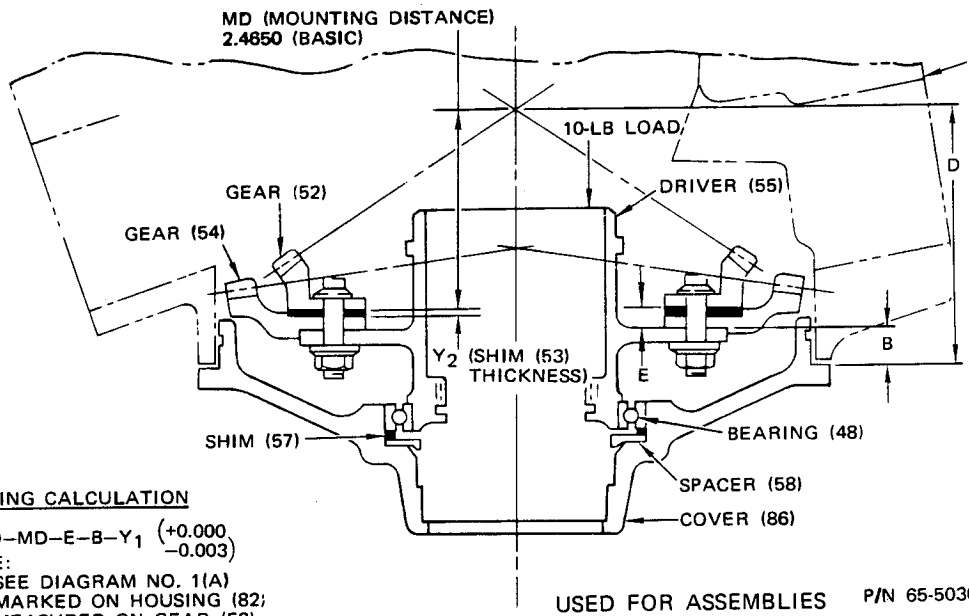


USED FOR ASSEMBLIES THAT DO NOT USE DRIVER (55, P/N 65-50272-1)

NOTE: ALL DIMENSIONS ARE IN INCHES

DIAGRAM NUMBER 1B

Shimming Diagrams
Figure 504 (Sheet 1)



SHIMMING CALCULATION

$Y_2 = D-MD-E-B-Y_1 \begin{pmatrix}+0.000\\-0.003\end{pmatrix}$

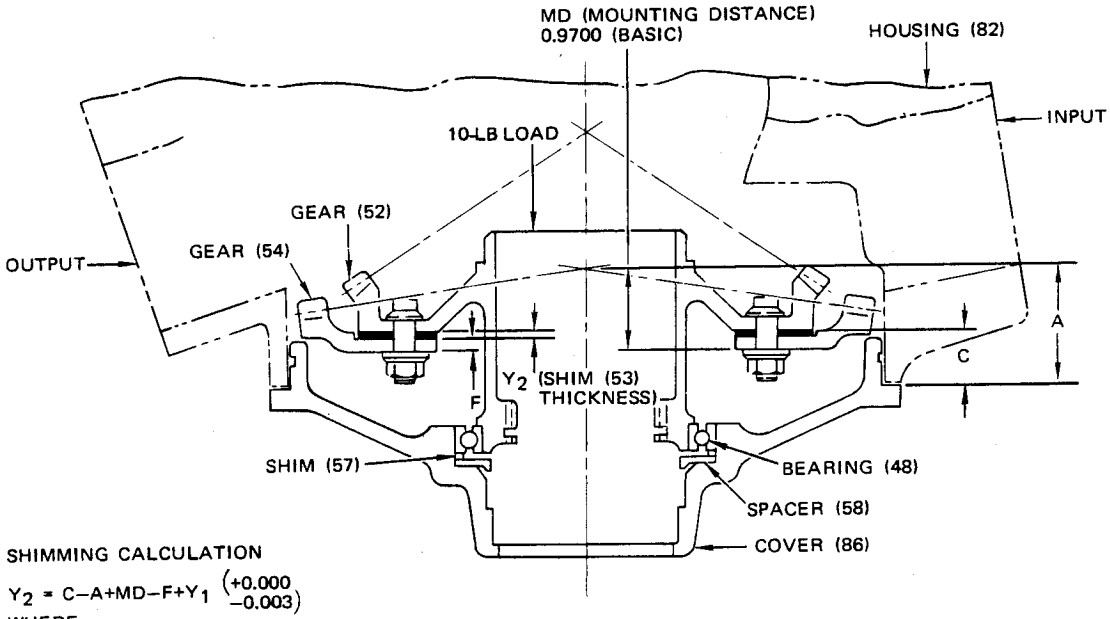
WHERE:
B = SEE DIAGRAM NO. 1(A)
D = MARKED ON HOUSING (82)
E = MEASURED ON GEAR (52)
MD = MOUNTING DISTANCE
Y_1 = SHIM (57) THICKNESS, FROM DIAGRAM NO. 1A

USED FOR ASSEMBLIES THAT USE DRIVER (55, P/N 65-50272-1)

P/N 65-50303-( ) SHOWN

NOTE: ALL DIMENSIONS ARE IN INCHES

DIAGRAM NUMBER 2A



SHIMMING CALCULATION

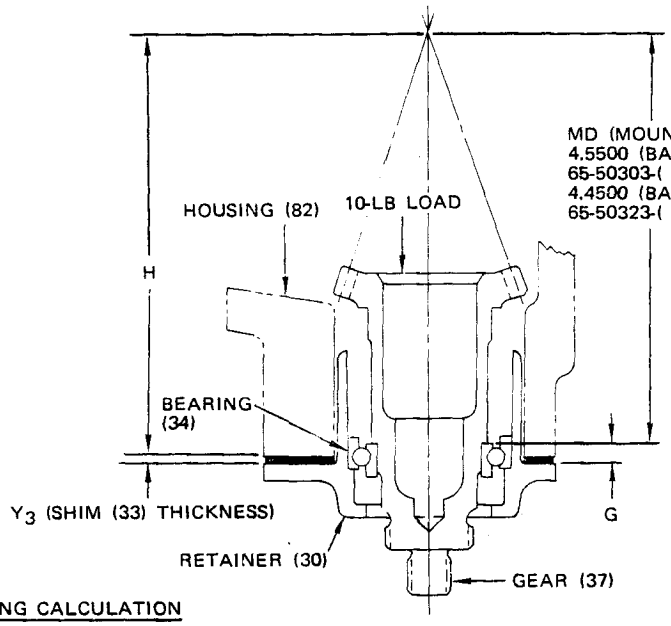
$Y_2 = C-A+MD-F+Y_1 \begin{pmatrix}+0.000\\-0.003\end{pmatrix}$

WHERE:
A = MARKED ON INPUT SIDE OF HOUSING (82)
C = SEE DIAGRAM NO. 1(B)
F = MEASURED ON GEAR (52)
MD = MOUNTING DISTANCE
Y_1 = SHIM (57) THICKNESS, FROM DIAGRAM NO. 1B

USED FOR ASSEMBLIES THAT DO NOT USE DRIVER (55, P/N 65-50272-1)

NOTE: ALL DIMENSIONS ARE IN INCHES

DIAGRAM NUMBER 2B



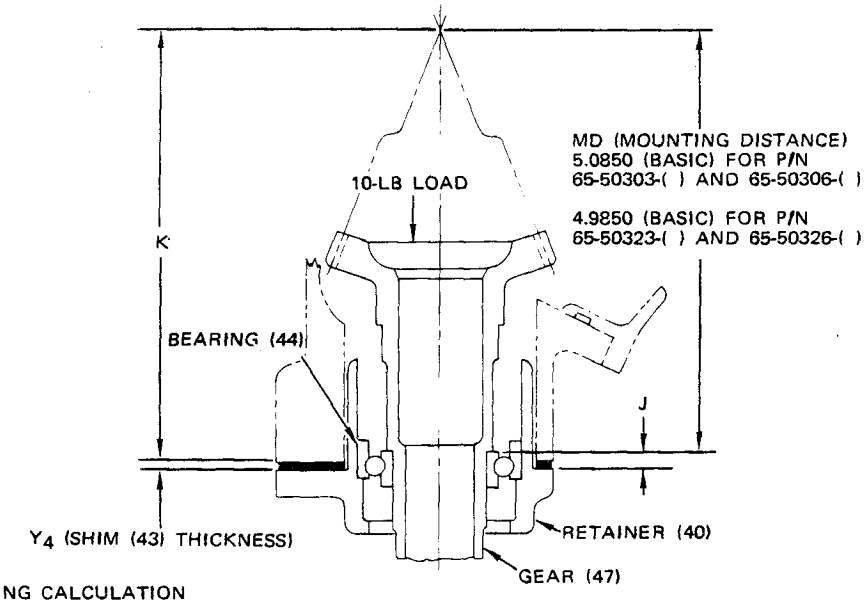
NOTE: ALL DIMENSIONS ARE IN INCHES

SHIMMING CALCULATION

$Y_3 = G+MD-H \quad {}^{(+0.003}_{-0.000)}$

WHERE:
G = MEASURED ON LOADED RACE OF BEARING (34)
H = MARKED ON HOUSING (82)
MD = MOUNTING DISTANCE

DIAGRAM NUMBER 3



SHIMMING CALCULATION

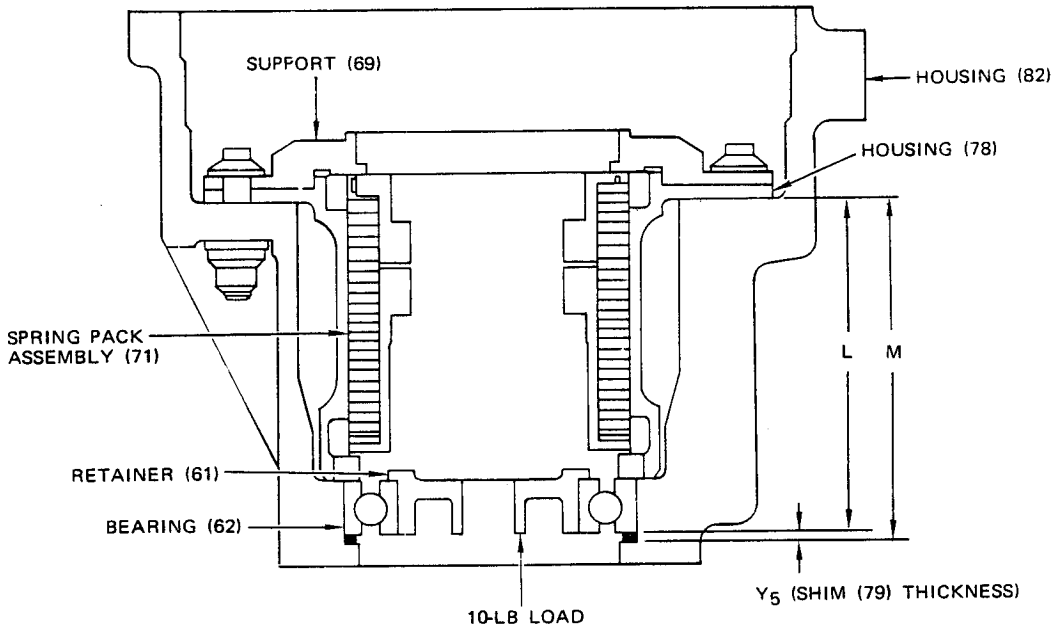
$Y_4 = J+MD-K \quad {}^{(+0.003}_{-0.000)}$

WHERE:
J = MEASURED ON LOADED RACE OF BEARING (44)
K = MARKED ON HOUSING (82)
MD = MOUNTING DISTANCE

NOTE: ALL DIMENSIONS ARE IN INCHES

DIAGRAM NUMBER 4

Shimming Diagrams
Figure 504 (Sheet 3)



SHIMMING CALCULATION

$Y_5 = M-L \begin{matrix}(+0.003 \\ -0.000)\end{matrix}$

WHERE:
L = MEASURED TO OUTER RACE OF BEARING (62), BY ASSEMBLING PARTS AS SHOWN AND APPLYING LOAD TO STACK PARTS TIGHTLY. TAKE AVERAGE OF FOUR READINGS, APPROXIMATELY 90 DEGREES APART.

M = MEASURED ON HOUSING (82)

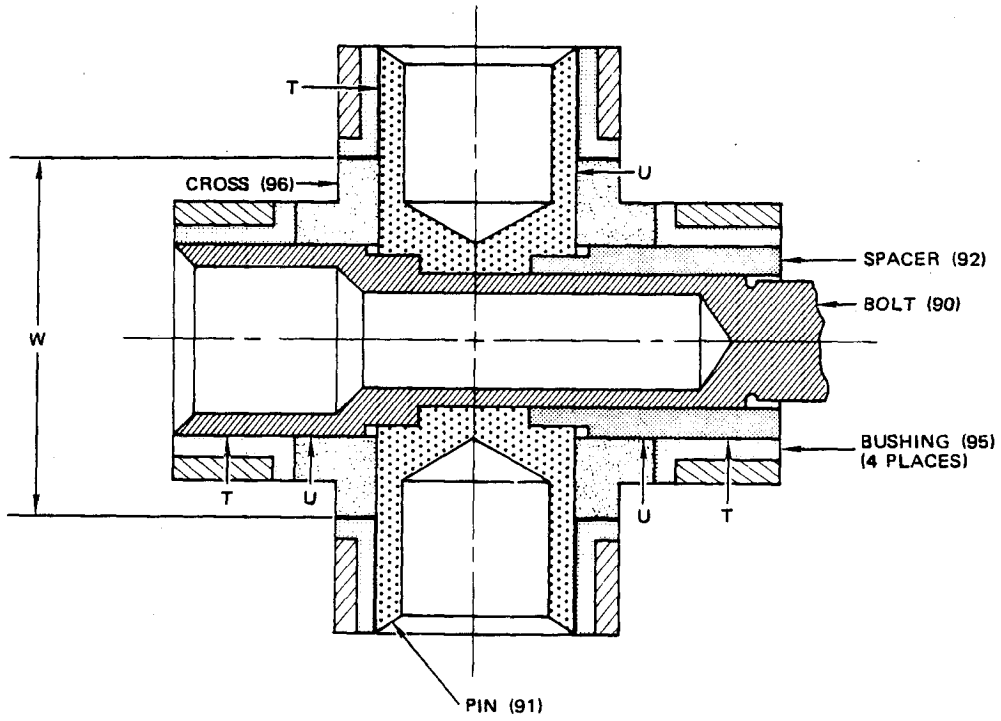
NOTE: ALL DIMENSIONS ARE IN INCHES

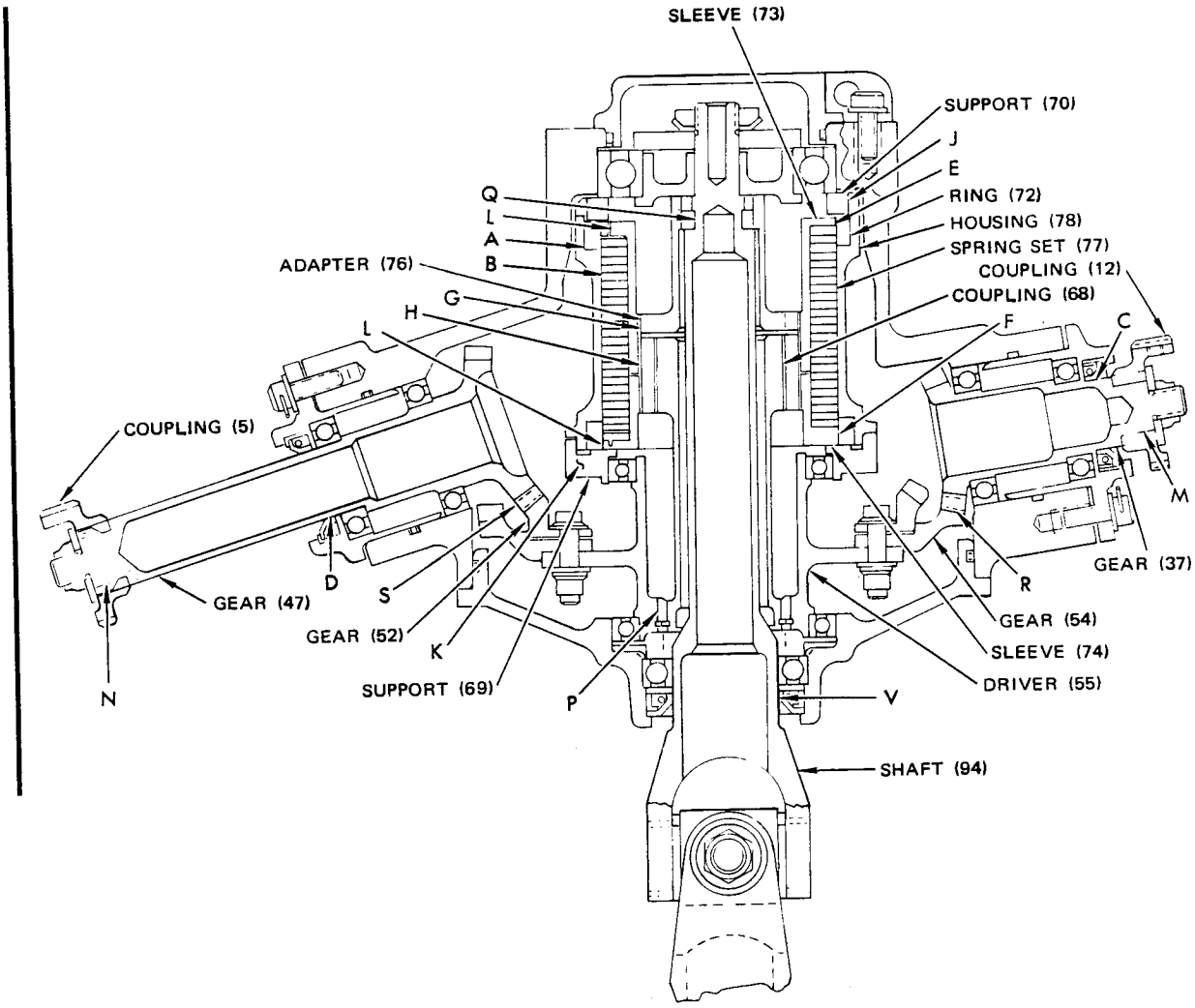
DIAGRAM NUMBER 5

FITS AND CLEARANCES

1. 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.

2. 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.





P/N 65-50303-( ) SHOWN

		Design Dimensions				Service Wear Limits		
Ref Letter Fig.601	Mating Item No. Fig.1101	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 78 OD 72	3.524 3.514	3.525 3.515	0.009	0.011	3.513	3.526	0.013
B	ID 78*[11] OD 77*[10]	3.0966 3.0070	3.0971 3.0080	0.0886	0.0901	3.0065	3.0976	0.0911
B	ID 78*[12] OD 77*[10]	3.0950 3.0230	3.0955 3.0240	0.0710	0.0725	3.0225	3.0960	0.0735
C	OD 37	0.970	0.972			0.966		
D	OD 47	0.970	0.972			0.966		
E	*[2] 73	0.883	0.887			0.875		
F	*[2] 74	0.883	0.887			0.875		
G	*[3] 76	0.645	0.649			0.637		
H	*[3] 68	0.645	0.649			0.637		
J	*[1] 70	0.299	0.301			0.297		
K	*[1] 69	0.182	0.185				0.187	
L	*[9] 73,74	0.234	0.239			0.232		
M	*[4] 12 37			0.0000	0.0052			0.0090
N	*[4] 5 47			0.0000	0.0052			0.0090

		Design Dimensions				Service Wear Limits		
Ref Letter Fig.601	Mating Item No. Fig.1101	Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
P	*[5] 55, 68			0.0015	0.0073			0.0090
Q	*[6] 94, 76			0.0015	0.0068			0.0090
R	*[7] 37, 54			0.0009	0.0038			0.0057
S	*[7] 47, 52			0.0007	0.0030			0.0045
T	ID 95*[13]	0.8340	0.8350	0.0001	0.0033	0.8303	0.8423	0.0120
	OD 90,91,92	0.8313	0.8320					
U*[8]	ID 96	0.8322	0.8335	0.0002	0.0022	0.8303	0.8350	0.0047
	OD 90,91,92	0.8313	0.8320					
V	OD 94	1.3769	1.3774			1.3720		
W	*[1] 96	1.253	1.255			1.250		
	OD 72	0.374	0.375			0.372		
	OD 32A,42A	1.126	1.128			1.122		

*[1] Width

*[2] Circular tooth thickness measured at pitch diameter of 1.9375 inches.

*[3] Chordal tooth thickness measured at pitch diameter of 1.9375 inches.

*[4] Spline backlash, measured at 0.8125-inch pitch diameters of internal splines on couplings (5 or 12) while gears (37 or 47) are fixed.

*[5] Spline backlash, measured at 1.625-inch pitch diameter of spline on driver (55) while coupling (68) is fixed.

*[6] Spline backlash, measured at 0.8125-inch pitch diameter of spline on shaft (94) while adapter (76) is fixed.

*[7] Gear backlash, measured at 0.8125-inch pitch diameter of spline on pinions of gears (37, 47), prior to disassembly. Backlash beyond service limits requires check of wear of each gear in the pair. Lock output shaft and remove all other backlash in gearbox by applying 20 lb-ins. torque to pinion of gear not being checked.

*[8] Used for universal joint assembly 69-52409-4 only.

*[9] Thickness of flanges on sleeves (73, 74)

*[10] Spring measured in free condition.

*[11] 176655 housing and 176661 spring set.

*[12] 178344-1 housing and 178359-1 spring set.

*[13] Bushing DBAF-13-022, 90718.

TESTING

1. Test Equipment

NOTE: Equivalent substitutes may be used.

A. Compressed air source, controlled at 0 to 15 psi

B. Air valve adapter

C. ST6396 Transmission Tester (Curtiss-Wright Corp., Caldwell Facility, 300\Fairfield Road, Caldwell, New Jersey 07006)

D. Deleted.

E. X-Y Recorder:

(1) Model HP7090A (X-Y Recorder, Hewlett Packard Co., 3000 Hanover St., Palo Alto, California 94304) (Replaces HP7004B)

(2) Model 6423 DIN A3 (X-Y Recorder, Soltec Corp., Sol Vista Park, 12977 Arroyo St., San Fernando, California 91340-1597). Replaces XY530T, Esterline Corporation, Esterline-Angus Division P.O. Box 24000, 1201 Main St., Indianapolis, Indiana 46224

F. Model 870 Signal Conditioners (Daytronic Corp., 2589 Corporate Drive Place, Miamisburg, Ohio 45342) (2 required). No longer available, see H below.

G. Model 801 Adapter (Daytronic Corp., 2589 Corporate Drive Place, Miamisburg, Ohio 45342). No longer available, see H below.

H. Model 3170 or 3270 Strain Gage Conditioner (Daytronic Corp., 2589 Corporate Drive Place, Miamisburg, Ohio 45342). Replaces conditioner and adapter listed in F and G.

2. Preparation for Test

A. Ensure that unit has been serviced with hydraulic fluid.

B. Install air valve adapter in upper filler port.

C. Turn over coupling, by hand, in both directions. Gears and bearings must be free running without evidence of binding in any position.

D. With the output and universal shafts free, torque required to rotate input shaft in both directions shall not exceed 12 lb-in.

3. Functional Test (Fig. 1101)

   A. Connect air hose to air valve adapter in upper filler port, and pressurize with filtered air at 14.5-15.5 psi for minimum of 3 minutes. There shall be no leakage. Remove adapter and install plug (1) and O-ring (2) in upper filler port. Lockwire plug (1). Apply Glyptal to lockwire ends.

   B. Rotate input shaft 10 revolutions in each direction. allow unit to stand for 8 hours. There shall be no leakage at the end of this period.

   C. With universal shaft locked, apply 45-55 lb-in. torque to input shaft in clockwise direction. Mark position of input shaft. Apply same torque in counterclockwise direction. Input rotational backlash shal1 not exceed 20 degrees.

   D. Mount assembly in test fixture (Fig. 702). Connect torque transducers to X-Y recorder.

   E. Connect transmission input shaft to calibrated input torque transducer, and transmission output shaft to calibrated output transducer.

   F. Check that X-Y recorder is zeroed before any torque is applied to transmission.

   G. Draw vertical lines on X-Y recorder paper at minimum lockout input torque of 120 lb-in. (65-50323, 65-50326) or 160 lb-in. (65-50303, 65-50306) and at maximum input limits (1820, 2400 lb-in.).

   H. Install manual input torque arm.

   CAUTION: DO NOT EXCEED MAX INPUT TORQUE (FIG. 701) OR DAMAGE TO UNIT MAY OCCUR.

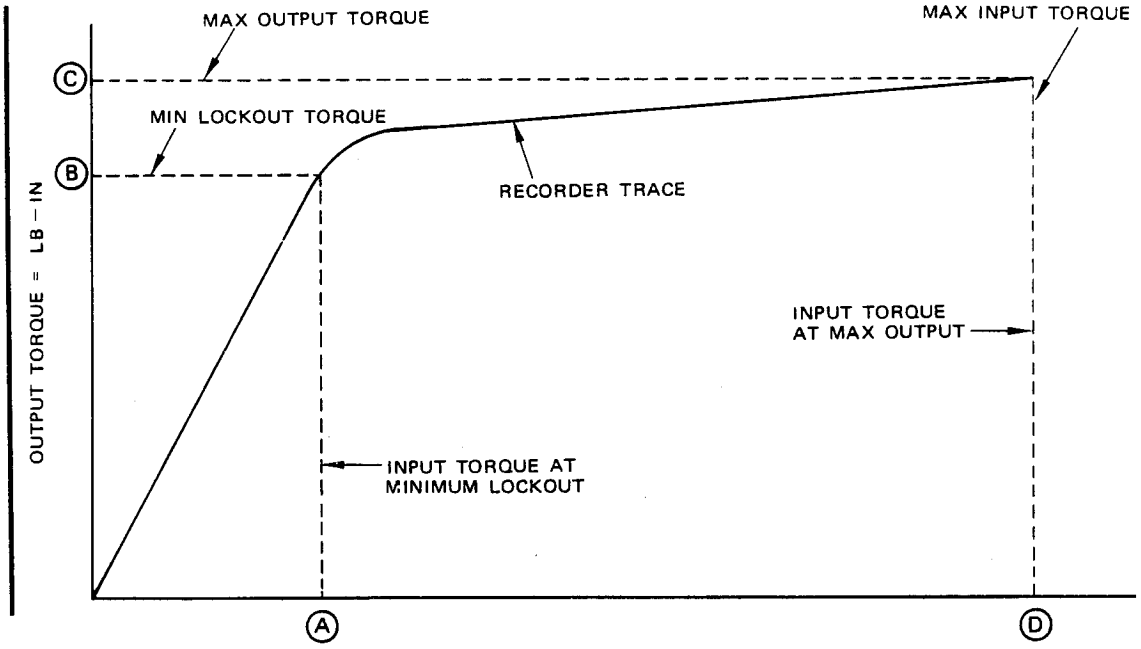
   I. Slowly turn the manual input torque arm in the clockwise direction until the input torque is at the maximum limit (Fig. 701).

   J. Make sure that the output torque at minimum lockout is not less than 339 lb-in. (65-50323, 65-50326) or 394 lb-in. (65-50303, 65-50306) with a minimum input torque of 120 or 160 lb-in., respectively.

   K. Make sure that the output torque is not more than 390 lb-in. (65-50323, 65-50326) or 522 lb-in. (65-50303, 65-50306) with a maximum input torque of 1820 or 2400 lb-in., respectively.

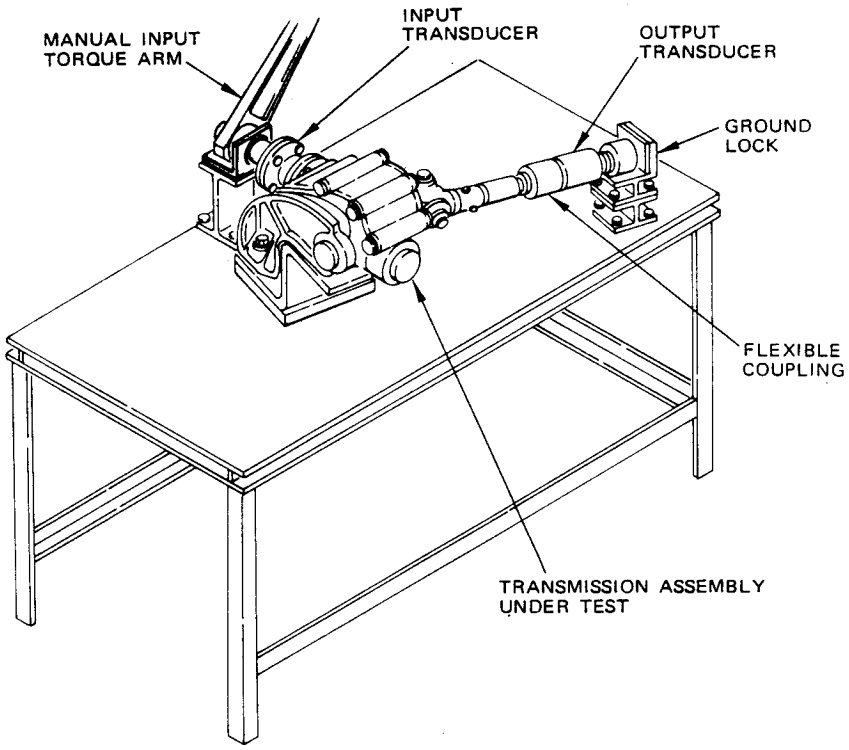
   L. Repeat steps I thru K with counterclockwise input torque.

4. Deleted.



	65-50323 65-50326	65-50303	65-50306
(A) INPUT	120	160	160
(B) LOCKOUT	339	394	394
(C) OUTPUT	390	522	522
(D) MAX INPUT	1820	2400	2400

Torque Brake Test
Figure 701



Test Fixture
Figure 702

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Figure 703

TROUBLE SHOOTING

1. Trouble shooting is keyed to individual steps of the test procedure. Referenced paragraphs show test procedure in which noted trouble would appear.

Trouble	Possible Cause	Correction
A. External leakage, paragraph 3.A., B.	Defective O-rings or seals	Replace O-rings or seals
B. Binding or rough movement, paragraph 2.C.	Improperly installed or defective components	Correct condition
C. Excessive backlash, paragraph 3.C.	Inadequate shims or excessively worn components	Replace shims or other component
D. Lockout occurs outside of minimum or maximum limits, paragraph 3.J., K.	Defective torque brake assembly	Replace or repair torque brake assembly

STORAGE INSTRUCTIONS

1. Wrap assembly in vapor barrier paper and tag securely.

2. Tag assembly with test date, and cure date for rubber components.

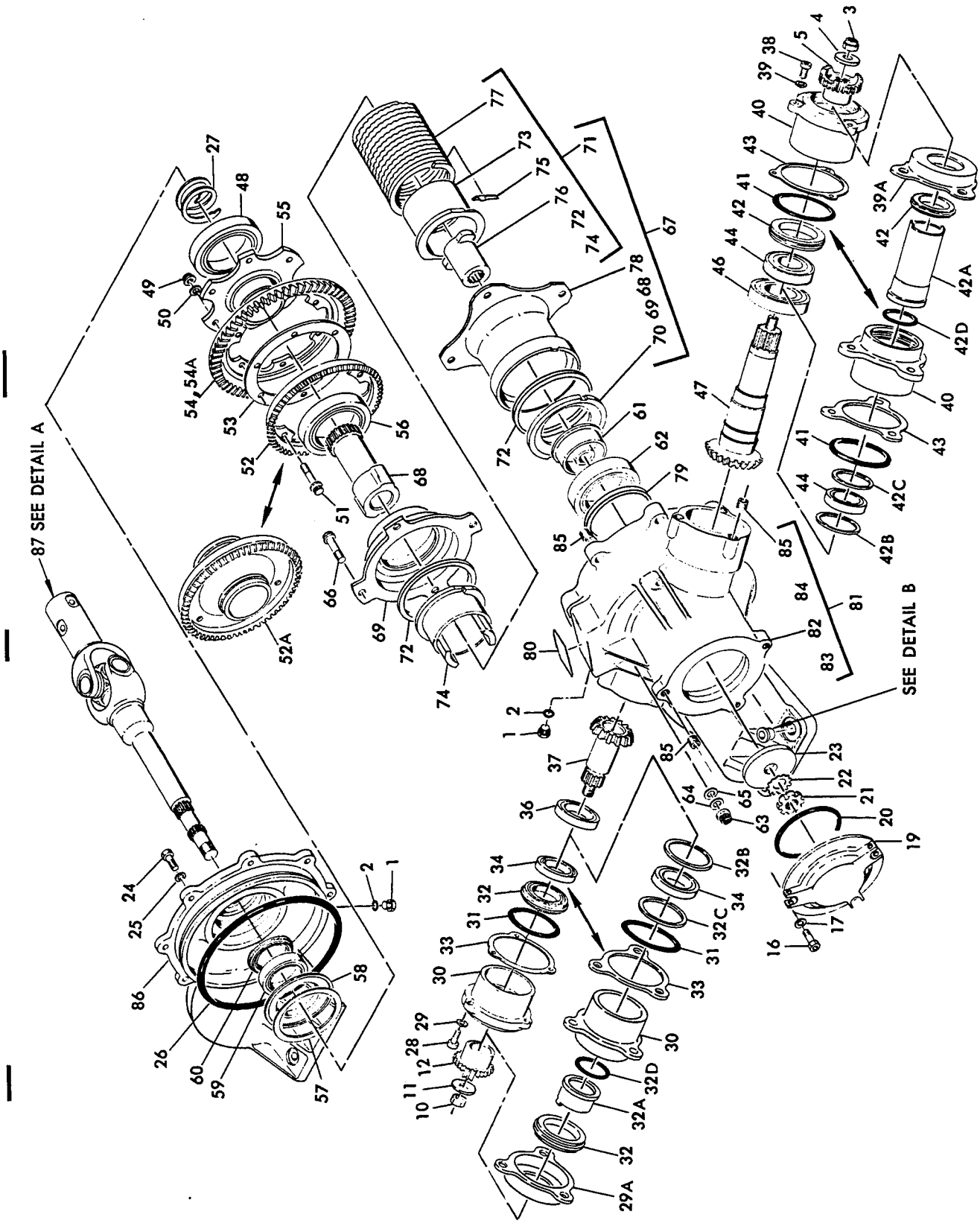
3. For further information, refer to Temporary Protective Coatings, Subject 20-44-02, and Protection, Storage, and Handling of Airplane Components, Subject 20-70-01.

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

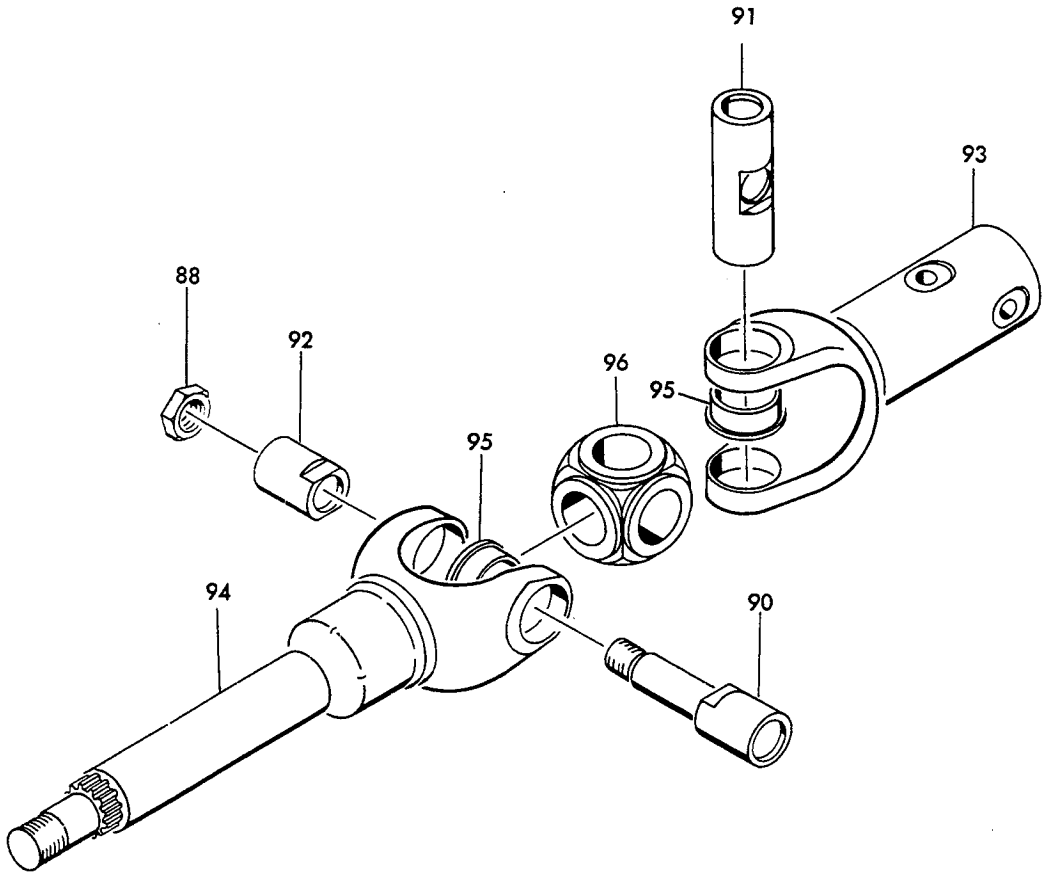
NOTE: Equivalent substitutes may be used for listed items. Refer to Testing for special tools and equipment required for testing.

1. F71228-500 -- Splined Coupling Wrench (Boeing)
2. ST6105-3 -- Torque Wrench Adapter *[1]
3. ST6107-10 -- Fixture Sleeve *[1]
4. ST6107-13, -14 -- Spring Stops *[1]
5. ST6107 -- Spring Pack Assembly Jig *[1]

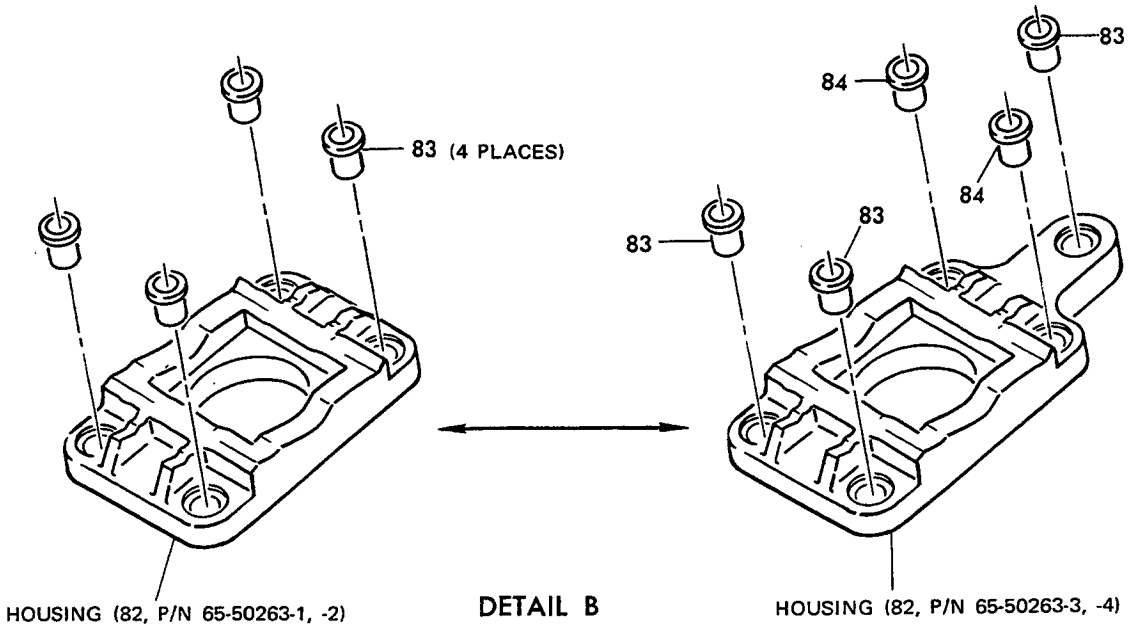
*[1] Curtiss-Wright Flight Systems Inc., 300 Fairfield Road, Fairfield, New Jersey 07006-1932



Trailing Edge Flap Drive Transmission Assemblies Nos. 3 and 6
Figure 1101 (Sheet 1)



DETAIL A



DETAIL B

Trailing Edge Flap Drive Transmission Assemblies Nos. 3 and 6
Figure 1101 (Sheet 2)

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
	65-50303-2		TRANSMISSION ASSY NO. 3, TE FLAP DRIVE (SB 27-1015)	A	RF
	65-50303-3		TRANSMISSION ASSY NO. 3, TE FLAP DRIVE	B	RF
	65-50303-4		TRANSMISSION ASSY NO. 3, TE FLAP DRIVE	C	RF
	65-50306-2		TRANSMISSION ASSY NO. 6, TE FLAP DRIVE (SB 27-1015)	D	RF
	65-50306-3		TRANSMISSION ASSY NO. 6, TE FLAP DRIVE	E	RF
	65-50306-4		TRANSMISSION ASSY NO. 6, TE FLAP DRIVE	F	RF
	65-50323-1		TRANSMISSION ASSY NO. 3, TE FLAP DRIVE	G	RF
	65-50323-2		TRANSMISSION ASSY NO. 3, TE FLAP DRIVE	H	RF
	65-50326-1		TRANSMISSION ASSY NO. 6, TE FLAP DRIVE	I	RF
	65-50326-2		TRANSMISSION ASSY NO. 6, TE FLAP DRIVE	J	RF
	65-50323-3		TRANSMISSION ASSY NO. 3, TE FLAP DRIVE (SB 27-1069)	K	RF
	65-50326-3		TRANSMISSION ASSY NO. 6, TE FLAP DRIVE (SB 27-1069)	L	RF
	65-50323-4		TRANSMISSION ASSY NO. 3, TE FLAP DRIVE	M	RF
	65-50326-4		TRANSMISSION ASSY NO. 6, TE FLAP DRIVE	N	RF
	65-50323-5		TRANSMISSION ASSY NO. 3, TE FLAP DRIVE	O	RF
	65-50326-5		TRANSMISSION ASSY NO. 6, TE FLAP DRIVE	P	RF
	65-50323-6		TRANSMISSION ASSY NO. 3, TE FLAP DRIVE	Q	RF
	65-50326-6		TRANSMISSION ASSY NO. 6, TE FLAP DRIVE	R	RF
1	AN814-4DL		. PLUG		2
2	MS28778-4		. PACKING, O-RING		2
3	BACN10JC6		. NUT (REPLS NAS679A6)		1
4	66-24715-1		. WASHER		1
5	69-52427-1		. COUPLING	A-F	1
5	69-52427-2		. COUPLING	G-R	1
10	BACN10JC6		. NUT (REPLS NAS679A6)		1
11	66-24715-1		. WASHER		1
12	69-52427-1		. COUPLING	ABD-F	1
12	69-52427-2		. COUPLING	CG-R	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
16	NAS1351-4H12P		. BOLT		3
17	AN960-416		. WASHER		3
19	69-37694-1		. COVER		1
20	MS28775-147		. PACKING, O-RING		1
21	69-52435-1		. NUT		1
21	MS172322		. NUT (OPT)	G-R	1
22	MS172272		. WASHER		1
23	69-52434-1		. WASHER	A-F	1
23	69-52434-1		. WASHER (OPT)	G-R	1
23	69-52434-2		. WASHER	G-R	1
24	BACB30NE4H5		. BOLT (REPLS NAS1304-5H)		8
25	AN960-416		. WASHER		8
26	2-164-N304-7		. O-RING, V83259		1
27	RR165K		. RING, V80756	A-F	1
27	RR165		. RING, V80756	G-R	1
28	NAS1351-4H12P		. BOLT		3
29	AN960-416		. WASHER		3
29A	69-52470-1		. RETAINER	CF-R	1
30	69-37697-1		. RETAINER	ABDE	1
30	69-52469-1		. RETAINER	CF-R	1
31	MS28775-133		. PACKING, O-RING		1
32	69-73393-2		. SEAL	ABDE	1
32	69-73393-9		. SEAL (OPT)	ABDE	1
32	21959-0269		. SEAL, V73680 (OPT)	ABDE	1
32	69-73393-3		. SEAL	CF-R	1
32	69-73393-10		. SEAL (OPT)	CF-R	1
32	21959-0351		. SEAL, V73680 (OPT)	CF-N	1
32A	69-52473-1		. SLEEVE	CF-R	1
32B	RRN165		. RING, V80756	CF-R	1
32C	69-52468-1		. SHIM	CF-R	1
32D	MS28775-021		. PACKING, O-RING	CF-R	1
33	69-52439-1		. SHIM		1
34	BACB10BB25		. BEARING (REPLS BACB10A345 AND BACB10A407)		1
36	HDB006P5		. BEARING, V40920		1
36	HDB006P3		. BEARING, V40920 (OPT)		1
37	69-52412-1		. GEAR	AB	1
37	69-52412-3		. GEAR	C-R	1
37	69-52412-2		. GEAR (OPT)	F-R	1
38	NAS1351-4H12P		. BOLT		3
39	AN960-416		. WASHER		3
39A	69-52470-1		. RETAINER	CF-R	1
40	69-37697-1		. RETAINER	ABDE	1
40	69-52469-1		. RETAINER	CF-R	1
41	MS28775-133		. PACKING, O-RING		1
42	69-73393-2		. SEAL	ABDE	1
42	69-73393-9		. SEAL (OPT)	ABDE	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
42	21959-0269		. SEAL, V73680 (OPT)	ABDE	1
42	69-73393-3		. SEAL	CF-R	1
42	69-73393-10		. SEAL (OPT)	CF-R	1
42	21959-0351		. SEAL, V73680 (OPT)	CF-N	1
42A	69-52474-1		. SLEEVE	CF-R	1
42B	RRN165		. RING, V80756	CF-R	1
42C	69-52468-1		. SHIM	CF-R	1
42D	MS28775-021		. PACKING, O-RING	CF-R	1
43	69-52439-1		. SHIM		1
44	BACB10BB25		. BEARING (REPLS BACB10A345, BACB10A407)		1
46	HDB006P5		. BEARING, V40920		1
46	HDB006P3		. BEARING, V40920 (OPT)		1
47	69-52417-1		. GEAR	ABDE	1
47	69-52417-3		. GEAR	CF-J	1
47	69-52417-2		. GEAR (OPT)	CF-J	1
47	69-52417-4		. GEAR	K-R	1
48	111GE		. BEARING, V21335		1
49	BACN10HR4		. NUT		6
50	BACW10BP4P		. WASHER		6
51	BACB30LE4-8		. BOLT (OPT TO BACB30MT4T8) *[1]	A-P	6
51	BACB30MT4T8		. BOLT *[1]	A-P	6
51	BACB30LE4-8		. BOLT *[1]	QR	6
51A	BACB30LE4-5		. BOLT (OPT TO BACB30MT4T5) *[1]	A-P	6
51A	BACB30MT4T5		. BOLT *[1]	A-P	6
51A	BACB30LE4-5		. BOLT *[1]	QR	6
51A	BACB30US4K5		. BOLT (OPT) *[1]	QR	6
52	69-37608-1		. GEAR (OPT TO 69-37608-2)*[1]		1
52	69-37608-2		. GEAR *[1]		1
52A	65-50313-1		. GEAR (OPT TO 65-50313-2)*[1]		1
52A	65-50313-2		. GEAR *[1]		1
53	66-23945-1		. SHIM		1
54	69-37607-1		. GEAR (OPT TO 69-37607-2)*[1]		1
54	69-37607-2		. GEAR *[1]		1
54A	69-37607-2		. GEAR *[1]	A-F	1
54A	69-52466-1		. GEAR (OPT TO 69-37607-2)*[1]	A-F	1
54A	69-37607-1		. GEAR (OPT TO 69-52466-1 ONLY WITH 65-50313-1)*[1]	A-F	1
54A	69-52466-1		. GEAR (OPT TO 69-52466-2)*[1]	G-J	1
54A	69-52466-2		. GEAR *[1]	G-J	1
54A	69-52466-3		. GEAR *[1]	K-R	1
54A	69-52466-2		. GEAR (OPT TO 69-52466-3) *[1]	K-R	1
54A	69-52466-1		. GEAR (OPT TO 69-52466-3) *[1]	K-R	1
55	65-50272-1		. DRIVER (OPT TO 65-50272-2) *[1]		1
55	65-50272-2		. DRIVER *[1]		1
56	111GE		. BEARING, V21335		1
57	69-52450-1		. SHIM		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
58	69-52448-1		. SPACER		1
59	BACB10BB35		. BEARING (REPLS BACB10A347)		1
60	69-73393-4		. SEAL		1
60	69-73393-11		. SEAL (OPT)		1
60	21959-0535		. SEAL, V73680 (OPT)	A-N	1
61	69-52437-1		. ADAPTER	A-F	1
61	69-52437-1		. ADAPTER (OPT)	G-R	1
61	69-52437-2		. ADAPTER	G-R	1
61	66-23902-1		. ADAPTER (OPT)	G-R	1
62	9110HK1		. BEARING, V38443	A-F	1
62	9110HK1		. BEARING, V38443	G-R	1
62	BACB10A474		. BEARING (OPT)	G-R	1
63	BACN10HR5		. NUT		4
64	BACW10BN5P		. WASHER		8
65	600-001-5/16		. SEAL, V83259		4
65	7100-5/16		. SEAL, V83259 (OPT)		4
65	BACS11W5		. SEAL (OPT)		4
65	NAS1523-5Y		. SEAL (OPT)		4
66	BACB30MT5T14		. BOLT	A-P	4
66	BACB30US5K14		. BOLT	QR	4
67	176667		. BRAKE ASSY, TORQUE, V71791	A-F	1
67	178366-1		. BRAKE ASSY, TORQUE, V71791	G-R	1
68	176654		. . COUPLING, V71791		1
69	176657		. . SUPPORT, V71791		1
70	176660		. . SUPPORT, V71791		1
71	176663		. . SPRING PACK ASSY, V71791	A-F	1
71	178360-1		. . SPRING PACK ASSY, V71791	G-R	1
72	176643-3		. . . RING, V71791		2
73	176653		. . . SLEEVE, V71791		1
74	176652		. . . SLEEVE, V71791		1
75	176278X		. . . SHIM, V71791		AR
76	175827		. . . ADAPTER, V71791		1
77	176661		. . . SPRING SET, V71791	A-F	1
77	178359-1		. . . SPRING SET, V71791	G-R	1
78	176655		. . HOUSING, V71791	A-F	1
78	178344-1		. . HOUSING, V71791	G-R	1
79	69-52453-1		. SHIM (REPLD BY 69-52453-2)	A-N	1
79	69-52453-2		. SHIM (REPLS 69-52453-1)	A-N	1
79	69-52453-2		. SHIM	O-R	1
80	69-52461-1		. NAMEPLATE		1
81	65-50309-1		. HOUSING ASSY	ABC	1
81	65-50309-2		. HOUSING ASSY	DEF	1
81	65-50309-3		. HOUSING ASSY	GHK	1
81	65-50309-4		. HOUSING ASSY	IJL	1
81	65-50309-5		. HOUSING ASSY	MOQ	1
81	65-50309-6		. HOUSING ASSY	NPR	1
82	65-50263-1		. . HOUSING	ABC	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
82	65-50263-2		. . HOUSING	DEF	1
82	65-50263-3		. . HOUSING	GHK	1
82	65-50263-4		. . HOUSING	IJL	1
82	65-50263-5		. . HOUSING	MOQ	1
82	65-50263-6		. . HOUSING	NPR	1
83	69-52441-1		. . BUSHING	A-F	4
83	66-24745-2		. . BUSHING	G-R	3
84	66-24745-6		. . BUSHING	G-R	2
85	MS21208F4-15		. . INSERT	G-R	17
86	65-50266-1		. COVER	GI	1
86	65-50266-2		. COVER	HJ-R	1
86	65-82783-1		. COVER	A-F	1
86	65-50266-1		. COVER (OPT)	A-F	1
87	69-52409-4		. UNIVERSAL JOINT ASSY	AD	1
87	65-76603-1		. UNIVERSAL JOINT ASSY	BCEF	1
87	65-76603-3		. UNIVERSAL JOINT ASSY	G-J	1
87	65-76603-5		. UNIVERSAL JOINT ASSY	K-R	1
88	BACN10JC7		. . NUT		1
89	BAC27DCT48		DELETED		
90	69-52431-2		. . BOLT	AD	1
90	65-76607-1		. . BOLT (SB 27-1015)	BCE-R	1
91	69-52424-1		. . PIN, CROSS	AD	1
91	69-60057-1		. . PIN, CROSS (OPT)	BCE-R	1
91	69-60057-2		. . PIN, CROSS	BCE-R	1
92	69-52426-1		. . SPACER	AD	1
92	69-60053-1		. . SPACER (OPT)	BCE-R	1
92	69-60053-2		. . SPACER	BCE-R	1
93	69-52420-1		. . YOKE	A-F	1
93	69-52420-3		. . YOKE (OPT)	G-J	1
93	69-52420-5		. . YOKE	G-J	1
93	69-52420-11		. . YOKE (OPT)	K-R	1
93	69-52420-5		. . YOKE (OPT)	K-R	1
93	69-52420-7		. . YOKE	K-R	1
94	69-52407-1		. . SHAFT (OPT)		1
94	69-52407-2		. . SHAFT	A-J	1
94	69-52407-4		. . SHAFT (OPT)	K-R	1
94	69-52407-2		. . SHAFT (OPT)	K-R	1
94	69-52407-3		. . SHAFT	K-R	1
95	DBAF-13-022		. . BUSHING, V81376 (BOEING 10-60516-264) (OPT)	A-J	4
95	90718		. . BUSHING, V09455 (BOEING 10-60516-264) (OPT)	A-J	4
95	AFDU13-9-15		. . BUSHING, V15860 *[2]		4
95	AJF13A104DU		. . BUSHING, V50294 *[2]		4
95	HJF13DU102		. . BUSHING, V02758 *[2]		4
96	69-52408-1		. . CROSS, TRUNNION	AD	1
96	69-60059-1		. . CROSS, TRUNNION	BCE-R	1

*[1] THESE PARTS USED TOGETHER	THESE PARTS USED TOGETHER
69-37607-1 or -2 69-37608-1 or -2 65-50272-1 or -2 BACB30MT4T8 or BACB30LE4-8 (USE CODES A-P) BACB30LE4-8 (USE CODES QR)	65-50313-1 or -2 OPT TO: 69-52466-1 or 69-37607-1 or -2 (USE CODES A-F) 69-52466-1 or -2 (USE CODES G-J) 69-52466-1, -2, or -3 (USE CODES K-R) BACB30MT4T5 or BACB30LE4-5 (USE CODES A-P) BACB30LE4-5 or BACB30US4K5 (USE CODES QR)

*[2] BOEING 10-61899-15 REPLS BOEING 10-60516-264

VENDORS

V02758	NETWORKS ELECTRONIC CORP., U.S. BEARING DIV., 9750 DESOTO AVE., CHATSWORTH, CALIFORNIA 91311-4409
V09455	BFM, TRANSPORT DYNAMICS CORP., P.O. BOX 1953, 3131 W. SEGERSTROM STREET, SANTA ANA, CALIFORNIA 92702-1953
V15860	NEW HAMPSHIRE BALL BEARINGS, INC., ASTRO DIV., 155 LEXINGTON AVE., LACONIA, NEW HAMPSHIRE 03246-2937
V21335	TORRINGTON CO., FAFNIR BEARING DIVISION, 59 FIELD ST., TORRINGTON, CONNECTICUT 06790-4942
V38443	MRC BEARINGS, 402 CHANDLER ST., JAMESTOWN, NEW YORK 14701-3802
V40920	MPB MINIATURE PRECISION BEARING DIVISION, PRECISION PARK, P.O. BOX 547, KEENE, NEW HAMPSHIRE 03431
V50294	NEW HAMPSHIRE BALL BEARINGS INC., 9730 INDEPENDENCE AVE., P.O. BOX 2515, CHATSWORTH, CALIFORNIA 91311-4323
V71791	CURTISS-WRIGHT FLIGHT SYSTEMS INC., 300 FAIRFIELD ROAD, FAIRFIELD, NEW JERSEY 07006-1932
V73680	GARLOCK INC., MECHANICAL PACKING DIVISION, SUB OF COLT IND., 1666 DIVISION ST., PALMYRA, NEW YORK 14522-9343
V80756	SPIROLUX DIVISION OF KAYDON CORP., 29 CASSENS ST., ST. LOUIS, MISSOURI 63026-2542
V81376	SOUTHWEST PRODUCTS COMPANY, 2240 BUENA VISTA STREET, IRVINDALE, CALIFORNIA 91706
V83259	PARKER-HANNIFIN CORP., O-SEAL DIVISION, 10567 JEFFERSON BLVD., CULVER CITY, CALIFORNIA 90232-3513