TO: ALL HOLDERS OF TRAILING EDGE FLAP DRIVE TRANSMISSION ASSEMBLIES NO. 4 AND 5 OVERHAUL MANUAL, 27-55-54

REVISION NO. 36, DATED MAR 1/05

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
Revised part numbers of items (86) and (103) in IPL. Updated vendors list												X	
Added seals BACS11W4 and NAS1523-4Y item (64) as optional												X	
Added details to the lockout torque test to clarify requirements at minimum lockout and maximum lockout								X					

TRAILING EDGE FLAP DRIVE TRANSMISSION ASSEMBLIES NOS. 4 AND 5

27-55-54

BOEING P/N 65-50254-2, -4, -5, -6
65-50255-2, -4, -5, -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	May 15/68
27-1015, Rev 1		PRR 31291, -1	May 15/69
		PRR 31581	Nov 10/69
27-1005			Dec 10/70
		PRR 32358	Sep 25/74

LIST OF EFFECTIVE PAGES

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

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	T-2	BLANK
*	LEP-1	Mar 1/05
	LEP-2	BLANK
	T/C-1	Dec 10/70
	T/C-2	BLANK
	1	Dec 10/70
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	1102	Dec 10/70
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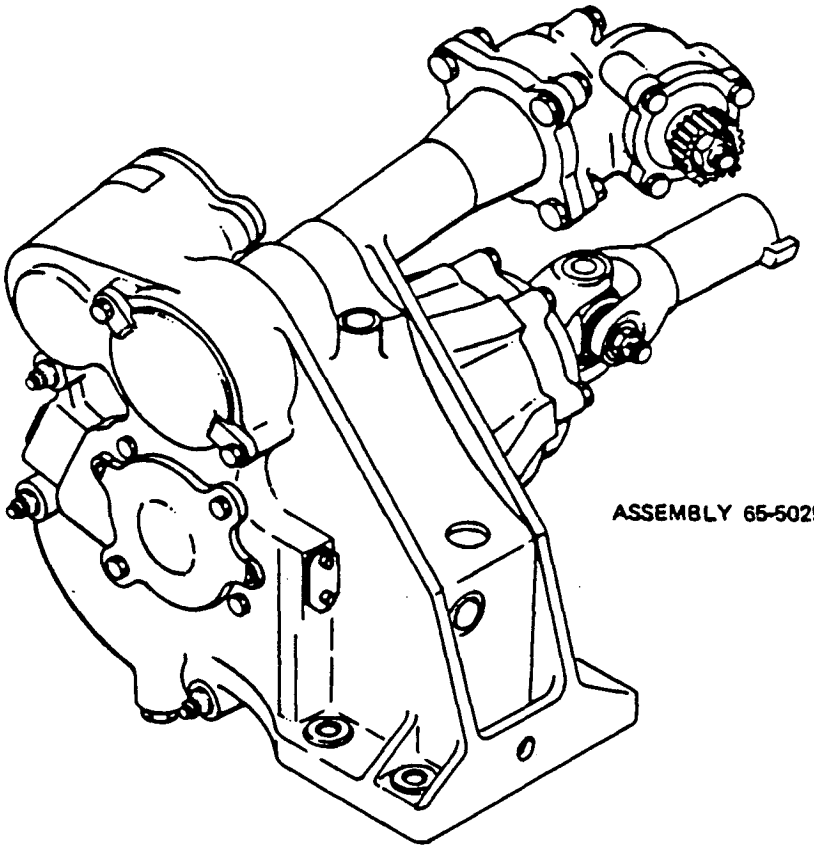
TRAILING EDGE FLAP DRIVE TRANSMISSION ASSEMBLIES NO. 4 AND 5

Boeing Part Numbers: 65-50254-2, -4, -5, -6
65-50255-2, -4, -5 and -6



ASSEMBLY 65-50254 SHOWN

Trailing Edge Flap Drive Transmission Assemblies No. 4 and 5
Figure 1

DESCRIPTION AND OPERATION

1. Description

   A. The trailing edge flap drive transmission assemblies Nos. 4 and 5 consist of a combination of bevel gears, spur gears, a no-back ratchet mechanism, and a torque brake assembly housed in a lubricant filled sealed housing. The gears are bearing mounted. The torque brake assembly is installed around the output shaft. A universal joint assembly is provided at the end of the output shaft. A splined

coupling is provided to drive the input shaft. A second splined coupling is provided to drive the flap drive torque tube to the flap transmission assembly No. 3 or 6. The assemblies are located inboard on the inboard flaps.

2. Operation

A. The trailing edge flap drive transmission assemblies Nos. 4 and 5 provide a change in direction and an off-set of the flap drive torque tubes rotary motion. Each assembly functions to transmit flap drive torque tube rotary motion to a ball screw and nut assembly. The torque brake assembly limits the amount of torque applied to the ball screw and nut assembly. The no-back ratchet mechanism prevents flap retraction until reverse rotary motion is applied by the flap drive torque tubes.

3. Leading Particulars

Length -- 15 inches
Width -- 12.25 inches
Height -- 12 inches
Weight -- 46.5 pounds (wet)

DISASSEMBLY

1. General (See figure 1101.)

   A. Remove all lockwire.

   B. Remove plugs (1 and 3) and O-rings (2 and 4), and drain fluid from assembly.

   C. Hold coupling (38) with Splined Coupling Wrench, F71228 or equivalent, and remove nut (39), washer (40) and coupling (38) from gear (48).

   D. Fix output shaft (120) by locking universal joint. Apply 20 pound-inches torque to coupling (5). Check backlash on OD of spline on gear (48). Refer to figure 601 for backlash limits. If service limit is exceeded, check gears (48 and 56) for evidence of wear.

   E. Restrain movement of gear (116) by wedging through drain plug (3) port. Measure backlash on OD of spline on gear (48). Refer to figure 601 for backlash limits. Value of backlash is total of 2 gear pairs (48 and 56) and (56 and 116). If service limit is exceeded, check each gear for evidence of wear.

   F. Hold coupling (5) with Splined Coupling Wrench, F71228 or equivalent, and remove nut (6), washer (7) and coupling (5) from gear (12).

   G. Restrain movement of gear (26), using lubrication port to gain access to gear. Measure backlash on OD of spline on gear (12). Refer to figure 601 for backlash limits. If service limit is exceeded, check gears (12 and 26) for evidence of wear.

2. Disassembly (See figure 1101.)

   A. Remove and disassemble gear (12).

      (1) Remove bolts (8), washers (9), support (10), and shim (11) from housing assembly (22). Measure and note thickness of shim (11) to facilitate reassembly.

      (2) Remove gear (12) with attached parts from housing assembly (22).

      (3) Remove bearings (13 and 14) from gear (12).

B. Remove and disassemble gear (26).

(1) Remove bolts (15), washers (16), plate (17), and gasket (18) from housing assembly (22).

(2) Remove bolts (19), washers (20), nuts (21), housing assembly (22), and shim (25) from housing assembly (31). Measure and note thickness of shim (25) to facilitate reassembly.

NOTE: Do not remove inserts (24) from housing (23) unless replacement is necessary.

(3) Remove gear (26) with attached parts and shaft (30) from housing assembly (31).

(4) Remove ring (27) if installed, bearings (28), and spacer (29) from gear (26).

C. Remove and disassemble gear (48).

(1) Remove bolts (41), washers (42), nuts (43), and cover (44) with attached parts from housing assembly (31).

(2) Remove O-ring (45), ring (46) and seal (47) from cover (44).

(3) Remove gear (48) with attached parts from housing assembly (31).

(4) Remove spacers (49), O-ring (50) and bearings (51) from gear (48).

D. Remove and disassemble no-back ratchet mechanism.

(1) Remove bolts (63), washers (63A), seals (64), and cover (65) from housing assembly (31).

(2) Remove O-rings (66 and 67) from cover (65).

(3) Remove screws (68), washers (69), retainers (70), and springs (72).

(4) Straighten tangs of washer (73) and remove nut (74), washer (73), and plate (75) from shaft (120). Discard washer (73).

(5) Remove bearing (76) from plate (75).

(6) Remove shim (77), plate (78) and ratchet (79) from shaft (120). Measure and note thickness of shim (77) to facilitate reassembly.

(7) Remove pins (80), pawl assemblies (82) and washers (86) from housing assembly (31).

NOTE: Do not remove guides (83) or bearings (85) from pawls (84), unless repair or replacement is required.

(8) Remove O-rings (81) from pins (80).

E. Remove and disassemble support assembly (98).

(1) Remove nuts (87), washers (88 and 89), bolts (90 and 91), bolts (92 and 95), washers (93 and 96), and nuts (94 and 97).

(2) Separate support assembly (98) with attached parts from housing assembly (31).

(3) Remove shim (102) and O-ring (103) from support assembly (98). Measure and note thickness of shim (102) to facilitate reassembly.

NOTE: Do not remove pins (100) or inserts (101) from support (99), unless repair or replacement is required.

(4) Remove bolts (62), washers (62A), seals (64), adapter (104), plate (105), washer (107), bearing (108), support (109), adapter (110), shim (111), and retainer (113) from housing assembly (31). Measure and note thickness of shim (111) to facilitate reassembly.

(5) Remove bearing (106) from plate (105), bearing (112), if installed, from adapter (110), and bearing (114) from support (109).

(6) Remove lockwire, screws (115), gear (116), and coupling (118) from shaft (120). If installed, remove spacer (116A).

(7) Remove bearing (117) from gear (116).

F. Remove and disassemble universal joint assembly (119) as follows:

(1) Remove bolts (134) and washers (135) from support assembly (98).

(2) Remove support assembly (140) and universal joint assembly (119), as a unit, from support assembly (98).

(3) Remove rings (149 and 159), retainer (148) and adapter (147) from shaft (120).

(4) Remove support assembly (140) from shaft (120).

(5) Remove screws (130), washers (131) and retainer (132) from support assembly (140).

NOTE: Do not remove inserts (142) from support (141), unless repair or replacement is required.

(6) Remove seal (133) from retainer (132).

(7) Remove O-ring (137) and bearing (138) from support assembly (140).

(8) Remove nut (122), bolt (124), spacer (125), and shaft (120) from cross (128).

NOTE: Do not remove bushings (129) from yoke (126), unless repair or replacement is required.

(9) Remove pin (127) and cross (128) from yoke (126).

NOTE: Do not remove bushings (129) from shaft (120) or yoke (126), unless repair or replacement is required.

(10) If installed, remove placard (123) and tape (121) from yoke (126) and discard.

G. Remove and disassemble torque brake assembly (139).

(1) Remove torque brake assembly (139) and shim (136) from support assembly (98). Measure and note thickness of shim (136) to facilitate reassembly.

(2) Remove O-ring (157) from housing (143) and O-ring (158) from support (141).

(3) Remove rings (152) and coupling (151) from spring pack assembly (150).

(4) Remove spring pack assembly (150) from housing (143), using care not to distort or change relationship of spring ends.

(5) Remove support assembly (144) from support (99) and retainers (160) from coupling (151).

NOTE: Do not remove pins (146) from support (145), unless repair or replacement is required.

(6) Remove bearing (161) from support (99).

(7) Remove shims (155) from spring pack assembly (150).

NOTE: There may be two shims in each end, two shims in one end only, or no shims at all installed. Note number, location and thickness of shims to facilitate reassembly.

(8) Open center of Spring Pack Assembly Jig, ST6107, and slide assembled spring pack (150) into jig. Check that ends of spring set (156) contact locking lugs on bottom of circular portion of jig. Use Torque Bar, PT49001, to rotate upper ends of spring set in line with locking lugs of jig. Press lugs into place to restrain springs. Tighten set screws to prevent lugs from retracting.

(9) When spring ends are securely retained, turn cranks on assembly jig as evenly as possible to expand springs. Remove sleeves (153, 154) and adapter (147).

(10) Rotate cranks in reverse direction to relieve spring load. Loosen set screws, back off locking lugs, and remove spring set (156) from jig.

NOTE: Spring set is a matched assembly of two springs. Identify as matched parts.

H. Remove and disassemble gear (56).

(1) Remove bolts (52), washers (53) and cover (54) from housing assembly (31).

(2) Remove O-ring (55) from cover (54).

(3) Remove gear (56) from housing assembly (31).

(4) Remove seal (57) from housing assembly (31).

NOTE: Do not remove bushings (33, 34, 35), inserts (36, 37), screws (162) or nameplate (163) from housing (32), unless repair or replacement is required.

(5) Remove bearing (58), shim (59), bearing (60), and shim (61) from gear (56). Measure and note thickness of shims (59, 61) to facilitate reassembly.

CLEANING

1. General (See figure 1101.)

   A. Wash and rinse all metal parts, except bearings, in dry cleaning solvent, Specification P-D-680 or equivalent. Use stiff bristle brush to remove dirt and grease. Clean all passages and bores.

   B. Dry parts with clean lint-free cloth or with moisture-free compressed air.

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

2. Bearings (See figure 1101.)

   A. Clean bearings in accordance with "Cleaning and Relubricating Antifriction Bearings," Subject 20-30-01.

   B. Lubricate all bearings, except bearings (13, 14 and 28), with hydraulic fluid, Specification MIL-H-5606.

   C. Lubricate bearings (13, 14 and 28) with grease, Specification MIL-G-21164.

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 -- supports (10, 99, 141, 145), housings (23, 32), covers (44, 54, 65).

3. Magnetic particle check per 20-20-01 -- couplings (5, 38, 118, 151), washers (7, 40), gears (12, 26, 48, 56, 116), shafts (30, 120), plates (75, 78, 105), ratchet (79), pins (80, 127), pawls (84), adapters (104, 110, 147), support (109), bolt (124), spacer (125), yoke (126), cross (128), housing (143), retainer (148, 160), ring (152), sleeves (153, 154), and spring set (156).

REPAIR

1. Repair

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

B. Cross (128) (Fig. 401) ID's for bolt (124), spacer (125) and pin (127).

(1) Machine as required to remove defects per SOPM 20-10-02, observing 0.784 max rework diameter. Machined finish to be at least 63 microinch. No step or mismatch allowed.

(2) Stress relieve per Fig. 406

(3) Shot peen using size and intensity specified.

(4) Nickel plate per SOPM 20-42-09, 0.004-0.006 single plate thickness as specified.

(5) Chrome plate per SOPM 20-42-03 as specified.

(6) Machine cross 65-76639-1 to a design diameter of 0.7532-0.7541 and machine cross 66-25116-1 to a design diameter of 0.7532-0.7545 per SOPM 20-10-04. Total plating thickness (nickel and/or chrome) after machining to be 0.015 max. Machined finish to be at least 63 microinch.

(7) Magnetic particle examine per SOPM 20-20-01.

C. Coupling (38), bolt (124), spacer (125), pin (127) and cross (128) exterior dimensions - (Fig. 401)

(1) Machine as required, within rework limits shown, to remove corrosion or defects per SOPM 20-10-02. Observe surface finish requirements. Remove burrs and sharp edges. Smoothly blend all mismatch areas.

(2) Stress relieve per Fig. 406.

(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. Torque Brake Rework (139) (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 (143) surface as indicated on repair figure per SOPM 20-10-02. Maintain finish and dimensions shown.

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

(a) Machine spring set (156) and stress relieve as indicated (note amount of material removed).

(b) Build up 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 (156) was increased (+0.0000/-0.0005). A shift of torque lockout level relatively affects maximum or minimum lockout levels a corresponding amount.

E. Gear (56) - (Fig. 404)

(1) Method 1:

(a) Grind 0.750-inch OD, per SOPM 20-10-01, as required to remove wear or defects to 8-microinch finish. Do not exceed minimum diameter of 0.747 inch. Maintain concentricity to 0.788-inch diameter within 0.002 inch TIR. Magnetic particle examine per SOPM 20-20-01.

(2) Method 2:

(a) Machine surface as required to remove defects per SOPM 20-10-02. Do not exceed minimum repair diameter.

(b) Magnetic particle examine per SOPM 20-20-01.

(c) Shot peen machined surfaces per SOPM 20-10-03. Shot number 70-170 intensity .008A2.

(d) Build up repaired area with chrome plate per SOPM 20-42-03 and grind to finish and final design dimension as shown per SOPM 20-10-04. Chrome plate thickness not to exceed 0.015 inches.

(e) Magnetic particle examine per SOPM 20-20-01.

F. Pawl assembly (82)

(1) Remove worn bearing (85). Make new bearing, aluminum bronze 630, per AMS 4640 (Aeronautical Materiels Specifications). Bearing ID to be 0.300-0.305 inch. Install bearing in pawl (84) with 0.0005-0.0015 inch interference. Grind ID to 0.3125-0.3130 inch. (See Replacement, item F.)

G. Support (109)

(1) Flange rim, which holds washer (107) on assembly, must be measured on overhaul and trimmed to 0.09-0.10 inch height. Later parts will not require trimming.

H. Shaft (120) - (Fig. 405)

(1) Bearing and seal OD

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

(b) Machine as required to remove defects per SOPM 20-10-02, observing 1.3669 min rework diameter. Maintain 63-microinch surface finish and 0.10-inch fillet radius.

(c) Shot peen using size and intensity specified.

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

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

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

(2) Trunnion holes

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

(b) Machine holes per SOPM 20-10-02 as required to remove defects, observing max rework diameter. Maintain perpendicularity as noted and surface finish of at least 32 microinch.

NOTE: Remove only enough material that is necessary to remove defects.

(c) Surface temper etch the machined area with ammonium persulphate per SOPM 20-10-02.

(d) Stress relieve per SOPM 20-10-02.

(e) Magnetic particle examine the machined area per SOPM 20-20-01, class B.

(f) Shot peen the area shown using size, intensity and coverage specified per SOPM 20-10-03. Observe material heat treat criteria specified.

(g) Build up the hole diameter with chrome plate per SOPM 20-42-03. Chrome plate runout 0.01-0.02 inch around edges of hole. Do not chrome plate chamfered area.

(h) Stress relieve within 10 hours of plating. Stress relieve bake at 350-400°F for 12 hours per SOPM 20-42-03.

(i) Grind hole ID per SOPM 20-10-04 to the after plating diameter shown. Surface finish to be 63 microinches or better.

(j) Magnetic particle check per SOPM 20-20-01 class B.

(k) Low hydrogen embrittlement stylus cad plate per SOPM 20-42-10 any unplated areas created due to chrome plate stops. Observe post plate bake requirements in SOPM 20-42-03.

I. Ratchet (79)

(1) Grind OD and depth of teeth per SOPM 20-10-01 to a surface finish of 125 microinch. Grinding beyond service limits, shown in Fig. 601, not permitted. Stress relieve per Fig. 406.

J. Pawls (84)

(1) Grind tip radius per SOPM 20-10-01 to a surface finish of 125 microinch. Grinding beyond service limit, shown in Fig. 601, not permitted. Stress relieve per Fig. 406.

K. Thrust races on adapter (104) and plate (105)

(1) Grind per SOPM 20-10-01 to a surface finish of 16 microinch. Grinding beyond service limits, shown in Fig. 601, not permitted. Stress relieve per Fig. 406.

L. Yoke (126) - (Fig. 405)

(1) Oversize bolthole repair

(a) Machine boltholes per SOPM 20-10-02 to dimension shown.

(b) Break sharp edges as indicated.

(c) Tag yoke to indicate that yoke must be used with oversize bolts (NAS3005E23 or equivalent) and with ballscrews with oversize boltholes.

(2) ID corrosion removal

(a) Magnetic particle examine per SOPM 20-20-01, class B.

(b) Machine per SOPM 20-10-02 the yoke ID as required, within repair limits, to remove defects. Finish should be 32 microinches or better. No step or mismatch is allowed. Break sharp edges.

(c) Surface temper etch with ammonium persulphate per SOPM 20-10-02.

(d) Stress relieve per SOPM 20-10-02.

(e) Magnetic particle examine per SOPM 20-20-01, class B.

(f) Shot peen machined area per SOPM 20-10-03. Observe material heat treat criteria specified.

(g) Check if mating part (jackscrew) has been chrome plated. Use optional repair method for yoke if mating part has been chrome plated.

1) Build UP ID with chrome plate per SOPM 20-42-03. Chrome plate runout 0.01-0.03 inch around edges of ID and all holes.

2) OPTIONAL REPAIR: Build up ID using electrodeposited nickel plate per SOPM 20-42-09, Type 3. Nickel plate runout 0.01-0.03 inch around edges of ID and all holes.

(h) Stress relieve within 10 hours of plating. Stress relieve bake chrome plated parts at 350-400°F for 12 hours per SOPM 20-42-03. Stress relieve bake nickel plated parts per SOPM 20-42-09.

(i) Grind yoke ID per SOPM 20-10-04 to design diameter shown. Surface finish to be 63 microinches or better.

(j) Magnetic particle examine per SOPM 20-20-01, class B.

(k) Low hydrogen embrittlement stylus cad plate per SOPM 20-42-10 any unplated areas created due to chrome or nickel plate stops. Observe post plate bake requirements in SOPM 20-42-03 for chrome plated parts and in SOPM 20-42-09 for nickel plated parts.

(3) Trunnion hole corrosion removal

(a) Magnetic particle examine per SOPM 20-20-01, class B.

(b) Machine trunnion hole per SOPM 20-10-02 as required to remove corrosion within maximum repair diameter shown. Maintain perpendicularity as noted and surface finish of at least 32 microinches. Break sharp edges.

NOTE: Remove only enough material that is necessary to remove corrosion.

(c) Surface temper etch the machined area with ammonium persulphate per SOPM 20-10-02.

(d) Stress relieve per SOPM 20-10-02.

(e) Magnetic particle examine the machined area per SOPM 20-20-01, class B.

(f) Shot peen the area shown using size, intensity and coverage specified per SOPM 20-10-03. Observe material heat treat criteria specified.

(g) Build up the hole diameter with chrome plate per SOPM 20-42-03. Chrome plate runout 0.01-0.02 inch around edges of hole. Do not chrome plate chamfered area.

(h) Stress relieve within 10 hours of plating. Stress relieve bake at 350-400°F for 12 hours per SOPM 20-42-03.

(i) Grind hole ID per SOPM 20-10-04 to the after plating diameter shown. Surface finish to be 63 microinches or better.

(j) Magnetic particle check per SOPM 20-20-01 class B.

(k) Low hydrogen embrittlement stylus cad plate per SOPM 20-42-10 any unplated areas created due to chrome plate stops. Observe post plate bake requirements in SOPM 20-42-03.

2. Refinish (Fig. 1101)

NOTE: Refer to SOPM 20-30-02 for stripping of protective coatings, to 20-41-01 for explanation of F and SRF finish codes and to AMS (Aeronautical Materiels Specifications) for AMS references.

A. Coupling (5), washers (7, 40, 86) shaft (30) -- Cadmium plate (F-15.02). Material: 4340 steel (150-180 ksi).

B. Support (10) -- Chromic acid anodize all over, plus apply one layer of primer BMS 10-11, Type 1 (F-18.13) on large end OD, large end face and smaller ID. Material: Al alloy.

C. Gears (12, 26, 48), housing (32), retainers (70, 132), pin (80), support (141), housing (143) (Fig. 403).

D. Gear (56) -- Fig. 404.

E. Shaft (120), yoke (126) -- Fig. 405.

F. Plate (17) -- 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 (23) -- Chromic acid or sulfuric acid anodize (F-17.05). Apply one layer of primer BMS 10-11, Type 1 (F-20.02) except no paint on machined surfaces. Material: Al alloy.

H. Spacer (29), retainer (113), spacer (116A), support (145) -- Anodize per AMS 2470. Material: Al alloy.

I. Covers (44, 54, 65) -- Anodize (F-17.05) plus one coat primer BMS 10-11, Type 1 (F-20.02) followed by one coat enamel BMS 10-11, Type 2 (SRF-12.63) on external surfaces only (omit enamel from 69-37629-5). Material: Al alloy.

J. Support (99) -- Anodize, plus one coat primer BMS 10-11, Type 1 (SRF-12.205) followed by one coat enamel BMS 10-11, Type 2 (SRF-12.63) on external surfaces only. Apply no paint or primer to flange holes or machined surfaces. Material: Al alloy.

K. Coupling (38), bolt (124), spacer (125), pin (127), cross (128) -- See Fig. 401.

L. Retainer (148) -- Phosphate coat per AMS 2481 all over.

M. Spring set (156) -- Fig. 402.

3. Replacement (Fig. 1101)

A. Replace all O-rings and seals, rings (149, 159) and washer (74).

B. and C. Deleted

D. Insert (24, 36, 37, 101, or 142):

(1) Remove damaged insert.

(2) Clean and check threads in bore.

(3) Apply primer, BMS 10-11, type 1, to bore and to new insert. Install insert 1/4 to 1/2 turns below start of bore thread while primer is wet.

(4) Remove tang.

E. Bushing (33, 34, 35, or 129):

(1) Press bushing from bore.

(2) Clean and check condition of bore.

(3) Apply primer, BMS 10-11, type 1, to bore and to OD of bushing.

(4) Press bushing into bore while primer is wet.

F. Bearing (85)

(1) Press bearing from pawl.

(2) Clean and check condition of bore.

(3) Apply hydraulic fluid, MIL-H-5606, to bore of pawl and to OD of bearing.

(4) Press new bearing into bore of pawl. (See Repair, item F.) Bearing must be flush with surface of pawl.

G. Pin (100 or 146)

(1) Remove pin from bore.

(2) Clean and check condition of bore.

(3) Apply primer, BMS 10-11, type 1, to bore and to OD of pin.

(4) Press pin into bore while primer is wet. Pin (100) must protrude 0.20-0.23 inch.

H. Screws (162) or nameplate (163)

(1) Remove screws (162) and nameplate (163).

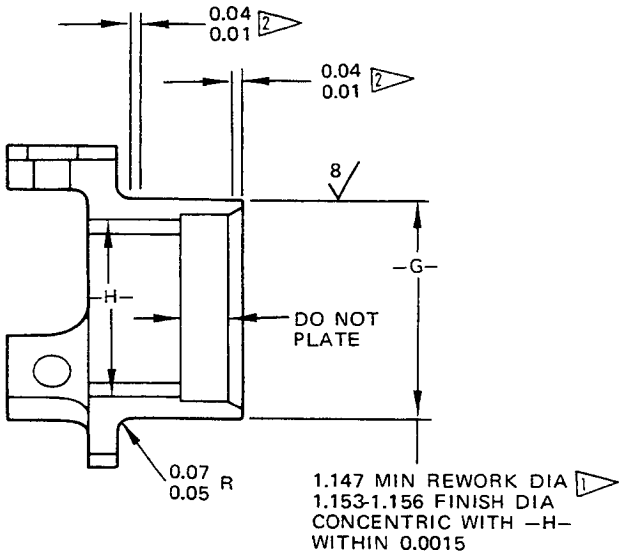
(2) Check condition of surrounding surface.

(3) Apply sealant, Loctite, Grade B (20-60-04) on screws, position nameplate, and install screws while sealant is wet.

I. Bushings (129)

(1) If installed bushings (129) meet Inspection/Check requirements, and the service wear limits are less than those shown in Fig. 601, mark position of bushings in yoke (126) and shaft (120), rotate bushings 180 degrees, and reinstall.

(2) If bushings (129) are damaged, or exceed the limits shown in Fig. 601, 20-50-03, for replacement instructions.



REFINISH

CADMIUM-TITANIUM PLATE ALL OVER PER 4 EXCEPT DIA -G- AND AS NOTED

REPAIR

AS NOTED BY 1 2

SHOT PEEN: (20-10-03)

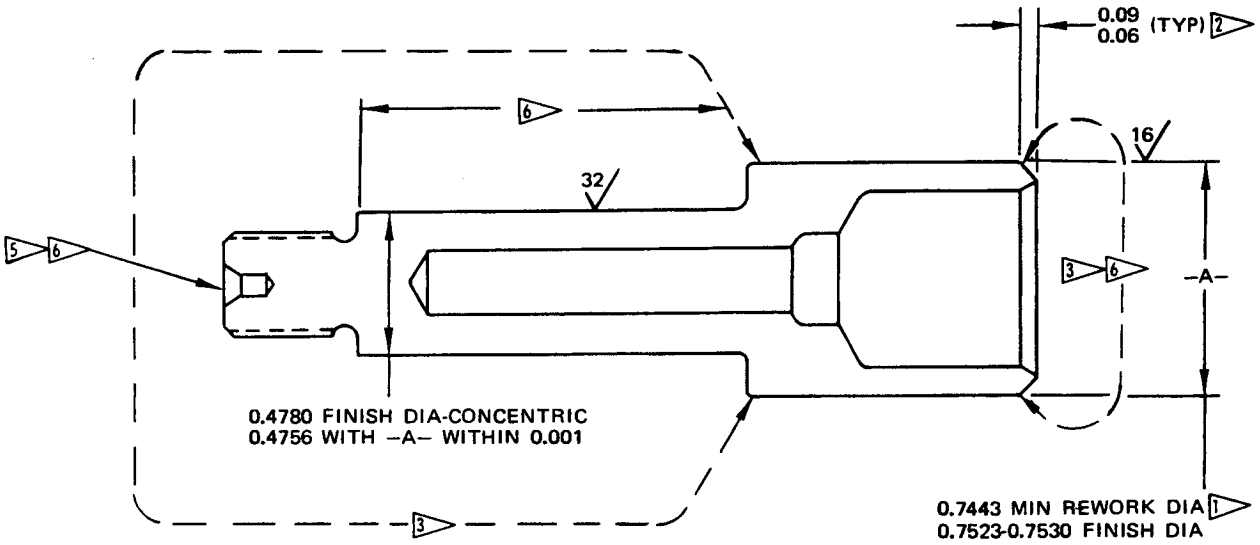
0.017-0.033 SHOT SIZE
0.015 A2 INTENSITY

BREAK SHARP EDGES 0.003-0.020R

MATERIAL: 8740 STEEL (150–180 KIS)

COUPLING (38)

Bolts, Spacer, Pins and Cross - Repair and Refinish
Figure 401 (Sheet 1)



REFINISH 7

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

REPAIR

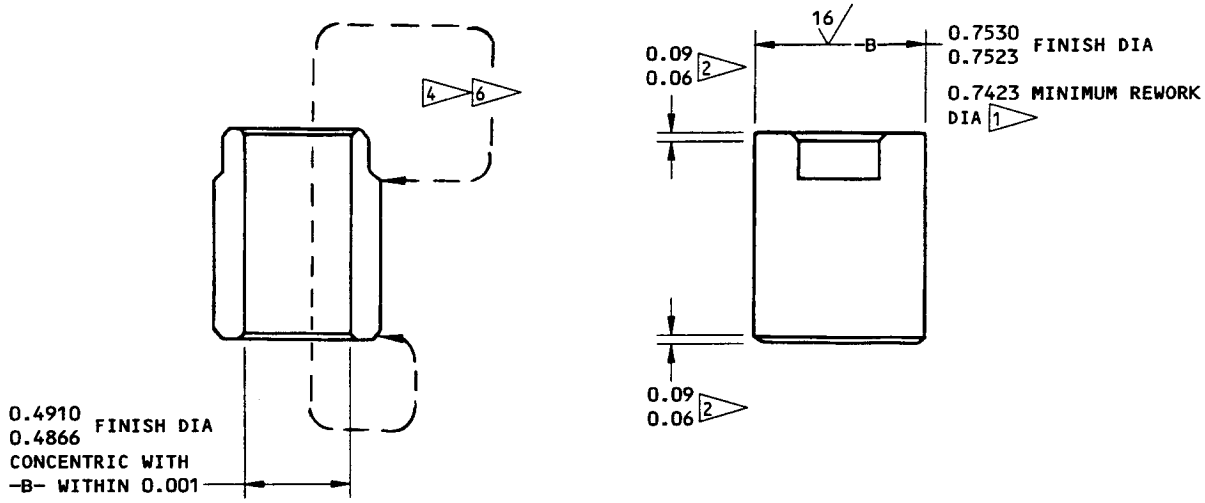
AS NOTED BY 1 2

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

MATERIAL: (65-76605-1) 4340 STEEL (275–300 KSI)
(66-25119-1,-2) MOD H-11 STEEL
(RC 54-56)

BOLT (124)

Bolts, Spacer, Pins and Cross - Repair and Refinish
Figure 401 (Sheet 2)



REFINISH 7

CHROME PLATE (F-15.04) -B- CADMIUM-TITANIUM PLATE ALL OTHER SURFACES PER 4. APPLY PRIMER AND PAINT PER 6.

REPAIR

AS NOTED BY 1 2

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

BREAK SHARP EDGES 0.005-0.015R

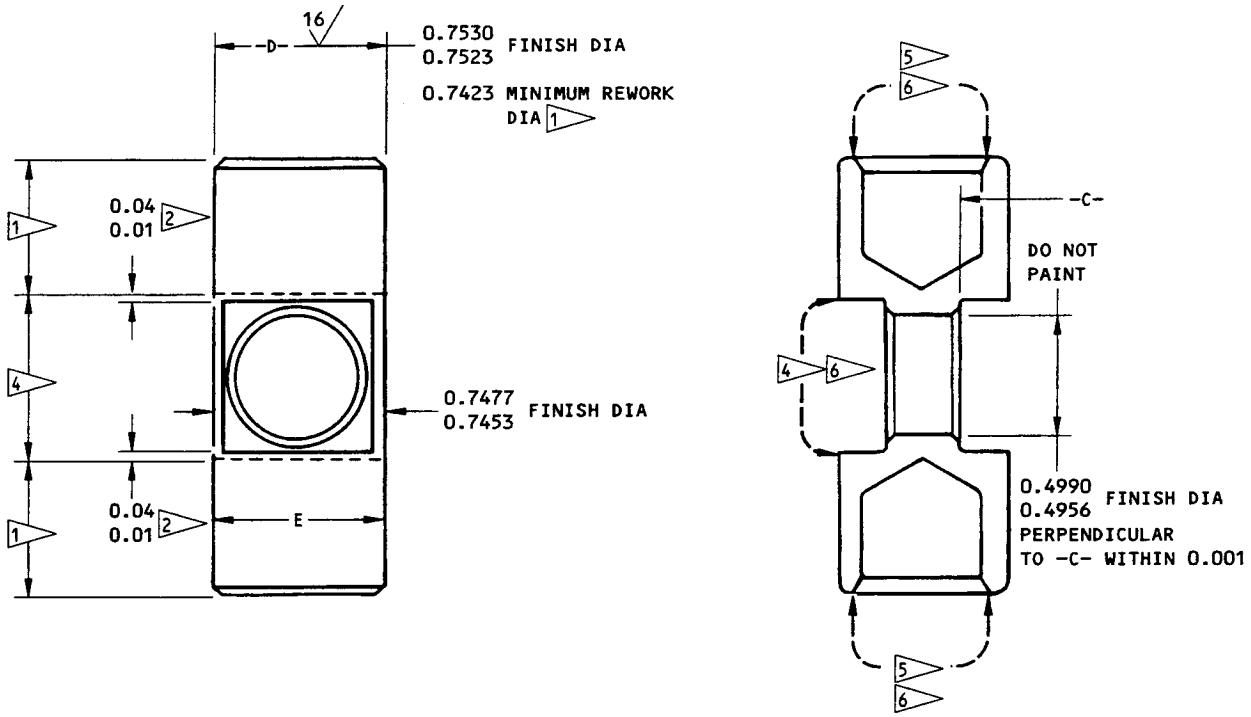
MATERIAL: (66-25117-1, 69-60051-1)
MOD H-11 STEEL (RC 54-56)

(69-60051-2)
4340M STEEL
(270-300 KSI)

SPACER (125)

Bolts, Spacer, Pins and Cross - Repair and Refinish
Figure 401 (Sheet 3)

L93866



REFINISH 7

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

REPAIR

DIMENSIONS NOTED BY 1 2

SHOT PEEN: (SOPM 20-10-03)

0.017-0.033 SHOT SIZE
0.015 A2 INTENSITY

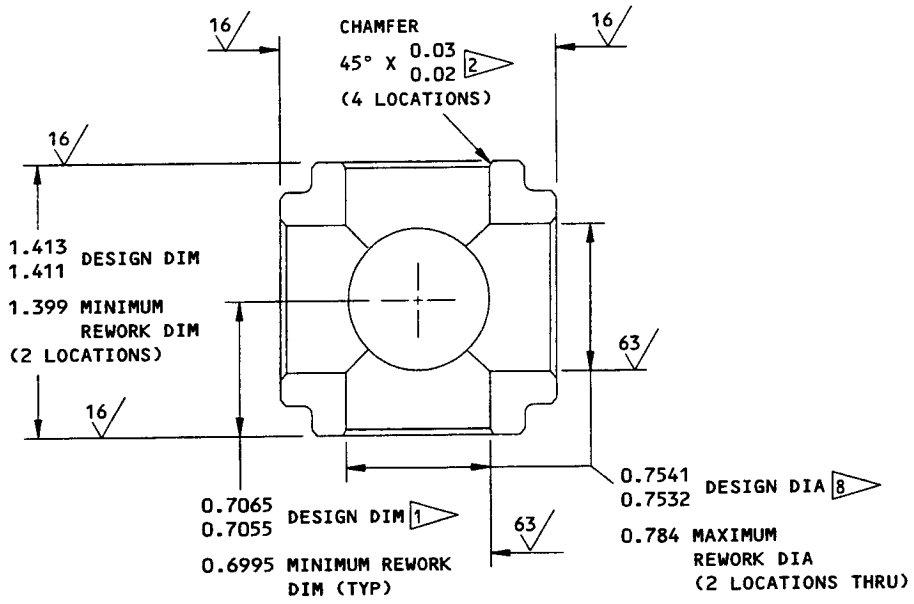
BREAK SHARP EDGES 0.005-0.015R

MATERIAL: (66-25118-1, 69-60055-1) MOD H-11 STEEL (RC 54-56)

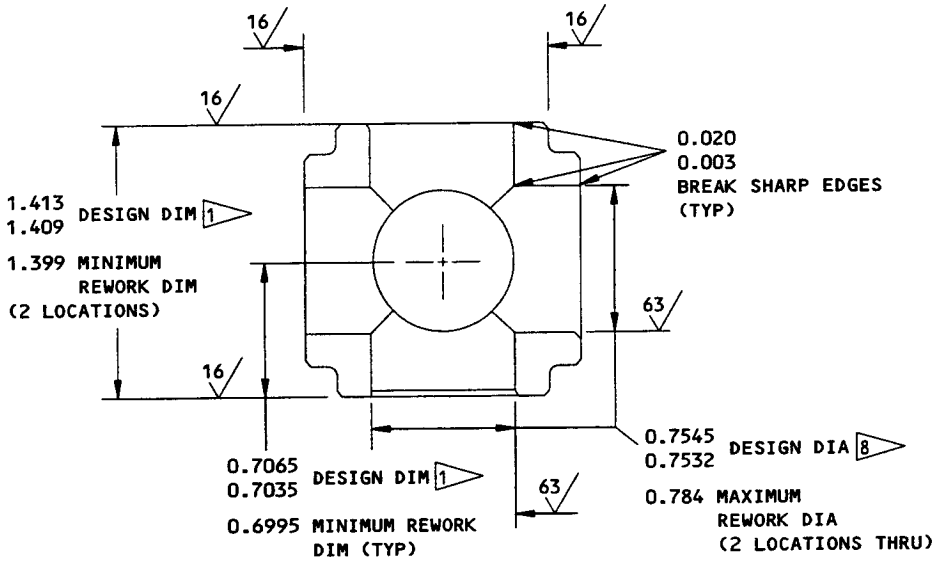
(69-60055-2) 4340M STEEL (270-300 KSI)

PIN (127)

Bolts, Spacer, Pins and Cross - Repair and Refinish
Figure 401 (Sheet 4)



65-76639-1



66-25116-1

REFINISH

65-76639-1 CHROME PLATE OUTER SURFACES (F-15.04)
(0.003-0.005 PLATE THICKNESS)

66-25116-1 ELECTROLESS NICKEL PLATE OUTER
SURFACE (F-15.08)

REPAIR

AS NOTED BY 1

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

BREAK SHARP EDGES

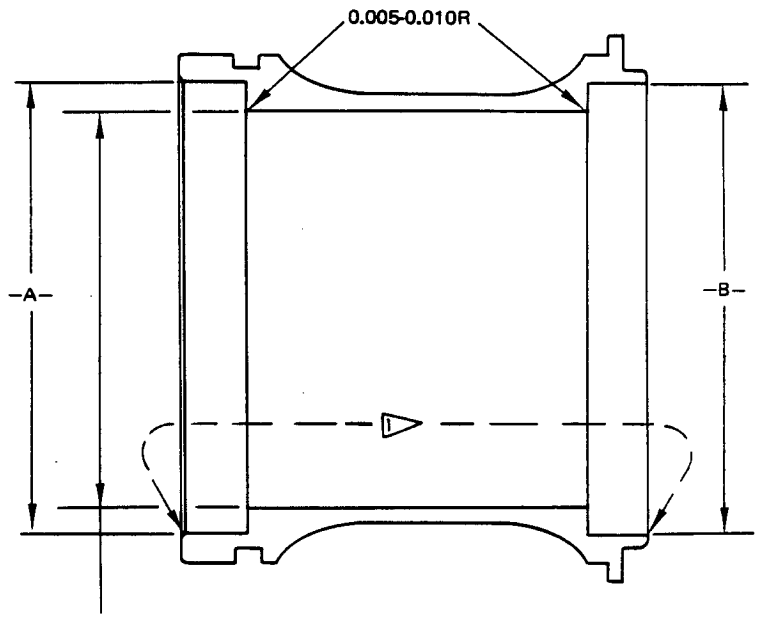
MATERIAL: (65-76639-1): 15-5PH CRES
(180-200 KSI)
(66-25116-1): STEEL, MOD H-11
(RC 54-56)

CROSS (128)

Bolts, Spacer, Pin and Cross - Repair and Refinish
Figure 401 (Sheet 5)

1. BUILD UP WITH HARD CHROME PLATE (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. REPLACES ORIGINAL ELECTROLESS NICKEL PLATING
8. 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 MACHING TO BE 0.015 MAX.

ALL DIMENSIONS ARE IN INCHES



REWORK

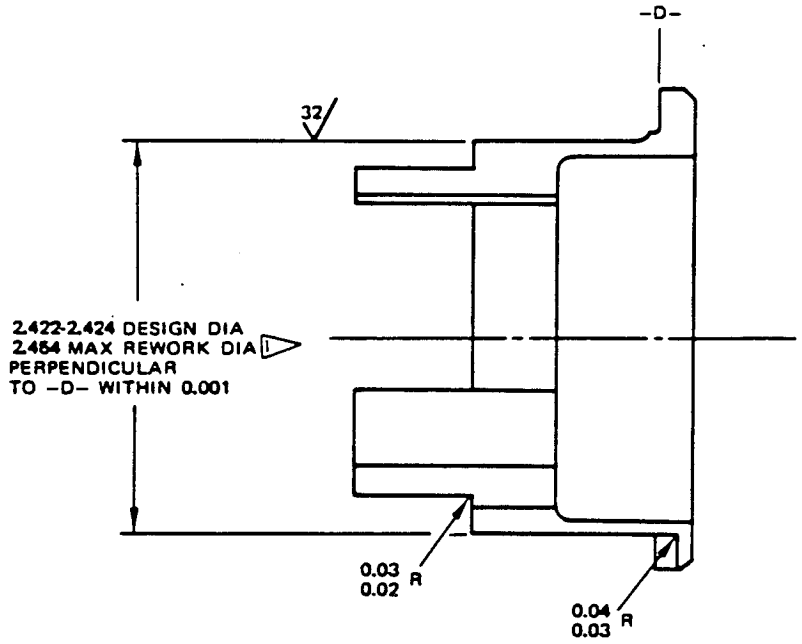
MACHINE ID AS REQUIRED
TO INCREASE TORQUE SETTING DESIRED AMOUNT
(TORQUE SETTING INCREASES
5.0 LB-IN FOR EACH 0.001
INCREASE OF ID)

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

BREAK SHARP EDGES 0.003-0.020R

1 CARBURIZED, 0.025–0.035 DEEP

TORQUE BRAKE HOUSING (143)



REPAIR

AS NOTED BY 1

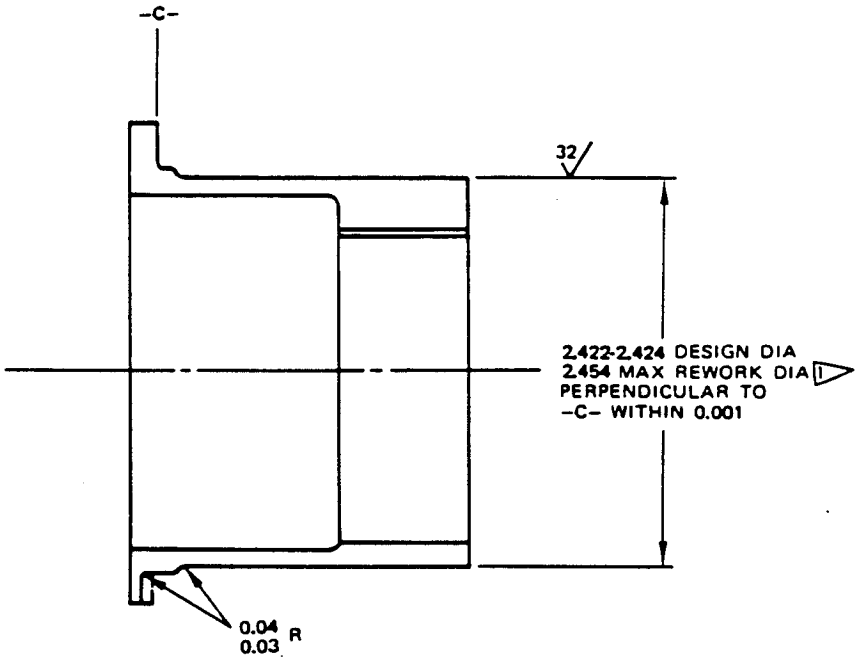
MATERIAL: STEEL (HT 290-300 KSI)

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 (153)



REPAIR

AS NOTED BY 1

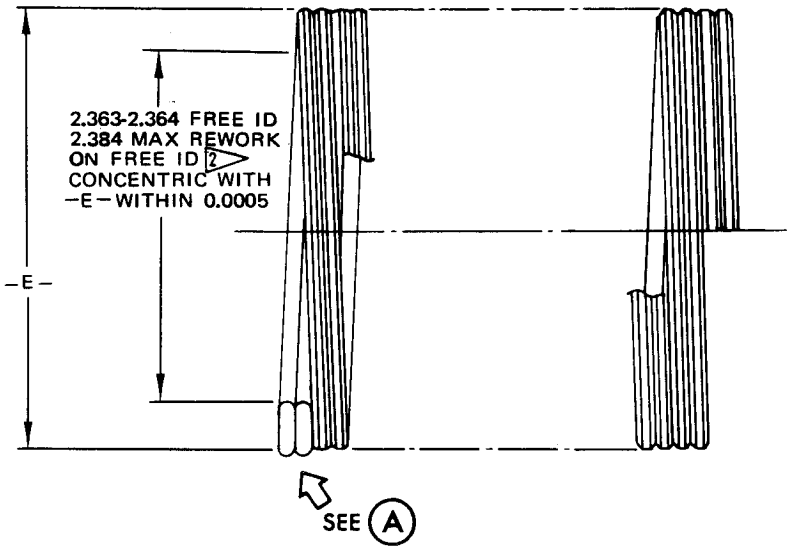
MATERIAL: STEEL (HT 290-300 KSI)

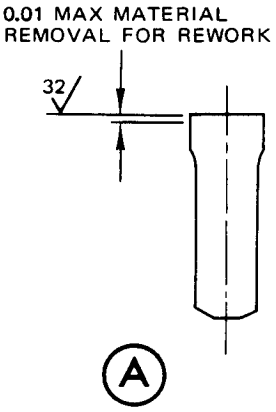
BREAK SHARP EDGES 0.005-0.015R

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

0.010-0.019 SHOT SIZE
0.012-0.015 A2 INTENSITY

SLEEVE (154)





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 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)

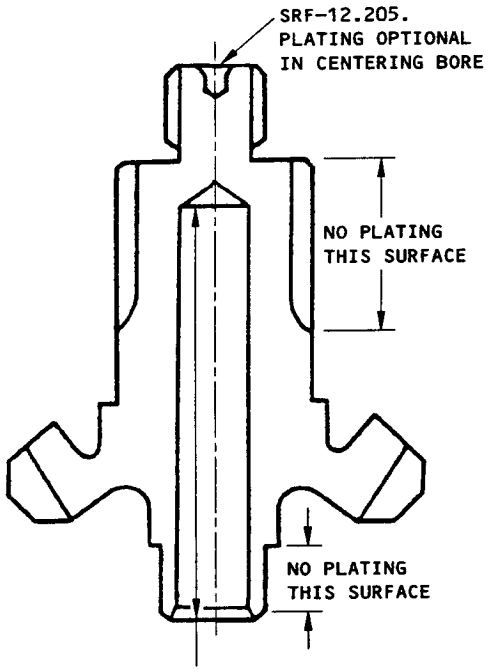
BREAK SHARP EDGES 0.005-0.015R

SPRING SET (156)

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 (156) WAS INCREASED (+ 0.0000,-0.0005)

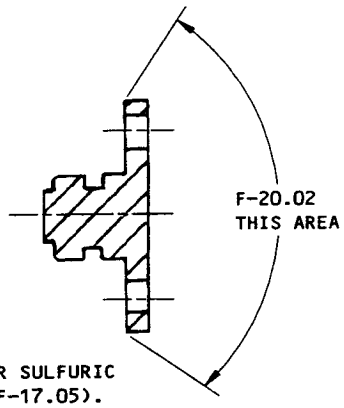
2 NOTE AMOUNT ID IS INCREASED TO DETERMINE REWORK OF SLEEVES (153, 154)



F-15.01 EXCEPT AS NOTED. PLUS F-20.02 AS NOTED

MATERIAL: (69-37600-2,-3) MOD H-11 STEEL (RC 54-56)
(69-37600-4) 4340M STEEL (270-300 KSI)

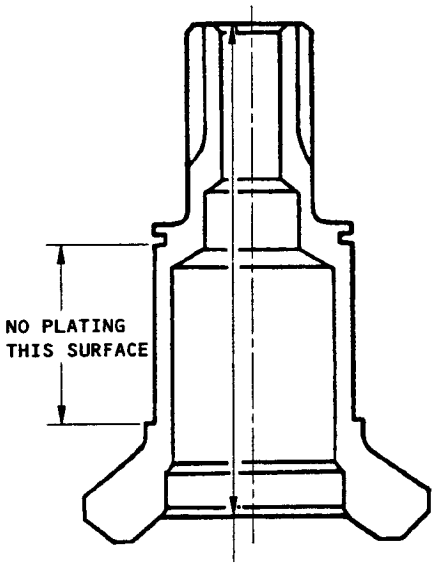
GEAR (12)



CHROMIC ACID OR SULFURIC ACID ANODIZE (F-17.05). APPLY ONE LAYER OF BMS 10-11, TYPE 1 PRIMER (F-20.02) TO AREA SHOWN.

MATERIAL: AL ALLOY

RETAINER (70)

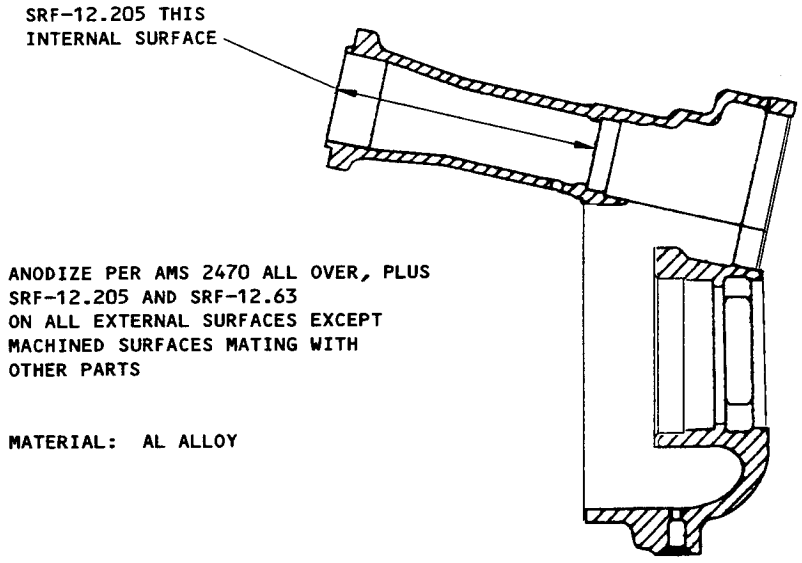


F-15.01 EXCEPT AS NOTED.
F-20.02 AS NOTED

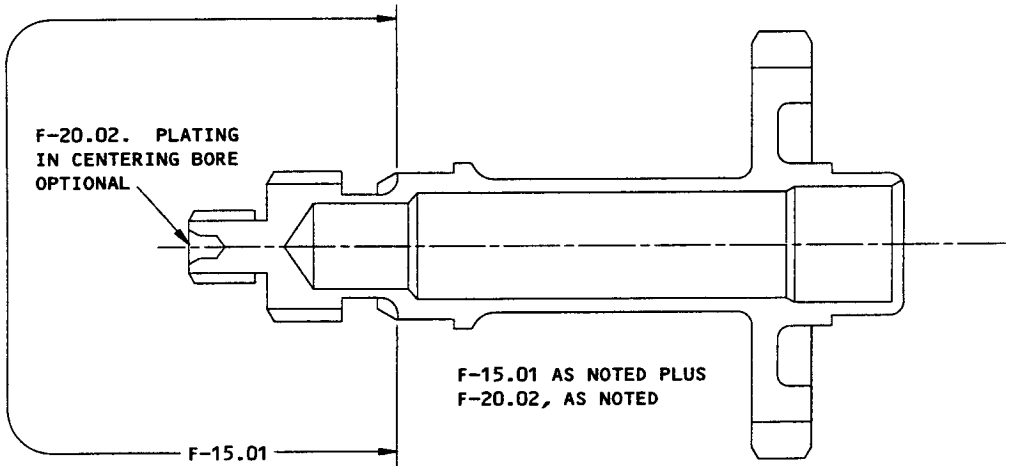
MATERIAL: MOD H-11 STEEL (RC 54-56)

GEAR (26)

Refinish Diagram
Figure 403 (Sheet 1)



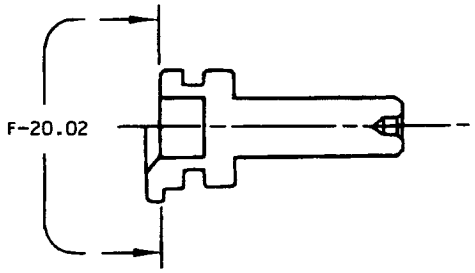
HOUSING (32)



MATERIAL: (69-37604-3,-4) MOD H-11 STEEL (RC 54-56)
(69-37604-5) 4340M STEEL (270-300 KSI)

GEAR (48)

Refinish Diagrams
Figure 403 (Sheet 2)



REFINISH

APPLY ONE LAYER OF BMS 10-11, TYPE 1 PRIMER (F-20.02) TO AREA SHOWN

PIN (80)

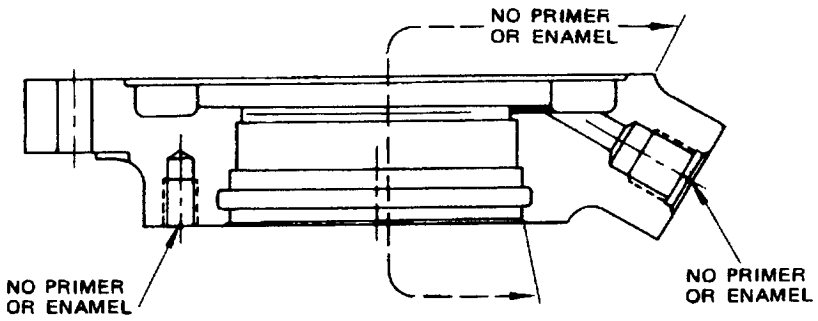
REFINISH

ANODIZE (F-17.05) ALL OVER.
APPLY PRIMER, BMS 10-11, TYPE 1 (F-20.02) TO AREA SHOWN

MATERIAL: AL ALLOY

RETAINER (132)

Refinish Diagram
Figure 403 (Sheet 3)

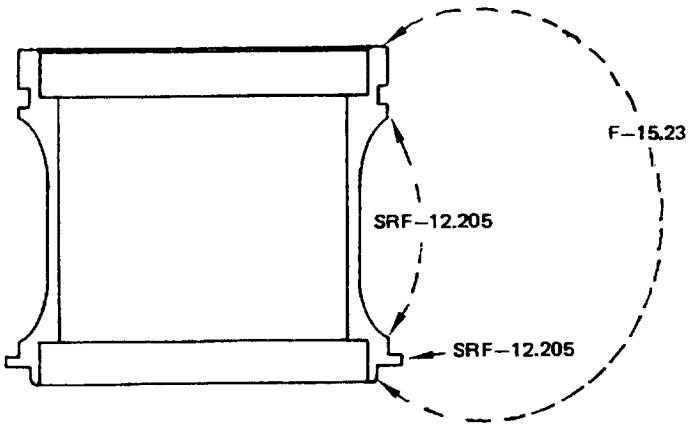


REFINISH

ANODIZE PER (AMS 2470) ALL OVER
APPLY PRIMER BMS 10–11, TYPE 1
(SRF–12–12.205) AND ENAMEL,
BMS 10–11, TYPE 2 (SRF–12.63)
EXCEPT AS NOTED

MATERIAL: AL ALLOY

SUPPORT (141)

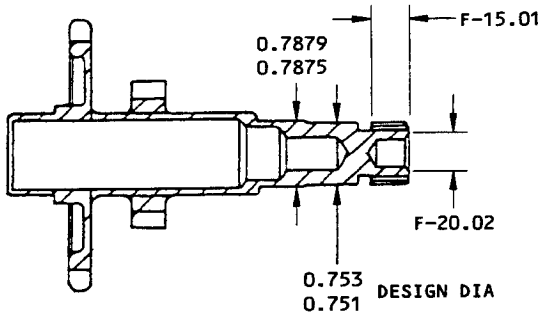


REFINISH

CADMIUM PLATE (F–15.23) AND
APPLY PRIMER, BMS 10–11, TYPE
1 (SRF–12.205) AS NOTED

HOUSING (143)

Refinish Diagram
Figure 403 (Sheet 4)



GEAR (56)

REFINISH

F-15.01 AND F-20.02 AS NOTED

REPAIR

OR 1 AND 3
OR 2 AND 3

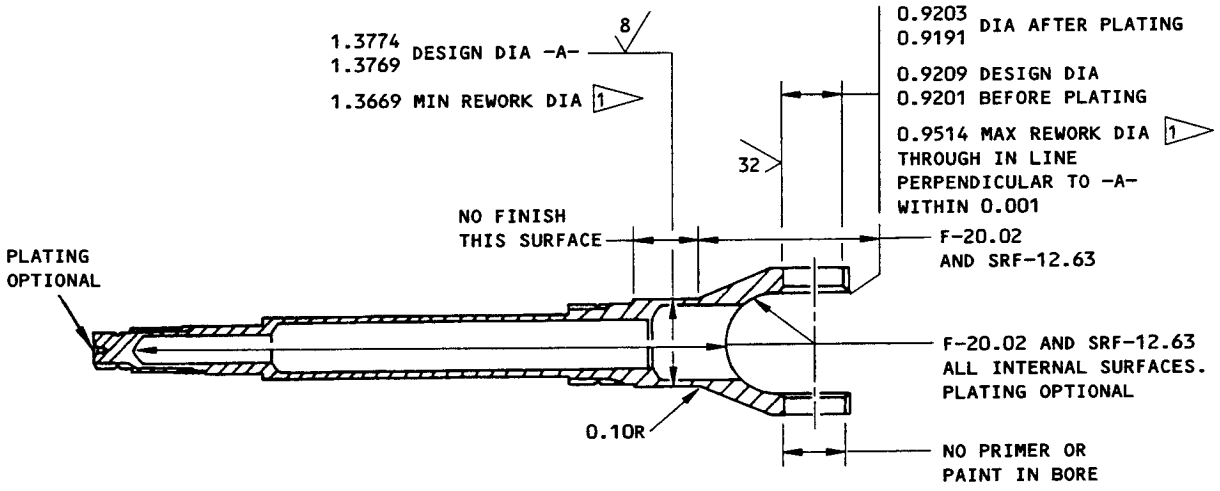
MATERIAL: (65-50283,-4,-5) MOD H-11 STEEL
(RC 54-56)
(65-50283-6) 4340 STEEL
(270-300 KSI)

1 METHOD 1: GRIND TO REMOVE WEAR OR DEFECTS TO FINISH SHOWN. DO NOT EXCEED MINIMUM REPAIR DIAMETER. MAINTAIN CONCENTRICITY PER FL 3. MAGNETIC PARTICLE EXAMINE PER SOPM 20-20-01.

2 METHOD 2: MACHINE SURFACE AS REQUIRED TO REMOVE DEFECTS (SOPM 20-10-01). DO NOT EXCEED MINIMUM REPAIR DIAMETER. MAGNETIC PARTICLE EXAMINE PER SOPM 20-20-01. SHOT PEEN MACHINED SURFACES PER SOPM 20-10-03. SHOT NUMBER 70-170 INTENSITY 0.008A. BUILD UP REPAIRED AREA WITH CHROME PLATE PER SOPM 20-42-03 AND GRIND TO FINISH AND FINAL DESIGN DIMENSION AS SHOWN PER SOPM 20-10-04. CHROME PLATE THICKNESS NOT TO EXCEED 0.015 INCHES. MAINTAIN CONCENTRICITY PER FL 3. MAGNETIC PARTICLE EXAMINE PER SOPM 20-20-01.

3 MAINTAIN CONCENTRICITY TO 0.7875-0.7879 DIAMETER WITHIN 0.002 TIR

Repair and Refinish Diagram
Figure 404



REFINISH

CADMIUM-TITANIUM PLATE (F-15.01) ALL OVER 0.0003 - 0.0005 INCH THICK EXCEPT AS NOTED FOLLOWED BY PRIMER BMS 10-11 TYPE I (F-20.02) AND ENAMEL (SRF-12.63); EXCEPT AS NOTED

MATERIAL: (65-50285-5,-7) MOD H-11 STEEL (RC 54-56)
(65-50285-8) 4340M STEEL (270-300 KSI)

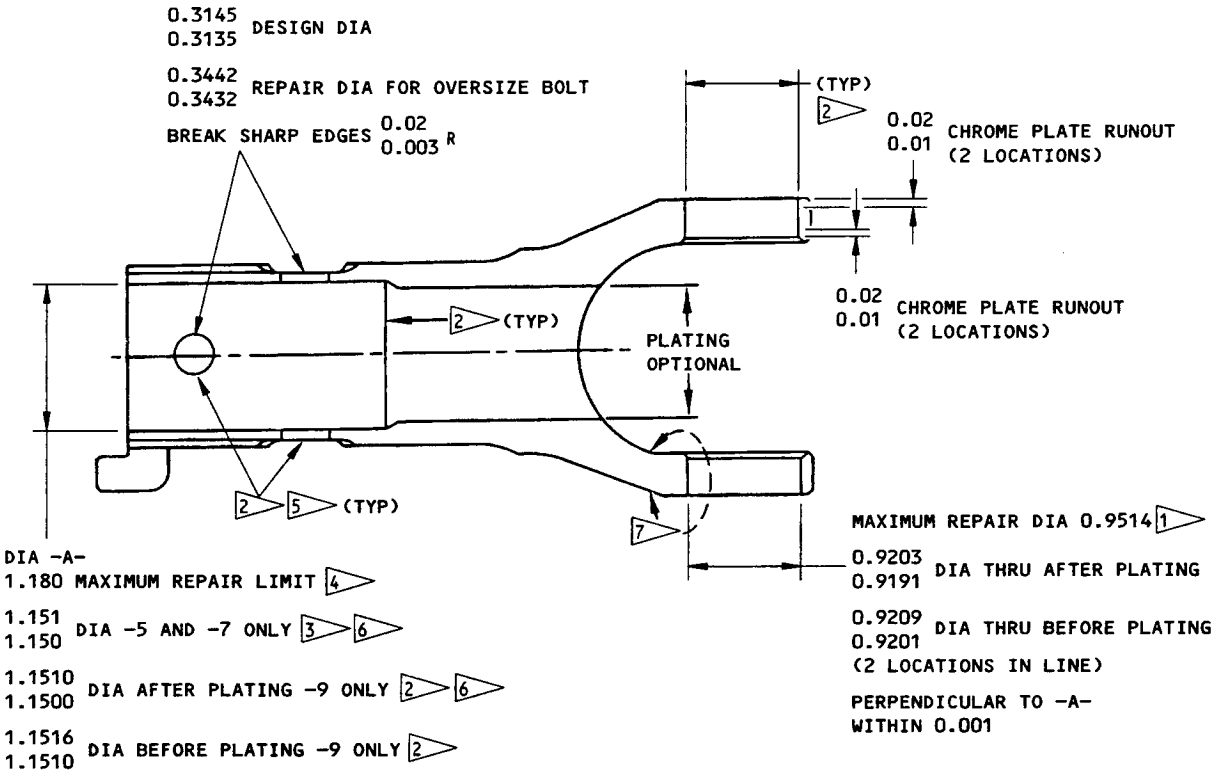
REPAIR

AS NOTED BY 1
SHOT PEEN: (SOPM 20-10-03)
0.017-0.039 SHOT SIZE
0.016 A2 INTENSITY

SHAFT (120)

Repair and Refinish Diagram
Figure 405 (Sheet 1)

E87274



REFINISH

CADMIUM-TITANIUM ALLOY PLATE (F-15.01) ALL OVER 0.0003-0.0005 INCH THICK EXCEPT AS NOTED BY 3
APPLY TWO COATS OF PRIMER, BMS 10-11, TYPE 1 (F-20.03) EXCEPT AS NOTED BY 2 AND 3

REPAIR

REF 4 5 6 7

MATERIAL: (65-50286-5,-7) MOD H-11 STEEL (RC 54-56)
(65-50286-9) 4340M STEEL (270-300 KSI)

SHOT PEEN: (SOPM 20-10-03)

YOKE (126)

1. BUILD UP WITH HARD CHROME PLATE (SOPM 20-42-03) MACHINE TO FINISH AND DIMENSION SHOWN.
2. NO SHOT PEEN OR PRIMER THIS SURFACE.
3. NO CADMIUM-TITANIUM PLATING, SHOT PEEN OR PRIMER THIS SURFACE.
4. BUILD UP WITH CHROME PLATE (SOPM 20-42-03) (OPTIONAL: ELECTRODEPOSITED NICKEL PLATE (SOPM 20-42-09).
5. PLATING RUNOUT IS 0.01-003 INCH AROUND EDGES OF ID AND ALL HOLES.
6. OMIT CADMIUM-TITANIUM PLATING IF THIS SURFACE IS REPAIRED.
7. SHOT PEEN AREA ALL AROUND HOLE AS SHOWN, 2 LOCATIONS.

Repair and Refinish Diagram
Figure 405 (Sheet 2)

E87296

Index No. Fig. 1101	Part No.	Part Name	Material	Tensile Strength (ksi)	Stress Relief after Base Material Rework	
					Temperature (°F)	Time (Hrs)
56	65-50283-4 65-50283-5	Gear	MOD H-11	RC 54-56	850-900	4
	65-50283-6		4340 M	270-300	500-550	4
79	69-37632-2	Ratchet	MOD H-11	RC 54-56	850-900	4
84	66-23901-2	Pawl	MOD H-11	RC 54-56	850-900	4
104	69-37648-3	Adapter	MOD H-11	RC 54-56	850-900	4
105	69-37667-1 69-52455-1	Plate	NITRIDED STEEL	RC 32-40	625-675	3
109	69-37635-1	Support	S.A.E. 4340	180-200	800-850	3
120	65-50285-5 65-50285-7	Shaft	MOD H-11	RC 54-56	850-900	4
	65-50285-8		4340M	270-300	500-550	4
124	66-25119-1 66-25119-2	Bolt	MOD H-11	RC 54-56	850-900	4
	65-76605-1		4340M	275-300	500-550	4
125	66-25117-1 69-60051-1	Spacer	MOD H-11	RC 54-56	850-900	4
	69-60051-2		4340 M	270-300	500-550	4
126	65-50286-5 65-50286-7	Yoke	MOD H-11	RC 54-56	850-900	4
	65-50286-9		4340 M	270-300	500-550	4
127	66-25118-1 69-60055-1	Pin	MOD H-11	RC 54-56	850-900	4
	69-60055-2		4340 M	270-300	500-550	4
128	66-25116-1	Cross	MOD H-11	RC 54-56	850-900	4
	65-76639-1		15-5PH CRES	180-200	850-900	1-4

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

Stress Relief Data
Figure 406

ASSEMBLY

1. General

   A. Lubricate O-rings and seals with MIL-H-5606 hydraulic fluid or light coat of MIL-G-7711 grease on assembly.

   B. Apply primer, Specification BMS 10-11, type 1, to faying surfaces from 0-ring groove to outer edge, where required by reassembly procedures. Do not allow primer on 0-ring, in 0-ring groove, or on sealing surfaces. Mate while primer is wet.

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

   D. Lockwire plugs, bolts and screws, where required by reassembly procedures, using double wire twist method.

2. Assembly (See figure 1101.)

   A. Install gear (56).

      (1) Refer to figure 501, diagrams No. 1 and No. 2, and determine thickness of shims (59 and 61).

      (2) Assemble shims (59 and 61) and bearings (58 and 60) on gear 56.

      (3) Position gear (56) in housing (32). Mate cover (54) to housing (32) and install bolts (52) and washers (53). Tighten bolts (52) to a torque range of 81 to 99 pound-inches.

      (4) Measure axial free play of gear (56). Free play must be 0.002 to 0.004 inch. If necessary, adjust thickness of shim (61) accordingly.

      (5) Remove bolts (52), washers (53) and cover (54). Remove gear (56) from housing.

      (6) Fill groove in sealing surface of housing (32) with sealant, BMS 5-95 and install seal (57).

      (7) Position gear (56) in housing (32). Install O-rings (55) on cover (54). Apply primer to faying surfaces and mate cover (54) to housing (32) . Install bolts (52) and washers (53). Tighten bolts to a torque range of 81 to 99 pound-inches.

B. Install gear (48).

(1) Preassemble bearings (51), spacers (49) and 0-ring (50) on gear (48).

(2) Position gear (48) in housing (32).

(3) Fill groove in sealing surface of cover (44) with sealant, BMS 5-95 and install seal (47), ring (46) and 0-ring (45) on cover (44).

(4) Apply primer to faying surfaces and mate cover (44) to housing (32).

(5) Apply primer to bolts and install bolts (41), washer (42) and nuts (43). Tighten nuts (43) to a torque range of 50 to 70 pound-inches.

C. Install and adjust gears (12 and 26).

(1) Refer to figure 501, diagrams No. 3 and No. 4, and determine thickness of shims (11 and 25).

(2) Preassemble bearings (13 and 14) on gear (12).

(3) Butter lube gear (12) with grease, Specification MIL-G-21164, and install gear (12) in housing (23).

(4) Position shim (11) on support (10), apply primer to faying surfaces and mate support (10) to housing (23).

(5) Apply primer to bolts and install bolts (8) and washers (9). Tighten bolts (8) to a torque range of 81 to 99 pound-inches. Lockwire bolts.

(6) Preassemble bearings (28), spacer (29) and ring (27), if used, on gear (26).

(7) Butter lube gear (26) with grease, Specification MIL-G-21164, and install gear (26) in housing (23).

(8) Position shim (25) on housing (32), mate housing (23) to housing (32), and install bolts (19), washers (20) and nuts (21). Tighten nuts (21) to aa torque range of 50 to 75 pound-inches and measure gear backlash between gear (12) and gear (26). Refer to figure 601 for backlash limits and procedure.

(9) Remove nuts (21), washers (20), bolts (19), and housing (23).

(10) Apply a film of grease, Specification MIL-G-21164, to internal splines of shaft (30).

(11) Position shaft (30) in housing (32) to engage gear (56).

(12) Apply primer to faying surfaces and mate housing (23) to housing (32).

(13) Apply primer to bolts and install bolts (19), washers (20) and nuts (21). Tighten nuts (21) to 50-75 lb-in.

(14) Apply primer to faying surfaces and position gasket (18) and plate (17) on housing (23).

(15) Apply primer to bolts and install bolts (15) and washers (16). Tighten bolts (15) to 81-99 lb-in. Lockwire bolts.

(16) Position coupling (5) on gear (12) and install washer (7) and nut (6). Hold coupling (5) with Splined Coupling Wrench F71228 and tighten nut (6) to 160-190 lb-in.

D. Adjust gear (116).

(1) Preassemble bearing (161) on support (99).

(2) Preassemble bearing (117) on gear (116).

(3) Position gear (116) and spacer (116A), if used, in support (99).

(4) See Fig. 501, diagram No. 5, and determine thickness of shim (102).

(5) Position shim (102) on support (99), mate support (99) to housing (32), and install bolts (90, 91, 92, 95), washers (88, 89, 93, 96) and nuts (87, 94, 97). Tighten nuts (87) to 180-250 lb-in., bolt (92) to 225-275 lb-ins. and bolt (95) to 450-550 lb-ins.

(6) Measure backlash between gears (48, 56) and (56, 116). See Fig. 601 for backlash limits and procedures. Adjust thickness of shim (102) as required.

(7) Remove nuts (87), washers (88) and bolts (90 and 91).

(8) Remove bolts (92 and 95), washers (93 and 96) and nuts (94 and 97).

(9) Separate support (99) and gear (116) from housing (32).

E. Preassemble and adjust no-back ratchet mechanism.

(1) Preassemble bearing (114) on support (109), bearing (112) on adapter (110), bearings (106 and 108) on plate (105), and bearing (76) on plate (75).

(2) Refer to figure 501, diagram No. 6, and determine thickness of shim (111).

(3) Position plate (105) on shaft (120).

(4) Position adapter (104), adapter (110), shim (111), retainer (113), washer (107), and support (109) on plate (105).

(5) Position shim (77), plate (78), ratchet (79), plate (75), washer (73), and nut (74) on shaft (120).

(6) Tighten nut (74) to a torque range of 50 to 70 pound-inches.

(7) Refer to figure 501, diagram No. 7, and determine thickness of shim (77). Adjust thickness of shim (77) as required.

(8) Remove nut (74), washer (73), plate (75), plate (78), and ratchet (79) from shaft (120).

(9) Remove plate (105) and attached parts from shaft (120).

(10) Position plate (105) and attached parts in housing (32). Install coupling (118) in adapter (104) and gear (116).

NOTE: Bolt holes in adapter (110) and shim (111) must be aligned with bolt holes in housing (32).

(11) Install bolts (62), washers (62A) and seals (64). Do not tighten bolts (62).

F. Assemble torque brake assembly (139).

(1) Align ends of springs in spring set (156) approximately 180 degrees apart.

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

(2) Deleted.

(3) Place spring set (156) into Spring Pack Assembly Jig, ST6107 (Fig. 502).

NOTE: Install rolled shim between OD of spring set and ID of jig if necessary, to maintain concentricity of spring set when springs are expanded.

(4) Check that top ends of coil are in line with the two locking lugs on jig before applying torque to springs. Insert Torque Bar, PT49001 into coil ends and wind spring ends until they are past the locking lugs on top of jig.

(5) Maintain pressure on torque bar. Insert an allen wrench into lockscrew holding locking lug. Push lugs inward, in position to prevent springs from unwinding. Lock set screws to prevent lugs from retracting (Fig. 502).

(6) Remove circular portion of assembly jig from its base. Invert unit and reinstall firmly on base. Use torque bar to align locking lugs into spring ends on bottom of spring set. Lock lugs in place by tightening set screws.

(7) Wind springs about 30 degrees further by rotating takeup screws in spring pack jig. This will expand spring set so that sleeves (153 and 154) can be inserted.

(8) Coat all surfaces of sleeve (154) with a light film of hydraulic fluid, MIL-H-5606, and assemble into expanded spring pack.

(9) Remove circular portion of assembly jig from its base. Reinstall this section onto base so that sleeve (154) is on bottom. Slip a wood block between sleeve (154) and base to prevent sleeve from dropping out.

(10) Coat sleeve (153) with hydraulic fluid, MIL-H-5606 and insert into spring pack. Make sure sleeve is fully inserted and internal lugs align with sleeve (154). Loosen locking lugs on assembly jig and press sleeve (153) further into spring set. Slide locking lugs inward and secure flats on sleeve (153)

(11) Remove circular portion of assembly jig from base. Apply a light film of hydraulic fluid, MIL-H-5606 to adapter (147).

(12) Insert adapter (147) into spring pack with internal splines pointing outward. Ears of adapter must mate with lands of sleeve (153) (Fig. 503).

(13) Slowly unwind spring set by rotating assembly jig to relieve spring expansion. Spring friction will prevent sleeves and adapter from dropping out.

(14) Back off locking lugs on top side of assembly jig. Use thumbs to remove spring pack by applying pressure on flange of sleeve (153). Use care to prevent misalignment of internal components.

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

(15) Place assembled parts in arbor press. Protect flanged faces of sleeves (153, 154) and apply an end load of 75-100 pounds to stack springs tight.

(16) Install rings (152) over spring set and press down to remove clearance and end play.

(17) Measure stacked height of assembled parts. Select shims (155) to provide dimension of 3.539-3.551 inches between outer faces of rings (152), after installation. Remove end rings (152) and install shims as shown in Fig. 504. 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.

(18) Install one end ring (152) over spring on sleeve (153) end. Slide other end of pack into housing (143), and press the remaining end ring (152) over spring set (156) and into housing ID.

(19) Assemble retainer (160) and coupling (151) and install on gear (116) with screws (115). Tighten screws (115) to 20-25 lb-in. Lockwire screws together.

G. Install support assembly (98) and gear (116).

(1) Install O-ring (103) on support (99). Apply primer to faying surfaces and install support (99), gear (116) and preassembled parts in housing (32).

(2) Apply primer to bolts and install bolts (90, 91, 92, 95), washers (88, 89, 93, 96) and nuts (87, 94, 97). Tighten nuts (87) to 180-250 lb-in., bolts (92) to 225-275 lb-in. and bolt (95) to 450-550 lb-in.

(3) Install support assembly (144) in support (99).

H. Assemble universal joint assembly (119).

(1) Coat shank of bolt (124) and threads of nut (122) with MIL-C-11796, corrosion preventive compound. Position yoke (126) on cross (128) and install pin (127). Position shaft (120) on cross (128) and install bolt (124), spacer (125) and nut (122). Tighten nut (122) as follows:

(a) Tighten nut to 170-200 lb-in. when used with bolt 66-25119-1, -2.

(b) Deleted.

(c) The requirements for nut (122) installation when used with bolt 65-76605-1, are as follows:

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

2) Tighten nut to 170-200 lb-ins.

I. Install torque brake assembly (139).

(1) See Fig. 501, diagram No. 8, and determine thickness of shim (136). Install shim (136) on housing (143).

(2) Install O-ring (157) on housing (143). Apply primer to faying surfaces and mate housing (143) to support (99). Pin (146) on support (144) must engage slot on housing (143).

J. Assemble and install support assembly (140) and shaft (120).

(1) Preassemble bearing (138) and O-ring (137) on support (141).

(2) Fill groove in sealing surface of retainer (132) with sealant, BMS 5-95 and install seal (133) on retainer (132).

(3) Apply primer to faying surfaces and mate retainer (132) to support (141).

(4) Apply primer to screws and install screws (130) and washers (131). Tighten screws to 20 - 25 lb-in. Lockwire screws.

(5) Position support assembly (140) and preassembled parts on shaft (120). Protect seal (133) from damage on splines of shaft.

(6) Remove adapter (147) from torque brake assembly (139). Position retainer (148) on shaft (120). Install ring (159) on groove of shaft (120).

(7) Position adapter (147) on shaft (120) and install ring (149) in retainer (148).

(8) Apply primer to faying surfaces on support (141) and housing (143). Insert shaft (120), adapter (147) and preassembled parts into torque brake assembly (139). Mate support (141) to housing (143). Ensure that ears of adapter (147) engage lands of sleeve (153).

(9) Apply primer to bolts and install bolts (134) and washers (135). Tighten bolts (134) to 81 - 99 lb-in. Lockwire bolts.

K. Assemble no-back ratchet mechanism.

(1) Position pawl assemblies (82) and washers (86) in housing (32), install O-rings (81) on pins (80) and install pins (80).

CAUTION: DO NOT RE-USE OLD WASHER (73) OR FAILURE OF TANGS AND LOSS OF NUT RETENTION MAY OCCUR.

(2) Hold pawls (84) in retracted position and install ratchet (79), shim (77), plates (78, 75), new washer (73), and nut (74) on shaft (120). Tighten nut (74) to 200 - 240 lb-in. and bend tangs of washer (73) into slots of nut (74).

(3) Install O-rings (71) on retainers (70) and insert springs (72) in housing (32).

(4) Apply primer to faying surfaces and mate retainers (70) to housing (32).

(5) Apply primer to screws and install screws (68) and washers (69). Tighten screws to a torque range of 20 to 25 pound-inches. Lockwire screws together.

(6) Install O-rings (66 and 67) on cover (65).

(7) Apply primer to faying surfaces and mate cover (65) to housing (32). Install seals (64), washers (63A) and bolts (63). Tighten bolts (62 and 63) to a torque range of 81 to 99 pound-inches. Lockwire bolts (62 and 63).

NOTE: Flaps of cover (65) must mate cutoff on pin (80) heads.

L. Service transmission assembly.

(1) Install O-rings (4) and plugs (3). Lockwire plugs.

(2) Position assembly with yoke end of shaft (120) 6-1/2 degrees below horizontal plane.

(3) Fill assembly with hydraulic fluid, Specification MIL-H-5606, until fluid is at filler port level.

(4) Install plug (1) and O-ring (2). Do not lockwire until after test.

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

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

3. Materials

A. Hydraulic Fluid -- Specification MIL-H-5606

B. Primer -- Specification BMS 10-11, type 1

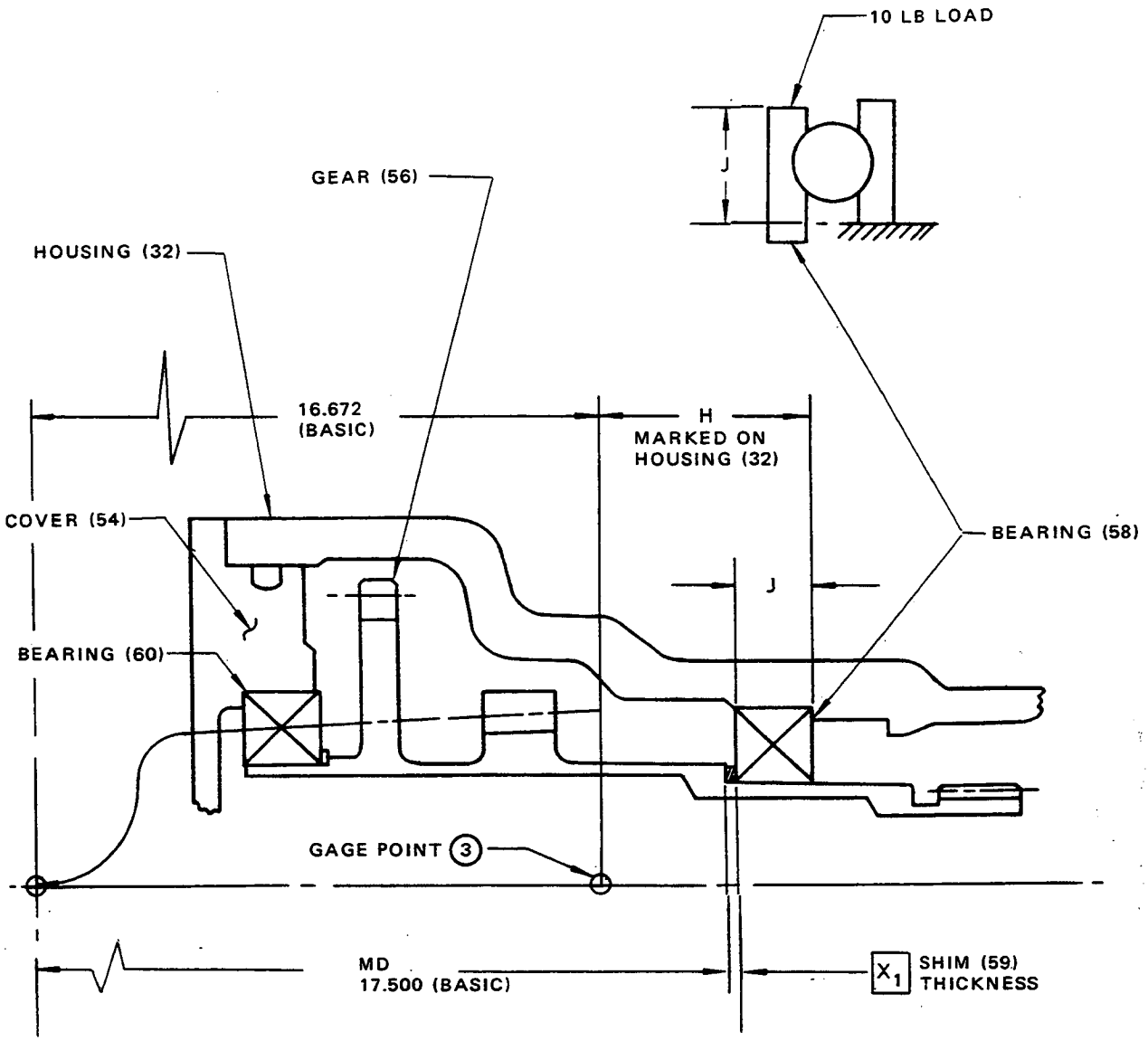
C. Grease -- Specification MIL-G-7711

D. Grease -- Specification MIL-G-21164

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

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

G. Corrosion Preventive Compound -- Specification MIL-C-11796, class 3



ALL DIMENSIONS ARE IN INCHES

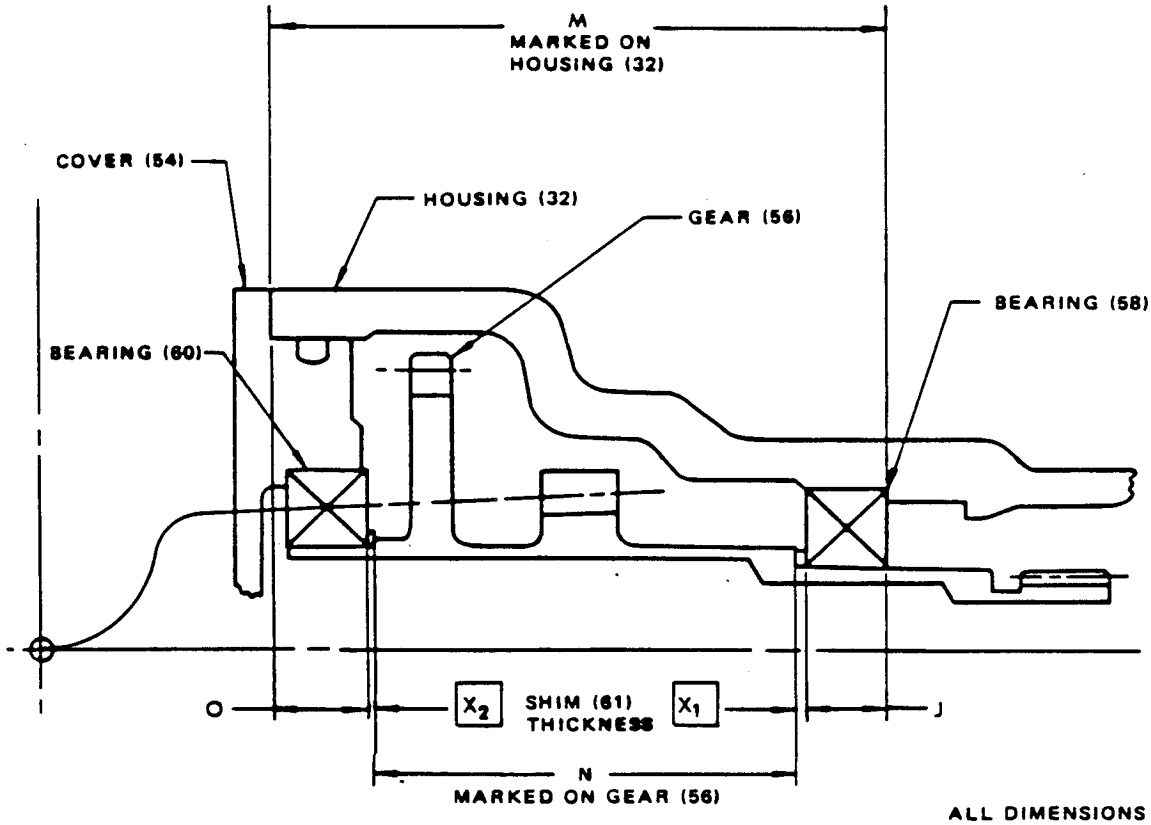
SHIMMING CALCULATION

SHIM X_1 = 16.672 + H - J - MD (+0.000/-0.003)

WHERE: H = MARKED ON HOUSING (1.325 TO 1.335)
J = MEASURED AS SHOWN
MD = MOUNTING DISTANCE

DIAGRAM NUMBER 1

Shimming Diagrams
Figure 501 (Sheet 1)

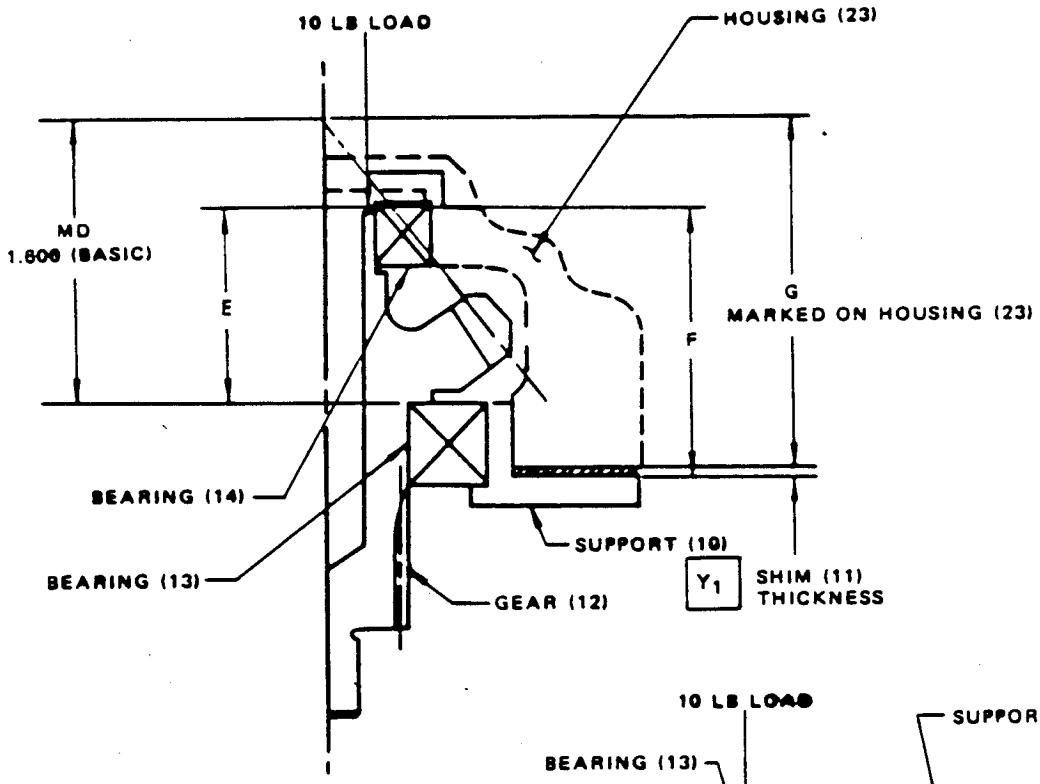


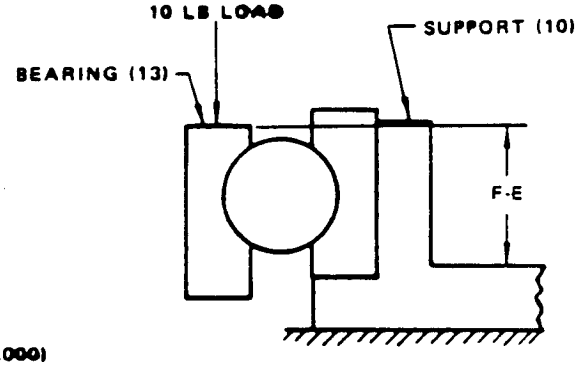
SHIMMING CALCULATION

SHIM $\boxed{X_2}$ = M - (O + N + X_1 + J) -0.002 (+0.000/-0.002)

WHERE: M = MARKED ON HOUSING (3.445 TO 3.455)
O = MEASURED
N = MARKED ON GEAR (2.365 TO 2.375)
X_1 = SEE DIAGRAM NO. 1
J = SEE DIAGRAM NO. 1

DIAGRAM NUMBER 2





ALTERNATE METHOD
(MEASURE F-E)

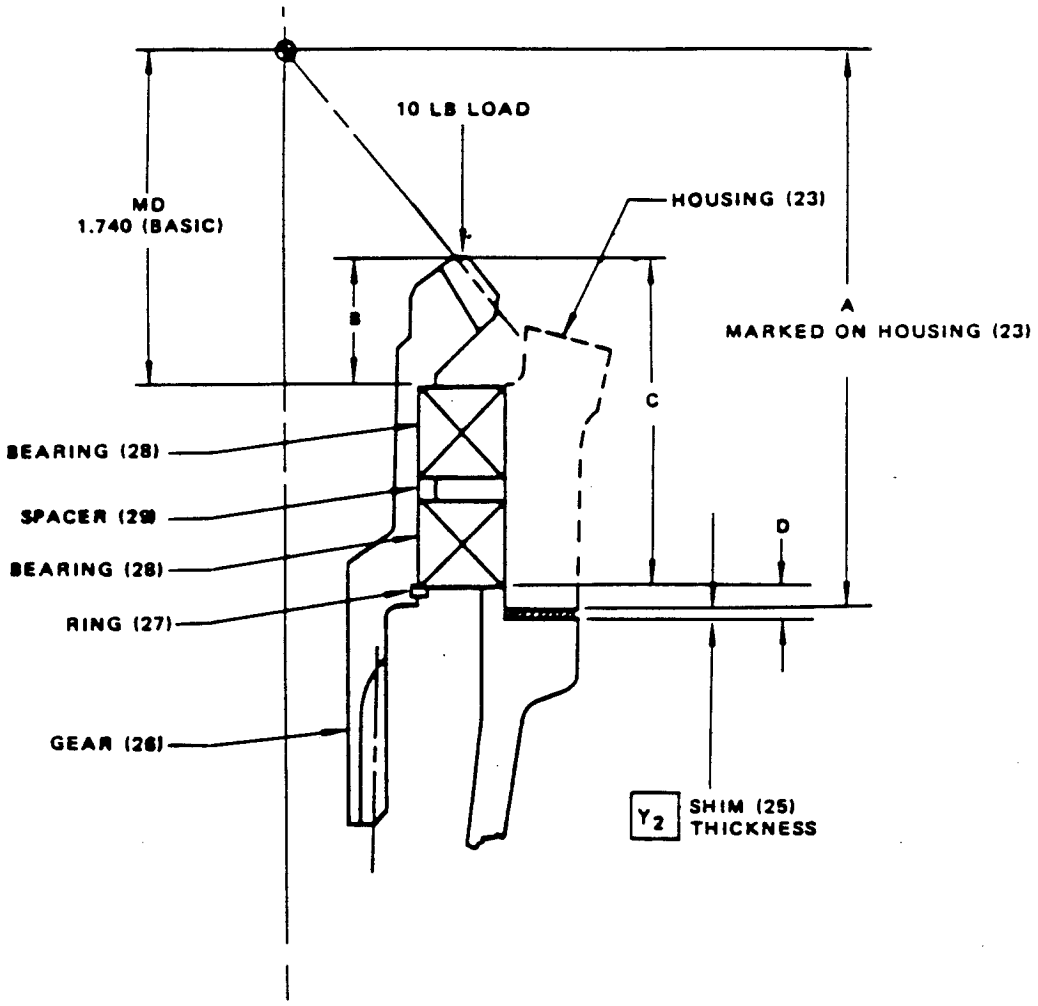
SHIMMING CALCULATION

SHIM Y_1 = MD + F - G - E (+0.003/-0.000)

WHERE: MD = MOUNTING DISTANCE (1.600 TO 1.603)
E = MEASURED
F = MEASURED
G = MARKED ON HOUSING (1.980 TO 1.990)

DIAGRAM NUMBER 3

ALL DIMENSIONS
ARE IN INCHES



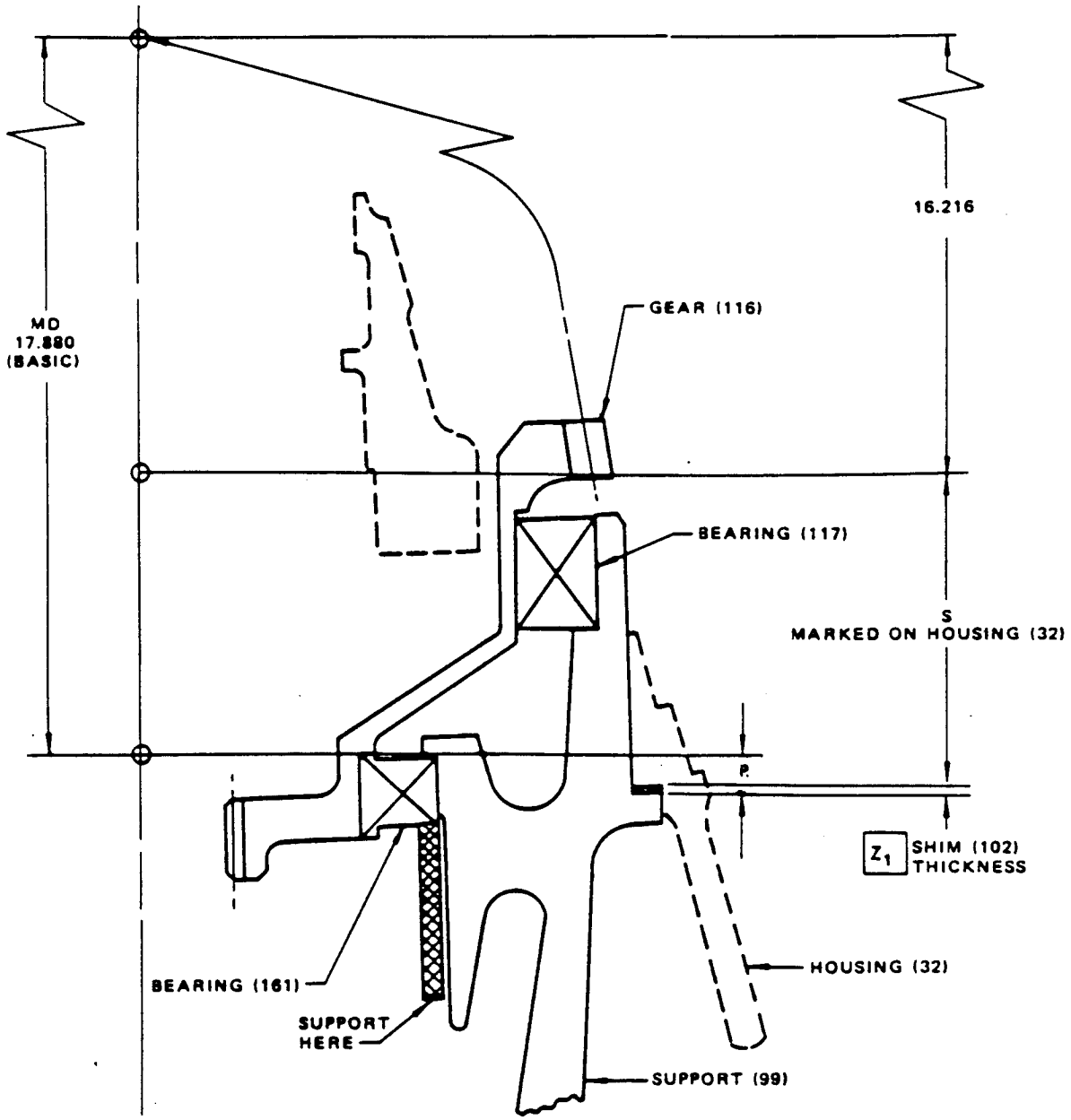
SHIMMING CALCULATION

SHIM Y_2 = MD + C + D - B - A (+0.003/-0.000)

WHERE: MD = MOUNTING DISTANCE
A = MARKED ON HOUSING (2.999 TO 3.009)
B = MEASURED
C = MEASURED
D = MEASURED

ALL DIMENSIONS ARE IN INCHES

DIAGRAM NUMBER 4



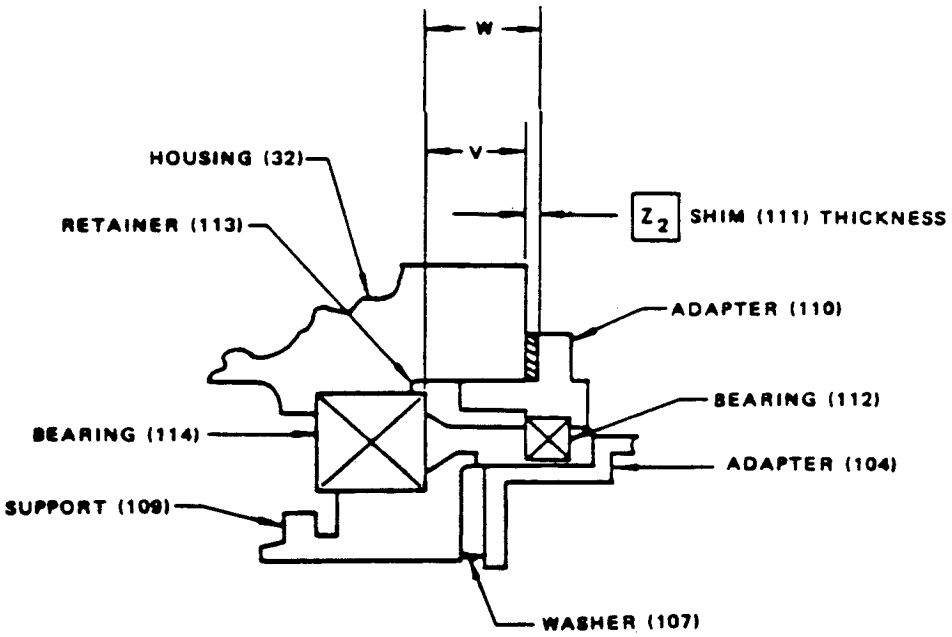
SHIMMING CALCULATION

SHIM Z_1 = MD + P - 16.216 - S (+0.003/-0.000)

WHERE: MD = MOUNTING DISTANCE
P = MEASURED
S = MARKED ON HOUSING (1.963 TO 1.973)

ALL DIMENSIONS ARE IN INCHES

DIAGRAM NUMBER 5



SHIMMING CALCULATION

SHIM Z_2 = W - V - 0.001 (+0.000/-0.003)

WHERE: V = MEASURED. [CLAMP OUTER RACE OF BEARING (114) TO HOUSING (32)]
W = MEASURED. [PREASSEMBLE ADAPTER (110), BEARING (112) RETAINER (113) AND BEARING (114) TO MEASURE]

ALL DIMENSIONS ARE IN INCHES

DIAGRAM NUMBER 6

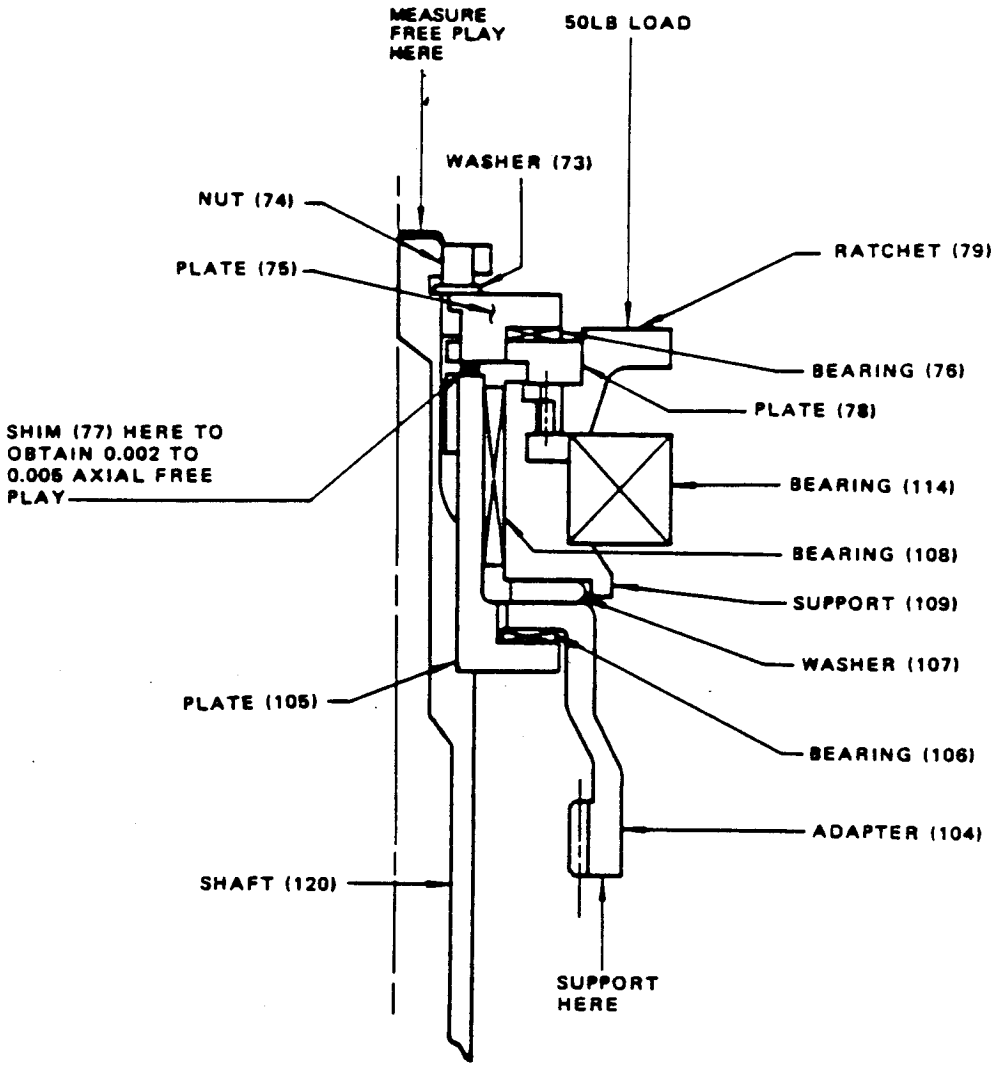
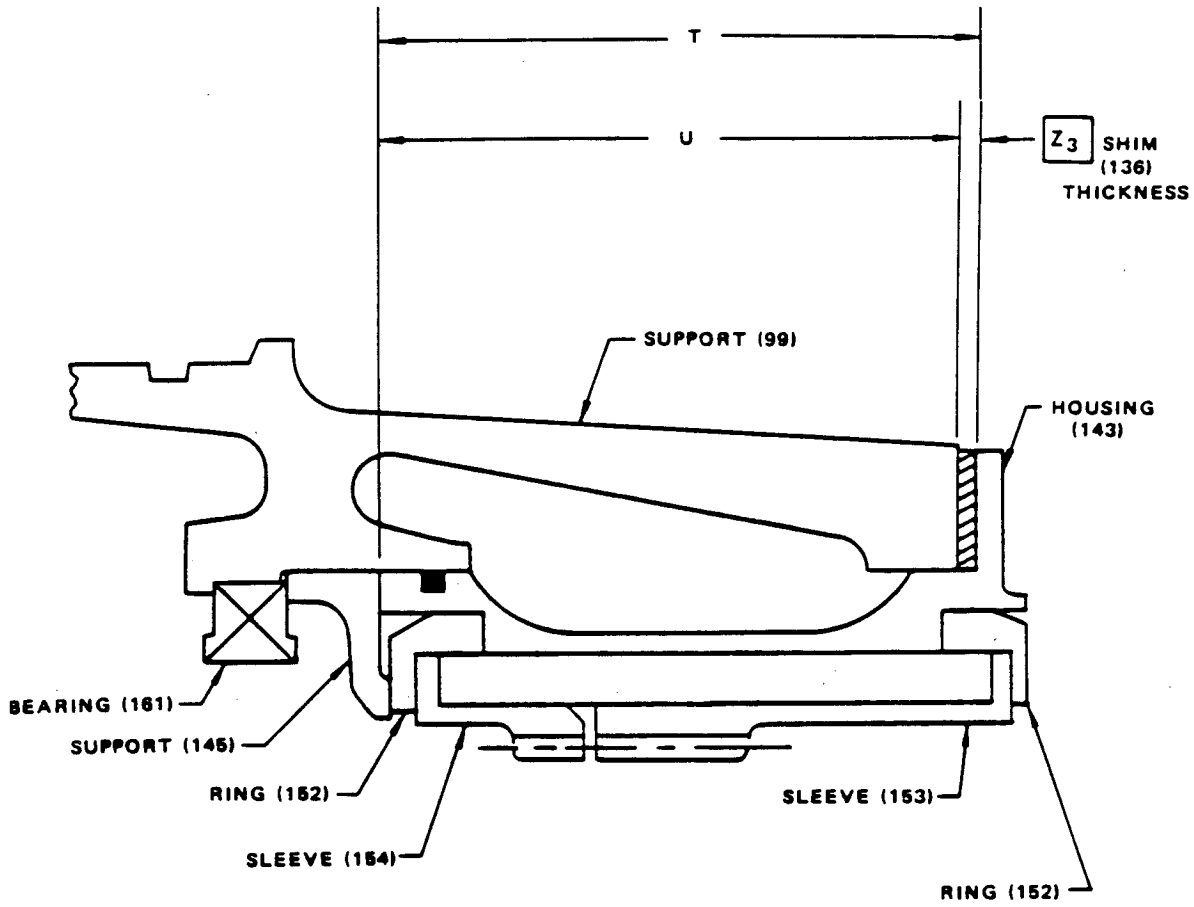


DIAGRAM NUMBER 7



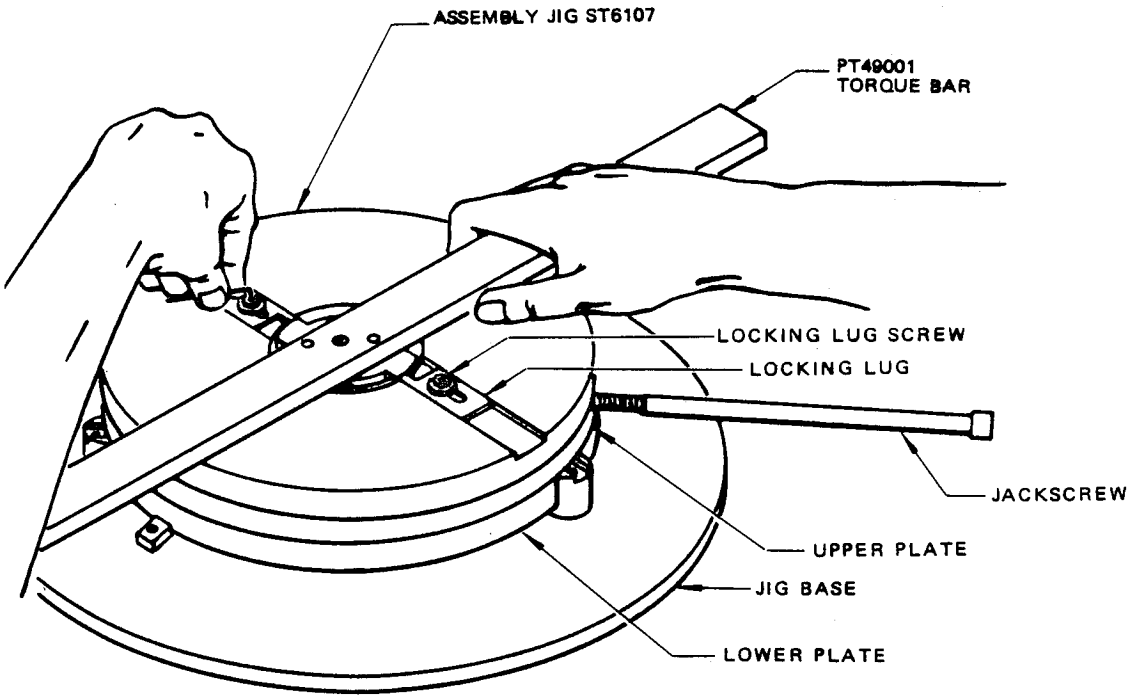
SHIMMING CALCULATION

SHIM Z_3 = T - U - 0.001 (+0.000/-0.003)

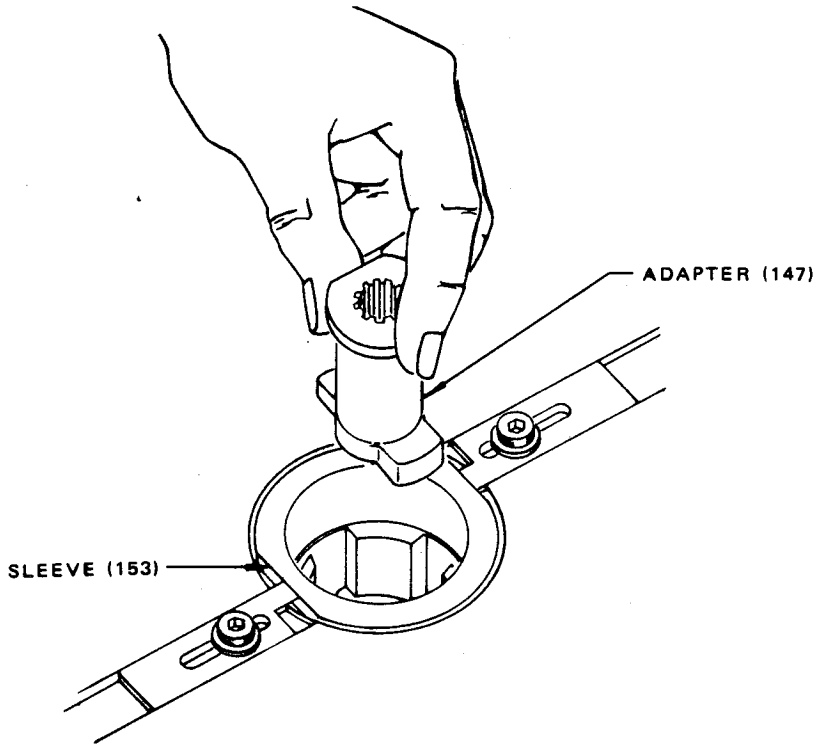
WHERE: T = MEASURED ON HOUSING (143)

U = MEASURED BY PREASSEMBLING SUPPORTS (99 AND 145) AND BEARING (161)

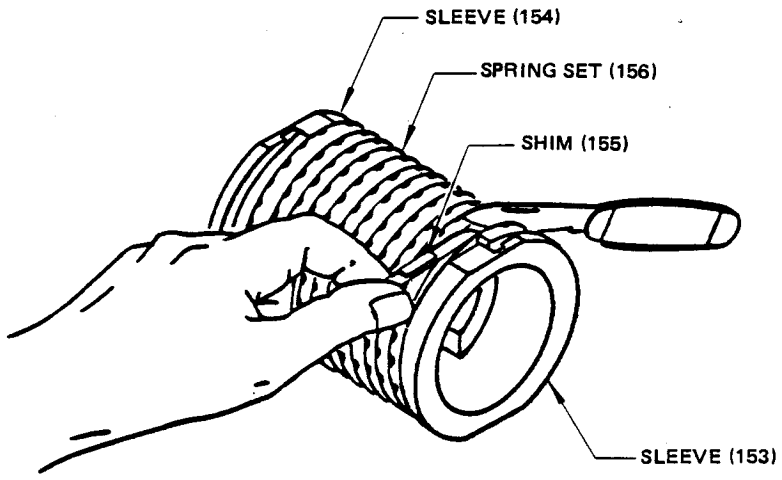
DIAGRAM NUMBER 8



Spring Pack Assembly Jig ST6107
Figure 502



Spring Pack Buildup
Figure 503



Spring Pack Shim Installation
Figure 504

FITS AND CLEARANCES

1. and 2. deleted.

		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 129 [23] OD 124,125, 127	0.7550 0.7523	0.7560 0.7530	0.0020	0.0037	0.7513	0.7633	0.012
B [27]	ID 128 [16] OD 124,125, 127	0.7532 0.7523	0.7545 0.7530	0.0002	0.0022	0.7513	0.7563	0.0050
B [24]	ID 128 [17] OD 124,125, 127	0.7532 0.7523	0.7541 0.7530	0.0002	0.0018	0.751	0.7563	0.0050
C	ID 82 OD 80	0.3125 0.3110	0.3130 0.3120	0.0005	0.0020	0.3100	0.3130	0.0030
D	ID 143 OD 152	3.524 3.519	3.525 3.520	0.004	0.006	3.518	3.526	0.008
E	ID 143 OD 156	3.0950 3.0230	3.0955 3.0240	0.0710	0.0725	3.0225	3.0960	0.0735

Ref. Letter Fig.601	Mating Index No. Fig.1101	Original Design Limits				Service Wear Limits		
		Dimension (inches)		Assembly Clearance (inches)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min.	Max.	Min.	Max.	Min.	Max.	
F	[2] 48 56			0.0007	0.0026			0.0053
G	[3] 48 116			0.0020	0.0078			0.0132
H	[4] 56 116			0.0013	0.0052			0.0079
J	[5] 12 26			0.0008	0.0033			0.0050
K	[6] 5,38 12,48			0.0000	0.0054			0.0090
L	[6] 30 26,56			0.0000	0.0052			0.0090
M	[7] 75,105 120			0.0000	0.0052			0.0090
N	[8] 104 118			0.0015	0.0077			0.0090
P	[8] 116 118			0.0015	0.0071			0.0090
Q	[9] 116 151			0.0023	0.0110			0.0139
R	[10] 147 120			0.0027	0.0127			0.0161

Fits and Clearances
Figure 601 (Sheet 2)

Ref Letter Fig.601	Mating Item No. Fig. 1101	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
S	11 79 109			0.0000	0.0058			0.0090
T	OD 38	1.153	1.159			1.153		
U	OD 56	0.751	0.753			0.747		
V	OD 120	1.3769	1.3774			1.3720		
W	12 107	0.154	0.158			0.135		
X	OD 105	0.9995	1.0000			0.9992		
Y	13 16 128	1.409	1.413			1.409		
Y	13 17 128	1.411	1.413			1.409		
Z	14 152	0.095	0.097			0.093		
AA	11 141	0.233	0.235				0.237	
BB	13 145	0.041	0.043			0.039		
CC	15 147,150	0.645	0.649			0.637		
DD	15 153,154	0.883	0.887			0.875		
EE	16 79	3.085	3.105			3.075		
FF	19 79	0.190	0.210				0.225	
GG	20 84	0.050	0.070				0.075	
HH	21 104	0.120	0.125			0.115		
JJ	21 105	1.510	1.520				1.525	

[1] Dimension of spring set (156) to be measured with spring set installed on 2.426 inch diameter mandrel.

[2] Gear backlash. Prior to disassembly, fix output shaft (120) and apply 20 pound-inches torque to coupling (5) on gear (12). Check backlash on OD of spline for coupling on gear (48). If service limit is exceeded, check gears (48 and 56) for evidence of wear.

[3] Gear backlash. Prior to disassembly, restrain movement of gear (116), using drain plug port to introduce wedge. Measure backlash on OD of spline for coupling on gear (48). Value of backlash is total of 2 gear pairs (48 and 56) and (56 and 116). If service limit is exceeded, check each gear for evidence of wear.

[4] Gear backlash. Subtract actual backlash between gears (48 and 56) from backlash between gears (48 and 116). If service limit is exceeded check gear teeth on (56 and 116) for evidence of wear.

[5] Gear backlash. Prior to disassembly, restrain movement of gear (26), using lubrication port to gain access to gear. Measure backlash on OD of spline for coupling on gear (12). If service limit is exceeded, check gears (12 and 26) for evidence of wear.

[6] Spline backlash, measured at 0.8750-inch pitch diameter of splines while either part is held fixed.

[7] Spline backlash, measured at 0.6563-inch pitch diameter of splines while either part is held fixed.

[8] Spline backlash, measured at pitch diameter of spline while either part is held fixed. Pitch diameter of splines on adapter (104) and coupling (118) is 2.1875 inches. Pitch diameter of splines on gear (116) and coupling (118) is 1.3750 inches.

[9] Spline backlash, measured on OD of single tooth spline on coupling (151) while gear (116) is held fixed.

[10] Spline backlash, measured on OD of single tooth spline on adapter (147) while shaft (120) is held fixed.

11 Spline backlash, measured at 1.7500 inch-pitch diameter of mating splines.

12 Thickness

13 Width

14 Chordal tooth thickness measured at pitch diameter of 1.9375 inches.

15 Circular tooth thickness measured at pitch diameter of 1.9375 inches.

16 Used for 66-25116-1

17 Used for 65-76639-1

18 OD of ratchet (79) teeth.

19 Height of ratchet (79) teeth.

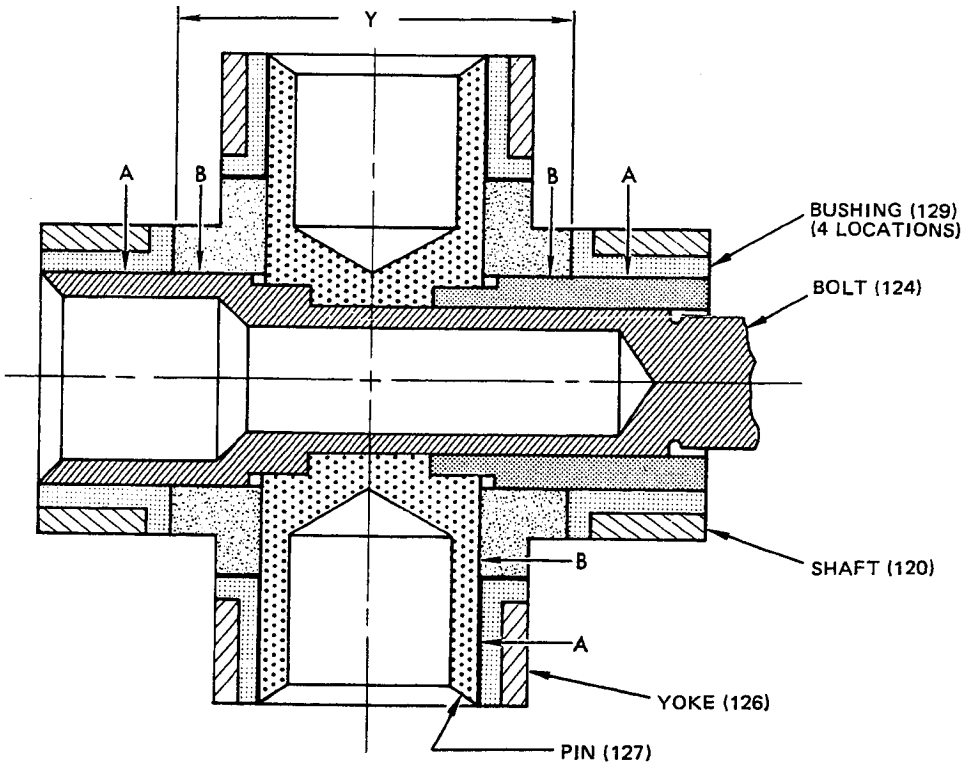
20 Tip radii of pawl (84).

21 Width of thrust race.

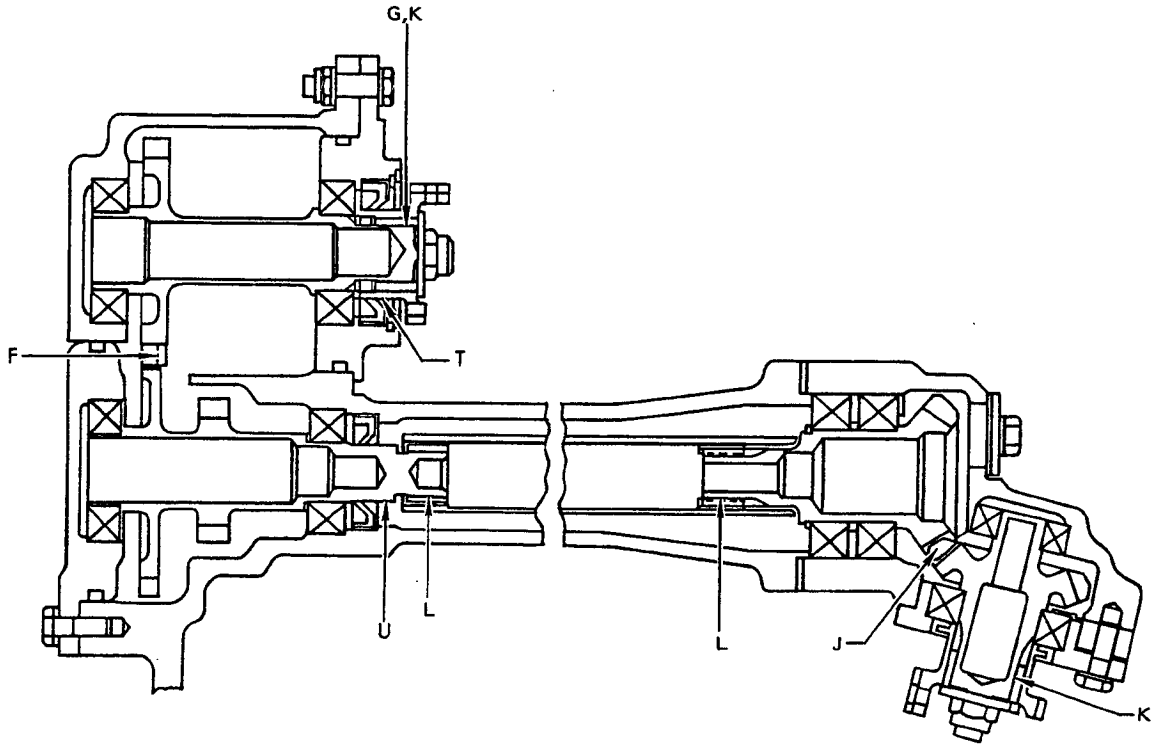
22 Used for universal joint assembly 69-37653-6, -8, -11, -13 only.

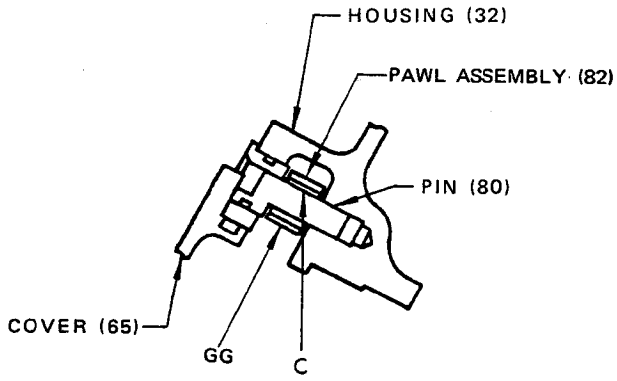
23 Bushing DBAF12-117, 90586.

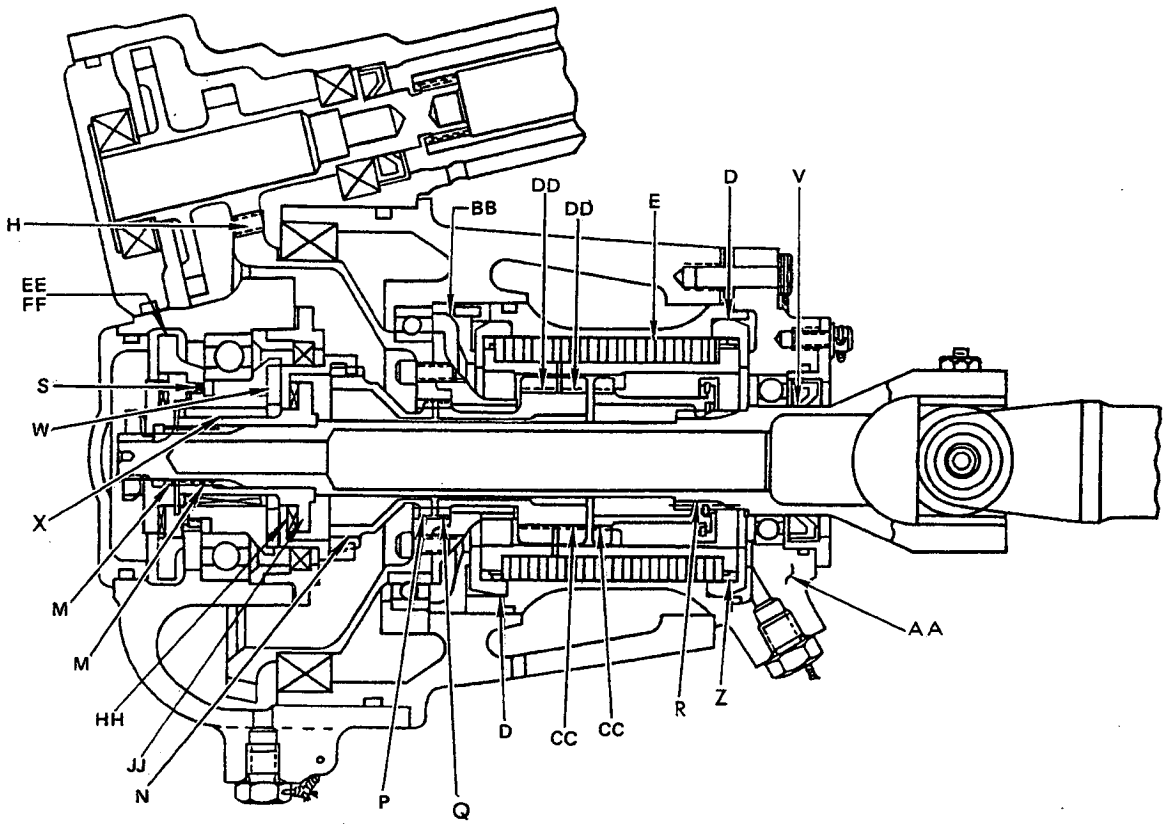
24 Used for universal joint assembly 65-76601-2.



UNIVERSAL JOINT




HOUSING (32)
PAWL ASSEMBLY (82)
PIN (80)
COVER (65)
GG
C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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 Test Fixture (Curtiss Wright Corp. Caldwell Facility, 300 Fairfield Rd., 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 Conditioner (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 MIL-H-5606 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 output and universal shafts free, torque required to rotate the 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 to 14.5-15.5 psi for minimum of 3minutes. 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. With universal (output) shaft locked, apply 45-55 lb-in. of torque to input shaft in clockwise direction. Mark position of input shaft. Apply same torque in counterclockwise direction. Input rotational backlash shall not exceed 20 degrees.

C. Alternately apply a 45-55-pound tension and compression load to universal shaft and check that shaft axial play is 0.004-0.010 inch.\

D. Deleted.

E. Apply 50 pound- compressive load to universal shaft and rotate shaft clockwise. A ratcheting sound shall be audible.

F. Mount transmission in ST6396 test fixture (Fig. 701).

G. Connect torque transducers to X-Y recorder.

H. Connect test fixture calibrated input and output torque transducers to transmission shaft.

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

J. Draw vertical lines on X-Y recorder paper at minimum lockout input torque (105 lb-in.) and at maximum input torques (1970, 2400 lb-in.).

K. Install manual input torque arm.

CAUTION: DO NOT EXCEED INPUT TORQUE OF 2400 LB-IN. OR DAMAGE TO UNIT MAY OCCUR.

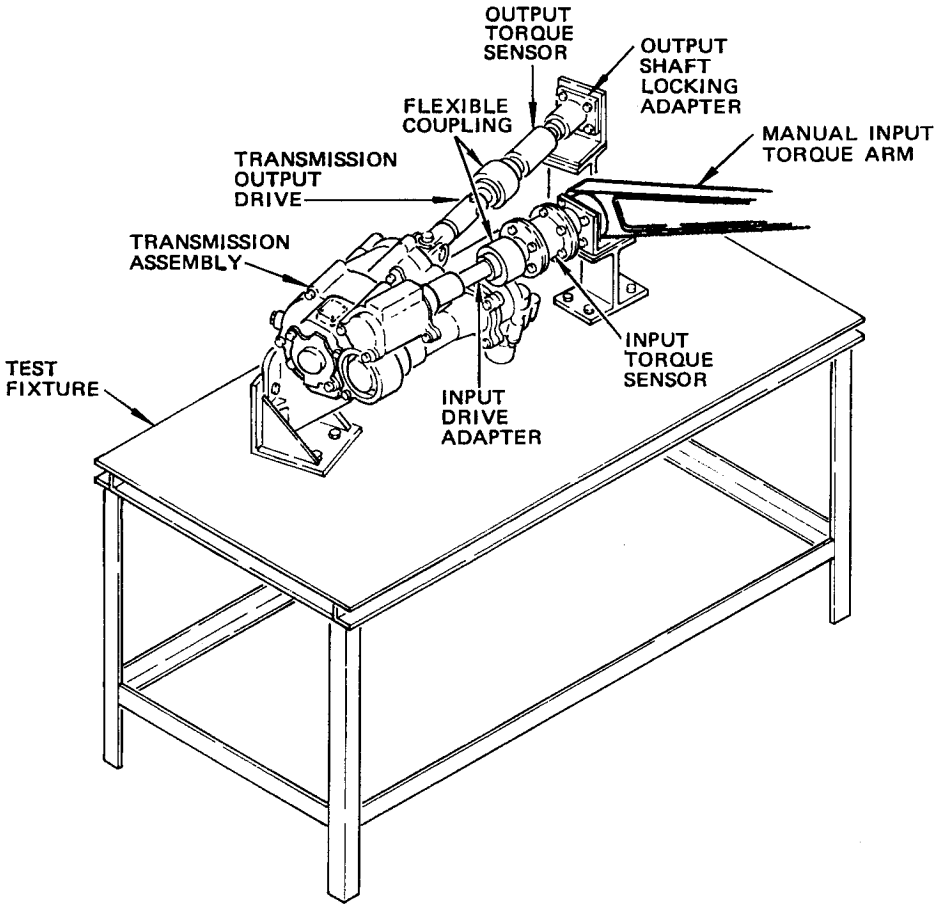
L. Slowly turn the manual input torque arm in the clockwise direction until the input torque is at the maximum limit (Fig. 703).

M. Make sure that the output torque at minimum lockout is not less than 338 lb-in. with a minimum input torque of 105 lb-in.

N. Make sure that the output torque is not more than 394 lb-in. with a maximum input torque of 1890 lb-in.

O. Repeat steps L thru N with counterclockwise input torque.

4. Deleted.



ST6396 Test Fixture
Figure 701

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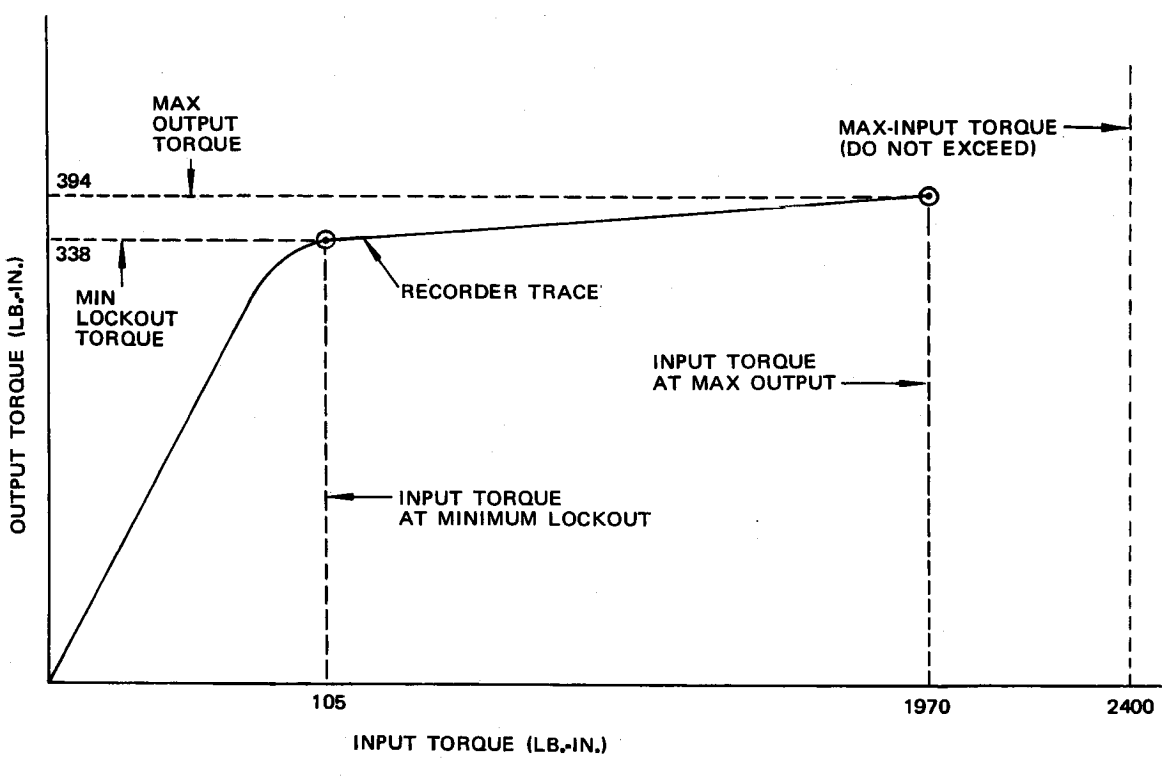
Figure 702



Torque Brake Test
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, par. 3.A.	Defective O-rings or seals	Replace O-rings or seals
B.	Binding or rough movement, par. 2.C.	Improperly installed or defective components	Correct condition
C.	Excessive backlash, par. 3.B.	Inadequate shims or excessively worn components	Replace shims or other component
D.	Lockout occurs outside of minimum or maximum limits, par. 3.M., N.	Defective torque brake assembly	Replace or repair torque brake assembly

STORAGE INSTRUCTIONS

1. Wrap assembly in vapor barrier paper and tape securely.
2. Tag assembly with test date and cure date for rubber products.
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 component test.

1. F71228 -- Splined Coupling Wrench (Boeing)

2. ST6107 -- Spring Pack Assembly Jig (Curtiss Wright Corp. Caldwell Facility, 300 Fairfield Rd., Caldwell, New Jersey 07006)

3. PT49001 -- Torque Bar (Curtiss Wright Corp. Caldwell Facility, 300 Fairfield Rd., Caldwell, New Jersey 07006)

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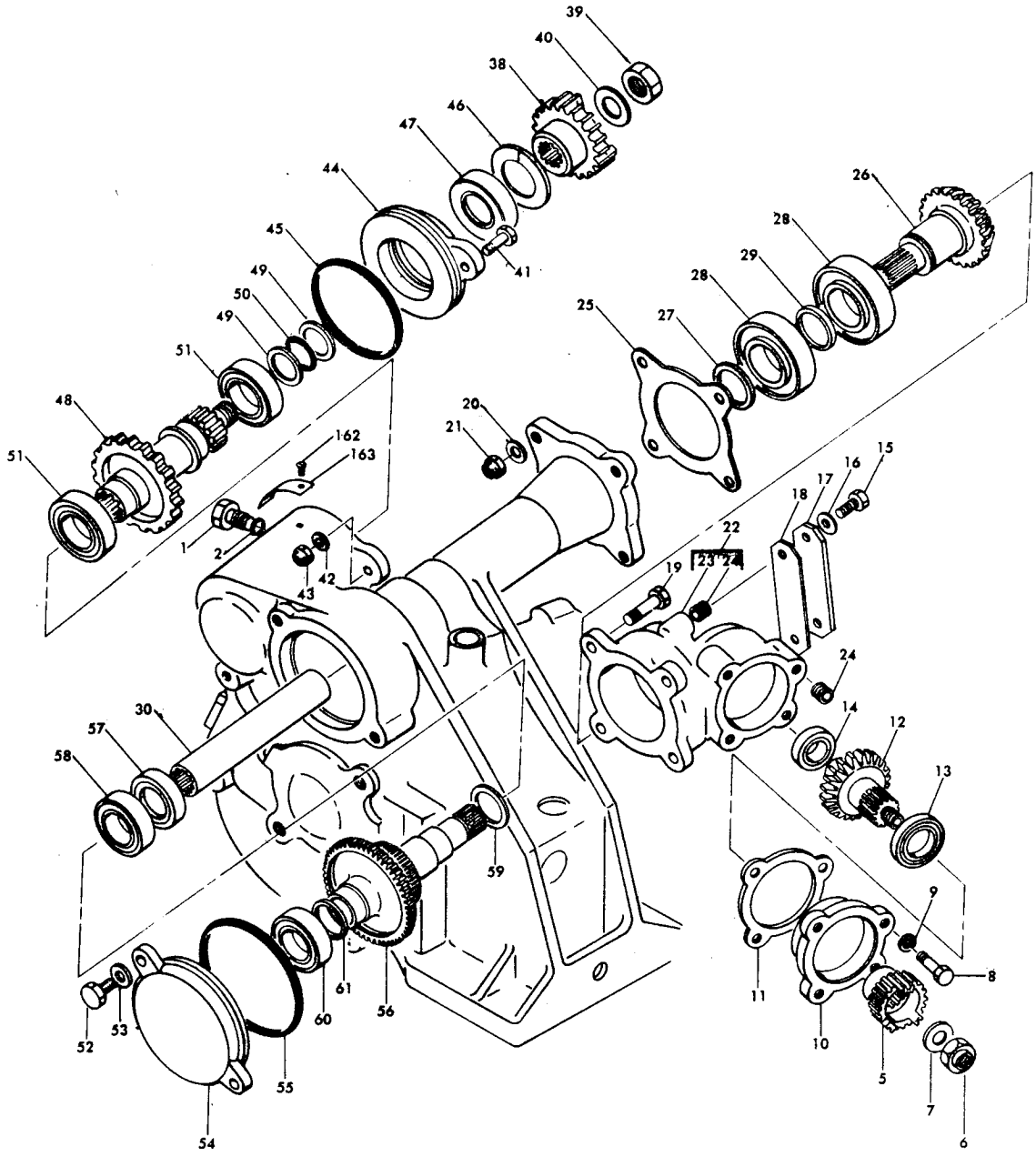
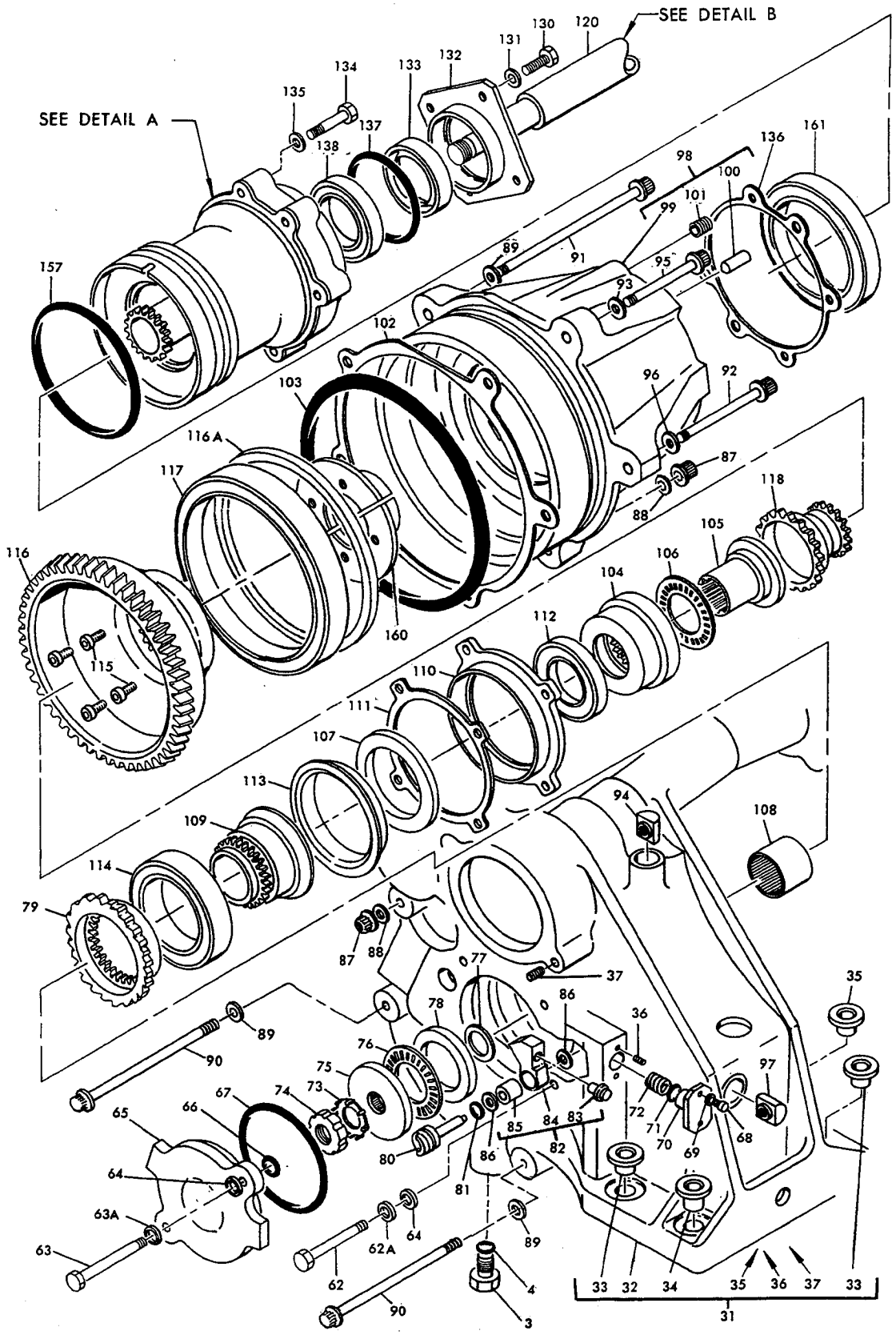
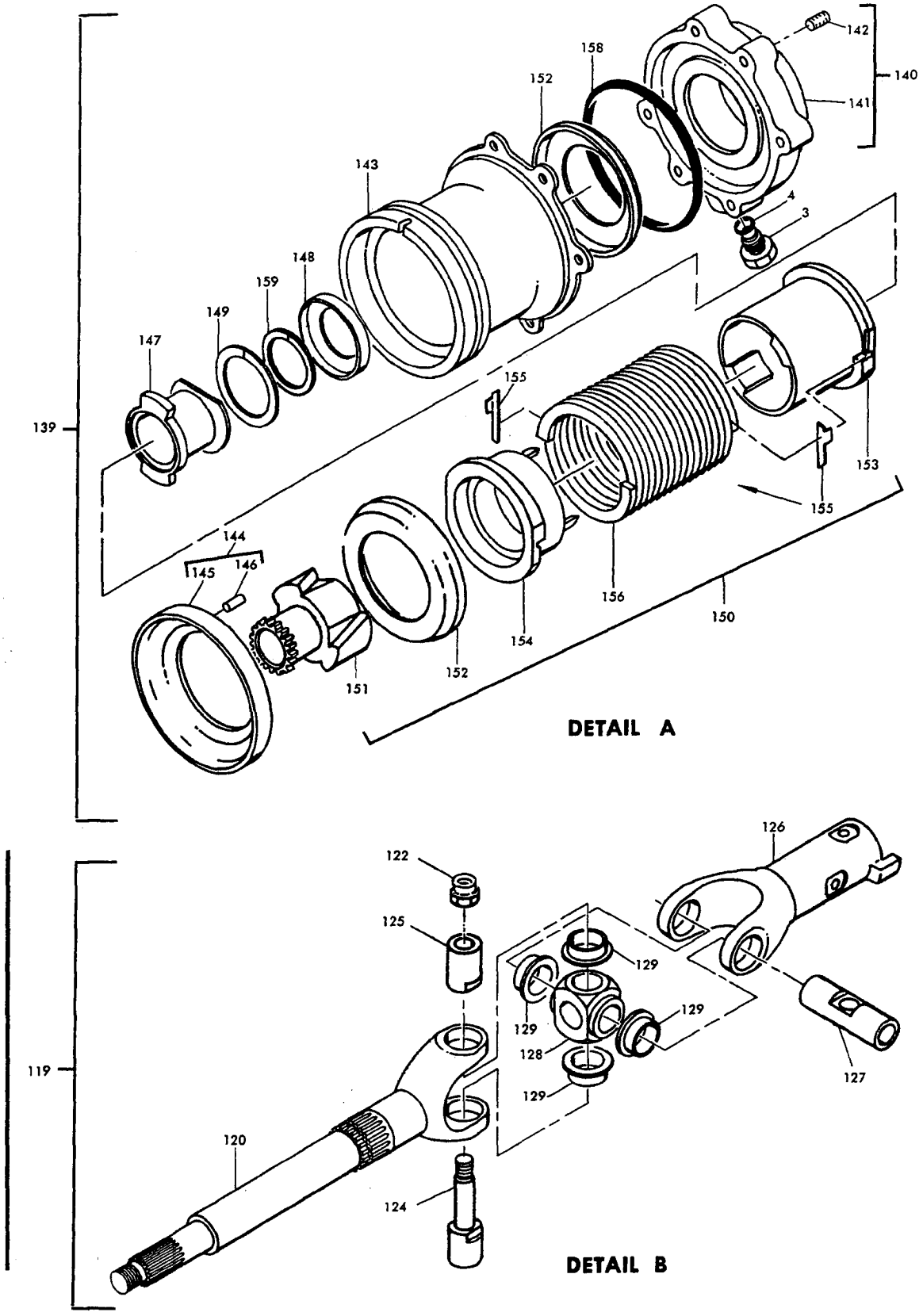
1. Exploded View





Trailing Edge Flap Drive Transmission Assemblies Nos. 4 and 5
Figure 1101 (Sheet 2)



Trailing Edge Flap Drive Transmission Assemblies Nos. 4 and 5
Figure 1101 (Sheet 3)

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101					
	65-50254-2		TE FLAP DRIVE TRANSMISSION ASSY NO. 4	A	
	65-50255-2		TE FLAP DRIVE TRANSMISSION ASSY NO. 5	B	
	65-50254-4		TE FLAP DRIVE TRANSMISSION ASSY NO. 4 (SB 27-1015)	C	
	65-50255-4		TE FLAP DRIVE TRANSMISSION ASSY NO. 5 (SB 27-1015)	D	
	65-50254-5		TE FLAP DRIVE TRANSMISSION ASSY NO. 4	E	
	65-50255-5		TE FLAP DRIVE TRANSMISSION ASSY NO. 5	F	
	65-50254-6		TE FLAP DRIVE TRANSMISSION ASSY NO. 4	G	
	65-50255-6		TE FLAP DRIVE TRANSMISSION ASSY NO. 5	H	
1	AN814-4DL		. PLUG		1
2	MS28778-4		. PACKING, O-RING		1
3	AN814-4DL		. PLUG		2
4	MS28778-4		. PACKING, O-RING		2
5	69-37625-3		. COUPLING		1
6	BACN10JC6		. NUT (REPLS NAS679A6)		1
7	66-24715-1		. WASHER		1
8	BACB30NE4H4		. BOLT (REPLS NAS1304-4H)		4
9	AN960-416		. WASHER		4
10	69-37628-4		. SUPPORT		1
10	69-37628-3		. SUPPORT (OPT)		1
11	66-23942-1		. SHIM		1
12	69-37600-2		. GEAR	A-D	1
12	69-37600-3		. GEAR (OPT TO 69-37600-2)	A-D	1
12	69-37600-4		. GEAR	E-H	1
12	69-37600-3		. GEAR (OPT TO 69-37600-4)	E-H	1
13	BACB10BA25PP		. BEARING (REPLS BACB10A117H)		1
14	BACB10BA15PP		. BEARING (REPLS BACB10A523)		1
15	BACB30NE4H1		. BOLT (REPLS NAS1304-1H)		2
16	AN960-416		. WASHER		2
17	66-24714-1		. PLATE		1
18	66-24713-2		. GASKET		1
19	BACB30NE4-13		. BOLT (REPLS NAS1304-13)		4
20	AN960-416		. WASHER		4
21	BACN10JC4		. NUT (REPLS NAS679A4W)		4
22	66-24731-1		. HOUSING ASSY		1
23	69-37626-1		. . HOUSING		1
24	MS21208F4-15		. . INSERT (REPLS MS124696)		6
25	66-25123-1		. SHIM		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
26	69-37601-3		. GEAR	A-D	1
26	69-37601-2		. GEAR (OPT TO 69-37601-3)	A-D	1
26	69-37601-1		. GEAR (OPT TO 69-37601-2)	A-D	1
26	69-37601-3		. GEAR	E-H	1
27	RS118		. RING, V80756	A-D	1
28	BACB10BA30PP		. BEARING (REPLS BACB10A95)		2
29	66-24711-1		. SPACER		1
30	69-37624-2		. SHAFT	A-D	1
30	69-37624-3		. SHAFT	E-H	1
31	69-37651-3		. HOUSING ASSY	ACEG	1
31	69-37651-4		. HOUSING ASSY	BDFH	1
32	65-50277-13		. . HOUSING	ACEG	1
32	65-50277-14		. . HOUSING	BDFH	1
33	66-24745-1		. . BUSHING		2
34	66-24745-2		. . BUSHING		1
35	66-24745-3		. . BUSHING		1
36	MS21208F1-15		. . INSERT (REPLS MS124695)		4
37	MS21208F4-15		. . INSERT (REPLS MS124696)		2
38	69-37677-2		. COUPLING		1
39	BACN10JC6		. NUT (REPLS NAS679A6)		1
40	66-24715-1		. WASHER		1
41	BACB30NE4-10		. BOLT (REPLS NAS1304-10)		2
42	AN960-416		. WASHER		2
43	BACN10JC4		. NUT (REPLS NAS679A4W)		2
44	69-37621-3		. COVER		1
45	MS28775-232		. PACKING, O-RING		1
46	RR187		. RING, V80756		1
47	69-73393-3		DELETED		
47	67X363		. SEAL, V73680		1
47	21959-0363		. SEAL, V73680 (OPT)		1
48	69-37604-3		. GEAR	A-D	1
48	69-37604-4		. GEAR (OPT TO 69-37604-3)	A-D	1
48	69-37604-5		. GEAR	E-H	1
48	69-37604-4		. GEAR (OPT TO 69-37604-5)	E-H	1
49	66-25129-1		. SPACER		2
50	69-37680-1		. O-RING		1
51	BACB10BA25		. BEARING		2
52	BACB30NE4H4		. BOLT (REPLS NAS1304-4H)		2
53	AN960-416		. WASHER		2
54	69-37627-6		. COVER	BDFH	1
54	69-37627-9		. COVER (OPT TO 69-37627-6)	BDFH	1
54	69-37627-9		. COVER	ACEG	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
55	MS28775-234		. PACKING, O-RING		1
56	65-50283-4		. GEAR	A-D	1
56	65-50283-5		. GEAR (OPT TO 65-50283-4)	A-D	1
56	65-50283-6		. GEAR	E-H	1
56	65-50283-5		. GEAR (OPT TO 65-50283-6)	E-H	1
57	69-73393-1		. SEAL, V73680		1
57	21959-0143		. SEAL, V73680 (OPT)		1
57	67X143		. SEAL, V73680 (OPT)		1
57	69-73393-8		. SEAL, V73680 (OPT)		1
58	BACB10BA20		. BEARING (REPLS BACB10A334)		1
59	66-23940-1		. SHIM		1
60	BACB10BA25		. BEARING		1
61	66-23939-2		. SHIM		1
62	BACB30NE4H36		. BOLT (REPLS NAS1304-36H)		2
62A	AN960-416		. WASHER		2
63	BACB30NE4H42		. BOLT (REPLS NAS1304-42H)		2
63A	AN960-416		. WASHER		2
64	600-001-1/40S		. SEAL, V83259		4
64	7100-1/4		. SEAL, V83259 (OPT)		4
64	BACS11W4		. SEAL (OPT)		4
64	NAS1523-4Y		. SEAL (OPT)		4
65	69-37629-5		. COVER (REPLS 69-37629-3 PER SB 27-1005)	A-D	1
65	69-37629-3		. COVER (OPT TO 69-37629-5)	A-D	1
65	69-37629-5		. COVER	E-H	1
66	MS28775-011		. PACKING, O-RING		2
67	MS28775-233		. PACKING, O-RING		1
68	NAS1351-3H8P		. SCREW		4
69	AN960-10		. WASHER		4
70	66-25107-1		. RETAINER		2
71	MS28775-012		. PACKING, O-RING		2
72	66-23937-1		. SPRING		2
73	MS172272		. WASHER		1
74	MS172322		. NUT		1
75	69-37649-1		. PLATE		1
76	NTA2031		. BEARING, V60380		1
76	TC2031		. BEARING, V21335 (OPT)		1
77	66-24737-1		. SHIM		1
78	66-24732-1		. PLATE		1
79	69-37632-2		. RATCHET		1
80	66-23906-2		. PIN		2
81	MS28775-014		. PACKING, O-RING		2
82	66-24736-2		. PAWL ASSY		2
83	66-23908-1		. . GUIDE		1
84	66-23901-2		. . PAWL		1
85	66-25126-1		. . BEARING		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
86	66-23929-2		. WASHER		4
87	BACN10HR5		. NUT		3
88	BACW10BN5P		. WASHER (REPLS BACW10AKP5)		3
89	BACW10BN5C		. WASHER (REPLS BACW10AKC5)		3
90	BACB30MT5T64		. BOLT (REPLS BACB30CW5-64)		2
91	BACB30MT5T64		. BOLT (REPLS BACB30CW5-64)	ACEG	1
91	BACB30MT5T68		. BOLT (REPLS BACB30CW5-68)	BDFH	1
92	BACB30MT5T36		. BOLT (REPLS BACB30CW5-36)		1
93	BACW10BN6C		. WASHER (REPLS BACW10AKC6)		1
94	NAS577-6A		. NUT (REPLS NAS577-6)		1
95	BACB30MT6T26		. BOLT (REPLS BACB30CW6-26)		1
96	BACW10BN5C		. WASHER (REPLS BACW10AKC5)		1
97	NAS577-5A		. NUT (REPLS NAS577-5)		1
98	69-37674-1		. SUPPORT ASSY	AC	1
98	69-37674-2		. SUPPORT ASSY	BD	1
98	69-37674-3		. SUPPORT ASSY	EG	1
98	69-37674-4		. SUPPORT ASSY	FH	1
99	65-50296-3		. . SUPPORT	AC	1
99	65-50296-4		. . SUPPORT	BD	1
99	65-50296-5		. . SUPPORT	EG	1
99	65-50296-6		. . SUPPORT	FH	1
100	NAS607-5-6P		. . PIN		2
101	MS21208F4-15		. . INSERT (REPLS MS124696)		4
102	66-25122-2		. SHIM		1
103	2-258N304-7		. O-RING, V83259		1
104	69-37648-3		. ADAPTER		1
105	69-37667-1		. PLATE		1
105	69-52455-1		. PLATE (REPLS 69-37667-1)		1
106	NTA2031		. BEARING, V60380		1
106	TC2031		. BEARING, V21335 (OPT)		1
107	66-23936-1		. WASHER		1
108	J1616		. BEARING, V60380		1
108	SCE1616		. BEARING, V21335 (OPT)		1
109	69-37635-1		. SUPPORT		1
110	69-37618-2		. ADAPTER		1
111	66-25120-1		. SHIM		1
112	TCNR37-46S		. BEARING, V40920		1
112	TCNR37-46P		. BEARING, V40920 (OPT TO TCNR37-46S)		1
112	TCNR37-46U		. BEARING, V40920 (OPT TO TCNR37-46S)		1
112	C3746BM3P515L 02		. BEARING (OPT TO TCNR37-46S) (PREF)		1
113	69-37682-1		. RETAINER		1
114	BACB10BA50		. BEARING (REPLS BACB10A474)		1
115	NAS1351-3H8P		. SCREW		4

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101					
116	65-50297-2		. GEAR	A-D	1
116	65-50270-1		. GEAR	E-H	1
116A	69-52465-1		. SPACER (USED WITH KD50CP)	A-D	1
117	KD50CP		. BEARING, V32828 (USED WITH 69-52465-1)	A-D	1
117	KD50CP		. BEARING, V32828	E-H	1
117	B944101		. BEARING, V32828 (OPT TO KD50CP AND 69-52465-1)	A-D	1
118	69-37687-2		. COUPLING		1
119	65-76601-2		. UNIVERSAL JOINT ASSY	GH	1
119	65-76601-2		. UNIVERSAL JOINT ASSY	A-F	1
119	69-37653-11		. UNIVERSAL JOINT ASSY (OPT)	A-F	1
119	69-37653-13		. UNIVERSAL JOINT ASSY (OPT)	A-D	1
119	69-37653-8		. UNIVERSAL JOINT ASSY (OPT)	AB	1
119	69-37653-6		. UNIVERSAL JOINT ASSY (OPT)	AB	1
120	65-50285-5		. . SHAFT (USED ON 69-37653-8,-13)		1
120	65-50285-8		. . SHAFT (USED ON 69-37653-6,-11; 65-76601-2)		1
120	65-50285-7		. . SHAFT (USED ON 69-37653-6,-11; 65-76601-2)(OPT)		1
121	69-37653-9		DELETED		
122	BACN10JC7C		. . NUT (REPLS NAS1022C7)(USED ON 69-37653-6,-8)		1
122	BACN10JC7		. . NUT (USED ON 69-37653-11,-13; 65-76601-2)		1
123	BAC27DCT48		DELETED		
124	66-25119-1		. . BOLT (USED ON 69-37653-6,-8)		1
124	66-25119-2		. . BOLT (USED ON 69-37653-11,-13)		1
124	65-76605-1		. . BOLT (USED ON 65-76601-2)		1
125	66-25117-1		. . SPACER (USED ON 69-37653-6,-8, -11,-13)		1
125	69-60051-2		. . SPACER (USED ON 65-76601-2)		1
125	69-60051-1		. . SPACER (USED ON 65-76601-2)(OPT)		1
126	65-50286-5		. . YOKE (USED ON 69-37653-8,-13)		1
126	65-50286-9		. . YOKE (USED ON 69-37653-6,-11; 65-76601-2)		1
126	65-50286-7		. . YOKE (USED ON 69-37653-6,-11; 65-76601-2)(OPT)		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
127	66-25118-1		. . PIN, CROSS (USED ON 69-37653-6, -8,-11,-13)		1
127	69-60055-2		. . PIN, CROSS (USED ON 65-76601-2)		1
127	69-60055-1		. . PIN, CROSS (USED ON 65-76601-2) (OPT)		1
128	66-25116-1		. . CROSS, TRUNNION (USED ON 69-37653-6,-8,-11,-13)		1
128	65-76639-1		. . CROSS, TRUNNION (USED ON 65-76601-2)		1
129	AFDU12-3-17		. . BUSHING, V15862, (BOEING 10-61899-17) *[1]		4
129	AJF12A123DU		. . BUSHING, V50294 (BOEING 10-61899-17) *[1]		4
129	DBAF12-117		. . BUSHING, V81376 (BOEING 10-60516-251)(OPT)		4
129	90586		. . BUSHING, V09455 (BOEING 10-60516-251)(OPT)		4
130	NAS1351-3H8P		. SCREW		4
131	AN960-10		. WASHER		4
132	66-25113-2		. RETAINER		1
133	69-73393-4		. SEAL, V73680		1
133	67X535		. SEAL, V73680 (OPT)		1
133	21959-0535		. SEAL, V73680 (OPT)		1
133	69-73393-11		. SEAL, V73680 (OPT)		1
134	BACB30NE4H11		. BOLT (REPLS NAS1304-11H)		4
135	AN960-416		. WASHER		4
136	66-25121-3		. SHIM		1
136	66-25121-2		. SHIM (OPT TO 66-25121-3)		1
137	MS28775-140		. PACKING, O-RING		1
138	BACB10BB35		. BEARING (REPLS BACB10A347)		1
139	175899-1		. TORQUE BRAKE ASSY, V71791	ACEG	1
139	175899-2		. TORQUE BRAKE ASSY, V71791	BDFH	1
140	175895		. . SUPPORT ASSY, V71791	ACEG	1
140	175849		. . SUPPORT ASSY, V71791	BDFH	1
141	175853		. . . SUPPORT, V71791	ACEG	1
141	175848		. . . SUPPORT, V71791	BDFH	1
142	MS21208F1-15		. . . INSERT (REPLS MS124695)		4
143	175854		. . HOUSING, V71791	ACEG	1
143	175859		. . HOUSING, V71791	BDFH	1
144	175847		. . SUPPORT ASSY, V71791		1
145	175855		. . . SUPPORT, V71791		1
146	NAS607-2-3P		. . . PIN		1
147	175857		. . ADAPTER, V71791		1
148	175842		. . RETAINER, V71791		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101					
149	145498-187		. . RING, V71791		1
150	175868		. . SPRING PACK ASSY, V71791		1
151	175845		. . . COUPLING, V71791		1
152	175852		. . . RING, V71791		2
153	175851		. . . SLEEVE, V71791		1
154	175850		. . . SLEEVE, V71791		1
155	176278		. . . SHIM, V71791		AR
156	175867		. . . SPRING SET, V71791		1
157	MS28775-239		. PACKING, O-RING		1
158	2-043-N304-7		. O-RING, V83259		1
159	RSN125		. RING		1
160	66-25110-2		. RETAINER		2
161	KP47BTC337		. BEARING, V21335		1
161	K47BK		. BEARING, V21335 (OPT TO KP47BTC337)	BDFH	1
161	KP47B		. BEARING, V21335 (OPT TO KP47BTC337)	ACEG	
162	NAS601-4P		. SCREW (REPLS AN515-6R4)		2
163	66-25101-1		. NAMEPLATE		1

*[1] REPLS DBAF12-117, 90586.

VENDORS

V09455	RBC TRANSPORT DYNAMICS CORP., P.O. BOX 1953, 3131 W. SEGERSTROM AVE., SANTA ANA, CALIFORNIA 92704
V21335	TIMKEN US CORP., FAFNIR DIV., 336 MECHANIC ST., LEBANON, NEW HAMPSHIRE 03766-0267
V32828	KAYDON CORP., 2860 MCCRACKEN ST., MUSKEGON, MICHIGAN 49441
V40920	TIMKEN SUPER PRECISION, SUPER PRECISION DIV., 7 OPTICAL AVE., PRECISION PARK KEENE, NEW HAMPSHIRE 03431
V60380	TIMKEN US CORP., 336 MECHANIC ST., LEBANON, NEW HAMPSHIRE 03766-0267
V71791	CURTISS-WRIGHT FLIGHT SYSTEMS, INC., 19 CHAPIN RD., BUILDING C, PINEBROOK, NEW JERSEY 07058-9777
V73680	GARLOCK, INC., OH CORP., 1666 DIV. ST., PALMYRA, NEW YORK 14522-9383
V80756	KAYDON CORP., SPIROLOX DIV., 29 CASSENS COURT, FENTON, MISSOURI 63026-2542
V81376	SMITH ACQUISITION CO., 2240 BUENA VISTA, IRWINDALE, CALIFORNIA 91010-3318
V83259	PARKER-HANNIFIN CORP., COMPOSITE SEALING SYSTEMS DIV., 7664 PANASONIC WAY, SAN DIEGO, CALIFORNIA 92154-8206

Part No.	Fig. And Index No.	Qty. per Assy.
AFDU12-3-17	1101-129	4
AJF12A123DU	129	4
AN814-4DL	1	1
AN814-4DL	3	2
AN960-10	131	4
AN960-10	69	4
AN960-416	135	4
AN960-416	16	2
AN960-416	20	4
AN960-416	42	2
AN960-416	53	2
AN960-416	62A	2
AN960-416	63A	2
AN960-416	9	4
B944101	117	1
BAC27DCT48	123	
BACB10BA15PP	14	1
BACB10BA20	58	1
BACB10BA25	51	2
BACB10BA25	60	1
BACB10BA25PP	13	1
BACB10BA30PP	28	2
BACB10BA50	114	1
BACB10BB35	138	1
BACB30MT5T36	92	1
BACB30MT5T64	90	2
BACB30MT5T64	91	1
BACB30MT5T68	91	1
BACB30MT6T26	95	1
BACB30NE4-10	41	2
BACB30NE4-13	19	4
BACB30NE4H1	15	2
BACB30NE4H11	134	4
BACB30NE4H36	62	2
BACB30NE4H4	52	2
BACB30NE4H4	8	4
BACB30NE4H42	63	2
BACN10HR5	87	3
BACN10JC4	21	4
BACN10JC4	43	2
BACN10JC6	39	1
BACN10JC6	6	1
BACN10JC7	122	1
BACN10JC7C	122	1
BACS11W4	64	4
BACW10BN5C	89	3
BACW10BN5C	96	1
BACW10BN5P	88	3

Part No.	Fig. And Index No.	Qty. per Assy.
BACW10BN6C	93	1
C3746BM3P515L02	112	1
DBAF12-117	129	4
J1616	108	1
K47BK	161	1
KD50CP	117	1
KD50CP	117	1
KP47B	161	1
KP47BTC337	161	1
MS172272	73	1
MS172322	74	1
MS21208F1-15	142	4
MS21208F1-15	36	4
MS21208F4-15	101	4
MS21208F4-15	24	6
MS21208F4-15	37	2
MS28775-011	66	2
MS28775-012	71	2
MS28775-014	81	2
MS28775-140	137	1
MS28775-232	45	1
MS28775-233	67	1
MS28775-234	55	1
MS28775-239	157	1
MS28778-4	2	1
MS28778-4	4	2
NAS1351-3H8P	115	4
NAS1351-3H8P	130	4
NAS1351-3H8P	68	4
NAS1523-4Y	64	4
NAS577-5A	97	1
NAS577-6A	94	1
NAS601-4P	162	2
NAS607-2-3P	146	1
NAS607-5-6P	100	2
NTA2031	106	1
NTA2031	76	1
RR187	46	1
RS118	27	1
RSN125	159	1
SCE1616	108	1
TC2031	106	1
TC2031	76	1
TCNR37-46P	112	1
TCNR37-46S	112	1
TCNR37-46U	112	1
145498-187	149	1

Part No.	Fig. and Index No.	Qty. per Assy.
175842	1101-148	1
175845	151	1
175847	144	1
175848	141	1
175849	140	1
175850	154	1
175851	153	1
175852	152	2
175853	141	1
175854	143	1
175855	145	1
175857	147	1
175859	143	1
175867	156	1
175868	150	1
175895	140	1
175899-1	139	1
175899-2	139	1
176278	155	AR
2-043-N304-7	158	1
2-258N304-7	103	1
21959-0143	57	1
21959-0363	47	1
21959-0535	133	1
600-001-1/40S	64	4
65-50254-4		
65-50254-5		
65-50254-6		
65-50255-1		
65-50255-2		
65-50255-4		
65-50255-5		
65-50255-6		
65-50270-1	116	1
65-50277-13	32	1
65-50277-14	32	1
65-50283-4	56	1
65-50283-5	56	1
65-50283-5	56	1
65-50283-6	56	1
65-50285-5	120	1
65-50285-7	120	1
65-50285-8	120	1
65-50286-5	126	1
65-50286-7	126	1
65-50286-9	126	1
65-50296-3	99	1
65-50296-4	99	1

Part No.	Fig. and Index No.	Qty. per Assy.
65-50296-5	99	1
65-50296-6	99	1
65-50297-2	116	1
65-76601-2	119	1
65-76601-2	119	1
65-76605-1	124	1
65-76639-1	128	1
66-23901-2	84	1
66-23906-2	80	2
66-23908-1	83	1
66-23929-2	86	4
66-23936-1	107	1
66-23937-1	72	2
66-23939-2	61	1
66-23940-1	59	1
66-23942-1	11	1
66-24711-1	29	1
66-24713-2	18	1
66-24714-1	17	1
66-24715-1	40	1
66-24715-1	7	1
66-24731-1	22	1
66-24732-1	78	1
66-24736-2	82	2
66-24737-1	77	1
66-24745-1	33	2
66-24745-2	34	1
66-24745-3	35	1
66-25101-1	163	1
66-25107-1	70	2
66-25110-2	160	2
66-25113-2	132	1
66-25116-1	128	1
66-25117-1	125	1
66-25118-1	127	1
66-25119-1	124	1
66-25119-2	124	1
66-25120-1	111	1
66-25121-2	136	1
66-25121-3	136	1
66-25122-2	102	1
66-25123-1	25	1
66-25126-1	85	1
66-25129-1	49	2
67X143	57	1
67X363	47	1
67X535	133	1

Part No.	Fig. and Index No.	Qty. per Assy.
69-37600-2	1101-12	1
69-37600-3	12	1
69-37600-3	12	1
69-37600-4	12	1
69-37601-1	26	1
69-37601-2	26	1
69-37601-3	26	1
69-37601-3	26	1
69-37604-3	48	1
69-37604-4	48	1
69-37604-4	48	1
69-37604-5	48	1
69-37618-2	110	1
69-37621-3	44	1
69-37624-2	30	1
69-37624-3	30	1
69-37625-3	5	1
69-37626-1	23	1
69-37627-6	54	1
69-37627-9	54	1
69-37627-9	54	1
69-37628-3	10	1
69-37628-4	10	1
69-37629-3	65	1
69-37629-5	65	1
69-37629-5	65	1
69-37632-2	79	1
69-37635-1	109	1
69-37648-3	104	1
69-37649-1	75	1
69-37651-3	31	1
69-37651-4	31	1
69-37653-11	119	1
69-37653-13	119	1
69-37653-6	119	1
69-37653-8	119	1
69-37653-9	121	
69-37667-1	105	1
69-37674-1	98	1
69-37674-2	98	1
69-37674-3	98	1
69-37674-4	98	1
69-37677-2	38	1
69-37680-1	50	1
69-37682-1	113	1
69-37687-2	118	1
69-52455-1	105	1

Part No.	Fig. and Index No.	Qty. per Assy.
69-52465-1	116A	1
69-60051-1	125	1
69-60051-2	125	1
69-60055-1	127	1
69-60055-2	127	1
69-73393-1	57	1
69-73393-11	133	1
69-73393-3	47	
69-73393-4	133	1
69-73393-8	57	1
7100-1/4	64	4
90586	129	4