TO: ALL HOLDERS OF AILERON CONTROL FORCE TRANSDUCER DRUM ASSEMBLY COMPONENT MAINTENANCE MANUAL 27-11-07

REVISION NO. 8 DATED MAR 01/00

HIGHLIGHTS

Pages which have been added or revised are outlined below together with the highlights of the revision. Remove and insert the affected pages as listed and enter Revision No. and date on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
TITLE PAGE	Added new drum assembly P/N 253T1141-10 and -12 with
1	new shaft assembly P/N 253T1141-12 per PRRB13204.
TR & SB RECORD	
1	
301	
REPAIR 6-1	
601	
REPAIR 8-1	
601	
REPAIR 11-1	
601	
701-702,704	
801-803	
1005-1010,1015-1024	

AILERON CONTROL FORCE TRANSDUCER
DRUM ASSEMBLY

PART NUMBERS 253T1141-1,-3,-4,-6,-7,-8,-10,-12
015T0253-6,-9

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

59655

REVISION RECORD

- Retain this record in front of manual. On receipt of revision, insert revised pages in the manual, and enter revision number, date inserted and initial.

REVISION NUMBER	REVISION DATE	DATE FILED	BY	REVISION NUMBER	REVISION DATE	DATE FILED	BY

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL
SB 27A62		PRR B11476 PRR B11720 PRR B13204	APR 10/86 JAN 01/88 JUL 01/89 MAR 01/00

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1	JUL 10/83	01
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TR & SB RECORD		
*1	MAR 01/00	01.1
2	BLANK	
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*801	MAR 01/00	01.1
*802	MAR 01/00	01.1
*803	MAR 01/00	01.1
804	BLANK	
ILLUSTRATED PARTS LIST		
1001	JUL 10/83	01
1002	JUL 01/89	01.1
1003	JUL 01/89	01.1
1004	JUL 01/89	01.1
*1005	MAR 01/00	01.1
*1006	MAR 01/00	01.1
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*1023	MAR 01/00	01.1
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1030	JUL 01/89	01.1
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1034	BLANK	

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TABLE OF CONTENTS

INTRODUCTION

The instructions in this manual provide the information necessary to perform maintenance functions ranging from simple checks and replacement to complete shop-type repair.

This manual is divided into separate sections:

1. Title Page
2. Record of Revisions &
3. Temporary Revision & Service Bulletin Record
4. List of Effective Pages
5. Table of Contents
6. Introduction
7. Procedures & IPL Sections

Refer to the Table of Contents for the page location of applicable sections. An asterisked flagnote *[ ] in place of the page number indicates that no special instructions are provided since the function can be performed using standard industry practices.

The beginning of the REPAIR section includes a list of the separate repairs, a list of applicable standard Boeing practices, and an explanation of the True Position Dimensioning symbols used.

An explanation of the use of the Illustrated Parts List is provided in the Introduction to that section.

Design changes, optional parts, configuration differences and Service Bulletin modifications create alternate part numbers. These are identified in the Illustrated Parts List (IPL) by adding an alphabetical character to the basic item number. The resulting item number is called an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless otherwise indicated.

Verification:

Disassembly
Assembly

AILERON CONTROL FORCE TRANSDUCER DRUM ASSEMBLY

DESCRIPTION AND OPERATION

1. The force transducer drum assembly, which is located aft of the base on the captain's control column, consists of two drum assemblies and a force transducer mounted on a shaft assembly. The shaft assembly consists of an inner shaft, outer shaft, and a bus crank.

2. The force transducer assembly transfers cable input from the control wheel to the load limiter drum assembly and to other aileron control units. The force transducer provides input signals to the autopilot system.

3. Leading Particulars (Approximate)

   Diameter -- 13 inches
   Height -- 11 inches
   Weight -- 9 pounds

DISASSEMBLY

1. Parts Replacement

   NOTE: The following parts are recommended for replacement. Unless otherwise specified, actual replacement of parts may be based on in-service experience.

   A. Collar (150, 200, IPL Fig. 1; 45, 70, 85, 105, IPL Fig. 2)

   B. Pin (130, IPL Fig. 1; 55, IPL Fig. 2)

2. Disassembly (IPL Fig. 1)

   A. Remove screw (5), washer (10), nut (15A), and clamp (25) from bus crank (205).

      NOTE: Do not remove plug (20A) from clamp (25) or clamp (25) from wires of force transducer (50) unless necessary for repair or replacement.

   B. Remove screws (30), washers (35), nuts (40), bushings (45), and force transducer (50) from drum assembly (100) and bus crank (205).

   C. Remove nuts (65), washers (70), housing assembly (75), and housing (90).

      NOTE: Do not remove bearing (80) from housing assembly (75) unless necessary for repair or replacement

   D. Remove nut (95), drum assembly (100), spacer (115) and bearing (120) from shaft assembly (190).

      NOTE: Do not remove bearing (105) from drum assembly (100) unless necessary for repair or replacement.

   E. Remove nut (125) and bearing (135) from adapter collar assembly (155). Remove pin (130) from adapter collar (170).

   F. Remove bolts (146), collars (150), and spool connector (185) from shaft assembly (190).

   G. Remove bolts (140, 145), collar (150), drum (175), crank (180), and adapter collar assembly (155) from spool connector (185).

   H. Remove bolt (195), washer (197) if installed, and collar (200).

I. Freeze bonded area between bus crank (205) and outer shaft (225).

J. Tap loose outer shaft (225) from bus crank (205).

K. Remove inner shaft assembly (210) from outer shaft (225).

3. Disassembly (IPL Fig. 2)

A. Remove items (5 thru 30).

NOTE: Do not remove the bearing (20) from the housing (25) unless necessary for repair or replacement.

B. Remove nut (50) and bearing (60) from the adapter collar assembly (75). Remove pin (55) from adapter collar (87).

C. Remove bolts (65 and 80) and collars (70 and 85). Remove drum (90).

D. Remove bolt (100) and collar (105).

E. Freeze bonded area between bus crank (125) and inner shaft assembly (110).

F. Tap loose the inner shaft assembly (110) from the bus crank (125).

G. Remove the bolts (40) and collars (45). Remove bus crank (125) from the drive drum (35).

CLEANING

1. Clean all parts except bearings using standard industry practices (Ref 20-30-03).

2. Clean all teflon-sealed bearings (80, 105, 120, 135, IPL Fig. 1; 20, 60, IPL Fig. 2) per manufacturer's instructions.

CHECK

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

2. Magnetic particle check per 20-20-01 -- Connector spool (185, IPL Fig. 1), spacer (115, IPL Fig. 1), adapter collar (170, IPL Fig. 1; 87, IPL Fig. 2), and shafts (220, 225, IPL Fig. 1; 120, IPL Fig. 2).

3. Penetrant check per 20-20-02 -- Housing (85, 90, IPL Fig. 1; 25, 30, IPL Fig. 2), drum (110, 175, IPL Fig. 1; 35, 90, IPL Fig. 2), bus crank (205, IPL Fig. 1; 125, IPL Fig. 2), and crank (180, IPL Fig. 1).

REPAIR - GENERAL

1. Contents

A. Repair, refinish and replacement procedures are included in separate repair sections as follows:

P/N	NAME	REPAIR
253T1138	COLLAR, ADAPTER	1-1
253T1117	SPOOL, CONNECTOR	2-1
253T1118	DRUM	3-1
253T1120	DRUM	4-1
253T1121	HOUSING	5-1
253T1123	SHAFT, OUTER	6-1
253T1139	SHAFT, INNER	7-1
253T1153	SHAFT, INNER	8-1
253T1155	BUS CRANK	9-1
253T1152	DRUM	10-1
- -	MISC PARTS REFINISH	11-1

2. Standard Practices

A. Refer to the following standard practices as applicable, for details of procedure in individual repairs.

20-30-02 Stripping of Protective Finishes
20-30-03 General Cleaning Procedures
20-41-01 Decoding Table for Boeing Finish Codes
20-42-05 Bright Cadmium Plating
20-43-01 Chromic acid Anodizing
20-50-03 Bearing Installation and Retention
20-50-12 Application of Adhesives

3. Materials

NOTE: Equivalent substitutes may be used.

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

4. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in applicable repair procedures are shown in Fig. 601.

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
⌯	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
∅	DIAMETER
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE FROM WHICH PERMISSIBLE VARIATIONS ARE ESTABLISHED BY TOLERANCES ON OTHER DIMENSIONS OR NOTES.
[-A-]	DATUM
Ⓜ	MAXIMUM MATERIAL CONDITION (MMC)
Ⓢ	REGARDLESS OF FEATURE SIZE (RFS)
Ⓟ	PROJECTED TOLERANCE ZONE

EXAMPLES

— 0.002	STRAIGHT WITHIN 0.002
⊥ B 0.002	PERPENDICULAR TO B WITHIN 0.002
// A 0.002	PARALLEL TO A WITHIN 0.002
○ 0.002	ROUND WITHIN 0.002
⌭ 0.010	CYLINDRICAL SURFACE MUST LIE BETWEEN TWO CONCENTRIC CYLINDERS, ONE OF WHICH HAS A RADIUS 0.010 INCH GREATER THAN THE OTHER
⌒ A 0.006	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART IN RELATION TO DATUM PLANE A
⌓ A 0.020	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.02 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
◎ C ∅ 0.0005	CONCENTRIC TO C WITHIN 0.0005 DIAMETER (FULL INDICATOR MOVEMENT)
⌯ A 0.010	SYMMETRICAL WITH A WITHIN 0.010
∠ A 0.005	ANGULAR TOLERANCE 0.005 WITH A
⌖ B ∅ 0.002 Ⓢ	LOCATED AT TRUE POSITION WITHIN 0.002 DIA IN RELATION TO DATUM B, REGARDLESS OF FEATURE SIZE
⊥ A ∅ 0.010 Ⓜ 0.510 Ⓟ	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010-INCH DIAMETER, PERPENDICULAR TO, AND EXTENDING 0.510-INCH ABOVE, DATUM A, MAXIMUM MATERIAL CONDITION
[2.000] OR 2.000 BSC	EXACT DIMENSION IS 2.000

True Position Dimensioning Symbols
Figure 601

59659

ADAPTER COLLAR - REPAIR 1-1

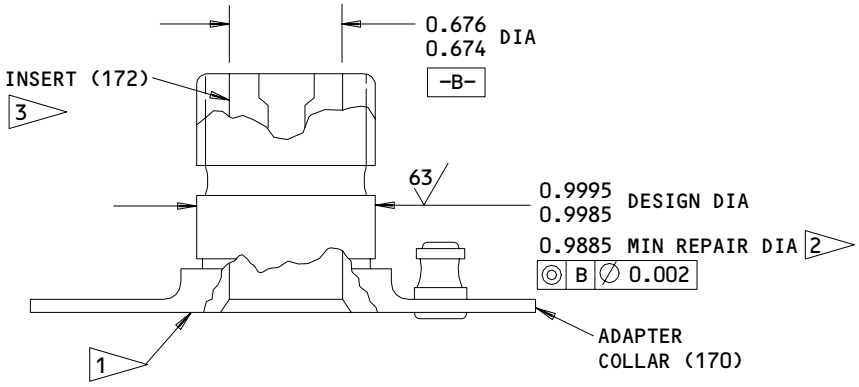
253T1138-1

NOTE: Refer to REPAIR-GEN for list of aplicable standard practices. For repair of surfaces which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Repair (Fig. 601)

   A. Machine bearing seat as required, within repair limit shown, to remove defects.

   B. Chrome plate buildup repaired surface and grind to dimension and finish shown.



REFINISH

ADAPTER COLLAR (170) -- PASSIVATE (F-17.09) ALL OVER. CADMIUM PLATE AND APPLY ONE COAT OF PRIMER BMS 10-11, TYPE 1 (F-16.01) TO AREA INDICATED BY 1

2 BUILD UP WITH CHROME PLATE AND GRIND TO DIMENSION AND FINISH SHOWN. CHROME PLATE RUN OUT 0.00-0.08. STOP CHROME PLATE 0.00-0.02 FROM FILLET RADIUS OR EDGE

3 INSERT (172) AND PIN (174) USED ON LIMITED ASSEMBLIES

REPAIR

REF 2

MATERIAL: 15-5PH CRES
180-200 KSI

ALL DIMENSIONS ARE IN INCHES

PIN (174) NOT SHOWN FOR CLARITY

ITEM NUMBERS REFER TO IPL FIG. 2

Adapter Collar Repair
Figure 601

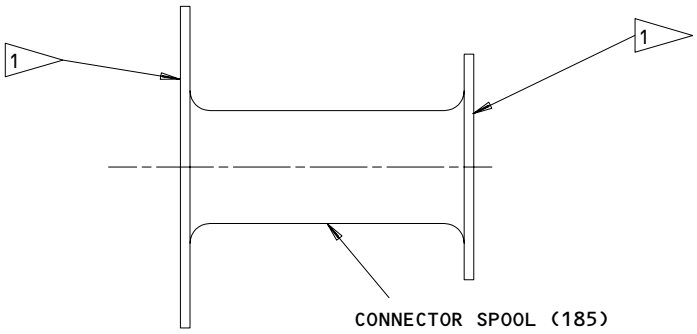
59666

SPOOL, CONNECTOR - REPAIR 2-1

253T1117-1

1. Plating Repair

NOTE: Repair consists of restoration of original finish. Refer to Refinish instructions, Fig. 601 and to REPAIR-GEN for list of applicable standard practices.



REFINISH

CADMIUM PLATE (F-15.02) ALL OVER
EXCEPT OMIT PLATING IN HOLES.
APPLY ONE COAT OF BMS 10-11, TYPE 1
PRIMER (F-20.02) ON SURFACES NOTED BY 1.

MATERIAL: 15-5 PH CRES, 180-200 PSI

ITEM NUMBER REFER TO IPL FIG. 1.

Connector Spool Repair
Figure 601

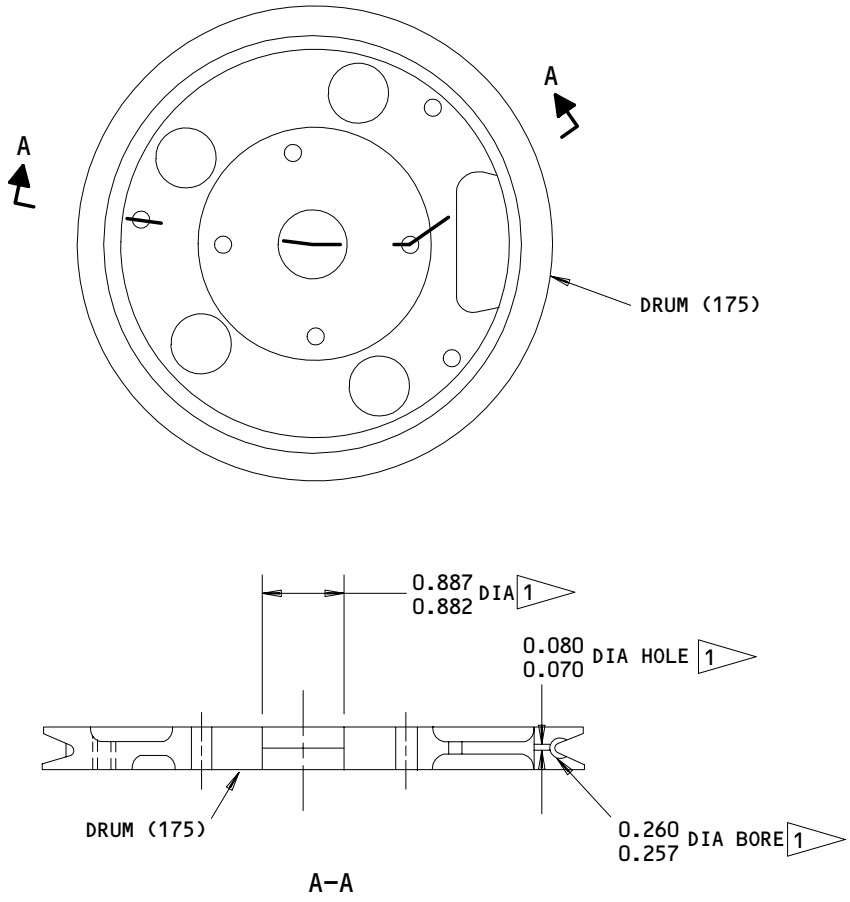
59562

DRUM ASSEMBLY - REPAIR 3-1

253T1118-7

1. Repair

NOTE: Repair consists of restoration of original finish. Refer to Refinish instructions, Fig. 601 and to REPAIR-GEN for list of applicable standard practices.



REFINISH

DRUM (175) - - TREAT SURFACE (F-17.01) AND APPLY ONE COAT OF BMS 10-11, TYPE 1 PRIMER (F-20.02) EXCEPT OMIT PRIMER IN SURFACES NOTED

1 OMIT PRIMER THIS SURFACE

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES
ITEM NUMBER REFER TO IPL FIG. 1

Drum Assembly - Refinish
Figure 601

59567

DRUM ASSEMBLY - REPAIR 4-1

253T1120-4, -6

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Bearing Replacement (IPL Fig. 1, Fig. 601)

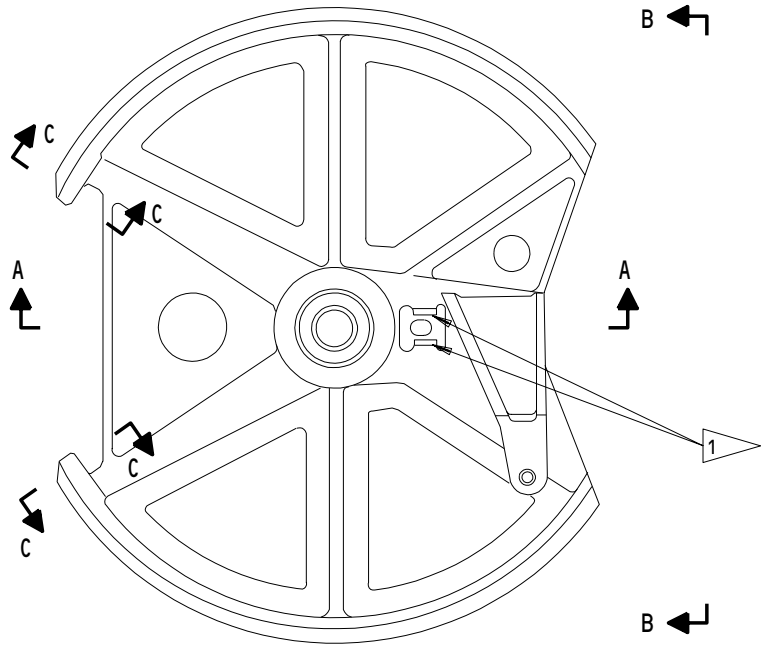
   A. Remove bearing (105).

   B. Install and roller swage new bearing per 20-50-03 except use BMS 10-11, type 1 primer.

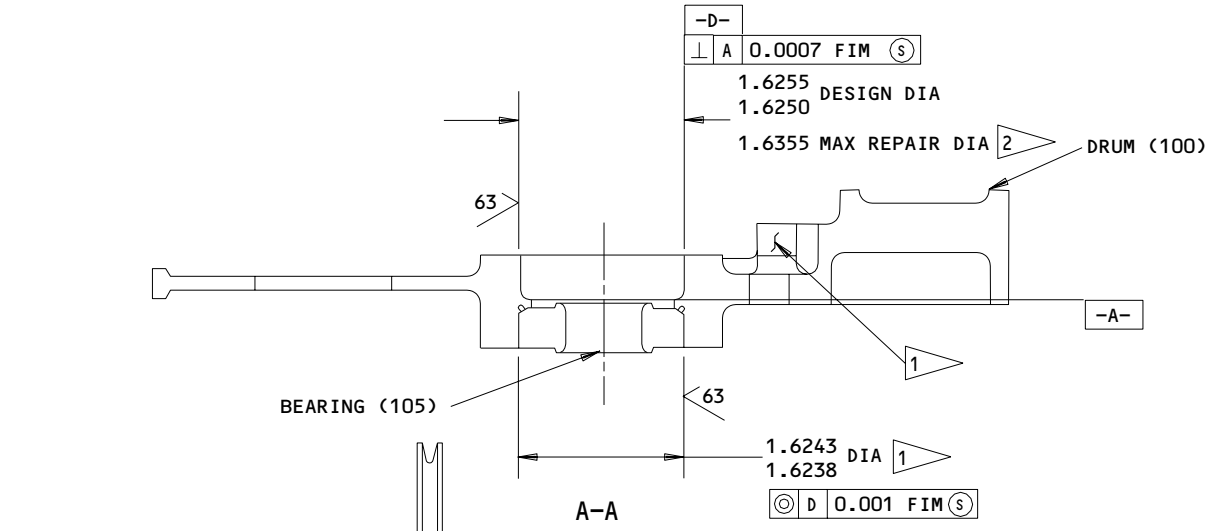
2. Repair (Fig. 601)

   A. Machine bearing seat as required, within repair limit shown, to remove defects.

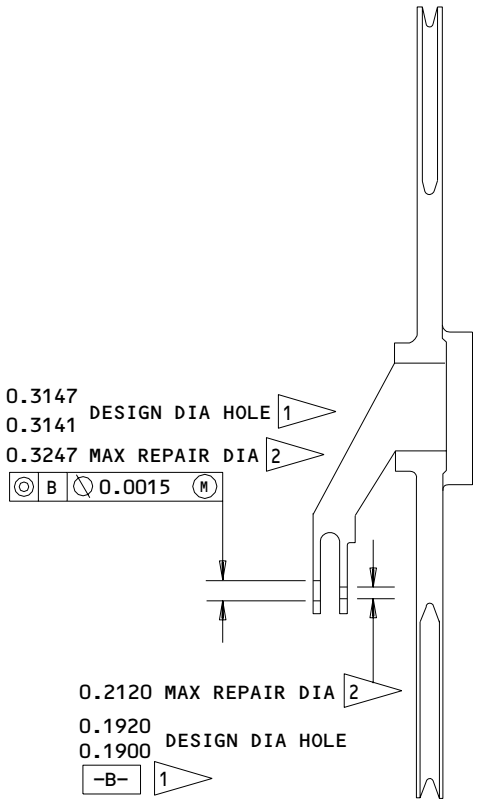
   B. Chrome plate build up repaired surface and grind to dimension and finish shown.



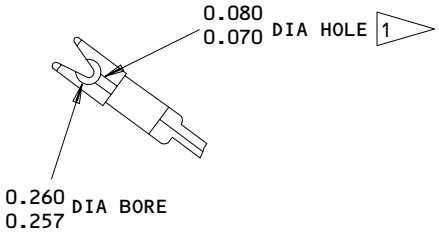
Drum Assembly - Bearing Replacement/Refinish
Figure 601 (Sheet 1)



A-A



B-B



C-C

REFINISH

DRUM (110) -- ANODIZE (F-17.05) AND APPLY ONE COAT OF BMS 10-11, TYPE 1 PRIMER (F-20.02) EXCEPT AS NOTED

1 OMIT PRIMER THIS SURFACE

2 BUILD UP WITH CHROME PLATE AND GRIND TO DIMENSION AND FINISH SHOWN. CHROME PLATE RUNOUT 0.00-0.08. STOP CHROME PLATE 0.00-0.02 FROM FILLET RADIUS OR EDGE

REPAIR

REF 2

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

253T1120-4,-6

Drum Assembly - Bearing Replacement/Refinish
Figure 601 (Sheet 2)

59573

HOUSING ASSEMBLY - REPAIR 5-1

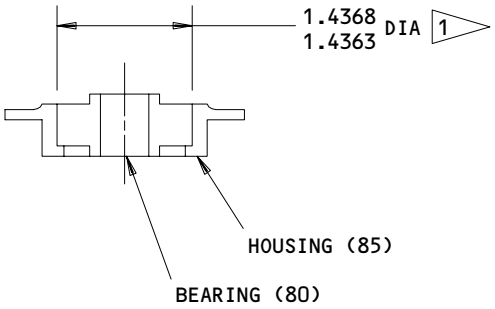
253T1121-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Bearing Assembly (IPL Fig. 1, Fig. 601)

   A. Remove bearing (80).

   B. Install and roller swage new bearing per 20-50-03 except use BMS 10-11, type 1 primer (F-20.06).



REFINISH

HOUSING (85) -- CHROMIC ACID ANODIZE AND APPLY ONE COAT OF BMS 10-11, TYPE 1 PRIMER (F-18.13) EXCEPT AS NOTED

1 OMIT PRIMER THIS SURFACE

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES.

ITEM NUMBERS REFER TO IPL FIG. 1

Housing Assembly - Bearing Replacement/Refinish
Figure 601

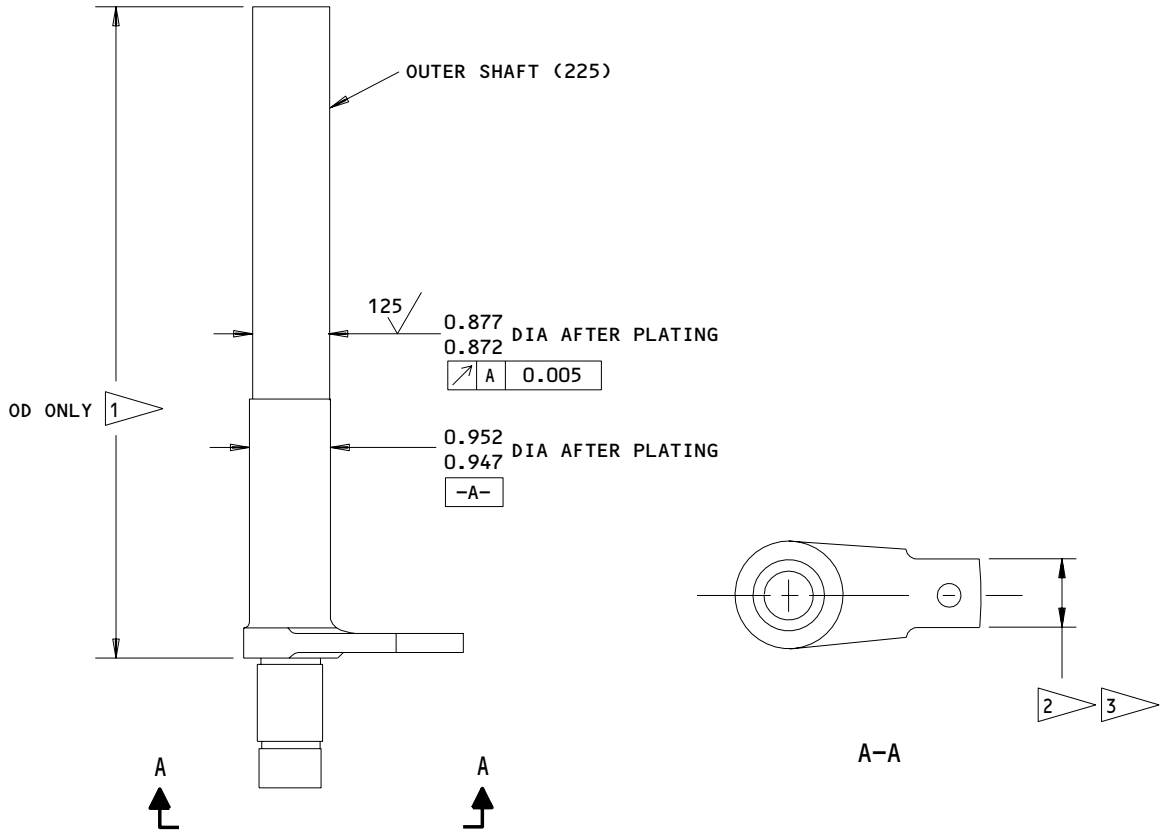
59575

SHAFT, OUTER - REPAIR 6-1

253T1123-3, -5

1. Plating Repair

NOTE: Repair consists of restoration of original finish. Refer to Refinish instructions, Fig. 601 and to REPAIR-GEN for list of applicable standard practices.



REFINISH

1 PASSIVATE (F-17.09) ALL OVER. CAD PLATE AND APPLY ONE COAT OF BMS 10-11, TYPE 1 PRIMER (F-16.01)

2 OMIT PRIMER ON THESE SURFACES

3 DIMENSIONS AFTER PLATING
0.701-0.705 FOR 253T1123-3
0.6700-0.6740 FOR 253T1123-5

MATERIAL: 17-4PH CRES

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 1

253T1123-3,-5
Outer Shaft - Plating Repair
Figure 601

59576

SHAFT, INNER - REPAIR 7-1

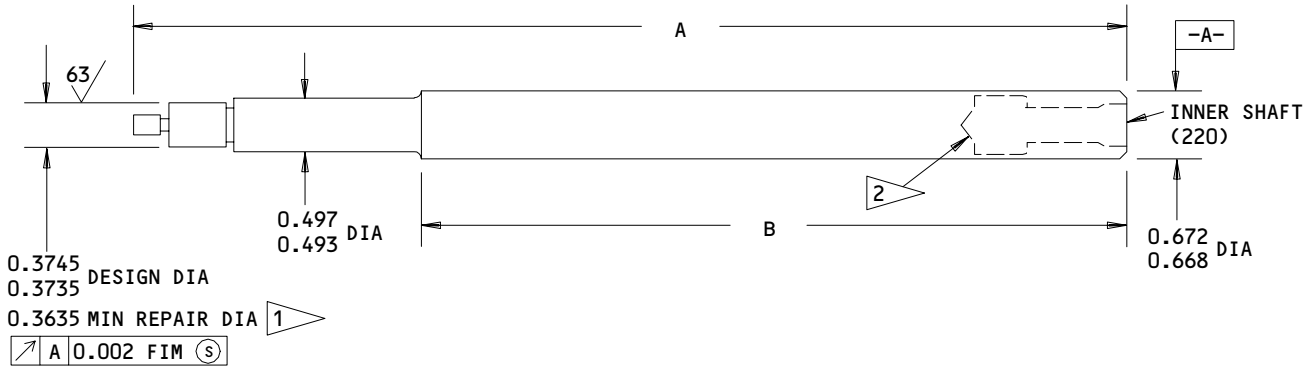
253T1139-1, -5

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Repair (Fig. 601)

   A. Machine bearing seat as required, within repair limit shown to remove defects.

   B. Chrome plate build up repaired surface and grind to dimension and finish shown.



ASSY NO.	A	B
253T1139-1	9.44 9.42	6.69 6.67
253T1139-5	9.74 9.72	6.99 6.97

REFINISH

PASSIVATE (F-17.09) ALL OVER

1 BUILD UP WITH CHROME PLATE AND GRIND TO DIMENSION AND FINISH SHOWN. CHROME PLATE RUNOUT 0.00-0.08. STOP CHROME PLATE 0.00-0.02 FROM FILLET RADIUS OR EDGE

2 EXTENDED SPLINE, 253T1139-5 ONLY

REPAIR

REF 1

MATERIAL: 15-5PH CRES
180-200 KSI

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBER REFER TO IPL FIG. 1

Inner Shaft - Repair
Figure 601

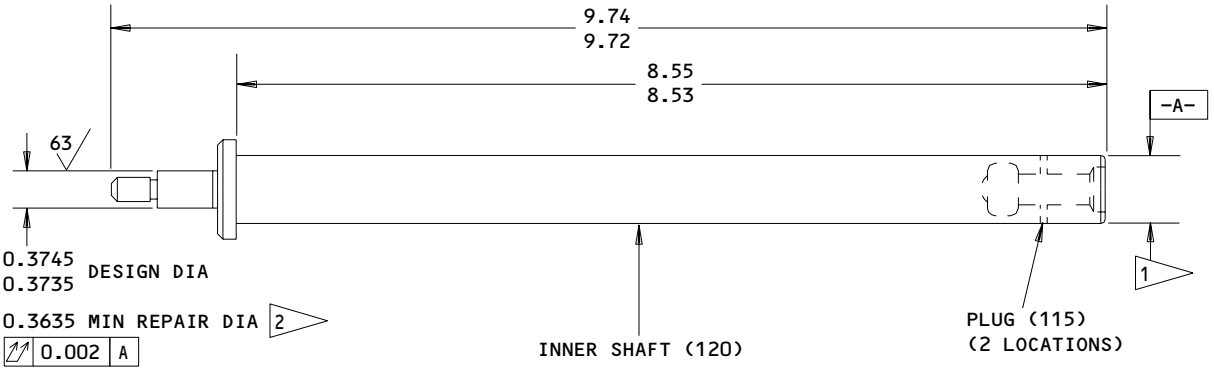
130856

SHAFT, INNER - REPAIR 8-1

253T1153-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices. For repair of surfaces which may only require restoration of original finish, refer to Refinish instructions, Fig. 601.

1. Repair



REFINISH

PASSIVATE (F-17.09) ALL OVER AND CADMIUM PLATE (F-15.02) AS NOTED BY 1

1 CADMIUM PLATE 0.0002 TO 0.0004 THICK THIS SURFACE ONLY

2 BUILD UP WITH CHROME PLATE AND GRIND TO DIMENSION AND FINISH SHOWN. CHROME PLATE RUNOUT 0.00-0.08. STOP CHROME PLATE 0.00-0.02 FROM FILLET RADIUS OR EDGE

REPAIR

REF 2

MATERIAL: 15-5PH CRES
180-200 KSI

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBERS REFER TO IPL FIG. 2

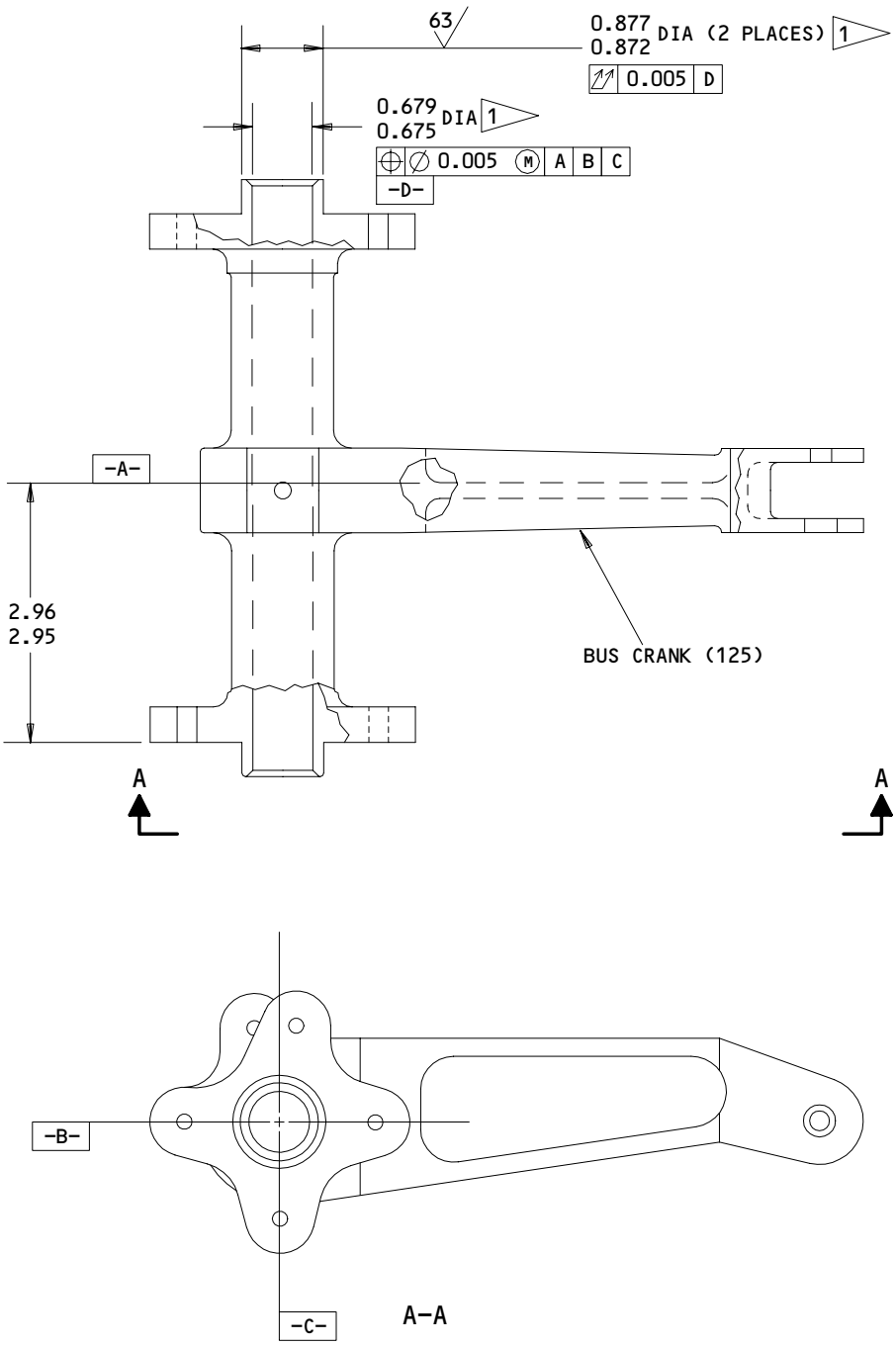
Inner Shaft - Repair
Figure 601

BUS CRANK - REPAIR 9-1

253T1155-1

NOTE: Repair consists of restoration of original finish. Refer to Refinish instructions, Fig. 601 and to REPAIR-GEN for list of applicable standard practices.

1. Repair



REFINISH

ANODIZE (F-17.05) AND APPLY ONE COAT OF BMS 10-11, TYPE 1, PRIMER (F-20.02) EXCEPT TO ALL HOLES AND AS NOTED

1 DO NOT APPLY PRIMER THIS SURFACE

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBER REFER TO IPL FIG. 2

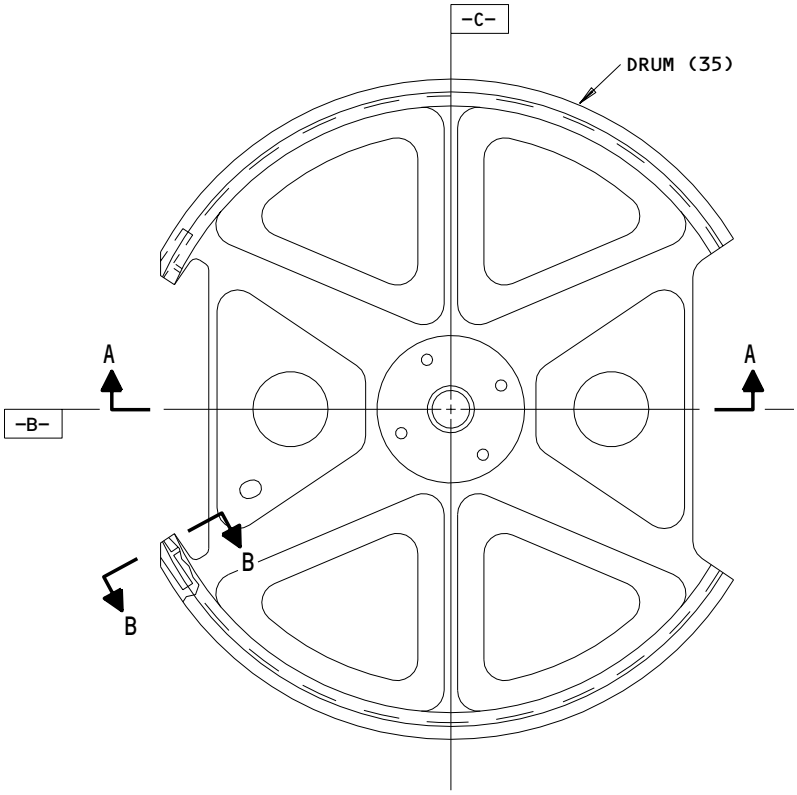
Bus Crank Refinish
Figure 601

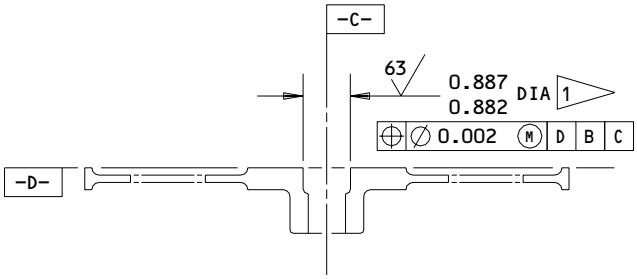
DRUM - REPAIR 10-1

253T1152-1

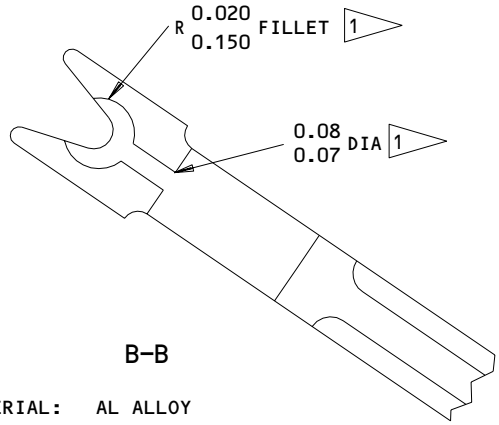
NOTE: Repair consists of restoration of original finish. Refer to Refinish instructions, Fig. 601 and to REPAIR-GEN for list of applicable standard practices.

1. Repair





A-A



B-B

REFINISH

ANODIZE (F-17.05) AND APPLY ONE COAT OF BMS 10-11, TYPE 1, PRIMER (F-22.02) EXCEPT AS NOTED

1 DO NOT APPLY PRIMER THIS SURFACE

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

ITEM NUMBER REFER TO IPL FIG. 2

Drum Refinish
Figure 601

656403

MISCELLANEOUS PARTS REFINISH - REPAIR 11-1

1. Repair of parts listed in Fig. 601 consists of restoration of the original finish.

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Spacer (115)	15-5 PH CRES 125-145 ksi	Passivate (F-17.09) all over
Crank (180)	Al alloy	Chromic acid anodize and apply one coat of BMS 10-11, Type 1 primer (F-18.13).
Crank (180A)	Al alloy	Boric acid-sulfuric acid anodize (F-(F-17.35). Apply BMS 10-11, type 1 primer (F-20-03).
Bus crank (205)	Al alloy	Anodize (F-17.05) and apply one coat of primer BMS 10-11, type 1 (F-20.02) all over except no primer in holes.

Refinish Details
Figure 601

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

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

B. Deleted.

C. Adhesive -- Type 70 (Ref 20-50-12)

D. Lockwire -- MS20995C33 (Ref 20-50-02)

E. Sealant -- BMS 5-95 (Ref 20-60-04)

2. Assembly (IPL Fig. 1, Fig. 701)

A. Position bus crank (205) on outer shaft (225) and bond with type 70 adhesive per 20-50-12.

B. Install inner shaft assembly (210) thru outer shaft (225).

C. Install bolt (195) and collar (200) with BMS 5-95 sealant (F-20.06).

NOTE: Bolt (195A), used with washer (197), is optional to bolt (195).

D. Install crank (180), drum (175) and adapter collar assembly (155) on connector spool (185) with bolts (140, 145) and collar (150). Install bolts (140, 145) with BMS 5-95 sealant.

E. Install connector spool (185) on bus crank (205). Install bolt (146) and collar (150) with BMS sealant. Install pin (130).

F. Install bearing (135) and nut (125) on adapter collar (170). Tighten nut (125) to 350-450 lb-ins. above run-on torque.

G. Install spacer (115) and bearing (120) inside drum assembly (100). Install bearing (120) per 20-50-03 except use BMS 10-11, type 1 primer.

H. Install drum assembly (100) on shaft assembly (190) with tab on shaft mating with slot in drum.

I. Install the nut (95) on the outer shaft (225).

(1) For drum assemblies 253T1141-1, -3, -4, -6, -8: Torque the nut (95) to 350-450 pound-inches above run-on torque.

(2) For drum assemblies 253T1141-10, -12: Torque the nut (95) to 260-340 pound-inches.

J. Install housing (90) and housing assembly (75) on shaft assembly (190).

K. Install washer (70) and nut (65) on shaft assembly (190).

L. Install Force Transducer (50).

(1) Maintain the gap settings between slot in drum (110) and end of outer shaft (225) as shown in Fig. 701 using temporary shims or feeler gage. Remove primer from either or both adjacent parts affecting gap as required.

(2) Remove the temporary shim and make sure the drum assembly (100) can rotate freely across the gap with the temporary shims removed.

(3) Re-install the temporary shims and adjust the force transducer (50) to align holes in end fittings with holes in drum assembly (100) and shaft assembly (190). Holes must align so screws (30) can be installed without forcing.

(4) Install force transducer (50) with screws (30), washers (35), bushings (45) and nuts (40).

(5) Remove temporary shims or feeler gage.

(6) Deleted.

(7) Tighten jamnut.

(8) Recheck the gap dimensions between slot in drum (110) and end of outer shaft (225) as shown in Fig. 701.

(9) Install lockwire per 20-50-02.

M. Install clamp (25) on bus crank (205) of shaft assembly (190) with screw (5), washer (10) and nut (15). Prevent wire movement by using plug (20).

3. Assembly (IPL Fig. 2)

A. Position the inner-shaft assembly (110) in the drive drum (35) and bus crank (125). Use BMS 5-95 wet sealant on both the inner shaft assembly (110) and the bore surfaces not protected by primer on the drive drum (35).

B. Install the bolt (100) and collar (105) with BMS 5-95 sealant (F-19.48).

C. Install bolts (40) and collars (45).

D. Install the drum (90) on the adapter collar (87) using the bolt (80) and collar (85).

E. Use wet BMS 5-95 sealant on the bore surfaces not protected by primer on the drum (90) and install the drum (90) and adapter collar assembly (75) on the bus crank (125).

F. Install the bolts (65) and collars (70) using BMS 5-95 sealant (F-19.48).

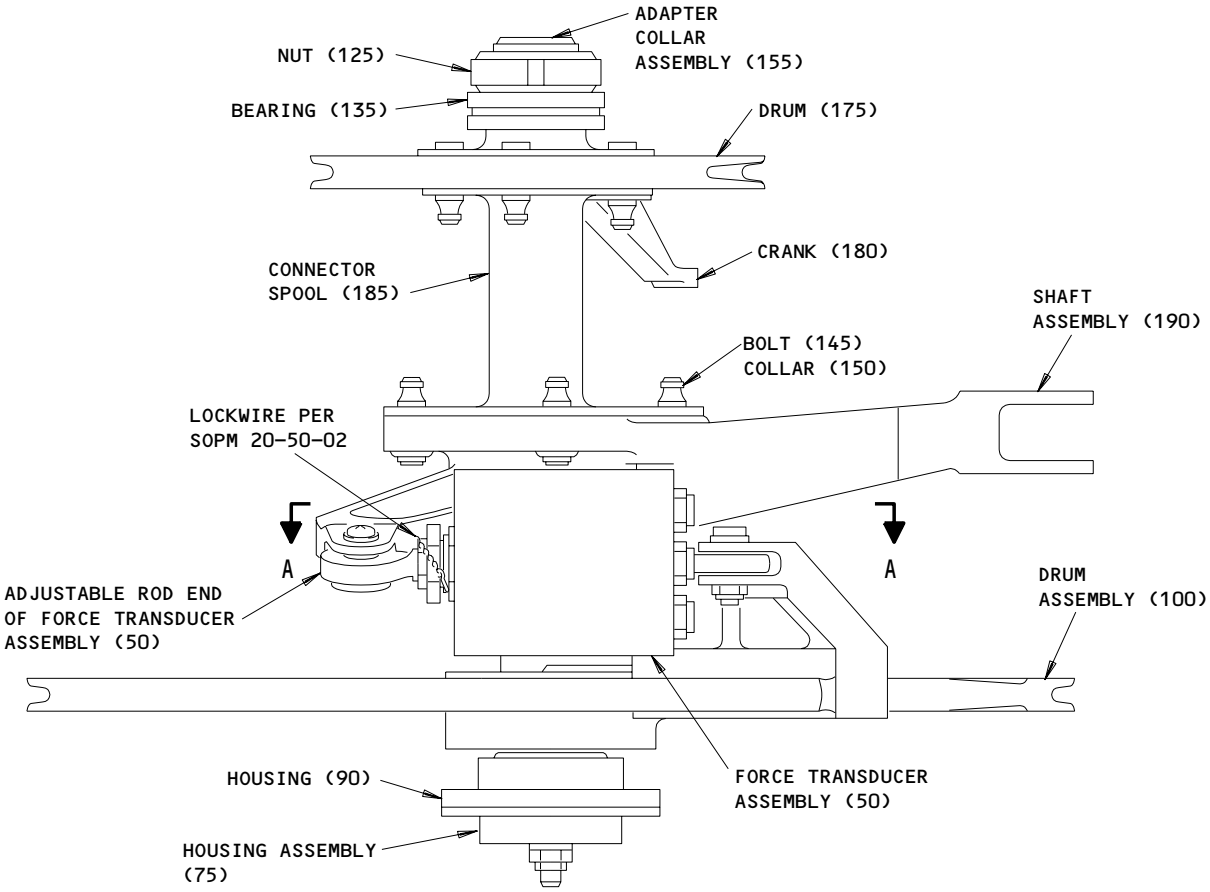
G. Install the pin (55).

H. Install the bearing (60) using BMS 5-95 sealant per 20-50-03.

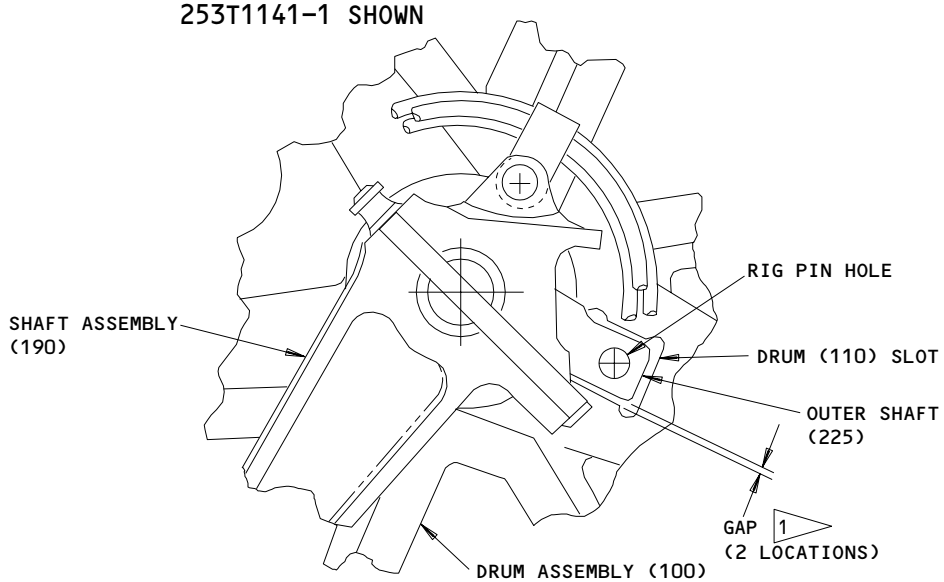
I. Install the nut (50) and tighten to 350-450 pound-inches above run-on torque.

J. Install the housing (30) and the bearing-housing assembly (15). Install the washer (5) and nut (10).

4. Prepare and store component in accordance with standard industry practices.



253T1141-1 SHOWN



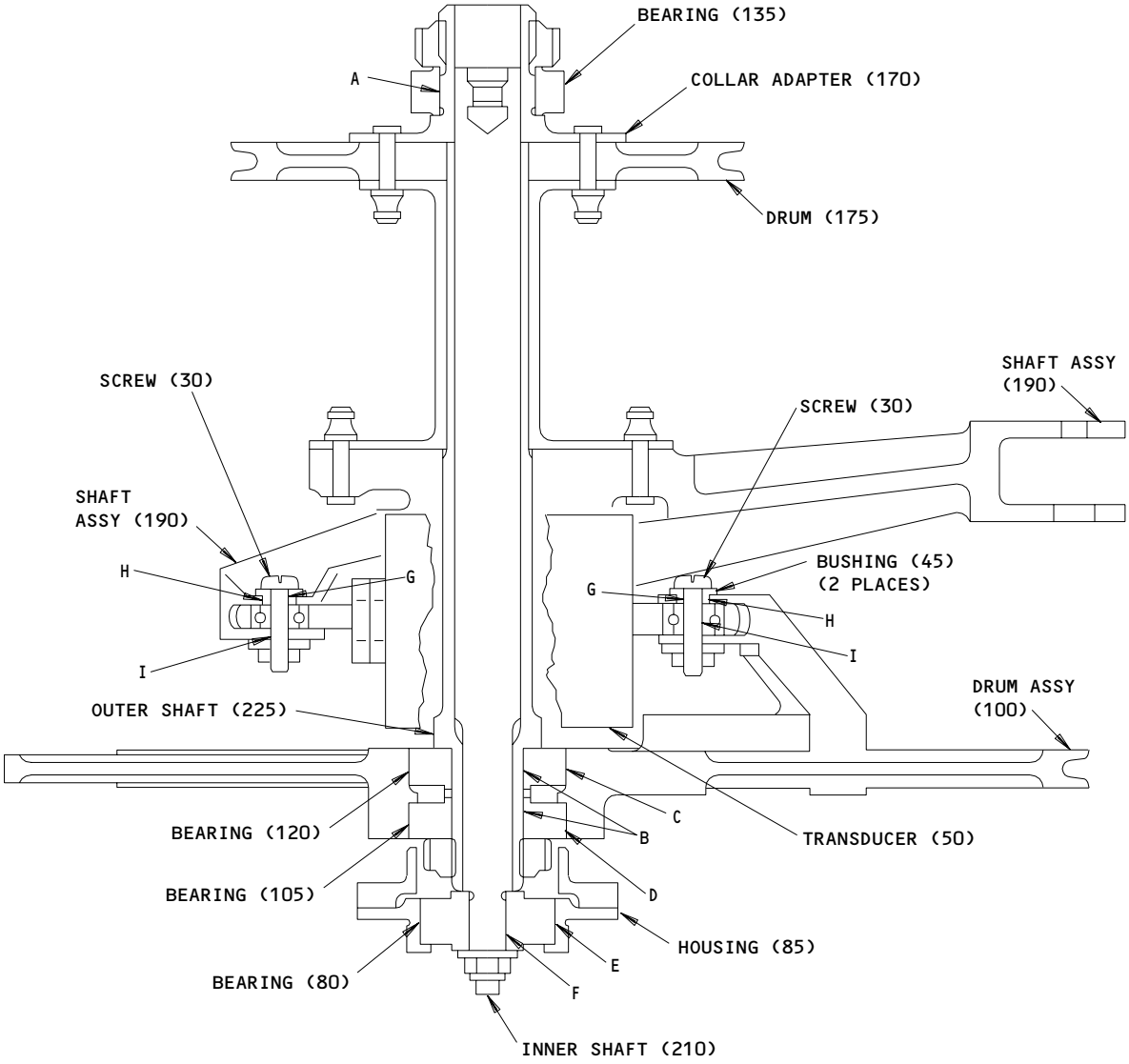
A-A

1 0.020-0.024 GAP FOR 253T1141-1,-3,-4,-6,-8
0.0360-0.0370 GAP FOR 253T1141-10,-12

Force Transducer Drum Assembly
Figure 701

59668

FITS AND CLEARANCES



ITEM NUMBERS REFER TO IPL FIG. 1

Fits and Clearances
Figure 801 (Sheet 1)

Ref Letter Fig.801	1 Mating Item No. IPL Fig.	Design Dimension				Service Wear Limit		
		Dimension		Assembly Clearance 3		Dimension		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
A	ID 135 1 60 2 OD 170 1 87 2	0.9995 0.9985	1.0000 0.9995	0.0000	0.0015	0.9980	1.0000	0.002
B	ID 120 OD 225	0.7497 0.7492	0.7500 0.7497	0.0000	0.0008	0.7488	0.7506	0.0018
C	ID 100 OD 120	1.6250 1.6246	1.6255 1.6250	0.0000	0.0009	1.6246	1.6257	0.0010
D	ID 100 OD 105	1.6238 1.6246	1.6243 1.6250	-0.0012	-0.0003	1.6246	1.6246	0.0000
E	ID 85 1 25 2 OD 80 1 20 2	1.4363 1.4370	1.4368 1.4375	-0.0012	-0.0002	1.4370	1.4370	0.0000
F	ID 80 OD 210	0.3745 0.3735	0.3750 0.3745	0.0000	0.0015	0.3739	0.3750	0.0020
G	ID 45 OD 30	0.1900 0.1870	0.1915 0.1895	0.0005	0.0045	0.1867	0.1917	0.0050
H	ID 100 OD 45	0.1900 0.1870	0.1920 0.1895	0.0005	0.0050	0.1870	0.1925	0.0055
I	ID 50 OD 30	0.1895 0.1870	0.1900 0.1895	0.0000	0.0030	0.1865	0.1905	0.0040

ALL DIMENSIONS ARE IN INCHES

1 IPL FIG. 1

2 IPL FIG. 2

3 NEGATIVE VALUES DENOTE INTERFERENCE FIT

Fits and Clearances
Figure 801 (Sheet 2)

59662

REF IPL		NAME	TORQUE*	
FIG. NO.	ITEM NO.		POUND-INCHES	POUND-FEET
1	95 2 ,125	NUT	350-450 1	
1	95 3	NUT	260-340 1	
2	50	NUT	350-450 1	

* REFER TO SOPM 20-50-01 FOR TORQUE VALUES OF STANDARD FASTENERS.

1 ABOVE RUN-ON TORQUE
2 FOR DRUM ASSEMBLIES 251T1141-1,-3,-4,-6,-8
3 FOR DRUM ASSEMBLIES 251T1141-10,-12

Torque Table
Figure 802

59664

ILLUSTRATED PARTS LIST

1. This section lists and illustrates replaceable or repairable component parts. The Illustrated Parts Catalog contains a complete explanation of the Boeing part numbering system.

2. Indentures show parts relationships as follows:

    Assembly
      Detail Parts for Assembly
      Subassembly
      Attaching Parts for Subassembly
        Detail Parts for Subassembly

    Detail Installation Parts (Included only if installation parts may be returned to shop as part of assembly)

3. One use code letter (A, B, C, etc.) is assigned in the EFF CODE column for each variation of top assembly. All listed parts are used on all top assemblies except when limitations are shown by use code letter opposite individual part entries.

4. Letter suffixes (alpha-variants) are added to item numbers for optional parts, Service Bulletin modification parts, configuration differences (except left- and right-hand parts), product improvement parts, and parts added between two sequential item numbers. The alpha-variant is not shown on illustrations when appearance and location of all variants of the part is the same.

5. Service Bulletin modifications are shown by the notations PRE SB XXXX and POST SB XXXX.

    A. When a new top assembly part number is assigned by Service Bulletin, the notations appear at the top assembly level only. The configuration differences at detail part level are then shown by use code letter.

    B. When the top assembly part number is not changed by the Service Bulletin, the notations appear at the detail part level.

6. Parts Interchangeability

Optional (OPT)	The parts are optional to and interchangeable with other parts having the same item number.
Supersedes, Superseded By (SUPSDS, SUPSD BY)	The part supersedes and is not interchangeable with the original part.
Replaces, Replaced By (REPLS, REPLD BY)	The part replaces and is interchangeable with, or is an alternate to, the original part.

VENDORS

06725 AIR INDUSTRIES CORPORATION
12570 KNOTT STREET
GARDEN GROVE, CALIFORNIA 92641-3932
FORMERLY AIR INDUSTRIES OF CALIF IN GARDENA, CALIF.

08524 DEUTSCH FASTENER CORP
1315 E GRAND AVE
EL SEGUNDO, CALIFORNIA 90245-4323
FORMERLY IN LOS ANGELES, CALIFORNIA

10630 ANILLO INDUSTRIES, INCORPORATED
2090 NORTH GLASSELL
ORANGE, CALIFORNIA 92667
FORMERLY WESTERN WASHER DIV OF SENG CO V87487

15653 KAYNAR MICRODOT AEROSPACE FASTENING SYSTEM
800 SOUTH COLLEGE BLVD PO BOX 3001
FULLERTON, CALIFORNIA 92634
FORMERLY MICRODOT AEROSPACE FASTENING SYS DIV OF MICRODOT INC IN PICO RIVERA, CALIFORNIA

16115 PECO MANUFACTURING CO INC
PO BOX 02156 4707 SOUTHEAST 17TH STREET
PORTLAND, OREGON 97202-4714
FORMERLY VB0129 OR V0129B

21335 TEXTRON INC FAFNIR BEARING DIVISION
37 BOOTH STREET
NEW BRITAIN, CONNECTICUT 06050
FORMERLY FAFNIR BRG CO DIV OF TEXTRON INC

22863 KAVLICO CORP INC
14501 LOS ANGELES AVENUE
MOORPARK, CALIFORNIA 93021
FORMERLY IN VAN NUYS AND CHATSWORTH , CALIFORNIA

30163 DAYRON CORP
333 MAGUIRE BLVD PO BOX 20394
ORLANDO, FLORIDA 32814

38443 TRW INC BEARING DIV
402 CHANDLER STREET
JAMESTOWN, NEW YORK 14701-3802
FORMERLY MARLIN-ROCKWELL CORP DIV TRW INC

VENDORS

43991 FAG BEARING INCORPORATED
HAMILTON AVENUE
STAMFORD, CONNECTICUT 06904
FORMERLY NORMA-HOFFMAN BEARING CORPORATION
FORMERLY NORMA FAG BEARINGS CORPORATION

52828 REPUBLIC FASTENER MFG CORP
1300 RANCHO CONEJO BLVD
NEWBURY PARK, CALIFORNIA 91320-1405
FORMERLY IN SYLMAR, CALIFORNIA

56878 SPS TECHNOLOGIES INC AEROSPACE AND INDUSTRIAL PRODUCTS DIV
HIGHLAND AVENUE
JENKINTOWN, PENNSYLVANIA 19046
USE APPLICABLE FACILITY CODE
FORMERLY STANDARD PRESSED STEEL

71087 BOOTS ACFT NUT DIV TOWNSEND CO SEE TEXTRON INC CHERRY
FASTENER TOWNSEND DIV V11815

72962 ELASTIC STOP NUT A DIV OF HARTFORD INDUSTRIES INC
2330 VAUXHALL ROAD
UNION, NEW JERSEY 07083-5038
FORMERLY AMERACE CORP ESNA DIV

73197 HI-SHEAR TECHNOLOGY CORP
2600 SKYPARK DRIVE
TORRANCE, CALIFORNIA 90509

75345 KIRKHILL RUBBER CO
300 EAST CYPRESS STREET
BREA, CALIFORNIA 92621-4007
FORMERLY L.A. STANDARD RUBBER CO V84914

77896 REXNORD INC BEARING OPERATION
2400 CURTIS STREET
DOWNERS GROVE, ILLINOIS 60515-4005
FORMERLY SHAEFER BEARING DIV REX CHAINBELT
FORMERLY REX CHAINBELT INC BEARING DIV.

80539 SPS TECHNOLOGIES INC AEROSPACE PRODUCTS DIV
2701 SOUTH HARBOR BOULEVARD PO BOX 1259
SANTA ANA, CALIFORNIA 92702-1259
FORMERLY NUTT-SHEL DIV OF SPC WESTERN CO V80539 AND STANDARD
PRESSED STEEL WESTERN DIV V17279

VENDORS

81872 OLYMPIC PLASTICS CO SUB OF INTERCONTENTAL DIAMOND CORP
5800 WEST JEFFERSON BOULEVARD
LOS ANGELES, CALIFORNIA 90016-3109

84914 LOS ANGELES STD RUBBER CO SEE KIRKHILL RUBBER CO V75345

92215 VOI-SHAN DIV OF VSI CORP SUB OF FAIRCHILD INDUSTRIAL INC
8463 HIGUERA STREET
CULVER CITY, CALIFORNIA 90230

95272 SARGENT IND INC STILLMAN SEAL DIV
6020 AVENDIDA ENCINAS PO BOX 2000
CARLSBAD, CALIFORNIA 92008-4407
FORMERLY STILLMAN RUBBER DIV ELECTRADA CORP
FORMERLY STILLMAN SEAL DIV OF SARGENT IND IN CULVER CITY, CA

97393 SHUR-LOK CORPORATION
2541 WHITE ROAD PO BOX 19584
IRVINE, CALIFORNIA 92713
FORMERLY SHUR LOK CORP VB0060
FORMERLY IN SANTA ANA, CALIFORNIA 92714

97928 DEUTSCH FASTENER CORP
3969 PARAMONT BOULEVARD
LAKEWOOD, CALIFORNIA 90712
FORMERLY DUMONT AVIATION ASSOC IN LONG BEACH, CALIFORNIA
FORMERLY LITTON FASTENING SYSTEMS DIV OF LITTON SYSTEMS INC

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
AL10V6-15		2	65	4
AN960PD10L		1	10	1
		1	35	2
AN960PD416		1	197	1
BACB10AC3		80	10	2
BACB10AC6		1	80	1
		2	20	1
BACB10AP12		1	105	1
		1	120	1
BACB10CJ16		1	135	1
		2	60	1
BACB28X3C014		1	45	2
BACB30MY6K10		1	140	2
BACB30MY6K13		2	40	4
BACB30MY6K15		2	65	4
BACB30MY6K2		1	160	1
		2	80	1
BACB30MY6K9		1	145	6
		1	146	4
		1	140A	20
BACB30MY8K31		2	100	1
BACB30MY8K45		1	195	1
BACB30MY8K46		1	195A	1
BACB30NT3K5		1	5A	1
BACB30NT3K9		1	30A	2
BACB30VT6K12		1	145A	2
BACB30VT6K9		1	140B	2
		1	146A	4
BACB30VT8K45		1	195B	1
BACC10DK6		1	25	1
BACC30BL6		1	150A	8
BACC30BL8		1	200A	1
BACC30M6		1	150	8
		1	165	1
		2	45	4
		2	70	4
		2	85	1
BACC30M8		1	200	1
		2	105	1
BACC45FT12C12P		80	5	3
BACN10JC3		1	40	2
BACN10JC4		1	65	1
BACN10RF12		1	95	1
BACN10RF16		1	125	1
		2	50	1
BACN10R10L		1	15A	1
BACN10YR3CD		1	40A	2

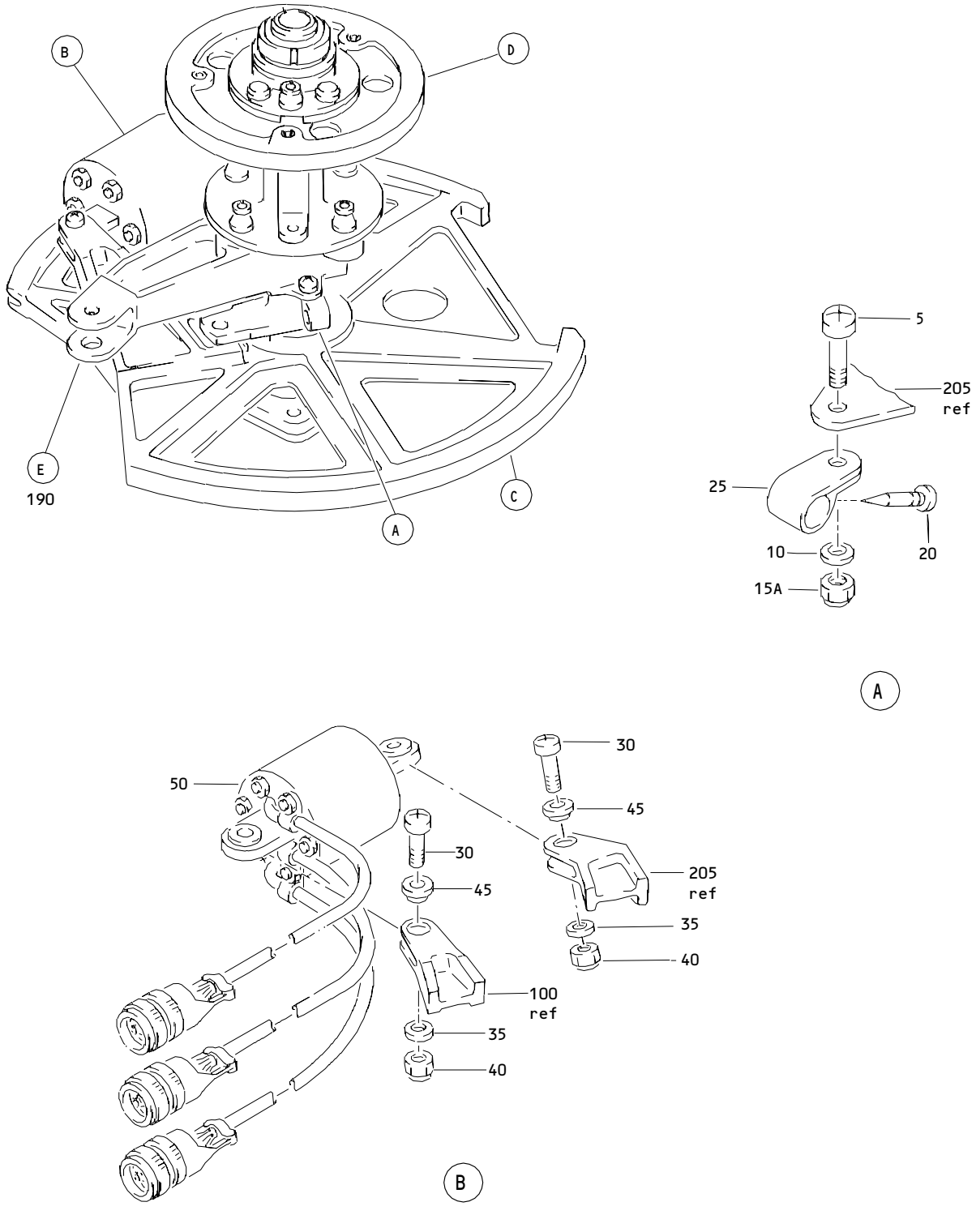
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
BACN10YR4CD		1	65A	1
BACP20BA1		1	20A	1
BACW10BP4DP		1	70	1
		2	5	1
BRH10-3		1	15	
BRH10A3		1	40	2
BRH10A4		1	65	1
BR9080-12		1	95	1
BR9080-16		1	125	1
		2	50	1
B30MY6K10		1	140	2
B30MY6K13		2	40	4
B30MY6K15		2	65	4
B30MY6K2		1	160	1
		2	80	1
B30MY6K9		1	145	6
		1	140A	20
B30MY8K45		1	195	1
B30MY8K46		1	195A	1
DAT16-26A4		1	135	1
		2	60	1
F22K1-02		1	15A	1
GM10242		1	50C	1
GM6931		1	50	1
		80	1	RF
HHKSP3		80	10	2
HHKSP6		1	80	1
		2	20	1
HL10C6-15		2	65	4
HL10VAZ6-10		1	140	2
HL10VAZ6-13		2	40	4
HL10VAZ6-15		2	65	4
		2	65	4
		2	65	4
		2	65	4
		2	65	4
HL10VAZ6-2		1	160	1
		2	80	1
HL10VAZ6-9		1	145	6
		1	146	4
		1	140A	2
HL10VAZ8-45		1	195	1
HL10VAZ8-46		1	195A	1
HL10V6-15		2	65	4
		2	65	4
		2	65	4

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
HL79-6		1	150	8
		1	165	1
		2	45	4
		2	70	4
		2	85	1
HL79-8		1	200	1
		2	105	1
H10-3BAC		1	40	2
H10-4BAC		1	65	1
KSP3		80	10	2
KSP3-2TS		80	10	2
KSP3E9440A		80	10	2
KSP3FS428		80	10	2
KSP3G27		80	10	2
KSP6		1	80	1
		2	20	1
KSP6-2TS		1	80	1
		2	20	1
KSP6E9440		1	80	1
		2	20	1
KSP6FS428		1	80	1
		2	20	1
KSP6G27		1	80	1
		2	20	1
LLMKP12A		1	105	1
		1	120	1
L80-6-15		2	65	4
L800-6-15		2	65	4
L8006K10		1	140	2
L8006K13		2	40	4
L8006K15		2	65	4
L8006K2		1	160	1
		2	80	1
L8006K9		1	145	6
		1	140A	20
L8008K45		1	195	1
L8008K46		1	195A	1
MKP12A		1	105	1
		1	120	1
MKP12AFS428		1	105	1
		1	120	1
MKP12AG20		1	105	1
		1	120	1
MKP12ATT		1	105	1
		1	120	1
MKP12A2TS		1	105	1
		1	120	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
MKP12E6531		1	105	1
		1	120	1
MS16562-209		1	130	1
		1	174	1
		2	55	1
MS21042L4		2	10	1
MS39086-125		1	130A	1
		1	130B	1
		2	55A	1
NAS1149D0316J		1	10A	1
		1	35A	2
NAS623-3-5		1	5	1
NAS623-3-9		1	30	2
NS202101-02		1	40	2
NS202101-048		1	65	1
N2088		1	20	
		1	20A	1
RMLH9075-3W		1	40	2
RMLH9075-4W		1	65	1
SL2822-12		1	95	1
SL2822-16		1	125	1
		2	50	1
SZ7105		1	20A	1
S253T401-1		1	50	1
		80	1	R6
S253T401-3		1	50C	1
T6S1032J		1	40	2
T6S428J		1	65	1
VN303A02		1	40	2
VN303A048		1	65	1
015T0253-6		1	1D	RF
015T0253-9		1	1E	RF
10-61072-3		1	50A	1
10-61072-4		1	50B	1
22K1-02		1	15A	1
253T1117-1		1	185	1
253T1118-7		1	175	1
		2	90	1
253T1120-4		1	100	1
253T1120-5		1	110	1
253T1120-6		1	100A	1
253T1120-7		1	110A	1
253T1121-1		1	75	1
		2	15	1
253T1121-2		1	85	1
		2	25	1

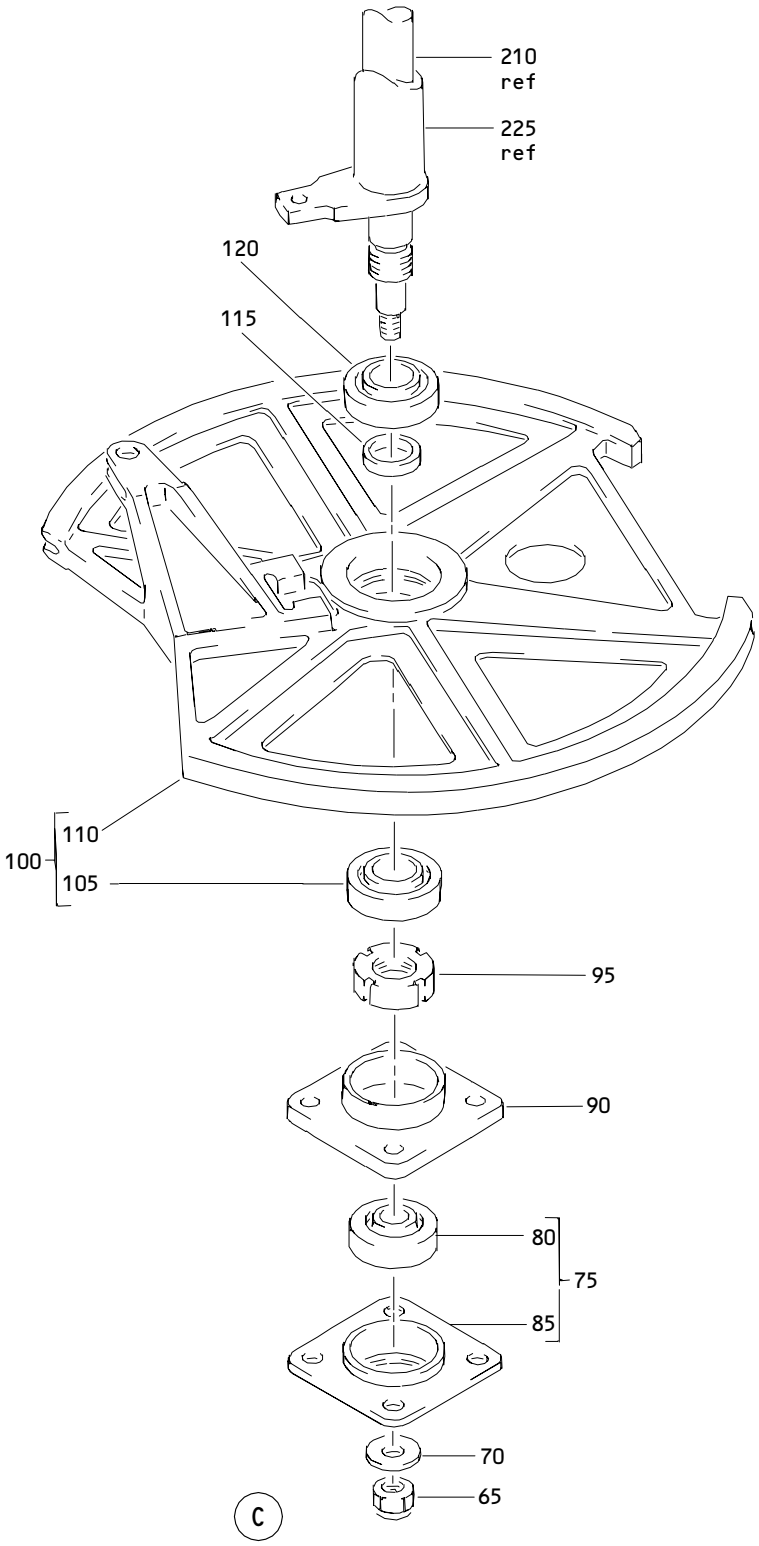
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
253T1121-5		1	90	1
		2	30	1
253T1123-3		1	225	1
		1	225A	1
253T1123-4		1	225B	1
253T1123-5		1	225C	1
253T1125-5		1	215	2
253T1132-6		1	115	1
253T1138-1		1	155	1
		2	75	1
253T1138-2		1	170	1
		2	87	1
253T1139-1		1	210	1
253T1139-2		1	220	1
253T1139-5		1	210A	1
253T1139-6		1	220A	1
253T1141-1		1	1	RF
253T1141-10		1	1J	RF
253T1141-11		1	190B	1
253T1141-12		1	1K	RF
253T1141-2		1	190	1
253T1141-3		1	1A	RF
253T1141-4		1	1B	RF
253T1141-5		1	190A	1
253T1141-6		1	1C	RF
		1	1F	RF
253T1141-7		1	1G	RF
		2	1	RF
253T1141-8		1	1H	RF
253T1145-1		1	205	1
253T1151-1		1	172	1
253T1152-1		2	35	1
253T4013-1		1	180	1
253T4013-3		1	180A	1
26CL02		1	15A	1
4841		1	20A	1
66014-6		1	150	8
		1	165	1
		2	45	4
		2	70	4
		2	85	1
66014-8		1	200	1
		2	105	1
82631-1216		1	95	1
82631-1612		1	125	1
		2	50	1
96-02		1	40	2

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
96-048		1	65	1



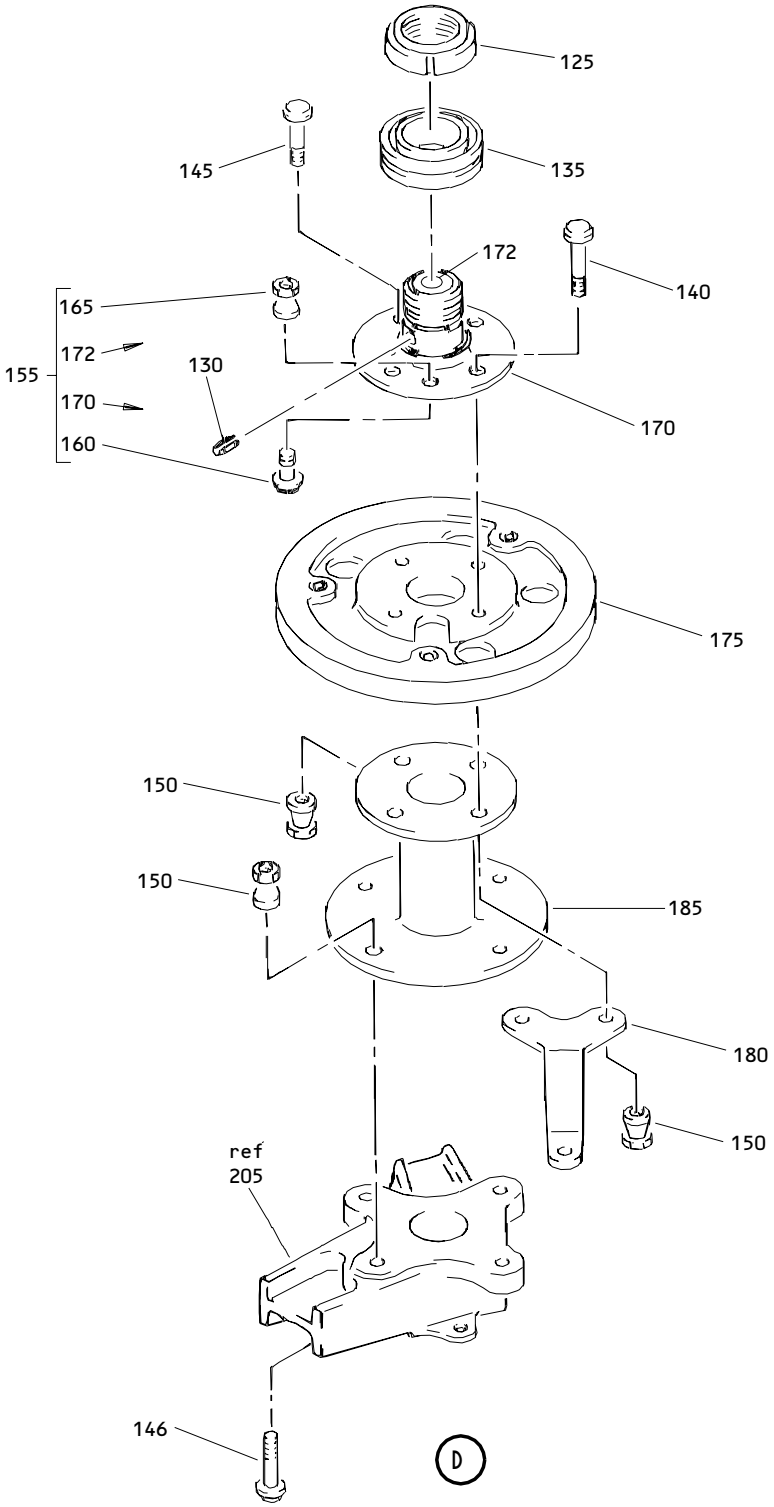
Aileron Control Force Transducer Drum Assembly
Figure 1 (Sheet 1)

T64900



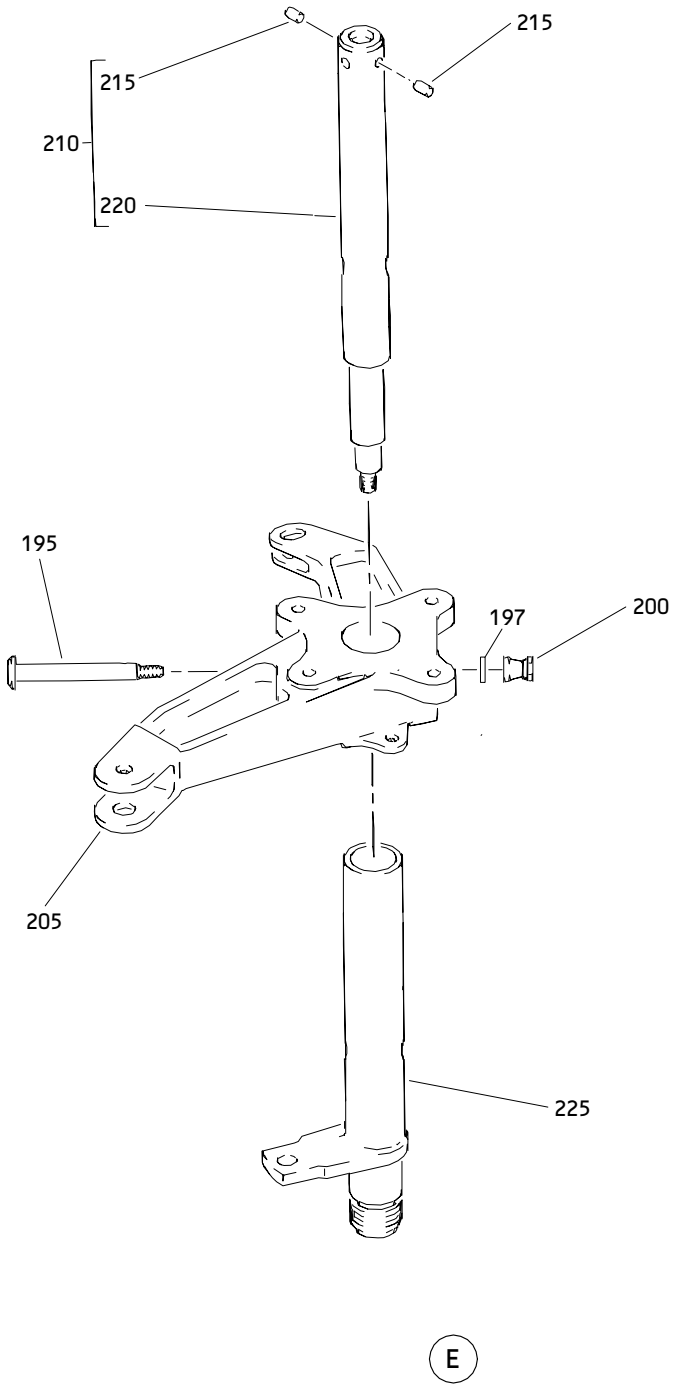
Aileron Control Force Transducer Drum Assembly
Figure 1 (Sheet 2)

T64899



Aileron Control Force Transducer Drum Assembly
Figure 1 (Sheet 3)

T64901



Aileron Control Force Transducer Drum Assembly
Figure 1 (Sheet 4)

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	-1	253T1141-1		DRUM ASSY-AIL CONT FORCE TRANSDUCER (PRE SB 27A62)	A	RF
R	-1A	253T1141-3		DRUM ASSY-AIL CONT FORCE TRANSDUCER (PRE SB 27A62)	B	RF
R	-1B	253T1141-4		DRUM ASSY-AIL CONT FORCE TRANSDUCER (PRE SB 27A62)	C	RF
R	-1C	253T1141-6		DRUM ASSY-AIL. CONT FORCE TRANSDUCER *[1]	D	RF
R	-1D	015T0253-6		DRUM ASSY-AIL CONT FORCE TRANSDUCER (POST SB 27A62)	E	RF
R	-1E	015T0253-9		DRUM ASSY-AIL CONT FORCE TRANSDUCER (POST SB 27A62)	F	RF
R	-1F	253T1141-6		DRUM ASSY-AIL CONT FORCE TRANSDUCER *[1] (POST SB 27A62)	G	RF
R	-1G	253T1141-7		DRUM ASSY-AIL CONT FORCE TRANSDUCER (FOR DETAILS SEE FIG. 2)	H	RF
R	-1H	253T1141-8		DRUM ASSY-AIL CONT FORCE TRANSDUCER	J	RF
R	-1J	253T1141-10		DRUM ASSY-AIL CONT FORCE TRANSDUCER	K	RF
R	-1K	253T1141-12		DRUM ASSY-AIL CONT FORCE TRANSDUCER	L	RF
	5	NAS623-3-5		.SCREW	A-GJ	1
	5A	BACB30NT3K5		.BOLT	K	1
	10	AN960PD10L		.WASHER	A-GJ	1
	10A	NAS1149D0316J		.WASHER	K	1
	15	BRH10-3		DELETED		
R	15A	F22K1-02		.NUT- (V72962) (SPEC BACN10R10L) (OPT 22K1-02 (V72962)) (OPT 26CL02 (V80539))	A-GJ K	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	20	N2088		DELETED		
R	20A	N2088		.PLUG- (V75345) (SPEC BACP20BA1) (OPT SZ7105 (V95272)) (OPT 4841 (V84914))	A-GJ	1
	25	BACC10DK6		.CLAMP- (V16115) (SPEC BACC10DK6) (OPT BACC10DK6 (V81872))	A-GJ K	1
	30	NAS623-3-9		.SCREW	A-GJ	2
	30A	BACB30NT3K9		.BOLT	K	2
	35	AN960PD10L		.WASHER	A-GJ	2
	35A	NAS1149D0316J		.WASHER	K	2
R	40	H10-3BAC		.NUT- (V15653) (SPEC BACN10JC3) (OPT NS202101-02 (V80539)) (OPT RMLH9075-3W (V72962)) (OPT T6S1032J (V71087)) (OPT VN303A02 (V92215)) (OPT 96-02 (V80539)) (OPT BRH10A3 (V52828))	A-GJ	2

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	40A	BACN10YR3CD		.NUT	KL	2
	45	BACB28X3C014		.BUSHING	A-GJ KL	2
R	50	GM6931		.TRANSDUCER ASSY-FORCE (V22863) (SPEC S253T401-1) (FOR DETAILS SEE FIG. 80)	A-G	1
R	-50A	10-61072-3		.TRANSDUCER ASSY-FORCE (OPT ITEM 50B)	J	1
R	-50B	10-61072-4		.TRANSDUCER ASSY-FORCE (OPT ITEM 50A)	J	1
R	-50C	GM10242		.TRANSDUCER ASSY-FORCE (V22863) (SPEC S253T401-3)	KL	1
R	65	H10-4BAC		.NUT- (V15653) (SPEC BACN10JC4) (OPT NS202101-048 (V80539)) (OPT RMLH9075-4W (V72962)) (OPT T6S428J (V71087)) (OPT VN303A048 (V92215)) (OPT 96-048 (V80539)) (OPT BRH10A4 (V52828))	A-GJ	1
	65A	BACN10YR4CD		.NUT	KL	1
	70	BACW10BP4DP		.WASHER- (V10630) (SPEC BACW10BP4DP)	A-GJ KL	1
R	75	253T1121-1		.HOUSING ASSY-BEARING	A-GJ KL	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
80	KSP6		..BEARING- (V38443) (SPEC BACB10AC6) (OPT HHKSP6 (V38443)) (OPT KSP6-2TS (V43991)) (OPT KSP6E9440 (V21335)) (OPT KSP6FS428 (V21335)) (OPT KSP6G27 (V30163))	A-GJ KL	1
85	253T1121-2		..HOUSING	A-GJ KL	1
90	253T1121-5		.HOUSING	A-GJ KL	1
95	SL2822-12		.NUT- (V97393) (SPEC BACN10RF12) (OPT BR9080-12 (V72962)) (OPT 82631-1216 (V56878))	A-GJ KL	1
100	253T1120-4		.DRUM ASSY	AE	1
R -100A	253T1120-6		.DRUM ASSY	B-DFG JKL	1
105	MKP12A		..BEARING- (V38443) (SPEC BACB10AP12) (OPT LLMKP12A (V38443)) (OPT MKP12AFS428 (V21335)) (OPT MKP12ATT (V43991)) (OPT MKP12A2TS (V43991)) (OPT MKP12E6531 (V21335)) (OPT MKP12AG20 (V38443))	A-GJ KL	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	110	253T1120-5		..DRUM	AE	1
R	-110A	253T1120-7		..DRUM	B-DFG JKL	1
	115	253T1132-6		.SPACER	A-GJ KL	1
	120	MKP12A		.BEARING- (V38443) (SPEC BACB10AP12) (OPT LLMKP12A (V38443)) (OPT MKP12AFS428 (V21335)) (OPT MKP12ATT (V43991)) (OPT MKP12A2TS (V43991)) (OPT MKP12E6531 (V21335)) (OPT MKP12AG20 (V38443))	A-GJ KL	1
	125	SL2822-16		.NUT- (V97393) (SPEC BACN10RF16) (OPT BR9080-16 (V72962)) (OPT 82631-1612 (V56878))	A-GJ KL	1
R	130	MS16562-209		.PIN-SPR (OPT ITEM 130A)	A-GJ	1
R	-130A	MS39086-125		.PIN-SPR (OPT ITEM 130)	A-GJ	1
R	-130B	MS39086-125		.PIN-SPR	KL	1
	135	DAT16-26A4		.BEARING- (V77896) (SPEC BACB10CJ16)	A-GJ KL	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-140	HL10VAZ6-10		.BOLT- (V56878) (SPEC BACB30MY6K10) (OPT B30MY6K10 (V97928)) (OPT HL10VAZ6-10 (V73197)) (OPT HL10VAZ6-10 (V92215)) (OPT HL10VAZ6-10 (V97928)) (OPT L8006K10 (V06725)) (OPT HL10VAZ6-10 (V08524))	ABEF	2
R	-140A	HL10VAZ6-9		.BOLT- (V56878) (SPEC BACB30MY6K9) (OPT B30MY6K9 (V97928)) (OPT HL10VAZ6-9 (V73197)) (OPT HL10VAZ6-9 (V92215)) (OPT HL10VAZ6-9 (V97928)) (OPT L8006K9 (V06725)) (OPT HL10VAZ6-9 (V08524))	CDGJ	2
|	-140B	BACB30VT6K9		.BOLT	KL	2

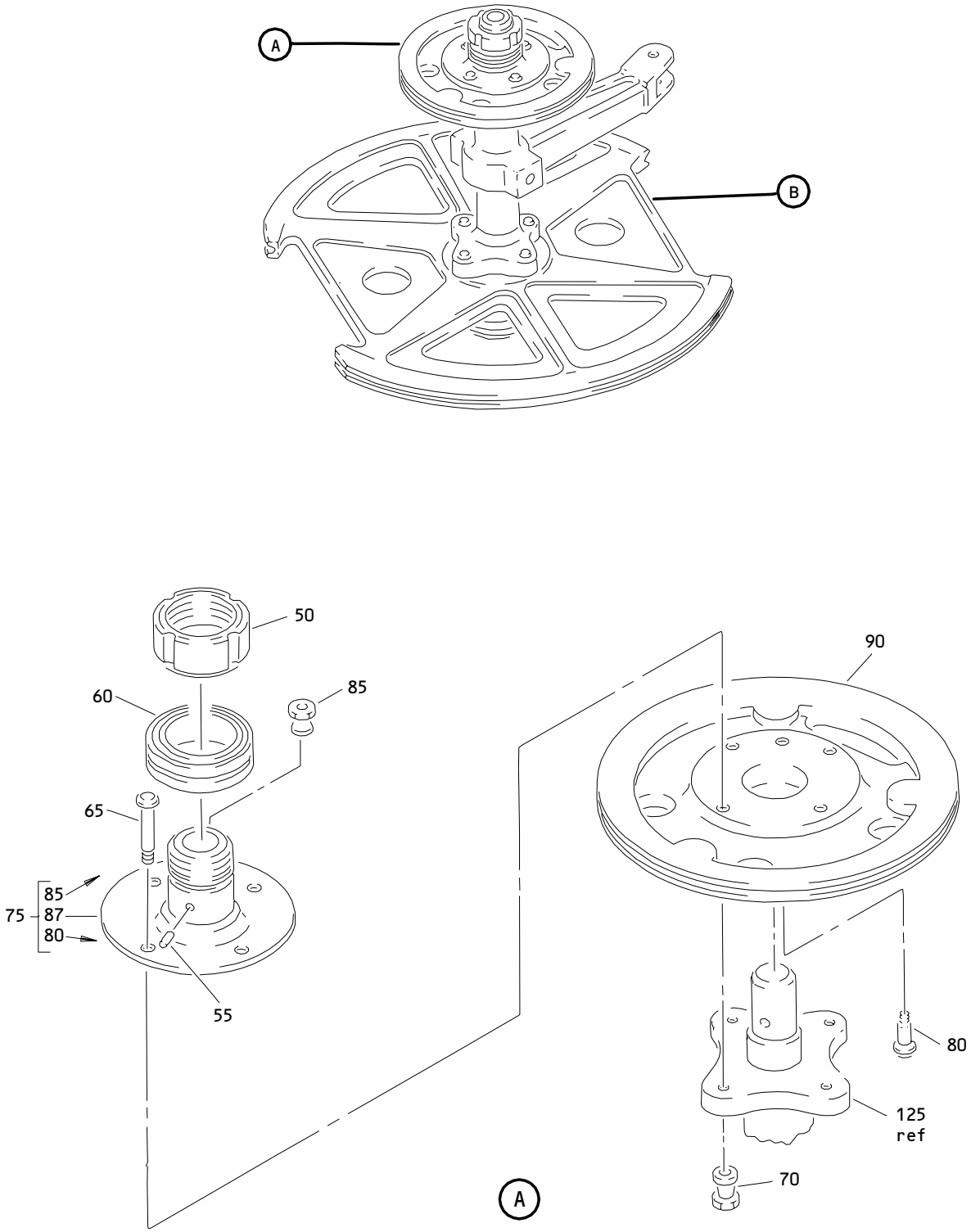
FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-145	HL10VAZ6-9		.BOLT (V56878) (SPEC BACB30MY6K9) (OPT B30MY6K9 (V97928)) (OPT HL10VAZ6-9 (V73197)) (OPT HL10VAZ6-9 (V92215)) (OPT HL10VAZ6-9 (V97928)) (OPT L8006K9 (V06725)) (OPT HL10VAZ6-9 (V08524))	A-GJ	6
-145A	BACB30VT6K12		.BOLT	KL	2
146	HL10VAZ6-9		.BOLT (V56878) (SPEC BACB30MY6K9) (SEE ITEM 140A FOR OPTIONAL PARTS)	A-GJ	4
-146A	BACB30VT6K9		.BOLT	KL	4
150	HL79-6		.COLLAR (V56878) (SPEC BACC30M6) (OPT HL79-6 (V73197)) (OPT HL79-6 (V92215)) (OPT 66014-6 (V56878))	A-GJ	8
-150A	BACC30BL6		.COLLAR	KL	8
155	253T1138-1		.COLLAR ASSY-ADAPTER	A-GJ KL	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
	160	HL10VAZ6-2		..BOLT-	A-GJ	1
				(V56878)	KL	
				(SPEC BACB30MY6K2)		
				(OPT B30MY6K2 (V97928))		
				(OPT HL10VAZ6-2 (V73197))		
				(OPT HL10VAZ6-2 (V92215))		
				(OPT HL10VAZ6-2 (V97928))		
				(OPT L8006K2 (V06725))		
				(OPT HL10VAZ6-2 (V08524))		
	165	HL79-6		..COLLAR-	A-GJ	1
				(V56878)	KL	
				(SPEC BACC30M6)		
				(OPT HL79-6 (V73197))		
				(OPT HL79-6 (V92215))		
				(OPT 66014-6 (V56878))		
				(REFER TO ITEM 150 FOR OPTIONAL PARTS)		
	170	253T1138-2		..COLLAR-ADAPTER	A-GJ KL	1
	172	253T1151-1		..INSERT *[1]	EFG	1
	-174	MS16562-209		..PIN-SPRING *[1]	EFG	1
	175	253T1118-7		.DRUM	A-GJ KL	1
	180	253T4013-1		.CRANK	ABEF	1
	-180A	253T4013-3		.CRANK	KL	1
R	185	253T1117-1		.SPOOL-CONN.	A-GJ KL	1
	190	253T1141-2		.SHAFT ASSY *[1]	A-C E-G	1
R	-190A	253T1141-5		.SHAFT ASSY *[1]	DJ	1
R	-190B	253T1141-11		.SHAFT ASSY	KL	1

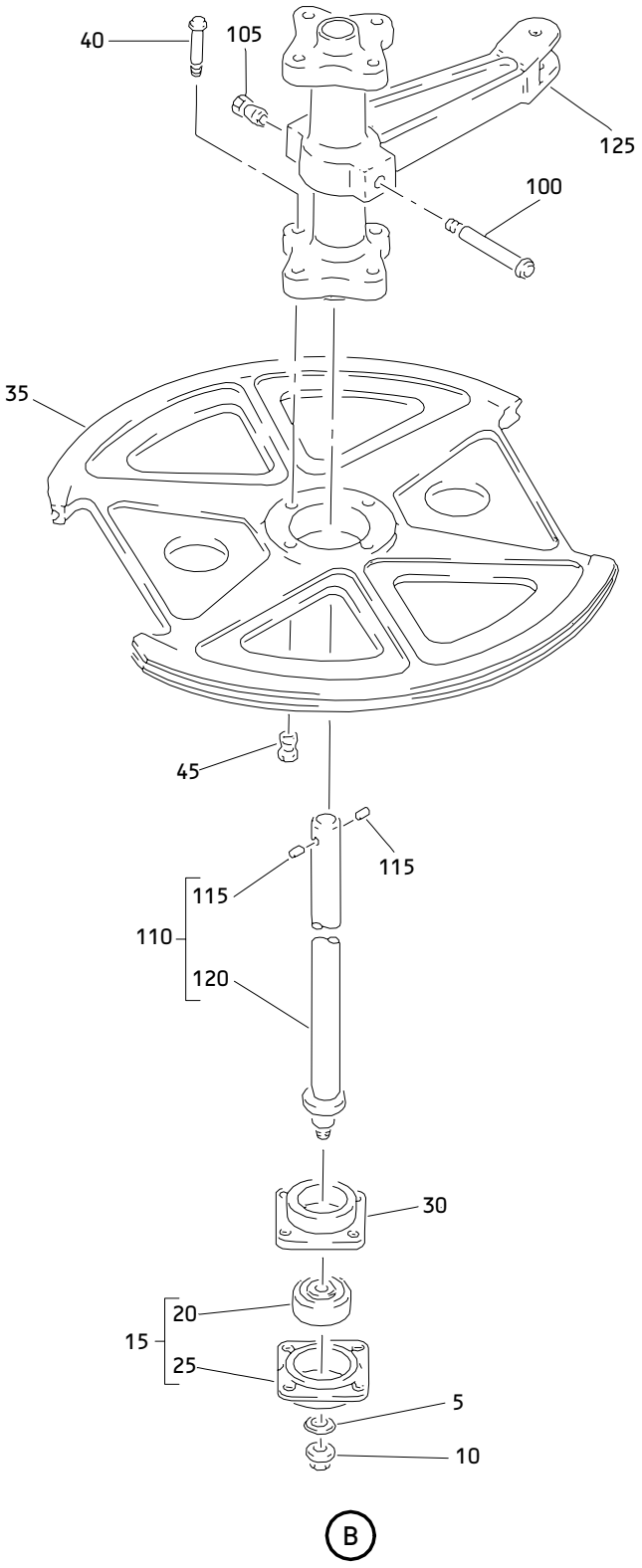
	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-195	HL10VAZ8-45		..BOLT- (V56878) (SPEC BACB30MY8K45) (OPT B30MY8K45 (V97928)) (OPT HL10VAZ8-45 (V73197)) (OPT HL10VAZ8-45 (V92215)) (OPT HL10VAZ8-45 (V97928)) (OPT L8008K45 (V06725)) (OPT HL10VAZ8-45 (V08524)) (OPT ITEM 195A USED WITH ITEM 197)	A-GJ	1
R	195A	HL10VAZ8-46		..BOLT- (V56878) (SPEC BACB30MY8K46) (OPT B30MY8K46 (V97928)) (OPT HL10VAZ8-46 (V73197)) (OPT HL10VAZ8-46 (V92215)) (OPT HL10VAZ8-46 (V97928)) (OPT L8008K46 (V06725)) (OPT HL10VAZ8-46 (V08524)) (OPT ITEM 195) (USED WITH ITEM 197)	A-GJ	1
	-195B	BACB30VT8K45		.BOLT	KL	1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	01-					
R	197	AN960PD416		..WASHER- (USED WITH ITEM 195A)	A-GJ	1
	200	HL79-8		..COLLAR- (V56878) (SPEC BACC30M8) (OPT HL79-8 (V73197)) (OPT HL79-8 (V92215)) (OPT 66014-8 (V56878))	A-GJ	1
	-200A	BACC30BL8		..COLLAR-	KL	1
	205	253T1145-1		..CRANK-BUS	A-GJ KL	1
	210	253T1139-1		..SHAFT ASSY-INNER (USED ON ITEM 190)		1
R	-210A	253T1139-5		..SHAFT ASSY-INNER (USED ON ITEM 190A,190B)	GJKL	1
	215	253T1125-5		...PLUG	A-GJ KL	2
	220	253T1139-2		...SHAFT (USED ON ITEM 210)		1
R	-220A	253T1139-6		...SHAFT (USED ON ITEM 210A)		1
	225	253T1123-3		..SHAFT-OUTER	A-C E-G	1
R	-225A	253T1123-3		..SHAFT-OUTER (OPT ITEM 225B)	DJ	1
R	-225B	253T1123-4		..SHAFT-OUTER (OPT ITEM 225A)	DJ	1
R	-225C	253T1123-5		..SHAFT-OUTER	KL	1

*[1] PRODUCTION DRUM ASSEMBLY 253T1141-6 (ITEM 1C) CONTAINS SHAFT ASSEMBLY 253T1141-5. REWORK DRUM ASSEMBLY 253T1141-6 (ITEM 1F), MADE FROM DRUM ASSEMBLY 253T1141-4 (SB 27A62), CONTAINS SHAFT ASSEMBLY 253T1141-2 PLUS INSERT 253T1151-1 AND SPRING PIN MS16562-209.



Aileron Control Force Transducer Drum Assembly
Figure 2 (Sheet 1)



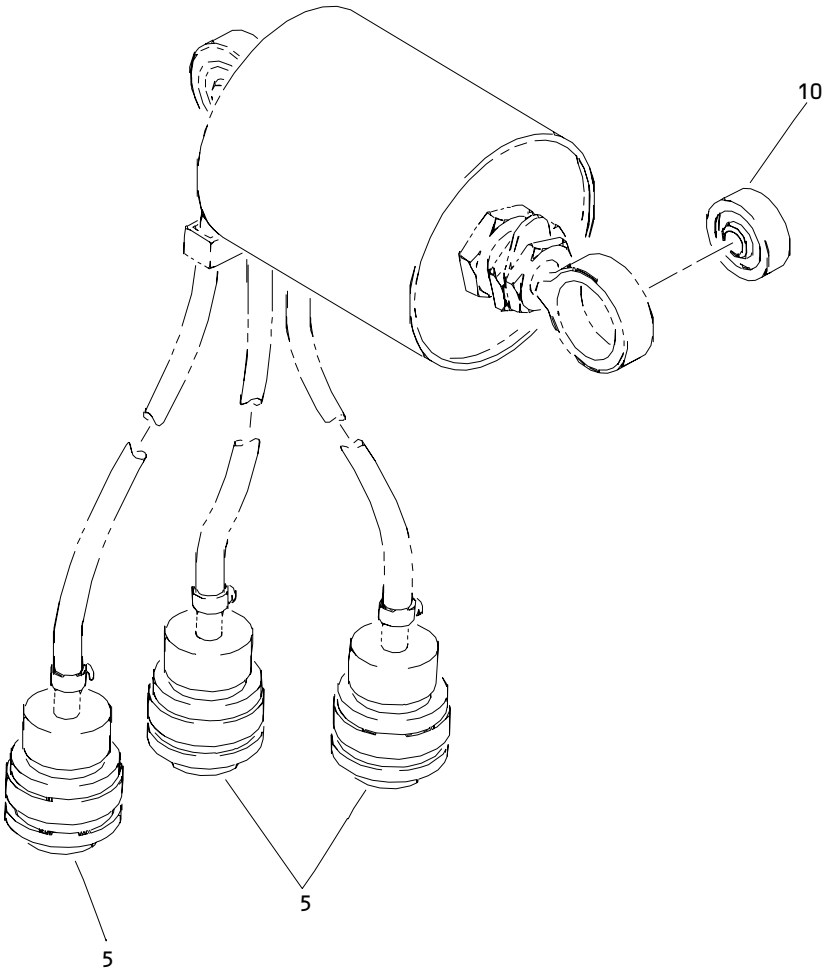
Aileron Control Force Transducer Drum Assembly
Figure 2 (Sheet 2)

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	02-					
R	-1	253T1141-7		DRUM ASSY-AIL. CONT FORCE TRANSDUCER	H	RF
R	5	BACW10BP4DP		.WASHER- (V10630) (SPEC BACW10BP4DP)		1
R	10	MS21042L4		.NUT		1
R	15	253T1121-1		.HOUSING ASSY-BEARING		1
R	20	KSP6		..BEARING- (V38443) (SPEC BACB10AC6) (OPT HHKSP6 (V38443)) (OPT KSP6-2TS (V43991)) (OPT KSP6E9440 (V21335)) (OPT KSP6FS428 (V21335)) (OPT KSP6G27 (V30163))		1
R	25	253T1121-2		..HOUSING		1
R	30	253T1121-5		.HOUSING		1
R	35	253T1152-1		.DRUM-DRIVE		1
R	40	HL10VAZ6-13		.BOLT- (V56878) (SPEC BACB30MY6K13) (OPT B30MY6K13 (V97928)) (OPT HL10VAZ6-13 (V73197)) (OPT HL10VAZ6-13 (V92215)) (OPT HL10VAZ6-13 (V97928)) (OPT L8006K13 (V06725)) (OPT HL10VAZ6-13 (V08524))		4

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	02-					
R	45	HL79-6		.COLLAR- (V56878) (SPEC BACC30M6) (OPT HL79-6 (V73197)) (OPT HL79-6 (V92215)) (OPT 66014-6 (V56878))		4
R	50	SL2822-16		.NUT- (V97393) (SPEC BACN10RF16) (OPT BR9080-16 (V72962)) (OPT 82631-1612 (V56878))		1
R	55	MS16562-209		.PIN-SPR (OPT ITEM 055A)		1
R	-55A	MS39086-125		.PIN-SPR (OPT ITEM 055)		1
R	60	DAT16-26A4		.BEARING- (V77896) (SPEC BACB10CJ16)		1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
R	02-65	HL10C6-15		.BOLT- (V73197) (SPEC BACB30MY6K15) (OPT HL10V6-15 (V97928)) (OPT L800-6-15 (V06725)) (OPT AL10V6-15 (V92215)) (OPT HL10V6-15 (V73197)) (OPT HL10V6-15 (V80539)) (OPT L80-6-15 (V97928)) (OPT B30MY6K15 (V97928)) (OPT HL10VAZ6-15 (V56878)) (OPT HL10VAZ6-15 (V73197)) (OPT HL10VAZ6-15 (V92215)) (OPT HL10VAZ6-15 (V97928)) (OPT L8006K15 (V06725)) (OPT HL10VAZ6-15 (V08524))		4
R	70	HL79-6		.COLLAR- (V56878) (SPEC BACC30M6) (OPT HL79-6 (V73197)) (OPT HL79-6 (V92215)) (OPT 66014-6 (V56878))		4
R	75	253T1138-1		.COLLAR ASSY-ADAPTER		1

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	02-					
R	80	HL10VAZ6-2		..BOLT- (V56878) (SPEC BACB30MY6K2) (OPT B30MY6K2 (V97928)) (OPT HL10VAZ6-2 (V73197)) (OPT HL10VAZ6-2 (V92215)) (OPT HL10VAZ6-2 (V97928)) (OPT L8006K2 (V06725)) (OPT HL10VAZ6-2 (V08524))		1
R	85	HL79-6		..COLLAR- (V56878) (SPEC BACC30M6) (OPT HL79-6 (V73197)) (OPT HL79-6 (V92215)) (OPT 66014-6 (V56878))		1
	87	253T1138-2		..COLLAR-ADAPTER		1
R	90	253T1118-7		.DRUM		1
R	100	BACB30MY8K31		.BOLT		1
R	105	HL79-8		.COLLAR- (V56878) (SPEC BACC30M8) (OPT HL79-8 (V73197)) (OPT HL79-8 (V92215)) (OPT 66014-8 (V56878))		1
R	110	253T1153-1		.SHAFT ASSY-INNER		1
R	115	253T1125-5		..PLUG		2
R	120	253T1153-2		..SHAFT		1
R	125	253T1155-1		.CRANK-BUS		1



Force Transducer Assembly
Figure 80

	FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
	80- -1	GM6931		TRANSDUCER ASSY-FORCE (V22863) (SPEC S253T401-1)		RF
	5	BACC45FT12C12P		.CONNECTOR		3
R	10	KSP3		.BEARING- (V38443) (SPEC BACB10AC3) (OPT KSP3-2TS (V43991)) (OPT KSP3E9440A (V21335)) (OPT KSP3FS428 (V21335)) (OPT HHKSP3 (V38443)) (OPT KSP3G27 (V30163))		2

NOTE: THE ABOVE ASSEMBLY IS NOT BOEING MANUFACTURED. PARTS BREAKDOWN FOR REFERENCE ONLY. CONSULT VENDOR FOR ANY ADDITIONAL INFORMATION.