TO: ALL HOLDERS OF AILERON CONTROL RIGHT SIDE TORQUE SHAFT ASSEMBLY COMPONENT MAINTENANCE MANUAL 27-11-20

REVISION NO. 6 DATED JUL 01/99

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 to the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
TITLE PAGE 1 301-302 501 REPAIR 1-1 601 REPAIR 7-1 601 701,703 801-802 1005-1008,1010-1017	Added 251T1597-4 top assembly.
TITLE PAGE 1 REPAIR 6-1 601 1005-1008,1011-1017	Deleted 251T1597-1 top assembly.
501 REPAIR 3-1 603-604 REPAIR 7-1 602-603	Edited without technical change.
1005-1008	Edited parts list for SB 27-128 notes.

BOEING

COMPONENT
MAINTENANCE MANUAL

AILERON CONTROL RIGHT SIDE TORQUE SHAFT ASSEMBLY

PART NUMBERS 251T1597-2 THRU -4

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

71675

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
		PRR B10500-19	MAR 10/83
		PRR B12597	MAR 01/95
27-128			MAR 01/95

PAGE	DATE	CODE
27-11-20		
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*1	JUL 01/99	01.1
2	BLANK	
REVISION RECORD		
1	JUL 10/83	01
2	BLANK	
TR & SB RECORD		
1	MAR 01/95	01.1
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LIST OF EFFECTIVE PAGES		
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THRU LAST PAGE		
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*701	JUL 01/99	01.1
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PAGE	DATE	CODE
FITS AND CLEARANCES		
*801	JUL 01/99	01.1
*802	JUL 01/99	01.1
ILLUSTRATED PARTS LIST		
1001	JUL 10/83	01
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*1005	JUL 01/99	01.1
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*1007	JUL 01/99	01.1
*1008	JUL 01/99	01.1
*1009	JUL 01/99	01.101
*1010	JUL 01/99	01.1
*1011	JUL 01/99	01.1
*1012	JUL 01/99	01.1
*1013	JUL 01/99	01.1
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TABLE OF CONTENTS

*[1] Special instruction not required. Use standard industry practices and information contained in 20-30-03.

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 Revisions & 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.

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

All weights and measurements used in the manual are in English units, unless otherwise stated. When metric equivalents are given, they will be in parentheses following the English units.

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	Mar 1/83
Assembly	Mar 1/83

AILERON CONTROL RIGHT SIDE TORQUE SHAFT ASSEMBLY

DESCRIPTION AND OPERATION

1. Description

   A. The aileron control right side torque shaft assembly consists of two lever assemblies, a cable guard assembly, LCCA input lever, torque tube, support assembly and input lever.

2. Operation

   A. The aileron control right side torque shaft assembly transfers control wheel inputs from the right aileron control quadrant to right LCCA.

3. Leading Particulars (approximate)

   Width -- 14 inches
   Length -- 27 inches
   Height -- 7 inches
   Weight -- 5 pounds

DISASSEMBLY

NOTE: Disassemble this component only as necessary to complete fault isolation, determine the serviceability of parts, perform required repairs, and restore the unit to serviceable condition.

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 (10)

   B. Bolt (5)

2. Disassembly (IPL Fig. 1)

   A. Remove nut (90) and spacer (94) from upper fitting (95A).

   B. Remove lever assembly (40) from upper fitting (95A).

      NOTE: Do not remove bushings (65) unless necessary for repair or replacement.

   CAUTION: SHEAR PLATE (50) AND LEVER ASSY (55) COMPRISE A MATCHED SET AND MUST BE KEPT TOGETHER TO ENSURE PROPER OPERATION AFTER ASSEMBLY.

   C. Remove bolt (5), collar (10) and bushing (15). Remove lever assembly (25) from lever assembly (40). Remove bearing (20) from lever assembly (25).

      NOTE: Do not remove bearing (30) unless necessary for repair or replacement.

   D. Remove bolts (75), washers (80) and nuts (85). Remove cable guard assembly (100) and upper fitting (95A) from torque tube (155).

      NOTE: Do not remove marker (205) unless necessary for replacement.

   E. Remove screws (105), washers (110) and nuts (115). Remove fairlead (120) from guard bracket (125).

      NOTE: Do not remove LCCA input lever (135) unless necessary for repair or replacement.

   F. Remove bolts (140), washers (145) and nuts (150). Remove torque tube (155) from input lever (200).

G. Remove bolt (160), washer (165), nut (170) and bushing (175). Remove support assembly (180) from input lever (200).

NOTE: Do not remove bearings (185, 190) unless necessary for repair or replacement.

CHECK

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

2. Refer to FITS AND CLEARANCES for design dimensions and wear limits.

3. Magnetic particle check the following parts (Ref IPL Fig. 1) per 20-20-01.

   A. Fitting (95A)

4. Penetrant check the following parts (Ref IPL Fig. 1) per 20-20-02.

   A. Fitting (195)

   B. Input Lever (200)

   C. Lever (35, 70, 135)

   D. Shear Plate (50)

   E. Torque Tube (155)

REPAIR - GENERAL

1. Content

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

P/N	NAME	REPAIR
251T1517	SUPPORT	1-1
251T1523	LEVER	2-1
251T1599	LEVER	3-1
BAC27TCT0289	MARKER	4-1
---	MISC PARTS REFINISH	5-1
251T1593	FITTING	6-1
251T1518	LEVER	7-1

2. Standard Practices

   A. Refer to the following standard practices as applicable, for details of procedures 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
   20-41-02 Application of Chemical and Solvent Resistant Finishes
   20-43-01 Chromic Acid Anodizing
   20-50-03 Bearing Installation and Retention
   20-50-08 Application of Dry Lubricant
   20-50-05 Application of Metal-cals

3. Materials

   NOTE: Equivalent substitutes may be used.

   A. Deleted

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

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

D. Dry Lubricant -- MIL-L-8937 or BMS 3-8 (Ref 20-50-08)

E. Protective finish topcoating -- Type 41 (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

242563

SUPPORT ASSEMBLY - REPAIR 1-1

251T1517-3, -5, -7

NOTE: Refer to REPAIR-GENERAL for list of applicable standard practices.

1. Bearing Replacement (Ref IPL Fig. 1)

   A. Remove bearings (185, 190).

   B. Install new bearing (190) with BMS 5-95 sealant and roller swage both sides in place per 20-50-03.

   C. Install new bearing (185) with BMS 5-95 sealant and roller swage per SOPM 20-50-03.

1. Refinish

   A. Fitting (195 IPL Fig. 1) -- Chromic acid anodize and apply one coat of primer BMS 10-11, type 1 (F-18.13) all over except no primer in holes. Material: Aluminum alloy.

LEVER ASSEMBLY - REPAIR 2-1

251T1523-1, -3

NOTE: Refer to REPAIR-GENERAL for list of applicable standard practices.

1. Bearing Replacement (Ref IPL Fig. 1)

   A. Remove bearing (30).

   B. Install bearing (30) with BMS 5-95 sealant and roller swage in place per SOPM 20-50-03.

2. Refinish

   A. Lever (35) -- chromic acid anodize and apply one coat of primer BMS 10-11, type 1 (F-18.13) all over except no primer in holes. Material: Aluminum alloy.

LEVER ASSEMBLY - REPAIR 3-1

251T1599-1

NOTE: Refer to REPAIR-GEN for list of applicable standard practices.

1. Bushing Replacement (IPL Fig. 1)

   CAUTION: SHEAR PLATE (50) AND LEVER ASSY (55) COMPRISE A MATCHED SET AND MUST BE KEPT TOGETHER TO ENSURE PROPER OPERATION AFTER ASSEMBLY.

   A. Remove rivets (45) and bushings (60) then separate shear plate (50) and lever (70).

   B. Remove bushings (60, 65).

   C. Install replacement bushings (60, 65) with BMS 5-95 sealant.

   D. Fillet seal bushing flanges with BMS 5-95 sealant.

   E. Position shear plate (50) on lever (70) and secure with rivets (45). Install rivets (45) with sealant and use squeeze method.

CAUTION: RIVETS (45) ARE CONTROLLED SHEAROUT RIVETS AND SUBSTITUTION IS NOT ALLOWED.

2. Refinish

   A. Shear plate (50, IPL Fig. 1) -- Passivate (F-17.09) all over. Cadmium plate and apply one coat of primer BMS 10-11, type 1 (F-16.01) to flat surface of plate. Material: 15-5PH CRES, 180-200 ksi.

   B. Bushing (60, IPL Fig. 1) -- Cadmium plate (F-15.02). Cadmium plate is optional in bore. Material: 15-5PH CRES, 180-200 ksi.

   C. Bushing (65, IPL Fig. 1) -- Cadmium plate (F-15.06) all over except on bushing bore. Material: Aluminum alloy.

3. Hole Repair (Fig. 601)

   A. Install oversize bushing to replace bushing (15).

      (1) Machine as required, within repair limit, to remove defects.

      (2) Manufacture oversize bushing per Fig. 602.

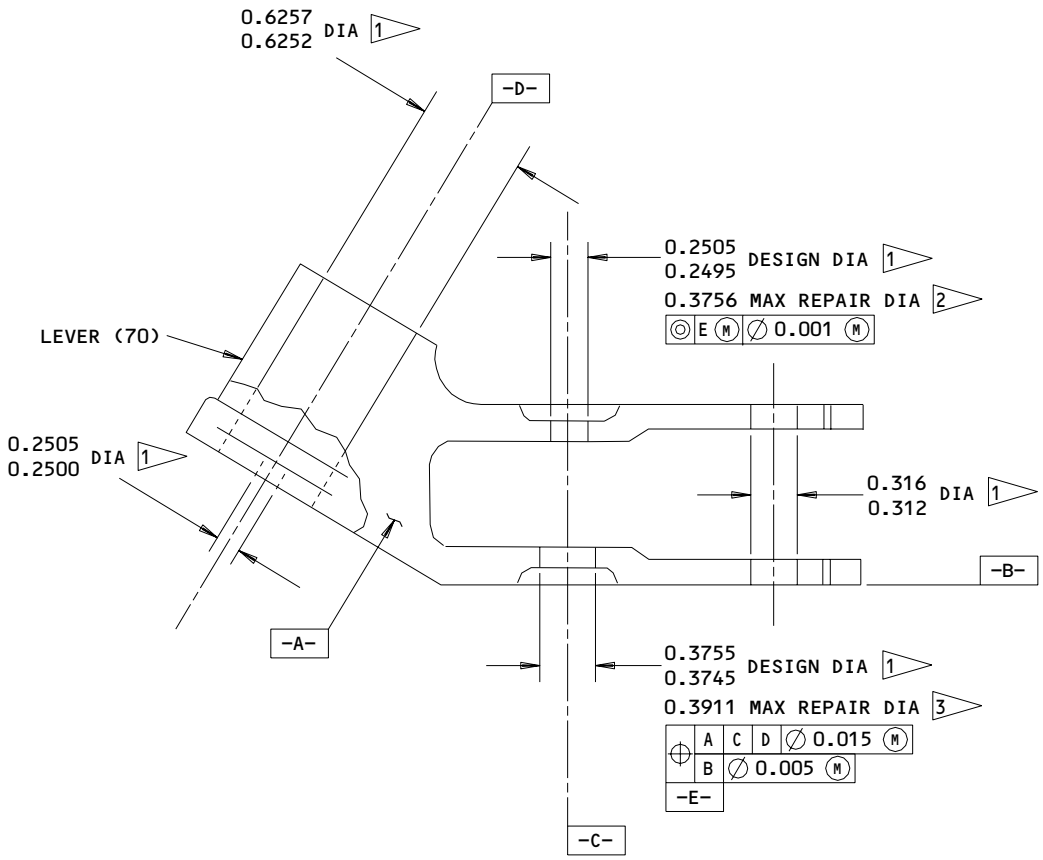
      (3) Attach bushing to lever assembly (25) with tag stating "Hole has been machined oversize. Use attached bushing in place of bushing BACB28AK04-023."

B. Install repair bushing.

(1) Machine as required, within repair limit, to remove defects.

(2) Manufacture repair bushing per Fig. 603. Minimum wall thickness of bushing to be 0.032 inch.

(3) Install bushing with wet BMS 5-95 sealant per SOPM 20-50-03.



REFINISH

LEVER (7O) -- CHROMIC ACID ANODIZE AND APPLY ONE COAT OF BMS 10-11, TYPE 1, PRIMER (F-18.13) EXCEPT OMIT PRIMER AS NOTED.

HOGOUT LEVER (7OA) -- CHROMIC ACID ANODIZE AND APPLY ONE COAT BMS 10-11, TYPE 1, PRIMER (F-18.13) PLUS APPLY ONE COAT BMS 10-11, TYPE 1, PRIMER (F-20.02) EXCEPT OMIT PRIMER AS NOTED.

1 OMIT PRIMER THIS SURFACE

2 REPAIR LIMIT FOR INSTALLATION OF REPAIR BUSHING

3 REPAIR LIMIT FOR INSTALLATION OF OVER-SIZE BUSHING

REPAIR

REF 2 3

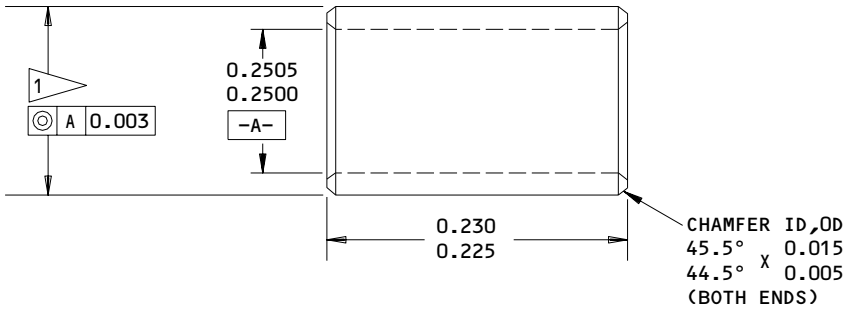
125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.008 R

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

251T1599-1
Lever Repair
Figure 601



1 FINAL BUSHING OUTSIDE DIAMETER EQUALS REPAIR DIAMETER OF LEVER MINUS 0.0000–0.0015 CLEARANCE

32 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: CRES

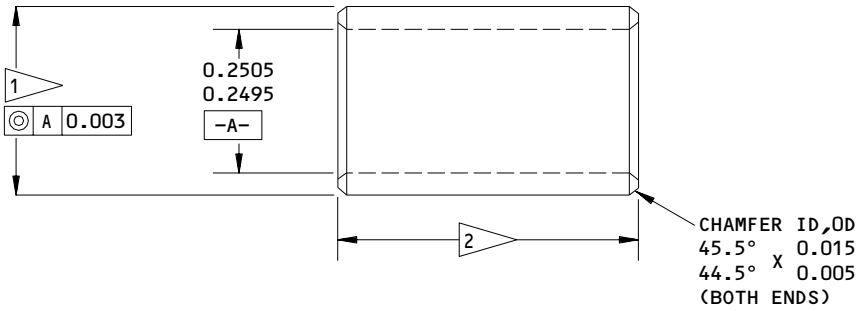
FINISH: CHROME PLATE

DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 602

242430



1 FINAL BUSHING OUTSIDE DIAMETER EQUALS REPAIR DIAMETER OF LEVER PLUS 0.0003–0.0015 INTERFERENCE

2 BUSHING LENGTH TO BE FLUSH, MINUS 0.000–0.003, TO LEVER AT REPAIR HOLE

32 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL–NI–BRONZE

FINISH: CADMIUM PLATE

DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

Repair Bushing Details
Figure 603

242432

MARKER - REPAIR 4-1

BAC27TCTO289

NOTE: Refer to REPAIR-GEN for list of applicable standard practices.

1. Marker Replacement (Ref IPL Fig. 1)

   A. Remove marker (205).

   B. Pre-form marker by bending around 1.0 inch diameter rod (spring-back will produce conformity with tube diameter).

   C. Install marker (205) per 20-50-05.

   D. Seal edges per 20-50-05 except use protective finish topcoating.

MISCELLANEOUS PARTS REFINISH - REPAIR 5-1

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

IPL FIG. & ITEM	MATERIAL	FINISH
Fig. 1		
Lever (135)	Al alloy	Chromic acid anodize (F-17.04). Apply one coat of primer BMS 10-11, type 1 (F-20.02) all over except no primer in holes.
Fitting (95)		Deleted. (See Repair 6-1).
Torque tube (155)	Al alloy	Chemical treatment (F-17.05) all over. Apply two coats of primer BMS 10-11, type 1 (F-20.03) on unmachined part.
Guard bracket (125)	Al alloy	Anodize chromic acid, type 1 or sulfuric acid, type 2 (F-17.05) plus apply two coats of primer BMS 10-11, type 1 (F-20.03) all over.

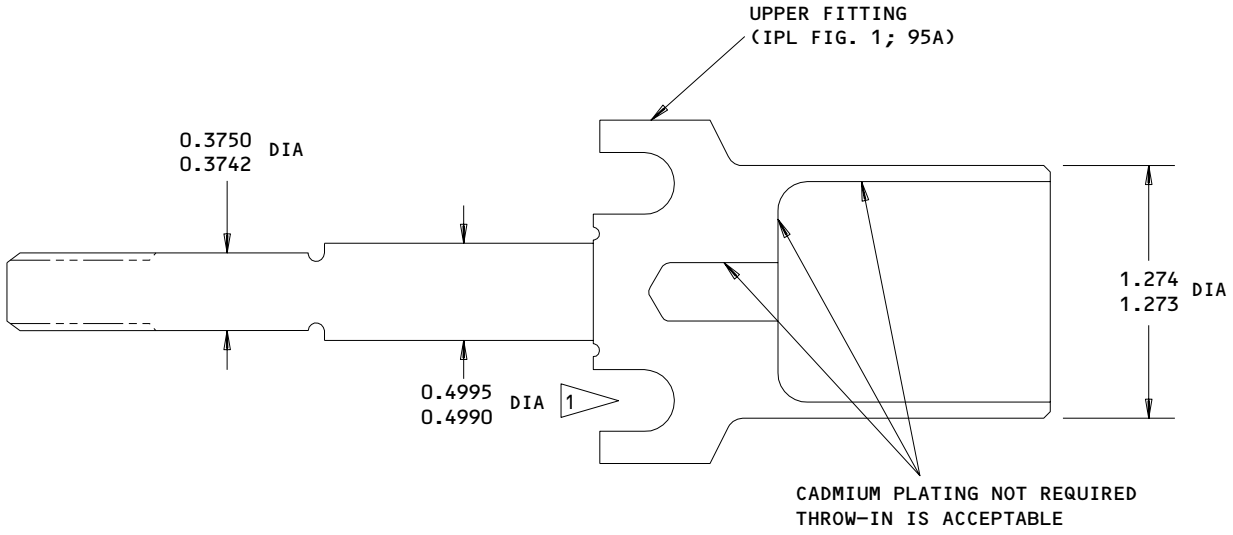
Refinish Details
Figure 601

UPPER FITTING - REPAIR 6-1

251T1593-2

1. Plating Repair

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



REFINISH

CADMIUM PLATE (0.0002 TO 0.0004 INCH) (F-15.02) PER 20-42-05 ALL OVER, EXCEPT AS NOTED BY 1

1 OMIT CADMIUM PLATING THIS DIAMETER. APPLY DRY FILM LUBE MIL-L-8937 OR BMS 3-8 PER 20-50-08

MATERIAL: 15-5 PH CRES
180-200 KSI

ALL DIMENSIONS ARE IN INCHES

ALL DIMENSIONS APPLY AFTER PLATING

251T1593-2
Upper Fitting Refinish
Figure 601

199275

LEVER - REPAIR 7-1

251T1518-3, -4

1. Plating Repair

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.

2. Hole Repair (Fig. 601)

A. Install oversize bushing to replace bushing (175).

(1) Machine as required, within repair limit, to remove defects.

(2) Manufacture oversize bushing per Fig. 602.

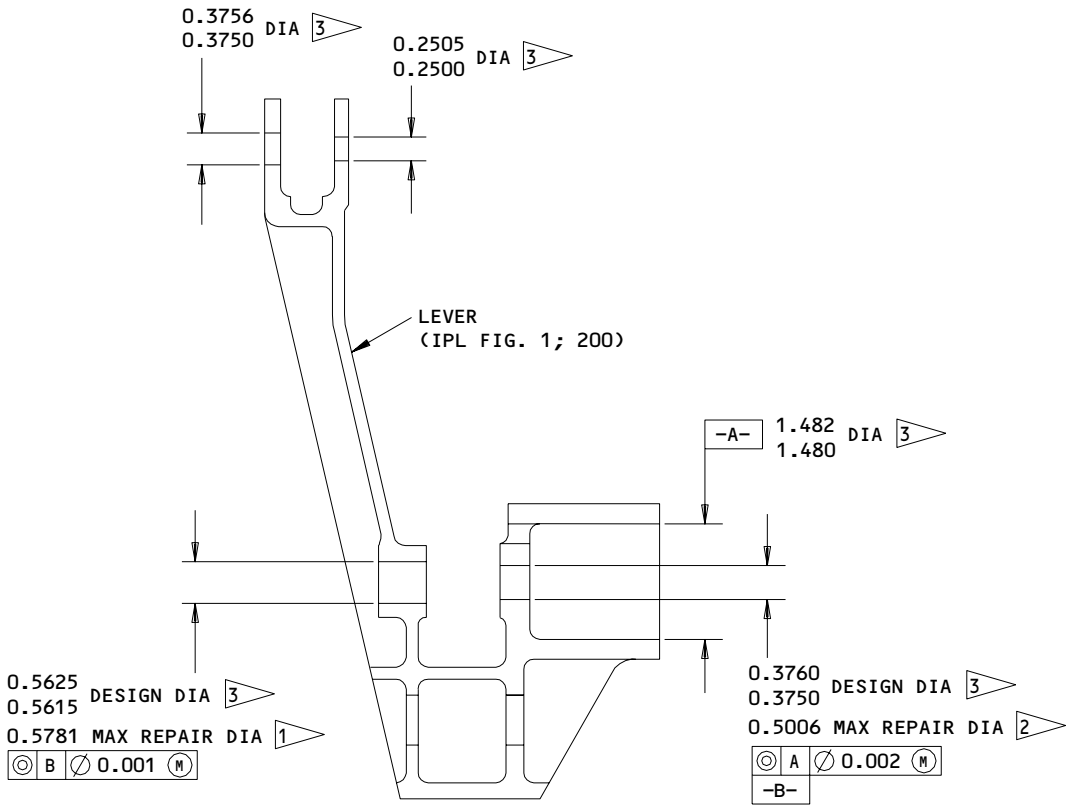
(3) Attach bushing to lever (200) with tag stating "Hole has been machined oversize. Use attached bushing in place of bushing BACB28AK06-063."

B. Install repair bushing.

(1) Machine as required, within repair limit, to remove defects.

(2) Manufacture repair bushing per Fig. 603. Minimum wall thickness of bushing to be 0.032 inch.

(3) Install bushing with wet sealant per 20-50-03.



REFINISH

LEVER (200) -- ANODIZE (F-17.05) PLUS APPLY ONE COAT OF BMS 10-11, TYPE 1, PRIMER (F-20.02) EXCEPT OMIT PRIMER AS NOTED

LEVER (200A) -- BORIC ACID-SULFURIC ACID ANODIZE (F-17.35) PLUS APPLY ONE COAT OF BMS 10-11, TYPE 1, PRIMER (F-20.02) EXCEPT OMIT PRIMER AS NOTED

REPAIR

REF 1 2

125 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

BREAK SHARP EDGES 0.008 R

MATERIAL: AL ALLOY

ALL DIMENSIONS ARE IN INCHES

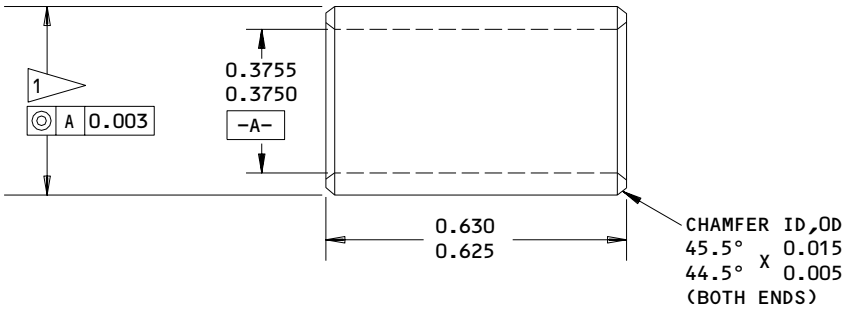
1 REPAIR LIMIT FOR INSTALLATION OF OVER-SIZE BUSHING

2 REPAIR LIMIT FOR INSTALLATION OF REPAIR BUSHING

3 OMIT PRIMER THIS SURFACE

251T1518-3,-4
Lever Repair
Figure 601

242424



1 FINAL BUSHING OUTSIDE DIAMETER EQUALS REPAIR DIAMETER OF LEVER MINUS 0.0000–0.0015 CLEARANCE

32 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: CRES

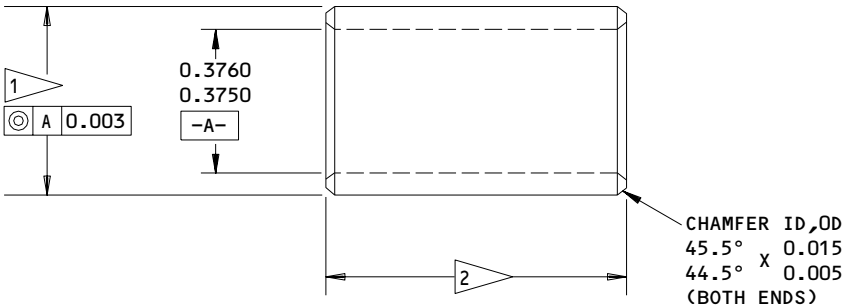
FINISH: CHROME PLATE

DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

Oversize Bushing Details
Figure 602

242431



1 FINAL BUSHING OUTSIDE DIAMETER EQUALS REPAIR DIAMETER OF LEVER MINUS 0.0004–0.0016 CLEARANCE

2 BUSHING LENGTH TO BE FLUSH, MINUS 0.000–0.003, TO LEVER AT REPAIR HOLE

32 ALL MACHINED SURFACES UNLESS SHOWN DIFFERENTLY

MATERIAL: AL–NI–BRONZE

FINISH: CHROME PLATE

DIMENSIONS APPLY AFTER PLATING

ALL DIMENSIONS ARE IN INCHES

Repair Bushing Details
Figure 603

242435

ASSEMBLY

1. Materials

NOTE: Equivalent substitutes may be used.

A. Grease -- BMS 3-24 (Ref 20-60-03)

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

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

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

A. Install torque tube (155) to LCCA input lever (135) with fay surface seal and secure with rivets (130). Fillet seal seam between torque tube (155) and LCCA input lever (135) with sealant.

B. Install fairlead (120) on guard bracket (125) with screws (105), washers (110) and nuts (115).

C. Install upper fitting (95A) into torque tube (155) with fay surface seal. Position cable guard assembly (100) on torque tube (155) and secure with bolts (75), washers (80) and nuts (85). Install bolt (75) with sealant. Upper fitting (95A) to be flush with machined shoulder of torque tube (155) within 0.01 inch.

D. Fillet seal seam between torque tube (155) and upper fitting (95A) with sealant.

E. Install bearing (20) into lever assembly (25) with grease per 20-50-03. Install lever assembly (25) into lever assembly (40) with bolt (5), bushing (15) and collar (10). Install bolt (5) with grease on all surfaces. Install bushing (15) with grease at bushing ID.

F. Install lever assembly (40) with grease at ID of bushings (65), on upper fitting (95A). Ensure that groove on lever assembly (40) sits on lug of upper fitting (95A).

G. Install spacer (94) and nut (90) on upper fitting (95A).

NOTE: Remove and discard nut (90) and spacer (94) at installation.

H. Position support assembly (180) with swaged bearing (185) facing torque tube (155), on input lever (200). Install bolt (160) with grease on all surfaces, bushing (175), washer (165) and nut (170). Install bushing (175) with grease at bushing ID.

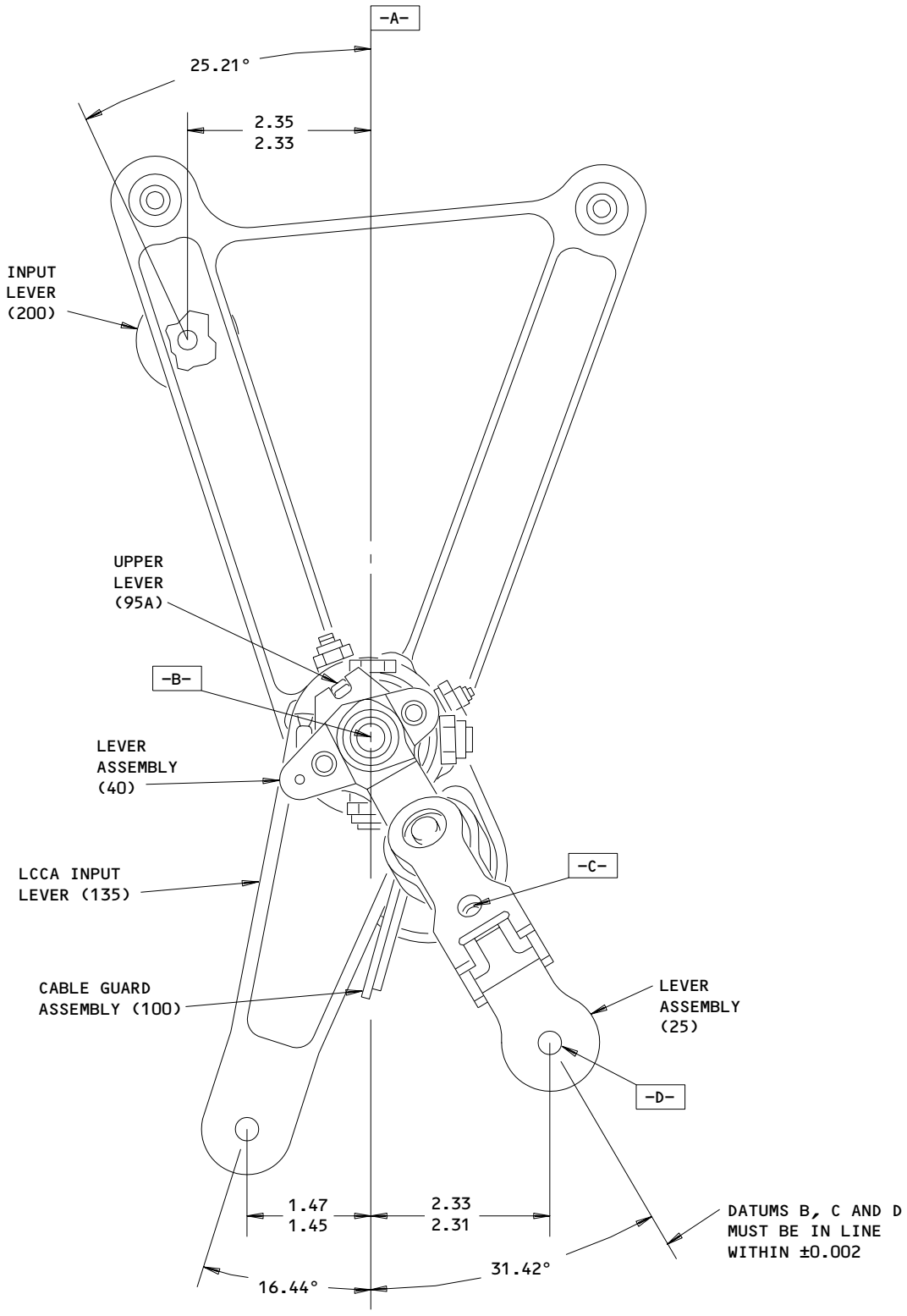
I. Install torque tube (155) into input lever (200) with fay surface seal. Install bolts (140) with sealant, washers (145) and nuts (150).

J. Fillet seal seam between torque tube (155) and input lever (200) with sealant.

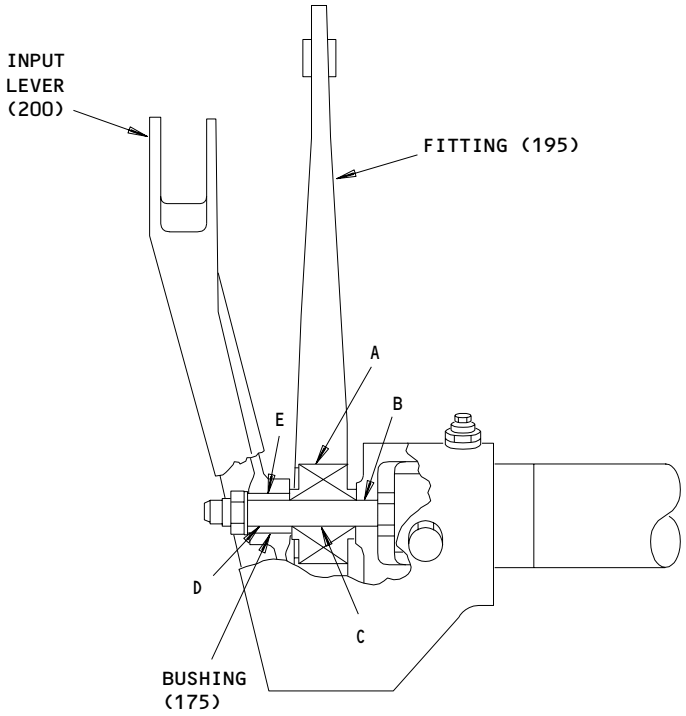
K. Apply two coats of primer to external unprimed surfaces.

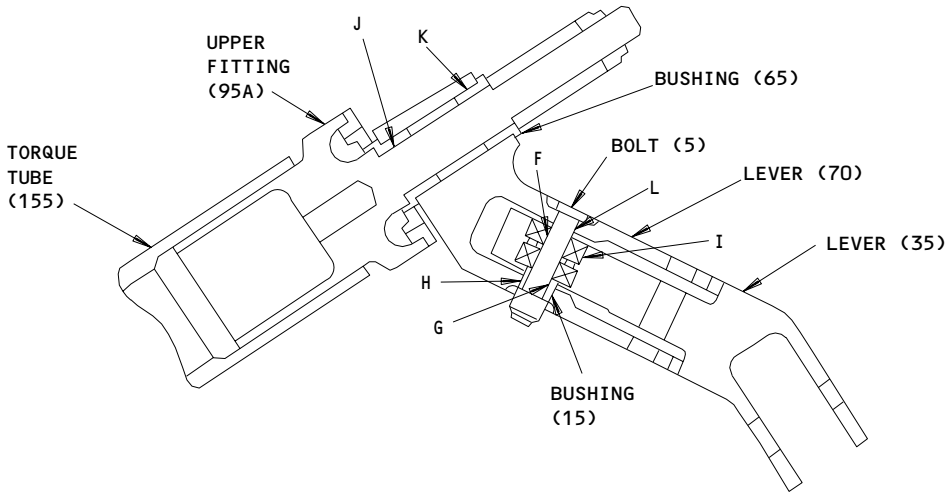
3. Storage

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



Right Side Torque Shaft Assembly
Figure 701





Fits and Clearances
Figure 801 (Sheet 1)

Ref Letter Fig.801	Mating Item No. IPL Fig.	Design Dimension				Service Wear Limit		
		Dimension		Assembly Clearance 1		Dimension		Maximum Clearance
		Min	Max	Min	Max	Min	Max	
A	ID 195 OD 185	1.4377 1.4370	1.4382 1.4375	0.0002	0.0012			
B	ID 200 OD 160	0.3750 0.3735	0.3760 0.3745	0.0005	0.0025	0.3715	0.3790	0.0045
C	ID 185 OD 160	0.3745 0.3735	0.3750 0.3745	0.0000	0.0015	0.3715	0.3780	0.0035
D	ID 175 OD 160	0.3750 0.3735	0.3755 0.3745	0.0005	0.0020	0.3715	0.3785	0.0040
E	ID 200 OD 175	0.5615 0.5610	0.5625 0.5615	0.0000	0.0015	0.5590	0.5650	0.0035
F	ID 20,30 OD 5	0.2497 0.2480	0.2500 0.2495	0.0002	0.0020	0.2460	0.2535	0.0040
G	ID 15 OD 5	0.2500 0.2480	0.2505 0.2495	0.0005	0.0025	0.2460	0.2540	0.0045
H	ID 70 OD 15	0.3745 0.3740	0.3755 0.3745	0.0000	0.0015	0.3720	0.3780	0.0035
I	ID 35 OD 20,30	0.7495 0.7496	0.7502 0.7500	-0.0005	0.0006	0.7476	0.7526	0.0026
J	ID 65 OD 95A	0.5005 0.4990	0.5015 0.4995	0.0010	0.0025			
K	ID 70 OD 65	0.6252 0.6257	0.6257 0.6262	-0.0010	0.0000			
L	ID 70 OD 5	0.2495 0.2480	0.2505 0.2495	0.0000	0.0025	0.2460	0.2540	0.0045

1 NEGATIVE VALUES DENOTE INTERFERENCE FIT

ALL DIMENSIONS ARE IN INCHES

Fits and Clearances
Figure 801 (Sheet 2)

71659

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 are 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

S0352 NIPPON MINIATURE BEARING CO LTD
TOKYO, JAPAN

02758 NETWORKS ELECTRONIC CORP U S BEARING DIV
9750 DE SOTO AVENUE
CHATSWORTH, CALIFORNIA 91311-4409

09455 BFM TRANSPORT DYNAMICS CORP
3131 WEST SEGERSTROM AVENUE PO BOX 1953
SANTA ANA, CALIFORNIA 92702-1953

11815 CHERRY AEROSPACE FASTENERS DIV OF TEXTRON
1224 EAST WARNER AVENUE PO BOX 2157
SANTA ANA, CALIFORNIA 92707-0157

15653 MICRODOT INC AEROSPACE FASTENING SYS KAYNAR MFG DIV
800 SOUTH STATE COLLEGE BLVD PO BOX 3001
FULLERTON, CALIFORNIA 92634-3001

15860 NEW HAMPSHIRE BALL BEARINGS, INCORPORATED ASTRO DIVISION
155 LEXINGTON AVENUE
LACONIA, NEW HAMPSHIRE 03246-2937

16746 SPECLINE INCORPORATED
11185 TUXFORD STREET
SUN VALLEY, CALIFORNIA 91352-2632

17446 HUCK MFG CO GOV CONTRACTS LOS ANGELES DIV SUB OF FED-MOGUL
900 WATSON CENTER ROAD
CARSON, CALIFORNIA 90745

21335 TORRINGTON CO FAFNIR BEARING DIV
59 FIELD STREET
TORRINGTON, CONNECTICUT 06790-4942

29666 HUCK MANUFACTURING CO SUB OF FEDERAL-MOGUL CORP
6 THOMAS
IRVINE, CALIFORNIA 92714

VENDORS

38443 MRC BEARINGS
402 CHANDLER STREET
JAMESTOWN, NEW YORK 14701-3802

40920 MPB MINIATURE PRECISION BEARING DIV
PRECISION PARK PO BOX 547
KEENE, NEW HAMPSHIRE 03431

43991 FAG BEARING INCORPORATED
118 HAMILTON AVENUE
STAMFORD, CONNECTICUT 06904

50294 NEW HAMPSHIRE BALL BEARINGS INC
9730 INDEPENDENCE AVENUE PO BOX 2515
CHATSWORTH, CALIFORNIA 91311-4323

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

56644 AURORA BEARING CO
970 SOUTH LAKE STREET
AURORA, ILLINOIS 60506-5929

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

73134 IMO INDUSTRIES INC HEIM BEARINGS DIV
60 ROUND HILL ROAD PO BOX 430
FAIRFIELD, CONNECTICUT 06430

80539 SPS TECHNOLOGIES INC AEROSPACE PRODUCTS DIV
2701 SOUTH HARBOR BOULEVARD PO BOX 1259
SANTA ANA, CALIFORNIA 92702-1259

VENDORS

81376 SOUTHWEST PRODUCTS COMPANY
2240 BUENA VISTA STREET
IRVINDALE, CALIFORNIA 91706

83086 NEW HAMPSHIRE BALL BEARINGS, INCORPORATED
ROUTE 202
PETERBOROUGH, NEW HAMPSHIRE 03458

92215 FAIRCHILD IND INC FAIRCHILD AEROSP FASTNR DIV DESIGN & ENGRG
3000 WEST LOMITA BLVD
TORRANCE, CALIFORNIA 90505-5102

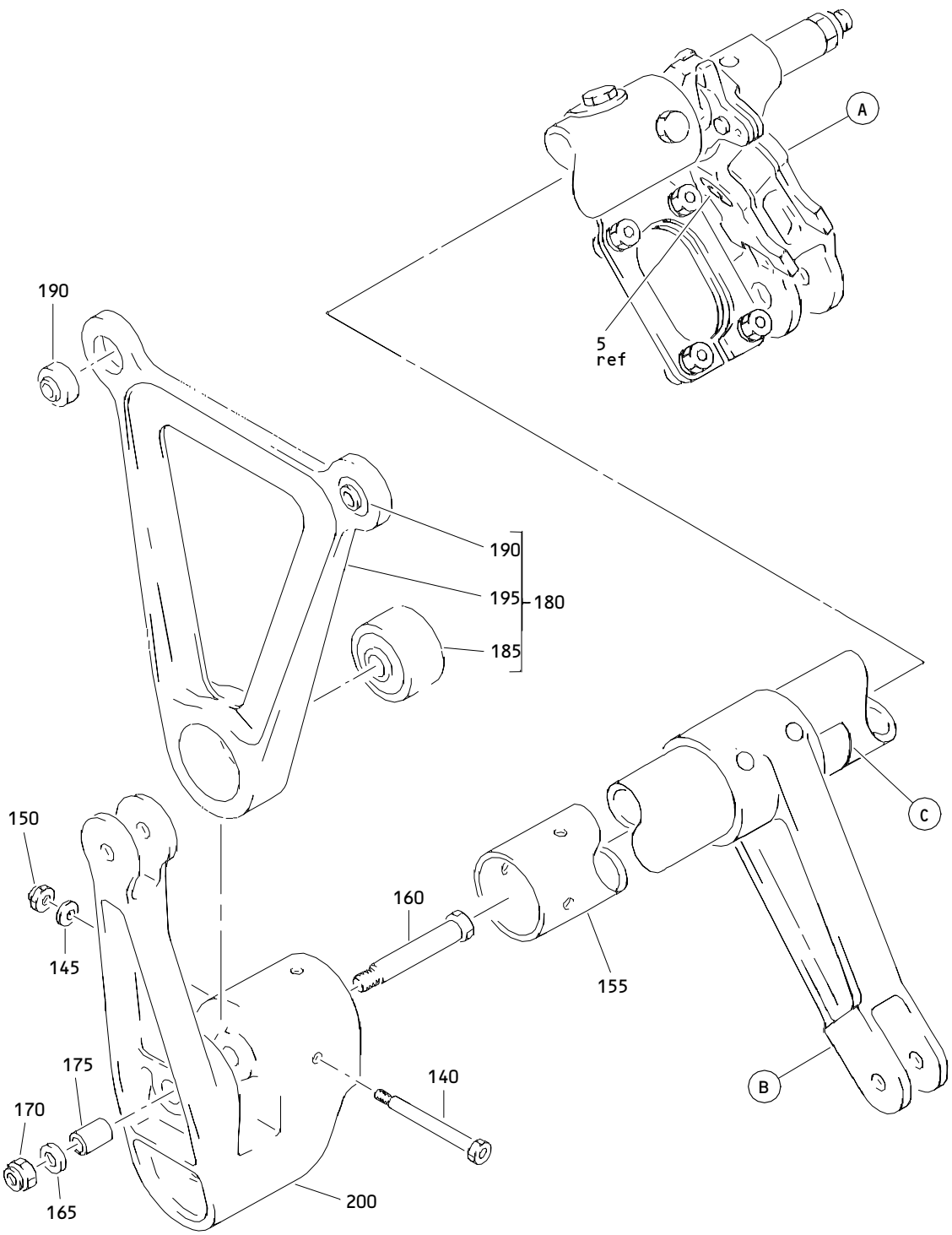
97613 SARGENT TECHNOLOGIES
1851 SOUTH PANTANO ROAD
TUCSON, ARIZONA 85710

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
ABG4-4		1	190	2
		1	190	2
ACMDSP6A3908		1	185A	1
		1	185B	1
ACMKP4AA3908		1	20A	1
		1	20B	1
		1	30A	1
		1	30B	1
AG425		1	190	2
AN960KD10L		1	110	4
AN960KD416		1	145	2
AN960KD516		1	80	2
AN960KD616		1	165	1
BACB10AP4		1	20	1
		1	30	1
BACB10CA6		1	185	1
BACB10CL4		1	190	2
BACB10FS04RJ		1	20C	1
		1	30C	1
BACB10FS4R		1	20A	1
		1	20B	1
		1	30A	1
		1	30B	1
BACB10FW6		1	185A	1
		1	185B	1
		1	185C	1
BACB28AK04-023		1	15	1
BACB28AK04-086		1	15A	1
BACB28AK06-063		1	175	1
BACB30GW8-15		1	5	1
BACB30NF4-33		1	140	2
BACB30NF5-25		1	75	2
BACB30NF6-32		1	160	1
BACB30NF6-35		1	160A	1
BACC30K8		1	10	1
BACN10JC3		1	115	4
BACN10JC4		1	150	2
BACN10JC4CD		1	150A	2
BACN10JC5		1	85	2
BACN10JC5CD		1	85A	2
BACN10JC6		1	90	1
		1	170	1
BACN10JC6CD		1	90A	1
		1	170A	1
BACR15BB4AD9		1	45	2
BAC27TCT0289		1	205	1
BLN4-2220		1	190	2

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
BNP4F112		1	190	2
BRH10A3		1	115	4
BRH10A4		1	150	2
BRH10A5		1	85	2
BRH10A6		1	90	1
		1	170	1
DSP6		1	185	1
DSP6FS428		1	185	1
DSP65D610		1	185	1
HG4-141		1	190	2
HHDSP6		1	185	1
H10-3BAC		1	115	4
H10-4BAC		1	150	2
H10-5BAC		1	85	2
H10-6BAC		1	90	1
		1	170	1
KSBG4-56		1	190	2
LLMKP4A		1	20	1
		1	30	1
MKP4A		1	20	1
		1	30	1
MKP4AFS428		1	20	1
		1	30	1
MKP4AG20		1	20	1
		1	30	1
MKP4ALY196		1	20	1
		1	30	1
MKP4ATT		1	20	1
		1	30	1
MKP4A2TS		1	20	1
		1	30	1
MKP4E6531		1	20	1
		1	30	1
NAS1149D0463J		1	145A	2
NAS1149D0516J		1	80A	2
NAS1149D0663J		1	165A	1
NAS1398D6-6		1	130A	6
NAS1398D6-7		1	130	6
NAS42DD12-71		1	94A	1
NAS42DD12-72		1	94	1
		1	94B	1
NAS623-3-3		1	105	4
NB4-1		1	190	2
NB4A		1	190	2
NC4-1		1	190	2
ND4A		1	190	2
NS202101-02		1	115	4

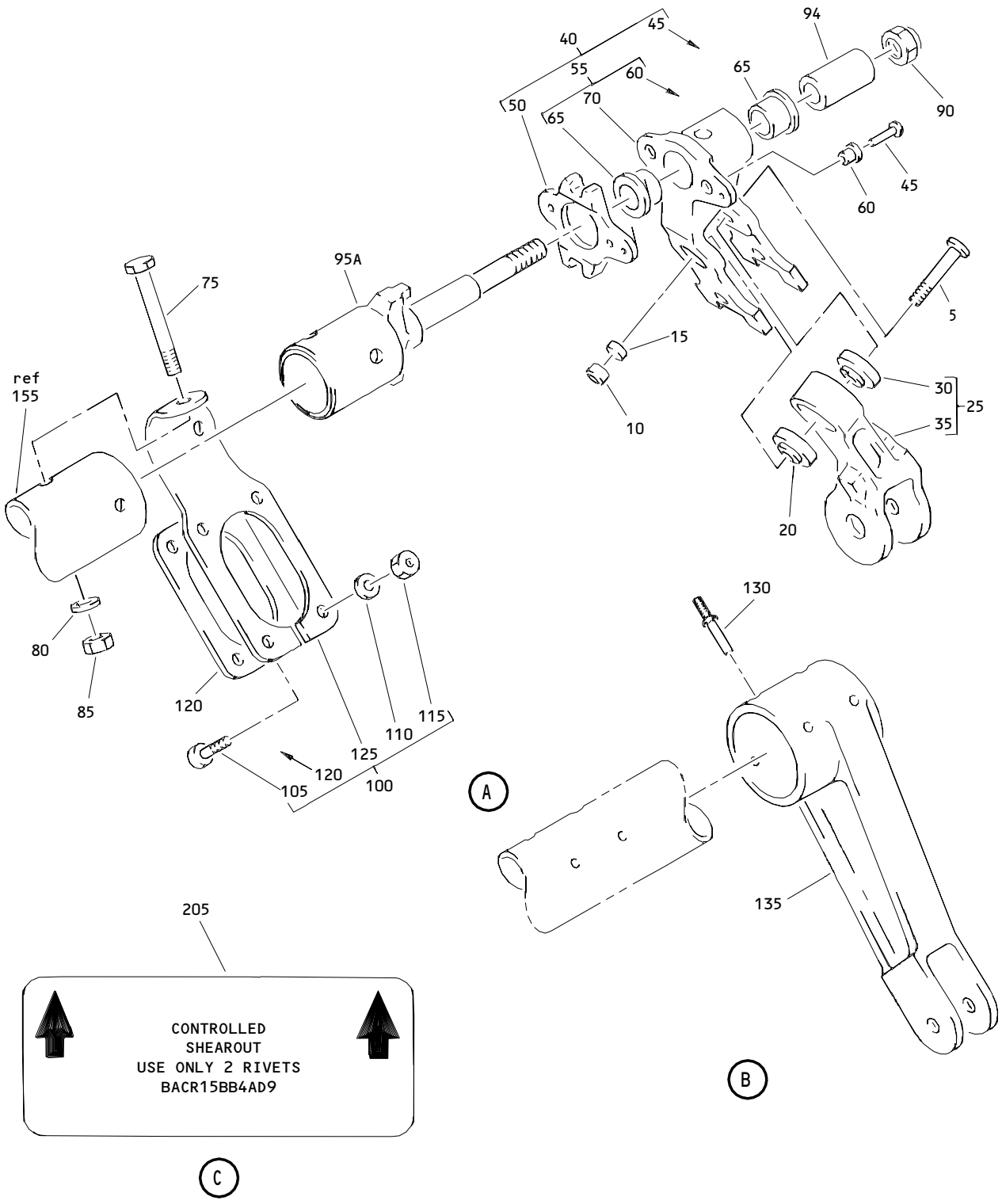
PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
NS202101-048		1	150	2
PACMKP4AA3908		1	20A	1
		1	20B	1
		1	30A	1
		1	30B	1
RMLH9075-3W		1	115	4
RMLH9075-4W		1	150	2
RMLH9075-5W		1	85	2
RMLH9075-6		1	90	1
		1	170	1
SALPYT8-15		1	5	1
SSMDSP6SD705		1	185A	1
		1	185B	1
SSMKP4SD706		1	20A	1
		1	20B	1
		1	30A	1
		1	30B	1
T6S1032J		1	115	4
T6S428J		1	150	2
T6S524J		1	85	2
VN303A02		1	115	4
VN303A048		1	150	2
2DCC8		1	10	1
251T1517-3		1	180	1
251T1517-4		1	195	1
251T1517-5		1	180A	1
251T1517-6		1	195A	1
251T1517-7		1	180B	1
251T1518-3		1	200	1
251T1518-4		1	200A	1
251T1519-2		1	135	1
251T1523-1		1	25	1
251T1523-2		1	35	1
251T1523-3		1	25A	1
251T1591-1		1	50	1
251T1592-1		1	55	1
251T1592-2		1	70	1
251T1592-3		1	70A	1
251T1593-1		1	95	
251T1593-2		1	95A	1
251T1594-1		1	60	2
251T1596-1		1	155	1
251T1597-1		1	1	
251T1597-2		1	1A	RF
251T1597-3		1	1B	RF
251T1597-4		1	1C	RF
251T1599-1		1	40	1

PART NUMBER	AIRLINE PART NO.	FIG.	ITEM	TTL REQ
251T1650-1		1	65	2
251T1651-1		1	100	1
251T1651-2		1	125	1
251T1652-2		1	120	1
55766-04		1	190	2
96-02		1	115	4
96-048		1	150	2
96-054		1	85	2
96-064		1	90	1
		1	170	1



Aileron Control Right Side Torque Shaft Assembly
Figure 1 (Sheet 1)

T67886



Aileron Control Right Side Torque Shaft Assembly
Figure 1 (Sheet 2)

T67887

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-1	251T1597-1		DELETED		
-1A	251T1597-2		SHAFT ASSY-AIL. CONT R SIDE TORQUE	A	RF
-1B	251T1597-3		SHAFT ASSY-AIL. CONT R SIDE TORQUE	B	RF
-1C	251T1597-4		SHAFT ASSY-AIL. CONT R SIDE TORQUE	C	RF
5	SALPYT8-15		.BOLT- (V11815) (SPEC BACB30GW8-15) (OPT SALPYT8-15 (V29666)) (OPT SALPYT8-15 (V17446))		1
10	2DCC8		.COLLAR- (V11815) (SPEC BACC30K8) (OPT 2DCC8 (V17446))		1
15	BACB28AK04-023		.BUSHING	AB	1
-15A	BACB28AK04-086		.BUSHING	C	1
20	MKP4A		.BEARING (V38443) (SPEC BACB10AP4) (OPT LLMKP4A (V38443)) (OPT MKP4AFS428 (V21335)) (OPT MKP4ATT (V43991)) (OPT MKP4A2TS (V43991)) (OPT MKP4E6531 (V21335)) (OPT MKP4AG20 (V38443)) (OPT MKP4ALY196 (V40920)) (OPT MKP4A (V38443)) (REPLD BY ITEM 20B)	A	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-20A	ACMKP4AA3908		.BEARING (V21335) (SPEC BACB10FS4R) (OPT PACMKP4AA3908 (V21335)) (OPT SSMKP4SD706 (V83086))	B	1
-20B	ACMKP4AA3908		.BEARING (V21335) (SPEC BACB10FS4R) (OPT PACMKP4AA3908 (V21335)) (OPT SSMKP4SD706 (V83086)) (REPLS ITEM 20)	A	1
-20C	BACB10FS04RJ		.BEARING	C	1
25	251T1523-1		.LEVER ASSY	A	1
-25A	251T1523-3		.LEVER ASSY	BC	1
30	MKP4A		..BEARING (V38443) (SPEC BACB10AP4) (OPT LLMKP4A (V38443)) (OPT MKP4AFS428 (V21335)) (OPT MKP4ATT (V43991)) (OPT MKP4A2TS (V43991)) (OPT MKP4E6531 (V21335)) (OPT MKP4AG20 (V38443)) (OPT MKP4ALY196 (V40920)) (OPT MKP4A (V38443)) (REPLD BY ITEM 30B)	A	1

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-30A	ACMKP4AA3908		..BEARING (V21335) (SPEC BACB10FS4R) (OPT PACMKP4AA3908 (V21335)) (OPT SSMKP4SD706 (V83086))	B	1
-30B	ACMKP4AA3908		..BEARING (V21335) (SPEC BACB10FS4R) (OPT PACMKP4AA3908 (V21335)) (OPT SSMKP4SD706 (V83086)) (REPLS ITEM 30)	A	1
-30C	BACB10FS04RJ		..BEARING	C	1
35	251T1523-2		..LEVER		1
40	251T1599-1		.LEVER ASSY		1
45	BACR15BB4AD9		..RIVET		2
50	251T1591-1		..PLATE-SHEAR (MATCHED SET)		1
55	251T1592-1		..LEVER ASSY-(MATCHED SET)		1
60	251T1594-1		...BUSHING		2
65	251T1650-1		...BUSHING		2
70	251T1592-2		...LEVER- (OPT ITEM 70A)		1
-70A	251T1592-3		...LEVER-HOGOUT (OPT ITEM 70)		1
75	BACB30NF5-25		.BOLT		2
80	AN960KD516		.WASHER	AB	2
-80A	NAS1149D0516J		.WASHER	C	2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-85	H10-5BAC		.NUT (V15653) (SPEC BACN10JC5) (OPT RMLH9075-5W (V72962)) (OPT T6S524J (V71087)) (OPT 96-054 (V80539)) (OPT BRH10A5 (V52828))	AB	2
-85A	BACN10JC5CD		.NUT	C	2
90	H10-6BAC		.NUT (V15653) (SPEC BACN10JC6) (OPT RMLH9075-6 (V72962)) (OPT 96-064 (V80539)) (OPT BRH10A6 (V52828))	AB	1
-90A	BACN10JC6CD		.NUT	C	1
94	NAS42DD12-72		.SPACER (OPT ITEM 94A)	AB	1
-94A	NAS42DD12-71		.SPACER (OPT ITEM 94)	AB	1
-94B	NAS42DD12-72		.SPACER	C	1
95	251T1593-1		DELETED		

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
95A	251T1593-2		.FITTING-UPPER		1
100	251T1651-1		.GUARD ASSY-CABLE		1
105	NAS623-3-3		..SCREW		4
110	AN960KD10L		..WASHER		4
115	H10-3BAC		..NUT		4
			(V15653)		
			(SPEC BACN10JC3)		
			(OPT NS202101-02 (V80539))		
			(OPT RMLH9075-3W (V72962))		
			(OPT T6S1032J (V71087))		
			(OPT VN303A02 (V92215))		
			(OPT 96-02 (V80539))		
			(OPT BRH10A3 (V52828))		
120	251T1652-2		..FAIRLEAD		1
125	251T1651-2		..BRACKET-GUARD		1
130	NAS1398D6-7		.RIVET	AB	6
-130A	NAS1398D6-6		.RIVET	C	6
135	251T1519-2		.LEVER-LCCA INPUT		1
140	BACB30NF4-33		.BOLT		2
145	AN960KD416		.WASHER	AB	2
-145A	NAS1149D0463J		.WASHER	C	2
150	H10-4BAC		.NUT	AB	2
			(V15653)		
			(SPEC BACN10JC4)		
			(OPT NS202101-048 (V80539))		
			(OPT RMLH9075-4W (V72962))		
			(OPT T6S428J (V71087))		
			(OPT VN303A048 (V92215))		
			(OPT 96-048 (V80539))		
			(OPT BRH10A4 (V52828))		
-150A	BACN10JC4CD		.NUT	C	2

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
155	251T1596-1		.TUBE-TORQUE		1
160	BACB30NF6-32		.BOLT	AB	1
-160A	BACB30NF6-35		.BOLT	C	1
165	AN960KD616		.WASHER	AB	1
-165A	NAS1149D0663J		.WASHER	C	1
170	H10-6BAC		.NUT	AB	1
			(V15653)		
			(SPEC BACN10JC6)		
			(OPT RMLH9075-6 (V72962))		
			(OPT 96-064 (V80539))		
			(OPT BRH10A6 (V52828))		
-170A	BACN10JC6CD		.NUT	C	1
175	BACB28AK06-063		.BUSHING		1
180	251T1517-3		.SUPPORT ASSY	A	1
-180A	251T1517-5		.SUPPORT ASSY	B	1
-180B	251T1517-7		.SUPPORT ASSY	C	1
185	DSP6		..BEARING	A	1
			(V38443)		
			(SPEC BACB10CA6)		
			(OPT DSP6FS428 (V21335))		
			(OPT HHDSP6 (V38443))		
			(OPT DSP65D610 (V83086))		
			(REPD BY ITEM 185C)		
			(PRE SB 27-128)		
-185A	ACMDSP6A3908		..BEARING	C	1
			(V21335)		
			(SPEC BACB10FW6)		
			(OPT SSMDSP6SD705 (V83086))		
			(OPT ITEM 185)		

FIG. & ITEM	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1234567	EFF CODE	QTY PER ASSY
01-					
-185B	ACMDSP6A3908		..BEARING (V21335) (SPEC BACB10FW6) (OPT SSMDSP6SD705 (V83086))	AB	1
-185C	BACB10FW6		..BEARING (REPLS ITEM 185) (POST SB 27-128)	A	1
190	AG425		..BEARING- (V15860) (SPEC BACB10CL4) (OPT BLN4-2220 (V81376)) (OPT HG4-141 (V02758)) (OPT KSBG4-56 (V97613)) (OPT NB4A (V73134)) (OPT 55766-04 (V09455)) (OPT ABG4-4 (V50294)) (OPT NB4-1 (V56644)) (OPT NC4-1 (V56644)) (OPT ND4A (V73134)) (OPT ABG4-4 (VS0352)) (OPT BNP4F112 (V16746))		2
195	251T1517-4		..FITTING	AB	1
-195A	251T1517-6		..FITTING	C	1
200	251T1518-3		.LEVER-INPUT	AB	1
-200A	251T1518-4		.LEVER-INPUT	C	1
205	BAC27TCT0289		.MARKER-ALUMINUM FOIL- SYMBOL		1