COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

FORWARD GALLEY DOOR BODY SIDE TORQUE TUBE ASSEMBLY

PART NUMBER 141A6510–1, –2, –3, –4

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COMPONENT MAINTENANCE MANUAL

Revision No. 7
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To: All holders of FORWARD GALLEY DOOR BODY SIDE TORQUE TUBE ASSEMBLY 52-41-06.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

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TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL

All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

Revision		Filed		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

Revision		Filed	
Number	Date	Date	Initials

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When the temporary revision is incorporated or cancelled, and the pages are removed, enter the date the pages are removed and the initials of the person who removed the temporary revision.

Temporary Revision		Inserted		Removed	
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Temporary Revision		Inserted		Removed	
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Number	Date	Date	Initials	Date	Initials

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INTRODUCTION

1. General

A. The instructions in this manual supply the data necessary to do the maintenance functions together with the test, fault isolation, repair, and replacement of the defective parts.

B. This manual is divided into different parts:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) List of Effective Pages

(5) Table of Contents

(6) Temporary Revision & Service Bulletin Record

(7) Record of Revisions

(8) Record of Temporary Revisions

(9) Introduction

(10) Procedures & IPL Sections

C. Components that can be repaired have a different repair number for each specified repair. To find the repair number location of a component, look in the Repair-General procedure at the beginning of the REPAIR section. The Repair-General procedure also has an explanation of the True Position Dimension symbols used.

D. All dimensions, measures, quantities and weights included are in English units. When metric equivalents are given they will be in the parentheses that follow the English units.

E. The introduction to the Illustrated Parts List (IPL) shows how the IPL data is used.

F. Design changes, optional parts, configuration differences and Service Bulletin modifications may cause different part numbers. These part numbers are identified in the IPL with an alphabetical letter which is added to the end of the basic item number. This new item number is referred to as an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless shown differently.

G. The tool reference numbers found in the individual procedures and in the Special Tools, Fixtures, and Equipment section are used to identify if a tool is a standard tool (STD-XXXX), a commercial tool (COM-XXXX), or a Special Tool (SPL-XXXX). This reference number is also used to distinguish between tools with similar names in the same procedure. These reference numbers are for use in the documentation only. They are not to be used for ordering tools.

FORWARD GALLEY DOOR BODY SIDE TORQUE TUBE ASSEMBLY - DESCRIPTION AND OPERATION

1. Description

A. The forward-galley-door-body-side torque tube assembly (DESCRIPTION AND OPERATION, Figure 1) is made of two torque tube sections, two link assemblies, and two hinge link pins, all bolted together. The torque tube assembly can also include a collar, handle, and a spring-loaded splined shaft and fitting.

B. The torque tube assembly is part of the hinge installation for the forward galley door. It is installed in the door frame in the fuselage of the airplane.

2. Operation

A. The torque tube assembly holds the door as it opens, and gives the reaction force to the vertical loads.

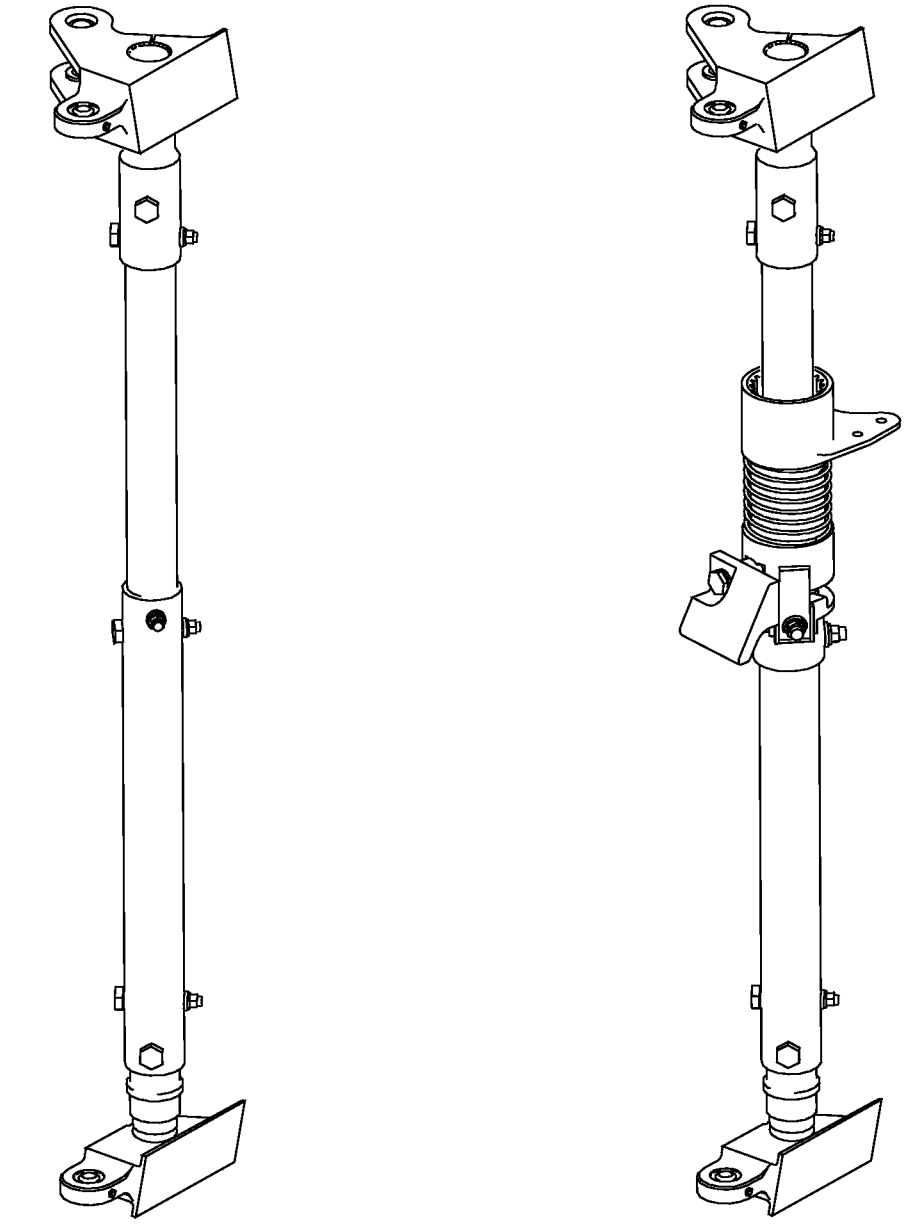
B. The torque tube assemblies which have the collar and splined fitting can lock the door in the open position.

3. Leading Particulars (Approximate)

A. Length – 26 inches

B. Width – 5 inches

C. Weight – 5 pounds



G22242 S00041002349_V2

Forward Galley Door Body Side Torque Tube Assembly
Figure 1

(NOT APPLICABLE)

DISASSEMBLY

1. General

A. This procedure has the data necessary to disassemble the torque tube assembly (IPL Figure 1; 1A), (IPL Figure 2; 1A).

B. Disassemble this component sufficiently to isolate the defects, do the necessary repairs, and put the component back to a serviceable condition.

C. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

D. Refer to IPL Figure 1 or IPL Figure 2 for the item numbers.

2. Disassembly

A. Procedure

(1) Procedure (IPL Figure 1)

CAUTION: THE TORQUE TUBE ASSEMBLY IS A MATCHED SET OF DRILLED PARTS. DO NOT INTERCHANGE THE PARTS WITH PARTS FROM A DIFFERENT ASSEMBLY. IF NECESSARY, REPLACE ALL OF THE DRILLED PARTS AT THE SAME TIME, OR THE ASSEMBLY CAN BE MISALIGNED AND OPERATE INCORRECTLY.

(a) Before you start to disassemble the unit, put marks across the joints between the torque tubes (100A, 105A) and the hinge link pins (30, 35). This will help to align the parts correctly during assembly.

(b) Remove the bolts (20) and the washers (25), then remove the link assemblies (40, 45) from the hinge link pins (30, 35).

NOTE: Do not remove the fittings (50), bushings (55), or bearings (60), from the link assemblies, unless necessary for repair or replacement.

(c) Remove the bolts (5), washers (10), and nuts (15), then remove the hinge link pins (30, 35) from the torque tubes (100A, 105A).

(d) Remove the bolts (85), washers (90), and nuts (95), then disconnect the torque tubes (100A, 105A).

(2) Procedure (IPL Figure 2)

CAUTION: THE TORQUE TUBE ASSEMBLY IS A MATCHED SET OF DRILLED PARTS. DO NOT INTERCHANGE THE PARTS WITH PARTS FROM A DIFFERENT ASSEMBLY. IF NECESSARY, REPLACE ALL OF THE DRILLED PARTS AT THE SAME TIME, OR THE ASSEMBLY CAN BE MISALIGNED AND OPERATE INCORRECTLY.

(a) Before you start to disassemble the unit, put marks across the joints between the torque tubes (160, 165), hinge link pins (30, 35), and the collar (150). This will help to align the parts correctly during assembly.

(b) Remove the bolts (20) and the washers (25), then remove the link assemblies (40, 45) from the hinge link pins (30, 35).

NOTE: Do not remove the fittings (50), bushings (55), or bearings (60) from the link assemblies, unless necessary for repair or replacement.

(c) Remove the bolts (5), washers (10), and nuts (15), then remove the hinge link pins (30, 35) from the torque tubes (160, 165).

(d) Romove the bolt (85), washers (90, 95), and handle (100) from the splined shaft (145).

(e) Remove the bolts (105, 110), washers (115), nuts (120), flat spring (125), and retainer (130), then disconnect the torque tubes (160, 165).

(f) Remove the splined shaft (145), spring (140), and splined fitting (135) from the upper torque tube 160).

(g) Remove the collar (150) from the lower torque tube (165).

CLEANING

1. **General**
   A. This procedure has the data necessary to clean the torque tube assembly (1A).
   B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.
   C. Unless shown differently, the item numbers refer to IPL Figure 1 and IPL Figure 2.
2. **Cleaning**
   A. Procedure
      (1) Clean the bearings (60) as specified in SOPM 20-30-01.
      (2) Use standard industry procedures and refer to SOPM 20-30-03 to clean other parts.

CHECK

1. General

A. This procedure has the data necessary to find defects in the material of the specified parts.

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Unless shown differently, the item numbers refer to IPL Figure 1 and IPL Figure 2.

2. Check

A. References

Reference	Title
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION
SOPM 20-20-02	PENETRANT METHODS OF INSPECTION

B. Procedure

(1) Use standard industry procedures to do a visual check of all the parts for defects. Do the penetrant or magnetic particle check if the visual check shows possible damage or if you suspect possible damage on the parts listed below:

(2) Do a magnetic particle check (SOPM 20-20-01) of these parts:

(a) Hinge link pin (30, 35)

(b) Torque Tube (IPL Figure 1; 100A, 105A), (IPL Figure 2; 160, 165)

(c) Retainer (IPL Figure 2; 130)

(d) Collar (IPL Figure 2; 150A)

(3) Do a penetrant check (SOPM 20-20-02) of these parts:

(a) Link (75, 80)

(b) Handle (IPL Figure 2; 100)

(4) Do a load check of the coil spring (IPL Figure 2; 140).

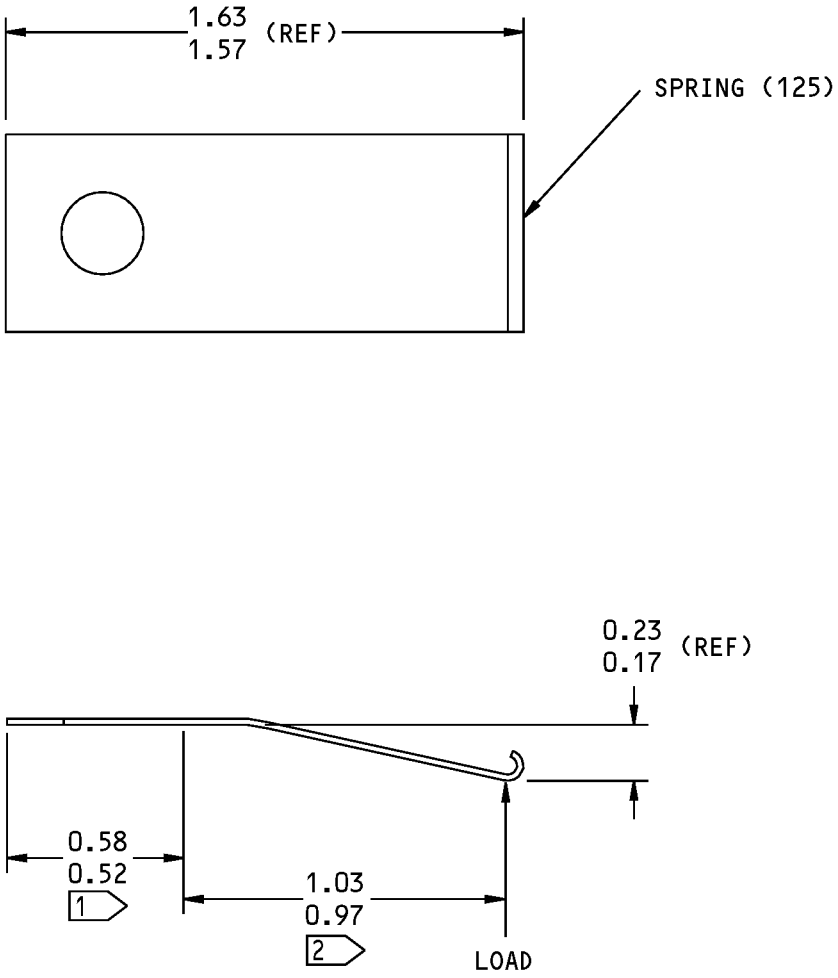
(a) Free length – 3.9 inches (for reference only)

(b) Maximum check load – 2.99 - 3.65 pounds at 1.24-inch length.

(5) Do a load check of the flat spring (IPL Figure 2; 125). Refer to CHECK, Figure 501.

(a) Initial load – 0.28-0.88 pound at 0.10-inch deflection.

(b) Final load – 1.35-1.67 pounds at 0.20-inch deflection



1 APPLY CLAMP OVER THIS LENGTH

2 APPLY PERPENDICULAR LOAD

ITEM NUMBERS REFER TO IPL FIG. 2

ALL DIMENSIONS ARE IN INCHES

Spring Check
Figure 501

REPAIR

1. General

A. Instructions for repair, refinish, and replacement of the specified subassembly parts are included in each REPAIR when applicable:

Table 601:

PART NUMBER	NAME	REPAIR
—	REFINISH OF OTHER PARTS	1-1
141A6510	TORQUE TUBE	2-1
141A6511	LINK	3-1, 3-2
149A6105	HINGE LINK PIN	4-1

2. Dimensioning Symbols

A. Standard True Position Dimensioning Symbols used in the applicable repair procedures are shown in REPAIR-GENERAL, Figure 601.

—	STRAIGHTNESS
▱	FLATNESS
⊥	PERPENDICULARITY (OR SQUARENESS)
//	PARALLELISM
○	ROUNDNESS
⌭	CYLINDRICITY
⌒	PROFILE OF A LINE
⌓	PROFILE OF A SURFACE
◎	CONCENTRICITY
⌯	SYMMETRY
∠	ANGULARITY
↗	RUNOUT
↗↗	TOTAL RUNOUT
⌴	COUNTERBORE OR SPOTFACE
∨	COUNTERSINK
⌖	THEORETICAL EXACT POSITION OF A FEATURE (TRUE POSITION)
∅	DIAMETER
S ∅	SPHERICAL DIAMETER
R	RADIUS
SR	SPHERICAL RADIUS
()	REFERENCE
BASIC (BSC) OR [DIM]	A THEORETICALLY EXACT DIMENSION USED TO DESCRIBE SIZE, SHAPE OR LOCATION OF A FEATURE. FROM THIS FEATURE PERMISSIBLE VARIATIONS ARE ESTABLISHED BY TOLERANCES ON OTHER DIMENSIONS OR NOTES.
[-A-]	DATUM
Ⓜ	MAXIMUM MATERIAL CONDITION (MMC)
Ⓛ	LEAST MATERIAL CONDITION (LMC)
Ⓢ	REGARDLESS OF FEATURE SIZE (RFS)
Ⓟ	PROJECTED TOLERANCE ZONE
FIM	FULL INDICATOR MOVEMENT

EXAMPLES

— | 0.002	STRAIGHT WITHIN 0.002
⊥ | 0.002 | B	PERPENDICULAR TO DATUM B WITHIN 0.002
// | 0.002 | A	PARALLEL TO DATUM 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
⌒ | 0.006 | A	EACH LINE ELEMENT OF THE SURFACE AT ANY CROSS SECTION MUST LIE BETWEEN TWO PROFILE BOUNDARIES 0.006 INCH APART RELATIVE TO DATUM A
⌓ | 0.020 | A	SURFACES MUST LIE WITHIN PARALLEL BOUNDARIES 0.020 INCH APART AND EQUALLY DISPOSED ABOUT TRUE PROFILE
◎ | ∅ 0.0005 | C	CONCENTRIC TO DATUM C WITHIN 0.0005 DIAMETER
⌯ | 0.010 | A	SYMMETRICAL WITH DATUM A WITHIN 0.010
∠ | 0.005 | A	ANGULAR TOLERANCE 0.005 WITH DATUM A
⌖ | ∅ 0.002 Ⓢ | B	LOCATED AT TRUE POSITION WITHIN 0.002 DIA RELATIVE TO DATUM B, REGARDLESS OF FEATURE SIZE
⊥ | ∅ 0.010 Ⓜ | A 0.510 Ⓟ	AXIS IS TOTALLY WITHIN A CYLINDER OF 0.010 INCH DIAMETER, PERPENDICULAR TO DATUM A, AND EXTENDING 0.510 INCH ABOVE DATUM A, MAXIMUM MATERIAL CONDITION
[2.000] OR 2.000 BSC	THEORETICALLY EXACT DIMENSION IS 2.000

True Position Dimensioning Symbols
Figure 601

REFINISH OF OTHER PARTS - REPAIR 1-1

1. General

A. This procedure has the data necessary to refinish the parts which are not given in the specified repairs.

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

2. Refinish of Other Parts

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00032	Coating - Exterior Protective Enamel, General Use	BMS10-60, Type I
C00259	Primer - Chemical And Solvent Resistant Finish, Epoxy Resin	BMS10-11, Type I

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

C. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

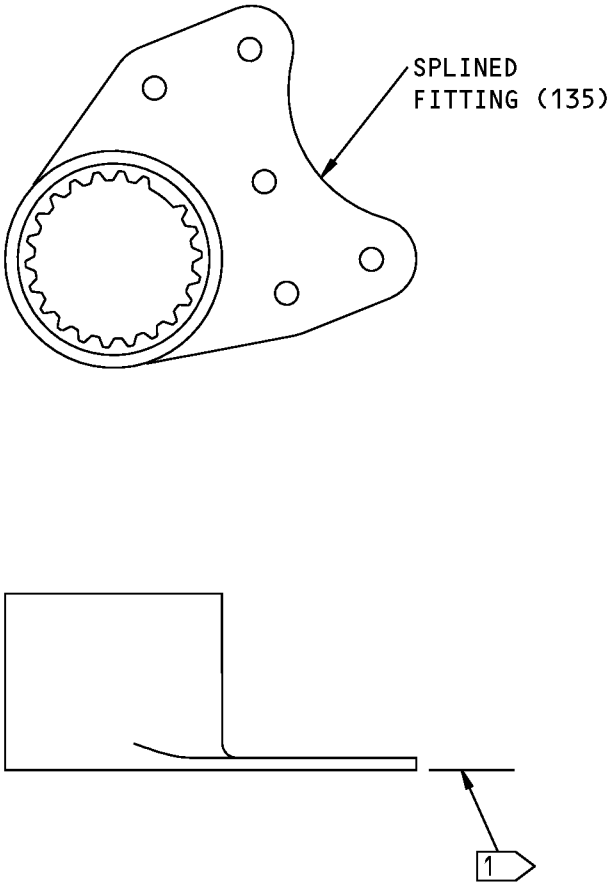
(1) Instructions for the repair of the parts listed in REPAIR 1-1, Table 601 are for repair of the initial finish.

Table 601: Refinish details

IPL FIG. & ITEM	MATERIAL	FINISH
IPL Fig. 1		
Torque tube (100A, 105A)	15-5PH CRES, 180-200 ksi	Passivate (F-17.25).
IPL Fig. 2		
Handle (100)	Aluminum alloy	Chromic acid anodize and apply primer, C00259 (F-18.13), then apply enamel coating, C00032 (F-14.9815-302 which replaces SRF-14.9815-302).
Handle (100A)	Aluminum alloy	Boric acid-sulfuric acid or chromic acid anodize (F-17.31). Apply primer, C00259 (F-20.02) and enamel coating, C00032 (F-14.9815-302).

Table 601: Refinish details (Continued)

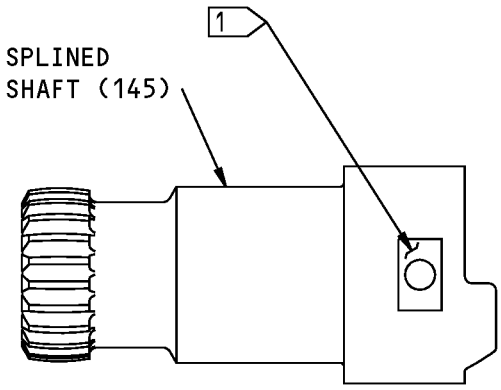
IPL FIG. & ITEM	MATERIAL	FINISH
Flat spring (125)	17-7PH CRES, 180-200 ksi	Passivate (F-17.25, which replaces F-17.09).
Retainer (130)	15-5PH CRES, 150-170 ksi	Passivate (F-17.25, which replaces F-17.09).
Spring (140)	302 wire	Passivate (F-17.25, which replaces F-17.09).
Splined fitting (135)	Titanium alloy	Apply primer, C00259 (F-18.12) to the surface shown in REPAIR 1-1, Figure 601.
Splined shaft (145)	Titanium alloy	Apply primer, C00259 (F-18.12) to the area shown in REPAIR 1-1, Figure 602.
Collar (150)	Titanium alloy	No finish (F-25.01).
Collar (150A)	15-5PH CRES, 150-170 ksi	Passivate (F-17.25, which replaces F-17.09).
Torque tube (160, 165)	15-5PH CRES, 180-200 ksi	Passivate (F-17.25).



1 APPLY PRIMER TO THIS SURFACE. OVERSPRAY IS PERMITTED, BUT NOT ON THE SPLINES.

ITEM NUMBERS REFER TO IPL FIG. 2

141A6508-1 Splined Fitting Refinish
Figure 601



1 APPLY PRIMER TO THE FLAT SURFACE.
NO OVERSPRAY ON THE THREADS.

ITEM NUMBERS REFER TO IPL FIG. 2

141A6509-1 Splined Shaft Refinish
Figure 602

TORQUE TUBE ASSEMBLY - REPAIR 2-1

141A6510–1, –2, –3, –4

1. General

A. This procedure has the data necessary to repair the torque tube assembly (1A).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subject identified in this procedure.

C. Refer to IPL Figure 1 and IPL Figure 2 for the item numbers.

D. General repair details:

(1) (1) Material: 15-5PH CRES, 180-200 ksi

2. Repair Procedures

A. References

Reference	Title
SOPM 20-10-01	REPAIR AND REFINISH OF HIGH STRENGTH STEEL PARTS
SOPM 20-20-01	MAGNETIC PARTICLE INSPECTION

B. Parts Replacement

CAUTION: THE TORQUE TUBE ASSEMBLY IS A MATCHED SET OF DRILLED PARTS. DO NOT INTERCHANGE THE PARTS WITH PARTS FROM A DIFFERENT ASSEMBLY. IF NECESSARY, REPLACE ALL OF THE DRILLED PARTS AT THE SAME TIME, OR THE ASSEMBLY CAN BE MISALIGNED AND OPERATE INCORRECTLY.

(1) Assemble the torque tube assembly (1A) with the new, undrilled parts. Refer to ASSEMBLY. Make sure that the parts are aligned correctly, as shown in ASSEMBLY, Figure 701 or ASSEMBLY, Figure 702.

(2) Put marks across the joints between the torque tubes (IPL Figure 1; 100A, 105A), (IPL Figure 2; 120, 125), hinge link pins (30, 35), and the collar (IPL Figure 2; 150). This will help to align the parts correctly during assembly.

(3) Tighten the bolts (20) in the link assemblies (40, 45) to 25-30 pound-inches.

(4) Machine 0.2495-0.2505 inch diameter holes (SOPM 20-10-01) for the bolts (IPL Figure 1; 5, 85), (IPL Figure 2; 5, 85, 105, 110) as shown in ASSEMBLY, Figure 701 or ASSEMBLY, Figure 702.

(5) Break sharp edges.

(6) Do a magnetic particle check (SOPM 20-20-01) on the machined areas.

C. Bolt Hole Repair

NOTE: Refer to ASSEMBLY, Figure 701 or ASSEMBLY, Figure 702 for the bolt hole locations.

(1) Assemble the torque tube assembly (1A). Refer to ASSEMBLY. Make sure that the parts are aligned correctly as shown in ASSEMBLY, Figure 701 or ASSEMBLY, Figure 702.

(2) Tighten the bolts (20) in the link assemblies (40, 45) to 25-30 pound-inches.

(3) Remove the bolt, washer, and nut at the location of the damaged torque tube bolt hole.

(4) Hold the torque tube assembly in the correctly aligned position.

(5) Machine (SOPM 20-10-01) the holes as necessary to remove the defects and give 0.0000-0.0015 inch clearance with the oversize bolts. The maximum permitted oversize is a 0.0313-inch increase in diameter for the bolts (IPL Figure 2; 105, 110) through the collar (IPL Figure 2; 150). The maximum permitted oversize for the other cross bolts is a 0.0625-inch increase in diameter.

(6) Break sharp edges.

(7) Do a magnetic particle check (SOPM 20-20-01) on the machined area.

(8) Install oversize fasteners to replace the removed bolt, washer, and nut.

LINK ASSEMBLY - REPAIR 3-1

141A6511–1, –2

1. General

A. This procedure has the data necessary to repair the link assembly (40, 45).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Unless shown differently, the item numbers refer to IPL Figure 1 and IPL Figure 2.

2. Repair Procedures

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS 5-95

B. References

Reference	Title
SOPM 20-50-03	BEARING AND BUSHING REPLACEMENT
SOPM 20-60-02	FINISHING MATERIALS

C. Bearing Replacement

(1) Remove the bearing (60) from the link assembly (40, 45) (SOPM 20-50-03).

(2) Install the new bearing (60).

(3) Ball stake the link (75, 80) at 5 points, as shown in REPAIR 3-1, Figure 601.

D. Bushing Replacement

NOTE: For miscellaneous materials, refer SOPM 20-60-02.

(1) Remove the bushing (55) from the link assembly (40) (SOPM 20-50-03).

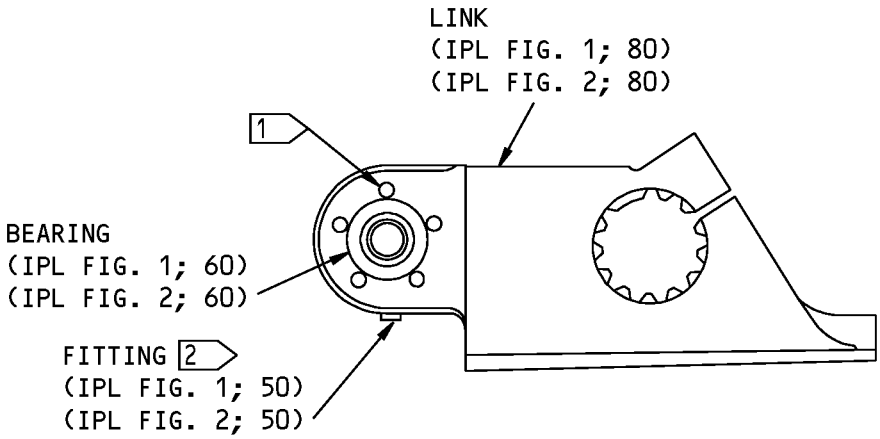
(2) Install the new bushing (55) with sealant, A00247.

(3) Fillet seal the bushing flange with sealant, A00247.

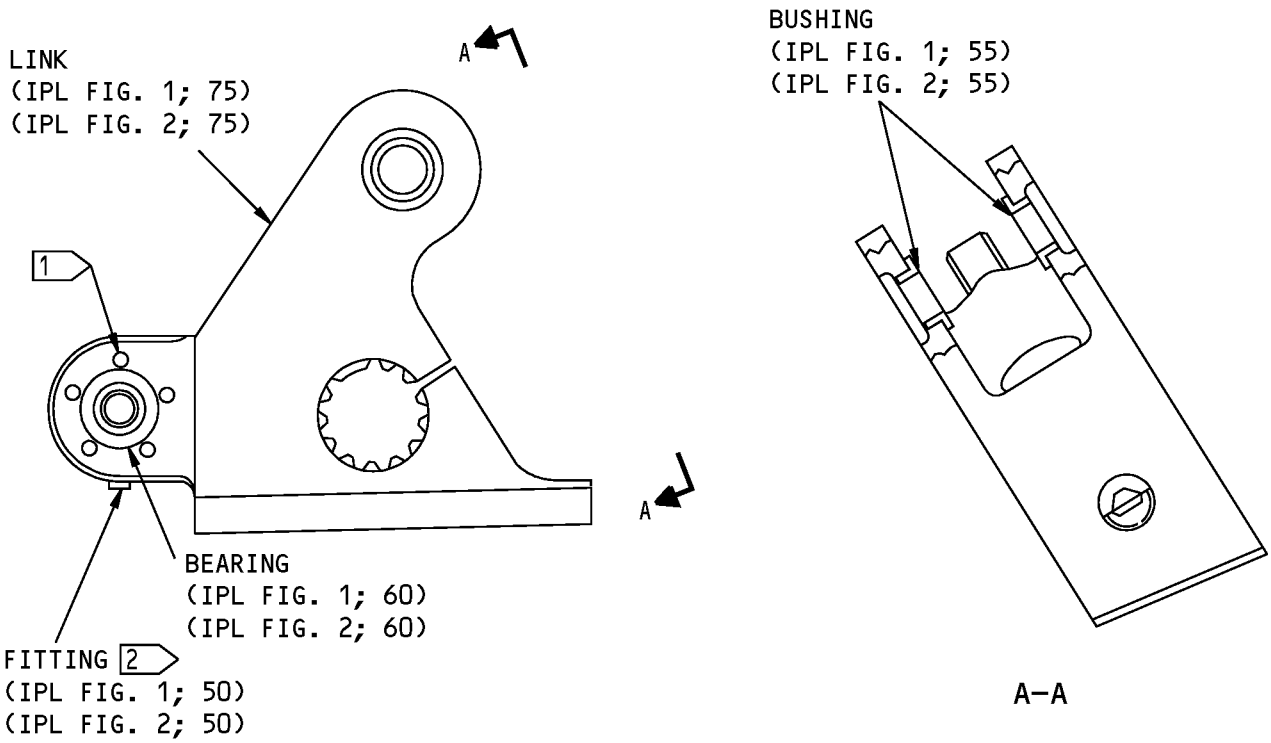
E. Fitting Replacement

(1) Remove the fitting (50).

(2) Install the new fitting (50). Use the press-fit procedure.



141A6511-1



141A6511-2

1 BALL STAKE 5 POINTS AT EQUAL DISTANCES ±0.03

2 PRESS FIT INSTALLATION

ALL DIMENSIONS ARE IN INCHES

141A6511-1,-2 Link Assembly - Parts Replacement
Figure 601

LINK - REPAIR 3-2

141A6511–3, –4

1. General

A. This procedure has the data necessary to refinish the link (75, 80).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subject identified in this procedure.

C. Unless shown differently, the item numbers refer to IPL Figure 1 and IPL Figure 2.

D. General repair details:

(1) Material: Aluminum alloy.

2. Link Refinish

A. Consumable Materials

NOTE: Equivalent substitutes may be used.

Reference	Description	Specification
C00175	Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines)	BMS10-79, Type III
C00700	Coating - Exterior Protective Enamel, Gray Gloss Enamel	BMS10-60, Type I, BAC 707

B. References

Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES
SOPM 20-60-02	FINISHING MATERIALS

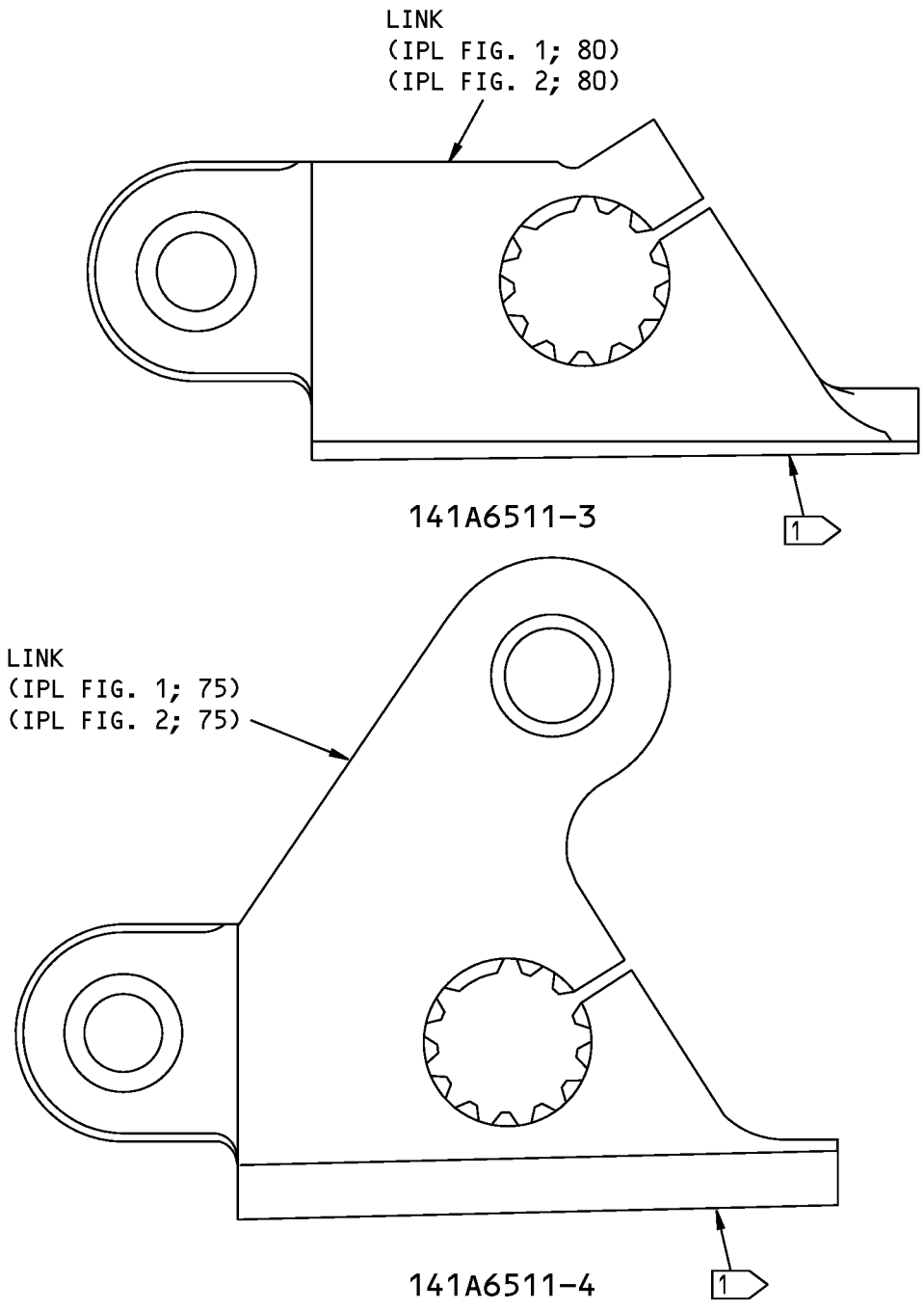
C. Procedure

NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01. For finishing materials, refer to SOPM 20-60-02.

(1) Anodize (F-17.35).

(2) Apply primer, C00175 (F-19.47). Do not apply the primer on the splines or in the hole for the bearing (60).

(3) Apply enamel coating, C00700 (F-19.39-707) on the surface shown in REPAIR 3-2, Figure 601. Overspray is permitted.



1 APPLY ENAMEL ON THIS SURFACE.

141A6511-3,-4 Link Refinish
Figure 601

HINGE LINK PIN - REPAIR 4-1

149A6105–1, –2

1. General

A. This procedure has the data necessary to refinish the hinge link pin (30, 35).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Unless shown differently, the item numbers refer to (IPL Figure 1 and IPL Figure 2).

D. General repair details:

(1) (1) Material: 15-5PH CRES, 180-200 ksi

2. Hinge Link Pin Refinish

A. References

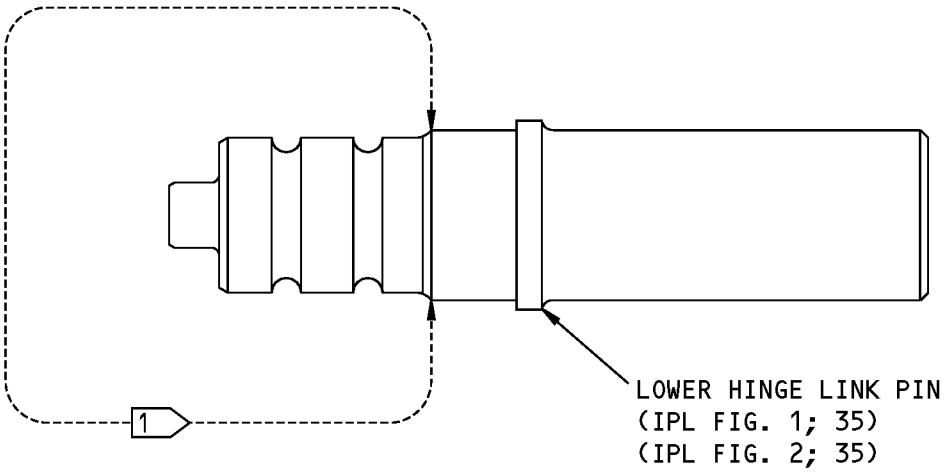
Reference	Title
SOPM 20-30-02	STRIPPING OF PROTECTIVE FINISHES
SOPM 20-41-01	DECODING TABLE FOR BOEING FINISH CODES

B. Procedure

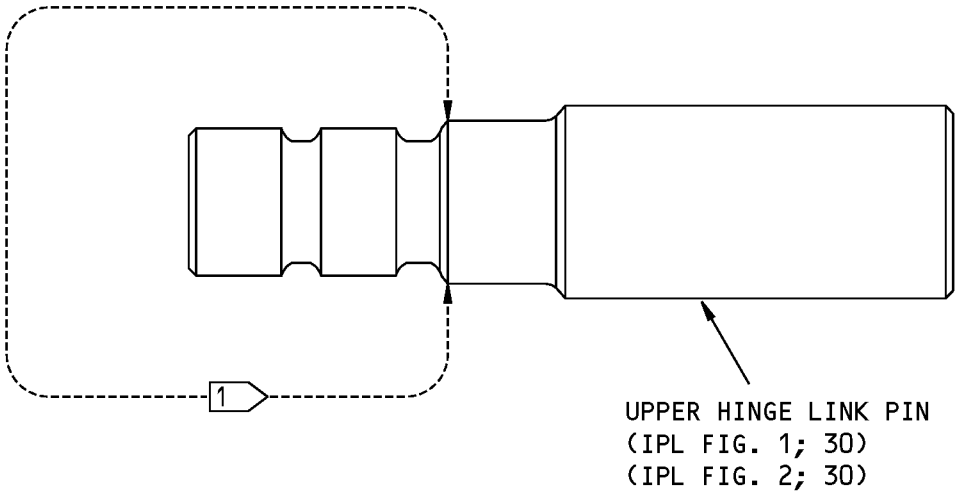
NOTE: For stripping of protective finishes, refer to SOPM 20-30-02. For the decoding table for Boeing finish codes, refer to SOPM 20-41-01.

(1) Passivate (F-17.25).

(2) Cadmium plate (F-15.06) the splined end of the hinge link pin (30, 35) as shown in REPAIR 4-1, Figure 601.



149A6105-1



149A6105-2

1 CADMIUM PLATE THIS AREA

149A6105-1,-2 Hinge Link Pin Refinish
Figure 601

ASSEMBLY

1. General

A. This procedure has the data necessary to assemble the torque tube assembly (IPL Figure 1; 1A), (IPL Figure 2; 1A).

B. Refer to the Standard Overhaul Practices Manual (SOPM) for the SOPM subjects identified in this procedure.

C. Refer to IPL Figure 1 or IPL Figure 2 for the item numbers.

2. Assembly

A. References

Reference	Title
SOPM 20-50-01	BOLT AND NUT INSTALLATION

B. Procedure

NOTE: For nut and bolt installation, refer to SOPM 20-50-01.

(1) For 141A6510-1 (IPL Figure 1) assemble as follows:

(a) Use standard industry procedures and the steps shown below to assemble this component.

CAUTION: THE TORQUE TUBE ASSEMBLY IS A MATCHED SET OF DRILLED PARTS. DO NOT INTERCHANGE THE PARTS WITH PARTS FROM A DIFFERENT ASSEMBLY. IF NECESSARY, REPLACE ALL OF THE DRILLED PARTS AT THE SAME TIME, OR THE ASSEMBLY CAN BE MISALIGNED AND OPERATE INCORRECTLY.

(b) Assemble the torque tube assembly (1A) to the dimensions shown in ASSEMBLY, Figure 701. Make sure that the parts and fasteners are aligned as shown in the figure.

(c) Tighten all of the fasteners with your fingers.

NOTE: The fasteners will be tightened to the correct torque during installation.

(2) For 141A6510-2, -3, -4 (IPL Figure 2) assemble as follows:

(a) Use standard industry procedures and the steps shown below to assemble this component.

(b) Put the sleeve (155) in the splined shaft (145), then install the splined fitting (135), spring (140), and splined shaft (145) on the upper torque tube (160).

(c) Put the collar (150) on the lower torque tube (165), then install the bolts (105, 110), washers (115), and nuts (120) to hold the collar (150), retainer (130), flat spring (125), and torque tubes (160, 165) together.

CAUTION: THE TORQUE TUBE ASSEMBLY IS A MATCHED SET OF DRILLED PARTS. DO NOT INTERCHANGE THE PARTS WITH PARTS FROM A DIFFERENT ASSEMBLY. IF NECESSARY, REPLACE ALL OF THE DRILLED PARTS AT THE SAME TIME, OR THE ASSEMBLY CAN BE MISALIGNED AND OPERATE INCORRECTLY.

(d) Assemble the torque tube assembly (1A) to the dimensions shown in ASSEMBLY, Figure 702. Make sure that the parts and fasteners are aligned as shown in the figure.

(e) Tighten all of the fasteners with your fingers.

NOTE: The fasteners will be tightened to the correct torque during installation.

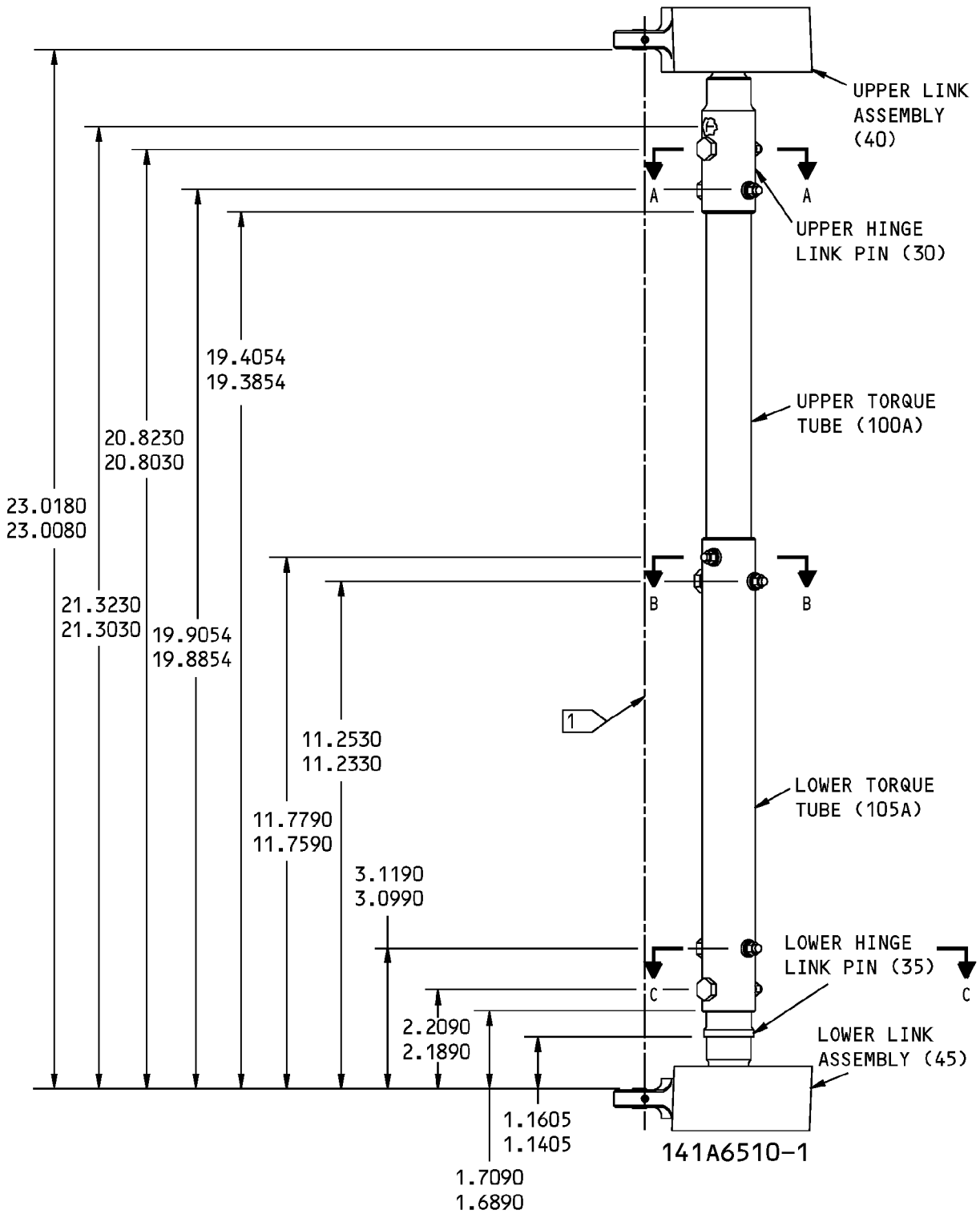
3. Storage

A. References

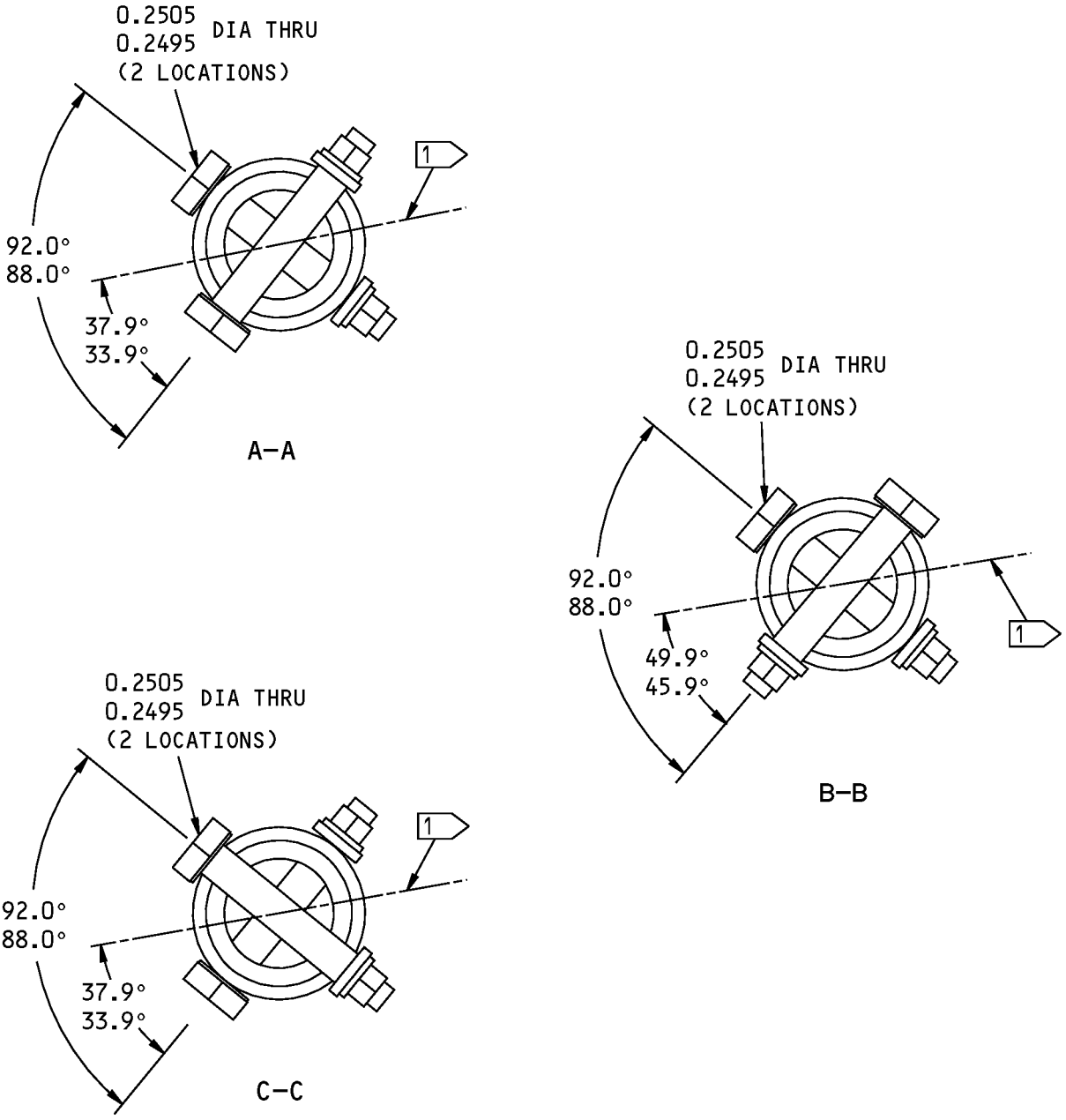
Reference	Title
SOPM 20-44-02	TEMPORARY PROTECTIVE COATINGS

B. Procedure

(1) Use standard industry procedures to store this component. Refer to SOPM 20-44-02 for more data.



Torque Tube Assembly
Figure 701 (Sheet 1 of 2)

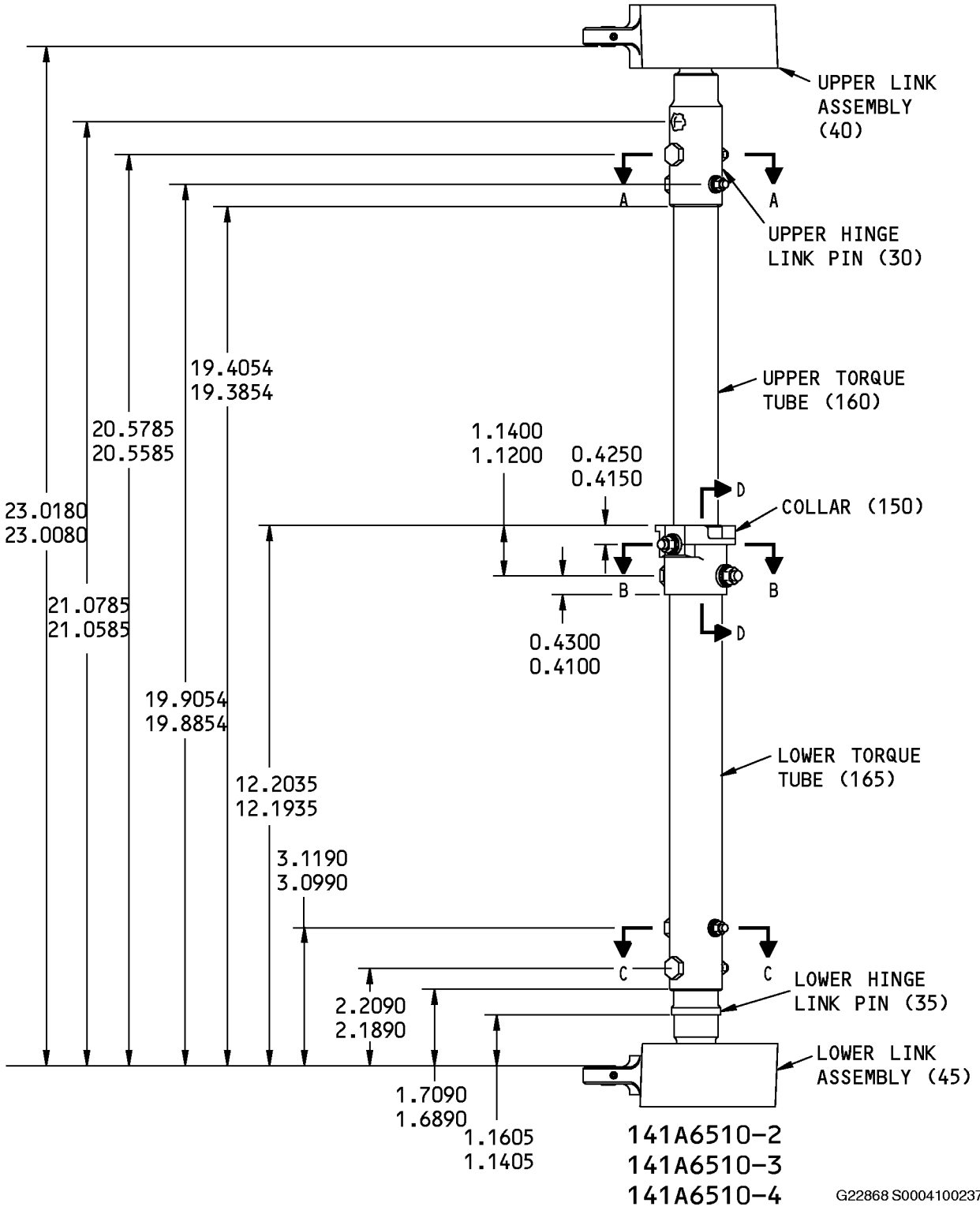


1 PLANE THROUGH CENTERLINE OF THE BEARINGS (60), CLOCKED THROUGH THE SPLINES IN THE LINKS (75,80) AND THE HINGE LINK PINS (30,35).

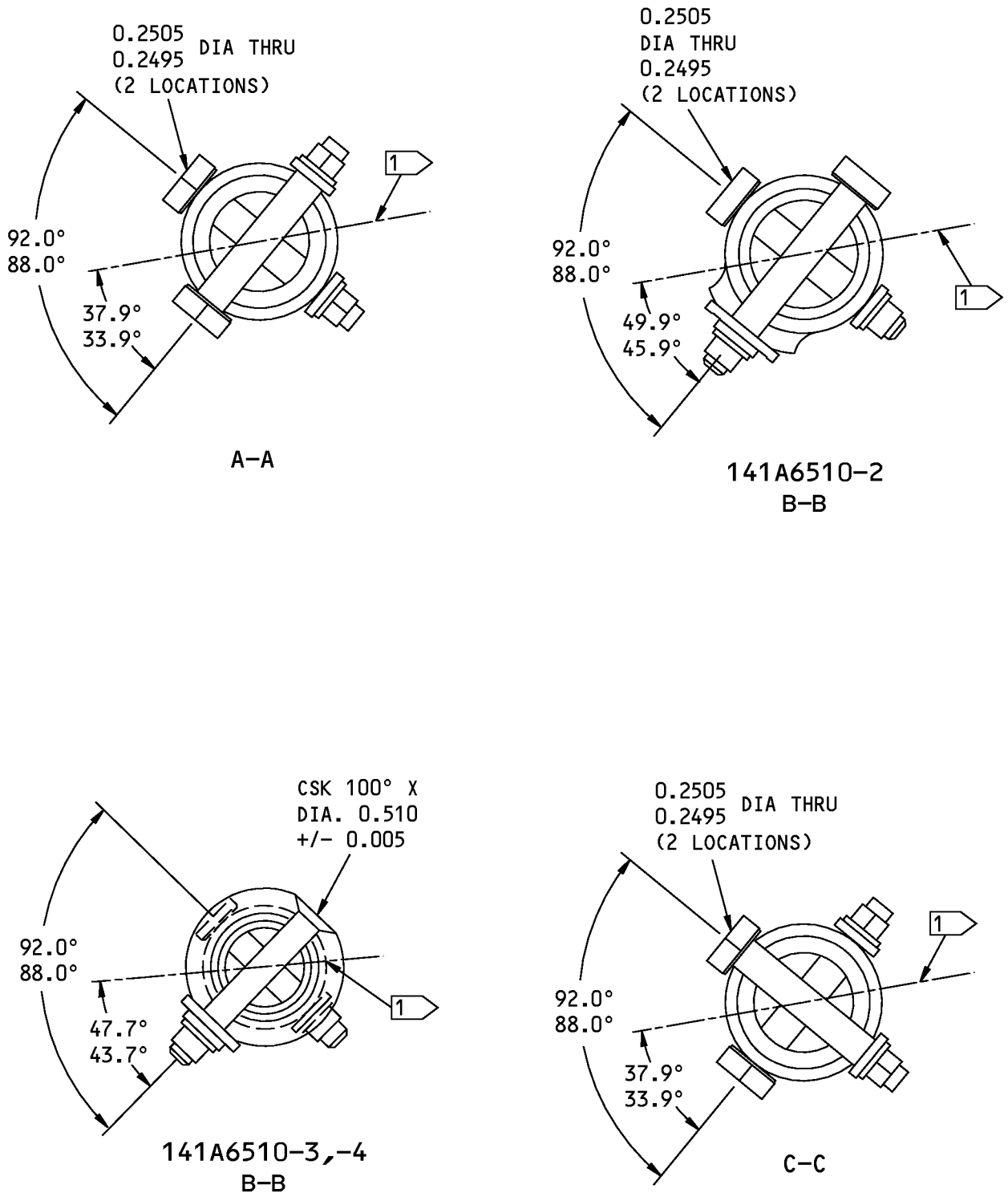
ITEM NUMBERS REFER TO IPL FIG. 1

ALL DIMENSIONS ARE IN INCHES

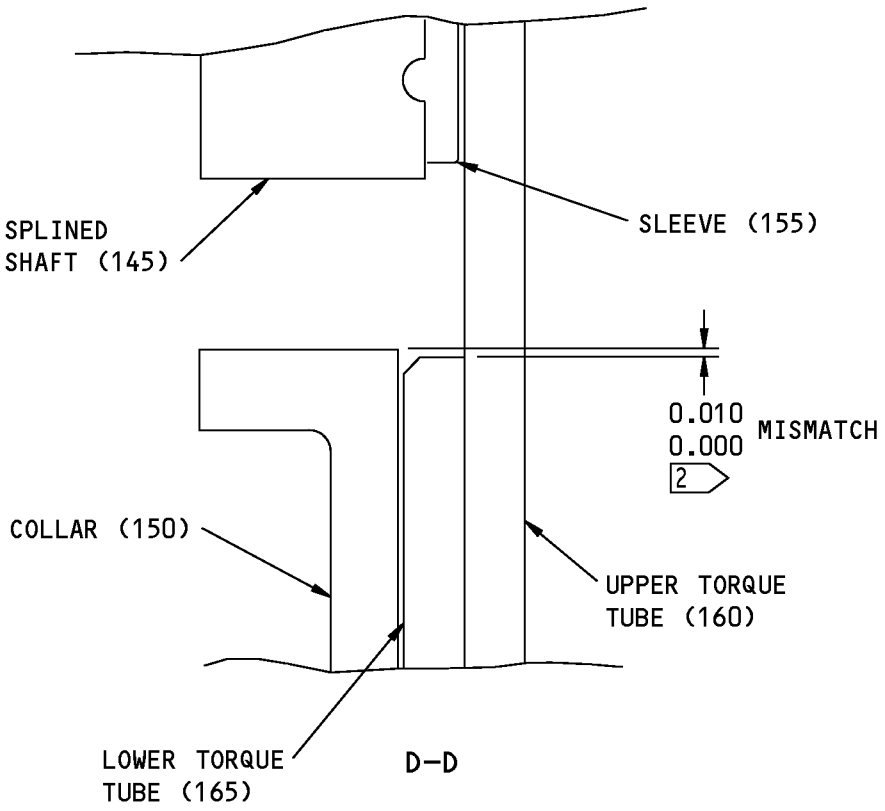
Torque Tube Assembly
Figure 701 (Sheet 2 of 2)



Torque Tube Assembly
Figure 702 (Sheet 1 of 3)



Torque Tube Assembly
Figure 702 (Sheet 2 of 3)



1 PLANE THROUGH CENTERLINE OF THE BEARINGS (60), CLOCKED THROUGH THE SPLINES IN THE LINKS (75,80) AND THE HINGE LINK PINS (30,35).

2 THE TOP OF THE COLLAR (150) MUST BE FLUSH WITH OR ABOVE THE TOP OF THE LOWER TORQUE TUBE (165).

ITEM NUMBERS REFER TO IPL FIG. 2

ALL DIMENSIONS ARE IN INCHES

G58089 S00041002376_V2

Torque Tube Assembly
Figure 702 (Sheet 3 of 3)

BOEING®

COMPONENT MAINTENANCE MANUAL

FITS AND CLEARANCES

(NOT APPLICABLE)

(NOT APPLICABLE)

ILLUSTRATED PARTS LIST

1. Introduction

A. The Illustrated Parts List (IPL) contains an illustration and a list of component parts you can repair or replace. The Illustrated Parts Catalog (IPC) shows how to use the Boeing part number system.

B. This shows how parts are related: The relation of each item to its next higher assembly (NHA) is shown in the NOMENCLATURE column. Use the indenture system that follows:

1 2 3 4 5 6 7

. Assembly

. Attaching parts for assembly

. . Detail parts for assembly

. . Subassembly

. . Attaching parts for subassembly

. . . Detail parts for subassembly

. . . Sub-subassembly

. . . Attaching parts for subassembly

. . . . . Details parts for sub-subassembly

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

C. Each top assembly is given one use code letter (A, B, C, etc.) in the USAGE CODE column. All subsequent component parts in the list can have one or more of the use code letters to show effectivity to top assemblies. A component part without a use code applies to all top assemblies.

D. An alphabetical letter is added after the item number for optional parts, parts changed by a Service Bulletin, configuration differences (except left-handed and right-handed parts), last engineering releases, and parts added between item numbers in a sequence. The alphabetical letter will not be shown on the illustration for equivalent parts of the same part number.

E. Color-coded parts are identified with a single digit alpha following the dash number or with ''SP'' suffix. If the ''SP'' suffix is used, it represents consolidation of all color codes applicable for a given usage which are not separately listed. Orders for color-coded parts should include the registry number of the airplane for which the parts are ordered.

F. If a part number is 15 characters long but will not fit in the part number column, the part number will be displayed with a ''~'' at the end of the line and will be continued on the next line. The ''~'' denotes that the part number continues on the next line.

G. Parts changed by a Service Bulletin are shown by PRE SB XXXX and POST SB XXXX added to the NOMENCLATURE column.

(1) When a new top assembly is added by a Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the top assembly level only. The configuration differences at the detail part level are shown by use code letters.

(2) When the top assembly part number is not changed by the Service Bulletin, PRE SB XXXX and POST SB XXXX will be added at the detail level.

H. Interchangeable Parts

Optional (OPT)	The part is optional to and interchangeable with other parts that have the same item number.
Replaces, Replaced by and not interchangeable with (REPLACES, REPLACED BY AND NOT INTCHG/W)	The part replaces and is not interchangeable with the initial part.
Replaces, Replaced by (REPLACES, REPLACED BY)	The part replaces and is interchangeable with, or is an alternative to, the initial part.

VENDOR CODES

Code	Name
02758	NETWORKS ELECTRONIC CORP U S BEARING DIV 9750 DE SOTO AVENUE CHATSWORTH, CALIFORNIA 91311-4409 FORMERLY U S BEARING DIV NETWORKS ELEC CORP
09455	RBC TRANSPORT DYNAMICS CORP 3131 W SEGERSTROM AVE SANTA ANA, CALIFORNIA 92704-5872 FORMERLY TRANSPORT DYNAMICS AEROSPACE DIV; FABROID DIV TRANSPORT DYNAMICS V17571 & LEAR SEIGLER INC TRANSPORT DIV V98076; FORMERLY BFM TRANSPORT DYNAMICS
15653	ALCOA GLOBAL FASTENERS INC DIV KAYNAR PRODUCTS 800 S STATE COLLEGE BLVD FULLERTON, CALIFORNIA 92831-3001 FORMERLY VK6405 MICRODOT AEROSP LTD; FORMERLY KAYNAR TECH FORMERLY FAIRCHILD FASTENERS KAYNAR DIV
15860	NEW HAMPSHIRE BALL BEARINGS, INC ASTRO DIVISION 155 LEXINGTON AVENUE LACONIA, NEW HAMPSHIRE 03246-2937 FORMERLY ASTRO BEARING CORP, LOS ANGELES, CALIF.
16746	SPECLINE INCORPORATED 2230 MOUTON DR CARSON CITY, NV 89706 FORMERLY IN SUN VALLEY, CAIFORNIA
56644	AURORA BEARING CO 970 SOUTH LAKE STREET AURORA, ILLINOIS 60506-5929

Code	Name
56878	SPS TECHNOLOGIES INC AEROSPACE AND INDUSTRIAL PRODUCTS DIV 301 HIGHLAND AVE JENKINTOWN, PENNSYLVANIA 19046 FORMERLY STANDARD PRESSED STEEL FORMERLY IN SALT LAKE, UTAH
62554	SIMMONDS MECAERO FASTENERS INC 1734 SEQUOIA AVENUE ORANGE, CALIFORNIA 92668
72962	HARVARD INDUSTRIES INC 3 WERNER WAY SUITE 210 LEBANON, NEW JERSEY 08833 FORMERLY ESNA V7A079 FORMERLY ELASTIC STOP NUT IN UNION, NJ
73134	ROLLER BEARING COMPANYOF AMER DBA HEIM BEARINGS DIV 60 ROUND HILL RD FAIRFIELD, CONNECTICUT 06430-0000 FORMERLY INCOM INTL HEIM DIV; HEIM UNIVERSAL CORP INCOM; FORMERLY HEIM DIV INCOM INTL; IMO IND HEIM BEARINGS DIV
81376	SMITH ACQUISITION COMPANY 2240 BUENA VISTA BALDWIN PARK, CALIFORNIA 91706
97393	SHUR-LOK CORPORATION 2541 WHITE ROAD PO BOX 19584 IRVINE, CALIFORNIA 92623-9584 FORMERLY SHUR LOK CORP VB0060 FORMERLY IN SANTA ANA, CALIFORNIA 92714
97613	SARGENT CONTROLS & AEROSPACE/KAHR BEARING DIV 5675 W BURLINGAME RD TUCSON, ARIZONA 85743 FORMERLY AETNA STEEL PROD KAHR BEARING DIV V96579 FORMERLY SARGENT IND KAHR BEARING DIV, BURBANK, CALIFORNIA
S0352	NIPPON MINIATURE BEARING CO LTD TOKYO, JAPAN

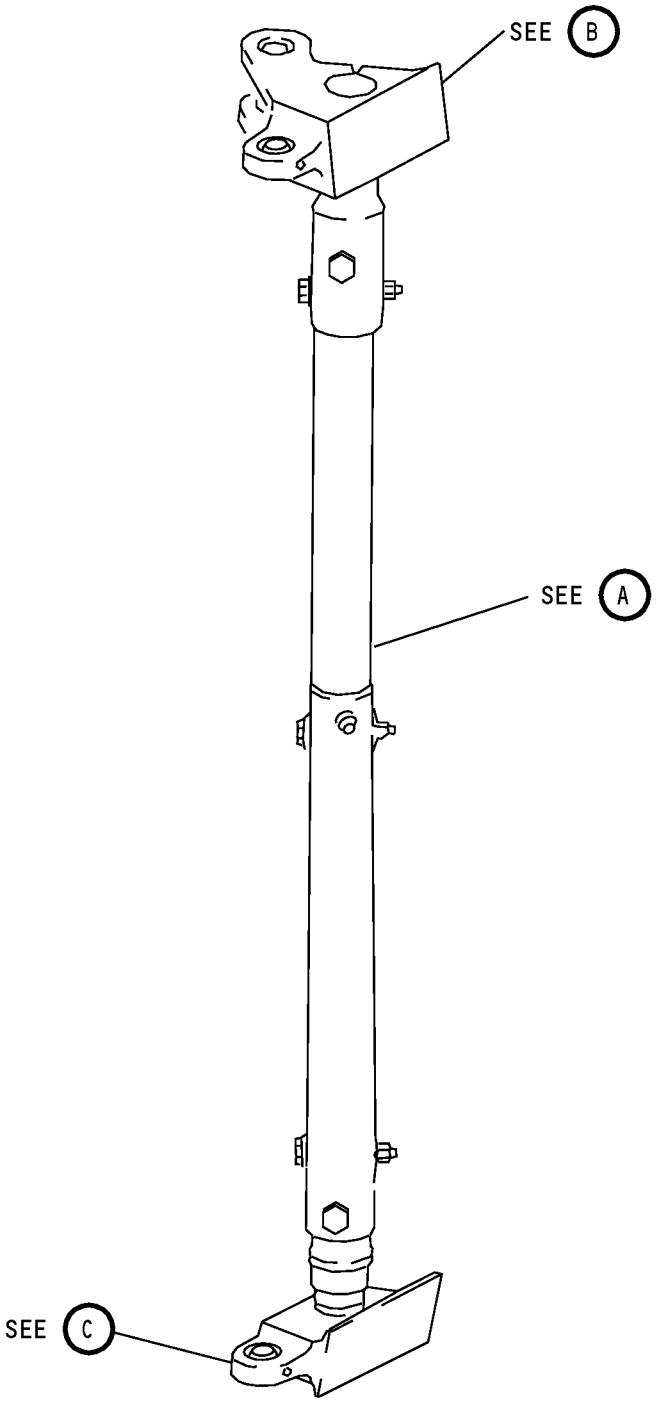
NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
141A6508-1		2	135	1
141A6509-1		2	145	1
141A6510-1		1	1A	RF
141A6510-2		1	1B	RF
		2	1A	RF
141A6510-3		1	1C	RF
		2	1B	RF
141A6510-4		1	1D	RF
		2	1C	RF
141A6511-1		1	45	1
		2	45	1
141A6511-2		1	40	1
		2	40	1
141A6511-3		1	80	1
		2	80	1
141A6511-4		1	75	1
		2	75	1
141A6512-3		1	105A	1
		2	165	1
141A6512-4		1	100A	1
		2	160	1
141A6514-1		2	100A	1
149A6105-1		1	35	1
		2	35	1
149A6105-2		1	30	1
		2	30	1
149A6117-2		2	150	1
149A6118-1		2	155	1
55303		1	60	1
		2	60	1
65C31741-1		2	140	1
69-76538-1		2	125	1
69-76563-2		2	150A	1
69-76604-1		2	130	1

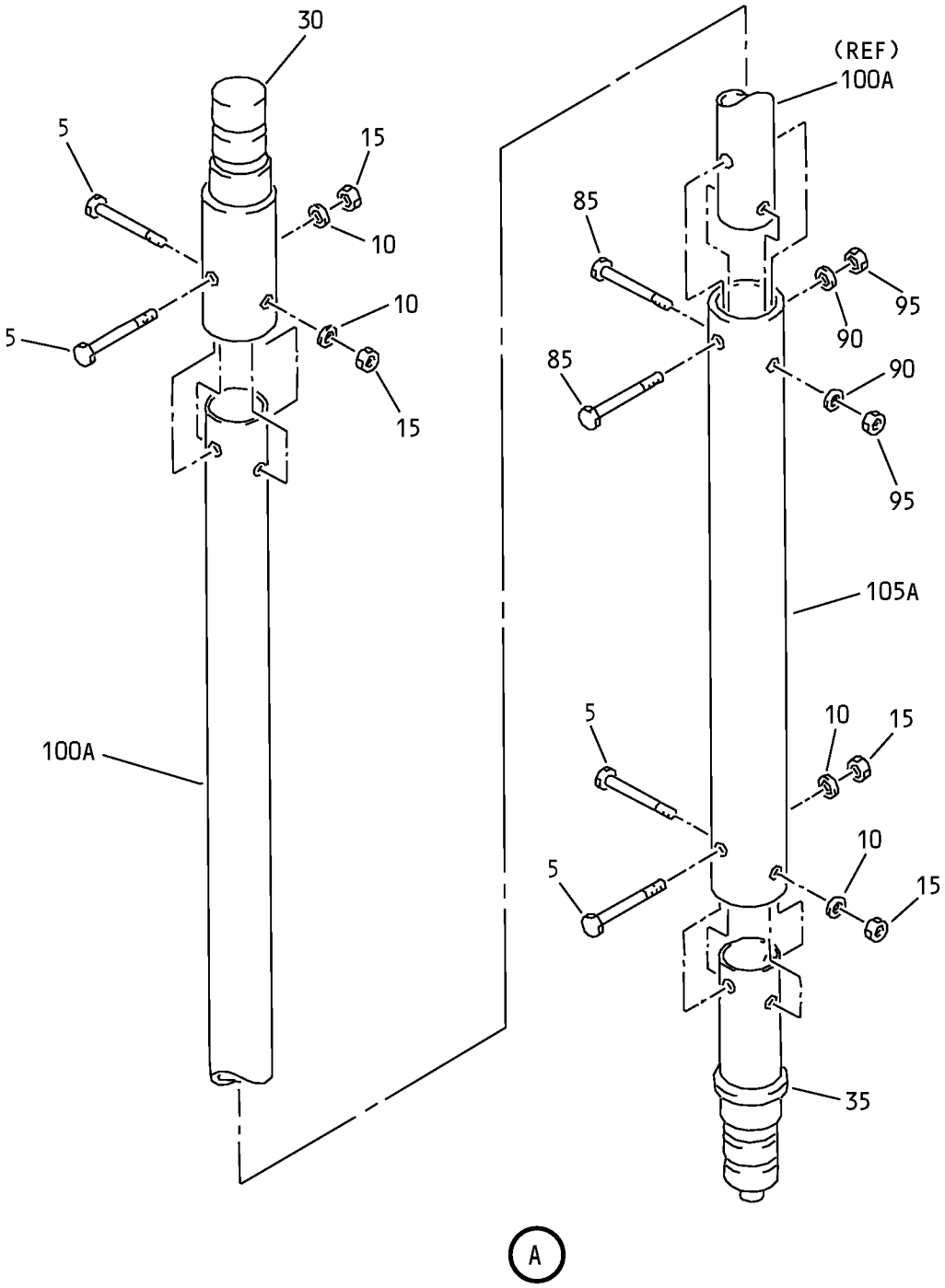
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
69-76715-2		2	100	1
8065-02RET		1	70	1
		2	70	1
94263-1032		1	65	1
		2	65	1
ABW4-5		1	60	1
		2	60	1
AW4CRG		1	60	1
		2	60	1
BACB10X3T		1	60	1
		2	60	1
BACB30LJ4-19X		1	5A	AR
		1	85A	AR
		2	5A	AR
BACB30LJ4-19Y		1	5B	AR
		1	85B	AR
		2	5B	AR
BACB30NM3K16		1	20	2
		2	20	2
BACB30NN4K29		2	110C	1
BACB30NR4K12		2	85	1
BACB30NR4K14		2	85A	1
BACB30NR4K23		2	105	1
BACB30NR4K23X		2	105A	AR
BACB30NR4K23Y		2	105B	AR
BACB30NR4K27		2	110	1
BACB30NR4K27X		2	110A	AR
BACB30NR4K27Y		2	110B	AR
BACB30PU4-19		1	5	4
		1	85	2
		2	5	4
BACB30PU5-19		1	5C	AR
		1	85C	AR
		2	5C	AR
BACN10HC3		1	65	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
		2	65	1
BACN10YR3CM		1	15	4
		1	95	2
		2	15	4
BACN10YR4CM		1	15A	AR
		1	95A	AR
		2	15A	AR
		2	120	2
BACR10V3R		1	70	1
		2	70	1
BACW10BP3APU		1	10	4
		1	90	2
		2	10	4
BACW10BP3CD		1	25	3
		2	25	3
BACW10BP4APU		1	10A	AR
		1	90A	AR
		2	10A	AR
		2	115	2
BACW10EC4C		2	90A	1
		2	90B	1
BSSR4806		1	60	1
		2	60	1
BWP3E115T		1	60	1
		2	60	1
H52732-3CM		1	15	4
		1	95	2
		2	15	4
H52732-4CM		2	120	2
HU4-136		1	60	1
		2	60	1
KWB4CRG		1	60	1
		2	60	1
LH8065-02		1	65	1
		2	65	1

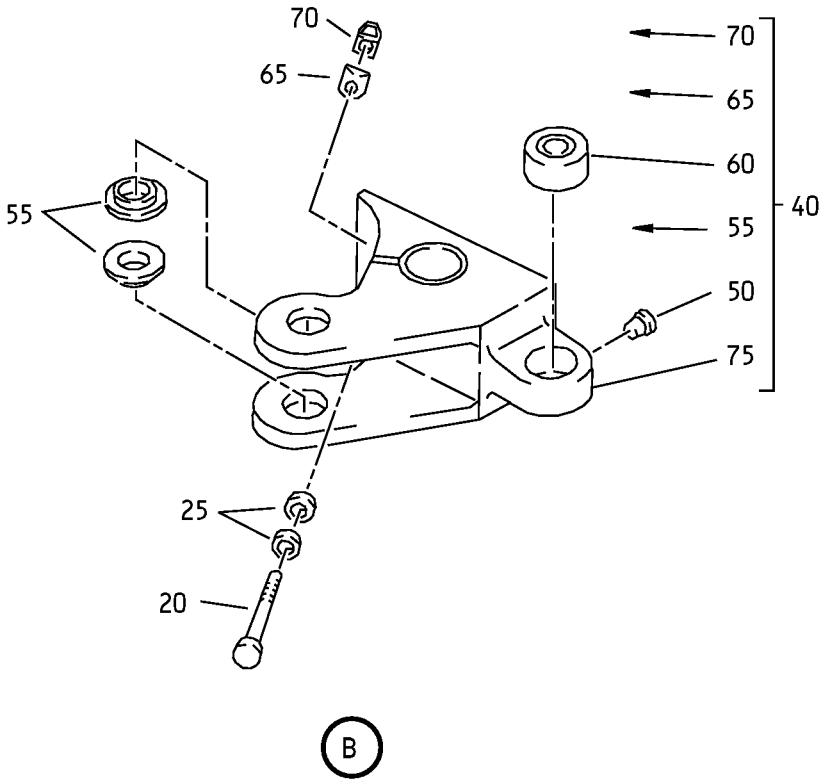
PART NUMBER	AIRLINE PART NUMBER	FIGURE	ITEM	UNITS PER ASSEMBLY
MS35338-139		2	90	1
NAS1149E0416P		2	95	1
NAS516-1P		1	50	1
		2	50	1
NAS77-6-014		1	55	2
		2	55	2
PLH53CM		1	15	4
		1	95	2
		2	15	4
PLH54CM		2	120	2
SL414-3		1	65	1
		2	65	1
WC4-1		1	60	1
		2	60	1
WS4E		1	60	1
		2	60	1

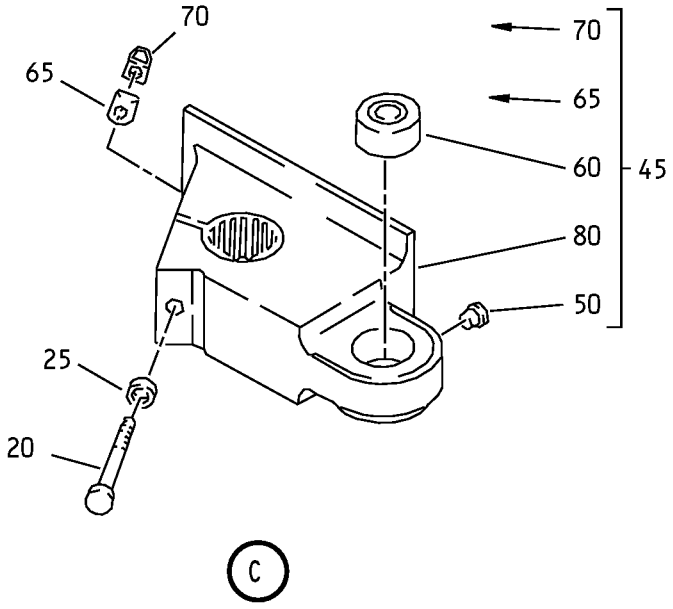


Forward Galley Door Body Side Torque Tube Assembly
IPL Figure 1 (Sheet 1 of 3)



Forward Galley Door Body Side Torque Tube Assembly
IPL Figure 1 (Sheet 2 of 3)





Forward Galley Door Body Side Torque Tube Assembly
IPL Figure 1 (Sheet 3 of 3)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
–1A	141A6510-1		TUBE ASSY-TORQUE, FWD GALLEY DOOR BODY SIDE	A	RF
–1B	141A6510-2		TUBE ASSY-TORQUE, FWD GALLEY DOOR BODY SIDE (FOR DETAILS SEE FIG. 2)	B	RF
–1C	141A6510-3		TUBE ASSY-TORQUE, FWD GALLEY DOOR BODY SIDE (FOR DETAILS SEE FIG. 2)	C	RF
–1D	141A6510-4		TUBE ASSY-TORQUE, FWD GALLEY DOOR BODY SIDE (FOR DETAILS SEE FIG. 2)	D	RF
5	BACB30PU4-19		. BOLT	A	4
–5A	BACB30LJ4-19X		. BOLT (OVERSIZE-FOR REPAIR ONLY)	A	AR
–5B	BACB30LJ4-19Y		. BOLT (OVERSIZE-FOR REPAIR ONLY)	A	AR
–5C	BACB30PU5-19		. BOLT (OVERSIZE-FOR REPAIR ONLY)	A	AR
10	BACW10BP3APU		. WASHER	A	4
–10A	BACW10BP4APU		. WASHER (OVERSIZE-FOR REPAIR ONLY)	A	AR
15	H52732-3CM		. NUT (V15653) (SPEC BACN10YR3CM) (OPT PLH53CM (V62554))	A	4
–15A	BACN10YR4CM		. NUT (OVERSIZE-FOR REPAIR ONLY)	A	AR
20	BACB30NM3K16		. BOLT	A	2
25	BACW10BP3CD		. WASHER	A	3
30	149A6105-2		. PIN-UPR HINGE LINK	A	1
35	149A6105-1		. PIN-LWR HINGE LINK	A	1
40	141A6511-2		. LINK ASSY-UPR	A	1
45	141A6511-1		. LINK ASSY-LWR	A	1
50	NAS516-1P		. . FITTING	A	1
55	NAS77-6-014		. . BUSHING (USED ON ITEM 40)	A	2

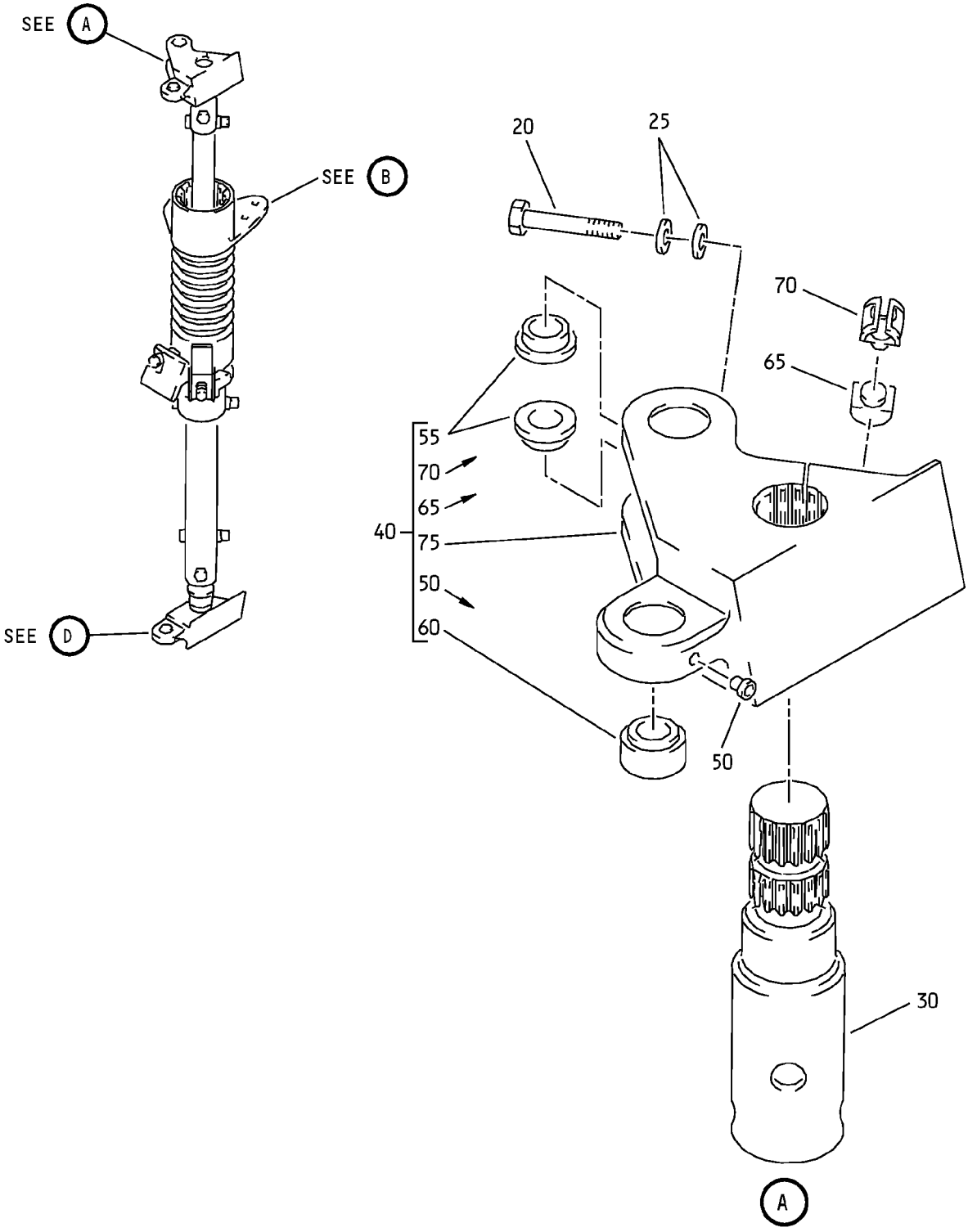
–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
60	BWP3E115T		. . BEARING (V16746) (SPEC BACB10X3T) (OPT AW4CRG (V15860)) (OPT BSSR4806 (V81376)) (OPT HU4-136 (V02758)) (OPT KWB4CRG (V97613)) (OPT WS4E (V73134)) (OPT 55303 (V09455)) (OPT WC4-1 (V56644)) (OPT ABW4-5 (VS0352))	A	1
65	LH8065-02		. . NUT (V72962) (SPEC BACN10HC3) (OPT SL414-3 (V97393)) (OPT 94263-1032 (V56878))	A	1
70	8065-02RET		. . RETAINER (V72962) (SPEC BACR10V3R)	A	1
75	141A6511-4		. . LINK (USED ON ITEM 40)	A	1
80	141A6511-3		. . LINK (USED ON ITEM 45)	A	1
85	BACB30PU4-19		. BOLT	A	2
–85A	BACB30LJ4-19X		. BOLT (OVERSIZE-FOR REPAIR ONLY)	A	AR
–85B	BACB30LJ4-19Y		. BOLT (OVERSIZE-FOR REPAIR ONLY)	A	AR
–85C	BACB30PU5-19		. BOLT (OVERSIZE-FOR REPAIR ONLY)	A	AR
90	BACW10BP3APU		. WASHER	A	2
–90A	BACW10BP4APU		. WASHER (OVERSIZE-FOR REPAIR ONLY)	A	AR
95	H52732-3CM		. NUT (V15653) (SPEC BACN10YR3CM) (OPT PLH53CM (V62554))	A	2
–95A	BACN10YR4CM		. NUT (OVERSIZE-FOR REPAIR ONLY)	A	AR
100	141A6512-2		DELETED		

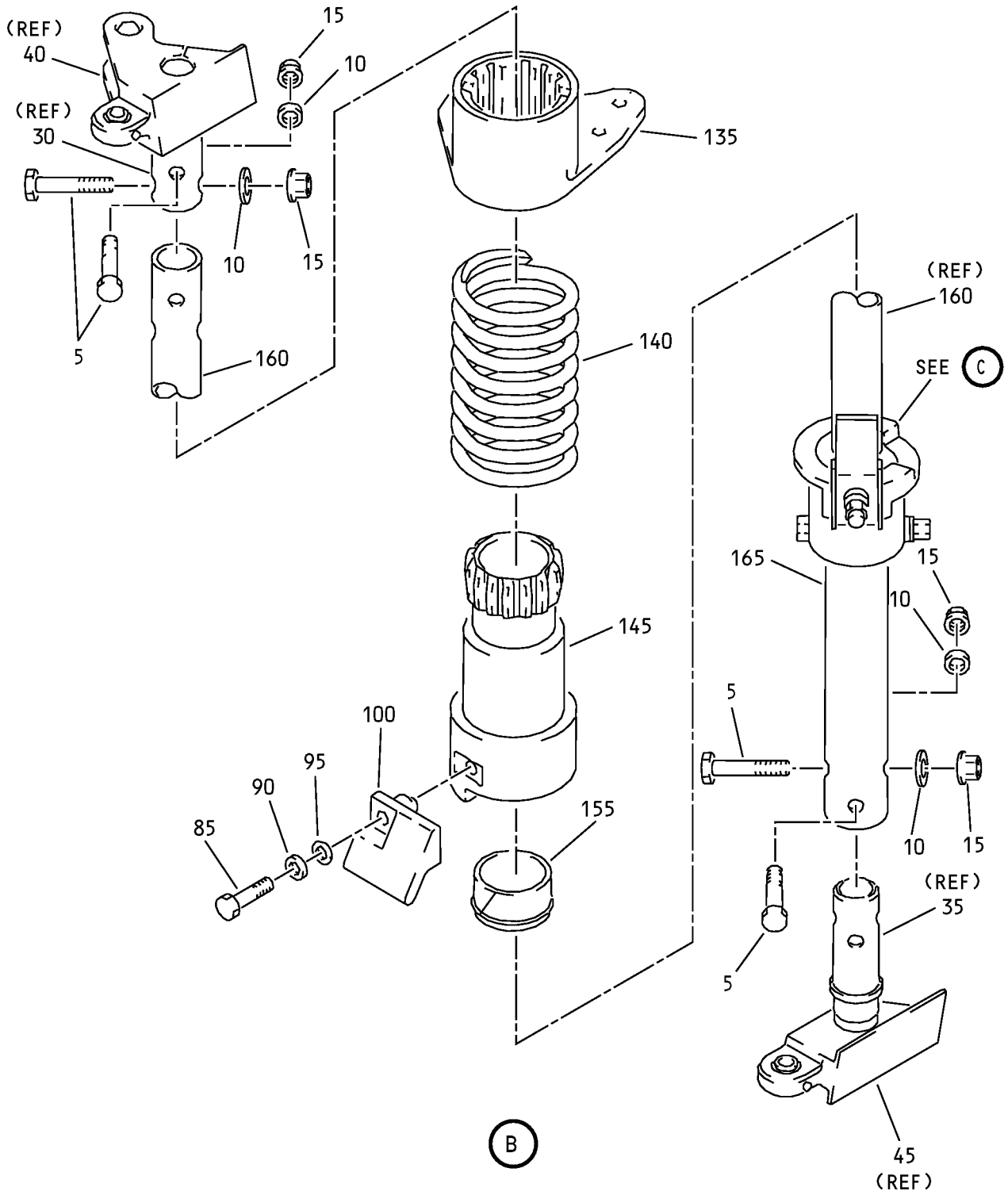
–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
1–					
100A	141A6512-4		. TUBE-UPR	A	1
105	141A6512-1		DELETED		
105A	141A6512-3		. TUBE-LWR	A	1

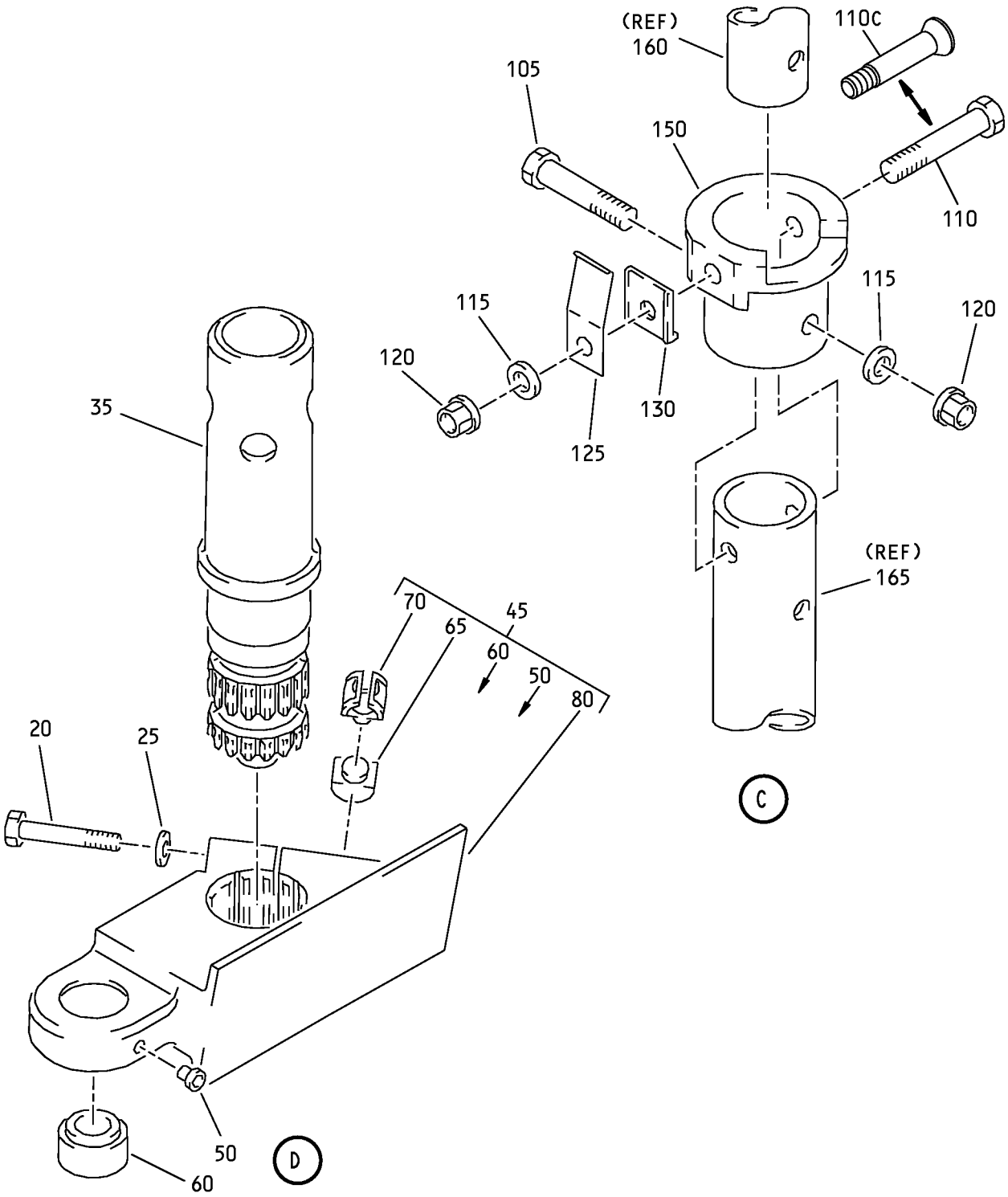
–Item not Illustrated



Forward Galley Door Body Side Torque Tube Assembly
IPL Figure 2 (Sheet 1 of 3)



Forward Galley Door Body Side Torque Tube Assembly
IPL Figure 2 (Sheet 2 of 3)



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Forward Galley Door Body Side Torque Tube Assembly
IPL Figure 2 (Sheet 3 of 3)

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
–1A	141A6510-2		TUBE ASSY-TORQUE, FWD GALLEY DOOR BODY SIDE	B	RF
–1B	141A6510-3		TUBE ASSY-TORQUE, FWD GALLEY DOOR BODY SIDE	C	RF
–1C	141A6510-4		TUBE ASSY-TORQUE, FWD GALLEY DOOR BODY SIDE	D	RF
5	BACB30PU4-19		. BOLT	B-D	4
–5A	BACB30LJ4-19X		. BOLT (OVERSIZE-FOR REPAIR ONLY)	B	AR
–5B	BACB30LJ4-19Y		. BOLT (OVERSIZE-FOR REPAIR ONLY)	B	AR
–5C	BACB30PU5-19		. BOLT (OVERSIZE-FOR REPAIR ONLY)	B	AR
10	BACW10BP3APU		. WASHER	B-D	4
–10A	BACW10BP4APU		. WASHER (OVERSIZE-FOR REPAIR ONLY)	B	AR
15	H52732-3CM		. NUT (V15653) (SPEC BACN10YR3CM) (OPT PLH53CM (V62554))	B-D	4
–15A	BACN10YR4CM		. NUT (OVERSIZE-FOR REPAIR ONLY)	B	AR
20	BACB30NM3K16		. BOLT	B-D	2
25	BACW10BP3CD		. WASHER	B-D	3
30	149A6105-2		. PIN-UPR HINGE LINK	B-D	1
35	149A6105-1		. PIN-LWR HINGE LINK	B-D	1
40	141A6511-2		. LINK ASSY-UPR	B-D	1
45	141A6511-1		. LINK ASSY-LWR	B-D	1
50	NAS516-1P		. . FITTING	B-D	1
55	NAS77-6-014		. . BUSHING (USED ON ITEM 40)	B-D	2

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
60	BWP3E115T		. . BEARING (V16746) (SPEC BACB10X3T) (OPT AW4CRG (V15860)) (OPT BSSR4806 (V81376)) (OPT HU4-136 (V02758)) (OPT KWB4CRG (V97613)) (OPT WS4E (V73134)) (OPT 55303 (V09455)) (OPT WC4-1 (V56644)) (OPT ABW4-5 (VS0352))	B-D	1
65	LH8065-02		. . NUT (V72962) (SPEC BACN10HC3) (OPT SL414-3 (V97393)) (OPT 94263-1032 (V56878))	B-D	1
70	8065-02RET		. . RETAINER (V72962) (SPEC BACR10V3R)	B-D	1
75	141A6511-4		. . LINK (USED ON ITEM 40)	B-D	1
80	141A6511-3		. . LINK (USED ON ITEM 45)	B-D	1
85	BACB30NR4K12		. BOLT	B, C	1
–85A	BACB30NR4K14		. BOLT	D	1
90	MS35338-139		. WASHER (REPLACED BY ITEM 90A)	B, D	1
–90A	BACW10EC4C		. WASHER (REPLACES ITEM 90)	B, D	1
–90B	BACW10EC4C		. WASHER	C	1
95	NAS1149E0416P		. WASHER	B-D	1
100	69-76715-2		. HANDLE	B, C	1
–100A	141A6514-1		. HANDLE	D	1
105	BACB30NR4K23		. BOLT	B-D	1
–105A	BACB30NR4K23X		. BOLT (OVERSIZE-FOR REPAIR ONLY)	B	AR
–105B	BACB30NR4K23Y		. BOLT (OVERSIZE-FOR REPAIR ONLY)	B	AR
110	BACB30NR4K27		. BOLT	B	1

–Item not Illustrated

FIG/ ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
2–					
–110A	BACB30NR4K27X		. BOLT (OVERSIZE-FOR REPAIR ONLY)	B	AR
–110B	BACB30NR4K27Y		. BOLT (OVERSIZE-FOR REPAIR ONLY)	B	AR
110C	BACB30NN4K29		. BOLT	C, D	1
115	BACW10BP4APU		. WASHER	B-D	2
120	H52732-4CM		. NUT (V15653) (SPEC BACN10YR4CM) (OPT PLH54CM (V62554))	B-D	2
125	69-76538-1		. SPRING-FLAT	B-D	1
130	69-76604-1		. RETAINER-SPR	B-D	1
135	141A6508-1		. FITTING-SPLINED	B-D	1
140	65C31741-1		. SPRING-HELICAL CPRSN	B-D	1
145	141A6509-1		. SHAFT-SPLINED	B-D	1
150	149A6117-2		. COLLAR	B	1
–150A	69-76563-2		. COLLAR	C, D	1
155	149A6118-1		. SLEEVE	B-D	1
160	141A6512-4		. TUBE-UPR	B-D	1
165	141A6512-3		. TUBE-LWR	B-D	1

–Item not Illustrated