TO: ALL HOLDERS OF ELEVATOR CONTROL QUADRANT ASSEMBLY OVERHAUL MANUAL, 27-37-02

REVISION NO. 7, DATED NOV 1/07

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D & O	D / Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Added Elevator Control Quadrant Assembly 65-54204-18		X			X	X						X	

ELEVATOR CONTROL QUADRANT ASSEMBLY

27-37-02

BOEING P/N 65-54204-1, -3, -4, -6, -8, -10, -12, -14, -16, -18

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
27-1032		PRR 31465	Sep 10/70
		PRR 32070-9	Mar 25/73
		PRR 32070-23	Jun 25/74
		PRR 33180-89	Mar 5/84
		PRR 33329	Mar 5/84
		PRR 33760	Sep 5/85

LIST OF EFFECTIVE PAGES

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

	PAGE	DATE	PAGE	DATE	PAGE	DATE
27-37-02						
*	T-1	Nov 1/07				
	T-2	BLANK				
*	LEP-1	Nov 1/07				
	LEP-2	BLANK				
	T/C-1	Jul 5/82				
	T/C-2	BLANK				
	1	Mar 25/73				
	2	Sep 10/70				
*	101	Nov 1/07				
	102	BLANK				
	201	Sep 10/70				
	202	BLANK				
	301	Mar 5/89				
	302	BLANK				
	401	Sep 10/70				
*	402	Nov 1/07				
*	501	Nov 1/07				
*	502	Nov 1/07				
	503	Mar 5/89				
	504	Dec 5/92				
	505	Mar 5/89				
*	506	Nov 1/07				
	601	Jul 5/82				
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	902	BLANK				
	1001	Sep 10/70				
	1002	BLANK				
	1101	Aug 15/67				
*	1102	Nov 1/07				
*	1103	Nov 1/07				
*	1104	Nov 1/07				

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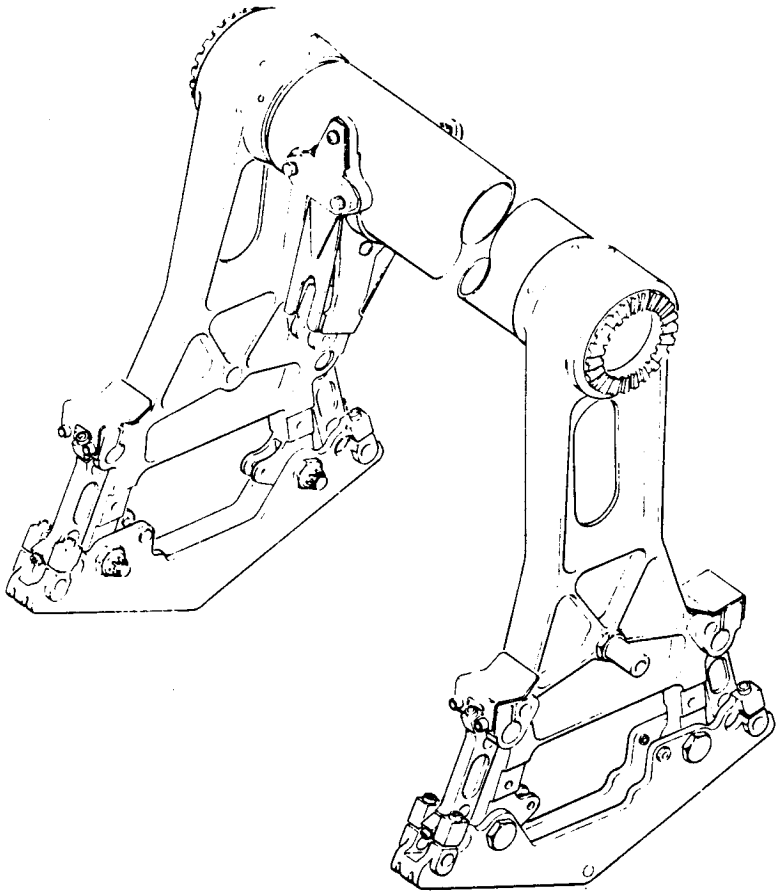
ELEVATOR CONTROL QUADRANT ASSEMBLY



Elevator Control Quadrant Assembly
Figure 1

DESCRIPTION AND OPERATION

1. Description

   A. The elevator control quadrant assembly consists of a torque tube and a quadrant assembly mounted at each end of the tube. The assembly interconnects the captains and the first officer's control columns, with the control columns mounted at each end of the torque tube.

2. Operation

A. The elevator control quadrant assembly assists in activating the elevator control system. It transmits the fore and aft motion of the captain's and first officer's control columns, through a series of cables and pulleys, to the aft control quadrants located in the empennage. The aft control quadrants, together with other elevator control devices, then provide rotation of the elevators.

3. Leading Particulars

Width -- 12.38 inches (approximately)
Length -- 30.50 inches (approximately)
Height -- 18.65 inches (approximately)
Weight -- 13.00 pounds (approximately)

DISASSEMBLY

1. Procedures (Fig. 1101).

   A. Remove nuts (1), washers (2), and shou1der bo1ts (3).

   B. Remove screws (4), washers (5), guards (5A), nuts (6) and retainers (7).

   C. Remove pivots (8), 1inks (9), and quadrant assemb1ies (10 and 11).

      NOTE: Do not remove rivet (12), spacer (13), and bushings (14) from quadrants (15 and 16) un1ess repair or rep1acement is necessary.

   D. Remove nut (17), washer (18), and stop (19).

      NOTE: Do not remove Meta1-Ca1 (20) un1ess damaged or i11egib1e.

   E. Remove nuts (22), washers (23), and screws (24).

   F. Remove bo1ts (25), washers (26), retainers (27), and springs (28 and 29).

   G. Remove nut (30), washers (31), screw (32), bushing (33), and fork (34) from tube assemb1y (35).

   H. Remove rivets (36 and 37) and mount assemb1y (38).

      NOTE: Do not remove inserts (39) from mount (40) un1ess repair or rep1acement is necessary.

   I. Remove rivets (44) and input crank (45).

   J. Remove rivets (41 and 41A) and s1ide supports (42) off tube (43).

CLEANING

1. General

   A. Wash and rinse all metal parts in solvent, Specification P-D-680, or equivalent.

   B. Clean all bores, holes, threads, passages, and chambers using a stiff-bristle brush.

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

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

INSPECTION/CHECK

1. Visual Check (Fig. 1101)

   A. Check all metal parts for pits, scratches, cracks, burrs, corrosion, and damage using strong light and a minimum of 10-power magnification.

   B. Examine all threaded parts for cross-threading and stripping.

   C. Examine plated and painted surfaces for blistering or flaking.

   D. Check clutch teeth on support (42) for nicks, gouges, cracks, or uneven wear. Wear pattern must be smooth and centered on teeth.

   E. Examine grooves in quadrant assemblies (10, 11) for wear and condition of cable terminal sockets.

   F. Check bushings (14, 33) for indications of wear or damage.

2. Special Check (Fig. 1101)

   A. If visual examination discloses evidence of defects in any of the parts listed, perform the following checks:

      (1) Dye penetrant check -- links (9), quadrants (15, 16), forks (34), mount (40), and supports (42).

3. Spring Check

   A. Check leaf springs (28, 29) after installation (Ref ASSEMBLY).

REPAIR

1. Repair (See figure 1101.)

   A. Remove corrosion and minor defects from metal parts by polishing lightly with abrasive cloth 220 grit or finer. Refinish as necessary for protection against corrosion.

   B. Repair minor defects on clutch teeth of support (42) by light filing or using an abrasive.

   C. Remove minor defects from threads with small triangular file or thread chaser.

2. Refinish (See figure 1101.)

   NOTE: Refer to Subject 20-30-02 for stripping of protective finishes and to Subject 20-41-01 for decoding of "F" and "SRF" finish symbols and their BAC equivalents.

   A. If plated or painted surfaces are worn or chipped, refinish parts listed below as indicated.

      (1) Shoulder Bolts (3) -- Apply F-1.1926 all over.

      (2) Guards (5A) -- Apply F-8.07 all over.

      (3) Links (9) -- Apply SRF-2.19 all over except omit primer in 0.6253- and 0.438-inch diameter holes.

      (4) Quadrants (15 and 16) -- Apply SRF-2.19 all over except omit primer in 0.3123-inch diameter holes (for bushings (14)), 0.4995-inch diameter holes (for shoulder bolts (3)), and 0.6253-inch diameter holes (for pivots (8)).

      (5) Stop (19) -- Apply F-1.1926 all over followed by SRF-12.205 on interior surfaces.

      (6) Retainers (27) -- Apply SRF-2.30 all over.

      (7) Springs (28 and 29) -- Apply F-1.1923 all over.

      (8) Fork (34) -- Apply SRF-2.30 all over except on surfaces which contact spring (29). Apply F-2.26 on these surfaces.

(9) Mount (40) -- Apply SRF-2.30 all over except on surfaces which contact forked end of spring (29). Apply F-2.26 on these surfaces.

(10) Support (42, 65-52995-3) -- Apply SRF-2.19 all over except omit primer on clutch teeth and in 0.562 and 0.6253-inch diameter holes.

(11) Support (42, 65-52995-4, -6, -7 and -13) -- Apply F-18.04 all over except omit primer on clutch teeth and in 0.562 and 0.6253-inch diameter holes.

(12) Support (42, 65-52995-8, -9, -10 and -11) -- Apply F-18.13 all over except omit primer on clutch teeth and in 0.562 and 0.6253-inch diameter holes.

(13) Tube (43) -- Apply SRF-2.902 all over.

(14) Input Crank (45) -- Chromic acid anodize according to MIL-A-8625, Type 1 and apply one coat of BMS 10-11, Type 1 primer according to SOPM 20-41-02 except in 0.190-0.191 dia hole.

3. Replacement (Fig. 1101).

A. Replace all parts found unserviceable or damaged beyond simple repair.

CAUTION: TO PREVENT BINDING OF BUSHING (14), DO NOT USE BMS 10-11, TYPE 1 PRIMER WHEN INSTALLING NEW BUSHING.

B. If necessary to replace bushings (14), press out old bushing and press new bushing in place.

C. Replace damaged or defective marker (20), per SOPM 20-50-05. Locate as shown in Fig. 501.

D. If necessary to replace inserts (39), remove old insert and install new insert 1/4 to 1-1/2 turns below start of first thread. Remove tang.

NOTE: Install inserts (39) with a thin coat of corrosion preventive compound, MIL-C-11796, class 3.

ASSEMBLY

1. Procedures (Fig. 501 and 1101)

A. Position tube (43) in supports (42) as shown in Fig. 501 and install rivets (41 and 41A) with the manufactured head on the outside.

B. Position mount assembly (38) on tube (43) as shown in Fig. 501 and install rivets (37 and 36) with the manufactured heads on the outside.

C. Install fork (34), bushing (33), screw (32), washers (31), and nut (30).

CAUTION: REPLACE SPRINGS (28, 29) IF CLEARANCE BETWEEN SPRING (29) AND FORK (34) EXCEEDS 0.015 IN., OR UNIT MAY NOT FUNCTION PROPERLY.

D. Install springs (29 and 28) and retainers (27) on mount assembly (38) with washers (26), bolts (25), screws (24), washers (23), and nuts (22). Install springs (29) with chamfer against radius of mount assembly (38). Make sure that clearance between spring (29) and fork (34) does not exceed 0.015 in.

E. Install stop (19), washer (18), and nut (17).

F. Assemble quadrant assemblies (11 and 10), links (9), pivots (8), and shoulder bo1ts (3) to supports (42) as follows:

(1) Align quadrant assemblies (11 and 10) with supports (42) and install shoulder bolt (3) and 0.4995/0.4985-inch diameter pin or equivalent diameter bolt (grip length 1.00 inch or longer) in the holes of each quadrant assembly as shown in Fig. 501. Loosely install washers (2) and nuts (1) on shoulder bolts.

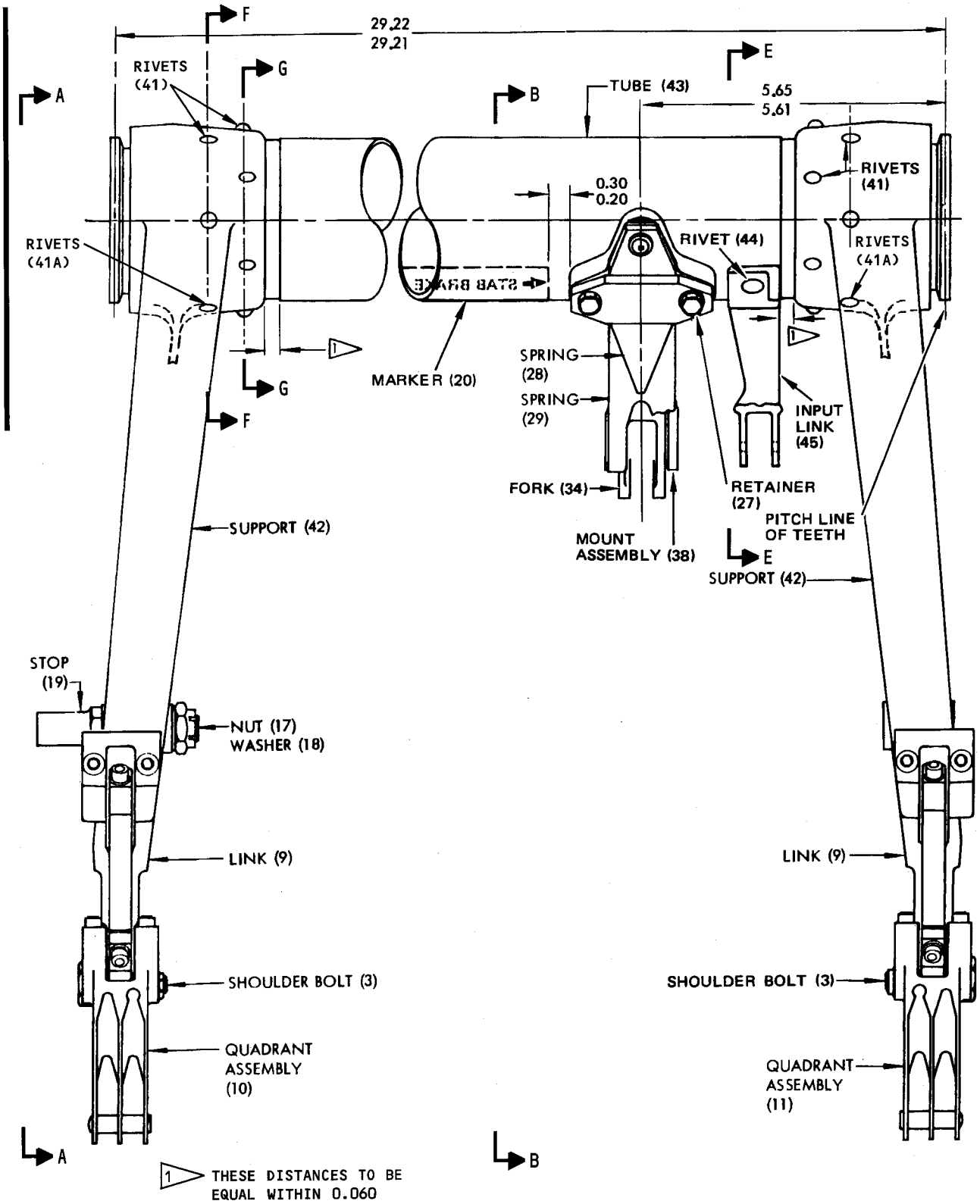
(2) Install links (9) and pivots (8). Install pivots (8) with corrosion preventive compound MIL-C-11796, class 3 (F-19.11). Index pivots at the angle shown in Fig. 501. Establish gap dimensions at both ends of all links by gaging with 0.04-inch diameter wire extended into holes in both grooves of pivots to center the pivots. The resultant centering must provide clearance shown in Fig. 501.

(3) Install retainers (7), nuts (6), guards (5A), washers (5), and screws (4). Tighten screws (4) to 40-47 pound-inches.

(4) With the assembly oriented as shown in Fig. 501, remove 0.4995/0.4985-inch diameter pin. Test alignment of holes by reinstalling pin without relative movement between quadrant assemblies (11 and 10) and supports.

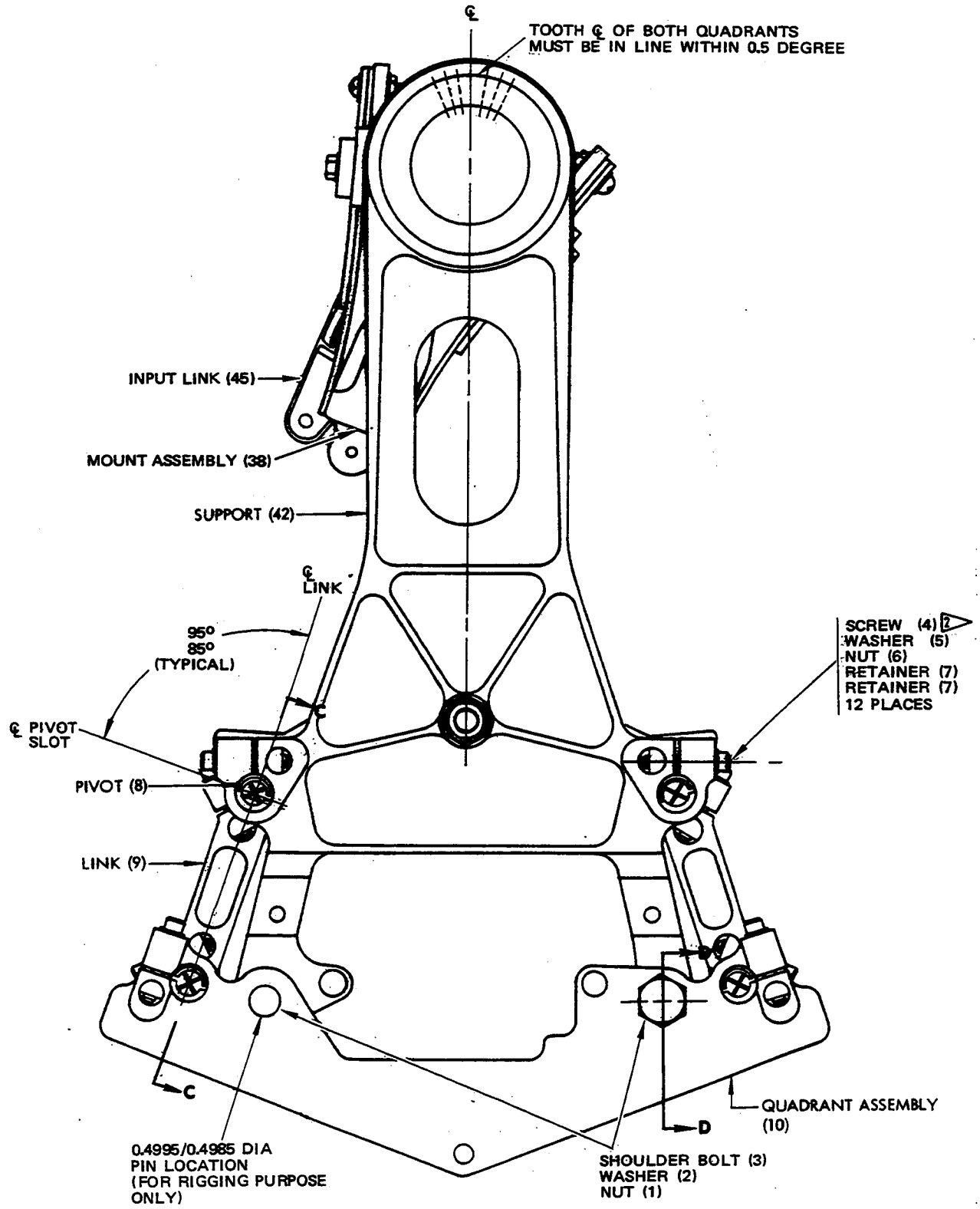
(5) Remove pins and install shoulder bo1ts (3), washer (2), and nuts (1). Tighten nuts (1) previously installed.

G. Position input link (45) on tube (43) as shown in Fig. 501 and install rivets (44) with the manufactured head on the outside.



Assembly Procedure
Figure 501 (Sheet 1)

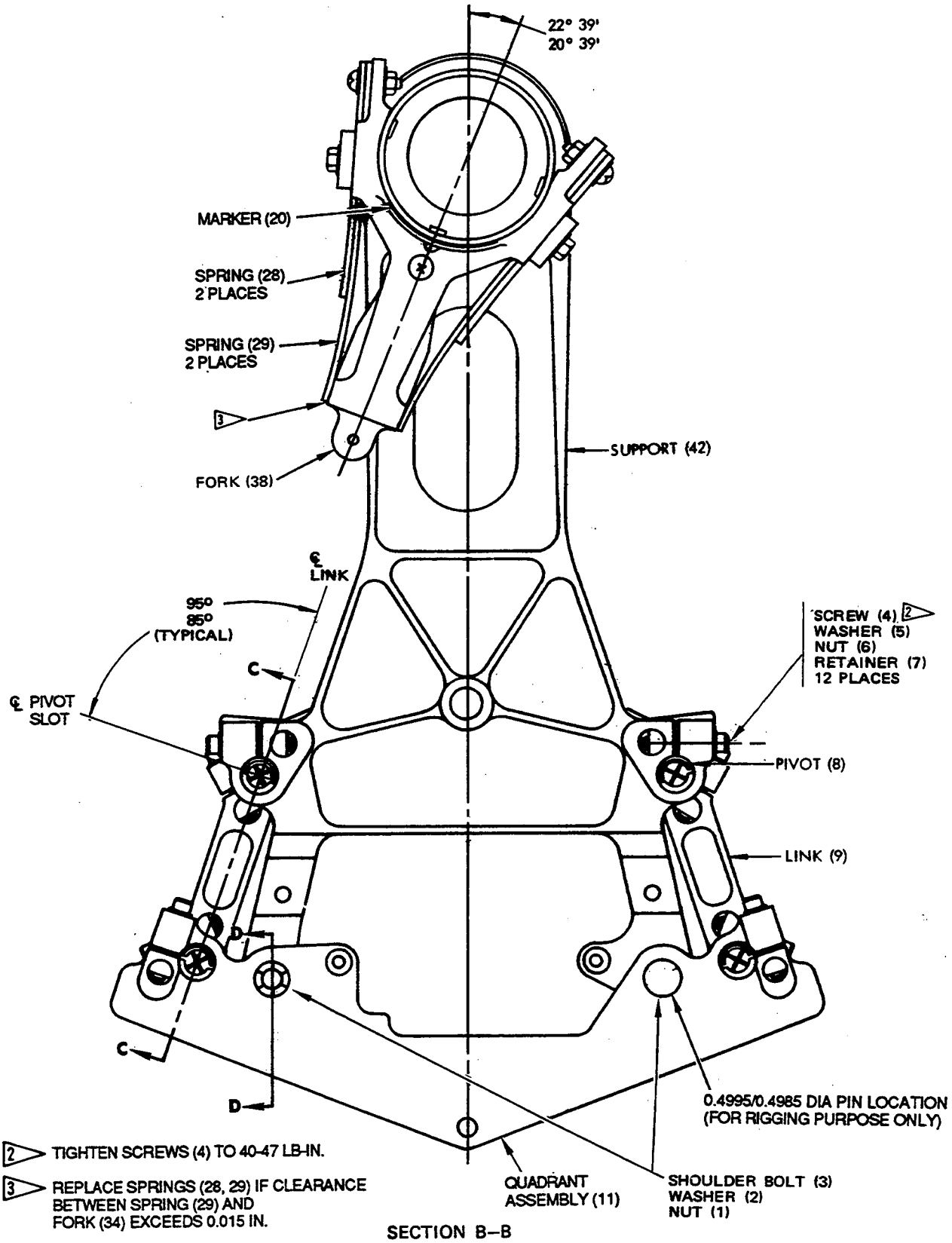
1421655



2 TIGHTEN SCREWS (4) TO 40–47 LB–IN.

SECTION A–A

Assembly Procedure
Figure 501 (Sheet 2)

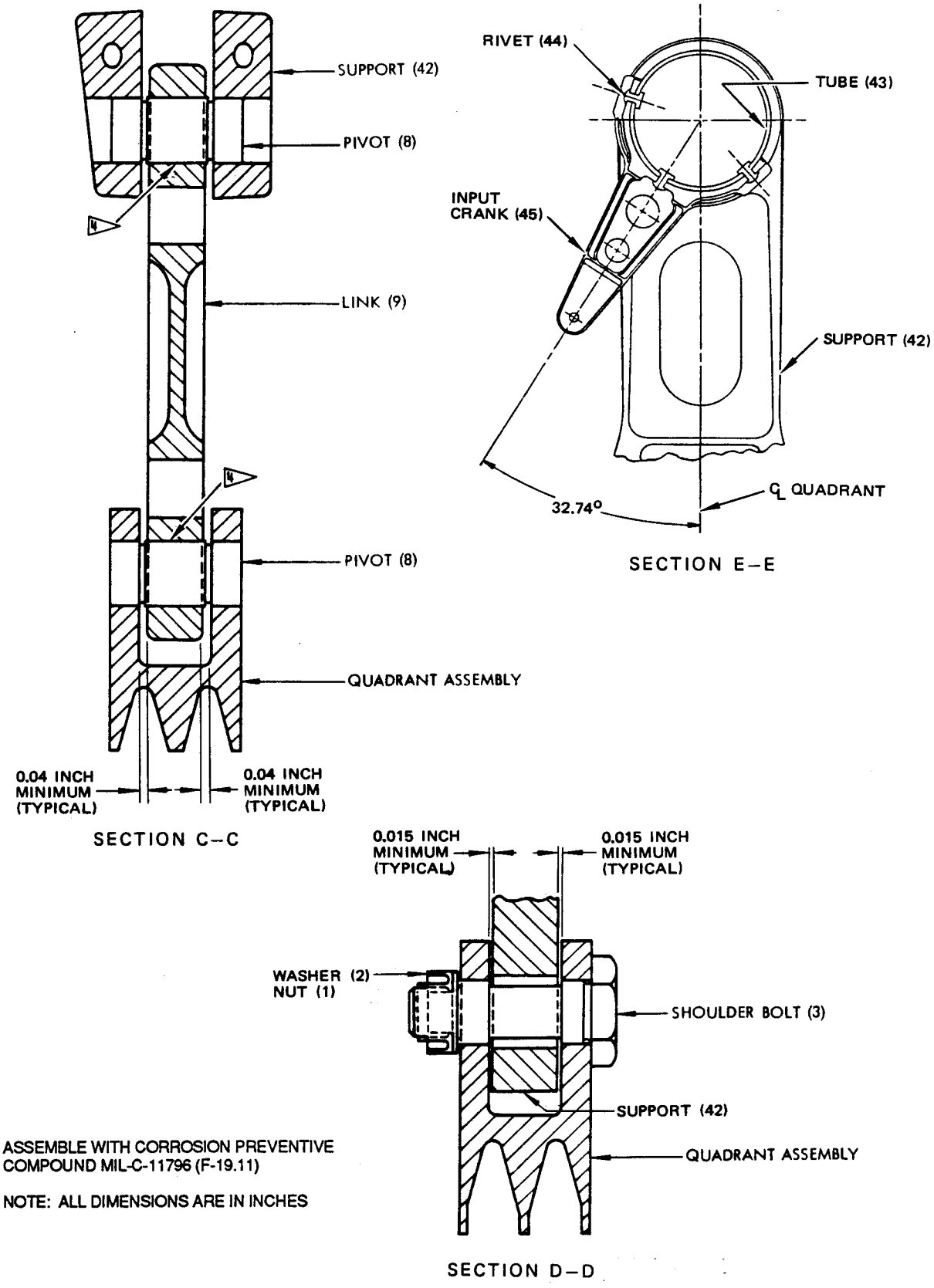


2 TIGHTEN SCREWS (4) TO 40-47 LB-IN.

3 REPLACE SPRINGS (28, 29) IF CLEARANCE BETWEEN SPRING (29) AND FORK (34) EXCEEDS 0.015 IN.

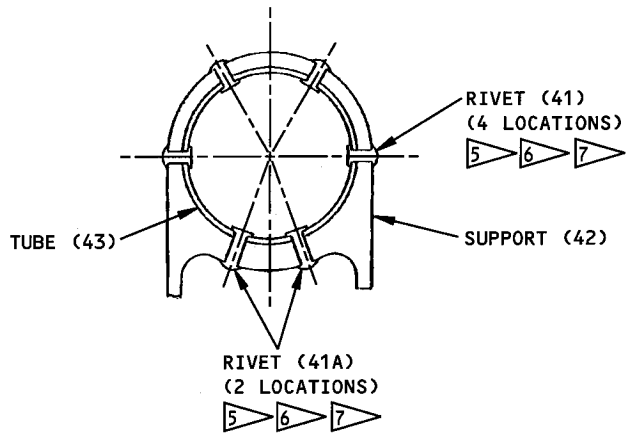
SECTION B–B

Assembly Procedure
Figure 501 (Sheet 3)

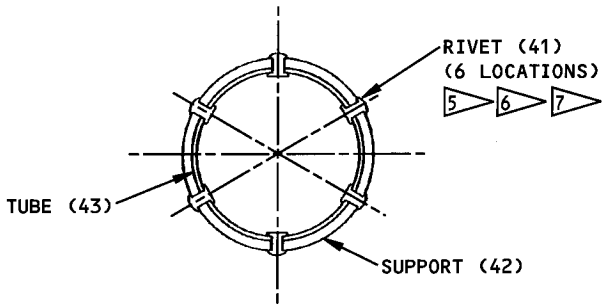


4 ASSEMBLE WITH CORROSION PREVENTIVE COMPOUND MIL-C-11796 (F-19.11)

NOTE: ALL DIMENSIONS ARE IN INCHES



SECTION F-F



SECTION G-G

5 HOLES TO BE OPENED UP TO 0.199-0.202 FOR (OPT) RIVETS MS21141

6 INSTALL WITH WET PRIMER (F-20.06).

7 APPLY TOUCH UP (F-21.12) TO EXPOSED FASTENER HOODS.

Assembly Procedure
Figure 501 (Sheet 5)

1421952

FITS AND CLEARANCES

FOR TORQUE VALUE OF STANDARD FASTENERS, REFER TO 20-50-01			
ITEM NO. FIG. 1101	NAME	TORQUE	
		POUND-INCHES	POUND-FEET
4	Screw	40-47	

Torque Table
Figure 601

STORAGE INSTRUCTIONS

1. Wrap elevator control quadrant assembly in vapor barrier paper and seal securely. Tag or mark assembly with test date and store.

2. For further information, refer to Subject 20-44-02, "Temporary Protective Coatings."

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

1. Pin - 0.4985/0.4995 inch diameter 1 inch or longer

ILLUSTRATED PARTS LIST

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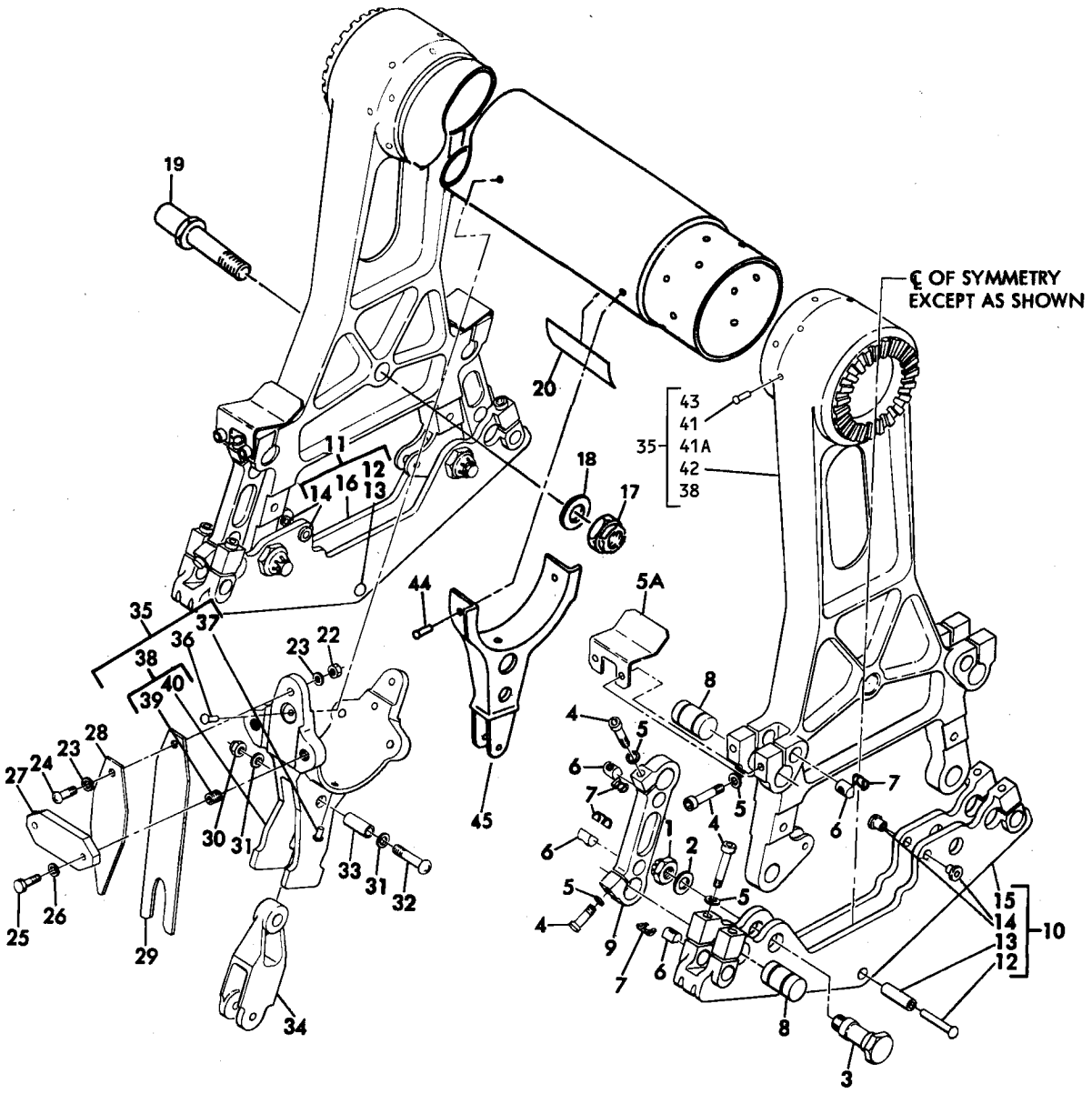

Elevator Control Quadrant Assembly
Figure 1101

1422013

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
	65-54204-1		QUADRANT ASSY, ELEVATOR CONTROL	A	RF
	65-54204-3		QUADRANT ASSY, ELEVATOR CONTROL (SB 27-1032)	B	RF
	65-54204-4		QUADRANT ASSY, ELEVATOR CONTROL	C	RF
	65-54204-6		QUADRANT ASSY, ELEVATOR CONTROL	D	RF
	65-54204-8		QUADRANT ASSY, ELEVATOR CONTROL	E	RF
	65-54204-10		DELETED		
	65-54204-12		QUADRANT ASSY, ELEVATOR CONTROL	F	RF
	65-54204-14		QUADRANT ASSY, ELEVATOR CONTROL	G	RF
	65-54204-16		QUADRANT ASSY, ELEVATOR CONTROL	H	RF
	65-54204-18		QUADRANT ASSY, ELEVATOR CONTROL	J	RF
1	BACN10JC6		. NUT (REPLS NAS679A6)	A-E	4
1	MS21042L6		. NUT	F-J	4
2	AN960PD616L		. WASHER		4
3	69-40263-1		. BOLT, SHOULDER		4
4	MS16998-32		. SCREW		24
5	AN960PD10L		. WASHER		24
5A	69-60170-1		. GUARD (SB 27-1032)	A	4
5A	69-60170-1		. GUARD	B-J	4
6	BACN10HC3		. NUT (REPLS BACN10CP3L)		24
7	BACR10V3R		. RETAINER (REPLS BACR10V3)		24
8	6020-400		. PIVOT, V99551	A-G	8
8	6020-400X		. PIVOT, V99551 (PREF)	HJ	8
8	6020-400		. PIVOT, V99551 (OPT TO 6020-400X)	HJ	8
9	65-53397-1		. LINK	ABC	4
9	65-53397-4		. LINK	D-J	4
10	65-53592-1		. QUADRANT ASSY		1
11	65-53592-2		. QUADRANT ASSY (OPP 65-53592-1)		1
12	BACR15BB6A		. . RIVET (REPLS MS20470A6)		1
13	NAS42DD6-62		. . SPACER		1
14	BACB28X3D45		. . BUSHING		2
15	65-53592-3		. . QUADRANT (USED ON 65-53592-1)		1
16	65-53592-4		. . QUADRANT (USED ON 65-53592-2)		1
17	BACN10JC9		. NUT (REPLS BACN10BY59)	A-G	1
18	BACW10P253S		. WASHER	A-G	1
19	69-40267-3		. STOP	A-G	1
20	BACM10L8X		. MARKER	A-F	1
21	MS20470D6		DELETED		
22	BACN10JC3		. NUT	A-E	2
22	MS21042L3		. NUT	F	2
23	AN960PD10L		. WASHER	A-F	4
24	NAS623-3-7		. SCREW	A-F	2
25	BACB30NF4-5		. BOLT (REPLS NAS1104-5)	A-F	4
26	AN960PD416L		. WASHER	A-F	4
27	66-19375-1		. RETAINER	A-F	2
28	69-26478-2		. SPRING	A-F	2
29	69-26478-1		. SPRING	A-F	2

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
30	BACN10JC3		. NUT (REPLS NAS679A3W)	A-E	1
30	MS21042L3		. NUT	F	1
31	AN960PD10L		. WASHER	A-F	2
32	NAS623-3-13		. SCREW	A-F	1
33	NAS75-3-027		. BUSHING	A-F	1
34	65-33290-1		. FORK	A-F	1
35	65-54204-2		. TUBE ASSY	AB	1
35	65-54204-5		. TUBE ASSY	C	1
35	65-54204-7		. TUBE ASSY	D	1
35	65-54204-9		. TUBE ASSY	E	1
35	65-54204-11		DELETED		
35	65-54204-13		. TUBE ASSY	F	1
35	65-54204-15		. TUBE ASSY	G	1
35	65-54204-17		. TUBE ASSY	H	1
35	65-54204-19		. TUBE ASSY	J	1
36	BACR15BA6D		. . RIVET (REPLS MS20426D6)	A-F	2
37	BACR15BB6D		. . RIVET (REPLS MS20470D6)	A-F	2
38	65-33287-1		. . MOUNT ASSY, CRANK	ABC	1
38	65-33287-4		. . MOUNT ASSY	DEF	1
39	MS21209F4-15		. . . INSERT (REPLS BACS13W4CN3)		4
40	65-33287-2		. . . MOUNT	ABC	1
40	65-33287-5		. . . MOUNT	DEF	1
41	BACR15BB6DD		. . RIVET (REPLS MS20470D6)		20
41	MS21141-0605P		. . FASTENER-BLIND (OPT)	F-J	20
41A	BACR15BB6DD		. . RIVET		4
41A	MS21141-0607P		. . FASTENER-BLIND (OPT)	F-J	4
42	65-52995-3		. . SUPPORT	AB	2
42	65-52995-4		. . SUPPORT	CD	2
42	65-52995-8		. . SUPPORT (OPT TO 65-52995-4)	D	2
42	65-52995-6		. . SUPPORT	EFG	2
42	65-52995-9		. . SUPPORT (OPT TO 65-52995-6)	E	2
42	65-52995-11		. . SUPPORT (PREF)	H	2
42	65-52995-7		. . SUPPORT (OPT TO 65-52995-11)	H	2
42	65-52995-10		. . SUPPORT (OPT TO 65-52995-11,-7)	H	2
42	65-52995-13		. . SUPPORT	J	2
43	6-17859-2000		. . TUBE		1
44	BACR15BB6D		. . RIVET	F-J	3
45	65C25546-1		. . INPUT CRANK (OPT TO 65C25546-2)	F-J	1
45	65C25546-2		. . INPUT CRANK (OPT TO 65C25546-1)	F-J	1

VENDORS

V99551 GOODRICH CORP., DIV. POWER TRANSMISSION SYSTEMS, 104 OTIS ST., ROME, NEW YORK 13441