TO: ALL HOLDERS OF VERNIER ADJUSTMENT CONTROL ROD ASSEMBLY OVERHAUL MANUAL, 27-37-09

REVISION NO. 16, DATED JUL 1/08

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 control rod assembly 256A3914-1, -2, -3 per PRR 38006				X	X	X						X	
Changed stencil lettering on page 2					X								

VERNIER ADJUSTMENT CONTROL ROD ASSEMBLY

27-37-09

BOEING P/N 65-45166-1, -4, -7, -8, -12, -14, -16, -17, -18, -21, -24
69-37290-6, -7, -8, -10 thru 13, -15, -16, -17
69-43490-2, -4 thru -12
69-71010-7, -8, -9, -13
69-73371-2 thru -7
251A3416-1,-2
65C37931-3
65C38024-9, -11
251A3495-1, -7
256A3914-1, -2, -3

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
27-1019		PRR 30917	Dec 10/70
		PRR 32121-10	Jun 25/75
27-1068		PRR 32399	Jun 25/75
		PRR 32900-1	Jan 5/80
		PRR 32950-7	Jan 5/80
		PRR 33410-59	Dec 5/86
		PRR 33890-91	Sep 5/91
		PRR 38060-6	Jun 1/97
27A1202R2	TR 27-32		Dec 1/97
		PRR 38060-12	Dec 1/97
		PRR 38506	Nov 1/02
55A1080			Nov 1/02
27-1207			Nov 1/02
27-1252			Nov 1/05
27-1253			Nov 1/05
27-1255			Nov 1/05
		PRR 38488-1	Nov 1/05
		PRR 35005-272RS	Jul 1/07
		PRR 38275-104S	Jul 1/07
27-1252R3			Jul 1/07
27-1253R3			Jul 1/07
27-1255R3			Jul 1/07
27A1279			Jul 1/07
		PRR 38006	Jul 1/08

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
27-37-09						
*	T-1	Jul 1/08				
	T-2	BLANK				
*	LEP-1	Jul 1/08				
	LEP-2	BLANK				
*	T/C-1	Jul 1/08				
	T/C-2	BLANK				
	1	Jul 1/05				
*	2	Jul 1/08				
	2A	Jul 1/05				
	2B	Nov 1/02				
	2C	Nov 1/02				
	2D	Nov 1/02				
	2E	Nov 1/02				
	2F	Nov 1/02				
	3	Nov 1/02				
	4	Nov 1/02				
	4A	Nov 1/05				
	4B	BLANK				
	5	Nov 1/05				
	6	Nov 1/02				
	7	Dec 1/97				
	8	Dec 1/97				
	9	Mar 1/98				
	10	Dec 1/97				
	11	Dec 1/97				
	12	Dec 1/97				
	13	Dec 1/97				
	14	Dec 1/97				
	15	Dec 1/97				
*	16	Jul 1/08				
	17	Dec 1/97				
	18	Nov 1/05				
	19	Nov 1/05				
*	20	Jul 1/08				
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*	26	Jul 1/08				
*	27	Jul 1/08				
*	28	Jul 1/08				
*	29	Jul 1/08				
*	30	Jul 1/08				

TABLE OF CONTENTS

NOTE: This manual contains overhaul data for control rods used in the rudder and elevator control systems. Overhaul functions which cannot be performed by using standard industry practices are included in the individual section for each control rod.

VERNIER ADJUSTMENT CONTROL ROD ASSEMBLIES

1. Rod Assembly (65-45166-1, -4, -7, -8, -12, -14, -16, -17, -18, -21, -24) (Fig. 1)

   A. Penetrant examine rod (5) per SOPM 20-20-02.

   B. Repair

      (1) Check surface of rod (5) for damage.

      (2) Blend out surface damage up to 0.005 inches deep. Blend depth not to exceed 0.007 inches. Total surface area of blend out repairs combined not to exceed 1.0 inch in length and not to exceed 90° of rod surface width.

      Limit repair to a depth of 0.001 inches within a 0.35 inch radius of drain holes, fastener holes and inspection holes. Limit repair to a depth of 0.001 inches on areas within 0.59 inches of end of rod, for rods P/N 65-45166-3, -6, -13. Limit repair to a depth of 0.001 inches on areas within 0.96 inches of the end of the rod, for rods P/N 65-45166-15, -23.

      (3) After blend out of surface area do a check of the rod (5). Check aluminum rods P/N 65-45166-3, -6, -13 by penetrant examination per SOPM 20-20-02. Check titanium rods P/N 65-45166-15, -23 ultrasonically per BAC 5439-2.

      (4) Refinish rod (5) as shown below.

   C. Refinish

      NOTE: Refer to SOPM 20-30-02 for stripping of protective finishes, to SOPM 20-41-01 for explanation of F and SRF finish codes, and to SOPM 20-50-10 for stencil explanation.

      (1) Rod (5) (65-45166-3, -6) -- Anodize and apply one coat primer, BMS 10-11, Type 1 (SRF-2.19) all over, except no primer on threads. Material: Al alloy.

      (2) Rod (5) (65-45166-13) -- Chemical treat and seal in dilute chromate solution and apply one coat of BMS 10-11, Type 1 (F-18.05), except no primer on threads. Material: Al alloy.

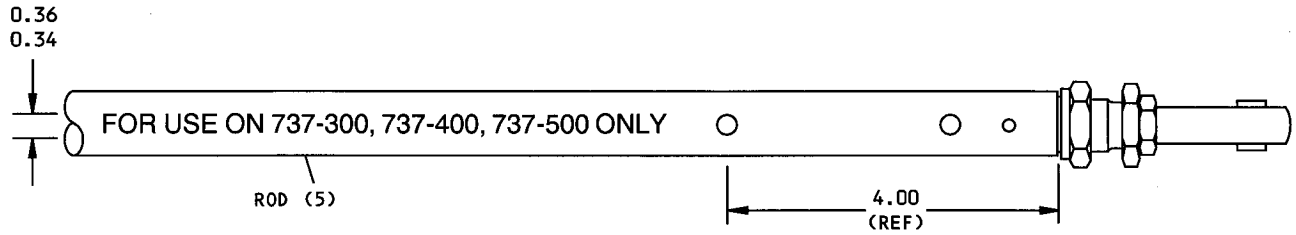
      (3) Rod (5) (65-45166-15, -23) -- Apply one coat of BMS 10-11, Type 1 primer (F-20.02) on outer surface with overspray acceptable on inside surface. Locate stencil and apply BMS 10-60 gloss enamel (F-14.9815-701) - Fig. 401. Material: Titanium.

      (4) Bushing (6), Insert (8, 8A) -- Passivate (F-17.09). Material: CRES Bar, 180-200 ksi.

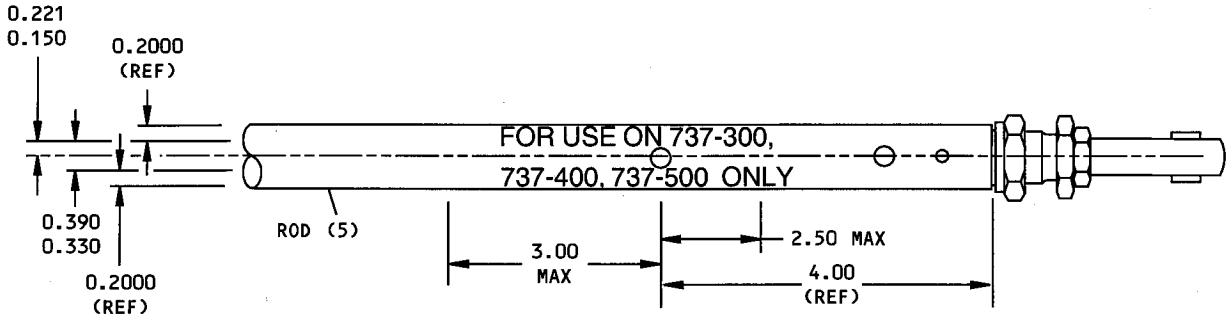
      (5) Sleeve (7, 11, 12) -- Apply no finish (F-25.01). Material: Nylon.

      (6) Restraint (10) (65C35943-5) -- Chromic acid anodize (F-17.19) and apply one coat of BMS 10-11, Type 1 primer (F-20.02). Material: Al alloy.

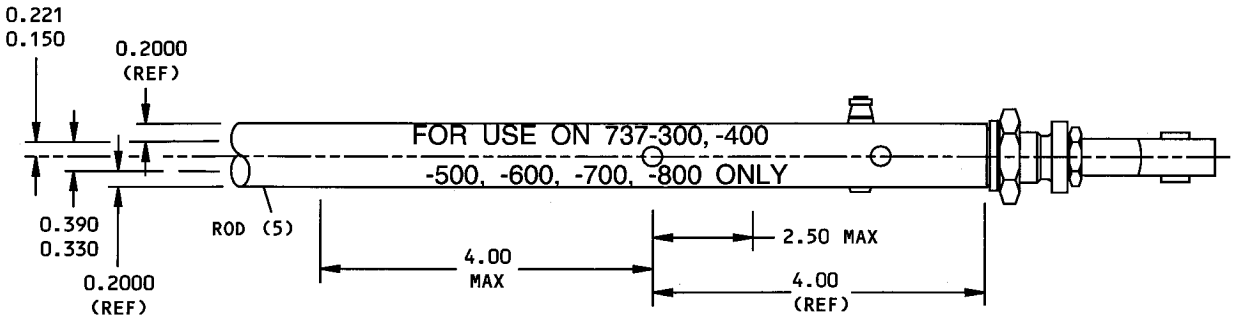
      (7) Restraint (10) (65C35943-10) -- Boric acid - sulfuric acid anodize (F-17.31) and apply one coat of BMS 10-11, Type 1 primer (F-20.02). Material: Al alloy.



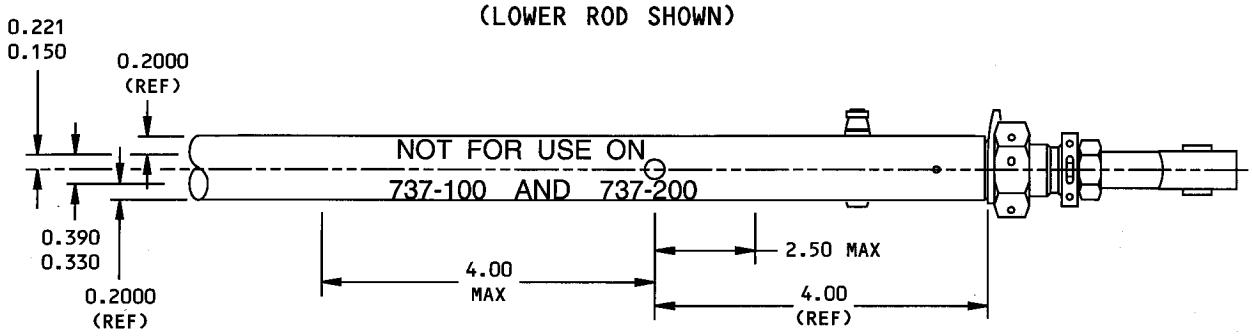
ROD ASSEMBLY (65-45166-14)



ROD ASSEMBLY 65-45166-16



ROD ASSEMBLY 65-45166-17,-18
(LOWER ROD SHOWN)



ROD ASSEMBLY 65-45166-21,-24
(LOWER ROD SHOWN)
(65-45166-24 SHOWN)

Refinish Diagram
Figure 401

F41185

D. Assembly

(1) Rod Assemblies 65-45166-1, -4, -7, -8, -12

(a) Apply a thin coat of corrosion preventive compound, (F-12.14) on the internal and external threads before assembly.

(b) Install checknuts (3, 1) with nylon inserts away from rod.

(2) Rod Assembly 65-45166-14, -16, -17, -18, -21, -24

(a) Install bolts (14, 15) and collars (16, 16A, 16B) with BMS 5-95 sealant (F-19.48). Assure stencils point as shown in Fig. 1 and Fig. 2.

(b) Install bushing (6) with BMS 3-24 or BMS 3-33 on threads. Screw bushing (6) to maximum depth into rod (5), and then unscrew bushing (6) so that the inspection hole in rod (5) is not blocked.

(c) Install rod end (9) with BMS 3-24 or BMS 3-33 on threads. Screw rod end (9) to maximum depth into rod (5), and then unscrew rod end (9) so that the inspection hole in rod (5) is not blocked.

E. Materials

NOTE: Equivalent substitutes may be used.

(1) Primer -- BMS 10-11, Type 1 (Ref 20-60-02) -- C00812

(2) Enamel -- BMS 10-60, Type 1 (Ref 20-60-02) -- C00259

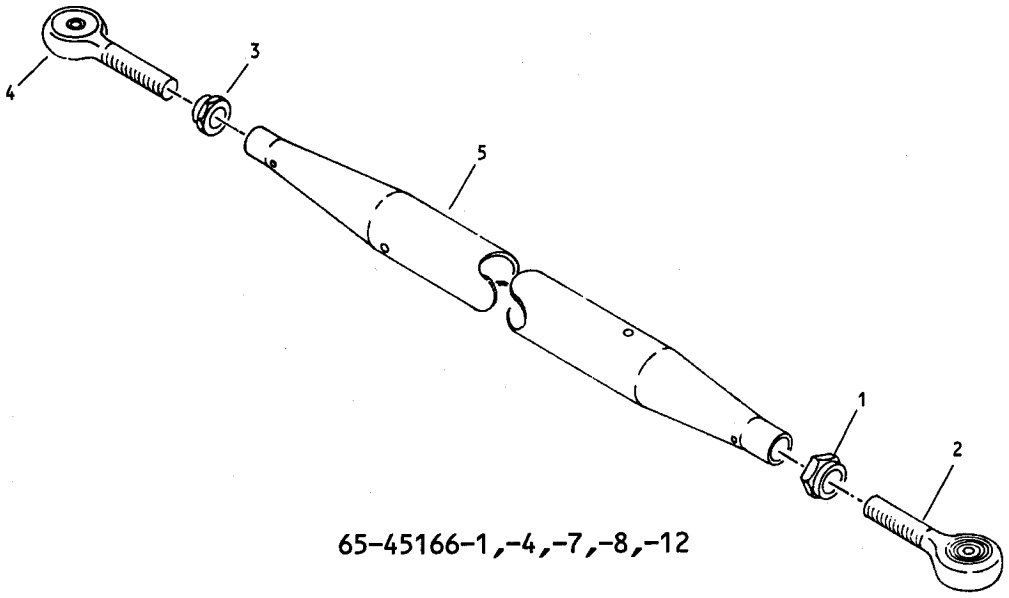
(3) Corrosion preventive compound -- MIL-C-16173 (Ref 20-60-02) -- C00174

(4) Sealant -- BMS 5-95 (Ref 20-60-04) -- A00359

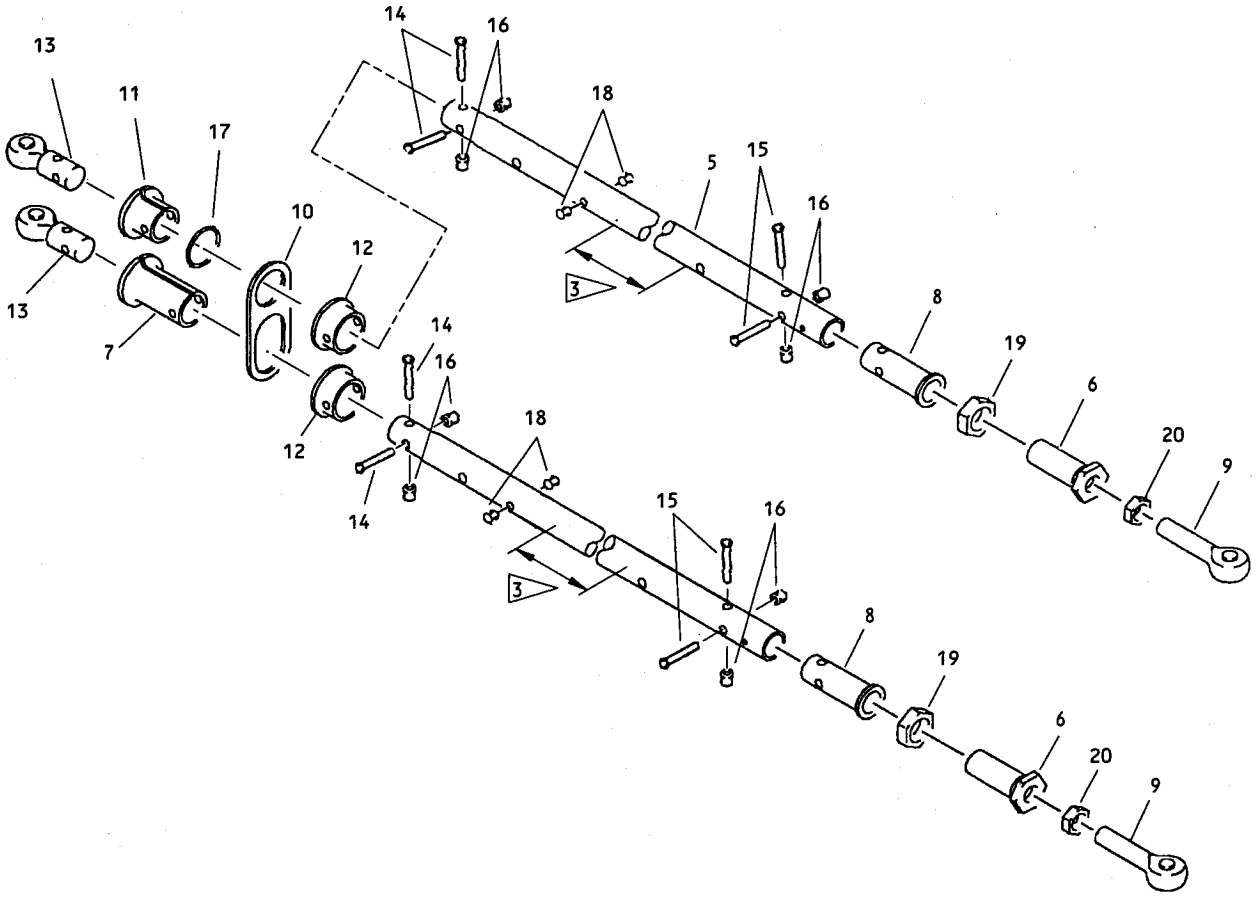
(5) Grease -- BMS 3-24 (Ref 20-60-03) -- D00294

(6) Grease -- BMS 3-33, (Ref 20-60-03) -- D00633

(7) Chemical coating -- BAC 5719 (Ref 20-43-03) -- C00438



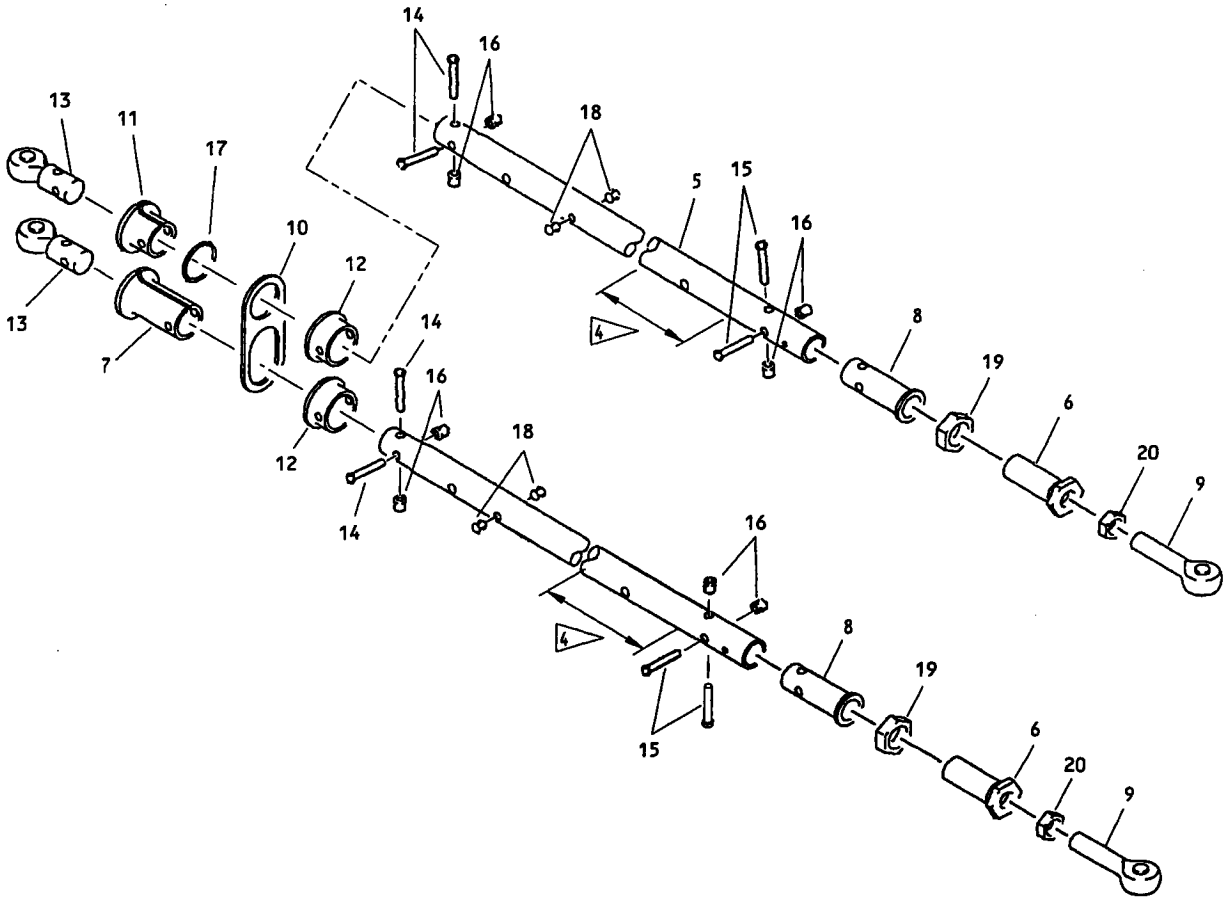
65-45166-1,-4,-7,-8,-12



65-45166-14 1

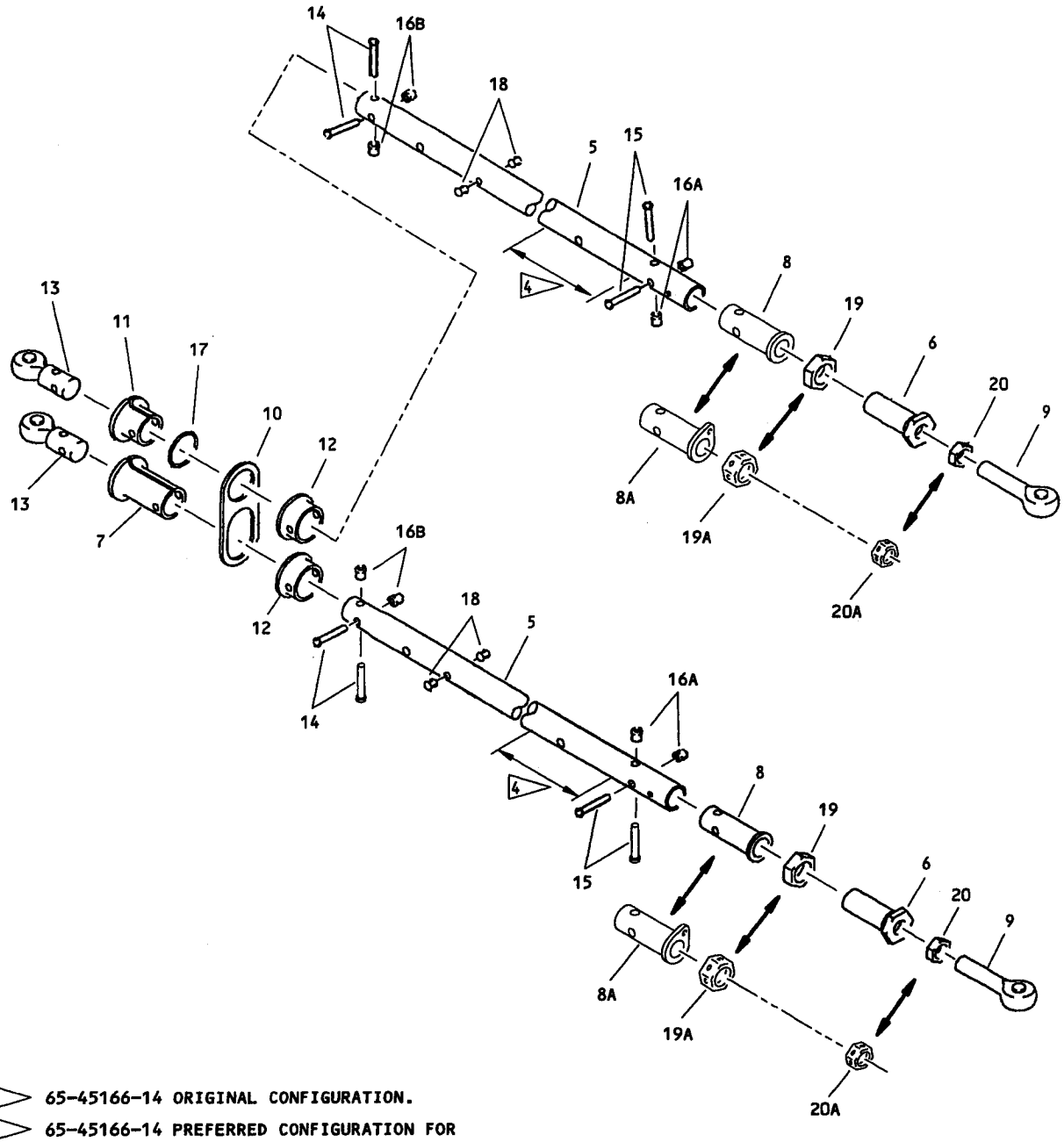
Vernier Adjustment Control Rod Assembly
Figure 1 (Sheet 1)

F41457



65-45166-14 [2], -16,-17

Vernier Adjustment Control Rod Assembly
Figure 1 (Sheet 2)



1 > 65-45166-14 ORIGINAL CONFIGURATION.

2 > 65-45166-14 PREFERRED CONFIGURATION FOR FASTENERS (SERVICE LETTER 737-SL-27-87).

3 > 65-45166-14 STENCIL AREA.

4 > 65-45166-16,-17,-18,-21,-24 STENCIL AREA.

65-45166-18,-21,-24
Vernier Adjustment Control Rod Assembly
Figure 1 (Sheet 3)

N53048

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1-					
	65-45166-1		ROD ASSY, VERNIER ADJUSTMENT CONT	A	RF
	65-45166-4		ROD ASSY, VERNIER ADJUSTMENT CONT	B	RF
	65-45166-7		ROD ASSY, VERNIER ADJUSTMENT CONT	C	RF
	65-45166-8		ROD ASSY, VERNIER ADJUSTMENT CONT	D	RF
	65-45166-12		ROD ASSY, VERNIER ADJUSTMENT CONT	E	RF
	65-45166-14		ROD ASSY, VERNIER ADJUSTMENT CONT	F	RF
	65-45166-16		ROD ASSY, VERNIER ADJUSTMENT CONT	G	RF
	65-45166-17		ROD ASSY, VERNIER ADJUSTMENT CONT (PRE SB 55A1080)	H	1
	65-45166-18		ROD ASSY, VERNIER ADJUSTMENT CONT (PRE SB 55A1080)	J	RF
	65-45166-21		ROD ASSY, VERNIER ADJUSTMENT CONT (PRE SB 55A1080)	K	RF
	65-45166-24		ROD ASSY, VERNIER ADJUSTMENT CONT (POST SB 55A1080)	L	RF
1	AN316-7R		. NUT	ACDE	1
1	52NTE-070		. NUT	B	1
2	GRR4M7-2FS428		. BEARING, V21335	AC	1
2	GRR4M7-2E9171		. BEARING, V21335 (OPT)	AC	1
2	RM4AF		. BEARING, V77896 (OPT)	AC	1
2	REP4M7-2FS428		. BEARING, V21335	BD	1
2	REP4M7-2E9171		. BEARING, V21335 (OPT)	BD	1
2	BACB10AD13		. BEARING	E	1
2	REP4M7-2FS428		. BEARING, V21335 (OPT)	E	1
2	REP4M7-2E9171		. BEARING, V21335 (OPT)	E	1
3	AN316-6R		. NUT	CDE	1
3	52NTE-064		. NUT	B	1
4	GRR4M6-7FS428		. BEARING V21335	C	1
4	GRR4M6-7E9171		. BEARING, V21335 (OPT)	C	1
4	BACB10C241H		. BEARING (OPT)	C	1
4	REP4M6-5FS428		. BEARING, V21335	BD	1
4	REP4M6-5E9171		. BEARING, V21335 (OPT)	BD	1
4	BACB10AD12		. BEARING	E	1
4	REP4M6-5FS428		. BEARING, V21335 (OPT)	E	1
4	REP4M6-5E9171		. BEARING, V21335 (OPT)	E	1
5	65-45166-3		. ROD	AC	1
5	65-45166-6		. ROD	BD	1
5	65-45166-13		. ROD	E	1
5	65-45166-15		. ROD	FGHJK	2
5	65-45166-23		. ROD	L	2
6	65C35943-1		. BUSHING	FGHJK	2
6	65C35943-8		. BUSHING	L	2
7	65C35943-2		. SLEEVE	FGHJKL	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1-					
8	65C35943-3		. INSERT	FGHJK	2
8A	65C35943-9		. INSERT	L	2
9	65C35943-4		. ROD END	FGHJK	2
9	65C35943-11		. ROD END	L	2
10	65C35943-5		. RESTRAINT	FGHJK	1
10	65C35943-10		. RESTRAINT	L	1
11	65C35943-6		. SLEEVE	FGHJKL	1
12	65C35943-7		. SLEEVE	FGHJKL	2
13	BACB10AE10A		. ROD END	FGHJK	2
13	BACB10GZ10AJP		. ROD END	L	2
14	BACB30FM5A11SU		. BOLT	FGH	4
14	BACB30FM5A11SU		. BOLT	JK	4
14	BACB30VT5HK11		. BOLT (OPT)	JK	4
14	BACB30FM5A12SU		. BOLT	L	4
15	BACB30FM5A12SU		. BOLT	FGHJKL	4
15A	BACB30FM5A12SU		DELETED		
16	BACC30AB5S		. COLLAR	FGH	8
16A	BACC30AB5S		. COLLAR	JKL	4
16B	BACC30AB5S		. COLLAR (USED ON BACB30FM5A11SU)	JK	4
16B	BACC30BL5		. COLLAR (USED ON BACB30VT5HK11)	JK	4
16B	BACC30AB5S		. COLLAR	L	4
17	BACP11J19		. O-RING	FGHJKL	1
18	NAS1398M4A4		. RIVET	FGHJKL	4
19	NAS1423-10		. NUT	FGHJ	2
19	BACN11U10CD2N		. NUT	K	2
19A	BACN11U10CM1		. NUT	L	2
20	NAS1423-7		. NUT	FGHJ	2
20	BACN11U7CD2N		. NUT	K	2
20A	BACN11U7CM1		. NUT	L	2

2. Rod Assembly (69-37290-6, -7, -8, -10 thru -13, -15, -16, -17, 65C37931-3, 65C38024-9, -11) (Fig. 3)

A. Inspection/Check

(1) Penetrant examine rod (85, 90) and clevis (50, 55) per SOPM 20-20-02.

(2) Magnetic particle examine sleeve (60) per SOPM 20-20-01.

B. Refinish

NOTE: Refer to SOPM 20-30-02 for stripping of protective finishes and to SOPM 20-41-01 for explanation of F and SRF finish codes.

(1) Rod (85) -- Chemical treat and seal in dilute chromate solution and apply one coat primer, BMS 10-11, Type 1 (F-18.05) all over, except no primer on threads or in boltholes. Apply white enamel, BMS 10-60 (SRF-14.9812) on all exterior primed surfaces. Material: Al alloy.

(2) Sleeve (60) -- Cadmium plate (F-1.1926) all over. Material: Steel, 125-145 ksi.

(3) Clevis (5) -- Chemical treat (F-2.940) machined surfaces, plus one coat primer, BMS 10-11, Type 1 (SRF-12.205) all over, except no primer on threads or in bolthole. Apply white enamel, BMS 10-60 (SRF-14.9812) on all exterior primed surfaces. Replace sealant (BMS 5-95) in clevis (69-40727-2) cavity if edges have pulled loose. Fill clevis (69-40727-1) cavity with sealant (BMS 5-79) (Ref SB 27-1068). Material: Al alloy.

C. Assembly

(1) Apply a thin coat of corrosion preventive compound on the internal and external threads before assembly.

(2) Assemble to lengths shown in Fig. 2.

Part Number	Length Between Mounting Holes (Centerlines) (inches)
69-37290-6, -11,-15	27.10 - 27.12
69-37290-7, -10, -12 , -17	13.78 - 13.80
69-37290-8, -13, -16	10.77 - 10.79
65C37931-3	27.10 - 27.12
65C38024-9	10.77 - 10.79
65C38024-11	13.78 - 13.80

Control Rod Lengths
Figure 2

D. Materials

NOTE: Equivalent substitutes may be used.

(1) Corrosion preventive compound -- MIL-C-16173 (SOPM 20-60-02) -- C00174

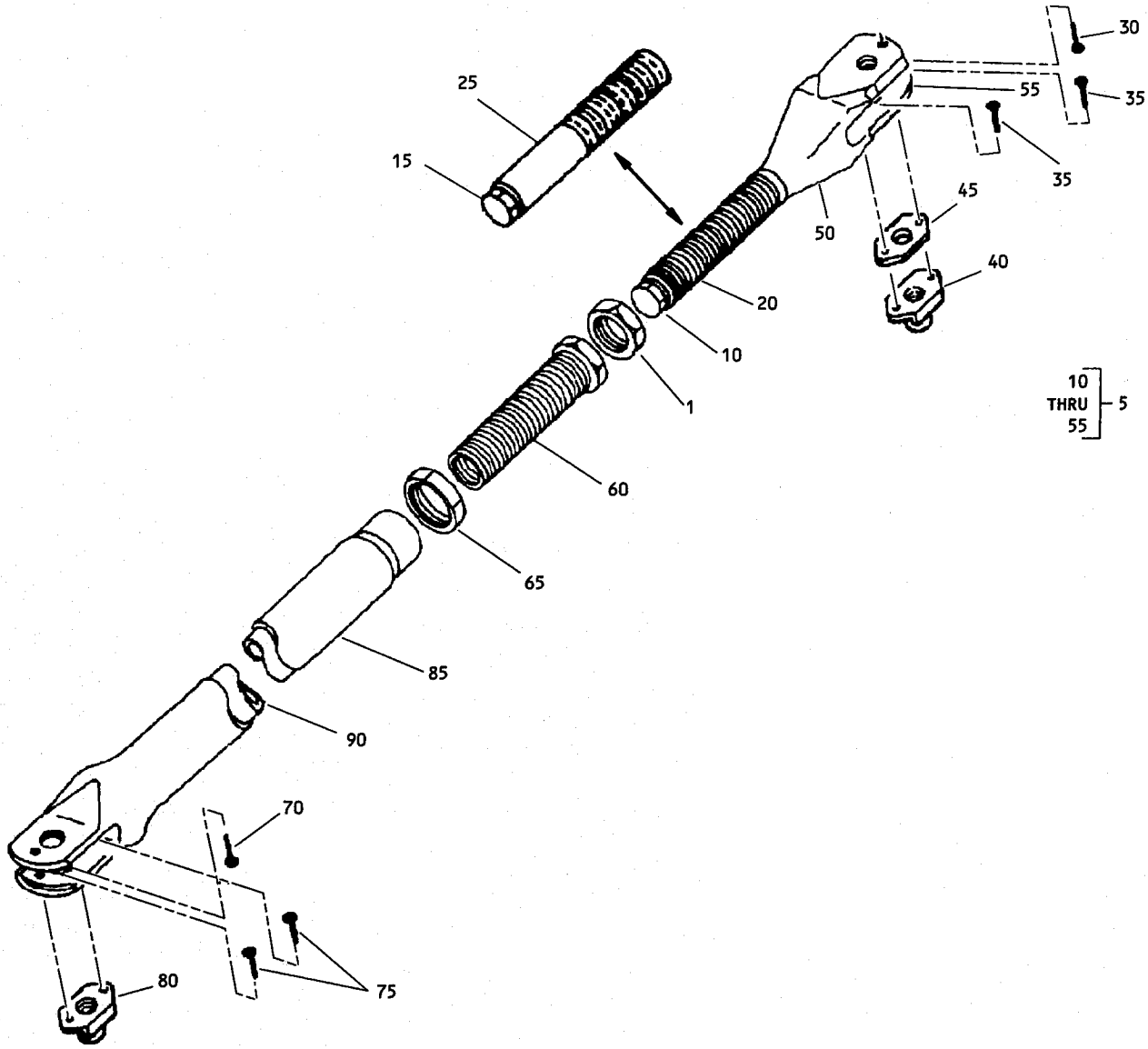
(2) Primer -- BMS 10-11, Type 1 (SOPM 20-60-02) -- C00812

(3) Enamel -- BMS 10-60 (SOPM 20-60-02) -- C00592

(4) Sealant -- BMS 5-79 (SOPM 20-60-04) -- A00310

(5) Chemical coating -- BAC5719 (SOPM 20-43-03) -- C00438

(6) Sealant -- BMS 5-95 (SOPM 20-60-04) -- A00359



Dual Path Vernier Control Rod Assembly
Figure 3

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
3-					
	69-37290-6		ROD ASSY, DUAL PATH VERNIER CONT (PRE SB 27A1202R2) (PRE SB 27-1252, PRE SB 27-1255)	A	RF
	69-37290-7		ROD ASSY, DUAL PATH VERNIER CONT (PRE SB 27-1207)	B	RF
	69-37290-8		ROD ASSY, DUAL PATH VERNIER CONT (SB 27-1068) (PRE SB 27-1207)	C	RF
	69-37290-10		ROD ASSY, DUAL PATH VERNIER CONT (PRE SB 27-1207)	D	RF
	69-37290-11		ROD ASSY, DUAL PATH VERNIER CONT (PRE SB 27A1202R2) (PRE SB 27-1252, PRE SB 27-1255)	E	RF
	69-37290-12		ROD ASSY, DUAL PATH VERNIER CONT	F	RF
	69-37390-13		ROD ASSY, DUAL PATH VERNIER CONT	G	RF
	69-37290-15		ROD ASSY, DUAL PATH VERNIER CONT (POST SB 27A1202R2) (PRE SB 27-1252, PRE SB 27-1255)	H	RF
	69-37290-16		ROD ASSY, DUAL PATH VERNIER CONT	K	RF
	69-37290-17		ROD ASSY, DUAL PATH VERNIER CONT	L	RF
	65C37931-3		ROD ASSY, DUAL PATH VERNIER CONT (POST SB 27A1202R2)	J	RF
	65C38024-9		ROD ASSY, DUAL PATH VERNIER CONT (POST SB 27-1207)	M	RF
	65C38024-11		ROD ASSY, DUAL PATH VERNIER CONT (POST SB 27-1207)	N	RF
1	66-19689-3		. NUT		1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
3-					
5	69-40727-1		. CLEVIS ASSY (SB 27-1068)	A-D	1
5	69-40727-2		. CLEVIS ASSY	EFG	1
5	69-40727-3		. CLEVIS ASSY	HKL	1
5	65C37931-4		. CLEVIS ASSY	J	1
5	65C38024-10		. CLEVIS ASSY	MN	1
10	NAS605-11		. . SCREW	A-DJMN	1
15	NAS605-42P		. . SCREW	EFG	1
15	BACB30NE5-32		. . SCREW (OPT)	EFG	1
15	BACB30NE5P32		. . SCREW (OPT)	EFG	1
15	BACB30NE5LN32		. . SCREW (OPT)	EFG	1
15	NAS1305-32		. . SCREW (OPT)	EFG	1
15	BACB30NR5K32		. . SCREW	HKL	1
20	AN960PD516		. . WASHER	A-DJMN	1
25	66-25697-1		. . SPACER	EFGHKL	1
30	BACR15BA4D		. . RIVET (OPT)		1
35	BACR15BA4D		. . RIVET	A-G	2
35	BACR15BA4AD6C		. . RIVET	HJKLMN	2
40	BACN10MFAF58		. . NUT PLATE	A-G	1
40	BACN10MFB2F58		. . NUT PLATE (OPT)	A-G	1
40	BACN10KE5B3CD		. . NUT PLATE	HJKLMN	1
45	NAS463XDD516		. . SHIM (USED WITH BACN10MFAF58)	A-G	1
45	251A3506-1		. . FILLER	HJKLMN	1
50	69-40728-2		. . CLEVIS, OUTER		1
55	69-40728-1		. . CLEVIS, INNER		1
60	69-40729-2		. SLEEVE		1
65	66-19689-4		. NUT		1
70	BACR15BA4D		. RIVET	A-GJMN	1
70	BACR15BA4AD*C		. RIVET	HKL	1
75	BACR15BA4D		. RIVET	A-G	2
75	BACR15BA4AD6C		. RIVET	HJKLMN	2
80	BACN10MFAF58		. NUT PLATE	A-G	1
80	BACN10KE5B3CD		. NUT PLATE	HJKLMN	1
85	69-37291-2		. ROD, OUTER	AEHJ	1
85	69-37291-4		. ROD, OUTER	BDFLN	1
85	69-37291-8		. ROD, OUTER	CGKM	1
90	69-37291-1		. ROD, INNER	AEHJ	1
90	69-37291-3		. ROD, INNER	BDFLN	1
90	69-37291-7		. ROD, INNER	CGKM	1

3. Rod Assembly (69-43490-2,-4,-5,-6,-7,-8,-9,-10,-11,-12) (Fig. 5)

A. Refinish

NOTE: Refer to 20-30-02 for stripping of protective finishes, and to 20-41-01 for explanation of F and SRF finish codes.

(1) Rod end (3) -- Chemically or chromic acid anodize; apply one coat BMS 10-11, Type 1 primer (SRF-2.30) all over, except omit primer from threads and 0.098 inch diameter hole. Material: Al alloy.

(2) Rod end (6, P/N 69-43492-6,-8,-10,-12,-14) -- Chemically treat or chromic acid anodize; apply one coat BMS 10-11, Type 1 primer (F-18.05) all over, except omit primer from threads and bearing bore. Material: Al alloy.

(3) Rod end (6, P/N 69-43494-2) -- Chemically treat or chromic acid anodize; apply one coat BMS 10-11, Type 1 primer (SRF-2.30) all over, except omit primer from threads and bearing bore. Material: Al alloy.

B. Replacement

(1) Bearings (4, 7, P/N BACB10AC3L) -- Ball stake new bearing (4, 7) in place per 20-50-03. Stake 0.017-0.023 inch deep in five places both sides, equally spaced within 0.03 inch (Optional: roller swage per 20-50-03). Stake on rod end (3) at 0.72-0.74 inch diameter. Stake on rod end (6) at 0.715-0.735 inch diameter. Breakout torque after installation shall not exceed 0.05 pound-inch.

(2) Bearing (7, P/N BACB10AC5A) -- Ball stake new bearing in place per 20-50-03. Stake 0.017-0.020 inch deep in six places both sides, equally spaced within 0.03 inch (Optional: roll swage per 20-50-03). Stake on rod end (6) at 0.90-0.91 inch diameter. Breakout torque after installation shall not exceed 0.05 pound-inch.

C. Assembly

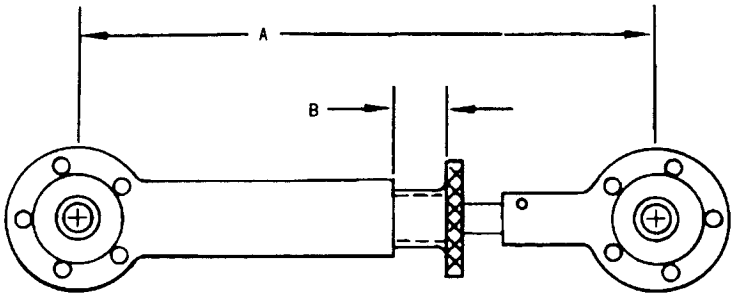
(1) Form a head on the rivet (1) sufficient to keep the rivet in the rod end.

(2) Assemble rod assemblies to lengths shown in Fig. 4.

D. Materials

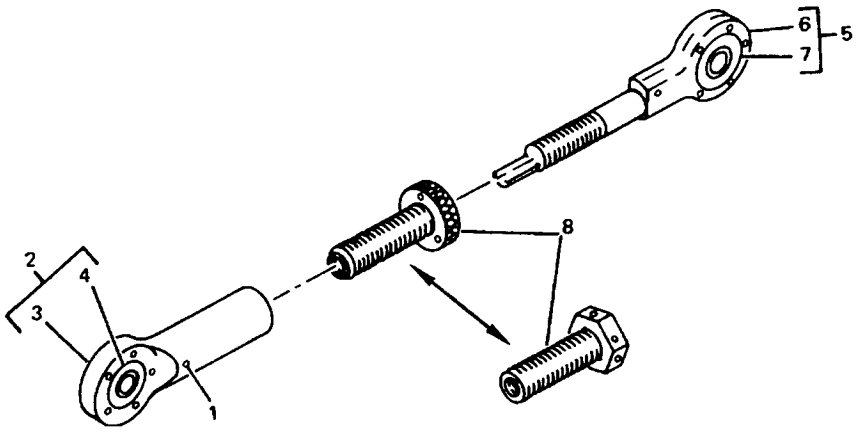
NOTE: Equivalent substitutes may be used.

(1) Primer -- BMS 10-11, Type 1 (Ref 20-60-02) -- C00812



Part Number	Dimension A (inches)	Dimension B (inches)
69-43490-2	5.31 - 5.35	0.32 - 0.34
69-43490-4	6.68 - 6.72	0.32 - 0.34
69-43490-5	7.23 - 7.27	0.32 - 0.34
69-43490-6, -9	7.98 - 8.02	0.32 - 0.34
69-43490-7	3.52 - 3.56	0.32 - 0.34
69-43490-8	4.38 - 4.42	0.32 - 0.34
69-43490-10	6.75 - 6.79	0.36 - 0.38
69-43490-11	4.46 - 4.50	0.36 - 0.38
69-43490-12	8.52 - 8.56	0.31 - 0.33

Control Rod Lengths
Figure 4



Elevator Controls Micro Adjustment Rod Assembly
Figure 5

G49881

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
5-					
	69-43490-4		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSTMENT	A	RF
	69-43490-5		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSTMENT	B	RF
	69-43490-6		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSTMENT	C	RF
	69-43490-7		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSTMENT	D	RF
	69-43490-8		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSTMENT	E	RF
	69-43490-9		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSTMENT	F	RF
	69-43490-2		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSTMENT	G	RF
	69-43440-10		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSTMENT	H	RF
	69-43490-11		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSTMENT	J	RF
	69-43490-12		ROD ASSY, ELEVATOR CONTROL MICRO ADJUSMENT	K	RD
1	MS20470D3-7		. RIVET (REPLD BY BACR15BB3D-7)		1
1	BACR15BB3D-7		. RIVET (REPLS MS20470D3-7)		1
2	69-43491-1		. ROD END ASSY, FEMALE	A-EG-J	1
2	69-43491-3		. ROD END ASSY, FEMALE	FK	1
3	69-43491-2		. . ROD END	A-EG-J	1
3	69-43491-4		. . ROD END	FK	1
4	BACB10AC3L		. . BEARING		1
5	69-43492-4		. ROD END ASSY, MALE	AFH	1
5	69-43492-7		. ROD END ASSY, MALE	BK	1
5	69-43492-9		. ROD END ASSY, MALE	C	1
5	69-43492-11		. ROD END ASSY, MALE	D	1
5	69-43492-13		. ROD END ASSY, MALE	EJ	1
5	69-43494-1		. ROD END ASSY, MALE	G	1
6	69-43492-6		. . ROD END	AFH	1
6	69-43492-8		. . ROD END	BK	1
6	69-43492-10		. . ROD END	C	1
6	69-43492-12		. . ROD END	D	1
6	69-43492-14		. . ROD END	EJ	1
6	69-43494-2		. . ROD END	G	1
7	BACB10AC3L		. . BEARING	A-FH-K	1
7	BACB10AC5A		. . BEARING	G	1
8	69-43493-1		. THUMB NUT	B-FGJK	1
8	69-43493-2		. THUMB NUT	AH	1

4. Rod Assembly (69-73371-2 thru -7) (Fig. 7)

A. Penetrant examine rod end (2, 5) per 20-20-02.

B. Refinish

NOTE: Refer to 20-30-02 for stripping of protective finishes and to 20-41-01 for explanation of F and SRF finish codes.

(1) Rod end (2, 5) -- Chromic acid anodize and apply one coat of BMS 10-11, type 1 primer (F-18.13) except omit primer from threads and bearing bore. Material Al alloy.

C. Replacement

(1) Bearings (3, 6) -- Roller swage new bearing per 20-50-03 except install with BMS 5-95 sealant. Maximum breakout torque not to exceed 0.05 pound-inch after bearing installation.

D. Assembly

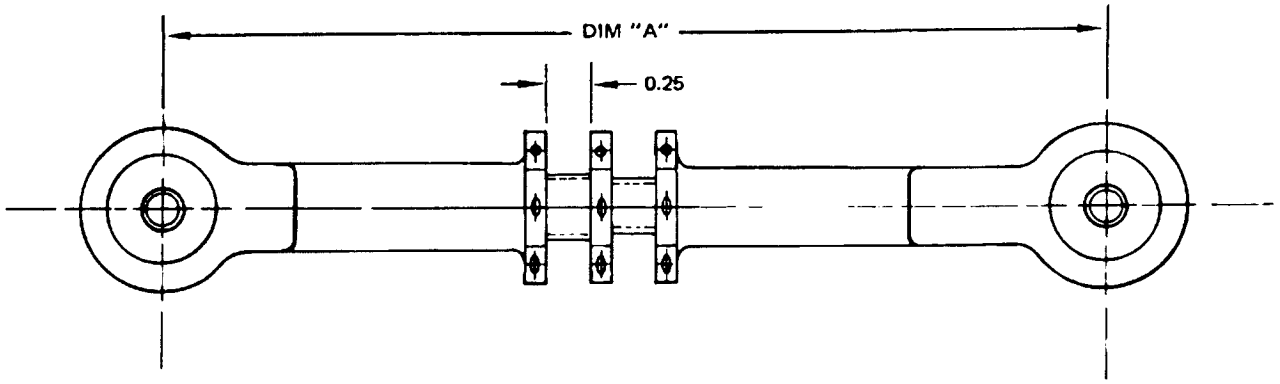
(1) Assemble rod assemblies to lengths in Fig. 6.

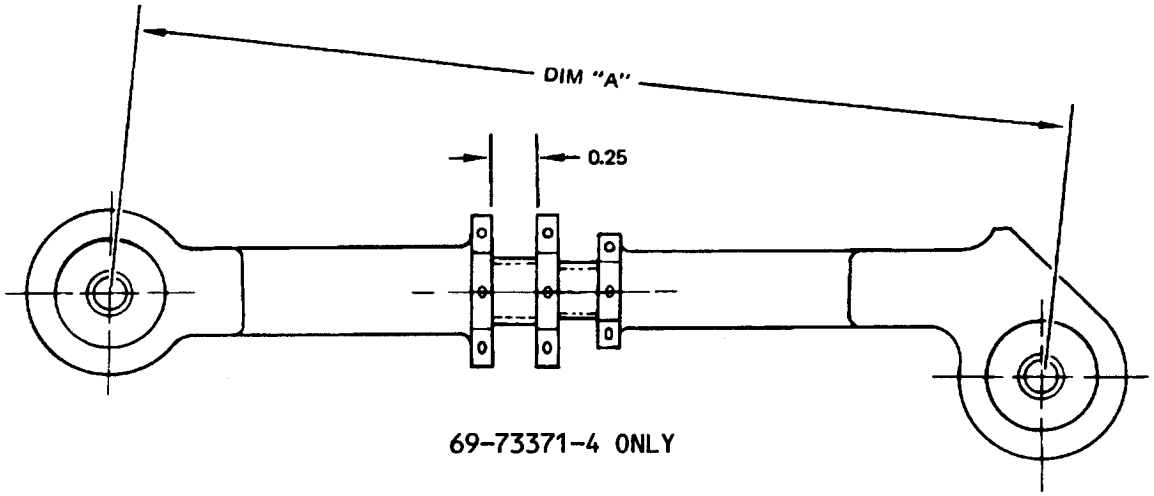
E. Materials

NOTE: Equivalent substitutes may be used.

(1) Primer -- BMS 10-11, type 1 (Ref 20-60-02) -- C00812

(2) Sealant -- BMS 5-95 (Ref 20-60-04) -- A00359



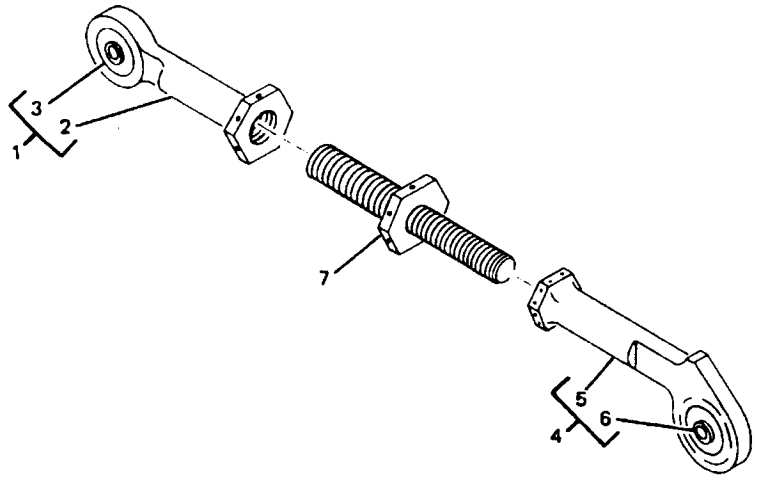


69-73371-4 ONLY

Part Number	Dimension "A" (inches)
-1	5.33
-2	7.23
-3	7.60
-4	5.33
-5	10.59
-6	13.35
-7	6.00

69-73371-2 thru -7

Control Rod Length
Figure 6



Micro Adjustment Rod Assembly
Figure 7

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
7-					
	69-73371-2		ROD ASSY, MICRO ADJUSTMENT	A	RF
	69-73371-3		ROD ASSY, MICRO ADJUSTMENT	B	RF
	69-73371-4		ROD ASSY, MICRO ADJUSTMENT	C	RF
	69-73371-5		ROD ASSY, MICRO ADJUSTMENT	D	RF
	69-73371-6		ROD ASSY, MICRO ADJUSTMENT	E	RF
	69-73371-7		ROD ASSY, MICRO ADJUSTMENT	F	RF
1	69-73372-1		. ROD END ASSY, FEMALE	C-F	1
1	69-73372-3		. ROD END ASSY, FEMALE	AB	1
2	69-73372-2		. . ROD END	C-F	1
2	69-73372-4		. . ROD END	AB	1
3	BACB10AC3L		. . BEARING	C-F	1
3	BACB10AC4A		. . BEARING	AB	1
4	69-73373-2		. ROD END ASSY	A	1
4	69-73373-3		. ROD END ASSY	B	1
4	69-73373-7		. ROD END ASSY	C	1
4	69-73373-10		. ROD END ASSY	D	1
4	69-73373-12		. ROD END ASSY	E	1
4	69-73373-14		. ROD END ASSY	F	1
5	69-73373-5		. . ROD END	A	1
5	69-73373-6		. . ROD END	B	1
5	69-73373-8		. . ROD END	C	1
5	69-73373-9		. . ROD END	D	1
5	69-73373-11		. . ROD END	E	1
5	69-73373-13		. . ROD END	F	1
6	BACB10AC3L		. . BEARING	A-DF	1
6	BACB10AC4A		. . BEARING	E	1
7	69-73374-1		. THUMBNUT		1

G49932

5. Rod Assembly (69-71010-13, -7, -8, -9) (Fig. 9)

A. Refinish

NOTE: Refer to 20-20-02 for stripping of protective finishes and to 20-41-01 for explanation of F and SRF finish codes.

(1) Rod (1) -- Chemical treat interior and exterior surfaces and apply one coat of BMS 10-11, type 1, primer (F-18.07) except omit primer from threads.

B. Assembly

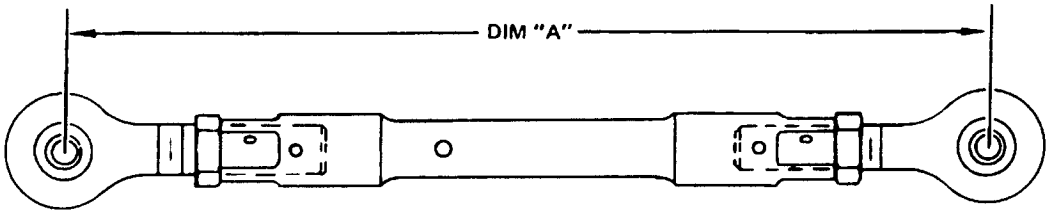
(1) Apply a thin coat of corrosion preventive compound on both the internal and external surfaces of mating threads (F-19.05) before assembly.

(2) Assemble to lengths shown in Fig. 8.

C. Materials

(1) Primer -- BMS 10-11, type 1 (Ref 20-60-02) -- C00812

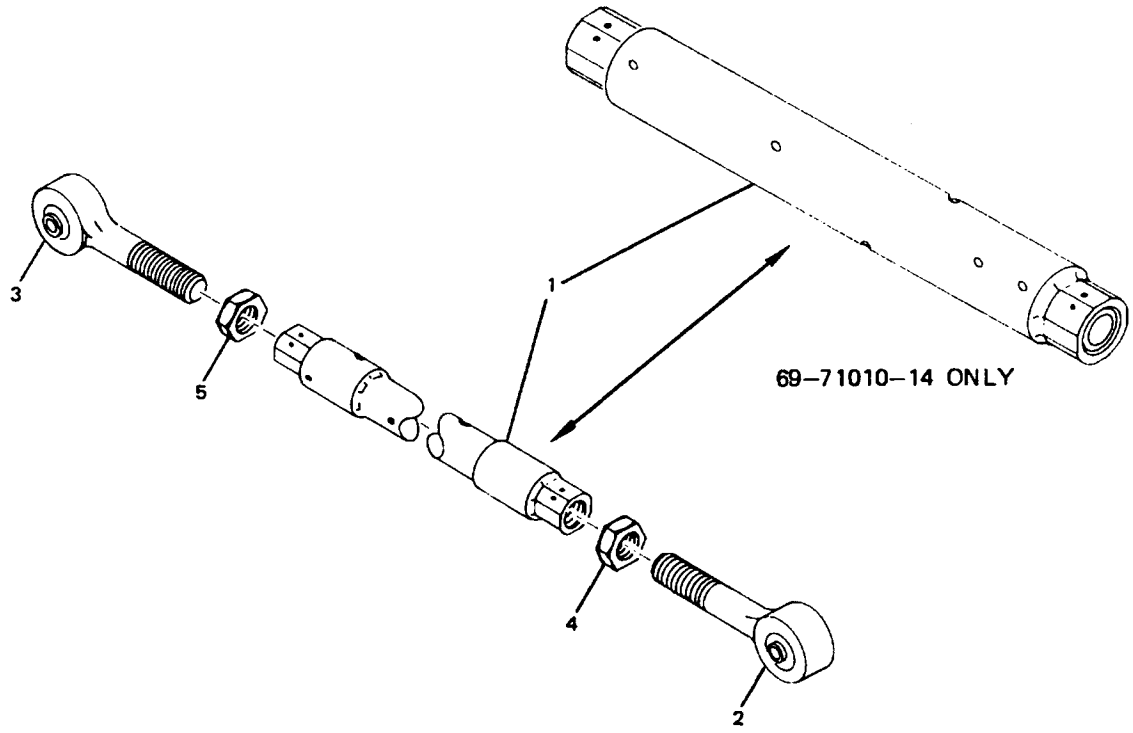
(2) Corrosion preventive compound -- MIL-C-16173, grade 2 (Ref 20-60-02) -- C00174



Part Number	Dimension "A" (inches)
-7	8.08
-8	11.17
-9	9.43
-13	11.17

69-71010-7, -8, -9, -13

Control Rod Length
Figure 8



Vernier Adjustment Control Rod Assembly
Figure 9

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
9-					
	69-71010-13		ROD ASSEMBLY, CONTROL - VERNIER ADJUSTMENT	A	RF
	69-71010-7		ROD ASSEMBLY, CONTROL - VERNIER ADJUSTMENT	B	RF
	69-71010-8		ROD ASSEMBLY, CONTROL - VERNIER ADJUSTMENT	C	RF
	69-71010-9		ROD ASSEMBLY, CONTROL - VERNIER ADJUSTMENT	D	RF
1	69-71010-14		. ROD	A	1
1	69-71010-10		. ROD	B	1
1	69-71010-11		. ROD	C	1
1	69-71010-12		. ROD	D	1
2	BACB10AD12		. BEARING		1
3	BACB10AD13		. BEARING		1
4	NAS509-6		. NUT		1
5	NAS509-7		. NUT		1

6. Rod Assembly (251A3416-1-2) (Fig. 11)

A. Inspection/Check

(1) Penetrant examine rod (75, 80) and clevis (40, 45) per 20-20-02.

(2) Magnetic particle examine sleeve (50) per 20-20-01.

B. Refinish

NOTE: Refer to 20-30-02 for stripping of protective finishes and to 20-41-01 for explanation of F and SRF finish codes.

(1) Rod (75) -- Chemical treat the interior and exterior surfaces (F-17.08). Apply one coat of BMS 10-11, type I primer to the interior and exterior surfaces (F-20.48).

(2) Sleeve (50) -- Cadmium plate (F-15.06) all over. Material: Steel, 125-145 ksi.

(3) Clevis (5) -- Chemical treat (F-17.10) machined surfaces, plus two coats primer,

BMS 10-11, type 1 (F-20.03) all over, except no primer on threads or in bolthole. Replace sealant (BMS 5-95) in clevis (5) cavity if edges have pulled loose. Apply a layer of sealant BMS (5-95) to the bottom side of the head of bolt (10) before it is installed. Material: Aluminum alloy.

C. Assembly

(1) Apply a thin coat of corrosion preventive compound on the internal and external threads before assembly.

(2) Assemble to lengths shown in Fig. 10.

Part Number	Length Between Mounting Holes (Centerlines) (inches)
251A3416-1,-2	26.207 - 26.227

Control Rod Lengths
Figure 10

D. Materials

NOTE: Equivalent substitutes may be used.

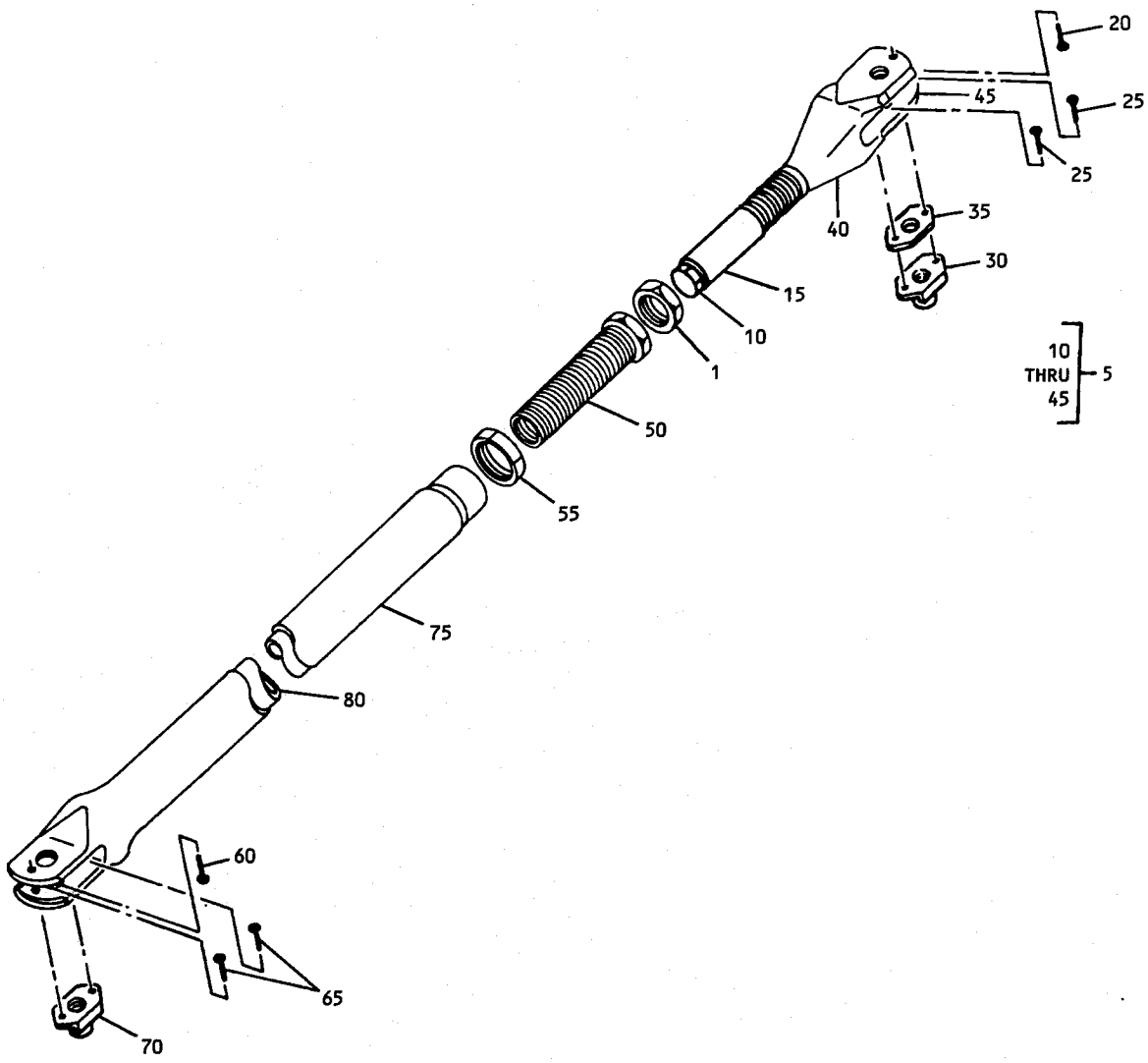
(1) Corrosion preventive compound -- MIL-C-16173 (Ref 20-60-02) -- C00174

(2) Primer -- BMS 10-11, type 1 (Ref 20-60-02) -- C00812

(3) Enamel -- BMS 10-60 (Ref 20-60-02) -- C00592

(4) Sealant -- BMS 5-95 (Ref 20-60-04) -- A00359

(5) Chemical coating -- BAC5719 (Ref 20-43-03) -- C00438



Dual Path Vernier Control Rod Assembly
Figure 11

G49966

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
11-					
	251A3416-1		ROD ASSY, DUAL PATH VERNIER CONT	A	RF
	251A3416-2		ROD ASSY, DUAL PATH VERNIER CONT (PRE SB 27-1253)	B	RF
1	251A3501-1		. NUT		1
5	251A3418-1		. CLEVIS ASSY	A	1
5	251A3418-2		. CLEVIS ASSY	B	1
10	BACB30NR5K32		. . BOLT		1
15	251A3503-1		. . SPACER		1
20	BACR15BA4AD5C		. . RIVET		1
25	BACR15BA4AD6C		. . RIVET		2
30	BACB10KE5ACD		. . NUTPLATE	A	1
30	BACB10KEB3CD		. . NUTPLATE	B	1
35	251A3506-1		. . FILLER		1
40	251A3502-2		. . CLEVIS, OUTER		1
45	251A3502-1		. . CLEVIS, INNER		1
50	251A3419-1		. SLEEVE		1
55	251A3501-2		. NUT		1
60	BACR15BA4AD5C		. RIVET		1
65	BACR15BA4AD6C		. RIVET		1
70	BACN10KE5AC6		. NUTPLATE	A	1
70	BACN10KE5B3CD		. NUTPLATE	B	1
75	251A3417-2		. ROD, OUTER		1
80	251A3417-1		. ROD, INNER		1

7. Rod Assembly (251A3495-1, -7) (Fig. 13)

A. Inspection/Check

(1) Penetrant examine tube (25)

(2) Magnetic particle examine clamp-up sleeve (20), extension sleeve (45) and vernier sleeve (55).

B. Refinish

NOTE: Refer to SOPM 20-30-02 for stripping of protective finishes and to SOPM 20-41-01 for explanation of finish codes.

(1) Clamp-up sleeve (20) -- Passivate (F-17.25). Cadmium plate (F-15.06) and apply BMS 10-11, Type 1 primer (F-20.02) except do not apply cadmium plate and primer on threads. Material: 15-5PH CRES (150-170 ksi).

(2) Tube (25) -- Apply chemical conversion coating (F-17.08) and apply BMS 10-11, Type 1 primer (F-20.55). Material: Aluminum alloy.

(3) Extension sleeve (45) -- Passivate (F-17.25). Material: 15-5PH CRES (150-170 ksi).

(4) Vernier sleeve (55) -- Passivate (F-17.25). Apply BMS 3-8 solid film lubricant (F-19.10) on threaded areas. Material: 15-5PH CRES (150-170 ksi).

C. Assembly (Fig. 12)

(1) Extension sleeve assembly (35) -- Install rod end bearing (40) in extension sleeve (45) with two rivets (50).

(2) Fixed end assembly (10)

(a) Install rod end bearing (15) and clamp-up sleeve (20) with wet BMS 5-95 sealant.

(b) Install rivets (30) wet using BMS 5-95 sealant per SOPM 20-50-19. Manufactured heads of the rivets must be inside the clamp-up sleeve (20).

(c) Fillet seal each end of the tube (25) and exterior ends of rivets (30) with BMS 5-142 per SOPM 20-50-19.

(3) Rudder control rod assembly (5)

(a) Install vernier sleeve (55) into fixed end assembly (10).

(b) Install extension sleeve assembly (35) into vernier sleeve (55).

(c) Adjust length of rudder control rod assembly (5) as shown in Fig. 12.

(d) Attach a tag to the rudder control rod assembly to verify the center-to-center before installation on the aircraft. The center-to-center length for 737-600/700/800/900 is 26.191-26.193 inches. The center-to-center length for 737-100/200/300/400/500 is 26.385-26.387 inches.

(4) Apply marker and stencil to rod assembly 251A3495-7 (See Fig. 12)

(a) Apply marker (75) at location shown ±20 degrees rotationally, per SOPM 20-50-05. Edge seal per SOPM 20-44-01, using Type 41 adhesive.

(b) Apply stencil per SOPM 20-50-10 at location shown ±20 degrees rotationally, 0.30 inch high letters, using BMS 10-60, Type 1, enamel (F-14.9815-701).

D. Materials

NOTE: Equivalent substitutes may be used.

(1) Primer -- BMS 10-11, Type 1 (Ref SOPM 20-60-02) -- C00174

(2) Chemical conversion coating (Ref SOPM 20-43-03) -- C00438

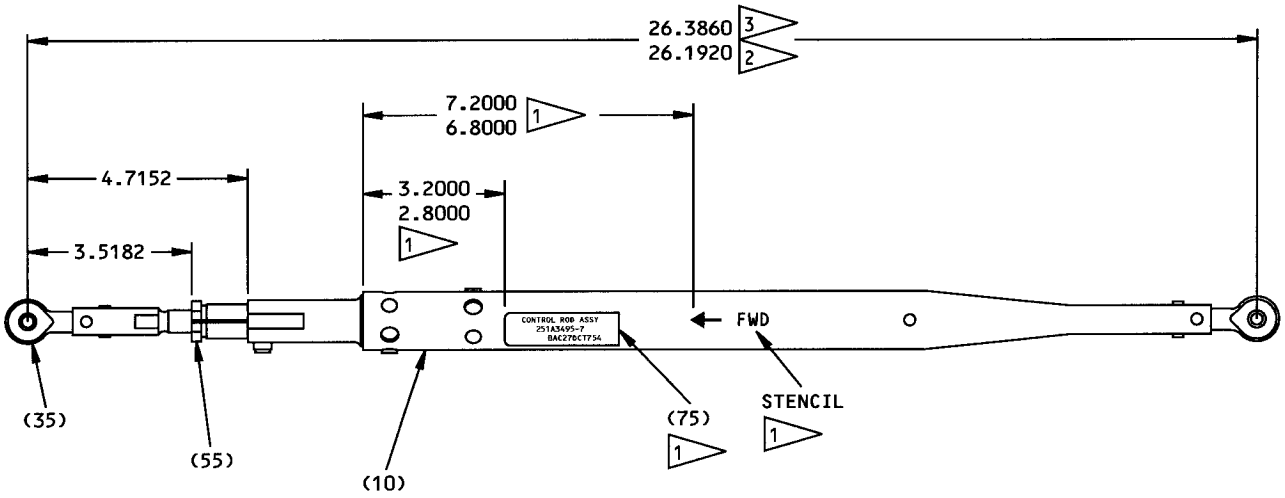
(3) Solid fluid lubricant -- BMS 3-8 (Ref SOPM 20-60-03) -- D00566

(4) Sealant -- BMS 5-95 (Ref SOPM 20-60-04) -- A00359

(5) Sealant -- BMS 5-142 (Ref SOPM 20-60-04) -- A00765

(6) Enamel -- BMS 10-60 (Ref SOPM 20-60-02) -- C00032

(7) Adhesive -- Type 41 (Ref SOPM 20-60-04) -- B00571



1 251A3495-7 ONLY

2 NOMINAL DIMENSION OF 26.1920 SHOWN FOR 737-600/700/800/900

3 NOMINAL DIMENSION OF 26.3860 SHOWN FOR 737-100/200/300/400/500

251A3495-1,-7
Control Rod Assembly
Figure 12

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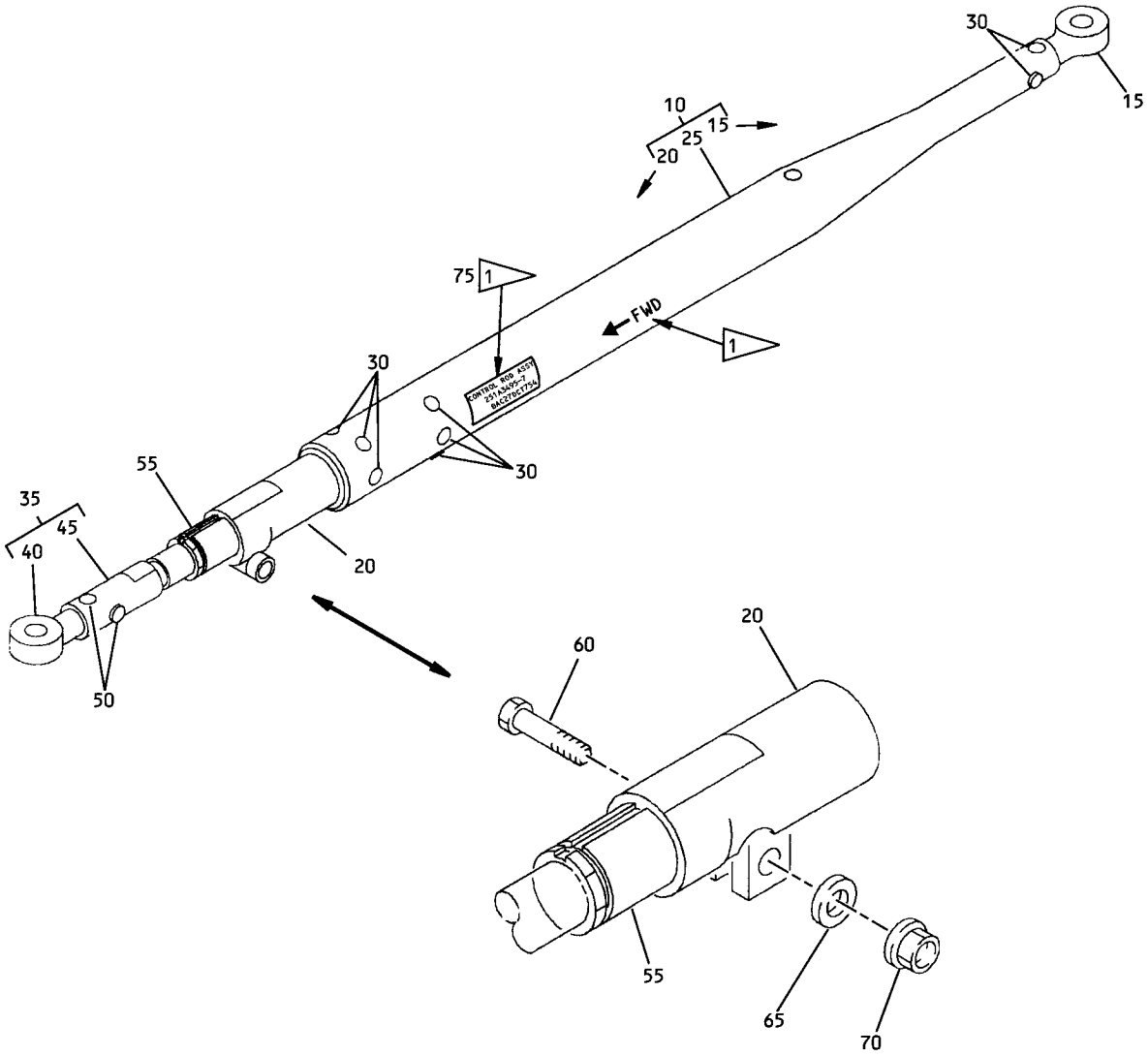


1 251A3495-7 ONLY

Vernier Rudder Control Rod Assembly
Figure 13

J77019

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
13-					
	251A3495-1		ROD ASSY, VERNIER RUDDER CONTROL (POST SB 27-1252R1,R2, PRE SB 27-1252R3, POST SB 27-1253R1,R2, PRE SB 27-1253R3,POST SB 27-1255R1, R2, PRE SB 27-1255R3, PRE SB 27A1279)	A	RF
	251A3495-7		ROD ASSY, VERNIER RUDDER CONTROL (POST SB 27-1252R3, POST SB 27-1253R3, POST SB 27-1255R3, POST SB 27A1279)	B	RF
10	251A3495-2		. END ASSY - FIXED	A	1
10	251A3495-8		. CONTROL ROD ASSY RUDDER CONTROL	B	1
15	BACB10GZ7AJ		. . BEARING, ROD END	A	1
15	BACB10GY16J		. . BEARING, ROD END	B	1
20	251A3497-1		. . SLEEVE, CLAMP-UP		1
25	251A3496-1		. . TUBE	A	1
25	251A3496-2		. . TUBE	B	1
30	BACR15FT5KE*C		. . RIVET		8
35	251A3495-3		. SLEEVE ASSY, EXTENSION	A	1
35	251A3495-9		. SLEEVE ASSY, EXTENSION	B	1
40	BACB10GZ7AJ		. . BEARING, ROD END	A	1
40	BACB10GY16J		. . BEARING, ROD END	B	1
45	251A3498-1		. . SLEEVE, EXTENSION	A	1
45	251A3498-2		. . SLEEVE, EXTENSION	B	1
50	MS20615-5M		. . RIVET	A	2
55	251A3499-1		. SLEEVE, VERNIER		1
60	BACB30NM5K8		. BOLT		1
65	NAS1149C0532R		. WASHER		1
70	BACN10YR5CM		. NUT		1
75	BAC27DCT754		. MARKER	B	1

8. Control Rod Assembly (256A3914-1, -2, -3) (Fig. 15)

A. Inspection/Check

(1) Penetrant examine control rod (5) per SOPM 20-20-02.

(2) Magnetic particle check adjustment sleeve (10) per SOPM 20-20-01.

B. Refinish

NOTE: Refer to SOPM 20-30-02 for stripping of protective finishes and to SOPM 20-41-01 for explanation of finish codes.

(1) Control rod (5) -- Apply chemical conversion coating (F-17.08). Apply BMS 10-11, Type 1 primer (F-20.02) on internal surfaces and (F-20.03) on external surfaces except no primer on threads. Material: Aluminum alloy - T42 seamless tubing.

(2) Adjustment sleeve (10) -- Cadmium plate (F-16.04). Apply BMS 3-8 solid film lubricant (F-19.10) except on non-threaded surfaces. Material: 15-5PH CRES (180-200 ksi).

C. Assembly

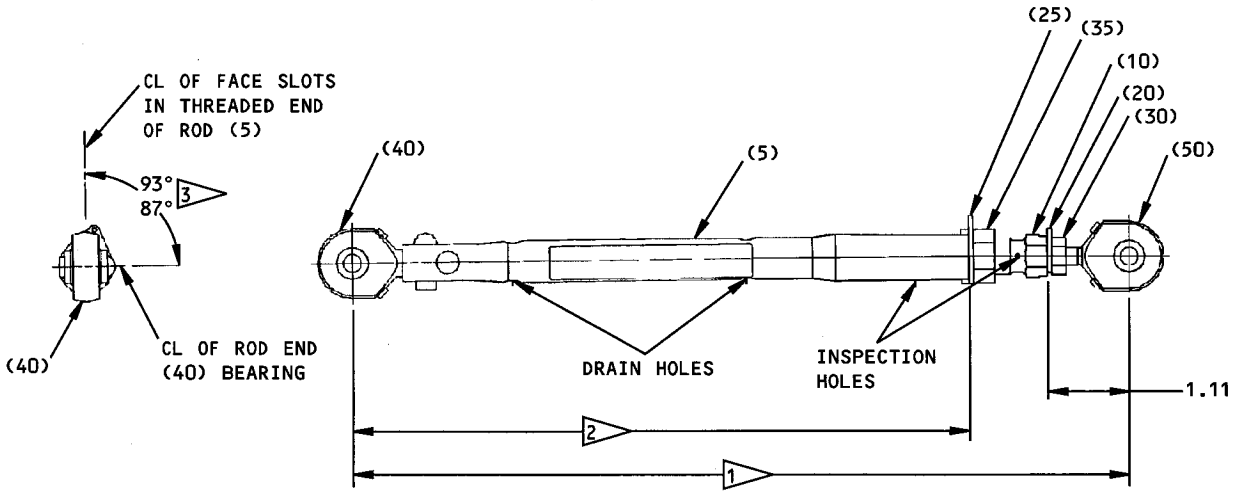
(1) Control rod assembly (1) (256A3914-1, -2, -3)

(a) Refer to Figure 14 for the installation positioning for bearing (40). Install bearing (40) onto control rod (5) with rivets (60), using wet BMS 5-95 sealant (F-19.27) (SOPM 20-50-19). Ensure that the sealant does not obscure the drain holes shown on Figure 14.

(b) Apply BMS 3-27 compound on all threads of rod (5), bearing (50) and adjustment sleeve (10) before assembly (F-19.71).

(c) Install bearing (50) and locking device (20) onto adjustment sleeve (10) with nut (30), making the 1.11 inch dimension adjustment shown on Figure 14. Verify that the inspection hole in adjustment sleeve (10) is completely blocked by rod end (50). Nut (30) is installed hand tight only.

(d) Install adjustment sleeve (10) and lock rod end (25) onto control rod (5) with nut (35). Adjust the flagnote 1 dimension on Figure 14 value specified, keeping the flat surfaces of rod ends (40) and (50) coplanar as shown on the figure, as determined by visual inspection, when the measurement is made. Verify that the inspection hole in rod (5) is completely blocked by adjustment sleeve (10). Nut (35) is installed hand tight only.



1> 256A3914-1: 10.50 INCHES
256A3914-2: 14.60 INCHES
256A3914-3: 12.22 INCHES

2> 256A3914-1: 8.34 INCHES
256A3914-2: 12.07 INCHES
256A3914-3: 9.87 INCHES

3> 256A3914-1

256A3914-1,-2,-3 Control Rod Assembly
Figure 14

1561811

(e) Install nameplate (15) at approximate position shown. Prepare surfaces and bond over 100% of the faying surface per BAC5010 with Type 89 or Type 70.

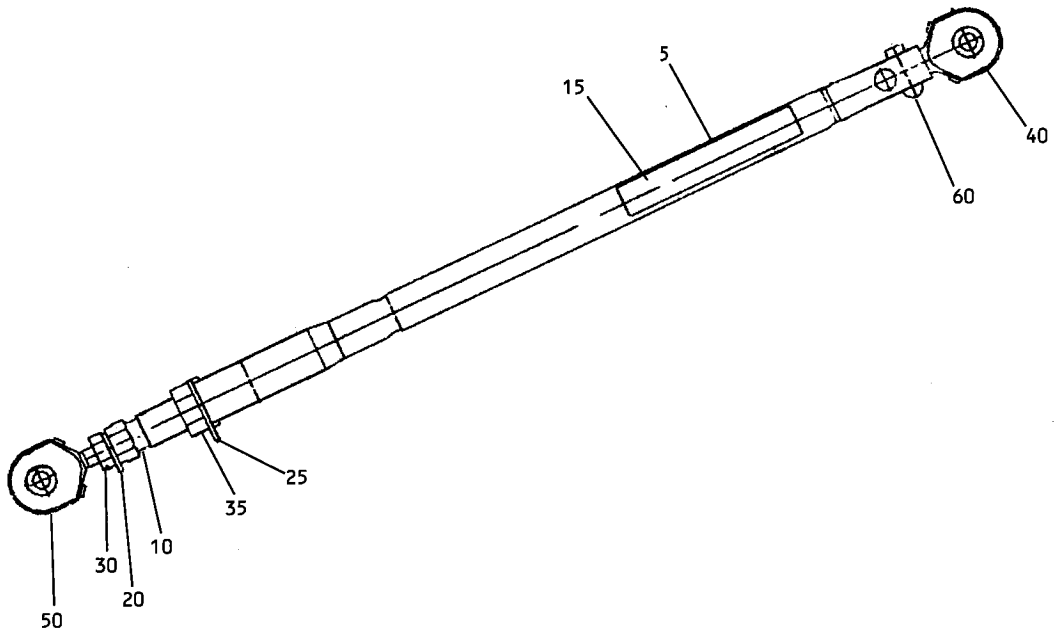
D. Materials

NOTE: Equivalent substitutes may be used.

(1) Sealant -- BMS 5-95 BAC5000 (SOPM 20-60-04) -- A00359

(2) Compound -- BMS 3-27 (SOPM 20-60-02) -- C00913 or C50056

(3) Adhesive -- BAC5010 Type 89 -- A50055 or Type 70 -- A00028 (SOPM 20-50-12)



Flap Skew Detection Control Rod Assembly
Figure 15

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
15-					
	256A3914-1		CONTROL ROD ASSY-FLAP SKEW DETECTION	A	RF
	256A3914-2		CONTROL ROD ASSY-FLAP SKEW DETECTION	B	RF
	256A3914-3		CONTROL ROD ASSY-FLAP SKEW DETECTION	C	RF
5	256A3915-1		. CONTROL ROD	A	1
5	256A3915-2		. CONTROL ROD	B	1
5	256A3915-3		. CONTROL ROD	C	1
10	256A3916-1		. ADJUSTMENT SLEEVE		1
15	BAC27DCT537		. MARKER	A	1
15	BAC27DCT538		. MARKER	B	1
15	BAC27DCT539		. MARKER	C	1
20	MS14198K4C		. LOCKING DEVICE		1
25	MS14198K8C		. LOCK - ROD END		1
30	NAS509-4C		. NUT		1
35	NAS509-8C		. NUT		1
40	AACREP4S6-3		. ROD END (SPEC S012T236-106)		1
50	AACREP4M4-3		. ROD END (SPEC S012T236-107)		1
60	BACR15BB5AD( )		. RIVET (SIZE DETERMINED ON INSTALLATION)		2

VENDORS

V21335 TIMKEN US CORPORATION, FAFNIR DIV., 336 MECHANIC ST., LEBANON, NEW HAMPSHIRE 03766-0267

V77896 REXNORD, INC., BEARING DIV., 2400 CURTIS ST., DOWNER'S GROVE, ILLINOIS 60515