TO: ALL HOLDERS OF POTENTIOMETER DRIVE ASSEMBLY OVERHAUL MANUAL, 27-09-32

REVISION NO. 5, DATED MAR 5/91

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 vendor part number and updated vendor name and address. Edited Illustrated Parts List												X	

POTENTIOMETER DRIVE ASSEMBLY

27-09-32

BOEING P/N 65-45171-2, -3, -7, -10, -12, -16

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 31077	Feb 15/69
		PRR 32304	Jul 5/77
		PRR 32900-1	Jul 5/79
		PRR 32912-1	Jul 5/79

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
	27-09-32					
	T-1	Dec 5/83				
	T-2	BLANK				
*	LEP-1	Mar 5/91				
	LEP-2	BLANK				
	T/C-1	Jul 5/77				
	T/C-2	BLANK				
	1	Jul 5/77				
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*	9	Mar 5/91				
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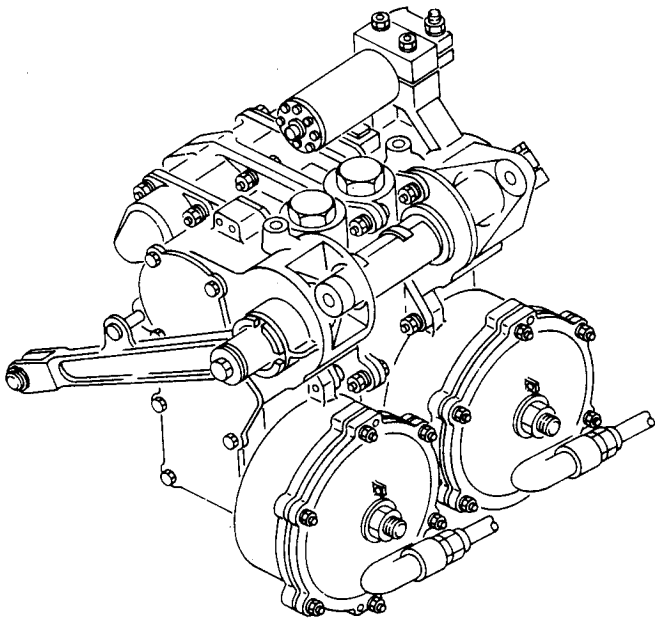
*[1] Use standard industry practices, and applicable procedures contained in 20-30-01.

POTENTIOMETER DRIVE ASSEMBLY



(65-45171-2, -3 Shown)

Potentiometer Drive Assembly
Figure 1

1. DESCRIPTION AND OPERATION

A. The potentiometer drive assembly consists of a microadjustment rod, a potentiometer linkage crank, a computer assembly, a potentiometer mounted on the computer housing, and on some assemblies, an input arm or a crank on the computer shaft. A pin is inserted through the input arm (on applicable assemblies) for handling and storage purposes. The potentiometer drive mechanically translates electrical and mechanical inputs to provide automatic stabilizer movement.

B. Leading Particulars (Approximate)

Length -- 10 in.
Width -- 12 in.
Height -- 13 in.
Weight -- 22 lbs

2. DISASSEMBLY (Fig. 3)

A. (65-45171-2, -3, -7)

(1) Remove lockwire from plug (1).

(2) Remove plug (1), washer (2), and safety pin (3).

NOTE: Safety pin (3) is installed for assembly, handling and storage purposes only.

(3) Remove arm assembly (4) from computer.

(4) Remove ring (5) and bushing (6) from arm (9). Do not remove rivets (7) and anchor nut (8) unless repair or replacement is necessary.

B. (All assemblies (except as noted))

(1) Remove nuts (10), washers (11), screws (12), and washer (13). Remove and disassemble adjustment rod assembly (14).

(a) Remove lockwire from thumb nut (22).

(b) Drill out rivet (15) from rod end assembly (16) and remove rod end assembly (19) and thumb nut (22).

(c) Remove nut (22) from rod end assembly (19).

(d) Do not remove bearings (17, 20) from rod ends (18 , 21) unless repair or replacement is required.

(2) Scribe a vertical index mark on end of potentiometer shaft and on potentiometer linkage crank (26) to facilitate reassembly.

(3) Remove nut (23), washer (24) and bolt (25) from potentiometer linkage crank (26).

(4) Remove linkage crank (26) from potentiometer (27) shaft.

(5) (65-45171-10 -12, -16) remove nut, washer and bolt (26A, 26B, 26C) from crank (26D) and remove crank from computer (28) shaft.

NOTE: Do not remove grommet (26E) unless repair of crank or replacement of grommet is necessary.

(6) Loosen two bolts securing potentiometer (27) to computer assembly (28) and remove potentiometer.

NOTE: Bolts (NAS1531-4H24P) are part of computer assembly (28).

3. INSPECTION/CHECK

A. Check all parts in accordance with standard industry practices. Refer to Fits and Clearances for design dimensions and wear limits.

B. Penetrant check per 20-20-02 -- Bushing (6), arm (9), and rod ends (18, 21)

C. Magnetic check per 20-20-01 -- Crank (26F).

4. REPAIR

A. Repair minor defects using standard industry practices.

B. Refinish (Fig. 3)

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 Ends (18, 21) -- Alodize or chromic acid anodize and apply one coat of primer BMS 10-11, type 1 (SRF-2.30) all over, except no primer in bearing bore and on threaded area. Material: Alum alloy.

(2) Safety Pin (3) -- Cadmium plate (0.0002-0.0004 in. thick) (F-1.1926) all over. Material: 4340 steel, 125-150 ksi.

(3) Bushing (6) -- Cadmium plate (0.0003 in. thick) (F-1.1929) all over. Material: 4130 steel, 125-145 ksi.

(4) Arm (9) -- Anodize (F-2.201) plus one coat of primer, BMS 10-11, type 1 (SRF-12.205) all over, except omit primer in spline area and hub ends, inner surfaces of clevis, and holes in clevis and lug. Material: Alum alloy.

C. Replacement (Fig. 3)

(1) Bearings (17, 20) -- Install bearing with wet primer, BMS 10-11, type 1, in accordance with 20-50-03. Stake both sides at 5 points equidistant (± 0.03) between old stake marks. Use a staking tool with 0.094-0.100-inch spherical radius, and stake 0.017-0.023-inch deep. Breakout torque shall not exceed 0.05 lb-in.

5. ASSEMBLY (Fig. 3)

A. (65-45171-2, -3, -7)

(1) Install bushing (6) and ring (5) in arm (9).

(2) Install input arm assembly (4) on computer and install safety pin (3). Temporarily secure pin (3) with masking tape.

(3) Install washer (2) and plug (1). Tighten plug (1) to 150-200 lb-in. and install lockwire per 20-50-02, using double twist method.

B. (65-45171-10, -12, -16)

(1) Install crank (26D) with bolt, washer, and nut (26C, 26B, 26A) on computer (28), with nut finger tight.

C. (All assemblies) Preassemble adjustment rod assembly (14).

(1) Install thumb nut (22) on rod end (16). Turn thumb nut (22) until distance between end of rod end (16) and nearest edge of knurled nut is 0.32-0.34 inch.

(2) Install rod end (19) and adjust until distance between centers of bearings (17, 20) is 3.76-3.80 inches. Do not change 0.32-0.34-inch distance between nut (22) and rod end (16).

(3) Install rivet (15) in rod end (16).

NOTE: Rod end (19) may require slight adjustment to permit inserting rivet.

(4) Using thumb nut (22), adjust rod assembly to 3.77-3.79 inches between centers of bearings (17, 20).

(5) Install lockwire on adjustment rod (14) per 20-50-02, using the double twist method.

D. (65-45171-2, -3, -7) Install lower end of adjustment rod (14) on crank (69-39139-1, preassembled on computer assembly (28)) using screw (12), washers (13, 11) and nut (10), with washer (13) installed under head of screw (12).

E. (All Assemblies)

(1) Loosen the two bolts (NAS1351-4H24P) holding cover clamp (69-39145-1) and place potentiometer (27) in position with index marks aligned in a vertical position above the shaft.

NOTE: Bolts (NAS1531-4H24P) and clamp (69-39145-1) are part of computer assembly (28).

(2) Install bolt (25), washer (24) and nut (23) in potentiometer linkage crank (26). Do not tighten nut (23).

(3) Install crank (26) on potentiometer (27). Align shaft using index marks scribed during disassembly procedure.

(4) Tighten nut (23) to secure crank (26) on potentiometer shaft.

(5) Connect adjustment rod (14) to linkage crank (26) with screw (12), washer (11) and nut (10).

(6) Turn potentiometer (27) until index marks on shaft and housing align and tighten bolts (NAS1351-4H24P) to 40-50 lb-in.

F. (65-45171-10, -12, -16)

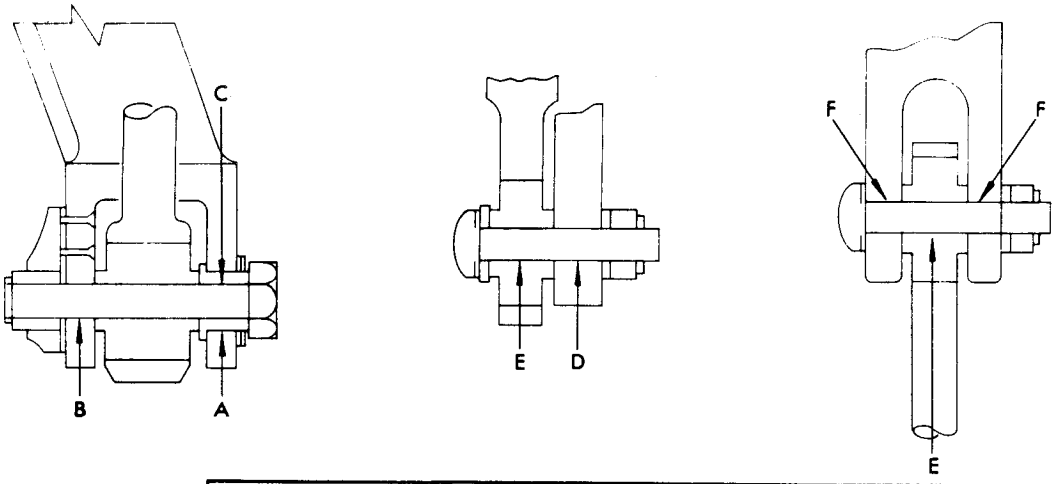
(1) Attach lower end of rod assembly (14) to crank (26D) using screw (12), washers (13, 11), with washer (13) under screw head, and nut (10).

(2) Tighten nut (26A) to secure crank (26D) on computer (28) shaft.

NOTE: Additional adjustment is accomplished after installation in the airplane.

6. FITS AND CLEARANCES

A. and B Deleted



Ref Letter Fig. 2	Mating Item No. Fig. 3	Design Dimensions				Service Wear Limits		
		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
		Min	Max	Min	Max	Min	Max	
A	ID 9	0.3762	0.3767	0.0013	0.0059		0.3784	0.0023
	OD 6	0.3754	0.3761			0.3751		
B	ID 9	0.2495	0.2505	0.0000	0.0020		0.2535	0.0040
	OD *[1]	0.2485	0.2495			0.2481		
C	ID 6	0.2495	0.2505	0.0000	0.0020		0.2535	0.0040
	OD *[1]	0.2485	0.2495			0.2481		
D	ID *[2]	0.1895	0.1900	0.0000	0.0030		0.1945	0.0050
	OD 12	0.1870	0.1895			0.1866		
E	ID 14	0.1895	0.1900	0.0000	0.0030		0.1945	0.0050
	OD 12	0.1870	0.1895			0.1866		
F	ID 26	0.1895	0.1900	0.0000	0.0030		0.1945	0.0050
	OD 12	0.1870	0.1895			0.1866		

*[1] NAS1304-16
*[2] 69-39139-1, 65-86748-1, 65-86749-1

7. STORAGE INSTRUCTIONS (Fig. 3)

A. Cap all open fluid ports with Skydrol resistant material to prevent contamination or leakage during storage.

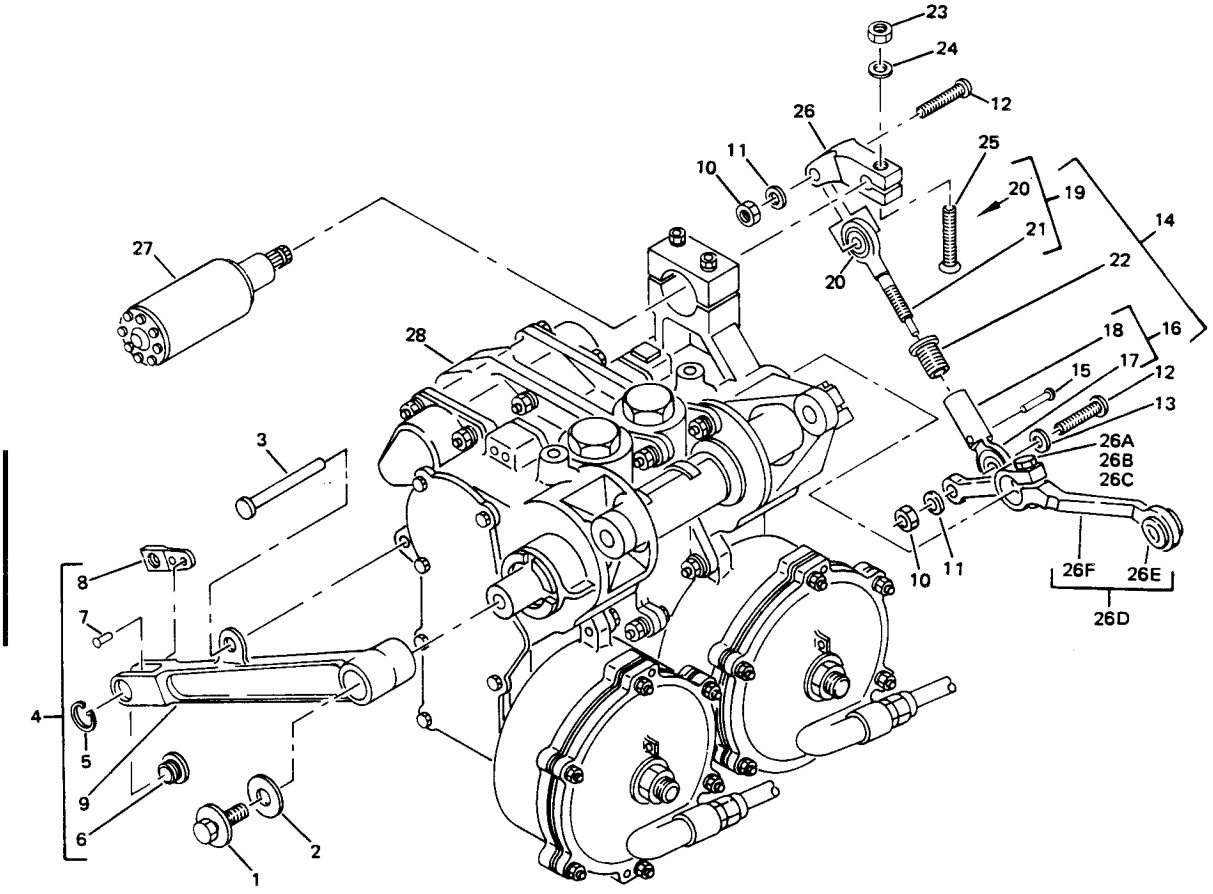
B. Cap all open air ports to prevent contamination.

C. Securely tape safety pin (3) to hold input arm assembly (4) in a fixed position.

D. Wrap assembly in vapor barrier paper and seal securely. Tag or mark assembly for identity.

E. For further information, refer to 20-44-02.

8. ILLUSTRATED PARTS LIST



Potentiometer Drive 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-					
	65-45171-3		DRIVE ASSY, POTENTIOMETER	A	RF
	65-45171-2		DRIVE ASSY, POTENTIOMETER	B	RF
	65-45171-10		DRIVE ASSY, POTENTIOMETER	C	RF
	65-45171-12		DRIVE ASSY, POTENTIOMETER	D	RF
	65-45171-7		DRIVE ASSY, POTENTIOMETER	E	RF
	65-45171-16		DRIVE ASSY, POTENTIOMETER	F	RF
1	69-39146-1		. PLUG	AB	1
2	AN960PD816		. WASHER	AB	1
3	69-51524-1		. PIN, SAFETY		1
4	65-51237-1		. ARM ASSY, INPUT	AB	1
5	MS16624-1037		. . RING		1
6	65-51237-4		. . BUSHING		1
7	BACR15BA3B		. . RIVET (REPLS MS20426B3)		2
7	MS20426B3		DELETED		
8	BACN10KB4F		. . NUT PLATE		
8	F1915-4		DELETED		
9	65-51237-2		. . ARM		1
10	BACN10JC3		. NUT (REPLS NAS679A3W)		2
10	NAS679A3W		DELETED		
11	AN960PD10		. WASHER		2
12	NAS623-3-9		. SCREW		2
13	BACW10Q3		. WASHER		1
14	69-43490-1		. ROD ASSY		1
15	BACR15BB3D		. . RIVET (REPLS MS20470D3)		1
15	MS20470D3		DELETED		
16	69-43491-1		. . ROD END ASSY		1
17	BACB10AC3L		. . . BEARING		1
18	69-43491-2		. . . ROD END		1
19	69-43492-1		. . ROD END ASSY		1
20	BACB10AC3L		. . . BEARING		1
21	69-43492-2		. . . ROD END		1
22	69-43493-1		. . NUT, THUMB		1
23	BACN10JC3		. NUT (REPLS NAS679A3W)		1
23	NAS679A3W		DELETED		
24	AN960PD10		. WASHER		1
25	BACB30LU3-14		. BOLT (REPLS BACB30FL3-14)		1
25	BACB30FL3-14		DELETED		
26	69-44449-1		. CRANK		1
26A	BACN10JC4		. NUT	CDF	1
26B	AN960C416		. WASHER	CDF	1
26C	BACB30NF4-16		. BOLT	CDF	1
26D	65-86748-1		. CRANK ASSY	CDF	1
26D	65-86749-1		. CRANK ASSY (OPT)	CDF	1
26E	NAS1368N6C		. . GROMMET	CDF	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
3-					
26F	65-86748-2		. . CRANK (USED ON 65-86748-1)	CDF	1
6F	65-86749-2		. . CRANK (USED ON 65-86749-1)	CDF	1
27	2589918-901		. POTENTIOMETER, V58960 (BOEING 10-61071-10)	ABCEF	1
27	2589918-902		. POTENTIOMETER, V58960 (BOEING 10-61071-32)	D	1
28	65-45132-7		. COMPUTER ASSY (REF 27-09-31)	A	1
28	65-45132-5		. COMPUTER ASSY (REF 27-09-31)	B	1
28	65-45132-10		. COMPUTER ASSY (REF 27-09-31)	CD	1
28	65-45132-9		. COMPUTER ASSY (REF 27-09-31)	E	1
28	65-45132-12		. COMPUTER ASSY (REF 27-09-31)	F	1

VENDORS

V58960 HONEYWELL AIR TRANSPORT SYSTEM, 21111 NORTH 19TH AVENUE, P.O. BOX 21111, PHOENIX, ARIZONA 85036. FORMERLY SPERRY FLIGHT SYSTEMS, V07187, DIV. OF SPERRY RAND AND SPERRY CORP., COMMERCIAL FLT SYS DIV.