TO: ALL HOLDERS OF ELEVATOR CONTROL FEEL AND CENTERING TUBE AND CRANK ASSEMBLY OVERHAUL MANUAL 27-37-13

REVISION NO. 5, DATED JUN 5/88

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
Changed crank assembly refinish to ease manufacturing					X								

ELEVATOR CONTROL FEEL AND CENTERING TUBE AND CRANK ASSEMBLY

27-37-13

BOEING P/N 65-60586-1

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT

LIST OF EFFECTIVE PAGES

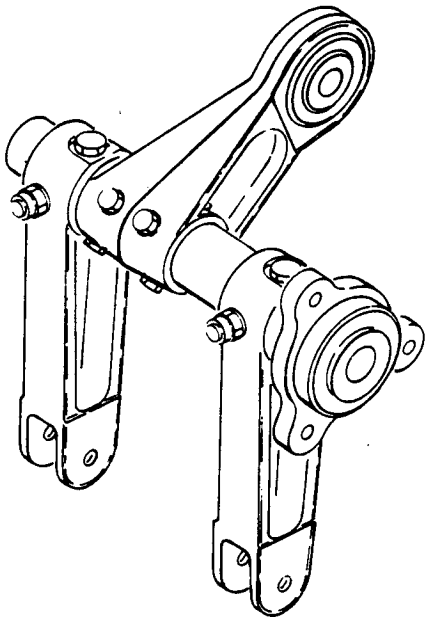
* Indicates pages revised, added or deleted in latest revision

F Indicates foldout pages - print one side only

	PAGE	DATE	PAGE	DATE	PAGE	DATE
	27-37-13					
	T-1	Dec 10/70				
	T-2	BLANK				
*	LEP-1	Jun 5/88				
	LEP-2	BLANK				
	1	Dec 10/70				
	2	Dec 5/85				
*	3	Jun 5/88				
	4	Jun 5/86				
	4A	Jun 5/86				
	4B	Jun 5/86				
	5	Dec 10/70				
	6	Dec 10/70				
	7	Jun 5/86				
	8	BLANK				

ELEVATOR CONTROL FEEL AND CENTERING TUBE AND CRANK ASSEMBLY

Boeing Part Number: 65-60586-1



Elevator Control Feel and Centering Tube and Crank Assembly
Figure 1

1. DESCRIPTION AND OPERATION

A. Description

(1) The elevator control feel and centering tube and crank assembly consists of tube assembly with a clevis crank near each end and a two-piece bonded and riveted crank assembly between. At one end of the tube assembly is a bearing, bearing housing and retainer. The tube assembly consists of two concentric tubes bonded together.

B. Operation

(1) The elevator control feel and centering tube and crank assembly is part of a neutral shift linkage which pivots the elevator feel and centering unit to establish a new neutral position following a change in stabilizer attitude.

C. Leading Particulars

Length -- 7.3 inches
Width -- 6.4 inches
Height -- 8.2 inches
Weight -- 2.2 pounds

NOTE: Special instructions for disassembly, assembly, and storage are not required. Standard aircraft shop practices are sufficient for overhual of this component.

2. CLEANING

A. Clean all bearings per Subject 20-30-01, Cleaning and Relubricating Antifriction Bearings.

3. INSPECTION/CHECK

A. Visual Check

(1) Examine all metal parts for pits, scratches, cracks, corrosion and damage using strong light and minimum of 10-power magnification.

CAUTION: INSPECT BOTH INNER AND OUTER TUBES ON BONDED TUBE ASSEMBLY (19).

(2) Check for wear beyond the limits shown in Fig. 3.

(3) Check bearings for excessive radial or axial play.

(4) Examine all bearings, bushing and bolt holes for corrosion and eccentric or excessive wear.

B. Special Check (Fig. 4).

(1) If visual examination discloses evidence of defects in any of the parts listed below, perform the indicated check.

(a) Dye penetrant check -- cranks (4, 9 and 18) and tubes (19 and 20) per Penetrant Methods of Inspection, Subject 20-20-02.

4. REPAIR

A. Repair

(1) Remove corrosion and other minor defects from metal parts by polishing lightly with abrasive cloth, 200 grit or finer. Do not exceed limits shown in Fig. 3 (Fits and Clearances). Refinish as necessary for protection against corrosion.

B. Refinish (Fig. 4)

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

(1) Cranks (4, 18) -- Alodize (F-2.940). Apply one coat BMS 10-11, type 1 primer (SRF-12.205) all over, except omit primer from 1.093 inch diameter. Material: Al alloy.

(2) Crank assembly (9) -- Apply colored chemical coating (F-17.10). Apply one layer of BMS 10-11, type 1 primer (F-20.02) all over, except do not apply primer to the 1.093 and 1.5625 inch diameter holes. Material: Al alloy.

(3) Retainer (15) -- Alodize or chromic acid anodize. Apply one coat BMS 10-11, type 1 primer (SRF-2.30) all over. Material: Al alloy.

(4) Housing (17) -- Alodize or chromic acid anodize. Apply one coat BMS 10-11, type 1 primer (SRF-2.30) all over, except omit primer from 1.9375 inch diameter, bearing seat, and attachment bolt holes. Material: Al alloy.

(5) Tube assembly (19) -- Interior: Alodize or chromic acid anodize. Apply one coat BMS 10-11, type 1 primer (SRF-2.30). Exterior: Alodize (F-2.940). Material: Al alloy.

C. Replacement (Fig. 4)

(1) Replace bearings (10 and 16), if required, per 20-50-03. Roller stake bearing sleeve (11) to retain bearing (10) (Fig. 2). Maximum breakout torque after bearing (10) installation shall not exceed 0.08 lb-in.

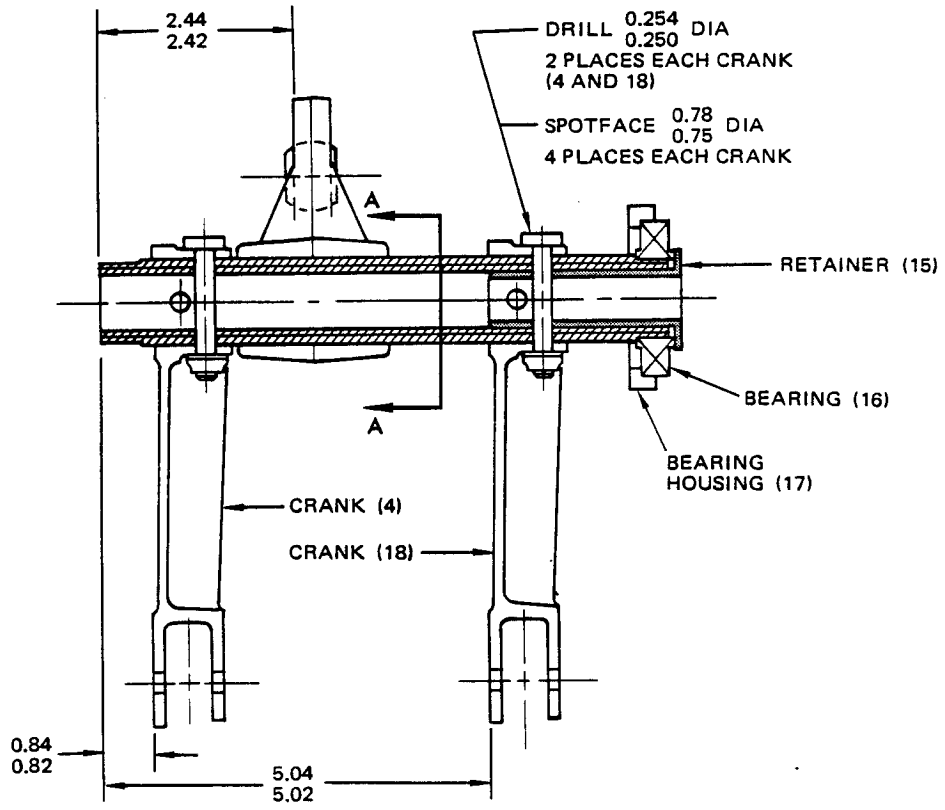
CAUTION: DO NOT DAMAGE EXISTING BOLT HOLES WHEN DRILLING HOLES THROUGH UNDRILLED REPLACEMENT PARTS.

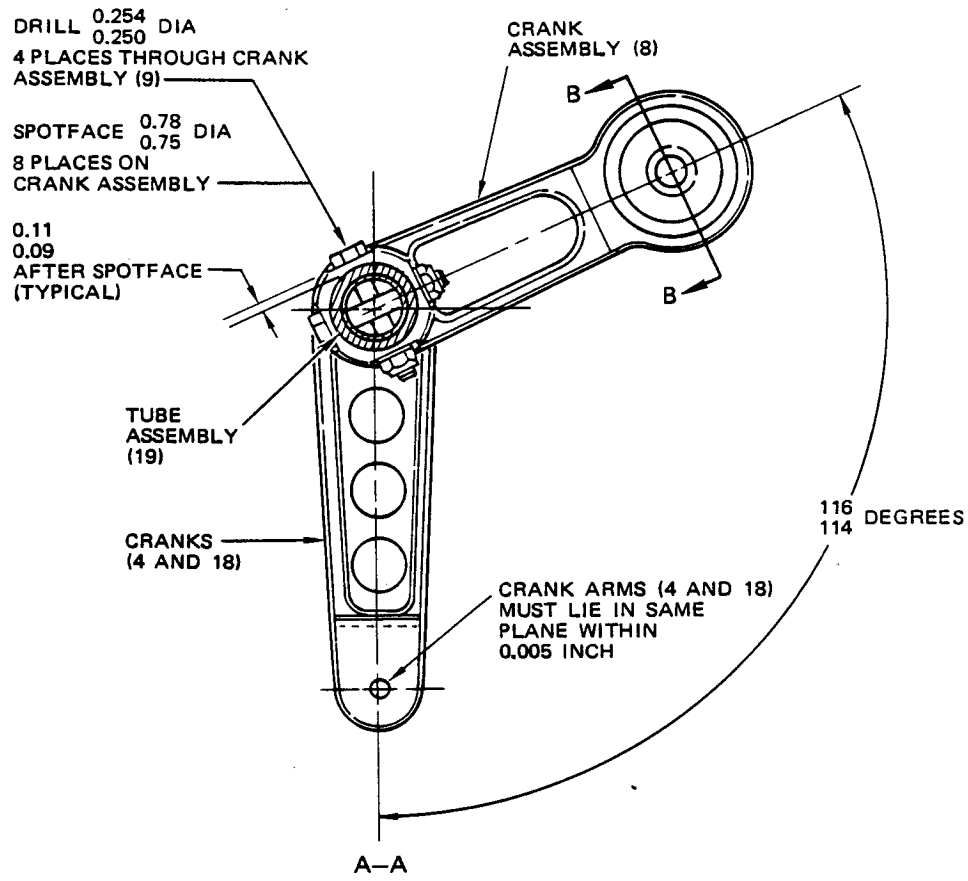
(2) If parts other than bearings require replacement, position and align parts as shown (Fig. 2) and drill bolt holes to match. Apply alodine and primer to new bolt holes. Assemble using wet primer. Install fasteners before primer dries.

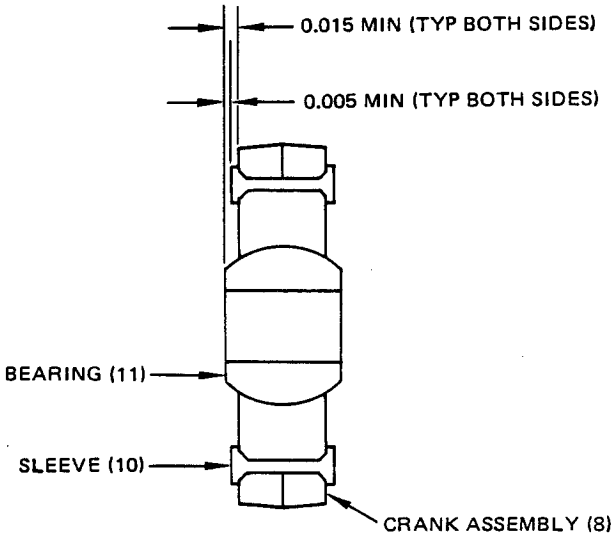
D. Materials

NOTE: Equivalent substitutes may be used.

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


2.44
2.42
DRILL 0.254 0.250 DIA
2 PLACES EACH CRANK
(4 AND 18)
SPOTFACE 0.78 0.75 DIA
4 PLACES EACH CRANK
A
A
RETAINER (15)
BEARING (16)
BEARING
HOUSING (17)
CRANK (4)
CRANK (18)
0.84
0.82
5.04
5.02



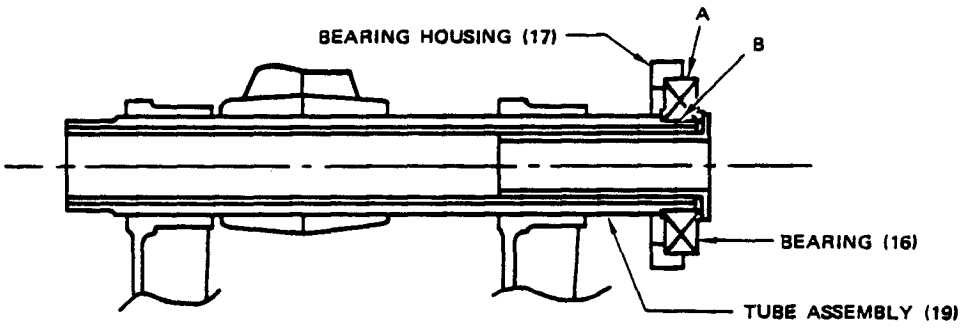


NOTE: ALL DIMENSIONS ARE IN INCHES

5. FITS AND CLEARANCES (See figure 3.)

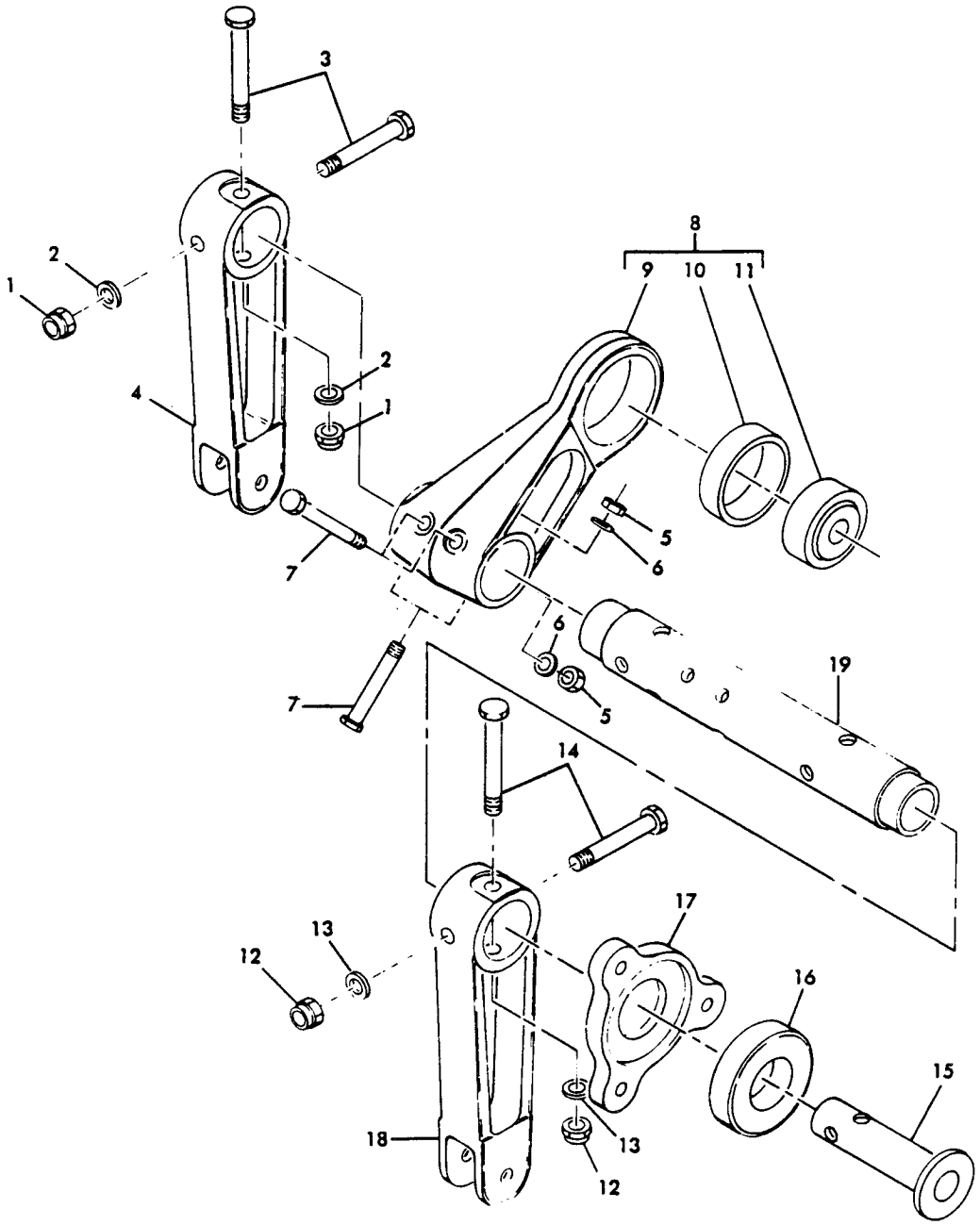
A. The fits and clearances table lists design dimensions and service wear limits for close tolerance parts of the assembly that are subject to wear or corrosion. Unless otherwise specified, parts should be returned to the design dimensions whenever rework is accomplished.

B. Clearances are given to aid assembly of the components. The values given in the Maximum Allowable Clearance column are the maximum permitted to ensure proper functioning of the unit. If assembled parts fail to meet this requirement, one or more of the parts must be rejected. Parts that are rejected should be reworked if within the rework limits given in the Repair procedure; if not within rework limits, the parts should be scrapped. It is recommended that the design clearances be used as the guiding assembly criteria when newly reworked parts are assembled.



			Design Dimensions				Service Wear Limits		
Ref Letter Fig.3	Mating Item No. Fig.4		Dimensions (inches)		Assembly Clearance (inch)		Dimension Limits (inches)		Maximum Allowable Clearance (inch)
			Min	Max	Min	Max	Min	Max	
A	ID	17	1.9375	1.9385	.0000	.0020		1.9415	.0040
	OD	16	1.9365	1.9375			1.9360		
B	ID	16	.9990	1.0000	.0000	.0015		1.0025	.0035
	OD	19	.9985	.9990			.9965		

6. ILLUSTRATED PARTS LIST



Elevator Control Feel and Centering Tube and Crank Assembly
Figure 4

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
4-	65-60586-1		ELEVATOR CONTROL FEEL AND CENTERING TUBE AND CRANK ASSY		
1	NAS679A4W		. NUT		2
2	AN960PD416		. WASHER		2
3	NAS1104-22		. BOLT		2
4	65-60587-501		. CRANK (SUPSDS 65-60587-1)		1
4	65-60587-1		. CRANK (SUPSD BY 65-60587-501)		1
5	NAS679A4W		. NUT		4
6	AN960PD416		. WASHER		4
7	NAS1104-22		. BOLT		4
8	65-61327-1		. CRANK ASSY		1
9	65-61327-2		. . CRANK ASSY, BONDED		1
10	69-38919-18		. . SLEEVE		1
11	BACB10AC6		. . BEARING		1
12	NAS679A4W		. NUT		2
13	AN960PD416		. WASHER		2
14	NAS1104-22		. BOLT		2
15	69-48217-1		. RETAINER		1
16	BACB10A827		. BEARING		1
17	69-48216-2		. HOUSING, BEARING		1
18	65-60587-501		. CRANK (SUPSDS 65-60587-1)		1
18	65-60587-1		. CRANK (SUPSD BY 65-60587-501)		1
19	65-60568-1		. TUBE ASSY, BONDED		1