

Chapter 3

SYSTEMS

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INTRODUCTION

Fits and tolerances

1. Permissible worn fits and tolerances in the flying controls system are tabulated in fig.1 to 6 and 8 to 14. The following limitations apply to wear on flying control push-pull rods caused by the action of roller bearings. The permitted wear, after Ardrex checks and the blending and polishing out of score marks, is limited to a flat not greater in width than 25 per cent of the rod circumference and to a maximum depth of 0.015 in. on 20 s.w.g. rods, 0.025 in. on 17 s.w.g. rods and 0.035 in. on 14 s.w.g. rods. Any control rod having wear in excess of these limits must be scrapped.

Repair prohibitions

2. No repairs to the pneumatic system air containers or to the oxygen bottles and other components of the oxygen system are permissible. Should damage be sustained by any of these components they must be renewed. Similarly, damaged flexible piping must be renewed, although sections of damaged metal piping may be repaired as indicated in para.12.

Repair precautions

3. Before commencing repairs to any metal tank, the precautions stipulated in A.P.4117A, Vol.1 and 6, Part 1, Sect.1, must be observed.

FUEL TANKS

Flexible, bag-type

4. Repairs to flexible, bag-type fuel tanks should be effected in accordance with A.P.4117A, Vol.1 and 6, Part 1, Sect.3.

Rigid, metal-type

5. Repairs to rigid, metal-type fuel tanks should be effected in accordance with A.P.4117A, Vol.1 and 6, Part 1, Sect.2.

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OIL TANKS

6. For information on the repair of oil tanks, refer to A.P.4117A, Vol.1 and 6, Part 1, Sect.4.

COOLANT HEADER TANKS

7. The header tank may be repaired in accordance with the provisions of A.P.4117A, Vol.6, Part 2, Sect.7, Chap.2.

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WATER/METHANOL TANKS

8. Refer to A.P.4117A, Vol.1 and 6, Part 1, Sect.7, Chap.6, for information on the repair of these tanks.

HYDRAULIC FLUID RESERVOIR

9. The hydraulic fluid reservoir may be repaired in accordance with the provisions of A.P.4117A, Vol.1 and 6, Part 1, Sect.7, Chap.3.

DE-ICING FLUID TANKS

10. For information on the repair of these tanks, refer to A.P.4117A, Vol.1 and 6, Part 1, Sect.7, Chap.4.

PROTECTIVE COVERING FOR TANKS

11. For repairs to protective coverings on tanks, refer to A.P.4117A, Vol.1 and 6, Part 1, Sect.5.

PIPING

12. In normal conditions, all damaged piping should be renewed, but, in emergency, copper pipes used in the cooling system may be repaired by brazed patching as indicated in A.P.1464D, Vol.1, Part 2, Sect.3, Chap.3. Similarly, other metal pipes may be repaired by insertion, the joints being made with standard A.G.S. couplings.

PNEUMATIC SYSTEM

13. Certain components of the pneumatic system may be repaired as indicated in the relevant Vol.6 of the A.P.4303 series.

FLYING CONTROLS SYSTEM (fig.1 to 6, 8 to 14)

14. The method of setting and rigging the flying controls, after repairs to adjacent structure or components, is given in the relevant Shackleton Aircraft Servicing Manual.

MATERIAL SPECIFICATION

15. Certain material specification numbers have been replaced. New specifications should be effective as and when present material stocks become exhausted.

Change of specifications are as follows:-

Tube specification L.1 is replaced by L.64

Tube specification T.4 is replaced by L.62

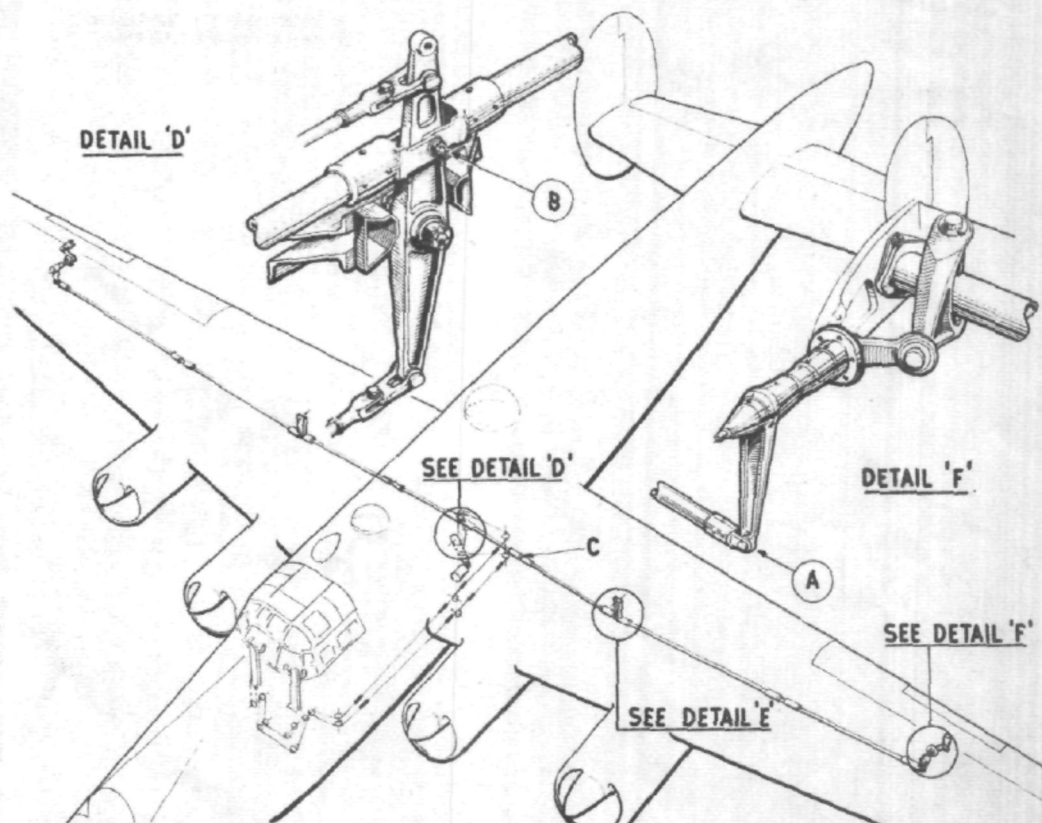
Rivet specification D.T.D.327 is replaced by L.86

Rivet specification D.T.D.237 is replaced by D.T.D.10

TABLE 1

Materials for repair of control tubes

Stores Ref.	Part No.	Description	Size	Specification
26EA/17343	2/R2372	Internal liner	For 1 1/4 in. o/d. x 17 s.w.g. tube	L.64
26FP/NIV	2/R3291	Internal liner	For 1 1/4 in. o/d. x 14 s.w.g. tube	L.64
26FP/NIV	5/R3804	External sleeve	For 1 1/4 in. o/d. x 17 s.w.g. tube	L.62
28Q/12488	AS2230/624	Rivet - 120 degree countersunk hd.	3/16 in. dia. x 1 1/2 in. long	L.86
28Q/9417278	TLP/D/BS630	Rivet-dome/hd. pop	3/16 in. dia. x 0.3 in. long	D.T.D.10



JOINT	BOLT DIAMETER	HOLE IN SOCKET FORK END	BUSH DIAMETER	HOLE IN LEVER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	$\frac{1}{2}$ IN. $-.001$ IN. $-.002$ IN.	$\frac{1}{2}$ IN. $\pm .0005$ IN.	$\frac{5}{8}$ O/D $+.0005$ IN. $-.0000$ IN.	$\frac{5}{8}$ IN. $+.003$ IN. $+.001$ IN.	$-.003$ IN.	$-.006$ IN.
					$-.0025$ IN.	$-.003$ IN.
			$\frac{1}{2}$ O/D $+.002$ IN. $-.000$ IN.		$-.004$ IN.	$-.008$ IN.
B	$\frac{1}{2}$ IN. $-.001$ IN. $-.0007$ IN.	$\frac{5}{8}$ IN. $+.003$ IN. $+.001$ IN.	$\frac{5}{8}$ O/D $+.0005$ IN. $-.0000$ IN.	$\frac{5}{8}$ IN. $+.0031$ IN. $+.001$ IN.	$-.0025$ IN.	$-.005$ IN.
					$-.0025$ IN.	$-.005$ IN.
			$\frac{1}{2}$ O/D $\pm .0005$ IN.		$-.0015$ IN.	$-.003$ IN.
C	$\frac{5}{8}$ IN. $+.000$ IN. $-.002$ IN.	$\frac{3}{8}$ IN. $+.0005$ IN.			$-.0025$ IN.	$-.005$ IN.

AILERON HINGES AT RIBS 14, 18 & 22

HOLE IN HINGE ARM	BUSH OUTSIDE DIAMETER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
$+.002$ IN. $-.012$ IN. $-.000$ IN.	$+.000$ IN. $-.0125$ IN. $-.002$ IN.	$-.004$ IN.	$-.010$ IN.
Aileron hinge at rib 33			
$+.0015$ IN. $-.0625$ IN. $-.0000$ IN.	$+.002$ IN. $-.060$ IN. $-.000$ IN.	$-.004$ IN.	$-.010$ IN.

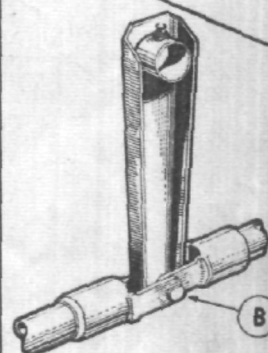
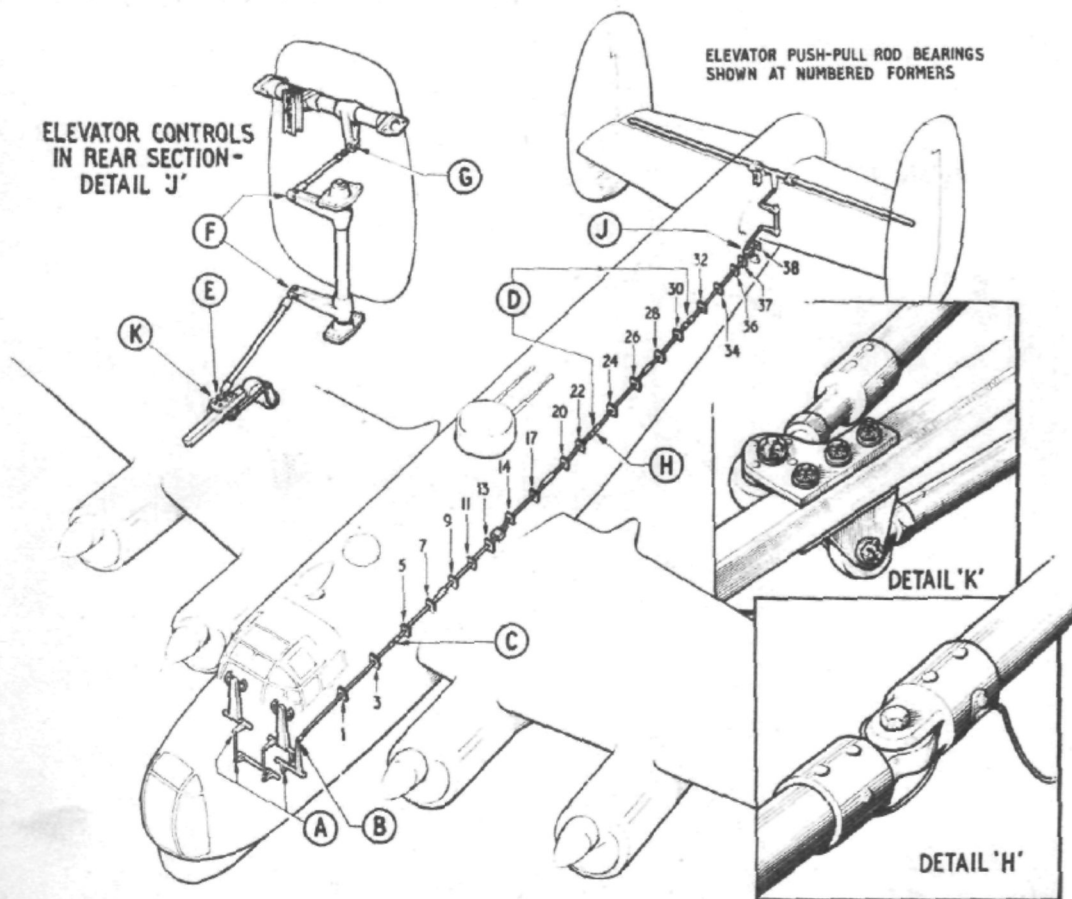


FIG. 1 AILERON CONTROLS - FITS & TOLERANCES - MK. 1 & 2.

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ELEVATOR CONTROLS

JOINT	BOLT DIAMETER	HOLE IN SOCKET FORK END	BUSH DIAMETER	HOLE IN LEVER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	$\frac{1}{2}$ IN. $\begin{smallmatrix} +.0002 \\ -.0003 \end{smallmatrix}$		$\frac{1}{D} \frac{1}{2}$ IN. $\begin{smallmatrix} +.0002 \\ -.0003 \end{smallmatrix}$ O/D $\frac{3}{8}$ IN. $\begin{smallmatrix} -.00025 \\ -.00075 \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \\ -.00025 \end{smallmatrix}$	.0005 IN. .00125 IN.	.001 IN. .0025 IN.
B	$\frac{1}{2}$ IN. $\begin{smallmatrix} -.001 \\ -.0007 \end{smallmatrix}$	$\frac{1}{2}$ IN. $\begin{smallmatrix} +.0005 \\ -.0005 \end{smallmatrix}$	$\frac{1}{D} \frac{1}{2}$ IN. $\begin{smallmatrix} +.002 \\ -.000 \end{smallmatrix}$ O/D $\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \\ -.0000 \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.003 \\ +.001 \end{smallmatrix}$	.0035 IN. .003 IN.	.007 IN. .006 IN.
C	$\frac{7}{16}$ IN. $\begin{smallmatrix} -.001 \\ -.0007 \end{smallmatrix}$	$\frac{7}{16}$ IN. $\begin{smallmatrix} +.0005 \\ -.0005 \end{smallmatrix}$		$\frac{7}{16}$ IN. $\begin{smallmatrix} +.0005 \\ -.0005 \end{smallmatrix}$	.002 IN.	.004 IN.
D	$\frac{3}{16}$ IN. $\begin{smallmatrix} -.001 \\ -.0007 \end{smallmatrix}$	$\frac{3}{16}$ IN. $\begin{smallmatrix} +.0005 \\ -.0005 \end{smallmatrix}$			.0015 IN.	.003 IN.
E	$\frac{3}{16}$ IN. $\begin{smallmatrix} -.001 \\ -.0007 \end{smallmatrix}$			$\frac{3}{16}$ IN. $\begin{smallmatrix} +.0005 \\ -.0005 \end{smallmatrix}$	.0015 IN.	.003 IN.
F	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0002 \\ -.0003 \end{smallmatrix}$			$\frac{3}{8}$ IN. $\begin{smallmatrix} +.002 \\ -.000 \end{smallmatrix}$	.0023 IN.	.0046 IN.
G	$\frac{3}{8}$ IN. $\begin{smallmatrix} -.00025 \\ -.00075 \end{smallmatrix}$			$\frac{3}{8}$ IN. $\begin{smallmatrix} +.00025 \\ -.00025 \end{smallmatrix}$	.001 IN.	.002 IN.

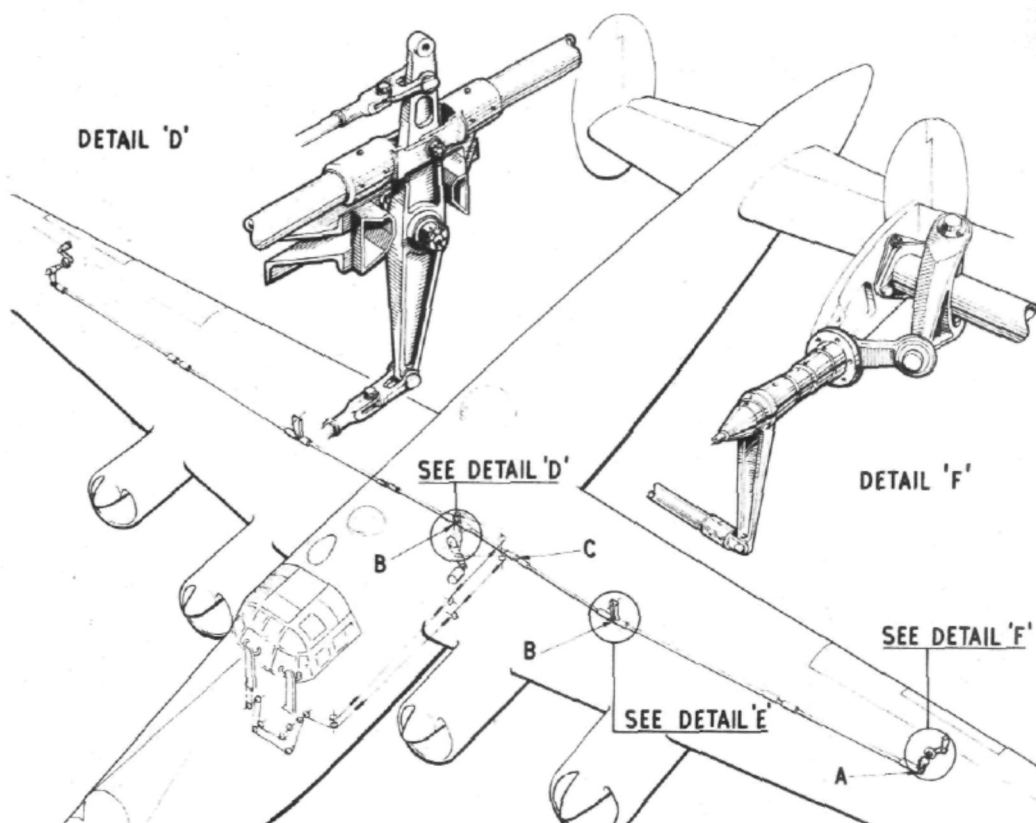
ELEVATOR HINGES

BOLT DIAMETER	HOLE IN BRACKET	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
$\frac{3}{8}$ IN. $\begin{smallmatrix} +.000 \\ -.002 \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.002 \\ -.000 \end{smallmatrix}$	.004 IN.	.010 IN.

NOTE - WHERE A JOINT IN THE CONTROL ROD SYSTEM CONTAINS A BALL RACE IN A LEVER OR SOCKET, THE CLEARANCE BETWEEN THE BALL RACE AND THE SECURING BOLT HAS BEEN IGNORED

FIG. 2. ELEVATOR CONTROLS - FITS AND TOLERANCES - MK. I

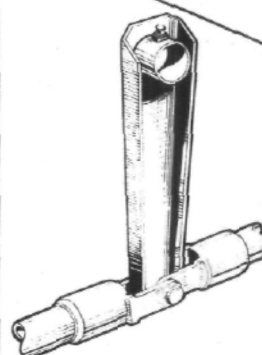
RESTRICTED



JOINT	BOLT DIAMETER	HOLE IN SOCKET FORK END	BUSH DIAMETER	HOLE IN LEVER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	$\frac{1}{2}$ IN. $\pm .001$ IN.	$\frac{1}{2}$ IN. $\pm .0005$ IN.	$\frac{5}{8}$ IN. $\pm .0005$ IN.	$\frac{5}{8}$ IN. $\pm .001$ IN.	$\pm .003$ IN.	$\pm .006$ IN.
	$\frac{1}{2}$ IN. $\pm .002$ IN.		$\frac{1}{2}$ IN. $\pm .002$ IN.		$\pm .0025$ IN.	$\pm .005$ IN.
B	$\frac{1}{2}$ IN. $\pm .001$ IN.	$\frac{5}{8}$ IN. $\pm .001$ IN.	$\frac{5}{8}$ IN. $\pm .0005$ IN.	$\frac{5}{8}$ IN. $\pm .001$ IN.	$\pm .0025$ IN.	$\pm .005$ IN.
	$\frac{1}{2}$ IN. $\pm .007$ IN.		$\frac{1}{2}$ IN. $\pm .0005$ IN.		$\pm .0025$ IN.	$\pm .005$ IN.
C	$\frac{3}{8}$ IN. $\pm .001$ IN.	$\frac{3}{8}$ IN. $\pm .0005$ IN.			$\pm .0015$ IN.	$\pm .003$ IN.
	$\frac{3}{8}$ IN. $\pm .002$ IN.				$\pm .0025$ IN.	$\pm .005$ IN.

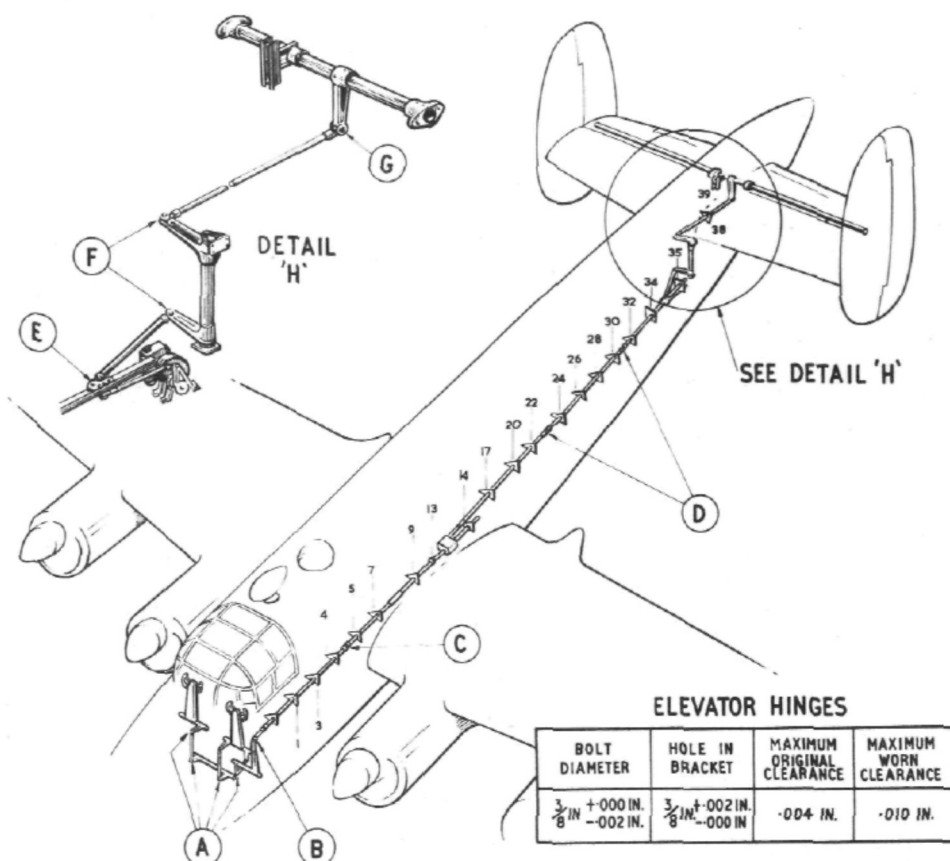
AILERON HINGES AT RIBS 14,18 & 22

HOLE IN HINGE ARM	BUSH OUTSIDE DIAMETER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
$\pm .002$ IN.	$\pm .000$ IN.	$\pm .004$ IN.	$\pm .010$ IN.
$\pm .012$ IN. $\pm .000$ IN.	$\pm .0125$ IN. $\pm .002$ IN.		
Aileron hinge at rib 33			
$\pm .0015$ IN.	$\pm .002$ IN.	$\pm .004$ IN.	$\pm .010$ IN.
$\pm .0025$ IN. $\pm .0000$ IN.	$\pm .000$ IN. $\pm .000$ IN.		



DETAIL 'E'

FIG. 1A. AILERON CONTROLS - FITS & TOLERANCES - MK.2



ELEVATOR CONTROLS

JOINT	BOLT DIAMETER	HOLE IN SOCKET FORK END	BUSH DIAMETER	HOLE IN LEVER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	$\frac{1}{2}$ IN. $^{+0.002}$ IN. $_{-0.003}$ IN.		$\frac{1}{16}$ IN. $^{+0.002}$ IN. $_{-0.003}$ IN. $\frac{3}{16}$ IN. $^{+0.0025}$ IN. $_{-0.0075}$ IN.	$\frac{5}{8}$ IN. $^{+0.005}$ IN. $_{-0.0025}$ IN.	.0005 IN. .00125 IN.	.001 IN. .0025 IN.
B	$\frac{1}{2}$ IN. $^{+0.001}$ IN. $_{-0.007}$ IN.	$\frac{1}{2}$ IN. $^{+0.005}$ IN. $_{-0.001}$ IN.	$\frac{1}{16}$ IN. $^{+0.002}$ IN. $_{-0.001}$ IN. $\frac{3}{16}$ IN. $^{+0.005}$ IN. $_{-0.001}$ IN.	$\frac{5}{8}$ IN. $^{+0.003}$ IN. $_{-0.001}$ IN.	.0035 IN. .003 IN.	.007 IN. .006 IN.
C	$\frac{7}{16}$ IN. $^{+0.001}$ IN. $_{-0.007}$ IN.	$\frac{7}{16}$ IN. $^{+0.005}$ IN. $_{-0.001}$ IN.		$\frac{7}{16}$ IN. $^{+0.005}$ IN. $_{-0.001}$ IN.	.002 IN.	.004 IN.
D	$\frac{5}{16}$ IN. $^{+0.001}$ IN. $_{-0.007}$ IN.	$\frac{5}{16}$ IN. $^{+0.005}$ IN. $_{-0.001}$ IN.			.0015 IN.	.003 IN.
E	$\frac{5}{16}$ IN. $^{+0.001}$ IN. $_{-0.007}$ IN.			$\frac{5}{16}$ IN. $^{+0.005}$ IN. $_{-0.001}$ IN.	.0015 IN.	.003 IN.
F	$\frac{3}{8}$ IN. $^{+0.002}$ IN. $_{-0.003}$ IN.			$\frac{3}{8}$ IN. $^{+0.002}$ IN. $_{-0.001}$ IN.	.0023 IN.	.0046 IN.
G	$\frac{3}{8}$ IN. $^{+0.0025}$ IN. $_{-0.0075}$ IN.			$\frac{3}{8}$ IN. $^{+0.0025}$ IN. $_{-0.001}$ IN.	.001 IN.	.002 IN.

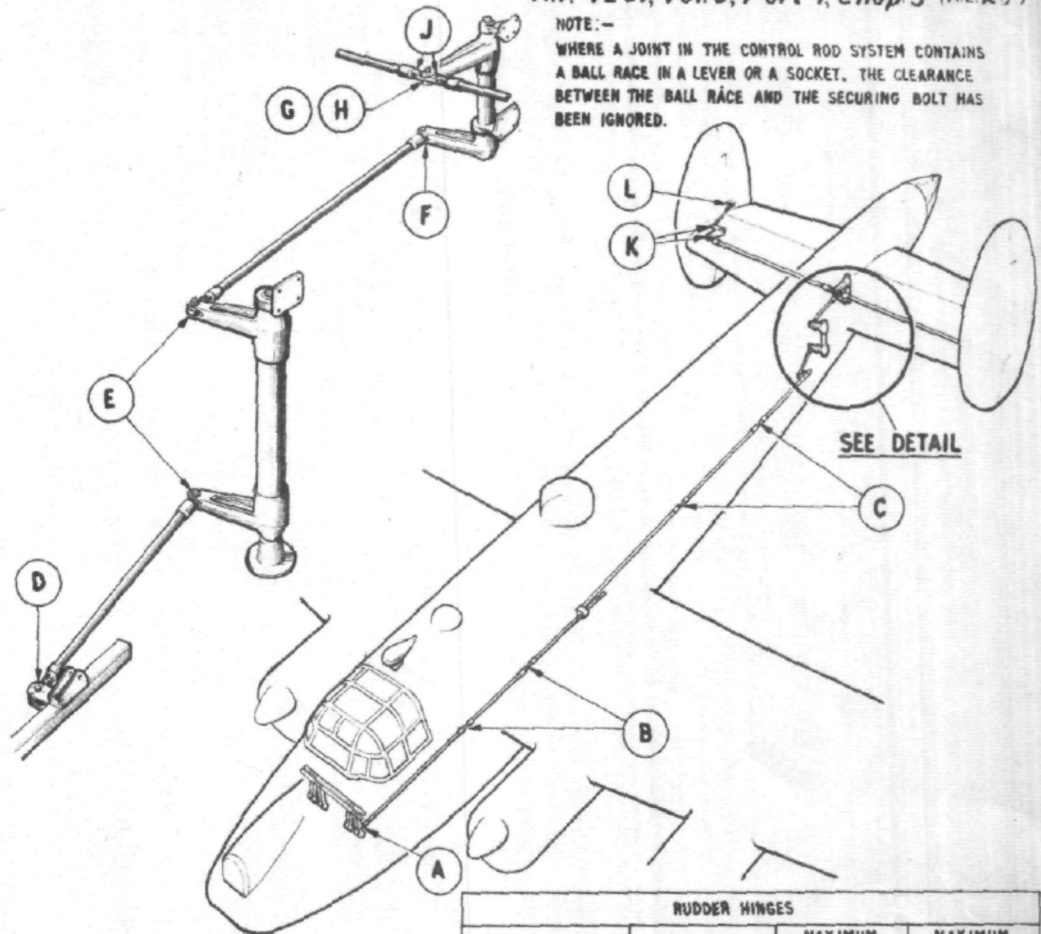
NOTE:- WHERE A JOINT IN THE CONTROL ROD SYSTEM CONTAINS A BALL RACE IN A LEVER OR SOCKET, THE CLEARANCE BETWEEN THE BALL RACE AND THE SECURING BOLT HAS BEEN IGNORED

FIG. 2A. ELEVATOR CONTROLS-FITS AND TOLERANCES-MK.2

RESTRICTED

NOTE:-

WHERE A JOINT IN THE CONTROL ROD SYSTEM CONTAINS A BALL RACE IN A LEVER OR A SOCKET, THE CLEARANCE BETWEEN THE BALL RACE AND THE SECURING BOLT HAS BEEN IGNORED.



RUDDER HINGES			
BOLT DIA.	HOLE IN BRACKET	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0035 \text{ IN.} \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.002 \text{ IN.} \\ -.000 \text{ IN.} \end{smallmatrix}$	.0055 IN.	.010 IN.

JOINT	BOLT DIA.	HOLE IN SOCKET FORK END	BUSH DIA.	HOLE IN LEVER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.000 \text{ IN.} \\ -.002 \text{ IN.} \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$		$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$	.0025 IN.	.005 IN.
B	$\frac{7}{16}$ IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$	$\frac{7}{16}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$		$\frac{7}{16}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$	.0015 IN.	.003 IN.
C	$\frac{3}{8}$ IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.002 \text{ IN.} \\ -.000 \text{ IN.} \end{smallmatrix}$			.003 IN.	.006 IN.
D	$\frac{3}{8}$ IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$			.0015 IN.	.003 IN.
E	$\frac{3}{8}$ IN. $\begin{smallmatrix} -.0003 \text{ IN.} \\ +.0002 \text{ IN.} \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.002 \text{ IN.} \\ -.000 \text{ IN.} \end{smallmatrix}$			.0023 IN.	.0046 IN.
F	$\frac{3}{8}$ IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$			$\frac{3}{8}$ IN. $\begin{smallmatrix} +.002 \text{ IN.} \\ -.000 \text{ IN.} \end{smallmatrix}$	.003 IN.	.006 IN.
G			$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0000 \text{ IN.} \end{smallmatrix}$	$\frac{7}{16}$ IN. $\begin{smallmatrix} +.003 \text{ IN.} \\ +.002 \text{ IN.} \end{smallmatrix}$	.0015 IN.	.003 IN.
H	$\frac{5}{16}$ IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$		$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$	.0015 IN.	.003 IN.
J	$\frac{3}{8}$ IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$	$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$		$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$	.0015 IN.	.003 IN.
K	$\frac{5}{16}$ IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$			$\frac{3}{8}$ IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$	.0015 IN.	.003 IN.
L	$\frac{3}{8}$ IN. $\begin{smallmatrix} -.005 \text{ IN.} \\ -.003 \text{ IN.} \end{smallmatrix}$			$\frac{3}{8}$ IN. $\begin{smallmatrix} +.002 \text{ IN.} \\ -.000 \text{ IN.} \end{smallmatrix}$	.007 IN.	.014 IN.

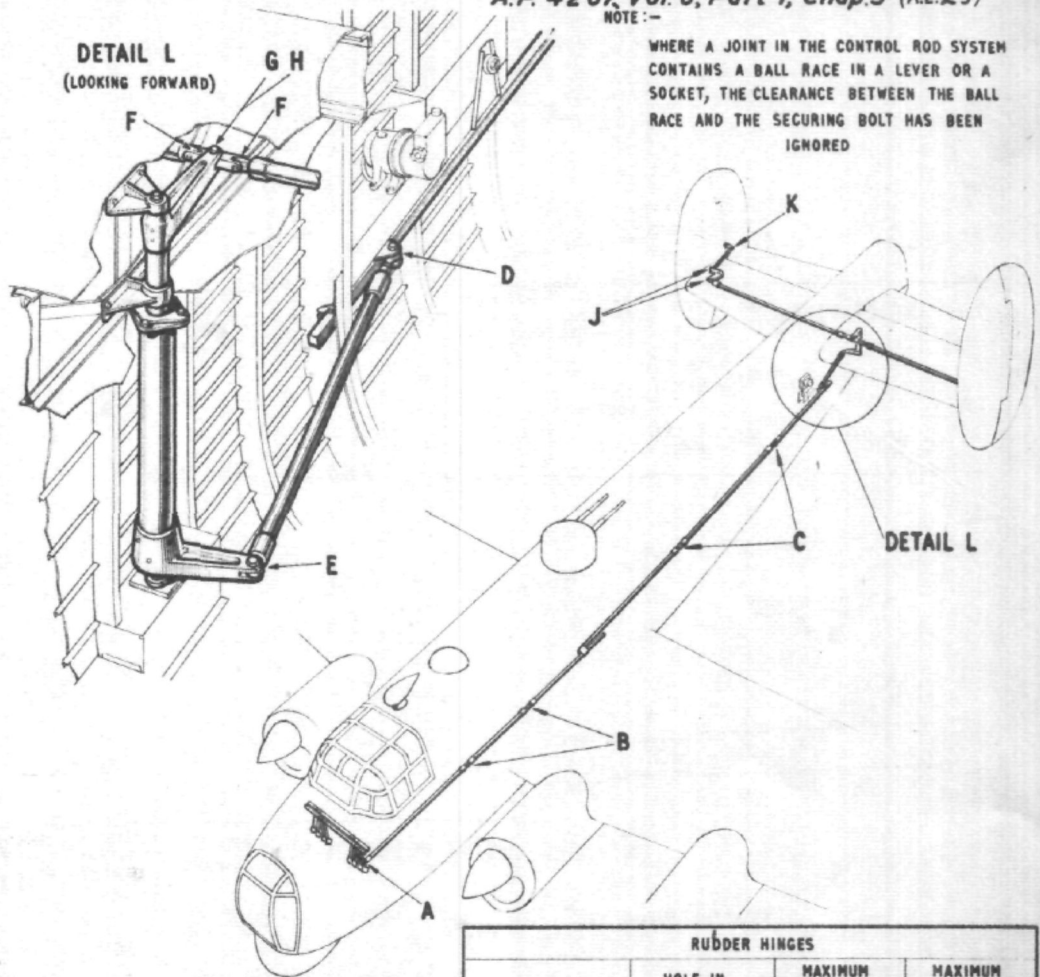
FIG. 3A. RUDDER CONTROLS—FITS AND TOLERANCES—MK 2

(A.L. 25, Feb. 58)

RESTRICTED

NOTE:-

WHERE A JOINT IN THE CONTROL ROD SYSTEM CONTAINS A BALL RACE IN A LEVER OR A SOCKET, THE CLEARANCE BETWEEN THE BALL RACE AND THE SECURING BOLT HAS BEEN IGNORED



RUDDER HINGES			
BOLT DIA.	HOLE IN BRACKET	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
$\frac{3}{8}$ IN. $-.0005$ IN. $-.0055$ IN.	$\frac{3}{8}$ IN. $+.002$ IN. $-.000$ IN.	$-.0055$ IN.	$-.010$ IN.

JOINT	BOLT DIA.	HOLE IN SOCKET FORK END	BUSH DIA.	HOLE IN LEVER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	$\frac{3}{8}$ IN. $+.000$ IN. $-.002$ IN.	$\frac{3}{8}$ IN. $+.0005$ IN.		$\frac{3}{8}$ IN. $+.0005$ IN.	$-.0025$ IN.	$-.005$ IN.
B	$\frac{1}{16}$ IN. $-.001$ IN. $-.0007$ IN.	$\frac{1}{16}$ IN. $+.0005$ IN.		$\frac{1}{16}$ IN. $+.0005$ IN.	$-.0015$ IN.	$-.003$ IN.
C	$\frac{3}{8}$ IN. $-.001$ IN. $-.0007$ IN.	$\frac{3}{8}$ IN. $+.002$ IN. $-.000$ IN.			$-.003$ IN.	$-.006$ IN.
D	$\frac{3}{8}$ IN. $-.001$ IN. $-.0007$ IN.	$\frac{3}{8}$ IN. $+.0005$ IN.			$-.0015$ IN.	$-.003$ IN.
E	$\frac{3}{8}$ IN. $-.001$ IN. $-.0007$ IN.			$\frac{3}{8}$ IN. $+.002$ IN. $-.000$ IN.	$-.003$ IN.	$-.006$ IN.
F	$\frac{3}{8}$ IN. $-.001$ IN. $-.0007$ IN.	$\frac{3}{8}$ IN. $+.0005$ IN.		$\frac{3}{8}$ IN. $+.0005$ IN.	$-.0015$ IN.	$-.003$ IN.
G			$.4385$ IN. $+.0005$ IN. $-.000$ IN.	$\frac{7}{16}$ IN. $+.003$ IN. $+.002$ IN.	$-.0015$ IN.	$-.003$ IN.
H	$\frac{1}{16}$ IN. $-.001$ IN. $-.0007$ IN.		$\frac{1}{16}$ IN. $+.0005$ IN.	$\frac{3}{16}$ IN. $+.0005$ IN.	$-.0015$ IN.	$-.003$ IN.
J	$\frac{3}{16}$ IN. $-.001$ IN. $-.0007$ IN.			$\frac{5}{16}$ IN. $+.0005$ IN.	$-.0015$ IN.	$-.003$ IN.
K	$\frac{3}{8}$ IN. $-.005$ IN. $-.003$ IN.			$\frac{3}{8}$ IN. $+.002$ IN. $-.000$ IN.	$-.007$ IN.	$-.014$ IN.

FIG. 3. RUDDER CONTROLS - FITS AND TOLERANCES - MK. I

(A.L.25, Feb. 58)

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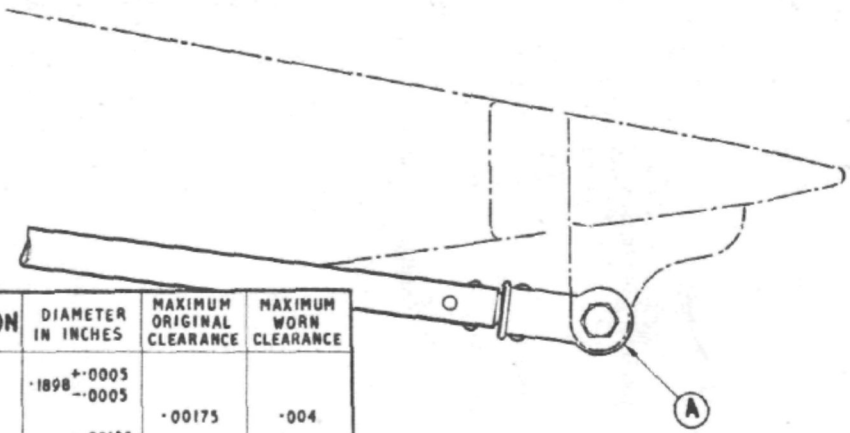
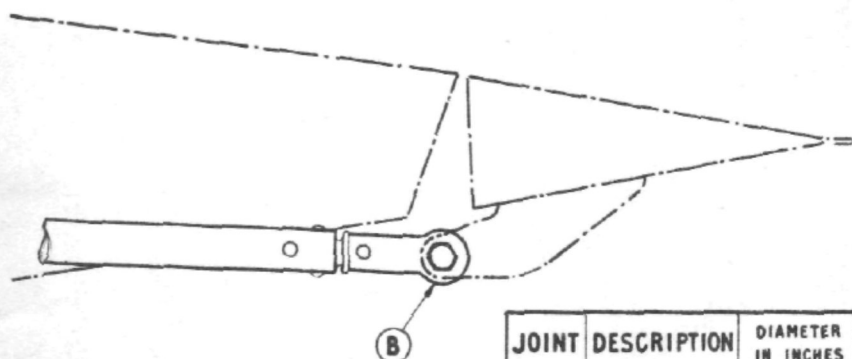


Diagram of Aileron Trim Tab control joint A. It shows a lever connected to a special bolt, which is attached to the trim tab. The lever is shown in two positions: a solid line for the neutral position and a dashed line for the deflected position. The joint is labeled 'A' in a circle.

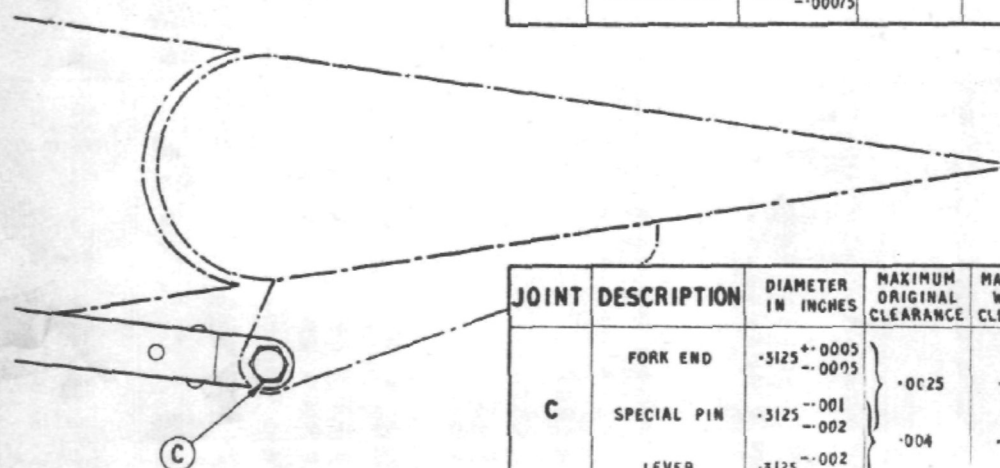
JOINT	DESCRIPTION	DIAMETER IN INCHES	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	LEVER	.1898 $\begin{smallmatrix} +.0005 \\ -.0005 \end{smallmatrix}$	.00175	.004
	SPECIAL BOLT	.1898 $\begin{smallmatrix} -.00125 \\ -.00075 \end{smallmatrix}$		

AILERON TRIM TAB



ELEVATOR TRIM TAB

JOINT	DESCRIPTION	DIAMETER IN INCHES	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
B	LEVER	.1898 $\begin{smallmatrix} +.0005 \\ -.0005 \end{smallmatrix}$	.00175	.004
	SPECIAL BOLT	.1898 $\begin{smallmatrix} -.00125 \\ -.00075 \end{smallmatrix}$		

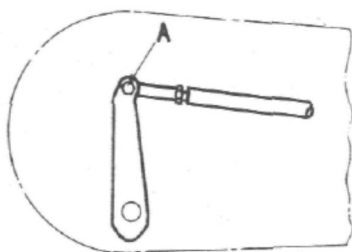


RUDDER TRIM TAB

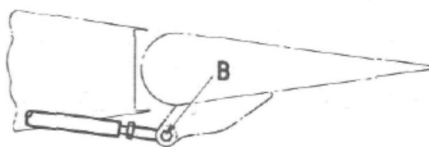
JOINT	DESCRIPTION	DIAMETER IN INCHES	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
C	FORK END	.3125 $\begin{smallmatrix} +.0005 \\ -.0005 \end{smallmatrix}$	.0025	.005
	SPECIAL PIN	.3125 $\begin{smallmatrix} -.001 \\ -.002 \end{smallmatrix}$		
	LEVER	.3125 $\begin{smallmatrix} -.002 \\ -.000 \end{smallmatrix}$	.004	.008

FIG. 4. TRIM TAB CONTROLS-FITS AND TOLERANCES

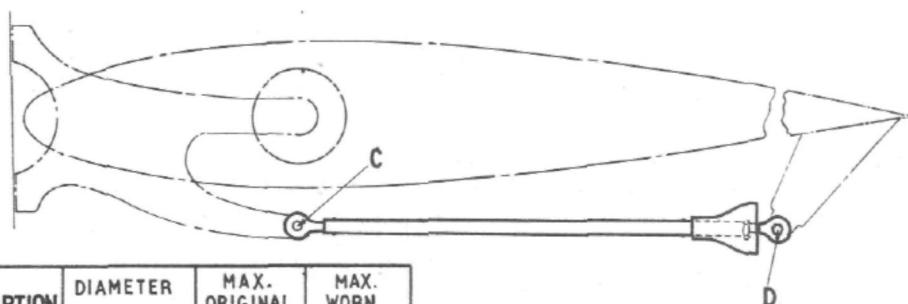
RESTRICTED



RUDDER

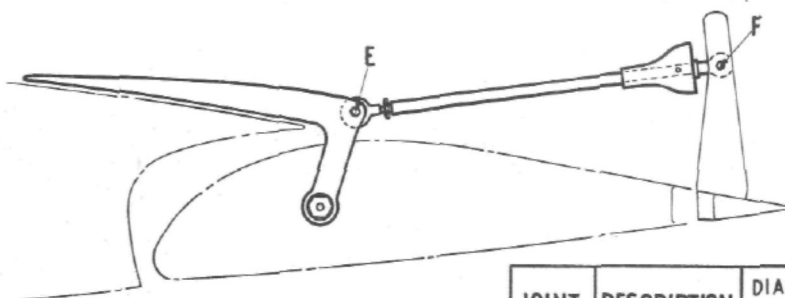


JOINT	DESCRIPTION	DIAMETER IN INCHES	MAX. ORIGINAL CLEARANCE	MAX. WORN CLEARANCE
A	BOLT LEVER	.185 $\pm$.0003 .189 $\pm$.002 -.002	.009 IN.	.029 IN.
B	BOLT LEVER	.185 $\pm$.0003 .191 $\pm$.002 -.002	.012 IN.	.032 IN.



ELEVATOR

JOINT	DESCRIPTION	DIAMETER IN INCHES	MAX. ORIGINAL CLEARANCE	MAX. WORN CLEARANCE
C	BOLT LEVER	.189 $\pm$.0003 .189 $\pm$.002 -.002	.0055 IN.	.025 IN.
D	BOLT LEVER	.189 $\pm$.0003 .189 $\pm$.002 -.002	.006 IN.	.025 IN.

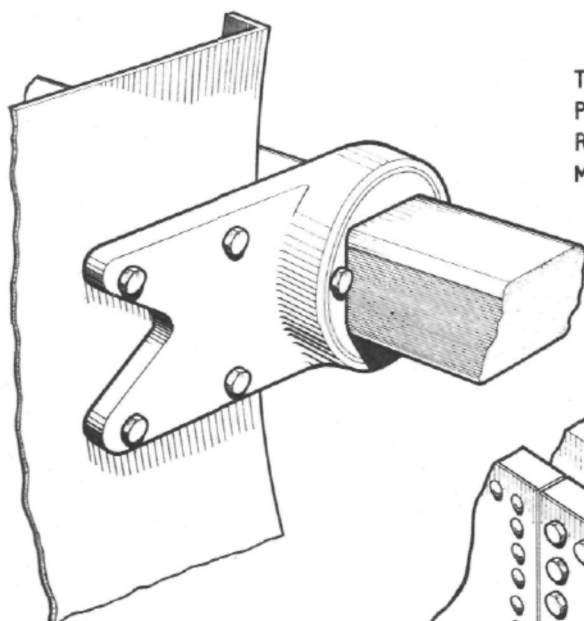


AILERON

JOINT	DESCRIPTION	DIAMETER IN INCHES	MAX. ORIGINAL CLEARANCE	MAX. WORN CLEARANCE
E	BOLT LEVER	.189 $\pm$.0003 .189 $\pm$.002 -.002	.0045 IN.	.025 IN.
F	BOLT LEVER	.185 $\pm$.0003 .189 $\pm$.002 -.002	.012 IN.	.032 IN.

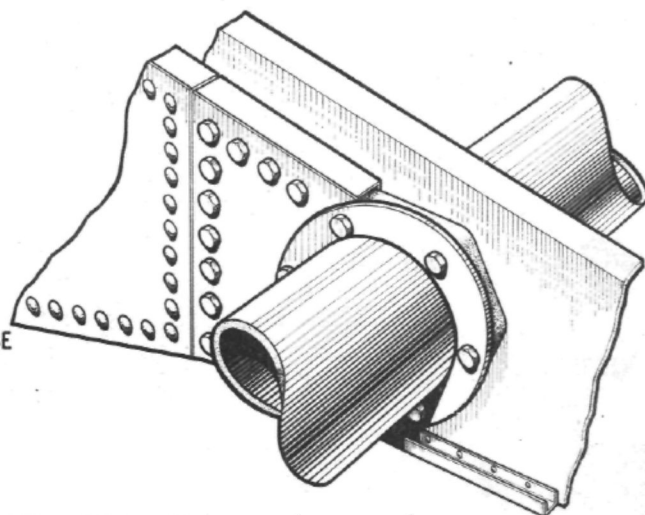
FIG. 5. SERVO TAB CONTROLS - FITS AND TOLERANCES

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TYPICAL VIEW OF
PUSH-PULL CONTROL
ROD (SQUARE)
MK.I. ONLY

TYPICAL VIEW OF
FLAP-OPERATING TUBE



PUSH-PULL FLYING CONTROLS (MK.I. ONLY)

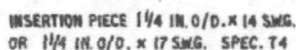
PART No.	DESCRIPTION	DIMENSION NEW	MAX. WORN DIMENSION	ORIGINAL CLEARANCE	MAX. WORN CLEARANCE
2/R2977	SQUARE BEARING I/D	1.25 +.002 - .003 IN.	1.275 IN.	.008 IN. MIN. .015 IN. MAX.	.035 IN. *
R 3800	SQUARE CONTROL ROD	1.25 - .011 - .013 IN.	1.225 IN.		
FLAP-OPERATING TUBE (MK.I. AND 2.)					
9/F4363	FLAP TUBE BEARING I/D	3.05 +.00 - .01 IN.	3.107 IN.	.023 IN. MIN. .067 IN. MAX.	.090 IN. *
F 5432	FLAP TUBE O/D	3.0 +.017 - .017 IN.	2.98 IN.		

* THE CLEARANCE BETWEEN A WORN CONTROL TUBE AND A WORN BEARING MUST NOT EXCEED THE FIGURES STATED. FOR EXAMPLE A "MAX. WORN" CONTROL TUBE AND A "MAX. WORN" BEARING WILL PRODUCE A TOTAL WORN CLEARANCE GREATER THAN THAT STATED. THIS IS NOT PERMISSIBLE

FIG.6. CONTROL TUBES AND BEARINGS - FITS AND TOLERANCES

RESTRICTED

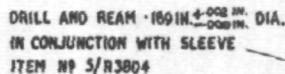
(A.L.25)



6 HOLES-DRILL MORSE #11 (.191 IN.) DIA.
IN CONJUNCTION WITH ITEM 2 AND
COUNTERSINK ALL HOLES 120°

RIVETS TO BE FILED
FLUSH WITH TUBE,
FILING TO BE ALONG TUBE
AND NOT ROUND IT

INSERTION REPAIR FOR 14 SW.G. AND 17 SW.G. $\times 1\frac{1}{4}$ IN. O/D. TUBES



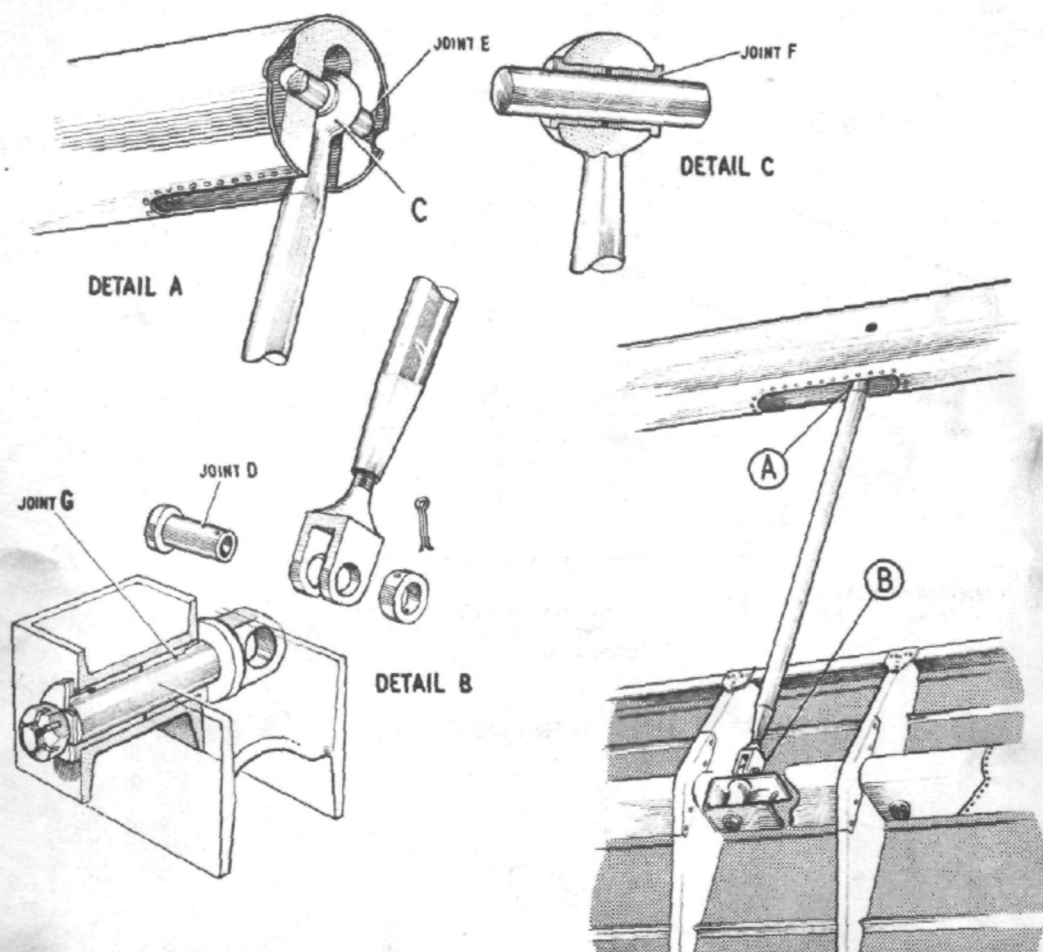
NOTE - THIS REPAIR MUST ONLY BE USED IN THAT PORTION OF A CONTROL TUBE WHICH DOES NOT PASS THROUGH A BEARING OR FAIRLEAD

INSERTION REPAIR FOR 17 S.W.G. x 1½ IN. O/D. TUBES

FIG. 7. INSERTION REPAIRS TO CONTROL TUBES

(A.L.25, Feb. 58)

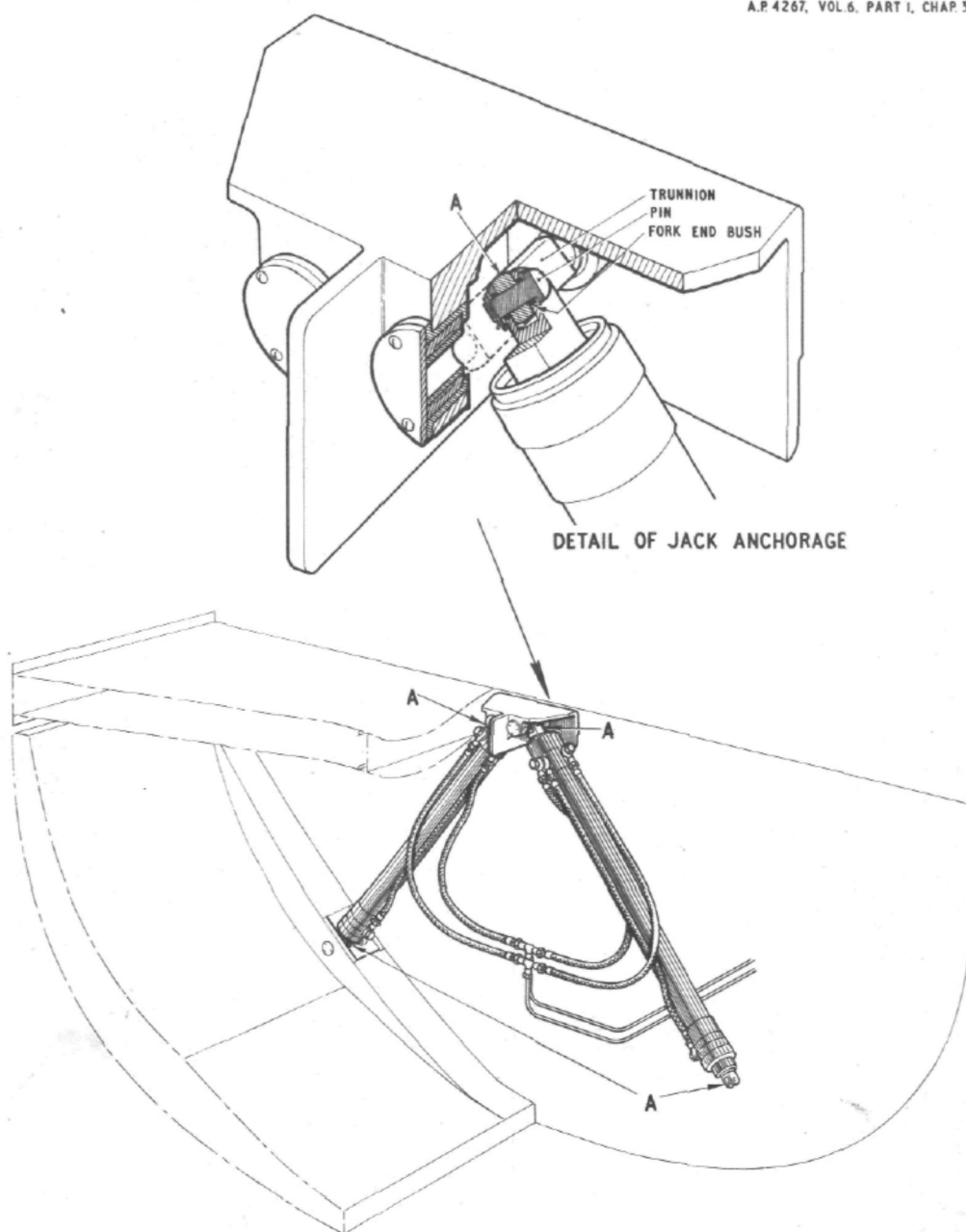
RESTRICTED



PART No.	JOINT	DESCRIPTION	ORIGINAL DIMENSION	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN DIMENSION	MAXIMUM WORN CLEARANCE
4/F3911	D	EYEBOLT (FLAP LINK)	.5005 IN.	.0025 IN.	.5025 IN.	.004 IN.
5/F3911		PIN	.4995 IN.		.495 IN.	
4/F3749		EYEBOLT (FLAP SPAR)	.499 IN.		.5025 IN.	
			.498 IN.			
			.5005 IN.			
			.4995 IN.			
8/F3911	E	PIN (FLAP OPERATING GEAR)	.62475 IN.	.0015 IN.	.621 IN.	.007 IN.
6/F3917		SOCKET (FLAP OPERATING GEAR)	.62425 IN.		.628 IN.	
			.62375 IN.			
			.6245 IN.			
8/F3911	F	PIN (FLAP OPERATING GEAR)	.62475 IN.	.00475 IN.	.621 IN.	.012 IN.
3/F3911		BUSH (FLAP LINK)	.62425 IN.		.633 IN.	
			.629 IN.			
			.628 IN.			
4/F3749	G	EYEBOLT (FLAP SPAR)	.624 IN.	.00275 IN.	.615 IN.	.010 IN.
3/F3749		BUSH	.625 IN.		.628 IN.	
			.62375 IN.			
			.6245 IN.			

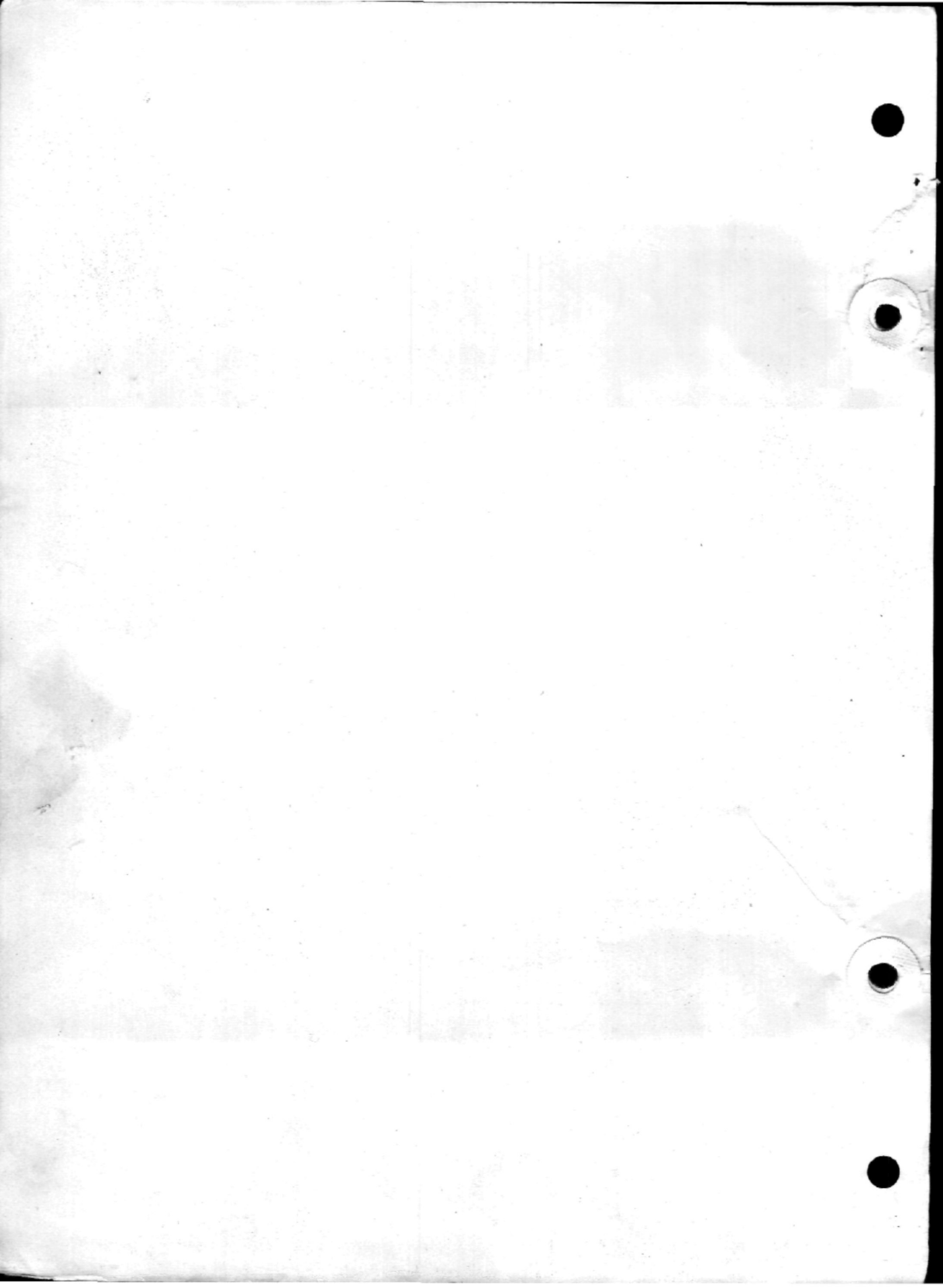
FIG. 8. FLAP OPERATING LINK—FITS AND TOLERANCES

RESTRICTED



PART NO	REF.	DESCRIPTION	ORIGINAL DIMENSION	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN DIMENSION	MAXIMUM WORN CLEARANCE
D4007Y/18 (DOWTY)	A	FORK END BUSH	.5005 IN. .4995 IN.	.0055 IN. .007 IN.	.502 IN.	.009 IN. .011 IN.
SP4/M/17		PIN	.499 IN. .495 IN.		.49 IN.	
195/D6290		TRUNNION	.502 IN. .500 IN.		.506 IN.	

FIG.9. BOMB DOOR JACK MTGS.-FITS AND TOLERANCES



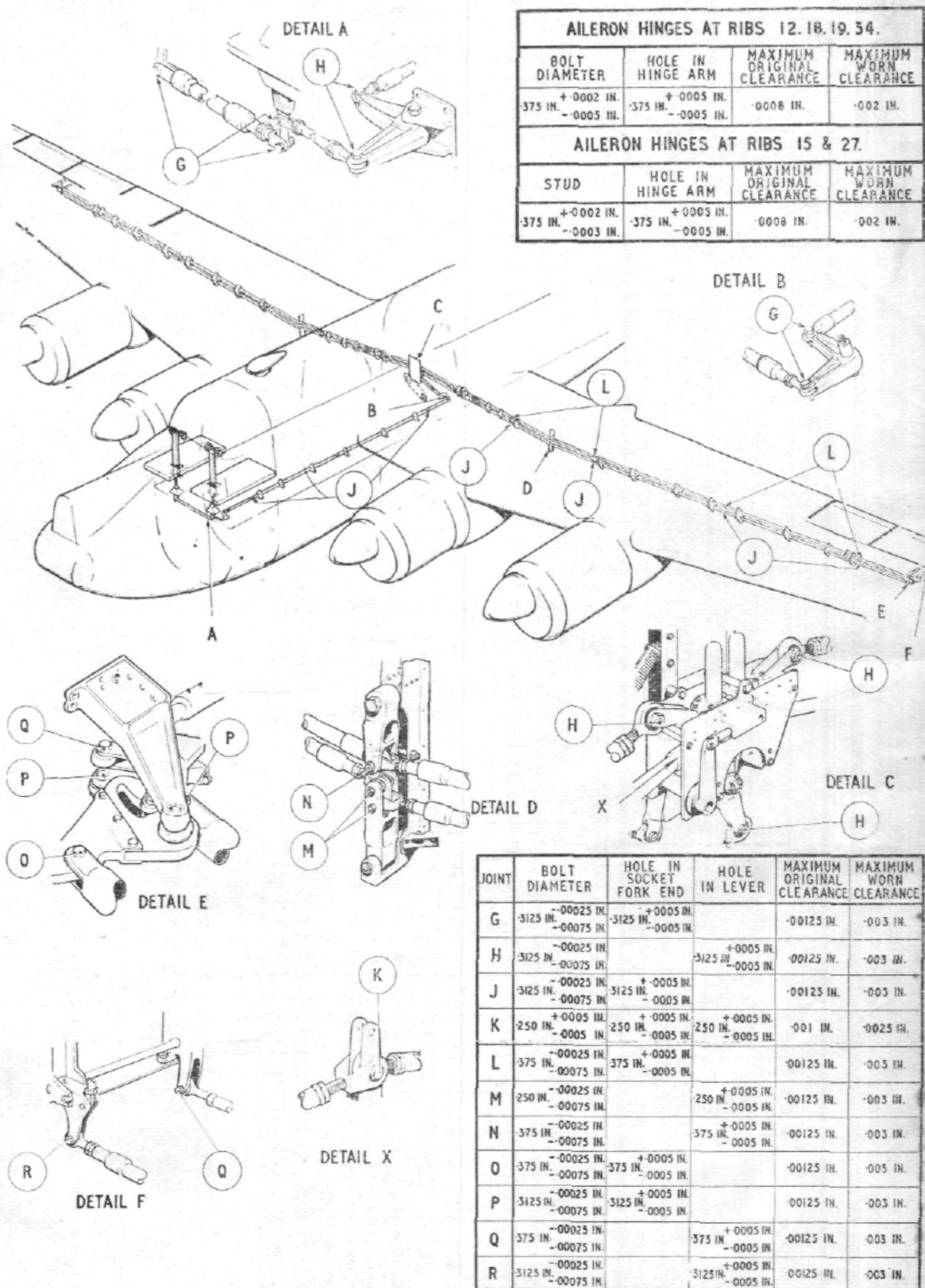
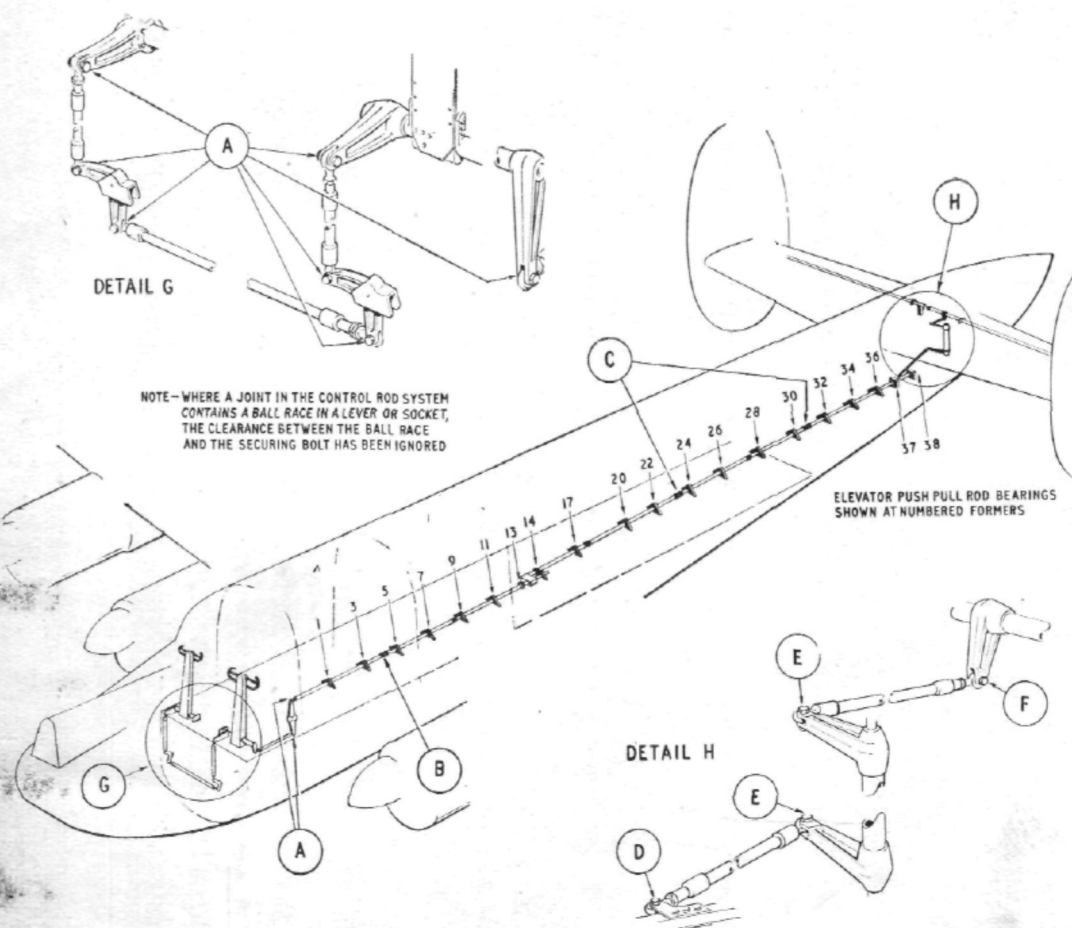


Fig. 10. Aileron controls fits and tolerances—Mk. 3

(A.L.21, Oct. 57)

RESTRICTED



ELEVATOR CONTROLS

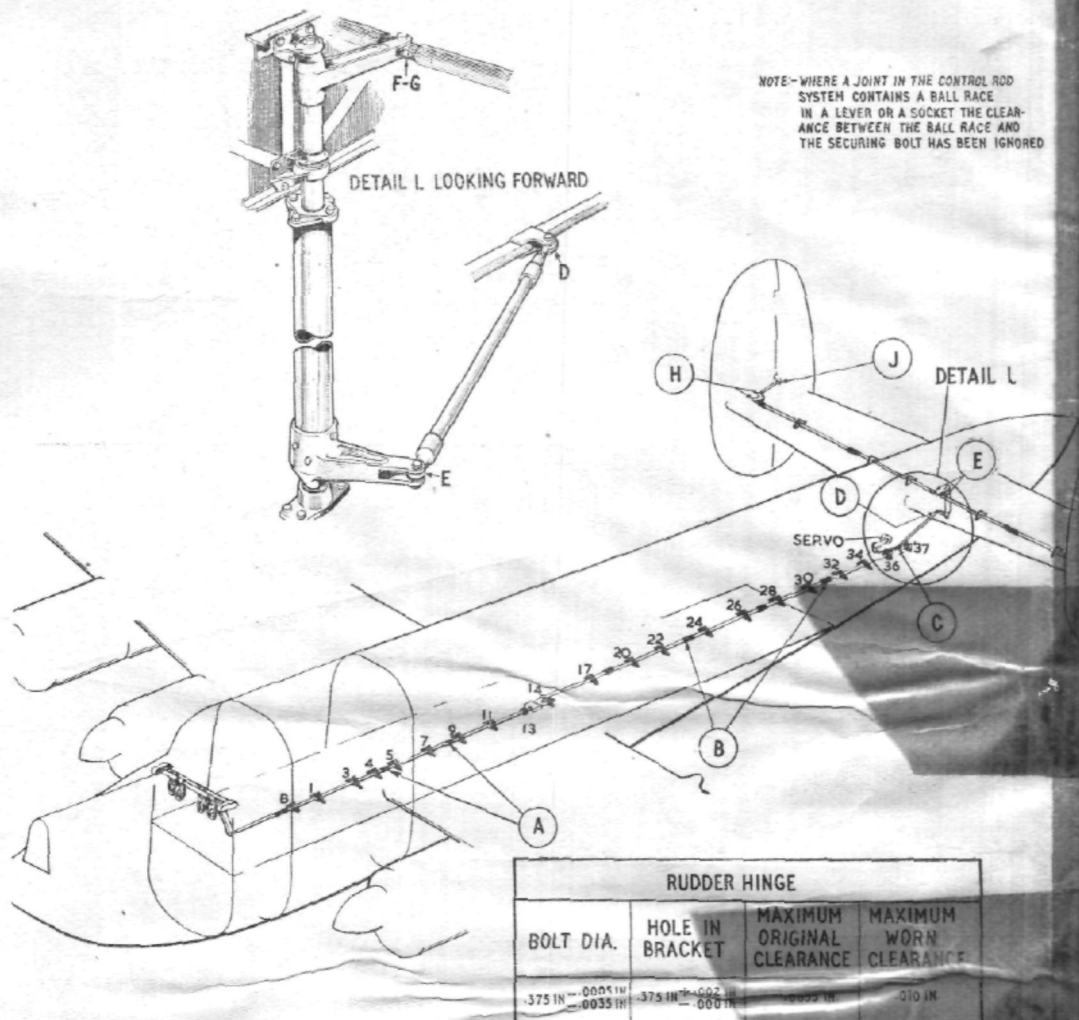
JOINT	BOLT DIAMETER	HOLE IN SOCKET FORK END	BUSH DIAMETER	HOLE IN LEVER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	.375 IN. $\begin{smallmatrix} -.00023 \text{ IN.} \\ -.00075 \text{ IN.} \end{smallmatrix}$		$\begin{smallmatrix} 1/8 \text{ D } .375 \text{ IN. } +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \\ 0 \text{ D } .50 \text{ IN. } +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$	.50 IN. $\begin{smallmatrix} -.0305 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$	$\begin{smallmatrix} .00035 \text{ IN.} \\ .00035 \text{ IN.} \end{smallmatrix}$	$\begin{smallmatrix} .0015 \text{ IN.} \\ .0015 \text{ IN.} \end{smallmatrix}$
B	.4375 IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$	.4375 IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$			.0015 IN.	.003 IN.
C	.3125 IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$	.3125 IN. $\begin{smallmatrix} +.0005 \text{ IN.} \\ -.0005 \text{ IN.} \end{smallmatrix}$			.0015 IN.	.003 IN.
D	.3125 IN. $\begin{smallmatrix} -.001 \text{ IN.} \\ -.0007 \text{ IN.} \end{smallmatrix}$			.3125 IN. $\begin{smallmatrix} +.00025 \text{ IN.} \\ -.00025 \text{ IN.} \end{smallmatrix}$	.00125 IN.	.003 IN.
E	.375 IN. $\begin{smallmatrix} +.0002 \text{ IN.} \\ -.0003 \text{ IN.} \end{smallmatrix}$			.375 IN. $\begin{smallmatrix} +.002 \text{ IN.} \\ -.000 \text{ IN.} \end{smallmatrix}$	.0023 IN.	.0046 IN.
F	.375 IN. $\begin{smallmatrix} -.00025 \text{ IN.} \\ -.00075 \text{ IN.} \end{smallmatrix}$			.375 IN. $\begin{smallmatrix} +.00025 \text{ IN.} \\ -.00025 \text{ IN.} \end{smallmatrix}$	.001 IN.	.002 IN.

ELEVATOR HINGES

BOLT DIAMETER	HOLE IN BRACKET	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
.375 IN. $\begin{smallmatrix} +.000 \text{ IN.} \\ -.002 \text{ IN.} \end{smallmatrix}$	.375 IN. $\begin{smallmatrix} +.002 \text{ IN.} \\ -.000 \text{ IN.} \end{smallmatrix}$	.004 IN.	.010 IN.

Fig. 11. Elevator controls fits and tolerances—Mk. 3

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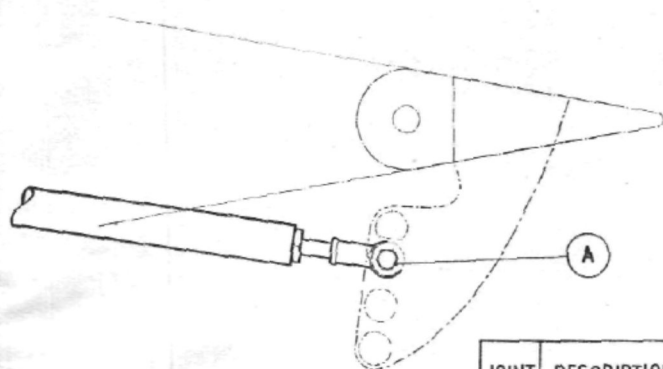


JOINT	BOLT DIA.	HOLE IN SOCKET FORK END	BUSH DIA.	HOLE IN LEVER	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	.4375 IN. $\pm$.001 IN. -.0007 IN.	.4375 IN. $\pm$.0005 IN.		.4375 IN. $\pm$.0005 IN.	.002 IN.	.004 IN.
B	.3750 IN. $\pm$.001 IN. -.0007 IN.	.3750 IN. $\pm$.002 IN. -.000 IN.			.003 IN.	.006 IN.
C	.3750 IN. $\pm$.001 IN. -.0007 IN.	.3750 IN. $\pm$.0005 IN.			.0015 IN.	.003 IN.
D	.3750 IN. $\pm$.001 IN. -.0007 IN.			.3750 IN. $\pm$.002 IN. -.000 IN.	.003 IN.	.006 IN.
E	.3750 IN. $\pm$.001 IN. -.0007 IN.	.3750 IN. $\pm$.0005 IN.		.3750 IN. $\pm$.0005 IN.	.0015 IN.	.003 IN.
F			.4385 IN. $\pm$.0005 IN. -.000 IN.	.4375 IN. $\pm$.003 IN. -.002 IN.	.002 IN.	.004 IN.
G	.3125 IN. $\pm$.001 IN. -.0007 IN.		.3125 IN. $\pm$.0005 IN.	.3125 IN. $\pm$.0005 IN.	.002 IN.	.004 IN.
H	.3125 IN. $\pm$.001 IN. -.0007 IN.			.3125 IN. $\pm$.0005 IN.	.0015 IN.	.003 IN.
J	.3125 IN. $\pm$.005 IN. -.003 IN.			.3125 IN. $\pm$.002 IN. -.000 IN.	.007 IN.	.014 IN.

Fig. 12. Rudder controls fits and tolerances—Mk. 3

(A.L.21, Oct. 57)

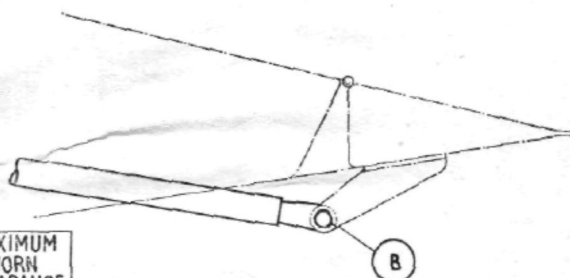
RESTRICTED



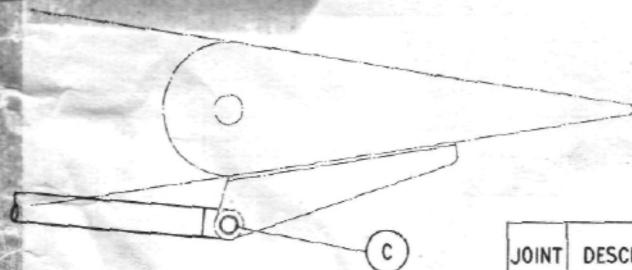
AILERON TRIM TAB

JOINT	DESCRIPTION	DIAMETER IN INCHES	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	LEVER	.1898 $\pm .0005$ + .0001	.00125	.004
	SPECIAL BOLT	.1898 $\pm .00075$ - .00025		

ELEVATOR TRIM TAB



JOINT	DESCRIPTION	DIAMETER IN INCHES	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
B	LEVER	.1898 $\pm .0005$ - .0005	.00175	.004
	SPECIAL BOLT	.1828 $\pm .00125$ - .00075		

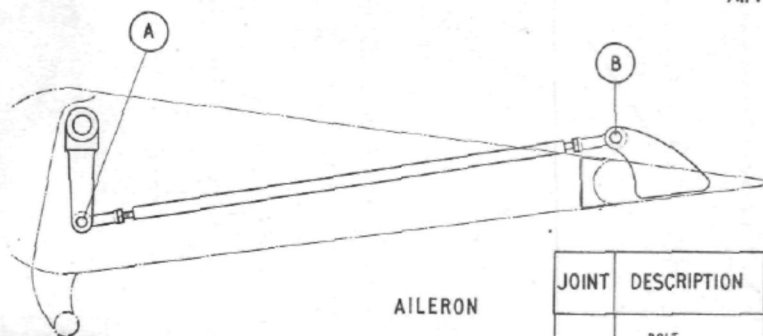


RUDDER TRIM TAB

JOINT	DESCRIPTION	DIAMETER IN INCHES	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
C	FORK END	.3125 $\pm .0005$ - .0005	.0025	.005
	SPECIAL PIN	.3125 $\pm .001$ - .002		
	LEVER	.3125 $\pm .002$ - .000	.004	.008

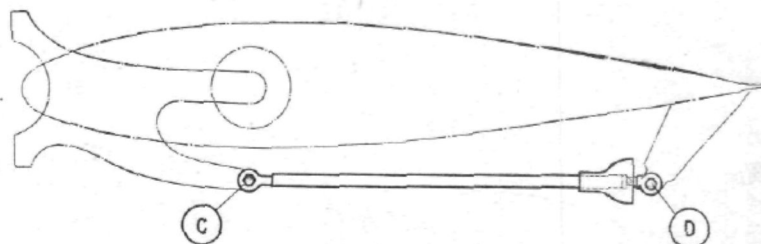
Fig. 13. Trim tab controls—fits and tolerances—Mk. 3

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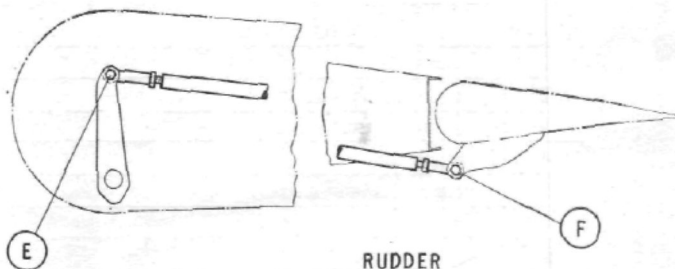
AILERON

JOINT	DESCRIPTION	DIAMETER IN INCHES	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
A	BOLT LEVER	$\begin{matrix} .1698 & - & .00025 \\ & & .00075 \\ .1898 & + & .0005 \\ & & - & .0005 \end{matrix}$	$\begin{matrix} .00125 \text{ IN.} \\ .00125 \text{ IN.} \end{matrix}$	$\begin{matrix} .0125 \text{ IN.} \\ .0125 \text{ IN.} \end{matrix}$
B	BOLT LEVER	$\begin{matrix} .1898 & - & .00025 \\ & & .00075 \\ .1898 & + & .0005 \\ & & - & .0005 \end{matrix}$	$\begin{matrix} .00125 \text{ IN.} \\ .00125 \text{ IN.} \end{matrix}$	$\begin{matrix} .0125 \text{ IN.} \\ .0125 \text{ IN.} \end{matrix}$



ELEVATOR

JOINT	DESCRIPTION	DIAMETER IN INCHES	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
C	BOLT LEVER	$\begin{matrix} .189 & + & .000 \\ & & - & .0003 \\ .189 & + & .005 \\ & & - & .000 \end{matrix}$	$\begin{matrix} .0055 \text{ IN.} \\ .0055 \text{ IN.} \end{matrix}$	$\begin{matrix} .025 \text{ IN.} \\ .025 \text{ IN.} \end{matrix}$
D	BOLT LEVER	$\begin{matrix} .189 & + & .000 \\ & & - & .0005 \\ .189 & + & .001 \\ & & - & .000 \end{matrix}$	$\begin{matrix} .0015 \text{ IN.} \\ .0015 \text{ IN.} \end{matrix}$	$\begin{matrix} .025 \text{ IN.} \\ .025 \text{ IN.} \end{matrix}$



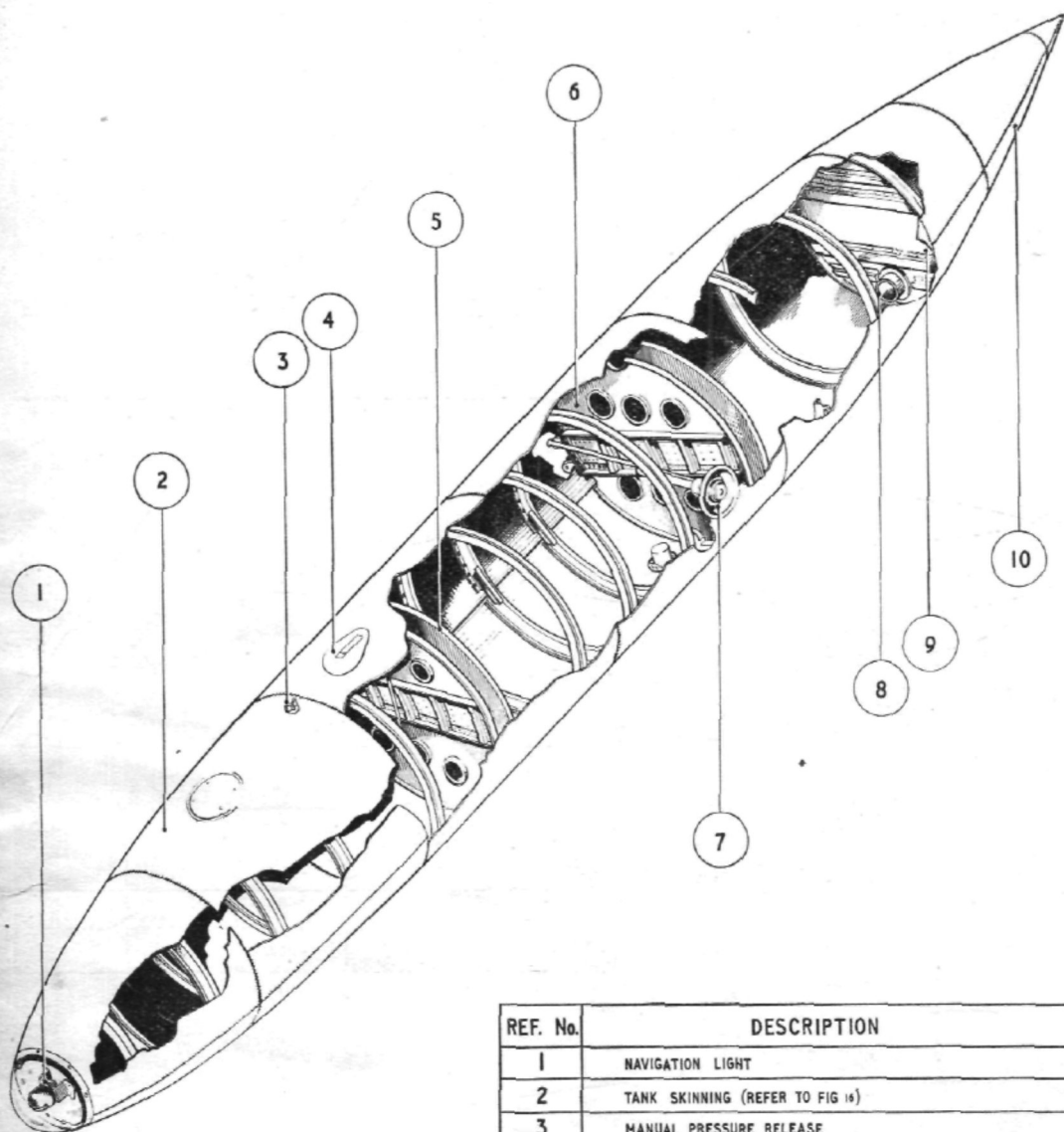
RUDDER

JOINT	DESCRIPTION	DIAMETER IN INCHES	MAXIMUM ORIGINAL CLEARANCE	MAXIMUM WORN CLEARANCE
E	BOLT LEVER	$\begin{matrix} .1898 & - & .00025 \\ & & .00075 \\ .1898 & + & .002 \\ & & - & .000 \end{matrix}$	$\begin{matrix} .00275 \text{ IN.} \\ .00275 \text{ IN.} \end{matrix}$	$\begin{matrix} .029 \text{ IN.} \\ .029 \text{ IN.} \end{matrix}$
F	BOLT LEVER	$\begin{matrix} .1898 & - & .00025 \\ & & .00075 \\ .191 & + & .005 \\ & & - & .000 \end{matrix}$	$\begin{matrix} .00695 \text{ IN.} \\ .00695 \text{ IN.} \end{matrix}$	$\begin{matrix} .032 \text{ IN.} \\ .032 \text{ IN.} \end{matrix}$

Fig. 14. Servo tab controls—fits and tolerances—Mk. 3

(A.L.21, Oct. 57)

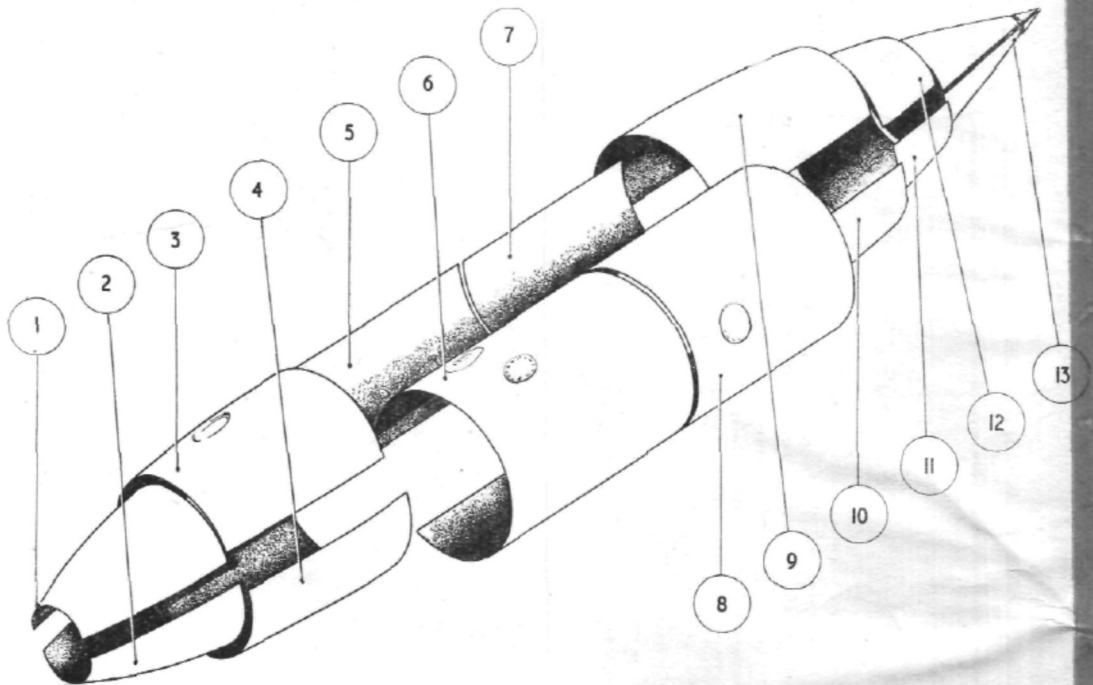
RESTRICTED



REF. No.	DESCRIPTION
1	NAVIGATION LIGHT
2	TANK SKINNING (REFER TO FIG 14)
3	MANUAL PRESSURE RELEASE
4	FILLER
5	FORWARD SUPPORT BULKHEAD
6	REAR SUPPORT BULKHEAD
7	FUEL CONTENTS GAUGE
8	JETTISON PIPE
9	REAR BULKHEAD
10	DETACHABLE TAIL CONE

Fig. 15. Wing tip tank

RESTRICTED



REF. No.	PART No.		S.W.G.	SPEC.
	PORT	STARBOARD		
1	19P3130	19P3130	18	L59
2	19P3130	19P3130	18	L59
3	90P3130	90P3130	18	L59
4	20P3130	20P3130	18	L59
5	27P3130	28P3130	12	L59
6	21P3130	22P3130	16	L59
7	70P3130	71P3130	12	L59
8	23P3130	24P3130	16	L59
9	29P3130	29P3130	18	L59
10	25P3130	26P3130	18	L59
11	12P3130	12P3130	18	L59
12	12P3130	12P3130	18	L59
13	72P3130	72P3130	16	L59

Fig. 16. Wing tip tank—skin plating

