

CHAPTER 7

TAIL UNIT
(including tail booms)

CHAPTER 7

TAIL BOOM AND TAIL UNIT

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Description

1. There is a difference in detail design in the tail units of single- and two-seater types of the aircraft. Generally the tail unit is of metal and comprises twin tail booms, fins and rudders and a single tail plane and elevator attached spanwise across the ends of the booms. In fig. 7/26 to 7/29 the two-seater tail plane is separately illustrated, the single-seater tail plane being illustrated in fig. 7/2. The method to be adopted in repairing damage to either type is the same.

Definitions of negligible and repairable damage

2. Definitions of damage with references to the figures illustrating suitable methods of repair will be found listed in the table overleaf where also reference is made to the relevant key diagrams for the various members concerned.

Wear limits

3. Wear limits for all male and female parts of the principal fittings in the tail boom and tail unit will be found listed in tables opposite the pertinent key diagrams and reference should be made to Chap. 1, para. 14, for details of the method to be used in applying the information included in the tables.

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TAIL BOOM AND TAIL UNIT

Definitions of negligible and repairable damage

Component	Damage definition		Repair fig. No.	Repair material item No.	Key diagram fig. No.
	Negligible damage	Repairable damage			
TAIL BOOM					
Skin					
Top and bottom panels	Dents or bruises 0.03 in. deep 1.0 in. dia. 12.0 in. apart	4.0 in. dia. 18.0 in. apart	7/3	13, 16, 40, 41	7/1 7/26
Side panels	Dents or bruises 0.05 in. deep 2.0 in. dia. 12.0 in. apart	0.5 in. dia. } 1.0 in. dia. } 12.0 in. apart 2.0 in. dia. } 4.0 in. x 2.5 in. } 18.0 in. apart 8.0 in. x 4.0 in. } 8.0 in. insertion } 24.0 in. apart 16.0 in. insertion }	7/18 7/7 7/4 7/6 7/5	16, 38, 39, 57, 58 13, 16, 38, 39, 41 16, 35, 39 13, 38, 39	
Diaphragms	Dents or bruises 0.03 in. deep 1.5 in. dia. 12.0 in. apart	0.5 in. dia. 12.0 in. apart Renewal of (Two only in a stringer, 12.0 in. apart) flange between stringers	7/18 7/6	16, 58, 39, 57, 58 13, 16, 38, 39, 41	
Stringers	Dents or bruises 0.02 in. deep 0.5 in. dia. 12.0 in. apart	Insertion up to 12.0 in. 24.0 in. apart	7/24	16, 28, 29, 38, 39	
TAIL UNIT					
Skins		0.5 in. dia. } 1.0 in. dia. } 12.0 in. apart 2.0 in. dia. } 3.0 in. dia. }	7/18 7/19	16, 38, 39, 55, 65 19, 20, 35, 36, 45, 55, 64	7/8, 7/9, 7/10, 7/15, 7/16, 7/27, 7/28, 7/29
		5.0 in. dia. } 8.0 in. x 5.0 in. } 18.0 in. apart 8.0 in. insertion } at nose }	7/20 7/21	18, 19, 20, 37, 38, 42, 43 18, 19, 45, 46, 56, 65	
Spars					
Webs	Dents or bruises 0.03 in. deep 1.0 in. dia. 12.0 in. apart	0.5 in. dia. } 1.0 in. dia. } 18.0 in. apart 2.0 in. dia. }	7/18	16, 38, 39, 55, 65	
Flanges		1.0 in. wide involving 1.0 in. depth of web 18.0 in. apart	7/23	19, 20, 28, 29, 53, 54, 61	7/11, 7/12, 7/14, 7/17, 7/27, 7/28, 7/29
Ribs					
Webs		1.0 in. dia.	7/22	19, 20, 28, 29, 53, 61	
Flanges		1.0 in. wide involving 1.0 in. depth of web 18.0 in. apart	7/23	19, 20, 28, 29, 53, 52, 61	
Stringers	Dents or bruises 0.02 in. deep 1.0 in. dia. 12.0 in. apart	Insertions up to 12.0 in. length. Applies to single and double stringers. Insertions must be at least 24.0 in. apart	7/24	16, 28, 29, 38, 39	7/9, 7/10, 7/15, 7/27, 7/29
Fairings					
Skin	Dents or bruises 0.03 in. deep 1.0 in. dia. 12.0 in. apart	2.0 in. dia. 12.0 in. apart	7/18	16, 38, 39, 56, 65	7/30
Ribs		1.0 in. dia.	7/23	19, 20, 28, 29, 52, 53, 61	
Webs		1.0 in. wide, involving 1.0 in. depth of web			
Flanges					

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TAIL BOOM

Key to items shown on fig. 7/1

Assembly J.00551-2, Mk. 3 and 5
J.001732, Mk. 20

Key No.	Part numbers		Material	Specification	S.W.G.	Description
	Port	Starboard				
1	J.00657ND	J.00657ND	Alclad	D.T.D.390	10	Top plate
2	J.00658ND	J.00658ND			10	Bottom plate
3	J.00659ND—L.H. J.00660ND—R.H.	J.00660ND—L.H. J.00659ND—R.H.			16	Side plate
4	J.001202	J.001202	Dural	L.40	Forging	Jointing angle
5	J.00931ND	J.00932ND				Diaphragm—assembled on J.00691-2A
6	J.00933ND	J.00934ND				Diaphragm—assembled on J.00693-4A
7	J.00935ND	J.00935ND	Alclad	L.38 or D.T.D.390	20	Diaphragm—assembled on J.00695-6A
8	J.00937ND	J.00938ND			20	Diaphragm—assembled on J.00697-8A
9	J.00939ND	J.00939ND			20	Diaphragm—assembled on J.00699-700A
10	J.00941ND	J.00942ND	Alclad	L.38 or D.T.D.390	20	Diaphragm—assembled on J.00701-2A
11	J.00943ND	J.00944ND			20	Diaphragm—assembled on J.00703-4A
12	J.00763	J.00763			20	Diaphragm
13	J.00621ND—L.H. J.00622ND—R.H.	J.00621ND—L.H. J.00622ND—R.H.	Alclad	L.38 or D.T.D.390	18	Packing plate
14	J.00623ND—L.H. J.00624ND—R.H.	J.00623ND—L.H. J.00624ND—R.H.			18	
15	J.00619ND	J.001232ND			14	Reinforcing plate
16	J.001233ND	J.00620ND	—	—	—	Stringer
17	J.00618ND	J.00618ND			—	Reynolds A.115-1
18	J.00957ND	J.00957ND			16	Door
19	J.0063	J.0063	Alclad	D.T.D.390	18	Nut plate—assembled on J.0066A
20	J.00958ND	J.00958ND			16	Cover plate
21	J.0064	J.0064			18	Nut plate—assembled on J.0067A
22	J.00959ND	J.00959ND	Alclad	D.T.D.390	16	Cover plate
23	J.0065	J.0065			18	Nut plate—assembled on J.0068A
24	J.00766	J.00766			16	Cover plate
25	J.001589ND	J.001589ND	—	—	20	Bracket
26	J.00133	J.00133			18	Reinforcing plate
27	J.00484A	J.00484A			16	Cover plate
28	K.00355A	K.00355A	Alclad	D.T.D.390	—	Assembly of shock pad
29	J.001747ND	J.001747ND			—	Bottom control bracket
30	J.001749	J.001749			18	Extension plate
31	J.001745ND	J.001745ND	M.S.	S.3	—	Shock pad diaphragm
32	J.001748	J.001748			18	Lower nut plate
33	J.001753ND	J.001753ND			12	Shock pad diaphragm Rubbing strip

Note.—Items 29-33 are exclusive to Mk. 20 aircraft

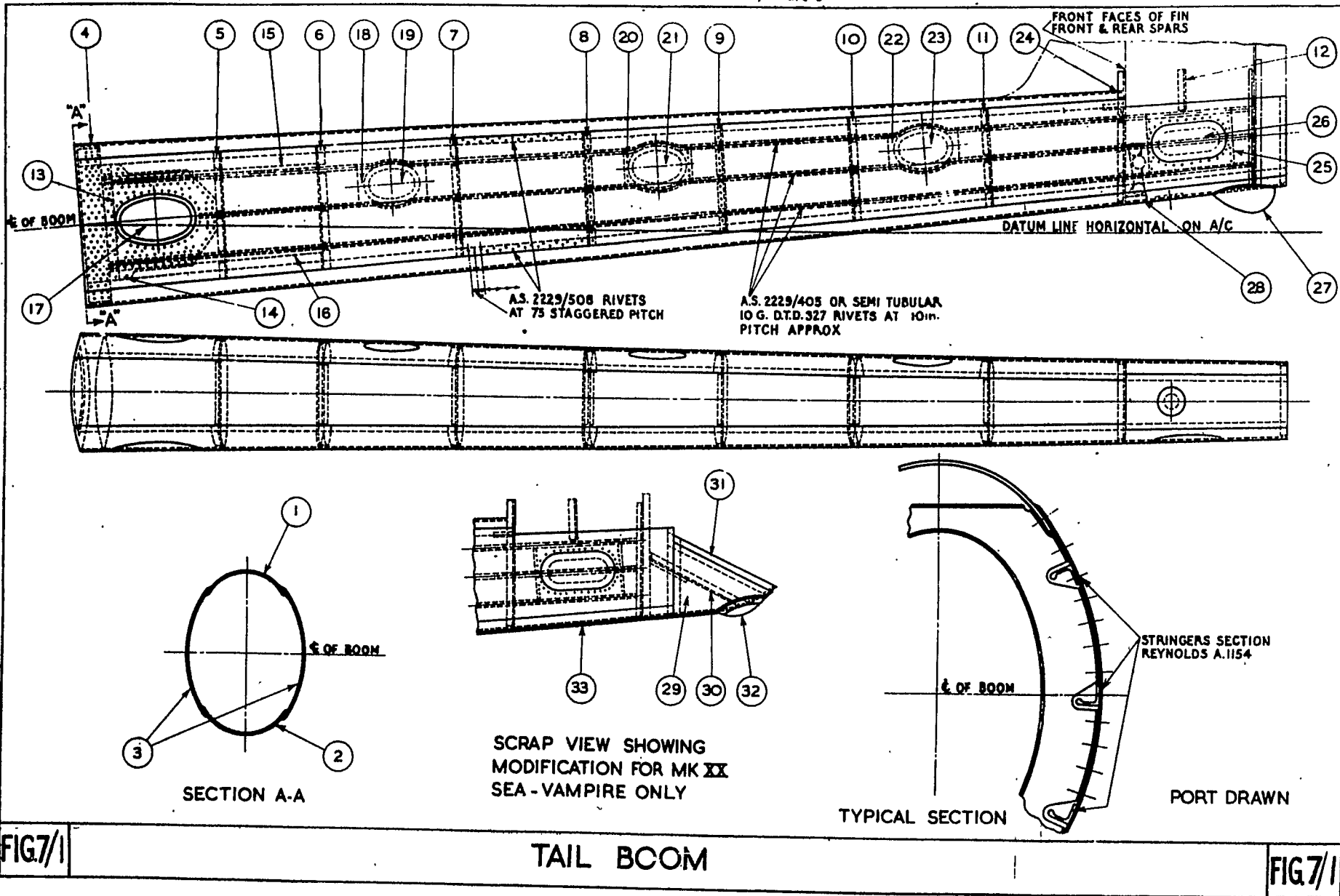


FIG7/1

TAIL BOOM

FIG7/1

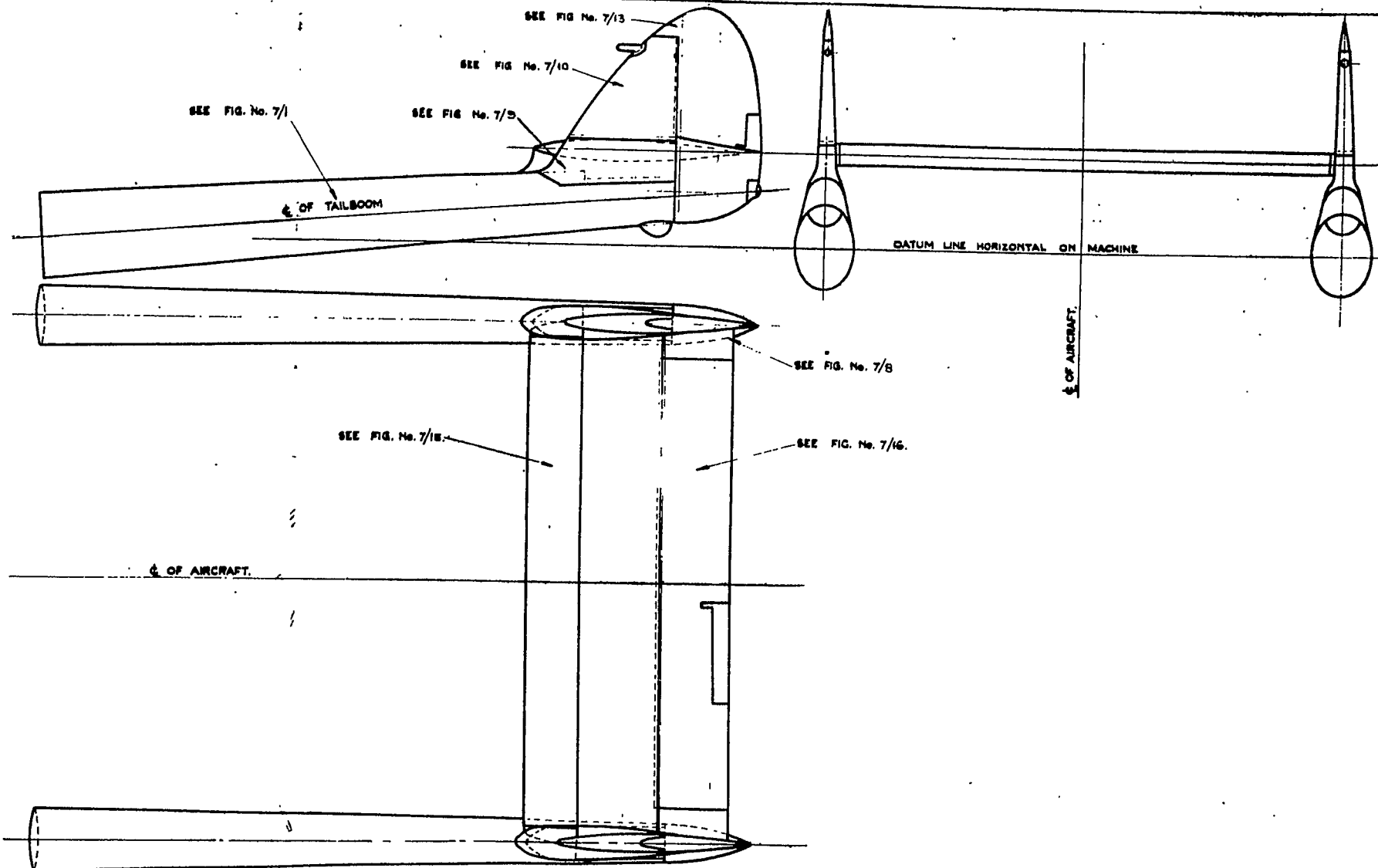
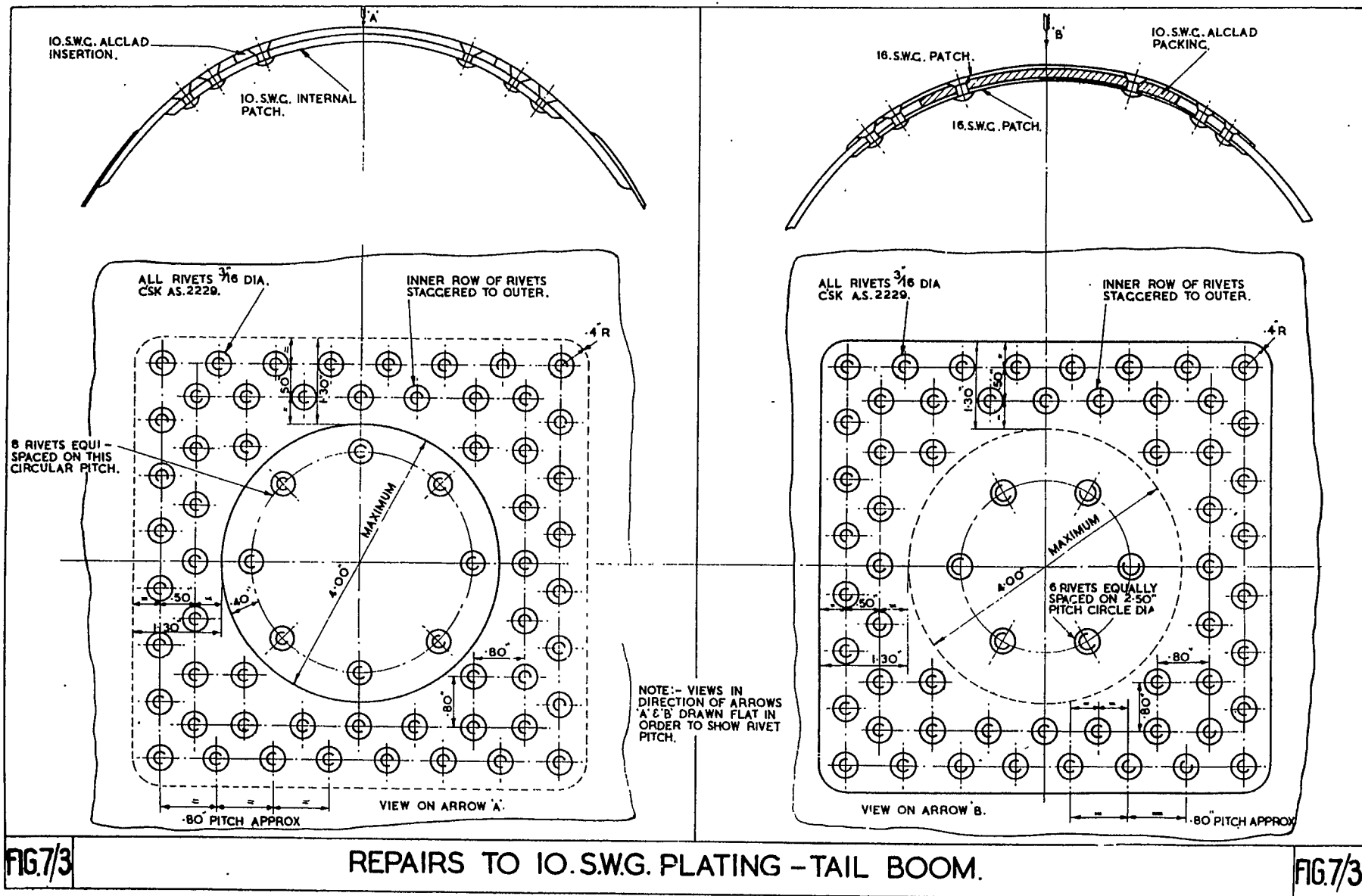


FIG. 7/2

TAIL UNIT REFERENCE DIAGRAM.

FIG. 7/2



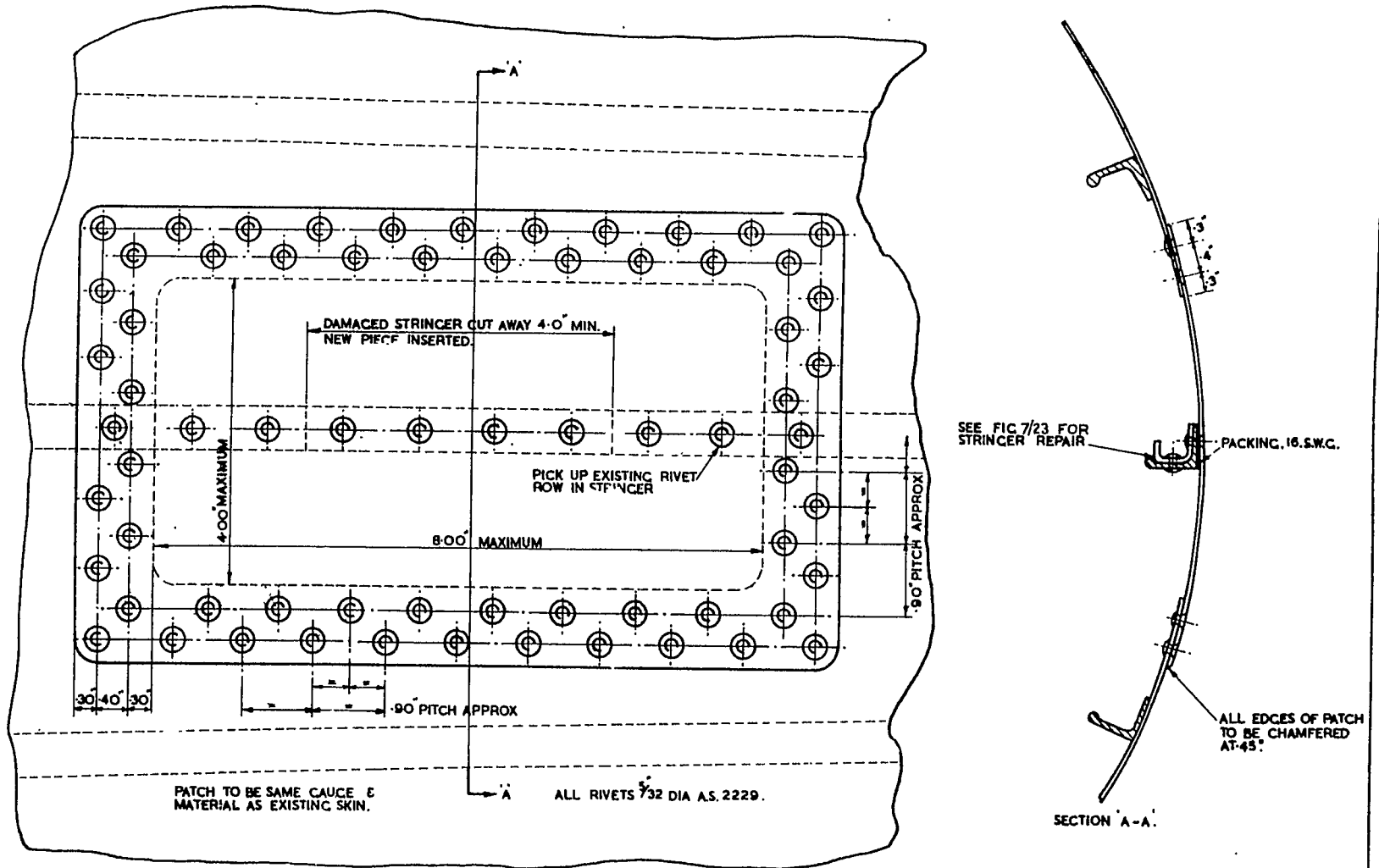


FIG.7/4

REPAIR TO SKIN & STRINGER TAIL BOOM.

FIG7/4

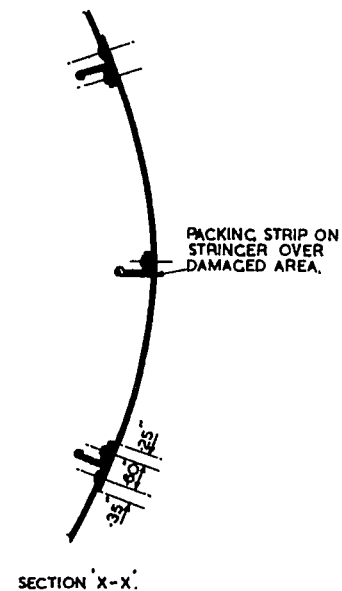
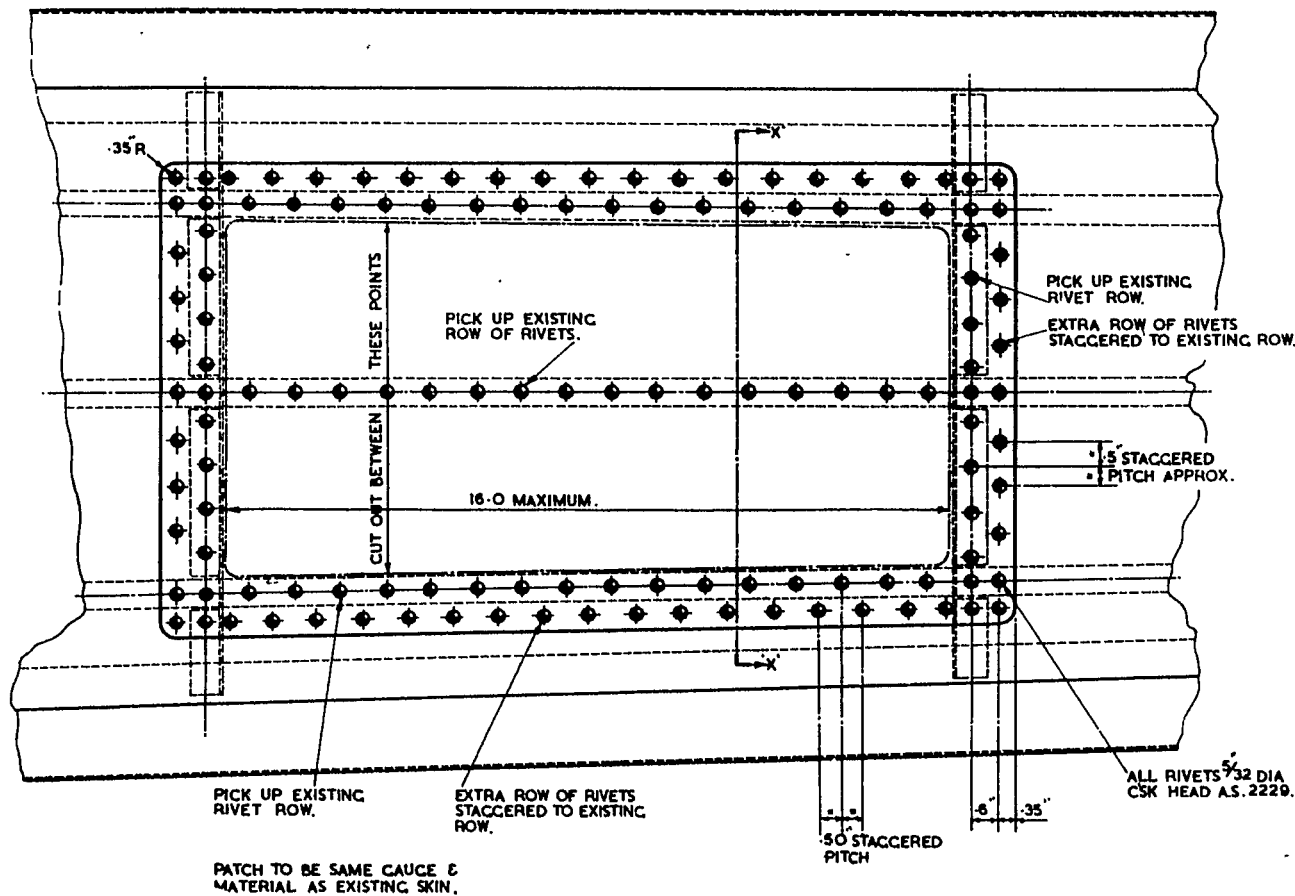


FIG 7/5

PATCH REPAIR TO SIDE PLATES - TAIL BOOM.

FIG 7/5

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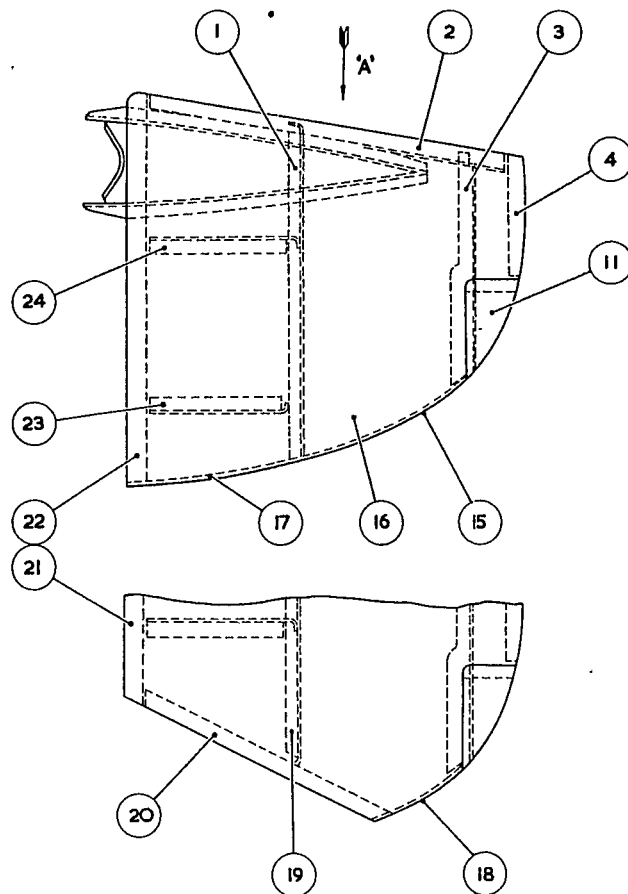
3

TAIL BOOM REAR FAIRING

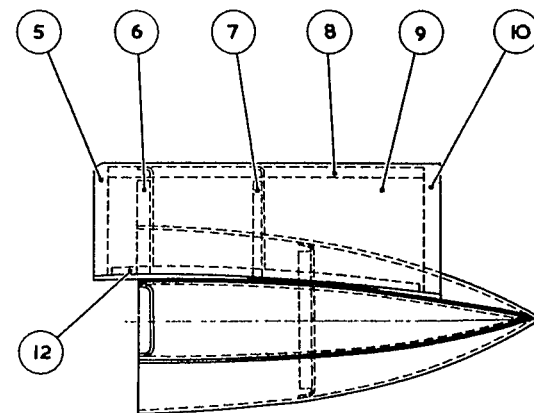
Key to items shown on fig. 7/8

Key No.	Part number		Material		Description
	Port	Starboard	Specification	S.W.G.	
1	J.00909	J.00909	L.72	24	Diaphragm
2	J.00907	J.00907		24	Top rib
3	J.00911	—		20	Diaphragm
4	J.001663	J.001663	L.I or D.T.D.423A	—	Trailing edge member
5	J.001565ND	J.001566ND	L.72	20	Reinforcing strip
6	J.00951ND	J.00951ND		24	Front former
7	J.00952ND	J.00952ND		24	Centre former
8	J.00955	J.00955		24	Rib
9	J.00947ND J.00949ND	J.00948ND J.00950ND		24	Top and bottom skins
10	J.00956	J.00956	L.I or D.T.D.423A	—	Trailing edge member
11	J.00969	—	D.T.D.213	18	Lamp fairing
12	J.001563ND	J.001564ND	L.72	24	Stiffener
13	—	J.00912		24	Diaphragm
14	—	J.00973ND		24	Butt-strap
15	J.00972ND	J.00972ND		24	Butt-strap
16	J.00961 J.00962	J.00963 J.00964		24	Rear fairing plates
17	J.00971ND	J.00971ND	L.72	24	Butt-strap
18	J.001728ND	—		24	Butt-strap
19	J.001730	J.001730		24	Diaphragm
20	J.001731ND	J.001731ND		16	Edge stiffener
21	J.001729ND	J.001729ND		18	Reinforcing plate
22	J.00974ND	J.00974ND		16	Reinforcing plate
23	J.00913	J.00913		24	Bottom former
24	J.00908	J.00908		24	Top former

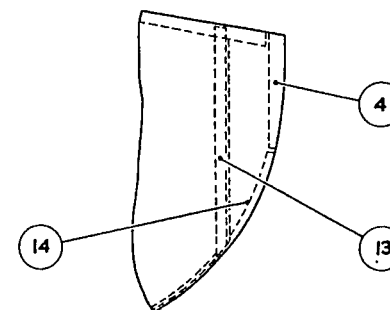
Note.—Assemblies J.00905-6 are exclusive to Mk. 5, 9, 10, 11 and 22 aircraft and J.001726-7 to Mk. 20 aircraft



MARK 20 AIRCRAFT ONLY



VIEW IN DIRECTION OF
ARROW 'A'



STARBOARD FAIRING
(ALL MARKS)

Fig. 7/B. Tail boom rear fairing

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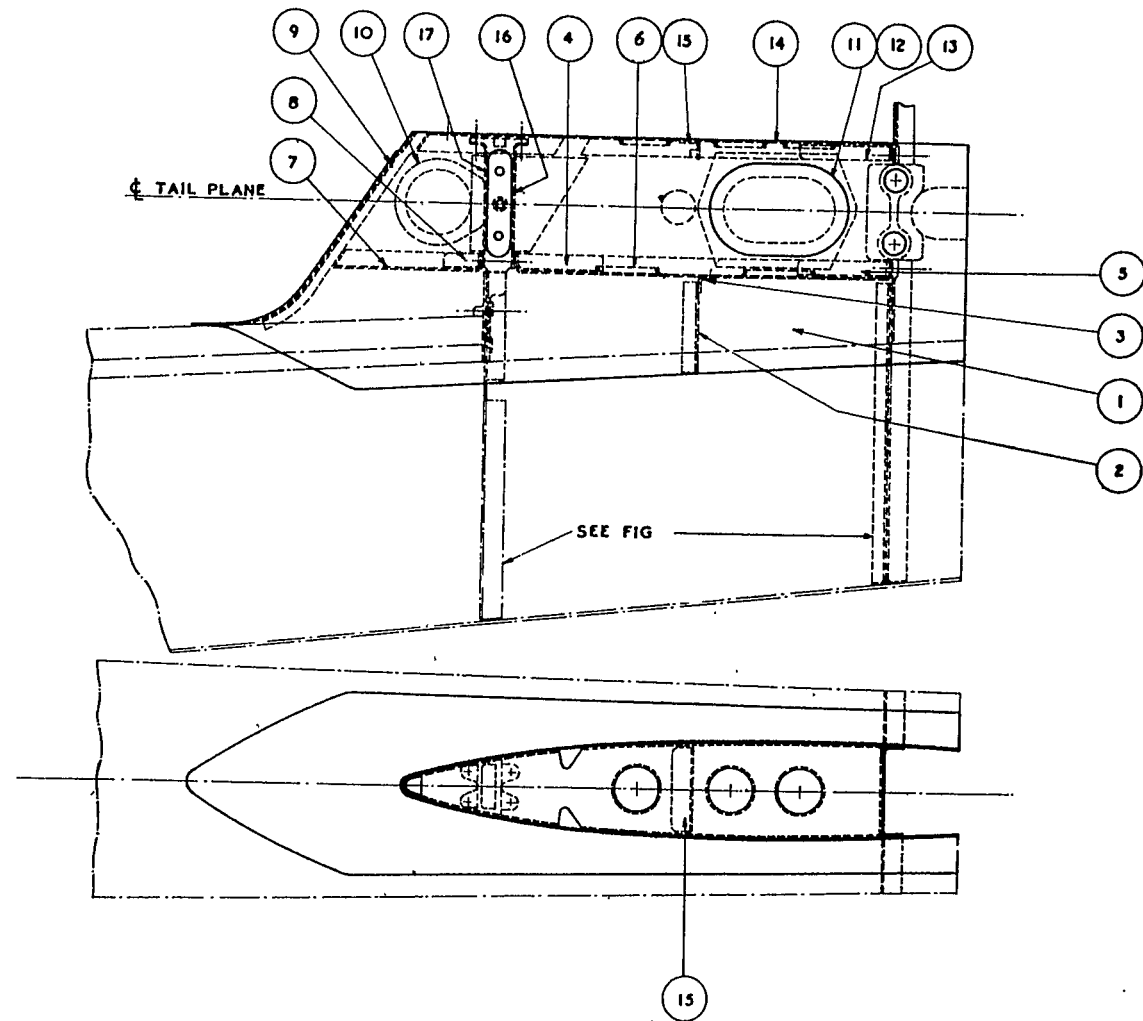
FIN—BOTTOM PORTION

Key to items shown on fig. 7/9

Assembly J.00581-2

Key No.	Part number		Material	Specification	S.W.G.	Description
	Port	Starboard				
1	J.00578	J.00578	Alclad	L.72	20	Fin bottom skin
2	J.00763	—			20	Diaphragm
3	J.00680	—			20	Stiffener
4	J.00671A	J.00672A	M.S.	S.3	20	Bracket
5	J.00665	J.00666			20	Bracket
6	J.00662ND	—	Alclad	L.72	20	Centre rib plate
7	J.00664ND	—			22	Nose rib plate
8	J.00675A	J.00676A	M.S.	S.3	20	Bracket
9	J.00577	—	Alclad	L.72	20	Butt strap
10	J.00764	—			20	Patch plate
11	J.00787A	—			18	Nut plate
12	J.00786	—			16	Cover plate
13	J.00647A	—			20	Bracket
14	J.00615A	—			16	Centre rib plate
15	J.00646ND	—			20	Stiffener
16	J.00690	—			20	Rear former
17	J.00689	—			20	Front former

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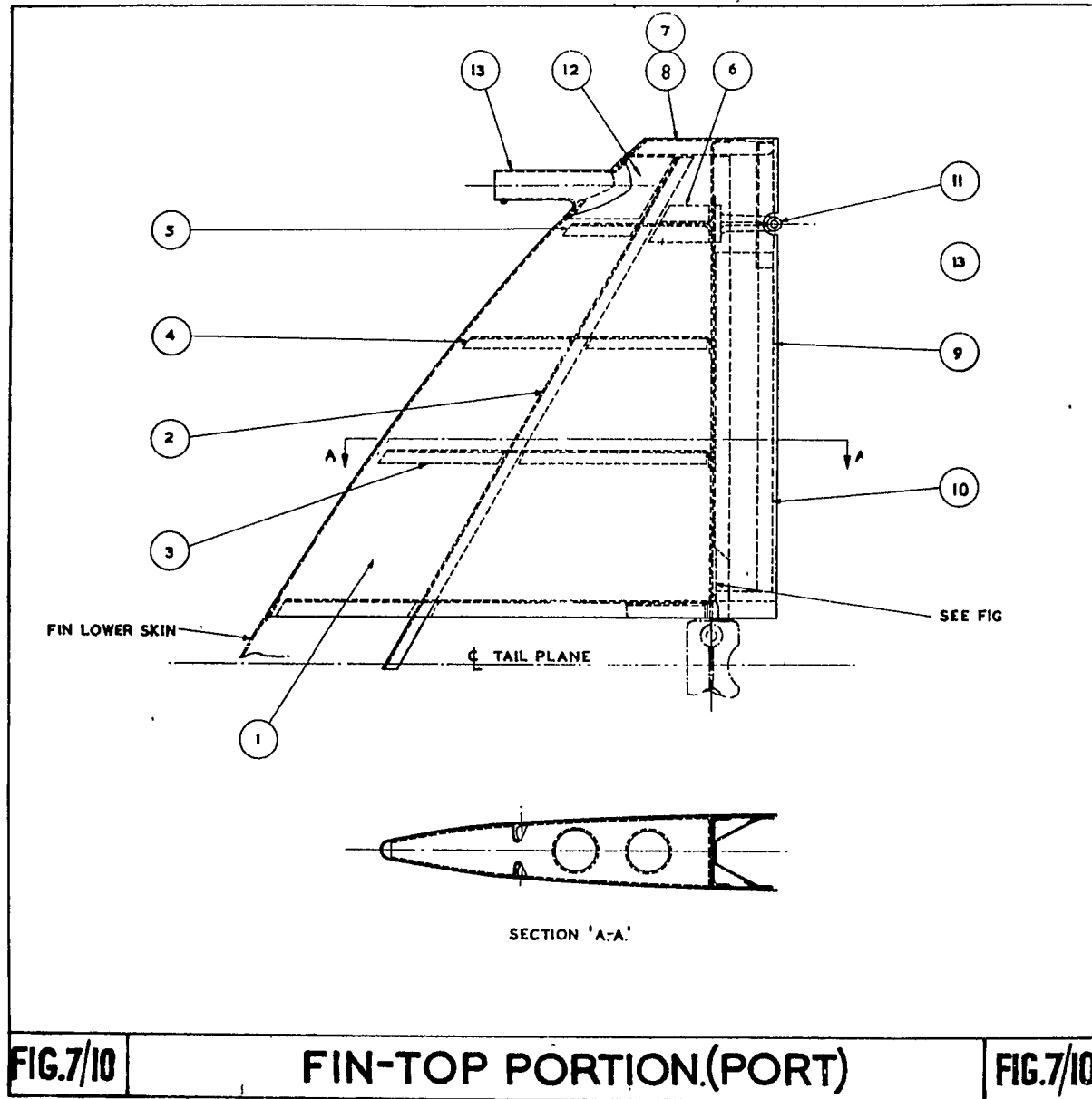


FIN—TOP PORTION

Key to items shown on fig. 7/10

Assembly J.00813-4

Key No.	Part number		Material	Specification	S.W.G.	Description
	Port	Starboard				
1	J.00815ND	J.00816ND	Alclad	D.T.D.390	22	Skin
2	J.00817ND—L.H.	J.00817ND—L.H.	—	—	—	} Stringer, Reynolds Section A.1154
	J.00818ND—R.H.	J.00818ND—R.H.	—	—	—	
3	J.00820	J.00820	Alclad	D.T.D.390	22	Rib No. 3
4	J.00821	J.00821			22	Rib No. 4
5	J.00832ND	J.00832ND			20	Rib No. 5
6	J.00833ND	J.00833ND			20	Top plate
7	J.00844ND	J.00824			20	Rib No. 6
8	J.00845ND	—			18	Access door
9	J.001050A	J.001049A			22	Fin shroud plates
10	J.00830ND	J.00830ND			22	Trailing edge stiffener
11	J.00825	J.00825				Casting hinge bracket
12	J.00862ND	—			20	Reinforcing plate—Assembled on J.00827A
13	J.00826A	—	M.S.P.	S.3	20	Pressure head bracket



FIN SPAR—REAR

Key to Items shown on fig. 7/11

Assembly J00553-4A

Key No.	Part number		Material	Specification	S.W.G.	Description
	Port	Starboard				
1	J.00558ND	J.00558ND	Alclad	D.T.D.390	18	Spar plate
2	J.00559ND	J.00559ND			20	Reinforcing plate
3	J.00555ND	J.00555ND			20	Spar plate
4	J.00556ND	J.00556ND	Aluminium Copper alloy	D.T.D.298	18	Reinforcing plate
5	J.00561	J.00562				Fin spar casting

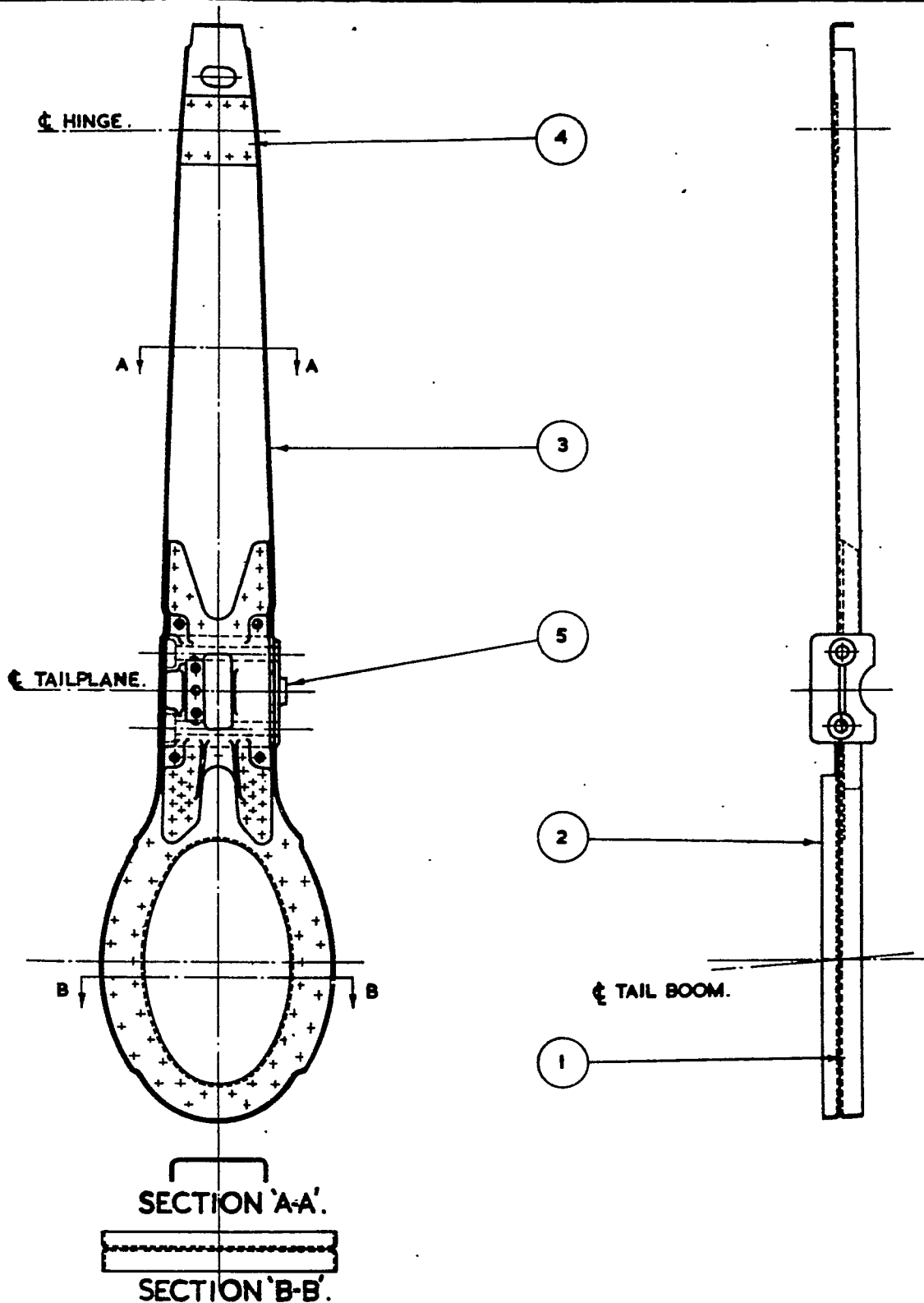


FIG.7/11

FIN SPAR (REAR)

FIG.7/11

FIN FRONT SPAR AND REAR FRAME

Key to items shown on fig. 7/12

Assembly J.00565-6A

Key No.	Part number	Material	Specification	S.W.G.	Description
1	J.00573	Aluminium-copper alloy	D.T.D.298		Casting
2	J.00568ND	Alclad	D.T.D.390	20	Reinforcing plate
3	J.00567ND	Alclad	D.T.D.390	18	Frame

Assembled
on
J.00565-6

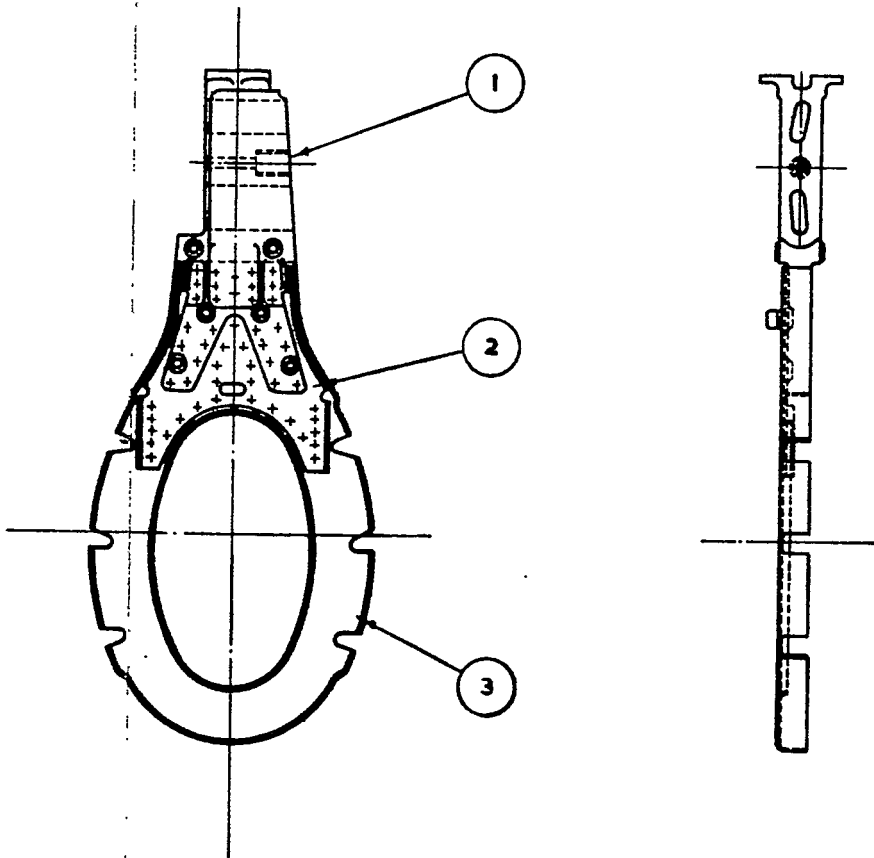


FIG. 7/12

FIN FRONT SPAR & REAR FRAME.

FIG. 7/12

RUDDER

Key to items shown on fig. 7/13

Assembly J.00583A

Key No.	Part number		Material	Specification	S.W.G.	Description
	Port	Starboard				
1	J.00795ND	J.00795ND	Alclad	D.T.D.390	24	Skin
2	J.00716A	J.00716A				Assembly of rudder post
3	J.00781ND	J.00781ND			22	Rib
4	J.00782ND	J.00782ND			20	Nut plate
5	J.00739—L.H. J.00740—R.H.	J.00739—L.H. J.00740—R.H.			20	Gusset plate
6	J.001044	J.001044			22	Gusset plate
7	J.001474A	J.001474A				Assembly of rudder tab
8	J.001476	J.001476	Magnesium alloy	D.T.D.289	Casting	Hinge block
9	J.00732	J.00732	Alclad	D.T.D.390	22	Rib
10	J.00734ND	J.00734ND	M.S.P.	S.3	22	Stiffener
11	J.00754	J.00754			22	Rib
12	J.00750ND	J.00750ND	Alclad	D.T.D.390	22	Rib—top
13	J.00751ND	J.00751ND			22	Rib—bottom
14	J.00891ND	J.00891ND	M.S.P.	S.3	22	Corner bracket—top
15	J.00892ND	J.00892ND			22	Corner bracket—bottom
16	J.001473	J.001473	Dural	L.1	Bar	Trailing edge
17	J.001205ND	J.001206ND	Manganese Aluminium alloy	D.T.D.213	22	Top skin
18	J.00773	J.00773			22	Rib
19	J.00772	J.00772			22	Rib
20	J.00777ND	J.00777ND			22	Rib—nose
21	J.00779ND	J.00779ND	Alclad	D.T.D.390	16	Base plate
22	J.00778ND	J.00778ND			22	Rib—rear
23	J.00737—L.H. J.00738—R.H.	J.00737—L.H. J.00738—R.H.			20	Gusset plate
24	J.00755	J.00755	Light alloy	D.T.D.300	Casting	Hinge bracket
25	J.00756	J.00756	Dural	L.1	Bar	Link—assembled on J.001043A
26	J.00730	J.00730	Light alloy	D.T.D.300	Casting	Rudder pedestal
27	J.001027	J.001027	M.S.P.	S.3	20	Rudder mass balance

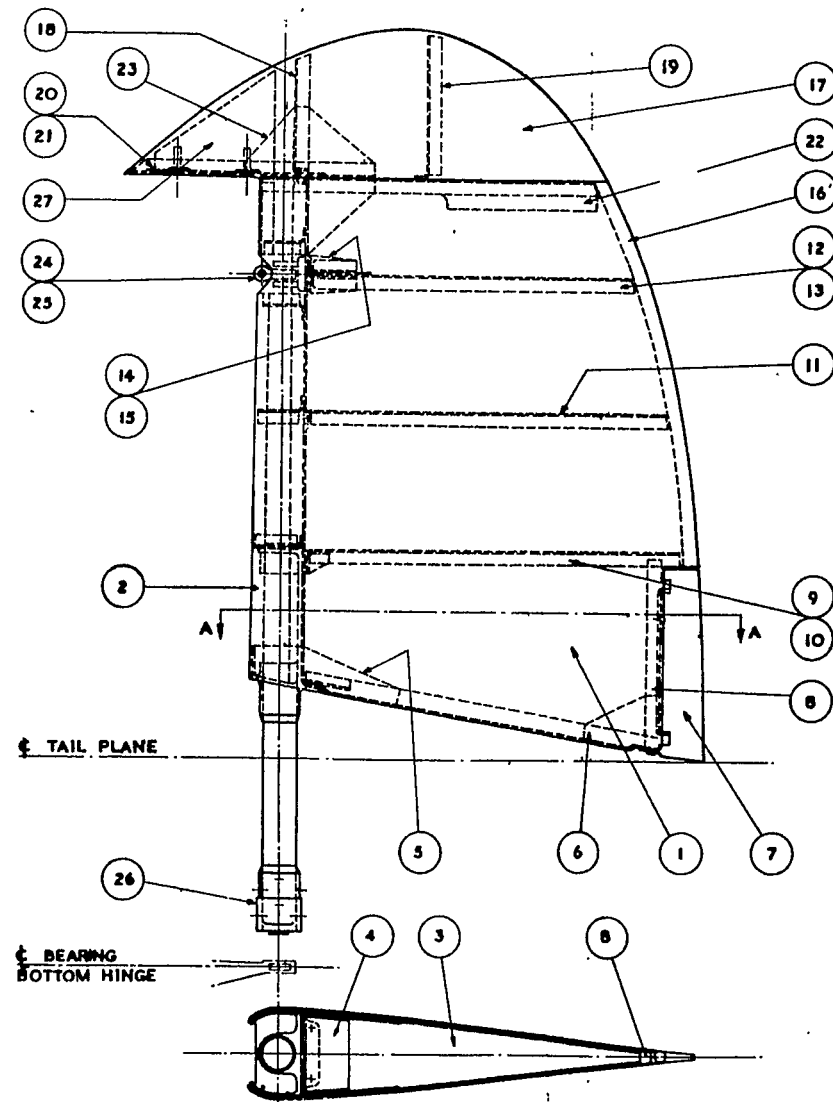


FIG.7/13

RUDDER. (PORT)

FIG.7/13

RUDDER POST

Key to Items shown on fig. 7/14

Assembly J.00716A

Key No.	Part number		Material	Specification	S.W.G.	Description
	Port	Starboard				
1	J.00717ND	J.00717ND	Alclad	D.T.D.390	20	Spar
2	J.00718ND	J.00718ND			22	Spar reinforcing
3	J.00719ND—L.H.	J.00719ND—L.H.			20	Nose stiffening
	J.00720ND—R.H.	J.00720ND—R.H.				
4	J.001048ND	J.001048ND			20	Nose stiffening
5	J.00723ND	J.00723ND			22	Former
6	J.00724ND	J.00724ND			22	Former
7	J.00725ND	J.00725ND			22	Former
8	J.00726ND	J.00726ND			22	Former
9	J.00728	J.00728	Light alloy	D.T.D.300	Casting	Strap
10	J.00729	J.00729	Dural tube	T.4	17	Rudder post tube (1½ in. o/d)
11	J.00727	J.00727	Light alloy	D.T.D.300	Casting	Mounting bracket

FIG. 7/14

TAIL PLANE

Key to items shown on fig. 7/15

Assembly J.00600A

Key No.	Part number		Material	Specification	S.W.G.	Description
	Port	Starboard				
1		J.00887ND	Alclad	L.38 or D.T.D.390	22	Nose skin
2		J.00888ND			22	Main skin—top
3		J.00889ND			22	Main skin—bottom
4		J.00590A				Assembly of front spar
5		J.00595A				Assembly of rear spar
6	J.00599	J.00599	Alclad	D.T.D.390 or L.38	22	Nose ribs
7	J.00606ND	J.00606ND			18	End rib, assembled on J.00605A
8	J.00615	J.00615			22	Stiffener {top—port bottom—starboard
9	J.00616	J.00616			22	Stiffener {bottom—port top—starboard
10	J.00613	J.00613			22	Rib
11	J.00637ND	—			22	Half rib, assembled on J.00636A
12	J.00632ND	—			22	Rib {Assembled on J.00631A
13	J.00633ND	—			22	Half rib {Assembled on J.00640A
14	—	J.00641ND			22	Rib {Assembled on J.00640A
15	—	J.00633ND			22	Half rib {Assembled on J.00640A
16	J.00608ND	J.00608ND			20	End rib. Assembled on J.00607A
17	J.00799ND	J.00799ND			20	Reinforcing plate {top—port bottom—starboard
18	J.00800ND	J.00800ND			20	Reinforcing plate {bottom—port top—starboard
19	J.00796ND	J.00796ND			20	Reinforcing plate
20	J.00947	J.00847			22	Shroud—top
21	J.00848	J.00848			22	Shroud—bottom
22	J.00849	J.00849			22	Shroud—top
23	J.00850	J.00850			22	Shroud—bottom
24	J.00201B	—			18	Stiffener plate, assembled on J.00201A
25	J.00263	—			18	Access door
26	J.00654ND	—			18	Stiffener plate, assembled on J.00653A
27	J.00264	—			18	Tab jack access door
28	J.00261	—	Manganese aluminium alloy	D.T.D.310 or D.T.D.213A	1½ in. o/d × 22	Guide tube
29	J.00588	J.00588	Light alloy	D.T.D.289	Casting	Hinge bracket Stringer, Reynolds A.1154
30	J.001229ND	—				

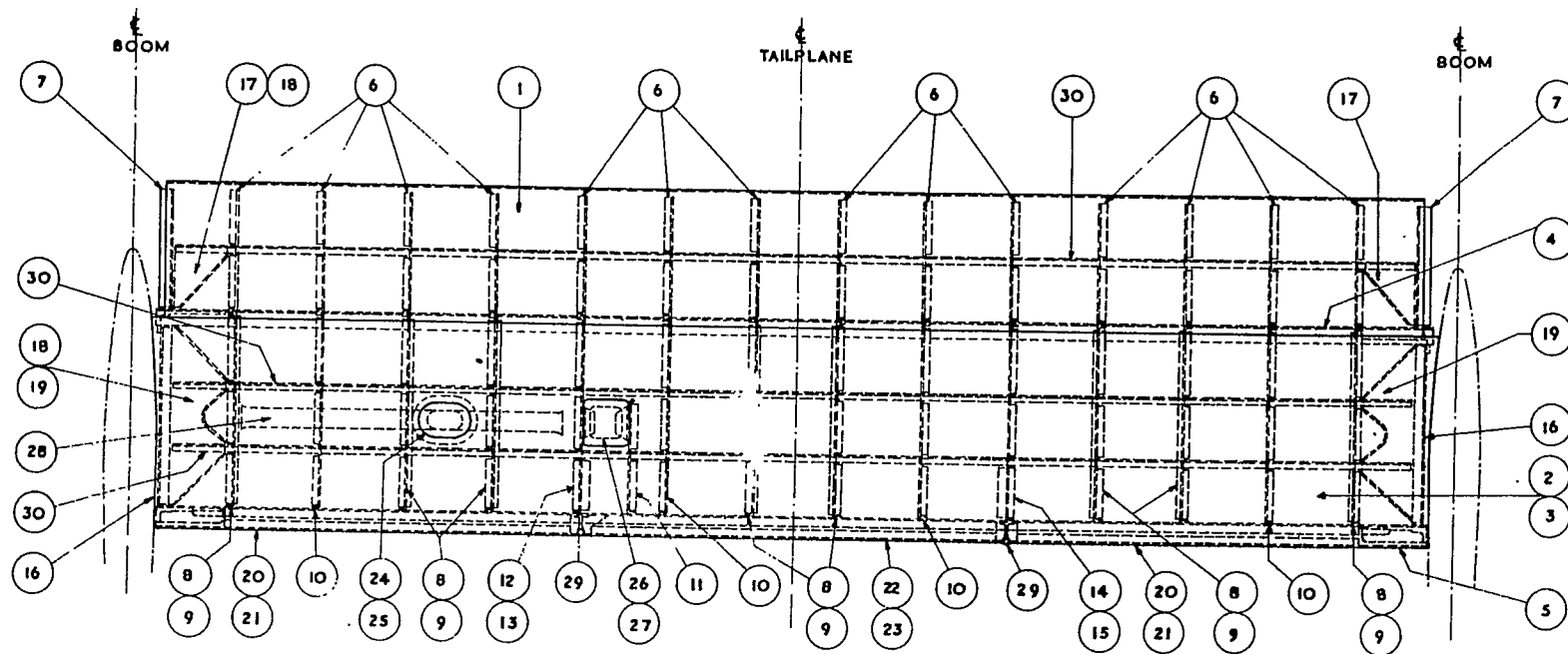


FIG.7/15

TAILPLANE

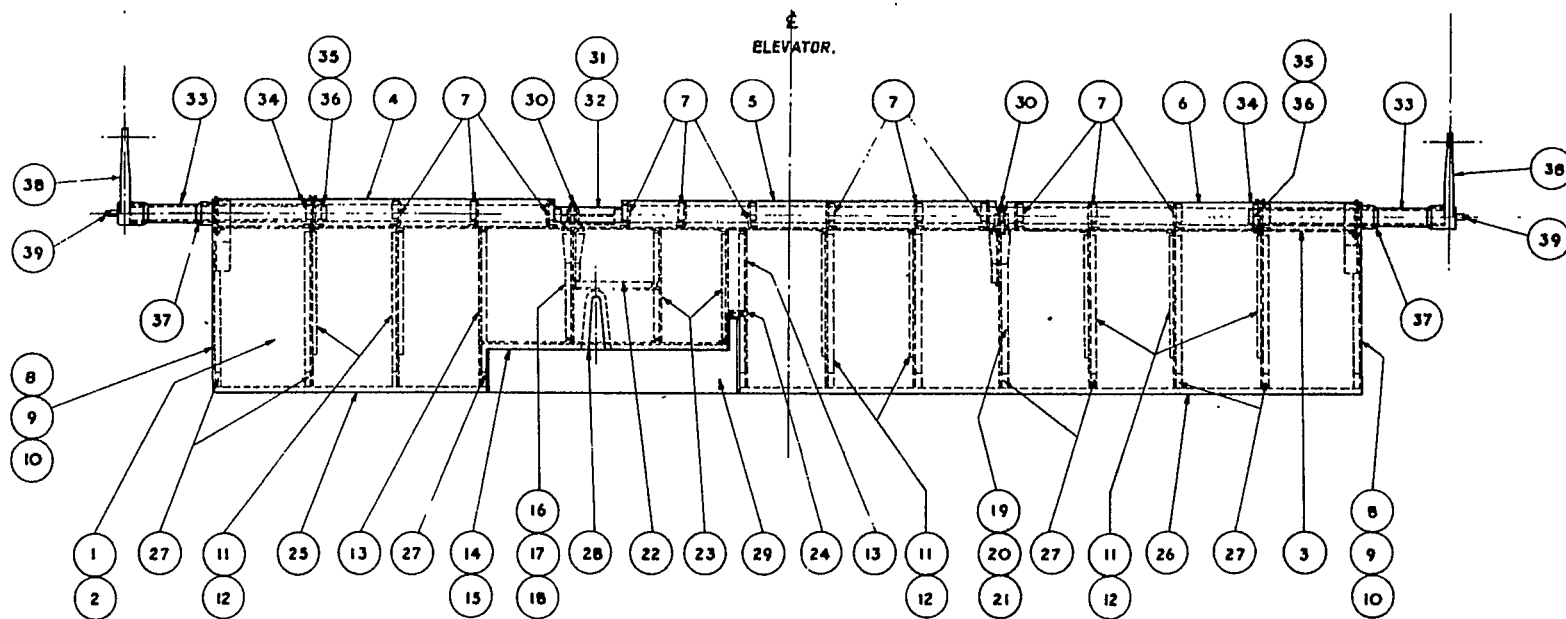
FIG.7/15

ELEVATOR

Key to items shown on fig. 7/16

Assembly J.00601A

Key No.	Part number		Material	Specification	S.W.G.	Description
	Port	Starboard				
1		J.00917	Alclad	D.T.D.390 or L.38	22	Top skin
2		J.00918	Alclad	D.T.D.390 or L.38	22	Bottom skin
3		J.00758A				Assembly of elevator spar
4	J.00902	—			20	Edge member
5		J.00903			20	Edge member
6	—	J.00904	Alclad	D.T.D.390 or L.38	20	Edge member
7	J.00685	J.00685			22	Nose rib
8	J.00748	J.00748			20	Rear rib
9	J.00746ND	J.00746ND	M.S.	S.3	22	Rib } Assembled on J.00745A } Assembled on J.00744A
10	J.00747ND	J.00747ND			22	Plate }
11	J.00681	J.00681			22	Stiffener { Top—Port } Assembled on J.00790A
12	J.00682	J.00682			22	Stiffener { Bottom—Starboard } Assembled on J.00713A
13	J.00687	—	Alclad	D.T.D.390 or L.38	22	Stiffener { Top—Starboard } Assembled on J.00705A
14	J.00791ND	—			20	Stiffener { Bottom—port }
15	J.00792ND	—			20	Tab support spar
16	J.00714ND	—			20	Stiffening channel
17	J.00707ND	—			20	Rib
18	J.001573ND	—	M.S.	S.3	22	Half rib
19	—	J.00706ND	Alclad	D.T.D.390 or L.38	20	Bracket
20	—	J.00707ND	Alclad	D.T.D.390 or L.38	20	Rib
21	—	J.001574ND	M.S.	S.3	22	Half rib
22	J.00788	—			22	Bracket
23	J.00688	—	Alclad	D.T.D.390 or L.38	22	Stiffening rib
24	J.00789	—			22	Stiffener
25	J.00804	—			22	Diaphragm at tab
26	—	J.00805	Dural	D.T.D.423A or L.1	Bar	Trailing edge
27	—	J.00398	Light alloy	D.T.D.194	—	Trailing edge
28	J.00398	—	Alclad	D.T.D.390 or L.38	22	Block
29	J.00793	—			22	Fairing
30	J.00801A	—				Elevator tab assembly
31	J.00895A	J.00895A				Hinge assembly
32	J.00914ND	—	Alclad	D.T.D.390 or L.38	20	Door
33	J.00915ND	—			20	Locating plate
34	J.00901	J.00901	Steel alloy	T.45	1½ in. o/d × 17	Assembled on J.00916A
35	J.00686	J.00686	Alclad	D.T.D.390 or L.38	20	Torque tube
36	J.00768ND	J.00768ND	Steel alloy	T.45	1½ in. o/d × 17	Packing
37	J.00769ND	J.00769ND	M.S.	S.3	20	Sleeve
38	J.00783	J.00783	Light alloy	L.1, L.40 or D.T.D.423A	Bar	Assembled on J.00767A
39	J.00784A	J.00784A	Light alloy	D.T.D.300	Casting	Plate
40	J.00302	J.00302	H.T.S.	S.80 or S.11	Bar	Torque tube fitting
41						Lever—Assembled on J.00784A
42						Spigot



TAIL PLANE AND ELEVATOR SPARS

Key to items shown on fig. 7/17

TAIL PLANE FRONT SPAR—Assembly J.00590A

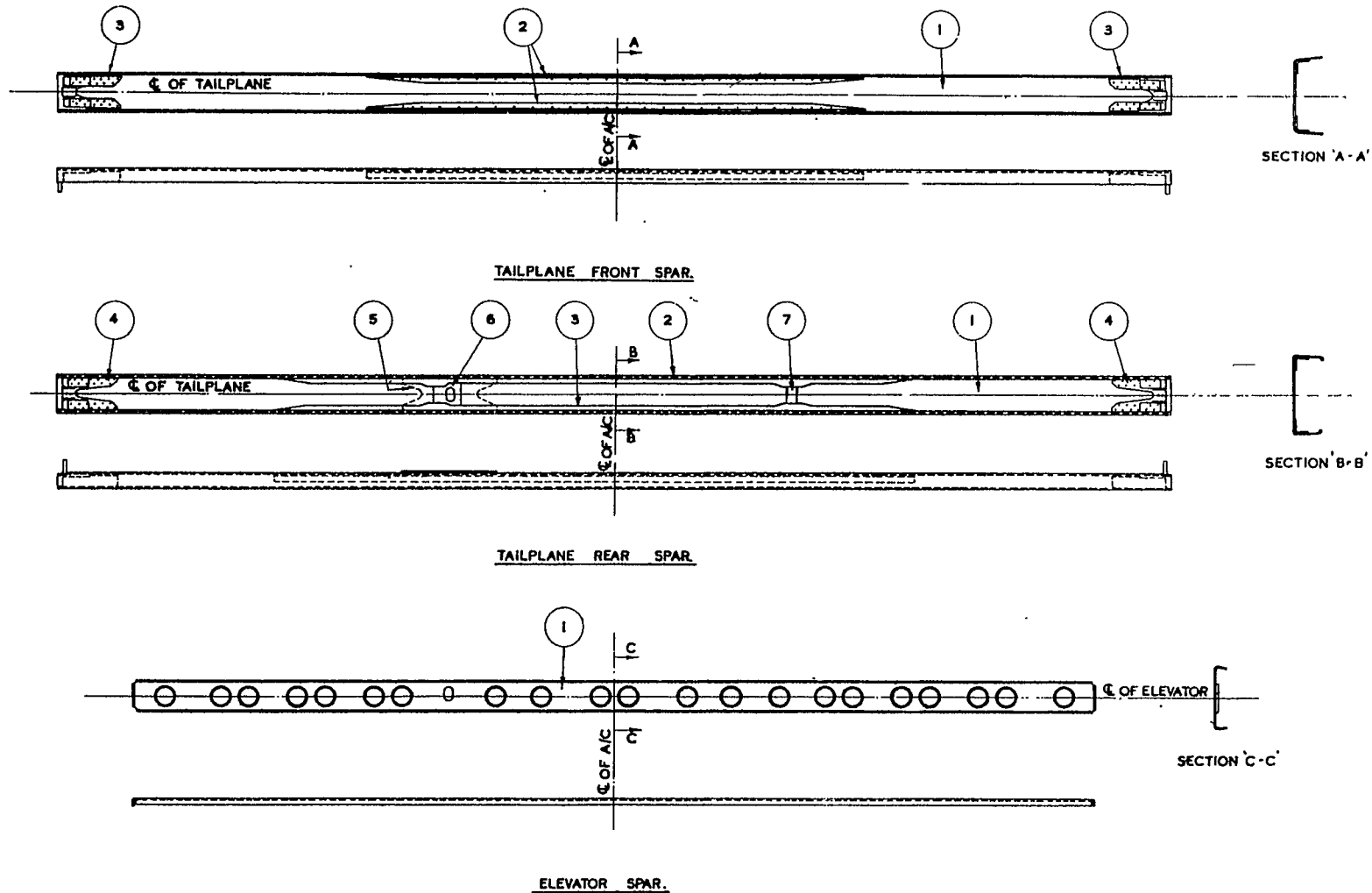
Key No.	Part number		Material	Specification	S.W.G.	Description
	Port	Starboard				
1	J.00591ND		Alclad	D.T.D.390 or L.38	20	Channel
2	J.00592ND		Alclad	D.T.D.390 or L.38	18	Angle
3	J.00585ND	J.00585ND	Light alloy	D.T.D.298	Casting	End fitting—Assembled on J.00584A

TAIL PLANE REAR SPAR—Assembly J.00595A

Key No.	Part number		Material	Specification	S.W.G.	Description
	Port	Starboard				
1	J.00596ND		Alclad	D.T.D.390 or L.38	20	Channel
2	J.00597ND				16	Top angle
3	J.00598ND				16	Bottom angle
4	J.00587ND	J.00587ND	Light alloy	D.T.D.298	Casting	End fitting—Assembled on J.0046A
5	J.00593ND	—	Alclad	D.T.D.390	16	Packing
6	—	J.00594ND	Alclad	D.S.D.390	16	Packing

ELEVATOR SPAR—Assembly J.00758A

Key No.	Part number	Material	Specification	S.W.G.	Description
1	J.00759ND	Alclad	D.T.D.390 or L.38	20	Spar
2	J.00760ND			16	Angle



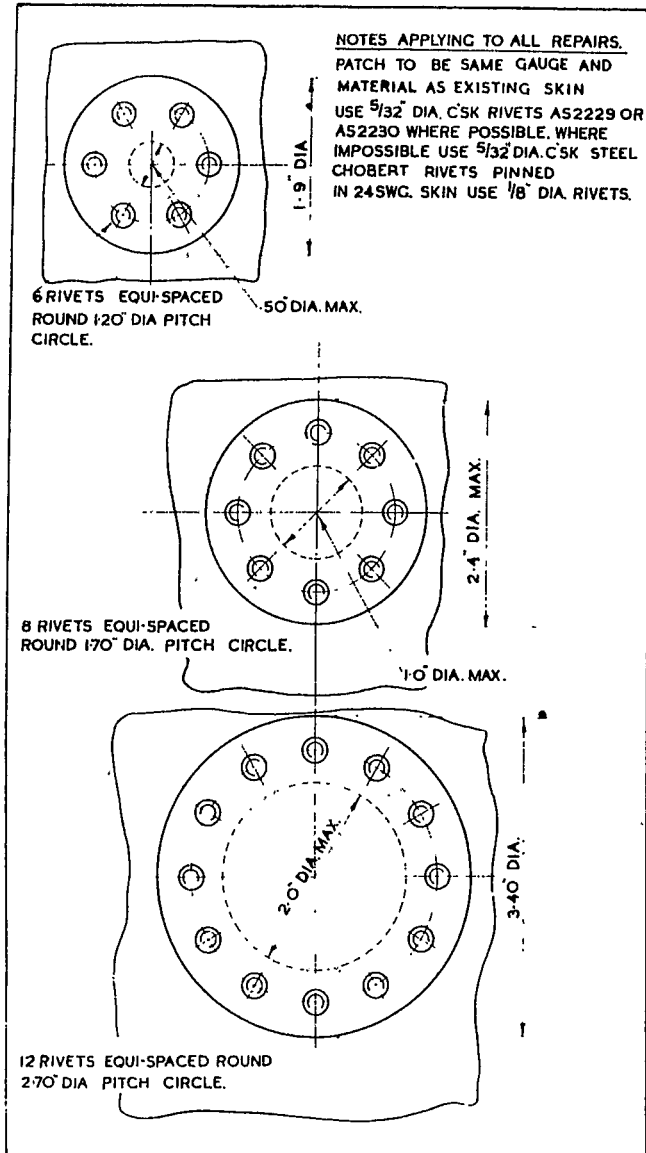


FIG 7/18

PATCH REPAIR TO
 SPAR WEBS AND TO SKINS.

FIG 7/18

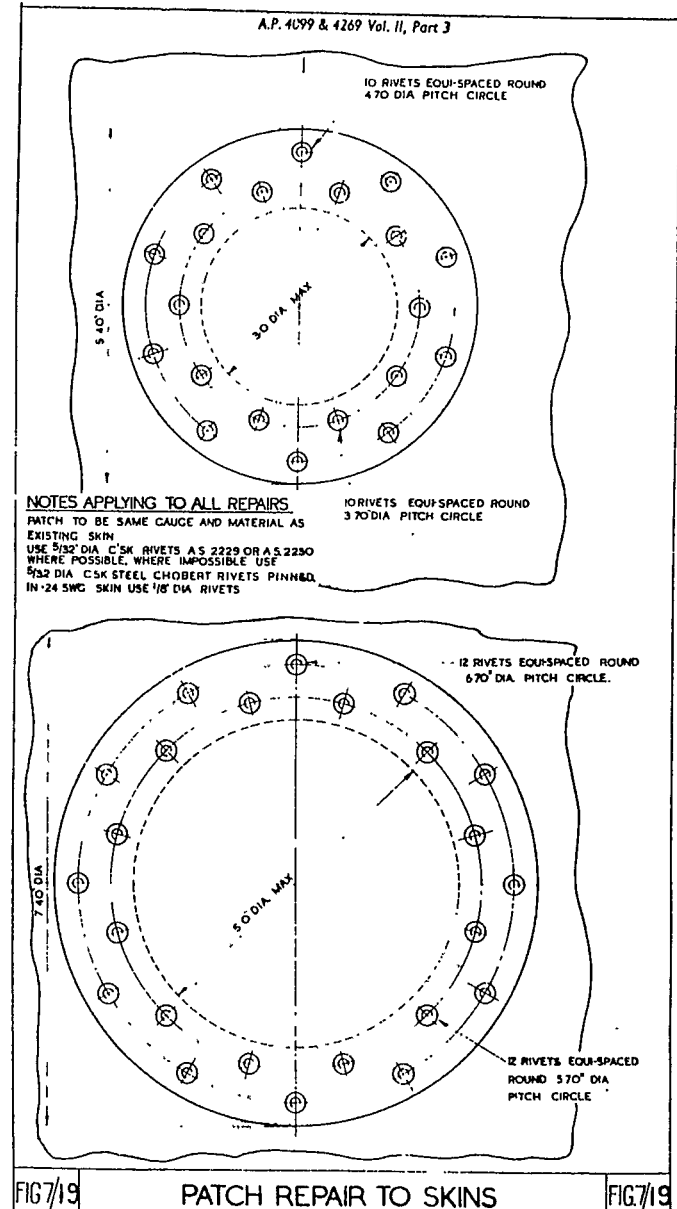
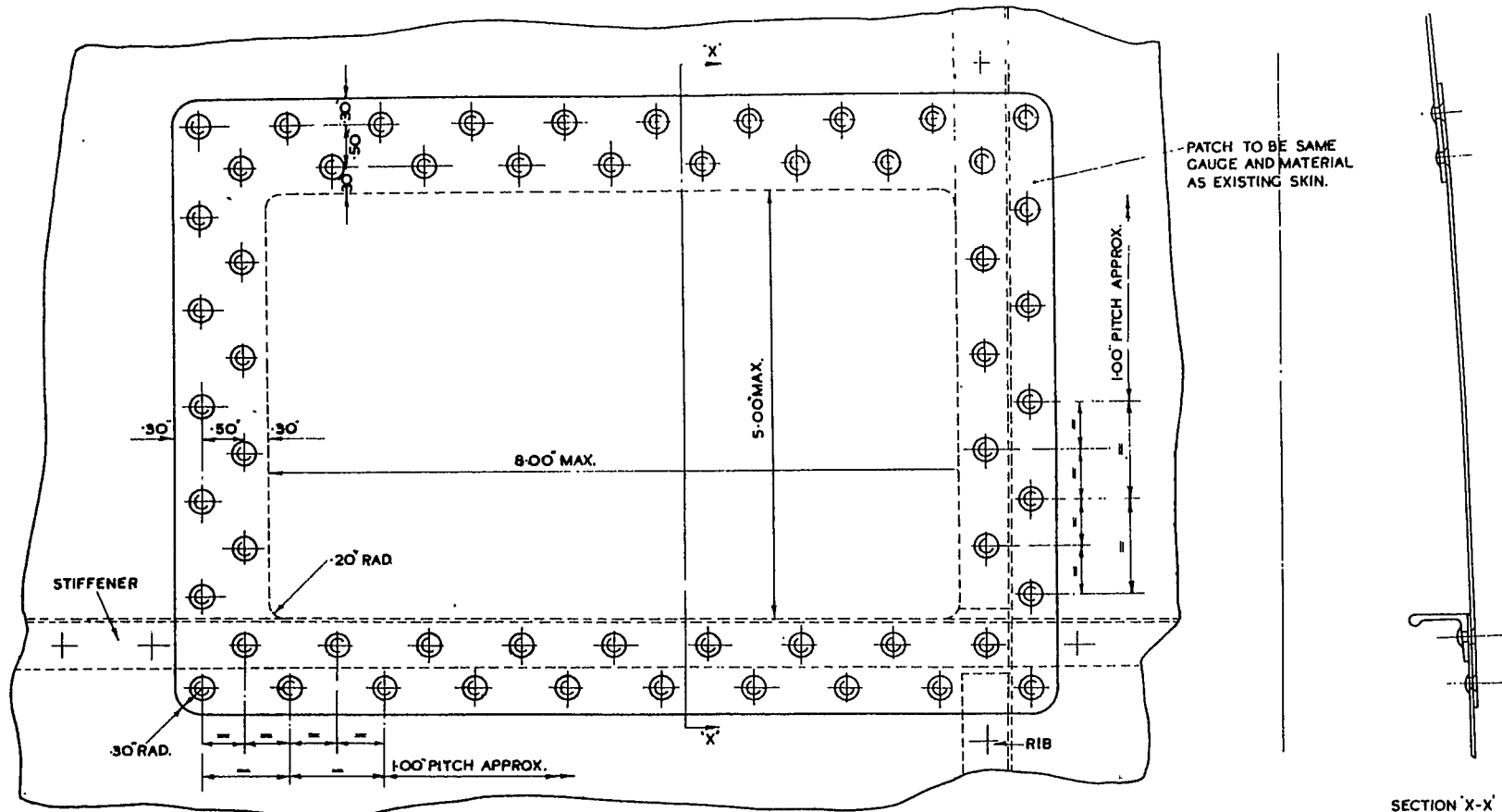


FIG 7/19

PATCH REPAIR TO SKINS

FIG 7/19



WHEN BOTH SKINS ARE DAMAGED ONE MAY BE RIVETED WITH SOLID RIVETS & THE OTHER WITH CHOBERT RIVETS. RIVETING TO RIBS STIFFENERS OR CLEAR SKIN AS SHOWN IN DRAWING MAY BE APPLIED TO ANY OR ALL SIDES OF PATCH AS REQUIRED DEPENDING ON THE POSITION OF THE REPAIR.

RIVETS:— AS 2230 SOLID C'SK RIVETS OR C'SK STEEL CHOBERT RIVETS PINNED IN 20 OR 22 SW.G. SKIN $\frac{5}{32}$ " DIA. RIVETS ARE TO BE USED. IN 24 SW.G. SKIN $\frac{1}{8}$ " DIA. RIVETS ARE TO BE USED. IF SPOT-WELDS ARE DRILLED OUT IN ANY GAUGE OF SKIN $\frac{5}{32}$ " DIA. RIVETS ARE TO BE USED IN THEIR PLACE.

WHERE EXISTING RIBS OR STIFFENERS ARE PICKED UP, EXISTING RIVET HOLES MUST BE USED. DAMAGED SKIN SHOULD BE CUT BACK TO THE EDGE OF ANY ADJACENT STIFFENER OR RIB AS SHOWN.

FIN & RUDDER REPAIRS.
NOTE:— NO REPAIR GREATER THAN 3'-0" DIA. ON ONE SIDE OF THE COMPONENT OR 1'-0" DIA. ON BOTH SIDES OF THE COMPONENT IS PERMISSIBLE ANY REPAIR GREATER THAN THIS MUST BE AFFECTED BY RESKINNING WHICH WILL BE COVERED IN PART 4 OF THIS BOOK.

SECTION 'X-X'

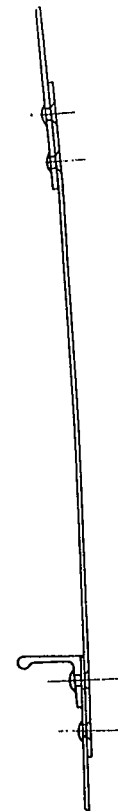
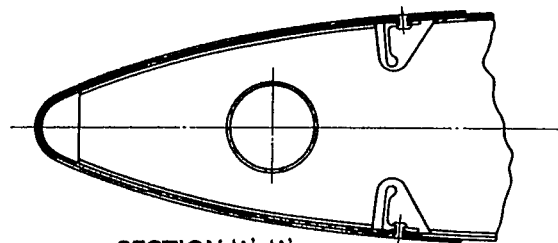


FIG 7/20

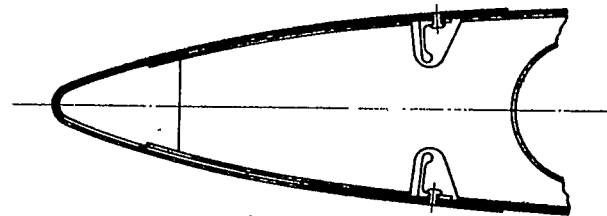
PATCH REPAIR TO TAIL UNIT SKINS.

FIG 7/20

RESTRICTED

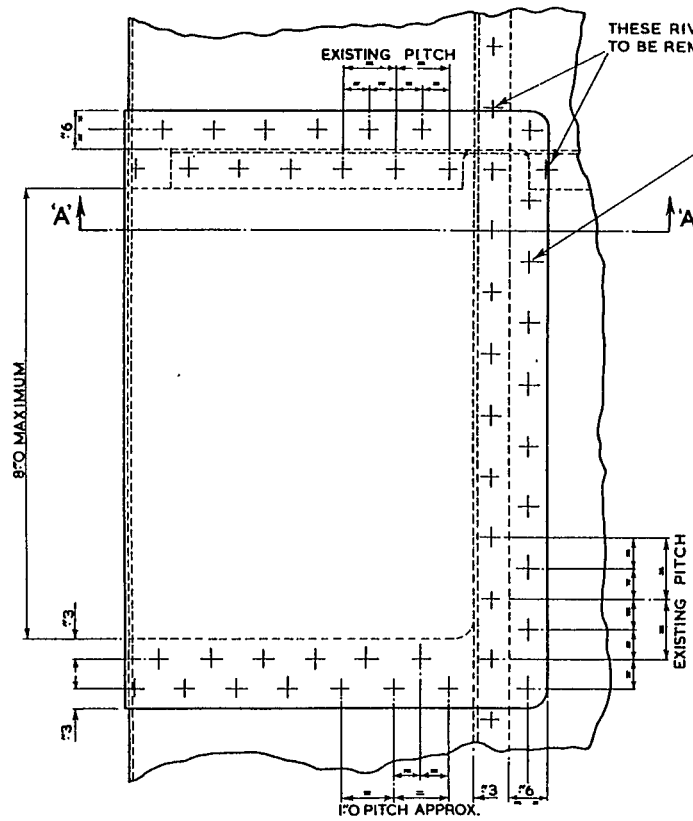


SECTION 'A'-A'



SECTION 'B'-B'

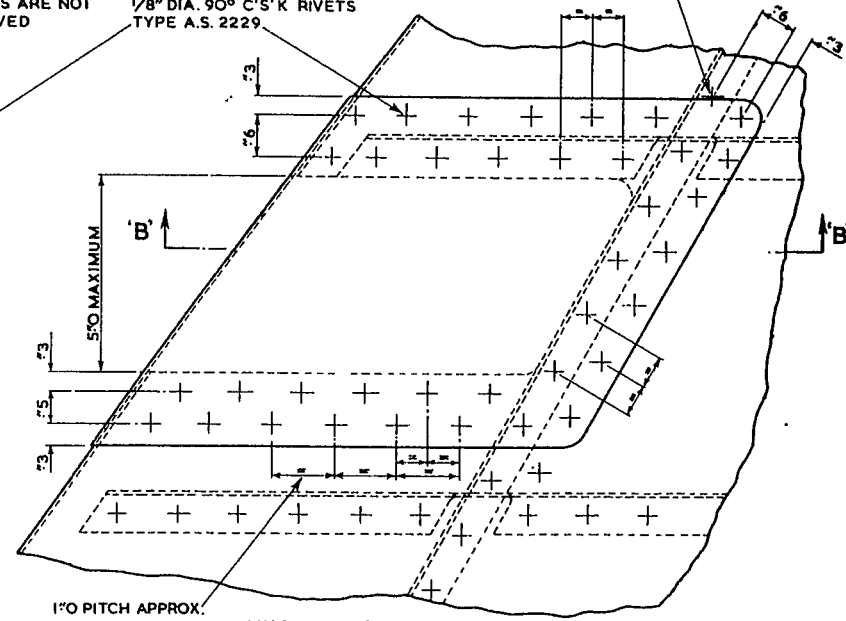
THIS RIVET IS NOT TO BE REMOVED



TAILPLANE REPAIR

THESE RIVETS ARE NOT TO BE REMOVED

1/8" DIA. 90° C'S'K RIVETS
TYPE A.S. 2229



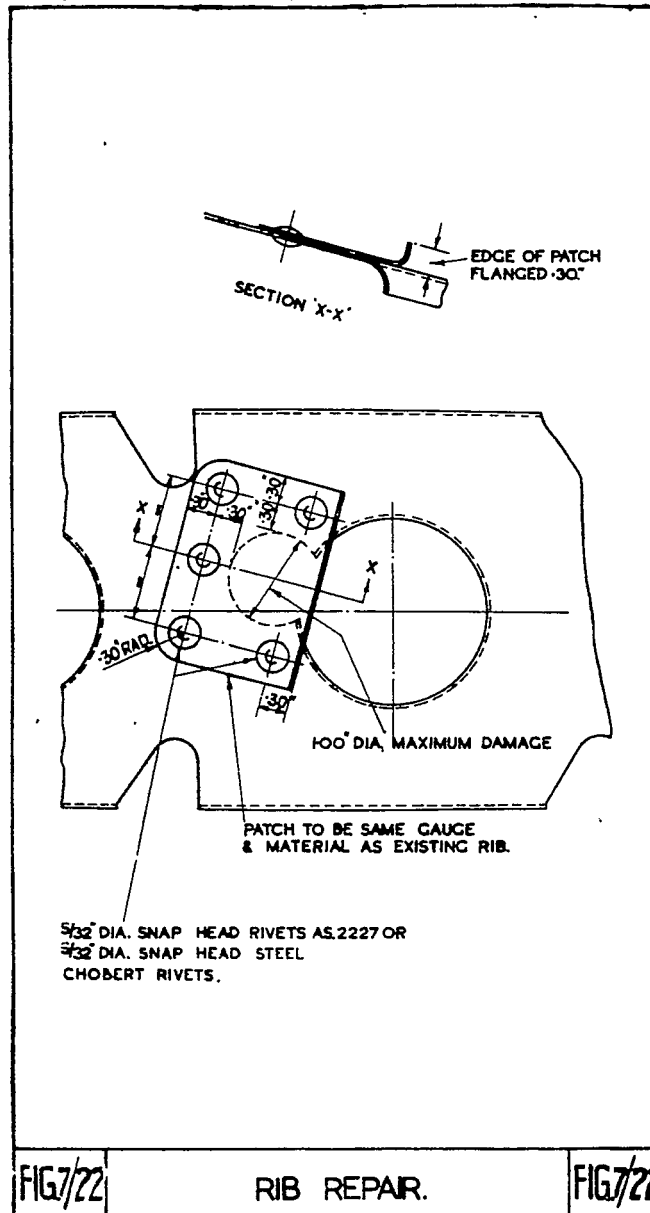
FIN REPAIR

NOTES

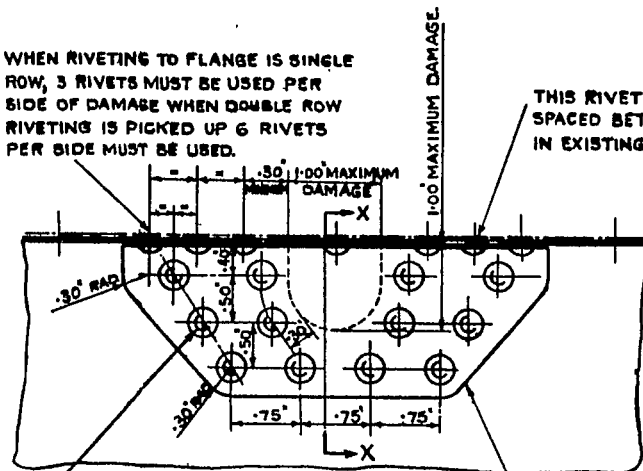
PATCHES ARE TO BE SAME GAUGE AND SPEC. AS EXISTING SKIN.
RIVETING TO RIBS, STIFFENERS OR SKIN AS SHOWN IN DRAWING,
MAY BE APPLIED TO ALL OR ANY SIDES OF PATCH AS REQUIRED,
DEPENDING ON THE LOCATION OF THE DAMAGE.
EXISTING RIVET HOLES MUST BE PICKED UP WHERE POSSIBLE.
THE USE OF SOLID RIVETS IS RECOMMENDED, BUT EQUIVALENT
STEEL CHOBERT RIVETS PINNED, MAY BE USED.
ALL SKINS 20 SWG AND BELOW MUST BE DIMPLED FOR C'S'K RIVETS.

RESTRICTED

FIG.7/21 FIN AND TAILPLANE LEADING EDGE REPAIRS



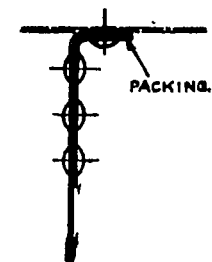
WHEN RIVETING TO FLANGE IS SINGLE ROW, 3 RIVETS MUST BE USED PER SIDE OF DAMAGE WHEN DOUBLE ROW RIVETING IS PICKED UP 6 RIVETS PER SIDE MUST BE USED.



$\frac{5}{32}$ DIA. SNAP HEAD RIVETS AS 2227
OR $\frac{5}{32}$ DIA. SNAP HEAD STEEL
CHOBERT RIVETS PINNED.

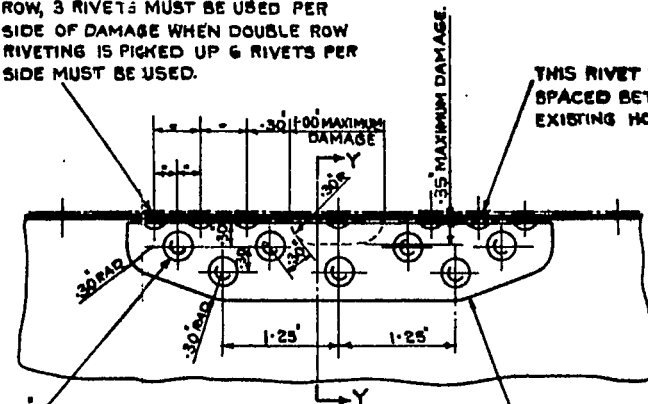
PATCH TO BE SAME
GAUGE & MATERIAL
AS EXISTING PLATE.

THIS RIVET TO BE EQUALLY
SPACED BETWEEN RIVETS
IN EXISTING HOLES.



SECTION X-X'.

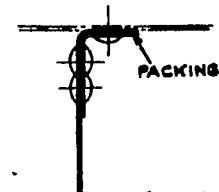
WHEN RIVETING TO FLANGE IS SINGLE ROW, 3 RIVETS MUST BE USED PER SIDE OF DAMAGE WHEN DOUBLE ROW RIVETING IS PICKED UP 6 RIVETS PER SIDE MUST BE USED.



$\frac{5}{32}$ DIA. SNAP HEAD RIVETS AS 2227
OR $\frac{5}{32}$ DIA. SNAP HEAD STEEL
CHOBERT RIVETS PINNED.

PATCH TO BE SAME
GAUGE & MATERIAL
AS EXISTING PLATE.

THIS RIVET TO BE EQUALLY
SPACED BETWEEN RIVETS IN
EXISTING HOLES.

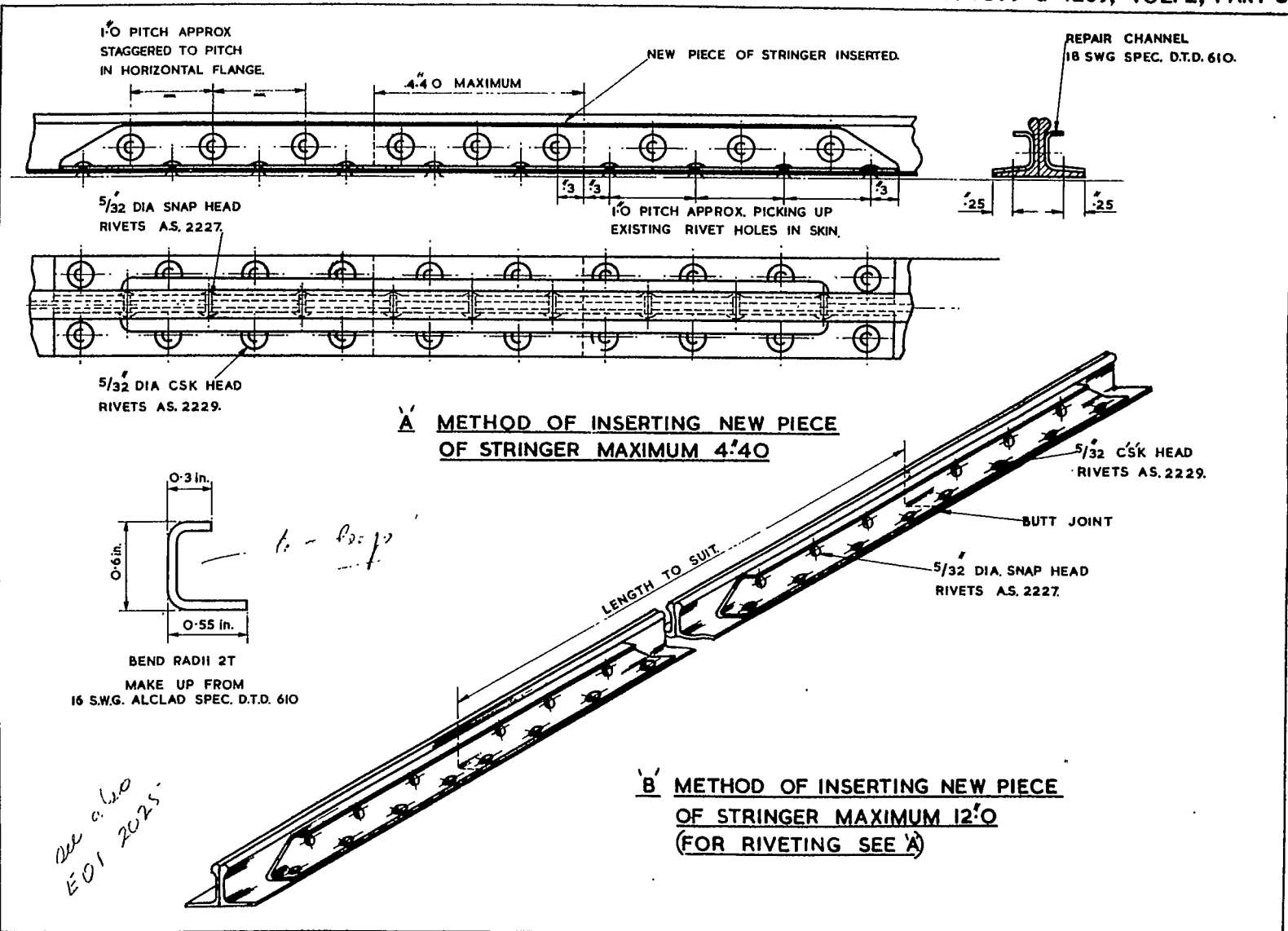


SECTION Y-Y'.

FIG 7/23

STANDARD FLANGE REPAIRS.

FIG 7/23



CONTROL FITTINGS—TAIL BOOM REAR END

Limits of wear for items shown on fig. 7/25

Key No.	Part No.	Description of Part	Nominal Diameter	Female High or Male Low Limit	Maximum Wear Limit	Plug Gauge
1	AS.2504/7G	Special bolt	0.3125 in.	— 0.0012	— 0.0025	Micrometer
2	J.00267	Rudder connecting-rod fork	0.3125 in.	+ 0.0004	+ 0.002	VC
3	J.00361	Spindle	0.5 in.	— 0.0012	— 0.002	Micrometer
4	J.00604	Lever brackets	0.5 in.	+ 0.0004	+ 0.003	WE
5	J.00563	Rudder mass-balance, lower fulcrum	0.25 in.	+ 0.0004	+ 0.002	VC
6	J.00563	Rudder mass-balance, upper fulcrum	0.25 in.	+ 0.0004	+ 0.002	VC
7	J.00363	Special bolt	0.25 in.	— 0.0012	— 0.0025	Micrometer
8	AS.2504/6E	Special bolt	0.3125 in.	— 0.0012	— 0.0025	Micrometer
9	J.00362	Link plates, rudder	0.25 in.	+ 0.0003	+ 0.002	VC

RESTRICTED

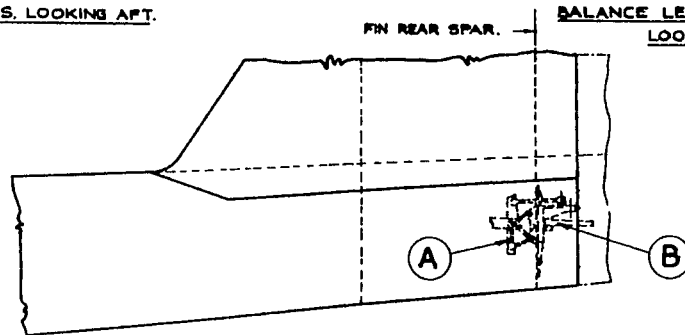
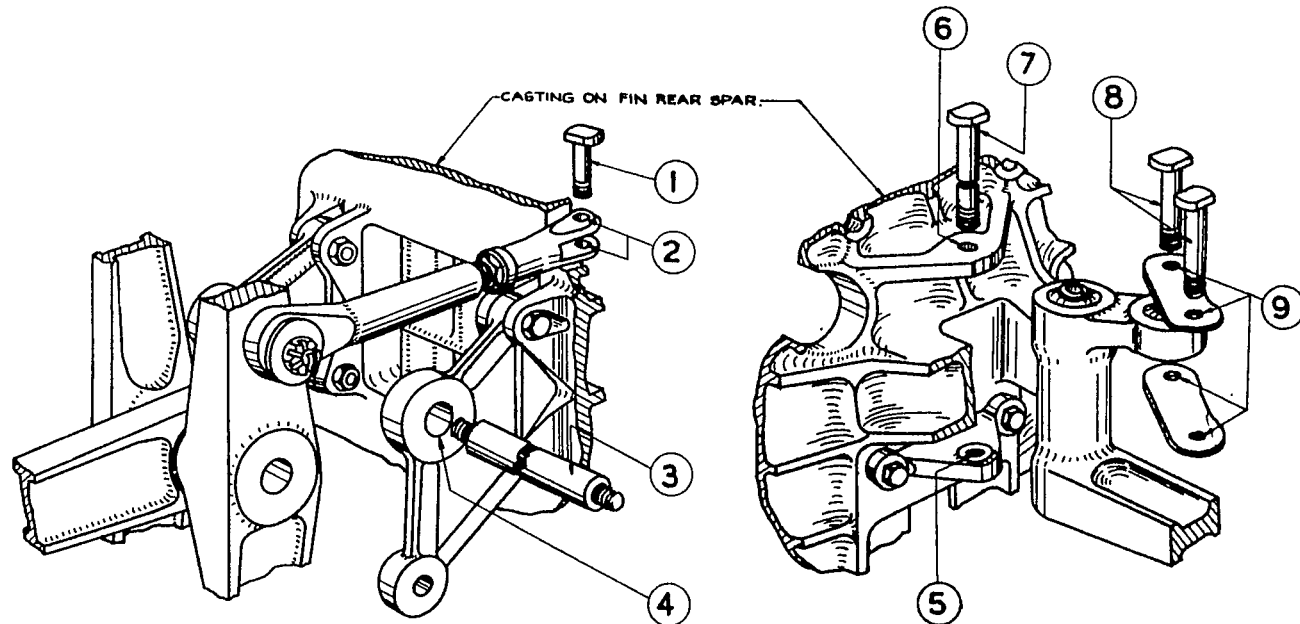


FIG 7/25 EXPLODED VIEWS OF CONTROL FITTINGS — TAIL BOOM REAR END.

FIG 7/25

RESTRICTED

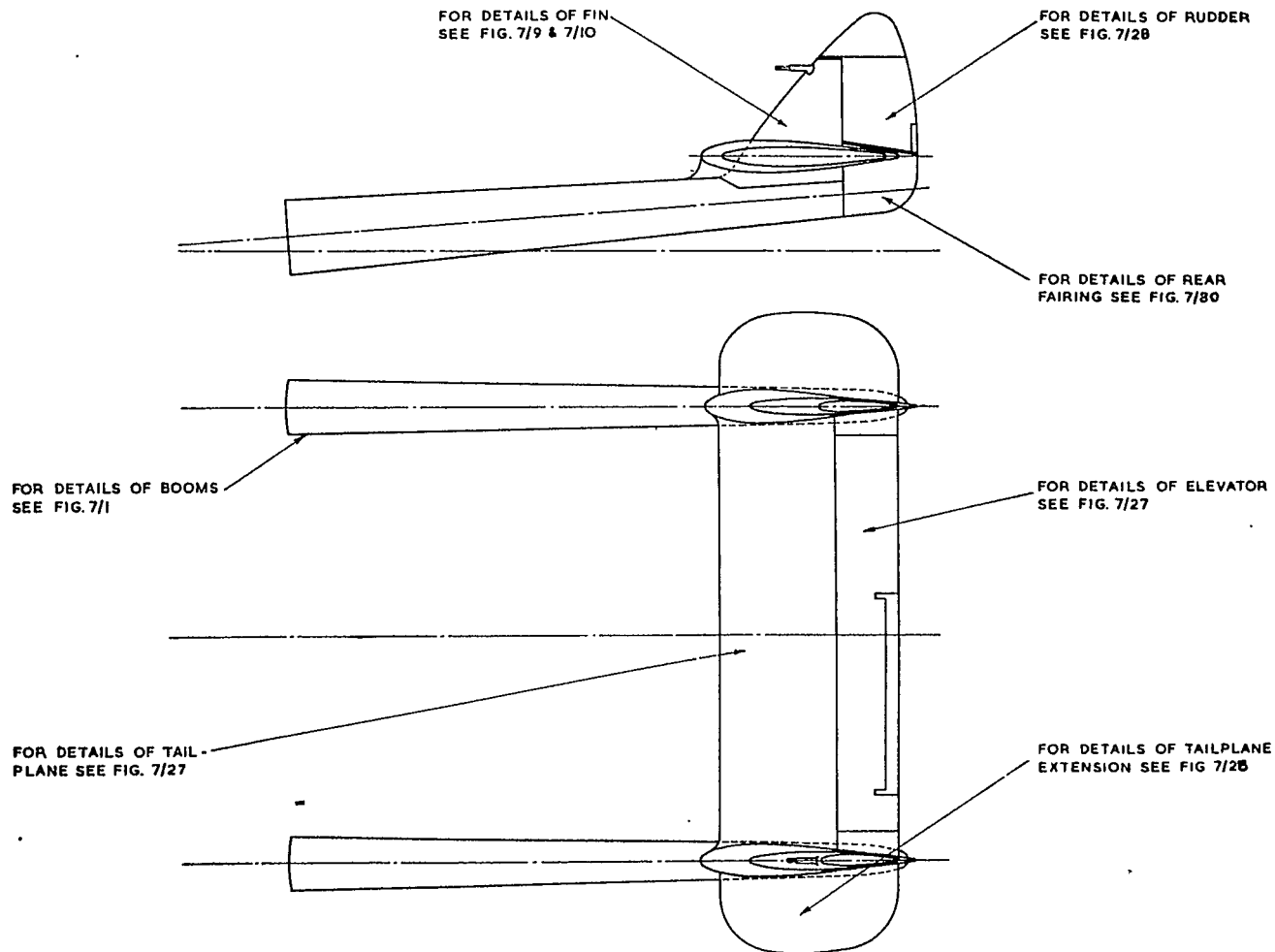
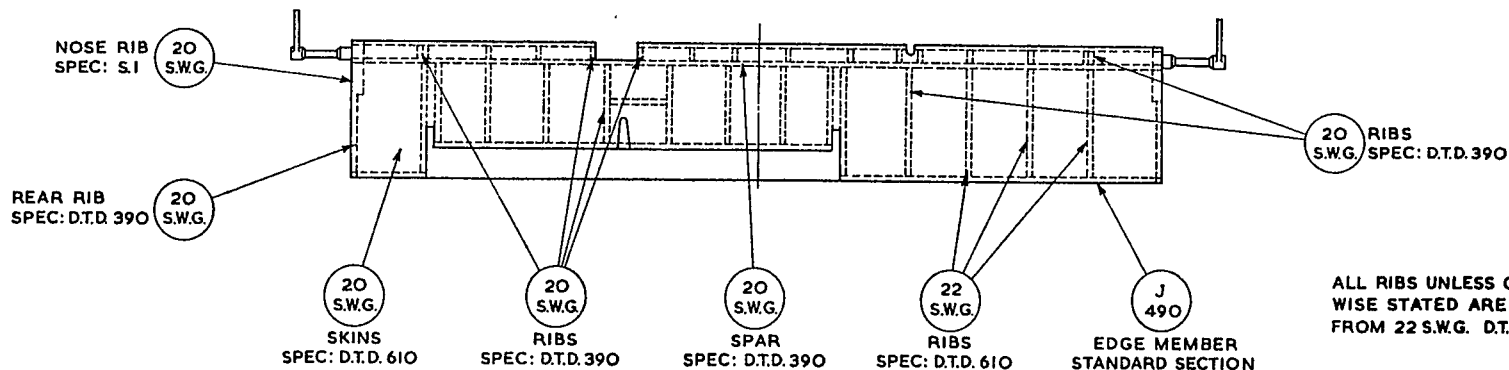
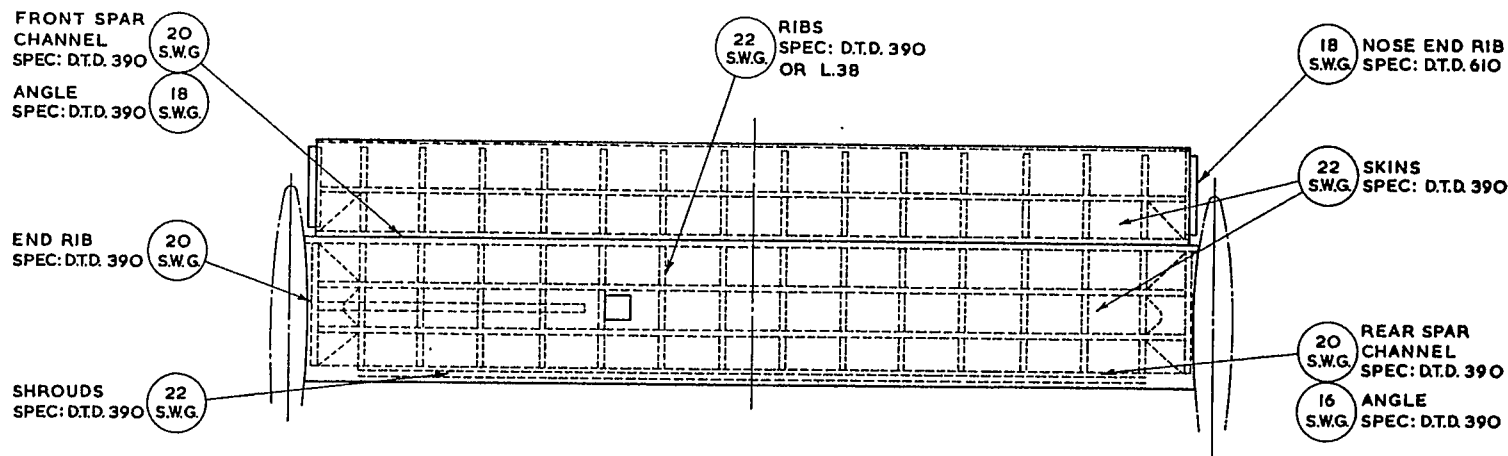


Fig. 7/26. Tail Unit Diagram (two-seater type)

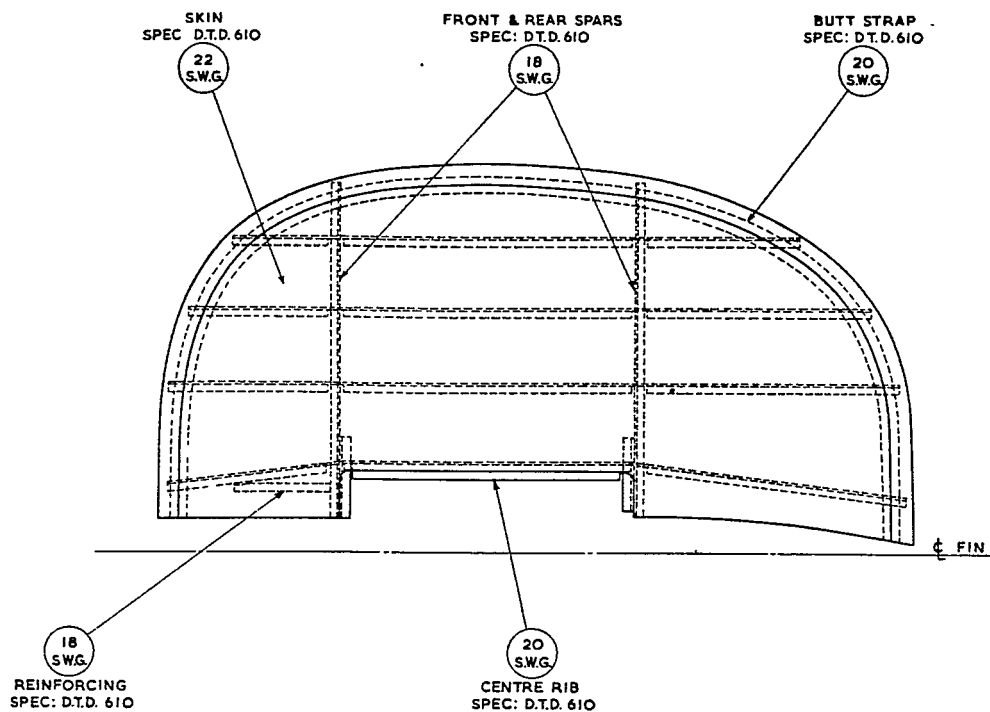
RESTRICTED



ALL RIBS UNLESS OTHERWISE STATED ARE MADE FROM 22 S.W.G. D.T.D. 390

Component	Definition of damage		Repair Fig. No.	Repair Material Item No.
	Negligible	Repairable		
Skins Spars Webs Flanges Ribs Webs & flanges	Dents or bruises 0.03 in. deep 1.0 in. dia. 12.0 in. apart	0.5 in. dia. to 3.0 in. dia. 12.0 in. apart 5.0 in. or 8.0 in. insertion at nose 24.0 in. apart 2.0 in. dia., 18.0 in. apart 1.0 in. wide involving 1.0 in. depth of web Damage in excess of negligible	7/18 4/12, 7/19 7/20 & 7/21 7/23 7/23	16, 38, 39, 57, 58 19, 20, 35, 26, 45, 55, 64 18, 19, 45, 46, 56, 65 19, 20, 28, 29, 52, 53, 61

Fig. 7/27. Tail plane and elevator (two-seater type)

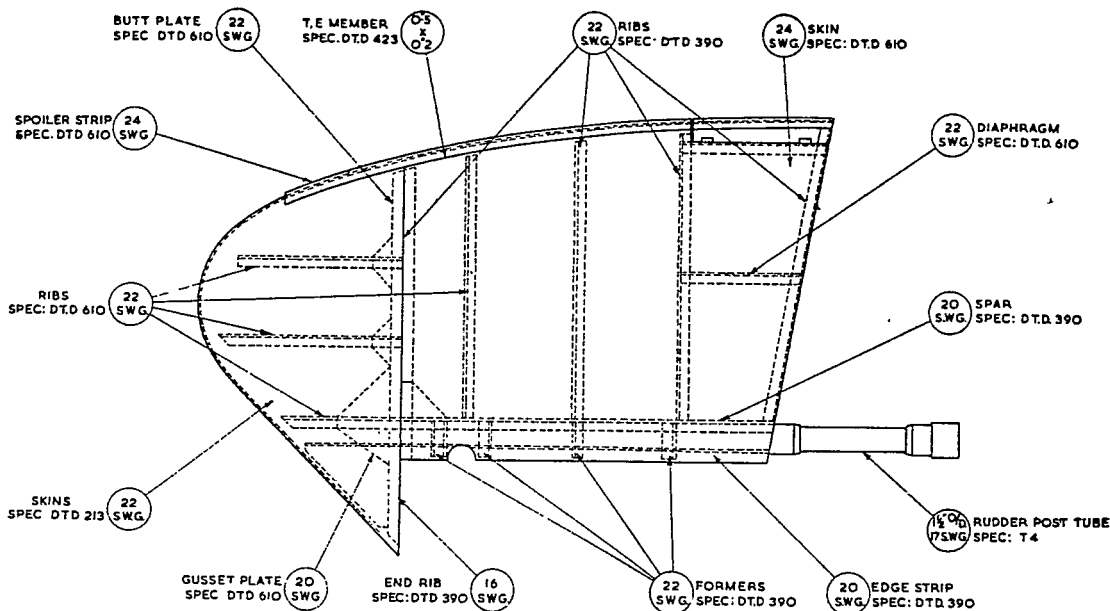


NOTE—All ribs are made from Light Alloy, Spec. D.T.D.610, 22 S.W.G. unless otherwise stated

Component	Definition of damage		Repair fig. No.	Repair material Item No.
	Negligible	Repairable		
Skin	Dents or bruises 0.03 in. deep, 1.0 in. dia. and 12.0 in. apart	0.5 in. to 2.0 in. dia., 12.0 in. apart	7/18	16, 38, 39, 57, 58
Spars		0.5 in. to 2.0 in. dia., 18.0 in. apart 1.0 in. wide involving 1.0 in. depth of web	7/18	
Webs			7/23	19, 20, 28, 29, 52, 53, 61
Flanges				
Ribs		1.0 in. dia. 1.0 in. wide involving 1.0 in. depth of web	7/22	
Webs			7/23	
Flanges				

Fig. 7/28. Tail plane Extension

RESTRICTED



Component	Definition of damage		Repair fig. No.	Repair material item No.
	Negligible	Repairable		
Rudder Skin		0.5 to 3.0 in. dia., 12.0 in. apart 3.0 to 5.0 in. dia., 18.0 in. apart 8.0 in. x 5.0 in., 18.0 in. apart 8.0 in. insertion (nose), 24.0 in. apart	7/18 7/19 7/20 7/21	15, 38, 39, 57, 65 19, 20, 35, 36, 45, 55, 64 18, 19, 20, 37, 38, 42, 43 18, 19, 45, 46, 56, 65
Spars	Dents or bruises 0.03 in. deep, 1.0 in. dia., 12.0 in. apart	0.5 to 2.0 in. dia., 18.0 in. apart	7/18	16, 38, 39, 56, 65
Webs		1.0 in. wide involving 1.0 in. depth of web, 18.0 in. apart	7/23	19, 20, 28, 29, 52, 53, 61
Flanges		1.0 in. dia. 1.0 in. dia. involving 1.0 in. depth of web, 18.0 in. apart	7/22 7/23	19, 20, 28, 29, 53, 61
Ribs				
Webs				
Flanges				

Fig. 7/29. Rudder (two-seater type)

RESTRICTED

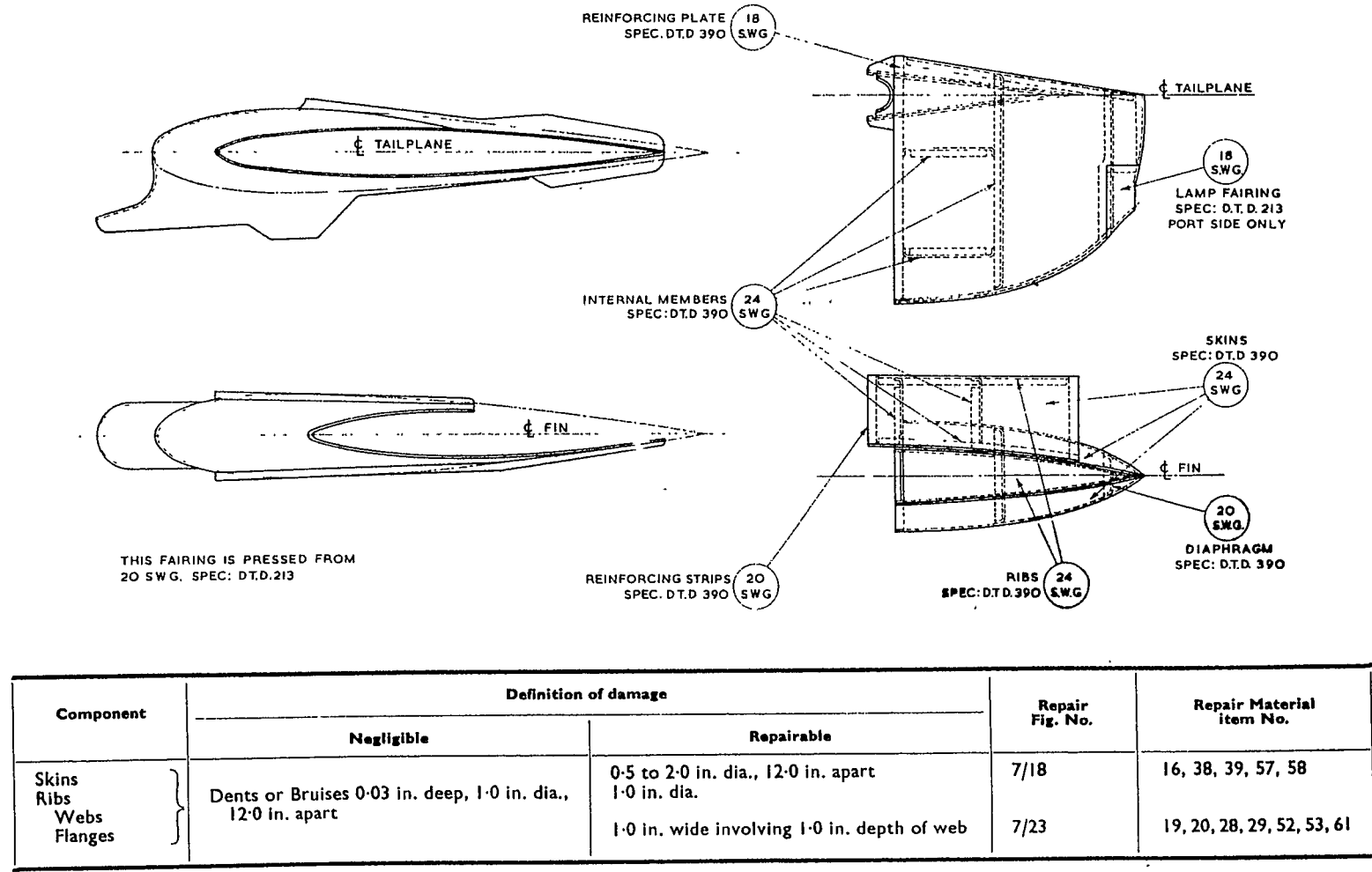
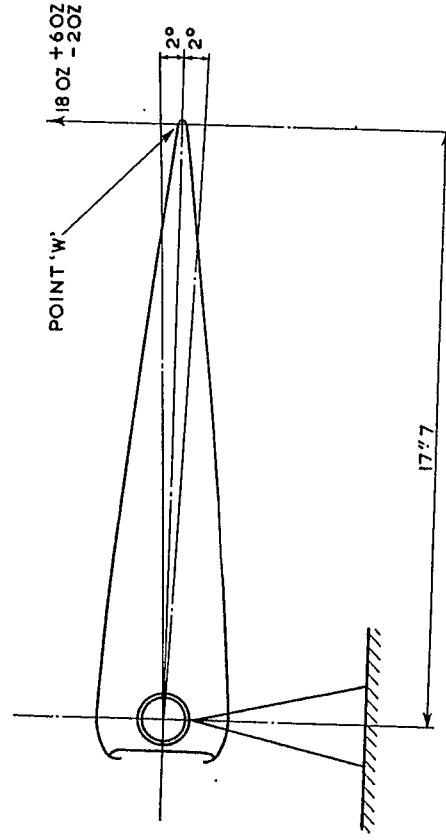
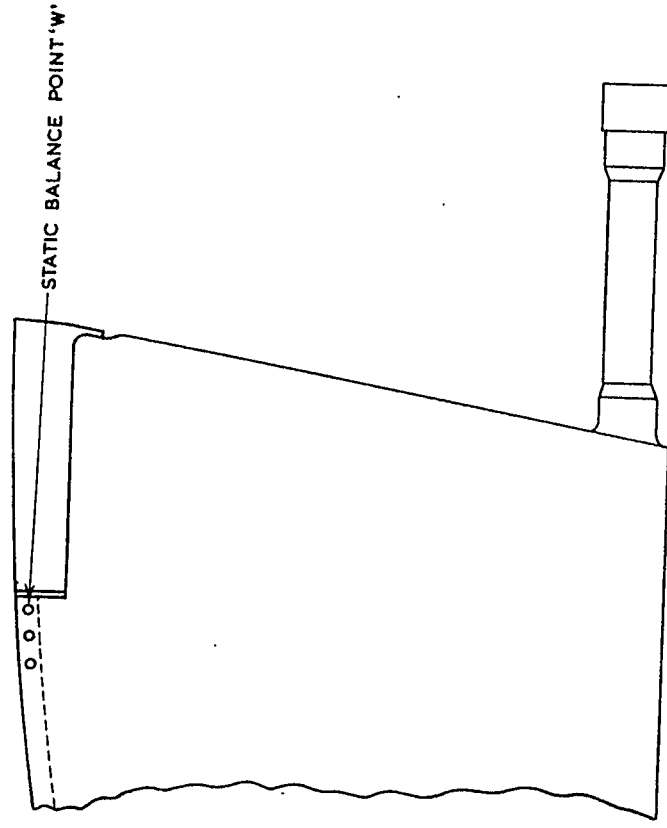


Fig. 7/30. Tail unit fairing

RESTRICTED

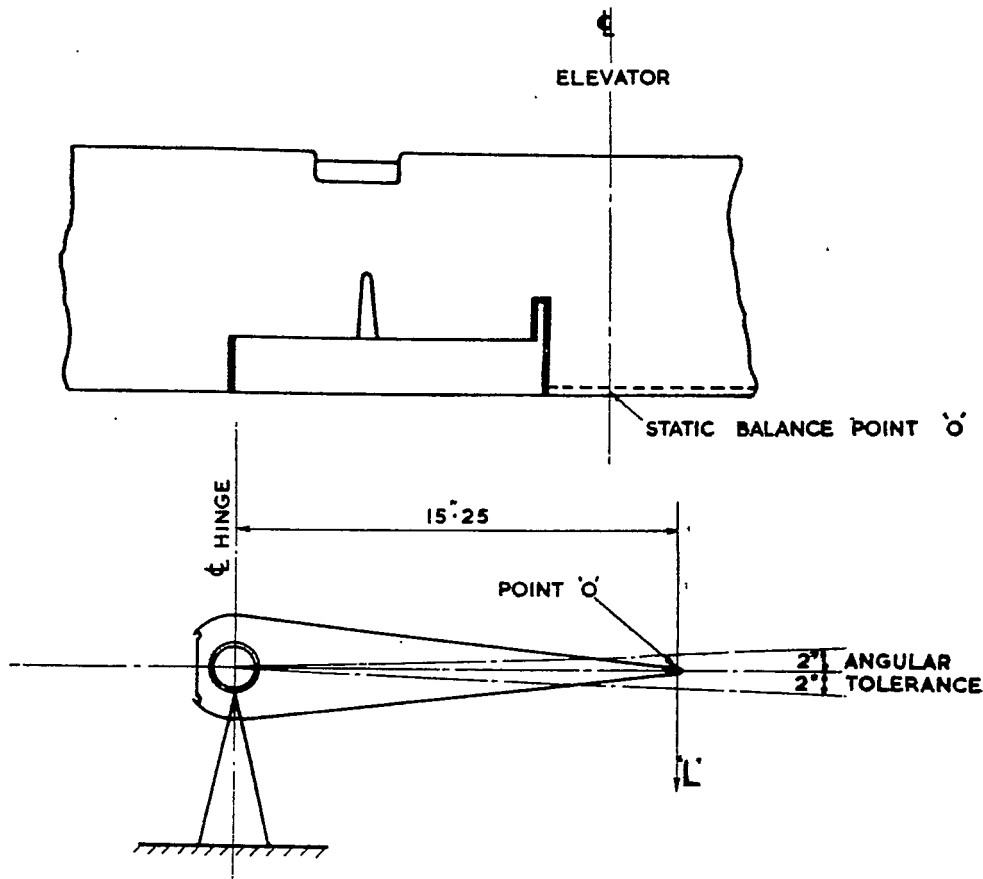
C (AL11)



This rudder, Assembly 13.TR.1, is fitted mainly to NF. Mark 10 aircraft but is being used widely as a replacement in other marks. With the rudder supported at top hinge and end of torque tube, balance must be obtained within an angular tolerance of ± 2 degrees by applying an upward load of 18 oz. $\left\{ \begin{array}{l} -6 \text{ oz.} \\ -2 \text{ oz.} \end{array} \right.$ at point 'W'.

Fig. 7/31A. Balancing of Rudder

RESTRICTED



GENERAL NOTE

AFTER A REPAIR TO AN ELEVATOR HAS BEEN CARRIED OUT AND THE FINAL PAINT SCHEME APPLIED, A BALANCE CHECK SHOULD BE MADE IN THE MANNER GIVEN ON THIS ILLUSTRATION. THE COMPONENT SHOULD BE COMPLETE WITH TAB AND TAB CONNECTING-ROD

BALANCE CHECK

SUPPORT AT TORQUE TUBE ENDS WITH HINGE CENTRE—LINE HORIZONTAL SO THAT IT PIVOTS FREELY. THE ELEVATOR MUST BALANCE WITH ITS CHORD LINE WITHIN THE ANGULAR TOLERANCE, WHEN A LOAD 'L' IS APPLIED AT 15.25 IN. FROM THE HINGE CENTRE—LINE.

AIRCRAFT TYPE	LOAD 'L'
MK. 5 AND 9	4 LB. 13 OZ. + 4 OZ. - 8 OZ.
MK. 10	6 LB. 12 OZ. + 4 OZ. - 8 OZ.
MK. 11 AND 22	7 LB. 3 OZ. + 15 OZ. - 15 OZ.

Fig. 7/31B. Balancing of elevator

RESTRICTED

(A.L.26, Jan. 58)

FIN AND RUDDER FITTINGS

Limits of wear for items shown in fig. 7/32

Key No.	Part number	Description of Part	Nominal Diameter	Female High or Male Low Limit	Maximum Wear Limit	Plug Gauge
1	J.001480 (Mk. 5 and 9) 12.T.205 (Mk. 10, 11 and 22)	Shear bolt	0.5625	—0.004	—0.0045	Micrometer
2	J.00573 J.00570	Fin front casting Bush	0.5625 0.5625	- 0.0016 - 0.0016	-- 0.0035 -- 0.0035	ZA ZA
3	AS.2504/18G	Standard bolt	0.3125	—0.00075	—0.0015	Micrometer
4	J.00602A	Rudder hinge bracket	0.3125	--0.0004	-- 0.002	VC
5	J.00756A	Rudder hinge link	0.3125	--0.0004	—0.002	VC
6	J.00825	Top hinge bracket	0.3125	--0.0004	--0.002	VC
7	J.00561	Fin rear casting	1.0	—0.0078	—0.01	Micrometer
8	J.00875	Spigot bolt	0.3125	—0.0001	—0.0025	Micrometer

RESTRICTED

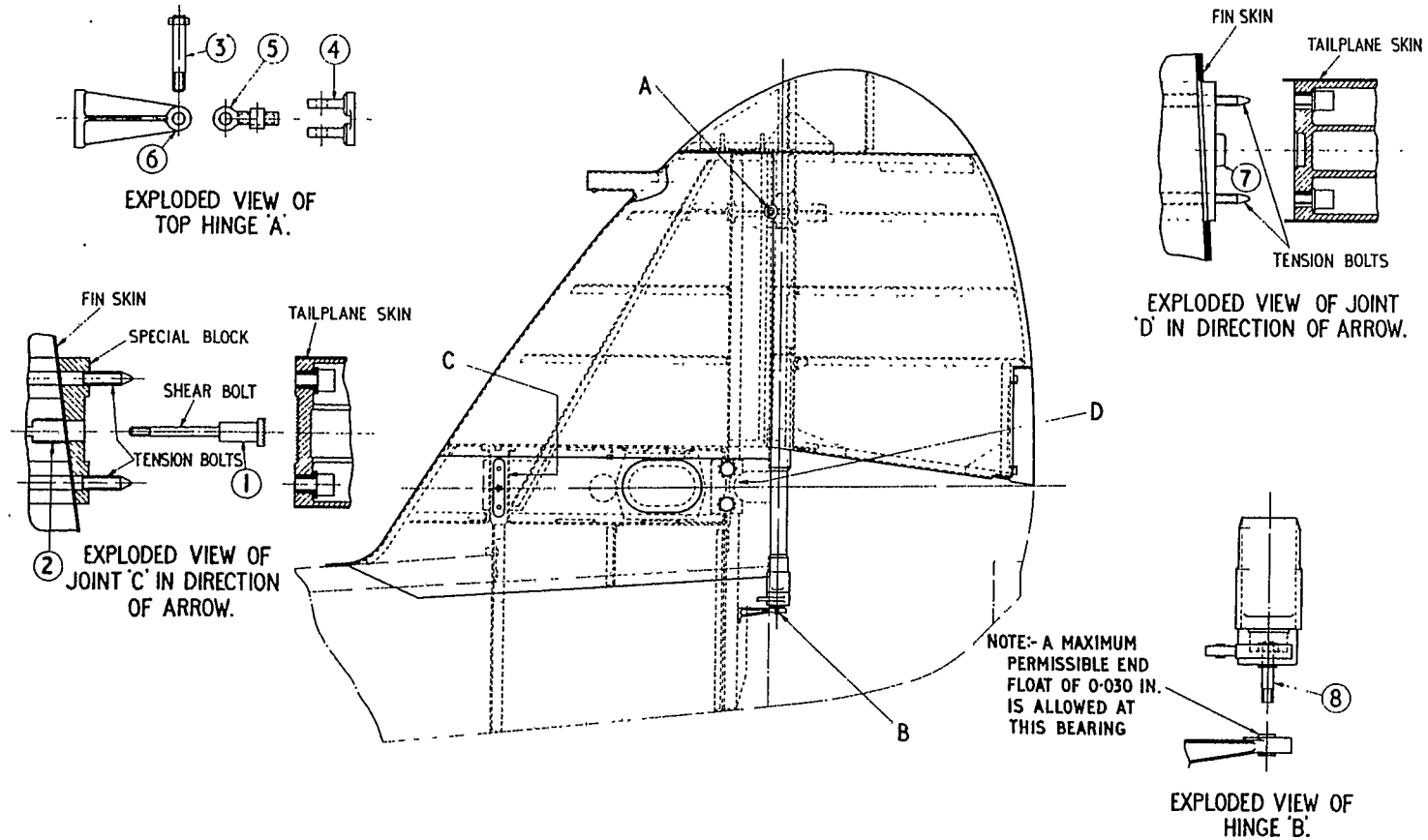


Fig. 7/32. Exploded view of fin and rudder fittings

(A.L. 26, Jan. 58)

RESTRICTED

TAIL PLANE AND ELEVATOR FITTINGS

Limits of wear for items shown in fig. 7/33

Key No.	Part number	Description of Part	Nominal Diameter	Female High or Male Low Limit	Maximum Wear Limit	Plug Gauge
1	12.TP.9	Rear spar end fittings	1.0	-0.0024	-0.005	Feelers and Standard gauge
2	A.1/11G	Standard bolt	0.3125	-0.0035	-0.0045	Micrometer
3	J.00589	Elevator hinge	0.3125	-0.0004	-0.002	VC
4	A.1/20G	Standard bolt	0.3125	-0.0035	-0.0045	Micrometer
5	J.00171	Elevator hinge link	0.3125	-0.0004	-0.002	VC
6	J.00589	Elevator hinge bracket	0.3125	-0.0004	-0.002	VC
7	J.00302	Spigot bolt	0.3125	-0.0001	-0.0025	Micrometer
8	AS.2504/10G	Bolt	0.3125	-0.00075	-0.0015	Micrometer
9	K.00379 (Mk. 5 and 9) 13.CF.601 (Mk. 10, 11 and 22)	Connecting-rod top end	0.3125	-0.0003	-0.002	VC
10	J.00359	Pivot pin	0.25	-0.0015	-0.0035	Micrometer
11	J.00526A —	Jack head	0.25	-0.0003	-0.0025	VB
	J.00362	Bush	0.25	-0.0003	-0.0025	VB
12	J.00893	Special bolt	0.1875	-0.0015	-0.001	Micrometer
13	J.00872 —	Jack barrel	0.1875	-0.0025	-0.0035	VA
14	J.00873	Jack fork end	0.1875	-0.0025	-0.0035	VA
15	J.00894	Special bolt	0.1875	-0.0015	-0.001	Micrometer
16	J.00873	Jack fork end	0.1875	-0.0025	-0.0035	VA
17	J.00453	Special bolt	0.1875	-0.0009	-0.0015	Micrometer
18	J.001829	Tab lever	0.1875	-0.0004	-0.0035	VA

RESTRICTED

(A.L.26, Jan. 58)

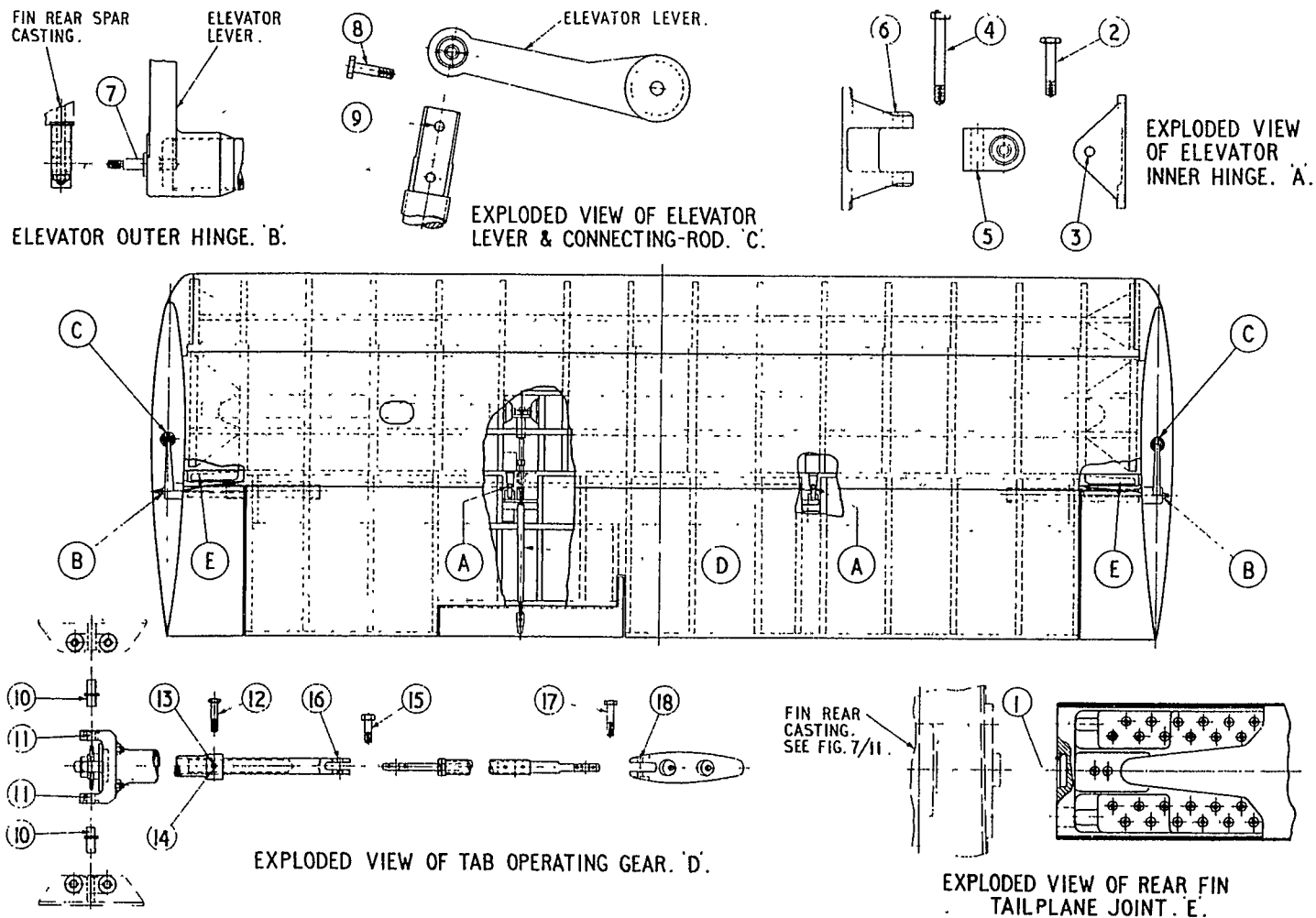


Fig. 7/33. Exploded views of tailplane and elevator fittings

RESTRICTED

APPENDIX

APPENDIX

1. This Appendix introduces and approves the following list of repair drawings and Vol. 2, Part 4, Repair Leaflets.

2. Issue numbers are not quoted for the repair drawings listed inasmuch as it is the practice of the firm manufacturing Vampire Aircraft to cancel the existing drawing number when an important design alteration is made and to reissue the amended drawing under a new number. Any drawing number quoted in the Table is current irrespective to its issue number. Holders of any drawings obtained to illustrate repair methods should take steps to obtain replacements of them when the numbers of such drawings are deleted by A.L. action and replaced by new numbers.

List of Vol. 2, Part 4 Repair Leaflets and applicable drawings

List of contents Vol. 2, Part 4	Repair Drawing No.	Repair Leaflet Number	Date of Issue	Mark of the aircraft to which repair is applicable
	Group B—ENGINE MOUNTING Group C—SYSTEMS Group D—FUSELAGE			
Shell				
Damage to fuselage	R.00.A.1	D.1/1	July 1950	All marks
Access doors	R.00.A.2	D.1/2	July 1950	Mk. 1
Replacement of Joint B member	R.00.A.6	D.1/3	July 1950	All marks
Bulkheads and Diaphragms				
Firewall	R.00.A.7	D.2/1	July 1950	All marks
Cowl support channel	R.00.A.3	D.2/2	July 1950	All marks
	R.00.A.7			
Repair of rear cone	R.00.L.1	D.2/3	July 1950	All marks
Cannon beam	R.00.A.5	D.2/4	July 1950	All marks
Attachment fittings				
Wing and fuselage	—	D.3/1	July 1950	All marks
Cross tube replacement	R.00.A.69	D.3/2	July 1950	All marks
Main plane attachment fittings replacement	R.00.A.67	D.3/3	July 1950	All marks
Replacement root end fittings	R.00.D.142			
	R.00.D.143-4	D.3/4	July 1950	All marks
	Group E—ALIGNING GEAR Group F—MAIN PLANE			
Attachments				
Replacement of root end fittings	R.00.142	D.3/4	July 1950	All marks
	R.00.143-4			
Stringer				
Stiffening of stringer at Rib No. 2	R.00.D.5	F.2/1	July 1950	Mk. 1
	R.00.D.1			
Skin				
Treatment of elongated holes	R.00.D.8	F.3/1	July 1950	All marks
	Group G—TAIL UNIT (incorporating Group H)			
Elevator				
General repair	R.00.J.21	G.1/1	July 1950	All marks
	R.00.J.2			
Rudder				
General repair	R.00.J.3	G.2/1	July 1950	Mk. 3
Tail plane				
General repair	R.00.J.1	G.3/1	July 1950	Mk. 1
	(Sheet 1, Sheet 2)			
Fin				
Repair of upper portion	R.00.J.4	G.4/1	July 1950	All marks
Stub boom				
Removal of nose and rear portion	R.00.D.9	G.5/1	July 1950	Mk. 1 and 3
	Group J—MISCELLANEOUS			

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