GROUP C - MAIN PLANES

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NOSE WHEEL DOORS

Renewal of nose wheel door skin panels

1. This leaflet covers the renewal of any of the outer and inner skin panels of the nose wheel doors. Existing magnesium alloy skins, specification D.T.D.626, are to be replaced, when corroded, cracked or defective, with skins made from material specification L.72 same gauge as the original skin. For application of Cello-seel (Ref.No.33H/113) and protective treatments refer to Part 1, Chapter 1. If it is possible to renew a skin panel with the door in situ, then it will be advantageous to do so, failing which the door must be removed and the procedure detailed in para.3 and 4 adhered to.

Reference drawings

2. Appended below is a list of production assembly drawings, which can be obtained through the normal recognised channels if required to assist the operators when assembling the repair.

D.12776	-	Repair of nose wheel u/c. door skins.
D.9455	Sht.1	G.A. of nose wheel doors.
D.9455	Sht.2	Hinge mounting details.
D.9455	Sht.3	Door details at jack attachment position.
D.9455	Sht.4	Door details at corners.
D.9455	Sht.5	Buffer assembly at leg contact position.
D.9455	Sht.6	Details of access doors. Inner skin nose wheel doors.
D.9455	Sht.7	Assembly of skin jointing former.
D.9455	Sht.8	Assembly of micro switch lever for nose wheel doors.
D.9455	Sht.15	Mounting of aerial on stbd. nose wheel door.

Renewal of nose wheel door outer skins

3. Proceed as follows:-

(1) Door must be suitably supported on trestles to ensure correct alignment of door hinges and door frame being maintained when removing and renewing skin panels.

(2) All items which are attached to the panel being renewed, must be removed and identified to ensure correct reassembly.

(3) Defective skin panels must be removed by carefully drilling out rivets and ensuring that rivet holes are not elongated.

(4) Using the defective skin panel as a template, manufacture a new panel from material specification L.72, 18 gauge. Drill sufficient rivet holes in the panel to maintain rigidity of door frame after service bolting and pinning.

(5) The inner skin panel, opposite to the new outer skin panel, must then be removed by carefully drilling out all the rivets attaching it to the door frame structure.

(6) Complete the drilling on the new outer skin panel by back drilling through the door structure. Any holes which are oversize or elongated must be opened out for 5/32 in. dia. rivets. Countersink to 60 deg. and 120 deg. where required to suit the size of rivets being fitted, also refer to the old panel and reference drawings for additional guidance.

(7) Remove the panel, de-burr all holes, clean down the door structure etc., apply protective treatment to the frame and skin panel, reassemble and finally rivet together.

(8) Check the internal structure for cleanliness, and, if the inner skin panel is serviceable de-burr where necessary, clean down, apply protective treatment, reassemble and finally rivet completely.

(9) Paint as required.

NOTE...
It may be more expedient to refit items removed in para.3, sub-para.(2), before new skins are finally riveted especially where solid rivets are used for attachment.

Renewal of nose wheel door inner skins

4. Proceed as follows:-

(1) Refer to para.3, sub-para.(1), (2) and (3).

(2) Using the defective skin panel as a template, manufacture a new panel from material specification L.72, 20 s.w.g. Where rivet holes can be drilled in conjunction with the door frame by using a back marker, it may be more expedient to do so.

(3) After completing the drilling, deburr all holes, clean down the door structure etc., apply protective treatment to the door frame and skin panel, reassemble and finally rivet completely.

(4) Paint as required.

NOTE . . .

It may be more expedient to refit items removed in para.4, sub-para.(1), before new skins are finally riveted especially where solid rivets are used for attachment.

Information

5. Gaps between skin panels must not exceed 0·03 in. If the skin panel with the mod. and aerial plates attached is to be renewed, the plates must be re-assembled on the new panel. Before finally assembling all inspection and access panels it is imperative that the interior of the door is thoroughly checked for cleanliness. A record must be made of any panels changed to assist personnel in the future.

Materials

6. A list of the materials required to renew all or one of the panels is tabulated in Table 1.

TABLE 1

List of Material

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
1			Forward outer skin	20.0 in. x 54.0 in.	L.72	18	Material required for one door
2			Aft outer skin	20.0 in. x 78.0 in.	L.72	18	
3			Forward inner skin	18.5 in. x 52.0 in.	L.72	20	Material required for one door
4			Aft inner skin	18.5 in. x 76.0 in.	L.72	20	
5	28Q/9417246	A.G.S.2051/424 B.S.	1/8 in. dia. 120 deg. csk./hd. pop rivets	As req.	D.T.D.10B	-	
6	28Q/9417225	A.G.S.2050/424 B.S.	1/8 in. dia. dome head pop rivets	As req.	D.T.D.10B	-	
7	28Q/9417247	A.G.S.2050/429 B.S.	1/8 in. dia. dome head pop rivets	As req.	D.T.D.10B	-	For use with inner skins
8	28Q/9417248	A.G.S.2050/435 B.S.	1/8 in. dia. dome head pop rivets	As req.	D.T.D.10B	-	spec. L.72
9		A.G.S.2070/419 B.S.	1/8 in. dia. 100 deg. csk./hd. pop rivets	As req.	D.T.D.10B	-	
10	28Q/17494	SP.80/404	1/8 in. dia. snap head solid rivets	As req.	L.86	-	
11		SS.4111/403	1/8 in. dia. 60 deg. csk./hd. solid rivets	As req.	L.86	-	
12		SS.4111/404	1/8 in. dia. 60 deg. csk./hd. solid rivets	As req.	L.86	-	For use with outer skins
13		SS.4111/405	1/8 in. dia. 60 deg. csk./hd. solid rivets	As req.	L.86	-	spec. L.72
14	28Q/9417247	A.G.S.2051/429 B.S.	1/8 in. dia. 120 deg. csk./hd. pop rivets	As req.	D.T.D.10B	-	
15	28Q/9417174	A.G.S.2049/423 B.S.	1/8 in. dia. 120 deg. csk./hd. pop rivets	As req.	L.58	-	
16	28Q/9417188	A.G.S.2048/423 B.S.	1/8 in. dia. dome head pop rivets	As req.	L.58	-	
17	28Q/9417189	A.G.S.2048/429 B.S.	1/8 in. dia. dome head pop rivets	As req.	L.58	-	To be used if refitting
18	28Q/9417248	A.G.S.2050/435 B.S.	1/8 in. dia. dome head pop rivets	As req.	D.T.D.10B	-	original inner skins
19		A.G.S.2070/419 B.S.	1/8 in. dia. 100 deg. csk./hd. pop rivets	As req.	D.T.D.10B	-	spec. D.T.D.626
20	28Q/18326	SP.79/404	1/8 in. dia. snap head solid rivets	As req.	L.58		

NOTE . . . For oversize holes use rivets 5/32 in. dia. same type and specification.

REPAIR TO STRINGER ATTACHMENT BRACKETS - AFT FACE, REAR PRESSURE BULKHEAD, STATION 204F.

General information

1. This repair is applicable to Vulcan B.Mk.1, Mk.1A and Mk.2 aircraft.

2. This repair calls for the renewal of all cracked, corroded, or damaged stringer attachment brackets on the aft face of the rear pressure bulkhead, station 204F, that are outside the tolerances quoted in Repair Leaflet A.1/3. It is essential that new brackets, manufactured from aluminium alloy only, be used for renewal.

3. This repair is concerned only with the renewal of defective stringer brackets and does not give any details of removals or re-installations that have been necessary to gain access to them.

4. Refer to Repair Leaflet A.1/2 to determine the correct aircraft jacking procedure for this repair before commencing operations.

5. Before commencing operations, obtain the manufacturers drawings that are listed below. If any of these drawings have been held on a station, it is essential that they be checked, before use, to see that they are the latest issue.

6. The original magnesium alloy stringer attachment brackets, together with their stringer positions and new aluminium alloy stringer attachment brackets, are given in the Key to Fig.1 of this Leaflet.

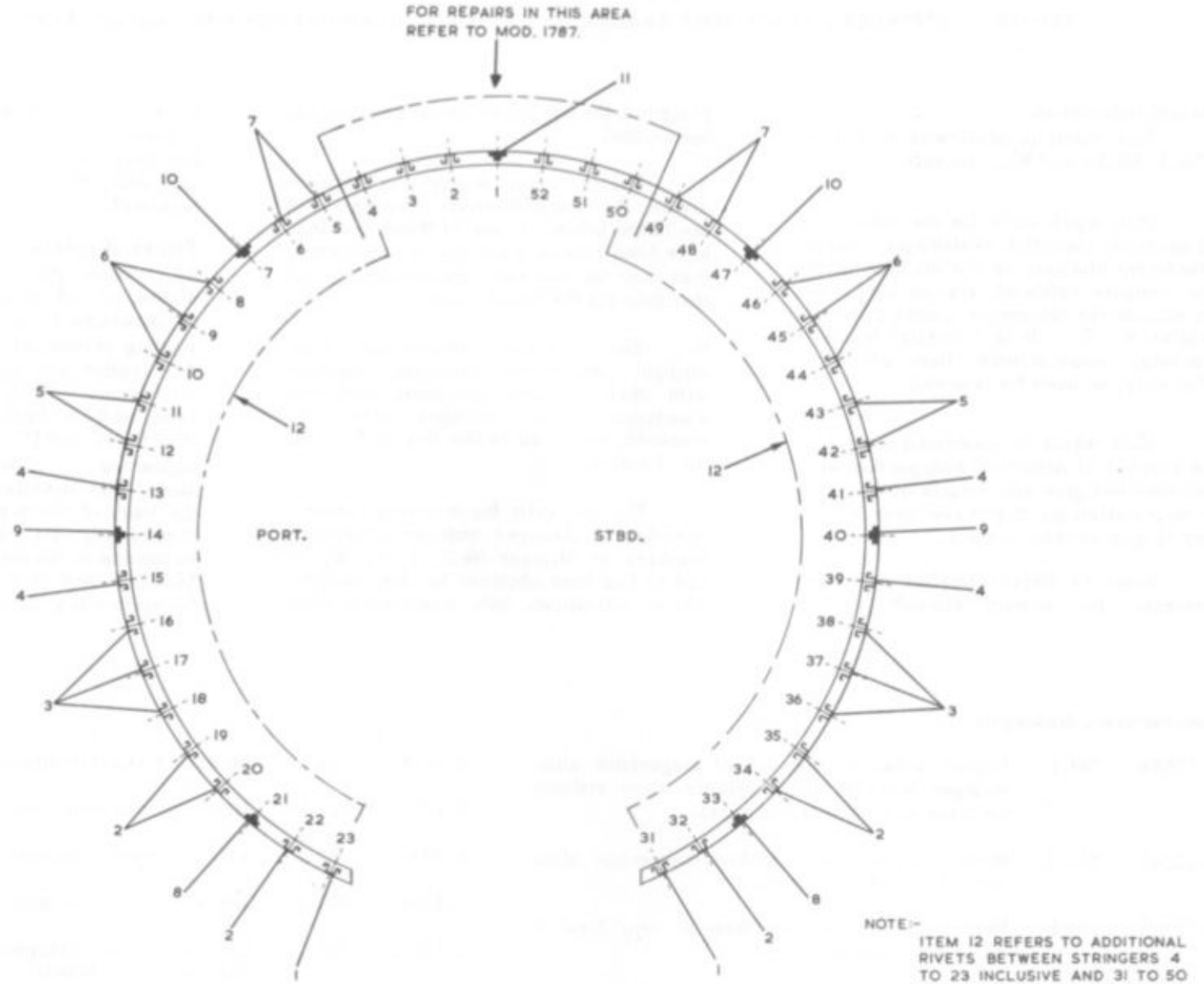
7. The necessity for renewing cracked, corroded or damaged stringer attachment brackets at stringer No.2, 3, 4, 50, 51 and 52 has been obviated by Mod.No.1787, which introduces two reinforcing strap plates on the top surface of the fuselage. It should be noted that Mod.No.1787 calls for strap plates to be embodied on both fore and aft faces of the rear pressure bulkhead.

Fitting of special screws

8. When fitting the external strap plates, as called for by Mod.1787, it may be necessary to fit 1SS.5213 special, self-tapping screws and reference to Fig.2 of this leaflet will give the correct method for fitment. This screw has a recessed head and a Phillips No.2 screwdriver (Ref.No.1C/6411) must be used for tightening. Care must be exercised during this operation to avoid damage to the head of the screw or breakage of the screwdriver bit through overtightening. Reference to drawing D.12452 - sheet 2 and 5D.12452 will give all other relevant data for completing the operation.

Manufacturers drawings:-

D.12634	Sht.1	Repair showing renewals of magnesium alloy stringer brackets by aluminium alloy stringer brackets at all structural joints.
D.12365	Sht.2	Method of renewing cracked magnesium alloy top hat stringer brackets.
D.12365	Sht.1	Repair to stringer brackets on rear face of pressure bulkhead.
D.12620	-	Semi-finished top hat stringer brackets.
D.9428	Sht.5	Details of stringer attachment - crews nacelle.
D.8734	Sht.3	Details of centre section skinning.
A.3096	Sht.2	G.A. of aircraft transport joints.
A.3071	Sht.2	G.A. of aircraft transport joints.
D.12613	Sht.1	Top hat section stringer attachment bracket at rear pressure bulkhead.



NOTE:-
ITEM NUMBERS FOR KEY TABLES
ARE ARRANGED EXTERNALLY

NOTE:-
ITEM 12 REFERS TO ADDITIONAL RIVETS BETWEEN STRINGERS 4 TO 23 INCLUSIVE AND 31 TO 50 INCLUSIVE. REFER TO DRAWING D.12365, SHEET 1 AND 2.

Fig. 1. Rear pressure bulkhead, station 204F — aft face

KEY TO FIG.1

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
* 1		9D.12614	Top hat stringer bracket at stringers 23 and 31	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 9D.8654.
		2D.12365	Reinforcing strip	4	L.72	14	Ref.drawing D.12365, sheet 2.
	28D/1011259	A.25/10G	Bolt - hexagon head	2	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10291	A.G.S.2001/G1	Stiffnut	2	S.112		
	28W/9419476	SP.15/G	Washer	4	L.72		Washer under head and nut.
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2.
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	16	L.86		Ref. drawing D.12365, sheet 2.
	28Q/	SS.4141/508	Rivet - 120 deg. countersunk head	10	L.86		Ref.drawing D.12365, sheet 2.
* 2		10D.12614	Top hat stringer bracket at stringers 22, 32, 19, 20, 34 and 35.	6	D.T.D.5004	Forging	Redundant magnesium alloy bracket 10D.8654.
		2D.12365	Reinforcing strip	12	L.72	14	Ref.drawing D.12365, sheet 2.
	28D/1011259	A.25/10G	Bolt - hexagon head	6	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10291	A.G.S.2001/G1	Stiffnut	6	S.112		
	28W/9419476	SP.15/G	Washer	12	L.72		Washer under head and nut
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2.
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	48	L.86		Ref.drawing D.12365, sheet 2.
	28Q/	SS.4141/508	Rivet - 120 deg. countersunk head	30	L.86		Ref.drawing D.12365, sheet 2.

KEY TO FIG.1 (Continued)

Item No.	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
* 3		11D.12614	Top hat stringer bracket at stringers 16, 17, 18, 36, 37 and 38.	6	D.T.D.5004	Forging	Redundant magnesium alloy bracket 11D.8654
		2D.12365	Reinforcing strip	12	L.72	14	Ref.drawing D.12365, sheet 2.
	28D/1011259	A.25/10G	Bolt - hexagon head	6	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10291	A.G.S.2001/G1	Stiffnut	6	S.112		
	28W/9419476	SP.15/G	Washer	12	L.72	18	
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	48	L.86		Ref.drawing D.12365, sheet 2,
	28Q/	SS.4141/508	Rivet - 120 deg. countersunk head	30	L.86		Ref.drawing D.12365, sheet 2.
* 4		12D.12614	Top hat stringer bracket at stringers 13, 15, 39 and 41.	4	D.T.D.5004	Forging	Redundant magnesium alloy bracket 12D.8654.
		2D.12365	Reinforcing strip	8	L.72	14	Ref.drawing D.12365, sheet 2.
	28D/1011259	A.25/10G	Bolt - hexagon head	4	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10291	A.G.S.2001/G1	Stiffnut	4	S.112		
	28W/9419476	SP.15/G	Washer	8	L.72	18	Washer under head and nut.
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2.
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	32	L.86		) Ref.drawing D.12365,) sheet 2
	28Q/	SS.4141/508	Rivet - 120 deg. countersunk head	20	L.86		) Ref.drawing D.12365, sheet 2.

KEY TO FIG.1 (Continued)

Item No.	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
* 5		13D.12614	Top rear stringer bracket at stringers 11, 12, 42 and 43	4	D.T.D.5004	Forging	Redundant magnesium alloy bracket 13D.8654.
		2D.12365	Reinforcing strip	8	L.72	14	Ref.drawing D.12365, sheet 2.
	28D/1011259	A.25/10G	Bolt - hexagon head	4	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10291	A.G.S.2001/G1	Stiffnut	4	S.112		
	28W/9419476	SP.15/G	Washer	8	L.72	18	Washer under head and nut.
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2.
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	32	L.86		Ref.drawing D.12365, sheet 2.
	28Q/	SS.4141/508	Rivet - 120 deg. countersunk head	20	L.86		Ref.drawing D.12365, sheet 2.
* 6		14D.12614	Top hat stringer bracket at stringers 8, 9, 10, 44, 45 and 46.	6	D.T.D.5004	Forging	Redundant magnesium alloy bracket 14D.8654.
		2D.12365	Reinforcing strip	12	L.72	14	Ref.drawing D.12365, sheet 2.
	28D/1011259	A.25/10G	Bolt- hexagon head	6	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10291	A.G.S.2001/G1	Stiffnut	6	S.112		
	28W/9419476	SP.15/G	Washer	12	L.72	18	Washer under head and nut.
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2.
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	48	L.86		Ref.drawing D.12365, sheet 2.
	28Q/	SS.4141/508	Rivet - 120 deg. countersunk head	30	L.86		Ref.drawing D.12365, sheet 2.

KEY TO FIG.1 (Continued)

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
* 7		15D.12614	Top hat stringer bracket at stringers 5, 6, 48 and 49	4	D.T.D.5004	Forging	Redundant magnesium alloy bracket 15D.8654.
		2D.12365	Reinforcing strip	8	L.72	14	Ref.drawing D.12365, sheet 2.
	28D/1011259	A.25/10G	Bolt - hexagon head	4	S.105		Ref.drawing A.3096, sheet 2 and A.3071 sheet 2.
	28M/10291	A.G.S.2001/G1	Stiffnut	4	S.112		
	28W/9419476	SP.15/G	Washer	8	L.72	18	Washer under head and nut.
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2.
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	32	L.86		Ref.drawing D.12365, sheet 2.
	28Q/	SS.4141/508	Rivet - 120 deg. countersunk head	20	L.86		Ref.drawing D.12365, sheet 2.
8		7D12625	'T' stringer bracket at stringers 21 and 33	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 7D.8653.
	28D/1011246	A.25/11E	Bolt - hexagon head	4	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10290	A.G.S.2001/E1	Stiffnut	4	S.112		
	28W/9419405	SP.15/E	Washer	8	L.72	18	Washer under head and nut.
	28Q/	SS.4111/410	Rivet - 60 deg. countersunk head	28	L.86		Ref.drawing D.8734, sheet 3.
	28Q/9141064	SP.80/408	Rivet - snap head	10	L.86		Ref.drawing D.8734, sheet 3.

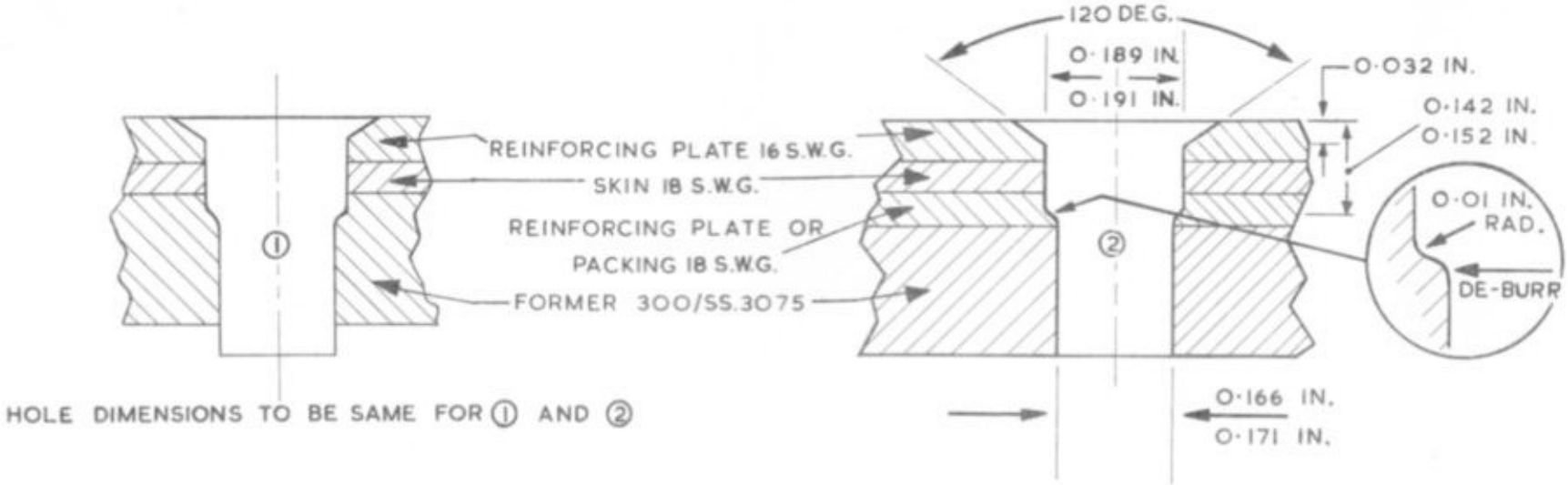
KEY TO FIG.1 (Continued)

Item No.	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
9		6D.12625	'T' stringer bracket at stringers 14 and 40	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 6D.8653.
	28D/1011246	A.25/11E	Bolt - hexagon head	4	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10290	A.G.S.2001/E1	Stiffnut	4	S.112		
	28W/9419405	SP.15/E	Washer	8	L.72	18	Washer under head and nut.
	28Q	SS.4111/410	Rivet - 60 deg. countersunk head	28	L.86		Ref.drawing D.8734, sheet 3.
	28Q/9141064	SP.80/408	Rivet - snap head	10	L.86		Ref.drawing D.8734, sheet 3.
10		9D.12625	'T' stringer bracket at stringers 7 and 47	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 9D.8653.
	25D/1011259	A.25/10G	Bolt - hexagon head	4	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10291	A.G.S.2001/G1	Stiffnut	4	S.112		
	28W/9419476	SP.15/G	Washer	8	L.72	18	Washer under head and nut.
	28Q/	SS.4111/410	Rivet - 60 deg. countersunk head	28	L.86		Ref.drawing D.8734, sheet 3
	28Q/9141054	SP.80/408	Rivet - snap head	10	L.86		Ref.drawing D.8734, sheet 3.
11		5D.12625	'T' stringer bracket at stringer 1	1	D.T.D.5004	Forging	Redundant magnesium alloy bracket 5D.8653.
	28D/1010031	A.25/8E	Bolt - hexagon head	2	S.105		Ref.drawing A.3096, sheet 2 and A.3071, sheet 2.
	28M/10290	A.G.S.2001/E1	Stiffnut	2	S.116		
	28W/9419405	SP.15/E	Washer	4	L.72	18	Washer under head and nut.
	28Q/	SS.4111/410	Rivet - 60 deg. countersunk head	14	L.86		Ref.drawing D.8734, sheet 3.
	28Q/9141064	SP.80/408	Rivet - snap head	5	L.86		Ref.drawing D.8734, sheet 3.

KEY TO FIG.1 (Continued)

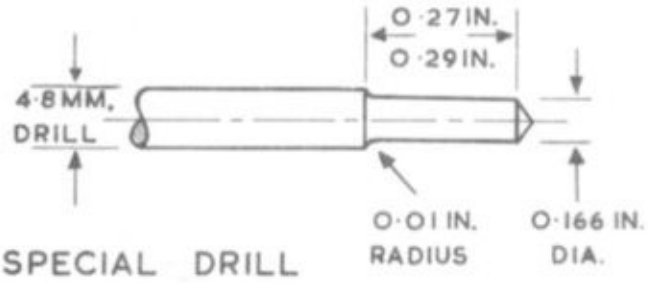
Item No.	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
12	28Q/	SS.4111/408	Rivet - 60 deg. countersunk head	As req.	L.86		Ref. drawing D. 12365, sheet 1 and 2.
		3.SS/4864	Special rivet - 60 deg. countersunk head	As req.	L.86		Ref. drawing D. 12365, sheet 1 and 2.

* If these brackets are unobtainable, they may be manufactured locally from D.12620 semi-finished brackets to Drawing No. D. 12614 - Sheet 1.



The drilling of holes to be carried out using drills given below.

1. Drill hole using special drill OR use alternative method.



SPECIAL DRILL

A. Drill pilot hole with 3.9 m.m. drill
B. Final drill with 4.2 m.m. drill
C. Drill counterbore using 4.8 m.m. counterbore drill

2. Countersink with *120 deg. cutter (Ref.No.1C/6571).

3. Screw to be assembled after the thread and plain portion have been dipped in Celloseel (Ref.No. 33H/113).

*NOTE . . . *The pilot of the 120 deg. countersink cutter must be shortened to 0.1 in.*

Fig.2. Procedure for fitment of 1SS.5213 self tapping screw.

REPAIR TO STRINGER ATTACHMENT BRACKETS - FORWARD AND AFT FACES, REAR SPAR, STATION 355.5A

General information

1. This repair is applicable to Vulcan B.Mk.1 and Mk.1A aircraft.

2. This repair calls for the renewal of all cracked, corroded or damaged stringer attachment brackets on the forward and aft face of the rear spar at station 355.5A, that are outside the tolerances quoted in Repair Leaflet A.1/3. It is essential that new brackets, manufactured from aluminium alloy only, be used for renewal.

3. This repair is concerned only with the renewal of defective stringer brackets and does not give any details of removals or reinstallations that have been necessary in gaining access to them.

4. Before commencing operations, obtain the manufacturers drawings that are listed below. If any of these drawings have been held on a station, it is essential that they be checked, before use, to see that they are the latest issue.

5. Refer to Repair Leaflet A.1/2 to determine the correct aircraft jacking procedure for this repair before commencing operations.

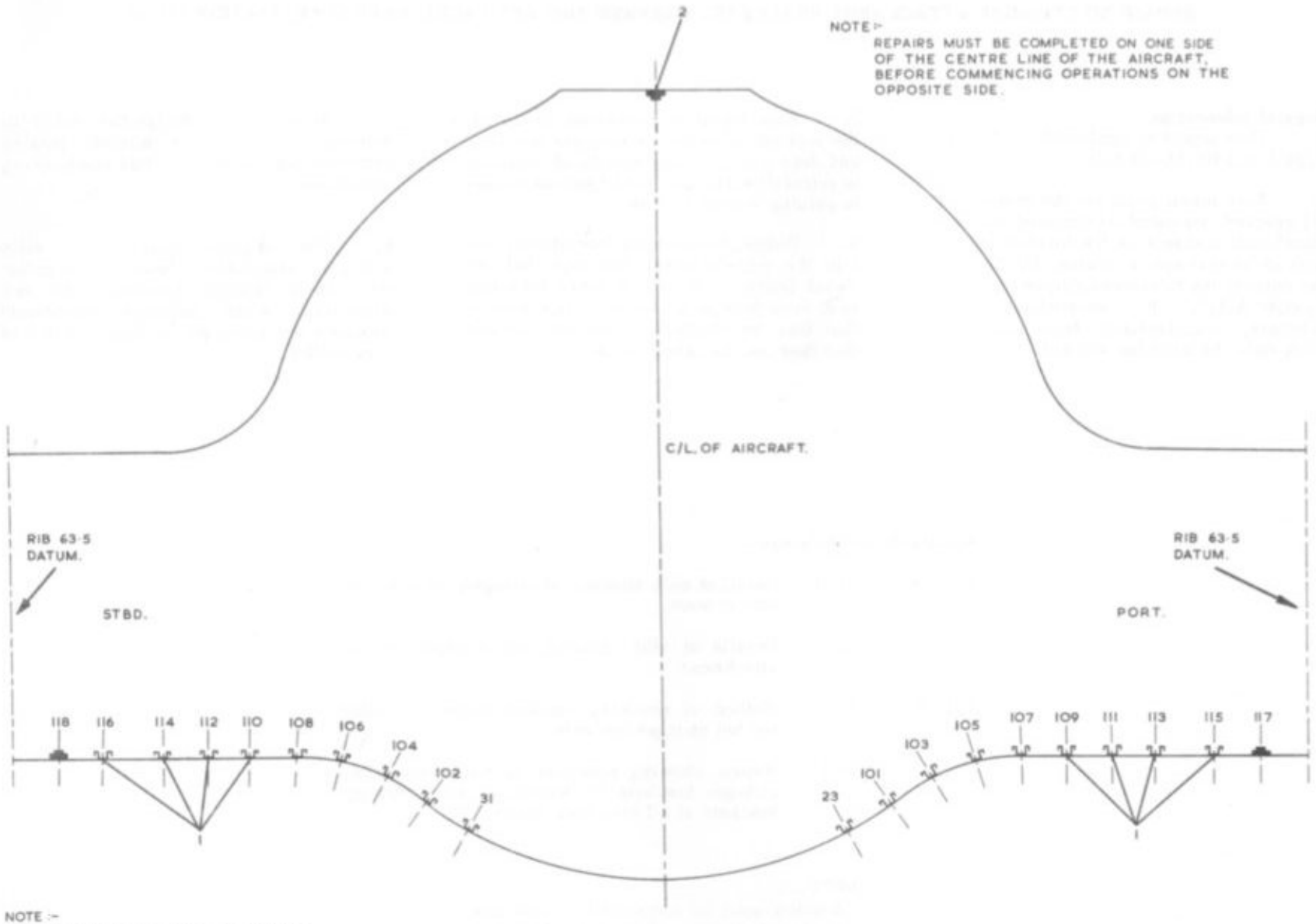
6. The original magnesium alloy stringer attachment brackets, together with their stringer positions and new aluminium alloy stringer attachment brackets are given in the Key to Fig.1 of this leaflet.

Manufacturers drawings:-

D.8734	Sht.16	Detail of skin riveting at stringers on rear spar bottom boom.
D.8734	Sht.18	Details of skin riveting and stringer bracket attachment.
D.12365	Sht.2	Method of renewing cracked magnesium alloy top hat stringer brackets.
D.12634	Sht.1	Repair showing renewals of magnesium alloy stringer brackets by aluminium alloy stringer brackets at all structural joints.

NOTE...

Repairs must be completed on one side of the centre line of the aircraft before commencing operations on the opposite side.



NOTE :-
ITEM NUMBERS FOR KEY TABLES ARE ARRANGED EXTERNALLY.

Fig.1. Rear spar, station 355·5A – forward and aft faces

RESTRICTED

KEY TO FIG.1

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
1		2D.12616	Top hat stringer bracket at stringers 110,112,114,116,109, 111,113 and 115	8	D.T.D.5004	Forging	Redundant magnesium alloy bracket 2D.9091
	28D/13919	A.26/22G	Bolt - hexagon head	8	S.105		Ref.drawing D.8734, sheet 16
	28M/10291	A.G.S.2001/G1	Stiffnut	8	S.112		
	28W/9419403	SP.13/G	Washer	8	L.72		
		2D.12365	Reinforcing strip	16	L.72	14	Ref.drawing D.12365, sheet 2
	28Q/16382	A.G.S.2065/512	Avdel rivets - snap head	80	L.86		Ref.drawing D.12365, sheet 2
2		10D.12626	Forward 'T' section stringer bracket at stringer 1	1	D.T.D.5004	Forging	Redundant magnesium alloy bracket 10D.8655
		427D.8610	Aft 'T' section stringer bracket at stringer 1	1	D.T.D.5004	Forging	Redundant magnesium alloy bracket 285D.8610
	28D/1011244	A.25/9E	Bolt - hexagon head	1	S.105		Ref.drawing D.8734, sheet 18
	28M/10290	A.G.S.2001/E1	Stiffnut	1	S.112		
	28W/9418921	SP.13/E	Washer	1	L.72		
	28Q/9141064	SP.80/408	Rivet - snap head	10	L.86		*Ref.drawing D.8734, sheet 18
	28Q/	SS.4141/408	Rivet - 120 deg. countersunk head	20	L.86		*Ref.drawing D.8734, sheet 18

*As these drawings call up magnesium alloy brackets and rivets, use in pictorial sense only.

NOTE... *Stringer brackets at stringer number 23, 101, 103, 105, 107, 117, 31, 102, 104, 106, 108 and 118 are already manufactured from aluminium alloy.*

REPAIR TO STRINGER ATTACHMENT BRACKETS - FORWARD FACE TRANSPORT FORMER, STATION 428A

General information

1. This repair is applicable to Vulcan Mk.1 and Mk.1A aircraft.

2. This repair calls for the renewal of all cracked, corroded or damaged stringer attachment brackets on the forward face of the transport former, station 428A, that are outside the tolerances quoted in Repair Leaflet A.1/3. It is essential that new brackets, manufactured from aluminium alloy only, be used for renewal.

3. This repair is concerned only with the renewal of defective stringer brackets and does not give any details of removals or reinstallations that have been necessary in gaining access to them.

4. Before commencing operations, obtain the manufacturers drawings listed below. If any of these drawings have been held on a station, it is essential that they be checked, before use, to see that they are the latest issue.

5. Refer to Repair Leaflet A.1/2 to determine the correct aircraft jacking procedure for this repair before commencing operations.

6. The original magnesium alloy stringer attachment brackets, together with their stringer positions and new aluminium alloy stringer attachment brackets are given in Fig.1 of this leaflet.

7. If it is necessary to effect renewals of stringer brackets in more than one segment of former 428A (refer to Fig.1 for details of segments), it is essential that repairs in any one segment be completed before commencing operations in another.

Manufacturers drawings

A.3071	Sht.2	G.A. of aircraft transport joints.
D.12365	Sht.2	Method of renewing cracked magnesium alloy top hat stringer brackets.
D.9024	Sht.4	Termination and attachment of stringers at 428A.
D.9024	Sht.5	Termination and attachment of stringers at 428A.
D.10702	Sht.2	G.A. rear fuselage - closing panel and 63.5 joint.
D.12622		Top hat stringer. Semi-finished stringer bracket for renewal purposes.
295D.9344		Stringer attachment bracket, former 428A.
428 to 434D.8610		Top hat stringer bracket at former 428A.

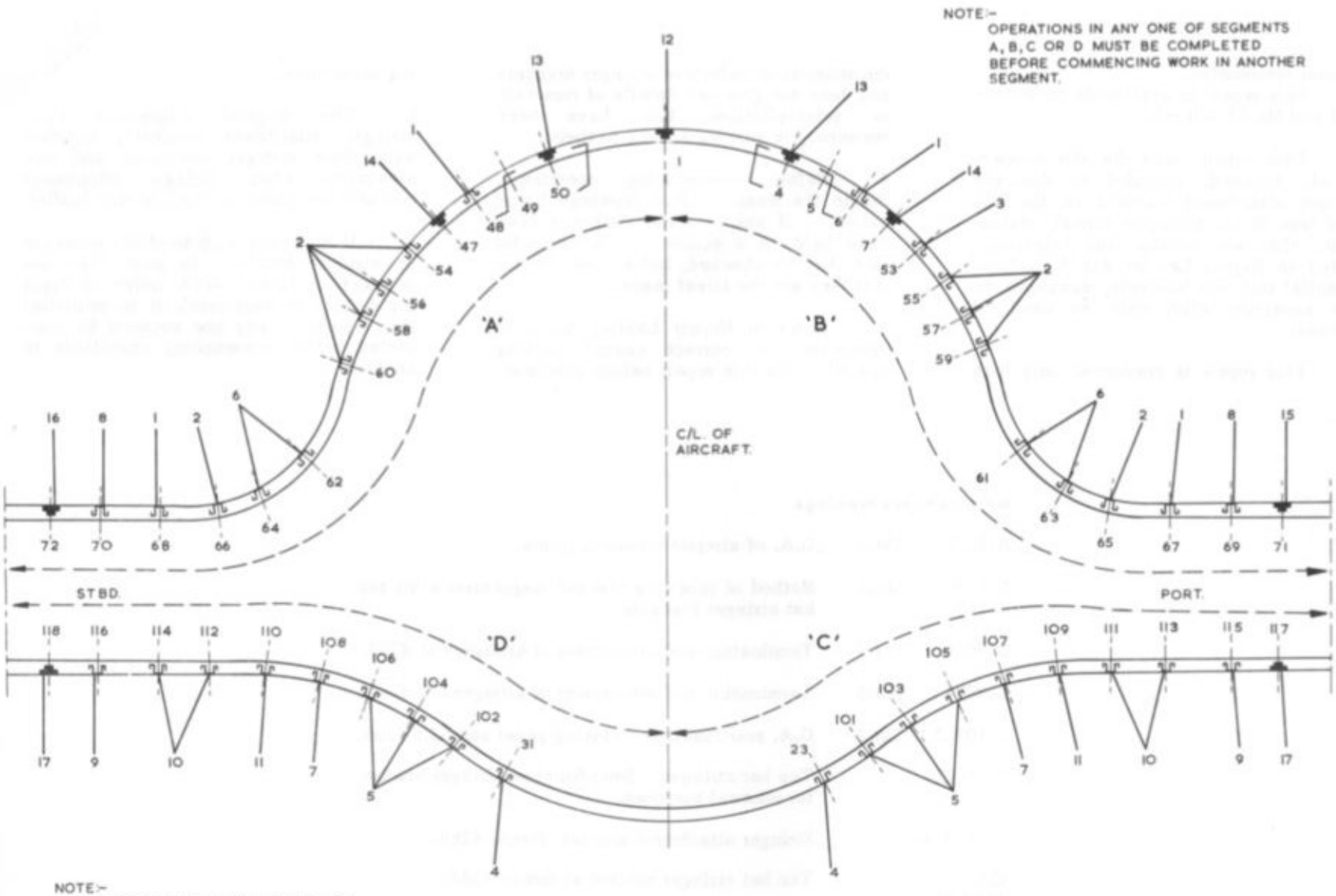


Fig.1. Transport former, station 428A, forward face

RESTRICTED

KEY TO FIG.1

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
* 1		433D.8610	Top hat stringer bracket at stringers 6, 67, 68 and 48	4	D.T.D.5004	Forging	Redundant magnesium alloy bracket 330D.8610
		2D.12365	Reinforcing strip	8	L.72	14	Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1011244	A.25/9E	Bolt - hexagon head	4	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	4	S.112		
	28W/9419405	SP.15/E	Washer	8	L.72		Washer under head and nut
		SS.4141/406	Rivet - 120 deg. countersunk head	20	L.86		Ref.drawing D.12365, sheet 2
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	32	L.86		Ref.drawing D.12365, sheet 2
* 2		432D.8610	Top hat stringer bracket at stringers 55, 57, 59, 66, 60, 54, 56, 58 and 65	9	D.T.D.5004	Forging	Redundant magnesium alloy bracket 329D.8610
		2D.12365	Reinforcing strip	18	L.72		Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1011244	A.25/9E	Bolt - hexagon head	9	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	9	S.112		
	28W/9419405	SP.15/E	Washer	18	L.72		Washer under head and nut
		SS.4141/406	Rivet - 120 deg. countersunk head	45	L.86		Ref.drawing ** D.9024, sheet 4
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	72	L.86		Ref.drawing D.12365, sheet 2

KEY TO FIG.1 (continued)

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
* 3		432D.8610	Top hat stringer bracket at stringer 53	1	D.T.D.5004	Forging	Redundant magnesium alloy bracket 330D.8610
		2D.12365	Reinforcing strip	2	L.72		Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1011242	A.25/7E	Bolt - hexagon head	1	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	1	S.112		
	28W/9419405	SP.15/E	Washer	2	L.72		Washer under head and nut
		SS.4141/406	Rivet - 120 deg. countersunk head	5	L.86		Ref.drawing ** D.9024, sheet 4
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	8	L.86		Ref.drawing D.12365, sheet 2
* 4		432D.8610	Top hat stringer bracket at stringers 23 and 31	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 330D.8610
		2D.12365	Reinforcing strip	4	L.72		Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1008145	A.25/6E	Bolt - hexagon head	2	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	2	S.112		
	28W/9419405	SP.15/E	Washer	4	L.72		Washer under head and nut
		SS.4141/406	Rivet - 120 deg. countersunk head	10	L.86		Ref.drawing ** D.9024, sheet 5
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	16	L.86		Ref.drawing D.12365, sheet 2

KEY TO FIG.1 (continued)

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
* 5		432D.8610	Top hat stringer bracket at stringers 101, 102, 103, 104, 105 and 106	6	D.T.D.5004	Forging	Redundant magnesium alloy bracket 330D.8610
		2D.12365	Reinforcing strip	12	L.72		Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1010031	A.25/8E	Bolt - hexagon head	6	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	6	S.112		
	28W/9419405	SP.15/E	Washer	12	L.72		Washer under head and nut
		SS.4141/406	Rivet - 120 deg. countersunk head	30	L.86		Ref.drawing ** D.9024, sheet 5
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	48	L.86		Ref.drawing D.12365 sheet 2
* 6		431D.8610	Top hat stringer bracket at stringers 61, 62, 63 and 64	4	D.T.D.5004	Forging	Redundant magnesium alloy bracket 328D.8610
		2D.12365	Reinforcing strip	8	L.72		Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1011244	A.25/9E	Bolt - hexagon head	4	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	4	S.112		
	28W/9419405	SP.15/E	Washer	8	L.72		Washer under head and nut
		SS.4141/406	Rivet - 120 deg. countersunk head	20	L.86		Ref.drawing ** D.9024, sheet 4
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	32	L.86		Ref.drawing D.12365, sheet 2

KEY TO FIG.1 (continued)

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
* 7		431D.8610	Top hat stringer bracket at stringers 107 and 108	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 328D.8610
		2D.12365	Reinforcing strip	4	L.72		Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1010031	A.25/8E	Bolt - hexagon head	2	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	2	S.112		
	28W/9419405	SP.15/E	Washer	4	L.72		Washer under head and nut
		SS.4141/406	Rivet - 120 deg. countersunk head	10	L.86		Ref.drawing ** D.9024, sheet 5
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	16	L.86		Ref.drawing D.12365, sheet 2
* 8		295D.9344	Top hat stringer bracket at stringers 69 and 70	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 84D.9344
		2D.12365	Reinforcing strip	4	L.72		Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1011244	A.25/9E	Bolt - hexagon head	2	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	2	S.112		
	28W/9419405	SS.4141/406	Rivet - 120 deg. countersunk head	10	L.86		Ref.drawing ** D.9024, sheet 4
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	16	L.86		Ref.drawing D.12365, sheet 2

KEY TO FIG.1 (continued)

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
* 9		430D.8610	Top hat stringer bracket at stringers 115 and 116	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 327D.8610
		2D.12365	Reinforcing strip	4	L.72		Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1011244	A.25/9E	Bolt - hexagon head	2	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	2	S.112		
	28W/9419405	SP.15/E	Washer	4	L.72		Washer under head and nut
		SS.4141/406	Rivet - 120 deg. countersunk head	10	L.86		Ref.drawing ** D.9024, sheet 5
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	16	L.86		Ref.drawing D.12365, sheet 2
*10		434D.8610	Top hat stringer bracket at stringers 111, 112, 113 and 114	4	D.T.D.5004	Forging	Redundant magnesium alloy bracket 331D.8610
		2D.12365	Reinforcing strip	8	L.72		Ref.drawing D.12365, sheet 2
			Packing	As req.	L.72	As req.	Ref.drawing D.12365, sheet 2
	28D/1010031	A.25/8E	Bolt - hexagon head	4	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	4	S.112		
	28W/9419405	SP.15/E	Washer	8	L.72		Washer under head and nut
		SS.4141/406	Rivet - 120 deg. countersunk head	20	L.86		Ref.drawing ** D.9024, sheet 5
	28Q/16382	A.G.S.2065/512	Avdel rivet - snap head	32	L.86		Ref.drawing D.12365, sheet 2

KEY TO FIG.1 (continued)

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
11		294D.9344	Stringer bracket at stringers 109 and 110	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 83D.9344
	28D/1011019	A.25/8C	Bolt - hexagon head	6	S.105		Ref.drawing A.3071, sheet 2
	28M/10288	A.G.S.2001/C1	Stiffnut	6	S.112		
	28W/9419475	SP.15/C	Washer	12	L.72		Washer under head and nut
	28D/1010030	A.25/7C	Bolt - hexagon head	6	S.105		Ref.drawing D.9024, sheet 5
	28M/10288	A.G.S.2001/C1	Stiffnut	6	S.112		
	28W/9419475	SP.15/C	Washer	12	L.72		Washer under head and nut
12		290D.9344	'T' section stringer bracket at stringer 1	1	D.T.D.5004	Forging	Redundant magnesium alloy bracket 79D.9344
	28D/1011246	A.25/11E	Bolt - hexagon head	2	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	2	S.112		
	28W/9419405	SP.15/E	Washer	2	L.72		
		SP.80/410	Rivet - snap head	2	L.86		Ref.drawing ** D.9024, sheet 4
		SP.80/409	Rivet - snap head	4	L.86		Ref.drawing ** D.9024, sheet 4
	28Q/9141064	SP.80/408	Rivet - snap head	7	L.86		Ref.drawing ** D.9024, sheet 4

KEY TO FIG.1 (continued)

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
13		290D.9344	'T' section stringer bracket at stringers 4 and 50	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 79D.9344
	28D/12546	A.25/14E	Bolt - hexagon head	4	S.105		Ref.drawing A.3071 sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	4	S.112		
	28W/9419405	SP.15/E	Washer	8	L.72		Washer under head and nut
		SS.4141/410	Rivet - 120 deg. countersunk head	4	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/409	Rivet - 120 deg. countersunk head	8	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/408	Rivet - 120 deg. countersunk head	12	L.86		Ref.drawing ** D.9024, sheet 4
	28Q/9141064	SP.80/408	Rivet - snap head	10	L.86		Ref.drawing ** D.9024, sheet 4
14		291D.9344	'T' section stringer bracket at stringers 7 and 47	2	D.T.D.5004		Redundant magnesium alloy bracket 80D.9344
	28D/1011244	A.25/9E	Bolt - hexagon head	4	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	4	S.112		
	28W/9419405	SP.15/E	Washer	8	L.72		Washer under head and nut
		SS.4141/410	Rivet - 120 deg. countersunk head	8	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/409	Rivet - 120 deg. countersunk head	8	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/408	Rivet - 120 deg. countersunk head	8	L.86		Ref.drawing ** D.9024, sheet 4
	28Q/9141064	SP.80/408	Rivet - snap head	10	L.86		Ref.drawing **D.9024, sheet 4

KEY TO FIG.1 (continued)

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
15		292D.9344	Stringer bracket at stringer 71	1	D.T.D.5004	Forging	Redundant magnesium alloy bracket 81D.9344
	28D/1011244	A.25/9E	Bolt - hexagon head	2	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	2	S.112		
	28W/9419405	SP.15/E	Washer	4	L.72		Washer under head and nut
	28Q/9141064	SP.80/408	Rivet - snap head	5	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/407	Rivet - 120 deg. countersunk head	4	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/408	Rivet - 120 deg. countersunk head	4	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/409	Rivet - 120 deg. countersunk head	4	L.86		Ref.drawing ** D.9024, sheet 4
16		293D.9344	Stringer bracket at stringer 72	1	D.T.D.5004	Forging	Redundant magnesium alloy bracket 82D.9344
	28D/1011244	A.25/9E	Bolt - hexagon head	2	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	2	S.112		
	28W/9419405	SP.15/E	Washer	4	L.72		Washer under head and nut
	28Q/9141064	SP.80/408	Rivet - snap head	5	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/407	Rivet - 120 deg. countersunk head	4	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/408	Rivet - 120 deg. countersunk head	4	L.86		Ref.drawing ** D.9024, sheet 4
		SS.4141/409	Rivet - 120 deg. countersunk head	4	L.86		Ref.drawing ** D.9024, sheet 4

KEY TO FIG.1 (continued)

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
17		435D.8610	'T' section stringer bracket at stringers 117 and 118	2	D.T.D.5004	Forging	Redundant magnesium alloy bracket 333D.8610
	28D/1011244	A.25/9E	Bolt - hexagon head	4	S.105		Ref.drawing A.3071, sheet 2
	28M/10290	A.G.S.2001/E1	Stiffnut	4	S.112		
	28W/9419405	SP.15/E	Washer	8	L.72		Washer under head and nut
		SS.4141/408	Rivet - 120 deg. countersunk head	12	L.86		Ref.drawing ** D.9024, sheet 5
		SS.4141/409	Rivet - 120 deg. countersunk head	8	L.86		Ref.drawing ** D.9024, sheet 5
		SS.4141/410	Rivet - 120 deg. countersunk head	4	L.86		Ref.drawing ** D.9024, sheet 5
	28Q/9141064	SP.80/408	Rivet - snap head	10	L.86		Ref.drawing ** D.9024, sheet 5

* If these stringer brackets are unobtainable, they may be manufactured locally from D.12622 semi-finished brackets to the relevant detail drawings which are given in the List of Manufacturers Drawings above.

** As these drawings call up magnesium alloy brackets and rivets, use in pictorial sense only.

REPAIR TO OUTER SKIN, INNER BOMB DOOR

General

1. This leaflet is applicable to Vulcan B.Mk.1 and Mk.1A aircraft and is issued to provide a skin patch and corrugation insert repair adjacent to the hinge channel. The repair is suitable for any position along the channel between ribs 3 and 16.

Drawings required

2. The Avro Whitworth drawings required are:

B.B.H.1915		Typical skin and corrugation insert repair to inner bomb door.
D.8901	Sht. 5	Detail arrangements of skin joints.

Repair procedure

3. Referring to the repair drawing proceed as follows:-

(1) Remove the damaged areas of the corrugation and skin panel to leave regularly shaped cut-outs as shown on B.B.H.1915.

(2) Drill out the existing rivets marked on the drawing which will be riveted in conjunction with the patch plate on assembly.

(3) Manufacture corrugation insert, packing and patch plate from the material given on the drawing. Chamfer edges of patch plate.

(4) Mark out and drill three rows, 3/32 in. dia., 1.0 in. staggered pitch on the trough of the corrugation insert. Place the insert in position and drill the existing trough, opening the holes out to 3.25 mm. dia. Pin insert in position.

(5) Put the packing in place between the channel flange and corrugation, mark out and drill both items 4.05 mm. dia. to correspond to the existing pitch in the channel flange. Remove the corrugation insert and tack rivet packing in position.

(6) Locate the patch plate and drill 12 holes 3.25 mm. dia. in conjunction with the skin and channel flange. Enlarge these holes to 4.05 mm. dia.

(7) Mark out and drill 3.25 mm. dia. for all remaining hollow rivets taking care not to drill through the inner skin. Countersink holes 100 deg. in patch plate.

(8) Remove patch plate, deburr and apply protective treatment to all items in accordance with Part 1, Chap.1. Remove all swarf from the internal structure.

(9) Pin insert in position and rivet up the three rows in the trough. Put patch plate and butt straps in position and rivet up all items.

(10) Mark out, drill and rivet the row of solid rivets adjacent to the hinge line, existing pitch to be used.

Material required

4. Table 1 gives the material required.

TABLE 1

List of material

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
1		3,4 B.B.H.1915	Corrugation insert	1+1	L.72	20	Dimensions of items are dependant upon the size of repairs required.
2		5,6 B.B.H.1915	Packing	1+1	L.72	20	
3		7,8 B.B.H.1915	Patch plate	1+1	L.72	18	
4	28Q/9454150	SP.71/303	Rivet, 100 deg.csk/hd.	As req.	L.86	-	
5	28Q/18331	SP.71/404	Rivet, 100 deg.csk/hd.	As req.	L.86	-	
6	28Q/9417267	A.G.S.2050/424	Rivet, pop, dome head	As req.	D.T.D.10B	-	
7	28Q/9417268	A.G.S.2050/429	Rivet, pop, dome head	As req.	D.T.D.10B	-	
8	28Q/17424	A.G.S.2066/407	Rivet, Avdel, 100 deg.csk/hd.	As req.	L.86	-	
9		A.G.S.2066/510	Rivet, Avdel, 100 deg.csk/hd.	As req.	L.86	-	

OUTER SKIN INSERT REPAIR, INNER BOMB DOOR

General

1. This leaflet is applicable to Vulcan B.Mk.1 and Mk.1A aircraft and provides a skin insert repair in the region of the bomb door channel adjacent to the aircraft centre line. The repair may be applied at any position along the channel between ribs 3 and 16.

Drawings required

2. The Avro Whitworth drawing required is B.B.H.1916 - Typical skin insert repair to inner bomb door adjacent to channel on aircraft centre line.

Repair procedure

3. Referring to the repair drawing proceed as follows:

(1) Remove and retain the nuts, bolts and washers securing the rubber seal and retaining strip to the channel flange along the extent of the damage.

(2) Drill out the 5/32 and 1/8 in.dia. rivets securing the damaged skin to the channel flange and corrugation. Remove the damaged skin to give a regularly shaped cut-out as shown on the repair drawing. Avoid damage to the corrugation and channel flange.

(3) Manufacture skin insert and butt straps to conform to the repair drawing. A gap of 0.03 in. is permissible between the edges of the existing skin and skin insert.

(4) Mark out and drill the butt straps 3.25 mm.dia. Deburr holes and place the butt straps on top of the skin at their respective positions. Drill all holes in the skin corresponding to the appropriate holes in the butt straps. When drilled, remove the butt straps and countersink the skin holes 120 deg.

(5) Pin the butt straps in position, place the skin insert in the cut-out and drill the 3.25 mm. and 4.05 mm.dia. holes in conjunction with the channel flange and butt straps. Countersink all holes 120 deg. in skin insert.

(6) Dismantle all items, deburr and apply protective treatment in accordance with Part 1, Chap.1. Remove swarf.

(7) Assemble all items and rivet up.

(8) Drill the 4.9 mm.dia. holes in the skin insert in conjunction with the seal retaining strip and channel flange and refit the bolts removed in operation (1).

Material required

4. Table 1 gives the list of material needed to carry out the repair:

TABLE 1

List of material

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
1		3 B.B.H.1916	Butt strap	1	L.72	18	Dimensions of items are
2		4 B.B.H.1916	Skin insert	1	L.72	20	dependant upon the size
3		5 B.B.H.1916	Butt strap	2	L.72	18	of repairs required.
4	28Q/1012162	A.S.2230/505	Rivet, 120 deg.csk/hd.	As req.	L.86	-	
5	28Q/9417245	A.G.S.2051/419 B.S.	Rivet, pop, 120 deg.csk/hd.	As req.	D.T.D.10B	-	

BOTTOM CHANNEL INSERT REPAIR, INNER BOMB DOORS

General

1. This leaflet is applicable to Vulcan B Mk.1 and Mk.1A aircraft and covers an insertion repair to the inner bomb door bottom channel.

2. A new joint is not permitted between ribs 3 and 4, ribs 15 and 18 or within 20 in. of an existing production joint. If a repair is required between these ribs a new channel length may be inserted from rib 3 or rib 18 to a new joint between ribs 4 and 5 or 14 and 15 respectively. A repair within 20 in. of an existing production joint may be made by inserting a channel, approximate length 20 in., with a new manufactured joint at one end and utilizing the existing production joint at the other end. If channels 5, 6D.8890 are damaged refer to the note on B.B.H.1917 for s.w.g. of the channel insert and joint channel strap.

Drawings required

3. The following drawings are required when carrying out this repair:

B.B.H.1917		Typical channel insert repair to inner bomb door adjacent to aircraft centre line.
D.8890	Sht. 1	Channel assembly (inner door).
D.8890	Sht. 2	Drilling of flange - channel assembly, inner door.

Repair procedure

4. Open the bomb doors and proceed as follows:

(1) Mark out the portion of damaged channel to be removed.

(2) Remove and retain sufficient AS.1242/3C and A.25/3B seal attachment bolts to allow each seal and retaining strip to be moved away from the flange. This will prevent them being damaged when removing the defective channel section and during assembly of the repair items.

(3) Drill out all rivets which attach the inner and outer skins to the channel in the damaged area and remove the defective channel portion.

(4) Obtain the appropriate channel item from Avro Whitworth Division and cut off the required length for insertion. Alternatively, locally manufacture the channel insert and joint channel straps of the appropriate s.w.g. from material specification L.72 in accordance with the repair drawing. Joggle the joint channels to suit the outer rubber seal as shown on detail 'A', B.B.H.1917. Remove all sharp edges from new repair items and existing channels.

(5) With the channel insert in position, drill the 5/32 in. dia. holes in the flanges in conjunction with those existing in the skins. Retain the insert in position by pinning. Mark out and drill the skins and channel flanges for the additional 5/32 in. dia. rivets where shown on B.B.H.1917.

(6) Mark out and drill the 5/32 in.dia. holes in the web of each joint channel strap in accordance with B.B.H.1917. With the joint channel straps in their respective positions drill the 5/32 in. dia. holes in the flanges in conjunction with those drilled in operation (5). Retain the straps in position by pinning.

(7) Drill the 5/32 in. dia. holes in the webs of the existing channel and channel insert in conjunction with those drilled in the joint channel strap webs in operation (6).

(8) Drill holes 4.9 mm. and 3.8 mm. dia. in the joint channel strap and repair insert flanges to suit the 2B.A. and 4B.A. seal retaining bolts. Mark out and drill for the additional 2B.A. bolt on the outer skin. See B.B.H.1917, View on inner bomb door (outer skin).

(9) Countersink holes 120 deg. for rivets and bolts where necessary.

(10) Dismantle, deburr all items, remove swarf and apply protective treatment in accordance with Part 1, Chap.1.

(11) Assemble all repair items and rivet up using the type of rivets called for on B.B.H.1917. The outer skin seal should be positioned before riveting the channel outer flange, otherwise it may be difficult to insert it in its correct position after rivets have been formed. See section 'X-X' on B.B.H.1917.

(12) Replace inner skin seal and both retaining strips. Refit the bolts removed in operation (2) and fit new, longer bolts at the positions shown on B.B.H.1917. Drill 4.9 mm. dia. through the seal retaining strip in conjunction with the additional hole drilled in the skin and joint channel. Fit AS.1242/4C bolt.

Material required

5. Table 1 lists the material required to carry out the repair.

TABLE 1
List of material

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
1		3,4 B.B.H.1917	Channel insert	1 + 1	L.72	16	May be made from 7, 8D.8890
2		5 B.B.H.1917	Joint channel strap	2 + 2	L.72	16	
3		6 B.B.H.1917	Joint channel strap	2 + 2	L.72	18	
4		7,8 B.B.H.1917	Channel insert	1 + 1	L.72	20	May be made from 5,6D.8890
5	28Q/16381	A.G.S.2065/510	Rivet, Avdel, snap head	As req.	L.86	-	
6	28Q/11554	AS.2230/504	Rivet, 120 deg. csk/hd.	As req.	L.86	-	
7	28Q/1012162	AS.2230/505	Rivet, 120 deg. csk/hd.	As req.	L.86	-	
8	28Q/101263	AS.2230/506	Rivet, 120 deg. csk/hd.	As req.	L.86	-	
9	28D/1007976	AS.1242/4C	Bolt, 2B.A.	2 + 2	-	-	
10	28M/10288	A.G.S.2001/C1	Nut, 2B.A.	2 + 2	-	-	
11	28W/9419402	SP.13C	Washer 2B.A.	2 + 2	-	-	
12	28D/9140638	A.25/4B	Bolt 4B.A.	1 + 1	-	-	
13	28M/10287	A.G.S.2001/B.1	Nut 4B.A.	1 + 1	-	-	
14	28W/9419465	SP.13B	Washer 4B.A.	1 + 1	-	-	

BUSH INSERT REPAIR TO INNER BOMB DOOR HINGE BLOCKS

General

1. This leaflet is applicable to Vulcan B Mk.1 and Mk.1A aircraft and is issued to provide a repair by bushing to hinge blocks 10D.8851 and 10D.8868. These hinge blocks, attached to ribs 1 and 18 on the inner bomb doors, are to be repaired by this method when the hinge bolt holes are worn in excess of the limits given in Part 3, Chap.3, Fig.302.

Reference

2. Refer to figure 1 in conjunction with this leaflet for repair information.

Repair procedure

3. Remove the outer bomb door in accordance with A.P.4505A and C, Vol.1, Book 1, Sect.3, Chap.1 and proceed as follows:-

(1) Progressively drill the worn holes in the hinge blocks using twist drills 25/32 in. dia. (Ref.No.3B/9108761) and 51/64 in. dia. (Ref. No.3B/9108776) to enlarge the holes and leave approximately 1/64 in. for final reaming.

(2) Carefully ream the holes to 0.8125 in. dia. using a 13/16 in. dia. parallel reamer (Ref.No.1B/3075). Dimensions of holes after reaming must be to Newall Class 'A' limits. Apply 1/64 in. radius to the edges of the holes.

(3) Obtain bushes, item 5 B.B.H.1920, from Avro Whitworth Division, Langar, or manufacture them locally in conformity with the dimensions given on figure 1. Newall Class 'B' and 'D' limits must be strictly adhered to. Cadmium plate manufactured items to specification D.T.D.904.

(4) Apply grease ZX-28 (Ref.No.34B/9437518) to the reamed surfaces of the hinge blocks and fit bushes ensuring that the ends fit flush in the hinge block. If necessary file off any excess material to obtain this condition.

(5) Refit outer bomb door.

Material required

4. Table 1 gives the material and tools required for this repair.

TABLE 1
List of material

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
1		5 B.B.H.1920	Bush	4	S.96	-	Qty. given for one bomb door only
2	3B/9108761		Twist drill 25/32 in. dia.	1	-	-	
3	3B/9108776		Twist drill 51/64 in. dia.	1	-	-	
4	1B/3075		Reamer 13/16 in. dia.	1	-	-	
5	34B/9437518	ZX-28	Grease	As req.	-	-	

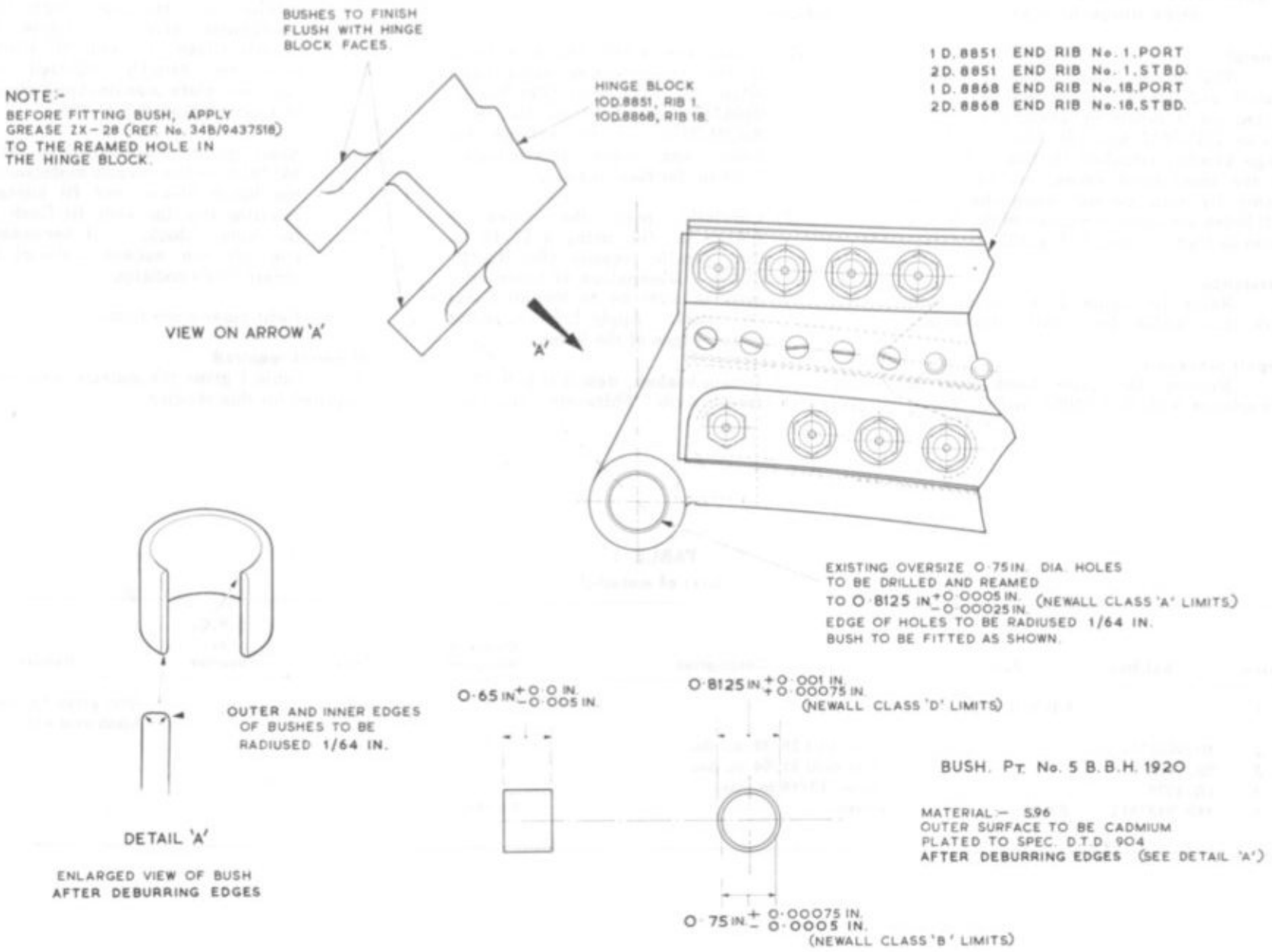


Fig.1 Repair by bushing to inner bomb door hinge block

RESTRICTED

RENEWAL OF WING TANK TUNNEL SKINS

General

1. This repair applies to Vulcan B.Mk.1, Mk.1A and Mk.2 aircraft.

2. The tank tunnel skins, port and starboard, tank numbers 3,4,5,6 and 7 are made up from 22 and 24 s.w.g. magnesium alloy skin panels, D.T.D.742 material, in three groups. These are inboard, centre and outboard in a spanwise direction, each group comprising eight skin panels around the tank periphery. This leaflet covers the replacement of these skins by L.72 material when they are found to be in a cracked or corroded condition. When working in the tank tunnels personnel must wear soft footwear such as pumps to prevent damage to the serviceable skins.

Drawing required

3. The repair must be carried out in conformity with Avro Whitworth repair drawing: F.11902 - Repair scheme for cracked tank tunnel skins.

Repair procedure

4. Stress jack the aircraft in accordance with Leaflet A.1/2. Drain and remove the wing tank from the unserviceable tunnel in accordance with A.P.4505A and C, Vol.1, Book 1, Sect.4, Chap.2, Vulcan Mk.1 and 1A,or A.P.4505B, Vol.1, Book 1, Sect.4, Chap.2 ,Vulcan B Mk.2,and proceed as follows:

(1) Enter the tank tunnel through the sump access hole, remove the serrated linen tape from around the unserviceable panel and drill out the rivets securing the reinforcing strips at the lap joints of this panel. When the strips are removed drill out the rivets securing the damaged panel and remove the panel from the tunnel. Remove all swarf.

(2) The notes on panel renewals detailed on F.11902 must be strictly adhered to when the damaged panel is in the centre or outboard group and is being replaced by L.72 material.

(3) Using the damaged panel as a template mark out and drill a replacement panel on L.72 material of the same gauge. Deburr all edges. Cut out the tank button keyhole slots in identical positions to those on the damaged panel. Remove the tank button reinforcing plates from the damaged panel and fit them to the new panel. This must be done before the panel is placed in position in the tank tunnel because the reinforcing plates are outside the tank bay area.

(4) If the skin in the sump cut-out area is cracked or corroded careful note must be made of the direction of crack spread. This will determine whether a 'Detail B' or 'Detail D' type of repair is required as referenced on F.11902. The skin panels and gusset plates can be locally manufactured as shown on these details.

(5) Where the fitting of the new panel entails the mating of L.72 material with magnesium alloy, barrier material P.R.1005L(Ref.No.33H/92) or E.C.776 (Ref.No.33H/2202439) must be used between mating surfaces extending 3/8 in. beyond the edges of each panel. Where the contacting surfaces are L.72 material the joint is made with Celloseel (Ref.No.33H/113). The rivets must be dipped in approved paint primer or Celloseel and expanded while still wet.

(6) The rivets passing through L.72 and magnesium alloy must be type A.G.S.2048 or SP.84. The rivets passing through L.72 material only must be type A.G.S.2050 or SP.85.

(7) Refit the skin joint reinforcing strips. If these are being renewed they must be L.72 material, 20 s.w.g.

(8) When all riveting has been completed, tape all rivet heads on the tunnel internal surfaces with serrated linen tape cemented to the skin with Titanine B.2 adhesive. The tapes are not to be doped over.

(9) All rivets must have a minimum landing of 0.3 in. Where holes have been elongated when removing the damaged panel, they must be drilled to 5/32 in.dia. and the appropriate size rivet, of the same type and specification as those quoted on F.11902, fitted.

Material required

5. The following table gives the material required to do a repair to any tank tunnel .

TABLE 1

List of material

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
1		3,4F.11902	Skin panel, No.3 tank	1+1	L.72	24	Fitted aft of sump cut-out
2		5,6F.11902	Skin panel, No.3 tank	1+1	L.72	24	Fitted fwd.of sump cut-out
3		7,8F.11902	Skin panel, No.3 tank	1+1	L.72	24	Outboard lower aft skin
4		9,10F.11902	Skin panel, No.3 tank	1+1	L.72	24	Outboard lower fwd.skin
5		11,12F.11902	Gusset plate, No.3 tank	1+1	L.72	20	Fitted aft of sump cut-out
6		13,14F.11902	Gusset plate, No.3 tank	1+1	L.72	20	Fitted fwd.of sump cut-out
7		63,64F.11902	Skin panel, No.3 tank	1+1	L.72	24	Inboard lower aft skin
8		65,66F.11902	Skin panel, No.3 tank	1+1	L.72	24	Inboard lower centre skin
9		15,16F.11902	Skin panel, No.4 tank	1+1	L.72	24	Fitted aft of sump cut-out
10		17,18F.11902	Skin panel, No.4 tank	1+1	L.72	24	Fitted fwd.of sump cut-out
11		19,20F.11902	Skin panel, No.4 tank	1+1	L.72	24	Outboard lower aft skin
12		21,22F.11902	Skin panel, No.4 tank	1+1	L.72	24	Outboard lower fwd.skin
13		23,24F.11902	Gusset plate, No.4 tank	1+1	L.72	20	Fitted aft of sump cut-out
14		25,26F.11902	Gusset plate, No.4 tank	1+1	L.72	20	Fitted fwd.of sump cut-out
15		27,28F.11902	Skin panel, No.5 tank	1+1	L.72	24	Fitted aft of sump cut-out
16		29,30F.11902	Skin panel, No.5 tank	1+1	L.72	24	Fitted fwd.of sump cut-out
17		31,32F.11902	Skin panel, No.5 tank	1+1	L.72	24	Outboard lower aft skin
18		33,34F.11902	Skin panel, No.5 tank	1+1	L.72	24	Outboard lower fwd.skin
19		35,36F.11902	Gusset plate, No.5 tank	1+1	L.72	20	Fitted aft of sump cut-out
20		37,38F.11902	Gusset plate, No.5 tank	1+1	L.72	20	Fitted fwd.of sump cut-out
21		39,40F.11902	Skin panel, No.6 tank	1+1	L.72	24	Fitted aft of sump cut-out
22		41,42F.11902	Skin panel, No.6 tank	1+1	L.72	22	Fitted fwd.of sump cut-out
23		43,44F.11902	Skin panel, No.6 tank	1+1	L.72	24	Outboard lower aft skin
24		45,46F.11902	Skin panel, No.6 tank	1+1	L.72	22	Outboard lower fwd.skin
25		47,48F.11902	Gusset plate, No.6 tank	1+1	L.72	20	Fitted aft of sump cut-out
26		49,50F.11902	Gusset plate, No.6 tank	1+1	L.72	20	Fitted fwd.of sump cut-out
27		51,52F.11902	Skin panel, No.7 tank	1+1	L.72	24	Fitted aft of sump cut-out
28		53,54F.11902	Skin panel, No.7 tank	1+1	L.72	22	Fitted fwd.of sump cut-out
29		55,56F.11902	Skin panel, No.7 tank	1+1	L.72	24	Outboard lower aft skin
30		57,58F.11902	Skin panel, No.7 tank	1+1	L.72	22	Outboard lower fwd.skin
31		59,60F.11902	Gusset plate, No.7 tank	1+1	L.72	20	Fitted aft of sump cut-out
32		61,62F.11902	Gusset plate, No.7 tank	1+1	L.72	20	Fitted fwd.of sump cut-out
33		SS.3791	Rivet, pop, dm/hd. 1/8 in.dia.	As req.	-	-	
34		A.G.S.2048 B.H.	Rivet, pop, dm/hd. 1/8 in.dia.	As req.	L.58	-	
35		A.G.S.2050 B.H.	Rivet, pop, dm/hd. 1/8 in.dia.	As req.	D.T.D.10B	-	
36		SP.84	Rivet, mush/hd. 1/8 in.dia.	As req.	L.58	-	
37		SP.85	Rivet, mush/hd. 1/8 in.dia.	As req.	L.86	-	
38	33B/751		Serrated linen tape	As req.	-	-	
39	33H/268		Titanine B.2 adhesive	-	-	-	
40	33H/92	P.R.1005L	Barrier material	As req.	-	-	
41	33H/2202439	E.C.776	Barrier material	As req.	-	-	
42	33H/113		Celloseel	As req.	-	-	

CHANGE OF MATERIAL, U/C. HINGE RIB 212.5

General

1. This repair applies to Vulcan B, Mk.1 and Mk.1A aircraft and is issued for guidance when fitting webs of L.72 material in place of the existing magnesium alloy found to be cracked or corroded. When renewing the webs the magnesium alloy joint straps and access doors must also be renewed using L.72 material. Where elongation of holes has occurred during the removal of items, oversize rivets 1/32 in.dia. larger than those quoted on the repair drawing may be used but must be of the same type and specification. Where magnesium alloy rivets are called up on the assembly drawings use rivets of the same type but of aluminium alloy material. See Part 1, Chap.1 for the protective treatment of items on assembly.

Drawings required

2. The Avro Whitworth drawings required to do the repair are:

F.11986		Repair of skinning, straps and access doors, rib 212.5.
F.8640	Sht. 1	G.A. of main u/c. hinge rib 212.5.
F.8640	Shts.2 and 2A	Details of skinning and riveting.
F.9112		Mounting of door jack swivel blocks.

Repair procedure

3. Remove all equipment which will interfere with the repair procedure and proceed as follows:

(1) Remove and retain all attachment angles, brackets, plates and stiffening angles attached to both faces of the rib web panels. These items are L.72 material and must be refitted to the new web in the same positions as on the original web.

(2) Remove all access doors, web joint straps 213,214,215 and 216 F.8640, rib panels 195,196,211, 212,219 and 220F.8640 and retain for use as templates. The rear bottom access door, comprising items 248,249,250 and 251F.8640, is L.72 material and must be retained for refitment.

(3) Remove all swarf and foreign matter from the rib structure area.

(4) Using the magnesium alloy joint straps and webs as templates, manufacture the new items using the material and gauge given in Table 1. Drill sufficient holes on the web panels to enable the new items to be pinned or service bolted accurately in position on the rib structure.

(5) Pin the new webs in position and drill all attachment holes from the structure side of the rib. Remove the webs and drill from the templates all remaining holes which do not pick up on the rib structure. Deburr, remove swarf and apply protective treatment. Rivet up using rivets called up on F.11986.

(6) Refit all items removed from the original webs in accordance with operation (1).

(7) Remove and retain the stiffeners attached to the magnesium alloy access doors. Manufacture new door plates using material and gauge given in Table 1 and refit the stiffeners in position on their respective new panels.

(8) Fit the doors to the rib and replace all attached equipment.

Material required

4. The following material is required to do the repair:

TABLE 1

List of material

Item	Ref.No.	Part No.	Description	Quantity Required	Spec.	S.W.G. or Section	Remarks
1		3,4F.11986	Rib web, top 102.0 in.x 25.0 in.	1+1	L.72	20	
2		5,6F.11986	Joint strap, 49.0 in.x 2.0 in.	1+1	L.72	20	
3		7,8F.11986	Rib web, side 50.0 in. x 12.0 in.	1+1	L.72	20	
4		9,10F.11986	Rib web, bottom 102.0 in.x 25.0 in.	1+1	L.72	20	Dimensions given in column
5		11,12F.11986	Joint strap 101.0 in.x 2.0 in.	1+1	L.72	20	4 is the material required for
6		13a,14aF.11986	Door plate 15.5 in. x 17.25 in.	1+1	L.72	20	one item only.
7		17a,18aF.11986	Door plate 16.5 in.x 17.0 in.	1+1	L.72	20	
8		19a,20aF.11986	Door plate 17.0 in.x 17.5 in.	1+1	L.72	20	
9		23F.11986	Door plate 10.125 in.x 9.5 in.	1+1	L.72	18	
10		SS.4141/304	Rivet, 120 deg.csk/hd. 3/32 in.dia.	As req.	L.86	-	
11	28Q/9454150	SP.71/303	Rivet, 100 deg.csk/hd. 3/32 in.dia.	As req.	L.86	-	
12	28Q/19341	SP.71/304	Rivet, 100 deg.csk/hd. 3/32 in.dia.	As req.	L.86	-	
13	28Q/18331	SP.71/404	Rivet, 100 deg.csk/hd. 1/8 in.dia.	As req.	L.86	-	
14	28Q/9141059	SP.71/405	Rivet, 100 deg.csk/hd. 1/8 in.dia.	As req.	L.86	-	
15		SP.80/303	Rivet, snap head 3/32 in.dia.	As req.	L.86	-	
16	28Q/17494	SP.80/404	Rivet, snap head 1/8 in.dia.	As req.	L.86	-	
17	28Q/9147920	SP.80/405	Rivet, snap head 1/8 in.dia.	As req.	L.86	-	
18	28Q/18796	SP.80/605	Rivet, snap head 3/16 in.dia.	As req.	L.86	-	

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