

## GROUP B FUSELAGE

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## FUSELAGE

### NOSE WHEEL COLLAPSE

#### Assessment of damage

1. Damage caused by a "nose wheel up" landing may be rectified mainly by renewing the damaged parts. It has been found that in making a landing of this nature and holding up the nose as long as possible, damage may be sustained to the tail skid and tail cone. These parts are therefore included in the table.

2. Repair schemes are available for the frames forward of frame 6 and to the skin

on the bottom of the nose piece. These leaflets may be found listed under the heading "Nose wheel collapse" in the list of contents of Group B.

3. The parts required for renewal may be selected from the following table. A jig will not normally be required for carrying out these renewals, although the use of a nose undercarriage door scribe template is advisable for certain repairs.

<i>Ref.No.</i>	<i>Part No.</i>	<i>Description</i>
26FX/8619	E.208293	Nose wheel door, forward
26FX/8620	E.208311	Nose wheel door, rear
26FX/NIV	G.219086/1	Side skin, frame 3-6, port
26FX/NIV	G.219087/1	Side skin, frame 3-6, stbd.
26FX/NIV	G.219082/1	Bottom skin, frame 1C-3
26FX/8618	E.210698	Access door, frame 1C-2
26FX/NIV	C.210334	Supporting beam, port
26FX/NIV	C.210335	Supporting beam, stbd.
26FX/NIV	B.210422	Reinforcing beam, port
26FX/NIV	B.210423	Reinforcing beam, stbd.
26FX/NIV	A.210860	Bracket, port
26FX/NIV	A.210861	Bracket, stbd.
26FX/NIV	C.207458	Side member, port
26FX/NIV	C.207459	Side member, stbd.
26FX/NIV	C.207750	Wheel door landing, port
26FX/NIV	C.207751	Wheel door landing, stbd.
26FX/8608	D.207617	Nose piece
26FX/8610	C.221798	Tail cone, Mk.7
26FX/NIV	C.223508	Tail cone, Mk.8
26FX/6088	B.207372	Tail skid, Mk.7
26FX/20033	C.232131	Tail skid, Mk.8
26FX/NIV	B.232256	Arrester hook, Mk.8

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## FUSELAGE

### NOSE WHEEL COLLAPSE

#### Repair to base of frame 1B

1. Where damage has occurred to the nose piece the frames as well as the skin may be damaged. This leaflet deals with the repair of frame 1B. Reference should be made to the following repair drawing which is included with this leaflet:-

#### RD.386-REPAIR TO BASE OF FRAME 1B.

2. The recommended sequence of operations is as follows:-

- (1) Remove the nose piece as described in Section 3, Chapter 1 of the appropriate Volume 1.
- (2) Remove the radome by releasing the

countersunk screws attaching it to frame 1A.

- (3) Mark out the position of the cut line.
- (4) Remove all fixings securing the damaged portions of frame to adjacent structure and skin.
- (5) Cut and remove damaged portions of frame.
- (6) From new frame cut replacement portions. RD.386 item 1 - port, item 2 - stbd.
- (7) From 20 s.w.g. light alloy to speci-

fication L.72 manufacture joint plates as shown on RD.386.

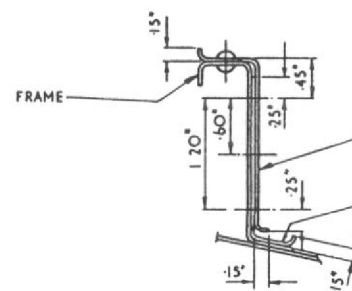
- (8) Offer up joint plates items 3 and 4 together with replacement portions of frame 1B items 1 and 2. Drill the holes required to secure the joint plates to the skin and frame flange.
- (9) Offer up remaining joint plates items 5 and 6. Drill all remaining holes and secure with appropriate rivets.
- (10) Replace all fixings securing the adjacent structure to the frame.
- (11) Secure the radome to frame 1A.
- (12) Replace nose piece.

3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	C.207620/2	Frame 1B - port side	-	-	} For items 1 and 2
26FX/NIV	C.207620/3	Frame 1B - stbd. side	-	-	
26FX/NIV	F.207638	Joint plate for frame 1B	-	-	For renewal purposes
30B/1732	-	Sheet aluminium alloy	20 s.w.g.	L.72	For items 3, 4, 5 and 6
28Q/1650	A.S.156-404	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/1660	A.S.156-405	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/7656	A.S.164-405	Rivets csk/hd.	1/8 in. dia.	L.37	

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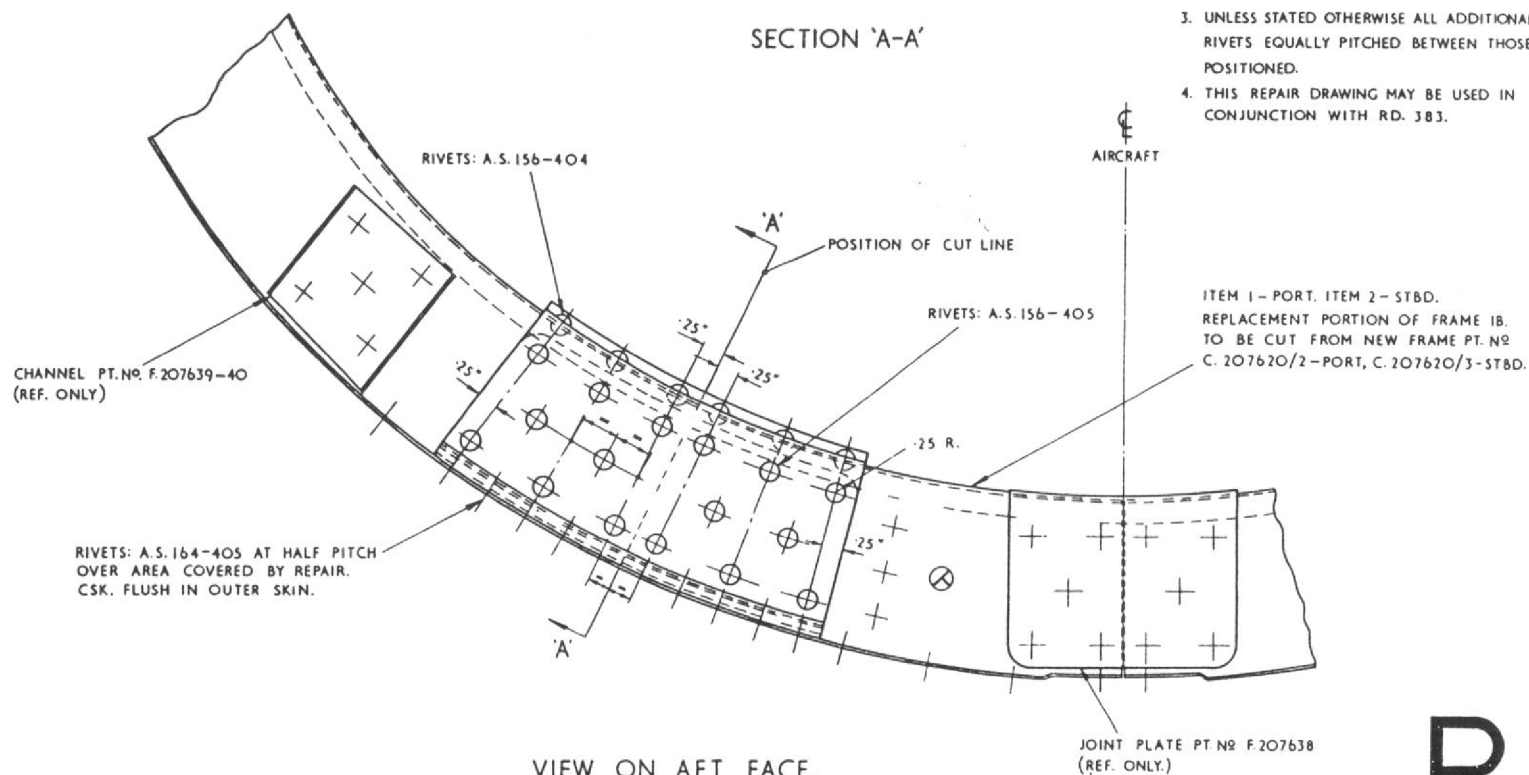
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SECTION 'A-A'

NOTES:-

1. REPAIR IS SYMMETRICAL ABOUT AIRCRAFT.
2. BEND RADIUS FOR 20 S.W.G. = .07"
3. UNLESS STATED OTHERWISE ALL ADDITIONAL RIVETS EQUALLY PITCHED BETWEEN THOSE POSITIONED.
4. THIS REPAIR DRAWING MAY BE USED IN CONJUNCTION WITH RD. 383.



VIEW ON AFT FACE.

REPAIR TO BASE OF FRAME 1B.

RD.386

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## FUSELAGE

### NOSE WHEEL COLLAPSE

#### Repair to base of frame 1C - rear

1. This repair should be used in conjunction with the renewals listed in repair leaflet B.1/1. Damage to the frame is usually confined to the vertical stiffeners with buckling of the frame web and damage to the boundary angles between these members. Reference should be made to the following repair drawing which is included with this leaflet:-

#### RD.376-REPAIR TO BASE OF FRAME 1C-REAR

2. The recommended sequence of operations is as follows:-

- (1) Remove all cables, pipes and accessories from area to be repaired.
- (2) Remove all rivets over the area to be covered by reinforcing plate.
- (3) Cut away damaged angle between the

stiffeners, the damaged portion of stiffeners and remove strip Part No. D.207537 item 12 as shown on RD.376 together with brackets Part No. F.210601 port, F.210602 stbd.

- (4) Dress out damage to the frame web.
- (5) From 18 s.w.g. light alloy to specification L.72 make up reinforcing plate item 1 and packing item 6.
- (6) Offer up reinforcing plate and drill holes to match the existing holes in frame web. Drill holes in the reinforcing plate and frame web in the additional positions as shown on RD.376.
- (7) From new stiffeners Part No. B.207538 - port, B.207539 - stbd. cut the portions required for renewal (items 4 and 5).

- (8) From 20 s.w.g. light alloy to specification L.72 make the capping channels (items 2 and 3).

- (9) Offer up the capping channels and bottom portion of stiffeners, drill necessary holes to secure the capping channels and stiffeners to web and reinforcing plate and insert the appropriate rivets as shown on RD.376.

*Note:- The horizontal stiffeners will have to be joggled to accomodate the extra thickness of the capping channels.*

- (10) Replace new brackets Part No. F.210601 - port, F.210602 - stbd. together with packing item 6 and secure with appropriate rivets.

- ◀ (11) Offer up new strip Part No. D.207537 item 12, Mk.8, D.232174 item 12, Mk.7 and secure with appropriate rivets. ▶

3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	B.207538	Stiffener, port	-	-	} For manufacture of items 4 and 5
26FX/NIV	B.207539	Stiffener, stbd.	-	-	
26FX/NIV	F.210604	Block, port	-	-	
26FX/NIV	F.210603	Block, stbd.	-	-	
◀ 26FX/NIV	D.207537/12	Strip, Mk.8 only	-	-	} For renewal purposes
26FX/NIV	D.232174/12	Strip, Mk.7 only	-	-	
26FX/NIV	F.210601	Bracket, port	-	-	
26FX/NIV	F.210602	Bracket, stbd.	-	-	
30B/1730	-	Sheet, aluminium alloy	18 s.w.g.	L.72	For items 1 and 6

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<i>Ref.No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Size</i>	<i>Specification</i>	<i>Remarks</i>
30B/1732	-	Sheet, aluminium alloy	20 s.w.g.	L.72	For items 2 and 3
28Q/1650	A.S.156-404	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/1660	A.S.156-405	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/1670	A.S.156-406	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/1680	A.S.156-407	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/9676	A.S.164-403	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/7655	A.S.164-404	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/7656	A.S.164-405	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/8147	A.S.164-406	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/9840	A.S.163-305	Rivets csk/hd.	3/32 in. dia.	L.36	
28Q/9417225	A.G.S.2050-424	Rivets pop. dm/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417224	A.G.S.2050-419	Rivets pop. dm/hd.	1/8 in. dia.	D.T.D.10	

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## FUSELAGE

### NOSE WHEEL COLLAPSE

#### Repair to bottom portion of frame 1D

1. This repair should be made in conjunction with the renewals listed in repair leaflet B.1/1. Reference should be made to the following repair drawing which is included with this leaflet:-

#### R D.377 - REPAIR BOTTOM PORTION OF FRAME 1D.

2. The recommended sequence of operations is as follows:-

- (1) Mark out the position of the cut line.
- (2) Remove all fixings securing the damaged portions of the frame to structure.
- (3) Cut and remove the damaged portions of the frame.

- (4) From new frame cut replacement portions RD.377 item 1 port, item 2 stbd.
- (5) From 20 s.w.g. light alloy to specification L.72 manufacture joint plates as shown on RD.377.
- (6) Offer up joint plates items 5 and 6 together with replacement portions of frame 1D items 1 and 2, drill the holes required to secure the joint plates to the skin and frame flange.
- (7) Offer up the remaining joint plates items 3 and 4. Drill and rivet into position.
- (8) Replace all fixings securing the adjacent structure to the frame.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	D.207541/2	Frame 1D, port side portion	-	-	} For items 1 and 2
26FX/NIV	D.207541/3	Frame 1D, stbd. side portion	-	-	
26FX/NIV	F.210340	Cleat	-	-	For renewal purposes
30B/1732	-	Sheet aluminium alloy	20 s.w.g.	L.72	For items 3, 4, 5 and 6
28Q/7656	A.S.164-405	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/1670	A.S.156-406	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/1660	A.S.156-405	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/1650	A.S.156-404	Rivets sn/hd.	1/8 in. dia.	L.37	

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ISSUE NO: 1		DRAWN G. FAULKNER	MOS: <i>Handwritten signature</i>

RIVETS: A.S. 156-406  
 DRILL 3 HOLES MORSE NO 30 TO  
 MATCH HOLES IN REINE BRACKET  
 P.T. NO: B.215913 (PORT) B.215914 (STBD)

RIVETS: A.S. 164-405 AT HALF PITCH  
 OVER AREA COVERED BY REPAIR. CSK.  
 FLUSH IN OUTER SKIN.

RIVETS: A.S. 156-405

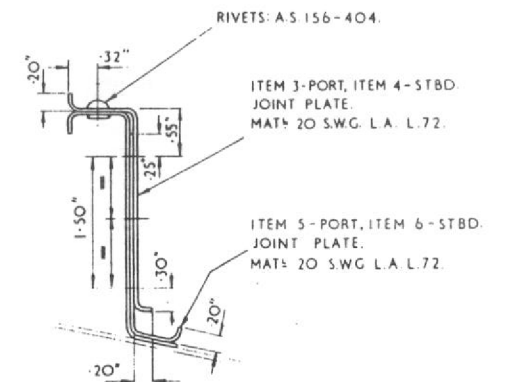
POSITION OF CUT LINE

25" RAD.

#### NOTES:-

1. UNLESS STATED OTHERWISE ALL ADDITIONAL RIVETS EQUALLY PITCHED BETWEEN THOSE POSITIONED.
2. BEND RADIUS FOR 20 S.W.G. = .07"

VIEW ON AFT FACE - PORT SIDE  
 STBD. SIDE MAY BE REPAIRED SIMILARLY



SECTION 'A-A'

ITEM 1 - PORT, ITEM 2 - STBD.  
 REPLACEMENT PORTION OF FRAME ID.  
 TO BE CUT FROM NEW FRAME PT. NO.  
 D.207541/2 (PORT) D.207541/3 (STBD)

**R**

REPAIR TO BOTTOM PORTION OF FRAME ID.

RD.377

## FUSELAGE

### NOSE WHEEL COLLAPSE

#### Repair to base of frame 2

1. This repair may be made in conjunction with the renewals listed in Repair Leaflet B.1/1. Reference should be made to the following repair drawing which is included with this leaflet:-

RD.378 - REPAIR TO BASE OF FRAME 2.

2. The recommended sequence of operations is as follows:-

(1) Drill out all necessary rivets, cut the frame as shown on both port and

starboard sides and remove the damaged portion of frame.

(2) From a new frame, cut the replacement portions (items 1 and 2).

(3) From 20 s.w.g. L.A. L.72, make the joint plates (items 3-6).

(4) Offer up replacement portions of frame, joint plates, landing Part No. D.207012 item 7 and joint plate Part No.D.207012 item 6. Drill holes and insert the appropriate rivets.

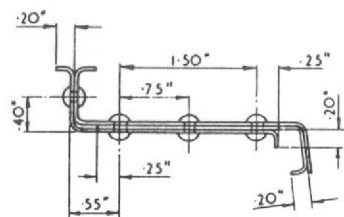
3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	D.207012/1	Frame - port	-	-	} For items 1 and 2
26FX/NIV	D.207012/2	Frame - stbd.	-	-	
26FX/NIV	D.207012/6	Joint plate	-	-	} For renewal of damaged parts
26FX/NIV	D.207012/7	Landing	-	-	
26FX/NIV	F.210341	Cleat	-	-	} For items 3-6
30B/1732	-	Sheet, aluminium alloy	20 s.w.g.	L.72	
28Q/7656	AS.164/405	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/1650	AS.156/404	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/1660	AS.156/405	Rivets, sn/hd.	1/8 in. dia.	L.37	

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SECTION 'A-A'.

ITEM 2-STBD.  
REPLACEMENT PORTION  
OF FRAME. CUT FROM A  
NEW FRAME PT. NO D. 207012/2

ITEM 1-PORT.  
REPLACEMENT PORTION  
OF FRAME. CUT FROM A  
NEW FRAME PT. NO D. 207012/1

JOINT PLATE, PT. NO  
D. 207012/6 (REF. ONLY)

LANDING PT. NO  
D. 207012/7  
(REF. ONLY)

RIVETS  
AS. 156-404.

ITEM 5-PORT.  
ITEM 6-STBD.  
JOINT PLATE.  
20 SWG. L.A. L.72.

RIVETS.  
AS. 156-405.

RIVETS.  
AS. 164-405

RIVETS-AS 164-405, AT HALF  
PITCH TO EXISTING POSITIONS

TOOLING HOLE  
(REF. ONLY)

ITEM 3-PORT.  
ITEM 4-STBD.  
JOINT PLATE.  
20 SWG. L.A. L.72.

VIEW LOOKING AFT ON PORT SIDE.  
REPAIR TO STBD. SIDE SIMILAR.

R

REPAIR TO BASE OF FRAME 2

RD.378.

<i>Ref.No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Size</i>	<i>Specification</i>	<i>Remarks</i>
26FX/NIV	T.402765	Nose u/c door aperture scribe template fwd.	-	-	For locating hinges
30B/1730	-	Sheet aluminium alloy	18 s.w.g.	L.72	For items 1, 2 and 3
28Q/1650	A.S.156-404	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/1660	A.S.156-405	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/1670	A.S.156-406	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/1680	A.S.156-407	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/9417225	A.G.S.2050-424	Rivets, dm/hd.	1/8 in. dia.	D.T.D.10	

## FUSELAGE

### NOSE WHEEL COLLAPSE

#### Repair to base of frame 3

1. This repair should be used in conjunction with the renewals listed in repair leaflet B.1/1. Damage to the frame will usually be confined to the reinforcing plates attached to the vertical stiffeners with buckling of the frame web and damage to the boundary angle between these members. Should the stiffeners and reinforcing plates appear to be undamaged care should be taken to ensure that the forward nose wheel door hinges are not out of alignment. Reference should be made to the following repair drawing which is included with this leaflet:-

#### RD.379 - REPAIR TO BASE OF FRAME 3.

2. The recommended sequence of operations is as follows :-

- (1) Remove all rivets over the area to be covered by the reinforcing plate.

- (2) If inboard and outboard reinforcing plates Part No. B.207397-400 are damaged, release rivets securing them to stiffeners. Hinge bearings Part No. F.207781 may be removed and used again if undamaged.

- (3) Release and discard cleats Part No. F.210432 port and F.210433 stbd.

- (4) Cut away damaged angle between stiffeners as shown on RD.379.

- (5) Dress out damage to frame web.

- (6) From 18 s.w.g. light alloy to specification L.72 make up reinforcing plate item 1 and angles items 2 and 3.

- (7) Offer up reinforcing plate item 1 and drill holes to match existing holes in frame web. Drill holes in reinforcing

plate and frame web in the additional positions as shown on RD.379 and insert rivets where possible.

- (8) Offer up angles items 2 and 3 and rivet into position.

- (9) Locate hinge bearings on the inboard and outboard reinforcing plates Part No. B.207397-400 and rivet into position.

- (10) Offer up packing Part No.E.232186 item 17 (2 off) item 18 (2 off).

- (11) Offer up inboard and outboard reinforcing plates and locate by means of the template Part No.T.402765, drill all necessary holes.

- (12) Remove the template and insert all rivets.

#### 3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	B.207397	Outbd. reinf. plate port	-	-	} For renewal purposes
26FX/NIV	B.207398	Outbd. reinf. plate stbd.	-	-	
26FX/NIV	B.207399	Inbd. reinf. plate port	-	-	
26FX/NIV	B.207400	Inbd. reinf. plate stbd.	-	-	
26FX/NIV	F.207781	Hinge bearing	-	-	
26FX/NIV	E.232186/17	Packing	-	-	
26FX/NIV	E.232186/18	Packing	-	-	

RESTRICTED

## FUSELAGE

### COLLISION WITH SAFETY BARRIER

#### Assessment of damage

1. Damage to the aircraft by collision with the safety barrier is mainly caused by the top and bottom horizontal cables of the barrier. The lower cable passes under the nose wheel and is raised when the vertical straps come into contact with the leading edges of the stub wings and main planes, causing damage to the wheel doors and their attachments to the fuselage, and perhaps slight damage to the wheel and leg fairings of the main undercarriage. The top cable is similarly pulled down on to the top of the fuselage damaging the spine fairings and the flying controls which run beneath them. Damage caused by the vertical straps is not extensive but the leading edges of the air intakes may be found to be in need of repair. To gain access for renewal of the attachment brackets inboard of the wheel doors and the flying control idling link brackets it will be found necessary to remove the engine.

#### Damage in the vicinity of the wheel doors

2. The load on the front edge of the wheel doors, in addition to damaging the doors themselves, will probably tear the doors away from their hinges. This will necessitate the renewal of the hinge mounting angles, the brackets attaching them to the fuselage, and the small portions of skin immediately inboard of the doors. The Teleflex controls and the rods and stops which actuate the sequence valves will also need renewal. The upper Teleflex control brackets may be renewed and alternative fixings are given in the appropriate repair scheme where access for solid riveting is not obtainable. The lower brackets carry the guide brackets which are jig located, in consequence renewal is impracticable on the site. However, damage to these brackets is usually confined to the lugs attaching them to the hinge mounting angles and a repair scheme is provided to cover this damage. The wheel door jacks and their attachments should be inspected carefully for damage.

#### Damage to spine fairings and flying controls

3. This normally occurs in the vicinity of the rear transport joint and will necessitate the renewal of the spine fairings, attachment angles, flying control rods, flying control brackets and idling links concerned.

#### Damage to the leading edges of air intakes

4. Damage to the leading edges of the air intakes also frequently occurs in the case of collision with birds. Repair is by renewal of the leading edge or by insertion repair, depending upon the extent of the damage, and suitable repair schemes will be found elsewhere in Group B.

#### Repair materials

5. As the extent of the damage will depend upon the velocity of the aircraft when coming into contact with the barrier it is not practicable to give a list of parts required for renewal and reference should be made to Vol.3. Materials required for repairs will be found listed in the appropriate repair leaflets.

## FUSELAGE

### COLLISION WITH SAFETY BARRIER

#### Repair to teleflex control brackets

1. Where damage has been sustained to teleflex control brackets by collision with the safety barrier, the repair or renewal may be carried out as shown in this leaflet. The lower brackets may be repaired, while the upper brackets should be renewed. The following repair drawing is included with this leaflet:-

#### RD.422 - REPAIR TO TELEFLEX CONTROL BRACKETS

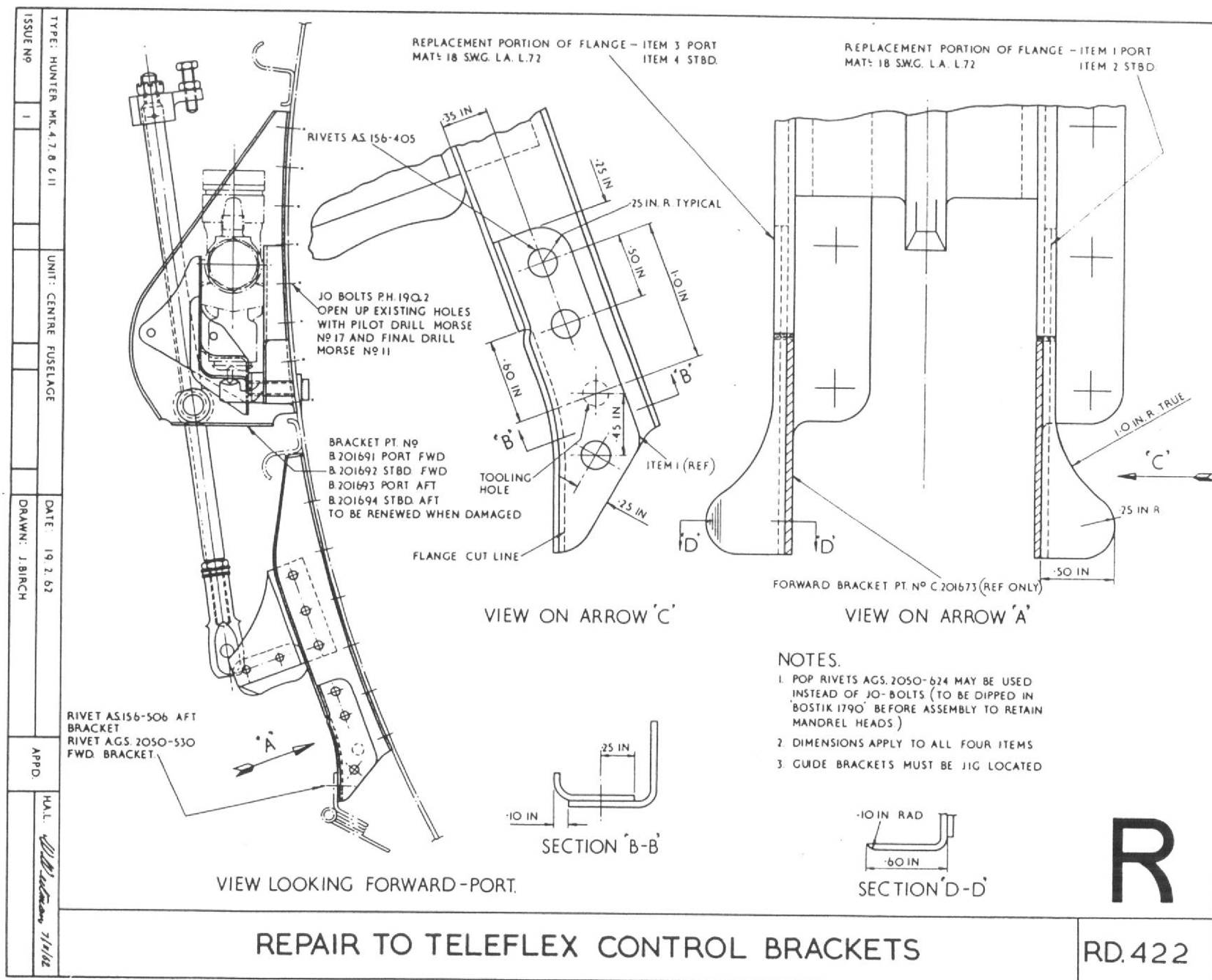
2. The recommended sequence of operations is as follows:-

- (1) Remove all services which will be in way of repair, discarding parts which are found to be damaged.
- (2) Drill out all rivets attaching upper brackets to fuselage.
- (3) Open up existing holes with pilot drill morse number 17 and final drill morse number 11.
- (4) Offer up new upper brackets and secure with Jo-bolts PH.190/2 or alternatively pop rivets A.G.S.2050/624 may be used.
- (5) Cut away damaged portion of lower brackets as shown on RD.422.
- (6) From 18 s.w.g. light alloy to specification L.72 manufacture replacement portion of flanges.
- (7) Offer up replacement portion of flanges, drill and rivet in position.
- (8) Insert appropriate rivets to secure lower control brackets to under-carriage wheel door hinge mounting angle.
- (9) Replace, or if necessary renew all services previously removed.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
30B/1730	-	Sheet, aluminium alloy	18 s.w.g.	L.72	For items 1, 2, 3 & 4
26FX/5177	B.201691	Bracket, forward port	-	-	} These parts to be renewed as required
26FX/5178	B.201692	Bracket, forward stbd.	-	-	
26FX/5179	B.201693	Bracket, aft port	-	-	
26FX/5180	B.201694	Bracket, aft stbd.	-	-	
28N/17890	PH.190/2	Jo-bolts	3/16 in.dia.	-	} As an alternative to Jo-bolts
28Q/9417235	A.G.S.2050/624	Rivets, pop, dm/hd.	3/16 in.dia.	D.T.D.10	
28Q/9417231	A.G.S.2050/530	Rivets, pop. dm/hd.	5/32 in.dia.	D.T.D.10	
28Q/1671	A.S.156/506	Rivets, sn/hd.	5/32 in.dia.	L.37	

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## FUSELAGE

### BIRD STRIKE

#### Assessment of damage

1. Whilst damage caused by collision with birds may obviously occur at almost any point on the aircraft a large number of cases have occurred where the bird has entered the air intake. This usually results in damage to the outboard end of the air intake in the region of diaphragm E, although deflection by the bird first striking the fuselage or the air intake leading edge may vary the point of impact. The leading edge of the air intake is often dented, the air intake skin is usually holed at the outboard end, and one or more of the stub wing diaphragms torn or distorted. With the exception of the case where the air intake skin is the only item damaged, when small repairs may be carried out with 'pop' rivets, it will be necessary to remove the main plane and the outer end rib of the stub wing to provide access for repair. On aircraft where the retrospective versions of Mod.772 and 693 have been incorporated access to the riveting of

diaphragms A, B, and C can only be obtained by removal of the external reinforcing plates introduced by these modifications should any of these diaphragms need repair.

#### Damage to air intake leading edges

2. Typical repairs to the leading edges of the air intake are given in this Group. Consideration should be given to whether it is more suitable to renew the complete leading edge, or to use one of the repair schemes provided, which may be used anywhere on the top or bottom leading edges.

#### Damage to air intake skins

3. Small skin repairs may be carried out using 'pop' rivets where access for solid riveting is not available. Normally solid rivets should be used for repairs to air intake skins, access being gained with the outer end rib of the stub wing removed. Typical examples of repairs are included in this Group and should be used as a

guide to cover variations in damage.

#### Damage to diaphragms

4. Damage to the outboard ends of span-wise diaphragms can usually be rectified by partial replacement, and suitable schemes will be found in this Group. Complete renewal of one of these diaphragms involves extensive stripping of the stub wing and is not advised. Damage to inboard or outboard diaphragms is rectified by renewal.

#### Damage to outer end rib

5. Where the stub wing diaphragms have been extensively damaged it may be found that the outer end rib has been torn or distorted. This should be rectified by renewal.

#### Repair materials

6. The materials required for repair will be found listed in the appropriate repair leaflets. Reference should be made to Vol.3 for parts required for renewal.

## CENTRE FUSELAGE

## BIRD STRIKE

**Insertion repair to leading edge of air intake**

1. Where damage has occurred to the top or bottom leading edge nosing of the port or starboard stub wing they may be repaired as shown in this leaflet. The following repair drawing is included with this leaflet:-

RD.430 - INSERTION REPAIR TO  
LEADING EDGE OF AIR  
INTAKE

2. The recommended sequence of operations is as follows:-

**Note . . .**

*Each nosing skin is attached to the butt straps prior to assembly by tack rivets. These rivets are situated between the two rows of rivets attaching the skin on both air intake and outer skin surfaces. One will be found at the inboard end, one at the outboard end, and one midway between. If*

*any of these rivets are in the area of repair the head only may be removed. Extreme care should be taken when drilling out the rivet head, and under no circumstances should the drill be allowed to penetrate further than necessary or damage to the leading edge member will be caused, the remaining shank of the rivet to be removed later.*

- (1) Drill out the necessary rivets to enable the damaged portion of the nosing to be cut out.
- (2) Cut out the damaged portion of nosing as shown in RD.430, great care should be taken to ensure that no damage is caused to the existing butt straps.
- (3) Remove the remaining shank of the rivet (See note).

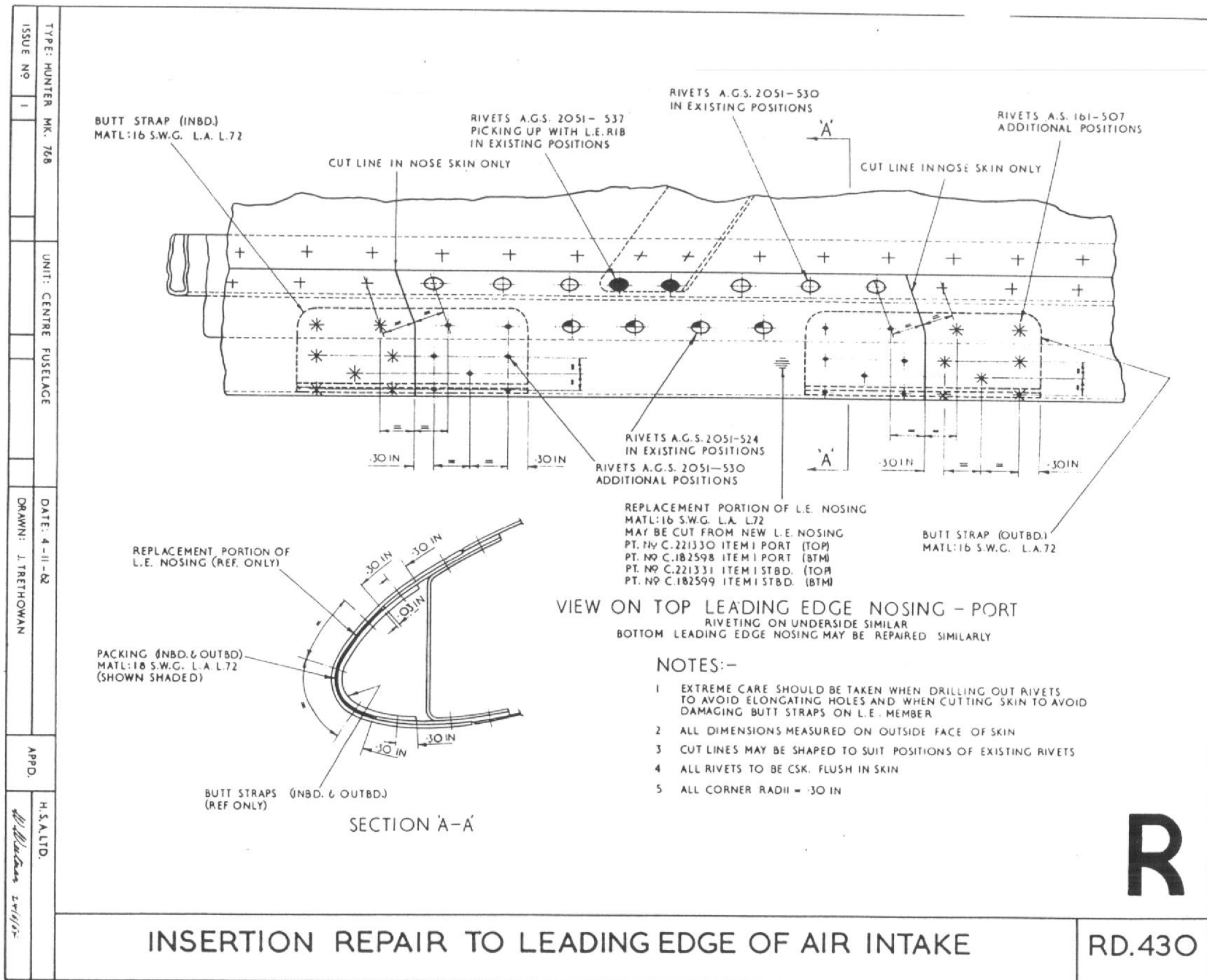
- (4) Manufacture outboard and inboard packings from 18 s.w.g. light alloy to specification L.72 and shape to contour.
- (5) Manufacture outboard and inboard butt straps from 16 s.w.g. to specification L.72 and shape to contour.
- (6) Offer up butt straps and packings to existing portion of leading edge nosing, drill holes and insert appropriate rivets.
- (7) From new nosing as called up on RD.430 cut replacement portion of nosing.
- (8) Offer up replacement portion of nosing drill holes and insert the appropriate rivets.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	C.221330/1	Leading edge nosing skin, top port			For renewal of damaged parts.
26FX/NIV	C.221331/1	Leading edge nosing skin, top stbd.			
26FX/NIV	C.182598/1	Leading edge nosing skin, btm. port			
26FX/NIV	C.182599/1	Leading edge nosing skin, btm. stbd.			
30B/1728	-	Sheet, aluminium alloy	16 s.w.g.	L.72	
30B/1730	-	Sheet, aluminium alloy	18 s.w.g.	L.72	
28Q/9417209	A.G.S.2051/524	Rivets, pop, csk/hd.	5/32 in.dia.	D.T.D.10	
28Q/9417210	A.G.S.2051/530	Rivets, pop, csk/hd.	5/32 in.dia.	D.T.D.10	
28Q/9417211	A.G.S.2051/537	Rivets, pop, csk/hd.	5/32 in.dia.	D.T.D.10	
28Q/6449	A.S.161/507	Rivets, csk/hd.	5/32 in.dia.	L.37	

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INSERTION REPAIR TO LEADING EDGE OF AIR INTAKE

RD.430

## CENTRE FUSELAGE

### BIRD STRIKE

#### Partial replacement of leading edge of air Intake

1. Where damage has occurred to the top or bottom leading edge nosing and leading edge member of the port or starboard stub wing they may be repaired as shown in this leaflet. The following repair drawing is included with this leaflet:-

#### RD.429 - PARTIAL REPLACEMENT OF LEADING EDGE OF AIR INTAKE

2. The recommended sequence of operations is as follows:-

- (1) Remove adjacent skins as necessary to carry out repair.

#### Note . . .

*Each nosing skin is attached to the butt straps prior to assembly by tack rivets. These rivets are situated between*

*the two rows of rivets attaching the skin on both air intake and outer skin surfaces. One will be found at the inboard end, one at the outboard end, and one midway between. On no account should removal of these rivets be attempted or damage to the leading edge member will be caused.*

- (2) Cut out damaged portion of nosing, and leading edge member as shown on RD.429.
- (3) Manufacture reinforcing channel from 22 s.w.g. to specification S.520, and shape to contour.
- (4) From new leading edge member, as called up on RD.429 cut replacement portion of leading edge member.
- (5) Offer up replacement portion of leading edge member and reinforcing channel drill holes and insert the appropriate rivets.

- (6) Manufacture packing from 18 s.w.g. light alloy to specification L.72 and shape to contour.
- (7) Manufacture butt strap from 16 s.w.g. light alloy to specification L.72 and shape to contour.
- (8) Offer up butt strap and packing to existing portion of nosing, drill holes and insert appropriate rivets.
- (9) From new nosing as called up on RD.429 cut replacement portion of nosing.
- (10) Offer up replacement portion of nosing drill holes and insert the appropriate rivets.
- (11) Replace undamaged skins previously removed, renewing damaged skins as shown on RD.435 or 437.

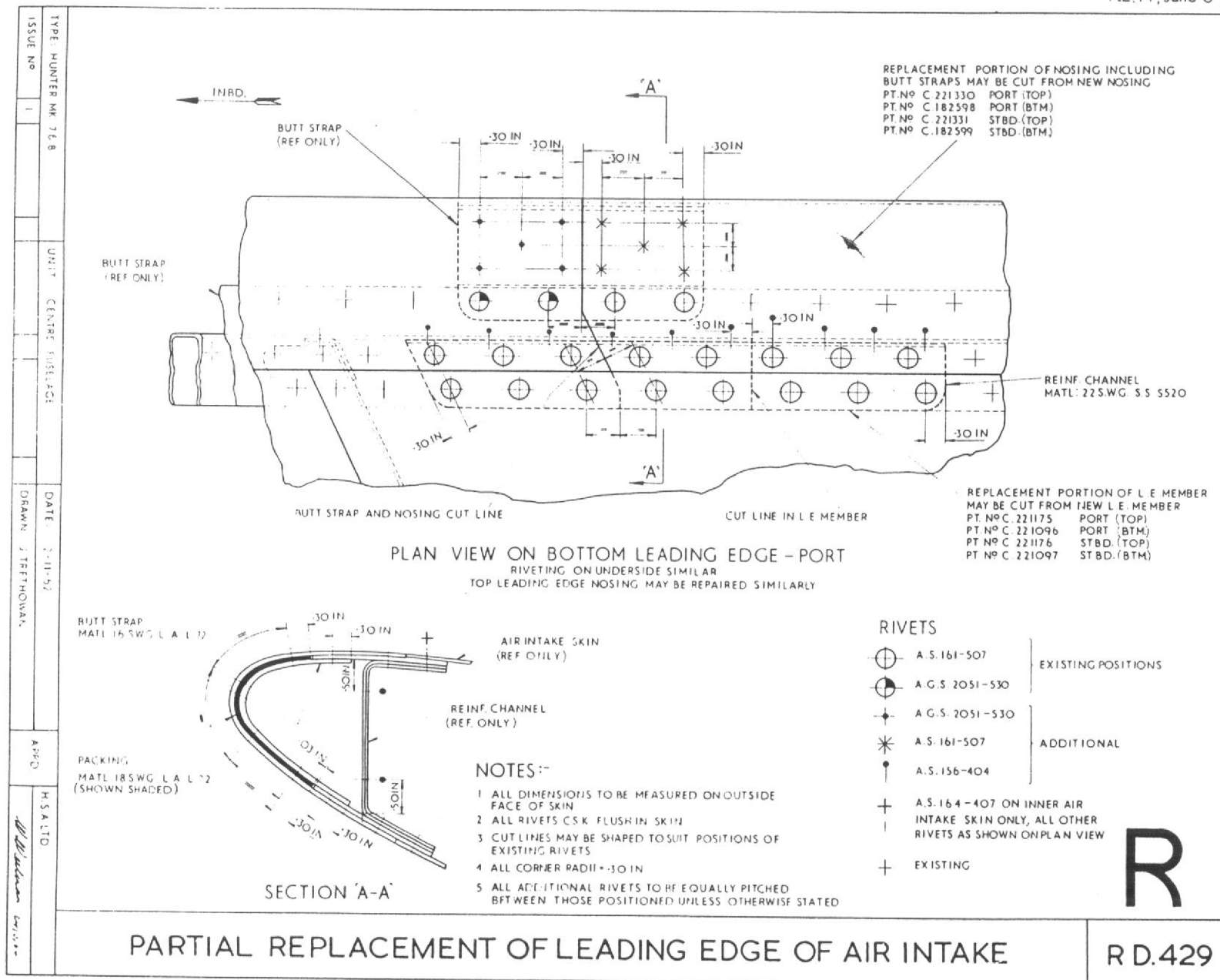
3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	C.221330	Leading edge nosing assy, top port			} For renewal of damaged parts.
26FX/NIV	C.221331	Leading edge nosing assy, top stbd.			
26FX/1823	C.182598	Leading edge nosing assy, btm. port			
26FX/1824	C.182599	Leading edge nosing assy, btm. stbd.			
26FX/NIV	C.221175	Leading edge member, top port			
26FX/NIV	C.221176	Leading edge member, top stbd.			
26FX/NIV	C.221096	Leading edge member, btm. port			

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<i>Ref.No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Size</i>	<i>Specification</i>	<i>Remarks</i>
26FX/NIV	C.221097	Leading edge member, btm. stbd.			For renewal of damaged parts
30A/2113	—	Sheet, stainless steel	22 s.w.g.	S.520	—
30B/1728	—	Sheet, aluminium alloy	16 s.w.g.	L.72	—
30B/1730	—	Sheet, aluminium alloy	18 s.w.g.	L.72	—
28Q/1649	A.S.156/404	Rivets, sn/hd.	1/8 in.dia.	L.37	—
28Q/6449	A.S.161/507	Rivets, csk/hd.	5/32 in.dia.	L.37	—
28Q/9417210	A.G.S.2051/530	Rivets, pop csk/hd.	5/32 in.dia.	D.T.D.10	—

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## CENTRE FUSELAGE BIRD STRIKE

### Repair to top leading edge of air intake.

1. Where damage has occurred to the top nosing, leading edge member, forward stub wing at air intake skins, they may be removed and renewed as shown in this leaflet is the following repair drawing.

### R.D.435 - REPAIR TO TOP LEADING EDGE OF AIR INTAKE.

2. The recommended sequence of operations is as follows:-

- (1) Remove detachable nose panels Part No. C.220289 top port C.220290 top starboard C.220291 air intake upper port, and C.220292 air intake upper starboard.
- (2) Remove outboard end fairing Part No. C.216760 port, and C.216761 starboard.
- (3) Release bolt holding leading edge to front fuselage.

### Note . . .

*The front fuselage must be attached to position the leading edge member, unless a jig is available. This repair scheme may also be used where damage has been confined to the air intake, or stub wing skin, in which case it will not be necessary to remove either the leading edge nosing assembly or leading edge member. Each nosing skin is attached*

*to the butt straps prior to assembly by tack rivets. These rivets are situated between the two rows of rivets attaching the skin on both air intake and outer skin surfaces. One will be found at the inboard end, one at the outboard end, and one midway between, and on no account should the removal of these rivets be attempted or damage to the leading edge member will be caused. To remove and assemble leading edge nosing assembly it is only necessary to remove either the air intake skin, or stub wing skin. When drilling out rivets in the air intake skin on the leading edge rib No.1 top Part No.C.22177 port, C.221178 starboard, the landing is attached to the rib by four 3/32 in. tack rivets, these must not be drilled out or damage will be caused to the air intake skin and boundary layer duct, there is also one hidden rivet as shown on RD.435 to remove this rivet first drill out and remove top cleat Part No.A.192029 port, A.192030 starboard. When drilling out rivets on mounting for D.M.E. aerials care should be taken, as two rivets are counter-sunk in the skin and Frame 19, and the mounting plate must first be removed before drilling out these rivets.*

- (4) Release and remove either stub wing or air intake skin, if there is no damage to either skin remove the stub wing skin only.
- (5) Remove damaged leading edge nosing assembly.

- (6) Remove damaged leading edge member.
- (7) Position new leading edge member Part No.C.221175 top port, C.221176 top starboard, replacing bolt holding leading edge to front fuselage.
- (8) Position and rivet new leading edge nosing assembly Part No.C.221330 top port, C.221331 top starboard.

### Note . . .

*Cover Plate Part No.F.181617 and outboard end rib Part No.B.180020 port, B.180021 starboard may be removed to provide access for riveting skins and outboard end fairing.*

- (9) Replace outboard end fairing Part No.C.216760 port, C.216761 starboard renewing if damaged.
- (10) The air intake skin should be replaced using a new skin if necessary. This is done by inserting the skin between the boundary layer duct skin and leading edge rib No.1 commencing riveting along this edge and working outboard. The top cleat at the boundary layer duct should be replaced after the rivet has been inserted beneath it must be remembered to insert the mounting for the D.M.E. aerial before the riveting has progressed too far. Where the stub wing skins have not been removed it may be found ne-

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cessary to use 'pop' rivets immediately inboard of leading edge rib No.2. As many solid rivets as possible must be inserted.

(11) Commence replacement of stub wing

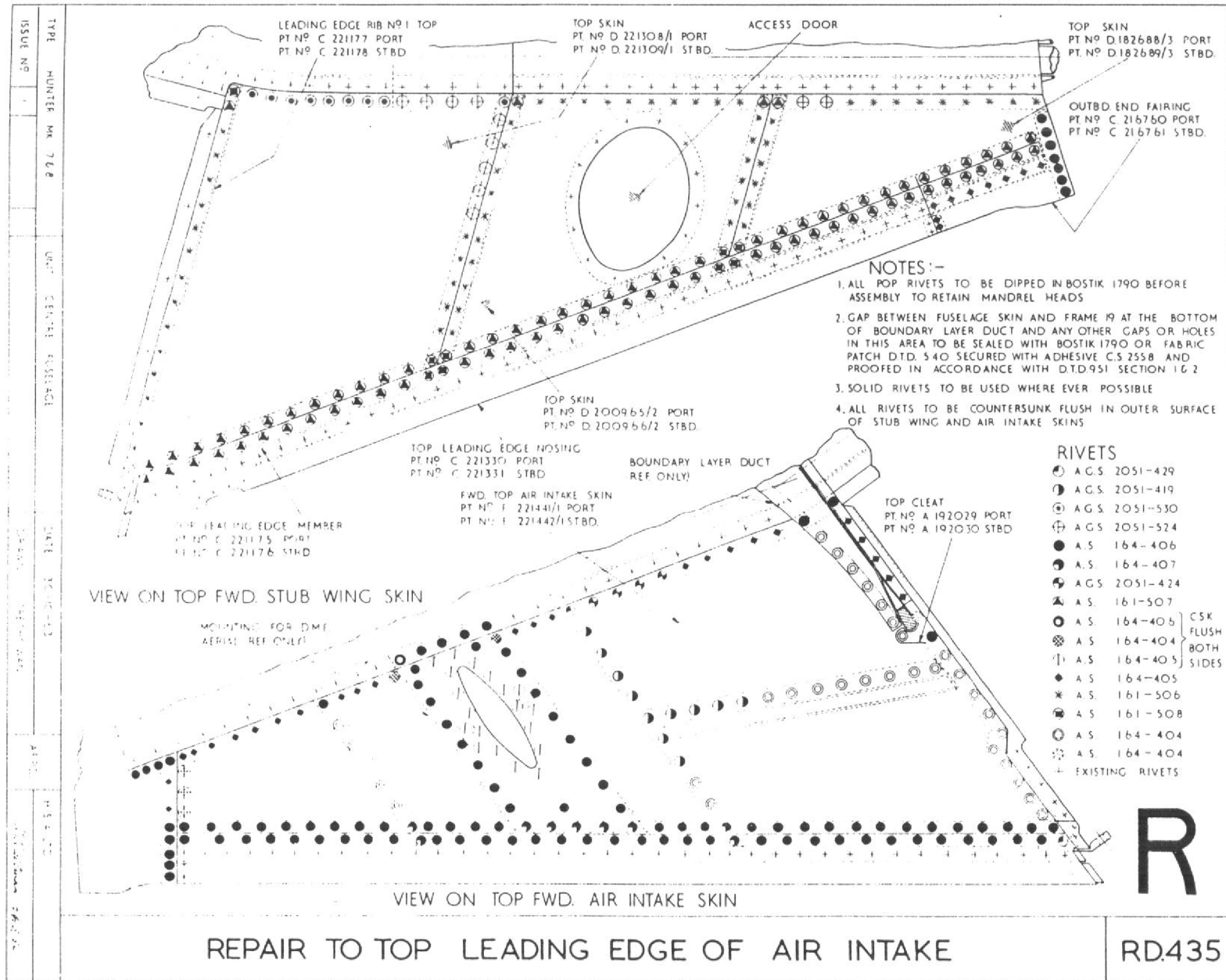
skins with top skins Part No.D.182688 item 3 port D.182689 item 3 starboard followed by top skin. Part No.D.200965 item 2 port, D.200966 item 2 starboard finally top skin Part No.D.221308 item 1 port D.221309 item 1 starboard.

It is essential that solid rivets be used where ever access is possible.

(12) Replace outboard end rib and cover plate on completion of skin riveting.

3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/1809	D.182688/3	Top skin, port			For renewal of damaged parts
26FX/1816	D.182689/3	Top skin, stbd.			
26FX/NIV	D.200965/2	Top skin, port			
26FX/NIV	D.200966/2	Top skin, stbd.			
26FX/NIV	D.221308/1	Top skin, port			
26FX/NIV	D.221309/1	Top skin, stbd.			
26FX/7875	C.216760	Outboard end fairing, port			
26FX/7876	C.216761	Outboard end fairing, stbd.			
26FX/NIV	C.221330	Leading edge nosing top, port			
26FX/NIV	C.221331	Leading edge nosing top, stbd.			
26FX/NIV	C.221175	Leading edge member top, port			
26FX/NIV	C.221176	Leading edge member top, stbd.			
26FX/NIV	E.221441/1	Forward top air intake skin, port			
26FX/NIV	E.221442/1	Forward top air intake skin, stbd.			
28Q/9417203	A.G.S.2051/419	Rivets, pop, csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417204	A.G.S.2051/424	Rivets, pop, csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417205	A.G.S.2051/429	Rivets, pop, csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417209	A.G.S.2051/524	Rivets, pop, csk/hd.	5/32 in. dia.	D.T.D.10	
28Q/9417210	A.G.S.2051/530	Rivets, pop, csk/hd.	5/32 in. dia.	D.T.D.10	
28Q/7655	A.S.164/404	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/7656	A.S.164/405	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/8147	A.S.164/406	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/8148	A.S.164/407	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/6135	A.S.161/506	Rivets, csk/hd.	5/32 in. dia.	L.37	
28Q/6449	A.S.161/507	Rivets, csk/hd.	5/32 in. dia.	L.37	
28Q/6136	A.S.161/508	Rivets, csk/hd.	5/32 in. dia.	L.37	



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## CENTRE FUSELAGE BIRD STRIKE

### Repair to bottom leading edge of air intake.

1. Where damage has occurred to the bottom nosing, leading edge member, forward stub wing or air intake skins, they may be removed and renewed as shown in this leaflet. Included with this leaflet is the following repair drawing.

### R D.437 - REPAIR TO BOTTOM LEADING EDGE OF AIR INTAKE.

2. The recommended sequence of operations is as follows:-

- (1) Remove detachable nose panels Part No. C.190413 bottom port, C.190414 bottom starboard, C.184363 air intake bottom port, and C.184364 air intake bottom starboard.
- (2) Remove outboard end fairing Part No. C.216760 port, C.216761 starboard.
- (3) Release bolt holding leading edge to front fuselage.

#### Note . . .

*The front fuselage must be attached to position the leading edge member unless a jig is available. This repair scheme may also be used where damage has been confined to the air intake, or stub wing skin, in which case it will not be necessary to remove either the leading edge nosing assembly or leading edge member. Each nosing skin is attached to the batt straps prior to assembly by tack rivets. These rivets are situated between the two rows of rivets attaching the skin on both air intake and*

*outer skin surfaces. One will be found at the inboard end, one at the outboard end, and one midway between, and on no account should the removal of these rivets be attempted or damage to the leading edge member will be caused. To remove and assemble leading edge nosing assembly it is only necessary to remove either the air intake skin, or stub wing skin. When drilling out rivets in the air intake skin on the leading edge rib No.1 bottom Part No. B.180014 port B.180015 starboard, the landing is attached to the rib by two 3/32 in. tack rivets these must not be drilled out or damage will be caused to the air intake skin, there is also one hidden rivet as shown on RD.437, to remove this rivet first drill out and remove bottom cleat Part No. A.192031 port, A.192032 starboard.*

- (4) Release and remove either stub wing skin or air intake skin, if there is no damage to either skin remove the stub wing skin only.
- (5) Remove damaged leading edge nosing assembly.
- (6) Remove damaged leading edge member.
- (7) Position new leading edge member Part No. C.180006 bottom port, C.180007 bottom starboard, replacing bolt holding leading edge to front fuselage.
- (8) Position and rivet new leading edge

nosing assembly Part No. C.182598 bottom port, C.182599 bottom starboard.

#### Note . . .

Cover plate Part No. F.181617 and outboard end rib Part No. B.180020 port, B.180021 starboard may be removed to provide access for riveting skins, and outboard end fairing.

- (9) Replace outboard end fairing Part No. C.216760 port, C.216761 starboard renewing if damaged.
- (10) The air intake skin should be replaced, using a new skin if necessary. This is done by inserting the skin between the boundary layer duct skin and leading edge rib No.1, commencing riveting along this edge and working outboard. The bottom cleat at the boundary layer duct should be replaced after the rivet has been inserted beneath it. Where the stub wing skins have not been removed it may be found necessary to use pop rivets as shown on RD.437 but as many solid rivets as possible must be inserted.
- (11) Commence replacement of stub wing skins with bottom skin Part No. D.182688 item 9 port, D.182689 item 3 starboard, followed by bottom skin Part No. D.182688 item 10 port, D.182689 item 10 starboard, finally bottom skin Part No. D.182688 item 11 port, D.182689 item 11 starboard.

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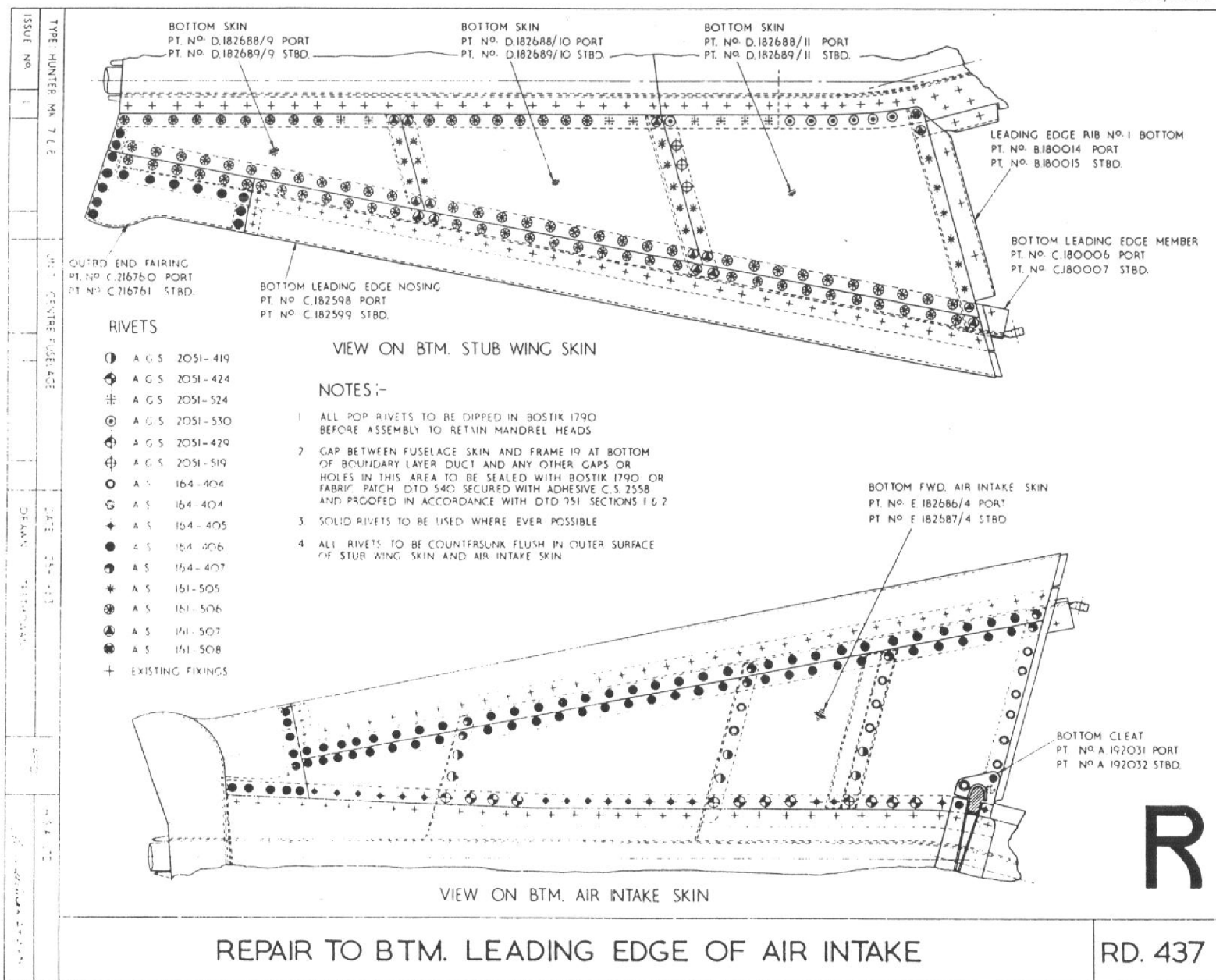
It is essential that solid rivets be used where ever access is possible.

(12) Replace outboard end rib and cover plate on completion of skin riveting.

3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/2682	D.182688/9	Bottom skin, port			For renewal of damaged parts
26FX/2685	D.182689/9	Bottom skin, stbd.			
26FX/2683	D.182688/10	Bottom skin, port			
26FX/2686	D.182689/10	Bottom skin, stbd.			
26FX/2684	D.182688/11	Bottom skin, port			
26FX/2687	D.182689/11	Bottom skin, stbd.			
26FX/7875	C.216760	Outboard end fairing, port			
26FX/7876	C.216761	Outboard end fairing, stbd.			
26FX/1823	C.182598	Leading edge nosing bottom, port			
26FX/1824	C.182599	Leading edge nosing bottom, stbd.			
26FX/2657	C.180006	Leading edge member bottom, port			
26FX/2658	C.180007	Leading edge member bottom, stbd.			
26FX/NIV	E.182686/4	Forward bottom air intake skin, port			
26FX/NIV	E.182687/4	Forward bottom air intake skin, stbd.			
28Q/9417203	A.G.S.2051/419	Rivets, pop, csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417204	A.G.S.2051/424	Rivets, pop, csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417205	A.G.S.2051/429	Rivets, pop, csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417208	A.G.S.2051/519	Rivets, pop, csk/hd.	5/32 in. dia.	D.T.D.10	
28Q/9417209	A.G.S.2051/524	Rivets, pop, csk/hd.	5/32 in. dia.	D.T.D.10	
28Q/9417210	A.G.S.2051/530	Rivets, pop, csk/hd.	5/32 in. dia.	D.T.D.10	
28Q/7655	A.S.164/404	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/7656	A.S.164/405	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/8147	A.S.164/406	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/8148	A.S.164/407	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/6134	A.S.161/505	Rivets, csk/hd.	5/32 in. dia.	L.37	
28Q/6135	A.S.161/506	Rivets, csk/hd.	5/32 in. dia.	L.37	
28Q/6449	A.S.161/507	Rivets, csk/hd.	5/32 in. dia.	L.37	
28Q/6136	A.S.161/508	Rivets, csk/hd.	5/32 in. dia.	L.37	

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## FUSELAGE

### BIRD STRIKE

#### Repair to air intake skin

1. Where damage has occurred to the outboard air intake skins between stub wing diaphragm D and the forward diaphragm at main spar, they may be repaired as shown in this leaflet. It is assumed that the main plane has been removed. The following repair drawing is included with this leaflet:-

RD.432 - REPAIR TO AIR INTAKE SKIN

2. The recommended sequence of operations is as follows:-

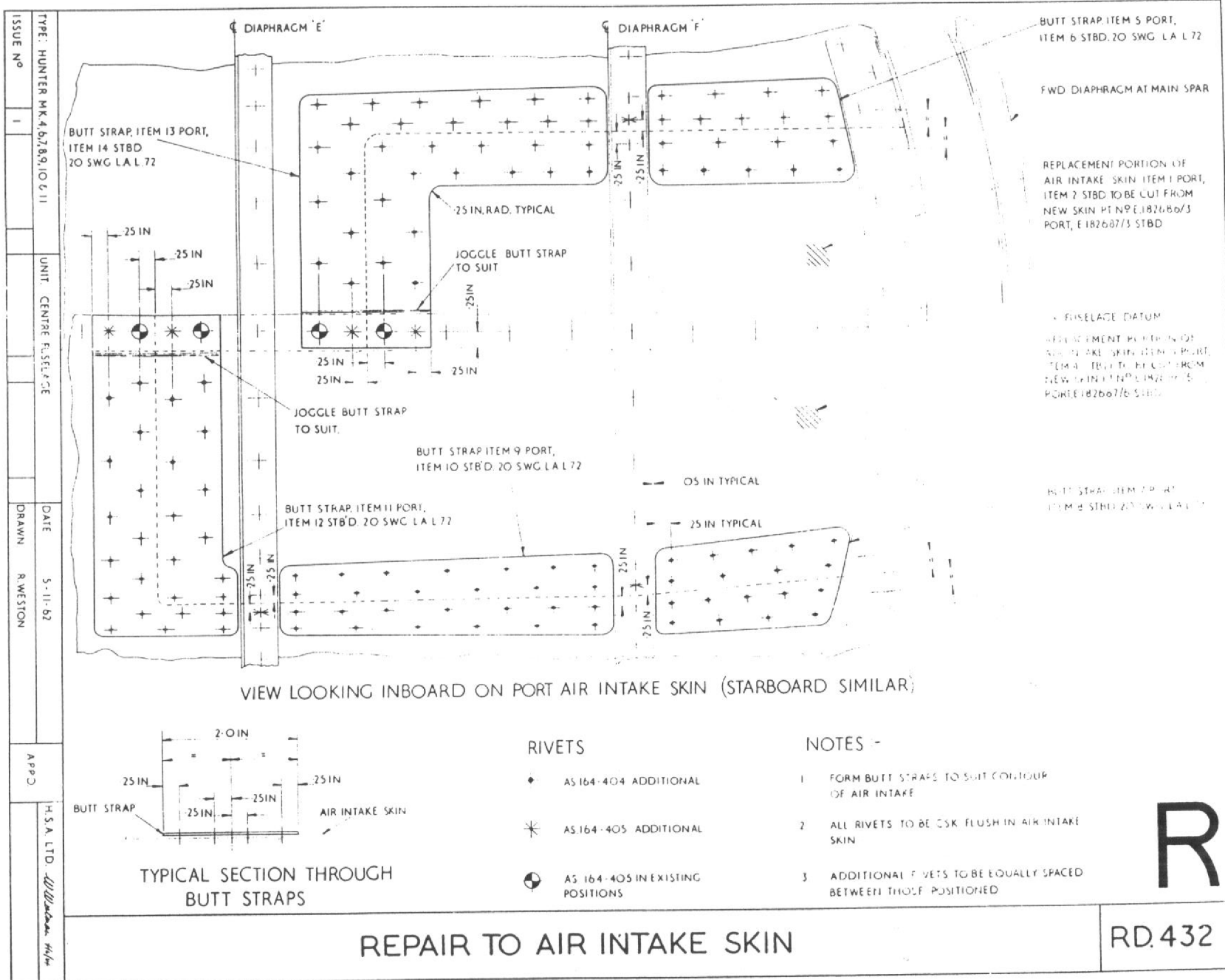
- (1) Drill out rivets as required, cut and remove damaged portions of top and bottom air intake skin as shown on RD.432.
- (2) From new skin part No.E.182686 item 3 port, E.182687 item 3 starboard cut replacement portion of skin item 1 port, item 2 starboard.

- (3) From new skin part No.E.182686 item 6 port, E.182687 item 6 starboard cut replacement portion of skin item 3 port, item 4, starboard.
- (4) From 20 s.w.g. light alloy to specification L.72 manufacture the butt straps item No. 5, 7, 9, 11 and 13, port, item No. 6, 8, 19, 12 and 14 starboard.
- (5) Offer up butt straps and replacement portions of skins and rivet in position.

3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	E.182686/3	Skin, port	-	-	For item 1
26FX/NIV	E.182687/3	Skin, starboard	-	-	For item 2
26FX/NIV	E.182686/6	Skin, Port	-	-	For item 3
26FX/NIV	E.182687/6	Skin, Starboard	-	-	For item 4
30B/1732	-	Sheet, aluminium alloy	20 s.w.g.	L.72	For items 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14
28Q/7655	A.S.164-404	Rivets, csk/hd.	1/8 in.dia.	L.37	-
28Q/7656	A.S.164-405	Rivets, csk/hd.	1/8 in.dia.	L.37	-

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## FUSELAGE

### BIRD STRIKE

#### Repair to stub wing diaphragm E

1. Where damage has occurred to the outer end of stub wing diaphragm E, it may be repaired as shown in this leaflet. It is assumed that the main plane has been removed. The following repair drawing is included with this leaflet:-

#### RD.424 - REPAIR TO STUB WING DIAPHRAGM E

2. The recommended sequence of operations is as follows:-

- (1) Remove the outer end rib diaphragm Part No. D.201133 item 1 port, D.201134 item 1 starboard. *Do not remove outer end rib skin attachment angles.*
- (2) Release appropriate rivets and remove

roof at underside of stub wing between diaphragm C and E.

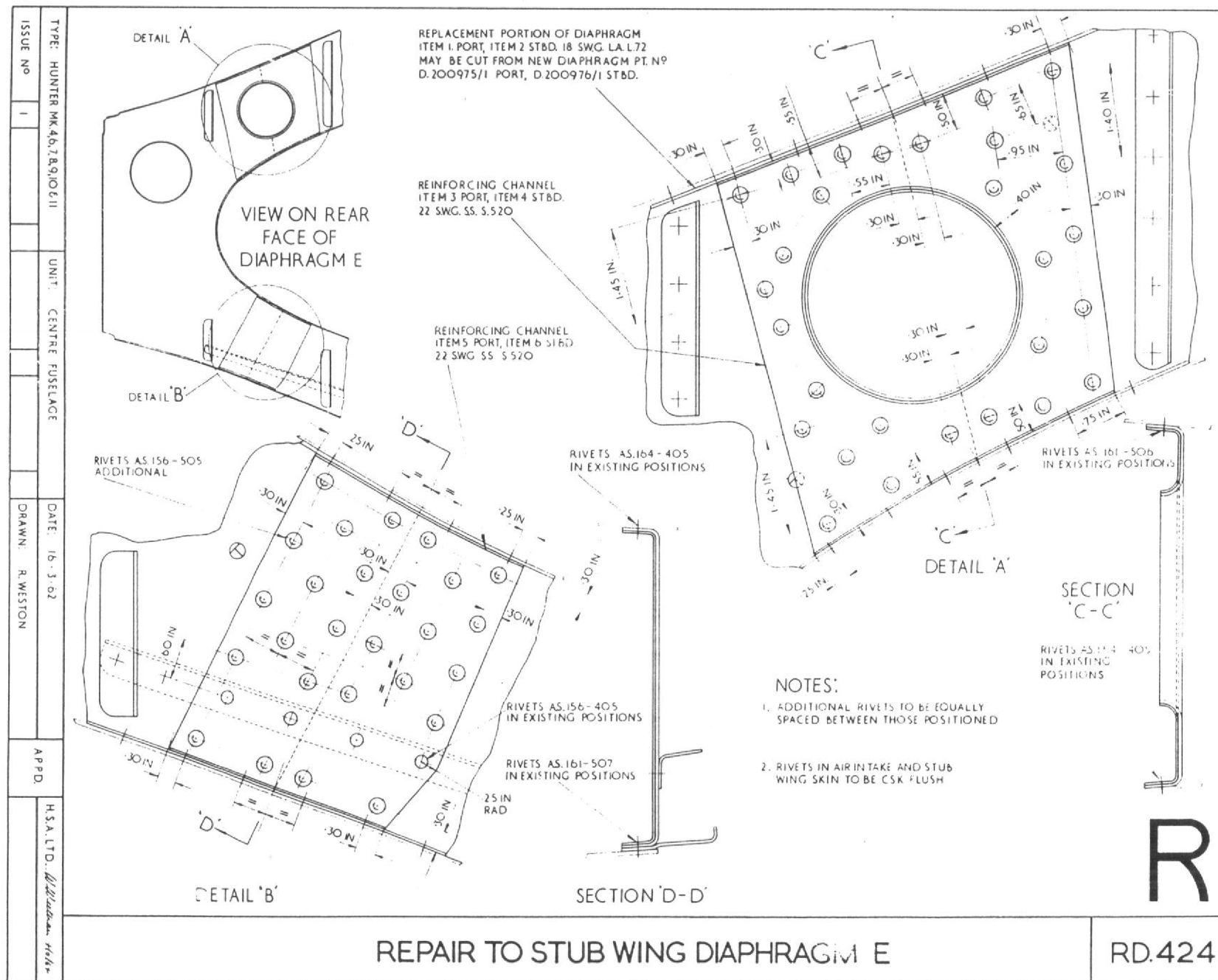
- (3) Inboard and outboard, diaphragms and stiffeners, forward and aft of diaphragm E, to be removed as required, to gain access for riveting.
- (4) Release top and bottom flanges of diaphragm E from stub wing and air intake skins, by drilling out the appropriate rivets.
- (5) Cut and remove damaged portion of diaphragm E as shown on RD.424.
- (6) From new diaphragm E Part No. D.200975 item 1 port, D.200976 item 1 starboard, manufacture the replacement portion.

- (7) From 22 s.w.g. stainless steel to specification S.520 manufacture the reinforcing channels as shown on RD.424.
- (8) Offer up replacement portion of diaphragm E, together with reinforcing channels and rivet in position.
- (9) Replace and rivet in position any diaphragms and stiffeners previously removed for access.
- (10) Offer up and rivet in position the roof at underside of stub wing between diaphragm C and E.
- (11) Replace and rivet in position the outer end rib diaphragm, Part No. D.201133 item 1 port, D.201134 item 1 starboard.

3. The following repair materials will be required:

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	D.200975/1	Diaphragm, port	-	-	For item 1
26FX/NIV	D.200976/1	Diaphragm, starboard	-	-	For item 2
30A/2510	-	Sheet, stainless steel	22 s.w.g.	S.520	For item 3, 4, 5 & 6
26Q/7656	A.S.164/405	Rivets, csk/hd.	1/8 in.dia.	L.37	-
28Q/6135	A.S.161/506	Rivets, csk/hd.	5/32 in.dia.	L.37	-
28Q/6449	A.S.161/507	Rivets, csk/hd.	5/32 in.dia.	L.37	-
28Q/1660	A.S.156/405	Rivets, sn/hd.	1/8 in.dia.	L.37	-
28Q/1661	A.S.156/505	Rivets, sn/hd.	5/32 in.dia.	L.37	-

RESTRICTED



## FUSELAGE

### BIRD STRIKE

#### Reinforcing of stub wing diaphragm F

1. Where damage has occurred to the outer end of stub wing diaphragm F but, does not necessitate partial replacement as shown in repair leaflet B.5/10, it may be repaired as shown in this leaflet. It is assumed that the main plane has been removed. The following repair drawing is included with this leaflet:

#### RD.428 - REINFORCING OF STUB WING DIAPHRAGM F

2. The recommended sequence of operations is as follows:-

- (1) Remove the outer end rib diaphragm Part No.D.201133 item 1 port, D.201134 item 1 starboard. Do not remove outer end rib skin attachment angles.
- (2) Release air intake skin from diaphragm by drilling out the appropriate rivets.
- (3) Dress out damaged portion of diaphragm to original contour.

- (4) From 22 s.w.g. sheet stainless steel to specification S.520 manufacture reinforcing plate item 1 port item 2 starboard, as shown on RD.428.
- (5) Offer up reinforcing plate to diaphragm, drill and rivet in position.
- (6) Replace and rivet in position the outer end rib diaphragm part No. D.201133 item 1 port, D.201134 item 1 starboard.

3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
30A/2510	—	Sheet, stainless steel	22 s.w.g.	S.520	For items 1 and 2
28Q/7656	A.S.164/405	Rivets, csk/hd.	1/8 in.dia.	L.37	—
28Q/8147	A.S.164/406	Rivets, csk/hd.	1/8 in.dia.	L.37	—
28Q/1650	A.S.156/404	Rivets, sn/hd.	1/8 in.dia.	L.37	—

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## FUSELAGE

## BIRD STRIKE

## Repair to stub wing diaphragm F.

1. Where damage has occurred to the outer end of stub wing diaphragm F, it may be repaired as shown in this leaflet. It is assumed that the main plane has been removed. The following repair drawing is included with this leaflet:-

RD.425 - REPAIR TO STUB WING  
DIAPHRAGM F.

2. The recommended sequence of operations is as follows:-

(1) Remove the outer end rib diaphragm Part No.D.201133 item 1 port, D.201134 item 1 starboard. *Do not remove outer end rib skin attachment angles.*

(2) Release the top and bottom flanges of diaphragm F from stub wing and air intake skins by drilling out the appropriate rivets.

(3) Cut and remove damaged portion of diaphragm F as shown on RD.425.

(4) From new diaphragm F Part No. D.200977 item 1 port, D.200978 item 1 starboard, manufacture the replacement portion.

(5) From 18 s.w.g. light alloy to specification L.72 manufacture the reinforcing plates item No. 5, 6, 11 and 12.

(6) From 22 s.w.g. stainless steel to specification S.520 manufacture the reinforcing angles item Nos. 3, 4, 7, 8, 9, 10, 13 and 14.

(7) From 18 s.w.g. light alloy to specification L.72 manufacture the angles item Nos. 15 and 16.

(8) Offer up replacement portion of diaphragm F together with reinforcing plates and reinforcing angles and rivet in position.

(9) Offer up angle item Nos. 15 and 16 and rivet in position.

(10) Replace and rivet in position any skin stiffeners or structure previously removed for access.

(11) Replace and rivet in position the outer end rib diaphragm Part No. D.201133 item 1 port, D.201134 item 1 starboard.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	D.200977/1	Diaphragm, port	-	-	For item 1
26FX/NIV	D.200978/1	Diaphragm, starboard	-	-	For item 2

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<i>Ref.No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Size</i>	<i>Specification</i>	<i>Remarks</i>
30B/1730	-	Sheet,aluminium alloy	18 s.w.g.	L.72	For item 5, 6, 11, 12, 15 and 16
30A/2510	-	Sheet,stainless steel	22 s.w.g.	S.520	For item 3, 4, 7, 8, 9, 10, 13 and 14
28Q/1661	A.S.156-505	Rivets, sn/hd.	5/32 in.dia.	L.37	-
28Q/1671	A.S.156-506	Rivets, sn/hd.	5/32 in.dia.	L.37	-
28Q/1681	A.S.156-507	Rivets, sn/hd.	5/32 in.dia.	L.37	-
28Q/7655	A.S.164-404	Rivets, csk/hd.	1/8 in.dia.	L.37	-
28Q/7656	A.S.164-405	Rivets, csk/hd.	1/8 in.dia.	L.37	-
28Q/8147	A.S.164-406	Rivets, csk/hd.	1/8 in.dia.	L.37	-
28Q/7943	A.S.164-304	Rivets, csk/hd.	3/32 in.dia.	L.37	-
28Q/7755	A.S.164-305	Rivets, csk/hd.	3/32 in.dia.	L.37	-
28Q/6449	A.S.161-507	Rivets, csk/hd.	5/32 in.dia.	L.37	-
28Q/6135	A.S.161-506	Rivets, csk/hd.	5/32 in.dia.	L.37	-

RESTRICTED



## FUSELAGE

### NOSE WHEEL COLLAPSE

#### Repair to bottom portion of frame 4

1. This repair should be made in conjunction with the renewals listed in repair leaflet B.1/1. Reference should be made to the following repair drawing which is included with this leaflet:-

#### RD.381 - REPAIR TO BOTTOM PORTION OF FRAME 4.

2. The recommended sequence of operations is as follows:-

- (1) Mark out the position of the cut line.
- (2) Remove all fixings securing the damaged portions of frame to the structure.
- (3) Cut and remove the damaged portions of frame.

(4) From new frame cut replacement portions of frame RD.381 item 1 - port, item 2 - starboard.

(5) From 20 s.w.g. light alloy to specification L.72 manufacture joint plates as shown on RD.381.

(6) Offer up joint plates items 5 and 6 together with replacement portions of frame 4 items 1 and 2, drill the holes required to secure the joint plates to the skin and frame flange and insert the appropriate rivets.

(7) Offer up the remaining joint plates items 3 and 4 drill and rivet into position.

(8) Replace all fixings securing the adjacent structure.

3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	D.207541/1	Frame 4 port side portion	-	-	} For items 1 and 2
26FX/NIV	D.207541/2	Frame 4 stbd. side portion	-	-	
30B/1732	-	Sheet aluminium alloy	20 s.w.g.	L.72	} For items 3, 4, 5 and 6
28Q/1650	A.S.156-404	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/1660	A.S.156-405	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/1672	A.S.156-606	Rivets, sn/hd.	3/16 in. dia.	L.37	
28Q/7656	A.S.164-405	Rivets, csk/hd.	1/8 in. dia.	L.37	
26FX/4211	STD.1687/2	Saddle	-	-	

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## FUSELAGE

### NOSE WHEEL COLLAPSE

#### Repair to bottom portion of frame 5

1. This repair should be used in conjunction with the renewals listed in repair leaflet B.1/1. Reference should be made to the following repair drawing which is included with this leaflet:-

RD.382 - REPAIR TO BOTTOM PORTION OF FRAME 5.

2. The recommended sequence of operations is as follows:-

- (1) Release cables from channel Part No. A.219398 (port only) and drill out rivets securing channel to frames 3, 4, 5 and 6 for access to area of repair.
- (2) Release all fixings securing the

damaged portions of frame to structure.

- (3) Mark out the positions of cut lines as shown on RD.382.
- (4) Cut and remove damaged portions of frame.
- (5) From new frame cut replacement portions RD.382 item 1 port and item 2 stbd.
- (6) From 20 s.w.g. light alloy to specification L.72 manufacture joint plates item 3 port, item 4 stbd.
- (7) Offer up joint plates item 3 and 4 together with replacement portions

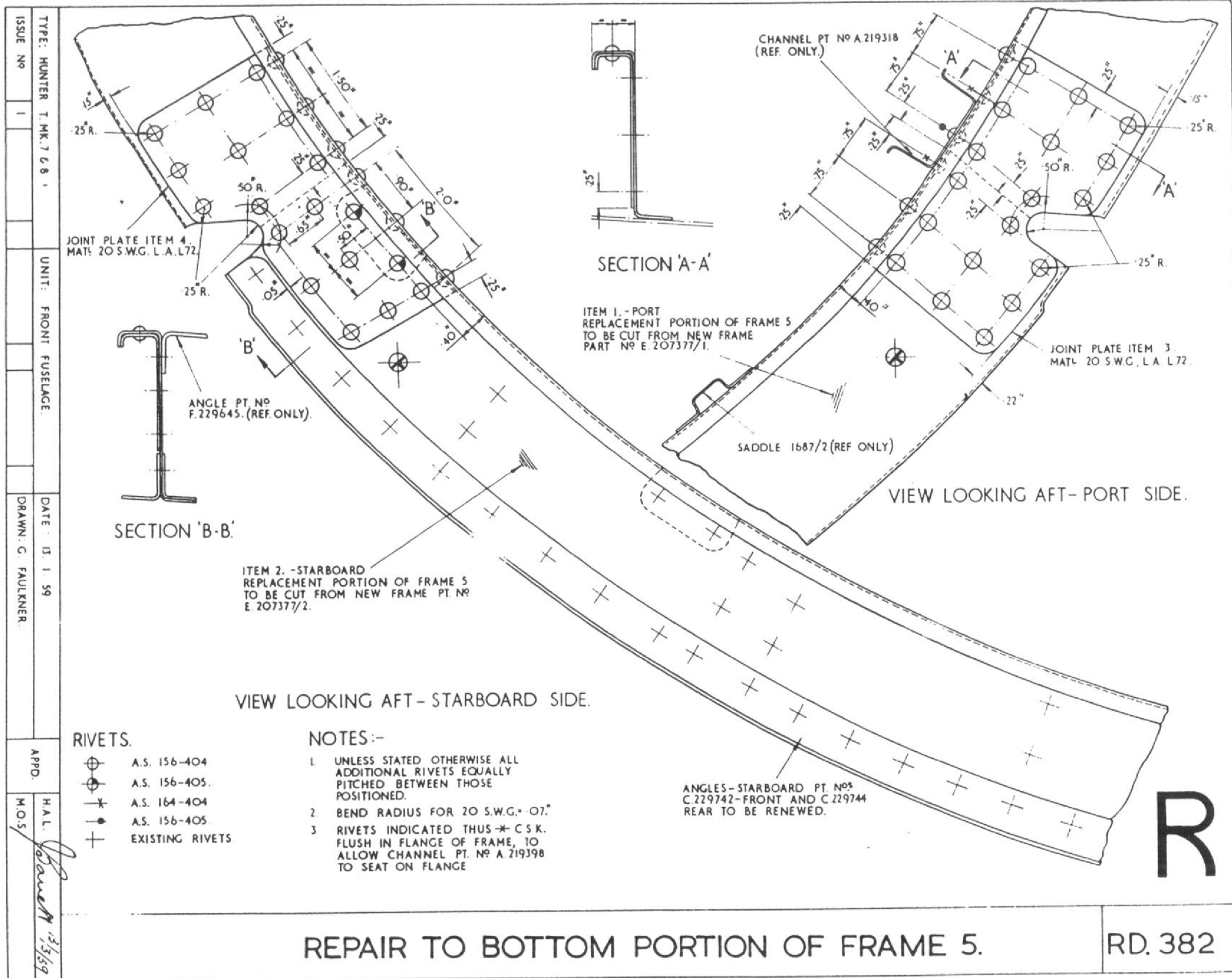
of frame 5 items 1 and 2, mark off and drill the holes to secure the joint plates to frame and insert appropriate rivets.

- (8) Offer up forward and rear angles Part Nos. C.229742 and C.229744 respectively and secure into position.
- (9) Replace all fixings securing frame to structure.
- (10) Replace channel Part No.A.219398 using rivets A.S.156/404 or A.G.S. 2050/419 where solid rivets are impracticable.
- (11) Replace cables into channel.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	E.207377/1	Frame 5 port side portion	-	-	} For items 1 and 2
26FX/NIV	E.207377/2	Frame 5 stbd. side portion	-	-	
26FX/NIV	C.229742	Angle - front	-	-	
26FX/NIV	C.229744	Angle - rear	-	-	For items 3 and 4
30B/1732	-	Sheet aluminium alloy	20 s.w.g.	L.72	
26FX/4211	Std.1687/2	Saddle	-	-	
28Q/1650	A.S.156-404	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/1660	A.S.156-405	Rivets sn/hd.	1/8 in. dia.	L.37	
28Q/7655	A.S.164-404	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/9417224	A.G.S.2050-419	Rivets pop dm/hd.	1/8 in. dia.	D.T.D.10	

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## FUSELAGE

## NOSE WHEEL COLLAPSE

**Repair to skin covering on underside of nose piece**

1. Where damage has occurred to the bottom of the nose piece, it may be repaired as shown in this leaflet. Reference should be made to the following repair drawing which is included with this leaflet:-

**RD.383 - REPAIR TO SKIN COVERING ON UNDERSIDE OF NOSE PIECE.**

2. The recommended sequence of operations is as follows:-

- (1) Remove the nose piece as laid down in Section 3, Chapter 1 of the appropriate Volume 1.
- (2) Remove the radome by releasing the countersunk screws attaching it to frame 1A.

- (3) Cut and remove damaged portions of skin as shown on RD.383. It will be noted that the butt strap Part No. B.207631 will no longer be required, retain bracket Part No.F.225693 if undamaged for later assembly.
- (4) If frame 1B is damaged it is to be repaired to repair drawing RD.386. Damage to frame 1C is to be repaired by the replacement of lower portion, replace frame 1A complete if damaged.
- (5) If any of the stiffeners have sustained damage they are to be renewed complete.
- (6) From 26 s.w.g. stainless steel to specification S.520 make butt straps items 2 and 3. These may be made from the same blank.

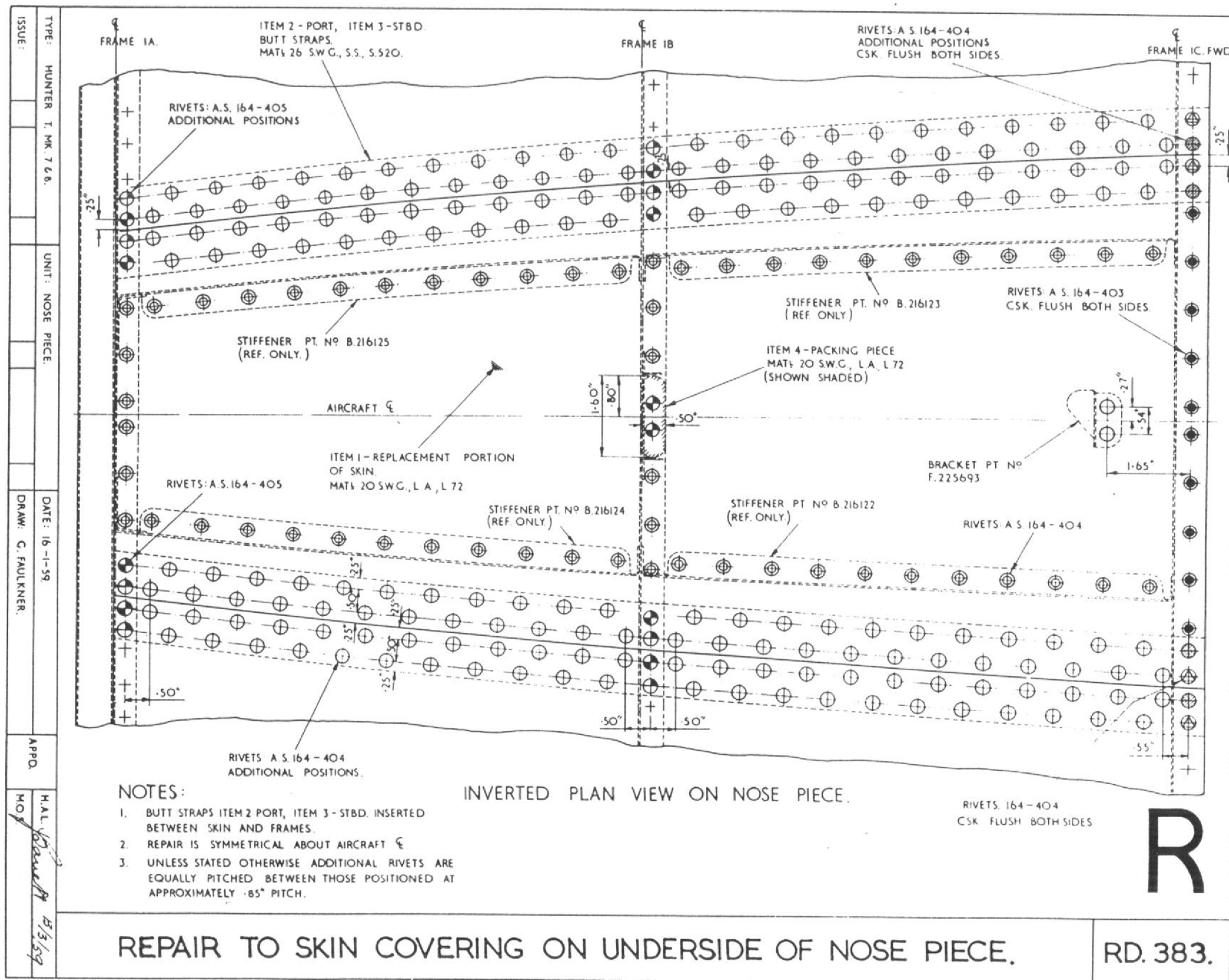
- (7) From 20 s.w.g. light alloy to specification L.72 make replacement portion of skin item 1 and packing piece item 4.
- (8) Offer up butt straps items 2 and 3 and insert between skin and structure as shown on RD.383. Drill and insert the appropriate rivets.
- (9) Offer up replacement portion of skin and packing piece, drill holes and insert appropriate rivets.
- (10) Position bracket Part No.F.225693, drill and rivet into position.
- (11) Replace the radome, renewing if found necessary.
- (12) Replace the nose piece.

**3. The following repair material will be required:-**

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/8724	B.207630	Radome	-	-	} For replacement purposes
26FX/NIV	C.207619	Frame 1A - complete	-	-	
26FX/NIV	D.207618/2	Frame 1C - lower portion	-	-	
26FX/NIV	A.207634	Joint plates for frame 1C	-	-	
26FX/NIV	F.225693	Bracket for drain pipe	-	-	
26FX/NIV	RD.386	Repair to base of frame 1B	-	-	
26FX/NIV	B.216122	Stiffener stbd	-	-	
26FX/NIV	B.216123	Stiffener port	-	-	
26FX/NIV	B.216124	Stiffener stbd	-	-	
26FX/NIV	B.216125	Stiffener port	-	-	
30A/NIV	-	Sheet stainless steel	26 s.w.g.	S.520	For items 2 and 3
30B/1732	-	Sheet aluminium alloy	20 s.w.g.	L.72	For items 1 and 4
28Q/7655	A.S.164-404	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/7656	A.S.164-405	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/9676	A.S.164-403	Rivets csk/hd.	1/8 in. dia.	L.37	

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REPAIR TO SKIN COVERING ON UNDERSIDE OF NOSE PIECE.

RD. 383.

## FUSELAGE

### NOSE WHEEL COLLAPSE

Repair to bottom skin covering between frames 1B and 1C

1. Where damage has occurred to the base of the nose piece, it may be repaired as shown in this leaflet if the damage is not too extensive. Reference should be made to the following repair drawing which is included with this leaflet:-

RD.385 - REPAIR TO SKIN COVERING BETWEEN FRAMES 1B AND 1C BOTTOM.

2. The recommended sequence of operations is as follows:-

(1) Remove the nose piece as laid down in Section 3, Chapter 1 of the appropriate Vol.1.

(2) Cut away butt strap Part No.B.207631 as shown on RD.385.

(3) Cut and remove damaged portion of skin as shown on RD.385.

(4) If undamaged release bracket Part No. F.225693 from skin for later assembly.

(5) If frame 1C has sustained damage, the complete lower portion is to be renewed.

(6) If any of the stiffeners have sustained damage they are to be renewed complete.

(7) From 26 s.w.g. stainless steel to

specification S.520 manufacture butt strap item 2.

(8) From 20 s.w.g. light alloy to specification L.72 manufacture replacement portion of skin item 1.

(9) Offer up butt strap and insert between existing skin and structure as shown on RD.385, drill and insert the appropriate rivets.

(10) Offer up replacement portion of skin item 1, drill holes and insert appropriate rivets.

(11) Mark out position of holes for bracket Part No.F.225693 drill holes and secure bracket with appropriate rivets.

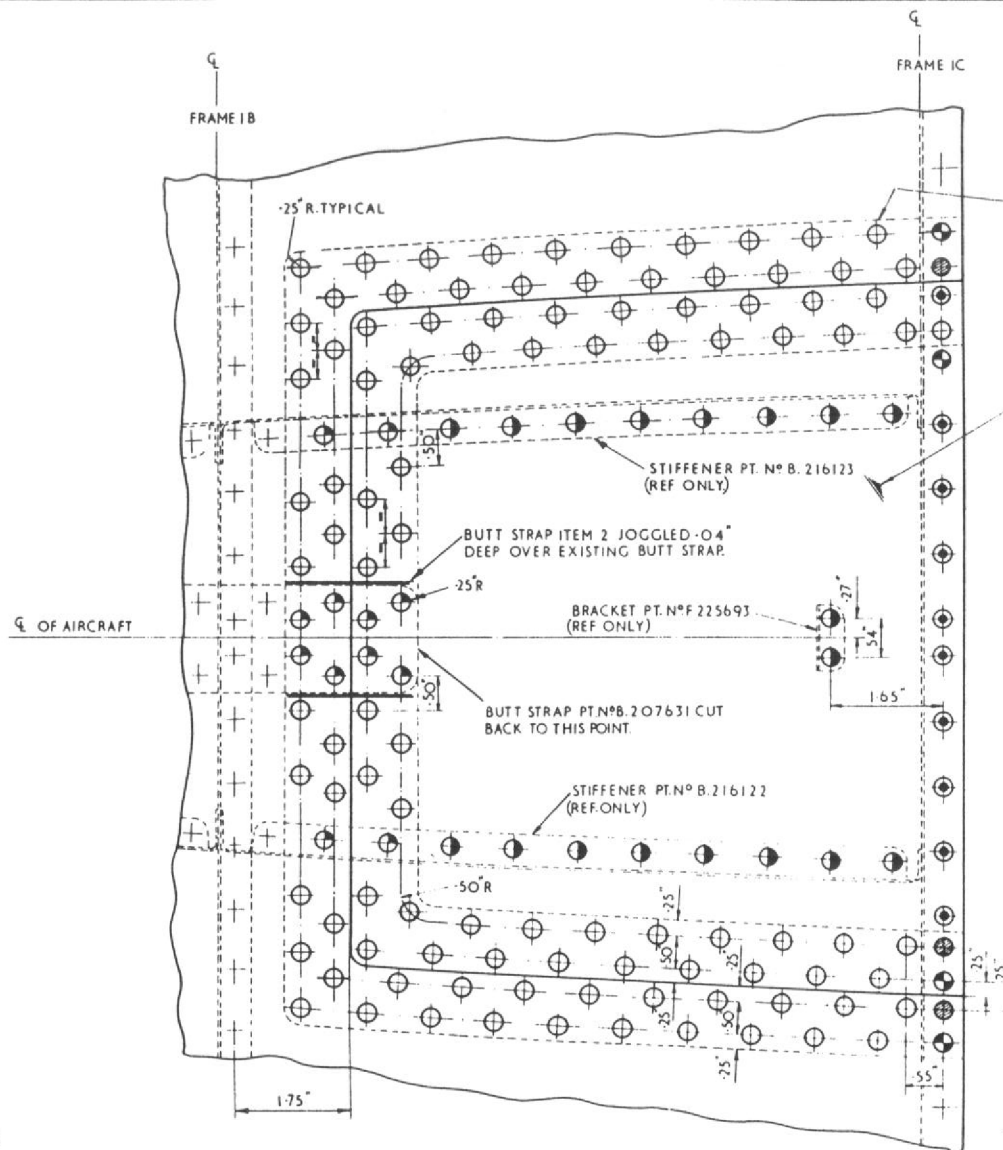
(12) Replace the nose piece.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	A.207634	Joint plates for frame 1C	-	-	} For replacement purposes
26FX/NIV	D.207618/2	Frame 1C lower	-	-	
26FX/NIV	F.225693	Bracket for drain pipe	-	-	
26FX/NIV	B.216122	Stiffener stbd. } between frames	-	-	
26FX/NIV	B.216123	Stiffener port } 1B to 1C	-	-	
30A/NIV	-	Sheet stainless steel	26 s.w.g.	S.520	For item 2
30B/1732	-	Sheet aluminium alloy	20 s.w.g.	L.72	For item 1
28Q/7655	A.S.164-404	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/7656	A.S.164-405	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/9676	A.S.164-403	Rivets csk/hd.	1/8 in. dia.	L.37	

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TYPE: HUNTER T.M.K. 7 & 8.	UNIT: NOSE PIECE.	DATE: 20-1-59	APD.
ISSUE N° 1		DRAWN: G. FAULKNER.	H.A.L. 3/1/59
			M.O.S.



BUTT STRAP- ITEM 2.  
MATH 26 S.W.G. S.S. S520  
INSERTED BETWEEN SKIN AND STRUCTURE.

REPLACEMENT PORTION OF SKIN- ITEM 1.  
MATH 20 S.W.G. L.A. L72.

#### NOTES:-

1. THIS REPAIR IS SYMMETRICAL ABOUT AIRCRAFT CL
2. ADDITIONAL RIVETS EQUALLY PITCHED BETWEEN THOSE POSITIONED UNLESS STATED OTHERWISE AT APPROX. 85° PITCH
3. ALL RIVETS TO BE CSK. FLUSH IN SKIN.
4. WHERE FRAME 1C HAS SUSTAINED DAMAGE THE AFFECTED PORTION IS TO BE RENEWED
5. RUNOUT ON JOGGLE NOT TO EXCEED .15"
6. ALL DIMENSIONS MEASURED AROUND SKIN

#### RIVETS

⊕	A S. 164-404	ADDITIONAL	} CSK. FLUSH BOTH SIDES
⊙	A S. 164-405	EXISTING POSITIONS	
⊖	A S. 164-404	EXISTING POSITIONS	
⊗	A S. 164-403	EXISTING POSITIONS	
⊕	A S. 164-404	ADDITIONAL	
⊙	A S. 164-404	EXISTING POSITIONS	
+	EXISTING RIVETS		

INVERTED PLAN VIEW ON NOSE PIECE

REPAIR TO SKIN COVERING BETWEEN FRAMES IB AND IC-BTM.

R D.385

## FUSELAGE

### BELLY LANDING

#### Assessment of damage

1. When assessing the damage after a "wheels up" landing it will be found that many components will be damaged beyond repair, and that in many other cases renewal will be easier and more economical than repair. A number of repair leaflets have been prepared where it is considered that a repair would be advantageous. In preparing these leaflets only details of the repair to the actual component in question are given. It is assumed that the aircraft has been dismantled at the breakdown points, skin and structure damaged beyond repair has been removed to provide access for repair, and controls and services have been dismantled where these interfere with the work to be carried out. It is essential that suitable jigs are utilised to ensure that parts are replaced in their correct positions and that the structure does not become flexible when it is stripped down and consequently remain distorted when the repairs are completed. It is envisaged that the underside of the centre fuselage,

and perhaps a little of the front and rear fuselages, will be damaged by a belly landing. The repairs listed have been devised to cover a moderate amount of damage, and it is considered that more extensive damage would involve rebuilding the structure.

2. The following damage to each major component is envisaged:-

#### (1) FRONT FUSELAGE

It is anticipated that only the rear portion of the front fuselage will sustain damage. The area concerned consists largely of access doors all of which may be renewed if damaged.

#### (2) CENTRE FUSELAGE

The underside of the centre fuselage consists largely of access doors which should be renewed if damaged. Damaged skin panels should also be renewed. Some frames are cut away at the bottom and should escape damage while the remaining frames can be repaired by renewing the

bottom section or by using one of the repair schemes provided.

#### (3) REAR FUSELAGE

Damage to the rear fuselage will probably be confined to the forward part where the frames are made in three portions. Renewal of the bottom portion will be found to provide the easiest method of repair. Minor damage to stringers may be repaired as shown in Part 1, Chap.2 of this Volume, while more extensive damage involves renewal of the stringers concerned. Damaged skin covering should be renewed.

3. A list of material required for repairs will be found at the end of each of the respective repair leaflets. Ref. numbers of the parts required for replacement may be found in Vol.3, Part 1.

4. A list of repair leaflets issued in connection with the belly landing case may be found on the front sheet of this section.

## FUSELAGE

### BELLY LANDING

#### Repair to base of frame 19 (nose spar)

1. This repair may be made in conjunction with the renewals mentioned in Repair Leaflet B.2/1. Reference should be made to the following repair drawing, which is included with this leaflet.

#### RD.307--REPAIR TO BASE OF FRAME 19 (NOSE SPAR).

2. The recommended sequence of operations is as follows:-

- (1) Remove the strap Part No.B.181160, and landing Part No.B.181167.
- (2) Remove from the front face of the frame the bottom stiffener Part No. B.181106, bottom shear plate Part No. F.189327, brackets Part Nos.F.187392 and A.192388, angle Part No.F.227023 and saddles.
- (3) Remove from the rear face of the frame the stringer attachments in way of repair, the damaged portion of the centre stiffener Part No.C.181103, and angle Part No.D.180827 item 3. The tank skins may be removed as necessary to gain access for repair.
- (4) Cut out the damaged portions of the front and rear diaphragms as shown, and also cut off flange of bracket Part No.A.221112.

- (5) From new diaphragms cut the portions required for replacement (items 5 & 6).

- (6) From 16 s.w.g. light alloy L.72 make the four butt straps (items 1 to 4) and the replacement portion of centre stiffener (item 13).

- (7) From Std.550-II-16 make tank skin angles (items 15 and 16).

- (8) From 20 s.w.g. light alloy L.72 make the four packing strips (item 8).

- (9) From 20 s.w.g. stainless steel S.520 make the channel (item 9) to join the centre stiffener.

- (10) From 22 s.w.g. stainless steel S.520 make the false flange (item 14).

- (11) Offer up the replacement portions of rear diaphragm and centre stiffener together with the appropriate butt straps, packing, joint channel and tank skin angle. Cut the tank skin angles to clear the butt straps. Drill holes in the new parts from the existing structure, and then remove the parts concerned.

- (12) Offer up the replacement portion of front diaphragm together with the appropriate butt straps, packing and bottom stiffener (a new one if the existing one is damaged). Drill holes

in the new parts to match the existing holes in the structure.

- (13) Offer up the brackets located on the front face of the frame; old parts may be used if undamaged with the exception of Part No.F.187392, which is to be replaced by Part No.F.187393 packed out by 16 s.w.g. light alloy (item 7) as shown on RD.307. The bottom shear plate Part No.F.189327 will not be replaced. Also offer up false flange (item 14).

- (14) Drill the remaining holes for the repair to the front diaphragm and insert the appropriate rivets.

- (15) Offer up the parts on the rear face as in sub-para. (11).

- (16) From 16 s.w.g. light alloy L.72 make the angles (items 10 and 11) to suit the existing tank angles and the two brackets (item 12) replacing Part No. F.178170. Offer up these parts.

- (17) Replace the tank angles removed with the damaged portion of diaphragm. New angles should be used if the existing angles are damaged. Carefully position the stringer attachments.

- (18) Drill the remaining holes and insert the appropriate rivets.

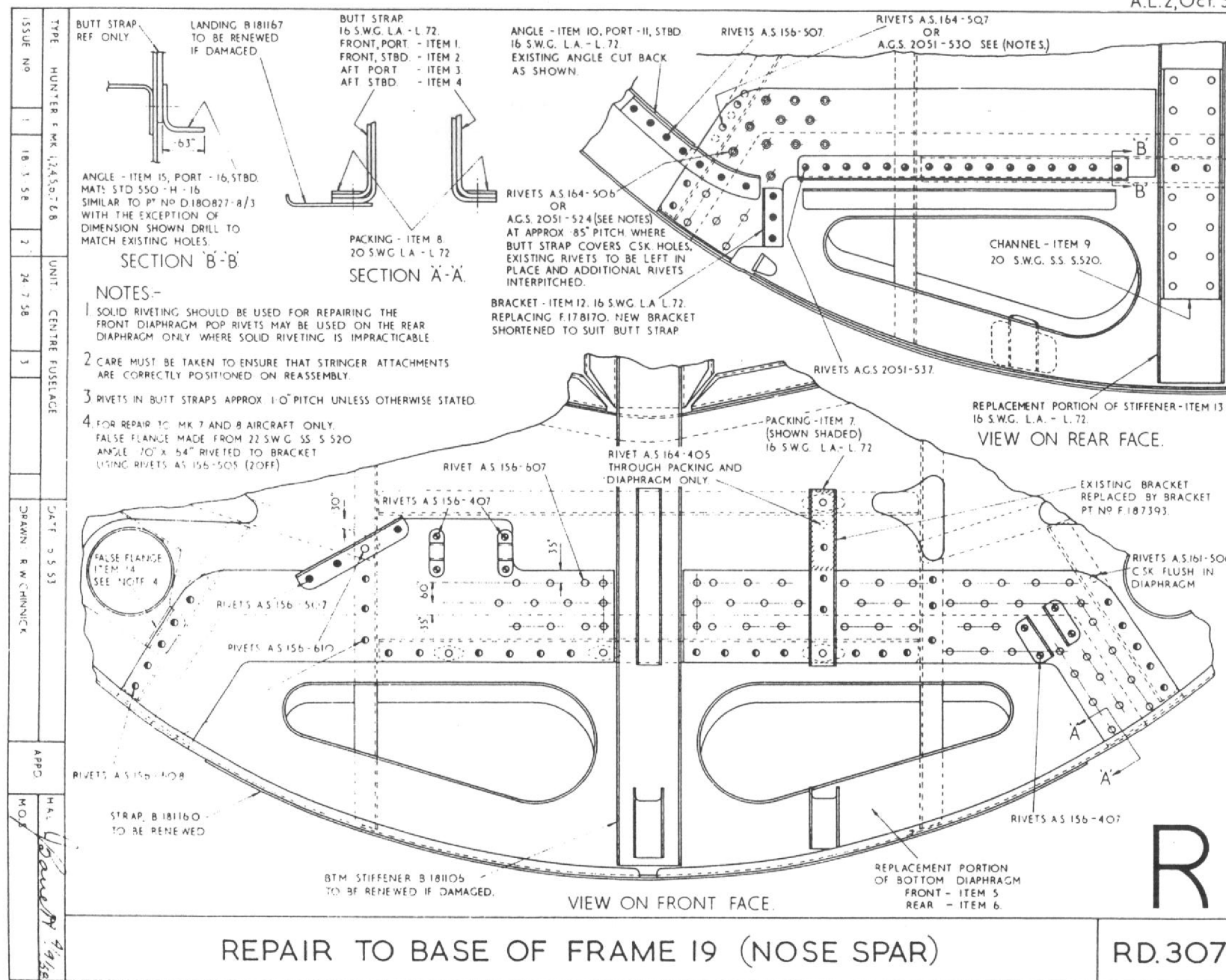
- (19) Replace the door landing, strap, and any tank skins which have been removed.

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3. The following repair material will be required:-

Ref. No.	Part No.	Description	Size	Specification	Remarks
26FX/8230	D.216907	Bottom diaphragm, front	-	-	} For items 5 and 6.
26FX/2467	D.181102	Bottom diaphragm, rear	-	-	
26FX/2469	B.181106	Stiffener, bottom	-	-	} For renewal of damaged parts.
26FX/2473	B.181160	Strap	-	-	
26FX/2468	B.181167	Landing	-	-	
26FX/2453	F.187393	Bracket	-	-	} For renewal of damaged parts.
26FX/2456	F.187396	Bracket	-	-	
26FX/2455	F.187397	Bracket	-	-	
26FX/4213	F.187398	Reinforcement	-	-	
26FX/3410	A.192388	Duct support bracket	-	-	
30A/2510	-	Sheet, stainless steel	22 s.w.g.	S.520	For item 14.
30A/2291	-	Sheet, stainless steel	20 s.w.g.	S.520	For item 9.
30B/1732	-	Sheet, aluminium alloy.	20 s.w.g.	L.72	For item 8.
30B/1728	-	Sheet, aluminium alloy	16 s.w.g.	L.72	For items 1, 2, 3, 4, 7, 10, 11, 12 and 13.
26FX/NIV	Std.550-H-16	Angle	-	-	For items 15 and 16.
28Q/1680	A.S.156-407	Rivets, sn /hd.	1/8 in. dia.	L.37	
28Q/1661	A.S.156-505	Rivets, sn /hd.	5/32 in. dia.	L.37	
28Q/1681	A.S.156-507	Rivets, sn /hd.	5/32 in. dia.	L.37	
28Q/1682	A.S.156-607	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/1692	A.S.156-608	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/1702	A.S.156-610	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/6135	A.S.161-506	Rivets, csk /hd.	5/32 in. dia.	L.37	
28Q/7656	A.S.164-405	Rivets, csk /hd.	1/8 in. dia.	L.37	
28Q/7657	A.S.164-505	Rivets, csk /hd.	5/32 in. dia.	L.37	
28Q/8149	A.S.164-506	Rivets, csk /hd.	5/32 in. dia.	L.37	
28Q/9040	A.S.164-507	Rivets, csk /hd.	5/32 in. dia.	L.37	
28Q/9417230	A.G.S.2050-524	Rivets, pop, dm /hd.	5/32 in. dia.	D.T.D.10	
28Q/9417236	A.G.S.2050-630	Rivets, pop, dm /hd.	3/16 in. dia.	D.T.D.10	
28Q/9417209	A.G.S.2051-524	Rivets, pop, csk /hd.	5/32 in. dia.	D.T.D.10	
28Q/9417210	A.G.S.2051-530	Rivets, pop, csk /hd.	5/32 in. dia.	D.T.D.10	
28Q/9417211	A.G.S.2051-537	Rivets, pop, csk /hd.	5/32 in. dia.	D.T.D.10	

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## FUSELAGE

### BELLY LANDING

#### Repair to base of frame 21

1. This repair may be made in conjunction with the renewals mentioned in Repair Leaflet B.2/1. Reference should be made to the following repair drawing, which is included with this leaflet:-

#### RD.305-REPAIR TO BASE OF FRAME 21.

2. The recommended sequence of operations is as follows:-

- (1) Cut the frame, drill out any rivets necessary, and remove the portion of frame which is to be renewed.
- (2) From a new frame cut the portion required.
- (3) From 22 s.w.g. S.520 make the joint channel item 1.
- (4) From 16 s.w.g. and 12 s.w.g. L.72

make the joint straps (items 4 and 5) for the outer and inner angles respectively.

- (5) Offer up the renewal portion of frame together with the joint straps and joint channels. Drill joint straps and joint channels to match the holes in the frame and insert the appropriate rivets.
- (6) From 22 s.w.g. L.72 make the two joint channels, item 6.
- (7) From 8 s.w.g. L.72 make the butt strap item 7.
- (8) Offer up the joint channels and butt strap, drill and insert the appropriate rivets.
- (9) From 20 s.w.g. L.72 make the packing strips, items 2 and 3, and temporarily secure them in position until the skin covering is replaced.

3. The following repair material will be required:-

Ref. No.	Part No.	Description	Size	Specification	Remarks
26FX/8216	D.215747	Frame 21	-	-	For renewal portion
30A/2510	-	Sheet, stainless steel	22 s.w.g.	S.520	For item 1.
30B/1734	-	Sheet, aluminium alloy	22 s.w.g.	L.72	For item 6.
30B/1732	-	Sheet, aluminium alloy	20 s.w.g.	L.72	For items 2 and 3.
30B/1728	-	Sheet, aluminium alloy	16 s.w.g.	L.72	For item 4.
30B/1724	-	Sheet, aluminium alloy	12 s.w.g.	L.72	For item 5.
30B/1721	-	Sheet, aluminium alloy	8 s.w.g.	L.72	For item 7.
28Q/1681	A.S.156-507	Rivets, sn /hd.	5/32 in. dia.	L.37	
28Q/1691	A.S.156-508	Rivets, sn /hd.	5/32 in. dia.	L.37	
28Q/9701	A.S.156-509	Rivets, sn /hd.	5/32 in. dia.	L.37	
28Q/1702	A.S.156-610	Rivets, sn /hd.	3/16 in. dia.	L.37	

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## FUSELAGE

### BELLY LANDING

#### Repair to base of frame 34

1. This repair may be made in conjunction with the renewals mentioned in Repair Leaflet B.2/1. Reference should be made to the following repair drawing, which is included with this leaflet:-

RD.304-PEPAIR TO BASE OF FRAME 34.

2. The recommended sequence of operations is as follows:-

(1) Drill out the necessary rivets and remove mounting angles Part No. A.190334-5. These angles will not be replaced and should be discarded.

(2) Remove nut for screw-jack Part No. F.177106.

(3) Drill out the rivets securing the diaphragms to the bottom channel over the area affected by the repair, cut the diaphragms as shown, and remove the damaged portions.

(4) If the bottom channel Part No. D.177095, item 6 is damaged, the appropriate rivets should be drilled out and the channel removed. The mounting angles and channel Part No. F.190388-90 should be retained for reassembly.

(5) If the bottom channel is to be renewed, offer up the new channel and rivet it to the existing portions of the diaphragms, replacing the mounting angles and channel removed in sub-para. (4).  
*It should be remembered that rivets*

*should not be inserted, at this stage, over the area to be covered by the butt straps and mounting angles.*

(6) From new diaphragms Part No. D.177095, items 1 to 4 cut the portions required for renewal.

(7) Offer up the renewal portions of diaphragms and rivet them to the bottom channel, except where the same fixings are to be used to secure other items.

(8) Offer up and rivet in position the joint plates, Part No.A.177100; the guide Part No.A.179364; and the

mounting bracket for external supply valve Part No.B.214195.

(9) From 16 s.w.g. L.72 make the four butt straps item 3

(10) From 14 s.w.g. L.72 make the mounting angles (items 4 and 5).

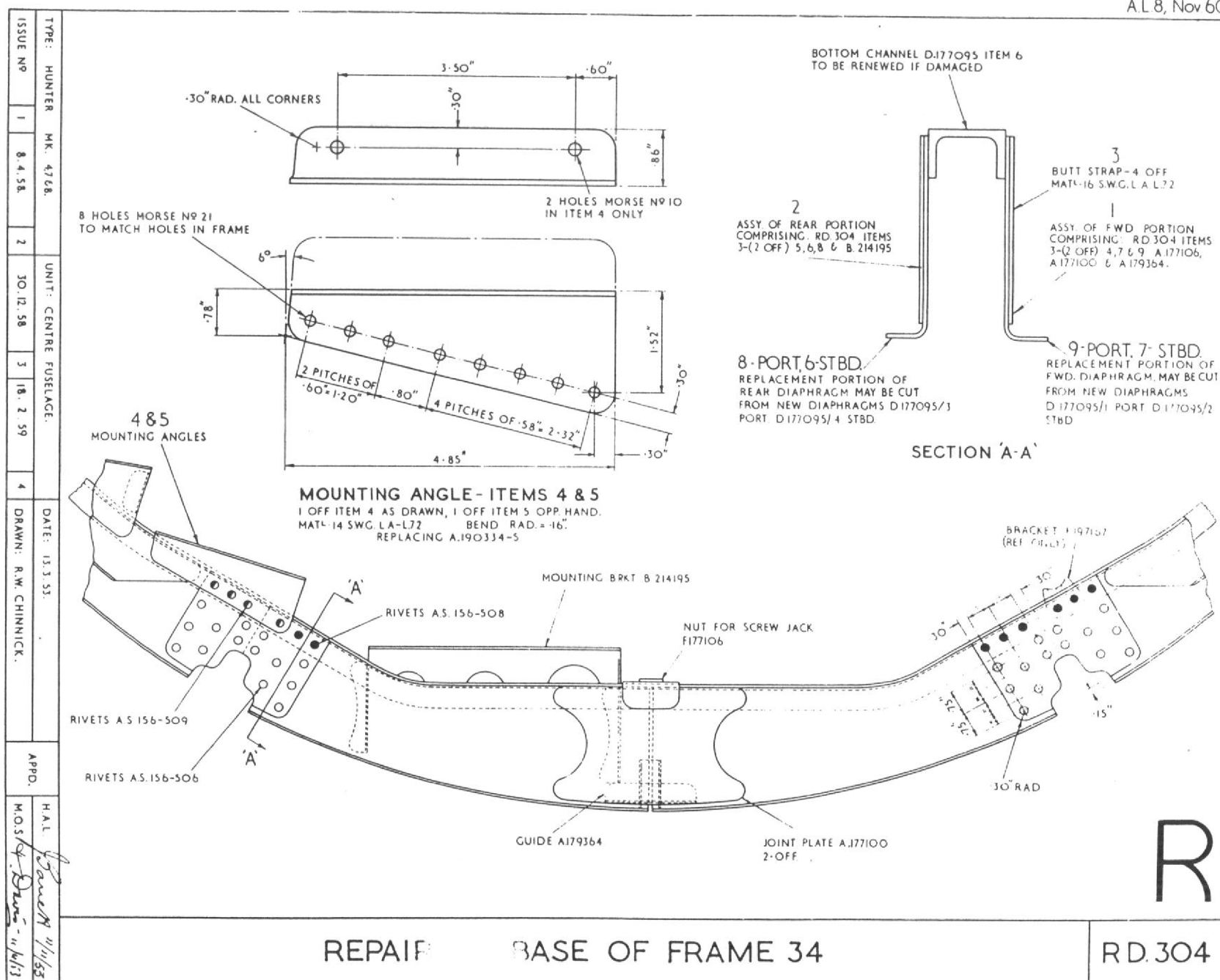
(11) Offer up the butt straps and mounting angles, drill and rivet in position. Bracket Part No.F.197167 should be replaced on top of the port aft butt strap.

(12) Replace the nut for the screw-jack.

3. The following repair material will be required:-

Ref. No.	Part No.	Description	Size	Specification	Remarks
26FX/2584	D.177095/1	Fwd. diaphragm, port	-	-	For renewal portions of diaphragms.
26FX/2585	D.177095/2	Fwd. diaphragm, stbd.	-	-	
26FX/2586	D.177095/3	Aft diaphragm, port	-	-	
26FX/2587	D.177095/4	Aft diaphragm, stbd.	-	-	
26FX/2583	D.177095/6	Bottom channel	-	-	For renewal of damaged parts
26FX/2596	A.177100	Joint plate	-	-	
26FX/2593	A.179364	Guide	-	-	
26FX/8227	B.214195	Mounting bracket	-	-	
26FX/993	F.177106	Nut for screw jack	-	-	
30B/1728	-	Sheet, aluminium alloy	16 s.w.g.	L.72	For item 3
30B/1726	-	Sheet, aluminium alloy	14 s.w.g.	L.72	For items 4 and 5
28Q/1671	A.S.156-506	Rivets, sn /hd.	5/32 in.	L.37 dia.	
28Q/1681	A.S.156-507	Rivets, sn /hd.	5/32 in.	L.37 dia.	
28Q/1691	A.S.156-508	Rivets, sn /hd.	5/32 in.	L.37 dia.	
28Q/9701	A.S.156-509	Rivets, sn /hd.	5/32 in.	L.37 dia.	
28Q/1672	A.S.156-606	Rivets, sn /hd.	3/16 in.	L.37 dia.	

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REPAIR BASE OF FRAME 34

RD.304

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## FUSELAGE

### BELLY LANDING

#### Repair to Bottom Strap at Frame 34

1. This repair may be made in conjunction with the renewals mentioned in Repair Leaflet B.2/1, and also with Leaflet B.2/4 where the frame is also damaged. Reference should be made to the following Repair Drawing, which is included with this leaflet:-

#### RD.368—REPAIR TO BOTTOM STRAP AT FRAME 34.

2. The recommended sequence of operations is as follows:-

(1) Release the necessary rivets and remove the bottom skin and landings.

(2) If the landings Part No.A.183418 and A.183419 are damaged, they are to be discarded and new landings fitted on re-assembly.

(3) Cut and remove the damaged portion of the bottom strap, as shown.

(4) From a new bottom strap, cut the replacement portion required.

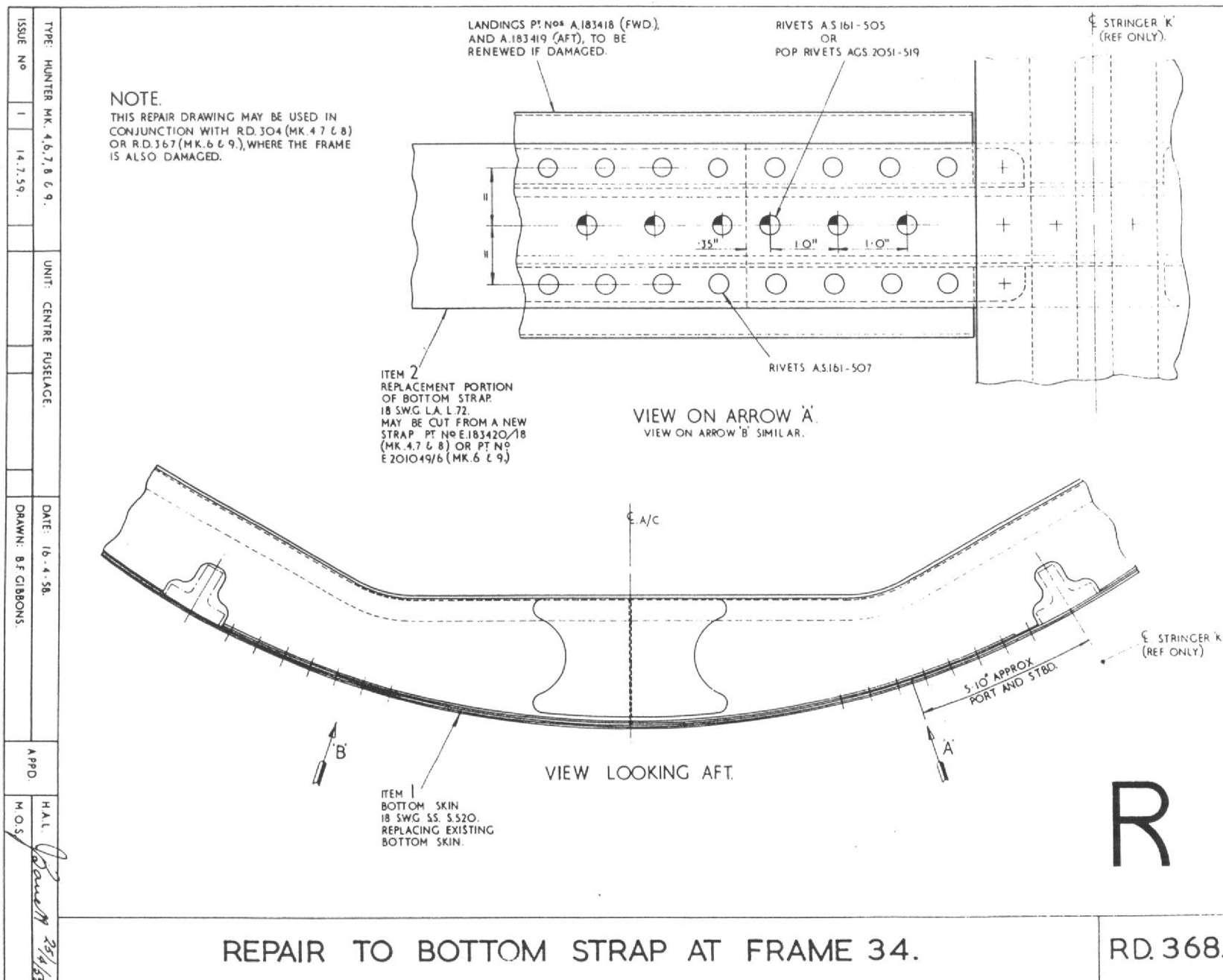
(5) From 18 s.w.g. stainless steel S.520, make the new bottom skin.

(6) Offer up the replacement portion of strap, bottom skin and landings, drill holes and insert the appropriate rivets.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/2759	A.183418	Landing	-	-	} For removal of damaged parts
26FX/2760	A.183419	Landing	-	-	
26FX/2179	E.183420/18	Bottom Strap			For item 2
30A/2515	-	Sheet, stainless steel	18 s.w.g.	S.520	For item 1
28Q/6134	AS.161-505	Rivets, csk/hd.	5/32 in. dia.	L.37	
28Q/6449	AS.161-507	Rivets, csk/hd.	5/32 in. dia.	L.37	
28Q/9417208	AGS.2051-519	Rivets, pop, csk/hd.	5/32 in. dia.	D.T.D.10	

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<i>Ref. No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Size</i>	<i>Specification</i>	<i>Remarks</i>
30B/1728	-	Sheet, aluminium alloy	16 s.w.g.	L.72	For item 4
30B/1724	-	Sheet, aluminium alloy	12 s.w.g.	L.72	For item 1
26AQ/2125	Std.1531/1	Extruded angle	-	-	For item 5
26FX/NIV	R.646/1	Special bolts	-	-	
26FX/NIV	R.646/2	Special bolts	-	-	
28M/12929	A.27.C.P.	Nuts, plain	2 B.A.		
28W/9419404	SP.16.C	Washers	2 B.A.		
26FX/NIV	Std.1547/21/12	Shaped washers	-	-	
26FX/1392	Std.1547/28/12	Shaped washers	-	-	
28Q/1660	AS.156/405	Rivets, sn/hd.	1/8 in.dia.	L.37	
28Q/1692	AS.156/608	Rivets, sn/hd.	3/16 in.dia.	L.37	
28Q/9594	AS.156/609	Rivets, sn/hd.	3/16 in.dia.	L.37	
28Q/6449	AS.161/507	Rivets, csk/hd.	5/32 in.dia.	L.37	
28Q/6136	AS.161/508	Rivets, csk/hd.	5/32 in.dia.	L.37	
28Q/10663	AS.161/511	Rivets, csk/hd.	5/32 in.dia.	L.37	
28Q/6621	AS.161/510	Rivets, csk/hd.	5/32 in.dia.	L.37	

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## FUSELAGE BELLY LANDING

### Repair to base of main spar frame (frame 25)

1. Where the base of the main spar frame has been damaged, it may be repaired as shown in this leaflet. The following repair drawing will be required:-

### RD.322-REPAIR OF BASE OF MAIN SPAR FRAME (FRAME 25).

2. The recommended sequence of operations is as follows:-

- (1) Drill out rivets and remove damaged skin and packing strips from base of spar frame.
- (2) Cut and remove damaged portions of straps under frame as shown on RD.322.
- (3) Remove angle Part No.F.178175 and cut and remove damaged portions of webs as shown on RD.322.
- (4) Using a repair boom (item 3) mark off the damaged portions of the booms which are to be renewed.

- (5) Remove all fixings over the area to be covered by the repair booms. Cut and remove the damaged portions of the booms.
- (6) Radius the ends of the remaining portions of the existing booms to match the repair booms.
- (7) Offer up the repair booms, drill and ream all holes as necessary.
- (8) Insert the bolts securing the repair booms to the remaining portions of the existing booms except those which are in way of rivets to be countersunk flush in flange.

*Note:- A greater degree of access may be achieved by temporarily removing the channels between the two frame webs. These should be riveted back in place after the bolts are assembled.*

- (9) Drill holes and insert the appropriate rivets through skin and frame.

- (10) Insert the remaining bolts which secure repair booms to frame.
- (11) From 16 s.w.g. light alloy sheet to specification L.72 make the two replacement portions of webs (item 4).
- (12) From Std.1531/1 angle make the new angle required for replacement on the front web (item 5).
- (13) Offer up the replacement portions of webs, the packing between booms and webs, and the angle, drill, and rivet in position.
- (14) Insert all other fixings securing existing webs to booms.
- (15) From 12 s.w.g. light alloy sheet to specification L.72 make the replacement portion of strap (item 1).
- (16) From 14 s.w.g. stainless steel sheet to specification S.520 make the replacement portion of skin (item 2).
- (17) Offer up the portions of strap and skin, drill and rivet in position.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	RD.322/3	Repair boom	-	-	May be made from forging R.648
30A/2292	-	Sheet, stainless steel	14 s.w.g.	S.520	For item 2

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## FUSELAGE

### BELLY LANDING

#### Repair to bottom of rear spar frame

1. Where the bottom of the rear spar frame (frame 32) is damaged but the inner and outer port and starboard booms remain intact, the area affected may be repaired as shown in this leaflet. It is assumed that the bottom skin (Part No.E.183421 item 1) has been removed, but this repair may be carried out without removing the port and starboard side skins (Part No E.200955 items 3 and 4 and E.183420 items 15 and 16). The following repair drawing will be required:-

#### RD.303 - REPAIR TO BOTTOM OF REAR SPAR.

2. The recommended sequence of operations for preparing the fuselage for repair is as follows:-

- (1) Remove the gearbox.
- (2) Remove the centre fuel tank detachable support panels.
- (3) Remove the centre fuel tanks.
- (4) Remove the main skins of the centre fuel tanks (Part No.E.182428 items 7 and 8) and the lower centre fuel tank skin assembly Part No.D.182430.
- (5) Remove the stringer attachments in way of the repair.
- (6) Remove the port and starboard cover plates Part Nos.C.179421 and C.178948 from the rear spar.

- (7) Remove the centre tank skin attachment angles Part Nos.F.178976 and B.178961.
- (8) Remove the four outer joint plates Part Nos.A.178971 and A.178972 and the packing Part No.F.180092.
- (9) Remove the bottom inner channel Part No.B.178958 and the angle Part No.B.179420.
- (10) Remove all bolts and rivets between the cut lines of the webs shown on RD.303 and the lower edges of the reinforcing plates Part No.B.178963.
- (11) Mark out the cut lines on the bottom strap Part No.C.182636 as shown on RD.303, and cut away the damaged portion. Remove the inner joint plates Part No.A.178973 from the inside faces of the webs.
- (12) Cut out the damaged portion of the spar at the cut lines of the webs, inserting a piece of steel sheet between each web and the side booms to prevent damage to the latter. It is recommended that steel templates be made to pick up with the relevant holes in the side booms. These templates would then be bolted to the inside faces of the webs and used as guides for cutting.

The following parts are supplied in a kit:-

- RD.303 item 1 (1 off) to replace bottom inner channel Part No. B.178958.
- RD.303 item 2 (3 off) to replace distance tube Part No.F.178863.
- RD.303 item 3 (1 off) to replace channel Part No.A.179370.
- RD.303 item 4 (2 off) to replace channel Part No.A.179451.
- RD.303 item 5 (1 off) to replace channel Part No.A.179373.
- RD.303 item 6 (1 off) to replace blanking channel Part No.A.196974.
- RD.303 item 8 (1 off) Packing.
- RD.303 item 9 (1 off) Packing.
- RD.303 item 10 (2 off) Packing.
- C.182636 (1 off) from which the replacement portion of bottom strap RD.303 item 11 is to be cut.

3. Since the existing holes in the replacement webs are undersize and intended to be used for locating purposes, the following method of re-assembly is recommended:-

Assemble the required parts by inserting locating pins in the existing holes. Drill holes to size through the components from the existing positions and insert locating pins in these holes at suitable points. remove the first locating pins and open out the remaining holes.

Use any undamaged parts in the following operations, making renewals where necessary:-

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- (1) Assemble the bottom forward reinforcing plate Part No.C.180089, the channels Part Nos.A.179374, A.179990 and A.179991, and the angle Part No. A.178974 to the starboard side of the forward replacement web R.632, item 2, and drill holes to size where possible. Remove the channels.
- (2) Assemble the channels Part Nos. A.179993 and A.179994, and the angle Part No.A.179456 to the port side of the forward replacement web R.632, item 1, and drill holes to size where possible. Remove the channels.
- (3) Assemble the bottom aft reinforcing plate Part No.A.180090 and the channels Part Nos.A.179374, A.179990 and A.179991 to the starboard side of the rear replacement web R.633, item 2, drill holes to size and insert the appropriate rivets where possible.
- (4) Assemble the channels Part Nos. A.179993 and A.179994 and the in-board saddle Std.1687, item 2, to the port side of the rear replacement web R.633, item 1, drill holes to size and insert the appropriate rivets where possible.
- (5) Pin the gearbox mounting channels Part Nos. A.179995, A.179996, A.179997 and B.183479 to the two portions of the rear replacement web.
- (6) Offer up the two portions of the 'rear face assembly' to the frame, locating the gearbox mounting channel bushes by means of the jig provided.
- (7) After ensuring that the aft replacement web portions are in alignment with the existing webs, drill holes for rivets in the web from positions in the inner and outer side booms. Insert the appropriate rivets in these booms and rivet the two parts of the rear replacement web together.
- (8) Offer up the two portions of the rear replacement web (R.632, items 1 and 2), the forward reinforcing plate Part No. C.180089, and the angles Part Nos. A.178974 and A.179456 to the frame, insert the appropriate rivets and rivet the two parts of the forward replacement web together. Insert and locate the channels (RD.303, items 3, 4, 5 and 6).
- (9) Insert all the remaining rivets in the fore and aft side booms.
- (10) Drill the holes in the forward flanges of the gearbox mounting channels and insert the appropriate rivets.
- (11) Remove the gearbox mounting jig and drill the holes in the aft flanges of the gearbox mounting channels. Insert the appropriate rivets.
- (12) Offer up the fore and aft bottom outer booms and drill holes 7/16 in. dia., Hawker fit C, in the webs from positions in the booms. Using these holes, assemble the eight joint plates Part Nos.F.178971, F.178972 and F.178973 and the packing Part No.F.180092, drill holes and insert the appropriate bolts, open out the remaining rivet holes in the booms and insert the appropriate rivets.
- (13) Drill the holes for the tank skin attachment angles Part Nos.F.178976 and F.178961 and insert the appropriate rivets.
- (14) Insert the remaining rivets securing the channels (RD.303, items 3, 4, 5 and 6).
- (15) Open out to Morse No.13, Hawker fit 'C', the two holes on the starboard side of the rear face of the spar which located the saddle Std.1687 item 2 before repair. Drill two holes Morse No.30 to locate the saddle in the new position, as shown on RD.303.
- (16) For the outboard saddle on the port side, drill the replacement web from the holes in the existing portion of the web. Offer up the two saddles and rivet in position.
- (17) Drill the remaining holes for the 2 B.A. csk /hd. bolts in the webs, as shown on RD.303, and insert the appropriate bolts.
- (18) Assemble the stringer attachments, drill the holes in the webs and insert the appropriate bolts.
- (19) Offer up the replacement bottom inner channel RD.303, item 1, replace the jig and locate the gearbox mounting blocks Part Nos. A.179999 and A.180777 on the spigots of the jig. Ensure that the web of the replacement channel is in alignment with the flanges of the inner side booms. Bolt the blocks to the bottom inner channel, adding shims as necessary.

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- (20) Drill holes 5/16 in. dia., Hawker fit C, in the bottom inner channel and webs from positions in the inner side booms. Insert the appropriate bolts and remove the jig.
- (21) Offer up the angle Part No.B.179420 and insert all the remaining rivets in the bottom inner channel.

- (22) Offer up the cover plates Part Nos. C.179421 and C.178948, drill holes and insert the appropriate rivets.

- (23) Offer up the butt straps RD.303, item 10, to the existing portion of the bottom strap. Drill the holes and rivet in position.

- (24) Offer up the replacement portion of bottom strap RD.303, item 11, drill the holes and rivet in position.

- (25) Replace all tank skins which have been removed together with the centre fuel tanks, the centre fuel tank detachable support panels and the gearbox.

4. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
		Jig for locating gearbox mounting			
26FX/4198	R.632/1	Fwd.replacement web port	14 s.w.g.	L.72	
26FX/4199	R.632/2	Fwd.replacement web stbd.	14 s.w.g.	L.72	
26FX/4200	R.633/1	Rear replacement web port	14 s.w.g.	L.72	
26FX/4201	R.633/2	Rear replacement web stbd.	14 s.w.g.	L.72	
26FX/4202	RD.303/1	Replacement bottom inner channel	-	L.65C	To replace B.178958
26FX/4412	RD.303/2	Distance tube	3/4 in. o/d.	L.65C	To replace F.178865
26FX/4413	RD.303/3	Channel	16 s.w.g.	L.72	To replace A.179370
26FX/4414	RD.303/4	Channel	16 s.w.g.	L.72	To replace A.179451
26FX/4415	RD.303/5	Channel	16 s.w.g.	L.72	To replace A.179373
26FX/4416	RD.303/6	Blanking channel	20 s.w.g.	L.72	To replace A.196974
26FX/4418	RD.303/8	Packing	14 s.w.g.	L.72	
26FX/4419	RD.303/9	Packing	14 s.w.g.	L.72	
26FX/4420	RD.303/10	Butt strap	12 s.w.g.	L.72	
26FX/2183	RD.303/11	Replacement portion of bottom strap	-	-	To be cut from new strap C.182636
26FX/2544	B.178961	Tank skin attachment angle			These parts to be renewed only as required
26FX/2546	F.178976	Tank skin attachment angle			
26FX/4204	C.178948	Lower stbd. cover plate			
26FX/4205	C.179421	Lower port cover plate			
26FX/2557	A.179374	Channel			
26FX/2559	A.179990	Channel			
26FX/2561	A.179991	Channel			
26FX/2558	A.179993	Channel			
26FX/2554	A.179994	Channel			
26FX/2563	A.179995	Gearbox mounting channel			

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/2564	A.179996	Gearbox mounting channel			These parts to be renewed only as required
26FX/2565	A.179997	Gearbox mounting channel			
26FX/4206	B.183479	Gearbox mounting channel			
26FX/2540	A.178974	Angle			
26FX/2545	A.179456	Angle			
26FX/2566	F.180092	Packing			
26FX/2567	A.178971	Bottom joint plate			
26FX/2568	A.178972	Bottom joint plate			
26FX/2569	A.178973	Bottom joint plate			
26FX/2548	B.178955	Fwd. bottom outer boom			
26FX/2549	B.178956	Rear bottom outer boom			
26FX/2426	F.178865	Distance tube			
26FX/NIV	B.179420	Angle			
26FX/2571	C.180090	Aft bottom reinforcing plate			
26FX/2570	C.180089	Fwd. bottom reinforcing plate			
26FX/987	A.179999	Gearbox mounting block			
26FX/986	A.180777	Gearbox mounting block			
26FX/2525	A.168436	Attachment fitting for stringer 'J'			
26FX/4207	F.178979	Attachment angle for stringer 'H'			
26FX/4208	F.178980	Attachment angle for stringer 'H'			
26FX/2424	A.178816	Attachment fitting for stringer 'K'			
26FX/2427	F.178881	Distance tube			
28Q/4901	A.S.155/304	Rivets, sn /hd.	3/32 in. dia.	L.36	
28Q/1670	A.S.156/406	Rivets, sn /hd.	1/8 in. dia.	L.37	
28Q/1662	A.S.156/605	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/1672	A.S.156/606	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/1682	A.S.156/607	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/1692	A.S.156/608	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/9594	A.S.156/609	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/1702	A.S.156/610	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/9595	A.S.156/611	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/1712	A.S.156/612	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/10664	A.S.156/613	Rivets, sn /hd.	3/16 in. dia.	L.37	
28Q/6135	A.S.161/506	Rivets, csk /hd.	5/32 in. dia.	L.37	
28Q/6449	A.S.161/507	Rivets, csk /hd.	5/32 in. dia.	L.37	

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- (20) Drill holes 5/16 in. dia., Hawker fit C, in the bottom inner channel and webs from positions in the inner side booms. Insert the appropriate bolts and remove the jig.
- (21) Offer up the angle Part No.B.179420 and insert all the remaining rivets in the bottom inner channel.
- (22) Offer up the cover plates Part Nos. C.179421 and C.178948, drill holes and insert the appropriate rivets.
- (23) Offer up the butt straps RD.303, item 10, to the existing portion of the bottom strap. Drill the holes and rivet in position.
- (24) Offer up the replacement portion of bottom strap RD.303, item 11, drill the holes and rivet in position.
- (25) Replace all tank skins which have been removed together with the centre fuel tanks, the centre fuel tank detachable support panels and the gearbox.

4. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
		Jig for locating gearbox mounting			
26FX/4198	R.632/1	Fwd.replacement web port	14 s.w.g.	L.72	
26FX/4199	R.632/2	Fwd.replacement web stbd.	14 s.w.g.	L.72	
26FX/4200	R.633/1	Rear replacement web port	14 s.w.g.	L.72	
26FX/4201	R.633/2	Rear replacement web stbd.	14 s.w.g.	L.72	
26FX/4202	RD.303/1	Replacement bottom inner channel	-	L.65C	To replace B.178958
26FX/4412	RD.303/2	Distance tube	3/4 in. o/d.	L.65C	To replace F.178865
26FX/4413	RD.303/3	Channel	16 s.w.g.	L.72	To replace A.179370
26FX/4414	RD.303/4	Channel	16 s.w.g.	L.72	To replace A.179451
26FX/4415	RD.303/5	Channel	16 s.w.g.	L.72	To replace A.179373
26FX/4416	RD.303/6	Blanking channel	20 s.w.g.	L.72	To replace A.196974
26FX/4418	RD.303/8	Packing	14 s.w.g.	L.72	
26FX/4419	RD.303/9	Packing	14 s.w.g.	L.72	
26FX/4420	RD.303/10	Butt strap	12 s.w.g.	L.72	
26FX/2183	RD.303/11	Replacement portion of bottom strap	-	-	To be cut from new strap C.182636
26FX/2544	B.178961	Tank skin attachment angle			These parts to be renewed only as required
26FX/2546	F.178976	Tank skin attachment angle			
26FX/4204	C.178948	Lower stbd. cover plate			
26FX/4205	C.179421	Lower port cover plate			
26FX/2557	A.179374	Channel			
26FX/2559	A.179990	Channel			
26FX/2561	A.179991	Channel			
26FX/2558	A.179993	Channel			
26FX/2554	A.179994	Channel			
26FX/2563	A.179995	Gearbox mounting channel			

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<i>Ref.No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Size</i>	<i>Specification</i>	<i>Remarks</i>
28W/9419478	S.P.15/L	Washers, aluminium alloy	7/16 in. dia.	-	
28W/9419404	S.P.16/C	Washers, aluminium alloy	2 B.A.	-	
26FX/4209	STD.1509/25/136	Distance tubes solid drawn	7/16 in. o/d. x 17 s.w.g.	T.4	
26FX/3835	STD.1553/J/300	Bolt, special H.T.S.	3/8 in. B.S.F.	S.99B	
26FX/3834	STD.1553/L/320	Bolt, special H.T.S.	7/16 in. B.S.F.	S.99B	
26FX/4210	STD.1592	Plate, Serial No.	20 s.w.g.	-	
26FX/4211	STD.1687/2	Saddles	24 s.w.g.	D.T.D.610	
26FX/4212	STD.1700/2/C	Bolts, 120 deg. csk /hd.	2 B.A.	S.95B or S.96B	

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Ref.No.	Part No.	Description	Size	Specification	Remarks
28Q/6136	A.S.161/508	Rivets, csk /hd.	5/32 in. dia.	L.37	
28Q/5992	A.S.161/605	Rivets, csk /hd.	3/16 in. dia.	L.37	
28Q/5993	A.S.161/606	Rivets, csk /hd.	3/16 in. dia.	L.37	
28Q/5994	A.S.161/607	Rivets, csk /hd.	3/16 in. dia.	L.37	
28Q/5995	A.S.161/608	Rivets, csk /hd.	3/16 in. dia.	L.37	
28Q/14500	A.S.161/609	Rivets, csk /hd.	3/16 in. dia.	L.37	
28Q/5996	A.S.161/610	Rivets, csk /hd.	3/16 in. dia.	L.37	
28Q/7755	A.S.164/305	Rivets, csk /hd.	3/16 in. dia.	L.37	
28Q/8064	A.S.164/606	Rivets, csk /hd.	3/16 in. dia.	L.37	
28Q/9406	A.S.164/609	Rivets, csk /hd.	3/16 in. dia.	L.37	
28D/12101	A.G.S.571/404	Bolts, shear	1/4 in. B.S.F.	S.2	
28D/11100	A.G.S.571/405	Bolts, shear	1/4 in. B.S.F.	S.2	
28D/12578	A.G.S.571/506	Bolts, shear	5/16 in. B.S.F.	S.2	
28D/14693	A.G.S.571/525	Bolts, shear	5/16 in. B.S.F.	S.2	
28M/13403	A.G.S.572/A/P	Nuts, thin, plain	1/4 in. B.S.F.	S.1	
28M/13439	A.G.S.572/C/P	Nuts, thin, plain	5/16 in. B.S.F.	S.1	
28Q/9417237	A.G.S.2050/636	Rivets, pop, dm /hd.	3/16 in. dia.	D.T.D.10	
28Q/9417238	A.G.S.2050/639	Rivets, pop, dm /hd.	3/16 in. dia.	D.T.D.10	
28Q/9417239	A.G.S.2050/650	Rivets, pop, dm /hd.	3/16 in. dia.	D.T.D.10	
28Q/9417240	A.G.S.2050/665	Rivets, pop, dm /hd.	3/16 in. dia.	D.T.D.10	
28Q/9417216	A.G.S.2051/636	Rivets, pop, csk /hd.	3/16 in. dia.	D.T.D.10	
28Q/9417218	A.G.S.2051/650	Rivets, pop, csk/hd.	3/16 in. dia.	D.T.D.10	
28Q/9417203	A.G.S.2051/419	Rivets, pop, csk /hd.	1/8 in. dia.	D.T.D.10	
28Q/9417205	A.G.S.2051/429	Rivets, pop, csk /hd.	1/8 in. dia.	D.T.D.10	
28Q/9417206	A.G.S.2051/435	Rivets, pop, csk /hd.	1/8 in. dia.	D.T.D.10	
28M/13273	A.24/J/P	Nuts, plain, H.T. stainless steel	3/8 in. B.S.F.	-	
28M/14438	A.24/L/P	Nuts, plain, H.T. stainless steel	7/16 in. B.S.F.	-	
28D/12533	A.25/5/C	Bolts, H.T.S.	2 B.A.	-	
28D/12566	A.25/6/C	Bolts, H.T.S.	2 B.A.	-	
28M/12929	A.27/C/P	Nuts, M.T.S.	2 B.A.	-	
28W/9419475	S.P.15/C	Washers, aluminium alloy	2 B.A.	-	
28W/9419405	S.P.15/E	Washers, aluminium alloy	1/4 in. dia.	-	
28W/9419476	S.P.15/G	Washers, aluminium alloy	5/16 in. dia.	-	
28W/9419477	S.P.15/J	Washers, aluminium alloy	3/8 in. dia.	-	

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## FUSELAGE

### BELLY LANDING

#### Repair to base of frame 39

1. This repair may be carried out in conjunction with the renewals and repairs mentioned in repair leaflet B.2/1. Reference should be made to the following repair drawing which is included with this leaflet:-

RD.394-REPAIR TO BASE OF FRAME 39.

2. The recommended sequence of operations is as follows:-

- (1) Remove the bottom skin Part No. E.183421 item 2.
- (2) Remove all services which will be in way of repair.

- (3) Drill out all necessary rivets, remove and discard the bottom reinforcing plate Part No. B.176254 and the engine rail mounting brackets from the frame.

- (4) Cut and remove the bottom portion of frame as shown on RD.394.

- (5) From a new bottom portion of frame, Part No. D.176256 item 1 cut out the portion required for replaced (item 3).

- (6) From 18 s.w.g. light alloy L.72 manufacture the joint plates, item 1 (port), item 2 (stbd.).

- (7) Offer up the replacement portion of frame, item 3, joint plates items 1 and 2, and a new reinforcing plate. Drill and insert the appropriate rivets.

- (8) Insert the appropriate rivets to secure the engine rail mounting brackets to the frame.

- (9) Replace and connect all services previously removed.

- (10) Offer up a new bottom skin Part No. E.183421 item 2 and insert the appropriate rivets.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/1834	E.183421/2	Bottom skin	14 s.w.g.	L.72	
26FX/2810	B.176254	Reinforcing plate	16 s.w.g.	L.72	
26FX/2809	D.176256/1	Lower diaphragm frame 39	18 s.w.g.	L.72	For item 3.
30B/1730	—	Sheet, aluminium alloy	18 s.w.g.	L.72	For items 1 and 2.
26FX/4211	Std.1687/2	Saddle	—	—	
28Q/1671	AS.156/506	Rivets, sn/hd.	5/32 in. dia.	L.37	
28Q/1681	AS.156/507	Rivets, sn/hd.	5/32 in. dia.	L.37	
28Q/1670	AS.156/406	Rivets, sn/hd.	5/32 in. dia.	L.37	




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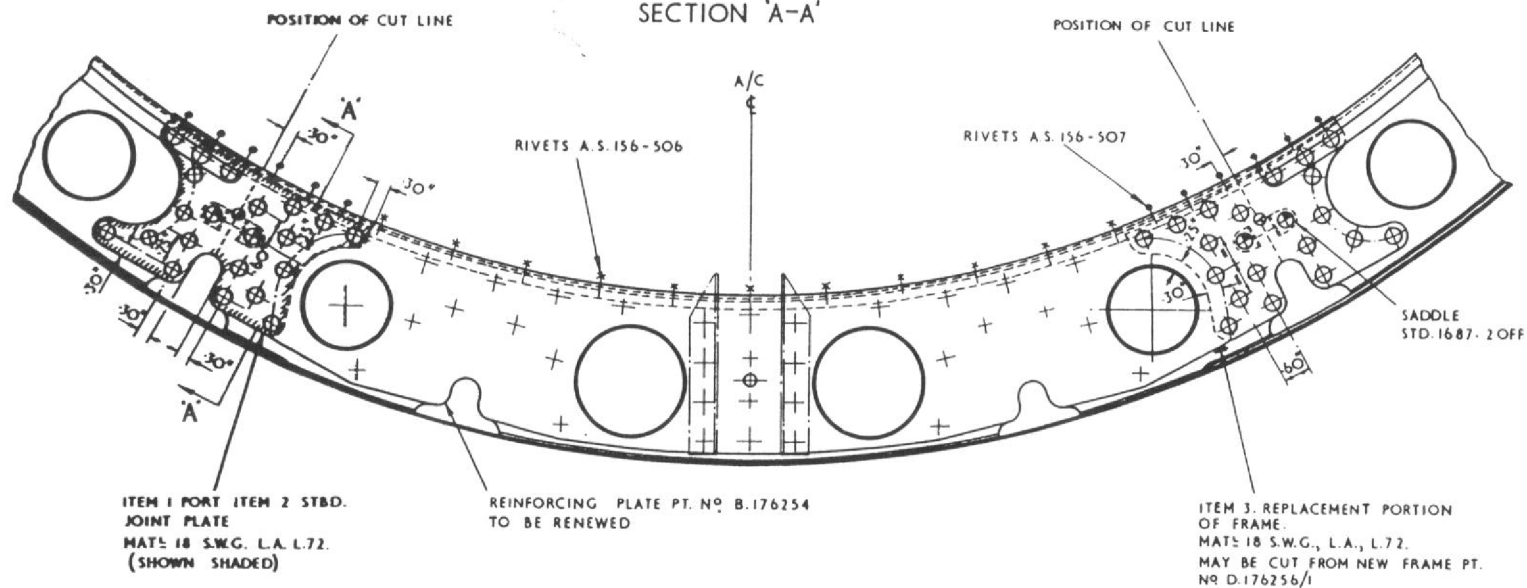
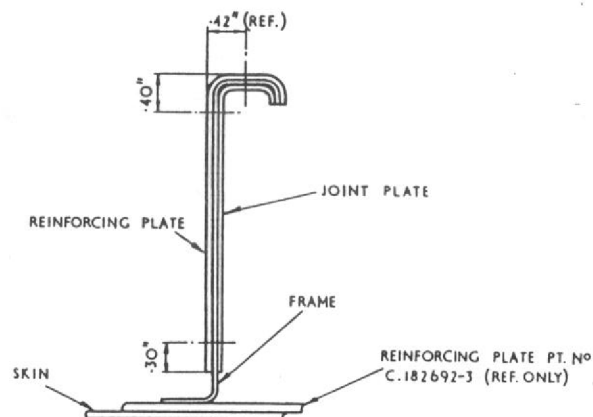
TYPE: HUNTER MK. 4, 7 & 8	UNIT: CENTRE FUSelage	DATE: 17-4-59	APPRO.	H.A.L.
ISSUE NO 1		DRAWN: G. FAULKNER		M.O.S.

# NOTES:-

1. ALL RIVETS THROUGH SKIN TO BE C.S.K. FLUSH IN OUTER SURFACE.
2. BEND RADIUS FOR 18 S.W.G. L.A. IS 10"
3.  $\frac{1}{4}$ " DIA. STD. TOOLING HOLES (REF. ONLY.)
4. UNLESS STATED OTHERWISE ALL ADDITIONAL RIVETS TO BE EQUALLY PITCHED BETWEEN THOSE POSITIONED.

## RIVETS:

	A.S. 156 - 506
	A.S. 156 - 507
	A.S. 156 - 406



VIEW ON FORWARD FACE  
REPAIR IS SYMMETRICAL ABOUT C OF AIRCRAFT

REPAIR TO BASE OF FRAME 39

RD. 394

R



## FUSELAGE

### MISCELLANEOUS

#### Addition of rubbing plates to frame 41

1. This repair covers damage caused by the flange of the "bearing cooling" outlet pipe chafing the frame. The repair need only be carried out at the next removal of the rear fuselage. Reference should be made to the following repair drawing which is included with this leaflet:-

#### RD.334—ADDITION OF RUBBING PLATES TO FRAME 41.

2. The recommended sequence of operations is as follows:-

- (1) Remove the rear fuselage as detailed in Vol.1, Sect.3, Chap.1.
- (2) Remove "bearing cooling" outlet pipes, port and starboard.
- (3) If the frame is perforated, cut out

damaged portion and smooth the edges of the hole with emery cloth.

- (4) If the frame is scored, the damaged area must be smoothed with emery cloth but score marks need not be completely removed.
- (5) From 20 s.w.g. stainless steel S.520, make rubbing plates.
- (6) Reduce the diameter of the flange (B.189938 item 3) of the "bearing cooling" outlet pipe to 3.15 in., and radius the edges.
- (7) Offer up rubbing plates, drill and rivet into position.
- (8) Replace "bearing cooling" outlet pipes, using new split pins.
- (9) Replace the rear fuselage as detailed in Vol.1, Sect.3, Chap.1.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
30A/2291	—	Sheet, stainless steel	20 s.w.g.	S.520	For rubbing plates
28P/12587	S.P.9.C.4	Split pins	1/16 in. dia.	—	
28Q/9417203	A.G.S.2051/419	Rivets, pop csk/hd.	1/8 in. dia.	D.T.D.10	

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H.A.L.	1000
M.O.S.	1000

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## FUSELAGE

### MISCELLANEOUS

#### Repair to intake skin.

1. Where damage has occurred to the air intake skins between Diaphragms B and C they may be repaired as shown in this leaflet. The following repair drawing is included with this leaflet:-

#### RD.336-REPAIR TO AIR INTAKE SKIN.

2. The recommended sequence of operations is as follows:-

- (1) Remove the outer wing as shown in Vol.1, Sect.3, Chap.2.
- (2) Remove the cover plate Part No. F.178841, on the outer end rib.

(3) Cut out the damaged portion of skin as shown on R.D.336 and drill out appropriate rivets.

(4) From 18 s.w.g. L.72 make a skin patch, Item No.1, 2, 3 or 4.

(5) From 18 s.w.g. L.72 make butt straps, Item No. 5, 6, 7 or 8 and 9 or 10.

(6) Offer up the skin patch and butt straps, drill and rivet.

(7) Replace cover plate Part No.F.178841 on the outer end rib, with pop rivets A.G.S.2050/524 - 20 off.

(8) Replace outer wing.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
30B/1730	-	Sheet, aluminium alloy	18 s.w.g.	L.72	For manufacture of items 1-10
28Q/7655	A.S.164/404	Rivets, csk /hd.	1/8 in. dia.	L.37	
28Q/7656	A.S.164/405	Rivets, csk /hd.	1/8 in. dia.	L.37	
28Q/8147	A.S.164/406	Rivets, csk /hd.	1/8 in. dia.	L.37	
28Q/9417225	A.G.S.2050/524	Rivets pop, dm /hd.	5/32 in. dia.	D.T.D.10	

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## FUSELAGE

### MISCELLANEOUS

#### Repairs to armament and radio access doors

1. This leaflet covers repairs to armament and radio access doors. Reference should be made to the following repair drawing:-

#### RD.384-REPAIRS TO ARMAMENT AND RADIO ACCESS DOORS.

The recommended sequence of operations is shown in the following paragraphs:-

2. Skin damage at bottom corners (Details N, O, P and R).

- (1) Remove all necessary fixings in area of repair.
  - (2) Where the skin is damaged, cut away the affected part.
  - (3) From 24 s.w.g. stainless steel sheet, to specification S.520, manufacture the appropriate reinforcing angle or plate.
  - (4) From 20 s.w.g. L.A. sheet, to specification L.72, manufacture the replacement portion of skin.
  - (5) Offer up the reinforcing angle or reinforcing plate RD.384 item No.2, 4, 6 or 8, drill and secure in position.
  - (6) Offer up the replacement portion of skin, RD.384 item No.1, 3, 5 or 7, drill and rivet in position.
- (7) Replace bolts as shown on RD.384.
3. Damage to edge members at bottom corners. (Details S, T, U and V).
- (1) Remove all necessary fixings in area of repair.
  - (2) Where the edge member is cracked, drill a 3/32 in. dia. hole at the extremity.
  - (3) From 24 s.w.g. stainless steel sheet, to specification S.520, manufacture the appropriate reinforcing angle or reinforcing plate.
  - (4) Offer up the reinforcing angle or reinforcing plate RD.384 item No.10, 11, 13 or 16, drill and rivet in position.
  - (5) Replace bolts as shown on RD.384.
  - (6) Where the extremity of the edge member is badly damaged, the affected area should be cut away.
  - (7) The above procedure should then be carried out but before securing the reinforcing angle or reinforcing plate, a piece of packing, RD.384 item 9, 12, 14 or 15, manufactured from 18 s.w.g. L.A. sheet, to specification L.72, should be fitted between the reinforcing angle and the skin.
4. Skin damage to top corners. (Detail W).
- (1) Remove all necessary fixings in area of repair.
  - (2) Where the skin is damaged, cut away the affected part.
  - (3) From 24 s.w.g. stainless steel sheet to specification S.520, manufacture the appropriate reinforcing plate.
  - (4) From 20 s.w.g. L.A. sheet, to specification L.72 manufacture the replacement portion of skin.
  - (5) Offer up the reinforcing plate, RD.384 item No.17 or 18, and drill the appropriate holes.
  - (6) Offer up the replacement portion of skin, RD.384 item No.19 or 20, and drill the appropriate holes.
  - (7) Secure the reinforcing plate and the replacement portion of skin with appropriate rivets as shown on RD.384.
5. Damage to edge member at top corners. (Detail Y).
- (1) Remove angle Part No. F.178463.
  - (2) Remove the three bolts securing hook Part No.A.228959.
  - (3) Remove all necessary fixings in the area of repair.
  - (4) Where the edge member is cracked, drill a hole 3/32 in. dia. at the extremity.

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- (5) From 24 s.w.g. stainless steel sheet, to specification S.520 manufacture the appropriate reinforcing angle.
- (6) Offer up the reinforcing angle, RD.384 item No.25, 26, 27 or 28, and drill all the necessary holes.
- (7) Fit angle Part No. F.178463 in position and secure all items to the structure by means of rivets and bolts, as shown on RD.384.
- (8) Where the extremity of the edge member is badly damaged the affected area should be cut away.
- (9) The above procedure should then be carried out, but before securing reinforcing angle, a piece of packing, RD.384 item No.29 or 30, manufactured from 18 s.w.g. L.A. sheet, to specification L.72 should be fitted between the reinforcing angle and skin.

6. Damage to top edge member.(Detail X).

- (1) Remove angle Part No. F.178463.
- (2) Remove all necessary fixings in area of repair.
- (3) Where the top edge member is damaged, cut away as indicated on RD.384.
- (4) From 24 s.w.g. stainless steel sheet, to specification S.520, manufacture the appropriate reinforcing angle.
- (5) From 18 s.w.g. L.A. sheet, to specification L.72, manufacture the replacement portion of skin.
- (6) Offer up the reinforcing angle, RD.384 item No.23 or 24, together with the replacement piece, RD.384 item No.21 or 22, drill and secure with rivets, leaving the two holes open for the rivets which secure angle Part No. F.178463.
- (7) Replace angle Part No.F.178463 and secure with rivets as indicated on RD.384.

7. More extensive damage to edge member at top corner. (Detail Z).

- (1) Remove all necessary fixings in area of repair.
- (2) Where the edge member is damaged, cut away the affected part.
- (3) From 24 s.w.g. stainless steel sheet, to specification S.520, manufacture the appropriate reinforcing plate.
- (4) From 18 s.w.g. L.A. sheet, to specification L.72, manufacture the replacement piece.
- (5) Insert the reinforcing plate, RD.384 item No.32, 33, 34 or 35, between edge member and skin and drill all necessary holes.
- (6) Offer up the replacement piece, RD.384 item No.36 or 37, drill and secure to the reinforcing plate and skin as shown on RD.384.

8. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
30A/2219		Stainless steel sheet	24 s.w.g.	S.520	For item Nos.2, 4, 6, 8, 10, 11, 13, 16, 17, 18, 23, 24, 25, 26, 27, 28, 32, 33, 34 and 35
30B/1730		Sheet aluminium alloy	18 s.w.g.	L.72	For item Nos.9, 12, 14, 15, 21, 22, 29, 30, 31, 36 and 37
30B/1732		Sheet aluminium alloy	20 s.w.g.	L.72	For item Nos.1, 3, 5, 7, 19 and 20

<i>Ref.No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Size</i>	<i>Specification</i>	<i>Remarks</i>
28Q/8077	A.S.164/303	Rivets csk/hd.	3/32 in. dia.	L.37	
28Q/7943	A.S.164/304	Rivets csk/hd.	3/32 in. dia.	L.37	
28Q/7655	A.S.164/404	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/7656	A.S.164/405	Rivets csk/hd.	1/8 in. dia.	L.37	
28Q/1671	A.S.156/506	Rivets sn/hd.	5/32 in. dia.	L.37	
28Q/1681	A.S.156/507	Rivets sn/hd.	5/32 in. dia.	L.37	
28Q/9417203	A.G.S.2051/419	Rivets csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417224	A.G.S.2050/419	Rivets dm/hd.	1/8 in. dia.	D.T.D.10	

## FUSELAGE MISCELLANEOUS

### Repair to rear fuselage - bottom portion - Mk.7 only

1. Damage has been caused by the tail skid and tail cone striking the runway during landing. Usually the main damage is sustained aft of frame 55, the skin being cut away forward of frame 55, to provide access for the repair to be carried out. Before commencing this repair, reference should be made to Part 1, Chap.1, Para.8. Reference should also be made to the following repair drawing which is included with this leaflet:-

### RD.357-REPAIR TO REAR FUSELAGE BOTTOM PORTION.

2. The recommended sequence of operations is as follows:-

- (1) Remove the rear fuselage as laid down in Sect.3, Chap.1, of the appropriate Vol.1.
- (2) Remove the tailskid and the tail cone.

- (3) Remove the bottom portion of skin aft of frame 55.
- (4) Cut and remove bottom portion of skin forward of frame 55, as shown on RD.357.
- (5) Inspect structure for damage and renew where necessary.
- (6) Where the bottom rear boom of frame 55 has been damaged and consequently replacement is necessary, it will invariably be found that the attachment holes in the frame web will be elongated. In this case the web should be repaired as shown on RD.357.
- (7) From 14 s.w.g. light alloy to specification L.72 make reinforcing plate item 10.
- (8) From light alloy to specification L.65C, make the packing 0.15 in. thick, item 11.
- (9) From 16 s.w.g. light alloy to speci-

fication L.72, make butt straps items 2-9.

- (10) From a new bottom skin, cut replacement portion of skin, item 1.
- (11) Offer up reinforcing plate and packing and also a new bottom rear boom for frame 55. Drill holes and insert the appropriate rivets.
- (12) Offer up butt straps, drill holes where necessary in the existing skin and insert the appropriate rivets.
- (13) Offer up replacement portion of skin, drill holes, and insert the appropriate rivets.
- (14) Replace portion of skin aft of frame 55 using a new skin.
- (15) Replace tail skid and tail cone using new items.
- (16) Replace the rear fuselage as laid down in the appropriate Vol.1.

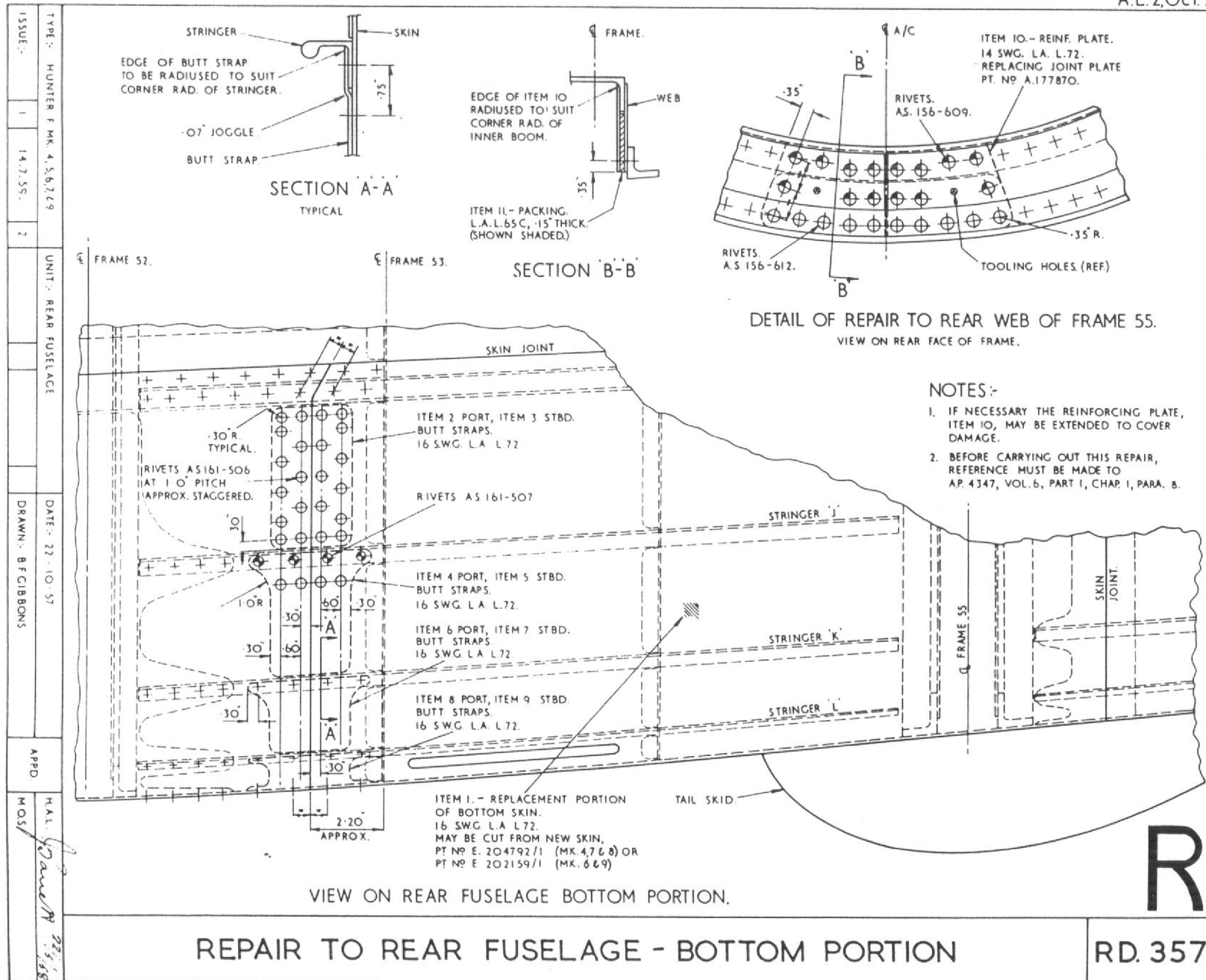
3. The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/2388	B.177789	Bottom rear boom, frame 55	-	-	} For renewal of damaged parts where necessary
26FX/6120	C.186467	Joint strap bottom	-	-	
26FX/6114	F.189335	Nut plate, frame 55	-	-	
26FX/6122	D.190475	Frame 56, bottom portion	-	-	
26FX/NIV	D.224026	Frame 57, bottom portion	-	-	

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Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/6119	B.190532	Bottom landing	-	-	For renewal of damaged parts where necessary
26FX/6124	A.190586	Stringers	-	-	
26FX/6110	A.190588	Stringers	-	-	
26FX/6116	B.190993/1	Plugs, wood (Ash.)	-	-	
26FX/8610	C.221798	Tail cone assembly	-	-	
26FX/NIV	E.204792/1	Bottom skin	-	-	
26FX/6088	B.207372	Tail skid	-	-	
26FX/NIV	D.224027/3	Bottom skin	-	-	For items 2-9
26FX/8513	F.216608	Drain extensions	-	-	
30B/1728	-	Sheet, aluminium alloy	16 s.w.g.	L.72	
30B/1726	-	Sheet, aluminium alloy	14 s.w.g.	L.72	For item 10
30B/NIV	-	Aluminium alloy bar	-	L.65C	For item 11
28Q/9594	A.S.156/609	Rivets, sn/hd.	3/16 in. dia.	L.37	For renewing the tail skid
28Q/1712	A.S.156/612	Rivets, sn/hd.	3/16 in. dia.	L.37	
28Q/6135	A.S.161/506	Rivets, csk/hd.	5/32 in. dia.	L.37	
28Q/6449	A.S.161/507	Rivets, csk/hd.	5/32 in. dia.	L.37	
28D/14522	A.25/23/E	Bolt	1/4 in. dia.	-	
28W/13388	S.P.14.E	Washer	1/4 in. dia.	-	



REPAIR TO REAR FUSELAGE - BOTTOM PORTION

RD. 357

## FUSELAGE

### MISCELLANEOUS

#### Scheme to reinforce inboard wall of expended case collector tank

1. Where damage has been sustained by empty shell cases, the inboard wall of the collector tank may be reinforced as shown in this leaflet. Reference should be made to the following repair drawing which is included with this leaflet:-

RD.391 - SCHEME TO REINFORCE INBOARD WALL OF COLLECTOR TANK.

2. The recommended sequence of operations is as follows:-

- (1) Drill out all necessary rivets in way of reinforcing plate, item No.1.
- (2) From 20 s.w.g. stainless steel S.520 manufacture reinforcing plate.
- (3) Offer up reinforcing plate; drill required holes and secure with appropriate rivets.
- (4) Drill 7/32 in. dia. std. hole in deflector and fix additional bolt as shown on RD.391.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
30A/2291	-	Sheet, stainless steel	20 s.w.g.	S.520	For item 1
28Q/1650	A.S.156-404	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/1660	A.S.156-405	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/1670	A.S.156-406	Rivets, sn/hd.	1/8 in. dia.	L.37	
28Q/9417224	A.G.S.2050-419	Rivets, pop, dm/hd.	1/8 in. dia.	D.T.D.10	
28D/8341	A.S.1248/1/C	Bolt H.T.S.	2 B.A.	-	
28M/12929	A27.C.P.	Nut, plain M.T.S.	2 B.A.	-	
28W/9419475	SP.15.C	Washer	2 B.A.	-	

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## FUSELAGE

### MISCELLANEOUS

#### Stiffening of rear fuselage fairings for braking parachute installation

1. On late production aircraft design improvements were made by fitting stiffeners to the fuselage fairings and by the use of solid rivets. Where the riveting on early production aircraft is found defective it should be renewed using solid rivets and the additional stiffeners fitted to both port and starboard sides as shown in this leaflet. The following repair drawing is included with this leaflet:-

#### RD.405-STIFFENING OF REAR FUSELAGE FAIRINGS FOR BRAKING PARACHUTE INSTALLATION

2. The recommended sequence of operations is as follows:-

- (1) Remove the tail cone as described in Vol.1, Sect.4, Chap.1.
- (2) On the outer surface of the fairing draw a line between the appropriate rivets in diaphragm, Part No.C.220507-8 and diaphragm, Part No.C.220328-9 as shown on RD.405. This will be

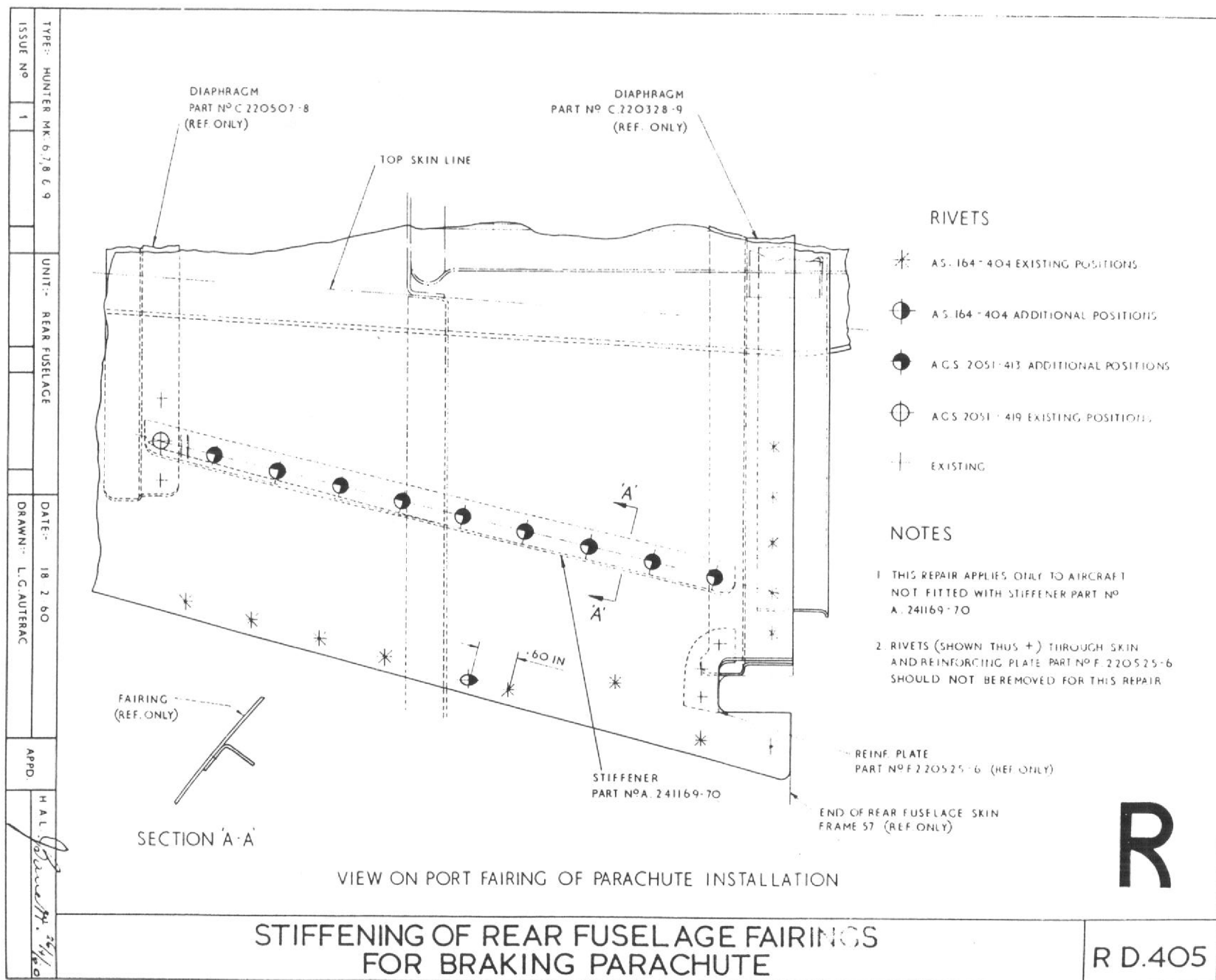
the centre line of the rivets securing the additional stiffeners.

- (3) Take stiffeners, Part No. A.241169 - port and A.241170 - stbd. and drill the additional Morse No.30 holes in the skin to match. The front hole in each stiffener picks up with the diaphragm, and the existing rivet should be removed from the hole. Countersink the additional holes to suit 1/8 in. dia. pop rivets.
- (4) Remove the rivets from the bottom and aft edges of the fairing, as shown on RD.405, to enable the skin to be lifted in order that the stiffeners may be inserted.
- (5) Offer up the stiffeners and secure them with the appropriate rivets.
- (6) Ensure that pop rivet mandrels are removed from the fairing, and replace the rivets in the fairing skin using the rivets specified on RD.405.
- (7) Replace the tail cone.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	A.241169	Stiffener, port	-	-	-
26FX/NIV	A.241170	Stiffener, stbd.	-	-	-
28Q/7655	A.S.164/404	Rivets, csk/hd.	1/8 in. dia.	L.37	-
28Q/9417202	A.G.S.2051/413	Rivets, pop, csk/hd.	1/8 in. dia.	D.T.D.10	-
28Q/9417203	A.G.S.2051/419	Rivets, pop, csk/hd.	1/8 in. dia.	D.T.D.10	-

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## FUSELAGE MISCELLANEOUS

### RD.412 - REINFORCING OF AIR INTAKE SKIN RIVETING

#### 1. Reinforcing of air intake skin rivetting:

- (1) Where rivets securing the intake skin at joints and frame attachments have become loose, the rivets may be renewed as shown in this leaflet. There is no limit to the number of external patches which may be applied at 1st and 2nd line servicing. Skin replacement may be carried out when skins are beyond economical repair, when sub-structure requires requires replacement or when the number of external patches becomes excessive and cannot be economically replaced by insertions. On Mk 6, 9, 10 and 12 aircraft the skins aft of frame 25 have been increased from 20 swg to 18 swg by Mod H1252. Where skins in this area are required to be reviewed only post mod H1252 skins should be used. The starter fairing is not affected by this modification and on no account should starter fairing skins be removed unless replacement is unavoidable, as a jig must be used to locate them on assembly. The following repair drawing is included with this leaflet.

2. Small areas of loose rivets may be renewed as follows:-

- (1) Where possible replace solid rivets with same type as those removed.
- (2) Where it is not possible to replace solid rivets carefully drill out affected rivet and replace with an Avdel rivet. Pop rivets may only be used where there is insufficient blind clearance.
- (3) When using pop rivets open out 1/8 in dia hole to 5/32 in dia without enlarging existing countersink.
- (4) Insert a 5/32 in dia pop rivet, dipping the rivet in Araldite before insertion to retain the mandrel head.

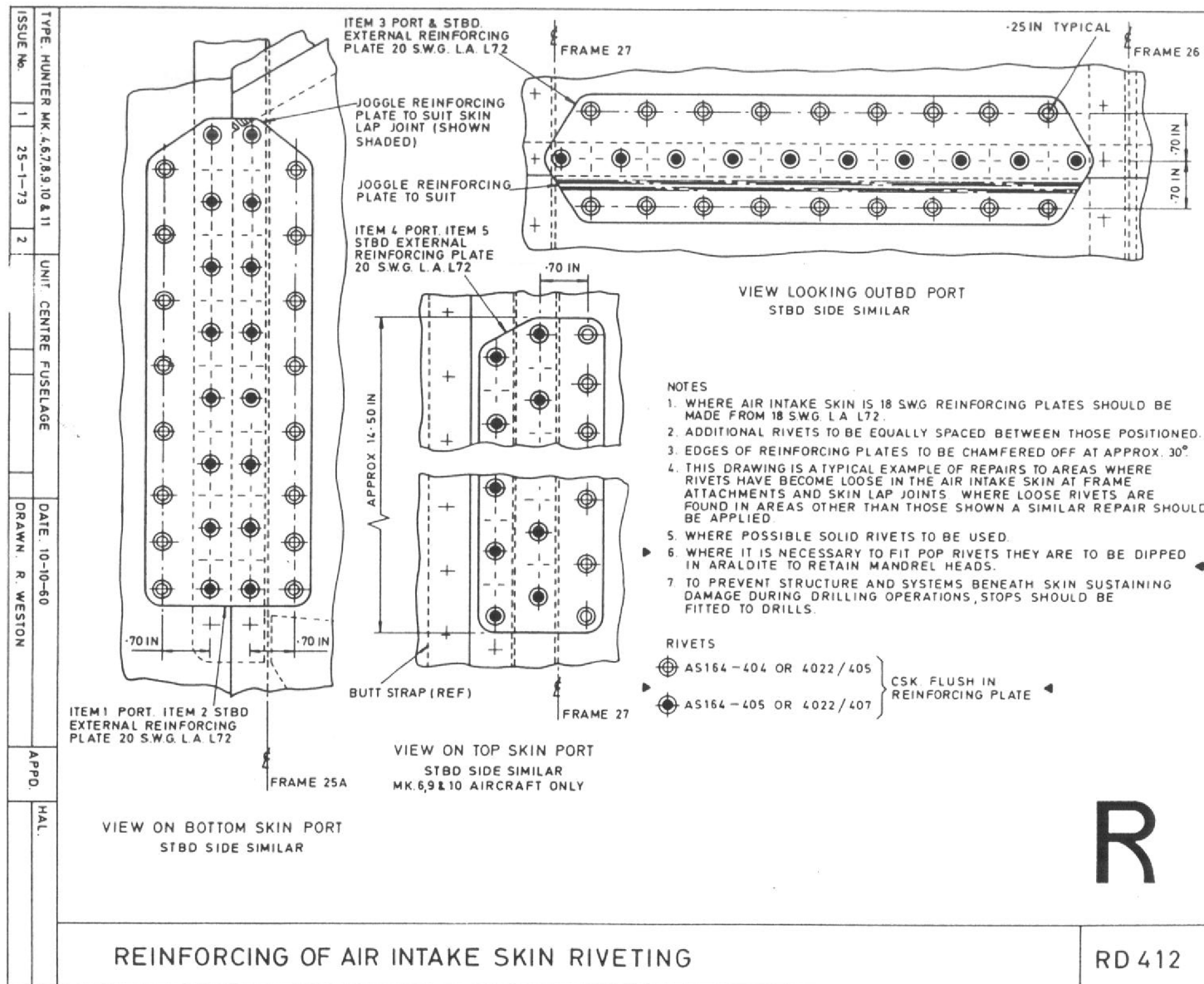
- (5) Carefully fill in rivet heads flush with skin using Araldite.

3. Where a larger area of loose rivets than covered in paragraph 2 has been found, it is recommended that the skin should be reinforced locally and additional rivets fitted. This is accomplished by fitting a reinforcing plate over the area concerned, typical examples of which may be found on RD.412. The reinforcing plates should extend beyond the defective rivets at each end and should not be less than 7 in. long. The recommended sequence of operations is as follows:-

- (1) From light alloy sheet to specification L.72 of the same thickness as the skin in the area concerned (20 s.w.g. or 18 s.w.g.) manufacture the appropriate reinforcing plate.
- (2) Offer up the reinforcing plate and drill the rivet holes. It is recommended that a stop should be used on the drill to ensure that structure and systems beneath the skin are not damaged.
- (3) Insert the rivets to secure the reinforcing plate using solid rivets where possible. Where access for solid rivetting is not possible "Avdel" or "Pop" rivets shown on RD 412 may be used, but "pop" rivets should be dipped in Araldite before insertion to retain mandrel heads.

4. The listed repair materials will be required:

Part No.	Description	Size	Specification	Remarks
-	Sheet aluminium alloy	18 s.w.g.	L72	For reinforcing plates
-	Sheet aluminium alloy	20 s.w.g.	L72	For reinforcing plates
AS164/404	Rivets CSK/hd	1/8 in. dia.	L37	Where solid rivets cannot be fitted
AS164/405	Rivets CSK/hd	1/8 in. dia.	L37	
4022/405	Rivets Avdel CSK/hd	1/8 in. dia.	L86	
4022/407	Rivets Avdel CSK/hd	1/8 in. dia.	L86	
4022/409	Rivets Avdel CSK/hd	1/8 in. dia.	L86	
4022/506	Rivets Avdel CSK/hd	5/32 in. dia.	L86	
4022/508	Rivets Avdel CSK/hd	5/32 in. dia.	L86	Blind holes only
4022/510	Rivets Avdel CSK/hd	5/32 in. dia.	L86	
AGS2051/419BS	Rivets Pop CSK/hd	1/8 in. dia.	DTD10	
AGS2051/424BS	Rivets Pop CSK/hd	1/8 in. dia.	DTD10	
AGS2051/419	Rivets Pop CSK/hd	1/8 in. dia.	DTD10	
AGS2051/424	Rivets Pop CSK/hd	1/8 in. dia.	DTD10	



R

REINFORCING OF AIR INTAKE SKIN RIVETING

RD 412



## FUSELAGE

## MISCELLANEOUS

Scheme to fit oversize bolts in fwd. nose wheel door.

1. Where a hinge on the forward nose wheel door is found to be loose, the 2 B.A. bolts attaching the hinge may be replaced with 1/4 in. dia. bolts. The following repair drawing is included with this leaflet:-

RD.416 - SCHEME TO FIT OVERSIZE BOLTS IN FORWARD NOSE WHEEL DOOR.

2. The recommended sequence of operations is as follows:-

(1) Remove the forward nose wheel door.

(2) Disconnect operating rod Part No. B.218821 from hinge assembly.

(3) Drill out all necessary rivets to lift top skin back sufficiently to gain access to hinge bolts.

(3) Release one of the four 2 B.A. bolts attaching the hinge, to allow the hole to be reamed. When reamed a 1/4 in. dia. bolt should be inserted as shown on RD.416. The three remaining holes should be reamed in a similar manner. By using this method the three remaining bolts will keep the hinge

bracket assembly in alignment for reaming. All four existing holes to be reamed out to 1/4 in. dia. Hawker fit 'C', and the csk. hole opened out at 90° to take csk. bolt Part No. A.S.1242/13/E.

(5) Re-connect the lock operating rod and replace the top skin as before, using pop rivets A.G.S.2050/419 and A.G.S.2050/424.

(6) Re-fit the forward nose wheel door as laid down in Sect.3, Chap.5, of the appropriate Vol.1.

3. The following repair material will be required:-

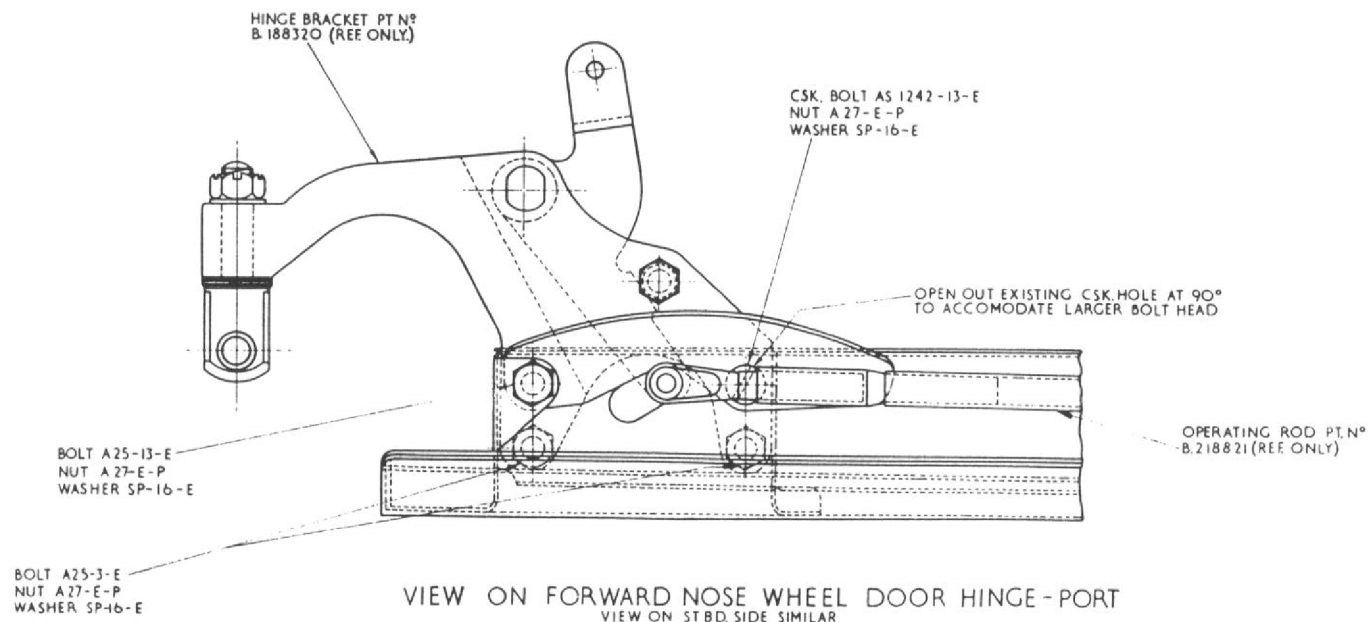
Ref.No.	Part No.	Description	Size	Specification	Remarks
28D/12519	A25/3/E	Bolts, H.T.S.	1/4 in. B.S.F.		
28D/12545	A25/13/E	Bolts, H.T.S.	1/4 in. B.S.F.		
28D/10571	A.S.1242/13/E	Bolts, H.T.S.	1/4 in. B.S.F.		
28M/12928	A.27/E/P.	Nuts, plain	1/4 in. B.S.F.		
28W/9419487	S.P.16/E	Washers	1/4 in. dia.		
28Q/9417224	A.G.S.2050/419	Rivets, pop, dm/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417225	A.G.S.2050/424	Rivets, pop, dm/hd.	1/8 in. dia.	D.T.D.10	

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TYPE: HUNTER MK. 768	UNIT: NOSE WHEEL DOORS	DATE: 6-6-61	APD	HAL
ISSUE N° 1		DRAWN: J. BIRCH		<i>[Signature]</i>

# NOTES:-

1. THE FOUR EXISTING HOLES CONCERNED TO BE REAMED OUT TO  $\frac{1}{4}$  IN. DIA. HAWKER 'C' FIT
2. NUTS TO BE LOCKED IN POSITION BY PEENING OVER ENDS OF BOLTS



R

SCHEME TO FIT OVERSIZE BOLTS IN FWD. NOSE WHEEL DOOR

RD. 416

## FUSELAGE

### MISCELLANEOUS

#### Repair to boundary layer duct skin

1. Where damage has occurred to the boundary layer duct skin, it may be repaired as shown in this leaflet. The following repair drawing is included with this leaflet:-

#### RD.415 - REPAIR TO BOUNDARY LAYER DUCT SKIN.

2. The recommended sequence of operations is as follows:-

- (1) Check boundary layer duct skin for cracks, and where cracks are detected drill 3/32 in. dia. holes at the extremities.

- (2) Drill out appropriate rivets as shown on RD.415.

- (3) From 18 s.w.g. light alloy to specification L.72 make and form reinforcing plates, items 1 and 2 port and items 3 and 4 stbd.

- (4) Offer up reinforcing plate item 1 port or item 2 stbd. Drill the holes required to secure the reinforcing plate to the skin, care being taken to ensure that all countersinking, and drawsinking to accommodate bolt and rivets as shown on RD.415 is carried out.

- (5) Offer up remaining reinforcing plate

item 3 port, or item 4 stbd. Drill the holes required to secure the reinforcing plate to the skin, attention being paid to the drilling, and drawsinking of bolt holes, to match holes in items 1 port, or item 2 stbd.

- (6) Secure reinforcing plates with appropriate rivets and bolts as shown on RD.415.

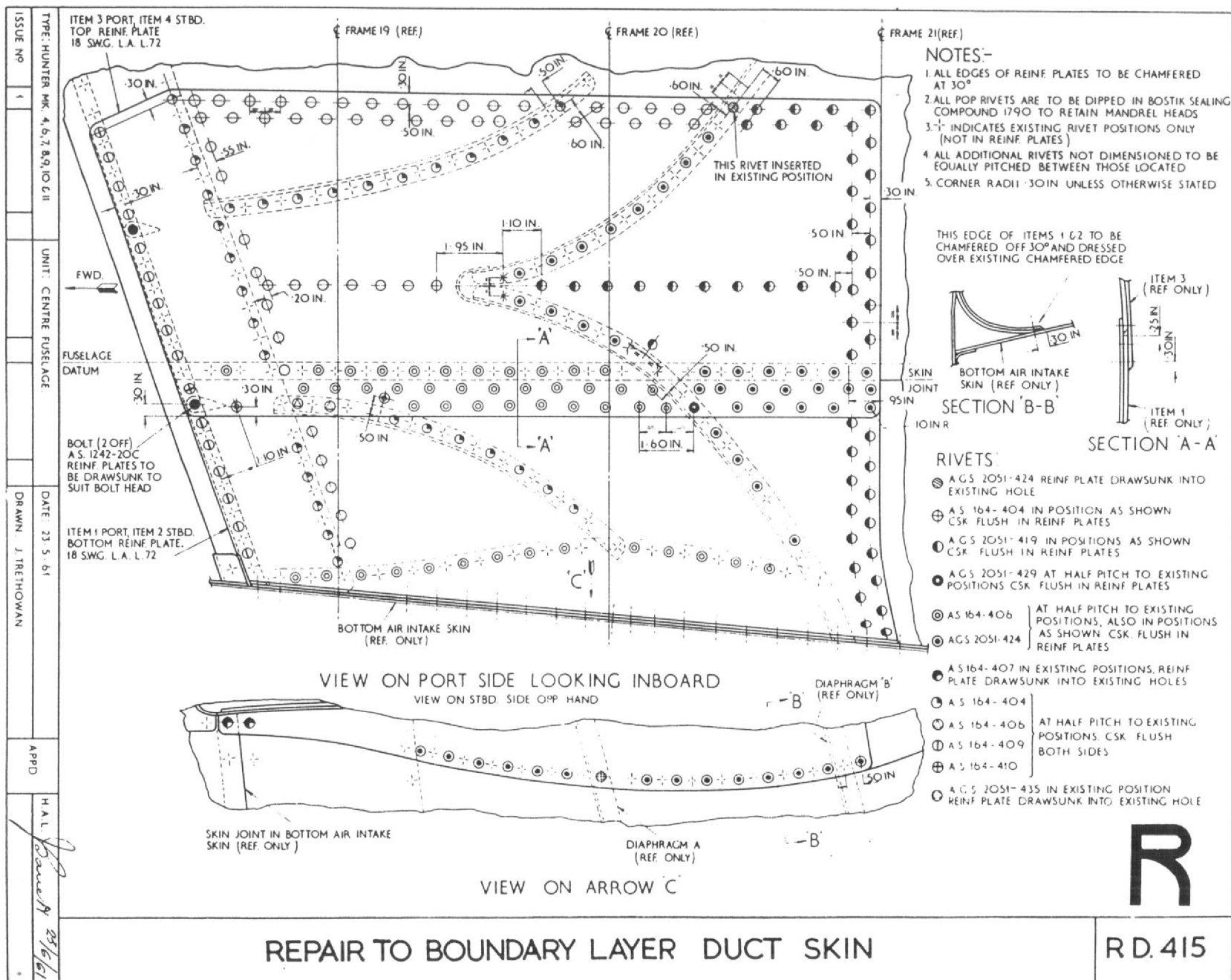
Before insertion, all pop rivets to be dipped in Bostik sealing compound 1790 to retain mandrel heads.

- (7) Dress reinforcing plate item 1 port or item 2 stbd. over bottom edge of skin as shown on RD.415.

3. The following repair material will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
30B/1730		Sheet aluminium alloy	18 s.w.g.	L.72	For items 1,2,3 & 4
28Q/9417203	A.G.S.2051/419	Rivets, pop csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417204	A.G.S.2051/424	Rivets, pop csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417205	A.G.S.2051/429	Rivets, pop csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/9417206	A.G.S.2051/435	Rivets, pop, csk/hd.	1/8 in. dia.	D.T.D.10	
28Q/7655	A.S.164/404	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/8147	A.S.164/406	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/8148	A.S.164/407	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/10098	A.S.164/409	Rivets, csk/hd.	1/8 in. dia.	L.37	
28Q/9036	A.S.164/410	Rivets, csk/hd.	1/8 in. dia.	L.37	
28D/11243	A.S.1242/20/C	Bolt, csk/hd.	2 B.A.		

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## FUSELAGE

## MISCELLANEOUS

**Rectification of worn tailplane attachments**

1. Where tailplane movement exceeds the dimensions shown on RD.440 due to wear the tailplane hinge blocks and caps must be renewed as shown in leaflet D.2/1 and the angle and rubbing strip assembly at frame 52 must be renewed as shown in this leaflet. Where it is necessary to renew rivets through the dorsal fin skin at top portion of frame 55 they may also be renewed as shown in this leaflet. The following repair drawing is included with this leaflet:-

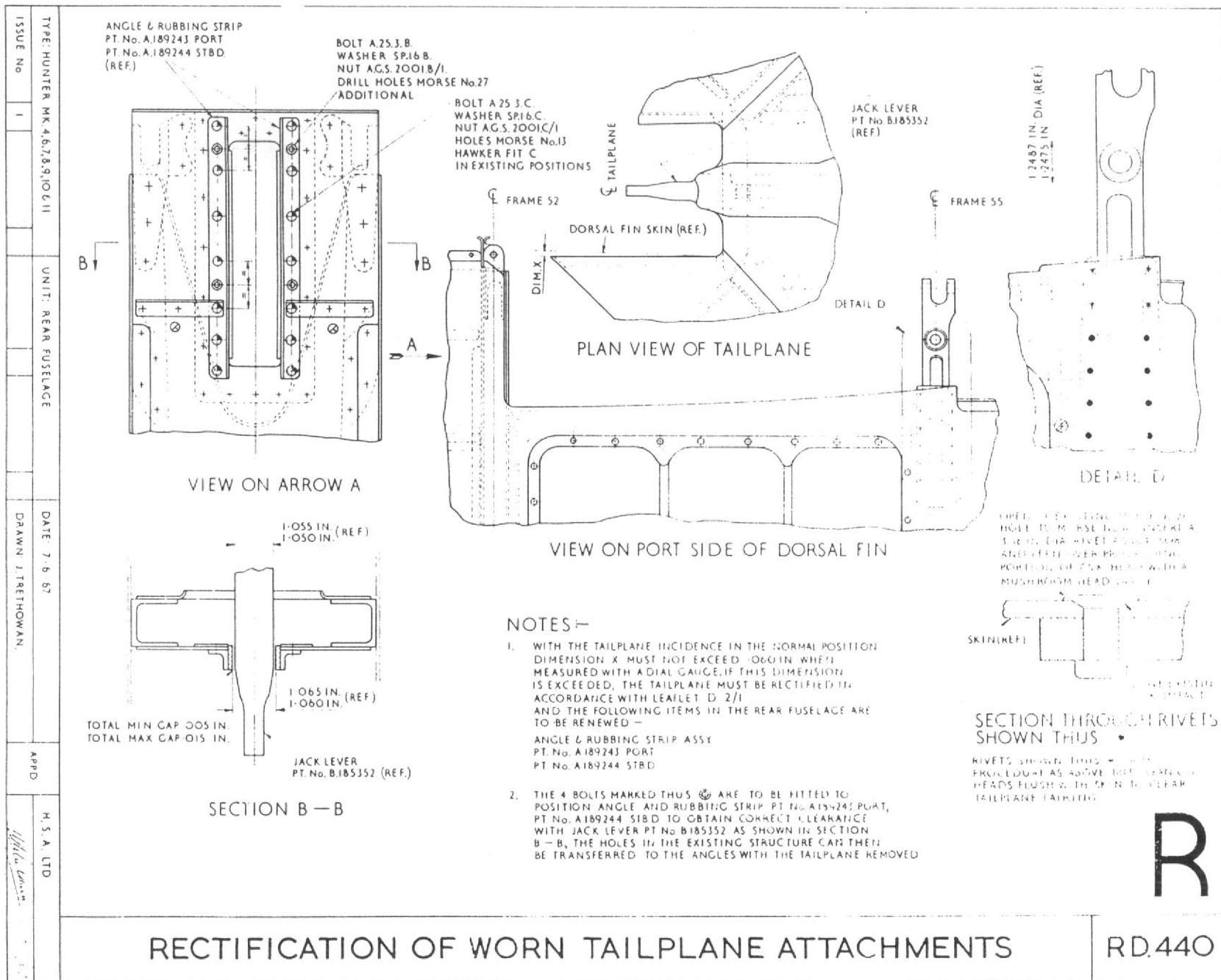
## RD.440 - RECTIFICATION OF WORN TAIL PLANE ATTACHMENTS

2. The recommended sequence of operations is as follows:-

- (1) Remove the tailplane from the fuselage as shown in A.P.4347, Vol.1.
- (2) Release appropriate fixings and remove the angle and rubbing strip assembly (port and starboard) at frame 52.
- (3) Check the tailplane pivot fitting at frame 52 for wear and ensure that it is within the limits shown on RD.440.
- (4) Refit tailplane to fuselage. (It is assumed that the tailplane hinge blocks and caps have been renewed and that the tailplane jack lever is within the limits shown on RD.440)
- (5) Offer up the new angle and rubbing strip assembly Part No.A.189243 port and A.189244 starboard. Position to obtain the dimensions shown in RD.440 and secure to frame 52 with the additional 4 B.A. bolts.
- (6) Remove the tailplane from the fuselage. Drill the new angle and rubbing strip assemblies to suit frame 52 and insert bolts as shown on RD.440.
- (7) Where rivets through the dorsal fin skin at frame 55 are loose they are to be removed and replaced as shown on RD.440.
- (8) Refit tailplane to fuselage as shown in A.P.4347, Vol.1.

3 The following repair materials will be required:-

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/10445	A.189243	Angle and rubbing strip assembly, port			For renewal of worn parts
26FX/10446	A.189244	Angle and rubbing strip assembly, starboard			For renewal of worn parts
28D/9419452	A.25/3/B	Bolt, hex/hd.	4 B.A.		
28D/2133012	A.25/3/C	Bolt, hex/hd.	2 B.A.		
28W/2419486	SP.16/B	Washer, aluminium alloy	4 B.A.		
28W/9419404	SP.16/C	Washer, aluminium alloy	2 B.A.		
28M/10287	A.G.S.2001.B.1	Nut	4 B.A.		
28M/10288	A.G.S.2001.C.1	Nut	2 B.A.		
28Q/8031	A.S.164/608	Rivet, csk/hd.	3/16 in. dia	L.37	



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A.P.101B-1302-6A, Part 2, Repair Leaflet B.3/11  
1306  
A.L.24, Feb.74

## FUSELAGE

### MISCELLANEOUS

#### Repair to front fuselage skin between frames 3 and 6

1. Cases have occurred on T.Mk.7 aircraft of the front fuselage skin between frames 3 and 6 cracking. Repair is effected by removal of the light alloy skins port and starboard and replacement by skins formed from stainless steel to specification S.520. The repair is effected by following the repair drawing included in this leaflet: -

#### RD.448 - REPAIR TO FRONT FUSELAGE SKIN BETWEEN FRAMES 3 AND 6.

2. The recommended sequence of operations is as follows: -

3. The following repair materials will be required:

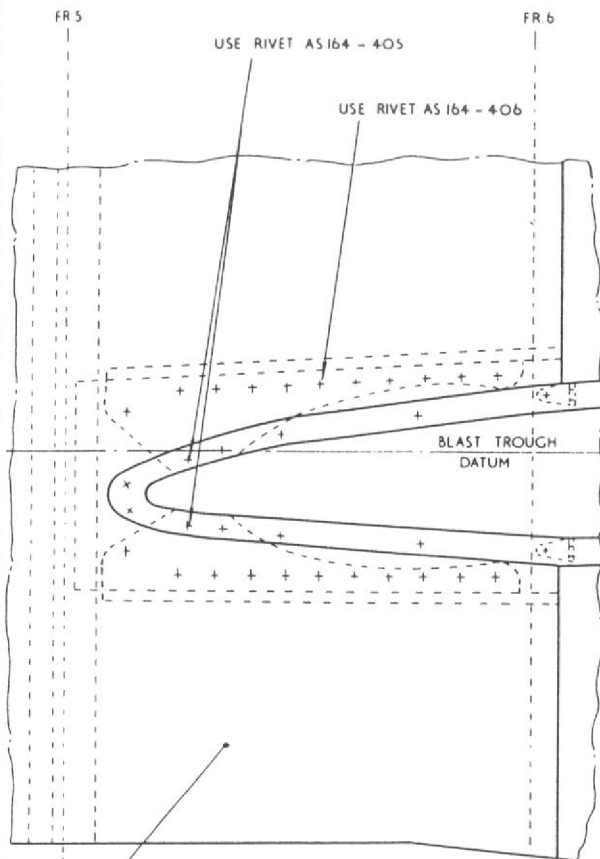
- (1) Drill and remove the rivets securing the skins to the frames and horizontal inter-frame members.
- (2) Offer up the replacement skins, item 1 port and item 2 starboard. Check the fit and trim as necessary within the acceptable 0.01 trim allowance.
- (3) From the existing rivet holes in the frames and inter-frame members, mark off the skin rivet hole positions. Drill morse No.30 and countersink 120 deg. to a depth of 0.04 in.
- (4) Rivet into position using the appropriate rivets indicated on the repair drawing.

Ref.No.	Part No.	Description	Size	Specification	Remarks
26FX/NIV	C.228886/4	Skin, port	18 s.w.g.	S.520	-
26FX/NIV	C.228886/5	Skin, starboard	18 s.w.g.	S.520	-
28Q/7655	A.S.164/404	Rivet, csk/hd.	1/8 in.dia.	L.37	-
28Q/7656	A.S.164/405	Rivet, csk/hd.	1/8 in.dia.	L.37	-
28Q/8147	A.S.164/406	Rivet, csk/hd.	1/8 in.dia.	L.37	-

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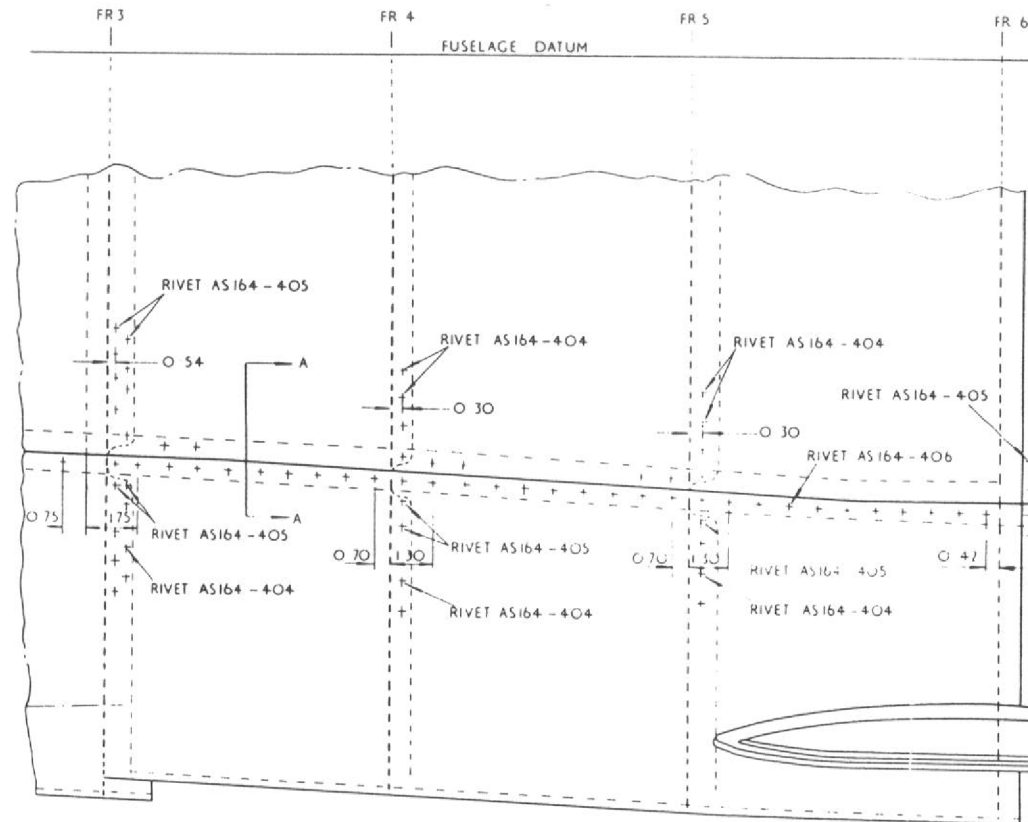
TYPE	HUNTER T MK 7
ISSUE No	1
UNIT	
DATE	
DRAWN	C WATKINSON
APPD	
H A L	
MOS	

HOLES IN SKIN DRILL MORSE No 30  
C SK 120 DEG TO DEPTH OF 0.04 INS

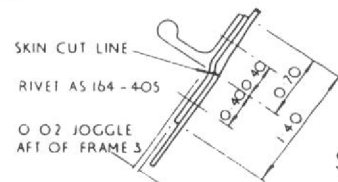


SKIN 18 SWG 5520  
ITEM 1 C 228886/4 SKIN BOTTOM PORT  
ITEM 2 C 228886/5 SKIN BOTTOM STARBOARD

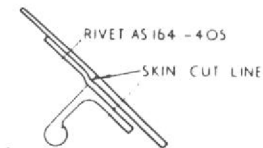
INVERTED PLAN VIEW



SIDE ELEVATION



SECTION A-A



NOTE - ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

REPAIR FOR FRONT FUSELAGE SKIN BETWEEN FRAMES 3 & 6

RD 448

R



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A.P.101B-<sup>1302</sup><sub>1306</sub>-6A, Part 2, Repair Leaflet B.3/12  
A.L.27 April 77

## FUSELAGE

### MISCELLANEOUS

#### Repair to hinge attachment (Air intake slot) (Mk.8 only)

1. Where air intake slot door hinge attachments have become loose they may be repaired as shown in this leaflet. The following repair drawing is included with this leaflet.

#### RD.450 REPAIR TO HINGE ATTACHMENT (AIR INTAKE SLOT)

2. The recommended sequence of operations is as follows:—

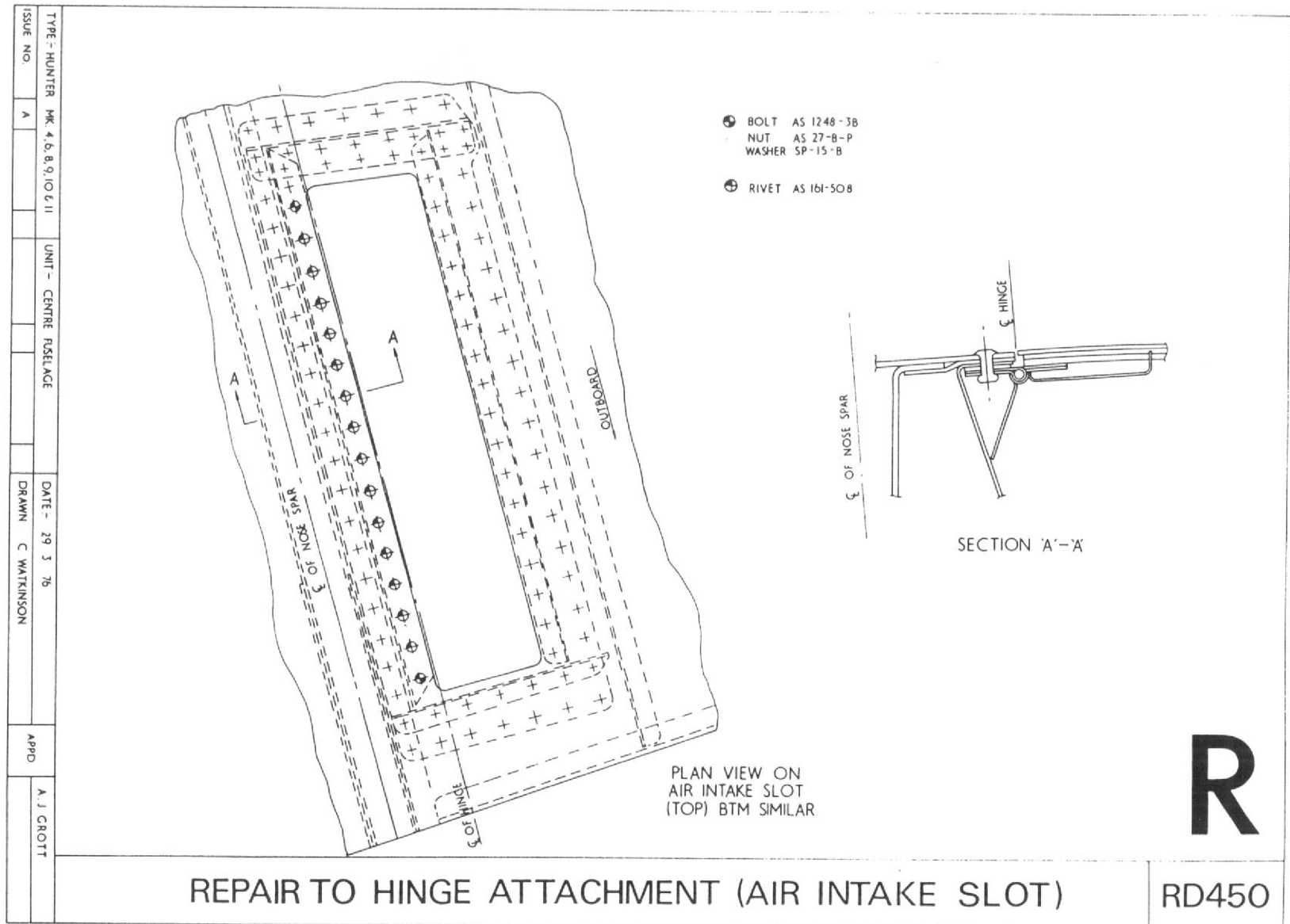
- (1) Remove existing rivets AS161-508 and two bolts AS1245-3B, two nuts A27-B-P and two washers SP-15B.
- (2) Open up holes to Morse 10, existing reduced countersinks to be left.
- (3) Insert rivets AS161-608 and rivet up rounding off countersunk head of rivet as shown in section 'A-A'.

3. The following repair materials will be required:—

Ref. No.	Part No.	Description	Size	Specification	Remarks
28Q/6136	AS161-608	Rivet csk. hd.	3/16in.	L37	As required

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## FUSELAGE MISCELLANEOUS

### 1. Repair to stub wing diaphragm 'G'.

(1) Where diaphragm 'G' is found to be cracked on the bend line, at the inboard end, it may be repaired as shown in this leaflet. The following repair drawing is included with this leaflet:-

#### RD.451 - REPAIR TO STUB WING DIAPHRAGM 'G'

2. The recommended sequence of operations is as follows:-

(1) Drill stop hole at extremity of crack.

(2) Remove rivets as required through diaphragm 'G' and bracket Part No. A180899 or A180900.

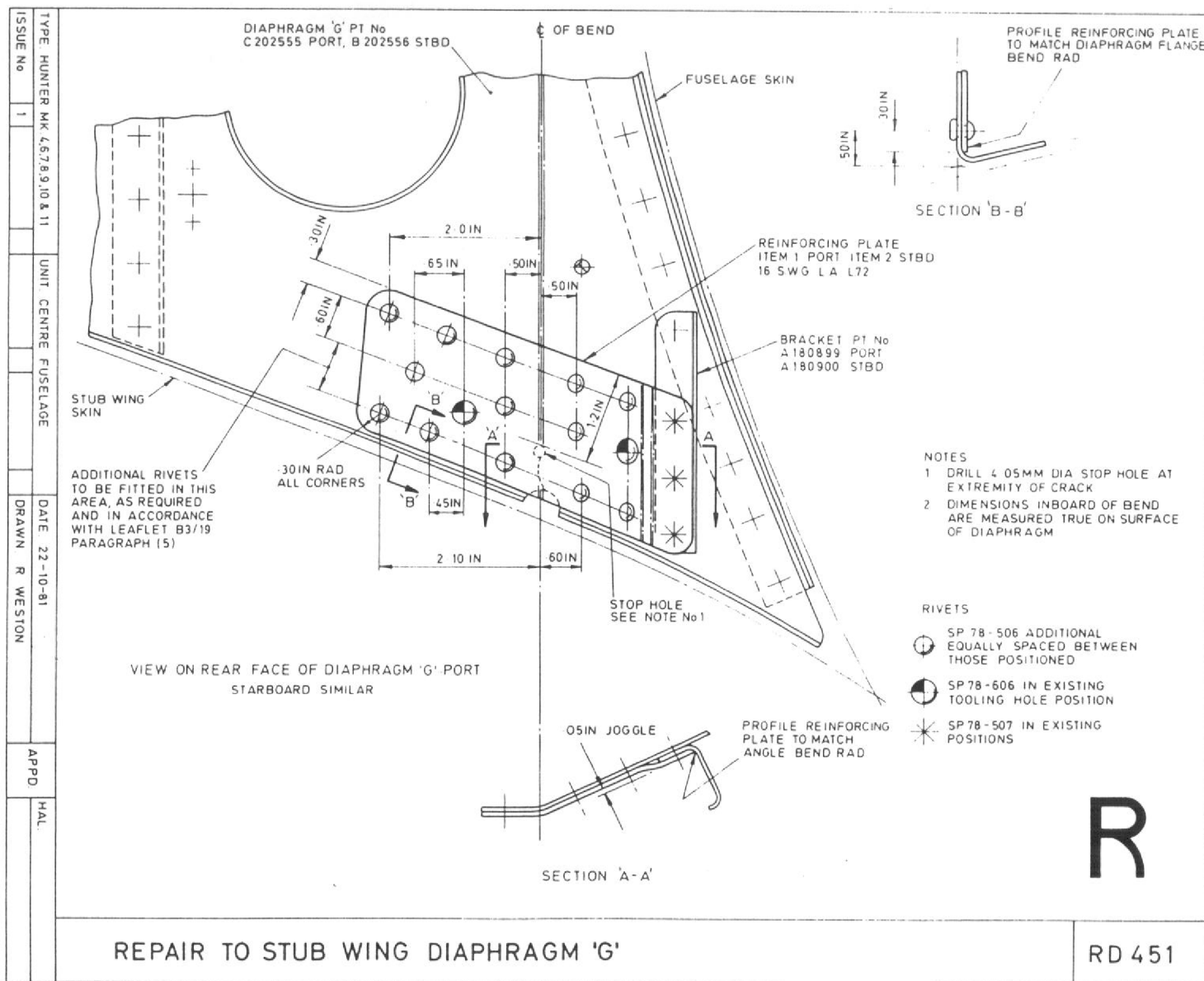
(3) From 16 s.w.g. L.A. to specification L.72 manufacture reinforcing plate item 1, port, or item 2, starboard, as shown on RD.451.

(4) Offer up reinforcing plate to diaphragm, drill and rivet in position.

(5) The repair as shown may be applied to diaphragms with cracks up to 1.50 in. long maximum, providing that the reinforcing plate is extended to maintain the 1.20 in. minimum dimension beyond the crack and the number of rivets increased to maintain pitches of .70 in. to .80 in..

The following repair materials will be required:-

<i>Ref.No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Size</i>	<i>Specification</i>	<i>Remarks</i>
30B/9611216	-	Sheet L.A.	16 s.w.g.	L.72	For item 1 and 2
28Q/20086	SP78/507	Rivets, Sn/Hd	5/32 in.dia.	L.37	-
28Q/18323	SP78/506	Rivets, Sn/Hd	5/32 in.dia.	L.37	-
28Q/19050	SP78/606	Rivets, Sn/Hd	3/16 in.dia.	L.37	-



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