SHADOW D - SERIES

CONSTRUCTION MANUAL

MONOCOQUE ASSEMBLY

SERIES D-D

MONOCOQUE ASSEMBLY

INTRODUCTION

The monocoque assembly is self aligning with the major parts pre-cut and routed.

N.B. The routed areas on the seat back, F360, and the hull floor, F359, can fracture with excessive movements, therefore handle these parts with care.

The strength of the monocoque is dependendant on the strength of the bonds - FOLLOW CAREFULLY the procedures in the PROCESS SHEETS.

METHOD

It is recommended that when applying Araldite you use a disposable gun applicator and you keep a continuous 'bead' of glue 3/16" to 1/4" along the bond line. After jointing, and while the glue is still wet, smooth off the glue fillet with a gloved finger.

Use strong packing tape (for example; 2" wide packing case type) and clamps to hold the components in position. Check for correct fitting and symmetry before leaving to cure.

All touching Fibrelam edges are to be similarly prepared prior to bonding.

Note that all bolts are fitted with the locknut INSIDE the cockpit for ease of inspection with the exception of the Seat Belt bolts at the bottom of the seat backs, and the Engine Bearer bolts outside and at the rear of the monocoque.

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FIGURE 1. MONOCOQUE ASSEMBLY

INSERTS
EPOXY FILLER

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F102-2	1	Monocoque side PORT	BOND	1.4
F102-1	1	Monocoque side STAR'BD	BOND	1.4
F360	1	Front seat back	BOND	1.4
F361	1	Rear seat back	BOND	1.4
F368	4	SPACER	BOND	1.4
F369	4	SPACER	BOND	1.4

Fit INSERTS CM1 and CM2 where indicated in FIGURES 1a and 1b.
8 inserts will later be drilled out to 1/4" when FULLY CURED, the other inserts (throttle, choke lever, flap lever and rudder stop cable inserts) will remain at 3/16".
Bear in mind the direction from which the inserts will be drilled and fit the COUNTERSUNK insert from that side.

Apply CM99, (REDUX), to Fibrelam edges as indicated in FIGURE 1c following instructions in PROCESS SHEET No. 5.

FIGURE 1A and 1B

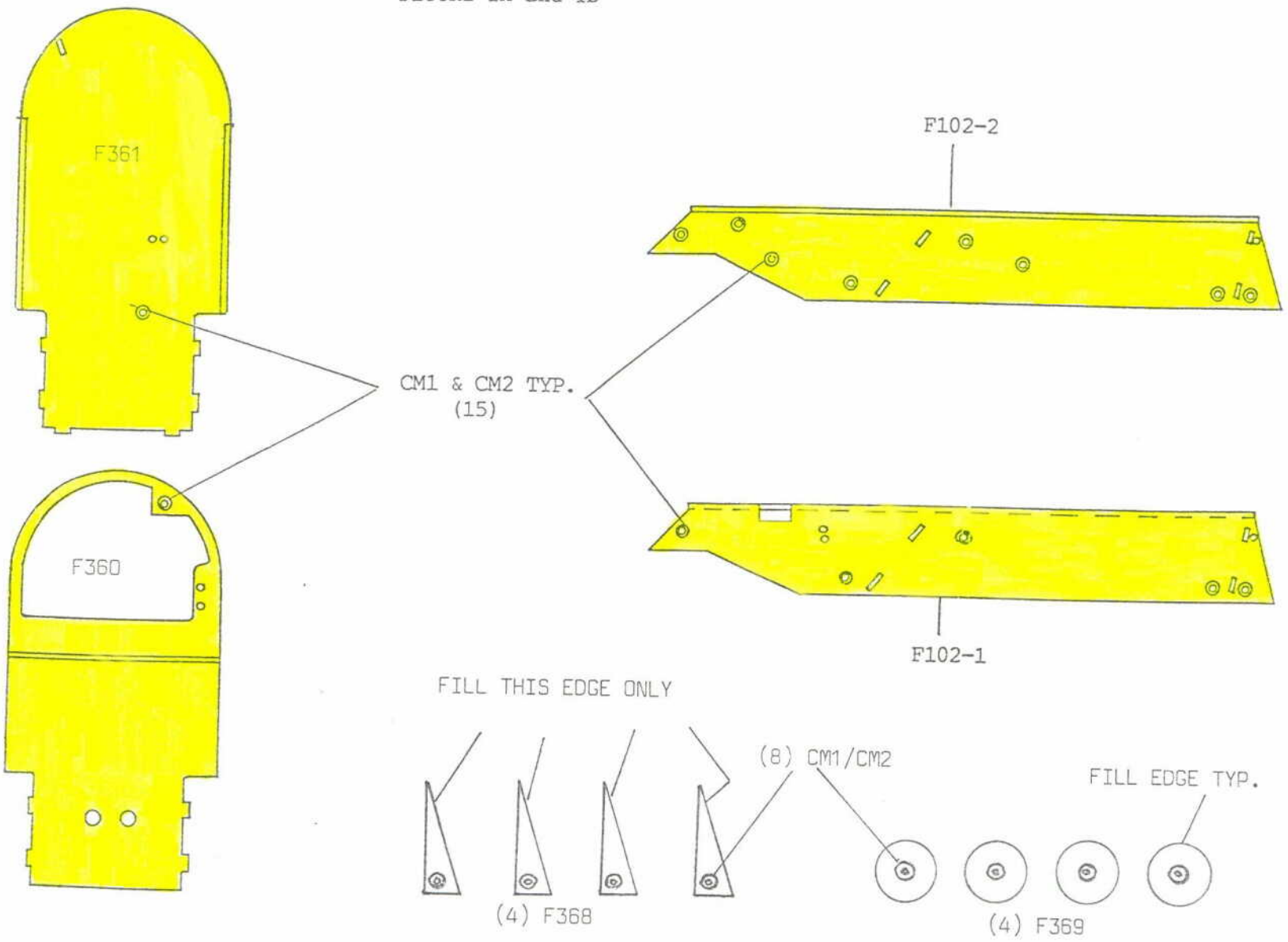


FIGURE 1A and 1B

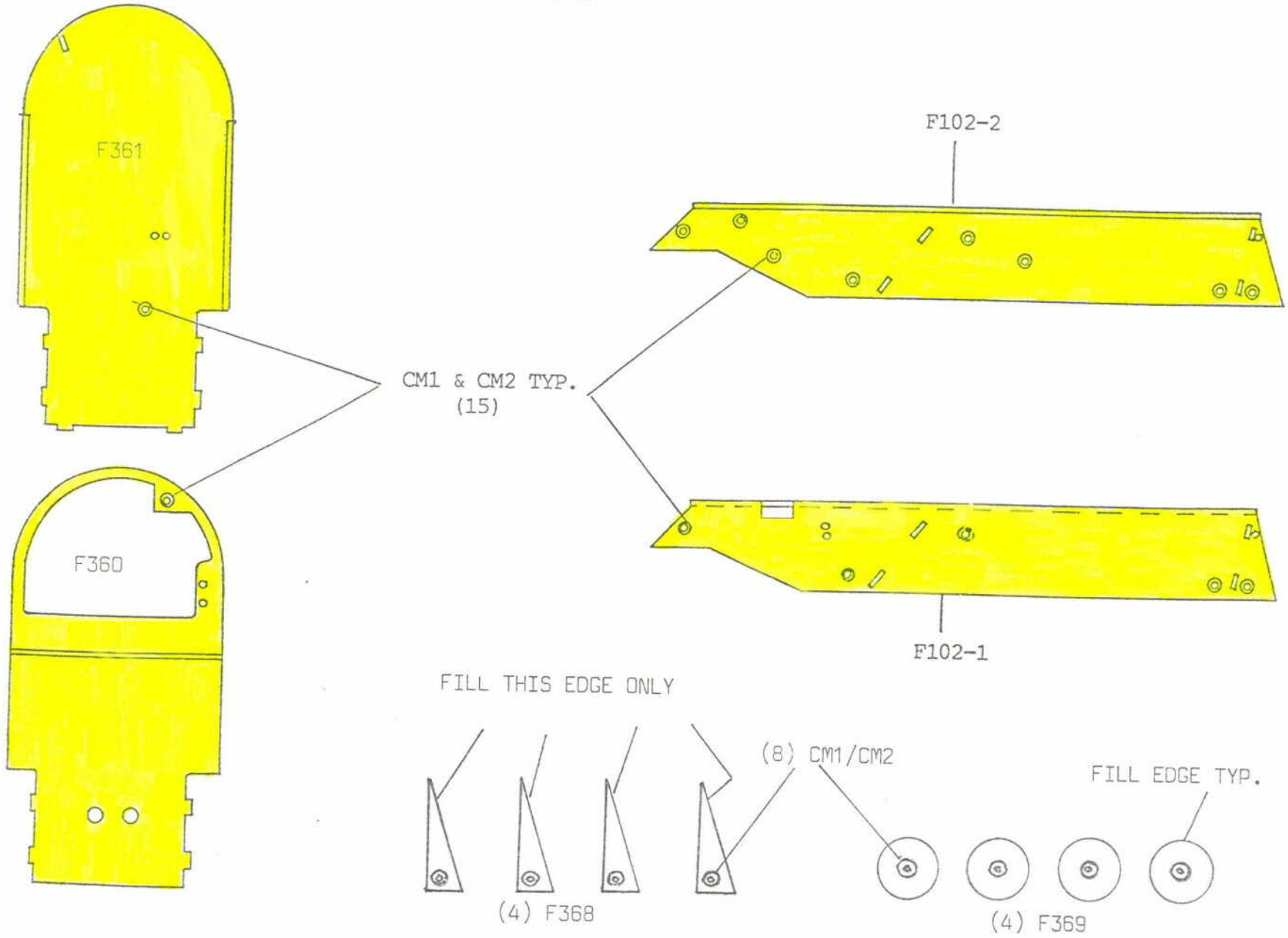


FIGURE 1C

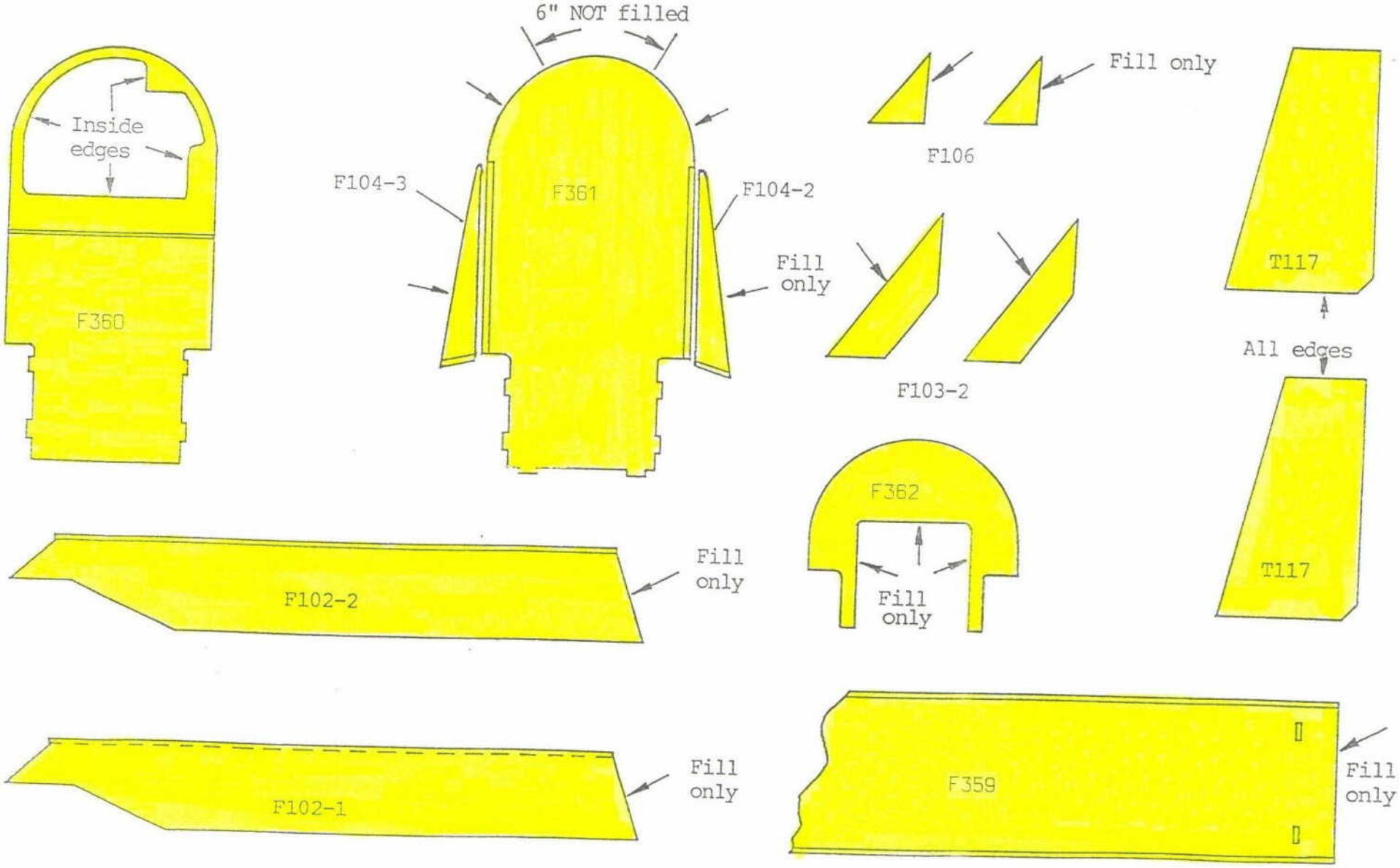

6" NOT filled
Inside edges
F360
F104-3
F361
F104-2
Fill only
F106
Fill only
T117
All edges
F103-2
F362
Fill only
T117
F102-2
Fill only
F102-1
Fill only
F359
Fill only

FIGURE 2.

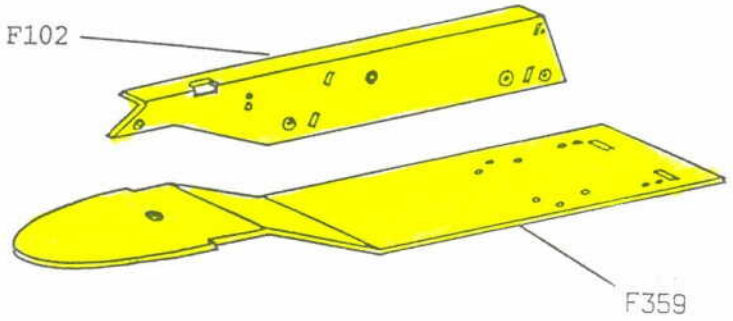
MONOCOQUE ASSEMBLY

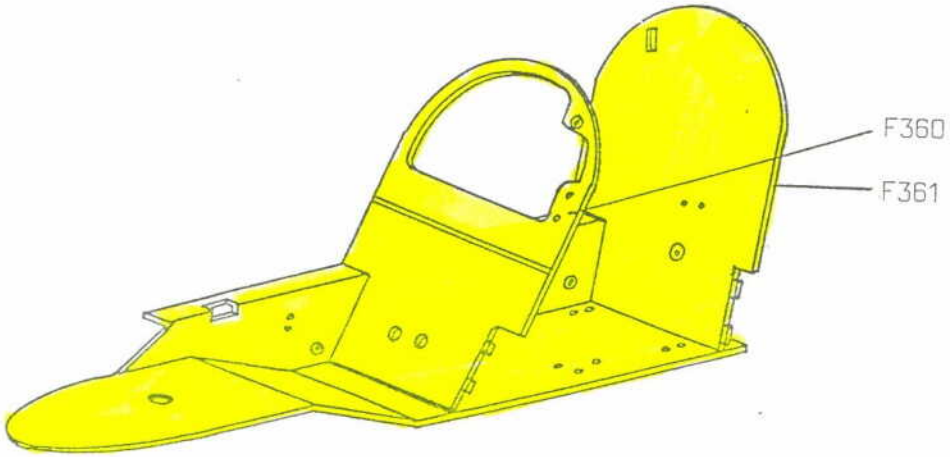
FLOOR
SIDES
SEAT BACKS
INSTRUMENT PANEL
GLASS ANGLES

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F359	1	Monocoque Floor	BOND	1.1
F102-1	1	Monocoque Side PORT	BOND	1.1
F102-2	1	Monocoque Side ST'BD	BOND	1.1
F360	1	Front Seat Back	BOND	1.1
F361	1	Rear Seat Back	BOND	1.1
F362	1	Instrument Panel	BOND	1.1
F280	4	Glass Angles	BOND	1.7
F322	2	Glass Angles	BOND	1.7
F281	2	Glass Angles	BOND	1.7
F106	2	Monocoque Gusset	BOND	1.1

Before applying Araldite to the Fibrelam surfaces to be bonded, ensure flush fitting of the surfaces and, if necessary, hand sand the edges at 45 degrees to remove excess paper core only.

FIGURE 2A





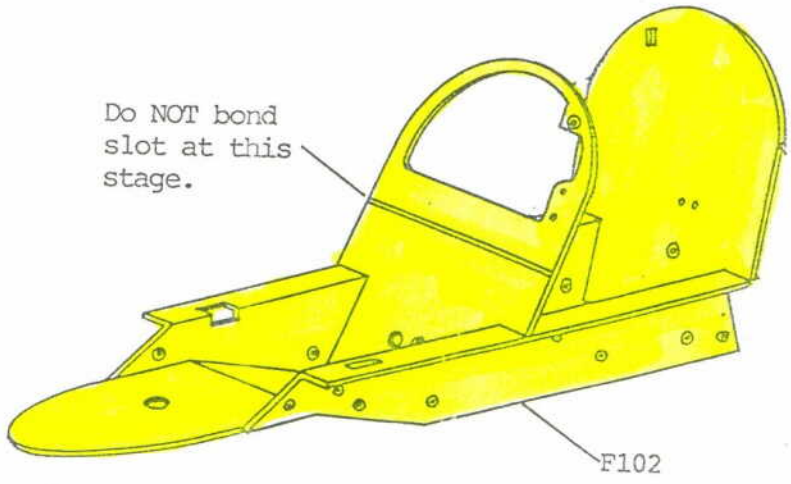


FIGURE 2B

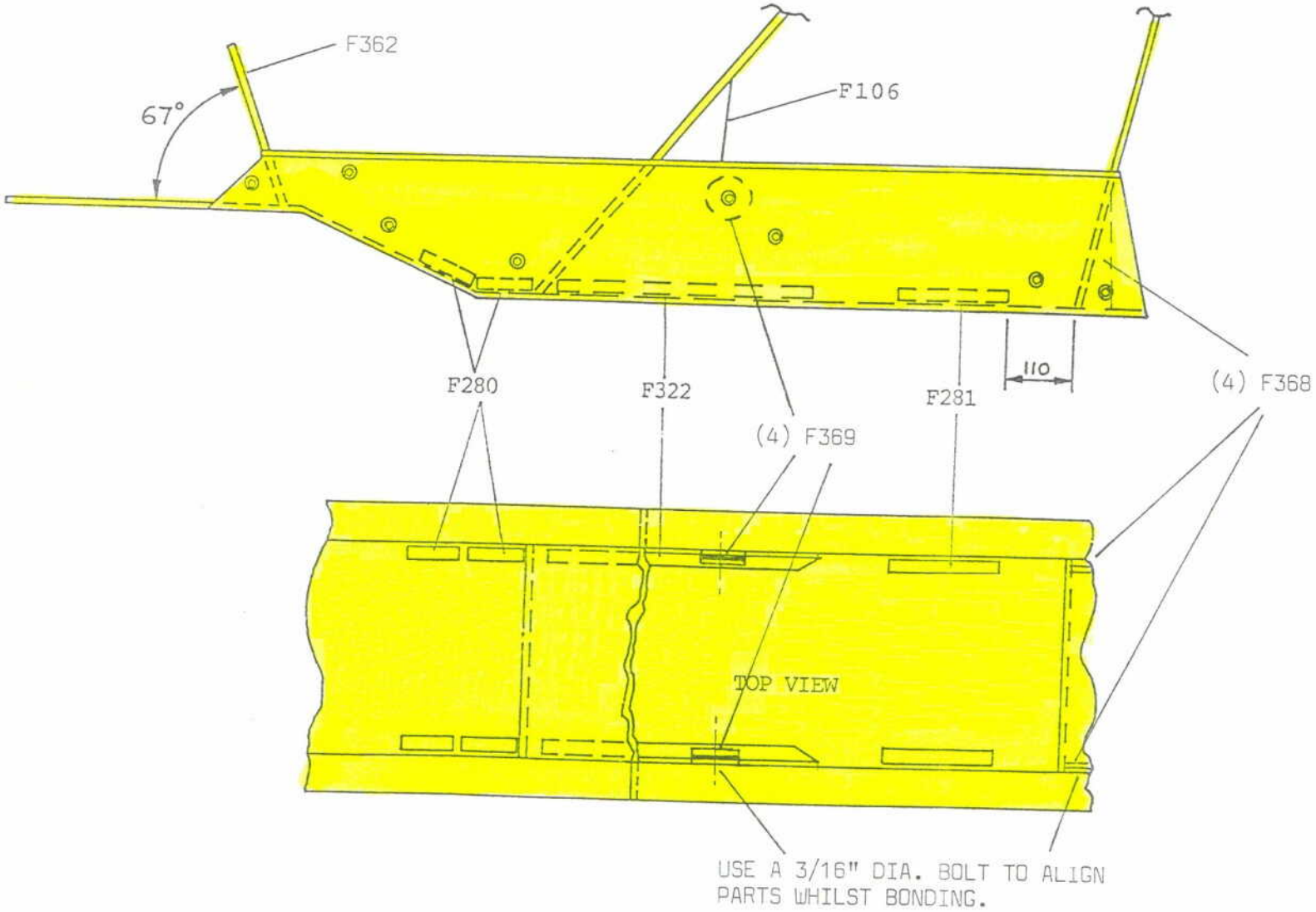

F362
67°
F106
F280
F322
F281
110
(4) F368
(4) F369
TOP VIEW
USE A 3/16" DIA. BOLT TO ALIGN
PARTS WHILST BONDING.


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FIGURE 3

MONOCOQUE ASSEMBLY

RUDDER PULLIES
FLOOR WELL

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F289	1	Floor Well	BOND	1.1
F317	1	Pulley Block	BOND	1.2
F117	4	Rudder Cable Pulley		
F118	4pr.	Pulley Bracket	BOND	1.2
F291	2	Pulley		
F294	4	Spacer - Pulley		
F295	2	Spacer - Pulley		

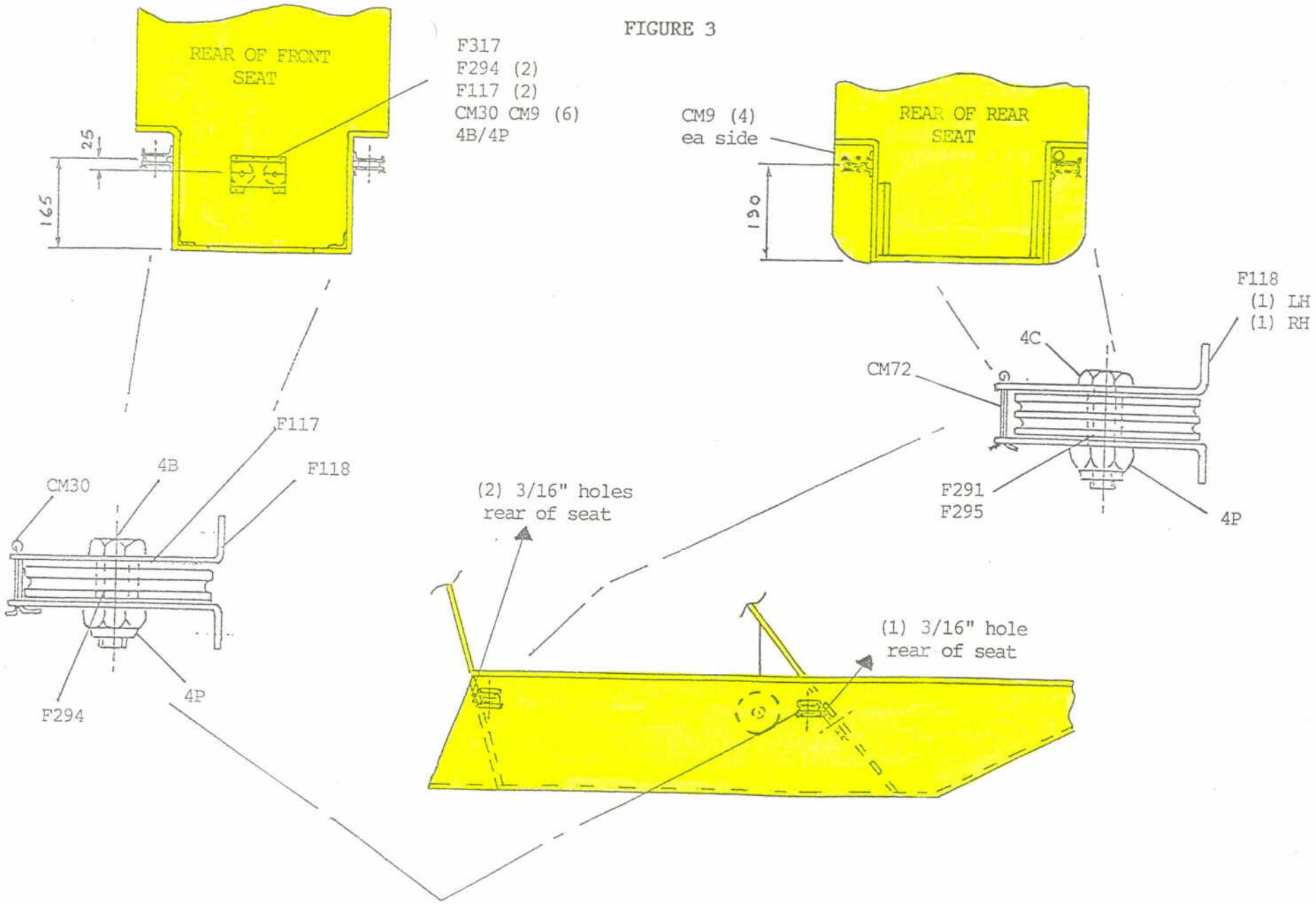
Assemble and bond the Floor Well with the same precautions and preparartions as the monocoque.

Locate the two outer pulleys by the front seat back and position the Pulley Block, F317, using a straight thin rod through the three pulley assemblies. Bond and rivet the Pulley Block and the two outer Rudder Cable Pullies.

Similarly, rivet and bond the rear double pullies making sure they are in line.

Cut out marked area in monocoque floor for Foot Well.

FIGURE 3


REAR OF FRONT SEAT
25
165
F317
F294 (2)
F117 (2)
CM30 CM9 (6)
4B/4P
CM9 (4)
ea side
REAR OF REAR SEAT
190
F118
(1) LH
(1) RH
4C
CM72
F291
F295
4P
F117
4B
F118
CM30
(2) 3/16" holes
rear of seat
(1) 3/16" hole
rear of seat
F294
4P

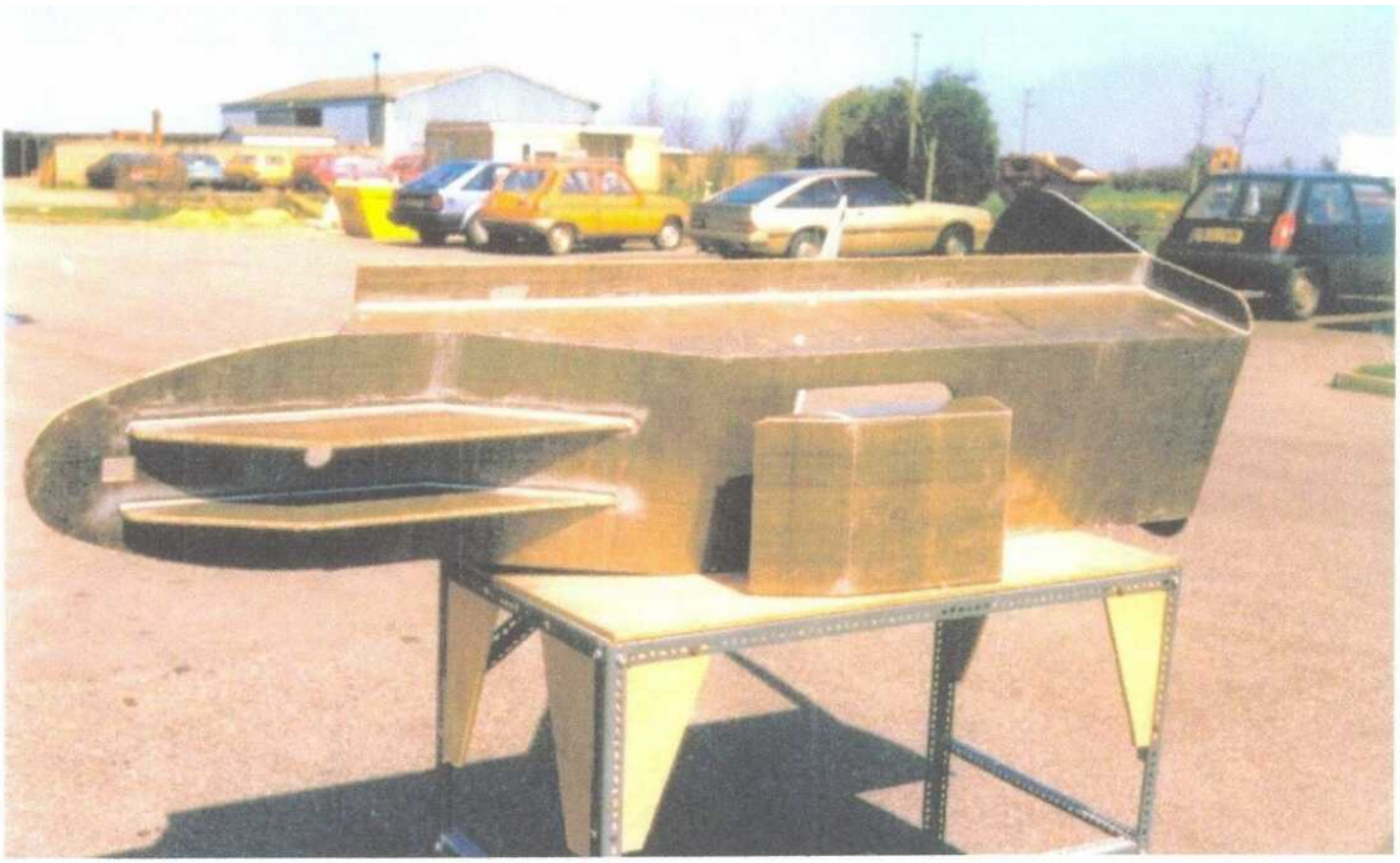


FIGURE 4

MONOCOQUE ASSEMBLY

FOOTWELL
NOSELEG SUPPORTS/GUSSETS
GLASS ANGLES
REAR RUDDER PEDALS

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F105	2	Noseleg Webs	BOND	1.1
F253	1	Noseleg Support	BOND	1.1
F167	2	Gusset - Hull	BOND	1.1
F254	1	Noseleg Support	BOND	1.1
F289	1	Floor Well	BOND	1.1
F146	2	Rudder Pedal		
F318	2	Spacer - Rudder Pedal		
F163	2	Hinge Rudder Pedal	BOND	1.2
F164	4	Backing Plate	BOND	1.2
F320	2	Glass Angles	BOND	1.7
F321	2	Glass Angles	BOND	1.7
F134	1	Nose Leg	*	
F148	1	Nose Leg Support	BOND	1.1

* Use F134 for a temporary fit to ensure alignment and symmetry. DO NOT bond F134 in place at this stage, ensure it can be removed after noseleg supports are cured.

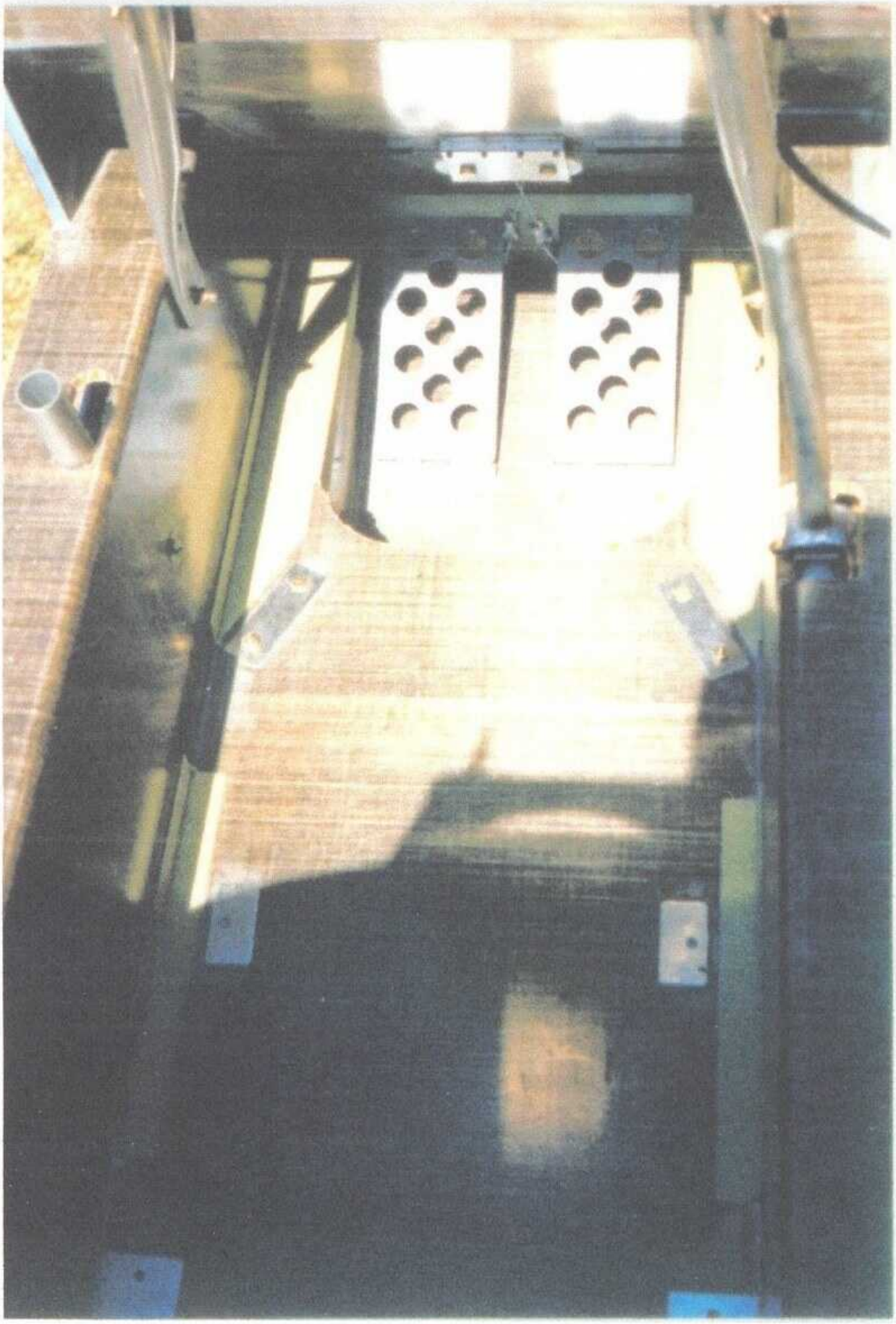


FIGURE 4A

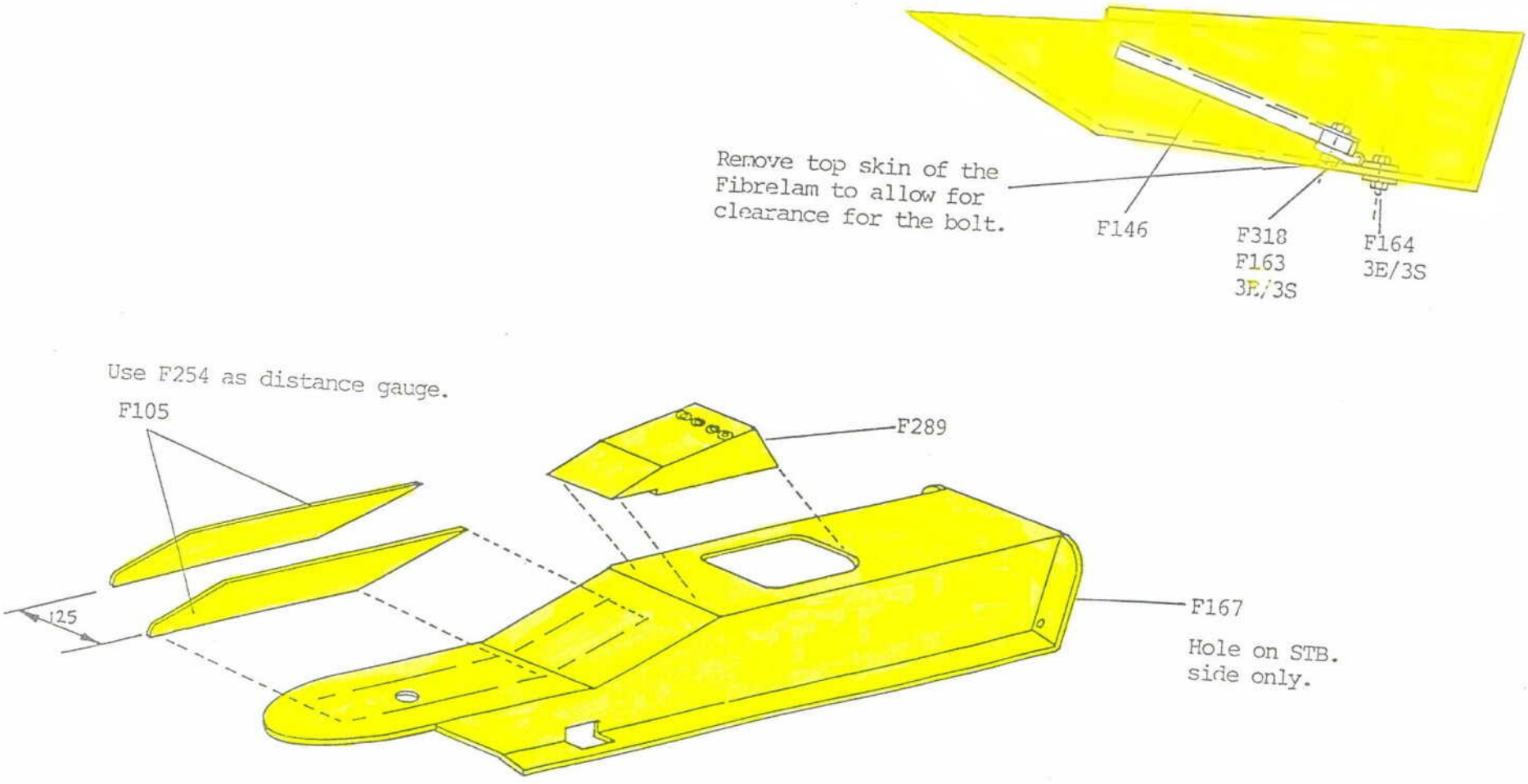
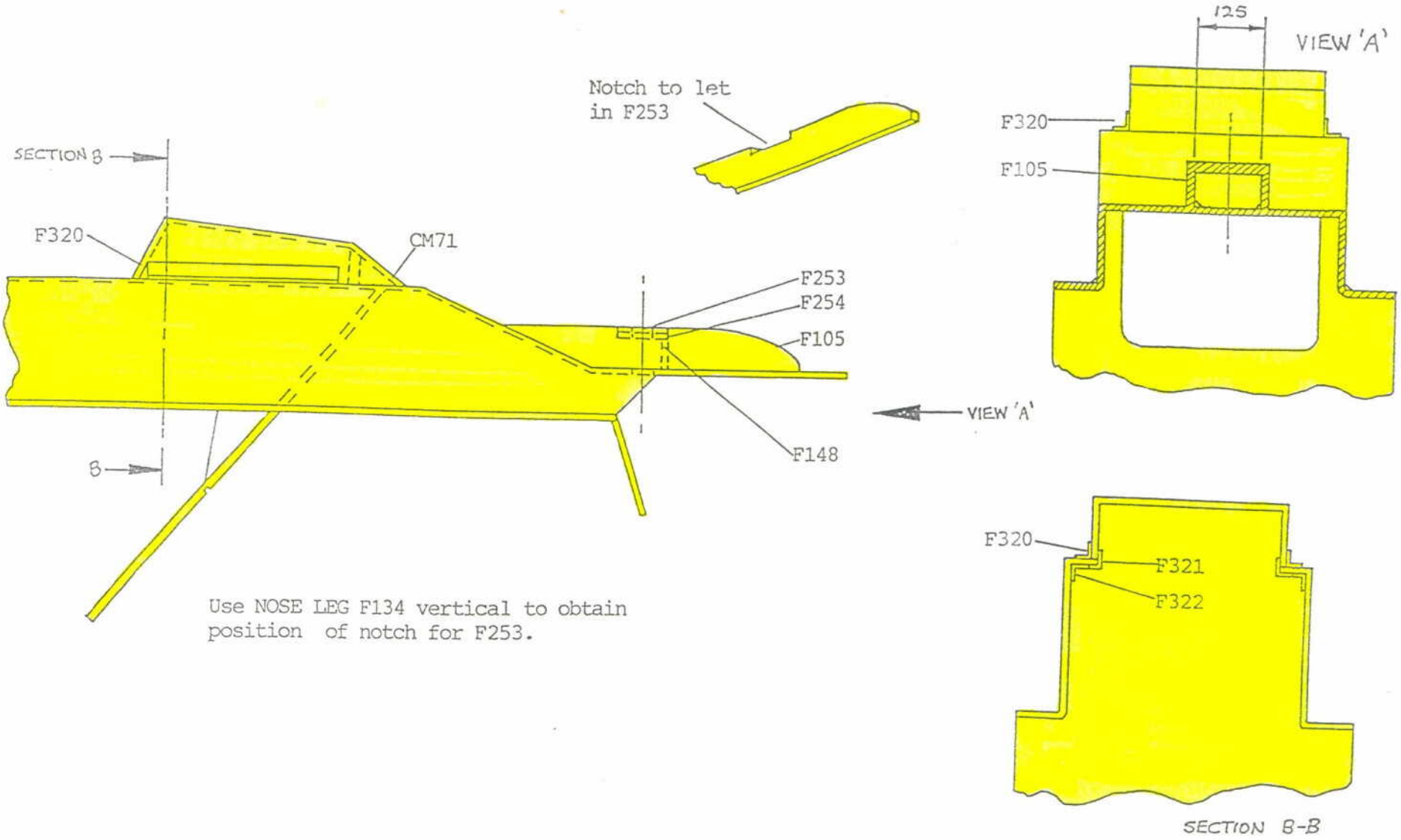

Remove top skin of the Fibrelam to allow for clearance for the bolt.
F146
F318
F163
3E/3S
F164
3E/3S
Use F254 as distance gauge.
F105
F289
125
F167
Hole on STB. side only.

FIGURE 4B



Use NOSE LEG F134 vertical to obtain position of notch for F253.

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F287	2	Bracket Control Stick		
F165	1	Torque Tube		
F168	4	Gusset Torque Tube	BOND	1.1
F256	3	Bearing Torque Tube	BOND	1.1

ASSEMBLY SEQUENCE

Bond together the two pairs F168 and bond F256, Bearing, into each pair and into the Hull Gusset F167, after fitting.

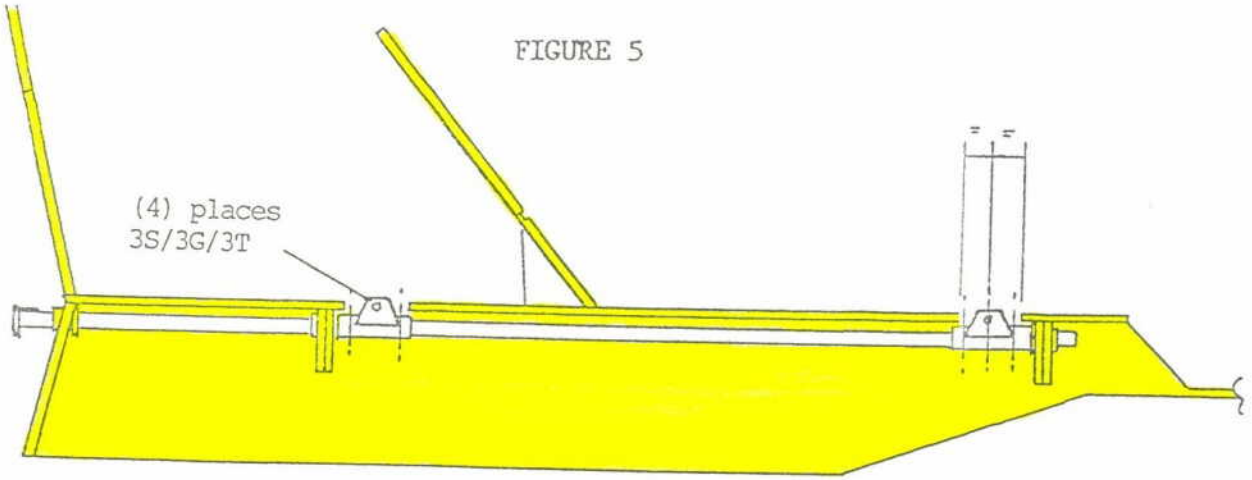
Lightly grease the Torque Tube F165, (to prevent any glue bonding to it), and pass the Torque Tube through assembly as shown in FIGURE 5.

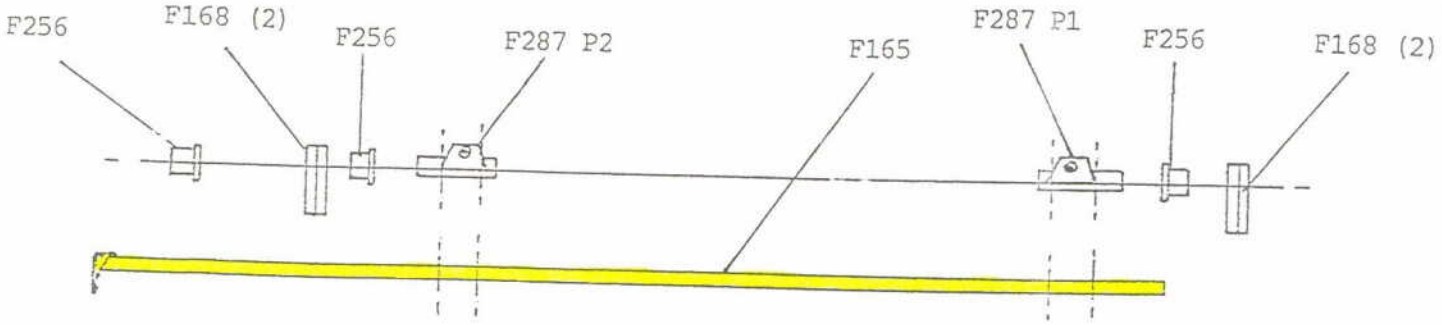
N.B. F287 P2 has the longest end towards the rear.
F287 P1 has the longest end to the front.

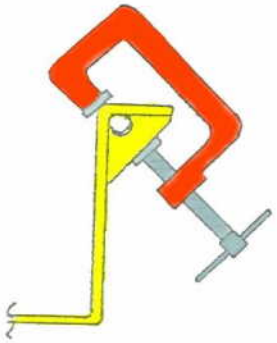
Butt assembly F168/F256 to F287 P1 and clamp.
Butt assembly F168/F256 to F287 P2 and clamp.

Leave Torque Tube in position, ensuring free movement of the tube, until assemblies are cured.

FIGURE 5







Adjust 'G' clamp pressure to suit.
F165 Torque Tube MUST rotate freely.

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F373	1	Boom Tube		
F216	2	Backing Plate		
F217	2	Backing Plate		
F141	2	Front Hanger Tube		
F142	2	Rear Hanger Tube		
F143	2	Hanger Diagonal		
F153	2	Bracket Hanger Tube		
F144	1	Spacer Stud		
F111	1	Stud Boom/Hanger		

primary structure is achieved during this operation.

Take your time and be very sure of ALIGNMENTS.

* The Boom, F373, is only temporary fitted at this stage to achieve the symmetry of the structure - it is only finally fitted after attachment to the Wing Centre Section when the wings have been built.

SEQUENCE

Assemble the Boom complete with the backing plates, ensuring the Boom is the right way up. Assemble the Hanger and Diagonal Tubes, N.B. the rear Hanger Tubes will not clear the bottom rear of the seat back, cut out a recess, one skin deep, in the Fibrelam for clearance. Tidy with Araldite later. Ensure all components are secure and bolts snug. Make sure the rear Hanger Tubes are snug to the hull side, after the rear seat back has been painted the Engine Mount Strut will attach to this common bolt.

FIGURE 6

Clamp rear Hanger Tubes to seat back.
Ensure that the tubes are the correct way up :
F142 has the 3/16" hole uppermost,
F141 has the 1/4" hole at the lowest point.

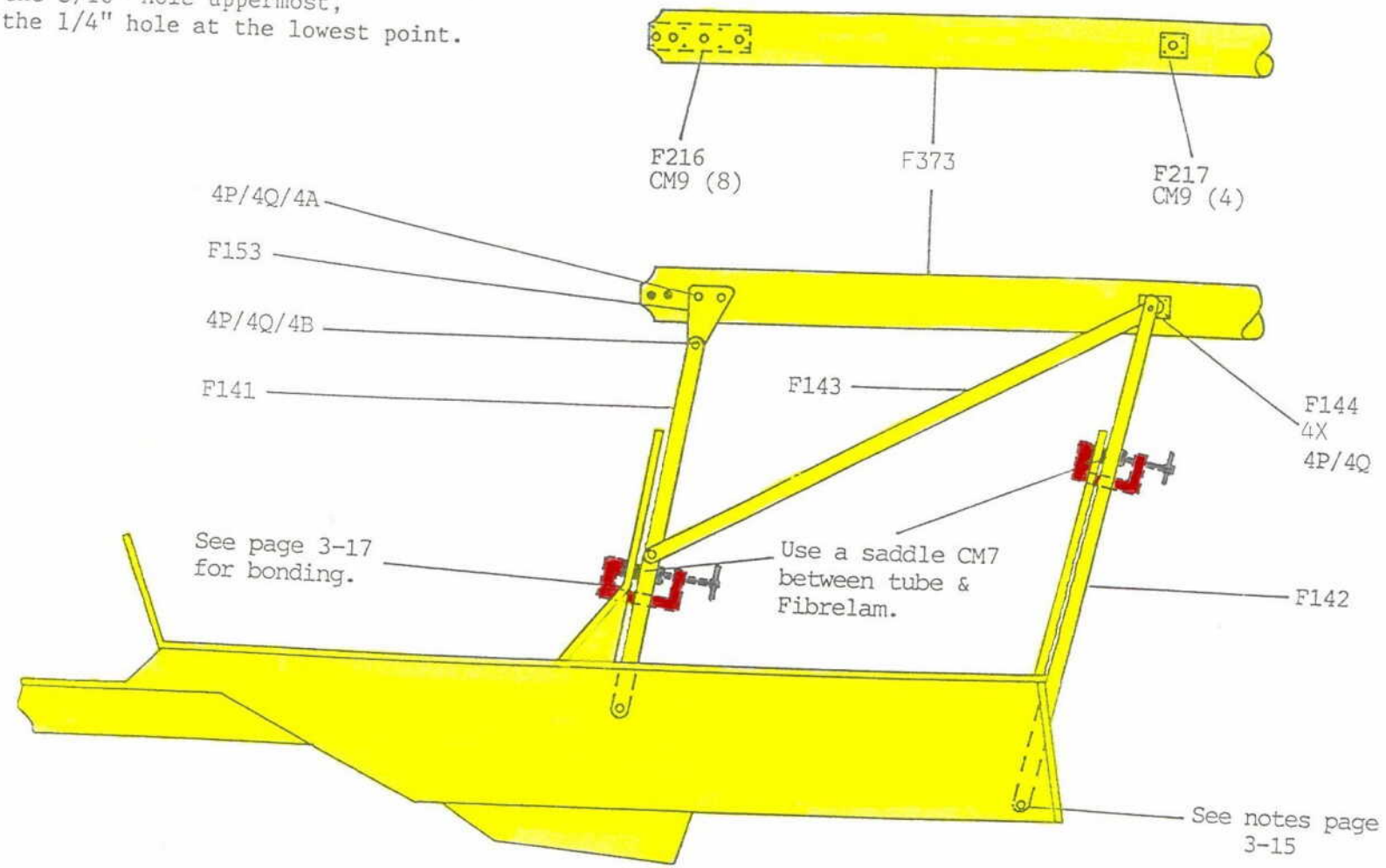
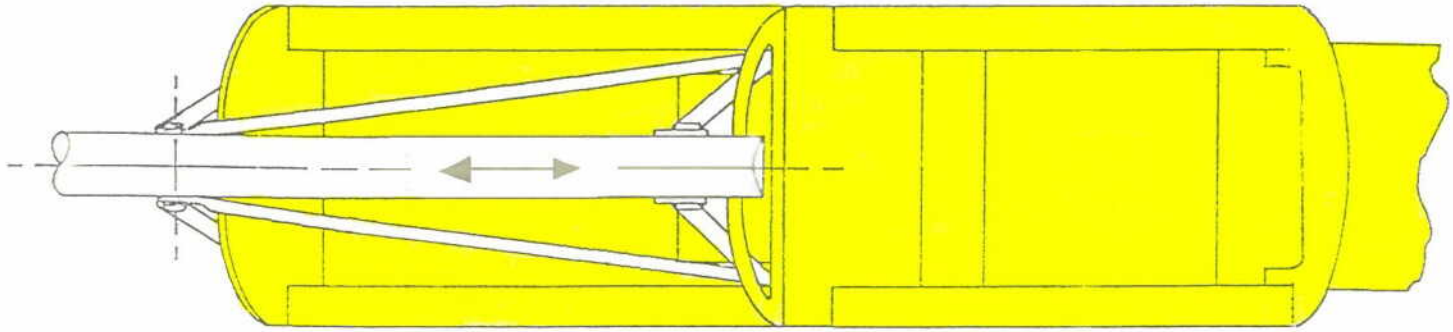


FIGURE 6B

Check ALIGNMENT and SYMMETRY of the assembly, Boom Tube parallel to the hull sides when viewed from above. Clamp front seat back to front Hanger Tubes.



When symmetry has been established, drill through Hanger Tube holes, through Fibrelam, (6 on rear seat and 2 on front seat back) from Hanger Tube through Fibrelam.
Disassemble Hanger Tubes and Boom.
Drill out 6 holes to 7/16" and BOND inserts CM1 and CM2 in place. The 2 x 1/4" holes for the rear seat belts DO NOT have inserts and remain at 1/4" diameter.
When the inserts have FULLY CURED, drill out the 2 bottom inserts in each seat back to 1/4".

Reassemble primary structure and BOND slot in front seat back in position. Note: the boom tube can finally be removed after completion of page 3-19.

FIGURE 7

FINAL HANGER TUBE ASSEMBLY

BACKING PLATES U/C
HANGER GUSSETS
HULL GUSSETS

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F175	1	Gusset Hanger Tube		
F176	1	Gusset Hanger Tube		
F177	1	Gusset Hanger Tube		
F178	1	Gusset Hanger Tube		
F103-2	2	Gusset	BOND	1.1
F155	2	Backing Plate	BOND	1.2
F127	2	Fitting Drag Strut	BOND	1.2
F363	2	Backing Plate U/C	BOND	1.2
F157	2	Backing Plate	BOND	1.2
W237	2	Backing Plate	BOND	1.2
F104-2	1	Gusset LH	BOND	1.1
F104-3	1	Gusset RH	BOND	1.1

FIGURE 7

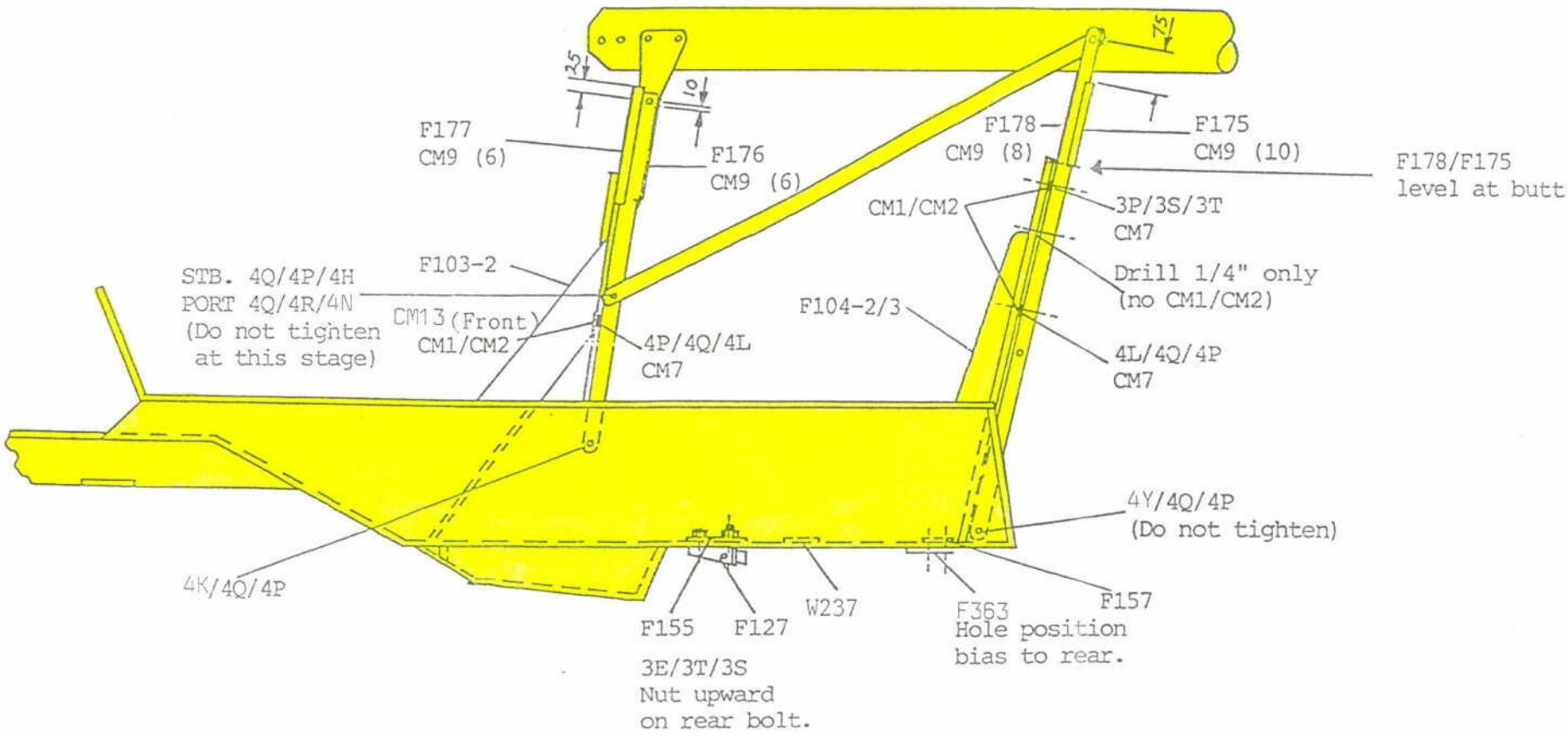

25
10
75
F177
CM9 (6)
F176
CM9 (6)
F178
CM9 (8)
F175
CM9 (10)
F178/F175
level at butt
CM1/CM2
3P/3S/3T
CM7
Drill 1/4" only
(no CM1/CM2)
F103-2
STB. 4Q/4P/4H
PORT 4Q/4R/4N
(Do not tighten
at this stage)
CM13 (Front)
CM1/CM2
4P/4Q/4L
CM7
F104-2/3
4L/4Q/4P
CM7
4Y/4Q/4P
(Do not tighten)
4K/4Q/4P
F155
F127
W237
F363
Hole position
bias to rear.
F157
3E/3T/3S
Nut upward
on rear bolt.

FIGURE 8

MONOCOQUE COMPONENTS

RUDDER PEDALS
ELEVATOR TELEFLEX
PANNIER SUPPORTS
SHROUD

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F367	1	Shroud Hoop	BOND	1.2
F249	1	Shroud	BOND	1.8
F268	2	Shim	BOND	1.2
F248	8	Pannier Support	BOND	1.9
F164	4	Backing Plates	BOND	1.2
F163	2	Hinge Rudder Pedal	BOND	1.2
F146	2	Rudder Pedal		
F173	2	Brake Pedal		
F311	2	Bush Brake Lever		
F312	2	Brake Pivot		
F264	2	Spacer - Shim		

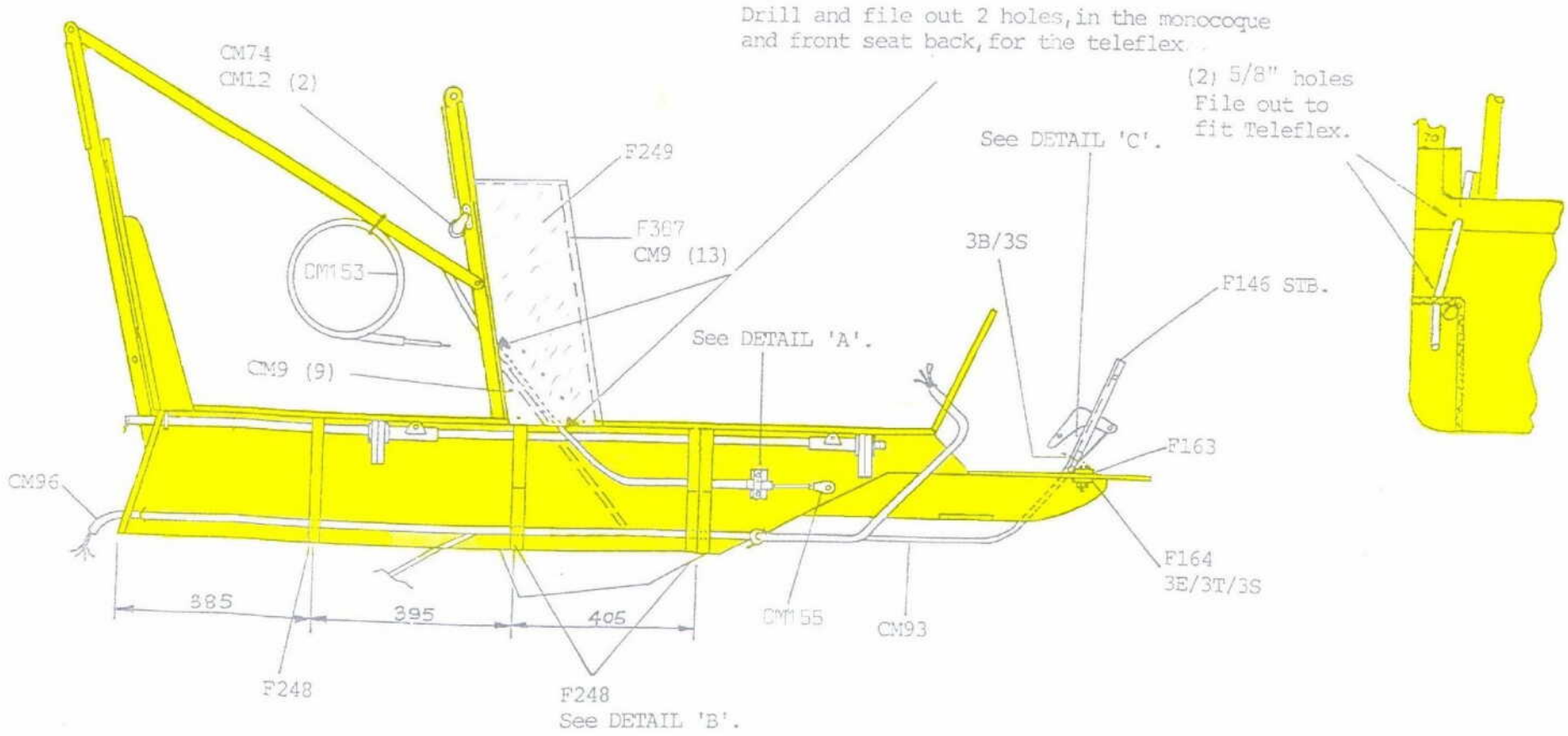
Cut out PANNIER SUPPORTS (foam) to allow clearance for Torque Tube, Teleflex, Wiring Loom and Brake Cables. Use 1.2mm ply flush to Pannier Supports to cover any cut-outs. Similarly, Pannier Supports for Port side.

When fitting TELEFLEX ensure correct seating of Teleflex Collar in clamp CM50.

FIGURE 8

Drill 2 x 3/8" holes in front of the gussets where the shroud hoop will fit - hoop flush with hull edge. Line up hoop with seat back and glue SHROUD in position (back of shroud flush with seat back) using tape and flat edges to ensure symmetry.

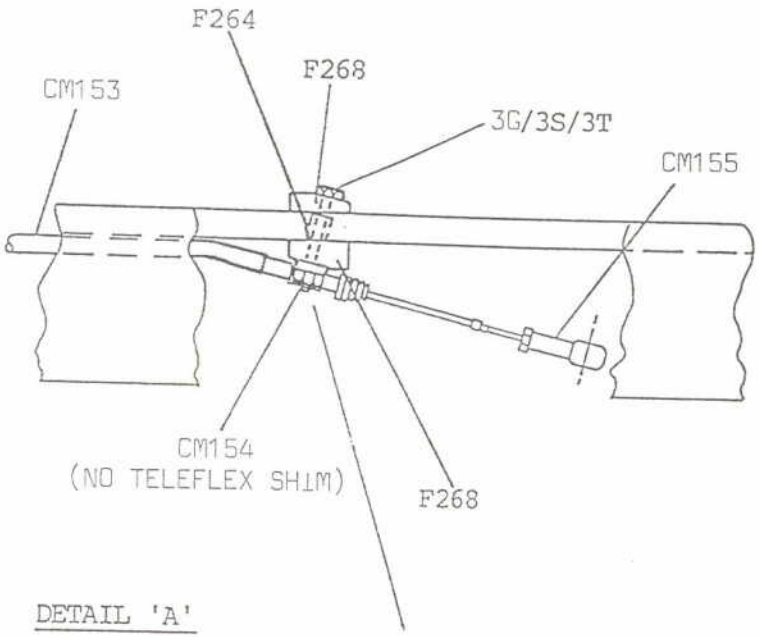
Rivet shroud to hoop from the top down the sides and cut off excess hoop protruding below the hull side. Leave any surplus shroud ply below the level of the hull side to half thickness of the hull material to eventually form a butt joint with the panniers.



28th APRIL, 1986

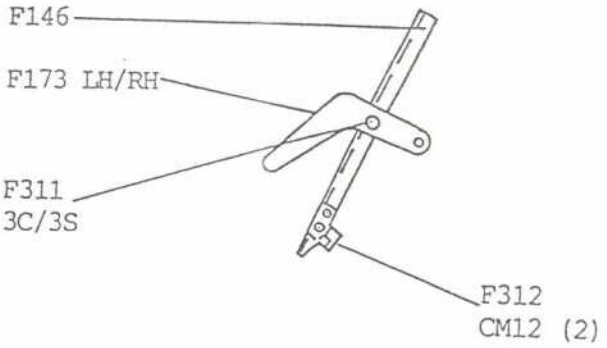
C/RM - DD

FIGURE 8

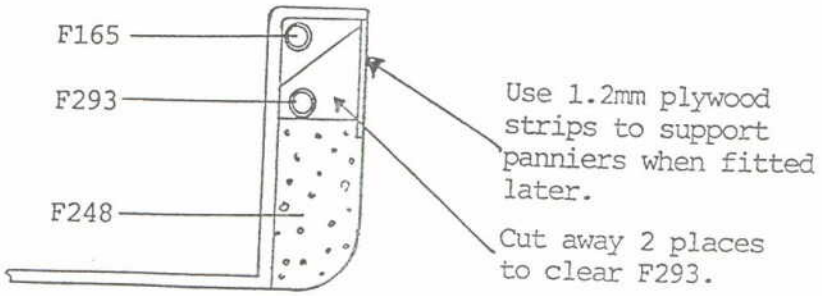


DETAIL 'A'

File off protruding thread of bolt level with locknut (lower) to prevent fouling of F293, Connect Tube - Stick.



DETAIL 'C'. (PORT Pedal)



DETAIL 'B'.

FIGURE 9

CONTROL STICK LINKAGE

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F293	1	Conn. Tube - Stick		
F290	2	Control Stick		
F298	2	Spacer Conn. Tube		

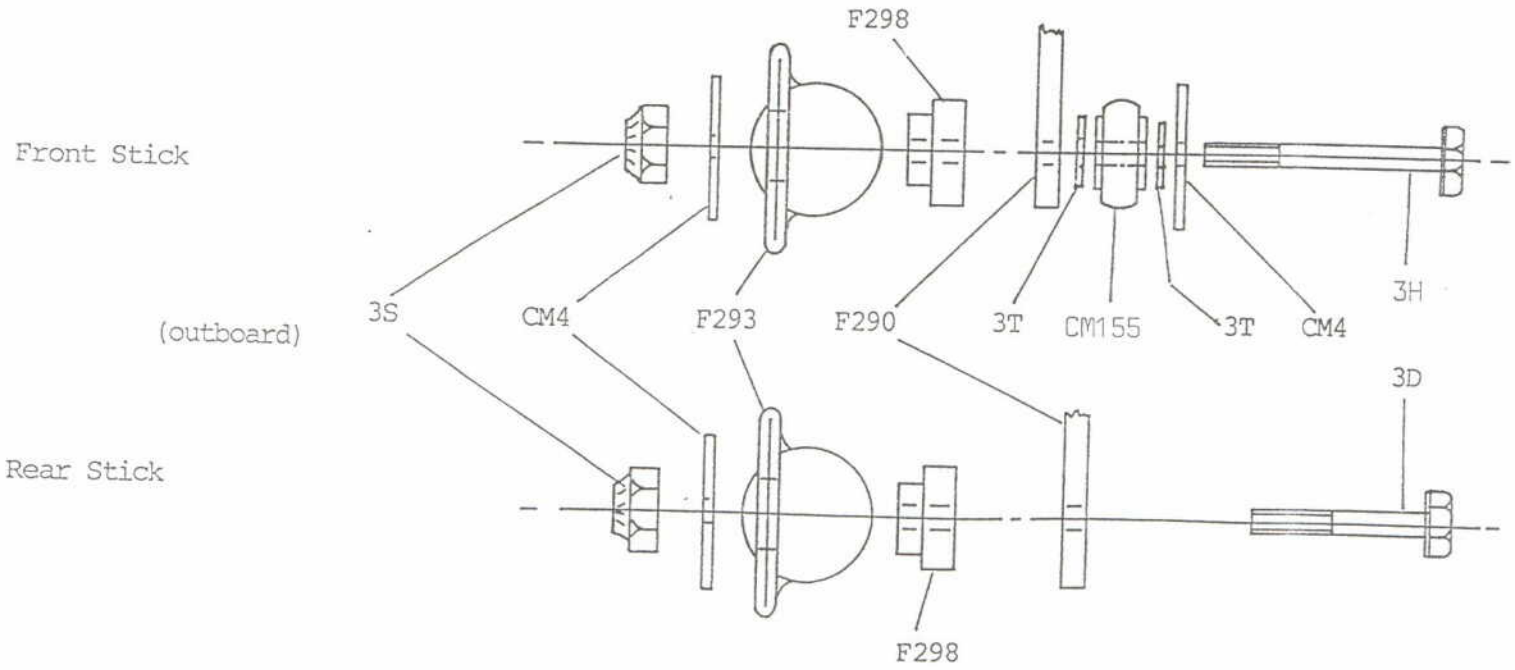


FIGURE 9

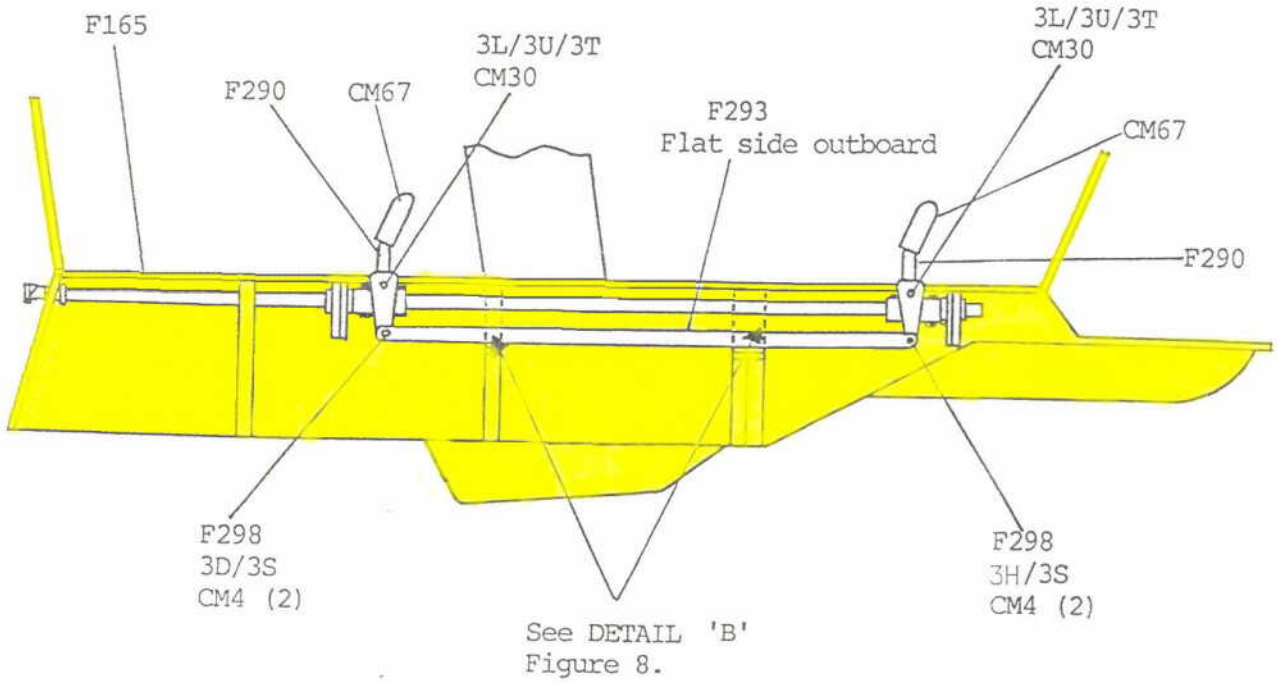
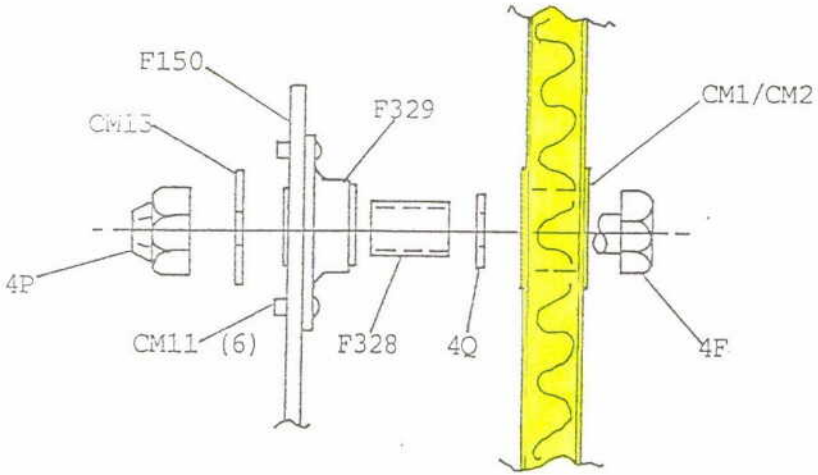

F165
F290
CM67
3L/3U/3T
CM30
F293
Flat side outboard
3L/3U/3T
CM30
CM67
F290
F298
3D/3S
CM4 (2)
See DETAIL 'B'
Figure 8.
F298
3H/3S
CM4 (2)

FIGURE 10

MONOCOQUE CONTROL COMPONENTS

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F160	1	Backing Plate Teleflex	BOND	1.2
F150	1	Bellcrank Rudder		
F329	1	Bearing Bellcrank		
F328	1	Spacer Bellcrank		
SF115	1	Bracket Starter		



PULL START PULLEY
RUDDER BELLCRANK BEARING
AILERON JACKSHAFT POSITION

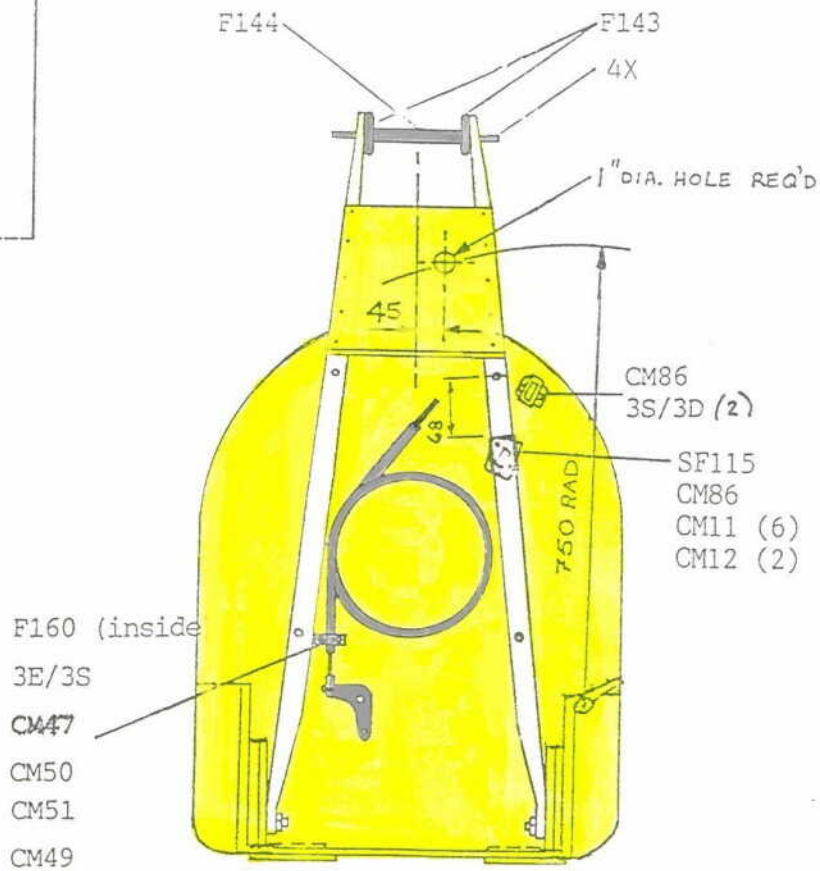


FIGURE 11

MONOCOQUE POWERPLANT CONTROLS

THROTTLE
FUEL ON/OFF VALVE

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F191	2	Handle Throttle Lever		
F201	2	Throttle Pivot Plug		
F190	2	Tube Throttle Lever		
F288	1	Conn. Tube Throttle		
F284B	1	Support Valve Tube	BOND	1.1
F228	1	Fuel Valve Torque Tube		
F230	1	Lever Arm Fuel on/off		
F229B	1	Lever Arm Fuel on/off		
F251	1	Lever Guide		
F282B	1	Fuel Valve MTG Plate	BOND	1.2

FIGURE 11

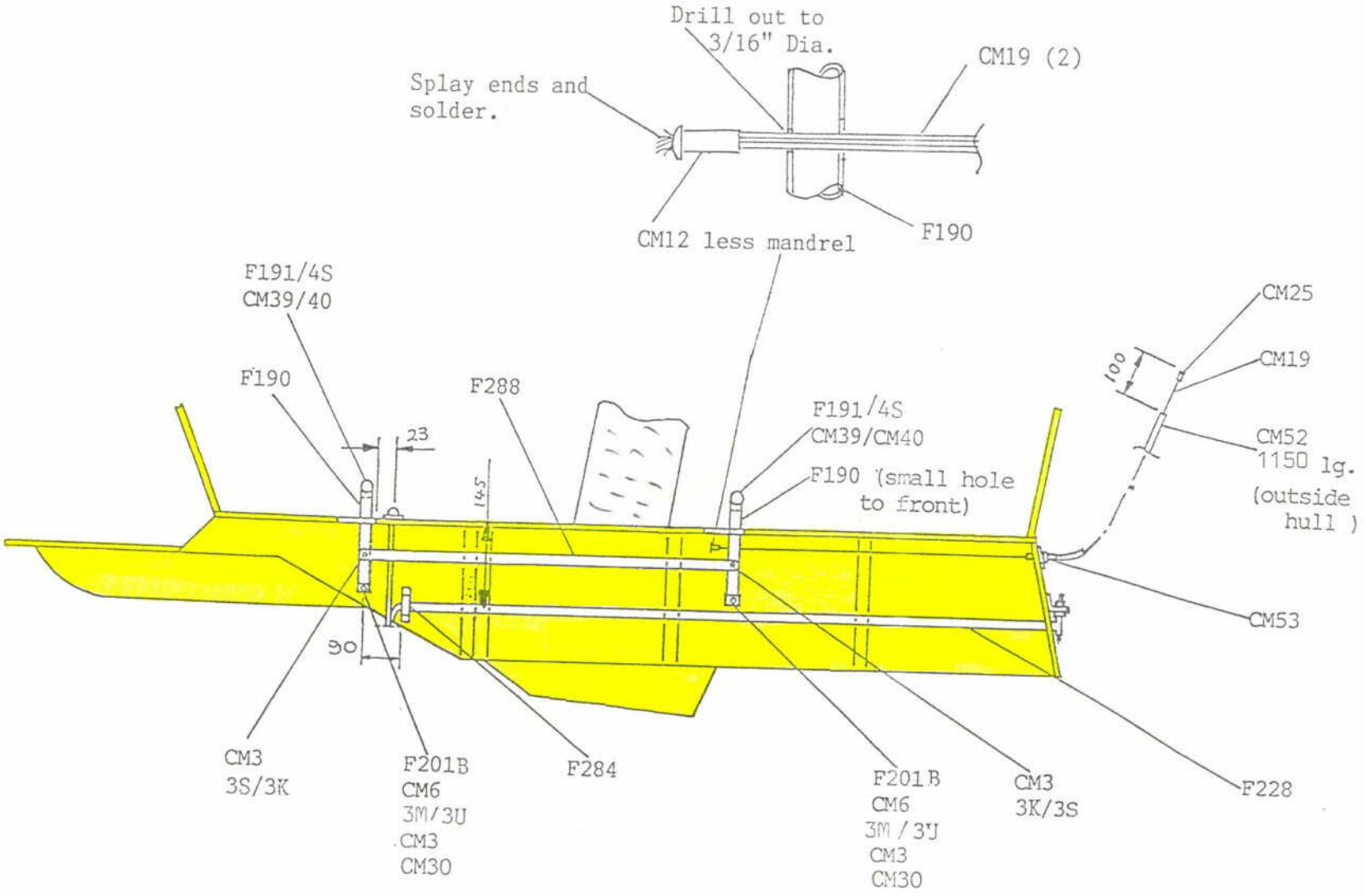
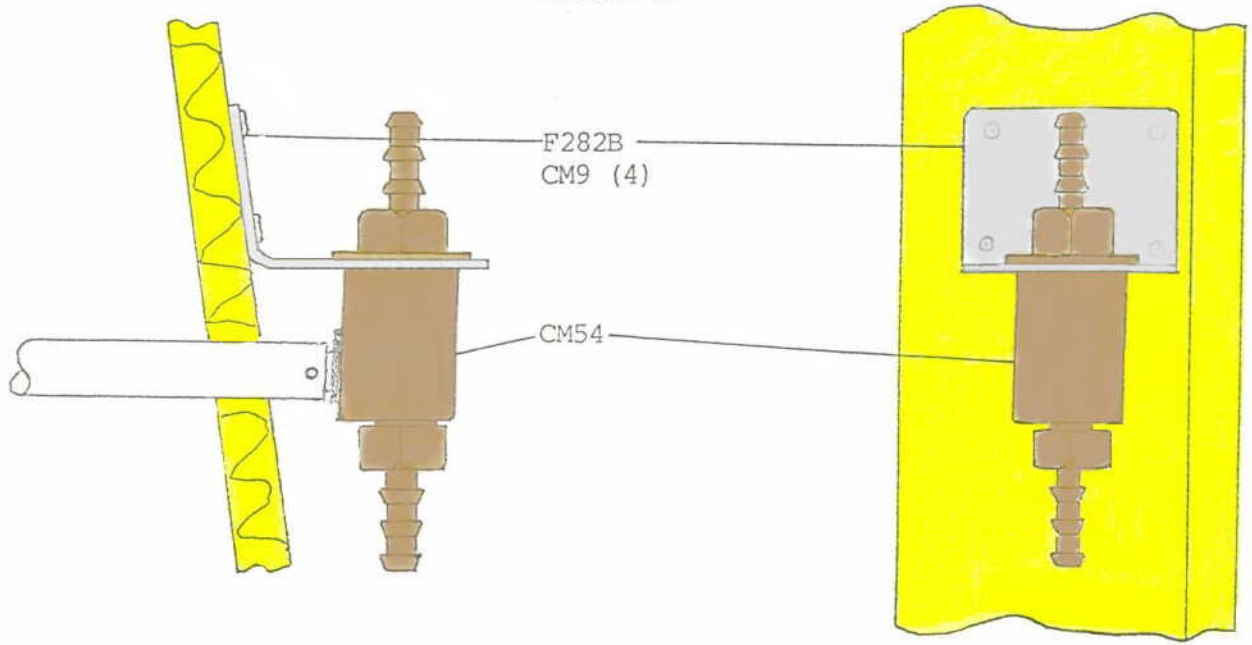
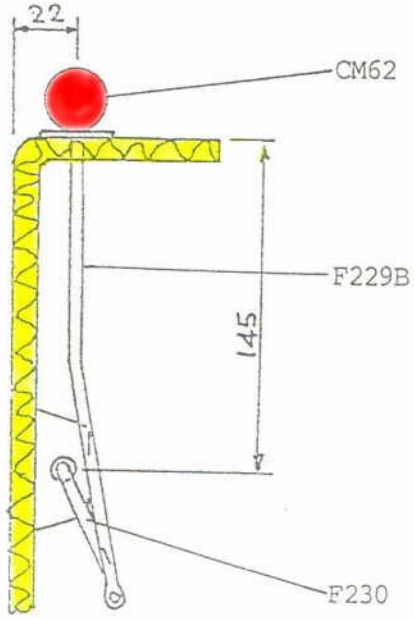
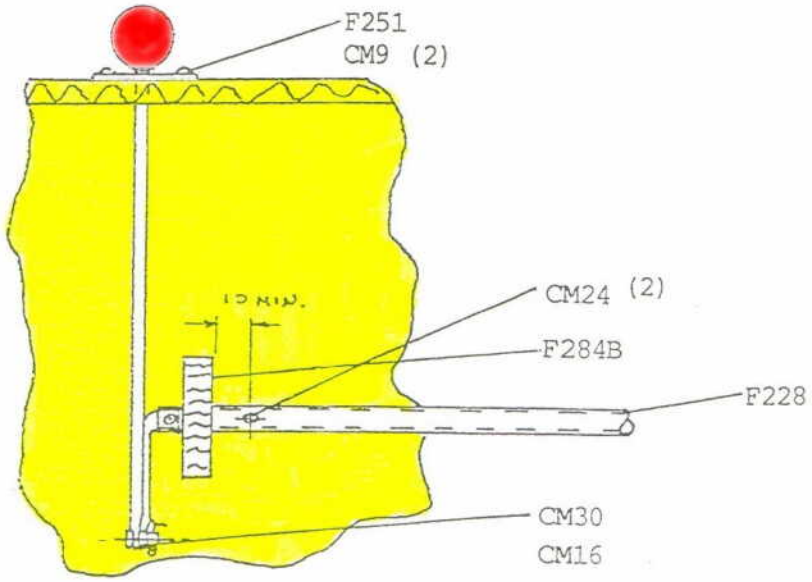

Drill out to
3/16" Dia.
CM19 (2)
Splay ends and
solder.
CM12 less mandrel
F190
F191/4S
CM39/40
F190
F288
CM25
CM19
100
CM52
1150 lg.
(outside
hull)
F191/4S
CM39/CM40
F190 (small hole
to front)
23
145
90
CM53
CM3
3S/3K
F201B
CM6
3M/3U
CM3
CM30
F284
F201B
CM6
3M/3J
CM3
CM30
CM3
3K/3S
F228

FIGURE 11


F282B
CM9 (4)
CM54


22
CM62
F229B
145
F230


F251
CM9 (2)
CM24 (2)
F284B
F228
CM30
CM16

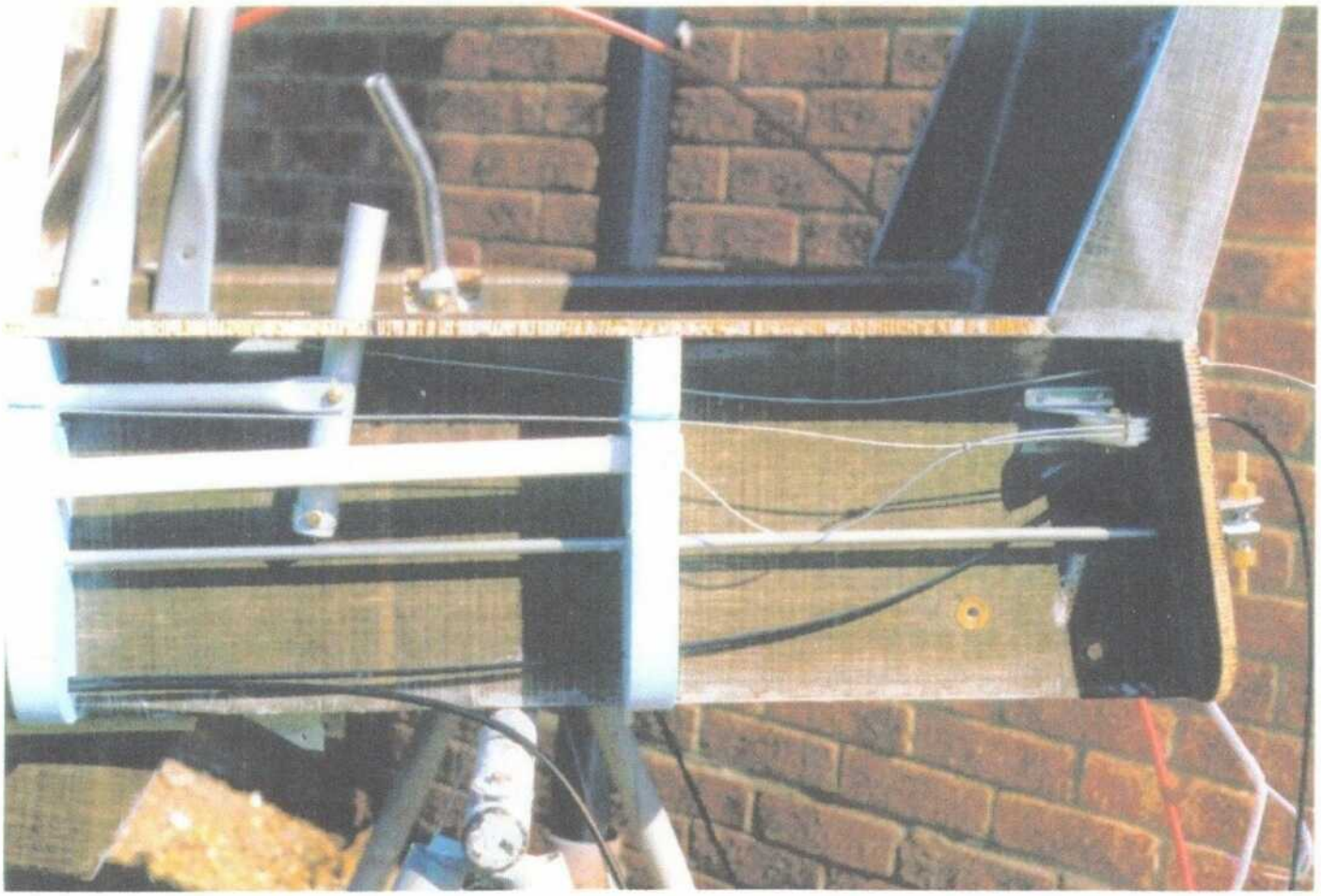


FIGURE 12

MONOCOQUE CONTROL COMPONENTS

RUDDER CABLES

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F225	4	Tang Rudder Pedal		
F319	2	Channel - Cable		

Make sure that the Cable Channel is kept forward towards the single pulley to prevent cable kinking with any slop.

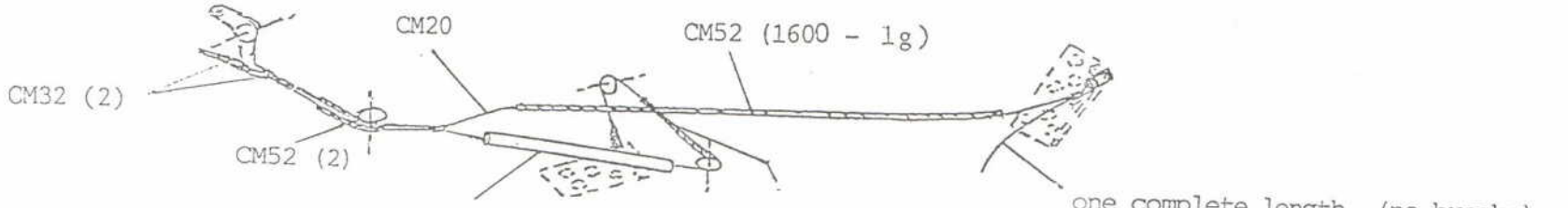
Route cable through the system from the rear seat rudder pedals to the front in a continuous run each side. Block up the rear rudder pedals at 90mm vertically from the floor to the top end of the pedal. Place a weight on the pedals and ensure they cannot move either up or down. Nicopress the cable at the rear rudder pedals.

Set the Rudder Bellcrank on the rear seat back to the NEUTRAL position, vertically down and pull the cables taut and nicopress at the Bellcrank.

Nicopress the nico joining the two cables at the half way point between the pannier support and the rear pulley.

Set the front rudder pedals at neutral (recommended 5 to 10 degrees angled forwards) and with the cable taut, nicopress.

STARBOARD RUDDER CABLE SCHEMATIC. (Refer to page 7-14)



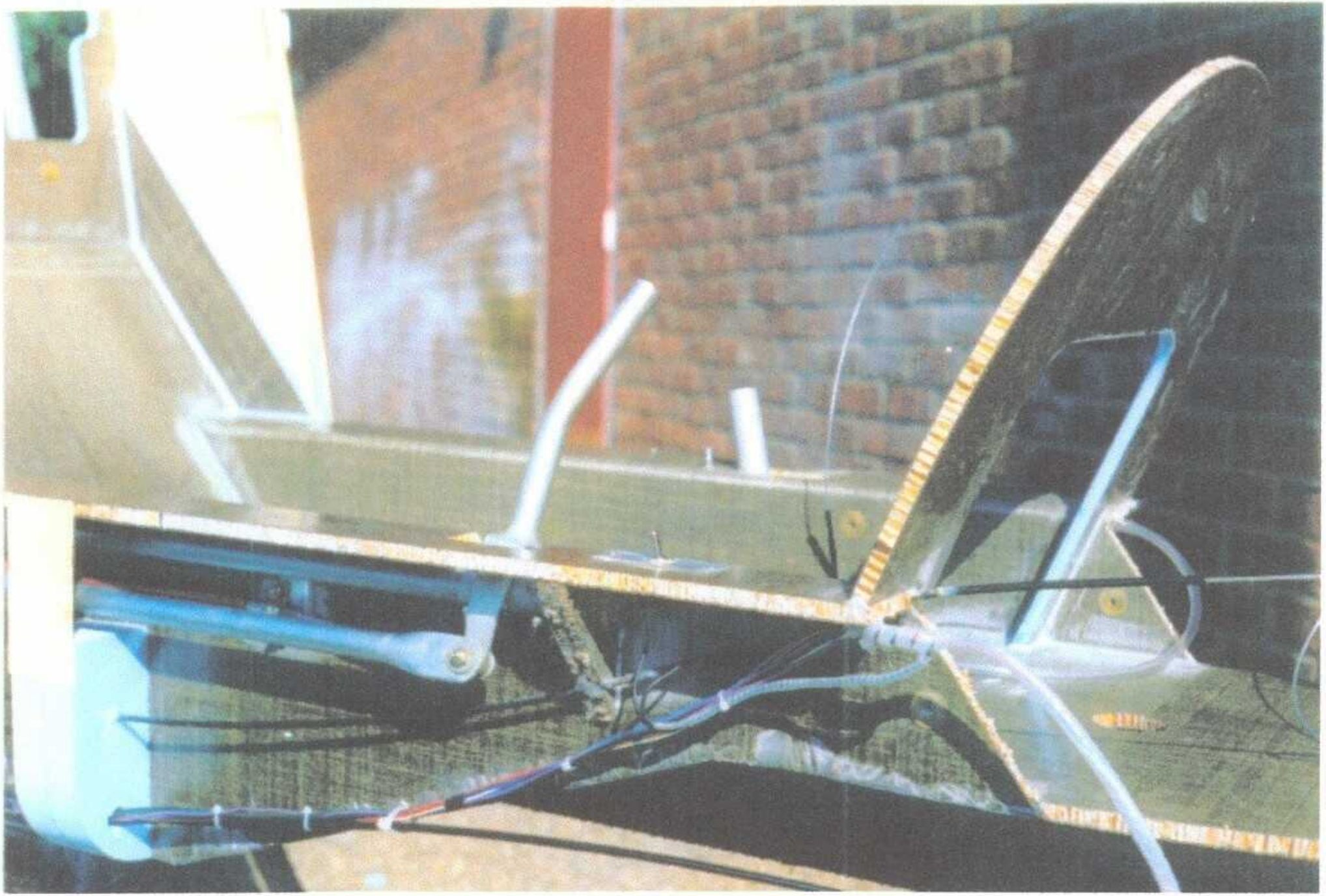
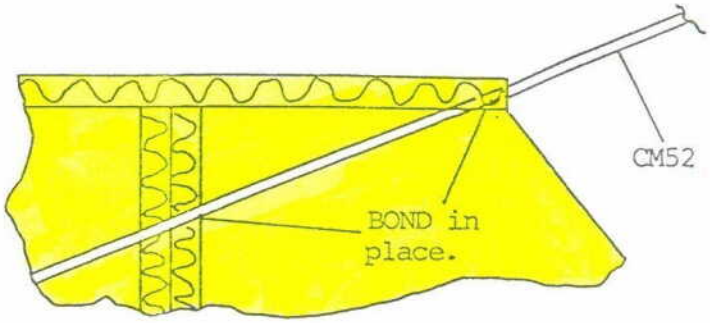


FIGURE 12 - STARBOARI



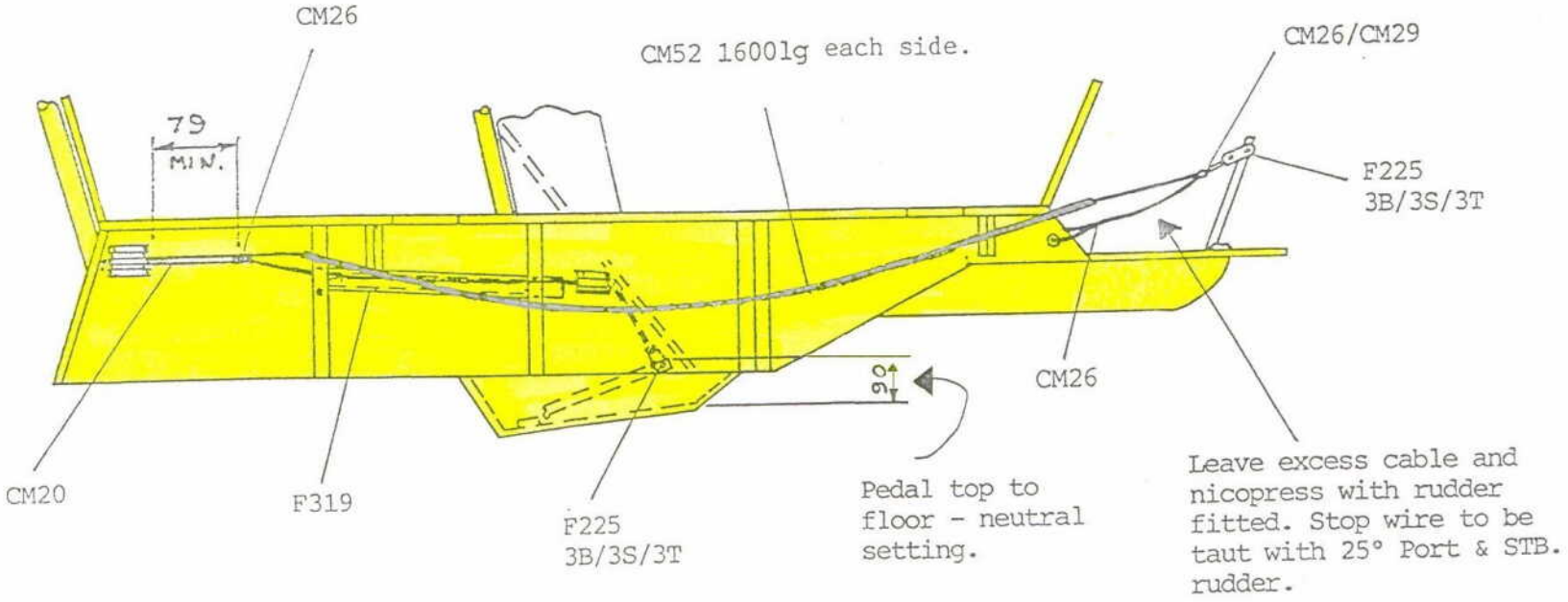


FIGURE 12 - PORT

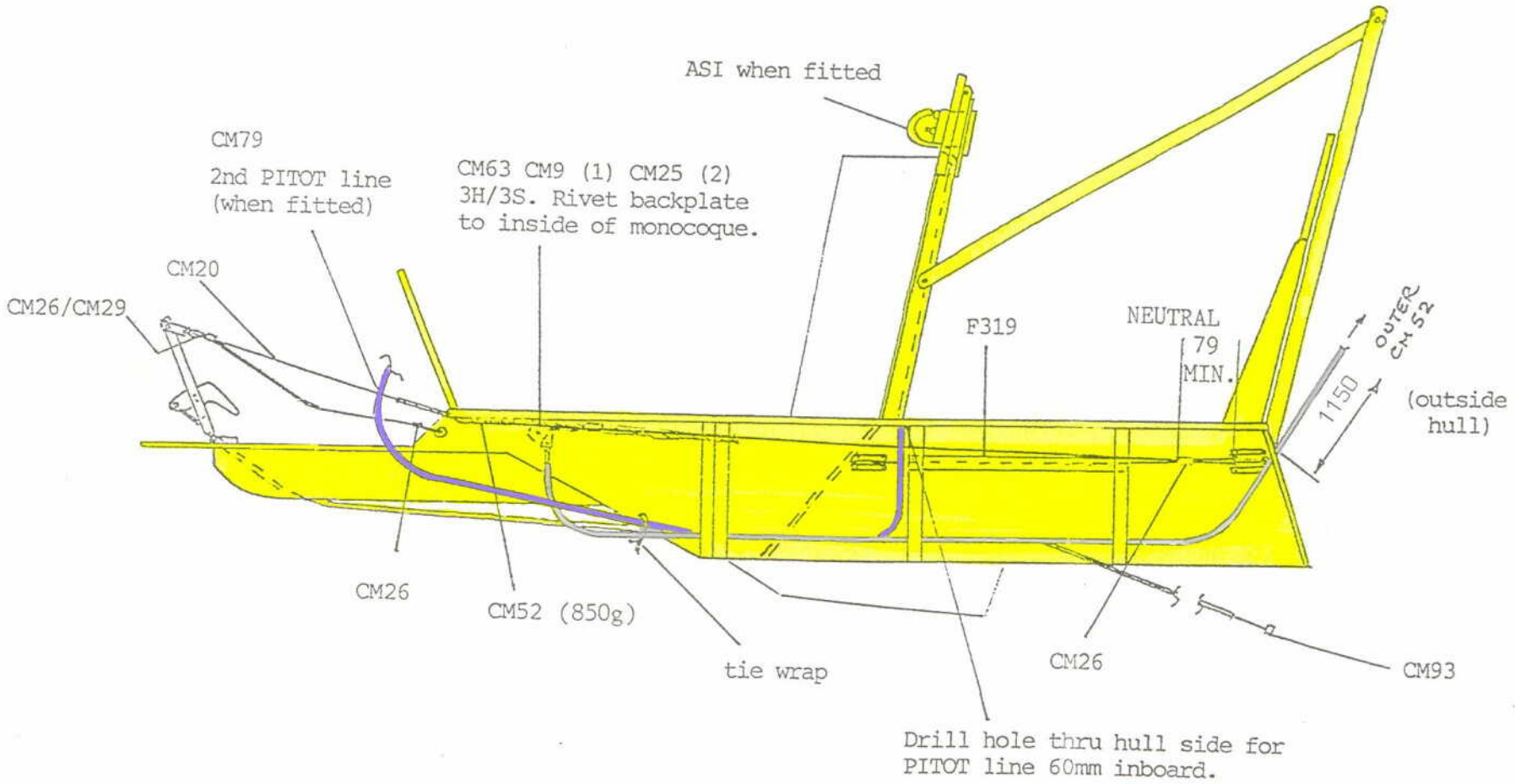


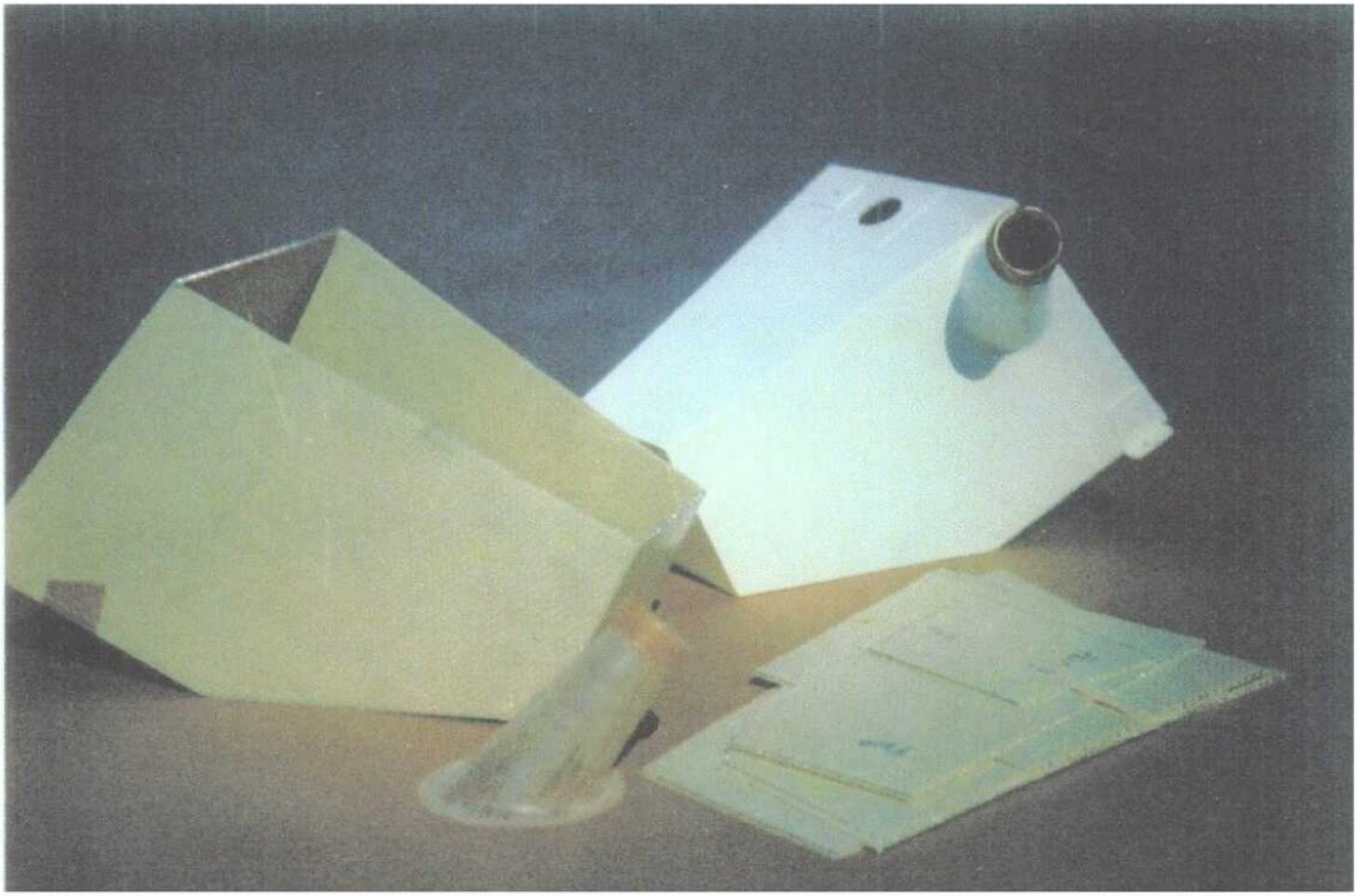
FIGURE 13

FUEL TANK

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F206	1	Fuel Tank Side Port	BOND	1.1
F207	1	Fuel Tank Side St'Bd	BOND	1.1
F209	1	Fuel Tank Bottom	BOND	1.1
F208	1	Fuel Tank Top	BOND	1.1
F210	1	Fuel Tank Front	BOND	1.1
F211	1	Fuel Tank Back	BOND	1.1
F205	1	Fuel Outlet	BOND	1.2
F285	1	Fuel Drain Plate	BOND	1.2
F269	1	Fuel Vent Backing Plate	BOND	1.2
F204	1	Fuel Strainer	BOND	1.1
F265	1	Fuel Sender	BOND	1.2
F266	1	Fuel Spout	BOND	1.1
F145	1	Bracket - Fuel Tank	BOND	1.2

THE FUEL TANK IS ASSEMBLED IN THE SAME MANNER AS THE MONO-COQUE, OBSERVING THE SAME CAREFUL PREPARATIONS.

Carefully rout out one skin and alloy core with a stanley knife from the edges of the fuel tank front, floor, top and back so that when assembled exterior surfaces are butted flush. The two sides are NOT routed.



Bond backing plates F285, F2C and F265 to the tank, keeping all th.eads clear of glue.

Bond together all fuel tank structure EXCEPT for the top of the tank. Retain and ensure symmetry. When cured bond on F266, spout, and seal ALL exposed alloy core with Araldite. Ensure that there is NO exposed alloy core ANYWHERE.

When all bonding is FULLY CURED, coat inside of tank with SAFE-TII-POXY (fuel proof lining), paying special attention around the holes to ensure they are sealed but not blocked. When resin has cured, bond on F204.

Bond on tank top F208 and when cured pour a small amount of resin into the tank and turn upside down and let the resin run around the top fuel joint. Keep resin away from strainer F204.

Leave upside down to cure.

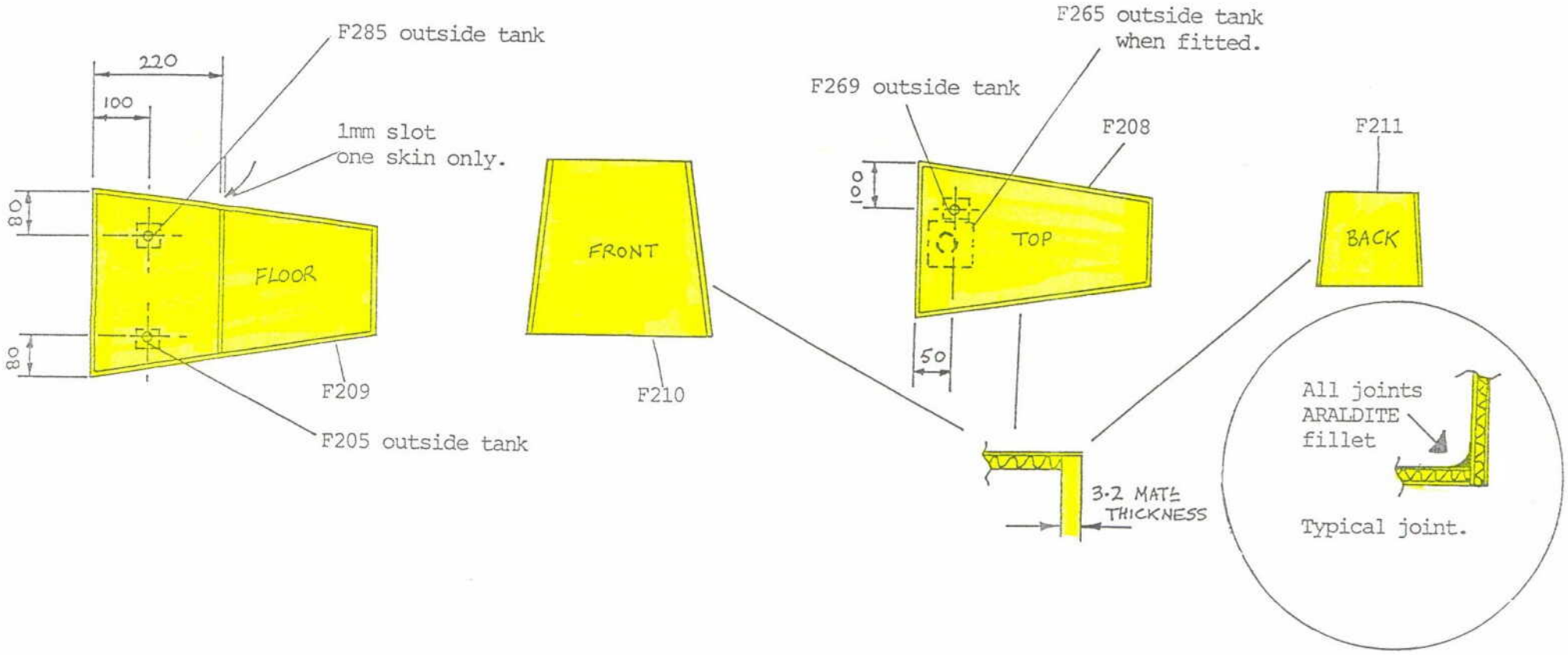
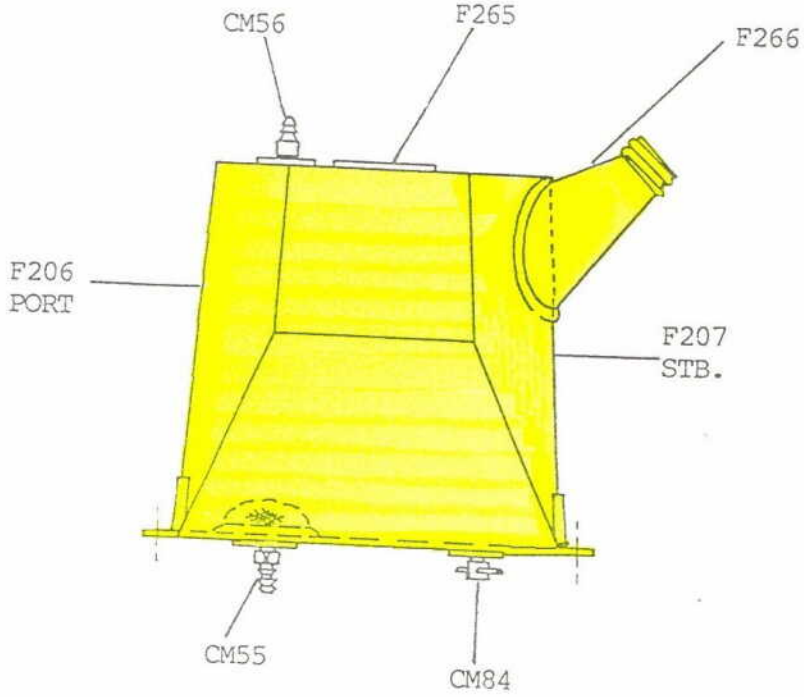


FIGURE 13

When fuel tank has cured, place it on a flat surface, ensure it is level, and bond into place the fuel tank Brackets, F145.

Install the fittings, CM55, CM84 and CM56 with RED HERMATITE sealer when the fuel tank has been painted AFTER INSPECTION. DO NOT OVERTIGHTEN.



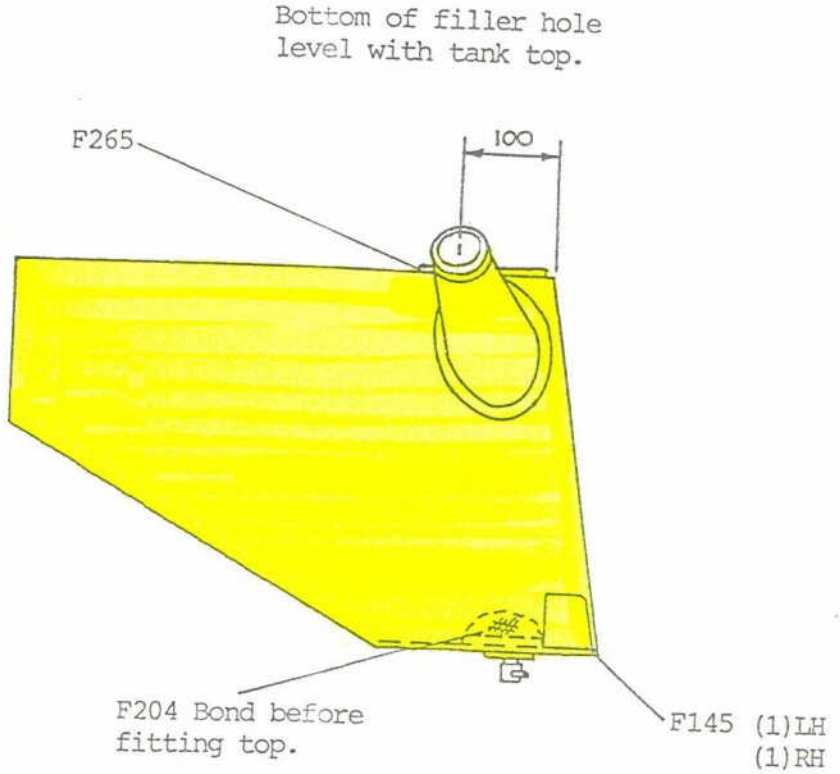


FIGURE 14

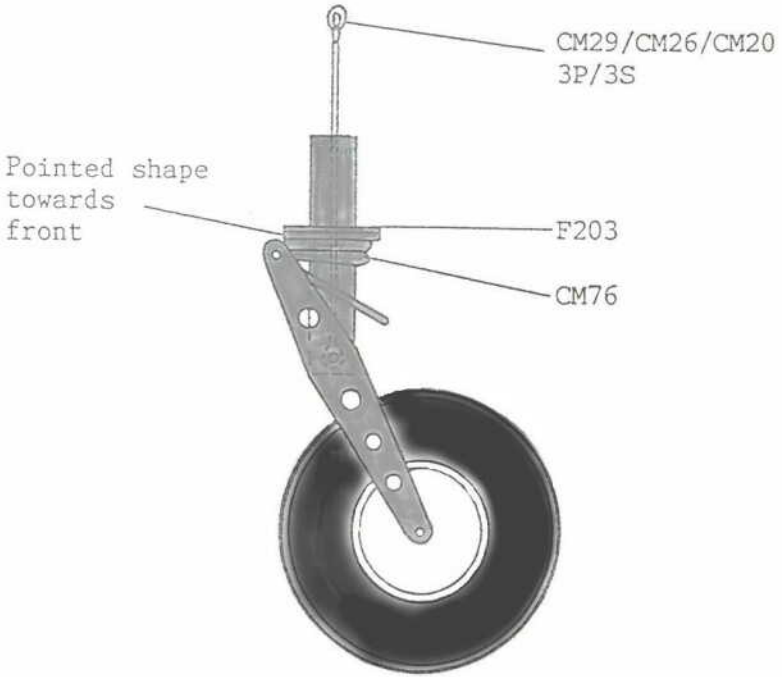
NOSELEG ASSEMBLY

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F203	1	Bearing Nosewheel		
F135	1	Nosewheel S/Assy		
F136	2	Trailing Link		
F140	2	Spacer Nosewheel		
F159	1	Spacer Nosewheel		
F139B	2	Spacer Nosewheel		

THE NOSELEG IS ONLY FITTED TO THE MONOCOQUE AFTER INSPECTION AND THE POD IS ON.

Determine the length of CM20 at final assembly after inspection and pod installation. (Page 3-43).

FIGURE 14


CM29/CM26/CM20
3P/3S
Pointed shape
towards
front
F203
CM76

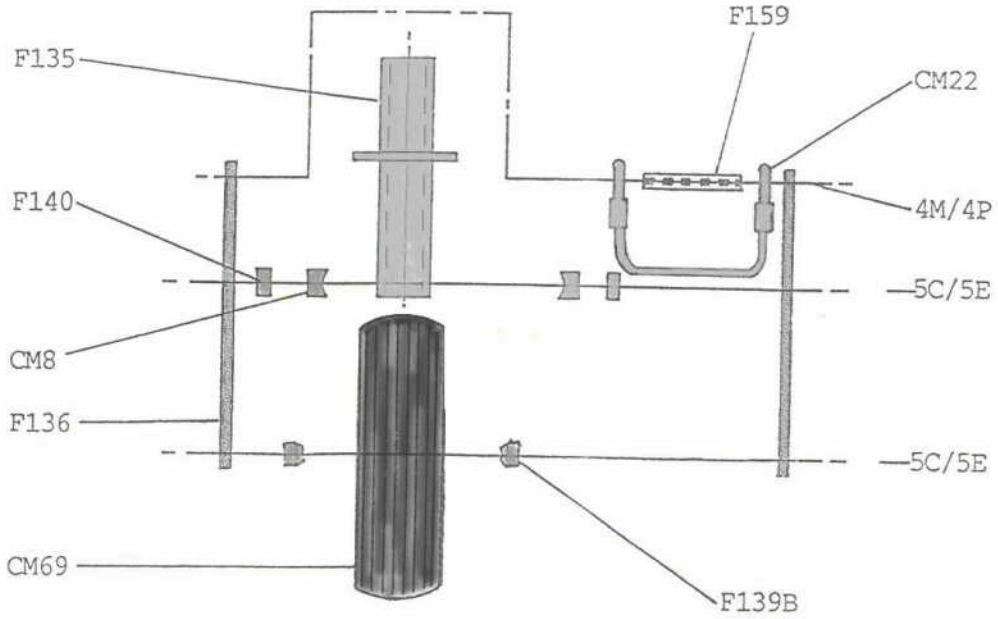

F159
F135
CM22
F140
4M/4P
5C/5E
CM8
F136
5C/5E
CM69
F139B

FIGURE 15

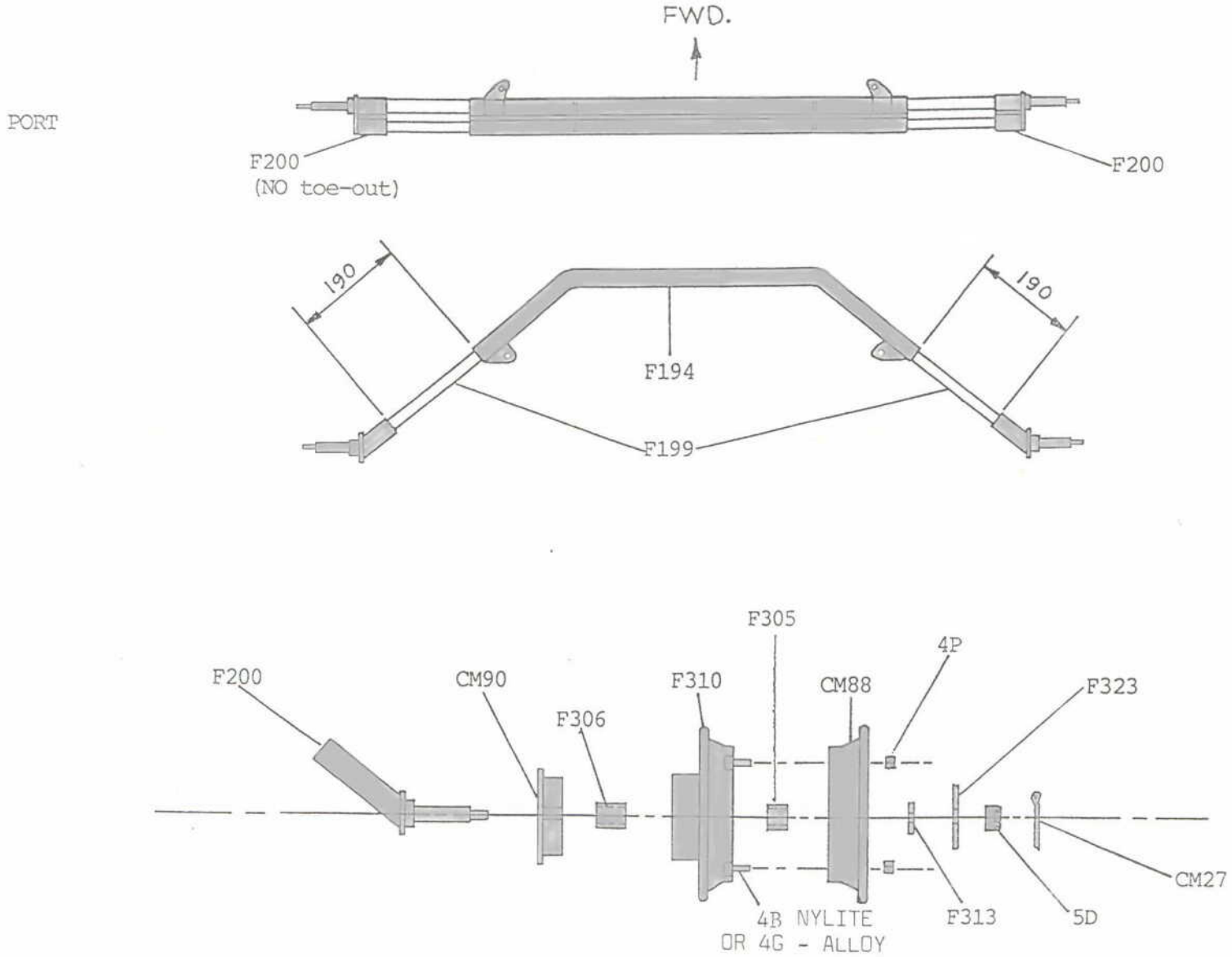
MAIN UNDERCARRIAGE ASSEMBLY

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F200	2	Axle s/Weld Assy.	BOND	1.3
F194	1	Main U/C Assy.	BOND	1.3
F199	4	Pultrusion Rod	BOND	1.6
F306	2	Spacer - Brake		
F310	2	Hub - Drum Brake		
F305	2	Spacer - Bearing Wheel		
F313	2	Washer - Axle		
F323	2	Washer - Axle		

THE UNDERCARRIAGE IS ONLY FITTED TO THE HULL AFTER INSPECTION AND PAINTING.

Bond EXCESSIVE Araldite into Axle/Pultrusion assemblies, F199/F194 and F199/F200 to ensure a strong bond. Clean off surplus glue afterwards.

FIGURE 15


FWD.
PORT
STARBOARD
F200
(NO toe-out)
F200
190
190
F194
F199
F200
CM90
F306
F310
F305
CM88
4P
F323
CM27
4B NYLITE
OR 4G - ALLOY
F313
5D

INSPECTION

Before proceeding beyond this stage to completion of Section 3, ensure inspection is effected and recorded as detailed on page F.

FIGURE 16

MONOCOQUE SKIN

PANNIERS
POD
NOSELEG
PITOT TUBE

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F246	2	Panniers	BOND	1.8
F247	1	Pod	BOND	1.7
F134	1	Leg Nosewheel	BOND	1.2
F258	2	Pitot	BOND	1.2

Prepare Fibrelam for bonding, bond and rivet underside of panniers to monocoque bottom. Pull brake cables through the cut-out in the panniers. Pulling into position, draw panniers up to join the monocoque hull side. Glue contact areas well and secure panniers.

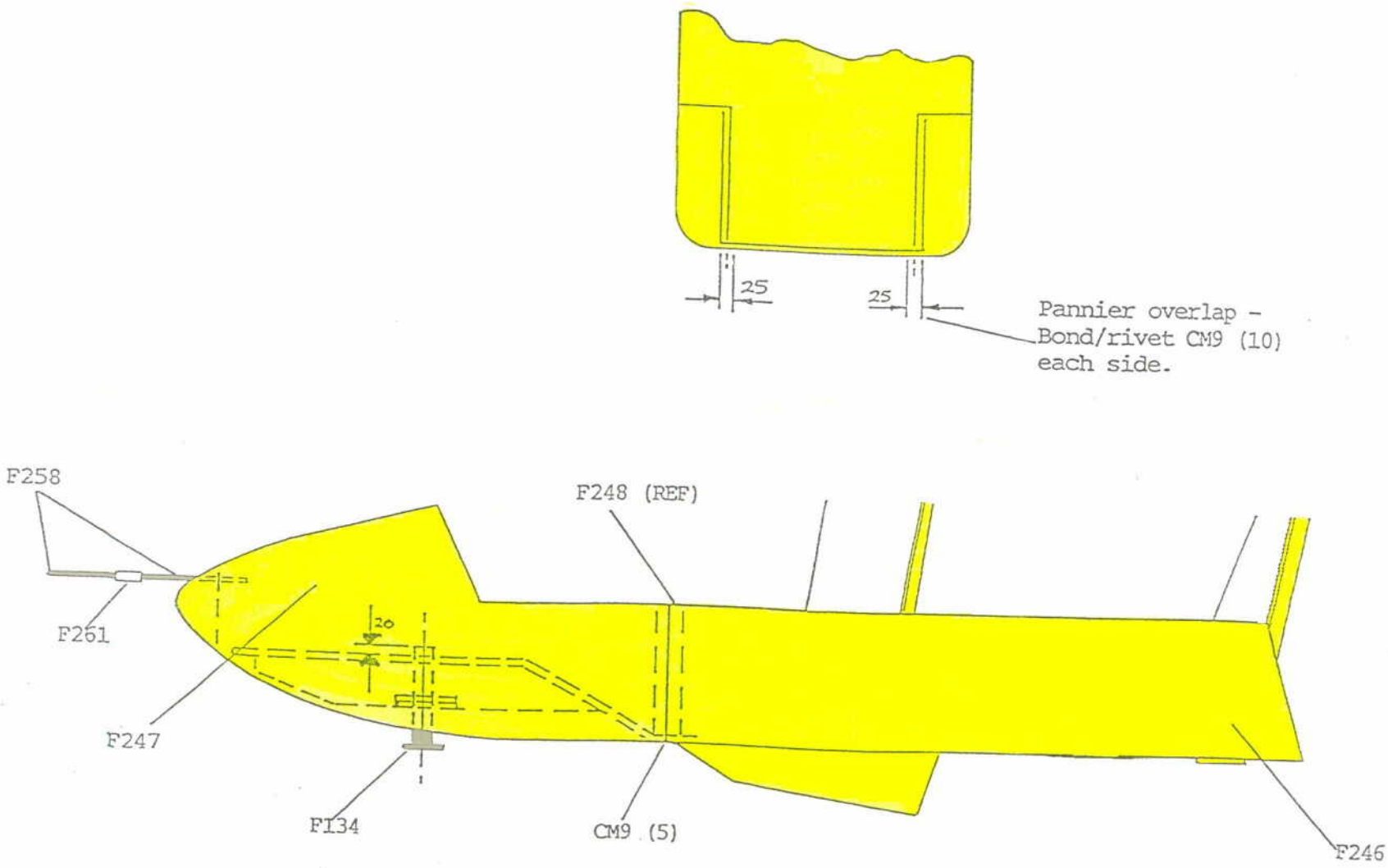
Temporarily fit Pod to hull. Mark and trim off excess pod material where it makes a butt join with the panniers and overlays the hull sides. Locate and make hole for Nose Leg F134. Remove and prepare hull floor for Nose Leg and Nose leg itself. N.B. ensure a strong bond - your landing gear relies upon this bond.
Bond Pitot into position, bond on Pod and bond in Nose Leg.

Retain with plenty of tape while curing.

When cured, trim off surplus Pod material from around the Instrument Panel.


Tenza

FIGURE 16


25
25
Pannier overlap -
Bond/rivet CM9 (10)
each side.
F258
F248 (REF)
F261
20
F247
FI34
CM9 (5)
F246

PAINT

Boom, except for the front 430mm.
Outside Hull.
Inside Hull.
Fuel Tank.

(Use Polyester Filler to fill in and cover rough surfaces prior to painting)

FIGURE 17

LANDING GEAR INSTALLATION

MAIN UNDERCARRIAGE
NOSE LEG

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F227	2	Insert Drag Strut		
F112	2	Drag Strut U/C		
F156	2	U Bolt U/C		
F327	4	Spacer - U/C		

As illustrated, drill out to 3/8" the holes in the Backing Plates F157 only to accomodate Spacers F327.

Install Undercarriage and fit drag strut on Main Undercarriage.
Position the other end in the Drag Strut Bracket and trim for length, ensuring at least 10mm excess from hole.
Fit and rivet Inserts. N.B. Check rivets do not interfere with the Strut Brackets with strut installed.
Drill drag strut ends for bolts after ensuring axle's symmetry to hull

NOSE WHEEL ASSEMBLY:

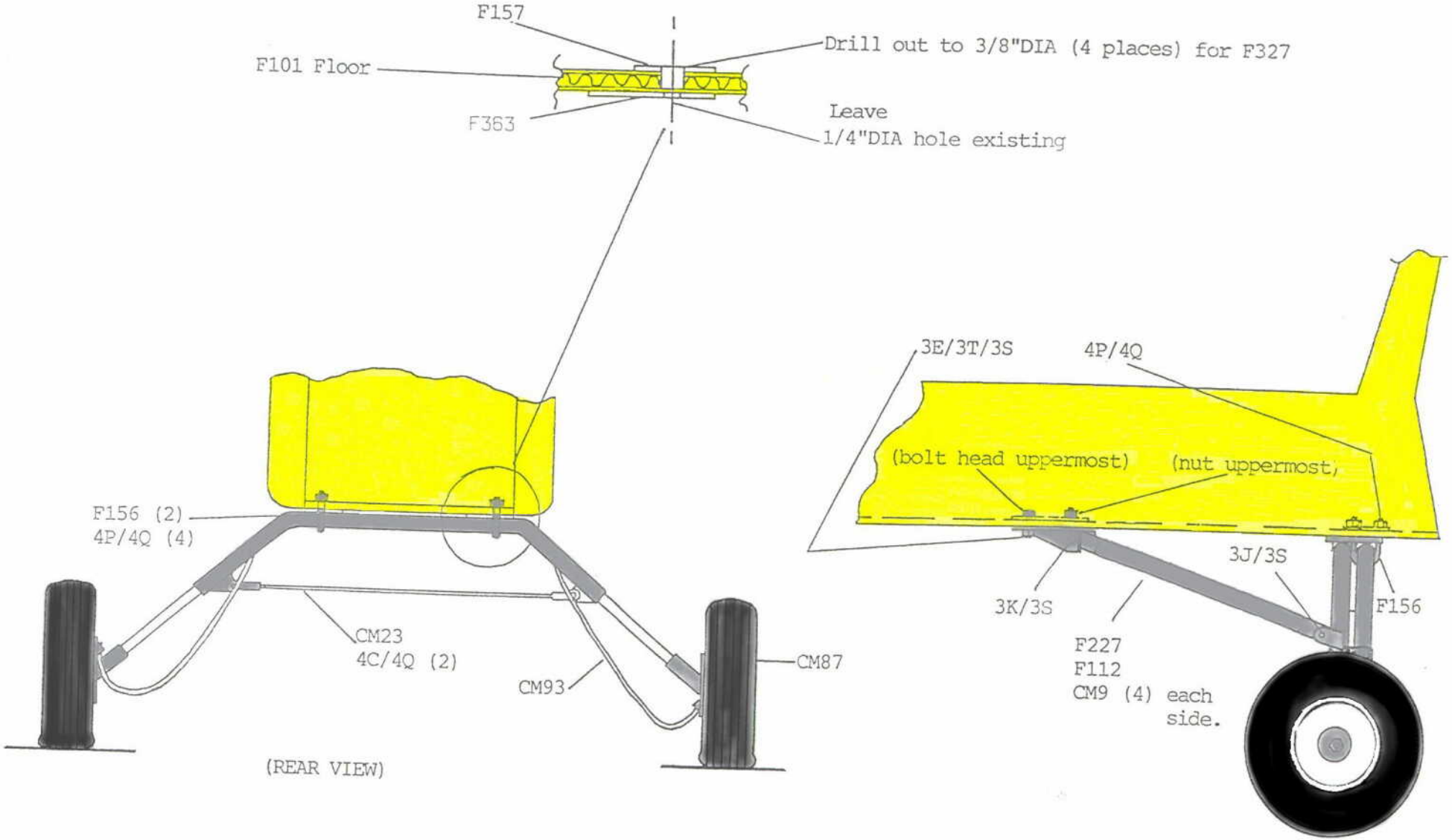
Determine the length of CM20 retaining cable after bolting through in monocoque with bolts 3S/3P and nicopress.

THE NOSE WHEEL LEG F134, MUST BE GREASED BEFORE BEING INSERTED INTO THE MONOCOQUE LEG, F135.

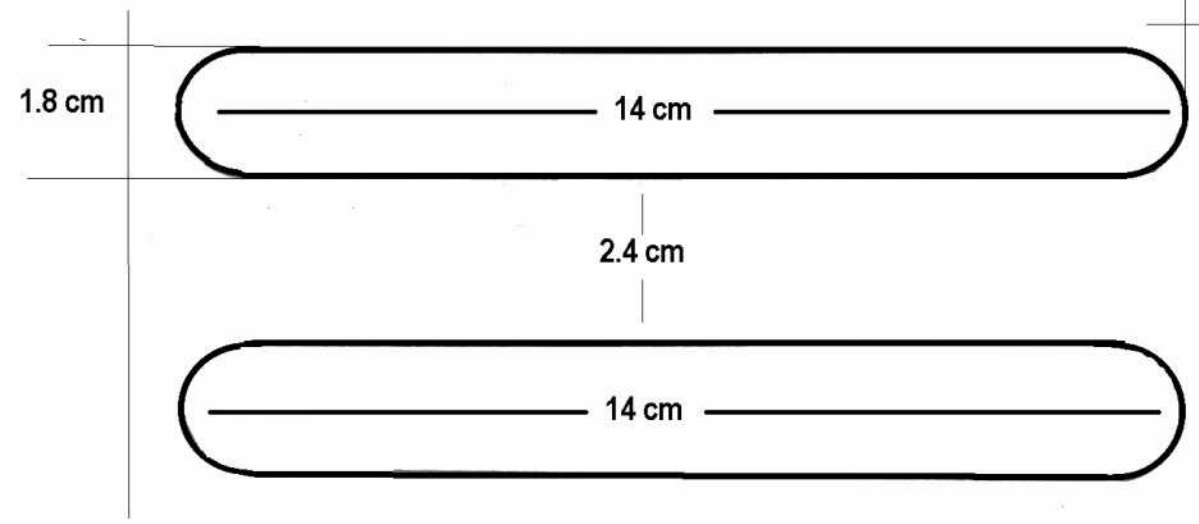
N.B. If the cable is too slack, add additional bearings F203. The Nose Wheel Assembly can be rotated to slightly shorten the retaining cable CM20 and provide 2lb - 4lb of friction. The Nose Wheel will SHIMMY if this is not done.

CM76, Shock/bungee cord, must be wrapped around the nose leg 3 times to prevent the nose leg from grounding.

FIGURE 17


F157
F101 Floor
F363
Drill out to 3/8"DIA (4 places) for F327
Leave
1/4"DIA hole existing
F156 (2)
4P/4Q (4)
CM23
4C/4Q (2)
CM93
CM87
(REAR VIEW)
3E/3T/3S
4P/4Q
(bolt head uppermost)
(nut uppermost)
3J/3S
3K/3S
F156
F227
F112
CM9 (4) each
side.

BRAKES — REAR FOOTWELL SLOTS



1 cm Dia

8 cm

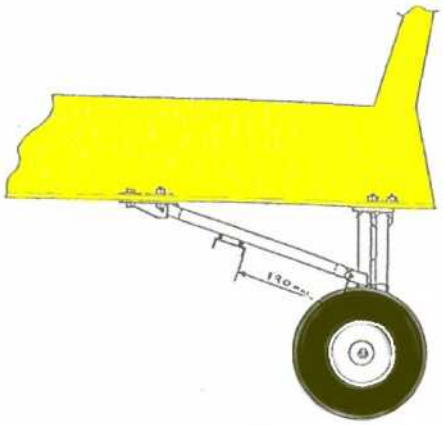
3.2 cm

7 cm

8 cm

5. DUAL BRAKE CONNECTOR BLOCK TO DRAG STRUT

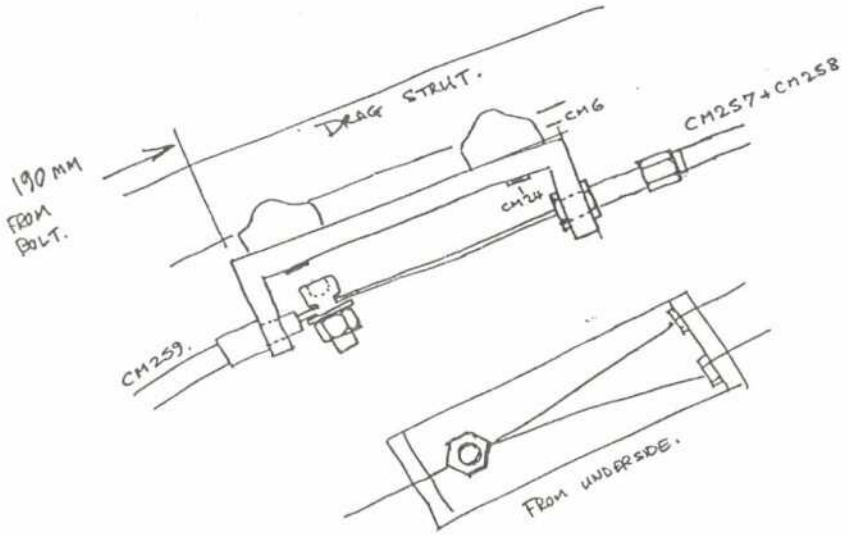
Rivet F500 dual brake connector block to underside of drag strut with (2) CM6 saddle washers using rivets (2) CM24 1/8" long at position shown in diagram below. Repeat on opposite drag strut.



6. WHEEL BRAKE CABLES

Fit new F258 wheel brake cables to brake units eliminating as much slack as possible without the brakes binding.

Connect cables as shown below



7. BRAKE BLISTER

Centralise and fit F512 rear brake blister to underside of large footwell floor. Refer to photograph below.

Shadow Wheels - Applies to all Aircraft

In a recent incident, a Streak landed with a puncture and unfortunately went off the runway into a fence doing moderate damage to the nose of the aircraft and breaking the nose leg.

On inspection of the wheel it was found that there was a gap of almost 3mm between the metal half hub attached to the aircraft and the nylon half hub. The result was that the inner tube got into this gap and after many landing had been nipped ultimately resulteing in the puncture.

Inspection of a similar type of nylon hub also revealed a gap between the two parts of the hub.

The nylon hubs in question were those fitted to the earlier Shadows probably up until 1995.

It is therefore highly recommended that you check your wheels to see if you have the earlier type of nylon hub. The earlier hub is characterised by the fact that it has four large holes, and the four nuts holding the two half hubs together are set into the nylon hub (if you have had a puncture with this type of hub you will know that most often the nut turns in the nylon resulting in the need to drive a screwdriver in to stop it turning). If you discover you have a gap between the half hubs you will almost certainly need to replace the nylon hub with the later type or an aluminium hub. Contact CFM Aircraft Limited for details.

Old style wheel

PART No.	QTY.	PART DESCRIPTION	NOTE	PROCESS REF.
F181	1	Bracket Flap Lever		
F122	1	Bracket Flap Position		
F202	1	Nylon Wear Pad	BOND	1.2
F123	1	Lever Flap		
F124	1	Bracket Flap Lever		
F271	1	Plate Flap Tension Spring		
F125	1	Detent Flap		
F126	1	Flap Lever Channel		
F214	2	Seat Belt Attach. Plate		
F371	1	Spacer - Flap Lever Pivot		

FIGURE 18

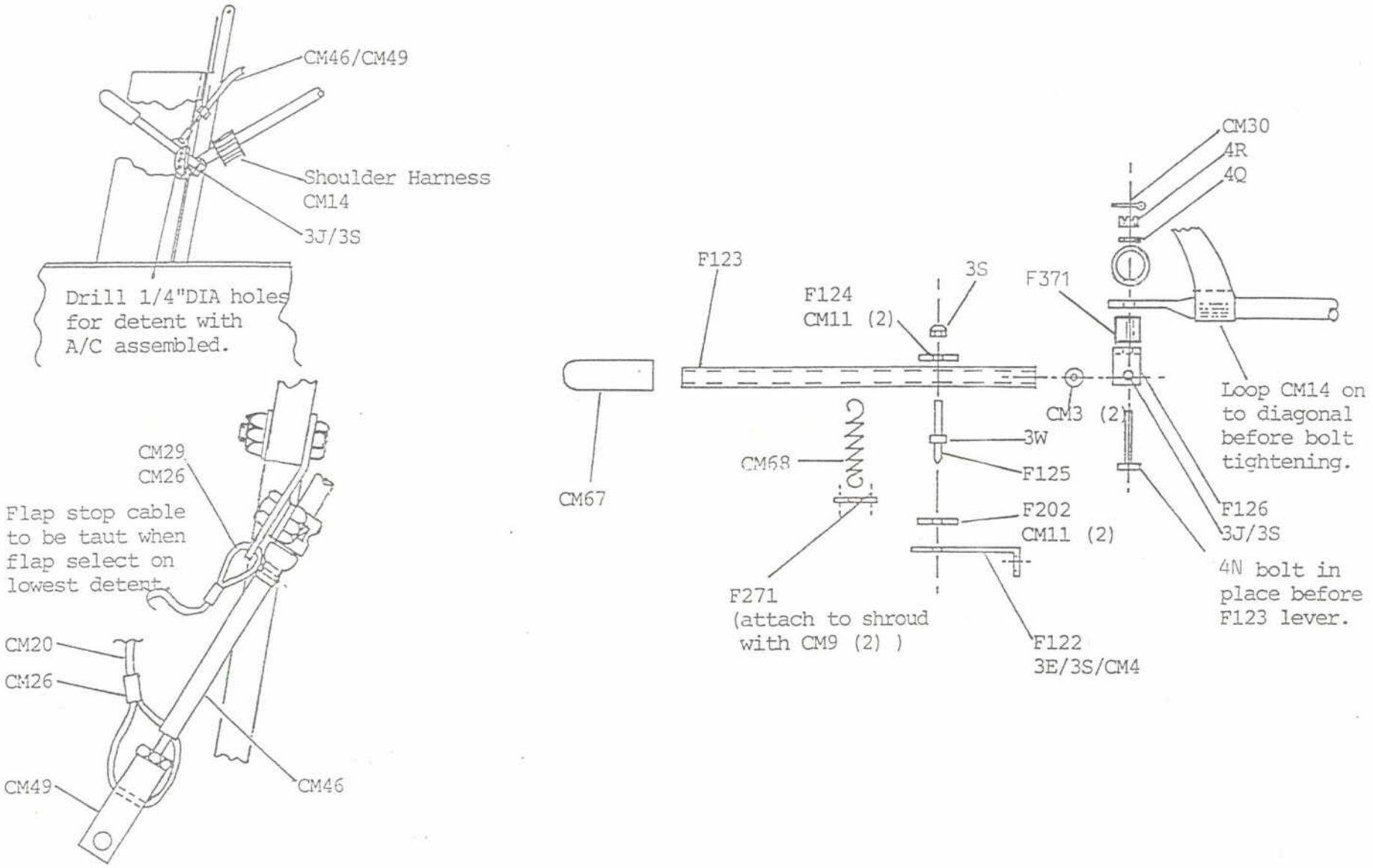
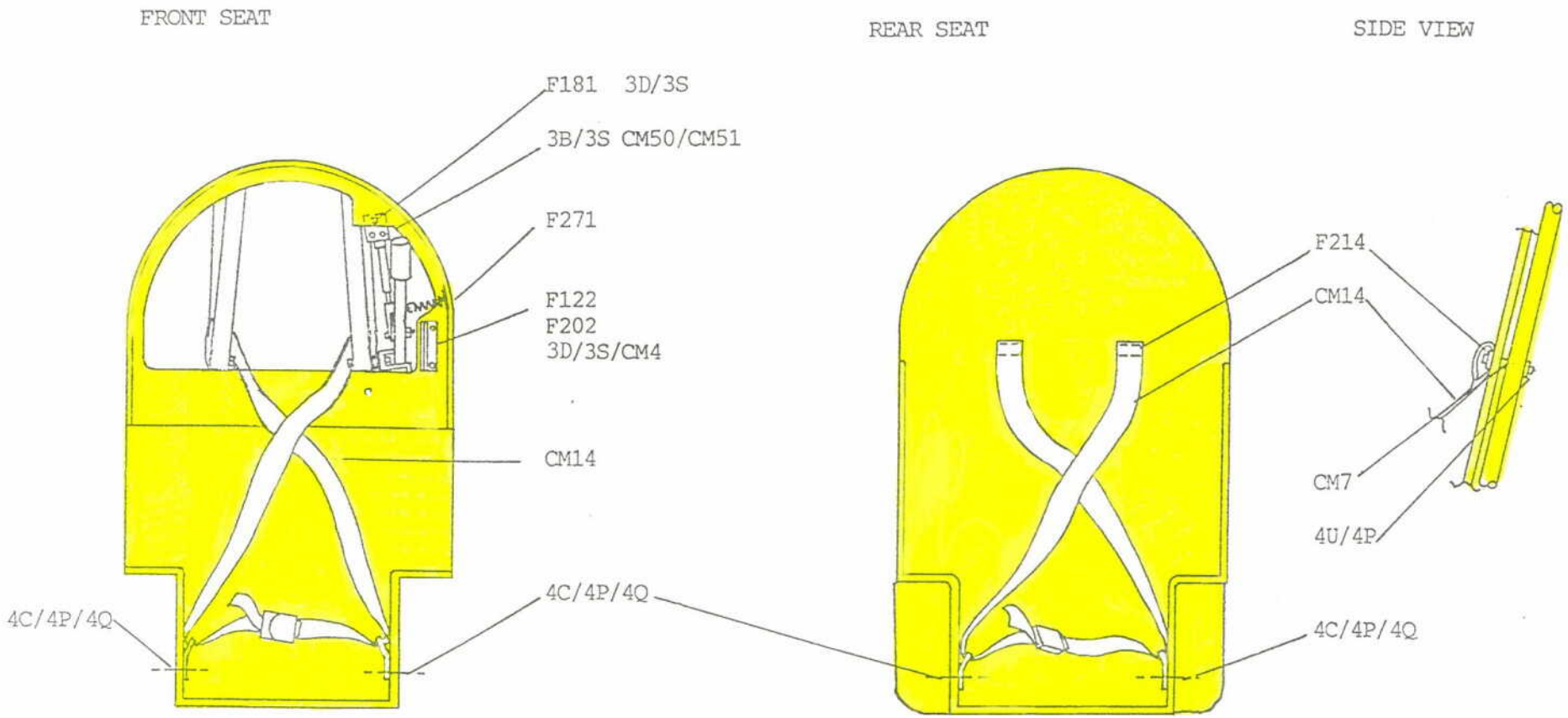

CM46/CM49
Shoulder Harness
CM14
3J/3S
Drill 1/4"DIA holes
for detent with
A/C assembled.
CM29
CM26
Flap stop cable
to be taut when
flap select on
lowest detent.
CM20
CM26
CM49
CM46
F123
CM67
F124
CM11 (2)
3S
F371
CM30
4R
4Q
Loop CM14 on
to diagonal
before bolt
tightening.
CM3 (2)
CM68
3W
F125
F202
CM11 (2)
F126
3J/3S
4N bolt in
place before
F123 lever.
F271
(attach to shroud
with CM9 (2))
F122
3E/3S/CM4

FIGURE 18


FRONT SEAT
REAR SEAT
SIDE VIEW
F181 3D/3S
3B/3S CM50/CM51
F271
F122
F202
3D/3S/CM4
CM14
4C/4P/4Q
4C/4P/4Q
F214
CM14
CM7
4U/4P
4C/4P/4Q

SHADOW D - SERIES

CONSTRUCTION MANUAL

COOK UNDERCARRIAGE

SERIES D-D

Shadow D-D

Crosbie undercarriage