

Hardtop fitting

Tools required

1. Die Grinder and Rotary Burrs (or fast drill)
2. Selection of files
3. Drill and selection of drill bits
4. Pop Rivet Gun and rivets
5. Screw Drivers and Alan Keys.
6. Rivnut Tool and M6 rivnuts (8off)

Parts required

1. GRP parts, Hardtop and doors, two fitting cups.
2. Door hinges (S/steel RVD made)
3. Gas Rams 21" 90N and brackets (brackets RVD)
4. Turnbuckle catches and hooks (2 sets 6 parts S/Steel & Brass RVD Made)
5. 2 complete sets of door locks and handles trim plates (RVD Made S/S & Brass)
6. 2 fixing sockets (fitted to body) S/Steel (RVD made)
7. 2 M8 X80mm S/S bolts and RVD hand knobs
8. seals and rubbers (info to be supplied later)
9. Felt sheet for windscreen top channel 3mm thick (or thin carpet underlay)
10. Impacted adhesive
11. Polycarbonate sheet 6mm thick for windows, 6' x 3' approx (Glass may be available if demand is high enough)
12. Head lining material.

Method:

1. First of all trim the cut edges of the window apertures and the bottom flange that mounts to the body, the window apertures should have a flange with of **16mm for glass bonding or 20mm for bolting polycarbonate sheet**. Bottom flange should be around **22mm in width all round**.
2. Remove any bonding flash from the wind screen top channel, and sand all the cut edges back with sand paper and round off GRP edges. Especially if you are fitting on to a car that is already painted as any sharp edges can cut into the paint finish.
3. Drill out the hinge holes to **5mm**, these can be clearly seen in the mouldings as small indents in the doors and the roof. its best too drill one hole in the door and one hole in the roof for the screw closest to the hinge pivot, at this time this will allow the door to be hung and moved a small amount if needed before the other holes are drilled through the hinge hole.

4. The next operation is to fit the sockets into the body shell; these fit into the section of the rear wing / scuttle, in the position shown below. **485mm from cockpit edge(19 1/8" in) and 118mm (4 5/8" in) from to right side of the boot lid aperture for the right side hole.** Mark with a marker pen if not painted or place a piece of masking tape on to the paint and mark with a ball pen the position.



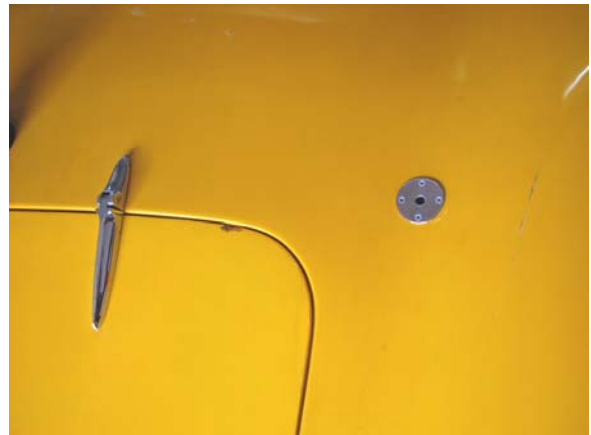
5. The left side is the same distance from the cockpit edge but different to the boot lid as shown below. **485mm (19 1/8" in) back and 130mm (5 1/8" in) from left side of the boot lid.**



6. This should give you a center to center distance of **980mm (38 19/32" in)** if you do not get this or very close to this re-measure the hole positions and move a small amount until this center is achieved.



7. Now that you have the positions marked and double sure they are correct drill a pilot hole then open up to **13mm (1/2")**, with a rotary burr cut a small bevel on the edge off the hole to clear the weld on the under side of the socket, to allow it to fit down flush with the body surface.

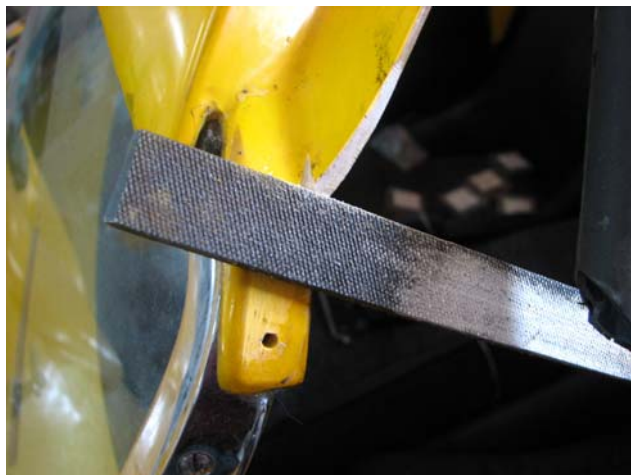


8. Test fit the S/Steel socket into the hole and make sure that the flange will sit flat on the body surface, if the hole is not square to the surface the flange may not sit flat, in this case the hole will need filing a small amount to allow the flange to fit down flat.

9. Drill the Rivet holes in the flange 4 holes 1/8" 3.2mm CSK rivets , for test fitting of the hard top M3 bolts can be fitted into the holes so that it is easy to remove before painting .
10. With a felt or thin carpet under lay in the windscreen channel to prevent rubbing of the Chrome of the frame (or heavy card) place the hard top onto the car and fit the top of the screen into the channel of the roof. **Note: if you car is painted cover the rear of the car with an old thick blanket with two holes to allow the M8 bolts to fit into the sockets.**
11. Fit the turnbuckle hooks to the side posts with the 2 M4 S/Steel screws provided (the hole in some screens may be taped 4BA this is a little smaller than 4mm and should be tapped out to M4 as 4BA screws are hard to come by now in S/steel) position the top hook on the out side of the GRP as shown below.

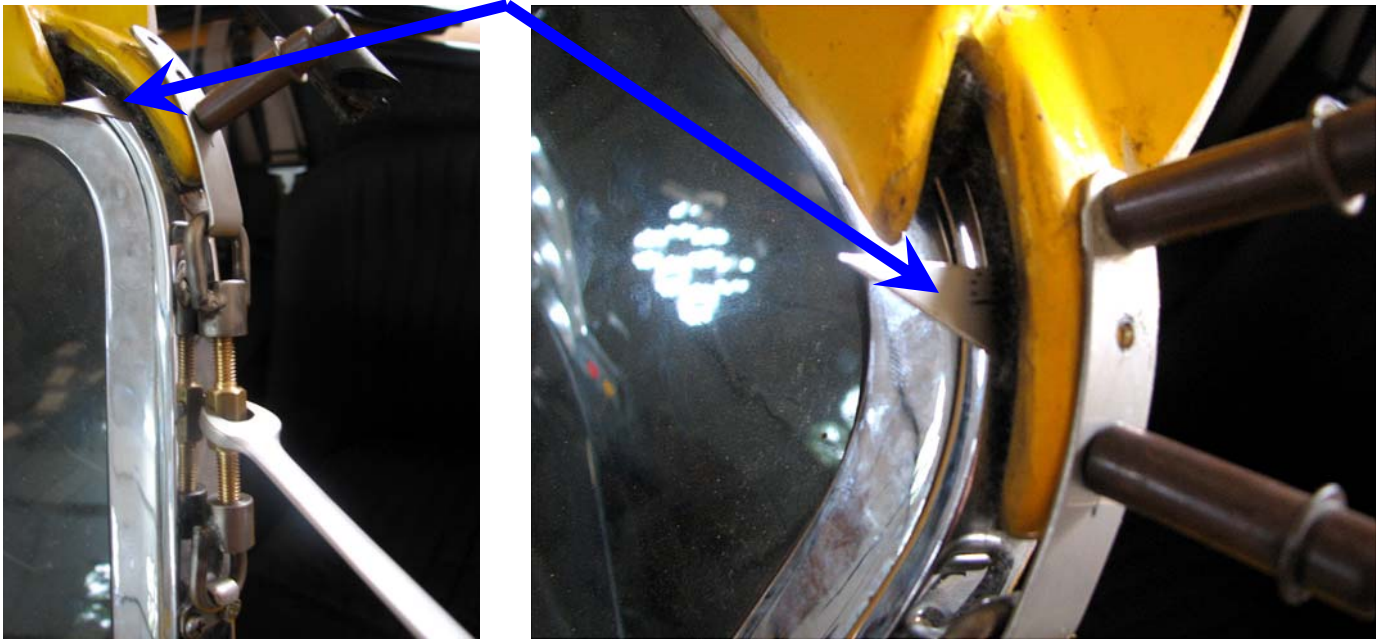


12. To get the top hook in position some trimming of the GRP may be required as shown below.



Felt packing

13. Once the GRP is trimmed reposition the hook and drill the three 1/8" 3.2mm rivet holes as shown below. To prevent damage to the chrome of the frame slip a deburred off cut of metal under the felt, to prevent the drill hitting the frame.

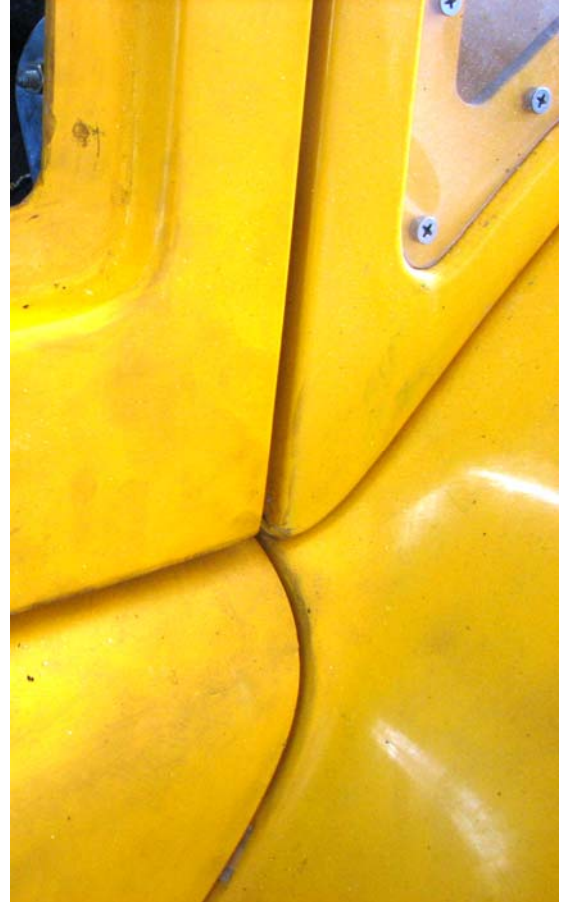


14. Drill the lowest hole first and put a little tension on the hook with the turnbuckle to line up the hook in a straight line, as not to put an extra side load on the rivets when in use.



15. Drill out the other holes and pin in position, temporary fit rivets or M3 bolts take care not to damage the polished finish of the hook if you rivet, as you will need to drill these out and re-fit after painting.

16. Once you have fitted the turn buckle hooks both sides tighten up evenly a small amount just enough to pull the cannel over the frame evenly both sides, now you may need to loosen the screen bolts inside the car on the side plates to allow some movement of the top of the screen to aid the alignment of the rear section. Move the rear around until the caps from the boot lid opening and the hard top are as even as you can get. The door openings should line up close to the rear edges of the door opening in the main body.



17. Drill out the hinge outer holes marked on the doors and the roof (furthest away from the shit line) 5mm or 5.5mm fit a bolt into the end hole of the door hinge and fit one part to the roof that does not have the pin in it and with the hinge pin lug to the rear of the car. (To allow the door to be removed easily) and the pin half's to the door. Slide the door into the hinges and close the door gently down, the door without the seal will close down to far, so pack the door with card or wood wedges at the bottom to keep it in the right position, there should be a parallel 6mm gap along the front edge and the wind screen frame if this gap is not parallel then the screen may need adjusting or the door may not be sitting flush all round.
18. Once you are happy with the fit and position tighten the hinge bolts making sure the two half's are together and drill the second holes through the hinge, and fit the bolts, the door should now hinge up and down and can be removed by sliding forwards. If you have some old door seal fit this for setting up if not use a new door seal but do not trim to length at the bottom end of the seal. trim the top front end to fit the angle of the GRP , this can be done with a sander / angle grinder and a sharp new disc for best results.

19. The end of the seal will need bonding to the GRP at the end with the same PU adhesive sealant that you used when fitting the body to the chassis, this can only be done after painting (or if you are leaving in gell coat)

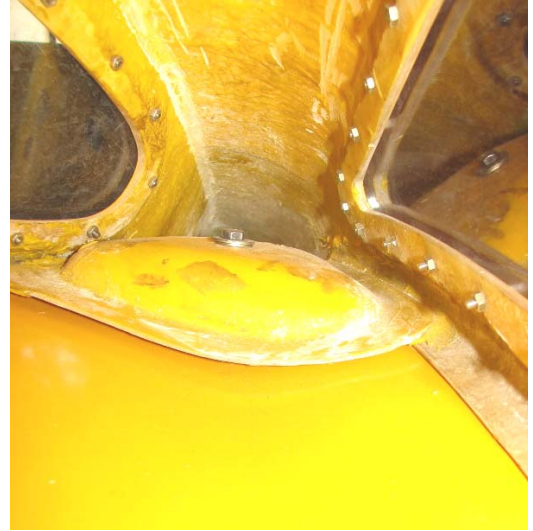
20. The next parts to be fitted are the gas rams, the bracket with the 5mm hole in the center is the one to be fitted to the H,T and the longer bracket with the hole 5mm hole one end (LH & RH) are the lower door mounted brackets.



21. fit the H,T bracket as shown above as close to the seal as possible and just before the radius as the H,T shape drops down to the body, fix with two M4 screws or 4mm pop rivets (bolting is best as they can be removed to fit the head lining). The door bracket can be fitted to the flange around the

window by drilling and countersinking for M4 screws the 5mm hole should be towards the bottom of the door and the ram fitting flange towards the back of the door as above right.

22. Now the fixing cups need to be trimmed and bonded each side, First drill out the 8.5mm hole that is marked on the fixing cup mouldings, slide the cup into position and trim the excess GRP from the flanges until the M8 bolt can be easily passed into the threaded socket that you have already fitted. Once both cups (left and right side) are trimmed and the bolts can be fitted by hand, mix up some bonding past or use isopon P40 type of filler past to bond the cups into position, rough all mating surfaces before bonding, use the bolt to squeeze down the past. But do not over tighten.



23. Once the bonding past has fully hardened loosen off the bolts around 10mm and lift the rear of the hardtop and insert the 13mmx6mm neoprene seal flush with the out side edge and then clamp the seal temporally in place. Make sure that the seal is in place all around and the hardtop is in the correct position, central and fitting the body shape correctly.
24. Mark with some tape the outer edge and inner edge of the base flange at a round 90mm from the rear of the door opening, once this is done both sides loosen all the fixings and lift the Hard top off to one side. This is to help locate the hole position for the location pin's as show below.





25. Shown above are the Stainless steel location pins and sockets, the socket fits into a $\frac{1}{2}$ " hole 12.7mm drilled in the center of the base flange (as marked by the tape in 24) at around 90mm $3 \frac{35}{64}$ " from the rear edge of the door opening as shown above right.
26. fit the sockets into the body both sides and tighten up, you may have to sand the underside of the rear wing to get the nut to pull the socket down even, and flush to the body surface, on final fitting it is best to fit the nut with "Lock tight" or a "Thread sealing compound" to prevent the nut coming lose.
27. Lift the roof back on into position and clamp back down with the neoprene seal under the base flange starting just behind the location socket, make sure you are happy with the fit and position of the Hard Top. From the under side of the rear wheel arch drill back up through the socket as a drill guide with a 8.4 mm $11/32$ " drill right through the base flange.
28. loosen off the fixing bolts once again and lift the rear of the H/T to allow the location pin to be fitted in to the hole that has just been drilled, you may need to sand or grind the GRP on the inside face of the base flange to allow the washers and the nut to be fitted flat.
29. once the pins are fitted lower to H/T back in position locating the pins into there sockets and re-fit the fixing bolts and turnbuckles, and seals, the H/T should now be fitting in the same position every time that it is fitted.



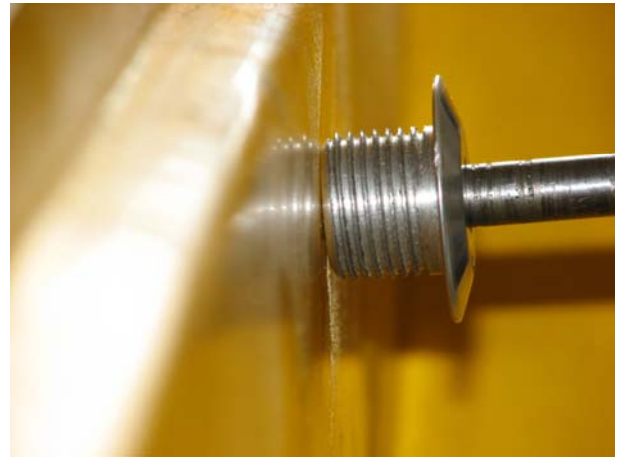
30. The door locks are the next parts that need to be fitted to the doors this can be done with the door on or off the car, if you have room to work on them off the car then this is the most easiest way, first make sure you have all the parts and relevant fasteners to hand, One side set of parts are shown below (minus the lock cables & rivnuts)



31. First place the lock cover plate onto the lock position at the rear of the door, it should fit snug onto the GRP of the door (as shown below) mark the position of the holes and slots that are cut into the plate onto the GRP of the door.



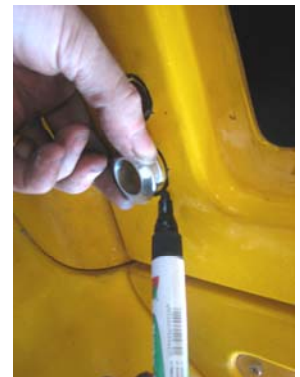
32. Drill an 8mm 5/16" hole through the inner skin of the door and then keeping the drill as square as possible to the outer skin drill through the outer skin, and drill out the two catch fixing holes and each end of the slot.
33. Drill out the two latch fixing holes either side of the slot to the correct size to fit 2 M6 rivnuts, counter bore the holes to take the head of the Rivnut so that once fitted the head is flush with the GRP or just proud.



34. Mark out a similar shape as shown above to be cut out to allow access to fit the locking mechanism into the door, Fit a 8mm drill or pin through the handle pivot and then through the outer and inner hole in the door that you have just drilled, look from all round with the handle pivot up against the outer skin, to test if the hole is square to the outer skin, any gap means its not square, a gap at the bottom (as in the picture top right) means the hole is to high, at the rear of the door to far forward and Vic versa.



35. Mark around the handle pivot with a marker pen remembering the direction the hole needs to be moved to allow it to fit square to the outer skin. With a rotary burr open up the hole until the pivot will pass through the outer skin and sit flat on the outer skin with the drill/pin through the inner skin.



36. Once the handle pivot is fitted correctly, place the cable cam over the drill/pin and with the cable posts square to the bottom of the door mark the position of the lock housing hole with a pen or with an 8mm drill in the end of the cable cam as shown in the picture. **Note left and right handed lock hole is lower than the pivot, not above!**

37. Open up the lock hole making sure that it remains on line to the lock cam pin hole until the lock housing can be inserted into the GRP outer skin.



38. Cut out the inner skin as shown below to allow the locking cam to be passed through the inner skin into the lock space.



39. Whit a small flap wheel smooth off the back of the GRP and remove any bonding past that may be in the way off fitting the lock retaining ring.
40. Fit the lock housing loosely back into the lock hole, the lock is the next thing to fit, this is a bit fiddly to say the least as it a very small space to fit all the parts. First fit the push lock through the back of the lock retaining ring with the wire ring clip inside the retaining ring,
41. pass the whole lot through the back access cutout and line up the push lock with the center hole off the lock housing on the other side, push the two parts together as far as possible to allow you to push the wire ring into the groove at the back of the lock housing, a small screw driver is best and a helping hand may be needed.

42. Once the wire clip is in place fit the two counter sunk screws into the push lock. Rotate the whole assembly round until you can access the two grub screws either side of the lock, tighten until the retaining ring is pulling on the lock housing and wire ring holding the whole assembly solid to the outer skin as below. (picture has the two countersunk screws removed for clarity)



43. fit the handle pivot back into the hole, fit the nylon washer and brass nut loosely, pass the handle pin through the pivot and through a 22mm 7/8" cranked ring spanner and on into the hole in the inner skin tighten the brass nut to just over finger tight. Withdraw the handle pin and the 22mm 7/8" spanner.
44. with the wire pin's to the inners skin place the cable cam over the end of the handle pin and slide the handle pin back through the inner skin, as far as it will go, push the cam onto the handle pivot and tighten the M5 Allen bolt onto the flat section of the handle pin. The handle should rotate freely until the cable cam stops it.



45. Once the cable cam is fitted the push lock should when pressed in pass the end pin through the hole in the cable cam locking the handle in position.



46. With the door closed and a 6mm parallel gap down the front edge of the door to the wind screen mark with a marker pen or some tape the back edge of the windscreen frame onto the front lock mounting hump, open the door again and hold the Black GRP striker plate over the hump and line up the front edge with the mark you have just placed.



47. Mark the two fixing bolt holes in the center of the slots or just to the rear of the slot but not at one end as you will need to adjust once the seals are fitted, to obtain a good seal and shutting operation. Fit Two M6 Rivnuts as with their rear lock flush with the surface of the GRP, and cut out a slot in the inner skin to clear the cable pin.