

Construction Manual For Technic 550 Spyder

Introduction

Your Technic 550 Spyder will be delivered with the body and floor pan mounted on the chassis. These are secured temporarily for transportation and positioning. We recommend the following sequence of construction :-

1. While the body is still mounted on the chassis, fit the steering column, instruments and switchgear, bonnet latches, fuse box, and screen. All these operations involve cutting or drilling fiberglass and performing these first gets the messy work out of the way,
2. Remove the body, rivet the aluminium floorpan to the chassis, assemble all mechanical components, brake, clutch and fuel lines etc. on the chassis.
3. Replace the body on the chassis and permanently fix into place.
4. Install the remaining components, wiring etc.

Section 1 - Work on the body

1.1 Steering Column

The VW steering column can be fitted complete with steering lock and indicator and wiper control arms, by cutting a hole in the dashboard as shown on the template. Alternatively if the steering lock and control arms are not required the column can be modified as described below.

Remove the steering wheel and undo the four screws holding the control levers and remove the levers. Next remove two screws retaining the lock assembly cover; if these are of the security type without slots they can be easily broken off with a chisel. If you have the ignition key the lock barrel is easily removed by inserting the key and turning clockwise while pulling back, the lock should then slide out. If you do not have a key the lock can be removed by inserting a feeler gauge between the lock and the column which depresses the tongue and should allow the lock to be removed. The shroud and lock holder should now be cut away with a hacksaw leaving just the bearing carrier, the column is now ready for installation.

1.2 Instruments and Switchgear

If using Technic replica instruments mark the gauge and steering column centres using the template supplied scribe the holes to the correct diameter and carefully cut out to give a snug fit when the gauges are pushed into the holes. If using alternative gauges we recommend making a template of the dash area and drawing your instrument layout on this before cutting the dash.

Switches are installed through the dash panel in whatever position suits the builder. Depending on the type of switches used it may be necessary to grind away behind the dash to reduce the thickness of the panel locally to the switch. This can be done using a small grinding stone on an electric drill or die grinder.

1.3 Bonnet Catches

If using Technic bonnet catches first mark out the hole centres on the bonnet as shown in Figure 2 and drill a pilot hole through. Next centre the chrome escutcheons over these holes and fix in position with small countersunk self tapping screws (note when using self tapping screws in grp always use the correct size hole otherwise the gel coat may crack, if unsure test a screw in a piece of scrap grp first). When the escutcheons have been fitted open out the hole through them and position the latch mounted on the plate supplied in line with this hole. Mark or drill through the four mounting holes in the plates and fix them with self tapping screws. Close the bonnet and check that the catches locate properly under the flange at the top of the body aperture.

1.4 Fuse box

If using the VW 1302 fuse box we recommend fitting it to the bulkhead underneath the dash board just outboard of the steering column.

1.5 Windscreen

The windscreen is secured by screen posts at each end of the frame and by a centre tension rod, the front lower edge being located by a rubber moulding onto an aluminium trim strip. The trim strip and body are pre-drilled so the first step is to rivet or bolt the trim strip to the body. Assemble the glass into the frame having first trimmed off the inner ribs from the rubber moulding as shown in the diagram; next trim to suit and fit the windscreen base rubber and place the screen assembly in position over the aluminium trim strip locating it centrally relative to the body. Offer up the posts to the frame and mark the position of the holes for the fixing spigots. Drill these undersize and carefully open them up with a file until the posts can be fitted into position with the grp spacer provided between the post base and the body. The tension rod should now be offered up and the location of the hole required for the rod to pass through the dash top should be marked. Remove the screen assembly and drill a 5mm hole for the tension rod. Fit the posts to the frame with the countersunk screws provided and replace the screen assembly on the dash top. Slide the securing tubes over the spigots and secure them with the 3/8 unc bolts but do not tighten. Next fit the tension rod through the dash top and screw it to the screen frame,

slide the angled spacer over the tension rod and secure it with a nut and lock washer. Gradually tighten the screen posts and tension rod a little at a time ensuring that the windscreen base seal is properly seated over the aluminium trim strip - do not overtighten.

1.6 Door Catches

Two types of door catch can be used, either those from the VW Beetle or the external mounting universal type.

To mount the VW catches cut out a rectangular hole on the rear face of the door using the template provided, fit the catch mechanism through this hole from inside the door and drill pilot holes through the two threaded holes being careful not to damage the threads. Open these holes out to 6mm and secure the catch with M6 bolts or screws. Remove the catch and while holding the door shut mark the catch position on the main body door shut face through the hole in the door, using this mark as a guide position the striker and mark two diagonally opposite holes. Drill these holes and mount the striker accessing the rear of the shut face through the hole in the rear bulkhead, refit the striker in the door and carefully try shutting the door. If necessary adjust the position of the striker by slotting the mounting holes and when satisfied with the alignment drill the remaining two holes.

Note that due to production tolerances it may be necessary to shim behind the striker and/or grinding irregularities from inside the door to obtain the best door catch operation.

To mount the external type catches use the template provided cut out a hole on the rear face of the door for the catch mechanism and mount it on the door with four countersunk M6 screws. Position and fix the striker in the same way as the VW type catch.

1.7 Rear Body Catches

The rear body section is secured using a catch mechanism from the VW bonnet on each side. Cut a 50mm diameter hole in the centre of the two flat areas just behind the rear bulkhead and fix the lower catch mechanism from underneath making sure that the cable pull direction is from the inside. File a cut out in the 50mm hole above the cable securing screw and mark and drill the four hole position for fixing the catch. The catches can be operated by universal choke cables or similar mounted through the rear outer bulkheads.

The upper catches are made using the pin and spring from the VW bonnet catch and the mounting brackets supplied. Fit the pin to the bracket and mount it into the lower catch, then carefully shut the rear body and as accurately as possible mark the position of the upper catches on the rear body inner moulding. One way of doing this is to put masking tape on the inner moulding where the catch will mount and put engineers blue or similar on the bracket mounting faces, when the body is closed pressing the catch against it should leave a mark where the bracket needs to be. Fit the bracket by the top hole only and close the body to align the upper catch. Open the body carefully trying not to move the upper catch and drill through the bottom hole. Check for correct operation of the catches and adjust as necessary by slotting the mounting holes for the upper catches.

In addition to the catches we recommend a secondary securing system such as leather bonnet type straps or similar.

2. SUSPENSION

2.1 Front Suspension

The kit is supplied with the front wishbones pre-fitted to the chassis. The top wishbone mounts are bolted to the chassis to enable adjustment of the wheel camber, this is done by inserting shims between the upper wishbone mounting brackets and the chassis. We recommend a camber angle of 1 to 1.5 degrees negative which should be set when the car is finished and the ride height has been set.

The shock absorber spring units are fitted with the 7/16 bolts provided. Ride height is set by adjusting the height of the spring platform on the shock absorber body, again this should be done when the car is completed. A ride height in the range 100 to 125 mm is recommended.

Modified VW 1302 front struts are provided on an exchange basis as part of the basic kit. These are fitted with a top ball joint from the Austin Mini which should be assembled as follows :-

- a) Insert spring into top of strut
- b) Fit locking ring over threads and secure with grease nipple
- c) Place one or two shims on top of locking ring
- d) Place cup for taper pin on top of spring
- e) Grease bottom of taper pin and hold in place on the cup, place cap over the pin and tighten
- f) The pin should move with some resistance and should not be too loose. Add or remove shims as necessary until movement is correct.
- g) Lock the cap in place and fit rubber seal over the pin.

The bottom of the strut should be fitted with a standard VW1302 lower ball joint. Install the assembled strut unit between the upper and lower wishbones and tighten ensuring the taper joints are fully seated. grease the top joints.

2.2 Steering Rack

This mounts to the chassis using the standard Ford Escort Mk.2 mounting rubbers. The rack requires modifying by cutting 16mm from each track rod and a similar amount from the VW track rod ends. The rack is then joined to the rod ends using the adaptor sleeves provided. It is important that locknuts are fitted at each end of the sleeve. The rack is connected to the steering column as described in section 1.1

2.3 Rear Suspension

The rear suspension is normally supplied fitted, if reassembling or fitting for the first time the following points should be noted :-

- a) Radius rods are equal length and angle slightly outwards.
- b) Do not fully tighten the bolts until the car is fully assembled and the ride height set, this ensures that excessive twist is not applied to the bushes.
- c) The panhard rod is fitted with the offset downwards to give clearance under the transmission

The rear wheel bearings etc are best fitted with the axle removed from the car and are fitted exactly as they would be in the VW1302, noting that the roller bearing is fitted on the outside.

Ride height is set as at the front.

3. Brake System

The brake system is the same as the VW 1302 and the various components should be assembled as on the VW (refer to a VW service manual).

The brake master cylinder bolts directly to the chassis using the pre drilled holes and connects to the pedal assembly with the standard VW pushrod.

Brake lines can be fitted as shown in Figure 5, the following points should be noted :-

- a) Always use grommets when lines pass through holes in the chassis or body
- b) When bending the lines be sure not to kink them, if this should happen never attempt to straighten the line.
- c) Secure the line at frequent intervals and ensure that there is adequate clearance from moving parts.

The brake fluid reservoir can be fitted in a convenient location in the front compartment and should have separate. If not using the VW reservoir make sure that there is a separate reservoir for the front and rear brake circuits

4. Pedal Assembly and Throttle Cable

The chassis is designed for the VW pedal assembly to bolt in as on the VW donor car. After Checking that the pedals are in good working order pass the left hand end of the assembly through the side of the centre tunnel, push the left end plate onto the pedal shaft and place the right hand plate with the plastic bearing piece over the shaft just to the right of the tunnel. Bolt the two plates to either side of the tunnel. Position the plate which adjusts the pedal angle on the floor at the base of the clutch and brake pedals and while holding the pedals at the desired angle mark the position of the plate and drill and bolt it to the floor. Push the throttle operating arm on to the shaft on the left hand end of the pedal assembly and secure with a circlip. Position the throttle pedal assembly on the throttle roller so that the maximum cable travel is achieved, mark the position of the floor bracket and drill and bolt to the floor. Ensure that the hair spring is installed so that the pedal is held against the roller.

The throttle cable is run through the centre tunnel, alongside the engine crankcase and under the driveshaft, it then loops through 180 degrees and passes through the sleeve in the fan housing as on the standard VW (non standard VW engine installations will require adaptation as necessary). At the front of the tunnel the 1/2 inch diameter bar bolts top the throttle operating arm and the cable securing bracket is then lined up, a hole drilled in the top of the tunnel and the bracket bolted into place (see fig.6).

5. Clutch

The standard VW clutch is converted to hydraulic operation. The master cylinder is bolted to the chassis using the pre drilled holes and the hydraulic line run down the centre tunnel and along the chassis tubes to the front transmission mount, it is then connected by flexible hose to the slave cylinder which is mounted to the transmission case ahead of the clutch operating arm using the engine to transmission fixing bolt. The fluid reservoir can be mounted in a convenient place in the front compartment and connected to the master cylinder with flexible hose.

6. Gearshift

Install a white nylon guide bush in the gear rod tunnel bracket and slide over the shift rod to approximately 5cm from the front. Feed the shift rod up the centre tunnel until the bracket is lined up with the holes in the tunnel and bolt it into place. Next install the second nylon bush in the tunnel rear plate which also incorporates the handbrake cable guide tubes, push the bush over the shift rod and bolt the plate to the chassis (note that it will be necessary to notch out the lower edge of this rear tunnel plate to clear the brake, clutch & fuel pipes). Install the standard VW gearlever assembly and check for free operation of the rod. Install a lock nut onto the 22mm diameter angled rod and screw it onto the shift rod universal joint. The engine and transmission assembly should now be installed before proceeding further.

Bolt the gearshift mounting plates to the rear crossmember as shown in figure 7 using a transmission mounting bolt and drilling a new hole for the second bolt. Push the 13mm diameter rod through the

bush in the mounting plate and through the bush on the guide bracket, the rod then passes through the hole in the transmission mounting cradle and screws into the universal joint on the end of the angled rod. Position the 13mm rod in the centre of the hole in the transmission mount and fix the guide bracket to the chassis.

Bolt the male rod-end to the mounting plate and fit the cross shaft through it with a female rod-end on each end, now fit the spigots through the female rod-ends and the to the shift rod and transmission selector rod respectively. The gearshift is now ready for adjustment.

Select reverse gear directly with the transmission selector and then hold the gearlever in the reverse gear position. Turn the spigots so that they are giving just less than maximum movement in the reverse gear direction and clamp them to the rods. While maintaining the reverse gear position adjust the position of the offset rod so that it is just level with the bottom of the chassis and lock it into place.

Check to see if all gears can be selected (do not force into gear) and if not make fine adjustment to the position of the spigots until satisfactory gear selection is obtained. After the car has been driven and the gearshift is working correctly drill through the spigots and rods and pin into place with the spring pins provided.

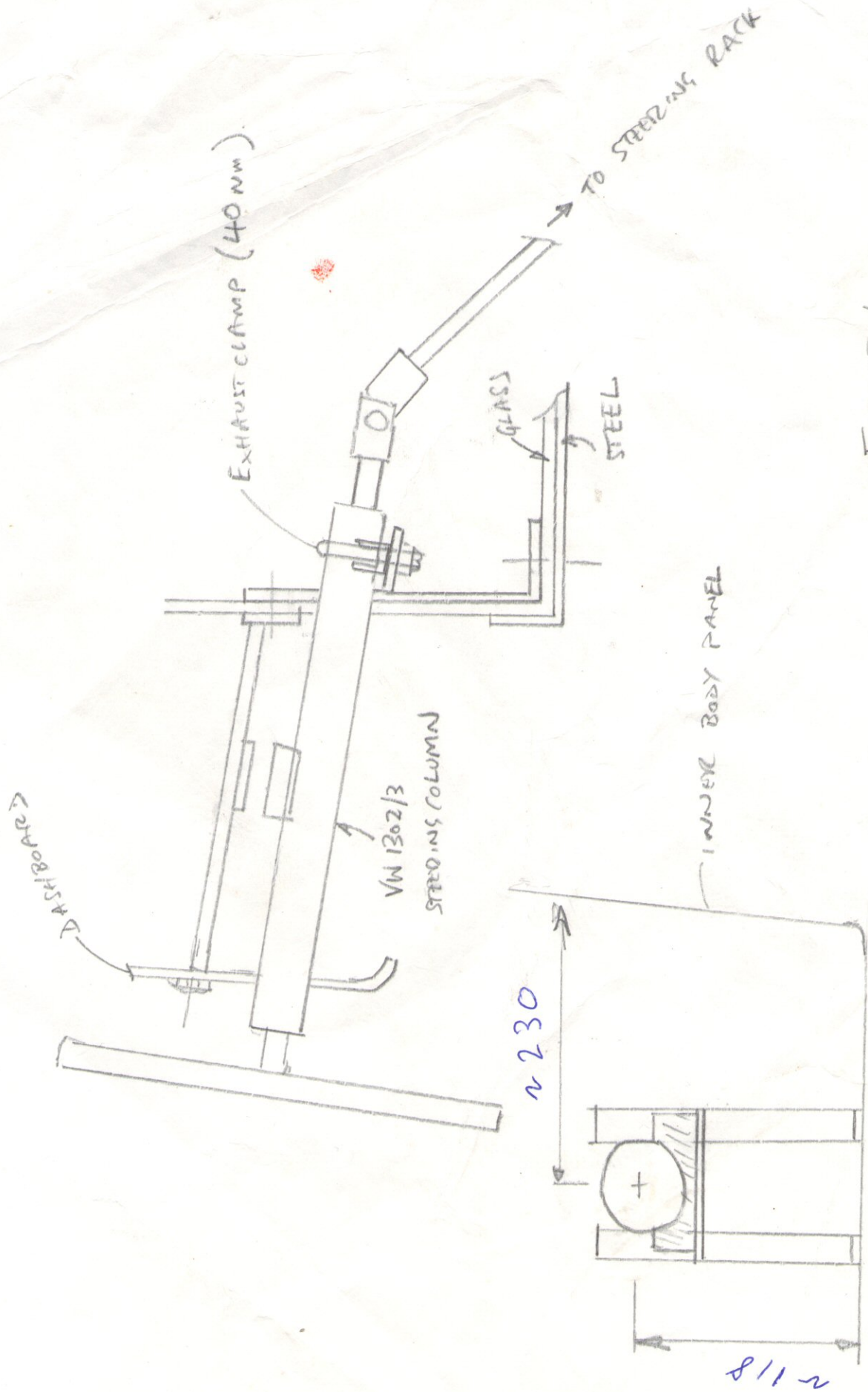
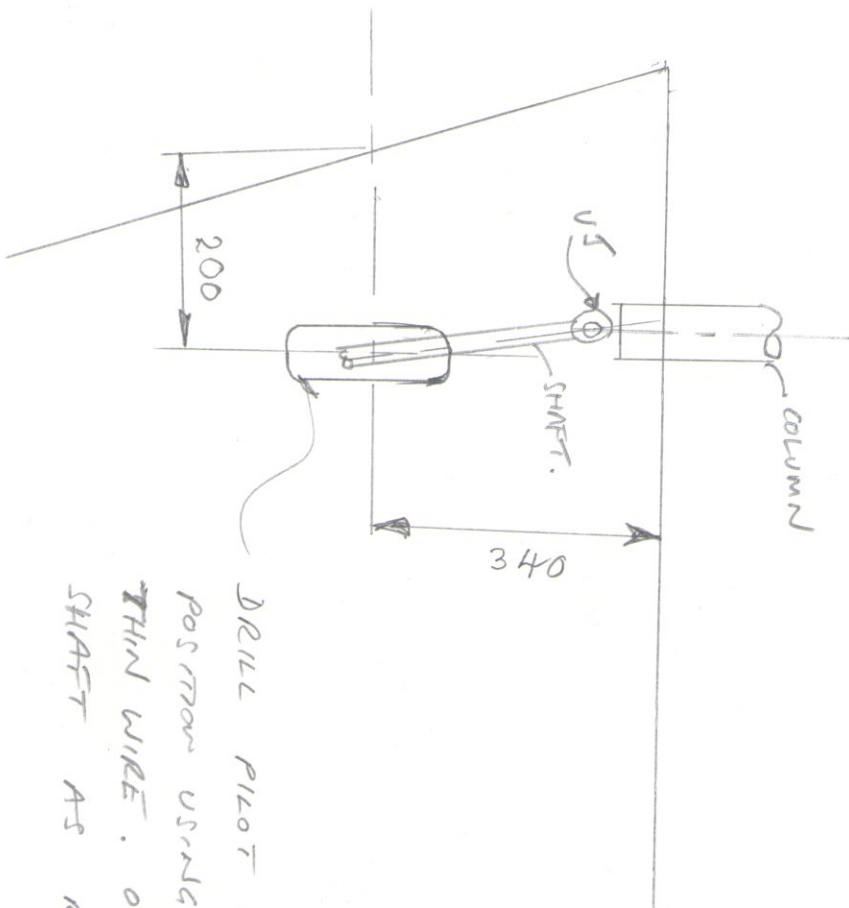


FIGURE 1



DRELL PILOT HOLE AND LOCATE EXACT
POSITION USING WELDING ROD OR SIMILAR
THIN WIRE. OPEN OUT SLOT TO CLEAR
SHAFT AS REQUIRED.

FIGURE 1A - CUT OUT FOR STEERING SHAFT.

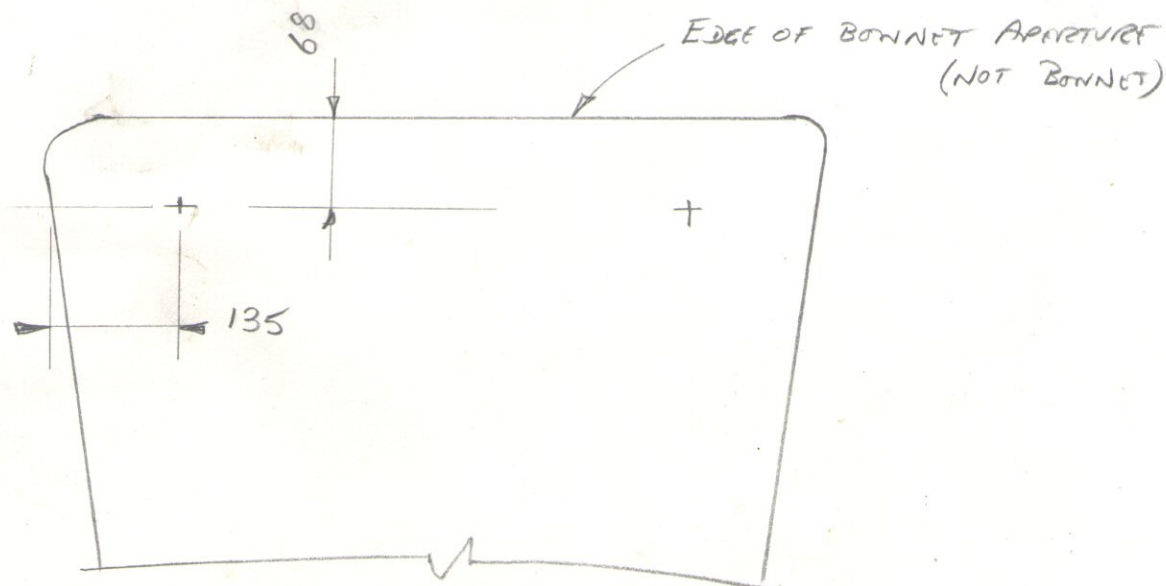


Figure 2

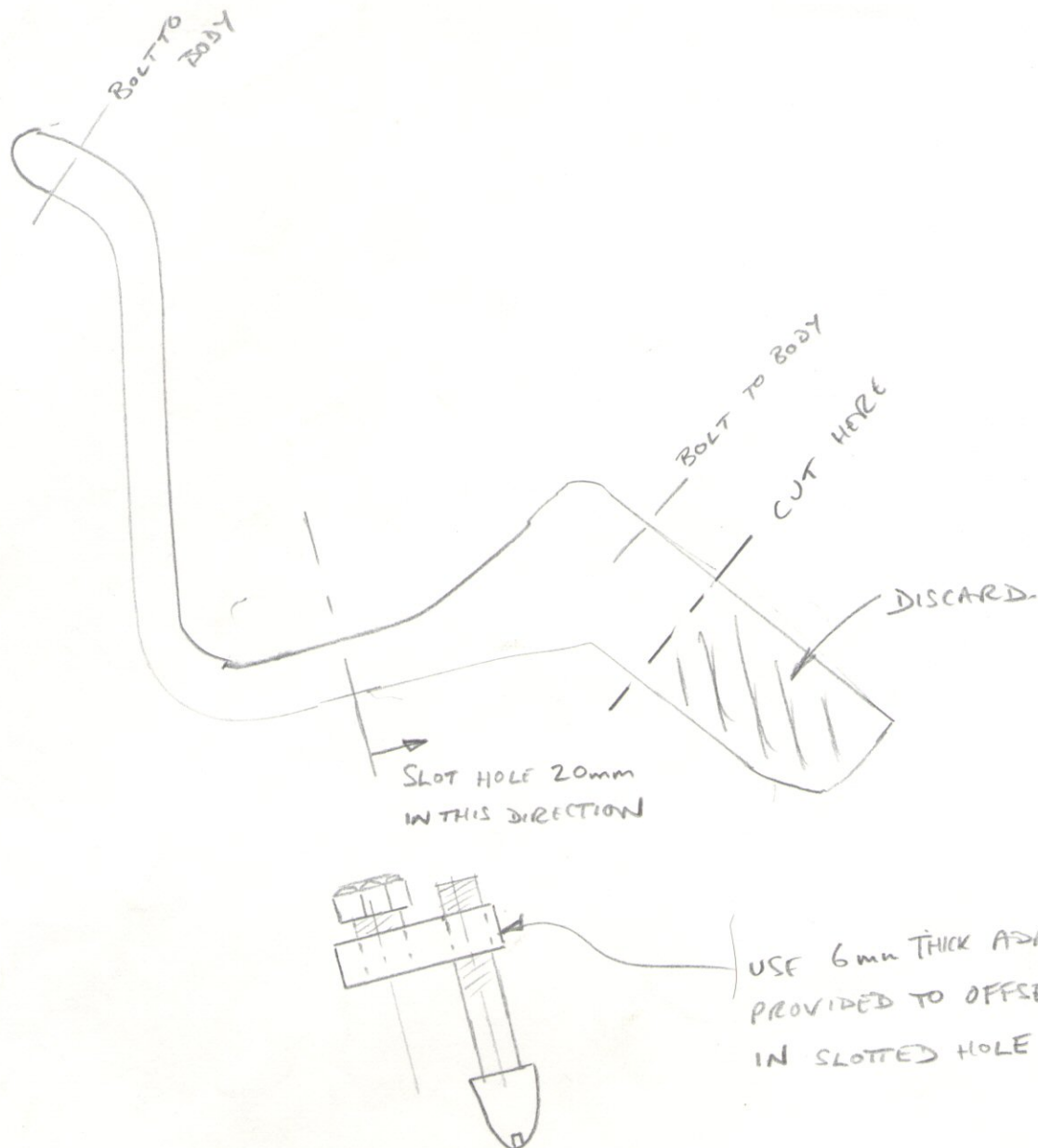


FIGURE 4 - REPAIR BODY CATCHES

ALTERNATIVELY USE EARLY VW UPPER
CATCH PART NO. 111 823 507 A WITHOUT
MODIFICATION

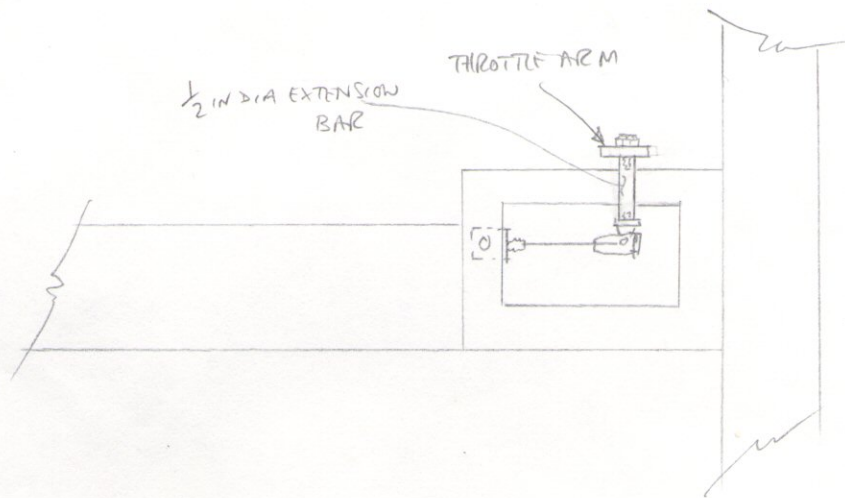
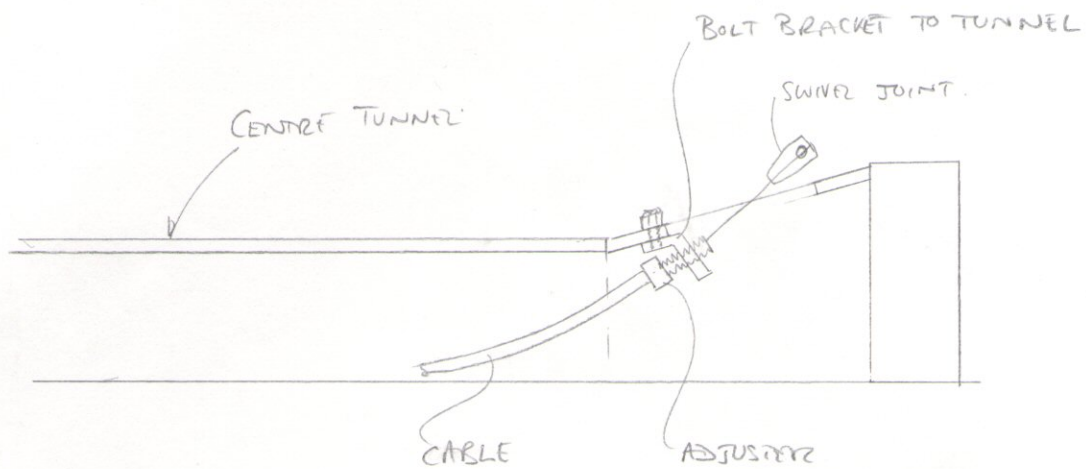


FIGURE 6 - THROTTLE CABLE FIXING

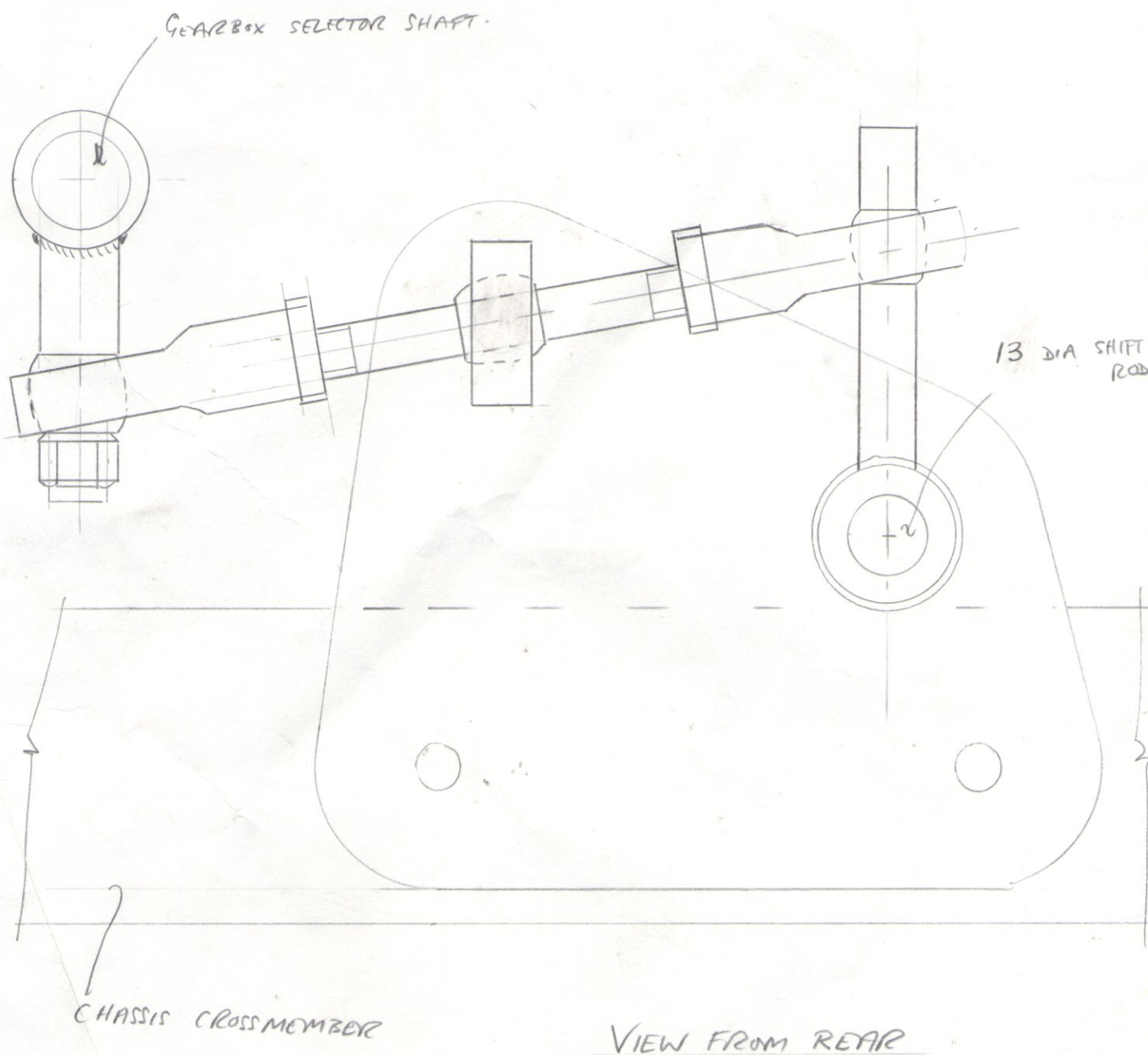
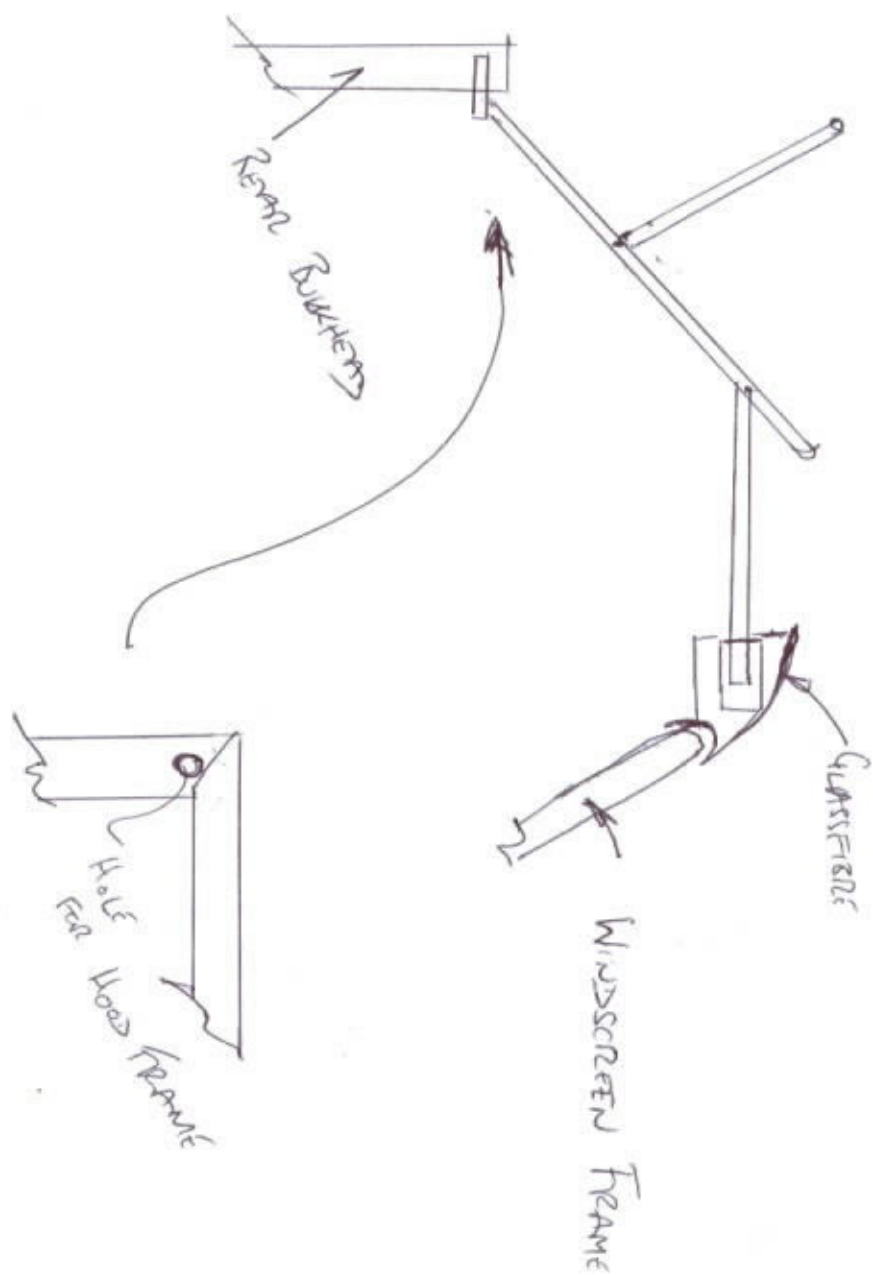


FIGURE 7 - GEAR SHIFT ARRANGEMENT (VW)



TUNNEL END PLATE - USE 914
PLASTIC BUSH FOR SHIFTER

PORSCHE 914

TO TRANSMISSION
SHIFT MECHANISM

CLASSED

914 SHIFTER

OFF FRONT
BRAKING

PORSCHE 914 GEARSHIFT ARRANGEMENT

TUNNEL

