

12.0 Engine and gearbox

Before fitting the engine and gearbox and clutch has to be inspected if not new and Checked for correct splines in centre plate for 5 speed type 9 box.

The central gearbox fitting mount on the Sierra has to be removed from the larger pan and taken apart., you will use the small inner rubber part to the gear box - Fix to the gearbox using a large 12mm bolt .

Remember to fill the gearbox with oil before fitting. A small polythene bag tied around the rear end of the gearbox will stop the oil from leaking as you drop in the engine and box.

Cut two small pieces of wood 4inchx2inch these will be required to put between the front engine mounting brackets and chassis plates when dropping engine into place to aid the correct positioning and drilling - Lower the engine and gearbox into to chassis tilting to approximately 45 degrees, lower the rear mount onto the two chassis rails inside tunnel - lower the engine

Down to approx level and bolt on the two steel engine mounts-lower again onto the two pieces of timber and remove the engine hoist. Temporarily Check with exhaust pipes that the exit is fine through the chassis-also that the alternator has clearance and adjustment-when you are satisfied that the engine position is ok -you can drill through the engine mounts -through the wood-through the chassis plates- put a small jack under the sump (use something soft on jack) jack up and remove the wood-replace with the rubber engine mounts and lower -tighten bolts.

CHECK AND MAKE SURE THAT YOU ALIGN EVERYTHING CORRECTLY BEFORE DRILLING THE Engine MOUNTING BRACKETS. Check clearance from water pump pulley bolts to springs

Minimum clearance 10 mm—it may be required to grind off a little of the rear of the gear box bell housing on left hand side to give correct clearance on front springs to water pump pulley bolts

The rear gearbox mounting plate holes can now be drilled through 8mm into chassis rails -the holes will be close to edge of tube..

Fig 12 below



If you are fitting twin side draft carbs it will be necessary to raise the near side of the engine a little to make sure that the carburettors are clear of the top chassis rail. Use washers as packers on the top of the rubber mount if required or purpose made spacers between the chassis and the rubber mounting (alloy is ok)

12.1 Clutch cable

The clutch cable is taken from the sierra or a new one can be supplied from TIGER RACING

The sierra pedal has a self adjusting mechanism and can be slightly adjusted by bending the metal "stop" on the pedal assembly (small flat tab) that touches the small nylon piece on the pedal. It is probable that the cable might need a small tube piece on the gear box bell housing

To extend the outer cable for better adjustment. Fig 12

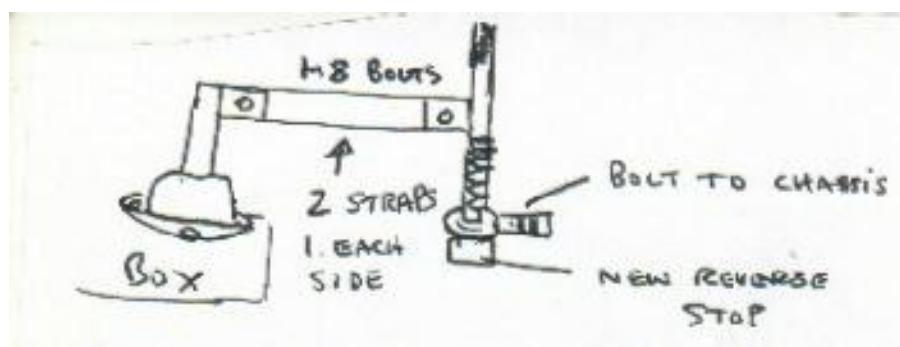
12.2 Gear stick - standard

If Using the standard Sierra gear stick. This has to be cut and a bent piece of small tube cut and welded on to get the better angle to bring the gear stick back towards the driver-another straight Piece of 10mm threaded bar or bolt is then welded onto the first piece of bent tube for the knob to screw onto.(remote is preferred)

12.3 Gear stick - remote

If fitting a tiger remote the small reverse stop in the top of the gearbox needs to be removed. This is done by knocking out the small oval plate in the top rail(near gear stick hole) Lever/and knock out the small piece of steel on drivers side (use a small bar or similar) Fig 12a Refit small plate.

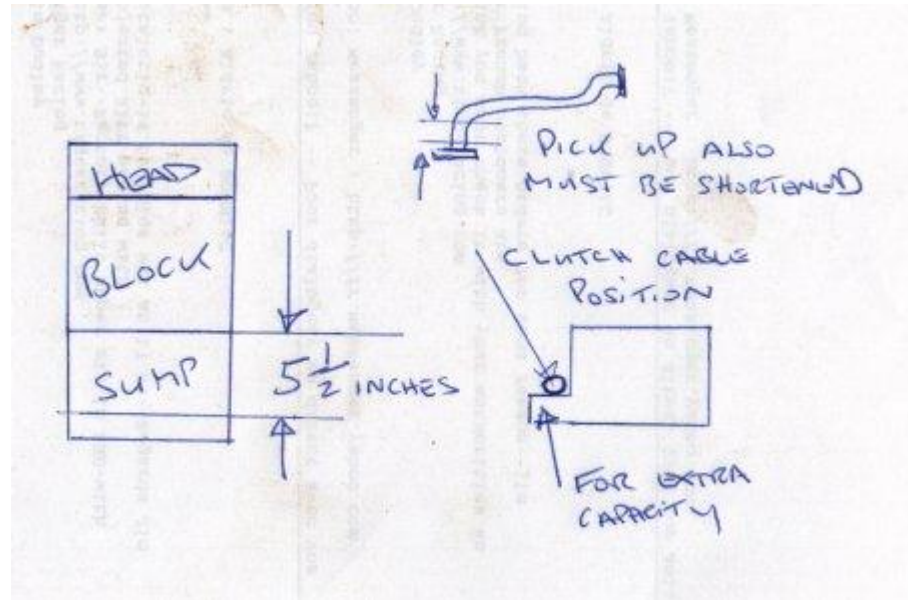
Fix the gear stick remote to the bracket welded in the central part of the chassis, bolt the rose joint on first. The two metal bar straps 25mm x 5mm are extended forwards to the shortened Sierra gear stick. Fig 12 a below



As the remote linkage has it's own reverse stop bolt – this is fitted on drivers side of

The central bracket on chassis –and must be m8 and long enough to adjust –use a locknut each side.

Fig 12.4aa
When fitting any modified sump use a round piece of plasticine on edge of pick up



And gently push on the sump- you must have around 8mm clearance between sump and pick up.

12.4 Modified sump oil level

It is essential to fit a modified sump, to give you a ground clearance.

As this changes the capacity of the sump you will need to re mark the dipstick to suit the new level. First fill with 4.5 litres of oil, run the engine for a few minutes, dip the oil and note the new level and mark with a hacksaw. This will give you the correct check level for the 4.5-litre capacity.

(For customers wishing to modify their own sump see fig 12.4a.)

12.5 Engine wiring

The engine wiring is relatively simple to follow, however note that if fitting electronic ignition from the Sierra donor car you must carefully check that it is in good working order and follow the electronic ignition wiring diagrams following this section. There are two early types of electronic ignition systems fitted to the Sierra, please make sure you follow the instructions for the correct one—if your ignition system differs to the ones in the manual—please refer to a ford or haynes Manual-

If you are using a new purpose made electronic ignition system, simply follow the manufacturers instructions.

If you wish you can use the standard points type distributor from a Ford Cortina, this will do the job and will simplify the ignition system. Make sure that you use a new set of points, and either use the Cortina coil or purchase a suitable 12 volt coil for this type of ignition. If you use the Sierra coil you will burnt out the points. It is also advisable to replace the condenser. For points distributor You will have to run a separate wire from the neg - connection of the coil to the terminal on the side of the distributor.(this terminal on the coil also feeds the rpm gauge)on tiger supplied gauges

As a general rule of thumb, use 30 amp fuses to get things going, these can be reduced in line with the Sierra fuse usage when all circuits have been tested.

The Cat normally has two relays one for the indicators the other for general circuitry, however some cats have a four-relay system, which merely have another two similar relays. Do not attempt to use the old Sierra four pin relays. The Tiger supplied relays are 5 pin voltage drop relays and the system is wired for use with these.(the indicator relay has 3 pins and you can identify the position on the loom by it having only 3 wires into back of relay holder.

12.7 Battery

The battery is fitted on the front bulkhead ahead of the GRP dash panel. The normal fitting point is in the central position on standard cats the heater from a Volkswagen Polo is fitted to its left.

The rear of the battery can have an angled piece of alloy or other bolted or riveted to the bulkhead(dash) where the battery will push up against and under the angle-- The header tank washer bottle fixture has the facility to hold down the front of the battery--drill through the chassis
And bolt (8mm) Fig 12b

Connect the main battery leads as follows:

RED from battery positive + to starter motor large terminal (via isolator switch if fitted)

BLACK 1 from battery negative – to earth on chassis

BLACK 2# from same earthing point of chassis to engine/gearbox bell housing bolt

this will ensure you get a good earth with engine, and will avoid power reduction to the starter motor.

It is good practice and indeed very useful to have a key operated battery isolator switch fitted under the dash board, this will enable you to quickly isolate power without having to disconnect the battery, and also gives you another security device. You can if preferred use the two white/red wires these are the wires from starter solenoid to ignition switch(connect to isolator and engine will not start but ignition will show)

Fig 12b below



12.8 Expansion tank and radiator

The radiator is fitted and rests on and between the two chassis cross members on the front of the car –thin rubber or other can be put under the rad-- use the metal top bracket to hold in position this is fixed to the top chassis rail (drill with 6mm).Fig 12e . Make sure the radiator is sloping backwards to get the best possible clearance with the nose cone - the small header tank connection is on bottom when fitting.

The expansion tank is fitted centrally ahead of the battery on the bulkhead. Fig 12b

The expansion tank lower water pipe is connected to the lower radiator fitting; the smaller top water pipe near the filler can be fitted in two different ways. First check the thermostat housing for a small pipe fitting, if this is present then run a hose from there to the small connection near the filler on the header tank- if this is not present then fit a short length of pipe approximately 50mm long and insert a blanking plug (bolt) fit with a jubilee clip and blank off the small connection near the filler. (NOTE- A HOLE 3.2mm can be drilled in the top of the rad as a bleed –use a self tapper to reseal with either fibre washer or a small amount of silicone)

The top hose from the radiator goes to the thermostat housing on the front of the engine, and the bottom hose from the radiator to the water pump. A small piece of pipe supplied in kit is used to join bottom hose and is useful for joining and changing angles on hoses.

If you are fitting full screen for sva then heat must be available to the screen via a



heater/blower

Fig 12e

When fitting the heater/demister you will have to run a supply from water pump to heater inlet and heater outlet to engine head centre, if no heater you go direct from water pump to engine head centre. A THERMOSWITCH IS FITTED TO TOP OF RAD

Do not forget to fill cooling system with appropriate anti-freeze solution.

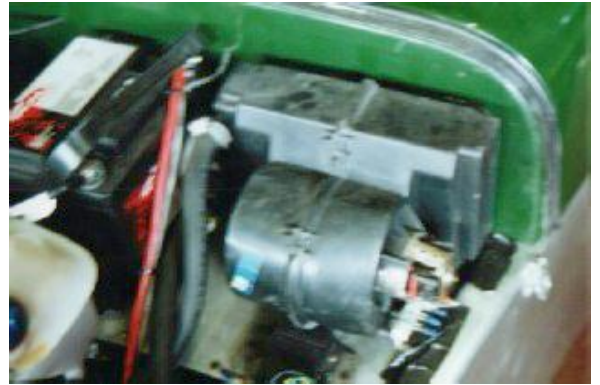
12.9 Heater/demister

The legal requirement is for a demister to be fitted if you have the full windscreen, if you have the aero screen you do not need to fit the demister unit. From early 2000 we have now been using a heater unit from a Volkswagen Polo mk 2 A small modification is done the rear of the heater sticking a small piece of alloy over the heater

Fig 12 g



fig 12f



Matrix and around the plastic shape of the heater-a hole is put in the alloy and a pipe fitted –this is fitted against the dash/bulkhead the hole continued through the grp the pipe is connected to the channel under the dash use silicone or other around joints.
Fig 12f

12.10 Radiator fan

The rad fan is fitted to the front of the rad use pu adhesive or silicone to stick
Along the top and bottom of rad fan to rad Fig 12g

After wiring the fan, short out the rad thermo switch which is fitted on the top of the radiator, and check which direction the fan is rotating and moving air through the radiator, the fan should suck air from the front of the car through the radiator. Use a thin piece of paper, if it sticks to the radiator it is sucking, if not it is blowing. If the fan is moving in the wrong direction, simply change to wires around on motor this will change the fan rotation.



PINTO Fig 12h



ZETEC

Exhaust

What you need:

- 4 x exhaust front pipes
- 8 x M8 bolts.
- exhaust manifold gasket x 4

The exhaust pipes fit over their appropriate outlets as shown in figure

- Place the exhaust pipes into their appropriate positions.
- Make sure of clearance on bodywork.
- Fit all bolts to head and leave loose fig 12h

Collector

What you need:

4 into 1 exhaust collector. Fig

- Now the collector may be fitted into position.
- The collector should be lined up with the 4 pipes
- Mark on the exhaust manifold how far up the collector should go, so you know when it is correctly fitted. And apply exhaust sealer on pipes (silicone sealer works well)
- Push the collector on to the ends of the manifolds.
Now, using a piece of wood, knock the collector on to the manifold until the marks you have made are covered up, so the collector is correctly and completely fitted. A 3.2 mm hole can be drilled underside of the collector to one of the pipes and a self-tapping screw fitted to secure the pipes.