

FITTING AN SD1 ENGINE & 5 SPEED GEARBOX INTO A P6 3500 AUTO.

Parts Required:

From SD1 Engine
Gearbox
Gear lever/tunnel grommet
Ignition Ballast Resistor
Speedometer Cable

From P6

3500S Pedal Box
Clutch Master Cylinder
& Mounting Bracket
Hydraulic Fluid
Reservoir
Radiator (not essential)
Exhaust System &
Manifolds (not essential)

Remove P6 engine, gearbox, auto selector, pedal box and hydraulic fluid reservoir.

To fit 3500S pedal box:

This can only be done with the engine out of the car. First, divert the hydraulic fluid pipe to the rear brakes. Remove the fuel changeover valve and cut away it's mounting bracket. (A modified bracket will need to be devised). Cut a 1" diameter hole in the correct

position to allow the operating shaft from the pedal box to protrude into the engine compartment. (Mine is a 1971 car. I believe later cars have holes ready in position and filled with grommets). With the pedal box bolted in position, offer up the clutch master cylinder mounting bracket. The master cylinder fits in a vertical position. There is a 'claw' which fits over the clutch operating shaft boss to assist in positioning. Drill a 3/8" hole to suit the front bolt hole of the bracket.

With the master cylinder in position, make up a bracket between the master cylinder bracket upper bolt holes and the front bolt on the steering box. Fit the master cylinder operating lever and tighten everything up. Check for satisfactory operation.

Fit the 3500S hydraulic fluid reservoir and make up a bracket to mount the fuel changeover valve.

This concludes the most difficult and time consuming part of the conversion.

SD1 Engine:

Turning now to the SD1 engine, a few decisions must be





made. The exhaust manifolds are not the same. Therefore decide which exhaust system to use. If using P6 auto exhaust system, then the P6 sump and corresponding oil pick-up must be used. If using 3500S exhaust system, then either P6 or SD1 sump may be used. If you intend to use an electric fuel pump, then retain the SD 1 front engine cover (this will retain the P6 distributor and oil pump). The SD1 front cover can be used, but an aperture must be made for the mechanical fuel pump operating lever. The mounting boss is already there, but the bolt holes will need to be tapped out 5/16" UNC. It is also advisable to get this boss spot faced. I didn't and have been plagued with an oil leak ever since. If using the SD1 cover, then the SD 1 electronic distributor and higher capacity oil pump are used and the front crankshaft oil seal is the improved lip type.

Use P6 water pump, crankshaft pulley, engine mountings, inlet manifold and linkages and crankcase breather system. Don't use SD1 Carbs. as the throttles open in the opposite direction and it is not possible to get full throttle opening. (Yes! I did try). Don't forget to fit the operating cam onto the camshaft if using a mechanical fuel pump.

With the engine and gearbox back in

the car, modify the gearbox rear mounting as shown in Fig. 1. This is for the BW35 mounts in the transmission tunnel. Type 65 mounts may be different. Fit the auto prop. shaft.

Next job is checking that oil pressure is OK. I found that the Vaseline method failed miserably. I tried three times, but turning the engine on the starter with the plugs out, failed to establish any pressure. The method I then used was to remove the front engine cover again and lay it on the bench with the joint face uppermost. Whilst turning the oil pump via the distributor shaft, oil was poured into the oil pump inlet port until the pump and filter were fully primed. The cover was then re-fitted to the engine, bolted up, and oil pressure was established immediately when the engine was turned over. (Incidentally, I once read in P6 NEWS of someone who started a V8 after a camshaft change without priming the system. He wrote that the noise was awful until the oil got round. I can well believe it and shudder to think of the wear which took place until all the lifters were primed and the oil reached all the bearings).

Use SD1 clutch slave cylinder, and P6 flexible pipe from master cylinder. Make up a short 3/16" Kunifer pipe as Fig.2 to connect the two. It will be

found advantageous to use and Eesibleed system to get fluid into the hydraulics. Clutch adjustment is made at the Master cylinder end and can be a pig. I found it necessary to make up a stop inside the car to prevent the clutch pedal being too high.

If a 3500S radiator is available all well and good, but the auto rad. is quite useable. The transmission oil cooler just becomes redundant. (Incidentally, I have never suffered any hint of overheating and consequent vapour lock since converting to manual)

Speedo cable is easily adapted. Use the P6 cable. Remove the gearbox end fitting from both cables and refit the SD 1 end onto the P6 cable. it just screws off/on. The speedo will need recalibrating. At an indicated 60 mph the car is actually doing 80, each 6 miles recorded is actually 8. Speedy Cables, The Mews, St Paul Street, Islington Tel 0171 226 9228 did the recalibration for me.

Exhaust System:

If fitting 3500S system, new manifolds will be needed, however, the auto system is quite useable if funds are limited. 3500S manifolds are getting rather scarce nowadays.

Ignition System:

If using SD1 distributor and ballast

resistor, wiring diagram is as Fig.3.

The distributor/coil side of the ballast resistor just plugs in. The supply side top connection formally went to the + side of the coil (two wires). Run a new supply to the bottom two terminals on the ballast resistor from any spare white terminal behind the dash.

Gear Lever:

When fitted, the gear lever fits in the centre of the auto selector aperture. This aperture must be opened out to accept the large transmission tunnel grommet from the SD1.

Reverse Light Wiring:

There are four wires which were originally connected to the auto box. The green wires are for the reversing light switch on the SD 1 box, the other pair were the starter inhibitor for the auto box. Short these together, or better still, wire them through a hidden switch as an anti theft device.

Was the conversion worth it? Definitely. the SD 1 engine is compatible with 4 star fuel whereas the 10.5 compression engine really needs 5 Star. The best fuel consumption as an auto was 20.25 mpg. with an average of about 16. The SD1 is averaging 24 - 25 with a best of 28. The gearbox is a delight to use with a very positive action. To anyone breaking a 3500S, save the pedal box and clutch hydraulic system, also the



exhaust manifolds. They are going to restoring.
 be needed because this is a very
 desirable conversion. Cheap, rusty
 SD1 manuals are also worth saving
 before anyone decides they are worth

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