



## SR20DET Conversion

### What you'll need:

- SR20DET Engine, gearbox, sensors and loom. (Also ECU if not using aftermarket computer)
- Intercooler (desireable, but not necessary initially)
- Series 3 front crossmember
- High pressure EFI fuel pump (and ignition coil bracket for mounting)
- Surge tank
- High pressure EFI fuel hose (1/4" and 5/16")
- S13 SR20 Front swaybar
- L series speedo sender unit
- Pod air filter, or Airbox (VL Commodore airbox fits well)
- Datsun 180b Auto Sedan tailshaft
- 3 x 5/16" to 1/4" Brass hose adaptors
- Bluebird Tailshaft loop
- Bluebird heater switch valve
- 90deg copper plumbing bends
- Bluebird L20b radiator hoses

### Procedure:

The key to fitting an SR20 (or CA18) into a Bluey is the use of a Series 3 Bluebird engine crossmember, where a CA20 once sat. First you need to rip out the old L20b and gearbox, using a Gregory's manual as a guide. It is much easier to get the motor and gearbox out as one if you park the rear wheels up on ramps before you start. Pull out the series 1 crossmember, put in the series 3 item, no hassles what so ever apart from having a struggle with the steering shaft spline on the rack, fitting it back into the steering column.

I got to work cleaning up the engine bay, giving it a respray, covering the wiring in that plastic loom stuff, and fitting up my intercooler. I bought an intercooler from a GTiR Pulsar, it took a tiny bit of cutting and bugging around to fit, but the end tanks are in a good position for the SR, and it leaves plenty of space for air to get to the radiator.



You need to take to the trans tunnel with the grinder, extending the gearstick hole back to the brace across the trans tunnel, so it is in a bullet shape. You need to make a new cover for the hole from aluminium plate, with a hole cut in one end to fit around the rubber shifter oil seal/boot. Wait till the gearbox is in before doing this.



Fit up a surge tank and VL Turbo fuel pump in the boot, using a stock series 2 pump as the lifter. Use an S2 ignition coil bracket to mount the VL pump, fits perfectly.



For some piece of mind I fabricated and fitted a 3mm thick aluminium bulkhead behind the rear seat. You can retain the original fuel lines, and use little brass adaptors from Pirtek to connect the 1/4" fuel hoses to the 5/16" VL pump and to the SR's fuel rail (also 5/16"). Take out the fuel tank to hook up the surge tank's overflow line, and so you can get to the fuel old fuel filler neck, which I removed and replaced with a cut down Mitsubishi Magna unleaded filler, this also required a little enlarging of the hole in the Bluey body with a file. The Magna filler uses the same 3 screw mounting as the Bluey, although you have to redrill one of the mounting holes.



Before putting the motor in, attack the plenum with a hacksaw then a grinder, to remove that bit that sticks up and fouls on the clutch master cylinder. I used a photo that Ben had taken to see how much to take off, so I could do it without having to put the motor in the car first. Grind it back until it is flush with the rest of the plenum/runner.



I had a look at the heater hose inlet and outlet on the SR, and sorted out my Bluey heater hoses so they'd fit. Doing it this way means you won't have to stuff around with it later, when you won't be able to get your hand back there. Mount the heater switch valve on the firewall seam, and using copper plumbing bends to route the hoses.



I also fitted up a remote mount filter setup at this stage, and rotated the turbo outlet pipe so it points forward in the direction that the chassis rail runs, this way it makes the intercooler piping simpler, and looks a lot neater.

Grind off the small Locating pins from the top of the mounts on the crossmember.

Once the engine and gearbox are in as one, it is apparent that the rubbers are a little stretched, but not too bad at all. Ben took the time to slot his rubber mount holes on the crossmember so there is less stretch in the rubbers, but since you have to unbolt the rubbers and control arms to do this, I couldn't be stuffed.



To mount the gearbox, use the original L20b gearbox mount, the holes have to be filed a little bit forward as the SR gearbox sits further back. After half an hour of solid work I had the gearbox mount bolted up. For the gearbox sensors, use some simple bullet connectors for the reverse switch, and put the SR speedo sender cog onto the old L20b mechanical sender unit, it works just fine. To do this you have to grind the S13 sender shaft flat on one side, so it is shaped like a 'D'. Fit the Bluebird clutch fluid line banjo bolt to the S13 slave cylinder.

For the accelerator cable, cut some of the plastic sheath from around the original cable, then push the threaded end section back on. Trim a little from the ends of the original radiator hoses, they fit fine after a little plastic from the thermofan shroud is trimmed. I went down to the exhaust shop and asked to have a look through their boxes of mandrel bends for my intercooler piping. I borrowed my mates cut off saw and got to work, taping the pipes up to get welded later. Don't forget the idle bypass pipe and a boost source nipple for the wastegate.

Obtain a front swaybar from an SR20 S13, including the link pins, which are different to the Bluey type. With 6mm thick aluminium spacers under the 'D' shackle mounts, it clears the sump ok, but you have to bash the sump lip in with a hammer. 8mm spacers would probably be better.

A tailshaft from a Datto 180b automatic is a perfect fit, after the flange around the gearbox spline has been cut off. Put the smaller bracket from the original tailshaft loop back on for some safety, with the big nuts between it and the body for clearance.



I had my intercooler pipes welded, then had them sand blasted before I painted them. I also picked up the loom that I had modified so that it was nothing short of plug and play. Mount the ECU on the kick-panel up beside the glovebox, it is barely visible from the cabin.



To get the tacho working with the stock SR20 ECU, take the tacho feed line from the ECU, and wire it directly to the original Bluebird tacho input. To get it to read correctly, it is necessary to splice another wire into the tacho feed, this extra wire is a constant +12v feed with a 10 kohm resistor in it, this effectively "pulls up" the low voltage of the ECU tacho-out up to the higher voltage that the Bluey tacho needs to work. For the temp gauge, splice into the ECU temp sensor wire and run the signal back to the original Bluey temp wire, with a 82 ohm resistor in the line. It works just fine, the gauge sits at about 1/3 at normal operating temperature, so you will get a good idea if it is running hot. Due to the SR making a different vacuum signal to the old L20b, the brake warning light on the dash is constantly lit. To fix this, simply remove the globe from the dash.

That's it! Pretty simple eh?! Of course now you will have to upgrade the brakes, suspension, and the diff, these are covered in other sections of this website.

#### Derwin thanks:

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