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CA18DET Conversion

The key to fitting a 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 (or CA20) and gearbox, using a Gregory's manual as a guide. If you are starting with a Series 3, you can re-use the original gearbox when you fit the CA18. We will come to the pro's and cons of this later. It is much easier to get the old motor and 'box out as one if you park the rear wheels up on ramps before you start. If you have an s1 or s2, pull out the old 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.

It is much easier to work in a neat, tidy and clean engine bay, not to mention it looks a lot better. So get to work cleaning up the engine bay, and covering the wiring in that plastic loom stuff.

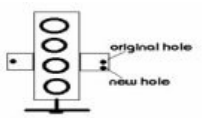
Now, we come to the decision to run the S13 CA18 gearbox or the stock Series 3 CA20 'box. If you use the original CA20 box, you will not need to modify the trans tunnel, as the shifter will still be in the same position, and you can retain your original tailshaft. Note however, the CA20 'box is weaker than the CA18 item, and so to do the job properly you really should use the CA18 gearbox. A good figure to look at is around 150rwkw, beyond this you should be using the CA18 'box.

If you intend to use the stronger CA18 'box, 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 close to one end to fit around the shifter. Wait till the gearbox is in before doing the cover.

You can retain the original fuel lines, and use little brass adaptors from Pirtek to connect the smaller fuel hoses to the VL pump and to the SR's fuel rail. 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 for legal reasons must be removed and replaced with an unleaded type filler. Use a cut down Mitsubishi Magna unleaded filler, this also requires 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 you put the motor in, sort out your heater hoses so they match the inlet and outlet on the CA18. 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.

You should keep the CA18 engine mounts and braces(to stop vibrations and things becoming loose) on the engine and use the CA20 bluebird rubber mounts. Drill a new hole in left hand engine mount to relieve stress on all four rubber mounts (2 engine and 2 g/box). (See diagram)



If you are using the CA18 gearbox, in order to mount it use the original L20b or CA20 gearbox mount, the holes have to be filed a little bit forward as the CA18 gearbox sits further back. For the gearbox sensors, use some simple bullet connectors for the reverse switch, and put the CA18 speedo sender cog onto the old L20b or CA20 mechanical sender unit, it works just fine. To do this you have to grind the old sender shaft flat on one side, so it is shaped like a 'D'. Not using the electronic speedo sender will upset the CA18 ECU a little, possibly introducing a speed cut, and can also affect the car's idle. The easiest way out of this is to have the ECU re-mapped, as they are a 'chippable' ECU.

If you used the CA18 gearbox, you have to get a new tailshaft fabricated to suit.

The Series 3 Bluebird radiator will be fine as the inlet/outlet pipes are in the right position and the CA20 hoses can be used. Have the radiator professionally cleaned ($100 - $200) and remove the engine fan and fit 2 smallish or 1 large thermo fan.

For the accelerator cable, cut some of the plastic sheath from around the original cable, then push the threaded end section back on.

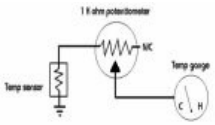
To get the tacho working with the stock CA18 ECU, take the tacho feed line from the ECU, and wire it directly to the original Bluebird tacho input. To get it to read correctly, it is necessary to splice another wire into the tacho feed, this extra wire is a constant +12v feed with a 10 kohm resistor 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.

Mount the ECU on the kick-panel up beside the glovebox, it is barely visible from the cabin & out of harm's way.

CA18det ecu connections

Things you should also do / Need to know

- The CA18 temp sensor/sender isn't matched to the Bluebird S3 temp gauge and the temp will read much higher than it is. One way to fix this is to get a sender made with CA20 internals in a CA18 package. The dodgy way to fix the problem (as I did) is to wire in series a variable resistor which can be adjusted to lower the gauge position. To set the gauge let the car heat up to a normal operating temp (85-90 deg C) check this with thermometer and then adjust the gauge accordingly.



WARNING: The down side is that if the car overheats you will never get full scale deflection of the gauge as the inline resistance will

only go down to what you have set on the pot... but the gauge will still get pretty high!

- You should also fit an adjustable fuel regulator if you fit a high volume fuel pump (i.e. Bosch VL turbo pump), as the standard pressure regulator doesn't work too well with the higher pressure and your engine will run extremely rich and use lots of fuel.