Jimny M Series Conversions
M13 to M15, M16 and M18 Engines

This guide assumes that anyone attempting this conversion has the appropriate Jimny Field Service Manual available.

This guide does not cover the installation of a replacement ECU. So far the Stock Jimny VVT M13A ECU has proven it will operate the VVT M18A engine. Another conversion has confirmed that the NON-VVT M13A ECU will operate the NON-VVT M16A Engine without issues.

Things to consider before you start your conversions:

M15A VVT engine can be obtained most commonly from Suzuki Swift.
NON-VVT M16A engine can be obtained most commonly from Suzuki Liana.
M18A VVT engine can be obtained most commonly from Suzuki Liana.
NON-VVT M15A engine can be obtained most commonly from 2001-05 Holden Cruze and some Suzuki Ignis.

Another thing to consider in Australia (and elsewhere):

Jimny conforms to Euro 4 emissions after June 30th, 2008.
Jimny conforms to Euro 3 emissions before July 1st 2008.
Liana sourced engines, 1.6 and 1.8 are Euro 3 emissions only, so check that your Jimny was ADR'd (Australian Design Rules Compliance Plate) before July 1st 2008 if you intend to use the vehicle on the public roads.

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1. Get a donor engine from somewhere. As a minimum you'll need the Head, Block, Intake Manifold, Injectors, and Throttle Body, so a mildly stripped down engine will still serve your Jimny well. You should use the Intake Manifold from the new engine but note that the Jimny manifold has additional connections for the 4x4 vacuum hose. This can be very easily overcome by inserting a simple T-Piece into one of the alternative vacuum hoses such as the vacuum line that goes from the fuel pressure regulator. Using the Throttle Body from the new engine, take the Idle Control Valve off the M13 Throttle Body and attach it to the new Throttle Body **(See Appendix 1)**. The coolant hose connections are at different angles, but easily overcome by just using some of the hoses from the donor engine, or just making your own. Note that you will need a small 5-point star socket to swap the Idle control valves. Some people have had success, other people can't get it to idle correctly. You can try or you can just use the M13 throttle body as that one is definitely going to idle correctly. Strip off the parts on the new engine that won't be needed while the oil and coolant are being drained out of the Jimny. Just on a side note, you'll need to relieve the fuel pressure because you'll be playing with the injectors, so the very first job is to pull the Fuel pump relay while the engine is running and let it run until it stalls. Crank it a few times until it’s completely starved of fuel. Then disconnect the battery and you are ready to start.

2. The main tools you are going to need are an engine hoist and a very flexible socket set and breaker bar. Basically a decent array of tools, but nothing special. You'll need a mate for some jobs and it typically takes about two days. Start by disconnecting the wiring loom. No two electrical plugs can be pushed into the wrong connector, so you only need to have a decent memory of roughly where each cable route goes. You might need to label up the small vacuum hoses around the intake manifold just to make it easier later.

3. Reaching some of the electrical connections are a real pain, so pretty soon you will have to start taking parts off the engine to complete the job of disconnecting the wiring loom and hoses.

4. First take the ancillaries off. Remove the radiator (for automatic transmissions, plug the oil cooler lines after disconnecting them from the radiator), fan, belts, and alternator – take them all completely off. Take the power steering pump off and tie it to one side of the engine bay (no need to disconnect the power steering hoses or lose any fluid). Leave the air con in place except for the compressor. This is attached to the engine, so you need to detach it and do the same as you did to the power steering pump. Don't lose any refrigerant, just disconnect from the engine and tie it out of the way. You'll also need to disconnect the Injector rail from the engine, but don't bother disconnecting the two fuel lines until the new engine is in. You can just pull the rail to one side out of the way.

5. The exhaust manifold will have to come off anyway, so take it off while the M13 engine is still in the car. It should make it easier to remove the engine with it off. With the exhaust manifold out of the way you can detach the two bolts holding the engine mount to the body. For the opposite side engine mount, don't undo the two bolts. Just undo the one nut by the water hose. It is hard to access because the hose is in the way, but you can do it with a decent ratchet spanner.

6. Do a sweep to make sure you got everything electrical disconnected. Next, take out the starter motor. For manual transmissions, remove the fasteners that mount the gearbox to the engine. You will also need to disconnect the clutch cable at the gearbox. It's hidden behind a triangular plastic cover. For automatic transmissions, remove torque converter housing lower plate and remove the drive plate bolts (removing the drive plate bolts will require that the drive plate be locked by engaging the plate’s gears with a flat end rod). Remove the fasteners that mount the gearbox to the engine and ensure that the gearbox remains level or tilted up during engine removal. The gearbox bolts are a pain to access, but you can do it with a flexible breaker bar using six-point sockets. Once these are all undone, and you are sure about this, get the hoist and jack up the engine. Make sure to lift the passenger side (right hand drive) mount up first. Once you do, you have the room to swing the engine to the passenger side and unmount the driver’s side engine mount. All should now be hanging on the engine crane. Don't jack it up too high or the gearbox will start lifting the car body. Put an axle stand under the gearbox to take the weight when the engine and gearbox separate. The gearbox has two main alignment pins on the right and left side. They will be corroded in so you will have to swing like an orangutan on that gearbox and engine to get them apart. But you'll get there eventually. A plastic wedge would help. Drive it in between the gearbox and engine.

7. With the engine out, swap all the required Jimny components over. Use the Jimny sump. You will need some instant gasket gum to do this. It doesn't use a gasket. Swap over the oil pick up pipe too. You will have to use the Jimny rocker cover and dipstick too since these will be on the wrong side of the engine on the liana block. You'll find that the liana

engine has blanking plates in all the right places. The main reason you have to swap all these items is because the liana is front wheel drive. You'll have to remove the liana engine mounting studs for one of the hoses. If you don't know how to remove studs, look it up on youtube. Alternatively, you can just grind them off if you can't be bothered with removal.

8. Use the Jimny Flywheel and clutch (MT) or Drive Plate (AT). The clutch is only 10mm smaller than the Liana, and a Jimny weighs less and it will have less power, so it's going to be fine, The Jimny clutch is up to the job. Use thread locker on the flywheel (MT) or Drive Plate (AT) bolts and torque to the settings from the Jimny manual (70 Nm / 7 kg-m / 51 lb-ft). Regarding the water impeller, you can swap the whole unit, or just the back half where the hoses connect and fit the studs and pulley from the Jimny unit to the front. You will also need to swap the Main pulley on the end of the Jimny engine over. The bolt holding it in should be torqued up good and proper, but it does come off anti-clockwise as per normal. Also don't forget to remove the liana oil filter holder. You may think it's better but it's going to whack your chasis when the engine shakes around. Tip: if you haven't got bolts big enough to do a proper job of removing the filter screw on stud, grind a small groove into it so that you can unscrew it with something flat like a flat-head screwdriver. Alternatively, you can buy a new Jimny oil filter mounting stud from Suzuki before starting. The Suzuki part number is 11241-69G01

9. Fitting the engine back in is the reverse of pulling it out naturally. Take some happy snaps for posterity’s sake!

10. Fill up all the fluids and start her up. If you get an engine light it's because you missed one of the electrical connections. The light will go away after 3 -5 cycles with the offending electrical connection connected back up. If your 4 wheel drive isn’t working, likely you missed a vacuum hose. You will probably overheat like I did the first test drive. The system will have a load of air locks in it, so don't panic, just top up the coolant again via the radiator (not the expansion tank) and all should be good!

Appendix 1

Examples shown are for an M18a engine conversion.

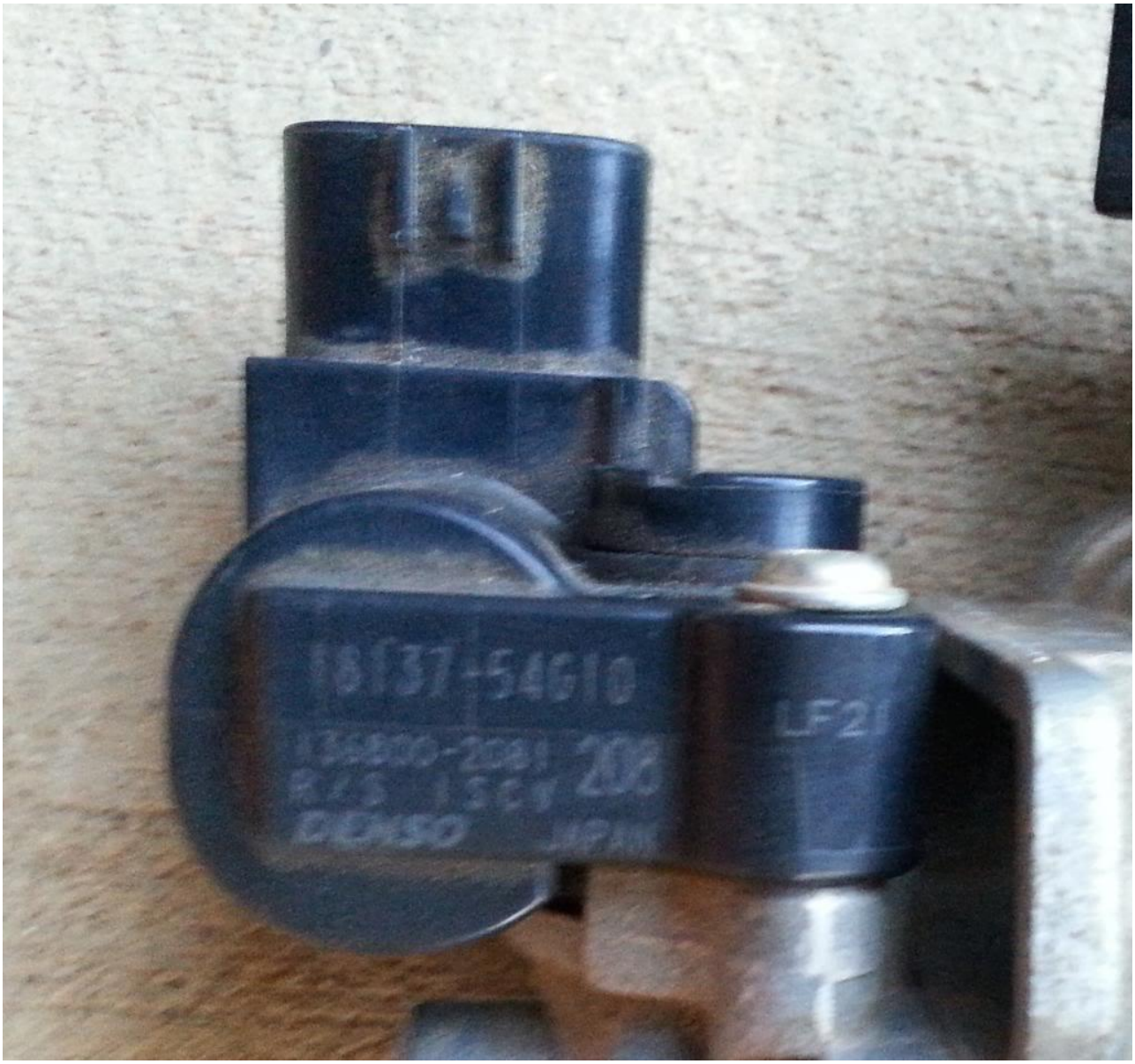
The IAC motor (the black part of the IAC valve) is held on with 2 #20 5 point torx screws.



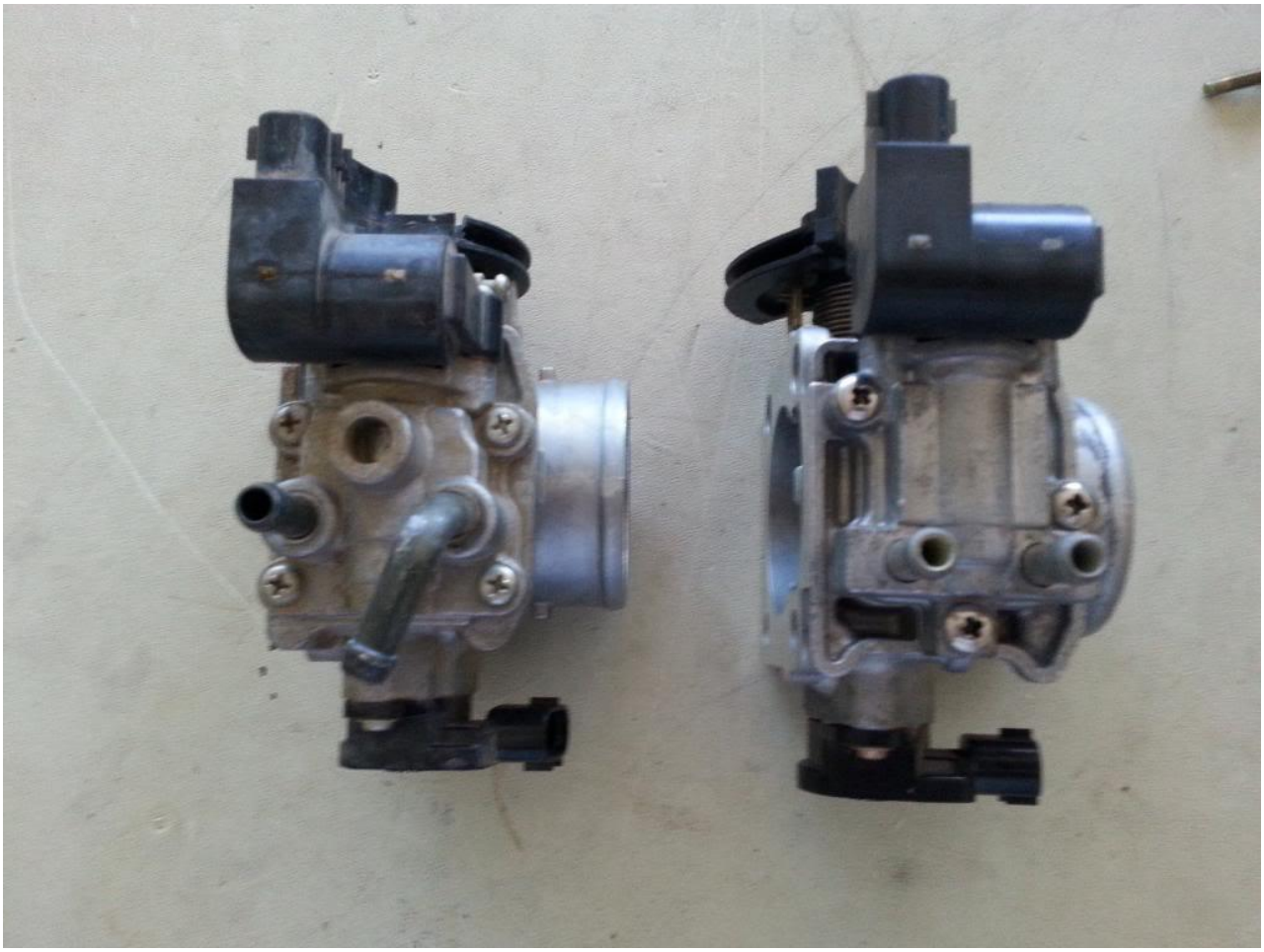
The two IAC motors look exactly the same but have different part numbers. The IAC motor from the M13A is the one you want to use and it has 18117-78F11 written on it.



The M18A IAC motor has 18137-54G10 written on it.



The top coolant pipe on the M18A throttle body is different to the one on the M13A so you will have to use the top hose from the M18A as well. You can see the difference in this picture:



The engine is much more responsive after this modification. It is clear that the engine is heavily restricted with the 1.3 throttle body (no big surprise really).

Notes:

Occasionally, the Jimny won't idle properly after the IAC change. Once fitted a 10-20 min drive in traffic and the idle will usually settle and be just as it was.

Take care during IAC removal and installation. When you remove the IAC, you will see a shaft with a permanent magnet on it. This shaft must rotate freely and smoothly, otherwise it will not idle correctly.

Credit for this guide goes to Squibby from the Auszookers forum.

Additional help and guidance from Bertie, Davert and Tim0z (from that same forum) which made an excellent guide even better.