



DOUBLE THREAT

LIKE MOST THINGS IN LIFE, TWO THROTTLES ARE BETTER THAN ONE

STORY BY LIAM QUIRK PICS BY LIAM QUIRK AND BEN HOSKING



Mace Engineering has been dabbling with V6 go-fast bits for a while now and its products are certainly yielding some good results. Wanting to check them out for ourselves, we got in contact with Steve of Mace.

He shipped us one of their twin-throttle intake manifolds to suit the Ecotec V6. The manifold isn't just a modified standard plenum with two stock throttle bodies grafted in, though. The throttles used on the Mace piece are ported and measure 69mm – a tad larger than the standard throats.

Our test mule was a garden variety VX S pack that is fitted with FIT higher-ratio rockers, Pacemaker headers and an exhaust system. So, it wasn't quite stock, but such modifications aren't out of reach for you guys and are pretty standard first steps.

The plan was to give the car a run at the drags as well as time on the dyno

before fitting the manifold. Then, while still at SAS, we could run it again with the twin-throttle manifold.

Post fitment the car was given a decent tune before returning to WSID for another night at the drags, which would see the testing finished.

The swap is pretty easy to do with a basic knowledge of how things go together, and with access to some pretty basic tools, you could have the conversion bowled over by lunch time. If you're going to give it a crack, we may as well guide you the way. So, here we go:

1. Here is what you should be looking at. First and foremost, remove the intake piping that bridges the plenum to the air box. Start disconnecting the injector loom and intake sensors.

2. The plenum 'hat' needs to come off in order to undo the bolts that hold the top half of the plenum to the runners.





3. Here you can see the old manifold alongside the new one. It becomes apparent through this comparison how much more air the twin-throttle manifold has the potential to flow. As we know, more air = more power.

4. The injector rail and injectors need to be swapped over from the old manifold onto the new one. The rail needs to be spaced out around 20mm. Bolt it down to the new manifold.

5. This spacer needs to be inserted between the runners and the new intake manifold. The device is a heat sink more than anything, and it keeps hot air away from the cool air being taken in by the motor. Apply sealer liberally between the runners and this spacer and put it in place.

6. It's time to drop the new manifold on. There are no locating bolts in the plenum yet and the only way to align it will be by landing the injectors in correctly.

7. Remove the hat off the plenum in order to bolt it to the runners. With it secure, replace the hat, but again not before applying a layer of sealant. You don't want air leaks robbing you of power.

8. With the twin-throttle manifold physically in place, it's a matter of connecting the plugs and sensors to let the ECU start doing the math. Your Throttle Position Sensor (TPS) and Idle Air Control (IAC) valve will both need adjusting to get the car idling and running just right.



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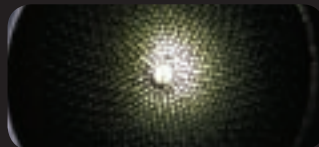
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THE RESULTS

Stats are fine, but from a driver's perspective what difference does the manifold make? We quizzed the pilot of the VX to gather some real-world feedback:

"It's got a lot more response, and a lot more torque down low. It'll now smoke up with four people in the car. It never used to do that! It's got a better engine note and the induction noise is much better. There's more of a note to it at full noise, even out the back it'll burble when you're slowing down.

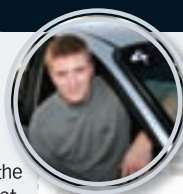
Fuel economy around town was affected. If you give it a bit around town, it sucks a lot more juice, but on the open road fuel economy is markedly improved.

[The engine] probably runs a little bit colder. It running temps have dropped by about 5°C. If anything, the throttle response is probably too much! If I tap the accelerator in first gear, I'll get wheel spin.

It has impacted on the cruise control, but that's not a great concern, really. You can definitely feel the difference. On a cold morning, the thing absolutely screams. Anything under 4000rpm you can definitely feel the difference in torque.

Launching it from the lights, it goes a hell of a lot harder from idle. That 'grandpa acceleration' that all of the Ecotec motors have, it doesn't really have that anymore. It's instant, kind of like the old Buick motors.

The induction noise is awesome



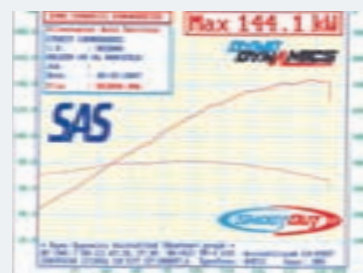
Quarter mile times after: 14.983@93.02mph

Quarter mile times before: 15.58@91.79mph

compared to how it used to be, and the engine noise in the cabin is a lot louder. It sounds choice now. Many people have commented that the exhaust noise sounds a lot angrier now whereas it used to sound somewhat sedated.

It has unleashed some animalistic instincts that have reduced drivability somewhat. But, the power gains, even though it was only 4-6kW on paper, the on-road feel is much better.

Because it has the extra low-down torque, I don't need to knock it back gears. I can stay in fifth if I want. Even though the peak power curve is only slight, the actual power curve is higher overall."



Dyno run before



Dyno run after

9. Of course, the air box will need to be plumbed up. Seeing as your factory piping will no longer suffice, Mace includes this piping in the kits.

10. With everything connected back up and the car running (even if it is in limp-home mode), it's time to roll the girl onto the dyno and give it a new tune to really reap the benefits of the dual throats.

11. Dave from SAS spent a while on the rollers perfecting the tune and getting the V6 singing. The results were a 5.1kW increase in power and a big gain in mid-range torque

12. That translated into great gains at the drags. The best the VX ran pre-manifold was a 15.58@147.73, but with the Mace manifold on we managed a 14.93@149.7.

At the end of the day, our mule was but a naturally aspirated, largely standard V6. Although the gains were impressive, with an aggressive cam, some internal work/light head porting or some forced induction, the manifold would really come into its own.

The principle behind cramming more air down the stock motor has been proven both with dyno results and drag racing stats. So, even on the most factory cars, the manifold has its advantages.

If you're looking at working your V6, a Mace Engineering intake manifold should definitely be on the shopping list. **SC**

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