

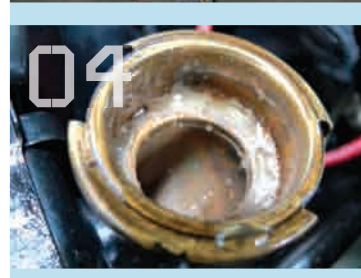
GOOD HEAD

THE VL AFFECTIONATELY KNOWN AS SHAZZA SUSTAINED A RATHER CRIPPLING INJURY - PERHAPS FROM HER LIGHTNING QUICK 16SEC PASS, BUT THE CAUSE IS YET TO BE DETERMINED. WE FELT WE OWED IT TO THE OLD GIRL TO GET HER BACK ON THE ROAD

STORY BY LIAM QUIRK PICS BY SCOTT STONEMAN AND CHRIS SORGSEPP

That's right, Shazza cracked a head gasket and was rendered disabled. Despite the temp gauge doing full loops, Shazza had to make it home via Holden HQ and North Rocks. With a fair few kilometres clocked up and exposed to enormous amounts of heat, the alloy head or the head gasket - we weren't quite sure - gave up.

The result: a milky mixture of oil and water through the coolant system. This is a telltale sign of a dud head gasket, or so we thought. First things first, let's rip off the head.



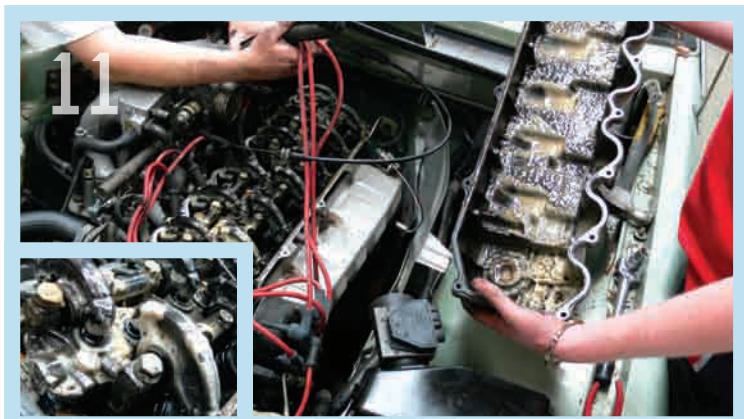
01. It can't hurt to disconnect the battery, so do that before you rip off even the tiniest part.

02. That's the bay as she stands. If it doesn't look like this, put down whatever bonnet you're holding up and move on to a VL.

03. This is the kit we picked up from the local Supercheap. It contained almost everything we needed to complete the job, including new oil and coolant, a torque wrench, new gaskets, gasket goo, new head bolts and a new oil filter.

04. After removing the radiator cap, we were greeted by this rather unpleasant sight. The milky substance is a mixture of oil and engine coolant baked on high in the galleries of the RB30 engine.

05. A similar view greeted us at the oil cap.



06. Start by removing the intake piping. We began at the airbox and worked our way toward the throttle body, first of all disconnecting the airflow meter.

07. Undo all the hose clamps dotted along the pipe and release the clamps on the PCV hoses. With those loose, remove the bolt holding the intake piping to the passenger side of the engine and pull it free. The bolts on the throttle cable will also need to be loosened.

08. With the intake piping out of the way, you can now move on to the radiator. Start by undoing the fan shroud, which is held in by a few screws. Don't remove it just yet.

09. Disconnect the main line connecting the radiator to the block and also the feed and drainage lines. Have a drip tray ready, because coolant will flow from the radiator lines and from the radiator itself. This flowed from ours.

10. With your intake piping aside, you can remove the tappet cover. It is held in by around 16 screws in all, some of which are harder to find than others.

11. With all of the screws out, remove the tappet cover. Surprise, surprise, we found more of that lovely brown goo – both on the underside of the cover and all through the rockers.

12. Now you can get cracking on the head bolts. You'll need a 10mm Allen-style socket piece, which isn't the kind of thing everyone has in their toolbox. We didn't, but a trip to Total Tools sorted that out.

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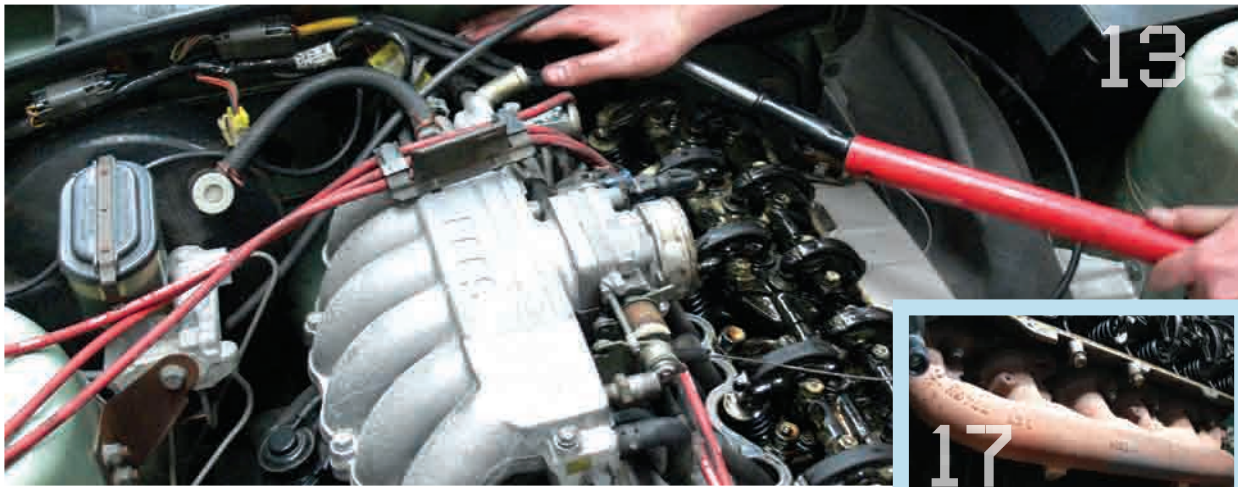
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13. Clean any gunk out of the head bolts with a screwdriver or other tool and start cracking them. They'll be in tight, so it's not a bad idea to allow a little extra leverage on the end of the ratchet. We found this in the form of a trolley jack handle.



14. With the head bolts cracked, we removed the radiator. Not the logical next step, but it's the order we did it in. Notice that Chris is wearing a white shirt. Yes, he did get in trouble from the missus.

15. We were filming the whole exercise for inclusion on the Live DVDs, so things took a little longer than they needed to because we stopped to explain what we were doing for the camera.

16. With the head physically free from the block, we needed to remove everything from the head. First to go was the exhaust manifold, which was covered by the factory heat shield.

17. Here are the factory headers in all their restrictive glory. Unbolt them.

18. While removing the bolts, you may snap more than a few. With rapid heating and cooling, they temper and may become brittle. Don't worry if you snap them – they can come back out again, but it will cost you. Bank on at least one breaking.

19. With the exhaust manifold free, start undoing the bolts on the timing belt cover and remove it. There are four bolts and they can be a little difficult to get to.



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20. To ensure that the timing belt went back on properly, we cable-tied it to the wheel. This is a simple solution to a problem that would otherwise cause you much grief. Remove the four bolts and pull it from the car.

21. To remove the intake manifold, you'll have to start by removing this bolt here and its brother a little further down the bracket.

22. Start unbolting the manifold. Again, there are numerous bolts, both top and bottom, with some easier to reach and undo than others. Keep at it and make sure you remove them all.

23. We found that the head was firmly stuck in place thanks to the gasket glue used to hold the thermostat housing in place. Crack this with a flat-head screwdriver and you're away.

24. With the manifold free, pull it off the bolts and rest it in the bay. There's no need to disconnect the lines and electrics, simply move the entire manifold out of your way.

25. The head should now be right to come totally clear of the car. Rope in a mate to help you lift it out. If you're cluey you'll give them the end with the thermostat housing and all of the associated oil/coolant sludge.

26. With the head now off the car, we could check the gasket. We were disappointed to see that it was intact, as it meant that the problem was a little more sinister.

27. Start to remove the gasket from the valley and clean up the surface. The new gasket will need a good, clean surface for it to comprehensively bind.

28. Instead of repairing the old head, which can be done, we sourced a 'new' one off a running VL. We then dropped this to Reconditioning Services at Auburn to be machined, which you should do to ensure that the head is flat and won't give you any trouble.

29. Here the head is being stripped of the rockers and timing pulley. A rattle gun makes light work of the bolts and cuts down on labour time. These parts will go into the parts washer while the head is milled.

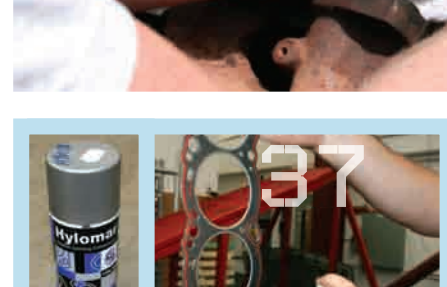
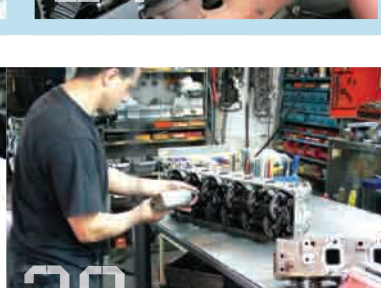
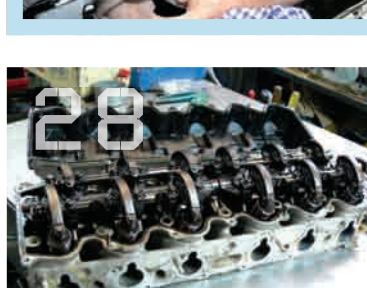
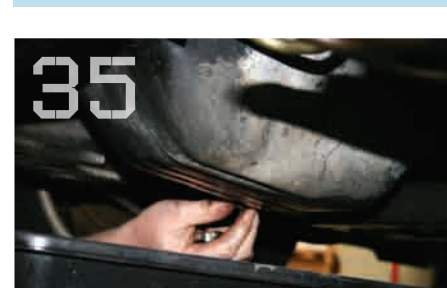
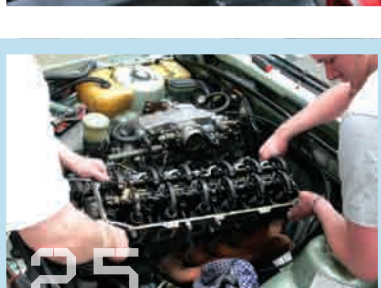
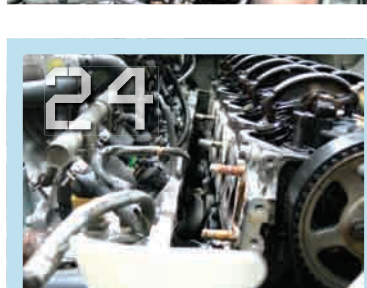
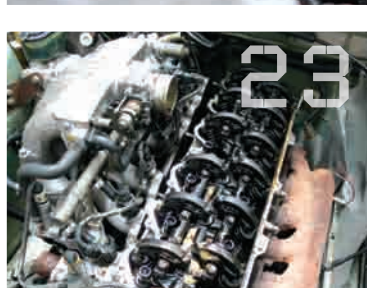
30. Here you can see the head on the mill. It works not unlike a router, slowly feeding the head through and taking off a small, regulated amount and making the surface perfectly flat and smooth.

31. With the head fresh off the mill, it joins the rocker gear in the parts washer to have the metal shards and years of built-up oil washed free.

32. Once washed in the parts washer, the parts are then blasted with a high-pressure hose just to be sure.

33. This is another VL head that just so happened to be at the reconditioners. The blue marks indicate where it has been cracked and, as you can see, it's not a little crack.

34. Here you can see the old and the new head next to one another. Recon Services did an amazing job. Just a hint - they didn't paint the new head matt black. It can now be fitted to Shazza, who has been headless for three days now.



35. Before the brand-new head was bolted atop the block, we had to drop the oil so as not to pump sludge through the fresh motor. Drop the oil as usual.

36. For the gasket to make an effective seal, all surfaces needed to be spotless. The old gasket was pretty much baked on, so we hit it with a pneumatic die-grinder mated with a coral grinder attachment. Both the intake manifold and block face were done. It's important to wear safety equipment, as well as blow the whole lot clean.

37. Now to get on with what we originally set out to do, replace a head gasket. Lay the gasket onto the block, lining up the bolt holes. We were warned against using gasket goo, and were put on to this product, Hylomar. Simply spray it onto the gasket.

38. Wait for the Hylomar to become tacky and lay the head down onto the face. Bolt the head down to the block, and we can start reassembling the motor. Follow steps one to 24, but in reverse.

39. The head bolts need to be done up to the correct torque specifications. We used new head bolts, which had to be done up in a particular manner for them to work properly. Follow the manufacturer's or workshop manual's directions.

40. The first thing to go back on was our timing belt. The cam had to be cranked around manually, as we had a new head on there. Bolt it up and snip off the cable ties while making sure that they don't fall down into the timing belt cover.

41. Replace the intake manifold gasket. As with the head gasket, coat it in Hylomar and bolt the manifold back in place.

42. The exhaust manifold has to go on too. If you have gasket goo lying around, absolutely coat both sides of the gasket with it and fit the factory pipes back up. Replace the heat shield as well.

43. Replace the top half of the timing belt cover and bolt the rocker cover back down. By this stage, the engine should look something like this.

44. Replace the dizzy. If you were silly and didn't mark it, you'll have to find top dead centre and move the rotor to fire at number one. Slot the dizzy into the block and connect all the leads.

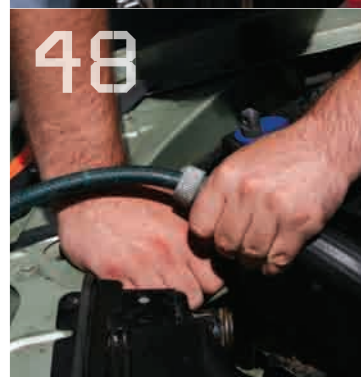
45. The engine won't be able to breathe without the intake piping, so connect that all up. Bolt it to the anchorage point and tighten all the hose clamps. Remember, a vacuum leak may cause the car to run poorly.

46. All of the PCV hoses need to be reconnected. We destroyed one of ours while pulling the intake piping off, but a short trip to the local Supercheap had us a brand-new one. Again, ensure that all connections are tight.

47. There should be nothing floating around now, but if there is, find it a home. If the engine is back together, the one thing left to replace is oil and water. Top the car up with the correct oil.

48. For fear of ooze being pumped through the coolant system, we flushed that too starting with the radiator.

49. After sitting around for so long, Shazza needed a little motivation to get going, so out came my VL with the jumper leads. With a little adjustment to the timing she fired, and even took a trip around the block.



And that should be the end of it. Provided that the engine looks the way it did before disassembly, be on your way. Check for leaks and loose parts over the coming days, and keep an eye on your temp gauge. Check the head bolts a few days after assembly to ensure they have maintained their torque specs.

Everything should be in order and you'll have your VL back in working condition without shelling out the ridiculous fees charged by the local grease monkey. *SC*

