

Cylinder Head R & R

"Don't mess with those Saabs," the old timers used to tell me, "'cause everything on them is backwards!"

Yes, parts of the Saab are arranged differently. These differences can scare people away from Saab service—but they shouldn't. For example, technicians at The Swedish Solution, Orange Village, OH, walked us through a cylinder head R and R recently. Know what? It didn't hurt a bit!

The service highlights shown here apply to the 1981 and later Saab 900—both turbo and non-turbo versions. These cars are equipped with H-series engines.

Important Notes

Cracked cylinder heads are not uncommon on these engines. But not every Saab that's losing coolant has a cracked head. If you don't find an obviously blown head gasket, clean the carbon off the combustion chambers and look for cracks. If you don't find any cracks, remember that corrosion-caused pinholes can also cause a coolant loss. When in doubt, always have the head pressure-tested. Lots of shops have eaten these jobs simply because they couldn't find anything obviously wrong, threw in a new head gasket, and crossed their fingers.

Typically, a cracked head will cause hard cold starts and a dead miss at idle. When a head gasket blows, it usually blows out between two cylinders. This means no RPM change when you short out two adjacent cylinders. In both cases, the engine will smoke and combustion pressure will build up inside the cooling system.

Some Saab specialists report that the most cost-effective repair route is to install a complete remanufactured head from a reputable supplier. Reman Saab heads are available from outfits such as Eriksson Industries (Circle No. 200).

However, other Saab specialists prefer to install new cylinder heads. They argue that the Saab head is difficult to recondition properly. They claim that inconsistent quality on reman heads has convinced them to use only new heads. New heads are available from companies such as Eriksson Industries (Circle No. 201), and Service and Value Expeditors/SAVE (Circle No. 202). If you buy a reman head assembly, the valves are supposed to be pre-adjusted. However, some Saab experts advise you to double-check the adjustment before you install the head.

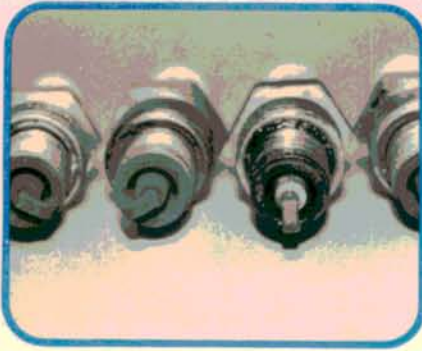
Always check the head gasket instructions because head torque procedures can vary according to the type of gasket you use. Swedish Solution technicians urge you to use only top-quality OE-equivalent head gaskets here.

Torque procedures also vary according to the type of head bolt. Some H engines have hex-head bolts, others have Torx® -head bolts. Check your manual! Always clean the head bolt threads and the threads inside the block. Clean debris and/or coolant out of the head bolt holes. Then lightly lube the head bolts before you reinstall them.

Other than these things, you'll have to:

- remove all the drive belts;
- discharge the air conditioning system;
- remove the compressor;
- change the oil, oil filter, and the coolant.

—By Dan Marinucci



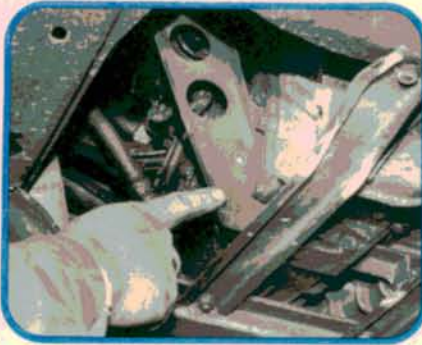
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When a head cracks, the plug inside the cracked chamber will be cleaner than the other plugs—usually white. The plug will also be wet with coolant.



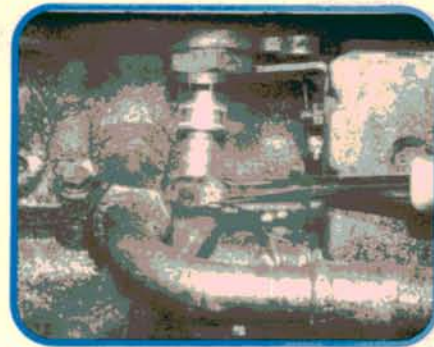
2

No question, the easiest, fastest way to do this job is to remove the hood. Thankfully, you just disconnect the washer hose, remove two bolts, and lift off the 900's hood. No, there's no adjustment to worry about—just reinstall those two bolts.



3

You don't want to have to wrestle with the turbo and the exhaust pipe as you get deeper into this job. So, unbolt this turbo support bracket now. Also, remember to unbolt the exhaust pipe bracket from the transaxle.



4

After you've removed the radiator cap and vented the system pressure, the quickest way to drain this engine is to remove this drain plug on the side of the block. This drain plug is hidden aft of the starter.



5

You can leave the distributor bolted to the cam cover. But because of the way the distributor slips into the end of the camshaft, you must bring number one up to TDC on compression stroke. Otherwise, you won't be able to remove the cam cover.



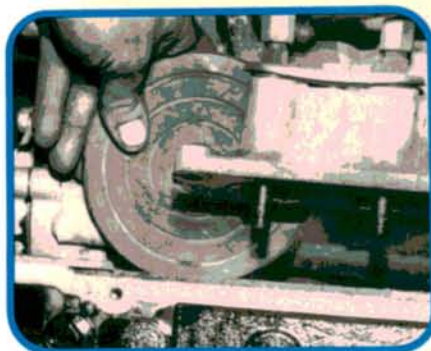
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The air conditioning compressor won't come off? Before you attack the thing with your monster persuader bar, just remove the bracket bolt that's hidden under the compressor and behind the alternator. Then lift off the compressor.



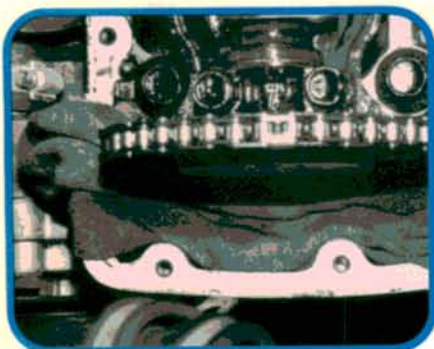
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It's easiest and safest to remove the exhaust manifold and the head *together*. However, it's also a good idea to remove the oxygen sensor before you unbolt the turbo from the exhaust manifold. This eliminates any chance of the sensor getting damaged or getting in the way.



8

After you've removed the intake manifold bolts, always support the manifold with a piece of rubber or a chunk of scrap wood. This way, you don't risk straining or damaging any injectors, injector lines, or wiring.



9

ALWAYS stuff shop towels into this opening before you remove the cam sprocket. If you did drop a bolt down there, your chances of retrieving it are slim. You'd have to pull the engine and separate the trans from the engine. Remove the sprocket and rest it between the chain guide rails.



10

Don't tug on that head yet. Feel around behind the firewall end of the head. Locate and remove these bolts that go through the timing cover. If you try to pull the head without removing these, you might crack the timing cover.



11

Loosen up the power steering pump. Disconnect its bracket from the head. To get enough space between it and the head, you'll have to carefully jack up the rear of the engine slightly. Put a block of wood on your floor jack. Jack the car at the transaxle drain plug.



12

If the head's cracked, you may find a nasty puddle of oil and coolant on this lower side of the head. Blot up this puddle with shop towels now or you'll spill it all over the engine compartment, the fender, and the floor.



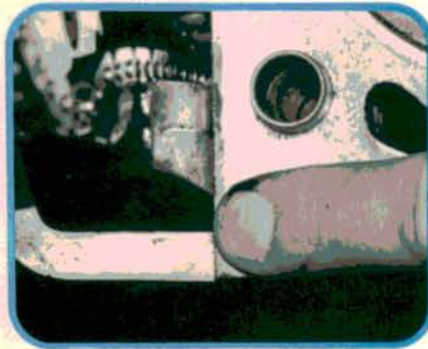
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This crack began in the typical place—the valve seat area. What's unusual is that this crack extended itself all the way across the combustion chamber! Remember that the cracked chamber will usually have less carbon buildup in it than the other combustion chambers.



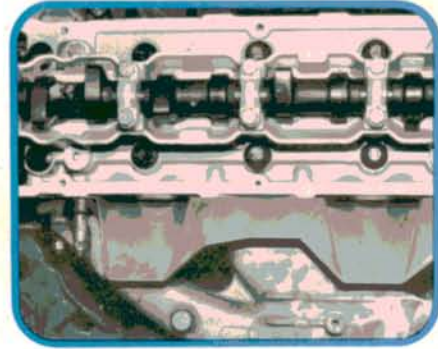
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The most common cracks you'll encounter on the H-engine head are the smaller ones that radiate out from the valve seat. Clean off the carbon and look closely, because some cracks are barely visible. Corrosion caused by neglected antifreeze can create pinhole leaks that only pressure-testing will find.



15

Always check that the chain guide bolts are tight. Don't be surprised if they aren't! If the lower guide bolt is loose, you'll have to pull the engine and pull the timing cover to tighten it. What if you did an otherwise-perfect head replacement and then the engine coughed out a guide bolt?



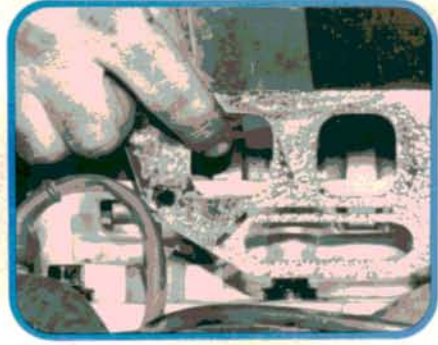
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On this engine, this heat shield is actually part of the exhaust manifold. Don't scrimp—install a new exhaust gasket. If you don't, you can bet the thing will develop an exhaust leak with your name on it!



17

These bolts hold the exhaust manifold flange onto the turbocharger. The one longer bolt on the right goes into the upper *inboard* flange hole.



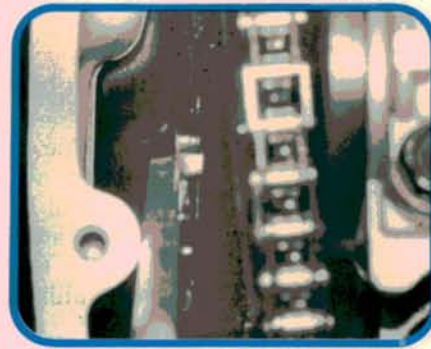
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Pay attention! You can reverse this intake gasket and all the intake bolts will still go in unobstructed. You may not realize you reversed the gasket until the job's all buttoned up and coolant is gushing out of the engine!



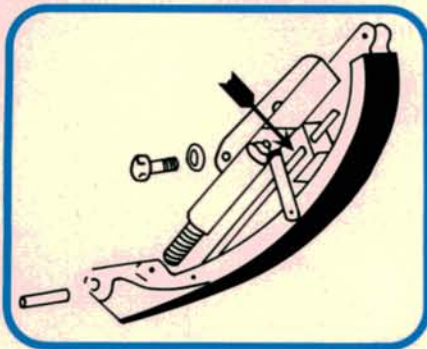
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Still acquiring the feel for threaded aluminum parts? If so, take your time. Lightly lubricate the intake bolts and always start them by hand. Here, those who live by the impact gun will also die by the impact gun!



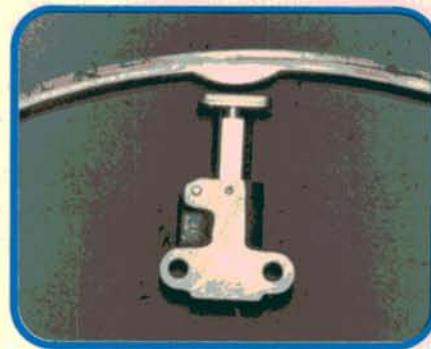
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1981-85 H-series engines have a ratcheting timing chain tensioner. In order to get the sprocket back onto the camshaft, you'll need Saab tool P/N 8393357 (or equivalent) to safely release the tensioner. If you try to force the tensioner, you may break it!



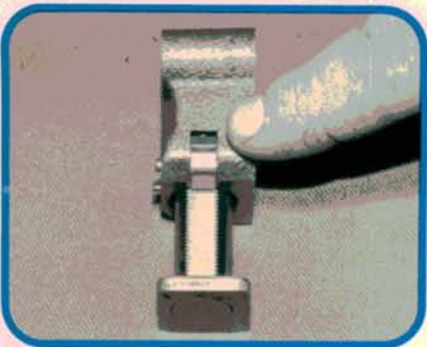
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On the earlier H engines, shine a light into the timing chain cover and look for this slot in the chain tensioner. Slip your tensioner tool into this slot. Slowly pull the tool upward until you're able to get the sprocket back onto the camshaft.



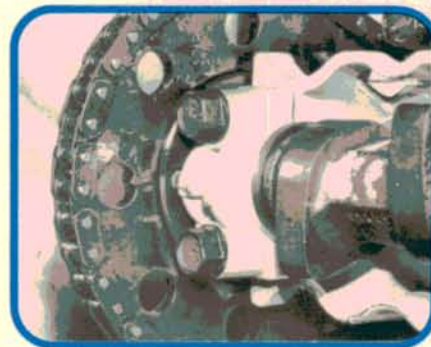
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If you have to replace a chain tensioner on an H-series Saab engine, always install this updated tensioner (P/N 8817405). If that engine has Torx® -head head bolts, odds are it's already equipped with this style of timing chain tensioner.



23

To release this later style chain tensioner, just press in this little tab with a small screwdriver.



24

In case you haven't noticed, there's a timing mark inside this sprocket hole that matches up to this V-shaped mark on top of the last camshaft cap.