

CYL-02, Cylinder Head and Head Gasket Installation

Tools

- Jack Stands or Ramps
- 6 mm Allen Head Socket
- Metric Socket Set
- Metric Wrench Set
- Torque Wrench

Other Procedures Needed

- [CYL-03](#), Cylinder Head Tightening Sequence and Torque Specifications
- [FUEL-09](#), Intake Manifold Removal and Installation
- [CAM-02](#), Camshaft Assembly Installation
- [FUEL-02](#), Fuel Injector and Fuel Rail Removal and Installation
- [ENG-06](#), Camshaft and Balance Shaft Belt Installation
- [ENG-10](#), Camshaft and Balance Shaft Belt Tension - Checking and Adjusting
- [AF-01](#), Air Filter Housing and Air Flow Sensor - Removal and Installation
- [IGN-01](#), Distributor Cap and Rotor Replacement
- [COOL-02](#), Coolant System Draining, Filling, and Venting

<u>Parts</u>	
Head Gaskets	Part Numbers
924 (77-82)	931 104 337 06
924S (87-88), 944 (83-88), 944S (87-88)	944 104 374 14
924T (80-82)	944 104 337 03
944T (86-88)	951 104 374 02
Cam Housing Gaskets	
924 (77-82)	060 198 025
924S (87-88), 944 (83-88), 944T (86-88)	944 105 199 03
924T (80-82)	060 198 025 A
944S (87-88)	928 104 447 09

<u>Parts</u>	
Intake Manifold Gaskets	
924 (77-82) (1)	047 133 227
924S (87-88), 944 (83-88), 944T (86-88) (4)	944 110 163 05
924T (80-82) (4)	931 110 147 00
944S (87-88) (1)	944 110 305 02
Exhaust Manifold Gaskets	
924 (77-82) (4)	048 129 589 A
924S (87-88), 944 (85.5-88), 944T (86-88) (4)	944 111 196 00
944 (83-85.5) (4)	928 111 193 12
924T (80-82) (4)	931 111 191 00
944S (87-88) (4)	944 111 205 00

Procedure

If not specified apply the following fastener torque specs.

Size	Torque
6 mm	8 Nm (6 ft-lbs)
8 mm	20 Nm (15 ft-lbs)
10 mm	40 Nm (29 ft-lbs)

1. Ensure that the mating surface on the cylinder head and block are clean. Remove all old gasket material and deposits. Be careful if using a scraper as it can easily gouge the aluminum surfaces of the head and block. Minor scratches can be removed with emery cloth or steel wool. Deep gouges will require machining to keep the mating surfaces level. In the case of the block this could require removing the engine from the car and removing the head studs.
2. Place the new head gasket on the block..

NOTE (from Tim Richards)

I've never tried it personally but, Tim Richards suggests removing the cylinder head with the exhaust manifolds still attached. According to Tim, it saves a couple hours of work. The cylinder head can also be installed with the exhaust manifolds attached. Thanks for the suggestion Tim.

3. Install the cylinder head onto the block.

4. Install the two M8 Allen head bolts (6 mm head) at the front of the cylinder head. Tighten the bolts to 20 Nm (15 ft-lbs).
5. Coat the head stud threads with a light film of engine oil. Do not use anything other than engine oil.
6. Install all head stud nuts finger tight and then torque in three steps to the appropriate torque for your engine. Refer to [CYL-03](#) for appropriate torque specs for your vehicle and tightening pattern.
7. Connect the coolant hose at the back of the cylinder head going to the heater control valve.
8. Connect the coolant outlet hose at the front of the cylinder head.
9. Place the exhaust manifold in position in the car.
10. Install the exhaust manifold studs and retaining nuts to secure the exhaust manifolds to the head. Torque the exhaust manifold nuts to 20 Nm (15 ft-lbs).
11. Using [FUEL-09](#), install the intake manifold.
12. Using [CAM-02](#), install the camshaft assembly.
13. Using [FUEL-02](#), install the fuel rail and injectors.
14. Using the appropriate sections of [ENG-06](#) and [ENG-10](#), install and tension the camshaft belt.
15. Install the front timing covers.
16. Using [AF-01](#), install the air filter housing and air flow sensor.
17. Using [IGN-01](#), install the rotor and distributor cap.
18. Route coil wire to the distributor and plug wires from the distributor to the spark plugs.
19. Using [COOL-02](#), fill and vent the coolant system.
20. Reconnect battery leads.

NOTE

After the engine has been run at normal operating temperature, the exhaust manifold retaining nuts should be checked and re-torqued as necessary.