

Removing fuel rail with injectors

Remove:

- Fuel rail cover.
- Injector connectors and clips.
- Clamps (2) holding fuel lines.

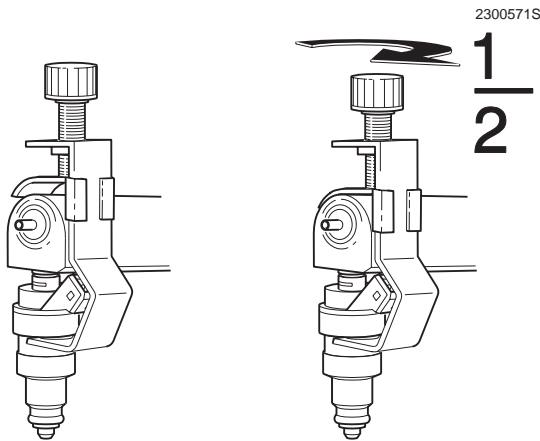
Install:

Early fuel rail:

- 5 clamps 999 5533-8 on the injectors.

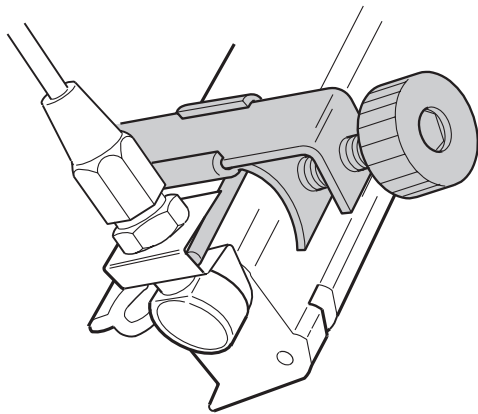
Later fuel rail (with bayonet coupling):

- 4 clamps 999 5533-8 and 1 clamp 999 5620-3 on the injectors. Position clamp 999 5620-3 closest to the fuel pressure line as illustrated below.

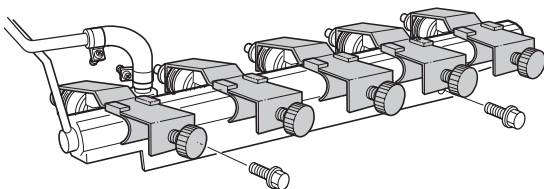


Press in the clamps so that they are in good contact with injectors.

- Screw down adjustment screw so that the contact plate is in contact with the fuel rail, turn the screw another half turn.



The Figure shows clamp 999 5620-3 positioned closest to the fuel pressure line (late fuel rail).

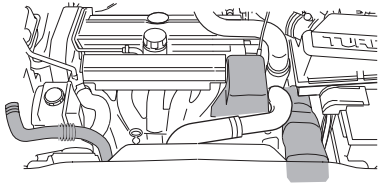
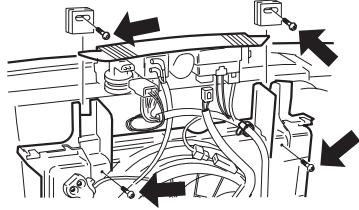


Remove:

- Vacuum hose from pressure regulator.
- Screws holding fuel rail.
- Lift the fuel rail twisting it carefully. Hook the middle injector behind the drainage gully seal.

Note: Handle injectors **carefully** to avoid damage to nozzles and needles.
Keep any damping rubbers on the intake manifold.

Removing engine cooling fan (FC)



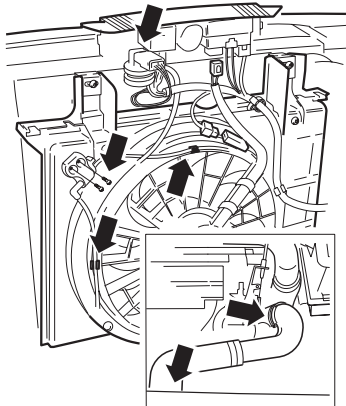
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Remove:

- Charge air pipe
- Air intake in front and inlet hose to the air cleaner (ACL).
- Air duct to the control module box.
- Engine cooling fan (FC) screws (4).

Lift away the upper air guide with relay.

Remove the two spacer washers on top.



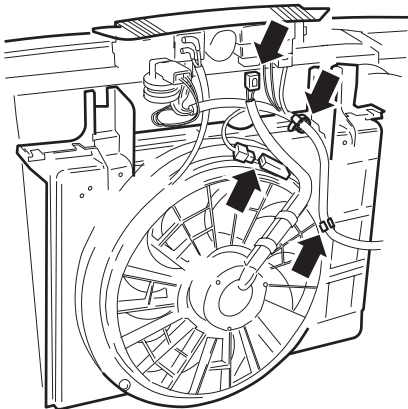
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Remove:

- Charge air pipe between the charge air cooler (CAC) and hose on the throttle body.
- Two screws retaining the canister purge (CP) valve.
- EVAP hose from the clips on the engine cooling fan (FC) shroud.

Engines with EGR systems:

Pull the EGR controller out of the track from upper air guide.



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All:

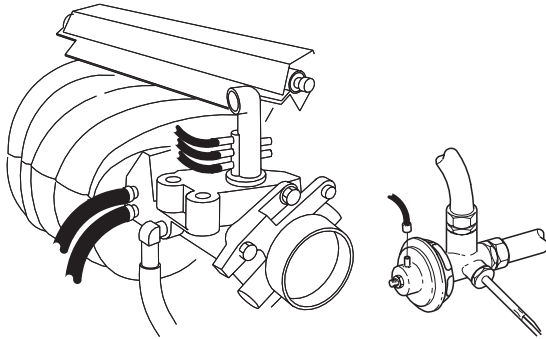
Disconnect the engine cooling fan (FC) connectors (2).

Remove the cable from the tie strap and clip on the engine cooling fan (FC) shroud.

Place the air guide with the relay on the engine

Remove engine cooling fan (FC). Pull engine cooling fan (FC) and shroud upwards.

Cover the radiator with protective panel P/N 999 5474-5.



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Removing hoses and connectors

Remove:

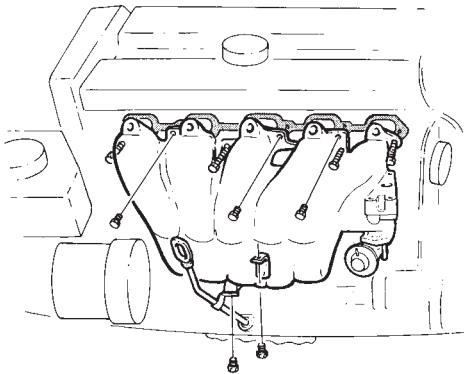
- Idle air control (IAC) valve and throttle position (TP) sensor connectors.
- Brake system servo hose.
- Hoses from multi-nipple and intake manifold.
- Disconnect EGR temperature sensor.
- Injector cable harness tie strap.

Removing intake manifold

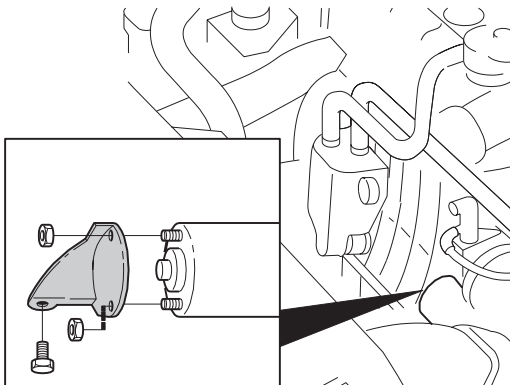
Remove:

- Intake manifold upper bolts (3).
- Dipstick and bracket from intake manifold.
- Intake manifold lower bolts.
- Gas recirculation pipe from EGR valve.
- Intake manifold support bracket bolt.
- Intake manifold, by lifting it approx. 20 mm (3/4") to free it from the engine.
- Crankcase ventilation hose from intake manifold at servo pump (if equipped).
- Intake manifold gasket.

Clean gasket faces on cylinder head and intake manifold.



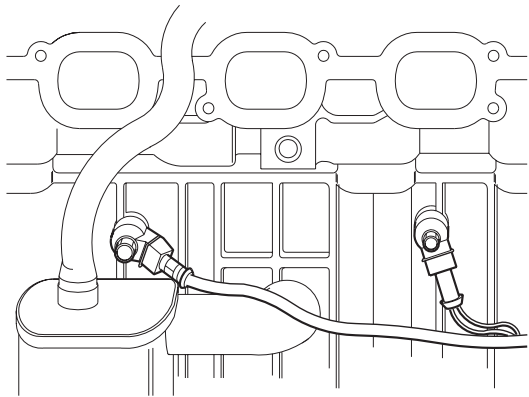
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Remove:

- Starter motor bracket



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Remove

- Knock sensor (KS) connectors
- Knock sensors (KS)

Replace cable terminals and receptacle housings

Replace cable terminals and receptacle housings on cables from engine compartment cable harness to knock sensors (KS).

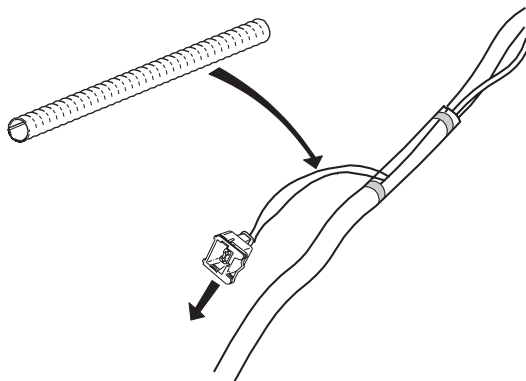
See Service Manual "Wiring repairs and replacement of cable terminals" 850, 900 sections *DD, EB, FA, FB, GB, GC, GD, J*.

Note: Ground cables (two-tone) should be connected to position 2 in the receptacle housing.

Pull the shorter cable (to the rear knock sensor (KS)) out of the protective sleeve so that it reaches the engine wiring duct.

Note: The knock sensor (KS) cable should be routed under the starter motor/starter motor bracket.

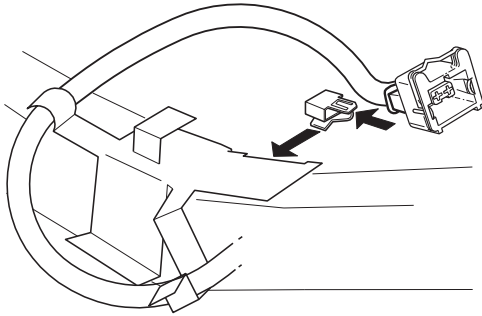
Tape the ends of the protective sleeve where the rear knock sensor (KS) wiring emerges.



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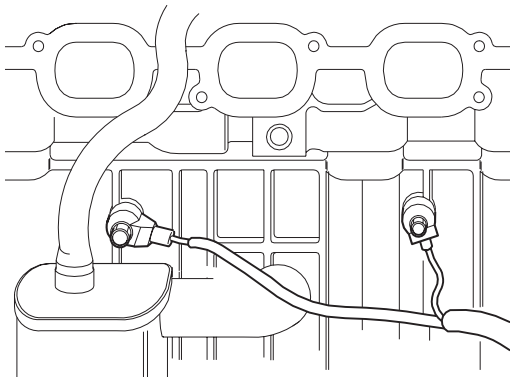
Install protective sleeve on wiring.

Cut to the correct length. Protective sleeve is available by the meter.



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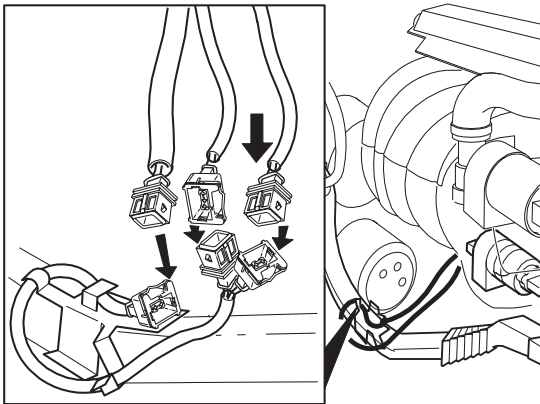
Install bracket, adapter wiring and clip as illustrated.



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Install knock sensors (KS) and tighten to **20 Nm** (15 ft.lbs).

Note: Tighten front knock sensor (KS) in the three o'clock position and rear knock sensor (KS) in the five o'clock position.

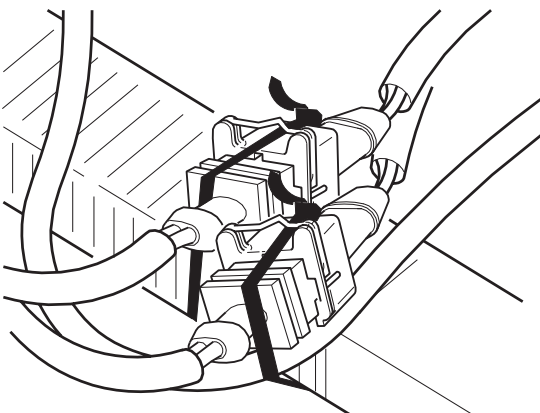


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Install bracket with adapter wiring on the engine wiring duct.

Route the cable from the knock sensors (KS) and the two existing cables under the starter motor bracket to the cable duct.

Note: Check the cable color markings so that they are connected to the correct connector on the adapter wiring.



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Clamp the connectors and wiring to the cable duct with two tie straps as illustrated.

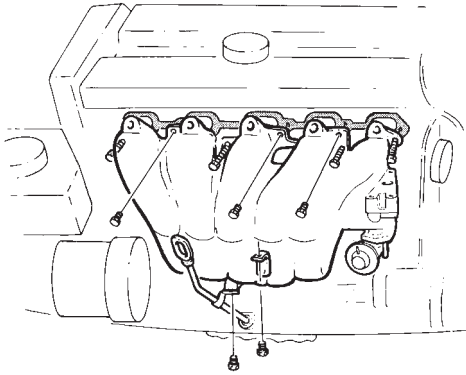
Installing intake manifold

Install:

- New gasket with manifold lower bolts (four).
- *If equipped:* Crankcase ventilation hose to intake manifold at servo pump.
- *All:* Intake manifold.

Note: Do **not** crush the crankcase ventilation hose between the cylinder head and intake manifold.

- Reinstall the EGR valve on the pipe. Tighten EGR valve gas recirculation pipe connection to **50 Nm** (37 ft.lbs).
- Upper intake manifold screws and tighten all screws to **20 Nm** (15 ft.lbs).
- Intake manifold support bracket bolt.
- Dipstick.

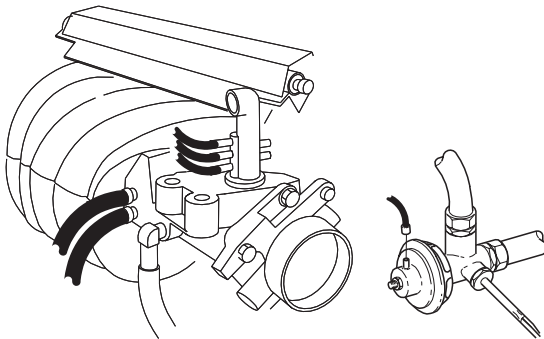


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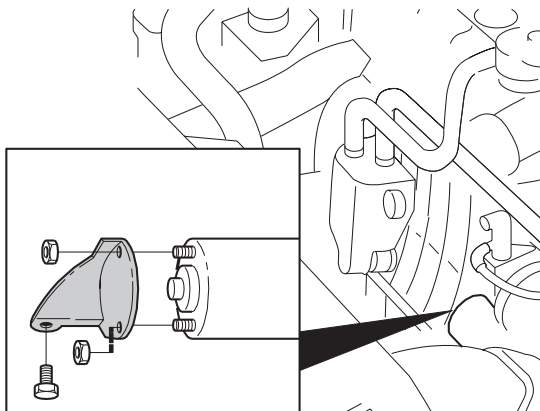
Reinstalling hoses and connectors

Install:

- Injector cable harness tie strap.
- Connect EGR temperature sensor.
- Intake manifold hoses.
- Multi-nipple hoses.
- Brake system servo hose.
- Idle air control (IAC) valve and throttle position (TP) sensor connectors

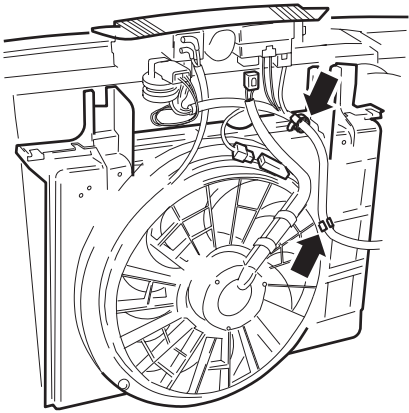


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Install starter motor bracket

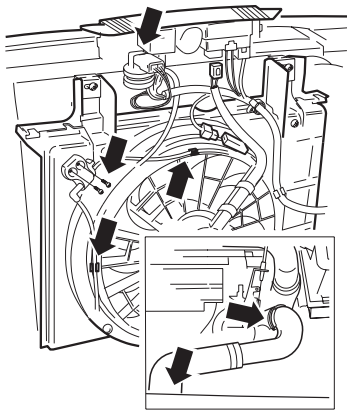


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Reinstalling engine cooling fan (FC)

Install:

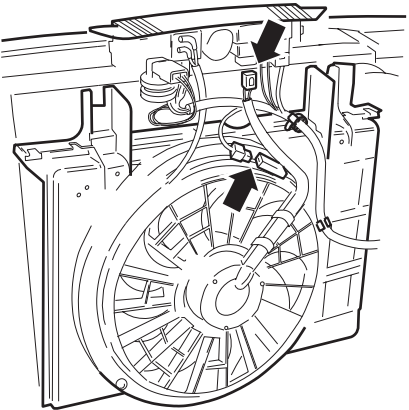
- Engine cooling fan (FC) with shroud on the radiator.
- Position the air guide with the relay on the radiator.
- Secure the cable in the tie strap and the clip on the engine cooling fan (FC) shroud.



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Install:

- EVAP valve on the engine cooling fan (FC) shroud.
- Two clips around EVAP hose on engine cooling fan (FC) shroud.
- Charge air pipe between the charge air cooler (CAC) and hose on the throttle body.
- Slide the EGR converter into the track in the upper air guide and check that it is secure.

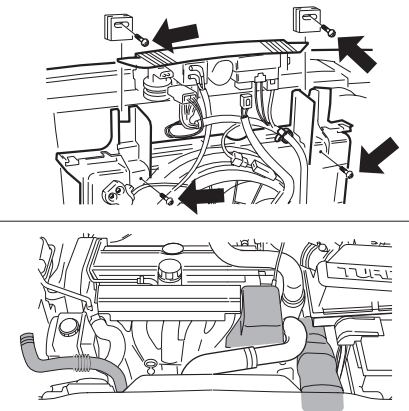


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Connect engine cooling fan (FC) connectors.

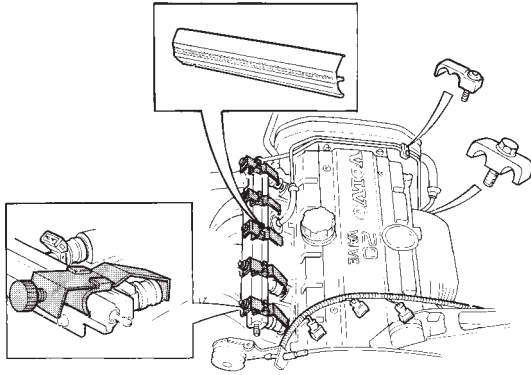
Install:

- Two spacer washers in the top of the tracks.
- Engine cooling fan (FC) shroud and upper air guide with four screws.
- Throttle cable.
- Throttle pulley cover.
- Air duct to the control module box.
- Air intake and intake hose to air cleaner (ACL).



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Installing fuel rail



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Install:

- All rubber damping elements on intake manifold.
- Fuel rail and fuel line clips (two).
- New screws and tighten to **10 Nm** (7.4 ft.lbs).
- Remove injector holders.
- Remove tie strap.
- Pressure regulator vacuum hose.
- Injector connectors. Check that each connector is fitted with a rubber seal.
- Fuel rail cover.

Install:

- Battery negative lead.

Enter radio code.

Reset clock.

WARRANTY STATEMENT: Claims may be submitted under the New Car Limited Warranty when a manufacturing defect is present using claim type: 01

Operation No.	Labor description	Time allowance
38602-2	Knock sensor (KS) replacement	2.1 hr
28921-3	Knock sensor (KS) wiring, modification	0.2 hr