

110 Engine Removal and Installation

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GENERAL

This repair group includes an overview of non-turbo and turbo engine removal and installation. The procedures have been combined and steps applying to an individual engine have been highlighted.

Transmission removal is required before the engine can be removed.

See also:

- **020 Maintenance** for engine covers removal
- **100 Engine-General** for engine codes and applications
- **121 Battery, Starter, Alternator**
- **170 Radiator and Cooling System**
- **180 Exhaust System**
- **230 Manual Transmission**
- **240 Automatic Transmission**
- **260 Driveshafts**
- **310 Front Suspension**
- **410 Fenders, Engine Hood**

110-2 Engine Removal and Installation

Warnings and Cautions

Warnings and Cautions

WARNING—

- The fuel system is designed to retain pressure even when the ignition is OFF. When working with the fuel system, loosen fuel lines slowly to allow residual fuel pressure to dissipate. Avoid spraying fuel.
- Before beginning any work on the fuel system, place a fire extinguisher in the vicinity of the work area.
- Fuel is highly flammable. When working around fuel, do not disconnect any wires that could cause electrical sparks. Do not smoke or work near heaters or other fire hazards.
- Loosen the fuel tank cap to release pressure in the tank before working on the tank or lines.
- When disconnecting a fuel hose, wrap a shop towel around the end of the hose to prevent fuel spray.
- Do not use a work light with an incandescent bulb near any fuel. Fuel may spray on the hot bulb causing a fire.
- Make sure the work area is properly ventilated.
- Steel fasteners may not be used in place of aluminum fasteners due to the threat of corrosion.
- Magnesium crankcase requires aluminum fasteners.
- Replace aluminum fasteners each time they are removed.
- Aluminum fasteners are identified with blue paint marking.

CAUTION—

- If the MIL (malfunction indicator light, also called Check Engine or Service Engine Soon light) is illuminated, **see** **OBD On-Board Diagnostics** for DME fault code information.
- If other system faults are indicated by an illuminated ABS, SRS or DSC warning light, see the appropriate repair group in this manual or an authorized BMW dealer for more information on fault codes.

ENGINE REMOVAL AND INSTALLATION

Be sure to cover painted surfaces before beginning the removal procedure. As an aid to installation, label components, wires and hoses before removing them. Do not reuse gaskets, O-rings or seals during reassembly.

WARNING—

- Due to risk of personal injury, be sure the engine is cold before beginning the removal procedure.

Engine, removing and installing

- Place hood in service position.
- Remove exhaust system. See **180 Exhaust System**.
- Remove transmission. See **230 Manual Transmission** or **240 Automatic Transmission**.
- Drain engine oil.

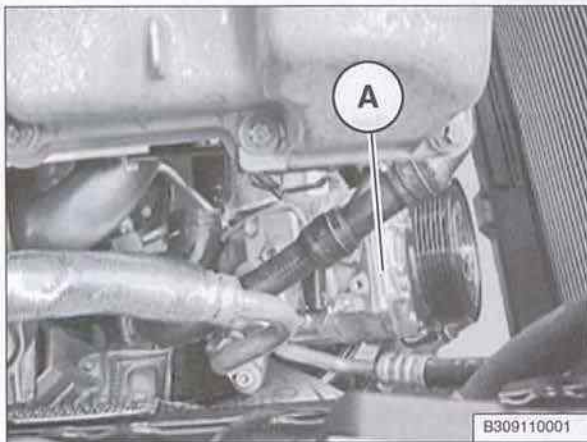
- Drain engine coolant.
- Disconnect negative (–) cable from battery.

CAUTION—

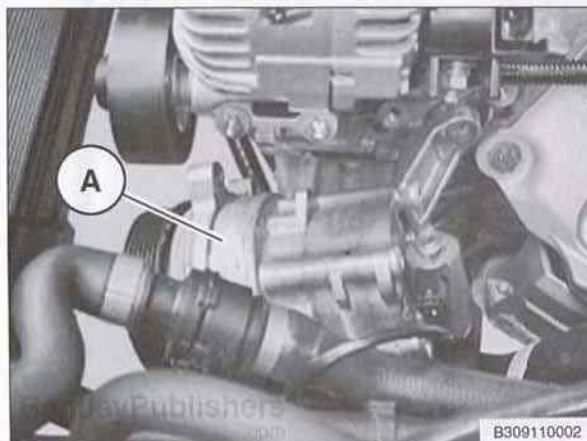
- Prior to disconnecting the battery, read the battery disconnection cautions in 001 Warnings and Cautions.

- Remove air cleaner housing and fresh air ducts. See 130 Fuel Injection.
- Remove fan cowl with electric cooling fan. See 170 Radiator and Cooling System.
- Remove radiator. See 170 Radiator and Cooling System.
- Remove thermostat. See 170 Radiator and Cooling System.
- Remove all cooling system hoses from vehicle.
- Remove intake manifold. See 130 Fuel Injection.
- Remove vacuum line from brake booster.
- Disconnect electrical connectors and harness from ignition coils and lay harness aside.
- Disconnect engine electrical harness and lay aside.
- Turbo engine: Remove fuel supply line to high pressure fuel pump. See 160 Fuel Tank and Fuel Pump for high pressure fuel pump removal and installation.

- Remove A/C compressor (A) from engine and set on front axle carrier. Do not disconnect A/C lines or discharge system.

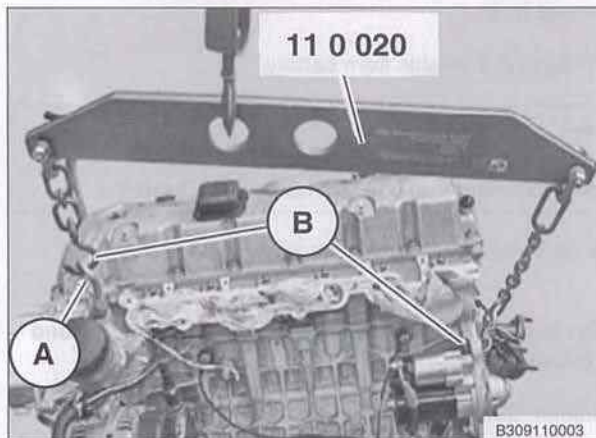


- Remove power steering pump (A) and set on front axle carrier. Do not disconnect hydraulic lines.

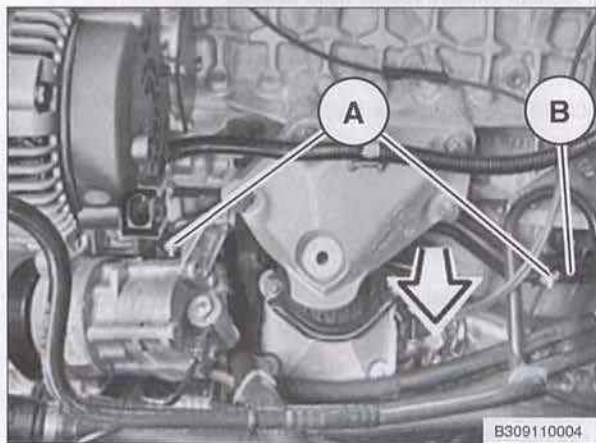


110-4 Engine Removal and Installation

Engine, removing and installing



- Install engine tow hook (from tool kit in trunk) to front of engine (A). Attach BMW special tool 11 0 020 to engine using only specified mounting places (B).



- If equipped with automatic transmission: Raise engine 10 cm (4 in) and remove fasteners (A) for ATF cooler lines (B).
- Remove engine from vehicle using engine hoist attached to BMW special hook 11 0 020.
 - Raise engine slowly while watching carefully to make sure no lines, wires or hoses become snagged.
 - Installation is reverse of removal. Remember to:
 - Replace aluminum fasteners.
 - Check for fuel leaks.
 - Check for coolant leaks.
 - Check and clear any fault codes using BMW factory scan tool or equivalent.

