

**Haynes**
shows you how

BMW 3-Series (92-98) & Z3 (96-98) Haynes Online Manual

20 Anti-lock braking system (ABS) components - removal and installation

Hydraulic unit

1 It is not possible for the home mechanic to remove the hydraulic unit. If the hydraulic unions are disconnected from the unit, air will enter the high-pressure hydraulic system linking the master cylinder and hydraulic unit. Bleeding of the high-pressure system can only be safely carried out by a BMW dealer who has access to the service tester (see [Section 2](#)). Hydraulic unit removal and installation should therefore be entrusted to a BMW dealer or other qualified repair shop.

Accumulator - models with All Season Traction (AST)

2 It is not possible for the home mechanic to remove the accumulator unit. If the hydraulic unions are disconnected from the unit, air will enter the high-pressure hydraulic system linking the accumulator and hydraulic unit. Bleeding of the high-pressure system can only be safely carried out by a technician who has access to the service tester (see [Section 2](#)). Accumulator removal and installation should therefore be entrusted to a BMW dealer or other qualified repair shop.

Electronic control unit (ECU)

Note:

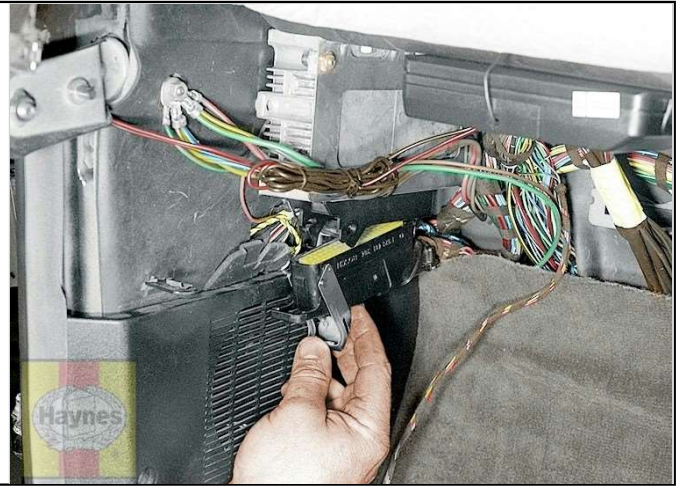
On vehicles equipped with All Season Traction (AST), if the ECU is disconnected, on reconnection it must be initialized using BMW diagnostic equipment. Note that the traction control system will be disabled until the ECU has been initialized.

Removal

3 Disconnect the battery negative terminal and remove the glove box (see [Section 27](#) in [Chapter 11](#)). Unclip the dash undercover and remove it. **Caution:** *If the stereo in your vehicle is equipped with an anti-theft system, make sure you have the correct activation code before disconnecting the battery.*

4 Lift the ECU wiring connector locking clip, and carefully disconnect the wiring connector (see illustration) .

20.4 Release the retaining clip and disconnect the wiring connector from the ABS ECU



5 Loosen and remove the nuts/bolts securing the ECU mounting bracket in position, and remove it from the vehicle (see illustration) .

20.5 Unscrew the retaining bolts and remove the ABS ECU and mounting bracket from the underneath the dash



Installation

6 Installation is a reversal of the removal procedure, ensuring that the ECU wiring connector is correctly and securely reconnected.

Front wheel sensor

Removal

7 Chock the rear wheels, then firmly apply the parking brake, jack up the front of the vehicle and support on axle stands. Remove the appropriate front wheel. Trace the wiring back from the sensor to the connector which is situated in a protective plastic box. Unclip the lid, then free the wiring connector and disconnect it from the main harness (see illustration) .

20.7 Unclip the cover then free the wheel sensor from its protective box and disconnect it



8 Loosen and remove the bolt securing the sensor to the steering knuckle, and remove the sensor and lead assembly from the vehicle (see illustration) .

20.8 Unscrew the retaining bolt (arrow) and withdraw the front wheel sensor from the steering knuckle



Installation

9 Prior to installation, apply a thin coat of multi-purpose grease to the sensor tip.

10 Ensure that the sensor and steering knuckle sealing faces are clean, then install the sensor to the hub. Install the retaining bolt and tighten it to the specified torque.

11 Ensure that the sensor wiring is correctly routed and retained by all the necessary clips, and reconnect it to its wiring connector. Install the sensor into the box and securely clip the lid in position.

12 Install the wheel, then lower the vehicle to the ground and tighten the wheel bolts to the specified torque.

Rear wheel sensor

Removal

13 Chock the front wheels, then jack up the rear of the vehicle and support it on axle stands. Remove the appropriate wheel.

14 Remove the sensor (see Steps 7 and 8).

Installation

15 Install the sensor (see Steps 9 through 12).

Front reluctor rings

16 The front reluctor rings are fixed onto the rear of wheel hubs. Examine the rings for damage such as chipped or missing teeth. If replacement is necessary, the complete hub assembly must be disassembled and the bearings replaced (see [Chapter 10](#)).

Rear reluctor rings

17 The rear reluctor rings are pressed onto the driveaxle outer joints. Examine the rings for signs of damage such as chipped or missing teeth, and replace as necessary. If replacement is necessary, the driveaxle assembly must be replaced (see [Chapter 8](#)).

Brake pedal position sensor

18 Release the vacuum from inside the brake booster by depressing the brake pedal several times.

19 Disconnect the battery negative terminal, then disconnect the wiring connector from the pedal position sensor. **Caution:** *If the stereo in your vehicle is equipped with an anti-theft system, make sure you have the correct activation code before disconnecting the battery.*

20 Using a small screwdriver, carefully lever off the sensor retaining clip, then withdraw the sensor from the front of the booster unit. Recover the sealing ring and snap-ring.

Installation

21 If a new sensor is being installed, note the color of the spacer installed on the original sensor, and install the relevant color spacer to the new sensor. This is vital to ensure that the correct operation of the anti-lock braking system.

22 Install the new snap-ring in the groove on the front of the brake booster, positioning its end gap over the booster sensor locating slot.

23 Install the new sealing ring to the sensor, lubricating it with a smear of oil to aid installation.

24 Install the sensor to the booster, aligning its locating notch with the booster upper groove. Push the sensor until it clicks into position, and check that it is securely retained by the snap-ring.

25 Reconnect the sensor wiring, and connect the battery negative terminal.