MAINTENANCE AND REPAIR

ON–VEHICLE SERVICE

SERVICE PRECAUTIONS

CAUTION : Brake fluid may irritate eyes and skin. In case of contact, take the following actions:

- Eye contact – rinse thoroughly with water.
- Skin contact – wash with soap and water.
- Ingestion – consult a physician immediately.

CAUTION : To help avoid personal injury due to poor braking, DO NOT tap into the vehicle's brake sys–tem to operate a trailer brake system.

Notice : When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) may be used. Fasteners that are not reused, and those requiring thread–locking compound will be called out. The correct torque values must be used when installing fasteners that require them. If the above procedures are not followed, parts or system damage could result.

Notice : Use only DOT 3 equivalent hydraulic brake fluid. The use of DOT 5 (silicone) brake fluid is not recommended. Reduced brake performance or durability may result.

Notice : Avoid spilling brake fluid on any of the vehicle's painted surfaces, wiring, cables, or electrical connectors. Brake fluid will damage paint and electrical connections. If any fluid is spilled on the vehicle, flush the area with water to lessen the damage.

Computer System Service Precautions

Take care to avoid electronic brake control module (EBCM) circuit overloading. In testing for opens or shorts, do not ground or apply voltage to any circuit unless instructed to do so by the diagnostic procedure. Test circuits only with a high–impedance multimeter. Never remove or apply power to any control module with the ignition in the ON position. Always turn the ignition to the OFF position before removing or connecting battery cables, fuses, or connectors.

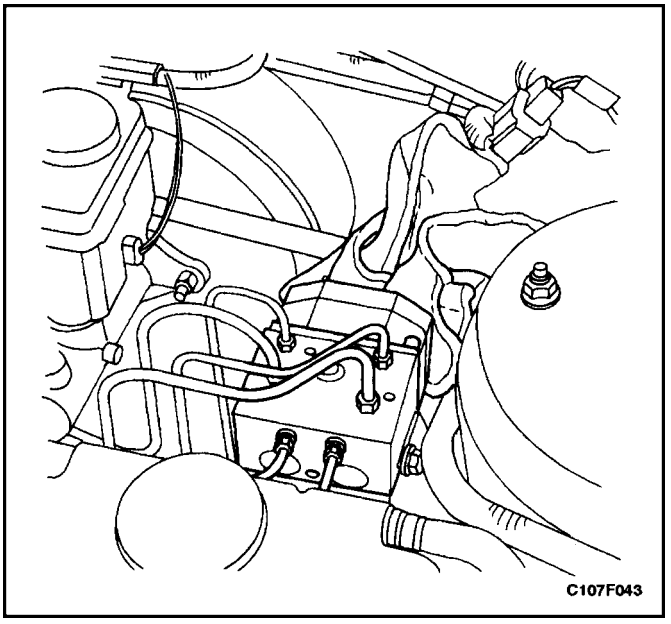
General Service Precautions

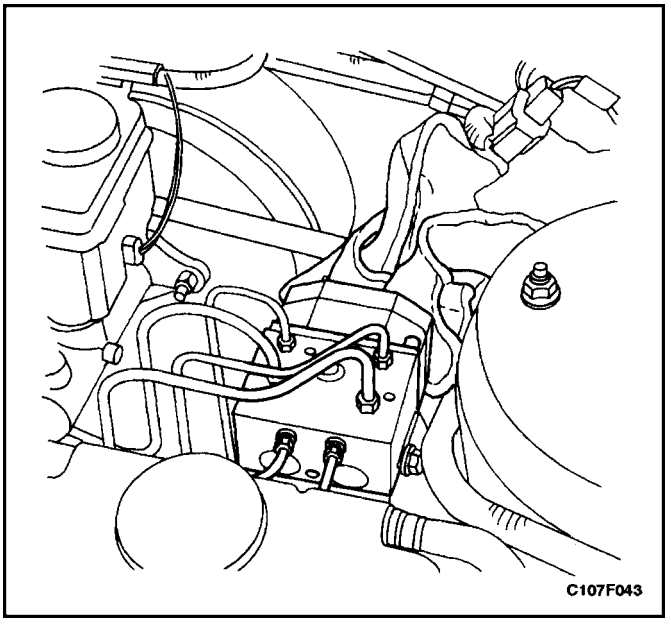
- Disconnect the EBCM connector before performing any vehicle welding work using an electric arc welder.
- Do not attempt to disassemble any component designated as nonserviceable. The hydraulic modulator and the EBCM can be separated from each other and replaced separately but cannot be serviced. They have no replaceable parts, and there is no access to the components they contain.

BLEEDING SYSTEM

Replacement modulators are shipped already filled and bled. In normal procedures requiring the removal of the modulator, such as to replace the EBCM, air will not enter the modulator, and normal bleeding will be all that is needed. For this procedure, refer to*Section 4A, Hydraulic Brakes.*

If air enters the hydraulic modulator, or if an unfilled modulator is installed, use the brake bleeding program in the scan tool to bleed the modulator. Manual bleeding of the hydraulic modulator is not possible.





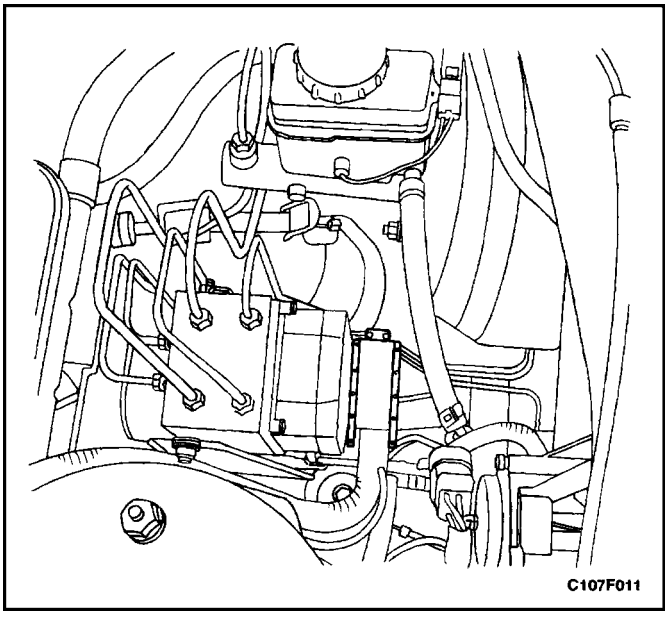
ABS 5.3 ASSEMBLY

Removal Procedure

1. Disconnect the negative battery cable.
2. Disconnect the 26– or 31–pin ABS wiring harness connector from its socket on the EBCM.
3. Cover the connector and the socket with shop cloths to protect them from brake fluid.

Notice : Take care not to allow air into the hydraulic unit or into the brake pipes from the master cylinder. If air gets into the hydraulic unit, it will require a bleeding procedure using a scan tool programmed for the ABS 5.3 system. As long as no air enters the hydraulic unit, a simple bleeding procedure is all the system will require.

4. Remove the brake pipes from the hydraulic unit. It may be necessary to loosen the brake pipe nuts on the master cylinder to allow for moving those pipes out of the way.
5. Loosen the mounting nuts on the hydraulic unit.
6. Move the brake pipes aside far enough to allow for lifting the ABS 5.3 unit out of the mounting bracket.
7. Tighten the brake pipe nuts on the master cylinder to avoid leaking brake fluid.
8. Cap the brake pipes.


C107F011

Installation Procedure

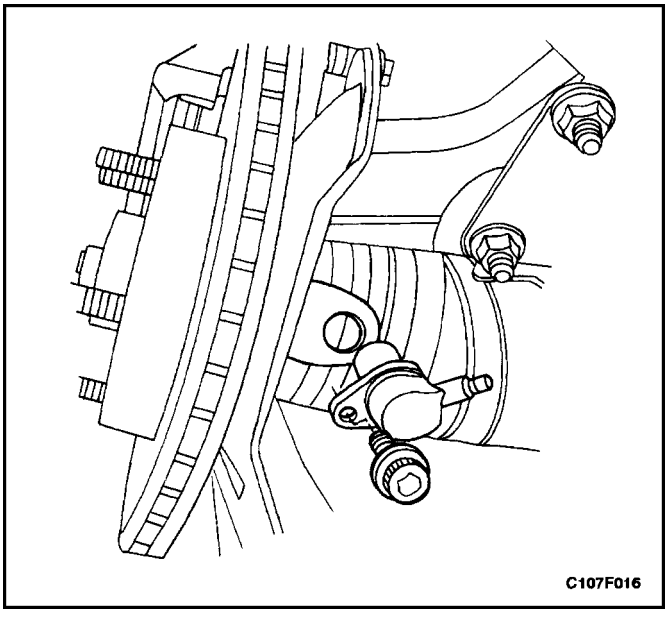
1. Insert the ABS 5.3 hydraulic unit into its mounting bracket and install the nuts.

   Tighten

   Tighten the ABS 5.3 mounting nuts to 9 N•m (80 lb–in).
2. Remove the screw plugs and install all of the hydraulic brake pipes.

   Tighten

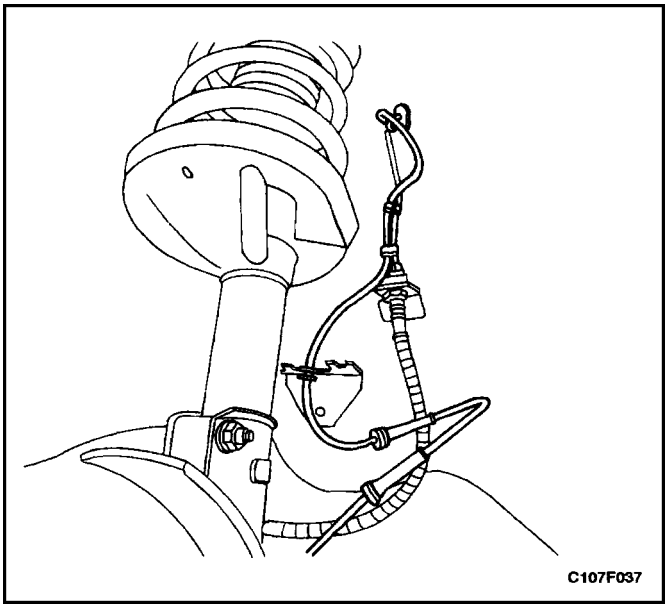
   Tighten the brake pipe nuts to 12 N•m (106 lb–ft).
3. Connect the 26– or 31–pin wiring harness connector.
4. Connect the negative battery cable.
5. Bleed the hydraulic system. Refer to *Section 4A, Hydraulic Brakes.*


C107F016

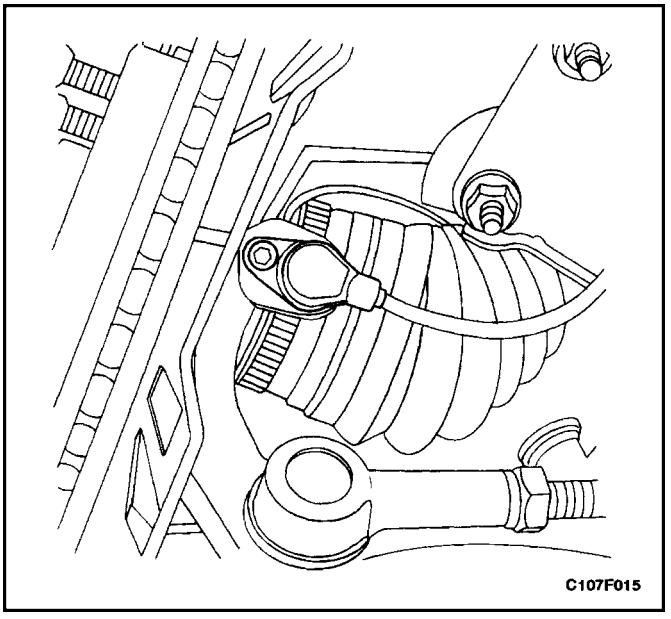
FRONT WHEEL SPEED SENSOR

Removal Procedure

1. Disconnect the negative battery cable.
2. Disconnect the front wheel speed sensor electrical connector.
3. Raise and suitably support the vehicle.
4. Remove the wheel. Refer to *Section 2E, Tires and Wheels.*
5. Turn the steering wheel to expose the speed sensor. It is located at the rear of the steering knuckle near the tie rod end.
6. Remove the bolt and the front wheel speed sensor from the steering knuckle.


C107F037

7. Free the feedthrough grommet for the speed sensor harness and the hydraulic pipe from the strut tower. Remove the speed sensor harness from it so that the connector can pass through the hole in the strut tower.
8. Free the sensor harness from the grommet holders and the clamps and pull it through the fender.

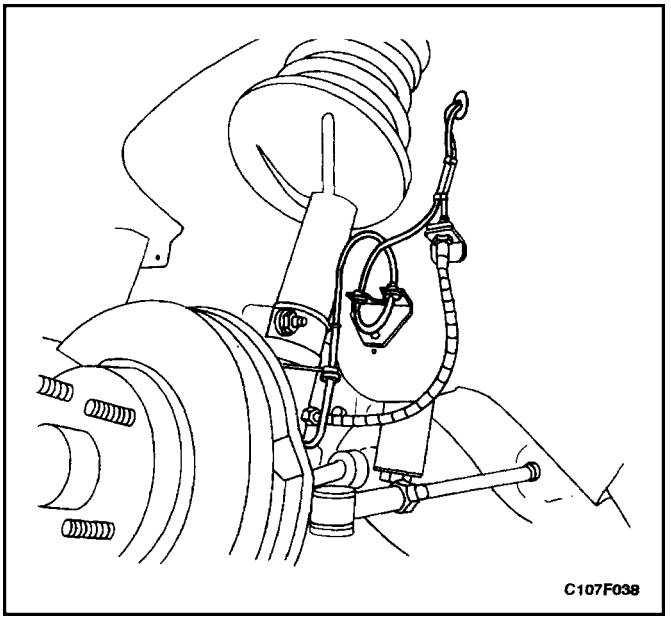


Installation Procedure

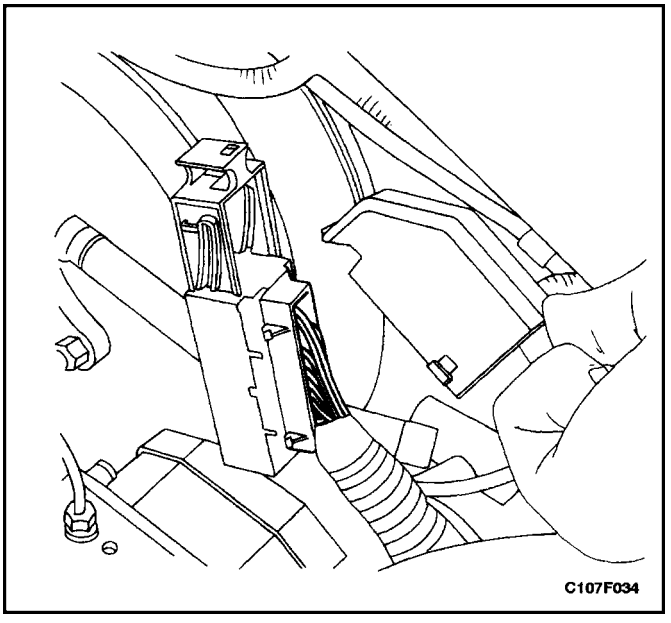
1. Install the front wheel speed sensor to the steering knuckle. Secure it with the bolt.

   Tighten

   Tighten the front wheel speed sensor bolt to 8 N•m (71 lb–in).



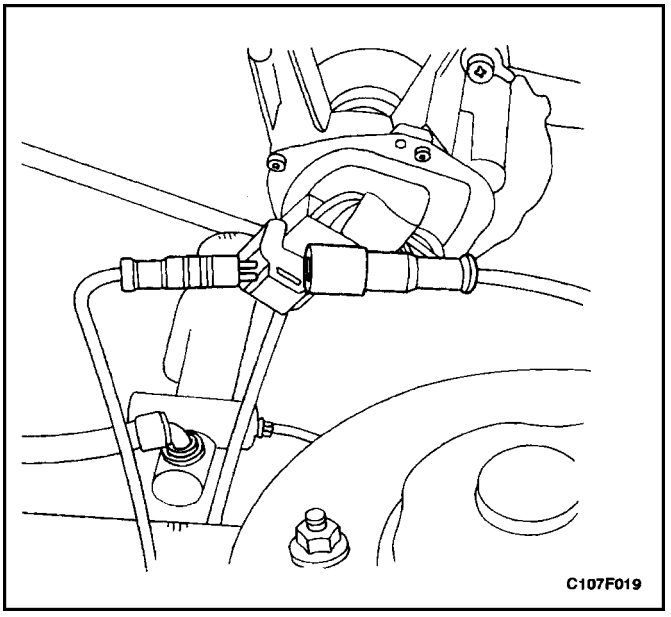
2. Feed the sensor harness into the engine compartment, insert it into the grommet, and secure the grommet into the hole in the strut tower.
3. Secure the harness into the grommet holders and the clamps under the fender.
4. Replace the wheel. Refer to *Section 2E, Tires and Wheels.*
5. Lower the vehicle.
6. Connect the front wheel speed sensor electrical connector.
7. Connect the negative battery cable.



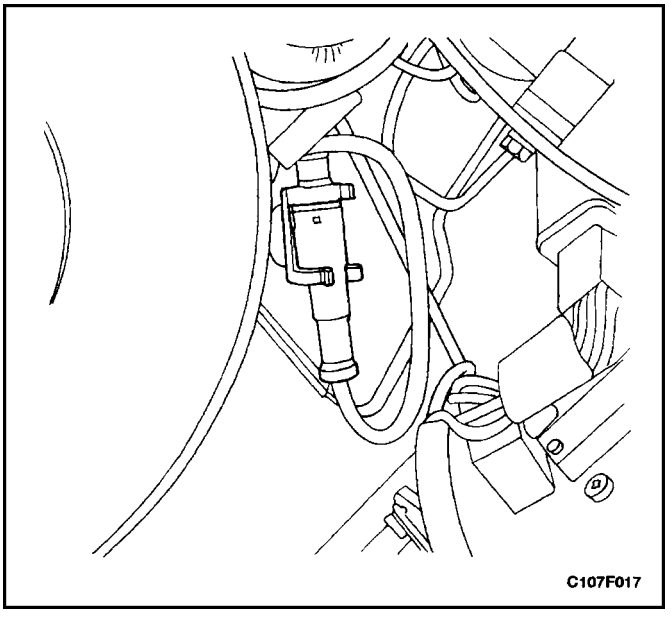
FRONT WHEEL SPEED SENSOR JUMPER HARNESS

Removal Procedure

1. Disconnect the negative battery cable.
2. Disconnect the electrical connector from the EBCM.
3. Remove the appropriate terminals from the connector:
   - Right–side – terminals 4 (PPL) and 5 (YEL).
   - Left–side – terminals 6 (WHT) and 7 (ORN).

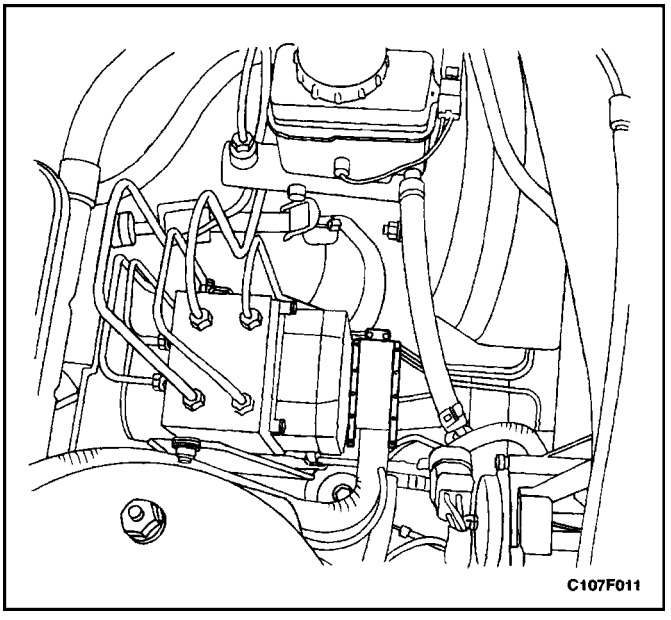


4. Both speed sensor harnesses break out of the ABS wiring harness just beyond the ABS connector. The right–side speed sensor harness crosses the top of the bulkhead to the right–side fender area. The left–side speed sensor harness goes directly to the left–side fender area.
5. Free the speed sensor harness from the wiring harness.
6. Remove the front wheel speed sensor electrical connector from the retaining clamps and disconnect the harness from the sensor connector.

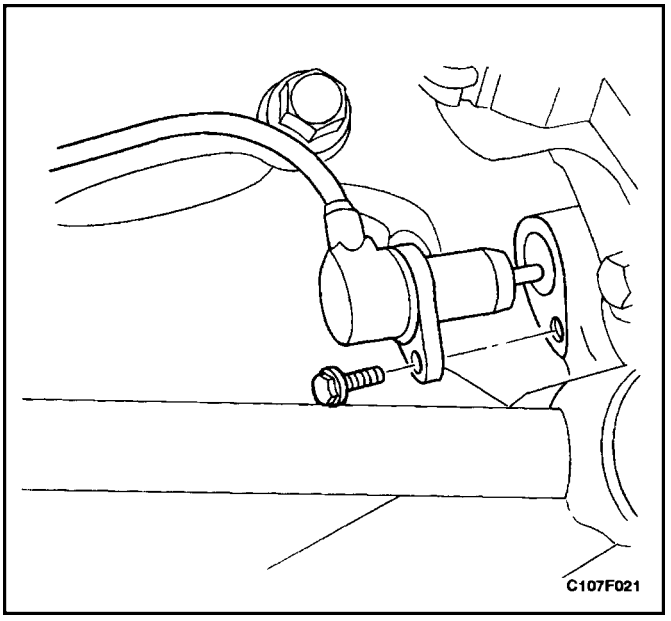


Installation Procedure

1. Install the front wheel speed sensor jumper harness.
2. Connect the front wheel speed sensor electrical connector and secure it into the clamps.



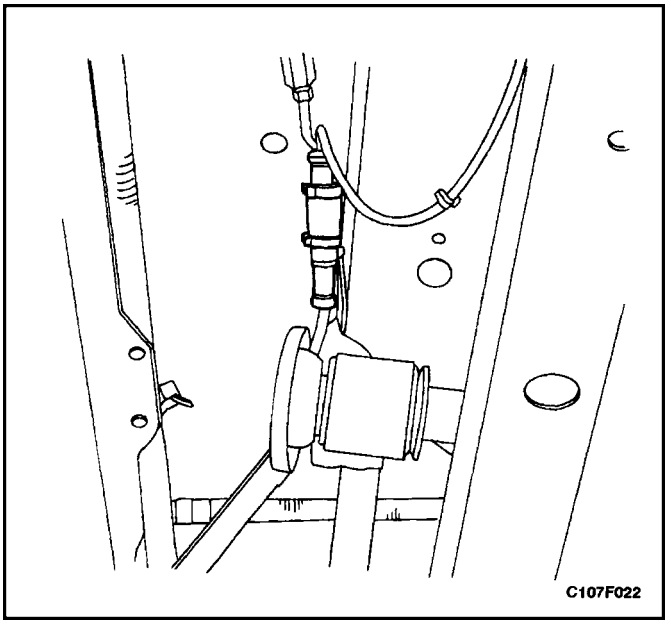
3. Replace the jumper harness into the wiring harness.
4. Insert the terminals into the electrical connector as they had been removed:
   - Right–side – terminals 4 (PPL) and 5 (YEL.
   - Left–side – terminals 6 (WHT) and 7 (ORN).
5. Connect the EBCM connector.
6. Connect the negative battery cable.



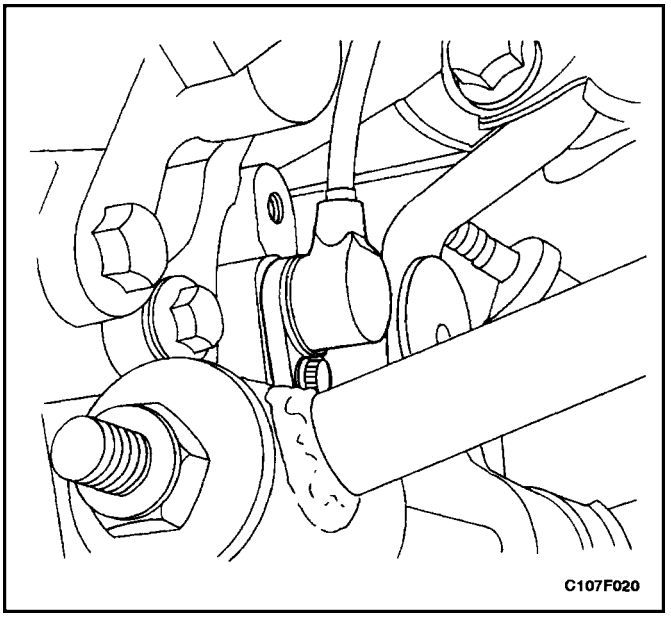
REAR WHEEL SPEED SENSOR

Removal Procedure

1. Disconnect the negative battery cable.
2. Raise and suitably support the vehicle.
3. Remove the bolt and the rear wheel speed sensor from the rear knuckle.



4. Remove the speed sensor cable grommets from their clamps.
5. Remove the speed sensor cable from the clamps securing it to the hydraulic pipe.
6. Remove the speed sensor cable connector from its clamps and disconnect the speed sensor cable from the harness.

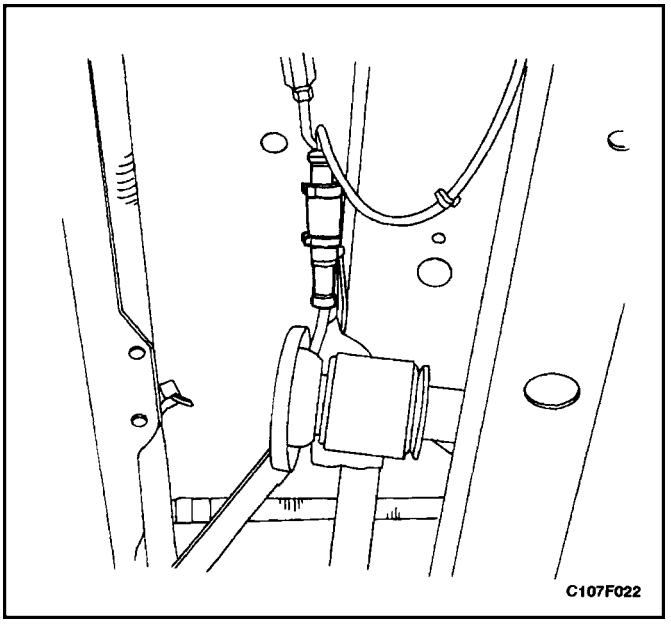


Installation Procedure

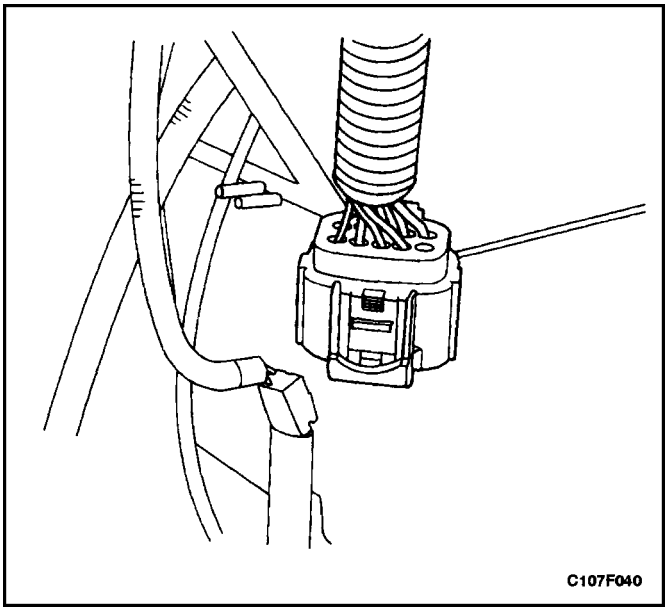
1. Install the rear wheel speed sensor to the rear knuckle. Secure it with the bolt.

   Tighten

   Tighten the rear wheel speed sensor bolt to 8 N•m (71 lb–in).



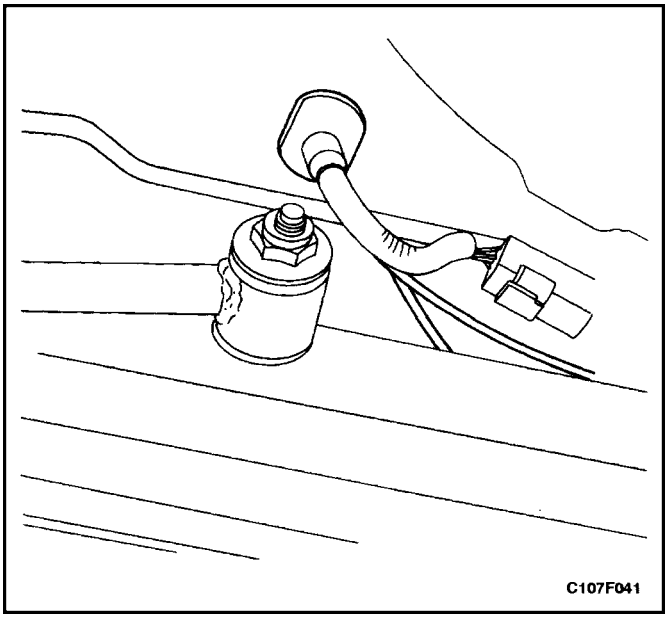
2. Connect the rear wheel speed sensor electrical connector.
3. Secure the speed sensor cable into its clamps on the hydraulic pipe.
4. Secure the speed sensor cable grommets into their clamps inside the fender well.
5. Lower the vehicle.
6. Connect the negative battery cable.

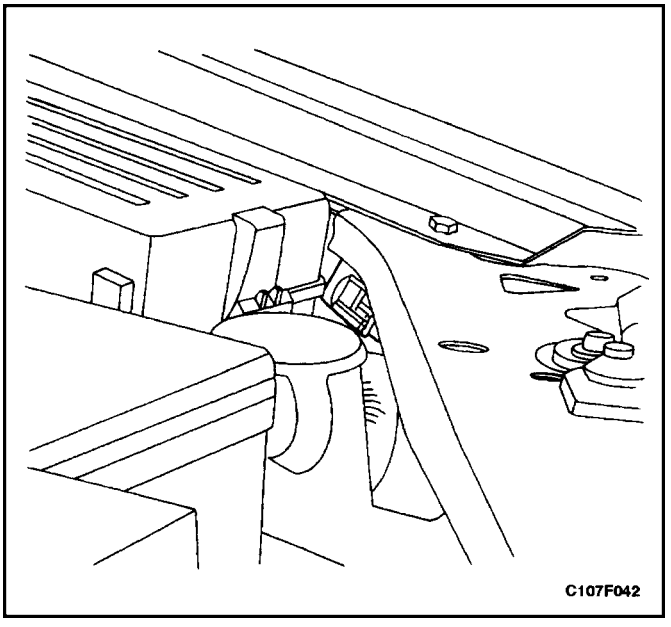


REAR WHEEL SPEED SENSOR JUMPER HARNESS

Removal Procedure

1. Remove the negative battery cable.
2. Raise and suitably support the vehicle.
3. Remove the left front wheel. Refer to *Section 2E, Tires and Wheels.*
4. Remove the wheel well splash shield inside the left front wheel arch to expose the body wiring harness where it enters the engine compartment. Refer to *Section 9R, Body Front End.*
5. Disconnect the body harness from the ABS harness at connector C107. This is forward of the left front wheel arch, between the engine fuse block and the wheel arch.
6. Pull the body harness end of C107 into the wheel arch area and remove the DK BLU–BRN pair of speed sensor wires appropriate for the harness being replaced.

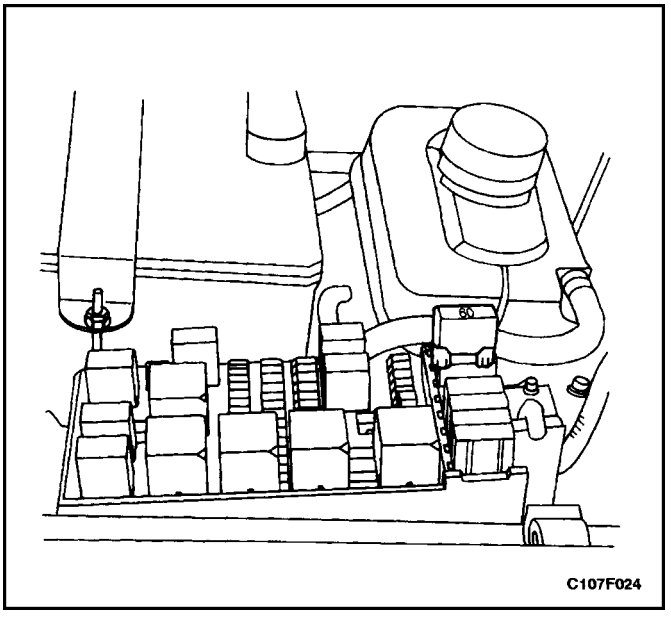


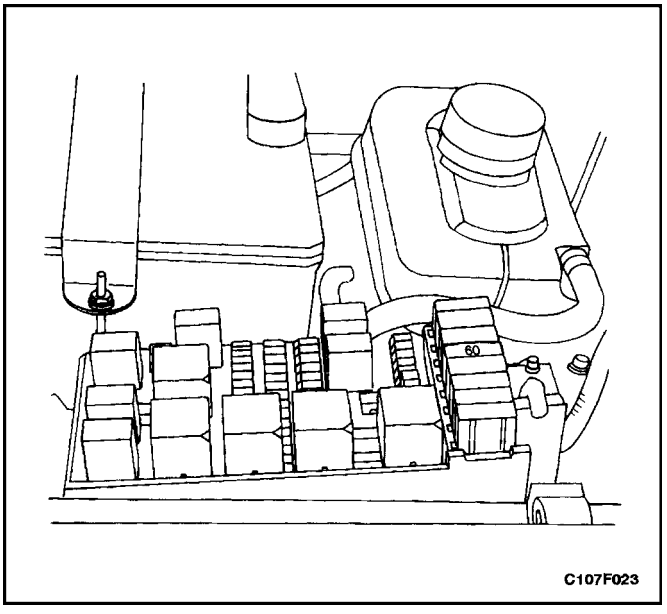


7. Open the body harness cover enough to free the speed sensor harness being replaced.
8. Lower the vehicle.
9. Expose the body harness inside the vehicle body and free the speed sensor harness being replaced.
10. Open the trunk, uncover the spare tire compartment, remove the tape from the feedthrough grommet, and free the speed sensor harness from the body harness.
11. Raise and suitably support the vehicle.
12. Disconnect the speed sensor cable from the sensor harness cable being replaced.
13. Remove the tape sealing the wiring harness and the rear speed sensor harnesses to the grommet passing them through the floor of the vehicle.
14. Pull the harness being replaced through the grommet.

Installation Procedure

1. Pass the harness through the grommet in the floor.
2. Connect the new wheel speed sensor harness to the wheel speed sensor.
3. Secure the connector in its clamp.
4. Adjust the cable length and tape the grommet opening under the vehicle.
5. Lower the vehicle.
6. Tape the grommet opening inside the vehicle.
7. Pass the harness through the grommet and on into the engine compartment.
8. Install terminals onto the harness wires and insert the new terminals into the appropriate cavities of connector C107.
9. Reconnect connector C107 to the ABS harness.
10. Secure the new speed sensor harness into the body wiring harness.
11. Replace the wheel well splash shield. Refer to *Section 9R, Body Front End.*
12. Replace the left front wheel. Refer to *Section 2E, Tires and Wheels.*
13. Lower the vehicle.
14. Connect the negative battery cable.





SYSTEM FUSE

Removal Procedure

The ABS system fuse, EF4, is located in the engine fuse block. Counting from the surge tank toward the fender, it is the fourth system fuse in the row at the strut tower end of the fuse block.

1. Disconnect the negative battery cable.
2. Remove the system fuse from its socket.

Installation Procedure

1. Install a new 60–amp system fuse into the socket.
2. Connect the negative battery cable.

INDICATORS

The indicator lamps associated with ABS operation are part of the instrument cluster. Refer to *Section 9E, Instrumentation/Driver Information,* for removal and replacement details.