

SPECIFICATIONS > TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

DESCRIPTION	N.m	Ft. Lbs.	In. Lbs.	NEW FASTENER*
Ignition Coil Screw	9 N.m	-	-	
Ignition coil tube - Replace Sleeve	50 N.m	-	-	*
Detonation sensor	24.5 N.m	-	-	*
RPM sensor	9.0 N.m	-	-	
Spark plugs 1.4L	18 N.m	-	-	
Spark plugs 2.4L	27 N.m	-	-	
*NEW FASTENER: Do not reuse these fasteners. If removed, a new fastener must be installed and tightened to specifications.				

COIL, IGNITION > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

Fig 1: Ignition Coil Electrical Connectors & Mounting Bolts



Courtesy of CHRYSLER GROUP, LLC

3. Unlock and disconnect the electrical connector (1) from the ignition coil.
4. Remove the ignition coil mounting bolts (2).

COIL, IGNITION > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION >

INSTALLATION

1. Seat the ignition coils and tighten the screws to the proper torque specification. Refer to SPECIFICATIONS .
2. Connect the electrical connectors to the ignition coils.
3. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

PLUG, GLOW > DIAGNOSIS AND TESTING > DIESEL COLD START SYSTEM

GLOW PLUG UNIT FUNCTIONALITY TEST

CONDITION	POSSIBLE CAUSE	CORRECTION
1	Check power unit preheating Place the key to Run Using a multimeter to verify that between pins 4 and mass is present the voltage of 12 V battery Proceed to STEP 2	Restore the electrical continuity of the power cord Restore fuse, after identifying the cause of the intervention. Replace main contactor Replace junction unit
2	Check ground connection Disconnect the negative battery cable Disconnect the wiring from the plug control unit Reconnect the battery Using an ohmmeter connected between pin 3 and ground wiring, verify that the resistance is less than 1 Ohm Proceed to STEP 3	Restore the electrical continuity of the ground wire
3	Check command activation unit by preheating the engine control unit Place the key to Run Using a multimeter: Check that between pin 2 and ground is a voltage of about 0 V Start the engine and check that the voltage switch at about 10 volts Proceed to STEP 4	Restore wiring between engine control unit and control unit plugs. If the voltage is interrupted replace the engine control unit
4	Check power supply Check that 12 v is present on pin 5	Restore wiring between the control unit and preheat fuses on battery

	Proceed to STEP 5	Restore power fuse after identifying the cause of the interruption.
5	Check power plugs Start the engine and check the battery voltage is properly delivered to the individual plugs in the preheat The test can be closed.	Restore wiring between the control and pre-heating glow plugs Changes to the unit preheating Replace glow plug module and make sure that the recovery process is working properly.

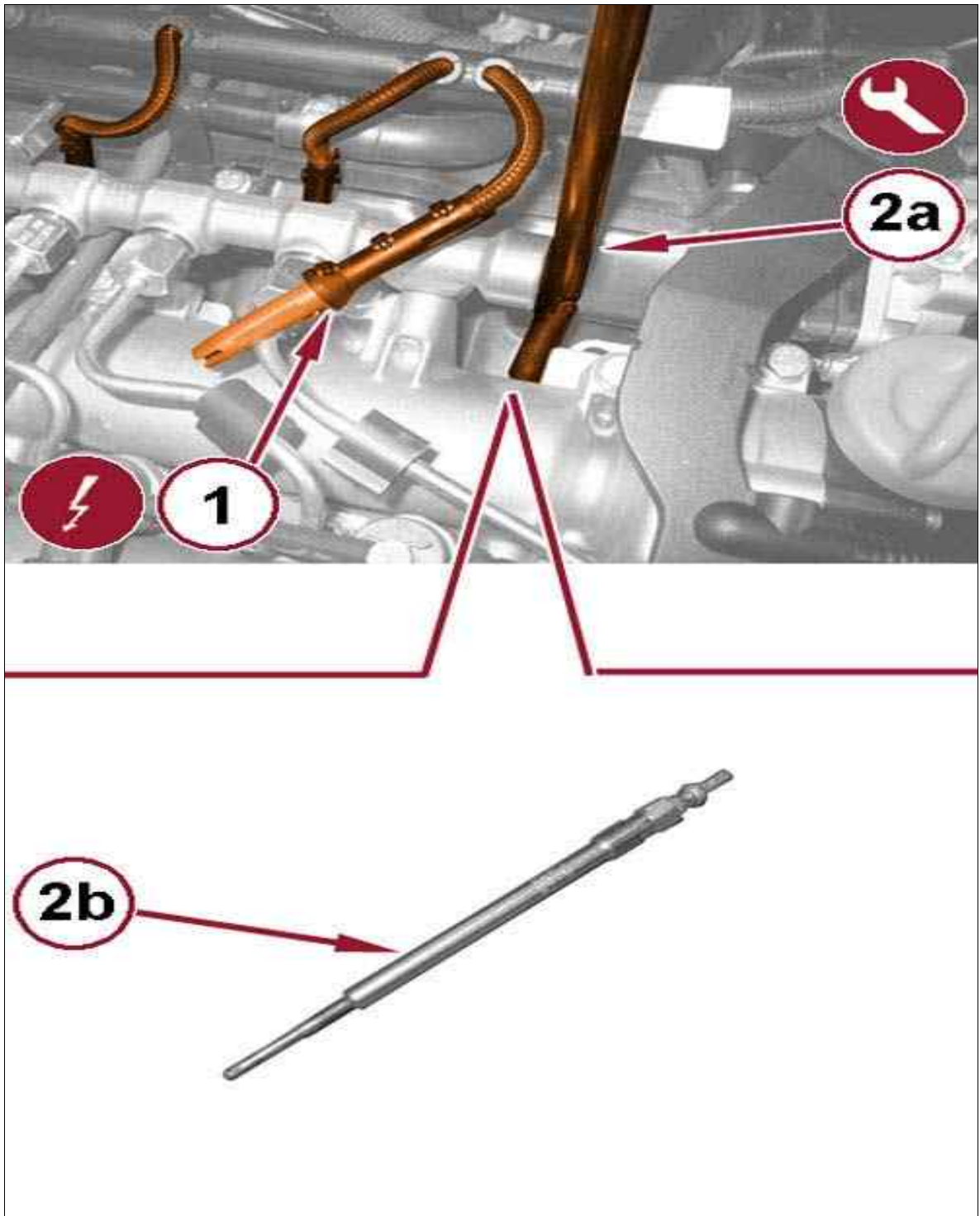
PLUG, GLOW > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

CAUTION:

The starting system is equipped with new low voltage glow plugs with a rated voltage lower than that of the battery, it is absolutely forbidden to connect the battery voltage to the battery post. Possible maneuvers of this type, for example testing continuity by means of a light bulb, may be destructive for both the spark plug and for the engine.

1. Disconnect and isolate the negative battery cable.
2. Remove the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

Fig 1: Glow Plug & Special Tool



Courtesy of CHRYSLER GROUP, LLC

3. Disconnect the electrical connections of the glow plugs.
4. Using the special tool (2a), loosen and remove the glow plugs (2b).

PLUG, GLOW > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION >

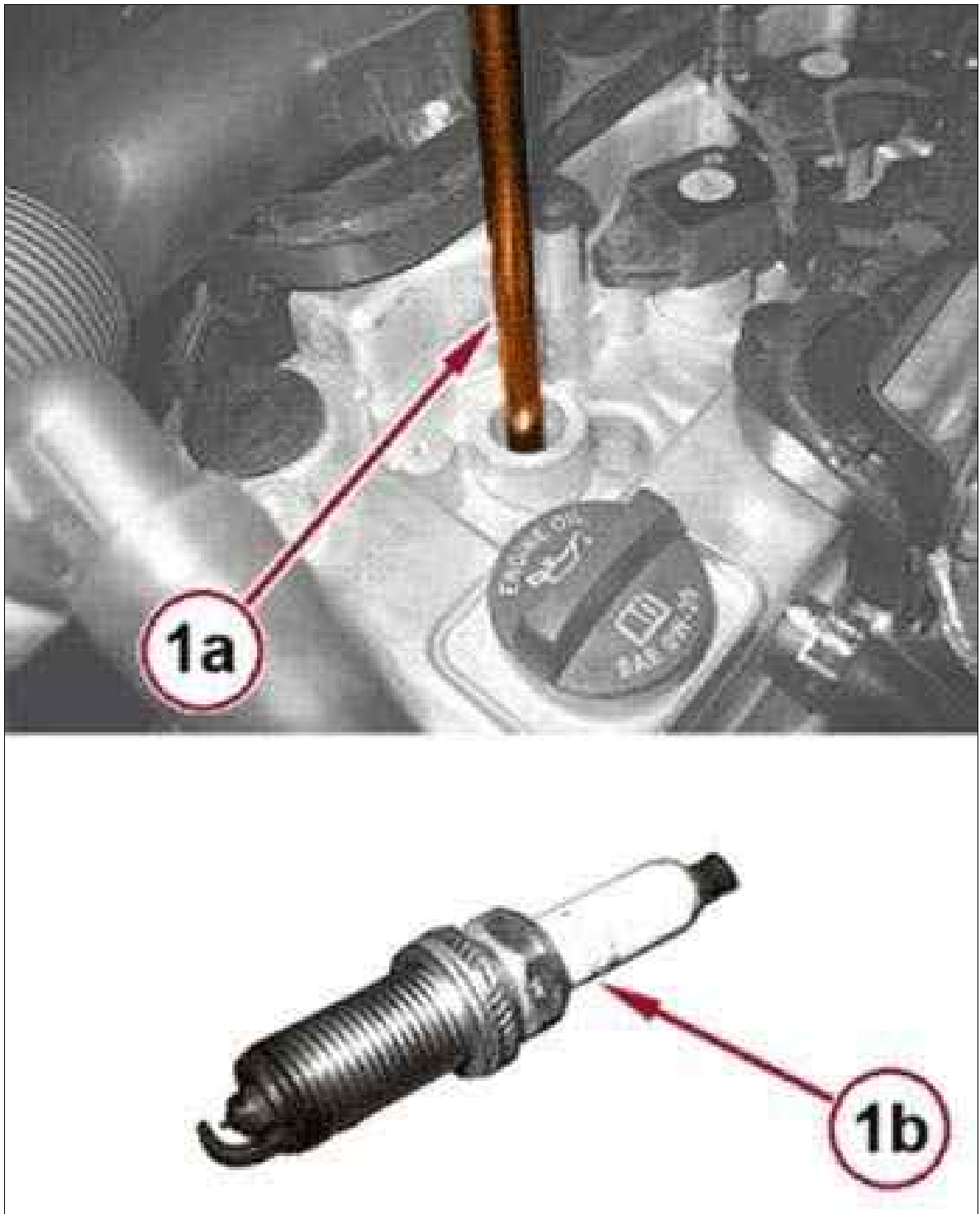
INSTALLATION

1. Using the tool, seat glow plug and tighten.
2. Connect the glow plug electrical connections.
3. Install the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION 2.4L.
4. Connect the negative battery cable.

SPARK PLUG > REMOVAL AND INSTALLATION > 2.4L REMOVAL AND INSTALLATION > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.
3. Remove the ignition coil. Refer to COIL, IGNITION, REMOVAL AND INSTALLATION .

Fig 1: Spark Plug & Appropriate Socket



Courtesy of CHRYSLER GROUP, LLC

 NOTE:

Prior to loosening the spark plug, use compressed air to blow out any debris that might be in the spark plug tube.

4. Using the appropriate socket (1a), unscrew and remove the spark plug (1b).

SPARK PLUG > REMOVAL AND INSTALLATION > 2.4L REMOVAL AND INSTALLATION > INSTALLATION



CAUTION:

Handle the spark plugs with care. Do not drop or force the spark plugs into the wells, damage to the electrodes and/or porcelain body may occur. Always start each spark plug by hand in order to avoid cross-threading the spark plug in the cylinder head.

Always tighten spark plugs to the specified torque. Too much or not enough torque will cause damage to the cylinder head and/or spark plug and may lead to poor engine performance.

1. Using the appropriate socket, seat the spark plugs to the engine and tighten to the proper torque specification. Refer to SPECIFICATIONS .
2. Install the ignition coils. Refer to COIL, IGNITION, REMOVAL AND INSTALLATION .
3. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.
4. Connect the negative battery cable.

SENSOR, CAMSHAFT POSITION > REMOVAL AND INSTALLATION > 1.4L REMOVAL AND INSTALLATION > 1.4L REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION or BELLY PAN, SIDE, REMOVAL AND INSTALLATION .
3. Remove the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

A close-up photograph of the engine compartment. A red arrow labeled '1' points to the battery terminal. A red arrow labeled '2' points to the alternator belt.

4. Remove the nut (1) securing the hose (2) in between the cooler and the throttle body to the bracket on the gearbox.
5. Loosen the clamp and disconnect the hose from the air hose.

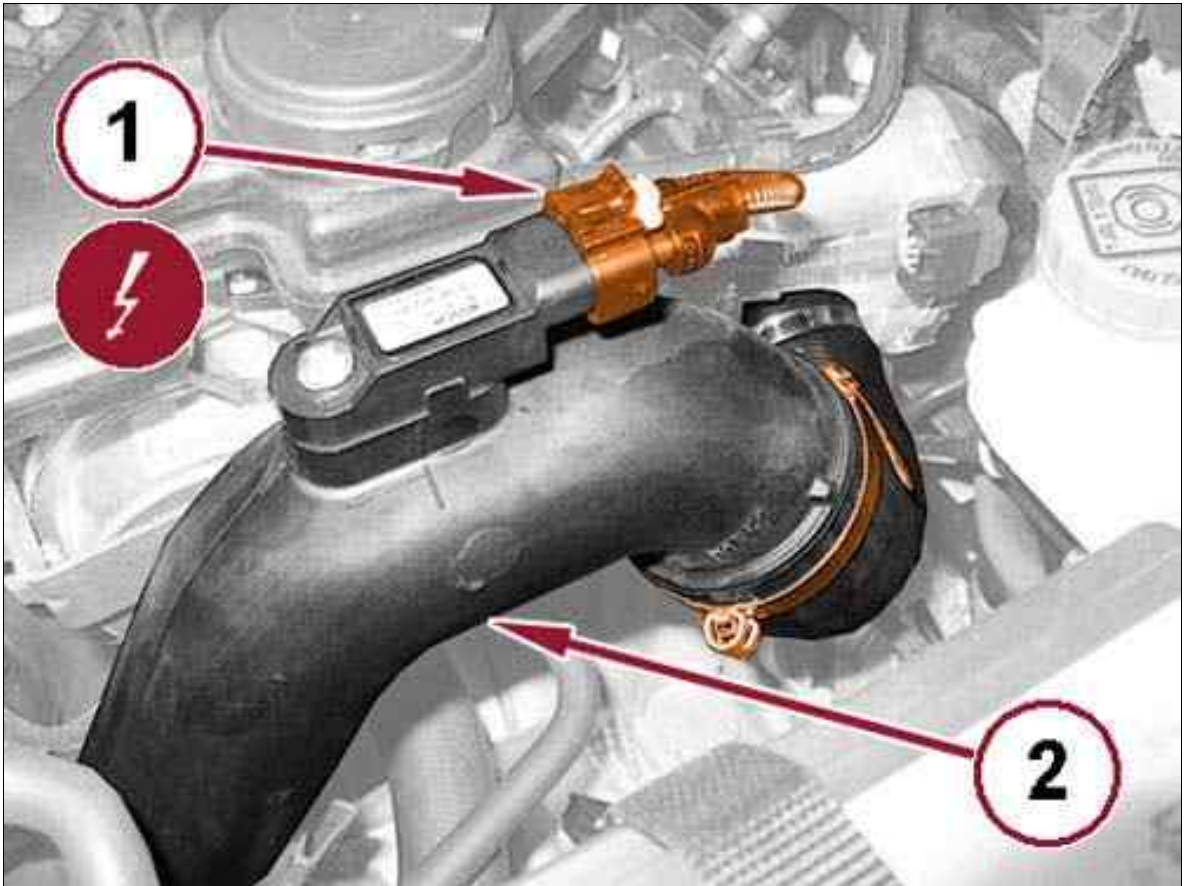
Fig 2: Screw



Courtesy of CHRYSLER GROUP, LLC

6. Remove the screw (1) securing the hose in between the cooler and the throttle body to the bracket.

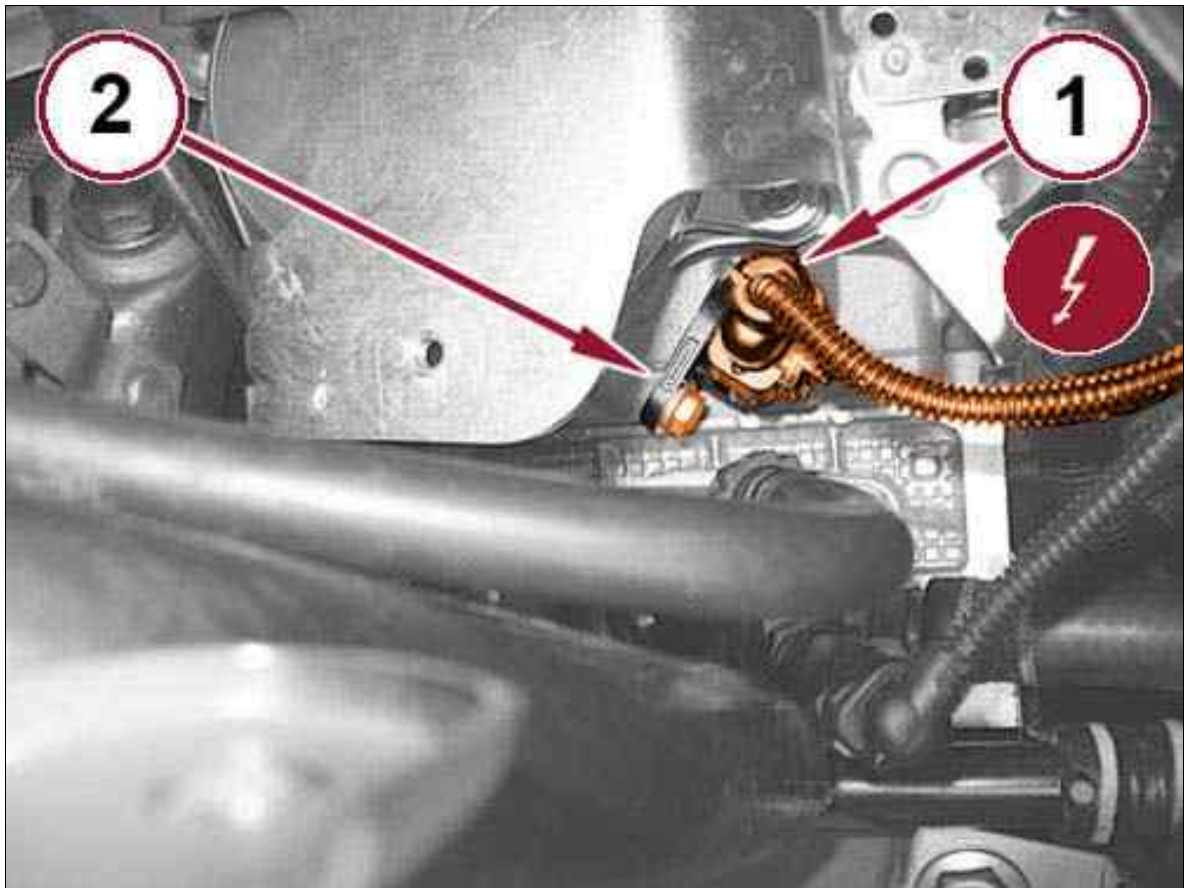
Fig 3: Air Pressure Sensor Electrical Connector & Hose



Courtesy of CHRYSLER GROUP, LLC

7. Disconnect the air pressure sensor electrical connector (1).
8. Loosen the clamp and remove the hose (2) in between the cooler and throttle body.

Fig 4: Cam Angle Sensor Electrical Connector & Screw



Courtesy of CHRYSLER GROUP, LLC

9. Disconnect the cam angle sensor electrical connector (1).
10. Remove the screw (2) and remove the cam angle sensor.

SENSOR, CAMSHAFT POSITION > REMOVAL AND INSTALLATION > 1.4L REMOVAL AND INSTALLATION > 1.4L INSTALLATION

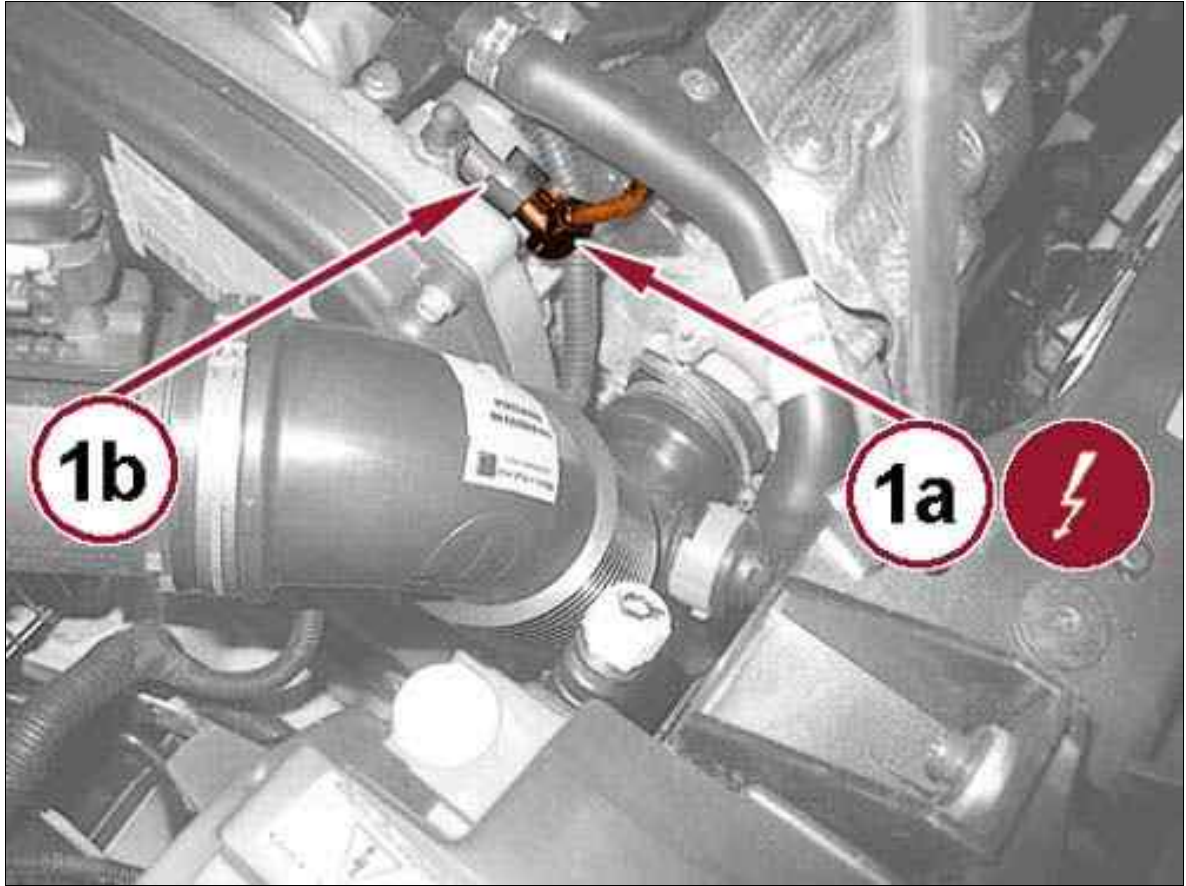
1. Position and install the cam angle sensor into place and tighten the screw to the proper torque specification. Refer to SPECIFICATIONS .
2. Connect the cam angle sensor electrical connection.
3. Position and install the hose in between the cooler and throttle body and tighten its strap.
4. Connect the air pressure sensor electrical connector.
5. Tighten the screw securing the hose in between the cooler and the throttle body to the bracket.
6. Connect the air sleeve to the hose in between the cooler and throttle body and tighten its strap.
7. Tighten the nut securing the hose in between the cooler and the throttle body to the bracket on the gearbox.

8. When replacing the cam angle sensor, connect the diagnostic scan tool, enter "Active Diagnosis" and run the self-learning procedure.

SENSOR, CAMSHAFT POSITION > REMOVAL AND INSTALLATION > 1.6L REMOVAL AND INSTALLATION > REMOVAL

1. Remove the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

Fig 1: Cam Angle Sensor Electrical Connector & Screw



Courtesy of CHRYSLER GROUP, LLC

2. Disconnect the cam angle sensor electrical connector (1a).
3. Remove the screw (1b) and remove the sensor.

SENSOR, CAMSHAFT POSITION > REMOVAL AND INSTALLATION > 1.6L REMOVAL AND INSTALLATION > INSTALLATION

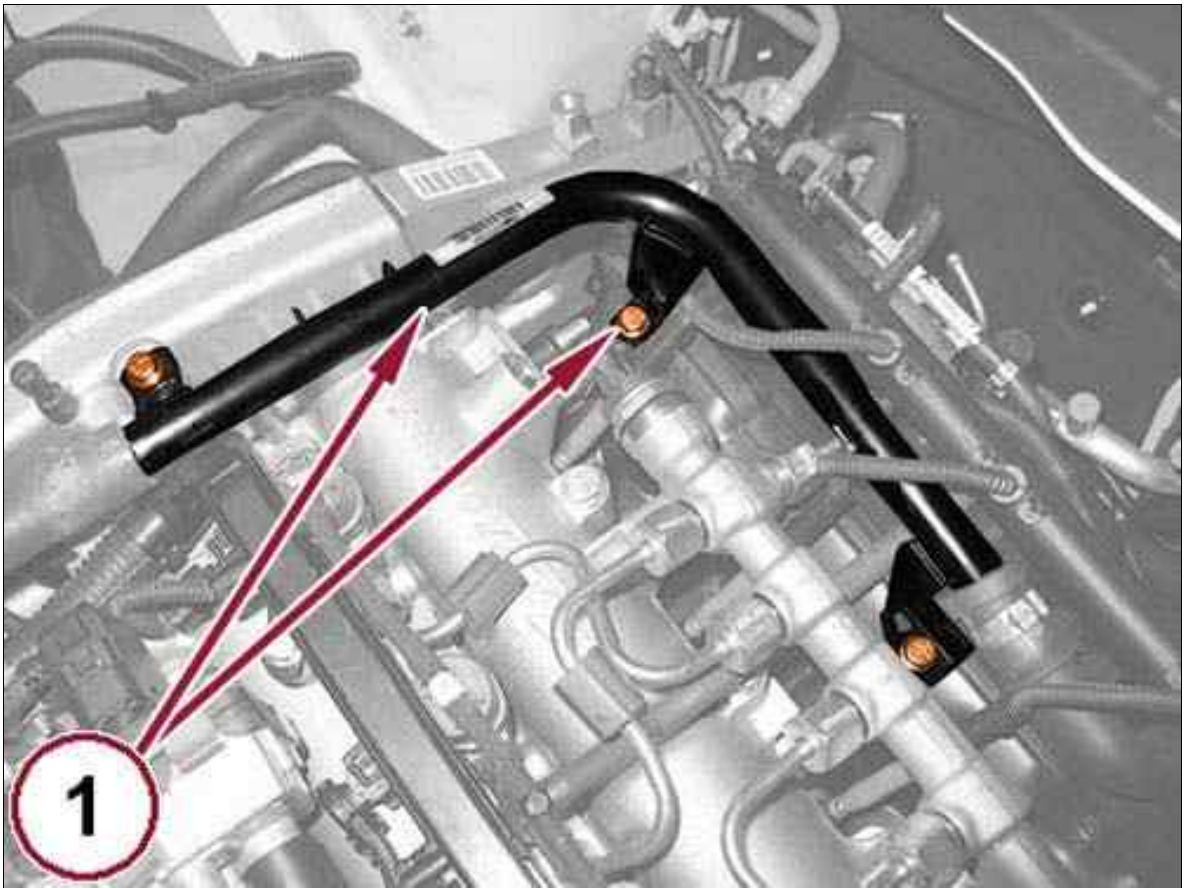
1. Install the cam angle sensor and tighten the screw to the proper torque specification. Refer to SPECIFICATIONS .

2. Connect the sensor electrical connection.
3. Install the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

SENSOR, CAMSHAFT POSITION > REMOVAL AND INSTALLATION > 2.0L REMOVAL AND INSTALLATION > 2.0L REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

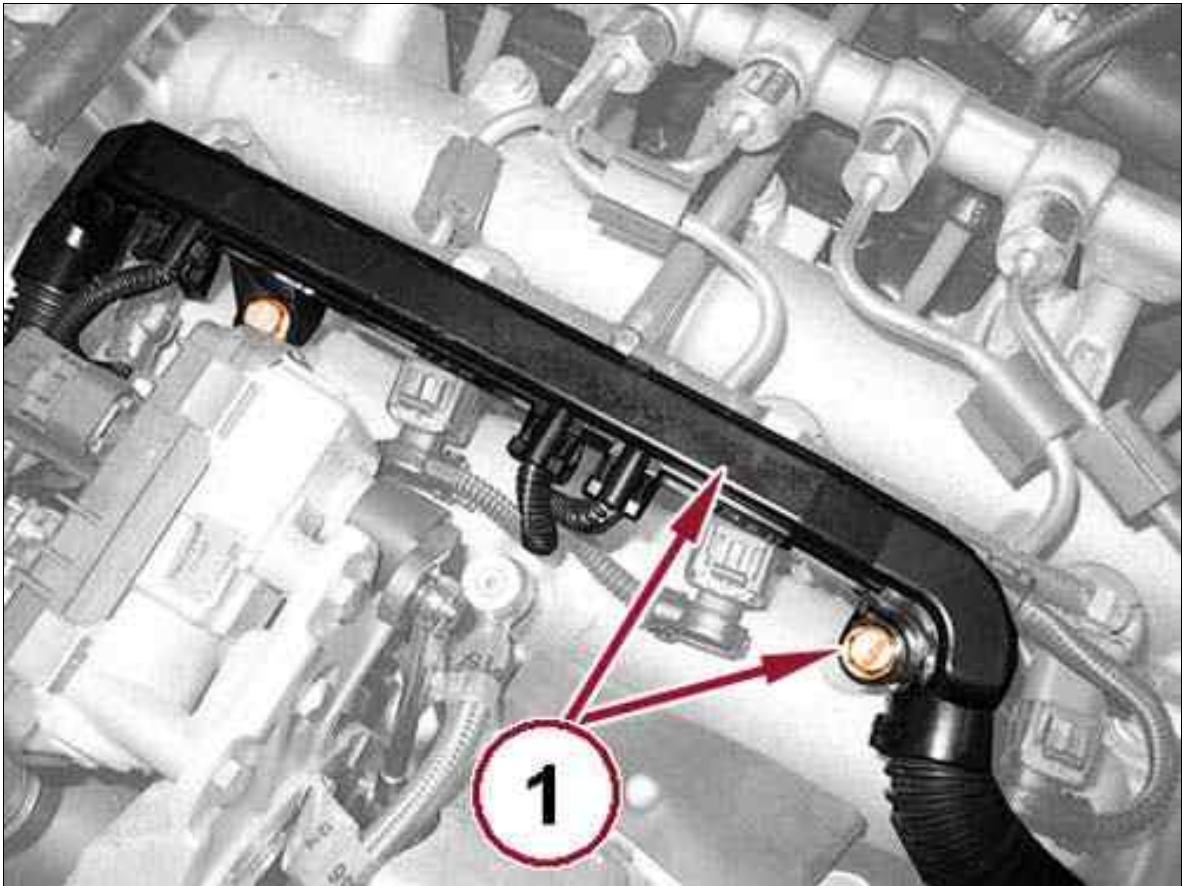
Fig 1: Oil Vapor Pipe & Screws



Courtesy of CHRYSLER GROUP, LLC

3. Remove the screws and move the oil vapor pipe to the side (1).

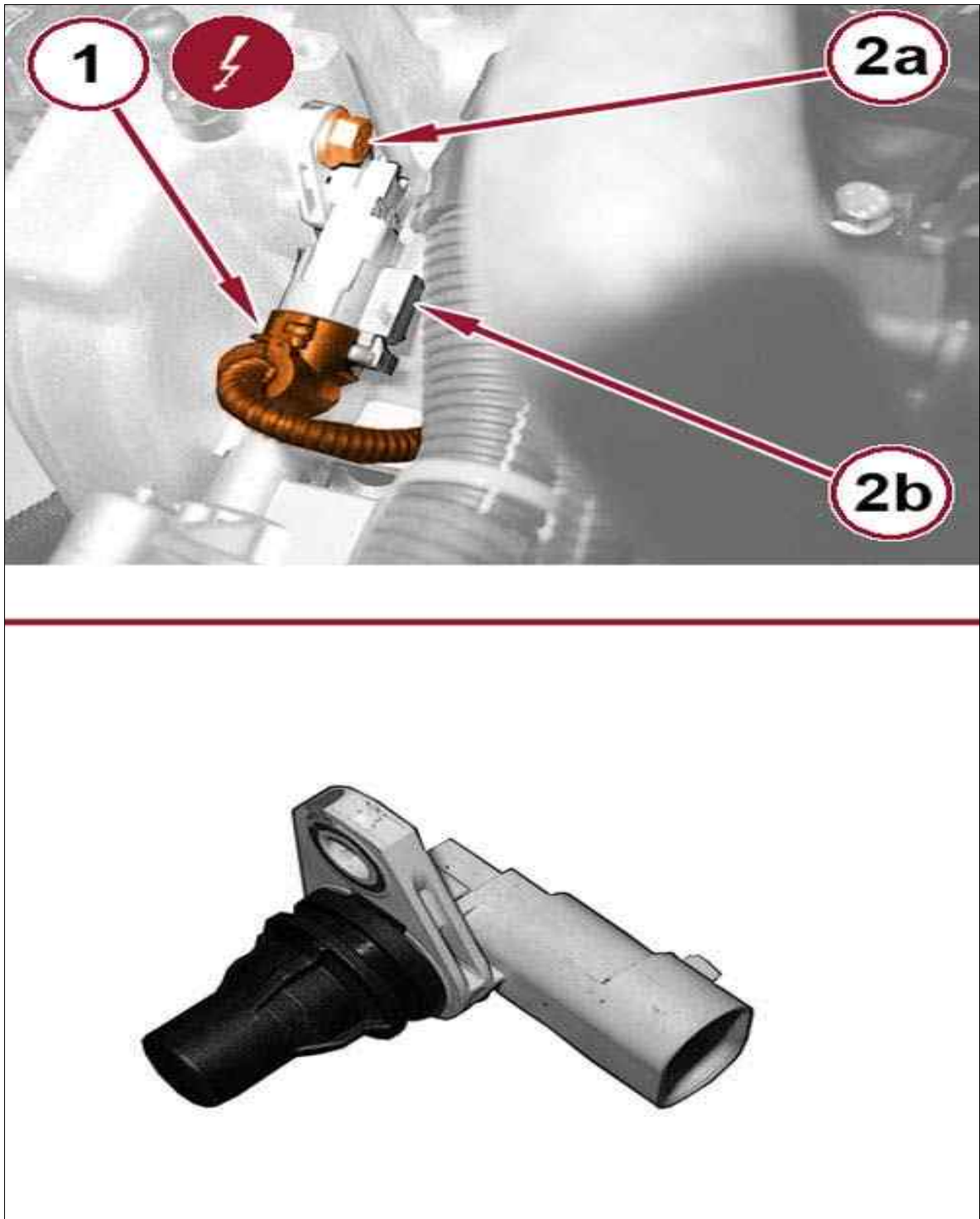
Fig 2: Wiring Conduit & Screws



Courtesy of CHRYSLER GROUP, LLC

4. Remove the screws securing the wiring conduit (1).

Fig 3: Cam Angle Sensor & Screw



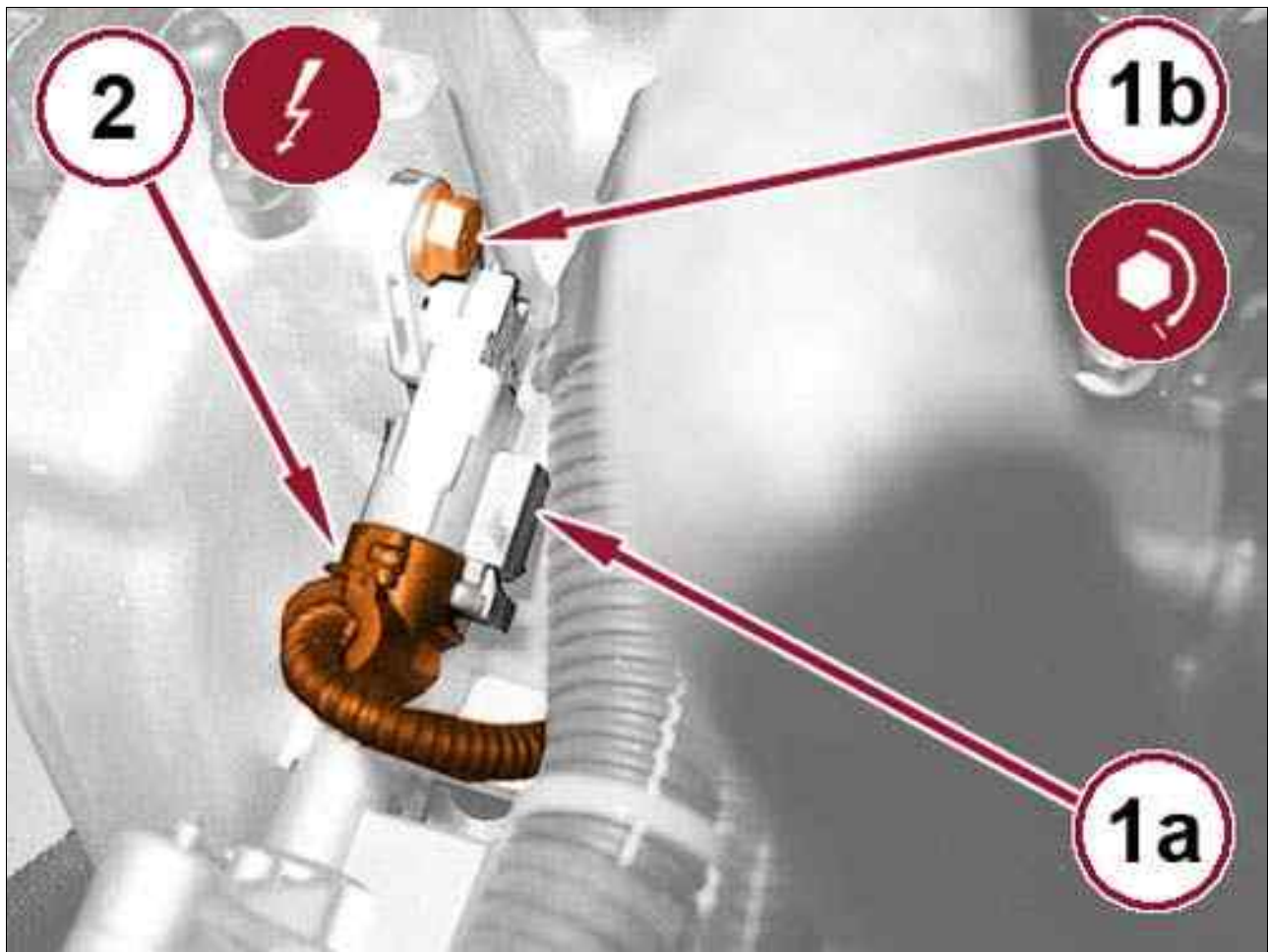
Courtesy of CHRYSLER GROUP, LLC

5. Disconnect the cam angle sensor electrical connection.
6. Remove the screw (2a) and remove the cam angle sensor (2b).

SENSOR, CAMSHAFT POSITION > REMOVAL AND INSTALLATION > 2.0L REMOVAL

AND INSTALLATION > 2.0L INSTALLATION

Fig 1: Cam Angle Sensor, Screw & Electrical Connection



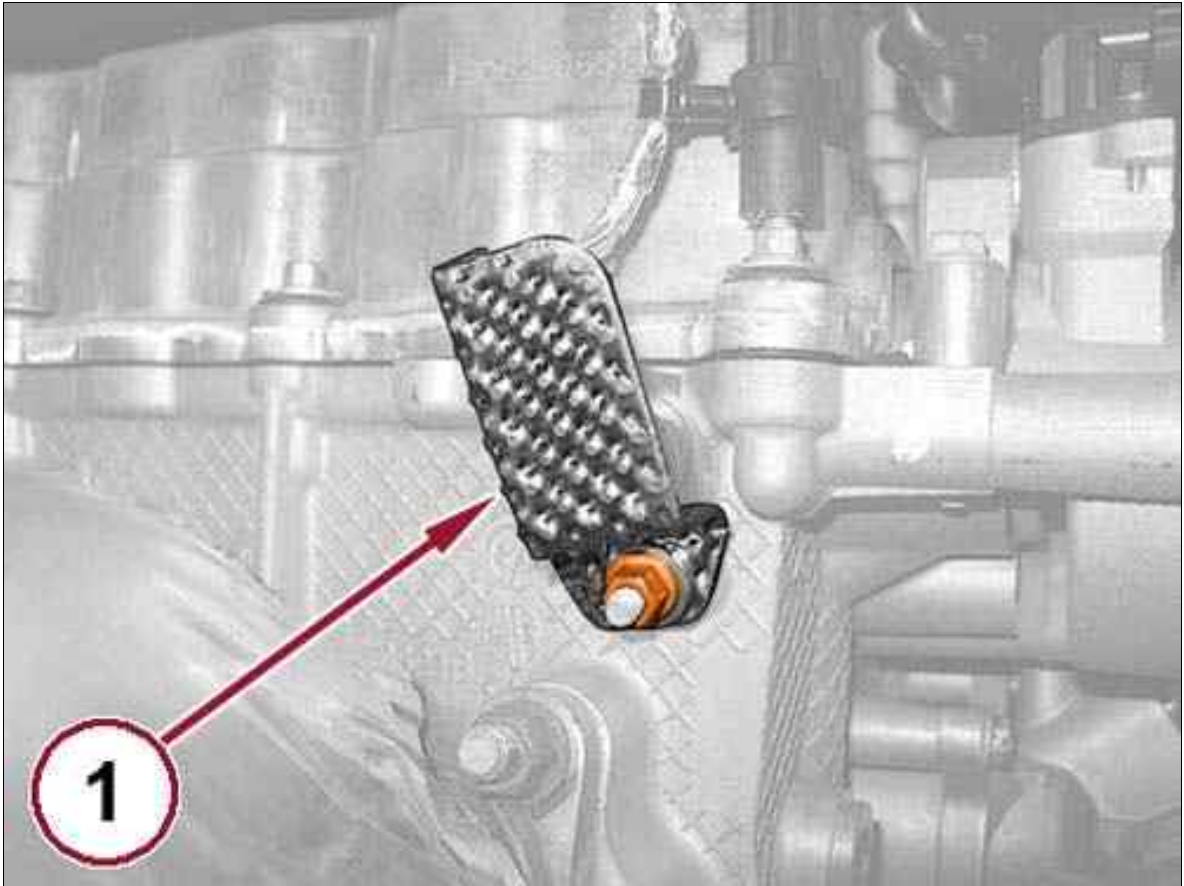
Courtesy of CHRYSLER GROUP, LLC

1. Place the cam angle sensor (1a) and tighten the screw (1b) to the proper torque specification. Refer to SPECIFICATIONS .
2. Connect the cam angle sensor electrical connection (2).
3. Tighten the screws securing the wiring conduit.
4. Place the oil vapor hose and tighten its screws.
5. Install the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.
6. Connect the negative battery cable.

SENSOR, CAMSHAFT POSITION > REMOVAL AND INSTALLATION > 2.4L REMOVAL AND INSTALLATION > 2.4L REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

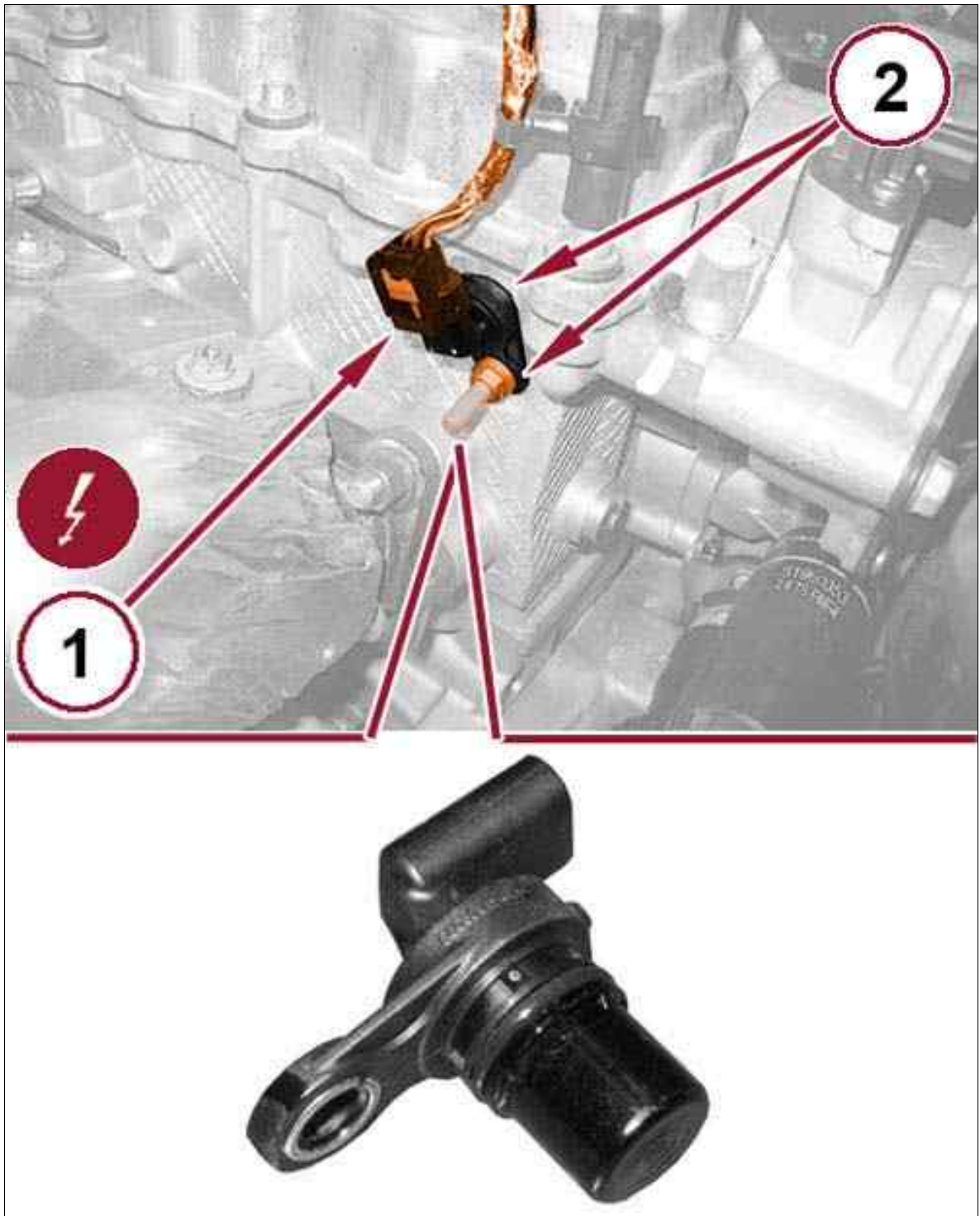
Fig 1: Heat Shield & Nut



Courtesy of CHRYSLER GROUP, LLC

3. Remove the nut and remove the heat shield (1).

Fig 2: Cam Angle Sensor Electrical Connector & Screw



Courtesy of CHRYSLER GROUP, LLC

4. Disconnect the cam angle sensor electrical connector (1).
5. Remove the screw (2) and remove the cam angle sensor.

SENSOR, CAMSHAFT POSITION > REMOVAL AND INSTALLATION > 2.4L REMOVAL

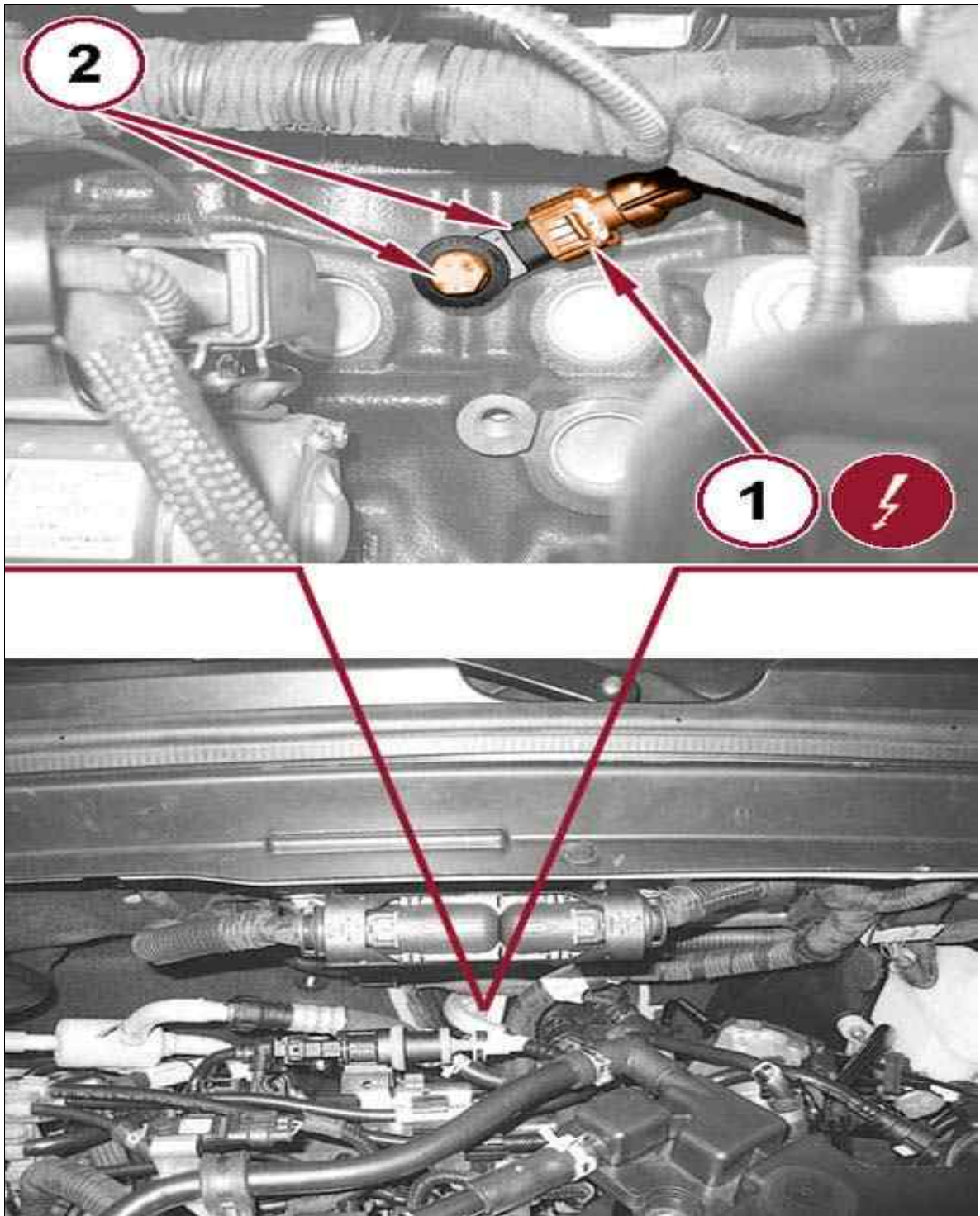
AND INSTALLATION > 2.4L INSTALLATION

1. Position and install the cam angle sensor into place and tighten the screw to the proper torque specification. Refer to SPECIFICATIONS .
2. Connect the cam angle sensor electrical connection.
3. Install the heat shield with the nut tightened to the proper torque specification. Refer to SPECIFICATIONS .
4. Install the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION 2.4L.
5. Connect the negative battery cable
6. When replacing the cam angle sensor, connect the diagnostic scan tool, enter "Active Diagnosis" and run the self-learning procedure.

SENSOR, KNOCK > REMOVAL AND INSTALLATION > 1.4L REMOVAL AND INSTALLATION > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

Fig 1: Knock Sensor, Electrical Connector & Screw



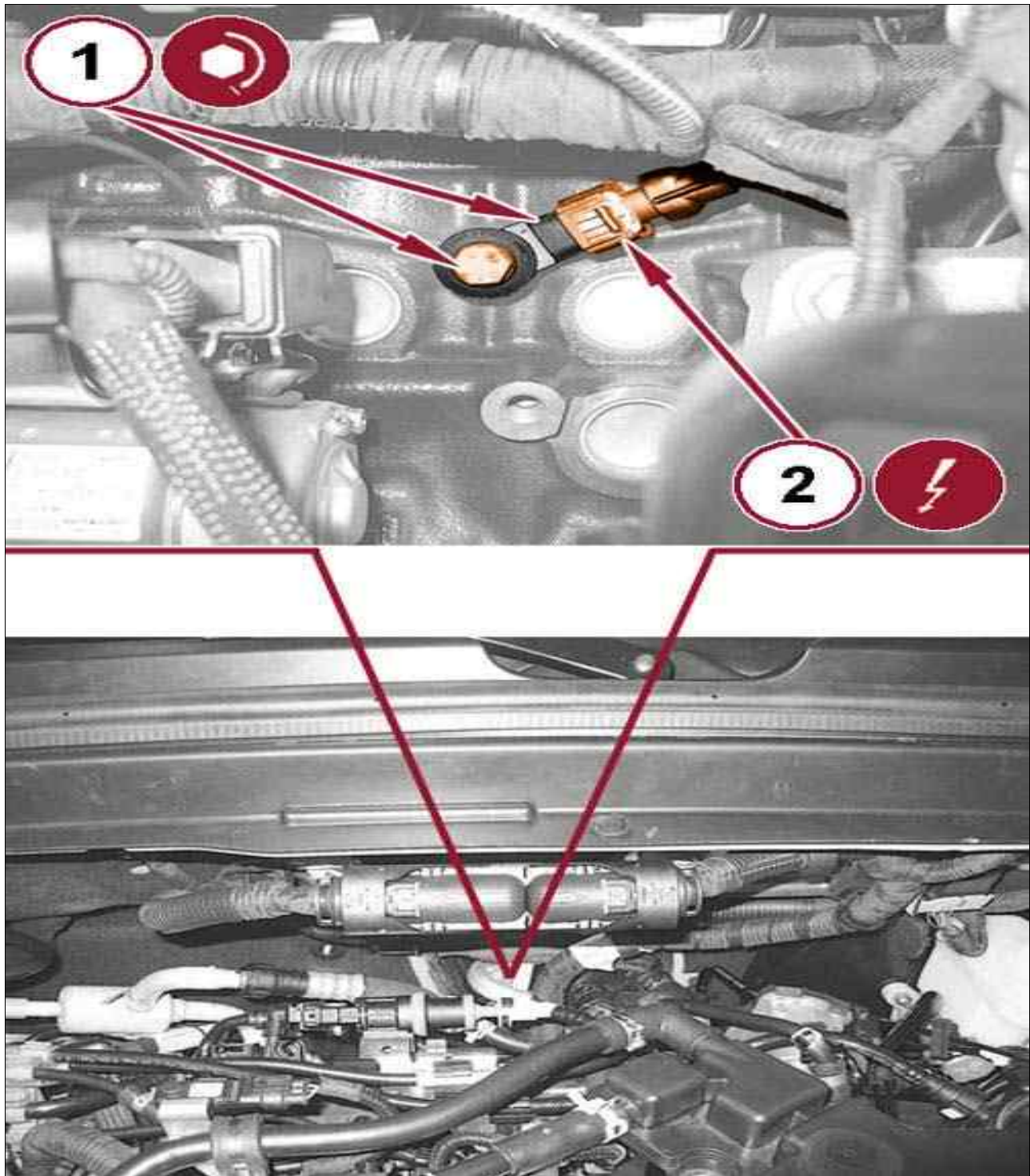
Courtesy of CHRYSLER GROUP, LLC

3. Disconnect the knock sensor electrical connector (1).
4. Remove the screw and remove the knock sensor (2).

SENSOR, KNOCK > REMOVAL AND INSTALLATION > 1.4L REMOVAL AND

INSTALLATION > INSTALLATION

Fig 1: Bolt & Knock Sensor Electrical Connector



Courtesy of CHRYSLER GROUP, LLC

1. Position the knock sensor and tighten the new bolt (1) to the proper torque specification. Refer to SPECIFICATIONS .
2. Connect the knock sensor electrical connector (2).
3. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for

1.6L/2.0L Diesel,COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.

4. Connect the negative battery cable.

SENSOR, KNOCK > REMOVAL AND INSTALLATION > 2.4L REMOVAL AND INSTALLATION > REMOVAL

1. Remove the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION for 2.4L.
2. Raise and support the vehicle.
3. Disconnect and isolate the negative battery cable.

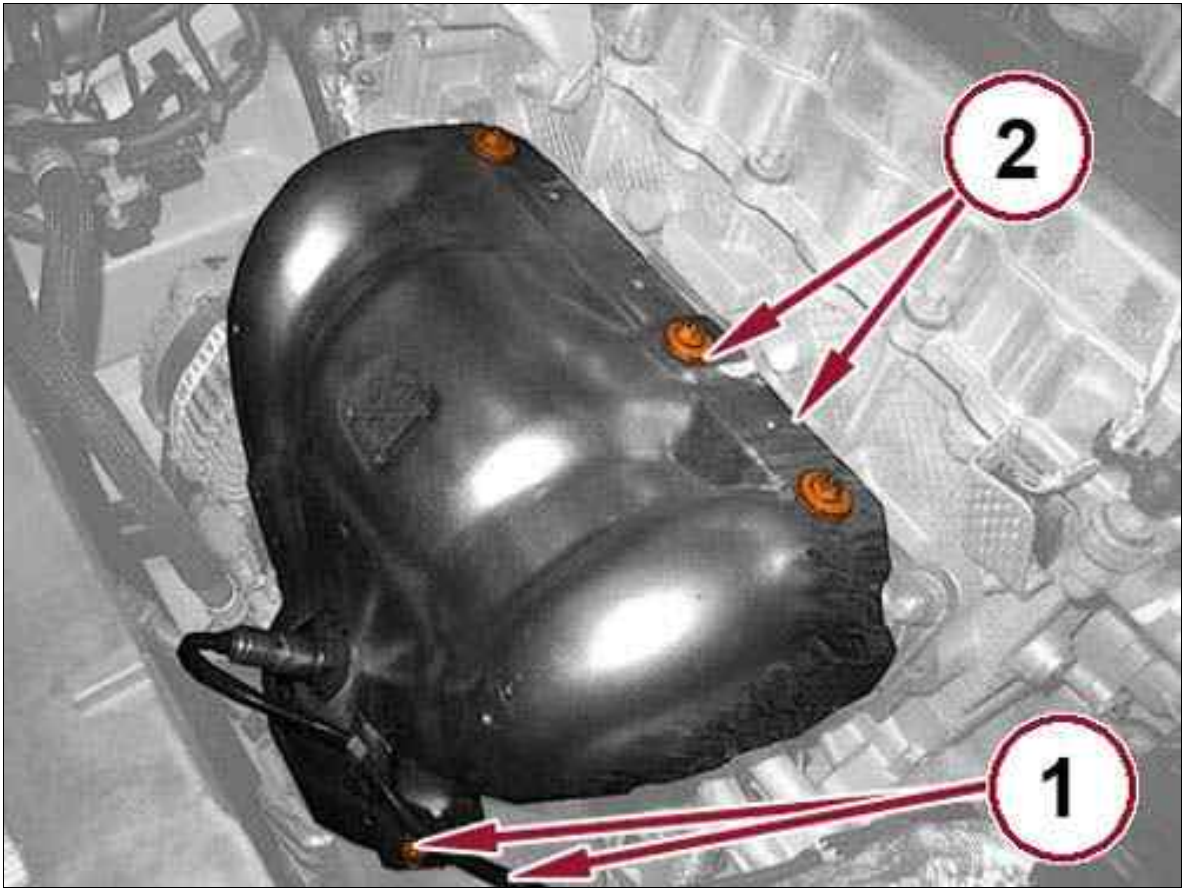
Fig 1: Upstream Oxygen Sensor Electrical Connection



Courtesy of CHRYSLER GROUP, LLC

4. Disconnect the electrical connection (1) of the oxygen sensor upstream of the catalyst.

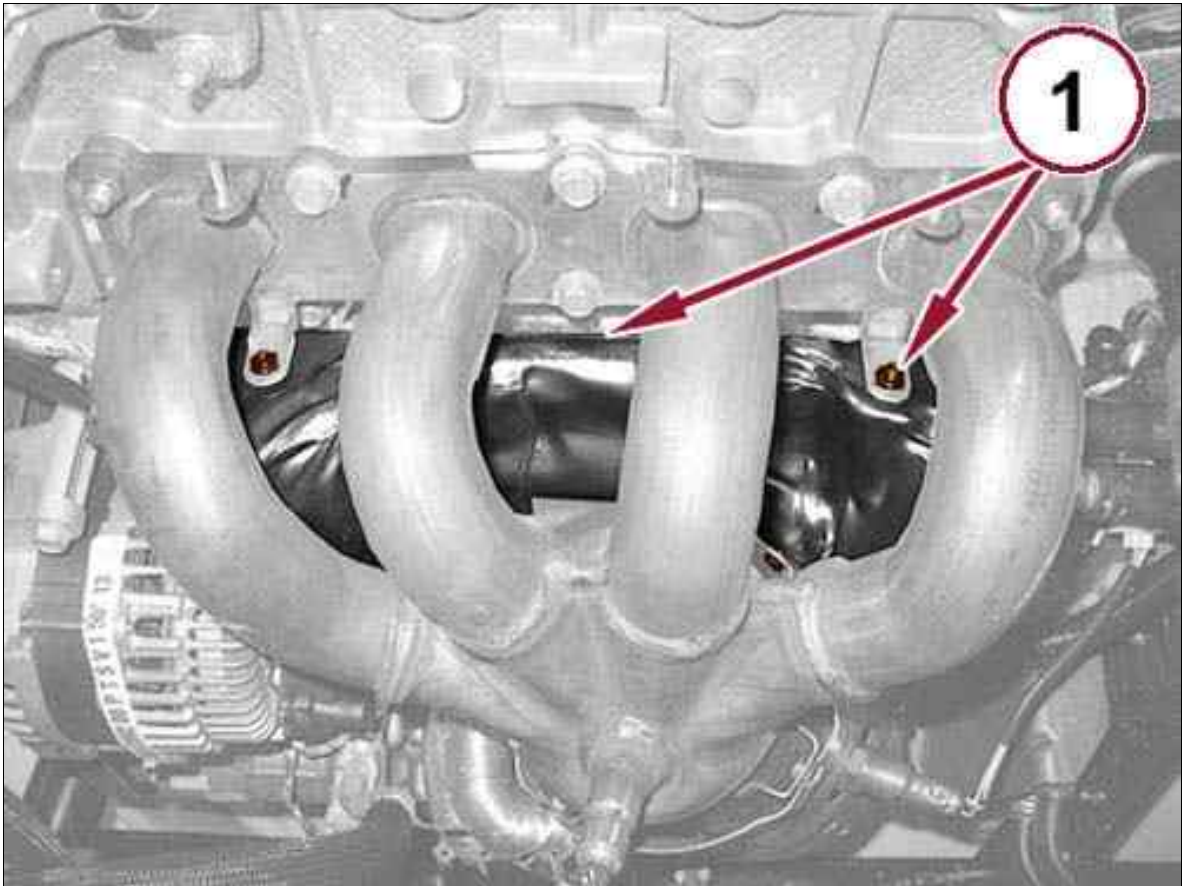
Fig 2: Oxygen Sensor Wiring, Clamps & Exhaust Manifold Upper Heat Shield



Courtesy of CHRYSLER GROUP, LLC

5. Disengage the oxygen sensor wiring (1), remove the screw and the bracket.
6. Remove the clamps (2) and remove the exhaust manifold upper heat shield (2).

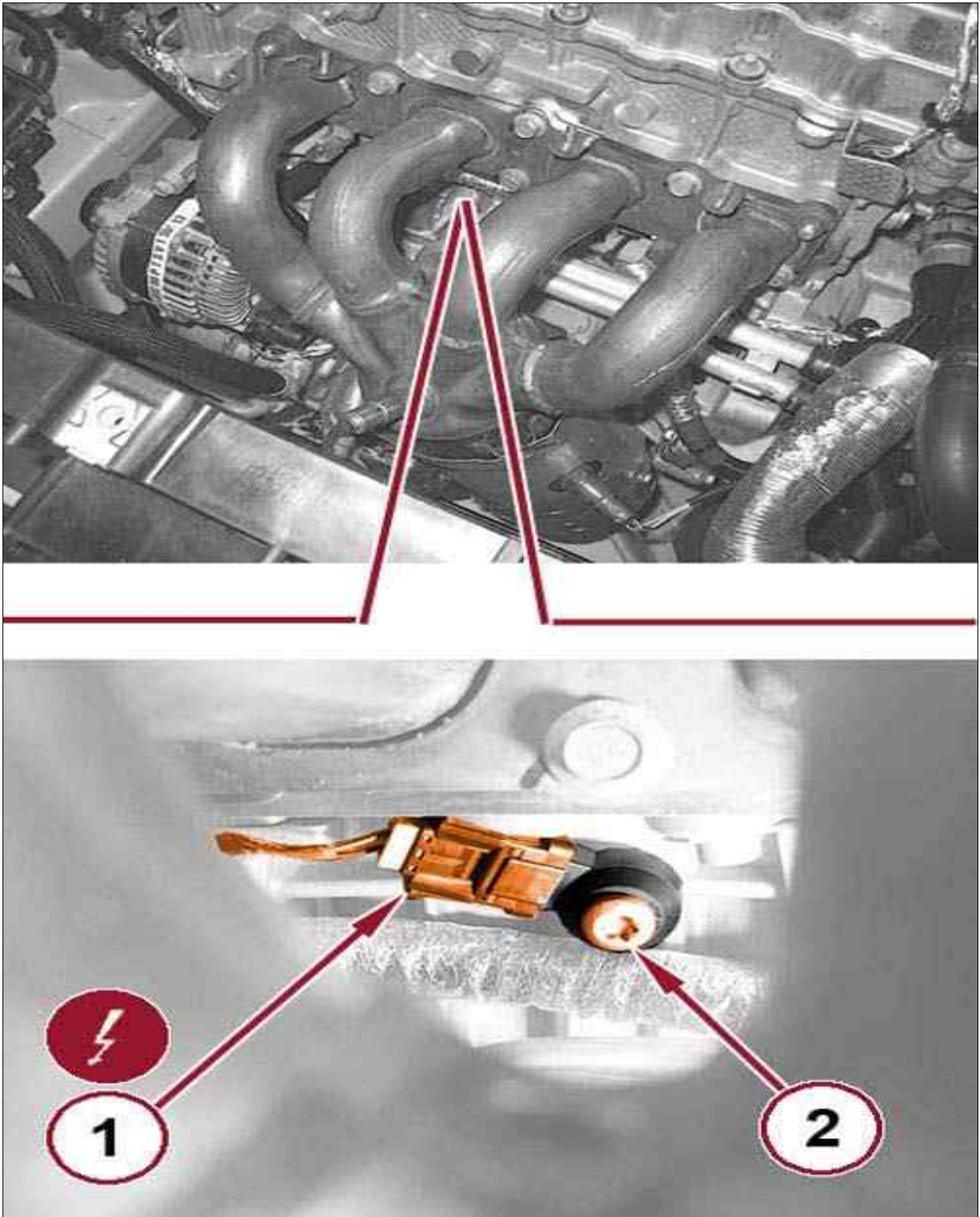
Fig 3: Lower Exhaust Manifold Heat Shield & Screws



Courtesy of CHRYSLER GROUP, LLC

7. Remove the screws (1) and remove the heat shield (1) below the exhaust manifold.

Fig 4: Knock Sensor & Electrical Connector



Courtesy of CHRYSLER GROUP, LLC

8. Disconnect the knock sensor electrical connector (1).

9. Remove the knock sensor (2).

SENSOR, KNOCK > REMOVAL AND INSTALLATION > 2.4L REMOVAL AND

INSTALLATION > INSTALLATION

1. Position the knock sensor and tighten the screw.
2. Connect the knock sensor electrical connector.
3. Position the lower heat shield of the exhaust manifold and tighten the screws.
4. Position the upper heat shield of the exhaust manifold and tighten its hardware.
5. Position the bracket wiring lambda probe upstream of the catalyst, tighten the screw and engage the wiring in the retaining clips.
6. Connect the electrical connection of the upstream oxygen sensor.
7. Install the engine beauty cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION for 1.6L/2.0L Diesel, COVER, ENGINE, REMOVAL AND INSTALLATION for 1.4L or COVER, ENGINE, REMOVAL AND INSTALLATION 2.4L.

SWITCH, IGNITION > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING > FAILED RECOGNITION OF THE IGNITION KEY IMMOBILIZER CODE

STEP	OPERATION TO BE CARRIED OUT	OK (NO FAULTS DETECTED)	FAULT DETECTED	OPERATION
1	SECOND KEY RECOGNITION CHECK • Check that the second key is correctly recognized. • If the second key is recognize, replace the first key.	End of diagnosis	The second key is not recognized	Go to STEP 2
2	CHECK USING DIAGNOSIS TOOL • Check that the Body Computer Module (BCM) is working correctly.	End of diagnosis	Incorrect BCM operation	Replace the BCM. Refer to MODULE, BODY CONTROL, REMOVAL AND INSTALLATION .

SWITCH, IGNITION > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING > KEY INSERTION IN THE IGNITION BARREL BARRED

STEP	OPERATION TO BE CARRIED OUT	OK (NO FAULTS DETECTED)	FAULT DETECTED	OPERATION
1	IGNITION BARREL CONDITION CHECK Check for the presence of signs of a break-in on the ignition barrel	Go to STEP 2	Presence of signs of a break-in on the ignition barrel	Replace the ignition barrel
2	KEY HOUSING CHECK Check that there are no foreign bodies in the key housing on the ignition barrel	Go to STEP 3	Presence of foreign bodies in the key housing on the ignition barrel	Replace the ignition barrel
3	IGNITION BARREL OPERATION CHECK Check that there are no foreign bodies in the key housing on the ignition barrel	End of diagnosis	The key still cannot be inserted in the ignition barrel.	Go to STEP 4
4	IGNITION BARREL OPERATION CHECK - Remove the barrel from the dashboard; check the condition and operation of the barrel. - Try again to insert the key in the barrel (when removed).	End of diagnosis	The key still cannot be inserted in the ignition barrel even if it has been removed from the dashboard.	Replace the ignition barrel.

SWITCH, IGNITION > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING > KEY ROTATION IN THE IGNITION BARREL HARDENED AT LOW TEMPERATURE

STEP	OPERATION TO BE CARRIED OUT	OK (NO FAULTS DETECTED)	FAULT DETECTED	OPERATION
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1	IGNITION BARREL CONDITION CHECK • Spray a modest quantity of grease through the key housing (in order not to foul the aesthetic parts). • Try again to activate the mechanism; do not exceed the torque of 2 Nm in order not to damage the key.	Key rotation occurs without problems. End of diagnosis.	The key still cannot be rotated in the ignition barrel.	Replace the ignition barrel
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SWITCH, IGNITION > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING > KEY OPERATING MECHANISM BLOCKED OR HARDENED DURING USE

STEP	OPERATION TO BE CARRIED OUT	OK (NO FAULTS DETECTED)	FAULT DETECTED	OPERATION
1	SECOND IGNITION KEY OPERATION CHECK • Check whether, with the second ignition key, the operating mechanism is still hardened	Go to STEP 2	Hardened movement	Go to STEP 3
2	IGNITION KEY CODING CHECK • Check that coding of the ignition key is correct	End of diagnosis	Incorrect coding of the ignition key	Replace the ignition key
3	IGNITION BARREL CONDITION CHECK • Check for the presence of signs of a break-in on the barrel	Go to STEP 4	Presence of signs of a break-in on the ignition barrel	Replace the ignition barrel

4	KEY HOUSING OPERATION CHECK • Spray a modest quantity of grease through the key housing (in order not to foul the aesthetic parts). • Try again to insert the key.	End of diagnosis	Hardened movement	Replace the ignition barrel.
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SWITCH, IGNITION > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING > THE IGNITION KEY COMES OUT FROM THE IGNITION BARREL AT A POSITION OTHER THAN STOP

STEP	OPERATION TO BE CARRIED OUT	OK (NO FAULTS DETECTED)	FAULT DETECTED	OPERATION
1	IGNITION BARREL CONDITION CHECK • Check whether the key comes out from the barrel at a position other than "STOP" also using the second ignition key	End of diagnosis	The key comes out from the barrel at a position other than "STOP" also using the second ignition key	Replace the ignition barrel

SWITCH, IGNITION > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING > THE STEERING LOCK DOES NOT ENGAGE WITH KEY REMOVED

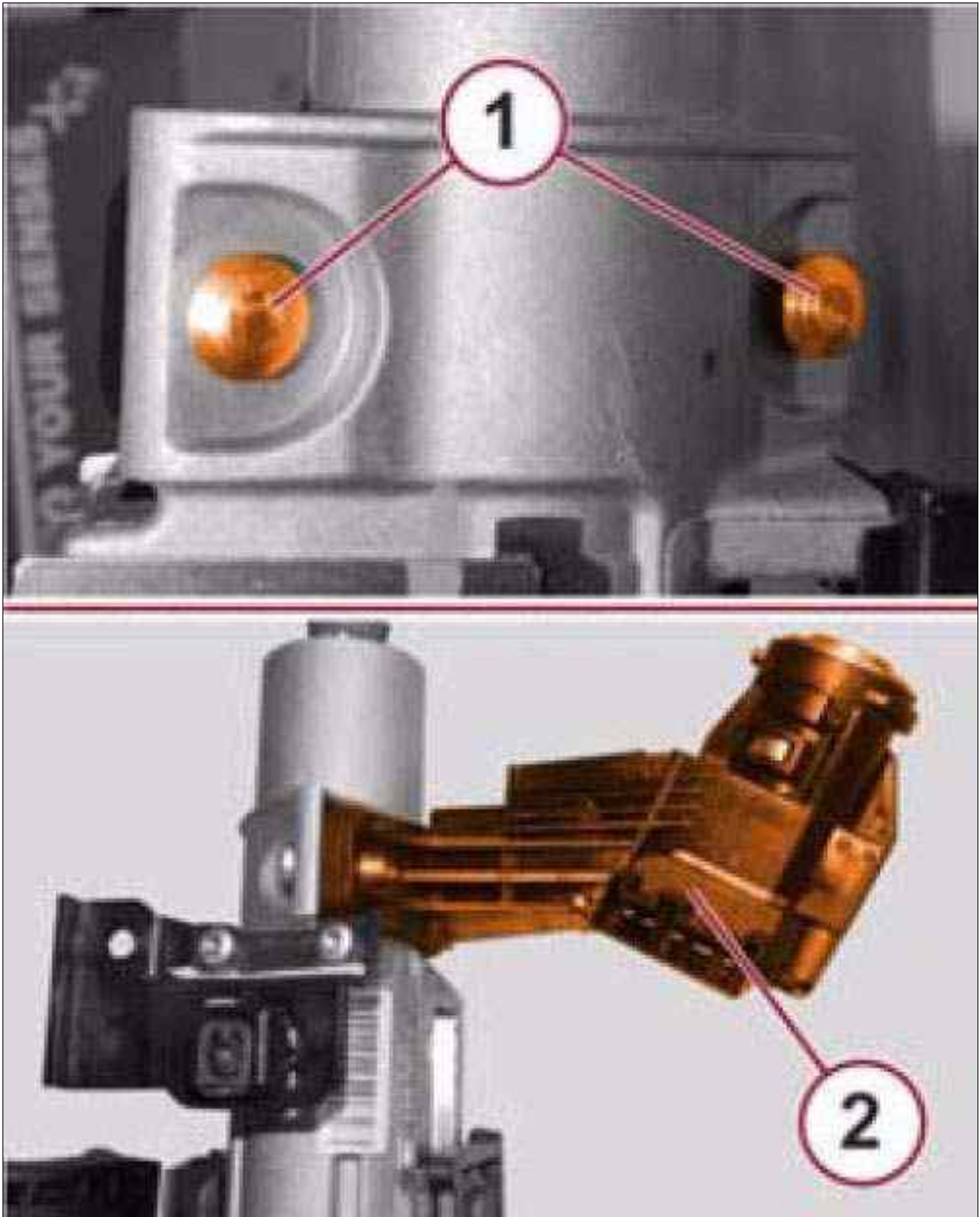
STEP	OPERATION TO BE CARRIED OUT	OK (NO FAULTS DETECTED)	FAULT DETECTED	OPERATION
1	IGNITION BARREL CONDITION CHECK • With the key at ON, extract the barrel from the	End of diagnosis	Transmission shank broken or damaged	Replace the ignition barrel

	steering lock device and check the condition of the transmission shank.			
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SWITCH, IGNITION > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

1. Remove the steering column. Refer to COLUMN, REMOVAL AND INSTALLATION .

Fig 1: Headless Screws



Courtesy of CHRYSLER GROUP, LLC

2. Using a drift and a hammer, remove the headless screws (1). Work carefully to avoid excessive vibration.
3. Remove the ignition switch with steering lock.

SWITCH, IGNITION > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

1. Position the ignition switch with steering lock in its housing.
2. Screw in and tighten the new special bolts until the heads shear off.
3. Place the electric steering control device in its housing and tighten the screws to the proper torque specification. Refer to SPECIFICATIONS .
4. Install the steering column. Refer to COLUMN, REMOVAL AND INSTALLATION .