

**Subject:** Diodes for ABS and [REDACTED]

**Application:** 900 and 9000 Models

**Supersedes** [REDACTED]

This Service Bulletin is being reissued to update the information to include 1993 models.

It may sometimes be difficult to diagnose and locate a failed diode in either the ABS or [REDACTED] system. This SI describes the most common fault symptoms as well as suitable methods of fault diagnosis and diode replacement, Figure 1.

### Cars Affected:

900 and 9000 Models as specified below in "Fault Diagnosis".

### Parts:

Diode P/N4424172  
This diode is of B4 252 GP GI type.

### Special Tools:

Breakout Box P/N 88 11 006  
35-pin LH Cable P/N 86 11 154  
[REDACTED] Cable P/N 86 11 030  
Multimeter, with diode or resistance measurement.

Use the wiring diagram in Service Manual [REDACTED] for the relevant system when testing the circuits.

### Fault Diagnosis:

The fault diagnosis section is divided into three areas:

- I **ABS [REDACTED] [REDACTED] ABS [REDACTED] (900)**  
Fault symptom  
Fault diagnosis
- I **ABS [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] M92 (9000)**  
Fault symptom  
Fault diagnosis
- I **ABS [REDACTED] [REDACTED] [REDACTED] M93 (9000)**  
Fault symptom  
Fault diagnosis

**Figure 1.** ABS and [REDACTED] diodes are located under the relay board in the ABS electrical distribution box.

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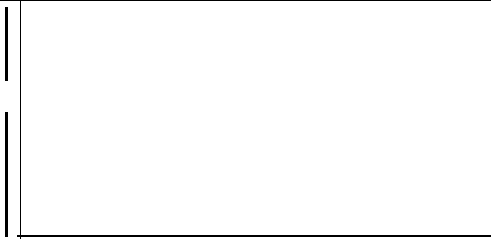
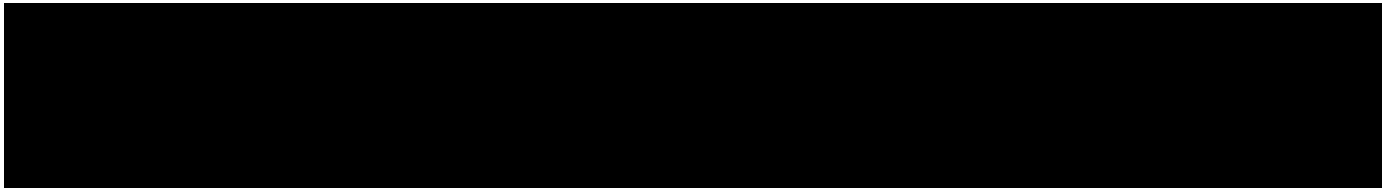
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[REDACTED] (9000)  
ABS [REDACTED] (900)

Table 1. Fault symptom

Diode No. Malfunction indicated	Fault symptom
[REDACTED] no continuity	The [REDACTED] warning lamp does <b>not</b> come on when the ignition switch is in the
303A short circuit	



Unplug the [redacted] connector from the ABS control module and connect the breakout box to the wiring harness by means of [redacted] cable 86 11 154, Figure 2. Do **not** connect the ABS control module.

Unplug the pump motor connector

Measure the voltage drop across the diode by connecting the diode tester to sockets 1 and 32 on the breakout box.

**Meter's negative lead to 32 and positive lead to 1**

- instrument shows [redacted] probable short circuit.

- instrument shows approximately [redacted] diode OK.
- instrument shows [redacted] - [redacted] probable no [redacted] tinyity.

**B. Meter's positive lead to 32 and negative lead to 1**

- instrument shows [redacted] short circuit in diode.
- instrument shows OL, diode OK.

In the event of no continuity or a short circuit, change the diode.

**ABS [redacted] (9000)**

[redacted] (9000)

[redacted] (9000)

**Table 2. Fault symptom**

Diode No. Malfunction indicated	Fault symptom
385 short circuit	The TCS [redacted] warning lamp does <b>not</b> come on when the ignition switch is in the Drive position (should normally come on and remain on for about two seconds).
385 no continuity	The TCS [redacted] warning lamp does <b>not</b> come on when the ignition switch is in the Start position (should normally come on when the ignition switch is turned from the Drive position to the Start position, i.e. when the [redacted] supply is interrupted).
[redacted] no continuity	The TCS [redacted] warning lamp does <b>not</b> come on when the ignition switch is in the Start position (should normally come on when the ignition switch is turned from the Drive position to the Start position, i.e. when the [redacted] supply is interrupted).
303A short circuit	The [redacted] and TCS [redacted] warning lamps come on while the car is being driven. The [redacted] shows diagnostic trouble code 36522.
[redacted] short circuit	The "30A PUMP" fuse in the main fuse box for the ABS system has blown.
<b>Important: Diode 385 is present only in cars with [redacted]</b>	

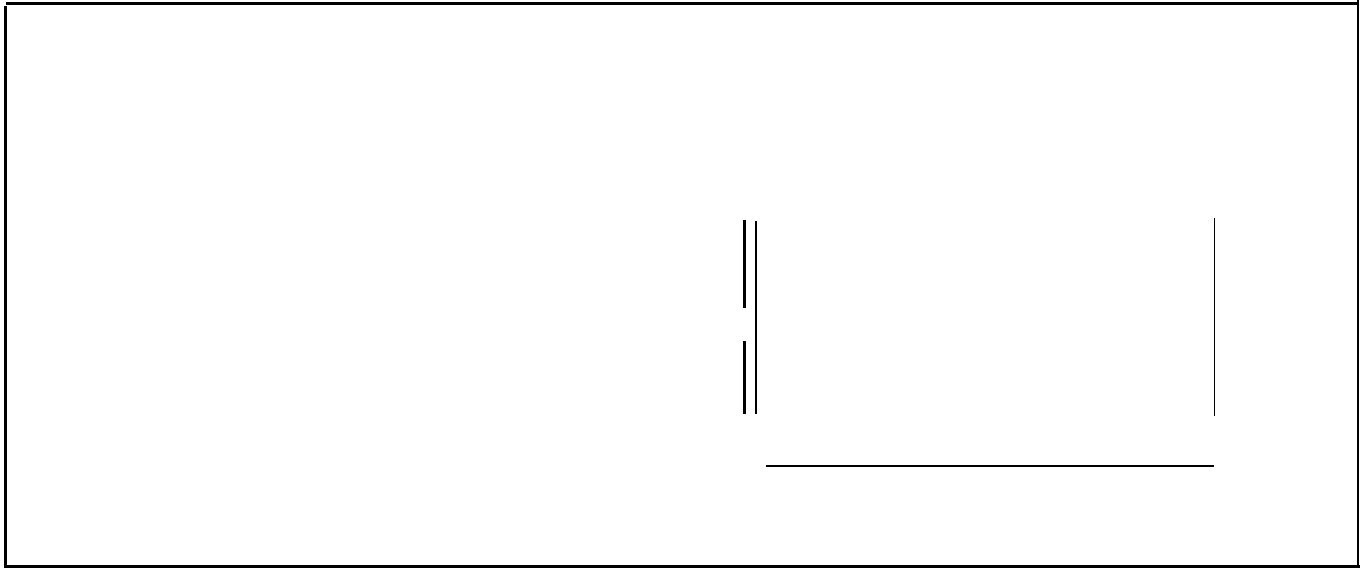


Figure 3. [REDACTED] cable 86 11 030 and Breakout Box 86 11 006

**Diode [REDACTED]**

1. Unplug the [REDACTED] connector from the ABS control module and connect the breakout box to the wiring harness by means of [REDACTED] cable 86 11 030, Figure 3. Do **not** connect the ABS control module.
2. Unplug the pump motor connector.
3. Remove the MAIN RELAY from the ABS main fuse box.
4. Measure the voltage drop across the diode by connecting the diode tester to sockets 33 and 52 on the breakout box:
  - A. **Meter's negative lead to 33 and positive lead to 52**
    - instrument shows [REDACTED] probable short circuit.
    - instrument shows approximately [REDACTED] diode OK.
    - instrument shows [REDACTED] - OL, probable no continuity.
  - B. **Meter's positive lead to 33 and negative lead to 52**
    - instrument shows [REDACTED] short circuit in diode.

**Diode [REDACTED]**

- [REDACTED]**  
**not** connect the ABS control module.
- Unplug the pump motor connector.
- Measure the voltage drop across the diode by connecting the diode tester to sockets 1 and 14 on the breakout box.
- Meter's negative lead to 14 and positive lead to 1**
- instrument shows [REDACTED] probable short circuit.
  - instrument shows approximately [REDACTED] diode OK.
  - instrument shows [REDACTED] - OL, probable no continuity.
- Meter's positive lead to 14 and negative lead to 1**
- instrument shows [REDACTED] short circuit in diode.
  - instrument shows OL, diode OK.

Unplug the [REDACTED] connector from the ABS control module and connect the breakout box to the wiring harness by means of [REDACTED] cable 88 11 030, Figure 3. Do **not** connect the ABS control module.

Unplug the pump motor connector.

Remove the MAIN RELAY from the ABS main fuse box.

Measure the voltage drop across the diode by connecting the diode tester to sockets 33 and 44 on the breakout box:

**Meter's negative lead to 33 and positive lead to 44**

- instrument shows [REDACTED] probable short circuit.
- instrument shows approximately [REDACTED] diode OK.
- instrument shows [REDACTED] - [REDACTED] probable no continuity.

**B. Meter's positive lead to 33 and negative lead to 44**

- instrument shows O.OV, short circuit in diode.
- instrument shows [REDACTED] diode OK.

In the event of no continuity or a short circuit, change the diode.

ABS [REDACTED] (9000)  
 ABS [REDACTED] M93 (9000)

**Table 3. Fault symptom**

Diode No. Malfunction indicated	Fault symptom
[REDACTED] short circuit	The [REDACTED] warning lamp does <b>not</b> come on when the ignition switch is in the Start position (should normally come on when the ignition switch is turned from the Drive position to the Start position, i.e. when the [REDACTED] supply is interrupted).
[REDACTED] no continuity	The [REDACTED] warning lamp comes on only when the ignition switch is in the Start position and goes out as soon as the main relay is supplied with voltage [REDACTED] from the ignition switch. The [REDACTED] lamp should normally remain on for 2-3 seconds after starting to show that the lamp and control module are in proper working order.
[REDACTED] no continuity	The [REDACTED] [REDACTED] fuse in the main fuse box for the ABS system has blown.



**Figure 4.** 55-pin cable 86 11 030 and Breakout Box 86 11 006

**Diode [REDACTED]**

1. Unplug the [REDACTED] connector from the [REDACTED] control module and connect the breakout box to the wiring harness by means of [REDACTED] cable 86 11 030, Figure 4. Do **not** connect the ABS control module.
2. Unplug the pump motor connector.
3. Remove the MAIN RELAY from the ABS main fuse box.
4. Measure the voltage drop across the diode by connecting the diode tester to sockets 33 and 52 on the breakout box:
  - A. **Meter's negative lead to 33 and positive lead to 52**
    - instrument shows [REDACTED] probable short circuit.
    - | instrument shows approximately [REDACTED] diode OK.
    - instrument shows [REDACTED] - [REDACTED] probable no continuity.
  - B. **Meter's positive lead to 33 and negative lead to 52**
    - instrument shows O.OV, short circuit in diode.
    - | instrument shows OL, diode OK.

In the event of no continuity or a short circuit, change the diode.

**Diode [REDACTED]**

1. Unplug the [REDACTED] connector from the ABS control module and connect the breakout box to the wiring harness by means of [REDACTED] cable 86 11 030, Figure 4. Do **not** connect the ABS control module.
2. Unplug the pump motor connector.
3. Remove the pump relay.
4. Measure the voltage drop across the diode by connecting the diode tester to pin 87 of the pump relay holder and 1 on the breakout box.
  - A. **Meter's negative lead to 87 and positive lead to 1**
    - instrument shows [REDACTED] probable short circuit.
    - | instrument shows approximately 0.5V diode OK.
    - instrument shows [REDACTED] probable no continuity.
  - B. **Meter's positive lead to 87 and negative lead to 1**
    - instrument shows O.OV, short circuit in diode.
    - | instrument shows OL, diode OK.

In the event of no continuity or a **short** circuit, change the diode.

**Action:**

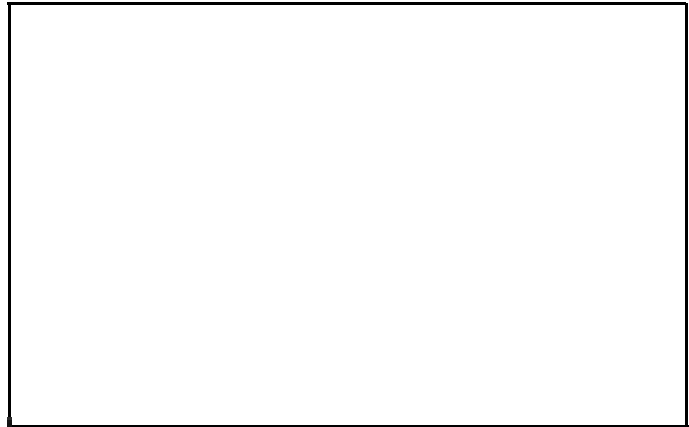
**Diode Replacement**

1. Remove the [REDACTED] main fuse box from its bracket. Undo the two screws securing the relay base and pull it up to expose the diodes. Consult Table 4 to ascertain which diode is the defective one.
2. Sever one of the diode's leads at the crimp. [REDACTED] move the insulating sleeve fitted over the crimp, Figure 5.



Figure 5. Sever one of the diode's leads at the crimp.

3. Solder one of the new diode's leads to the crimp. Be sure to install the new diode in the same direction as the old one, Figure 6. Compare with old diode or consult Table 4.



**NOTE**

Be careful to avoid heating the soldering point too long as this could damage the diode and cable insulation.

4. Cut off the remaining lead of the defective diode at the other crimp. Remove the insulating sleeve fitted over the crimp, Figure 7.



5. Solder the remaining lead of the new diode to the other crimp, Figure 8.

**NOTE**

Be careful to avoid heating the soldering point too long as this could damage the diode and cable insulation.



Figure 8. A



are correctly connected, the [REDACTED] lamp and the TCS [REDACTED] lamp, if equipped, should light up at the same time as the ignition is switched on.

Check the pump motor by depressing the brake pedal a few time until the pump starts. When it stops, check that the pump fuse in the ABS main fuse box is intact and that the [REDACTED] lamp and the TCS [REDACTED] lamp, if equipped, have gone out.

If any diode has been installed in the wrong direction, a description of the fault symptom for the relevant diode will be found in Table 3.



Clear any fault codes that have been generated. [REDACTED] the engine and check that the warning lamps go out shortly afterwards.

**Checking that the diodes are correctly connected.**

Turn the ignition switch to the Drive position and check whether the [REDACTED] (diode [REDACTED]) and TCS [REDACTED] (diode 385) warning lamps light up.

**NOTE**

Operation of the warning lamps as described below presupposes that full accumulator pressure is present in the system.

**Table 4. Checking that 11.489 d26y.4nn d2ed the syste1.8**




Table 5. Diodeconnections

Variant	Lead connected	Diode [REDACTED]	Lead connected	Lead connected	Diode [REDACTED]	Lead con- [REDACTED]	Lead [REDACTED] nected	Diode 385	Lead con- [REDACTED]
ABS 900 [REDACTED]	Yellow/White	[REDACTED]	White [REDACTED]	Yellow [REDACTED]	[REDACTED]	Black			
ABS 9000 [REDACTED]			White [REDACTED]			Blacke			
					[REDACTED]				
		[REDACTED]			[REDACTED]				
					—				
		[REDACTED]							
		[REDACTED]							