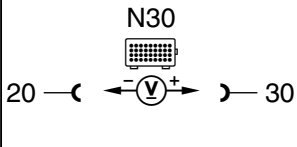
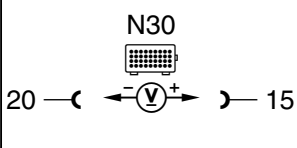
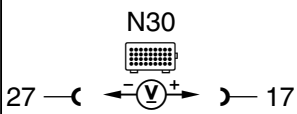
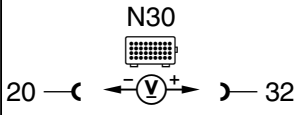


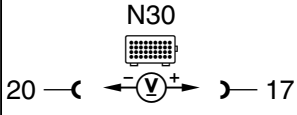
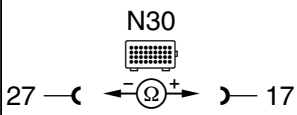
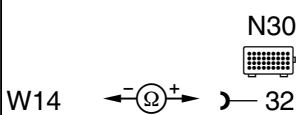

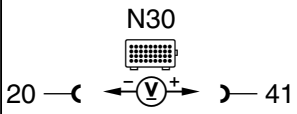
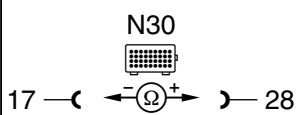
Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 1.0	ABS control module (N30) Voltage supply Circuit 87 E	<p>N30 20 —(V)- —(V)+ — 1 34 —(V)- —(V)+ — 1</p>	Ignition: ON	11 – 14 V	⇒ 1.1, Wiring, Ground, (component compartment, W16/4, Figure 5).
⇒ 1.1	Voltage supply from overvoltage protection relay module (K1/1)	<p>N30 W16/4 —(V)- —(V)+ — 1 (Figure 5)</p>	Ignition: ON	11 – 14 V	Fuse at K1/1, Wiring, K1/1.
⇒ 2.0	ABS malfunction indicator lamp (MIL) (A1e17)	<p>N30 20 —(V)- —(V)+ — 29</p>	Ignition: ON Engine: At idle	< 2 V A1e17: ON 10 – 14 V A1e17: OFF	Wiring, ABS MIL (A1e17), ⇒ 2.1 Fault stored, Read DTC memory: 11, Wiring, ABS control module (N30).

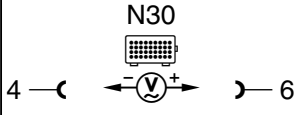
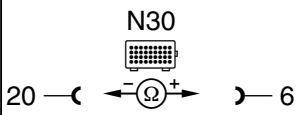
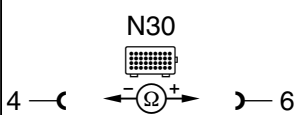
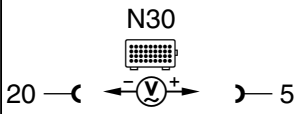
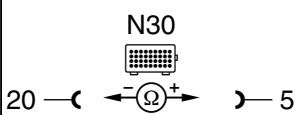
Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 2.1	Diode in solenoid valve (A7k1)		Engine: OFF Disconnect ABS control module (N30). Ignition: ON Engine: At idle	A1e17: ON A1e17: ON	Wiring, A7k1.
⇒ 3.0	Diagnosis output		Ignition: ON	10 – 14 V	Wiring, ABS control module (N30).
⇒ 4.0	Circuit 61 Voltage		Ignition: ON Engine: Start	< 1 V 11 – 14 V	Wiring, Generator (G2).
⇒ 5.0	Solenoid valve relay (A7k1)		Ignition: ON	10 – 14 V	DTC stored, see 11(clear DTC), ⇒ 5.1 to 5.3
	Control				
	Monitor			11 – 14 V	Wiring.

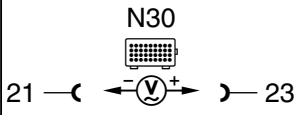
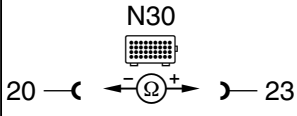
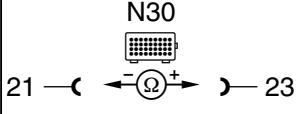
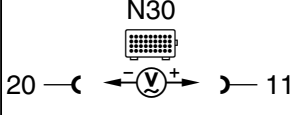
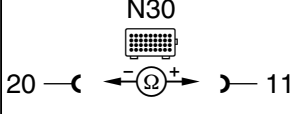
Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 5.1	Voltage supply		Ignition: ON	11 – 14 V	Wiring, ⇒ 1.0, ABS control module (N30).
⇒ 5.2	Coil resistance		Ignition: OFF Disconnect ABS control module (N30).	40 – 80 Ω	Wiring, Solenoid valve relay (A7k1).
⇒ 5.3	Operational contact	 <p>(Figure 4)</p>	Ignition: OFF Disconnect N30.	< 1 Ω	Wiring, Solenoid valve relay (A7k1),
⇒ 6.0	 Return pump relay (A7k2) Voltage supply		Ignition: ON	11 – 14 V	Wiring, ⇒ 6.1, Return pump (A7m1).
⇒ 6.1	Coil resistance		Ignition: OFF Disconnect N30.	40 – 80 Ω	Wiring, Return pump (A7k2, Figure 1).

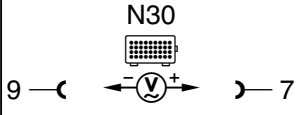
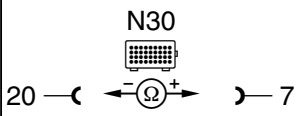
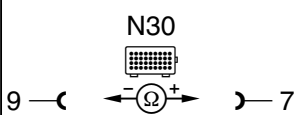
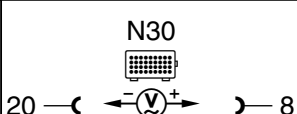
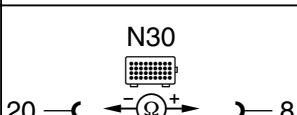
Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 7.0 2 16 25	Left front axle vehicle speed sensor (L6/1)	N30 	Lift front of vehicle. Ignition: ON Rotate left front wheel.	> 0.1 V~	⇒ 7.1, ⇒ 7.2
⇒ 7.1	Insulation resistance	N30 	Ignition: OFF Disconnect N30.	> 20 kΩ	Wiring.
⇒ 7.2	Internal resistance	N30 	Ignition: OFF Disconnect (N30) from socket box.	0.8 – 3.7 kΩ	Wiring, L6/1.
⇒ 8.0	Left front axle vehicle speed sensor output	N30 	Lift front of vehicle. Ignition: ON Rotate left front wheel.	> 3 V~	Wiring, ⇒ 7.0, ⇒ 8.1
⇒ 8.1	Circuit loading from connected control modules	N30 	Ignition: OFF Disconnect N30.	> 5 kΩ	Wiring, Connected control modules (A1, A2, N4/1, N4/2, N22).


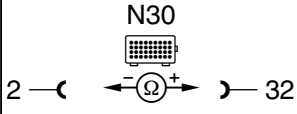

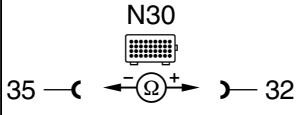

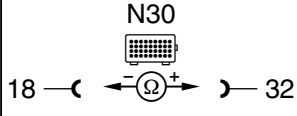
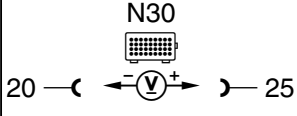
Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 9.0 3 16 26	Right front axle vehicle speed sensor (L6/2)	N30 	Lift front of vehicle. Ignition: ON Rotate right front wheel.	> 0.1 V	⇒ 9.1, ⇒ 9.2
⇒ 9.1	Insulation resistance	N30 	Ignition: OFF Disconnect N30.	> 20 kΩ	Wiring.
⇒ 9.2	Internal resistance	N30 	Ignition: OFF Disconnect N30.	0.8 – 3.7 kΩ	Wiring, L6/2.
⇒ 10.0	Right front axle vehicle speed sensor output	N30 	Lift front of vehicle. Ignition: ON Rotate right front wheel.	> 3 V~	Wiring, ⇒ 9.0, ⇒ 10.1
⇒ 10.1	Circuit loading from connected control modules	N30 	Ignition: OFF Disconnect N30.	> 5 kΩ	Wiring, Connected control modules (N30/2).

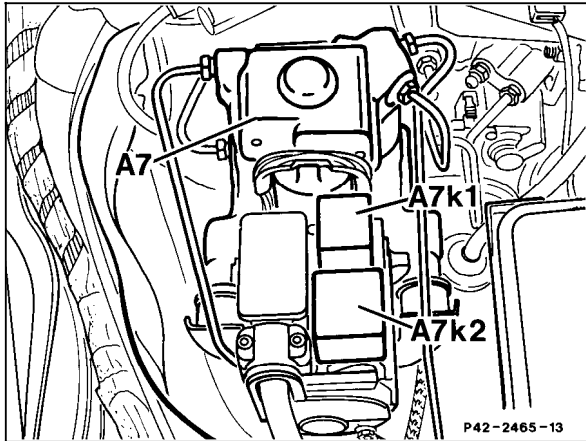
Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 11.0 4 16 27	Rear axle vehicle speed sensor (L6)	N30 	Lift rear of vehicle. Ignition: ON Rotate a rear wheel	> 0.1 V	⇒ 11.1, ⇒ 11.2
⇒ 11.1	Insulation resistance	N30 	Ignition: OFF Disconnect (N30).	>20 kΩ	Wiring.
⇒ 11.2	Internal resistance	N30 	Ignition: OFF Disconnect N30.	0.6 – 3.2 kΩ	Wiring, L6.
⇒ 12.0	Rear axle vehicle speed sensor output	N30 	Lift rear of vehicle. Ignition: ON Rotate a rear wheel.	> 3 V~	⇒ 11.0, ⇒ 12.1
⇒ 12.1	Circuit loading from connected control modules	N30 	Disconnect N30. Ignition: ON Rotate a rear wheel.	>5 kΩ	Wiring, Connected control modules (N3/4, N4/2, N30/2).

Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 13.0	 Left front axle solenoid valve (A7y1) Internal resistance		Ignition: OFF Disconnect N30.	0.7 – 2.2 kΩ	Wiring, ABS hydraulic unit (A7).
⇒ 14.0	 Right front axle solenoid valve (A7y2) Internal resistance		Ignition: OFF Disconnect N30.	0.7 – 2.2 kΩ	Wiring, ABS hydraulic unit (A7).
⇒ 15.0	 Rear axle vehicle solenoid valve (A7y3) Internal resistance		Ignition: OFF Disconnect N30.	0.7 – 2.2 kΩ	Wiring, ABS hydraulic unit (A7).
⇒ 16.0	Stop lamp switch (2-pole) (S9) N. O. contact		Ignition: ON Brake not applied. Brake applied.	< 1 V 11 – 14 V	Wiring, S9.

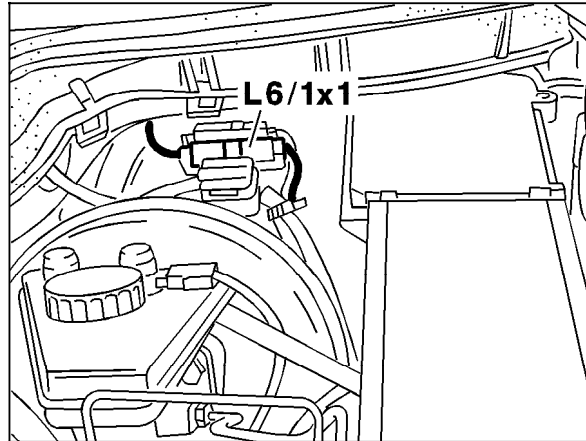
Electrical Test Program - Test



P42-2465-13
P42-2465-13

Figure 1

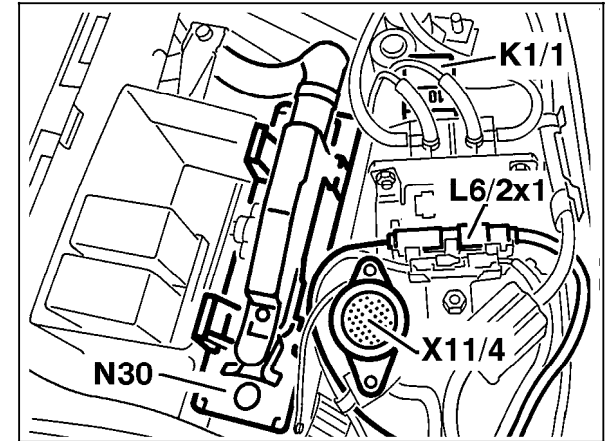
A7k1 Solenoid valve relay
A7k2 Return pump relay



P42-5179-13
P42-5179-13

Figure 2

L6/1x1 Left front axle vehicle speed sensor harness connector

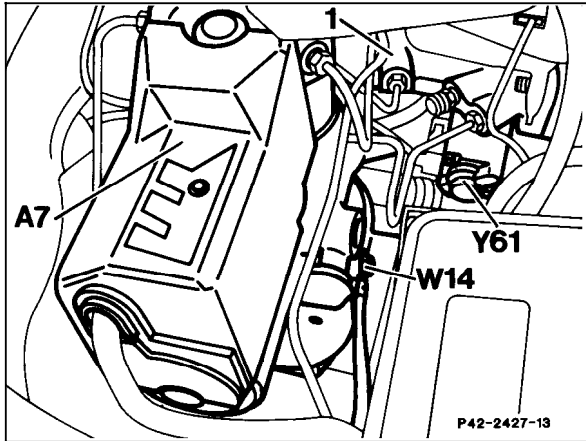


P42-5176-13
P42-5176-13

Figure 3

L6/2x1 Right front vehicle speed sensor harness connector

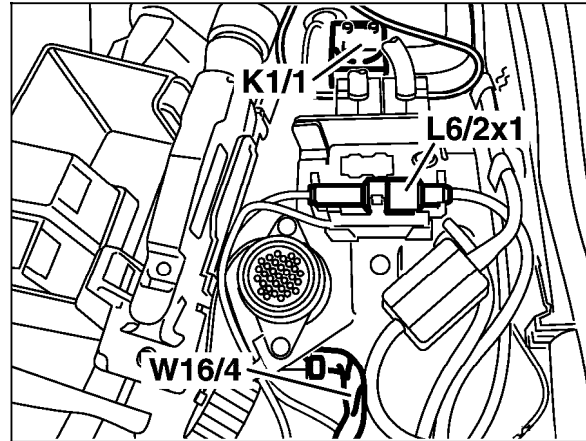
Electrical Test Program - Test



P42-2427-13

Figure 4

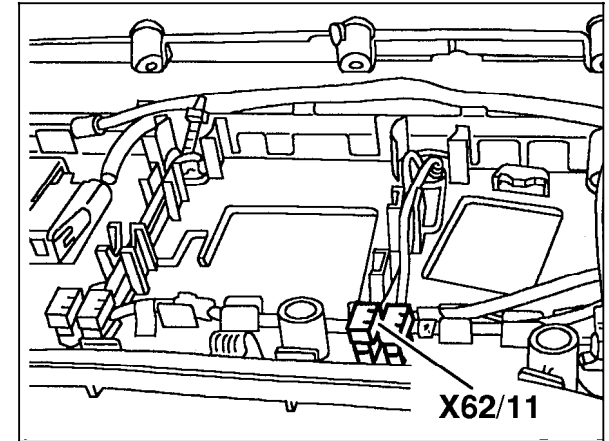
W14 Ground (ABS hydraulic unit bracket)



P42-5196-13

Figure 5

W16/4 Ground (component compartment - right)



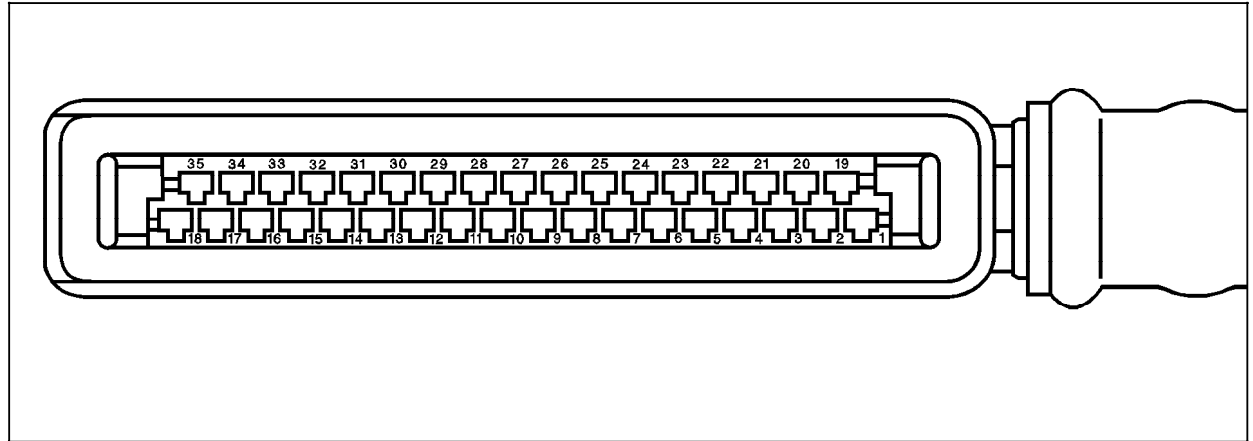
P42-5260-13

Figure 6

X62/1 Left rear axle vehicle speed sensor connector (2-pole)

Electrical Test Program - Test

Layout of connector for ABS control module (N30)



P42-5197-53

Figure 7

1	Circuit 87, voltage supply	18	Rear axle solenoid valve (A7y3) (-)
2	Left front axle solenoid valve (A7y1) (-)	19	-
3	-	20	Ground, (component compartment, right) (W16/4)
4	Left front axle vehicle speed sensor (L6/1) (-)	21	Right front axle vehicle speed sensor (L6/2) (-)
5	Left front vehicle speed sensor output	22	-
6	Left front axle vehicle speed sensor (L6/1) (+)	23	Right front axle vehicle speed sensor (L6/2) (+)
7	Rear axle vehicle speed sensor (L6) (+)	24-26	-
8	Rear axle vehicle speed sensor output	27	Solenoid valve relay (A7k1) (monitor)
9	Rear axle vehicle speed sensor (L6) (-)	28	-
10	-	29	ABS malfunction indicator lamp (A1e17)
11	Right front axle vehicle speed sensor output	30	Diagnosis output
12-13	-	31	-
14	Return pump relay (A7k2) (monitor)	32	Solenoid valve relay (A7k1) (+)
15	Circuit 61, voltage supply	33	-
16	-	34	Ground, (component compartment, right) (W16/4)
17	Return pump relay (A7k2) and solenoid valve relay (A7k1), voltage supply	35	Right front axle solenoid valve (A7y2) (-)