Electrical Test Program - Test

Test step **Adaptor position**	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 1.0 ***1***	**Overvoltage protection relay module (87E, 7-pole) (K1/1)**	-	Ignition: **OFF**	LED All: **OFF**	Check overvoltage protection relay module (K1/1) (Figure 1).
⇒ 2.0 ***1***	**Solenoid valve relay (A7k1)**	-	Ignition: **OFF**	LED All: **OFF**	Check solenoid valve relay (A7k1) (Figure 2).
⇒ 3.0 ***1***	**Overvoltage protection relay module (87E, 7-pole) (K1/1)**	Connect ⊖ Ⓥ ⊕ to 	Ignition: **ON**	11 - 14 V LED ⊟: **ON** Ⓖ: **ON** ABS malfunction indicator lamp: **ON**	Wiring interrupted, Battery not properly charged, Check fuse for overvoltage protection relay module (K1/1), Check ABS malfunction indicator lamp (A1e17), Check solenoid valve relay (A7k1), Check overvoltage protection relay module (K1/1).
⇒ 4.0 ***1***	**Generator, circuit 61**	-	Engine: **RUN BRIEFLY**	LED Ⓖ: **OFF**	Wiring interrupted, Terminal block (terminal 30/30Ü/61e/87L) (X4/10) poor contact (Figure 4), Generator or generator wiring defective.

Electrical Test Program - Test

Test step **Adaptor position**	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 4.0 ***1***	**Stop lamp switch (S9/1)**	-	Ignition: **ON** Depress brake pedal	LED (◯): **ON**	Wiring interrupted, check stop lamp switch (S9/1).
⇒ 6.0 ***2***	**Solenoid valve relay (A7k1)**	-	Ignition: **ON**	LED : **ON** Ⓖ : **ON** : **ON** Malfunction indicator lamp: **OFF**	Terminal block (terminal) 30/30U/61e/87L) (X4/10) poor contact (Figure 4), Wiring interrupted, Check solenoid valve relay (A7k1) (Figure 2)
⇒ 7.0 ***3***	**Diode in solenoid valve relay (A7k1)**	Connect ⊖Ⓥ⊕ to	Ignition: **ON**	0.4 - 1.5 V LED : **ON** Ⓖ : **ON**	Check solenoid valve relay (A7k1).
⇒ 8.0 ***4***	**Left front axle vehicle speed sensor (L6/1)** Internal resistance	Connect ⊖Ω⊕ to	Ignition: **ON**	0.85 - 2.3 kΩ	Wiring interrupted, Check left front axle vehicle speed sensor (L6/1).

Electrical Test Program - Test

Test step **Adaptor position**	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 9.0 ***4***	**Left front axle vehicle speed sensor (L6/1)** Insulation resistance	Connect ⊖Ω⊕ to 	Ignition: **ON** Press button: ⊥	> 20 kΩ	Check left front axle vehicle speed sensor (L6/1).
⇒ 10.0 ***5***	**Right front axle vehicle speed sensor (L6/2)** Internal resistance	Connect ⊖Ω⊕ to 	Ignition: **ON**	0.85 - 2.3 kΩ	Wiring interrupted, Check right front axle vehicle speed sensor (L6/2).
⇒ 11.0 ***5***	**Right front axle vehicle speed sensor (L6/2)** Insulation resistance	Connect ⊖Ω⊕ to 	Ignition: **ON** Press button: ⊥	> 20 kΩ	Check right front axle vehicle speed sensor (L6/2).
⇒ 12.0 ***6***	**Rear axle vehicle speed sensor (L6)** Internal resistance	Connect ⊖Ω⊕ to 	Ignition: **ON**	0.6 - 1.6 kΩ	Wiring interrupted, Check rear axle vehicle speed sensor (L6).

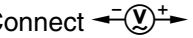
Electrical Test Program - Test

Test step **Adaptor position**	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 13.0 ***6***	**Rear axle vehicle speed sensor (L6)** Insulation resistance	Connect ⊖Ω⊕ to 	Ignition: **ON** Press button: ⊥	> 20 kΩ	Check rear axle vehicle speed sensor (L6).
⇒ 14.0 ***8***	**Left front axle solenoid valve (A7y2)** Internal resistance	Connect ⊖Ω⊕ to 	Ignition: **OFF** Press button: ⊥	0.7 - 2.2 Ω	Wiring interrupted, Check ABS hydraulic unit (A7).
⇒ 15.0 ***9***	**Right front axle solenoid valve (A7y2)** Internal resistance	Connect ⊖Ω⊕ to 	Ignition: **OFF** Press button: ⊥	0.7 - 2.2 Ω	Wiring interrupted, Check ABS hydraulic unit (A7).
⇒ 16.0 ***10***	**Rear axle solenoid switch (A7y3)** Internal resistance	Connect ⊖Ω⊕ to 	Ignition: **OFF** Press button: ⊥	0.7 - 2.2 Ω	Wiring interrupted, Check ABS hydraulic unit (A7).

Electrical Test Program - Test

Test step **Adaptor position**	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 17.0 ***4***	**Left front axle speed sensor (L6/1)** Voltage	Connect ⊖Ⓥ⊕ to	Raise vehicle Ignition: **ON** Turn wheel at approximately one revolution/second.	≥ 0.1 V~	Open circuit or wires connected incorrectly, Excessive wheel bearing play, Check left front axle vehicle speed sensor (L6/1).
⇒ 18.0 ***8***	**Left front axle solenoid valve (A7y1)** Pressure retention	remains connected	Vehicle raised Ignition: **ON** Turn wheel at approximately one revolution/second . Press switch: **"P="**. Depress brake pedal.	LED : **ON** Ⓖ: **ON** : **ON** (◯): **ON** Wheel must be able to rotate.	Ground (ABS hydraulic unit bracket) (W14) poor contact (Figure 10), Brake lines on ABS hydraulic unit (A7) reversed, Wires reversed, Check ABS hydraulic unit (A7).

Electrical Test Program - Test

Test step **Adaptor position**	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 19.0 ***8***	**Left front axle solenoid valve (A7y1**) Pressure reduction	 remains connected	Vehicle raised Ignition: **ON** Depress brake pedal. Press switch: **"P "**. Turn wheel at approximately one revolution/second	LED : **ON** Ⓖ: **ON** : **ON** Ⓜ: **ON** (◯): **ON** Wheel must be able to rotate.	Ground (ABS hydraulic unit bracket) (W14) poor contact (Figure 10), Check return/pressure pump relay (A7k2) (Figure 2), Check ABS hydraulic unit (A7)
⇒ 20.0 ***5***	**Right front axle speed sensor (L6/2)** Voltage	Connect  to 	Raise vehicle Ignition: **ON** Turn wheel at approximately one revolution/speed	≥ 0.1 V~	Open circuit or wires connected incorrectly, Excessive wheel bearing play, Check right front wheel speed sensor (L6/2).
⇒ 21.0 ***9***	**Right front axle solenoid valve (A7y2)** Pressure retention	 remains connected	Vehicle raised Ignition: **ON** Turn wheel at approximately one revolution/second . Press switch: **"P="**. Depress brake pedal.	LED : **ON** Ⓖ: **ON** : **ON** (◯): **ON** Wheel must be able to rotate.	Wires connected incorrectly, Ground (ABS hydraulic unit bracket) (W14) poor contact (Figure 10), Check ABS hydraulic unit (A7).

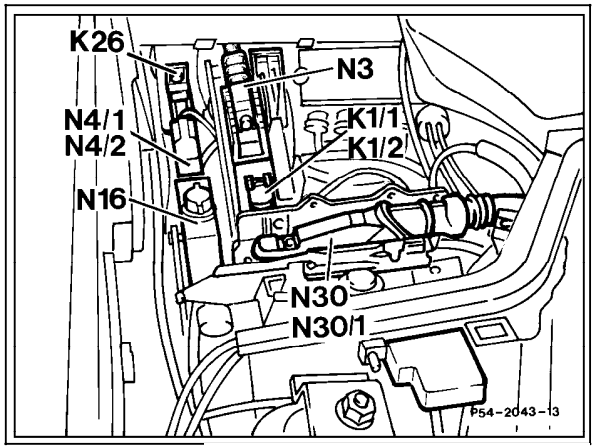
Electrical Test Program - Test

Test step **Adaptor position**	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 22.0 ***9***	**Right front axle solenoid valve (A7y2)** Pressure reduction	 remains connected	Vehicle raised Ignition: **ON** Twice depress brake pedal. Press switch: **"P "**. Turn wheel at approximately on revolution/second .	LED : **ON** Ⓖ: **ON** : **ON** Ⓜ: **ON** (◯): **ON** Wheel must be able to rotate.	Ground (ABS hydraulic unit bracket) (W14) poor contact (Figure 10), Check return/pressure pump relay (A7k2) (Figure 2), Check ABS hydraulic unit (A7)
⇒ 23.0 ***6***	**Rear axle vehicle speed sensor (L6)** Voltage	Connect  to 	Raise vehicle Ignition: **ON** Turn wheel at approximately one revolution/second.	≥ 0.1 V~	Wires interrupted, Rear axle vehicle speed sensor dirty, Check rear axle vehicle speed sensor (L6).

Electrical Test Program - Test

Test step **Adaptor position**	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 24.0 ***10***	**Rear Axle solenoid valve (A7y3)** Pressure retention	 remains connected	Vehicle raised Ignition: **ON** Turn wheel at approximately one revolution/second. Press switch: **"P="**. Depress brake pedal.	LED : **ON** Ⓖ: **ON** : **ON** (◯): **ON** Wheel must be able to rotate.	Wire connected incorrectly, Ground (ABS hydraulic unit bracket) (W14) poor contact (Figure 10), Brake lines on hydraulic unit interchanged, Check ABS hydraulic unit (A7).
⇒ 25.0 ***10***	**Left rear axle solenoid valve (A7/3y3)** Pressure reduction	 remains connected	Vehicle raised Ignition: **ON** Apply brake pedal. Press switch: **"P "**. Turn wheel at approximately one revolution/second.	LED : **ON** Ⓖ: **ON** : **ON** Ⓜ: **ON** (◯): **ON** Wheel must be able to rotate.	Ground (ABS hydraulic unit bracket) (W14) poor contact (Figure 10), Return/pressure pump relay (A7k2) (Figure 2), ABS/ASR hydraulic unit (A7/3).

Electrical Test Program - Test



P54-2043-13

Figure 1

K1/1	Overvoltage protection relay module (87E, 7-pole)
N30	ABS control module

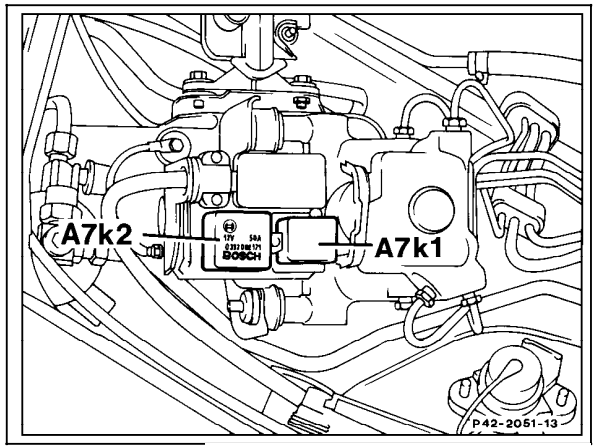


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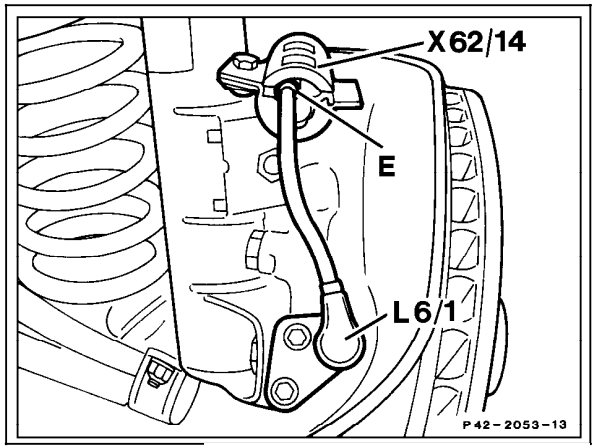
Figure 2

A7k1	Solenoid valve relay
A7k2	Return/pressure pump relay



P42-2053-13

Figure 3

L6/1	Left front axle vehicle speed sensor
X62/14	Left front axle vehicle speed sensor connector (axle spindle)

Electrical Test Program - Test

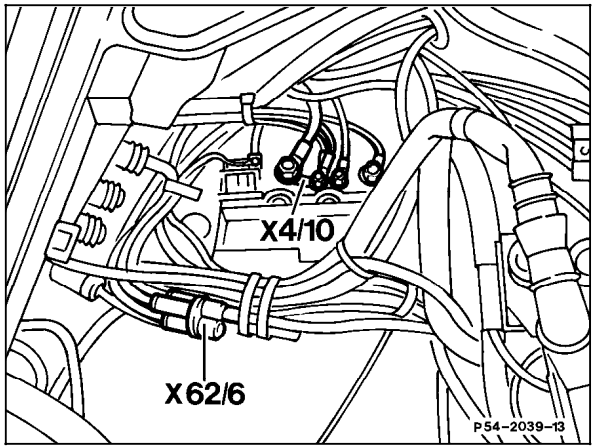


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Figure 4

X4/10 Terminal block (terminal 30/30Ue/61e/87L)
X62/6 Right front axle vehicle speed sensor connector (Component Compartment)

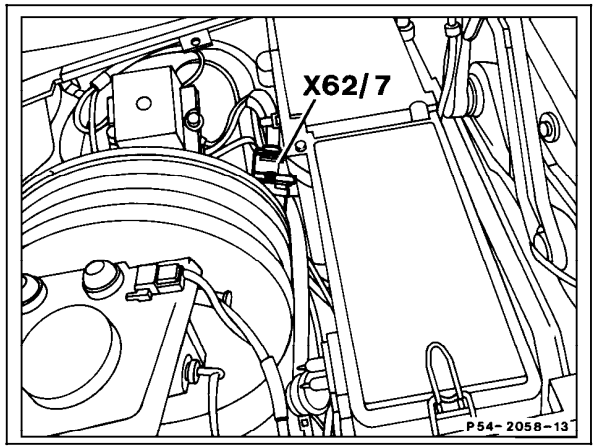

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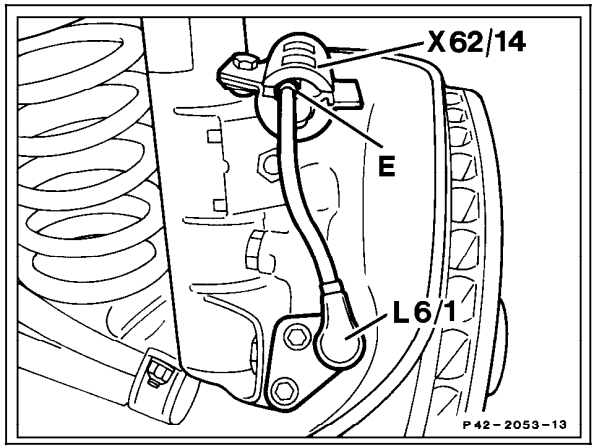
Figure 5

X62/7 Left front axle vehicle speed sensor connector (component compartment)

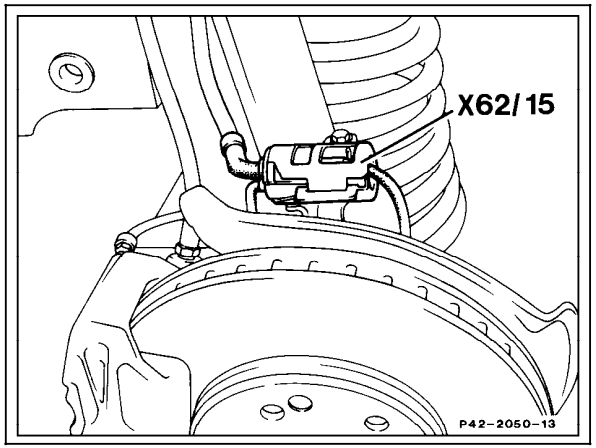


P42-2053-13

Figure 6

X62/14 Left front axle vehicle speed sensor connector (axle spindle)

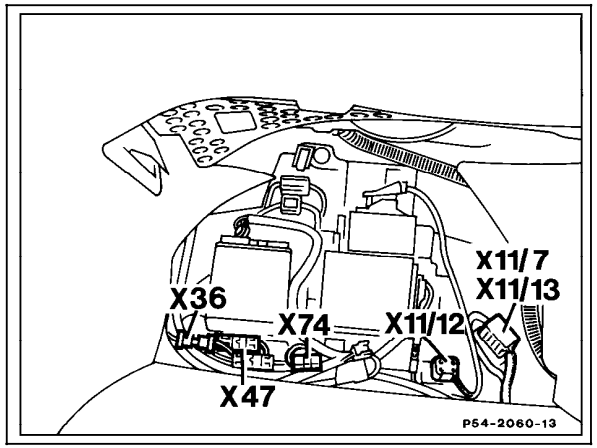
Electrical Test Program - Test



P42-2050-13

Figure 7

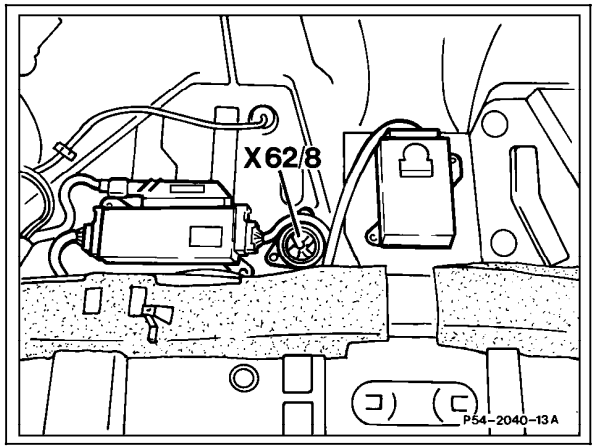
X62/15 Right spindle axle vehicle speed sensor connector
(axle spindle)



P54-2060-13

Figure 8

X47 Rear axle vehicle speed sensor harness connector
(2-pole)

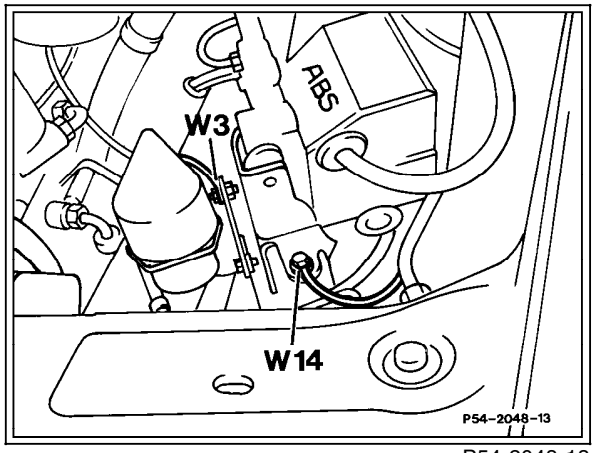


P54-2040-13A

Figure 9

X62/8 Rear axle multiple circuit junction connector

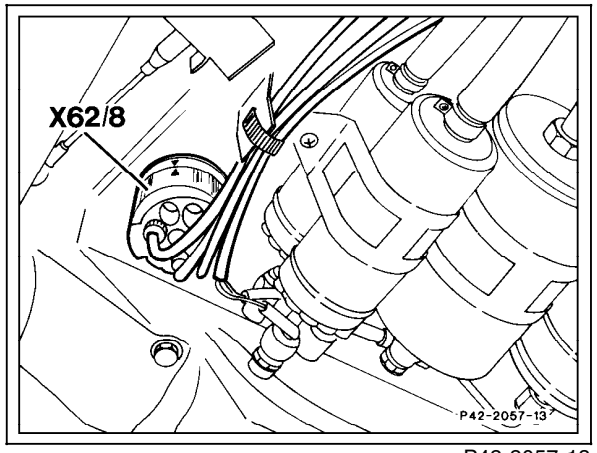
Electrical Test Program - Test



P54-2048-13

Figure 10

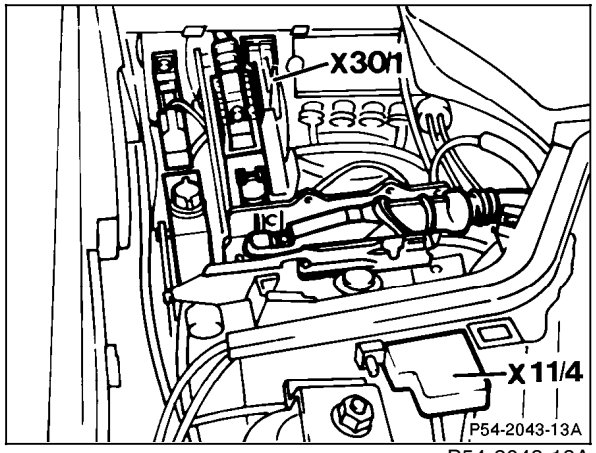
W3 Ground, left front wheelhousing (at ignition coil)
W14 Ground, ABS hydraulic unit bracket



P42-2057-13

Figure 11

X62/8 Rear axle multiple circuit junction connector

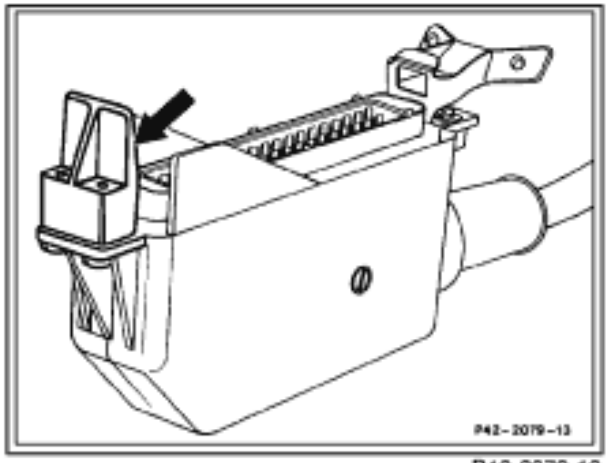


P54-2043-13A

Figure 12

X11/4 Diagnostic connector (diagnostic trouble code, 16-pole)
X30/1 Multi-function block connector

Electrical Test Program - Test



P42-2079-13

Figure 13

ABS Adapter plug