
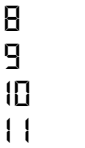




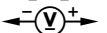



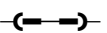


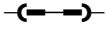









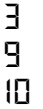
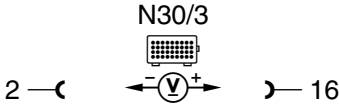

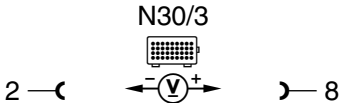

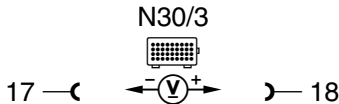
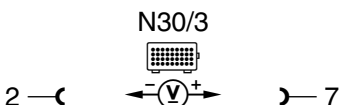
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		4MATIC control module (N30/3) Voltage supply Circuit 30a	  2 —(—) 19	Ignition: OFF	11 – 14 V	Wiring, Ground (battery) (W10), Fuse in K1/2, Overvoltage protection relay module (K1/2).
2.0		4MATIC control module (N30/3) Voltage supply Circuit 15 (fused, 87E)	  2 —(—) 1	Ignition: ON	11 – 14 V	Wiring, Fuse in K1/2, K1/2, Ignition switch (S2/1).
3.0		Voltage circuit 61	  2 —(—) 11	Ignition: ON Engine: at idle	< 3 V 11 – 14 V	Wiring, Generator (G2).
4.0		ASD/4MATIC (MIL) (A1e24) and diagnostic output	  2 —(—) 9	Ignition: OFF Unplug 4MATIC control module (N30/3). Ignition: ON	A1e24: ON	Wiring, A1e24.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0		ASD/4MATIC warning lamp (A1e25)	2 —  — 24 	Ignition: OFF Unplug 4MATIC control module (N30/3). Ignition: ON	A1e25: ON	Wiring, A1e25.
6.0		Vehicles up to 04/91 Oil pressure switch (A7/2s1) Vehicles as of 05/91 Oil pressure switch (A7/2s1) and 4MATIC function/test selection switch (S7/3)	20 —  — 19  20 —  — 19 	Engine: At idle Service valve in TEST position (see Figure 4) Engine: At idle S7/3 in TEST position (see Figure 5)	< 1.5 V 11 – 14 V < 1.5 V 11 – 14 V	Wiring, A7/2s1, 33 ⇒ 1.0 Wiring, A7/2s1, S7/3, 33 ⇒ 1.0
7.0		4MATIC – ABS Signal line	2 —  — 23 	Ignition: ON	6 – 7 V	Wiring.


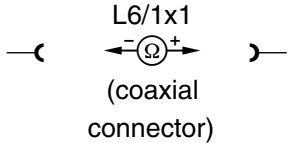
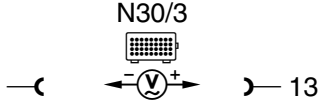
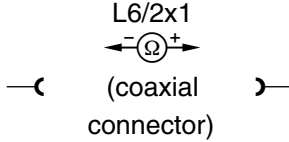
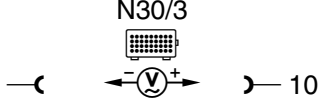
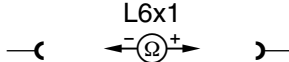
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0		Stop lamp switch (S9/1) N. O. contact	N30/3 	Ignition: ON Brakes not applied Brakes applied	< 1 V 11 – 14 V	Wiring, S9/1.
9.0		Stop lamp switch (S9/1) N. C. contact Rear axle differential lock valve (A7/2y3)	N30/3 	Ignition: ON Brakes not applied Brakes applied	11 – 14 V < 1 V	Wiring, S9/1, A7/2y3.
10		Steering angle sensor (N49) Signal	N30/3 	Ignition: ON Slowly turn steering wheel from right stop to (center position →) to left stop.	-4.2 to -5.0 V 0 V 4.2 to 5.0 V Voltage varies with steering movement.	⇒ 10.1, Wiring, N49.
10.1		Voltage supply Circuit 87E	N30/3 	Ignition: OFF Unplug 4MATIC control module (N30/3). Ignition: ON	11 – 14 V	Wiring, Overvoltage protection relay module (K1/2).










Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
11.0		Steering angle sensor (N49) Wiring reversed	N30/3 7 ← → 17 7 ← → 18	Ignition: ON Turn steering wheel slowly until nominal value is reached on both meters, then hold securely. Perform ⇒ 12.0 immediately. Note: For ⇒ 11.0 see 22 Figure 2 for connection diagram.	0 – 0.7 V	⇒ 10.0
12.0		Steering angle sensor (N49) Wiring reversed	N30/3 17 ← → 18	Ignition: ON Turn steering wheel slowly to the left	0 – 0.7 V 4.2 – 5.0 V	If a reading of –4.2 to –5.0 V is obtained, connection 17 and 18 in the steering angle sensor connector (N49x2) are reversed.
13.0		Left front vehicle speed signal (VSS) from ABS control module (N30)	N30/3 2 ← → 5	Lift front of vehicle. Ignition: ON Turn left front wheel by hand (approx. 1 rev. per sec.)	> 3 V	⇒ 13.1, Wiring, ABS control module (N30), Left front axle VSS sensor (L6/1), 4MATIC control module (N30/3).



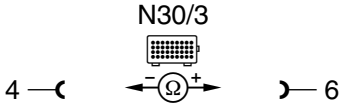

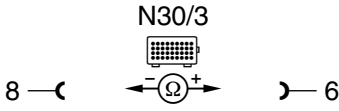
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.1		Left front axle VSS sensor (L6/1)	 <p>L6/1x1 (coaxial connector)</p>	Ignition: OFF	0.85 – 2.3 kΩ	L6/1.
14.0	5	Right front vehicle speed signal (VSS) from ABS control module (N30)	 <p>N30/3</p>	Lift front of vehicle. Ignition: ON Turn right front wheel by hand (approx. 1 rev. per sec.)	> 3 V	⇒ 14.1, Wiring, ABS control module (N30), Right front axle VSS sensor (L6/2), 4MATIC control module (N30/3).
14.1		Right front axle VSS sensor (L6/2)	 <p>L6/2x1 (coaxial connector)</p>	Ignition: OFF	0.85 – 2.3 kΩ	L6/2.
15.0	6	Rear vehicle speed signal (VSS) from ABS control module (N30)	 <p>N30/3</p>	Lift front of vehicle. Ignition: ON Turn rear wheel by hand (approx. 1 rev. per sec.)	> 3 V	⇒ 15.1, Wiring, ABS control module (N30), Rear axle VSS sensor (L6), 4MATIC control module (N30/3).
15.1		Rear axle VSS sensor (L6)	 <p>L6x1</p>	Ignition: OFF	0.85 – 2.3 kΩ	L6.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
16.0		Front axle drivetrain valve (A7/2y1) Operation	2  ←(→)→	4 Ignition: OFF Unplug 4MATIC control module (N30/3). Ignition: ON	A7/2y1 actuates audibly	⇒ 19.0, Wiring, Overvoltage protection relay module (K1/2), A7/2y1.
17.0	 	Central differential lock valve (A7/2y2) Operation	2  ←(→)→	6 Ignition: OFF Unplug 4MATIC control module (N30/3). Ignition: ON	A7/2y2 actuates audibly	⇒ 19.0, 20.0, Wiring, Overvoltage protection relay module (K1/2), A7/2y2.
18.0	 	Rear axle differential lock valve (A7/2y3) Operation	2  ←(→)→	8 Ignition: OFF Unplug 4MATIC control module (N30/3). Ignition: ON	A7/2y3 actuates audibly	⇒ 20.0, Wiring, Stop lamp switch (S9/1), K1/2, A7/2y3.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
19.0		Front axle drivetrain valve (A7/2y1) and central differential lock valve (A7/2y2) Internal resistance		Ignition: OFF Unplug 4MATIC control module (N30/3).	11 – 14 Ω	Wiring, A7/2y1, A7/2y2.
20.0		Central differential lock valve (A7/2y2) and rear axle differential lock valve (A7/2y3) Internal resistance		Ignition: OFF Unplug 4MATIC control module (N30/3).	11 – 14 Ω	Wiring, Stop lamp switch (S9/1), A7/2y2, A7/2y3.

Electrical Test Program – Test

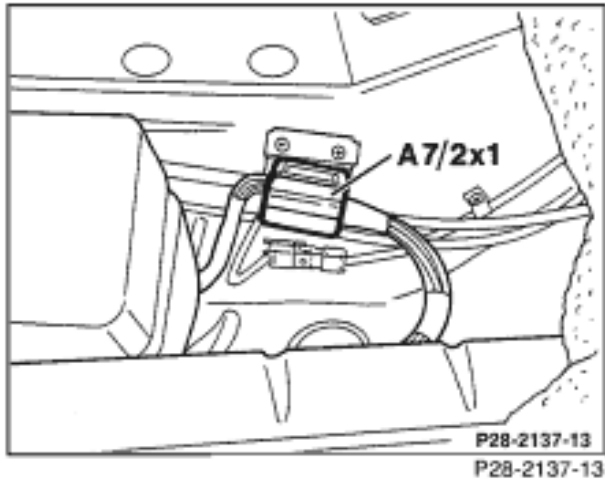


Figure 1

A7/2x1 4MATIC hydraulic unit connector

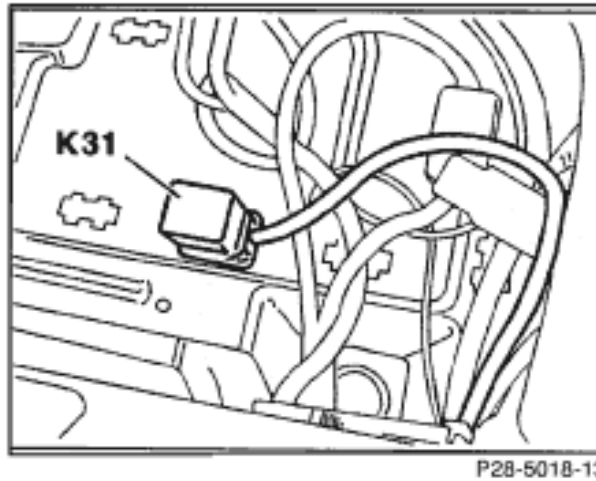


Figure 2

K31 4MATIC function/test relay module
(below passenger side foot panel)

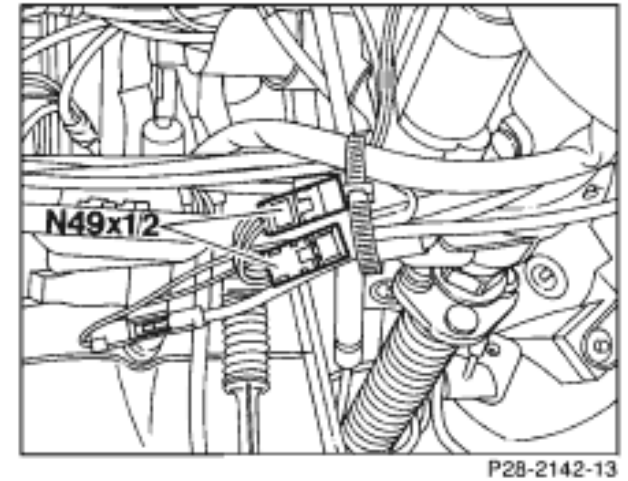
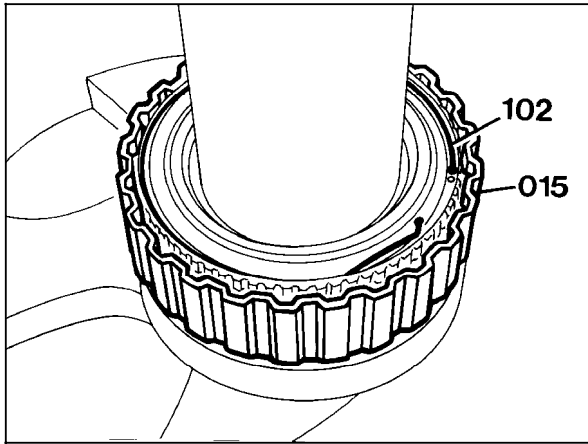


Figure 3

N49x1 Steering angle sensor connector
N49x2 Steering angle sensor connector
(near steering column)

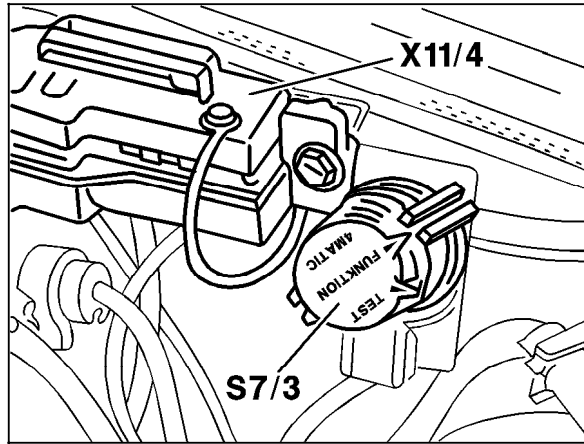
Electrical Test Program – Test



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Figure 4

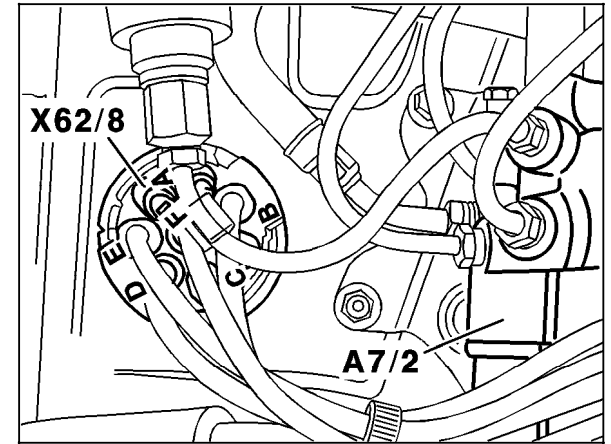
15 Service valve



P28-5038-13

Figure 5

S7/3 4MATIC function/test selection switch
 X11/4 Data link connector (DTC readout)



P28-5046-13

Figure 6

A7/2 4MATIC hydraulic unit
 X62/8 Rear axle multiple circuit junction connector
 (as of 05/91)

Electrical Test Program – Test

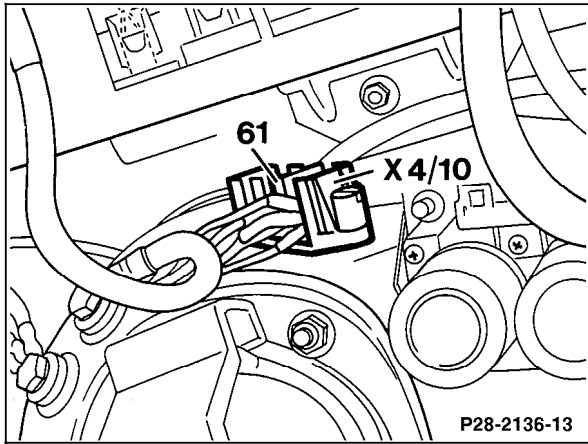


Figure 7

X4/10 Terminal block
(circuit 30/circuit 61 battery) (3-pole)
(forward of battery, on right wheelhousing)

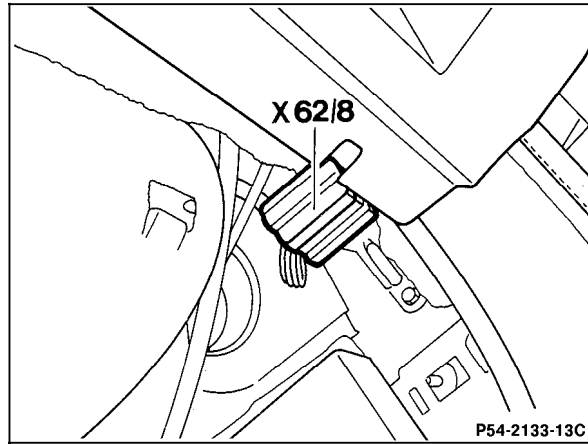


Figure 8

X62/8 Rear axle multiple circuit junction connector
(right A-pillar, at firewall)

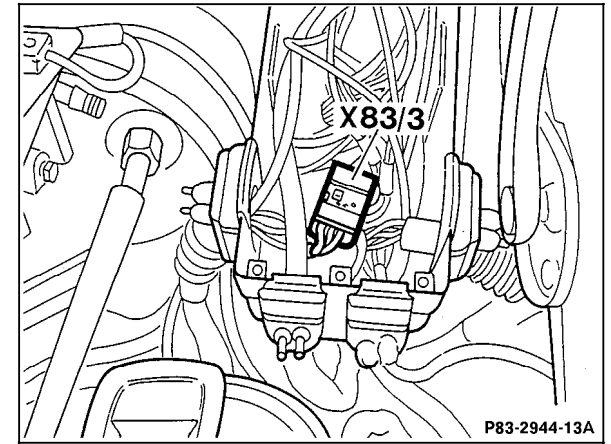


Figure 9

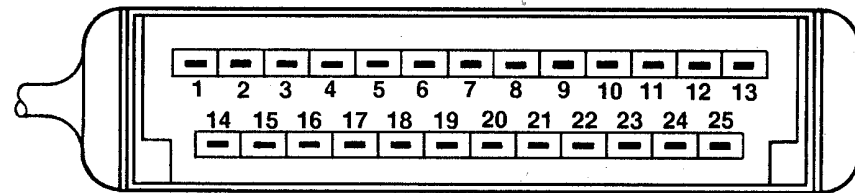
X83/3 Instrument cluster connector (4MATIC MIL)
(3-pole) (below fuse and relay box) (F1)

Electrical Test Program – Test

Layout of connector for 4MATIC Control Module (N30/3)

Figure 10

- 1 Voltage supply from overvoltage protection relay module (87E/87L/30a, 9-pole (Circuit 87E)
- 2 Ground (battery) (W10)
- 3 Not used
- 4 Front axle drivetrain valve (A7/2y1)
- 5 Left front VSS from ABS control module (N30)
- 6 Central differential lock valve (A7/2y2)
- 7 Steering angle sensor (N49) (-)
- 8 Rear axle differential lock valve (A7/2y3)
- 9 Diagnostic output ASD/4MATIC MIL (A1e24)
- 10 Rear axle VSS from ABS control module (N30)
- 11 Voltage circuit 61
- 12 Not used
- 13 Right front VSS from ABS control module (N30)
- 14-15 Not used
- 16 Stop lamp switch (S9/1) (4-pole) N. O. contact
- 17-18 Signal from steering angle sensor (N49)
- 19 Voltage supply from overvoltage protection relay module 87E/87L/30a, 9-pole (circuit 30a)
- 20 Oil pressure switch (A7/2s1)
- 21-22 Not used
- 23 ABS - signal
- 24 ASD/4MATIC warning lamp (A1e25)



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