3.3 Adaptive Damping System (ADS II)

Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	020 021	**ADS control module (N51)** Circuit 87 SA Voltage supply	N51 35 — ◄ –V+ ► — 10	Ignition: **ON**	11 – 14 V	⇒ 1.1, Wiring, W15
1.1		Voltge supply from: Base module (N16/1)	W16/1 ◄ –V+ ► — N51 10	Ignition: **ON**	11 – 14 V	Wiring, Fuse (F3) on BM (N16/1),
2.0		**Diagnosis output**	N51 35 — ◄ –V+ ► — 25	Ignition: **ON**	10 – 14 V	Wiring, ASD control module (N51).
3.0	014	**ADS MIL (A1e27)**	N51 35 — ◄ –V+ ► — 8	Ignition: **ON** Engine: **at Idle**	A1e27: **ON** < 1 V A1e27: **OFF** 11 – 14 V	Wiring, ⇒ 3.1, N51 Readout DTC memory 12, Wiring, N51

Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.1		ADS MIL (A1e27)	N51 35 — 8	Ignition: **OFF** Disconnect N51. Ignition: **ON**	11 – 14 V	Wiring, A1e27
4.0	015 016	**Steering angle sensor (N49)** Signal	N51 35 — 4	Ignition: **ON**	> 3 V ~	Wiring, ⇒ 4.1, ADS control module (N51).
4.1		Steering angle sensor (N49)	N51 35 — 4	Ignition: **OFF** Disconnect N51. Ignition: **ON**	> 3 V ~	Wiring, ⇒ 4.2, ⇒ 4.3, N49
4.2		Circuit 30 Voltage supply	N49x1 2 — 4	Ignition: **OFF** Disconnect N49x1.	11 – 14 V	Wiring.
4.3		Circuit 87 Voltage supply	N49x1 2 — 3	Ignition: **ON**	11 – 14 V	Wiring.

Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	017	**Steering angle sensor (N49)** Initialization		Engine: **at Idle** Turn steering wheel from right to left stop.	A1e27 goes out.	⇒ 3.0
6.0	006 007	**Left front axle damper valve assembly (Y51)** Voltage supply	N51 35 — (V) — 19	Ignition: **ON**	11–14 V	Wiring, ADS control module (N51).
6.1		Front axle solenoid valve 1 (Y51y1)	N51 39 — (Ω) — 19	Ignition: **OFF** Disconnect N51.	10 – 16 Ω	Wiring, Y51
6.2		Front axle solenoid valve 2 (Y51y2)	N51 40 — (Ω) — 19	Ignition: **OFF** Disconnect N51.	10 – 16 Ω	Wiring, Y51

Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0	008 009	**Right front axle damper valve assembly (Y52)** Voltage supply	N51 35 — 21	Ignition: **ON**	11–14 V	Wiring, ADS control module (N51).
7.1		Front axle solenoid valve 1 (Y52y1)	N51 41 — 21	Ignition: **OFF** Disconnect N51.	10 – 16 Ω	Wiring, Y52
7.2		Front axle solenoid valve 2 (Y52y2)	N51 22 — 21	Ignition: **OFF** Disconnect N51.	10 – 16 Ω	Wiring, Y52

Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0	010 011	**Left rear axle damper valve assembly (Y53)** Voltage supply	N51 35 — (V) — 31	Ignition: **ON**	11–14 V	Wiring, ADS control module (N51).
8.1		Rear axle solenoid valve 1 (Y53y1)	N51 24 — (Ω) — 31	Ignition: **OFF** Disconnect N51.	10 – 16 Ω	Wiring, Y53
8.2		Rear axle solenoid valve 2 (Y53y2)	N51 3 — (Ω) — 31	Ignition: **OFF** Disconnect N51.	10 – 16 Ω	Wiring, Y53

Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0	012 013	**Right rear axle damper valve assembly (Y54)** Voltage supply	N51 35 — (V) — 2	Ignition: **ON**	11–14 V	Wiring, ADS control module (N51).
9.1		Rear axle solenoid valve 1 (Y54y1)	N51 23 — (Ω) — 2	Ignition: **OFF** Disconnect N51.	10 – 16 Ω	Wiring, Y54
9.2		Rear axle solenoid valve 2 (Y54y2)	N51 1 — (Ω) — 2	Ignition: **OFF** Disconnect N51.	10 – 16 Ω	Wiring, Y54
10.0		**Circuit 61** Voltage supply	N51 35 — (V) — 26	Ignition: **ON** Engine: **at Idle**	< 1 V 11–14 V	Wiring, Generator (G2)

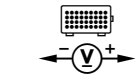
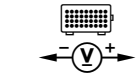
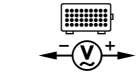
Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
11.0	018	**Right Front Wheel VSS Signal**	N51 35 — 5	Lift front of vehicle. Ignition: **ON** Rotate right front wheel at approx. 1 revolution/second.	> 3 V ~	ETS or ASR or ESP, see DM, Chassis and Drivetrain, Wiring, ADS control module (N51).
12.0	022	**Stop lamp switch (S9/1) (4-pole)**	N51 35 — 7	Ignition: **ON** Do not apply service brake. Apply service brake.	< 1 V 11–14 V	Wiring, S9/1
13.0	003	**Left front body lateral acceleration sensor (B24/3)** Voltage supply	N51 13 — 18	Ignition: **ON**	4.75 – 5.25 V	Wiring, B24/3, ADS control module (N51).
13.1		Static sensor signal (off)	N51 13 — 15	Ignition: **ON**	2.35 – 2.65 V	Wiring, B24/3

Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.2		Dynamic sensor signal (on)	N51 13 — ◄ –V+ ► — 15	Ignition: **ON** Vigorously move left front section of vehicle up and down by hand.	> 5 mV ~ **Note:** Value changes with movement of vehicle. Value can only be attained with digital multimeter set to mV ~.	B24/3

Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
14.0	004	**Right front body lateral acceleration sensor (B24/4)** Voltage supply	N51  33 — 38	Ignition: **ON**	4.75 – 5.25 V	Wiring, B24/4, ADS control module (N51).
14.1		Static sensor signal (off)	N51  33 — 34	Ignition: **ON**	2.35 – 2.65 V	Wiring, B24/4
14.2		Dynamic sensor signal (on)	N51  33 — 34	Ignition: **ON** Vigorously move right front section of vehicle up and down by hand.	> 5 mV ~ **Note:** Value changes with movement of vehicle. Value can only be attained with digital multimeter set to mV ~.	B24/4

Electrical Test Program - Test

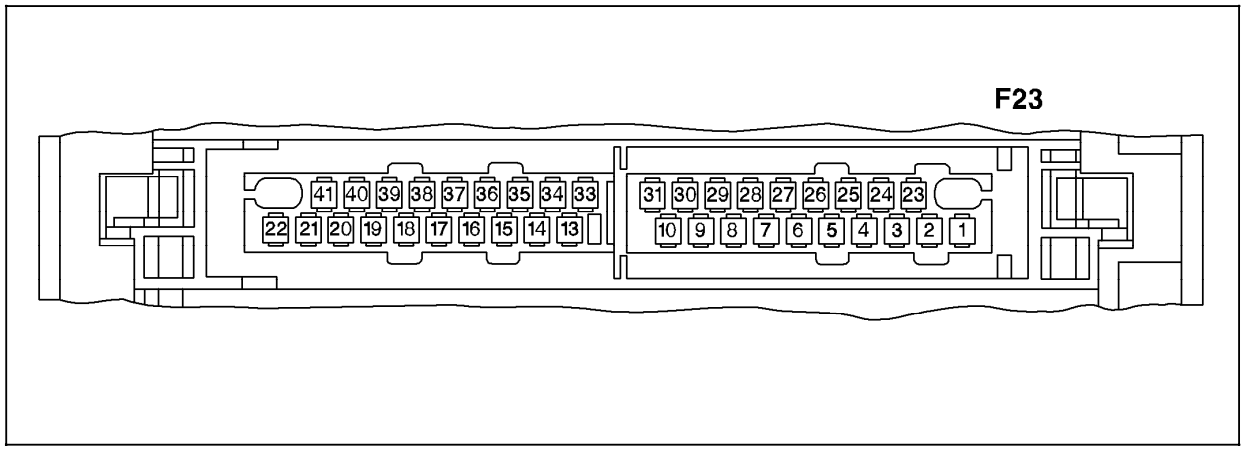
⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
15.0	005	**Right rear body lateral acceleration sensor (B24/6)** Voltage supply	N51 30 — 29	Ignition: **ON**	4.75 – 5.25 V	Wiring, B24/6, ADS control module (N51).
15.1		Static sensor signal (off)	N51 30 — 9	Ignition: **ON**	2.35 – 2.65 V	Wiring, B24/6
15.2		Dynamic sensor signal (on)	N51 30 — 9	Ignition: **ON** Vigorously move right rear section of vehicle up and down by hand.	> 5 mV ~ **Note:** Value changes with movement of vehicle. Value can only be attained with digital multimeter set to mV ~.	B24/6

Electrical Test Program - Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
16.0	019	**Comfort/sport switch (S45/1)**	N51 35 — 27	Ignition: **ON** **Hold** switch S45/1 in:		
				Comfort setting	< 1 V Indicator lamp in S45/1: **OFF**	Wiring, ADS control module (N51), S45/1
				Release switch:	11–14 V Indicator lamp in S45/1: **OFF**	Wiring, ADS control module (N51).
				Sport setting	4 – 6 V Indicator lamp in S45/1: **ON**	Wiring, ADS control module (N51), S45/1, ⇒ 16.1. control module (N51).
16.1		Indicator lamp in S45/1	N51 35 — 6	**Release** switch (S45/1)	11 – 14 V Indicator lamp in S45/1: **ON**	Wiring, N51

Electrical Test Program - Test

Connector Layout - ADS Control Module (N51)



P32.32-0262-04

F23 Module box

1	Right rear axle damper valve assembly, valve 2 (Y54y2) (–)
2	Right rear axle damper valve assembly (Y54y1, Y54y2) (+)
3	Left rear axle damper valve assembly, valve 2 (Y53y2) (–)
4	Steering angle sensor (N49)
5	Processed right front VSS signal from ASR/SPS or ETS/SPS or ESP/SPS control module (N47-1 or N47-2 or N47-5)
6	Comfort/sport switch (S45/1), indicator lamp
7	Stop lamp switch (S9/1)
8	ADS MIL (A1e27)
9	Right rear body latertal acceleration sensor (B24/6) signal
10	Circuit 87 voltage supply (feed from N16/1)
11–12	not used
13	Left front body lateral acceleration sensor (B24/3) (–)
14	not used
15	Left front body lateral acceleration sensor (B24/3) signal
16–17	not used
18	Left front body lateral acceleration sensor (B24/3) (+)
19	Left front axle damper valve assembly (Y51y1, Y51y2) (+)
20	not used
21	Right front axle damper valve assembly (Y52y1, Y52y2) (+)
22	Right front axle damper valve assembly , valve 2 (Y52y2) (–)
23	Right rear axle damper valve assembly, valve 1 (Y54y1) (–)
24	Left rear axle damper valve assembly, valve 1 (Y53y1) (–)
25	Diagnosis output
26	Circuit 61
27	Comfort/sport switch (S45/1)
28	not used
29	Right rear body lateral acceleration sensor (B24/6) (+)
30	Right rear body lateral acceleration sensor (B24/6) (–)
31	Left rear axle damper valve assembly (Y53y1, Y53y2) (+)
32	not used
33	Right front body lateral acceleration sensor (B24/4) (–)
34	Right front body lateral acceleration sensor (B24/4) signal
35	Ground, harness (W15 or W16/3)
36–37	not used
38	Right front body lateral acceleration sensor (B24/4) (+)
39	Left front axle damper valve assembly, valve 1 (Y51y1) (–)
40	Left front axle damper valve assembly, valve 2 (Y51y2) (–)
41	Right front axle damper valve assembly valve 1 (Y52y1) (–)