Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		**Central Locking:** **Interior switch (S21s10)** not activated HHT Actual Values		Switch (CL) (s21s10) not pressed.	OFF	If values are ok: ⇒ 1.1 If values are not ok: Heated rear window switch (S21s9), Switch (CL) (S21s10), Wiring: ⌈⌉– short circuit to ground (GND).
1.1		Central Locking: Interior switch (S21s10) activated HHT Actual Values		Switch (CL) (s21s10) pressed.	ON	If values are not ok: ⇒ 1.2
1.2		Heated rear window switch (S21s9) activated HHT Actual Values		Heated rear window switch (S21s9) pressed.	ON	If values are OK: Switch (CL) (S21s10), Wiring, If values are not OK: Wiring: ⌈⌉– short circuit to ground (GND), ⊥, N10

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
2.0		**Left front door rotary tumbler microswitch (Right front door rotary tumbler microswitch) Closed HHT Actual Values**		Door closed.	CLOSED	If values are ok: ⇒ 2.1 If values are **not** ok: ⇒ 2.2
2.1		Left front door rotary tumbler microswitch (Right front door rotary tumbler microswitch) Open HHT Actual Values		Open door.	OPEN	If values are ok: No fault. If values are **not** ok: ⇒ 2.3
2.2		Left front door rotary tumbler microswitch (Right front door rotary tumbler microswitch) Left front door separation point connector disconnected HHT Actual Values		Open door. Disconnect left/right front door separation connector (X35/1, X35/2).	CLOSED	If values are ok: Left front door rotary tumbler microswitch (S87/7), Right front door rotary tumbler microswitch (S87/6), Wiring: ⌈⌉– short circuit to ground (GND). If values are **not** ok: Wiring: ⌈⌉– short circuit to ground (GND), All-Activity-Module (AAM) (N10).

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
2.3		Left front door rotary tumbler microswitch (Right front door rotary tumbler microswitch) Bridged switch HHT Actual Values	X35/1 (X35/2) 2 (A) — 1 (A)	See connector layout (X35/1, X35/2) at end of 23	OPEN	If values are ok: S87/7, S87/6 Wiring: ⌈⌉– short circuit to ground (GND). If values are **not** ok: Wiring: ⌈⌉– short circuit to ground (GND), All-Activity-Module (AAM) (N10).
3.0		**Rear doors:** **Rotary tumbler micro switches** **Closed** **HHT Actual Values**		Both rear doors closed.	CLOSED	If values are ok: ⇒ 3.1 If values are **not** ok: ⇒ 3.5
3.1		Rear doors: Left rear door rotary tumbler microswitch Open HHT Actual Values		Open left rear door.	OPEN	If values are ok: ⇒ 3.2 If values are **not** ok: ⇒ 3.3
3.2		Rear doors: Right rear door rotary tumbler microswitch Open HHT Actual Values		Close left rear door. Open right rear door.	OPEN	If values are ok: No fault. If values are **not** ok: ⇒ 3.4

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.3		Left rear door rotary tumbler microswitch Bridged switch HHT Actual Values	X35/3 2 (A) — 1 (A)	Disconnect X35/3 connector.	OPEN	If values are ok: S87/2, Wiring: –//– open circuit. If values are **not** ok: Wiring: –//– open circuit.
3.4		Right rear door rotary tumbler microswitch Bridged switch HHT Actual Values	X35/4 2 (A) — 1 (A)	Disconnect X35/4 connector.	OPEN	If values are ok: S87/3 Wiring: –//– open circuit. If values are **not** ok: Wiring: –//– open circuit.
3.5		Left rear door rotary microswitch Disconnected HHT Actual Values		Close both rear doors. Disconnect X35/3	CLOSED	If values are ok: S87/2, Wiring: ⊓– short circuit to ground (GND). If values are **not** ok: ⇒1.6

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.6		Right rear door rotary microswitch Disconnected HHT Actual Values		Close both rear doors. Disconnect X35/4 connector.	CLOSED	If values are ok: S87/3, Wiring: ⌈⌉– short circuit to ground (GND). If values are **not** ok: Wiring: ⌈⌉– short circuit to ground (GND), All-Activity-Module (AAM) (N10).
4.0		**CL signal verification at driver door:** **Door open** **(left front passenger side door, left rear door, right rear door**		Door is open and unlocked	OPEN	If values are ok: ⇒ 4.1, If values are **not** ok: ⇒ 4.2
4.1		CL signal verification at driver door: Door closed (left front passenger side door, left rear door, right rear door	X35/4 2 (A) — 1 (A)	Close doors and lock.	CLOSED	If values are ok: No fault, Wiring: –//– open circuit. If values are **not** ok: ⇒ 4.3

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.2		CL signal verification: Switches disconnected HHT Actual Values		Open doors, Disconnect: X35/1, X35/2, X35/3, X35/4	OPEN	If values are ok: Microswitch (CL) (M14/5s1), Microswitch (CL) (M14/6s1), Microswitch (CL) (M14/8s1), CL microswitch (M14/9s1), Wiring: ⌈⌉– short circuit to ground (GND), If values are **not** ok: Wiring: ⌈⌉– short circuit to ground (GND), All-Activity-Module (AAM) (N10).
4.3		actual values, CL signal verification: Switches bridged	X35/1 X35/2 X35/3 X35/4 1 (A) — 3 (A)	Open doors, Disconnect separation point connectors, See end of 23 for connector layout.	OPEN	If values are ok: Microswitch (CL) (M14/5s1), Microswitch (CL) (M14/6s1), Microswitch (CL) (M14/8s1), CL microswitch (M14/9s1), Wiring: ⌈⌉– short circuit to ground (GND), If values are **not** ok: Wiring: ⌈⌉– short circuit to ground (GND), All-Activity-Module (AAM) (N10).

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0		**CL actuating motors:** **RF door CL actuating motor (M14/5),** **LF door CL actuating motor (M14/6),** **LR door CL actuating motor (M14/8)** **RR door CL actuating motor (M14/9)** **Resistance**	X35/2 X35/1 X35/3 X35/4 4 (A) – Ω – 5 (A)	Open doors, Disconnect: X35/1, X35/2, X35/3, X35/4	4 – 30 Ω	>20 kΩ: ⇒ 5.1 If: <1 Ω: Engine, Wiring: ⊓ short circuit
5.1		CL actuating motors: Activation	M14/5 M14/6 M14/8 M14/9 + – D ⊥ – E	Remove door panels, disconnect connector at actuating motor, engage rotary tumbler. Use safety cable 124 589 37 63 00 for battery connection. After performing measurement, pull on door handle to open rotary tumbler	Motor locks.	Motor

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0		**CL:** **Lock all locks (doors etc.)** **HHT Activation**		All doors are closed and **unlocked.**	All doors and fuel filler flap **are locked.**	If individual doors are not locked: ⇒ 6.1 If **none** of the doors is locked: ⇒ 1.2
6.1		CL: Unlock all locks (doors etc.) HHT Activation		All doors are closed and **locked.**	All doors and fuel filler flap **are unlocked.**	If left front door and fuel filler flap are not unlocked: ⇒ 6.3 If right front door and rear doors are not unlocked: ⇒ 6.4 Tailgate is not unlocked: ⇒ 6.5 None of the doors in unlocked: Wiring, N10
6.2		Central locking, all doors lock relay (f1k20) Function		Swap central locking, all doors lock relay (F1k20) with central locking, tailgate unlock relay (F1k15). Perform test step 6.0 again.	All doors and fuel filler flap **are locked.**	If test is ok: F1k20 Otherwise check: Wiring.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.3		Central locking, LF door and fuel filler flap unlock relay (F1k24) Function		Swap central locking, LF door and fuel filler flap unlock relay (F1k24) with central locking, tailgate unlock relay (F1k15). Close and lock left front door. Use HHT to open left front door.	Left front door is unlocked.	If values are ok: F1k24 If values are not ok: Wiring.
6.4		Central locking, RF door and rear doors unlock relay (F1k23)		Swap central locking, RF door and rear doors unlock relay (F1k23) with central locking, tailgate unlock relay (F1k15). Perform test step 6.1 again.	All doors and fuel filler flap are unlocked.	If left front door and fuel filler flap are not unlocked: Wiring, N10 Tailgate is not unlocked: F1k23
6.5		Central locking, tailgate unlock relay (F1k15) Function		Swap central locking, tailgate unlock relay (F1k15) with central locking, RF door and rear doors unlock relay (F1k23), close tailgate and lock. Using HHT open tailgate	Tailgate is unlocked.	If values are ok: F1k15 If values are not ok: Wiring.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0		**Tailgate rotary tumbler microswitch** **Closed** **HHT Actual Values**		Tailgate closed.	CLOSED	If values are ok: ⇒ 7.1 If values are not ok: ⇒ 7.2
7.1		Tailgate rotary tumbler microswitch Open HHT Actual Values		Tailgate open.	OPEN	If values are ok: No fault If values are not ok: ⇒ 7.3
7.2		Tailgate rotary tumbler microswitch Disconnected HHT Actual Values		Disconnect X18/1, tailgate open.	CLOSED	If values are ok: S88/1, Wiring: ⌈⌉– short circuit to ground (GND). If values are not ok: N10 Wiring: ⌈⌉– short circuit to ground (GND).

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.3		Tailgate rotary tumbler microswitch Switch bridged HHT Actual Values	X18/1 2 (A) — 1 (A)		OPEN	If values are ok: S88/1 Wiring: –//– open circuit. If values are not ok: N10 Wiring: –//– open circuit.
8.0		**CL signal verification:** **Tailgate is open** **HHT Actual Values**		Tailgate open and unlocked.	OPEN	If values are ok: ⇒ 8.1 If values are not ok: ⇒ 8.2
8.1		CL signal verification: Tailgate is closed HHT Actual Values		Tailgate closed and locked	CLOSED	If values are ok: No fault If values are not ok: ⇒ 8.3

Electrical Test Program – Test

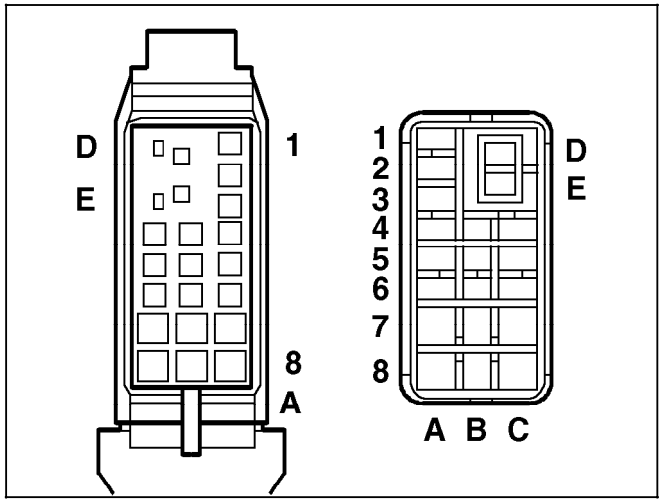
⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.2		CL signal verification: Tailgate switch disconnected HHT Actual Values		Open tailgate, disconnect X18/1	OPEN	If values are ok: Microswitch (CL) (M14/7s1) Wiring: ⌈⌉– short circuit to ground (GND). If values are not ok: N10 Wiring: ⌈⌉– short circuit to ground (GND).
8.3		CL signal verification: Tailgate switch bridged HHT Actual Values	X18/1 ⊥—(—(—▬—)—)— 9	Tailgate open. Switch disconnected.	Closed	If values are ok: Microswitch (CL) (M14/7s1) Wiring: –//– open circuit. If values are not ok: N10 Wiring: –//– open circuit.
9.0		**Tailgate CL actuating motor** **Resistance**	X18/1 7 —▬ ←–Ω+→ ▬— 8	Open tailgate, Disconnect X18/1	4 – 30 Ω	>20 kΩ: ⇒ 9.1 If: <1 Ω: M14/7 Wiring: ⌈⌉ short circuit.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.1		Tailgate CL actuating motor (M14/7) Activation	M14/7 + A ⊥ B	Disconnect connector at actuating motor. Use safety cable 124 589 37 63 00 for battery connection	Motor runs.	If values are ok: Wiring: –//– open circuit. If values are not ok: M14/7
10.0		**Filler flap CL actuating motor (M14/10)** **Activation**	M14/10 + A ⊥ B	Disconnect connector at actuating motor. Use safety cable 124 589 37 63 00 for battery connection	Motor runs.	M14/10

Electrical Test Program – Test

Connector Layout - Left front door separation point (X35/1), Right front door separation point (X35/2), Left rear door separation point (X35/3), Right rear door separation point (X35/4)



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