Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	2 3	**In–car temperature sensor with aspirator blower (B10/4)** Resistance	N22 19 — 20 11 — Ω — 20	on left connector (1) Ignition: **OFF** Disconnect test cable from pushbutton control module	°C kΩ 10 18.3 – 21.5 15 15.2 – 17.5 20 11.5 – 13.5 25 9.5 – 10.5 30 7.5 – 8.5 35 6.0 – 7.0 40 4.5 – 5.5 45 3.5 – 4.5	Wires from pushbutton control module (N22) to sensor B10/4 via connector (X85/2), B10/4.
2.0	4 5	**Outside temperature sensor (B10/5)** Resistance	N22 19 — 20 12 — Ω — 20	on left connector (1) Ignition: **OFF** Disconnect test cable from pushbutton control module	°C kΩ 10 5.0 – 6.0 15 4.0 – 4.6 20 3.1 – 3.9 25 2.4 – 3.0 30 1.9 – 2.3 35 1.6 – 2.0 40 1.4 – 1.6 45 1.1 – 1.3	Wires from pushbutton control module (N22) to sensor B10/5, B10/5.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.0	6 7	**Evaporator temperature sensor (B10/6)** [1] Resistance	N22 19 — 20 8 — Ω — 20	on left connector (1) Ignition: **OFF** Disconnect test cable from pushbutton control module	°C / kΩ 0 / 8.1 – 9.9 5 / 6.3 – 7.7 10 / 5.0 – 6.0 15 / 4.0 – 4.6 20 / 3.1 – 3.9 25 / 2.4 – 3.0 30 / 1.9 – 2.3 35 / 1.6 – 2.0 40 / 1.4 – 1.6 45 / 1.1 – 1.3	Wires from pushbutton control module (N22) to sensor B10/6, B10/6.
4.0	8 9	**Heater core temperature sensor (B10/1)** Resistance	N22 19 — 20 10 — Ω — 20	on left connector (1) Ignition: **OFF** Disconnect test cable from pushbutton control module	°C / kΩ 10 / 18.3 – 21.5 15 / 15.2 – 17.5 20 / 11.5 – 13.5 25 / 9.5 – 10.5 30 / 7.5 – 8.5 35 / 6.0 – 7.0 40 / 4.5 – 5.5 45 / 3.5 – 4.5	Wires from pushbutton control module (N22) to sensor B10/1, B10/1.

[1] If the A/C system was in use immediately before the test, the temperature at the evaporator temperature sensor will be lower than the outside air temperature.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	12 13	**ECT sensor (A/C)** Resistance	N22 19 — 20 7 — Ω — 20	on left connector (1) Ignition: **OFF** Disconnect test cable from pushbutton control module	°C Ω 20 5000 – 8000 60 900 – 1800 85 460 – 650 100 300 – 400 110 230 – 290 120 180 – 220 130 135 – 175	Wires from pushbutton control module (N22) to sensor B10/8, B10/8.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0	20 21	**Center and side air outlet flap control module, left air outlet adjuster (N18/2r1)** Voltage	N22 20 — V — 16	on left connector (1) Move left air outlet adjuster completely to the right (outlet closed) completely to the left (outlet open)	0.6 – 0.9 V continuous, no steps 3.9 – 4.5 V	Wires from control module (N22) to left air outlet adjuster (N18/2r1), Center and side air outlet flap control module (N18/2).
7.0	16 17	**Center and side air outlet flap control module, center air outlet adjuster (N18/2r2)** Voltage	N22 20 — V — 18	on left connector (1) Move center air outlet adjuster completely to the right (outlet closed) completely to the left (outlet open)	0.6 – 0.9 V continuous, no steps 3.9 – 4.5 V	Wires from N22 to center air outlet adjuster (N18/2r2), N18/2.
8.0	24 25	**Center and side air outlet flap control module, right air outlet adjuster (N18/2r3)** Voltage	N22 20 — V — 14	on left connector (1) Move right air outlet adjuster completely to the right (outlet closed) completely to the left (outlet open)	0.6 – 0.9 V continuous, no steps 3.9 – 4.5 V	Wires from N22 to right air outlet adjuster (N18/2r3), N18/2.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0		**Center and side air outlet flap control module, pushbutton "cold" (N18/2s1)** Voltage	N22 19 — (V) — 4	on left connector (1) Press blue switch on center air outlet and hold	< 0.1 V	Wires from N22 to cold pushbutton switch (N18/2s1), Center and side air outlet flap control module (N18/2).
10.0		**Center and side air outlet flap control module, pushbutton "warm" (N18/2s2)** Voltage	N22 19 — (V) — 3	on left connector (1) Press red switch on center air outlet and hold	< 0.1 V	Wires from N22 to cold pushbutton switch (N18/2s2), N18/2.
11.0	22 23	**Left air outlet feedback potentiometer (R23/1)** Voltage	N22 20 — (V) — 15	on left connector (1) Move left air outlet adjuster completely to the right (outlet closed) completely to the left (outlet open)	0.7 – 1.1 V Continuous, no steps 3.5 – 4.8 V	Wires from N22 to feedback potentiometer (R23/1), R23/1, Incorrect adjustment or defective, replace vacuum element.
12.0	18 19	**Center air outlet feedback potentiometer (R23/3)** Voltage	N22 20 — (V) — 17	on left connector (1) Move center air outlet adjuster completely to the right (outlet closed) completely to the left (outlet open)	0.7 – 1.1 V Continuous, no steps 3.5 – 4.8 V	Wires from N22 to feedback potentiometer (R23/3), R23/3, incorrect adjustment or defective, replace vacuum element.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.0	26 27	**Right air outlet feedback potentiometer (R23/2)** Voltage	N22 20 — ◄ –V+ ► — 13	on left connector (1) Move right air outlet adjuster completely to the right (outlet closed) completely to the left (outlet open)	0.7 – 1.1 V Continuous, no steps 3.5 – 4.8 V	Wires from N22 to feedback potentiometer (R23/2), R23/2, incorrect adjustment or defective, replace vacuum element.
14.0		**Left soft top fabric bow switch group (A22)** Voltage	N22 19 — ◄ –V+ ► — 6	on left connector (1) Soft top closed Soft top open	< 0.1 V > 10 V	Wires from N22 to left soft top bow switch group (A22) via connectors (X85/2, X18/3).

Electrical Test Program – Test

Test Conditions

1. Ignition: **OFF**
2. Disconnect both connectors from A/C pushbutton control module (N22).
3. Disconnect test cable from left connector and reconnect to right connector.

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
15.0	31 or 71	**Monovalve (Y19)**	N22 18 — Ω — 20		11 – 19 Ω	Wires from N22 to Y19, Y19.

Electrical Test Program – Test

Test Conditions

1. Connect test cable to right connector of A/C pushbutton control module (N22).
2. Connect wiring harness to left connector of A/C pushbutton control module.
3. Ignition: **ON**

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
16.0		**A/C pushbutton control module (N22)** Voltage supply (circuit 30)	N22 ⊥ V — 1	on right connector (2)	> 10 V	Fuse 10 (F1–10), circuit 30, Wires from N22 to fuse F1-10 open.
17.0		**A/C pushbutton control module (N22)** Voltage supply (circuit 15)	N22 ⊥ V — 19	on right connector (2)	> 10 V	Fuse 7 (F1–7), circuit 15, Wires from N22 to fuse F1-7 open.
18.0		**A/C pushbutton control module (N22)** Voltage supply, output	N22 ⊥ V — 20	on right connector (2)	> 10 V	N22.
19.0		**Mono valve (Y19)** Ground connection	N22 18 — V — 20	on right connector Temperature selector (2)wheel set at “MIN”.	After 10 seconds > 10 V	N22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
20.0	30 70	**Auxiliary coolant pump (M13) and and additional function test by manual touch** Ground connection	N22 16 — ◄ –V+ ► — 20	on right connector (2) Temperature selector wheel set at “MAX”	After approx. 50 seconds > 10 V	A/C pushbutton control module (N22).
21.0	50	**Switchover valve block (Y11)** Data transfer	N22 7 — ◄ –V+ ► — 20	on right connector (2)	Voltage oscillates between 0 – 8 V	N22.
22.0		Electronic blower regulator (N29) Voltage supply	N22 ⊥ –V+ ► — 11	on right connector (2) Blower speeds: 1 2 3 4	 0.8 – 1.2 V 1.8 – 2.2 V 2.7 – 3.3 V > 5 V	N22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
23.0	35 75	**Auxiliary fan (M4)** Stage 1	N22 12 — (V) — 20	on right connector (2) Press AUTOMATIC Outside temperature above 86 °F	> 10 V and auxiliary fan running in stage 1	A/C pushbutton control module (N22).
24.0	34 74	**Auxiliary fan (M4)** Stage 2	N22 13 — (V) — 20	on right connector (2) Disconnect and bridge ETC sensor plug (B10/8)	> 10 V and auxiliary fan running in stage 2	N22.
25.0	33 73	**A/C compressor (A9)** Ground connection 1)	N22 14 — (V) — 20	on right connector (2) Press AUTOMATIC	After 10 seconds > 10 V	N22.

1) If the A/C compressor does not engage, check compressor shut-off 24.