


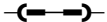




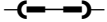




Electrical Test Program – Test



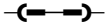


⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	2 3	In-car temperature sensor with aspirator blower (B10/4) Resistance	<p>N22 </p> <p>19 — — 20</p> <p>11 — — 20</p>	<p> on left connector (1)</p> <p>Ignition: OFF</p> <p>Disconnect test cable from pushbutton control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

Electrical Test Program – Test


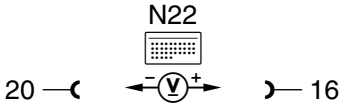

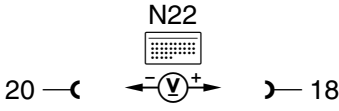

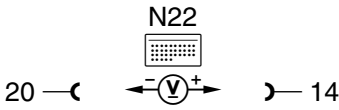

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.0		Evaporator temperature sensor (B10/6) ¹⁾ Resistance	  	 on left connector (1) Ignition: OFF Disconnect test cable from pushbutton control module	°C kΩ 0 8.1 – 9.9 5 6.3 – 7.7 10 5.0 – 6.0 15 4.0 – 4.6 20 3.1 – 3.9 25 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		Heater core temperature sensor (B10/1) Resistance	  	 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.


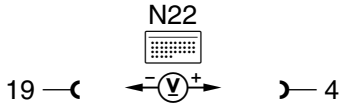

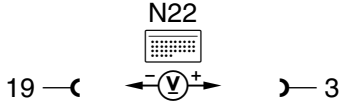



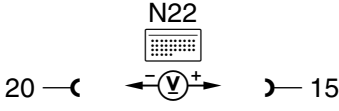



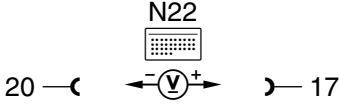

Electrical Test Program – Test

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


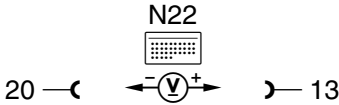

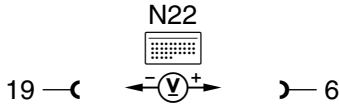

Electrical Test Program – Test

⇒		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		 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		 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		 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		 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		 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	 	Left air outlet feedback potentiometer (R23/1) Voltage		 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	 	Center air outlet feedback potentiometer (R23/3) Voltage		 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.


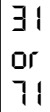
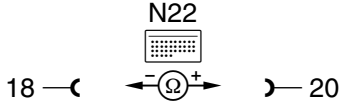
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.0	26 27	Right air outlet feedback potentiometer (R23/2) Voltage		 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		 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		Monovalve (Y19)			11 – 19 Ω	Wires from N22 to Y19, Y19.



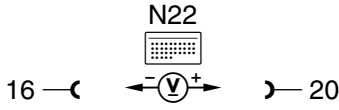


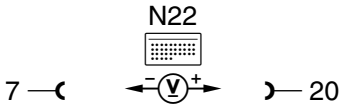

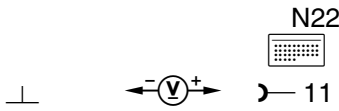

Electrical Test Program – Test

Test Conditions


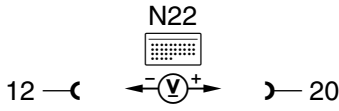

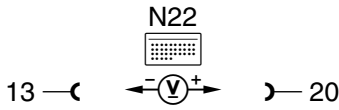

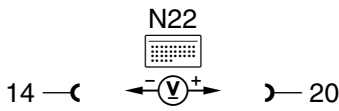

1. Connect test cable to right connector of A/C pushbutton control module (N22).
2. Connect wiring harness to left connector of A/C pushbutton control module.
3. Ignition: **ON**

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
16.0		A/C pushbutton control module (N22) Voltage supply (circuit 30)	   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)	   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	   20	 on right connector (2)	> 10 V	N22.
19.0		Mono valve (Y19) Ground connection	 18   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		Auxiliary coolant pump (M13) and additional function test by manual touch Ground connection		 on right connector (2) Temperature selector wheel set at "MAX"	After approx. 50 seconds > 10 V	A/C pushbutton control module (N22).								
21.0		Switchover valve block (Y11) Data transfer		 on right connector (2)	Voltage oscillates between 0 – 8 V	N22.								
22.0		Electronic blower regulator (N29) Voltage supply		 on right connector (2) Blower speeds: <table style="margin-left: 20px;"> <tr><td>1</td><td>0.8 – 1.2 V</td></tr> <tr><td>2</td><td>1.8 – 2.2 V</td></tr> <tr><td>3</td><td>2.7 – 3.3 V</td></tr> <tr><td>4</td><td>> 5 V</td></tr> </table>	1	0.8 – 1.2 V	2	1.8 – 2.2 V	3	2.7 – 3.3 V	4	> 5 V		N22.
1	0.8 – 1.2 V													
2	1.8 – 2.2 V													
3	2.7 – 3.3 V													
4	> 5 V													

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
23.0	35 75	Auxiliary fan (M4) Stage 1		 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		 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⁾		 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.