

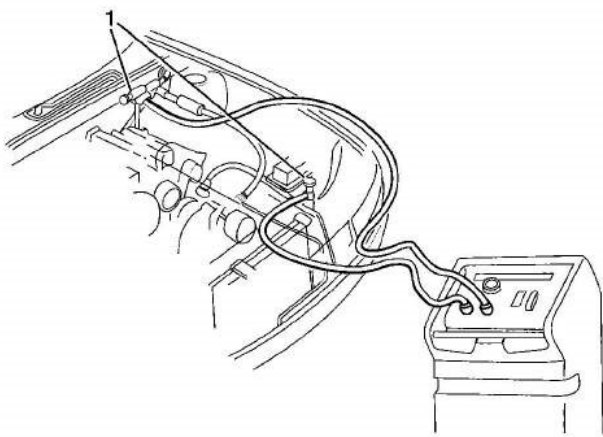
Air Conditioning (A/C) System Performance Test

Table 1: [A/C Performance Table](#)

Table 2: [Refrigerant-134a Pressure-Temperature Relationship](#)

Important:

- Before carrying out the high/low pressure and centre vent temperature testing, make sure that the vehicles A/C system has no visual or operational defects and that all refrigerant recovery and recharging safety requirements are adhered to. Refer to [Refrigerant Recovery and Recharging](#).
- Before commencing the testing follow the vehicle set up procedure. Failure to correctly set the vehicle up for testing will provide inaccurate diagnosis when comparing actual pressure readings to the table below.



1. Connect the calibrated high/low pressure gauges to the A/C system (1).

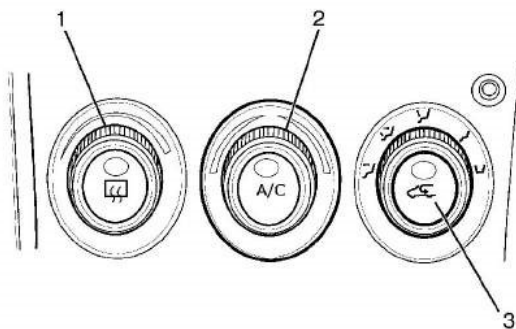
Important: Both high and low pressures should be within 50kPa of each other, if not a blockage may be present in the system.

2. Confirm that the static pressures (vehicle not started or A/C engaged) are correct.

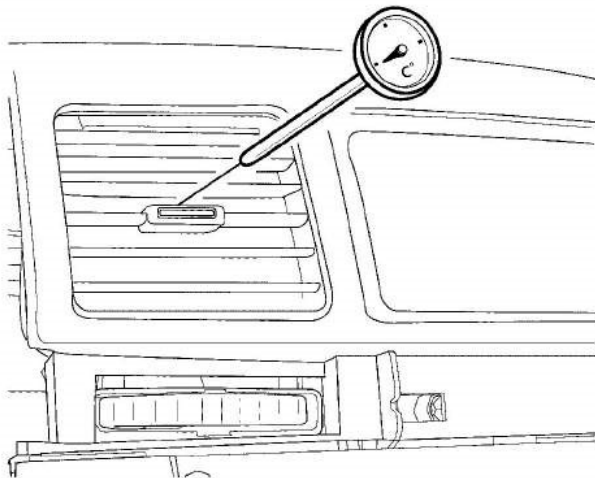
Important: When possible the vehicle should be tested in direct sunlight, especially in the case of climate control vehicles using solar sensors.

3. Record the ambient temperature conditions and the relative humidity at the time of the test.
4. DO NOT test the vehicle with the condenser air flow restricted, such as against a wall.

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5. Set the blower motor speed control (1) to the highest blower motor speed.
6. Set the temperature control (2) to the maximum cold setting.
7. Set the air intake mode control (3) to fresh air intake mode.



8. Set the mode outlet control to the face position with the instrument panel louvers open and facing straight ahead.

Important: Make sure that the thermometer probe is inserted to a length of approximately 50mm.

9. Insert a thermometer centrally into the face vent.
10. Turn the engine ON and run at idle speed.
11. Close all vehicle doors and windows.
12. Close the vehicle engine hood.

Important: For Accurate testing the relative humidity percentage (RH%) should be known, as you will see the pressures and vent temperatures alter as RH% changes. Refer to the A/C performance table below.

13. Make sure accurate pressure gauges are connected to the A/C system.
14. Turn the engine OFF and compare the readings with the data in the A/C performance table. A normally operating A/C system should not exceed levels shown. If the readings exceed the table limits, refer to [Symptoms - HVAC Systems - Manual](#).

A/C Performance Table

Engine Speed (RPM)	Relative Humidity (%)	Ambient Air Temperature		Centre Air Outlet Temperature		Gauge Pressure Low Side Pressure		Gauge Pressure High Side Pressure	
		°F	°C	°F	°C	psi	kPa	psi	kPa
Idle	20	59	15	37	3.00	27	162	142	943
		68	20	37	3.00	31	185	168	1106
		77	25	40	4.64	36	209	191	1296
		86	30	47	8.60	42	236	225	1494
		95	35	54	12.49	50	265	266	1653
		104	40	62	16.45	58	300	304	1864
		113	45	69	20.47	63	334	323	2155
	40	59	15	37	3.00	25	171	139	956
		68	20	38	3.50	28	197	164	1129
		77	25	44	6.79	32	222	192	1323
		86	30	52	11.27	36	252	209	1445
		95	35	61	15.94	42	288	248	1709
		104	40	69	20.76	48	329	279	1925
		113	45	77	25.18	54	375	306	2110
	60	59	15	37	3.00	26	177	140	966
		68	20	40	4.47	30	205	166	1146
		77	25	48	8.92	34	233	192	1326
		86	30	57	13.93	39	269	215	1480
		95	35	66	19.11	45	310	249	1718
		104	40	76	24.59	52	358	300	2072
		113	45	86	29.82	59	406	318	2196
	80	59	15	37	3.00	27	186	142	976
		68	20	43	6.11	31	214	168	1160
		77	25	52	11.15	36	250	191	1320
		86	30	62	16.95	42	289	225	1551
		95	35	74	23.23	50	342	266	1833
		104	40	85	29.27	58	398	304	2096
		113	45	96	35.65	63	436	323	2226

Refrigerant-134a Pressure-Temperature Relationship

°C	°F	kPa	psig	°C	°F	kPa	psig
DEFINITION: This table indicates the pressure of the Refrigerant-134a at various temperatures. For instance, a drum of refrigerant at room temperature of 26.6°C (80°F) will have a pressure of 595.6 kPa (86.4 psi). If the refrigerant is heated to 51.6°C (125°F), the pressure will increase to 1278.8 kPa (185.5 psi). The refrigerant also can be used conversely in order to determine the temperature at which the Refrigerant-134a boils under various pressures. For example, at a pressure of 188.2 kPa (27.3 psi), the Refrigerant-134a boils at 0°C (32°F).							
				15.5	60	392.3	56.9
-23.3	-10	12.4	1.8	18.3	65	438.2	63.6
-20.5	-5	27.0	3.9	21.1	70	487.3	70.7
-17.7	0	43.2	6.3	23.8	75	539.7	78.3
15.0	5	60.8	8.8	26.6	80	595.6	86.4
-12.2	10	80.1	11.6	29.4	85	655.1	95.0
9.4	15	101.3	14.7	32.2	90	718.5	104.2
-6.6	20	124.3	18.0	35.0	95	785.6	113.9
-3.8	25	149.4	21.7	37.7	100	856.9	124.3
-1.1	30	176.6	25.6	40.5	105	932.3	135.2
0.0	32	188.2	27.3	43.3	110	1012.1	146.8
1.6	35	206.2	29.9	46.1	115	1096.4	159.0
4.4	40	238.0	34.5	48.8	120	1185.2	171.9
7.2	45	272.5	39.5	51.6	125	1278.8	185.5
10.0	50	309.5	44.9	54.4	130	1377.3	199.8
12.7	55	349.4	50.7	60.0	140	1589.6	230.5