

A/C SYSTEM GENERAL DIAGNOSTIC PROCEDURES

Article Text

1990 Volkswagen Corrado

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Thursday, March 23, 2000 09:41PM

ARTICLE BEGINNING

1983-90 AIR CONDITIONING & HEAT
General Servicing Diagnostic Procedures

All Import Makes & Models

Diagnosis is an important first step in A/C system servicing. To save time and effort, systems should be carefully checked to identify the causes of poor performance. By using the following diagnostic charts, defective components or system damage can be quickly located. To identify problems that are specific to one system, refer to the repair section of this manual. The charts in this section apply to all systems.

ALTITUDE PRESSURE VARIATIONS

ALTITUDE PRESSURE VARIATIONS TABLE

AA

Altitude (Ft. Above Sea Level)	Absolute Pressure of Atmosphere (psi)	Gauge Altitude Correction (1) (psi)
0	14.7	0
1000	14.2	-0.5
2000	13.7	-1.0
3000	13.2	-1.5
4000	12.7	-2.0
5000	12.2	-2.5
6000	11.7	-3.0
7000	11.3	-3.4
8000	10.9	-3.8
9000	10.5	-4.2
10,000	10.1	-4.6

(1) - Subtract correction shown from gauge readings.

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ALTITUDE VACUUM VARIATIONS

ALTITUDE VACUUM VARIATIONS TABLE

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Altitude (Ft. Above Sea Level)	Absolute Pressure of Atmosphere (psi)	Gauge Altitude Correction (1) (psi)
0	29.92	0
1000	28.92	+1.0
2000	27.82	+2.1
3000	26.82	+3.1
4000	25.82	+4.1

- | | | |
|-------------------|----------------------|--|
| * Compressor | Quiet, No Leaks | Noisy - Check belts, oil level, seals, gaskets, reed valves. |
| * Condenser | Free of Obstructions | Blocked - Clean off.
Plugged - Flush or replace. |
| * Receiver-Drier | Dry & warm to touch | Frosty - Check for restriction, replace desiccant. |
| * Sight Glass | Clear or few bubbles | Bubbly, foamy or streaks - Check gauge readings. |
| * High Side Lines | Dry & warm to touch | Frosty or very hot - Check for restriction or overcharge. |
| * Low Side Lines | Dry & cool to touch | Frosty or warm - Check for restriction, low charge or bad valve. |
| * Expansion Valve | Dry | Frosty - Check for |

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- | | | | |
|---|------------|---------------------|---|
| * | STV | Dry & cool to touch | moisture or restriction.
Check sensing bulb.
Frosty or warm - Check
gauge readings for valve
malfunction. |
| * | Evaporator | Dry & cold to touch | Freezing or warm - Check
expansion valve, STV or
thermo switch. |

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Gauge Readings Gauge Readings are:

- | | | | |
|---|-----------------|--------------------|---|
| * | High Side Gauge | See Pressure Chart | Above or below normal -
See A/C Diagnosis. |
| * | Low Side Gauge | See Pressure Chart | Above or below normal -
See A/C Diagnosis. |

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AMBIENT TEMPERATURE/PRESSURE

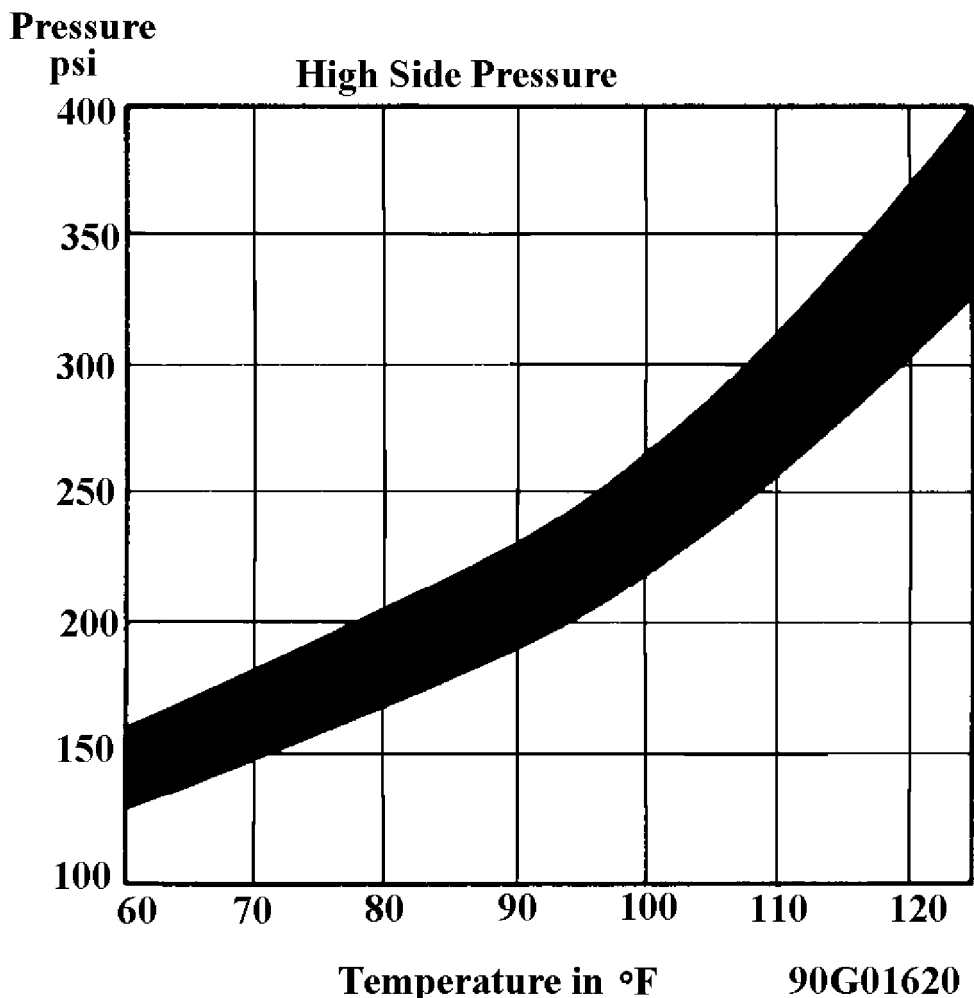


Fig. 1: Ambient Temperature/Pressure A/C Chart

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EVAPORATOR TEMPERATURE/PRESSURE

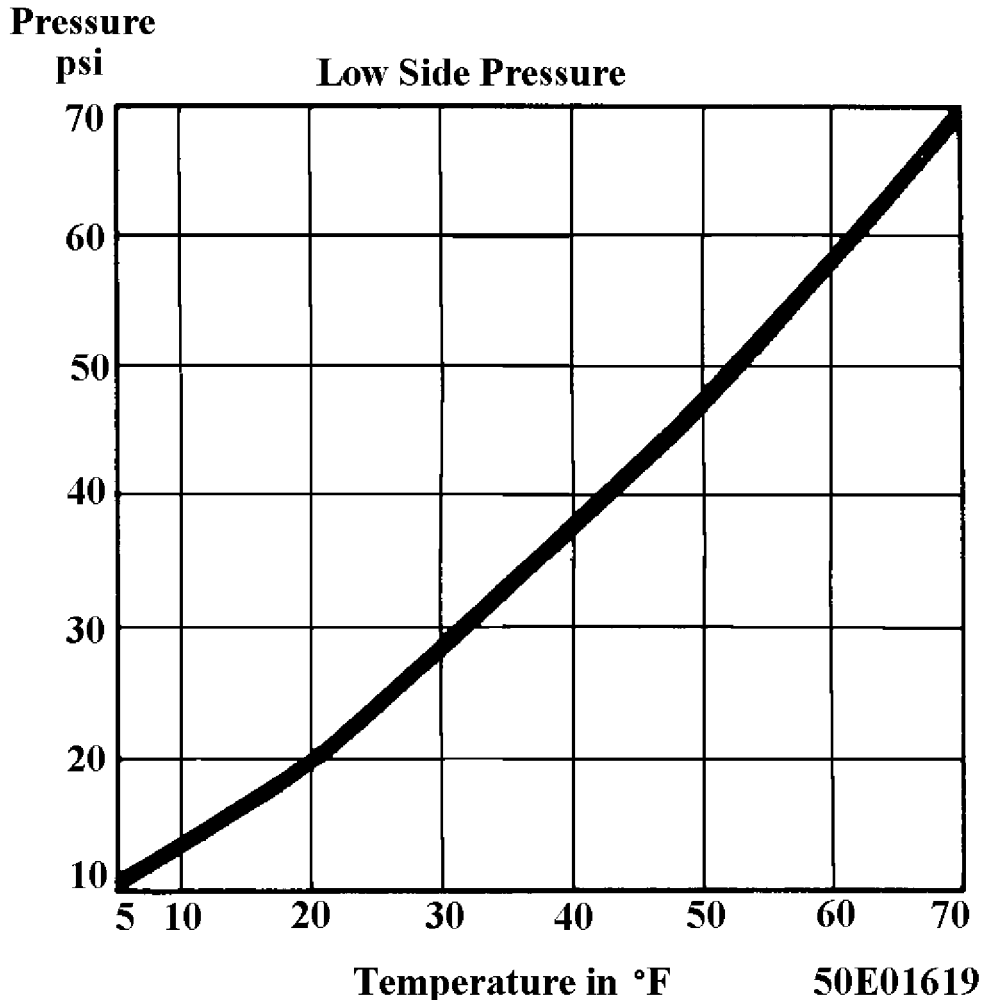


Fig. 2: Evaporator Temperature/Pressure A/C Chart

AIR CONDITIONING DIAGNOSIS WITH GAUGES FOR SYSTEMS WITH
INSUFFICIENT OR NO COOLING TABLE

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Low Side Gauge	High Side Gauge	Other Symptoms (1)	Diagnosis
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NORMAL	NORMAL	No or few bubbles in sight glass. High side gauge may go high. Low side gauge does not fluctuate with compressor on/off cycle.	Some Air and Moisture in System
NORMAL	NORMAL	Cools okay in morning but not during hot part of day. Bubbles in sight glass. Discharge air warm when low side gauge drops into vacuum.	Excessive Moisture in System
NORMAL	NORMAL	Thermostatic switch system only - compressor cycles off	Defective Thermostatic

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NORMAL to HIGH	NORMAL	and on too rapidly. Cycling clutch systems only - compressor doesn't turn on soon enough. Discharge air becomes warm as low side pressure rises.	Switch Misadjusted Thermostatic Switch or Defective Pressure Sensing Switch
LOW	LOW	Bubbles in sight glass. Outlet air slightly cool.	Low R-12 Charge
LOW	LOW	Sight glass clear. Outlet air very warm.	Excessively Low R-12 Charge
LOW	LOW	Outlet air slightly cool. Sweating or frost at expansion valve.	Expansion Valve Stuck Closed Screen Plugged or Sensing Bulb Malfunction
LOW	LOW	Outlet air slightly cool. High side line cool to touch. Sweating or frost on high side.	Restriction on High Side
LOW	HIGH	Evaporator outlet pipe cold. Low side goes into vacuum when blower is disconnected.	STV Stuck Open
HIGH	LOW	Evaporator outlet pipe warm. Outlet air warm.	STV Stuck Closed
HIGH	LOW	Noise from compressor.	Compressor Malfunction
HIGH	HIGH	Outlet air warm. Liquid line very hot. Bubbles in sight glass.	Compressor Malfunction or R-12 Overcharge
HIGH	HIGH	Outlet air slightly cool. Bubbles in sight glass.	Large Amount of Air and Moisture in System
HIGH	HIGH	Outlet air warm. Evaporator outlet sweating and frost.	Expansion Valve Stuck Open

(1) - If equipped with a low refrigerant charge protection system,
compressor operation may have stopped.

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END OF ARTICLE