A/C SYSTEM GENERAL DIAGNOSTIC PROCEDURES

1990 Nissan 240SX

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

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.

ALTITUDE VACUUM VARIATIONS

ALTITUDE VACUUM VARIATIONS TABLE

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
5000	24.92	+5.0
6000	23.92	+6.0
7000	23.02	+6.9
8000	22.22	+7.7
9000	21.32	+8.6
10,000	20.52	+9.4

(1) - Add correction shown to gauge readings.

PREPARATION FOR TESTING

1) Attach Low and High pressure gauges.
2) Start engine and allow to warm up.
3) Set system to "COOL" and blower to "HIGH".
4) Open car doors and hood.
5) Run engine at fast idle for 2-3 minutes.

AIR CONDITIONING SYSTEM PERFORMANCE CHECK TABLE

PERFORM TESTS:	SHOULD BE:	IF:
Temperature Check		Temperature Check Is
* Switch to "LOW" blower. * Close doors. * Check outlet temperature.	35-45° F	Too warm - Check control lever operation, heater water valve, cooling system and gauge readings.
Visual Check		Visual Check Shows:
* 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 moisture or restriction. Check sensing bulb.
* STV	Dry & cool to touch	Frosty or warm - Check gauge readings for valve malfunction.
* Evaporator	Dry & cold to touch	Freezing or warm - Check expansion valve, STV or thermo switch.
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.

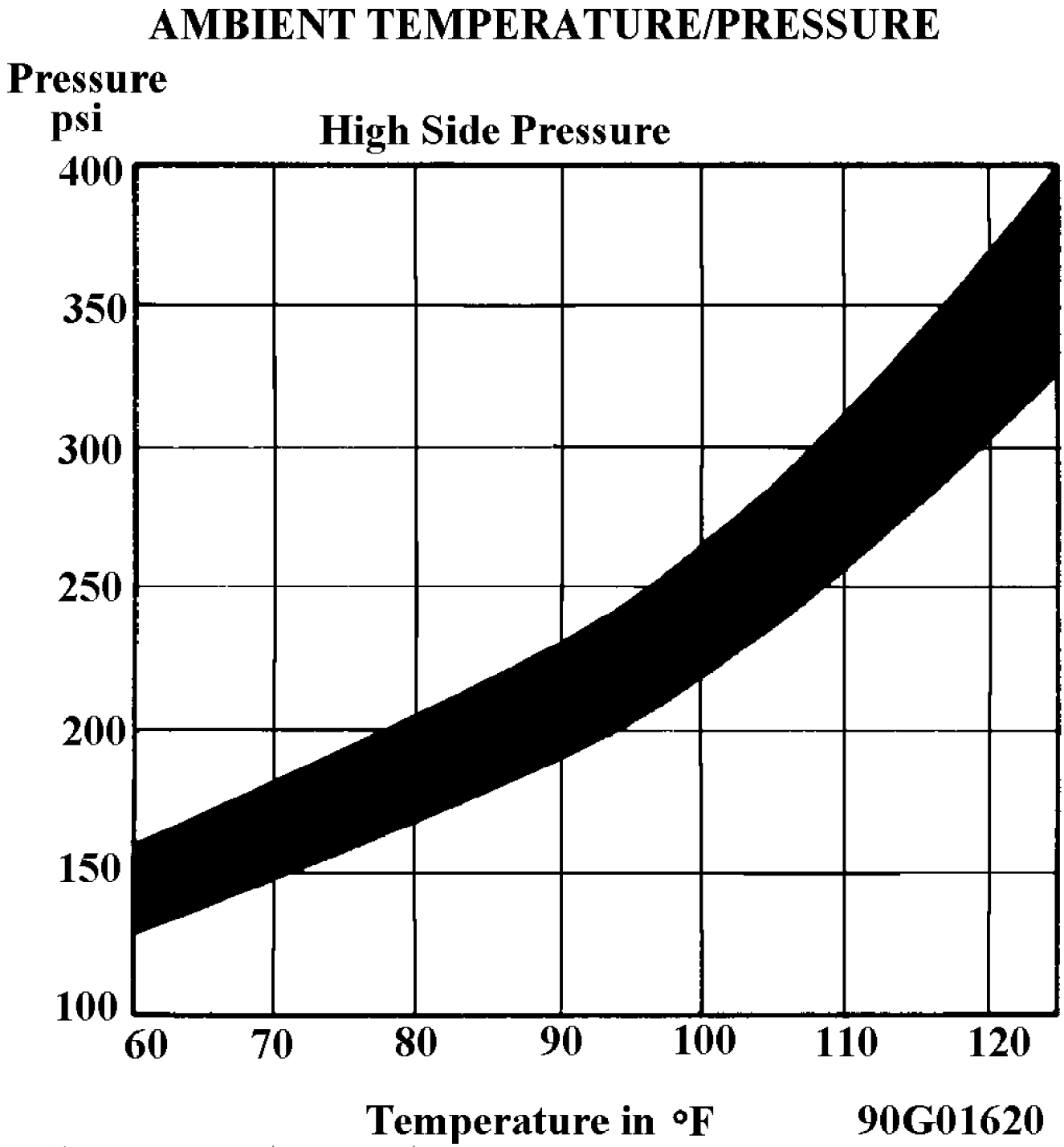

Fig. 1: Ambient Temperature/Pressure A/C Chart

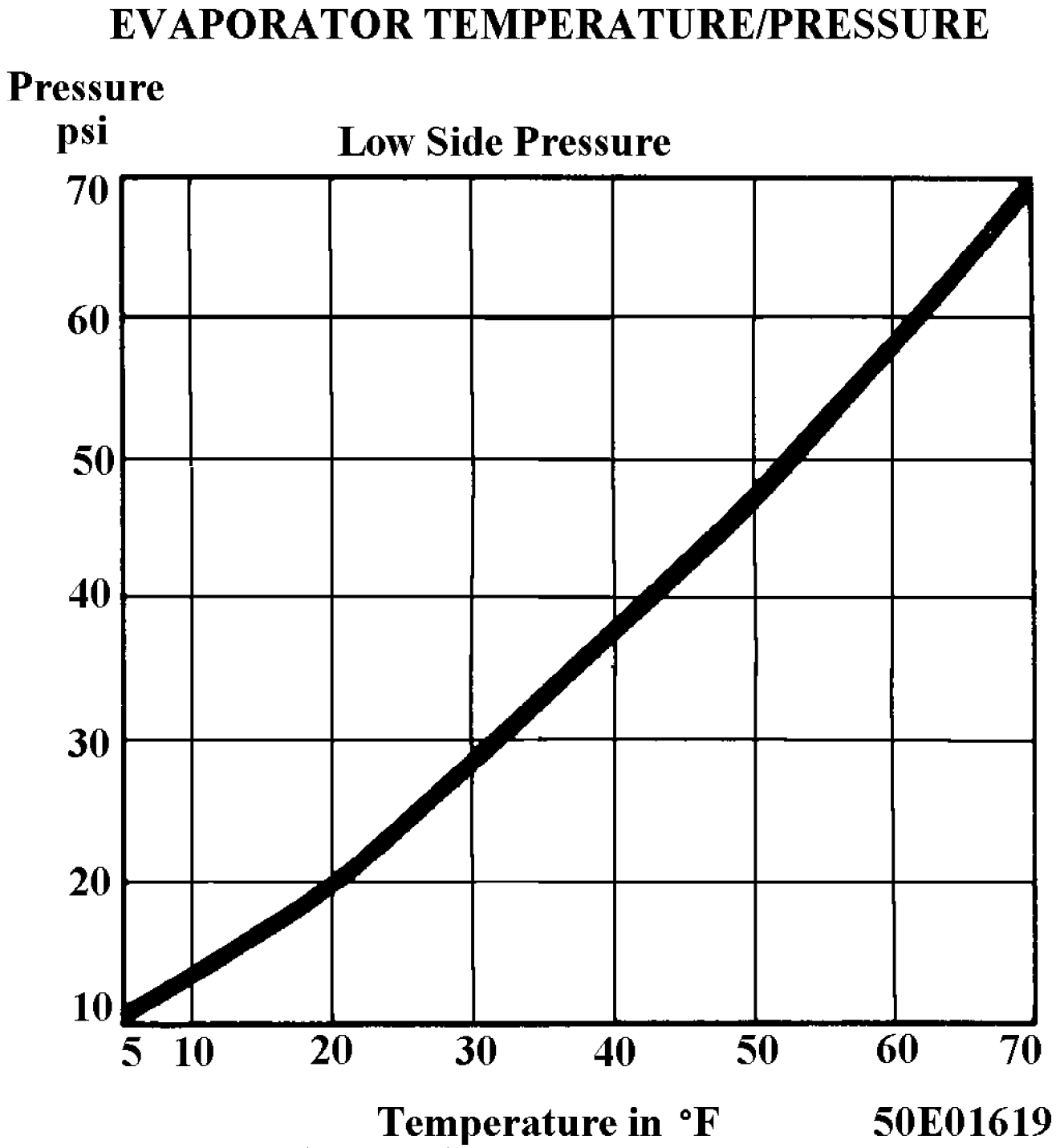

Fig. 2: Evaporator Temperature/Pressure A/C Chart

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

Low Side Gauge	High Side Gauge	Other Symptoms (1)	Diagnosis
NORMAL	NORMAL	No or few bubbles in sight glass. High side gauge may	Some Air and Moisture in

		go high. Low side gauge does not fluctuate with compressor on/off cycle.	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 and on too rapidly.	Defective Thermostatic Switch
NORMAL to HIGH	NORMAL	Cycling clutch systems only - compressor doesn't turn on soon enough. Discharge air becomes warm as low side pressure rises.	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.