

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

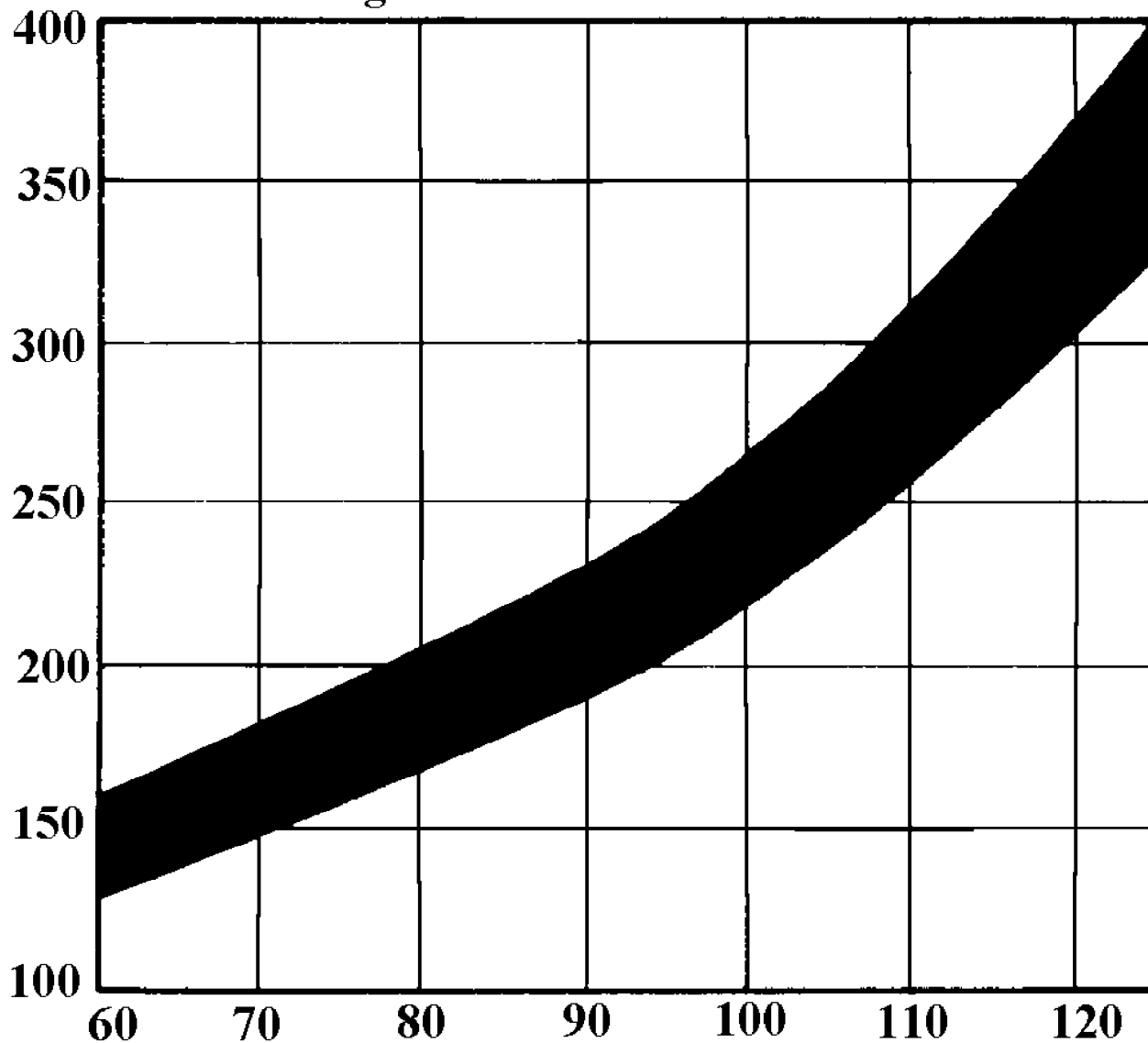
| PERFORM TESTS: | SHOULD BE: | IF: |
|-----------------------------|----------------------|--|
| Temperature Check | | Temperature Check Is |
| * Switch to "LOW" blower. | | |
| * Close doors. | | |
| * Check outlet temperature. | 35-45° F | Too warm - Check control lever operation, heater water valve, 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. |

AMBIENT TEMPERATURE/PRESSURE

Pressure

psi

High Side Pressure



Temperature in °F

90G01620

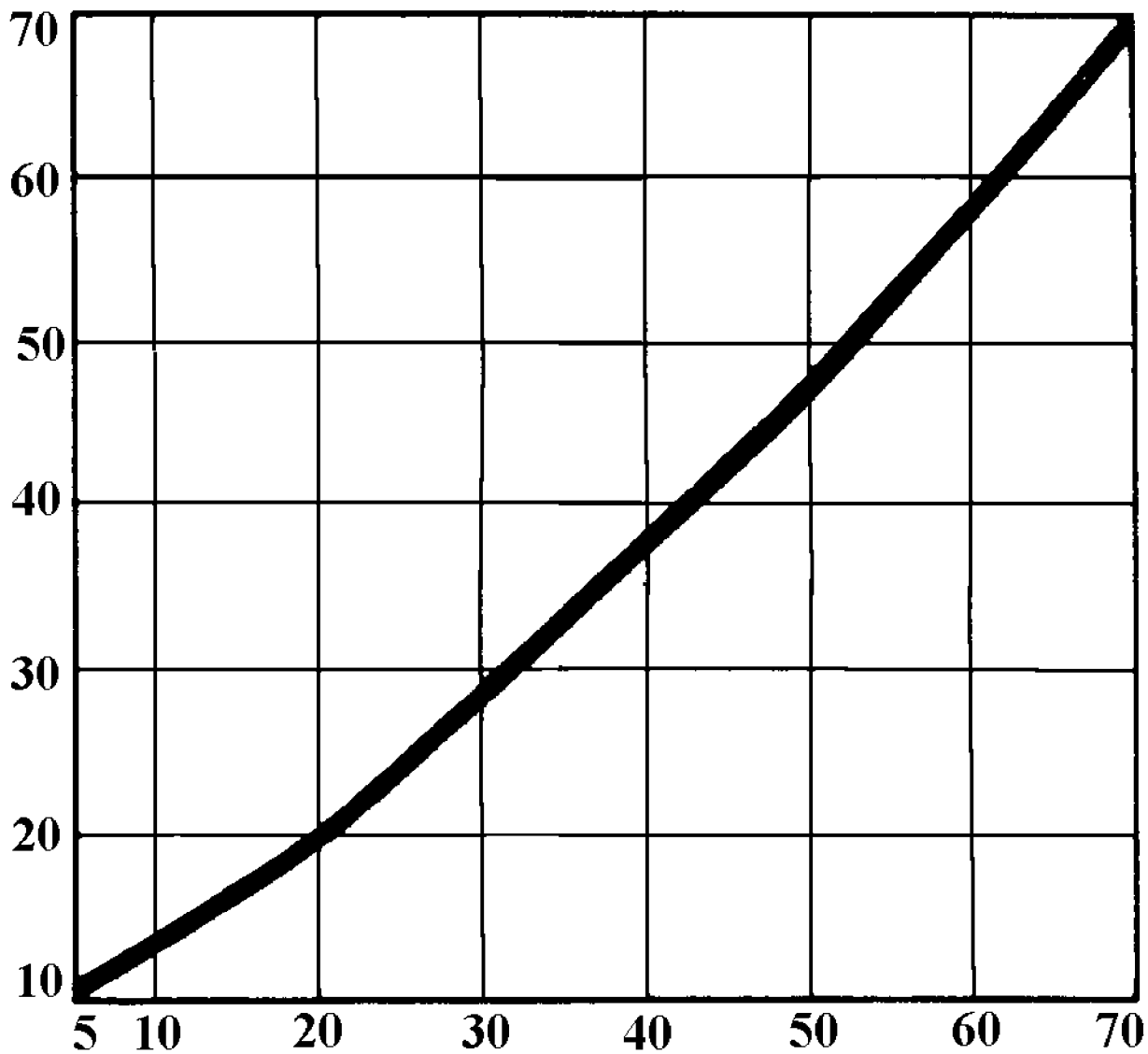
Fig. 1: Ambient Temperature/Pressure A/C Chart

EVAPORATOR TEMPERATURE/PRESSURE

Pressure

psi

Low Side Pressure



Temperature in °F

50E01619

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.