

A/C SYSTEM GENERAL SERVICING

1998 Mitsubishi Montero

1998 AIR CONDITIONING & HEAT
Mitsubishi - A/C System General Servicing

Diamante, Eclipse, Galant, Mirage, Montero, Montero Sport &
3000GT

A/C COMPRESSOR APPLICATIONS

A/C COMPRESSOR APPLICATION TABLE

| Application | Compressor |
|---------------------------------|-----------------------------|
| Diamante | Sanden MSC105CVS Scroll |
| Eclipse 2.0L Non-Turbo | Nippondenso 10PA17C 10-Cyl. |
| 2.0L Turbo & 2.4L | Sanden MSC105CVS Scroll |
| Galant | Sanden MSC90C12 Scroll |
| Mirage | Sanden MSC90 Scroll |
| Montero | Nippondenso 10PA15 10-Cyl. |
| Montero Sport | Sanden MSC105C Scroll |
| 3000GT | Sanden MSC105 Scroll |

USING R-12 & R-134a REFRIGERANT

HANDLING/SAFETY PRECAUTIONS

- 1) Always work in a well-ventilated, clean area. Avoid breathing refrigerant vapors. Exposure may irritate eyes, nose and throat. Refrigerant is colorless and is invisible as a gas. Refrigerant is heavier than oxygen and will displace oxygen in a confined area.
- 2) A/C system high pressure can cause severe injury to eyes and skin if a hose were to burst. Always wear eye protection, gloves and other protective clothing when working around A/C system and refrigerant.
- 3) Refrigerant evaporates quickly when exposed to atmosphere, freezing anything it contacts. If liquid refrigerant contacts eyes or skin (frostbite), DO NOT rub eyes or skin. Immediately flush affected area with cool water for 15 minutes and consult a doctor or hospital.
- 4) Never use R-134a in combination with compressed air for leak testing. Pressurized R-134a in the presence of oxygen (air concentrations greater than 60 percent by volume) may form a combustible mixture. DO NOT introduce compressed air into R-134a containers (full or empty), A/C system components or service equipment.
- 5) DO NOT expose A/C system components to high temperatures, steam cleaning for example, as excessive heat will cause refrigerant/system pressure to increase. Never expose refrigerant directly to open flame. If refrigerant needs to be warmed, place bottom of refrigerant tank in warm water. Water temperature MUST NOT exceed 125°F (52°C).

CAUTION: When R-134a is exposed to an open flame, drawn into engine, or detected with a Halide (propane) leak tester, a poisonous gas is formed. Keep work areas well ventilated.

- 6) Use care when handling refrigerant containers. DO NOT drop, strike, puncture or incinerate containers. Use Department Of

Transportation (DOT) approved, DOT 4BW or DOT 4BA refrigerant containers.

7) Never overfill refrigerant containers. The safe filling level of a refrigerant container MUST NOT exceed 60 percent of the container's gross weight rating. Store refrigerant containers at temperature less than 125°F (52°C).

8) R-134a refrigerant is sold and stored in 30- or 50-pound Light Blue containers, while Freon (R-12) is stored in White colored containers.

9) Refrigerant R-12 and R-134a must never be mixed, as they and their desiccants and lubricants are not compatible. If refrigerants are mixed, system cross-contamination or A/C system component failure may occur. Always use separate servicing and refrigerant recovery/recycling equipment.

10) Follow equipment manufacturer instructions of all service equipment to be used. The Material Safety Data Sheet (MSDS), provided by refrigerant manufacturer/suppliers, contains valuable information regarding the safe handling of refrigerants.

11) Before connecting refrigerant lines always lubricate "O" rings using appropriate refrigerant oil.

12) Always plug or cap A/C system refrigerant lines and component connections as soon as possible to protect components from moisture and/or dust. DO NOT remove plugs or caps until ready to install component.

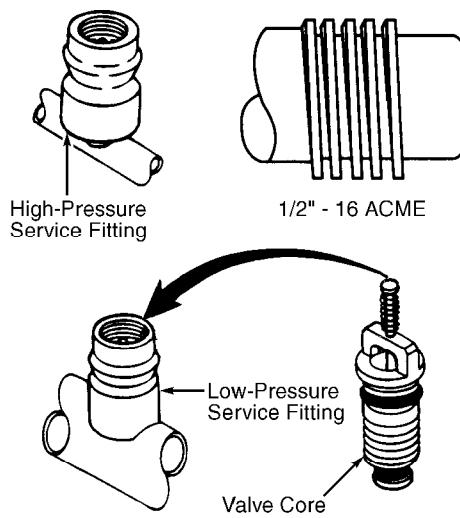
13) Always use a back-up wrench when tightening or loosening fittings.

IDENTIFYING R-134a SYSTEMS & COMPONENTS

To prevent refrigerant cross-contamination, use following methods to identify R-134a based systems and components.

Fittings & "O" Rings

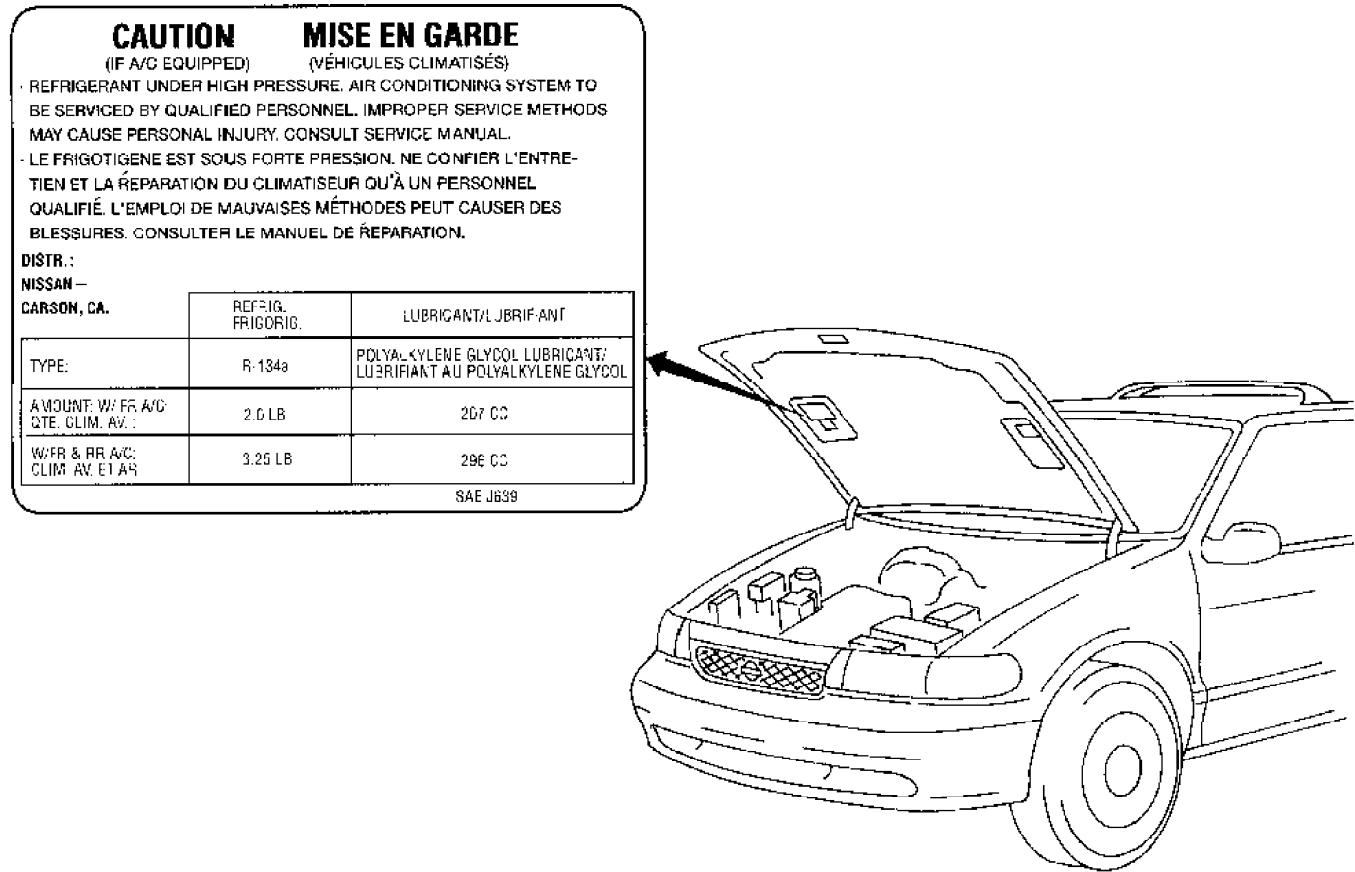
All R-134a based A/C systems use 1/2" - 16ACME threaded fittings (identifiable by square threads) and quick-connect service couplings. See Fig. 1. Besides the use of these fittings, most manufacturers will use Green colored "O" rings in R-134a systems.



93H19254
Fig. 1: Identifying R-134a Fittings & Quick-Connect Service Couplings
Courtesy of Audi of America, Inc.

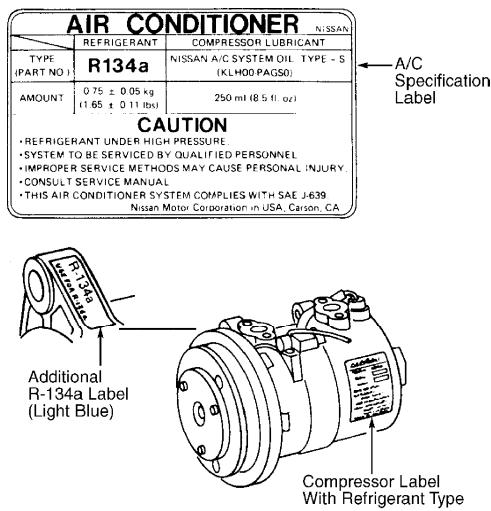
Underhood A/C Specification Labels
Most R-134a based systems will be identified through the use

of underhood labels, or with R-134a refrigerant clearly printed on labels. See Figs. 2 and 3. Labels may be located on underside of hood, compressor, firewall and/or strut supports. Before servicing an A/C system, always determine which refrigerant is being used.



98E04104

Fig. 2: Underhood A/C Specification Label (Typical)
Courtesy of Nissan Motor Co., U.S.A.



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Fig. 3: A/C Specification Labels Located On Compressor (Typical)
Courtesy of Nissan Motor Co., U.S.A.

Other Means Of Identification

Refrigerant R-134a, when viewed through a sight glass, may have a "milky" appearance due to the mixture of refrigerant and lubricating oil. As the refrigerant and oil DO NOT exhibit a "clear" sight glass on a properly charged A/C system, most R-134a systems have no sight glass.

REFRIGERANT OILS

NOTE: Use ONLY the specified oil for the appropriate system or A/C compressor. Always check vehicle underhood A/C specification label or A/C compressor label before adding refrigerant oil to A/C compressor/system. See Figs. 2 and 3. Always use refrigerant oil specified on vehicle underhood A/C specification label if different from the following list.

Refrigerant R-12 based systems use mineral oil, while R-134a systems use Polyalkylene Glycol (PAG) oils. Using a mineral oil based lubricant with R-134a will result in A/C compressor failure due to lack of proper lubrication. The following R-134a refrigerant oils are currently specified:

Use DENSO/ND-Oil 8 refrigerant oil on Nippondenso compressors. Use SUN PAG 56 refrigerant oil on Sanden compressors.

NOTE: PAG oils absorb moisture very rapidly, 2.3-5.6 percent by weight, as compared to a mineral oil absorption rate of 0.005 percent by weight.

SERVICE EQUIPMENT

A/C systems using R-134a refrigerant and PAG lubricants cannot use R-12 refrigerant or mineral oil lubricants. R-134a refrigerant is NOT compatible or interchangeable with R-12 refrigerant. Separate sets of hoses, manifold gauge sets and recovery/recycling equipment are required to service the different systems. This is necessary to avoid cross-contaminating and damaging A/C system. A single set of A/C service equipment cannot be cleaned thoroughly enough to be used with both types of refrigerant.

All equipment used to service A/C systems using R-134a must be U.L. listed and certified to meet SAE standard J2210. The service hoses on the manifold gauge set must have manual (turn wheel) or automatic back-flow valves at the service port connector ends. This will prevent refrigerant from being released into the atmosphere.

For identification purposes, R-134a service hoses must have a Black stripe along its length and be clearly labeled SAE J2196/R-134a. The low pressure test hose is Blue with a Black stripe. The high pressure test hose is Red with a Black stripe, and the center test hose is Yellow with a Black stripe.

R-134a manifold gauge sets can be identified by one or all of the following: Labeled FOR USE WITH R-134a on set, labeled HFC-134a or R-134a on gauge face, or by a Light Blue color on gauge face. In addition, pressure/temperature scales on R-134a gauge sets are different from R-12 manifold gauge sets.

SYSTEM SERVICE VALVES

SCHRADER-TYPE VALVES

NOTE: Although similar in construction and operation to a tire valve, NEVER replace a Schrader-type valve with a tire valve.

Schrader valve is similar in construction and operation to a tire valve. When a test gauge hose with built-in valve core depressor is attached, Schrader stem is pushed inward to the open position and allows system pressure to reach gauge.

If test hose does not have a built-in core depressor, an adapter must be used. Never attach hose or adapter to Schrader valve unless it is first connected to manifold gauge set.

Refrigerant R-12 Schrader-type valve cores have TV5 thread size. Refrigerant R-134a Schrader-type valve cores use M6 (Metric) threads. See Fig. 1.

SERVICE VALVE LOCATIONS

SERVICE VALVE LOCATIONS TABLE

| Vehicle | High | Low |
|---------------------|-----------|-----|
| Diamante | (1) | (2) |
| Eclipse | (1) | (2) |
| Galant | (1) | (2) |
| Mirage | (1) | (2) |
| Montero | (3) | (3) |
| Montero Sport | (1) | (2) |
| 3000GT | (4) | (2) |

(1) - On high pressure line, between accumulator/receiver-drier and evaporator.
(2) - On low pressure line, between evaporator and compressor.
(3) - On top of accumulator/receiver-drier.
(4) - On high pressure line, near receiver-drier.

REFRIGERANT RECOVERY/RECYCLING

Refrigerant recovery/recycling equipment is used to remove refrigerant from vehicle's A/C system without polluting atmosphere. To remove and recycle refrigerant, connect the recovery/recycling equipment and following the equipment manufacturer's instructions.

Removed refrigerant is filtered, dried and stored in a tank within the recovery/recycling equipment until it is ready to be pumped back into vehicle A/C system. With refrigerant stored in the recovery/recycling equipment, A/C system can be opened without polluting atmosphere.

NOTE: Separate sets of hoses, gauges and refrigerant recovery/recycling equipment MUST be used for R-12 and R-134a based systems. DO NOT mix R-12 and R-134a refrigerants, as their refrigerant oils and desiccants are not compatible. It is NOT possible to clean equipment thoroughly enough to prevent cross-contamination of A/C systems. On systems with R-134a refrigerant, use Polyalkylene Glycol (PAG) wax-free refrigerant oil.