Mastercool® Inc.

"World Class Quality"

Instruction Manual
R134a DIGITAL MANIFOLD

Includes Automotive Refrigerant and Oil Capacity Readings

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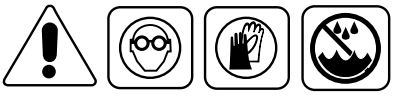
SPECIAL FEATURES

- Automotive Refrigerant & Oil Capacity Readings for over 1000 Makes & Models
- Automatic Warm-up
- Low Battery Indicator
- Large Digital Display of Pressures and Temperatures
- Protective Rubber Boot for Durability
- Heavy Duty Hook folds back into unit for compact storage
- Capable of Software Upgrade through optional USB and CD

SPECIFICATIONS

- Refrigerant: R134a
- Pressure & Vacuum Display: Low Side - PSI/IN-Hg , Bar, MPa, Kg/cm^2
  High Side - PSI, Bar, MPa, Kg/cm^2
- Temperature Display: -40 to 200°F (-4 to 93°C)
- Response Time: 250 mSec.
- Connection: 1/2" acme or 1/4" flare
- Operating Temperature: 32 to 122°F (0 to 45°C)
- Power: 9V DC battery
- Battery Life: 50-60 hours continuous use
- Low Battery Indicator: Special ICON on LCD

WARNINGS

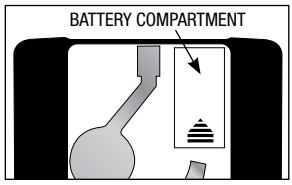


- **Wear safety glasses / Wear gloves**
- **Do not vent refrigerant into the atmosphere.**
- **If eyes come in contact with refrigerant, immediately flush with plenty of water and seek medical attention.**
- **Keep in a dry place. Do not allow moisture to enter the unit.**
- **IMPORTANT NOTE REGARDING STATIC DISCHARGE: Climates in some parts of the world are conducive to creating static electric build up (ESD). Your digital manifold has been designed to eliminate the damaging effects of ESD. In some extreme cases, ESD will be apparent on your digital manifold by a lack of response or an inability to turn off the unit. In the rare case that this occurs, simply disconnect the battery, wait 1 minute and reconnect the battery. The digital manifold will "reboot" itself and operate normally once the unit is turned on.**

BATTERY INSTALLATION

Remove the battery compartment cover. Make sure to place the battery into the compartment with the correct polarity. Replace battery cover.

Note: If you need to replace the battery allow 15-20 seconds before reconnecting the battery to the battery snaps.



PRESSURE ADJUSTMENT FOR ELEVATION

For an accurate reading, it is important to adjust the manifold for elevation. Follow these steps to set the unit for local elevation and barometric readings.

1. Press the **POWER** button to turn the unit ON.
2. Allow 10-15 seconds for warm-up and readings to stabilize. (You will see all characters and units countdown 9999 , 8888 , 7777...) Once the warm-up is complete, only pressure and temperature readings will appear.
3. Since the manifold reads gauge pressure it must be set for local elevation and barometric readings. Press and hold the **UNIT** button and then the **ENTER** button simultaneously for 6-8 seconds and release. Pressure readings will now be truly zero.

NOTE: In some cases pressure readings may not be zero with the manifold disconnected from the pressure or vacuum source. Press and hold the UNIT button and then the ENTER button simultaneously for 6-8 seconds and release. Pressure readings will now be zero.

WARNING! If the manifold is connected to a pressure or vacuum source and displays actual readings, do not attempt to zero out the reading by pressing the enter button. This can offset the reading.

BASIC SET-UP

The following settings are pre-programmed into the unit.

- Pressure: PSI / IN-Hg
- Temperature: °F

To change these settings please follow the procedure below:

- Press the **POWER** button to turn the unit ON. Allow 10-15 seconds for warm-up and readings to stabilize. **(You will see all characters and units countdown** 9999 , 8888 , 7777 **...)** Once the warm-up is complete, pressure and temperature readings will appear.
- Press the **UNITS** button to select the desired pressure/temperature. Scroll through PSI, Kg/cm^2, Bar, Mpa in ˚F. Continue to scroll for pressures to display in ˚C

SETTING MANUFACTURER/MODEL/YEAR FOR REFRIGERANT & OIL CAPACITIES

- Press **VEHICLE** ▲ or **VEHICLE** ▼ button to scroll through each manufacturer. **VEHICLE** ▲ to go in alphabetical order/**VEHICLE** ▼ in reverse alphabetic order.
  Manufacturers Include: Acura, Audi, BMW, Buick, Cadillac, Chevrolet, Chrysler, Dodge, Fiat, Ford, GMC, Honda, Hummer, Hyundai, Infiniti, Isuzu, Jaguar, Jeep, Kia, Lancia, Land Rover, Lexus, Lincoln, Mazda, Mercury, Mini, Mitsubishi, Mercedes Benz, Nissan, Oldsmobile, Plymouth, Pontiac, Porsche, Renault, Rover, Saab, Saturn, Scion, Smart, Subaru, Suzuki, Toyota, Volkwagen, Volvo
- Press **ENTER** once desired manufacturer is found.
- Press **VEHICLE** ▲ to scroll through each model/year. For faster scrolling, press and hold **VEHICLE** ▲ or ▼ (If you pass the model/year you desire use the ▼ button to go back.)
- Once you have found the desired model/year, you can change the units of measure by pressing the **UNITS** button. Scroll through your options of LBS/OZ, LBS/ML, KG/OZ, KG/ML .
- Press **ENTER** once desired model, year and measurement is found.
- Refrigerant & Oil Capacity measurements will display at the top of the LCD screen.
- Press **ENTER** again to begin pressure readings.

PRE-SERVICE INSTRUCTIONS

1. Close both valves on the manifold gauge set by turning the High and Low knobs clockwise.
2. Attach the High and Low couplers to the Red and Blue hoses. If using manual couplers, open the plunger by turning the knob counter-clock wise prior to connection to the system. (fig. A)
3. Connect the Red hose to the High port and the Blue hose to the Low port on the manifold gauge.

HOOK-UP FOR SYSTEM DIAGNOSIS

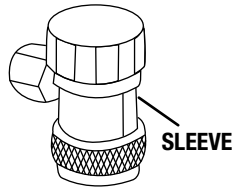
To properly diagnose the problem in the A/C system, first check the system's overall performance. This includes testing the system's pressure and refrigerant flow. The system pressure can be checked with the manifold gauge set.

NOTE: Be sure that the hand valves on the manifold gauge set are in the closed position. Always wear gloves and safety goggles when working with refrigerant.

1. Remove the protective caps from the system ports. Check for leaks at the ports.
2. Connect the Low side service hose (Blue) to the suction side of the compressor. Connect the High side service hose (Red) to the discharge side of the compressor. Make sure the couplers are securely snapped.
3. If using manual couplers, move the plunger down within the coupler by turning the knob clockwise in order to open the port valves and start refrigerant flow.

MANUAL COUPLER (FIG. A)

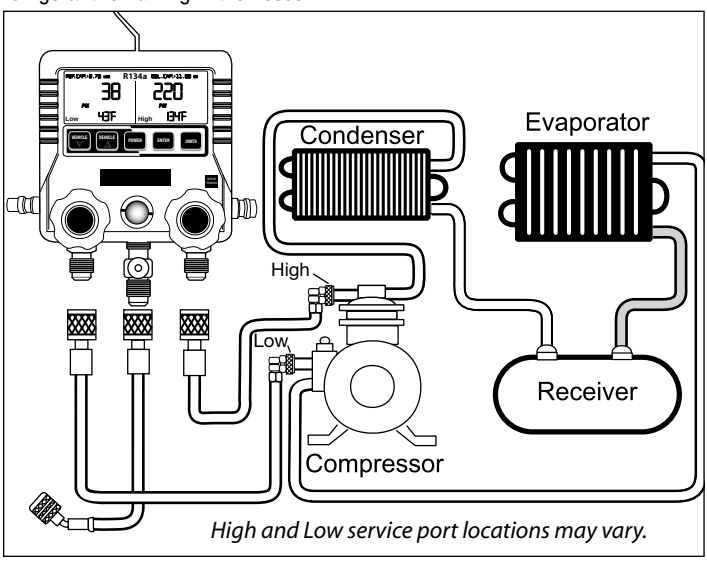
To attach to the system, retract the plunger by turning the knob fully counter-clockwise. Connect to the system by lifting up the sleeve, placing the service port inside the coupler and releasing to lock. To start the flow, turn the knob fully clockwise (opening the service port).



IMPORTANT NOTES

A system that has been opened or one that is found to be excessively low on refrigerant pressure as a result of a leak, must be fully evacuated by means of recycling and deep vacuum.

A system that has been evacuated must be repaired, leak tested and evacuated before charging. If charging on the liquid or High side, use only the High side valve on the manifold gauge set. Make sure the Low side valve is closed. After charging, test the system by turning on the engine and running the A/C with both valves closed on the manifold. After testing, disconnect the couplers from the system and make sure to use a recovery/recycling machine to evacuate any refrigerant remaining in the hoses.



High and Low service port locations may vary.

DIAGNOSING TIPS FOR THE A/C SYSTEM

- Low side and High side pressures are low. Usually indicates a low charge.
- Low side pressure is low and High side pressure is high. Usually indicates a blockage in the system. (i.e. expansion of valve or orifice tube.)
- Low side pressure is high and High side pressure is low. When accompanied by a fluctuating digital reading, usually indicates faulty reed valves in compressor.
- Low side and High side pressures are high. Usually indicates an over charged system.

R134a TEMPERATURE PRESSURE CHART

Ambient Temperature (˚F)	Low Side Gauge	High Side Gauge
65˚	25-35 psi	135-155 psi
70˚	35-40 psi	145-160 psi
75˚	35-45 psi	150-170 psi
80˚	40-50 psi	175-210 psi
85˚	45-55 psi	225-250 psi
90˚	45-55 psi	250-270 psi
95˚	50-55 psi	275-300 psi
100˚	50-55 psi	315-325 psi
105˚	50-55 psi	340-345 psi

CHARGING REFRIGERANT

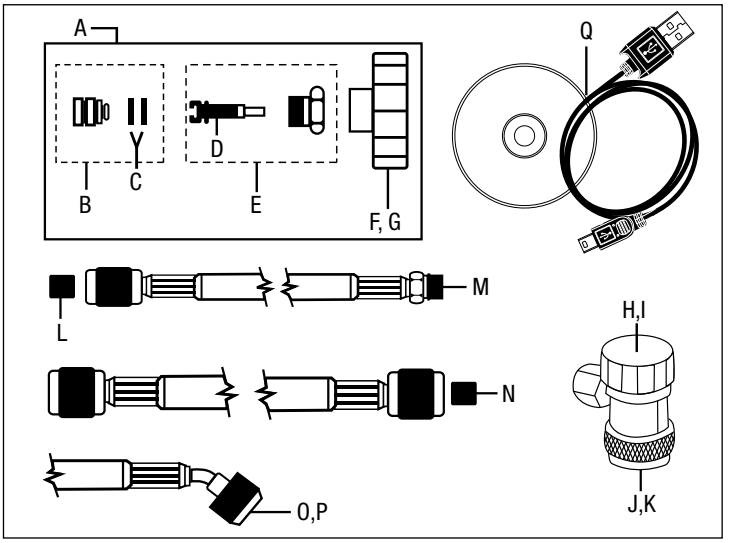
A. Verify that both valves on the manifold are shut completely.
B. Turn on car and A/C system (this will aid in charging of the refrigerant.)
C. Connect the other end of the yellow hose to Refrigerant Gas supply. (Follow refrigerant manufacturer's instructions for proper dispensing.)
D. Open manifold low side (blue) valve slowly until pressure reaches 40 psi. Do no exceed 40 psi during recharging process. Exceeding 40 psi could damage the compressor.
E. When charging is finished, close low side (blue) valve.

EVACUATION OF SYSTEM WITH VACUUM PUMP AND LEAK TESTING

A. Verify that there is no refrigerant in the A/C system.
B. Attach blue and red adapters to A/C system.
C. Connect yellow hose to vacuum pump, turn on pump.
D. Open manifold low side (blue) valve.
E. Open manifold high side (red) valve.
*After system has been evacuated to a gauge reading of 29 IN-Hg (inches of vacuum), run vacuum pump for 20 minutes.
F. Close both high and low side manifold valves.
G. Allow system to sit and check gauges to verify vacuum remains.

R134a DIGITAL MANIFOLD PARTS LIST

A. Complete Stem Assembly w/Knob (2 pcs)
B. Piston Seal Assembly w/O-Rings (2 pcs)
C. Piston Seal O-Rings
D. Stem O-Ring
E. Stem, Nut and Stem O-Ring
F. Knob only, Low Side (Blue)
G. Knob only, High Side (Red)
H. Manual Low Side Coupler - complete
I. Manual High Side Coupler - complete
J. Low Side O-Ring
K. High Side O-Ring
L. Gasket for Hose Assembly
M. O-Ring for Male Fitting
N. Gasket for 1/4“ FL
O. Shut-Off Valve O-Ring (1/2” ACME)
P. Shut-Off Valve O-Ring (1/4” FL-F)
Q. Optional USB and CD for Software Upgrade



TROUBLESHOOTING:

Low Battery Indicator:
A special icon will appear in the lower right hand corner of the LCD when the battery must be replaced.

No Display:
Check the battery and polarity.