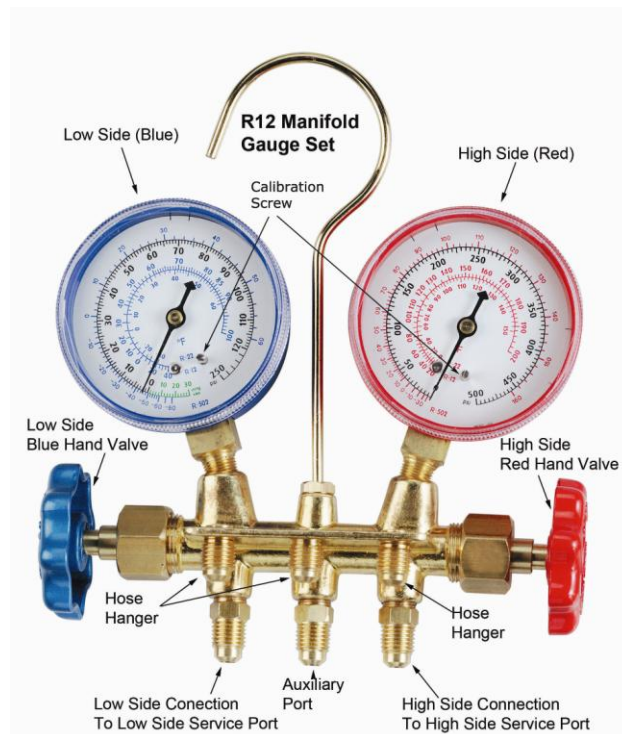
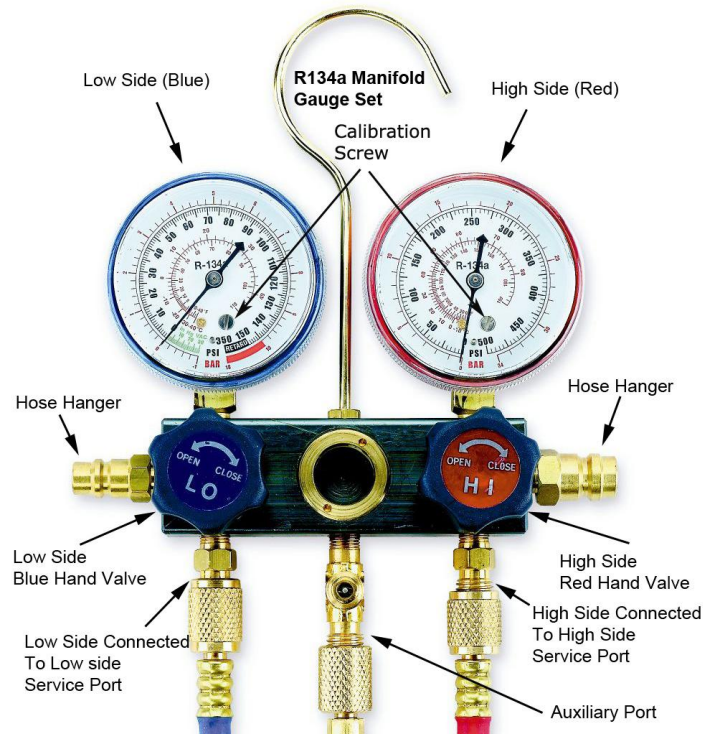




Automotive Air Conditioning Manifold Gauge Sets



Caution: These instructions are not for use with Hybrid Vehicles. For instructions for servicing Hybrid Vehicles use Hybrid Vehicle manufacturer's service manual only.

Confirm system refrigerant type before servicing vehicle. Cross contamination of refrigerants can cause damage to A/C system, service tools and equipment. Do not blend refrigerants in a system or in the same container.

Do not breathe in A/C refrigerants, lubricant vapor or mist. Exposure may irritate eyes, nose, and throat. If accidental system discharge occurs, ventilate area before continuing service. Obtain health and safety information from refrigerant and lubricant manufacturers if required.

GENERAL MANIFOLD INFORMATION:

The right side of the manifold with the red hand valve is the high side; the red gauge is the high pressure gauge. The left side of the manifold with the blue hand valve is the low side; the blue gauge is the vacuum/pressure gauge. Separate passages from the low and high side fittings to their respective gauges allow the technician to check pressure and vacuum reading whether the hand wheels are in the closed or open position. The manifold body connects all three lower 1/2" ACME (R134a) or 1/4" SAE (R12/22) fittings to each other by internal passages. The red (HIGH SIDE) opens or closes the flow through the 1/2" Acme (R134a) or 1/4"SAE (R12/22) fitting on the right side to the other two fittings, provided the blue (LOW SIDE) is in the open position.

Note: If gauges do not read 0 psi, remove gauge face and adjust calibration screw to 0 psi.

Note: Do not over tighten hoses on to manifold gauge set.

Caution: Never open the high side valve on manifold gauge set when the A/C System is operating.

*****R12 A/C Systems do not use R134a couplers to connect to the A/C system. On R12 systems disregard the references to R134a couplers below.**

R134A SYSTEM OPERATION:

Connect the R134a service couplers to the proper color charging hoses.

Note: You must use R134a quick couplers to connect to the manifold gauge set to the vehicle's R134a A/C service ports. For manual service couplers, the coupler must be in the closed position before connecting to the appropriate vehicle's service port. To close, turn the knob on the top of the coupler counterclockwise, until it stops, retract the coupler sleeve, then push it on the appropriate service fitting, then release the sleeve. If gauge set is supplied with automatic quick couplers, there is no knob present, just retract the coupler sleeve and push on the appropriate service fitting. **Caution: All R134a service couplers must be connected to a refrigerant hose and the refrigerant hose must be connected to a manifold gauge set with both low and high side valves in the closed position before connecting the R134a service couplers to an A/C System.**

Connect to A/C System to Diagnose the A/C System:

1. Close all valves on the manual service couplers and manifold gauge set. Connect the high side coupler which is connected to the red hose to the vehicle's high side service port and connect the low side coupler which is connected to the blue hose to the vehicle's low side service port.
2. Start the vehicle, then turn on the A/C system, and let it run until the gauge readings stabilize.
3. If the gauge readings are within the manufacturer's specification, and the A/C system appears to be operating properly, stop the A/C system, turn off the vehicle, and disconnect the hoses from the system.

4. If the pressure shown on the gauges differ from the manufacturer's specifications, determine the problem and make the necessary repairs.

EVACUATING AND CHARGING AN A/C SYSTEM

Recover all refrigerant from the system using A/C recovery service equipment.

DO NOT VENT REFRIGERANT TO THE ATMOSPHERE. USE APPROPRIATE RECOVERY EQUIPMENT.

SYSTEM EVACUATION:

Connect the BLUE LOW side service hose to the A/C system's LOW side service port. Connect the RED HIGH side service hose to the A/C system's HIGH side service port. Connect the CENTER YELLOW charging hose to a vacuum pump. If using manual R134a couplers, after connecting the couplers to the A/C system, open the manual couplers by turning the knob on the top of the coupler clockwise until it stops.

1. Open the HIGH and LOW manifold valves using the Red and Blue hand valves and start the vacuum pump.
2. After evacuating the system according to the manufacturer's specifications, close both the HIGH and LOW side hand valves and turn off the vacuum pump.
3. Disconnect the YELLOW charging hose from the vacuum pump and connect it to the appropriate refrigerant container.
4. You can now charge the A/C system according to the manufacturer's specifications.

CAUTION: Always connect hoses to the manifold gauge set and R134a couplers before connecting R134a couplers to the R134a service ports on the A/C system to prevent refrigerant from escaping from open fittings and to prevent any from entering an evacuated system. Never open the RED high pressure hand valve when the A/C System is operating. Charge with gas only, never with liquid refrigerant.

After all connections have been made, the refrigerant can be added through the low side on most systems. (Consult OEM capacity specifications)

Charging an Empty System:

1. Vehicle engine must be not running and the A/C system must be turned off.
2. Make certain that the dispensing valve on the refrigerant source is in the closed position.
3. Make certain that both the high pressure and the low pressure valves are in their closed position.
4. Connect both high and low R134a couplers to the A/C system's service ports. If using manual R134a couplers, open the couplers by turning the knob on the top of the coupler clockwise until it stops.
5. Open valve on the refrigerant source.
6. Open the low side valve on the manifold gauge set.
7. Charge system until gauges read over 50 pounds of pressure.
8. Close low side valve on the manifold gauge set.
9. Both High Side and Low Side valves on the manifold gauge set must be turned off.
10. Go to step # 4 in Charging an A/C System that is low on Refrigerant below:

Charging an A/C System that is low on Refrigerant:

1. Make certain that the dispensing valve on the refrigerant source is in the closed position.
2. Make certain that both the high pressure and the low pressure valves are in their closed position.
3. Connect both high and low R134a couplers to the A/C system's service ports. If using manual R134a couplers, open the couplers by turning the knob on the top of the coupler clockwise until it stops.
4. Start the vehicle. Insure adequate air flow enters through the front of the vehicle to avoid overheating.
5. Turn on the air conditioner. Set controls for maximum cooling and high fan speed.
6. Open the dispensing valve on the refrigerant source. Keep the refrigerant source upright at all times so that refrigerant can only enter the hoses as a gas. Allow the gas to flow into the system until the desired amount has been added or until the source container is empty. **USE OF AN ELECTRONIC SCALE (FJC part # 2845 and 2850) IS RECCOMENDED FOR THIS OPERATION IF CHARGING WITH A 30 POUND CYLINDER.** Refrigerant will continue to flow as a gas as long as the pressure in the can is greater than the pressure in the system. Getting the required refrigerant amount into the system may take several minutes.

Note: If 12 ounce refrigerant cans are being used. When changing refrigerant cans, the BLUE SIDE, low pressure valve on the manifold gauge must be tightened to its closed position before changing cans.

7. To begin adding refrigerant (with system running) open the BLUE LOW side hand valve on the low pressure side of the manifold gauge set.
8. When you have charged the system to manufacturer's specifications, close the manifold's BLUE LOW side hand valve. Let the compressor run and check the gauge readings to be sure the system is operating properly. If not, repair the system as required by vehicle manufacturer service manual.
9. To disconnect the manifold when the system filled and operating properly, close the BLUE LOW side hand valve and close the RED HIGH side hand valve on the manifold.
- 10 To disconnect the manual R134a coupler, turn the knob on the R134a coupler counterclockwise until finger tight. Slide the coupler sleeve up, releasing the coupler from the vehicle's service port.

Remove the R134a couplers carefully from the system. CAUTION: HIGH SIDE QUICK COUPLER MAY BE EXTREMELY HOT

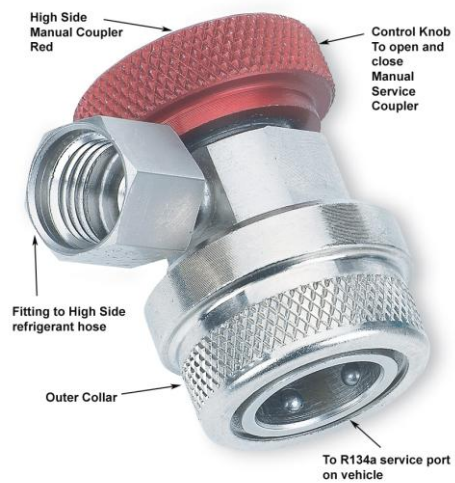
11. Replace protective caps on vehicle's service fittings.

Caution: FJC manifold gauge sets should only be used by technicians trained or experienced in servicing A/C systems. FJC offers an Automotive Heating and Air Conditioning Manual part # 2819 for information about servicing an Air Conditioning System.

Part # 6002
Low Side Manual R134a Coupler



Part # 6001
High Side Manual R134a Coupler



Low Side Quick Coupler
FJC Part # 6006



High Side Quick Coupler
FJC part # 6005



Instruction for changing Vacuum Pump Oil:

1. Operate vacuum pump until vacuum pump oil becomes warm.
2. Turn vacuum pump switch off and disconnect electrical cord plug from electrical outlet.
3. Place vacuum pump on a level surface. Unscrew and remove oil plug from bottom of pump housing and let oil drain from pump until all oil has drained. (see photo)
4. Reinstall drain plug back into pump housing. (see photo)
5. Remove oil fill plug in top of pump housing. (see photo)
6. Add oil as noted on specification chart or an amount of FJC vacuum pump oil, part # 2200, to raise the oil level to the full oil level marks on the front of the vacuum pump housing on each side of the oil sight glass.
7. Reinstall oil fill plug. (see photo)
8. Operate vacuum pump for a short period of time.
9. Check oil level through oil sight glass. (see photo)

Troubleshooting:

Pump will not run.

1. Check electrical outlet for low voltage or no voltage.
2. Check to ensure switch is turned on.

Pump does not pull low vacuum.

1. Check oil level.
2. Check for contaminated oil.
3. Check manifold and system servicing for leaks.
4. Check for low voltage at electrical outlet.
5. Check type of oil. If incorrect type of oil is used vacuum pump will not operate properly.

Warranty:

This vacuum pump is warranted to perform as stated in FJC literature for a period of 1 year from date of purchase. As we cannot control the use of this vacuum pump, the warranty shall not exceed the purchase price. We make no other warranty of any kind expressed or implied. This vacuum pump is warranted to be free from defects in material and workmanship for a period of one year from date of purchase. A copy of the original invoice must be returned with the pump or warranty is void. FJC's sole obligation under this warranty shall be to repair or replace any defective part or parts thereof, which are returned to our factory. The warranty shall not apply to any vacuum pump, which has been subject to misuse, negligence or accident. This includes the failure to provide the proper maintenance. FJC, Inc shall not be responsible for any special or consequential damages and the warranty as set forth is in lieu of all other warranties either expressed or implied.



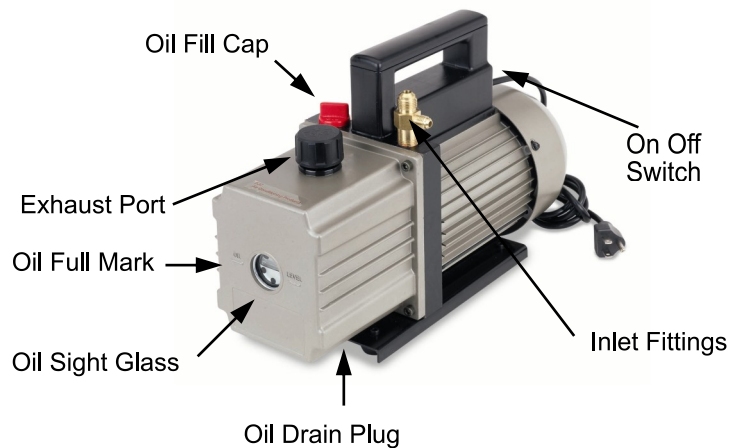
Vacuum Pump Operating Instructions & Specification Manual

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Part #	CFM	Micron Rating	Fitting Size	Voltage	Motor	Motor RPM	Oil Cap. Oz	Weight lbs.
6905	1.5	75	1/4" M.F. x 1/2" ACME	115V, 60 HZ	1/6 HP	1725	6.0	14
6909	3	75	1/4" M.F. x 1/2" ACME	115V, 60 HZ	1/3 HP	1725	8.0	17
6912	5	75	1/4" M.F. x 1/2" ACME	115V, 60 HZ	1/3 HP	1725	8.0	22
6916	7	75	1/4" M.F. x 1/2" ACME	115V, 60 HZ	2/4 HP	3450	17.0	28
6923	2stage 3	50	1/4" M.F. x 1/2" ACME	115V, 60 HZ	1/3 HP	1725	8.5	22
6925	2stage 5	50	1/4" M.F. x 1/2" ACME	115V, 60 HZ	1/2 HP	1725	9.5	25.8

Set Up Instructions:

1. Read vacuum pump instructions.
2. Remove vacuum pump and vacuum pump oil from box.
3. Inspect vacuum pump and electrical cord for damage.
4. If damage is found, it should be immediately reported to the freight carrier.
5. **VACUUM PUMP IS SHIPPED WITHOUT OIL – DO NOT OPERATE UNTIL OIL IS ADDED.**
6. **WARRANTY IS VOID IF VACUUM PUMP IS OPERATED WITHOUT OIL.**
7. Place vacuum pump on a level surface. Remove oil fill plug from top of pump housing and add vacuum pump oil until oil level is even with oil level full marks on front of vacuum pump housing on each side of the oil sight glass.
8. Use only FJC vacuum pump oil or equivalent. If the wrong type of oil is used, the vacuum pump will not operate properly. (see photo)
9. Reinstall oil fill plug. (see photo)

Setup Instructions Cont.....

10. Operate vacuum pump for a short period of time.
11. Vapor from exhaust port is normal during operation. This is the result of moisture in A/C system and humidity in shop.
12. Check oil level through oil sight glass. (see photo)
13. The vacuum pump will become hot during operation.
14. Remove electrical plug from outlet. Grasp plug and pull from outlet. Pulling wire to disconnect plug from outlet will damage electrical plug.

Operating Instructions

1. Check oil level. Oil level in sight glass should be even with “oil level full” marks on each side of sight glass on front of vacuum pump. If oil level is low, add oil until oil level reaches full oil level marks. (see photo)
2. Make sure vacuum pump electrical switch is turned off. (see photo)
3. Plug electrical plug into a grounded 115 volt electrical outlet.
4. Connect yellow hose from manifold gauge set to inlet of vacuum pump. Make sure pressure in system is less than 5 psi. If pressure is over 5 psi vacuum pump may be damaged.
5. Turn switch to on. (see photo)
6. Vapor from exhaust port is normal during operation. This is the result of moisture in A/C system and humidity in shop.
7. Allow pump to operate until desired vacuum is reached.
8. Close manifold gauge set valves.
9. Turn switch to off position. (see photo)
10. Disconnect yellow hose from vacuum pump.
11. Remove electrical plug from outlet. Grasp plug and pull from outlet. Pulling wire to disconnect plug from outlet will damage electrical plug.

Maintenance

- Check oil level through oil sight glass before each use. The main cause of vacuum pump failure is low oil levels and contaminated oil. (see photo)
- Always disconnect vacuum pump from electrical source before performing any maintenance.
- Replace vacuum pump oil every week during heavy usage periods or after every service of a system with excess moisture.
- Keep vacuum pump in a clean dry place.
- Use FJC vacuum pump oil Part # 2200 or equivalent.
- Check electrical cord and plug for wear or damage each week. If damage or excessive wear is found, have cord replaced by a licensed electrical technician.