3-Valve Manifold Gauge Set

User Manual



OMT
Orion Motor Tech

Read Carefully Before Use
Keep for Future Reference

Disclaimer

Read this disclaimer completely and carefully before proceeding with the rest of the manual content.

1. **Product Modifications**

   Any modifications or alterations to Orion Motor Tech (OMT) products void any warranties and may result in damage or injury. OMT shall not be liable for any damages resulting from such modifications or alterations.

2. **Compliance with Laws**

   Customers shall be liable for ensuring that the use of OMT products complies with all applicable laws and regulations in their respective jurisdictions. OMT assumes no responsibility for any violations of laws or regulations resulting from the use of OMT products.

3. **Correct Use**

   Always use OMT products only as directed in the accompanying manuals. Failure to follow instructions may result in injury or damage.

   Always ensure the assembly, installation, operation, maintenance, or repair of OMT products is carried out by a competent person.

   Always make maintenance regularly throughout OMT products' lifecycles; you have the liability to keep the products operating as intended.

   Always wear appropriate protective gear.

4. **Third-Party Products**

   OMT shall not be liable for any damages or losses resulting from the use of third-party products in conjunction with OMT products. Customers shall refer to the third-party's guidelines or/and warranties (if any) for any third-party products used.

5. **Limitation of Liability**

   OMT shall not be liable for any direct, indirect, punitive, incidental, special, or consequential damages to property or life, whatsoever arising out of or connected with the use or misuse of OMT products. In no event shall OMT's liability exceed the value of the products sold.

6. **Warranty**

   Refer to the sales page for warranty information.

This disclaimer states the entire obligation of OMT with respect to OMT products. If any part of this disclaimer is determined to be void, invalid, unenforceable, or illegal, including but not limited to the warranty disclaimers, liability disclaimers, and liability limitations set forth above, the invalid or unenforceable provision will be deemed superseded by a valid and enforceable provision that most closely matches the intent of the original provision and the remainder of the agreement shall remain in full force and effect.

Contents

1 Safety Information 1

2 Specifications 2

3 Package List 3

4 Product Diagram 5

5 Preparation 6

6 Initial setup of AC System 7

6.1 Connecting the Hoses to the Gauge 7

6.2 Connecting the Quick Couplers to the Pressure Hoses 8

6.3 Connecting the Quick Couplers to Your A/C System 9

7 AC System Operation 11

7.1 Performing Leakage Test 11

7.2 Evacuation 13

7.3 Charging 15

8 Initial Setup of HVAC System 19

9 Operation of HVAC System 20

9.1 Performing Leakage Test 20

9.2 Evacuation 20

9.3 Charging 20

10 Maintenance 24

11 Troubleshooting 24

1 Safety Information

Danger

- Read these instructions carefully before use and s tore this manual for future reference. Include this manual with this device if ever given or sold to a third party. Failure to follow these instructions may lead to serious property damage and severe personal injury.
- **ALWAYS** wear personal protective equipment such as a dust mask, goggles, and work gloves. Work in a well-ventilated area, as refrigerants can irritate your eyes, nose, throat, and skin or cause frostbite, heart arrhythmia, unconsciousness, and even death. Additionally, operating your vehicle in an enclosed space may result in carbon monoxide poisoning and other problems.
- If you begin to develop symptoms such as headaches, dizziness, or nausea while using this product, turn off your vehicle and get fresh air **IMMEDIATELY**. **DO NOT** resume work until the vehicle is in a well-ventilated area.
- **ONLY** use with **R1234yf**, **R134a**, **and R410a** refrigerant and their matching vehicle A/C systems. It should **NOT** be used with other refrigerants or home A/C systems, which can damage this product and your property.
- Use **EXTREME** caution when disconnecting the hoses after use as they may still contain some refrigerant under pressure.

Warning

- **ONLY** use the coupler marked **HIGH** on the **HIGH-PRESSURE** service port. **ONLY** use the coupler marked **LOW** on the **LOW-PRESSURE** port. Interchanging them may result in severe property damage and serious personal injuries.
- Turn your air-conditioning (A/C) or HAVC system off before evacuation.
- **DO NOT** allow children or persons with compromised physical or mental capabilities to use this product. Keep children, bystanders, and pets away during use.
- Stay alert, watch what you are doing, and use common sense when using this product. **DO NOT** use it while you are tired or under the influence of drugs, alcohol, or any medication.
- **ALWAYS** perform leak tests for this product and your A/C or HAVC system **BEFORE** charging. Fix any issues quickly and ensure that everything is leak-free before continuing on your way.
- Keep your work site clean and well-lit. Cluttered and dark work areas invite accidents.
- For best results, keep the kit clean and dry. Remove any fluid, oil, or grease before and after work.
- **DO NOT** leave this product unattended during use.
- In case of an accident or injury, have a first aid kit and a communication device (e.g., a phone) readily available. Know the location of emergency medical facilities.
- Maintain this product. Check for misalignment, binding, wear, or other damage before use. If any damage is detected, repair or replace the problematic components before further use. In a large shop, mark such tools as “**DO NOT USE**” until they have been repaired or replaced. **ONLY** replace components with identical or authorized parts.
- Machinery repair is inherently dangerous. This manual and the separate machinery service manual cannot cover all possible situations. **ALWAYS** exercise discretion and good judgment. Seek training if needed.

2 Specifications

Hoses	**Colors**	**Low-Pressure**	Blue	
		High-Pressure	Red	
		Evacuation/ Charging	Yellow	
	Total Length		5 ft.	1.5 m
	Thread Dia.		1/4 in.	
	Working Pressure		600 psi	41 bar
	Burst Pressure		3000 psi	206 bar
Quick Couplers	**Colors**	**Low-Pressure**	Blue	
		High-Pressure	Red	
	Thread Dia.		1/4 in.	
Refrigerant Can Taps	**Colors**	**R1234yf**	Blue	
		R134a	Red	
	Thread Dia.	**Male Outlet**	1/4 in.	
		Female Inlet	1/2 in.	
	Compatible Can Type		Self-Sealing	
Gauge Set	**Overall Dimensions**		7.3×6.3×2.4 (in.)	18.5×16×6 (cm)
	Port Thread Dia.		1/4 in.	
	Pressure Capacity	**Low-Pressure**	−15* to 500 (psi)	−1 to 35 (bar)
		High-Pressure	−15* to 800 (psi)	−1 to 55 (bar)
	Acceptable Refrigerants		R1234yf, R134a, and R410a	

* ***Note:*** *Negative pressure readings are typically measured in inches of mercury (inHg), which roughly equate to half the value in pounds per square inch (psi) or 1.3% of the value in centimeters of mercury (cmHg), kilograms per square centimeter (kg/cm²), or bars.*

3 Package List



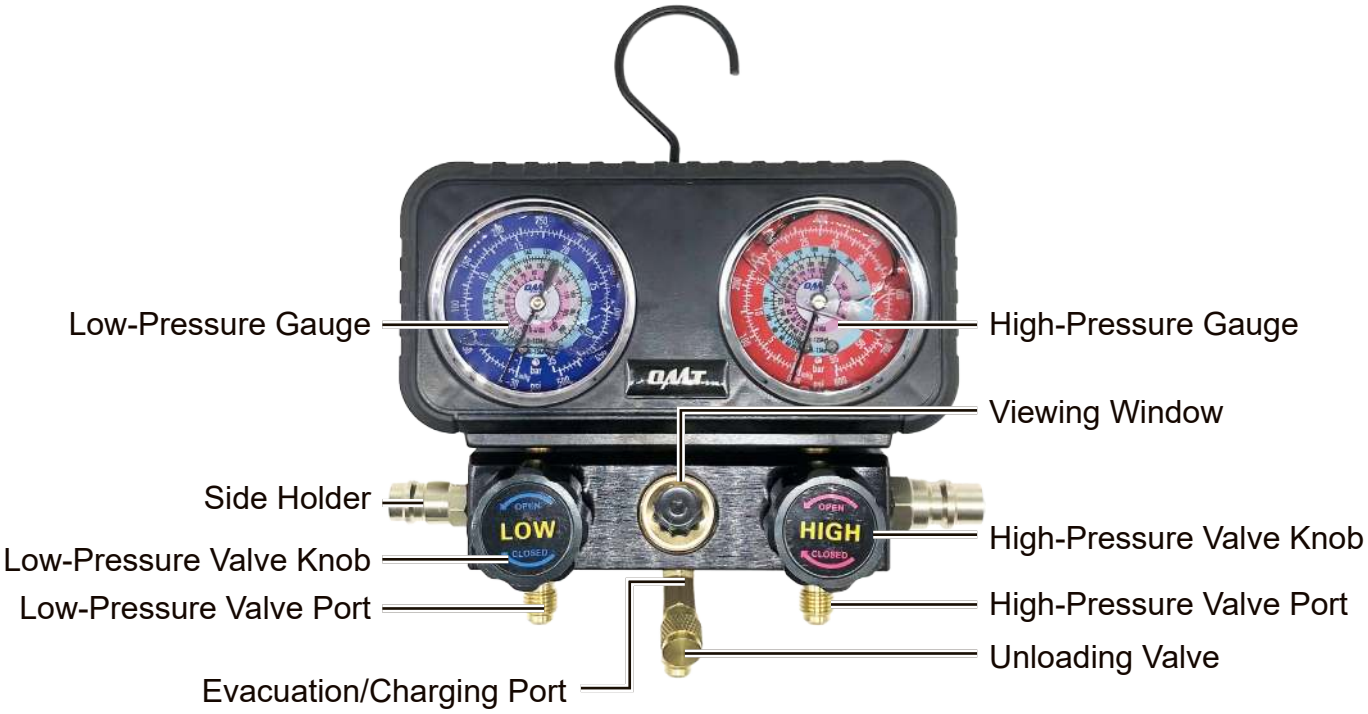
3 Package List

Item	Name	Qty.
A	High-Pressure Hose (Red)	1
B	Low-Pressure Hose (Blue)	1
C	Evacuation/Charging Hose (Yellow)	1
D	Work Gloves	1 Pair
E	Gauge Set	1
F	High-Pressure Quick Coupler (Red, for **R134a** refrigerant)	1
G	Low-Pressure Quick Coupler (Blue, for **R134a** refrigerant)	1
H	Dual-Purpose Screwdriver	1
I	R410A Safety Valves	2
J	Self-Sealing Can Tap (Red, for **R134a** refrigerant)	1
K	Self-Sealing Can Tap (Blue, for **R1234yf** refrigerant)	1
L	High-Pressure Quick Coupler (Red, for **R1234yf** refrigerant)	1
M	Low-Pressure Quick Coupler (Blue, for **R1234yf** refrigerant)	1
N	Pipe Disassembly Tools (7/8", 3/4", 5/8", 1/2", 3/8", 5/16", 1/4")	7
O	1/4" Male to 1/2" Female Adapters (Counterclockwise marked **LH**)	2
P	O-Rings	2
Q	Flat Gaskets	2
R	Copper Cores	3
S	Hose Gaskets	4
T	Valve Core Wrench	1

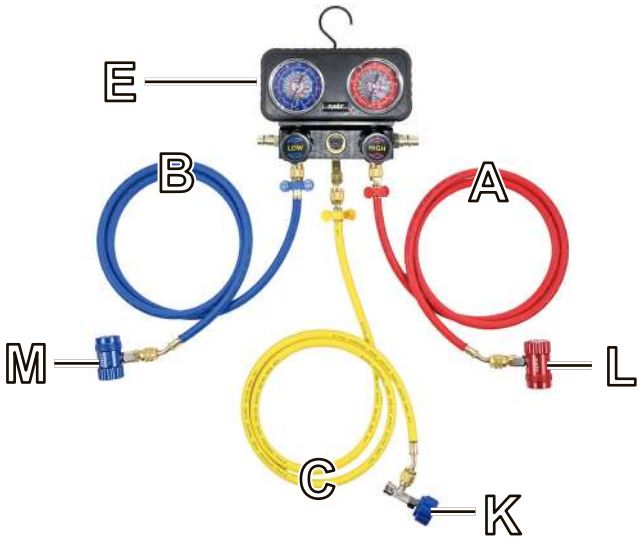
Not Included but Helpful:

- Micron Gauge
- Vacuum Pump
- Refrigerant Can
- Nitrogen Source
- Dust Masks
- Goggles
- Tape
- Leak Detector
- Soapy Water

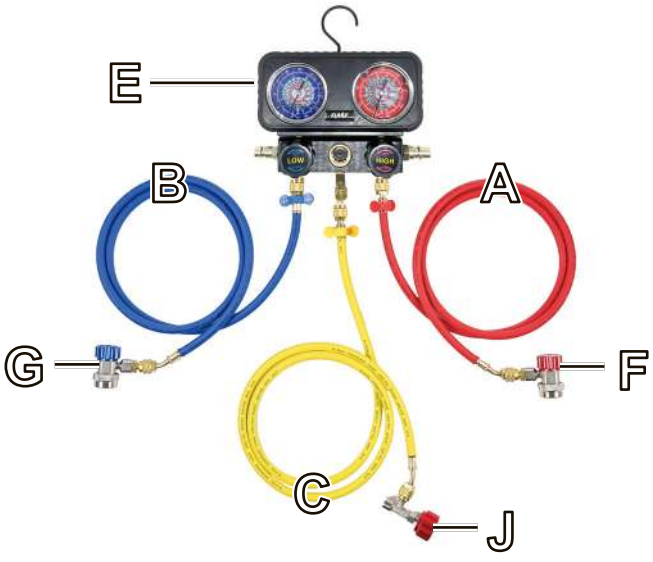
4 Product Diagram



For R1234yf Systems



For R134a Systems



5 Preparation

Danger

*Refrigerant can irritate your eyes, nose, throat, and skin or cause frostbite, heart arrhythmia, unconsciousness, and **EVEN** death.*

Clearing Your Work Area

Make sure the work area meets the following conditions:

- No children, bystanders, or pets
- Clean and clear of any clutter or dirt that may affect operation or pose safety hazards
- Well-lit and ventilated but adequately protected from the elements
- Free of explosives and sources of heat such as firecrackers and open flames

Putting on Proper PPE

Hand, breathing, and eye protection are required and should meet the standards by ANSI (American National Standards Institute) or OSHA (Occupational Safety and Health Administration).

The recommended ones include:

- Work Gloves (D)
- Dust Masks
- Goggles

Checking the Product

After unpacking, check that all items are included and undamaged.

If necessary, ask your local dealer or contractor for new identical replacements.

Danger

*Using this product with missing, broken, nonidentical, or unauthorized parts **WILL** pose a series of safety hazards.*

Familiarizing Yourself with Your HAVC or A/C Systems

For optimal safety, know your HAVC or A/C system well and take sufficient training before using this product.

Failures and accidents could happen due to a lack of training.

6 Initial setup of AC System

⚠Warning

- *Make sure your surroundings **ARE** safe for using this product.*

  *Avoid operating in crowded, dark, or cluttered areas. Ensure **NO** explosives or ignition sources nearby.*
- *Be sure that **ALL** connections **ARE** tightly secured.*

***Note:** Wrapping the threads with sealing tape (not included) before making the connection helps prevent leaks.*

6.1 Connecting the Hoses to the Gauge

1. Turn the knobs on the gauge set (E) completely clockwise, **FULLY** closing its low-pressure (LP) and high-pressure (HP) valves.

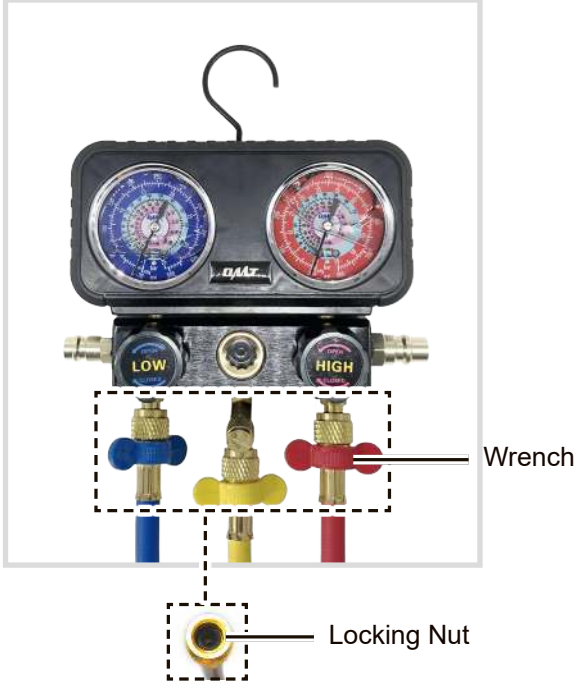


2. Unscrew the valve port caps under the knobs, connect the provided hoses to the corresponding ports by hand, and tighten the connections by hand using the hoses' locking nuts. The wrench through the hose helps tighten the locking nut.

⚠Warning

***DO NOT** mix up the three hoses, as they are **NOT** interchangeable.*

***Note:** Use the hose ends **WITHOUT** copper cores inside.*



- Connect the blue LP hose (B) to the port below the LP knob (**LOW**).
- Connect the red HP hose (A) to the port below the HP knob (**HIGH**).
- Connect the yellow evacuation/charging (E/C) hose (C) to the remaining port in the middle of the gauge.

6 Initial setup of AC System

6.2 Connecting the Quick Couplers to the Pressure Hoses

1. Select the quick couplers appropriate for your system.
   - Use the couplers marked **R1234yf** (L and M) for R1234yf refrigerant systems.
   - Use the couplers marked **R134a** (F and G) for R134a refrigerant systems.

> ***Note:***
> - *If your system uses R404a refrigerant, prepare couplers compatible with your system and hoses.*
> - ***ONLY** R1234yf, R134a, and R410a are compatible with the gauge set.*



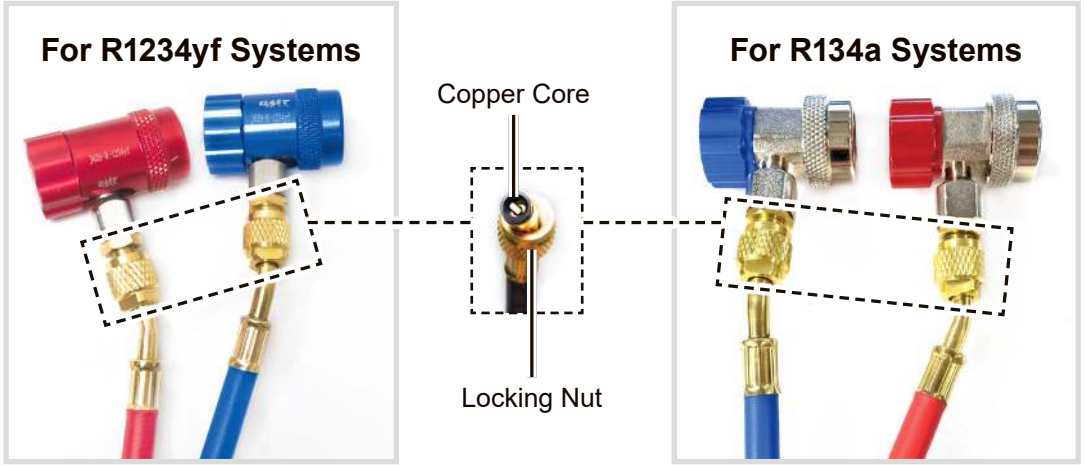
For R1234yf Systems



For R134a Systems

2. Connect the blue and red hoses to their identically colored quick couplers, and tighten the connections by hand using the hoses' locking nuts.

> ⚠ **Warning**
>
> ***DO NOT** mix up these hoses and couplers, as they are **NOT** interchangeable.*
>
> ***Note:** Use the hose ends **WITH** copper cores inside.*



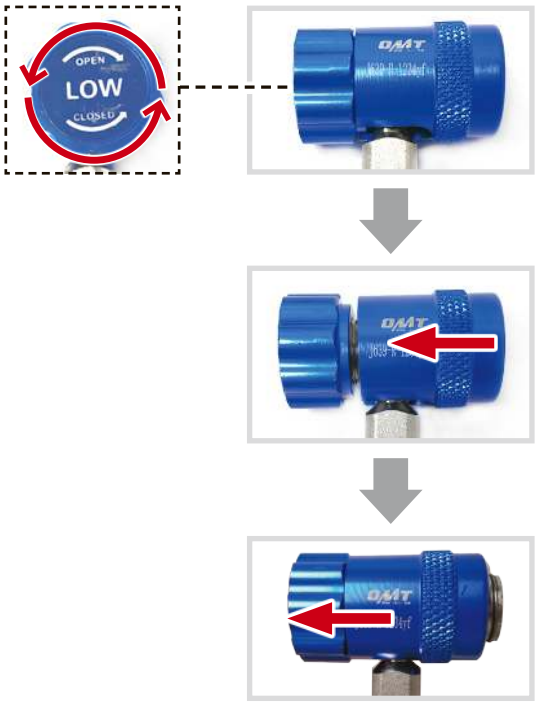
6 Initial setup of AC System

6.3 Connecting the Quick Couplers to Your A/C System

> **⚠ Warning**
>
> *Ensure that your A/C system has been turned off.*

1. Hang up the gauge using its hook to ensure optimal safety, stability, and accessibility during use.
2. Turn the blue and red quick couplers' knobs completely counterclockwise.
3. Hold one coupler and pull back the sleeve to the knob.

(Example: R1234yf LP Coupler)



4. Push the coupler onto its matching service port of your AC system.

> ***Note:*** *You can use the included pipe disassembly tools (N) to disassemble the AC system piping as needed.*



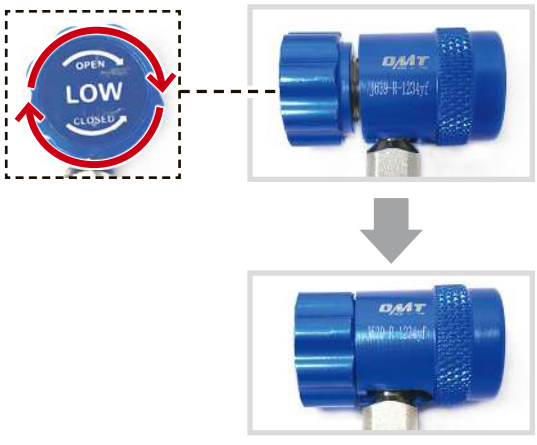
   a. Select the right-sized pipe disassembly tool (N).
   b. Place the tool on one side of the pipe connection.
   c. Press down the top of the tool with one hand to keep it steady.
   d. Use your other hand to slowly rotate the pipe and pull it outward.

5. Release the sleeve to secure the connection. **GENTLY** pull the coupler to verify the connection's security.

6 Initial setup of AC System

6. Repeat steps 3−5 for connecting the other coupler to the A/C system.

(Example: R1234yf LP Coupler)



> **⚠ Warning**
>
> - ***DO NOT*** *connect the two couplers to the* ***INCORRECT*** *service ports to prevent system malfunctions and safety hazards.*
> - ***ALWAYS*** *refer to the instructions and guidelines provided by the manufacturer of your A/C system for proper installation procedures.*

7. Turn the blue and red quick couplers' knobs completely clockwise.

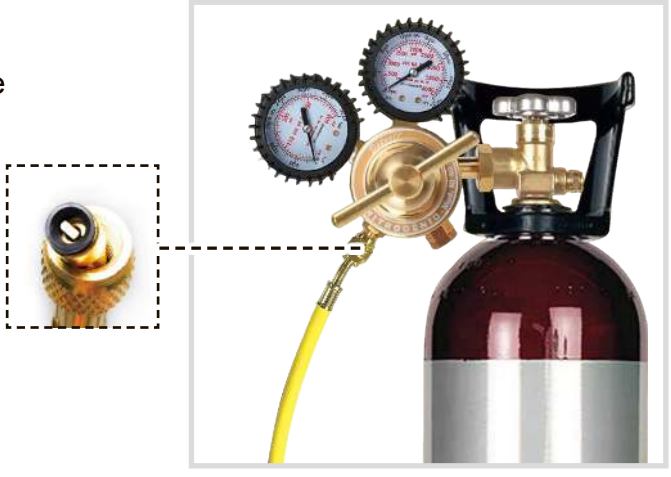
7 AC System Operation

You can evacuate your A/C system, and then charge it with refrigerant.

> ***Note:*** *Wrapping the threads with tape (not included) before making the connection helps prevent leaks.*

7.1 Performing Leakage Test

1. Connect the yellow hose **WITH** a copper core inside to a nitrogen source (not included).



2. Turn on the nitrogen source and set the pressure value.

> **⚠ Warning**
>
> *The pressure value must **NOT** exceed your A/C system's maximum pressure.*



3. Open the LP and HP valves by turning their knobs **SLOWLY** counterclockwise.

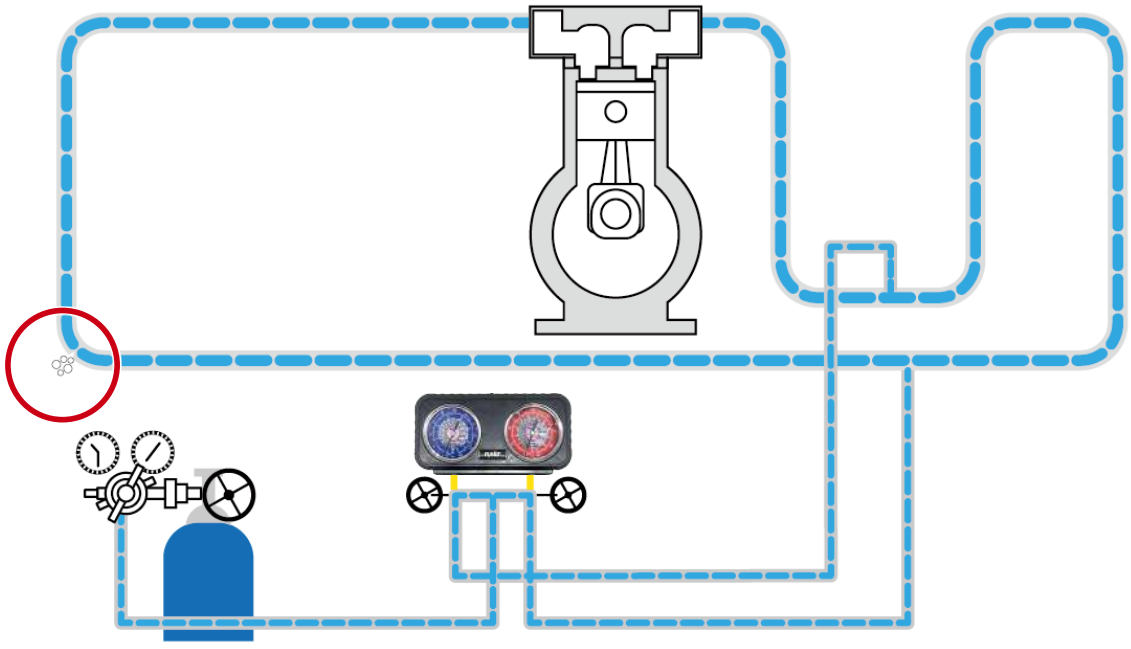
4. Once the gauge set indicates the same pressure values as the nitrogen source, close the LP and HP valves by turning their knobs **COMPLETELY** clockwise.



7 AC System Operation

5. It is recommended to observe the gauge set for about 15 to 30 minutes to ensure that the pressure readings remain stable.

   If the readings have a significant drop, leakage may exist in the system. Use a leak detector (not included) to detect leakage and apply soapy water (not included) to locate leakage. Repair or replace any detected loose joints or worn parts before further use.



6. If the pressure readings remain stable and there is no leakage, turn off the nitrogen source and disconnect the yellow EC hose from the nitrogen source.
7. Open the LP valve by turning its knob (LOW) **SLOWLY** counterclockwise to release the nitrogen gas.



8. Once the pressure readings indicate 0 psi, close the LP valve by turning its knob (LOW) completely clockwise.

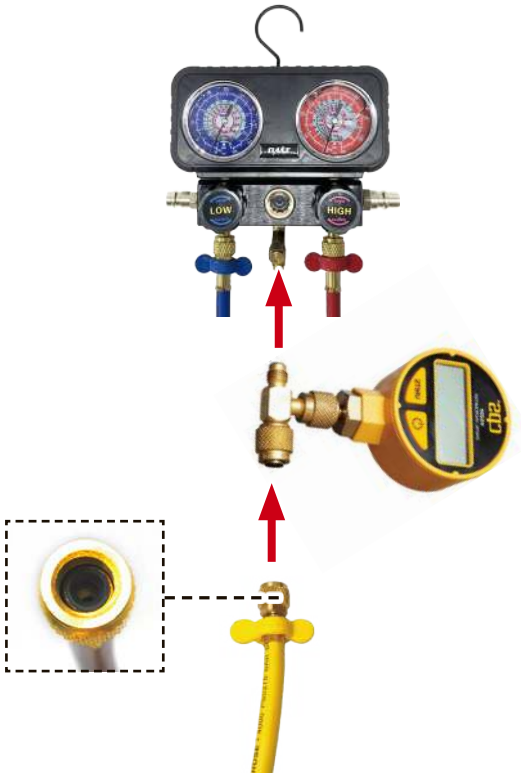


7.2 Evacuation

> **⚠ Warning**
>
> - *Again, check that your A/C system has been **COMPLETELY** turned off.*
> - ***DO NOT** vent refrigerant to the atmosphere. Use appropriate recovery equipment.*

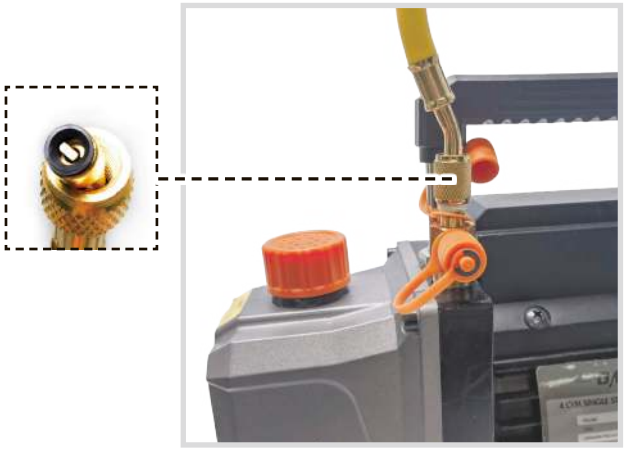
1. Connect a micron gauge (not included) to the E/C port and the yellow hose.

> ***Note:** Use the hose end **WITHOUT** a copper core inside.*



7 AC System Operation

2. Connect the other end of the yellow hose to a vacuum pump (not included) using its copper core end.



> ***Note:***
> - *If the port of your pump does not fit the hose's 1/4" threads, use the provided 1/4" male to 1/2" female adapter (O) or other suitable adapter to complete the connection.*
> - *Recommended for use with OMT vacuum pump.*

3. Make sure all connections are tightly joined and turn the micron gauge on.
4. Open the LP valve by turning its knob (LOW) completely counterclockwise. Turn on the pump, and the evacuation begins.



5. When the micron gauge reads less than **500** microns, your A/C system is fully cleared. Close the LP valve by turning its knob (LOW) **COMPLETELY** clockwise and turn off the pump.



6. Disconnect the micron gauge from the gauge set and the yellow hose. Disconnect the yellow hose from the pump.

7.3 Charging

⚠ Warning

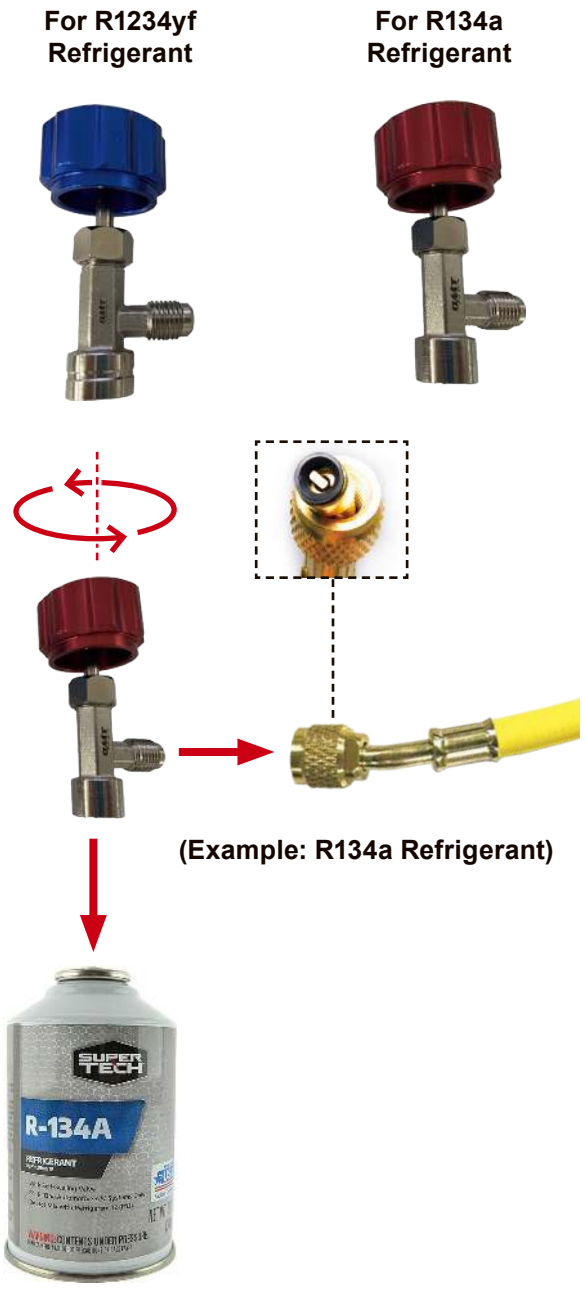
- ***ALWAYS*** *keep your refrigerant cans away from heat sources and direct sunlight.*
- *Be sure* ***NOT*** *to open your refrigerant cans by accident in* ***ANY*** *way.*
- *Ensure that* ***BOTH*** *valves on the gauge* ***ARE*** *completely closed* ***BEFORE*** *starting work.*
- ***NEVER*** *leave your refrigerant cans or the gauge unattended when charging A/C systems.*
- ***ALWAYS*** *wear proper PPE when disconnecting the couplers and hoses after charging is complete, as they may contain some refrigerant under pressure.*

1. Choose a provided self-sealing can tap (J or K) for your refrigerant can as you need.

> ***Note:***
> - *Use the red tap (J) for R134a refrigerant cans. Use the blue tap (K) for R1234yf refrigerant cans.*
> - *Some big refrigerant cans have taps to regulate the flow.*

2. Check that the tap has been closed by turning its knob **COMPLETELY** counterclockwise. Connect the outlet of the tap to the yellow hose and its inlet to your refrigerant can.

> ***Note:*** *Use the hose end* ***WITH*** *a copper core inside.*



(Example: R134a Refrigerant)

7 AC System Operation

3. Connect the yellow hose to the E/C port of the gauge set using the hose end **WITHOUT** a copper core inside.



4. Turn the knob clockwise to allow the refrigerant to flow through the hose.



5. Open the LP valve by turning its knob (LOW) completely counterclockwise and charging begins.



7 AC System Operation

6. To check if the small refrigerant can is empty, invert the can and **GENTLY** shake it. If refrigerant is visible from the glass window, there is still some refrigerant left in the can.

(Example: R134a Refrigerant)



7. To change the small empty refrigerant can, you **MUST** close the LP valve by turning its knob **COMPLETELY** clockwise and the tap's knob **COMPLETELY** counterclockwise before reconnecting a new refrigerant can.

> **⚠ Warning**
>
> - ***NEVER*** *discard discarded refrigerant cans at will or put them in ordinary trash cans.*
> - *Discarded refrigerant cans* ***MUST*** *be disposed of in accordance with local waste disposal regulations.*

(Example: R134a Refrigerant)



7 AC System Operation

8. Consult your A/C system's specifications to find its recommended pressure, usually between 25–80 psi (1.7–5.5 bars).
9. Once the system reaches the recommended pressure, stop charging the system by turning the tap knob **COMPLETELY** counterclockwise and turning the LP valve knob (LOW) **COMPLETELY** clockwise.

(Example: R134a Refrigerant)





10. Disconnect the two quick couplers from your A/C system and take down the gauge set.
11. Open the unloading valve by unscrewing its cap to clear any air or vapor remaining inside the gauge set. Confirm that the pressure readings indicate 0 psi, and then tighten the cap into place.



12. Disconnect the hoses from the quick couplers, the tap, and the gauge set.
13. Keep the tap securing on the partially used refrigerant can, or disconnect it from the empty can or the self-sealing can.

8 Initial Setup of HVAC System

⚠Warning

- *Make sure your surroundings **ARE** safe for using this product.*

  Avoid operating in crowded, dark, or cluttered areas. Keep away from explosives or ignition sources.
- *Be sure that **ALL** connections **ARE** tightly secured.*
- *Make sure the HVAC system is turned off **BEFORE** starting work.*

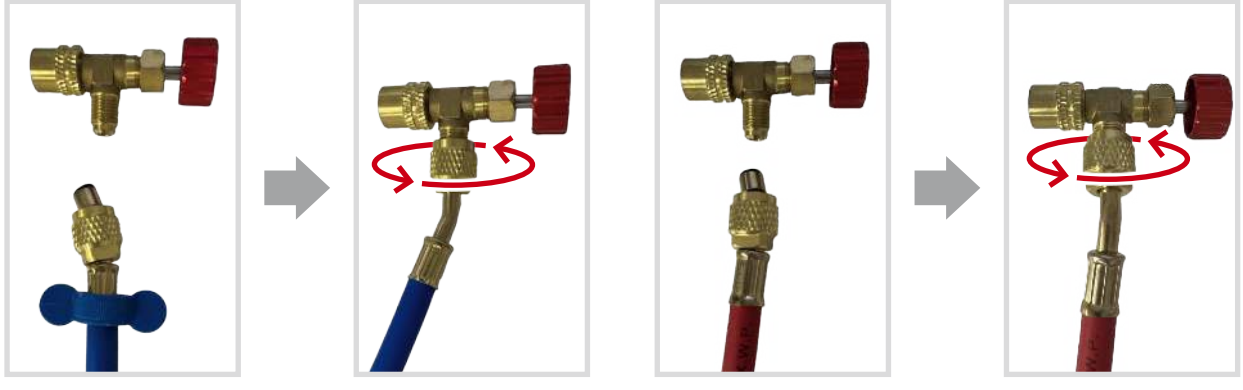
***Note:** Wrapping the threads with sealing tape (not included) before making the connection, helps prevent leaks.*

1. Connect the hoses to the gauge.

   For detailed steps, please see
   6.1 Connecting the Hoses to the Gauge
   on Page **7**.



2. Connect the blue and red hoses to the safety valves (I), and tighten the connections by hand using the hoses' locking nuts.



3. Screw and tighten the safety valve to the HVAC system.



9 Operation of HVAC System

You can evacuate your HAVC system, and then charge it with refrigerant.

9.1 Performing Leakage Test

For detailed steps, see **7.1 Performing Leakage Test** on Page **11**.

9.2 Evacuation

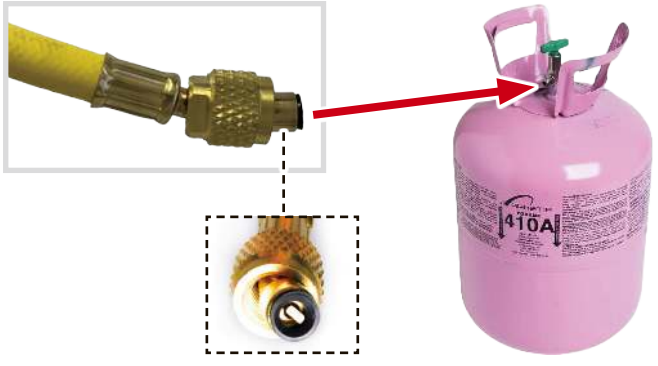
> **⚠ Warning**
>
> - *Again, make sure your HAVC system is **COMPLETELY** turned off.*
> - ***DO NOT** vent refrigerant to the atmosphere. Use appropriate recovery equipment.*

For detailed steps, see **7.2 Evacuation** on Page **13**.

9.3 Charging

> **⚠ Warning**
>
> - ***ALWAYS** keep your refrigerant tank away from heat sources and direct sunlight.*
> - *Make sure **NOT** to accidentally open your refrigerant tank.*
> - *Make sure that **BOTH** valves on the gauge **ARE** completely closed **BEFORE** starting work.*
> - ***NEVER** leave your refrigerant tank or the gauge unattended when charging the HAVC system.*
> - ***ALWAYS** wear proper PPE when disconnecting the couplers and hoses after charging is complete.*

1. Screw and tighten the yellow hose to the refrigerant tank.

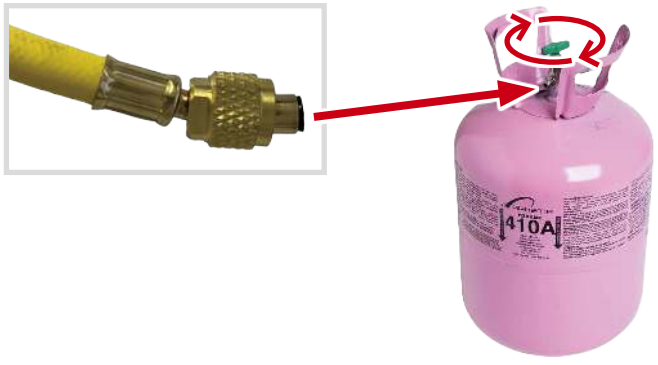


9 Operation of HVAC System

2. Connect the yellow hose to the E/C port of the gauge set using the hose end **WITHOUT** a copper core inside.



3. Turn the valve clockwise to allow the refrigerant to flow through the hose.

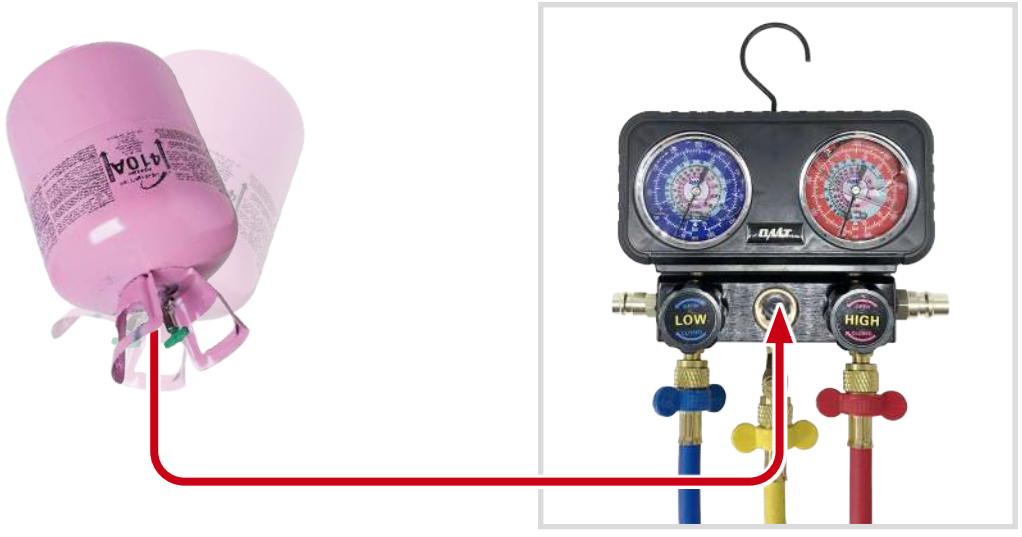


4. Open the LP valve by turning its knob (LOW) completely counterclockwise and charging begins.



9 Operation of HVAC System

5. To check if the refrigerant tank is empty, invert the tank and **GENTLY** shake it. If refrigerant is visible from the glass window, some are still left in the can.



> **⚠ Warning**
>
> - ***NEVER*** *dispose of refrigerant tanks at will or put them in ordinary trash.*
> - *Discarded refrigerant tanks* ***MUST*** *be disposed of according to local waste disposal regulations.*

6. Consult your system's specifications to find its recommended pressure, usually between 110 to 130 psi (0.8 to 0.9 MPa) for R410a.

7. Once the system reaches the recommended pressure, stop charging by turning the valve **COMPLETELY** counterclockwise and the LP valve knob (LOW) **COMPLETELY** clockwise.



9 Operation of HVAC System

8. Disconnect the two safety valves from your HAVC system and take down the gauge set.
9. Open the unloading valve by unscrewing its cap to clear any air or vapor remaining inside the gauge set. Confirm that the pressure readings indicate 0 psi, and then tighten the cap into place.



10. Disconnect the hoses from the safety valves, the tap, and the gauge set.
11. Securely close the partially used refrigerant can.

10 Maintenance

- **NEVER** scrape the hose or drop the gauge set on hard or rough surfaces.
- Check the parts for misalignment, cracks, and any other conditions that may affect the operation accuracy before use.
- If any gasket, O-ring, or copper core in the preinstalled refrigerant cap tap, quick coupler, or any hose is damaged or worn, replace it with its spare part (P, Q, R or S) using the valve core wrench (T) and/or dual-purpose screwdriver (H). If any other part of the gauge set is damaged or worn, have it repaired or replaced before further use.
- Clean the exterior of the gauge set and hoses with a soft damp cloth using a mild detergent or solvent. **DO NOT** use harsh abrasives or caustic chemicals.
- Store the gauge set in a clean dry place inaccessible to children and away from direct sunlight after use.

11 Troubleshooting

Problems	Solutions
Pressure readings are unstable or fluctuating.	Check all connections and seals for leaks. Ensure stable ambient temperature conditions.
The gauge set displays abnormally high or low readings.	Check if ambient temperature is affecting the readings. Inspect for any pressure leaks.

Contact Us

Thank you for choosing our products! If you have any questions or comments, contact us and we'll resolve your issues ASAP!

support@orionmotortech.com

Scan for the latest user manual

Rev. 26 Mar. 2025