




CONDENSING UNIT INSTALLATION INSTRUCTIONS

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CONDENSING UNIT SAFETY PRECAUTIONS


The following symbols and labels are used throughout this manual to indicate immediate or potential safety hazards. It is the owner's and installer's responsibility to read and comply with all safety information and instructions accompanying these symbols. Failure to heed safety information increases the risk of personal injury, property damage, and/or product damage.


 Recognize this symbol as a safety precaution.


 WARNING
Hazards or unsafe practices <u>could</u> result in property damage, product damage, severe personal injury or death.
 CAUTION
Hazards or unsafe practices <u>may</u> result in property damage, product damage, personal injury or death.

CAUTION
Hazards or unsafe practices <u>may</u> result in property or product damage.

 WARNING
HIGH VOLTAGE!
Disconnect <u>ALL</u> power before servicing.
Multiple power sources may be present.
Failure to do so may cause property damage, personal injury or death.



 WARNING
Installation and repair of this unit should be performed ONLY by individuals meeting the requirements of an "Entry Level Technician," at a minimum, as specified by the Air-Conditioning, Heating and Refrigeration Institute (AHRI). Attempting to install or repair this unit without such background may result in product damage, personal injury or death.




Important Note to the Owner Regarding Product Warranty

Your warranty certificate is supplied as a separate document with the unit installed by your contractor. Read the limited warranty certificate carefully to determine what is and is not covered. Keep the warranty certificate in a safe place. If you are unable to locate the warranty certificate, please contact your installing contractor, or contact customer service at 866-944-7575 to obtain a copy.

To receive the 10-Year Parts Limited Warranty, online registration must be completed within 60 days of installation. Online registration is not required in California or Quebec.

Complete warranty details and instructions are available at your local dealer or www.whirlpoolhvac.com.

To register your unit, go to www.whirlpoolhvac.com. Click on the Comfort Commitment Warranty link located at the bottom center of the home page. Next, click on the Click Here to Register Your Product link located at the top center of the page, and complete the forms in the manner indicated.

Shipping Inspection

Always keep the unit upright; laying the unit on its side or top may cause equipment damage. Shipping damage and subsequent investigation is the responsibility of the carrier. Verify the model number, specifications, electrical characteristics and accessories are correct prior to installation. The distributor or manufacturer will not accept claims from dealers for transportation damage or installation of incorrectly shipped units.

Codes and Regulations

This product is designed and manufactured to comply with national codes. Installation in accordance with such codes and/or prevailing local codes/regulations is the responsibility of the installer. The manufacturer assumes no responsibility for equipment installed in violation of any codes or regulations.

The United States Environmental Protection Agency (EPA) has issued various regulations regarding the introduction and disposal of refrigerants. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. Should you have any questions please contact the local office of the EPA.

If replacing a condensing unit or air handler, the system must be manufacturer-approved and Air Conditioning, Heating and Refrigeration Institute (AHRI) matched.

NOTE: Installation of unmatched systems is strongly discouraged.

Operating the unit in a structure that is not complete (either as part of new construction or renovation) will void the warranty.

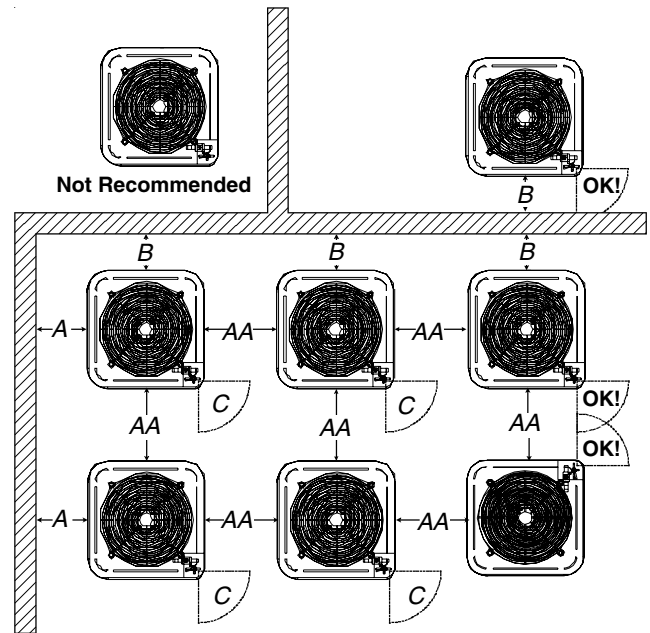
Installation Clearances

Special consideration must be given to the location of the condensing unit(s) in regard to structures, obstructions, other units and any/all other factors that may interfere with air circulation. Where possible, the top of the unit should be completely unobstructed; however, if vertical conditions require placement beneath an obstruction, there should be a minimum of 60" (152 cm) between the top of the unit and the obstruction(s).

The specified dimensions meet requirements for air circulation only. Consult all appropriate regulatory codes prior to determining final clearances.

Another important consideration in selecting a location for the unit(s) is the angle to obstructions. Either side adjacent the valves can be placed toward the structure provided the side away from the structure maintains minimum service clearance.

NOTE: Corner installations are strongly discouraged.



Minimum Airflow Clearance—in. (cm)

Model Type	A	B	C	AA
Residential	10 (25)	10 (25)	18 (46)	20 (51)
Light Commercial	12 (31)	12 (31)	18 (46)	24 (61)

This unit can be located at the ground floor level or on flat roofs. At ground floor level, the unit must be on a solid, level foundation that will not shift or settle. To reduce the possibility of sound transmission, the foundation slab should not be in contact with or be an integral part of the building foundation. Ensure the foundation is sufficient to support the unit. A concrete slab raised above ground level provides a suitable base.

Rooftop Installations

If it is necessary to install this unit on a roof structure, ensure the roof structure can support the weight and that proper consideration is given to the weather-tight integrity of the roof. Since the unit can vibrate during operation, sound vibration transmission should be considered when installing the unit. Vibration absorbing pads or springs can be installed between the condensing unit legs or frame and the roof mounting assembly to reduce noise vibration.

SAFE REFRIGERANT HANDLING

While these items will not cover every conceivable situation, they should serve as a useful guide.

WARNING

To avoid possible injury, explosion or death, practice safe handling of refrigerants.

WARNING

Refrigerants are heavier than air. They can “push out” the oxygen in your lungs or in any enclosed space. To avoid possible difficulty in breathing or death:

- Never purge refrigerant into an enclosed room or space. By law, all refrigerants must be reclaimed.
- If an indoor leak is suspected, thoroughly ventilate the area before beginning work.
- Liquid refrigerant can be very cold. To avoid possible frostbite or blindness, avoid contact and wear gloves and goggles. If liquid refrigerant does contact your skin or eyes, seek medical help immediately.
- Always follow EPA regulations. Never burn refrigerant, as poisonous gas will be produced.

WARNING

To avoid possible explosion:

- Never apply flame or steam to a refrigerant cylinder. If you must heat a cylinder for faster charging, partially immerse it in warm water.
- Never fill a cylinder more than 80% full of liquid refrigerant.
- Never add anything other than R-22 to an R-22 cylinder or R-410A to an R-410A cylinder. The service equipment used must be listed or certified for the type of refrigerant used.
- Store cylinders in a cool, dry place. Never use a cylinder as a platform or a roller.

WARNING

To avoid possible explosion, use only returnable (not disposable) service cylinders when removing refrigerant from a system.

- Ensure the cylinder is free of damage which could lead to a leak or explosion.
- Ensure the hydrostatic test date does not exceed 5 years.
- Ensure the pressure rating meets or exceeds 400 lbs.

When in doubt, do not use cylinder.

REFRIGERANT LINES

CAUTION

The compressor POE oil for R-410A units is extremely susceptible to moisture absorption and could cause compressor failure. Do not leave system open to atmosphere any longer than necessary for installation.

Use only refrigerant-grade (dehydrated and sealed) copper tubing to connect the condensing unit with the indoor evaporator. After cutting the tubing, install plugs to keep refrigerant tubing clean and dry prior to and during installation. Tubing should always be cut square, keeping the ends round and free from burrs. Clean the tubing to prevent contamination.

NOTE: Do not let the refrigerant lines come in direct contact with plumbing, ductwork, floor joists, wall studs, floors and walls. When running refrigerant lines through a foundation or wall, openings should allow for sound and vibration absorbing material to be placed or installed between tubing and foundation. Any gap between the foundation or wall and refrigerant lines should be filled with a pliable silicon-based caulk, RTV or a vibration damping material. Avoid suspending refrigerant tubing from joists and studs with rigid wire or straps that would come in contact with the tubing. Use an insulated or suspension-type hanger. Keep both lines separate and always insulate the suction line.

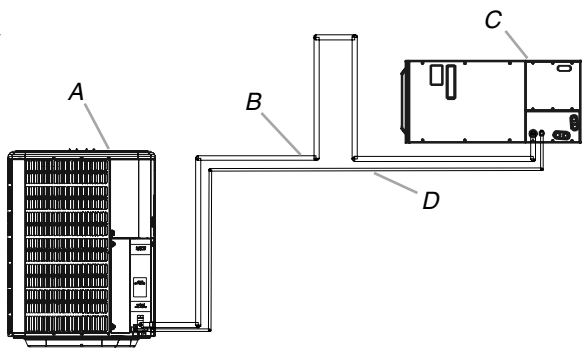
These sizes are recommended for line lengths of 79 ft (24 m) or less. For other line sizing option or runs of more than 50 ft (15 m), refer to Remote Cooling Service Manual, TP-107 Long Line Set Application R- 410A or contact your distributor for assistance.

Recommended Interconnecting Tubing – ft (m)

Conditioner Unit Tons	Line Diameter (in. OD)					
	0 to 24 (7)		25 to 49 (8 to 15)		50 to 79 (15 to 24)*	
	Suction	Liquid	Suction	Liquid	Suction	Liquid
1½	5/8	¼	¾	¾	¾	¾
2	5/8	¼	¾	¾	¾	¾
2½	5/8	¼	¾	¾	7/8	¾
3	¾	¾	7/8	¾	1 1/8	¾
3½	7/8	¾	1 1/8	¾	1 1/8	¾
4	7/8	¾	1 1/8	¾	1 1/8	¾
5	7/8	¾	1 1/8	¾	1 1/8	¾

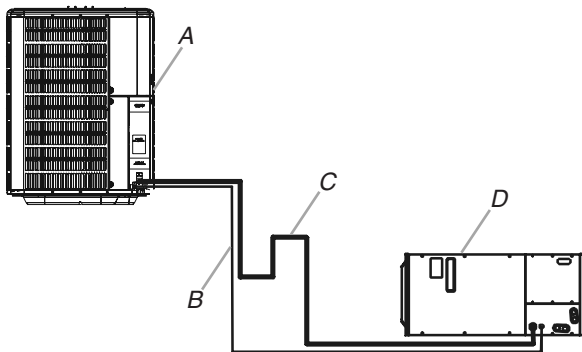
*For lines greater than 79 ft (24 m) in length or vertical elevation changes more than 50 ft (15 m), refer to the Remote Cooling Service Manual or contact your distributor for assistance.

Mounting the evaporator coil above the condensing unit will require an inverted loop in the suction line adjacent or near the connection to the evaporator coil. The top of the loop must be slightly higher than the top of the evaporator coil.



A. Condensing unit
B. Suction line
C. Evaporator coil
D. Liquid line

Mounting the condensing unit above the evaporator coil will require an oil trap in the suction line. Install one oil trap at the evaporator for a height difference of more than 15 ft (4.5 m) between indoor and outdoor units.



A. Condensing unit
B. Liquid line
C. Suction line
D. Evaporator coil

Insulation is necessary to avoid condensation from forming and dripping from the suction line. Armaflex (or satisfactory equivalent) with $\frac{3}{8}$ " (1 cm) minimum wall thickness is recommended. In severe conditions (hot, high humidity areas), $\frac{1}{2}$ " (1.3 cm) insulation may be required. Insulation must be installed in a manner which keeps tubing from damage and contamination.

Where possible, drain as much residual compressor oil from existing systems, lines and traps; pay close attention to low areas where oil may collect.

NOTE: If changing refrigerant types, ensure the indoor coil and metering device are compatible with the type of refrigerant being used; otherwise, the indoor coil must be replaced.

Burying Refrigerant Lines

If burying refrigerant lines cannot be avoided, use the following checklist.

1. Insulate liquid and suction lines separately.
2. Enclose all underground portions of the refrigerant lines in waterproof material (conduit or pipe) sealing the ends where tubing enters/exits the enclosure.
3. If the lines must pass under or through a concrete slab, ensure lines are adequately protected and sealed.

Refrigerant Line Connections

IMPORTANT: To avoid overheating the service valve, TXV valve or filter drier while brazing, wrap the component with a wet rag, or use a thermal heat trap compound. Be sure to follow the manufacturer's instruction when using the heat trap compound.

NOTE: Remove Schrader valves from service valves before brazing tubes to the valves. Use a brazing alloy of 2% minimum silver content. Do not use flux.

Torch heat required to braze tubes of various sizes is proportional to the size of the tube. Tubes of smaller size require less heat to bring the tube to brazing temperature before adding brazing alloy. Applying too much heat to any tube can melt the tube. Service personnel must use the appropriate heat level for the size of the tube being brazed.

NOTE: The use of a heat shield when brazing is recommended to avoid burning the serial plate or the finish on the unit.

1. The ends of the refrigerant lines must be cut square, deburred, cleaned and be round and free from nicks or dents. Any other condition increases the chance of a refrigerant leak.
2. "Sweep" the refrigerant line with nitrogen or inert gas during brazing to prevent the formation of copper-oxide inside the refrigerant lines. The POE oils used in R-410A applications will clean any copper-oxide present from the inside of the refrigerant lines and spread it throughout the system. This may cause a blockage or failure of the metering device.
3. After brazing, quench the joints with water or a wet cloth to prevent overheating of the service valve.
4. Ensure the filter drier paint finish is intact after brazing. If the paint of the steel filter drier has been burned or chipped, repaint or treat with a rust preventative. This is especially important on suction line filter driers which are continually wet when the unit is operating.

NOTES:

- Be careful not to kink or dent refrigerant lines. Kinked or dented lines will cause poor performance or compressor damage.
- Do not make final refrigerant line connection until plugs are removed from refrigerant tubing.
- Before brazing, verify indoor piston size by checking the piston kit chart packaged with indoor unit.

Leak Testing—Nitrogen or Nitrogen-Traced

WARNING

To avoid the risk of fire or explosion, never use oxygen, high pressure air or flammable gases for leak testing of a refrigeration system.

WARNING

To avoid possible explosion, the line from the nitrogen cylinder must include a pressure regulator and a pressure relief valve. The pressure relief valve must be set to open at no more than 150 psig.

Pressure test the system using dry nitrogen and soapy water to locate leaks. If you wish to use a leak detector, charge the system to 10 psi using the appropriate refrigerant, and then use nitrogen to finish charging the system to working pressure. Apply the detector to suspect areas. If leaks are found, repair them. After repair, repeat the pressure test. If no leaks exist, proceed to system evacuation.

System Evacuation

Condensing unit liquid and suction valves are closed to contain the charge within the unit. The unit is shipped with the valve stems closed and caps installed.

NOTE: Do not open valves until the system is evacuated.

WARNING

REFRIGERANT UNDER PRESSURE!

Failure to follow proper procedures may cause property damage, personal injury or death.

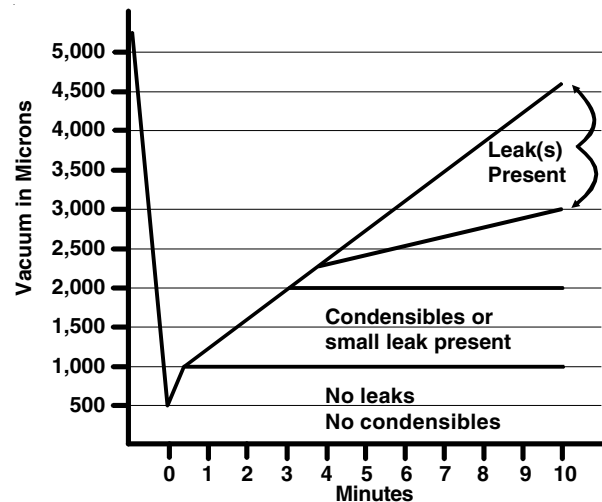
NOTE: Scroll compressors should never be used to evacuate or pump down a heat pump or air conditioning system.

CAUTION

Prolonged operation at suction pressures less than 20 psig for more than 5 seconds will result in overheating of the scrolls and permanent damage to the scroll tips, drive bearings and internal seal.

1. Connect the vacuum pump with 250 micron capability to the service valves.
2. Evacuate the system to 250 microns or less using suction and liquid service valves. Using both valves is necessary as some compressors create a mechanical seal separating the sides of the system.

3. Close pump valve and hold vacuum for 10 minutes. Typically pressure will rise during this period.



- If the pressure rises to 1,000 microns or less and remains steady, the system is considered leak-free; proceed to start-up.
- If pressure rises above 1,000 microns but holds steady below 2,000 microns, moisture and/or noncondensibles may be present or the system may have a small leak. Return to Step 2: If the same result is encountered, check for leaks as previously indicated and repair as necessary, and then repeat evacuation.
- If pressure rises above 2,000 microns, a leak is present. Check for leaks as previously indicated and repair as necessary, and then repeat evacuation.

ELECTRICAL CONNECTIONS

WARNING

HIGH VOLTAGE!

Disconnect ALL power before servicing.

Multiple power sources may be present.

Failure to do so may cause property damage, personal injury or death due to electric shock.

Wiring must conform with NEC or CEC and all local codes. Undersized wires could cause poor equipment performance, equipment damage or fire.



Consult the NEC, CEC, and all local codes to determine the correct wire gauge and length.

Local codes often require a disconnect switch located near the unit; do not install the switch on the unit. Refer to the installation instructions supplied with the indoor furnace/air handler for specific wiring connections and indoor unit configuration. Likewise, consult the instructions packaged with the thermostat for mounting and location information.

Over-current Protection

The following over-current protection devices are approved for use.

- Time-delay fuses
- HACR-type circuit breakers

These devices have sufficient time delay to permit the motor compressor to start and accelerate its load.

High Voltage Connections

Route power supply and ground wires through the high-voltage port and terminate in accordance with the wiring diagram provided inside the control panel cover.

Low Voltage Connections

Condensing unit control wiring requires 24-volt minimum, 25VA service from the indoor transformer. Low voltage wiring for 2-stage units depends on the thermostat used and the number of control wires between the indoor unit and the condensing unit. Route the control wires through the low voltage port and terminate in accordance with the wiring diagram provided inside the control panel cover.

WARNING

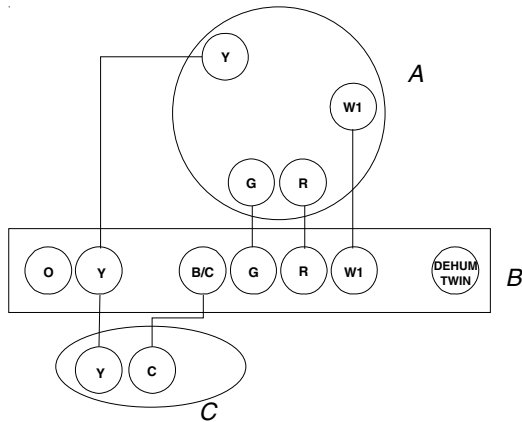
To avoid the risk of fire or equipment damage, use copper conductors.

NOTICE

Units with reciprocating compressors and non-bleed TXV's require a Hard Start Kit.

The unit rating plate lists pertinent electrical data necessary for proper electrical service and over-current protection. Wires should be sized to limit voltage drop to 2% (maximum) from the main breaker or fuse panel to the unit.

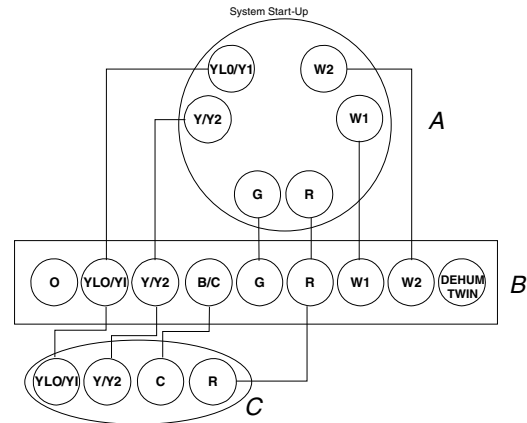
Single-Stage Thermostat with 2 Low Voltage Wires to Remote



A. Thermostat—single-stage heating with single-stage cooling
 B. Furnace or air handler
 C. Remote

NOTE: For 2-stage condensing units, refer to the Installation Instructions supplied with the variable-speed indoor units for field wiring connections.

2-Stage Thermostat with 3 Low Voltage Wires to Remote



A. Thermostat—2-stage heating with 2-stage cooling
 B. Furnace or air handler
 C. OD unit

SYSTEM START-UP

- Power must be supplied to the 18 SEER outdoor units containing ECM motors before the power is applied to the indoor unit. Sending a low-voltage signal without high-voltage power present at the outdoor unit can cause a malfunction of the control module on the ECM motor.
- Adequate refrigerant charge for a matching evaporator and 15 ft (4.6 m) lineset is supplied with the condensing unit. If line set exceeds 15 ft (4.6 m) in length, refrigerant should be added at 0.6 oz per foot of liquid line.

IMPORTANT: Open the suction service valve first. If the liquid service valve is opened first, oil from the compressor may be drawn into the indoor coil TXV, restricting refrigerant flow and affecting operation of the system.

NOTE: These are not back-seating valves. It is not necessary to force the stem tightly against the rolled lip.

After the refrigerant charge has bled into the system, open the liquid service valve. The service valve cap is the secondary seal for the valves and must be properly tightened to prevent leaks. Make sure the cap is clean and apply refrigerant oil to the threads and sealing surface on the inside of the cap. Tighten the cap finger tight, and then tighten an additional 1/8 of a turn (1 wrench flat), or to the following specification, to properly seat the sealing surfaces.

- 3/8" valve to 5 to 10 in.-lbs
- 3/4" valve to 5 to 20 in.-lbs
- 5/8" valve to 5 to 20 in.-lbs
- 7/8" valve to 5 to 20 in.-lbs

NOTE: Do not introduce liquid refrigerant from the cylinder into the crankcase of the compressor as this may damage the compressor.

CAUTION

POSSIBLE REFRIGERANT LEAK

To avoid a possible refrigerant leak, open the service valves until the top of the stem is 1/8" (3.2 mm) from the retainer.

When opening valves with retainers, open each valve only until the top of the stem is 1/8" (3.2 mm) from the retainer.

NOTE: To avoid loss of refrigerant, do not apply pressure to the retainer.

When opening valves without a retainer, remove the service valve cap, and insert a hex wrench into the valve stem. Back out the stem by turning the hex wrench counterclockwise. Open the valve until it contacts the rolled lip of the valve body.

CAUTION

POSSIBLE REFRIGERANT LEAK

To avoid a possible refrigerant leak, open the service valves until the top of the stem is 1/8" (3.2 mm) from the retainer.

- Break the vacuum by fully opening suction and liquid base valves.
- Set thermostat to call for cooling.
- Check indoor and outdoor fan operation and allow system to stabilize for 10 minutes for fixed orifices and 20 minutes for expansion valves.

FINAL CHARGE ADJUSTMENT

The outdoor temperature must be 60°F (16°C) or higher. Set the room thermostat to COOL, the fan switch to AUTO and set the temperature control well below room temperature.

After the system has stabilized according to the start-up instructions, check the subcooling and superheat as detailed in the following section.

WARNING

REFRIGERANT UNDER PRESSURE!

- Do not overcharge system with refrigerant.
- Do not operate unit in a vacuum or at negative pressure.

Failure to follow proper procedures may cause property damage, personal injury or death.

CAUTION

Use refrigerant certified to AHRI standards. Used refrigerant may cause compressor damage, and will void the warranty. Most portable machines cannot clean used refrigerant to meet AHRI standards.

NOTICE

Violation of EPA regulations may result in fines or other penalties.

CAUTION

Operating the compressor with the suction valve closed will void the warranty and cause serious compressor damage.

Fixed Orifice

WARNING

To prevent personal injury, carefully connect and disconnect manifold gauge hoses. Escaping liquid refrigerant can cause burns. Do not vent refrigerant into the atmosphere. Recover all refrigerant during system repair and before final unit disposal.

1. Purge the gauge lines.
2. Connect the service gauge manifold to the base-valve service ports. Run system at least 10 minutes to allow pressure to stabilize.
3. Temporarily install the thermometer on the suction (large) line near the suction line service valve with adequate contact and insulate for best possible reading.
4. Refer to the superheat table provided for proper system superheat. Add charge to lower superheat or recover charge to raise superheat.
5. Disconnect the manifold set; installation is complete.

Superheat = Suction Line Temperature - Saturated Suction Temperature.

Expansion Valve System

Single Speed Application

1. Purge gauge lines.
 2. Connect the service gauge manifold to the base-valve service ports. Run the system at least 10 minutes to allow pressure to stabilize.
 3. Temporarily install the thermometer on the liquid (small) line near the liquid line service valve with adequate contact and insulate for best possible reading.
 4. Check subcooling and superheat. Systems with TXV application should have a subcooling of 7°F ± 2°F and superheat of 7°F to 9 °F.
 - If the subcooling and superheat are low, adjust TXV to 7°F to 9°F superheat. Check subcooling.
NOTE: To adjust the superheat, turn the valve stem clockwise to increase and counterclockwise to decrease.
 - If the subcooling is low and the superheat is high, add charge to raise the subcooling to 7°F ± 2°F. Check superheat.
 - If subcooling and superheat are high, adjust TXV valve to 7°F to 9°F superheat. Check subcooling.
 - If subcooling is high and superheat is low, adjust TXV valve to 7°F to 9°F superheat and remove charge to lower the subcooling to 7°F ± 2°F (1°C).**NOTE:** Do not adjust the charge based on the suction pressure unless there is a gross undercharge.
 5. Disconnect the manifold set. Installation is now complete.
- Subcooling = Saturated Liquid Temperature - Liquid Line Temperature.

2-Stage Application

Run the condensing unit on low-stage cooling for 10 minutes until refrigerant pressures stabilize. Follow the guidelines and methods below to check the unit operation and ensure that the refrigerant charge is within limits. Charge the unit on low stage.

1. Purge the gauge lines.
2. Connect the service gauge manifold to the base-valve service ports.
3. Run the system at least 10 minutes to allow the pressure to stabilize.
4. Temporarily install a thermometer on the liquid (small) line near the liquid line service valve with adequate contact. Insulate the thermometer for the best possible reading.
5. Check the subcooling and superheat. Systems with TXV application should have a subcooling of 5°F to 7°F and superheat of 7°F to 9°F.
 - If the subcooling and superheat are low, adjust TXV to 7°F to 9°F superheat. Check subcooling.
NOTE: To adjust the superheat, turn the valve stem clockwise to increase and counterclockwise to decrease.
 - If the subcooling is low and the superheat is high, add charge to raise the subcooling to 5°F to 7°F. Check superheat.
 - If subcooling and superheat are high, adjust TXV valve to 7°F to 9°F superheat. Check subcooling.

- If subcooling is high and superheat is low, adjust TXV valve to 7°F to 9°F superheat and remove charge to lower the subcooling to 5°F to 7°F.

NOTE: Do not adjust the charge based on the suction pressure unless there is a gross undercharge.

6. Disconnect manifold set, installation is complete.

Subcooling = Saturated Liquid Temperature - Liquid Line Temperature

NOTE: Check the Schrader ports for leaks and tighten valve cores if necessary. Install caps finger tight.

NOTE: Superheat = Suction Line Temperature - Saturated Suction Temperature

System Superheat

Ambient Condenser Inlet Temperature—°F Dry-Bulb	Return Air Temperature—°F 50% RH									
	Dry bulb	Wet bulb	Dry bulb	Wet bulb	Dry bulb	Wet bulb	Dry bulb	Wet bulb	Dry bulb	Wet bulb
	65	54	70	58	75	63	80	67	85	71
115		***		***		***		***		5
100		***		***		***		5		6
95		***		***		5		5*		9
90		***		***		5		10		11
85		***		5		5		12		17
80		5		5		5		18		20
75		5		5		10		20		22
70		5		6		15		24		25
65		5		10		20		25		29
60		8		15		21		28		31

*Charge 5° superheat; all others could be ± 2°F.

Saturated Suction Pressure Temperature

Suction Pressure	Saturated Suction Temperature °F	Suction Pressure	Saturated Suction Temperature °F
PSIG	R-410A	PSIG	R-410A
50	1	78	20
52	3	80	21
54	4	85	24
56	6	90	26
58	7	95	29
60	8	100	31
62	10	110	36
64	11	120	41
66	13	130	45
68	14	140	49
70	15	150	53
72	16	160	56
74	17	170	60
76	19		

NOTE: Subcooling = Saturated Liquid Temperature - Liquid Line Temperature

Saturated Liquid Pressure Temperature

Liquid Pressure	Saturated Liquid Temperature °F	Liquid Pressure	Saturated Liquid Temperature °F
PSIG	R-410A	PSIG	R-410A
200	70	375	112
210	73	405	118
220	76	415	119
225	78	425	121
235	80	435	123
245	83	445	125
255	85	475	130
265	88	500	134
275	90	525	138
285	92	550	142
295	95	575	145
305	97	600	149
325	101	625	152
355	108		

TROUBLESHOOTING

Problem

No Cooling

Cause/Test Method and/or Solution

- | | |
|---|--|
| <ul style="list-style-type: none"> ■ System will not start | <ul style="list-style-type: none"> ■ Power failure. Test voltage. ■ Blown fuse. Inspect fuse size and type. Replace, if needed. ■ Loose connection. Inspect connection. Tighten if needed. ■ Shorted or broken wires. Test circuits with ohmmeter. Replace if needed. ■ Faulty thermostat. Test continuity of thermostat and wiring. Replace, if needed. ■ Faulty transformer. Check control circuit with voltmeter. Replace, if needed. ■ Compressor stuck. Use test cord. ■ Faulty compressor contactor. Test continuity of coil and contacts. Replace, if needed. |
| <ul style="list-style-type: none"> ■ Compressor will not start—fan runs | <ul style="list-style-type: none"> ■ Shorted or broken wires. Test circuits with ohmmeter. Replace if needed. ■ Shorted or open capacitor. Test capacitor. ■ Internal compressor overload open. Test continuity of overload. ■ Shorted or grounded compressor. Test motor windings. ■ Faulty compressor contactor. Test continuity of coil and contacts. Replace, if needed. ■ Low voltage. Test voltage. |
| <ul style="list-style-type: none"> ■ Compressor and condenser fan will not start | <ul style="list-style-type: none"> ■ Blown fuse. Inspect fuse size and type. Replace, if needed. ■ Shorted or broken wires. Test circuits with ohmmeter. Replace if needed. ■ Faulty thermostat. Test continuity of thermostat and wiring. Replace, if needed. ■ Faulty transformer. Check control circuit with voltmeter. Replace, if needed. ■ Faulty compressor contactor. Test continuity of coil and contacts. Replace, if needed. ■ High pressure control open. Reset and test control. |

Problem

No Cooling**Cause/Test Method and/or Solution**

- | | |
|--|--|
| <ul style="list-style-type: none">■ Evaporator fan will not start | <ul style="list-style-type: none">■ Blown fuse. Inspect fuse size and type. Replace, if needed.■ Loose connection. Inspect connection. Tighten if needed.■ Shorted or broken wires. Test circuits with ohmmeter. Replace if needed.■ Open overload. Test continuity of overloads.■ Faulty thermostat. Test continuity of thermostat and wiring. Replace, if needed.■ Shorted or open capacitor. Test capacitor.■ Faulty fan relay. Test continuity of coil and contacts.■ Faulty evaporator fan motor. Repair or replace.■ Shorted or grounded fan motor. Test motor windings. |
| <ul style="list-style-type: none">■ Condenser fan will not start | <ul style="list-style-type: none">■ Loose connection. Inspect connection. Tighten if needed.■ Shorted or broken wires. Test circuits with ohmmeter. Replace if needed.■ Open overload. Test continuity of overloads.■ Shorted or open capacitor. Test capacitor.■ Shorted or grounded fan motor. Test motor windings. |
| <ul style="list-style-type: none">■ Compressor runs—goes off on overload | <ul style="list-style-type: none">■ Loose connection. Inspect connection. Tighten if needed.■ Shorted or broken wires. Test circuits with ohmmeter. Replace if needed.■ Shorted or open capacitor. Test capacitor.■ Shorted or grounded compressor. Test motor windings.■ Compressor stuck. Use test cord.■ Faulty compressor contactor. Test continuity of coil and contacts. Replace, if needed.■ Low voltage. Test voltage.■ Overcharge of refrigerant. Recover part of charge.■ Wrong type of expansion valve. Replace valve.■ Expansion valve restricted. Replace valve.■ Undersized expansion valve. Replace valve.■ Inoperative expansion valve. Check valve operation. Replace if needed. |
| <ul style="list-style-type: none">■ Compressor cycles on overload | <ul style="list-style-type: none">■ Low voltage. Test voltage.■ Shortage of refrigerant. Test for leaks. Add refrigerant.■ Restricted liquid line. Replace restricted part.■ Overcharge of refrigerant. Recover part of charge.■ Noncondensibles. Recover charge. Evacuate and recharge.■ Recirculation of condensing air. Remove obstruction to airflow.■ Wrong type of expansion valve. Replace valve.■ Expansion valve restricted. Replace valve.■ Undersized expansion valve. Replace valve. |

Unsatisfactory Cooling

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| <ul style="list-style-type: none">■ System runs continuously—little cooling | <ul style="list-style-type: none">■ Shortage of refrigerant. Test for leaks. Add refrigerant.■ Restricted liquid line. Replace restricted part.■ Undersized liquid line. Replace line.■ Not enough air across indoor coil. Speed blower. Check duct static pressure.■ Infiltration of outdoor air. Check windows, doors, vent fans, etc.■ System undersized. Refigure cooling load.■ Inefficient compressor. Test compressor efficiency.■ Expansion valve restricted. Replace valve.■ Undersized expansion valve. Replace valve.■ Inoperative expansion valve. Check valve operation. Replace if needed. |
| <ul style="list-style-type: none">■ Too cool and then too warm | <ul style="list-style-type: none">■ Faulty thermostat. Test continuity of thermostat and wiring. Replace, if needed.■ Improper cooling anticipator. Check resistance of anticipator.■ Improperly located thermostat. Relocate thermostat.■ Airflow unbalanced. Readjust air volume dampers. |

Problem

No Cooling**Cause/Test Method and/or Solution**

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| <ul style="list-style-type: none">■ Not cool enough on warm days | <ul style="list-style-type: none">■ Undersized liquid line. Replace line.■ Not enough air across indoor coil. Speed blower. Check duct static pressure.■ Noncondensibles. Recover charge. Evacuate and recharge.■ Recirculation of condensing air. Remove obstruction to airflow.■ Infiltration of outdoor air. Check windows, doors, vent fans, etc.■ System undersized. Refigure cooling load.■ Wrong type of expansion valve. Replace valve.■ Expansion valve restricted. Replace valve.■ Undersized expansion valve. Replace valve. |
| <ul style="list-style-type: none">■ Certain areas too cool, others too warm | <ul style="list-style-type: none">■ Not enough air across indoor coil. Speed blower. Check duct static pressure.■ Infiltration of outdoor air. Check windows, doors, vent fans, etc.■ Airflow unbalanced. Readjust air volume dampers. |
| <ul style="list-style-type: none">■ Compressor is noisy | <ul style="list-style-type: none">■ Overcharge of refrigerant. Recover part of charge.■ Broken internal parts. Replace compressor.■ Broken valves. Test compressor efficiency. Replace if needed.■ Oversized expansion valve. Replace valve.■ Expansion valve bulb loose. Tighten bulb bracket.■ Loose hold-down bolts. Tighten bolts. |
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System Operating Pressures

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| <ul style="list-style-type: none">■ Low suction pressure | <ul style="list-style-type: none">■ Faulty evaporator fan motor. Repair or replace.■ Shortage of refrigerant. Test for leaks. Add refrigerant.■ Restricted liquid line. Replace restricted part.■ Undersized liquid line. Replace line.■ Undersized suction line. Replace line.■ Not enough air across indoor coil. Speed blower. Check duct static pressure.■ Expansion valve restricted. Replace valve.■ Undersized expansion valve. Replace valve.■ Inoperative expansion valve. Check valve operation. Replace if needed. |
| <ul style="list-style-type: none">■ Low head pressure | <ul style="list-style-type: none">■ Shortage of refrigerant. Test for leaks. Add refrigerant.■ Restricted liquid line. Replace restricted part.■ Inefficient compressor. Test compressor efficiency.■ Expansion valve restricted. Replace valve. |
| <ul style="list-style-type: none">■ High suction pressure | <ul style="list-style-type: none">■ Too much air across indoor coil. Reduce blower speed.■ Overcharge of refrigerant. Recover part of charge.■ Inefficient compressor. Test compressor efficiency.■ Oversized expansion valve. Replace valve.■ Expansion valve bulb loose. Tighten bulb bracket. |
| <ul style="list-style-type: none">■ High head pressure | <ul style="list-style-type: none">■ Shorted or grounded fan motor. Test motor windings.■ Overcharge of refrigerant. Recover part of charge.■ Noncondensibles. Recover charge. Evacuate and recharge.■ Recirculation of condensing air. Remove obstruction to airflow. |
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<i>NOTICE</i>

Units with reciprocating compressors and non-bleed TXV's require a Hard Start Kit.

ASSISTANCE OR SERVICE

If you need further assistance, you can write to the below address with any questions or concerns:

Tradewinds Distributing Company, LLC.
14610 Breakers Drive
Jacksonville, FL 32258

Please include a daytime phone number in your correspondence.

Or call toll free: 1-866-944-7575.