



# CONDENSING UNIT INSTALLATION INSTRUCTIONS

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## CONDENSING UNIT SAFETY

### Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.



This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

**! DANGER**

You can be killed or seriously injured if you don't immediately follow instructions.

**! WARNING**

You can be killed or seriously injured if you don't follow instructions.

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

# INSTALLATION REQUIREMENTS

These instructions are intended as a general guide only and do not supersede any national or local codes in any way. The installation must comply with all state, and local codes as well as the National Electrical Code.

- The condensing unit is designed and approved for outdoor use only.
- The condensing unit must be installed with no duct work in the airstream. The outdoor fan is not designed to operate against any additional static pressure.

## Tools and Parts

Assemble the required tools before starting installation. Read and follow the instructions provided with any tools listed here.

### Tools Needed:

- Torch
- ¼ in. Nut driver

### Parts Needed:

Check local codes and HVAC supplier. Check existing electrical supply, and read “Electrical Requirements,” “Location Requirements,” “System Requirements” and “Connect Refrigerant Lines.”

**NOTE:** Some condensing units do not contain a factory-installed filter dryer. With those units, a properly sized filter dryer must be field installed in the liquid (high pressure) line set between the outdoor condensing unit and indoor evaporator unit.

## System Requirements

Condensing unit system matches are derived from actual laboratory testing of matched systems. It is recommended that only matching equipment be used to ensure proper operation and efficient performance.

- The designed system matches are listed in the condensing unit specification sheets and on the condensing unit refrigerant charging instructions located on the back of the service access panel.
- Refrigerant charging instructions include a list of matching indoor equipment with the proper orifice size and amount of refrigerant charge required.
- This condensing unit has been factory charged with a quantity of refrigerant (R22) sufficient for a matched indoor coil and a maximum 20 ft of refrigerant line.

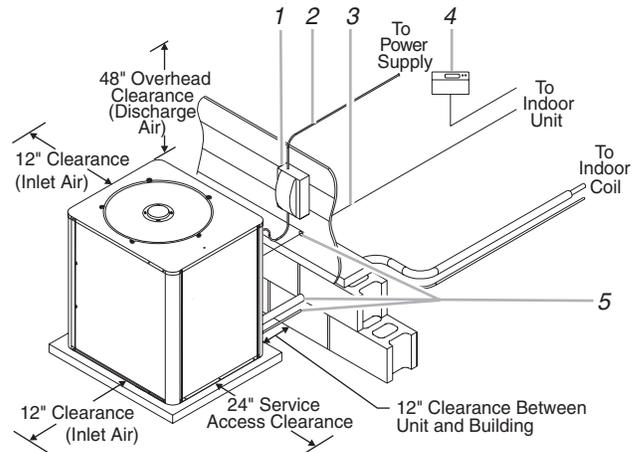
### Indoor System Orifice

- Check the indoor coil orifice to see whether it matches the required orifice for the indoor coil and condensing unit being installed.
- Refer to the refrigerant charge label located on the inside of the condensing unit access panel for the correct orifice size required.
- Replace the orifice with the correct size if this size is not already installed in the indoor coil. Instructions for replacing the orifice are provided with the indoor coil.

## Location Requirements

- This condensing unit is designed to be located outdoors with sufficient clearance for free entrance to the inlet and discharge air openings. The location must also allow for adequate service access. See “Minimum Clearances.”
- Where possible, select a location for the condensing unit which is shaded from the direct rays of the sun most of the time. North or east locations are usually most desirable. Position the condensing unit to avoid direct contact with water, snow or ice from a roof line overhead.
- The condensing unit must be installed on a solid, level mounting pad that will not settle or shift. Isolate the pad from the building structure to avoid possible transmission of sound or vibration from the condensing unit into the conditioned space.
- The condensing unit foundation should be raised to a minimum of 3 in. above finish grade. In areas which have prolonged periods of temperatures below freezing, and/or snowfall, the condensing unit should be elevated above the average snow line.
- Avoid placing the condensing unit near areas such as sleeping quarters or study rooms. Normal operating sound levels may be objectionable if the condensing unit is placed near certain rooms.

### Minimum Clearances



1. Weatherproof disconnect switch
2. NEC class 1 wiring
3. NEC class 2 wiring
4. House thermostat
5. Seal openings

## Electrical Requirements

### **WARNING**



#### Electrical Shock Hazard

Electrically ground condensing unit.  
Connect ground wire to green pigtail lead.  
Use copper wire for supply connection.  
Correct wire gauge is shown in the chart below.  
Failure to follow these instructions can result in death or electrical shock.

Rating Plate Ampacity	AWG
Less than 15	14
16 - 20	12
21 - 30	10
31 - 50	8

**NOTE:** All outdoor wiring must be suitable for outdoor use. Use copper conductors only.

- All field wiring must be done in accordance with National Electrical Code requirements, applicable requirements of UL, or local codes, where applicable.
- Electrical wiring, disconnect means and over current protection are to be supplied by the installer. Refer to the rating plate for the maximum over current protection, minimum circuit ampacity, and operating voltage. See wiring diagram.

# INSTALLATION INSTRUCTIONS

## Inspect Shipment

### **WARNING**

#### Excessive Weight Hazard

Use two or more people to move and install condensing unit/heat pump.  
Failure to do so can result in back or other injury.

This condensing unit is shipped in one package, completely assembled and wired. The thermostat is shipped in a separate carton when ordered.

1. Check the condensing unit rating plate to confirm specifications are as ordered.
2. Upon receipt of equipment, carefully inspect it for possible shipping damage. Take special care to examine the unit inside the carton if the carton is damaged.

If damage is found, it should be noted on the carrier's freight bill. Damage claims should be filed with the carrier immediately. Claims of shortages should be filed with the seller within 5 days.

**NOTE:** If any damages are discovered and reported to the carrier, do not install the unit as your claim may be denied.

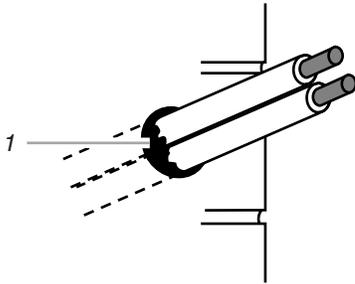
## Connect Refrigerant Lines

Refrigerant lines must be connected by a licensed, EPA certified refrigerant technician in accordance with established procedures.

### **IMPORTANT:**

- Connecting refrigerant lines must be clean, dehydrated, refrigerant-grade copper lines. Condensing units should be installed only with specified line sizes for approved system combinations with elevation differences up to 20 ft and total length of up to 100 ft. See the Suction Line Sizes and Liquid Line Sizes charts.
  - Use care with the refrigerant lines during the installation process. Sharp bends or possible kinking in the lines will cause a reduction in performance.
  - Do not remove the caps from the lines or system connection points until connections are ready to be completed.
1. Route the suction and liquid lines from the fittings on the indoor coil to the fittings on the condensing unit. Run the lines in as direct a path as possible avoiding unnecessary turns and bends.
  2. Ensure that the suction line is insulated over the entire exposed length and that both suction and liquid lines are not in direct contact with floors, walls, duct work, floor joists, or other piping.
  3. Remove valve cores.
  4. Wrap the service valves with a wet rag.
  5. If not provided, install a filter dryer in the liquid line between the outdoor condensing unit and the indoor evaporator coil.

6. Connect the suction and liquid lines, using a brazing compound. Braze with an alloy of silver or copper and phosphorus with a melting point above 1,100° F.  
**NOTE:** Do not use soft solder.
7. Make sure indoor coil has been put in place according to the Installation Instructions and is connected to the refrigerant lines.
8. Replace valve cores.
9. Pressurize the lines and indoor coil with dry nitrogen not to exceed 20 psi.
10. Leak test the refrigerant lines and indoor coil.
11. Evacuate the indoor coil and lines to a minimum of 500 microns to remove contamination and moisture, then disconnect the vacuum pump.
12. Open the suction and liquid service valves fully.
13. Insulate the suction line with refrigerant line insulation material of ¼ in. or more wall thickness.
14. Pack insulating material around refrigerant lines where they penetrate the structure to protect the lines and to minimize vibration transmission.



1. Seal openings where refrigerant lines penetrate structure.

## Refrigerant Charge

Refrigerant lines must be connected by a licensed, EPA certified refrigerant technician in accordance with established procedures.

### IMPORTANT:

- Refrigerant charge adjustment will be required for line set lengths greater than 20 ft. and for non system matched evaporator coils.
- The condensing unit is factory charged with the proper refrigerant charge amount for a matching evaporator and 20 ft of refrigerant line. Refer to the condensing unit rating plate for the exact amount of this factory charge.
- Adjustment of the refrigerant charge will be necessary based on the system combination and line length. To adjust the refrigerant size for increased line lengths add the following amount of refrigerant.

#### For line set lengths greater than 20 ft:

1. Add refrigerant by weighing in 0.60 oz. per foot of ¾ in. O.D. liquid line.
  2. Add refrigerant by weighing in 1.2 oz. per foot of ½ in. O.D. liquid line.
- If necessary, adjust the refrigerant charge for compatibility with the evaporator coil.
  - In condensing unit systems, horizontal suction lines should be slightly sloped toward the condensing unit. Piping must avoid dips or low spots which can collect oil.

## Suction Line Sizes

Installations exceeding 100 ft are not recommended.

BTU/HR	Line Set Size (in. OD)				
	5/8*	3/4	3/4	3/4	3/4
18,000	5/8*	3/4	3/4	3/4	3/4
24,000	5/8*	3/4	3/4	3/4	7/8
30,000	3/4	3/4	3/4	7/8	7/8
36,000	7/8	7/8	7/8	7/8	1 ½
42,000	3/4**	7/8	7/8	1 ½	1 ½
48,000	3/4**	7/8	7/8	1 ½	1 ½
60,000	7/8	7/8	7/8	1 ½	1 ½
Line Set Length	Less than 25 ft	25 ft	Over 25 ft and up to 50 ft	Over 50 ft and up to 75 ft	Over 75 ft and up to 100 ft

**NOTE:** Tubing size reducers may be required to adapt line set size to suction and liquid lines.

\* Requires a 3/4 in to 5/8 in reducer from unit to line set

\*\* Requires a 7/8 in to 3/4 in reducer from unit to line set

## Liquid Line Sizes

Installations exceeding 100 ft are not recommended.

BTU/HR	Line Set Size (in. OD)				
	3/8	3/8	3/8	3/8	3/8
18,000	3/8	3/8	3/8	3/8	3/8
24,000	3/8	3/8	3/8	3/8	3/8
30,000	3/8	3/8	3/8	3/8	1/2
36,000	3/8	3/8	3/8	3/8	1/2
42,000	3/8	3/8	3/8	1/2	1/2
48,000	3/8	3/8	3/8	1/2	1/2
60,000	3/8	3/8	3/8	1/2	1/2
Line Set Length	Less than 25 ft	25 ft	Over 25 ft and up to 50 ft	Over 50 ft and up to 75 ft	Over 75 ft and up to 100 ft

# Make Electrical Connections

## IMPORTANT:

- Electrical wiring, disconnect means and over current protection are to be supplied by the installer. Refer to the rating plate for the maximum over current protection, minimum circuit ampacity, and operating voltage. See wiring diagram.
- Install an adequately sized branch circuit disconnect, per the NEC, within sight of and readily accessible from the condensing unit.
- The cable or conduit and fittings connected from the disconnect to the condensing unit shall be rated for outdoor use.
- Check the condensing unit rating plate to determine if the system is rated single phase or 3 phase and follow the appropriate instructions below.

**⚠ WARNING**



**Electrical Shock Hazard**

**Electrically ground condensing unit.**

**Connect ground wire to green pigtail lead.**

**Use copper wire for supply connection.**

**Correct wire gauge is shown in the chart below.**

**Failure to follow these instructions can result in death or electrical shock.**

Rating Plate Ampacity	AWG
Less than 15	14
16 - 20	12
21 - 30	10
31 - 50	8

## Single Phase Electrical Connections (Refer to "Wiring Diagram - Single Phase 208/230 Volt")

**⚠ WARNING**



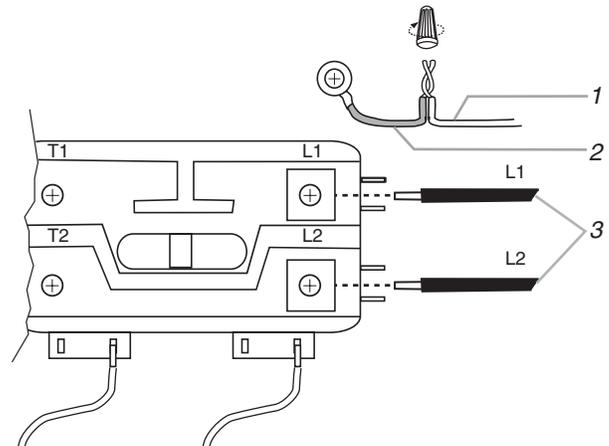
**Electrical Shock Hazard**

**Disconnect power before servicing.**

**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

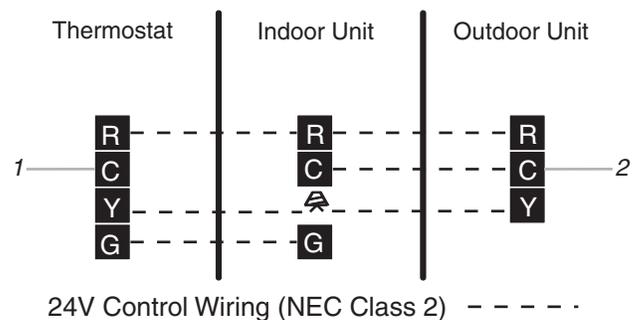
1. Disconnect power.
2. Remove control box cover.
3. Connect the field supply wires L1 and L2 to contactor terminals L1 and L2.
4. Using a U.L. listed wiring nut, connect ground wire to green pigtail lead.



1. Field supply ground wire
2. Green pigtail lead
3. 208/230 Volt field supply wires

5. Connect low voltage circuit.

### Typical Wiring Connection (low voltage circuit)



1. Do not connect C (common) connection between indoor unit and thermostat except when required by the indoor thermostat. Refer to the thermostat installation instructions.
2. C (common) connection between indoor unit and outdoor unit required for proper operation.

6. Replace control box cover.
7. Reconnect power.

**Three Phase Electrical Connections**  
**(Refer to “Wiring Diagram - Three Phase 208/230 Volt”)**

**⚠ WARNING**



**Electrical Shock Hazard**

**Disconnect power before servicing.**

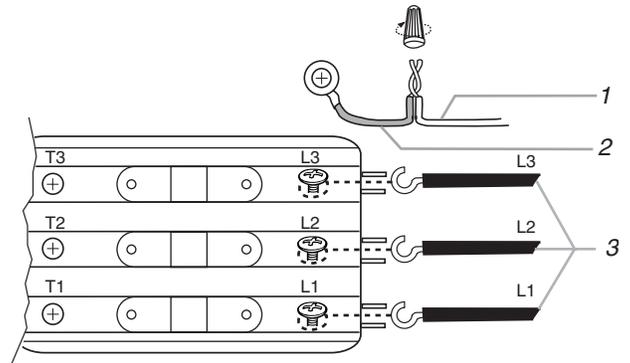
**Replace all parts and panels before operating.**

**Failure to do so can result in death or electrical shock.**

**IMPORTANT:** If three phase connections are reversed, the compressor will run backwards and go out on the overload protector. If this occurs, reverse any 2 of the field supply leads at the contactor.

1. Disconnect power.
2. Remove control box cover.
3. Connect the field supply wires L1, L2 and L3 to contactor terminals L1, L2 and L3.

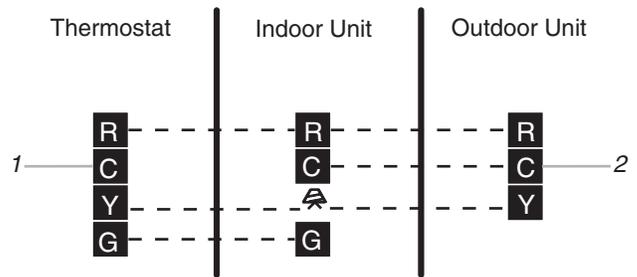
4. Using a U.L. listed wiring nut, connect ground wire to green pigtail lead.



1. Field supply ground wire
2. Green pigtail lead
3. 208/230 Volt field supply wires

5. Connect low voltage circuit.

**Typical Wiring Connection (low voltage circuit)**

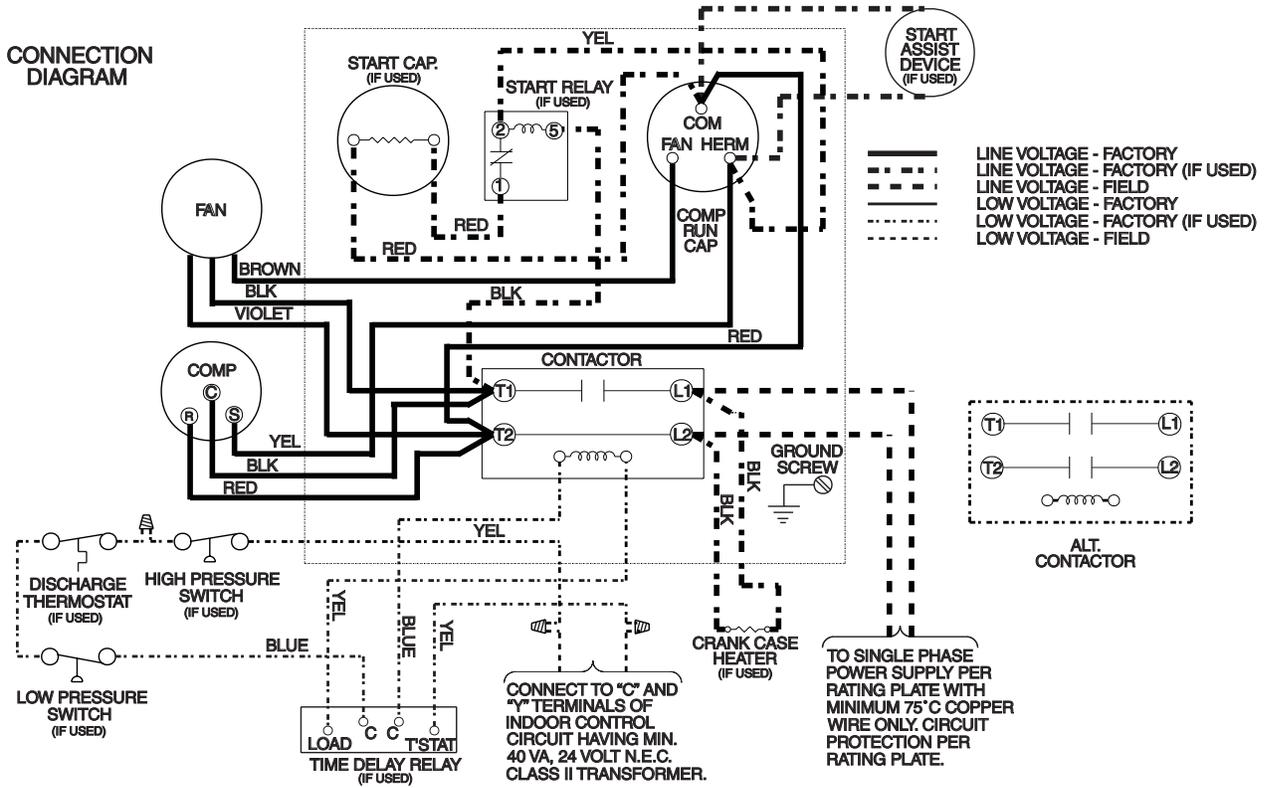


24V Control Wiring (NEC Class 2) - - - - -

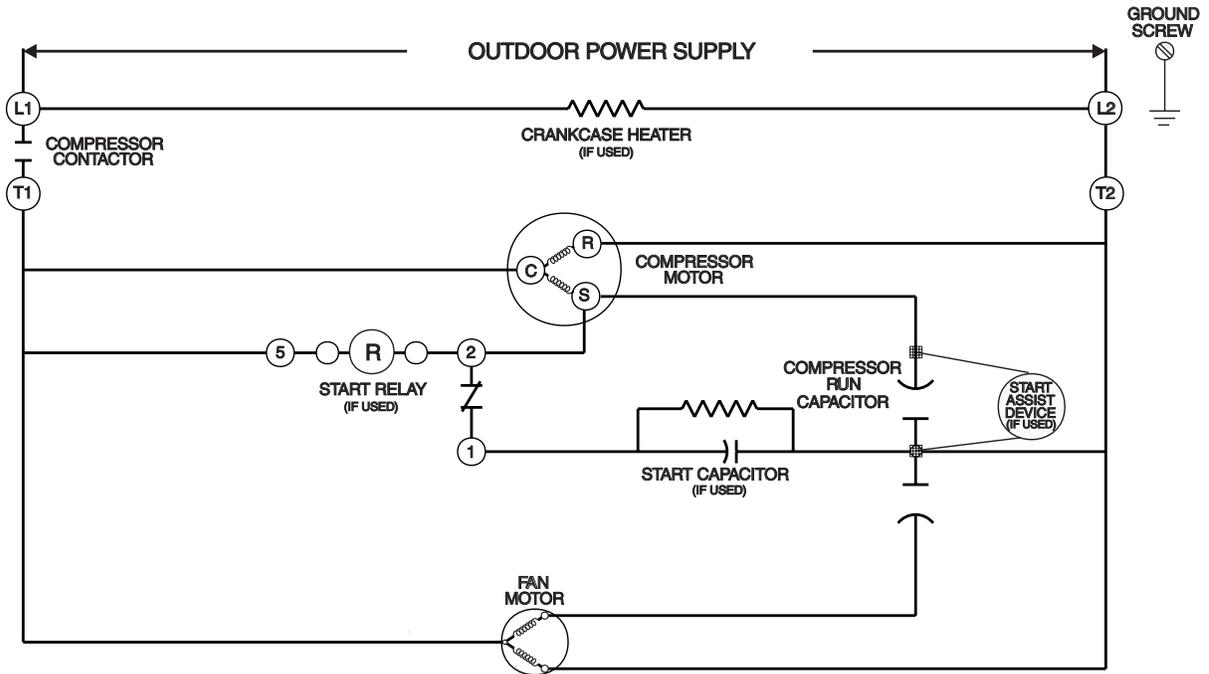
1. Do not connect C (common) connection between indoor unit and thermostat except when required by the indoor thermostat. Refer to the thermostat installation instructions.
2. C (common) connection between indoor unit and outdoor unit required for proper operation.

6. Replace control box cover.
7. Reconnect power.

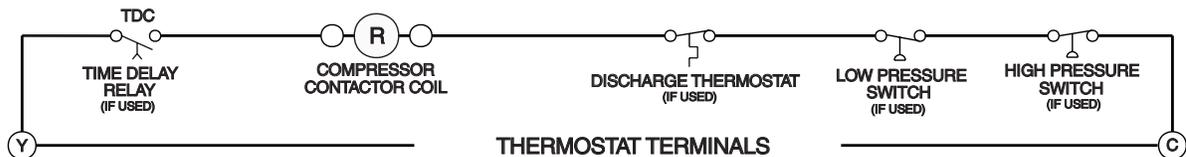
# Wiring Connection Diagram - Single Phase 208/230 Volt



## SCHEMATIC OF POWER CIRCUIT

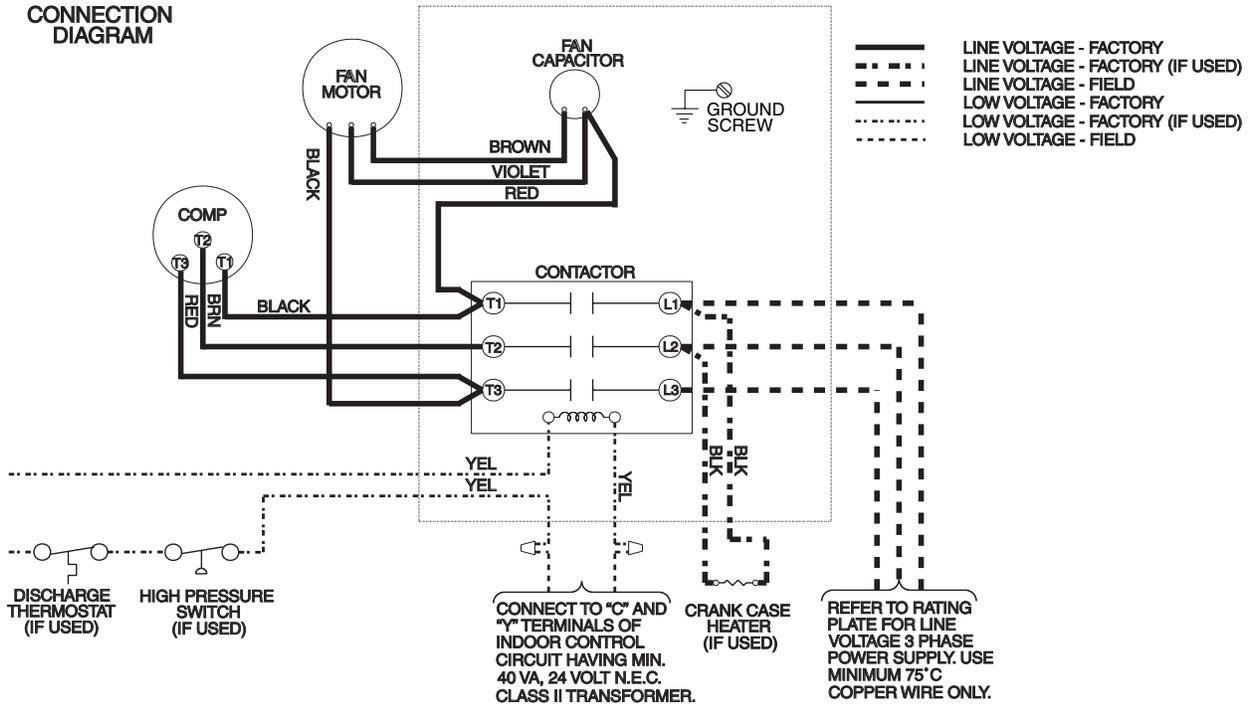


## TYPICAL SCHEMATIC OF CONTROL CIRCUIT

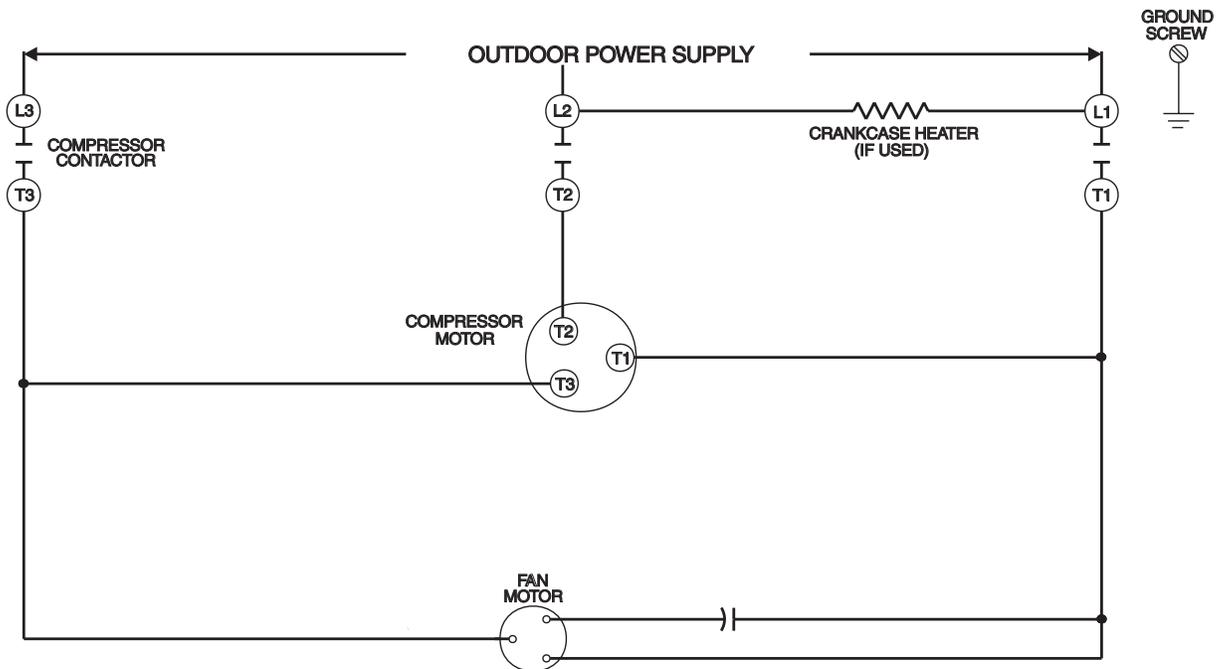


# Wiring Connection Diagram - Three Phase 208/230 Volt

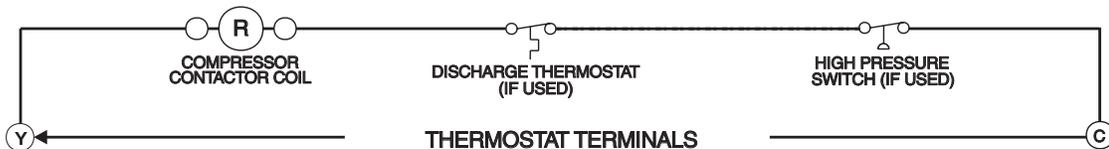
## CONNECTION DIAGRAM



## SCHEMATIC OF POWER CIRCUIT



## TYPICAL SCHEMATIC OF CONTROL CIRCUIT



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## Complete Installation

1. Operate the condensing unit for a period of at least 15 minutes to allow for pressures and temperatures to stabilize.
2. If condensing unit does not appear to be functioning correctly, have condensing unit checked by a person certified by the EPA to handle refrigerant.

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## Sequence of Operation

Upon cooling demand, the thermostat closes circuit R to Y. Closing R to Y energizes the condenser for cooling operation and closes the unit contactor, starting the compressor and outdoor fan. The thermostat automatically closes R to G circuit which also brings on the indoor fan at the same time. Upon satisfying cooling demand, the thermostat will open the above circuits and open the main contactor, stopping the compressor and outdoor fan. If the indoor unit is equipped with a delay timer, the blower will continue to operate for 60 - 90 seconds which improves system efficiency.

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## SYSTEM MAINTENANCE

- Leaves and other large obstructions should be carefully removed from the condensing unit surfaces without damaging the fin surface of the coil.
- Routinely clean or change the indoor air filter. Should the indoor coil become dirty, thus restricting airflow, call a qualified service person to carefully clean the coil surface.
- An annual inspection by a qualified person should be performed to ensure continued high-quality performance.

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## ASSISTANCE OR SERVICE

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

Whirlpool® Home Cooling and Heating  
7901 S.W. 6th Court  
Plantation, Florida 33324

Please include a daytime phone number in your correspondence.

## Limited Warranty

September 2002

*This warranty gives you specific legal rights and you may have other rights which vary from state/province to state/province. This warranty applies to U.S. and Canada only.*

**Warrantor: Allied Air Enterprises Inc., 355 Millennium Dr., Orangeburg, SC 29115**

Products are available under the following brand names: Whirlpool, Whirlpool Gold

**IF SOMETHING GOES WRONG, CONTACT THE WHIRLPOOL HOME COOLING & HEATING DEALER FROM WHOM YOU PURCHASED YOUR EQUIPMENT. IN MOST CASES, YOUR DEALER WILL BE ABLE TO CORRECT THE PROBLEM, BUT IF HE/SHE IS NOT ABLE TO DO SO, YOU SHOULD CONTACT TRADEWINDS DISTRIBUTING DIRECTLY IN WRITING AT THE FOLLOWING ADDRESS:**

**Whirlpool® Home Cooling and Heating  
7901 S.W. 6th Court  
Plantation, Florida 33324**

### General Warranty

Subject to the limitations stated in this warranty, we warrant the covered equipment for residential use, when installed, operated and maintained according to the manufacturer's instructions, to be free of defects in workmanship or materials for a period of 5 years (1 year for commercial use) from the time of initial installation. We will replace any defective component without cost or expense to you except for the costs of diagnosis, delivery and labor for removing, servicing and/or replacing the parts or unit.

**WC1 series air conditioners carry a 5-year compressor warranty. WC2 series air conditioners carry a 10-year compressor warranty. WGC 3-phase air conditioners carry a 5-year compressor warranty. All other WGC series air conditioners carry a 10-year compressor warranty.**

### Warranty Begins

The warranty period begins when the installation is complete and the product is ready to operate. You must be able to verify this date whenever a warranty claim is made. Original bill of sale, installer's invoice or other similar document will suffice. If the beginning date cannot be verified, we will consider warranty coverage to begin 6 months after the date the product was shipped from our factory.

### Limitations on Implied Warranties

**Implied warranties of merchantability or, to the extent applicable, fitness for a particular purpose are excluded to the extent legally permissible and are in any event limited to 5 years, or the shortest period allowed by law. Some states/provinces do not allow limitations or exclusions on how long an implied warranty of merchantability or fitness lasts, so the above limitations or exclusions may not apply to you.**

### Only Warranty

**This written Limited Warranty is the only warranty made by the warrantor; this warranty is in lieu of and excludes all other warranties by the warrantor, express or implied. The warrantor does not authorize any person to provide on it's behalf any other warranty or to assume for it any further obligation in connection with the warranted product.**

### What is NOT Covered by Any Warranty

1. Cabinets or cabinet pieces.
2. Normal maintenance items such as filters, fan belts, fuses or other consumable items.
3. Damage caused by misuse, failure to maintain properly, accidents or acts of God.
4. External wiring, piping, venting or attachment of accessory products not integral to our product, including without limitation, humidifier, air cleaner, vent damper, thermostat or other mechanical devices not manufactured by the warrantor.
5. Products that have been operated in a corrosive atmosphere or otherwise in contact with corrosive materials where a concentration of acids, halogenated hydrocarbons or other corrosive elements such as urine, salt, etc. causes deterioration to metal surfaces or integral components. NOTE: Operation in a corrosive atmosphere is considered misuse and voids this warranty.
6. Products that have NOT been installed, used and maintained in accordance with our published installation instructions, applicable local, state/provincial or national codes, and/or ACCA published standards.
7. Products that have NOT been installed by competent, qualified installers.
8. Products that have been moved from their original place of installation.

### Warranty on Replacement Components

Any replacement product or component furnished by us will assume the remaining (unused) portion of the Limited Warranty.

### Consequential Damages

The warrantor shall not be responsible for any accidental consequential damages caused by any defect in the product. Some state/provinces do not allow the exclusion or limitations of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This product must be installed, used and cared for in accordance with the instruction manual. You are responsible for required periodic maintenance or service, such as changing or cleaning of air filters and lubrication or cleaning of components. **Failure to properly install, operate or maintain your unit voids this warranty.**

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**Keep this book and your sales slip together for future reference. You must provide proof of purchase or installation date for in-warranty service.**

Write down the following information about your Split System Condensing Unit to better help you obtain assistance or service if you ever need it.

**Dealer name** \_\_\_\_\_

**Address** \_\_\_\_\_

**Phone number** \_\_\_\_\_

**Model number** \_\_\_\_\_

**Serial number** \_\_\_\_\_

**Installation date** \_\_\_\_\_

