

Installation and Start-Up Instructions

NOTE: Read the entire instruction manual before starting the installation.

SAFETY CONSIDERATION

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions attached to the unit. Consult local building codes and the National Electrical Code (NEC) for special installation requirements.

Recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit or in instructions and manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **would** result in minor personal injury or product and property damage.

WARNING

Before installing or servicing system, always turn off main power to system. There may be more than 1 disconnect switch. Turn off accessory heater power if applicable. Electrical shock can cause personal injury or death.

INSTALLATION

Step 1—Check Equipment and Jobsite

UNPACK UNIT — Move to final location. Remove carton taking care not to damage unit.

INSPECT EQUIPMENT — File claim with shipping company, prior to installation, if shipment is damaged or incomplete. Locate unit rating plate on unit corner panel. It contains information needed to properly install unit. Check rating plate to be sure unit matches job specifications.

Step 2—Install on a Solid, Level Mounting Pad

If conditions or local codes require the unit be attached to pad, tie-down bolts should be used and fastened through knockouts provided in unit base pan. Refer to unit mounting pattern in Fig. 2 to determine base pan size and knockout hole location.

When installing, allow sufficient space for airflow clearance, wiring, refrigerant piping and service. Allow 30-in. clearance to service end of unit and 48 in. above unit. For proper airflow, a 6-in.

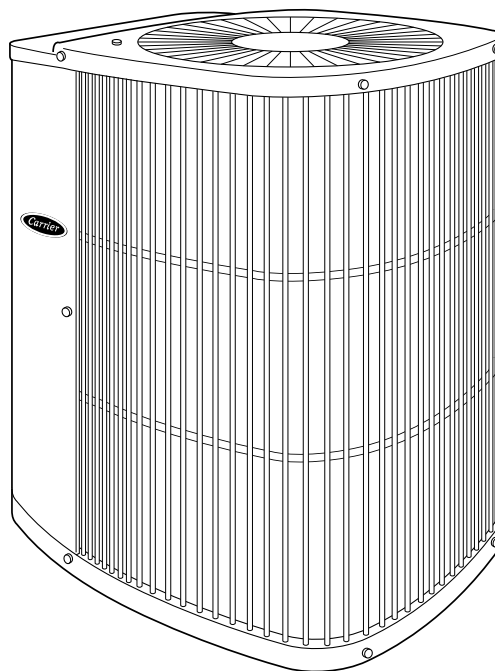


Fig. 1—Model 38TKW

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clearance on 1 side of unit and 12 in. on all remaining sides must be maintained. Maintain a distance of 24 in. between air conditioners. Position so snow or ice from roof or eaves cannot fall directly on unit.

On rooftop applications, locate unit at least 6 in. above roof surface. Where possible, place unit above a load-bearing wall.

Arrange supporting members to adequately support unit and minimize transmission of vibration to building. Consult local codes governing rooftop applications.

CAUTION

DO NOT BURY MORE THAN 36 IN. OF REFRIGERANT TUBING IN GROUND. If any section of tubing is buried, there must be a 6-in. vertical rise to the valve connections on the outdoor unit. If more than the recommended length is buried, refrigerant may migrate to cooler buried section during extended periods of unit shutdown, causing refrigerant slugging and possible compressor damage at start-up.

Step 3—Replace Indoor AccuRater® Piston (if required)

Check indoor coil piston to see if it matches the required piston shown on unit rating plate. If it does not match, replace indoor coil piston with piston shipped with this unit. The piston shipped with outdoor unit is correct for any approved indoor coil combination.

Step 4—Make Piping Connections

Outdoor units may be connected to indoor sections using accessory tubing package or field-supplied refrigerant grade tubing of correct

size and condition. For tubing requirements beyond 50 ft, consult Long-Line Application Guideline which is available at your local distributor.

NOTE: In some cases noise in the living area has been traced to gas pulsations from improper installation of equipment.

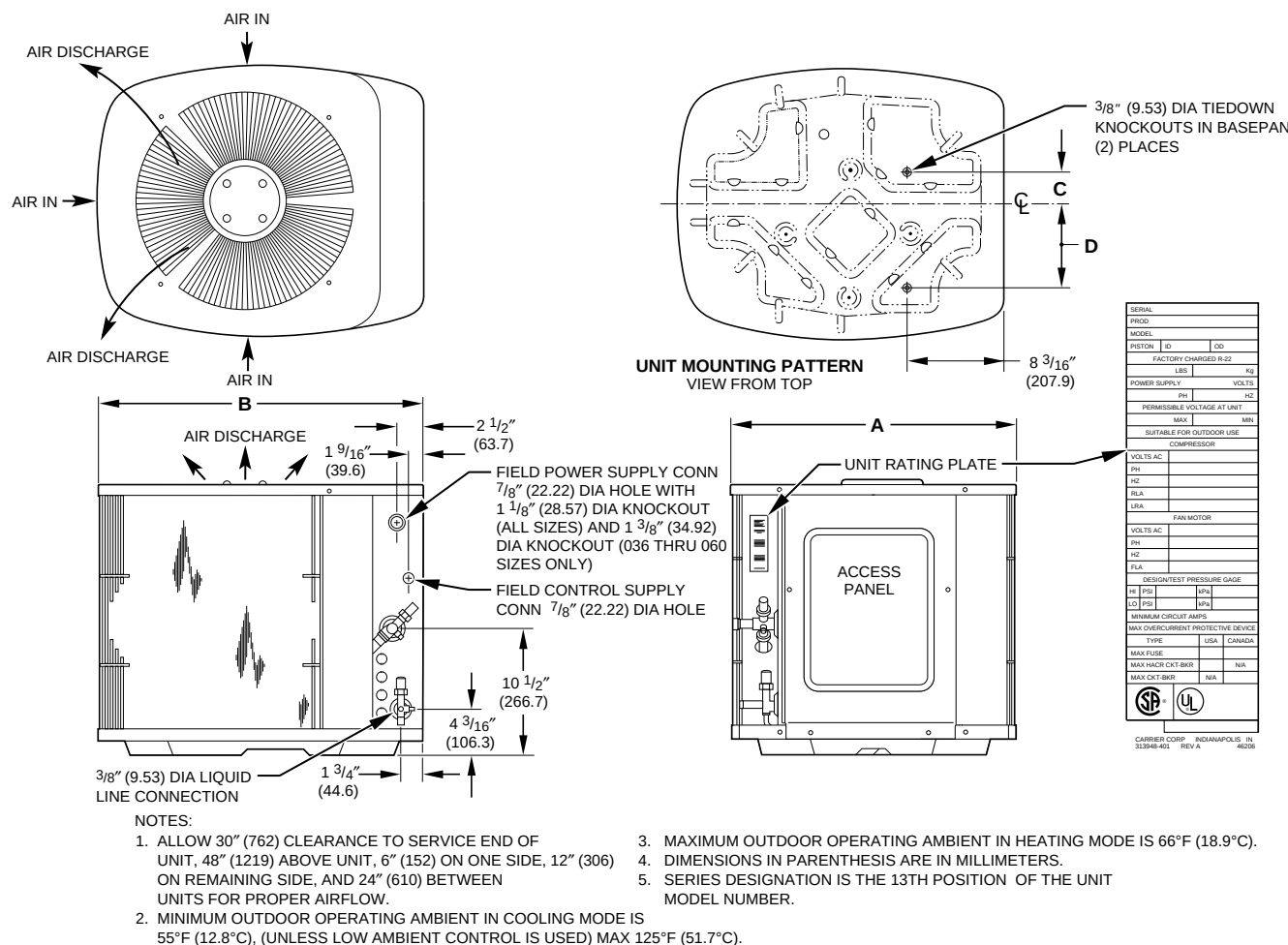
INSTALLATION RECOMMENDATIONS

1. Locate the unit away from windows.
2. Ensure that vapor and liquid line diameters are appropriate to the capacity of the unit. (See Table 1.)
3. Run refrigerant tubes as directly as possible by avoiding unnecessary turns and bends.
4. Leave some slack between the structure and the unit to absorb vibration.
5. When passing refrigerant tubes through the wall, seal the opening with RTV or other pliable silicon-based caulk. (See Fig. 3.)
6. Avoid direct lineset contact with water pipes, ductwork, floor joists, wall studs, floors, and walls.

7. Do not suspend refrigerant tubing from joists and studs with a rigid wire or strap which comes in direct contact with the tubing. (See Fig. 3.)
8. Ensure that tubing insulation is pliable and it completely surrounds the vapor line.
9. When necessary, use hanger straps which are 1 in. wide and conform to the shape of the tubing insulation. (See Fig. 3.)
10. Isolate the hanger straps from the insulation by using metal sleeves bent to conform to the shape of the insulation.

If refrigerant tubes or indoor coil is exposed to atmospheric conditions for longer than 5 minutes, it must be evacuated to 500 microns to eliminate contamination and moisture in the system.

OUTDOOR UNITS CONNECTED TO FACTORY-APPROVED INDOOR UNITS — Outdoor unit contains correct system refrigerant charge for operation with indoor unit of the same size when connected by 15 ft of field-supplied or factory accessory tubing. Check refrigerant charge for maximum efficiency. For tubing lengths longer than 15 ft weigh in 0.6 oz of refrigerant for each additional ft. (See Step 9 — Checking Charge.)



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MODEL 38TKW	A	B	C	D
	In.	In.	In.	In.
018, 024, 030, 036	22-1/2	27-1/2	2-13/16	6-15/16
038, 042, 048, 060	30	34-5/16	4	9-3/4

Fig. 2—Dimensional Drawing

Table 1—Refrigerant Connections and Recommended Liquid- and Vapor-Tube Diameters (In.)

UNIT SIZE	LIQUID		VAPOR	
	Connect Diameter	Tube Diameter	Connect Diameter	Tube Diameter
018,024	3/8	3/8	5/8	5/8
030,036	3/8	3/8	3/4	3/4
038,042,048	3/8	3/8	7/8	7/8
060	3/8	3/8	7/8	1-1/8

Note: Tube diameters are for lengths up to 50 ft. For tubing lengths greater than 50 ft, consult Long-Line Application Guideline available from distributor.

Use only 3/8-in. diameter liquid tube on cap-tube indoor coil systems.

REFRIGERANT TUBING — Connect tubing to fittings on outdoor unit vapor- and liquid-service valves. (See Fig. 2.)

⚠ CAUTION

A brazing shield **MUST** be used when tubing sets are being brazed to the service valves to prevent damage to the painted unit surface.

⚠ CAUTION

To avoid valve damage while brazing, service valves must be wrapped with a heat-sinking material such as a wet cloth.

SWEAT CONNECTION — Use refrigerant grade tubing. Service valves are closed from factory and ready for brazing. After wrapping the service valve with a wet cloth, the tubing set can be brazed to the service valve using either silver bearing or non-silver bearing brazing material. Consult local code requirements. Refrigerant tubing and indoor coil are now ready for leak testing. This check should include all field and factory joints.

Step 5—Make Electrical Connections

Be sure field wiring complies with local and national fire, safety and electrical codes, and voltage to system is within limits shown on unit rating plate. Contact local power company for correction of improper voltage. See unit rating plate for recommended circuit protection device. (See Fig. 2.)

NOTE: Operation of unit on improper line voltage constitutes abuse and could affect unit reliability. See unit rating plate. Do not install unit in system where voltage or phase imbalance (3 phase) may fluctuate above or below permissible limits.

NOTE: Use copper wire only between disconnect switch and unit.

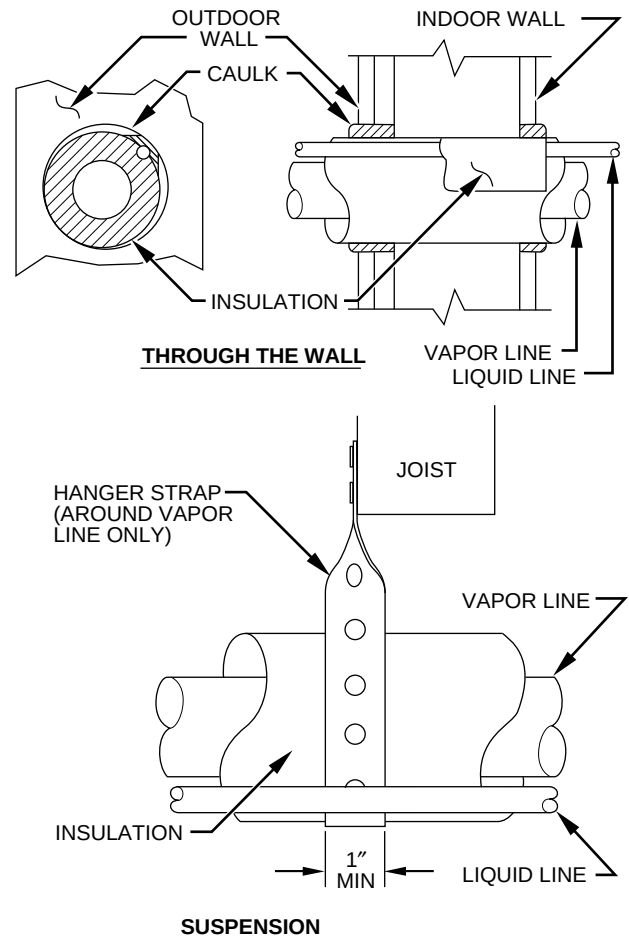
NOTE: Install branch circuit disconnect per NEC of adequate size to handle unit starting current, but not larger than maximum fuse size shown on unit rating plate. Locate disconnect within sight from and readily accessible from unit, per Section 440-14 of NEC.

⚠ WARNING

According to NEC, ANSI/NFPA 70 and local codes, the cabinet must have uninterrupted or unbroken ground, to minimize personal injury if an electrical fault should occur. The ground may consist of electrical wire or metal conduit when installed in accordance with existing electrical codes. Failure to follow this warning could result in electrical shock, fire, or death.

ROUTE GROUND AND POWER WIRES — Remove access panel and control box cover to gain access to unit wiring. Extend wires from disconnect through power wiring hole provided and into unit control box. (See Fig. 2.) Size wires per NEC but not smaller than minimum wire size shown in presale literature.

NOTE:
AVOID CONTACT BETWEEN TUBING AND STRUCTURE

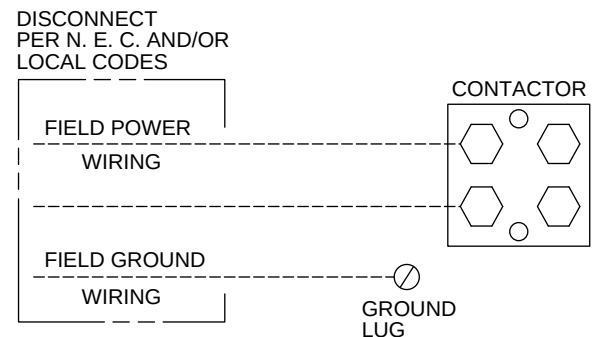


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Fig. 3—Piping Installation

CONNECT GROUND AND POWER WIRES — Connect ground wire to ground connection in control box for safety. Connect power wiring to contactor as shown in Fig. 4.

CONNECT CONTROL WIRING — Route 24-v control wires through control wiring grommet and connect to brown and blue pigtailed supplied in unit splice box. (See Fig. 5.)



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Fig. 4—Line Power Connections

Use No. 18 AWG color-coded, insulated (35° C minimum) wires. If thermostat is located more than 100 ft from unit (as measured along the control voltage wires), use No. 16 AWG color-coded wires to avoid excessive voltage drop.

Use furnace transformer, fan-coil transformer, or accessory transformer for control power, 24-v/40va minimum.

NOTE: Use of available 24-v accessories may exceed the minimum 40va power requirement. Determine total transformer loading and increase the transformer capacity or split the load with an accessory transformer as required.

Step 6—Compressor Crankcase Heater

Energize heater a minimum of 24 hrs before starting unit. To energize heater only, set thermostat to OFF and close electrical disconnect to outdoor unit. A crankcase heater is required if the refrigerant tubing is longer than 50 ft, except in scroll compressor applications.

Step 7—Install Electrical Accessories

Refer to the individual instructions packaged with the kits or accessories when installing.

TIME-DELAY RELAY FOR BLOWER (TDR.90) — The time-delay switch is in the low-voltage control circuit. When thermostat is satisfied, compressor is turned off and blower runs for 90 seconds to remove residual cooling from indoor coil. There are various ways to achieve the time-delay features for improved performance:

1. By using a thermostat which has a built-in time delay.
2. Fan-coil unit electric heater packages which have built-in delay.
3. Furnaces which have built-in TDR.
4. If none of the above have built-in TDR, then you must use a separate TDR to achieve the desired performance.

See your local distributor or dealer for specific component information.

NOTE: In most cases, only 1 of the above should be used to achieve TDR function. More than 1 of the methods listed above in a system may cause a degradation in performance.

Step 8—Start-up

1. When equipped with a crankcase heater, energize crankcase heater a minimum of 24 hrs before starting unit. To energize heater only, set thermostat at OFF position and close electrical disconnect to outdoor unit.
2. Fully open liquid- and vapor-tube service valves.
3. Unit is shipped with valve stem(s) front seated, and caps installed. Replace stem caps after system is opened to refrigerant flow. Replace caps finger-tight and tighten additional 1/6 turn with wrench.
4. Close electrical disconnects to energize system.
5. Set room thermostat at desired temperature. Be sure set point is below indoor ambient temperature.
6. Set room thermostat at COOL and fan at ON or AUTO, as desired. Operate unit for 15 minutes. Check system refrigerant charge.

⚠ CAUTION

For 3-phase scroll compressor equipment only, check compressor motor rotation at unit start-up. If compressor motor runs backward (which may be determined by excessive noise) shut off unit at disconnect switch. Interchange the 2 field wiring leads at the unit contactor.

Step 9—Checking Charge

Factory charge is shown on unit rating plate.

⚠ CAUTION

Damage may occur to the scroll compressor if operated at a negative suction pressure during a system pumpdown.

NOTE: Depending on the date of production, units may have a back seating or a front seating service valve. A back seating service valve has a taller stem cap and no Schrader valve. A front seating service valve has a shorter stem cap and is equipped with a Schrader valve.

⚠ CAUTION

Do not vent refrigerant to atmosphere. Recover during system repair or final unit disposal.

⚠ WARNING

If the unit is equipped with a back seating service valve, prevent personal injury by making sure gage manifold is connected to the valve gage ports, before moving valves off fully back seated position. Wear safety glasses and gloves when handling refrigerant.

⚠ CAUTION

Scroll compressor dome temperatures may cause personal injury.

⚠ CAUTION

Compressor damage may occur if system is overcharged.

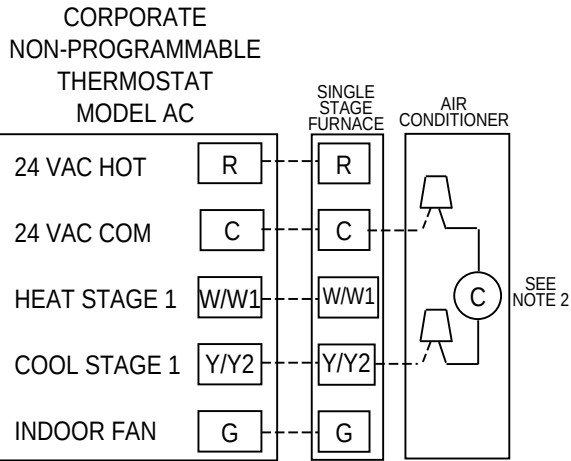
Adjust charge by following procedure shown on the superheat charging tables located on unit information plate.

CARE AND MAINTENANCE

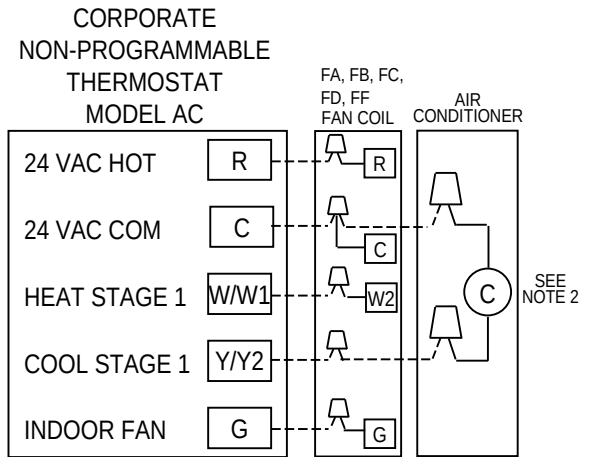
For continuing high performance, and to minimize possible equipment failure, it is essential that periodic maintenance be performed on this equipment. Consult your servicing contractor or User's Manual for the proper frequency of maintenance. Frequency of maintenance may vary depending upon geographic areas, such as coastal applications.

Step 1—Leave User's Manual With Homeowner

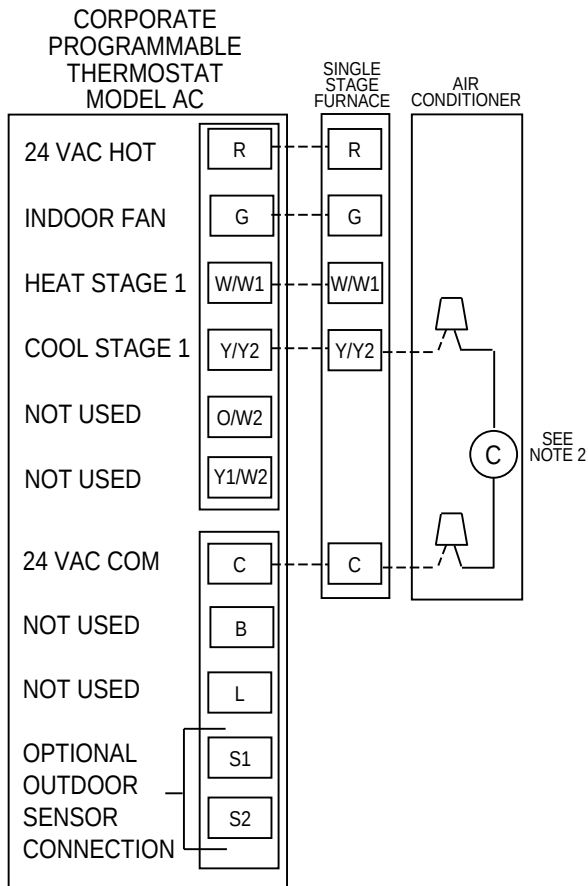
Explain system operation and maintenance procedures outlined in User's Manual.



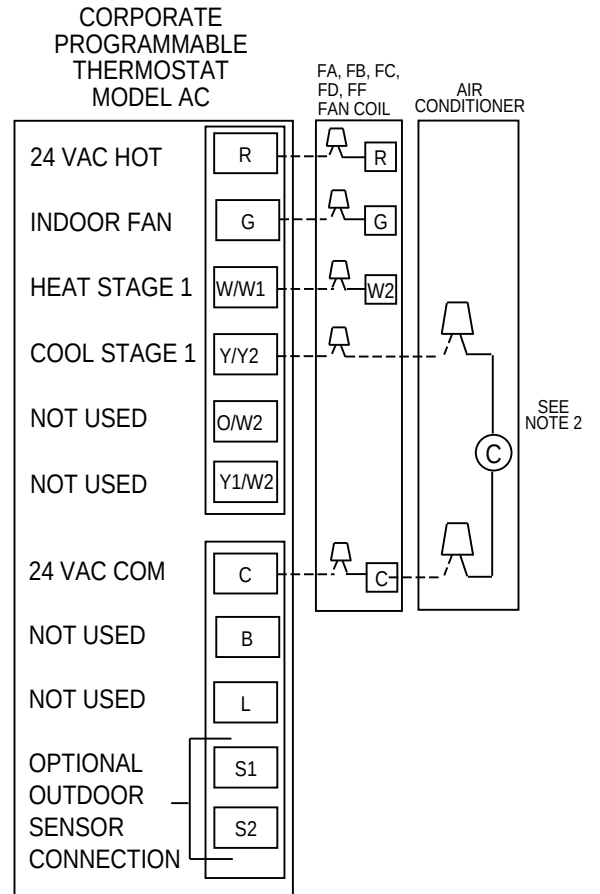
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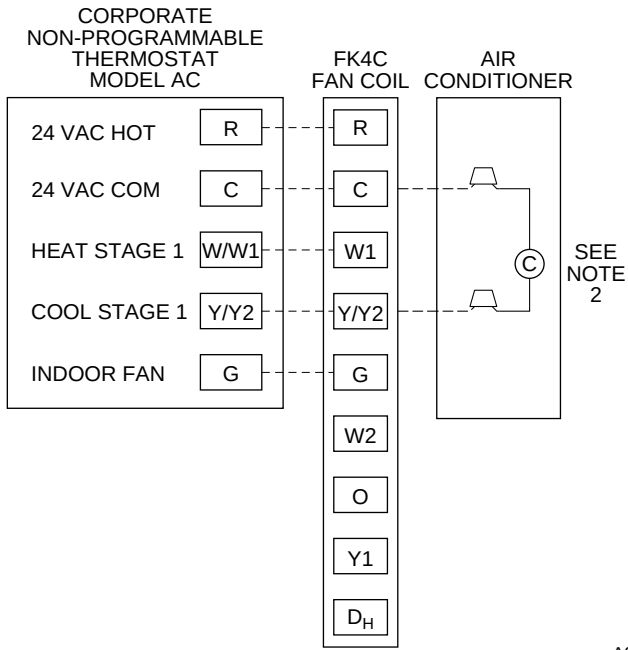


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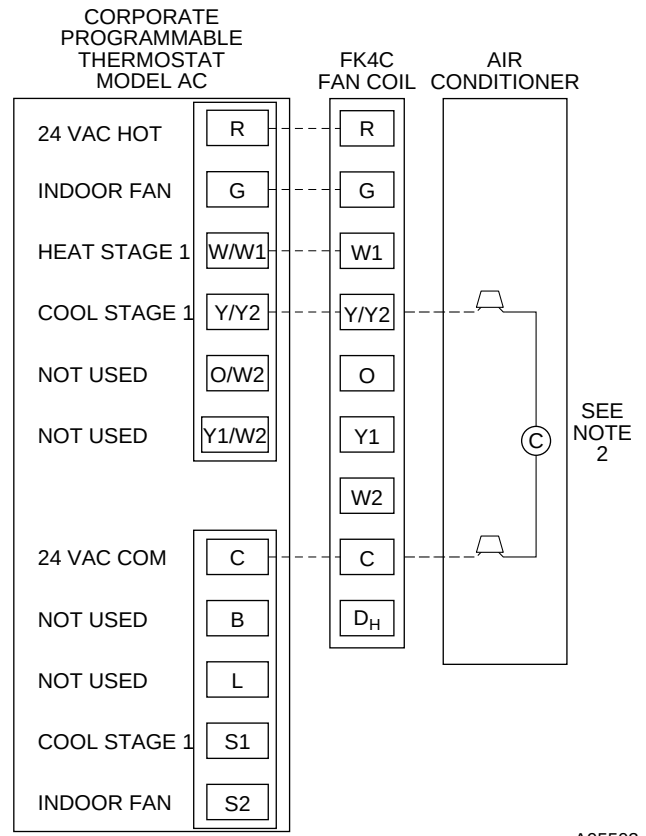


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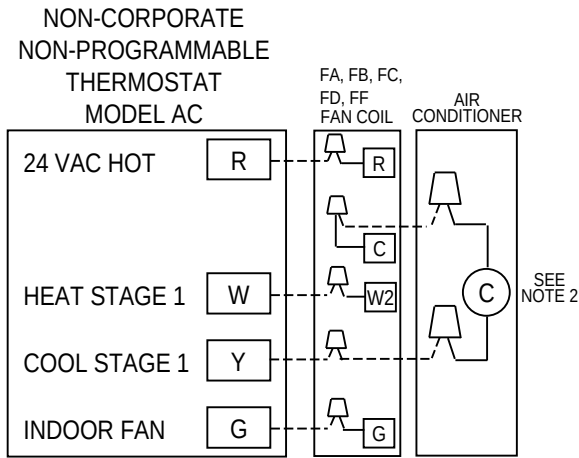
Fig. 5—Typical 24-v Circuit Connections



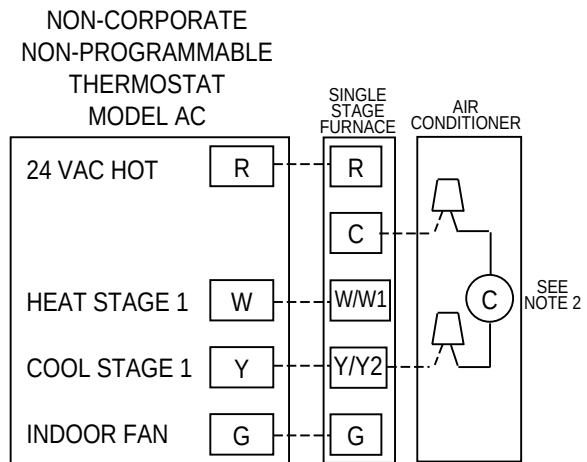
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Fig. 5—Typical 24-v Circuit Connections Continued

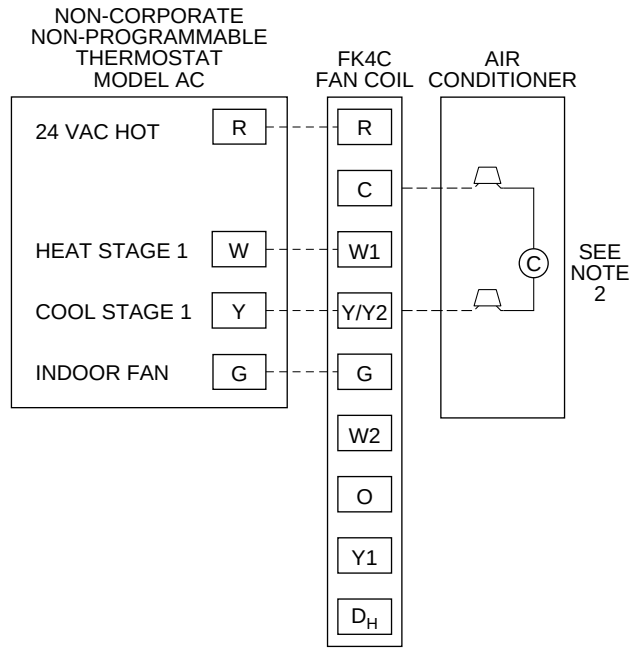


Fig. 5—Typical 24-v Circuit Connections Continued

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NOTES:

1. CORPORATE THERMOSTAT WIRING DIAGRAMS ARE ONLY ACCURATE FOR MODEL NUMBERS BEGINNING WITH TSTAT
2. WIRING MUST CONFORM TO NEC OR LOCAL CODE.
3. SOME UNITS ARE EQUIPPED WITH PRESSURE SWITCH(ES), TEMPERATURE SWITCH, OR 5 MINUTE COMPRESSOR CYCLE PROTECTION. CONNECT 24 VOLT FIELD WIRING TO FACTORY PROVIDED STRIPPED LEADS.
4. A LIQUID LINE SOLENOID VALVE IS REQUIRED ON SOME UNITS. SEE SPECIFIC UNIT INSTRUCTIONS.
5. THERMOSTATS ARE FACTORY CONFIGURED WITH 5 MINUTE COMPRESSOR CYCLE PROTECTION AND 4 CYCLES PER HOUR LIMIT. SEE THERMOSTAT INSTRUCTIONS FOR DETAILS.
6. TO STAGE THE ELECTRIC RESISTANCE HEAT, CONSULT OUTDOOR THERMOSTAT INSTALLATION INSTRUCTIONS.

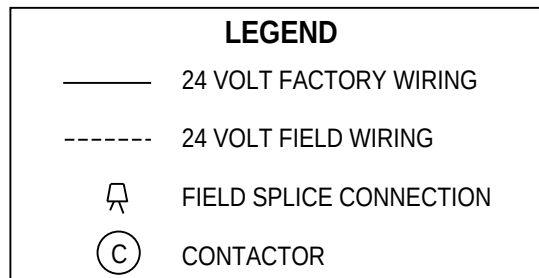


Fig. 5—Typical 24-v Circuit Connections Legend

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SERVICE TRAINING

Packaged Service Training programs are an excellent way to increase your knowledge of the equipment discussed in this manual, including:

- Unit Familiarization
- Maintenance
- Installation Overview
- Operating Sequence

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