



38TU Air Conditioning Unit

Installation and Start-Up Instructions

NOTE: Read this entire instruction manual before beginning installation.

SAFETY CONSIDERATIONS

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 warning or cautions attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements.

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

Understand the signal word DANGER, WARNING, or 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 that 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

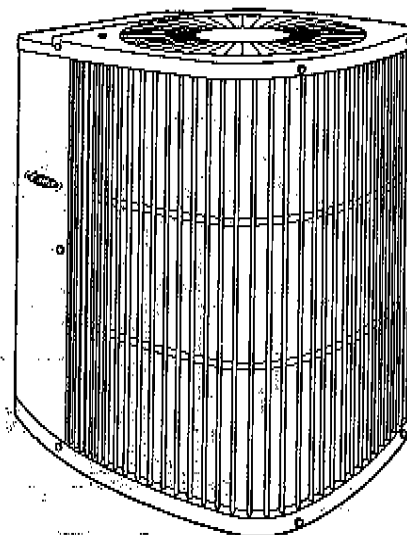
Move to final location. Remove carton taking care not to damage unit.

INSPECT EQUIPMENT

File claim with shipping company prior to installation if shipment is damaged or incomplete. Locate unit rating plate on unit service panel. (See Fig. 2.) 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, tiedown 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.



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Fig. 1—Model 38TU

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. 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 6 in. above roof surface. Where possible, place unit above a loadbearing wall.

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

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.

⚠ CAUTION

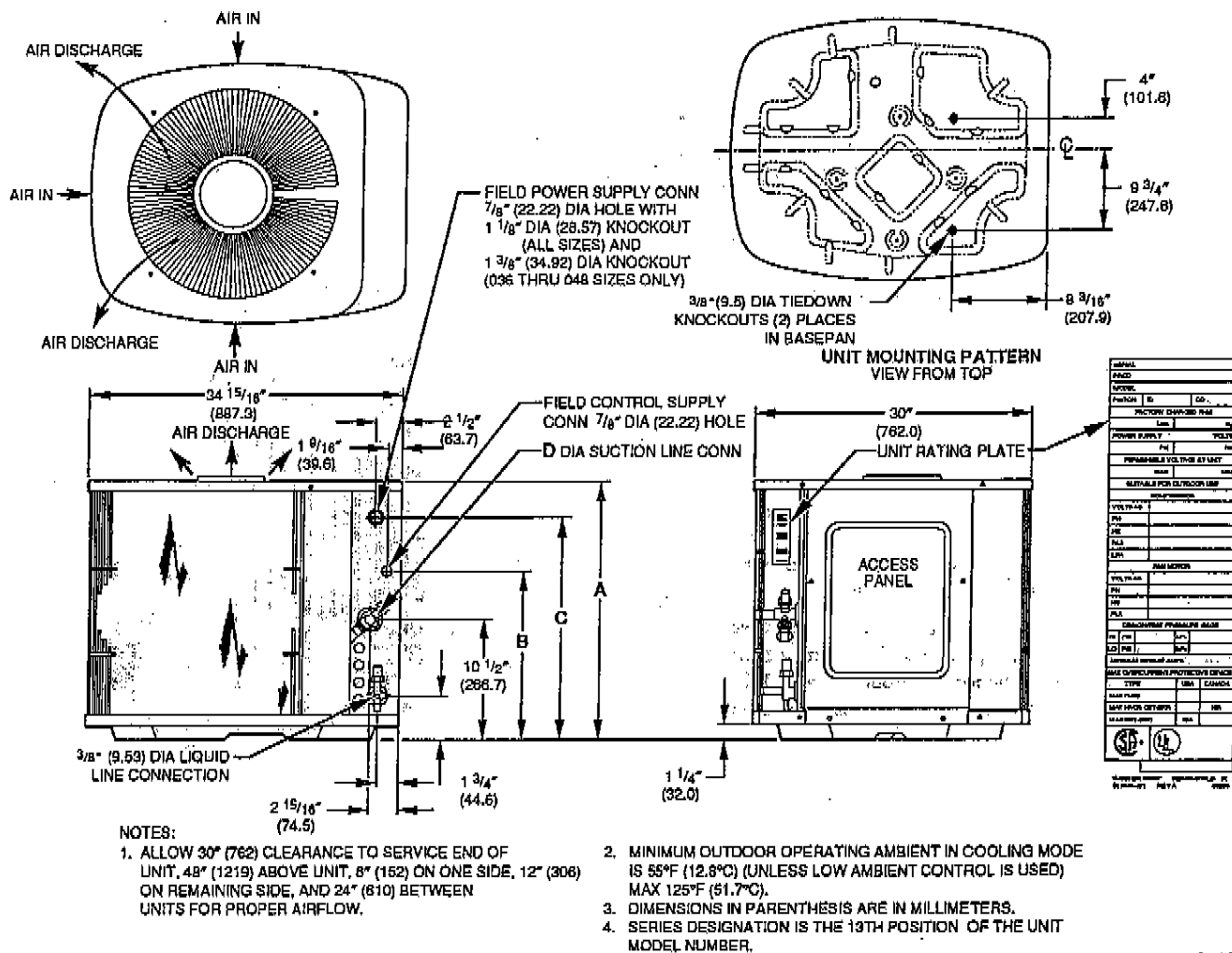
If unit is to be installed on system with a thermostatic expansion valve (TXV), removal of the indoor coil piston is required.

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.

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.



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UNIT	A	B	C	D
	In.	In.	In.	In.
024	25-7/8	15-1/2	21-7/8	5/8
030	25-7/8	15-1/2	21-7/8	3/4
036	31-7/8	21-1/2	27-7/8	3/4
042,060	37-7/8	27-1/2	33-7/8	7/8
048	31-7/8	21-1/2	27-7/8	7/8

Fig. 2—Unit Reference Drawing

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.

⚠ 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.

OUTDOOR UNITS CONNECTED TO FACTORY-APPROVED**⚠ 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.

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 may fluctuate above or below permissible limits.

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

⚠ WARNING

To avoid personal injury or death, do not supply power to unit with compressor terminal box cover removed.

BRANCH CIRCUIT DISCONNECT

Disconnect must be 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 ready accessible from unit, per Section 440-14 of NEC.

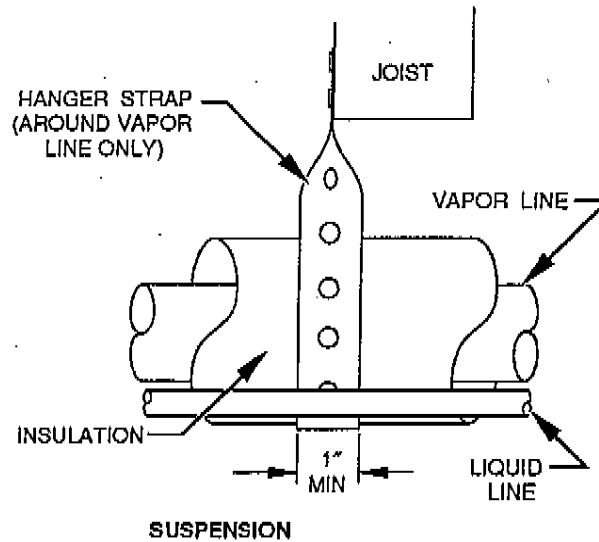
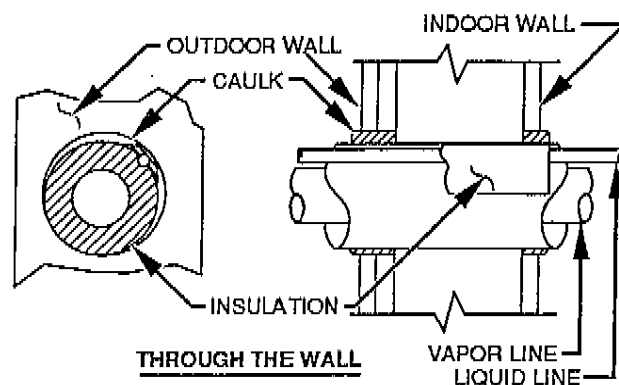
Table 1—Refrigerant Connections and Recommended Liquid and Vapor Tube Diameters

UNIT SIZE	LIQUID		VAPOR	
	Conn. Dia.	Tube Dia.	Conn. Dia.	Tube Dia.
024	3/8	3/8	5/8	5/8
030, 036	3/8	3/8	3/4	3/4
042, 048	3/8	3/8	7/8	7/8
060	3/8	3/8	7/8	1-1/8

1. Tube diameters are for lengths up to 50 ft. For tube sets over 50 ft. consult Long-Line Application Guideline.

2. Do not apply cap-tube indoor coils to these units.

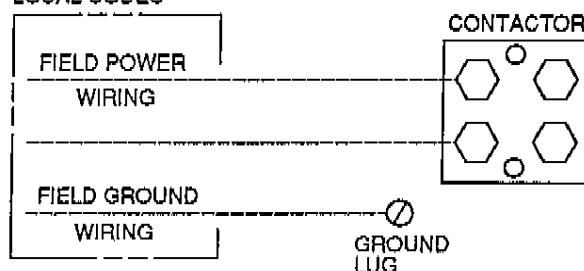
NOTE:
AVOID CONTACT BETWEEN TUBING AND STRUCTURE



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Fig. 3—Piping Installation

DISCONNECT
PER N. E. C. AND/OR
LOCAL CODES



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Fig. 4—Line Power Connections**⚠ WARNING**

According to NEC, ANSI/NFPA 70, and local codes, the cabinet must have an 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 an electric 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 (see Fig. 2) and into unit control box. Size wires per NEC, but not smaller than minimum wire size shown on unit rating plate.

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.

NOTE: Use No. 18 AWG color-coded, insulated (35° C min) wire. 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.

CONNECT CONTROL WIRING

Route 24-v control wires through control wiring grommet and connect to brown and blue pigtails supplied in unit splice box (Fig. 5).

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 Heat

A crankcase heater is required if the refrigerant tubing is longer than 50 ft.

Step 7—Install Electrical Accessories, If any

Refer to the individual instructions packaged with the kit or accessory when installing.

Step 8—Start-Up

1. When equipped with a crankcase heater, energize heater a minimum of 24 hours before starting unit. To energize heater only, set thermostat at OFF position and close electrical disconnect to outdoor unit.
2. Fully back seat (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 (back seated). 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 switch at FAN or AUTO, as desired. Operate unit for 15 minutes. Check system refrigerant charge. See Checking Charge.

Step 9—Checking Charge

Factory charge is shown on unit rating plate.

⚠ CAUTION

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

⚠ WARNING

Service valve gage ports are not equipped with Schrader valves. To prevent personal injury, make 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.

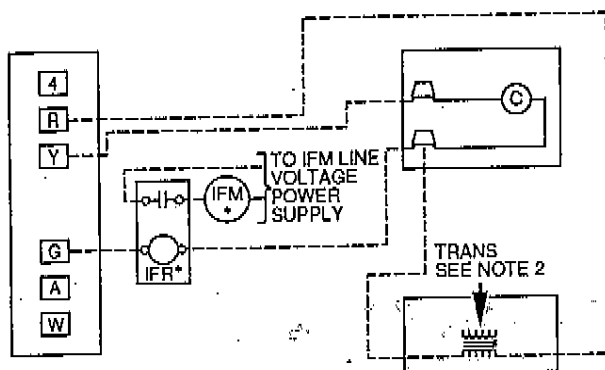
⚠ CAUTION

Compressor damage may occur if system is overcharged.

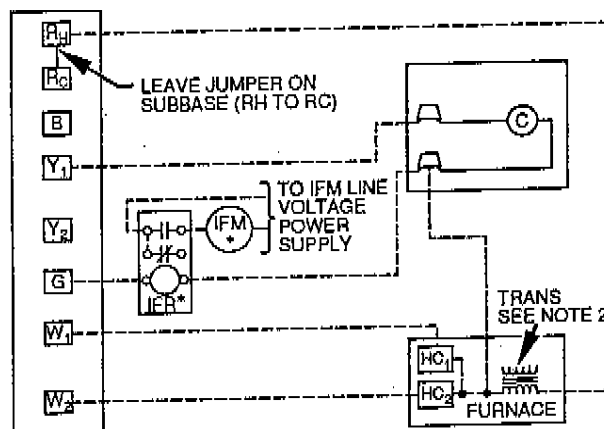
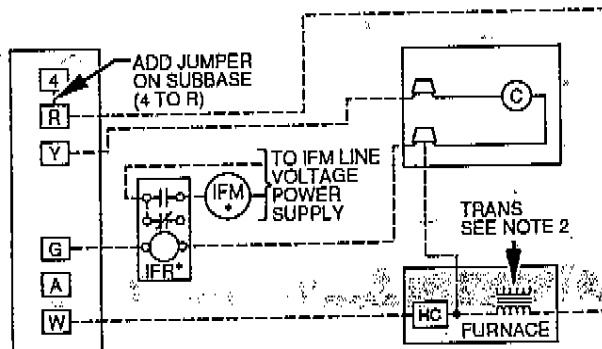
Adjust charge by following procedure shown on Superheat Charging Tables located on unit information plate.

Step 10—Leave User's Manual with Homeowner

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



ARRANGEMENT A-(COOLING ONLY)

ARRANGEMENT C-ONE TRANSFORMER
(COOLING AND TWO-STAGE HEATING)ARRANGEMENT B-ONE TRANSFORMER
(COOLING AND ONE-STAGE HEATING)

*IFR AND IFM ARE LOCATED IN FURNACE ON HEATING-COOLING APPLICATIONS. IF ACCESSORY IFR IS REQUIRED FOR COOLING-ONLY APPLICATIONS, LOCATE (IFR) IN FAN COIL.

C - CONTACTOR
HC - HEATING CONTROL
IFM - INDOOR FAN MOTOR
IFR - INDOOR FAN RELAY
TRANS - TRANSFORMER

⌞ FIELD SPICE
--- FIELD WIRING
___ FACTORY WIRING

NOTES: 1. REFER TO UNIT WIRING LABEL FOR WIRE COLORS: C TO G AND C TO Y CONNECTIONS.
2. N.E.C. CLASS 2, 24V CIRCUIT, MIN 40LA REQUIRED; 60VA REQUIRED FOR 050 AND 080 SIZE UNITS OR UNITS INSTALLED WITH LIQUID LINE SOLENOID VALVE.

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Fig. 5—24-V Control Circuit Connections

