



38TKB Air Conditioning Unit

Installation and Start-Up Instructions

NOTE: Read the entire instruction 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.

It is important to 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 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 one 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. (762mm) clearance to service end of unit and 48 in. (1219mm) above unit.

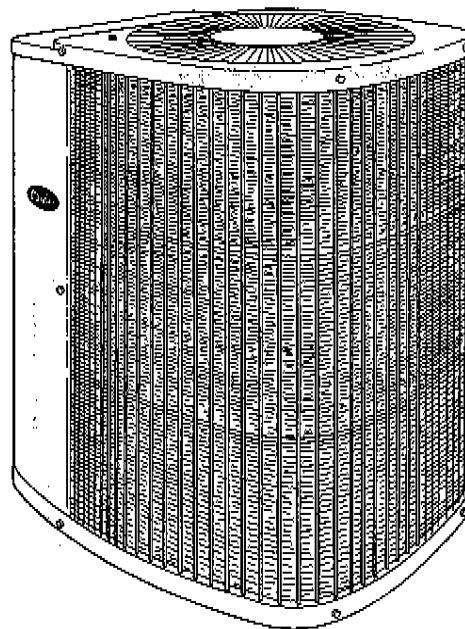


Fig. 1—Model 38TKB

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For proper airflow, a 6-in. (52mm) clearance on one side of unit and 12 in. (305mm) on all remaining sides must be maintained. Maintain a distance of 24 in. (610mm) 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. (152mm) 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.

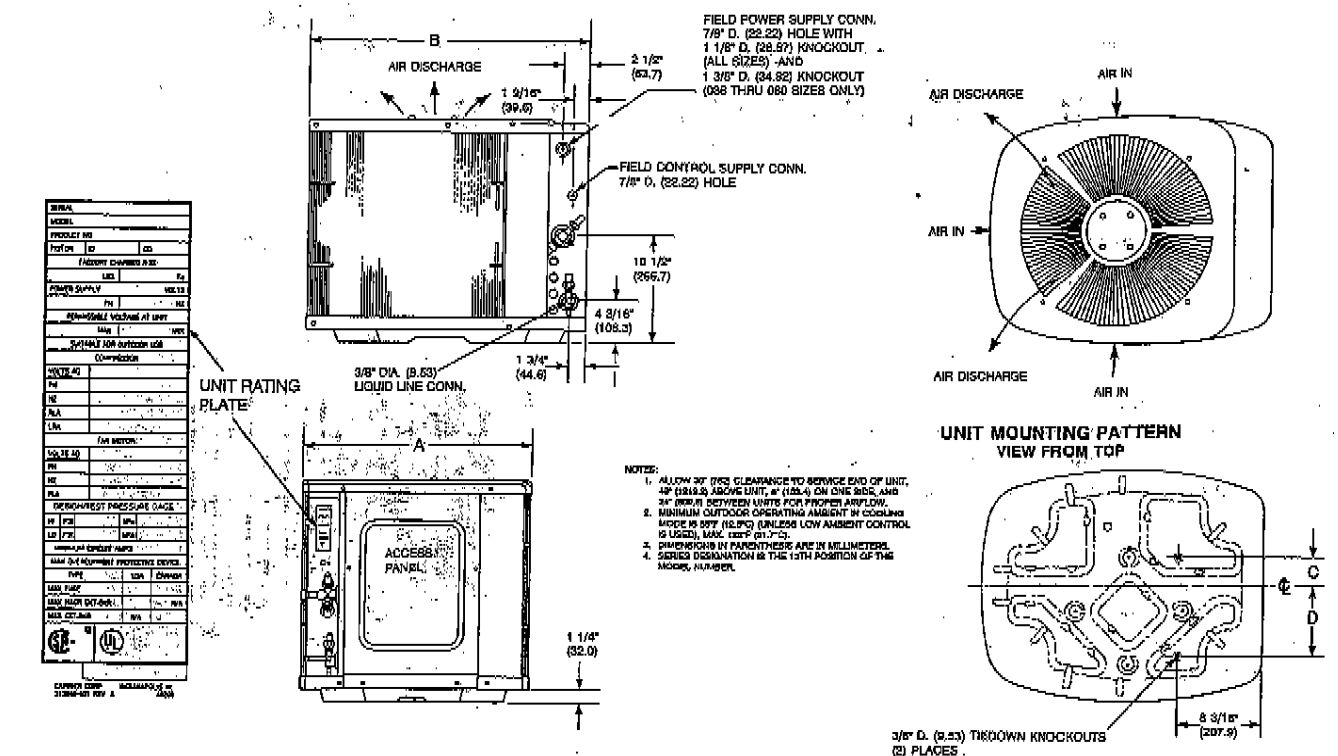
▲ CAUTION

DO NOT BURY MORE THAN 36 IN. (914mm) OF REFRIGERANT TUBING IN GROUND. If any section of tubing is buried, there must be a 6-in. (152mm) 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 shut-down, 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.

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



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MODEL 38TKB	A		B		C		D	
	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)
018, 024, 030, 036	22-1/2	571.5	27-1/2	698.5	2-13/16	71.4	6-15/16	176.1
038, 042, 048, 060	30	762.0	34-5/16	886.5	4	101.6	9-3/4	247.6

Fig. 2—Dimensional Drawing

Step 4—Make Piping Connections

Outdoor units may be connected to indoor sections using accessory tubing package or field-supplied tubing of refrigerant grade, correct size, and condition. The liquid- and vapor-tube diameters can be determined by using Table 1. For tubing requirements beyond 50 ft (15.24m), consult Long-Line Application Guideline available from your local distributor.

If either refrigerant tubing or indoor coil is exposed to atmospheric conditions for longer than five minutes, it must be evacuated to 1000 microns to eliminate contamination and moisture in the system.

Run refrigerant tubes as directly as possible, avoiding unnecessary turns and bends. Suspend refrigerant tubes so they do not damage insulation on vapor tube and do not transmit vibration to structure. Also, when passing refrigerant tubes through wall, seal opening so vibration is not transmitted to structure. Leave some slack in refrigerant tubes between structure and unit to absorb vibration.

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 25 ft (7.62m) of field-supplied or factory accessory tubing. Check refrigerant charge for maximum efficiency. (See Step 9 — Checking Charge.)

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

Notes: 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.)

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 Product Data Digest.

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. 3 and 4.

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

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 or fan coil transformer as 24-volt supply for system or use accessory transformer. (See Fig. 5.) Most systems require minimum 40 va, except 60 va is required for 060 size units installed with liquid-solenoid valve.

Step 6—Compressor Crankcase Heat

A crankcase heater is required if the refrigerant tubing is longer than 50 ft (15.24m), except in scroll compressor applications.

NOTE: The 042 size is factory equipped with an internal crankcase heater.

NOTE: The Seasonal Energy Efficiency Ratio (SEER) is obtained with the crankcase heat de-energized. To de-energize the crankcase heater, disconnect the black crankcase heater wires at the contactor. After disconnecting, make sure wires are isolated from all other electrical connections and components to prevent electrical shorting.

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

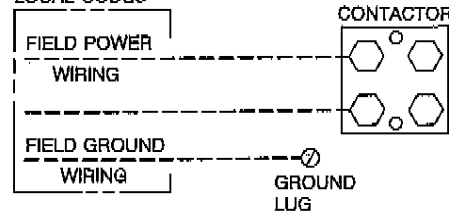


Fig. 3—Line Power Connections

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

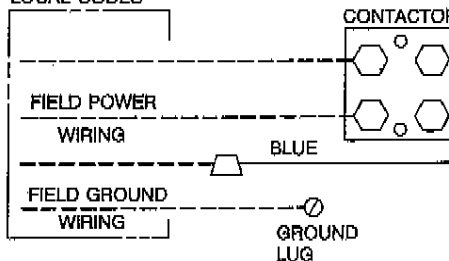


Fig. 4—Line Power Connections
(3 Phase)

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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 one of the above should be used to achieve TDR function. More than one 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 hours 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) frontseated, 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.

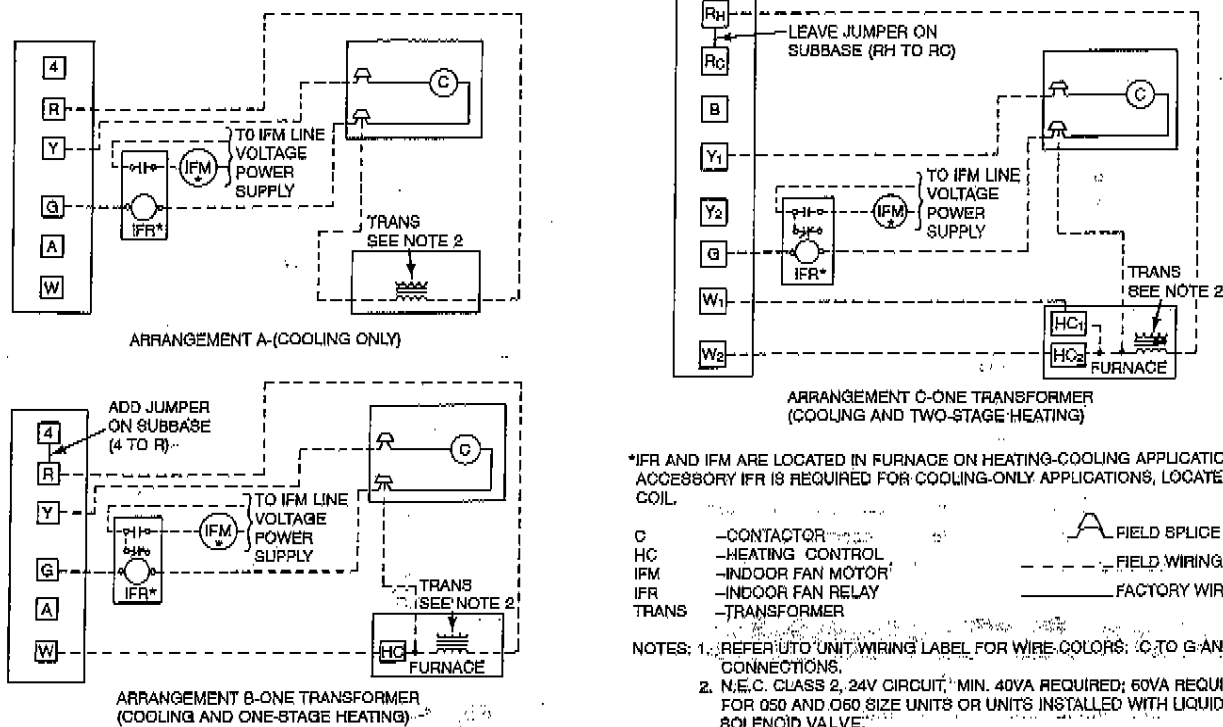


Fig. 5—24-Volt Control Circuit Connector

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- Set room thermostat at desired temperature. Be sure set point is below indoor ambient temperature.
- Set room thermostat at COOL and fan switch at PAN 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 two field wiring leads at the unit contactor.

CAUTION

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

Step 9—Checking Charge

Factory charge is shown on unit rating plate.

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

WARNING

If the unit is equipped with a backseating service valve, prevent personal injury by making sure gage manifold is connected to the valve gage ports, before moving valves off fully backseated 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.