

Installation & Maintenance Data

IM 812-1

Group: **PTAC/PTHP**

Part Number: **106870802**

Date: **October 2004**

McQuay

Packaged Terminal Air Conditioners and Heat Pumps (B+ Model)



McQuay[®]
Air Conditioning

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General Description

McQuay® Packaged Terminal Air Conditioners and Heat Pumps are designed and built for through-the-wall installation in either new or existing buildings. The self-contained refrigerant system delivers cooling to the desired space. Heating can be accomplished with electric resistance or with reverse cycle technology (heat pump models only). Generally, an estimate for capacity selection is 35 BTUH per square foot of floor space (cooling) and 4 BTUH (1.25 watts) per cubic foot (heating). The architect or engineer must verify the selection. Note that the heat pump reverse cycle generates approximately 10 BTUs per electrical watt as compared to 3.4 BTUs per watt with resistance electric heat. The unit will restart at its last setting after a power interruption. A complete unit consists of the following components, ordered and shipped separately.

1. Heating/Cooling Chassis and Front Panel.
2. Wall Sleeve.
3. Outdoor Louver.
4. Subbase – Optional for 208V and 230V units but mandatory for all 265V.
5. Separate plug-in power cord (selects heater size).

NOTE: PTAC/HP 09 & 012, 208/230 V, 2.9/3.5 Kw heaters are also available with factory installed power cords.

6. Electrical receptacle – Optional for 208V and 230V units but mandatory for all 265V.
7. Plug cord cover – Optional for 208V and 230V units but mandatory for all 265V.

NOTICE

This product was carefully packed and thoroughly inspected before leaving the factory. Responsibility for its safe delivery was assumed by the carrier upon acceptance of the shipment. Claims for loss or damage sustained in transit must therefore be made upon the carrier, as follows:

VISIBLE LOSS OR DAMAGE

Any external evidence of loss or damage must be noted on the freight bill or carrier's receipt, and signed by the carrier's agent. Failure to adequately describe such external evidence of loss or damage may result in the carrier's refusing to honor a damage claim. The form required to file such a claim will be supplied by the carrier.

CONCEALED LOSS OR DAMAGE

Concealed loss or damage means loss or damage which does not become apparent until the product has been unpacked. The contents may be damaged in transit due to rough handling even though the carton may not show external damages. When the damage is discovered upon unpacking, make a written request for inspection by the carrier's agent within fifteen (15) days of the delivery date. File a claim with the carrier since such damage is the carrier's responsibility.

WARNING

The installer must determine and follow all applicable codes and regulations. This equipment presents hazards of electricity, rotating parts, sharp edges, heat and weight. Failure to read and follow these instructions can result in property damage, severe personal injury or death. This equipment must be installed by experienced, trained personnel only.

WARNING

Inspect unit nameplate to be certain the voltage is the same as the voltage that will be delivered to the unit. The receptacle must match the plug on the unit cord. Improper electrical wiring can cause property damage, severe personal injury or death.

CAUTION

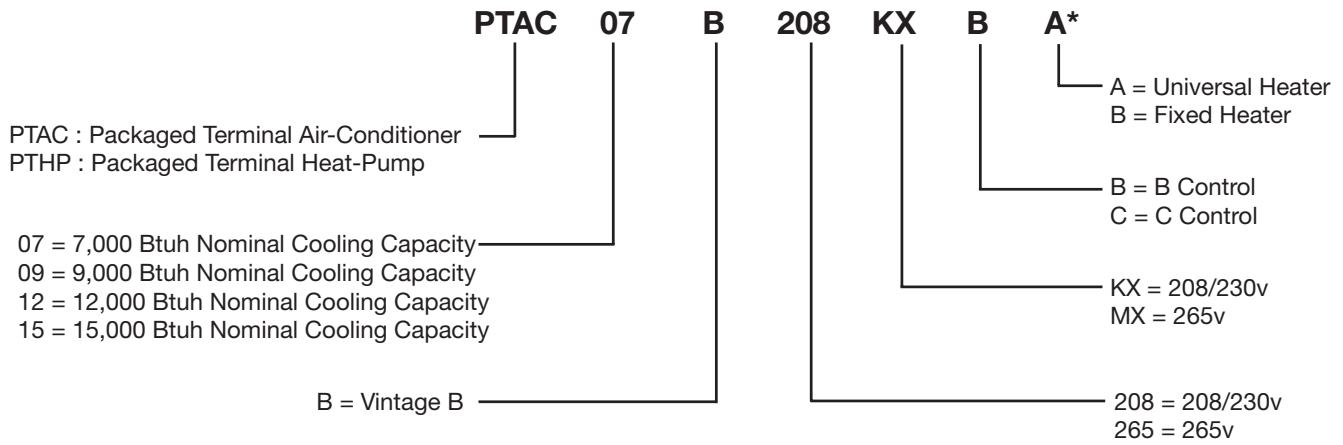
Use copper conductors only. Unit terminals are not designed to accept other types of conductors. Failure to do so can damage equipment.

WARNING



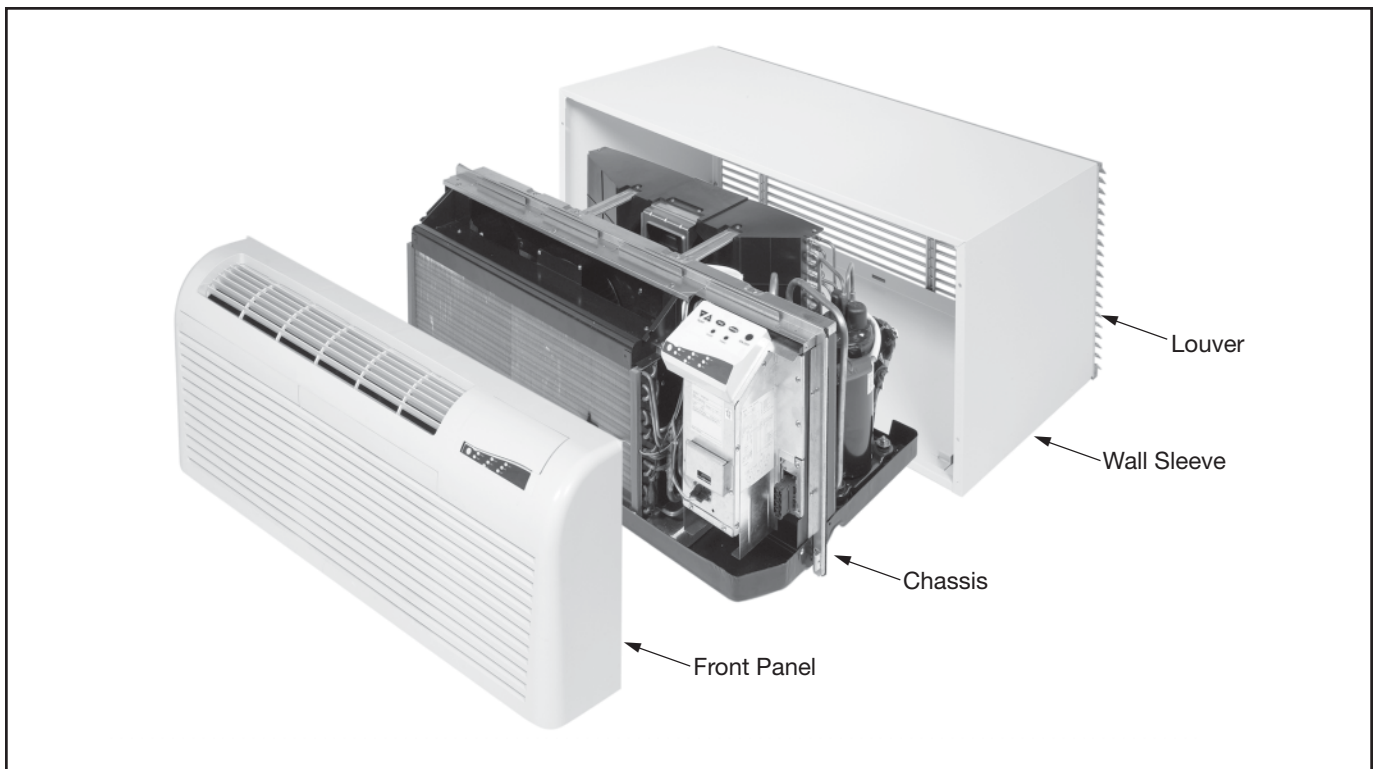
Hazardous Voltage!
Disconnect all electric power including remote disconnects before servicing. Failure to disconnect power before servicing can cause severe personal injury or death.

Product Nomenclature



* Fixed heater is 2.9/3.5 Kw, 208/230V only, with factory installed 20 amp power cord - available on unit size 09 and 012 only. Universal heater is nominal 2, 3, or 5 Kw (or no heat for cooling only applications), determined by power cord selection. See Table 2, page 15.

Figure 1. Exploded View of Complete Unit (Shown without subbase or power cord)



Now that you have made an investment in modern, efficient McQuay® equipment, its care and operation should be a high priority. For training information on all McQuay HVAC products, please visit us at www.mcquay.com and click on Training or phone 540-248-0711 and ask for the Training Department.

Control Features

Standard Control

Control Pad – Can remain unit-mounted as shipped, or can be remote wall mounted. Remote mounting requires an accessory 20', 35' or 50' low-voltage wire harness, control pad mounting plate and snap-in decorative cover to replace the control pad at the unit. The mounting location must be away from cold drafts, discharge air, outside walls, etc., because the room temperature sensor is mounted in the control pad (dip switch #2 of 4 on front of control box must be "ON"). A wireless hand-held remote controller is also available as an accessory, which allows control of the conditioner from anywhere in the room.

Heat – Select by pressing the ON/OFF key to "ON" and the MODE key to "HEAT." Use the ▲ or ▼ key to set the desired room temperature (60-85°F).

NOTE: Heat pumps will not operate in reverse cycle unless temperature setting is within 2°F of room temperature. Otherwise, unit will heat with electric heaters until satisfied. The next call for heat will be reverse cycle, provided the outdoor temperature is above the 30-40°F range. When the outdoor temperature is less than 25°F, most of the heating will be with electric resistance. Between 25°F and 40°F, the primary heat will be reverse cycle with occasional resistance heat as required to maintain room temperature. Above 40°F, all heating will be by reverse cycle.

Cool – Select by pressing the ON/OFF key to "ON" and the MODE key to "COOL." Use the ▲ or ▼ key to set the desired room temperature (60-85°F).

Fan – Select by pressing the ON/OFF key to "ON" and the MODE key to "FAN". Press the FAN key to select high or low speed. In this mode, only the indoor fan will operate and there will be no heating or cooling.

Cool/Dry – Press the ON/OFF key to "ON" and the MODE key to "COOL". Press and hold the MODE key for 15 seconds to activate "COOL/DRY". Use the ▲ or ▼ key to set the desired room temperature. Select this mode when the standard Cool mode does not provide sufficient dehumidification. The compressor and indoor low fan will cycle together and will operate for longer periods of time to provide up to 70% more dehumidification. As a result, the room temperature differential may increase slightly.

NOTE: COOL/DRY can not be used with SLEEP. Also, COOL/DRY mode will override continuous fan selection.

Fan Speed – Select fan speed by pressing the FAN key to "AUTO", "HIGH" or "LOW" while the unit is operating in "HEAT", or "COOL" mode. "AUTO" gives high fan if unit setting is more than 2°F from room temperature and low fan if less than 2°F from room temperature.

Continuous/Cycle Fan – When dip switch #8, located on the front of the control box, is in the down position, the indoor fan will operate continuously. When dip switch #8 is in the up position, the indoor fan will cycle on and off with the compressor

or heater. In cycle fan, the fan will start every 7 minutes to sample the room temperature. Fan will turn off again after 2 minutes unless heating or cooling is required.

Room Freeze Protection – When dip switch #4 of 4 (the right-hand end of the dip switch bank), located on front of the control box, is in the down position, a unit mount sensor will be activated that will bring on the electric heater and indoor fan as required to maintain a 40°-50°F minimum temperature. This will override "OFF", remote "OFF", "COOL", "COOL/DRY", "FAN" and "UNOCCUPIED" modes. When dip switch #4 of 4 is in the up position, there is no freeze protection.

IMPORTANT NOTE: The dip switch module designates up as "ON". Disregard that designation for freeze protection.

CAUTION

Absence of freeze protection can result in equipment and property damage. Make certain dip switch #4 of 4 is in the down position.

Wired Remote ON/OFF – The unit may be turned on by opening, or off by closing, a set of dry contacts located up to 325' from the unit using a pair of 22 ga. low voltage wires. The 22 ga. wires are connected to the unit using a plug and receptacle connection under the small electrical cover on the front of the control box. (A plug with 2 short wires is included with the chassis.) The dry contacts can be a toggle switch at the front desk, a time clock, etc. When the dry contact is closed, the unit control goes to memory P1 which is set from the factory at 75°F in COOL mode and high fan. If desired, P1 can be programmed for a different setting. See instructions under "Motion Sensor & Door Switch", page 5. When the dry contact is opened and the unit restarts, the control will automatically index to a Heat setting of 68°F (if room temperature is below 68°F) or a Cool setting of 75°F if the room temperature is above 68°F.

Temperature Limiting – The control temperature range as shipped from the factory is from 60°-85°F. By using dip switches #1-#4 of 8 (located on front of the control box), the range can be changed per the following charts:

| Min. Set Point | SW #1 | SW #2 |
|----------------|-------|-------|
| 60°F | OFF | OFF |
| 64°F | ON | OFF |
| 68°F | OFF | ON |
| 72°F | ON | ON |

| Max. Set Point | SW #3 | SW #4 |
|----------------|-------|-------|
| 75°F | ON | ON |
| 78°F | OFF | ON |
| 82°F | ON | OFF |
| 85°F | OFF | OFF |

Dip Switch Description (front of control box)

Dip SW1 #1-#8

#1-#4 = Temperature Limiting – see chart, page 4.

#5-#6 = (Heat Pumps Only) Approximate outdoor temperature when unit will automatically change from reverse cycle heating to electric heat.

#5-OFF & #6-OFF = 35°F (factory setting)

#5-ON & #6-OFF = 30°F

#5-ON & #6-ON = 25°F

#7-OFF = Normal HP operation, ON = electric heat only. (Use for PTHP only – must be OFF for PTAC).

#8-OFF = Constant indoor fan, ON = Cycle

Dip SW2 #1-#4

#1-OFF = Control pad activated, ON = 24V wall stat activated.

#2-OFF = Room temperature sensor on chassis, ON = sensor on control pad.

#3-OFF = Motion & Door sw. activated, ON = Timer and Sleep activated.

#4-OFF = Room freeze protection is activated, ON = deactivated.

NOTE: All dip switches ship from factory in the OFF position except #8 of 8 and #3 of 4 which are shipped turned ON. Any switch changes must be followed by unplugging and plugging in the power cord to activate the change.

Quick Heat & Cool – This feature provides extra comfort for the occupant during start up of an unconditioned space. When off for more than 2 hours, the unit setting will automatically raise 2°F in Heat or drop 2°F in Cool to offset the radiation felt from the cold or warm walls, ceiling and floor. The 2°F offset is maintained for the first cycle only. After that, the setting reverts to that shown on the digital display.



NOTE: Timer & Sleep features require the use of an optional control pad to replace the standard one. These may be ordered from your sales representative.




Timer (activated by dip switch #3 of 4 turned ON) – To turn the unit off, press the TIMER key repeatedly to select the number of hours (1-15) after which the unit will turn off. To turn the unit on, preset the unit controls to the desired mode and temperature you want, then turn it off. Press the TIMER key repeatedly to select the number of hours (1-15) after which the unit will turn on.

Sleep – (activated by dip switch #3 of 4 turned ON) – Press the SLEEP key to activate this function. In the heat mode, over a two-hour period, the unit temperature setting will gradually drop 5.4°F. In cooling, over a two-hour period, the unit temperature setting will gradually raise 3.6°F. Six hours after pressing the SLEEP key, the setting will return to that shown on the display.

Motion Sensor & Door Switch – (activate by dip switch #3 of 4 turned OFF) – Two receptacles under the metal cover on the front of control box provide connections for the motion sensor and door switch by others. Two plug and wire assemblies are included with each chassis to match the receptacles. Connect receptacle CN7 to motion sensor and CN4 to door switch.

While room is occupied, the motion sensor keeps the control “normal” so the occupant has full control of the unit. Fifteen minutes after the occupant leaves the room, the unit goes into memory P2. 14 hours later, if no one has entered the room, the unit goes into memory P1. Both P1 and P2 come factory set in COOL mode @ 75°F. They can be reprogrammed for temperature and mode by using a G11 hand held remote controller available from your sales representative.

Programming P1 using the G11 control – press and hold the  button for 3 seconds until P1 starts flashing on the G11 display. While P1 is still flashing, press the buttons to select temperature and mode for P1. Wait until P1 stops flashing, then press and release  button to send the P1 program to the unit control. P1 will flash on the unit display to show it was accepted.

Programming P2 using the G11 control – press and hold  button for 3 seconds until P1 starts flashing. While P1 is still flashing, press and release the  button again to start P2 flashing. While P2 is still flashing, select temperature and mode desired for P2. Wait until P2 has stopped flashing, then press and release  button twice in rapid succession to send the P2 program to the unit control. P2 will flash on the unit display to show it was accepted.

Control Lockout – The unit control has an electrical lockout feature to discourage anyone from changing the mode, temperature or fan speed. To activate this lockout, press and hold the unit FAN key for 10 seconds until LO shows on display. To unlock the control, press and hold the FAN key for 10 seconds until UL shows.

Remote Wall Thermostat

General – Remove the control pad from the unit by unsnapping it from its base and unplugging it from the receptacle on the control box front. The snap-in decorative cover (ordered separately) now mounts in place of the control pad. To modify the controls for Remote Wall Thermostat, slide dip switch #1 of 4 to ON. Also, unplug the power cord from the receptacle and plug back in again to reset the circuit. Four to seven low-voltage wires, as determined by the wall thermostat selected, connect to the 7 pin receptacle on the control box front. Use the 7 pin plug and wire assembly provided. Mount the thermostat on an inside wall, not in the unit discharge air stream, near a window, indirect sunlight, or other area where it may sense a misrepresentative condition.

Operation – The 24V wall thermostat should have the normal R, W, Y, and G terminals plus C if it requires 24V AC power from the unit. By using all 7 low voltage connections, wall stats with 2 stage heat & fan speed selection can also be used. Stats can be MCO, ACO, MCO/ACO or programmable. With the exception of “wired Remote ON/OFF”, the control features listed for the standard control pad will not be available with the wall thermostat unless the wall stat chosen includes them. Low fan speed is standard for stats without speed selection.

Unit Installation – General

Wall Opening Requirements

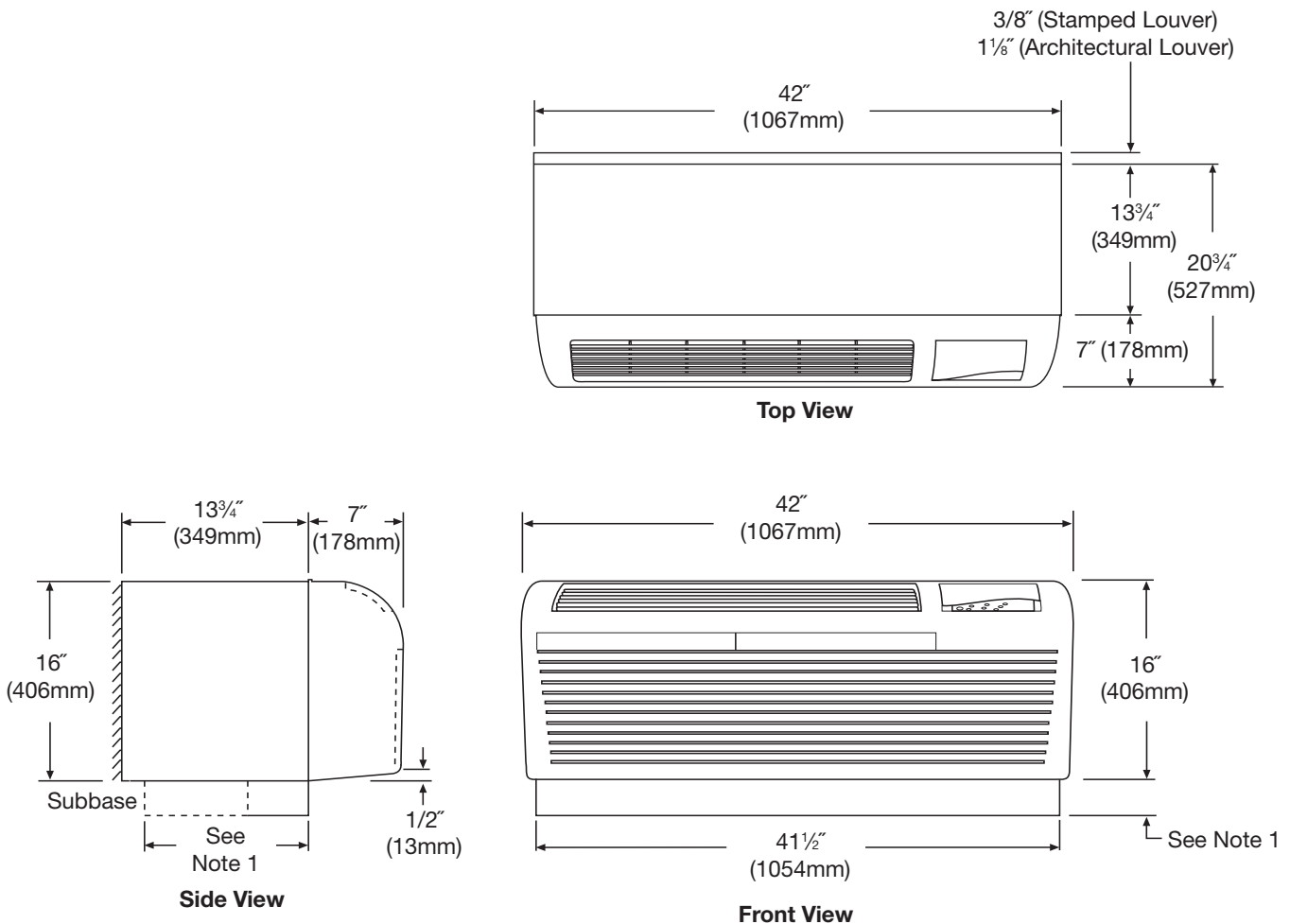
Before installing the unit, check the wall opening to be sure the wall sleeve will slide into the opening unobstructed. For masonry walls, a lintel must be used to provide support over each opening. The rough opening should measure 16 $\frac{1}{4}$ " high x 42 $\frac{1}{4}$ " wide (see Figure 2, Note 2). When a subbase is used, the opening must start 3" or 4" above the finished floor to match the height of the subbase selected. The subbase is available in either a 3" or 4" height and is required for 265V but is optional for 208/230V.

Each subbase has leveling legs to provide up to 1" additional height. When no subbase is used, the opening can start right at the finished floor level (208/230V only). Leave enough space for carpeting, etc.

NOTICE

Heat pump models will generate condensate during the heating season. If it is not desirable for this condensate to exit outdoors from the wall sleeve drain holes, install indoor or outdoor drain kits, available from your sales representative (see page 7).

Figure 2. Unit Dimensions



Notes:

- Unit pictured with subbase installed. Subbase is optional on 208V/230V units but required on all 265V units. See pages 8, 9, 10, and 11 for subbase dimensions, and details.
- Opening needs to be 16 $\frac{5}{8}$ " x 42 $\frac{5}{8}$ " when using a louver frame. See page 12, Figure B.

Installation of Optional Condensate Drain Kit

Figure 3 illustrates the installation of the indoor drain kit. The indoor drain kit must be installed before placing the wall sleeve into the opening. Install as follows:

1. Locate the drain so that it will be on the room side of the wall when the wall sleeve is installed.
2. Drill a 1/2" diameter hole in the base of the wall sleeve for the drain.
3. Drill two (2) 5/32" pilot holes for the mounting screws. These holes can be located using the drain kit as a pattern.
4. Assemble the drain kit as shown in Figure 3 and securely fasten it to the wall sleeve with the screws provided. Use either the 90° elbow or 6" straight fitting as required.
5. Install the wall sleeve as described on pages 9, 10, or 11.

Assembly of the outdoor drain kit should be completed after the wall sleeve has been installed.

Note: When using the outdoor drain kit, the sleeve must be flush or beyond the outside finished wall (do not recess).

Install the outdoor drain kit as follows:

1. Assemble the drain kit as shown in Figure 4.
2. Choose the side of the wall sleeve to which the drain kit is to be installed.
3. There are drain holes and pilot holes provided in the wall sleeve from factory. Place the drain kit against the chosen drain hole and fasten securely with screws provided. Use either the 90° elbow or 6" straight fitting as required.
4. Cover the unused drain hole with the block off plate and gasket supplied with the drain kit.

Figure 3. Indoor Drain Kit

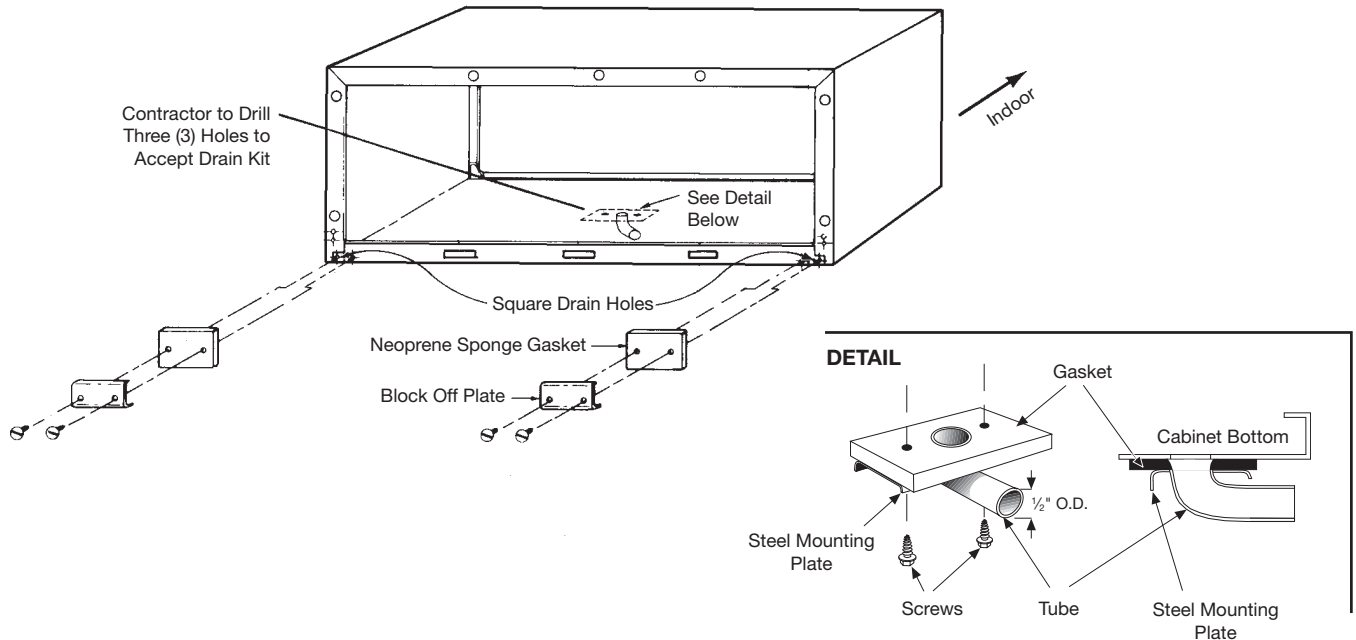
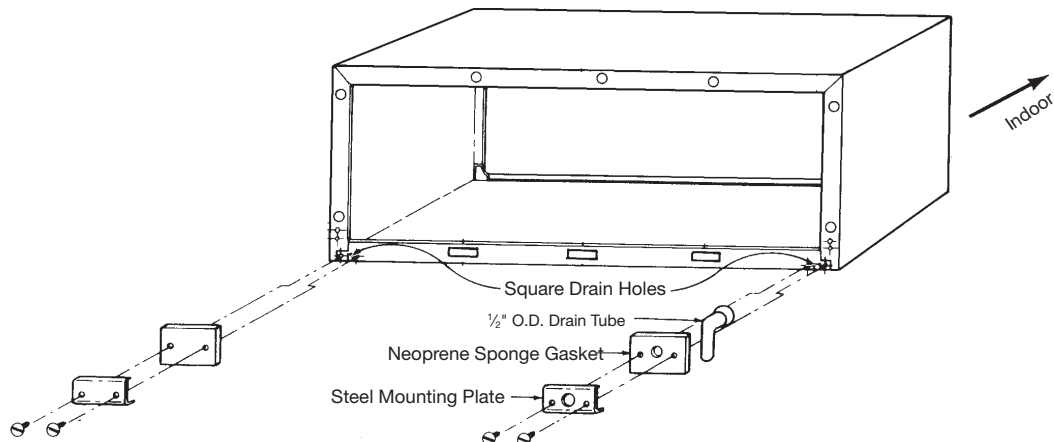


Figure 4. Outdoor Drain Kit



Subbase Installation

WARNING

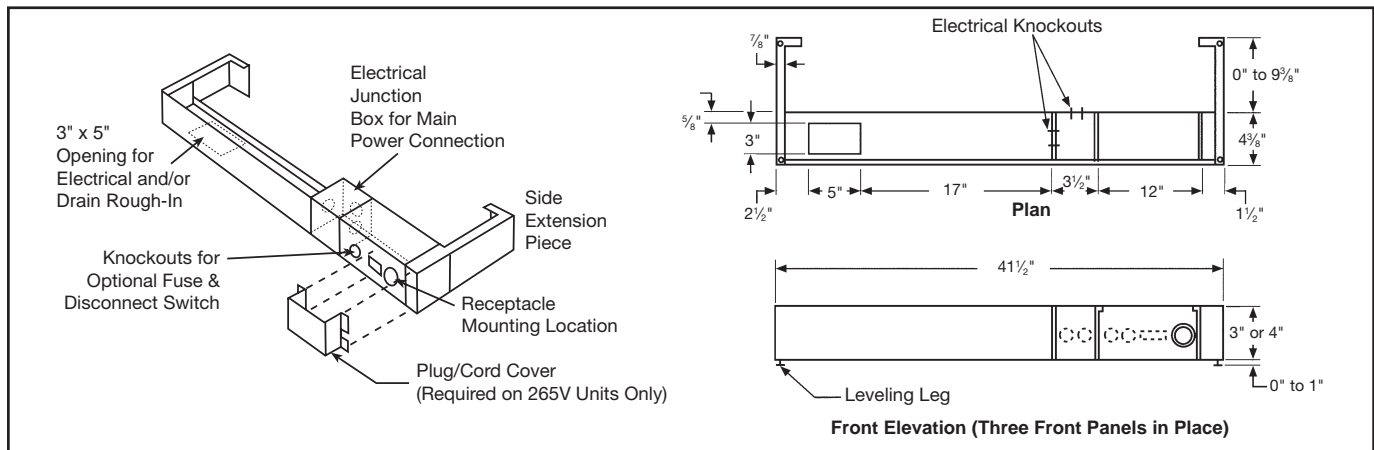
All electrical work must be done by trained, experienced electricians in accordance with applicable codes and standards. Kinked, bent or chafed cords; improper grounding or fusing; improper current or voltage; or improper installation can cause fire or electric hazards that can result in property damage, personal injury or death.

Electric Subbase

An electrical subbase is optional for 208V and 230V units, but is standard for 265V units. It is available in two sizes: 3" or 4". The subbase contains leveling legs for adjustment of up to 1" additional height. Install the wall sleeve and subbase at the same time.

Note: A minimum of 4 $\frac{3}{8}$ " of the wall sleeve must project into the room when using a subbase.

Figure 5. Electric Subbase



Installation

1. If the minimum depth subbase is required (4 $\frac{3}{8}$ "), discard the side extension pieces. The subbase mounts flush with the front of the wall sleeve.
2. If more than the minimum depth subbase is required, determine the depth of the side extension pieces desired and break at the proper score-line. Insert the side extension pieces into the front assembly and secure with two short black screws at each side.
3. Insert leveling legs into subbase bottom flanges. Four (4) legs will be needed if side extensions are used. Only two (2) will be required if side extensions are not used.
4. Place the subbase on the floor and align its center line with the center line of the wall opening. Do not fasten the subbases to the floor. After the wall sleeve has been installed, attach the subbase to it using the two clips provided.
5. The wiring should be roughed in and the conduit connected to the electrical junction box. Complete the installation by wiring the receptacle to the incoming power supply.

Power Supply and Control Wiring

All wiring must be done in accordance with local and National Electrical Code requirements. Some units have a multitap heater, so the Kw is determined by the field-installed power cord, and some have factory installed cords with fixed heaters. Refer to the data plate for proper overcurrent protection. Time delay fuses or HACR circuit breakers are required to avoid nuisance tripping.

Power Supply Wiring

208V and 230V units use a power cord that exits from beneath the conditioner on the control (R.H.) side. The cord has a usable length of 60" from where it exits the conditioner. (Do not use extension cords.) When a subbase is not used, the receptacle is generally mounted beneath the conditioner or on the wall beside it. An electrical subbase is available and contains a junction box for a field-mounted receptacle. All electrical connections are made within the subbase, thus eliminating the need for a wall-mounted receptacle (see Figure 5). The subbase is available in 3" or 4" height and can be furnished with a factory-mounted fused disconnect and receptacle as an option. The subbase is optional for 208V and 230V, but mandatory for 265V. The 265V chassis uses a "short cord," which is just long enough to plug into the subbase. A plug/cord cover is also required on 265V to make the power cord inaccessible (see Figure 5).

Control Wiring

If the unit control pad will be wall mounted, rough in the 20', 35' or 50' low-voltage wire harness at this time. The end of the harness, with exposed terminals, will plug into the control box at the unit. The other end, with concealed terminals, will connect to the control pad on the wall. At the unit, exit the wall with enough wire harness to reach the connector on the control box front. At the control pad mounting location on the wall, exit with only a few inches of wire harness. Line up the notch in the control pad mounting plate with the wire harness exiting the wall and secure the plate to the wall. Unplug the short cord from the PC board in the control pad, plug in the new wire harness from the wall and snap the control pad onto the mounting plate. The harness should all be concealed behind the control pad when finished. If an optional 24V wall stat will be used rather than the control pad, rough in the 4 to 7 low voltage wires as required by the stat. If remote ON/OFF control will be used, rough in 2 low voltage wires (22 ga. min.) to a maximum of 325' from the unit, (see page 4.) If unit will be connected to motion detector and door switch by others, rough in the wiring as required by the manufacturer. Leave enough wire at the unit to reach receptacles CN4 & CN7 on front of control box.

Wall Sleeve Installation – Thin Wall Construction

For panel wall and thin wall construction, a louver frame should be used. Refer to page 11 for installation of louver frame before continuing.

Panel wall and thin wall construction varies only slightly from frame and brick construction. Note: The center of gravity is 10 $\frac{1}{4}$ " from the outdoor edge of the wall sleeve. The wall sleeve must be supported to the center of gravity. Support can be from a factory-supplied subbase or from other field-supplied materials or it can be floor mounted for 208/230V.

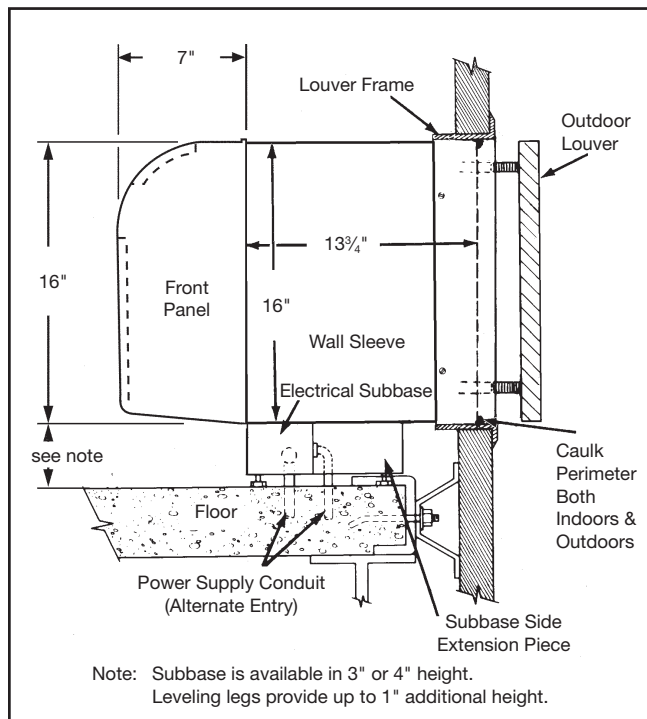
WARNING

Failure to provide proper support can result in property damage and severe personal injury.

Leave enough space for the cord to exit from under the front panel if required. Install as follows:

1. Clean the opening of all debris that may interfere with installation.
2. If the unit is to be supplied with a subbase, refer to page 8 for installation procedure. (265V always requires a subbase.) Install the subbase and wall sleeve at the same time.
3. If the optional drain kit is to be employed (heat pumps only), refer to page 7 before proceeding.

Figure 8. Thin Wall Construction with Standard Electrical Subbase



4. Recess the wall sleeve so that the louver is flush with the outside of the building. (Do not recess if using the outdoor drain kit. See page 7.)
5. Level wall sleeve left to right, pitch it 1/4" bubble to the outdoors and secure in wall with fasteners (as shown in Figure C, page 12). A 5/16" hole is provided on each side, 2" down from the top and 2" in from the rear. Additional holes may be required to firmly secure the wall sleeve.

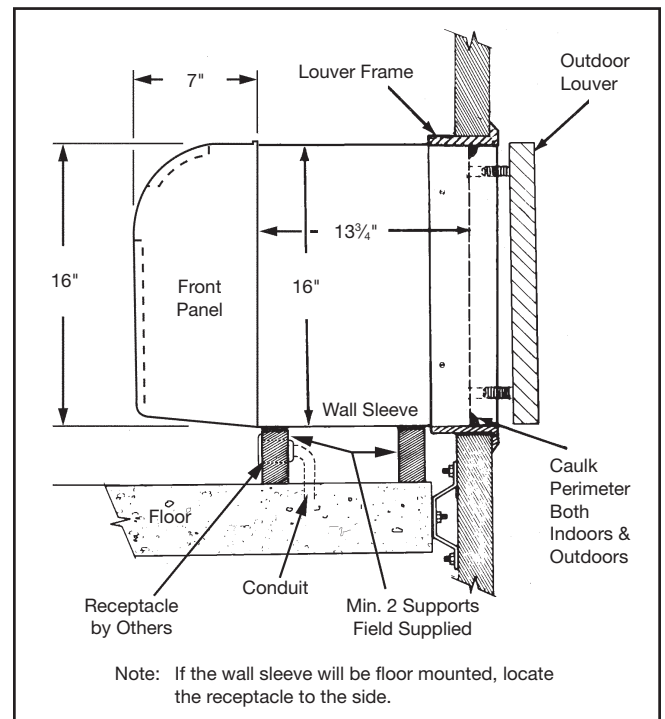
CAUTION

Do not drill holes in the bottom of the wall sleeve as it may cause leakage.

Where a subbase is used, secure the wall sleeve to the subbase with the two clips provided (see subbase installation, page 8).

6. Be sure the wall sleeve is mechanically attached to the wall for a proper seal. Use the louver frame for this purpose (see Figure B, page 12).
7. Caulk the wall sleeve to the wall opening on both the inside and outside perimeter. Be careful not to plug the weep holes. Caulking should be a resilient, non-hardening type, such as silicone.

Figure 9. Thin Wall Construction without subbase (208/230V only)



Wall Sleeve Installation – Medium Thick Wall Construction

A heavy-gauge, corrosion-resistant wall sleeve is provided for each unit. The wall sleeve is either shipped in a separate carton or shipped in a multi-pack of 15 on a skid.

The standard wall sleeve is designed to be easily installed in a variety of wall constructions.

Note: The center of gravity is 10¹/₄" from the outdoor edge of the wall sleeve. The center of gravity must be within the load-bearing surface of the wall or other support must be employed.

Support can be from a factory-supplied subbase or from other field-supplied materials. (265V always requires a subbase.) It may also be floor mounted for 208/230V.

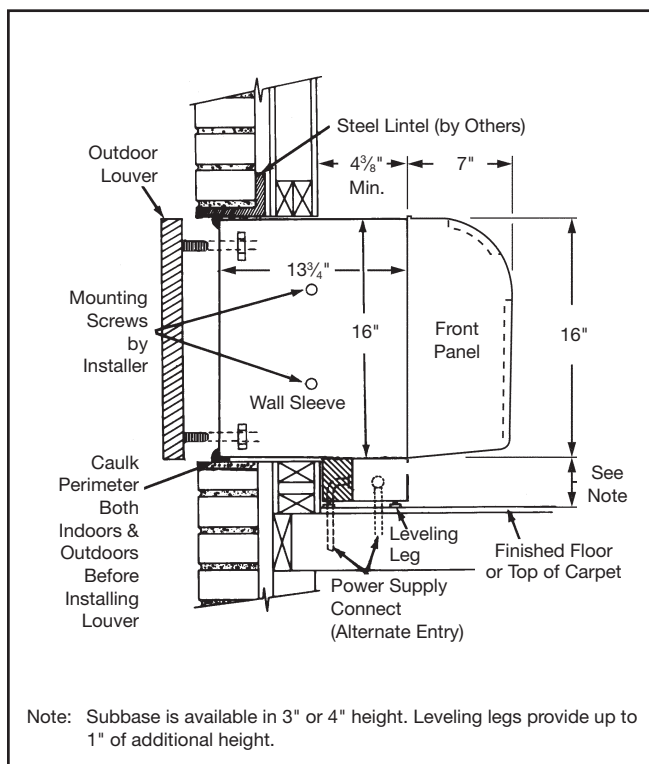
WARNING

Failure to provide proper support can result in property damage and severe personal injury.

Leave enough space for the cord to exit from under the front panel if required. The wall sleeve is not intended to replace the lintel. Install as follows:

1. Clean the opening of all debris that may interfere with installation.
2. If the unit is to be supplied with a subbase, refer to page 8 for installation procedure. Install subbase and wall sleeve at the same time. (Subbase is required for 265V but is optional for 208/230V.) A minimum of 4³/₈" of wall sleeve must project into the room when using a subbase.

Figure 6. Frame & Brick with Standard Electric Subbase



3. If the optional drain kit is to be employed (heat pumps only), refer to page 7 before proceeding.
4. Place a thin pad of mastic on bottom of the opening and slide in the wall sleeve. Be sure to recess the wall sleeve enough to accommodate outside louvers. This recess is 3/8" for stamped louvers and 1¹/₈" for architectural louvers. Louver should be flush to exterior surface when complete.

Note: Wall sleeve must be flush with the exterior wall, if using the outdoor drain kit (see page 7).

5. Level wall sleeve left to right, pitch it 1/4" bubble to the outdoors and secure in wall with fasteners (as shown in Figure C, page 12). A 5/16" hole is provided on each side, 2" down from the top and 2" in from the rear. Additional holes may be required to firmly secure the wall sleeve.

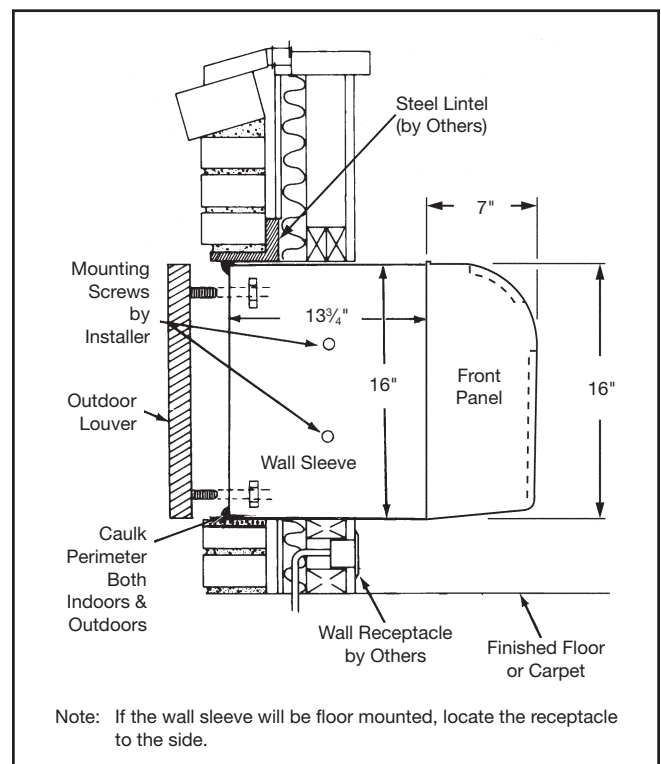
CAUTION

Do not drill holes in the bottom of the wall sleeve as it may cause leakage.

Where a subbase is used, secure the wall sleeve to the subbase with clips provided (see subbase installation, page 8).

6. Caulk the wall sleeve to the wall opening on both inside and outside perimeter. Be careful not to plug the weep holes. Caulking should be a resilient, non-hardening type, such as silicone.

Figure 7. Frame & Brick Without Subbase (208/230V only)



Wall Sleeve Installation – Thick Wall Construction

Use Table 1 to determine the maximum wall thickness allowed for the standard wall sleeve. For thicker walls, wall-sleeve extensions are available from your sales representative. Refer to page 12 for proper installation of wall-sleeve extensions.

Wall sleeve installation in thick walls is similar to frame and brick installation. The wall sleeve is not intended to replace the lintel. Install as follows:

1. Clean the opening of all debris that may interfere with installation.
2. If the unit is to be supplied with a subbase, refer to page 8 for installation procedure. Install subbase and wall sleeve at the same time. (Subbase is required for 265V but is optional for 208/230V.) A minimum of $4\frac{3}{8}$ " of wall sleeve must project into the room when using a subbase.
3. If the optional drain kit is to be employed (heat pumps only), refer to page 7 before proceeding.
4. If wall thickness exceeds dimensions shown in Table 1, a wall-sleeve extension must be used. Install the extension as described on page 12. Once the extension is attached to the wall sleeve, place a thin pad of mastic on the bottom of the opening and slide in the wall sleeve extension assembly. Be sure to recess the wall sleeve enough to accommodate outside louver. This recess is $\frac{3}{8}$ " for stamped louvers and $1\frac{1}{8}$ " for architectural louvers. Louvers should be flush to exterior surface when completed.

Note: Wall sleeve must be flush or projecting past the exterior, if using the outdoor drain kit (see page 7).

5. Level wall sleeve left to right, pitch it $\frac{1}{4}$ " bubble to the outdoors and secure in wall with fasteners (as shown in Figure C, page 12). A $5/16$ " hole is provided on each side, 2" down from the top and 2" in from the rear. Additional holes may be required to firmly secure the wall sleeve.

⚠ CAUTION

Do not drill holes in the bottom of the wall sleeve as it may cause leakage.

Where a subbase is used, secure the wall sleeve to the subbase with the two clips provided (see subbase installation, page 8).

6. Caulk the wall sleeve to the wall opening on both inside and outside perimeter. Be careful not to plug the weep holes. Caulking should be a resilient, non-hardening type, such as silicone.

*Reduce these dimensions by the louver thickness ($\frac{3}{8}$ " or $1\frac{1}{8}$ ") when using the outdoor drain kit. Sleeve must be flush with or projecting past the building exterior (see page 7).

Table 1. Maximum Wall Thickness without Sleeve Extensions

| Louver Type | *Maximum Wall Thickness | |
|--------------------------------|-------------------------|-------------------|
| | No Subbase | Standard Subbase |
| Stamped $\frac{3}{8}$ " | $14\frac{1}{8}$ " | $9\frac{3}{4}$ " |
| Architectural $1\frac{1}{8}$ " | $14\frac{7}{8}$ " | $10\frac{1}{2}$ " |

Figure 10. Thick Wall Construction with Standard Electrical Subbase

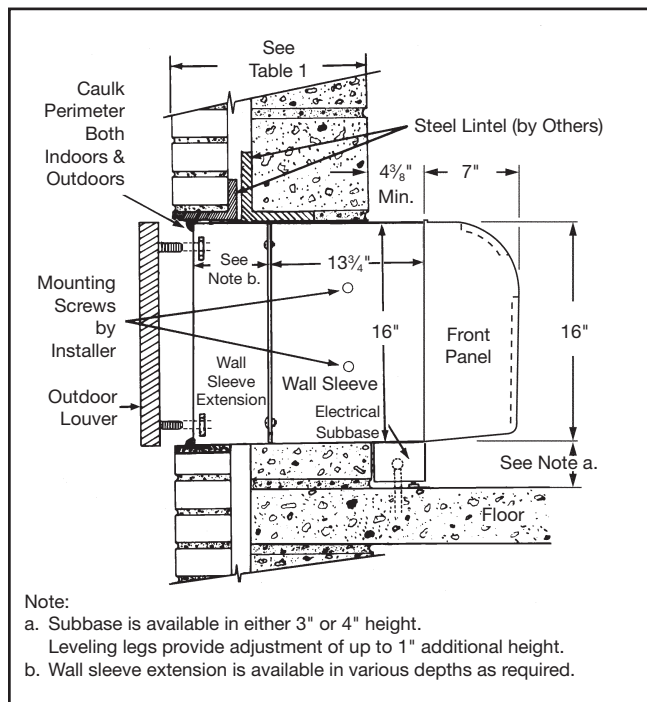
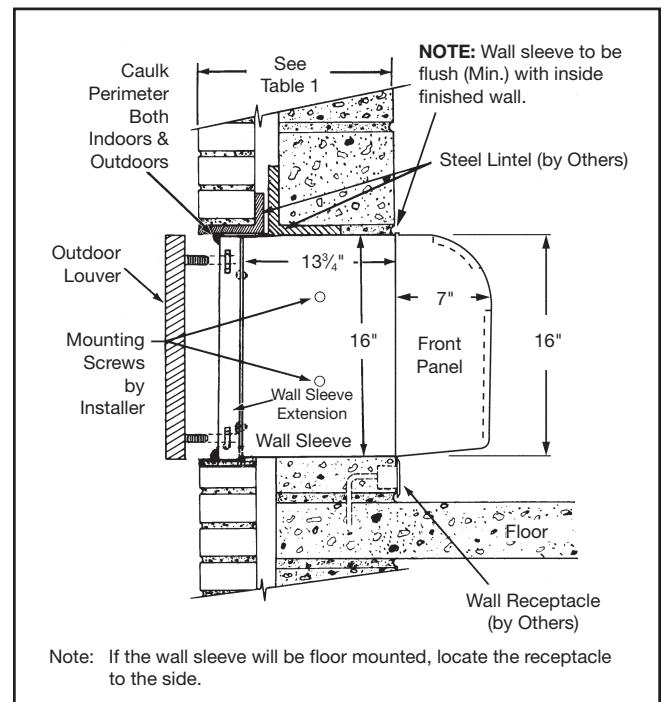


Figure 11. Thick Wall Construction without subbase (208/230V only)



Wall Sleeve Extension and Louver Frame

The standard wall sleeve will accommodate the maximum wall thickness described in Table 1, page 11. For thicker walls, wall sleeve extensions are available from your local distributor. Air splitters will be included in the wall sleeve extension as shown in Figure A.

Note: When installing a new chassis into an existing wall sleeve with an extension, it will be necessary to relocate the two air splitters to match the dimensions shown in Figure A.

Installation

Wall sleeve extensions are shipped in a separate carton. Install the wall sleeve extension as follows:

1. Place a bead of caulk around the perimeter of the wall sleeve and another bead around the mating side of the wall sleeve extension so that the joint is watertight. Be sure to use a resilient caulking, such as silicone.
2. Assemble the wall sleeve extension to the wall sleeve using fasteners by others. Make certain the caulking does not block the weep holes.
3. Attach indoor drain kit (if used) according to the instructions on page 7. Outdoor drain kits are not designed to be used with sleeve extensions.

Louver Frame

Louver frames should be used for panel wall and thin wall applications for positive anchoring to the wall. Recess the wall sleeve so that the louver is flush with the outside of the building (if outdoor drain kits are being used, keep sleeve flush with louver frame outer flange). Place louver frame around sleeve as shown in Figure B. Drill holes and attach to sides and top only.

CAUTION

Do not drill holes in the bottom of the wall sleeve as it may cause leakage.

Anchoring

Anchor the wall sleeve in the opening as shown in Figure C.

Figure A. Wall Sleeve Extension

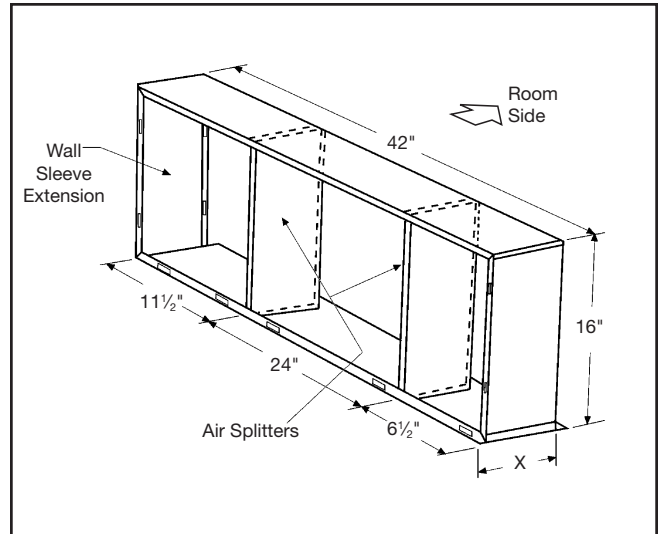


Figure B. Louver Frame

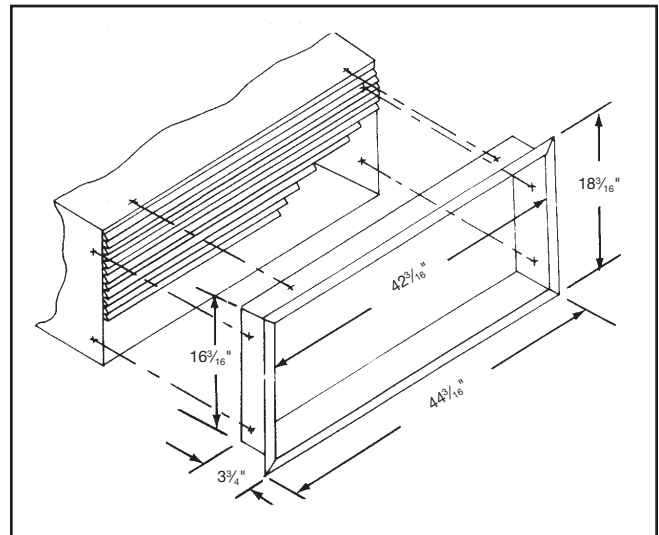
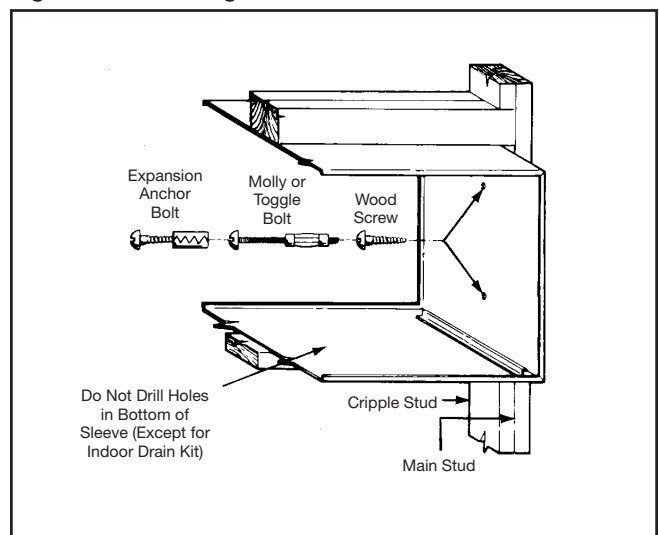


Figure C. Anchoring Methods



Outdoor Louvers

Two styles of exterior louvers are available. The standard louver is a one-piece stamped aluminum type that is finished natural and clear anodized, (Figure 12). Attractive, rugged architectural louvers (Figure 13) are extruded aluminum and are finished natural and clear anodized (optional colors are also available).

Louvers by others are acceptable as long as they meet factory specifications. They must have a minimum free area of 70% or a pressure drop not exceeding .05 in. w.g. at 300 fpm face velocity, and a blade design that will not cause recirculation of condenser air.

Free area is defined by ASHRAE as the minimum area of the openings in an air inlet or outlet through which air can pass. Have your local McQuay representative evaluate the application of special louvers or building facade treatments that may affect normal operation of the unit or restrict free air discharge of condenser airflow. A louver design that restricts the passage of condenser air or causes condenser air to be recirculated can dramatically alter the performance of the unit. Unit capacity and efficiency may be decreased and fan motor and compressor life can be shortened.

If the louver does not meet the requirements set out above or it is only marginally acceptable, then a drawing will be required for factory evaluation. If acceptance cannot be determined by the drawing, then a sample of the proposed louver must be sent to the factory for testing and certification. The sample sent for testing must be at least 16" high by 42" wide.

Typical Louver Design

Figure 14 illustrates some typical louver designs.

The "X" dimension represents the narrowest dimension through which air must pass. The "Y" dimension represents the increment of rise between the blades. To calculate the percentage of free area, divide dimension "X" by dimension "Y" (see Example).

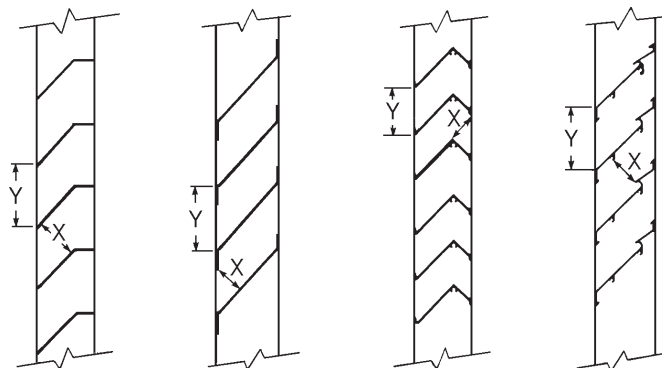
Figure 12. Standard Stamped Louver



Figure 13. Architectural Louver



Figure 14. Louver Designs



IMPORTANT!

Air flow required for PTAC units must not be restricted by exterior plants or walls.
Plants or shrubs must not be planted in close proximity to the outside grille of the PTAC unit.
Vegetation planted too close to grilles will cause discharge air to be recirculated, thereby increasing electrical consumption.
Warranty will be voided if it is determined that the compressor life is shortened from overheating due to close proximity of outside obstructions.

Note: Discharge air restrictions include, but are not limited to:

- Vegetation
- Concrete walls or barriers
- Overhangs that do not allow discharge air to rise

Example:

$$\text{Free Area \%} = \frac{X}{Y} \times 100$$

$$\text{Where } X = .7 \\ Y = 1.0$$

$$\text{Free Area \%} = \frac{.7}{1.0} \times 100 = 70\%$$

Installation of Louvers

1. Remove the louver and mounting hardware from the shipping carton and install the mounting studs in the louver.
2. Remove the temporary cardboard weather panel from wall sleeve.
3. Make a temporary handle by looping a piece of flexible wire or heavy cord through the louver. This enables the installer to keep a firm grasp on the louver when installing from inside the room.
4. Angle the louver through the opening at the rear of the wall sleeve, then pull the louver back to the wall sleeve flange so that the louver mounting studs pass through the holes in the outdoor flange.
5. Secure the louver in place using the nuts and washers provided.
6. If the heating/cooling chassis is not to be immediately installed, replace the cardboard weather panel.

Installation of Chassis

WARNING

The chassis weighs approximately 150 lbs. Use blocking and lifting devices. Do not raise over any body parts.

1. Remove the shipping carton and inspect for any shipping damage. Report any found to the carrier.
2. Save the shipping carton to cover installed conditioner until construction is complete.
3. Remove the two screws attaching the front panel to the chassis and unlatch the front panel from the chassis by grasping it at the lower corners and pulling forward. Lift the front panel off and set aside.
4. Check the nameplate data on chassis to ensure that the correct job site distribution has been made with respect to heating/cooling capacities. Generally, corner rooms require larger capacities. Also check for the correct voltage and max fuse/circuit breaker size.

WARNING

Improper electrical supply can cause property damage, severe personal injury or death.

5. Remove the chassis from carton base by lifting evenly on the base of unit.

CAUTION

Do not lift by pulling on the tubing. Tubing can crack or bend, damaging the unit.

6. Remove the temporary cardboard weather panel from the wall sleeve and make sure the louver has been installed.
7. Four (4) tinnerman clips and four (4) screws are included with the literature packet that ships in each chassis carton. Install the clips on the wall sleeve as shown in Figure 15 and save the screws for step 14.

8. Rotate the fans to be sure they are free of obstruction.
9. Check all fasteners to make certain they did not loosen during shipment. Do not loosen the bolts holding down the compressor.
10. Do not lubricate the motors before start-up. Motors are factory lubricated. Both motors have permanently lubricated bearings and do not require additional lubrication.
11. Check all copper tubing and capillaries for proper clearance so they will not hit or rub during operation.
12. When installing the chassis in older McQuay wall sleeves, bend both 1" wide sheet metal tabs, at the rear of the wall sleeve rails, straight up to allow full insertion of the chassis.
13. Slide the chassis into wall sleeve until firmly seated against weather seals.

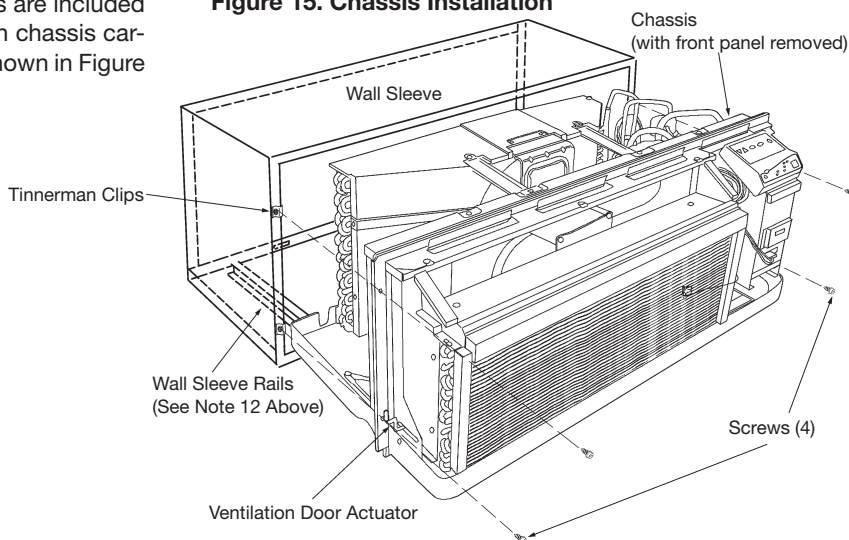
CAUTION

Do not push on the coil surface, control box cover or fan scroll.

Make sure tubing does not catch when inserting the chassis.

14. Secure the chassis into the wall sleeve with the four (4) screws mentioned in step 7.
15. Plug the power cord into the lower RH corner of the chassis and into the power supply receptacle. Excess cord for 208V and 230V units should be coiled neatly and stored under the control box. Attach the plug/cord cover to front of subbase on 265V. See Figure 5 page 8. Make sure power cord is not pinched or kinked.
16. Leave the front panel off until the "Equipment Start-up" has been completed. (See page 6, and 15-16.)

Figure 15. Chassis Installation



Equipment Start-up

Initial start-up of the unit by trained, experienced personnel, is usually the responsibility of the installing contractor. This start-up consists of inspecting and operating the equipment for all functions at the time of initial installation, and making necessary adjustments. It also includes demonstrating its proper operation to the owner or the owners' agent. Note that, unless otherwise specifically agreed to in writing, the manufacturer includes no field labor, start-up service or the like in the price of its equipment. After the equipment leaves the factory, it may become damaged or maladjusted during transportation or on the job. Sometimes wires are disconnected accidentally, or fan motors move on their bases due to rough handling, causing fans to strike. Correcting such conditions is part of start-up. Confirm that all dip switch settings are OFF except #8 of 8 and #3 of 4. Obtain the owners written authorization for any other settings. Any switch changes must be activated by unplugging and plugging in the power cord.

Note: For freeze protection, dip switch #4 of 4 must be in the down position (see page 4).

Note: There are various time delays built into the system when using the unit or wall mounted control pad. Most of these delays are only for a few seconds, but they can be up to four minutes. The compressor will delay for two minutes before it can be restarted on both the control pad and remote thermostat. The compressor will run for 90 seconds minimum unless the mode is changed. The fan runs for 15 seconds after the electric heater turns off. The unit will always start up with random time delay.

1. Chassis with a separate power cord has a universal electric heater. The power cord selected determines the Kw output. Make sure you have the right cord for the heater Kw required by the owner. See Table 2 below.

Table 2. Power Cord / Heater Kw Selection

| Heater Kw | Unit Voltage | Vendor Number ⁽³⁾ | Plug Size (amps) | Unit Fuse Size (amps) |
|--------------------|--------------|------------------------------|------------------|-----------------------|
| 0 ⁽¹⁾ | 208 | 105575512 | 15 | 15 |
| 0 ⁽¹⁾ | 230 | 105575512 | 15 | 15 |
| 0 ⁽¹⁾ | 265 | 105575804 | 20 | 15 |
| 1.7 | 208 | 105575511 | 15 | 15 |
| 2.0 | 230 | 105575511 | 15 | 15 |
| 2.0 | 265 | 105575802 | 20 | 15 |
| 2.5 | 208 | 105575611 | 20 | 20 |
| 3.0 | 230 | 105575611 | 20 | 20 |
| 3.0 | 265 | 105575801 | 20 | 15 |
| 4.2 ⁽²⁾ | 208 | 105575713 | 30 | 25 |
| 5.0 ⁽²⁾ | 230 | 105575713 | 30 | 30 |
| 5.0 ⁽²⁾ | 265 | 105575803 | 20 | 25 |

⁽¹⁾ Cooling Only ⁽²⁾ Unit Size 12 and 15 only ⁽³⁾ Molded on power cord receptacle

208/230V chassis with factory installed power cord, has a 2.9/3.5 Kw heater and must connect to a 20 amp circuit.

2. Make certain the chassis power cord is plugged into a receptacle with the correct voltage and fuse protection required by the unit data plate. See IM 714 (ships with the power cord) for more detail about the power cord and receptacle. Coil up any excess cord length and stow it under the control box.
3. Open or close the ventilation damper door as required by the owner. The actuator is located at the lower left end of the chassis. See Figure 15.

Note: Remove shipping screw from damper door if it needs to be opened.

4. If the conditioner will use the standard control pad that ships with the unit, continue to step 5. If a remote thermostat will be used rather than the control pad, skip over steps 5 through 18 and continue with step 19.
5. If the control pad is being remote mounted, unsnap the control from its mounting bracket on the unit, unplug it and mount it on the wall. Be sure to plug in the 6 wire cable that connects it to the unit mounted control box. Snap on the decorative cover that replaces the control pad at the unit. See pages 4 and 8 for more information. Dip switch #2 of 4 on front of control box, should be ON.

Note: If upon initial power up, the digital temperature display reads between 16° and 30° (Celsius), unplug the power cord and plug it back in again to reset for Fahrenheit (60-85°).

6. Test HEAT by selecting the heat mode and increasing the temperature setting until the unit is discharging heated air.

Note: Initial electric heater activation may result in slight burning odor. Run the heater at time of installation several minutes until any odor dissipates. To activate electric heaters on heat pump models, select a unit temperature several degrees above room temperature.

7. Test COOL by selecting the cooling mode and decreasing the temperature setting until the discharge air is cold.
8. Test FAN by selecting the fan mode and increasing the temperature setting to 85°F. There should be no heat. Lower the setting to 60°F. There should be no cooling.
9. Test COOL/DRY by selecting the COOL mode. With indicator light in COOL, press and hold the Mode key for 15 seconds until light switches to COOL/DRY. Then decrease the temperature setting until the discharge air is cold. Switch back to COOL by again pressing the Mode key for 15 seconds.
10. Test fan AUTO/HIGH/LOW as follows: With the unit in either HEAT, or COOL mode, switch back and forth between AUTO, HIGH and LOW speed, using the FAN key on the control pad. The sound level between HIGH and LOW will be noticeable and shown by indicator light. AUTO gives Low fan if temperature setting is within 2°F of room temperature and High fan if more than 2°F from room temperature.
11. Test the CONTINUOUS/CYCLE fan by selecting HEAT or COOL mode and raising or lowering the temperature set point. With dip switch #8 OFF (down), the indoor fan will continue to run regardless of whether the unit is calling for heating/cooling or not. With dip switch #8 ON, the indoor fan will run continuous while unit calls for heat/cool and be OFF 7 minutes and ON 2 minutes if unit is not heating/cooling. We recommend leaving dip switch #8 ON to conserve energy.
12. ROOM FREEZE PROTECTION – Unless the owner has expressly rejected this feature (40°-50°F minimum room temperature), leave dip switch #4 of 4 OFF (down). To test, place the room temperature sensor in ice water and the heat will come on regardless of the control mode or temperature settings.

13. WIRED REMOTE ON/OFF – If this feature is being used, connect the two low voltage wires, coming from the remote dry contacts, to the CN3 receptacle inside of the 2" x 3" electrical cover on front of the control box. Use the small plug and wire assembly provided. Test by closing the remote dry contacts. Control pad should now show settings for P1 (see page 5, if P1 setting need to change).
14. TEMPERATURE LIMITING – If the owner wants the control temperature range to be less than the factory default (60°-85°F), it can be reduced using dip switches #1 - #4 of 8 on front of the control. See charts on page 4.
15. SLEEP (optional) – Press the control pad key for SLEEP and the indicator light will come on. The temperature setting will gradually rise or fall over the next 2 hours. See page 5 for more information.
16. TIMER (optional) – To turn the unit OFF using the TIMER, proceed as follows: With the unit in operation, press the TIMER key once to start the digital display blinking. While the "0" is still blinking, press the TIMER key repeatedly to select the number of hours before you want the unit to turn OFF. After a few seconds, the display will switch back to showing the temperature setting of the unit. If at any time, you want to check the number of hours remaining before the unit shuts off, press the TIMER key and the number of hours will blink for a few seconds on the display. See page 5 for more information.

To turn the unit ON using the TIMER, proceed as follows: With the unit in operation, select the desired start-up mode, fan speed and temperature setting. Then, using the ON/OFF key, turn the unit OFF. Press the TIMER key once to start the display blinking. While the "0" is still blinking, press the TIMER key repeatedly to select the number of hours before you want the unit to start. The number of hours before start-up will continue to blink on the display until the start-up takes place, (see page 5 for more info.)
17. MOTION SENSOR & DOOR SWITCH (Optional) – To activate, dip switch #3 of 4 must be OFF. Using the plug assemblies that ship with the unit, connect motion sensor and door switch (both by others) to receptacles CN4 & CN7 on front of control box. Program memory P1 & P2 (see page 5). To test, short the 2 prongs (located to the right of the dip switches and labeled "T-SHRT") with wire or tin foil to reduce the 15 minute delay to 3 minutes, and the 14 hour delay to 6 minutes. Set mode and temperature on unit, (different than programmed for P1 & P2) then exit room and close door. After 3 minutes re-enter the room. Unit should now show settings programmed for P2. Again set the mode and temperature on unit (different than programmed for P1 & P2). Exit the room and close the door. Wait 6 minutes then re-enter the room. The unit should now show settings programmed for P1. Remove the short from the T-SHRT prongs to restore the normal 15 minute and 14 hour time delays.

CAUTION

Failure to remove short for long term operation will damage the equipment and void the warranty.

18. WIRELESS REMOTE CONTROLLER – If this optional accessory will be used, check it out at this time. It will only work with the control pad (either unit or wall mounted). You should be able to control the unit from anywhere in the room by pointing the remote controller at the control pad.
19. HEAT PUMP OVERRIDE – For units with reverse cycle heating, check the override feature. Note: The outdoor temperature should be above 40°F and dip switch #7 on front of the control must be OFF. Select the HEAT mode with temperature setting calling for heat. The compressor and outdoor fan should be operating and the room discharge air should be warm indicating reverse cycle heating. (NOTE: if using the control pad, temperature setting must be no more than 2°F above room temperature for reverse cycle to work. If more than 2°F above, electric heat will energize). Slide dip switch #7 to ON then unplug and plug in the power cord to activate the changes. The compressor and outdoor fan should not operate, but the unit should continue to discharge warm air, indicating it is now heating with electric heat. This feature provides electric heating if the compressor fails, or if reverse cycle heating is not sufficient at lower outdoor temperatures. Leave dip switch #7 OFF for normal operation.
20. REMOTE WIRED THERMOSTAT – If a remote thermostat will be used in lieu of the control pad, remove and discard the control pad then install the decorative cover in its place. Connect the low voltage remote thermostat wires to the 7 pin receptacle on the control box front, using the plug and wire assembly provided with the unit (see figure 16, page 17). Mount and wire the remote thermostat per the instructions that come with it. Slide dip switch #1 of 4 to ON. After this, unplug the power cord and plug it back in again to reset the control for remote thermostat. For more information, see pages 5 and 8. Check the operation of the conditioner using the instructions supplied with the remote thermostat.
21. DISCHARGE GRILLE – As shipped, the front panel discharge grille will angle 35° from vertical, towards the room. This will normally give the best air circulation. However, by removing 6 screws and reversing the grille, this angle can be reduced to 15° from vertical. Once the grille angle has been decided, place the front panel back on the chassis. Hook it at the top and snap it on at the bottom. Replace the two screws. The control door in the literature packet should now be installed on the front panel.

Installing Remote Mounted Thermostat

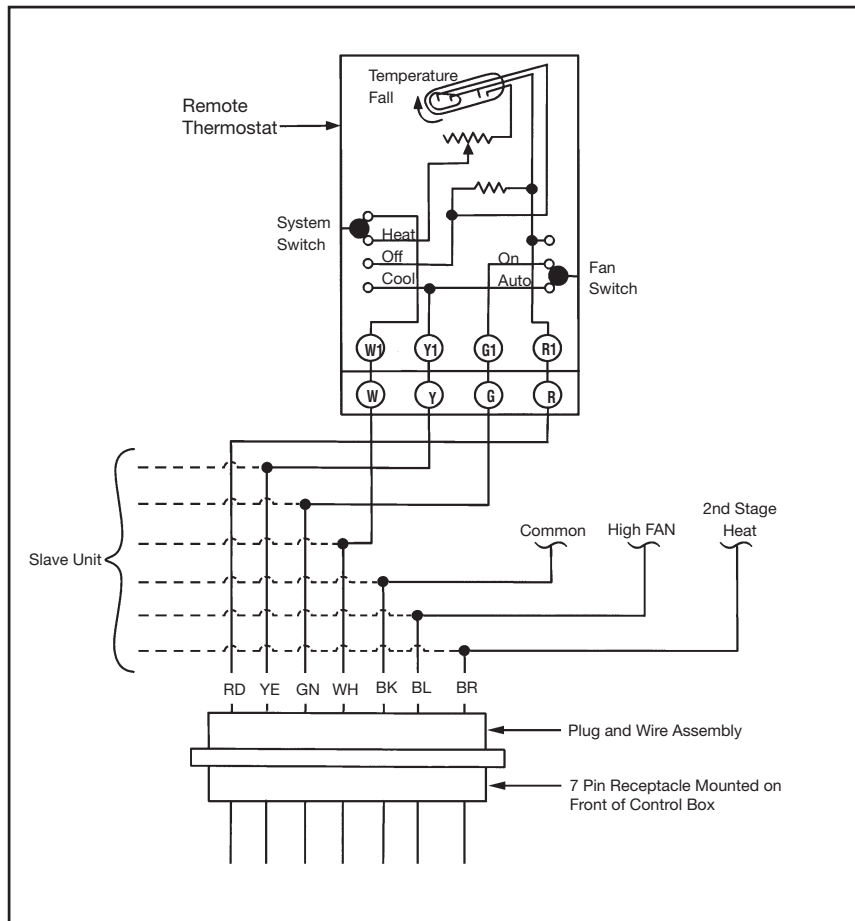
Units that use remote mounted thermostats should be field wired as shown in Figure 16. The Remote Wall Thermostat internal wiring shown is typical for manual changeover. Other thermostats will have different internal wiring. Master transformer size (15VA) allows only one slave (2 units per wall stat). Other considerations for this arrangement are as follows.

1. When wiring the low voltage plug and wire assembly, provide enough wire to move harness out of the way for chassis removal. Also see pages 5 and 8.

2. If a subbase is used under the unit wall sleeve, a small hole may be drilled and grommited in the subbase front to allow passage of the low voltage wires.

3. When using a programmable or electronic wall thermostat that requires 24V power, include the BK (common) wire to the thermostat. Wall stats with 2 stage heat or multiple fan speed controls, may require that all 7 low voltage wires be connected. Two stage thermostats must be programmed to power both WH and BR wires simultaneously to bring on 2nd stage heat (electric) and turn off reverse cycle heating.

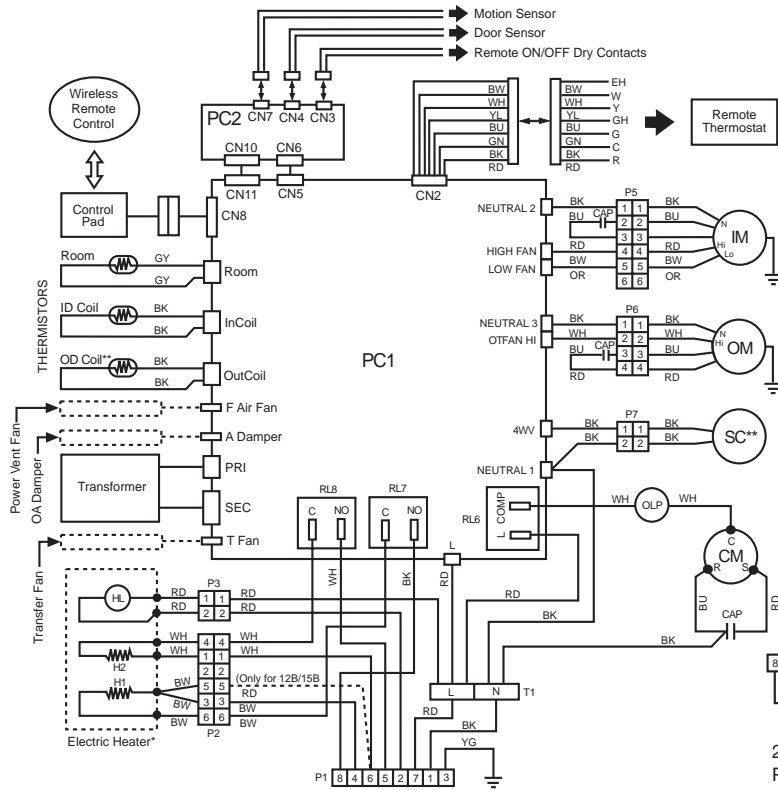
Figure 16. Typical Remote Thermostat Wiring



| | |
|---|--|
| <p>⚠ CAUTION</p> <p>Use copper conductors only. Unit terminals are not designed to accept other types of conductors. Failure to do so may cause damage to the equipment.</p> | <p>⚠ WARNING</p> <p> Hazardous Voltage! Disconnect all electric power including remote disconnects before servicing. Failure to disconnect power before servicing can cause severe personal injury or death.</p> |
|---|--|

Wiring Diagrams – PTAC/HP - 07B/09B/12B

Figure 17. Universal Heater with Field Installed Power Cord



NOTE: * H1 (3 kw) Heater terminal is always 0.25" with black shrink sleeve.
 H2 (2 kw) Heater terminal will be either 0.188" with black sleeve or 0.25" with clear or red sleeve or green mark on sleeve.
 ** Only for Heat Pump (PTHP)

Power Cords

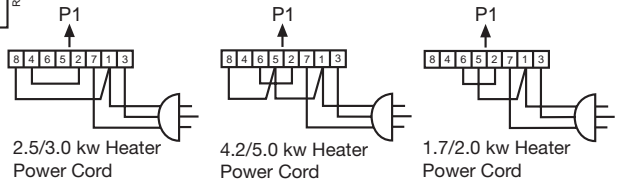
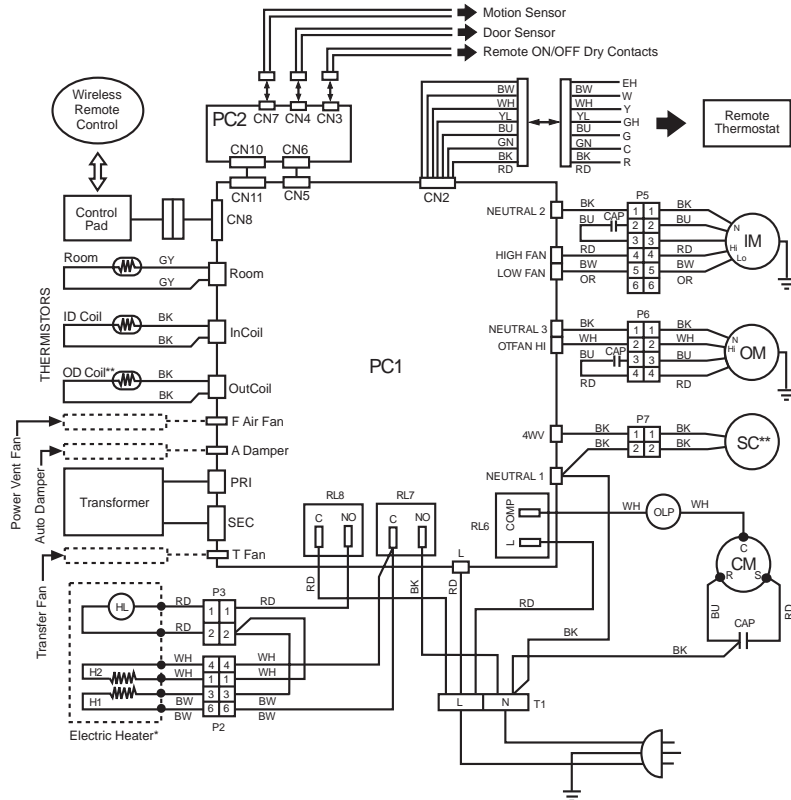


Figure 18. Fixed Heater with Factory Installed Power Cord



| Symbol | Name |
|--------|--------------------------------|
| PC1 | Main PC Board |
| PC2 | Dip Switch PC Board |
| CM | Compressor Motor |
| OM | Outdoor Motor |
| IM | Indoor Motor |
| [] | Component Provided as Assembly |
| SC | Reversing Valve Solenoid Coil |
| T# | Terminal Block |
| P# | Connector |
| ⊙ OLP | Overload Protector |
| ⊙ HL | Heater High Limit |

NOTE: * H1 (3 kw) Heater terminal is always 0.25" with black shrink sleeve.
 H2 (2 kw) Heater terminal will be either 0.188" with black sleeve or 0.25" with clear or red sleeve or green mark on sleeve.
 ** Only for Heat Pump (PTHP)

| | |
|---|---|
| <p>⚠ CAUTION</p> <p>Use copper conductors only. Unit terminals are not designed to accept other types of conductors. Failure to do so may cause damage to the equipment.</p> | <p>⚠ WARNING</p> <p>Hazardous Voltage! Disconnect all electric power including remote disconnects before servicing. Failure to disconnect power before servicing can cause severe personal injury or death.</p> |
|---|---|

Scheduled Maintenance

With proper care, the unit can provide uninterrupted service for many years. Scheduled maintenance of this equipment as described below, is the key to the equipment's longevity.

- A.** Air filters must be cleaned at regular intervals. Twice annually may be adequate in some areas, while twice monthly may be required in others. Areas with high dirt and lint content or heavy usage of units require more frequent filter maintenance than those areas of relatively clean operating or low usage conditions. Unit malfunction will occur if air filters are not kept clean. To remove the air filters, grasp the top of the filters and pull straight up. Vacuum the filters from the dirty side or wash with hot water and a mild detergent. Allow the filters to dry thoroughly before replacing them. See Figure 19.

Figure 19. Room Air Filters



- B.** Every year the chassis should be removed for a thorough checkup. This should be completed as follows:
1. Unplug unit from power source.
 2. Remove the front panel and clean it. Use mild soap and water only.
 3. Remove the chassis from the wall sleeve and move it to the maintenance department. Replace it with spare chassis or weather plate.
 4. Check all seals and insulation and repair as required.

5. Check all wiring and controls for hazardous conditions, such as kinks, cuts, abrasions and signs of malfunction, such as melting, pitting, discoloration or missing wires. Do not operate a unit with such signs until it has been professionally inspected and repaired.
6. Unplug the control pad and remove it before cleaning the chassis. Clean the coils, fan blades, motors, ventilation door screen, indoor and outdoor drain pans, compressor and condensate drain (Styrofoam® opening under ventilation damper door). Normal cleaning can be accomplished by wiping the unit surface with a damp cloth.

WARNING

Cleaning compounds can cause damage to the packaged terminal unit, or cause fire, electric shock, personal injury or death. Do not spray cleaning compounds onto the discharge grille, return air opening, or unit controls. When using cleaning compounds in the area, turn unit off to avoid drawing vapors into it and cover the cabinet front with a drop cloth. Avoid coil cleaners that include Lithium Hydroxide, Sodium Hydroxide, Potassium Hydroxide Magnesium Hydroxide, Ammonium Hydroxide, Sulfuric Acid, Hydrochloric Acid, Phosphoric Acid, Hydrofluoric Acid, Acetic Acid, Chromic Acid, Hydro Carbon, or any derivative of the above as they will damage the coil coating and cabinet front.

7. Dry equipment thoroughly, especially electric parts.
8. Clean any rust spots with steel wool and coat with rust-inhibiting paint.
9. Clean insulation or replace if necessary.
10. Check insulation on refrigerant tubing and replace if necessary.
11. Check all fasteners and tighten as required.
12. Clean ventilation door screen and oil linkage.
13. Reinstall the control pad and test run the chassis to check for rattles, etc., before replacing it in the wall sleeve.

Recommended Spare Parts

An inherent advantage of the PTAC/PTHP system is that shut-down of one unit does not interrupt the operation of the rest of the system. A further advantage is that a unit or part can be quickly and easily replaced, thus minimizing the inoperative time of the equipment. This is so, however, only if a replacement unit or part is quickly available. In order to replace a part quickly and keep all units in good operating condition, a small stock of parts should be purchased along with the PTAC/PTHP units. Where an owner carries such a stock, immediate replacement of a part is possible. The replaced part can then be returned to the factory or one of its authorized service stations. So long as it is still in warranty, it is repaired or replaced and returned to the owner without cost for shop labor and material. Thus, the stock of replacement parts is constantly replenished. Listed are the parts which we recommend be carried in stock, together with the quantity per 50 conditioners installed.

| | |
|--|---|
| Cooling Chassis | 1 |
| Compressor Overload Device | 1 |
| Compressor Running Capacitor | 1 |
| Indoor Fan Motor | 1 |
| Indoor Fan Wheel | 1 |
| Indoor Fan Motor Capacitor | 1 |
| Outdoor Fan Motor | 1 |
| Outdoor Fan Blade | 1 |
| Outdoor Fan Motor Capacitor | 1 |
| Control Pad* | 1 |
| Control Box Internal PC Board | 1 |
| Control Box External PC Board with Dip Switches..... | 1 |
| Universal Electric Heater | 1 |

For parts or service, contact your local distributor or call 1-800-377-2787, or 763-553-5009.

*Remote thermostats should be stocked if they are being used in lieu of the control pad.

Approximate Shipping Weights

Heating/Cooling Chassis and Front Panel

| | |
|----------------------------------|----------|
| Size 007 | 140 lbs. |
| Size 009 | 140 lbs. |
| Size 012 | 145 lbs. |
| Size 015 | 145 lbs. |
| Cabinet/Wall Sleeve | 36 lbs. |
| Louvers | |
| Flush-stamped | 6 lbs. |
| Architectural | 8 lbs. |

Subbase

| | |
|----------------------------------|---------|
| 3" (76mm) High Electrical | 10 lbs. |
| 4" (102mm) High Electrical | 10 lbs. |

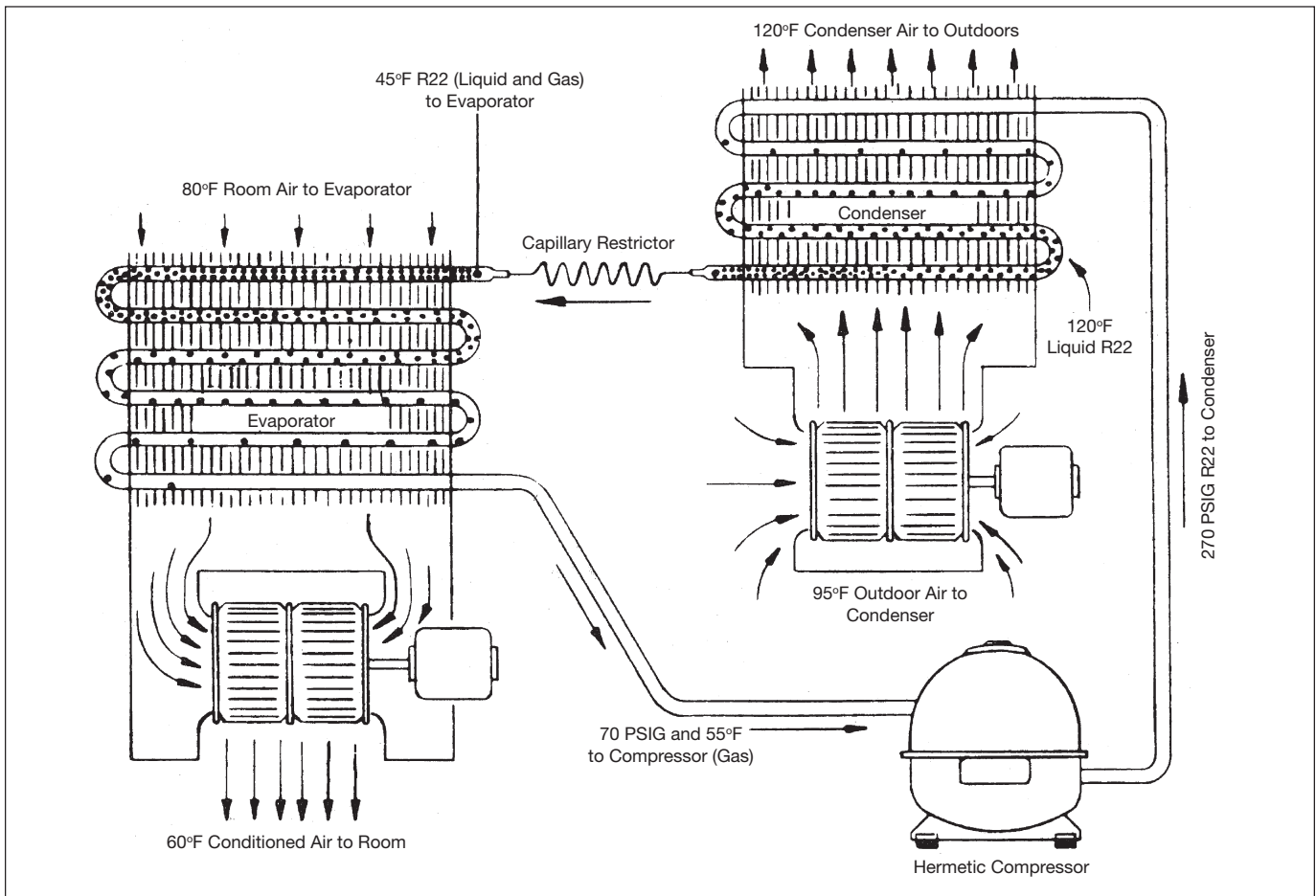
| | |
|------------------------------------|-------|
| Electrical Receptacle | 1 lb. |
| Plug Cord Cover | 1 lb. |
| Power Cord | 1 lb. |

Refrigeration Cycle

Every motor-driven refrigeration system operates on the Carnot cycle. A practical understanding of what goes on at the various steps in this cycle can be a big help to the troubleshooting mechanic. Figure 20 illustrates the refrigeration cycle. The diagram shows what occurs in each component of a hermetically sealed air conditioning system, as used in this equipment.

The temperatures shown are typical of what they might be when the air entering the condenser (outdoor temperature) is 95°F, and the temperature of the conditioned space is 80°F.

Figure 20. Refrigeration Cycle



Troubleshooting Chart



WARNING

Troubleshooting can present hazards of electricity, rotating parts, sharp edges and weight. Troubleshooting must be done by trained, experienced technicians only. Improper troubleshooting can result in equipment damage, severe personal injury or death.

| Trouble | Possible Causes | Treatment |
|--|--|---|
| 1. Indoor and outdoor fans will not operate in cool mode. | <ul style="list-style-type: none"> a. No power to unit. b. Faulty control pad or control box PC boards. c. Loose connections to control pad or control box PC board. | <ul style="list-style-type: none"> a. Check supply line fuses, circuit breakers, and be sure the power is on. Blown fuses would indicate circuit overloading, a short circuit or a grounded condition in the circuit. Voltage supply to the equipment should be checked. Voltage under load must be within 5% of voltage given on date plate. b. Replace. c. Tighten. |
| 2. Indoor fan operates on cool but compressor does not start. | <ul style="list-style-type: none"> a. Temperature setting too high. b. Low voltage. c. Faulty control pad or control box PC boards. d. Loose wire connections to control pad or control box PC board. e. Defective compressor overload. f. Loose connections at compressor terminals. g. Wiring to compressor terminals defective. h. Loose connections in compressor overload device. i. Starting capacitor malfunctions. j. Defective compressor. k. Built in time delay | <ul style="list-style-type: none"> a. Lower the setting. b. Must be within 5% of data plate rating. c. Replace. d. Tighten. e. Replace. f. Tighten. g. Replace. h. Tighten. i. Replace. j. Replace. k. Wait up to 4 minutes |
| 3. Indoor fan runs on cool and compressor starts but stops after a short interval. | <ul style="list-style-type: none"> a. Compressor overload is activated due to overloading. | <ul style="list-style-type: none"> a. Check voltage supply. Clean outdoor coil inside and out. Check for recirculation of condenser air. Put air "splitters" in, if missing. Check compressor for short circuit. If defective, replace. |
| 4. Indoor and outdoor fans run on cool and compressor starts and runs, but compressor occasionally stops (on overload device). | <ul style="list-style-type: none"> a. Low voltage due to overload circuits within building or throughout the local power system. Due to varying power demands, this condition might exist only at certain times during the day or on very hot days. b. High voltage due to fluctuations in local power system; usually occurs during low load periods of the day. c. Partial short circuit in compressor motor. Under normal loading a compressor with a partial short circuit might appear to be operating all right; increased condensing air temperature might then cause a short. | <ul style="list-style-type: none"> a. Run separate electric line to equipment. Consult local power company. b. Consult local power company. c. Replace compressor. |
| 5. Compressor starts and runs on cool but indoor or outdoor fan does not run. | <ul style="list-style-type: none"> a. Faulty control pad or control box PC boards. b. Open circuited blower motor. c. Blower rubbing against its housing. d. Bearings on blower motor seized. e. Loose wiring connection. | <ul style="list-style-type: none"> a. Replace. b. Replace. c. Adjust blower motor or blower wheel position. d. Replace blower motor. e. Tighten. |
| 6. Equipment gives electrical shock. | <ul style="list-style-type: none"> a. Grounded electrical circuit. | <ul style="list-style-type: none"> a. Repair and check equipment ground. |
| 7. Dip switch function does not work. | <ul style="list-style-type: none"> a. Function has not been activated by momentary loss of power. b. Dip switch did not connect c. Built-in time delays | <ul style="list-style-type: none"> a. Unplug the power cord then plug it back in. b. Slide it back and forth to make sure it has mechanically switched. c. There are time delays built-in to the control to prevent overlap of functions. Wait up to 4 minutes. |
| 8. Insufficient cooling capacity. (Continues on page 22) | <ul style="list-style-type: none"> a. Equipment standing too long without being run. b. Insufficient airflow through condenser due to: <ul style="list-style-type: none"> 1) Dirty condenser. 2) Obstructed outdoor louver. 3) Condenser fan not running. 4) Condenser fan not up to speed. 5) Condenser fan slipping on motor shaft. 6) Recirculation of condenser air. | <ul style="list-style-type: none"> a. If the air conditioner is allowed to stand for an extended length of time without being run on cool, it is possible for all the refrigerant to become absorbed in the oil inside the compressor and refrigeration circuit. If this should happen there will be no cooling until the necessary working pressures have been established. This will take about 5 minutes of continuous running. b. <ul style="list-style-type: none"> 1) Clean. 2) Remove obstructions. 3) Check same as in the case of malfunctioning condenser air blower. 4) Check for correct voltage. Replace motor if necessary. 5) Adjust fan position and tighten setscrews. 6) Make corrections. |

Troubleshooting Chart



WARNING

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| Trouble | Possible Causes | Treatment |
|------------------------------------|---|---|
| 8. Insufficient cooling capacity. | <ul style="list-style-type: none"> c. Insufficient airflow through evaporator due to: <ul style="list-style-type: none"> 1) Dirty evaporator. 2) Ice on evaporator coils. 3) Dirty air filter. 4) Obstructed discharge grilles. 5) Indoor blower motor not running. 6) Indoor blower motor not up to speed. 7) Indoor fan wheel slipping on motor shaft. d. Heat load in room exceeds capacity of equipment. e. Windows and doors in room are open f. Compressor not pumping, indicated by: <ul style="list-style-type: none"> 1) Low wattage. 2) Condenser not warm. g. Restricted capillary or strainer. <ul style="list-style-type: none"> 1) Frost on capillary or strainer 2) Low wattage. 3) Condenser not warm. 4) Evaporator partially frosted, only partially cool or not at all. | <ul style="list-style-type: none"> c. <ul style="list-style-type: none"> 1) Clean. 2) Low charge or low air flow. 3) Clean or replace. 4) Remove obstructions. 5) Check motor. 6) Check for correct voltage. 7) Adjust blower wheel position and tighten set screw d. Refer to original load calculations, recalculate heat load. e. Close them. f. Replace. g. Replace. |
| 9. Too much cooling. | <ul style="list-style-type: none"> a. Temperature set too low. b. Defective control pad or control box PC board. | <ul style="list-style-type: none"> a. Adjust. b. Replace. |
| 10. "Sweating." | <ul style="list-style-type: none"> a. Condensate drain from evaporator plugged. b. Insulating seals on equipment damaged. c. Indoor blower motor not up to speed. d. Indoor blower incorrectly positioned. | <ul style="list-style-type: none"> a. Remove obstructions to water flow. b. Repair or replace. c. Check for correct voltage. Replace motor or capacitor. d. Adjust. |
| 11. Blowers won't operate on Heat. | <ul style="list-style-type: none"> a. No power. b. Temperature setting too low (control is set on "cycle fan") c. Faulty control pad or PC boards d. Loose connections at control pad or PC boards. e. Defective blower motor | <ul style="list-style-type: none"> a. See No. 1. b. Raise the temperature set point. c. Replace. d. Tighten. e. Replace |
| 12. Equipment is noisy. | <ul style="list-style-type: none"> a. Fan rubbing against enclosure. b. Fan motor bearings dry. c. Loose fan motor hold-down nuts. d. Refrigerant absorbed in compressor oil after extended shutdown. e. Equipment improperly installed. f. Loose terminal box cover on compressor. g. Loose electrical components. h. Copper tubing vibrating. | <ul style="list-style-type: none"> a. Adjust fan position on motor shaft or reposition fan motor bracket assembly. b. Replace motor. c. Align blower assembly and tighten nuts. d. Noise will disappear after equipment runs awhile. e. Make necessary changes. f. Tighten. g. Fasten securely. h. Occasionally equipment will have noise for no apparent reason. Inspection has revealed no loose components that might be the source of the noise. Due to the action of the compressor, it is possible to have internal noise develop if the refrigerant tubing has become bent even slightly. To distinguish this condition from the simple rattle producing vibration caused by loose screws, nuts and other components, grasp the refrigerant tubing at various points throughout the system until a point is found where the noise is eliminated or reduced. Bend the copper tubing very gently until the noise disappears. |
| 13. Insufficient or no heat. | <ul style="list-style-type: none"> a. No power. b. Faulty control pad or PC boards. c. Loose connection control pad or PC boards. d. Temperature setting too low. e. HP heating capacity drops with outdoor temperature. f. Faulty electric heater or compressor. g. Low air flow (indoors or outdoors). | <ul style="list-style-type: none"> a. Check power supply line fuse, circuit breakers. Blown fuses would indicate circuit overloading, a short circuit, or a grounded condition in the circuit. b. Replace. c. Replace wire or tighten. d. Raise the temperature set point. e. Switch to electric heat. (sw. #7 on control box front) f. Repair or replace. g. Repair or replace fan/motor. |

Troubleshooting Chart (Continued)

WARNING

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| Trouble | Possible Causes | Treatment |
|---|--|--|
| 14. Blinking diagnostic display on control pad a. E1 b. E2 c. E3 | a. Defective room temperature sensor. b. Defective indoor coil temperature sensor. c. Defective outdoor coil temperature sensor (H.P. only). | a. Replace b. Replace c. Replace |

The information in this bulletin supersedes and replaces previous bulletins with regards to McQuay Applied Terminal Air Conditioning products. Illustrations cover the general appearance of McQuay products at the time of publication and the manufacturer reserves the right to make changes in design and construction at anytime without notice.



13600 Industrial Park Boulevard., Minneapolis, MN 55441 USA; phone (763) 553-5009
For replacement parts call 1-800-377-2787
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