



Installation Instructions

NOTE: Read the entire instruction manual before starting the installation

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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 cloths for brazing operations and have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions attached to the unit. Consult local building codes and appropriate national electrical codes (in USA, ANSI/NFPA70, National Electrical Code (NEC); in Canada, CSA C22.1) for special requirements.

It is important to 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 words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could cause personal injury or death.

Before performing service or maintenance operations on unit, turn off main power switch to unit and install lockout tag. Ensure electrical service to rooftop unit agrees with voltage and amperage listed on the unit rating plate. Unit may have more than one power switch.

⚠ WARNING

PERSONAL INJURY AND ENVIRONMENTAL HAZARD

Failure to follow this warning could cause personal injury or death.

Relieve pressure and recover all refrigerant before system repair or final unit disposal.

Wear safety glasses and gloves when handling refrigerants. Keep torches and other ignition sources away from refrigerants and oils.

⚠ WARNING

UNIT OPERATION AND SAFETY HAZARD

Failure to follow this warning could cause personal injury, death and/or equipment damage.

Puron® (R-410A) refrigerant systems operate at higher pressures than standard R-22 systems. Do not use R-22 service equipment or components on Puron refrigerant equipment.

⚠ CAUTION

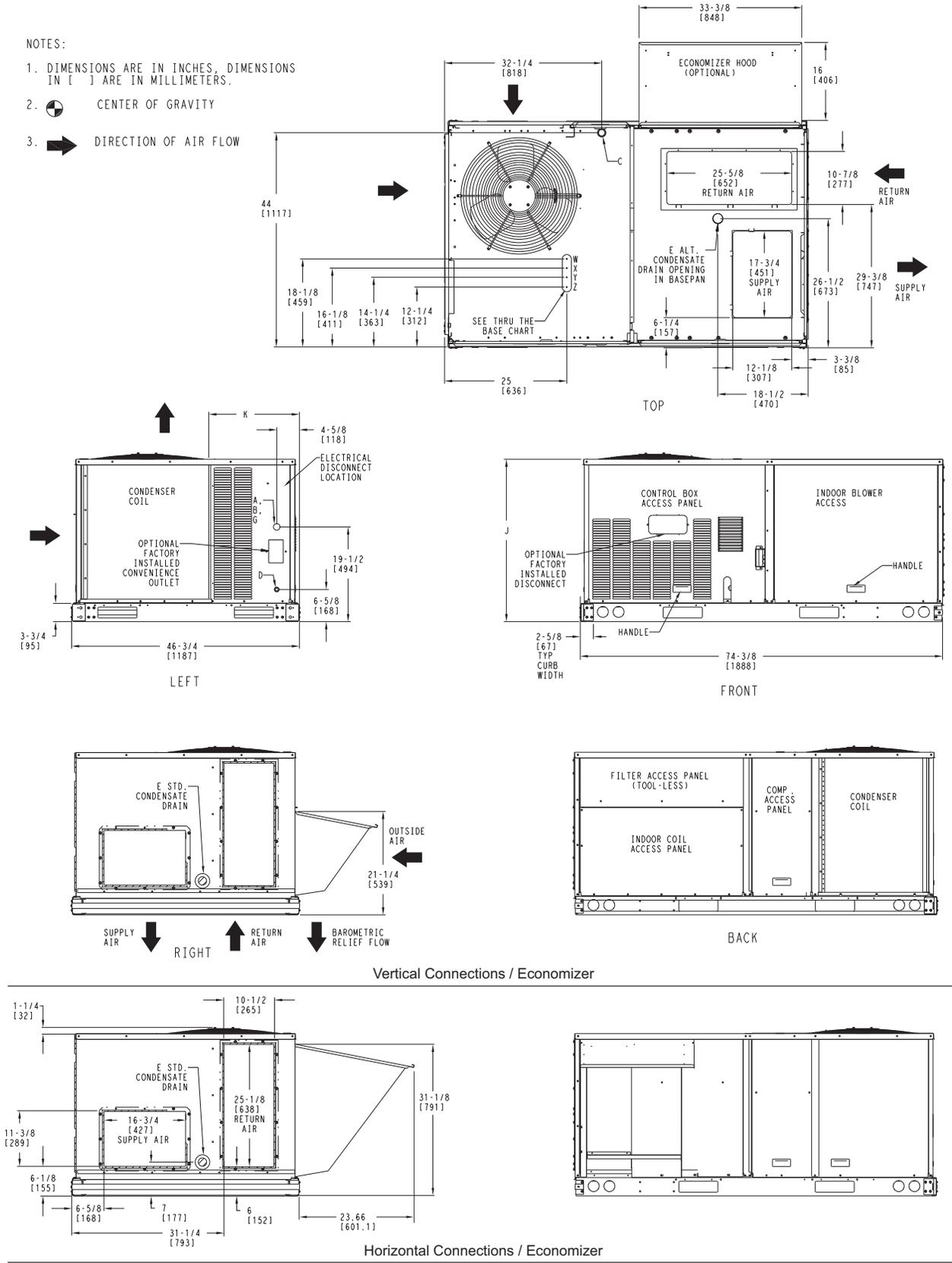
CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts and servicing equipment.

NOTES:

1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [] ARE IN MILLIMETERS.
2.  CENTER OF GRAVITY
3.  DIRECTION OF AIR FLOW



CONNECTION SIZES	
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2" [51] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [44] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
G	2 1/2" [64] DIA POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART THESE HOLES REQUIRED FOR USE CRBTMPWR001A01			
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	ACC.	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y *	3/4" [001]	POWER	1 1/8" [28.4]
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X & Y ARE PROVIDED			
* SELECT EITHER 3/4" OR 1/2" FOR POWER, DEPENDING ON WIRE SIZE			

UNIT	J	K
551J-04A	33 3/8 [847]	18 5/8 [472]
551J-05A	41 3/8 [1051]	14 7/8 [377]
551J-06A	41 3/8 [1051]	14 7/8 [377]

Fig. 1 - Unit Dimensional Drawing

551J

551J

UNIT	STD. UNIT WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
551J-04A	458	208	128	58	109	49	101	46	120	54	34 1/8 [867]	22 1/2 [572]	19 3/4 [502]
551J-05A	545	247	156	71	135	61	118	54	136	62	34 5/8 [879]	21 3/4 [552]	20 7/8 [530]
551J-06A	550	249	160	73	136	62	117	53	138	63	34 1/8 [867]	21 5/8 [549]	20 1/4 [514]

*- STANDARD UNIT WEIGHT IS WITHOUT ELECTRIC HEAT AND WITHOUT PACKAGING.
 FOR OTHER OPTIONS AND ACCESSORIES REFER TO THE PRODUCT DATA CATALOG.

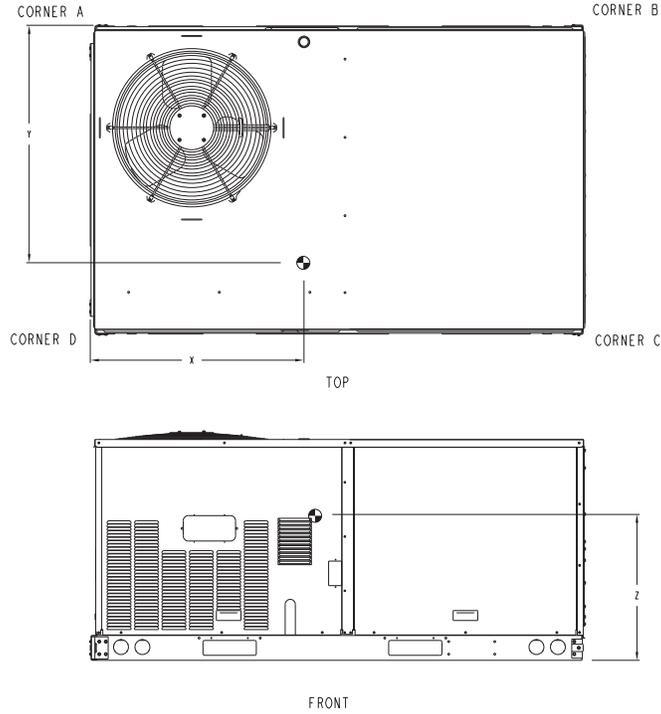


Fig. 1 - Unit Dimensional Drawing (cont.)

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INSTALLATION

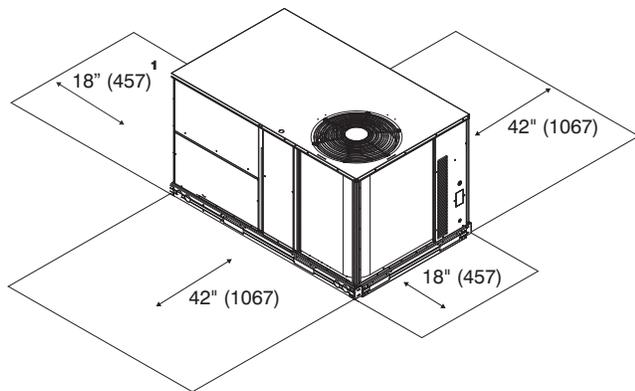
Jobsite Survey

Complete the following checks before installation.

1. Consult local building codes and the NEC (National Electrical Code) ANSI/NFPA 70 for special installation requirements.
2. Determine unit location (from project plans) or select unit location.
3. Check for possible overhead obstructions which may interfere with unit lifting or rigging.

Step 1 — Plan for Unit Location

Select a location for the unit and its support system (curb or other) that provides for minimum clearances required for safety (including clearance to combustible surfaces), unit performance and service access below, around and above unit as specified in unit drawings. See Fig. 2.



¹ Required bottom condensate drain connection. Otherwise, 36" (914mm) for condensate connection.

C07459

Fig. 2 - Service Clearance Dimensional Drawing

NOTE: Consider also the effect of adjacent units.

Unit may be installed directly on wood flooring or on Class A, B, or C roof-covering material when roof curb is used.

Do not install unit in an indoor location. Do not locate air inlets near exhaust vents or other sources of contaminated air.

Although unit is weatherproof, avoid locations that permit water from higher level runoff and overhangs to fall onto the unit.

Select a unit mounting system that provides adequate height to allow installation of condensate trap per requirements. Refer to Step 9 — Install External Condensate Trap and Line – for required trap dimensions.

Roof mount —

Check building codes for weight distribution requirements. Unit operating weight is shown in Table 1.

Step 2 — Plan for Sequence of Unit Installation

The support method used for this unit will dictate different sequences for the steps of unit installation. For example, on curb-mounted units, some accessories must be installed on the unit before the unit is placed on the curb. Review the following for recommended sequences for installation steps.

Curb-mounted installation —

- Install curb
- Install field-fabricated ductwork inside curb
- Install accessory thru-base service connection package (affects curb and unit) (refer to accessory installation instructions for details)
- Prepare bottom condensate drain connection to suit planned condensate line routing (refer to Step 9 for details)
- Rig and place unit
- Install outdoor air hood
- Install condensate line trap and piping
- Make electrical connections
- Install other accessories

Table 1 – Operating Weights

551J	UNITS LB (KG)		
	*04	*05	*06
Component			
Base Unit	458 (208)	545 (247)	550 (249)
Economizer			
Vertical	50 (23)	50 (23)	50 (23)
Horizontal	80 (36)	80 (36)	80 (36)
Cu Fins	25 (11)	43 (20)	56 (25)
Powered Outlet	32 (15)	32 (15)	32 (15)
Curb			
14-in/356 mm	110 (50)	110 (50)	110 (50)
24-in/610 mm	145 (66)	145 (66)	145 (66)

Pad-mounted installation —

- Prepare pad and unit supports
- Check and tighten the bottom condensate drain connection plug
- Rig and place unit
- Convert unit to side duct connection arrangement
- Install field-fabricated ductwork at unit duct openings
- Install outdoor air hood
- Install condensate line trap and piping
- Make electrical connections
- Install other accessories

Frame-mounted installation —

Frame-mounted applications generally follow the sequence for a curb installation. Adapt as required to suit specific installation plan.

Step 3 — Inspect unit

Inspect unit for transportation damage. File any claim with transportation agency.

Confirm before installation of unit that voltage, amperage and circuit protection requirements listed on unit data plate agree with power supply provided.

Step 4 — Provide Unit Support**Roof Curb Mount —**

Accessory roof curb details and dimensions are shown in Fig. 3. Assemble and install accessory roof curb in accordance with instructions shipped with the curb.

Curb should be level. This is necessary for unit drain to function properly. Unit leveling tolerances are shown in Fig. 4. Refer to Accessory Roof Curb Installation Instructions for additional information as required.

Install insulation, cant strips, roofing felt, and counter flashing as shown. *Ductwork must be attached to curb and not to the unit. The accessory thru-the-base power and gas connection package must be installed before the unit is set on the roof curb.*

If electric and control wiring is to be routed through the basepan, attach the accessory thru-the-base service connections to the basepan in accordance with the accessory installation instructions.

NOTE: The gasketing of the unit to the roof curb is critical for a watertight seal. Install gasket supplied with the roof curb as shown in Fig. 3. Improperly applied gasket can also result in air leaks and poor unit performance.

Slab Mount (Horizontal Units Only) —

Provide a level concrete slab that extends a minimum of 6 in. (150 mm) beyond unit cabinet. Install a gravel apron in front of condenser coil air inlet to prevent grass and foliage from obstructing airflow.

NOTE: Horizontal units may be installed on a roof curb if required.

Alternate Unit Support (In Lieu of Curb or Slab Mount) —

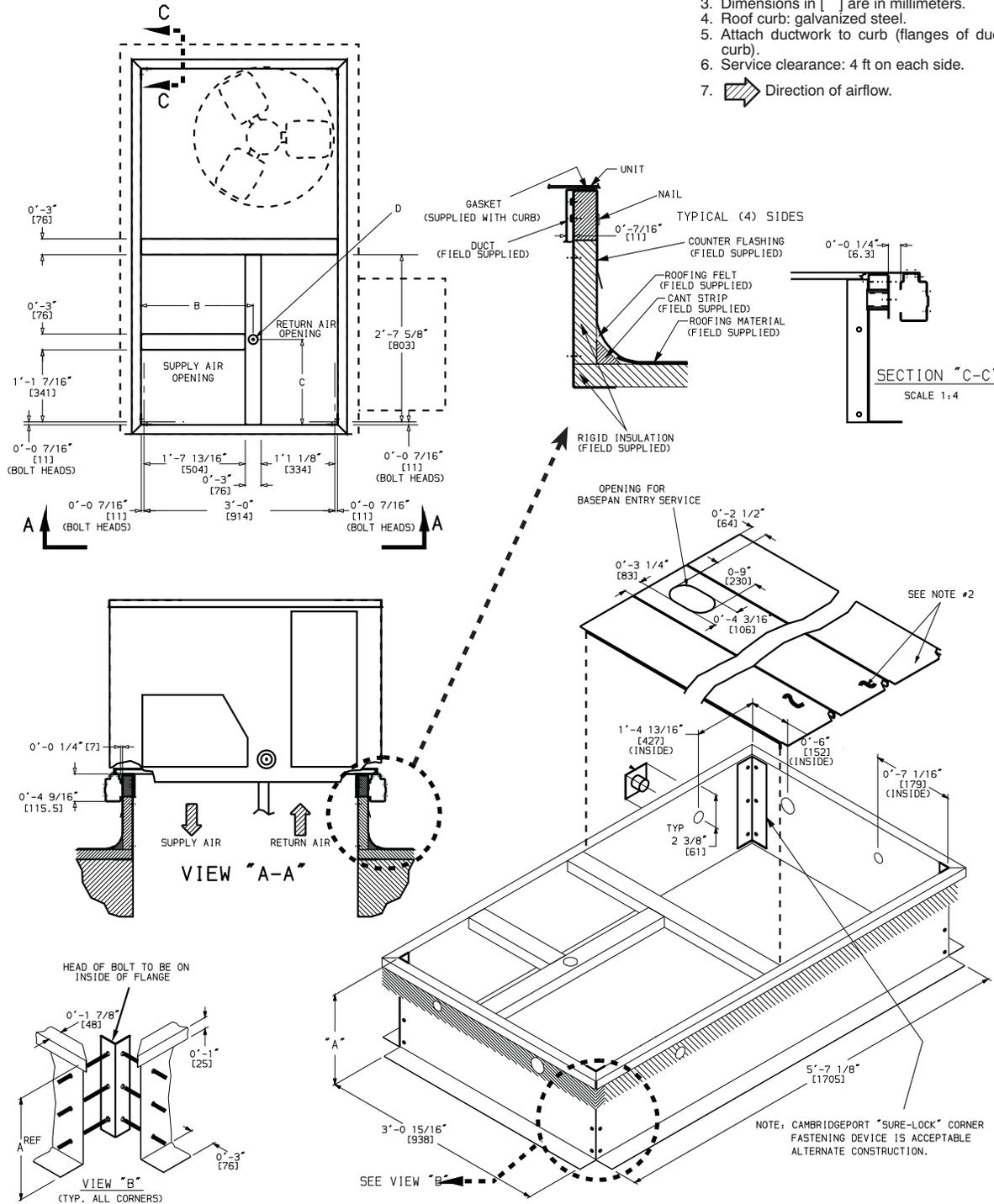
A non-combustible sleeper rail can be used in the unit curb support area. If sleeper rails cannot be used, support the long sides of the unit with a minimum of 3 equally spaced 4-in. x 4-in. (102 mm x 102 mm) pads on each side.

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	POWER	CONTROL	ACCESSORY POWER
CRBTMPWR003A01	1'-9 11/16" [551]	1'-4" [406]	1 3/4" [44.5]	3/4" [19] NPT	1/2" [12.7] NPT	1/2" [12.7] NPT
CRBTMPWR004A01				1 1/4" [31.7]		

ROOF CURB ACCESSORY	A	UNIT SIZE
CRRFCURB001A01	1'-2" [356]	551J*04-06
CRRFCURB002A01	2'-0" [610]	

NOTES:

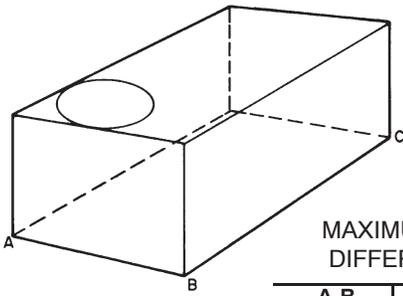
1. Roof curb accessory is shipped disassembled.
2. Insulated panels.
3. Dimensions in [] are in millimeters.
4. Roof curb: galvanized steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance: 4 ft on each side.
7.  Direction of airflow.



551J

Fig. 3 - Roof Curb Details

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MAXIMUM ALLOWABLE DIFFERENCE IN. (MM)

A-B	B-C	A-C
0.5" (13)	1.0" (25)	1.0" (25)

C06110

Fig. 4 - Unit Leveling Tolerances

Step 5 — Field Fabricate Ductwork

Cabinet return-air static pressure (a negative condition) shall not exceed 0.35 in. wg (87 Pa) with economizer or 0.45 in. wg (112 Pa) without economizer.

For vertical ducted applications, secure all ducts to roof curb and building structure on vertical ducted units. *Do not connect ductwork to unit.*

Insulate and weatherproof all external ductwork, joints, and roof openings with counter flashing and mastic in accordance with applicable codes.

Ducts passing through unconditioned spaces must be insulated and covered with a vapor barrier.

If a plenum return is used on a vertical unit, the return should be ducted through the roof deck to comply with applicable fire codes.

For units with accessory electric heaters: Horizontal applications require a minimum clearance to combustible surfaces of 1-in (25 mm) from duct for first 12-in (305 mm) away from unit. Vertical applications do not require a minimum clearance around ductwork.

Step 6 — Rig and Place Unit

Keep unit upright and do not drop. Spreader bars are not required if top crating is left on unit. Rollers may be used to move unit across a roof. Level by using unit frame as a reference. See Table 1 and Fig. 5 for additional information.

Lifting holes are provided in base rails as shown in Fig. 5. Refer to rigging instructions on unit.

Before setting the unit onto the curb, recheck gasketing on curb.

551J

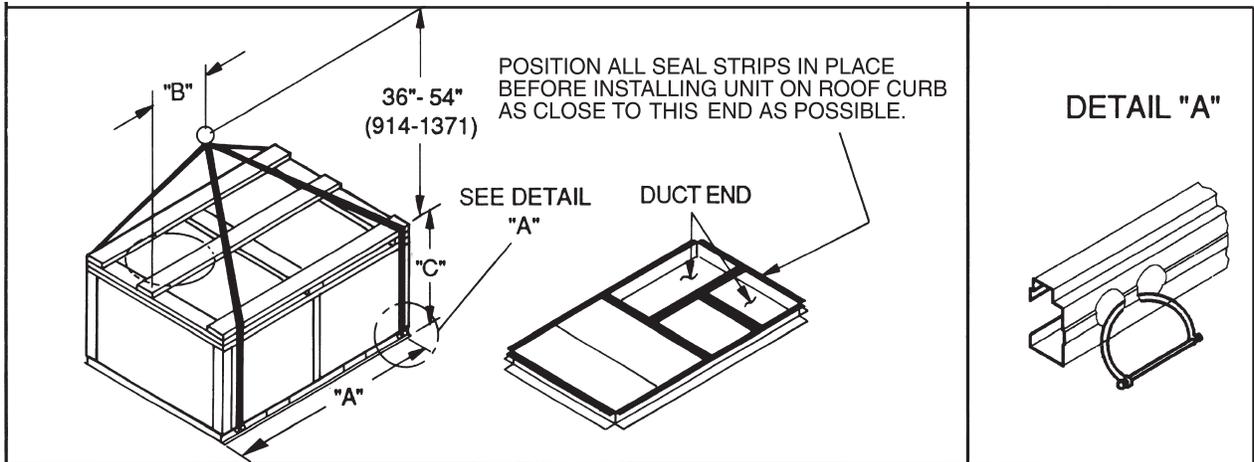
▲ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage.

All panels must be in place when rigging. Unit is not designed for handling by fork truck.

If using top crate as spreader bar, once unit is set, carefully lower wooden crate off building roof top to ground. Ensure that no people or obstructions are below prior to lowering the crate.



C06005

UNIT	MAX WEIGHT		DIMENSIONS					
			A		B		C	
	LB	KG	IN	MM	IN	MM	IN	MM
551J*04A	700	318	74.5	1890	36.5	925	33.5	850
551J*05A	830	377	74.5	1890	36.5	925	41.5	1055
551J*06A	865	393	74.5	1890	36.0	915	41.5	1055

NOTES:

1. Dimensions in () are in millimeters.
2. Hook rigging shackles through holes in base rail, as shown in detail "A." Holes in base rails are centered around the unit center of gravity. Use wooden top to prevent rigging straps from damaging unit.

Fig. 5 - Rigging Details

Positioning on Curb —

Position unit on roof curb so that the following clearances are maintained: 1/4 in. (6.4 mm) clearance between the roof curb and the base rail inside the front and rear, 0.0 in. clearance between the roof curb and the base rail inside on the duct end of the unit. This will result in the distance between the roof curb and the base rail inside on the condenser end of the unit being approximately equal to Fig. 3, section C-C.

Although unit is weatherproof, guard against water from higher level runoff and overhangs.

⚠ CAUTION

UNIT DAMAGE HAZARD

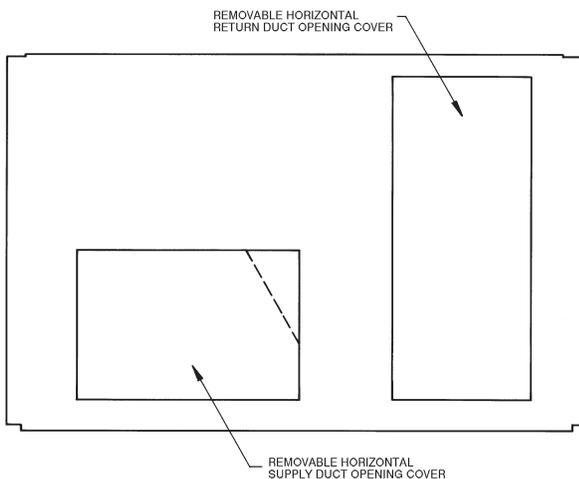
Failure to follow this caution may result in equipment damage.

All panels must be in place when rigging. Unit is not designed for handling by fork truck.

After unit is in position, remove rigging skids and shipping materials.

Step 7 — Convert to Horizontal and Connect Ductwork (when required)

Unit is shipped in the vertical duct configuration. Unit *without* factory-installed economizer or return air smoke detector option may be field-converted to horizontal ducted configuration. To convert to horizontal configuration, remove screws from side duct opening covers and remove covers. Using the same screws, install covers on vertical duct openings with the insulation-side down. Seals around duct openings must be tight. See Fig. 6.



C06108

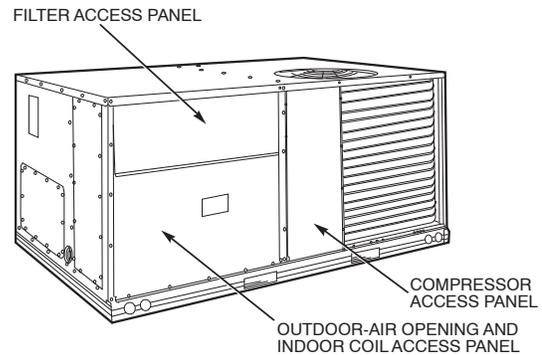
Fig. 6 - Horizontal Conversion Panels

Field-supplied flanges should be attached to horizontal duct openings and all ductwork should be secured to the flanges. Insulate and weatherproof all external ductwork, joints, and roof or building openings with counter flashing and mastic in accordance with applicable codes.

Do not cover or obscure visibility to the unit's informative data plate when insulating horizontal ductwork.

Step 8 — Install Outside Air Hood

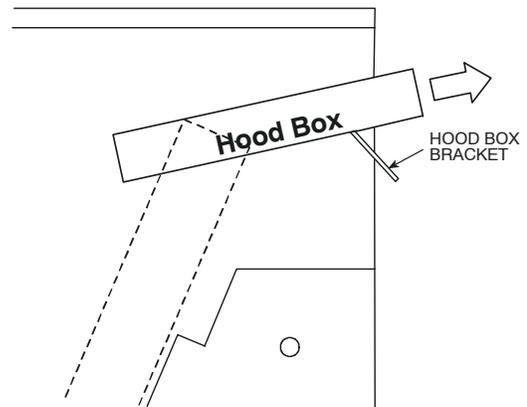
The outdoor hood components are shipped in a box located in the unit return air compartment behind the outdoor-air opening access panel (or economizer). Access is through the filter access panel. See Fig. 7.



C06023

Fig. 7 - Typical Access Panel Locations

1. To remove the existing unit filter access panel, raise the panel and swing the bottom outward. The panel is now disengaged from the track and can be removed.
2. To remove the component box from its shipping position, remove the screw holding the hood box bracket to the top of the economizer. Slide the hood box out of the unit. See Fig. 8.



C06024

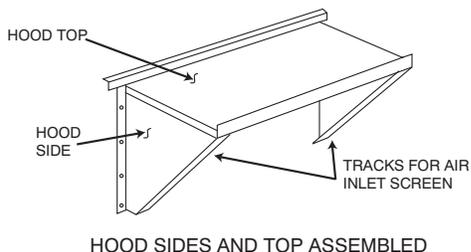
Fig. 8 - Hood Box Removal

Motorized 2-Position Damper Hood —

1. Assemble outdoor-air hood top and side plates as shown in Fig. 9. Install seal strips on hood top and sides. Put aside screen retainer and screws for later assembly.
2. Fasten hood top and side plate assembly to unit with screws provided. See Fig. 9.
3. Slide outdoor-air inlet screen into screen track on hood side plates. While holding screen in place, fasten screen retainer to hood using screws provided.
4. Replace filter access panel. See Fig. 7.



OUTDOOR-AIR HOOD – UNASSEMBLED



HOOD SIDES AND TOP ASSEMBLED

Fig. 9 - Outdoor-Air Hood Details

C07504

Economizer Hood —

NOTE: If the power exhaust accessory is to be installed on the unit, the hood shipped with the unit will not be used and must be discarded. Save the aluminum filter for use in the power exhaust hood assembly.

1. The indoor coil access panel will be used as the top of the hood. Remove the screws along the sides and bottom of the indoor coil access panel. See Fig. 10.
2. Swing out indoor coil access panel and insert the hood sides under the panel (hood top). Use the screws provided to attach the hood sides to the hood top. Use screws provided to attach the hood sides to the unit. See Fig. 11.
3. Remove the shipping tape holding the economizer barometric relief damper in place.
4. Insert the hood divider between the hood sides. See Fig. 11 and 12. Secure hood divider with 2 screws on each hood side. The hood divider is also used as the bottom filter rack for the aluminum filter.
5. Open the filter clips which are located underneath the hood top. Insert the aluminum filter into the bottom filter rack (hood divider). Push the filter into position past the open filter clips. Close the filter clips to lock the filter into place. See Fig. 12.
6. Caulk the ends of the joint between the unit top panel and the hood top.
7. Replace the filter access panel.

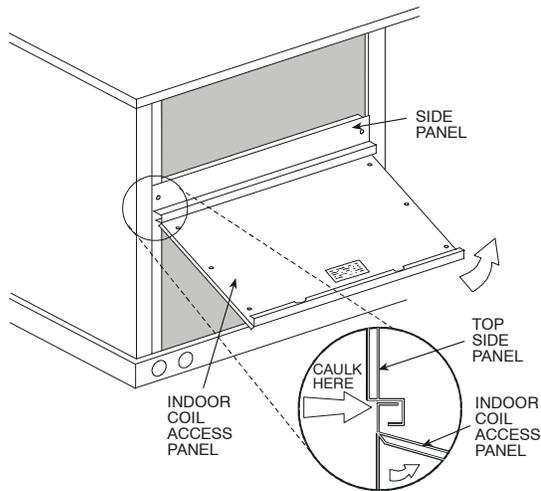


Fig. 10 - Indoor Coil Access Panel Relocation

C06025

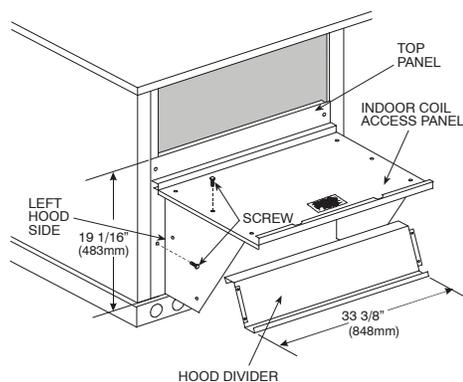


Fig. 11 - Economizer Hood Construction

C06026

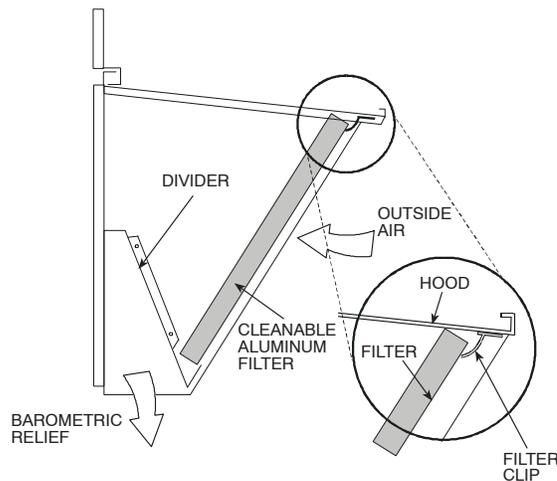
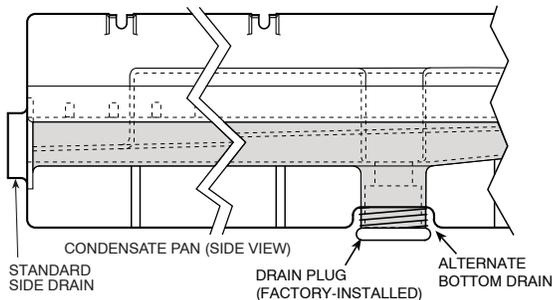


Fig. 12 - Economizer Filter Installation

C06027

Step 9 — Install External Condensate Trap and Line

The unit has one $\frac{3}{4}$ -in. condensate drain connection on the end of the condensate pan and an alternate connection on the bottom. See Fig. 13. Unit airflow configuration does not determine which drain connection to use. Either drain connection can be used with vertical or horizontal applications.



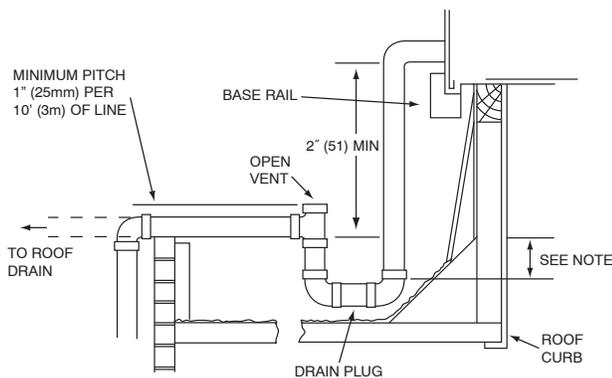
C08021

Fig. 13 - Condensate Drain Pan (Side View)

When using the standard side drain connection, ensure the red plug in the alternate bottom connection is tight. Do this before setting the unit in place. The red drain pan plug can be tightened with a $\frac{1}{2}$ -in. square socket drive extension.

To use the alternate bottom drain connection, remove the red drain plug from the bottom connection (use a $\frac{1}{2}$ -in. square socket drive extension) and install it in the side drain connection.

The piping for the condensate drain and external trap can be completed after the unit is in place. See Fig. 14.



NOTE: Trap should be deep enough to offset maximum unit static difference. A 4" (102) trap is recommended

C08022

Fig. 14 - Condensate Drain Piping Details

All units must have an external trap for condensate drainage. Install a trap at least 4-in. (102 mm) deep and protect against freeze-up. If drain line is installed downstream from the external trap, pitch the line away from the unit at 1-in. per 10 ft (25 mm in 3 m) of run. Do not use a pipe size smaller than the unit connection ($\frac{3}{4}$ -in.).

Step 10 — Make Electrical Connections

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Do not use gas piping as an electrical ground. Unit cabinet must have an uninterrupted, unbroken electrical ground to minimize the possibility of personal injury if an electrical fault should occur. This ground may consist of electrical wire connected to unit ground lug in control compartment, or conduit approved for electrical ground when installed in accordance with NEC (National Electrical Code); ANSI/NFPA 70, latest edition (in Canada, Canadian Electrical Code CSA [Canadian Standards Association] C22.1), and local electrical codes.

NOTE: Check all factory and field electrical connections for tightness. Field-supplied wiring shall conform with the limitations of 63°F (33°C) rise.

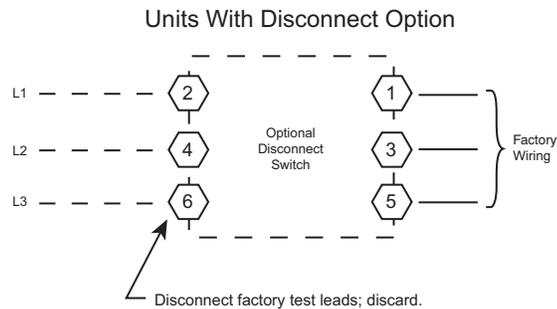
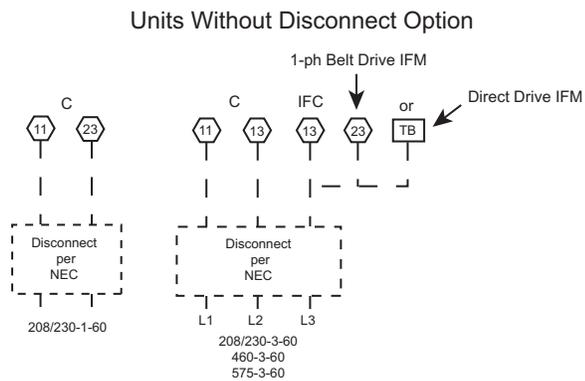
Field Power Supply —

If equipped with optional Powered Convenience Outlet: The power source leads to the convenience outlet's transformer primary are not factory connected. Installer must connect these leads according to required operation of the convenience outlet. If an always-energized convenience outlet operation is desired, connect the source leads to the line side of the unit-mounted disconnect. (Check with local codes to ensure this method is acceptable in your area.) If a de-energize via unit disconnect switch operation of the convenience outlet is desired, connect the source leads to the load side of the unit disconnect. On a unit without a unit-mounted disconnect, connect the source leads to compressor contactor C and indoor fan contactor IFC pressure lugs with unit field power leads.

Refer to Fig. 19 for power transformer connections and the discussion on connecting the convenience outlet on page 12.

Field power wires are connected to the unit at line-side pressure lugs on compressor contactor C and indoor fan contactor IFC (see wiring diagram label for control box component arrangement) or at factory-installed option non-fused disconnect switch. Max wire size is #2 AWG (copper only). (See Fig. 15.)

NOTE: TEST LEADS - Unit may be equipped with short leads (pigtailed) on the field line connection points on contactor C or optional disconnect switch. These leads are for factory run-test purposes only; remove and discard before connecting field power wires to unit connection points. Make field power connections directly to line connection pressure lugs only.



C10056

Fig. 15 - Power Wiring Connections

Units with Factory-Installed Disconnect —

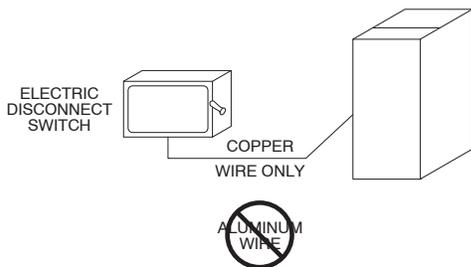
The factory-installed option disconnect switch is located in a weatherproof enclosure located under the main control box. The manual switch handle is accessible through an opening in the access panel. Discard the factory test leads (see Fig. 15).

⚠ WARNING

FIRE HAZARD

Failure to follow this warning could result in intermittent operation or performance satisfaction.

Do not connect aluminum wire between disconnect switch and 551J unit. Use only copper wire. (See Fig. 16.)



A93033

Fig. 16 - Disconnect Switch and Unit

Units Without Factory-Installed Disconnect —

When installing units, provide a disconnect switch per NEC (National Electrical Code) of adequate size. Disconnect sizing data is provided on the unit informative plate. Locate on unit cabinet or within sight of the unit per national or local codes. Do not cover unit informative plate if mounting the disconnect on the unit cabinet.

All units —

All field wiring must comply with NEC and all local codes. Size wire based on MCA (Minimum Circuit Amps) on the unit informative plate. See Fig. 15 and the unit label diagram for power wiring connections to the unit power terminal blocks and equipment ground. Maximum wire size is #2 ga AWG per pole.

Provide a ground-fault and short-circuit over-current protection device (fuse or breaker) per NEC Article 440 (or local codes). Refer to unit informative data plate for MOCP (Maximum Over-current Protection) device size.

All field wiring must comply with the NEC and local requirements.

All units except 208/230-v units are factory wired for the voltage shown on the nameplate. *If the 208/230-v unit is to be connected to a 208-v power supply, the control transformer must be rewired by moving the black wire with the 1/4-in. female spade connector from the 230-v connection and moving it to the 200-v 1/4-in. male terminal on the primary side of the transformer.* Refer to unit label diagram for additional information. Field power wires will be connected line-side pressure lugs on the power terminal block or at factory-installed option non-fused disconnect.

NOTE: Check all factory and field electrical connections for tightness. Field-supplied wiring shall conform with the limitations of 63°F (33°C) rise.

Convenience Outlets —

⚠ WARNING

ELECTRICAL OPERATION HAZARD

Failure to follow this warning could result in personal injury or death.

Units with convenience outlet circuits may use multiple disconnects. Check convenience outlet for power status before opening unit for service. Locate its disconnect switch, if appropriate, and open it. Tag-out this switch, if necessary.

Two types of convenience outlets are offered on 551J models: Non-powered and unit-powered. Both types provide a 125-volt GFCI (ground-fault circuit-interrupter) duplex receptacle rated at 15-A behind a hinged waterproof access cover, located on the end panel of the unit. See Fig. 17.

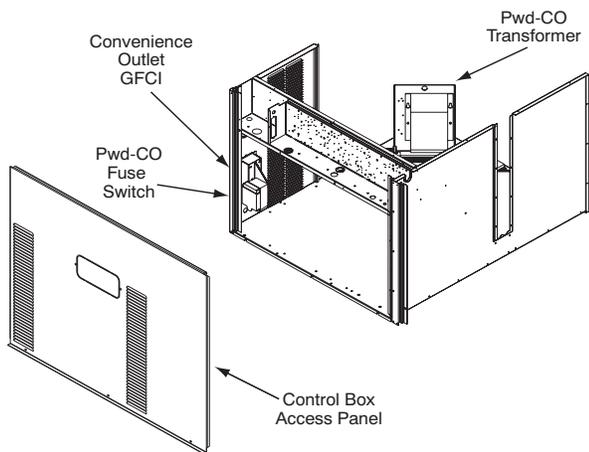


Fig. 17 - Convenience Outlet Location

C08128

Installing Weatherproof Cover –

A weatherproof while-in-use cover for the factory-installed convenience outlets is now required by UL standards. This cover cannot be factory-mounted due its depth; it must be installed at unit installation. For shipment, the convenience outlet is covered with a blank cover plate.

The weatherproof cover kit is shipped in the unit’s control box. The kit includes the hinged cover, a backing plate and gasket.

DISCONNECT ALL POWER TO UNIT AND CONVENIENCE OUTLET.

Remove the blank cover plate at the convenience outlet; discard the blank cover.

Loosen the two screws at the GFCI duplex outlet, until approximately 1/2-in (13 mm) under screw heads are exposed. Press the gasket over the screw heads. Slip the backing plate over the screw heads at the keyhole slots and align with the gasket; tighten the two screws until snug (do not over-tighten).

Mount the weatherproof cover to the backing plate as shown in Fig. 18. Remove two slot fillers in the bottom of the cover to permit service tool cords to exit the cover. Check for full closing and latching.

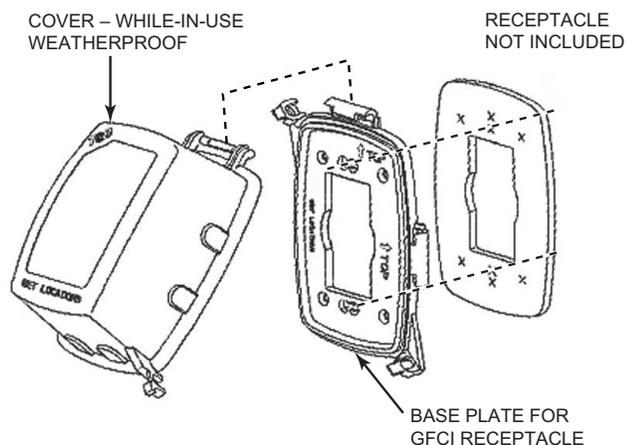


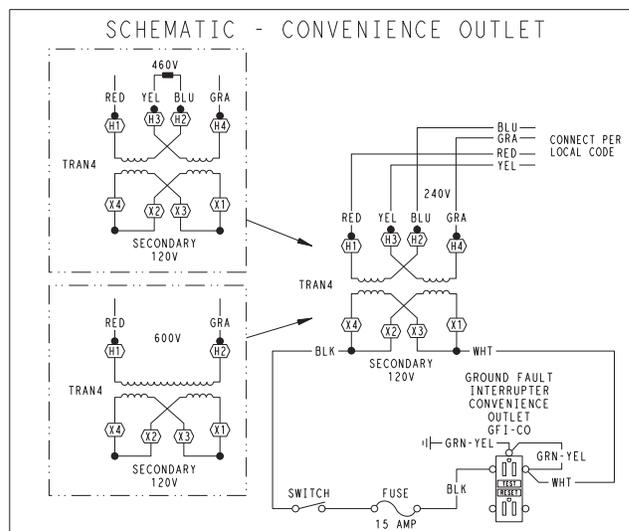
Fig. 18 - Weatherproof Cover Installation

C09022

Non-powered type: This type requires the field installation of a general-purpose 125-volt 15-A circuit powered from a source elsewhere in the building. Observe national and local codes when selecting wire size, fuse or breaker requirements and disconnect switch size and location. Route 125-v power supply conductors into the bottom of the utility box containing the duplex receptacle.

Unit-powered type: A unit-mounted transformer is factory-installed to stepdown the main power supply voltage to the unit to 115-v at the duplex receptacle. This option also includes a manual switch with fuse, located in a utility box and mounted on a bracket behind the convenience outlet; access is through the unit’s control box access panel. See Fig. 17.

The primary leads to the convenience outlet transformer are not factory-connected. Selection of primary power source is a customer-option. If local codes permit, the transformer primary leads can be connected at the line-side terminals on the unit-mounted non-fused disconnect or HACR breaker switch; this will provide service power to the unit when the unit disconnect switch or HACR switch is open. Other connection methods will result in the convenience outlet circuit being de-energized when the unit disconnect or HACR switch is open. See Fig. 19.

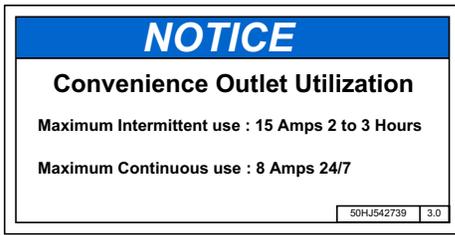


C08283

UNIT VOLTAGE	CONNECT AS	PRIMARY CONNECTIONS	TRANSFORMER TERMINALS
208, 230	240	L1: RED + YEL L2: BLU + GRA	H1 + H3 H2 + H4
460	480	L1: RED Splice BLU + YEL L2: GRA	H1 H2 + H3 H4
575	600	L1: RED L2: GRA	H1 H2

Fig. 19 - Powered Convenience Outlet Wiring

Fuse on power type: The factory fuse is a Bussman “Fusetron” T-15, non-renewable screw-in (Edison base) type plug fuse.



A9225

Fig. 20 - Convenience Outlet Utilization Notice Label

Duty Cycle: the unit-powered convenience outlet has a duty cycle limitation. The transformer is intended to provide power on an intermittent basis for service tools, lamps, etc; it is not intended to provide 15-amps loading for continuous duty loads (such as electric heaters for overnight use). Observe a 50% limit on circuit loading above 8-amps.

Convenience outlet usage rating:

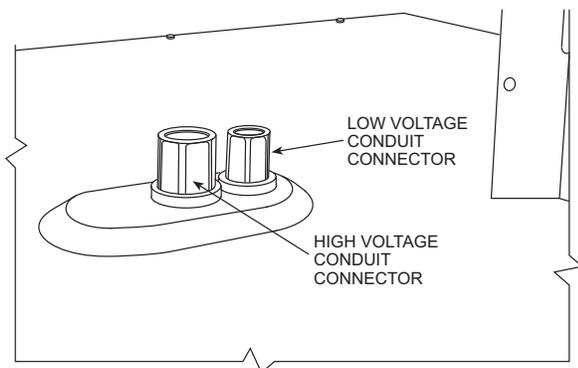
Continuous usage: 8 amps maximum

Intermittent usage: up to 15 amps maximum for up to 2 hours maximum

Test the GFCI receptacle by pressing the TEST button on the face of the receptacle to trip and open the receptacle. Check for proper grounding wires and power line phasing if the GFCI receptacle does not trip as required. Press the RESET button to clear the tripped condition.

Factory-Option Thru-Base Connections —

This service connection kit consists of a $\frac{1}{2}$ -in electrical bulkhead connector and a $\frac{3}{4}$ -in electrical bulkhead connector, all factory-installed in the embossed (raised) section of the unit basepan in the condenser section. The $\frac{3}{4}$ -in bulkhead connector enables the low-voltage control wires to pass through the basepan. The $\frac{1}{2}$ -in electrical bulkhead connector allows the high-voltage power wires to pass through the basepan. See Fig. 21.



C08637

Fig. 21 - Thru-Base Connection Fittings

Check tightness of connector lock nuts before connecting electrical conduits.

Field-supplied and field-installed liquid tight conduit connectors and conduit may be attached to the connectors on the basepan. Pull correctly rated high voltage and low voltage through appropriate conduits. Connect the power conduit to the internal disconnect (if unit is so equipped) or to the external disconnect (through unit side panel). A

hole must be field cut in the main control box bottom on the left side so the 24-v control connections can be made. Connect the control power conduit to the unit control box at this hole.

Units without Thru-Base Connections —

1. Install power wiring conduit through side panel openings. Install conduit between disconnect and control box.
2. Install power lines to terminal connections as shown in Fig. 15.

Voltage to compressor terminals during operation must be within voltage range indicated on unit nameplate. See Table 4. On 3-phase units, voltages between phases must be balanced within 2% and the current within 10%. Use the formula shown in the legend for Table 5, Note 2 to determine the percent of voltage imbalance. Operation on improper line voltage or excessive phase imbalance constitutes abuse and may cause damage to electrical components. Such operation would invalidate any applicable Bryant warranty.

Field Control Wiring —

The 551J unit requires an external temperature control device. This device can be a thermostat emulation device provided as part of a third-party Building Management System.

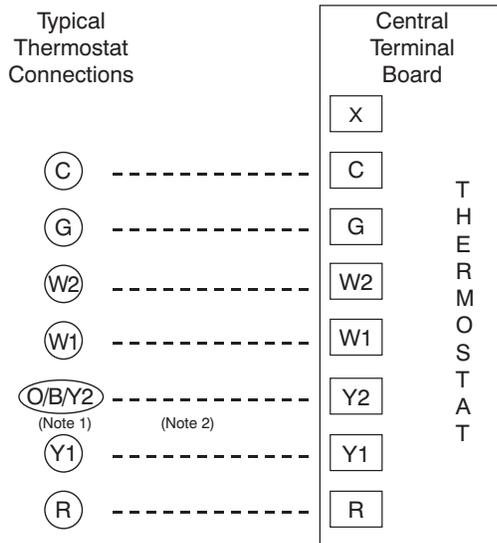
Thermostat —

Install a Bryant-approved accessory thermostat according to installation instructions included with the accessory. For complete economizer function, select a two-stage cooling thermostat. Locate the thermostat accessory on a solid wall in the conditioned space to sense average temperature in accordance with the thermostat installation instructions.

If the thermostat contains a logic circuit requiring 24-v power, use a thermostat cable or equivalent single leads of different colors with minimum of seven leads. If the thermostat does not require a 24-v source (no "C" connection required), use a thermostat cable or equivalent with minimum of six leads. Check the thermostat installation instructions for additional features which might require additional conductors in the cable.

Using unit-mounted convenience outlets: Units with unit-mounted convenience outlet circuits will often require that two disconnects be opened to de-energize all power to the unit. Treat all units as electrically energized until the convenience outlet power is also checked and de-energization is confirmed. Observe National Electrical Code Article 210, Branch Circuits, for use of convenience outlets.

For wire runs up to 50 ft. (15 m), use no. 18 AWG (American Wire Gage) insulated wire [35°C (95°F) minimum]. For 50 to 75 ft. (15 to 23 m), use no. 16 AWG insulated wire [35°C (95°F) minimum]. For over 75 ft. (23 m), use no. 14 AWG insulated wire [35°C (95°F) minimum]. All wire sizes larger than no. 18 AWG cannot be directly connected to the thermostat and will require a junction box and splice at the thermostat.



Note 1: Typical multi-function marking. Follow manufacturer's configuration Instructions to select Y2.

Note 2: Y2 to Y2 connection required on single-stage cooling units when integrated economizer function is desired.

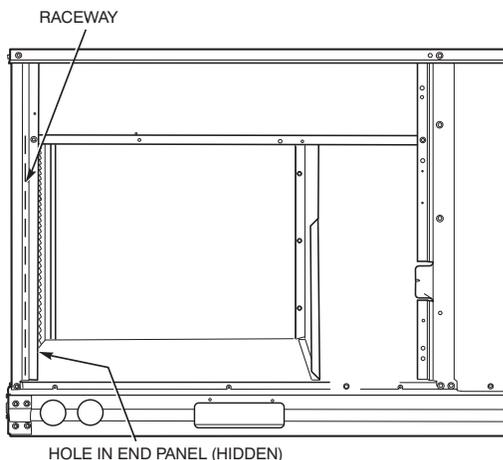
--- Field Wiring

C08069

Fig. 22 - Low-Voltage Connections

Unit without thru-base connection kit —

Pass the thermostat control wires through the hole provided in the corner post; then feed the wires through the raceway built into the corner post to the control box. Pull the wires over to the terminal strip on the upper-left corner of the Controls Connection Board. See Fig. 23.



C08027

Fig. 23 - Field Control Wiring Raceway

NOTE: If thru-the-bottom connections accessory is used, refer to the accessory installation instructions for information on routing power and control wiring.

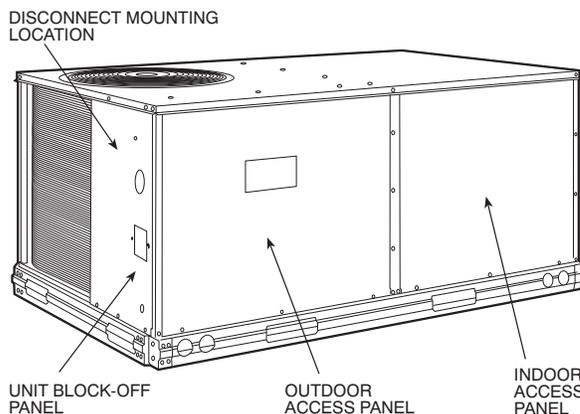
Heat Anticipator Settings —

Set heat anticipator settings at 0.14 amp for the first stage and 0.14 amp for second-stage heating, when available.

Electric Heaters

551J units may be equipped with field-installed accessory electric heaters. The heaters are modular in design, with heater frames holding open coil resistance wires strung through ceramic insulators, line-break limit switches and a control contactor. One or two heater modules may be used in a unit.

Heater modules are installed in the compartment below the indoor (supply) fan outlet. Access is through the indoor access panel. Heater modules slide into the compartment on tracks along the bottom of the heater opening. See Fig. 24, Fig. 25 and Fig. 26.



C08133

Fig. 24 - Typical Access Panel Location (3-6 Ton)

Not all available heater modules may be used in every unit. Use only those heater modules that are UL listed for use in a specific size unit. Refer to the label on the unit cabinet for the list of approved heaters.

Unit heaters are marked with Heater Model Numbers. But heaters are ordered as and shipped in cartons marked with a corresponding heater Sales Package part number. See Table 2 for correlation between heater Model Number and Sales Package part number.

NOTE: The value in position 9 of the part number differs between the sales package part number (value is 1) and a bare heater model number (value is 0).

Table 2 – Heater Model Number

Bare Heater Model Number	C	R	H	E	A	T	E	R	0	0	1	A	0	0
Heater Sales Package PNO Includes: Bare Heater Carton and packing materials Installation sheet	C	R	H	E	A	T	E	R	1	0	1	A	0	0

551J

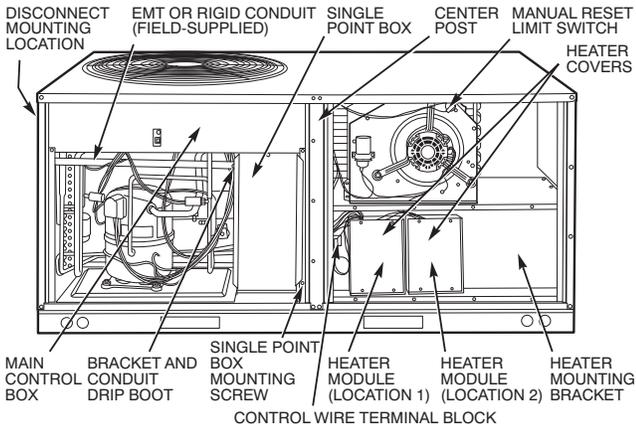


Fig. 25 - Typical Component Location

C08134

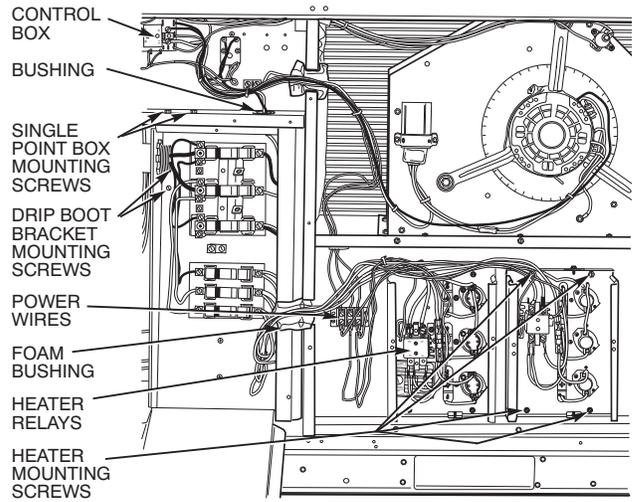


Fig. 27 - Typical Single Point Installation

C08136

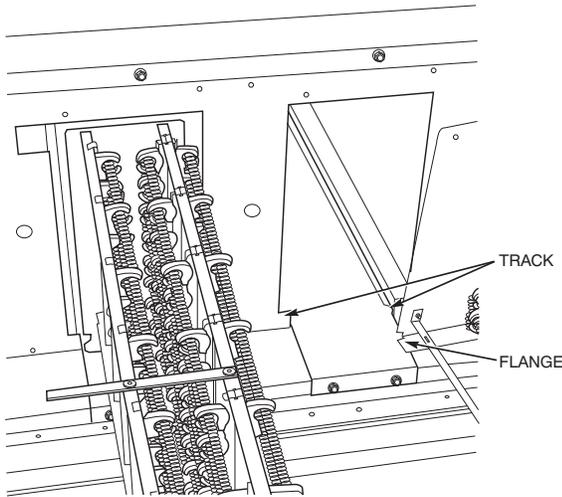


Fig. 26 - Typical Module Installation

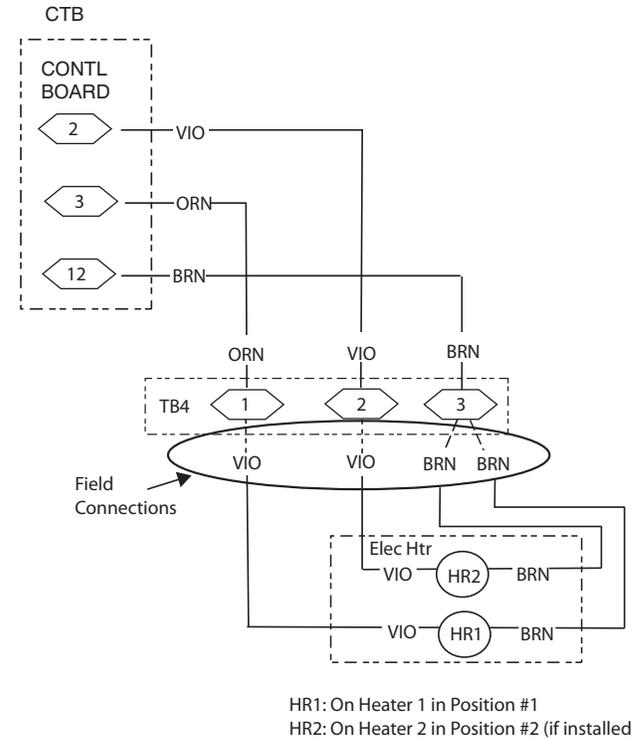
C08135

Single Point Boxes and Supplementary Fuses — When the unit MOCB device value exceeds 60-A, unit-mounted supplementary fuses are required for each heater circuit. These fuses are included in accessory Single Point Boxes, with power distribution and fuse blocks. The single point box will be installed directly under the unit control box, just to the left of the partition separating the indoor section (with electric heaters) from the outdoor section. The Single Point Box has a hinged access cover. See Fig. 27. The Single Point Box also includes a set of power taps and pigtails to complete the wiring between the Single Point Box and the unit's main control box terminals. Refer to the accessory heater and Single Point Box installation instructions for details on tap connections.

All fuses on 551J units are 60-A. (Note that all heaters are qualified for use with a 60-A fuse, regardless of actual heater ampacity, so only 60-A fuses are necessary.)

Single Point Boxes without Fuses — Unit heater applications not requiring supplemental fuses require a special Single Point Box without any fuses. The accessory Single Point Boxes contain a set of power taps and pigtails to complete the wiring between the Single Point Box and the unit's main control box terminals. Refer to accessory heater and Single Point Box installation instructions for details on tap connections.

Low-Voltage Control Connections — Pull the low-voltage control leads from the heater module(s) - VIO and BRN (two of each if two modules are installed; identify for Module #1) - to the 4-pole terminal board TB4 located on the heater bulkhead to the left of Heater #1. Connect the VIO lead from Heater #1 to terminal TB4-1. For 2 stage heating, connect the VIO lead from Heater #2 to terminal TB4-2. For 1 stage heating with 2 heater modules connect the VIO lead from both Heater #1 and #2 to terminal TB4-1. Connect both BRN leads to terminal TB4-3. See Fig. 28.



HR1: On Heater 1 in Position #1
 HR2: On Heater 2 in Position #2 (if installed)

C08331

Fig. 28 - Accessory Electric Heater Control Connections

Smoke Detectors —

Smoke detectors are available as factory-installed options on 551J models. Smoke detectors may be specified for Supply Air only or for Return Air without or with economizer or in combination of Supply Air and Return Air. Return Air smoke detectors are arranged for vertical return configurations only. All components necessary for operation are factory-provided and mounted. The unit is factory-configured for immediate smoke detector shutdown operation; additional wiring or modifications to unit terminal board may be necessary to complete the unit and smoke detector configuration to meet project requirements.

Units equipped with factory-optional Return Air smoke detectors require a relocation of the sensor module at unit installation. See “**Completing Installation of Return Air Smoke Sensor:**” on page 19 for details.

System

The smoke detector system consists of a four-wire controller and one or two sensors. Its primary function is to shut down the rooftop unit in order to prevent smoke from circulating throughout the building. It is not to be used as a life saving device.

Controller

The controller (see Fig. 29) includes a controller housing, a printed circuit board, and a clear plastic cover. The controller can be connected to one or two compatible duct smoke sensors. The clear plastic cover is secured to the housing with a single captive screw for easy access to the wiring terminals. The controller has three LEDs (for Power, Trouble and Alarm) and a manual test/reset button (on the cover face).

Sensor

The sensor (see Fig. 30) includes a plastic housing, a printed circuit board, a clear plastic cover, a sampling tube inlet and an exhaust tube. The sampling tube (when used) and exhaust tube are attached during installation. The sampling tube varies in length depending on the size of the rooftop unit. The clear plastic cover permits visual inspections without having to disassemble the sensor. The cover attaches to the sensor housing using four captive screws and forms an airtight chamber around the sensing electronics. Each sensor includes a harness with an RJ45 terminal for connecting to the controller. Each sensor has four LEDs (for Power, Trouble, Alarm and Dirty) and a manual test/reset button (on the left-side of the housing).

Air is introduced to the duct smoke detector sensor’s sensing chamber through a sampling tube that extends into the HVAC duct and is directed back into the ventilation system through a (shorter) exhaust tube. The difference in air pressure between the two tubes pulls the sampled air through the sensing chamber. When a sufficient amount of smoke is detected in the sensing chamber, the sensor signals an alarm state and the controller automatically takes the appropriate action to shut down fans and blowers, change over air handling systems, notify the fire alarm control panel, etc.

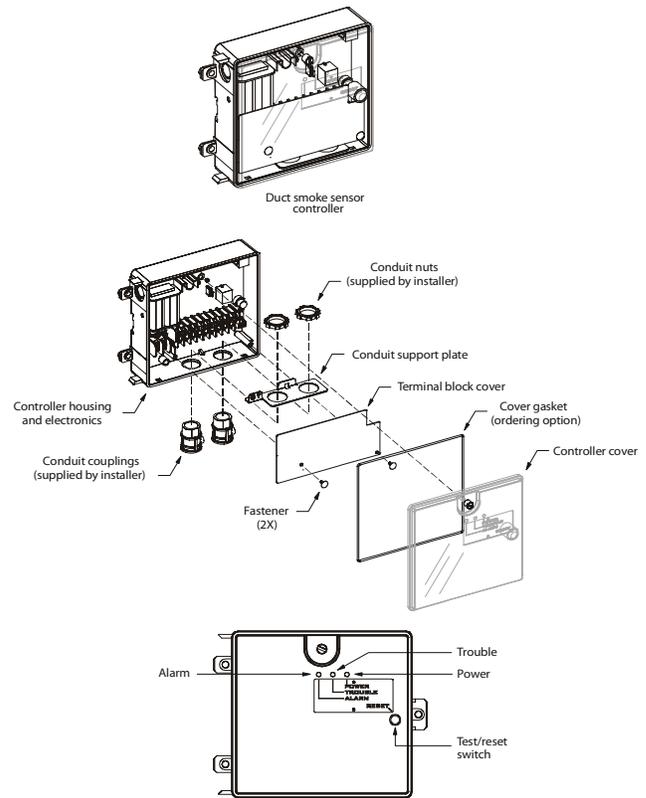


Fig. 29 - Controller Assembly

C08208

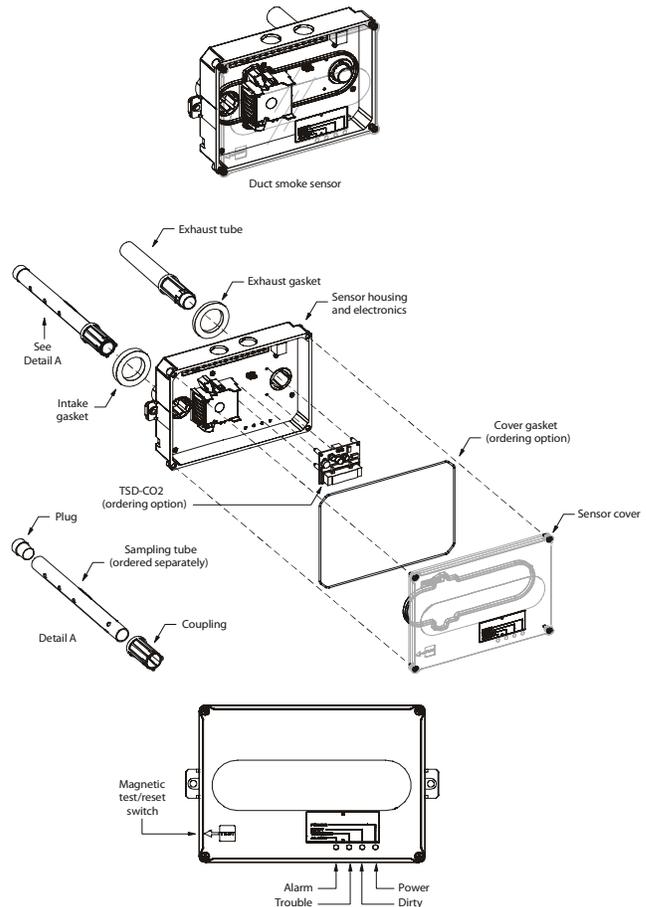


Fig. 30 - Smoke Detector Sensor

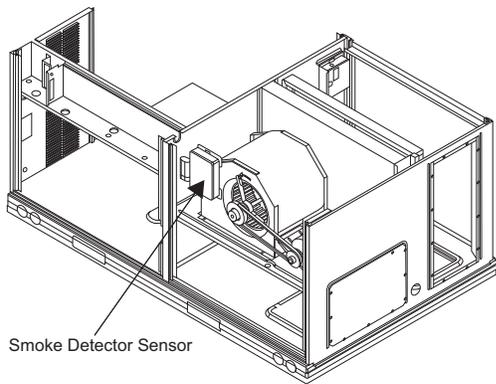
C08209

The sensor uses a process called differential sensing to prevent gradual environmental changes from triggering false alarms. A rapid change in environmental conditions, such as smoke from a fire, causes the sensor to signal an alarm state but dust and debris accumulated over time does not.

For installations using two sensors, the duct smoke detector does not differentiate which sensor signals an alarm or trouble condition.

Smoke Detector Locations

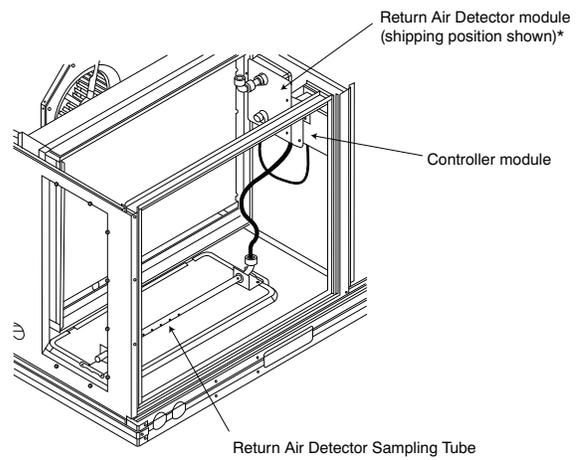
Supply Air — The Supply Air smoke detector sensor is located to the left of the unit’s indoor (supply) fan. See Fig. 31. Access is through the fan access panel. There is no sampling tube used at this location. The sampling tube inlet extends through the side plate of the fan housing (into a high pressure area). The controller is located on a bracket to the right of the return filter, accessed through the lift-off filter panel.



C08245

Fig. 31 - Typical Supply Air Smoke Detector Sensor Location

Return Air without Economizer — The sampling tube is located across the return air opening on the unit basepan. See Fig. 32. The holes in the sampling tube face downward, into the return air stream. The sampling tube is connected via tubing to the return air sensor that is mounted on a bracket high on the partition between return filter and controller location. (This sensor is shipped in a flat-mounting location. Installation requires that this sensor be relocated to its operating location and the tubing to the sampling tube be connected. See “**Completing Installation of Return Air Smoke Sensor:**” for details.)

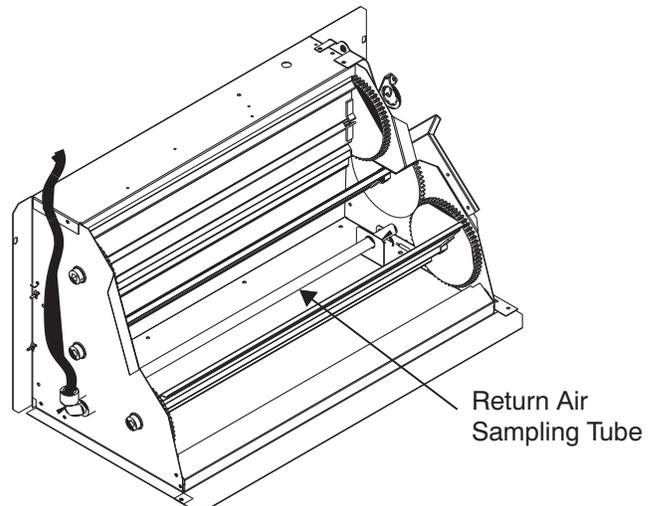


*RA detector must be moved from shipping position to operating position by installer

C07307

Fig. 32 - Typical Return Air Detector Location

Return Air with Economizer — The sampling tube is inserted through the side plates of the economizer housing, placing it across the return air opening on the unit basepan. See Fig. 33. The holes in the sampling tube face downward, into the return air stream. The sampling tube is connected via tubing to the return air sensor that is mounted on a bracket high on the partition between return filter and controller location. (This sensor is shipped in a flat-mounting location. Installation requires that this sensor be relocated to its operating location and the tubing to the sampling tube be connected. See the following installation procedure.)

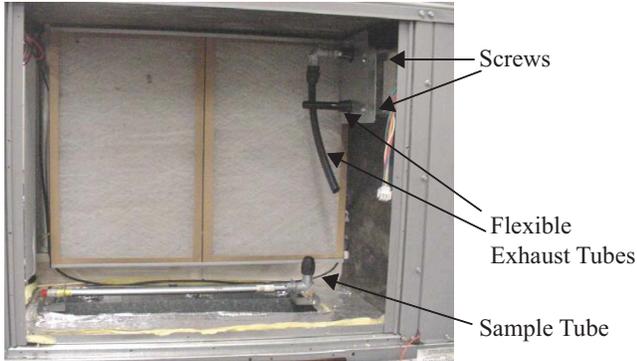


C08129

Fig. 33 - Return Air Sampling Tube Location

Completing Installation of Return Air Smoke Sensor:

1. Unscrew the two screws holding the Return Air Sensor detector plate. See Fig. 34. Save the screws.
2. Remove the Return Air Sensor and its detector plate.
3. Rotate the detector plate so the sensor is facing outwards and the sampling tube connection is on the bottom. See Fig. 35.
4. Screw the sensor and detector plate into its operating position using screws from Step 1. Make sure the sampling tube connection is on the bottom and the exhaust tube is on the top. See Fig. 35.
5. Connect the flexible tube on the sampling inlet to the sampling tube on the basepan.



C08126

Fig. 34 - Return Air Detector Shipping Position



C08127

Fig. 35 - Return Air Sensor Operating Position

Additional Application Data — Refer to Catalog No. HKRNKA-1XA for discussions on additional control features of these smoke detectors including multiple unit coordination.

RTU-MP control system —

The RTU-MP controller, see Fig. 36, provides expanded stand-alone operation of the HVAC system plus connection and control through communication with several Building Automation Systems (BAS) through popular third-party network systems. The available network systems are BACnet MP/TP, Modbus and Johnson J2. Communication with LonWorks is also possible by adding an accessory interface card to the RTU-MP. Selection of the communication protocol and baud rate are made at on-board DIP switches.

The RTU-MP control is factory-mounted in the 551J unit's main control box, to the left of the CTB. See Fig. 37. Factory wiring is completed through harnesses connected to the CTB. Field connections for RTU-MP sensors will be made at the Phoenix connectors on the RTU-MP board. The factory-installed RTU-MP control includes the supply-air temperature (SAT) sensor. The outdoor air temperature (OAT) sensor is included in the FIOP/accessory EconoMi\$er2 package.

Refer to Table 2, RTU-MP Controller Inputs and Outputs for locations of all connections to the RTU-MP board.

551J

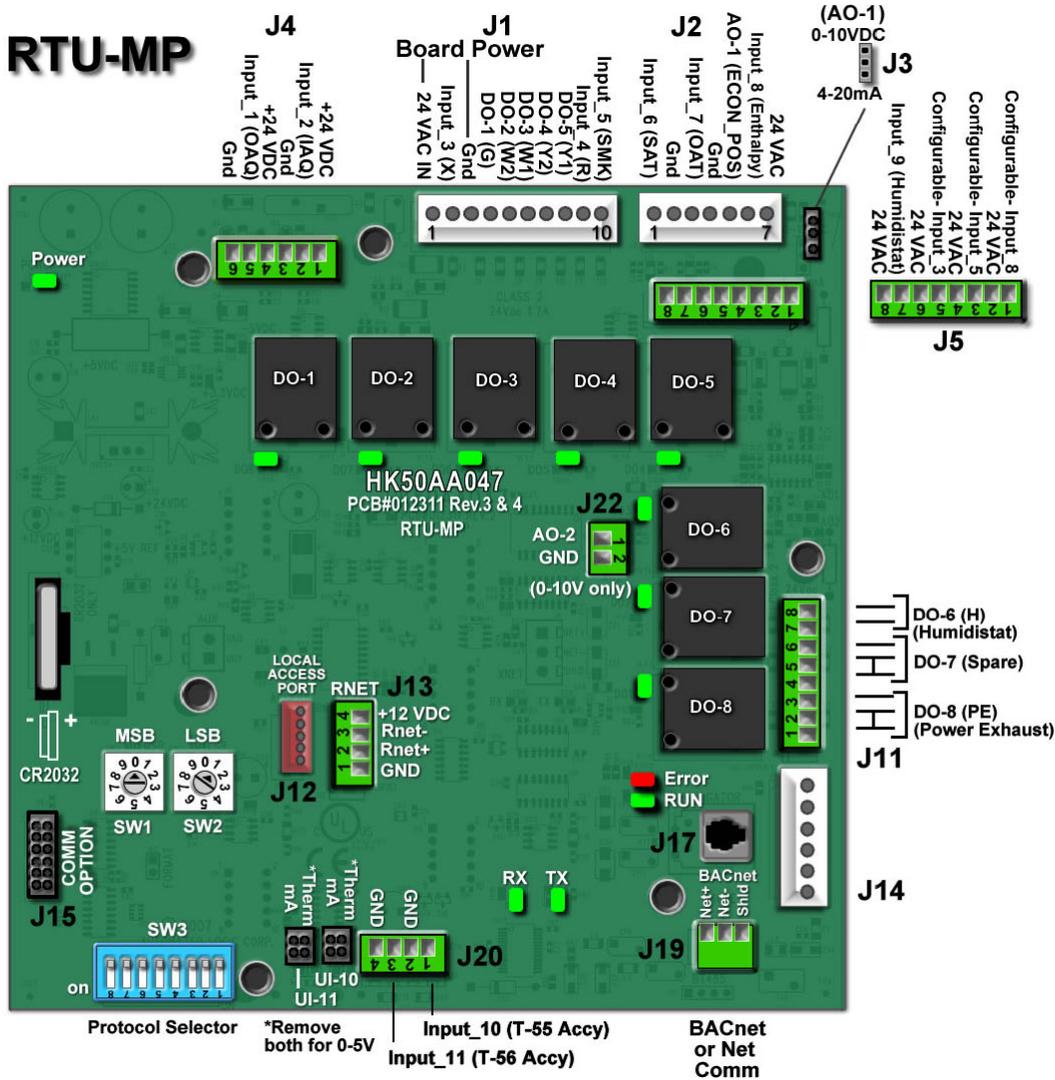


Fig. 36 - RTU-MP Multi-Protocol Control Board

C07129

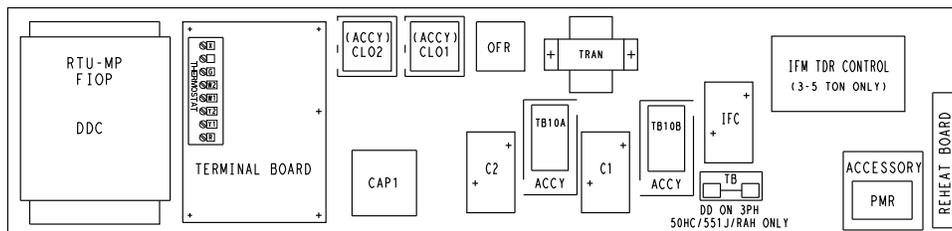


Fig. 37 - 551J Control Box Component Locations

C10049

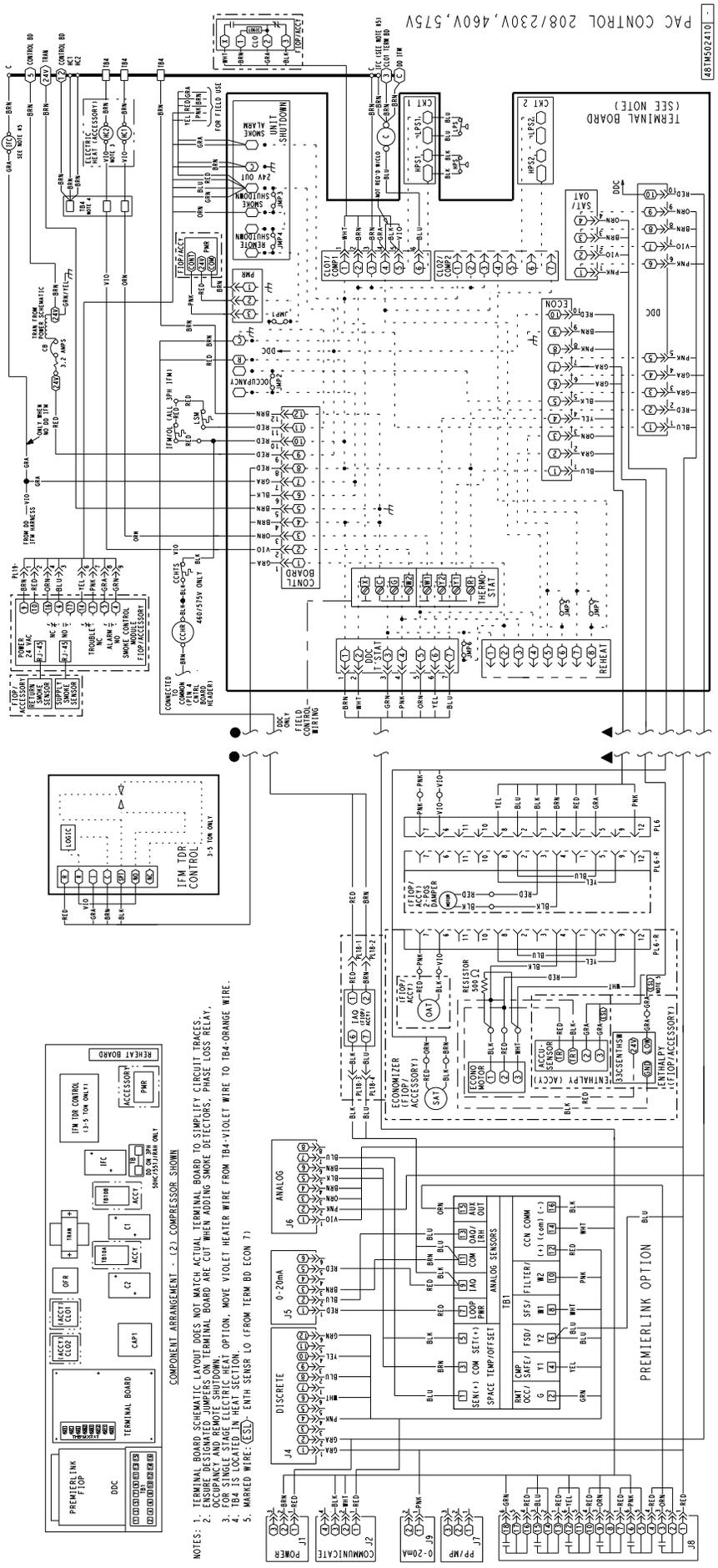


Fig. 38 - RTU-MP System Control Wiring Diagram

Table 3 – RTU-MP Controller Inputs and Outputs

POINT NAME	BACnet OBJECT NAME	TYPE OF I/O	CONNECTION PIN NUMBERS
INPUTS			
Space Temperature Sensor	sptsens	AI (10K Thermistor)	J20-1, 2
Supply Air Temperature	sat	AI (10K Thermistor)	J2-1, 2
Local Outside Air Temperature Sensor	oatsens	AI (10K Thermistor)	J2-3, 4
Space Temperature Offset Pot	sptopot	AI (100K Potentiometer)	J20-3
Indoor Air Quality	iaq	AI (4-20 ma)	J4-2, 3
Outdoor Air Quality	oaq	AI (4-20 ma)	J4-5, 6
Safety Chain Feedback	safety	DI (24 VAC)	J1-9
Compressor Safety	compstat	DI (24 VAC)	J1-2
Fire Shutdown	firedown	DI (24 VAC)	J1-10
Enthalpy Switch	enthalpy	DI (24 VAC)	J2-6, 7
Humidistat Input Status	humstat	DI (24 VAC)	J5-7, 8
CONFIGURABLE INPUTS*			
Space Relative Humidity	sprh	AI (4-20 ma)	J4-2,3 or J4-5,6
Outside Air Relative Humidity	oarh	AI (4-20 ma)	
Supply Fan Status	fanstat	DI (24 VAC)	J5-1,2 or J5-3,4 or J5 5,6 or J5-7,8
Filter Status	filtstat	DI (24 VAC)	
Remote Occupancy Input	remocc	DI (24 VAC)	
OUTPUTS			
Economizer Commanded Position	econocmd	4-20ma	J2-5
Supply Fan Relay State	sf	DO Relay (24VAC , 1A)	J1-4
Compressor 1 Relay State	comp_1	DO Relay (24VAC , 1A)	J1-8
Compressor 2 Relay State	comp_2	DO Relay (24VAC , 1A)	J1-7
Heat Stage 1 Relay State	heat_1	DO Relay (24VAC , 1A)	J1-6
Heat Stage 2 Relay State	heat_2	DO Relay (24VAC , 1A)	J1-5
Power Exhaust Relay State	aux_2	DO Relay (24VAC , 1A)	J11-3
Dehumidification Relay State	humizer	DO Relay (24VAC, 1A)	J11-7, 8

LEGEND

- AI** - Analog Input
- AO** - Analog Output
- DI** - Discrete Input
- DO** - Discrete Output

* These inputs (if installed) take the place of the default input on the specific channel according to schematic. Parallel pins J5-1 = J2-6, J5-3 = J1-10, J5-5 = J1-2 are used for field-installation.

The RTU-MP controller requires the use of a Byrant space sensor. A standard thermostat cannot be used with the RTU-MP system.

Supply Air Temperature (SAT) Sensor - On FIOP-equipped 551J unit, the unit is supplied with a supply-air temperature (SAT) sensor (33ZCSENSAT). This sensor is a tubular probe type, approx 6-inches (12.7 mm) in length. It is a nominal 10-k ohm thermistor.

The SAT is factory-wired. The SAT probe is wire-tied to the supply-air opening (on the horizontal opening end) in its shipping position. Remove the sensor for installation. Re-position the sensor in the flange of the supply-air opening or in the supply air duct (as required by local codes). Drill or punch a 1/2-in. hole in the flange or duct. Use two field-supplied, self-drilling screws to secure the sensor probe in a horizontal orientation. See Fig. 39.

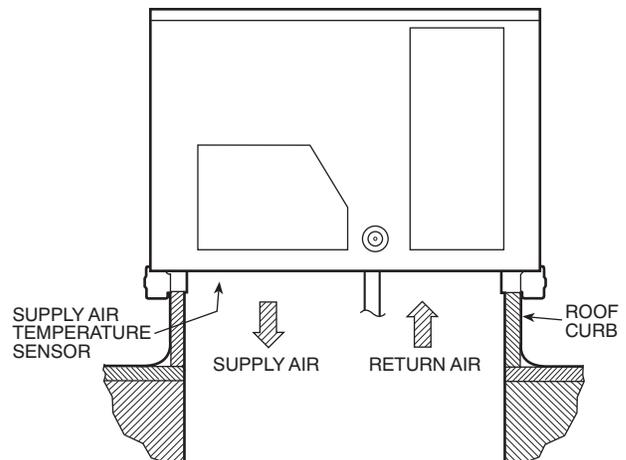


Fig. 39 - Typical Mounting Location for Supply Air Temperature (SAT) Sensor on Small Rooftop Units

C08200

Outdoor Air Temperature (OAT) Sensor - The OAT is factory-mounted in the EconoMiSer2 (FIOP or accessory). It is a nominal 10k ohm thermistor attached to an eyelet mounting ring.

EconoMiSer2 - The RTU-MP control is used with EconoMiSer2 (option or accessory) for outdoor air management. The damper position is controlled directly by the RTU-MP control; EconoMiSer2 has no internal logic device.

Outdoor air management functions can be enhanced with field-installation of these accessory control devices:

- Enthalpy control (outdoor air or differential sensors)
- Space CO₂ sensor
- Outdoor air CO₂ sensor

Field Connections - Field connections for accessory sensors and input devices are made the RTU-MP, at plugs J1, J2, J4, J5, J11 and J20. All field control wiring that connects to the RTU-MP must be routed through the raceway built into the corner post as shown in Fig. 23. The raceway provides the UL required clearance between high- and low-voltage wiring. Pass the control wires through the hole provided in the corner post, then feed the wires thorough the raceway to the RTU-MP. Connect to the wires to the removable Phoenix connectors and then reconnect the connectors to the board.

Space Temperature (SPT) Sensors

A field-supplied Byrant space temperature sensor is required with the RTU-MP to monitor space temperature. There are 3 sensors available for this application:

- 33ZCT55SPT, space temperature sensor with override button
- 33ZCT56SPT, space temperature sensor with override button and setpoint adjustment
- 33ZCT59SPT, space temperature sensor with LCD (liquid crystal display) screen, override button, and setpoint adjustment

Use 20 gauge wire to connect the sensor to the controller. The wire is suitable for distances of up to 500 ft. Use a three-conductor shielded cable for the sensor and setpoint adjustment connections. If the setpoint adjustment (slidebar) is not required, then an unshielded, 18 or 20 gauge, two-conductor, twisted pair cable may be used.

Connect T-55 - See Fig. 40 for typical T-55 internal connections. Connect the T-55 SEN terminals to RTU-MP J20-1 and J20-2. See Fig. 41.

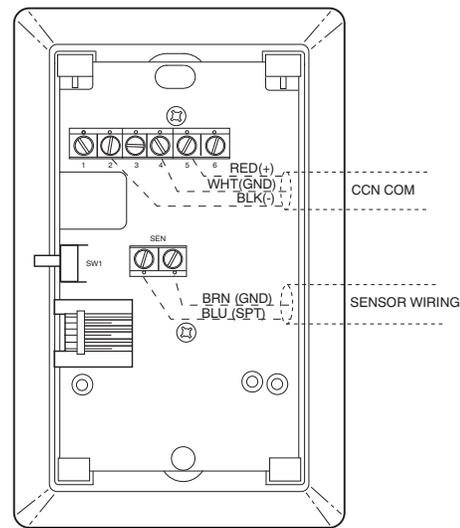


Fig. 40 - T-55 Space Temperature Sensor Wiring

C08201

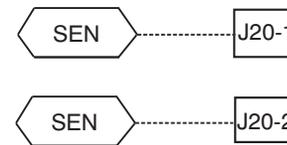


Fig. 41 - RTU-MP T-55 Sensor Connections

C08460

Connect T-56 - See Fig. 42 for T-56 internal connections. Install a jumper between SEN and SET terminals as illustrated. Connect T-56 terminals to RTU-MP J20-1, J20-2 and J20-3 per Fig. 43.

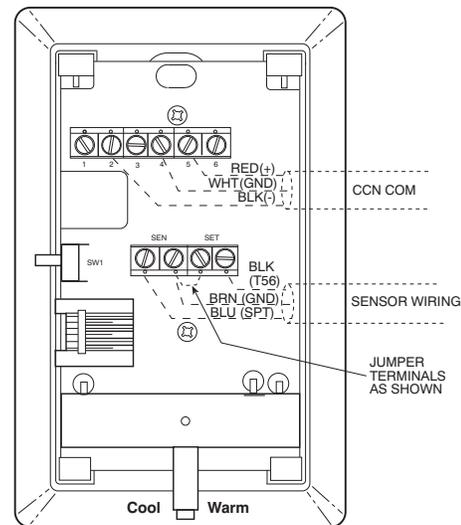


Fig. 42 - T-56 Internal Connections

C08202

551J

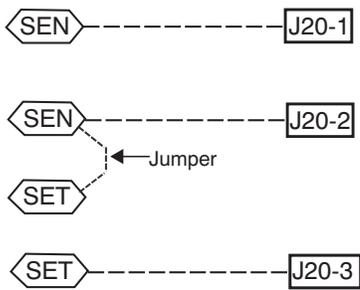
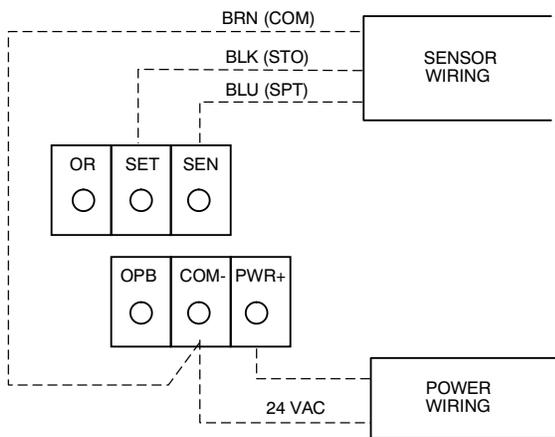


Fig. 43 - RTU-MP T-56 Sensor Connections

C08461

Connect T-59 - The T-59 space sensor requires a separate, isolated power supply of 24 VAC. See Fig. 44 for internal connections at the T-59. Connect the SEN terminal (BLU) to RTU-MP J20-1. Connect the COM terminal (BRN) to J20-2. Connect the SET terminal (STO or BLK) to J20-3.



NOTE: Must use a separate isolated transformer.

Fig. 44 - Space Temperature Sensor Typical Wiring (33ZCT59SPT)

C07132

Economizer controls —

Outdoor Air Enthalpy Control (PNO 33CSENTHSW) -

The enthalpy control (33CSENTHSW) is available as a field-installed accessory to be used with the EconoMi\$er2 damper system. The outdoor air enthalpy sensor is part of the enthalpy control. (The separate field-installed accessory return air enthalpy sensor (33CSENTSEN) is required for differential enthalpy control. See Fig. 45.)

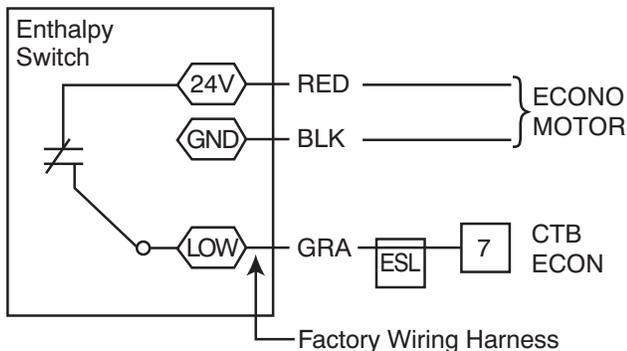


Fig. 45 - Enthalpy Switch (33CSENTHSW) Connections

C09026

Locate the enthalpy control in the economizer next to the Actuator Motor. Locate two GRA leads in the factory harness and connect the gray lead labeled “ESL” to the terminal labeled “LOW”. See Fig. 45. Connect the enthalpy control power input terminals to economizer actuator power leads RED (connect to 24V) and BLK (connect to GND).

The outdoor enthalpy changeover setpoint is set at the enthalpy controller.

Differential Enthalpy Control — Differential enthalpy control is provided by sensing and comparing the outside air and return air enthalpy conditions. Install the outdoor air enthalpy control as described above. Add and install a return air enthalpy sensor.

Return Air Enthalpy Sensor — Mount the return-air enthalpy sensor (33CSENTSEN) in the return-air section of the economizer. The return air sensor is wired to the enthalpy controller (33CSENTHSW). See Fig. 46.

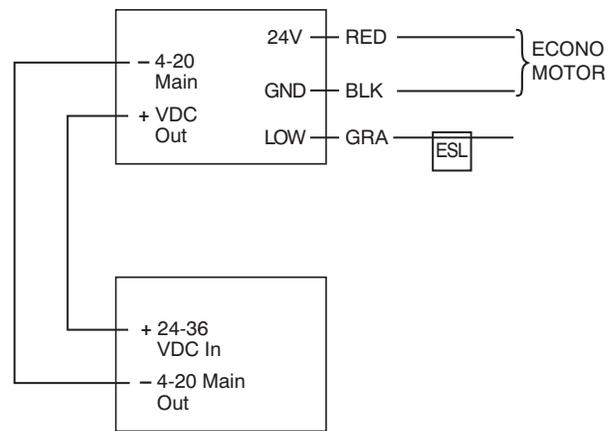


Fig. 46 - Outside and Return Air Enthalpy Sensor Wiring

C09027

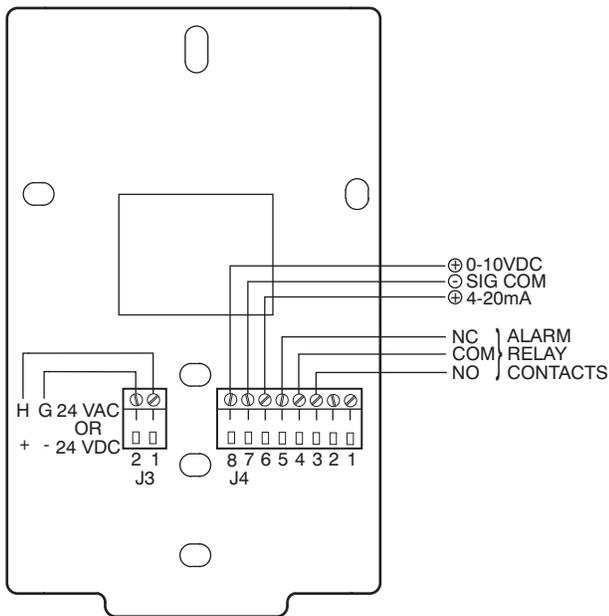
To wire the return air enthalpy sensor, perform the following:

1. Use a 2-conductor, 18 or 20 AWG, twisted pair cable to connect the return air enthalpy sensor to the enthalpy controller.
2. Connect the field-supplied RED wire to (+) spade connector on the return air enthalpy sensor and the (+) terminal on the enthalpy controller. Connect the BLK wire to (-) spade connector on the return air enthalpy sensor and the (-) terminal on the enthalpy controller.

Indoor Air Quality (CO₂ sensor) — The indoor air quality sensor accessory monitors space carbon dioxide (CO₂) levels. This information is used to monitor IAQ levels. Several types of sensors are available, for wall mounting in the space or in return duct, with and without LCD display, and in combination with space temperature sensors. Sensors use infrared technology to measure the levels of CO₂ present in the space air.

The CO₂ sensors are all factory set for a range of 0 to 2000 ppm and a linear mA output of 4 to 20. Refer to the instructions supplied with the CO₂ sensor for electrical

requirements and terminal locations. See Fig. 47 for typical CO₂ sensor wiring schematic.



C08635

Fig. 47 - Indoor/Outdoor Air Quality (CO₂) Sensor (33ZCSENCO2) - Typical Wiring Diagram

To accurately monitor the quality of the air in the conditioned air space, locate the sensor near a return-air grille (if present) so it senses the concentration of CO₂ leaving the space. The sensor should be mounted in a location to avoid direct breath contact.

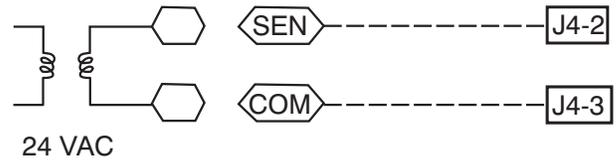
Do not mount the IAQ sensor in drafty areas such as near supply ducts, open windows, fans, or over heat sources. Allow at least 3 ft (0.9 m) between the sensor and any corner. Avoid mounting the sensor where it is influenced by the supply air; the sensor gives inaccurate readings if the supply air is blown directly onto the sensor or if the supply air does not have a chance to mix with the room air before it is drawn into the return airstream.

Wiring the Indoor Air Quality Sensor —

For each sensor, use two 2-conductor 18 AWG (American Wire Gage) twisted-pair cables (unshielded) to connect the separate isolated 24 vac power source to the sensor and to connect the sensor to the control board terminals.

To connect the sensor to the control, identify the positive (4 to 20 mA) and ground (SIG COM) terminals on the sensor. See Fig. 47. Connect the 4-20 mA terminal to RTU-MP J4-2 and connect the SIG COM terminal to RTU-MP J4-3. See Fig. 48.

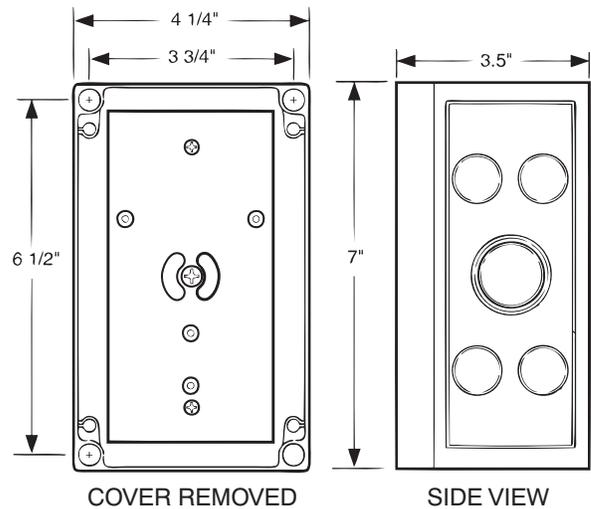
IAQ Sensor



C08462

Fig. 48 - RTU-MP / Indoor CO₂ Sensor (33ZCSENCO2) Connections

Outdoor Air Quality Sensor (PNO 33ZCSENCO2 plus weatherproof enclosure) — The outdoor air CO₂ sensor is designed to monitor carbon dioxide (CO₂) levels in the outside ventilation air and interface with the ventilation damper in an HVAC system. The OAQ sensor is packaged with an outdoor cover. See Fig. 49. The outdoor air CO₂ sensor must be located in the economizer outside air hood.



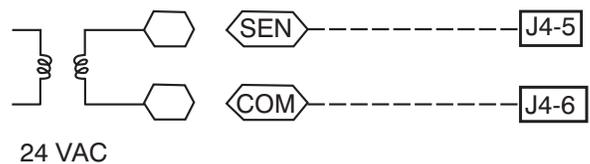
C07135

Fig. 49 - Outdoor Air Quality Sensor Cover

Wiring the Outdoor Air CO₂ Sensor — A dedicated power supply is required for this sensor. A two-wire cable is required to wire the dedicated power supply for the sensor. The two wires should be connected to the power supply and terminals 1 and 2.

To connect the sensor to the control, identify the positive (4 to 20 mA) and ground (SIG COM) terminals on the OAQ sensor. See Fig. 47. Connect the 4 to 20 mA terminal to RTU-MP J4-5. Connect the SIG COM terminal to RTU-MP J4-6. See Fig. 50.

OAQ Sensor/RH Sensor



C08463

Fig. 50 - RTU-MP / Outdoor CO₂ Sensor (33ZCSENCO2) Connections

551J

On 551J units equipped with factory-installed Smoke Detector(s), the smoke detector controller implements the unit shutdown through its NC contact set connected to the unit's CTB input. The FSD function is initiated via the smoke detector's Alarm NO contact set. The RTU-MP controller communicates the smoke detector's tripped status to the BAS building control. See Fig. 38, the RTU-MP System Control wiring schematic.

The Fire Shutdown Switch configuration, *MENU* → *Config* → *Inputs* → *input 5*, identifies the normally open status of this input when there is no fire alarm.

Connecting Discrete Inputs

Filter Status

The filter status accessory is a field-installed accessory. This accessory detects plugged filters. When installing this accessory, the unit must be configured for filter status by setting *MENU* → *Config* → *Inputs* → *input 3, 5, 8, or 9* to Filter Status and normally open (N/O) or normally closed (N/C). Input 8 or 9 is recommended for easy of installation. Refer to Fig. 36 and Fig. 38 for wire terminations at J5.

Fan Status

The fan status accessory is a field-installed accessory. This accessory detects when the indoor fan is blowing air. When installing this accessory, the unit must be configured for fan status by setting *MENU* → *Config* → *Inputs* → *input 3, 5, 8, or 9* to Fan Status and normally open (N/O) or normally closed (N/C). Input 8 or 9 is recommended for easy of installation. Refer to Fig. 36 and Fig. 38 for wire terminations at J5.

Remote Occupancy

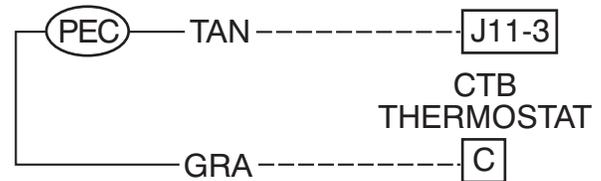
The remote occupancy accessory is a field-installed accessory. This accessory overrides the unoccupied mode and puts the unit in occupied mode. When installing this accessory, the unit must be configured for remote occupancy by setting *MENU* → *Config* → *Inputs* → *input 3, 5, 8, or 9* to Remote Occupancy and normally open (N/O) or normally closed (N/C).

Also set *MENU* → *Schedules* → *occupancy source* to DI on/off. Input 8 or 9 is recommended for easy of installation. Refer to Fig. 36 and Table 3 for wire terminations at J5.

Power Exhaust (output)

Connect the accessory Power Exhaust contactor coil(s) per Fig. 51.

Power Exhaust



C08464

Fig. 51 - RTU-MP Power Exhaust Connections

Communication Wiring - Protocols

General

Protocols are the communication languages spoken by control devices. The main purpose of a protocol is to communicate information in the most efficient method possible. Different protocols exist to provide different kinds of information for different applications. In the BAS application, many different protocols are used, depending on manufacturer. Protocols do not change the function of a controller; just make the front end user different.

The RTU-MP can be set to communicate on four different protocols: BACnet, Modbus, N2, and LonWorks. Switch 3 (SW3) on the board is used to set protocol and baud rate. Switches 1 and 2 (SW1 and SW2) are used to set the board's network address. See Fig. 52 for the switch setting per protocol. The 3rd party connection to the RTU-MP is through plug J19.

NOTE: Power must be cycled after changing the SW1-3 switch settings.

Refer to the *RTU-MP 3rd Party Integration Guide* for more detailed information on protocols, 3rd party wiring, and networking.

SW3 Protocol Selection

PROTOCOL	DS8	DS7	DS6	DS5	DS4	DS3	DS2	DS1
BACnet MS/TP (Master)	Unused	OFF	OFF	OFF	ON	OFF	Select Baud	Select Baud
Modbus (Slave)	Unused	OFF	OFF	ON	ON	OFF	Select Baud	Select Baud
N2 (Slave)	Unused	OFF	OFF	OFF	ON	ON	OFF	OFF
LonWorks	Unused	ON	ON	OFF	ON	OFF	OFF	OFF

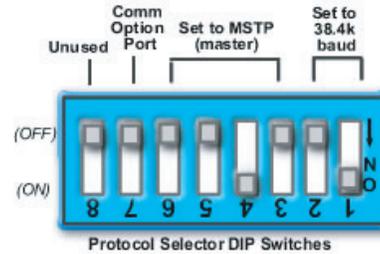
NOTE:

DS = Dip Switch

BACnet MS/TP SW3 example shown

Baud Rate Selections

BAUD RATE	DS2	DS1
9600	OFF	OFF
19,200	ON	OFF
38,400	OFF	ON
76,800	ON	ON



C07166

551J

Fig. 52 - RTU-MP SW3 Dip Switch Settings

Local Access

BACview⁶ Handheld

The BACview⁶ is a keypad/display interface used to connect to the RTU-MP to access the control information, read sensor values, and test the RTU, see Fig. 53. This is an accessory interface that does not come with the MP controller and can only be used at the unit. Connect the BACview⁶ to the RTU-MP's J12 local access port. There are 2 password protected levels in the display (User and Admin). The user password is defaulted to 0000 but can be changed. The Admin password is 1111 and cannot be changed. There is a 10 minute auto logout if a screen is idle. Contact your Bryant applications engineer for details on navigation and screen content.

Virtual BACview

Virtual BACview is a freeware computer program that functions as the BACview⁶ Handheld. The USB Link interface (USB-L) is required to connect a computer to the RTU-MP board. The link cable connects a USB port to the J12 local access port. This program functions and operates identical to the handheld.

RTU-MP Troubleshooting

Communication LEDs

The LEDs indicate if the controller is speaking to the devices on the network. The LEDs should reflect communication traffic based on the baud rate set. The higher the baud rate the more solid the LEDs will appear.

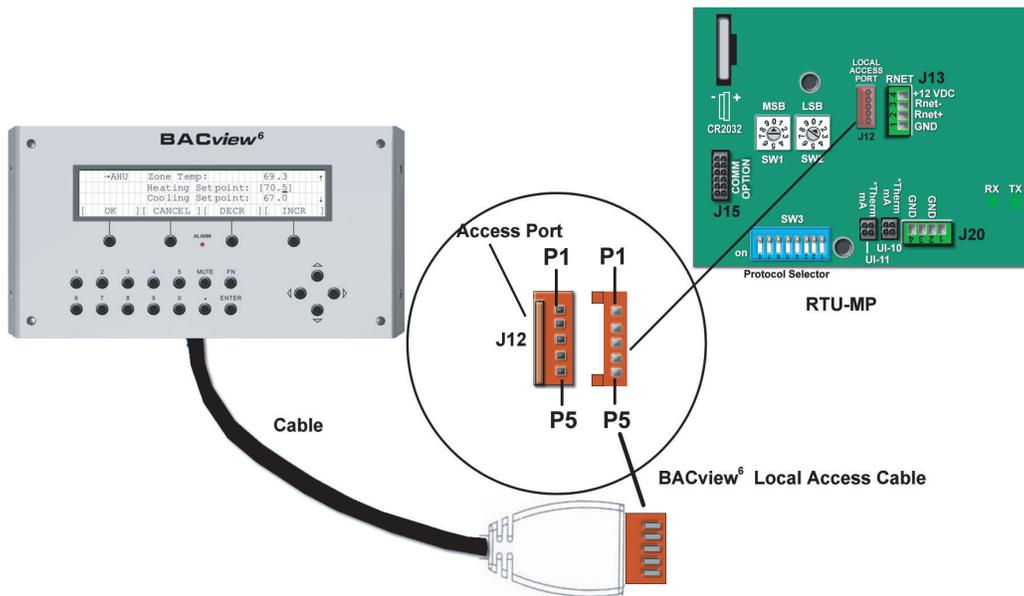


Fig. 53 - BACview⁶ Handheld Connections

C07170

Table 4 – LEDs

The LEDs on the RTU-MP show the status of certain functions

If this LED is on...	Status is...
Power	The RTU MP has power
Rx	The RTU MP is receiving data from the network segment
Tx	The RTU MP is transmitting data over the network segment
DO#	The digital output is active

The **Run** and **Error** LEDs indicate control module and network status

If Run LED shows...	And Error LED shows...	Status is...
2 flashes per second	Off	Normal
2 flashes per second	2 flashes, alternating with Run LED	Five minute auto-restart delay after system error
2 flashes per second	3 flashes, then off	Control module has just been formatted
2 flashes per second	4 flashes, then pause	Two or more devices on this network have the same ARC156 network address
2 flashes per second	On	Exec halted after frequent system errors or control programs halted
5 flashes per second	On	Exec start-up aborted, Boot is running
5 flashes per second	Off	Firmware transfer in progress, Boot is running
7 flashes per second	7 flashes per second, alternating with Run LED	Ten second recovery period after brownout
14 flashes per second	14 flashes per second, alternating with Run LED	Brownout
On	On	Failure. Try the following solutions: <ul style="list-style-type: none"> • Turn the RTU-MP off, then on. • Format the RTU-MP. • Download memory to the RTU-MP. • Replace the RTU-MP.

NOTE: Contact your Bryant applications engineer for details on configuration of RTU-MP, operating sequences and troubleshooting information, as well as details on configuration and troubleshooting of connected networks.

Table 5 Unit Wire/Fuse or HACR Breaker Sizing Data

UNIT	NO M. V - Ph - HZ	IFM TYPE	ELEC. HTR			PE.	NO C.O. or UNPWR C.O.							
			CRHEATER***	NOM (KW)	FLA	FLA	NO PE.				w/PE. (pwrd fr/unit)			
							MCA	FUSE or HACR BRKR	DISC. SIZE		MCA	FUSE or HACR BRKR	DISC. SIZE	
									FLA	LRA			FLA	LRA
551J*04	208/230-1-60	DD-STD	NONE	-	-		29.2	45	29	88	31.1	45	31	90
			101A00	3.3/4.4	15.9/18.3	1.9	29.2/32.1	45/45	29/30	88/88	31.5/34.5	45/45	31/32	90/90
			102A00	4.9/6.5	23.5/27.1		38.6/43.1	45/45	36/40	88/88	41.0/45.5	45/45	38/42	90/90
			103B00	6.5/8.7	31.4/36.3		48.5/54.6	50/60	45/50	88/88	50.9/57.0	60/60	47/52	90/90
			104B00	7.9/10.5	37.9/43.8		56.6/64.0	60/70	52/59	88/88	59.0/66.4	60/70	54/61	90/90
			102A00,102A00	9.8/13.0	46.9/54.2		67.9/77.0	70/80	62/71	88/88	70.3/79.4	80/80	65/73	90/90
	208/230-3-60	DD-STD	NONE	-	-		21.4	30	22	82	23.2	30	24	84
			101A00	3.3/4.4	9.2/10.6	1.9	21.4/22.5	30/30	22/22	82/82	23.3/24.9	30/30	24/24	84/84
			102A00	4.9/6.5	13.6/15.6		26.3/28.8	30/30	24/26	82/82	28.6/31.1	30/35	26/29	84/84
			103B00	6.5/8.7	18.1/20.9		31.9/35.4	35/40	29/33	82/82	34.3/37.8	35/40	32/35	84/84
			104B00	7.9/10.5	21.9/25.3		36.6/40.9	40/45	34/38	82/82	39.0/43.3	40/45	36/40	84/84
			105A00	12.0/16.0	33.4/38.5		51.0/57.4	60/60	47/53	82/82	53.4/59.8	60/60	49/55	84/84
		MED	NONE	-	-		18.9	25	19	87	20.8	30	21	89
			101A00	3.3/4.4	9.2/10.6	1.9	18.9/19.4	25/25	19/19	87/87	20.8/21.8	30/30	21/21	89/89
			102A00	4.9/6.5	13.6/15.6		23.1/25.6	25/30	21/24	87/87	25.5/28.0	30/30	23/26	89/89
			103B00	6.5/8.7	18.1/20.9		28.8/32.3	30/35	26/30	87/87	31.1/34.6	35/35	29/32	89/89
			104B00	7.9/10.5	21.9/25.3		33.5/37.8	35/40	31/35	87/87	35.9/40.1	40/45	33/37	89/89
			105A00	12.0/16.0	33.4/38.5		47.9/54.3	50/60	44/50	87/87	50.3/56.6	60/60	46/52	89/89
		HIGH	NONE	-	-		19.2	25	19	105	21.1	30	21	107
			101A00	3.3/4.4	9.2/10.6	1.9	19.2/19.8	25/25	19/19	105/105	21.1/22.1	30/30	21/21	107/107
			102A00	4.9/6.5	13.6/15.6		23.5/26.0	25/30	22/24	105/105	25.9/28.4	30/30	24/26	107/107
			103B00	6.5/8.7	18.1/20.9		29.1/32.6	30/35	27/30	105/105	31.5/35.0	35/40	29/32	107/107
			104B00	7.9/10.5	21.9/25.3		33.9/38.1	35/40	31/35	105/105	36.3/40.5	40/45	33/37	107/107
			105A00	12.0/16.0	33.4/38.5		48.3/54.6	50/60	44/50	105/105	50.6/57.0	60/60	47/52	107/107
	460-3-60	DD-STD	NONE	-	-		11.8	15	12	43	12.8	15	13	44
			106A00	6.0	7.2	1.0	14.0	15	13	43	15.3	20	14	44
			107A00	8.8	10.6		18.3	20	17	43	19.5	20	18	44
			108A00	11.5	13.8		22.3	25	20	43	23.5	25	22	44
109A00			14.0	16.8		26.0	30	24	43	27.3	30	25	44	
MED		NONE	-	-		9.9	15	10	45	10.9	15	11	46	
		106A00	6.0	7.2	1.0	11.6	15	11	45	12.9	15	12	46	
		107A00	8.8	10.6		15.9	20	15	45	17.1	20	16	46	
		108A00	11.5	13.8		19.9	20	18	45	21.1	25	19	46	
		109A00	14.0	16.8		23.6	25	22	45	24.9	25	23	46	
HIGH		NONE	-	-		10.4	15	10	54	11.4	15	11	55	
		106A00	6.0	7.2	1.0	12.3	15	11	54	13.5	15	12	55	
	107A00	8.8	10.6		16.5	20	15	54	17.8	20	16	55		
	108A00	11.5	13.8		20.5	25	19	54	21.8	25	20	55		
	109A00	14.0	16.8		24.3	25	22	54	25.5	30	23	55		
575-3-60	DD-STD	NONE	-	-	1.9	9.3	15	10	42	11.2	15	12	44	
	MED	NONE	-	-	1.9	7.2	15	7	43	9.1	15	9	45	
	HIGH	NONE	-	-	1.9	7.3	15	7	49	9.2	15	9	51	

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See "Legend and Notes for Table 5" on page 35.

Table 5 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M. V - Ph - HZ	IFM TYPE	ELEC. HTR			PE.	w/ PWRD C.O.								
			CRHEATER***	NOM (KW)	FLA	FLA	NO PE.				w/PE. (pwrdd fr/unit)				
							MCA	FUSE or HACR BRKR	DISC. SIZE		MCA	FUSE or HACR BRKR	DISC. SIZE		
									FLA	LRA			FLA	LRA	
551J*04	208/230-1-60	DD-STD	NONE	-	-	1.9	34.0	50	34	93	35.9	50	36	95	
			101A00	3.3/4.4	15.9/18.3		35.1/38.1	50/50	34/35	93/93	37.5/40.5	50/50	36/37	95/95	
			102A00	4.9/6.5	23.5/27.1		44.6/49.1	50/50	41/45	93/93	47.0/51.5	50/60	43/47	95/95	
			103B00	6.5/8.7	31.4/36.3		54.5/60.6	60/70	50/56	93/93	56.9/63.0	60/70	52/58	95/95	
			104B00	7.9/10.5	37.9/43.8		62.6/70.0	70/80	58/64	93/93	65.0/72.4	70/80	60/67	95/95	
			102A00,102A00	9.8/13.0	46.9/54.2		73.9/83.0	80/90	68/76	93/93	76.3/85.4	80/90	70/79	95/95	
	208/230-3-60	DD-STD	NONE	-	-	1.9	26.2	30	27	87	28.1	35	29	89	
			101A00	3.3/4.4	9.2/10.6		26.8/28.5	30/30	27/27	87/87	29.1/30.9	35/35	29/29	89/89	
			102A00	4.9/6.5	13.6/15.6		32.3/34.8	35/35	30/32	87/87	34.6/37.1	35/40	32/34	89/89	
			103B00	6.5/8.7	18.1/20.9		37.9/41.4	40/45	35/38	87/87	40.3/43.8	45/45	37/40	89/89	
			104B00	7.9/10.5	21.9/25.3		42.6/46.9	45/50	39/43	87/87	45.0/49.3	50/50	41/45	89/89	
				105A00	12.0/16.0	33.4/38.5		57.0/63.4	60/70	52/58	87/87	59.4/65.8	60/70	50/60	89/89
		MED	NONE	-	-	1.9	23.7	30	24	92	25.6	30	26	94	
			101A00	3.3/4.4	9.2/10.6		23.7/25.4	30/30	24/24	92/92	26.0/27.8	30/30	26/26	94/94	
			102A00	4.9/6.5	13.6/15.6		29.1/31.6	30/35	27/29	92/92	31.5/34.0	35/35	29/31	94/94	
103B00			6.5/8.7	18.1/20.9	34.8/38.3		35/40	32/35	92/92	37.1/40.6	40/45	34/37	94/94		
104B00	7.9/10.5		21.9/25.3	39.5/43.8	40/45		36/40	92/92	41.9/46.1	45/50	39/42	94/94			
		105A00	12.0/16.0	33.4/38.5		53.9/60.3	60/70	50/55	92/92	56.3/62.6	60/70	52/58	94/94		
HIGH	NONE	-	-	1.9	24.0	30	25	110	25.9	30	27	112			
	101A00	3.3/4.4	9.2/10.6		24.0/25.8	30/30	25/25	110/110	26.4/28.1	30/30	27/27	112/112			
	102A00	4.9/6.5	13.6/15.6		29.5/32.0	30/35	27/29	110/110	31.9/34.4	35/35	29/32	112/112			
	103B00	6.5/8.7	18.1/20.9		35.1/38.6	40/40	32/36	110/110	37.5/41.0	40/45	35/38	112/112			
	104B00	7.9/10.5	21.9/25.3		39.9/44.1	40/45	37/41	110/110	42.3/46.5	45/50	39/43	112/112			
		105A00	12.0/16.0	33.4/38.5		54.3/60.6	60/70	50/56	110/110	56.6/63.0	60/70	52/58	112/112		
460-3-60	DD-STD	NONE	-	-	1.0	14.0	20	14	45	15.0	20	16	46		
		106A00	6.0	7.2		16.8	20	15	45	18.0	20	17	46		
		107A00	8.8	10.6		21.0	25	19	45	22.3	25	20	46		
		108A00	11.5	13.8		25.0	25	23	45	26.3	30	24	46		
		109A00	14.0	16.8		28.8	30	26	45	30.0	30	28	46		
	MED	NONE	-	-	1.0	12.1	15	12	47	13.1	15	13	48		
		106A00	6.0	7.2		14.4	15	13	47	15.6	20	14	48		
		107A00	8.8	10.6		18.6	20	17	47	19.9	20	18	48		
		108A00	11.5	13.8		22.6	25	21	47	23.9	25	22	48		
		109A00	14.0	16.8		26.4	30	24	47	27.6	30	25	48		
	HIGH	NONE	-	-	1.0	12.6	15	13	56	13.6	20	14	57		
		106A00	6.0	7.2		15.0	15	14	56	16.3	20	15	57		
		107A00	8.8	10.6		19.3	20	18	56	20.5	25	19	57		
		108A00	11.5	13.8		23.3	25	21	56	24.5	25	23	57		
		109A00	14.0	16.8		27.0	30	25	56	28.3	30	26	57		
575-3-60	MEDDD-STD	NONE	-	-	1.9	11.0	15	12	44	12.9	15	14	46		
		NONE	-	-	1.9	8.9	15	9	45	10.8	15	11	47		
		NONE	-	-	1.9	9.0	15	9	51	10.9	15	11	53		

See "Legend and Notes for Table 5" on page 35.

Table 5 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M. V - Ph - HZ	IFM TYPE	ELEC. HTR			PE.	NO C.O. or UNPWR C.O.							
			CRHEATER***	NOM (KW)	FLA	FLA	NO PE.				w/PE. (pwrd fr/unit)			
							MCA	FUSE or HACR BRKR	DISC. SIZE		MCA	FUSE or HACR BRKR	DISC. SIZE	
									FLA	LRA			FLA	LRA
551J*05	208/230 - 1 - 60	DD-STD	NONE	-	-	1.9	36.1	50	35	127	38.0	50	37	129
			101A00	3.3/4.4	15.9/18.3		36.1/36.1	50/50	35/35	127/127	38.0/38.0	50/50	37/37	129/129
			103B00	6.5/8.7	31.4/36.3		48.5/54.6	50/60	45/50	127/127	50.9/57.0	60/60	47/52	129/129
			102A00,102A00	9.8/13.0	46.9/54.2		67.9/77.0	70/80	62/71	127/127	70.3/79.4	80/80	65/73	129/129
			103B00,103B00	13.1/17.4	62.8/72.5		87.8/99.9	90/100	81/92	127/127	90.1/102.3	100/110	83/94	129/129
			104B00,104B00	15.8/21.0	75.8/87.5		104.0/118.6	110/125	96/109	127/127	106.4/121.0	110/125	98/111	129/129
	208/230 - 3 - 60	DD-STD	NONE	-	-	1.9	25.9	30	26	93	27.8	40	28	95
			102A00	4.9/6.5	13.6/15.6		26.3/28.8	30/30	26/26	93/93	28.6/31.1	40/40	28/29	95/95
			103B00	6.5/8.7	18.1/20.9		31.9/35.4	35/40	29/33	93/93	34.3/37.8	40/40	32/35	95/95
			105A00	12.0/16.0	33.4/38.5		51.0/57.4	60/60	47/53	93/93	53.4/59.8	60/60	49/55	95/95
		MED	NONE	-	-	1.9	23.4	30	23	98	25.3	30	25	100
			102A00	4.9/6.5	13.6/15.6		23.4/25.6	30/30	23/24	98/98	25.5/28.0	30/30	25/26	100/100
			103B00	6.5/8.7	18.1/20.9		28.8/32.3	30/35	26/30	98/98	31.1/34.6	35/35	29/32	100/100
			105A00	12.0/16.0	33.4/38.5		47.9/54.3	50/60	44/50	98/98	50.3/56.6	60/60	46/52	100/100
		HIGH	NONE	-	-	1.9	23.7	30	23	116	25.6	30	26	118
			102A00	4.9/6.5	13.6/15.6		23.7/26.0	30/30	23/24	116/116	25.9/28.4	30/30	26/26	118/118
			103B00	6.5/8.7	18.1/20.9		29.1/32.6	30/35	27/30	116/116	31.5/35.0	35/40	29/32	118/118
			105A00	12.0/16.0	33.4/38.5		48.3/54.6	50/60	44/50	116/116	50.6/57.0	60/60	47/52	118/118
	460 - 3 - 60	DD-STD	NONE	-	-	1.0	12.7	15	13	47	13.7	20	14	48
			106A00	6.0	7.2		14.0	15	13	47	15.3	20	14	48
			108A00	11.5	13.8		22.3	25	20	47	23.5	25	22	48
			109A00	14.0	16.8		26.0	30	24	47	27.3	30	25	48
		MED	NONE	-	-	1.0	10.8	15	11	49	11.8	15	12	50
			106A00	6.0	7.2		11.6	15	11	49	12.9	15	12	50
108A00			11.5	13.8	19.9		20	18	49	21.1	25	19	50	
109A00			14.0	16.8	23.6		25	22	49	24.9	25	23	50	
HIGH		NONE	-	-	1.0	11.3	15	11	58	12.3	15	12	59	
		016A00	6.0	7.2		12.3	15	11	58	13.5	15	12	59	
		108A00	11.5	13.8		20.5	25	19	58	21.8	25	20	59	
		109A00	14.0	16.8		24.3	25	22	58	25.5	30	23	59	
108A00,108A00	23.0	27.7	37.9	40	35	58	39.1	40	36	59				
	575 - 3 - 60	HIGH MED DD-STD	NONE	-	-	1.9	10.9	15	11	43	12.8	15	13	45
			NONE	-	-	1.9	8.8	15	9	44	10.7	15	11	46
			NONE	-	-	1.9	8.9	15	9	50	10.8	15	11	52

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See "Legend and Notes for Table 5" on page 35.

Table 5 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M. V - Ph - HZ	IFM TYPE	ELEC. HTR			RE.	w/PWRD C.O.								
			CRHEATER***	NOM (KW)	FLA		FLA	NO P.E.				w/P.E. (pwrd fr/unit)			
								MCA	FUSE or HACR BRKR	DISC. SIZE		MCA	FUSE or HACR BRKR	DISC. SIZE	
										FLA	LRA			FLA	LRA
551J*05	208/230 - 1 - 60	DD-STD	NONE	-	-		40.9	60	41	132	42.8	60	43	134	
			101A00	3.3/4.4	15.9/18.3		40.9/40.9	60/60	41/41	132/132	42.8/42.8	60/60	43/43	134/134	
			103B00	6.5/8.7	31.4/36.3		54.5/60.6	60/70	50/56	132/132	56.9/63.0	60/70	52/58	134/134	
			102A00,102A00	9.8/13.0	46.9/54.2	1.9	73.9/83.0	80/90	68/76	132/132	76.3/85.4	80/90	70/79	134/134	
			103B00,103B00	13.1/17.4	62.8/72.5		93.8/105.9	100/110	86/97	132/132	96.1/108.3	100/110	88/100	134/134	
			104B00,104B00	15.8/21.0	75.8/87.5		110.0/124.6	125/125	101/115	132/132	112.4/127.0	125/150	103/117	134/134	
	208/230 - 3 - 60	DD-STD	NONE	-	-		30.7	40	31	98	32.6	45	34	100	
			102A00	4.9/6.5	13.6/15.6		32.3/34.8	40/40	31/32	98/98	34.6/37.1	45/45	34/34	100/100	
			103B00	6.5/8.7	18.1/20.9	1.9	37.9/41.4	40/45	35/38	98/98	40.3/43.8	45/45	37/40	100/100	
			105A00	12.0/16.0	33.4/38.5		57.0/63.4	60/70	52/58	98/98	59.4/65.8	60/70	55/60	100/100	
		104B00,104B00	15.8/21.0	43.8/50.5		70.0/78.4	80/80	64/72	98/98	72.4/80.8	80/90	67/74	100/100		
		MED	NONE	-	-		28.2	40	29	103	30.1	40	31	105	
			102A00	4.9/6.5	13.6/15.6	1.9	29.1/31.6	40/40	29/29	103/103	31.5/34.0	40/40	31/31	105/105	
			103B00	6.5/8.7	18.1/20.9		34.8/38.3	40/40	32/35	103/103	37.1/40.6	40/45	34/37	105/105	
			105A00	12.0/16.0	33.4/38.5		53.9/60.3	60/70	50/55	103/103	56.3/62.6	60/70	52/58	105/105	
		104B00,104B00	15.8/21.0	43.8/50.5		66.9/75.3	70/80	62/69	103/103	69.3/77.6	70/80	64/71	105/105		
		HIGH	NONE	-	-		28.5	40	29	121	30.4	40	31	123	
			102A00	4.9/6.5	13.6/15.6	1.9	29.5/32.0	40/40	29/29	121/121	31.9/34.4	40/40	31/32	123/123	
	103B00		6.5/8.7	18.1/20.9		35.1/38.6	40/40	32/36	121/121	37.5/41.0	40/45	35/38	123/123		
	105A00		12.0/16.0	33.4/38.5		54.3/60.6	60/70	50/56	121/121	56.6/63.0	60/70	52/58	123/123		
	104B00,104B00	15.8/21.0	43.8/50.5		67.3/75.6	70/80	62/70	121/121	69.6/78.0	70/80	64/72	123/123			
	460 - 3 - 60	DD-STD	NONE	-	-		14.9	20	15	49	15.9	20	16	50	
			106A00	6.0	7.2	1.0	16.8	20	15	49	18.0	20	17	50	
			108A00	11.5	13.8		25.0	25	23	49	26.3	30	24	50	
109A00			14.0	16.8		28.8	30	26	49	30.0	30	28	50		
108A00,108A00		23.0	27.7		42.4	45	39	49	43.6	45	40	50			
MED		NONE	-	-		13.0	15	13	51	14.0	20	14	52		
		106A00	6.0	7.2	1.0	14.4	15	13	51	15.6	20	14	52		
		108A00	11.5	13.8		22.6	25	21	51	23.9	25	22	52		
		109A00	14.0	16.8		26.4	30	24	51	27.6	30	25	52		
108A00,108A00		23.0	27.7		40.0	45	37	51	41.3	45	38	52			
HIGH		NONE	-	-		13.5	20	14	60	14.5	20	15	61		
		016A00	6.0	7.2	1.0	15.0	20	14	60	16.3	20	15	61		
	108A00	11.5	13.8		23.3	25	21	60	24.5	25	23	61			
	109A00	14.0	16.8		27.0	30	25	60	28.3	30	26	61			
108A00,108A00	23.0	27.7		40.6	45	37	60	41.9	45	39	61				
575 - 3 - 60	HIGH MED DD-STD	NONE	-	-	1.9	12.6	15	13	45	14.5	20	15	47		
		NONE	-	-	1.9	10.5	15	11	46	12.4	15	13	48		
		NONE	-	-	1.9	10.6	15	11	52	12.5	15	13	54		

See "Legend and Notes for Table 5" on page 35.

Table 5 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M. V - Ph - HZ	IFM TYPE	ELEC. HTR			PE.	NO C.O. or UNPWR C.O.							
			CRHEATER***	NOM (KW)	FLA	FLA	NO PE.				w/PE. (pwrd fr/unit)			
							MCA	FUSE or HACR BRKR	DISC. SIZE		MCA	FUSE or HACR BRKR	DISC. SIZE	
									FLA	LRA			FLA	LRA
551 J*06	208/230 - 1 - 60	DD-STD	NONE	-	-	1.9	40.1	60	39	144	42.0	60	41	146
			102A00	4.9/6.5	23.5/27.1		40.1/43.1	60/60	39/40	144/144	42.0/45.5	60/60	41/42	146/146
			103B00	6.5/8.7	31.4/36.3		48.5/54.6	60/60	45/50	144/144	50.9/57.0	60/60	47/52	146/146
			102A00,102A00	9.8/13.0	46.9/54.2		67.9/77.0	70/80	62/71	144/144	70.3/79.4	80/80	65/73	146/146
			103B00,103B00	13.1/17.4	62.8/72.5		87.8/99.9	90/100	81/92	144/144	90.1/102.3	100/110	83/94	146/146
			104B00,104B00	15.8/21.0	75.8/87.5		104.0/118.6	110/125	96/109	144/144	106.4/121.0	110/125	98/111	146/146
	208/230 - 3 - 60	DD-STD	NONE	-	-	1.9	28.7	40	28	120	30.6	45	31	122
			102A00	4.9/6.5	13.6/15.6		28.7/28.8	40/40	28/28	120/120	30.6/31.1	45/45	31/31	122/122
			104B00	7.9/10.5	21.9/25.3		36.6/40.9	40/45	34/38	120/120	39.0/43.3	45/45	36/40	122/122
			105A00	12.0/16.0	33.4/38.5		51.0/57.4	60/60	47/53	120/120	53.4/59.8	60/60	49/55	122/122
			104B00,104B00	15.8/21.0	43.8/50.5		64.0/72.4	70/80	59/67	120/120	66.4/74.8	70/80	61/69	122/122
			104B00,105A00	19.9/26.5	55.2/63.8		78.3/89.0	80/90	72/82	120/120	80.6/91.4	90/100	74/84	122/122
		MED	NONE	-	-	1.9	26.5	40	26	143	28.4	40	28	145
			102A00	4.9/6.5	13.6/15.6		26.5/26.5	40/40	26/26	143/143	28.4/28.4	40/40	28/28	145/145
			104B00	7.9/10.5	21.9/25.3		33.9/38.1	40/40	31/35	143/143	36.3/40.5	40/45	33/37	145/145
			105A00	12.0/16.0	33.4/38.5		48.3/54.6	50/60	44/50	143/143	50.6/57.0	60/60	47/52	145/145
			104B00,104B00	15.8/21.0	43.8/50.5		61.3/69.6	70/70	56/64	143/143	63.6/72.0	70/80	59/66	145/145
			104B00,105A00	19.9/26.5	55.2/63.8		75.5/86.3	80/90	69/79	143/143	77.9/88.6	80/90	72/82	145/145
	HIGH	NONE	-	-	1.9	28.8	40	29	169	30.7	45	31	171	
		102A00	4.9/6.5	13.6/15.6		28.8/28.9	40/40	29/29	169/169	30.7/31.3	45/45	31/31	171/171	
		104B00	7.9/10.5	21.9/25.3		36.8/41.0	40/45	34/38	169/169	39.1/43.4	45/45	36/40	171/171	
		105A00	12.0/16.0	33.4/38.5		51.1/57.5	60/60	47/53	169/169	53.5/59.9	60/60	49/55	171/171	
		104B00,104B00	15.8/21.0	43.8/50.5		64.1/72.5	70/80	59/67	169/169	66.5/74.9	70/80	61/69	171/171	
		104B00,104A00	19.9/26.5	55.2/63.8		78.4/89.1	80/90	72/82	169/169	80.8/91.5	90/100	74/84	171/171	
460 - 3 - 60	DD-STD	NONE	-	-	1.0	13.7	20	14	58	14.7	20	15	59	
		106A00	6.0	7.2		14.0	20	14	58	15.3	20	15	59	
		108A00	11.5	13.8		22.3	25	20	58	23.5	25	22	59	
		109A00	14.0	16.8		26.0	30	24	58	27.3	30	25	59	
		108A00,108A00	23.0	27.7		39.6	40	36	58	40.9	45	38	59	
		108A00,109A00	25.5	30.7		43.4	45	40	58	44.6	45	41	59	
	MED	NONE	-	-	1.0	12.3	15	12	69	13.3	20	13	70	
		106A00	6.0	7.2		12.3	15	12	69	13.5	20	13	70	
		108A00	11.5	13.8		20.5	25	19	69	21.8	25	20	70	
		109A00	14.0	16.8		24.3	25	22	69	25.5	30	23	70	
		108A00,108A00	23.0	27.7		37.9	40	35	69	39.1	40	36	70	
		108A00,109A00	25.5	30.7		41.6	45	38	69	42.9	45	39	70	
HIGH	NONE	-	-	1.0	13.1	20	13	82	14.1	20	14	83		
	016A00	6.0	7.2		13.3	20	13	82	14.5	20	14	83		
	108A00	11.5	13.8		21.5	25	20	82	22.8	25	21	83		
	109A00	14.0	16.8		25.3	30	23	82	26.5	30	24	83		
	108A00,108A00	23.0	27.7		38.9	40	36	82	40.1	45	37	83		
	108A00,109A00	25.5	30.7		42.6	45	39	82	43.9	45	40	83		
575 - 3 - 60	DD-STD	NONE	-	-	1.9	11.3	15	12	46	13.2	15	14	48	
	MED	NONE	-	-	1.9	9.3	15	9	53	11.2	15	11	55	
	HIGH	NONE	-	-	1.9	10.1	15	10	64	12.0	15	12	66	

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See "Legend and Notes for Table 5" on page 35.

Table 5 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M. V - PH - HZ	IFM TYPE	ELEC. HTR			RE.	w/ PWRD C.O.								
			CRHEATER***	NOM (KW)	FLA		FLA	NO PE.				w/PE. (pwrd fr/unit)			
								MCA	FUSE or HACR BRKR	DISC. SIZE		MCA	FUSE or HACR BRKR	DISC. SIZE	
										FLA	LRA			FLA	LRA
551J*06	208/230 - 1 - 60	DD-STD	NONE	-	-	1.9	44.9	60	44	149	46.8	60	47	151	
			102A00	4.9/6.5	23.5/27.1		44.9/49.1	60/60	44/45	149/149	47.0/51.5	60/60	47/47	151/151	
			103B00	6.5/8.7	31.4/36.3		54.5/60.6	60/70	50/56	149/149	56.9/63.0	60/70	52/58	151/151	
			102A00,102A00	9.8/13.0	46.9/54.2		73.9/83.0	80/90	68/76	149/149	76.3/85.4	80/90	70/79	151/151	
			103B00,103B00	13.1/17.4	62.8/72.5		93.8/105.9	100/110	86/97	149/149	96.1/108.3	100/110	88/100	151/151	
			104B00,104B00	15.8/21.0	75.8/87.5		110.0/124.6	125/125	101/115	149/149	112.4/127.0	125/150	103/117	151/151	
	208/230 - 3 - 60	DD-STD	NONE	-	-	1.9	33.5	45	34	125	35.4	50	36	127	
			102A00	4.9/6.5	13.6/15.6		33.5/34.8	45/45	34/34	125/125	35.4/37.1	50/50	36/36	127/127	
			104B00	7.9/10.5	21.9/25.3		42.6/46.9	45/50	39/43	125/125	45.0/49.3	50/50	41/45	127/127	
			105A00	12.0/16.0	33.4/38.5		57.0/63.4	60/70	52/58	125/125	59.4/65.8	60/70	55/60	127/127	
			104B00,104B00	15.8/21.0	43.8/50.5		70.0/78.4	80/80	64/72	125/125	72.4/80.8	80/90	67/74	127/127	
			104B00,105A00	19.9/26.5	55.2/63.8		84.3/95.0	90/100	78/87	125/125	86.6/97.4	90/100	80/90	127/127	
		MED	NONE	-	-	1.9	31.3	45	31	148	33.2	45	34	150	
			102A00	4.9/6.5	13.6/15.6		31.3/32.0	45/45	31/31	148/148	33.2/34.4	45/45	34/34	150/150	
			104B00	7.9/10.5	21.9/25.3		39.9/44.1	45/45	37/41	148/148	42.3/46.5	45/50	39/43	150/150	
			105A00	12.0/16.0	33.4/38.5		54.3/60.6	60/70	50/56	148/148	56.6/63.0	60/70	52/58	150/150	
			104B00,104B00	15.8/21.0	43.8/50.5		67.3/75.6	70/80	62/70	148/148	69.6/78.0	70/80	64/72	150/150	
			104B00,105A00	19.9/26.5	55.2/63.8		81.5/92.3	90/100	75/85	148/148	83.9/94.6	90/100	77/87	150/150	
	HIGH	NONE	-	-	1.9	33.6	45	34	174	35.5	50	36	176		
		102A00	4.9/6.5	13.6/15.6		33.6/34.9	45/45	34/34	174/174	35.5/37.3	50/50	36/36	176/176		
		104B00	7.9/10.5	21.9/25.3		42.8/47.0	45/50	39/43	174/174	45.1/49.4	50/50	42/45	176/176		
		105A00	12.0/16.0	33.4/38.5		57.1/63.5	60/70	53/58	174/174	59.5/65.9	60/70	55/61	176/176		
		104B00,104B00	15.8/21.0	43.8/50.5		70.1/78.5	80/80	65/72	174/174	72.5/80.9	80/90	67/74	176/176		
		104B00,104A00	19.9/26.5	55.2/63.8		84.4/95.1	90/100	78/88	174/174	86.8/97.5	90/100	80/90	176/176		
460 - 3 - 60	DD-STD	NONE	-	-	1.0	15.9	20	16	60	16.9	20	17	61		
		106A00	6.0	7.2		16.8	20	16	60	18.0	20	17	61		
		108A00	11.5	13.8		25.0	25	23	60	26.3	30	24	61		
		109A00	14.0	16.8		28.8	30	26	60	30.0	30	28	61		
		108A00,108A00	23.0	27.7		42.4	45	39	60	43.6	45	40	61		
		108A00,109A00	25.5	30.7		46.1	50	42	60	47.4	50	44	61		
	MED	NONE	-	-	1.0	14.5	20	15	71	15.5	20	16	72		
		106A00	6.0	7.2		15.0	20	15	71	16.3	20	16	72		
		108A00	11.5	13.8		23.3	25	21	71	24.5	25	23	72		
		109A00	14.0	16.8		27.0	30	25	71	28.3	30	26	72		
		108A00,108A00	23.0	27.7		40.6	45	37	71	41.9	45	39	72		
		108A00,109A00	25.5	30.7		44.4	45	41	71	45.6	50	42	72		
	HIGH	NONE	-	-	1.0	15.3	20	16	84	16.3	20	17	85		
		016A00	6.0	7.2		16.0	20	16	84	17.3	20	17	85		
		108A00	11.5	13.8		24.3	25	22	84	25.5	30	23	85		
		109A00	14.0	16.8		28.0	30	26	84	29.3	30	27	85		
		108A00,108A00	23.0	27.7		41.6	45	38	84	42.9	45	39	85		
		108A00,109A00	25.5	30.7		45.4	50	42	84	46.6	50	43	85		
575 - 3 - 60	HIGH MED DD-STD	NONE	-	-	1.9	13.0	15	13	48	14.9	20	16	50		
		NONE	-	-	1.9	11.0	15	11	55	12.9	15	13	57		
		NONE	-	-	1.9	11.8	15	12	66	13.7	15	14	68		

See "Legend and Notes for Table 5" on page 35.

Legend and Notes for Table 5

LEGEND:

- BRKR - Circuit breaker
- CO - Convenient outlet
- DD - Direct drive indoor fan motor
- DISC - Disconnect
- FLA - Full load amps
- IFM - Indoor fan motor
- LRA - Locked rotor amps
- MCA - Minimum circuit amps
- PE - Power exhaust
- PWRD CO - Powered convenient outlet
- UNPWR CO - Unpowered convenient outlet



NOTES:

1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. Canadian units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 230-3-60



AB = 224 v
BC = 231 v
AC = 226 v

$$\text{Average Voltage} = \frac{(224 + 231 + 226)}{3} = \frac{681}{3} = 227$$

Determine maximum deviation from average voltage.
(AB) 227 - 224 = 3 v Maximum deviation is 4 v.
(BC) 231 - 227 = 4 v Determine percent of voltage imbalance.
$$\% \text{ Voltage Imbalance} = 100 \times \frac{4}{227} = 1.76\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.
IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

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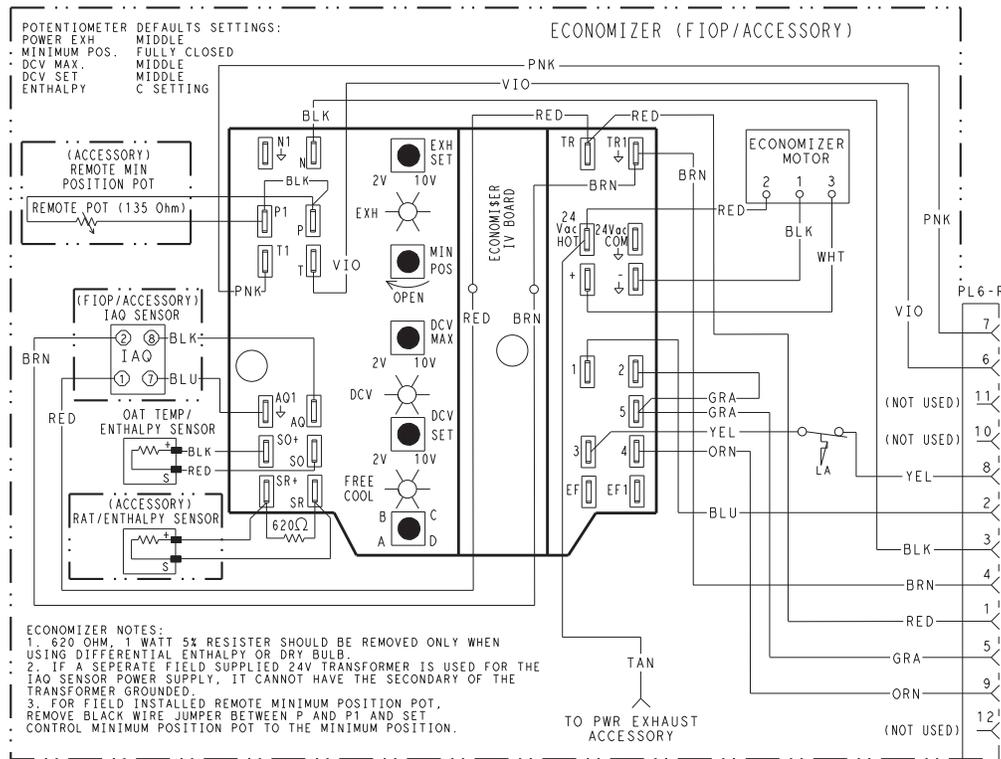


Fig. 54 - EconoMi\$er IV Wiring

C09302

Step 11 — Adjust Factory-Installed Options

Smoke Detectors —

Smoke detector(s) will be connected at the Controls Connections Board, at terminals marked “Smoke Shutdown”. Cut jumper JMP 3 when ready to energize unit.

EconoMi\$er IV Occupancy Switch —

Refer to Fig. 56 for general EconoMi\$er IV wiring. External occupancy control is managed through a connection on the Controls Connections Board.

If external occupancy control is desired, connect a time clock or remotely controlled switch (closed for Occupied, open for Unoccupied sequence) at terminals marked OCCUPANCY. Cut jumper JMP 2 to complete the installation.

Step 12 — Install Accessories

Available accessories include:

- Curb
- Thru-base connection kit (must be installed before unit is set on curb)
- Electric heaters and single-piping connection kits
- Manual outside air damper
- Two-Position motorized outside air damper
- EconoMi\$er IV (with control)
- EconoMi\$er2 (without control/for external signal)
- Power Exhaust
- Differential dry-bulb sensor (EconoMi\$er IV)
- Outdoor enthalpy sensor
- Differential enthalpy sensor
- CO₂ sensor
- Smoke detector (Return Air and/or Supply Air)
- Louvered hail guard
- Hood-type hail guard
- Phase monitor control

Refer to separate installation instructions for information on installing these accessories.

Pre-Start and Start-Up —

This completes the mechanical installation of the unit. Refer to the unit's Service Manual for detailed Pre-Start and Start-Up instructions.