



# Installation Instructions

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## GENERAL

This installation instruction contains basic unit installation information, including installation of thermostats and remote temperature sensors.

For additional information and service instructions, refer to the Controls and Troubleshooting literature also enclosed in this literature packet.

The 48ZT,ZW units are equipped with standard integral economizer and high-capacity power exhaust.

The 48Z6,Z8 units are equipped with factory-installed return/exhaust fans.

The staged gas control (SGC) option adds the capability to control the rooftop unit's gas heating system to a specified supply air temperature set point for purposes of tempering a cool mixed-air condition.

## SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform basic maintenance functions of cleaning coils and filters and replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature, tags and labels attached to the unit, and other safety precautions that may apply.

Follow all safety codes, including ANSI (American National Standards Institute) Z223.1. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguisher available for all brazing operations.

### WARNING

Before performing service or maintenance operations on unit, turn off main power switch to unit. Electrical shock could cause personal injury.

### FOR YOUR SAFETY WHAT TO DO IF YOU SMELL GAS

Do not try to light any appliance. Do not touch any electrical switch; do not use any phone in your building. Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. If you cannot reach your gas supplier, call the fire department.

### FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

### WARNING

Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information, consult a qualified installer, service agency, or the gas supplier.

### ⚠ CAUTION

Disconnect gas piping from units when leak testing at pressures greater than 0.5 psig. Pressures greater than 0.5 psig will cause gas valve damage resulting in a hazardous condition. If gas valve is subjected to pressure greater than 0.5 psig, it must be replaced. When pressure testing field-supplied gas piping at pressures of 0.5 psig or less, the unit connected to such piping must be isolated by manually closing the gas valve.

## INSTALLATION

**Jobsite Survey** — Complete the following checks before installation.

1. Consult local building codes and the NEC (National Electrical Code) (ANSI/NFPA [National Fire Protection Association] 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.

### ⚠ CAUTION

Do not lift unit with forklift truck. Move unit with overhead rigging only.

**Unit Placement** — Inspect unit for transportation damage. File claim with transportation agency.

Provide clearance around and above unit for airflow, safety, and service access. Do not restrict top (area above condenser fans) in any way. Allow at least 6 ft on all sides for rated performance, code compliance, and service.

Check unit dimensional drawings for unit arrangement and minimum performance and service clearances.

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

On units equipped with power exhaust option, high velocity air is exhausted out the hood. Unit should be positioned with at least 10 ft clearance between the exhaust hood and any obstruction. Although unit is weatherproof, guard against water from higher level runoff and overhangs.

Level by using unit frame as a reference. Physical data is shown in Tables 1A-6.

**Roof Mount** — Check building codes for weight distribution requirements. Unit weight is shown in Tables 1A-1E and 2. Unit may be mounted on class A, B, or C roofing material.

**ROOF CURB** — Assemble and install roof curb as described in instructions shipped with the accessory. Accessory roof curb and information required to field fabricate a roof curb is shown in Fig. 1-5. Install insulation, cant strips, roofing and counter flashing as required. For unit condensate drain to function properly, curb must be level or within tolerances shown in Fig. 1-5.

**STEEL BEAMS** — If roof curb is not used, support unit with steel beams along its entire length and then support steel as required. As a minimum, unit must be supported across its width at each lifting lug location.

**Slab Mount** — Provide a level concrete slab that extends beyond unit cabinet at least 6 inches. Make a slab 8 in. thick with 4 in. above grade. Use gravel apron in front of condenser coil air inlet to prevent grass and foliage from obstructing airflow. Ensure that slab is of sufficient height to allow for condensate trap of 4 in. on sizes 030-070 or 7 in. on sizes 075-105.

## Curb Gasketing

**SIZE 030-050 UNITS** — After ductwork has been connected to the roof curb, attach adhesive-backed gasketing on all end rails, cross rails, and duct rails. Be sure all joints and corners of gasket are square and flush to prevent possible water leaks. Follow all applicable building codes.

**SIZE 055-105 UNITS** — After ductwork has been connected to the roof curb, apply gasket material (1/2-in. thick x 1 1/2-in. wide neoprene) where indicated.

**Single-Thickness Gasketing** (See Fig. 6-8 for Item Numbers) — Apply gasketing in the following places:

1. Along both side rails (1) — 2 places, full length
2. Along return air end rail (2) — 1 place
3. Around return air internal duct flange (3) — 1 or 2 places
4. Around supply air internal duct flanges (4) — 3 places

**Double-Thickness Gasketing** (See Fig. 6 and 8 and Detail A-A) — Locate a line 9 3/4-in. from the supply air end of the accessory curb. Apply a double-thickness of gasket material along with line per detail A-A.

**NOTE:** Do not apply gasket material along the outside edge of the curb (area “X”). This pan area of the curb extends out beneath the end of the unit’s air handler section; applying gasket here develops a potential water trap area on top of the curb.

**Condenser Section Roof Curb** (See Fig. 7) — Apply single-thickness gasket along both side rails (5).

## Field-Fabricated Ductwork

### ⚠ WARNING

For vertical supply and return units, tools or parts could drop into ductwork and cause an injury. Install a 90-degree turn in the supply and return ductwork between the unit and the conditioned space. If a 90-degree elbow cannot be installed, then a grille of sufficient strength and density should be installed to prevent objects from falling into the conditioned space. Failure to follow these instructions could result in personal injury or property damage due to falling objects.

The 48ZG,ZN,ZT,ZW,Z6,Z8 units are designed for vertical supply/return only. Field-fabricated ductwork must be attached to the roof curb, on to the support steel, prior to the final rigging and installation of the unit. Supply and return duct dimensions are shown in Fig. 1-3.

To attach ductwork to roof curb, insert duct approximately 10 to 11 in. up into roof curb. Connect ductwork to 14-gage roof curb material with sheet metal screws driven from inside the duct.

Secure all ducts to the building structure, using flexible duct connectors between roof curbs and ducts as required. Ducts passing through an unconditioned space must be insulated and covered with a vapor barrier. Outlet grilles must not lie directly below unit discharge. The return duct must have a 90-degree elbow before opening into the building space if the unit is equipped with power exhaust.

Design supply duct strong enough to handle expected static pressures.

**Rigging** — Do not drop unit; keep upright. Use spreader bars over unit to prevent sling or cable damage. Sheets of plywood placed along the condenser coils will provide additional protection. All lifting lugs **MUST** be used when lifting unit. Level by using unit frame as a reference. See Fig. 9-13 for information. Unit and accessory weights are shown in Tables 1A-1E and 2. Weight distribution and center of gravity can be found in Fig. 14.

**Table 1A — Physical Data (48ZG,ZN030-050)**

BASE UNIT	48ZG,ZN030		48ZG,ZN035		
NOMINAL CAPACITY (tons)	30		35		
OPERATING WEIGHT (lb)	Standard Chassis	Extended Chassis	Standard Chassis	Extended Chassis	
Base Unit					
Low Heat	5640	6140	5766	6266	
High Heat	5770	6270	5895	6395	
With Economizer					
Low Heat	5941	6441	6066	6566	
High Heat	6070	6570	6195	6695	
COMPRESSORS	Semi-Hermetic				
Quantity...Type	2...06D		1...06D, 1...06E		
Oil Charge (pints)	8		8, 14		
Capacity Steps (%)					
CV	50,100		43,100		
VAV	17,33,50,67,83,100		14,28,42,57,71,86,100		
Number of Refrigerant Circuits	2		2		
REFRIGERANT	R-22				
Operating Charge (lb), Ckt 1/Ckt 2					
Standard Evaporator Coil	29.0/29.0		29.0/30.5		
Standard Evaporator with HGBP	31.0/29.0		31.0/30.5		
Alternate High-Capacity Evaporator Coil	N/A		N/A		
Alternate High-Capacity Evaporator with HGBP	N/A		N/A		
CONDENSER COILS	3/8-in. Tube Diameter				
Quantity	2		2		
Rows...Fins/in.	3...15.0		3...15.0		
Aluminum					
Copper (Optional)	3...13.7		3...13.7		
Total Face Area (sq ft)	37.5		37.5		
EVAPORATOR COILS	1				
Quantity			32.1		
Total Face Area (sq ft)			TXV...1		
Refrigerant Feed Device...No. per Circuit					
Standard Evaporator Coils	1/2 in. Tube Dia		1/2 in. Tube Dia		
Rows...Fins/in.	3...15.0		4...15.0		
Fin Type	Double Wavy		Double Wavy		
Tube Type	Cross Hatched		Cross Hatched		
Alternate, High-Capacity Evaporator Coils	N/A		N/A		
Rows...Fins/in.	N/A		N/A		
Fin Type	N/A		N/A		
Tube Type	N/A		N/A		
HEATING SECTION	Low Heat	High Heat	Low Heat	High Heat	
Number of Heat Exchangers	1	2	1	2	
Input (MBtuh)	325	650	325	650	
Output (MBtuh)	263	527	263	527	
Temperature Rise Range (F)	10-40	25-55	10-40	25-55	
Efficiency (%)	81	81	81	81	
Burner Orifice Diameter					
Quantity (in...drill no.)	7 (.1285...30)	14 (.1285...30)	7 (.1258...30)	14 (.1258...30)	
Manifold Pressure (in. wg)	3.3	3.3	3.3	3.3	
Line Pressure (in. wg) (min...max)	5.0...13.0	5.0...13.0	5.0...13.0	5.0...13.0	
Firing Stages	2	2	2	2	
Number of Gas Valves	1	2	1	2	
CONDENSER FANS	Propeller Type				
Quantity...Diameter (in.)	2...30		2...30		
Nominal Cfm	18,600		18,600		
Motor Hp...Rpm	1.0...1140		1.0...1140		
SUPPLY FAN	Centrifugal 25 x 25 in.				
Nominal Cfm	10,500		10,500		
Maximum Allowable Cfm	15,000		15,000		
Maximum Allowable Rpm	900		900		
Shaft Diameter at Pulley (in.)	1 11/16		1 11/16		
SUPPLY-FAN MOTOR AND DRIVE	(Any motor available on any unit)				
Motor Hp	7.5	10	15	20	25
Motor Frame Size	213T	215T	254T	256T	284T
Efficiency at Full Load (%)					
High Efficiency	88.5	89.5	91.0	91.0	91.7
Premium Efficiency	91.7	91.7	93.0	93.6	93.6
Fan Pulley Pitch Diameter (in.)	13.7	13.7	13.7	13.7	13.7
Motor Pulley Pitch Diameter (in.)	3.4	4.3	4.9	5.5	6.5
Resulting Fan Speed (rpm)	438	549	626	703	830
Belts Quantity...Type	2...BX60	2...5VX630	2...5VX630	2...5VX630	2...5VX650
Center Distance Range (in.)	17.74-14.30	17.74-14.30	17.63-14.01	17.63-14.01	16.63-12.87
OPTIONAL POWER EXHAUST	Centrifugal, 18 x 15 in. (Any motor available on any unit)				
Quantity...Motor Hp	2...3.0	2...5.0		2...7.5	2...10
Motor Frame Size	58HZ	184T		213T	215T
	182T	184T		213T	215T
Efficiency at Full Load (%) High/Premium	81.0/88.5	87.5/89.5		88.5/91.7	89.5/91.7
Fan Pulley Pitch Diameter (in.)	11	10.4		12	12
	11.0	10.4		12	12
Motor Pulley Pitch Diameter Range (in.)	4.1-3.1	4.7-3.7		6.0-4.8	7.0-5.8
	4.1-3.1	4.7-3.7		6.0-4.8	7.0-5.8
Motor Pulley Pitch Diameter Factory Setup (in.)	4.1	4.2		5.4	6.4
Blower Shaft Diameter at Pulley (in.)	1 7/16	1 7/16		1 7/16	1 7/16
Fan Rpm Range	500-656	621-785		717-882	854-1000
Factory Setup Fan Rpm	656	703		800	927
Maximum Allowable Rpm	1000	1000		1000	1000
Belts Quantity...No.	1...BX71	1...BX71		1...BX77	1...BX79
	1...BX71	1...BX71		1...BX77	1...BX79
Center Distance Range (in.)	23.62-26.50	23.62-26.50		23.62-26.50	23.62-26.50
FILTERS					
Standard Efficiency Throwaway (Standard)	8...20 x 25 x 2		8...20 x 25 x 2		8...20 x 25 x 2
Quantity...Size (in.)	8...20 x 20 x 2		8...20 x 20 x 2		8...20 x 20 x 2
Medium Efficiency (30%) Pleated (Optional)	8...20 x 25 x 2		8...20 x 25 x 2		8...20 x 25 x 2
Quantity...Size (in.)	8...20 x 20 x 2		8...20 x 20 x 2		8...20 x 20 x 2
High Efficiency (90%) Bag Filters with High Velocity Prefilters (Optional)					
Quantity...Size (in.)					
Bag Filter	6...20 x 24 x 22		6...20 x 24 x 22		6...20 x 24 x 22
	6...20 x 20 x 22		6...20 x 20 x 22		6...20 x 20 x 22
Prefilter	12...16 x 20 x 2		12...16 x 20 x 2		12...16 x 20 x 2
	3...20 x 24 x 2		3...20 x 24 x 2		3...20 x 24 x 2
OUTSIDE AIR SCREENS					
Standard Hood (25%) Quantity...Size (in.)	None		None		None
OPTIONAL ECONOMIZER FILTER	Aluminum Frame, Permanent				
Quantity...Size (in.)	5...20 x 20 x 2		5...20 x 20 x 1		5...20 x 20 x 1
	2...20 x 25 x 1		2...20 x 25 x 1		2...20 x 25 x 1

LEGEND

\*460-3-60 only.

- CV — Constant Volume
- HGBP — Hot Gas Bypass
- MBtuh — Btuh in Thousands
- TXV — Thermostatic Expansion Valve
- VAV — Variable Air Volume

**Table 1A — Physical Data (48ZG,ZN030-050) (cont)**

BASE UNIT	48ZG,ZN040				48ZG,ZN050			
NOMINAL CAPACITY (tons)	40				50			
OPERATING WEIGHT (lb)	Standard Chassis		Extended Chassis		Standard Chassis		Extended Chassis	
Base Unit								
Low Heat	6540		7040		6581		7081	
High Heat	6670		7170		6710		7210	
With Economizer								
Low Heat	6841		7341		6881		7381	
High Heat	6970		7470		7010		7510	
COMPRESSORS	Semi-Hermetic				2...06E			
Quantity...Type	2...06E				19, 14			
Oil Charge (pints)	14				19, 14			
Capacity Steps (%)								
CV	50,100				57,100			
VAV	25,50,75,100				18,37,56,63,81,100			
Number of Refrigerant Circuits	2				2			
REFRIGERANT	R-22							
Operating Charge (lb), Ckt 1/Ckt 2								
Standard Evaporator Coil	40.0/40.0				41.5/39.0			
Standard Evaporator with HGBP	42.0/40.0				43.5/39.0			
Alternate High-Capacity Evaporator Coil	50.0/51.0				49.0/49.0			
Alternate High-Capacity Evaporator with HGBP	52.0/51.0				51.0/49.0			
CONDENSER COILS					3/8-in. Tube Diameter			
Quantity	2				2			
Rows...Fins/in.								
Aluminum	3...15.0				3...15.0			
Copper (Optional)	3...13.7				3...13.7			
Total Face Area (sq ft)	50.0				50.0			
EVAPORATOR COILS					2			
Quantity					45.5			
Total Face Area (sq ft)					TXV...2			
Refrigerant Feed Device...No. per Circuit								
Standard Evaporator Coils								
Rows...Fins/in.	1/2 in. Tube Dia				1/2 in. Tube Dia			
Fin Type	3...15.0				4...15.0			
Tube Type	Double Wavy				Double Wavy			
Alternate, High-Capacity Evaporator Coils	Cross Hatched				Cross Hatched			
Rows...Fins/in.	1/2 in. Tube Dia				1/2 in. Tube Dia			
Fin Type	6...16.0				6...16.0			
Tube Type	Double Wavy				Double Wavy			
	Cross Hatched				Cross Hatched			
HEATING SECTION	Low Heat		High Heat		Low Heat		High Heat	
Number of Heat Exchangers	1		2		1		2	
Input (MBtuh)	325		650		325		650	
Output (MBtuh)	263		527		263		527	
Temperature Rise Range (F)	10-40		25-55		10-40		25-55	
Efficiency (%)	81		81		81		81	
Burner Orifice Diameter								
Quantity (in...drill no.)	7 (.1285...30)		14 (.1285...30)		7 (.1285...30)		14 (.1285...30)	
Manifold Pressure (in. wg)	3.3		3.3		3.3		3.3	
Line Pressure (in. wg) (min...max)	5.0...13.0		5.0...13.0		5.0...13.0		5.0...13.0	
Firing Stages	2		2		2		2	
Number of Gas Valves	1		2		1		2	
CONDENSER FANS					Propeller Type			
Quantity...Diameter (in.)	3...30				3...30			
Nominal Cfm	26,000				26,000			
Motor Hp...Rpm	1.0...1140				1.0...1140			
SUPPLY FAN					Centrifugal 25 x 25 in.			
Nominal Cfm	14,000				14,000			
Maximum Allowable Cfm	20,000				20,000			
Maximum Allowable Rpm	900				900			
Shaft Diameter at Pulley (in.)	1 11/16				1 11/16			
SUPPLY-FAN MOTOR AND DRIVE					(Any motor available on any unit)			
Motor Hp	7.5	10	15	20	25	30*		
Motor Frame Size	213T	215T	254T	256T	284T	286T		
Efficiency at Full Load (%)								
High Efficiency	88.5	89.5	91.0	91.0	91.7	92.4		
Premium Efficiency	91.7	91.7	93.0	93.6	93.6	93.6		
Fan Pulley Pitch Diameter (in.)	13.7	13.7	13.7	13.7	13.7	12.5		
Motor Pulley Pitch Diameter (in.)	3.4	4.3	4.9	5.5	6.5	6.5		
Resulting Fan Speed (rpm)	438	549	626	703	830	910		
Belts Quantity...Type	2...BX60	2...5VX630	2...5VX630	2...5VX630	2...5VX650	3...5VX630		
Center Distance Range (in.)	17.74-14.30	17.74-14.30	17.63-14.01	17.63-14.01	16.63-12.87	16.63-12.87		
OPTIONAL POWER EXHAUST					Centrifugal, 18 x 15 in. (Any motor available on any unit)			
Quantity...Motor Hp	2...3.0				2...7.5			
Motor Frame Size	58HZ				184T			
	182T				213T			
Efficiency at Full Load (%) High/Premium	81.0/88.5				87.5/89.5			
Fan Pulley Pitch Diameter (in.)	11				10.4			
	11.0				10.4			
Motor Pulley Pitch Diameter Range (in.)	4.1-3.1				4.7-3.7			
	4.1-3.1				4.7-3.7			
Motor Pulley Pitch Diameter Factory Setup (in.)	4.1				4.2			
Blower Shaft Diameter at Pulley (in.)	1 7/16				1 7/16			
Fan Rpm Range	500-656				621-785			
Factory Setup Fan Rpm	656				703			
Maximum Allowable Rpm	1000				1000			
Belts Quantity...No.	1...BX71				1...BX71			
	1...BX71				1...BX77			
Center Distance Range (in.)	23.62-26.50				23.62-26.50			
FILTERS								
Standard Efficiency Throwaway (Standard)	8...20 x 25 x 2				8...20 x 25 x 2			
Quantity...Size (in.)	8...20 x 20 x 2				8...20 x 20 x 2			
Medium Efficiency (30%) Pleated (Optional)	8...20 x 25 x 2				8...20 x 25 x 2			
Quantity...Size (in.)	8...20 x 20 x 2				8...20 x 20 x 2			
High Efficiency (90%) Bag Filters with High Velocity Prefilters (Optional)								
Quantity...Size (in.)								
Bag Filter	6...20 x 24 x 22		6...20 x 20 x 22		6...20 x 24 x 22		6...20 x 20 x 22	
Prefilter	12...16 x 20 x 2		3...20 x 24 x 2		12...16 x 20 x 2		3...20 x 24 x 2	
OUTSIDE AIR SCREENS								
Standard Hood (25%) Quantity...Size (in.)	None				None			
OPTIONAL ECONOMIZER FILTER					Aluminum Frame, Permanent			
Quantity...Size (in.)	5...20 x 20 x 2		2...20 x 25 x 1		5...20 x 20 x 1		2...20 x 25 x 1	

LEGEND

- CV — Constant Volume
- HGBP — Hot Gas Bypass
- MBtuh — Btuh in Thousands
- TXV — Thermostatic Expansion Valve
- VAV — Variable Air Volume

\*460-3-60 only.

**Table 1B — Physical Data (48ZG,ZN055-070)**

BASE UNIT	48ZG,ZN055		48ZG,ZN060		48ZG,ZN070	
<b>NOMINAL CAPACITY (tons)</b>	55		60		70	
<b>OPERATING WEIGHT (lb)</b>	Standard Chassis	Extended Chassis	Standard Chassis	Extended Chassis	Standard Chassis	
Base Unit						
Low Heat	8700	9248	9000	9,548	9,420	
High Heat	8820	9368	9120	9,668	9,550	
With Economizer						
Low Heat	9230	9730	9530	10,030	9,950	
High Heat	9350	9850	9650	10,450	10,080	
<b>COMPRESSORS</b>			Semi-Hermetic			
Quantity...Type	2...06E		2...06E		2...06E	
Oil Charge (Pints)	19, 14		19		19	
Capacity Steps (%)						
CV	60,100		50,100		45,100	
VAV	20,40,60,80,100		17,33,50,67,83,100		14,29,43,51,66,71,85,100	
Number of Refrigerant Circuits	2		2		2	
<b>REFRIGERANT</b>			R-22			
Operating Charge (lb), Ckt 1/Ckt 2						
Standard Evaporator Coil	59.0/44.5		61.0/61.0		70.5/64.5	
Standard Evaporator with HGBP	62.0/44.5		64.0/61.0		73.5/64.5	
Alternate High-Capacity Evaporator Coil	72.0/58.0		69.5/69.5		82.5/74.5	
Alternate High-Capacity Evaporator with HGBP	75.0/58.0		72.5/69.5		85.5/74.5	
<b>CONDENSER COILS</b>			3/8-in. Tube Diameter			
Quantity	4		4		4	
Rows...Fins/in.						
Aluminum	2...17.0, 3...17.0		3...17.0		3...17.0	
Copper (Optional)	2...15.7, 3...15.7		3...15.7		3...15.7	
Total Face Area (sq ft)	72.4		72.4		108.4	
<b>EVAPORATOR COILS</b>			2			
Quantity			61.5			
Total Face Area (sq ft)			TXV...2			
Refrigerant Feed Device...No. per Circuit			1/2 in. Tube Dia			
Standard Evaporator Coils			4...17.0		4...17.0	
Rows...Fins/in.	3...17.0		Double Wavy		Double Wavy	
Fin Type	Double Wavy		Smooth		Smooth	
Tube Type	Smooth		1/2 in. Tube Dia		6...16	
Alternate, High-Capacity Evaporator Coils			6...16		Double Wavy	
Rows...Fins/in.	6...16		Double Wavy		Cross Hatched	
Fin Type	Double Wavy		Cross Hatched		Cross Hatched	
Tube Type	Cross Hatched					
<b>HEATING SECTION</b>	Low Heat	High Heat	Low Heat	High Heat	Low Heat	High Heat
Number of Heat Exchangers	2	3	2	3	2	3
Input (MBtuh)	650	975	650	975	650	975
Output (MBtuh)	527	790	527	790	527	790
Temperature Rise Range (F)	10-40	20-50	10-40	20-50	10-40	20-50
Efficiency (%)	81	81	81	81	81	81
Burner Orifice Diameter						
Quantity (in. ...drill no.)	14 (.1285...30)	21 (.1285...30)	14 (.1285...30)	21 (.1285...30)	14 (.1285...30)	21 (.1285...30)
Manifold Pressure (in. wg)	3.3	3.3	3.3	3.3	3.3	3.3
Line Pressure (in. wg) (min...max)	5.0...13.0	5.0...13.0	5.0...13.0	5.0...13.0	5.0...13.0	5.0...13.0
Firing Stages	2	2	2	2	2	2
Number of Gas Valves	2	3	2	3	2	3
<b>CONDENSER FANS</b>			Propeller Type			
Quantity...Diameter (in.)	4...30		4...30		5...30	
Nominal Cfm	40,000		40,000		50,000	
Motor Hp...Rpm	1.0...1140		1.0...1140		1.0...1140	
<b>SUPPLY FAN</b>			Centrifugal 25 x 25 in.			
Nominal Cfm	17,500		21,000		24,500	
Maximum Allowable Cfm	25,000		30,000		30,000	
Maximum Allowable Rpm	800		800		800	
Shaft Diameter at Pulley (in.)	1 11/16		1 11/16		1 11/16	
<b>SUPPLY-FAN MOTOR AND DRIVE</b>			(Any motor available on any unit)			
Motor Hp	15	25	20	25	30	40
Motor Frame Size	254T		256T	284T	286T	S324T
Efficiency at Full Load (%)						
High Efficiency	91.0		91.0		92.4	
Premium Efficiency	93.0		93.6		93.6	
Fan Pulley Pitch Diameter (in.)	13.7		13.7		15.5	
Motor Pulley Pitch Diameter (in.)	4.5		5.1		5.9	
Resulting Fan Speed (rpm)	575		651		711	
Belts Quantity...Type	2...5VX1230		2...5VX1230		2...5VX1230	
Center Distance Range (in.)	48.25-44.00		48.25-44.00		48.50-44.25	
<b>OPTIONAL POWER EXHAUST</b>			Centrifugal, 15 x 15 in. (Any motor available on any unit)			
Quantity...Motor Hp	2...5		2...7.5		2...10	
Motor Frame Size	184T		213T		215T	
Efficiency at Full Load (%) High/Premium	87.5/89.5		88.5/91.7		89.5/91.7	
Resulting Fan Rpm	740		820		920	
Maximum Allowable Rpm	1000		1000		1000	
<b>FILTERS</b>						
Standard Efficiency Throwaway (Standard)	12...20 x 25 x 2		12...20 x 25 x 2		12...20 x 25 x 2	
Quantity...Size (in.)	12...20 x 20 x 2		12...20 x 20 x 2		12...20 x 20 x 2	
Medium Efficiency (30%) Pleated (Optional)	12...20 x 25 x 2		12...20 x 25 x 2		12...20 x 25 x 2	
Quantity...Size (in.)	12...20 x 20 x 2		12...20 x 20 x 2		12...20 x 20 x 2	
High Efficiency (90%) Bag Filters with High Velocity Prefilters (Optional)						
Quantity...Size (in.)						
Bag Filter	6...24 x 24 x 22		6...24 x 24 x 22		6...24 x 24 x 22	
	6...24 x 20 x 22		6...24 x 20 x 22		6...24 x 20 x 22	
Prefilter	6...24 x 24 x 2		6...24 x 24 x 2		6...24 x 24 x 2	
	6...20 x 24 x 2		6...20 x 24 x 2		6...20 x 24 x 2	
<b>OUTSIDE AIR SCREENS</b>						
Standard Hood (25%) Quantity...Size (in.)	4...25 x 16 x 1		4...25 x 16 x 1		4...25 x 16 x 1	
	2...20 x 16 x 1		2...20 x 16 x 1		2...20 x 16 x 1	
<b>OPTIONAL ECONOMIZER FILTER</b>			Aluminum Frame, Permanent			
Quantity...Size (in.)	12...16 x 25 x 1		12...16 x 25 x 1		12...16 x 25 x 1	
	2...16 x 20 x 1		2...16 x 20 x 1		2...16 x 20 x 1	

**LEGEND**

- CV — Constant Volume
- HGBP — Hot Gas Bypass
- MBtuh — Btuh in Thousands
- TXV — Thermostatic Expansion Valve
- VAV — Variable Air Volume



**Table 1C — Physical Data (48ZG,ZN075-105)**

BASE UNIT	48ZG,ZN075		48ZG,ZN090		48ZG,ZN105	
<b>NOMINAL CAPACITY (tons)</b>	75		90		105	
<b>OPERATING WEIGHT (lb)</b>						
Base Unit without Economizer						
Low Heat/High Heat	10,270/10,445		10,480/10,655		11,210/11,385	
With Economizer						
Low Heat/High Heat	10,800/10,975		11,010/11,185		11,740/11,915	
<b>COMPRESSOR</b>			Semi-Hermetic			
Number	2		2		4	
Circuit (No. Cyl)	A (6)	B (6)	A (6)	B (6)	A1 (6), A2 (4)	B1 (6), B2 (4)
Model 06E	-275	-299	-299	-299	-275, -250	-275, -250
Oil Charge (pints)	19	19	19	19	19, 14	19, 14
Capacity Steps (%)	43,100		50,100		50,100	
CV	14,29,43,51,66,86,100		17,33,50,67,83,100		20,30,40,50,60,60,70,80,80,90,100	
VAV	2		2		2	
Number of Refrigerant Circuits	2		2		2	
<b>REFRIGERANT</b>			R-22			
Operating Charge (lb), Ckt 1/Ckt 2						
Standard Evaporator Coil	70.5/64.5		64.0/64.0		68.0/68.0	
Standard Evaporator with HGBP	73.5/64.5		67.0/64.0		71.0/68.0	
Alternate High-Capacity Evaporator Coil	83.0/75.0		76.0/76.0		79.5/79.5	
Alternate High-Capacity Evaporator with HGBP	86.0/75.0		79.0/76.0		82.5/79.5	
<b>CONDENSER COILS</b>			<sup>3</sup> / <sub>8</sub> -in. Tube Diameter			
Quantity	4		4		4	
Rows...Fins/in.						
Aluminum	3...17.0		3...17.0		3...17.0	
Copper (Optional)	3...15.7		3...15.7		3...15.7	
Fin Type	Double Wavy		Lanced, Sine-wave		Lanced, Sine-wave	
Tube Type	Smooth		Cross-Hatched		Cross-Hatched	
Total Face Area (sq ft)	108.4		108.4		108.4	
<b>EVAPORATOR COILS</b>						
Quantity			2			
Total Face Area (sq ft)			61.5			
Refrigerant Feed Device...No. per Circuit			TXV...2			
Standard Evaporator Coils						
Rows...Fins/in.	<sup>1</sup> / <sub>2</sub> in. Tube Dia		<sup>3</sup> / <sub>8</sub> in. Tube Dia		<sup>3</sup> / <sub>8</sub> in. Tube Dia	
Fin Type	4...17.0		4...17.0		4...17.0	
Tube Type	Double Wavy		Lanced, Sine Wave		Lanced, Sine Wave	
Alternate, High-Capacity Evaporator Coils			Cross Hatched		Cross Hatched	
Rows...Fins/in.	6...16		<sup>1</sup> / <sub>2</sub> in. Tube Dia		6...16	
Fin Type	Double Wavy		Double Wavy		Double Wavy	
Tube Type	Cross Hatched		Cross Hatched		Cross Hatched	
<b>HEATING SECTION</b>						
Number of Heat Exchangers	Low Heat	High Heat	Low Heat	High Heat	Low Heat	High Heat
Input (MBtuh)	2	3	2	3	2	3
Output (MBtuh)	650	975	650	975	650	975
Temperature Rise Range (F)	527	790	527	790	527	790
Efficiency (%)	10-40	20-50	10-40	20-50	10-40	20-50
Burner Orifice Diameter	81	81	81	81	81	81
Quantity (in. ...drill no.)	14 (.1285...30)	21 (.1285...30)	14 (.1285...30)	21 (.1285...30)	14 (.1285...30)	21 (.1285...30)
Manifold Pressure (in. wg)	3.3	3.3	3.3	3.3	3.3	3.3
Line Pressure (in. wg) (Min...Max)	5.0...13.0	5.0...13.0	5.0...13.0	5.0...13.0	5.0...13.0	5.0...13.0
Number of Gas Valves	2	3	2	3	2	3
<b>CONDENSER FAN</b>			Propeller Type			
Quantity...Diameter (in.)	5...30		6...30		6...30	
Nominal Cfm	50,000		60,000		60,000	
Motor Hp (ea)...rpm	1.0...1140		1.0...1140		1.0...1140	
<b>STANDARD SUPPLY FAN</b>			Forward Curved Centrifugal 36 x 30 in.			
Nominal Cfm	24,500		29,750		35,000	
Maximum Allowable Cfm	30,000		34,000		40,000	
Maximum Allowable Rpm	670		670		670	
Shaft Diameter at Pulley (in.)	1 <sup>11</sup> / <sub>16</sub>		1 <sup>11</sup> / <sub>16</sub>		1 <sup>11</sup> / <sub>16</sub>	
<b>STANDARD SUPPLY-FAN MOTOR AND DRIVE</b>			(Any motor available on any unit)			
Motor Hp	30		40		50	
Motor Frame Size	S268T		S324T		S36T	
Efficiency at Full Load (%)						
High Efficiency	92.4		93.0		93.0	
Premium Efficiency	93.6		94.5		94.5	
Fan Pulley Pitch Diameter (in.)	18.5		18.5		18.5	
Motor Pulley Pitch Diameter (in.)	5.3		5.7		6.5	
Resulting Fan Rpm	501		539		615	
Belts Quantity...Type	3...5VX1320		4...5VX1320		4...5VX1320	
Center Distance Range (in.)	47.88-45.01		47.64-44.76		47.42-44.52	
<b>ALTERNATE, AIRFOIL FAN</b>			Airfoil			
Nominal Airflow (cfm)	24,500		29,750		35,000	
Maximum Allowable Airflow (cfm)	30,000		34,000		40,000	
Maximum Allowable Wheel Speed (rpm)	1846		1846		1846	
Shaft Diameter at Pulley (in.)	2 <sup>11</sup> / <sub>16</sub>		2 <sup>11</sup> / <sub>16</sub>		2 <sup>11</sup> / <sub>16</sub>	
<b>ALTERNATE SUPPLY-FAN MOTOR AND DRIVE</b>			(Any motor available on any unit)			
Motor Hp	30		40		50	
Motor Frame Size	S268T		S324T		S36T	
Efficiency at Full Load (%)						
High Efficiency	92.4		93.0		93.0	
Premium Efficiency	93.6		94.5		94.5	
Fan Pulley Pitch Diameter (in.)	9.7		10.2		8.9	
Motor Pulley Pitch Diameter (in.)	7.5		8.7		8.1	
Resulting Fan Rpm	1353		1493		1593	
Belts Quantity...Type	2...5VX1150		2...5VX1180		3...5VX1150	
Center Distance Range (in.)	42.96-45.82		42.96-45.57		42.96-45.57	

**Table 1C — Physical Data (48ZG,ZN075-105) (cont)**

BASE UNIT	48ZG,ZN075	48ZG,ZN090	48ZG,ZN105
<b>OPTIONAL POWER EXHAUST</b>	Centrifugal, 18 x 15 in. (Any motor available on any unit.)		
Quantity...Motor Hp	2...5	2...7.5	2...10
Motor Frame Size	184T	213T	215T
Efficiency at Full Load (%)			
High Efficiency	87.5	88.5	89.5
Premium Efficiency	89.5	91.7	91.7
Fan Pulley Pitch Diameter (in.)	10.6	10.6	10.6
Motor Pulley Pitch Diameter (in.)	4.5	5.0	5.6
Shaft Diameter at Pulley (in.)	17/16	17/16	17/16
Resulting Fan Rpm	740	820	920
Maximum Allowable Rpm	1000	1000	1000
<b>FILTERS</b>			
Standard Efficiency Throwaway (Standard)	12...20 x 25 x 2	12...20 x 25 x 2	12...20 x 25 x 2
Quantity...Size (in.)	12...20 x 20 x 2	12...20 x 20 x 2	12...20 x 20 x 2
30% and 65% Pleated (Optional)	12...20 x 25 x 2	12...20 x 25 x 2	12...20 x 25 x 2
Quantity...Size (in.)	12...20 x 20 x 2	12...20 x 20 x 2	12...20 x 20 x 2
<b>OUTSIDE AIR SCREENS</b>			
Standard Hood (25%) Quantity...Size (in.)	4...25 x 16 x 1	4...25 x 16 x 1	4...25 x 16 x 1
	2...20 x 16 x 1	2...20 x 16 x 1	2...20 x 16 x 1
<b>OPTIONAL ECONOMIZER FILTER</b>		Aluminum Frame, Permanent	
Quantity...Size (in.)	12...16 x 25 x 1	12...16 x 25 x 1	12...16 x 25 x 1
	2...16 x 20 x 1	2...16 x 20 x 1	2...16 x 20 x 1

**LEGEND**

- CV** — Constant Volume
- HGBP** — Hot Gas Bypass
- MBtuh** — Btuh in Thousands
- TXV** — Thermostatic Expansion Valve
- VAV** — Variable Air Volume

**Table 1D — Physical Data (48Z6,Z8075-105)**

BASE UNIT	48Z6,Z8075		48Z6,Z8090		48Z6,Z8105	
<b>NOMINAL CAPACITY (tons)</b>	75		90		105	
<b>OPERATING WEIGHT (lb)</b>						
Base Unit without Economizer						
Low Heat/High Heat	11,740/11,915		11,950/12,125		12,680/12,855	
With Economizer						
Low Heat/High Heat	12,270/12,445		12,480/12,655		13,210/13,385	
<b>COMPRESSOR</b>			Semi-Hermetic			
Number	2		2		4	
Circuit (No. Cyl)	A (6)   B (6)		A (6)   B (6)		A1 (6), A2 (4)   B1 (6), B2 (4)	
Model 06E	-275   -299		-299   -299		-275, -250   -275, -250	
Oil Charge (pints)	19   19		19   19		19, 14   19, 14	
Capacity Steps (%)						
CV	43,100		50,100		50,100	
VAV	14,29,43,51,66,71,86,100		17,33,50,67,83,100		20,30,40,50,60,70,80,90,100	
Number of Refrigerant Circuits	2		2		2	
<b>REFRIGERANT</b>			R-22			
Operating Charge (lb), Ckt 1/Ckt 2						
Standard Evaporator Coil	70.5/64.5		64.0/64.0		68.0/68.0	
Standard Evaporator with HGBP	73.5/64.5		67.0/64.0		71.0/68.0	
Alternate High-Capacity Evaporator Coil	83.0/75.0		76.0/76.0		79.5/79.5	
Alternate High-Capacity Evaporator with HGBP	86.0/75.0		79.0/76.0		82.5/79.5	
<b>CONDENSER COILS</b>			<sup>3</sup> / <sub>8</sub> -in. Tube Diameter			
Quantity	4		4		4	
Rows...Fins/in.						
Aluminum	3...17.0		3...17.0		3...17.0	
Copper (Optional)	3...15.7		3...15.7		3...15.7	
Fin Type	Double Wavy		Lanced, Sine-wave		Lanced, Sine-wave	
Tube Type	Smooth		Cross-Hatched		Cross-Hatched	
Total Face Area (sq ft)	108.4		108.4		108.4	
<b>EVAPORATOR COILS</b>						
Quantity			2			
Total Face Area (sq ft)			61.5			
Refrigerant Feed Device...No. per Circuit			TXV...2			
Standard Evaporator Coils			<sup>3</sup> / <sub>8</sub> in. Tube Dia		<sup>3</sup> / <sub>8</sub> in. Tube Dia	
Rows...Fins/in.	1/2 in. Tube Dia		4...17.0		4...17.0	
Fin Type	Double Wavy		Lanced, Sine Wave		Lanced, Sine Wave	
Tube Type	Smooth		Cross Hatched		Cross Hatched	
Alternate, High-Capacity Evaporator Coils			1/2 in. Tube Dia			
Rows...Fins/in.	6...16		6...16		6...16	
Fin Type	Double Wavy		Double Wavy		Double Wavy	
Tube Type	Cross Hatched		Cross Hatched		Cross Hatched	
<b>HEATING SECTION</b>						
Number of Heat Exchangers	Low Heat   High Heat		Low Heat   High Heat		Low Heat   High Heat	
Input (MBtuh)	2   3		2   3		2   3	
Output (MBtuh)	650   975		650   975		650   975	
Temperature Rise Range (F)	527   790		527   790		527   790	
Efficiency (%)	10-40   20-50		10-40   20-50		10-40   20-50	
Burner Orifice Diameter	81   81		81   81		81   81	
Quantity (in. ...drill no.)	14 (.1285...30)   21 (.1285...30)		14 (.1285...30)   21 (.1285...30)		14 (.1285...30)   21 (.1285...30)	
Manifold Pressure (in. wg)	3.3   3.3		3.3   3.3		3.3   3.3	
Line Pressure (in. wg) (Min...Max)	5.0...13.0   5.0...13.0		5.0...13.0   5.0...13.0		5.0...13.0   5.0...13.0	
Number of Gas Valves	2   3		2   3		2   3	
<b>CONDENSER FAN</b>			Propeller Type			
Quantity...Diameter (in.)	5...30		6...30		6...30	
Nominal Cfm	50,000		60,000		60,000	
Motor Hp (ea)...rpm	1.0...1140		1.0...1140		1.0...1140	
<b>STANDARD SUPPLY FAN</b>			Forward Curved Centrifugal 36 x 30 in.			
Nominal Cfm	24,500		29,750		35,000	
Maximum Allowable Cfm	30,000		34,000		40,000	
Maximum Allowable Rpm	670		670		670	
Shaft Diameter at Pulley (in.)	1 <sup>1</sup> / <sub>16</sub>		1 <sup>1</sup> / <sub>16</sub>		1 <sup>1</sup> / <sub>16</sub>	
<b>STANDARD SUPPLY-FAN MOTOR AND DRIVE</b>			(Any motor available on any unit.)			
Motor Hp	30		40		50	
Motor Frame Size	S268T		S324T		S36T	
Efficiency at Full Load (%)						
High Efficiency	92.4		93.0		93.0	
Premium Efficiency	93.6		94.5		94.5	
Fan Pulley Pitch Diameter (in.)	18.5		18.5		18.5	
Motor Pulley Pitch Diameter (in.)	5.3		5.7		6.5	
Resulting Fan Rpm	501		539		615	
Belts Quantity...Type	3...5VX1320		4...5VX1320		4...5VX1320	
Center Distance Range (in.)	47.88-45.01		47.64-44.76		47.42-44.52	
<b>ALTERNATE, AIRFOIL FAN</b>			Airfoil			
Nominal Airflow (cfm)	24,500		29,750		35,000	
Maximum Allowable Airflow (cfm)	30,000		34,000		40,000	
Maximum Allowable Wheel Speed (rpm)	1846		1846		1846	
Shaft Diameter at Pulley (in.)	2 <sup>1</sup> / <sub>16</sub>		2 <sup>1</sup> / <sub>16</sub>		2 <sup>1</sup> / <sub>16</sub>	
<b>ALTERNATE SUPPLY-FAN MOTOR AND DRIVE</b>			(Any motor available on any unit.)			
Motor Hp	30		40		60	
Motor Frame Size	S268T		S324T		S364T	
Efficiency at Full Load (%)						
High Efficiency	92.4		93.0		93.6	
Premium Efficiency	93.6		94.5		95.4	
Fan Pulley Pitch Diameter (in.)	9.7		10.2		8.9	
Motor Pulley Pitch Diameter (in.)	7.5		8.7		8.7	
Resulting Fan Rpm	1353		1493		1711	
Belts Quantity...Type	2...5VX1150		2...5VX1180		3...5VX1150	
Center Distance Range (in.)	42.96-45.82		42.69-45.57		42.45-45.35	



**Table 1D — Physical Data (48Z6,Z8075-105) (cont)**

BASE UNIT	48Z6,Z8075		48Z6,Z8090	48Z6,Z8105
<b>RETURN/EXHAUST FAN</b>	Plenum Fan, 47.13 in. (Any motor available on any unit.)			
Quantity...Motor Hp	1...20	1...25	1...30	1...40
Motor Frame Size	256T	284T	286T	324T
Efficiency at Full Load (%) High/Premium	91/93.6	91.7/93.6	92.4/93.6	93/93.8
Fan Pulley Pitch Diameter (in.)	8.5	9.8	8.5	8.5
Motor Pulley Pitch Diameter (in.)	5.3	6.7	6.1	6.7
Shaft Diameter at Pulley (in.)	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>
Resulting Fan Rpm	1104	1209	1271	1396
Maximum Allowable Rpm	1447	1447	1447	1447
<b>FILTERS</b>				
Standard Efficiency Throwaway (Standard)	12...20 x 25 x 2		12...20 x 25 x 2	12...20 x 25 x 2
Quantity...Size (in.)	12...20 x 20 x 2		12...20 x 20 x 2	12...20 x 20 x 2
30% and 65% Pleated (Optional)	12...20 x 25 x 2		12...20 x 25 x 2	12...20 x 25 x 2
Quantity...Size (in.)	12...20 x 20 x 2		12...20 x 20 x 2	12...20 x 20 x 2
<b>OPTIONAL ECONOMIZER FILTER</b>	Aluminum Frame, Permanent			
Quantity...Size (in.)	12...16 x 25 x 1		12...16 x 25 x 1	12...16 x 25 x 1
	2...16 x 20 x 1		2...16 x 20 x 1	2...16 x 20 x 1

LEGEND

- CV — Constant Volume
- HGBP — Hot Gas Bypass
- MBtuh — Btuh in Thousands
- TXV — Thermostatic Expansion Valve
- VAV — Variable Air Volume

**Table 1E — Physical Data (48ZT,ZW075-105)**

BASE UNIT	48ZT,ZW075		48ZT,ZW090		48ZT,ZW105					
<b>NOMINAL CAPACITY (tons)</b>	75		80		100					
<b>OPERATING WEIGHT (lb)</b> Base Unit without Economizer Low Heat/High Heat	13,205/13,380		13,415/13,590		14,145/14,320					
<b>COMPRESSOR</b>	Semi-Hermetic									
Number	2		2		4					
Circuit (No. Cyl)	A (6)	B (6)	A (6)	B (6)	A1 (6), A2 (4)	B1 (6), B2 (4)				
Model 06E	-275	-299	-299	-299	-275, -250	-275, -250				
Oil Charge (pints)	19	19	19	19	19, 14	19, 14				
Capacity Steps (%)	43,100		50,100		50,100					
CV	14,29,43,51,66,71,86,100		17,33,50,67,83,100		20,30,40,50,60,70,80,90,100					
VAV	2		2		2					
Number of Refrigerant Circuits	2		2		2					
<b>REFRIGERANT</b>	R-22									
Operating Charge (lb), Ckt 1/Ckt 2	70.5/64.5		64.0/64.0		68.0/68.0					
Standard Evaporator Coil	73.5/64.5		67.0/64.0		71.0/68.0					
Standard Evaporator with HGBP	83.0/75.0		76.0/76.0		79.5/79.5					
Alternate High-Capacity Evaporator Coil	86.0/75.0		79.0/76.0		82.5/79.5					
Alternate High-Capacity Evaporator with HGBP										
<b>CONDENSER COILS</b>	4		3/8-in. Tube Diameter		4					
Quantity	4		4		4					
Rows...Fins/in.	3...17.0		3...17.0		3...17.0					
Aluminum	3...15.7		3...15.7		3...15.7					
Copper (Optional)	Double Wavy		Lanced, Sine-wave		Lanced, Sine-wave					
Fin Type	Smooth		Cross-Hatched		Cross-Hatched					
Tube Type	108.4		108.4		108.4					
Total Face Area (sq ft)										
<b>EVAPORATOR COILS</b>	2		2		2					
Quantity	2		2		2					
Total Face Area (sq ft)	61.5		61.5		61.5					
Refrigerant Feed Device...No. per Circuit	TXV...2		TXV...2		TXV...2					
Standard Evaporator Coils	1/2 in. Tube Dia		3/8 in. Tube Dia		3/8 in. Tube Dia					
Rows...Fins/in.	4...17.0		4...17.0		4...17.0					
Double Wavy	Double Wavy		Lanced, Sine Wave		Lanced, Sine Wave					
Fin Type	Smooth		Cross Hatched		Cross Hatched					
Tube Type	Smooth		Cross Hatched		Cross Hatched					
Alternate, High-Capacity Evaporator Coils	1/2 in. Tube Dia		1/2 in. Tube Dia		1/2 in. Tube Dia					
Rows...Fins/in.	6...16		6...16		6...16					
Double Wavy	Double Wavy		Double Wavy		Double Wavy					
Fin Type	Cross Hatched		Cross Hatched		Cross Hatched					
Tube Type	Cross Hatched		Cross Hatched		Cross Hatched					
<b>HEATING SECTION</b>	Low Heat		High Heat		Low Heat		High Heat			
Number of Heat Exchangers	2		3		2		3			
Input (MBtuh)	650		975		650		975			
Output (MBtuh)	527		790		527		790			
Temperature Rise Range (F)	10-40		20-50		10-40		20-50			
Efficiency (%)	81		81		81		81			
Burner Orifice Diameter										
Quantity (in. ...drill no.)	14 (.1285...30)		21 (.1285...30)		14 (.1285...30)		21 (.1285...30)			
Manifold Pressure (in. wg)	3.3		3.3		3.3		3.3			
Line Pressure (in. wg) (Min...Max)	5.0...13.0		5.0...13.0		5.0...13.0		5.0...13.0			
Number of Gas Valves	2		3		2		3			
<b>CONDENSER FAN</b>	5...30		6...30		6...30		6...30			
Quantity...Diameter (in.)	5...30		6...30		6...30		6...30			
Nominal Cfm	50,000		60,000		60,000		60,000			
Motor Hp (ea)...rpm	1.0...1140		1.0...1140		1.0...1140		1.0...1140			
<b>STANDARD SUPPLY FAN</b>	24,500		29,750		35,000		35,000			
Nominal Cfm	24,500		29,750		35,000		35,000			
Maximum Allowable Cfm	30,000		34,000		40,000		40,000			
Maximum Allowable Rpm	670		670		670		670			
Shaft Diameter at Pulley (in.)	1 11/16		1 11/16		1 11/16		1 11/16			
<b>STANDARD SUPPLY-FAN MOTOR AND DRIVE</b>	30		40		50		60			
Motor Hp	30		40		50		60			
Motor Frame Size	S268T		S324T		S36T		S364T			
Efficiency at Full Load (%)	92.4		93.0		93.0		93.6			
High Efficiency	92.4		93.0		93.0		93.6			
Premium Efficiency	93.6		94.5		94.5		95.4			
Fan Pulley Pitch Diameter (in.)	18.5		18.5		18.5		18.5			
Motor Pulley Pitch Diameter (in.)	5.3		5.7		6.5		7.1			
Resulting Fan Rpm	501		539		615		672			
Belts Quantity...Type	3...5VX1320		4...5VX1320		4...5VX1320		4...5VX1320			
Center Distance Range (in.)	47.88-45.01		47.64-44.76		47.42-44.52		47.42-44.52			
<b>ALTERNATE, AIRFOIL FAN</b>	24,500		29,750		35,000		35,000			
Nominal Airflow (cfm)	24,500		29,750		35,000		35,000			
Maximum Allowable Airflow (cfm)	30,000		34,000		40,000		40,000			
Maximum Allowable Wheel Speed (rpm)	1846		1846		1846		1846			
Shaft Diameter at Pulley (in.)	2 11/16		2 11/16		2 11/16		2 11/16			
<b>ALTERNATE SUPPLY-FAN MOTOR AND DRIVE</b>	30		40		50		60		75	
Motor Hp	30		40		50		60		75	
Motor Frame Size	S268T		S324T		S36T		S364T		365T	
Efficiency at Full Load (%)	92.4		93.0		93.0		93.6		94.1	
High Efficiency	92.4		93.0		93.0		93.6		94.1	
Premium Efficiency	93.6		94.5		94.5		95.4		95.4	
Fan Pulley Pitch Diameter (in.)	9.7		10.2		8.9		8.9		10.8	
Motor Pulley Pitch Diameter (in.)	7.5		8.7		8.1		8.7		11.1	
Resulting Fan Rpm	1353		1493		1593		1711		1799	
Belts Quantity...Type	2...5VX1150		2...5VX1180		3...5VX1150		3...5VX1150		3...5VX1230	
Center Distance Range (in.)	42.96-45.82		42.96-45.57		42.96-45.57		42.45-45.35		42.45-45.35	

**Table 1E — Physical Data (48ZT,ZW075-105) (cont)**

BASE UNIT	48ZT,ZW075		48ZT,ZW090		48ZT,ZW105
<b>POWER EXHAUST</b>	Centrifugal, 22 x 20 in., 1 <sup>11</sup> / <sub>16</sub> in. shaft diameter (Any motor available on any unit)				
Total Hp	20	30	40	50	60
Quantity...Motor Hp	2...10	2...15	2...20	2...25	2...30
Motor Frame Size	S215T	D254T	S256T	S284T	S286T
Efficiency at Full Load (%)					
High Efficiency	89.5	91	91	91.7	92.4
Premium Efficiency	91.7	93	93.6	93.6	93.6
Fan Sheave Pitch Diameter (in.)	12.4	12.4	11.1	11.1	11.1
Motor Sheave Pitch Diameter (in.)	4.8	5.8	5.9	6.5	6.9
Resulting Fan Rpm	714	841	928	1020	1094
Maximum Allowable Rpm	1175	1175	1175	1175	1175
Belts — Quantity...Type	2...BX93	2...BX93	2...5VX950	2...5VX950	2...5VX950
<b>FILTERS</b>					
Standard Efficiency Throwaway (Standard)	12...20 x 25 x 2		12...20 x 25 x 2		12...20 x 25 x 2
Quantity...Size (in.)	12...20 x 20 x 2		12...20 x 20 x 2		12...20 x 20 x 2
30% and 65% Pleated (Optional)	12...20 x 25 x 2		12...20 x 25 x 2		12...20 x 25 x 2
Quantity...Size (in.)	12...20 x 20 x 2		12...20 x 20 x 2		12...20 x 20 x 2
<b>OUTSIDE AIR SCREENS</b>					
Standard Hood (25%) Quantity...Size (in.)	8...25 x 16 x 1 2...20 x 16 x 1		8...25 x 16 x 1 2...20 x 16 x 1		8...25 x 16 x 1 2...20 x 16 x 1

LEGEND

- CV — Constant Volume
- HGBP — Hot Gas Bypass
- MBtuh — Btuh in Thousands
- TXV — Thermostatic Expansion Valve
- VAV — Variable Air Volume

**Table 2 — Operating Weights of Options and Accessories (lb)**

OPTION OR ACCESSORY	UNIT SIZE							
	030,035	040,050	055	060	070	075	090	105
Roof Curb	450	480	515	515	515	560	560	560
Condenser Section Roof Curb	—	—	540	540	625	625	625	625
Economizer*	300	300	530	530	530	530	530	530
Power Exhaust*	600	600	710	710	710	710	710	710
Barometric Relief	200	200	200	200	200	200	200	200
Return Exhaust Fan*	—	—	—	—	—	1470	1470	1470
High-Efficiency Filters	20	20	20	20	20	—	—	—
Bag Filters	35	35	40	40	40	—	—	—
Hail Guard	120	150	145	145	210	210	210	210
Copper Condenser Coil Fins	180	235	235	235	420	420	420	420
Inlet Guide Vanes	95	95	115	115	115	115	115	115
Variable Frequency Drive								
7.5 hp	65	65	—	—	—	—	—	—
10 hp	65	65	—	—	—	—	—	—
15 hp	110	110	110	110	110	—	—	—
20 hp	111	111	111	111	111	—	—	—
25 hp	190	190	190	190	190	—	—	—
30 hp	—	190	190	190	190	152	152	152
40 hp	—	—	190	190	190	155	155	155
50 hp	—	—	—	—	—	263	263	263
60 hp	—	—	—	—	—	266	266	266
75 hp	—	—	—	—	—	266	266	266
High-Capacity Evaporator Coil	—	300	300	300	300	300	300	300

\*Includes hood.

**Table 3 — Supply Fan Drive Data**

HP	SHAFT DIA (in.)	SPEED (rpm)	MOTOR SHEAVE	MOTOR PITCH DIA (in.)	WHEEL SHEAVE	WHEEL PITCH DIA (in.)	QUANTITY ...BELT
<b>Sizes 030-050</b>							
7.5	1 <sup>3</sup> / <sub>8</sub>	438	2BK36	3.4	2B5V136	13.7	2...BX60
10	1 <sup>3</sup> / <sub>8</sub>	549	2B5V42	4.3	2B5V136	13.7	2...5VX630
15	1 <sup>5</sup> / <sub>8</sub>	626	2B5V48	4.9	2B5V136	13.7	2...5VX630
20	1 <sup>5</sup> / <sub>8</sub>	703	2B5V54	5.5	2B5V136	13.7	2...5VX630
25	1 <sup>7</sup> / <sub>8</sub>	830	2B5V64	6.5	2B5V136	13.7	2...5VX650
30*	1 <sup>7</sup> / <sub>8</sub>	910	3B5V64	6.5	3B5V124	12.5	3...5VX630
<b>Sizes 055-070</b>							
15	1 <sup>5</sup> / <sub>8</sub>	575	2B5V44	4.5	2B5V136	13.7	2...5VX1230
20	1 <sup>5</sup> / <sub>8</sub>	651	2B5V50	5.1	2B5V136	13.7	2...5VX1230
25	1 <sup>7</sup> / <sub>8</sub>	703	2B5V54	5.5	2B5V136	13.7	2...5VX1230
30	1 <sup>7</sup> / <sub>8</sub>	711	2B5V62	6.3	2B5V154	15.5	2...5VX1230
40	2 <sup>1</sup> / <sub>8</sub>	740	3B5V66	6.7	3B5V160	16.1	3...5VX1250
<b>Sizes 075-105 (Forward Curved Fan)</b>							
30	1 <sup>7</sup> / <sub>8</sub>	501	3B5V52	5.33	B5V184	18.5	3...5VX1320
40	2 <sup>1</sup> / <sub>8</sub>	539	4B5V56	5.74	B5V184	18.5	4...5VX1320
50	2 <sup>1</sup> / <sub>8</sub>	615	4B5V64	6.54	B5V184	18.5	4...5VX1320
60	2 <sup>3</sup> / <sub>8</sub>	672	4B5V70	7.14	B5V184	18.5	4...5VX1320
<b>Sizes 075-105 (Airfoil Fan)</b>							
30	1 <sup>7</sup> / <sub>8</sub>	1353	2B5V74	7.5	2Q5V97	9.7	2...5VX1150
40	2 <sup>1</sup> / <sub>8</sub>	1493	2B5V86	8.7	2Q5V103	10.2	2...5VX1180
50	2 <sup>1</sup> / <sub>8</sub>	1593	3B5V80	8.1	3R5V90	8.9	3...5VX1150
60	2 <sup>3</sup> / <sub>8</sub>	1711	3B5V86	8.7	3R5V90	8.9	3...5VX1150
75	2 <sup>3</sup> / <sub>8</sub>	1799	3B5V110	11.1	3R5V109	10.8	3...5VX1230

\*Sizes 040,050 only.

NOTE: Part numbers are Browning Manufacturing Corp. reference.

**Table 4 — Power Exhaust Fan Drive Data**

TOTAL HP	MOTOR QTY...HP	MOTOR SHAFT DIA (in.)	FAN SPEED RPM	MOTOR SHEAVE P/N	MOTOR SHEAVE PITCH DIA (in.)	FAN SHEAVE P/N	FAN SHEAVE PITCH DIA (in.)	BELTS QTY...P/N	CENTER DIST RANGE (in.)
<b>Sizes 030-050</b>									
6*	2...3	7/8	656	1VL44	4.1	BK115	11	1...BX71	23.62-26.50
6†	2...3	1 <sup>1</sup> / <sub>8</sub>	656	1VP44L	4.1	BK115	11	1...BX71	23.62-26.50
10**	2...5	1 <sup>1</sup> / <sub>8</sub>	785	1VP50L	4.7	BK110	10.4	1...BX71	23.62-26.50
15**	2...7.5	1 <sup>3</sup> / <sub>8</sub>	882	1VP65	6.0	BK130	12	1...BX77	23.62-26.50
20**	2...10	1 <sup>3</sup> / <sub>8</sub>	1000	1VP75	7.0	BK130	12	1...BX79	23.62-26.50
<b>Sizes 055-105</b>									
10	2...5	1 <sup>1</sup> / <sub>8</sub>	740	2P3V45	4.5	2Q3V106	10.6	2...3VX800	26.8-28.5
15	2...7.5	1 <sup>3</sup> / <sub>8</sub>	820	2P3V50	5.0	2Q3V106	10.6	2...3VX800	26.8-28.5
20	2...10	1 <sup>3</sup> / <sub>8</sub>	920	2P3V56	5.6	2Q3V106	10.6	2...3VX800	26.8-28.5

\*High-Efficiency Motor Option.

†Premium-Efficiency Motor Option.

\*\*Applies to both motor options.

NOTE: Part numbers are Browning Manufacturing Corp. reference.

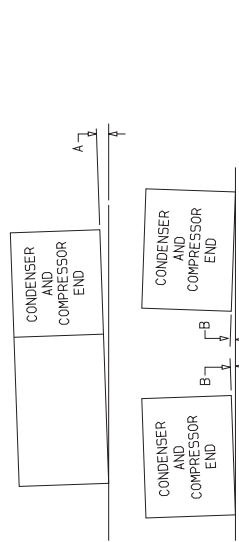
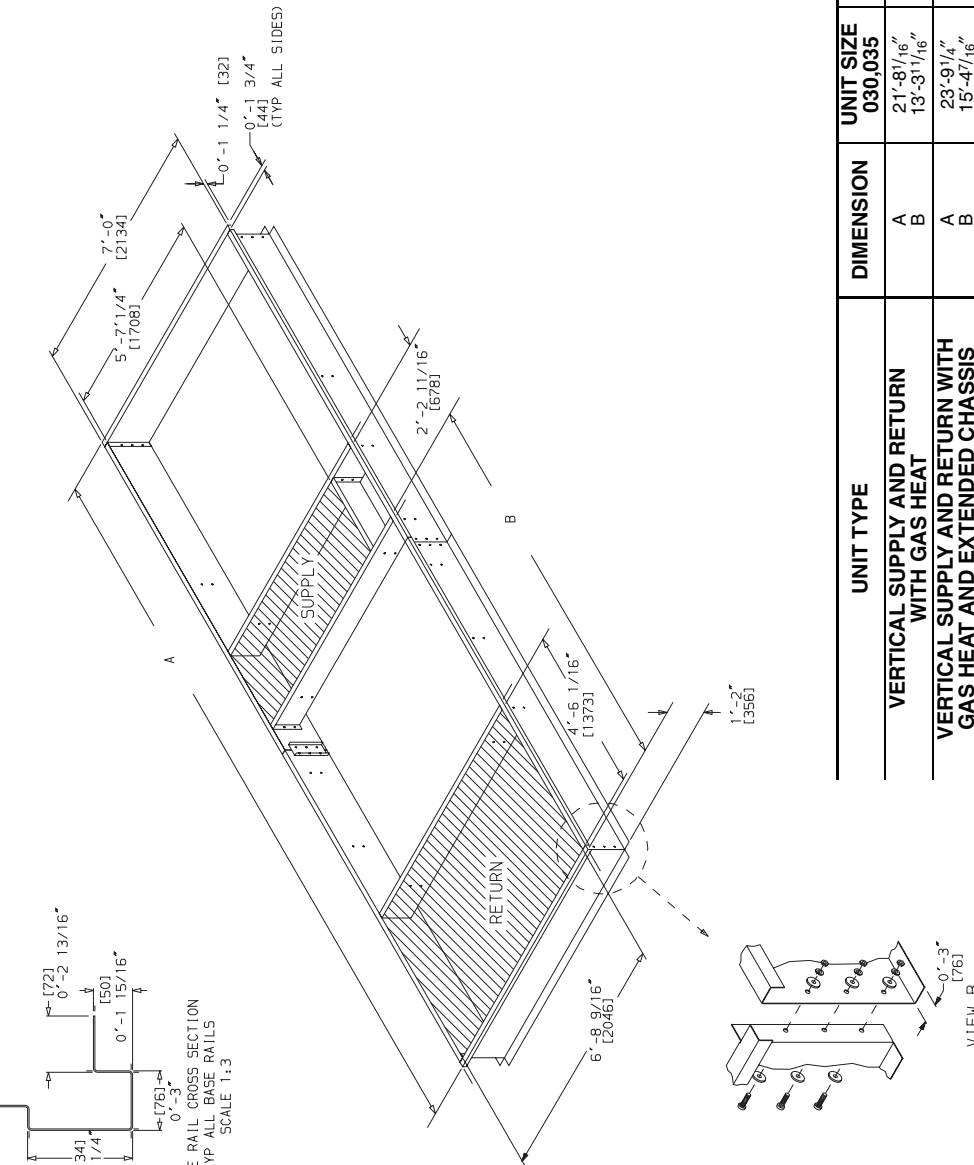
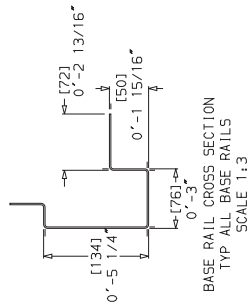
**Table 5 — High-Capacity Power Exhaust Fan Drive Data (48ZT,ZW Units)**

TOTAL HP	MOTOR QTY...HP	MOTOR SHAFT DIA. (in.)	SPEED RPM	MOTOR SHEAVE		BLOWER SHEAVE		QTY...BELT	CENTER DISTANCE RANGE (in.)
				Part Number	Pitch Diameter (in.)	Part Number	Pitch Diameter (in.)		
20	2...10	1.375	714	2B5V48	4.8	2B5V124	12.4	2...BX93	32.8 to 36.7
30	2...15	1.625	841	2B5V58	5.8	2B5V124	12.4	2...BX93	32.6 to 36.5
40	2...20	1.625	928	2B5V58	5.9	2B5V110	11.1	2...5VX950	32.6 to 36.5
50	2...25	1.875	1020	2B5V64	6.5	2B5V110	11.1	2...5VX950	32.5 to 36.3
60	2...30	1.875	1094	2B5V68	6.9	2B5V110	11.1	2...5VX950	32.5 to 36.3

**Table 6 — Return/Exhaust Fan Drive Data (48Z6,Z8 Units)**

TOTAL HP	MOTOR QTY...HP	MOTOR SHAFT DIA. (in.)	SPEED RPM	MOTOR SHEAVE		BLOWER SHEAVE		QTY...BELT	CENTER DISTANCE RANGE (in.)
				Part Number	Pitch Diameter (in.)	Part Number	Pitch Diameter (in.)		
20	1...20	1.625	1104	3B5V52	5.3	3R5V85	8.5	3...5VX1000	38.1 to 41.0
25	1...25	1.875	1209	3B5V66	6.7	3R5V97	9.8	3...5VX1060	38.9 to 41.8
30	1...30	1.875	1271	3B5V60	6.1	3R5V85	8.5	3...5VX1030	38.9 to 41.8
40	1...40	2.125	1396	3B5V66	6.7	3R5V85	8.5	3...5VX1060	39.9 to 42.8

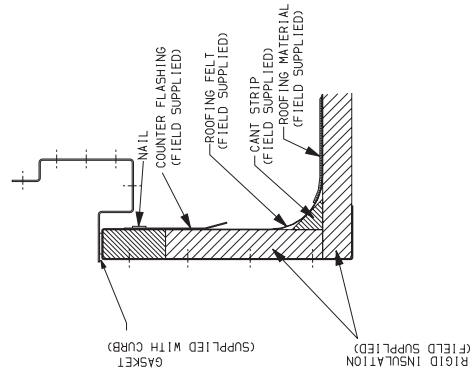
- NOTES:
1. ROOF CURB IS SHIPPED DISASSEMBLED.
  2. ROOFCURB: 14 GA. (VA03-56) STL.
  3. DIMENSIONS IN ( ) ARE MILLIMETERS.



(degrees and inches)

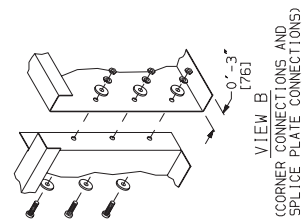
A		B	
DEG.	IN.	DEG.	IN.
1.0	2.0	.50	.75

UNIT LEVELING TOLERANCES  
\*From edge of unit to horizontal.



UNIT TYPE	DIMENSION	UNIT SIZE 030,035	UNIT SIZE 040,050
VERTICAL SUPPLY AND RETURN WITH GAS HEAT	A	21'-8 1/16"	25'-8 11/16"
	B	13'-3 1/16"	16'-0 5/8"
VERTICAL SUPPLY AND RETURN WITH GAS HEAT AND EXTENDED CHASSIS	A	23'-9 1/4"	27'-9 5/16"
	B	15'-4 7/16"	18'-1 7/8"

Fig. 1 — Roof Curb; Sizes 030-050

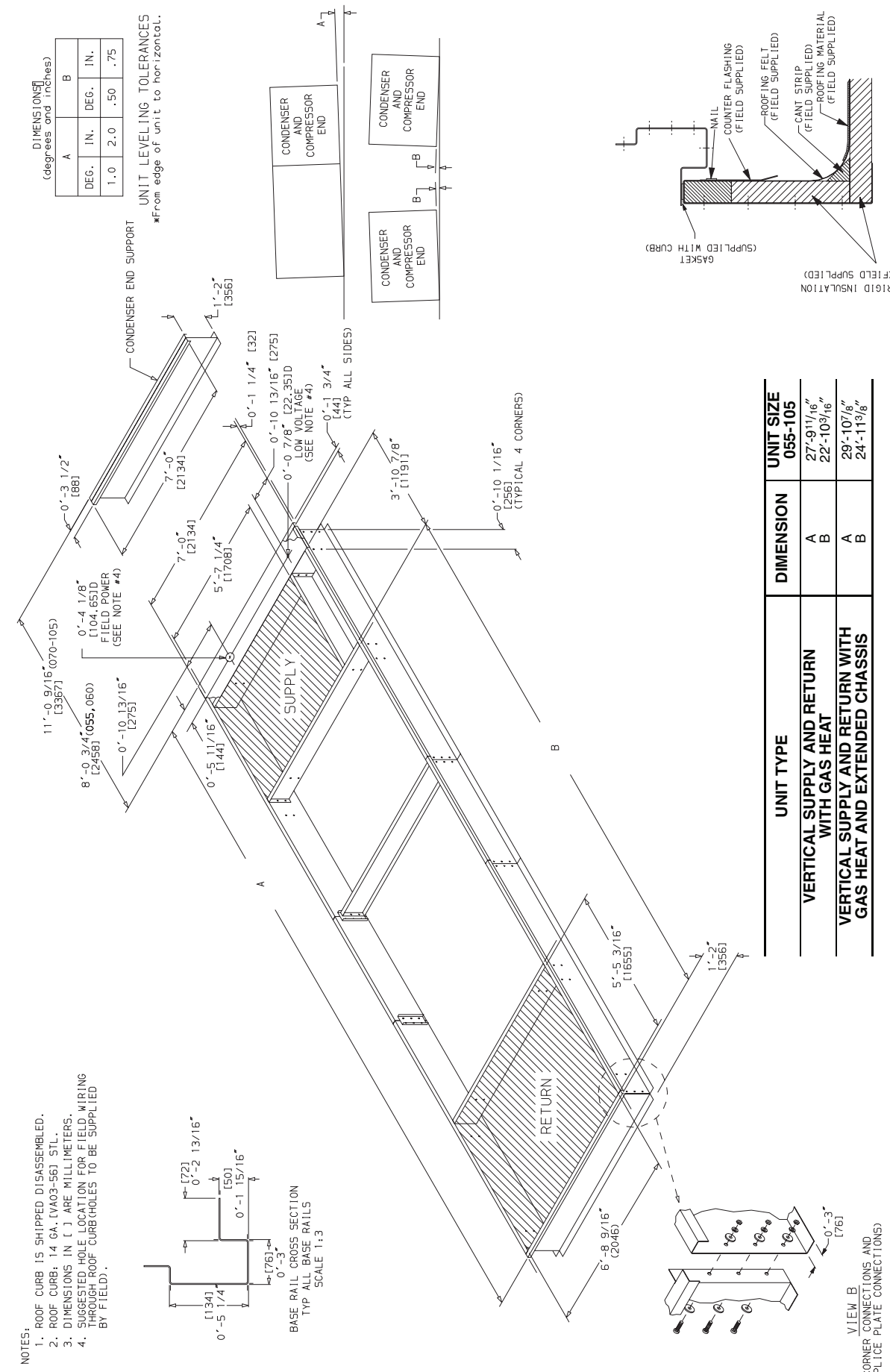


- NOTES:
1. ROOF CURB IS SHIPPED DISASSEMBLED.
  2. ROOF CURB: 14 GA. (VA03-561) STL.
  3. DIMENSIONS IN ( ) ARE MILLIMETERS.
  4. SUGGESTED HOLE LOCATION FOR FIELD WIRING THROUGH ROOF CURB (HOLES TO BE SUPPLIED BY FIELD).

DIMENSIONS (degrees and inches)

A		B	
DEG.	IN.	DEG.	IN.
1.0	2.0	.50	.75

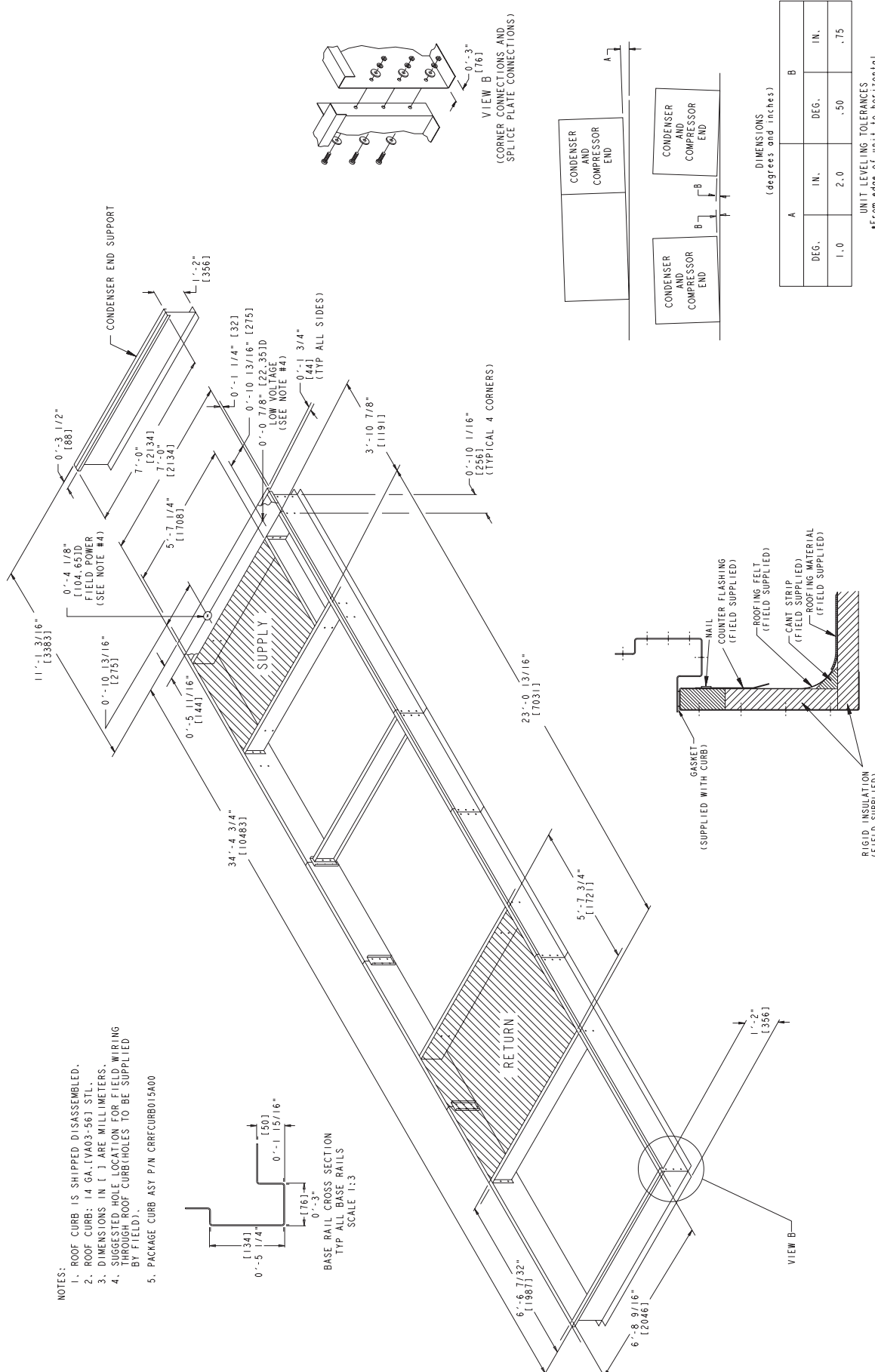
UNIT LEVELING TOLERANCES  
\*From edge of unit to horizontal.



UNIT TYPE	DIMENSION	UNIT SIZE
VERTICAL SUPPLY AND RETURN WITH GAS HEAT	A	055-105
	B	27'-9 1/16" 22'-10 3/16"
VERTICAL SUPPLY AND RETURN WITH GAS HEAT AND EXTENDED CHASSIS	A	29'-10 7/8"
	B	24'-11 9/8"

Fig. 2 — Roof Curb; Sizes 055-070 and Sizes 075-105 without High-Capacity Power Exhaust

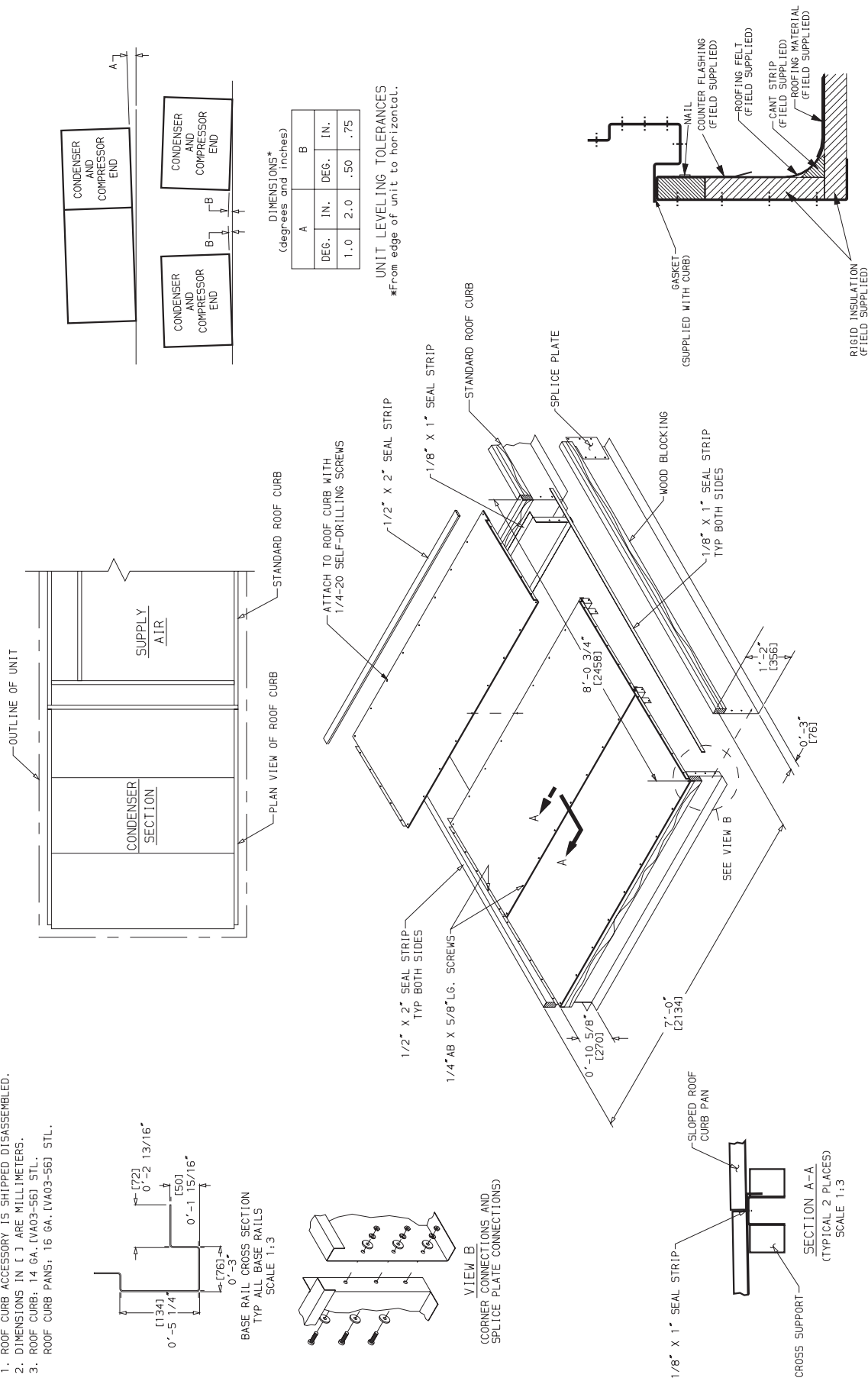




- NOTES:
1. ROOF CURB IS SHIPPED DISASSEMBLED.
  2. ROOF CURB: 14 GA. [EVA03-561] STL.
  3. DIMENSIONS IN [ ] ARE MILLIMETERS.
  4. SUGGESTED HOLE LOCATION FOR FIELD WIRING THROUGH ROOF CURB (HOLES TO BE SUPPLIED BY FIELD).
  5. PACKAGE CURB ASY P/N CRRFCURB015A00

Fig. 3 — Roof Curb; Sizes 075-105 with High-Capacity Power Exhaust

- NOTES:
1. ROOF CURB ACCESSORY IS SHIPPED DISASSEMBLED.
  2. DIMENSIONS IN [ ] ARE MILLIMETERS.
  3. ROOF CURB: 14 GA. [VA03-56] STL.  
ROOF CURB PANG: 16 GA. [VA03-56] STL.

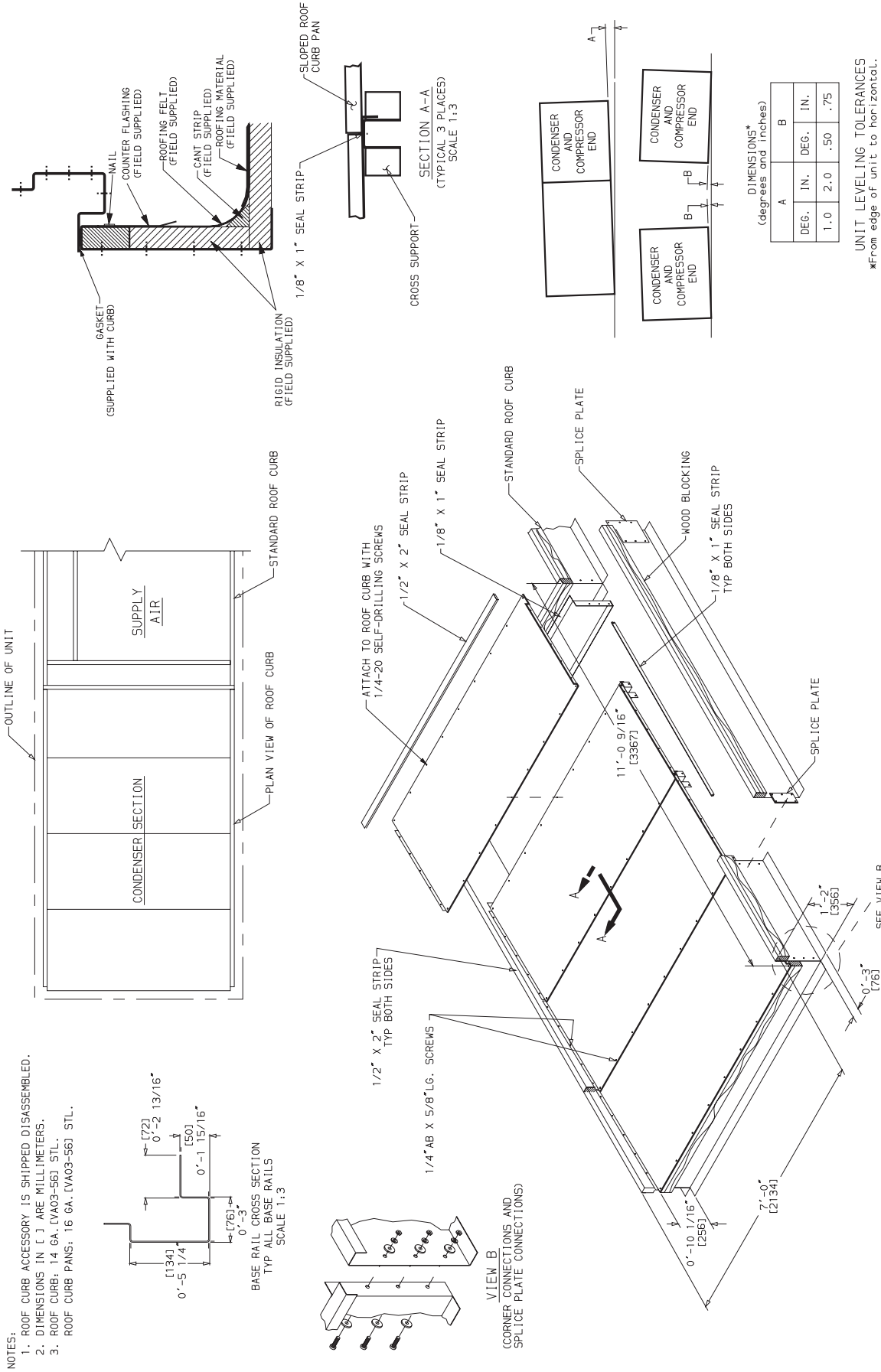


DIMENSIONS\*  
(degrees and inches)

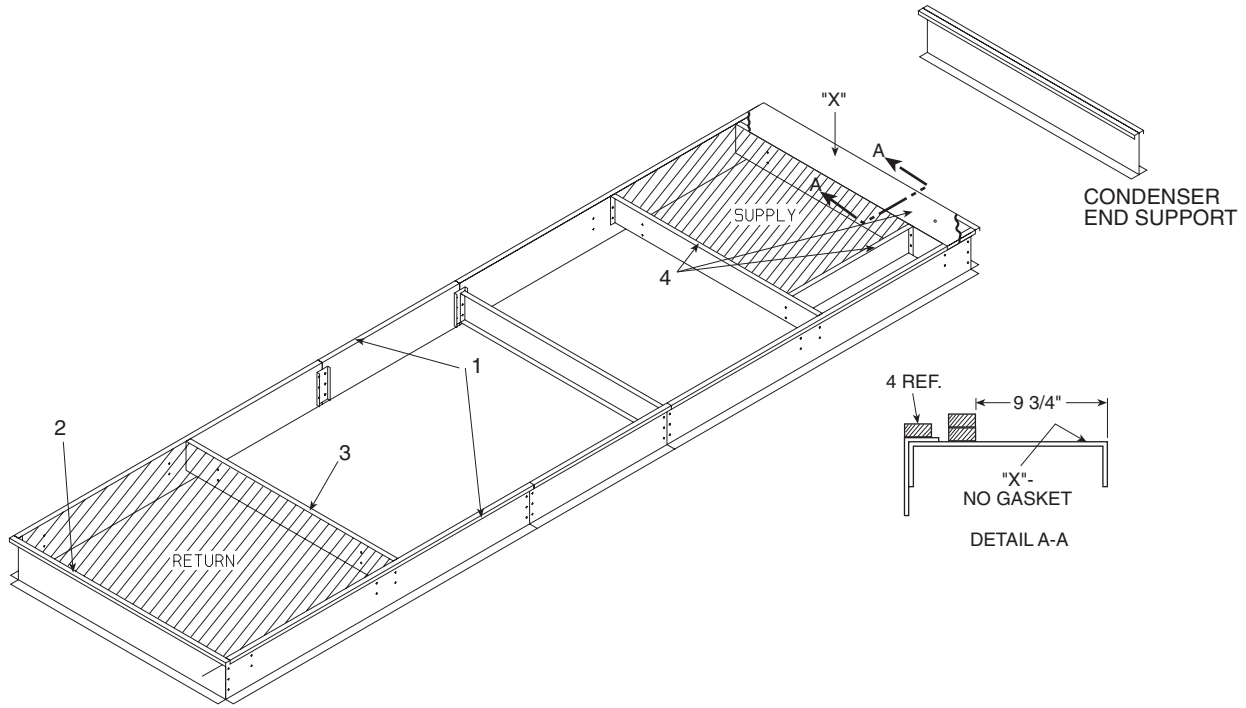
A		B	
DEG.	IN.	DEG.	IN.
1.0	2.0	.50	.75

UNIT LEVELING TOLERANCES  
\*From edge of unit to horizontal.

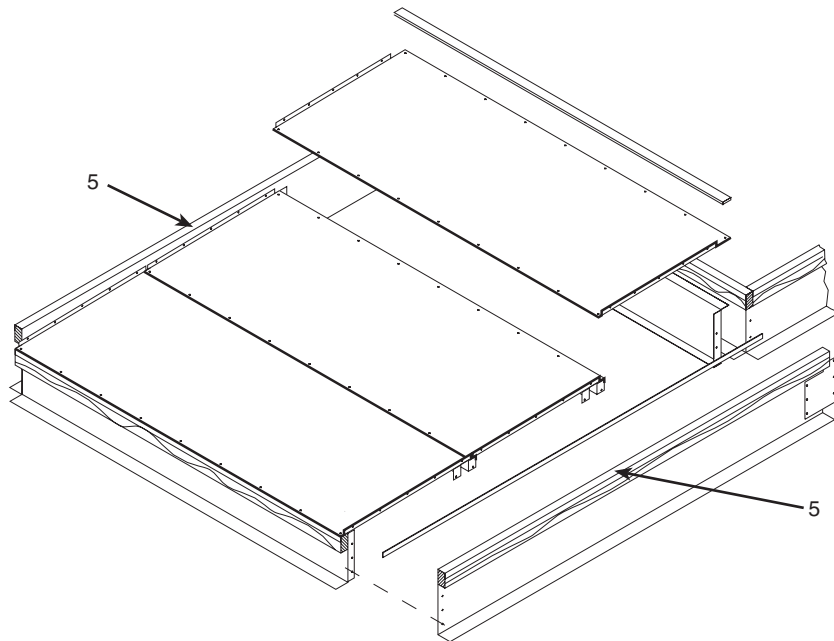
Fig. 4 — Condenser Section Roof Curb (Size 055 and 060 Only)



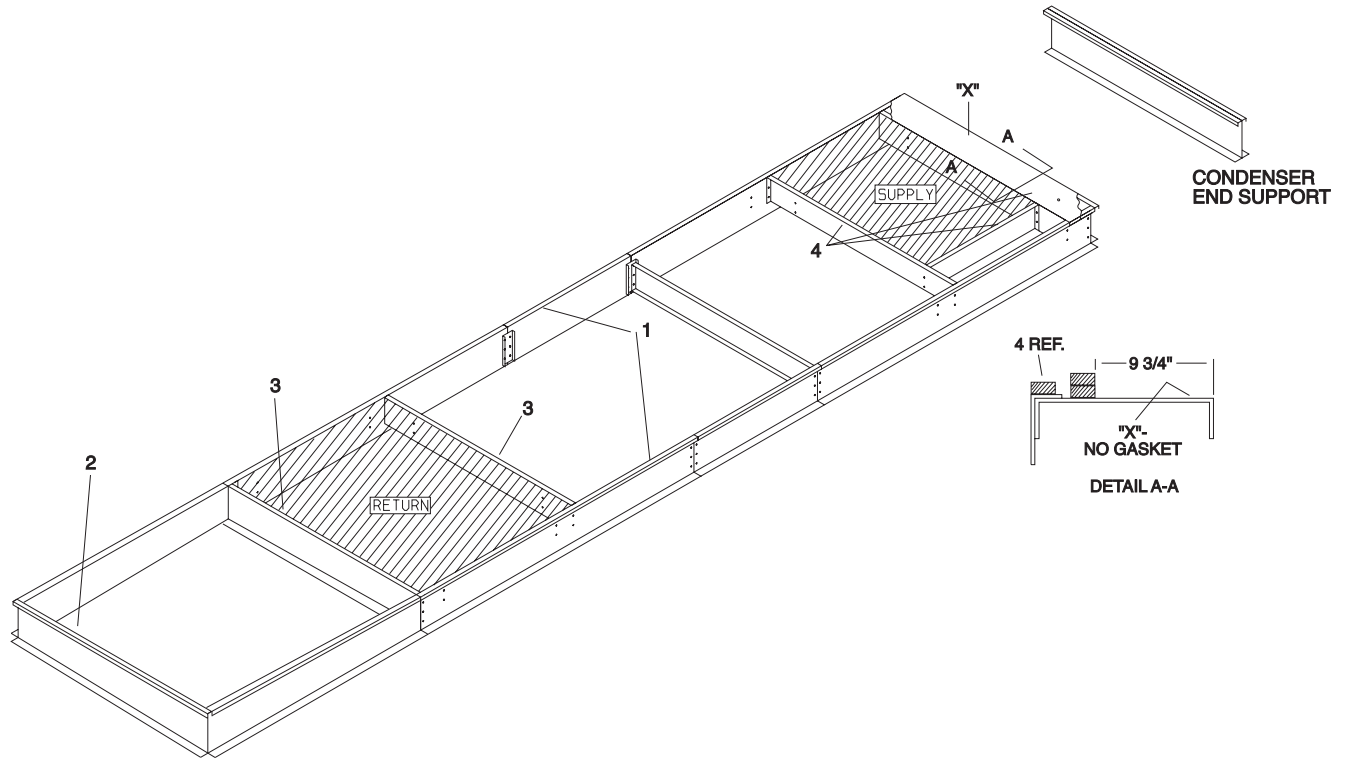
**Fig. 5 — Condenser Section Roof Curb (Size 070-105 Only)**



**Fig. 6 — Gasket Location on Roof Curb (48ZG,ZN055-105 and 48Z6,Z8075-105 Units)**



**Fig. 7 — Gasket Location — Condenser Section Roof Curb (Size 055-105 Units)**



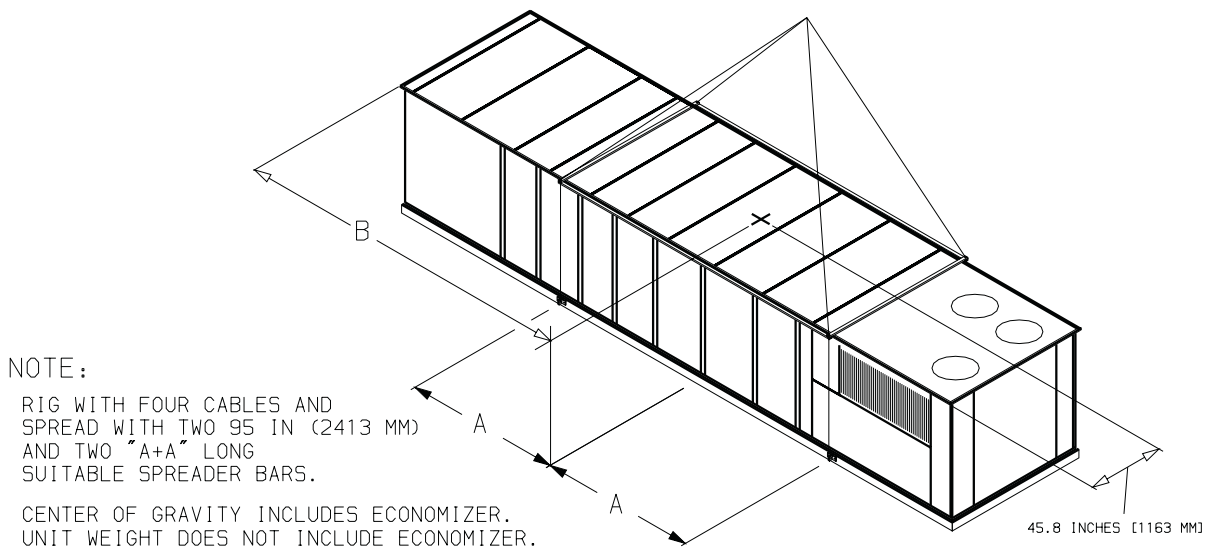
**Fig. 8 — Gasket Location on Roof Curb (48ZT,ZW075-105 Units)**

**⚠ CAUTION**

**NOTICE TO RIGGERS**

1. ALL PANELS MUST BE IN PLACE WHEN RIGGING.
2. DO NOT ATTEMPT TO FORK THESE UNITS.

UNIT	WEIGHT		A		B		ECONOMIZER	
	lb	kg	in.	mm	in.	mm	lb	kg
48Z030	5770	2623	83.23	2114	176.14	4474	300	136
48Z035	5895	2679	83.23	2114	177.99	4521	300	136
48Z040	6670	3032	92.64	2353	205.87	5229	300	136
48Z050	6710	3050	92.64	2353	207.01	5258	300	136

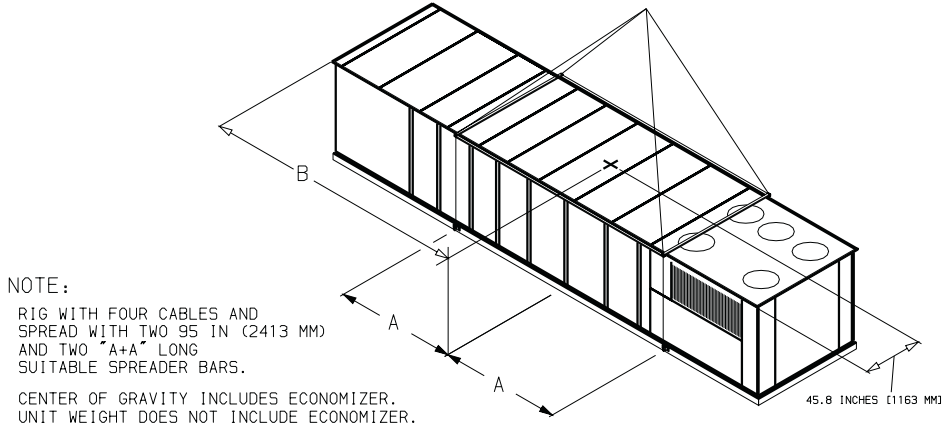


**Fig. 9 — Rigging Label — Size 030-050 Units (Standard Chassis)**

**CAUTION**

- NOTICE TO RIGGERS  
 1. ALL PANELS MUST BE IN PLACE WHEN RIGGING.  
 2. DO NOT ATTEMPT TO FORK THESE UNITS.

UNIT	WEIGHT		A		B		ECONOMIZER	
	lb	kg	in.	mm	in.	mm	lb	kg
48Z055	8,820	4009	128.75	3270	235.0	5969	530	240.9
48Z060	9,120	4145	128.75	3270	235.0	5969	530	240.9
48Z070	9,550	4341	112.50	2858	252.0	6401	530	240.9
48ZG,ZN075	10,445	4738	127.80	3247	260.6	6618	530	240.9
48ZG,ZN090	10,655	4833	127.80	3247	262.4	6666	530	240.9
48ZG,ZN105	11,385	5164	127.80	3247	271.0	6883	530	240.9
48Z6,Z8075	11,915	5405	127.80	3247	260.6	6618	530	240.9
48Z6,Z8090	12,125	5500	127.80	3247	262.4	6666	530	240.9
48Z6,Z8105	12,855	5831	127.80	3247	271.0	6883	530	240.9

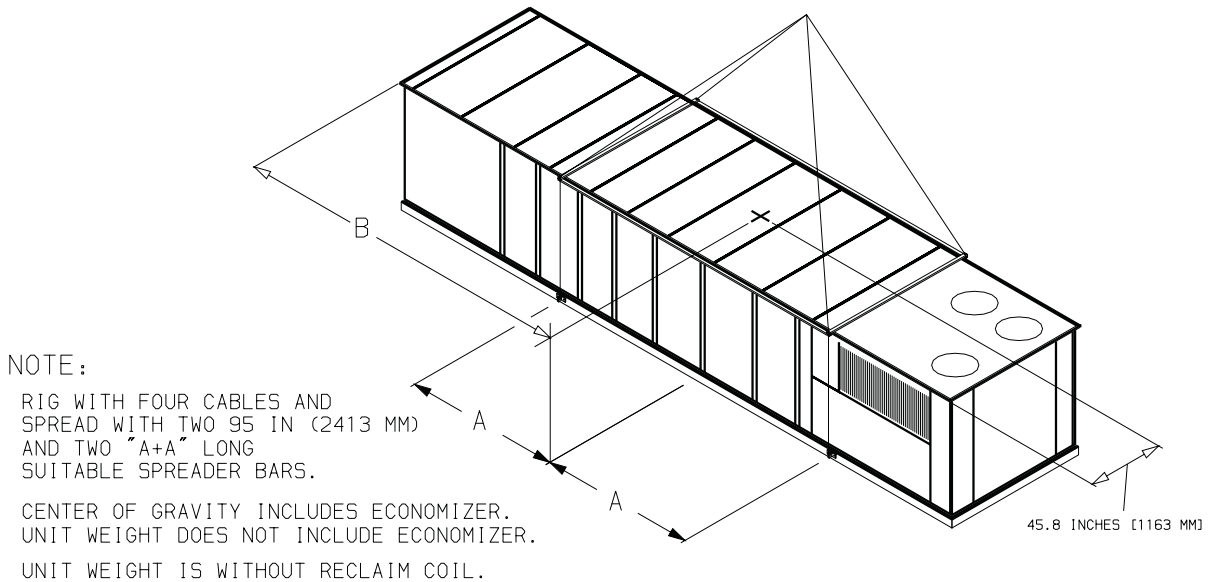


**Fig. 10 — Rigging Label — Size 055-105 Units (Standard Chassis)**

**CAUTION**

- NOTICE TO RIGGERS  
 1. ALL PANELS MUST BE IN PLACE WHEN RIGGING.  
 2. DO NOT ATTEMPT TO FORK THESE UNITS.

UNIT	WEIGHT		A		B		ECONOMIZER	
	lb	kg	in.	mm	in.	mm	lb	kg
48Z030	6270	2844	95.83	2434	192.56	4891	300	136
48Z035	6395	2900	95.83	2434	194.72	4946	300	136
48Z040	7170	3252	105.24	2673	222.44	5650	300	136
48Z050	7210	3270	105.24	2673	223.50	5677	300	136



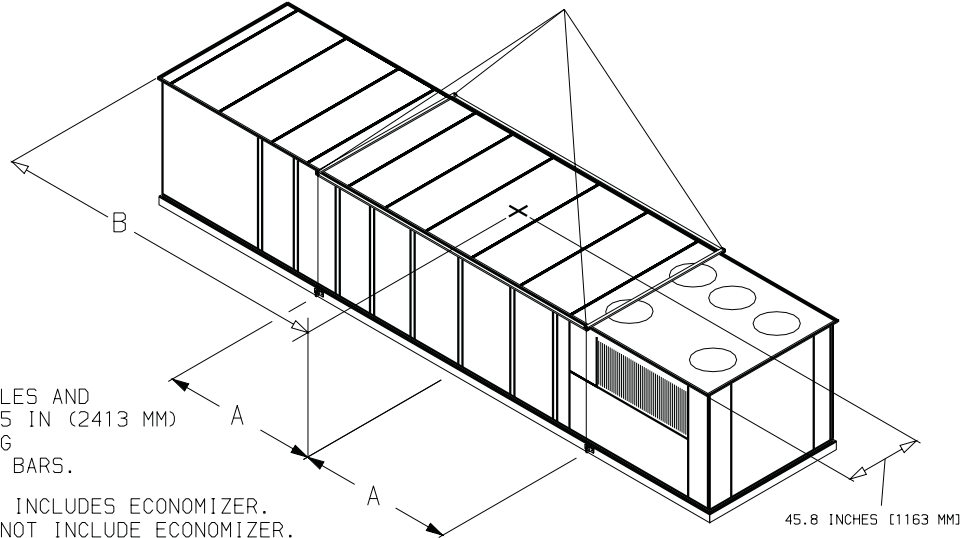
**Fig. 11 — Rigging Label — Size 030-050 Units (Extended Chassis)**



**CAUTION**

- NOTICE TO RIGGERS  
 1. ALL PANELS MUST BE IN PLACE WHEN RIGGING.  
 2. DO NOT ATTEMPT TO FORK THESE UNITS.

UNIT	WEIGHT		A		B		ECONOMIZER	
	lb	kg	in.	mm	in.	mm	lb	kg
48Z055	9548	4330	121.50	3085.5	248.50	6312	530	240.9
48Z060	9668	4385	121.50	3085.5	248.50	6312	530	240.9



NOTE:

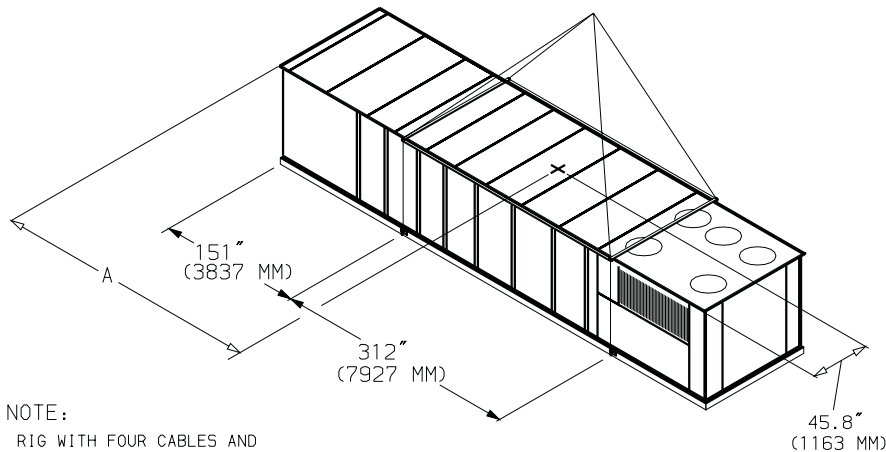
- RIG WITH FOUR CABLES AND SPREAD WITH TWO 95 IN (2413 MM) AND TWO "A+A" LONG SUITABLE SPREADER BARS.  
 CENTER OF GRAVITY INCLUDES ECONOMIZER. UNIT WEIGHT DOES NOT INCLUDE ECONOMIZER.  
 UNIT WEIGHT IS WITHOUT RECLAIM COIL

**Fig. 12 — Rigging Label — Size 055,060 Units (Extended Chassis)**

**CAUTION**

- NOTICE TO RIGGERS  
 1. ALL PANELS MUST BE IN PLACE WHEN RIGGING.  
 2. DO NOT ATTEMPT TO FORK THESE UNITS.

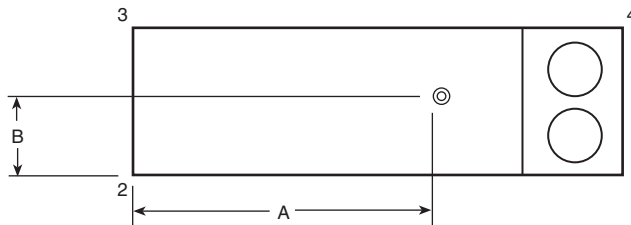
UNIT	WEIGHT		A	
	lb	kg	in.	mm
48Z075	13,380	6069	298.9	7591
48Z090	13,590	6164	300.7	7637
48Z105	14,320	6495	309.9	7873



NOTE:

- RIG WITH FOUR CABLES AND SPREAD WITH TWO 95 IN (2413 MM) AND TWO 312 IN (7927 MM) LONG SUITABLE SPREADER BARS.

**Fig. 13 — Rigging Label — 48ZT,ZW075-105 Units (High-Capacity Power Exhaust Units)**



UNITS 48ZG,ZN	SIZE	CORNER WEIGHTS (lb)				TOTAL (lb)	A	B
		1	2	3	4		ft-in.	ft-in.
VERTICAL SUPPLY AND RETURN/ LOW GAS HEAT	030	1968	1004	1005	1964	5,941	14- 9 <sup>1</sup> / <sub>8</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	035	1851	1184	1142	1889	6,066	14-11	3-9 <sup>13</sup> / <sub>16</sub>
	040	2246	1177	1179	2239	6,841	17- 2 <sup>7</sup> / <sub>8</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	050	2264	1182	1179	2256	6,881	17- 4	3-9 <sup>13</sup> / <sub>16</sub>
	055	2478	2140	2144	2468	9,230	19- 7	3-9 <sup>13</sup> / <sub>16</sub>
	060	2557	2211	2212	2549	9,530	19- 7	3-9 <sup>13</sup> / <sub>16</sub>
	070	2648	2330	2334	2638	9,950	21- 0	3-9 <sup>13</sup> / <sub>16</sub>
	075	2955	2447	2445	2953	10,800	21- 7 <sup>1</sup> / <sub>2</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	090	3035	2471	2471	3033	11,010	21- 9 <sup>7</sup> / <sub>16</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	105	3342	2529	2529	3340	11,740	22- 6	3-9 <sup>13</sup> / <sub>16</sub>
VERTICAL SUPPLY AND RETURN/ HIGH GAS HEAT	030	2000	1037	1038	1995	6,070	14- 8 <sup>1</sup> / <sub>8</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	035	2061	1038	1037	2059	6,195	14-10	3-9 <sup>13</sup> / <sub>16</sub>
	040	2277	1210	1213	2270	6,970	17- 1 <sup>7</sup> / <sub>8</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	050	2301	1206	1205	2297	7,010	17- 3	3-9 <sup>13</sup> / <sub>16</sub>
	055	2510	2168	2172	2500	9,350	19- 7	3-9 <sup>13</sup> / <sub>16</sub>
	060	2587	2242	2237	2584	9,650	19- 7	3-9 <sup>13</sup> / <sub>16</sub>
	070	2683	2361	2365	2672	10,080	21- 0	3-9 <sup>13</sup> / <sub>16</sub>
	075	3015	2474	2472	3013	10,974	21- 8 <sup>9</sup> / <sub>16</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	090	3095	2499	2498	3092	11,184	21-10 <sup>7</sup> / <sub>16</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	105	3405	2554	2554	3401	11,914	22- 7	3-9 <sup>13</sup> / <sub>16</sub>
VERTICAL SUPPLY AND RETURN/ EXTENDED CHASSIS/LOW GAS HEAT	030	2133	1089	1091	2127	6,441	16- 11 <sup>1</sup> / <sub>16</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	035	2198	1087	1087	2194	6,566	16- 3 <sup>7</sup> / <sub>8</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	040	2411	1262	1264	2404	7,341	18- 7 <sup>1</sup> / <sub>2</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	050	2434	1259	1256	2432	7,381	18- 8 <sup>5</sup> / <sub>8</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	055	2617	2251	2255	2607	9,730	20- 9	3-9 <sup>13</sup> / <sub>16</sub>
	060	2698	2320	2325	2687	10,030	20- 9	3-9 <sup>13</sup> / <sub>16</sub>
VERTICAL SUPPLY AND RETURN/ EXTENDED CHASSIS/HIGH GAS HEAT	030	2188	1100	1101	2182	6,570	16- 2 <sup>3</sup> / <sub>4</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	035	2187	1163	1161	2184	6,695	18- 6 <sup>7</sup> / <sub>16</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	040	2454	1284	1287	2446	7,470	18- 7 <sup>1</sup> / <sub>2</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	050	2017	1740	1738	2014	7,510	20- 9	3-9 <sup>13</sup> / <sub>16</sub>
	055	2649	2279	2283	2639	9,850	20- 9	3-9 <sup>13</sup> / <sub>16</sub>
	060	3442	1787	1791	3431	10,450	16- 0 <sup>9</sup> / <sub>16</sub>	3-9 <sup>13</sup> / <sub>16</sub>

UNITS 48ZT,ZW WITH HIGH-CAPACITY POWER EXHAUST	SIZE	CORNER WEIGHTS (lb)				TOTAL (lb)	A	B
		1	2	3	4		ft-in.	ft-in.
VERTICAL SUPPLY AND RETURN/ LOW GAS HEAT, HIGH-CAPACITY POWER EXHAUST	075	3551	3053	3049	3551	13,204	24- 9 <sup>13</sup> / <sub>16</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	090	3629	3080	3075	3630	13,414	24- 1 <sup>5</sup> / <sub>8</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	105	3948	3126	3121	3948	14,144	25- 9 <sup>1</sup> / <sub>8</sub>	3-9 <sup>13</sup> / <sub>16</sub>
VERTICAL SUPPLY AND RETURN/ HIGH GAS HEAT, HIGH-CAPACITY POWER EXHAUST	075	3611	3081	3076	3611	13,380	24-10 <sup>7</sup> / <sub>8</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	090	3691	3106	3102	3691	13,590	25- 0 <sup>3</sup> / <sub>4</sub>	3-9 <sup>13</sup> / <sub>16</sub>
	105	4008	3155	3150	4008	14,320	25- 9 <sup>15</sup> / <sub>16</sub>	3-9 <sup>13</sup> / <sub>16</sub>

UNITS 48Z6,Z8 WITH RETURN/EXHAUST FAN	SIZE	CORNER WEIGHTS (lb)				TOTAL (lb)	A	B
		1	2	3	4		ft-in.	ft-in.
VERTICAL SUPPLY AND RETURN LOW GAS HEAT, RETURN/EXHAUST FAN	075	2802	3002	3008	2868	11,740	19-4	3-9 <sup>13</sup> / <sub>16</sub>
	090	2940	3029	3035	2946	11,950	19-6	3-9 <sup>13</sup> / <sub>16</sub>
	105	3242	3091	3098	3249	12,680	20-2	3-9 <sup>13</sup> / <sub>16</sub>
VERTICAL SUPPLY AND RETURN HIGH GAS HEAT, RETURN/EXHAUST FAN	075	2921	3029	3036	2928	11,914	19-6	3-9 <sup>13</sup> / <sub>16</sub>
	090	2999	3056	3063	3006	12,124	19-7	3-9 <sup>13</sup> / <sub>16</sub>
	105	3304	3116	3123	3311	12,854	20-4	3-9 <sup>13</sup> / <sub>16</sub>

Fig. 14 — Weight Distribution and Center of Gravity

**Condensate Drain Connections** — There are a total of five drain connections required on each unit: one primary drain (on right-hand side of the unit) and four secondary drains (two on each side of unit).

**PRIMARY DRAIN** — The primary drain is a 2-in. NPT pipe connection located on the right-hand side of the unit looking at the unit from the return air end. See Fig. 15-24.

With field-supplied fittings and pipe sections, plumb the primary condensate drain to the 2-in. FPT connector on the base rail. Use a trap height of at least 4-in. for size 030-070 units and 7-in. for size 075-105 units. See Fig. 24 and 25. Install with a height dimension of at least 2-in. from the top of the exit pipe from the trap section to the bottom of the connector. Apply a bead of RTV or similar sealant around the pipe joint at the connector in the base rail.

**SECONDARY DRAINS (Units Installed on Curb)** — There are two secondary drain connections on each side of the unit. See Fig. 26. There are secondary drains on each side of the unit in the filter section and one on each side of the unit in the supply fan section. There are labels marking each location on the unit base rail. See Fig. 15-23.

Locate the four 1<sup>1</sup>/<sub>4</sub>-in. drain coupling assemblies and mounting screws (shipped in a bag taped to the basepan in the supply fan section, located behind the access panel marked FAN SECTION). The drain couplings are a 10-gage plate with a 1<sup>1</sup>/<sub>4</sub> in. half coupling welded to the plate.

At each secondary drain hole location, there is a 1<sup>3</sup>/<sub>8</sub>-in. hole pre-drilled in the bottom of the base rail, surrounded by four 0.20-in. engagement holes. Install a drain coupling assembly using screws provided at each secondary drain hole location. See Fig. 27. Do not attach any drain coupling assemblies in the condenser section base rail.

Using field-supplied fittings and pipe sections, assemble U-traps at each secondary drain fitting. See Fig. 28. Provide a minimum size of 1/2-in. pipe for secondary drains. Use a trap at least 4-in. deep for size 030-070 units and 7-in. deep for size 075-105 units. Apply a bead of RTV or similar sealant around the drain assemblies.

Consult local plumbing codes for direction on joining multiple drain lines. Total size of any combined line does not need to exceed nominal 2-in. size of primary drain connection.

Fill the U-traps at the secondary drain locations prior to unit start-up. Also check the U-traps before each cooling season to ensure the traps are filled and functioning properly.

**SECONDARY DRAINS (Units Installed on Steel Beam or Slab)** — There are two secondary drain connections required on each side of the unit. See Fig. 26. There are secondary drains on each side of the unit in the filter section and one on each side of the unit in the supply fan section. There are labels marking each location on the unit base rail. See Fig. 15-23. Prior to final positioning of the unit, apply a bead of RTV or similar sealant around each secondary drain hole in the bottom of the unit base rail. Then position the unit into final location.

Locate the four 1<sup>1</sup>/<sub>4</sub>-in. drain coupling assemblies and mounting screws (shipped in a bag taped to the basepan in the supply fan section, located behind the access panel marked FAN SECTION). The drain couplings are a 10-gage plate with a 1<sup>1</sup>/<sub>4</sub> in. half coupling welded to the plate.

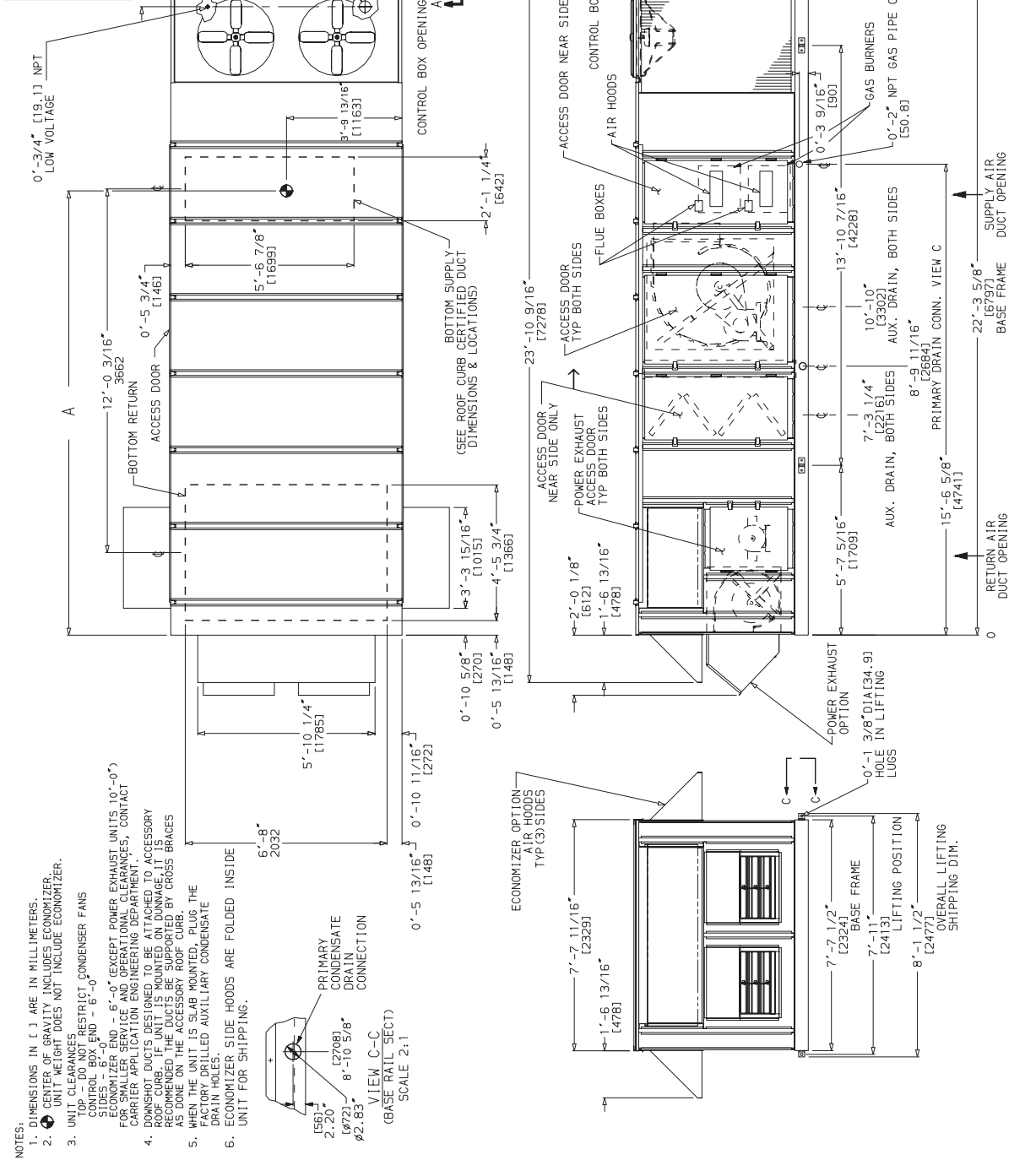
After final positioning of the unit, perform the following procedure:

1. At each of the four secondary drain locations (marked with labels on the unit base rail), position the drain coupling assembly in the side of the base rail. Mark the screw holes and the drain hole locations on the base rail.
2. Drill holes for drain outlet (use 1<sup>3</sup>/<sub>8</sub>-in. hole saw) and for the mounting screws (use 3/16-in. drill bit).
3. Install a drain coupling assembly using screws provided at each secondary drain hole location.
4. Using field-supplied fittings and pipe sections, assemble U-traps at each secondary drain fitting. See Fig. 28. Provide minimum size of 1/2-in. pipe for secondary drains. Use a trap at least 4-in. deep for size 030-070 units and 7-in. deep for size 075-105 units.
5. Apply a bead of RTV or similar sealant around the drain assemblies.

Consult local plumbing codes for direction on joining multiple drain lines. Total size of any combined line does not need to exceed nominal 2-in. size of primary drain connection.

Fill the U-traps at the secondary drain locations prior to unit start-up. Also check the U-traps before each cooling season to ensure the traps are filled and functioning properly.

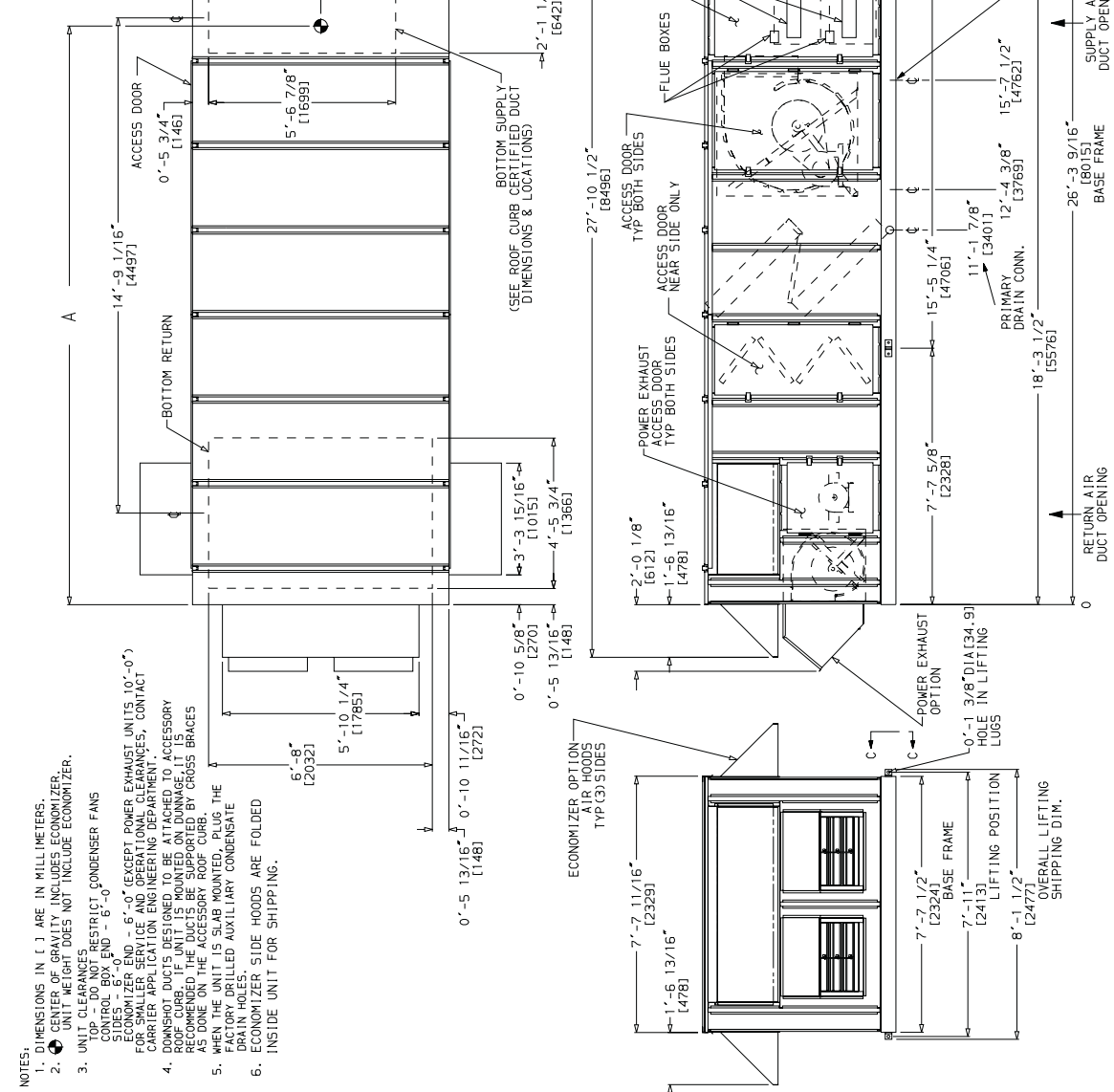
UNIT SIZE	WEIGHT		A
	LB	KG	
030 LOW HEAT	5640	2563.6	4498
030 HIGH HEAT	5770	2622.7	4474
035 LOW HEAT	5766	2621	4547
035 HIGH HEAT	5895	2679	4521



**Fig. 15 — Base Unit Dimensional Drawing — 48ZG,ZN030,035 (Standard Chassis)**

UNIT SIZE	WEIGHT		A
	LB	KG	
040 LOW HEAT	6540	2972.7	5255
040 HIGH HEAT	6670	3031.8	5229
050 LOW HEAT	6581	2991	5283
050 HIGH HEAT	6710	3050	5258

0'-3/4" [19.11] NPT  
LOW VOLTAGE



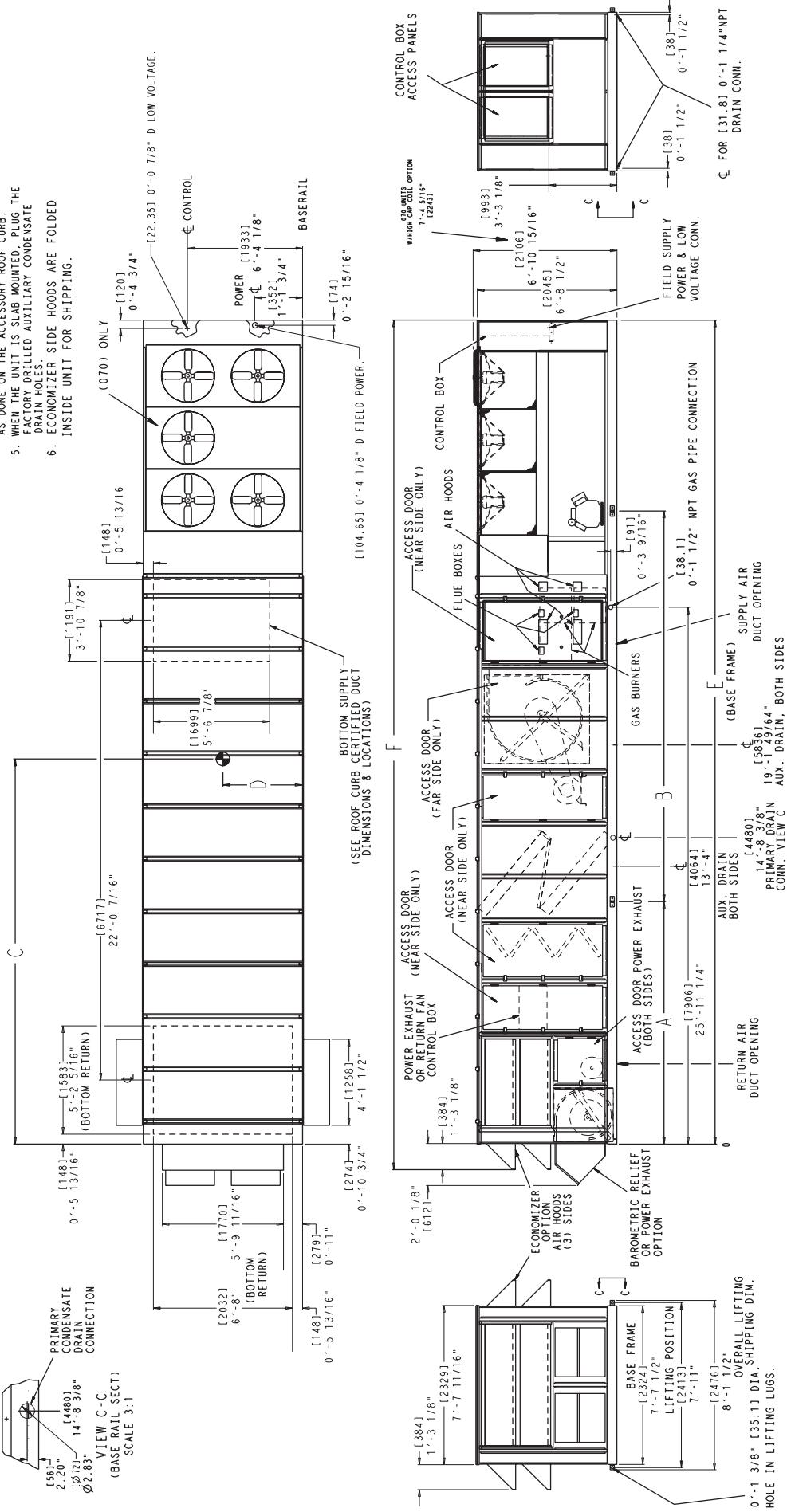
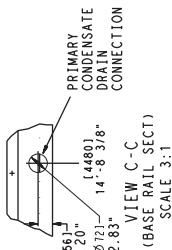
- NOTES:
1. DIMENSIONS IN ( ) ARE IN MILLIMETERS.
  2. UNIT WEIGHT INCLUDES CONDENSATE DRAIN PIPING.
  3. UNIT CLEARANCES: TOP - DO NOT RESTRICT CONDENSER FANS; BOTTOM - 6" (152.4) MIN. CLEARANCE TO ACCESSORY CURB; SIDE - 6" (152.4) MIN. CLEARANCE TO ACCESSORY CURB; REAR - 6" (152.4) MIN. CLEARANCE TO ACCESSORY CURB.
  4. DOWNSHOT DUCTS DESIGNED TO BE ATTACHED TO ACCESSORY CURB. UNITS ARE SUPPLIED BY CRASS BRACES AS DONE ON THE ACCESSORY ROOF CURB.
  5. WHEN THE UNIT IS SLAB MOUNTED, PLUG THE FACTORY DRILLED AUXILIARY CONDENSATE DRAIN HOLES.
  6. ECONOMIZER SIDE HOODS ARE FOLDED INSIDE UNIT FOR SHIPPING.

Fig. 16 — Base Unit Dimensional Drawing — 48ZG,ZN040,050 (Standard Chassis)

UNIT SIZE	WEIGHT		A		B		C		D		E		F	
	LB	KG	MM	FT. - IN.	MM	FT. - IN.	MM	FT. - IN.	MM	FT. - IN.	MM	FT. - IN.	MM	FT. - IN.
055 LOW HEAT	8700	3955	2718	8'-11"	6541	21'-5 1/2"	5969	19'-7"	1163	3'-9 13/16"	11140	36'-6 9/16"	11524	37'-9 11/16"
060 LOW HEAT	9000	4091	2718	8'-11"	6541	21'-5 1/2"	5969	19'-7"	1163	3'-9 13/16"	11140	36'-6 9/16"	11524	37'-9 11/16"
070 LOW HEAT	9420	4282	3543	11'-7 1/2"	5715	18'-9"	6401	21'-0"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"
055 HIGH HEAT	8820	4009	2718	8'-11"	6541	21'-5 1/2"	5969	19'-7"	1163	3'-9 13/16"	11140	36'-6 9/16"	11524	37'-9 11/16"
060 HIGH HEAT	9120	4145	2718	8'-11"	6541	21'-5 1/2"	5969	19'-7"	1163	3'-9 13/16"	11140	36'-6 9/16"	11524	37'-9 11/16"
070 HIGH HEAT	9550	4341	3543	11'-7 1/2"	5715	18'-9"	6401	21'-0"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"

**NOTES:**

1. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY INCLUDES ECONOMIZER. UNIT WEIGHT DOES NOT INCLUDE ECONOMIZER.
3. UNIT CLEARANCES  
TOP - DO NOT RESTRICT CONDENSER FANS  
CONTROL BOX END - 6'-0"  
SIDES - 6'-0" (EXCEPT POWER EXHAUST UNITS 10'-0")  
FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES, CONTACT CARRIER APPLICATION ENGINEERING DEPARTMENT.
4. DOWNSHOT DUCTS DESIGNED TO BE ATTACHED TO ACCESSORY ROOF CURB IF UNIT IS MOUNTED ON DUNNAGE. IT IS RECOMMENDED THE DUCTS BE SUPPORTED BY CROSS BRACES AS DONE ON THE ACCESSORY ROOF CURB.
5. WHEN THE UNIT IS SLAB MOUNTED, PLUG THE FACTORY DRILLED AUXILIARY CONDENSATE DRAIN HOLES.
6. ECONOMIZER SIDE HOODS ARE FOLDED INSIDE UNIT FOR SHIPPING.



**Fig. 17 — Base Unit Dimensional Drawing — 48ZG,ZN055-070 (Standard Chassis)**



UNIT SIZE	WEIGHT		A		B		C		D		E		F	
	LB	KG	MM	FT - IN.	MM	FT - IN.	MM	FT - IN.	MM	FT - IN.	MM	FT - IN.	MM	FT - IN.
075 LOW HEAT	10270	4658	3544	11'-7 1/2"	6494	21'-3 5/8"	6592	21'-7 1/2"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"
090 LOW HEAT	10480	4754	3544	11'-7 1/2"	6494	21'-3 5/8"	6641	21'-9 7/16"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"
105 LOW HEAT	11210	5085	3544	11'-7 1/2"	6494	21'-3 5/8"	6861	22'-6 1/8"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"
075 HIGH HEAT	10445	4738	3544	11'-7 1/2"	6494	21'-3 5/8"	6618	21'-8 9/16"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"
090 HIGH HEAT	10655	4833	3544	11'-7 1/2"	6494	21'-3 5/8"	6666	21'-10 7/16"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"
105 HIGH HEAT	11385	5164	3544	11'-7 1/2"	6494	21'-3 5/8"	6883	22'-7"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"

- NOTES:
1. DIMENSIONS IN ( ) ARE IN MILLIMETERS.
  2. CENTER OF GRAVITY INCLUDES ECONOMIZER. UNIT WEIGHT DOES NOT INCLUDE ECONOMIZER.
  3. UNIT CLEARANCES  
TOP DO NOT RESTRICT CONDENSER FANS UNLESS BOX END - 6'-0"  
ECONOMIZER END - 6'-0" (EXCEPT POWER EXHAUST UNITS 10'-0")  
FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES. CONTACT CARRIER APPLICATION ENGINEERING DEPARTMENT.
  4. DOWNSHOT DUCTS DESIGNED TO BE ATTACHED TO ACCESSORY ROOF CURB. IF UNIT IS MOUNTED ON DUNNAGE, IT IS RECOMMENDED THE DUCTS BE SUPPORTED BY CROSS BRACES AS DONE ON THE ACCESSORY ROOF CURB.
  5. WHEN THE UNIT IS SLAB MOUNTED, PLUG THE FACTORY DRILLED AUXILIARY CONDENSATE DRAIN HOLES.
  6. ECONOMIZER SIDE HOODS ARE FOLDED INSIDE UNIT FOR SHIPPING.

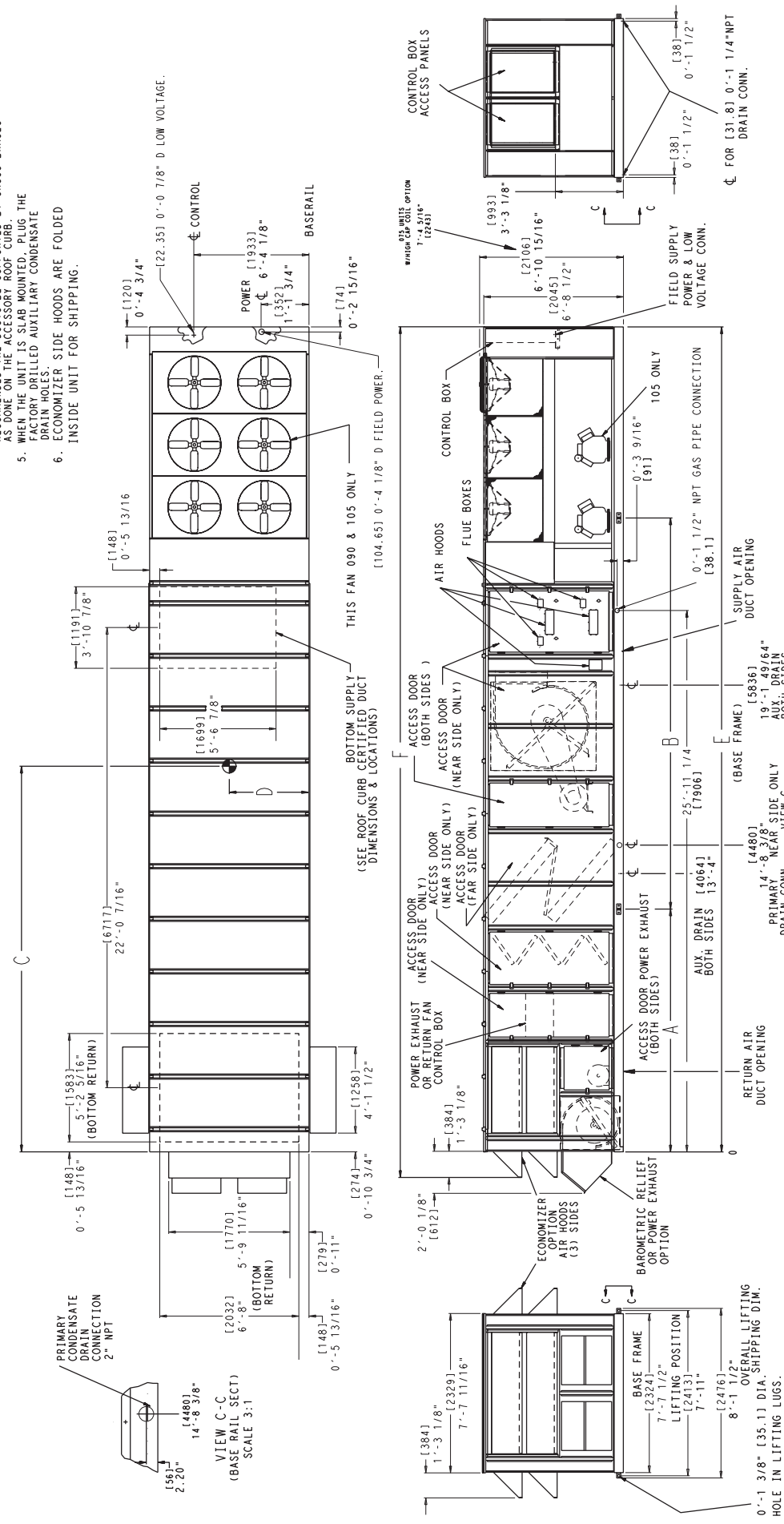
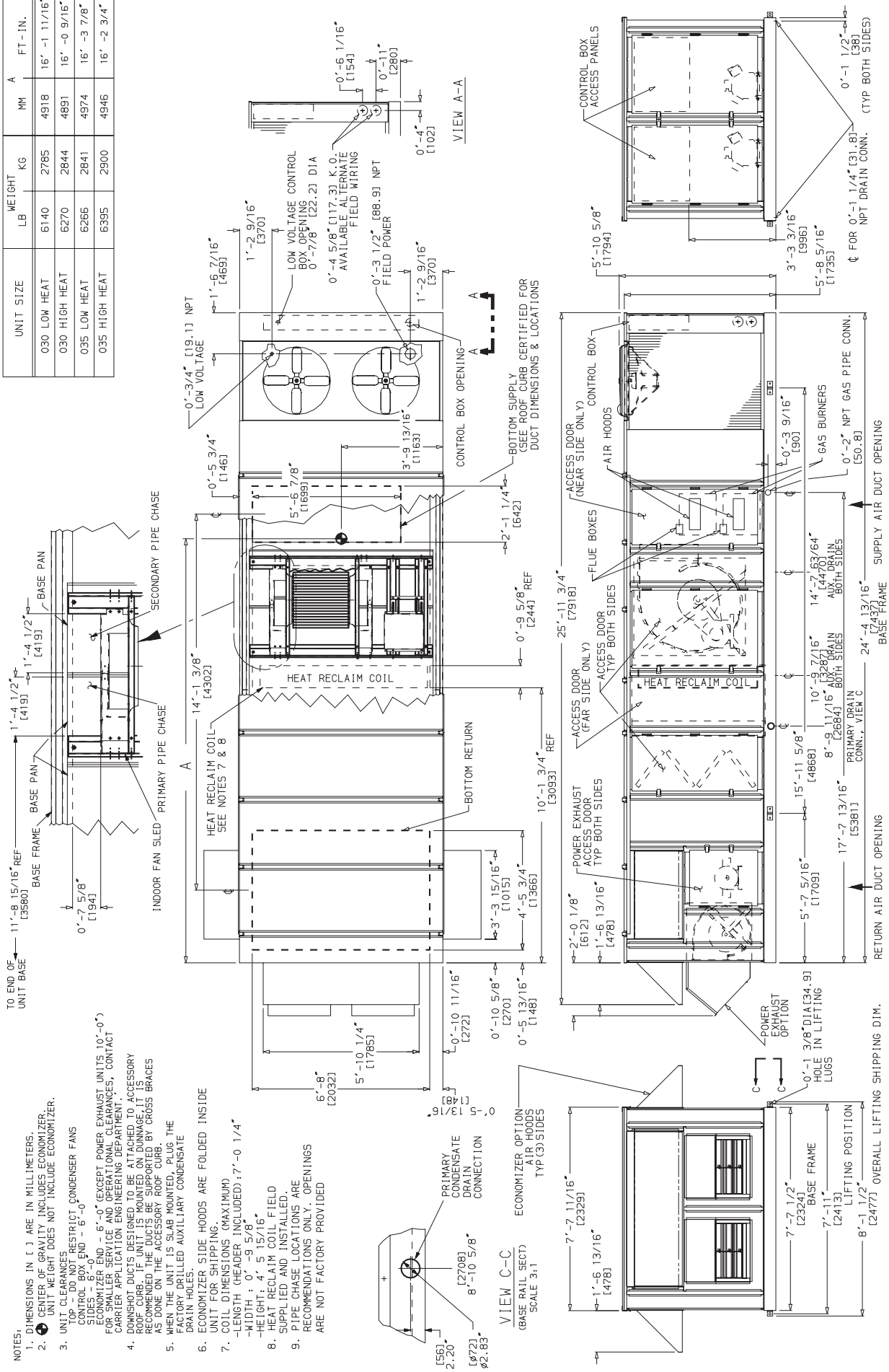


Fig. 18 — Base Unit Dimensional Drawing — 48ZG,ZN075-105 (Standard Chassis)

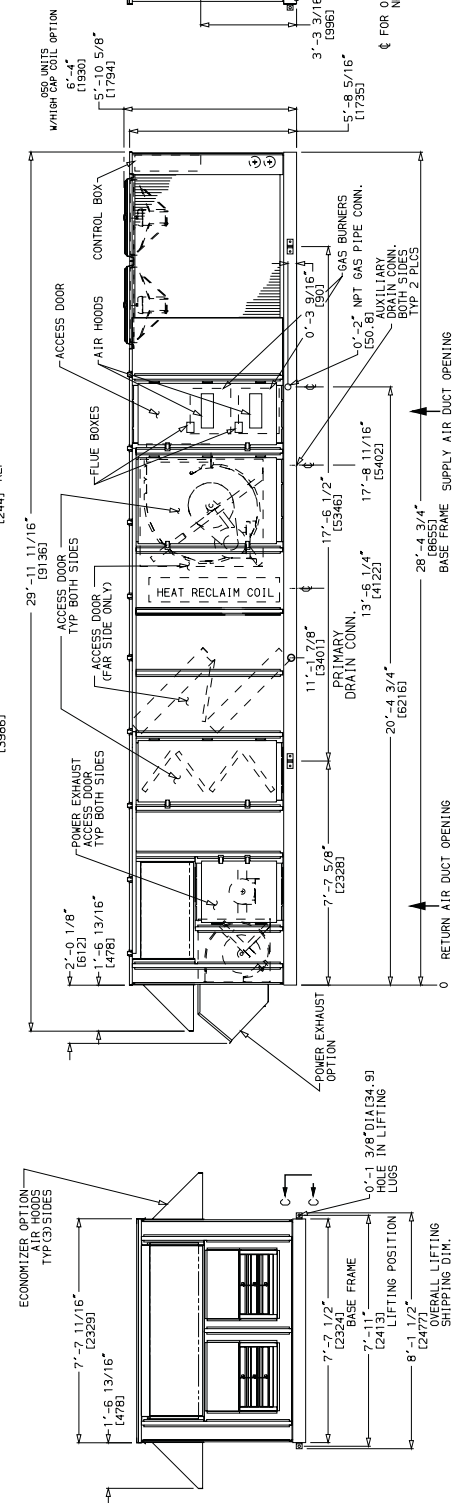
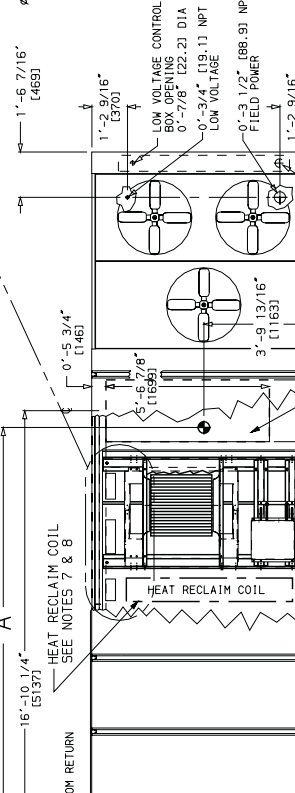
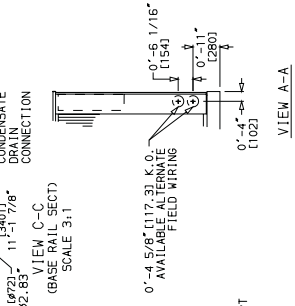
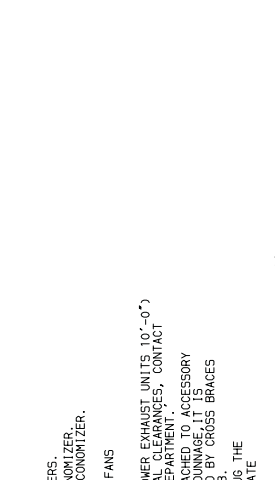
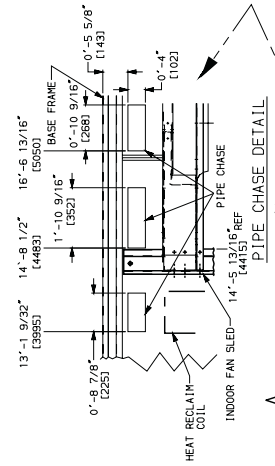
UNIT SIZE	LB	KG	MM	FT-IN.
030 LOW HEAT	6140	2785	4918	16'-1 11/16"
030 HIGH HEAT	6270	2844	4891	16'-0 9/16"
035 LOW HEAT	6266	2841	4974	16'-3 7/8"
035 HIGH HEAT	6395	2900	4946	16'-2 3/4"



**Fig. 19 — Base Unit Dimensional Drawing — 48ZG,ZN030,035 (Extended Chassis)**

- NOTES:
1. DIMENSIONS IN ( ) ARE IN MILLIMETERS.
  2. Ⓢ CENTER OF GRAVITY INCLUDES ECONOMIZER.
  3. UNIT CLEARANCES DOES NOT INCLUDE ECONOMIZER.
  4. TOP DO NOT RESTRICT CONDENSER FANS SIDES - 6'-0"
  5. ECONOMICIZER END - 6'-0" EXCEPT POWER EXHAUST UNITS 10'-0"
  6. ECONOMICIZER END - 6'-0" EXCEPT POWER EXHAUST UNITS 10'-0" CARRIER APPLICATION ENGINEERING DEPARTMENT
  7. DOWNSHOT DUCTS DESIGNED TO BE ATTACHED TO ACCESSORY ROOF CURB. IF UNIT IS MOUNTED ON DUNNAGE, IT IS RECOMMENDED THE DUCTS BE SUPPORTED BY CROSS BRACES AS DONE ON THE ACCESSORY ROOF CURB.
  8. WHEN THE UNIT IS SLAB MOUNTED, PLUG THE FACTORY DRILLED AUXILIARY CONDENSATE DRAIN HOLES.
  9. ECONOMIZER SIDE HOODS ARE FOLDED INSIDE UNIT FOR SHIPPING.
  10. COIL DIMENSIONS (MAXIMUM) -LENGTH (GREATER INCLUDED): 7'-0 1/4" -HEIGHT: 4'-9 5/8"
  11. HEAT RECLAIM COIL FIELD SUPPLIED AND INSTALLED.
  12. PIPE CHASE LOCATIONS ARE RECOMMENDATIONS ONLY. OPENINGS ARE NOT FACTORY PROVIDED

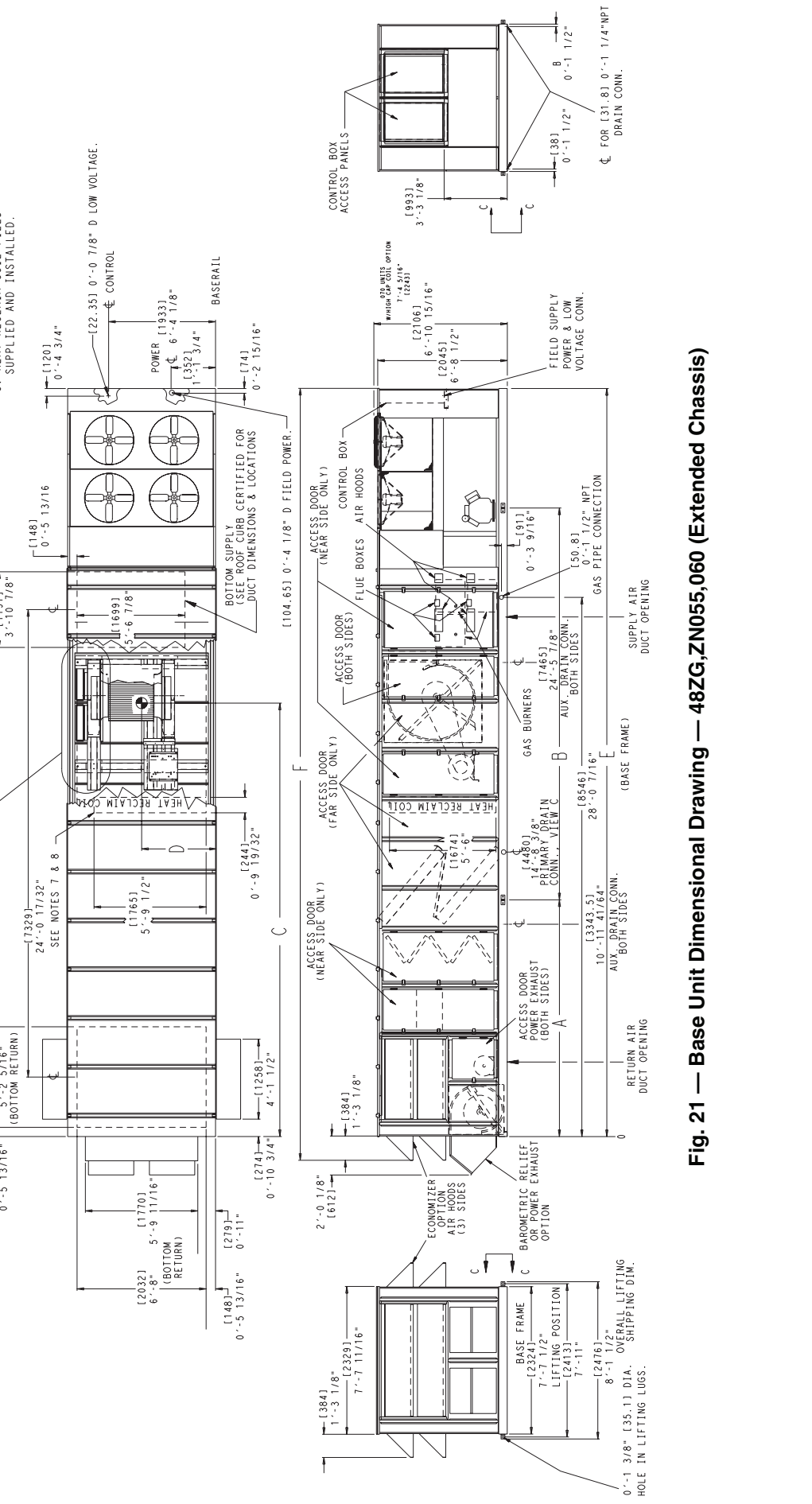
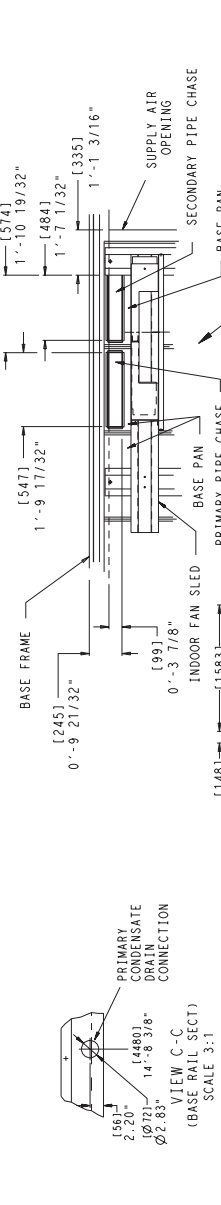
UNIT SIZE	LB	KG	A	FT - IN.
040 LOW HEAT	7040	3193	5677	18' - 7 1/2"
040 HIGH HEAT	7170	3252	5650	18' - 6 7/16"
050 LOW HEAT	7081	3211	5704	18' - 8 5/8"
050 HIGH HEAT	7210	3270	5677	18' - 7 1/2"



- NOTES:
1. DIMENSIONS IN ( ) ARE IN MILLIMETERS.
  2. CENTER OF GRAVITY INCLUDES ECONOMIZER.
  3. UNIT WEIGHT DOES NOT INCLUDE ECONOMIZER.
  4. UNITS WITH CONDENSER FANS
  5. UNITS WITH CONDENSER FANS
  6. UNITS WITH CONDENSER FANS
  7. UNITS WITH CONDENSER FANS
  8. UNITS WITH CONDENSER FANS

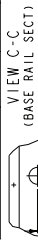
Fig. 20 — Base Unit Dimensional Drawing — 48ZG,ZN040,050 (Extended Chassis)

UNIT SIZE	WEIGHT		A		B		C		D		E		F	
	LB	KG	MM	FT - IN.	MM	FT - IN.	MM	FT - IN.	MM	FT - IN.	MM	FT - IN.	MM	FT - IN.
0.55 LOW HEAT	9248	4194	3728	12'-2 3/4"	6171	20'-2 15/16"	6312	20'-8 9/16"	1163	3'-9 25/32"	11780	38'-7 13/16"	12164	39'-10 7/8"
0.55 HIGH HEAT	9368	4278	3728	12'-2 3/4"	6171	20'-2 15/16"	6312	20'-8 9/16"	1163	3'-9 25/32"	11780	38'-7 13/16"	12164	39'-10 7/8"
0.60 LOW HEAT	9548	4330	3728	12'-2 3/4"	6171	20'-2 15/16"	6312	20'-8 9/16"	1163	3'-9 25/32"	11780	38'-7 13/16"	12164	39'-10 7/8"
0.60 HIGH HEAT	9668	4385	3728	12'-2 3/4"	6171	20'-2 15/16"	6312	20'-8 9/16"	1163	3'-9 25/32"	11780	38'-7 13/16"	12164	39'-10 7/8"



**Fig. 21 — Base Unit Dimensional Drawing — 48ZG,ZN055,060 (Extended Chassis)**

UNIT SIZE	WEIGHT		"A" DIMENSION	
	LB	KG	MM	FT-IN
075 LOW HEAT	13205	5990	7565	24'-9 13/16"
090 LOW HEAT	13415	6085	7612	24'-11 5/8"
075 HIGH HEAT	14145	6416	7851	25'-9 1/8"
080 HIGH HEAT	13380	6069	7591	24'-10 7/8"
105 HIGH HEAT	13590	6164	7637	25'-0 3/4"
105 HIGH HEAT	14320	6495	7813	25'-9 15/16"



- NOTES:
1. DIMENSIONS IN 1/8 ARE IN MILLIMETERS.
  2. INCLUDES GRAVITY AND UNIT WEIGHT.
  3. UNIT CLEARANCES
  4. CONDENSATE ECONOMIZER. UNIT WEIGHT
  5. WHEN THE UNIT IS SLAB MOUNTED, PLUG THE FACTORY DRILLED AUXILIARY CONDENSATE CONTROL AND RESTRICT CONDENSER FANS SIDES. 6'-0" MIN. CLEARANCE.
  6. ECONOMIZER SIDE HOODS (END) ARE FOLDED INSIDE UNIT FOR SHIPPING. CENTER HOODS ARE SHIPPED DISASSEMBLED INSIDE ECONOMIZER SECTION.

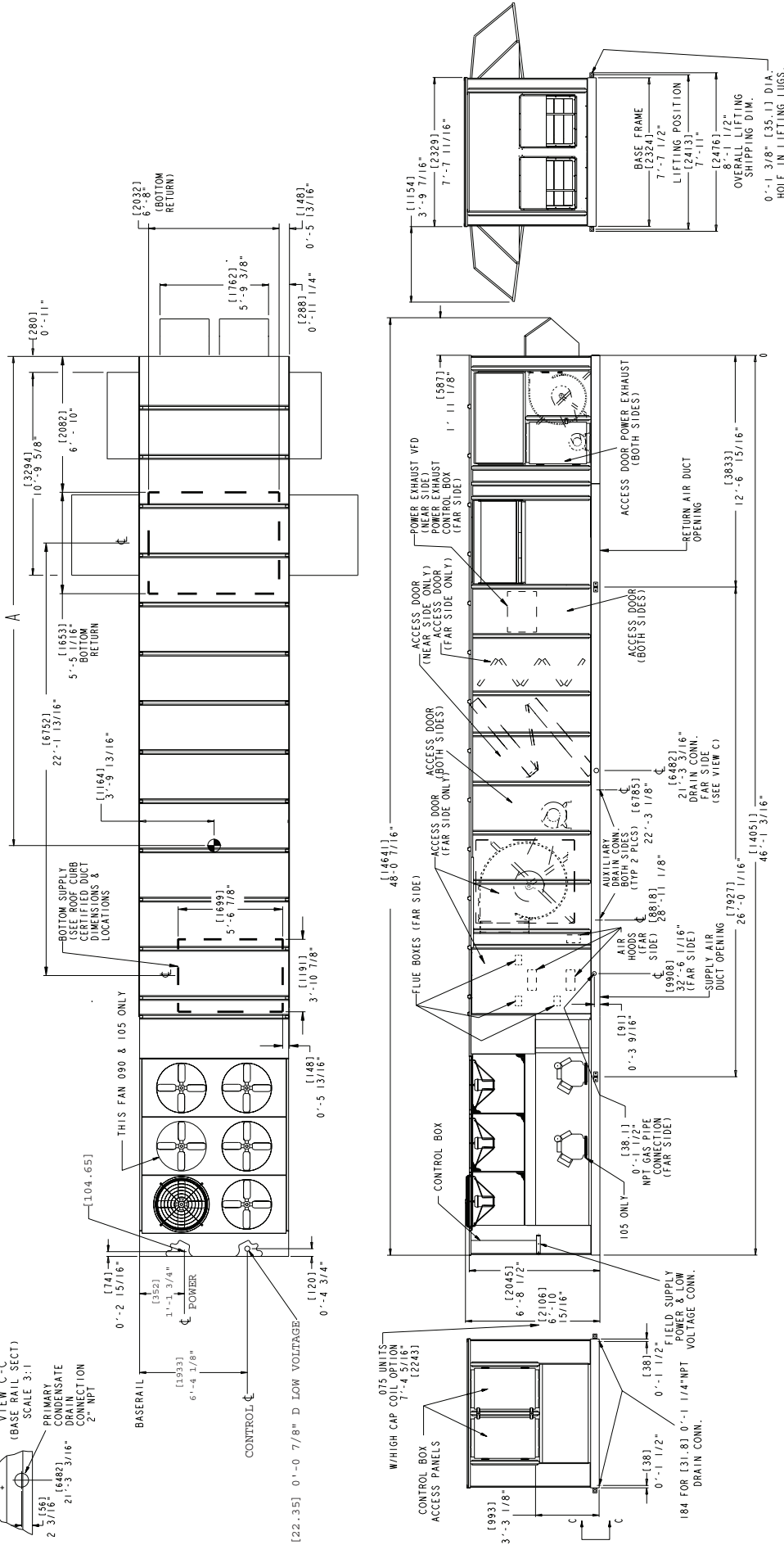


Fig. 22 — Base Unit Dimensional Drawing — 48ZT, ZW075-105 (Units with High-Capacity Power Exhaust)

UNIT SIZE	LB WEIGHT	MM	A	FT - IN.	MM	B	FT - IN.	MM	C	FT - IN.	MM	D	FT - IN.	MM	E	FT - IN.	MM	F	FT - IN.
075 LOW HEAT	11740	3544	11'-7 1/2"	6494	21'-3 5/8"	5893	19'-4"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"	12433	40'-9 1/2"	12433	40'-9 1/2"		
090 LOW HEAT	11950	3544	11'-7 1/2"	6494	21'-3 5/8"	5944	19'-6"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"	12433	40'-9 1/2"	12433	40'-9 1/2"		
105 LOW HEAT	12680	3544	11'-7 1/2"	6494	21'-3 5/8"	6147	20'-2"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"	12433	40'-9 1/2"	12433	40'-9 1/2"		
075 HIGH HEAT	11914	3544	11'-7 1/2"	6494	21'-3 5/8"	5944	19'-6"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"	12433	40'-9 1/2"	12433	40'-9 1/2"		
090 HIGH HEAT	12124	3544	11'-7 1/2"	6494	21'-3 5/8"	5969	19'-7"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"	12433	40'-9 1/2"	12433	40'-9 1/2"		
105 HIGH HEAT	12854	3544	11'-7 1/2"	6494	21'-3 5/8"	6198	20'-4"	1163	3'-9 13/16"	12049	39'-6 3/8"	12433	40'-9 1/2"	12433	40'-9 1/2"	12433	40'-9 1/2"		

- NOTES:
- DIMENSIONS IN ( ) ARE IN MILLIMETERS.
  - CENTER OF GRAVITY INCLUDES ECONOMIZER. UNIT WEIGHT DOES NOT INCLUDE ECONOMIZER.
  - UNIT CLEARANCES:  
CONTROL BOX TO RESTRICT CONDENSER FANS SIDES - 6'-0"  
ECONOMIZER END - 6'-0" (EXCEPT POWER EXHAUST UNITS 10'-0")  
FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES, CONTACT CARRIER APPLICATION ENGINEERING DEPARTMENT.
  - DOWNSHOT DUCTS DESIGNED TO BE ATTACHED TO ACCESSORY ROOF CURB. IF UNIT IS MOUNTED ON DUNNAGE, IT IS ASSEMBLED TO THE ACCESSORY ROOF CURB. WHEN THE UNIT IS SLAB MOUNTED, PLUG THE FACTORY DRILLED AUXILIARY CONDENSATE DRAIN HOLES. ECONOMIZER SIDE HOODS ARE FOLDED INSIDE UNIT FOR SHIPPING.

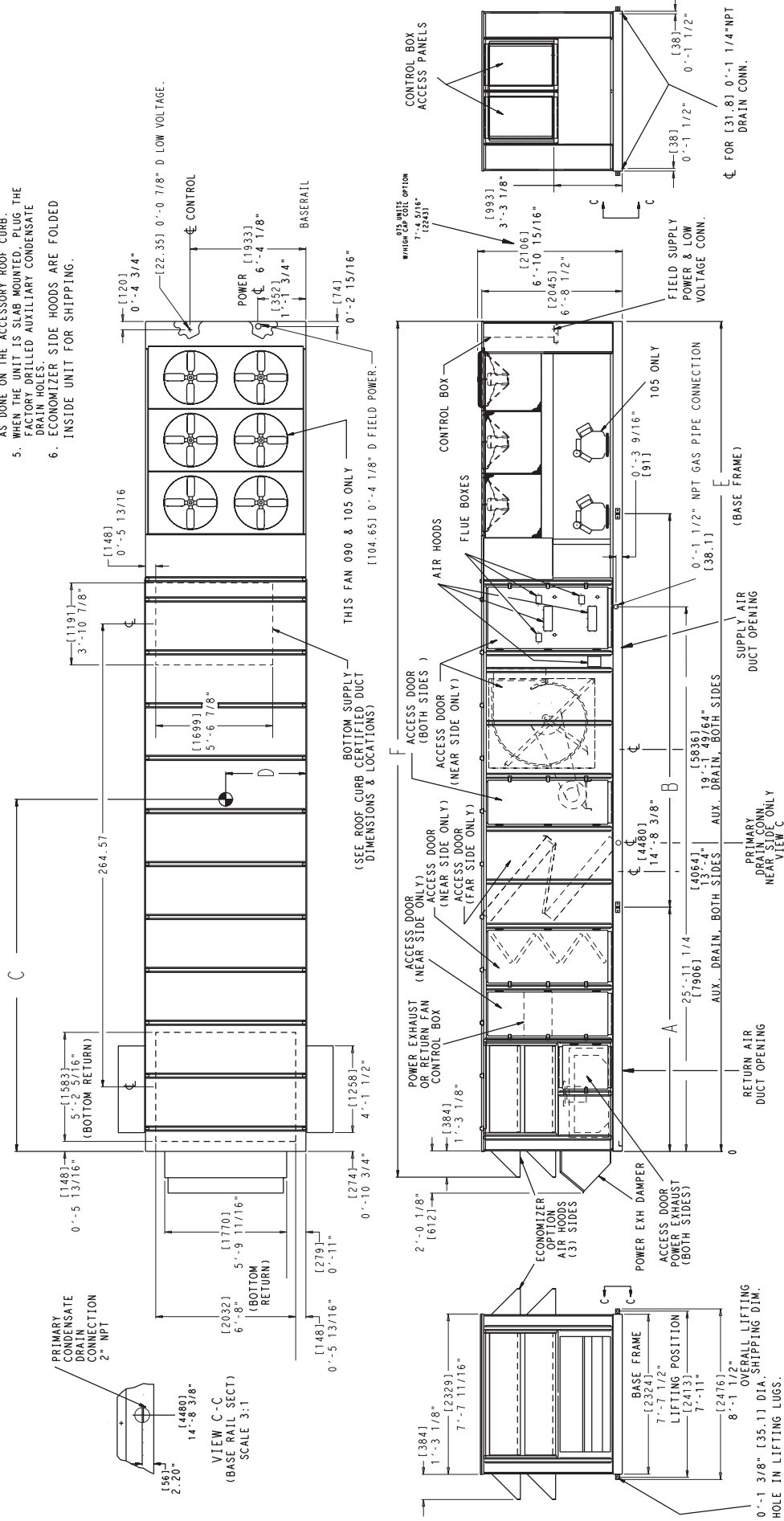
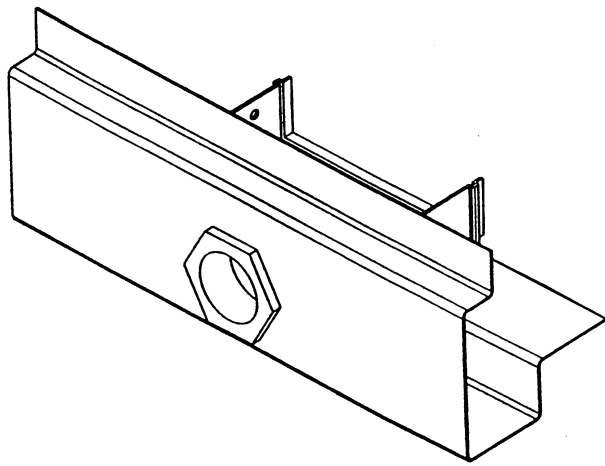
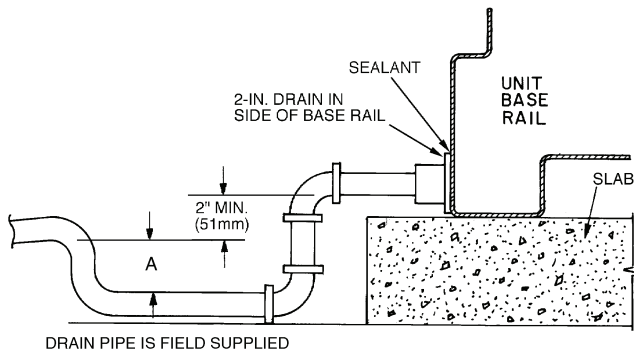


Fig. 23 — Base Unit Dimensional Drawing — 48Z6,Z8075-105 (Units with Return/Exhaust Fan)



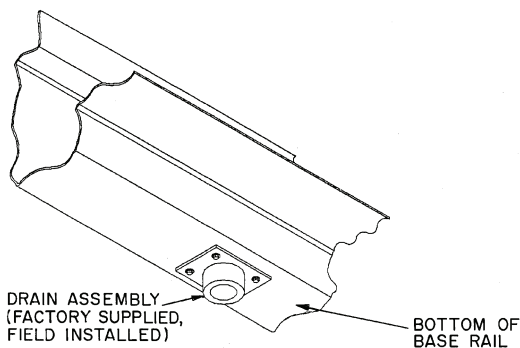


**Fig. 24 — Primary Drain Connection**

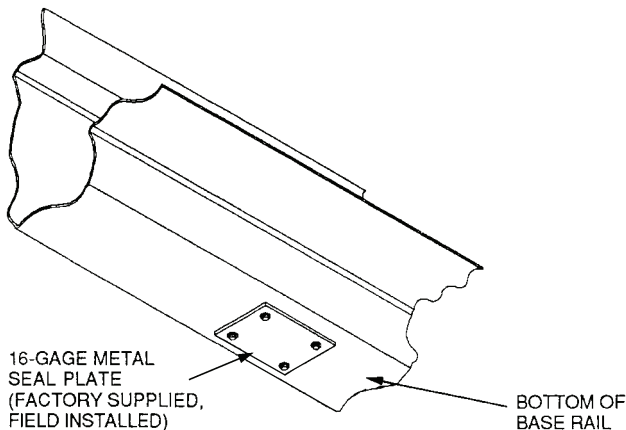


A = 4-in. (102 mm) min — Sizes 030-070  
7-in. (178 mm) min — Sizes 075-105

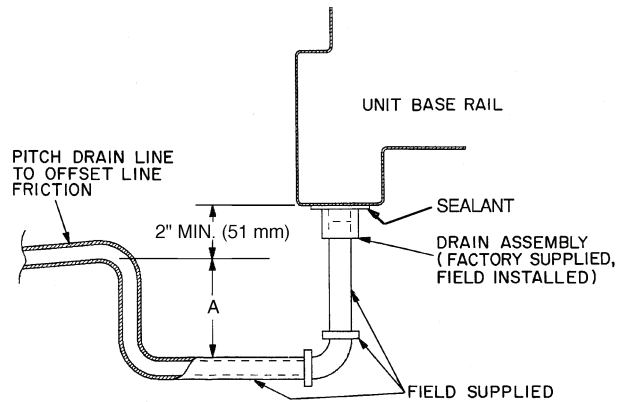
**Fig. 25 — Slab-Mounted Condensate Drain Piping Details**



**Fig. 26 — Secondary Condensate Drain Location**



**Fig. 27 — Secondary Drain Seal Plate Location**



A = 4-in. (102 mm) min — sizes 030-070  
7-in. (178 mm) min — sizes 075-105

**Fig. 28 — Curb-Mounted Condensate Drain Pipe Details**

### Install Outdoor Hoods (48ZG,ZN,Z6,Z8 Units)

UNIT SIZES 030-050

#### 25% Outdoor-Air Hoods (Units without Economizer Option) (Fig. 29)

1. Outdoor-air hoods are shipped bolted to the unit in a shipping position. Remove the 6 screws holding each 25% outdoor air hood shipping cover in place.
2. Remove the holddown screw from each upper corner of each hood.
3. Pivot hoods outward (2 hoods).
4. Install 17 screws around outside of each hood. (Screws are in the fastener package taped to the basepan inside the fan section.)
5. Apply a bead of RTV or similar sealant to corner of each hood at pivot point to prevent water leaks. See Fig. 30.

#### Economizer Hoods (Units with Economizer Option) (Fig. 31 and 32)

1. Remove the 4 screws holding each of the 2 economizer side hoods in place.
2. Pivot hoods outwards (2 hoods).
3. Apply seal strip to vertical flange of hood sides.
4. Install hood sides of hood top using 19 screws (7 each side, 5 top). Screws are in fastener package located with the hood sides and seal strip which is taped inside the unit.
5. Apply a bead of RTV or similar sealant to corners of economizer hoods to prevent water leaks.

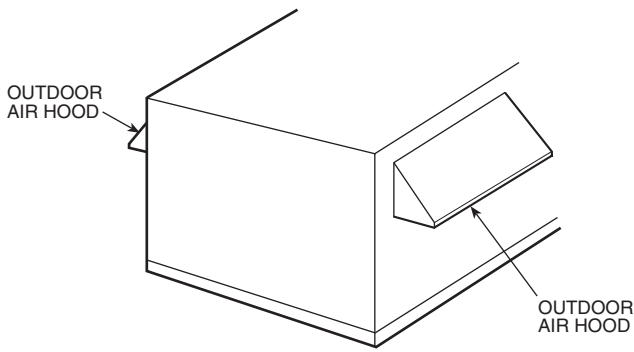
UNIT SIZES 055-105

25% Outdoor-Air Hoods (Fig. 33) — The outdoor-air hoods are factory installed on the 055-105 units.

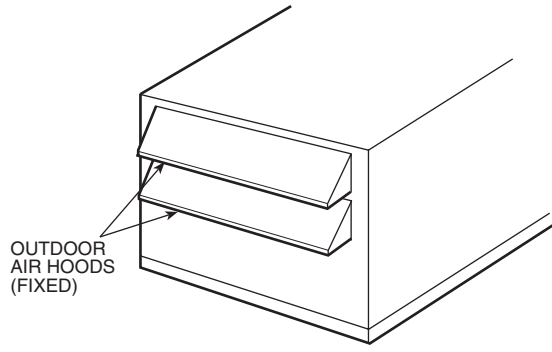
#### Economizer Hoods (Units with Economizer Option) (Fig. 34-36)

1. Remove the 6 screws holding each of the 4 economizer shipping covers in place.
2. Remove the holddown screw from each upper corner of each economizer hood.
3. Pivot hoods outward (4 hoods).
4. Apply seal strip to vertical flange of hood sides.
5. Install 18 screws (5 each side, 6 top, and 2 bottom) around the outside of each hood. (Screws are in the fastener package taped to the basepan inside the fan section.)
6. Apply a bead of RTV or similar sealant to corner of economizer hood at pivot point to prevent water leaks. (See Fig. 30.)

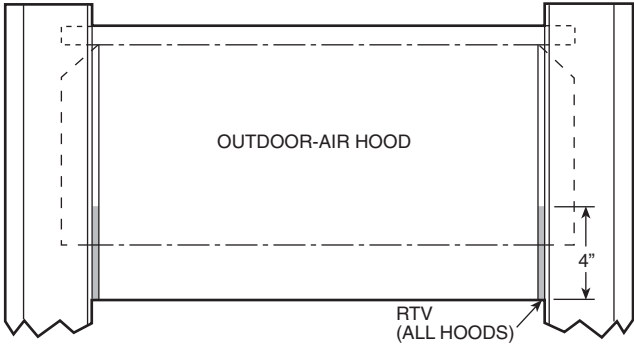




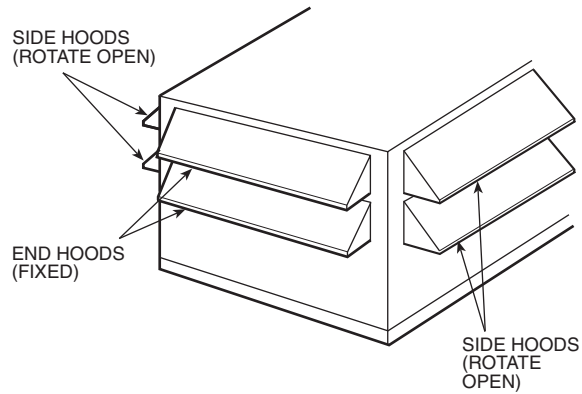
**Fig. 29 — Outdoor Air Hood Installation (Sizes 030-050)**



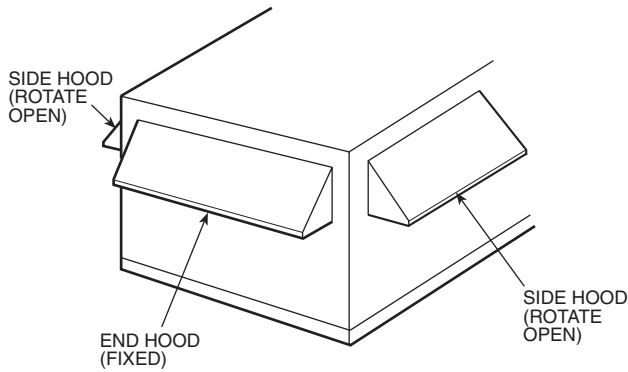
**Fig. 33 — 25% Outdoor-Air Hood Location**



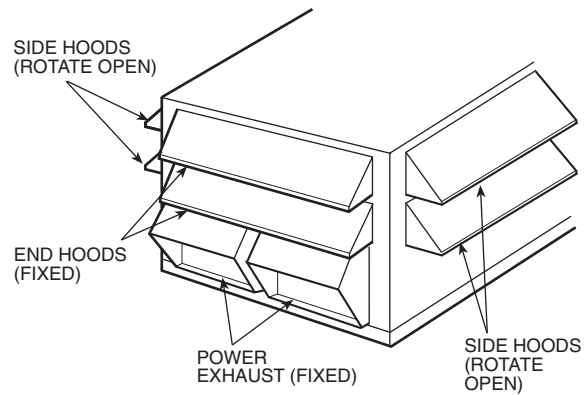
**Fig. 30 — Outdoor-Air and Economizer Hood**



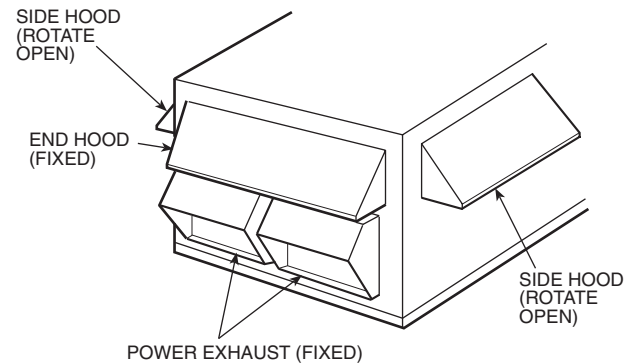
**Fig. 34 — Economizer Outdoor-Air Hood Installation (Sizes 055-105)**



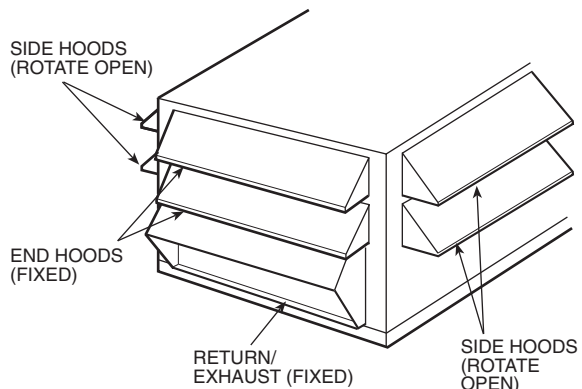
**Fig. 31 — Economizer Outdoor-Air Hood Installation (Sizes 030-050)**



**Fig. 35 — Economizer with Power Exhaust Outdoor-Air Hood Installation (Sizes 055-105)**



**Fig. 32 — Economizer with Power Exhaust Outdoor-Air Hood Installation (Sizes 030-050)**



**Fig. 36 — Economizer with Return/Exhaust Fan Outdoor-Air Hood Installation (48Z6,Z8075-105 Units)**

### Install Economizer Hoods (48ZT,ZW Units) —

The economizer uses a total of 4 outdoor intake hoods, 2 on each side of the unit. See Fig. 37. Two small hoods (one per side) are factory-installed and are pivoted inside the unit chassis for shipment. Two large hoods are shipped in packages located inside the unit. The large hoods (1 on each side) require field assembly and mounting.

**INSTALL SMALL HOODS** — To install the small economizer hoods, perform the following procedure:

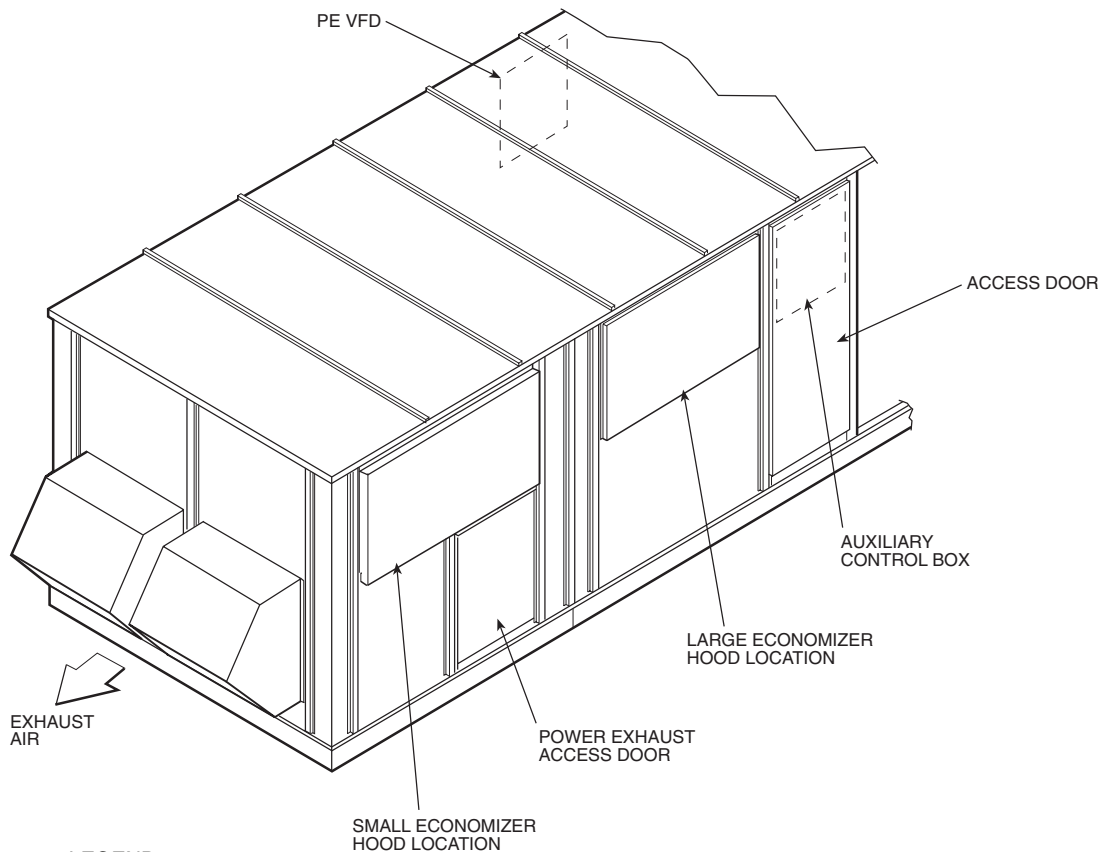
1. Remove the 10 screws holding each of the small economizer hood shipping covers in place.
2. Pivot hoods outward. (There are a total of 2 hoods.)
3. Apply seal strip to vertical flange of hood sides.
4. Install 15 screws (4 each side, 7 across top) around the outside of each hood. Screws are in the fastener package taped to the basepan inside the fan section.
5. Apply a bead of RTV or similar sealant to corner of economizer hood at pivot point to prevent water leaks. (See Fig. 30.)

**INSTALL LARGE HOODS** — Large hoods are shipped disassembled in the economizer section of the unit behind the large economizer hood shipping cover. See Fig. 38 for assembly details for large economizer hoods. To install the large economizer hoods, perform the following procedure:

1. Remove the 17 screws holding each of the large economizer hood shipping covers in place.
2. Remove the packages containing the disassembled large economizer hoods (total of 2 packages). Each package

contains the following: left hood side, right hood side, hood top, hood front, top filter flange, side filter flanges (4), bottom support, front support, filters (6), filter clips (9), seal strip, fasteners.

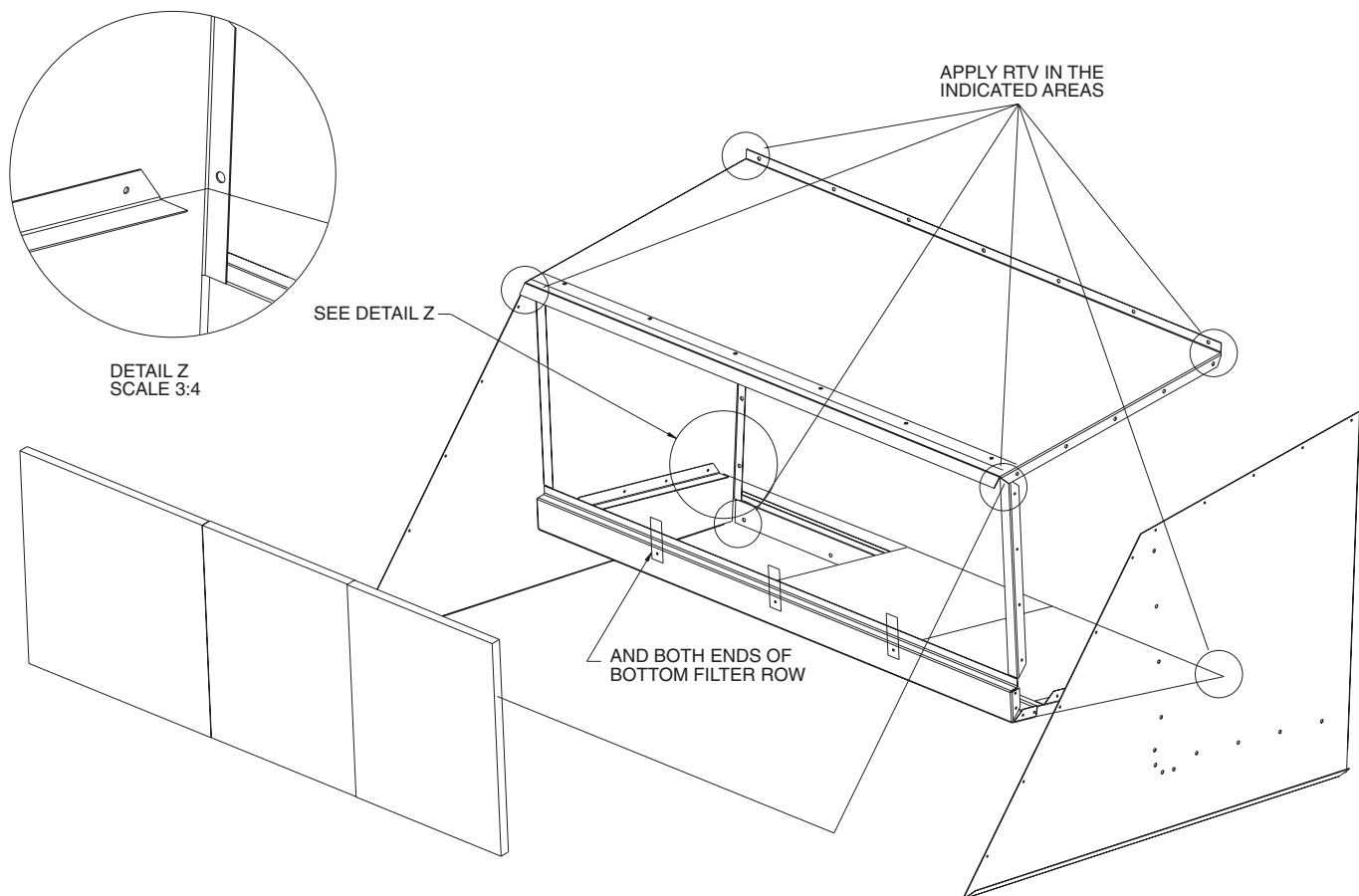
3. Place seal strip on backside of bottom support along entire length of support, covering 6 clearance holes.
4. Attach bottom support piece to unit. Be sure seal strip is between bottom support and panel on unit.
5. Place seal strip on  $\frac{3}{4}$ -in. flange on both the left and right hood side.
6. Attach the side filter flanges to the left and right hood sides, 2 on each hood side.
7. Attach left and right hood sides to unit. Be sure seal strip is between hood side and unit.
8. Place seal strip on  $\frac{3}{4}$ -in. flange on hood top.
9. Attach top filter flange to hood top.
10. Attach top hood to unit and to hood sides. Be sure seal strip is between hood top and unit.
11. Attach front support between left and right hood sides.
12. Place seal strip on all filter flanges.
13. Attach filter clips to front and bottom supports.
14. Install filters and filter clips. Filters are held in place with filter clips.
15. Attach hood front to hood top and sides.
16. Apply RTV or similar sealant to 6 places shown in Fig. 38.



#### LEGEND

PE VFD — Power Exhaust Variable Frequency Drive

**Fig. 37 — Economizer Hood Location — 48ZT,ZW Units**



**Fig. 38 — Large Economizer Hood Assembly**

### Field Wire Routing

UNIT SIZES 030-050 — Field wiring can be brought into the unit through the basepan and roof curb or through the corner post in the side of the unit next to the control box.

A 3<sup>1</sup>/<sub>2</sub>-in. NPT coupling for field power and a 3<sup>4</sup>/<sub>4</sub>-in. NPT coupling for 24 v control wiring are provided in the basepan. There are two 4<sup>5</sup>/<sub>8</sub>-in. knockouts in the corner post for field power wiring.

If field power wiring is brought through the roof curb, route wiring out through one of the 4<sup>5</sup>/<sub>8</sub>-in. knockouts to the field-supplied disconnect and then back into the unit through the other knockout. See Fig. 39 for recommended disconnect location.

If power wiring is brought through the side of the unit, route wiring from field-supplied disconnect through top 4<sup>5</sup>/<sub>8</sub>-in. knockouts into unit.

If control wiring is to be brought in through the side of the unit, a 7<sup>8</sup>/<sub>8</sub>-in. diameter hole must be drilled in the corner post next to the control box.

UNIT SIZES 055-105 — Field wiring is brought into the unit through the bottom of the control box. Wiring can be brought through the roof curb through field-supplied watertight connections. See Fig. 40 and 41.

A 4<sup>5</sup>/<sub>32</sub>-in. hole for field power wiring and a 7<sup>8</sup>/<sub>8</sub>-in. hole for 24 v control wiring are provided in the bottom of the control box. Field-supplied couplings must be used when routing wiring into the control box.

See Fig. 40 and 41 for recommended disconnect location.

### Field Electrical Connections

**IMPORTANT:** The 48ZN,ZW,Z8 units generate, use, and can radiate radio frequency energy. If units are not installed and used in accordance with these instructions, they may cause radio interference. They have been tested and found to comply with limits of a Class A computing device as defined by FCC (Federal Communications Commission) regulations, Subpart J of Part 15, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

**POWER WIRING** — Units are factory wired for the voltage shown on the unit nameplate. The main terminal block is suitable for use with aluminum or copper wires. Maximum wire size varies according to disconnect size.

**Units Without Factory-Installed Disconnect** — When installing units, provide a disconnect per NEC (National Electrical Code) of adequate size (MOCP [Maximum Overcurrent Protection] of unit is on the informative plate). 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. 42 for power wiring connections to the unit power terminal block and equipment ground. Maximum wire size is two (2) 500 MCM (thousand circular mils) conductors per pole.

**Units with Factory-Installed Disconnect** — The factory-installed disconnect is an interlocking, door-type. The disconnect handle locks the door when it is in the ON position. The disconnect handle must be in the OFF position to open the control box door. The disconnect is located in a separate control box behind the control box door for all units. See Fig. 43.

All field wiring must comply with NEC and all local codes. Wire must be sized based on MCA (Minimum Circuit Amps) on the unit informative plate. See Fig. 44 for power wiring connections to the unit disconnect and equipment ground.

DISCONNECT SIZE	QUANTITY...MAXIMUM WIRE SIZE (MCM)
200 Amps	1...300
400 Amps	1...600
600 Amps	2...600

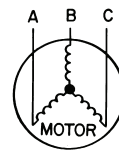
**Operating Voltage** — Operating voltage to the compressor must be within the voltage range indicated on the unit nameplate. Voltages between phases must be balanced within 2%, and the current must be balanced within 10%. See Tables 7-16 for unit electrical data.

Use the following formula to determine the percentage of voltage imbalance.

Voltage Imbalance

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

Example: Supply voltage is 460-3-60.



$$AB = 452 \text{ v}$$

$$BC = 464 \text{ v}$$

$$AC = 455 \text{ v}$$

$$\text{Average Voltage} = \frac{455 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage:

$$(AB) 457 - 452 = 5 \text{ v}$$

$$(BC) 464 - 457 = 7 \text{ v}$$

$$(AC) 457 - 455 = 2 \text{ v}$$

Maximum deviation is 7 v.

Determine percent voltage imbalance:

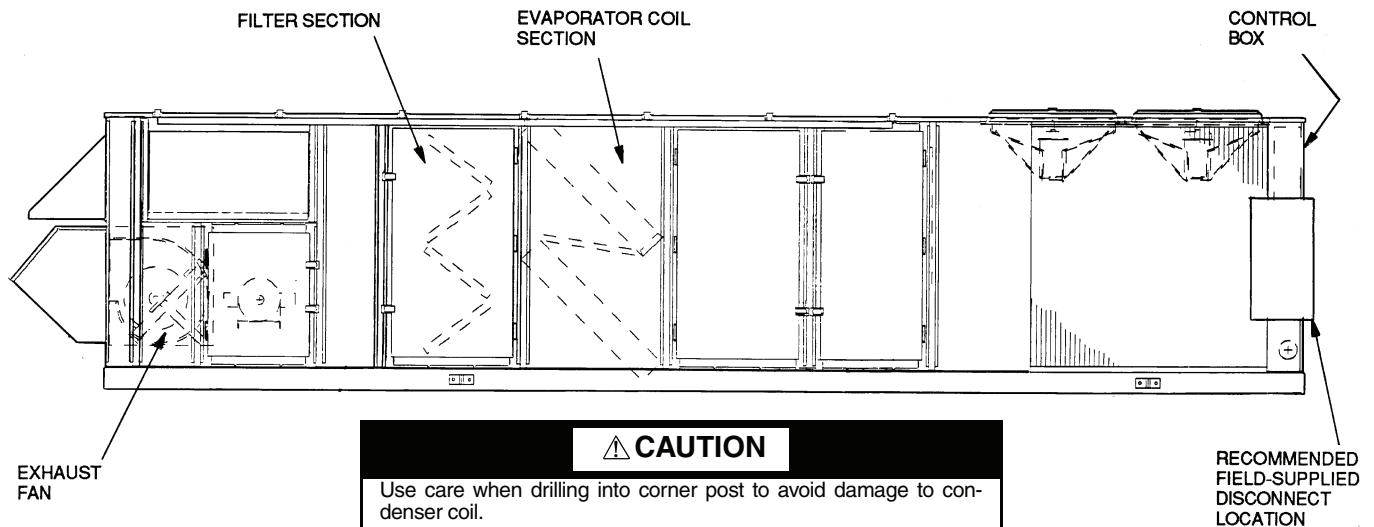
$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

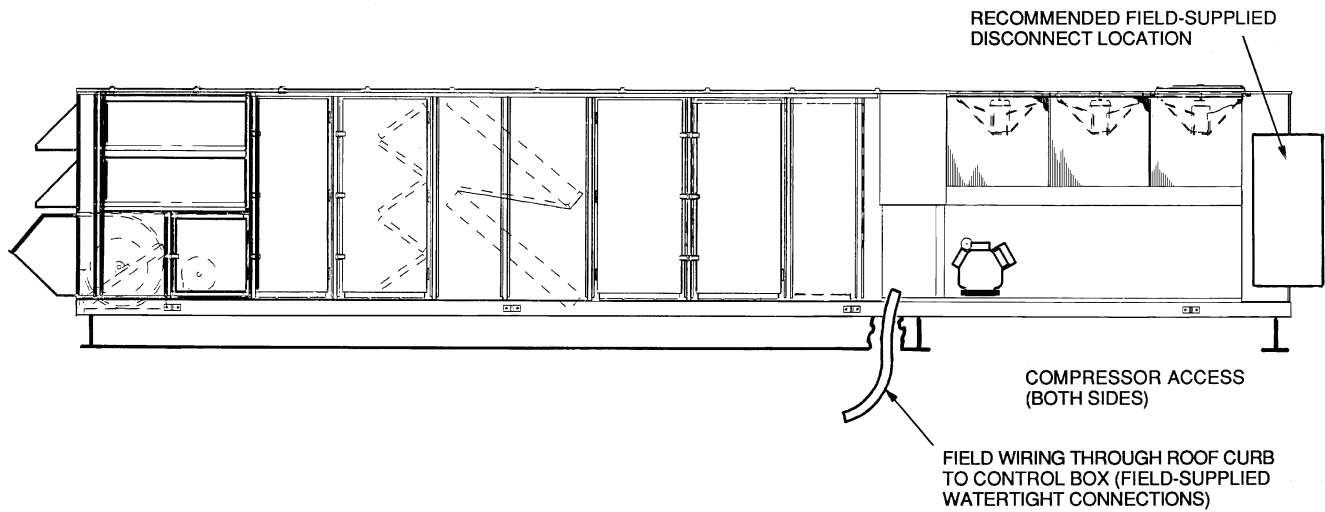
This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

**IMPORTANT:** If the supply voltage phase imbalance is more than 2%, contact local utility immediately.

Unit failure as a result of operation on improper line voltage or excessive phase imbalance constitutes abuse and may cause damage to electrical components.

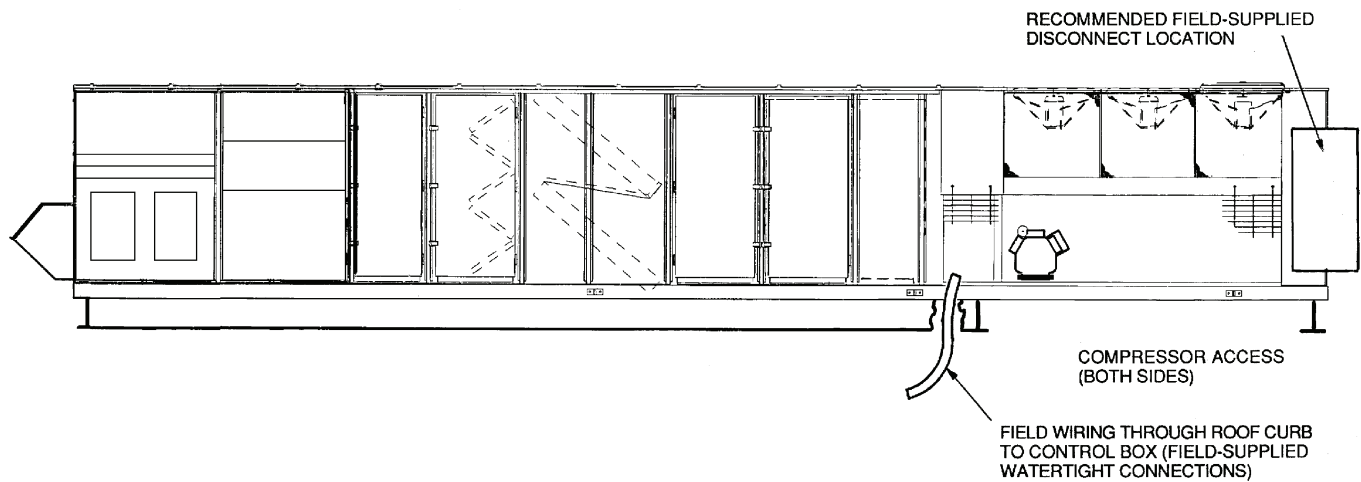


**Fig. 39 — Disconnect Location — Size 030-050 Units**



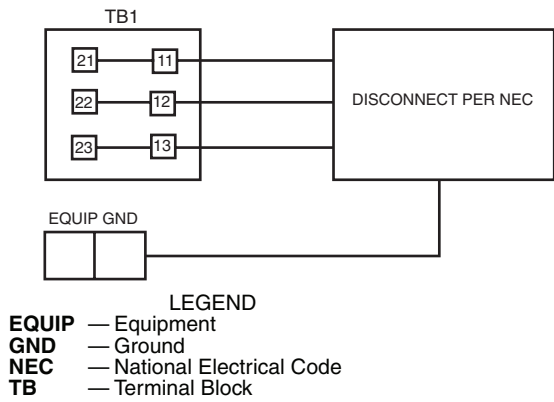
**⚠ CAUTION**  
 Use care when drilling into corner post to avoid damage to condenser coil.

**Fig. 40 — Disconnect Location — 48ZG,ZN055-105 and 48Z6,Z8075-105 Units**

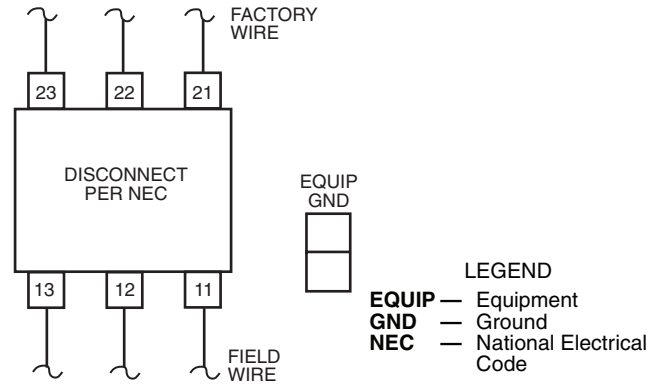


**⚠ CAUTION**  
 Use care when drilling into corner post to avoid damage to condenser coil.

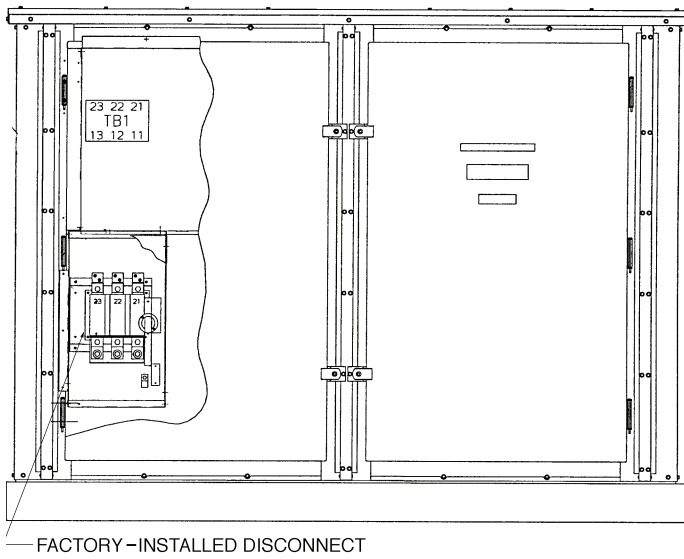
**Fig. 41 — Disconnect Location — 48ZT,ZW075-105 Units**



**Fig. 42 — Field Power Wiring Connections**



**Fig. 44 — Field Power Wiring Connections for Factory-Installed Disconnect**



**Fig. 43 — Factory-Installed Disconnect Location**

**Table 7 — Electrical Data, 48ZG,ZN030 Units**

NOMINAL VOLTAGE (3 Ph 60 Hz)	VOLTAGE RANGE	COMPRESSOR				OFM		IFM		EXHAUST FAN		POWER SUPPLY	
		No. 1		No. 2						Total Hp	Total FLA	MCA	MOCP
		RLA	LRA	RLA	LRA	Qty	Total FLA	Hp	FLA				
208/230	187-254	53.2	266	53.2	266	2	6.6 (ea)	7 1/2	24.2/22.0	—	—	157.1/154.9	200/200
										6	21.2/19.2	178.3/174.1	225/225
										10	33.4/30.4	190.5/185.3	225/225
										15	48.4/44.0	205.5/198.9	250/250
										20	62.0/56.0	220.8/211.6	250/250
										—	—	163.7/160.9	200/200
										6	21.2/19.2	184.9/180.1	225/225
										10	33.4/30.4	197.1/191.3	250/250
										15	48.4/44.0	212.1/204.9	250/250
										20	62.0/56.0	227.4/217.6	250/250
										—	—	179.1/174.9	225/225
										6	21.2/19.2	184.9/180.1	250/225
										10	33.4/30.4	197.1/191.3	250/250
										15	48.4/44.0	212.1/204.9	250/250
										20	62.0/56.0	227.4/217.6	300/250
										—	—	193.9/187.1	250/225
										6	21.2/19.2	215.1/206.3	250/250
										10	33.4/30.4	227.3/217.5	250/250
										15	48.4/44.0	242.3/231.1	300/250
										20	62.0/56.0	256.0/243.6	300/250
460	414-508	28.8	120	28.8	120	2	3.3 (ea)	7 1/2	11.0	—	—	82.4	110
										6	9.6	92.0	110
										10	15.2	97.6	125
										15	22.0	104.4	125
										20	28.0	110.4	125
										—	—	85.4	110
										6	9.6	95.0	110
										10	15.2	100.6	125
										15	22.0	107.4	125
										20	28.0	113.4	125
										—	—	92.4	110
										6	9.6	102.0	125
										10	15.2	107.6	125
										15	22.0	114.4	125
										20	28.0	120.4	125
										—	—	98.4	125
										6	9.6	108.0	125
										10	15.2	113.6	125
										15	22.0	120.4	125
										20	28.0	126.4	150
575	518-632	23.1	96	23.1	96	2	2.4 (ea)	7 1/2	9.0	—	—	65.8	80
										6	7.8	73.6	90
										10	12.2	78.0	100
										15	18.0	83.8	100
										20	22.0	87.8	110
										—	—	67.8	90
										6	7.8	75.6	90
										10	12.2	80.0	100
										15	18.0	85.8	100
										20	22.0	89.8	110
										—	—	73.8	90
										6	7.8	81.6	100
										10	12.2	86.0	100
										15	18.0	91.8	110
										20	22.0	95.8	110
										—	—	78.8	100
										6	7.8	86.6	100
										10	12.2	91.0	110
										15	18.0	96.8	110
										20	22.0	100.8	110
575	518-632	23.1	96	23.1	96	2	2.4 (ea)	25	27.0	—	—	84.8	110
										6	7.8	92.6	110
										10	12.2	97.0	110
										15	18.0	102.8	125
										20	22.0	106.8	125

**LEGEND**

- FLA — Full Load Amps
- Hp — Nominal Horsepower
- IFM — Indoor (Supply) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps

NOTE: Units use 1 (low heat) or 2 (high heat) combustion fan motors rated at 0.3 FLA each.





**Table 8 — Electrical Data, 48ZG,ZN035 Units**

NOMINAL VOLTAGE (3 Ph 60 Hz)	VOLTAGE RANGE	COMPRESSOR				OFM		IFM		EXHAUST FAN		POWER SUPPLY											
		No. 1		No. 2		Qty	Total FLA	Hp	FLA	Total Hp	Total FLA	MCA	MOCP										
		RLA	LRA	RLA	LRA																		
208/230	187-254	53.2	266	69.2	345	2	6.6 (ea)	7 1/2	24.2/22.0	—	—/—	177.1/174.9	225/225										
										6	21.2/19.2	198.3/194.1	250/250										
										10	33.4/30.4	210.5/205.3	250/250										
										15	48.4/44.0	225.5/218.9	250/250										
										20	62.0/56.0	238.7/230.9	300/300										
										10	30.8/28.0	53.2	266	69.2	345	2	6.6 (ea)	10	30.8/28.0	—	—/—	183.7/180.9	250/250
																				6	21.2/19.2	204.9/200.1	250/250
																				10	33.4/30.4	217.1/211.3	250/250
																				15	48.4/44.0	232.1/224.9	300/250
																				20	62.0/56.0	245.3/236.9	300/300
										15	46.2/42.0	53.2	266	69.2	345	2	6.6 (ea)	15	46.2/42.0	—	—/—	199.1/194.9	250/250
																				6	21.2/19.2	220.3/214.1	250/250
																				10	33.4/30.4	232.5/225.3	300/250
																				15	48.4/44.0	247.5/238.9	300/300
																				20	62.0/56.0	260.7/250.9	300/300
										20	59.4/54.0	53.2	266	69.2	345	2	6.6 (ea)	20	59.4/54.0	—	—/—	212.3/206.9	250/250
																				6	21.2/19.2	233.5/226.1	300/250
																				10	33.4/30.4	245.7/237.3	300/300
																				15	48.4/44.0	260.7/250.9	300/300
																				20	62.0/56.0	273.9/262.9	300/300
25	74.8/68.0	53.2	266	69.2	345	2	6.6 (ea)	25	74.8/68.0	—	—/—	229.1/220.9	300/250										
										6	21.2/19.2	250.3/240.1	300/300										
										10	33.4/30.4	262.5/251.3	300/300										
										15	48.4/44.0	277.5/264.9	350/300										
										20	62.0/56.0	290.7/276.9	350/300										
460	414-508	28.8	120	34.6	173	2	3.3 (ea)	7 1/2	11.0	—	—	89.7	110										
										6	9.6	99.3	125										
										10	15.2	104.9	125										
										15	22.0	111.7	125										
										20	28.0	117.7	150										
										10	14.0	28.8	120	34.6	173	2	3.3 (ea)	10	14.0	—	—	92.7	125
																				6	9.6	102.3	125
																				10	15.2	107.9	125
																				15	22.0	114.7	125
																				20	28.0	120.7	150
										15	21.0	28.8	120	34.6	173	2	3.3 (ea)	15	21.0	—	—	99.7	125
																				6	9.6	109.3	125
																				10	15.2	114.9	125
																				15	22.0	121.7	150
																				20	28.0	127.7	150
										20	27.0	28.8	120	34.6	173	2	3.3 (ea)	20	27.0	—	—	105.7	125
																				6	9.6	115.3	125
																				10	15.2	120.9	150
																				15	22.0	127.7	150
																				20	28.0	133.7	150
25	34.0	28.8	120	34.6	173	2	3.3 (ea)	25	34.0	—	—	112.7	125										
										6	9.6	122.3	150										
										10	15.2	127.9	150										
										15	22.0	134.7	150										
										20	28.0	140.7	175										
575	518-632	23.1	96	26.7	120	2	2.4 (ea)	7 1/2	9.0	—	—	70.3	90										
										6	7.8	78.1	100										
										10	12.2	82.5	100										
										15	18.0	88.3	110										
										20	22.0	92.3	110										
										10	11.0	23.1	96	26.7	120	2	2.4 (ea)	10	11.0	—	—	72.3	90
																				6	7.8	80.1	100
																				10	12.2	84.5	110
																				15	18.0	90.3	110
																				20	22.0	94.3	110
										15	17.0	23.1	96	26.7	120	2	2.4 (ea)	15	17.0	—	—	78.3	100
																				6	7.8	86.1	110
																				10	12.2	90.5	110
																				15	18.0	96.3	110
																				20	22.0	100.3	125
										20	22.0	23.1	96	26.7	120	2	2.4 (ea)	20	22.0	—	—	83.3	100
																				6	7.8	91.1	110
																				10	12.2	95.5	110
																				15	18.0	101.3	125
																				20	22.0	105.3	125
25	27.0	23.1	96	26.7	120	2	2.4 (ea)	25	27.0	—	—	88.4	110										
										6	7.8	96.2	110										
										10	12.2	100.6	125										
										15	18.0	106.4	125										
										20	22.0	110.4	125										

**LEGEND**

- FLA** — Full Load Amps
- Hp** — Nominal Horsepower
- IFM** — Indoor (Supply) Fan Motor
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps (for wire sizing)
- MOCP** — Maximum Overcurrent Protection
- OFM** — Outdoor (Condenser) Fan Motor
- RLA** — Rated Load Amps

NOTE: Units use 1 (low heat) or 2 (high heat) combustion fan motors rated at 0.3 FLA each.



**Table 9 — Electrical Data, 48ZG,ZN040 Units**

NOMINAL VOLTAGE (3 Ph 60 Hz)	VOLTAGE RANGE	COMPRESSOR				OFM		IFM		EXHAUST FAN		POWER SUPPLY	
		No. 1		No. 2		Qty	Total FLA	Hp	FLA	Total Hp	Total FLA	MCA	MOCP
		RLA	LRA	RLA	LRA								
208/230	187-254	69.2	345	69.2	345	3	6.6 (ea)	7 1/2	24.2/22.0	—	—/—	199.7/197.5	250/250
										6	21.2/19.2	220.9/216.7	250/250
										10	33.4/30.4	233.1/227.9	300/250
										15	48.4/44.0	248.1/241.5	300/300
										20	61.6/56.0	261.3/253.5	300/300
										—	—/—	206.3/203.5	250/250
										6	21.2/19.2	227.5/222.7	250/250
										10	33.4/30.4	239.7/233.9	300/300
										15	48.4/44.0	254.7/247.5	300/300
										20	62.0/56.0	267.9/259.5	300/300
										—	—/—	221.7/217.5	250/250
										6	21.2/19.2	242.9/236.7	300/300
										10	33.4/30.4	255.1/247.9	300/300
										15	48.4/44.0	270.1/261.5	300/300
										20	62.0/56.0	283.3/273.5	350/300
										—	—/—	234.9/229.5	300/250
										6	21.2/19.2	256.1/248.7	300/300
										10	33.4/30.4	268.3/259.9	300/300
										15	48.4/44.0	283.3/273.5	350/300
										20	62.0/56.0	296.5/285.5	350/350
—	—/—	251.7/243.5	300/300										
6	21.2/19.2	272.9/262.7	300/300										
10	33.4/30.4	285.1/273.9	350/300										
15	48.4/44.0	300.1/287.5	350/350										
20	62.0/56.0	313.3/299.5	350/350										
460	414-508	34.6	173	34.6	173	3	3.3 (ea)	7 1/2	11.0	—	—	98.8	125
										6	9.6	108.4	125
										10	15.2	114.0	125
										15	22.0	120.8	150
										20	28.0	126.8	150
										—	—	101.8	125
										6	9.6	111.4	125
										10	15.2	117.0	150
										15	22.0	123.8	150
										20	28.0	129.8	150
										—	—	108.8	125
										6	9.6	118.4	150
										10	15.2	124.0	150
										15	22.0	130.8	150
										20	28.0	136.8	150
										—	—	114.8	125
										6	9.6	124.4	150
										10	15.2	130.0	150
										15	22.0	138.8	150
										20	28.0	142.8	175
—	—	121.8	150										
6	9.6	131.4	150										
10	15.2	137.0	150										
15	22.0	143.8	175										
20	28.0	149.8	175										
—	—	129.1	150										
6	9.6	138.7	175										
10	15.2	144.3	175										
15	22.0	151.1	175										
20	28.0	157.1	175										
575	518-632	26.7	120	26.7	120	3	2.4 (ea)	7 1/2	9.0	—	—	76.3	100
										6	7.8	84.1	110
										10	12.2	88.5	100
										15	18.0	94.3	110
										20	22.0	98.3	110
										—	—	78.3	100
										6	7.8	86.1	110
										10	12.2	90.5	110
										15	18.0	96.3	110
										20	22.0	100.3	125
										—	—	84.3	110
										6	7.8	92.1	110
										10	12.2	96.5	110
										15	18.0	102.3	125
										20	22.0	106.3	125
										—	—	89.3	110
										6	7.8	97.1	110
										10	12.2	101.5	125
										15	18.0	107.3	125
										20	22.0	101.3	125
—	—	94.4	110										
6	7.8	102.2	125										
10	12.2	106.6	125										
15	18.0	112.4	125										
20	22.0	116.4	125										

**LEGEND**

- FLA** — Full Load Amps
- Hp** — Nominal Horsepower
- IFM** — Indoor (Supply) Fan Motor
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps (for wire sizing)
- MOCP** — Maximum Overcurrent Protection
- OFM** — Outdoor (Condenser) Fan Motor
- RLA** — Rated Load Amps

NOTE: Units use 1 (low heat) or 2 (high heat) combustion fan motors rated at 0.3 FLA each.



**Table 10 — Electrical Data, 48ZG,ZN050 Units**

NOMINAL VOLTAGE (3 Ph 60 Hz)	VOLTAGE RANGE	COMPRESSOR				OFM		IFM		EXHAUST FAN		POWER SUPPLY	
		No. 1		No. 2		Qty	Total FLA	Hp	FLA	Total Hp	Total FLA	MCA	MOCP
		RLA	LRA	RLA	LRA								
208/230	187-254	89.7	446	69.2	345	3	6.6 (ea)	7 1/2	24.2/22.0	—	—	225.3/223.1	300/300
										6	21.2/19.2	246.5/242.3	300/300
										10	33.4/30.4	258.7/253.5	300/300
										15	48.4/44.0	273.7/267.1	350/350
										20	61.6/56.0	286.9/279.1	350/350
										6	21.2/19.2	231.9/229.1	300/300
										10	33.4/30.4	253.1/248.3	300/300
										15	48.4/44.0	265.3/259.5	350/300
										20	62.0/56.0	280.3/273.1	350/350
										293.5/285.1	350/350		
										6	21.2/19.2	247.3/243.1	300/300
										10	33.4/30.4	268.5/262.3	350/350
										15	48.4/44.0	280.7/273.5	350/350
										20	62.0/56.0	295.7/287.1	350/350
										308.9/299.1	350/350		
										6	21.2/19.2	260.5/255.1	350/300
										10	33.4/30.4	281.7/274.3	350/350
										15	48.4/44.0	293.9/285.5	350/350
										20	62.0/56.0	308.9/299.1	350/350
										322.1/311.1	400/400		
6	21.2/19.2	275.9/269.1	350/350										
10	33.4/30.4	297.1/288.3	350/350										
15	48.4/44.0	309.3/299.5	350/350										
20	62.0/56.0	324.3/313.1	400/400										
337.5/325.1	400/400												
460	414-508	43.6	223	34.6	173	3	3.3 (ea)	7 1/2	11.0	—	—	110.0	150
										6	9.6	119.6	150
										10	15.2	125.2	150
										15	22.0	132.0	175
										20	28.0	138.0	175
										6	9.6	113.0	150
										10	15.2	122.6	150
										15	22.0	128.2	150
										20	28.0	135.0	175
										141.0	175		
										6	9.6	120.0	150
										10	15.2	129.6	150
										15	22.0	135.2	175
										20	28.0	142.0	175
										148.0	175		
										6	9.6	126.0	150
										10	15.2	135.6	175
										15	22.0	141.2	175
										20	28.0	148.0	175
										154.0	175		
6	9.6	133.0	175										
10	15.2	142.6	175										
15	22.0	148.2	175										
20	28.0	155.0	175										
161.0	200												
6	9.6	139.0	175										
10	15.2	148.6	175										
15	22.0	154.2	175										
20	28.0	161.0	200										
167.0	200												
575	518-632	36.5	164	26.7	120	3	2.4 (ea)	7 1/2	9.0	—	—	88.5	125
										6	7.8	96.3	125
										10	12.2	100.7	125
										15	18.0	106.5	125
										20	22.0	110.5	125
										6	7.8	90.5	125
										10	12.2	98.3	125
										15	18.0	102.7	125
										20	22.0	108.5	125
										112.5	125		
										6	7.8	96.5	125
										10	12.2	104.3	125
										15	18.0	108.7	125
										20	22.0	114.5	150
										118.5	150		
										6	7.8	101.5	125
										10	12.2	109.3	125
										15	18.0	113.7	150
										20	22.0	119.5	150
										123.5	150		
6	7.8	106.5	125										
10	12.2	114.3	150										
15	18.0	118.7	150										
20	22.0	124.5	150										
128.5	150												

**LEGEND**

- FLA** — Full Load Amps
- Hp** — Nominal Horsepower
- IFM** — Indoor (Supply) Fan Motor
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps (for wire sizing)
- MOCP** — Maximum Overcurrent Protection
- OFM** — Outdoor (Condenser) Fan Motor
- RLA** — Rated Load Amps

NOTE: Units use 1 (low heat) or 2 (high heat) combustion fan motors rated at 0.3 FLA each.



**Table 11 — Electrical Data, 48ZG,ZN055 Units**

NOMINAL VOLTAGE (3 Ph 60 Hz)	VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM Total FLA	IFM		BASE UNIT ONLY		EXHAUST FAN		BASE UNIT WITH EXHAUST FAN	
		RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCP	Total Hp	Total FLA	MCA	MOCP
208/230	187-254	108	506	74.4	345	26.4	15	46.2/42	281.6/277.4	350/350	10 15 20	34/30 48/44 62/56	315.0/307.4 330.0/321.4 343.2/333.4	400/400 400/400 450/400
							20	59.4/54	294.8/289.4	400/350	10 15 20	34/30 48/44 62/56	328.2/319.4 343.2/333.4 356.4/345.4	400/400 450/400 450/450
							25	74.8/68	310.2/303.4	400/400	10 15 20	34/30 48/44 62/56	343.6/333.4 358.6/347.4 371.8/359.4	450/400 450/450 450/450
							30	88.0/80	323.4/315.4	400/400	10 15 20	34/30 48/44 62/56	356.8/345.4 371.8/359.4 385.0/371.4	450/450 450/450 450/450
							40	114.4/104	351.5/339.4	450/400	10 15 20	34/30 48/44 62/56	384.9/369.8 399.9/383.4 412.6/395.4	450/450 500/450 500/500
460	414-508	50.6	253	34.6	173	13.2	15	21.0	132.1	175	10 15 20	15.2 22.0 28.0	147.3 154.1 160.1	175 200 200
							20	27.0	138.1	175	10 15 20	15.2 22.0 28.0	153.3 160.1 166.1	200 200 200
							25	34.0	145.1	175	10 15 20	15.2 22.0 28.0	160.3 167.1 173.1	200 200 200
							30	40.0	151.1	200	10 15 20	15.2 22.0 28.0	166.3 173.1 179.1	200 200 225
							40	52.0	163.4	200	10 15 20	15.2 22.0 28.0	178.6 185.4 191.4	225 225 225
575	518-632	39.1	176	28.8	120	9.6	15	17.0	104.3	125	10 15 20	12.2 18.0 22.0	116.5 122.3 126.3	150 150 150
							20	22.0	109.3	125	10 15 20	12.2 18.0 22.0	121.5 127.3 131.3	150 150 150
							25	27.0	114.3	150	10 15 20	12.2 18.0 22.0	126.5 132.3 136.3	150 150 175
							30	32.0	119.3	150	10 15 20	12.2 18.0 22.0	131.5 137.3 141.3	150 175 175
							40	41.0	128.8	150	10 15 20	12.2 18.0 22.0	141.0 146.8 150.8	175 175 175

**LEGEND**

- FLA** — Full Load Amps
- Hp** — Nominal Horsepower
- IFM** — Indoor (Supply) Fan Motor
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps (for wire sizing)
- MOCP** — Maximum Overcurrent Protection
- OFM** — Outdoor (Condenser) Fan Motor
- RLA** — Rated Load Amps

NOTE: Units use 2 (low heat) or 3 (high heat) combustion fan motors rated at 0.3 FLA each.



**Table 12 — Electrical Data, 48ZG,ZN060 Units**

NOMINAL VOLTAGE (3 Ph 60 Hz)	VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM Total FLA	IFM		BASE UNIT ONLY		EXHAUST FAN		BASE UNIT WITH EXHAUST FAN	
		RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCP	Total Hp	Total FLA	MCA	MOCP
208/230	187-254	108	506	108	506	26.4	15	46.2/42	314.9/310.7	400/400	10 15 20	34/30 48/44 62/56	348.3/340.7 363.3/354.7 376.6/366.7	450/400 450/450 450/450
							20	59.4/54	328.1/322.7	400/400	10 15 20	34/30 48/44 62/56	361.5/352.7 376.5/366.7 389.7/378.7	450/450 450/450 450/450
							25	74.8/68	343.5/336.7	450/400	10 15 20	34/30 48/44 62/56	376.9/366.7 391.9/380.7 405.1/392.7	450/450 450/450 500/500
							30	88.0/80	356.7/348.7	450/450	10 15 20	34/30 48/44 62/56	390.1/378.7 405.1/392.7 418.3/404.7	450/450 500/500 500/500
							40	114.4/104	384.8/372.7	450/450	10 15 20	34/30 48/44 62/56	418.2/403.1 433.2/416.7 445.9/428.7	500/500 500/500 500/500
460	414-508	50.6	253	50.6	253	13.2	15	21.0	148.1	175	10 15 20	15.2 22.0 28.0	163.3 170.1 176.1	200 200 200
							20	27.0	154.1	200	10 15 20	15.2 22.0 28.0	169.3 176.1 182.1	200 225 225
							25	34.0	161.1	200	10 15 20	15.2 22.0 28.0	176.3 183.1 189.1	225 225 225
							30	40.0	167.1	200	10 15 20	15.2 22.0 28.0	182.3 189.1 195.1	225 225 225
							40	52.0	179.4	225	10 15 20	15.2 22.0 28.0	194.6 201.4 207.4	225 250 250
575	518-632	39.1	176	39.1	176	9.6	15	17.0	114.6	150	10 15 20	12.2 18.0 22.0	126.8 132.6 136.6	150 150 175
							20	22.0	119.6	150	10 15 20	12.2 18.0 22.0	131.8 137.6 141.6	150 175 175
							25	27.0	124.6	150	10 15 20	12.2 18.0 22.0	136.8 142.6 146.6	175 175 175
							30	32.0	129.6	150	10 15 20	12.2 18.0 22.0	141.8 147.6 151.6	175 175 175
							40	41.0	139.6	175	10 15 20	12.2 18.0 22.0	151.3 157.1 161.1	175 175 200

**LEGEND**

- FLA** — Full Load Amps
- Hp** — Nominal Horsepower
- IFM** — Indoor (Supply) Fan Motor
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps (for wire sizing)
- MOCP** — Maximum Overcurrent Protection
- OFM** — Outdoor (Condenser) Fan Motor
- RLA** — Rated Load Amps

NOTE: Units use 2 (low heat) or 3 (high heat) combustion fan motors rated at 0.3 FLA each.



**Table 13 — Electrical Data, 48ZG,ZN070 Units**

NOMINAL VOLTAGE (3 Ph 60 Hz)	VOLTAGE RANGE	COMPR NO. 1		COMPR NO. 2		OFM Total FLA	IFM		BASE UNIT ONLY		EXHAUST FAN		BASE UNIT WITH EXHAUST FAN	
		RLA	LRA	RLA	LRA		Hp	FLA	MCA	MOCP	Total Hp	Total FLA	MCA	MOCP
208/230	187-254	108	506	142	690	33.0	15	46.2/42	364.8/360.6	500/500	10 15 20	34/30 48/44 62/56	398.2/390.6 413.2/404.6 426.4/416.6	500/500 500/500 500/500
							20	59.4/54	378.0/372.6	500/500	10 15 20	34/30 48/44 62/56	411.4/402.6 426.4/416.6 439.6/428.6	500/500 500/500 500/500
							25	74.8/68	393.4/386.6	500/500	10 15 20	34/30 48/44 62/56	426.8/416.6 441.8/430.6 455.0/442.6	500/500 500/500 500/500
							30	88.0/80	406.6/389.6	500/500	10 15 20	34/30 48/44 62/56	440.0/428.6 455.0/442.6 468.2/454.6	500/500 500/500 600/500
							40	114.4/104.0	433.0/422.6	500/500	10 15 20	34/30 48/44 62/56	466.4/453.0 481.4/466.6 494.1/478.6	600/500 600/600 600/600
460	414-508	50.6	253	65.4	345	16.5	15	21.0	169.9	225	10 15 20	15.2 22.0 28.0	185.1 191.9 197.9	250 250 250
							20	27.0	175.9	225	10 15 20	15.2 22.0 28.0	191.1 197.9 203.9	250 250 250
							25	34.0	182.9	225	10 15 20	15.2 22.0 28.0	198.1 204.9 210.9	250 250 275
							30	40.0	188.9	250	10 15 20	15.2 22.0 28.0	204.1 210.9 216.9	250 275 275
							40	52.0	200.9	250	10 15 20	15.2 22.0 28.0	216.1 222.9 228.9	250 250 250
575	518-632	39.1	176	52.6	276	12.0	15	17.0	133.9	175	10 15 20	12.2 18.0 22.0	146.1 151.9 155.9	175 200 200
							20	22.0	138.9	175	10 15 20	12.2 18.0 22.0	151.1 156.9 160.9	200 200 200
							25	27.0	143.9	175	10 15 20	12.2 18.0 22.0	156.1 161.9 165.9	200 200 200
							30	32.0	148.9	200	10 15 20	12.2 18.0 22.0	161.1 166.9 170.9	200 200 200
							40	41.0	157.9	200	10 15 20	12.2 18.0 22.0	170.1 175.9 179.9	200 225 225

**LEGEND**

- FLA** — Full Load Amps
- Hp** — Nominal Horsepower
- IFM** — Indoor (Supply) Fan Motor
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps (for wire sizing)
- MOCP** — Maximum Overcurrent Protection
- OFM** — Outdoor (Condenser) Fan Motor
- RLA** — Rated Load Amps

NOTE: Units use 2 (low heat) or 3 (high heat) combustion fan motors rated at 0.3 FLA each.



**Table 14 — Electrical Data — 48ZG,ZN075-105 Units**

UNIT SIZE	NOMINAL VOLTAGE (3 Ph 60 Hz)	VOLTAGE RANGE	COMPRESSOR								OFM Total FLA	IFM		BASE UNIT ONLY		OPTIONAL POWER EXHAUST FAN		BASE UNIT WITH EXHAUST FAN	
			No. 1		No. 2		No. 3		No. 4			Hp	FLA	MCA	MOCP	Total Hp	Total FLA	MCA	MOCP
			RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA		RLA	LRA						
075	460	414-508	50.6	253	65.4	345	—	—	—	—	16.5	30	40.0	188.9	250	10	15.2	204.1	250
																15	22.0	210.9	250
																20	28.0	216.9	250
												40	52.0	200.9	250	10	15.2	216.1	250
																15	22.0	222.9	250
																20	28.0	228.9	250
												50	65.0	213.9	250	10	15.2	229.1	250
																15	22.0	235.9	300
																20	28.0	241.9	300
												60	77.0	228.8	300	10	15.2	244.0	300
																15	22.0	250.8	300
																20	28.0	256.8	300
												75	96.0	252.5	300	10	15.2	267.7	300
																15	22.0	274.5	350
																20	28.0	280.5	350
090	460	414-508	65.4	345	65.4	345	—	—	—	—	19.8	30	40.0	207.0	250	10	15.2	222.2	350
																15	22.0	229.0	250
																20	28.0	235.0	300
												40	52.0	219.0	250	10	15.2	234.2	250
																15	22.0	241.0	300
																20	28.0	247.0	300
												50	65.0	232.0	250	10	15.2	247.2	300
																15	22.0	254.0	300
																20	28.0	260.0	300
												60	77.0	246.9	300	10	15.2	262.1	300
																15	22.0	268.9	300
																20	28.0	274.9	300
												75	96.0	270.6	350	10	15.2	285.8	350
																15	22.0	292.6	350
																20	28.0	298.6	350
105	460	414-508	50.6	253	34.6	173	50.6	253	34.6	173	19.8	30	40.0	242.9	250	10	15.2	258.1	300
																15	22.0	264.9	300
																20	28.0	270.9	300
												40	52.0	255.2	300	10	15.2	270.4	300
																15	22.0	277.2	300
																20	28.0	283.2	300
												50	65.0	271.5	300	10	15.2	286.7	350
																15	22.0	293.5	350
																20	28.0	299.5	350
												60	77.0	286.5	350	10	15.2	301.7	350
																15	22.0	308.5	350
																20	28.0	314.5	350
												75	96.0	310.2	400	10	15.2	325.4	400
																15	22.0	332.2	400
																20	28.0	338.2	400

**LEGEND**

- FLA** — Full Load Amps
- Hp** — Nominal Horsepower
- IFM** — Indoor (Supply) Fan Motor
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps (for wire sizing)
- MOCP** — Maximum Overcurrent Protection
- OFM** — Outdoor (Condenser) Fan Motor
- RLA** — Rated Load Amps



NOTE: Units use 2 (low heat) or 3 (high heat) combustion fan motors rated at 460 v, single-phase, 60 Hertz and 0.3 FLA each.



**Table 15 — Electrical Data — 48Z6,Z8075-105 Units**

UNIT SIZE	VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR								CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		RETURN/ EXHAUST FAN		POWER SUPPLY	
				No. 1		No. 2		No. 3		No. 4						Hp	FLA (total)		
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA	Qty	FLA	Hp	FLA			Hp	FLA (total)
075	460	414	508	50.6	253	65.4	345	—	—	—	—	5	3.3 (ea)	30	40.0	20	27	215.9	250
																25	34	222.9	250
																30	40	228.9	250
																40	52	240.9	300
														40	52.0	20	27	227.9	250
																25	34	234.9	300
																30	40	240.9	300
																40	52	252.9	300
														50	65.0	20	27	240.9	300
																25	34	247.9	300
																30	40	253.9	300
																40	52	265.9	300
														60	77.0	20	27	255.8	300
																25	34	262.8	300
																30	40	268.8	300
																40	52	280.8	350
														75	96.0	20	27	279.5	350
																25	34	286.5	350
																30	40	292.5	350
																40	52	304.5	400
090	460	414	508	65.4	345	65.4	345	—	—	—	—	6	3.3 (ea)	30	40.0	20	27	234.0	250
																25	34	241.0	300
																30	40	247.0	300
																40	52	259.0	300
														40	52.0	20	27	246.0	300
																25	34	253.0	300
																30	40	259.0	300
																40	52	271.0	300
														50	65.0	20	27	259.0	300
																25	34	266.0	300
																30	40	272.0	300
																40	52	284.0	300
														60	77.0	20	27	273.9	350
																25	34	280.9	350
																30	40	286.9	350
																40	52	298.9	350
														75	96.0	20	27	297.6	350
																25	34	304.6	400
																30	40	310.6	400
																40	52	322.6	400
105	460	414	508	50.6	253	50.6	253	34.6	173	34.6	173	6	3.3 (ea)	30	40.0	20	27	269.9	300
																25	34	276.9	300
																30	40	282.9	300
																40	52	294.9	300
														40	52.0	20	27	282.2	300
																25	34	289.2	300
																30	40	295.2	300
																40	52	307.2	350
														50	65.0	20	27	298.5	350
																25	34	305.5	350
																30	40	311.5	350
																40	52	323.5	350
														60	77.0	20	27	313.5	350
																25	34	320.5	350
																30	40	326.5	400
																40	52	338.5	400
														75	96.0	20	27	337.2	400
																25	34	344.2	400
																30	40	350.2	400
																40	52	362.2	450

**LEGEND**

- FLA — Full Load Amps
- Hp — Nominal Horsepower
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- RLA — Rated Load Amps



NOTE: Units use 2 (low heat) or 3 (high heat) combustion fan motors rated at 460 v, single-phase, 60 Hertz and 0.3 FLA each.

Table 16 — Electrical Data — 48ZT,ZW075-105 Units

UNIT SIZE	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE	COMPRESSOR								OFM Total FLA	IFM			EXHAUST FAN		BASE UNIT WITH EXHAUST FAN			
			No. 1		No. 2		No. 3		No. 4			Hp	FLA	LRA	Total Hp	Total FLA	MCA	MOCP		
			RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA										
075	460	414-508	50.6	253	65.4	345	—	—	—	—	16.5	30	40.0	230	20	28	216.9	250		
															30	42	230.9	250		
															40	54	242.9	300		
															50	68	256.9	300		
															60	80	268.9	300		
			40	52.0	304	—	—	—	—	—	—	—	16.5	40	52.0	304	20	28	228.9	250
																	30	42	242.9	300
																	40	54	254.9	300
			50	65.0	370	—	—	—	—	—	—	—	16.5	50	65.0	370	20	28	241.9	300
																	30	42	255.9	300
																	40	54	267.9	300
			60	77.0	453	—	—	—	—	—	—	—	16.5	60	77.0	453	20	28	256.8	300
	30	42															270.8	300		
	40	54															282.8	350		
	75	96.0	—	—	—	—	—	—	—	—	16.5	75	96.0	—	20	28	280.5	350		
															30	42	294.5	350		
															40	54	306.5	400		
	575	518-632	518-632	39.1	176	52.6	276	—	—	—	—	12.0	30	32.0	—	20	22	170.9	200	
																30	34	182.9	225	
																40	44	192.9	225	
50																54	202.9	250		
40				41.0	—	—	—	—	—	—	—	—	12.0	40	41.0	—	20	22	179.9	225
																	30	34	191.9	225
																	40	44	201.9	250
50				52.0	—	—	—	—	—	—	—	—	12.0	50	52.0	—	20	22	190.9	225
																	30	34	202.9	250
																	40	44	212.9	250
60				62.0	—	—	—	—	—	—	—	—	12.0	60	62.0	—	20	22	203.2	250
																	30	34	215.2	250
	40	44	225.2														250			
090	460	414-508	65.4	345	65.4	345	—	—	—	—	19.8	30	40.0	230	20	28	235.0	300		
															30	42	249.0	300		
															40	54	261.0	300		
															50	68	275.0	300		
															60	80	287.0	350		
			40	52.0	304	—	—	—	—	—	—	—	19.8	40	52.0	304	20	28	247.0	300
																	30	42	261.0	300
																	40	54	273.0	300
			50	65.0	370	—	—	—	—	—	—	—	19.8	50	65.0	370	20	28	260.0	300
																	30	42	274.0	300
																	40	54	286.0	350
			60	77.0	453	—	—	—	—	—	—	—	19.8	60	77.0	453	20	28	274.9	350
30	42	288.9															350			
40	54	300.9															350			
75	96.0	—	—	—	—	—	—	—	—	19.8	75	96.0	—	20	28	298.6	350			
														30	42	312.6	400			
														40	54	324.6	400			
60	77.0	453	—	—	—	—	—	—	—	19.8	60	77.0	453	50	68	300.0	350			
														60	80	312.0	350			
														60	80	312.0	350			
50	65.0	370	—	—	—	—	—	—	—	19.8	50	65.0	370	50	68	300.0	350			
														60	80	312.0	350			
														60	80	312.0	350			
40	52.0	304	—	—	—	—	—	—	—	19.8	40	52.0	304	50	68	300.0	350			
														60	80	312.0	350			
														60	80	312.0	350			
30	40.0	230	—	—	—	—	—	—	—	19.8	30	40.0	230	50	68	300.0	350			
														60	80	312.0	350			
														60	80	312.0	350			

Table 16 — Electrical Data — 48ZT,ZW075-105 Units (cont)

UNIT SIZE	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE	COMPRESSOR								OFM Total FLA	IFM			EXHAUST FAN		BASE UNIT WITH EXHAUST FAN	
			No. 1		No. 2		No. 3		No. 4			Hp	FLA	LRA	Total Hp	Total FLA	MCA	MOCP
			RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA								
090	575	518-632	52.6	276	52.6	276	—	—	—	—	14.4	30	32.0	—	20	22	186.8	225
															30	34	198.8	250
															40	44	208.8	250
															50	54	218.8	250
															60	64	228.8	250
												40	41.0	—	20	22	195.8	225
															30	34	207.8	250
															40	44	217.8	250
												50	52.0	—	50	54	227.8	250
															50	54	238.8	250
															60	64	248.8	300
												60	62.0	—	20	22	219.1	250
30	34	231.1	250															
40	44	241.1	300															
50	54	251.1	300															
60	64	261.1	300															
105	460	414-508	50.6	253	34.6	173	50.6	253	34.6	173	19.8	30	40.0	230	20	28	270.9	300
															30	42	284.9	300
															40	54	296.9	300
															50	68	310.9	350
															60	80	322.9	350
												40	52.0	304	20	28	283.2	300
															30	42	297.2	300
															40	54	309.2	350
												50	65.0	370	50	68	323.2	350
															50	68	339.5	400
															60	80	351.5	400
												60	77.0	453	20	28	314.5	350
	30	42	328.5	400														
	40	54	340.5	400														
	50	68	354.5	400														
	60	80	366.5	400														
	75	96.0	—	20	28	338.2	400											
				30	42	352.2	400											
				40	54	364.2	450											
				50	68	378.2	450											
				60	80	390.2	450											
				30	32.0	—	20	22	209.8	225								
							30	34	221.8	250								
							40	44	231.8	250								
50							54	241.8	250									
60	64	251.8	300															
40	41.0	—	20	22	219.3	250												
			30	34	231.3	250												
			40	44	241.3	250												
			50	54	251.3	300												
			60	64	261.3	300												
50	52.0	—	20	22	233.0	250												
			30	34	245.0	250												
			40	44	255.0	300												
			50	54	265.0	300												
			60	64	275.0	300												
60	62.0	—	20	22	245.5	300												
			30	34	257.5	300												
			40	44	267.5	300												
			50	54	277.5	300												
			60	64	287.5	300												

LEGEND

- FLA — Full Load Amps
- Hp — Nominal Horsepower
- IFM — Indoor (Evaporator) Fan Motor
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps (for wire sizing)
- MOCP — Maximum Overcurrent Protection
- OFM — Outdoor (Condenser) Fan Motor
- RLA — Rated Load Amps

NOTE: Units use 2 (low heat) or 3 (high heat) combustion fan motors rated at 460 v, single-phase, 60 Hertz and 0.3 FLA each.



**Air Pressure Tubing** — Before options such as inlet guide vanes (IGV), variable frequency drive (VFD), and/or modulating power exhaust can operate properly, the pneumatic tubing for pressure sensing must be installed. Use fire-retardant plenum tubing (field-supplied). All control devices use 1/4-in. tubing. Tubing must be run from the appropriate sensing location (in the duct or in the building space) to the control device location in the unit.

**INLET GUIDE VANES** — The tubing for the duct pressure (DP) control option should sample supply duct pressure about 2/3 of the way out from the unit in the main trunk duct, at a location where a constant duct pressure is desired.

The duct pressure is sensed by a pressure transducer. The output of the pressure transducer is directed to the unit control module. On all sizes, the DP transducer is located in the unit auxiliary control box. See Fig. 45 and 46 for auxiliary control box location. See Fig. 47 and 48 for auxiliary control box details. Use a nominal 1/4-in. plastic tubing.

**VARIABLE FREQUENCY DRIVE** — The tubing for the duct pressure (DP) control option should sample supply duct pressure about 2/3 of the way out from the unit in the main trunk duct, at a location where a constant duct pressure is desired.

On these units, the duct pressure is sensed by a pressure transducer. The pressure transducer output is directed to the unit control module. On all sizes, the DP transducer is located in the unit auxiliary control box. See Fig. 45 and 46 for auxiliary control box location. See Fig. 47 and 48 for auxiliary control box details. Use a nominal 1/4-in. plastic tubing.

Refer to appropriate base unit Controls and Troubleshooting book for instructions on adjusting set points for duct pressure controls.

**MODULATING POWER EXHAUST** — The tubing for the building pressure (BP) control (achieved via the modulating power exhaust option) should sample building pressure in the area near the entrance lobby (or other appropriate and sensitive location) so that location is controlled as closely to design pressures as possible.

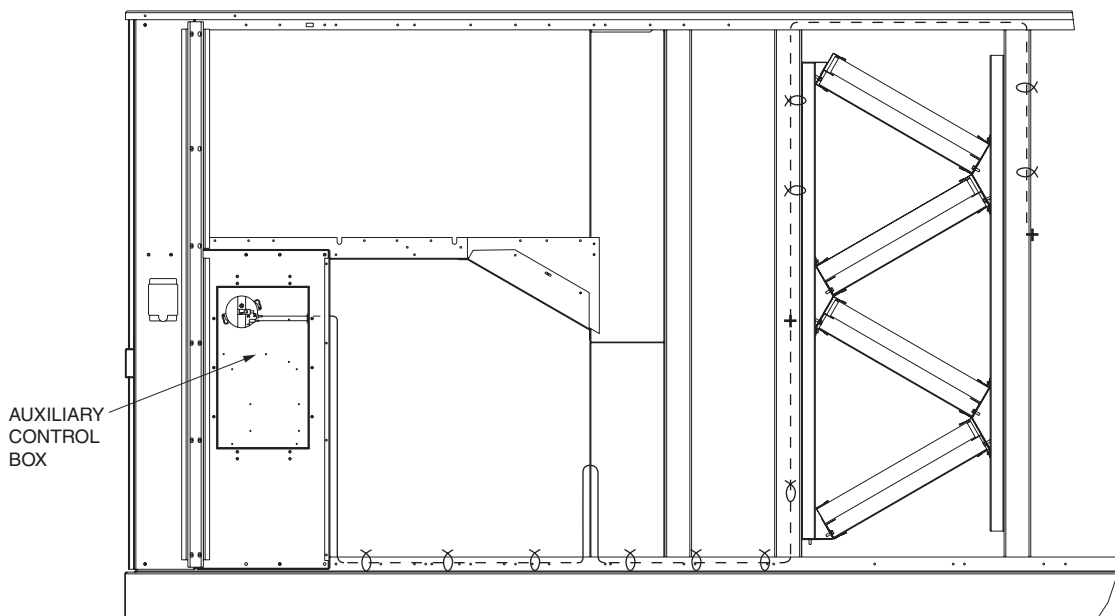
These units use a pressure transducer for sensing building pressure. The BP transducer is located in the unit auxiliary control box. See Fig. 45 and 46 for auxiliary control box location. See Fig. 47 and 48 for auxiliary control box details. Use a nominal 1/4-in. plastic tubing.

For instructions on adjusting BP control set points, refer to the Controls and Troubleshooting book.

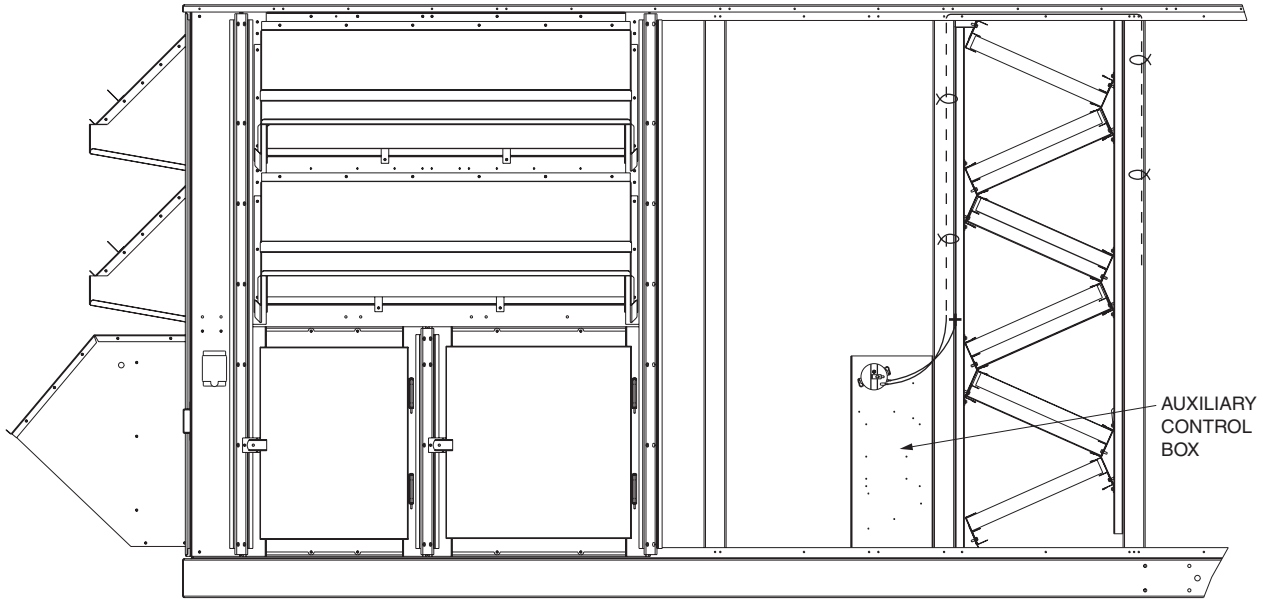
**RETURN/EXHAUST POWER EXHAUST** — The tubing for the building pressure (BP) control (achieved via the return/exhaust power exhaust option) should sample building pressure in the area near the entrance lobby (or other appropriate and sensitive location) so that location is controlled as closely to design pressures as possible.

The units use a pressure transducer for sensing building pressure. The BP transducer is located in the unit auxiliary control box. See Fig. 46 for auxiliary control box location. Fig. 49 for auxiliary control box details. Use a nominal 1/4-in. plastic tubing.

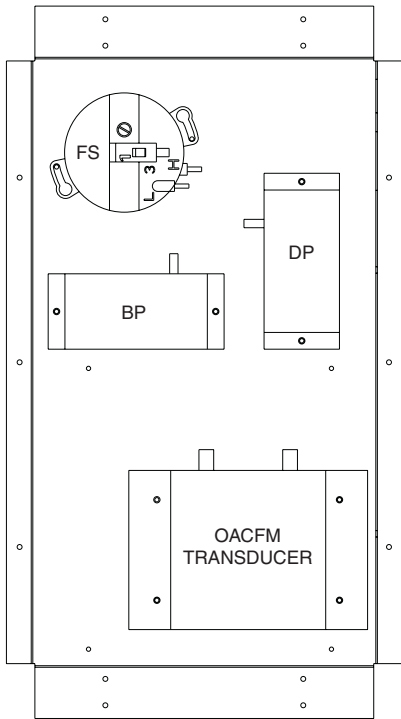
For instructions on adjusting BP control set points, refer to the Controls and Troubleshooting book.



**Fig. 45 — Auxiliary Control Box Location (Sizes 030-050)**



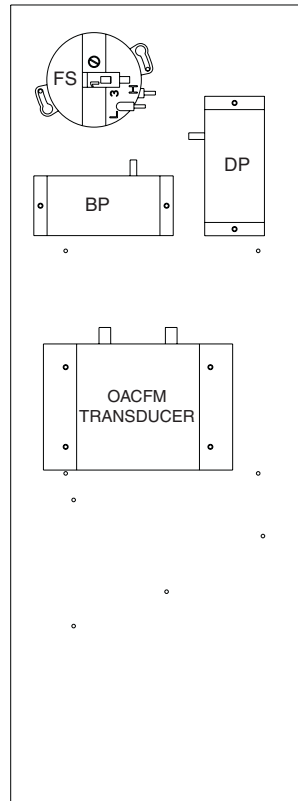
**Fig. 46 — Auxiliary Control Box Location (Sizes 055-105)**



LEGEND

- BP** — Building Pressure Transducer
- DP** — Duct Pressure Transducer
- FS** — Filter Switch
- OACFM** — Outdoor Air Cfm Sensor Transducer

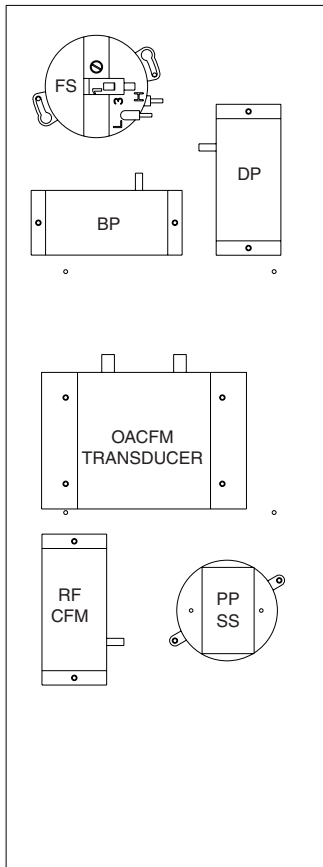
**Fig. 47 — Auxiliary Control Box Details (Sizes 030-050)**



LEGEND

- BP** — Building Pressure Transducer
- DP** — Duct Pressure Transducer
- FS** — Filter Switch
- OACFM** — Outdoor Air Cfm Sensor Transducer

**Fig. 48 — Auxiliary Control Box Details (Sizes 055-105 without Return Fan)**



LEGEND

- |                                   |   |
|-----------------------------------|---|
| BP — Building Pressure Transducer | OACFM — Outdoor Air Cfm Sensor Transducer |
| DP — Duct Pressure Transducer     | PPSS — Plenum Pressure Safety Switch      |
| FS — Filter Switch                | RFCFM — Return Fan Cfm Sensor Transducer  |

**Fig. 49 — Auxiliary Control Box Details (Size 075-105 Units with Return Fan)**

**Supply-Fan Shipping Brackets** — Supply-fan shipping brackets (4 per unit) must be removed from each corner of the fan sled before starting unit.

UNIT SIZES 030-050

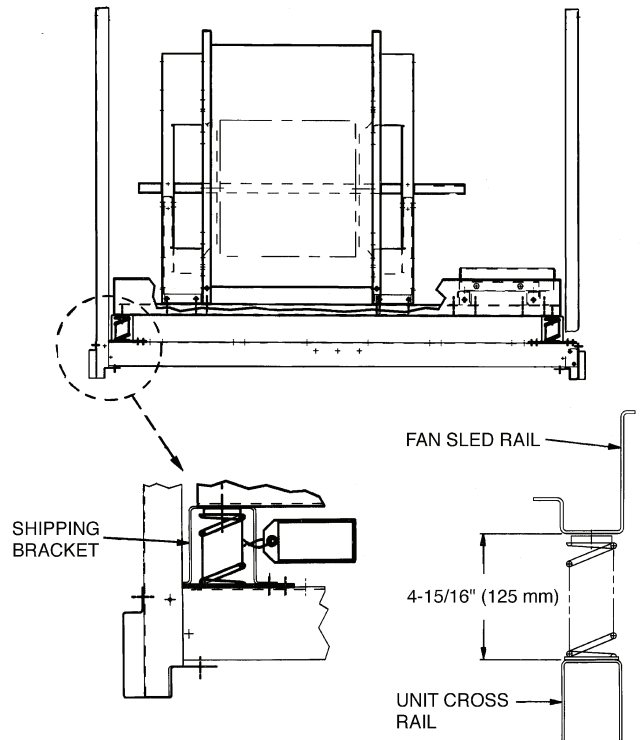
1. To remove brackets, raise fan sled by turning adjusting bolt counterclockwise until spring is compressed slightly.
2. Remove screws holding shipping bracket to unit cross rail.
3. Remove shipping bracket (top of bracket is slotted so that it will slide out).
4. After removing all shipping brackets, level fan sled using the adjusting screws. On all 4 corners, dimension from cross rail to fan sled should be as shown in Fig. 50.

UNIT SIZES 055-070 — To remove shipping brackets, remove the 6 screws holding each bracket to the cross rail. There are 8 brackets per unit. See Fig. 51.

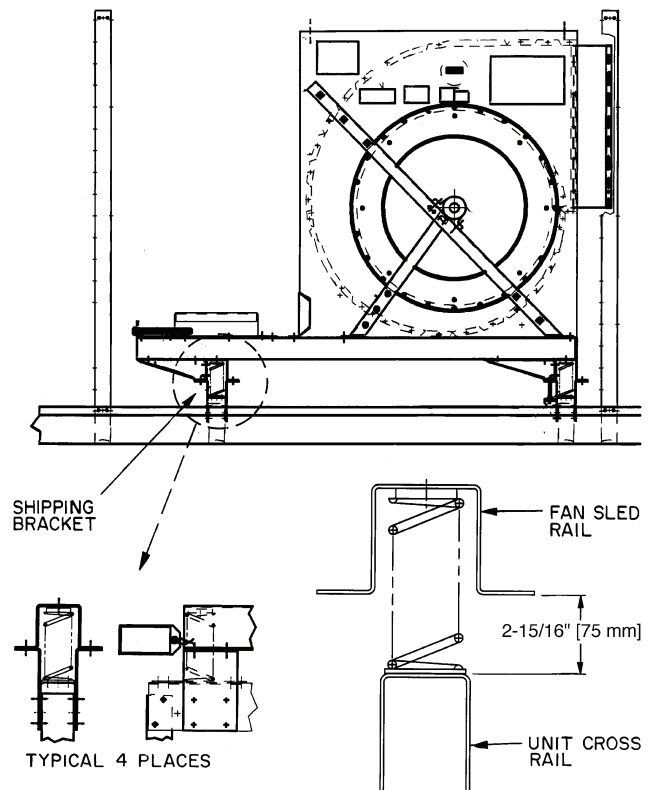
After removing all shipping brackets, level fan sled using the adjusting screws. On all 4 corners dimension from cross rail to fan sled should be as shown in Fig. 51.

UNIT SIZES 075-105 — Supply-fan shipping brackets must be removed from each corner of the fan sled before starting unit. To remove shipping brackets, remove the 6 screws holding each bracket to the cross rail. There are 4 brackets per unit. See Fig. 52.

After removing all shipping brackets, level fan sled using the adjusting screws. On all 4 corners dimension from cross rail to fan sled should be as shown in Fig. 52.



**Fig. 50 — Shipping Brackets; Size 030-050 Units**

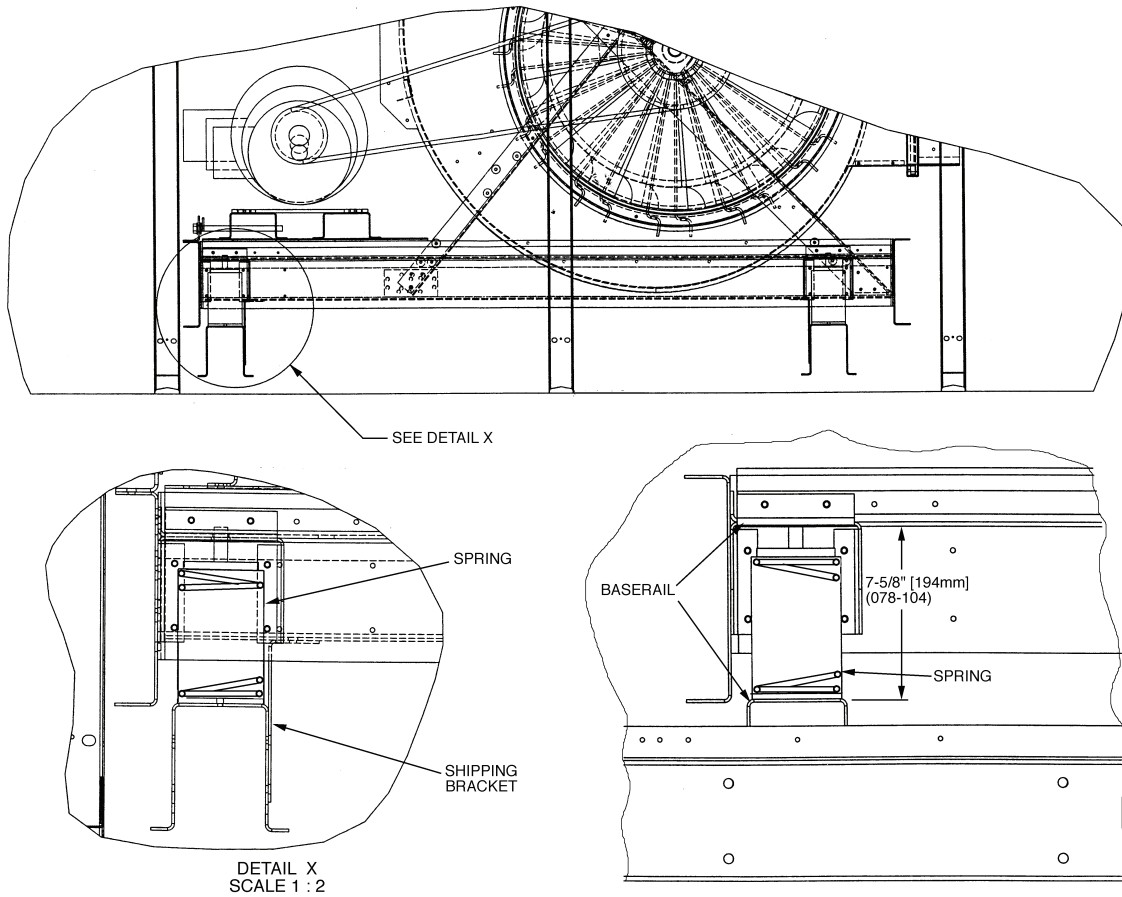


**Fig. 51 — Shipping Brackets; Size 055-070 Units**

**Return/Exhaust-Fan Shipping Brackets (48Z6, Z8 Units)** — Return/exhaust fan shipping brackets must be removed from each corner of the fan sled before starting unit.

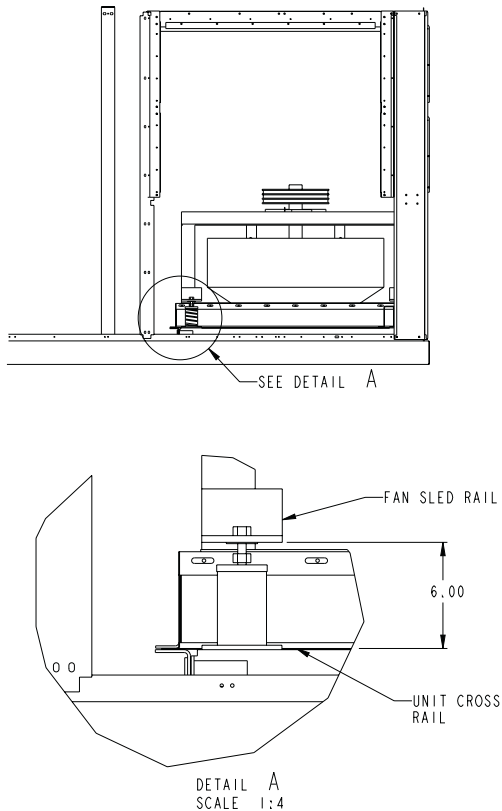
To remove shipping brackets, remove 2 screws holding each bracket to the cross rail. There are 4 brackets per unit.

After removing all shipping brackets, level the fan using the adjustment screws. On all 4 corners the dimension from cross rail to fan sled should be as shown in Fig. 53.



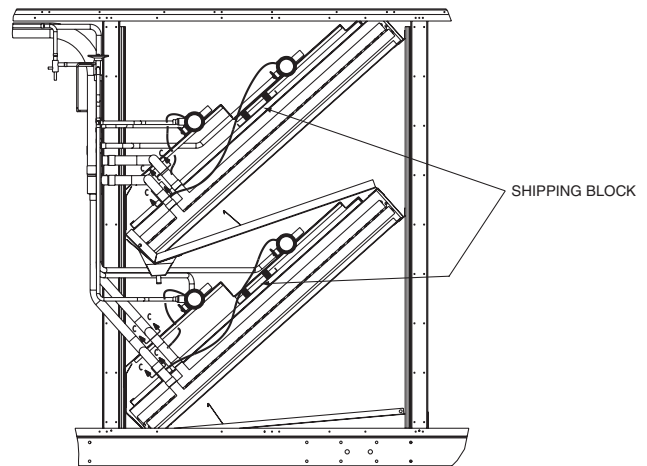
**Fig. 52 — Shipping Brackets (Sizes 075-105)**

**Remove TXV Shipping Blocks** — Shipping blocks for the TXV bracket are used on size 030-075 units with high capacity coils and all 075-105 size units. Remove the foam shipping block before starting unit. See Fig. 54.



NOTE: All dimensions are in inches.

**Fig. 53 — Return/Exhaust Fan Shipping Brackets**



**Fig. 54 — Foam TXV Shipping Blocks**



## Compressor Mounting

**SIZES 030-090** — Each compressor is supported on 4 springs. The springs are compressed for shipment. After the unit is installed, the holddown nuts need to be loosened for normal operation. See Fig. 55 for compressor mounting details. Loosen each bolt using nut indicated until the flatwasher ( $\frac{3}{8}$ -in.) can be moved with finger pressure. Do not remove the locknuts. Check each compressor mounting to ensure all 4 springs have been loosened properly.

**SIZE 105** — Compressors are mounted on rails and held down by rail bolts during shipment. After unit is installed, loosen the rail bolts to allow the rails and compressors to float freely on the springs located under the rails. See Fig. 56 and 57.

**Gas Piping** — Unit is equipped for use with natural gas only. Installation must conform with local building codes, or in the absence of local codes, with the National Fuel Gas Code (NFGC), ANSI Z223.1.

A  $\frac{1}{8}$ -in. NPT tapping plug, accessible for test gage connection, must be field installed immediately upstream of gas supply connection to unit, but after manual gas valve. See Fig. 58. Natural gas pressure at unit gas connection must not be less than 5 in. wg or greater than 13 in. wg.

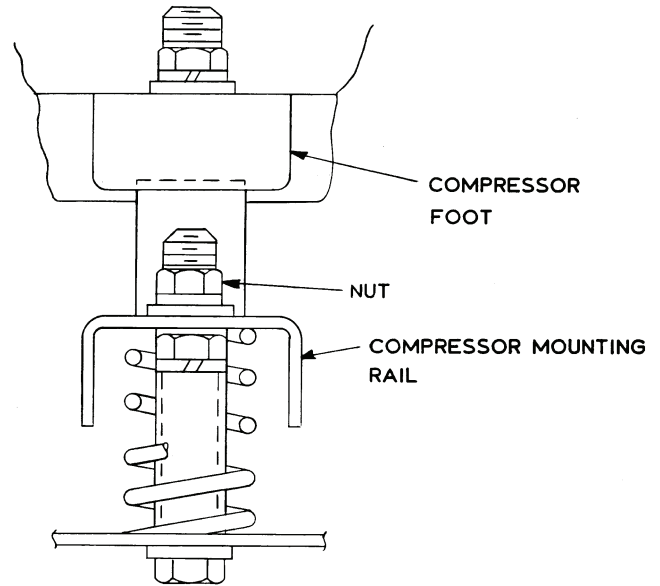
Size gas supply piping for 0.5 in. wg maximum pressure drop. Do not use supply pipe smaller than unit gas connection.

### CAUTION

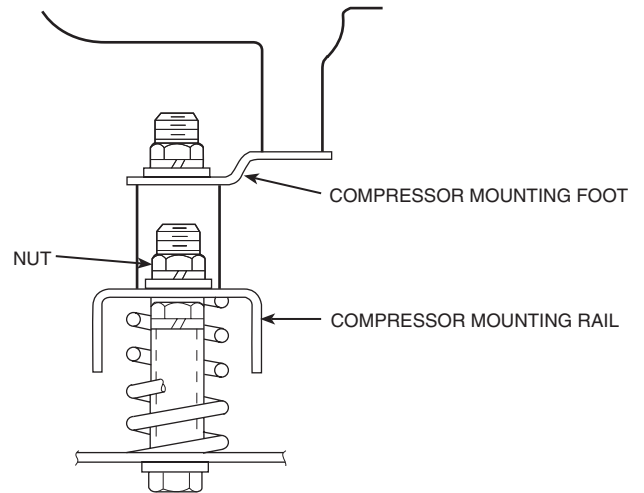
Disconnect gas piping from unit when leak testing at pressures greater than 0.5 psig. Pressures greater than 0.5 psig will cause gas valve damage resulting in a hazardous condition. If gas valve is subjected to pressure greater than 0.5 psig, it must be replaced.

**Optional Staged Gas Control** — The 48Z030-105 large rooftop units may be ordered with an optional factory-installed staged gas control system that monitors heating operation of the rooftop. The control system is composed of several components as listed in sections below. Table 17 shows 48Z Series staged gas implementation.

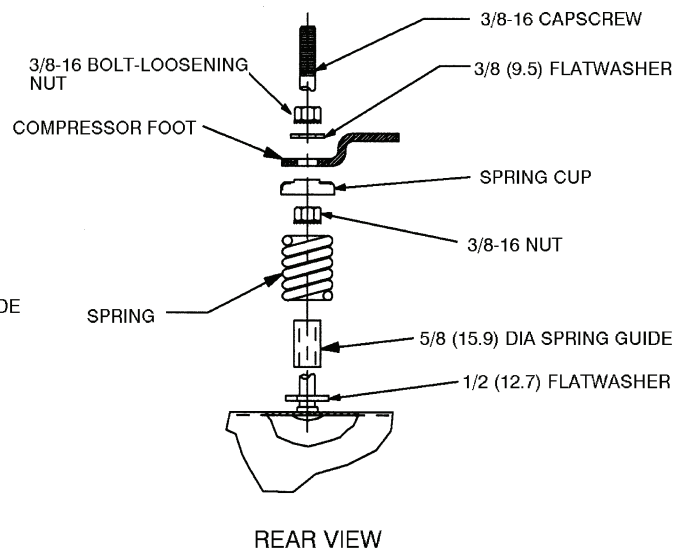
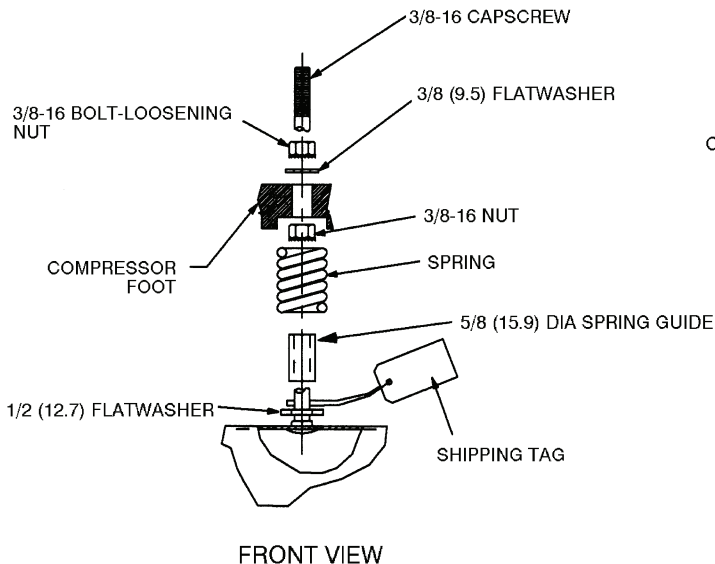
Refer to the Unit Controls and Troubleshooting book for information on configuring staged gas control.



**Fig. 56 — Front View of Compressor Mounting Rail Assembly — Size 105 Units**

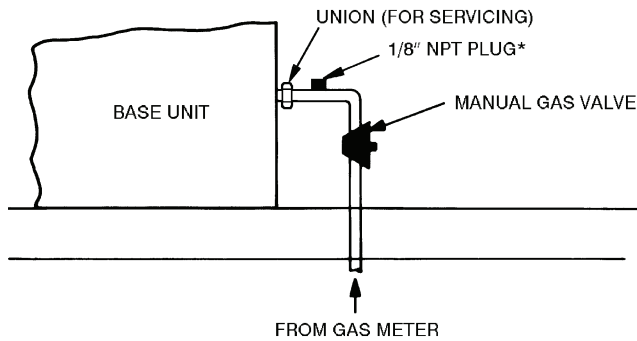


**Fig. 57 — Rear View of Compressor Mounting Rail Assembly — Size 105 Units**



NOTE: All dimensions are in inches (mm).

**Fig. 55 — Compressor Mounting (Sizes 030-090)**



\*NPT plug is field supplied.  
NOTE: Follow all local codes.

**Fig. 58 — Gas Piping Details**

**Installing Flue/Inlet Hoods** — The flue and inlet hoods are shipped in a package taped to the basepan in the fan section. The flue (outlet) hoods are pre-assembled. The flue deflector and inlet hoods require assembly.

The hoods are located on the heating section access panel as shown in Fig. 59 (sizes 030-050) or Fig. 60 (sizes 055-105). See Table 18 for a list of parts used to assemble each hood and quantities of each hood type used with each unit.

1. Remove shipping block-offs and shipping tape from all openings in the access panel.
2. Attach flue outlet hoods (see Fig. 61) to access panel using screws provided. Hoods are placed over each combustion outlet.

3. Install flue deflector baffle inside flue deflector hood. See Fig 62 for sizes 030-050 and 075-105 (V-type deflector). See Fig. 63 for sizes 055-105 (curve-type deflector). Install flue deflector hood assembly over each flue outlet hood (installed in Step 2). Observe the offset mounting hole locations in the deflector hood flanges when attaching hood to panel (see Fig. 64). Holes in the mounting flange must be at the bottom when attached.
4. Inlet hoods are shipped unassembled and must be assembled on the access panel (see Fig. 65). Flanges of the hood top and sides should be placed on the inside of the access panel openings. Install hood top and sides with screws provided. Attach speed clips to screen and insert screen into bottom opening of hood. Secure with 3 screws. On large inlet hoods, attach viewport cover over opening in hood (see Fig. 66). Secure with two screws.

**Supply-Air Thermistors (Staged Gas Units Only)** — Supply-air thermistors are a field-installed, factory-provided component. Three supply-air thermistors are shipped with staged gas units inside the heating section. Thermistor wires must be connected to SGC in the heating section. See Table 19. The supply-air thermistors should be located in the supply duct with the following criteria:

Three supply-air thermistors are shipped with staged gas units inside the heating section. Thermistor wires must be connected to SGC in the heating section. See Table 19. The supply-air thermistors should be located in the supply duct with the following criteria:

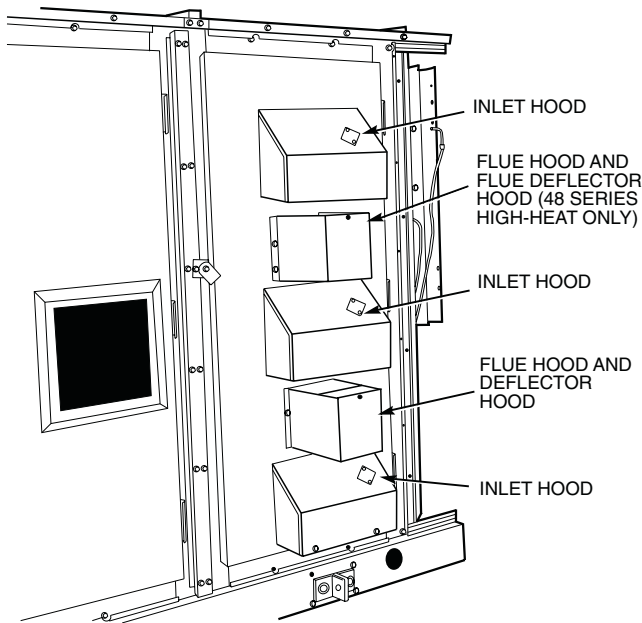
- downstream of the heat exchanger cells
- equally spaced as far as possible from the heat exchanger cells
- a duct location where none of the supply air thermistors are within sight of the heat exchanger cells
- a duct location with good mixed supply air portion of the unit.

**Table 17 — 48Z Series Staged Gas Implementation**

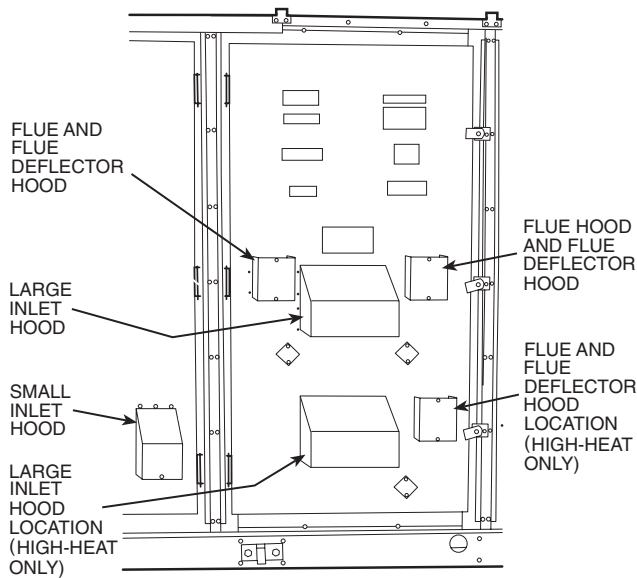
NO. OF STAGES	MODEL NUMBER POSITION				POINT				HEAT SIZE
	3	5	6,7,8	10	HTSTGTYP	CAPMXSTG	LIMTHIHT	LIMTLOHT	
2 stages	Z	H, K, W, Y	030 035 040 050	ALL	Default=0	Default=45	Default=170 F	Default=160 F	Low
	5 stages	Z	J, L, X, Z	030 035 040 050	ALL	Default=1	Default=20	Default=170 F	Default=160 F
		H, K, W, Y	055 060 070	ALL	Default=1	Default=20	Default=135 F	Default=125 F	Low
		H, K	075 090 105	-,A,B,C,D,E	Default=1	Default=20	Default=135 F	Default=125 F	
				G,H,J,K,L,M	Default=1	Default=20	Default=130 F	Default=120 F	
9 stages	Z	J, L, X, Z	055 060 070	ALL	Default=3	Default=15	Default=135 F	Default=125 F	High
		J, L	075 090 105	-,A,B,C,D,E	Default=3	Default=15	Default=135 F	Default=125 F	
				G,H,J,K,L,M	Default=3	Default=15	Default=130 F	Default=120 F	

**LEGEND**

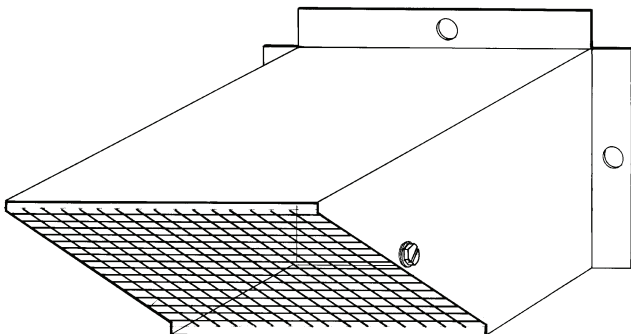
- CAPMXSTG** — Maximum Capacity per Changes
- HTSTGTYP** — Heat Stage Type
- LIMTHIHT** — Limit Switch Thermistor High Temperature
- LIMTLOHT** — Limit Switch Thermistor Low Temperature



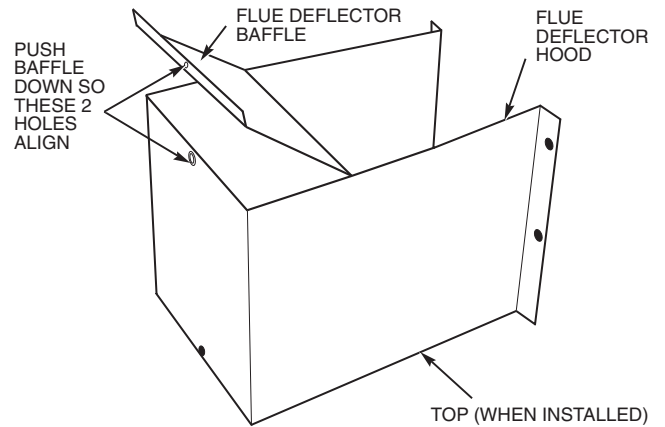
**Fig. 59 — Flue/Inlet Hood Locations, 030-060 Units**



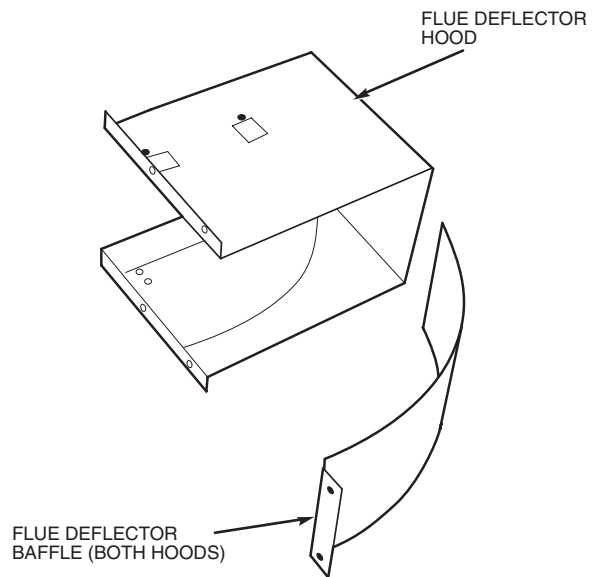
**Fig. 60 — Flue/Inlet Hood Locations, 055-105 Units**



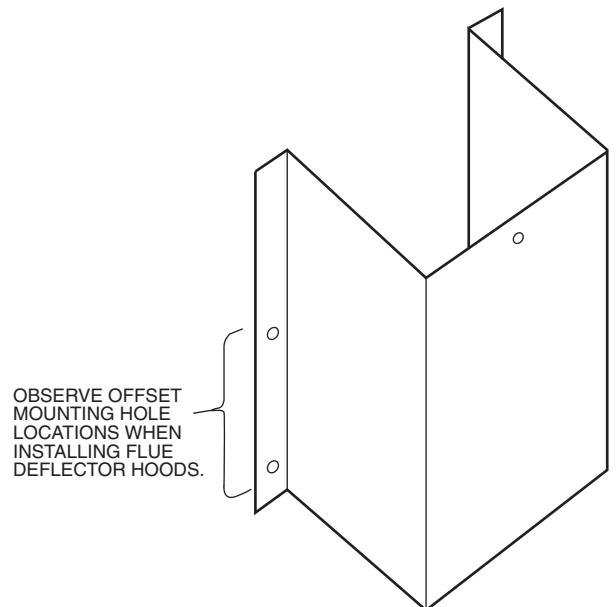
**Fig. 61 — Flue Outlet Hood**



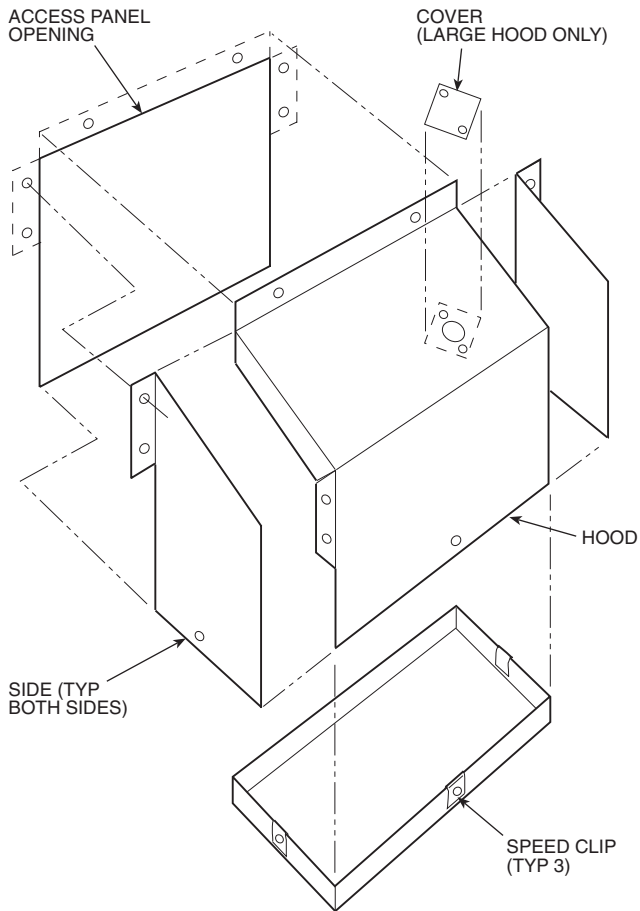
**Fig. 62 — Flue Deflector Baffle, 030-050 and 075-105 Units (V-Type)**



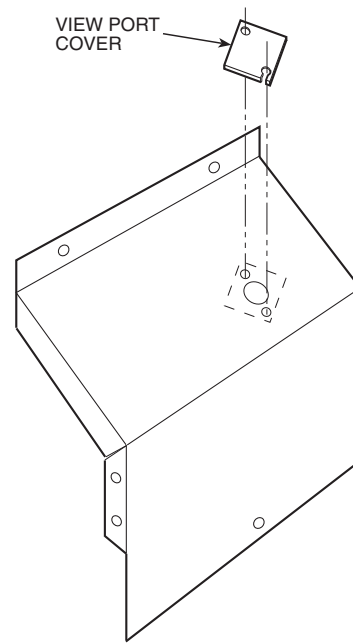
**Fig. 63 — Flue Deflector Baffle, 055-105 Units (Curve-Type)**



**Fig. 64 — Mounting Deflector Hoods**



**Fig. 65 — Inlet Hood Assembly**



**Fig. 66 — Inlet Hood View Port Cover Installation (055-105 Units Only)**

**Table 18 — Flue and Inlet Hood Usage**

HOOD TYPE	PARTS LIST	FIG. NO.	QUANTITY USED					
			Sizes 030-050 (Low Heat)	Sizes 030-050 (High Heat)	Sizes 055-070 (Low Heat)	Sizes 055-070 (High Heat)	Sizes 075-105 (Low Heat)	Sizes 075-105 (High Heat)
<b>Large Inlet (14-in.)</b>	Top (14-in.) Side (Left) Side (Right) Screen Cover Speed Clips Screws	65,66	3	3	1	2	1	2
<b>Small Inlet (6-in.)</b>	Top (6-in.) Side (Left) Side (Right) Screen Cover Speed Clips Screws	65	—	—	1	1	1	1
<b>Flue Outlet</b>	Pre-assembled	61	1	2	2	3	2	3
<b>Flue Deflector (V-Type)</b>	Hood Deflector Baffle Screws	62	1	2	—	—	2	2
<b>Flue Deflector (Curve-Type)</b>	Hood Deflector Baffle Screws	63	—	—	2	3	—	1

**Table 19 — SGC Thermistor Designations**

THERMISTOR	PIN CONNECTION POINT	FUNCTION AND LOCATION	PART NO.
		Thermistors	
SAT1	J8 – 1,2 (SGC)	Supply-Air Thermistor (SAT) — Inserted into supply section underneath the gas heat section (factory-provided, field-installed)	HH79NZ033
SAT2	J8 – 3,4 (SGC)	Supply-Air Thermistor (SAT) — Inserted into supply section underneath the gas heat section (factory-provided, field-installed)	
SAT3	J8 – 5,6 (SGC)	Supply-Air Thermistor (SAT) — Inserted into supply section underneath the gas heat section (factory-provided, field-installed)	
LIMITTEMP	J8 – 15,16 (SGC)	Limit Switch Thermistor (LIMITTEMP) — Inserted next the lower limit switch (factory-installed)	

**SGC** — Staged Gas Controller

**Install Unit Accessories** — For applications requiring accessories, the following packages are available:

All units:

- barometric relief
- space temperature sensor
- CO<sub>2</sub> sensor
- space temperature sensor with CO<sub>2</sub>
- airflow switch
- filter switch
- smoke detector

All 48ZG,ZT,Z6 units:

- modulating power exhaust
- pressure operated unloaders

All 48ZN,ZW,Z8 units:

- modulating power exhaust
- VFD remote display

Refer to the individual accessory installation instructions in each accessory package for information on installing accessories.

### CONTROLS INSTALLATION

**Constant Volume (CV) Units** — The 48ZG,ZT,Z6 units may be used in applications with additional control features, options, or accessories. Refer to the appropriate accessory installation instructions for more information on installing that accessory. Control options and accessories available for CV units are:

- thermostats
- enthalpy sensor
- enthalpy switch
- relative humidity sensor
- CEM (controls expansion module)
- Navigator™ hand-held display

**CONTROL WIRING** — The unit can be controlled with a Carrier-approved accessory electro-mechanical or electronic thermostat that has two stages of cooling, two stages of heating control, and an output for fan control. The thermostat may also include time of day scheduling or use scheduling routines built into the *ComfortLink™* controls.

Install the thermostat according to the installation instructions shipped with the accessory thermostat. Locate thermostat assembly on a solid interior wall to sense average temperature.

Route thermostat cable or equivalent leads of colored wire from subbase terminals through conduit into the low voltage connections in the main control box. For thermostat TB203 connections, see Fig. 67.

NOTE: For wire runs up to 50 ft, use no. 18 AWG (American Wire Gage) insulated wire (35 C minimum). For over 75 ft, use no. 14 AWG insulated wire (35 C minimum). All wire larger

than no. 18 AWG cannot be directly connected at the thermostat and will require a junction box and splice at the thermostat.

**Variable Air Volume (VAV) Units** — The 48ZN, ZW, Z8 units may be used in applications with additional control features, options, or accessories. Refer to the appropriate accessory installation instructions for more information on installing that accessory. Refer to the Controls and Troubleshooting manual for more information concerning installation and configuration of options and accessories. Control options and accessories available for VAV units are:

- enthalpy sensor
- enthalpy switch
- relative humidity sensor
- CEM (controls expansion module)
- Navigator hand-held display
- VFD remote display

**VAV CONTROL WIRING** — The recommended types of control wiring are shown below:

MANUFACTURER	PART NO.	
	Regular Wiring	Plenum Wiring
<b>Alpha</b>	1895	—
<b>American</b>	A21451	A48301
<b>Belden</b>	8205	884421
<b>Columbia</b>	D6451	—
<b>Manhattan</b>	M13402	M64430
<b>Quabik</b>	6130	—

**SENSORS** — Sensors should be wired using single twisted pairs of 20 AWG (American Wire Gage) conductor cable rated for the application, except for the T-56 accessory sensor which requires 3-conductor cable.

NOTE: Humidity and CO<sub>2</sub> sensors must be powered from isolated 24-v power supplies.

**HUMIDITY CONTROL AND HOT WATER AND STEAM VALVES** — These devices require 20 AWG twisted pair conductor cables rated for the application for the 4 to 20 mA signal.

**SPACE TEMPERATURE SENSOR (T-55)** — The space temperature sensor (P/N 33ZCT55SPT) is shipped standard with every unit, and is located in the main control box. Space temperature sensor wires are to be connected to terminals in the unit main control box.

**⚠ CAUTION**

Jumper **MUST** be in place between pins 1 and 3, 3 and 4 or inaccurate readings could result.

To connect the space temperature sensor, see Fig. 68.



**SPACE TEMPERATURE SENSOR (T-56)** — The space temperature sensor (P/N 33ZCT56SPT) wires are connected to terminals in the unit main control box.

<b>⚠ CAUTION</b>
Jumper <b>MUST</b> be in place between pins 1 and 3, 3 and 4 or inaccurate readings could result.

To connect the space temperature sensor, see Fig. 68.

**COMMUNICATING SPACE TEMPERATURE SENSOR (T-58)** — The communicating space temperature sensor (P/N 33ZCT58SPT) is wired to the Carrier Comfort Network® (CCN) connections on TB202.

**SPACE TEMPERATURE AVERAGING** — Applications that require averaging using multiple space temperature sensors can be satisfied using either 4 or 9 sensors as shown in Fig. 69.

**NOTE:** Only Carrier sensors may be used for standard T-55 space averaging. Sensors must be used in multiples of 1, 4, and 9 only, with total sensors wiring not to exceed 1000 ft. However, space temperature reset can be accomplished with only one sensor.

**NOTE:** Do not use T-56 sensors for space temperature averaging because the 5-degree offset function will not work in a multiple sensor application.

**HEAT INTERLOCK RELAY (VAV Units Only — Not Necessary For Digital Air Volume Applications)** — Variable air volume (VAV) units using optimal start (morning warm-up) and/or occupied heating require that room terminals be controlled to the fully open position when the unit goes into Heating mode. The HIR (heat interlock relay) function is provided for this control. When the unit goes into Heating mode, the HIR is energized to provide switch closure or opening (depending on how the field-supplied power source is set up) to open the room terminals. The field connections for the HIR are at TB201 terminals 7 and 8. See Fig. 70.

**Option and Accessory Control Wiring** — The Z Series units may be used in applications with additional control features, options, or accessories. Refer to the Controls and Troubleshooting manual for more information concerning installation and configuration of options and accessories. Figures 70-80 contain wiring information on the following features:

- heat interlock relay (Fig. 70)
- outdoor air enthalpy switch (Fig. 71)
- CO<sub>2</sub> space sensor (Fig. 72)
- filter status switch (Fig. 73)
- fan status switch (Fig. 74)
- space humidity sensor (Fig. 75)
- return air humidity sensor (Fig. 75)
- return air CO<sub>2</sub> sensor (Fig. 76)
- return air smoke detector (Fig. 77)
- smoke control — fire shutdown (Fig. 78)
- smoke control — purge (Fig. 79)
- smoke control — evacuation (Fig. 79)
- smoke control — pressurization (Fig. 79)
- CCN connections (Fig. 80)

**Carrier Comfort Network (CCN) Interface** — The 48ZN,ZW,Z8 units can be connected to the CCN system if desired. The communication bus wiring is supplied and installed in the field. It consists of shielded, 3-conductor cable with shield wire.

The system elements are connected to the communication bus in a daisy chain arrangement. The positive pin of each

system element communication connector must be wired to the positive pins of the system element on either side of it, the negative pins must be wired to the negative pins, and the signal pins must be wired to signal ground pins. Wiring connections for the CCN system should be made at the terminal block using the screw terminals. The board also contains an RJ14 CCN plug that can be used to connect a Navigator™ device or field service computer. There is also another RJ14 LEN (Local Equipment Network) connection that is used to download software. Consult CCN Contractor's Manual for further information.

**NOTE:** Conductors and drain wire must be 20 AWG minimum stranded, tinned copper. Individual conductors must be insulated with PVC, PVC/nylon, vinyl, Teflon, or polyethylene. An aluminum/polyester 100% foil shield and an outer jacket of PVC, PVC/nylon, chrome vinyl, or Teflon with a minimum operating temperature range of -4 to 140 F (-20 C to 60 C) is required. See Table 20 for cables that meet the requirements.

**Table 20 — CCN Connection Approved Shielded Cables**

MANUFACTURER	CABLE PART NO.
Alpha	2413 or 5463
American	A22503
Belden	8772
Columbia	02525

<b>IMPORTANT:</b> When connecting the CCN communication bus to a system element, use a color coding system for the entire network to simplify installation and checkout.
--

The following color code is recommended:

SIGNAL TYPE	CCN BUS CONDUCTOR INSULATION COLOR	COMM1 PLUG PIN NO.
+	RED	1
GROUND	WHITE	2
-	BLACK	3

**NOTE:** If a cable with a different color scheme is selected, a similar color code should be adopted for the entire network.

At each system element, the shields of its communication bus cables must be tied together. If the communication bus is entirely within one building, the resulting continuous field must be connected to a ground at one point only. If the communication bus cable exits from one building and enters another, the shields must be connected to grounds at the lightning suppressor in each building where the cable enters or exits the building (one point per building only).

To connect the unit to the network (Fig. 80):

1. Turn off power to the control box.
2. Cut the CCN wire and strip the ends of the red (+), white (ground) and black (-) conductors. (If a different network color scheme is used, substitute appropriate colors.)
3. Wire the CCN to the screw terminals on the COMM board as follows (Fig. 80):
  - a. Secure the red (+) wire to CCN screw terminal + on the COMM board.
  - b. Secure the white (ground) wire to CCN screw terminal C on the COMM board.
  - c. Secure the black (-) wire to CCN screw terminal - on the COMM board.

- d. Secure shield wire to CCN screw terminal SHIELD on the COMM board.

**IMPORTANT:** A shorted CCN bus cable will prevent some routines from running and may prevent unit from starting. If abnormal conditions occur, unplug the connector. If conditions return to normal, check CCN connector, and run new cable if necessary. A short in one section of the bus can cause problems with all system elements on the bus.

**RJ14 PLUG WIRING** — Units on the CCN can be monitored from the space at the sensor through the RJ14 connector, if desired. To wire the RJ14 connector into the CCN (Fig. 80):

**IMPORTANT:** The cable selected for the RJ14 connector wiring **MUST** be identical to the CCN communication bus wire used for the entire network.

1. Cut the CCN wire and strip ends of the red (+), white (ground), and black (–) conductors. (If another wire color scheme is used, strip ends of appropriate wires.)
2. Secure the red (+) wire to CCN screw terminal + on the COMM board.
3. Secure the white (ground) wire to CCN screw terminal C on the COMM board.
4. Secure the black (–) wire to CCN screw terminal – on the COMM board.
5. Secure shield wire to CCN screw terminal SHIELD on the COMM board.
6. Connect the other end of the communication bus cable to the CCN communication bus.

**Smoke Control Modes** — Rooftop units can be used for aid in building smoke control in the event of a building fire. The available functions include: Fire Shutdown, Pressurization, Evacuation, and Smoke Purge. These functions are enhanced when multiple rooftop units are used to zone a building. See Table 21 and Fig. 78 and 79.

**FIRE SHUTDOWN** — Fire Shutdown mode terminates all unit operation (cooling, heating, supply fan, and power exhaust). This mode prevents recirculation of contaminated air back into the space. The mode will not allow admission into the space of unsuitable outside air. See Fig. 78 for wiring.

**PRESSURIZATION** — Pressurization mode is intended to keep smoke out of a zone. The factory-installed optional economizer is required for this function. Pressurization is accomplished by the following:

- opening the economizer (option)
- running the supply fan (optional inlet guide vanes open or optional VFD at normal duct static pressure set point)
- closing the power exhaust dampers (if installed as option or accessory)
- shutting off the power exhaust fans (if installed as option or accessory)

This allows the space to be overpressurized relative to adjacent zones and prevents or slows entry of smoke into this space from adjacent zones. See Fig. 79 for wiring.

**EVACUATION** — Evacuation mode removes smoke or undesirable air from interior spaces without reintroducing unsuitable air. The factory-installed optional economizer with option/accessory power exhaust is required for this function. Evacuation is accomplished by the following:

- turning the supply fan off
- opening the economizer (option required)
- running the exhaust fans (option or accessory required)
- opening the exhaust dampers.

See Fig. 79 for wiring.

**SMOKE PURGE** — Smoke Purge mode removes smoke from the interior spaces and replaces it with fresh outside air. The factory-installed optional economizer with option/accessory power exhaust are required for this function. Smoke purge is accomplished by the following:

- turning supply fan on
- opening the economizer (option required)
- running the exhaust fans (option or accessory required)
- opening the exhaust dampers

See Fig. 79 for wiring.

**SMOKE CONTROL INSTALLATION** — Implementation of the various smoke control modes on these units requires the installer to modify the unit wiring to add contacts (via either manual switches or relays) that will selectively interrupt and override standard factory control sequences. See Table 21 and Fig. 78 and 79 for more information.

**Table 21 — Smoke Control Modes**

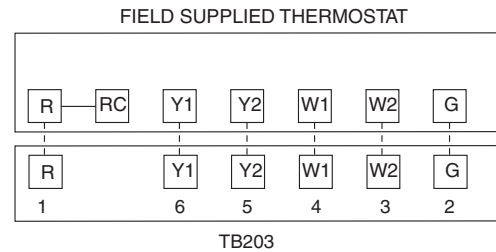
FUNCTION	MODE			
	Fire Shutdown	Pressurization	Evacuation*	Smoke Purge*
Supply Fan	Off	On	Off	On
IGV/VFD†	—	Open/On	—	Open/On
Economizer	Closed	Open	Open	Open
Return Air Damper	Open	Closed	Closed	Closed
Exhaust Fans	Off	Off	On	On
Exhaust Damper	Closed	Closed	Open	Open

**LEGEND**

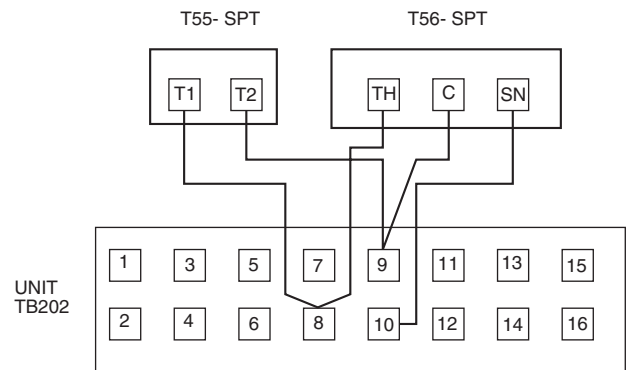
- IGV — Inlet Guide Vane
- PIC — Product Integrated Control
- VAV — Variable Air Volume
- VFD — Variable Frequency Drive

\*Power exhaust option required for this mode.

†Applicable to VAV and PIC units with appropriate options.

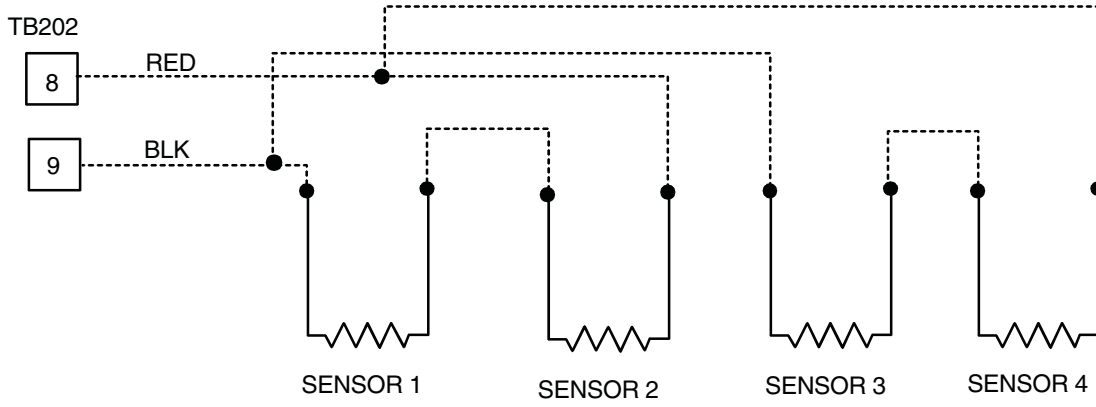


**Fig. 67 — Field Control Thermostat Wiring**

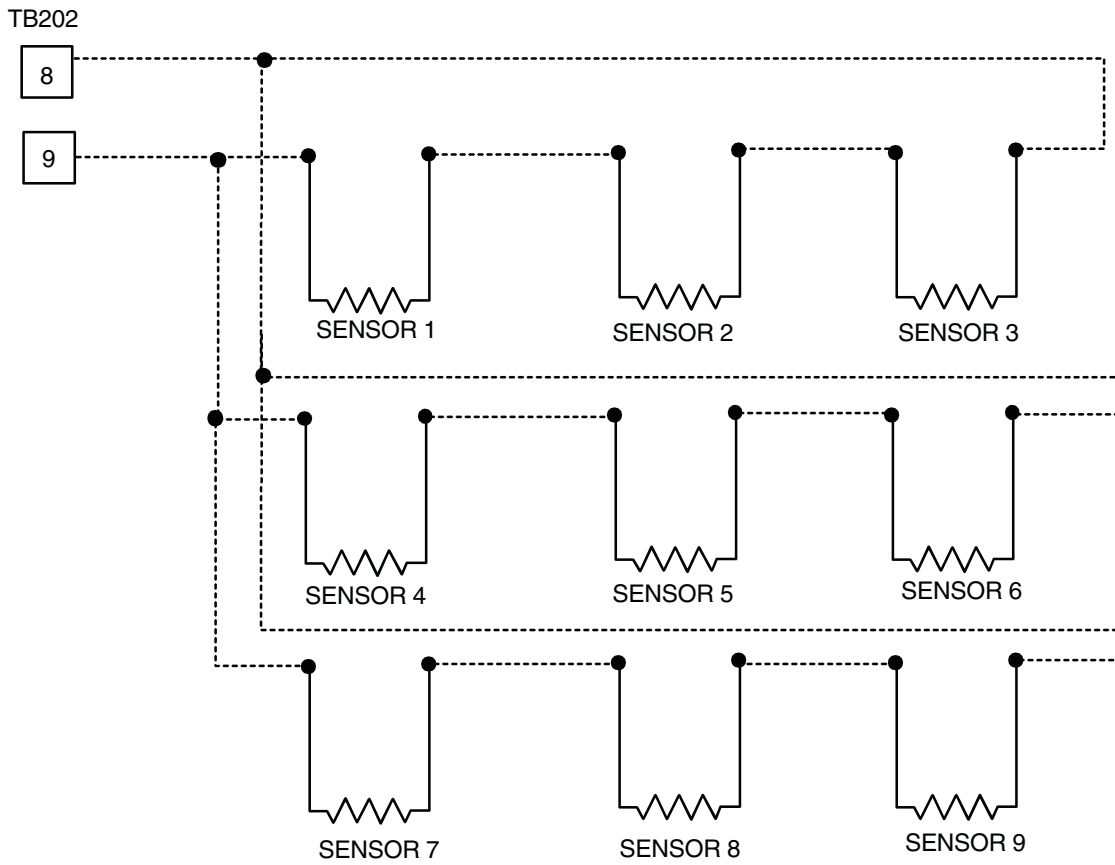


**Fig. 68 — T55 or T56 Wiring**





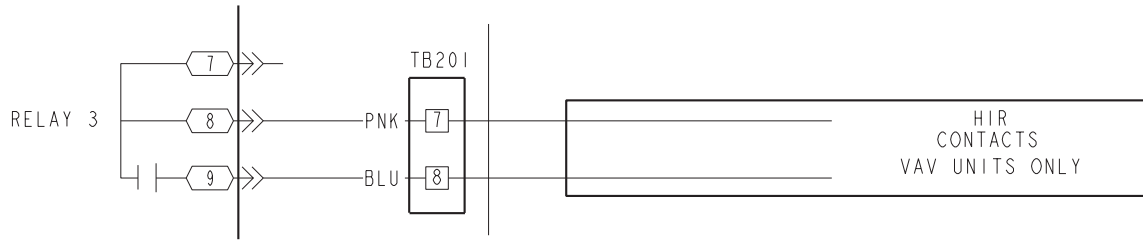
SPACE TEMPERATURE AVERAGING (4 SENSOR APPLICATION)



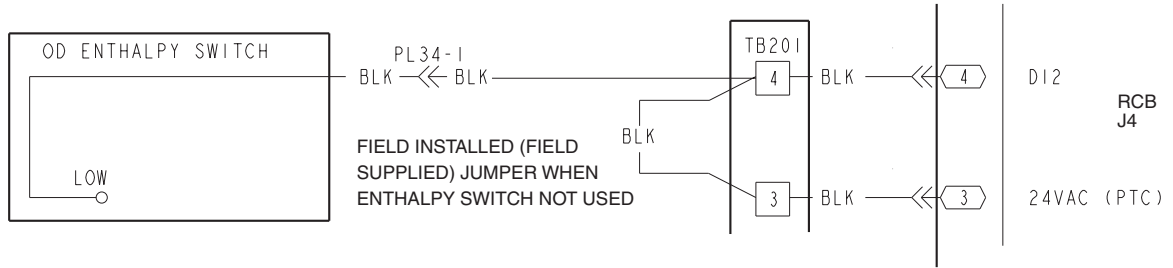
SPACE TEMPERATURE AVERAGING (9 SENSOR APPLICATION)

NOTE: Use T55 sensor only.

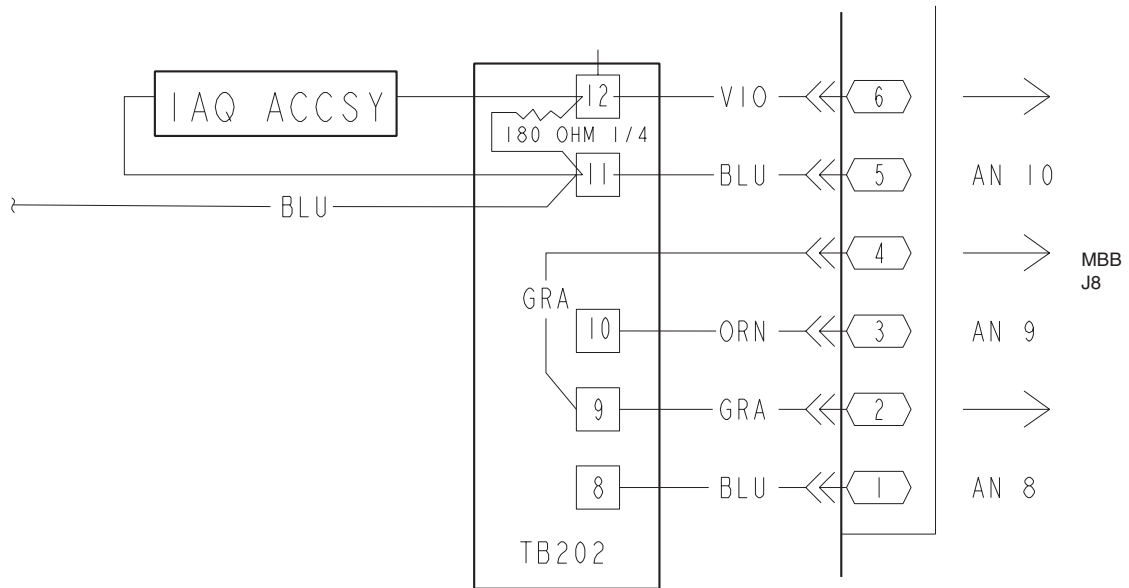
**Fig. 69 — Space Temperature Averaging Wiring**



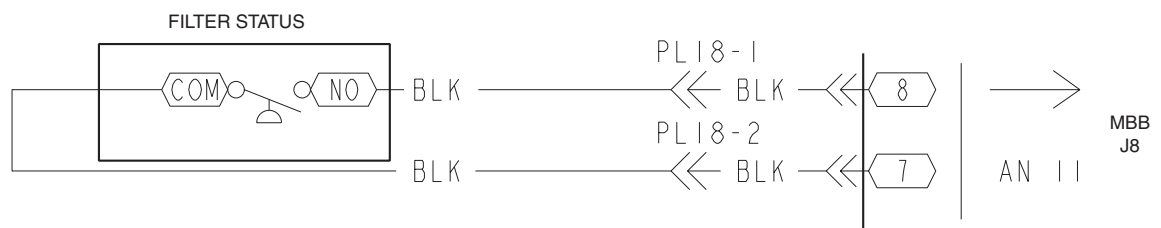
**Fig. 70 — Heat Interlock Relay Wiring**



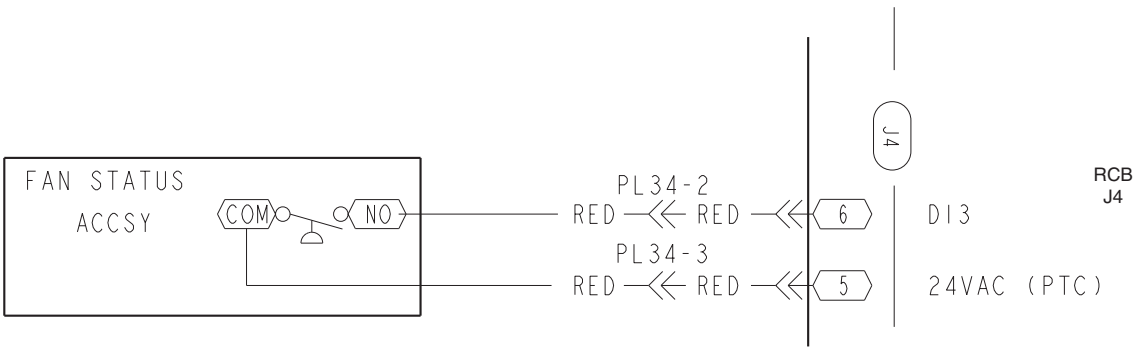
**Fig. 71 — Outdoor Air Enthalpy Switch Wiring**



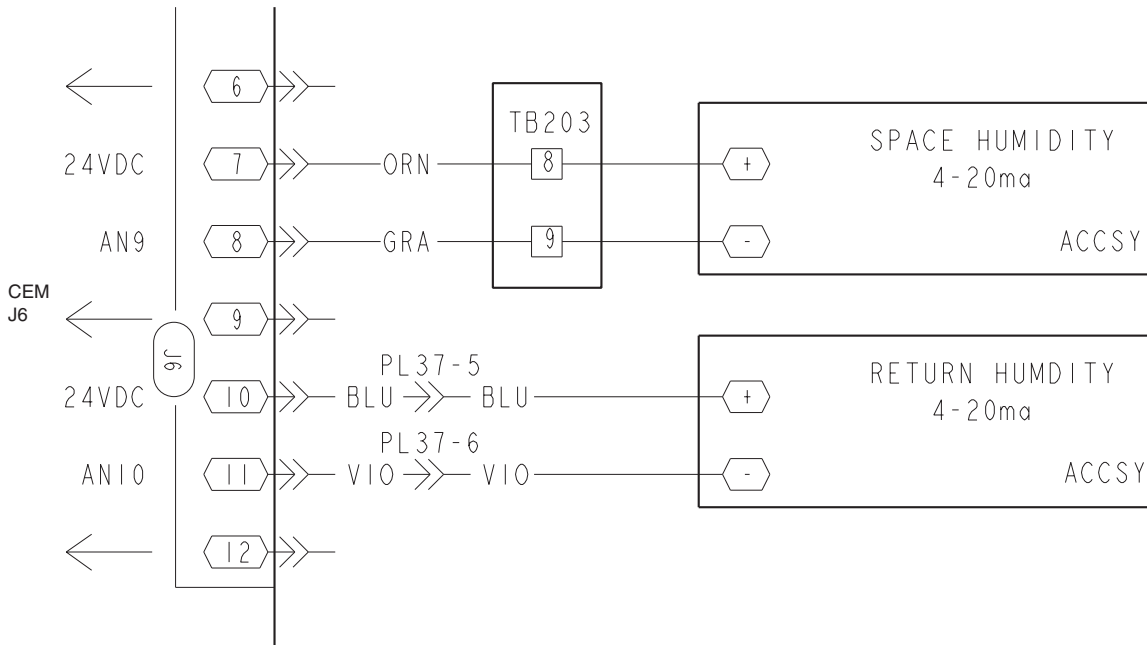
**Fig. 72 — CO<sub>2</sub> Space Sensor Wiring**



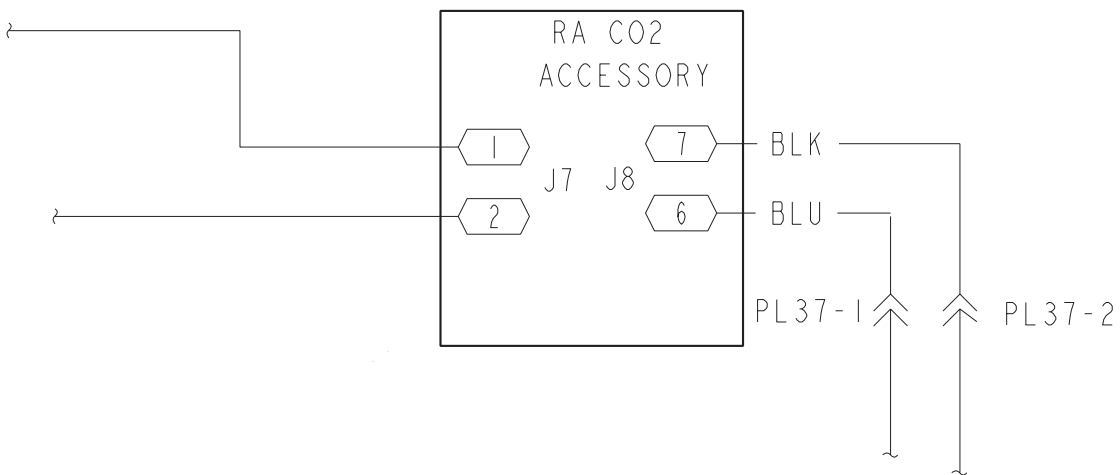
**Fig. 73 — Filter Status Wiring**



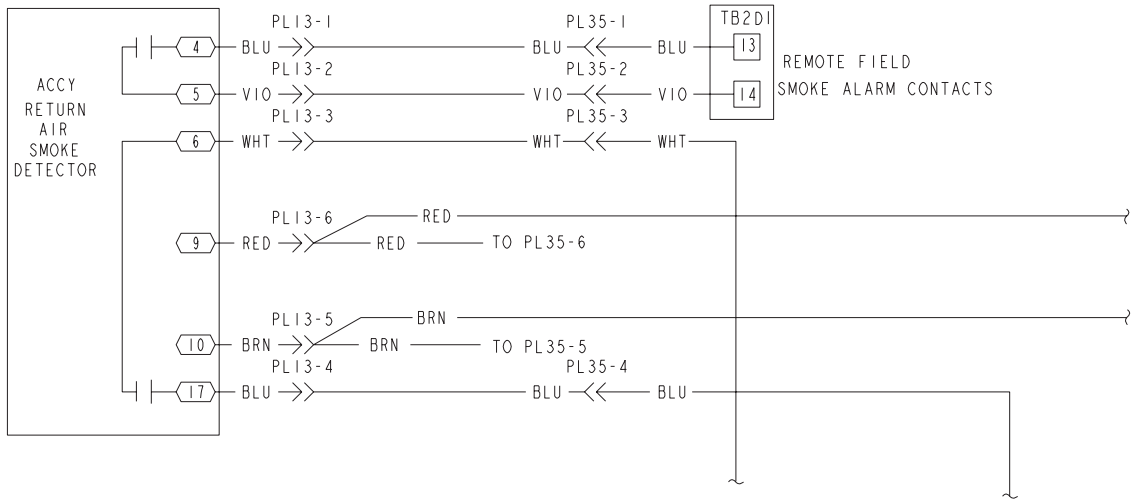
**Fig. 74 — Fan Status Switch Wiring**



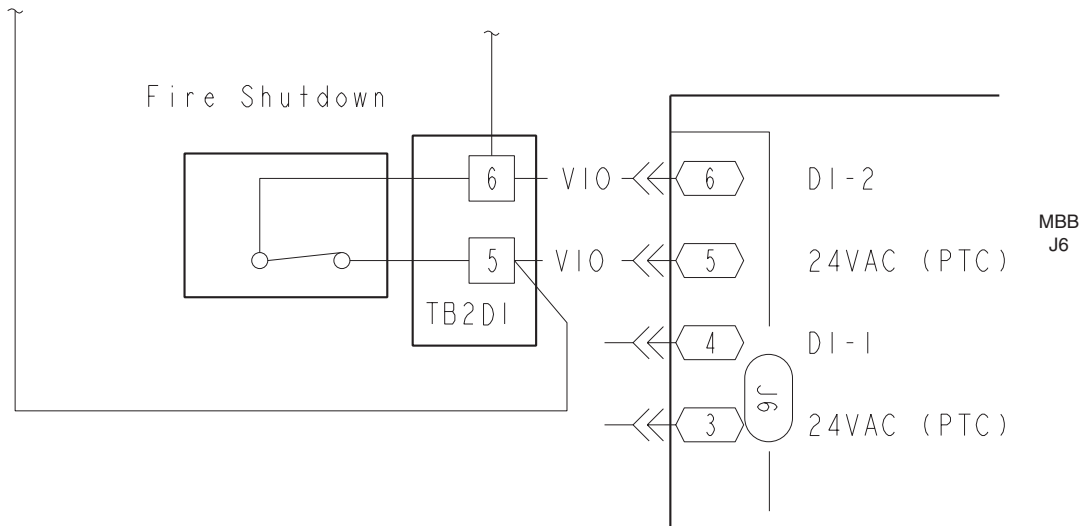
**Fig. 75 — Space and Return Air Humidity Sensor Wiring**



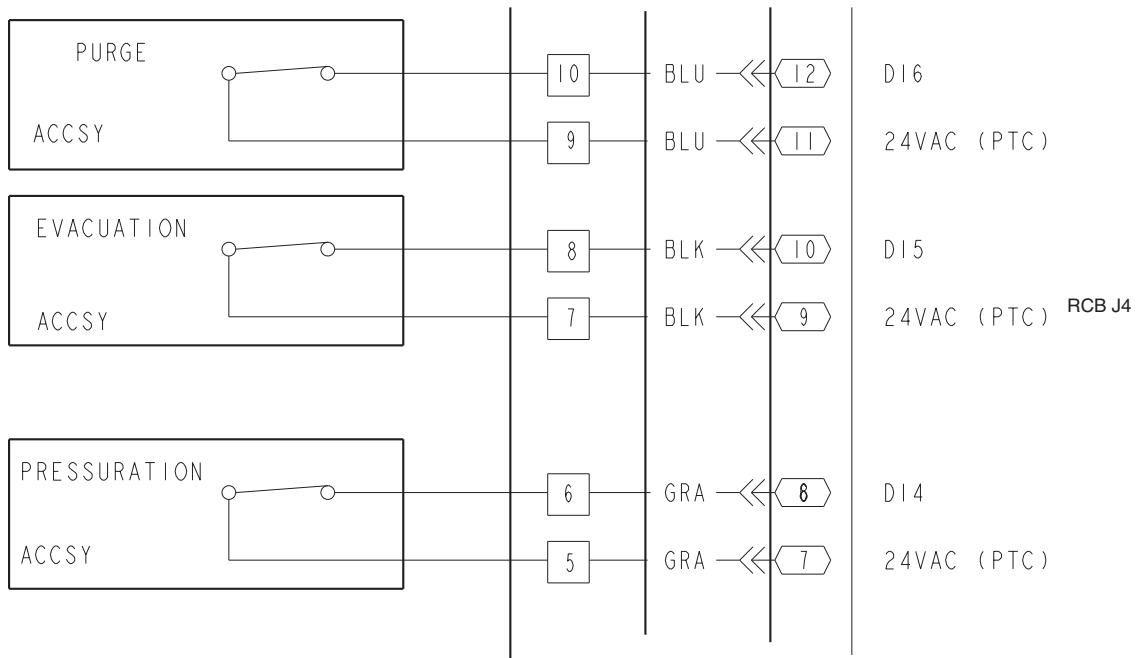
**Fig. 76 — Return Air CO<sub>2</sub> Sensor Wiring**



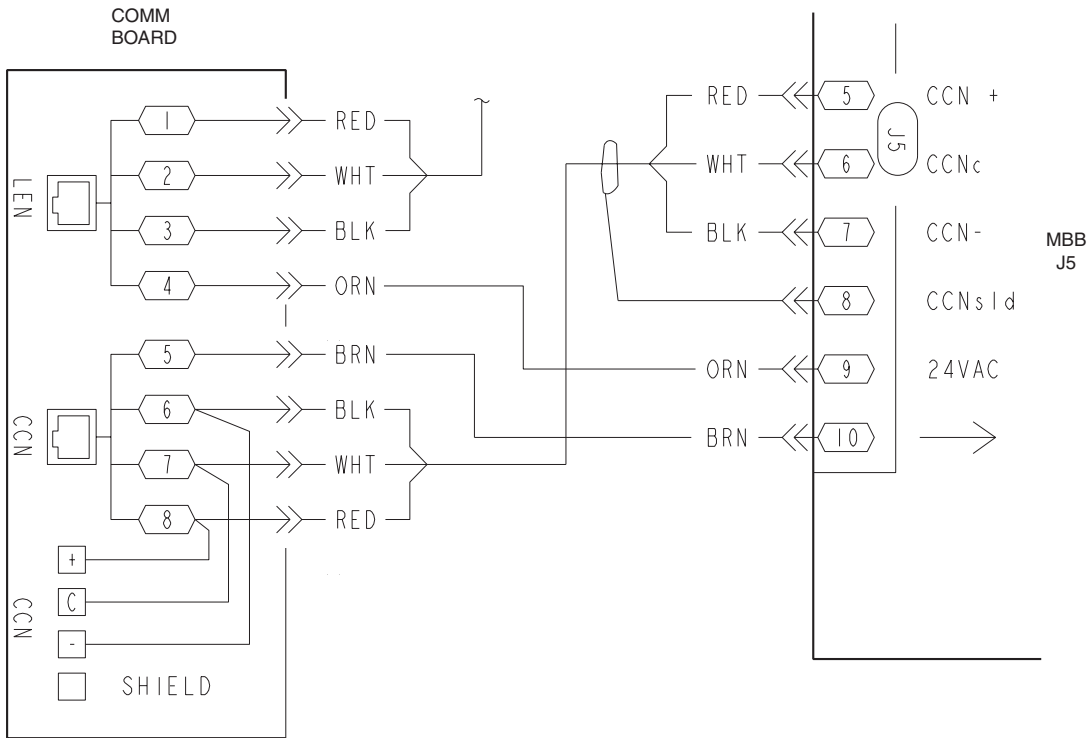
**Fig. 77 — Return Air Smoke Detector Wiring**



**Fig. 78 — Fire Shutdown Wiring**



**Fig. 79 — Purge, Evacuation, and Pressurization Wiring**



**Fig. 80 — CCN Connections**



