

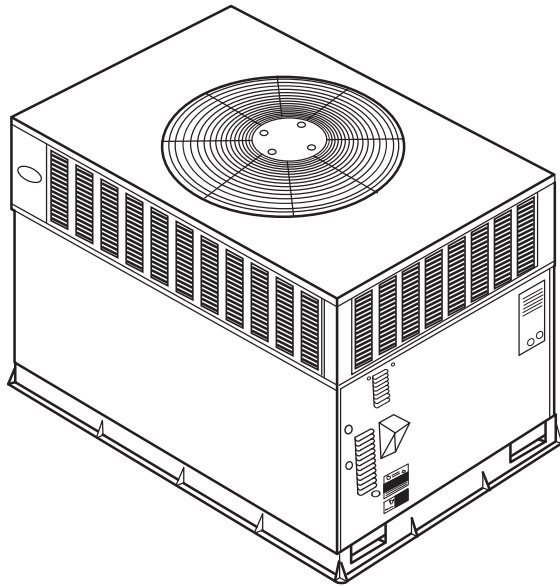
48XP

Performance™ 13 SEER Single–Packaged Air Conditioner and Gas Furnace System with Puron® (R–410A) Refrigerant Single– and Three–Phase 2 to 5 Nominal Tons (Sizes 024–060)



Turn to the Experts.®

Product Data



A99088

Fig. 1 - Unit 48XP

Single-Packaged Products with Energy-Saving Features and Puron® refrigerant.

- Up to 13.5 SEER
- Up to 81% AFUE
- Factory-Installed TXV
- Variable-Speed Blower-Standard
- Direct Spark Ignition
- Low Sound Levels

FEATURES/BENEFITS

One-piece heating and cooling units with low sound levels, easy installation, low maintenance, and dependable performance.

Puron Environmentally Sound Refrigerant is Carrier's unique refrigerant designed to help protect the environment. Puron is an HFC refrigerant which does not contain chlorine that can harm the ozone layer. Puron refrigerant is in service in millions of systems proving highly reliable, environmentally sound performance.

IdealHumidity™ Technology featuring Thermidistat control and Variable Speed blower motor that provides greater comfort, humidity control, and energy efficiency. You can expect up to 30 times better dehumidification; economical constant fan for less than \$50.00 a year, which provides improved indoor air quality and more even temperatures from room to room; and reduced indoor noise due to lower air velocity. In addition, you'll realize improved installation flexibility with 3 different airflow choices for best overall comfort.

Easy Installation

Factory-assembled package is a compact, fully self-contained, combination gas heating/electric cooling unit that is prewired, pre-piped, and pre-charged for minimum installation expense.

These units are available in a variety of standard and optional heating/ cooling size combinations with voltage options to meet residential and light commercial requirements. Units are lightweight and install easily on a rooftop or at ground level. The high tech composite base eliminates rust problems associated with ground level applications.

Convertible duct configuration

Unit is designed for easy use in either downflow or horizontal applications. Each unit is easily converted from horizontal to downflow and includes horizontal duct covers. Downflow operation is easily provided in the field to allow vertical ductwork connections. The basepan utilizes knockout style seals on the bottom openings to ensure a positive seal in the horizontal airflow mode.

Efficient operation High-efficiency design offers SEER (Seasonal Energy Efficiency Ratios) of up to 13.5 and AFUE (Annual Fuel Utilization Efficiency) ratings as high as 81%.

Energy-saving, direct spark ignition saves gas by operating only when the room thermostat calls for heating. Standard units are furnished with natural gas controls. A low-cost field installed kit for propane conversion is available for all units.

48XPN units are dedicated Low NOx units designed for California installations. These models meet the California maximum oxides of nitrogen (NOx) emissions requirement of 40 nanograms/joule or less as shipped from the factory and **MUST** be installed in California Air Quality Management Districts where a Low NOx rule exists.

Durable, dependable components Compressors are designed for high efficiency. Each compressor is hermetically sealed against contamination to help promote longer life and dependable operation. Each compressor also has vibration isolation to provide quieter operation. All compressors have internal high pressure and overcurrent protection.

Monoport inshot burners produce precise air-to-gas mixture, which provides for clean and efficient combustion. The large monoport on the inshot (or injection type) burners seldom, if ever, requires cleaning. All gas furnace components are accessible in one compartment.

Turbo-tubular™ heat exchangers are constructed of aluminized steel for corrosion resistance and optimum heat transfer for improved efficiency. The tubular design permits hot gases to make multiple passes across the path of the supply air.

In addition, dimples located on the heat exchanger walls force the hot gases to stay in close contact with the walls, improving heat transfer.

Direct-drive brushless DC blower motor is standard on all 48XP models.

Direct-drive PSC condenser-fan motors are designed to help reduce energy consumption and provide for cooling operation down to 55°F (13°C) outdoor temperature. Motormaster® II low ambient kit is available as a field-installed accessory.

Thermostat controls

Time Guard® II anti-short cycle protection circuitry. If a non-corporate thermostat without anti-short cycle protection is used the Time Guard II field-installed anti-short cycle kit is recommended.

Thermostatic Expansion Valve - A hard shutoff, balance port TXV maintains a constant superheat at the evaporator exit (cooling cycle) resulting in higher overall system efficiency.

Refrigerant system is designed to provide dependability. Liquid filter driers are used to promote clean, unrestricted operation. Each unit leaves the factory with a full refrigerant charge. Refrigerant service connections make checking operating pressures easier.

High and Low Pressure Switches provide added reliability for the compressor.

Indoor and Outdoor coils are computer-designed for optimum heat transfer and efficiency. The indoor coil is fabricated from copper tube and aluminum fins and is located inside the unit for protection against damage. The outdoor coil is internally mounted on the top tier of the unit. Copper fin coils and pre-coated fin coils are available from the factory by special order. These coils are recommended in applications where aluminum fins are likely to be damaged due to corrosion. They are ideal for seacoast applications.

Low sound ratings ensure a quiet indoor and outdoor environment with sound ratings as low as 72dBA.

Easy to service cabinets provide easy single-panel accessibility to serviceable components during maintenance and installation. The basepan with integrated drain pan provides easy ground level installation with or without a mounting pad. Convenient handholds are provided to manipulate the unit on the jobsite. A nesting feature ensures a positive basepan to roof curb seal when the unit is roof mounted. A convenient 3/4-in. (19.05 mm) wide perimeter flange makes frame mounting on a rooftop easy.

Integrated Gas Control (IGC) board provides safe and efficient control of heating and simplifies trouble-shooting through its built-in diagnostic function.

Cabinets are constructed of heavyduty, phosphated, zinc-coated prepainted steel capable of withstanding 500 hours in salt spray. Interior surfaces of the evaporator/heat exchanger compartment are insulated with cleanable semi-rigid insulation board, which keeps the conditioned air from being affected by the outdoor ambient temperature and provides improved indoor air quality. (conforms to American Society of Heating, Refrigeration and Air conditioning Engineers No. 62P.) The sloped drain pan minimizes standing water in the drain. An external drain is provided.

Louvered Grille provides hail and vandalism protection.

TABLE OF CONTENTS

Features/Benefits	1-2
Model Number Nomenclature	3
ARI Capacities	4
Physical Data	5
Options and Accessories	6
Base Unit Dimensions	8-9
Accessory Dimensions	10
Selection Procedure	11
Performance Data	12-17
Typical Piping and Wiring	18
Application Data	19
Electrical Data	20
Typical Wiring Schematics	21-22
Controls	23
Guide Specifications	24-25

48XP - 024 040 3 0 1 --

Type of Unit
48XP – Single Packaged
Gas Heating/Electric
Cooling Unit

Low NOx Indicator
– Standard
N – Low Nox

Nominal Cooling Capacity
024 – 2.0 Tons
030 – 2.5 Tons
036 – 3.0 Tons
042 – 3.5 Tons
048 – 4.0 Tons
060 – 5.0 Tons

Heat Input Size (Btuh)
040 – 40,000
060 – 60,000
090 – 90,000
115 – 115,000
130 – 130,000

Electrical Supply
3 – 208/230-1-60
5 – 208/230-3-60

Series

Packaging

Options
BT – AL evap, vinyl condenser
CC – AL evap, CU condenser
CU – CU evap & condenser
TP – Base unit with tin plated indoor coil hairpins
TV – TP with vinyl coating on outdoor coil
TC – TP with AL indoor coil & CU/CU outdoor coil
See Price Page for full list of factory options.
Only used if ordering an option

AL – Aluminum
CU – Copper



ARI* CAPACITIES

Cooling Capacities and Efficiencies

UNIT 48XP	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITIES (Btuh)	EER**	SEER†
024	2	770	24,000	11.0	13.2
030	2-1/2	960	29,000	11.0	13.0
036	3	1100	36,000	11.2	13.5
042	3-1/2	1450	41,000	11.2	13.0
048	4	1450	45,000	11.0	13.0
060	5	1710	57,000	11.0	13.0

LEGEND

dB—Sound Levels (decibels)

db—Dry Bulb

SEER—Seasonal Energy Efficiency Ratio

wb—Wet Bulb

COP—Coefficient of Performance

* Air Conditioning & Refrigeration Institute.

**At "A" conditions—80°F (26.7°C) indoor db/67°F (19.4°C) indoor wb & 95°F (35°C) outdoor db.

† Rated in accordance with U.S. Government DOE Department of Energy) test procedures and/or ARI Standards 210/240.

Notes:

1. Ratings are net values, reflecting the effects of circulating fan heat.

Ratings are based on:

Cooling Standard: 80°F (26.7°C) db, 67°Fwb (19.4°C) indoor entering—air temperature and 95°F db (35°C) outdoor entering—air temperature.

2. Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

48XP

Gas Heating Capacities and Efficiencies

UNIT 48XP	HEATING INPUT (Btuh)	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE RANGE °F (°C)	AFUE (%)
024040 030040	40,000	31,000	20-50 (11-28)	80.1
024060 030060	60,000	46,000	35-65 (19-36)	78.4
036060			25-55 (14-31)	78.7
042060		47,000	20-50 (11-28)	78.7
036090	90,000	70,000	45-75 (25-42)	79.9
042090	90,000	71,000	35-65 (19-36)	79.9
048090 060090	90,000	70,000	25-55 (14-31)	78.6
048115 060115	115,000	92,000	35-65 (19-36)	81.1
048130 060130	130,000	104,000 103,000	40-70 (22-39)	80.3

LEGEND

AFUE—Annual Fuel Utilization Efficiency

NOTE: Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

A-Weighted Sound Power Level (dBA)

MODEL 48XP	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA) (without tone adjustment)						
		125	250	500	1000	2000	4000	8000
024	72	58.8	63.5	67.2	66.9	63.7	58.3	50.0
030	72	58.8	63.5	67.2	66.9	63.7	58.3	50.0
036	72	60.7	63.3	66.8	66.5	64.2	60.3	53.0
042	72	56.7	62.8	67.8	67.4	63.7	57.7	50.8
048	78	62.4	69.9	71.3	73.4	70.0	66.3	60.1
060	78	63.5	67.6	71.8	75.5	71.0	68.1	59.9

* Tested in accordance with ARI Standard 270 (not listed in ARI).

PHYSICAL DATA

UNIT SIZE 48XP	024040	024060	030040	030060	036060	036090	042060	042090
NOMINAL CAPACITY (ton)	2	2	2-1/2	2-1/2	3	3	3-1/2	3-1/2
SHIPPING WEIGHT (lb)	388	388	392	392	416	416	464	464
(kg)	176	176	178	178	189	189	210	210
COMPRESSORS	Scroll							
Quantity	1							
REFRIGERANT (R-410A)								
Quantity (lb)	7.3	7.3	8.0	8.0	9.5	9.5	10.7	10.7
(kg)	3.3	3.3	3.6	3.6	4.3	4.3	4.9	4.9
REFRIGERANT METERING DEVICE	TXV							
CONDENSER COIL								
Rows...Fins/in.	2...21	2...21	2...21	2...21	2...21	2...21	2...21	2...21
Face Area (sq ft)	11.95	11.95	11.95	11.95	13.7	13.7	15.4	15.4
CONDENSER FAN								
Nominal Cfm	2350	2350	2350	2350	2800	2800	2800	2800
Diameter (in.)	22	22	22	22	22	22	22	22
(mm)	559	559	559	559	559	559	559	559
Motor Hp (Rpm)	1/8 (825)	1/8 (825)	1/8 (825)	1/8 (825)	1/8 (825)	1/8 (825)	1/8 (825)	1/8 (825)
EVAPORATOR COIL								
Rows...Fins/in.	3...15	3...15	3...15	3...15	4...15	4...15	3...15	3...15
Face Area (sq ft)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
EVAPORATOR BLOWER								
Nominal Airflow (Cfm)	770	770	960	960	1150	1150	1400	1400
Size (in.)	10x10	10x10	10x10	10x10	11x10	11x10	11x10	11x10
(mm)	254x254	254x254	254x254	254x254	279x254	279x254	279x254	279x254
Motor (hp)	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4
FURNACE SECTION*								
Burner Orifice No. (Qty...Drill Size) Natural Gas	2...44	2...38	2...44	2...38	2...38	3...38	2...38	2...38
Burner Orifice No. (Qty...Drill Size) Propane Gas	2...50	2...46	2...50	2...46	2...46	3...46	2...46	2...46
HIGH-PRESSURE SWITCH (psig)	650 +/-15							
Cut-out Reset (Auto)	420 +/-25							
LOSS-OF-CHARGE / LOW-PRESSURE SWITCH (Liquid Line) (psig) Cut-out Reset (auto)	20 +/-5							
	45 +/-10							
RETURN-AIR FILTERS Throwaway† (in.) (mm)	20x24x1 508x610x25						24x30x1 610x762x25	

*Based on altitude of 0 to 2000 ft (0-610 m).

†Required filter sizes shown are based on the larger of the ARI (Air Conditioning and Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300 ft/minute for high-capacity type. Air filter pressure drop for non-standard filters must not exceed 0.08 in. wc.

48XP

PHYSICAL DATA (CONT)

UNIT SIZE 48XP	048090	048115	048130	060090	060115	060130
NOMINAL CAPACITY (ton)	4	4	4	5	5	5
SHIPPING WEIGHT (lb)	512	512	512	559	559	559
(kg)	232	232	232	254	254	254
COMPRESSORS	Scroll					
Quantity	1					
REFRIGERANT (R-410A) Quantity (lb)	11.25	11.25	11.25	13.2	13.2	13.2
(kg)	5.1	5.1	5.1	6.0	6.0	6.0
REFRIGERANT METERING DEVICE	TXV					
CONDENSER COIL Rows...Fins/in.	2...21	2...21	2...21	2...21	2...21	2...21
Face Area (sq ft)	17.4	17.4	17.4	19.3	19.3	19.3
CONDENSER FAN						
Nominal Cfm	3300	3300	3300	3300	3300	3300
Diameter (in.)	22	22	22	22	22	22
(mm)	559	559	559	559	559	559
Motor Hp (Rpm)	1/4 (1100)	1/4 (1100)	1/4 (1100)	1/4 (1100)	1/4 (1100)	1/4 (1100)
EVAPORATOR COIL						
Rows...Fins/in.	4...15	4...15	4...15	4...17	4...17	4...17
Face Area (sq ft)	4.7	4.7	4.7	5.7	5.7	5.7
EVAPORATOR BLOWER						
Nominal Airflow (Cfm)	1400	1400	1400	1710	1710	1710
Size (in.)	11x10	11x10	11x10	11x10	11x10	11x10
(mm)	279x254	279x254	279x254	279x254	279x254	279x254
Motor (hp)	3/4 (1075)	3/4 (1075)	3/4 (1075)	1.0 (1040)	1.0 (1040)	1.0 (1040)
FURNACE SECTION*						
Burner Orifice No. (Qty...Drill Size) Natural Gas	3...38	3...33	3...31	3...38	3...33	3...31
Burner Orifice No. (Qty...Drill Size) Propane Gas	3...46	3...42	3...41	3...46	3...42	3...41
HIGH-PRESSURE SWITCH (psig)	650 +/-15					
Cut-out Reset (Auto)	420 +/-25					
LOSS-OF-CHARGE / LOW-PRESSURE SWITCH (Liquid Line) (psig) Cut-out Reset (auto)	20 +/-5					
	45 +/-10					
RETURN-AIR FILTERS Throwaway† (in.) (mm)	24x30x1 610x762x25					

*Based on altitude of 0 to 2000 ft (0-610 m).

†Required filter sizes shown are based on the larger of the ARI (Air Conditioning and Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300 ft/minute for high-capacity type. Air filter pressure drop for non-standard filters must not exceed 0.08 in. wc.

OPTIONS AND ACCESSORIES

Factory-installed options

Louver grille provides hail and vandalism protection. A wire grille is standard on all models. See model number nomenclature for louver grille options.

Coil options include copper/copper and vinyl-coated construction for refrigerant coils. Units are shipped standard with copper tube/aluminum fin construction. See model number nomenclature for coil options.

Field-installed accessories

Economizer with Solid-State Controls and Barometric Relief Dampers
Manual Air Damper (25% open)
Filter Rack
Flat Roof Curbs (8-in. and 14-in.) (230.2 mm and 355.6 mm)
Square-to-Round Duct Transition Kit
Thermidistat
Thermostats
Crankcase Heater
Compressor Start Kit (for use on single-phase units only)
Natural-to-propane Gas Conversion Kit
High Altitude Propane Conversion Kit
Propane-to-natural Gas Conversion Kit
Rigging Kit
Low Ambient Kit (Motormaster® II Control)
Solid-State Time Guard® II Device

Economizer with solid-state controls and barometric relief dampers includes filter racks and provide outdoor air during cooling and reduce compressor operation.

Manual outside air damper includes hood and filter rack with adjustable damper blade for up to 25% outdoor air.

Flat roof curbs in both 8 in. (203.2 mm) and 14 in. (355.6 mm) sizes are available for roof mounted applications.

Square-to-round duct transition kit enables 024-048 size units to be fitted to 14 in. (355.6 mm) round ductwork.

Compressor start kit assists compressor start-up by providing additional starting torque on single phase units and prolongs compressor motor life.

Thermidistat Control coupled with the system's variable speed indoor blower delivers Carrier's patented IdealHumidity Technology that allows for even greater humidity control. Along with more precisely controlling temperature and humidity control. Along with more precisely controlling temperature and humidity, the Thermidistat offers full seven-day programmability allowing you to further customize your comfort and energy savings.

Corporate Thermostats provide control for the system heating and cooling functions. Thermostat models are available in both programmable and non-programmable versions.

Crankcase heater provides anti-floodback protection for low-load cooling applications.

Natural-to-propane gas conversion kit allows for conversion from natural gas to propane gas for standard altitude (0 to 2000 ft [0 to 610 m] above sea level).

Rigging kit includes lifting brackets which are inserted into the unit base rigging holds to lift unit for rooftop applications.

Low-ambient kit (Motormaster II control) allows the use of mechanical cooling down to outdoor temperatures as low as 0°F (-17.8°C) when properly installed.

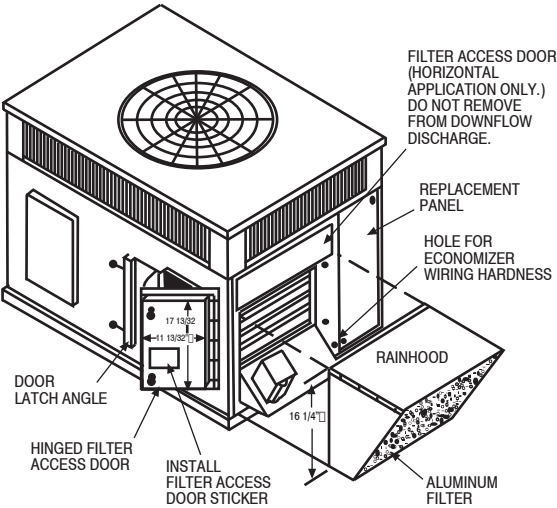
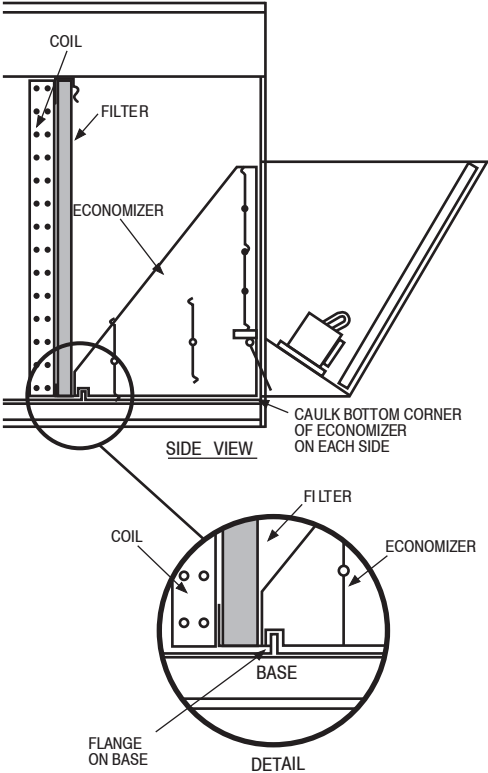
Solid-state Time Guard II device provides short-cycling protection for the compressor. Not required with corporate electronic thermostats.

Filter rack features easy installation, serviceability, and high-filtering performance for vertical applications.

High altitude propane conversion kit is for use at 2001 to 6000 ft (610 to 1829 m) above sea level. Kit consists of propane gas orifices that compensate for gas heat operation at high altitude.

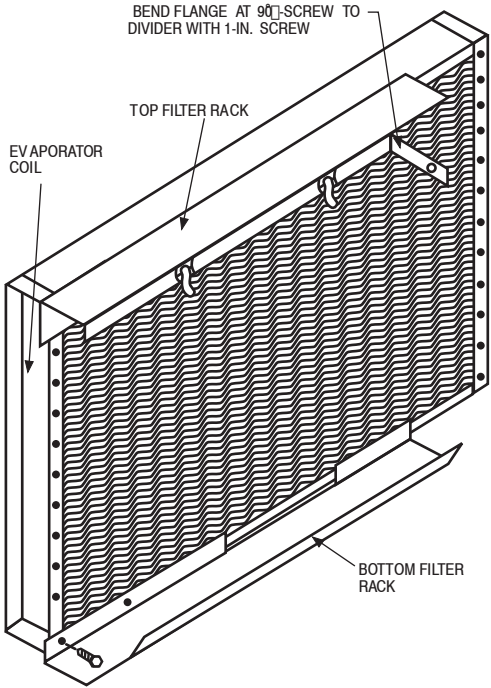
Propane-to-natural conversion kit is for use at standard altitudes (0 to 2000 ft [0 to 610 m] above sea level). Kit contains natural gas orifices and gas valve spring to convert the unit back to natural gas.

ECONOMIZER

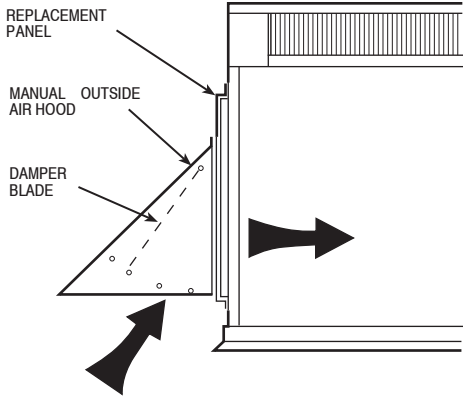


48XP

FILTER RACK



MANUAL OUTSIDE AIR DAMPER



UNIT DIMENSIONS - 48XP024-036

48XP

UNIT	ELECTRICAL CHARACTERISTICS		UNIT HEIGHT			CENTER OF GRAVITY MM/IN		
	LBS.	KG.	"A"	X	Y	Z		
48XP024040/060	340	154	940.3(37.02)	558.8(22.0)	368.3(14.5)	406.4(16.0)		
48XP030040/060	344	156	991.1(39.02)	558.8(22.0)	387.4(15.3)	447.0(17.6)		
48XP036060/090	368	167	1041.9(41.02)	508.0(20.0)	355.6(14.0)	447.0(17.6)		

REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

CORNER WEIGHT LBS./KG.		MILLIMETERS (IN)	
"1"	"2"	"3"	"4"
024	51/23	68/31	102/46
030	52/23	69/31	103/47
036	55/24	74/33	110/50

REC. REQUIRED CLEARANCES.

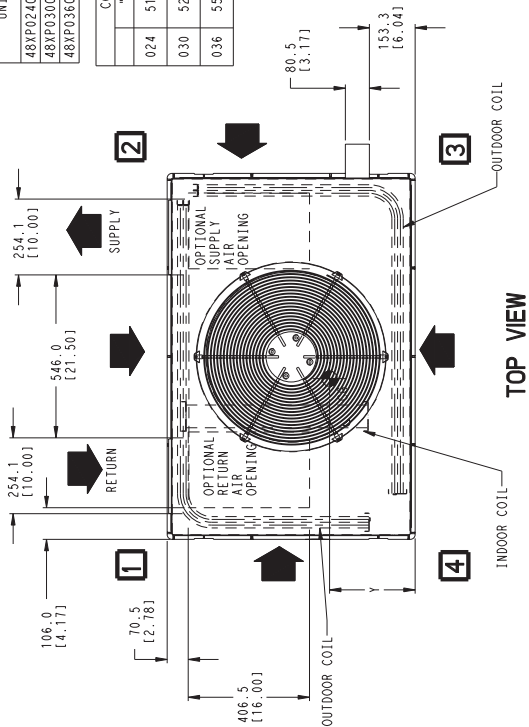
MILLIMETERS (IN)	
TOP OF UNIT	355.6 (14.00)
DUCT SIDE OF UNIT	50.8 (2.00)
SIDE OPPOSITE DUCTS	355.6 (14.00)
BOTTOM OF UNIT	0.0 (0.00)
FLUE PANEL	914.4 (36.00)

REQUIRED CLEARANCE FOR OPERATION AND SERVICING

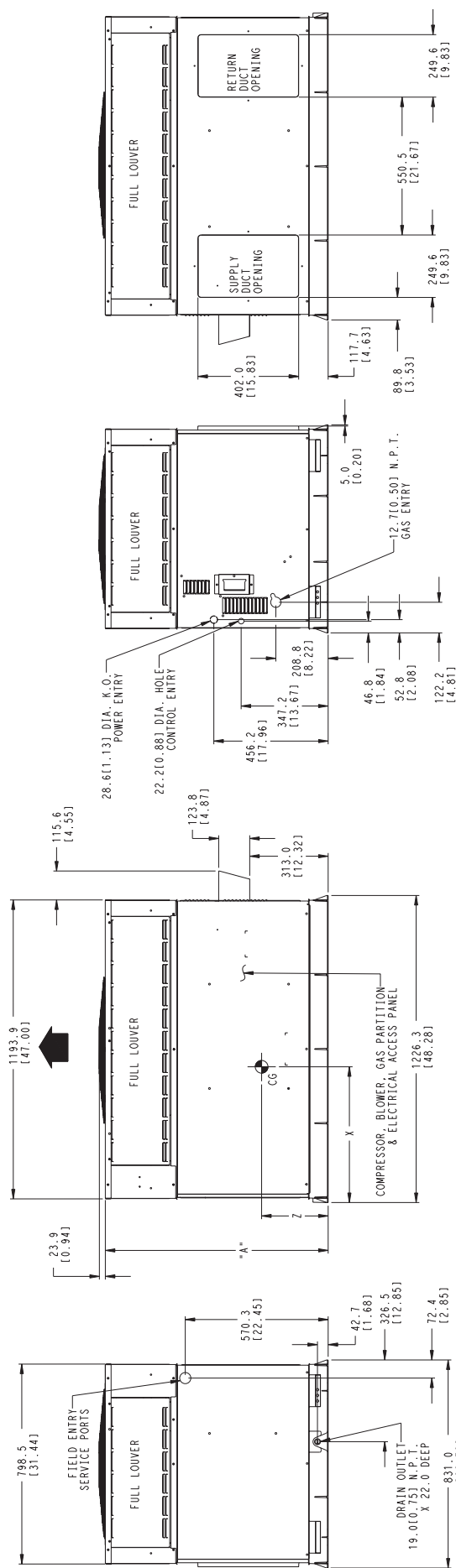
MILLIMETERS (IN)	
EVAP. COIL ACCESS SIDE	914.0 (36.00)
POWER ENTRY SIDE	914.0 (36.00)
(EXCEPT FOR NEC REQUIREMENTS)	
UNIT TOP	1219.2 (48.00)
SIDE OPPOSITE DUCTS	914.0 (36.00)
DUCT PANEL	304.8 (12.00)

*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 304.8 (12.00) FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAY BE COMPROMISED.

DIMENSIONS IN [] ARE IN INCHES



TOP VIEW



FRONT VIEW

RIGHT SIDE VIEW

REAR VIEW

LEFT SIDE VIEW

UNIT DIMENSIONS - 48XP042-060

UNIT	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT "A"	CENTER OF GRAVITY MM/IN		
		LBS.	KG.		X	Y	Z
48XP02060/090	208-230-1-60, 208/230-3-60	412	187	1091.7(42.98)	495.3(19.5)	447.6(17.6)	457.2(18.0)
48XP048090/115/130	208-230-1-60, 208/230-3-60	462	210	1142.5(44.98)	495.3(19.5)	447.6(17.6)	457.2(18.0)
48XP060090/115/130	208-230-1-60, 208/230-3-60	507	230	1193.3(46.98)	533.4(21.0)	500.0(20.0)	442.0(17.6)

REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

CORNER WEIGHT LBS./KG.		ELECTRICAL CHARACTERISTICS		UNIT WT.		CENTER OF GRAVITY MM/IN		
1"	2"	3"	4"	LBS.	KG.	"A"	X	Y
042	62/28	82/37	124/56	144/65				
048	69/31	92/42	139/63	162/73				
060	76/35	101/46	152/69	178/80				

NEC REQUIRED CLEARANCES.

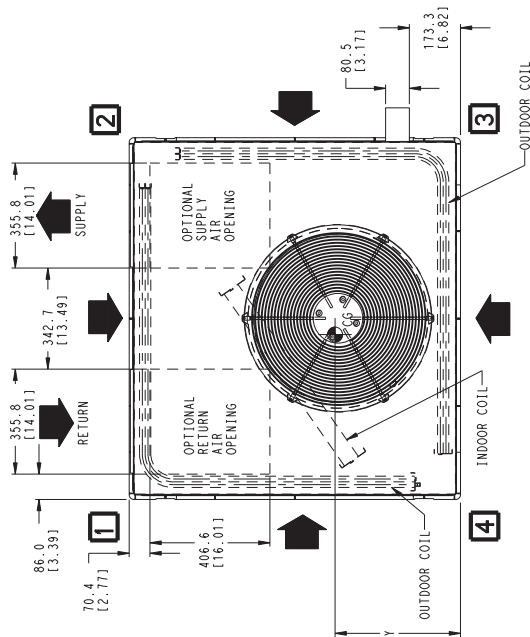
CORNER WEIGHT LBS./KG.		ELECTRICAL CHARACTERISTICS		UNIT WT.		CENTER OF GRAVITY MM/IN		
1"	2"	3"	4"	LBS.	KG.	"A"	X	Y
042	62/28	82/37	124/56	144/65				
048	69/31	92/42	139/63	162/73				
060	76/35	101/46	152/69	178/80				

REQUIRED CLEARANCE FOR OPERATION AND SERVICING

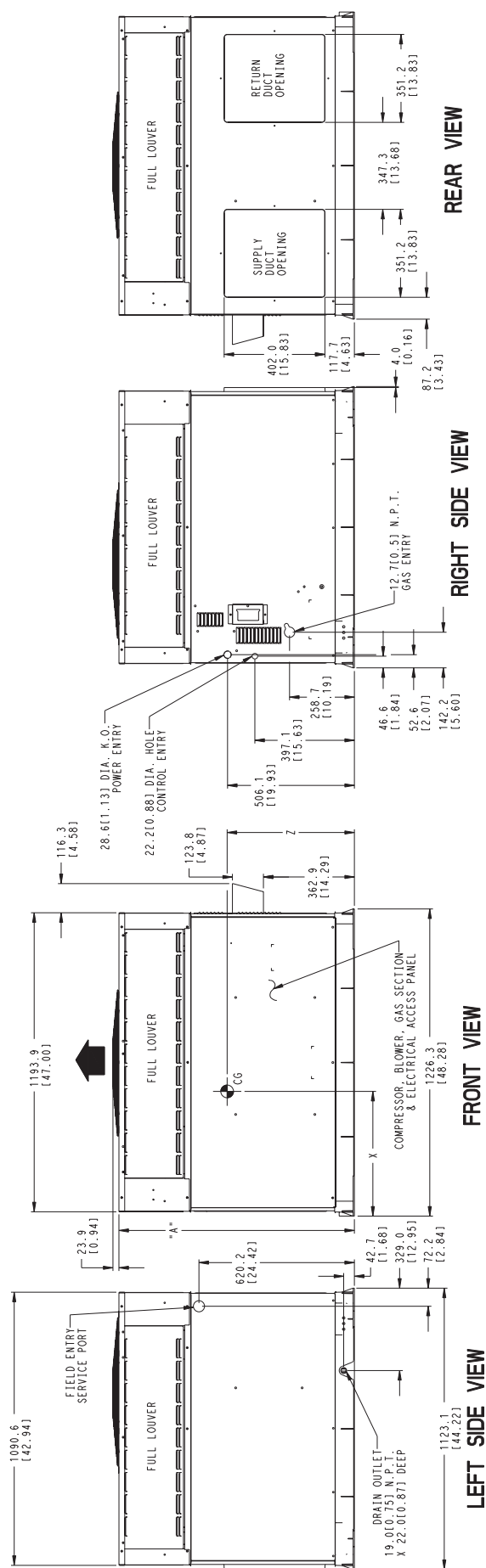
CORNER WEIGHT LBS./KG.		ELECTRICAL CHARACTERISTICS		UNIT WT.		CENTER OF GRAVITY MM/IN		
1"	2"	3"	4"	LBS.	KG.	"A"	X	Y
042	62/28	82/37	124/56	144/65				
048	69/31	92/42	139/63	162/73				
060	76/35	101/46	152/69	178/80				

*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 304.8 [12.00] FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAYBE COMPROMISED.

DIMENSIONS IN [] ARE IN INCHES



TOP VIEW



REAR VIEW

RIGHT SIDE VIEW

FRONT VIEW

LEFT SIDE VIEW

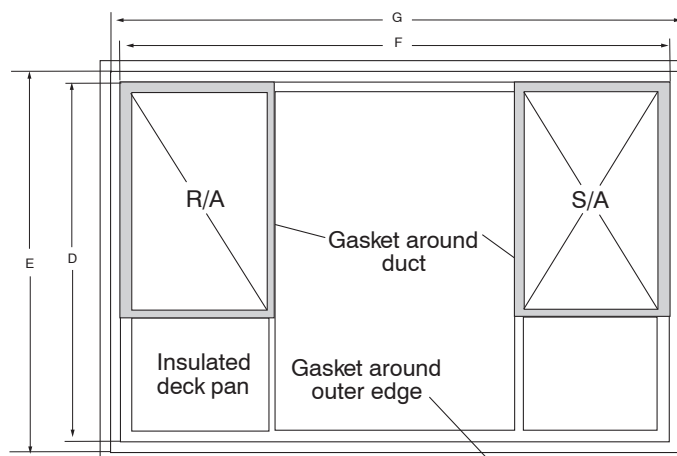
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48XP

48XP

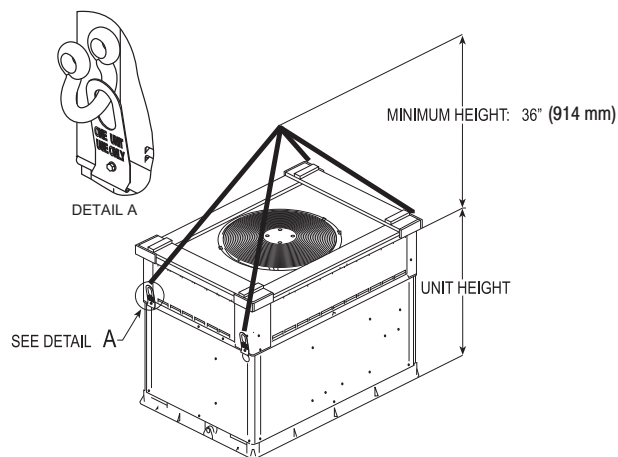
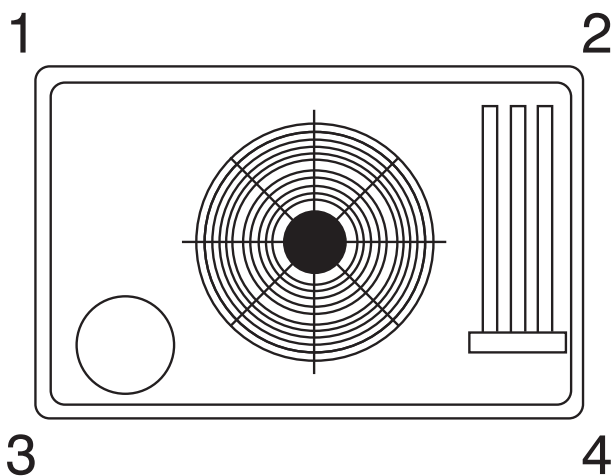


Note A: When unit mounting screw is used, retainer bracket must also be used.



UNIT SIZE	CATALOG NUMBER	A IN. (MM)	B IN. (MM)	C IN. (MM)	D IN. (MM)	E IN. (MM)	F IN. (MM)	G IN. (MM)
48XP018-036	CPRFCURB006A00	8 (203)	11 (279)	16-1/2 (419)	28-3/4 (730)	30-3/8 (771)	44-5/16 (1126)	45-15/16 (1167)
	CPRFCURB007A00	14 (356)	11 (279)	16-1/2 (419)	28-3/4 (730)	30-3/8 (771)	44-5/16 (1126)	45-15/16 (1167)
48XP042-060	CPRFCURB008A00	8 (203)	16-3/16 (411)	17-3/8 (441)	40-1/4 (1022)	41-15/16 (1065)	44-7/16 (1129)	46-1/16 (1169)
	CPRFCURB009A00	14 (356)	16-3/16 (411)	17-3/8 (441)	40-1/4 (1022)	41-15/16 (1065)	44-7/16 (1129)	46-1/16 (1169)

1. Roof curb must be set up for unit being installed.
2. Seal strip must be applied, as required, to unit being installed.
3. Roof curb is made of 16-gauge steel.
4. Attach ductwork to curb (flanges of duct rest on curb).
5. Insulated panels: 1-in. (25.4 mm) thick fiberglass 1 lb. density.
6. When unit mounting screw is used (see Note A), a retainer bracket must be used as well. This bracket must also be used when required by code for hurricane or seismic conditions. This bracket is available through Micrometl.



A08005

A07216

Unit	SMALL CABINET							LARGE CABINET						
	024		030		036			Unit	042		048		060	
	lb	kg	lb	kg	lb	kg			lb	kg	lb	kg	lb	kg
Rigging Weight	377	171	381	173	405	184		Rigging Weight	449	204	499	226	544	247

NOTE: See dimensional drawing for corner weight distribution. Corner weights shown on drawing are based on unit—only weights and do not include packaging.

SELECTION PROCEDURE (WITH EXAMPLE)

1. Determine cooling and heating requirements at design conditions:

Given:

Required Cooling Capacity (TC) 34,500 Btuh
 Sensible Heat Capacity (SHC) 26,000 Btuh
 Required Heating Capacity 60,000 Btuh
 Condenser Entering Air Temperature 95°F (35°C)
 Indoor-Air Temperature . 80°F (26°C)edb 67°F (19°C)ewb
 Evaporator Air Quantity 1200 CFM
 External Static Pressure 0.2 in. wc
 Electrical Characteristics 230-1-60

2. Select unit based on required cooling capacity.

Enter Net Cooling Capacities table at condenser entering temperature of 95°F (35°C). Unit 036 at 1200 cfm and 67°F (19°C) ewb (entering wet bulb) will provide a total capacity of 36,000 Btuh and a SHC of 27,400 Btuh. Calculate SHC correction, if required, using Note 4 under Cooling Capacities tables.

3. Select heating capacity of unit to provide design condition requirement.

In the Heating Capacities and Efficiencies table, note that the unit 036090 will provide 72,000 Btuh with an input of 90,000 Btuh.

4. Determine fan speed and power requirements at design conditions.

Before entering the air delivery tables, calculate the total static pressure required. From the given example, the Wet Coil Pressure Drop Table, and the Filter Pressure Drop Table:

External Static Pressure 0.200 in. wc
 Filter 0.130 in. wc
 Wet Coil Pressure Drop 0.032 in. wc
 Total Static Pressure 0.362 in. wc

Enter the table for Dry Coil Air Delivery—Horizontal and Downflow Discharge. At .362 in. wc ESP, the closest speed to 1235 CFM with the NOM Speed pin selected.

5. Select unit that corresponds to power source available.

The Electrical Data Table shows that the unit is designed to operate at 208/230-1-60.

48XP

PERFORMANCE DATA

48XP024 Cooling Performance Table

Temp °F (°C) Outdoor Air Entering Condenser		800/0.026										900/0.032										1000/0.04									
		Evaporator Air - CFM /BF										Evaporator Air - Ewb °F (°C)										Evaporator Air - CFM /BF									
		62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)														
75 (24)	TC	24.0	24.5	26.5	29.1	24.6	25.1	27.1	29.8	25.1	25.5	27.4	30.4																		
	SHC	21.9	21.3	18.7	15.4	23.5	22.8	19.8	16.1	25.0	24.2	20.8	16.7																		
	KW	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9																		
85 (29)	TC	22.9	23.3	25.3	27.9	23.5	23.9	25.8	28.5	23.9	24.3	26.2	28.9																		
	SHC	21.4	20.7	18.1	14.9	22.9	22.2	19.2	15.6	24.3	23.6	20.3	16.2																		
	KW	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1																		
95 (35)	TC	21.8	22.2	24.0	26.5	22.3	22.6	24.5	27.0	22.7	23.0	24.8	27.4																		
	SHC	20.8	20.2	17.6	14.3	22.3	21.6	18.7	15.0	23.6	22.9	19.7	15.6																		
	KW	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3																		
105 (41)	TC	20.5	20.9	22.6	25.0	21.0	21.3	23.0	25.4	21.6	21.7	23.3	25.7																		
	SHC	20.2	19.5	16.9	13.7	21.6	20.9	18.0	14.3	22.5	22.2	19.0	14.9																		
	KW	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5																		
115 (46)	TC	19.2	19.5	21.1	23.3	19.8	19.9	21.5	23.7	20.7	20.4	21.7	23.6																		
	SHC	19.4	18.8	16.3	13.0	20.6	20.2	17.3	13.7	21.5	21.2	18.3	14.1																		
	KW	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8																		
125 (52)	TC	17.8	18.0	19.4	21.4	18.5	18.5	19.5	21.7	19.0	19.0	19.9	21.9																		
	SHC	18.5	18.1	15.5	12.3	19.2	19.2	16.5	12.9	19.8	19.7	17.6	13.5																		
	KW	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1																		

PERFORMANCE DATA (CONT)

48XP036

Temp °F (°C) Outdoor Air Entering Condenser		1100/0.06										1225/0.07										1400/0.08									
		Evaporator Air - CFM/BF										Evaporator Air - CFM/BF										Evaporator Air - CFM/BF									
		Evaporator Air - Ewb °F (°C)										Evaporator Air - Ewb °F (°C)										Evaporator Air - Ewb °F (°C)									
75 (24)	TC	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)										
		36.2	36.8	39.7	43.8	36.9	37.4	40.3	44.4	37.9	38.1	41.0	45.1	37.9	38.1	41.0	45.1	37.9	38.1	41.0	45.1										
		33.2	26.7	27.8	22.3	34.7	27.9	29.0	23.1	36.9	29.6	30.9	24.2	36.9	29.6	30.9	24.2	36.9	29.6	30.9	24.2										
		KW	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.9	2.9	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9									
85 (29)	TC	34.6	35.1	37.9	41.8	35.3	35.6	38.4	42.4	36.4	36.3	39.1	43.1	36.4	36.3	39.1	43.1	36.4	36.3	39.1	43.1										
		SHC	32.4	26.0	27.1	21.6	34.0	27.1	28.3	22.4	35.6	28.9	30.2	23.6	35.6	28.9	30.2	23.6	35.6	28.9	30.2	23.6									
		KW	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.2	3.1	3.1	3.1	3.2	3.1	3.1	3.1	3.2									
		TC	33.0	33.4	36.0	39.7	33.7	33.8	36.5	40.2	34.8	34.4	37.0	40.8	34.8	34.4	37.0	40.8	34.8	34.4	37.0	40.8									
95 (35)	SHC	31.6	25.3	26.4	20.9	32.9	26.4	27.6	21.7	34.4	28.1	29.4	22.8	34.4	28.1	29.4	22.8	34.4	28.1	29.4	22.8										
		KW	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.5										
		TC	31.3	31.5	34.0	37.5	32.1	31.9	34.3	37.9	33.1	32.4	34.9	38.4	33.1	32.4	34.9	38.4	33.1	32.4	34.9	38.4									
		SHC	30.6	24.5	25.6	20.1	31.5	25.7	26.8	20.9	32.8	27.3	28.6	22.0	32.8	27.3	28.6	22.0	32.8	27.3	28.6	22.0									
105 (41)	KW	3.6	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.8	3.8	3.8	3.8	3.7	3.7	3.8	3.8	3.7	3.7	3.8	3.8										
		TC	29.6	29.4	31.8	35.0	30.4	29.8	32.1	35.4	31.3	30.3	32.6	35.8	31.3	30.3	32.6	35.8	31.3	30.3	32.6	35.8									
		SHC	29.3	23.7	24.8	19.3	30.0	24.8	26.0	20.0	31.0	26.4	27.7	21.1	31.0	26.4	27.7	21.1	31.0	26.4	27.7	21.1									
		KW	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.1	4.1	4.1	4.2	4.1	4.1	4.1	4.2	4.1	4.1	4.1	4.2									
125 (52)	TC	27.8	27.2	29.4	32.4	28.4	27.5	29.7	32.7	29.3	28.0	30.1	33.0	29.3	28.0	30.1	33.0	29.3	28.0	30.1	33.0										
		SHC	27.5	22.8	23.9	18.4	28.2	23.8	25.0	19.1	29.0	25.4	26.7	20.2	29.0	25.4	26.7	20.2	29.0	25.4	26.7	20.2									
		KW	4.4	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5									

48XP042

Temp °F (°C) Outdoor Air Entering Condenser		1225/0.06										1400/0.07										1575/0.08									
		Evaporator Air - CFM/BF										Evaporator Air - CFM/BF										Evaporator Air - CFM/BF									
75 (24)	TC	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)														
		39.6	40.4	43.4	47.6	40.5	41.2	44.2	48.4	41.5	42.1	45.1	49.4	41.5	42.1	45.1	49.4														
		33.5	27.6	28.6	23.4	35.4	29.0	30.0	24.3	37.9	30.8	31.9	25.6	37.9	30.8	31.9	25.6														
85 (29)	SHC	37.9 <td>38.7</td> <td>41.5</td> <td>45.5</td> <td>38.7</td> <td>39.4</td> <td>42.3</td> <td>46.3</td> <td>39.7</td> <td>40.2</td> <td>43.2</td> <td>47.2</td> <td>39.7</td> <td>40.2</td> <td>43.2</td> <td>47.2</td>	38.7	41.5	45.5	38.7	39.4	42.3	46.3	39.7	40.2	43.2	47.2	39.7	40.2	43.2	47.2														
		32.8	26.9	27.8	22.7	34.6	28.2	29.2	23.6	37.0	31.1	24.8	37.0	31.1	24.8	37.0	31.1														
		3.3	3.3	3.4	3.4	3.3	3.3	3.4	3.4	3.3	3.3	3.4	3.4	3.3	3.3	3.4	3.4														
95 (35)	TC	36.2 <td>36.8</td> <td>39.6</td> <td>43.4</td> <td>36.9</td> <td>37.5</td> <td>40.3</td> <td>44.1</td> <td>37.8</td> <td>38.2</td> <td>41.0</td> <td>44.9</td> <td>37.8</td> <td>38.2</td> <td>41.0</td> <td>44.9</td>	36.8	39.6	43.4	36.9	37.5	40.3	44.1	37.8	38.2	41.0	44.9	37.8	38.2	41.0	44.9														
		32.0	26.1	27.0	21.9	33.8	27.4	28.4	22.8	35.9	29.1	24.0	35.9	29.1	24.0	35.9	29.1														
		3.7	3.7	3.7	3.8	3.7	3.7	3.7	3.8	3.7	3.7	3.7	3.8	3.7	3.7	3.7	3.8														
105 (41)	SHC	34.2 <td>34.8</td> <td>37.4</td> <td>41.0</td> <td>34.9</td> <td>35.4</td> <td>38.0</td> <td>41.6</td> <td>36.0</td> <td>36.0</td> <td>38.7</td> <td>42.3</td> <td>36.0</td> <td>36.0</td> <td>38.7</td> <td>42.3</td>	34.8	37.4	41.0	34.9	35.4	38.0	41.6	36.0	36.0	38.7	42.3	36.0	36.0	38.7	42.3														
		31.0	25.2	26.2	21.1	32.7	26.5	27.6	22.0	34.3	28.3	29.4	23.2	34.3	28.3	29.4	23.2														
		4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1														
115 (46)	TC	32.1 <td>32.6</td> <td>35.0</td> <td>38.4</td> <td>32.8</td> <td>33.1</td> <td>35.5</td> <td>38.9</td> <td>34.0</td> <td>33.7</td> <td>36.1</td> <td>39.5</td> <td>34.0</td> <td>33.7</td> <td>36.1</td> <td>39.5</td>	32.6	35.0	38.4	32.8	33.1	35.5	38.9	34.0	33.7	36.1	39.5	34.0	33.7	36.1	39.5														
		30.0	24.3	25.2	20.2	31.4	25.6	26.6	21.0	32.8	27.3	28.5	22.2	32.8	27.3	28.5	22.2														
		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.6	4.5	4.5	4.5	4.6	4.5	4.5	4.5	4.6														
125 (52)	TC	29.8 <td>30.1</td> <td>32.3</td> <td>35.3</td> <td>30.6</td> <td>30.5</td> <td>32.7</td> <td>35.7</td> <td>31.7</td> <td>31.0</td> <td>33.2</td> <td>36.2</td> <td>31.7</td> <td>31.0</td> <td>33.2</td> <td>36.2</td>	30.1	32.3	35.3	30.6	30.5	32.7	35.7	31.7	31.0	33.2	36.2	31.7	31.0	33.2	36.2														
		28.6	23.2	24.2	19.1	29.6	24.5	25.5	20.0	30.6	26.1	27.3	21.1	30.6	26.1	27.3	21.1														
		4.9	4.9	4.9	5.0	4.9	4.9	4.9	5.0	4.9	4.9	4.9	5.0	4.9	4.9	4.9	5.0														

See Legend and Notes on Page 15.



PERFORMANCE DATA (CONT)

48XP048

Temp °F (°C) Outdoor Air Entering Condenser		Evaporator Air - CFM /BF									
		1260/0.06					1400/0.07				
		62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)
75 (24)	TC	45.0	45.8	49.6	54.7	46.7	47.3	51.2	56.3	48.1	48.7
	SHC	39.3	32.0	33.4	27.2	42.6	34.3	35.8	28.9	45.8	36.8
	KW	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.4	3.4
85 (29)	TC	42.8	43.6	47.2	52.1	44.3	44.9	48.6	53.5	45.6	46.1
	SHC	38.2	30.9	32.3	26.2	41.3	33.2	34.7	27.7	44.3	37.3
	KW	3.7	3.7	3.8	3.8	3.7	3.7	3.8	3.8	3.8	3.8
95 (35)	TC	40.6	41.3	44.7	49.4	41.8	42.4	46.0	50.7	44.2	47.0
	SHC	36.9	29.8	31.2	25.2	39.9	32.0	33.6	26.7	43.0	36.1
	KW	4.1	4.1	4.2	4.2	4.1	4.1	4.2	4.2	4.2	4.2
105 (41)	TC	38.2	38.9	42.1	46.4	39.6	39.8	43.1	47.6	41.5	40.8
	SHC	35.7	28.7	30.1	24.0	38.3	30.7	32.3	25.5	40.0	33.2
	KW	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.7	4.6	4.6
115 (46)	TC	35.7	36.3	39.3	43.3	38.2	37.1	40.1	44.2	38.7	37.9
	SHC	34.4	27.5	28.9	22.9	35.7	29.5	31.0	24.3	38.2	31.8
	KW	5.0	5.0	5.1	5.1	5.1	5.0	5.1	5.1	5.1	5.1
125 (52)	TC	33.4	33.4	36.2	39.4	34.6	34.1	36.9	40.5	36.1	34.8
	SHC	32.1	26.2	27.6	21.5	33.8	28.2	29.7	22.9	35.6	30.2
	KW	5.6	5.6	5.6	5.7	5.6	5.6	5.6	5.6	5.6	5.6

1600/0.08

Evaporator Air - CFM /BF

Evaporator Air - Ewb °F (°C)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

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67 (19)

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63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

48XP060

Temp °F (°C) Outdoor Air Entering Condenser		Evaporator Air - CFM /BF									
		1500/0.004					1750/0.07				
		62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)	67 (19)	72 (22)	62 (17)	63* (17)
75 (24)	TC	57.2	58.2	62.4	68.1	58.8	59.7	64.0	69.8	60.0	60.8
	SHC	49.4	47.9	41.6	33.8	53.6	51.8	44.5	35.4	57.6	55.4
	KW	4.1	4.1	4.2	4.2	4.2	4.3	4.3	4.4	4.4	4.4
85 (29)	TC	54.7	55.6	59.7	65.2	56.2	57.0	61.1	66.6	57.4	58.1
	SHC	48.2	46.7	40.4	32.6	52.4	50.5	43.2	34.2	56.3	54.2
	KW	4.5	4.5	4.6	4.7	4.7	4.7	4.8	4.9	4.8	4.9
95 (35)	TC	52.2	53.0	56.9	62.0	53.5	54.3	58.0	63.2	55.0	55.3
	SHC	47.0	45.4	39.2	31.4	51.1	49.2	41.9	32.9	55.0	52.9
	KW	5.0	5.0	5.1	5.2	5.1	5.2	5.3	5.3	5.2	5.3
105 (41)	TC	49.4	50.2	53.8	58.7	50.7	51.4	54.8	59.6	52.5	52.4
	SHC	45.7	44.1	37.9	30.1	49.8	47.9	40.6	31.6	52.5	51.6
	KW	5.5	5.6	5.6	5.7	5.7	5.7	5.8	5.9	5.8	5.8
115 (46)	TC	46.5	47.2	50.5	55.0	48.1	48.3	51.3	56.8	49.7	49.7
	SHC	44.3	42.7	36.4	28.7	48.1	46.6	39.2	30.6	49.7	49.7
	KW	6.1	6.2	6.2	6.3	6.2	6.3	6.4	6.4	6.4	6.4
125 (52)	TC	43.3	43.9	46.7	52.2	45.2	45.1	47.4	52.5	46.4	46.4
	SHC	42.8	41.2	34.9	27.8	45.2	45.1	37.6	28.9	46.4	46.4
	KW	6.7	6.8	6.8	6.8	6.8	6.9	7.0	7.0	7.0	7.0

2000/0.08

Evaporator Air - CFM /BF

Evaporator Air - Ewb °F (°C)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

62 (17)

63* (17)

67 (19)

72 (22)

See Legend and Notes on Page 15.

PERFORMANCE DATA (CONT)

* At 75°F (24°C) entering dry bulb—Tennessee Valley Authority (TVA) rating conditions; all others at 80°F dry bulb.

LEGEND

- BF—Bypass Factor
- edb—Entering Dry—Bulb
- Ewb—Entering Wet—Bulb
- kW—Total Unit Power Input
- SHC—Sensible Heat Capacity (1000 Btuh)
- TC—Total Capacity (1000 Btuh) (net)
- rh—Relative Humidity

COOLING NOTES:

- 1. Ratings are net; they account for the effects of the evaporator—fan motor power and heat.
- 2. Direct interpolation is permissible. Do not extrapolate.
- 3. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{Sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

$$t_{lwb} = \frac{\text{Wet-bulb temperature corresponding to enthalpy air leaving evaporator coil (} h_{lwb} \text{)}}{h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

- 4. The SHC is based on 80° F (26.6°C) edb temperature of air entering evaporator coil. Below 80° F (26.6°C) edb, subtract (corr factor x cfm) from SHC. Above 80° F (26.6°C) edb, add (corr factor x cfm) to SHC.

Correction Factor = $1.10 \times (1 + BF) \times (edb + 80)$.

- 5. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

PERFORMANCE DATA (CONT)

48XP Cooling Dry Coil ECM Airflow - Small Cabinet

UNIT SIZE	CFM ADJUST PIN SELECT	LO PIN			NOM PIN			HI PIN		
	EXTERNAL STATIC PRESSURE RANGE (in. wc)	0.0–0.39	0.4–0.69	0.7–1.0	0.0–0.39	0.4–0.69	0.7–1.0	0.0–0.39	0.4–0.69	0.7–1.0
024	COOLING	800	725	—	885	805	730	990	930	855
	COOLING DEHUMIDIFY	715	670	—	715	695	645	795	775	745
030	COOLING	1010	920	825	1105	1030	930	1255	1160	1050
	COOLING DEHUMIDIFY	890	845	795	890	865	825	1010	980	925
036	COOLING	1110	1025	970	1235	1175	1115	1400	1355	1280
	COOLING DEHUMIDIFY	990	960	910	990	975	940	1125	1110	1085

48XP

48XP Cooling Dry Coil ECM Airflow - Large Cabinet

UNIT SIZE	CFM ADJUST PIN SELECT	LO PIN	NOM PIN	HI PIN
	EXTERNAL STATIC PRESSURE RANGE (in. wc)	0.1–1.0	0.1–1.0	0.1–1.0
042	COOLING	1100	1225	1410
	COOLING DEHUMIDIFY	980	980	1125
048	COOLING	1260	1400	1610
	COOLING DEHUMIDIFY	1120	1120	1290
060	COOLING	1575	1750	2010
	COOLING DEHUMIDIFY	1400	1400	1610

48XP Gas Heating ECM Airflow - Small Cabinet

EASY SELECT™ BOARD SETTING (CFM)		700			800			1100			1250		
Unit Size	External Static Pressure (in. wc)	0.0–0.4	0.4–0.7	0.7–1.0	0.0–0.4	0.4–0.7	0.7–1.0	0.0–0.4	0.4–0.7	0.7–1.0	0.0–0.4	0.4–0.7	0.7–1.0
	Gas Heat Size												
024	040	—	—	—	855	770	710	—	—	—	—	—	—
	060	—	—	—	—	—	—	1020	890	835	—	—	—
030	040	—	—	—	880	840	805	—	—	—	—	—	—
	060	—	—	—	—	—	—	1030	970	910	—	—	—
036	060	—	—	—	—	—	—	1035	995	955	—	—	—
	090	—	—	—	—	—	—	—	—	—	1170	1110	1025

48XP Gas Heating ECM Airflow - Large Cabinet

EASY SELECT™ BOARD SETTING (CFM)		1000	1250	1600	1750	1800
Unit Size	External Static Pressure (in. wc)	0.0–1.0	0.0–1.0	0.0–1.0	0.0–1.0	0.0–1.0
	Gas Heat Size					
042	060	1000	—	—	—	—
	090	—	1250	—	—	—
048	090	—	1250	—	—	—
	115	—	—	1600	—	—
060	130	—	—	—	1750	—
	090	—	1250	—	—	—
	115	—	—	1600	—	—
	130	—	—	—	—	1800

Filter Pressure Drop Table (IN. W.C.)

FILTER SIZE in. (mm)	CFM																		
	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
20X20X1 (508X508X25)	0.05	0.07	0.08	0.10	0.12	0.13	0.14	0.15	—	—	—	—	—	—	—	—	—	—	—
20X24X1 (508X610X25)	—	—	—	—	0.09	0.10	0.11	0.13	0.14	0.15	0.16	—	—	—	—	—	—	—	—
24X30X1 (610X762X25)	—	—	—	—	—	—	—	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18

Economizer 1-in. (25 mm) Filter Pressure Drop (IN. W.C.)

UNIT 48XP	PRESSURE DROP
024–036	0.20
042–060	0.25

ECM Airflow vs Gas Heat Temperature Rise Chart

COOLING SIZE	RATED GAS INPUT RATE (X 1000)	AIRFLOW SETTING EAST SELECT™ (SCFM)	CALCULATED TEMPERATURE RISE °F (°C)	MIN. TEMP RISE °F (°C)	MAX TEMP RISE °F (°C)	MAX DISCH. TEMP °F (°C)
024	40	800	36.5 (20.3)	20 (11)	50 (28)	175 (79)
	60	1100	40 (22.2)	35 (19)	65 (36)	165 (74)
030	40	800	36.5 (20.3)	20 (11)	50 (28)	175 (79)
	60	1100	40 (22.2)	35 (19)	65 (36)	165 (74)
036	60	1100	40 (22.2)	25 (14)	55 (31)	165 (74)
	90	1200	54 (30.0)	45 (25)	75 (42)	175 (79)
042	60	1000	44 (24.4)	20 (11)	50 (28)	165 (74)
	90	1250	53 (29.4)	35 (19)	65 (36)	170 (77)
048	90	1250	53 (29.4)	25 (14)	55 (31)	165 (74)
	115	1600	53 (29.4)	35 (19)	65 (36)	170 (77)
	130	1750	54 (30.0)	40 (22)	70 (39)	175 (79)
060	90	1600	41 (22.8)	25 (14)	55 (31)	155 (68)
	115	1600	53 (29.4)	35 (19)	65 (36)	170 (77)
	130	1800	53 (29.4)	40 (22)	70 (39)	175 (79)

48XP

High Altitude Compensation Natural Gas Only

Orifice Conversion—3.5 IN. W.C. Manifold Pressure

ALTITUDE ft (m)	INPUT (Btuh)*	OUTPUT (Btuh)*	ORIFICE NUMBER†
0–2000 (0–610)	40,000	31,000	#44
	60,000	46,000	#38
	90,000	70,000	#38
	115,000	92,000	#33
	130,000	103,000	#31
2001–6000 (610–1829)	32,075	24,858	#48
	48,547	37,219	#42
	72,820	56,638	#42
	90,094	72,075	#37
	102,630	81,315	#34

*In the U.S.A., the input rating for altitudes above 2,000 ft (610 m) must be reduced by 4% for each 1,000 ft (305) above sea level. In Canada, the input rating for altitudes from 2,000 to 4,500 ft (610–1372 m) above sea level must be derated 10% by an authorized Gas Conversion Station or Dealer.

†Orifices available through your distributor.

Propane Gas Only

Orifice Conversion—10.0 IN. W.C. Manifold Pressure

ALTITUDE ft (m)	INPUT (Btuh)*	OUTPUT (Btuh)*	ORIFICE NUMBER†
0–2000 (0–610)	40,000	31,000	#50
	57,000	43,720	#46
	85,500	66,520	#46
	115,000	92,000	#42
	127,000	100,580	#41
2001–6000 (610–1829)	33,834	26,221	#52
	49,238	37,766	#48
	73,856	57,461	#48
	94,571	75,657	#44
	101,284	80,214	#43

*In the U.S.A., the input rating for altitudes above 2,000 ft (610 m) must be reduced by 4% for each 1,000 ft (305 m) above sea level. In Canada, the input rating for altitudes from 2,000 to 4,500 ft (610 to 1372 m) above sea level must be derated 10% by an authorized Gas Conversion Station or Dealer.

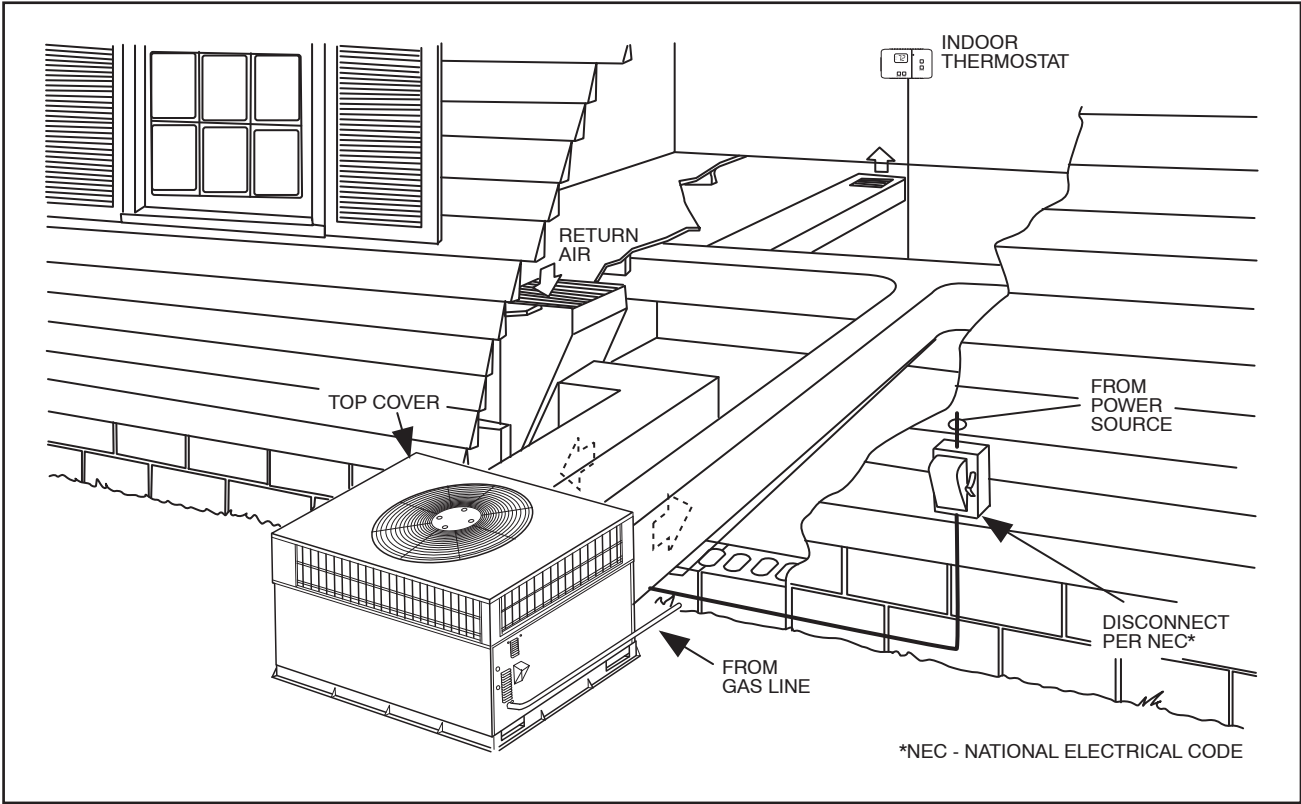
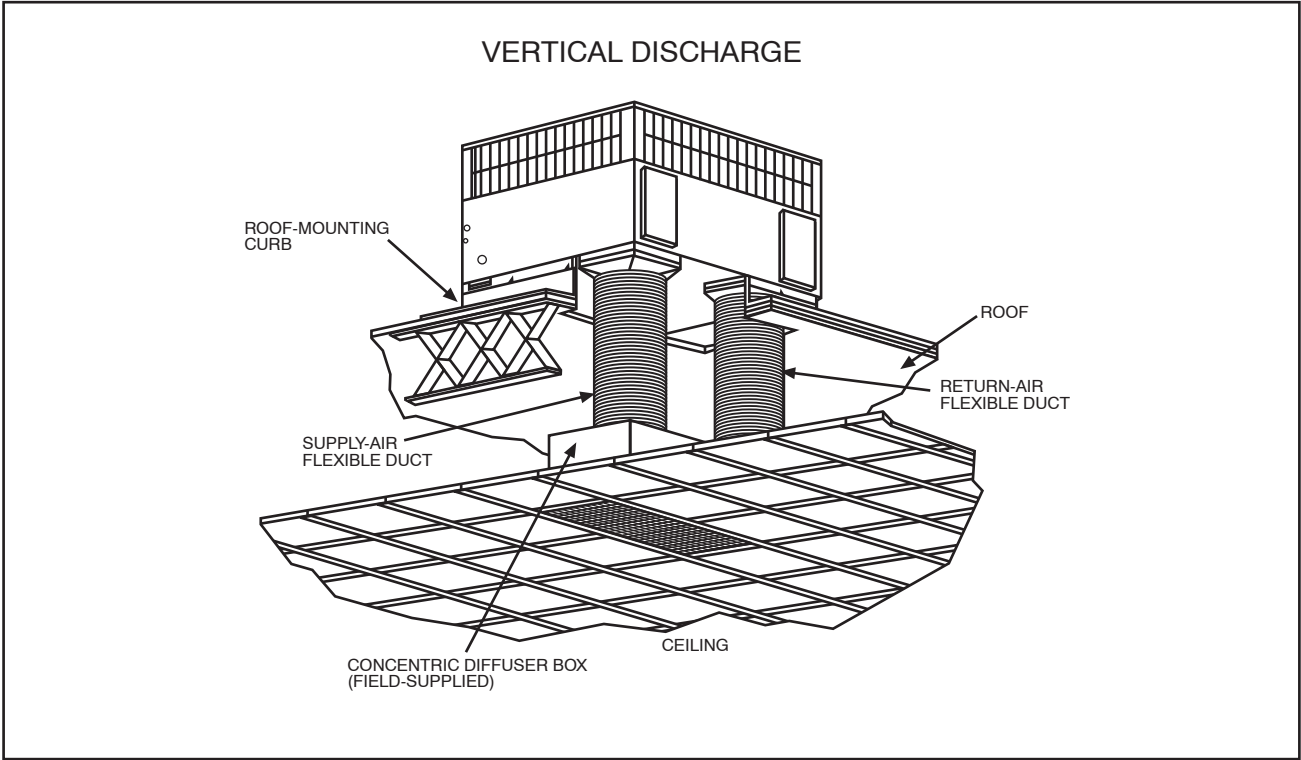
†Orifices available through your distributor.

48XP Wet Coil Pressure Drop

UNIT SIZE	STANDARD CFM (SCFM)															
	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100
024	0.005	0.007	0.010	0.012	0.015	–	–	–	–	–	–	–	–	–	–	–
030	–	0.007	0.010	0.012	0.015	0.018	0.021	0.024	–	–	–	–	–	–	–	–
036	–	–	–	0.019	0.023	0.027	0.032	0.037	0.042	0.047	–	–	–	–	–	–
042	–	–	–	–	0.014	0.017	0.020	0.024	0.027	0.031	0.035	0.039	0.043	–	–	–
048	–	–	–	–	–	–	0.027	0.032	0.036	0.041	0.046	0.052	0.057	0.063	0.068	–
060	–	–	–	–	–	–	–	–	–	0.029	0.032	0.036	0.040	0.045	0.049	0.053

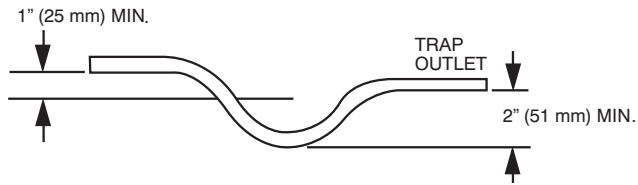
TYPICAL PIPING AND WIRING

48XP



APPLICATION DATA

Condensate trap — A 2-in. (51 mm) condensate trap must be field supplied.



Ductwork — Secure downflow discharge ductwork to roof curb. For horizontal discharge applications, attach ductwork to unit with flanges.

To convert a unit to downflow discharge — Units are equipped with factory-installed inserts in the down-flow openings. Removal of the inserts is similar to removing an electrical knock-out. Use the duct cover to seal the horizontal discharge openings in the unit. Units installed in horizontal discharge orientation do not require duct covers.

Airflow — Units are draw-thru in the cooling mode and blow-thru in the heating mode.

Maximum cooling airflow — To minimize the possibility of condensate blow-off from the evaporator, airflow through the units should not exceed 450 cfm per ton.

Minimum cooling airflow — Minimum cooling airflow is 350 cfm per ton for cooling mode. Airflow can be lower in certain modes when humidity removal is an issue.

Minimum ambient cooling operation temperature — All standard units have a minimum ambient operating temperature of 55°F (13°C). With accessory low ambient temperature kit, units can operate at temperatures down to 0°F (-17°C).

Maximum cooling operating outdoor air temperature is 125°F (52°C) intermittent.

ELECTRICAL DATA

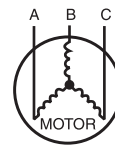
UNIT	NOMINAL V-PH-HZ	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	POWER SUPPLY	
		MIN	MAX	RLA	LRA	FLA	FLA	MCA	MOCP
48XP(-,N)024	208/230-1-60	187	253	13.5	61.0	0.8	4.3	22.0/22.0	30/30
48XP(-,N)030				15.9	73.0	0.8	4.3	25.0/25.0	30/30
48XP(-,N)036				16.9	83.0	0.8	6.8	28.7/28.7	35/35
48XP(-,N)042				22.4	105.0	0.8	6.8	35.6/35.6	45/45
48XP(-,N)048				21.3	109.0	1.6	6.8	35.0/35.0	45/45
48XP(-,N)060				27.0	145.0	1.6	9.1	44.5/44.5	60/60
48XP(-,N)036	208/230-3-60	187	253	12.2	77.0	0.8	6.8	22.9/22.9	30/30
48XP(-,N)042				15.4	88.0	0.8	6.8	26.9/26.9	35/35
48XP(-,N)048				14.7	91.0	1.6	6.8	26.8/26.8	35/35
48XP(-,N)060				19.2	137.0	1.6	9.1	33.3/33.3	40/40

LEGEND

FLA -- Full Load Amps
 LRA -- Locked Rotor Amps
 MCA -- Minimum Circuit Amps
 MOCP -- Maximum Overcurrent Protection
 RLA -- Rated Load Amps



EXAMPLE: Supply voltage is 230-3-60.



AB = 228 v

BC = 231 v

AC = 227 v

$$\text{Average Voltage} = \frac{228 + 231 + 227}{3}$$

$$= \frac{686}{3}$$

$$= 229$$

NOTES:

- In compliance with NEC (National Electrical Code) requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be Power Supply fuse. The CGA (Canadian Gas Association) units may be fuse or circuit breaker.
- Minimum wire size is based on 60 C copper wire. If other than 60 C wire is used, or if length exceeds wire length in table, determine size from NEC.
- Unbalanced 3-Phase Supply Voltage
Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance

% Voltage imbalance

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

Determine maximum deviation from average voltage.

$$(AB) 229 - 228 = 1 \text{ v}$$

$$(BC) 231 - 229 = 2 \text{ v}$$

$$(AC) 229 - 227 = 2 \text{ v}$$

Maximum deviation is 2 v.

Determine percent of voltage imbalance

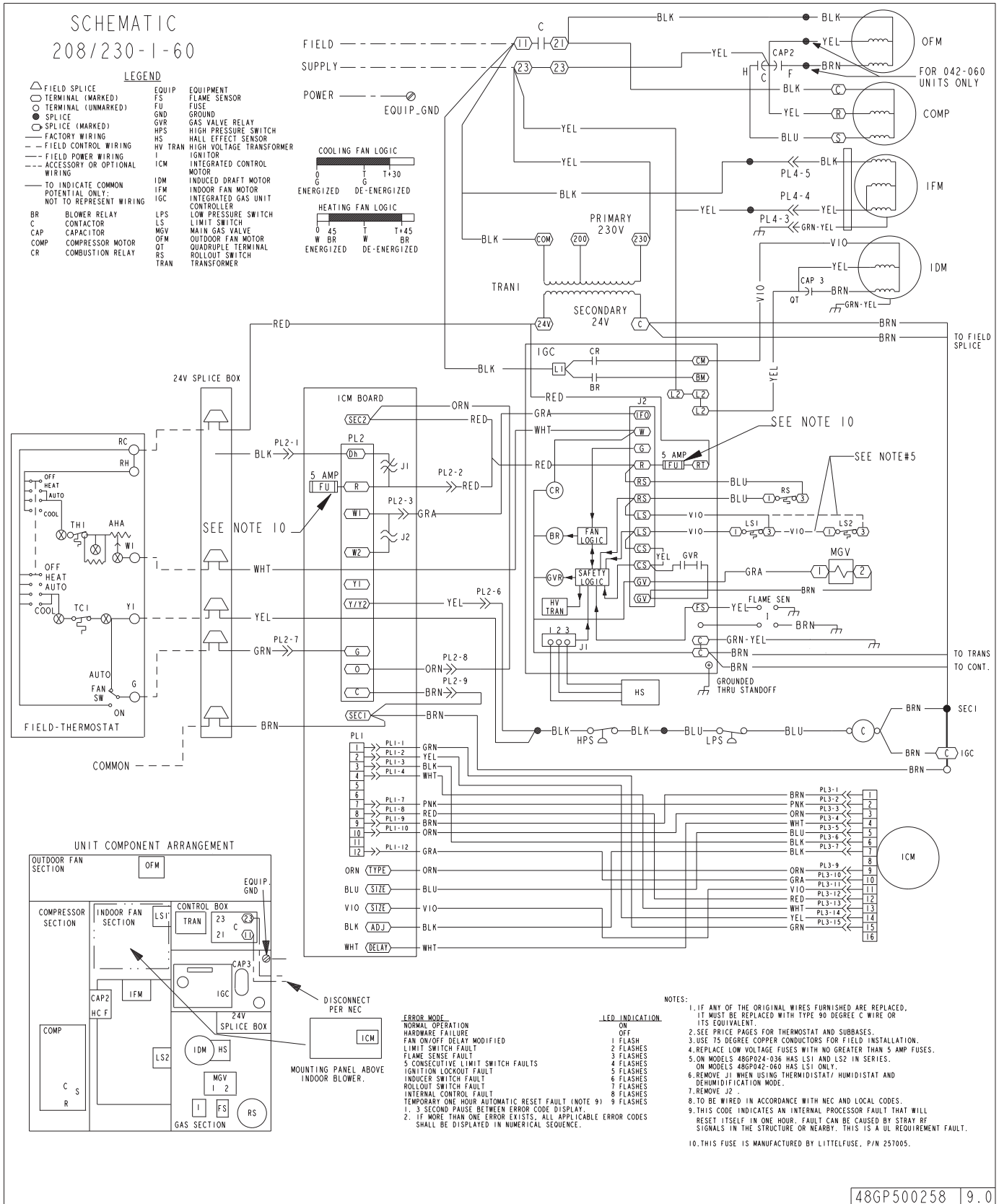
$$\% \text{ Voltage Imbalance} = 100 \times \frac{2}{229}$$

$$= 0.8\%$$

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

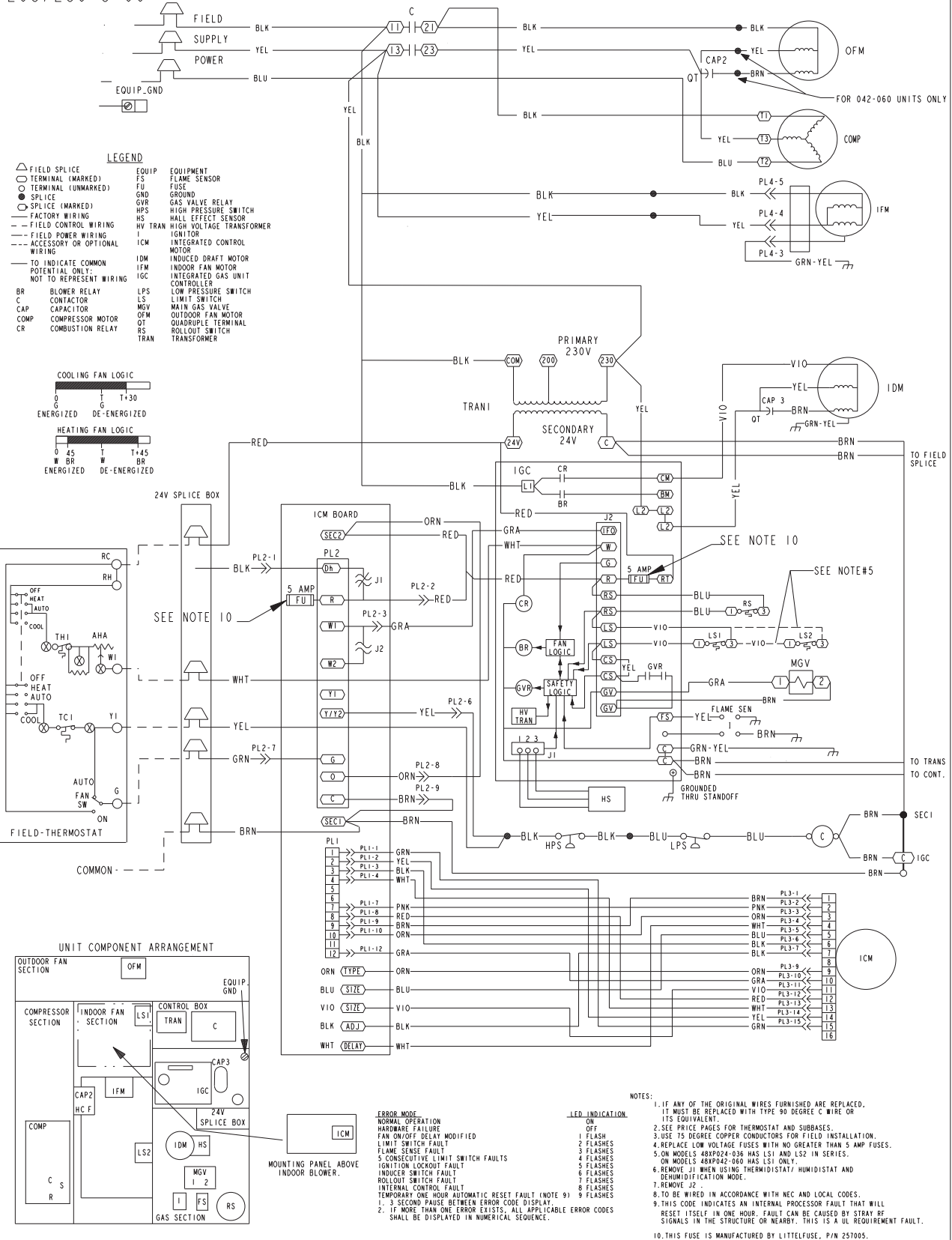
IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

TYPICAL WIRING SCHEMATIC 208/230-1-60



TYPICAL WIRING SCHEMATIC 208/230-3-60

SCHEMATIC 208/230-3-60



48XP

48XP500149 6.0

A08463

CONTROLS

Operating sequence

Heating - On a call for heating, terminal W of the thermostat is energized, starting the induced-draft motor. When the pressure switch senses that the induced-draft motor is moving sufficient combustion air, the burner sequence begins. This function is performed by the integrated gas unit controller (IGC). The indoor (evaporator) fan motor is energized 45 sec after flame is established. When the thermostat is satisfied and W is de-energized, the burners stop firing and the indoor (evaporator) fan motor shuts off after a 45-sec time-off delay. Please note that the IGC has the capability to automatically reduce the indoor fan motor on delay and increase the indoor fan motor off delay in the event of high duct static and/or partially-clogged filter.

Cooling — When the room temperature rises to a point that is slightly above the cooling control setting of the thermostat, the thermostat completes the circuit between thermostat terminal R to terminals Y and G. These completed circuits through the thermostat connect contactor coil (C) (through unit wire Y) and indoor fan board (through unit wire G) across the 24-v secondary of transformer (TRAN).

The normally open contacts of energized contactor (C) close and complete the circuit through compressor motor (COMP) to condenser (outdoor) fan motor (OFM). Both motors start instantly.

The indoor blower will cycle on and off with a call for cooling per the on/off delay profile selected on the easy select circuit board.

The cooling cycle remains “on” until the room temperature drops to a point that is slightly below the cooling control setting of the room thermostat. At this point, the thermostat “breaks” the circuit between thermostat terminal R to terminals Y and G. These open circuits de-energize contactor coil C and indoor blower motor. The condenser and compressor motors stop. After a preselected delay, the blower motor stops. The unit is in a “standby” condition, waiting for the next “call for cooling” from the room thermostat.

The ECM indoor blower operation with a call for fan operation (G) in the cooling mode will perform by the on/off delay profile selected on the Easy Select circuit board.

GUIDE SPECIFICATIONS

Packaged Gas Heating/Electric Cooling Units

Constant Volume Application

HVAC Guide Specifications

Size Range: **2 to 5 Tons, Nominal Cooling
40,000 to 130,000 Btuh,
Nominal Heating Input**

Model Number: 48XP

Part 1 — General

SYSTEM DESCRIPTION

Outdoor rooftop mounted, gas heating/electric cooling unit utilizing a hermetic scroll compressor for cooling duty. Unit shall discharge supply air vertically or horizontally as shown on contract drawings. Condenser fan/coil section shall have a draw-thru design with vertical discharge for minimum sound levels.

QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standards 210/240 and 270.
- B. Unit shall be designed in accordance with UL Standard 1995 and ANSI Z21.34/CSA2.3.
- C. Unit shall be manufactured in a facility registered to ISO 9001 manufacturing quality standard.
- D. Unit shall be UL listed and c-UL certified as a total package for safety requirements.
- E. Roof curb shall be designed to conform to NRCA Standards.
- F. Insulation and adhesives shall meet NFPA 90.1 requirements for flame spread and smoke generation.
- G. Cabinet insulation shall meet ASHRAE Standard 62.2.

DELIVERY, STORAGE AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

Part 2 — Products

EQUIPMENT

A. General:

Factory-assembled, single-piece, heating and cooling unit. Contained within the enclosure shall be all factory wiring, piping, controls, refrigerant charge with R-410A refrigerant, and special features required prior to field start-up.

B. Unit Cabinet:

1. Unit cabinet shall be constructed of phosphated, zinc-coated, pre-painted steel capable of with-standing 500 hours in salt spray.
2. Normal service shall be through a single removable cabinet panel.
3. The unit shall be constructed on a rust proof basepan that has an externally trapped, integrated sloped drain pan.
4. Evaporator fan compartment top surface shall be insulated with a minimum 1/2-in. (12.7 mm) thick, flexible fiberglass insulation, coated on the air side and retained by adhesive and mechanical means. The evaporator wall sections will be insulated with a minimum semi-rigid foil-faced board capable of being wiped clean. Aluminum foil-faced fiberglass insulation shall be used in the entire indoor air cavity section.
5. Unit shall have a field-supplied condensate trap.

C. Fans:

1. The evaporator fan shall be a multi-speed, direct-drive, as shown on equipment drawings.

2. Fan wheel shall be made from steel, be double-inlet type with forward curved blades with corrosion resistant finish. Fan wheel shall be dynamically balanced.
3. Condenser fan shall be direct drive propeller type with aluminum blades riveted to corrosion resistant steel spiders, be dynamically balanced, and discharge air vertically.

D. Compressor:

1. Fully hermetic compressors with factory-installed vibration isolation.
2. Scroll compressors shall be standard on all units.

E. Coils:

Evaporator and condenser coils shall have aluminum plate fins mechanically bonded to seamless copper tubes with all joints brazed (Copper/copper and vinyl-coated construction available as option). Tube sheet openings shall be belled to prevent tube wear.

F. Heating Section:

1. Induced-draft combustion type with energy saving direct spark ignition system and redundant main gas valve.
2. Induced-draft motors shall provide adequate airflow for combustion.
3. The heat exchangers shall be constructed of aluminized steel for corrosion resistance.
4. Burners shall be of the in-shot type constructed of aluminum coated steel.
5. All gas piping and electric power shall enter the unit cabinet at a single location.

G. Refrigerant Components:

Refrigerant expansion device shall be of the TXV (thermostatic expansion valve) type.

H. Filters:

Filter section shall consist of field-installed, throwaway, 1-in. (25 mm) thick fiberglass filters of commercially available sizes.

I. Controls and Safeties:

1. Unit controls shall be complete with a self-contained low voltage control circuit.
2. Compressors shall incorporate a solid-state compressor protector that provides reset capability.
3. Unit shall provide high and loss-of -charge/low pressure safety protection.

J. Operating Characteristics:

1. Unit shall be capable of starting and running at 125°F (51°C) ambient outdoor temperature per maximum load criteria of ARI Standard 210.
2. Compressor with standard controls shall be capable of operation down to 55°F (13°C) ambient outdoor temperature.
3. Units shall be provided with fan time delay to prevent cold air delivery before the heat exchanger warms up.
4. Indoor fan off delay for cooling is selected on Easy Select board.

K. Electrical Requirements:

All unit power wiring shall enter the unit cabinet at a single location.

L. Motors:

1. Compressor motors shall be of the refrigerant-cooled type with line-break thermal and current overload protection.
2. All fan motors shall have permanently lubricated bearings, and inherent, automatic reset, thermal overload protection.
3. Condenser fan motor shall be totally enclosed.

GUIDE SPECIFICATIONS (CONT)

M. Grille

1. Louvered Grille:

Wire grille shall be factory-installed to provide hail guard and vandalism protection.

N. Special Features Available:

1. Coil Options:

Shall include factory-installed optional tin-plated indoor, copper/copper and vinyl-coated refrigerant coils.

2. Economizer:

- a. Economizer controls capable of providing free cooling using outside air.
- b. Equipped with low leakage dampers not to exceed 3% leakage, at 1.0 IN. W.C. pressure differential.
- c. Spring return motor shuts off outdoor damper on power failure.

3. Flat Roof Curb:

Curbs shall have seal strip and a wood nailer for flashing and shall be installed per manufacturer's instructions.

4. Manual Outdoor Air Damper:

Package shall consist of damper, birdscreen, and rainhood which can be preset to admit outdoor air for year-round ventilation.

5. Thermostat:

To provide for one-stage heating and cooling in addition manual or automatic changeover and indoor fan control.

6. Natural-to-Propane Conversion Kit:

Shall be complete with all required hardware to convert to propane gas operation at 3.5 IN. W.C. manifold pressure.

7. Propane-to-Natural Conversion Kit

Shall be complete with all hardware to convert to natural gas at standard altitude (0 to 2000 ft [0 to 610 m] above sea level).

8. Low Ambient Package:

Shall consist of a solid-state control and condenser coil temperature sensor for controlling condenser-fan motor operation, which shall allow unit to operate down to 0°F (-17°C) outdoor ambient temperature when properly installed.

9. Filter Rack Kit:

Shall provide filter mounting for downflow applications.

10. Square-To-Round Duct Transitions (024-048):

Shall have the ability to convert the supply and return openings from rectangular to round.

11. Crankcase Heater:

Shall provide anti-floodback protection for low-load cooling applications.

12. High Altitude Propane Conversion Kit:

Shall consist of all required hardware to convert to propane gas heat operation at 2001 to 6000 ft (610 to 1829 m) above sea level.

13. Low NOx:

Shall provide NOx reduction to values below 40 nano-grams/joule to meet California emission requirements as shipped from factory.

14. Compressor Start Kit (single phase units only):

Shall provide additional starting torque for single-phase compressors.

