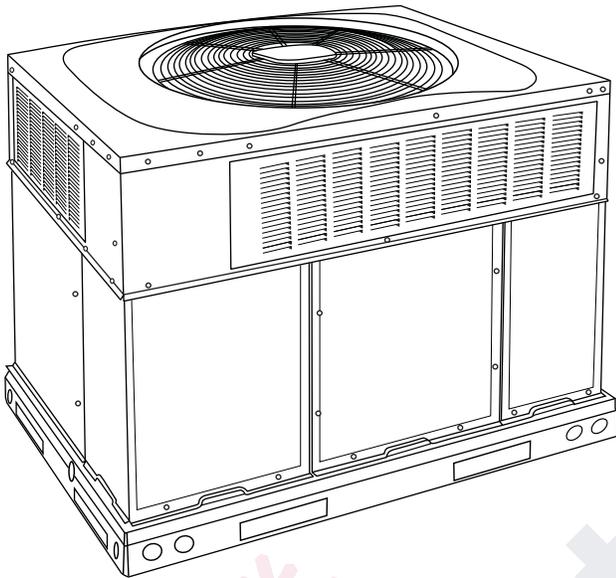


## 48VG-A

Performance™ 16 SEER 2-Stage Packaged Air  
Conditioner and Gas Furnace System with Puron®  
(R-410A) Refrigerant  
Single and Three Phase  
2 to 5 Nominal Tons (Sizes 24-60)



# Product Data



A09033

Fig. 1 - Unit 48VG-A

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

- 15.0 to 16.0 SEER
- 12.0 - 12.5 EER
- Up to 80.4% AFUE
- Meets Energy Star requirements
- Direct Spark Ignition
- Factory-Installed TXV
- Multi-speed ECM Blower Motor-Standard
- Sound Levels as low as 72dBA
- Two Stage Cooling
- Two Stage Heating (208/230 VAC models)
- Dehumidification Feature

### 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.

#### 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.

#### Innovative Unit Base Design

On the inside a high-tech composite material will not rust and incorporates a sloped drain pan which improves drainage and helps inhibit mold, algae and bacterial growth. On the outside metal base rails provide added stability as well as easier handling and rigging.

#### Convertible duct configuration

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

#### Efficient operation

**High-efficiency design** offers SEER (Seasonal Energy Efficiency Ratios) of 15.0 to 16.0, 12.0 to 12.5 EER, and AFUE (Annual Fuel Utilization Efficiency) ratings as high as 80.4%.

**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.

**48VGN-A 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 and wherever a Low NOx rule exists.

#### Durable, dependable components

**Compressors** have two stages of cooling and 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.

Stainless steel heat exchanger available as factory installed option.

**Multi-speed ECM Blower Motor** is standard on all 48VG-A models.

**Direct-drive PSC (Permanent Split Capacitor) condenser-fan motors** are designed to help reduce energy consumption and provide for cooling operation down to 40°F (4.4°C) outdoor temperature. Motormaster® II low ambient kit is available as a field-installed accessory.

**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.

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

**Dehumidification Feature**

This unit has independent fan speeds for low stage cooling and high stage cooling. In addition, 208/230 VAC models have the field-selectable capability to run an enhanced dehumidification ('DHUM') speed on high stage cooling (as low as 320CFM per ton). Coupled with the improved dehumidification associated with low stage cooling, the DHUM speed allows for a complete dehumidification solution independent of cooling stage. 208/230 VAC models also have independent fan speeds for low stage gas heating and high stage gas heating. The dehumidification control must open the control circuit on humidity rise above the dehumidification set point.

**NOTE:** The enhanced dehumidification feature on high stage cooling does not support use of an economizer.

**Heating**

- Reliable direct spark ignition system
- Two-speed PSC inducer motor with ball bearings (208/230 VAC models)
- Low stage heating delivers 65% of high-stage capacity (208/230 VAC models)

**Easy to service cabinets** provide easy 3-panel accessibility to serviceable components during maintenance and installation. The basepan with integrated drain pan provides easy ground level installation with mounting pad. 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.

**Standard horizontal metal duct covers** with insulation come with the unit and cover the horizontal duct openings. These can be left in place if the units are converted to downflow.

**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 foil-faced insulation, 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 62.2.) The sloped drain pan minimizes standing water in the drain. An external drain is provided.

**Louvered grille** provides hail and vandalism protection for the coil.

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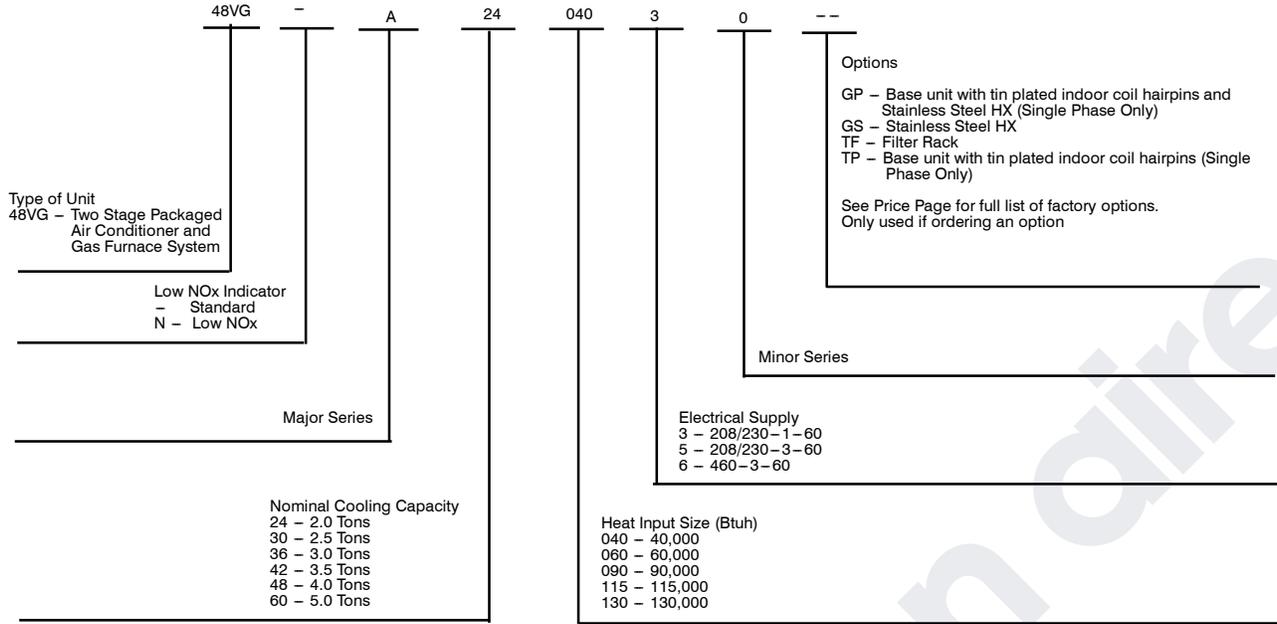
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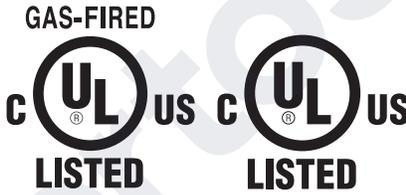
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# MODEL NUMBER NOMENCLATURE



**48VG-A**



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to [www.ahridirectory.org](http://www.ahridirectory.org).



# AHRI\* CAPACITIES

## Cooling Capacities and Efficiencies

Unit Model 48VG-A	Nominal Tons	Standard CFM (High / Low Stage)	Net Cooling Capacities - Btuh (High Stage)	EER @A**	SEER†
24	2	800 / 600	23000	12.0	15.0
30	2-1/2	1000 / 750	29000	12.0	15.0
36	3	1200 / 900	35400	12.5	16.0
42	3-1/2	1400 / 1050	42000	12.5	16.0
48	4	1600 / 1200	47500	12.3	16.0
60	5	1750 / 1200	57000	12.3	16.0

**LEGEND**

**dB**—Sound Levels (decibels)

**db**—Dry Bulb

**SEER**—Seasonal Energy Efficiency Ratio

**wb**—Wet Bulb

**COP**—Coefficient of Performance

\* Air Conditioning, Heating & 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 AHRI 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°F wb (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 AHRIdirectory.org.

48VG-A

## Heating Capacities and Efficiencies

### 208/230 VAC Models

UNIT 48VG-A	HEATING INPUT (BTUH) HIGH/LOW	OUTPUT CAPACITY (BTUH) HIGH / LOW	TEMPERATURE RISE RANGE HIGH °F (°C)	TEMPERATURE RISE RANGE LOW °F (°C)	AFUE (%)
24040 30040	40,000 / 26,000	32,000 / 21,000	20-50 (11-28)	15-45 (8-25)	78
24060 30060 36060 42060	60,000 / 39,000	49,000 / 31,000	25-55 (14-31)	25-55 (14-31)	78.6
36090 42090 48090 60090	90,000 / 58,500	74,000 / 47,000	35-65 (19-36)	35-65 (19-36)	79.2
48115 60115	115,000 / 75,000	93,000 / 61,000	30-60 (17-33)	30-60 (17-33)	80.1
48130 60130	130,000 / 84,500	103,000 / 68,000	35-65 (19-36)	35-65 (19-36)	80.0

**LEGEND**

**AFUE** — Annual Fuel Utilization Efficiency

**NOTE:** Before purchasing this appliance, read important energy cost and efficiency information available from AHRIdirectory.org.

## Heating Capacities and Efficiencies

### 460V Models

UNIT 48VG-A	HEATING INPUT (Btuh)	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE RANGE °F (°C)	AFUE (%)
36060 42060	60,000	47,000 47,000	25-55 (13.9-30.6)	78.5 78.5
36090 42090 48090 60090	90,000	73,000	35-65 (19.4-36.1)	80.4
48115 60115	115,000	93,000	30-60 (16.7-33.3)	80.3
48130 60130	130,000	103,000	35-65 (19.4-36.1)	78.9

**LEGEND**

**AFUE**—Annual Fuel Utilization Efficiency

**NOTE:** Before purchasing this appliance, read important energy cost and efficiency information available from AHRIdirectory.org.

## A-Weighted Sound Power Level (dBA)

Model 48VG-A	Sound Ratings (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA without tone adjustment)						
		125	250	500	1000	2000	4000	8000
24	73	60.0	62.5	68.5	68.5	64.0	60.0	53.0
30	77	57.5	67.0	73.5	72.0	67.0	61.0	52.5
36	73	62.5	65.5	67.5	68.0	65.5	60.0	52.5
42	73	60.5	63.5	68.0	68.0	66.0	60.5	53.0
48	72	60.0	63.5	66.0	67.0	63.5	58.5	49.5
60	75	69.0	67.0	69.0	68.0	65.0	61.5	54.0

NOTE: Tested in accordance with AHRI Standard 270 (not listed in AHRI).

## PHYSICAL DATA

UNIT SIZE	24040	24060	30040	30060	36060	36090	42060	42090
<b>NOMINAL CAPACITY (ton)</b>	2	2	2-1/2	2-1/2	3	3	3-1/2	3-1/2
<b>SHIPPING WEIGHT** lb.</b>	352	352	359	359	455	455	455	455
<b>SHIPPING WEIGHT** (kg)</b>	160	160	163	163	206	206	206	206
<b>COMPRESSORS</b>	2-Stage Scroll							
Quantity	1							
<b>REFRIGERANT (R-410A)</b>								
Quantity lb.	6.4	6.4	8.3	8.3	8.1	8.1	8.7	8.7
Quantity (kg)	2.9	2.9	3.8	3.8	3.7	3.7	3.9	3.9
<b>REFRIGERANT METERING DEVICE</b>	TXV							
<b>OUTDOOR COIL</b>								
Rows...Fins/in.	1..21	1..21	2..21	2..21	2..21	2..21	2..21	2..21
Face Area (sq ft)	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
<b>OUTDOOR FAN</b>								
Nominal CFM	2500	2500	2700	2700	3000	3000	3000	3000
Diameter in.	24	24	24	24	26	26	26	26
Diameter (mm)	609.6	609.6	609.6	609.6	600.4	600.4	660.4	660.4
Motor Hp (Rrpm)	1/10 (810)	1/10 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/5 (810)
<b>INDOOR COIL</b>								
Rows...Fins/in.	3...17	3...17	3...17	3...17	3...17	3...17	3...17	3...17
Face Area (sq ft)	3.7	3.7	3.7	3.7	4.7	4.7	4.7	4.7
<b>INDOOR BLOWER</b>								
Nominal Low Stage Cooling Airflow (Cfm)	600	600	750	750	900	900	1050	1050
Nominal High Stage Cooling Airflow (Cfm)	800	800	1000	1000	1200	1200	1400	1400
Size in.	10x10	10x10	10x10	10x10	11x10	11x10	11x10	11x10
Size (mm.)	254x254	254x254	254x254	254x254	279.4x254	279.4x254	279.4x254	279.4x254
Motor HP (RPM)	1/2 (1050)	1/2 (1050)	1/2 (1050)	1/2 (1050)	3/4 (1000)	3/4 (1000)	3/4 (1075)	3/4 (1075)
<b>FURNACE SECTION*</b>								
Burner Orifice No. (Qty...Drill Size)	2...44		2...44		208/230 VAC Models 3...44		208/230 VAC Models 3...44	
Natural Gas (Factory Installed)	2...55		2...55		3...55		3...55	
Propane Gas					460 VAC Models 2...38		460 VAC Models 2...38	
					2...53		2...53	
<b>HIGH-PRESSURE SWITCH (psig) Cut-out Reset (Auto)</b>	650 +/- 15 420 +/- 25							
<b>LOSS-OF-CHARGE / LOW-PRESSURE SWITCH (psig) cut-out Reset (auto)</b>	50 +/- 7 95 +/- 7							
<b>DUCT RETURN-AIR FILTERS†‡</b>								
Throwaway Size in. (mm)	20x20x1 508x508x25	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 AHRI (Air Conditioning Heating and Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300 ft/minute for throwaway type. Air filter pressure drop for non-standard filters must not exceed 0.08 IN. W.C.

‡ If using accessory filter rack refer to the filter rack installation instructions for correct filter sizes and quantity.

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## PHYSICAL DATA (CONT)

UNIT SIZE	48090	48115	48130	60090	60115	60130
<b>NOMINAL CAPACITY (ton)</b>	4	4	4	5	5	5
<b>SHIPPING WEIGHT lb</b>	500	500	500	520	520	520
<b>SHIPPING WEIGHT kg</b>	227	227	227	236	236	236
<b>COMPRESSORS</b>	2-Stage Scroll					
Quantity	1					
<b>REFRIGERANT (R-410A)</b>						
Quantity lb	10.8	10.8	10.8	12.1	12.1	12.1
Quantity (kg.)	4.9	4.9	4.9	5.5	5.5	5.5
<b>REFRIGERANT METERING DEVICE</b>	TXV					
<b>OUTDOOR COIL</b>						
Rows...Fins/in.	2...21	2...21	2...21	2...21	2...21	2...21
Face Area (sq ft)	19.4	19.4	19.4	21.4	21.4	21.4
<b>OUTDOOR FAN</b>						
Nominal Cfm	3300	3300	3300	3600	3600	3600
Diameter in.	26	26	26	26	26	26
Diameter (mm)	660.4	660.4	660.4	660.4	660.4	660.4
Motor Hp (Rpm)	1/5 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/5 (810)
<b>INDOOR COIL</b>						
Rows...Fins/in.	3...17	3...17	3...17	3...17	3...17	3...17
Face Area (sq ft)	5.7	5.7	5.7	5.7	5.7	5.7
<b>INDOOR BLOWER</b>						
Nominal Low Stage Cooling Airflow (Cfm)	1200	1200	1200	1200	1200	1200
Nominal High Stage Cooling Airflow (Cfm)	1600	1600	1600	1750	1750	1750
Size in.	11x10	11x10	11x10	11x10	11x10	11x10
Size (mm)	279.4x254	279.4x254	279.4x254	279.4x254	279.4x254	279.4x254
Motor HP (RPM)	1.0 (1075)	1.0 (1075)	1.0 (1075)	1.0 (1075)	1.0 (1075)	1.0 (1075)
<b>FURNACE SECTION*</b>						
<b>Burner Orifice No. (Qty...Drill Size)</b>						
Natural Gas (Factory Installed)	3...38	3...33	3...31	3...38	3...33	3...31
Propane Gas	3...53	3...51	3...49	3...53	3...51	3...49
<b>HIGH-PRESSURE SWITCH (psig) Cut-out Reset (Auto)</b>	650 +/- 15 420 +/- 25					
<b>LOSS-OF-CHARGE / LOW-PRESSURE SWITCH (psig) cut-out Reset (auto)</b>	50 +/- 7 95 +/- 7					
<b>DUCT RETURN-AIR FILTERS</b> Throw-away † ‡ in. (mm)	24x36x1 610x914x25					

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

† Required filter sizes shown are based on the larger of the AHRI (Air Conditioning Heating and Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300 ft/minute for throwaway type. Air filter pressure drop for non-standard filters must not exceed 0.08 IN. W.C.

‡ If using accessory filter rack refer to the filter rack installation instructions for correct filter sizes and quantity.

## OPTIONS AND ACCESSORIES

ITEM	DESCRIPTION	FACTORY INSTALLED OPTION	FIELD INSTALLED ACCESSORY
Coil Options	Base unit with tin plated indoor coil hairpins	X	
Compressor Start Kit	Compressor Start Kit assists compressor start-up by providing additional starting torque on single phase units only.		X
Corporate Thermostats	Thermostats provide control for the system heating and cooling functions.		X
Crankcase Heater	Crankcase Heater provides anti-floodback protection for low-load cooling applications.		X*
Economizer	Vertical Economizer with Jade Honeywell W7220 Controller, Honeywell communicating actuator, and dry bulb sensor. (Contact MicroMetl Customer Service at 1-800-662-4822 to order.)		X
	Horizontal Economizer with Jade Honeywell W7220 Controller, Honeywell communicating actuator, and dry bulb sensor. (Contact MicroMetl Customer Service at 1-800-662-4822 to order.)		X
Filter Rack	Filter Rack features easy installation, serviceability, and high-filtering performance for vertical applications. Includes 1-in. filter.	X	X
Flat Roof Curbs	Flat Roof Curbs in both 11-in (279 mm) and 14-in. (356 mm) sizes are available for roof mounted applications.		X
Flue Discharge Deflector	Directs flue gas exhaust 90 degrees upward from current discharge.		X
Heat Exchanger	Stainless Steel Heat Exchanger	X	
High Altitude Propane Conversion Kit	High Altitude Propane Conversion Kit is for use at 2001 to 6000 ft. (611 – 1829 m) above sea level. Kit consists of propane gas orifices that compensate for gas heat operation at high altitude.		X
Low Ambient Kit	Low Ambient Kit (Motormaster II Control) allows the use of mechanical cooling down to outdoor temperatures as low as 0°F (-18°C) when properly installed.		X
Manual Outside Air Damper	Manual Outside Air Damper includes hood and filter rack with adjustable damper blade for up to 25% outdoor air.		X
Natural to Propane Gas Conversion Kit	Natural to Propane Gas Conversion Kit allows for conversion from natural gas to propane gas (0–2000 ft) (0–610 m)		X
Propane to Natural Gas Conversion Kit	Propane to Natural Gas Conversion Kit allows for conversion from propane to natural gas for altitudes of 0–2000 ft (0–610 m)		X
Square-to-Round Duct Transition Kit	Square-to-Round Duct Transition Kit enable 24–48 size units to be fitted to 14 in. (356 mm) round ductwork.		X
Time Guard II	Automatically prevents the compressor from restarting for at least 4 minutes and 45 seconds after shutdown of the compressor. Not required when a corporate programmable thermostat is applied or with a RTU-MP control.		X

\*Refer to Price Page for application detail.

48VG-A

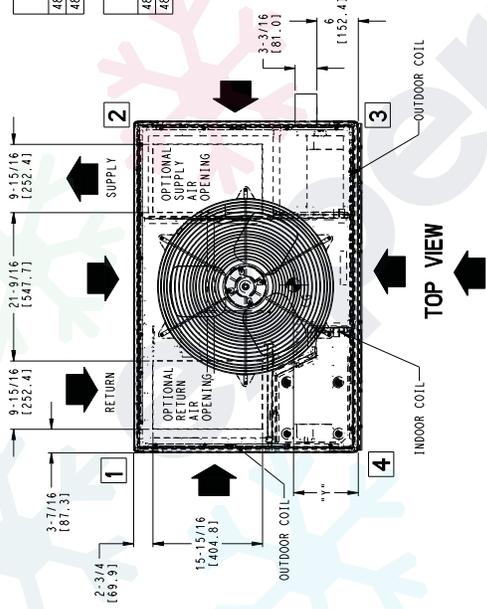
# UNIT DIMENSIONS - 48VG-A24-30

48VG-A

UNIT	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT IN/MM		CENTER OF GRAVITY IN/MM					
		LB	KG	"A"	"A"	X	Y	Z			
48VG(-/N/A)24(040/060)13(0)	208/230-1	344	156.1	44-1/8	1121	22-13/16	579.4	15-5/16	386.9	15-13/16	401.6
48VG(-/N/A)30(040/060)13(5/0)	208/230-1, 208/230-3-60	351	159.3	44-1/8	1121	22-13/16	579.4	15-5/16	386.9	16-5/8	422.3

UNIT	VOLTAGE		CORNER WEIGHT LB/KG						
	"1"	"2"	"3"	"4"					
48VG(-/N/A)24(040/060)13(0)	208/230	87.0	39.9	77.6	35.2	84.1	38.2	94.4	42.8
48VG(-/N/A)30(040/060)13(5/0)	208/230	89.7	40.7	79.0	35.8	85.8	38.9	96.5	43.8

NOTE: ALL TABLE DATA RELEVANT FOR ALL FACTORY INSTALLED OPTIONS EXCEPT ECONOMIZER



**REQUIRED CLEARANCES TO COMBUSTIBLE MATL.**

	INCHES (MM)
TOP OF UNIT	14 (355.6)
SIDE OF UNIT	4 (101.6)
SIDE OPPOSITE DUCTS	4 (101.6)
BOTTOM OF UNIT	1/2 (12.7)
FLUE PANEL	36 (914.4)

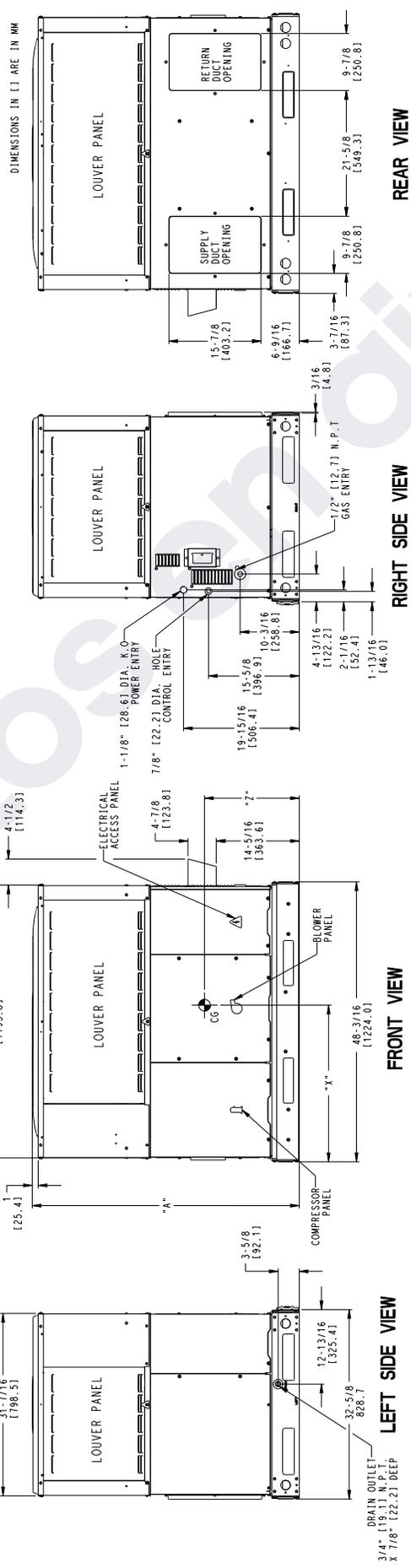
**NEC. REQUIRED CLEARANCES.**

	INCHES (MM)
BETWEEN UNITS, POWER ENTRY SIDE	36 (914.4)
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE	42 (1066.8)
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, POWER ENTRY SIDE	42 (1066.8)

**REQUIRED CLEARANCE FOR OPERATION AND SERVICING**

	INCHES (MM)
EVAP. COIL ACCESS SIDE	36 (914.4)
POWER ENTRY SIDE	42 (1066.8)
FLUE PANEL ACCESS (FOR REPAIRS)	48 (1219.2)
SIDE OPPOSITE DUCTS	36 (914.4)
DUCT PANEL	12 (304.8)

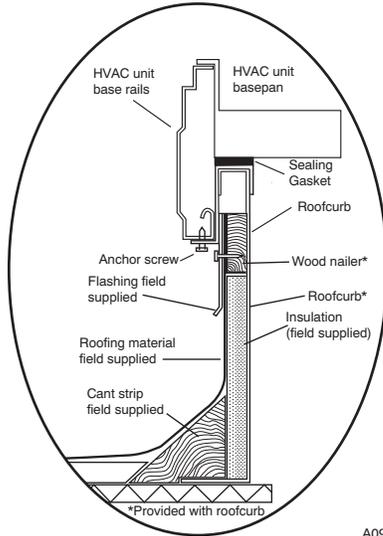
\*MINIMUM DISTANCES IF UNIT IS PLACED LESS THAN 12" (304.8) FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAY BE COMPROMISED.



REV -  
48VG500054

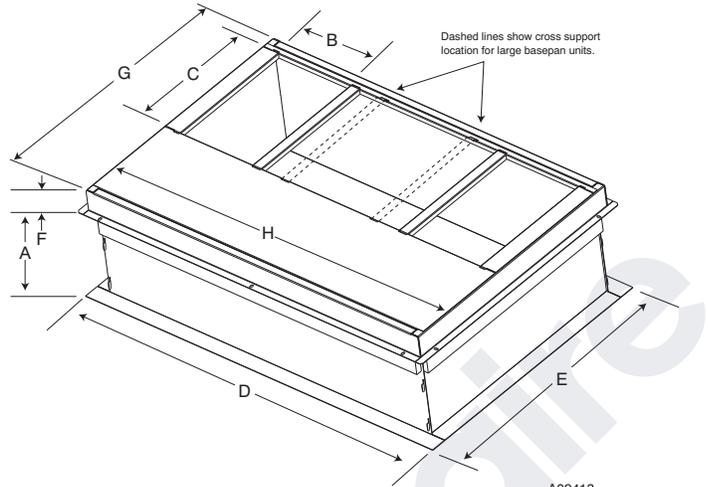


# ACCESSORY DIMENSIONS



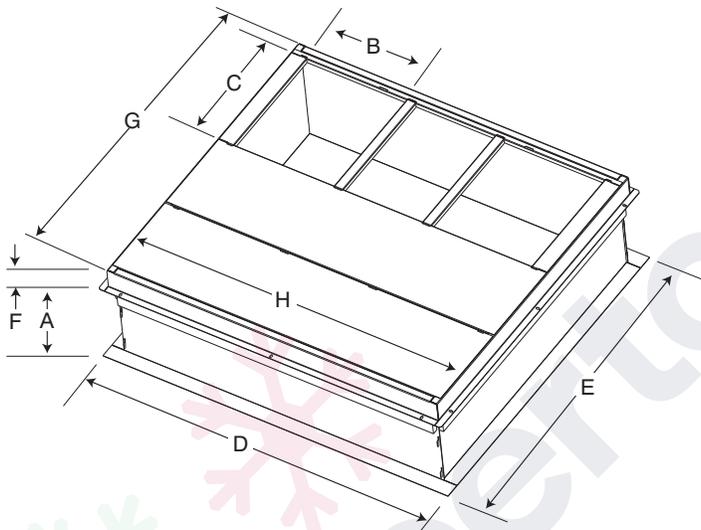
ROOF CURB DETAIL

A09090



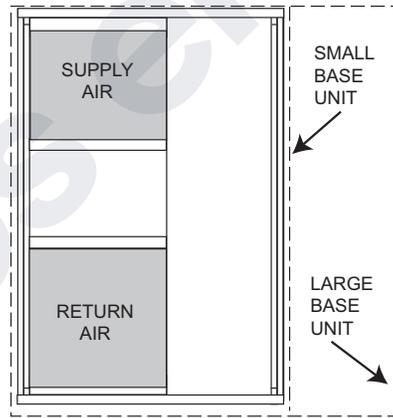
SMALL/COMMON CURB

A09413



LARGE CURB

A09415



UNIT PLACEMENT ON COMMON CURB

A09094

SMALL OR LARGE BASE UNIT

A09414

UNIT SIZE	CATALOG NUMBER	A IN. (mm)	B (small / common base) IN. (mm)*	B (large base) IN. (mm)*	C IN. (mm)	D IN. (mm)	E IN. (mm)	F IN. (mm)	G IN. (mm)	H IN. (mm)	
Small or Large	CPRFCURB010A00	11 (279)	10 (254)	14 (356)	16 (406)	47.8 (1214)	32.4 (822)	2.7 (69)	30.6 (778)	46.1 (1170)	
	CPRFCURB011A00	14 (356)									
Large	CPRFCURB012A00	11 (279)	14 (356)						43.9 (1116)		42.2 (1072)
	CPRFCURB013A00	14 (356)									

\* Part Numbers CPRFCURB010A00 and CPRFCURB011A00 can be used on both small and large basepan units. The cross supports must be located based on whether the unit is a small basepan or a large basepan.

NOTES:

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.

## SELECTION PROCEDURE (WITH EXAMPLE)

### 1. Determine cooling and heating requirements at design conditions:

Given:

Required Cooling Capacity (TC) ..... 34,000 Btuh  
Sensible Heat Capacity (SHC) ..... 25,000 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 ..... 0.100 IN. W.C.  
Electrical Characteristics ..... 208-1-60

### 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 34,200 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 (208/230 VAC) will provide 74,000 Btuh with an input of 90,000 Btuh in high stage and will provide 47,000 Btuh of heating in low stage.

### 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	0.100 IN. W.C
Filter	0.07 IN. W.C
Wet Coil Pressure Drop	<u>0.180</u> IN. W.C
Total Static Pressure	0.287 IN. W.C

Enter the table for Dry Coil Air Delivery—Horizontal and Downflow Discharge. At .287 IN. W.C. ESP, the closest speed to 1200 CFM is Med-Low (pink wire), which delivers 1262 CFM at .3 in ESP.

### 5. Select unit that corresponds to power source available.

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

48VG-A

## PERFORMANCE DATA

024 Low Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																							
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)								
		Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW								
<b>525</b>	57 (13.8)	17.82	1.08	16.44	1.24	15.06	1.41	13.67	1.60	12.27	1.81	10.86	2.04	17.82	1.08	16.44	1.24	15.06	1.41	13.67	1.60	12.27	1.81	10.86	2.04
	62 (16.6)	18.21	1.07	16.66	1.24	15.05	1.41	13.69	1.60	12.28	1.81	10.88	2.04	18.21	1.07	16.66	1.24	15.05	1.41	13.69	1.60	12.28	1.81	10.88	2.04
	63* (17.2)	18.58	1.07	16.98	1.23	15.39	1.41	13.80	1.60	12.20	1.82	10.62	2.05	18.58	1.07	16.98	1.23	15.39	1.41	13.80	1.60	12.20	1.82	10.62	2.05
	67 (19.4)	19.95	1.04	18.24	1.21	16.54	1.39	14.83	1.58	13.13	1.80	11.44	2.03	19.95	1.04	18.24	1.21	16.54	1.39	14.83	1.58	13.13	1.80	11.44	2.03
	72 (22.2)	21.87	1.01	20.00	1.18	18.14	1.36	16.28	1.56	14.42	1.78	12.59	2.01	21.87	1.01	20.00	1.18	18.14	1.36	16.28	1.56	14.42	1.78	12.59	2.01
	57 (13.8)	18.60	1.08	17.14	1.24	15.68	1.42	14.21	1.61	12.73	1.82	11.25	2.05	18.60	1.08	17.14	1.24	15.68	1.42	14.21	1.61	12.73	1.82	11.25	2.05
	62 (16.6)	18.65	1.08	17.17	1.24	15.71	1.42	14.23	1.61	12.75	1.82	11.27	2.05	18.65	1.08	17.17	1.24	15.71	1.42	14.23	1.61	12.75	1.82	11.27	2.05
<b>600</b>	63* (17.2)	18.96	1.08	17.31	1.24	15.67	1.42	14.03	1.61	12.39	1.83	10.77	2.06	18.96	1.08	17.31	1.24	15.67	1.42	14.03	1.61	12.39	1.83	10.77	2.06
	67 (19.4)	20.34	1.05	18.58	1.22	16.82	1.40	15.06	1.60	13.31	1.81	11.59	2.04	20.34	1.05	18.58	1.22	16.82	1.40	15.06	1.60	13.31	1.81	11.59	2.04
	72 (22.2)	22.29	1.02	20.35	1.19	18.43	1.37	16.52	1.57	14.61	1.79	12.73	2.02	22.29	1.02	20.35	1.19	18.43	1.37	16.52	1.57	14.61	1.79	12.73	2.02
	57 (13.8)	19.26	1.09	17.73	1.25	16.20	1.42	14.66	1.62	13.11	1.83	11.57	2.06	19.26	1.09	17.73	1.25	16.20	1.42	14.66	1.62	13.11	1.83	11.57	2.06
<b>675</b>	62 (16.6)	19.29	1.09	17.75	1.25	16.22	1.42	14.68	1.62	13.13	1.83	11.59	2.06	19.29	1.09	17.75	1.25	16.22	1.42	14.68	1.62	13.13	1.83	11.59	2.06
	63* (17.2)	19.25	1.09	17.56	1.25	15.88	1.43	14.21	1.63	12.53	1.84	10.89	2.07	19.25	1.09	17.56	1.25	15.88	1.43	14.21	1.63	12.53	1.84	10.89	2.07
	67 (19.4)	20.64	1.06	18.83	1.23	17.03	1.41	15.24	1.61	13.45	1.82	11.70	2.05	20.64	1.06	18.83	1.23	17.03	1.41	15.24	1.61	13.45	1.82	11.70	2.05
	72 (22.2)	22.59	1.03	20.61	1.20	18.64	1.39	16.69	1.58	14.74	1.80	12.83	2.03	22.59	1.03	20.61	1.20	18.64	1.39	16.69	1.58	14.74	1.80	12.83	2.03

See Legend and Notes on Page 24.

**PERFORMANCE DATA (CONT)**

024 High Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW	
<b>700</b>	57 (13.8)	23.89	23.89	1.55	22.22	22.22	1.70	20.54	20.54	1.87	18.86	18.86	2.05	17.17	17.17	2.26	15.50	15.50	2.48
	62 (16.6)	24.55	21.58	1.55	22.62	20.64	1.71	20.72	19.69	1.87	18.89	18.89	2.05	17.20	17.20	2.26	15.52	15.52	2.48
	63* (17.2)	25.02	17.56	1.56	23.05	16.72	1.71	21.08	15.86	1.87	19.13	15.01	2.06	17.19	14.15	2.26	15.30	13.30	2.48
	67 (19.4)	26.85	18.20	1.57	24.72	17.34	1.73	22.61	16.48	1.89	20.50	15.61	2.07	18.42	14.75	2.27	16.39	13.89	2.49
	72 (22.2)	29.38	14.76	1.60	27.04	13.97	1.75	24.71	13.17	1.92	22.42	12.38	2.10	20.14	11.59	2.30	17.91	10.81	2.52
	57 (13.8)	24.94	24.94	1.57	23.16	23.16	1.73	21.38	21.38	1.90	19.59	19.59	2.08	17.81	17.81	2.28	16.04	16.04	2.51
	62 (16.6)	25.14	23.30	1.58	23.20	23.20	1.73	21.41	21.41	1.90	19.62	19.62	2.08	17.83	17.83	2.28	16.06	16.06	2.51
<b>800</b>	63* (17.2)	25.56	18.77	1.58	23.51	17.89	1.73	21.48	17.00	1.90	19.46	16.11	2.08	17.46	15.22	2.28	15.51	14.34	2.50
	67 (19.4)	27.40	19.50	1.60	25.19	18.60	1.75	23.00	17.70	1.92	20.83	16.80	2.10	18.68	15.89	2.30	16.60	15.00	2.52
	72 (22.2)	29.94	15.58	1.62	27.52	14.76	1.78	25.12	13.94	1.95	22.74	13.12	2.13	20.40	12.31	2.33	18.12	11.50	2.54
	57 (13.8)	25.82	25.82	1.60	23.95	23.95	1.76	22.08	22.08	1.92	20.20	20.20	2.11	18.33	18.33	2.31	16.48	16.48	2.53
	62 (16.6)	25.86	25.86	1.60	23.98	23.98	1.76	22.11	22.11	1.92	20.23	20.23	2.11	18.35	18.35	2.31	16.50	16.50	2.53
	63* (17.2)	25.97	19.95	1.60	23.86	19.03	1.75	21.77	18.11	1.92	19.70	17.18	2.10	17.66	16.25	2.30	15.68	15.32	2.52
	67 (19.4)	27.81	20.76	1.62	25.54	19.83	1.77	23.30	18.89	1.94	21.07	17.95	2.12	18.88	17.01	2.32	16.76	16.07	2.54
<b>900</b>	72 (22.2)	30.37	16.37	1.64	27.89	15.53	1.80	25.42	14.69	1.97	22.99	13.85	2.15	20.59	13.01	2.35	18.26	12.18	2.56

See Legend and Notes on Page 24.

## PERFORMANCE DATA (CONT)

CFM		EWB		CONDENSER ENTERING AIR TEMPERATURES ° F (° C)												Total Syst KW		Capacity MBtuh		Total Syst KW		Capacity MBtuh		Total Syst KW							
				75 (23.9)			85 (29.4)			95 (35)			105 (40.6)													115 (46.1)			125 (51.7)		
				Capacity MBtuh	Total Syst KW	Sens	Capacity MBtuh	Total Syst KW	Sens	Capacity MBtuh	Total Syst KW	Sens	Capacity MBtuh	Total Syst KW	Sens											Capacity MBtuh	Total Syst KW	Sens	Capacity MBtuh	Total Syst KW	Sens
655	57 (13.8)	22.30	22.30	20.19	20.19	18.10	18.10	1.49	1.53	16.02	16.02	13.97	13.97	1.57	1.59	11.95	11.95	1.60	1.60												
	62 (16.6)	22.91	20.51	17.72	20.54	15.01	18.23	1.48	1.53	16.05	16.05	13.99	13.99	1.57	1.59	11.97	11.97	1.60	1.60												
	63* (17.2)	23.36	16.69	14.35	20.94	12.09	18.55	1.48	1.53	16.21	16.21	13.91	13.91	1.56	1.59	11.68	11.68	1.60	1.60												
	67 (19.4)	25.19	17.36	14.93	22.57	12.60	19.99	1.46	1.51	17.47	17.47	15.00	15.00	1.55	1.58	12.60	12.60	1.59	1.59												
	72 (22.2)	27.74	14.14	12.08	24.84	10.11	22.00	1.44	1.49	19.22	19.22	16.51	16.51	1.54	1.57	13.88	13.88	1.58	1.58												
	57 (13.8)	23.33	23.33	21.08	21.08	18.87	18.87	1.50	1.54	16.68	16.68	14.51	14.51	1.58	1.60	12.38	12.38	1.61	1.61												
750	62 (16.6)	23.49	22.18	21.12	21.12	18.90	18.90	1.50	1.54	16.70	16.70	14.53	14.53	1.58	1.60	12.39	12.39	1.61	1.61												
	63* (17.2)	23.87	17.87	15.38	21.36	12.98	18.90	1.50	1.55	16.48	16.48	14.12	14.12	1.58	1.61	11.84	11.84	1.61	1.61												
	67 (19.4)	25.72	18.62	16.04	23.00	13.55	20.35	1.48	1.53	17.75	17.75	15.21	15.21	1.57	1.59	12.76	12.76	1.60	1.60												
	72 (22.2)	28.29	14.94	12.78	25.30	10.72	22.37	1.46	1.51	19.51	19.51	16.72	16.72	1.55	1.58	14.03	14.03	1.59	1.59												
	57 (13.8)	24.14	24.14	21.79	21.79	19.48	19.48	1.52	1.56	17.18	17.18	14.92	14.92	1.59	1.61	12.71	12.71	1.62	1.62												
	62 (16.6)	24.18	24.18	21.82	21.82	19.50	19.50	1.52	1.56	17.21	17.21	14.94	14.94	1.59	1.61	12.72	12.72	1.62	1.62												
840	63* (17.2)	24.24	18.95	16.32	21.66	13.79	19.15	1.52	1.56	16.68	16.68	14.28	14.28	1.60	1.62	11.96	11.96	1.63	1.63												
	67 (19.4)	26.09	19.78	17.06	23.31	14.43	20.60	1.50	1.55	17.95	17.95	15.36	15.36	1.59	1.61	12.87	12.87	1.62	1.62												
	72 (22.2)	28.69	15.67	13.42	25.62	11.27	22.63	1.48	1.53	19.71	19.71	16.86	16.86	1.57	1.60	14.12	14.12	1.61	1.61												

See Legend and Notes on Page 24.

**PERFORMANCE DATA (CONT)**

030 High Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW	
<b>875</b>	57 (13.8)	30.54	1.97	28.11	2.15	25.68	2.35	23.24	2.57	20.78	2.83	18.33	2.83	18.33	3.12	18.33	2.83	18.33	3.12
	62 (16.6)	31.60	1.98	28.82	2.15	26.06	2.35	23.34	2.57	20.81	2.83	18.36	2.83	18.36	3.12	18.36	2.83	18.36	3.12
	63* (17.2)	32.20	1.98	29.34	2.16	26.51	2.36	23.69	2.58	20.88	2.83	18.12	2.83	18.12	3.11	18.12	2.83	18.12	3.11
	67 (19.4)	34.66	2.01	31.55	2.19	28.49	2.38	25.45	2.60	22.42	2.85	19.45	2.85	19.45	3.13	19.45	2.85	19.45	3.13
	72 (22.2)	38.04	2.05	34.61	2.22	31.23	2.42	27.87	2.64	24.55	2.89	21.31	2.89	21.31	3.16	21.31	2.89	21.31	3.16
<b>1000</b>	57 (13.8)	31.92	2.01	29.32	2.19	26.74	2.39	24.16	2.61	21.55	2.87	18.97	2.87	18.97	3.15	18.97	2.87	18.97	3.15
	62 (16.6)	32.39	2.01	29.52	2.19	26.78	2.39	24.19	2.61	21.58	2.87	18.99	2.87	18.99	3.15	18.99	2.87	18.99	3.15
	63* (17.2)	32.92	2.02	29.95	2.19	27.01	2.39	24.10	2.61	21.21	2.86	18.37	2.86	18.37	3.14	18.37	2.86	18.37	3.14
	67 (19.4)	35.39	2.04	32.18	2.22	29.00	2.42	25.86	2.64	22.74	2.88	19.70	2.88	19.70	3.16	19.70	2.88	19.70	3.16
	72 (22.2)	38.82	2.08	35.26	2.26	31.76	2.46	28.30	2.67	24.87	2.92	21.55	2.92	21.55	3.19	21.55	2.92	21.55	3.19
<b>1125</b>	57 (13.8)	33.07	2.05	30.34	2.23	27.63	2.43	24.91	2.65	22.18	2.90	19.49	2.90	19.49	3.19	19.49	2.90	19.49	3.19
	62 (16.6)	33.13	2.05	30.38	2.23	27.67	2.43	24.94	2.65	22.21	2.90	19.51	2.90	19.51	3.19	19.51	2.90	19.51	3.19
	63* (17.2)	33.47	2.05	30.41	2.23	27.40	2.42	24.41	2.64	21.46	2.89	18.57	2.89	18.57	3.17	18.57	2.89	18.57	3.17
	67 (19.4)	35.96	2.08	32.64	2.25	29.39	2.45	26.17	2.67	22.98	2.91	19.90	2.91	19.90	3.19	19.90	2.91	19.90	3.19
	72 (22.2)	39.41	2.12	35.75	2.29	32.16	2.49	28.60	2.71	25.11	2.95	21.72	2.95	21.72	3.22	21.72	2.95	21.72	3.22

See Legend and Notes on Page 24.

## PERFORMANCE DATA (CONT)

036 Low Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																								
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)									
		Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW	Capacity MBtuh	Total Syst KW									
<b>785</b>	57 (13.8)	25.86	1.54	23.52	1.64	21.19	1.74	18.89	1.84	16.59	1.93	14.33	2.02	57 (13.8)	25.86	1.54	23.52	1.64	21.19	1.74	18.89	1.84	16.59	1.93	14.33	2.02
	62 (16.6)	26.33	1.54	23.73	1.64	21.23	1.74	18.92	1.84	16.62	1.93	14.35	2.02	62 (16.6)	26.33	1.54	23.73	1.64	21.23	1.74	18.92	1.84	16.62	1.93	14.35	2.02
	63* (17.2)	26.84	1.53	24.16	1.64	21.53	1.74	18.93	1.84	16.37	1.94	13.88	2.03	63* (17.2)	26.84	1.53	24.16	1.64	21.53	1.74	18.93	1.84	16.37	1.94	13.88	2.03
	67 (19.4)	28.92	1.51	26.02	1.62	23.18	1.72	20.39	1.82	17.65	1.92	10.19	2.02	67 (19.4)	28.92	1.51	26.02	1.62	23.18	1.72	20.39	1.82	17.65	1.92	10.19	2.02
	72 (22.2)	31.81	1.48	28.62	1.59	25.50	1.70	22.43	1.80	19.42	1.90	7.89	2.00	72 (22.2)	31.81	1.48	28.62	1.59	25.50	1.70	22.43	1.80	19.42	1.90	7.89	2.00
	57 (13.8)	27.03	1.55	24.55	1.65	22.09	1.75	19.65	1.85	17.23	1.94	14.84	2.03	57 (13.8)	27.03	1.55	24.55	1.65	22.09	1.75	19.65	1.85	17.23	1.94	14.84	2.03
	62 (16.6)	27.07	1.55	24.59	1.65	22.12	1.75	19.68	1.85	17.25	1.94	14.86	2.03	62 (16.6)	27.07	1.55	24.59	1.65	22.12	1.75	19.68	1.85	17.25	1.94	14.86	2.03
<b>900</b>	63* (17.2)	27.41	1.55	24.64	1.65	21.93	1.75	19.25	1.85	16.63	1.95	10.51	2.04	63* (17.2)	27.41	1.55	24.64	1.65	21.93	1.75	19.25	1.85	16.63	1.95	10.51	2.04
	67 (19.4)	29.51	1.53	26.52	1.63	23.59	1.74	20.72	1.84	17.90	1.94	11.05	2.03	67 (19.4)	29.51	1.53	26.52	1.63	23.59	1.74	20.72	1.84	17.90	1.94	11.05	2.03
	72 (22.2)	32.43	1.50	29.14	1.61	25.92	1.71	22.76	1.82	19.67	1.92	8.43	2.01	72 (22.2)	32.43	1.50	29.14	1.61	25.92	1.71	22.76	1.82	19.67	1.92	8.43	2.01
	57 (13.8)	27.98	1.56	25.37	1.66	22.80	1.76	20.25	1.86	17.72	1.95	15.24	2.04	57 (13.8)	27.98	1.56	25.37	1.66	22.80	1.76	20.25	1.86	17.72	1.95	15.24	2.04
<b>1010</b>	62 (16.6)	28.02	1.56	25.41	1.66	22.83	1.76	20.28	1.86	17.75	1.95	15.25	2.04	62 (16.6)	28.02	1.56	25.41	1.66	22.83	1.76	20.28	1.86	17.75	1.95	15.25	2.04
	63* (17.2)	27.84	1.56	24.99	1.67	22.22	1.77	19.49	1.87	16.82	1.96	14.28	2.05	63* (17.2)	27.84	1.56	24.99	1.67	22.22	1.77	19.49	1.87	16.82	1.96	14.28	2.05
	67 (19.4)	29.94	1.54	26.88	1.65	23.89	1.75	20.96	1.85	18.09	1.95	11.82	2.04	67 (19.4)	29.94	1.54	26.88	1.65	23.89	1.75	20.96	1.85	18.09	1.95	11.82	2.04
	72 (22.2)	32.87	1.51	29.50	1.62	26.21	1.73	22.99	1.83	19.84	1.93	8.94	2.02	72 (22.2)	32.87	1.51	29.50	1.62	26.21	1.73	22.99	1.83	19.84	1.93	8.94	2.02

See Legend and Notes on Page 24.

**PERFORMANCE DATA (CONT)**

036 High Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW	
<b>1050</b>	57 (13.8)	35.86	2.29	33.72	33.72	2.51	31.52	31.52	2.76	29.26	29.26	3.03	26.89	26.89	3.34	24.47	24.47	3.69	
	62 (16.6)	36.94	2.30	34.42	31.53	2.52	31.86	29.88	2.76	29.31	29.31	3.03	26.93	26.93	3.34	24.51	24.51	3.69	
	63* (17.2)	37.62	2.31	35.04	25.57	2.53	32.41	24.12	2.77	29.71	22.66	3.03	26.94	21.18	3.34	24.13	19.71	3.69	
	67 (19.4)	40.43	2.34	37.63	26.55	2.56	34.79	25.07	2.80	31.86	23.58	3.07	28.87	22.07	3.37	25.86	20.58	3.71	
	72 (22.2)	44.31	2.39	41.22	21.45	2.61	38.07	20.10	2.85	34.86	18.73	3.11	31.58	17.37	3.41	28.28	16.02	3.75	
	57 (13.8)	37.44	2.33	35.15	35.15	2.55	32.81	32.81	2.80	30.39	30.39	3.07	27.88	27.88	3.38	25.31	25.31	3.73	
	62 (16.6)	37.84	2.34	35.28	35.09	2.56	32.85	32.85	2.80	30.43	30.43	3.07	27.92	27.92	3.38	25.34	25.34	3.73	
<b>1200</b>	63* (17.2)	38.44	2.34	35.75	27.35	2.56	33.01	25.83	2.80	30.22	24.30	3.07	27.35	22.75	3.37	24.48	21.21	3.71	
	67 (19.4)	41.27	2.38	38.37	28.45	2.59	35.40	26.90	2.83	32.38	25.34	3.10	29.29	23.77	3.40	26.20	22.20	3.74	
	72 (22.2)	45.20	2.43	41.98	22.65	2.64	38.71	21.25	2.88	35.39	19.85	3.15	32.00	18.44	3.45	28.62	17.05	3.79	
	57 (13.8)	38.77	2.37	36.36	36.36	2.59	33.88	33.88	2.84	31.33	31.33	3.11	28.69	28.69	3.42	26.00	26.00	3.76	
	62 (16.6)	38.82	2.37	36.40	36.40	2.59	33.92	33.92	2.84	31.37	31.37	3.11	28.72	28.72	3.42	26.03	26.03	3.76	
	63* (17.2)	39.08	2.38	36.30	29.05	2.59	33.49	27.48	2.83	30.61	25.88	3.10	27.68	24.26	3.40	24.75	22.63	3.74	
	67 (19.4)	41.92	2.41	38.92	30.29	2.63	35.87	28.67	2.86	32.77	27.04	3.13	29.62	25.40	3.43	26.47	23.74	3.77	
72 (22.2)	45.86	2.46	42.55	23.81	2.68	39.20	22.37	2.92	35.78	20.92	3.18	32.32	19.48	3.48	28.86	18.05	3.81		

See Legend and Notes on Page 24.

## PERFORMANCE DATA (CONT)

042 Low Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW	
<b>915</b>	57 (13.8)	30.96	1.93	28.67	28.67	1.98	26.33	26.33	2.01	23.93	23.93	2.04	21.48	21.48	2.05	19.01	19.01	2.03	
	62 (16.6)	31.67	1.93	29.07	26.30	1.97	26.44	26.27	2.01	23.97	23.97	2.04	21.51	21.51	2.05	19.03	19.03	2.03	
	63* (17.2)	32.30	1.92	29.63	21.25	1.97	26.89	18.92	2.01	24.12	16.63	2.04	21.31	14.41	2.05	18.51	12.28	2.04	
	67 (19.4)	34.88	1.90	31.98	22.15	1.94	29.02	19.73	1.98	26.03	17.38	2.01	23.01	15.09	2.03	20.00	12.89	2.02	
	72 (22.2)	38.48	1.87	35.25	17.89	1.91	31.99	15.82	1.95	28.70	13.81	1.98	25.38	11.87	1.99	22.08	10.03	1.98	
	57 (13.8)	32.40	1.95	29.96	29.96	2.00	27.47	27.47	2.03	24.92	24.92	2.05	22.32	22.32	2.06	19.70	19.70	2.04	
	62 (16.6)	32.52	1.95	30.01	30.01	1.99	27.51	27.51	2.03	24.96	24.96	2.05	22.35	22.35	2.06	19.73	19.73	2.04	
<b>1050</b>	63* (17.2)	33.02	1.95	30.24	22.82	1.99	27.41	20.34	2.03	24.54	17.91	2.06	21.65	15.55	2.07	18.77	13.28	2.06	
	67 (19.4)	35.63	1.93	32.61	23.83	1.97	29.55	21.26	2.01	26.46	18.75	2.03	23.35	16.31	2.04	20.26	13.96	2.03	
	72 (22.2)	39.26	1.89	35.92	18.95	1.93	32.54	16.78	1.97	29.14	14.67	2.00	25.72	12.64	2.01	22.33	10.70	1.99	
	57 (13.8)	33.57	1.98	31.00	31.00	2.01	28.38	28.38	2.05	25.70	25.70	2.07	22.99	22.99	2.07	20.25	20.25	2.05	
<b>1180</b>	62 (16.6)	33.62	1.98	31.04	31.04	2.01	28.42	28.42	2.05	25.74	25.74	2.07	23.02	23.02	2.07	20.27	20.27	2.05	
	63* (17.2)	33.55	1.98	30.68	24.28	2.02	27.77	21.66	2.05	24.85	19.10	2.08	21.90	16.60	2.09	18.99	18.84	2.07	
	67 (19.4)	36.17	1.95	33.07	25.40	1.99	29.92	22.69	2.03	26.76	20.04	2.05	23.60	17.46	2.06	20.46	14.94	2.05	
	72 (22.2)	39.84	1.92	36.39	19.94	1.96	32.92	17.68	1.99	29.44	15.49	2.02	25.95	13.37	2.02	22.49	11.34	2.01	

See Legend and Notes on Page 24.

**PERFORMANCE DATA (CONT)**

042 High Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW	
<b>1225</b>	57 (13.8)	44.10	2.67	40.87	2.95	37.59	3.27	34.28	3.63	30.95	4.03	27.68	4.47						
	62 (16.6)	45.47	2.68	36.75	2.96	34.87	3.28	34.34	3.63	31.00	4.03	27.72	4.47						
	63* (17.2)	46.30	2.69	29.82	2.97	28.16	3.28	26.49	3.64	24.81	4.03	23.17	4.46						
	67 (19.4)	49.63	2.71	30.90	3.00	29.20	3.32	27.50	3.67	25.80	4.06	24.14	4.49						
	72 (22.2)	54.17	2.75	24.90	3.04	23.34	3.36	21.79	3.72	20.23	4.11	18.73	4.54						
	57 (13.8)	45.98	2.72	42.52	3.01	39.03	3.33	35.52	3.69	32.01	4.08	28.56	4.52						
	62 (16.6)	46.52	2.73	42.71	3.01	39.08	3.33	35.57	3.69	32.04	4.08	28.59	4.52						
<b>1400</b>	63* (17.2)	47.25	2.73	31.84	3.01	30.11	3.33	28.36	3.68	26.61	4.07	24.89	4.50						
	67 (19.4)	50.58	2.76	33.07	3.04	31.30	3.36	29.52	3.72	27.75	4.11	26.00	4.54						
	72 (22.2)	55.17	2.79	26.26	3.08	24.65	3.41	23.05	3.76	21.45	4.16	19.90	4.59						
	57 (13.8)	47.54	2.77	43.89	3.05	40.22	3.38	36.54	3.74	32.86	4.13	29.26	4.57						
	62 (16.6)	47.60	2.77	43.95	3.05	40.27	3.38	36.59	3.74	32.90	4.14	29.29	4.57						
	63* (17.2)	47.97	2.77	43.88	3.05	39.80	3.37	35.76	3.72	31.76	4.12	27.94	4.55						
	67 (19.4)	51.31	2.80	35.17	3.08	33.33	3.40	31.48	3.76	29.62	4.15	27.77	4.58						
<b>1575</b>	72 (22.2)	55.92	2.84	27.57	3.12	25.93	3.45	24.28	3.81	22.64	4.20	21.05	4.63						

See Legend and Notes on Page 24.

## PERFORMANCE DATA (CONT)

048 Low Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW	
<b>1050</b>	57 (13.8)	35.18	2.15	32.65	2.21	30.08	2.26	27.45	2.29	24.76	2.29	22.01	2.29	22.01	2.29	22.01	2.29	2.26	
	62 (16.6)	35.89	2.14	30.42	2.21	30.13	2.26	27.49	2.29	24.80	2.29	22.04	2.29	22.04	2.29	22.04	2.29	2.25	
	63* (17.2)	36.62	2.14	33.64	2.21	30.61	2.26	27.55	2.29	24.45	2.29	21.33	2.29	21.33	2.29	21.33	2.29	2.26	
	67 (19.4)	39.58	2.11	36.35	2.19	33.07	2.24	29.78	2.28	26.42	2.28	23.06	2.28	23.06	2.28	23.06	2.28	2.25	
	72 (22.2)	43.68	2.08	40.10	2.16	36.50	2.22	32.85	2.26	29.17	2.26	25.49	2.26	25.49	2.26	25.49	2.26	2.24	
	57 (13.8)	36.76	2.18	34.07	2.25	31.32	2.29	28.53	2.32	25.68	2.32	22.77	2.32	22.77	2.32	22.77	2.32	2.28	
	62 (16.6)	36.82	2.18	34.12	2.25	31.37	2.29	28.58	2.32	25.71	2.32	22.80	2.32	22.80	2.32	22.80	2.32	2.28	
<b>1200</b>	63* (17.2)	37.37	2.18	34.28	2.25	31.15	2.30	27.99	2.32	24.79	2.32	21.59	2.32	21.59	2.32	21.59	2.32	2.29	
	67 (19.4)	40.36	2.15	37.01	2.23	33.63	2.28	30.21	2.31	26.77	2.31	23.32	2.31	23.32	2.31	23.32	2.31	2.28	
	72 (22.2)	44.51	2.12	40.80	2.20	37.07	2.26	33.30	2.29	29.52	2.29	25.74	2.29	25.74	2.29	25.74	2.29	2.26	
	57 (13.8)	37.76	2.21	34.95	2.27	32.10	2.32	29.20	2.34	26.23	2.34	23.23	2.34	23.23	2.34	23.23	2.34	2.30	
	62 (16.6)	37.81	2.21	35.00	2.27	32.15	2.32	29.24	2.34	26.27	2.34	23.26	2.34	23.26	2.34	23.26	2.34	2.30	
<b>1310</b>	63* (17.2)	37.81	2.21	34.64	2.28	31.45	2.32	28.23	2.35	24.98	2.35	21.76	2.35	21.76	2.35	21.76	2.35	2.31	
	67 (19.4)	40.80	2.19	37.39	2.26	33.93	2.31	30.46	2.33	26.96	2.33	23.47	2.33	23.47	2.33	23.47	2.33	2.29	
	72 (22.2)	44.98	2.15	41.19	2.23	37.37	2.28	33.55	2.31	29.70	2.31	25.85	2.31	25.85	2.31	25.85	2.31	2.28	

See Legend and Notes on Page 24.

**PERFORMANCE DATA (CONT)**

048 High Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW		Capacity MBtuh	Total Sys KW	
<b>1400</b>	57 (13.8)	48.89	48.89	3.11	45.66	45.66	3.41	42.38	42.38	3.75	39.05	39.05	4.13	35.68	35.68	4.55	32.30	32.30	4.99
	62 (16.6)	50.28	43.47	3.12	46.51	41.71	3.42	42.75	39.90	3.76	39.11	39.11	4.13	35.73	35.73	4.55	32.34	32.34	4.99
	63* (17.2)	51.23	35.39	3.13	47.37	33.80	3.43	43.48	32.17	3.77	39.57	30.53	4.14	35.65	28.86	4.54	31.78	27.20	4.98
	67 (19.4)	55.12	36.75	3.16	50.93	35.12	3.46	46.72	33.47	3.80	42.50	31.80	4.17	38.27	30.11	4.58	34.10	28.42	5.02
	72 (22.2)	60.49	29.87	3.21	55.87	28.34	3.51	51.22	26.80	3.84	46.58	25.25	4.22	41.93	23.68	4.62	37.37	22.12	5.06
	57 (13.8)	51.01	51.01	3.18	47.56	47.56	3.48	44.07	44.07	3.83	40.53	40.53	4.20	36.95	36.95	4.62	33.37	33.37	5.06
	62 (16.6)	51.47	46.83	3.18	47.65	47.65	3.49	44.13	44.13	3.83	40.59	40.59	4.20	37.00	37.00	4.62	33.41	33.41	5.06
<b>1600</b>	63* (17.2)	52.30	37.79	3.19	48.28	36.13	3.49	44.24	34.44	3.83	40.20	32.73	4.20	36.15	30.99	4.60	32.18	29.26	5.04
	67 (19.4)	56.21	39.32	3.23	51.86	37.62	3.53	47.50	35.90	3.86	43.13	34.16	4.23	38.77	32.40	4.64	34.50	30.65	5.07
	72 (22.2)	61.65	31.49	3.27	56.85	29.91	3.57	52.04	28.32	3.91	47.24	26.72	4.28	42.45	25.11	4.68	37.76	23.52	5.11
	57 (13.8)	52.37	52.37	3.23	48.78	48.78	3.54	45.15	45.15	3.88	41.47	41.47	4.25	37.75	37.75	4.66	34.04	34.04	5.11
	62 (16.6)	52.45	52.45	3.23	48.85	48.85	3.54	45.21	45.21	3.88	41.52	41.52	4.26	37.79	37.79	4.66	34.08	34.08	5.11
<b>1750</b>	63* (17.2)	52.92	39.53	3.24	48.81	37.82	3.54	44.68	36.08	3.87	40.56	34.32	4.24	36.44	32.53	4.65	32.42	30.72	5.08
	67 (19.4)	56.86	41.19	3.27	52.41	39.44	3.57	47.95	37.67	3.91	43.50	35.88	4.28	39.06	34.07	4.68	34.73	32.25	5.12
	72 (22.2)	62.33	32.67	3.32	57.41	31.06	3.62	52.50	29.43	3.95	47.61	27.80	4.32	42.73	26.16	4.72	37.97	24.55	5.15

See Legend and Notes on Page 24.

## PERFORMANCE DATA (CONT)

060 Low Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES ° F (° C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW		Capacity MBtuh	Total Syst KW	
<b>1200</b>	<sup>57</sup> (13.8)	42.50	2.61	41.54	2.64	40.36	2.63	38.87	2.59	37.03	2.49	34.82	2.49	34.82	2.49	34.82	2.49	34.82	2.34
	<sup>62</sup> (16.6)	43.53	2.61	38.49	2.64	40.24	2.63	38.94	2.59	37.09	2.49	34.87	2.49	34.87	2.49	34.87	2.49	34.87	2.34
	<sup>63*</sup> (17.2)	44.37	2.61	31.12	2.63	29.70	2.63	28.21	2.59	26.66	2.49	25.05	2.49	25.05	2.49	25.05	2.49	25.05	2.34
	<sup>67</sup> (19.4)	47.96	2.59	33.87	2.62	31.00	2.62	29.49	2.58	27.93	2.49	26.30	2.49	26.30	2.49	26.30	2.49	26.30	2.33
	<sup>72</sup> (22.2)	52.94	2.56	27.58	2.60	24.86	2.60	23.45	2.57	21.98	2.48	20.47	2.48	20.47	2.48	20.47	2.48	20.47	2.33
	<sup>57</sup> (13.8)	44.36	2.67	43.29	2.69	41.98	2.68	40.36	2.63	38.36	2.53	35.98	2.53	35.98	2.53	35.98	2.53	35.98	2.37
	<sup>62</sup> (16.6)	44.59	2.67	43.36	2.69	42.05	2.68	40.42	2.63	38.42	2.53	36.03	2.53	36.03	2.53	36.03	2.53	36.03	2.37
<b>1370</b>	<sup>63*</sup> (17.2)	45.25	2.67	33.28	2.69	31.80	2.68	29.71	2.63	28.64	2.53	26.95	2.53	26.95	2.53	26.95	2.53	26.95	2.37
	<sup>67</sup> (19.4)	48.88	2.65	34.77	2.68	33.26	2.67	31.70	2.62	30.07	2.53	28.37	2.53	28.37	2.53	28.37	2.53	28.37	2.37
	<sup>72</sup> (22.2)	53.90	2.62	27.69	2.65	26.28	2.65	24.83	2.61	23.32	2.52	21.77	2.52	21.77	2.52	21.77	2.52	21.77	2.36
	<sup>57</sup> (13.8)	45.96	2.73	44.78	2.75	43.35	2.73	41.59	2.67	39.46	2.57	36.92	2.57	36.92	2.57	36.92	2.57	36.92	2.40
<b>1545</b>	<sup>62</sup> (16.6)	46.03	2.73	44.84	2.75	43.41	2.73	41.65	2.67	39.51	2.57	36.97	2.57	36.97	2.57	36.97	2.57	36.97	2.40
	<sup>63*</sup> (17.2)	45.92	2.73	35.42	2.75	33.88	2.73	32.27	2.68	30.58	2.57	28.35	2.57	28.35	2.57	28.35	2.57	28.35	2.41
	<sup>67</sup> (19.4)	49.57	2.71	37.08	2.73	35.51	2.72	33.88	2.67	32.18	2.57	30.36	2.57	30.36	2.57	30.36	2.57	30.36	2.40
	<sup>72</sup> (22.2)	54.62	2.69	29.14	2.71	27.69	2.71	26.20	2.66	24.66	2.56	23.08	2.56	23.08	2.56	23.08	2.56	23.08	2.39

See Legend and Notes on Page 24.

**PERFORMANCE DATA (CONT)**

060 High Cool EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW		
<b>1750</b>	57 (13.8)	58.66	3.81	55.57	4.17	52.33	4.58	48.92	5.04	45.32	5.57	41.58	6.16	38.84	6.75	35.42	7.34		
	62 (16.6)	59.85	3.82	51.25	4.17	52.51	4.58	48.99	5.05	45.37	5.57	41.63	6.16	39.11	6.75	35.74	7.34		
	63* (17.2)	60.83	3.82	41.43	4.18	53.16	4.58	49.10	5.04	44.88	5.56	40.58	6.13	37.91	6.75	34.17	7.34		
	67 (19.4)	65.32	3.86	43.05	4.22	57.00	4.63	39.48	5.10	48.03	5.62	43.40	6.20	44.77	6.75	35.70	7.34		
	72 (22.2)	71.52	3.90	34.50	4.27	62.34	4.69	57.48	5.17	52.44	5.70	47.35	6.29	36.12	6.75	27.57	7.34		
	57 (13.8)	60.99	3.90	57.68	4.26	54.22	4.68	50.58	5.15	46.74	5.68	42.79	6.27	60.99	6.75	42.79	7.34		
	62 (16.6)	61.23	3.90	57.75	4.26	54.29	4.68	50.64	5.15	46.80	5.68	42.83	6.27	61.23	6.75	42.83	7.34		
<b>2000</b>	63* (17.2)	61.92	3.91	44.25	4.26	53.95	4.67	49.76	5.13	45.40	5.65	41.00	6.22	45.99	6.75	36.66	7.34		
	67 (19.4)	66.43	3.94	46.10	4.30	57.80	4.72	53.27	5.19	48.55	5.71	43.81	6.29	47.87	6.75	38.42	7.34		
	72 (22.2)	72.71	3.98	36.40	4.35	63.17	4.78	58.16	5.26	52.95	5.79	47.73	6.37	38.07	6.75	29.31	7.34		
	57 (13.8)	62.91	3.99	59.42	4.35	55.76	4.77	51.93	5.25	47.89	5.78	43.74	6.37	62.91	6.75	43.74	7.34		
	62 (16.6)	62.99	3.99	59.49	4.36	55.83	4.77	51.99	5.25	47.94	5.78	43.79	6.37	62.99	6.75	43.79	7.34		
	63* (17.2)	62.73	3.99	46.95	4.35	54.54	4.76	50.24	5.22	45.80	5.73	41.35	6.30	48.75	6.75	38.84	7.34		
	67 (19.4)	67.27	4.02	49.01	4.39	58.40	4.80	53.75	5.27	48.94	5.80	44.15	6.38	67.27	6.75	44.15	7.34		
72 (22.2)	73.56	4.06	38.24	4.43	63.76	4.86	58.61	5.34	53.29	5.87	47.96	6.46	73.56	6.75	31.01	7.34			

See Legend and Notes on Page 24.

**PERFORMANCE DATA (CONT)**

\* At 75°F (24°C) entering dry bulb – Tennessee Valley Authority (TVA) rating conditions; all others at 80°F (27°C) 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:

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

$$t_{lwb} = \text{Wet-bulb temperature corresponding to enthalpy air leaving evaporator coil } (h_{lwb})$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

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

4. The SHC is based on 805 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 =  $1.10 \times (1 + \text{BF}) \times (\text{edb} - 80)$ .

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)

### GAS ADJUSTMENT

#### Natural Gas Orifice Sizes and Manifold Pressure 208/230VAC Models

Nameplate Input, High Stage (Btu/hr)		ALTITUDE OF INSTALLATION (FT. [m] ABOVE SEA LEVEL) U.S.A.*				
		0 to 2000 [0 to 610]	2001 to 3000* [610 to 914]	3001 to 4000 [915 to 1219]	4001 to 5000 [1220 to 1524]	5001 to 6000 [1524 to 1829]
40000	Orifice No. (Qty)	44 (2)	45 (2)†	48 (2)†	48 (2)†	48 (2)†
	Manifold Press. High / Low (in. W.C.)	3.2 / 1.4	3.2 / 1.4	3.8 / 1.6	3.5 / 1.5	3.2 / 1.4
60000	Orifice No. (Qty)	44 (3)	45 (3)†	48 (3)†	48 (3)†	48 (3)†
	Manifold Press. High / Low (in. W.C.)	3.2 / 1.4	3.2 / 1.4	3.8 / 1.6	3.5 / 1.5	3.2 / 1.4
90000	Orifice No. (Qty)	38 (3)	41 (3)†	41 (3)†	42 (3)†	42 (3)†
	Manifold Press. High / Low (in. W.C.)	3.6 / 1.6	3.8 / 1.6	3.4 / 1.5	3.4 / 1.5	3.2 / 1.4
115000	Orifice No. (Qty)	33 (3)	36 (3)†	36 (3)†	36 (3)†	38 (3)†
	Manifold Press. High / Low (in. W.C.)	3.8 / 1.7	3.8 / 1.7	3.6 / 1.6	3.3 / 1.4	3.6 / 1.5
130000	Orifice No. (Qty)	31 (3)	31 (3)	33 (3)†	33 (3)†	34 (3)†
	Manifold Press. High / Low (in. W.C.)	3.8 / 1.7	3.2 / 1.4	3.7 / 1.6	3.4 / 1.4	3.3 / 1.4

#### Natural Gas Orifice Sizes and Manifold Pressure 460V

Nameplate Input (Btu/hr)		ALTITUDE OF INSTALLATION (FT. ABOVE SEA LEVEL) U.S.A.*				
		0 to 2000 (0-610 m)	2001 to 3000* (611 to 914 m)	3001 to 4000 (915 to 1219 m)	4001 to 5000 (1220 to 1524 m)	5001 to 6000 (1524 to 1829 m)
60000	Orifice No. (Qty)	38 (2)	41 (2)†	41 (2)†	42 (2)†	42 (2)†
	Manifold Press. (in. W.C.)	3.6	3.8	3.4	3.4	3.2
90000	Orifice No. (Qty)	38 (3)	41 (3)†	41 (3)†	42 (3)†	42 (3)†
	Manifold Press. (in. W.C.)	3.6	3.8	3.4	3.4	3.2
115000	Orifice No. (Qty)	33 (3)	36 (3)†	36 (3)†	36 (3)†	38 (3)†
	Manifold Press. (in. W.C.)	3.8	3.8	3.6	3.3	3.6
130000	Orifice No. (Qty)	31 (3)	31 (3)	33 (3)†	33 (3)†	34 (3)†
	Manifold Press. (in. W.C.)	3.8	3.2	3.7	3.4	3.3

\*In the U.S.A., the input rating for altitudes above 2000 ft (610m) must be reduced by 4% for each 1000 ft (305 m) above sea level.

In Canada, the input rating for altitudes from 2001 to 4500 ft (611 to 1372 m) above sea level must be derated by 10% by an authorized gas conversion station or dealer.

For Canadian Installations from 2000 to 4500 ft, use U.S.A. column 2001 to 3000 ft (610 to 914 m).

† Orifices available through your distributor.

NOTE: Orifice sizes and manifold pressure settings are based on natural gas with a heating value of 1025 Btu/ft<sup>3</sup> and a specific gravity of .6.

#### Propane Gas Orifice Sizes and Manifold Pressure 208/230VAC Models

Nameplate Input, High Stage (Btu/hr)		ALTITUDE OF INSTALLATION (FT. ABOVE SEA LEVEL) U.S.A.*†				
		0 to 2000 [0 to 610]	2001 to 3000* [610 to 914]	3001 to 4000 [915 to 1219]	4001 to 5000 [1220 to 1524]	5001 to 6000 [1524 to 1829]
40000	Orifice No. (Qty)	55 (2)	56 (2)	56 (2)	56 (2)	56 (2)
	Manifold Press. High / Low (in. W.C.)	10.0/5.0	11.0/6.0	11.0/5.5	11.0/5.0	10.7/4.8
60000	Orifice No. (Qty)	55 (3)	56 (3)	56 (3)	56 (3)	56 (3)
	Manifold Press. High / Low (in. W.C.)	10.0/5.0	11.0/6.0	11.0/5.5	11.0/5.0	10.7/4.8
90000	Orifice No. (Qty)	53 (3)	54 (3)	54 (3)	54 (3)	54 (3)
	Manifold Press. High / Low (in. W.C.)	10.0/5.4	11.0/6.4	11.0/5.9	11.0/5.4	11.0/5.0
115000	Orifice No. (Qty)	51 (3)	52 (3)	52 (3)	53 (3)	53 (3)
	Manifold Press. High / Low (in. W.C.)	10.0/5.4	11.0/5.0	10.6/4.8	11.0/6.1	11.0/5.5
130000	Orifice No. (Qty)	49 (3)	50 (3)	51 (3)	52 (3)	52 (3)
	Manifold Press. High / Low (in. W.C.)	10.0/5.4	11.0/4.8	11.0/4.9	11.0/5.2	11.0/5.0

\*In the U.S.A., the input rating for altitudes above 2000 ft (610m) must be reduced by 4% for each 1000 ft (305 m) above sea level.

In Canada, the input rating for altitudes from 2001 to 4500 ft (611 to 1372 m) above sea level must be derated by 10% by an authorized gas conversion station or dealer.

For Canadian Installations from 2000 to 4500 ft, use U.S.A. column 2001 to 3000 ft (610 to 914 m).

† Use Kit No. CPLPCONV013B00 (0-2000 ft [0-610 m] above sea level). Use Kit No. CPLPCONV014B00 (2001-6000 ft [611-1829 m] above sea level).

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## PERFORMANCE DATA (CONT)

### Propane Gas Orifice Sizes and Manifold Pressure

460V

Nameplate Input (Btu/hr)		ALTITUDE OF INSTALLATION (FT. ABOVE SEA LEVEL) U.S.A.*				
		0 to 2000 (0–610 m)	2001 to 3000* (611 to 914 m)	3001 to 4000 (915 to 1219 m)	4001 to 5000 (1220 to 1524 m)	5001 to 6000 (1524 to 1829 m)
60000	Orifice No. (Qty)	53 (2)	54 (2)	54 (2)	54 (2)	54 (2)
	Manifold Press. (IN. W.C.)	10.0	11.0	11.0	11.0	11.0
90000	Orifice No. (Qty)	53 (3)	54 (3)	54 (3)	54 (3)	54 (3)
	Manifold Press. (IN. W.C.)	10.0	11.0	11.0	11.0	11.0
115000	Orifice No. (Qty)	51 (3)	52 (3)	52 (3)	53 (3)	53 (3)
	Manifold Press. (IN. W.C.)	10.0	11.0	10.6	11.0	11.0
130000	Orifice No. (Qty)	49 (3)	50 (3)	51 (3)	52 (3)	52 (3)
	Manifold Press. (IN. W.C.)	10.0	11.0	11.0	11.0	11.0

\*In the U.S.A., the input rating for altitudes above 2000 ft (610m) must be reduced by 4% for each 1000 ft (305 m) above sea level.

In Canada, the input rating for altitudes from 2001 to 4500 ft (611 to 1372 m) above sea level must be derated by 10% by an authorized gas conversion station or dealer.

For Canadian Installations from 2000 to 4500 ft (610–1372 m), use U.S.A. column 2001 to 3000 ft (611 to 914 m).

†Use Kit No. CPLPCONV013B00 (0–2000 ft [0–610 m] above sea level). Use Kit No. CPLPCONV014B00 (2001–6000 ft [611–1829 m] above sea level).

### High Altitude Compensation: Natural Gas

#### 208/230VAC Models

Nameplate Input, High Stage (Btu/hr)	Rated Heating Input (Btu/hr), Natural Gas at Installation Altitude Above Sea Level, U.S.A.*									
	0 to 2000 ft 0 to 610 m		2001 to 3000 ft* 610 to 914 m		3001 to 4000 ft 915 to 1219 m		4001 to 5000 ft 1220 to 1524 m		5001 to 6000 ft 1524 to 1829 m	
	High Stage	Low Stage	High Stage	Low Stage	High Stage	Low Stage	High Stage	Low Stage	High Stage	Low Stage
40000	40000	26000	36000	23400	34400	22300	32800	21300	31200	20300
60000	60000	39000	54000	35100	51600	33500	49200	32000	46800	30400
90000	90000	58500	81000	52700	77400	50300	73800	48000	70200	45600
115000	115000	75000	103500	67500	98900	64500	94300	61500	89700	58500
130000	130000	84500	117000	76100	111800	72700	106600	69300	101400	65900

### High Altitude Compensation, Natural Gas

460V

Nameplate Input (Btu/hr)	Rated Heating Input (Btu/hr), Natural Gas at Installation Altitude Above Sea Level, U.S.A.*				
	0 to 2000 ft (0–610 m)	2001 to 3000 ft* (611 to 914 m)	3001 to 4000 ft (915 to 1219 m)	4001 to 5000 ft (1220 to 1524 m)	5001 to 6000 ft (1524 to 1829 m)
60000	60000	54000	51600	49200	46800
90000	90000	81000	77400	73800	70200
115000	115000	103500	98900	94300	89700
130000	130000	117000	111800	106600	101400

\*In the U.S.A., the input rating for altitudes above 2000 ft (610m) must be reduced by 4% for each 1000 ft (305 m) above Sea level.

In Canada, the input rating for altitudes from 2001 to 4500 ft (611 to 1372 m) above sea level must be derated by 10% by an authorized gas conversion station or dealer.

For Canadian Installations from 2000 to 4500 ft (610–1372 m), use U.S.A. column 2001 to 3000 ft (611 to 914 m).

### High Altitude Compensation: Propane Gas

#### 208/230VAC Models

Nameplate Input, High Stage (Btu/hr)	Rated Heating Input (Btu/hr), LP Gas at Installation Altitude Above Sea Level, U.S.A.*									
	0 to 2000 ft 0 to 610 m		2001 to 3000 ft* 610 to 914 m		3001 to 4000 ft 915 to 1219 m		4001 to 5000 ft 1220 to 1524 m		5001 to 6000 ft 1524 to 1829 m	
	High Stage	Low Stage	High Stage	Low Stage	High Stage	Low Stage	High Stage	Low Stage	High Stage	Low Stage
40000	38000	26000	31700	23400	31700	22300	31700	21300	31200	20300
60000	57000	39000	47500	35100	47500	33500	47500	32000	46800	30400
90000	79000	58500	68900	52700	68900	50300	68600	48000	68600	45600
115000	103000	75000	100400	67500	98900	64500	83000	61500	83000	58500
130000	116000	84500	115500	76100	111800	72700	101300	69300	100400	65900

\*In the U.S.A., the input rating for altitudes above 2000 ft (610m) must be reduced by 4% for each 1000 ft (305 m) above sea level.

In Canada, the input rating for altitudes from 2001 to 4500 ft (611 to 1372 m) above sea level must be derated by 10% by an authorized gas conversion station or dealer.

For Canadian Installations from 2000 to 4500 ft (610–1372 m), use U.S.A. column 2001 to 3000 ft (611 to 914 m).

## High Altitude Compensation, Propane Gas 460V

Nameplate Input (Btu/hr)	Rated Heating Input (Btu/hr), Propane Gas at Installation Altitude Above Sea Level, U.S.A.*				
	0 to 2000 ft (0–610 m)	2001 to 3000 ft* (611 to 914 m)	3001 to 4000 ft (915 to 1219 m)	4001 to 5000 ft (1220 to 1524 m)	5001 to 6000 ft (1524 to 1829 m)
60000	53000	45900	45900	45800	45800
90000	79000	68900	68900	68600	68600
115000	103000	100400	98900	83000	83000
130000	116000	115500	111800	101300	100400

\*In the U.S.A., the input rating for altitudes above 2000 ft (610m) must be reduced by 4% for each 1000 ft (305 m) above sea level.

In Canada, the input rating for altitudes from 2001 to 4500 ft (611 to 1372 m) above sea level must be derated by 10% by an authorized gas conversion station or dealer.

For Canadian Installations from 2000 to 4500 ft (610–1372 m), use U.S.A. column 2001 to 3000 ft (611 to 914 m).



**DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)																	
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1								
48VG(A,N)24060	25 - 55°F Low Stage, 25 - 55°F High Stage	Low <sup>1</sup>	Blue	CFM	689	597	489	352	---	---	---	---	---	---	---	---	---				
				BHP	0.08	0.06	0.06	0.05	---	---	---	---	---	---	---	---	---	---	---		
				Low Stage Heat Rise °F (°C)	41 (23)	48 (27)	NA														
				High Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
				CFM	777	692	583	465	318	---	---	---	---	---	---	---	---	---	---	---	
				BHP	0.09	0.10	0.10	0.11	0.12	---	---	---	---	---	---	---	---	---	---	---	
		Med-Low <sup>3</sup>	Pink	Med-Low <sup>3</sup>	Low Stage Heat Rise °F (°C)	CFM	37 (20)	41 (23)	49 (27)	NA											
						BHP	0.09	0.10	0.10	0.11	0.12	---	---	---	---	---	---	---	---	---	
						High Stage Heat Rise °F (°C)	NA	NA													
						CFM	921	829	754	663	582	485	371	---	---	---	---	---	---	---	---
						BHP	0.14	0.14	0.15	0.16	0.17	0.17	0.18	---	---	---	---	---	---	---	---
						Low Stage Heat Rise °F (°C)	31 (17)	34 (19)	38 (21)	43 (24)	49 (27)	NA	NA								
		Med-High <sup>4</sup>	Orange	Med-High <sup>4</sup>	High Stage Heat Rise °F (°C)	CFM	1229	1171	1105	1049	980	913	838	775	716	679	633	596	559		
						BHP	0.28	0.30	0.30	0.31	0.32	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	
						Low Stage Heat Rise °F (°C)	NA	NA	26 (14)	27 (15)	29 (16)	31 (17)	34 (19)	37 (20)	42 (23)	49 (29)	53 (31)	58 (34)	63 (37)	68 (40)	
						High Stage Heat Rise °F (°C)	36 (20)	38 (21)	40 (22)	42 (24)	45 (25)	49 (27)	53 (29)	58 (31)	63 (34)	68 (37)	73 (40)	78 (43)	83 (46)	88 (49)	
CFM	1291					1206	1142	1081	1017	951	888	823	753	688	623	558	493	428	363		
BHP	0.31					0.32	0.33	0.34	0.34	0.35	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36		
High	Black	High	Low Stage Heat Rise °F (°C)	CFM	NA	NA	25 (14)	26 (15)	28 (16)	30 (17)	32 (18)	35 (19)	38 (21)	41 (24)	44 (26)	47 (28)	50 (30)				
				BHP	NA	NA	0.14	0.15	0.16	0.17	0.17	0.18	0.18	0.18	0.18	0.18	0.18				
				High Stage Heat Rise °F (°C)	34 (19)	37 (20)	39 (22)	41 (23)	44 (24)	47 (26)	50 (28)	54 (30)	58 (32)	62 (34)	66 (36)	70 (38)	74 (40)				
				CFM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
				BHP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
				High Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			

See notes on page 41.

DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR		EXTERNAL STATIC PRESSURE (IN. W.C.)															
					0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1						
48VG(A, N)30040	15 - 45°F Low Stage, 20 - 50°F High Stage	Low <sup>3</sup>	Blue	CFM	714	525	---	---	---	---	---	---	---	---	---	---	---	---		
				BHP	0.08	0.07	---	---	---	---	---	---	---	---	---	---	---	---	---	---
				Low Stage Heat Rise °F (°C)	26 (15)	36 (20)	NA													
		Med-Low <sup>1</sup>	Pink	High Stage Heat Rise °F (°C)	41 (23)	NA														
				CFM	831	765	670	586	466	299	---	---	---	---	---	---	---	---	---	---
				BHP	0.11	0.12	0.12	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
		Medium <sup>4</sup>	Red	Low Stage Heat Rise °F (°C)	23 (13)	25 (14)	28 (16)	32 (18)	40 (22)	NA										
				High Stage Heat Rise °F (°C)	35 (19)	38 (21)	43 (24)	50 (28)	NA											
				CFM	877	779	698	598	519	410	---	---	---	---	---	---	---	---	---	---
		Med-High <sup>2</sup>	Orange	BHP	0.12	0.12	0.13	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
				Low Stage Heat Rise °F (°C)	21 (12)	24 (13)	27 (15)	31 (17)	36 (20)	NA										
				High Stage Heat Rise °F (°C)	33 (18)	37 (21)	42 (23)	49 (27)	NA											
		High	Black	CFM	1139	1069	1012	937	870	786	724	626	512	381	288	228	188	148	108	68
				BHP	0.22	0.23	0.24	0.24	0.25	0.26	0.26	0.26	0.26	0.27	0.27	0.28	0.28	0.28	0.28	0.28
				Low Stage Heat Rise °F (°C)	17 (9)	18 (10)	19 (10)	20 (11)	22 (12)	24 (13)	26 (14)	26 (14)	26 (14)	27 (14)	28 (14)	29 (14)	30 (14)	31 (14)	32 (14)	33 (14)
		High	Black	High Stage Heat Rise °F (°C)	26 (14)	27 (15)	29 (16)	31 (17)	33 (19)	37 (21)	40 (22)	47 (26)	54 (31)	61 (36)	68 (41)	75 (46)	82 (51)	89 (56)	96 (61)	103 (66)
CFM	1531			1460	1382	1301	1209	1114	1003	890	764	629	494	369	244	119	94	69		
BHP	0.53			0.52	0.50	0.48	0.46	0.44	0.42	0.40	0.37	0.35	0.33	0.31	0.29	0.27	0.25	0.23		
High	Black	Low Stage Heat Rise °F (°C)	NA	NA	NA	NA	16 (9)	17 (9)	19 (10)	21 (12)	25 (14)	30 (17)	35 (20)	40 (23)	45 (26)	50 (29)	55 (32)	60 (35)		
		High Stage Heat Rise °F (°C)	NA	20 (11)	21 (12)	22 (12)	24 (13)	26 (15)	29 (16)	33 (18)	38 (21)	43 (24)	48 (27)	53 (30)	58 (33)	63 (36)	68 (39)	73 (42)		
		CFM	NA	20 (11)	21 (12)	22 (12)	24 (13)	26 (15)	29 (16)	33 (18)	38 (21)	43 (24)	48 (27)	53 (30)	58 (33)	63 (36)	68 (39)	73 (42)		

See notes on page 41.

**DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)															
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1						
48VG(A, N)30060  25 - 55°F Low Stage, 25 - 55°F High Stage		Low <sup>3</sup>	Blue	CFM	777	692	583	465	318	---	---	---	---	---	---	---			
				BHP	0.09	0.10	0.10	0.11	0.12	---	---	---	---	---	---	---	---		
				Low Stage Heat Rise °F (°C)	37 (21)	41 (23)	49 (27)	NA	NA										
				High Stage Heat Rise °F (°C)	NA	NA													
		Med-Low <sup>1</sup>	Pink	CFM	831	765	670	586	466	299	---	---	---	---	---	---	---	---	
				BHP	0.11	0.12	0.12	0.13	0.13	0.14	---	---	---	---	---	---	---	---	
				Low Stage Heat Rise °F (°C)	34 (19)	37 (21)	43 (24)	49 (27)	NA	NA									
				High Stage Heat Rise °F (°C)	54 (30)	NA	NA												
		Medium <sup>2</sup>	Red	CFM	1139	1069	1012	937	870	786	724	626	512	381	---	---	---	---	
				BHP	0.22	0.23	0.24	0.24	0.25	0.26	0.26	0.27	0.27	0.27	0.28	---	---	---	
				Low Stage Heat Rise °F (°C)	25 (14)	27 (15)	28 (16)	30 (17)	33 (18)	36 (20)	39 (22)	46 (26)	NA	NA	NA	NA	NA	NA	NA
				High Stage Heat Rise °F (°C)	39 (22)	42 (23)	44 (24)	47 (26)	51 (28)	NA	NA								
		Med-High <sup>4</sup>	Orange	CFM	1229	1171	1105	1049	980	913	838	775	679	516	---	---	---	---	
				BHP	0.28	0.30	0.30	0.31	0.32	0.33	0.33	0.34	0.34	0.34	0.33	---	---	---	
				Low Stage Heat Rise °F (°C)	NA	NA	26 (14)	27 (15)	29 (16)	31 (17)	34 (19)	37 (21)	42 (23)	45 (25)	55 (31)	---	---	---	
				High Stage Heat Rise °F (°C)	36 (20)	38 (21)	40 (22)	42 (23)	45 (25)	49 (27)	53 (29)	59 (34)	64 (37)	70 (41)	76 (44)	82 (48)	88 (51)	94 (54)	
High	Black	CFM	1531	1460	1382	1301	1209	1114	1003	890	764	629	---	---	---	---			
		BHP	0.53	0.52	0.50	0.48	0.46	0.44	0.42	0.40	0.37	0.35	---	---	---	---			
		Low Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	26 (14)	28 (16)	32 (18)	37 (21)	44 (24)	50 (28)	---	---	---			
		High Stage Heat Rise °F (°C)	29 (16)	30 (17)	32 (18)	34 (19)	37 (21)	40 (22)	44 (24)	50 (28)	56 (32)	62 (36)	69 (41)	76 (44)	83 (48)	90 (51)			

See notes on page 41.



**DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)											
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1		
48VG(A,N)36090 35 - 65°F Low Stage, 35 - 65°F High Stage		Low <sup>3</sup>	Blue	CFM	1097	971	823	747	669	636	558	513	456	412	
				BHP	0.12	0.11	0.10	0.11	0.12	0.13	0.14	0.15	0.16		
				Low Stage Heat Rise °F (°C)	39 (22)	44 (25)	52 (29)	58 (32)	64 (36)	NA	NA	NA	NA		
				High Stage Heat Rise °F (°C)	61 (34)	NA									
				CFM	934	864	810	745	698	649	571	525	486	428	
				BHP	0.10	0.10	0.11	0.12	0.13	0.14	0.14	0.15	0.16	0.17	
		Med-Low <sup>1</sup>	Pink	Low Stage Heat Rise °F (°C)	46 (26)	50 (28)	53 (29)	58 (32)	62 (34)	NA	NA	NA	NA		
				High Stage Heat Rise °F (°C)	NA										
				CFM	1251	1198	1149	1104	1066	1017	970	932	892	839	
				BHP	0.19	0.21	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29	
				Low Stage Heat Rise °F (°C)	NA	36 (20)	37 (21)	39 (22)	40 (22)	42 (23)	44 (25)	46 (26)	48 (27)	51 (28)	
				High Stage Heat Rise °F (°C)	54 (30)	56 (31)	59 (33)	61 (34)	63 (35)	NA	NA	NA	NA	NA	
Med-High <sup>4</sup>		High	Black	CFM	1451	1415	1372	1327	1287	1249	1212	1168	1130	1094	
				BHP	0.29	0.30	0.31	0.32	0.32	0.35	0.36	0.37	0.38	0.39	
				Low Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	35 (20)	37 (20)	38 (21)	39 (22)	
				High Stage Heat Rise °F (°C)	46 (26)	48 (26)	49 (27)	51 (28)	52 (29)	54 (30)	56 (31)	58 (32)	60 (33)	62 (34)	
				CFM	1466	1423	1384	1343	1308	1263	1219	1183	1145	1106	
				BHP	0.30	0.31	0.33	0.34	0.35	0.36	0.37	0.38	0.40	0.41	
		High	Black	Low Stage Heat Rise °F (°C)	NA	35 (20)	36 (20)	38 (21)							
				High Stage Heat Rise °F (°C)	46 (26)	47 (26)	49 (27)	50 (28)	52 (29)	53 (30)	55 (31)	57 (32)	59 (33)	61 (34)	

See notes on page 41.

**DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)																								
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1															
48VG(A,N)42060 25 - 55°F Low Stage, 25 - 55°F High Stage		Low <sup>3</sup>	Blue	CFM	694	624	533	460	383	328	---	---	---	---	---	---	---	---	---	---	---							
				BHP	0.05	0.05	0.06	0.07	0.07	0.08	---	---	---	---	---	---	---	---	---	---	---	---	---					
				Low Stage Heat Rise °F (°C)	41 (23)	46 (25)	54 (30)	NA																				
				High Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
				CFM	1076	1026	972	918	872	827	771	714	666	611	---	---	---	---	---	---	---	---	---	---	---	---		
				BHP	0.13	0.14	0.15	0.15	0.17	0.18	0.18	0.20	0.21	0.22	0.22	0.23	0.24	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
		Med-Low <sup>1</sup>	Pink	Med-Low <sup>1</sup>		Low Stage Heat Rise °F (°C)	27 (15)	28 (15)	29 (16)	31 (17)	33 (18)	35 (19)	37 (21)	37 (21)	40 (22)	43 (24)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)			
						High Stage Heat Rise °F (°C)	41 (23)	43 (24)	46 (25)	48 (28)	51 (30)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	
						CFM	1213	1169	1110	1065	1016	964	923	878	820	777	---	---	---	---	---	---	---	---	---	---	---	---
						BHP	0.16	0.17	0.17	0.19	0.20	0.21	0.22	0.22	0.23	0.24	0.24	0.24	0.24	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
						Low Stage Heat Rise °F (°C)	NA	NA	26 (14)	27 (15)	28 (16)	30 (16)	31 (17)	33 (18)	35 (19)	37 (21)	37 (21)	40 (22)	43 (24)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)	47 (26)
						High Stage Heat Rise °F (°C)	37 (20)	38 (21)	40 (22)	42 (24)	44 (26)	46 (27)	48 (28)	51 (30)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)	54 (32)
Med-High <sup>2</sup>	Orange	Med-High <sup>2</sup>		CFM	1451	1415	1372	1327	1287	1249	1212	1168	1130	1094	1058	1022	986	950	914	878	842	806	770	734				
				BHP	0.29	0.30	0.31	0.32	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48			
				Low Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
				High Stage Heat Rise °F (°C)	31 (17)	31 (17)	32 (18)	34 (18)	35 (19)	36 (20)	37 (21)	38 (21)	39 (22)	40 (22)	41 (23)	42 (23)	43 (24)	44 (24)	45 (25)	46 (25)	47 (26)	48 (26)	49 (27)	50 (27)	51 (28)	52 (28)		
				CFM	1633	1590	1552	1518	1483	1444	1406	1372	1340	1303	1265	1227	1190	1152	1114	1076	1038	1000	962	924	886	848		
				BHP	0.41	0.43	0.44	0.45	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.64		
High	Black	High		Low Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
				High Stage Heat Rise °F (°C)	27 (15)	28 (16)	29 (16)	29 (16)	30 (17)	31 (17)	32 (18)	32 (18)	33 (18)	34 (19)	35 (19)	36 (20)	37 (20)	38 (21)	39 (21)	40 (22)	41 (22)	42 (23)	43 (23)	44 (24)	45 (24)			

See notes on page 41.

**DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)										
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	
48VG(A,N)42090	35 - 65°F Low Stage, 35 - 65°F High Stage	Low <sup>3</sup>	Blue	CFM	1097	971	823	747	669	636	558	513	456	412
				BHP	0.12	0.11	0.10	0.11	0.12	0.13	0.14	0.15	0.16	
				Low Stage Heat Rise °F (°C)	39 (22)	44 (25)	52 (29)	58 (32)	64 (36)	NA	NA	NA	NA	
				High Stage Heat Rise °F (°C)	61 (34)	NA								
				CFM	1076	1026	972	918	872	827	771	714	666	611
				BHP	0.13	0.14	0.15	0.15	0.17	0.18	0.18	0.20	0.21	0.22
		Med-Low <sup>1</sup>	Pink	Low Stage Heat Rise °F (°C)	40 (22)	44 (23)	44 (25)	47 (26)	49 (27)	52 (29)	56 (31)	64 (36)	NA	
				High Stage Heat Rise °F (°C)	63 (35)	NA								
				CFM	1251	1198	1149	1104	1066	1017	970	932	892	839
				BHP	0.19	0.21	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29
				Low Stage Heat Rise °F (°C)	NA	36 (20)	37 (21)	39 (22)	40 (22)	42 (23)	44 (25)	46 (26)	48 (27)	
				High Stage Heat Rise °F (°C)	54 (30)	56 (31)	59 (33)	61 (34)	63 (35)	NA	NA	NA	NA	
Med-High <sup>2</sup>	Orange	Med-High <sup>2</sup>	Orange	CFM	1451	1415	1372	1327	1287	1249	1212	1168	1130	1094
				BHP	0.29	0.30	0.31	0.32	0.32	0.35	0.36	0.37	0.38	0.39
				Low Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	35 (20)	37 (20)	38 (21)	
				High Stage Heat Rise °F (°C)	46 (26)	48 (26)	49 (27)	51 (28)	52 (29)	54 (30)	56 (31)	58 (32)	60 (33)	
				CFM	1633	1590	1552	1518	1483	1444	1406	1372	1340	1303
				BHP	0.41	0.43	0.44	0.45	0.47	0.48	0.49	0.50	0.51	0.53
		High <sup>4</sup>	Black	Low Stage Heat Rise °F (°C)	NA	NA								
				High Stage Heat Rise °F (°C)	41 (23)	42 (24)	43 (24)	44 (25)	45 (25)	47 (26)	48 (27)	49 (27)	50 (28)	

See notes on page 41.



**DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)										
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	
48VG(A,N)48115 30 - 60°F Low Stage, 30 - 60°F High Stage		Low <sup>1</sup>	Blue	CFM	1271	1229	1177	1121	1066	1027	974	942	887	839
				BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29
				Low Stage Heat Rise °F (°C)	44 (24)	45 (25)	47 (26)	50 (28)	52 (29)	54 (30)	57 (32)	59 (33)	NA	NA
				High Stage Heat Rise °F (°C)	NA									
		Med-Low <sup>3</sup>	Pink	CFM	1340	1299	1240	1191	1139	1091	1050	1001	952	895
				BHP	0.22	0.23	0.24	0.25	0.26	0.28	0.29	0.30	0.31	0.32
				Low Stage Heat Rise °F (°C)	42 (23)	43 (24)	45 (25)	47 (26)	49 (27)	51 (28)	53 (30)	56 (31)	59 (33)	NA
				High Stage Heat Rise °F (°C)	NA									
		Medium <sup>2</sup>	Red	CFM	1686	1650	1617	1576	1544	1503	1468	1433	1393	1356
				BHP	0.42	0.44	0.45	0.46	0.48	0.49	0.51	0.52	0.53	0.55
				Low Stage Heat Rise °F (°C)	33 (18)	34 (19)	35 (19)	35 (20)	36 (20)	37 (21)	38 (21)	39 (22)	40 (22)	41 (23)
				High Stage Heat Rise °F (°C)	52 (29)	53 (29)	54 (30)	55 (31)	56 (31)	58 (32)	59 (33)	NA	NA	NA
		Med-High	Orange	CFM	1854	1837	1781	1784	1720	1698	1655	1625	1578	1532
				BHP	0.56	0.57	0.60	0.59	0.62	0.63	0.64	0.66	0.67	0.67
Low Stage Heat Rise °F (°C)	30 (17)			30 (17)	31 (17)	31 (17)	32 (18)	33 (18)	34 (19)	34 (19)	35 (20)	36 (20)		
High Stage Heat Rise °F (°C)	47 (26)			47 (26)	49 (27)	49 (27)	51 (28)	51 (28)	53 (29)	53 (30)	55 (31)	57 (32)		
High <sup>4</sup>	Black	CFM	1934	1900	1855	1815	1778	1737	1695	1656	1606	1528		
		BHP	0.59	0.61	0.62	0.64	0.65	0.67	0.68	0.70	0.70	0.68		
		Low Stage Heat Rise °F (°C)	NA	NA	30 (17)	31 (17)	31 (17)	32 (18)	33 (18)	34 (19)	35 (19)	37 (20)		
		High Stage Heat Rise °F (°C)	45 (25)	46 (25)	47 (26)	48 (27)	49 (27)	50 (28)	51 (28)	52 (29)	54 (30)	57 (32)		

See notes on page 41.

**DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)										
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	
48VG(A, N)48130	35 - 65°F Low Stage, 35 - 65°F High Stage	Low <sup>1</sup>	Blue	CFM	1271	1229	1177	1121	1066	1027	974	942	887	839
				BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29
				Low Stage Heat Rise °F (°C)	49 (27)	51 (28)	53 (30)	56 (31)	59 (33)	61 (34)	64 (36)	NA	NA	NA
		High Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		CFM	1340	1299	1240	1191	1139	1091	1050	1001	952	895		
		BHP	0.22	0.23	0.24	0.25	0.26	0.28	0.29	0.30	0.31	0.32		
		Low Stage Heat Rise °F (°C)	47 (26)	48 (27)	51 (28)	53 (29)	55 (31)	57 (32)	60 (33)	63 (35)	NA	NA		
		High Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
		CFM	1686	1650	1617	1576	1544	1503	1468	1433	1393	1356		
		BHP	0.42	0.44	0.45	0.46	0.48	0.49	0.51	0.52	0.53	0.55		
		Low Stage Heat Rise °F (°C)	37 (21)	38 (21)	39 (22)	40 (22)	41 (23)	42 (23)	43 (24)	44 (24)	45 (25)	46 (26)		
		High Stage Heat Rise °F (°C)	57 (32)	58 (32)	59 (33)	61 (34)	62 (35)	64 (35)	65 (36)	NA	NA	NA		
		CFM	1854	1837	1781	1784	1720	1698	1655	1625	1578	1532		
		BHP	0.56	0.57	0.60	0.59	0.62	0.63	0.64	0.66	0.67	0.67		
		Low Stage Heat Rise °F (°C)	NA	NA	35 (20)	35 (20)	36 (20)	37 (21)	38 (21)	39 (21)	40 (22)	41 (23)		
High Stage Heat Rise °F (°C)	52 (29)	52 (29)	54 (30)	54 (30)	56 (31)	56 (31)	58 (32)	59 (33)	61 (34)	63 (35)				
CFM	1934	1900	1855	1815	1778	1737	1695	1656	1606	1528				
BHP	0.59	0.61	0.62	0.64	0.65	0.67	0.68	0.70	0.70	0.68				
Low Stage Heat Rise °F (°C)	NA	NA	NA	35 (19)	35 (20)	36 (20)	37 (21)	38 (21)	39 (22)	41 (23)				
High Stage Heat Rise °F (°C)	50 (28)	50 (28)	52 (29)	53 (29)	54 (30)	55 (31)	57 (31)	58 (32)	60 (33)	63 (35)				

See notes on page 41.



**DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)											
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1		
48VG(A,N)60115 30 - 60°F Low Stage, 30 - 60°F High Stage		Low <sup>1</sup>	Blue	CFM	1271	1229	1177	1121	1066	1027	974	942	887	839	
				BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29	
				Low Stage Heat Rise °F (°C)	44 (24)	45 (25)	47 (26)	50 (28)	52 (29)	54 (30)	57 (32)	59 (33)	NA	NA	
				High Stage Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		Med-Low <sup>3</sup>	Pink		CFM	1340	1299	1240	1191	1139	1091	1050	1001	952	895
					BHP	0.22	0.23	0.24	0.25	0.26	0.28	0.29	0.30	0.31	
					Low Stage Heat Rise °F (°C)	42 (23)	43 (24)	45 (25)	47 (26)	49 (27)	51 (28)	53 (30)	56 (31)	59 (33)	NA
					High Stage Heat Rise °F (°C)	NA									
		Medium	Red		CFM	1686	1650	1617	1576	1544	1503	1468	1433	1393	1356
					BHP	0.42	0.44	0.45	0.46	0.48	0.49	0.51	0.52	0.53	0.55
					Low Stage Heat Rise °F (°C)	33 (18)	34 (19)	35 (19)	35 (20)	36 (20)	37 (21)	38 (21)	39 (22)	40 (22)	41 (23)
					High Stage Heat Rise °F (°C)	52 (29)	53 (29)	54 (30)	55 (31)	56 (31)	58 (32)	59 (33)	NA	NA	NA
		Med-High <sup>2</sup>	Orange		CFM	1878	1844	1805	1762	1731	1693	1655	1616	1570	1532
					BHP	0.50	0.52	0.53	0.54	0.56	0.57	0.59	0.60	0.64	0.63
Low Stage Heat Rise °F (°C)	30 (17)				30 (17)	31 (17)	32 (18)	32 (18)	33 (18)	34 (19)	35 (19)	36 (20)	36 (20)		
High Stage Heat Rise °F (°C)	46 (26)				47 (26)	48 (27)	49 (27)	50 (28)	51 (29)	53 (29)	54 (30)	55 (31)	57 (32)		
High <sup>4</sup>	Black		CFM	1934	1900	1855	1815	1778	1737	1695	1656	1606	1528		
			BHP	0.59	0.61	0.62	0.64	0.65	0.67	0.68	0.70	0.70	0.68		
			Low Stage Heat Rise °F (°C)	NA	NA	30 (17)	31 (17)	31 (17)	32 (18)	33 (18)	34 (19)	35 (19)	37 (20)		
			High Stage Heat Rise °F (°C)	45 (25)	46 (25)	47 (26)	48 (27)	49 (27)	50 (28)	51 (28)	52 (29)	54 (30)	57 (32)		

See notes on page 41.

**DRY COIL AIR DELIVERY\* - HORIZONTAL AND DOWNFLOW DISCHARGE - UNIT 48VG-A 208/230 VAC MODELS (CONT)**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)											
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1		
48VG(A, N)60130	35 - 65°F Low Stage, 35 - 65°F High Stage	Low <sup>1</sup>	Blue	CFM	1271	1229	1177	1121	1066	1027	974	942	887	839	
				BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29	
				Low Stage Heat Rise °F (°C)	49 (27)	51 (28)	53 (30)	56 (31)	59 (33)	61 (34)	64 (36)	NA	NA	NA	
				High Stage Heat Rise °F (°C)	NA	NA									
				CFM	1340	1299	1240	1191	1139	1091	1050	1001	952	895	
				BHP	0.22	0.23	0.24	0.25	0.26	0.28	0.29	0.30	0.31	0.32	
	Med-Low <sup>3</sup>	Pink	Med-Low <sup>3</sup>	Low Stage Heat Rise °F (°C)	47 (26)	48 (27)	51 (28)	53 (29)	55 (31)	57 (32)	60 (33)	63 (35)	NA	NA	
				High Stage Heat Rise °F (°C)	NA										
				CFM	1686	1650	1617	1576	1544	1503	1468	1433	1393	1356	
				BHP	0.42	0.44	0.45	0.46	0.48	0.49	0.51	0.52	0.53	0.55	
				Low Stage Heat Rise °F (°C)	37 (21)	38 (21)	39 (22)	40 (22)	41 (23)	42 (23)	43 (24)	44 (24)	45 (25)	46 (26)	
				High Stage Heat Rise °F (°C)	57 (32)	58 (32)	59 (33)	61 (34)	62 (35)	64 (36)	65 (36)	NA	NA	NA	
Med-High <sup>2</sup>	Orange	Med-High <sup>2</sup>	CFM	1878	1844	1805	1762	1731	1693	1655	1616	1570	1532		
			BHP	0.50	0.52	0.53	0.54	0.56	0.57	0.59	0.60	0.64	0.63		
			Low Stage Heat Rise °F (°C)	NA	NA	35 (19)	36 (20)	36 (20)	37 (21)	38 (21)	39 (22)	40 (22)	41 (23)		
			High Stage Heat Rise °F (°C)	51 (28)	52 (29)	53 (30)	54 (30)	55 (31)	57 (31)	58 (32)	59 (33)	61 (34)	63 (35)		
			CFM	1934	1900	1855	1815	1778	1737	1695	1656	1606	1528		
			BHP	0.59	0.61	0.62	0.64	0.65	0.67	0.68	0.70	0.70	0.68		
High <sup>4</sup>	Black	High <sup>4</sup>	Low Stage Heat Rise °F (°C)	NA	NA	NA	35 (19)	35 (20)	36 (20)	37 (21)	38 (21)	39 (22)	41 (23)		
			High Stage Heat Rise °F (°C)	50 (28)	50 (28)	52 (29)	53 (29)	54 (30)	55 (31)	57 (31)	58 (32)	60 (33)			
			CFM	1934	1900	1855	1815	1778	1737	1695	1656	1606	1528		

Notes:

- 1 Factory-shipped low stage cooling speed
  - 2 Factory-shipped high stage cooling speed
  - 3 Factory-shipped low stage gas heating speed
  - 4 Factory-shipped high stage gas heating speed
- \*Allowable High Stage Enhanced Dehumidification Cooling Speed
- "NA" = Not allowed for particular heating speed

**DRY COIL AIR DELIVERY - HORIZONTAL AND DOWNFLOW DISCHARGE - 48VG-A 460 VAC MODELS**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR		EXTERNAL STATIC PRESSURE (IN. W.C.)										
					0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	
48VG(A,N)36060	25 - 55°F	Low <sup>1</sup>	Blue	CFM	934	864	810	745	698	649	571	525	486	428	
				BHP	0.10	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17		
				Heat Rise °F (°C)	48 (26)	51 (29)	55 (30)	NA	NA	NA	NA	NA	NA	NA	
		Med-Low	Pink	CFM	1076	1026	972	918	872	827	771	714	666	611	
				BHP	0.13	0.14	0.15	0.15	0.17	0.18	0.20	0.21	0.22		
				Heat Rise °F (°C)	41 (23)	43 (24)	46 (25)	48 (27)	51 (28)	54 (30)	NA	NA	NA	NA	
	Medium <sup>3</sup>	Red	CFM	1213	1169	1110	1065	1016	964	923	878	820	777		
			BHP	0.16	0.17	0.17	0.19	0.20	0.21	0.22	0.23	0.24			
			Heat Rise °F (°C)	37 (20)	38 (21)	40 (22)	42 (23)	44 (24)	46 (26)	48 (27)	51 (28)	54 (30)	NA		
	Med-High <sup>2</sup>	Orange	CFM	1251	1198	1149	1104	1066	1017	970	932	892	839		
			BHP	0.19	0.21	0.21	0.23	0.24	0.25	0.26	0.27	0.28			
			Heat Rise °F (°C)	36 (20)	37 (21)	39 (21)	40 (22)	42 (23)	44 (24)	46 (25)	48 (26)	50 (28)	53 (29)		
48VG(A,N)36090	35 - 65°F	High	Black	CFM	1451	1415	1372	1327	1287	1249	1212	1168	1130	1094	
				BHP	0.29	0.30	0.31	0.32	0.32	0.35	0.36	0.37	0.38		
				Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
		Low <sup>1</sup>	Blue	CFM	1076	1026	972	918	872	827	771	714	666	611	
				BHP	0.13	0.14	0.15	0.15	0.17	0.18	0.20	0.21	0.22		
				Heat Rise °F (°C)	63 (35)	NA	NA								
Med-Low	Pink	CFM	1213	1169	1110	1065	1016	964	923	878	820	777			
		BHP	0.16	0.17	0.17	0.19	0.20	0.21	0.22	0.23	0.24				
		Heat Rise °F (°C)	56 (31)	58 (32)	61 (34)	64 (35)	NA	NA	NA	NA	NA	NA			
Medium	Red	CFM	1251	1198	1149	1104	1066	1017	970	932	892	839			
		BHP	0.19	0.21	0.21	0.23	0.24	0.25	0.26	0.27	0.28				
		Heat Rise °F (°C)	54 (30)	57 (32)	59 (33)	62 (34)	64 (35)	NA	NA	NA	NA	NA			
Med-High <sup>2</sup>	Orange	CFM	1451	1415	1372	1327	1287	1249	1212	1168	1130	1094			
		BHP	0.29	0.30	0.31	0.32	0.32	0.35	0.36	0.37	0.38				
		Heat Rise °F (°C)	47 (26)	48 (27)	50 (28)	51 (28)	53 (29)	54 (30)	56 (31)	58 (32)	60 (33)	62 (35)			

See notes on page 46.

**DRY COIL AIR DELIVERY - HORIZONTAL AND DOWNFLOW DISCHARGE - 48VG-A 460 VAC MODELS**

48VG(A,N)42060	25 - 55°F	Low <sup>1</sup>	Blue	CFM	1076	1026	972	918	872	827	771	714	666	611	
				BHP	0.13	0.14	0.15	0.15	0.17	0.18	0.18	0.20	0.21	0.22	
				Heat Rise °F	41	43	46	48	51	54	54	54	54	54	54
				(°C)	(23)	(24)	(25)	(27)	(28)	(30)	(30)	(30)	(30)	(30)	(30)
				CFM	1213	1169	1110	1065	1016	964	923	878	820	777	729
				BHP	0.16	0.17	0.17	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.25
				Heat Rise °F	37	38	40	42	44	46	48	48	48	48	48
				(°C)	(20)	(21)	(22)	(23)	(24)	(26)	(27)	(27)	(28)	(30)	(30)
				CFM	1251	1198	1149	1104	1066	1017	970	932	892	839	791
				BHP	0.19	0.21	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.29
Heat Rise °F	36	37	39	40	42	44	46	48	50	53	53				
(°C)	(20)	(21)	(21)	(22)	(23)	(24)	(25)	(26)	(28)	(29)	(29)				
CFM	1451	1415	1372	1327	1287	1249	1212	1168	1130	1094	1056				
BHP	0.29	0.30	0.31	0.32	0.32	0.35	0.36	0.37	0.38	0.39	0.39				
High Stage Heat Rise °F	31	31	32	33	35	36	37	38	39	39	41				
(°C)	(17)	(17)	(18)	(19)	(19)	(20)	(20)	(21)	(22)	(22)	(23)				
CFM	1633	1590	1552	1518	1483	1444	1406	1372	1340	1303	1265				
BHP	0.41	0.43	0.44	0.45	0.47	0.48	0.49	0.50	0.51	0.53	0.53				
Heat Rise °F	27	28	29	29	30	31	32	32(18)	33	34	34				
(°C)	(15)	(16)	(16)	(16)	(17)	(17)	(18)	(18)	(18)	(19)	(19)				
CFM	1076	1026	972	918	872	827	771	714	666	611	563				
BHP	0.13	0.14	0.15	0.15	0.17	0.18	0.18	0.20	0.21	0.22	0.22				
Heat Rise °F	63	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
(°C)	(35)														
CFM	1213	1169	1110	1065	1016	964	923	878	820	777	729				
BHP	0.16	0.17	0.17	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.25				
Heat Rise °F	56	58	61	64	NA	NA	NA	NA	NA	NA	NA				
(°C)	(31)	(32)	(34)	(35)											
CFM	1251	1198	1149	1104	1066	1017	970	932	892	839	791				
BHP	0.19	0.21	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.29				
Heat Rise °F	54	57	59	62	64	NA	NA	NA	NA	NA	NA				
(°C)	(30)	(32)	(33)	(34)	(35)										
CFM	1451	1415	1372	1327	1287	1249	1212	1168	1130	1094	1056				
BHP	0.29	0.30	0.31	0.32	0.32	0.35	0.36	0.37	0.38	0.39	0.39				
Heat Rise °F	47	48	50	51	53	54	56	58	60	62	62				
(°C)	(26)	(27)	(28)	(28)	(29)	(30)	(31)	(32)	(33)	(35)	(35)				
CFM	1633	1590	1552	1518	1483	1444	1406	1372	1340	1303	1265				
BHP	0.41	0.43	0.44	0.45	0.47	0.48	0.49	0.50	0.51	0.53	0.53				
Heat Rise °F	42	43	44	45	46	47	48	50	51	52	52				
(°C)	(23)	(24)	(24)	(25)	(25)	(26)	(27)	(28)	(28)	(29)	(29)				

See notes on page 46.

**DRY COIL AIR DELIVERY - HORIZONTAL AND DOWNFLOW DISCHARGE - 48VG-A 460 VAC MODELS**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR		EXTERNAL STATIC PRESSURE (IN. W.C.)									
					0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
48VG(A,N)48090	35 - 65°F	Low <sup>1</sup>	Blue	CFM	1271	1229	1177	1121	1066	1027	974	942	887	839
				BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29
				Heat Rise °F (°C)	54 (30)	55 (31)	58 (34)	61 (36)	64 (38)	NA	NA	NA	NA	NA
		Med-Low <sup>3</sup>	Pink	CFM	1445	1389	1341	1281	1236	1189	1139	1072	1027	982
				BHP	0.24	0.26	0.26	0.28	0.29	0.3	0.32	0.33	0.34	0.35
				Heat Rise °F (°C)	47 (26)	49 (27)	51 (28)	53 (29)	55 (31)	57 (32)	60 (33)	63 (35)	NA	NA
	30 - 60°F	Medium <sup>2</sup>	Red	CFM	1686	1650	1617	1576	1544	1503	1468	1433	1393	1356
				BHP	0.42	0.44	0.45	0.46	0.48	0.49	0.51	0.52	0.53	0.55
				Heat Rise °F (°C)	40 (22)	41 (23)	42 (23)	43 (24)	44 (24)	45 (25)	46 (26)	47 (26)	49 (28)	50 (28)
		Med-High	Orange	CFM	1854	1837	1781	1784	1720	1698	1655	1625	1578	1532
				BHP	0.56	0.57	0.60	0.59	0.62	0.63	0.64	0.66	0.67	0.67
				Heat Rise °F (°C)	37 (20)	37 (20)	38 (21)	38 (21)	40 (22)	40 (22)	41 (23)	42 (23)	43 (24)	44 (25)
48VG(A,N)48115	30 - 60°F	High	Black	CFM	2131	2088	2065	2013	1982	1941	1888	1860	1785	1751
				BHP	0.72	0.74	0.75	0.77	0.79	0.8	0.81	0.81	0.79	0.75
				Heat Rise °F (°C)	NA	NA	NA	NA	NA	35 (19)	36 (20)	37 (20)	38 (21)	39 (22)
	Low <sup>1</sup>	Blue	CFM	1271	1229	1177	1121	1066	1027	974	942	887	839	
			BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29	
			Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
30 - 60°F	Med-Low	Pink	CFM	1445	1389	1341	1281	1236	1189	1139	1072	1027	982	
			BHP	0.24	0.26	0.26	0.28	0.29	0.3	0.32	0.33	0.34	0.35	
			Heat Rise °F (°C)	60 (33)	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Medium <sup>2</sup>	Red	CFM	1686	1650	1617	1576	1544	1503	1468	1433	1393	1356	
			BHP	0.42	0.44	0.45	0.46	0.48	0.49	0.51	0.52	0.53	0.55	
			Heat Rise °F (°C)	51 (28)	52 (29)	53 (30)	55 (31)	56 (31)	57 (32)	59 (33)	60 (33)	NA	NA	
Med-High	Orange	CFM	1854	1837	1781	1784	1720	1698	1655	1625	1578	1532		
		BHP	0.56	0.57	0.60	0.59	0.62	0.63	0.64	0.66	0.67	0.67		
		Heat Rise °F (°C)	47 (26)	47 (26)	48 (27)	48 (27)	50 (28)	51 (28)	52 (29)	53 (29)	55 (30)	56 (31)		
High <sup>3</sup>	Black	CFM	2131	2088	2065	2013	1982	1941	1888	1860	1785	1751		
		BHP	0.72	0.74	0.75	0.77	0.79	0.8	0.81	0.81	0.79	0.75		
		Heat Rise °F (°C)	40 (22)	41 (23)	42 (23)	43 (24)	44 (24)	45 (25)	46 (25)	46 (26)	48 (27)	49 (27)		

See notes on page 46.

**DRY COIL AIR DELIVERY - HORIZONTAL AND DOWNFLOW DISCHARGE - 48VG-A 460 VAC MODELS**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	Heat Rise °F	EXTERNAL STATIC PRESSURE (IN. W.C.)												
					0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1			
48VG(A,N)48130	35 - 65°F	Low <sup>1</sup>	Blue	CFM	1271	1229	1177	1121	1066	1027	974	942	887	839	0.29		
				BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	
		Med-Low	Pink	CFM	1445	1389	1341	1281	1236	1189	1139	1072	1027	982	935	0.35	
				BHP	0.24	0.26	0.26	0.28	0.29	0.3	0.32	0.33	0.34	0.35	0.36	0.37	
		Medium <sup>2</sup>	Red	CFM	1686	1650	1617	1576	1544	1503	1468	1433	1393	1356	1319	0.41	
				BHP	0.42	0.44	0.45	0.46	0.48	0.49	0.51	0.52	0.53	0.54	0.55	0.56	
		Med-High	Orange	CFM	1854	1837	1781	1784	1720	1698	1655	1625	1578	1532	1487	0.45	
				BHP	0.56	0.57	0.60	0.59	0.62	0.63	0.64	0.66	0.67	0.68	0.69	0.70	
		48VG(A,N)60090	35 - 65°F	Low <sup>1</sup>	Blue	CFM	52	52	54	54	56	57	58	59	61	63	0.67
						BHP	(29)	(29)	(30)	(30)	(31)	(32)	(32)	(33)	(34)	(35)	(36)
Med-Low <sup>3</sup>	Black			CFM	2131	2088	2065	2013	1982	1941	1888	1860	1785	1751	1717	0.75	
				BHP	0.72	0.74	0.75	0.77	0.79	0.8	0.81	0.81	0.81	0.81	0.81	0.81	
Medium <sup>2</sup>	Red			CFM	45	46	47	48	49	50	51	52	54	55	55	0.75	
				BHP	(25)	(26)	(26)	(27)	(27)	(28)	(28)	(29)	(29)	(30)	(31)	(31)	
High	Black			CFM	1271	1229	1177	1121	1066	1027	974	942	887	839	792	0.75	
				BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.28	0.29	0.29	
48VG(A,N)60090	35 - 65°F			Low <sup>1</sup>	Blue	CFM	54	55	58	61	64	64	64	64	64	64	0.67
						BHP	(30)	(31)	(32)	(34)	(35)	NA	NA	NA	NA	NA	NA
		Med-Low <sup>3</sup>	Pink	CFM	1445	1389	1341	1281	1236	1189	1139	1072	1027	982	935	0.35	
				BHP	0.24	0.26	0.26	0.28	0.29	0.3	0.32	0.33	0.34	0.35	0.36	0.37	
		Medium <sup>2</sup>	Red	CFM	1878	1844	1805	1762	1731	1693	1655	1616	1570	1532	1492	0.41	
				BHP	0.50	0.52	0.53	0.54	0.56	0.57	0.59	0.60	0.60	0.64	0.63	0.63	
		High	Black	CFM	36	37	38	39	39	40	41	42	43	44	44	0.63	
				BHP	(20)	(20)	(21)	(21)	(22)	(22)	(23)	(23)	(24)	(24)	(25)	(25)	
		48VG(A,N)60090	35 - 65°F	Med-Low <sup>3</sup>	Pink	CFM	2020	1990	1956	1912	1872	1842	1802	1760	1719	1643	0.72
						BHP	0.62	0.63	0.66	0.67	0.69	0.70	0.71	0.73	0.74	0.74	0.72
Medium <sup>2</sup>	Red			CFM	NA	NA	35	36	36	37	38	39	40	41	0.72		
				BHP	(19)	(19)	(20)	(20)	(20)	(21)	(21)	(21)	(22)	(22)	(23)		
High	Black			CFM	2131	2088	2065	2013	1982	1941	1888	1860	1785	1751	1717	0.75	
				BHP	0.72	0.74	0.75	0.77	0.79	0.8	0.81	0.81	0.81	0.79	0.75		

See notes on page 46.

**DRY COIL AIR DELIVERY - HORIZONTAL AND DOWNFLOW DISCHARGE - 48VG-A 460 VAC MODELS**

UNIT	HEATING RISE RANGE	MOTOR SPEED	WIRE COLOR	Heat Rise °F	EXTERNAL STATIC PRESSURE (IN. W.C.)									
					0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
48VG(A,N)60115	30 - 60°F	Low <sup>1</sup>	Blue	CFM	1271	1229	1177	1121	1066	1027	974	942	887	839
				BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29
				Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Med-Low	Pink	CFM	1445	1389	1341	1281	1236	1189	1139	1072	1027	982
				BHP	0.24	0.26	0.26	0.28	0.29	0.3	0.32	0.33	0.34	0.35
				Heat Rise °F (°C)	60 (33)	NA								
		Medium <sup>2</sup>	Red	CFM	1878	1844	1805	1762	1731	1693	1655	1616	1570	1532
				BHP	0.50	0.52	0.53	0.54	0.56	0.57	0.59	0.60	0.64	0.63
				Heat Rise °F (°C)	46 (26)	47 (26)	48 (27)	49 (27)	50 (28)	51 (28)	52 (29)	53 (30)	55 (31)	56 (31)
		Med-High	Orange	CFM	2020	1990	1956	1912	1872	1842	1802	1760	1719	1643
BHP	0.62			0.63	0.66	0.67	0.69	0.70	0.71	0.73	0.74	0.72		
Heat Rise °F (°C)	43 (43)			44 (43)	44 (43)	45 (43)	46 (44)	47 (44)	48 (44)	49 (45)	50 (45)	52 (49)		
48VG(A,N)60130	35 - 65°F	High <sup>3</sup>	Black	CFM	2131	2088	2065	2013	1982	1941	1888	1860	1785	1751
				BHP	0.72	0.74	0.75	0.77	0.79	0.8	0.81	0.81	0.79	0.75
				Heat Rise °F (°C)	40 (22)	41 (23)	42 (23)	43 (24)	44 (24)	44 (25)	46 (25)	46 (26)	48 (27)	49 (27)
		Low <sup>1</sup>	Blue	CFM	1271	1229	1177	1121	1066	1027	974	942	887	839
				BHP	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.27	0.28	0.29
				Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Med-Low	Pink	CFM	1445	1389	1341	1281	1236	1189	1139	1072	1027	982
				BHP	0.24	0.26	0.26	0.28	0.29	0.3	0.32	0.33	0.34	0.35
				Heat Rise °F (°C)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Medium <sup>2</sup>	Red	CFM	1878	1844	1805	1762	1731	1693	1655	1616	1570	1532
BHP	0.50			0.52	0.53	0.54	0.56	0.57	0.59	0.60	0.64	0.63		
Heat Rise °F (°C)	51 (28)			52 (29)	53 (30)	55 (30)	56 (31)	57 (32)	58 (32)	60 (33)	61 (34)	63 (35)		
Med-High	Orange	CFM	2020	1990	1956	1912	1872	1842	1802	1760	1719	1643		
		BHP	0.62	0.63	0.66	0.67	0.69	0.70	0.71	0.73	0.74	0.72		
		Heat Rise °F (°C)	48 (26)	48 (27)	49 (27)	50 (28)	51 (29)	52 (29)	53 (30)	55 (30)	56 (31)	59 (33)		
High <sup>3</sup>	Black	CFM	2131	2088	2065	2013	1982	1941	1888	1860	1785	1751		
		BHP	0.72	0.74	0.75	0.77	0.79	0.8	0.81	0.81	0.79	0.75		
		Heat Rise °F (°C)	45 (25)	46 (26)	47 (26)	48 (27)	49 (27)	50 (28)	51 (28)	52 (29)	54 (30)	55 (31)		

## Notes:

- 1 Factory-shipped low stage cooling speed
  - 2 Factory-shipped high stage cooling speed
  - 3 Factory-shipped low gas heating speed
- "NA" = Not allowed for particular heating speed

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

FILTER SIZE IN. (MM)	COOLING TONS	STANDARD CFM (SCFM)																
		600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
600-1400 CFM 12x20x1+12x20x1 (305x508x25+305x508x25)	2.0, 2.5,	0.03	0.04	0.05	0.06	0.06	0.07	0.07	0.08	0.08	-	-	-	-	-	-	-	-
	3.0 3.5, 4.0	-	-	-	-	0.04	0.05	0.06	0.07	0.08	0.09	0.09	0.10	0.11	0.12	0.12	0.13	0.15
1200-1800 CFM 16x24x1+14x24x1 (406x610x25+356x610x25)	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	0.04	0.06	0.08	0.10	0.11	0.13	0.14	0.15

**Wet Coil Pressure Drop (IN. W.C.)**

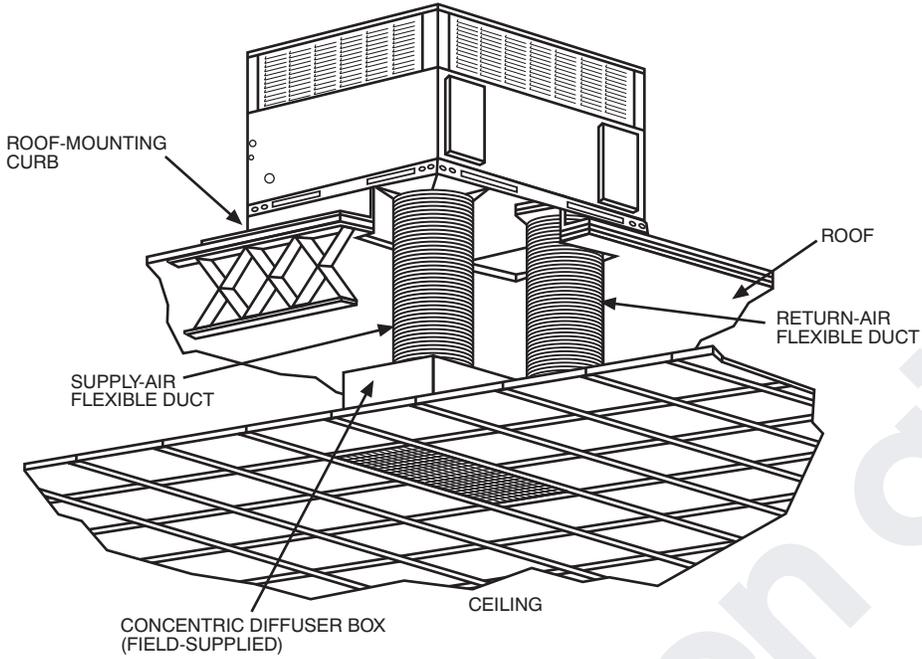
UNIT SIZE	STANDARD CFM (SCFM)																	
	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	
24	0.03	0.04	0.04	0.05	0.06													
30				0.05	0.06	0.07	0.08	0.11										
36				0.06	0.06	0.09	0.10	0.11	0.14									
42					0.05	0.05	0.06	0.07	0.08	0.08	0.09	0.09	0.11					
48							0.04	0.06	0.09	0.10	0.10	0.11	0.12	0.13	0.14			
60										0.06	0.07	0.01	0.08	0.09	0.10	0.12	0.13	0.13

**Economizer with 1-in. Filter Pressure Drop (IN. W.C.)**

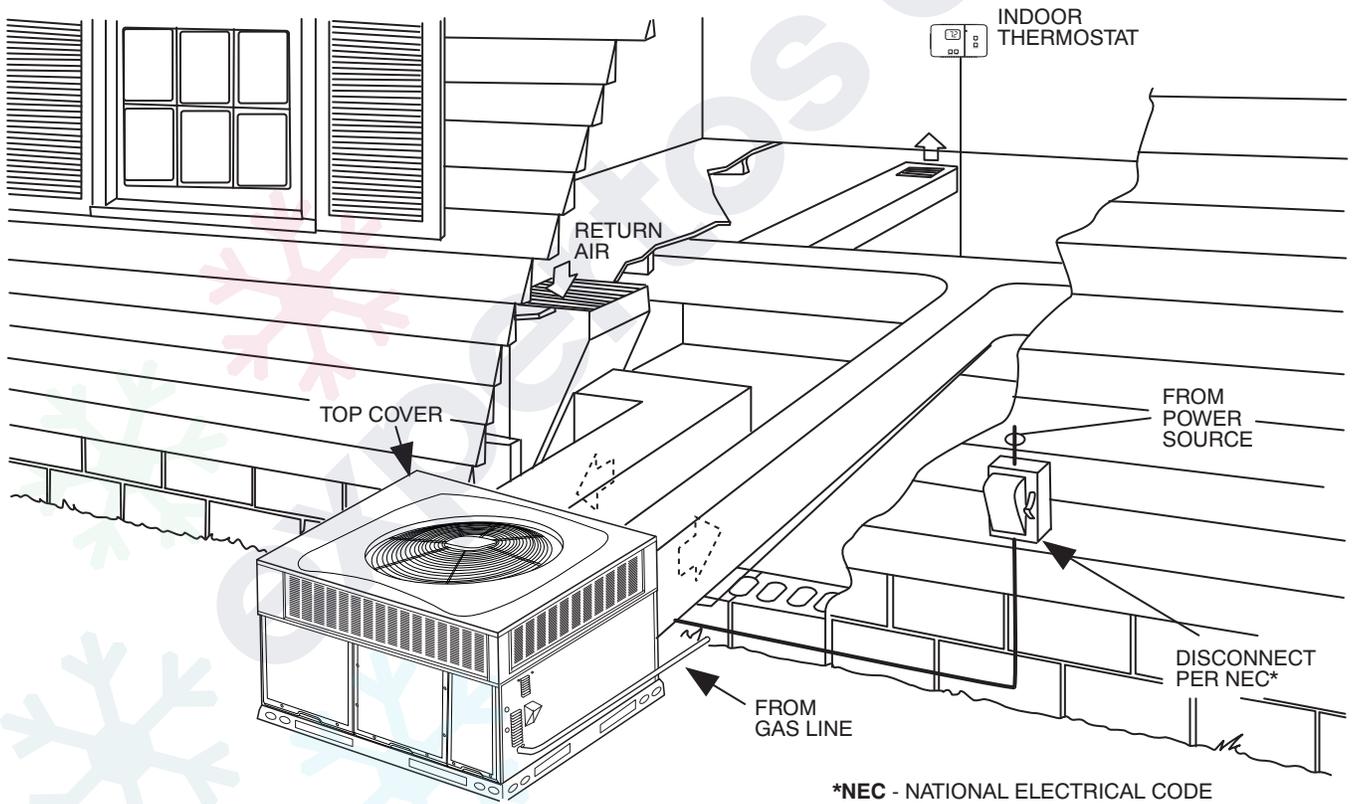
FILTER SIZE IN. (MM)	COOLING TONS	STANDARD CFM (SCFM)																
		600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
600-1400 CFM 12x20x1+12x20x1 (305x508x25+305x508x25)	2.0, 2.5,	-	-	0.08	0.09	0.10	0.10	0.11	0.13	0.14	-	-	-	-	-	-	-	-
	3.0 3.5, 4.0	-	-	-	-	-	0.09	0.09	0.10	0.12	0.13	0.15	0.17	0.17	0.19	0.21	-	-
1200-1800 CFM 16x24x1+14x24x1 (406x610x25+356x610x25)	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	0.15	0.17	0.18	0.20	0.21	0.22	0.23	0.23

# TYPICAL PIPING AND WIRING

48V/G-A



A09233



\*NEC - NATIONAL ELECTRICAL CODE

A09234

## APPLICATION DATA

**Condensate trap** — A 2-in. (50.8 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.

**Minimum ambient cooling operation temperature** — All standard units have a minimum ambient operating temperature of 40°F (4°C). With accessory low ambient temperature kit, units can operate at temperatures down to 0°F (-17°C).

**Minimum temperature** — Air entering the heat exchanger in heating mode must be a minimum of 55°F (13°C) continuous and a maximum of 80°F (27°C) continuous.

# ELECTRICAL DATA

48VG-A

UNIT	NOMINAL	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	IDM	POWER SUPPLY	
		MIN	MAX	RLA	LRA	FLA	FLA	FLA	MCA	MOCp
48VG(-,N)A2404030 48VG(-,N)A2406030	208/230-1-60	197	253	11.7	58.3	0.7	4.1	.21	19.4	30
48VG(-,N)A3004030 48VG(-,N)A3006030	208/230-1-60	197	253	13.1	73.0	1.2	4.1	.21	21.7	30
48VG(-,N)A3004050 48VG(-,N)A3006050	208/230-3-60	197	253	8.7	58.0	1.2	4.1	.21	16.2	20
48VG(-,N)A3606030 48VG(-,N)A3609030	208/230-1-60	197	253	15.3	83.0	1.2	6.0	.21	26.3	40
48VG(-,N)A3606050 48VG(-,N)A3609050	208/230-3-60	197	253	11.6	73.0	1.2	6.0	.21	21.7	30
48VG(-,N)A3606060	460-3-60	414	506	5.7	38.0	0.53	3.2	.65	10.8	15
48VG(-,N)A3609060								.33		
48VG(-,N)A4206030 48VG(-,N)A4209030	208/230-1-60	197	253	17.9	96.0	1.2	6.0	.21	29.6	45
48VG(-,N)A4206050 48VG(-,N)A4209050	208/230-3-60	197	253	14.2	88.0	1.2	6.0	.21	25.0	35
48VG(-,N)A4206060	460-3-60	414	506	6.2	44.0	0.53	3.2	.65	11.5	15
48VG(-,N)A4209060								.33		
48VG(-,N)A4809030	208/230-1-60	197	253	21.2	104.0	1.2	7.6	.21	35.3	50
48VG(-,N)A4811530								.50		
48VG(-,N)A4813030								.50		
48VG(-,N)A4809050	208/230-3-60	197	253	14.0	83.1	1.2	7.6	.21	26.3	40
48VG(-,N)A4811550								.50		
48VG(-,N)A4813050								.50		
48VG(-,N)A4809060	460-3-60	414	506	6.4	41.0	0.53	4.0	.33	12.5	15
48VG(-,N)A4811560								.65		
48VG(-,N)A4813060								.30		
48VG(-,N)A6009030	208/230-1-60	197	253	28.8	152.9	1.2	7.6	.21	44.8	60
48VG(-,N)A6011530								.50		
48VG(-,N)A6013030								.50		
48VG(-,N)A6009050	208/230-3-60	197	253	16.2	110.0	1.2	7.6	.21	29.1	40
48VG(-,N)A6011550								.50		
48VG(-,N)A6013050								.50		
48VG(-,N)A6009060	460-3-60	414	506	7.6	52.0	.053	4.0	.33	14.0	20
48VG(-,N)A6011560								.65		
48VG(-,N)A6013060								.30		

# ELECTRICAL DATA (CONT)

## LEGEND

- FLA - Full Load Amps
- IDM - Inducer Motor
- IFM - Indoor Fan Motor
- LRA - Locked Rotor Amps
- MCA - Minimum Circuit Amps
- MOCP - Maximum Over Current Protection
- OFM - Outdoor Fan Motor
- RLA - Rated Load Amps

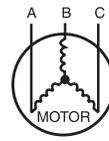
## NOTES:

1. 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 or circuit breaker.
2. 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.
3. 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

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

EXAMPLE: Supply voltage is 230-3-60.



AB = 228 v  
BC = 231 v  
AC = 227 v

$$\begin{aligned} \text{Average Voltage} &= \frac{228 + 231 + 227}{3} \\ &= \frac{686}{3} \\ &= 229 \end{aligned}$$

Determine maximum deviation from average voltage.

(AB) 229 - 228 = 1 v  
(BC) 231 - 229 = 2 v  
(AC) 229 - 227 = 2 v

Maximum deviation is 2 v.

Determine percent of voltage imbalance

$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{2}{229} \\ &= 0.8\% \end{aligned}$$

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

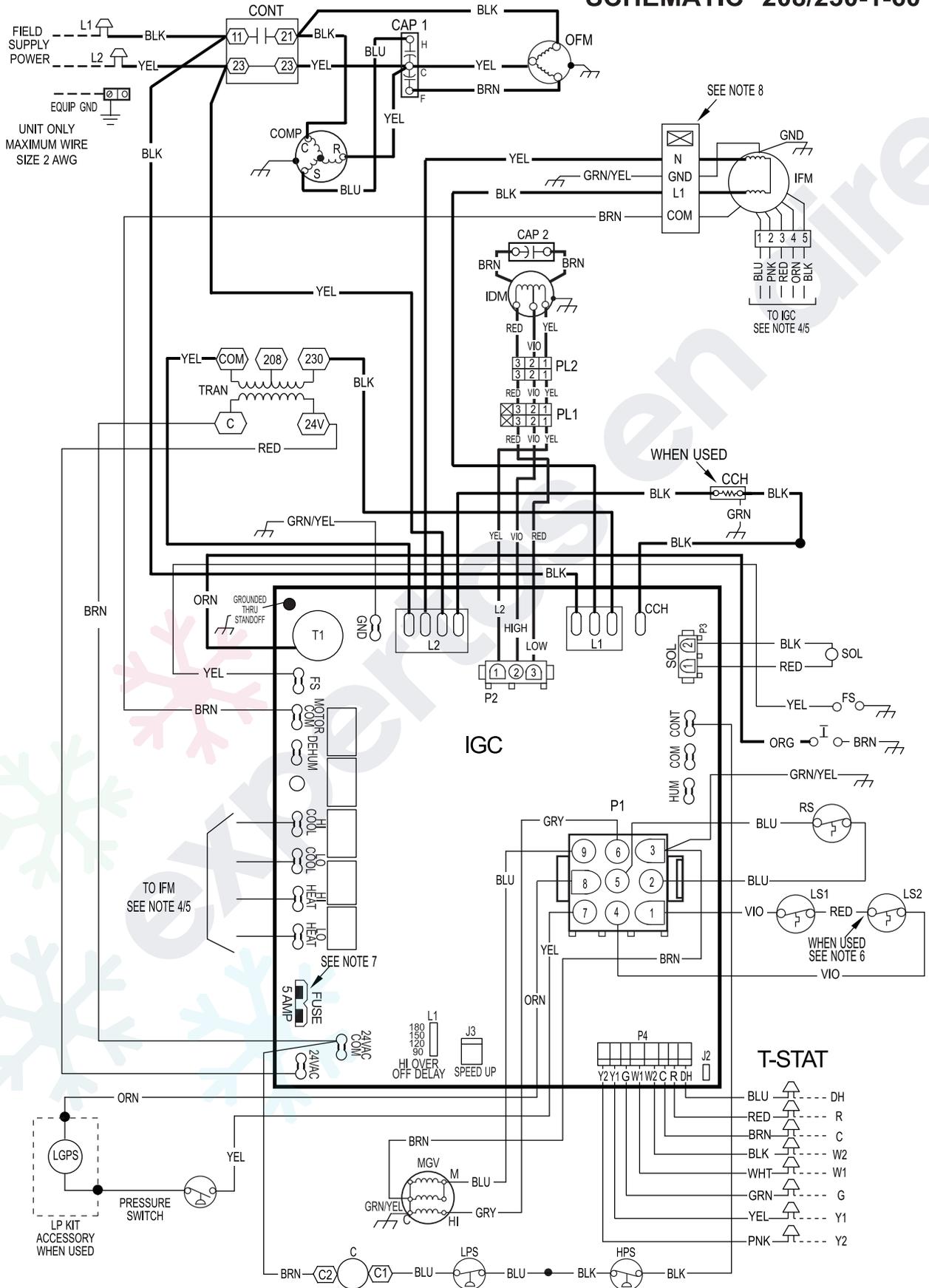
**IMPORTANT:** If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

CONNECTION WIRING SCHEMATIC GAS INPUTS 40, 60, 90 KBTU/HR 208/230-1-60

CONNECTION WIRING DIAGRAM

DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING

SCHEMATIC 208/230-1-60



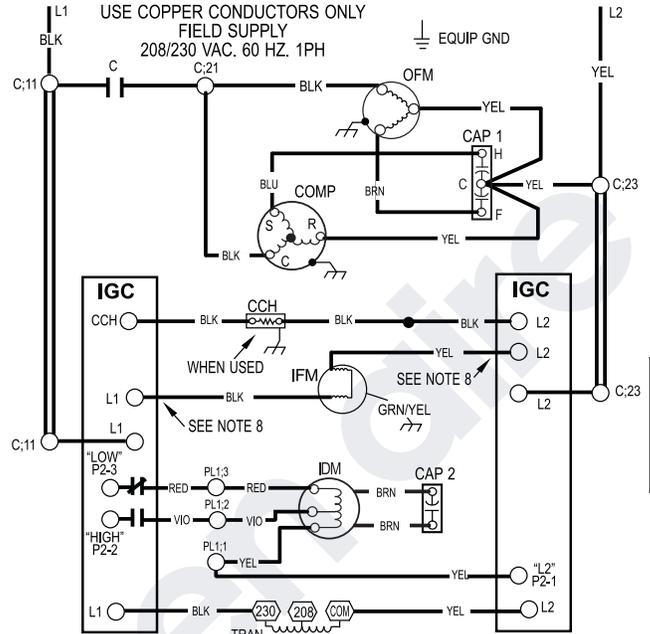
48V/G-A

# LADDER WIRING SCHEMATIC GAS INPUTS 40, 60 90 KBTU/HR 208/230-1-60

## LADDER WIRING DIAGRAM

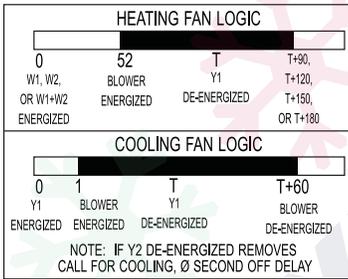
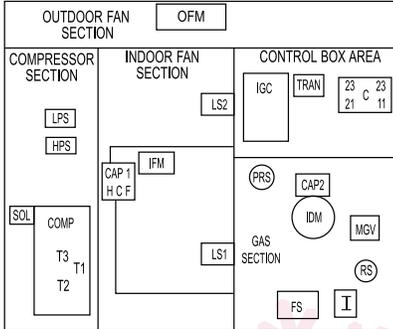
**DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING**

LEGEND		
	FIELD SPICE	EQUIP
	TERMINAL (MARKED)	FS
	TERMINAL (UNMARKED)	GND
	SPLICE	HPS
	SPLICE (MARKED)	IDM
	FACTORY LO VOLTAGE	IFM
	FIELD CONTROL WIRING	IGC
	FIELD POWER WIRING	LGPS
	ACCESSORY OR OPTIONAL WIRING	LPS
	FACTORY HI VOLTAGE	LS1
C	CONTACTOR	LS2
CAP1	CAPACITOR, COMP	MGV
CAP2	CAPACITOR, INDUCER	OFM
CCH	CRANKCASE HEATER	OT
COMP	COMPRESSOR MOTOR	PL1
		PL2
		RS
		SOL
		TRAN
		T-STAT
		EQUIPMENT
		FLAME SENSOR
		GROUND
		HIGH PRESSURE SWITCH
		IGNITOR
		INDUCED DRAFT MOTOR
		INDOOR FAN MOTOR
		INTERGRATED GAS UNIT CONTROLLER
		LOW GAS PRESSURE SWITCH (WHEN USED)
		LOW PRESSURE SWITCH
		PRIMARY LIMIT SWITCH
		SECONDARY LIMIT SWITCH
		MAIN GAS VALVE
		OUTDOOR FAN MOTOR
		QUADRUPLE TERMINAL
		IGC TO INDUCER MOTOR PLUG
		INDUCER MOTOR PLUG
		ROLLOUT SWITCH
		COMPRESSOR SOLENOID
		TRANSFORMER
		THERMOSTAT

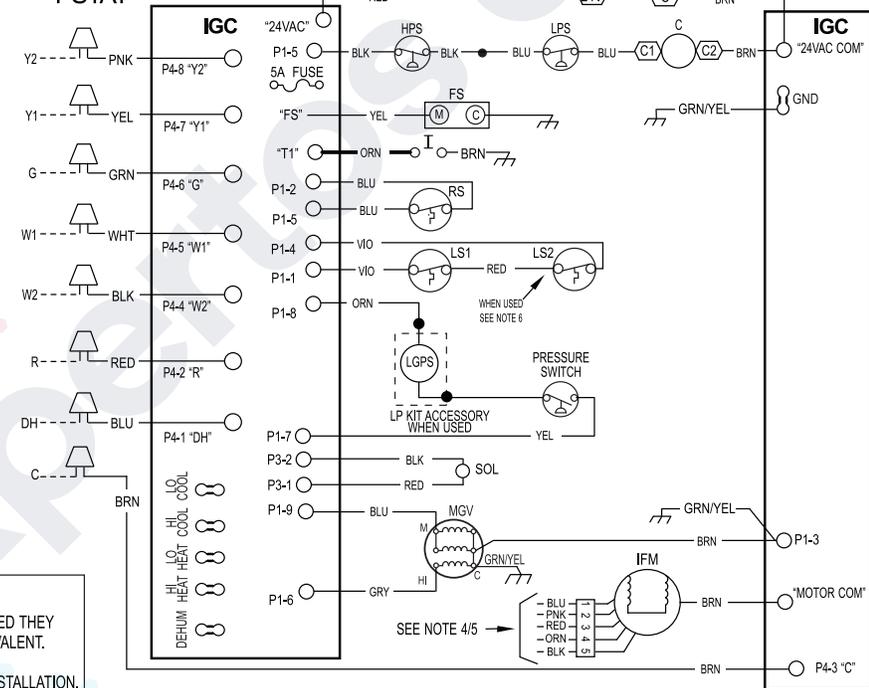


**48VG-A**

### 1Ø UNIT COMPONENT ARRANGEMENT



### T-STAT



### NOTES:

1. IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED THEY MUST BE REPLACED WITH THE SAME WIRE OR IT'S EQUIVALENT.
2. SEE PRE-SALE LITERATURE FOR THERMOSTATS.
3. USE 75 DEGREES C COPPER CONDUCTORS FOR FIELD INSTALLATION.
4. REFER TO INSTALLATION INSTRUCTIONS FOR CORRECT SPEED SELECTION FOR IFM.
5. SEE INSTALLATION INSTRUCTIONS FOR PROPER HEATING AND COOLING CONNECTIONS FOR YOUR UNIT.
6. ON SOME MODELS LS1 AND LS2 ARE WIRED IN SERIES. ON OTHER MODELS ONLY LS1 IS USED.
7. THIS FUSE IS MANUFACTURED BY LITTLE FUSE, P/N 257005.
8. DO NOT DISCONNECT PLUG UNDER LOAD.



48VG500004 REV. B

48VG500004 REV. B



A13019



# LADDER WIRING SCHEMATIC GAS INPUTS 115, 130 KBTU/HR 208/230-1-60

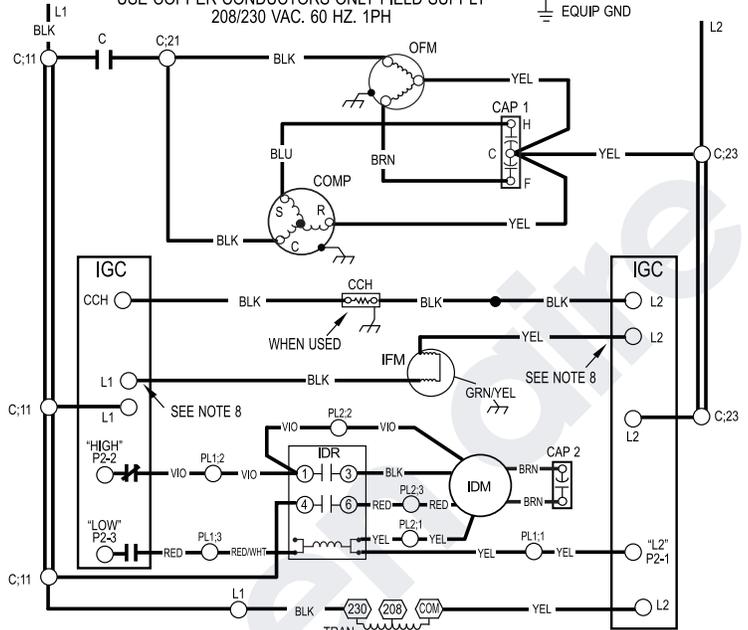
## LADDER WIRING DIAGRAM

**DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING**

USE COPPER CONDUCTORS ONLY FIELD SUPPLY  
208/230 VAC, 60 HZ, 1PH

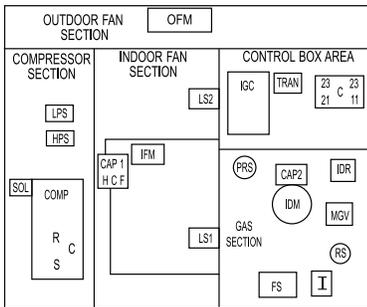
EQUIP GND

LEGEND		EQUIP	EQUIPMENT
△	FIELD SPLICE	FS	FLAME SENSOR
○	TERMINAL (MARKED)	GND	GROUND
○	TERMINAL (UNMARKED)	HPS	HIGH PRESSURE SWITCH
●	SPLICE	IDM	INDUCED DRAFT MOTOR
○	SPLICE (MARKED)	IDR	INDUCER RELAY
—	FACTORY LO VOLTAGE	IFM	INDOOR FAN MOTOR
---	FIELD CONTROL WIRING	IGC	INTERGRATED GAS UNIT CONTROLLER
---	FIELD POWER WIRING	LGPS	LOW GAS PRESSURE SWITCH (WHEN USED)
---	ACCESSORY OR OPTIONAL WIRING	LPS	LOW PRESSURE SWITCH
---	FACTORY HI VOLTAGE	LS1	PRIMARY LIMIT SWITCH
---		LS2	SECONDARY LIMIT SWITCH
---		MGV	MAIN GAS VALVE
---		OFM	OUTDOOR FAN MOTOR
---		OT	QUADRUPLE TERMINAL
---		PL1	IGC TO INDUCER MOTOR PLUG
---		PL2	INDUCER MOTOR PLUG
---		RS	ROLLOUT SWITCH
---		SOL	COMPRESSOR SOLENOID
---		TRAN	TRANSFORMER
---		T-STAT	THERMOSTAT



48VG-A

### 1Ø UNIT COMPONENT ARRANGEMENT



### HEATING FAN LOGIC



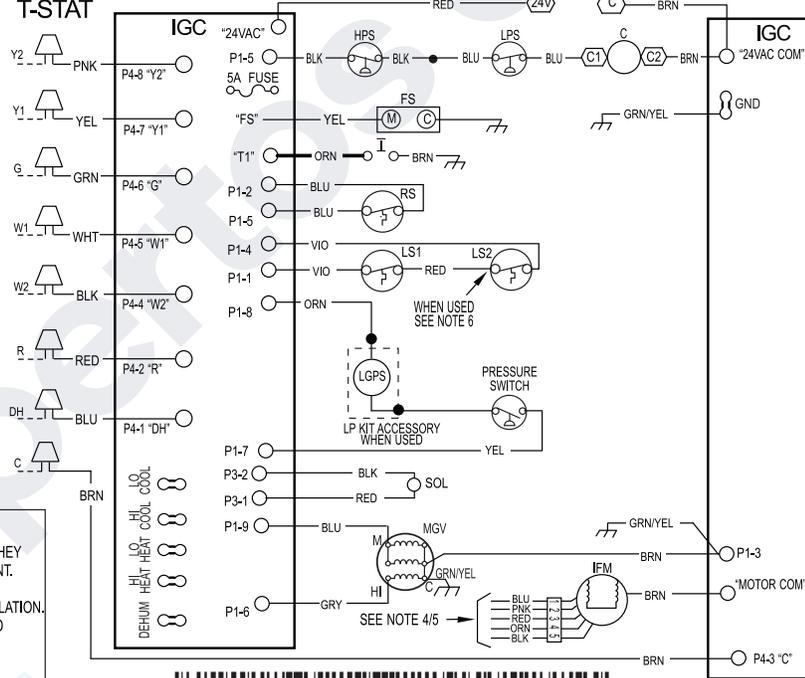
### COOLING FAN LOGIC



### NOTES:

- IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED THEY MUST BE REPLACED WITH THE SAME WIRE OR IT'S EQUIVALENT.
- SEE PRE-SALE LITERATURE FOR THERMOSTATS.
- USE 75 DEGREES C COPPER CONDUCTORS FOR FIELD INSTALLATION.
- REFER TO INSTALLATION INSTRUCTIONS FOR CORRECT SPEED SELECTION FOR IFM.
- SEE INSTALLATION INSTRUCTIONS FOR PROPER HEATING AND COOLING CONNECTIONS FOR YOUR UNIT.
- ON SOME MODELS LS1 AND LS2 ARE WIRED IN SERIES. ON OTHER MODELS ONLY LS1 IS USED.
- THIS FUSE IS MANUFACTURED BY LITTLE FUSE, P/N 257005.
- DO NOT DISCONNECT PLUG UNDER LOAD.

### T-STAT



48VG500048 REV. B

48VG500048 REV. B



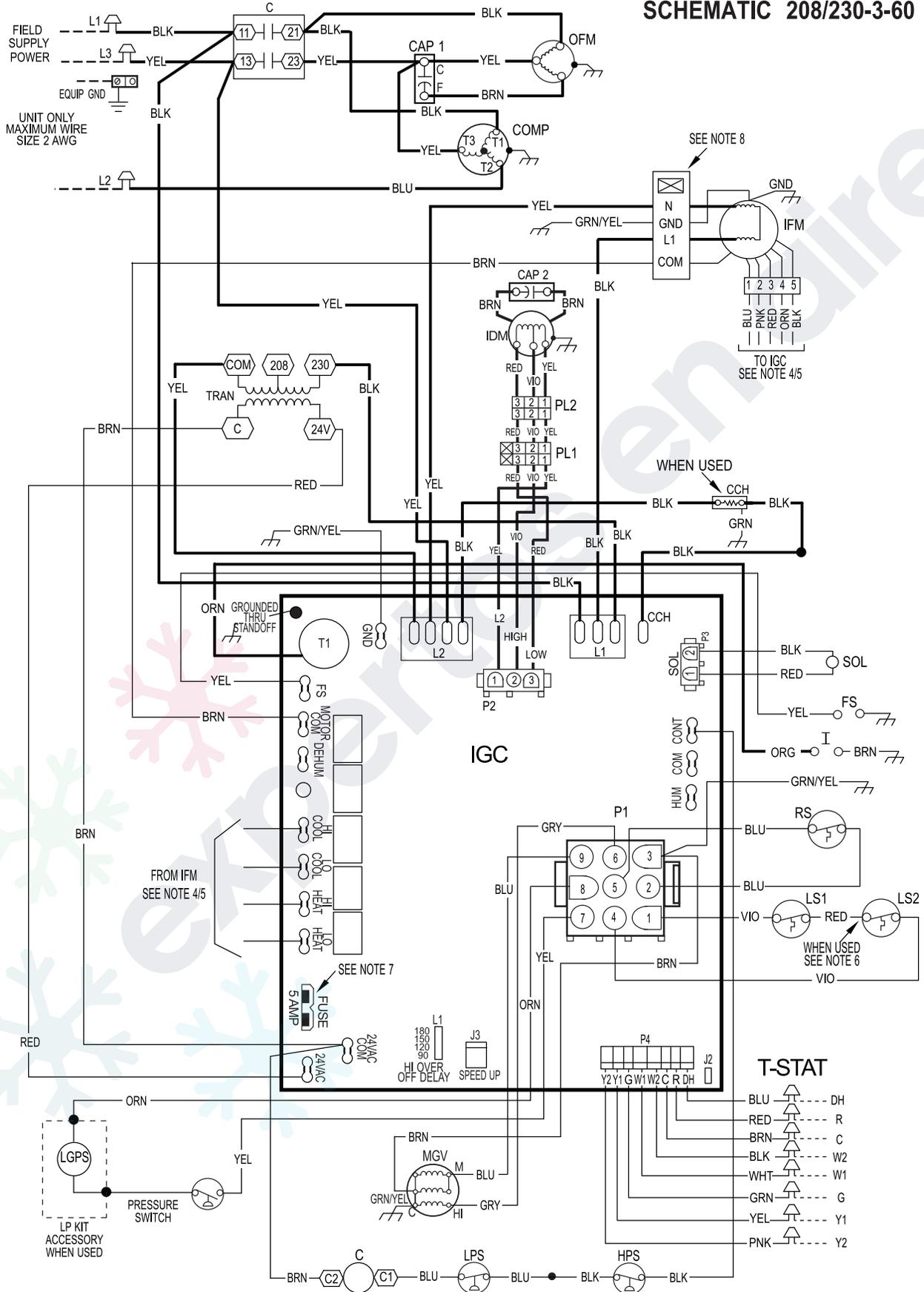
A13021

# CONNECTION WIRING SCHEMATIC GAS INPUTS 40, 60, 90 KBTU/HR 208/230-3-60

## CONNECTION WIRING DIAGRAM

**DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING**

**SCHEMATIC 208/230-3-60**



487VG-A

# LADDER WIRING SCHEMATIC GAS INPUTS 40, 60, 90 KBTU/HR 208/230-3-60

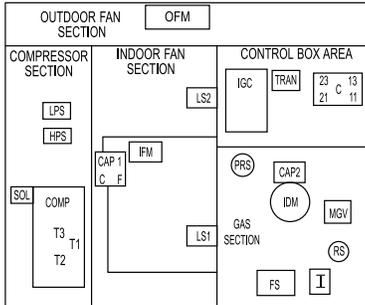
## LADDER WIRING DIAGRAM

**DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING**

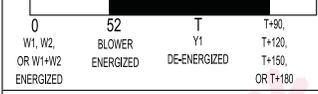
### LEGEND

	FIELD SPLICE	EQUIP	EQUIPMENT
	TERMINAL (MARKED)	FS	FLAME SENSOR
	TERMINAL (UNMARKED)	GND	GROUND
	SPLICE	HPS	HIGH PRESSURE SWITCH
	SPLICE (MARKED)	IDM	INDUCED DRAFT MOTOR
	FACTORY LO VOLTAGE	IFM	INDOOR FAN MOTOR
	FIELD CONTROL WIRING	IGC	INTERGRATED GAS UNIT CONTROLLER
	FIELD POWER WIRING	LGPS	LOW GAS PRESSURE SWITCH (WHEN USED)
	ACCESSORY OR OPTIONAL WIRING	LPS	LOW PRESSURE SWITCH
	FACTORY HI VOLTAGE	LS1	PRIMARY LIMIT SWITCH
	CONTACTOR	LS2	SECONDARY LIMIT SWITCH
	CAPACITOR, COMP	MGV	MAIN GAS VALVE
	CAPACITOR, INDUCER	OFM	OUTDOOR FAN MOTOR
	CRANKCASE HEATER	OT	QUADRUPLE TERMINAL
	COMPRESSOR MOTOR	PL1	IGC TO INDUCER MOTOR PLUG
		PL2	INDUCER MOTOR PLUG
		RS	ROLLOUT SWITCH
		SOL	COMPRESSOR SOLENOID
		TRAN	TRANSFORMER
		T-STAT	THERMOSTAT

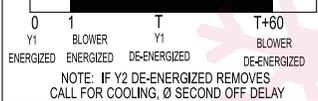
### 30 UNIT COMPONENT ARRANGEMENT



### HEATING FAN LOGIC

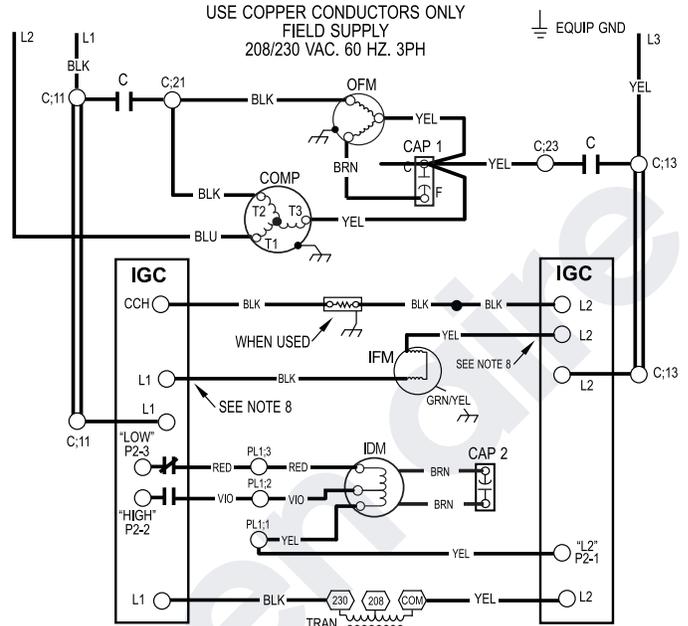


### COOLING FAN LOGIC

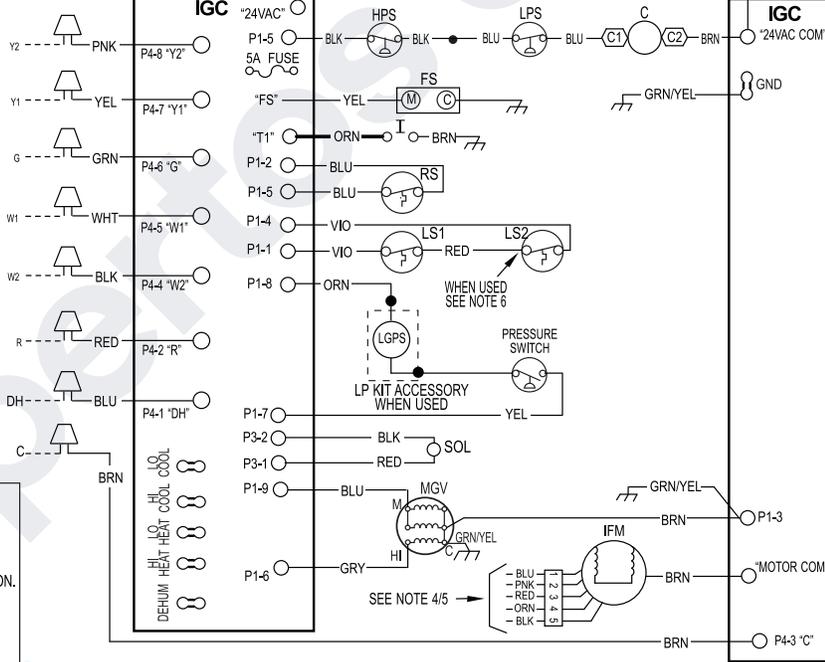


### NOTES:

- IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED THEY MUST BE REPLACED WITH THE SAME WIRE OR IT'S EQUIVALENT.
- SEE PRE-SALE LITERATURE FOR THERMOSTATS.
- USE 75 DEGREES C COPPER CONDUCTORS FOR FIELD INSTALLATION.
- REFER TO INSTALLATION INSTRUCTIONS FOR CORRECT SPEED SELECTION FOR IFM.
- SEE INSTALLATION INSTRUCTIONS FOR PROPER HEATING AND COOLING CONNECTIONS FOR YOUR UNIT.
- ON SOME MODELS LS1 AND LS2 ARE WIRED IN SERIES. ON OTHER MODELS ONLY LS1 IS USED.
- THIS FUSE IS MANUFACTURED BY LITTLE FUSE, P/N 257005.
- DO NOT DISCONNECT PLUG UNDER LOAD.



### T-STAT



48VG500005 REV. B

48VG500005 REV. B



A13023

48VG-A

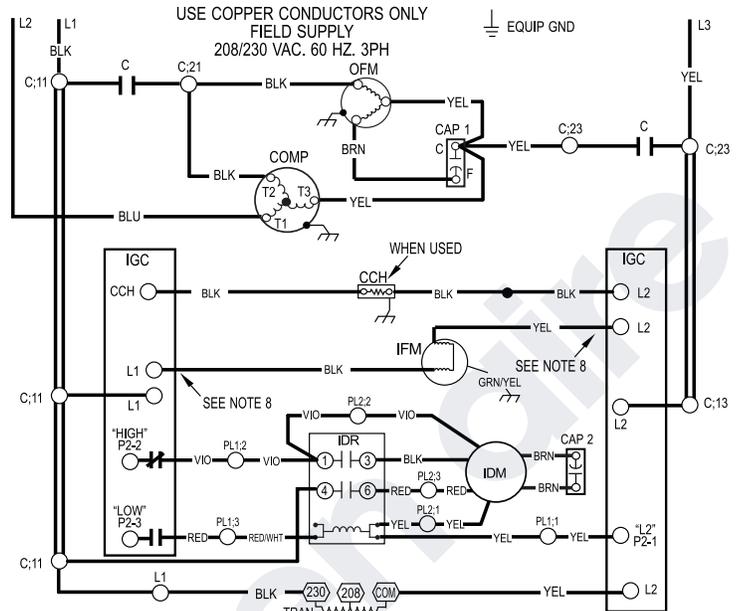


# LADDER WIRING SCHEMATIC GAS INPUTS 115, 130 208/230-3-60

## LADDER WIRING DIAGRAM

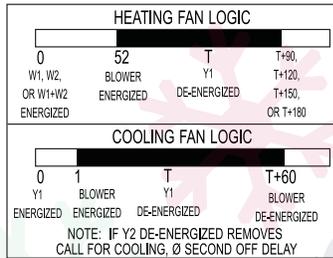
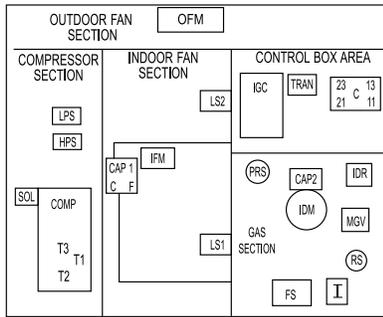
**DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING**

LEGEND	
	FIELD SPLICE
	TERMINAL (MARKED)
	TERMINAL (UNMARKED)
	SPLICE
	SPLICE (MARKED)
	FACTORY LO VOLTAGE
	FIELD CONTROL WIRING
	FIELD POWER WIRING
	ACCESSORY OR OPTIONAL WIRING
	FACTORY HI VOLTAGE
C	CONTACTOR
CAP1	CAPACITOR, COMP
CAP2	CAPACITOR, INDUCER
CCH	CRANKCASE HEATER
COMP	COMPRESSOR MOTOR
EQUIP	EQUIPMENT
FS	FLAME SENSOR
GND	GROUND
HPS	HIGH PRESSURE SWITCH
I	IGNITOR
IDM	INDUCED DRAFT MOTOR
IDR	INDUCER RELAY
IFM	INDOOR FAN MOTOR
IGC	INTERGRATED GAS UNIT CONTROLLER
LGPS	LOW GAS PRESSURE SWITCH (WHEN USED)
LPS	LOW PRESSURE SWITCH
LS1	PRIMARY LIMIT SWITCH
LS2	SECONDARY LIMIT SWITCH
MGV	MAIN GAS VALVE
OFM	OUTDOOR FAN MOTOR
OT	QUADRUPLE TERMINAL
PL1	IGC TO INDUCER MOTOR PLUG
PL2	INDUCER MOTOR PLUG
RS	ROLLOUT SWITCH
SOL	COMPRESSOR SOLENOID
TRAN	TRANSFORMER
T-STAT	THERMOSTAT



**48VG-A**

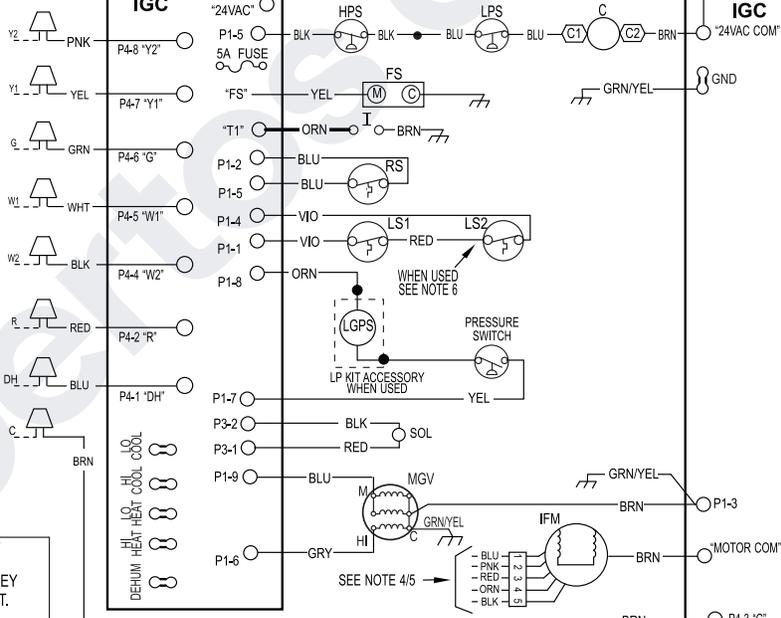
### 30 UNIT COMPONENT ARRANGEMENT



### NOTES:

- IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED THEY MUST BE REPLACED WITH THE SAME WIRE OR IT'S EQUIVALENT.
- SEE PRE-SALE LITERATURE FOR THERMOSTATS.
- USE 75 DEGREES C COPPER CONDUCTORS FOR FIELD INSTALLATION.
- REFER TO INSTALLATION INSTRUCTIONS FOR CORRECT SPEED SELECTION FOR IFM.
- SEE INSTALLATION INSTRUCTIONS FOR PROPER HEATING AND COOLING CONNECTIONS FOR YOUR UNIT.
- ON SOME MODELS LS1 AND LS2 ARE WIRED IN SERIES. ON OTHER MODELS ONLY LS1 IS USED.
- THIS FUSE IS MANUFACTURED BY LITTLE FUSE, P/N 257005.
- DO NOT DISCONNECT PLUG UNDER LOAD.

### T-STAT



48VG500049 REV. B



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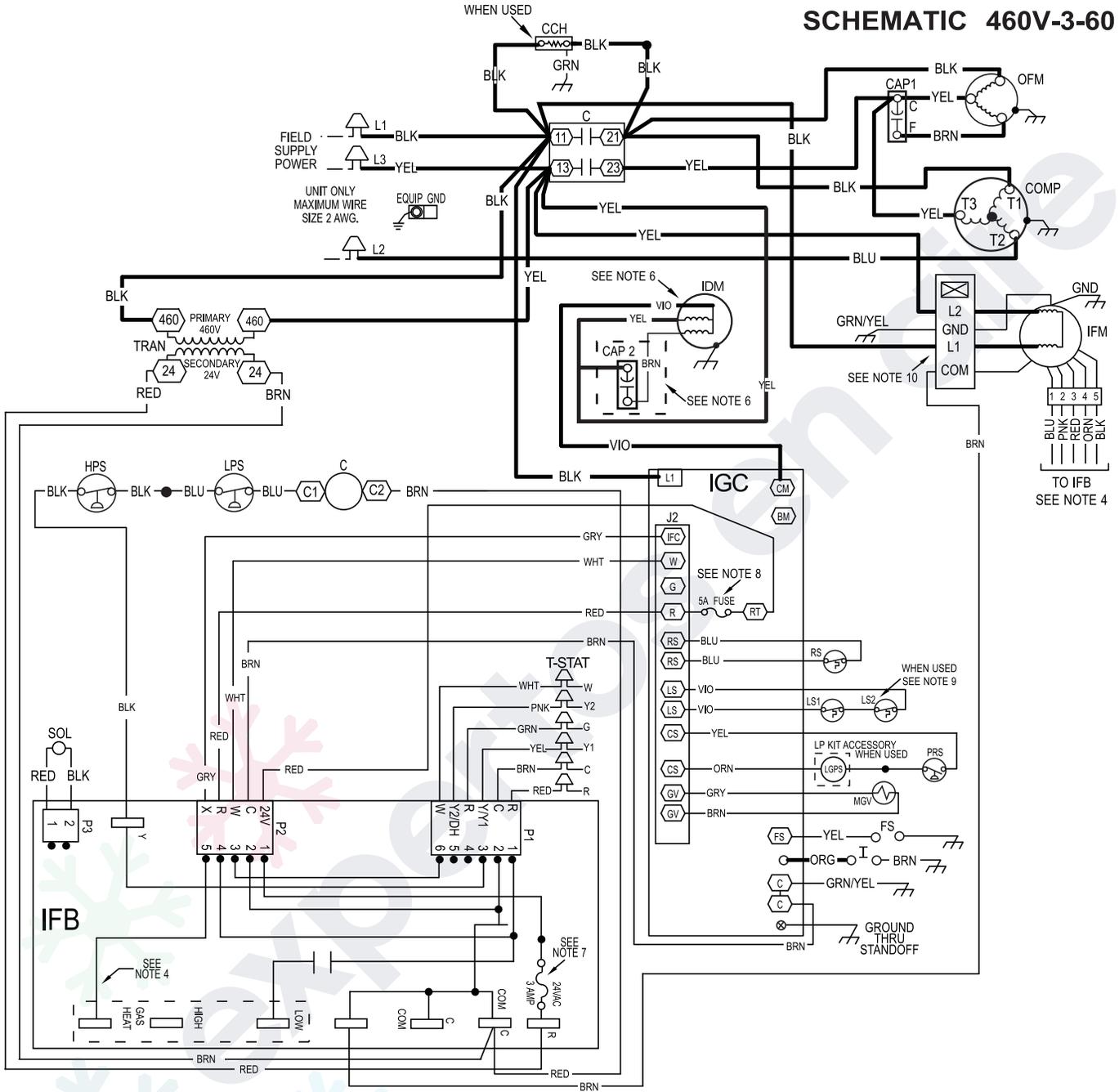
# CONNECTION WIRING SCHEMATIC 460-3-60

## CONNECTION WIRING DIAGRAM

**DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING**

## SCHEMATIC 460V-3-60

**48VG-A**

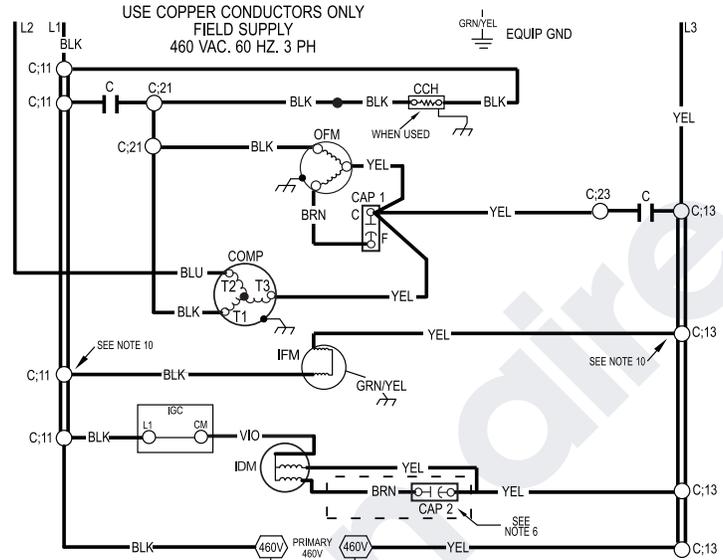


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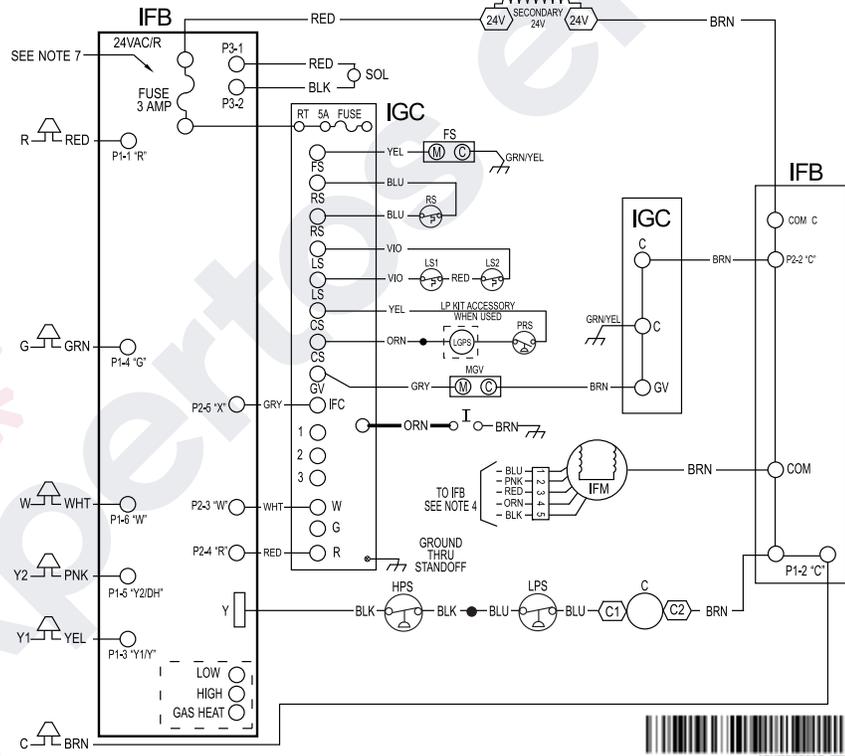
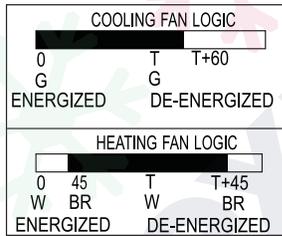
# LADDER WIRING DIAGRAM 460-3-60

## LADDER WIRING DIAGRAM DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING

LEGEND			
	FIELD SPLICE	FS	FLAME SENSOR
	TERMINAL (MARKED)	GND	GROUND
	TERMINAL (UNMARKED)	HPS	HIGH PRESSURE SWITCH
	SPLICE	I	IGNITOR
	SPLICE (MARKED)	IFB	INDOOR FAN BOARD
	FACTORY LO VOLTAGE	IGC	INTERGRATED GAS UNIT CONTROLLER
	FIELD CONTROL WIRING	IDM	INDUCED DRAFT MOTOR
	FIELD POWER WIRING	IFM	INDOOR FAN MOTOR
	ACCESSORY OR OPTIONAL WIRING	LGPS	LOW GAS PRESSURE SWITCH
	FACTORY HI VOLTAGE	LPS	LOW PRESSURE SWITCH
C	CONTACTOR	LS1	PRIMARY LIMIT SWITCH
CAP 1	CAPACITOR, COMP	LS2	SECONDARY LIMIT SWITCH
CAP 2	CAPACITOR, INDUCER	MGV	MAIN GAS VALVE
COMP	COMPRESSOR MOTOR	OFM	OUTDOOR FAN MOTOR
CCH	CRANK CASE HEATER	PRS	PRESSURE SWITCH
EQUIP	EQUIPMENT	QT	QUADRUPLE TERMINAL
		RS	ROLLOUT SWITCH
		SOL	COMPRESSOR SOLENOID
		TRAN	TRANSFORMER
		T-STAT	THERMOSTAT

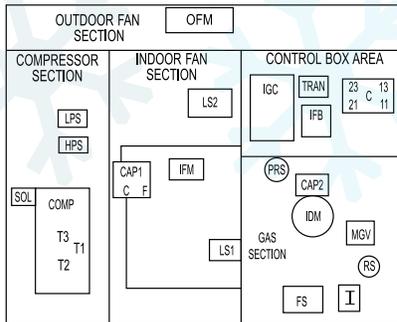


48VG-A



48VG500006 REV. -

### 30 UNIT COMPONENT ARRANGEMENT



### NOTES:

1. IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED, THEY MUST BE REPLACED WITH THE SAME WIRE OR IT'S EQUIVALENT.
2. SEE PRE SALE LITERATURE FOR THERMOSTAT.
3. USE 75 DEGREE COPPER CONDUCTORS FOR FIELD INSTALLATION.
4. SEE INSTALLATION INSTRUCTIONS FOR PROPER HEATING AND COOLING CONNECTIONS FOR YOUR UNIT.
5. LS2 USED ON SMALL CHASSIS ONLY.
6. INDUCER CAPACITOR AND WIRING ON CERTAIN MODELS ONLY. IF CAP2 IS PRESENT, YELLOW WIRES FROM CONTACTOR AND IDM CONNECT ON SAME SIDE OF CAP2.
7. THIS FUSE IS MANUFACTURED BY LITTLE FUSE, P/N 287003.
8. THIS FUSE IS MANUFACTURED BY LITTLE FUSE, P/N 257005.
9. ON SOME MODELS LS1 AND LS2 ARE WIRED IN SERIES. ON OTHER MODELS ONLY LS1 IS USED.
10. DO NOT DISCONNECT PLUG UNDER LOAD.

## CONTROLS

### Operating sequence

#### 208/230 VAC Models:

On a call for low stage heating, terminal W1 on the thermostat is energized. On a call for high stage heating both terminals W1 and W2 are energized. Regardless of the stage of the heating call, the induced-draft motor is turned on to high speed for a 15 sec pre-purge time. After the pre-purge, when the pressure switch senses that sufficient combustion air is being moved by the induced-draft motor, the ignition sequence begins. The IGC will energize the sparker and the low stage gas valve solenoid. Upon sensing flame, the IGC will check the heating call. If W2 is not energized, the IGC will drop the induced-draft motor to low speed and maintain the gas valve on low stage. If W2 is energized, the IGC will maintain the induced-draft motor on high speed and energize the high stage gas valve solenoid. Thirty sec after flame is sensed the IGC will turn on the evaporator fan motor. If W2 is not energized, the evaporator fan motor will run on low heat speed. If W2 is energized, the evaporator fan motor will run on high heat speed. After the call for heat is satisfied, the IGC will run the evaporator fan motor an additional field-selectable time of 90, 120, 150, or 180 sec before shutting the evaporator fan motor off.

#### 460 VAC Models:

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 ignition 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 system thermostat calls for cooling, 24 V is supplied to the “Y1/Y” and “G” terminals of the thermostat. This completes the circuit to the contactor coil (C) and indoor (evaporator) fan relay (IFR). The normally open contacts of energized C close and complete the circuit through compressor motor (COMP) to outdoor (condenser) fan motor (OFM). Both motors start instantly. The set of normally open contacts of energized IFR close and complete the circuit through IFM. The IFM starts instantly.

On the loss of the thermostat call for cooling, 24 V is removed from both the “Y1/Y” and “G” terminals (provided the fan switch is in the “AUTO” position) de-energizing the compressor contactor and opening the contacts supplying power to compressor/OFM. After a 60-second delay, the IFM shuts off. If the thermostat fan selector switch is in the “ON” position, the IFM will run continuously.

**NOTE:** On units with a Time Guard® II device: Once the compressor has started and then stopped, it cannot be restarted again until 5 minutes have elapsed.

# 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: 48VG-A

#### Part 1 — General

##### SYSTEM DESCRIPTION

Outdoor rooftop or ground mounted air conditioner and gas furnace system utilizing a two-stage scroll compressor for cooling duty. Unit shall discharge supply air vertically or horizontally as shown on contract drawings. Outdoor 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 AHRI Standards 210/240 and 270.
- B. Unit shall be designed in accordance with UL Standard 1995 and ANSI Z 21.47.
- 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 3 removable cabinet panels.
3. The unit shall be constructed on a rust proof unit base that has an externally trapped, integrated sloped drain.
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. Two-stage 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. 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.

###### 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 AHRI Standard 210.
2. Compressor with standard controls shall be capable of operation down to 40°F (4°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. Unit shall be provided with 90-second fan time delay after the thermostat is satisfied.

###### 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.
4. Evaporator Fan Motor to be multi-speed ECM blower motor.

###### M. Compressor Protection:

Solid-state control shall protect compressor by preventing "short cycling."

## GUIDE SPECIFICATIONS (CONT)

### N. Low NO<sub>x</sub>:

Shall provide NO<sub>x</sub> reduction to values below 40 nanograms/joule to meet California's and other localities' emission requirements as shipped from factory.

### O. Special Option/Kits Available:

#### 1. Coil Options

Base unit with tin plated indoor coil hairpins available as a factory installed option.

#### 2. Compressor Start Kit (single phase units only):

Shall provide additional starting torque for single-phase compressors.

#### 3. Corporate Thermostat:

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

#### 4. Crankcase Heater Kit:

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

#### 5. Economizer for two-stage operation:

(Horizontal and Vertical with Jade Honeywell W7220 controller, Honeywell communicating actuator, and dry bulb sensor. (Contact MicroMetl Customer Service at 1-800-662-4822 to order.)

**NOTE:** The enhanced dehumidification feature on high stage cooling does not support use of an 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.

#### 6. Filter Rack Option or Kit:

Shall provide filter mounting for downflow applications. Offered as an accessory or as a factory installed option.

#### 7. Flat Roof Curb Kit:

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

#### 8. Flue Discharge Deflector Kit

Directs flue gas exhaust; 90 degrees upward from current discharge.

#### 9. Heat Exchanger Option

Stainless Steel Heat Exchanger available as a factory installed option.

#### 10. High Altitude Propane Conversion Kit:

Shall consist of all required hardware to convert to propane gas heat operation at 2001 to 6000 ft (611 to 1829 m) above sea level.

#### 11. Low Ambient Package Kit:

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 (-18°C) outdoor ambient temperature when properly installed.

#### 12. Manual Outdoor Air Damper Kit:

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

#### 13. Natural-to-Propane Conversion Kit:

Shall be complete with all required hardware to convert to propane gas operation at 10.0 IN. W.C. manifold pressure.

#### 14. 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).

#### 15. Square-To-Round Duct Transitions Kit (24-48 models):

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