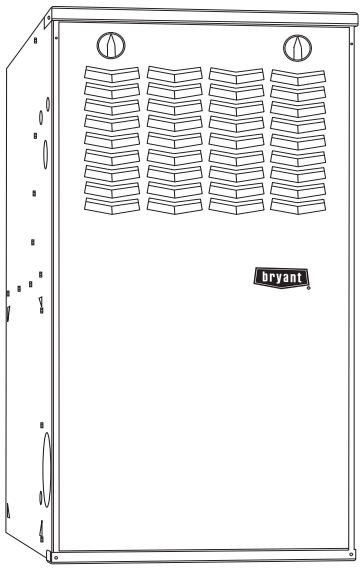
830CB

Evolution® 80 Ultra Low NOx, Variable-Speed,Communicating, 4-Way Multipoise Gas Furnace

Product Specifications



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EVOLUTION® 80 ULTRA LOW NOx GAS FURNACE

The 830CB delivers home comfort in an 80% AFUE furnace that meets the nitrogen oxides (NOx) emission limit of 14 nanograms/joule for South Coast Air Quality Management District, San Joaquin Valley Air Pollution Control District in California, and Bay Area Air Quality Management District. It provides warm winter heating with 65% lower NOx emissions than standard models.

The Evolution® 80 Ultra Low NOx Gas Furnaces offers a number of comfort-enhancing features with its constant airflow variable-speed Infinity ECM blower motor. FanOnPlus™ technology selectable fan speeds allows control over ventilation. SmartEvap™ technology provides humidity control during cooling operation, and with select outdoor units, Perfect Humidity® technology provides significantly better dehumidification. And, when paired with a two-speed or variable-speed outdoor unit, homeowners will enjoy consistent summer comfort.

EFFICIENCY

- 80% AFUE
- 40K, 60K, 80K, 100K Btu/h capacities
- Ultra-low NOx emissions - 830CB meets the nitrogen oxides (NOx) emission limit of 14 nanograms/joule for the South Coast Air Quality Management District and San Joaquin Valley Air Pollution Control District in California

TECHNOLOGY

- Single-stage gas valve
- Variable speed constant airflow ECM blower motor
- Pre-mix burner with pilot free, hot surface ignition
- Variable speed inducer motor
- Stainless steel, tubular heat exchanger

PERFORMANCE

- Integral part of the Perfect Humidity® System Maximum dehumidification selection for summertime cooling. Full Perfect Humidity® benefits including “Super Dehumidify” SmartEvap™ - Humidity control when using a Thermidistat™/ Evolution control.
- SmartEvap™ can lower the humidity level in the home by nearly 10 percent
- Perfect Light™Igniter
- Microprocessor based control center
  - 3-digit display shows fault codes and furnace status
  - Stores fault codes during power outages
  - Adjustable heating air temperature rise
  - Adjustable heating and cooling airflow
  - Dehumidification selection for summer-time cooling
- Draft Safeguard switch designed to ensure proper furnace venting
- On-board NFC antenna makes setup a tap away when using the Carrier Service Technician App
- RAT and SAT thermistors can provide temperature rise
- Insulated blower compartment
- Inner door for tighter sealing
- HYBRID HEAT® Dual Fuel System compatible

DESIGN AND INSTALLATION

- Approved for installation up to 5,400 feet
- Versatile venting for tight-fit applications
- Factory shipped for natural gas, not convertible to propane
- Four-position furnace: Upflow, Horizontal Right, Horizontal Left, Downflow (with 6 different vent options)
- Cabinet air leakage less than 2.0% at 1.0 in. W.C. and cabinet air leakage less than 1.4% at 0.5 in. W.C. when tested in accordance with ASHRAE standard 193

ISO 9001 Quality

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 .

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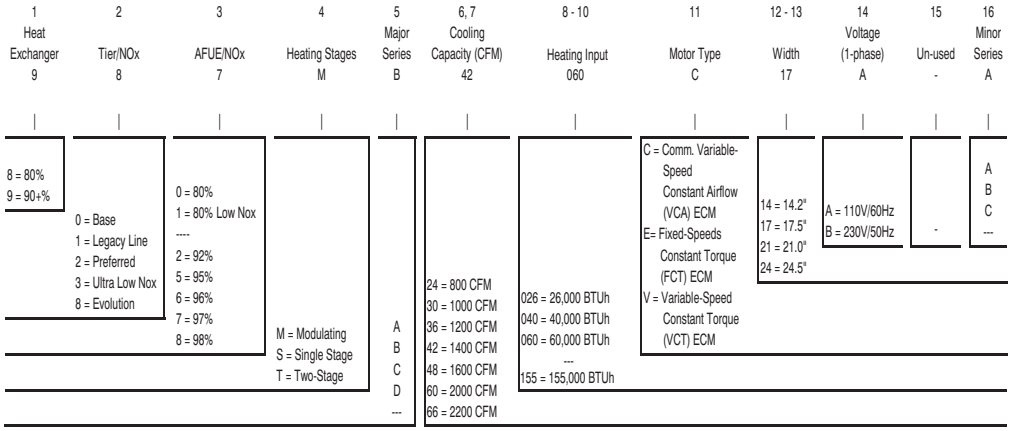
SPECIFICATIONS

FURNACE SIZE			36040C17A	48060C17A	60080C21A	60100C21A
RATINGS AND PERFORMANCE						
Input Btuh*			40,000	60,000	80,000	100,000
Output Capacity (Btuh)†			31,000	48,000	64,000	81,000
AFUE†			80.0	80.0	80.0	80.0
Certified Temperature Rise Range - °F (°C)			25 - 55 (14 - 31)	25 - 55 (14 - 31)	25 - 55 (14 - 31)	25 - 55 (14 - 31)
External Static Pressure (in. w.c.)‡		Heating	.10	.12	.15	.20
		Cooling	.50	.50	.50	.50
Airflow Delivery @ ESP Listed Above (CFM)		Heating	650	1000	1450	1650
		Cooling	505-1490	535-1480	990-2390	1130-2260
ELECTRICAL						
Unit Volts-Hertz-Phase			115-60-1			
Operating Voltage Range		Min-Max	104-127			
Maximum Unit Amps			11.1	11.1	14.4	14.4
Unit Ampacity			14.4	14.4	18.5	18.5
Maximum Wire Length - Measure one way in Ft			25	25	31	31
Minimum Wire Size			14	14	12	12
Maximum Fuse or Ckt Bkr Size (Amps)**			15	15	20	20
Transformer (24v)			40 VA			
External Control Power Available		Heating	12 VA			
		Cooling	35 VA			
Air Conditioning Blower Relay			Standard			
CONTROLS						
Limit Control			SPST			
Heating Blower Control			Solid-State Time Operation			
Gas Connection Size			1/2-in. NPT			
GAS CONTROLS						
Gas Valve (Redundant)		Mfr.	White Rodgers			
		Min. inlet pressure (In. W.C.)	3.5 Natural Gas			
		Max. inlet pressure (In. W.C.)	13.6 Natural Gas			
Ignition Device			Hot Surface Igniter			
Factory-installed orifice			3.35mm	#18	#10	#6
BLOWER DATA						
Direct-Drive Motor HP			3/4	3/4	1	1
Motor Full Load Amps			8.8	8.8	11.5	11.5
Nominal RPM			1050	1050	1050	1050
Blower Wheel Diameter x Width - In. (mm)			10 x 8 (243 x 203)	11 x 8 (279 x 203)	11 x 11 (279 x 279)	11 x 11 (279 x 279)

*. Gas input ratings are certified for elevations to 5,400 ft. (1646 M). In USA, for elevations above 2,000 ft. (610 M), reduce ratings 2 percent for each 1,000 ft. (305 M) above sea level. Refer to National Fuel Gas Code NFPA 54/ANSI Z223.1 Table F.4 or furnace installation instructions.
†. Capacity in accordance with U.S. Government DOE test procedures.
‡. DOE Minimum External Static Pressure
**. Time-delay type is recommended.
ICS = Isolated Combustion System

MODEL NUMBER NOMENCLATURE



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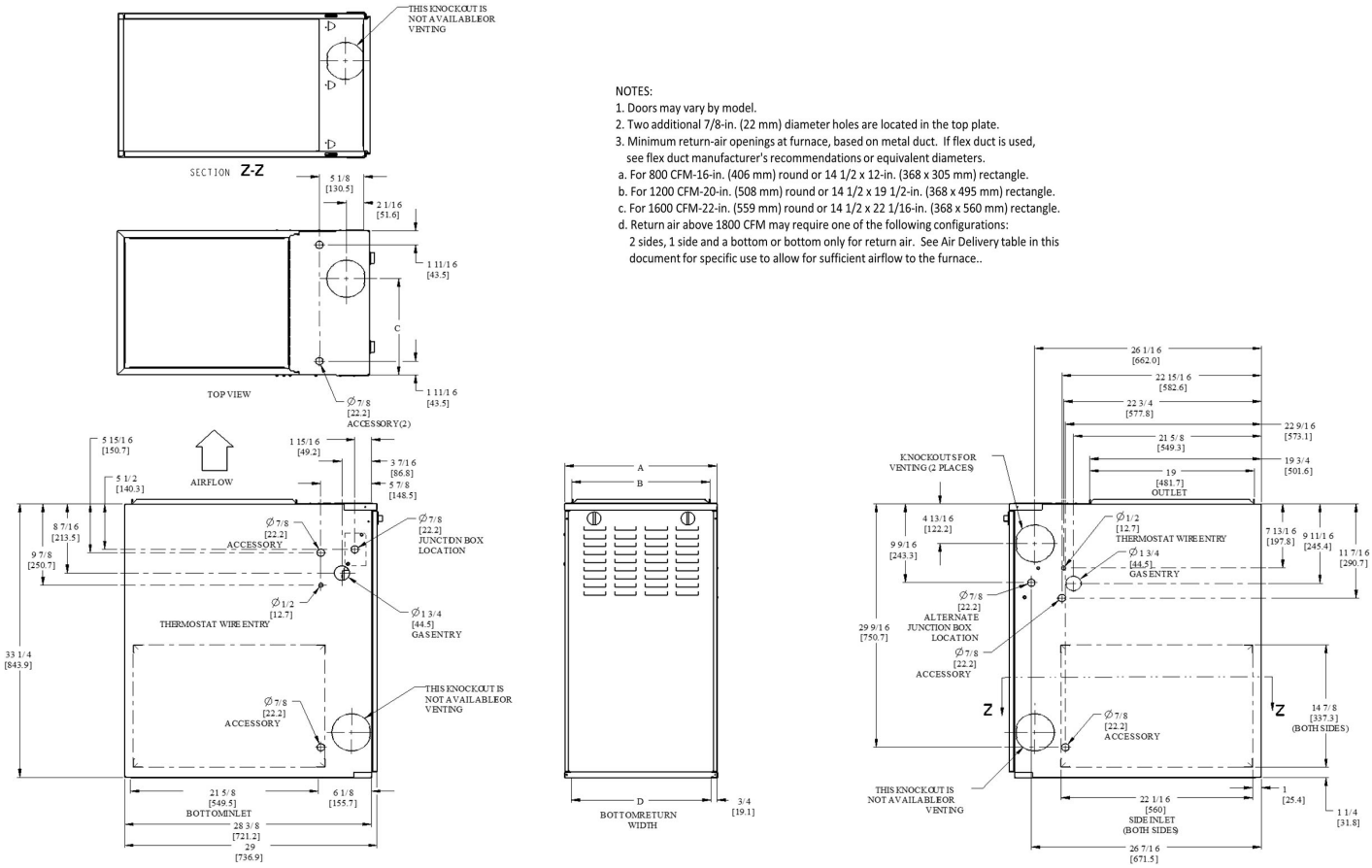
DIMENSIONS



NOTES:
1. Doors may vary by model.
2. Two additional 7/8-in. (22 mm) diameter holes are located in the top plate.
3. Minimum return-air openings at furnace, based on metal duct. If flex duct is used, see flex duct manufacturer's recommendations or equivalent diameters.
   a. For 800 CFM-16-in. (406 mm) round or 14 1/2 x 12-in. (368 x 305 mm) rectangle.
   b. For 1200 CFM-20-in. (508 mm) round or 14 1/2 x 19 1/2-in. (368 x 495 mm) rectangle.
   c. For 1600 CFM-22-in. (559 mm) round or 14 1/2 x 22 1/16-in. (368 x 560 mm) rectangle.
   d. Return air above 1800 CFM may require one of the following configurations: 2 sides, 1 side and a bottom or bottom only for return air. See Air Delivery table in this document for specific use to allow for sufficient airflow to the furnace..

NOTE: ALL DIMENSIONS IN INCH (MM) U.S. ECCN: Not Subject to Regulation (N.S.R.)

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FURNACE SIZE	A CABINET WIDTH	B OUTLET WIDTH	C TOP FLUE COLLAR	D BOTTOM INLET WIDTH	VENT CONNECTION SIZE	SHIP WT. LB. (KG)
830CA36040C17A	17-1/2 (445)	15-7/8 (403)	11-9/16 (294)	16 (406)	4 (102)	123 (56)
830CA48060C17A	17-1/2 (445)	15-7/8 (403)	11-9/16 (294)	16 (406)	4 (102)	130 (59)
830CA60080C21A	21 (533)	19-3/8 (492)	13-5/16 (338)	19-1/2 (495)	4 (102)	144 (65)
830CA60100C21A	21 (533)	19-3/8 (492)	13-5/16 (338)	19-1/2 (495)	4 (102)	154 (70)

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

CLEARANCES

⚠ WARNING

ELECTRIC SHOCK AND MOVING PARTS HAZARD

High voltage and rotating fan blades may be present in blower compartment when door switch is pressed. Keep hands clear.

⚠ WARNING

FIRE, EXPLOSION, ASPHYXIATION HAZARD

Improper adjustment, alteration, service, maintenance, or installation can cause serious injury or death.
Read and follow instructions and precautions in User's Information Manual provided with this furnace. Installation and service must be performed by a qualified service agency or the gas supplier.

⚠ CAUTION

Check entire gas assembly for leaks after lighting this appliance

INSTALLATION

1. This furnace must be installed in accordance with the manufacturer's instructions & local codes. In the absence of local codes, follow the National Fuel Gas Code ANSI Z223.1 / NFPA54 or CSA B-149.1 Gas Installation Code.
2. This furnace must be installed so there are provisions for combustion & ventilation air. See manufacturer's installation information provided with this appliance.

OPERATION

This furnace is equipped with manual reset limit switch(es) in burner compartment to protect against overheat conditions that can result from inadequate combustion air supply or blocked vent conditions.

1. Do not bypass limit switches.
2. If a limit opens, call a quallified serviceman to correct the condition & reset limit switch.

INSTALLATION

MINIMUM INCHES CLEARANCE TO COMBUSTIBLE CONSTRUCTION

This forced air furnace is equipped for use with natural gas at altitudes 0 - 5,400ft (0 - 1,646m). An accessory kit, supplied by the manufacturer, shall be used to convert to propane gas use or may be required for Some natural gas applications. This furnace is for indoor installation in a building constructed on site.This furnace may be installed on combustible flooring in alcove or closet at minimum clearance as indicated in the table from combustible material. This furnace may be used with a Type B-1 Vent and may be vented in common with other gas fired appliances. This furnace is approved for UPFLOW, DOWNFLOW, and HORIZONTAL installations.

	TOP	BOTTOM †	SIDES *	BACK	FRONT Ø	VENT	FRONT SERVICE
Inches	1	0	0	0	3	0	24
mm	25.4	0	0	0	76.2	0	610
Vent Clearance to combustibles		Single Wall: 6 inch			Type B-1: 1 inch		

DOWNFLOW POSITIONS:

† Installation on non-combustible floors only. For installation on combustible flooring only when installed on a manufacturer approved special base kit or manufacturer recommended coil assembly.

Ø 18 inches front clearance required for alcove.

* Indicates supply or return sides when furnace is in the horizontal position. Line contact only permissible between lines formed by intersections of the Top and two Sides of the furnace jacket, and building joists, studs or framing.

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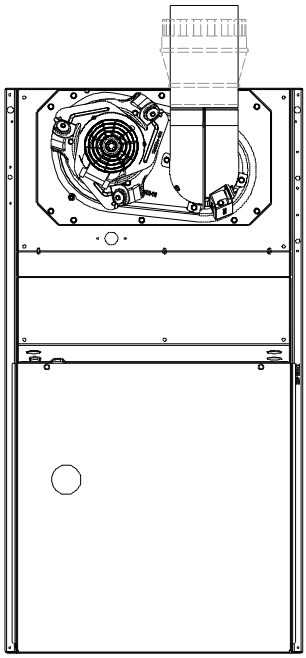
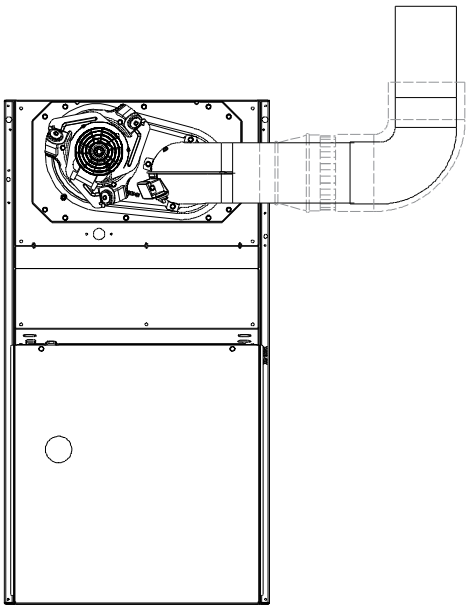
VENTING CONFIGURATIONS



SEE NOTES: 1,2,4,7,8,9 on the page following these figures

A03208

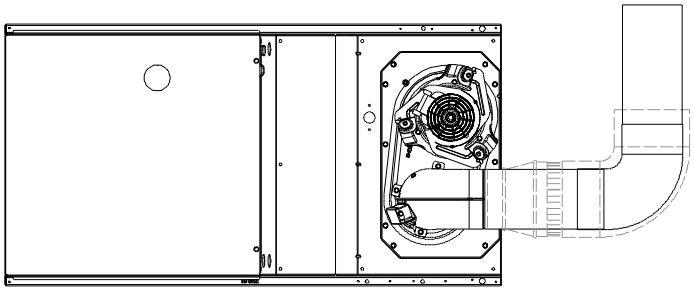
Upflow Application-Vent Elbow Up



SEE NOTES: 1,2,3,4,7,8,9 on the pages following these figures

A03209

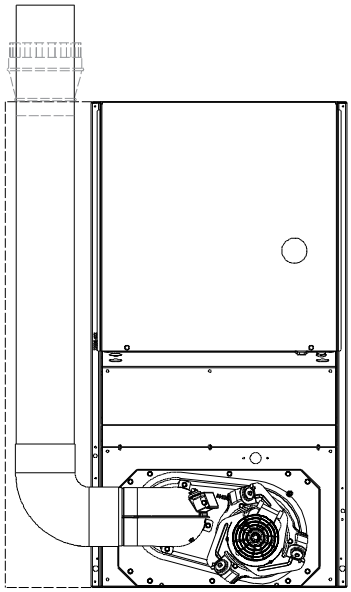
Upflow Application-Vent Elbow Right



SEE NOTES: 1,2,4,7,8,9 on the page following these figures

A03218

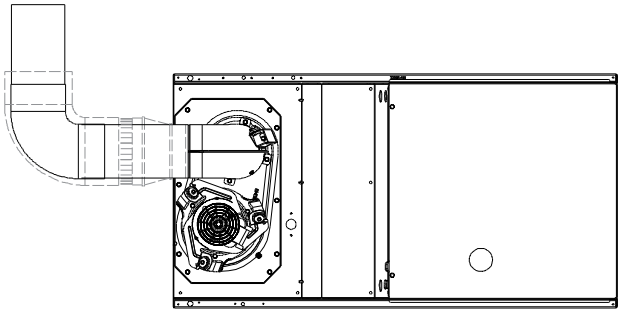
Horizontal Right Application-Vent Elbow Right



SEE NOTES: 1,2,4,5,6,7,8,9 on the page following these figures

A03207

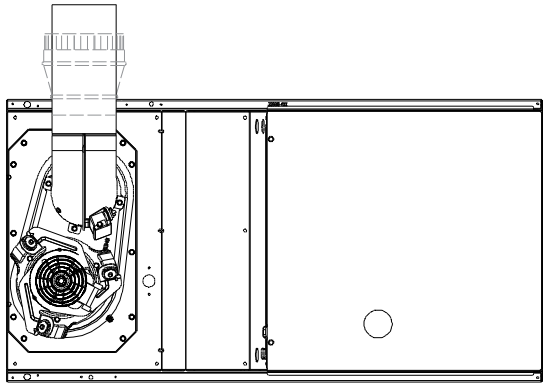
Downflow Application-Vent Elbow Left then Up



SEE NOTES: 1,2,4,7,8,9 on the page following these figures

A03213

Horizontal Left Application-Vent Elbow Left



SEE NOTES: 1,2,4,5,7,8,9 on the page following these figures

A03215

Horizontal Left Application-Vent Elbow Up

Venting Notes

1. For common vent, vent connector sizing and vent material: United States, latest edition of the National Fuel Gas Code (NFGC), NFPA54/ANSI Z223.1.
2. Immediately increase to 5-in. (127 mm) vent connector outside furnace casing when 5-in. (127 mm) vent connector required, refer to Note 1.
3. Side outlet vent for upflow and downflow installations must use Type B vent immediately after exiting the furnace, except when accessory Downflow Vent Guard is used in downflow position.
4. Type B vent where required, refer to Note 1.
5. 4-in. (102 mm) single wall vent must be used inside furnace casing and the Downflow Vent Guard Kit.
6. Accessory Downflow Vent Guard Kit required in downflow installations with bottom vent configuration.
7. Secure vent connector to furnace elbow with (2) corrosion-resistant sheet metal screws, space approximately 180° apart.
8. Secure all other single wall vent connector joints with (3) corrosion-resistant screws spaced approximately 120° apart.
9. Secure Type B vent connectors per vent connector manufacturer's recommendations.

ACCESSORIES

DESCRIPTION	PART NO.	36040C17A	48060C17A	60080C21A	60100C21A
Evolution® System Control Wi-Fi	SYSTXBBECC01	X	X	X	X
Flue Extension	KGAFE0112UPH	X	X	X	X
Combustible Floor Base	KGASB0201ALL	X	X	X	X
Downflow Vent Guard	KGBVG0101DFG	X	X	X	X
ECM Motor Simulator Kit	KGBSD0301FMS	X	X	X	X
External Bottom Return Filter Rack*	FHG1625-2	X	X	-	-
	FHG2025-2	-	-	X	X
Unframed Filter 3/4-in. (19 mm)*	325531-402	X	X	-	-
	325531-403	-	-	X	X
Coil Adapter Kits (see Installation Instructions for coil requirements)					
Coil Adapter Kits - No Offset	KGADA0101ALL	X	X	X	X
Coil Adapter Kits - Single Offset	KGADA0201ALL	X	X	X	X
Coil Adapter Kits - Double Offset	KGADA0301ALL	X	X	X	X

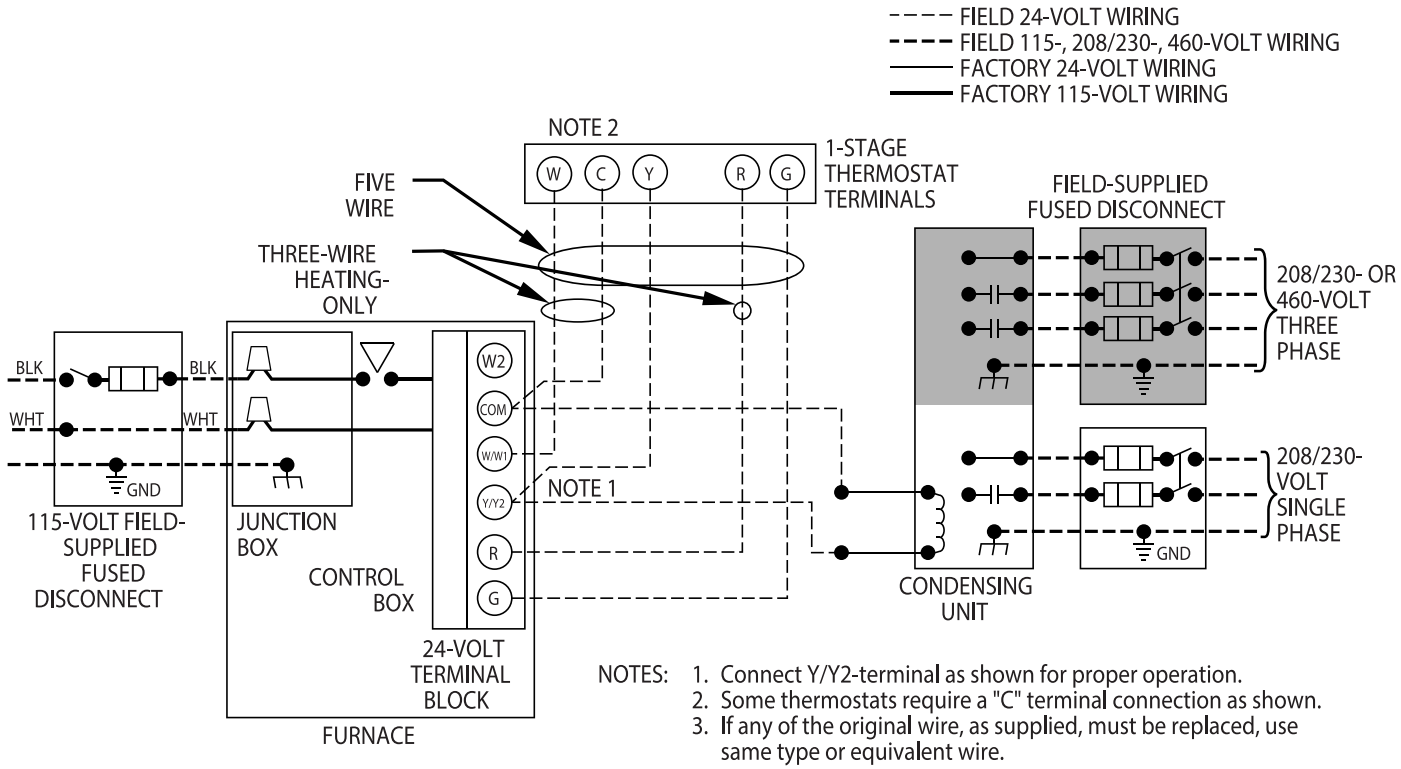
*. Purchased through Replacement Components

DESCRIPTION	ACCESSORIES
HUMIDIFIER	Model HUM
HEAT RECOVERY VENTILATOR	Model HRV
ENERGY RECOVERY VENTILATOR	Model ERV
UV LIGHTS	Model UVL

DESCRIPTION	ACCESSORY	14"	17"	21"
Bryant Carbon Monoxide Alarm (10 pack)	COALMBBNRB02-A10	X	X	X
Bryant Evolution Air Purifier - 16" x 25" (407 x 635 mm)	DGAPAXX1625	X	X	–
Bryant Evolution Air Purifier - 20" x 25" (508 x 635 mm)	DGAPAXX2025	–	–	X
Bryant Evolution Air Purifier Repl. Filter- 16" x 25" (407 x 635 mm)	PGAPXCAR1625-A02	X	X	–
Bryant Evolution Air Purifier Repl. Filter- 20" x 25" (508 x 635 mm)	PGAPXCAR2025-A02	–	–	X
Media Filter Cartridge - 16" (407 mm) (MERV 11)	FILXXCAR0116	X	X	–
Media Filter Cartridge - 16" (407 mm) (MERV 8)	FILXXCAR0016	X	X	–
Media Filter Cartridge - 20" (508 mm) (MERV 8)	FILXXCAR0020	–	–	X
Media Filter Cartridge - 20" (508 mm) (MERV11)	FILXXCAR0120	–	–	X
Media Filter Cabinet -16"	FILCABXL0016	X	X	–
Media Filter Cabinet - 20"	FILCABXL0020	–	–	X
EZ Flex Cabinet Side or Bottom - 16"	EZXCAB--1016	X	X	–
EZ Flex Cabinet Side or Bottom - 20"	EZXCAB--1020	–	–	X
EZ Flex Replacement Filters 16" MERV 10	EXPXXFIL0016	X	X	–
EZ Flex Replacement Filters 16" MERV 13	EXPXXFIL0316	X	X	–
EZ Flex Replacement Filters 20" MERV 10	EXPXXFIL0020	–	–	X
EZ Flex Replacement Filters 20" MERV 13	EXPXXFIL0320	–	–	X
EZ-Flex Filter with End Caps - 16" (407 mm) (MERV 10)	EXPXXUNV0016	X	X	–
EZ-Flex Filter with End Caps - 16" (407 mm) (MERV 13)	EXPXXUNV0316	X	X	–
EZ-Flex Filter with End Caps - 20" (508 mm) (MERV 10)	EXPXXUNV0020	–	–	X
EZ-Flex Filter with End Caps - 20" (508 mm) (MERV 13)	EXPXXUNV0320	–	–	X
Combustion Air Filter Kit – 17"	AGAFLTULN01A17	–	X	–
Combustion Air Filter Kit – 21"	AGAFLTULN01A21	–	–	X

Bryant has a wide variety of thermostats for your system, please visit www.Bryant.com to see all thermostat and IAQ products.

TYPICAL WIRING SCHEMATIC



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AIR DELIVERY

Table 1 – 36040C17A Airflow in CFM

Setting	External Static Pressure (in.w.c.)									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1*	488							†		
2	525									
3	555									
4	600									
5	650									
6	700									
7	740									
8‡	800									
9	875									
10	925									
11	975									
12	1000									
13**	1050									
14	1138									
15	1200									
16	1225									
17	1300									
18	1400									
19	1480									
20	1600									
Constant Fan Airflow (cfm)	Settings 1 - 9 (+488 - 875cfm)									
	Settings above 9 are not recommended									

Setting	Heat Stage
	High
Comfort 1	510
Comfort 2††	565
Efficiency 1	650
Efficiency 2	750

*. Constant Fan Default
†. Operation in the blank region is not recommended because heat operation will exceed 1.0" w.c. ESP.
‡. Low Cooling Default
**. High Cooling Default
††. Heating Default

Table 2 – 48060C17A Airflow in CFM

Setting	External Static Pressure (in.w.c.)									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1*	488			†						
2	525									
3	555									
4	600									
5	650									
6	700									
7	740									
8	800									
9	875									
10	925									
11	975									
12	1000									
13‡	1050									
14	1138									
15	1200									
16	1225									
17	1300									
18**	1400									
19	1480									
20	1600									
Constant Fan Airflow (cfm)	Settings 1 - 9 (+488 - 875)									
	Settings above 9 are not recommended									

Setting	Heat Stage
	High
Comfort 1	785
Comfort 2††	870
Efficiency 1	1000
Efficiency 2	1125

*. Constant Fan Default
†. Operation in the blank region is not recommended because heat operation will exceed 1.0" w.c. ESP.
‡. Low Cooling Default
**. High Cooling Default
††. Heating Default

Table 3 – 60080C21A Airflow in CFM

Setting	External Static Pressure (in.w.c.)									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1*	650									
2	700									
3	740									
4	800									
5	875									
6	925									
7	975									
8	1000									
9	1050									
10	1138									
11	1200									
12	1225									
13‡	1300									
14	1400									
15	1480									
16	1600									
17	1625									
18**	1750									
19	1850									
20	1910									
21	2000									
22	2100									2060
23	2180							2160	2110	2060
24	2200							2160	2110	2060
Constant Fan Airflow (cfm)	Settings 1 - 9 (+650 - 1050)									
	Settings above 9 are not recommended									

	Heat Stage
Setting	High
Comfort 1	1120
Comfort 2††	1250
Efficiency 1	1450
Efficiency 2	1700

*. Constant Fan Default
†. Operation in the blank region is not recommended because heat operation will exceed 1.0" w.c. ESP.
‡. Low Cooling Default
**. High Cooling Default
††. Heating Default

Table 4 – 66100C21A Airflow in CFM

Setting	External Static Pressure (in.w.c.)									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1*	650									
2	700									
3	740									
4	800									
5	875									
6	925									
7	975									
8	1000									
9	1050									
10	1138									
11	1200									
12	1225									
13‡	1300									
14	1400									
15	1480									
16	1600									
17	1625									
18**	1750									
19	1850									
20	1910									
21	2000								1980	1930
22	2100							2040	1980	1930
23	2180					2155	2100	2040	1980	1930
24	2200					2155	2100	2040	1980	1930
Constant Fan Airflow (cfm)	Settings 1 - 9 (+650 - 1050)									
	Settings above 9 are not recommended									

	Heat Stage
Setting	High
Comfort 1	1300
Comfort 2††	1435
Efficiency 1	1650
Efficiency 2	1875

*. Constant Fan Default
†. Operation in the blank region is not recommended because heat operation will exceed 1.0" w.c. ESP.
‡. Low Cooling Default
**. High Cooling Default
††. Heating Default

GUIDE SPECIFICATIONS

General

System Description

Furnish a _____ 4-way multipoise gas-fired condensing furnace for use with natural gas or propane (factory-authorized conversion kit required for propane).

Quality Assurance

Unit will be designed, tested and constructed to the current ANSI Z 21.47/CSA 2.3 design standard for gas-fired central furnaces.

Unit will be third party certified by CSA to the current ANSI Z 21.47/CSA 2.3 design standard for gas-fired central furnaces. Unit will carry the CSA Blue Star® and Blue Flame® labels. Unit efficiency testing will be performed per the current DOE test procedure as listed in the Federal Register.

Unit will be certified for capacity and efficiency and listed in the latest AHRI Consumer's Directory of Certified Efficiency Ratings.

Unit will carry the current Federal Trade Commission Energy Guide efficiency label.

Delivery, Storage, and Handling

Unit will be shipped as single package only and is stored and handled per unit manufacturer's recommendations.

Warranty (for inclusion by specifying engineer)

U.S. and Canada only. Warranty certificate available upon request.

Equipment

Blower Wheel and ECM Blower Motor

Galvanized blower wheel shall be centrifugal type, statically and dynamically balanced. Blower motor of ECM type shall be permanently lubricated with sealed ball bearings, of _____HP, and have multiple speeds from 600-1200 RPM operating only when 24-VAC motor inputs are provided. Blower motor shall be direct drive and soft mounted to the blower housing to reduce vibration transmission.

Filters

Furnace shall have reusable-type filters.

Filter shall be _____ in. (mm) x_____ in. (mm).

An accessory highly efficient Media Filter is available as an option. _____ Media Filter.

Casing

Casing shall be of 0.030 in. thickness minimum, pre-painted steel.

Draft Inducer Motor

Draft inducer motor shall be single-speed PSC design.

Primary Heat Exchangers

Primary heat exchangers shall be 3-Pass corrosion-resistant aluminized steel of fold-and-crimp sectional design and applied operating under negative pressure.

Secondary Heat Exchangers

Secondary heat exchangers shall be of a stainless steel flow-through of fin-and-tube design and applied operating under negative pressure.

Controls

Controls shall include a micro-processor-based integrated electronic control board with at least 16 service troubleshooting codes displayed via diagnostic flashing LED light on the control, a self-test feature that checks all major functions of the furnace, and a replaceable automotive-type circuit protection fuse. Multiple operational settings available, including blower speeds for heating and cooling.

Operating Characteristics

Heating capacity shall be _____ Btuh input; _____ Btuh output capacity.

Fuel Gas Efficiency shall be _____AFUE.

Air delivery shall be _____ cfm minimum at 0.50 in. W.C. external static pressure.

Dimensions shall be: depth_____in. (mm); width _____in. (mm); height_____in. (mm) (casing only).

Height shall be_____in. (mm) with A/C coil and _____in. (mm) overall with plenum.

Electrical Requirements

Electrical supply shall be 115 volts, 60 Hz, single-phase (nominal). Minimum wire size shall be _____AWG; maximum fuse size of HACR-type designated circuit breaker shall be _____ amps.

Special Features

Refer to section of the product data identifying accessories and descriptions for specific features and available enhancements.

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