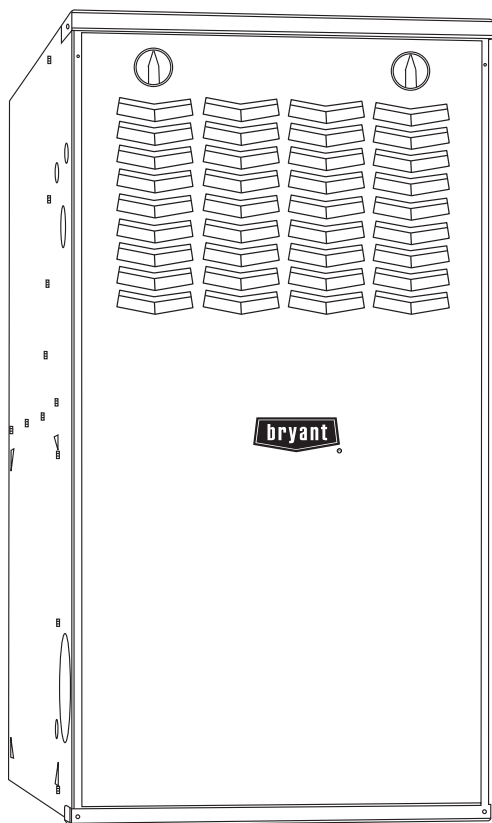


830SA
4-Way Multipoise, Ultra Low NO_x
80% AFUE Gas Furnace
Input Capacities: 40,000 thru 100,000 Btu/h



Product Data



A180220

LEGACY™ 80 ULTRA LOW NO_x GAS FURNACE

The 830SA 4-way Multipoise Gas Furnaces offer features not found in other single-stage 80% gas furnaces. These models meet the nitrogen oxides (NO_x) emission limit of 14 nanograms/joule for the South Coast Air Quality Management District and San Joaquin Valley Air Pollution Control District in California.



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.



STANDARD FEATURES

Efficiency

- 80% AFUE
- 40K, 60K, 80K, 100K Btu/h capacities
- Ultra-low NO_x emissions – 830SA meets the nitrogen oxides (NO_x) 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
- Fixed-Speeds, Constant Torque (FCT) tapped ECM blower motor
- Pre-mix burner with pilot free, hot surface ignition
- Variable speed inducer motor
- Stainless steel, tubular heat exchanger

Performance

- Pre-mix burner with variable speed inducer
- Insulated blower compartment for quiet operation, and inner door for tighter sealing
- Draft safeguard switch designed to ensure proper furnace venting
- Hybrid Heat® Dual Fuel compatible

Design and Installation

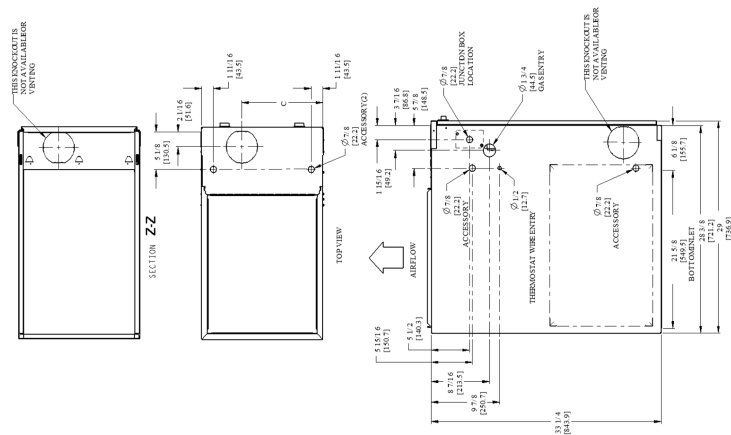
- Versatile venting for tight-fit applications
- Four-position furnace: Upflow, Horizontal Right, Horizontal Left, Downflow (with 6 different vent options)
- Cabinet air leakage less than 2.0% at 1.0 in. W.C. and cabinet air leakage less than 1.4% at 0.5 in. W.C. when tested in accordance with ASHRAE standard 193.

1 Heat Exchanger 9	2 Tier/NOx 8	3 AFUE/NOx 7	4 Heating Stages M	5 Major Series B	6, 7 Cooling Capacity (CFM) 42	8 - 10 Heat Input 080	11 Motor Type C	12 - 13 Width 17	14 Voltage (1-phase) A	15 Un-used -	16 Minor Series A
8 = 80% 9 = 90+%	0 = Base 1 = Legacy Line 2 = Preferred 3 = Ultra Low Nox 8 = Evolution	0 = 80% 1 = 80% Low NOx (Not Ultra Low NOx) 2 = 92% 5 = 95% 8 = 96% 7 = 97% 9 = 98%	C = Single Stage Communicating M = Modulating S = Single Stage T = Two-Stage	A B C D —	24 = 800 CFM 30 = 1000 CFM 36 = 1200 CFM 42 = 1400 CFM 48 = 1600 CFM 60 = 2000 CFM 66 = 2200 CFM	028 = 28,000 BTU/h 040 = 40,000 BTU/h 060 = 60,000 BTU/h —	C = Constant Airflow Variable-Speed (VCA) ECM E = Discrete Tapped (FCT) ECM V = Variable-Speed (VCT) PWM	14 = 14.2" 17 = 17.5" 21 = 21.0" 24 = 24.5"	A = 110V/60Hz B = 230V/50Hz	—	A B C —

A190378

DIMENSIONS

- NOTES:
- Doors may vary by model.
 - Two additional 7/8-in. (22 mm) diameter holes are located in the top plate.
 - Minimum return-air openings at furnace, based on metal duct, if flex duct is used, must be provided in addition to the minimum return-air openings at furnace.
 - For 800 CFM/16-in. (406 mm) round or 14 1/2 x 12-in. (368 x 305 mm) rectangle.
 - For 1200 CFM/20-in. (508 mm) round or 14 1/2 x 19 1/2-in. (368 x 495 mm) rectangle.
 - For 1500 CFM/22-in. (559 mm) round or 14 1/2 x 22 1/2-in. (368 x 560 mm) rectangle.
 - 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.) SD5507-4 ULN 80 REV. B

A190257

FURNACE SIZE	A CABINET WIDTH	B OUTLET WIDTH	C TOP FLUE COLLAR	D BOTTOM INLET WIDTH	VENT CONNECTION SIZE	SHIP WT. LB. (KG)
830SA36040E17A	17-1/2 (445)	15-7/8 (403)	11-9/16 (294)	16 (406)	4 (102)	118 (54)
830SA48060E17A	17-1/2 (445)	15-7/8 (403)	11-9/16 (294)	16 (406)	4 (102)	126 (57)
830SA60080E21A	21 (533)	19-3/8 (492)	13-5/16 (338)	19-1/2 (495)	4 (102)	140 (64)
830SA60100E21A	21 (533)	19-3/8 (492)	13-5/16 (338)	19-1/2 (495)	4 (102)	150 (68)

⚠ 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 and 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 and 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 overheating 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 qualified serviceman to correct the condition and reset limit switch.

INSTALLATION

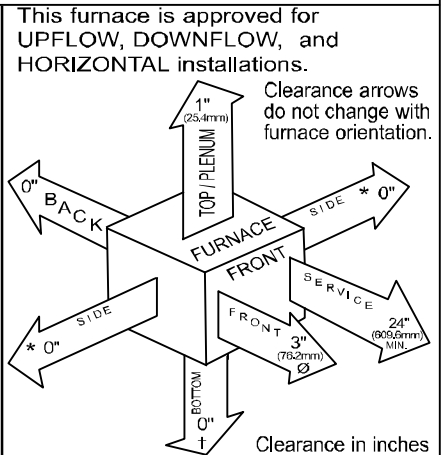
MINIMUM INCHES CLEARANCE TO COMBUSTIBLE CONSTRUCTION

This forced air furnace is equipped for use with natural gas at altitudes 0 - 5,000 ft (0 - 1524m).

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 by the diagram 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.



Vent Clearance to combustibles:

For Single Wall vents 6 inches (6 po).
For Type B-1 vent type 1 inch (1 po).

MINIMUM INCHES CLEARANCE TO COMBUSTIBLE CONSTRUCTION DOWNFLOW POSITIONS:

- † Installation on non-combustible floors only.
For installation on combustible flooring only when installed on a manufacture 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.



345310-101 REV.A

A190303

SPECIFICATIONS

UNIT SIZE		36040E17A	48060E17A	60080E21A	60100E21A
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 (14) – 55 (30)	30 (16) – 60 (33)	25 (14) – 55 (30)	25 (14) – 55 (30)
External Static Pressure††	Heating	.10	.12	.15	.20
	Cooling	.50	.50	.50	.50
Airflow Delivery @ ESP Listed Above (CFM)	Heating	695	1020	1330	1885
	Cooling	250 – 1370	940 – 1545	815 – 1990	950 – 2005
ELECTRICAL					
Unit Volts – Hertz – Phase		115-60-1			
Operating Voltage Range	Min-Max	104-127			
Maximum Unit Amps		8.2	10.6	13.3	13.3
Unit Ampacity		10.9	13.9	17.3	17.3
Maximum Wire Length – Measure one way in Ft (M)		33 (10)	26 (8)	33 (10)	33 (10)
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 Ignitor			
Factory-installed orifice		3.35mm	#18	#10	#6
BLOWER DATA					
Direct-Drive Motor HP		1/2	3/4	1	1
Motor Full Load Amps		6.40	8.80	11.50	11.50
Nominal RPM (Speeds)		1050 (5)	1050 (5)	1050 (5)	1050 (5)
Blower Wheel Diameter x Width – In. (mm)		11 (279) x 8 (203)	11 (279) x 8 (203)	11 (279) x 11 (279)	11 (279) x 11 (279)

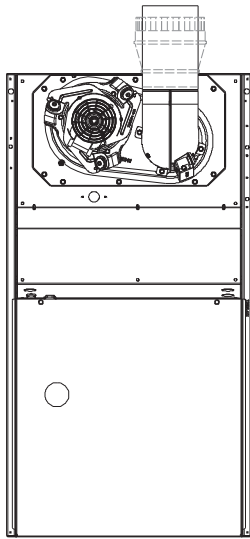
* Gas input ratings are certified for elevations to 5,000 ft. (1524 M). In USA, for elevations above 2,000 ft. (610 M), reduce ratings 2 percent for each 1,000 ft. (305 M) above sea level. Refer to National Fuel Gas Code NFPA 54/ANSI Z223.1 Table F.4 or furnace installation instructions.

† Capacity in accordance with U.S. Government DOE test procedures.

†† DOE Minimum External Static Pressure

** Time – delay type is recommended.

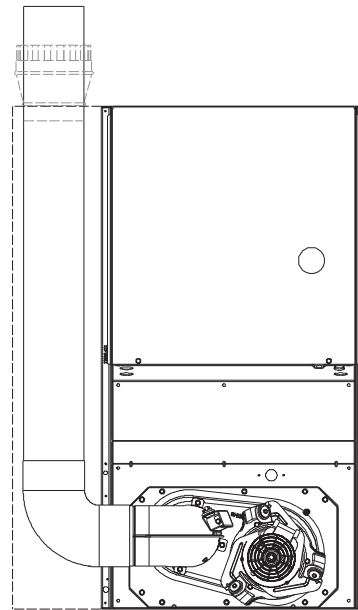
ICS Isolated Combustion System



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

Fig. 1 - Upflow Application-Vent Elbow Up

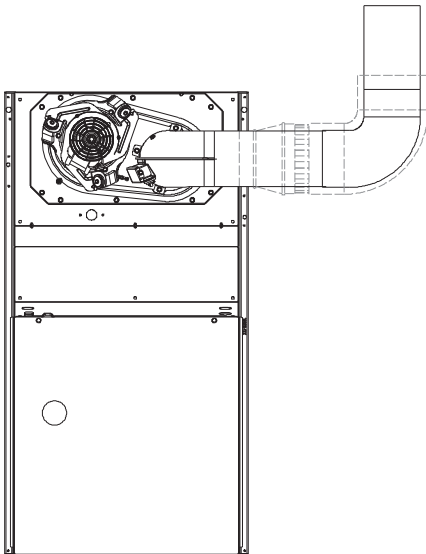
A03208



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

Fig. 4 - Downflow Application-Vent Elbow Left then Up

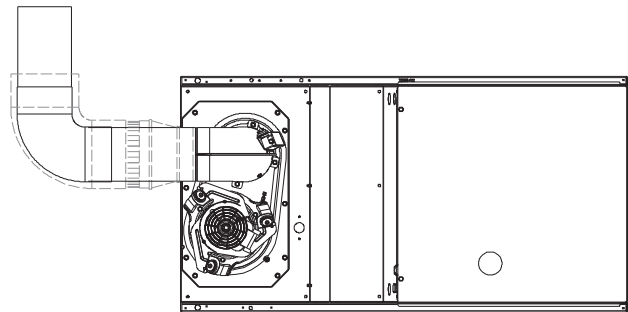
A03207



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

Fig. 2 - Upflow Application-Vent Elbow Right

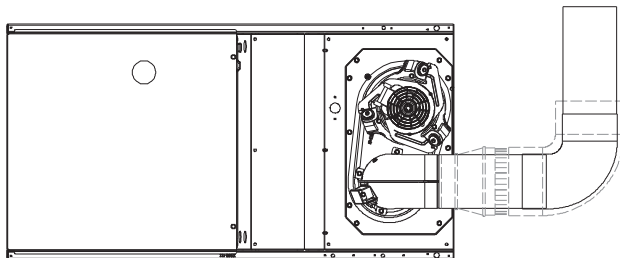
A03209



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

Fig. 5 - Horizontal Left Application-Vent Elbow Left

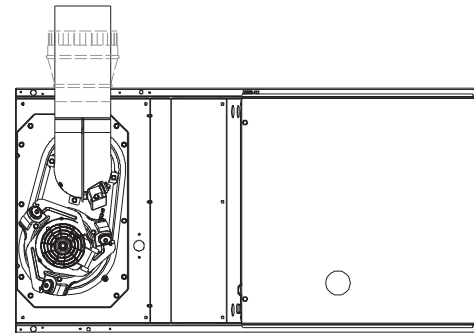
A03213



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

Fig. 3 - Horizontal Right Application-Vent Elbow Right

A03214



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

Fig. 6 - Horizontal Left Application-Vent Elbow Up

A03215

Venting Notes

1. For common vent, vent connector sizing and vent material: United States, latest edition of the National Fuel Gas Code (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.	36040E17A	48060E17A	60080E21A	60100E21A
Flue Extension	KGAFE0112UPH	X	X	X	X
Combustible Floor Base	KGASB0201ALL	X	X	X	X
Downflow Vent Guard	KGBVG0101DFG	X	X	X	X
Bottom Filter Rack – 17.5 inches (455 mm)	KGBFR0501B17	X	X		
Bottom Filter Rack – 21 inches (533 mm)	KGBFR0601B21			X	X
Unframed Filter 3/4–in.	KGAWF1306UFR	X	X		
	KGAWF1406UFR			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

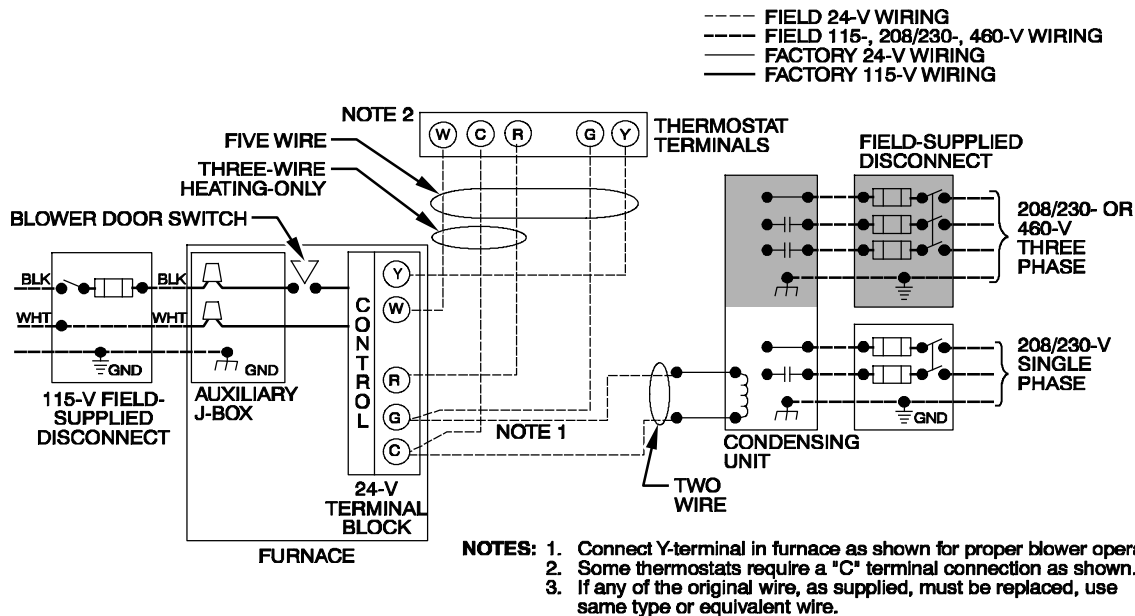
DESCRIPTION	ACCESSORIES
HUMIDIFIER	Model HUM
HEAT RECOVERY VENTILATOR	Model HRV
ENERGY RECOVERY VENTILATOR	Model ERV
UV LIGHTS	Model UVL

DESCRIPTION	ACCESSORY	14"	17"	21"
Bryant Carbon Monoxide Alarm (10 pack)	COALMBBNRB02–A10	X	X	X
Bryant Evolution Air Purifier - 16x25 (407x635 mm)	DGAPAXX1625	X	X	
Bryant Evolution Air Purifier - 20x25 (508x635 mm)	DGAPAXX2025			X
Bryant Evolution Air Purifier Repl. Filter- 16x25 (407x635 mm)	PGAPXCAR1625-A02	X	X	
Bryant Evolution Air Purifier Repl. Filter- 20x25 (508x635 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

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

X – Accessory

TYPICAL WIRING SCHEMATIC



Representative drawing only, some models may vary.

A180241

AIR DELIVERY - CFM (WITH FILTER)

Furnace	Wire Lead Color ²	Function	Test Airflow Delivery @ Various External Static Pressures									
			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
036040	Gray	Cooling. Do not use for heating.	1535	1495	1455	1415	1370	1320	1280	1235	1190	1145
	Yellow	Alt Cooling or alt Heating	1100	1055	1005	955	905	855	800	740	680	625
	Orange	Heating or alt cooling	695	645	585	510	450	390	325	270	215	155
	Blue	Alt Cooling or alt Heating	935	885	830	775	720	655	595	540	490	430
	Red	Alt Cooling or alt Heating	570	455	380	310	250	180	110	—	—	—
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
048060	Gray	Cooling. Do not use for heating.	1720	1680	1635	1585	1545	1505	1455	1405	1355	1305
	Yellow	Alt Cooling or alt Heating	1470	1425	1385	1335	1290	1245	1200	1160	1110	1060
	Orange	Alt Cooling or alt Heating	1305	1255	1215	1160	1115	1070	1025	975	925	870
	Blue	Heating or alt cooling	1040	940	890	835	790	740	675	620	565	525
	Red	Alt Cooling or alt Heating	1135	1090	1035	985	940	895	845	790	730	675
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
060080	Gray	Cooling. Do not use for heating.	2185	2135	2085	2035	1990	1935	1880	1825	1770	1715
	Yellow	Alt Cooling or alt Heating	1885	1830	1780	1730	1675	1625	1575	1520	1470	1420
	Orange	Alt Cooling or alt Heating	1565	1500	1440	1385	1330	1275	1220	1170	1115	1055
	Blue	Heating or alt cooling	1365	1295	1230	1165	1100	1045	985	925	845	780
	Red	Alt Heating or alt cooling	1205	1045	965	895	815	745	650	595	540	480
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
060100	Gray	Cooling. Do not use for heating.	2230	2180	2120	2060	2005	1945	1880	1815	1755	1700
	Blue	Heating or alt cooling	1945	1885	1830	1770	1715	1650	1585	1525	1465	1405
	Yellow	Alt Cooling or alt Heating	1835	1775	1720	1655	1595	1530	1470	1410	1350	1285
	Orange	Alt cooling or alt Heating	1535	1470	1395	1325	1265	1205	1140	1080	1015	955
	Red	Alt cooling. Do not use for heating	1095	1060	1020	985	950	915	880	845	805	770

1. A filter is required for each return—air inlet. Airflow performance included 3/4—in. (19 mm) washable filter media such as contained in factory—authorized accessory filter rack. To determine airflow performance without this filter, assume an additional 0.1—in. W.C. available external static pressure.

2. Adjust the blower speed tabs as necessary for the proper air temperature rise for each installation.

— — Indicates unstable operating conditions.

GUIDE SPECIFICATIONS

Gas Furnace

830SA0

GENERAL

System Description

Furnish a _____ fixed capacity gas-fired furnace for use with natural gas; furnish cold air return plenum.

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 3rd 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® label.

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

Warranty (for inclusion by specifying engineer)

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

PRODUCTS

Equipment

Components shall include: slow-opening gas valve to reduce ignition noise, regulate gas flow, with electric switch gas shut-off; flame proving sensor, hot surface ignitor, transducer, burner thermal switch, blower and inducer assembly, 40va transformer; low-voltage (heating) (heating/ cooling) thermostat.

Blower Wheel and Blower Motor

Galvanized blower wheel shall be centrifugal type, statically and dynamically balanced. Blower motor of ECM type shall be permanently lubricated with sealed bearings, of _____ hp, and shall be multiple-speed direct drive. Blower motor shall be soft mounted to the blower scroll to reduce vibration transmission.

Filters

Furnace may have reusable-type filters. Filter shall be _____ in (x) _____ in. (mm). An accessory high-efficiency media filter is available as an option. _____ Media Filter.

Casing

Casing shall be of .030 in. (.76 mm) thickness minimum, pre-painted steel.

Draft Safeguard Switch

Draft Safeguard Switch (blocked vent safeguard) shall be factory installed to reduce the possibility of vent gas infiltration due to a blocked or restricted vent pipe.

Controls

Control shall include a micro-processor based integrated electronic control board with troubleshooting codes displayed via enhanced flashing LED diagnostic 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 separate blower speeds for heating and cooling.

Operating Characteristics

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

Fuel Gas Efficiency shall be 80% AFUE.

Air delivery shall be _____ CFM minimum at 0.50 In. W.C. external static pressure.

Dimensions shall be: depth _____ in.; width _____ in; 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 or circuit breaker shall be _____ Amps.

Special Features

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