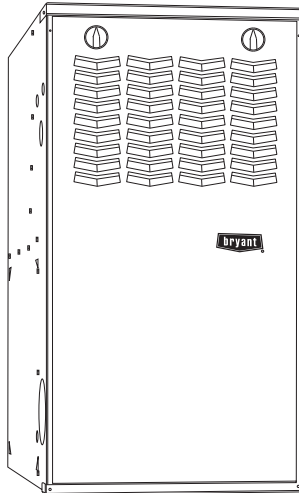


**820SA/821SA**  
**4-Way Multipoise, Non-Condensing**  
**33-1/3 in. Gas Furnace**  
**Input Capacities: 045K thru 110K BTUh**



## Product Data



A10252

### THE 820SA/821SA GAS FURNACE

The 820SA/821SA 4-way Multipoise Gas Furnaces feature Bryant's QuietTech™ noise reduction system for quiet induced draft operation. Applications are easy with 4-way multipoise design, through-the-furnace downflow venting, 13 different venting options, and easy service access. An inner blower door is provided for tighter sealing in sensitive applications. The 820SA/821SA furnaces are factory shipped for use with natural gas and convertible to propane with approved accessory kit. The 821SA - Low NOx units are designed for California installations and meet 40 ng/J NOx emission limits. Can be installed in air quality management districts with a 40 ng/J NOx emissions limit.

### PERFORMANCE

- Single-stage gas valve
- Variable-speed, Constant Torque (VCT) ECM blower motor
- QuietTech™ noise reduction system with fully insulated cabinet
- Microprocessor based “smart” control center  
Fan on *Plus*™ - Continuous Fan speed adjustable from thermostat
- Enhanced diagnostics with LED and reflective sight glass, non-volatile fault code memory, and self test feature
- Adjustable heating air temperature rise
- Adjustable cooling airflow
- Perfect Light™ Igniter
- Patented blocked vent safeguard to ensure proper furnace venting
- Inner blower door for tighter sealing

### INSTALLATION FLEXIBILITY

- 4-way Multipoise furnace, 13 vent applications
- HYBRID HEAT® Dual Fuel System compatible
- All models are chimney friendly when used with accessory vent kit

### APPLICATIONS

- Compact design - only 33-1/3 in. (847 mm) tall
- Propane convertible with gas conversion accessory
- Convenient Air Purifier and Humidifier connections

### CERTIFICATION

- 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
- Residential installations eligible for consumer financing through the Retail Credit Program



Use of the AHRI Certified™ 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).

A200316

## SPECIFICATIONS

Unit Size		36045V14	48045V17	48070V17	60070V21	60090V21	60090V24	66110V24
<b>RATINGS AND PERFORMANCE</b>								
Input Btuh* Nonweatherized ICS	All Standard All Low NOx Upflow	44,000	44,000	66,000	66,000	88,000	88,000	110,000
	All Low Nox Downflow/Horizontal	42,000	42,000	63,000	63,000	84,000	84,000	105,000
Output Capacity (Btuh)† Nonweatherized ICS	All Standard All Low NOx Upflow	35,000	35,000	54,000	53,000	71,000	72,000	90,000
	All Low Nox Downflow/Horizontal	34,000	34,000	51,000	51,000	68,000	69,000	86,000
AFUE†		80.00	80.00	80.00	80.00	80.00	80.00	80.00
Certified Temperature Rise Range - °F (°C)		30-60 (17-33)	30-60 (17-33)	25-55 (14-30)	25-55 (14-30)	25-55 (14-30)	30-60 (17-33)	30-60 (17-33)
Certified External Static Pressure	Heat/Cool	0.10/0.50	0.10/0.50	0.12/0.50	0.12/0.50	0.15/0.50	0.15/0.50	0.20/0.50
Airflow CFM‡	Heating	870	925	1385	1425	1800	1710	2090
	Cooling	1310	1350	1720	2045	1915	1980	2280
<b>ELECTRICAL</b>								
Unit Volts-Hertz-Phase		115-60-1						
Operating Voltage Range	Min-Max	104-127						
Maximum Unit Amps		7.9	7.9	10.8	13.2	11.1	11.1	13.9
Unit Ampacity		10.7	10.7	14.3	17.3	14.6	14.6	18.1
Maximum Wire Length (Measure 1 Way in Ft (M))		34 (10.6)	34 (10.6)	25 (7.9)	33 (10.1)	25 (7.7)	25 (7.7)	31 (9.7)
Minimum Wire Size		14	14	14	12	14	14	12
Maximum Fuse or Ckt Bkr Size (Amps)**		15	15	15	20	15	15	20
Transformer (24v)		40va						
External Control Power Available	Heating	12va						
	Cooling	35va						
Air Conditioning Blower Relay		Standard						
<b>CONTROLS</b>								
Heating Blower Control		Solid State Time Operation						
Burners (Monoport)		2	2	3	3	4	4	5
Gas Connection Size		1/2in. NPT						
<b>GAS CONTROLS</b>								
Gas Valve (Redundant)	Mfr.	WhiteRodgers						
	Min. inlet pressure (In. W.C.)	4.5 (Natural Gas)						
	Max. inlet pressure (In. W.C.)	13.6 (Natural Gas)						
Ignition Device		Hot Surface						
Factory installed orifice		Size 43						
<b>BLOWER DATA</b>								
Direct Drive Motor HP		1/2	1/2	3/4	1	3/4	3/4	1
Motor Full Load Amps		6.7	6.7	9.6	12.0	9.6	9.6	12.0
RPM (Nominal)Speeds		1200	1200	1200	1200	1200	1200	1200
Blower Wheel Diameter x Width - In. (mm)		10 x 6 (254x152)	10 x 8 (254x203)	11 x 8 (279x203)	11 x 10 (254x279)	11 X 11 (279x279)	11 X 11 (279x279)	11 X 11 (279x279)

\*. Gas input ratings are certified for elevations to 2000 ft. (610 M). In USA, For elevations above 2000 ft (610 M), reduce ratings 4 percent for each 1000 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.

‡. Airflow shown is for bottom only return-air supply. For air delivery above 1800 CFM, see Air Delivery table for other options. A filter is required for each return-air supply. An airflow reduction of up to 7 percent may occur when using the factory-specified 4-5/16-in. (110 mm) wide, high efficiency media filter.

\*\* Time-delay type is recommended.

ICS = Isolated Combustion System

# MODEL NUMBER NOMENCLATURE

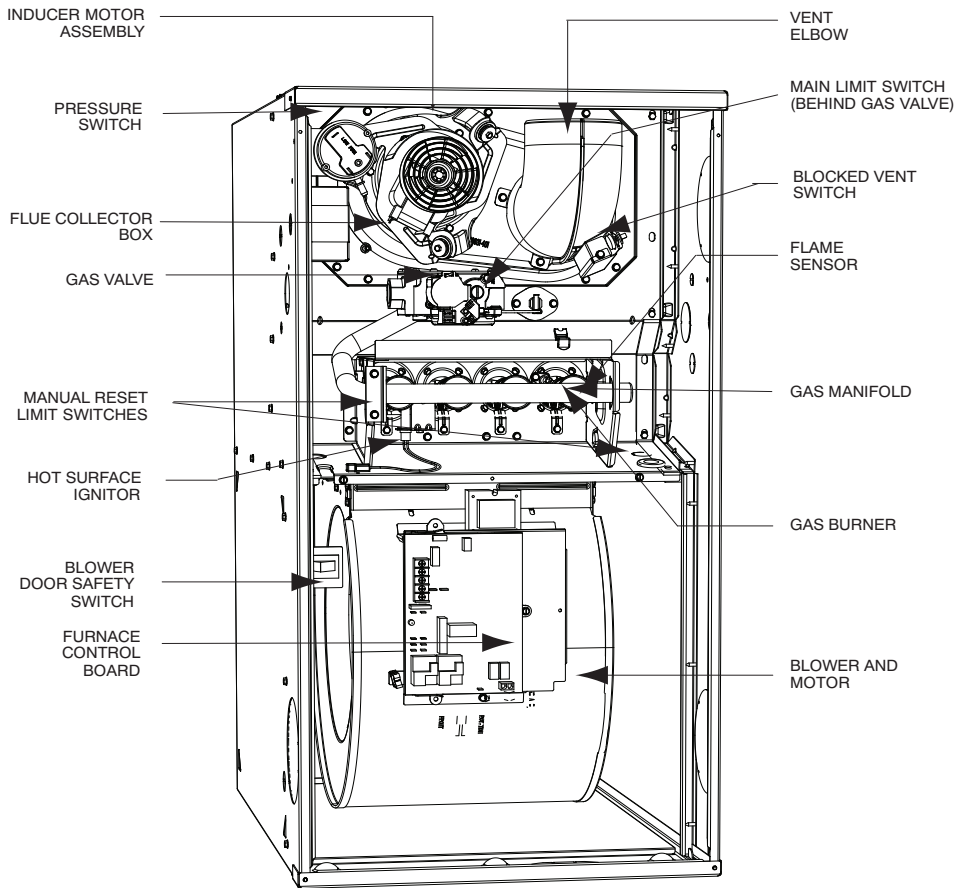
1 Heat Exchanger 9	2 Tier/NOx 8	3 AFUE/NOx 7	4 Heating Stages M	5 Major Series B	6, 7 Cooling Capacity (CFM) 42	8 - 10 Heat Input 060	11 Motor Type C	12 - 13 Width 17	14 Voltage (1-phase) A	15 Un-used -	16 Minor Series A
8 = 80% 9 = 90+%	0 = Base 1 = Legacy Line 2 = Preferred 3 = Ultra Low Nox 8 = Evolution	0 = 80% 1 = 80% Low Nox ---- 2 = 92% 5 = 95% 6 = 96% 7 = 97% 8 = 98%	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	026 = 26,000 BTU/h 040 = 40,000 BTU/h 060 = 60,000 BTU/h ---	C = Comm. Variable-Speed Constant Airflow (VCA) ECM E = Fixed-Speeds Constant Torque (FCT) ECM V = Variable-Speed Constant Torque (VCT) ECM	14 = 14.2" 17 = 17.5" 21 = 21.0" 24 = 24.5"	A = 110V/60Hz B = 230V/50Hz	-	A B C ---

A190404

For California Residents:

For installation in SCAQMD only: This furnace does not meet the SCAQMD Rule 1111 14 ng/J NOx emission limit, and thus is subject to a mitigation fee of up to \$450. This furnace is not eligible for the Clean Air Furnace Rebate Program: [www.CleanAirFurnaceRebate.com](http://www.CleanAirFurnaceRebate.com)

## FURNACE COMPONENTS



A190086

**NOTE:** The furnaces are factory shipped for use with natural gas. These furnaces can be field-converted for propane gas with a factory-authorized and listed accessory conversion kit.

## ACCESSORIES

DESCRIPTION	PART NO.	36045V14	48045V17	48070V17	60070V21	60090V21	60090V24	66110V24
Bottom Return Filter Rack*	FHG1425-2	X						
	FHG1625-2		X	X				
	FHG2025-2				X	X		
	FHG2424-2						X	X
Unframed Washable Filter 3/4-in. (19 mm)*	325531-402	X	X	X				
	325531-403				X	X		
	325531-404						X	X
Flue Extension	KGAFE0112UPH	X	X	X	X	X	X	X
Combustible Floor Base	KGASB0201ALL	X	X	X	X	X	X	X
Downflow Vent Guard	KGBVG0101DFG	X	X	X	X	X	X	X
Vent Extension Kit	KGAVE0101DNH	X	X	X	X	X	X	X
Chimney Adapter Kit	KGACA02014FC	X	X	X	X	X	X	X
Natural-to-Propane Conversion Kit†	AGAGC8NPS01A	X	X	X	X	X	X	X
Propane-to-Natural Conversion Kit†	AGAGC8PNS01A	X	X	X	X	X	X	X

\* Purchased through Replacement Components

† Factory-authorized and field installed. Fuel conversion kits are CSA (formerly AGA/CGA) recognized

X Accessory available

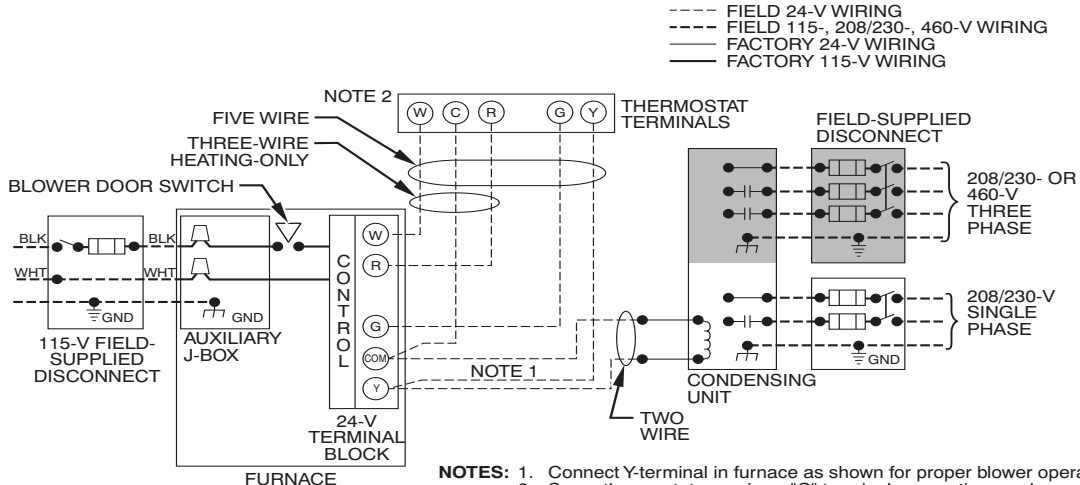
ORIFICES		
Gas Orifice	LH32DB207	See Installation Instructions for model, altitude, and heat value usages.
	LH32DB202	
	LH32DB200	
	LH32DB205	
	LH32DB208	
	LH32DB078	
	LH32DB076	
	LH32DB203	
	LH32DB201	
	LH32DB206	
	LH32DB209	
	LH32DB210	

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

Bryant has a wide variety of thermostats for your system, please visit [www.Bryant.com](http://www.Bryant.com) to see all thermostat and IAQ products.

DESCRIPTION	ACCESSORY	14"	17"	21"	24"
Bryant Carbon Monoxide Alarm (10 pack)	COALMBBNRB02-A10	X	X	X	X
Bryant Evolution Air Purifier - 16x25 (407x635 mm)	DGAPAXX1625	X	X		
Bryant Evolution Air Purifier - 20x25 (508x635 mm)	DGAPAXX2025			X	X
Bryant Evolution Air Purifier Repl. Filter- 16x25 (407x635 mm)	GAPBBCAR1625-A05	X	X		
Bryant Evolution Air Purifier Repl. Filter- 20x25 (508x635 mm)	GAPBBCAR2025-A05			X	X
Cartridge Media Filter - 16" (407 mm) (MERV 11)	FILXXCAR0116	X	X		
Cartridge Media Filter - 16" (407 mm) (MERV 8)	FILXXCAR0016	X	X		
Cartridge Media Filter - 20" (508 mm) (MERV 8)	FILXXCAR0020			X	
Cartridge Media Filter - 20" (508 mm) (MERV11)	FILXXCAR0120			X	
Cartridge Media Filter - 24" (610 mm) (MERV 8)	FILXXCAR0024				X
Cartridge Media Filter - 24" (610 mm) (MERV11)	FILXXCAR0124				X
EZ Flex Cabinet Side or Bottom - 16"	EZXCAB--0016	X	X		
EZ Flex Cabinet Side or Bottom - 20"	EZXCAB--0020			X	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 Replacement Filters 24" MERV 10	EXPXXFIL0024				X
EZ Flex Replacement Filters 24" MERV 13	EXPXXFIL0324				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	
EZ-Flex Filter with End Caps - 24" (610 mm) (MERV 10)	EXPXXUNV0024				X
EZ-Flex Filter with End Caps - 24" (610 mm) (MERV 13)	EXPXXUNV0324				X
Media Filter Cabinet - 20"	FILCABXL0020			X	
Media Filter Cabinet - 24"	FILCABXL0024				X
Media Filter Cabinet - 16"	FILCABXL0016	X	X		

# TYPICAL WIRING SCHEMATIC



A190079

# AIR DELIVERY

## Air Delivery - CFM (With Filter)\*

COOLING <sup>4</sup> AND HEATING AIR DELIVERY - CFM (Bottom Return <sup>5</sup> with Filter)													
(SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)													
Unit Size: 36045V14	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1175	1140	1105	1075	1040	1015	980	945	910	875
Cooling (SW2-8,7,6)	OFF	OFF	ON	610	560	500	440	380	See Note 4				
	OFF	ON	OFF	805	760	720	670	625	575	530	485	See Note 4	
	OFF	ON	ON	1010	970	930	895	860	825	785	745	705	665
	ON	OFF	OFF	1175	1140	1105	1075	1040	1015	980	945	910	875
	ON	OFF	ON	1345	1310	1280	1250	1220	1190	1165	1140	1095	1015
	ON	ON	OFF	1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
	ON	ON	ON	1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
Maximum Clg Airflow <sup>2</sup>				1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
CF Switches	SW2-5	SW2-4	SW2-3	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Low-Clg Default:	OFF	OFF	OFF	610	560	500	440	380	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	610	560	500	440	380	See Note 4				
	OFF	ON	OFF	805	760	720	670	625	575	530	485	See Note 4	
	OFF	ON	ON	1010	970	930	895	860	825	785	745	705	665
	ON	OFF	OFF	1175	1140	1105	1075	1040	1015	980	945	910	875
	ON	OFF	ON	1345	1310	1280	1250	1220	1190	1165	1140	1095	1015
	ON	ON	OFF	1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
	ON	ON	ON	1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
Cont. Fan Default:	OFF	OFF	OFF	610	560	500	440	380	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	610	560	500	440	380	See Note 4				
	OFF	ON	OFF	805	760	720	670	625	575	530	485	See Note 4	
	OFF	ON	ON	1010	970	930	895	860	825	785	745	705	665
	ON	OFF	OFF	1010	970	930	895	860	825	785	745	705	665
	ON	OFF	ON	1010	970	930	895	860	825	785	745	705	665
	ON	ON	OFF	1010	970	930	895	860	825	785	745	705	665
	ON	ON	ON	1010	970	930	895	860	825	785	745	705	665
Heating (SW1)	Heat Airflow <sup>3</sup>			870	825	785	745	700	655	615	570	530	480

**Air Delivery - CFM (With Filter)\* (Continued)**

<b>COOLING<sup>4</sup> AND HEATING AIR DELIVERY - CFM (Bottom Return<sup>5</sup> with Filter)</b>													
<b>(SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)</b>													
<b>Unit Size: 48045V17</b>	<b>Clg/CF Switch settings</b>			<b>External Static Pressure (ESP)</b>									
<b>Clg Switches:</b>	<b>SW2-8</b>	<b>SW2-7</b>	<b>SW2-6</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Clg Default:	OFF	OFF	OFF	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
Cooling (SW2-8,7,6)	OFF	OFF	ON	655	590	530	465	390	335	See Note 4			
	OFF	ON	OFF	825	770	715	665	615	560	495	445	395	350
	OFF	ON	ON	1025	980	940	895	850	810	765	725	680	630
	ON	OFF	OFF	1200	1160	1125	1085	1050	1010	975	935	900	860
	ON	OFF	ON	1385	1350	1320	1285	1250	1215	1180	1145	1110	1030
	ON	ON	OFF	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
	ON	ON	ON	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
Maximum Clg Airflow <sup>2</sup>			1525	1490	1445	1400	1350	1300	1250	1200	1140	1035	
<b>CF Switches</b>	<b>SW2-5</b>	<b>SW2-4</b>	<b>SW2-3</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Low-Clg Default:	OFF	OFF	OFF	655	590	530	465	390	335	See Note 4			
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	655	590	530	465	390	335	See Note 4			
	OFF	ON	OFF	825	770	715	665	615	560	495	445	395	350
	OFF	ON	ON	1025	980	940	895	850	810	765	725	680	630
	ON	OFF	OFF	1200	1160	1125	1085	1050	1010	975	935	900	860
	ON	OFF	ON	1385	1350	1320	1285	1250	1215	1180	1145	1110	1030
	ON	ON	OFF	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
	ON	ON	ON	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
Cont. Fan Default:	OFF	OFF	OFF	655	590	530	465	390	335	See Note 4			
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	655	590	530	465	390	335	See Note 4			
	OFF	ON	OFF	825	770	715	665	615	560	495	445	395	350
	OFF	ON	ON	1025	980	940	895	850	810	765	725	680	630
	ON	OFF	OFF	1025	980	940	895	850	810	765	725	680	630
	ON	OFF	ON	1025	980	940	895	850	810	765	725	680	630
	ON	ON	OFF	1025	980	940	895	850	810	765	725	680	630
	ON	ON	ON	1025	980	940	895	850	810	765	725	680	630
Heating (SW1)	Heat Airflow <sup>3</sup>			925	875	830	780	735	685	635	590	540	490
<b>Unit Size: 48070V17</b>													
<b>Clg Switches:</b>	<b>SW2-8</b>	<b>SW2-7</b>	<b>SW2-6</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Clg Default:	OFF	OFF	OFF	1595	1560	1520	1485	1445	1410	1375	1335	1300	1265
Cooling (SW2-8,7,6)	OFF	OFF	ON	660	585	515	445	370	See Note 4				
	OFF	ON	OFF	825	765	705	645	590	530	470	410	365	310
	OFF	ON	ON	1025	970	915	860	810	760	705	640	585	530
	ON	OFF	OFF	1225	1180	1135	1085	1040	995	950	910	865	820
	ON	OFF	ON	1390	1350	1305	1265	1225	1180	1140	1100	1060	1020
	ON	ON	OFF	1595	1560	1520	1485	1445	1410	1375	1335	1300	1265
	ON	ON	ON	1855	1815	1785	1750	1720	1675	1625	1575	1525	1475
Maximum Clg Airflow <sup>2</sup>			1855	1815	1785	1750	1720	1675	1625	1575	1525	1475	
<b>CF Switches</b>	<b>SW2-5</b>	<b>SW2-4</b>	<b>SW2-3</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Low-Clg Default:	OFF	OFF	OFF	660	585	515	445	370	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	660	585	515	445	370	See Note 4				
	OFF	ON	OFF	825	765	705	645	590	530	470	410	365	310
	OFF	ON	ON	1025	970	915	860	810	760	705	640	585	530
	ON	OFF	OFF	1225	1180	1135	1085	1040	995	950	910	865	820
	ON	OFF	ON	1390	1350	1305	1265	1225	1180	1140	1100	1060	1020
	ON	ON	OFF	1595	1560	1520	1485	1445	1410	1375	1335	1300	1265
	ON	ON	ON	1855	1815	1785	1750	1720	1675	1625	1575	1525	1475
Cont. Fan Default:	OFF	OFF	OFF	660	585	515	445	370	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	660	585	515	445	370	See Note 4				
	OFF	ON	OFF	825	765	705	645	590	530	470	410	365	310
	OFF	ON	ON	1025	970	915	860	810	760	705	640	585	530
	ON	OFF	OFF	1025	970	915	860	810	760	705	640	585	530
	ON	OFF	ON	1025	970	915	860	810	760	705	640	585	530
	ON	ON	OFF	1025	970	915	860	810	760	705	640	585	530
	ON	ON	ON	1025	970	915	860	810	760	705	640	585	530
Heating (SW1)	Heat Airflow <sup>3</sup>			1395	1350	1310	1270	1230	1185	1145	1105	1065	1025

**Air Delivery - CFM (With Filter)\* (Continued)**

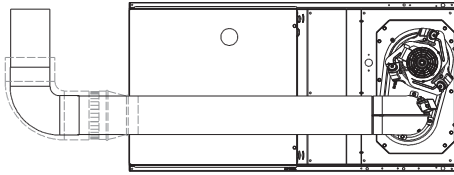
<b>COOLING<sup>4</sup> AND HEATING AIR DELIVERY - CFM (Bottom Return<sup>5</sup> with Filter)</b>													
<b>(SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)</b>													
<b>Unit Size: 60070V21</b>	<b>Clg/CF Switch settings</b>			<b>External Static Pressure (ESP)</b>									
<b>Clg Switches:</b>	<b>SW2-8</b>	<b>SW2-7</b>	<b>SW2-6</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Clg Default:	OFF	OFF	OFF	1930	1895	1855	1815	1775	1740	1700	1665	1630	1595
Cooling (SW2-8,7,6)	OFF	OFF	ON	810	735	660	585	505	See Note 4				
	OFF	ON	OFF	1010	945	885	820	760	695	625	565	510	455
	OFF	ON	ON	1205	1150	1090	1040	985	930	875	820	760	705
	ON	OFF	OFF	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
	ON	OFF	ON	1580	1540	1495	1445	1405	1360	1320	1275	1235	1190
	ON	ON	OFF	1930	1895	1855	1815	1775	1740	1700	1665	1630	1595
	ON	ON	ON	2245	2195	2145	2095	2045	1995	1935	1885	1835	1785
	Maximum Clg Airflow <sup>2</sup>			2245	2195	2145	2095	2045	1995	1935	1885	1835	1785
<b>CF Switches</b>	<b>SW2-5</b>	<b>SW2-4</b>	<b>SW2-3</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Low-Clg Default:	OFF	OFF	OFF	810	735	660	585	505	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	585	490	See Note 4							
	OFF	ON	OFF	810	735	660	585	505	See Note 4				
	OFF	ON	ON	1010	945	885	820	760	695	625	565	510	455
	ON	OFF	OFF	1205	1150	1090	1040	985	930	875	820	760	705
	ON	OFF	ON	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
	ON	ON	OFF	1580	1540	1495	1445	1405	1360	1320	1275	1235	1190
	ON	ON	ON	1930	1895	1855	1815	1775	1740	1700	1665	1630	1595
Cont. Fan Default:	OFF	OFF	OFF	810	735	660	585	505	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	585	490	See Note 4							
	OFF	ON	OFF	810	735	660	585	505	See Note 4				
	OFF	ON	ON	1010	945	885	820	760	695	625	565	510	455
	ON	OFF	OFF	1205	1150	1090	1040	985	930	875	820	760	705
	ON	OFF	ON	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
	ON	ON	OFF	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
	ON	ON	ON	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
Heating (SW1)	Heat Airflow <sup>3</sup>			1435	1385	1335	1290	1245	1195	1145	1100	1050	1000
<b>Unit Size: 60090V21</b>													
<b>Clg Switches:</b>	<b>SW2-8</b>	<b>SW2-7</b>	<b>SW2-6</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Clg Default:	OFF	OFF	OFF	1985	1935	1885	1835	1785	1735	1685	1630	1583	1532
Cooling (SW2-8,7,6)	OFF	OFF	ON	860	755	650	545	445	See Note 4				
	OFF	ON	OFF	1085	1000	910	830	735	655	565	485	405	310
	OFF	ON	ON	1255	1180	1105	1025	950	870	790	715	640	570
	ON	OFF	OFF	1425	1355	1290	1220	1150	1085	1015	940	870	800
	ON	OFF	ON	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
	ON	ON	OFF	1985	1935	1885	1835	1785	1735	1685	1630	1583	1532
	ON	ON	ON	2100	2055	2010	1960	1915	1870	1820	1775	1715	1640
	Maximum Clg Airflow <sup>2</sup>			2100	2055	2010	1960	1915	1870	1820	1775	1715	1640
<b>CF Switches</b>	<b>SW2-5</b>	<b>SW2-4</b>	<b>SW2-3</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	700	575	See Note 4							
	OFF	ON	OFF	860	755	650	545	445	See Note 4				
	OFF	ON	ON	1085	1000	910	830	735	655	565	485	405	310
	ON	OFF	OFF	1255	1180	1105	1025	950	870	790	715	640	570
	ON	OFF	ON	1425	1355	1290	1220	1150	1085	1015	940	870	800
	ON	ON	OFF	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
	ON	ON	ON	1985	1935	1885	1835	1785	1735	1685	1630	1583	1532
Cont. Fan Default:	OFF	OFF	OFF	860	755	650	545	445	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	700	575	See Note 4							
	OFF	ON	OFF	860	755	650	545	445	See Note 4				
	OFF	ON	ON	1085	1000	910	830	735	655	565	485	405	310
	ON	OFF	OFF	1255	1180	1105	1025	950	870	790	715	640	570
	ON	OFF	ON	1425	1355	1290	1220	1150	1085	1015	940	870	800
	ON	ON	OFF	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
	ON	ON	ON	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
Heating (SW1)	Heat Airflow <sup>3</sup>			1830	1775	1725	1675	1625	1570	1520	1465	1410	1360

**Air Delivery - CFM (With Filter)\* (Continued)**

<b>COOLING<sup>4</sup> AND HEATING AIR DELIVERY - CFM (Bottom Return<sup>5</sup> with Filter)</b>													
<b>(SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)</b>													
<b>Unit Size: 60090V24</b>	<b>Clg/CF Switch settings</b>			<b>External Static Pressure (ESP)</b>									
<b>Clg Switches:</b>	<b>SW2-8</b>	<b>SW2-7</b>	<b>SW2-6</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Clg Default:	OFF	OFF	OFF	1970	1915	1865	1815	1765	1715	1660	1605	1545	1485
Cooling (SW2-8,7,6)	OFF	OFF	ON	980	885	770	675	585	See Note 4				
	OFF	ON	OFF	1115	1030	930	840	755	670	575	510	415	330
	OFF	ON	ON	1280	1205	1130	1045	960	885	810	740	670	595
	ON	OFF	OFF	1450	1380	1315	1250	1165	1090	1020	955	890	825
	ON	OFF	ON	1630	1570	1510	1450	1385	1320	1250	1185	1125	1070
	ON	ON	OFF	1970	1915	1865	1815	1765	1715	1660	1605	1545	1485
	ON	ON	ON	2135	2090	2035	1990	1940	1895	1850	1795	1745	1690
	Maximum Clg Airflow <sup>2</sup>			2175	2125	2080	2030	1980	1935	1890	1840	1795	1735
<b>CF Switches</b>	<b>SW2-5</b>	<b>SW2-4</b>	<b>SW2-3</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Low-Clg Default:	OFF	OFF	OFF	980	885	770	675	585	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	790	670	See Note 4							
	OFF	ON	OFF	980	885	770	675	585	See Note 4				
	OFF	ON	ON	1115	1030	930	840	755	670	575	510	415	330
	ON	OFF	OFF	1280	1205	1130	1045	960	885	810	740	670	595
	ON	OFF	ON	1450	1380	1315	1250	1165	1090	1020	955	890	825
	ON	ON	OFF	1630	1570	1510	1450	1385	1320	1250	1185	1125	1070
	ON	ON	ON	1970	1915	1865	1815	1765	1715	1660	1605	1545	1485
Cont. Fan Default:	OFF	OFF	OFF	980	885	770	675	585	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	790	670	See Note 4							
	OFF	ON	OFF	980	885	770	675	585	See Note 4				
	OFF	ON	ON	1115	1030	930	840	755	670	575	510	415	330
	ON	OFF	OFF	1280	1205	1130	1045	960	885	810	740	670	595
	ON	OFF	ON	1450	1380	1315	1250	1165	1090	1020	955	890	825
	ON	ON	OFF	1630	1570	1510	1450	1385	1320	1250	1185	1125	1070
	ON	ON	ON	1630	1570	1510	1450	1385	1320	1250	1185	1125	1070
Heating (SW1)	Heat Airflow <sup>3</sup>			1740	1680	1625	1570	1510	1445	1385	1325	1265	1205
<b>Unit Size: 66110V24</b>													
<b>Clg Switches:</b>	<b>SW2-8</b>	<b>SW2-7</b>	<b>SW2-6</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Clg Default:	OFF	OFF	OFF	2040	1980	1920	1865	1805	1750	1700	1640	1575	1525
Cooling (SW2-8,7,6)	OFF	OFF	ON	910	795	690	580	495	See Note 4				
	OFF	ON	OFF	1140	1050	955	865	775	See Note 4				
	OFF	ON	ON	1305	1220	1140	1055	975	895	815	745	680	605
	ON	OFF	OFF	1480	1405	1325	1255	1180	1105	1035	975	895	830
	ON	OFF	ON	1680	1610	1540	1475	1415	1345	1275	1215	1150	1095
	ON	ON	OFF	2040	1980	1920	1865	1805	1750	1700	1640	1575	1525
	ON	ON	ON	2280	2230	2175	2125	2075	2025	1980	1930	1880	1830
	Maximum Clg Airflow <sup>2</sup>			2485	2430	2380	2330	2280	2230	2185	2140	2090	2030
<b>CF Switches</b>	<b>SW2-5</b>	<b>SW2-4</b>	<b>SW2-3</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Low-Clg Default:	OFF	OFF	OFF	910	795	690	580	495	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	730	665	See Note 4							
	OFF	ON	OFF	910	795	690	580	495	See Note 4				
	OFF	ON	ON	1140	1050	955	865	775	See Note 4				
	ON	OFF	OFF	1305	1220	1140	1055	975	895	815	745	680	605
	ON	OFF	ON	1480	1405	1325	1255	1180	1105	1035	975	895	830
	ON	ON	OFF	1680	1610	1540	1475	1415	1345	1275	1215	1150	1095
	ON	ON	ON	2040	1980	1920	1865	1805	1750	1700	1640	1575	1525
Cont. Fan Default:	OFF	OFF	OFF	910	795	690	580	495	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	730	665	See Note 4							
	OFF	ON	OFF	910	795	690	580	495	See Note 4				
	OFF	ON	ON	1140	1050	955	865	775	See Note 4				
	ON	OFF	OFF	1305	1220	1140	1055	975	895	815	745	680	605
	ON	OFF	ON	1480	1405	1325	1255	1180	1105	1035	975	895	830
	ON	ON	OFF	1480	1405	1325	1255	1180	1105	1035	975	895	830
	ON	ON	ON	1480	1405	1325	1255	1180	1105	1035	975	895	830
Heating (SW1)	Heat Airflow <sup>3</sup>			2120	2065	2005	1950	1895	1845	1790	1735	1680	1625



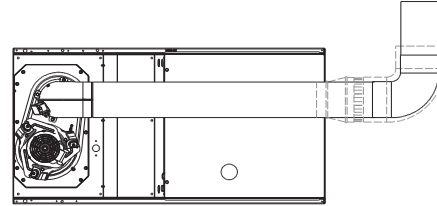
1. Nominal 350 CFM/ton cooling airflow is delivered with SW1-5 and SW2-2 set to OFF.  
 Set both SW1-5 and SW2-2 to ON for +7% airflow (nominal 370 CFM/ton).  
 Set SW1-5 to ON and SW2-2 to OFF for +15% airflow (nominal 400 CFM/ton).  
 Set SW2-2 to ON and SW1-5 to OFF for -7% airflow (nominal 325 CFM/ton).  
 The above adjustments in airflow are subject to motor horsepower range/capacity.  
 This applies to Cooling and Low-Cooling airflow, but does not affect continuous fan airflow.
2. Maximum cooling airflow is achieved when switches SW2-6, SW2-7, SW2-8 and SW1-5 are set to ON, and SW2-2 is set to OFF.
3. All heating CFM's are when comfort/efficiency adjustment switch (SW1-4) is set to OFF
4. Ductwork must be sized for heating CFM within the operational range of ESP. Operation within blank areas of the chart is not recommended because heat operation will be above 1.0 ESP.
5. All airflows on 21" casing size furnaces are 5% less on side return only installations.
6. Side returns for 24.5" casing sizes require two sides, or side and bottom, to allow sufficient airflow at the return of the furnace.
7. Airflows over 1800 CFM require bottom return, two-side return, or bottom and side return or excessive watt draw may result. A minimum filter size of 20x25" (508 x 635 mm) is required.



SEE NOTES: 1,2,4,5,7,8,9

HORIZONTAL RIGHT

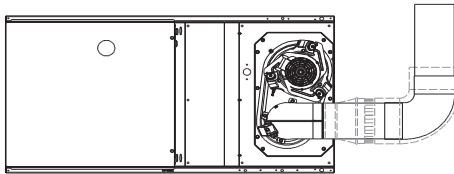
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SEE NOTES: 1,2,4,5,7,8,9

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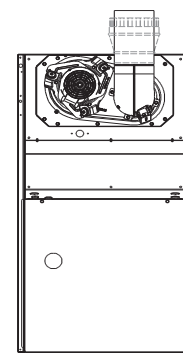
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SEE NOTES: 1,2,4,7,8,9

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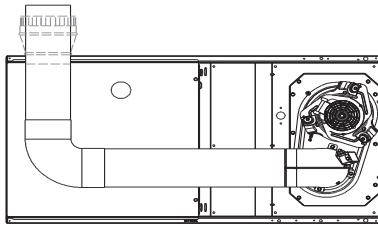
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SEE NOTES: 1,2,4,7,8,9

UPFLOW

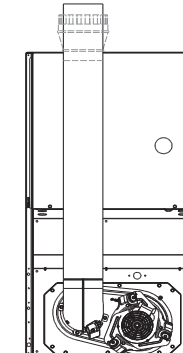
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SEE NOTES: 1,2,4,5,7,8,9

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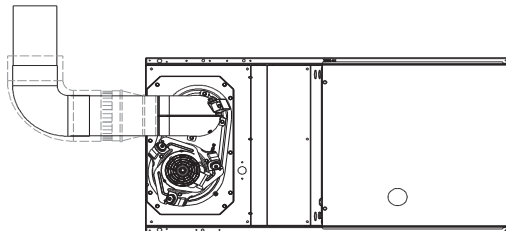
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SEE NOTES: 1,2,4,5,7,8,9

DOWNFLOW

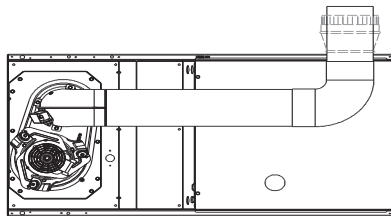
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SEE NOTES: 1,2,4,7,8,9

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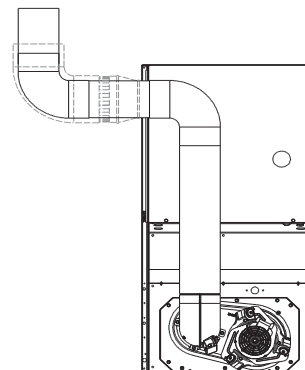
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SEE NOTES: 1,2,4,5,7,8,9

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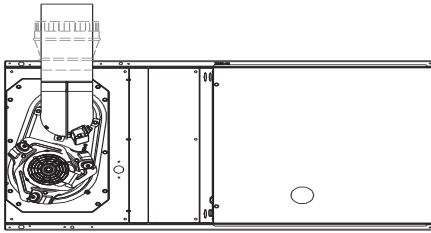
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SEE NOTES: 1,2,3,4,5,7,8,9

DOWNFLOW

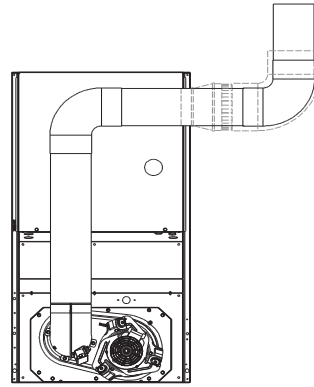
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SEE NOTES: 1,2,4,5,7,8,9

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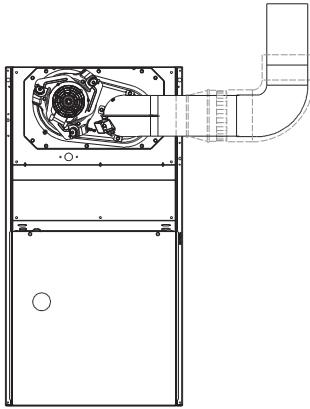
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SEE NOTES: 1,2,3,4,7,8,9

DOWNFLOW

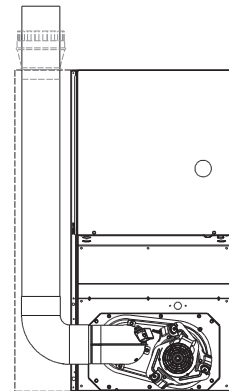
A02063



SEE NOTES: 1,2,3,4,7,8,9

UPFLOW

A02059



SEE NOTES: 1,2,4,5,6,7,8,9

DOWNFLOW

A02062

## VENTING NOTES

1. For common vent, vent connector sizing and vent material: United States, latest edition of the National Fuel Gas Code (NFGC), ANSI Z223.1/NFPA 54.
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 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. Chimney Adapter Kit required for exterior masonry chimney applications. Refer to Chimney Adapter Kits for sizing and complete application details.
8. Secure vent connector to furnace elbow with (2) corrosion-resistant sheet metal screws, space approximately 180 apart.
9. Secure all other single wall vent connector joints with (3) corrosion-resistant screws spaced approximately 120 apart. Secure Type B vent connectors per vent connector manufacturer's recommendations.



## GUIDE SPECIFICATIONS

### Gas Furnace

#### 820SA/821SA

#### General

#### SYSTEM DESCRIPTION

Furnish a \_\_\_\_\_ fixed capacity gas-fired furnace for use with natural gas or propane (factory authorized conversion kit required for propane); 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 shall 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)

Warranty certificate available upon request.

#### 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 igniter, pressure switch assembly, flame rollout 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 have variable speed from 600-1200 RPM operating only when motor inputs are provided. Blower motor shall be direct drive and soft mounted to the blower housing to reduce vibration transmission.

#### Filters

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

#### Casing

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

#### Inducer Motor

Inducer motor shall be soft mounted to reduce vibration transmission.

#### 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.

#### Heat Exchangers

Heat exchangers shall be a 4-Pass 20 gage aluminized steel of fold-and-crimp sectional design when applied operating under negative pressure.

#### Controls

Control shall include a micro-processor based integrated electronic control board with at least 11 service troubleshooting codes displayed via enhanced flashing LED diagnostic light on the control, a self-test feature that checks all major functions of the furnace within one minute, and a non-volatile memory replaceable automotive-type circuit protection fuse. Multiple operational settings available including, separate blower speeds for heating, cooling and continuous fan. Continuous fan speed may be adjusted from the thermostat. Cooling airflow will be selectable between 350 or 400 CFM per ton of air conditioning.

#### 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. (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 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.