

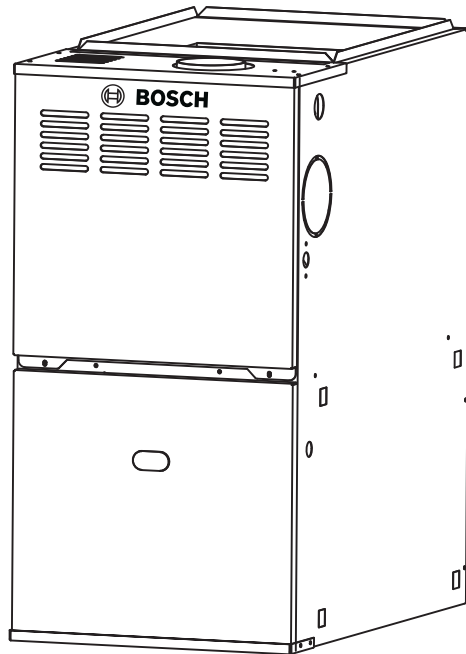
# Bosch 80% AFUE Gas Furnace BGS80 Model

Engineering  
Submittal  
Sheet



# BOSCH

## Overview and Certifications



## Product Features

### Standard Features

- ▶ 50, 80, 100, 120 kBtu/hr offerings
- ▶ Single-stage gas valve
- ▶ Fixed-speed (4 speed – High, Mid-High, Mid-low, Low) PSC circulating blower motor
- ▶ Single speed, PSC inducer motor
- ▶ Rotatable inducer motor for horizontal, upflow, and down-flow applications
- ▶ Aluminized steel tubular heat exchanger
- ▶ Hot surface ignitor
- ▶ All units come with conversion kit for propane gas (LP)
- ▶ Low profile (33.75") cabinet
- ▶ LED fault diagnostics for quick and easy troubleshooting
- ▶ Fully compatible with Bosch outdoor units (BOVA models) and cased coils (BMAC models).
- ▶ AHRI certified; ETL listed

Product Features continued..

**Cabinet Features**

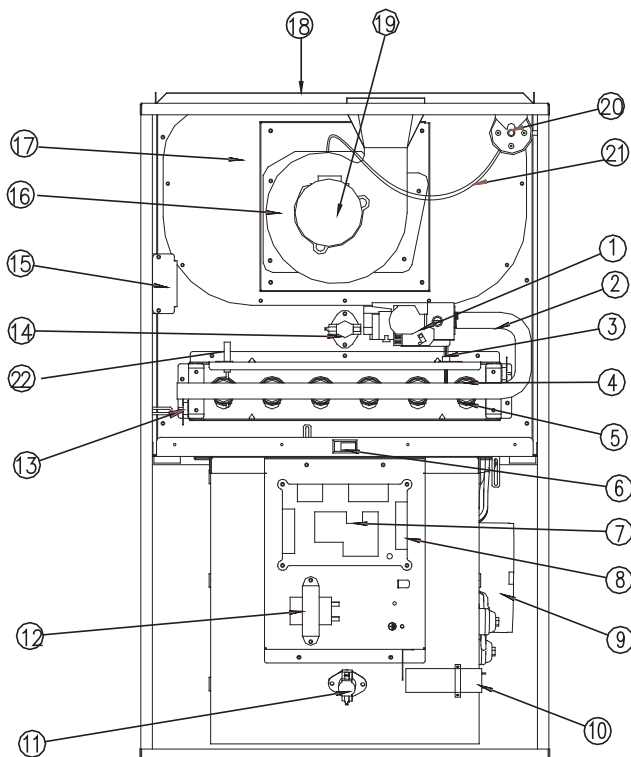
- ▶ Anti-rust: Painted, galvanized, 21 gauge steel cabinet, passes 500 hours salt spray test
- ▶ Low noise: Fully insulated (fiberglass insulation) design helps to minimize indoor noise level
- ▶ 4-way Multipoise Design:
  - Upflow (side or bottom return)
  - Downflow
  - Horizontal

**Warranty\***

All models installed in one or two family residential dwellings come standard with a 5 year limited warranty on parts and a 20 year limited warranty on the heat exchanger. With registration of the product on [bosch-climate.us](http://bosch-climate.us), the 5 year limited warranty on parts shall be upgraded to 10 years. Furnaces installed in applications other than one or two family residential dwellings will qualify for a 1 year limited warranty on parts and a 10 year limited warranty on the heat exchanger.

\* For complete Warranty details please see: <https://www.bosch-climate.us/support-center/product-warranty-library/gas-furnace-warranty.html>

**Key Components**

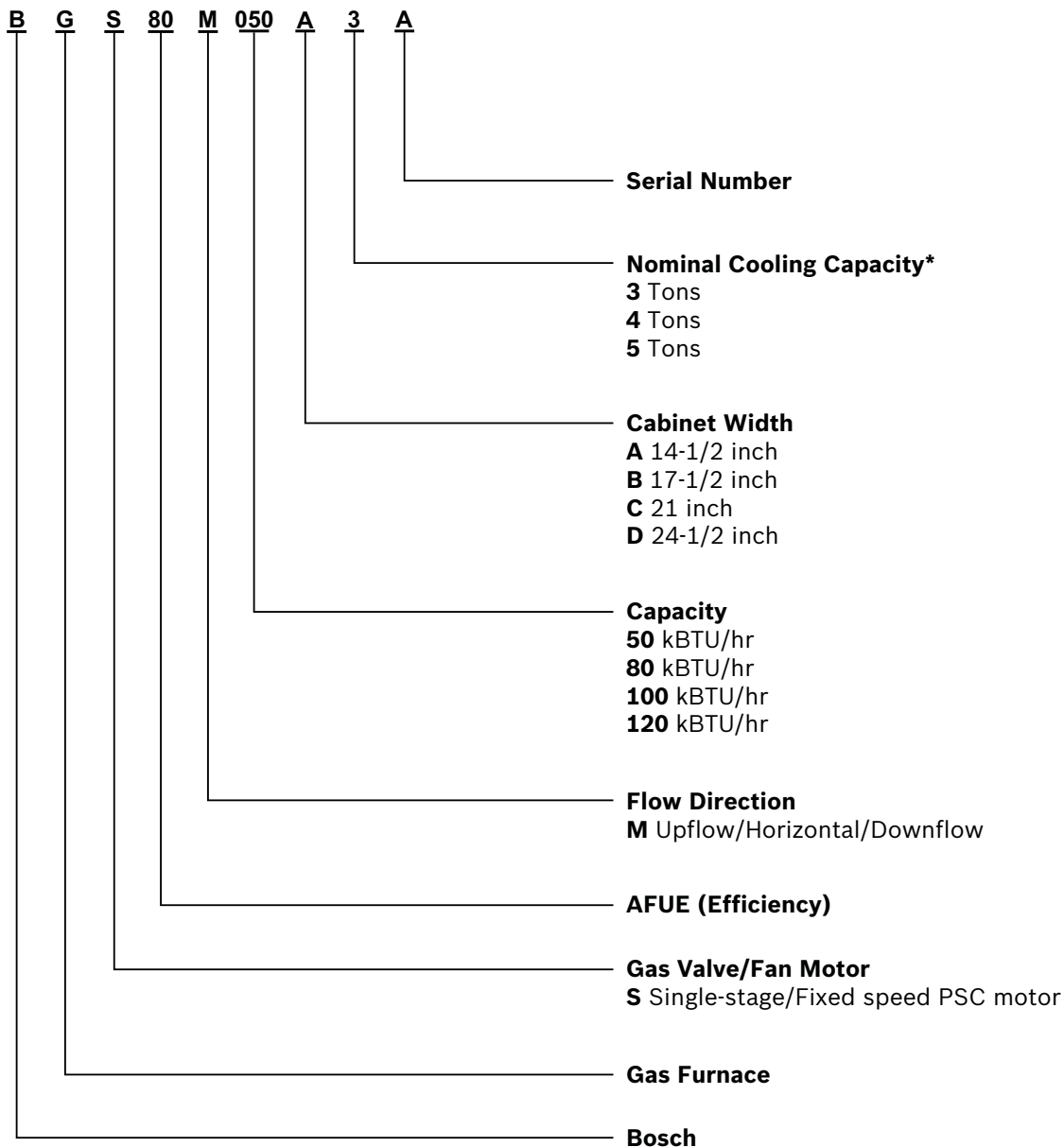


**COMPONENT IDENTIFICATION:**

1. Single Stage Gas Valve
2. Gas Manifold
3. Mini Igniter
4. Natural/Propane Gas Orifice
5. Burner
6. Door Switch
7. Integrated Control Module
8. 24 Volt Thermostat Connections
9. Blower
10. Capacitor
11. Fan Mounted Limit Switch
12. Transformer
13. Rollout Switch - Resettable
14. Chamber Limit Switch - Fixed
15. Junction Box
16. Induced Draft Blower
17. Flue Collector Box
18. Heat Exchanger
19. Blower Wheel
20. Pressure Switch
21. Pressure Switch Hose
22. Flame Sensor

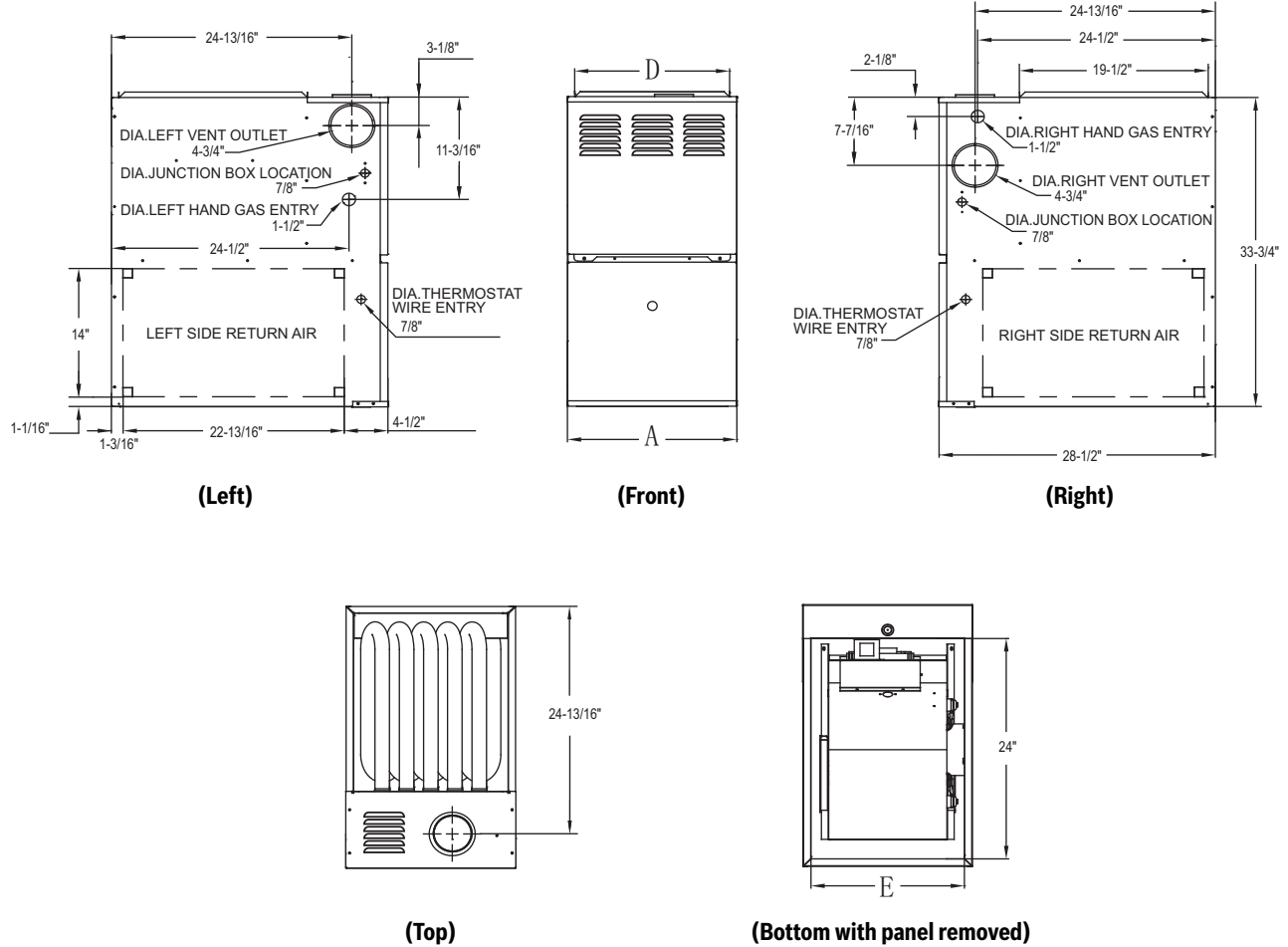


**Model Nomenclature**



\* Nominal 350-400 CFM per 12,000 BTU/hr

**Dimensions and Connections**



Furnace Model	"A" Cabinet Width	"D" Supply- Air Width	"E" Return- Air Width
BGS80M050A3A	14.5	13	12-27/32
BGS80M080B4A	17.5	16	15-27/32
BGS80M100C5A	21	19.5	19-13/32
BGS80M120D5A	24.5	23	22-27/32

Dimensions in inches

# Bosch 80% AFUE Gas Furnace BGS80 Model



Technical Specifications							
Description		Unit	BGS80M050A3A	BGS80M080B4A	BGS80M100C5A	BGS80M120D5A	
Basic Product Information	Bosch Part Number		–	7738006442	7738006443	7738006444	7738006445
	Fuel Type		–	Natural Gas/ Propane Gas	Natural Gas/ Propane Gas	Natural Gas/ Propane Gas	Natural Gas/ Propane Gas
Gas Heating Performance	AFUE		%	80	80	80	80
	Input	Natural Gas	Btu/h	50000	80000	100000	120000
		Propane Gas (LP)	Btu/h	46000	80000	92000	115000
	Output	Natural Gas	Btu/h	40000	64000	80000	96000
		Propane Gas (LP)	Btu/h	36800	64000	73600	92000
	Air Temperature Rise		°F	25-55	30-60	30-60	35-65
Design Max. Outlet Air Temperature		°F	155	160	160	165	
Static Pressure	Certified EXT static pressure	Heating		0.1	0.15	0.2	0.2
		Cooling		0.5	0.5	0.5	0.5
Circulating Blower Data	Circulating Blower	Type	–	Centrifugal fan			
		Diameter blower wheel	Inch	11-1/5			
		Height blower wheel	Inch	6-1/7	9-2/3	11-1/5	11-1/5
	Tons AC @ 0.5" ESP		tons	1.5/2/2.5/3	2.5/3/3.5/4	3/3.5/4/5	3/3.5/4/5
	Circulating Fan Motor	Motor Model	–	YDK250-6F	YDK365-6F	YDK550-6F	YDK550-6F
	Circulating Fan Motor	Motor Horsepower	HP	1/3	1/2	3/4	3/4
	Air Flow (0.5 ESP in. WC)	High	CFM	1260	1580	1810	1980
	Air Flow (0.5 ESP in. WC)	Mid-High	CFM	1030	1430	1520	1610
	Air Flow (0.5 ESP in. WC)	Mid-Low	CFM	960	1240	1380	1430
	Air Flow (0.5 ESP in. WC)	Low	CFM	670	1020	1250	1280
	Motor Speeds		# speeds	4 (fixed speed)			
		settings	High/Med-High/Med-Low/Low				
		rpm	1065/910/840/630	1060/960/850/725	1040/830/760/680	1040/830/760/680	
Combustion System Specifications	Max. Inlet Gas Press	Natural Gas	in. WC	10.5			
		Propane Gas (LP)	in. WC	13			
	Min. Inlet Gas Press	Natural Gas	in. WC	5			
		Propane Gas (LP)	in. WC	11			
	Natural Gas Working Pressure		in. WC	4.3-4.7	3.6-4.0	4.0-4.4	4.3-4.7
	Propane Gas Working Pressure		in. WC	9.7-10.3			
	Number of Burners		#	3	5	6	7
	Natural Gas Factory Orifice (0-2000 ft)		#	49			
	Propane Gas (LP) Factory Orifice (0-2000 ft)		#	57			
	Gas Connection Size		in. NPT	1/2			
	Igniton Device		–	Hot surface			
	Heat exchanger Diameter		inch	1 1/2			
	Heat exchangers		# tubes	3	5	6	7
Flue Vent Diameter		Inch	4				

# Bosch 80% AFUE Gas Furnace BGS80 Model



Technical Specifications Continued							
Description		Unit	BGS80M050A3A	BGS80M080B4A	BGS80M100C5A	BGS80M120D5A	
Safety Switch Settings	Pressure Switch Factory Setting		in. WC	0.55			
	Rollout switch - resettable	Off/On	°F	250			
	Chamber Limit switch - fixed	Off/On	°F	160/130			
	Fan mounted Limit switch	Off/On	°F	120/90			
Electrical Data	Power supply		V/Hz/PH	115V/60Hz/1PH			
	Max Overcurrent Protection (MOP)*		Amps	15			
	Blower motor full load (FLA)		Amps	5.9	7.5	8.9	8.9
	Blower Capacitor		uF	25	30	50	50
	Inducer Power Input		W	<65			
Shipping Data	Packing Dimension (with pallet) (WxDxH)		Inch	(16-5/9) x (30-2/3) x (40)	(19-4/7) x (30-2/3) x (40)	(23-1/7) x (30-2/3) x (40)	(27-1/3) x (30-2/3) x (40)
	Gross Weight (with pallet)		lb	136.7	157.6	178.1	192.0

\* MOP refers to the maximum recommended fuse or breaker size.

**i** This furnace is designed for minimum continuous return-air temperature of 60°F (16°C) (DBT) or intermittent operation down to 55°F (13°C) (DBT) such as when used with a night setback thermostat. Return-air temperature must not exceed 85°F (29°C) (DBT). Failure to follow these return-air temperature limits may affect reliability of heat exchangers, motors, and controls.

**i** This furnace is not approved for installation in mobile homes, recreational vehicles, or outdoors.

**i** Maximum shipment stacking may not exceed 3 units high (120").

**i** Inlet gas supply pressures must be maintained within the ranges specified above. The supply pressure must be constant and available with all other household gas fired appliances operating. The minimum gas supply pressure must be maintained to prevent unreliable ignition. The maximum must not be exceeded to prevent unit overfiring.

AHRI 201/240 System Performance Data										
Tonnage	Outdoor Unit (Bosch BOVA Models)	Cooling Coil (Bosch BMAC Models)	Furnace model (Bosch BGS80 Series)	Heat Pump Cooling Capacity (BTU/h)			Heat Pump Heating Capacity			CFM
				Total	EER <sup>2</sup>	SEER <sup>1</sup>	Hi	HSPF <sup>3</sup>	Low <sup>4</sup>	
2	BOVA-36HDN1-M18M	BMAC2430ANTD	BGS80M050A3A	24000	11.5	14.5	24000	8.7	17200	880
3	BOVA-36HDN1-M18M	BMAC3036ANTD	BGS80M050A3A	32400	10.0	14.0	35000	8.7	22600	1000
	BOVA-36HDN1-M18M	BMAC3036BNTD	BGS80M080B4A	33000	10.0	14.0	35000	8.7	22600	1000
	BOVA-36HDN1-M18M	BMAC3036CNTD	BGS80M100C5A	33600	10.0	14.0	35000	8.7	23000	1150
4	BOVA-60HDN1-M18M	BMAC4248BNTF	BGS80M080B4A	43000	10.0	15.0	45000	9.5	30000	1250
	BOVA-60HDN1-M18M	BMAC4248CNTF	BGS80M100C5A	44000	10.0	15.0	47000	9.5	31000	1450
	BOVA-60HDN1-M18M	BMAC4248DNTF	BGS80M120D5A	44000	10.0	15.0	48000	9.5	31000	1450
5	BOVA-60HDN1-M18M	BMAC4860CNTF	BGS80M100C5A	52500	10.0	15.0	54000	9.5	35000	1450
	BOVA-60HDN1-M18M	BMAC4860DNTF	BGS80M120D5A	53000	10.0	15.0	54000	9.5	36000	1450

<sup>1</sup> Seasonal Energy Efficiency Ratio; Certified per AHRI 210/240

<sup>2</sup> Energy Efficiency Ratio; Certified per AHRI 210/240

<sup>3</sup> HSPF = Heating Seasonal Performance Factor; Certified per AHRI 210/240

<sup>4</sup> Jumper cut or dip switch off

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## Air Delivery

The duct system should be designed and sized according to accepted national standards such as those published by: Air Conditioning Contractors Association (ACCA), Sheet Metal and Air Conditioning Contractors National Association (SMACNA) or American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) or consult The Air Systems Design Guidelines reference tables available from your local distributor. The duct system should be sized to handle the required system design CFM at the design external static pressure. The furnace airflow rates are provided in the table below.

Air Delivery - CFM (Without Filter) *												
Furnace model	Return-air inlet	Speed	External static pressure (in. WC)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
BGS80M050A3A	Bottom or Sides	H	1460	1420	1370	1320	1260	1200	1120	1040	950	860
		H-M	1210	1170	1140	1090	1030	970	910	840	760	780
		**M-L	1080	1050	1010	960	960	870	810	750	670	550
		L	780	760	730	700	670	630	580	510	390	----
BGS80M080B4A	Bottom or Sides	H	1880	1810	1730	1650	1580	1500	1430	1330	1210	990
		**H-M	1680	1620	1560	1500	1430	1350	1270	1160	1020	800
		M-L	1440	1390	1340	1290	1240	1170	1080	970	810	640
		L	1190	1150	1110	1070	1020	950	870	750	640	530
BGS80M100C5A	Bottom or Sides	H	2180	2070	1960	1890	1810	1720	1620	1500	1370	1230
		**H-M	1760	1710	1660	1600	1520	1460	1360	1260	1140	1130
		M-L	1570	1540	1490	1440	1380	1310	1240	1150	1040	910
		L	1410	1370	1340	1310	1250	1200	1130	1040	940	810
BGS80M120D5A	Bottom or Sides	H	2320	2240	2160	2060	1980	1890	1780	1670	1540	1360
		**H-M	1790	1750	1700	1660	1610	1540	1460	1360	1220	1060
		M-L	1550	1520	1490	1450	1430	1360	1300	1210	1110	960
		L	1360	1350	1330	1310	1280	1220	1160	1070	960	830

\* A filter is required for each return-air inlet. Airflow performance included 3/4-inch washable filter media such as contained in field supplied accessory filter rack. To determine airflow performance with this filter, assume an additional 0.1 in. WC available external static pressure.

\*\* Manufacturer default speed tap for heating.

---- Indicates unstable operating conditions.

**i** Installation must be adjusted to obtain temperature rise as specified on the unit's rating plate.

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## Filters

Bosch does not supply filters or filter racks with furnace units. All filters must be field supplied according to the Manufacturer recommended high velocity filter sizes and specifications shown below.

Furnace cabinet width	Filter size		Filter type
	Side return	Bottom return	
14-1/2	16X25	14X25	High Velocity (600 FPM)
17-1/2	16X25	16X25	High Velocity (600 FPM)
21	16X25	20X25	High Velocity (600 FPM)
24.5	16X25	24X25	High Velocity (600 FPM)

*Dimension in inches*

## High Altitude Derating

In high altitude applications, a standard derate for altitude from National Fuel Gas Code ANSI Z223.1 of 4% per 1000 feet above sea level must be taken. Refer to the most recent version of ANSI Z223.1 for correct gas orifice based on your specific application. The orifices must be selected using the specifications listed in the table below. The furnace derate is 4% for each 1,000 feet above sea level. The table below is based upon a heating value of approximately 1,000 Btu/ft<sup>3</sup>. In some areas the gas supplier may artificially derate the gas in an effort to compensate for the effects of altitude. If the gas is artificially derated, the appropriate orifice size must be determined based upon the BTU/ft<sup>3</sup> content of the derated gas and the altitude. Refer to the latest version of NFPA54/ANSI Z223.1 and information provided by the gas supplier to determine the proper orifice size.

Input Rate KBTU/H	Number of burners	Elevation (Ft)		Elevation (Ft)		Elevation (Ft)		Elevation (Ft)		Elevation (Ft)	
		0-2000		2000-4000		4000-6000		6000-8000		8000-10000	
		NG**	LP	NG**	LP	NG**	LP	NG**	LP	NG**	LP
50	3	49	57	50	58	51	59	52	61	53	62
80	5	49	57	50	58	51	59	52	61	53	62
100	6	49	57	50	58	51	59	52	61	53	62
120	7	49	57	50	58	51	59	52	61	53	62

\* LP orifice based on 10 in. WC manifold pressure

\*\* NG denotes natural gas



The input to the furnace must be checked AFTER reorificing.



Units installed with natural gas at altitudes up to 2000 ft. above sea level may be installed without any modifications. Units installed above 2000 ft. of elevation must use orifices as specified in the above table.

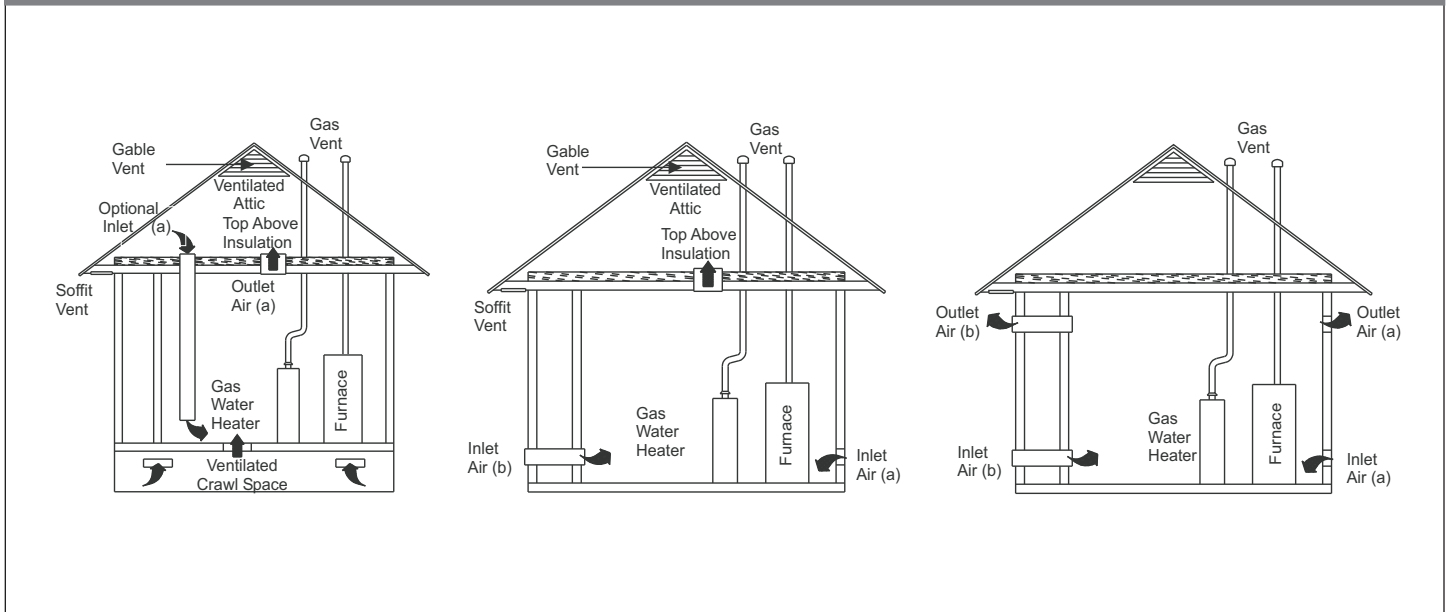


## Venting

The BGS80 series is a Category I Fan-assisted furnace. Category I venting consists of vertically venting one or more appliances in B-vent or B-vent connectors. Type B-vent systems extend in a general vertical direction and do not contain offsets exceeding 45°. A vent system with no more than one 60° offset is permitted. The venting system must be installed in accordance with Section 5.3 Air for combustion and Ventilation of the National Fuel Gas Code Z223.1/NFPA 54 (latest edition) or National Gas and Propane Codes (latest edition) or applicable provisions of the local building code and these instructions.

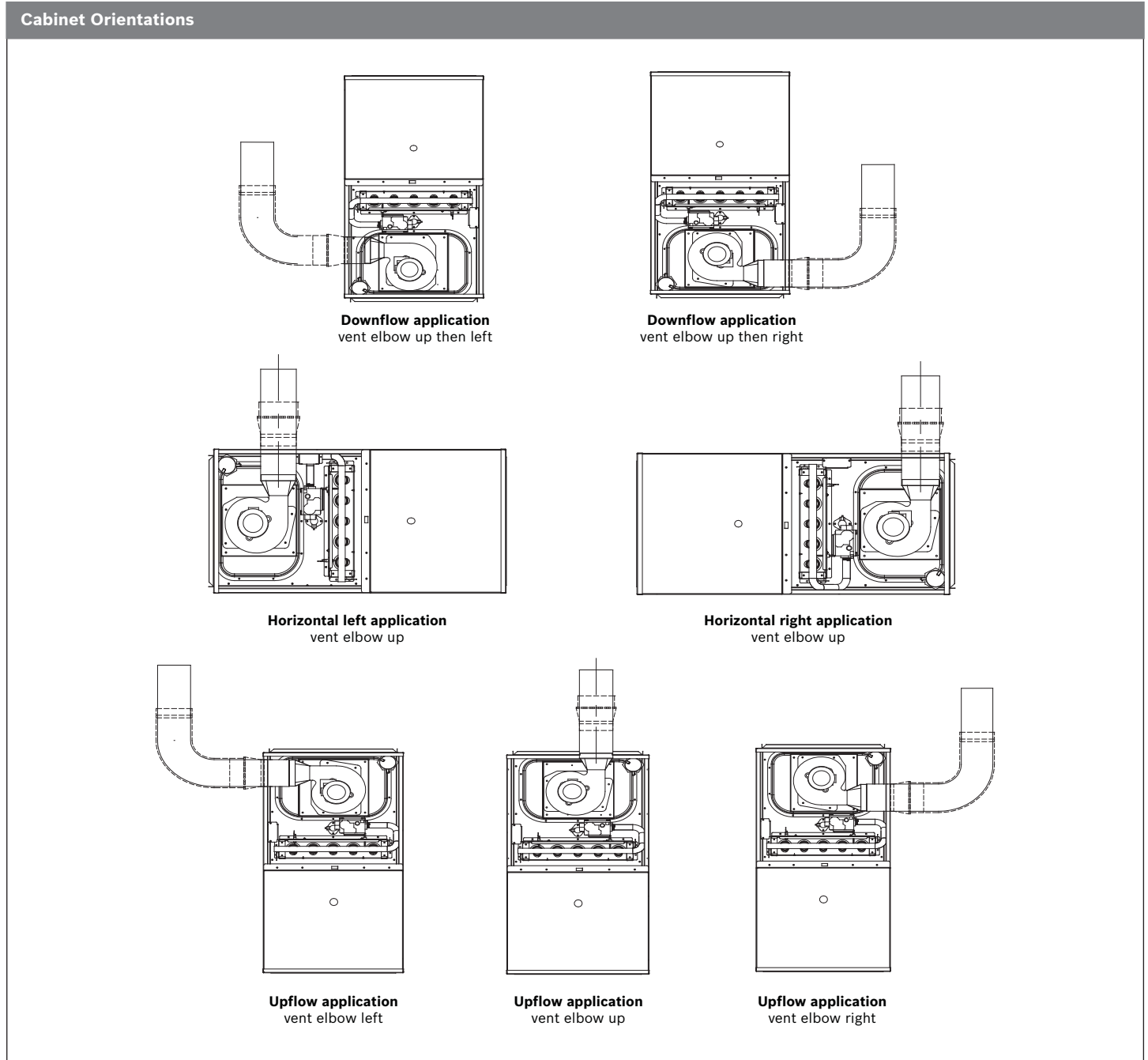
This furnace may be used with a Type B-1 Vent and may be vented in common with other gas fired appliances. The furnace shall not be connected to a chimney flue serving a separate appliance designed to burn solid fuel. Single-wall vent pipe is not allowed.

### Outside and Ambient Combustion Air



**Cabinet Orientations**

To convert to a horizontal or downflow position, the inducer may be rotated (as detailed in the Installation, Operation, and Maintenance Manual). Regardless of cabinet orientation, all venting must remain vertical. Vent the furnace with the appropriate connector as shown in below.

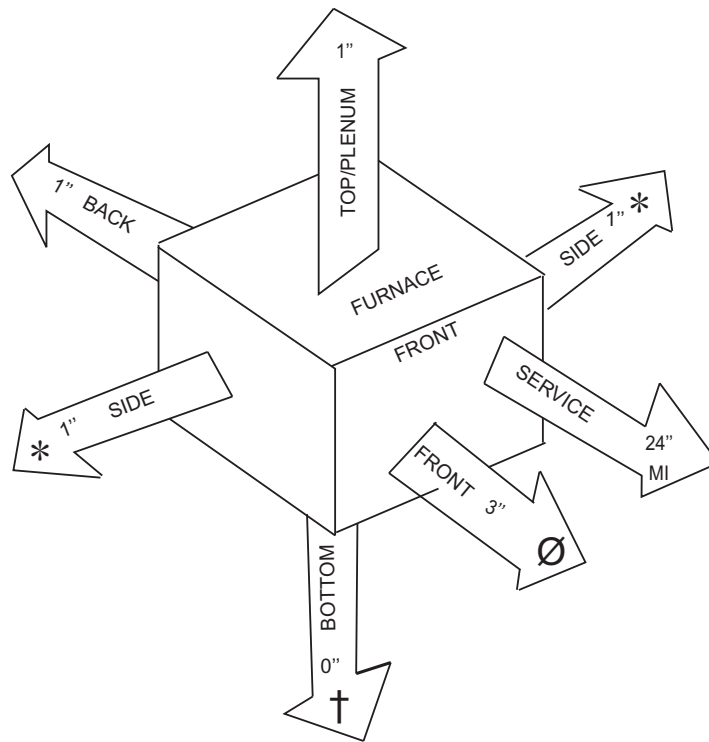


**Required Clearances from Combustibles**

This furnace may be installed on combustible flooring in an alcove or closet at minimum clearance as indicated below.

**Minimum clearance from combustible construction**

Clearance arrows do not change with furnace orientation



VENT		SIDES	FRONT	BACK	TOP (PLENUM)
B1-VENT	SINGLE				
1"	6"	1"	3"	1"	1"

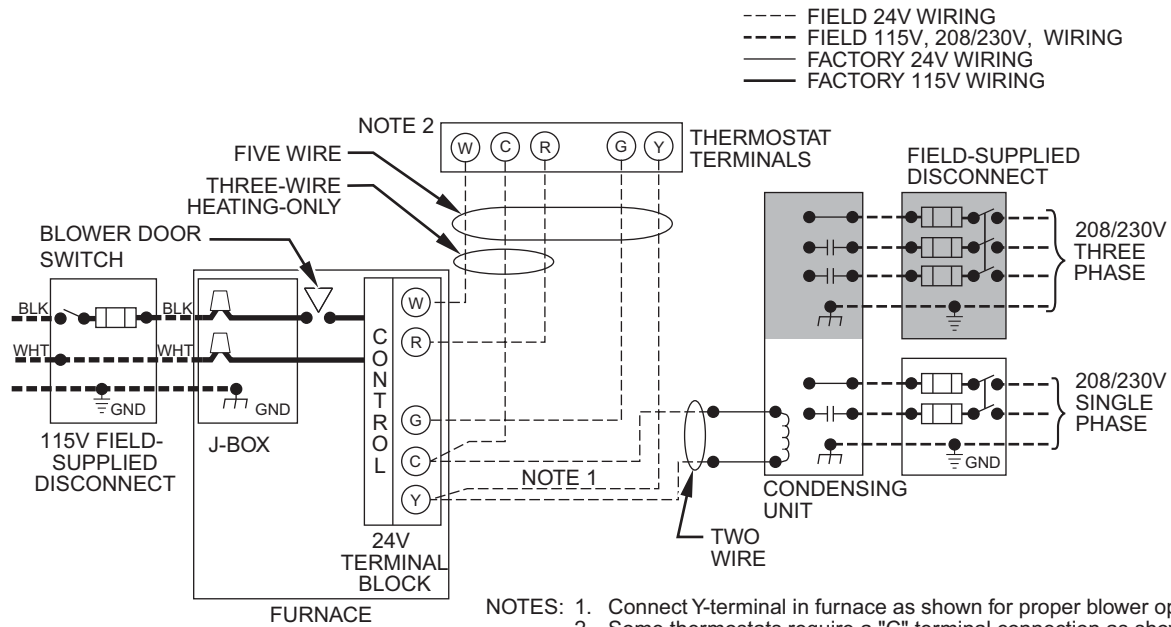
**Downflow positions:**

- † Installation on non-combustible floors only. Installation on combustible flooring requires installation on field supplied sub-base.
- ∅ 18 inches front clearance required for alcove.

**Horizontal installation in attic or crawl space**

- \* Indicates supply or return sides when furnace is in the horizontal position. Line contact only permissible between lines formed by intersections of the side and back of the furnace cabinet and building joists, studs or frame.
- A special, field supplied base is required for horizontal installations (refer to Installation, Operation & Maintenance Manual, Section 7.3 "Horizontal Installation").

Heating and Cooling Application Wiring Diagram with I-Stage Thermostat



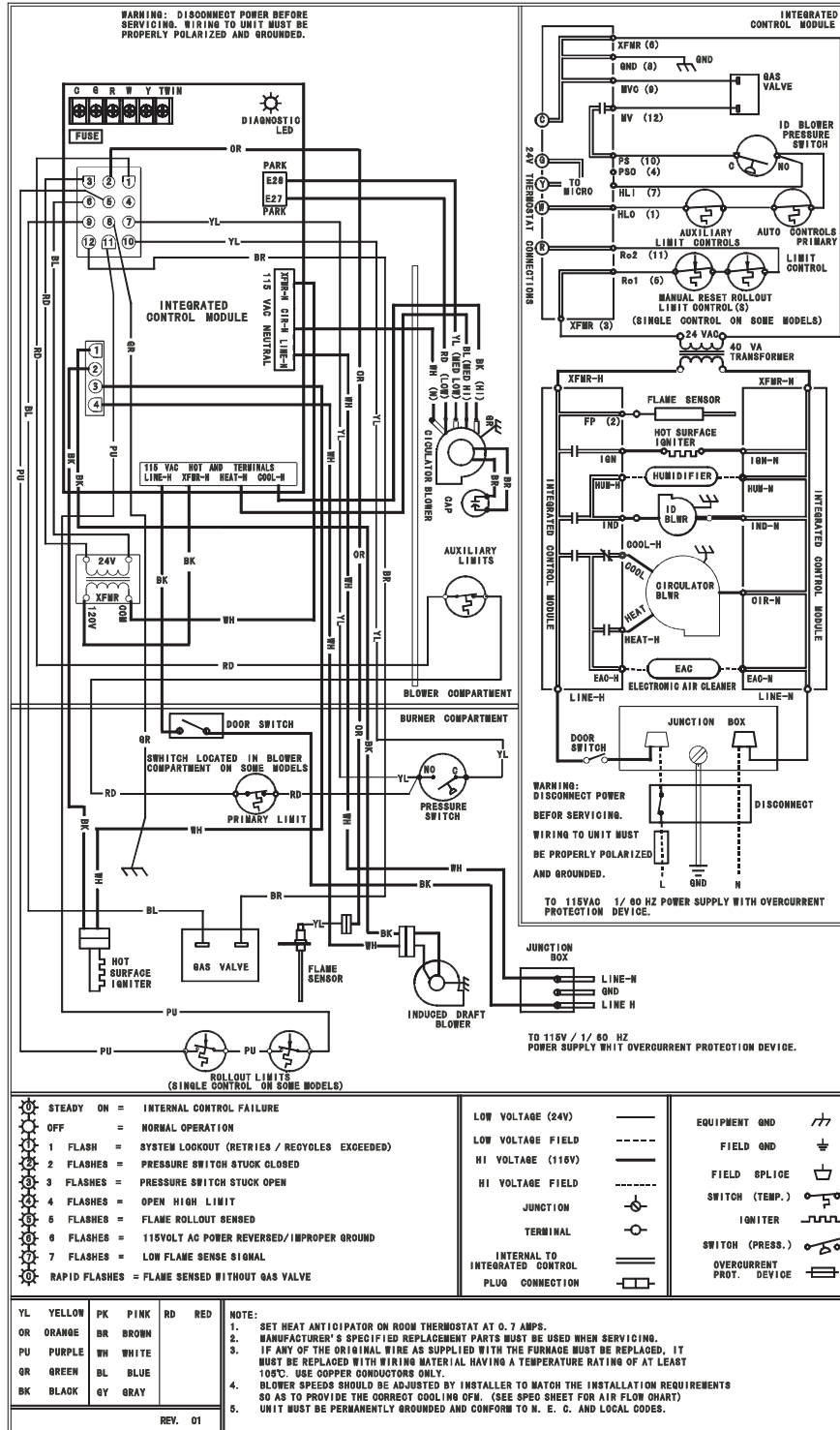
- NOTES: 1. Connect Y-terminal in furnace as shown for proper blower operation.  
 2. Some thermostats require a "C" terminal connection as shown.  
 3. If any of the original wire, as supplied, must be replaced, use same type or equivalent wire.

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## Unit Wiring Diagram - Models: 80B4A, 100C5A, 120D5A



Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date schematic.

**High Voltage:**  
Disconnect all power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury, or death.

**WARNING**

