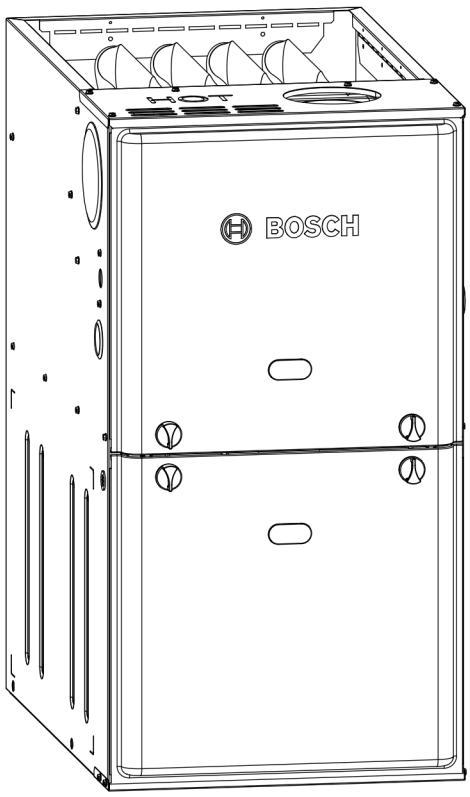
Technical Guide: BGK80 Series - Non-Condensing Residential Gas Furnaces

Two-Stage Standard ECM Multi-position Standard and Low NOx



Bosch Thermotechnology Corp. 65 Grove St.
Watertown, MA 02472

6884286-BTG-A-1126

Supersedes: Nothing

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Description

These compact units employ induced combustion, reliable hot surface ignition, and high heat transfer aluminized steel tubular heat exchangers. The units are factory shipped for installation in upflow or downflow applications and can be converted for horizontal applications.

These furnaces are designed for residential installation in a basement, closet, alcove, attic, recreation room, or garage, and are also ideal for commercial applications. All units are factory assembled, wired, and tested to ensure safe, dependable, and economical installation and operation.

These units are Category I listed and can be common vented with another gas appliance as allowed by the National Fuel Gas Code.

Due to continuous product improvement, specifications are subject to change without notice. **This document is only for distribution use - it is not to be used at point of retail sale.**

Visit us on the web at www.bosch-homecomfort.com

Additional rating information can be found at www.ahridirectory.org.

Certification



Assembled at a facility with an ISO 9001:2015-certified Quality Management System





Warranty

20-year limited warranty on the heat exchanger.

10-year heat exchanger warranty on non-residential applications.

5-year limited parts warranty.

Extended residential limited lifetime heat exchanger and 10-year limited parts warranty when product is registered online within 90 days of purchase for replacement or within 90 days of closing for new home construction.

See the *Limited Warranty certificate* for details.

Features

- Two-stage heating operation includes a two-stage gas valve, two-stage inducer operation, and standard ECM blower operation. Auto-staging allows two-stage operation with a single-stage thermostat.
- Easily applied in upflow, horizontal left, horizontal right, or downflow installation with minimal conversion necessary
- The unit cabinet is compact and easy to install with an ideal height of 33 in.
- Blower-off delay for cooling SEER2 improvement
- Easy access to controls to connect power and control wiring
- Built-in, high-level self diagnostics with fault code displays standard on integrated control module for reliable operation
- Low unit current requirement for easy replacement application
- All models are convertible to use propane (LP) gas.
- Electronic hot surface ignition reduces fuel cost with increased dependability and reliability.
- 100% shut-off main gas valve for extra safety
- 24 V, 40 VA control transformer and control provisions supplied for add-on cooling
- Hi-tech tubular aluminized steel primary heat exchanger
- Solid removable bottom panel allows easy conversion for bottom return air applications
- Airflow leakage less than 1% of nominal airflow for duct performance testing conditions
- No electrical knockouts, making installation easier
- Fold-up duct connector flanges for application flexibility
- Quiet inducer operation
- Inducer rotates for easy conversion of venting options
- Fully supported blower assembly for easy access and removal of blower
- External air filters are used for maximum flexibility in meeting customers' indoor air quality (IAQ) needs.
- Insulated blower compartment for thermal and acoustic performance
- Low NOx models have been designed to meet specific code requirements.
- Venting applications: install as a common vent with other gas-fired appliances or use a lined masonry chimney.
- 1/4 turn knobs are provided for easy independent door removal.

Nomenclature

Table 1: Nomenclature for BGK80 units

Number	Category	Option	Description
1	Brand	B	Bosch
2	Application	G	Gas furnace, low nox
3	Technology	E	Single-stage, ECM CT
		H	Two-stage, ECM CA
		K	Two-stage, ECM CT
		M	Modulating, ECM CA
4,5	AFUE	80	80% AFUE
		96	96% AFUE
		97	97% AFUE
6	Orientation	A	All position: upflow/horizontal/downflow
		M	Upflow/horizontal
7,8,9	Capacity	060	60,000 Btu/h
		080	80,000 Btu/h
		100	100,000 Btu/h
		120	1200,000 Btu/h
10	Cabinet width	A	14 1/2 in.
		B	17 1/2 in.
		C	21 in.
		D	24 1/2 in.
11	Nominal cooling capacity	2	2 ton
		3	3 ton
		4	4 ton
		5	5 ton
12	Revision level	A	First revision

Table 2: Model nomenclature example

Number	1	2	3	4,5	6	7,8,9	10	11	12
Option	B	G	K	80	A	060	A	3	A

Dimensions

Figure 1: Dimensions

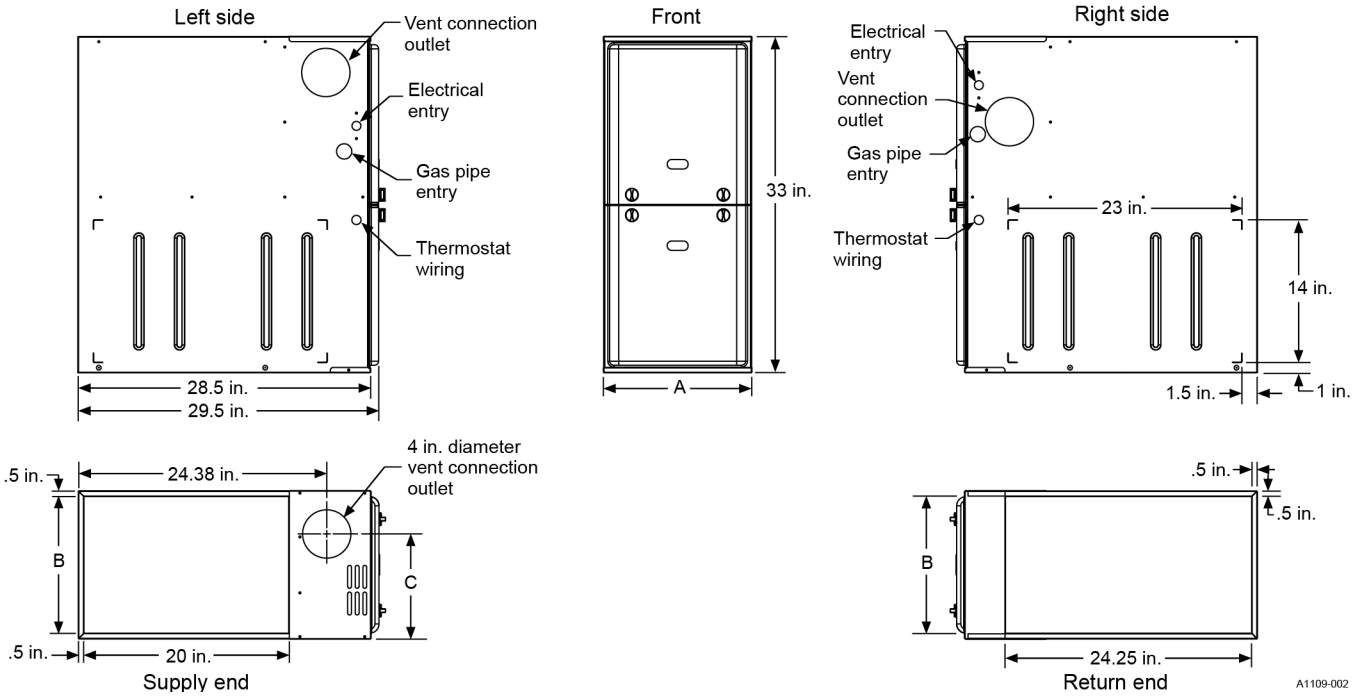


Table 3: Cabinet and duct dimensions

Models	Nominal CFM (m^3/min)	Cabinet size	A (in.)	A (cm)	B (in.)	B (cm)	C (in.)	C (cm)
BGK80A060A3A	1200 (34.0)	A	14 1/2	36.8	13 3/8	34.0	10.3	26.2
BGK80A080B3A	1200 (34.0)	B	17 1/2	44.4	16 3/8	41.6	11.8	29.9
BGK80A080C4A	1600 (45.3)	C	21	53.3	19 7/8	50.5	13.6	34.5
BGK80A100C4A	1600 (45.3)	C	21	53.3	19 7/8	50.5	13.6	34.5
BGK80A100C5A	2000 (56.6)	C	21	53.3	19 7/8	50.5	13.6	34.5
BGK80A120C5A	2000 (56.6)	C	21	53.3	19 7/8	50.5	15.8	40.1

Ratings and physical and electrical data

Table 4: Ratings and physical and electrical data

Models	BGK80A060A3A	BGK80A080B3A	BGK80A080C4A	BGK80A100C4A	BGK80A100C5A	BGK80A120C5A
High fire input (MBH)	60	80	80	100	100	120
Low fire input (MBH)	39	52	52	65	65	78
High fire output (MBH)	48	64	64	80	80	96
Low fire output (MBH)	31.2	41.6	41.6	52.0	52.0	62.4
Nominal airflow (CFM)	1200	1200	1600	1600	2000	2000
AFUE (%)	80					
Fuse or circuit breaker (A)	15					
Maximum outlet air temperature (°F)	190					
High fire air temperature rise (°F)	30 to 60					35 to 65
Low fire air temperature rise (°F)	20 to 50					
Gas pipe connection, NPT (in.)	1/2					
Blower (hp)	1/2	1/2	1/2	1/2	3/4	3/4
Blower (A)	6.4	6.4	6.4	6.4	8.8	8.8
Blower size (in.)	11 x 8	11 x 8	11 x 10	11 x 10	11 x 11	11 x 11
Total unit (A)	9.0	9.0	9.0	8.9	11.3	11.3
Operating weight (lb)	94	103	114	118	122	129

Note:

- The nominal external static pressure is 0.5 in. W.C. at furnace outlet ahead of indoor coils.
- Annual fuel utilization efficiency (AFUE) numbers are determined in accordance with DOE test procedures.
- Wire size and overcurrent protection must comply with the National Electrical Code (NFPA-70-latest edition) and all local codes.

Horizontal sidewall venting

For applications where vertical venting is not possible, the only approved method of horizontal venting is the use of an auxiliary power vent. Auxiliary power venters must be approved by CSA, UL, or other recognized safety agencies. Follow all application and installation details provided by the manufacturer of the power vent.

Filter performance

CAUTION

In downflow furnace arrangement, the filter must be located a minimum of 12 in. from the return air inlet of the furnace.

The airflow capacity data shown in represents blower performance **without** filters.

All applications of these furnaces require the use of field-installed air filters. All filter media and mounting hardware or provisions must be field installed external to the furnace cabinet. **Do not** attempt to install any filters inside the furnace.

NOTICE

Single side return above 1800 CFM is approved as long as the filter velocity does not exceed the filter manufacturer's recommendation and a transition is used to allow use of a 20 x 25 filter.

Table 5: Recommended filter sizes

CFM (m^3/min)	Cabinet size	Side (in.)	Bottom (in.)
1200 (34.0)	A	16 x 25	14 x 25
1200 (34.0)	B	16 x 25	16 x 25
1600 (45.3)	C	16 x 25	20 x 25
2000 (56.6)	C	(2) 16 x 25	20 x 25

Note:

- Air velocity through disposable type filters must not exceed 300 ft/min (91.4 m/min). All velocities over this require the use of high velocity filters.
- Do not exceed 1800 CFM using a single side return and a 16 x 25 filter. For CFM greater than 1800, you may use two side returns or one side and the bottom or one return with a transition to allow use of a 20 x 25 filter.

Table 6: Unit clearances to combustibles (all dimensions in inches and all surfaces identified with the unit in an upflow configuration)

Application	Top	Front	Rear	Left side	Right side	Flue	Floor/bottom	Closet	Alcove	Attic	Line contact
	in. (cm)	in. (cm)	in. (cm)	in. (cm)	in. (cm)	in. (cm)					
Upflow	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	6 (15.2)	Combustible	Yes	Yes	Yes	No
Upflow B-vent	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.5)	Combustible	Yes	Yes	Yes	No
Downflow	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	6 (15.2)	1 (25.4)[1]	Yes	Yes	Yes	No
Downflow B-vent	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.5)	1 (25.4)[1]	Yes	Yes	Yes	No
Horizontal	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	6 (15.2)	Combustible	No	Yes	Yes	Yes[2]
Horizontal B-vent	1 (2.5)	1 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.5)	Combustible	No	Yes	Yes	Yes[2]

1 A combustion floor base accessory or indoor coil cabinet is required for use on a combustible floor.
2 Line contact is only permitted between lines formed by the intersection of the rear panel and side panel (top in horizontal position) of the furnace jacket and building joists, studs, or framing.

Accessories

Propane (LP) Conversion Kit

This accessory conversion kit can be used to convert natural gas units for LP operation.

7759014188 - all models except 130 kBtu input

LP Stainless Steel Burner Kit

This accessory conversion kit may be used to convert existing burners to stainless steel burners for LP use only.

7759014194 - all LP Models

Natural (NAT) Gas Stainless Steel Burner Kit

This accessory kit may be used to replace existing burners with stainless steel burners for NAT gas use only.

7759014195 - all NAT gas models

Side Return Filter Racks

The 7759014196 kit accommodates only a 1 in. filter.

7759014196 - all models

Bottom Return Filter Racks

Bottom return filter racks are available as follows:

7759014197 - for 14 1/2 in. cabinets

7759014198 - for 17 1/2 in. cabinets

7759014199 - for 21 in. cabinets

Masonry Chimney Kit

This accessory kit allows upflow 80% models to be vented into a tile-lined masonry chimney.

7759014190 - all 80% Non-modulating Models

Combustible Floor Base Kit

These kits are required to prevent potential overheating situations when the furnaces are installed in downflow applications directly onto combustible flooring material. These kits are also required in any applications where the furnace is installed in a downflow configuration without an indoor coil and where the combustible floor base kit provides access for combustible airflow.

7759014191 - for 14 1/2 in. cabinets

7759014192 - for 17 1/2 in. cabinets

7759014193 - for 21 in. cabinets

High Altitude Pressure Switches

For installation where the altitude is less than 5,000 ft, it is not required to change the pressure switch. For altitudes above 5,000 ft, use an appropriate kit from below:

7759014189 - all models

Thermostats

Compatible thermostat controls are available through accessory sourcing. For optimum performance, these outdoor units are fully compatible with our residential thermostat options available through Bosch. For more information, refer to https://www.bosch-homecomfort.com.

Blower performance

Table 7: Blower performance CFM - any position, without filter

Model	Speed	Airflow data (SCFM) external static pressure (in. W.C.)							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
060A12	High	1375	1325	1300	1275	1225	1200	1175	1125
	Medium high	1050	1000	975	925	900	850	825	775
	Medium	925	875	850	800	750	725	675	625
	Medium low	850	800	750	725	675	625	550	500
	Low	675	625	575	525	450	400	350	275
080B12	High	1375	1325	1300	1275	1225	1200	1150	1125
	Medium high	1175	1125	1075	1050	1000	975	925	900
	Medium	1025	1000	950	925	875	825	800	750
	Medium low	925	875	850	800	750	725	675	625
	Low	700	650	600	550	500	450	400	325
080C16	High	1700	1675	1625	1600	1550	1500	1450	1425
	Medium high	1400	1375	1325	1275	1225	1200	1125	1100
	Medium	1275	1250	1200	1150	1100	1050	1000	950
	Medium low	1150	1100	1050	1000	950	900	850	775
	Low	975	925	875	825	750	700	625	575
100C16	High	1900	1850	1825	1800	1750	1725	1675	1625
	Medium high	1650	1625	1575	1550	1500	1450	1425	1375
	Medium	1250	1200	1175	1125	1075	1050	1000	950
	Medium low	1125	1050	1025	975	925	875	825	800
	Low	875	775	725	675	625	575	500	450
100C20	High	1975	1950	1900	1850	1825	1775	1725	1700
	Medium high	1825	1775	1725	1675	1650	1600	1550	1500
	Medium	1675	1600	1575	1500	1475	1425	1375	1325
	Medium low	1450	1400	1350	1300	1250	1175	1125	1050
	Low	1000	925	825	700	575	475	400	300
120C20	High	2000	1925	1875	1825	1775	1725	1675	1625
	Medium high	1725	1675	1600	1550	1500	1425	1375	1325
	Medium	1475	1400	1350	1275	1225	1175	1100	1050
	Medium low	1250	1175	1100	1025	950	875	800	725
	Low	1000	900	800	700	600	525	425	375

- Airflow is shown in standard cubic feet per minute (SCFM).
- The motor voltage is 115 V.
- Do not operate at an external static pressure higher than the rating on the furnace data plate.

Third-party trademarks

Third-Party Trademarks Notice: For information about third-party trademarks, refer to the relevant company websites.

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