



Heating and Air Conditioning

TECHNICAL GUIDE

80 AFUE MULTI-POSITION GAS FURNACES

MODELS: G8C SERIES

4-POSITION
50-125 MBH INPUT

3-POSITION
150 MBH INPUT



ISO 9001
Certified Quality
Management System

DESCRIPTION

These compact units (31-1/2" high) employ induced combustion, reliable electronic ignition and high heat transfer heat exchangers. The units may be factory shipped for upflow/horizontal application and converted for downflow application. These units may also be factory shipped for downflow application and converted for upflow/horizontal applications

Note: The 150 MBH input model is upflow/horizontal only and may not be converted to the downflow position.

These furnaces are designed for residential installation in a basement, closet, alcove, attic, or garage. All units are factory assembled, wired and tested to assure safe dependable and economical installation and operation.

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

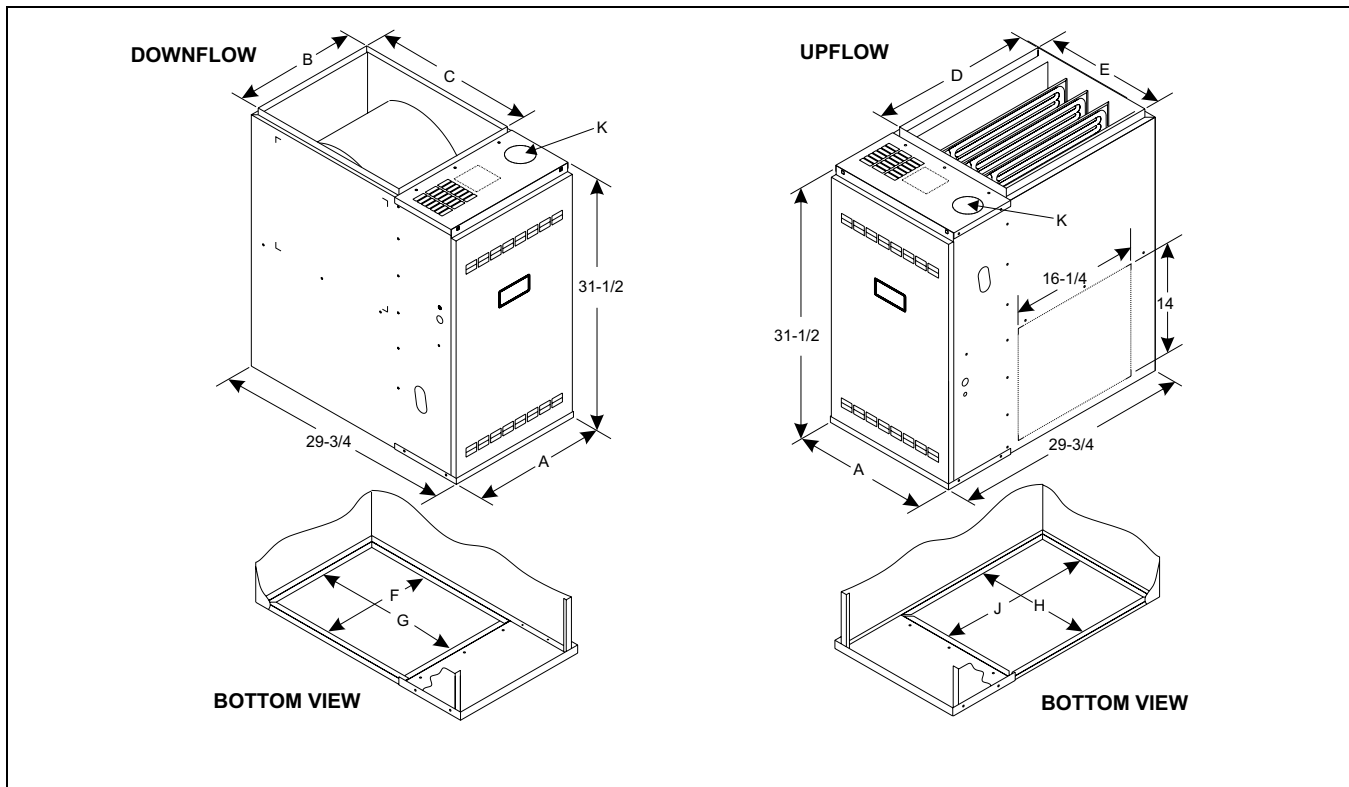
WARRANTY

20-year limited warranty on the heat exchanger.

5-year limited parts warranty.

FEATURES

- 4-position (MU) upflow models allow horizontal-left, horizontal-right, downflow and convertible applications
- 4-position (MD) models allow downflow and convertible upflow/horizontal applications
- 3-position (UH) 150 MBH input model allows upflow, horizontal-left and horizontal-right application
- Reliable, hot surface ignitor
- Integrated control module for simplicity and reliable, economical operation
- Built-in self-diagnostics with fault code display
- 100% shut off main gas valve for added safety
- Rollout safety control
- Low unit amp requirement for easy application
- High quality inducer motor for quiet operation
- 40 VA, fuse protected control transformer
- Terminals for controlling humidifiers and EAC's
- Easy to connect power and control wiring
- Efficiency ratings of 80 AFUE
- Cooling blower relay supplied for easy installation of add-on cooling
- Blower off-delay for cooling SEER improvement
- Multi-speed PSC, direct-drive blower motors to match cooling requirements
- Adjustable fan-off settings to eliminate "cold-blow"
- Compact 31-1/2-in height allows installation in small space confines
- All models are propane convertible with factory kit
- Pre-painted exterior provides attractive, durable finish
- Models are not approved for LoNox applications



CABINET AND DUCT DIMENSIONS

BTUH (kW) Input	Nominal CFM	Cabinet Size	Cabinet Dimension									
			A(in.)	B(in.)	C(in.)	D(in.)	E(in.)	F(in.)	G(in.)	H(in.)	J(in.)	K Vent (in.)
G8C05012(MU,MD)B12 ¹	1200	B	17 1/2	16 1/2	20 3/8	20.0	16	14 3/4	18 3/4	15 1/8	19.0	3
G8C07512(MU,MD)B12 ¹	1200	B	17 1/2	16 1/2	20 3/8	20.0	16	14 3/4	18 3/4	15 1/8	19.0	4 ²
G8C07516(MU,MD)C12 ¹	1600	C	21	20	20 3/8	20.0	19 1/2	18 1/4	18 3/4	18 5/8	19.0	4 ²
G8C10016(MU,MD)C12 ¹	1600	C	21	20	20 3/8	20.0	19 1/2	18 1/4	18 3/4	18 5/8	19.0	4 ²
G8C10020(MU,MD)D11 ¹	2000	D	24.5	23 1/2	20 3/8	20.0	23	21 3/4	18 3/4	22 1/8	19.0	4 ²
G8C12520(MU,MD)D11 ¹	2000	D	24.5	23 1/2	20 3/8	20.0	23	21 3/4	18 3/4	22 1/8	19.0	5 ²
G8C15020UHD11 ³	2000	D	24 1/2	23 1/2	20 3/8	20.0	23	21 3/4	18 3/4	22 1/8	19.0	5 ²

1. 4-position models may be factory configured as upflow (MU) or downflow (MD).
2. 3-position 150 MBH model available only in upflow/horizontal (UH) configuration.
3. All models are supplied with 3" (7.62 cm) vent connections. An installer supplied transition to 4" (10.16 cm) or 5" (12.7 cm) must be used where necessary.

RATINGS & PHYSICAL / ELECTRICAL DATA - UPFLOW MODELS

Models	Input	Output	Nominal Airflow	Cabinet Width	Total Unit	AFUE	Air Temp. Rise	
	MBH	MBH	CFM	In.	Amps		°F	
G8C05012(MU,MD)B12	50	40	1200	17-1/2	8.0	80.0	30-60	
G8C07512(MU,MD)B12	75	60	1200	17-1/2	8.0	80.0	35-65	
G8C07516(MU,MD)C12	75	60	1600	21	11.4	80.0	30-60	
G8C10016(MU,MD)C12	100	80	1600	21	11.4	80.0	40-70	
G8C10020(MU,MD)D11	100	80	2000	24 1/2	11.3	80.0	35-65	
G8C12520(MU,MD)D11	125	100	2000	24 1/2	11.3	80.0	40-70	
G8C15020UHD11	150	120	2000	24 1/2	11.3	80.0	40-70	
Models	Input	Max. Outlet Air Temp	Blower		Blower Size	Max Over-current protect	Min.Wire Size (awg) @ 75 ft. one way	Operation Wt.
	MBH	°F	Hp	Amps	In.			LBS
G8C05012(MU,MD)B12	50	160	1/2	7.0	10 x 8	15	14	112
G8C07512(MU,MD)B12	75	165	1/2	7.0	10 x 8	15	14	118
G8C07516(MU,MD)C12	75	160	1/2	10.4	10 x 10	15	14	129
G8C10016(MU,MD)C12	100	170	1/2	10.4	10 x 10	15	14	135
G8C10020(MU,MD)D11	100	165	1	10.3	(2)10 x 6	15	14	149
G8C12520(MU,MD)D11	125	170	1	10.3	(2)10 x 6	15	14	155
G8C15020UHD11	150	170	1	10.3	(2)10 x 6	15	14	165

Nominal external static pressure is 0.50" w.c. at furnace outlet ahead of cooling coils.

Annual Fuel Utilization Efficiency (AFUE) numbers are determined in accordance with DOE Test procedures.

Wire size and over current protection must comply with the National Electrical Code (NFPA-70-latest edition) and all local codes.

BLOWER PERFORMANCE

BTU/H (kW) Input	Cabinet Size	Speed Tap	External Static Pressure, Inches WC - CFM															
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8								
UPFLOW, SINGLE SIDE RETURN (WITHOUT FILTER)																		
G8C05012(MU,MD)B12 ¹	B	High	1411	1360	1289	1218	1154	1075	983	882								
		Med	1213	1177	1134	1085	1022	960	880	782								
		Low	887	884	871	848	814	775	726	656								
G8C07512(MU,MD)B12 ¹	B	High	1535	1470	1408	1343	1275	1202	1115	1014								
		Med	1215	1199	1182	1151	1106	1039	976	887								
		Low	875	874	864	847	827	799	736	658								
G8C07516(MU,MD)C12 ¹	C	High	1792	1724	1630	1552	1462	1367	1264	1152								
		Med	1597	1555	1496	1444	1372	1287	1190	1086								
		Low	1115	1140	1167	1183	1149	1093	1023	939								
G8C10016(MU,MD)C12 ¹	C	High	1868	1781	1690	1600	1498	1396	1277	1156								
		Med	1602	1553	1503	1447	1376	1287	1181	1060								
		Low	1147	1147	1147	1147	1132	1078	1009	918								
G8C10020(MU,MD)D11 ²	D	High	NOT ALLOWED															
		Med-High																
		Med-Low																
		Low																
G8C12520(MU,MD)D11 ³	D	High																
		Med-High																
		Med-Low																
		Low																
G8C15020UHD11 ²	D	High																
		Med-High																
		Med-Low																
		Low																
DUAL RETURN (TWO SIDES OR ONE-SIDE & BOTTOM)																		
G8C05012(MU,MD)B12 ¹	B	High									1507	1433	1371	1300	1223	1132	1040	938
		Med									1239	1215	1175	1144	1085	1012	938	838
		Low									907	907	891	875	849	800	741	672
G8C07512(MU,MD)B12 ¹	B	High	1634	1562	1484	1417	1340	1238	1154	1030								
		Med	1243	1228	1214	1184	1133	1079	999	912								
		Low	886	886	886	886	865	823	777	700								
G8C07516(MU,MD)C12 ¹	C	High	1978	1896	1803	1693	1589	1478	1366	1235								
		Med	1682	1657	1606	1530	1455	1366	1265	1137								
		Low	1235	1235	1235	1235	1198	1154	1083	987								
G8C10016(MU,MD)C12 ¹	C	High	2122	2027	1916	1821	1717	1590	1462	1312								
		Med	1667	1696	1656	1597	1523	1438	1330	1191								
		Low	1130	1145	1177	1194	1181	1146	1077	982								
G8C10020(MU,MD)D11 ²	D	High	2350	2248	2129	2015	1876	1745	1596	1425								
		Med-High	2122	2018	1926	1824	1722	1606	1458	1311								
		Med-Low	1958	1875	1782	1690	1608	1491	1364	1213								
		Low	1820	1757	1664	1594	1506	1405	1287	1137								
G8C12520(MU,MD)D11 ²	D	High	2483	2392	2282	2161	2032	1887	1739	1567								
		Med-High	2198	2123	2039	1930	1830	1708	1550	1413								
		Med-Low	1999	1916	1859	1778	1684	1576	1451	1315								
		Low	1832	1775	1709	1642	1556	1450	1335	1209								
G8C15020UHD11 ²	D	High	2570	2462	2361	2244	2128	1983	1826	1655								
		Med-High	2205	2105	2033	1952	1865	1738	1617	1459								
		Med-Low	1993	1931	1869	1880	1708	1590	1485	1330								
		Low	1831	1782	1722	1660	1575	1477	1364	1231								

BLOWER PERFORMANCE (CONTINUED)

BTU/H (kW) Input	Cabinet Size	Speed Tap	External Static Pressure, Inches WC - CFM							
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
BOTTOM/END RETURN										
G8C05012(MU,MD)B12 ¹	B	High	1419	1357	1297	1212	1131	1050	942	846
		Med	1221	1185	1145	1092	1036	961	879	780
		Low	920	902	883	860	818	761	711	639
G8C07512(MU,MD)B12 ¹	B	High	1552	1491	1420	1348	1271	1185	1080	970
		Med	1229	1237	1198	1164	1105	1039	956	861
		Low	889	892	879	866	846	807	760	689
G8C07516(MU,MD)C12 ¹	C	High	1946	1862	1775	1620	1518	1409	1291	1160
		Med	1683	1611	1551	1484	1388	1300	1190	1080
		Low	1110	1138	1175	1190	1175	1126	1041	937
G8C10016(MU,MD)C12 ¹	C	High	1997	1920	1822	1723	1620	1500	1355	1211
		Med	1728	1679	1635	1556	1465	1359	1249	1117
		Low	1131	1156	1181	1190	1171	1126	1049	926
G8C10020(MU,MD)D11 ²	D	High	2327	2232	2121	1999	1888	1763	1628	1473
		Med-High	2050	1967	1868	1757	1658	1525	1403	1260
		Med-Low	1911	1839	1758	1675	1593	1468	1340	1189
		Low	1780	1712	1642	1566	1465	1366	1249	1094
G8C12520(MU,MD)D11 ²	D	High	2397	2304	2192	2063	1955	1822	1678	1521
		Med-High	2151	2063	1977	1881	1774	1652	1528	1377
		Med-Low	1972	1906	1838	1748	1660	1551	1419	1282
		Low	1845	1794	1721	1646	1559	1451	1344	1208
G8C15020UHD11 ²	D	High	2488	2389	2276	2151	2024	1883	1730	1577
		Med-High	2164	2084	2024	1920	1816	1692	1558	1395
		Med-Low	1998	1934	1868	1773	1673	1567	1445	1294
		Low	1843	1793	1728	1653	1553	1453	1328	1192

1. Return air is through side opposite motor (left side) for one side return (worst case).
2. Airflows above 1800 CFM (50.97 m³/min) require either return from two sides or one side plus bottom
3. Airflows expressed in standard cubic feet per minute (CFM) and in cubic meters per minute (m³/min).

RETURN AIR AND FILTERS

The return air ducts to the furnace must have a total cross sectional area of not less than two square inches per 1000 BTUH of furnace input rating for heating operation. **If air conditioning is to be installed with the furnace, or if it may be added at a later time, larger return air ducts may be required, depending on the capacity of the air conditioner and the airflow required.**


WARNING

For applications requiring more than 1800 CFM, it is required to use the bottom return, both side returns or one side plus the bottom return.

- Single side return is not approved on 5 Ton models.
- 18" minimum height for return air box for bottom return only on Heating only applications with furnace in the upflow configuration.
- 24" minimum height for return air box for bottom return only on A/C applications with furnace in the upflow configuration.

FILTER PERFORMANCE

The airflow capacity data published in the "Blower Performance" table listed above represents blower performance WITHOUT filters. To determine the approximate blower performance of the system, apply the filter drop value for the filter being used or select an appropriate value from the "Filter Performance" table shown.

The filter pressure drop values in the "Filter Performance" table shown are typical values for the type of filter listed and should only be used as a guideline. Actual pressure drop ratings for each filter type vary between filter manufacturers.

RECOMMENDED FILTER SIZE

UPFLOW					
Models	Input	Air Flow	Cabinet Size	Side Return	Bottom/End Return
	MBH	CFM		in.	in.
G8C05012(MU,MD)B12	50	1200	B	25 x 16	25 x 16
G8C07512(MU,MD)B12	75	1200	B	25 x 16	25 x 16
G8C07516(MU,MD)C12	75	1600	C	25 x 16	25 x 20
G8C10016(MU,MD)C12	100	1600	C	25 x 16	25 x 20
G8C10020(MU,MD)D11	100	2000	D	(2) 25 x 16	24 x 24
G8C12520(MU,MD)D11	125	2000	D	(2) 25 x 16	24 x 24
G8C15020UHD11	150	2000	D	(2) 25 x 16	24 x 24
DOWNFLOW					
Models	Input	Air Flow	Cabinet Size	Top Return (Downflow) Cleanable Air Filters	Top Return (Downflow) Disposable Air Filters
	MBH	CFM		in.	in.
G8C05012(MU,MD)B12	50	1200	B	14 x 20	(2) 10 x 20
G8C07512(MU,MD)B12	75	1200	B	14 x 20	(2) 14 x 20
G8C07516(MU,MD)C12	75	1600	C	16 x 20	(2) 16 x 20
G8C10016(MU,MD)C12	100	1600	C	16 x 20	(2) 16 x 20
G8C10020(MU,MD)D11	100	2000	D	20 x 20	(2) 20 x 20
G8C12520(MU,MD)D11	125	2000	D	20 x 20	(2) 20 x 20
G8C15020UHD11	150	2000	D	N/A	N/A

NOTES:

1. Air velocity through throwaway type filters may not exceed 300 feet per minute. All velocities over this require the use of high velocity filters.
2. Air flows above 1800 CFM require either return from two sides or one side plus bottom.

FILTER PERFORMANCE - PRESSURE DROP INCHES W.C. AND (KPA)

Airflow Range	Minimum Opening Size	Filter Type		
		Disposable	Washable Fiber	Pleated
CFM	in²	In W.C.	In W.C.	In W.C.
0 - 750	230	0.01	0.01	0.15
751 - 1000	330	0.05	0.05	0.20
1001 - 1250	330	0.10	0.10	0.20
1251 - 1500	330	0.10	0.10	0.25
1501 - 1750	380	0.15	0.14	0.30
1751 - 2000	380	0.19	0.18	0.30
2001 & Above	463	0.19	0.18	0.30

APPLYING FILTER PRESSURE DROP TO DETERMINE SYSTEM AIRFLOW

To determine the approximate airflow of the unit with a filter in place, follow the steps below:

1. Select the filter type.
2. Select the number of return air openings or calculate the return opening size in square inches to determine the proper filter pressure drop.
3. Determine the External System Static Pressure (ESP) without the filter.
4. Select a filter pressure drop from the table based upon the number of return air openings or return air opening size and add to the ESP from Step 3 to determine the total system static.
5. If total system static matches a ESP value in the airflow table (i.e. 0.20 w.c., 0.60 w.c., etc.) the system airflow corresponds to the intersection of the ESP column and Model/Blower Speed row.
6. If the total system static falls between ESP values in the table (i.e. 0.58 w.c., 0.75 w.c., etc.), the static pressure may be rounded to the nearest value in the table determining the airflow using Step 5 or calculate the airflow by using the following example.

Example: For a 75,000 BTUH furnace with 2 return openings and operating on high-speed blower, it is found that total system static is 0.38" w.c. To determine the system airflow, complete the following steps:

Obtain the airflow values at 0.30 w.c. & 0.40 w.c. ESP.

Airflow @ 0.30": 1408 CFM

Airflow @ 0.40": 1343 CFM

Subtract the airflow @ 0.30 w.c. from the airflow @ 0.40 w.c. to obtain airflow difference.

$$1343 - 1408 = -65 \text{ CFM}$$

Subtract the total system static from 0.30 w.c. and divide this difference by the difference in ESP values in the table, 0.40 w.c. - 0.30 w.c., to obtain a percentage.

$$(0.38 - 0.30) / (0.40 - 0.30) = 0.8$$

Multiply percentage by airflow difference to obtain airflow reduction.

$$(0.8) \times (-65) = -52$$

Subtract airflow reduction value to airflow @ 0.30 w.c. to obtain actual airflow @ 0.38 in. w.c. ESP.

$$1408 - 52 = 1356$$

UNIT CLEARANCES TO COMBUSTIBLES

Application	Top	Front	Rear	Left Side	Right Side	Flue	Floor / Bottom	Closet	Alcove	Attic	Line Contact
Upflow	1	6	0	0	0	6	Combustible	Yes	Yes	Yes	No
Upflow B-Vent	1	2	0	0	0	1	Combustible	Yes	Yes	Yes	No
Horizontal	0	6	0	0	1	6	Combustible	No	Yes	Yes	Yes(See Note ²)
Horizontal B-Vent	1	2	0	0	1	1	Combustible	No	Yes	Yes	Yes(See Note ²)
Downflow	1	6	0	0	5*	6	1" (See Note ¹)	Yes	Yes	Yes	No
Downflow B-Vent	1	2	0	0	0	1	1" (See Note ¹)	Yes	Yes	Yes	No

1. Special floor base or air conditioning coil required for use on combustible floor.

2. Line contact 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.

* Cabinet clearance is "0", vent clearance is required.

ACCESSORIES

Propane Conversion Kit (Standard) – 1NP0366

This accessory conversion kit may be used to convert natural gas units for propane (LP) operation at altitudes 0-2,000 ft. Conversion must be made by qualified distributor or dealer personnel.

Propane Conversion Kit (High Altitude) – 1PS0467

This accessory conversion kit may be used to convert natural gas units for propane (LP) operation at altitudes from 2,000 to 8,000 ft. Conversion must be made by qualified distributor or dealer personnel.

Natural Gas Conversion Kit (High Altitude) – 1PS0466

This accessory conversion kit may be used to convert natural gas units for high altitude operation at altitudes from 2,000 to 8,000 ft. Conversion must be made by qualified distributor or dealer personnel.

Combustible Floor Base

This accessory is used for downflow applications on combustible surfaces.

17-1/2" "B" Cabinets 1FB0318

21" "C" Cabinets 1FB0319

24-1/2" "D" Cabinets 1FB0320

Bottom External Filter Rack

This accessory is used to upflow/bottom return air applications. Packaged and sold in quantities of six (6).

17-1/2" "B" Cabinets 1BR0312BK

21" "C" Cabinets 1BR0316BK

24-1/2" "D" Cabinets 1BR0320BK

NOTES

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270844-YTG-A-0407
Supersedes: 246657-YTG-C-0806

Unitary	5005	Norman
Products	York	OK
Group	Drive	73069