

TECHNICAL GUIDE

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95.5% AFUE SINGLE STAGE RESIDENTIAL GAS FURNACES

MULTI-POSITION

MODELS: TG9S

NATURAL GAS

60 - 120 MBH INPUT



Due to continuous product improvement, specifications are subject to change without notice.

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

WARRANTY SUMMARY

A 20-year limited warranty on heat exchangers in residential applications.

A 10-year warranty on the heat exchanger in commercial applications. 12 Months Parts.

Standard 5-year limited Parts warranty. Residential Only

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

See Limited Warranty certificate in Users Information Manual for details.

DESCRIPTION

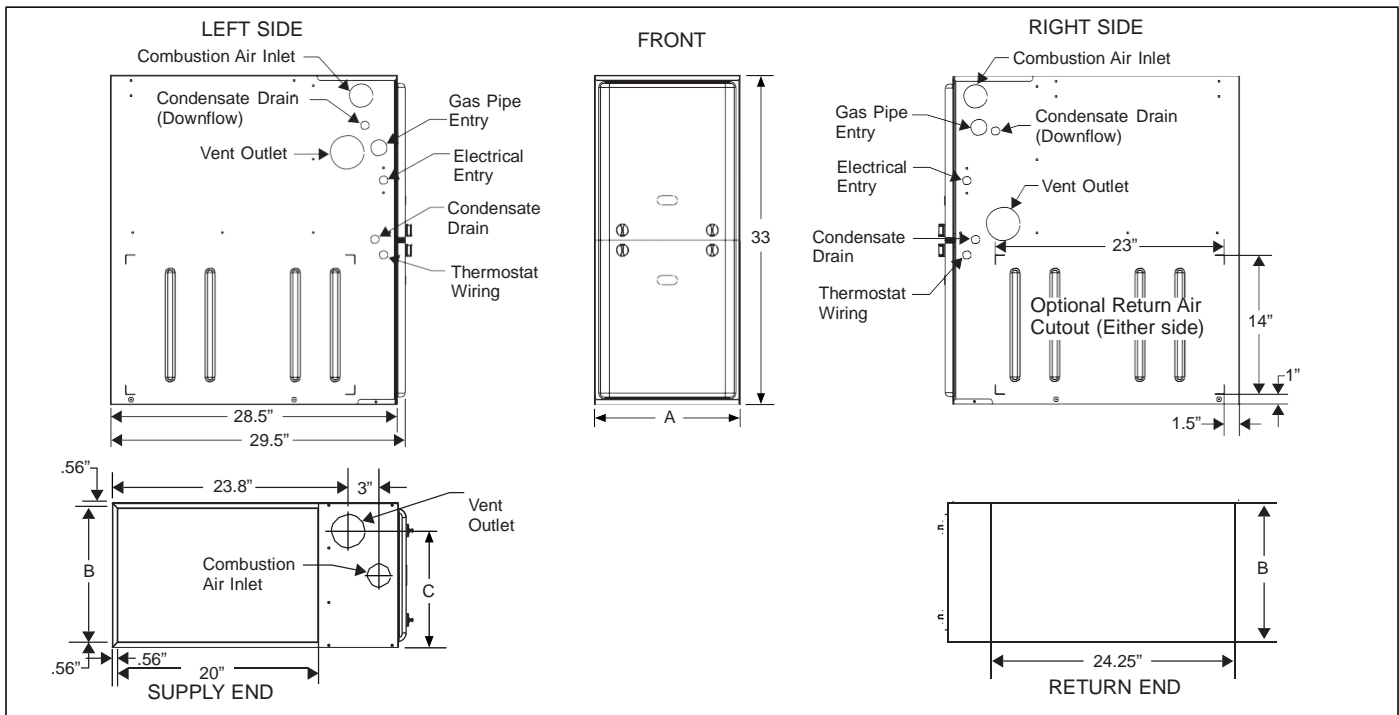
These compact units employ induced combustion, reliable hot surface ignition and high heat transfer aluminized tubular heat exchangers. The units are factory shipped for installation in upflow or horizontal applications and may be converted for downflow applications.

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 assure safe dependable and economical installation and operation.

These units are Category IV listed and may be vented either through side wall or roof applications using approved plastic combustion air and vent piping.

FEATURES

- Easily applied in upflow, horizontal left or right, or downflow installation with minimal conversion necessary.
- Compact, easy to install, ideal height 33" tall cabinet.
- Blower-off delay for cooling SEER improvement.
- Easy access to controls to connect power/control wiring.
- Built-in, high level self diagnostics with fault code displays standard on integrated control module for reliable operation.
- Low unit amp requirement for easy replacement application.
- Single wire twinning or staging feature available.
- All models are convertible to use propane (LP) gas.
- Electronic Hot Surface Ignition saves fuel cost with increased dependability and reliability.
- 100% shut off main gas valve for extra safety.
- 4 speed, direct drive PSC motor.
- 24V, 40 VA control transformer and blower relay supplied for add-on cooling.
- Hi-tech tubular aluminized steel primary heat exchanger.
- Secondary heat exchanger made of corrosion resistant stainless steel materials.
- Timed on, adjustable off blower capability for maximum comfort.
- Blower door safety switch.
- Solid removable bottom panel allows easy conversion.
- Airflow leakage less than 1% of nominal airflow at duct-blaster conditions.
- No knockouts to deal with, making installation easier.
- Movable 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 used for maximum flexibility in meeting customers IAQ needs.
- Protection included from air intake, exhaust vent, or condensate blockage.
- No special vent termination required.
- 1/4 turn knobs provided for easy door removal.
- Internal condensate trap design (patent pending) provides condensate management options and is self-priming to prevent nuisance problems.
- Venting applications - may be installed as either 2-pipe (sealed combustion) or single-pipe vent (using indoor combustion air).



Cabinet & Duct Dimensions

Models	Nominal CFM (m ³ /min)	Cabinet Size	Cabinet Dimensions (Inches)			Approximate Operating Weights
			A	B	C	Lbs
TG9S060B12MP11	1200	B	17 1/2	16 3/8	13 1/4	122
TG9S080C16MP11	1600	C	21	19 7/8	16 1/2	136
TG9S100C20MP11	2000	C	21	19 7/8	18 1/4	145
TG9S120D20MP11	2000	D	24 1/2	23 3/8	21 3/4	156

Ratings & Physical / Electrical Data

Models	Input	Output	AFUE %	Air Temp. Rise	Max. Outlet Air Temp	Blower		Blower Size	Max Over-Current Protect	Total Unit Amps	Min. wire Size (awg) @ 75 ft one way
	MBH	MBH		°F	°F	HP	Amps				
TG9S060B12MP11	60	57	95.5	30-60	160	1/2	7.1	11x8	15	10.0	14
TG9S080C22MP11	80	76	95.5	35-65	165	1	14.5	11x11	20	17.0	12
TG9S100C20MP11	100	95	95.5	35-65	165	1	14.5	11x11	20	17.0	12
TG9S120D20MP11	120	114	95.5	35-65	165	1	14.5	11x11	20	17.0	12

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.

The furnace shall be installed so that the electrical components are protected from water.

FILTER PERFORMANCE

The airflow capacity data published in the "Blower Performance" tables shown represents blower performance WITH-OUT 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
<p><i>Single side return above 1800 CFM is approved as long as the filter velocity does not exceed filter manufacturer's recommendation and a transition is used to allow use on a 20x25 filter.</i></p>

Recommended Filter Sizes (High velocity 600 FPM)

CFM	Cabinet Size	Side (in)	Bottom (in)
800	A	16 x 25	14 x 25
1000	A	16 x 25	14 x 25
1200	A	16 x 25	14 x 25
1200	B	16 x 25	16 x 25
1600	B	16 x 25	16 x 25
1600	C	16 x 25	20 x 25
2000	C	(2) 16 x 25	20 x 25
2200	C	(2) 16 x 25	20 x 25
2000	D	(2) 16 x 25	22 x 25

- Air velocity through throwaway type filters may not exceed 300 feet per minute (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 16x25 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 20x25 filter.

Unit Clearances to Combustibles

Application	Upflow	Downflow	Horizontal
Top	1"	0"	0"
Vent	0"	0"	0"
Rear	0"	0"	0"
Side	0"	0"	1"
Front*	0"	0"	0"
Floor	Combustible	Combustible ¹	Combustible
Closet	Yes	Yes	Yes
Line Contact	No	No	Yes

- For combustible floors only when used with special sub-base.
- * - 24" clearance in front and 18" on side recommended for service access.
All furnaces approved for alcove and attic installation.

ACCESSORIES

Propane (LP) Conversion Kit - This accessory conversion kit may be used to convert natural gas (N) units for propane (LP) operation.

S1-1NP0347 - All Models

Concentric Vent Termination - For use through rooftop, sidewall. Allows combustion air to enter and exhaust to exit through single common hole. Eliminates unsightly elbows for a cleaner installation.

AOPS7488 (2")
Aops7489 (3")

Sidewall Vent Termination Kit - For use on sidewall, two-pipe installations only. Provide a more attractive termination for locations where the terminal is visible on the side of the home.

370191 (2" & 3")

Condensate Neutralizer Kit - Neutralizer cartridge has a 1/2" plastic tube fittings for installation in the drain line.

320095

Side Return Filter Racks -

S1-1SR0402 - All Models

Bottom Return Filter Racks - 1BR05xx series are galvanized steel filter racks..

S1-1BR0517 - For 17-1/2" cabinets

S1-1BR0521 - For 21" cabinets

S1-1BR0524 - For 24-1/2" cabinets

Combustible Floor Base Kit - For installation of these furnaces in downflow applications directly onto combustible flooring material, These kits are required to prevent potential overheating situations. tible floor base kit provides access for combustible airflow.

S1-1CB0517 - For 17-1/2" cabinets

S1-1CB0521 - For 21" cabinets

S1-1CB0524 - For 24-1/2" cabinets

High Altitude Pressure Switches - For installation where the altitude is less than 5,000 feet it is not required that the pressure switch be changed. For altitudes above 5,000 feet, see kits below.

S1-1PS3306 - 060

S1-1PS3307 - 040, 080

S1-1PS3302 - 100, 120, 130

Blower Performance CFM - Any Position (without filter) - Bottom Return

Models	Speed	Bottom Airflow Data (SCFM)									
		Ext. Static Pressure (in. H2O)									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
TG9S060B12MP11	High	1492	1442	1378	1325	1243	1176	1075	966	849	655
	Medium High	1236	1201	1161	1139	1082	1011	919	830	715	590
	Medium Low	986	950	961	916	872	831	757	703	600	510
	Low	824	795	783	744	713	659	624	554	489	389
TG9S080C16MP11	High	1919	1865	1802	1738	1671	1600	1517	1414	1322	1201
	Medium High	1532	1533	1513	1499	1465	1416	1352	1283	1198	1084
	Medium Low	1232	1313	1291	1280	1250	1209	1207	1148	1055	937
	Low	826	821	853	858	838	817	794	776	760	711
TG9S100C20MP11	High	2284	2205	2114	2021	1934	1848	1752	1653	1505	1397
	Medium High	1967	1905	1824	1763	1712	1628	1551	1473	1379	1213
	Medium Low	1610	1563	1513	1480	1430	1367	1319	1261	1101	1012
	Low	1326	1304	1267	1232	1183	1143	1080	1003	871	798
TG9S120D20MP11	High	2341	2245	2153	2072	1977	1876	1769	1642	1506	1306
	Medium High	2002	1952	1878	1823	1739	1657	1563	1458	1322	1185
	Medium Low	1615	1579	1533	1473	1430	1368	1282	1186	1091	953
	Low	1352	1295	1259	1245	1190	1141	1076	998	938	820

1. Airflow expressed in standard cubic feet per minute (CFM).
2. Motor voltage at 115 V

Blower Performance CFM - Any Position (without filter) - Left Side Return

Models	Speed	Left Side Airflow Data (SCFM)									
		Ext. Static Pressure (in. H2O)									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
TG9S060B12MP11	High	1470	1406	1361	1309	1241	1155	1060	920	775	628
	Medium High	1211	1186	1139	1101	1042	980	896	796	681	545
	Medium Low	970	957	927	889	853	796	745	660	568	450
	Low	793	781	756	724	694	653	585	530	469	382
TG9S080C16MP11	High	1956	1907	1846	1778	1717	1647	1573	1483	1353	1209
	Medium High	1543	1543	1516	1504	1477	1446	1382	1309	1202	1099
	Medium Low	1238	1241	1243	1241	1252	1242	1201	1140	1074	967
	Low	906	902	903	910	888	866	859	829	795	743
TG9S100C20MP11	High	2391	2286	2165	2079	2004	1934	1839	1692	1560	1366
	Medium High	1945	1878	1838	1782	1694	1642	1565	1451	1334	1163
	Medium Low	1549	1530	1495	1430	1431	1365	1284	1192	1097	1022
	Low	1256	1229	1189	1159	1089	1033	1008	950	871	784
TG9S120D20MP11	High	2343	2253	2167	2071	1979	1881	1785	1668	1473	1351
	Medium High	1954	1892	1846	1781	1714	1637	1548	1429	1238	1171
	Medium Low	1596	1539	1511	1458	1399	1341	1254	1180	942	988
	Low	1299	1261	1229	1177	1111	1053	993	937	882	782

1. Airflow expressed in standard cubic feet per minute (CFM).
2. Return air is through side opposite motor (left side).
3. Motor voltage at 115 V.
4. Airflow through across motor side (right side) may be slightly less than the data shown above.

Vent Tables

Maximum Equivalent Pipe Length

Elevation Sea level - 2000		
Model Input (BTUH)	Pipe Size (in)	Max. equivalent Length (ft)
60,000	2	65
60,000	3	90
60,000	4	150
80,000	2	65
80,000	3	90
80,000	4	150
100,000	2	30
100,000	3	90
100,000	4	150
120,000	3	90
120,000	4	150

See Installation manual for complete Maximum Vent Length Tables

Equivalent Length of Fittings

Fitting	Equivalent Length
2" 90° sweep elbow	5 feet of 2" pipe
2" 45° sweep elbow	2-1/2 feet of 2" pipe
2" 90° standard elbow	7 feet of 2" pipe
2" 45° standard elbow	3-1/2 feet of 2" pipe
3" 90° sweep elbow	5 feet of 3" pipe
3" 45° sweep elbow	2-1/2 feet of 3" pipe
3" 90° standard elbow	7 feet of 3" pipe
3" 45° standard elbow	3-1/2 feet of 3" pipe
4" 90° elbow (sweep or standard)	5 feet of 4" pipe
4" 45° elbow (sweep or standard)	2-1/2 feet of 4" pipe