

# TECHNICAL GUIDE

## 95.0% AFUE Single Stage Gas-fired Manufactured Housing Multi-position Gas Furnaces

### Models: MM9E

Natural Gas

60 MBH to 100 MBH Input



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

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### 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 downflow applications and can be converted for upflow applications.

These furnaces are designed for residential mobile home, manufactured, or modular home installation. All units are factory assembled, wired, and tested to ensure safe, dependable, and economical installation and operation.

These units are Category IV direct vent, sealed combustion listed and can be vented either through side wall or roof applications using approved plastic combustion air and vent piping. Approved plastic combustion air and vent piping include PVC, CPVC, ABS, IPEX System 1738, Selkirk Polyflue, DuraVent PolyPro, and Centrotherm InnoFlue polypropylene venting systems.

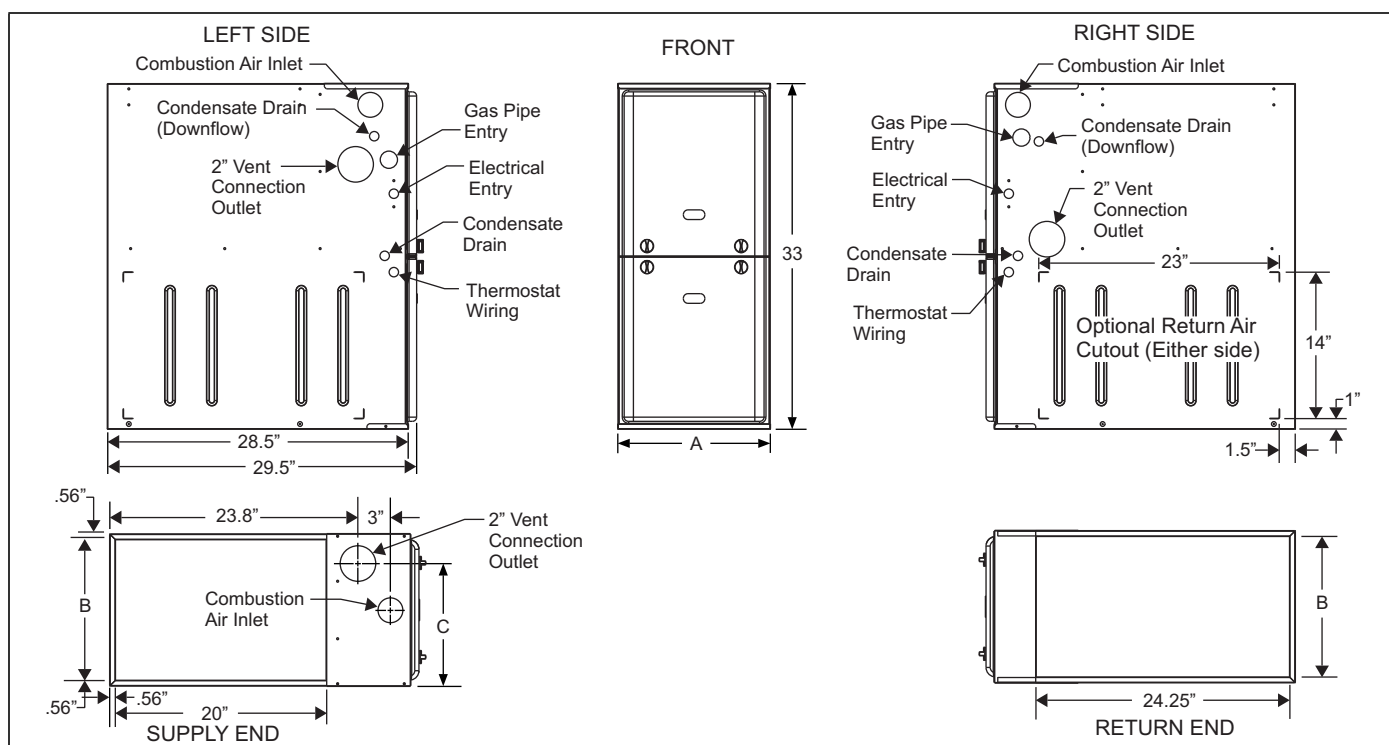
### Warranty

15-year limited warranty on the heat exchanger

2-year limited parts warranty

### Features

- Easily applied in upflow or downflow installation with minimal conversion necessary.
- Compact, easy to install, ideal height 33 in. 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.
- 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.
- Five speed, direct drive standard ECM motor.
- 24 V, 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 performance testing 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.
- Slide-out blower assembly for easy access and blower removal.
- External air filters used for maximum flexibility in meeting customers' IAQ needs.
- Protection included from air intake, exhaust vent, or condensate blockage.
- Patented self-priming internal condensate trap design for easy installation.
- Venting applications - installed as a two-pipe (sealed combustion) using outdoor air for combustion.
- No special vent termination required.
- 1/4 turn knobs provided for easy door removal.



Cabinet and duct dimensions (upflow configuration shown)

Model	Nominal CFM (m <sup>3</sup> /min)	Cabinet size	Cabinet dimensions (in.)			Approximate operating weights (lb)
			A	B	C	
MM9E060B12MP11	1200	B	17 1/2	16 3/8	13 1/4	122
MM9E080B12MP11	1200	B	17 1/2	16 3/8	14 3/4	126
MM9E080C16MP11	1600	C	21	19 7/8	16 1/2	136
MM9E080C20MP11	2000	C	21	19 7/8	18 1/4	145
MM9E100C16MP11	1600	C	21	19 7/8	18 1/4	142

## Ratings and physical/electrical data

Model	Input	Output	AFUE	Air temperature rise	Maximum outlet air temperature	Blower		Blower size	Recommended fuse or circuit breaker	Total unit	Gas pipe connection, NPT
	MBH	MBH	%	°F	°F	HP	A	in.	A	A	in.
MM9E060B12MP11	60	57	95.0	30–60	190	1/2	6.8	11 x 8	15	10.4	1/2
MM9E080B12MP11	80	76	95.0	40–70	190	1/2	6.8	11 x 8	15	10.4	1/2
MM9E080C16MP11	80	76	95.0	40–70	190	5/8	8.0	11 x 10	15	11.6	1/2
MM9E080C20MP11	80	76	95.0	30–60	190	1	10.9	11 x 11	20	14.5	1/2
MM9E100C16MP11	100	95	95.0	40–70	190	5/8	8.0	11 x 10	15	11.6	1/2

## Notes:

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.

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

## Filter performance

The airflow capacity data in the *Blower Performance CFM - Any Position (Without Filter)* table 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.

**Note:** Single-side return above 1800 CFM is approved provided 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 (upflow only).

**Recommended filter sizes (high velocity 600 FPM)**

CFM (m <sup>3</sup> /min)	Cabinet Size	Side (in.)	Bottom (in.)
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

**Notes:**

Air velocity through throwaway filters may 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 can 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.

**Unit clearances to combustibles**

Application	Upflow	Downflow
Top (in.)	1	0
Vent (in.)	0	0
Rear (in.)	0	0
Side (in.)	0	0
Front <sup>1</sup> (in.)	0	0
Floor	Combustible	Combustible <sup>2</sup>
Closet	Yes	Yes
Line Contact	No	No

1. 24 in. clearance in front and 18 in. on side is recommended for service access.

2. A special sub-base is required for downflow applications on combustible floors.

**Note:** All furnaces are approved for alcove and attic installation.

**Accessories**

**LP stainless steel burner kit** - This accessory conversion kit is used to convert existing burners to stainless steel burners for LP use only.

S1-32926889000 - All LP models

**Natural (NAT) gas stainless steel burner kit** - This accessory kit is used to replace existing burners with stainless steel burners for NAT gas use only.

S1-32924441000 - All NAT gas models

**Concentric vent termination** - For use through rooftop, side-wall. Allows combustion air to enter and exhaust to exit through single common hole. This eliminates unsightly elbows for a cleaner installation.

S1-1CT0302 (2 in.) and S1-1CT0302-636 (2 in.)

S1-1CT0303 (3 in.) and S1-1CT0303-636 (3 in.)

**Sidewall vent termination kit** - For use on sidewall, two-pipe installations only. This provides a more attractive termination for locations where the terminal is visible on the side of the home.

S1-1HT0901 (3 in.)

S1-1HT0902 (2 in.)

**Condensate neutralizer kit** - Neutralizer cartridge has 1/2 in. plastic tube fittings for installation in the drain line. Calcium carbonate refill media is also available from the Source 1 Parts (part number 026-30228-000).

S1-1NK0301

**Side return filter racks (upflow only)** - The S1-1SR0200 kit accommodates a 1 in., 2 in., or 4 in. filter. The S1-1SR0402 kit accommodates a 1 in. filter only.

S1-1SR0200 - All models

S1-1SR0402 - All models

**Bottom return filter racks** - The S1-1BR05\* series are galvanized steel filter racks. The S1-1BR06\* series are pre-painted steel filter racks to match the appearance of the furnace cabinet. The S1-1BR05\* and S1-1BR06\* series filter racks accommodate a 1 in., 2 in., or 4 in. filter.

S1-1BR0517 or S1-1BR0617 - For 17 1/2 in. cabinets

S1-1BR0521 or S1-1BR0621 - For 21 in. cabinets

S1-1BR0524 or S1-1BR0624 - For 24 1/2 in. cabinets

**Combustible floor base kit** - This kit is required to prevent potential overheating when the furnace is installed in a downflow application directly onto combustible flooring material. This kit is also required in any applications where the furnace is installed in a downflow configuration without an indoor coil. In this case, the combustible floor base kit provides access for combustible airflow.

S1-1CB0517 - For 17 1/2 in. cabinets

S1-1CB0521 - For 21 in. cabinets

S1-1CB0524 - For 24 1/2 in. cabinets

**EAC transition kits** - These kits are used for installation of EAC accessories with the furnace to provide easy transition of return airflow through the EAC to get the proper sealing and reduced airflow leakage.

S1-1TK1001 - For all models using side return

S1-1TK1017 - For 17 1/2 in. cabinets using bottom return

S1-1TK1021 - For 21 in. cabinets using bottom return

S1-1TK1024 - For 24 1/2 in. cabinets using bottom return

**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, see the following kits:

S1-1PS3306 - 060

S1-1PS3307 - 080

S1-1PS3302 - 100

**Thermostats** - Compatible thermostat controls are available through accessory sourcing. For optimum performance, these units are fully compatible with our residential Hx™ Touch Screen Thermostat. For more information, see the thermostat section of the Product Equipment Catalog.

S1-THXU280 - All models

# Blower performance CFM - any position (without filter)

Model	Speed	Airflow data (SCFM)							
		External static pressure (in. H <sub>2</sub> O)							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
MM9E060B12MP11	High	1342	1316	1290	1268	1243	1219	1172	1116
	Medium high	1297	1267	1247	1217	1189	1159	1129	1087
	Medium	1165	1139	1108	1080	1051	1020	983	948
	Medium low	1027	995	965	936	894	862	825	778
	Low	822	775	740	687	649	605	566	512
MM9E080B12MP11	High	1418	1390	1364	1333	1304	1281	1246	1205
	Medium high	1305	1281	1244	1217	1182	1149	1109	1066
	Medium	1139	1112	1071	1035	992	951	908	874
	Medium low	1017	986	948	901	859	819	765	727
	Low	885	821	763	711	651	611	560	518
MM9E080C16MP11	High	1706	1678	1649	1621	1602	1560	1505	1437
	Medium high	1390	1344	1313	1267	1235	1194	1150	1109
	Medium	1212	1167	1125	1086	1041	996	951	902
	Medium low	1016	964	914	861	803	734	653	594
	Low	920	791	733	666	568	506	448	388
MM9E080C20MP11	High	2130	2086	2065	2016	2001	1932	1863	1775
	Medium high	1922	1894	1835	1810	1771	1727	1688	1627
	Medium	1684	1648	1616	1559	1516	1471	1429	1382
	Medium low	1563	1528	1474	1435	1392	1329	1291	1244
	Low	1371	1321	1281	1222	1173	1131	1076	1017
MM9E100C16MP11	High	1762	1733	1688	1659	1625	1594	1565	1512
	Medium high	1428	1386	1337	1291	1245	1205	1161	1114
	Medium	1225	1178	1127	1083	1034	988	918	886
	Medium low	1108	1059	1001	948	889	821	764	702
	Low	1022	867	799	732	660	579	521	496

## Notes:

Airflow expressed in standard cubic feet per minute (CFM)

Motor voltage at 115 V