



Heating and Air Conditioning

TECHNICAL GUIDE

96% AFUE TWO STAGE VARIABLE SPEED ECM RESIDENTIAL GAS FURNACES

MULTI-POSITION

MODELS: TM9V*C

NATURAL GAS

40 - 120 MBH INPUT



ISO 9001
Certified Quality
Management System

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

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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.

Standard 5-year limited Parts warranty.

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.

See Limited Warranty certificate in Users Information Manual for details.

DESCRIPTION

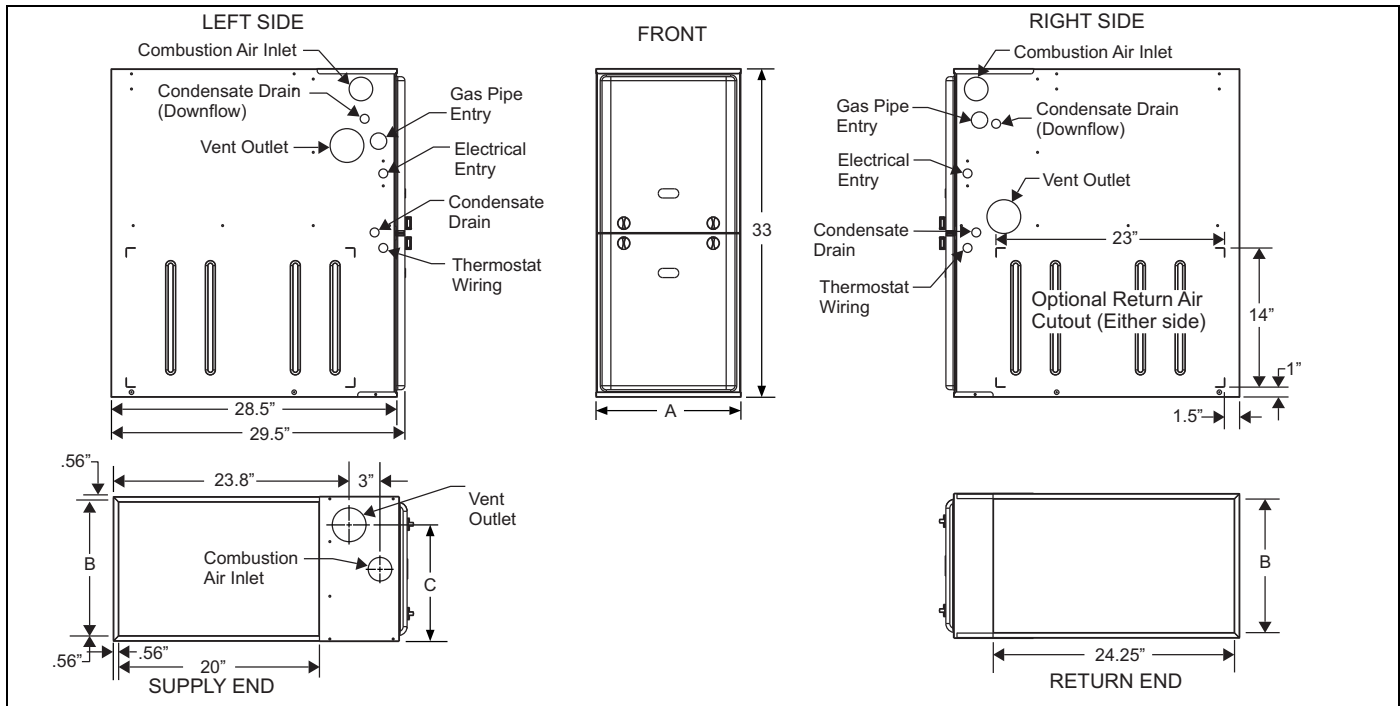
These compact units employ induced combustion, reliable hot surface ignition and high heat transfer aluminized tubular heat exchangers. The units are factory shipped for installation in upflow or horizontal applications and may be converted for downflow applications.

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

- Two stage heating operation includes two stage gas valve, two stage inducer operation and variable speed ECM blower operation. Adjustable delay timer allows two stage operation with a single stage thermostat.
- Easily applied in upflow, horizontal left or right, or downflow installation with minimal conversion necessary.
- Compact, easy to install, ideal height 33" tall cabinet.
- ECM variable speed drive for cooling SEER enhancement, improved comfort with optional airflow delay profiles, and continuous fan options for IAQ performance.
- Easy access to controls to connect power/control wiring.
- Built-in, high level self diagnostics with fault code display.
- 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.
- 24V, 40 VA control transformer and blower relay supplied for add-on cooling.
- Hi-tech tubular aluminized steel primary heat exchanger with stainless steel tube/aluminum fin secondary heat exchanger for outstanding efficiency.
- Solid removable bottom panel allows easy conversion.
- Airflow leakage less than 1% of nominal airflow for duct blaster conditions.
- No knockouts to deal with, making installation easier.
- Movable duct connector flanges for application flexibility.
- Quiet inducer operation, burner, and blower 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.
- Insulated blower compartment for thermal and acoustic performance.
- 1/4 turn knobs provided for easy independent door removal.
- Internal condensate trap design (patent pending) provides condensate management options and is self priming to prevent nuisance problems.
- Protection included from air intake, exhaust vent or condensate blockage.
- Venting applications maybe installed as either 2 pipe sealed combustion or single pipe vent using indoor combustion air.
- These models may be connected as part of a communicating control system using a 4-wire connection bus.



Cabinet & Duct Dimensions

| Model | Nominal CFM (m ³ /min) | Cabinet Size | Cabinet Dimensions (Inches) | | | Approximate Operating Weights |
|-----------------|-----------------------------------|--------------|-----------------------------|--------|--------|-------------------------------|
| | | | A | B | C | Lbs |
| TM9V040A10MP11C | 1000 | A | 14-1/2 | 13-3/8 | 11-3/4 | 113 |
| TM9V060B12MP11C | 1200 | B | 17-1/2 | 16-3/8 | 13-1/4 | 122 |
| TM9V080B12MP11C | 1200 | B | 17-1/2 | 16-3/8 | 13-1/4 | 126 |
| TM9V080C16MP11C | 1600 | C | 21 | 19-7/8 | 16-1/2 | 136 |
| TM9V100C16MP11C | 1600 | C | 21 | 19-7/8 | 18-1/4 | 142 |
| TM9V100C20MP11C | 2000 | C | 21 | 19-7/8 | 18-1/4 | 145 |
| TM9V120D20MP11C | 2000 | D | 24-1/2 | 23-3/8 | 21-3/4 | 156 |

Ratings & Physical / Electrical Data

| Model | Input High/Low | Output High/Low | Total Unit | AFUE | High Fire Air Temp. Rise | Low Fire Air Temp. Rise |
|-----------------|-----------------------|-----------------|------------|-------------|---------------------------|---------------------------------------|
| | MBH | MBH | Amps | % | °F | °F |
| TM9V040A10MP11C | 40/26 | 38/25 | 9 | 96 | 30 - 60 | 20 - 50 |
| TM9V060B12MP11C | 60/39 | 58/37 | 9 | 96 | 35 - 65 | 35 - 65 |
| TM9V080B12MP11C | 80/52 | 77/50 | 9 | 96 | 40 - 70 | 35 - 65 |
| TM9V080C16MP11C | 80/52 | 77/50 | 12 | 96 | 35 - 65 | 35 - 65 |
| TM9V100C16MP11C | 100/65 | 96/62 | 12 | 96 | 35 - 65 | 30 - 65 |
| TM9V100C20MP11C | 100/65 | 96/62 | 14 | 96 | 35 - 65 | 35 - 65 |
| TM9V120D20MP11C | 120/78 | 115/75 | 14 | 96 | 35 - 65 | 35 - 65 |
| Model | Max. Outlet Air Temp. | Blower | | Blower Size | Max. Over-current Protect | Min. Wire Size (awg) @ 75 ft. One Way |
| | °F | HP | Amps | In. | | |
| TM9V040A10MP11C | 180 | 1/2 | 7 | 11 X 8 | 15 | 14 |
| TM9V060B12MP11C | 180 | 1/2 | 7 | 11 x 8 | 15 | 14 |
| TM9V080B12MP11C | 175 | 1/2 | 7 | 11 x 8 | 15 | 14 |
| TM9V080C16MP11C | 165 | 3/4 | 10.2 | 11 x 10 | 15 | 14 |
| TM9V100C16MP11C | 180 | 3/4 | 10.2 | 11 x 10 | 15 | 14 |
| TM9V100C20MP11C | 170 | 1 | 12.7 | 11 x 11 | 20 | 12 |
| TM9V120D20MP11C | 180 | 1 | 12.7 | 11 x 11 | 20 | 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" table shown 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 filter manufacturer's recommendation and a transition is used to allow use on a 20x25 filter.

Recommended Filter Sizes (High velocity 600 FPM)

| CFM | Cabinet Size | Side (in) | Bottom (in) |
|------|--------------|-------------|-------------|
| 1000 | A | 16 x 25 | 14 x 25 |
| 1200 | B | 16 x 25 | 16 x 25 |
| 1600 | C | 16 x 25 | 20 x 25 |
| 2000 | 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.

S1-1CT0302 (2") & S1-1CT0302-636 (2")

S1-1CT0303 (3") & S1-1CT0303-636 (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.

S1-1HT0901 (3")

S1-1HT0902 (2")

Condensate Neutralizer Kit - Neutralizer cartridge has a 1/2" plastic tube fittings for installation in the drain line. Calcium carbonate refill media is also available from the Source 1 Parts (P/N 026-30228-000).

1NK0301

Side Return Filter Racks -

S1-1SR0200 - All Models

S1-1SR0402 - All Models

Bottom Return Filter Racks - 1BR05xx series are galvanized steel filter racks. 1BR06xx are pre-painted steel filter racks to match the appearance of the furnace cabinet.

S1-1BR0514 or 1BR0614 - For 14-1/2" cabinets

S1-1BR0517 or 1BR0617 - For 17-1/2" cabinets

S1-1BR0521 or 1BR0621 - For 21" cabinets

S1-1BR0524 or 1BR0624 - 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.

S1-1CB0514 - For 14-1/2" cabinets

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.

S1-1PS3308 - All Models

Thermostats - Compatible thermostat controls are available through accessory sourcing. For optimum performance, these indoor units are fully compatible with the **Residential Touchscreen Communicating Control S1-TTSCC01**.

Table 1: Air Flow Data

| HIGH / LOW SPEED COOLING AND HEAT PUMP CFM | | | | | | | |
|--|------|--------|------|--------|------|-----------------|----------|
| 040A10 | | 060B12 | | 080B12 | | Jumper Settings | |
| High | Low | High | Low | High | Low | COOL Tap | ADJ Tap* |
| 1080 | 750 | 1343 | 865 | 1320 | 882 | A | B |
| 960 | 680 | 1116 | 727 | 1093 | 755 | B | B |
| 980 | 690 | 1235 | 791 | 1203 | 810 | A | A |
| 870 | 620 | 1026 | 661 | 1001 | 693 | B | A |
| 890 | 620 | 1079 | 709 | 1080 | 730 | A | C |
| 770 | 550 | 889 | 590 | 880 | 641 | C | B |
| 790 | 560 | 900 | 599 | 910 | 642 | B | C |
| 650 | 480 | 787 | 531 | 803 | 585 | D | B |
| 700 | 500 | 814 | 542 | 836 | 597 | C | A |
| 590 | 440 | 712 | 490 | 738 | 557 | D | A |
| 640 | 450 | 725 | 499 | 749 | 561 | C | C |
| 540 | 400 | 641 | 456 | 682 | 529 | D | C |
| 080C16 | | 100C16 | | 100C20 | | Jumper Settings | |
| High | Low | High | Low | High | Low | COOL Tap | ADJ Tap* |
| 1787 | 1171 | 1818 | 1192 | 2019 | 1290 | A | B |
| 1503 | 987 | 1545 | 1030 | 1790 | 1174 | B | B |
| 1620 | 1053 | 1661 | 1083 | 1818 | 1195 | A | A |
| 1405 | 914 | 1427 | 936 | 1630 | 1068 | B | A |
| 1462 | 964 | 1497 | 991 | 1649 | 1082 | A | C |
| 1217 | 785 | 1234 | 819 | 1269 | 848 | C | B |
| 1245 | 818 | 1265 | 832 | 1432 | 956 | B | C |
| 940 | 608 | 977 | 648 | 1078 | 704 | D | B |
| 1091 | 702 | 1116 | 728 | 1169 | 770 | C | A |
| 852 | 551 | 884 | 572 | 986 | 638 | D | A |
| 983 | 626 | 1019 | 666 | 1062 | 685 | C | C |
| 764 | 544 | 791 | 519 | 866 | 576 | D | C |
| | | | | 120D20 | | Jumper Settings | |
| | | | | High | Low | COOL Tap | ADJ Tap* |
| | | | | 2006 | 1397 | A | B |
| | | | | 1687 | 1131 | B | B |
| | | | | 1845 | 1282 | A | A |
| | | | | 1552 | 1050 | B | A |
| | | | | 1694 | 1157 | A | C |
| | | | | 1502 | 1011 | C | B |
| | | | | 1400 | 944 | B | C |
| | | | | 1365 | 922 | D | B |
| | | | | 1364 | 931 | C | A |
| | | | | 1232 | 808 | D | A |
| | | | | 1225 | 808 | C | C |
| | | | | 1117 | 718 | D | C |
| HIGH / LOW HEAT CFM | | | | | | | |
| 040A10 | | 060B12 | | 80B12 | | Jumper Settings | |
| High | Low | High | Low | High | Low | HEAT Tap | ADJ Tap* |
| 960 | 670 | 1364 | 843 | 1433 | 945 | A | Any |
| 840 | 590 | 1253 | 745 | 1320 | 887 | B | Any |
| 740 | 520 | 1102 | 660 | 1223 | 840 | C | Any |
| 640 | 450 | 1014 | 607 | 1134 | 768 | D | Any |
| 80C16 | | 100C16 | | 100C20 | | Jumper Settings | |
| High | Low | High | Low | High | Low | HEAT Tap | ADJ Tap* |
| 1684 | 1095 | 1803 | 1182 | 2194 | 1417 | A | Any |
| 1542 | 1011 | 1686 | 1084 | 1999 | 1290 | B | Any |
| 1426 | 927 | 1530 | 1016 | 1799 | 1182 | C | Any |
| 1289 | 832 | 1427 | 936 | 1614 | 1062 | D | Any |
| | | | | 120D20 | | Jumper Settings | |
| | | | | High | Low | HEAT Tap | ADJ Tap* |
| | | | | 1937 | 1323 | A | Any |
| | | | | 1757 | 1199 | B | Any |
| | | | | 1594 | 1062 | C | Any |
| | | | | 1429 | 957 | D | Any |

All CFM's are shown at 0.5" w.c. external static pressure. These units have variable speed motors that automatically adjust to provide constant CFM from 0.0" to 0.6" w.c. static pressure. From 0.6" to 1.0" static pressure, CFM is reduced by 2% per 0.1" increase in static. Operation on duct systems with greater than 1.0" w.c. external static pressure is not recommended.

NOTE: At some settings, LOW COOL and/or LOW HEAT airflow may be lower than what is required to operate an airflow switch on certain models of electronic air cleaners. Consult the instructions for the electronic air cleaner for further details.

* The ADJ "D" tap should not be used.