# TECHNICAL GUIDE

## 96% AFUE TWO STAGE RESIDENTIAL GAS FURNACES MULTI-POSITION

## MODELS: TM9T

**NATURAL GAS**
**60 - 120 MBH INPUT**




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

**Visit us on the web at www.york.com**

**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.

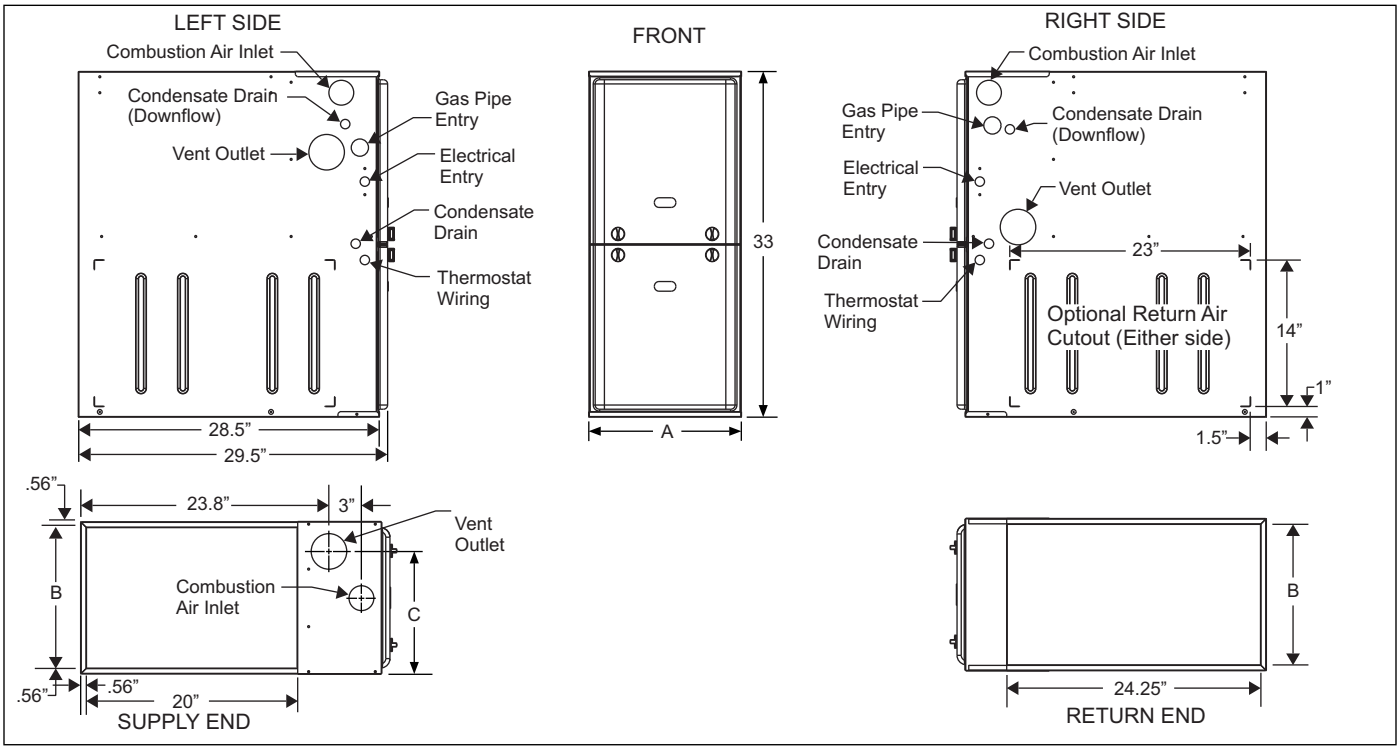
These furnaces are designed for residential installation in a basement, closet, alcove, attic, recreation room or garage and are also ideal for commercial applications. All units are factory assembled, wired and tested to assure safe dependable and economical installation and operation.

These units are Category IV, National Fuel Gas Code and may 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 Polyflue (a polypropylene venting systems)

### FEATURES

- Two stage heating operation includes two stage gas valve, two stage inducer operation and 4 speed, direct drive PSC motor 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.
- 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 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 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.
- 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.

FOR DISTRIBUTION USE ONLY - NOT TO BE USED AT POINT OF RETAIL SALE




**Cabinet & Duct Dimensions**

| BTUH (kW) Input | Nominal CFM ($m^3$/min) | Cabinet Size | Cabinet Dimensions (Inches) | | | Approximate Operating Weights |
|---|---|---|---|---|---|---|
| | | | A | B | C | Lbs |
| TM9T060B12MP11 | 1200 | B | 17 1/2 | 16 3/8 | 13 1/4 | 122 |
| TM9T080B12MP11 | 1200 | B | 17 1/2 | 16 3/8 | 14 3/4 | 126 |
| TM9T080C16MP11 | 1600 | C | 21 | 19 7/8 | 16 1/2 | 136 |
| TM9T100C16MP11 | 1600 | C | 21 | 19 7/8 | 18 1/4 | 142 |
| TM9T100C20MP11 | 2000 | C | 21 | 19 7/8 | 18 1/4 | 145 |
| TM9T120D20MP11 | 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 |
| TM9T060B12MP11 | 60/39 | 58/37 | 10 | 96 | 35 - 65 | 35 - 65 |
| TM9T080B12MP11 | 80/52 | 77/50 | 10 | 96 | 45 - 75 | 20 - 50 |
| TM9T080C16MP11 | 80/52 | 77/50 | 11.5 | 96 | 45 - 75 | 25 - 55 |
| TM9T100C16MP11 | 100/65 | 96/62 | 11.5 | 96 | 35 - 65 | 35 - 65 |
| TM9T100C20MP11 | 100/65 | 96/62 | 17 | 96 | 45 - 75 | 20 - 50 |
| TM9T120D20MP11 | 120/78 | 115/75 | 17 | 96 | 45 - 75 | 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. | | |
| TM9T060B12MP11 | 190 | 0.50 | 7 | 11 x 8 | 15 | 14 |
| TM9T080B12MP11 | 190 | 0.50 | 7 | 11 x 8 | 15 | 14 |
| TM9T080C16MP11 | 190 | 0.75 | 8.8 | 11 x 10 | 15 | 14 |
| TM9T100C16MP11 | 190 | 0.75 | 8.8 | 11 x 10 | 15 | 14 |
| TM9T100C20MP11 | 190 | 1.00 | 14.5 | 11 x 11 | 20 | 12 |
| TM9T120D20MP11 | 190 | 1.00 | 14.5 | 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) |
|---|---|---|---|
| 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 |

1. 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.
2. 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 |

1. 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 units for LP operation.

S1-1NP0347 - All Models

**LP Stainless Steel Burner Kit -** This accessory conversion kit may be 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 may be 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, 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).

S1-1NK0301

**Side Return Filter Racks -** The S1-1SR0200 Kit accommodates a 1”, 2” or 4” filter. The S1-1SR0402 Kit accommodates a 1” 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”, 2” or 4” filter.

S1-1BR0514 or S1-1BR0614 - For 14-1/2” cabinets
S1-1BR0517 or S1-1BR0617 - For 17-1/2” cabinets
S1-1BR0521 or S1-1BR0621 - For 21” cabinets
S1-1BR0524 or S1-1BR0624 - For 24-1/2” cabinets

**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.

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 outdoor units are fully compatible with our York touch screen thermostat with proprietary (patent-pending) hexagon interface. For more information, see the thermostat section of the Product Equipment Catalog.

S1-THXU280 - All Models

**Blower Performance CFM - Any Position (without filter)**

| Bottom Airflow Data (SCFM) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Models** | **Speed** | **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** |
| TM9T060B12MP11 | 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 |
| TM9T080B12MP11 | High | 1597 | 1537 | 1484 | 1435 | 1370 | 1286 | 1230 | 1155 | 1075 | 925 |
| | Medium High | 1338 | 1307 | 1273 | 1223 | 1179 | 1123 | 1065 | 998 | 928 | 812 |
| | Medium Low | 1113 | 1094 | 1077 | 1043 | 1008 | 972 | 924 | 868 | 803 | 798 |
| | Low | 937 | 916 | 900 | 877 | 854 | 817 | 775 | 718 | 639 | 560 |
| TM9T080C16MP11 | 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 |
| TM9T100C16MP11 | High | 1909 | 1880 | 1823 | 1776 | 1706 | 1637 | 1562 | 1474 | 1375 | 1252 |
| | Medium High | 1465 | 1463 | 1469 | 1485 | 1477 | 1416 | 1386 | 1324 | 1250 | 1114 |
| | Medium | 1190 | 1222 | 1216 | 1215 | 1224 | 1189 | 1158 | 1145 | 1087 | 996 |
| | Low | 787 | 834 | 819 | 836 | 819 | 810 | 790 | 761 | 690 | 707 |
| TM9T100C20MP11 | 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 |
| TM9T120D20MP11 | 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 |
| **Left Side Airflow Data (SCFM)** | | | | | | | | | | | |
| **Models** | **Speed** | **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** |
| TM9T060B12MP11 | 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 |
| TM9T080B12MP11 | High | 1605 | 1562 | 1514 | 1454 | 1393 | 1330 | 1251 | 1169 | 1073 | 940 |
| | Medium High | 1372 | 1318 | 1280 | 1255 | 1205 | 1161 | 1093 | 1023 | 943 | 849 |
| | Medium Low | 1087 | 1073 | 1052 | 1003 | 993 | 953 | 897 | 843 | 775 | 709 |
| | Low | 916 | 896 | 881 | 854 | 831 | 802 | 757 | 708 | 642 | 574 |
| TM9T080C16MP11 | 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 |
| TM9T100C16MP11 | High | 1828 | 1829 | 1789 | 1768 | 1727 | 1671 | 1601 | 1505 | 1390 | 1272 |
| | Medium High | 1422 | 1444 | 1437 | 1424 | 1396 | 1326 | 1301 | 1253 | 1200 | 1100 |
| | Medium | 1224 | 1229 | 1243 | 1234 | 1219 | 1193 | 1168 | 1135 | 1088 | 977 |
| | Low | 813 | 819 | 818 | 814 | 783 | 762 | 756 | 732 | 690 | 642 |
| TM9T100C20MP11 | 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 |
| TM9T120D20MP11 | 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.

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444559-YTG-G-0616
Supersedes: 444559-YTG-F-0615

**York International Corp.**
**5005 York Drive**
**Norman, OK 73069**