



# N80ESU

## Product Specifications

### 80% AFUE, Ultra-Low NOx, Single Stage Gas Furnace

#### EASIER TO SELL

- 80% AFUE
- Ultra-low NOx emissions – meets the nitrogen oxides (NOx) emission limit of 14 nanograms/joule for the South Coast Air Quality Management District and San Joaquin Valley Air Pollution Control District in California.
- Four-position furnace: Upflow, Horizontal Right, Horizontal Left, Downflow (6 different vent options)
- Versatile venting for tight-fit applications
- Category I venting
- Cabinet air leakage less than 2.0% at 1.0 in. W.C. and cabinet air leakage less than 1.4% at 0.5 in. W.C. when tested in accordance with ASHRAE Standard 193

#### TOUGHER

- Fixed-speeds, constant torque ECM blower motor
- Stainless steel, tubular heat exchanger
- Pilot free, hot surface ignition
- High temperature limit control designed to prevent overheating
- Blocked vent switch

#### QUIETER

- Pre-mix, enclosed burner
- Variable speed inducer motor

#### EASIER TO INSTALL AND SERVICE

- 33 1/4" (843.9mm) high, for ease of installation
- Quarter turn knobs for easy door removal and secure attachment
- Factory shipped for natural gas, not convertible to propane
- Flexible installation: Upflow, Downflow, Horizontal
- Two position vent elbow capability
- Common venting with other Category I appliances
- Self diagnostics
- Slide out blower assembly

#### LIMITED WARRANTY \*

- 20 year heat exchanger limited warranty
- 10 year parts limited warranty with timely registration
- 5 year parts limited warranty if not registered within 90 days of original installation
- \* For residential applications only. See warranty certificate for complete details and restrictions, including warranty coverage for other applications.



#### WARNING

This furnace is not designed for use in mobile homes, trailers, or recreational vehicles. Such use could result in property damage and/or death.



ISO 9001  
Quality

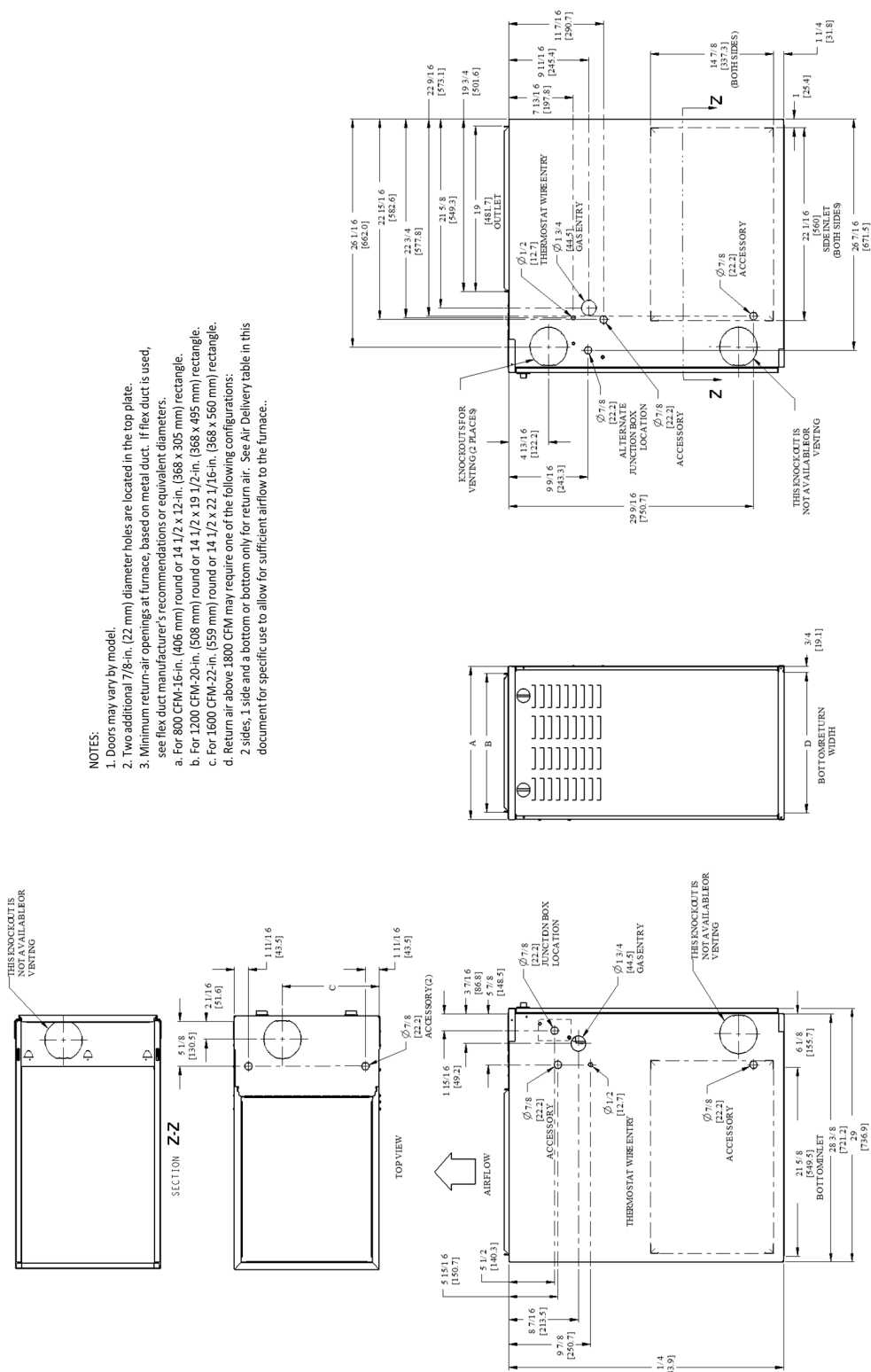


Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to [www.ahridirectory.org](http://www.ahridirectory.org)

| Model          | Input (MBTUH) | Efficiency AFUE | Cooling Capacity CFM range @ .5 in. w.c. (125 Pa) | Dimensions H x W x D Inches (Millimeters) | Shipping Wt. Lbs (Kg) |
|----------------|---------------|-----------------|---------------------------------------------------|-------------------------------------------|-----------------------|
| N80ESU0401712A | 40,000        | 80%             | 250 - 1370                                        | 33-1/4 x 17-1/2 x 29 (844 x 445 x 737)    | 118 (54)              |
| N80ESU0601716A | 60,000        | 80%             | 940 - 1545                                        | 33-1/4 x 17-1/2 x 29 (844 x 445 x 737)    | 126 (57)              |
| N80ESU0802120A | 80,000        | 80%             | 815 - 1990                                        | 33-1/4 x 21 x 29 (844 x 533 x 737)        | 140 (64)              |
| N80ESU1002120A | 100,000       | 80%             | 950 - 2005                                        | 33-1/4 x 21 x 29 (844 x 533 x 737)        | 150 (68)              |

| MODEL NUMBER IDENTIFICATION GUIDE                                                                                                                 |   |                                                                                   |                                                                                            |                                   |                   |                                                    |                                      |                                                 |    |                  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------|-------------------|----------------------------------------------------|--------------------------------------|-------------------------------------------------|----|------------------|--|
| DIGIT POSITION                                                                                                                                    | 1 | 2, 3                                                                              | 4                                                                                          | 5                                 | 6                 | 7, 8, 9                                            | 10, 11                               | 12, 13                                          | 14 | 15               |  |
|                                                                                                                                                   | N | 80                                                                                | E                                                                                          | S                                 | U                 | 060                                                | 17                                   | 16                                              | A  | 1                |  |
| N = Entry                                                                                                                                         |   | 80 = 80% AFUE<br>92 = 92% AFUE<br>95 = 95% AFUE<br>96 = 96% AFUE<br>97 = 97% AFUE | E = Fixed-Speeds Constant Torque (FCT) ECM<br>V = Variable-Speed Constant Torque (VCT) ECM | S = Single Stage<br>T = Two-Stage | U = Ultra Low NOx | 060 = 60,000 BTU/hr<br>---<br>155 = 155,000 BTU/hr | 17 = 17.5"<br>21 = 21"<br>24 = 24.5" | 16 = 1600 CFM<br>20 = 2000 CFM<br>22 = 2200 CFM | A  | 1                |  |
|                                                                                                                                                   |   |                                                                                   |                                                                                            |                                   |                   |                                                    |                                      |                                                 |    |                  |  |
|                                                                                                                                                   |   |                                                                                   |                                                                                            |                                   |                   |                                                    |                                      |                                                 |    |                  |  |
|                                                                                                                                                   |   |                                                                                   |                                                                                            |                                   |                   |                                                    |                                      |                                                 |    |                  |  |
|                                                                                                                                                   |   |                                                                                   |                                                                                            |                                   |                   |                                                    |                                      |                                                 |    |                  |  |
| C = Comm. Variable-speed Constant Airflow (VCA) ECM<br>E = Fixed-Speeds Constant Torque (FCT) ECM<br>V = Variable-Speed Constant Torque (VCT) ECM |   | MOTOR TYPE                                                                        |                                                                                            |                                   |                   |                                                    |                                      |                                                 |    |                  |  |
| M = Modulating<br>S = Single Stage<br>T = Two-Stage                                                                                               |   |                                                                                   |                                                                                            | HEATING STAGES                    |                   |                                                    |                                      |                                                 |    |                  |  |
| L = Low NOx<br>M = Mobile/Manufactured Home<br>N = Standard NOx<br>U = Ultra Low NOx                                                              |   |                                                                                   |                                                                                            |                                   |                   | FEATURE                                            |                                      |                                                 |    |                  |  |
| 026 = 26,000 BTU/hr<br>040 = 40,000 BTU/hr<br>060 = 60,000 BTU/hr<br>---                                                                          |   |                                                                                   |                                                                                            |                                   |                   | HEATING INPUT                                      |                                      |                                                 |    |                  |  |
| 14 = 14.2"<br>17 = 17.5"<br>21 = 21"<br>24 = 24.5"                                                                                                |   |                                                                                   |                                                                                            |                                   |                   |                                                    |                                      | CABINET WIDTH                                   |    |                  |  |
| 08 = 800 CFM<br>10 = 1000 CFM<br>12 = 1200 CFM<br>14 = 1400 CFM<br>16 = 1600 CFM<br>20 = 2000 CFM<br>22 = 2200 CFM                                |   |                                                                                   |                                                                                            |                                   |                   |                                                    |                                      |                                                 |    | COOLING CAPACITY |  |
| SALES (MAJOR) REVISION DIGIT                                                                                                                      |   |                                                                                   |                                                                                            |                                   |                   |                                                    |                                      |                                                 |    |                  |  |
| ENGINEERING (MINOR) REVISION DIGIT                                                                                                                |   |                                                                                   |                                                                                            |                                   |                   |                                                    |                                      |                                                 |    |                  |  |

UNIT DIMENSIONS



- NOTES:
- Doors may vary by model.
  - Two additional 7/8-in. (22 mm) diameter holes are located in the top plate.
  - Minimum return-air openings at furnace, based on metal duct. If flex duct is used, see flex duct manufacturer's recommendations or equivalent diameters.
    - For 800 CFM-16-in. (406 mm) round or 14 1/2 x 12-in. (368 x 305 mm) rectangle.
    - For 1200 CFM-20-in. (508 mm) round or 14 1/2 x 19 1/2-in. (368 x 495 mm) rectangle.
    - For 1600 CFM-22-in. (559 mm) round or 14 1/2 x 22 1/16-in. (368 x 560 mm) rectangle.
  - Return air above 1800 CFM may require one of the following configurations:
    - 2 sides, 1 side and a bottom or bottom only for return air. See Air Delivery table in this document for specific use to allow for sufficient airflow to the furnace.

NOTE: ALL DIMENSIONS IN INCH (MM) U.S. ECCN: Not Subject to Regulation (N.S.R.)

SD5507-4 ULN 80 REV. B

| FURNACE SIZE  | A                     | B                    | C                  | D                          | VENT CONNECTION SIZE IN. (MM) | SHIP WT LB (KG) |
|---------------|-----------------------|----------------------|--------------------|----------------------------|-------------------------------|-----------------|
|               | CABINET WIDTH IN (MM) | OUTLET WIDTH IN (MM) | TOP OUTLET IN (MM) | BOTTOM INLET WIDTH IN (MM) |                               |                 |
| N80ESU0401712 | 17-1/2 (445)          | 15-7/8 (403)         | 11-9/16 (294)      | 16 (406)                   | 4 (102)                       | 118 (54)        |
| N80ESU0601716 | 17-1/2 (445)          | 15-7/8 (403)         | 11-9/16 (294)      | 16 (406)                   | 4 (102)                       | 126 (57)        |
| N80ESU0802120 | 21 (533)              | 19-3/8 (492)         | 13-5/16 (338)      | 19-1/2 (495)               | 4 (102)                       | 140 (64)        |
| N80ESU1002120 | 21 (533)              | 19-3/8 (492)         | 13-5/16 (338)      | 19-1/2 (495)               | 4 (102)                       | 150 (68)        |

See installation instructions for complete installation requirements.

| UNIT SIZE                                       |                                | 0401712                      | 0601716            | 0802120             | 1002120             |
|-------------------------------------------------|--------------------------------|------------------------------|--------------------|---------------------|---------------------|
| RATINGS AND PERFORMANCE                         |                                |                              |                    |                     |                     |
| Input Btuh*                                     |                                | 40,000                       | 60,000             | 80,000              | 100,000             |
| Output Capacity (Btuh)†                         |                                | 31,000                       | 48,000             | 64,000              | 81,000              |
| AFUE†                                           |                                | 80.0                         | 80.0               | 80.0                | 80.0                |
| Certified Temperature Rise Range – °F (°C)      |                                | 25 (14) – 55 (30)            | 30 (16) – 60 (33)  | 25 (14) – 55 (30)   | 25 (14) – 55 (30)   |
| External Static Pressure††                      | Heating                        | .10                          | .12                | .15                 | .20                 |
|                                                 | Cooling                        | .50                          | .50                | .50                 | .50                 |
| Airflow Delivery @ ESP Listed Above (CFM)       | Heating                        | 695                          | 1020               | 1330                | 1885                |
|                                                 | Cooling                        | 250 – 1370                   | 940 – 1545         | 815 – 1990          | 950 – 2005          |
| ELECTRICAL                                      |                                |                              |                    |                     |                     |
| Unit Volts – Hertz – Phase                      |                                | 115-60-1                     | 115-60-1           |                     | 115-60-1            |
| Operating Voltage Range                         | Min-Max                        | 104-127                      | 104-127            |                     | 104-127             |
| Maximum Unit Amps                               |                                | 8.2                          | 10.6               | 13.3                | 13.3                |
| Unit Ampacity                                   |                                | 10.9                         | 13.9               | 17.3                | 17.3                |
| Maximum Wire Length – Measure one way in Ft (M) |                                | 33 (10)                      | 26 (8)             | 33 (10)             | 33 (10)             |
| Minimum Wire Size                               |                                | 14                           | 14                 | 12                  | 12                  |
| Maximum Fuse or Ckt Bkr Size (Amps)**           |                                | 15                           | 15                 | 20                  | 20                  |
| Transformer (24v)                               |                                | 40 VA                        |                    |                     |                     |
| External Control Power Available                | Heating                        | 12 VA                        |                    |                     |                     |
|                                                 | Cooling                        | 35 VA                        |                    |                     |                     |
| Air Conditioning Blower Relay                   |                                | Standard                     |                    |                     |                     |
| CONTROLS                                        |                                |                              |                    |                     |                     |
| Limit Control                                   |                                | SPST                         |                    |                     |                     |
| Heating Blower Control                          |                                | Solid – State Time Operation |                    |                     |                     |
| Gas Connection Size                             |                                | 1/2-in. NPT                  |                    |                     |                     |
| GAS CONTROLS                                    |                                |                              |                    |                     |                     |
| Gas Valve (Redundant)                           | Mfr.                           | White Rodgers                |                    |                     |                     |
|                                                 | Min. inlet pressure (In. W.C.) | 3.5 Natural Gas              |                    |                     |                     |
|                                                 | Max. inlet pressure (In. W.C.) | 13.6 Natural Gas             |                    |                     |                     |
| Ignition Device                                 |                                | Hot Surface ignitor          |                    |                     |                     |
| Factory-installed orifice                       |                                | 3.35mm                       | #18                | #10                 | #6                  |
| BLOWER DATA                                     |                                |                              |                    |                     |                     |
| Direct-Drive Motor HP                           |                                | 1/2                          | 3/4                | 1                   | 1                   |
| Motor Full Load Amps                            |                                | 6.40                         | 8.8                | 11.5                | 11.50               |
| Nominal RPM (Speeds)                            |                                | 1050 (5)                     | 1050 (5)           | 1050 (5)            | 1050 (5)            |
| Blower Wheel Diameter x Width – In. (mm)        |                                | 11 (279) x 8 (203)           | 11 (279) x 8 (203) | 11 (279) x 11 (279) | 11 (279) x 11 (279) |

\* Gas input ratings are certified for elevations to 5,000 ft. (1425 M). In USA, for elevations above 2,000 ft. (610 M), reduce ratings 2 percent for each 1,000 ft. (305 M) above sea level. Refer to National Fuel Gas Code NFPA 54/ANSI Z223.1 Table F.4 or furnace installation instructions.

† Capacity in accordance with U.S. Government DOE test procedures.

†† DOE Minimum External Static Pressure

\*\* Time–delay type is recommended.

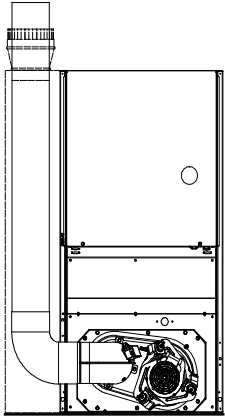
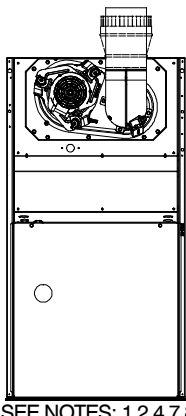
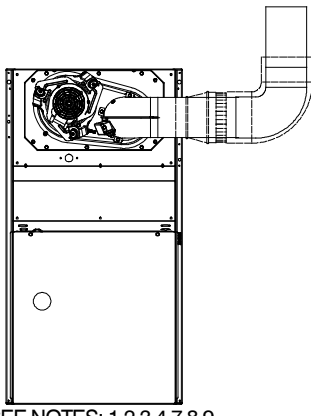
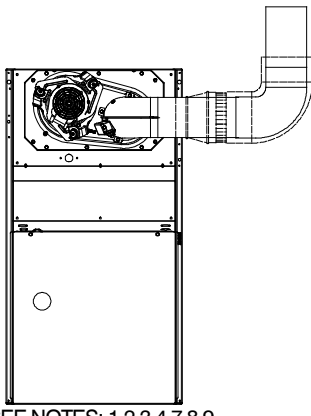
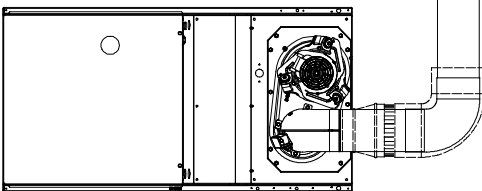
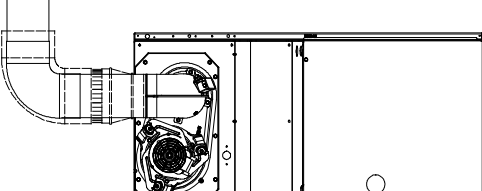
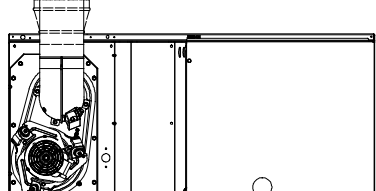
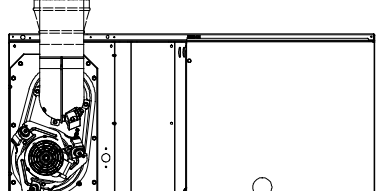
ICS Isolated Combustion System

AIR DELIVERY - CFM (with filter)\*

| Furnace | Wire Lead Color <sup>2</sup> | Function                            | Test Airflow Delivery @ Various External Static Pressures |      |      |      |      |      |      |      |      |      |
|---------|------------------------------|-------------------------------------|-----------------------------------------------------------|------|------|------|------|------|------|------|------|------|
|         |                              |                                     | External Static Pressure (IN. W.C.)                       |      |      |      |      |      |      |      |      |      |
|         |                              |                                     | 0.1                                                       | 0.2  | 0.3  | 0.4  | 0.5  | 0.6  | 0.7  | 0.8  | 0.9  | 1.0  |
| 0401712 | Gray                         | Cooling. Do not use for heating     | 1535                                                      | 1495 | 1455 | 1415 | 1370 | 1320 | 1280 | 1235 | 1190 | 1145 |
|         | Yellow                       | Alt Cooling or alt Heating          | 1100                                                      | 1055 | 1005 | 955  | 905  | 855  | 800  | 740  | 680  | 625  |
|         | Orange                       | Heating or alt cooling              | 695                                                       | 645  | 585  | 510  | 450  | 390  | 325  | 270  | 215  | 155  |
|         | Blue                         | Alt Cooling or alt Heating          | 935                                                       | 885  | 830  | 775  | 720  | 655  | 595  | 540  | 490  | 430  |
|         | Red                          | Alt Cooling or alt Heating          | 570                                                       | 455  | 380  | 310  | 250  | 180  | 110  | —    | —    | —    |
| 0601716 | Gray                         | Cooling. Do not use for heating     | 1720                                                      | 1680 | 1635 | 1585 | 1545 | 1505 | 1455 | 1405 | 1355 | 1305 |
|         | Yellow                       | Alt Cooling or alt Heating          | 1470                                                      | 1425 | 1385 | 1335 | 1290 | 1245 | 1200 | 1160 | 1110 | 1060 |
|         | Orange                       | Alt Cooling or alt Heating          | 1305                                                      | 1255 | 1215 | 1160 | 1115 | 1070 | 1025 | 975  | 925  | 870  |
|         | Blue                         | Heating or alt cooling              | 1040                                                      | 940  | 890  | 835  | 790  | 740  | 675  | 620  | 565  | 525  |
|         | Red                          | Alt Cooling or alt Heating          | 1135                                                      | 1090 | 1035 | 985  | 940  | 895  | 845  | 790  | 730  | 675  |
| 0802120 | Gray                         | Cooling. Do not use for heating     | 2185                                                      | 2135 | 2085 | 2035 | 1990 | 1935 | 1880 | 1825 | 1770 | 1715 |
|         | Yellow                       | Alt Cooling or alt Heating          | 1885                                                      | 1830 | 1780 | 1730 | 1675 | 1625 | 1575 | 1520 | 1470 | 1420 |
|         | Orange                       | Alt Cooling or alt Heating          | 1565                                                      | 1500 | 1440 | 1385 | 1330 | 1275 | 1220 | 1170 | 1115 | 1055 |
|         | Blue                         | Heating or alt cooling              | 1365                                                      | 1295 | 1230 | 1165 | 1100 | 1045 | 985  | 925  | 845  | 780  |
|         | Red                          | Alt Heating or alt cooling          | 1205                                                      | 1045 | 965  | 895  | 815  | 745  | 650  | 595  | 540  | 480  |
| 1002120 | Gray                         | Cooling. Do not use for heating     | 2230                                                      | 2180 | 2120 | 2060 | 2005 | 1945 | 1880 | 1815 | 1755 | 1700 |
|         | Blue                         | Heating or alt cooling              | 1945                                                      | 1885 | 1830 | 1770 | 1715 | 1650 | 1585 | 1525 | 1465 | 1405 |
|         | Yellow                       | Alt Cooling or alt Heating          | 1835                                                      | 1775 | 1720 | 1655 | 1595 | 1530 | 1470 | 1410 | 1350 | 1285 |
|         | Orange                       | Alt cooling or alt Heating          | 1535                                                      | 1470 | 1395 | 1325 | 1265 | 1205 | 1140 | 1080 | 1015 | 955  |
|         | Red                          | Alt cooling. Do not use for heating | 1095                                                      | 1060 | 1020 | 985  | 950  | 915  | 880  | 845  | 805  | 770  |

NOTES:

1. A filter is required for each return-air inlet. Airflow performance includes a 3/4 in. (19 mm) washable filter media such as contained in factory-authorized accessory filter rack. See accessory list. To determine airflow performance without this filter, assume an additional 0.1 in. W.C. available external static pressure.
  2. **ADJUST THE BLOWER SPEED TAPS AS NECESSARY FOR THE PROPER AIR TEMPERATURE RISE FOR EACH INSTALLATION.**
- Indicates unstable operating conditions.

| DOWNFLOW VENT CONFIGURATIONS                                                                                                        |  | UPFLOW VENT CONFIGURATIONS                                                                                                          |  |
|-------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
|  <p>SEE NOTES: 1,2,4,5,6,7,8,9</p> <p>A02062</p> |  |  <p>SEE NOTES: 1,2,4,7,8,9</p> <p>A02058</p>     |  |
|  <p>SEE NOTES: 1,2,3,4,7,8,9</p> <p>A02059</p> |  |  <p>SEE NOTES: 1,2,3,4,7,8,9</p> <p>A02059</p> |  |
| HORIZONTAL RIGHT VENT CONFIGURATIONS                                                                                                |  | HORIZONTAL LEFT VENT CONFIGURATIONS                                                                                                 |  |
|  <p>SEE NOTES: 1,2,4,7,8,9</p> <p>A02069</p>     |  |  <p>SEE NOTES: 1,2,4,7,8,9</p> <p>A02060</p>    |  |
|  <p>SEE NOTES: 1,2,4,5,7,8,9</p> <p>A02066</p> |  |  <p>SEE NOTES: 1,2,4,5,7,8,9</p> <p>A02066</p> |  |

**Venting Notes**

1. For common vent, vent connector sizing and vent material: United States—use the NFGC.
2. Immediately increase to 5 inch (127 mm) or 6-inch (152 mm) vent connector outside furnace casing when 5 inch (127 mm) vent connector is required, refer to Note 1 above.
3. Side outlet vent for upflow and downflow installations must use Type B vent immediately after exiting the furnace, except when Downflow Vent Guard Kit, is used in the downflow position.
4. Type-B vent where required, refer to Note 1 above.
5. 4 inch single-wall (26 ga. min.) vent must be used inside furnace casing and when the Downflow Vent Guard Kit is used external to the furnace.
6. Accessory Downflow Vent Guard Kit, required in downflow installations with lower vent configuration.
7. Secure vent connector to furnace elbow with (2) corrosion-resistant sheet metal screws, spaced approximately 180° apart.
8. Secure all other single wall vent connector joints with (3) corrosion resistant screws spaced approximately 120° apart.
9. Secure Type-B vent connectors per vent connector manufacturer's recommendations.

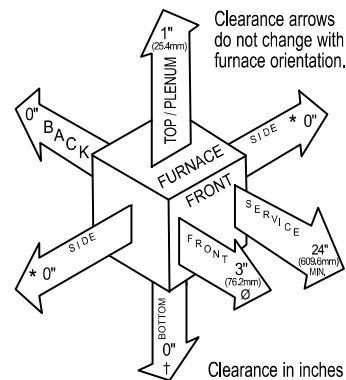
**MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS FOR ALL UNITS**

This forced air furnace is equipped for use with natural gas at altitudes 0 – 5,000 ft (0 – 1524 M).

This furnace is for indoor installation in a building constructed on site.

The furnace may be installed on combustible flooring in alcove or closet at minimum clearance as indicated by the diagram from combustible material.

This furnace may be used with a Type B-1 Vent and may be vented in common with other gas fired appliances.



**Vent Clearance to combustibles:**

For Single Wall vents 6 inches (6 po).  
For Type B-1 vent type 1 inch (1 po).

**ACCESSORIES**

| PART NUMBER | DESCRIPTION                                                                          | 0401712 | 0601716 | 0802120 | 1002120 |
|-------------|--------------------------------------------------------------------------------------|---------|---------|---------|---------|
| NAHB00601FF | External Bottom Filter Rack, 17 inch (16 x 25 inch washable filter included)         | X       | X       |         |         |
| NAHB00701FF | External Bottom Filter Rack, 21 inch (20 x 25 inch washable filter included)         |         |         | X       | X       |
| NAHA00506FB | Washable filter, 1 inch 16 x 25 (6 pack)                                             | X       | X       |         |         |
| NAHA00706FB | Washable filter, 1 inch 24 x 25 (6 pack)                                             |         |         | X       | X       |
| NAHA01101SB | Combustible Floor Base (Not required when evaporator coil case is used for downflow) | X       | X       | X       | X       |
| NAHB00301VC | Downflow Vent Guard (Not required when vent is routed through cabinet)               | X       | X       | X       | X       |

X Accessory available