



**ML193DFE**

**MERIT® SERIES**

**Downflow - High Efficiency Blower**

**RESIDENTIAL  
PRODUCT SPECIFICATIONS**

Bulletin No. 210868

April 2022

Supersedes November 2021



**MERIT®  
SERIES**



**QUALIFIED ONLY IN**  
**U.S. SOUTH:** AL, AZ, AR, CA, DC, DE, FL, GA, HI, KY, LA, MD, MS, NV, NM, NC, OK, SC, TN, TX, VA



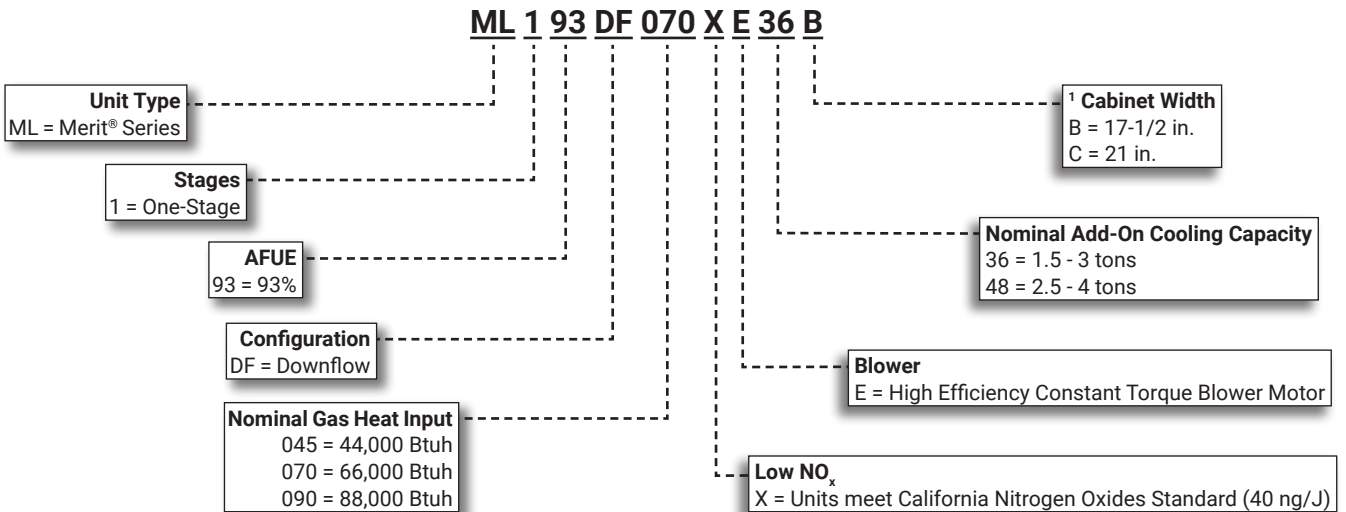
■ QUALIFIED

**AFUE - 93%**

**Input - 44,000 to 88,000 Btuh**

**Nominal Add-on Cooling - 1.5 to 4 Tons**

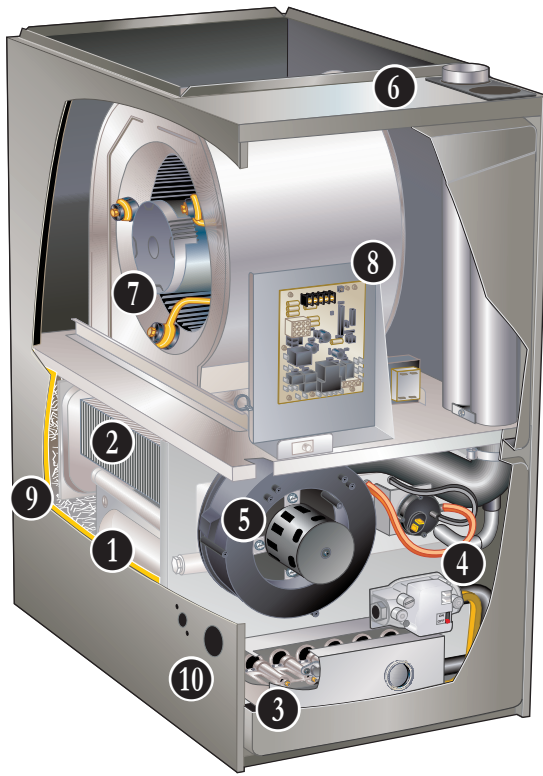
**MODEL NUMBER IDENTIFICATION**



<sup>1</sup> Downflow indoor coils with the same letter designation will physically match the furnace supply air opening.

## FEATURE HIGHLIGHTS

1. Lennox Duralok Plus™ Heat Exchanger
2. Secondary Heat Exchanger
3. Inshot Burners
4. Gas Control Valve
5. Combustion Air Inducer
6. SureLight® Integrated Furnace Control
7. Power Saver™ Constant Torque Blower
8. Insulated Cabinet
9. Safety Interlock Switch
10. Gas Piping And Electrical Inlets



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## APPROVALS AND WARRANTY

### APPROVALS

- AHRI Certified
- Tested and rated according to US DOE test procedures and FTC labeling regulations
- Approved by the California Energy Commission and meets California Nitrogen Oxides Standard (NOx) limits of 40 ng/J
- ENERGY STAR® units are certified only in the U.S. South in certain states and are designed to use less energy, help save money on utility bills, and help protect the environment
- ISO 9001 Registered Manufacturing Quality System
- Blower data from unit tests conducted in Lennox Laboratory air test chamber

### California Only

- These furnaces **do not meet** the South Coast Air Quality Management District (SCAQMD) Rule 1111 and San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 4905 NOx emission limit (14 ng/J) and cannot be installed within the SCAQMD and SJVAPCD areas
- These furnaces are approved by the California Energy Commission and meets California Nitrogen Oxides Standard (NOx) limits of 40 ng/J

### WARRANTY

- Duralok Plus™ Aluminized Steel Heat Exchanger:
  - Limited twenty year in residential applications
  - Limited ten years in non-residential applications
- All other covered components:
  - Limited five years in residential installations
  - Limited one year in non-residential installations

**NOTE** - Refer to Lennox® Basic Limited Warranty at [www.Lennox.com](http://www.Lennox.com) for additional details.

## FEATURES

### APPLICATIONS

- Input capacities of 44,000, 66,000 and 88,000 Btuh.
- Energy efficiency (AFUE) 93%.
- Lennox add-on indoor coils, high-efficiency air cleaners and humidifiers can easily be added to furnace.
- Shipped factory assembled with controls installed and wired.
- Each unit factory test operated to ensure proper operation.

### HEATING SYSTEM

- 1 **Lennox Duralok Plus™ Heat Exchanger Assembly**
  - Lennox developed heat exchanger assembly consists of primary heat exchanger and secondary condenser coil assembly.
  - Main multi-pass crimped seam design clamshell type heat exchanger.
  - Constructed of heavy-gauge, aluminized steel.
  - Designed for normal expansion and contraction with maximum efficiency and minimum resistance to air flow.
- 2
  - Secondary heat exchanger condenser coil constructed of aluminum fins fitted to stainless steel tubes.
  - Coil is factory tested for leaks.

- Condensate drain header box assembly located on front of coil.
- Compact size of complete heat exchanger assembly permits low overall design of furnace cabinet.
- Heat exchanger assembly has been laboratory life cycle tested in excess of industry standards.

### **Lennox Designed Header Box**

- Header box on end of condenser coil collects flue condensate for disposal through condensate drains.
- The drains are located on each side of the cabinet for easy field installation of condensate drain trap.
- Only one drain is used, the other drain is sealed.
- Condensate drain trap is included with unit for field installation.

## FEATURES

### HEATING SYSTEM (continued)

#### Lennox Designed Flue Condensate Trap Assembly

- Field installed outside the conditioned air stream
- Assembly can be mounted on either side of cabinet in upflow applications
- Assembly is mounted below the cabinet in horizontal applications
- Can also be mounted remotely (up to 5 ft. away) from unit
- See Dimension Drawing and Installation Instructions
- 90° street elbow furnished for ease of drain trap installation
- Drain connection can be made with field provided PVC pipe or PVC coupling
- Drain cap on trap allows easy cleaning and winterizing

### 3 Inshot Burners

- Aluminized steel inshot burners provide efficient, trouble-free operation
- Burner venturi mixes air and gas in correct proportion for proper combustion
- Burner assembly can be removed from the unit as a single component for ease of service

#### SureLight® Hot Surface Ignitor

- Tough, reliable, long-life, trouble-free performance
- Silicon nitride ignitor
- Cemented to steatite block for protection against current leakage
- Ignition leads are constructed of nickel plated copper and are enclosed in high temperature Teflon® insulation for dependable operation

### 4 Gas Control Valve

- 24 volt redundant combination gas control valve combines manual shut off switch (On-Off), automatic electric valve (dual) and gas pressure regulation into a compact combination control

#### Flame Rollout Switches (2)

- Factory installed on the front of the burner box
- Switch provides protection from abnormal operating conditions
- Manual reset

#### Limit Control

- Automatic reset, primary limit is accurately located on header box on all units

### 5 Combustion Air Inducer

- Shaded pole heavy duty blower prepurges heat exchanger and safely vents flue products
- Operates only during heating cycle

#### Pressure Switch

- Proves Combustion Air Inducer operation before allowing gas valve to open

### Optional Accessories

#### High Altitude Orifice Kits

- Required on all units for proper operation at altitudes from 7501 to 10,000 ft.
- Kits are available for natural gas and LPG/propane

#### High Altitude Pressure Switch Kit

- Required for proper unit operation on installations above 4500 ft.

#### Natural Gas to LPG/Propane Conversion Kit

- Required for field changeover from natural gas to LPG/Propane

#### LPG/Propane to Natural Gas Conversion Kit

- Required for field changeover from LPG/Propane to natural gas

#### Muffler (US Only)

- Significantly reduces outdoor operating sound levels
- Two-inch diameter muffler is optional for all models
- Installed vertically in the exhaust piping
- See Optional Accessory Dimension Drawing

### DIRECT VENT / NON-DIRECT VENT SEALED COMBUSTION SYSTEM

- Furnace features a “sealed combustion” system and can be installed in either Direct Vent or Non-Direct applications
- In Direct Vent applications, combustion air is supplied from outdoors and flue gases are discharged outdoors
- In Non-Direct Vent applications, combustion air is supplied from indoors and flue gases are discharged outdoors

**NOTE** - Lennox has approved the use of DuraVent® PolyPro® and Centrotherm InnoFlue® manufactured vent pipe and terminations as an alternative to PVC vent pipe. Must be ordered separately. Tested and listed to the ULC S636 standard in Canada.

- The polypropylene venting system must follow the uninsulated and unconditioned space vent lengths listed in the table on Page 10
- Refer to the Installation Instructions for additional details

## FEATURES

### **DIRECT VENT / NON-DIRECT VENT SEALED COMBUSTION SYSTEM (continued)**

#### **Flue Coupling**

- Assists with exhaust flue piping connection and servicing
- Includes flexible one 2-inch rubber coupling and two adjustable bands
- Approved for all Lennox 90% furnaces

#### **Vent Termination Kits**

- Facilitates installation of combustion air intake pipe and flue exhaust pipe
- Refer to venting table in this bulletin to determine pipe size needed and proper termination kit required
- See Optional Accessories table and dimension drawings

#### **Concentric Termination Kit - Direct Vent Applications**

- 2 or 3 inch kit contains concentric termination assembly, reducer bushing and 45° elbow
- 2 inch kit for -030-045-070 models contains an outdoor exhaust accelerator
- Kit requires single hole penetration of roof or wall for installation
- Roof Termination Flashing Kit is available for use with 2 inch Kits
- CSA certified

#### **Flush-Mount Termination Kit**

- Kit contains flush-mount termination, accelerator, mounting template and hardware
- Kit may be used with 2, 2-1/2 or 3 in. pipe

#### **Wall Assembly Termination Kits**

##### **Close Couple (US Only) - Direct Vent Applications**

- 2 or 3 inch kit consists of close-couple, side-by-side PVC piping with galvanized steel wall cover plate
- Seals and isolates intake and exhaust piping penetration of wall
- Piping spacing and length is sized for proper wall installations
- CSA certified

##### **Close Couple WTK (Canada Only) - Direct Vent Applications**

- 2 or 3 inch kit contains one insulated faceplate, one insulated exhaust pipe, elbow and fittings

**NOTE** - Maintain a maximum of 6 inches between the inlet and outlet openings in the installation of the pipes.

#### **Roof Termination Flashing Kit**

- For vertical venting through a roof
- 2 or 3 inch kit contains two neoprene rubber roof flashings
- Vent pipe and insulation not furnished
- Flashing Kit can also be used with Concentric Vent Termination Kits used in vertical venting rooftop applications

## **CONTROLS**

### **6 SureLight® Integrated Furnace Control**

- Contains all necessary controls and relays to operate furnace
- Combustion air inducer is operated by the integrated furnace control
- Prior to ignition, a pre-purge cycle for 15 seconds is initiated
- After the main burners are turned off, a post-purge cycle for 5 seconds is run
- Flame sensor assures safe and reliable operation
- Should loss of flame occur, the integrated furnace control will initiate 4 re-attempts at ignition before locking out unit operation for 60 minutes
- Watchguard type circuit automatically resets ignition controls after one hour of continuous thermostat demand after unit lockout, eliminating nuisance calls for service
- Fan control consists of adjustable blower timed-off delay (60, 90, 120, 180 seconds - factory setting 90 seconds) and fixed blower timed-on delay (30 seconds heating, 2 seconds cooling)
- For air-conditioning applications, blower is automatically energized on thermostat demand for cooling
- Two accessory terminals furnished for additional power supply requirements for 120 volt (less than 1 amp) power humidifiers and powered air cleaners
- One additional terminal is furnished for power supply requirements for 24V (less than 0.5 amp) low voltage accessories
- Ignition control has a single red LED to indicate status and as an aid in troubleshooting
- Last ten codes are stored in non-volatile memory (accessible by recall button on control) for servicing

### **24 Volt Transformer (40VA)**

- Fuse wired in series
- Furnished and factory installed in control box

### **Field Wiring Make-Up Box**

- Furnished for line voltage wiring
- Factory installed internally on left side of furnace
- Box may be installed internally or externally on either side of furnace

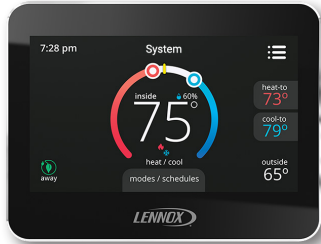
## FEATURES

### CONTROLS (continued)

#### Optional Accessories

##### M30 Smart Wi-Fi Thermostat

- Wi-Fi-enabled, electronic 7-day, universal, multi-stage, programmable, touchscreen thermostat
- 4 Heat/2 Cool
- Auto-changeover
- Dual-fuel control with optional outdoor sensor
- Controls dehumidification during cooling mode and humidification during heating mode
- Offers enhanced capabilities including humidification / dehumidification / dewpoint measurement and control, Humiditol® control, and equipment maintenance reminders
- Easy to read 4.3 in. color touchscreen (measured diagonally)
- LCD display with backlight shows the current and set temperature, time, inside relative humidity, system status (operating mode and schedules) and outside temperature (optional outdoor sensor required)
- Smooth Setback Recovery starts system early to achieve setpoint at start of program period
- Compressor short-cycle protection (5 minutes)
- Up to four separate schedules are available plus Schedule IQ™
- One-Touch Away Mode - A quick and easy way to set the cooling and heating setpoints while away
- Smart Away™ - Uses geo-fencing technology to determine when the homeowner is within a predetermined distance from the home to operate the system when leaving, away and arriving
- Wi-Fi remote monitoring and adjustment through a home wireless network for desktop PCs, laptops and apps for smartphones or tablets
- Smart home automation compatible with Amazon Alexa®, Google Assistant and IFTTT
- Service Dashboard features online real-time monitoring of installed Lennox® smart thermostats



**NOTE** - See the M30 Smart Wi-Fi Thermostat Product Specifications bulletin in the Controls section for more information.

##### Remote Outdoor Temperature Sensor

- Used with the M30 Smart Thermostat
- Outdoor sensor allows thermostat to display outdoor temperature

**NOTE** - Sensor is required for the Enhanced Dehumidification Accessory (EDA).



##### Thermostat

- Thermostat is not furnished with unit
- See Lennox Price Book for selection

##### Blower Relay Kit

###### (For Use With Two-Stage Outdoor Units)

- Allows furnace blower speed changes when matched with two-stage air conditioners or heat pumps

##### Furnace Twinning Panel

- Required to operate two identical furnaces simultaneously from a single thermostat
- For single stage conventional (1 heat/1 cool), multi-stage conventional (2 heat/2 cool) and heat pump (3 heat/2 cool) equipment
- Can be used with common or separate ducted systems
- Contains PC Control Board with terminal strip connections for thermostat and HVAC equipment
- LEDs indicate system operating status
- Uses standard 18-gauge thermostat wire
- Power Supply: 24 VAC, 40VA (transformer not furnished)
- Mounting base with hardware furnished
- Dimensions (H x W x D): 10 x 5 x 2 in.

**NOTE** - Only identical furnaces should be twinned in order to ensure that both furnace blowers start at the same time. If furnaces are not identical, back draft dampers can be installed in either the supply or return duct.

Up to four identical furnaces can be twinned. Requires two panels that are wired together.

##### Furnace Twinning Kit

- Required to operate two furnaces simultaneously
- Kit consists of twinning relays, quick connect terminals and mounting hardware
- Used for single-stage heating/single-stage cooling with a single-stage thermostat

##### Night Service Kit

- Contains most commonly used service parts:
  - Furnace Control
  - Igniter
  - Flame Sensor
  - Gas Valve
  - Transformer
  - Service Manual

## FEATURES

### **BLOWER**

- Direct drive blower
- Statically and dynamically balanced
- Resiliently mounted
- Blower assembly easily removed for servicing

#### **7 Power Saver™ Constant Torque Blower Motor**

- DC Brushless Motor
- High Efficiency Constant Torque
- ECM (Electronically Commutated Motor)
- Motor is programmed to provide constant torque at each of the selectable speeds
- Motor is controlled by the Integrated Furnace Control
- Blower speeds are easily changed on the integrated furnace control
- See Blower Data tables

### **CABINET**

- Low-profile, narrow width allows easy installation
- Heavy-gauge, cold rolled steel construction
- Pre-painted cabinet finish
- Flanges provided on supply air opening for ease of plenum connection or alignment with indoor coil

#### **8** • Insulated with foil faced insulation on sides and back of heating compartment

- Sealed blower compartment
- Complete service access

#### **9** • Safety interlock switch automatically shuts off power to unit when blower compartment access door is removed

#### **10** • Gas piping and electrical inlets are provided in both sides of cabinet

### **Coil Match-Up**

- All Lennox downflow indoor coils will physically match the furnace supply air opening with the same letter designation (A, B, C, D) as in the furnace model number

### **Low Leakage Cabinet**

- All models have less than 2% air leakage and meet ANSI/ASHRAE Standard 193-2010 "Method of Test for Determining the Air Tightness of HVAC Equipment"

### **Optional Accessories**

#### **Condensate Drain Heat Cable Kits**

- Self-limiting wattage heat cable prevents condensate drain from freezing in unconditioned areas
- Available in 6 or 24 ft. lengths

#### **Crawl Space Vent Drain Kit**

- Allows venting through a crawl space for downflow applications
- Includes 2 or 3 in. sanitary tee, 2 in. PVC assembly, PVC boot and clamp
- Kit for Canada is certified to ULC S636

#### **Downflow Combustible Flooring Base**

- Required for heating only units installed on combustible floors
- Not required in add-on cooling applications
- See Dimension Drawing

#### **FILTER (not furnished)**

- Filter and provisions for external mounting must be field provided

### **Optional Accessories**

#### **Downflow Filter Cabinet**

- Filter cabinet mounts directly on top of furnace
- "B and "C" width cabinets have two filters
- Filter rails are furnished
- Front access for servicing
- Cleanable filter(s) are furnished

## SPECIFICATIONS

|   |  | Model No.                      | ML193DF045XE36B     | ML193DF070XE36B     | ML193DF090XE48C     |
|---|--|--------------------------------|---------------------|---------------------|---------------------|
| <b>Gas Heating Performance</b>            | AHRI Reference No.   |                                | 20556884            | 20556885            | 20556886            |
|   | <sup>1</sup> AFUE  |                                | 93%                 | 93%                 | 93%                 |
|   | Input - Btuh   |                                | 44,000              | 66,000              | 88,000              |
|   | Output - Btuh  |                                | 43,000              | 63,000              | 84,000              |
|   | Temperature rise range - °F                                |                                | 30 - 60             | 40 - 70             | 45 - 75             |
|   | Gas Manifold Pressure (in. w.g.)<br>Nat. Gas / LPG/Propane |                                | 3.5 / 10.0          | 3.5 / 10.0          | 3.5 / 10.0          |
|   | High static - in. w.g.                                     |                                | 0.50                | 0.50                | 0.50                |
|   | <b>Connections in.</b>                                     | Intake / Exhaust Pipe (PVC)    |                     | 2 / 2               | 2 / 2               |
| Gas pipe size IPS                         |  |                                | 1/2                 | 1/2                 | 1/2                 |
| Condensate Drain Trap (PVC pipe) - i.d.   |  |                                | 3/4                 | 3/4                 | 3/4                 |
| with furnished 90° street elbow           |  |                                | 3/4 slip x 3/4 Mipt | 3/4 slip x 3/4 Mipt | 3/4 slip x 3/4 Mipt |
| with field supplied (PVC coupling) - o.d. |  |                                | 3/4 slip x 3/4 MPT  | 3/4 slip x 3/4 MPT  | 3/4 slip x 3/4 MPT  |
| <b>Indoor Blower</b>                      | Wheel nom. dia. x width - in.                              |                                | 10 x 8              | 10 x 8              | 10 x 10             |
|   | Motor output - hp  |                                | 1/2                 | 1/2                 | 3/4                 |
|   | Tons of add-on cooling                                     |                                | 1.5 - 3             | 1.5 - 3             | 2.5 - 4             |
|   | Air Volume Range - cfm                                     |                                | 335 - 1430          | 340 - 1415          | 825 - 1720          |
| <b>Electrical Data</b>                    | Voltage  | 120 volts - 60 hertz - 1 phase |                     |                     |                     |
|   | Blower motor full load amps                                |                                | 6.8                 | 6.8                 | 8.4                 |
|   | Maximum overcurrent protection                             |                                | 15                  | 15                  | 15                  |
| <b>Shipping Data</b>                      | lbs. - 1 package   |                                | 122                 | 128                 | 151                 |

NOTE - Filters and provisions for mounting are not furnished and must be field provided.

<sup>1</sup> Annual Fuel Utilization Efficiency based on DOE test procedures and according to FTC labeling regulations. Isolated combustion system rating for non-weatherized furnaces.

## INSTALLATION CLEARANCES

|                        |                              |
|------------------------|------------------------------|
| Sides                  | <sup>1</sup> 0 inches (0 mm) |
| Rear                   | 0 inches (0 mm)              |
| Top/Plenum             | 1 inch (25 mm)               |
| Front                  | 0 inches (0 mm)              |
| Front (service/alcove) | 24 inches (610 mm)           |
| Floor                  | <sup>2</sup> Combustible     |

NOTE - Air for combustion must conform to the methods outlined in the National Fuel Gas Code (NFPA 54/ANSI-Z223.1) or the National Standard of Canada CAN/CSA-B149.1 "Natural Gas and Propane Installation Code".

NOTE - In the U.S. flue sizing must conform to the methods outlined in the current National Fuel Gas Code (NFPA 54/ANSI-Z223.1) or applicable provisions of local building codes. In Canada flue sizing must conform to the methods outlined in National Standard of Canada CAN/CSA-B149.1.

<sup>1</sup> Allow proper clearances to accommodate condensate trap and vent pipe installation.

<sup>2</sup> Clearance for installation on combustible floor if Optional Downflow Combustible Flooring Base is installed between furnace and combustible floor. Not required in add-on cooling applications if installed in accordance with local codes or National Fuel Gas Code ANSI-Z223.1 or CAN/CGA-149.1,.2. Do not install the furnace directly on carpeting, tile, or other combustible materials other than wood flooring.



## OPTIONAL ACCESSORIES

|   |                              | "B" Width Models           | "C" Width Models |       |
|---|------------------------------|----------------------------|------------------|-------|
| <b>CABINET ACCESSORIES</b>                                      |                              |                            |                  |       |
| Downflow Combustible Flooring Base                              |                              | 11M60                      | 11M61            |       |
| <b>CONDENSATE DRAIN KITS</b>                                    |                              |                            |                  |       |
| Condensate Drain Heat Cable                                     | 6 ft.                        | 26K68                      | 26K68            |       |
|   | 24 ft.                       | 26K69                      | 26K69            |       |
| Crawl Space Vent Drain Kit                                      | US                           | 51W18                      | 51W18            |       |
|   | Canada                       | 15Z70                      | 15Z70            |       |
| <b>CONTROLS</b>   |                              |                            |                  |       |
| Blower Relay Kit (for two-stage outdoor units)                  |                              | 85W66                      | 85W66            |       |
| M30 Smart Wi-Fi Thermostat                                      |                              | 15Z69                      | 15Z69            |       |
| Remote Outdoor Temperature Sensor                               |                              | X2658                      | X2658            |       |
| Furnace Twinning Panel  |                              | Y3653                      | Y3653            |       |
| Furnace Twinning Kit  |                              | 16W72                      | 16W72            |       |
| <b>DOWNFLOW FILTER KITS</b>                                     |                              |                            |                  |       |
| <sup>1</sup> Downflow Filter Cabinet                            |                              | 51W07                      | 51W08            |       |
|   | No. and Size of filter - in. | (2) 16 x 20 x 1            | (2) 16 x 20 x 1  |       |
| <b>NIGHT SERVICE KIT</b>  |                              |                            |                  |       |
| Night Service Kit   |                              | 84W48                      | 84W48            |       |
| <b>TERMINATION KITS</b>   |                              |                            |                  |       |
| See Installation Instructions for specific venting information. |                              |                            |                  |       |
| Direct Vent   | Concentric                   | US - 2 in.                 | 71M80            | 69M29 |
|   |                              | 3 in.                      | ---              | 60L46 |
|   |                              | Canada - 2 in.             | 44W92            | 44W92 |
|   |                              | 3 in.                      | ---              | 44W93 |
|   | Flush-Mount                  | US - 2, 2-1/2 or 3 in.     | 51W11            | 51W11 |
|   |                              | Canada - 2, 2-1/2 or 3 in. | 51W12            | 51W12 |
| Wall - Close Couple   |                              | US - 2 in.                 | 22G44            | ---   |
|   |                              | 3 in.                      | 44J40            | 44J40 |
| Wall - Close Couple WTK   |                              | Canada - 2 in.             | 30G28            | ---   |
|   |                              | 3 in.                      | 81J20            | 81J20 |
| Roof Termination Flashing Kit<br>(no vent pipe - 2 flashings)   |                              | 2 in.                      | 15F75            | 15F75 |
|   |                              | 3 in.                      | 44J41            | 44J41 |
| <b>VENTING</b>  |                              |                            |                  |       |
| Flue Coupling   |                              | 2 in.                      | 17H92            | 17H92 |

<sup>1</sup> Cleanable polyurethane frame type filter.

NOTE - Termination Kits (44W92, 44W93, 30G28, 51W12, 81J20) and Crawl Space Vent Drain Kit (15Z70) are certified to ULC S636 standard for use in Canada only.

## GAS HEAT ACCESSORIES

| Models | High Altitude Pressure Switch Kit |                   | Natural Gas to LPG/Propane Kit | LPG/Propane to Natural Gas Kit | Natural Gas High Altitude Orifice Kit | LPG/Propane High Altitude Orifice Kit | Muffler (US Only) |
|--------|-----------------------------------|-------------------|--------------------------------|--------------------------------|---------------------------------------|---------------------------------------|-------------------|
|        | 4501 - 7500 ft.                   | 7501 - 10,000 ft. | 0 - 7500 ft.                   | 0 - 7500 ft.                   | 7501 - 10,000 ft.                     | 7501 - 10,000 ft.                     |                   |
| 045    | 11U65                             | 11U66             | 11K49                          | 73W81                          | 73W37                                 | 11K44                                 | 15Y66 (2-inch)    |
| 070    | 11U65                             | 11U66             | 11K49                          | 73W81                          | 73W37                                 | 11K44                                 | 15Y66 (2-inch)    |
| 090    | 11U65                             | 11U66             | 11K49                          | 73W81                          | 73W37                                 | 11K44                                 | 15Y66 (2-inch)    |

## HIGH ALTITUDE DERATE

NOTE - Units may be installed at altitudes up to 10,000 ft.

At altitudes above 4501 ft. the unit must be derated to match the manifold pressure information shown below.

Units installed at altitudes of 4501 to 10,000 ft. require a pressure switch change.

Units installed at altitudes of 7501 to 10,000 ft. require an orifice change.

See the Gas Heat Accessories table for ordering information.

NOTE - This is the only permissible derate for these units.

NOTE - In Canada, certification for installations at elevations over 4500 feet is the jurisdiction of local authorities.

| Input     | Gas         | Manifold Pressure in. w.g. |                 |                 |                 |                   | Supply Line Pressure in. w.g. 0 - 10,000 ft. |      |
|-----------|-------------|----------------------------|-----------------|-----------------|-----------------|-------------------|--|------|
|           |             | 0 - 4500 ft.               | 4501 - 5500 ft. | 5501 - 6500 ft. | 6501 - 7500 ft. | 7501 - 10,000 ft. |  |      |
| All Sizes | Natural     | 3.5                        | 3.3             | 3.2             | 3.1             | 3.5               | 4.5  | 13.0 |
|           | LPG/Propane | 10.0                       | 9.4             | 9.1             | 8.9             | 10.0              | 11.0   | 13.0 |

## VENT LENGTHS - UNINSULATED EXHAUST PIPE IN UNCONDITIONED SPACE

| <sup>1</sup> Winter Design Temperatures | Vent Pipe Diameter | Unit Input Size                               |                  |     |                  |     |                  |
|---|--------------------|---|------------------|-----|------------------|-----|------------------|
|   |                    | 045   |                  | 070 |                  | 090 |                  |
|   |                    | Maximum Uninsulated Exhaust Vent Length (ft.) |                  |     |                  |     |                  |
|   |                    | PVC   | PolyPro InnoFlue | PVC | PolyPro InnoFlue | PVC | PolyPro InnoFlue |
| 32 to 21°F                              | 1-1/2 in.          | 25  | N/A              | 25  | N/A              | N/A | N/A              |
|   | 2 in.              | 18  | 16               | 31  | 28               | 50  | 48               |
|   | 2-1/2 in.          | 13  | N/A              | 24  | N/A              | 42  | N/A              |
|   | 3 in.              | 9   | 9                | 18  | 18               | 35  | 35               |
| 20 to 1°F                               | 1-1/2 in.          | 15  | N/A              | 20  | N/A              | N/A | N/A              |
|   | 2 in.              | 9   | 8                | 18  | 16               | 32  | 29               |
|   | 2-1/2 in.          | 5   | N/A              | 13  | N/A              | 24  | N/A              |
|   | 3 in.              | N/A   | N/A              | 8   | 8                | 19  | 19               |
| 0 to -20°F                              | 1-1/2 in.          | 10  | N/A              | 15  | N/A              | N/A | N/A              |
|   | 2 in.              | 5   | N/A              | 12  | 10               | 22  | 19               |
|   | 2-1/2 in.          | N/A   | N/A              | 7   | N/A              | 15  | N/A              |
|   | 3 in.              | N/A   | N/A              | N/A | N/A              | 10  | 10               |

NOTE - Concentric terminations are equivalent to 5 ft. of straight pipe and should be included when measuring total pipe length.

<sup>1</sup> Refer to 99% Minimum Design Temperature table provided in the current edition of the ASHRAE Handbook-Fundamentals.

PolyPro® poly-propylene vent pipe is a registered trademark of DuraVent®.

Innoflue® is a registered trademark of Centrotherm Eco Systems.

## OUTDOOR TERMINATION KIT USAGE

| Input Size | Vent Pipe Diameter (in.) | Standard Terminations      |                            |                            |  | Concentric Terminations    |                            |        |
|------------|--------------------------|----------------------------|----------------------------|----------------------------|--|----------------------------|----------------------------|--------|
|            |                          | Flush Mount Kit            | Wall Kit                   |                            | Field Fabricated Exhaust Accelerator Size Required | Concentric Kit             |                            |        |
|            |                          |                            | 2 inch                     | 3 inch                     |  | 1-1/2 inch                 | 2 inch                     | 3 inch |
|            |                          | 51W11 (US)<br>5 51W12 (CA) | 22G44 (US)<br>5 30G28 (CA) | 44J40 (US)<br>5 81J20 (CA) | 71M80 (US)<br>5 44W92 (CA)                         | 69M29 (US)<br>5 44W92 (CA) | 60L46 (US)<br>5 44W93 (CA) |        |
| 045        | 1-1/2                    | 4 YES                      | YES                        | 2 YES                      | 1-1/2 in.  | 3 YES                      | ---                        | ---    |
|            | 2                        | 4 YES                      | YES                        | 2 YES                      | 1-1/2 in.  | 3 YES                      | ---                        | ---    |
|            | 2-1/2                    | 4 YES                      | YES                        | 2 YES                      | 1-1/2 in.  | 3 YES                      | ---                        | ---    |
|            | 3                        | 4 YES                      | YES                        | 2 YES                      | 1-1/2 in.  | 3 YES                      | ---                        | ---    |
| 070        | 1-1/2                    | 4 YES                      | YES                        | 2 YES                      | 1-1/2 in.  | 3 YES                      | ---                        | ---    |
|            | 2                        | 4 YES                      | YES                        | 2 YES                      | 1-1/2 in.  | 3 YES                      | ---                        | ---    |
|            | 2-1/2                    | 4 YES                      | YES                        | 2 YES                      | 1-1/2 in.  | 3 YES                      | ---                        | ---    |
|            | 3                        | 4 YES                      | YES                        | 2 YES                      | 1-1/2 in.  | 3 YES                      | ---                        | ---    |
| 090        | 2                        | 4 YES                      | ---                        | YES                        | 2 in.  | ---                        | YES                        | YES    |
|            | 2-1/2                    | 4 YES                      | ---                        | YES                        | 2 in.  | ---                        | YES                        | YES    |
|            | 3                        | 4 YES                      | ---                        | YES                        | 2 in.  | ---                        | YES                        | YES    |

NOTE - Standard Terminations do not include any vent pipe or elbows external to the structure.

Any vent pipe or elbows external to the structure must be included in total vent length calculations. See Vent Length Tables.

<sup>1</sup> 2 inch to 1-1/2 inch reducer required, must be field provided.

<sup>2</sup> Requires field provided 1-1/2 in. outdoor exhaust accelerator.

<sup>3</sup> Concentric Kits **71M80** and **44W92** include 1-1/2 in. outdoor exhaust accelerator, required when used with 045 and 070 input models. Accelerator is not used with 090 input models. NOTE - When using 1-1/2 in. piping, the pipe must be transitioned to 2 in. pipe when used with the Concentric Kit.

<sup>4</sup> Flush Mount Kit **51W11** and **51W12** includes 1-1/2 in. outdoor exhaust accelerator, required when used with all models. NOTE - When using 1-1/2 in. piping, the pipe must be transitioned to 2 in. pipe when used with the Flush Mount Kit.

<sup>5</sup> Termination Kits **30G28**, **44W92**, **44W93**, **51W12** and **81J20** are certified to ULC S636 standard for use in Canada only.

## VENT LENGTHS

### STANDARD TERMINATION AT ELEVATION 0 - 10,000 ft.

|               | Pipe Size Input | 1-1/2 in. |     |     | 2 in. |     |     | 2-1/2 in. |     |     | 3 in. |     |     |
|---------------|-----------------|-----------|-----|-----|-------|-----|-----|-----------|-----|-----|-------|-----|-----|
|               |                 | 045       | 070 | 090 | 045   | 070 | 090 | 045       | 070 | 090 | 045   | 070 | 090 |
| No. of 90 ELL | 1               | 20        | 15  | N/A | 61    | 46  | 24  | 100       | 80  | 43  | 127   | 127 | 108 |
|               | 2               | 15        | 10  | N/A | 56    | 41  | 19  | 95        | 75  | 38  | 122   | 122 | 103 |
|               | 3               | 10        | N/A | N/A | 51    | 36  | 14  | 90        | 70  | 33  | 117   | 117 | 98  |
|               | 4               | N/A       | N/A | N/A | 46    | 31  | N/A | 85        | 65  | 28  | 112   | 112 | 93  |
|               | 5               | N/A       | N/A | N/A | 41    | 26  | N/A | 80        | 60  | 23  | 107   | 107 | 88  |
|               | 6               | N/A       | N/A | N/A | 36    | 21  | N/A | 75        | 55  | 18  | 102   | 102 | 83  |
|               | 7               | N/A       | N/A | N/A | 31    | 16  | N/A | 70        | 50  | 13  | 97    | 97  | 78  |
|               | 8               | N/A       | N/A | N/A | 26    | 11  | N/A | 65        | 45  | N/A | 92    | 92  | 73  |
|               | 9               | N/A       | N/A | N/A | 21    | N/A | N/A | 60        | 40  | N/A | 87    | 87  | 68  |
|               | 10              | N/A       | N/A | N/A | 10    | N/A | N/A | 55        | 35  | N/A | 82    | 82  | 63  |

### CONCENTRIC TERMINATION ELEVATION 0 - 10,000 ft.

|               | Pipe Size Input | 1-1/2 in. |     |     | 2 in. |     |     | 2-1/2 in. |     |     | 3 in. |     |     |
|---------------|-----------------|-----------|-----|-----|-------|-----|-----|-----------|-----|-----|-------|-----|-----|
|               |                 | 045       | 070 | 090 | 045   | 070 | 090 | 045       | 070 | 090 | 045   | 070 | 090 |
| No. of 90 ELL | 1               | 15        | 10  | N/A | 53    | 38  | 22  | 90        | 70  | 39  | 111   | 111 | 104 |
|               | 2               | 10        | N/A | N/A | 48    | 33  | 17  | 85        | 65  | 34  | 106   | 106 | 99  |
|               | 3               | N/A       | N/A | N/A | 43    | 28  | 12  | 80        | 60  | 29  | 101   | 101 | 94  |
|               | 4               | N/A       | N/A | N/A | 38    | 23  | N/A | 75        | 55  | 24  | 96    | 96  | 89  |
|               | 5               | N/A       | N/A | N/A | 33    | 18  | N/A | 70        | 50  | 19  | 91    | 91  | 84  |
|               | 6               | N/A       | N/A | N/A | 28    | 13  | N/A | 65        | 45  | 14  | 86    | 86  | 79  |
|               | 7               | N/A       | N/A | N/A | 23    | N/A | N/A | 60        | 40  | N/A | 81    | 81  | 74  |
|               | 8               | N/A       | N/A | N/A | 18    | N/A | N/A | 55        | 35  | N/A | 76    | 76  | 69  |
|               | 9               | N/A       | N/A | N/A | 13    | N/A | N/A | 50        | 30  | N/A | 71    | 71  | 64  |
|               | 10              | N/A       | N/A | N/A | N/A   | N/A | N/A | 45        | 25  | N/A | 66    | 66  | 59  |

NOTES - Additional vent pipe and elbows used to terminate vent pipe outside the structure must be included in the total vent length calculation.

Intake and exhaust pipes are sized separately.

Values in table are for separate intake or exhaust pipe lengths.

Both intake and exhaust pipe must be the same size diameter.

## VENT LENGTHS (EXHAUST) - VENTILATED ATTIC OR CRAWLSPACE INTAKE AIR - FEET

STANDARD TERMINATION AT ELEVATION 0 - 10,000 ft.

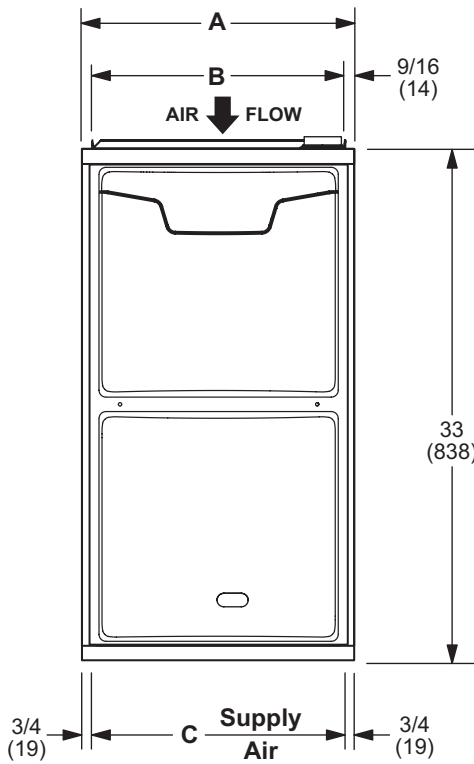
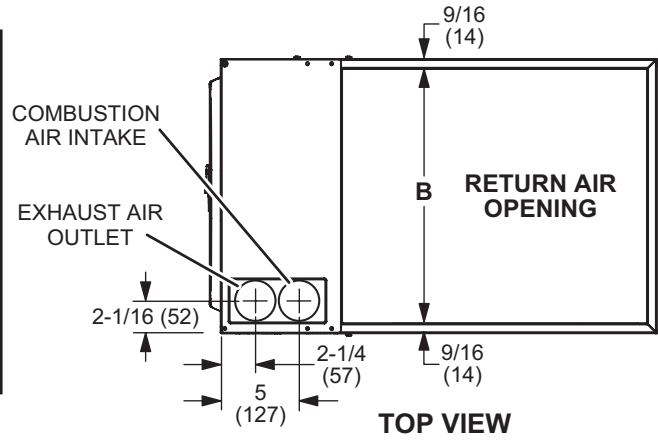
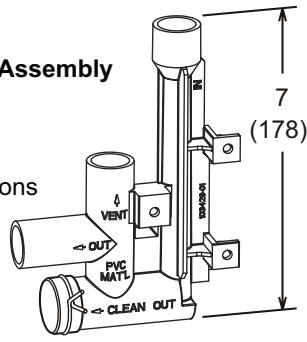
| Pipe Size                |    | 1-1/2 in. |     |     | 2 in. |     |     | 2-1/2 in. |     |     | 3 in. |     |     |
|--------------------------|----|-----------|-----|-----|-------|-----|-----|-----------|-----|-----|-------|-----|-----|
| Input                    |    | 045       | 070 | 090 | 045   | 070 | 090 | 045       | 070 | 090 | 045   | 070 | 090 |
| <b>No. of<br/>90 ELL</b> | 1  | 15        | 10  | N/A | 51    | 36  | 14  | 85        | 65  | 28  | 107   | 107 | 88  |
|                          | 2  | 10        | N/A | N/A | 46    | 31  | 9   | 80        | 60  | 23  | 102   | 102 | 83  |
|                          | 3  | N/A       | N/A | N/A | 41    | 26  | 4   | 75        | 55  | 18  | 97    | 97  | 78  |
|                          | 4  | N/A       | N/A | N/A | 36    | 21  | N/A | 70        | 50  | 8   | 92    | 92  | 73  |
|                          | 5  | N/A       | N/A | N/A | 31    | 16  | N/A | 65        | 45  | 3   | 87    | 87  | 68  |
|                          | 6  | N/A       | N/A | N/A | 26    | 11  | N/A | 60        | 40  | N/A | 82    | 82  | 63  |
|                          | 7  | N/A       | N/A | N/A | 21    | 6   | N/A | 55        | 35  | N/A | 77    | 77  | 58  |
|                          | 8  | N/A       | N/A | N/A | 16    | 1   | N/A | 50        | 30  | N/A | 72    | 72  | 53  |
|                          | 9  | N/A       | N/A | N/A | 11    | N/A | N/A | 45        | 25  | N/A | 67    | 67  | 48  |
|                          | 10 | N/A       | N/A | N/A | 6     | N/A | N/A | 40        | 20  | N/A | 62    | 62  | 43  |

NOTES - Additional vent pipe and elbows used to terminate vent pipe outside the structure must be included in the total vent length calculation.

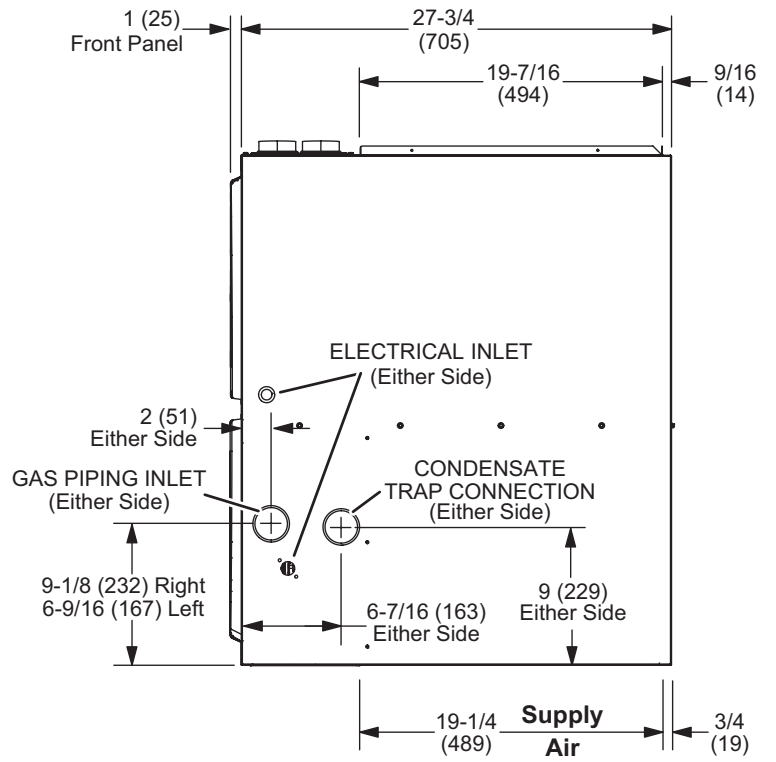
**DIMENSIONS - UNIT**

**Flue Condensate Trap Assembly**

Furnished for external field installation on either side of unit. (See installation instructions for additional information.)



**FRONT VIEW**

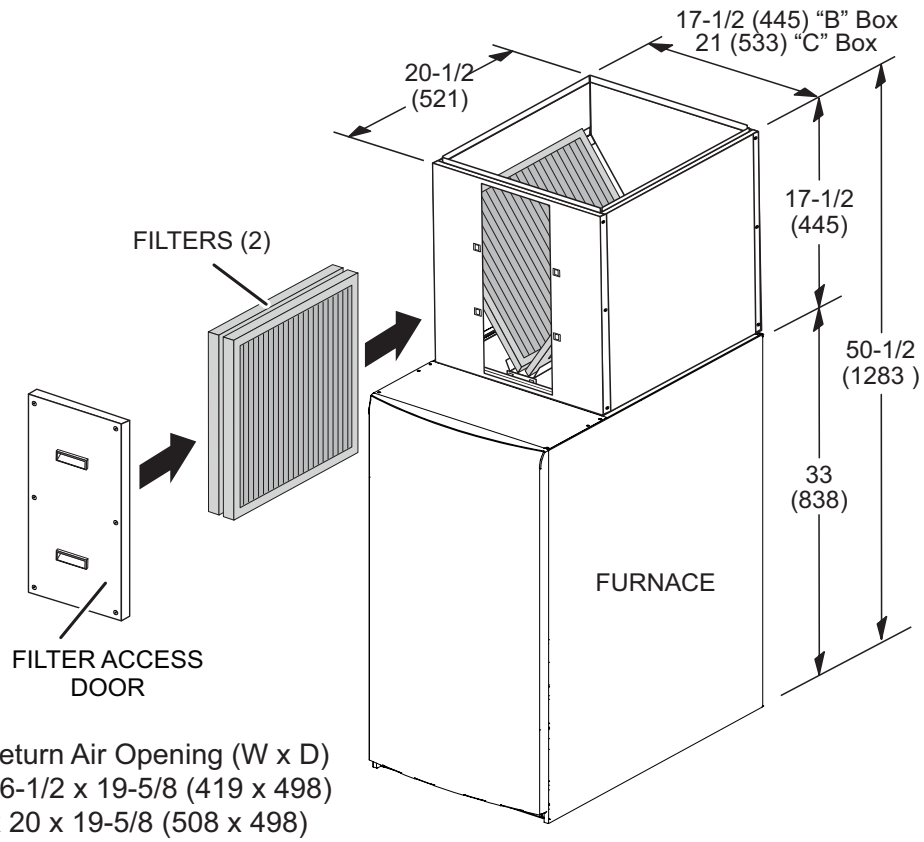


**SIDE VIEW**

| Model No.                          | A      |     | B      |     | C      |     |
|------------------------------------|--------|-----|--------|-----|--------|-----|
|                                    | in.    | mm  | in.    | mm  | in.    | mm  |
| ML193DF045XE36B<br>ML193DF070XE36B | 17-1/2 | 446 | 16-3/8 | 416 | 16     | 406 |
| ML193DF090XE48C                    | 21     | 533 | 19-7/8 | 505 | 19-1/2 | 495 |

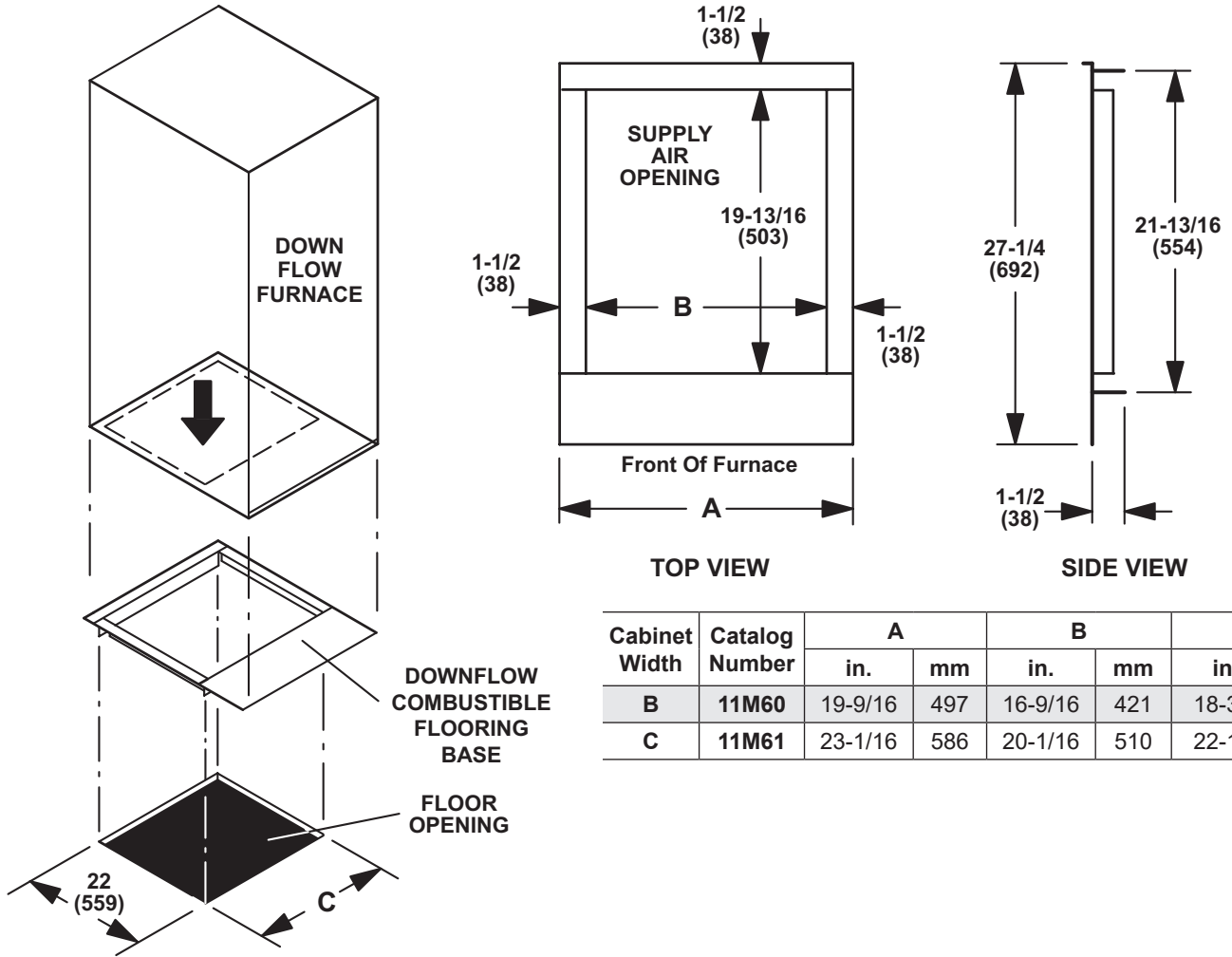
### DOWNFLOW FILTER CABINET

“B AND ”C” WIDTH FURNACES  
(Two Filters)



## DIMENSIONS - OPTIONAL ACCESSORIES

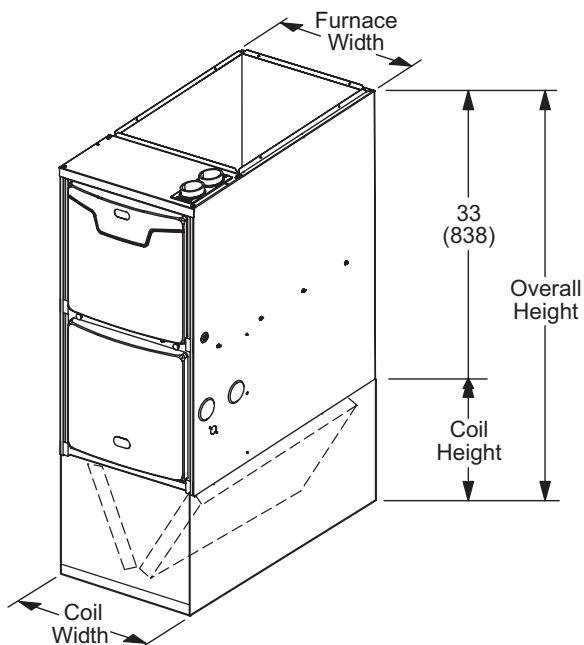
### DOWNFLOW COMBUSTIBLE FLOORING BASE



| Cabinet Width | Catalog Number | A       |     | B       |     | C      |     |
|---------------|----------------|---------|-----|---------|-----|--------|-----|
|               |                | in.     | mm  | in.     | mm  | in.    | mm  |
| B             | 11M60          | 19-9/16 | 497 | 16-9/16 | 421 | 18-3/4 | 476 |
| C             | 11M61          | 23-1/16 | 586 | 20-1/16 | 510 | 22-1/4 | 565 |

## DIMENSIONS - FURNACE/COIL COMBINED DIMENSIONS

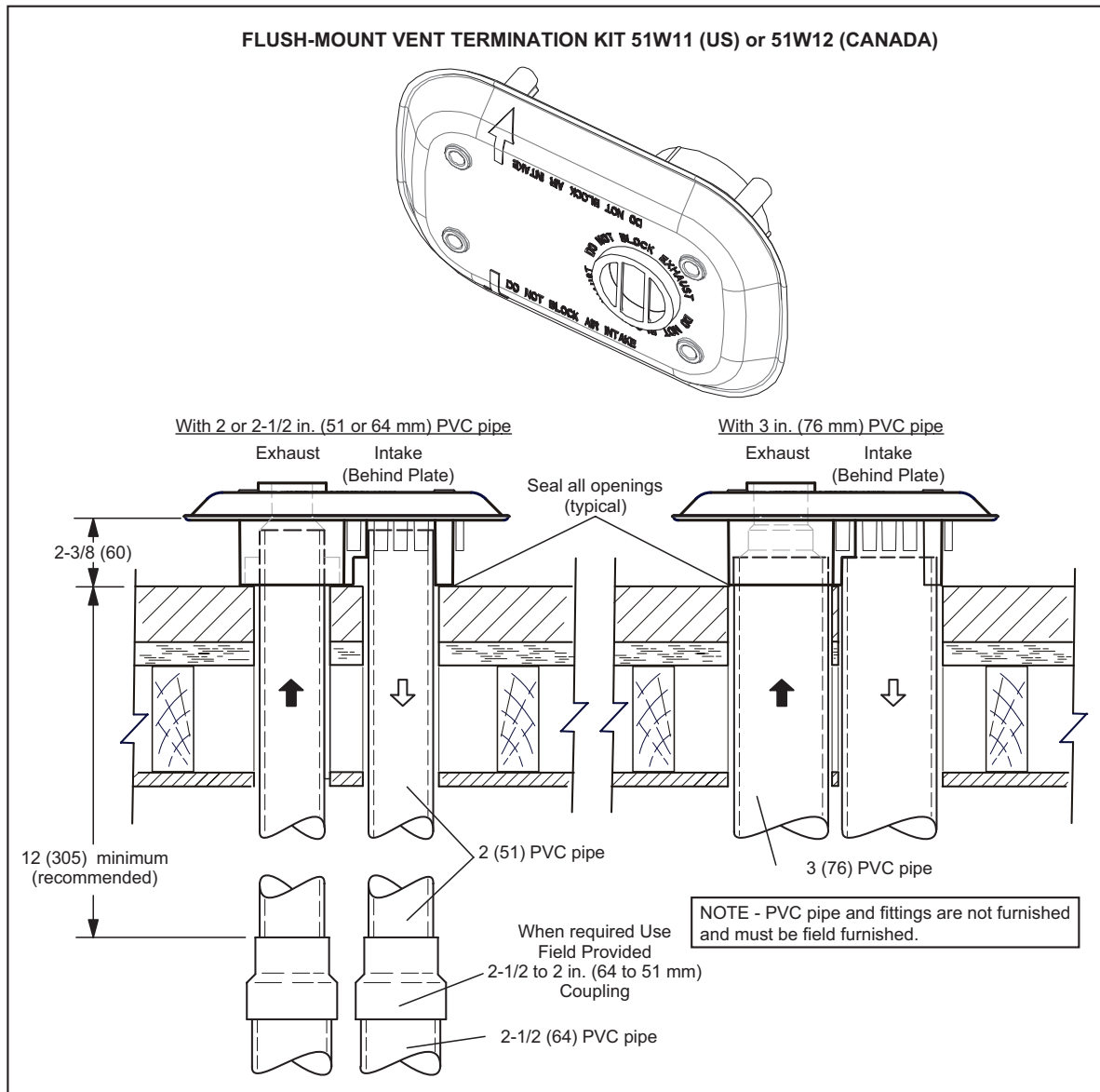
### DOWNFLOW POSITION



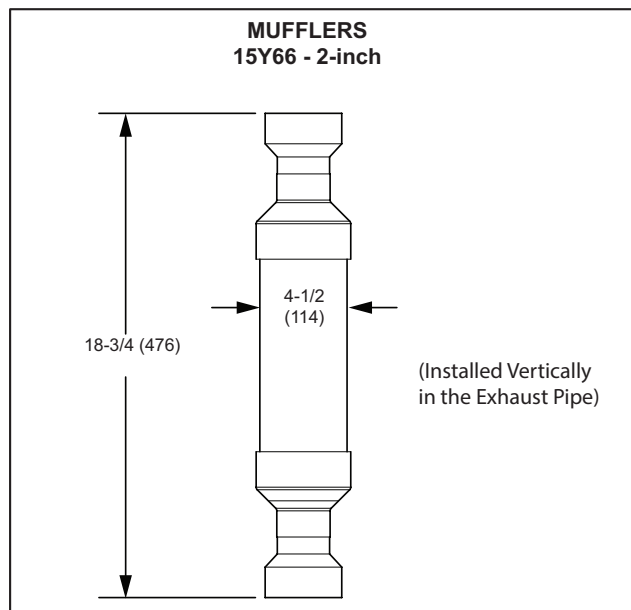
| Model Number  | Coil Width |     | Furnace Width |     | Coil Height |     | Overall Height |      |
|---------------|------------|-----|---------------|-----|-------------|-----|----------------|------|
|               | in.        | mm  | in.           | mm  | in.         | mm  | in.            | mm   |
| CR33-24B-F    | 17-1/2     | 446 | 17-1/2        | 446 | 13-1/4      | 337 | 46-1/4         | 1175 |
| CR33-30/36B-F | 17-1/2     | 446 | 17-1/2        | 446 | 16-1/8      | 410 | 49-1/8         | 1248 |
| CR33-30/36C-F | 21         | 533 | 21            | 533 | 16-1/8      | 410 | 49-1/8         | 1248 |
| CR33-48B-F    | 21         | 533 | 17-1/2        | 446 | 20          | 508 | 53             | 1346 |
| CR33-48C-F    | 21         | 533 | 21            | 533 | 20          | 508 | 53             | 1346 |
| CR33-50/60C-F | 24-1/2     | 622 | 21            | 533 | 23-5/8      | 600 | 56-5/8         | 2276 |

**DIMENSIONS - OPTIONAL ACCESSORIES - VENTING**

**FLUSH-MOUNT VENT TERMINATION KIT 51W11 (US) or 51W12 (CANADA)**



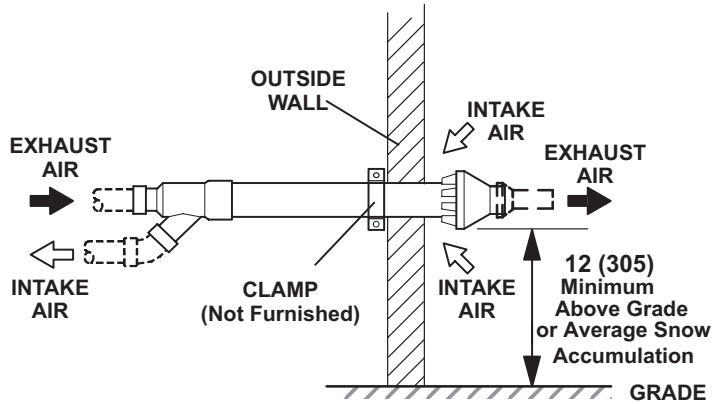
**MUFFLERS  
15Y66 - 2-inch**



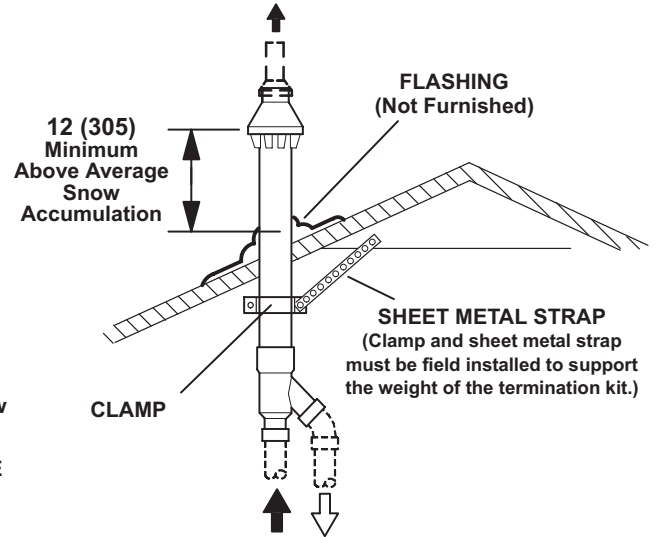


**DIMENSIONS - OPTIONAL ACCESSORIES - VENTING**

**CONCENTRIC WALL  
TERMINATION APPLICATIONS**

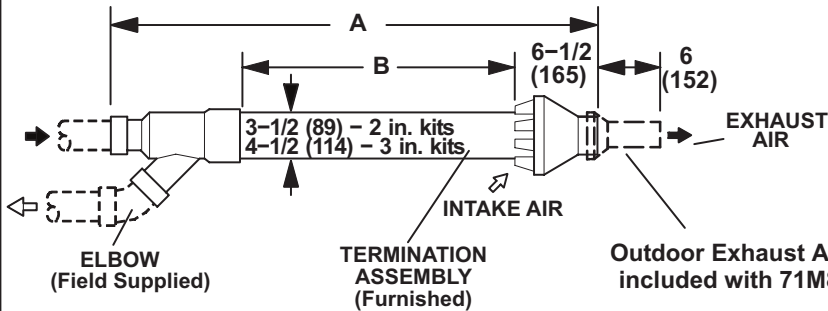


**CONCENTRIC ROOF  
TERMINATION APPLICATIONS**



**71M80 / 69M29 / 44W92 – 2 inch kits  
60L46 / 44W93 – 3 inch kits**  
See Installation Instructions for additional information.

Note - Field provided reducer may be required to adapt different vent pipe sizes to termination.



| Cat. No.          | A      |     | B       |     |
|-------------------|--------|-----|---------|-----|
|                   | in.    | mm  | in.     | mm  |
| 71M80<br>69M29    | 33-3/8 | 848 | 16-3/4  | 425 |
| 44W92<br>(Canada) | 29     | 737 | 15-1/2  | 394 |
| 60L46             | 38-7/8 | 987 | 21-3/16 | 538 |
| 44W93<br>(Canada) | 36-1/8 | 918 | 19-1/2  | 495 |

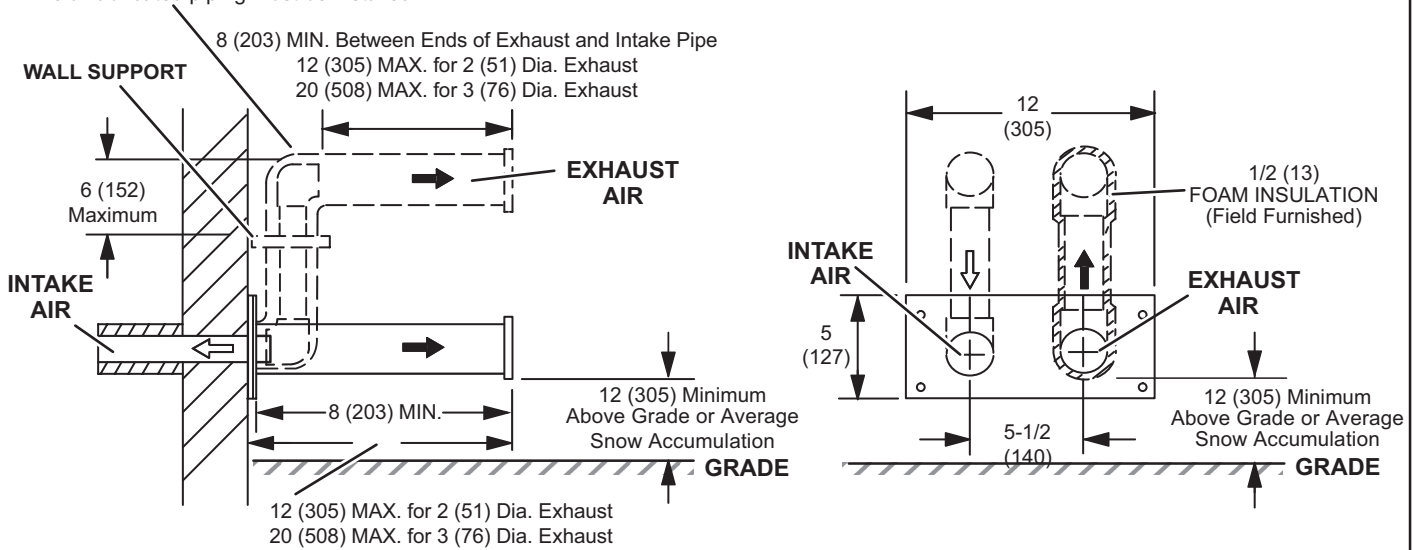
**NOTE - Typical illustration for dimensions only. Design may vary depending on kit ordered.**

**WALL TERMINATION KITS (CLOSE-COUPLE)  
EXTENDED VENT FOR GRADE CLEARANCE  
2 inch (51 mm) 22G44 (US)  
3 inch (76 mm) 44J40 (US)**

**See Installation Instructions for additional information.**

Note - Field provided reducer may be required to adapt different vent pipe sizes to termination.

If Intake and Exhaust Pipe is less than 12 in. (305 mm) above snow accumulation or other obstructions, field fabricated piping must be installed.

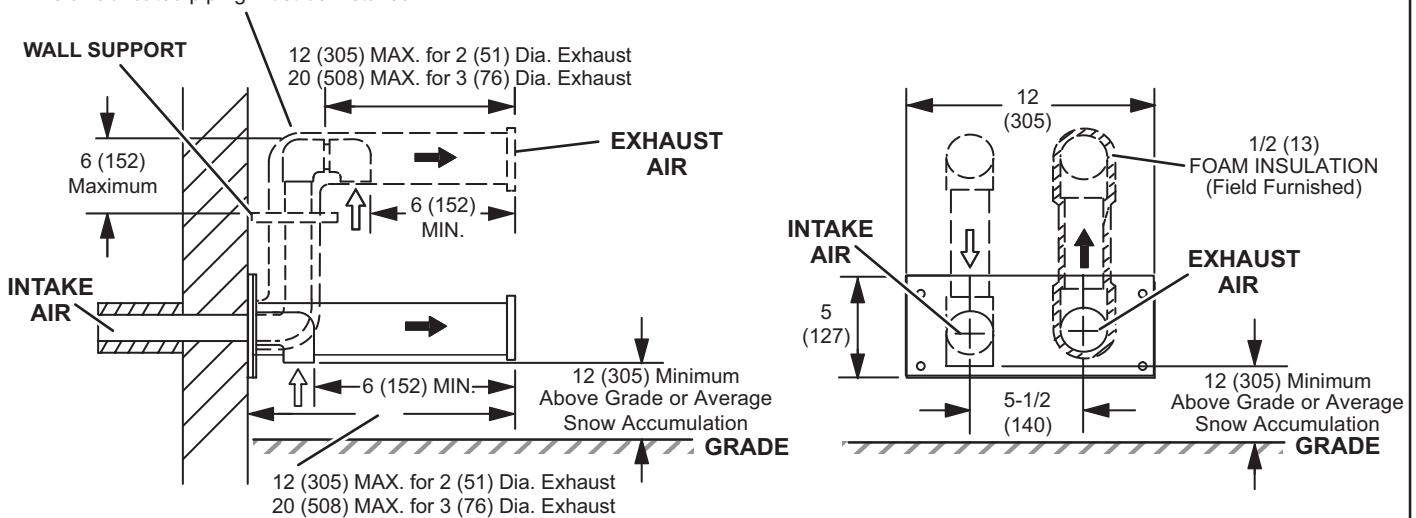


**WALL TERMINATION KITS (CLOSE-COUPLE)  
EXTENDED VENT FOR GRADE CLEARANCE  
2 inch (51 mm) 30G28 (WTK Canada)  
3 inch (76 mm) 81J20 (WTK Canada)**

**See Installation Instructions for additional information.**

Note - Field provided reducer may be required to adapt different vent pipe sizes to termination.

If Intake and Exhaust Pipe is less than 12 in. (305 mm) above snow accumulation or other obstructions, field fabricated piping must be installed.



## BLOWER DATA

### ML193DF045XE36B PERFORMANCE (Less Filter)

| External Static Pressure<br>in. w.g. | Air Volume / Watts at Various Blower Speeds |       |                        |       |                  |       |                        |       |              |       |
|--------------------------------------|---|-------|------------------------|-------|------------------|-------|------------------------|-------|--------------|-------|
|                                      | High<br>(Black)                             |       | Medium-High<br>(Brown) |       | Medium<br>(Blue) |       | Medium-Low<br>(Yellow) |       | Low<br>(Red) |       |
|                                      | cfm   | Watts | cfm                    | Watts | cfm              | Watts | cfm                    | Watts | cfm          | Watts |
| 0.00                                 | 1430  | 353   | 1305                   | 270   | 1180             | 199   | 890                    | 107   | 740          | 70    |
| 0.10                                 | 1395  | 364   | 1270                   | 279   | 1145             | 207   | 845                    | 113   | 695          | 76    |
| 0.20                                 | 1365  | 375   | 1245                   | 291   | 1105             | 212   | 795                    | 121   | 640          | 81    |
| 0.30                                 | 1330  | 383   | 1215                   | 298   | 1070             | 221   | 740                    | 126   | 575          | 86    |
| 0.40                                 | 1305  | 391   | 1180                   | 310   | 1025             | 228   | 700                    | 136   | 530          | 93    |
| 0.50                                 | 1275  | 400   | 1140                   | 320   | 980              | 237   | 660                    | 143   | 485          | 97    |
| 0.60                                 | 1245  | 406   | 1110                   | 328   | 950              | 250   | 615                    | 147   | 445          | 103   |
| 0.70                                 | ---   | ---   | 1080                   | 335   | 910              | 252   | 585                    | 151   | 390          | 107   |
| 0.80                                 | ---   | ---   | 1030                   | 332   | 870              | 264   | 545                    | 160   | 335          | 116   |

### ML193DF070XE36B PERFORMANCE (Less Filter)

| External Static Pressure<br>in. w.g. | Air Volume / Watts at Various Blower Speeds |       |                        |       |                  |       |                        |       |              |       |
|--------------------------------------|---|-------|------------------------|-------|------------------|-------|------------------------|-------|--------------|-------|
|                                      | High<br>(Black)                             |       | Medium-High<br>(Brown) |       | Medium<br>(Blue) |       | Medium-Low<br>(Yellow) |       | Low<br>(Red) |       |
|                                      | cfm   | Watts | cfm                    | Watts | cfm              | Watts | cfm                    | Watts | cfm          | Watts |
| 0.00                                 | 1415  | 340   | 1295                   | 269   | 1175             | 191   | 905                    | 101   | 750          | 64    |
| 0.10                                 | 1380  | 351   | 1265                   | 276   | 1140             | 202   | 860                    | 109   | 700          | 73    |
| 0.20                                 | 1345  | 360   | 1240                   | 285   | 1090             | 208   | 810                    | 119   | 645          | 79    |
| 0.30                                 | 1325  | 371   | 1215                   | 291   | 1060             | 218   | 770                    | 124   | 590          | 84    |
| 0.40                                 | 1295  | 380   | 1175                   | 302   | 1025             | 228   | 710                    | 132   | 530          | 91    |
| 0.50                                 | 1260  | 392   | 1135                   | 318   | 985              | 236   | 670                    | 138   | 490          | 94    |
| 0.60                                 | 1235  | 402   | 1105                   | 320   | 955              | 247   | 620                    | 146   | 440          | 102   |
| 0.70                                 | 1185  | 411   | 1080                   | 333   | 910              | 254   | 585                    | 152   | 395          | 106   |
| 0.80                                 | ---   | ---   | 1040                   | 342   | 865              | 261   | 540                    | 157   | 340          | 113   |

### ML193DF090XE48C PERFORMANCE (Less Filter)

| External Static Pressure<br>in. w.g. | Air Volume / Watts at Various Blower Speeds |       |                        |       |                  |       |                        |       |              |       |
|--------------------------------------|---|-------|------------------------|-------|------------------|-------|------------------------|-------|--------------|-------|
|                                      | High<br>(Black)                             |       | Medium-High<br>(Brown) |       | Medium<br>(Blue) |       | Medium-Low<br>(Yellow) |       | Low<br>(Red) |       |
|                                      | cfm   | Watts | cfm                    | Watts | cfm              | Watts | cfm                    | Watts | cfm          | Watts |
| 0.00                                 | 1720  | 412   | 1530                   | 281   | 1400             | 220   | 1290                   | 187   | 1195         | 146   |
| 0.10                                 | 1695  | 418   | 1495                   | 288   | 1365             | 229   | 1265                   | 194   | 1160         | 152   |
| 0.20                                 | 1680  | 431   | 1445                   | 300   | 1315             | 240   | 1240                   | 204   | 1110         | 159   |
| 0.30                                 | 1640  | 444   | 1410                   | 309   | 1285             | 247   | 1200                   | 214   | 1070         | 165   |
| 0.40                                 | 1605  | 455   | 1385                   | 318   | 1245             | 255   | 1160                   | 218   | 1020         | 171   |
| 0.50                                 | 1575  | 466   | 1355                   | 325   | 1215             | 263   | 1115                   | 227   | 975          | 179   |
| 0.60                                 | 1550  | 473   | 1310                   | 334   | 1165             | 274   | 1085                   | 232   | 925          | 188   |
| 0.70                                 | 1490  | 467   | 1265                   | 346   | 1125             | 282   | 1030                   | 243   | 885          | 195   |
| 0.80                                 | ---   | ---   | 1240                   | 354   | 1075             | 288   | 995                    | 251   | 825          | 202   |

## REVISIONS

| Sections       | Description of Change               |
|----------------|-------------------------------------|
| Specifications | Output updated for ML193DF045XE36B. |



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