

## PULSE21® SERIES UP-FLOW GAS FURNACES – DIRECT VENT

# G21Q

Bulletin #210069  
April 1997  
Supersedes  
#210069  
October 1994

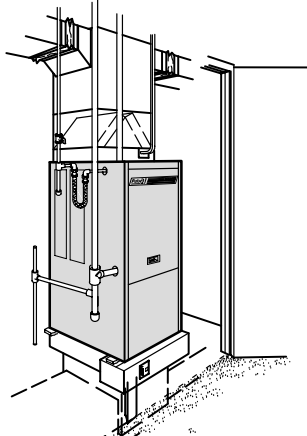
\*93.2% to 96.2% A.F.U.E.

40,000 to 100,000 Btuh (11.7 to 29.3 kW) Input

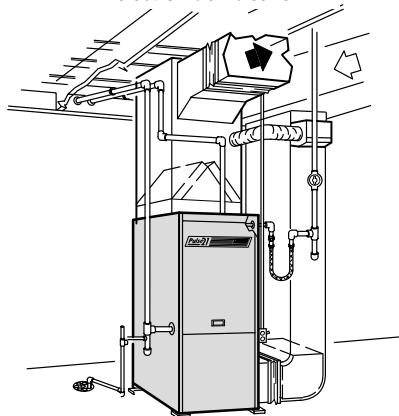
Nominal Add-On Cooling — 1-1/2 thru 5 Tons (5.3 thru 17.6 kW)

\*Isolated Combustion System Rating for Non-Weatherized Furnaces

### Typical Applications



Closest Installation  
With cooling coil and  
electronic air cleaner



Utility Room Installation  
With cooling coil and humidifier



**Application** — Lennox G21 series gas furnaces are available in eight models (natural gas or LPG/Propane) with input capacities of 40,000, 60,000, 80,000 and 100,000 Btuh (11.7, 17.6, 23.4 and 29.3 kW). Units operate on the pulse combustion principle and do not require conventional pilot burner, main burners, flue or chimney. Standard size cabinet with side or bottom return air entry permits installation in a basement, utility room or closet. Lennox add-on evaporator coils, electronic air cleaners and power humidifiers can easily be added for a total comfort all-season system. Replacement of furnaces manufactured by Lennox in the last twenty-five years can be done with only minor modification to duct work or add-on coils.

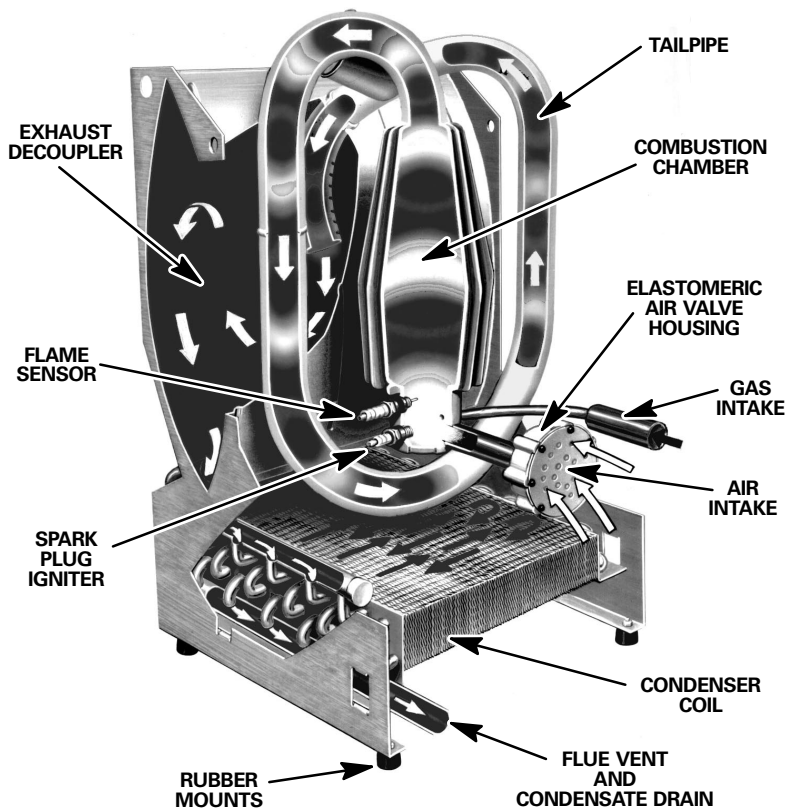
High efficiency of the G21 series is achieved with a unique heat exchanger design which features: finned cast iron combustion chamber, temperature resistant steel tailpipe, aluminized steel exhaust decoupler section and a finned stainless steel tube condenser coil. Moisture, during the process of combustion, is condensed in the coil, extracting almost all usable heat out of the flue gas. Most of the combustion heat is utilized in the heat transfer from the coil, producing flue vent temperatures as low as 100°F to 130°F (38°C to 54°C) which allows the use PVC (polyvinyl chloride) pipe for venting. Condensate created in the coil (PH ranges from 4.0 to 6.0) is not harmful to standard household plumbing and can be drained into city sewers and septic tanks without damage.

The G21 furnace has no pilot light or burners. An automotive type spark plug is used for ignition on the initial cycle only, saving gas and electrical energy. In the pulse combustion process, the use of atmospheric burners is eliminated, with combustion confined to heat exchanger combustion chamber. Sealed combustion system virtually eliminates the loss of conditioned air due to combustion and stack dilution. Combustion air is piped to the furnace with same type PVC pipe as used for exhaust gases.

Furnace is equipped with standard type redundant gas valve in series with gas expansion tank and gas intake flapper valve. Also factory installed are an air intake flapper valve, purge blower, spark plug igniter, flame sensor with solid-state control, solid-state blower control, limit control, high and low voltage terminal strip, 30VA transformer and cleanable air filter. Furnished for field installation are a flexible gas line connector, (4) isolation mounting pads, base insulation pad and condensate drip leg.

Optional equipment available: flue vent/air intake line roof or wall termination installation kits, LPG/Propane conversion kits, mufflers  
♦ attenuators, furnace twinning kit, continuous low speed blower kit, external filter mounting kit and thermostat.

G21 units are shipped completely factory assembled with all controls installed and wired. Units are test fired at the factory before shipment.



## PROCESS OF COMBUSTION

The process of combustion begins as gas and air are introduced into the sealed combustion chamber with the spark plug igniter. Spark from the plug ignites the gas/air mixture, which in turn causes a positive pressure buildup that closes the gas and air inlets. This pressure relieves itself by forcing the products of combustion out of the combustion chamber through the tailpipe into the heat exchanger exhaust decoupler and on into the heat exchanger coil. As the combustion chamber empties, its pressure becomes negative, drawing in air and gas for the next pulse of combustion. At the same instant, part of the pressure pulse is reflected back from the tailpipe at the top of the combustion chamber. The flame remnants of the previous pulse of combustion ignites the new gas/air mixture in the chamber, continuing the cycle. Once combustion is started, it feeds upon itself allowing the purge blower and spark plug igniter to be turned off. Each pulse of gas/air mixture is ignited at a rate of 60 to 70 times per second. Almost complete combustion occurs with each pulse. The force of these series of ignitions creates great turbulence which forces the products of combustion through the entire heat exchanger assembly resulting in maximum heat transfer.

## FEATURES

**Approvals** — G21 series furnaces are designed certified by A.G.A. and C.G.A. Laboratories and ratings are certified by GAMA. Units meet the California Nitrogen Oxides (NO<sub>x</sub>) standards and California Seasonal Efficiency requirements. In addition, units have been rated and tested in the Lennox Research Laboratory according to Department of Energy (DOE) test procedures and Federal Trade Commission (FTC) labeling regulations. Blower data is from unit tests conducted in the Lennox Laboratory air test chamber.

**Equipment Warranty** — G21 "Pulse" heat exchangers have a limited lifetime warranty in residential applications and a limited twenty year warranty in non-residential applications. All other components have a limited warranty for five years in residential applications and one year in non-residential applications. Refer to Lennox Limited Equipment Warranty certificate included with the equipment for details.

**Sequence of Operation** — Room thermostat, on a demand for heat, will initiate purge blower operation for a pre-purge cycle (30 seconds) followed by energizing and opening of the gas valve. As ignition occurs, the flame sensor reacts to proof of ignition and de-energizes the spark plug igniter and purge blower after 8 seconds. Furnace blower operation is initiated 45 seconds (adjustable 30 to 60 seconds) after combustion ignition. When thermostat is satisfied, gas valve is closed and purge blower is re-energized for a post-purge cycle (34 seconds). Furnace blower will remain in operation until "fan off" factory setting of 180 seconds (adjustable from 120 to 240 seconds) is reached. Should loss of flame occur before thermostat is satisfied, flame sensor controls will initiate 5 attempts at re-ignition before locking out unit operation. Additionally, loss of either combustion intake air or flue exhaust will automatically terminate system operation. If unit becomes locked out, Watchguard circuit on ignition control automatically resets ignition controls after one hour.

**Heat Exchanger Assembly** — Lennox developed heat exchanger assembly consists of combustion chamber, tailpipe, exhaust decoupler section and condenser coil. Combustion chamber contains the spark plug igniter, flame sensor and combustion air and gas intake manifolds. Cast iron construction provides excellent radiation of heat over entire surface area. Finned "teardrop" shape design permits total air coverage of all surfaces with low resistance. Tailpipe connects

the combustion chamber to the exhaust decoupler section. Precisely sized and shaped tailpipe is constructed of combination stainless and aluminized steel for superior resistance to high temperatures. Aluminized steel resonator on tailpipe minimizes combustion sound. Heavy gauge aluminized steel exhaust decoupler section has large surface area for maximum heat transfer. Air foil shape design results in complete air coverage with minimum air resistance. Condenser coil intake header connects to bottom of exhaust decoupler section. Large face area and circuiting of coil provides high heat transfer, minimum air resistance and proper moisture drainage. Coil is constructed of exactly spaced ripple-edged aluminum fins fitted to stainless steel tubes. Flared collars on fins grip tubes for maximum contact area. Flared tubing connections and high temperature brazing provide tight, leakproof joints. Combined flue vent and condensate drain outlet is located on the coil. Coil is factory tested for leaks. All components are mounted in a heavy gauge steel frame and installed in the furnace cabinet on resilient rubber mounts assuring quiet, vibration free operation. Heat exchanger has been laboratory life cycle tested.

**Cabinet** — Constructed of heavy gauge cold rolled steel. Cabinet is subject to a five station metal wash process resulting in a perfect bonding surface for a paint finish of baked-on enamel. The paint solution and metal are given opposite electrical charges resulting in positive adhesion and even coverage of the paint to the metal surfaces. Heat exchanger section is completely lined with thick 1-1/2 lb./ft.<sup>3</sup> (24 kg/m<sup>3</sup>) density foil faced fiberglass insulation. Blower compartment is completely lined with thick 1-1/2 lb./ft.<sup>3</sup> (24 kg/m<sup>3</sup>) density black mat faced fiberglass insulation. This results in quiet and efficient operation due to the excellent acoustical and insulating properties of fiberglass. Complete service access is accomplished by removing heating section and blower access panels. Removable panel is provided in vestibule panel for access to the spark plug and flame sensor. Holes are located in the base for cabinet leveling. Leveling bolts and nuts are not provided and must be ordered extra. Safety interlock switch automatically shuts power off to unit when blower access panel is removed. Blower assembly may be completely removed from unit for servicing. Electrical inlets, gas line inlets and exhaust air outlets are provided in both sides of cabinet. Combustion air inlet opening is located in cabinet cap. Return air duct connection can be made on either side or bottom of cabinet.

## FEATURES

**Blower** — Units are equipped with quiet multi-speed direct drive blower. Each blower assembly is statically and dynamically balanced. Multiple-speed leadless motor is resiliently mounted. A choice of blower speeds is available on each blower. See blower performance tables. Change in blower speed is easily accomplished by simple wiring change.

**Solid-State Blower Control** — Circuit board located in wiring junction box contains all necessary controls to automatically operate the blower. Contains adjustable blower timed-on control (30 to 60 seconds – factory setting 45 seconds) and adjustable blower timed-off control (120 to 240 seconds – factory setting 180 seconds).

**Cleanable Air Filters** — Washable or vacuum cleanable frame type filter is furnished as standard. Polyurethane media is coated with oil for maximum efficiency. Filter is readily accessible in unit for quick and easy removal for servicing.

**Combustion Air Intake Box** — Contains the purge blower, air intake flapper valve and air valve housing. The -40, -60 and -80 units have a single differential pressure switch mounted inside the unit cabinet. The -100 models have a single differential pressure switch mounted on the vestibule panel. Pressure switches terminate unit operation in case of air intake or flue exhaust blockage. Box is located on vestibule panel. Purge blower is equipped with a permanently lubricated motor. Blower operates only during pre-purge, post-purge and ignition cycles. Air is drawn through the blower during the combustion cycle by negative pressure in the combustion chamber. Flapper valve air housing is constructed of an elastomeric non-metallic polymer which reduces operating sound levels. Flapper valve section of the box is completely lined with 1 inch (25 mm) thick 6 lb./ft.<sup>3</sup> (96 kg/m<sup>3</sup>) density duct liner board, black neoprene coated fiberglass. Valve opening and closing is actuated by back pressure and negative pressure in combustion chamber during the heating cycle.

**Ignition Control** — Solid-state control provides power for spark plug igniter. Also controls pre-purge and post-purge cycles and re-ignition sequence if loss of flame occurs. Also features Watchguard circuit. Solid-state control provides automatic reset of ignition controls after 1 hour of continuous thermostat demand after unit lockout. Ignition control is factory installed on the vestibule panel.

## OPTIONAL ACCESSORIES (Must Be Ordered Extra)

**LPG/Propane Conversion Kits (Optional)** — For LPG/Propane models a conversion kit is available for field changeover from natural gas. See Specifications tables.

**Thermostat (Optional)** — Heating thermostat is not furnished. For all-season applications, heating-cooling thermostat is available with the condensing unit. See Thermostats bulletin in Accessories Section and Lennox price Book.

**In-Line Mufflers (Optional)** — Two mufflers LB-52057CA (**67F81**) are optional for -40 and -60 units. Two mufflers are required on -80 & -100 units. Mufflers field install, vertical or horizontal, one in the intake line and one in the exhaust line. See optional accessory dimension drawings.

☼ **In-Line Attenuators (Optional)** — Attenuators field install, vertical or horizontal, one in the intake line and one in the exhaust line. Two attenuators are furnished per order no. GPA-3030 (**12H76**) contains two 30 inch (762 mm) long attenuators. GPA-3019 (**12H77**) contains one 30 in. (762 mm) attenuator and one 19 inch (483 mm) attenuator for reduced clearances. See optional accessory dimension drawings.

**Continuous Low Speed Blower Kit (Optional)** — Field installed kit LB-83611A (**90H79**) is available to provide continuous low speed blower operation. Kit includes switch and all necessary wiring.

**Furnace Twinning Kit (Optional)** — Field Installed kits are available to operate two furnaces simultaneously. Two kits are available — Twinning Kit For Continuous Low speed Blower LB-63093C (**35J93**) or Twinning Kit For Non-Continuous Low speed Blower LB-63093B (**64H88**). Kit consists of heavy gauge steel control box and two auxiliary limit controls. Control box has electrical inlet knockouts and contains low voltage and high voltage terminal strips, blower control relay, heat relays, door interlock relay and 24 volt control transformer. All controls are factory installed and wired. Limit controls are field installed in each furnace. Holes for mounting control box are provided. Box may be field installed in any convenient location adjacent to or on one of the furnaces.

**Limit Control** — Factory installed and accurately located on vestibule. Fixed limit control provides positive protection from abnormal operating conditions. Automatic reset.

**Automatic Gas Valve, Expansion Tank and Gas Intake Flapper Valve** — 24 volt redundant dual gas control valve combines gas pressure regulation and manual main shutoff valve into one compact combination control. Dual valve design provides double assurance of 100% close off of gas on each heating cycle. Expansion tank is located downstream from the gas valve and absorbs any pressure pulsations. Gas intake flapper valve is installed in the combustion chamber intake manifold between the orifice and expansion tank. Valve is opened by entering gas pressure and closed by back pressure from combustion pulse during the heating cycle.

**Wiring Junction Box** — Power supply and thermostat connections are made at the wiring junction box located on the vestibule panel. Box contains 30 VA transformer, high and low voltage terminal strips and blower cooling relay. Low voltage terminal strip has a fuse to protect the transformer. Terminal strip permits easy connections for optional power humidifiers and electronic air cleaners. Blower cooling relay activates blower operation for add-on air conditioning cooling.

**Installation Recommendations** — Lennox recommends the following installation procedures to minimize any vibration transmitted from furnace during operation. Place (4) neoprene rubber isolation mounting pads (furnished) and/or base insulation pad (furnished), 1 inch thick 1-1/2 lb./ft.<sup>3</sup> (24 kg/m<sup>3</sup>) density fiberglass, under the unit. Install flexible duct connectors in the supply air plenum and return air plenum or duct connection. Insulate with 1 inch (25mm) thick, 1-1/2 to 3 lb./ft.<sup>3</sup> (24 to 48 kg/m<sup>3</sup>) density, mat faced fiberglass) supply and return air plenums through take-off or duct elbow. Use flexible gas connector (furnished) in gas supply piping where allowed by local codes. Insulate (refrigerant piping insulation or equivalent) all straps and hangers used in suspending ducts, electrical conduit, gas piping, combustion air intake piping and flue exhaust piping. In addition, use plastic pipe or tubing for drain line from the condensate coil drip leg (furnished) to the drain, do not use copper tubing.

**External Filter Mounting Kit (Optional)** — Kit (**16H36**) is available for installing air filter external to unit cabinet on side return air applications. Heavy gauge cold rolled steel filter rack assembly field installs on either side of unit cabinet with existing screws. Rack has flanges for ease of duct connection. Filter is not furnished. Kit utilizes existing filter supplied with G21 unit. See Specifications tables.

**Condensate Drain Heat Cable Kits (Optional)** — Self-limiting wattage heat cable prevents condensate drain from freezing in unconditioned areas. Kit LB-88643C (**26K70**) has 50 ft. (15.2 m) of heat cable. Kit LB-88643B (**26K69**) contains 24 ft. (7.3 m) of heat cable. Kit LB-88643A (**26K68**) contains 6 ft. (1.8 m) of heat cable. Also available:

— Heat Cable Tape 66 ft. (20 m) length, 1/2 in. (13 mm) wide fiberglass (**39G04**) or 60 ft. (18 m) length, 2 in. (51 mm) wide aluminum foil (**39G03**).

**Concentric Vent/Intake Air Roof/Wall Termination Kit (Optional)** — Facilitates installation of combustion air intake pipe and flue exhaust pipe. Kit LB-49107CE (**60G77**) contains concentric termination assembly, mounting clamp, roof flashing, reducer bushing and 45 degree elbow. Kit requires single hole penetration of roof or wall for installation. 2 inch (51 mm) kit is A.G.A./C.G.A. certified. See Specifications table and optional accessory dimension drawings. Not available for -100 size models.

**Vent/Intake Air Roof Termination Kit (Optional)** — Facilitates installation of combustion air intake pipe and flue exhaust pipe. Kit contains two neoprene rubber roof flashings. Kit also contains two 18 inch (457mm) insulation sleeves for sealing and isolating intake and exhaust piping penetration in roof. See Specifications table and optional accessory dimension drawings. Refer to venting tables in this bulletin to determine pipe size needed and proper termination kit required.

**For 2 inch (51 mm) Venting:**—  
LB-49107CC (**15F75**)

**For 3 inch (76 mm) Venting** —  
LB-65678A (**44J41**)

## OPTIONAL ACCESSORIES (Must Be Ordered Extra)

**Vent/Intake Air Wall Termination Kits (Optional)** – Facilitates installation of combustion air intake pipe and flue exhaust pipe. Kit must be ordered extra. Refer to venting tables in this bulletin to determine pipe size needed and proper termination kit required.

- **Ring Kit (15F74)** 2 inch (51 mm) contains 2 stainless steel outside seal caps, 2 galvanized steel inside seal caps, 4 seal rings for the caps and 18 inch (457 mm) insulation sleeve for sealing and isolating intake and exhaust piping penetration of wall. Maintain a maximum of 6 inches (152 mm) between the inlet and outlet openings in the installation of the pipes. See optional accessory dimension drawings.
- **WTK Close Couple Kits (30G28)** 2 inch (51 mm) or **(81J20)** 3 inch (76 mm) contains one insulated faceplate, one insulated exhaust pipe, elbow and fittings. See optional accessory dimension drawings.

- **Close Couple Kits (22G44)** 2 inch (51 mm) or **(44J40)** 3 inch (76 mm) consists of close-couple side-by-side PVC (polyvinyl chloride) piping with galvanized steel wall cover plate for sealing and isolating piping penetration of the wall. Piping spacing and length is sized for proper wall installations. A.G.A./C.G.A. certified. See optional accessory dimension drawings.

- **WTKX Close Couple Kit With Extension Riser (30G79)** 2 inch (51 mm) is used where extended grade line clearance is required. Kit includes 3 ft. (1.0m) extension riser containing both vent lines (exhaust vent insulated) and wall securing bracket. See optional accessory dimension drawings.

## SPECIFICATIONS

Model No.	G21Q3-40	G21Q3-60	G21Q4-60
Input – Btuh (kW)	40,000 (11.7)	60,000 (17.6)	60,000 (17.6)
Output – Btuh (kW)	39,000 (11.4)	55,500 (16.1)	57,000 (16.7)
☆A.F.U.E.	96.2%	94.1%	94.1%
California Seasonal Efficiency	90.7%	89.9%	88.8%
Temperature rise range – °F (°C)	35 – 65 (19 – 36)	40 – 70 (22 – 39)	35 – 65 (19 – 36)
High static certified by A.G.A./C.G.A. – in wg. (Pa)		.50 (124)	
Gas Piping Size I.P.S. – in. (mm) Nat. or LPG/Propane		1/2 (12.7)	
Vent/Intake air pipe size connection – in. (mm)		2 (51)	
Condensate drain connection – in. (mm) SDR11		1/2 (12.7)	
Blower wheel nominal diameter x width – in. (mm)	10 x 8 (254 x 203)		11 x 9 (279 x 229)
Blower motor output – hp (W)	1/3 (249)		1/2 (373)
Number and size of filters – in. (mm)		(1) 16 x 25 x 1 (406 x 635 x 25)	
Nominal cooling that can be added – Tons (kW)	1-1/2 – 3 (5.3 – 10.6)		2-1/2 – 4 (8.8 – 14.1)
Shipping weight – lbs. (kg) 1 package	250 (113)		255 (116)
Electrical characteristics	120 volts – 60 hertz – 1 phase (less than 12 amps) All models		
↕ Optional Accessories (Must Be Ordered Extra) ↕			
LPG/Propane Kit	LB-65810A <b>(46J45)</b>	LB-65810B <b>(46J46)</b>	
In-line Mufflers (↕Attenuators) – 2 required	<b>67F81</b> (qty. 2) or ↕ <b>GPA-3030 (12H76)</b> and ↕ <b>GPA3019 (12H77)</b> – 19 lbs. (9 kg)		
Concentric Vent/Intake Air Roof Termination Kit	<b>60G77</b> 2 inch (51 mm) – 12 lbs. (5 kg)		
Vent/Intake Air Roof Termination Kit	2 inch (51 mm)	<b>15F75</b> – 3 lbs. (1 kg)	
	3 inch (76 mm)	<b>44J41</b> – 3 lbs. (1 kg)	
Vent/Intake Air Wall Termination Kit	2 inch (51 mm)	Ring Kit <b>(15F74)</b> , Close-Couple Kit <b>(22G44)</b> , WTKX Close-Couple w/ 3 ft. (1 m) Extension Riser <b>(30G79)</b> , WTK Close-Couple Kit <b>(30G28)</b>	
	3 inch (76 mm)	Close-Couple Kit <b>(44J40)</b> , WTK Close-Couple Kit <b>(81J20)</b>	
Continuous Low Speed Blower Switch Kit	LB-83611A <b>(90H79)</b> (All models – not used with twinning kit)		
Twinning Kits	Non-continuous low speed	<b>64H88</b> (all models)	
	Continuous low speed	<b>35J93</b> (all models)	
‡External Filter Mounting Kit	Catalog No.	LB-81871CA <b>(16H36)</b>	
	Filter size – in. (mm)	(1) 16 x 25 x 1 (406 x 635 x 25)	
Condensate Drain Heat Cable	<b>26K68</b> 6 ft. (1.8 m) – <b>26K69</b> 24 ft. (7.3 m) – <b>26K70</b> 50 ft. (15.2 m)		
Heat Cable Tape	<b>39G04</b> – 66 ft. (20 m) x 1/2 in. (38 mm) fiberglass or <b>39G03</b> – 60 ft. (18 m) x 2 in. (25 mm) aluminum foil (1 roll)		

‡Filter is not furnished with kit. Filter kit utilizes existing filter supplied with G21 unit.

☆Annual Fuel Utilization Efficiency based on D.O.E. test procedures and according to F.T.C. labeling regulations. Isolated combustion system rating for non-weatherized furnaces.

## SPECIFICATIONS

Model No.	G21Q3-80	G21Q4-80	□G21Q5-80	G21Q3-100	G21Q4/5-100
Input – Btuh (kW)	80,000 (23.4)	80,000 (23.4)	80,000 (23.4)	100,000 (29.3)	100,000 (29.3)
Output – Btuh (kW)	74,000 (21.7)	74,000 (21.7)	75,000 (22.0)	94,000 (27.5)	95,000 (27.8)
☆A.F.U.E.	93.9%	93.9%	93.2%	94.0%	94.5%
California Seasonal Efficiency	90.1%	88.9%	88.3%	90.8%	89.6%
Temperature rise range – °F (°C)	45 – 75 (25 – 41)	40 – 70 (22 – 39)	35 – 65 (19 – 36)	55 – 85 (31 – 47)	40 – 70 (22 – 39)
High static certified by A.G.A./C.G.A. – in wg. (Pa)	.50 (124)				
Gas Piping Size I.P.S. – in. (mm) Nat. or LPG/Propane	1/2 (12.7)				
Vent/Intake air pipe size connection – in. (mm)	2 (51)				
Condensate drain connection – in. (mm) SDR11	1/2 (12.7)				
Blower wheel nominal diameter x width – in. (mm)	10 x 8 (254 x 203)	11 x 9 (279 x 229)	12 x 12 (305 x 305)	10 x 8 (254 x 203)	12 x 12 (305 x 305)
Blower motor output – hp (W)	1/3 (249)	1/2 (373)	3/4 (560)	1/2 (373)	3/4 (560)
Number and size of filters – in. (mm)	(1) 16 x 25 x 1 (406 x 635 x 25)		(1) 20 x 25 x 1 (508 x 635 x 25)		
Nominal cooling that can be added	Tons	2 – 3	2-1/2 – 4	4 or 5	2 – 3
	kW	7.0 – 10.6	8.8 – 14.1	14.4 or 17.6	7.0 – 10.6
Shipping weight – lbs. (kg) 1 package	250 (113)	255 (116)	297 (135)	297 (135)	297 (135)
Electrical characteristics	120 volts – 60 hertz – 1 phase (less than 12 amps) All models				
↘ Optional Accessories (Must Be Ordered Extra) ↙					
LPG/Propane Kit	LB-65810B (46J46)			LB-65810C (46J47)	
In-line Mufflers ( ⚡Attenuators) – 2 required	67F81 (qty. 2) or ⚡GPA-3030 (12H76) and ⚡GPA3019 (12H77) – 19 lbs. (9 kg)				
Concentric Vent/Intake Air Roof Termination Kit	60G77 – 2 inch (51 mm) 12 lbs. (5 kg)				
Vent/Intake Air Roof Termination Kit	2 inch (51 mm)	15F75 – 3 lbs. (1 kg)			
	3 inch (76 mm)	44J41 – 3 lbs. (1 kg)			
Vent/Intake Air Wall Termination Kit	2 inch (51 mm)	Ring Kit (15F74), Close-Couple Kit (22G44), WTKX Close-Couple w/ 3 ft. (1 m) Extension Riser (30G79), WTK Close-Couple Kit (30G28)			
	3 inch (76 mm)	Close-Couple Kit (44J40), WTK Close-Couple Kit (81J20)			
Continuous Low Speed Blower Switch Kit	LB-83611A (90H79) (All models – not used with twinning kit)				
Twinning Kits	Non-continuous low speed	64H88 (all models)			
	Continuous low speed	35J93 (all models)			
‡External Filter Mounting Kit	Catalog No.	LB-81871CA (16H36)	LB-81871CB (16H37)		
	Filter size (in.)	(1) 16 x 25 x 1 (406 x 635 x 25)	(1) 20 x 25 x 1 (508 x 635 x 25)		
Condensate Drain Heat Cable	26K68 6 ft. (1.8 m) – 26K69 24 ft. (7.3 m) – 26K70 50 ft. (15.2 m)				
Heat Cable Tape	39G04 – 66 ft (20 m) x 1/2 in. (38 mm) fiberglass or 39G03 – 60 ft. (18 m) x 2 in. (25 mm) aluminum foil (1 roll)				

‡Filter is not furnished with kit. Filter kit utilizes existing filter supplied with G21 unit.

☆Annual Fuel Utilization Efficiency based on D.O.E. test procedures and according to F.T.C. labeling regulations. Isolated combustion system rating for non-weatherized furnaces.

□U.S. only.

## INSTALLATION CLEARANCES

Sides	1 inch (25 mm)
Rear	1 inch (25 mm)
Top	1 inch (25 mm)
Front	1 inch (25 mm)
Floor	Combustible
Exhaust Pipe	0 inches (0 mm)
Exhaust Pipe Side	6 inches (152 mm) (service only)

## VENTING REQUIREMENTS

Vent Pipe Maximum Equivalent Length – ft. (m)	Minimum Vent Pipe Diameter Required – in. (mm)
5 – 50 (1.5 – 15.2)	2 (51)
51 – 90 (15.5 – 27.4)	2-1/2 (64)
91 – 130 (27.7 – 39.6)	3 (76)

NOTE – One 90° elbow is equivalent to 5 feet (1.5m) of straight vent pipe  
One 45° elbow is equivalent to 2.5 feet (.75 m) of straight vent pipe.  
Intake and exhaust pipes MUST be the same diameter.  
All pipe runs must terminate with 1-1/2" (38 mm) pipe.

## BLOWER DATA

### G21Q3-40, G21Q3-60 AND G21Q3-80 BLOWER PERFORMANCE

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1585	748	1392	657	920	434
.05	13	1558	735	1364	644	917	433
.10	25	1533	723	1354	639	915	432
.15	37	1505	710	1335	630	912	430
.20	50	1477	695	1315	621	905	427
.25	62	1447	683	1294	611	893	421
.30	75	1418	669	1272	600	887	419
.40	100	1355	639	1225	577	858	405
.50	125	1282	605	1164	549	803	379

NOTE – All air data is measured external to the unit with the air filter in place.

**G21Q4-60 AND G21Q4-80 BLOWER PERFORMANCE**

External Static Pressure		Air Volume at Various Blower Speeds							
		High		Medium-High		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1890	890	1545	730	1240	585	1030	485
.05	13	1870	880	1540	725	1245	585	1030	485
.10	25	1850	875	1530	720	1245	585	1025	485
.15	37	1830	865	1515	715	1245	585	1020	480
.20	50	1800	850	1500	710	1240	585	1015	480
.25	62	1770	835	1480	700	1230	580	1010	475
.30	75	1740	820	1460	690	1220	575	1000	470
.40	100	1670	790	1420	670	1190	560	975	460
.50	125	1590	750	1370	645	1160	545	950	450

NOTE — All air data is measured external to the unit with the air filter in place.

**G21Q5-80 BLOWER PERFORMANCE**

External Static Pressure		Air Volume at Various Blower Speeds									
		High		Medium-High		Medium		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2460	1160	2350	1110	2155	1015	1900	895	1695	800
.05	12	2430	1145	2310	1090	2130	1005	1875	885	1675	790
.10	25	2395	1130	2275	1075	2100	990	1855	875	1655	780
.15	37	2355	1110	2240	1055	2065	975	1825	860	1625	765
.20	50	2315	1090	2205	1040	2035	960	1800	850	1600	755
.25	62	2275	1075	2175	1025	1995	940	1780	840	1570	740
.30	75	2235	1055	2130	1005	1960	925	1740	820	1540	725
.40	100	2155	1015	2055	970	1880	885	1675	790	1480	700
.50	125	2070	975	1970	930	1790	845	1605	755	1410	665
.60	150	1980	935	1890	890	1710	805	1540	725	1345	635

NOTE — All air data is measured external to the unit with the air filter in place.

**G21Q3-100 BLOWER PERFORMANCE**

External Static Pressure		Air Volume at Various Blower Speeds					
		High		Medium-High		Medium-Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s
0	0	1850	875	1660	785	1500	710
.05	13	1805	850	1635	770	1470	695
.10	25	1760	830	1610	760	1440	680
.15	37	1720	810	1575	745	1420	670
.20	50	1680	795	1540	725	1400	660
.25	62	1635	770	1505	710	1375	650
.30	75	1590	750	1470	695	1350	635
.40	100	1500	710	1400	660	1290	610
.50	125	1400	660	1320	625	1220	575
.60	150	1290	610	1230	580	1140	540

NOTE — All air data is measured external to the unit with the air filter in place.

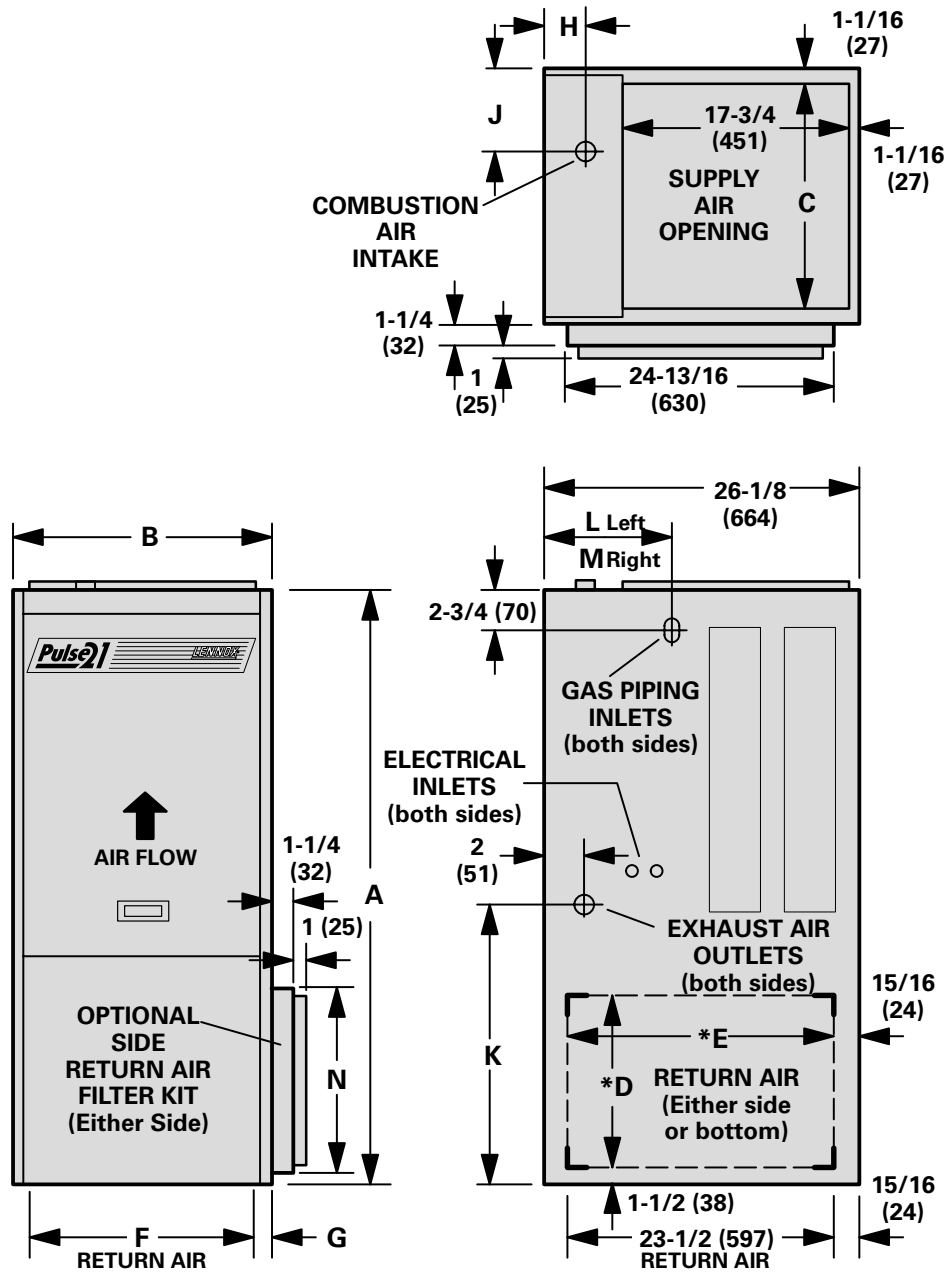
NOTE — G21Q3-100 has a four speed motor, however, low speed operation is not recommended.

**G21Q4/5-100 BLOWER PERFORMANCE**

External Static Pressure		Air Volume at Various Blower Speeds									
		High		Medium-High		Medium		Medium-Low		Low	
in. w.g.	Pa	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
0	0	2450	1155	2340	1105	2140	1010	1910	900	1690	800
.05	12	2420	1140	2310	1090	2110	995	1880	885	1670	790
.10	25	2390	1130	2270	1070	2080	980	1860	880	1640	775
.15	37	2350	1110	2240	1055	2050	965	1830	865	1620	765
.20	50	2320	1095	2210	1045	2020	955	1800	850	1590	750
.25	62	2280	1075	2170	1025	1990	940	1770	835	1570	740
.30	75	2250	1060	2140	1010	1960	925	1740	820	1540	725
.40	100	2180	1030	2060	970	1870	890	1680	790	1480	700
.50	125	2100	990	1980	935	1810	855	1610	760	1420	670
.60	150	2005	945	1890	890	1740	820	1530	720	1350	635

NOTE — All air data is measured external to the unit with the air filter in place.

**DIMENSIONS — inches (mm)**



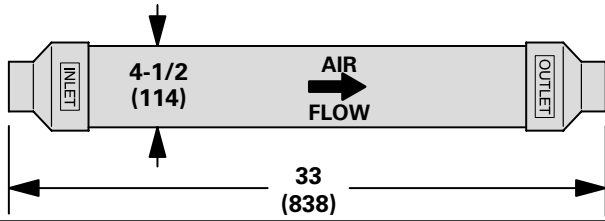
\*Unit or Optional External Side Return Air Filter Kit

Model No.		A	B	C	D	E	F	G	H	J	K	L	M	N
G21Q3-40 G21Q3-60 G21Q3-80	in.	49	21-1/4	19-1/8	14-1/2	18-1/2	14-1/2	3-3/8	4-1/2	8-1/2	20-1/4	7-1/4	5-1/4	16
	mm	1245	540	486	368	470	368	86	114	216	514	184	133	406
G21Q4-60 G21Q4-80	in.	49	21-1/4	19-1/8	14-1/2	23-1/2	14-1/2	3-3/8	4-1/2	8-1/2	20-1/4	7-1/4	5-1/4	16
	mm	1245	540	486	368	597	368	86	114	216	514	184	133	406
G21Q3-100	in.	53	26-1/4	24-1/8	18-1/2	18-1/2	18-1/2	3-7/8	2-1/2	11	24-1/4	4-5/8	4-5/8	20
	mm	1346	667	613	470	470	470	98	64	279	616	117	117	508
G21Q5-80 G21Q4/5-100	in.	53	26-1/4	24-1/8	18-1/2	23-1/2	18-1/2	3-7/8	2-1/2	11	24-1/4	4-5/8	4-5/8	20
	mm	1346	667	613	470	597	470	98	64	279	616	117	117	508

**OPTIONAL ACCESSORY DIMENSIONS – inches (mm)**

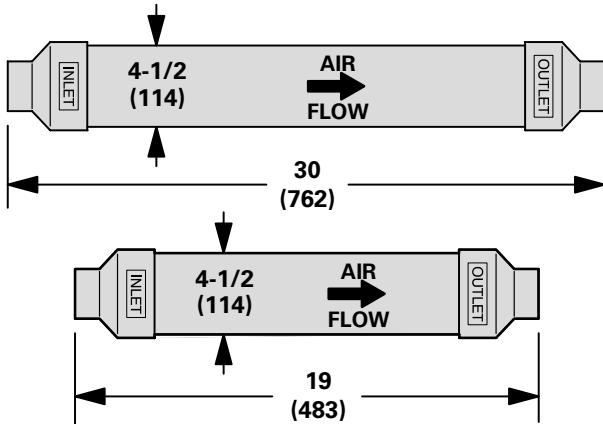
**IN-LINE MUFFLERS  
67F81**

NOTE – Two mufflers are furnished per order.

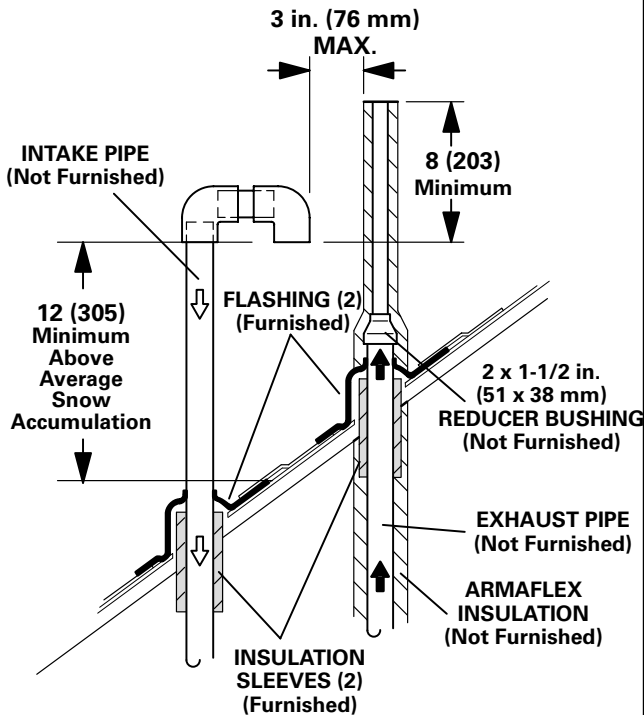


**IN-LINE ATTENUATORS  
GPA-3030 & GPA-3019**

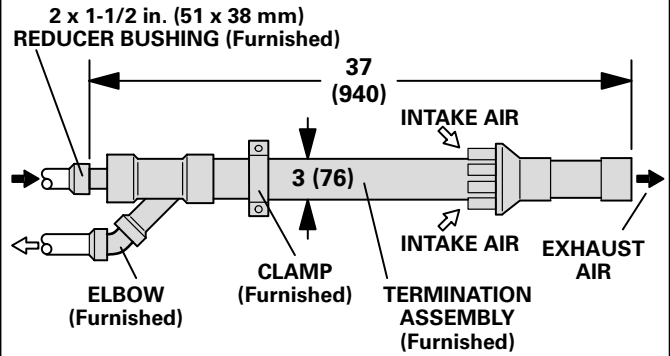
NOTE – GPA-3030 (12H76) contains two 30 in. (762mm) Attenuators. GPA-3019 (12H77) contains one 30 in. (762mm) Attenuator and one 19 in. (483mm) Attenuator.



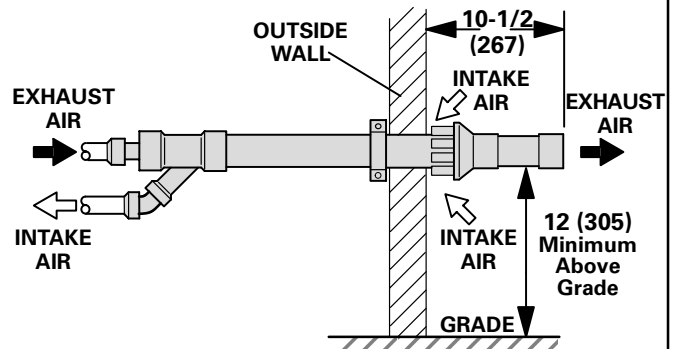
**ROOF TERMINATION KIT  
15F75 for 2 inch (51 mm) Venting  
44J41 for 3 inch (76 mm) Venting**



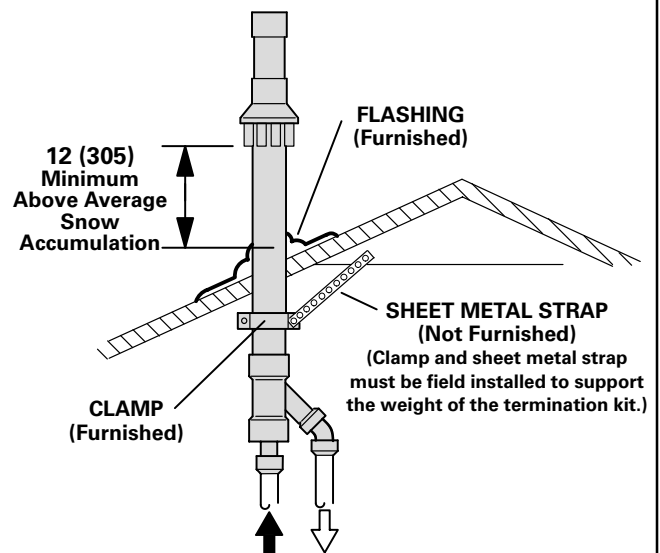
**CONCENTRIC ROOF/WALL  
TERMINATION KIT  
60G77 for 2 inch (51 mm) Venting**



**CONCENTRIC WALL  
TERMINATION APPLICATIONS**

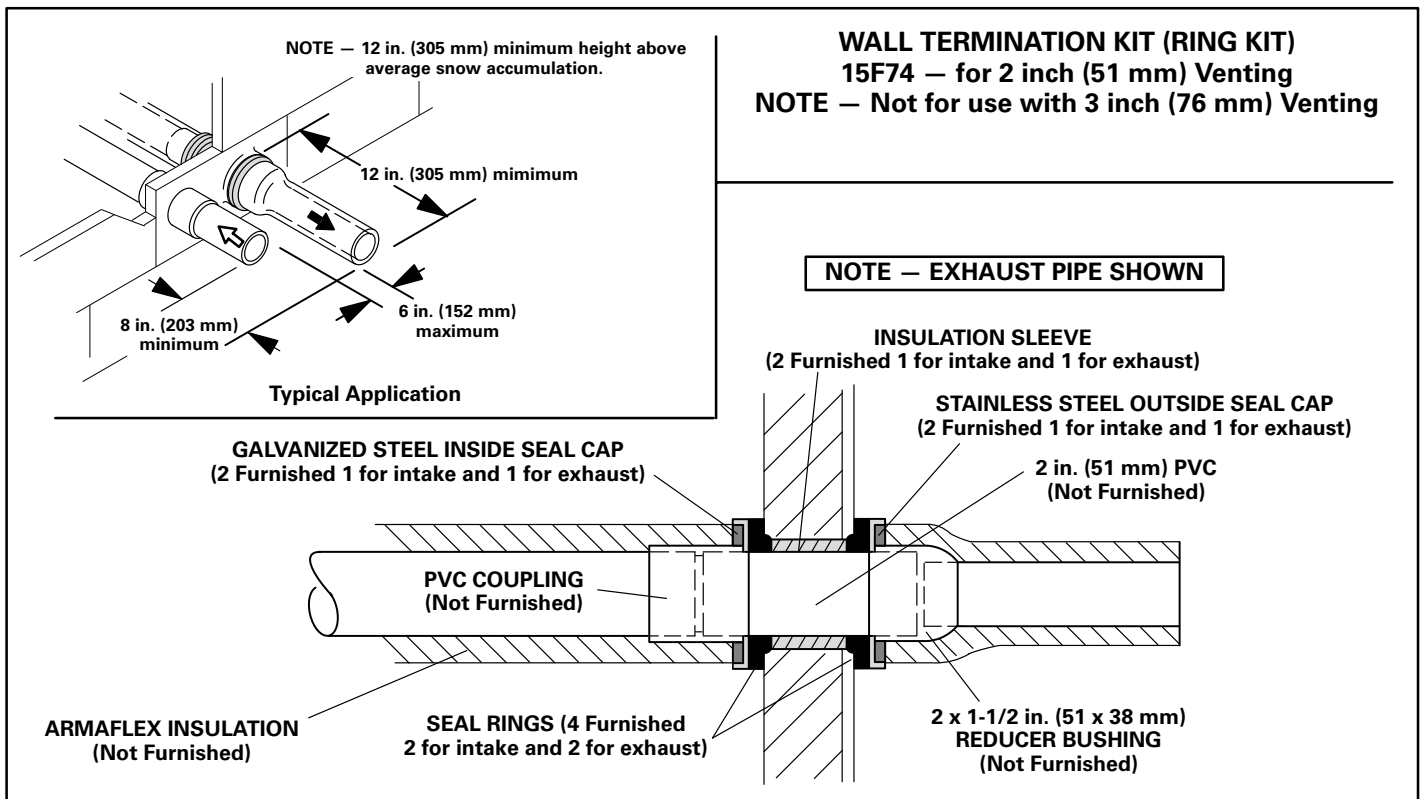
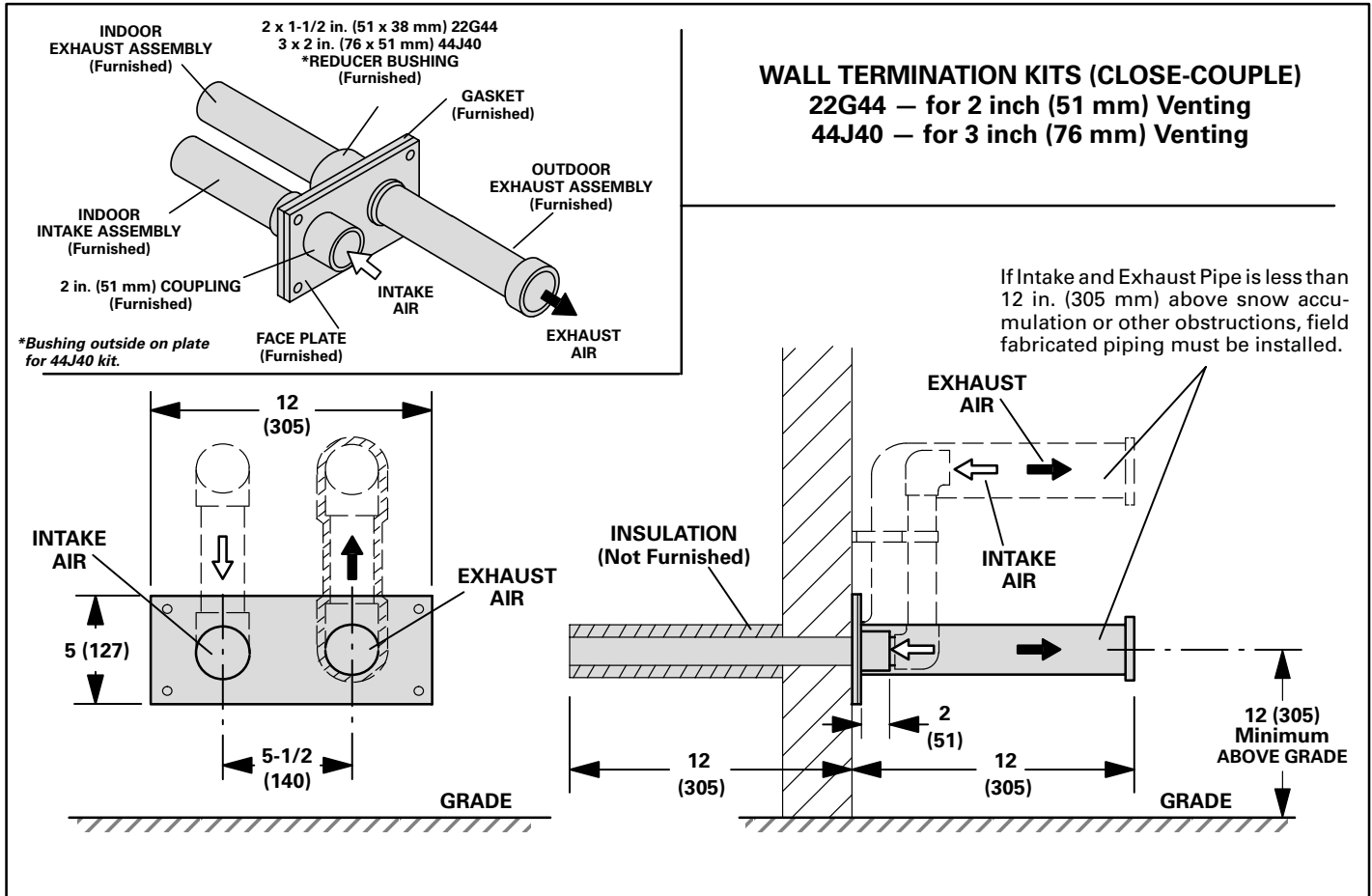


**CONCENTRIC ROOF  
TERMINATION APPLICATIONS**



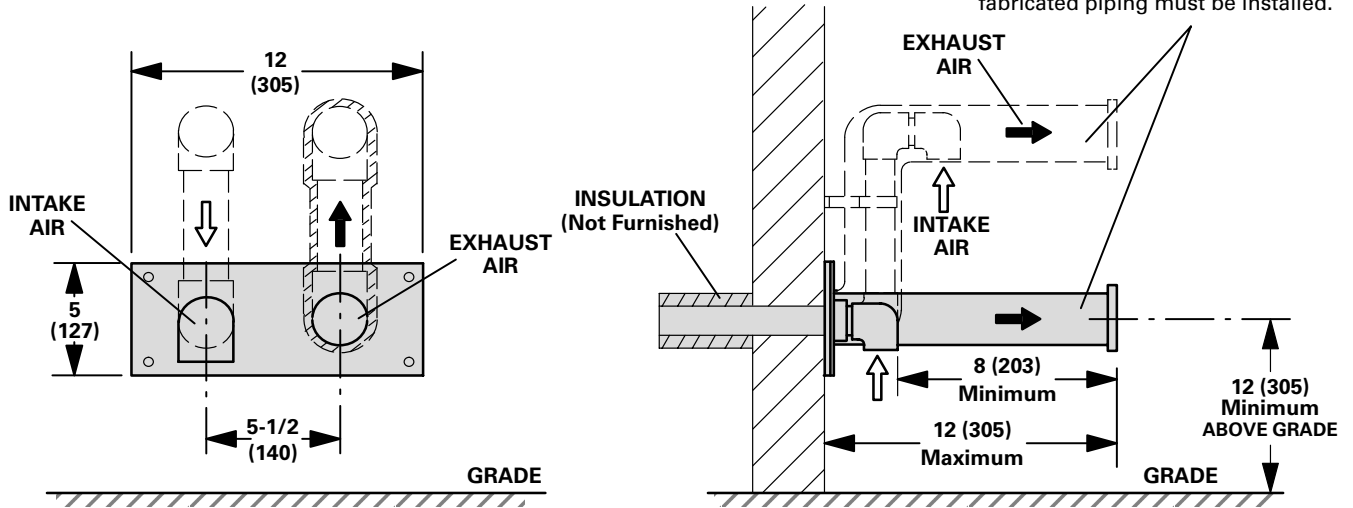


**OPTIONAL ACCESSORY DIMENSIONS – inches (mm)**



**WTK WALL TERMINATION KIT  
WITH FIELD FABRICATION ABOVE  
GRADE EXTENDED CLEARANCE**  
30G28 – For 2 inch (51 mm) Venting  
81J20 – For 3 inch (76 mm) Venting

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



**WTKX EXTENSION RISER TERMINATION KIT**  
30G79 – For 2 inch (51 mm) Venting  
NOTE – Not for 3 inch (76 mm) Venting

