987MA
EVOLUTION® MODULATING
4-WAY MULTIPOISE, VARIABLE SPEED
CONDENSING GAS FURNACE, SERIES B

bryan

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 07/19/16

Product Data

A11264

The 987MA Multipoise Variable-Speed Condensing Gas Furnace features the modulating Evolution® System. The Perfect Heat® Technology modulating gas system is at the heart of the comfort provided by this furnace, along with the Perfect ECM™ full-featured variable-speed communicating blower motor, and variable-speed inducer motor. With an Annual Fuel Utilization Efficiency (AFUE) of up to 98.3%, the Evolution modulating gas furnace provides exceptional savings as well. This Evolution Gas Furnace also features 4-way multipoise installation flexibility, and is available in six model sizes. The 987MA can be vented for direct vent/two-pipe, ventilated combustion air, or single pipe applications. A Bryant Evolution Control and Evolution Air Conditioner or Heat Pump, can be used to form a complete Evolution System. All units meet California Air Quality Management District emission requirements. All sizes are design certified in Canada.

STANDARD FEATURES

- Evolution System; compatible with **single- and multi-zone** Evolution systems.
- Evolution Features—match with the Evolution Control for Evolution System benefits.
- All sizes meet ENERGY STAR® Version 4.0 criteria for gas furnaces: 95+AFUE; AMACF electrical rating; 2% or less cabinet airflow leakage.
- Quiet operation. Compare for yourself at HVACpartners.com.
- Ideal height 35" (889 mm) cabinet: short enough for taller coils, but still allows enough room for service.
- Silicon Nitride Perfect Light™ Hot Surface Igniter.
- SmartEvap™ technology helps control humidity levels in the home when used with a compatible humidity control system.
- FanOn Plus™ technology allows control of continuous fan speed from a compatible thermostat.
- External Media Filter Cabinet included.
- 4-way multipoise design for upflow, downflow or horizontal installation with unique vent elbow and optional through-the-cabinet downflow venting capability.
- Full-featured variable-speed communicating blower motor, variable-speed inducer motor, and modulating gas valve.
- Aluminized-steel primary heat exchanger.
- Stainless-steel condensing secondary heat exchanger.
- Propane convertible (see Accessory list).
- Factory-configured ready for upflow applications.
- Fully-insulated casing including blower section.
- Convenient Air Purifier and Humidifier connections.
- Direct-vent/sealed combustion or ventilated combustion air.
- Installation flexibility: sidewall or vertical vent.
- Residential installations may be eligible for consumer financing through the Retail Credit Program.
- Variable-Speed blower motor, variable-speed inducer motor, and modulating gas valve.
- Self-diagnostics and extended diagnostic data through the Advanced Product Monitor (APM) accessory or Evolution User Interface.
- Adjustable blower speed for cooling, continuous fan, and dehumidification.
- Certified to leak 2% or less of nominal air conditioning CFM delivered when pressurized to 1-in. water column with all present air inlets, air outlets, and condensate drain port(s) sealed.

EVOLUTION™ SYSTEM

Perfect Humidity™

ENERGY STAR

DESIGN CERTIFIED®

CERTIFIED®

AHRI CERTIFIED™ www.ahridirectory.org

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

Certified System™ ISO 9001 QMI-SAI Global

Always Ask For FACTORY AUTHORIZED PARTS

SAP ORDERING NO.	CASING DIMENSIONS (IN.)			RATED HEATING OUTPUT† (BTUH)			HEATING AIRFLOW			COOLING CFM @ 0.5 ESP	MOTOR HP (VARIABLE SPEED)	M CA SU
	H	D	W	Maximum	Minimum	AFUE	CFM‡ (Minimum Heating)	CFM (Maximum Heating)	Rated Heating ESP @ Maximum			
987MA42060V17	35	29.5	17.5	59,000	24,000	97.0%	415	1075	0.12	510 - 1335	1/2	16
987MA60060V21	35	29.5	21.0	60,000	24,000	98.3%	555	1085	0.12	510 - 1905	1	20
987MA42080V17	35	29.5	17.5	78,000	31,000	97.0%	620	1500	0.15	490 - 1375	1/2	16
987MA60080V21	35	29.5	21.0	78,000	31,000	97.0%	620	1345	0.15	750 - 1945	1	20
987MA66100V21	35	29.5	21.0	98,000	39,000	97.0%	725	1575	0.20	715 - 2160	1	20
987MA66120V24	35	29.5	24.5	117,000	47,000	97.0%	900	1820	0.20	885 - 2185	1	24

†Capacity in accordance with DOE test procedures. Ratings are position dependent. See rating plate.

‡Minimum heat CFM when low–heat rise adjustment switch (SW 1–3) and comfort/efficiency adjustment switch (SW1–4) on control center are OFF.

ESP – External Static Pressure

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FEATURES AND BENEFITS

Fully Modulating Gas Valve — When paired with the Evolution® control, this furnace improves comfort by adjusting heating output in 1% increments from 40% to 100% capacity to meet the heating needs of the home. Precision begins with a stepper motor to adjust manifold pressures. Stepper motors are used in electronic devices, such as computer disc drives, which require precise mechanical positioning. The precision of the stepper motor, combined with our unique two-point calibration, allows the modulating furnace to accurately control and directly deliver the right amount of gas to the burners every time.

Perfect Humidity® Technology — The Perfect Humidity system actively controls both temperature and humidity in the home to provide the best comfort all year long. Other systems depend on heating or cooling demand to manage the moisture in the air. But, Perfect Humidity gives the homeowner the right amount of humidity day and night, even in mild weather. No other manufacturer can do this! Perfect Humidity saves energy, too. By keeping humidity under control, the homeowner can set their thermostat lower to stay comfortable and save energy.

SmartEvap™ Technology — When paired with a compatible thermostat, this dehumidification feature overrides the cooling blower off-delay when there is a call for dehumidification. By deactivating the blower off-delay, SmartEvap technology prevents condensate that remains on the coil after a dehumidification cycle from re-humidifying throughout the home. This results in reduced humidity and a more comfortable indoor environment for the homeowner.

Unlike competitive systems, SmartEvap technology only overrides the cooling when humidity control is needed. Once humidity is back in control, SmartEvap re-enables the energy-saving cooling blower off-delay.

Fan On Plus™ Technology — Sometimes the constant fan setting on a standard furnace system can actually reduce homeowner comfort by providing too much or too little air! Fan On Plus technology improves comfort all year long by allowing the homeowner to select the continuous fan speed of their choice using a compatible thermostat.

Power Heat™ Igniter — Bryant's unique SiN igniter is not only physically robust but it is also electrically robust. It is capable of running at line voltage and does not require complex voltage regulators as do other brands. This unique feature further enhances the gas furnace reliability and continues Bryant's tradition of technology leadership and innovation in providing a reliable and durable product.

Full-Featured, Communicating, Variable Speed Motors — Our Perfect ECM™ (Electronically Commutated Motor) provides variable-speed operation to optimize comfort levels in the home year round; features such as passive/active dehumidification, ramping profiles, constant air flow and quiet operation. They can provide cooling match enhancements to increase the effective SEER of select Bryant air conditioner or heat pump system, and feature the highest efficiency of all indoor fan motors.

Reliable Heat Exchanger Design — The aluminized steel, clam shell primary heat exchanger was re-engineered to achieve greater efficiency out of a smaller size. The first two passes of the heat exchanger are based on the current 80% product, a design with more than ten years of field-proven performance and success. These innovations, paired with the continuation of a crimped, no-weld seam create an efficient, robust design for this essential component.

The condensing heat exchanger, a stainless steel fin and tube design, is positioned in the furnace to extract additional heat. Stainless steel coupling box componentry between heat exchangers has exceptional corrosion resistance in both natural gas and propane applications.

Media Filter Cabinet — Enhanced indoor air quality in the home is made easier with our media filter cabinet—a standard accessory on all deluxe furnaces. When installed as a part of the system, this cabinet allows for easy and convenient addition of a Bryant high efficiency air filter.

4-Way Multipoise Design — One model for all applications – there is no need to stock special downflow or horizontal models when one unit will do it all. The new heat exchanger design allows these units to achieve the certified AFUE in all positions.

Direct Venting or Optional Ventilated Combustion Air — This furnace can be installed as a 2-pipe (Direct Vent) furnace or as an optional ventilated combustion air application. This provides added flexibility to meet diverse installation needs.

Sealed Combustion System —This furnace brings in combustion air from outside the furnace, which results in especially quiet operation. By sealing the entire combustion vestibule, the entire furnace can be made quieter, not just the burners.

Insulated Casing — Foil-faced insulation in heat exchanger section of the casing minimizes heat loss. The acoustical insulation in the blower compartment reduces air and motor noise for quiet operation.

Monoport Burners — The burners are specially designed and finely tuned for smooth, quiet combustion and economical operation.

Bottom Closure — Factory-installed for side return; easily removable for bottom return. The multi-use bottom closure can also serve for roll-out protection in horizontal applications, and act as the bottom closure for the optional return air base accessory.

Blower Access Panel Switch — Automatically shuts off 115-v power to furnace whenever blower access panel is opened.

Quality Registration — Our furnaces are engineered and manufactured under an ISO 9001 registered quality system.

Certifications — This furnace is CSA (AGA and CGA) design certified for use with natural and propane gases. The furnace is factory-shipped for use with natural gas. A CSA listed gas conversion kit is required to convert furnace for use with propane gas. The efficiency is AHRI efficiency rating certified. This furnace meets California Air Quality Management District emission requirements.

SPECIFICATIONS

The furnace should be sized to provide 100 percent of the design heating load requirement plus any margin that occurs because of furnace model size capacity increments. None of the furnace model sizes can be used if the heating load is 20,000 BTU or lower. Use Air Conditioning Contractors of America (Manual J and S); American Society of Heating, Refrigerating, and Air-Conditioning Engineers; or other approved engineering method to calculate heating load estimates and select the

Excessive oversizing of the furnace may cause the furna

vent to fail prematurely, customer discomfort and/or vent

Failure to follow these guidelines is considered faulty in

and/or misapplication of the furnace; and resulting failure,

or repairs may impact warranty coverage.

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Heating Capacity and Efficiency			42060	60060	42080	60080	66100	66120
Input	Maximum Heat	(BTUH)	60,000	60,600	80,000	80,000	100,000	120,000
	Intermediate Heat	(BTUH)	39,000	39,000	52,000	52,000	65,000	78,000
	Minimum Heat	(BTUH)	24,000	24,000	32,000	32,000	40,000	48,000
Output	Maximum Heat	(BTUH)	59,000	60,000	78,000	78,000	98,000	117,000
	Intermediate Heat	(BTUH)	38,000	39,000	51,000	51,000	64,000	76,000
	Minimum Heat	(BTUH)	24,000	24,000	31,000	31,000	39,000	47,000
Certified Temperature Rise Range ºF (ºC)		Maximum Heat	35 - 65 (19 - 36)	35 - 65 (19 - 36)	40 - 70 (22 - 39)	40 - 70 (22 - 39)	45 - 75 (25 - 42)	45 - 75 (25 - 42)
		Intermediate Heat	50 - 80 (28 - 44)	40 - 70 (22 - 39)	50 - 80 (28 - 44)	50 - 80 (28 - 44)	50 - 80 (28 - 44)	50 - 80 (28 - 44)
		Minimum Heat	35 - 65 (19 - 36)	25 - 55 (14-31)	35 - 65 (19 - 36)	35 - 65 (19 - 36)	35 - 65 (19 - 36)	35 - 65 (19 - 36)

Airflow Capacity and Blower Data		42060	60060	42080	60080	66100	66120
Rated External Static Pressure (in. w.c.)	Heating	0.12	0.12	0.15	0.15	0.20	0.20
	Cooling	0.5	0.5	0.5	0.5	0.5	0.5
Airflow Delivery	Maximum Heat	1075	1080	1500	1345	1575	1820
	Intermediate Heat	530	690	750	795	955	1100
	Minimum Heat	415	555	620	595	745	900
	Cooling	1335	1905	1375	1945	2160	2185
Cooling Capacity (tons) @ 400, 350 CFM/ton	400 CFM/ton	3	4.5	3.5	4.5	5.5	5.5
	350 CFM/ton	3.5	5.5	4	5.5	6	6
Direct-Drive Motor Type		Electronically Commutated Motor (ECM)					
Direct-Drive Motor HP		1/2	1	1/2	1	1	1
Motor Full Load Amps		7.7	12.8	7.7	12.8	12.8	12.8
RPM Range		300 - 1300					
Speed Selections		Variable (Communicating)					
Blower Wheel Dia x Width	in.	11 x 8	11 x 10	11 x 8	11 x 10	11 x 10	11 x 11
Air Filtration System		Factory Supplied Media Cabinet Field Supplied Filter					
Filter Used for Certified Watt Data*		KGAWF**06UFR					

Electrical Data		42060	60060	42080	60080	66100	66120
Input Voltage	Volts-Hertz-Phase	115-60-1					
Operating Voltage Range	Min-Max	104 -127					
Maximum Input Amps	Amps	9.7	14.8	9.7	14.8	14.8	14.8
Unit Ampacity	Amps	12.7	19.1	12.7	19.1	19.1	19.1
Minimum Wire Size	AWG	14	12	14	12	12	12
Maximum Wire Length @ Minimum Wire Size	Feet	29	30	29	30	30	30
	(M)	(8.8)	(9.1)	(8.8)	(9.1)	(9.1)	(9.1)
Maximum Fuse/Ckt Bkr (Time-Delay Type Recommended)	Amps	15	20	15	20	20	20
Transformer Capacity (24vac output)		40VA					
External Control Power Available	Heating	27.9 VA					
	Cooling	34.6 VA					

Controls		42060	60060	42080	60080	66100	66120
Gas Connection Size		1/2" - NPT					
Burners (Monoport)		3	3	4	4	5	6
Gas Valve (Redundant)	Manufacturer	White Rogers					
Minimum Inlet Gas pressure (in. wc)		4.5					
Maximum Inlet Gas pressure (in. wc)		13.6					

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SPECIFICATIONS (CONTINUED)

Manufactured (Mobile) Home Kit	*not approved for MH use*					
Twinning Kit	*not approved for twinning*					
Ignition Device	Silicon Nitride					
Controls	**42060**	**60060**	**42080**	**60080**	**66100**	**6**
Limit Control	180	160	170	200	180	
Heating Blower Control (Heating Off-Delay)	Adjustable: 90, 120, 150, 180 seconds					
Cooling Blower Control (Time Delay Relay)	90 seconds					
Communication System	Evolution, Evolution Zoning					
Thermostat Connections	R, W/W1, W2 Y/Y2, Y1, G, Com 24V, DHUM					
Accessory Connections	EAC (115vac); HUM (24vac); 1-stg AC (via Y/Y2)					

* See Accessory List for part numbers available.

MODEL NUMBER NOMENCLATURE

Example of a Model Number

Not all familes have these models.

A12374

FURNACE COMPONENTS

REPRESENTATIVE DRAWING ONLY, SOME MODELS MAY VARY IN APPEARANCE.

A11408

ACCESSORIES

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DESCRIPTION	PART NUMBER	42060	60060	42080	60080	66100	
Venting Accessories							
Vent Kit - Through the Cabinet	KGADC0101BVC	●	●	●	●	●	
Vent Terminal - Concentric - 2” (51 mm)	KGAVT0701CVT	See Venting Tables					
Vent Terminal - Concentric - 3” (76 mm)	KGAVT0801CVT						
Vent Terminal Bracket - 2” (51 mm)	KGAVT0101BRA						
Vent Terminal Bracket - 3” (76 mm)	KGAVT0201BRA						
Vent Kit – Rubber Coupling	KGAAC0101RVC	See Venting Tables					
Condensate Drainage Accessories							
Freeze Protect Kit - Heat Tape	KGAHT0101CFP	●	●	●	●	●	●
CPVC to PVC Drain Adapters - 1/2” CPVC to 3/4” PVC	KGAAD0110PVC	●	●	●	●	●	●
Horizontal Trap Grommet - Direct Vent	KGACK0101HCK	All DV Horizontal					
Condensate Neutralizer Kit	P908–0001	●	●	●	●	●	●
External Trap Kit	KGAET0201ETK	●	●	●	●	●	●
Ductwork Adapter Accessories							
Furnace Base Kit for Combustible Floors	KGASB0201ALL	●	●	●	●	●	●
Coil Adapter Kits – No Offset	KGADA0101ALL	●	●	●	●	●	●
Coil Adapter Kits – Single Offset	KGADA0201ALL	●	●	●	●	●	●
Coil Adapter Kits – Double Offset	KGADA0301ALL	●	●	●	●	●	●
Return Air Base (Upflow Applications) 17.5–in. wide	KGARP0301B17	●		●			
Return Air Base (Upflow Applications) 21.0–in. wide	KGARP0301B21		●		●	●	
Return Air Base (Upflow Applications) 24.5–in. wide	KGARP0301B24						●
IAQ Device Duct Adapters 20.0–in. IAQ to 16 in. Side Return	KGAAD0101MEC	20”x25” IAQ Devices					
IAQ Device Duct Adapters 24.0–in. IAQ to 16 in. Side Return	KGAAD0201MEC	24”x25” IAQ Devices					
Gas Conversion Accessories							
Gas Conversion Kit - Nat to LP; Var-speed Products	KGCNP5201VSP	●	●	●	●	●	●
Gas Conversion Kit - LP to Nat; Var-speed Products	KGCPN4401VSP	●	●	●	●	●	●
Gas Orifice Kit - #42 (Nat Gas)	LH32DB207	●	●	●	●	●	●
Gas Orifice Kit - #43 (Nat Gas)	LH32DB202	●	●	●	●	●	●
Gas Orifice Kit - #44 (Nat Gas)	LH32DB200	●	●	●	●	●	●
Gas Orifice Kit - #45 (Nat Gas)	LH32DB205	●	●	●	●	●	●
Gas Orifice Kit - #46 (Nat Gas)	LH32DB208	●	●	●	●	●	●
Gas Orifice Kit - #47 (Nat Gas)	LH32DB078	●	●	●	●	●	●
Gas Orifice Kit - #48 (Nat Gas)	LH32DB076	●	●	●	●	●	●
Gas Orifice Kit - #54 (LP)	LH32DB203	●	●	●	●	●	●
Gas Orifice Kit - #55 (LP)	LH32DB201	●	●	●	●	●	●
Gas Orifice Kit - #56 (LP)	LH32DB206	●	●	●	●	●	●
Gas Orifice Kit - 1.25mm (LP)	LH32DB209	●	●	●	●	●	●
Gas Orifice Kit - 1.30mm (LP)	LH32DB210	●	●	●	●	●	●
Control Accessories							
ECM Motor Simulator Kit	KGBSD0301FMS	●	●	●	●	●	●
Advanced Product Monitor - APM	KGASD0301APM	●	●	●	●	●	●
Evolution™ Control User Interface	SYSTXBBUID01-V	●	●	●	●	●	●
Evolution™ Control Zoning User Interface	SYSTXBBUIZ01-V	●	●	●	●	●	●
IAQ Accessories							
Filter Pack (6 pack) – Washable - 16x25x1 (406x635x25 mm)	KGAWF1306UFR	●	●	●	●	●	●
Filter Pack (6 pack) – Washable - 24x25x1 (610x635x25 mm)	KGAWF1506UFR	●	●	●	●	●	●
EZ-Flex Filter - 16” (406 mm)	EXPXXFIL0016	Use with EZXCAB–1016					
EZ-Flex Filter - 20” (508 mm)	EXPXXFIL0020	Use with EZXCAB–1020					
EZ-Flex Filter - 24” (610 mm)	EXPXXFIL0024	Use with EZXCAB–1024					
EZ-Flex Filter with End Caps - 16” (406 mm)	EXPXXUNV0016	Use with EZXCAB–1016					
EZ-Flex Filter with End Caps - 20” (508 mm)	EXPXXUNV0020	Use with EZXCAB–1020					
EZ-Flex Filter with End Caps - 24” (610 mm)	EXPXXUNV0024	Use with EZXCAB–1024					
Cartridge Media Filter - 16” (406 mm)	FILXXCAR0016	Use with FILCABXL–1016					
Cartridge Media Filter - 20” (508 mm)	FILXXCAR0020	Use with FILCABXL–1020					
Cartridge Media Filter - 24” (610 mm)	FILXXCAR0024	Use with FILCABXL–1024					
Bryant Perfect Air Purifier - 16x25 (406x635 mm)	GAPAAXBB1625-A08	Up to 1600 CFM					
Bryant Perfect Air Purifier - 20x25 (508x635 mm)	GAPAAXBB2025-A08	Up to 2000 CFM					
Bryant Perfect Air Purifier Repl. Filter- 16x25 (406x635 mm)	GAPABBCAR1625-A05	Use with GAPAAXBB1625					
Bryant Perfect Air Purifier Repl. Filter- 20x25 (508x635 mm)	GAPABBCAR2025-A05	Use with GAPAAXBB2025					
Bryant Preferred Air Purifier - 16x25 (508x635 mm)	PGAPXX1625	Up to 1600 CFM					
Bryant Preferred Air Purifier - 20x25 (508x635 mm)	PGAPXX2025	Up to 2000 CFM					
Bryant Preferred Air Purifier Repl Filter - 16x25 (406x635 mm)	PGAPAXXCAR1625	Use with PGAPXX1625					
Bryant Preferred Air Purifier Repl. Filter - 20x25 (508x635 mm)	PGAPAXXCAR2025	Use with PGAPXX2025					

● = Used with the model furnace

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AIR DELIVERY - CFM

Cooling[4] and Heating Air Delivery - CFM (Bottom Return[5] With Filter)

(SW1-5 and SW4-3 set to OFF, except as indicated. See notes 1 and 2)

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Unit Size	Clg/CF Switch Settings			External Static Pressure (ESP)									
	SWx-3	SWx-2	SWx-1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
42060													
Clg Default:	OFF	OFF	OFF	1060	1070	1080	1080	1075	1065	1050	1035	1025	1010
CF Default:	OFF	OFF	OFF	545	530	520	525	510	See note 4				
Cooling (SW2) Cont Fan (SW3)	OFF	OFF	ON	545	530	520	525	510	See note 4				
	OFF	ON	OFF	710	710	710	695	690	See note 4				
	OFF	ON	ON	875	880	890	895	895	890	885	880	870	855
	ON	OFF	OFF	1060	1070	1080	1080	1075	1065	1050	1035	1025	1010
	ON	OFF	ON	1235	1240	1250	1255	1255	1250	1230	1190	1155	1115
	ON	ON	OFF	1235	1240	1250	1255	1255	1250	1230	1190	1155	1115
	ON	ON	ON	1235	1240	1250	1255	1255	1250	1230	1190	1155	1115
Clg SW2:	Maximum Clg Airflow [2]			1425	1425	1405	1370	1335	1300	1260	1225	1190	1155
Heating (SW1)	Maximum Heat Airflow [3]			1075	1085	1095	1095	1090	1080	1065	1050	1035	1020
	Intermediate Heat Airflow [3]			535	515	505	515	495	See note 4				
	Minimum Heat Airflow [3]			420	410	415	400	380	See note 4				

Unit Size	Clg/CF Switch Settings			External Static Pressure (ESP)									
	SWx-3	SWx-2	SWx-1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
60060													
Clg Default:	OFF	OFF	OFF	1735	1735	1725	1715	1700	1685	1665	1650	1625	1605
CF Default:	OFF	OFF	OFF	545	530	520	525	510	See note 4				
Cooling (SW2) Cont Fan (SW3)	OFF	OFF	ON	540	525	525	520	540	See note 4				
	OFF	ON	OFF	680	725	725	720	720	See note 4				
	OFF	ON	ON	925	915	910	895	900	890	875	865	860	855
	ON	OFF	OFF	1070	1075	1080	1070	1080	1075	1055	1045	1030	1020
	ON	OFF	ON	1215	1245	1235	1220	1220	1210	1200	1195	1185	1175
	ON	ON	OFF	1380	1385	1395	1390	1395	1390	1380	1365	1355	1340
	ON	ON	ON	1735	1735	1725	1715	1700	1685	1665	1650	1625	1605
Clg SW2:	Maximum Clg Airflow [2]			1955	1950	1940	1925	1905	1885	1855	1815	1745	1685
Heating (SW1)	Maximum Heat Airflow [3]			1080	1085	1095	1090	1095	1085	1070	1055	1045	1030
	Intermediate Heat Airflow [3]			685	725	730	725	730	See note 4				
	Minimum Heat Airflow [3]			560	555	555	550	565	See note 4				

Unit Size	Clg/CF Switch Settings			External Static Pressure (ESP)									
	SWx-3	SWx-2	SWx-1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
42080													
Clg Default:	OFF	OFF	OFF	1055	1065	1080	1075	1065	1050	1045	1035	1025	1005
CF Default:	OFF	OFF	OFF	520	505	505	495	490	See note 4				
Cooling (SW2) Cont Fan (SW3)	OFF	OFF	ON	520	505	505	495	490	See note 4				
	OFF	ON	OFF	665	685	680	660	665	See note 4				
	OFF	ON	ON	885	895	905	900	900	895	885	875	860	845
	ON	OFF	OFF	1055	1065	1080	1075	1065	1050	1045	1035	1025	1005
	ON	OFF	ON	1245	1245	1255	1255	1260	1255	1250	1235	1220	1185
	ON	ON	OFF	1245	1245	1255	1255	1260	1255	1250	1235	1220	1185
	ON	ON	ON	1245	1245	1255	1255	1260	1255	1250	1235	1220	1185
Clg SW2:	Maximum Clg Airflow [2]			1520	1485	1450	1415	1375	1335	1300	1265	1225	1190
Heating (SW1)	Maximum Heat Airflow [3]			1520	1485	1450	1415	1375	1335	1300	1265	1225	1190
	Intermediate Heat Airflow [3]			755	745	755	755	765	See note 4				
	Minimum Heat Airflow [3]			620	625	630	620	610	See note 4				

AIR DELIVERY - CFM (CONTINUED)

Cooling[4] and Heating Air Delivery - CFM (Bottom Return[5] With Filter)

(SW1-5 and SW4-3 set to OFF, except as indicated. See notes 1 and 2)

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Unit Size	Clg/CF Switch Settings			External Static Pressure (ESP)									
	SWx-3	SWx-2	SWx-1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
60080													
Clg Default:	OFF	OFF	OFF	1745	1755	1755	1760	1755	1750	1745	1725	1705	1685
CF Default:	OFF	OFF	OFF	700	710	750	725	750	See note 4				
Cooling (SW2) Cont Fan (SW3)	OFF	OFF	ON	700	710	750	725	750	See note 4				
	OFF	ON	OFF	830	860	870	890	960	See note 4				
	OFF	ON	ON	1045	1045	1060	1070	1070	1070	1095	1090	1080	1070
	ON	OFF	OFF	1215	1220	1245	1240	1235	1235	1225	1220	1235	1235
	ON	OFF	ON	1370	1370	1390	1390	1400	1395	1400	1390	1390	1385
	ON	ON	OFF	1745	1755	1755	1760	1755	1750	1745	1725	1705	1685
	ON	ON	ON	1745	1755	1755	1760	1755	1750	1745	1725	1705	1685
Clg SW2:	Maximum Clg Airflow [2]			1920	1920	1945	1945	1945	1960	1950	1940	1915	1900
Heating (SW1)	Maximum Heat Airflow [3]			1340	1355	1370	1385	1380	1385	1400	1400	1385	1380
	Intermediate Heat Airflow [3]			780	810	835	840	845	See note 4				
	Minimum Heat Airflow [3]			595	595	600	595	605	See note 4				

Unit Size	Clg/CF Switch Settings			External Static Pressure (ESP)									
	SWx-3	SWx-2	SWx-1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
66100													
Clg Default:	OFF	OFF	OFF	1820	1825	1840	1845	1840	1835	1825	1805	1780	1770
CF Default:	OFF	OFF	OFF	750	740	745	730	715	See note 4				
Cooling (SW2) Cont Fan (SW3)	OFF	OFF	ON	750	740	745	730	715	See note 4				
	OFF	ON	OFF	900	900	915	910	905	See note 4				
	OFF	ON	ON	1070	1075	1095	1095	1090	1085	1095	1080	1065	1070
	ON	OFF	OFF	1280	1285	1305	1305	1310	1305	1295	1300	1290	1285
	ON	OFF	ON	1440	1445	1465	1465	1470	1485	1480	1485	1475	1460
	ON	ON	OFF	1820	1825	1840	1845	1840	1835	1825	1805	1780	1770
	ON	ON	ON	2135	2140	2140	2135	2140	2130	2115	2100	2070	2015
Clg SW2:	Maximum Clg Airflow [2]			2160	2165	2175	2170	2160	2150	2135	2120	2065	2020
Heating (SW1)	Maximum Heat Airflow [3]			1570	1575	1595	1595	1600	1605	1600	1600	1590	1575
	Intermediate Heat Airflow [3]			950	955	965	975	970	See note 4				
	Minimum Heat Airflow [3]			755	745	750	735	720	See note 4				

Unit Size	Clg/CF Switch Settings			External Static Pressure (ESP)									
	SWx-3	SWx-2	SWx-1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
66120 [6]													
Clg Default:	OFF	OFF	OFF	1850	1855	1860	1855	1850	1830	1805	1775	1750	1730
CF Default:	OFF	OFF	OFF	930	925	915	900	885	See note 4				
Cooling (SW2) Cont Fan (SW3)	OFF	OFF	ON	765	745	740	705	680	See note 4				
	OFF	ON	OFF	930	925	915	900	885	See note 4				
	OFF	ON	ON	1095	1100	1110	1105	1085	See note 4				
	ON	OFF	OFF	1265	1255	1265	1280	1275	1285	1270	1260	1250	1230
	ON	OFF	ON	1465	1455	1470	1465	1465	1470	1455	1450	1435	1415
	ON	ON	OFF	1850	1855	1860	1855	1850	1830	1805	1775	1750	1730
	ON	ON	ON	2200	2200	2200	2190	2185	2170	2145	2085	1990	1890
Clg SW2:	Maximum Clg Airflow [2]			2200	2200	2200	2190	2185	2170	2145	2085	1990	1890
Heating (SW1)	Maximum Heat Airflow [3]			1815	1820	1825	1820	1815	1795	1775	1745	1720	1700
	Intermediate Heat Airflow [3]			1095	1100	1110	1105	1085	See note 4				

1. Nominal 350 CFM/ton cooling airflow is delivered with SW1-5 and SW4-3 set to OFF.
   Set SW1-5 to ON for nominal 400 CFM/ton (+15% airflow).
   Set SW4-3 to ON for nominal 325 CFM/ton (-7% airflow).
   Set both SW1-5 and SW4-3 to ON for nominal 370 CFM/ton (+7% airflow).
   The above adjustments in airflow are subject to motor horsepower range/capacity.
2. Maximum cooling airflow is achieved when switches SW2-1, SW2-2, SW2-3 and SW1-5 are set to ON, and SW4-3 is set to OFF.
3. All heating CFM's are when low/medium heat rise adjustment switch (SW1-3) and comfort/efficiency adjustment switch (SW1-4) are both set to OFF.
4. Ductwork must be sized for high-heating CFM within the operational range of ESP. Operation within the blank areas of the chart is not recommended because high-heat operation will be above 1.0 ESP.
5. All airflows on 21" casing size furnaces are 5% less on side return only installations.
6. Side returns for 24.5" casing sizes require two sides, or side and bottom, to allow sufficient airflow at the return of the furnace.

MAXIMUM ALLOWABLE EXPOSED VENT LENGTHS INSULATION TABLE

Table 1 – Maximum Allowable Exposed Vent Length in Unconditioned Space

	Unit Size	40,000* BTUH									60,000 BTUH										
		Uninsulated			3/8-in. Insulation			1/2-in. Insulation			Uninsulated				3/8-in. Insulation				1/2-in. Insul		
	Pipe Dia. in.	1 ½	2	2 ½	1 ½	2	2 ½	1 ½	2	2 ½	1 ½	2	2 ½	3	1 ½	2	2 ½	3	1 ½	2	2
Winter Design Temp °F	20	20	20	20	20	50	45	20	60	50	20	30	30	25	20	75	65	60	20	85	7
	0	10	5	5	20	25	20	20	30	25	15	15	10	10	20	40	30	25	20	45	40	30
	-20	5			20	15	10	20	20	15	10	5			20	25	20	15	20	30	25	20
	-40				15	10	5	15	15	10	5				20	15	15	10	20	20	15	10

	Unit Size	80,000 BTUH														
		Uninsulated					3/8-in. Insulation					1/2-in. Insulation				
	Pipe Dia. in.	1 ½	2	2 ½	3	4	1 ½	2	2 ½	3	4	1 ½	2	2 ½	3	4
Winter Design Temp °F	20	15	40	40	35	30	15	50	90	75	65	15	50	70	70	70
	0	15	20	15	10	5	15	50	45	35	30	15	50	50	40	35
	-20	15	10	5			15	35	30	20	15	15	40	30	25	15
	-40	10	5				15	25	20	15	5	15	30	25	20	10

	Unit Size	100,000 BTUH											
		Uninsulated				3/8-in. Insulation				1/2-in. Insulation			
	Pipe Dia. in.	2	2 ½	3	4	2	2 ½	3	4	2	2 ½	3	4
Winter Design Temp °F	20	20	50	40	35	20	80	95	80	20	80	105	90
	0	20	20	15	10	20	55	45	35	20	65	55	45
	-20	15	10	5		20	35	30	20	20	45	35	25
	-40	10	5			20	25	20	10	20	30	25	15

	Unit Size	120,000 BTUH									140,000 BTUH								
		Uninsulated			3/8-in. Insulation			1/2-in. Insulation			Uninsulated			3/8-in. Insulation			1/2-in. Insulation		
	Pipe Dia. in.	2 ½	3	4	2 ½	3	4	2 ½	3	4	2 ½	3	4	2 ½	3	4	2 ½	3	4
Winter Design Temp °F	20	10	50	40	10	75	95	10	75	105	5	55	50	5	65	105	5	65	125
	0	10	20	15	10	55	45	10	65	50	5	25	15	5	65	50	5	65	60
	-20	10	10		10	35	25	10	45	30	5	10	5	5	45	30	5	50	40
	-40	10	5		10	25	15	10	30	20	5	5		5	30	20	5	35	25

Maximum Allowable Exposed Vent Length in Unconditioned Space (Metric)

	Unit Size	40,000* BTUH									60,000 BTUH										
		Uninsulated			3/8-in. Insulation			1/2-in. Insulation			Uninsulated				3/8-in. Insulation				1/2-in. Insulation		
	Pipe Dia. mm	38	51	64	38	51	64	38	51	64	38	51	64	76	38	51	64	76	38	51	64	76
Winter Design Temp °C	-7	6.1	6.1	6.1	6.1	15.2	13.7	6.1	18.3	15.2	6.1	9.1	9.1	7.6	6.1	22.9	19.8	18.3	6.1	25.9	22.9	19.8
	-18	3.0	1.5	1.5	6.1	7.6	6.1	6.1	9.1	7.6	4.6	4.6	3.0	3.0	6.1	12.2	9.1	7.6	6.1	13.7	12.2	9.1
	-29	1.5			6.1	4.6	3.0	6.1	6.1	4.6	3.0	1.5			6.1	7.6	6.1	4.6	6.1	9.1	7.6	6.1
	-40				4.6	3.0	1.5	4.6	4.6	3.0	1.5				6.1	4.6	4.6	3.0	6.1	6.1	4.6	3.0

	Unit Size	80,000 BTUH														
		Uninsulated					3/8-in. Insulation					1/2-in. Insulation				
	Pipe Dia. mm	38	51	64	76	102	38	51	64	76	102	38	51	64	76	102
Winter Design Temp °C	-7	4.6	12.2	12.2	10.7	9.1	4.6	15.2	27.4	22.9	19.8	4.6	15.2	21.3	21.3	21.3
	-18	4.6	6.1	4.6	3.0	1.5	4.6	15.2	13.7	10.7	9.1	4.6	15.2	15.2	12.2	10.7
	-29	4.6	3.0	1.5			4.6	10.7	9.1	6.1	4.6	4.6	12.2	9.1	7.6	4.6
	-40	3.0	1.5				4.6	7.6	6.1	4.6	1.5	4.6	9.1	7.6	6.1	3.0

	Unit Size	100,000 BTUH											
		Uninsulated				3/8-in. Insulation				1/2-in. Insulation			
	Pipe Dia. mm	51	64	76	102	51	64	76	102	51	64	76	102
Winter Design Temp °C	-7	6.1	15.2	12.2	10.7	6.1	24.4	28.9	24.4	6.1	24.4	32.0	27.4
	-18	6.1	6.1	4.6	3.0	6.1	16.8	13.7	10.7	6.1	19.8	16.7	13.7
	-29	4.6	3.0	1.5		6.1	10.7	9.1	6.1	6.1	13.7	10.7	7.6
	-40	3.0	1.5			6.1	7.6	6.1	3.0	6.1	9.1	7.6	4.6

	Unit Size	120,000 BTUH									140,000 BTUH								
		Uninsulated			3/8-in. Insulation			1/2-in. Insulation			Uninsulated			3/8-in. Insulation			1/2-in. Insulation		
	Pipe Dia. mm	64	76	102	64	76	102	64	76	102	64	76	102	64	76	102	64	76	102
Winter Design Temp °C	-7	3.0	15.2	12.2	3.0	22.9	28.9	3.0	22.9	32.0	1.5	16.7	15.2	1.5	19.8	32.0	1.5	19.8	38.1
	-18	3.0	6.1	4.6	3.0	16.8	13.7	3.0	19.8	15.2	1.5	7.6	4.6	1.5	19.8	15.2	1.5	19.8	18.3
	-29	3.0	3.0		3.0	10.7	7.6	3.0	13.7	9.1	1.5	3.0	1.5	1.5	13.7	9.1	1.5	15.2	12.2
	-40	3.0	1.5		3.0	7.6	4.6	3.0	9.1	6.1	1.5	1.5		1.5	9.1	6.1	1.5	35	7.6

* Pipe length (ft) specified for maximum pipe lengths located in unconditioned spaces. Pipes located in unconditioned space cannot exceed total allowable pipe length calculated from Table 2.

† Insulation thickness based on R value of 3.5 per in.

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MAXIMUM EQUIVALENT VENT LENGTH

NOTE: Maximum Equivalent Vent Length (MEVL) includes standard and concentric vent termination and does NOT include
Use Table 3 - Deductions from Maximum Equivalent Vent Length to determine allowable vent length for each applicatio

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Table 2 – Maximum Equivalent Vent Length

Modulating																	
Unit Size		**60,000**				**80,000**					**100,000**				**120,000**		
Altitude (feet)	**Pipe Dia. (in)**	**1 ½**	**2**	**2 ½**	**3**	**1 ½**	**2**	**2 ½**	**3**	**4**	**2**	**2 ½**	**3**	**4**	**2 ½**	**3**	**4**
	0-2000	40	100	175	200	25	95	130	175	200	35	80	175	200	10	75	185
	2001-3000	35	95	165	185	20	65	125	165	185	30	75	165	185		70	175
	3001-4000	30	90	155	175			115	155	175			155	175	5	65	165
	4001-4500	25	85	150	170	15		110	150	165		70		170	N/A	60	160
	4501-5000		80		165				145	160		65	150	165			
	5001-6000		75	140	155		55	100	135	150	25		140	155			155
	6001-7000		70	130	145		50	90	125	140	20	60	135	145		50	140
	7001-8000		65	120	135				120	125		55	125	135		45	130
	8001-9000	20	60	115	125	10	45	80	110	115		50	115	125		40	120
	9001-10000		55	105	115		40	75	100	105	15	45	100	115		30	115

Modulating - Metric																	
Unit Size		**60,000**				**80,000**					**100,000**				**120,000**		
Altitude (meters)	**Pipe Dia. (mm)**	**38**	**51**	**64**	**76**	**38**	**51**	**64**	**76**	**102**	**51**	**64**	**76**	**102**	**64**	**76**	**10**
	0-610	12	31	54	61	8	30	40	54	61	11	25	54	61	3	23	57
	611-914	11	29	51	57	6	20	38	51	57	9	23	51	57		21	54
	915-1219	9	27	48	54			36	48	53			48	54	1.5	20	51
	1220-1370	7.5	26	46	52	4.5		34	46	51		22		52	N/A	19	50
	1371-1524		24		51				45	50		21	46	51			
	1525-1829		22		47		17	31	42	46	8		43	48			48
	1830-2134		22	42	44		15	27	39	42	7	19	41	45		16	43
	2135-2438		20	37	42				36	39		18	38	42		14	40
	2439-2743	6	19	35	38	3	14	26	34	36		15	36	39		13	38
	2744-3048		17	33	36		13	24	31	33	4.5	14	34	36		12	35

Table 3 – Deductions from Maximum Equivalent Vent Length - Ft. (M)

Pipe Diameter (in):	**1-1/2**		**2**		**2-1/2**		**3**		**4**	
Mitered 90º Elbow	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)
Medium Radius 90º Elbow	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)
Long Radius 90º Elbow	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)
Mitered 45º Elbow	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)
Medium Radius 45º Elbow	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)
Long Radius 45º Elbow	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)
Tee	16	(4.9)	16	(4.9)	16	(4.9)	16	(4.9)	16	(4.9)
Concentric Vent Termination	NA		0	(0.0)	NA		0	(0.0)	NA	
Standard Vent Termination	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)

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Venting System Length Calculations

The Total Equivalent Vent Length (TEVL) for **EACH** combustion air or vent pipe equals the length of the venting system, plus the e length of elbows used in the venting system from Table 3.

Standard vent terminations or factory accessory concentric vent terminations count for zero deduction.

See vent system manufacturer's data for equivalent lengths of flexible vent pipe or other termination systems. **DO NOT ASSUME** foot of flexible vent pipe equals one foot of straight PVC/ABS DWV vent pipe.

Compare the Total Equivalent Vent Length to the Maximum Equivalent Vent Lengths in Table 2.

Example 1

A direct-vent 60,000 Btuh furnace installed at 2100 ft. (640 M). Venting system includes, **FOR EACH PIPE**, 100 feet (30 M) of vent pipe, 95 feet (28 M) of combustion air inlet pipe, (3) 90° long radius elbows, (2) 45° long radius elbows and a factory accessory concentric vent kit.

Can this application use 2-in. (50 mm ND) PVC/ABS DWV vent piping?

Measure the required linear length of air inlet and vent pipe; insert the longest of the two here:					100 ft	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90º long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3	x	3 ft	=	9 ft.	From Table 3
Add equiv length of (2) 45º long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	2	x	1.5 ft	=	3 ft.	From Table 3
Add equiv length of vent termination					0 ft.	From Table 3
Add correction for flexible vent pipe, if any					0 ft.	From Vent Manufacturer's instructions; zero for PVC/ABS DWV
Total Equivalent Vent Length (TEVL)					112 ft.	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)					127 ft.	For 2" pipe from Table 2
Is TEVL less than MEVL?					**YES**	**Therefore, 2" pipe may be used**

Example 2

A direct-vent 60,000 Btuh furnace installed at 2100 ft. (640 M) Venting system includes, **FOR EACH PIPE**, 100 feet (30 M) of vent pipe, 95 feet (28 M) of combustion air inlet pipe, (3) 90° long radius elbows, and a polypropylene concentric vent kit. Also includes 20 feet (6 M) of flexible polypropylene vent pipe, included within the 100 feet (30 M) of vent pipe.

Assume that one meter of flexible 60 mm or 80 mm polypropylene pipe equals 1.8 meters of PVC/ABS pipe. **VERIFY FROM VENT MANUFACTURER'S INSTRUCTIONS.**

Can this application use 60 mm (O.D.) polypropylene vent piping? If not what size piping can be used?

Measure the required linear length of air inlet and vent pipe; insert the longest of the two here:					100 ft	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90º long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3	x	3 ft	=	9 ft.	From Vent Manufacturer's instructions
Add equiv length of (2) 45º long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	0	x		=	0 ft.	From Vent Manufacturer's instructions
Add equiv length of of vent termination	9 M	x	3 ft/M	=	18 ft.	From Vent Manufacturer's instructions
Add correction for flexible vent pipe, if any	1.8	x	20 ft	=	36 ft.	From Vent Manufacturer's instructions
Total Equivalent Vent Length (TEVL)					163 ft.	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)					127 ft.	For 2" pipe from Table 2
Is TEVL less than MEVL?					**NO**	**Therefore, 60mm pipe may NOT be used; try 80 mm**
Maximum Equivalent Vent Length (MEVL)					250 ft.	For 3" pipe from Table 2
Is TEVL less than MEVL?					**YES**	**Therefore, 80 mm pipe may be used**

Notes:

1. Use only the smallest diameter pipe possible for venting. Over-sizing may cause flame disturbance or excessive vent terminal icing or freeze-up.
2. NA – Not allowed. Pressure switch will not close, or flame disturbance may result.
3. Vent sizing for Canadian installations over 4500 ft. (1370 M) above sea level are subject to acceptance by the local authorities having jurisdiction.
4. Size both the combustion air and vent pipe independently, then use the larger size for both pipes.
5. Assume the two 45° elbows equal one 90° elbow. Wide radius elbows are desirable and may be required in some cases.
6. Elbow and pipe sections within the furnace casing and at the vent termination should not be included in vent length or elbow count.
7. The minimum pipe length is 5 ft. (2 M) linear feet (meters) for all applications.
8. Use 3-in. (76 mm) diameter vent termination kit for installations requiring 4-in. (102 mm) diameter pipe.

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RETURN AIR TEMPERATURE

This furnace is designed for continuous return-air minimum temperature of 60°F (15°C) db or intermittent operation down to 55°F db such as when used with a night setback thermometer. Return-air temperature must not exceed 80°F (27°C) db. Failure to follow return air limits may affect reliability of heat exchangers, motors and controls.

A10490

987MA

MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS

POSITION	CLEARANCE
Rear	0 (0 mm)
Front (Combustion air openings in furnace and in structure)	1 in. (25 mm)
Required for service**	24 in. (610 mm)*
All Sides of Supply Plenum**	1 in. (25 mm)
Sides	0 (0 mm)
Vent	0 (0 mm)
Top of Furnace	1 in. (25 mm)

* Recommended
** Consult your local building codes

VENTILATED COMBUSTION-AIR PIPE FOR ATTIC / CRAWLSPACE APPLICATIONS

A12376

NOTE: See Installation Instructions for specific venting configurations.

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DOWNFLOW SUBBASE

Assembled

Disassembled

987MA

DIMENSIONS (IN. / MM)						
FURNACE CASING WIDTH	FURNACE IN DOWNFLOW APPLICATION	PLENUM OPENING*		FLOOR OPENING		HOLE NO. FOR WIDTH ADJUSTMENT
		A	B	C	D	
17–1/2 (444.5)	Furnace with or without Cased Coil Assembly or Coil Box	15–1/8 (384.2)	19 (482.6)	16–3/4 (425.5)	20–3/8 (517.5)	3
21 (533.4)	Furnace with or without Cased Coil Assembly or Coil Box	18–5/8 (396.4)	19 (482.6)	20–1/4 (514.4)	20–3/8 (517.5)	2
24–1/2 (622.3)	Furnace with or without Cased Coil Assembly or Coil Box	22–1/8 (562.0)	19 (482.6)	23–3/4 (603.3)	20–3/8 (517.5)	1

*The plenum should be constructed 1/4–in. (6 mm) smaller in width and depth than the plenum dimensions shown above.

Concentric Vent Kit

A93086

A concentric vent kit allows vent and combustion-air pipes to terminate through a single exit in a roof or side wall. One pipe runs inside the other allowing venting through the inner pipe and combustion air to be drawn in through the outer pipe.

Downflow Subbase

A88202

One base fits all furnace sizes. The base is designed to be installed between the furnace and a combustible floor when no coil box is used or when a coil box other than a Bryant cased coil is used. It is CSA design certified for use with Bryant branded furnaces when installed in downflow applications.

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MEDIA FILTER CABINET

Media Filter Cabinet	A	B
16" (406mm)	17" (432mm)	16" (406mm)
20" (508mm)	21" (533mm)	20" (508mm)
24" (610mm)	25" (635mm)	24" (610mm)

NOTE: Media cabinet is matched to the bottom opening on furnace. May also be used for side return.

A12428

987MA

TYPICAL WIRING SCHEMATIC

NOTES: 1. Connect Y/Y2-terminal as shown for proper operation.
2. Some thermostats require a "C" terminal connection as shown.
3. If any of the original wire, as supplied, must be replaced, use same type or equivalent wire.

A11401

DIMENSIONAL DRAWING

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NOTES:
1. Doors may vary by model.
2. Minimum return-air openings at furnace, based on metal duct. If flex duct is used, see flex duct manufacturer's recommendations for equivalent diameters.
   a. For 800 CFM-16-in. (406 mm) round or 14 1/2 x 12-in. (368 x 305 mm) rectangle.
   b. For 1200 CFM-20-in. (508 mm) round or 14 1/2 x 19 1/2-in. (368 x 495 mm) rectangle.
   c. For 1600 CFM-22-in. (559 mm) round or 14 1/2 x 22 1/16-in. (368 x 560mm) rectangle.
   d. Return air above 1800 CFM at 0.5 in. w.c. ESP on 24.5" casing, requires one of the following configurations: 2 sides, 1 side and a bottom or bottom only. See Air Delivery table in this document for specific use to allow for sufficient airflow to the furnace.
3. Vent and Combustion air pipes through blower compartment must use accessory "Vent Kit - Through the Cabinet". See accessory list for current part number.

A12267

987MA FURNACE SIZE	A CABINET WIDTH	B OUTLET WIDTH	C BOTTOM INLET WIDTH	D AIR INTAKE	SHIP WT. LB (KG)
42060	17 – 1/2 (445)	15 – 7/8 (403)	16 (406)	8 – 3/4 (222)	154.0 (69.3)
42080					164.0 (73.8)
60060	21 (533)	19 – 3/8 (492)	19 – 1/2 (495)	10 – 1/2 (267)	158.5 (72.0)
60080					168.5 (76.6)
66100					178.5 (80.3)
66120	24 – 1/2 (622)	22 – 7/8 (581)	23 (584)	12 – 1/4 (311)	202.5 (91.1)

GUIDE SPECIFICATIONS

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General

System Description

Furnish a _____ 4-way multipoise modulating gas-fired condensing furnace for use with natural gas or propane (factory- authorized conversion kit required for propane); furnish external media cabinet for use with accessory media filter or standard filter.

Quality Assurance

Unit will be designed, tested and constructed to the current ANSI Z 21.47/CSA 2.3 design standard for gas-fired central furnaces.

Unit will be third party certified by CSA to the current ANSI Z 21.47/CSA 2.3 design standard for gas-fired central furnaces. Unit will carry the CSA Blue Star® and Blue Flame® labels. Unit efficiency testing will be performed per the current DOE test procedure as listed in the Federal Register.

Unit will be certified for capacity and efficiency and listed in the latest AHRI Consumer's Directory of Certified Efficiency Ratings.

Unit will carry the current Federal Trade Commission Energy Guide efficiency label.

Delivery, Storage, and Handling

Unit will be shipped as single package only and is stored and handled per unit manufacturer's recommendations.

Warranty (for inclusion by specifying engineer)

U.S. and Canada only. Warranty certificate available upon request.

Equipment

Blower Wheel and ECM Blower Motor

Galvanized blower wheel shall be centrifugal type, statically and dynamically balanced. Blower motor of ECM type shall be permanently lubricated with sealed ball bearings, of _____hp, and have infinitely variable speed from 300-1300 RPM operating only when motor inputs are provided. Blower motor shall be direct drive and soft mounted to the blower housing to reduce vibration transmission.

Filters

Furnace shall have reusable-type filters. Filter shall be _____ in. (mm) X _____ in. (mm). An accessory highly efficient Media Filter is available as an option. _____ Media Filter.

Casing

Casing shall be of .030 in. thickness minimum, pre-painted steel.

Draft Inducer Motor

Draft inducer motor shall be variable-speed design.

Primary Heat Exchangers

Primary heat exchangers shall be 3-Pass corrosion-aluminized steel of fold-and-crimp sectional design and applied operating under negative pressure.

Secondary Heat Exchangers

Secondary heat exchangers shall be of a stainless steel flow-through of fin-and-tube design and applied operating under negative pressure.

Controls

Controls shall include a micro-processor-based integrated electronic control board with at least 16 service troubleshooting codes displayed via diagnostic flashing LED light on the control, a self-test feature that checks all major functions of the furnace, and a replaceable automotive-type circuit protection fuse. Multiple operational settings available including separate blower speeds for all modulating capacities, low cooling, high cooling and continuous fan. Continuous fan speed may be adjusted from the thermostat. Cooling airflow will be selectable between 325 to 400 CFM per ton of air conditioning. Features will also include temporary reduced airflow in the cooling mode for improved dehumidification when an Evolution Control or T6-PRH is selected as the thermostat.

Operating Characteristics

Heating capacity shall be _____ Btuh input; _____ Btuh output capacity.

Fuel Gas Efficiency shall be _____ AFUE.

Air delivery shall be _____ cfm minimum at 0.50 in. W.C. external static pressure.

Dimensions shall be: depth_____in. (mm); width _____in. (mm); height_____in. (mm) (casing only). Height shall be _____in. (mm) with A/C coil and _____in. (mm) overall with plenum.

Electrical Requirements

Electrical supply shall be 115 volts, 60 Hz, single-phase (nominal). Minimum wire size shall be _____AWG; maximum fuse size of HACR-type designated circuit breaker shall be _____ amps.

Special Features

Refer to section of the product data identifying accessories and descriptions for specific features and available enhancements.

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