

FURNACE



BROCK

HEATING & COOLING



BROPG96VTAA

**VARIABLE SPEED,
TWO-STAGE
NON-COMMUNICATING,
CONDENSING
GAS FURNACE**

brockhvac.com



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VARIABLE SPEED, TWO-STAGE NON-COMMUNICATING, 35-IN. (889 MM) CONDENSING GAS FURNACE

PRODUCT DATA

The BROPG96VTAA Multi-Position Condensing Gas Furnace features a two-stage gas valve and a variable speed, constant torque (VCT) ECM blower motor. With an Annual Fuel Utilization Efficiency (AFUE) of up to 96.0% AFUE, this furnace provides added savings over standard gas furnaces. It features 4-way multipoise installation flexibility, and is available in eight model sizes. All sizes are design certified in Canada. This furnace is not designed for use in recreation vehicles, manufactured (mobile) homes or outdoors.

PERFORMANCE

- Variable-speed, constant-torque ECM blower motor, two-speed inducer motor, and two-stage gas valve.
- Fully-insulated casing including blower section.
- Aluminized-steel primary heat exchanger.
- Stainless-steel condensing secondary heat exchanger.
- Silicon Nitride Hot Surface Igniter.
- Adjustable blower speed for heating, cooling, continuous fan, and dehumidification.

INSTALLATION FLEXIBILITY

- 4-way Multi-Position design for upflow, downflow or horizontal installations, with unique vent elbow and optional through-the-cabinet downflow venting capability.
- Factory-configured ready for upflow applications.
- Installation flexibility: sidewall or vertical vent.
- Ideal height 35" (889 mm) cabinet: short enough for taller coils, but still allows enough room for service.
- Direct-vent/sealed combustion, single-pipe venting or ventilated combustion air.

APPLICATIONS

- Convertible to propane with gas conversion accessory kit.
- Convenient Air Purifier and Humidifier connections.
- 5 ton sizes (sizes 60080 and 60100) allow 15 Amp breaker with accessory (order separately).
- Twinning capable with accessory kit.

CERTIFICATIONS

- All sizes meet ENERGY STAR® Version 4.1 criteria for gas furnaces: 95.0%+ AFUE.
- Cabinet air leakage less than 2.0% at 1.0 in. W.C. and cabinet air leakage less than 1.4% at 0.5 in. W.C. when tested in accordance with ASHRAE standard 193.
- All sizes can be installed in air quality management districts with a 40 ng/J NOx emissions requirement



FEATURES AND BENEFITS

FURNACE SIZE	CASING DIMENSIONS (IN.)			RATED HEATING OUTPUT†		AFUE			HEATING AIRFLOW			COOLING CFM@0.5 ESP (in. W.C.)	MOTOR HP
	H	D	W	HIGH	LOW	UPFLOW/ HORIZON- TAL	DOWN- FLOW	ENERGY STAR®	CFM (HIGH) HEATING)	CFM (LOW HEATING)	HIGH HEATING ESP (in. W.C.)		
30040A	35	29.50	14.20	39,000	25,000	96.0%	95.0%	YES	800	560	0.10	1030	1/2
36040B	35	29.50	17.50	39,000	25,000	96.0%	95.0%	YES	850	625	0.10	1105	1/2
36060A	35	29.50	14.20	58,000	38,000	95.0%	95.0%	YES	1110	770	0.12	1115	1/2
42060B	35	29.50	17.50	58,000	38,000	96.0%	95.0%	YES	1135	860	0.12	1475	3/4
48080B	35	29.50	17.50	78,000	50,000	96.0%	95.0%	YES	1450	1130	0.15	1655	3/4
60080C	35	29.50	21.00	78,000	51,000	96.0%	95.0%	YES	1555	1200	0.15	2005	1
60100C	35	29.50	21.00	97,000	63,000	96.0%	95.0%	YES	1865	1435	0.20	2005	1
66120D	35	29.50	24.00	117,000	76,000	96.0%	95.0%	YES	2120	1625	0.20	2190	1

† Capacity in accordance with DOE test procedures. Ratings are position dependent. See rating plate. ESP - External Static Pressure

SmartEvapt 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 blower off delay when humidity control is needed. Once humidity is back in control, SmartEvap re-enables the energy-saving cooling blower off-delay.

Dual Fuel system — This system can provide more control over your monthly energy bills by automatically selecting the most economical method of heating. With dual fuel, our system automatically switches between the gas furnace and the electric heat pump as outside temperatures change to maintain greater efficiency and comfort than with any traditional single-source heating system. The heat pump also delivers high-efficiency cooling in the summer.

Robust Igniter — The unique SiN igniter is not only physically robust is also electrically robust. It is capable of running at line voltage and does not require complex voltage regulators. This unique feature further enhances the gas furnace reliability and continues the tradition of technology leadership and innovation in providing a reliable and durable product.

ECM Motors — Our variable-speed, constant torque ECM (Electronically Commutated Motor) optimizes comfort levels in the home year round; features such as passive/active dehumidification, ramping profiles, and quiet operation. It can provide cooling match enhancements to increase the effective SEER of select the air conditioner or heat pump systems. This motor does not report back RPM and static pressure to the furnace control.

Reliable Heat Exchanger Design — The aluminized steel, clam shell primary heat exchanger features a crimped, no-weld seam to 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.

Optional Media Filter Cabinet — Enhanced indoor air quality in the home is made easier with our media filter cabinet (available as an accessory). When installed as a part of the system, this cabinet allows for easy and convenient addition of a 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.

Direct or Single-pipe Venting, or Optional Ventilated Combustion Air — This furnace can be installed as a 2-pipe (Direct Vent) furnace, in an optional ventilated combustion air application, or in single-pipe, non-direct vent applications. 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.

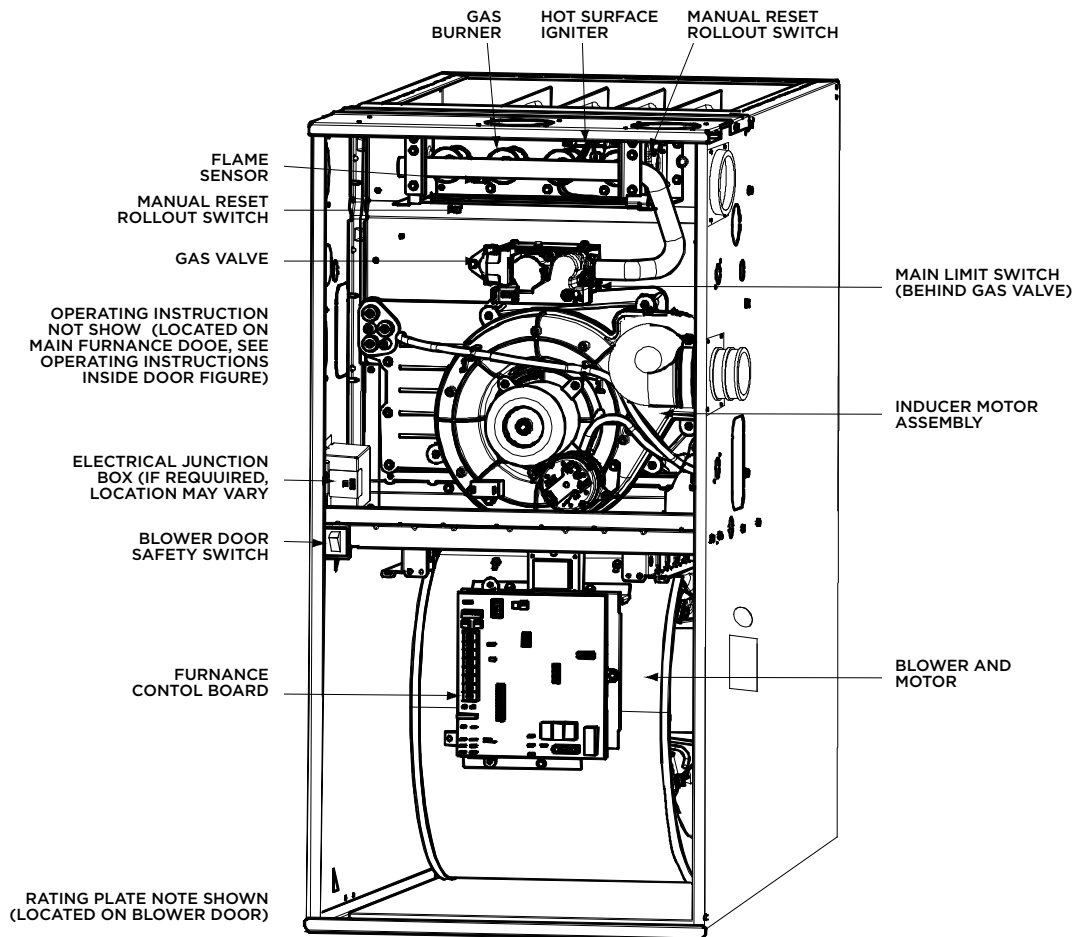
Bottom Closure — Factory-installed for side return; easily removable for bottom return. The multi-use bottom closure can also serve for roll-out protection in horizontal applications, and act as the bottom closure for the optional return air base accessory.

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.

MODEL NUMBER NOMENCLATURE

Product Series	Product	Base Effy.	Motor	Heating Stages	NOx Level	Major Series	Cooling Capacity	Heating Input (BTU/h)	Width	Minor Series
	G = Gas Furnace	80 = 80% AFUE 92 = 92% AFUE 95 = 95% AFUE 96 = 96% AFUE 97 = 97% AFUE 98 = 98% AFUE	C = Comm. Variable-Speed Constant Airflow (VCA) ECM E = Fixed-Speeds Constant Torque (FCT) ECM V = Variable-Speed Constant Torque (VCT) ECM	M = Modulating S = Single Stage T = Two-Stage	A = Standard L = Low NOx U = Ultra Low NOx	A B C	24 - 800 CFM 30 - 1000 CFM 36 - 1200 CFM 42 - 1400 CFM 48 - 1600 CFM 54 - 1800 CFM 60 - 2000 CFM 66 - 2200 CFM	026 = 26,000 040 = 40,000 060 = 60,000 080 = 80,000	A = 14.2" B = 17.5" C = 21.0" D = 24.5"	A B C

FURNACE COMPONENTS



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 approved engineering method to calculate heating load estimates and select the furnace. Excessive oversizing of the furnace may cause the

furnace and/or vent to fail prematurely, customer discomfort and/or vent freezing.

Failure to follow these guidelines is considered faulty installation and/or misapplication of the furnace; and resulting failure, damage, or repairs may impact warranty coverage.

Heating Capacity and Efficiency			30040A	36040B	36060A	42060B	48080B	60080C	60100C	66120D
Input	High Heat	(BTUH)	40,000	40,000	60,000	60,000	80,000	80,000	100,000	120,000
	Low Heat	(BTUH)	26,000	26,000	39,000	39,000	52,000	52,000	65,000	78,000
Output	High Heat	(BTUH)	39,000	39,000	58,000	58,000	78,000	78,000	97,000	117,000
	Low Heat	(BTUH)	25,000	25,000	38,000	38,000	50,000	51,000	63,000	76,000
Certified Temperature Rise Range °F (°C)	High Heat		40-70 (22-39)	40-70 (22-39)	40-70 (22-39)	40-70 (22-39)	40-70 (22-39)	40-70 (22-39)	40-70 (22-39)	40-70 (22-39)
	Low Heat		30-60 (17-33)	30-60 (17-33)	30-60 (17-3)	30-60 (17-33)	30-60 (17-33)	30-60 (17-33)	30-60 (17-33)	30-60 (17-33)

Airflow Capacity and Blower Data

Rated External Static Pressure (in. w.c.)	Heating	0.10	0.10	0.12	0.12	0.15	0.15	0.20	0.20	
	Cooling	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Airflow Delivery @ Rated ESP (CFM)	High Heat	800	850	1110	1135	1450	1555	1865	2120	
	Low Heat	560	625	770	860	1130	1200	1435	1625	
	Cooling	1030	1105	1115	1475	1655	2005	2005	2190	
Cooling Capacity (tons) @ 400, 350 CFM/ton	400 CFM/ton	2	2.5	2.5	3.5	4	5	5	5	
	350 CFM/ton	2.5	3	3	4	4.5	5.5	5.5	6	
Direct-Drive Motor Type	Electronically Commutated Motor (ECM)									
Direct-Drive Motor HP		1/2	1/2	1/2	3/4	3/4	1	1	1	
Motor Full Load Amps Default		6.3	6.5	6.3	10.1	9.2	13.9/10.4	13.9/10.4	11.7	
RPM Range		600-2000	400-1200	600-2000	400-1200	400-1200	400-1200	400-1200	400-1200	
Speed Selections		Variable (PWM)								
Blower Wheel Dia x Width	in.	11 x 7	11 x 8	11 x 7	11 x 8	11 x 8	11 x 10	11 x 10	11 x 11	
Air Filtration System		Field Supplied Filter								
Filter Used for Certified Watt Data		325531-40								

Electrical Data

Input Voltage	Volts-Hertz-Phase	115-60-1								
Operating Voltage Range	Min-Max	104-127								
Maximum Input Amps Default	Amps	7.0	7.2	7.1	10.9	10.0	14.7/11.3	14.7/11.3	12.6	
Unit Ampacity Default	Amps	9.7	9.8	9.7	14.6	13.4	19.3/14.9	19.4/15.0	16.7	
Minimum Wire Size Default	AWG	14	14	14	14	14	12/14	12/14	12	
Maximum Wire Length	Feet	38	37	38	25	27	29/24	29/24	34	
@ Minimum Wire Size Default	(M)	(11.7)	(11.5)	(11.7)	(7.7)	(8.4)	(9.0/7.5)	(9.0/7.5)	(10.5)	
Maximum Fuse/Ckt Bkr	Amps	15	15	15	15	15	20/15	20/15	20	
(Time Delay Type Recommended) Default										
Transformer Capacity (24vac output)		VA								
External Control	Heating	24.3 VA								
Power Available	Cooling	34.6 VA								

Controls

Gas Connection Size		1/2" - NPT								
Burners (Monoport)		2	2	3	3	4	4	5	6	
Gas Valve (Redundant)	Manufacturer	White Rodgers								
Minimum Inlet Gas pressure (in. wc)		4.50								
Maximum Inlet Gas pressure (in. wc)		13.60								
Manufactured (Mobile) Home Kit		Not Approved for MH Use								
Ignition Device		Silicon Nitride								
Heating Blower Control (Heating Off-Delay)		Adjustable: 90, 120, 150, 180 seconds								
Cooling Blower Control (Time Delay Relay)		90 seconds								
Communication System		None								
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)								

AIR DELIVERY - CFM

(SW1-5 and SW2-2 set to OFF, except as indicated. See notes 1 and 2.)

Unit Size: 30040A				External Static Pressure (ESP)									
Cg/CF Switch settings													
Cg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Cg Default:	OFF	OFF	OFF	1125	1105	1080	1055	1030	1005	975	955	930	905
Cooling (SW2-8,7,6)	OFF	OFF	ON	605	565	525	485	445	See Note 4				
	OFF	ON	OFF	760	730	695	655	625	590	555	525	490	455
	OFF	ON	ON	950	925	900	870	840	810	785	760	730	705
	ON	OFF	OFF	1125	1105	1080	1055	1030	1005	975	955	930	905
	ON	OFF	ON	1130	1105	1080	1055	1030	1005	980	955	930	905
	ON	ON	OFF	1130	1105	1080	1055	1030	1005	980	955	930	905
	ON	ON	ON	1130	1105	1080	1055	1030	1005	980	955	930	905
	Maximum Cg Airflow ²			1130	1105	1080	1055	1030	1005	980	955	930	905
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Cg Default:	OFF	OFF	OFF	605	565	525	485	445	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	605	565	525	485	445	See Note 4				
	OFF	ON	OFF	760	730	695	655	625	590	555	525	490	455
	OFF	ON	ON	950	925	900	870	840	810	785	760	730	705
	ON	OFF	OFF	1125	1105	1080	1055	1030	1005	975	955	930	905
	ON	OFF	ON	1130	1105	1080	1055	1030	1005	980	955	930	905
	ON	ON	OFF	1130	1105	1080	1055	1030	1005	980	955	930	905
	ON	ON	ON	1130	1105	1080	1055	1030	1005	980	955	930	905
Cont. Fan Default:	OFF	OFF	OFF	385	335	See Note 4							
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	245	180	See Note 4							
	OFF	ON	OFF	310	245	See Note 4							
	OFF	ON	ON	385	335	See Note 4							
	ON	OFF	OFF	385	335	See Note 4							
	ON	OFF	ON	385	335	See Note 4							
	ON	ON	OFF	385	335	See Note 4							
	ON	ON	ON	385	335	See Note 4							
Heating (SW1)	High Heat Airflow ³			800	770	730	700	665	635	605	570	540	510
	Low Heat Airflow ³			560	520	470	425	390	See Note 4				
Unit Size: 36040B				External Static Pressure (ESP)									
Cg/CF Switch settings													
Cg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Cg Default:	OFF	OFF	OFF	1240	1210	1180	1145	1105	1060	1005	950	895	835
Cooling (SW2-8,7,6)	OFF	OFF	ON	585	540	490	445	400	360	315	265	210	155
	OFF	ON	OFF	780	740	695	655	620	580	545	510	480	445
	OFF	ON	ON	975	945	910	870	835	805	775	740	710	680
	ON	OFF	OFF	1170	1140	1115	1085	1050	1020	985	945	890	835
	ON	OFF	ON	1240	1210	1180	1145	1105	1060	1005	950	895	835
	ON	ON	OFF	1240	1210	1180	1145	1105	1060	1005	950	895	835
	ON	ON	ON	1240	1210	1180	1145	1105	1060	1005	950	895	835
	Maximum Cg Airflow ²			1240	1210	180	1145	1105	1060	1005	950	895	835
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Cg Default:	OFF	OFF	OFF	585	540	490	445	400	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	585	540	490	445	400	See Note 4				
	OFF	ON	OFF	780	740	695	655	620	580	545	510	480	445
	OFF	ON	ON	975	945	910	870	835	805	775	740	710	680
	ON	OFF	OFF	1170	1140	1115	1085	1050	1020	985	945	890	835
	ON	OFF	ON	1240	1210	1180	1145	1105	1060	1005	950	895	835
	ON	ON	OFF	1240	1210	1180	1145	1105	1060	1005	950	895	835
	ON	ON	ON	1240	1210	1180	1145	1105	1060	1005	950	895	835
Cont. Fan Default:	OFF	OFF	OFF	585	540	490	445	400	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	305	235	See Note 4							
	OFF	ON	OFF	470	410	350	See Note 4						
	OFF	ON	ON	585	540	490	445	400	See Note 4				
	ON	OFF	OFF	585	540	490	445	400	See Note 4				
	ON	OFF	ON	585	540	490	445	400	See Note 4				
	ON	ON	OFF	585	540	490	445	400	See Note 4				
	ON	ON	ON	585	540	490	445	400	See Note 4				
Heating (SW1)	High Heat Airflow ³			850	810	770	730	700	660	630	595	560	530
	Low Heat Airflow ³			625	580	535	490	445	405	365	320	270	220

(SW1-5 and SW2-2 set to OFF, except as indicated. See notes 1 and 2.)

Unit Size: 36060A

Clg/CF Switch settings

External Static Pressure (ESP)

Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1180	1150	1130	1100	1075	1045	1020	995	965	935
Cooling (SW2-8,7,6)	OFF	OFF	ON	625	585	540	495	445	See Note 4				
	OFF	ON	OFF	820	785	745	710	670	635	595	560	525	490
	OFF	ON	ON	1000	970	935	905	875	845	815	785	755	725
	ON	OFF	OFF	1180	1150	1130	1100	1075	1045	1020	995	965	935
	ON	OFF	ON	1220	1195	1170	1140	1115	1090	1065	1035	1010	985
	ON	ON	OFF	1220	1195	1170	1140	1115	1090	1065	1035	1010	985
	ON	ON	ON	1220	1195	1170	1140	1115	1090	1065	1035	1010	985
	Maximum Clg Airflow ³			1220	1195	1170	1140	1115	1090	1065	1035	1010	985
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	625	585	540	495	445	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	625	585	540	495	445	See Note 4				
	OFF	ON	OFF	820	785	745	710	670	635	595	560	525	490
	OFF	ON	ON	1000	970	935	905	875	845	815	785	755	725
	ON	OFF	OFF	1180	1150	1130	1100	1075	1045	1020	995	965	935
	ON	OFF	ON	1220	1195	1170	1140	1115	1090	1065	1035	1010	985
	ON	ON	OFF	1220	1195	1170	1140	1115	1090	1065	1035	1010	985
	ON	ON	ON	1220	1195	1170	1140	1115	1090	1065	1035	1010	985
Cont. Fan Default:	OFF	OFF	OFF	375	315	See Note 4							
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	200	125	See Note 4							
	OFF	ON	OFF	285	215	See Note 4							
	OFF	ON	ON	375	315	See Note 4							
	ON	OFF	OFF	375	315	See Note 4							
	ON	OFF	ON	375	315	See Note 4							
	ON	ON	OFF	375	315	See Note 4							
Heating (SW1)	High Heat Airflow ³			1115	1090	1060	1035	1010	980	955	930	905	875
	Low Heat Airflow ³			780	740	695	655	615	575	530	490	450	405

Unit Size: 42060B

Clg/CF Switch settings

External Static Pressure (ESP)

Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1330	1295	1260	1220	1190	1150	1110	1075	1045	1005
Cooling (SW2-8,7,6)	OFF	OFF	ON	725	600	435	280	210	See Note 4				
	OFF	ON	OFF	780	725	660	615	540	See Note 4				
	OFF	ON	ON	975	925	875	835	785	750	690	655	610	570
	ON	OFF	OFF	1160	1120	1090	1045	1010	970	920	885	840	800
	ON	OFF	ON	1330	1295	1260	1220	1190	1150	1110	1075	1045	1005
	ON	ON	OFF	1705	1650	1595	1545	1475	1415	1340	1275	1200	1105
	ON	ON	ON	1705	1650	1595	1545	1475	1415	1340	1275	1200	1105
	Maximum Clg Airflow ³			1705	1650	1595	1545	1475	1415	1340	1275	1200	1105
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	725	600	435	280	210	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	725	600	435	280	210	See Note 4				
	OFF	ON	OFF	780	725	660	615	540	See Note 4				
	OFF	ON	ON	975	925	875	835	785	750	690	655	610	570
	ON	OFF	OFF	1160	1120	1090	1045	1010	970	920	885	840	800
	ON	OFF	ON	1330	1295	1260	1220	1190	1150	1110	1075	1045	1005
	ON	ON	OFF	1705	1650	1595	1545	1475	1415	1340	1275	1200	1105
	ON	ON	ON	1705	1650	1595	1545	1475	1415	1340	1275	1200	1105
Cont. Fan Default:	OFF	OFF	OFF	725	600	435	280	210	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	725	600	435	280	210	See Note 4				
	OFF	ON	OFF	780	725	660	615	540	See Note 4				
	OFF	ON	ON	975	925	875	835	785	750	690	655	610	570
	ON	OFF	OFF	975	925	875	835	785	750	690	655	610	570
	ON	OFF	ON	975	925	875	835	785	750	690	655	610	570
	ON	ON	OFF	975	925	875	835	785	750	690	655	610	570
Heating (SW1)	High Heat Airflow ³			1145	1105	1075	1030	995	955	905	870	825	785
	Low Heat Airflow ³			870	820	760	720	655	620	560	525	470	435

(SW1-5 and SW2-2 set to OFF, except as indicated. See notes 1 and 2.)

Unit Size: 48080B

	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1595	1560	1530	1500	1470	1440	1405	1370	1340	1290
Cooling (SW2-8,7,6)	OFF	OFF	ON	625	555	495	425	360	300	See Note 4			
	OFF	ON	OFF	810	755	700	645	595	540	480	425	380	330
	OFF	ON	ON	1040	995	950	900	860	815	770	725	680	630
	ON	OFF	OFF	1215	1175	1135	1095	1055	1015	975	935	900	860
	ON	OFF	ON	1390	1355	1320	1285	1245	1210	1175	1140	1105	1070
	ON	ON	OFF	1595	1560	1530	1500	1470	1440	1405	1370	1340	1290
	ON	ON	ON	1790	1760	1735	1700	1655	1610	1570	1485	1395	1295
		Maximum Clg Airflow ³			1790	1760	1735	1700	1655	1610	1570	1485	1395
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	625	555	495	425	360	300	See Note 4			
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	625	555	495	425	360	300	See Note 4			
	OFF	ON	OFF	810	755	700	645	595	540	480	425	380	330
	OFF	ON	ON	1040	995	950	900	860	815	770	725	680	630
	ON	OFF	OFF	1215	1175	1135	1095	1055	1015	975	935	900	860
	ON	OFF	ON	1390	1355	1320	1285	1245	1210	1175	1140	1105	1070
	ON	ON	OFF	1595	1560	1530	1500	1470	1440	1405	1370	1340	1290
	ON	ON	ON	1790	1760	1735	1700	1655	1610	1570	1485	1395	1295
		Maximum Clg Airflow ³			1790	1760	1735	1700	1655	1610	1570	1485	1395
Cont. Fan Default:	OFF	OFF	OFF	625	555	495	425	360	300	See Note 4			
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	465	390	300	See Note 4						
	OFF	ON	OFF	625	555	495	425	360	300	See Note 4			
	OFF	ON	ON	690	630	570	510	445	385	See Note 4			
	ON	OFF	OFF	690	630	570	510	445	385	See Note 4			
	ON	OFF	ON	690	630	570	510	445	385	See Note 4			
	ON	ON	OFF	690	630	570	510	445	385	See Note 4			
	ON	ON	ON	690	630	570	510	445	385	See Note 4			
Heating (SW1)	High Heat Airflow ³			1470	1435	1400	1365	1330	1295	1260	1225	1190	1155
	Low Heat Airflow ³			1150	1110	1070	1030	990	950	910	870	830	790

Unit Size: 60080C

	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1905	1870	1825	1785	1750	1700	1665	1625	1560	1460
Cooling (SW2-8,7,6)	OFF	OFF	ON	950	770	620	515	440	365	See Note 4			
	OFF	ON	OFF	1015	935	880	825	765	690	625	580	See Note 4	
	OFF	ON	ON	1155	1105	1040	990	920	875	815	755	710	645
	ON	OFF	OFF	1335	1290	1245	1190	1145	1085	1040	990	930	890
	ON	OFF	ON	1520	1485	1435	1390	1340	1300	1255	1200	1160	1115
	ON	ON	OFF	1905	1870	1825	1785	1750	1700	1665	1625	1560	1460
	ON	ON	ON	2290	2230	2160	2085	2005	1915	1820	1730	1640	1525
		Maximum Clg Airflow ³			2290	2230	2160	2085	2005	1915	1820	1730	1640
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	950	770	620	515	440	365	See Note 4			
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	645	540	435	See Note 4						
	OFF	ON	OFF	950	770	620	515	440	365	See Note 4			
	OFF	ON	ON	1015	935	880	825	765	690	625	580	See Note 4	
	ON	OFF	OFF	1155	1105	1040	990	920	875	815	755	710	645
	ON	OFF	ON	1335	1290	1245	1190	1145	1085	1040	990	930	890
	ON	ON	OFF	1520	1485	1435	1390	1340	1300	1255	1200	1160	1115
	ON	ON	ON	1905	1870	1825	1785	1750	1700	1665	1625	1560	1460
		Maximum Clg Airflow ³			2290	2230	2160	2085	2005	1915	1820	1730	1640
Cont. Fan Default:	OFF	OFF	OFF	950	770	620	515	440	365	See Note 4			
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	645	540	435	See Note 4						
	OFF	ON	OFF	950	770	620	515	440	365	See Note 4			
	OFF	ON	ON	1015	935	880	825	765	690	625	580	See Note 4	
	ON	OFF	OFF	1155	1105	1040	990	920	875	815	755	710	645
	ON	OFF	ON	1335	1290	1245	1190	1145	1085	1040	990	930	890
	ON	ON	OFF	1520	1485	1435	1390	1340	1300	1255	1200	1160	1115
	ON	ON	ON	1905	1870	1825	1785	1750	1700	1665	1625	1560	1460
Heating (SW1)	High Heat Airflow ³			1575	1535	1485	1445	1400	1350	1310	1260	1215	1170
	Low Heat Airflow ³			1230	1170	1125	1065	1015	955	900	855	795	755

(SW1-5 and SW2-2 set to OFF, except as indicated. See notes 1 and 2.)**Unit Size: 6010OC**

	Clg/CF Switch settings			External Static Pressure (ESP)									
	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1890	1845	1800	1755	1700	1655	1610	1560	1510	1460
Cooling (SW2-8,7,6)	OFF	OFF	ON	1015	825	630	485	405	325	See Note 4			
	OFF	ON	OFF	1080	895	815	740	690	615	555	475	See Note 4	
	OFF	ON	ON	1155	1080	1020	940	890	825	785	710	660	590
	ON	OFF	OFF	1310	1260	1195	1140	1075	1025	970	925	875	810
	ON	OFF	ON	1520	1475	1425	1365	1315	1255	1210	1155	1110	1055
	ON	ON	OFF	1890	1845	1800	1755	1700	1655	1610	1560	1510	1460
	ON	ON	ON	2290	2230	2160	2085	2005	1915	1820	1730	1640	1525
	Maximum Clg Airflow ²			2290	2230	2160	2085	2005	1915	1820	1730	1640	1525
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	1015	825	630	485	405	325	See Note 4			
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	745	640	535	See Note 4						
	OFF	ON	OFF	1015	825	630	485	405	325	See Note 4			
	OFF	ON	ON	1080	895	815	740	690	615	555	475	See Note 4	
	ON	OFF	OFF	1155	1080	1020	940	890	825	785	710	660	590
	ON	OFF	ON	1310	1260	1195	1140	1075	1025	970	925	875	810
	ON	ON	OFF	1520	1475	1425	1365	1315	1255	1210	1155	1110	1055
	ON	ON	ON	1890	1845	1800	1755	1700	1655	1610	1560	1510	1460
Cont. Fan Default:	OFF	OFF	OFF	1015	825	630	485	405	325	See Note 4			
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	745	640	535	See Note 4						
	OFF	ON	OFF	1015	825	630	485	405	325	See Note 4			
	OFF	ON	ON	1080	895	815	740	690	615	555	475	See Note 4	
	ON	OFF	OFF	1155	1080	1020	940	890	825	785	710	660	590
	ON	OFF	ON	1155	1080	1020	940	890	825	785	710	660	590
	ON	ON	OFF	1155	1080	1020	940	890	825	785	710	660	590
	ON	ON	ON	1155	1080	1020	940	890	825	785	710	660	590
Heating (SW1)	High Heat Airflow ³			1905	1865	1825	1775	1730	1685	1640	1590	1545	1490
	Low Heat Airflow ³			1480	1435	1375	1330	1265	215	1160	1115	1060	1005

Unit Size: 66120D

	Clg/CF Switch settings			External Static Pressure (ESP)									
	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	2060	2015	1975	1930	1885	1840	1790	1750	1705	1630
Cooling (SW2-8,7,6)	OFF	OFF	ON	865	775	690	595	505	425	See Note 4			
	OFF	ON	OFF	1080	1005	935	860	785	705	625	555	490	425
	OFF	ON	ON	1285	1220	1150	1085	1020	960	895	820	750	690
	ON	OFF	OFF	1465	1410	1350	1285	1230	1175	1115	1060	1000	935
	ON	OFF	ON	1685	1635	1585	1530	1475	1420	1375	1325	1270	1225
	ON	ON	OFF	2060	2015	1975	1930	1885	1840	1790	1750	1705	1630
	ON	ON	ON	2265	2225	2180	2145	2100	2060	2010	1895	1770	1645
	Maximum Clg Airflow ²			2320	2310	2270	2230	2190	2135	2020	1895	1770	1645
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	865	775	690	595	505	425	See Note 4			
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	585	470	See Note 4							
	OFF	ON	OFF	865	775	690	595	505	425	See Note 4			
	OFF	ON	ON	1080	1005	935	860	785	705	625	555	490	425
	ON	OFF	OFF	1285	1220	1150	1085	1020	960	895	820	750	690
	ON	OFF	ON	1465	1410	1350	1285	1230	1175	1115	1060	1000	935
	ON	ON	OFF	1685	1635	1585	1530	1475	1420	1375	1325	1270	1225
	ON	ON	ON	2060	2015	1975	1930	1885	1840	1790	1750	1705	1630
Cont. Fan Default:	OFF	OFF	OFF	865	775	690	595	505	425	See Note 4			
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	585	470	See Note 4							
	OFF	ON	OFF	730	630	See Note 4							
	OFF	ON	ON	865	775	690	595	505	425	See Note 4			
	ON	OFF	OFF	865	775	690	595	505	425	See Note 4			
	ON	OFF	ON	865	775	690	595	505	425	See Note 4			
	ON	ON	OFF	865	775	690	595	505	425	See Note 4			
	ON	ON	ON	865	775	690	595	505	425	See Note 4			
Heating (SW1)	High Heat Airflow ³			2165	2120	2075	2030	1985	1940	1895	1850	1770	1645
	Low Heat Airflow ³			1675	1625	1575	1525	1475	1425	1375	1325	1275	1225

Cooling4 and Heating Air Delivery – CFM (Bottom Returns with Filter) – NOTES

- Nominal 350 CFM/ton cooling airflow is delivered with SW1-5 and SW2-2 set to OFF. Set both SW1-5 and SW2-2 to ON for +7% airflow (nominal 370 CFM/ton). Set SW1-5 to ON and SW2-2 to OFF for +15% airflow (nominal 400 CFM/ton). Set SW1-5 to OFF and SW2-2 to ON for -7% airflow (nominal 325 CFM/ton). The above adjustments in airflow are subject to motor horsepower range/capacity. This applies to Cooling and Low-Cooling airflow, but does not affect continuous fan airflow.
- Maximum cooling airflow is achieved when switches SW2-6, SW2-7, SW2-8 and SW1-5 are set to ON, and SW2-2 is set to OFF.
- All heating CFM's are when comfort/efficiency adjustment switch SW1-4 is set to OFF.
- 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.
- All airflows on 21" (533 mm) casing size furnaces are 5% less on side-return only installations.
- Side returns for 24.5" (622 mm) casing sizes require two sides, or a side and bottom to allow sufficient airflow at the return of the furnace.
- Airflows over 1800 CFM require bottom return, two-side return, or bottom and side return or excessive watt draw may result. A minimum filter size of 20x25" (508 x 635 mm) is required

MAXIMUM ALLOWABLE EXPOSED VENT LENGTH

Table 1 - Maximum Allowable Exposed Vent Length in Unconditioned Space Insulation Table - Ft.

Unit Size - 40,000* BTUH

	Pipe Dia. in.	Uninsulated			3/8" Insulation			1/2" Insulation		
		1-1/2	2	2-1/2	1-1/2	2	2-1/2	1-1/2	2	2-1/2
Winter	20	20	20	20	20	50	45	20	60	50
Design	0	10	5	5	20	25	20	20	30	25
Temp	-20	5	-	-	20	15	10	20	20	15
° F	-40	-	-	-	15	10	5	15	15	10

Unit Size - 60,000 BTUH

	Pipe Dia. in.	Uninsulated				3/8-in. Insulation				1/2-in. Insulation			
		1-1/2	2	2-1/2	3	1-1/2	2	2-1/2	3	1-1/2	2	2-1/2	3
Winter	20	20	30	30	25	20	75	65	60	20	85	75	65
Design	0	15	15	10	10	20	40	30	25	20	45	40	30
Temp	-20	10	5	-	-	20	25	20	15	20	30	25	20
° F	-40	5	-	-	-	20	15	15	10	20	20	15	10

Unit Size - 80,000 BTUH

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

Unit Size 100,000 BTUH

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

Unit Size - 120,000 BTUH

	Pipe Dia. in.	Uninsulated			3/8-in. Insulation			1/2-in. Insulation		
		2-1/2	3	4	2-1/2	3	4	2-1/2	3	4
Winter	20	10	50	40	10	75	95	10	75	105
Design	0	10	20	15	10	55	45	10	65	50
Temp	-20	10	10	-	10	35	25	10	45	30
° F	-40	10	5	-	10	25	15	10	30	20

Unit Size - 140,000* BTUH

	Pipe Dia. in.	Uninsulated			3/8-in. Insulation			1/2-in. Insulation		
		2-1/2	3	4	2-1/2	3	4	2-1/2	3	4
Winter	20	5	55	50	5	65	105	5	65	125
Design	0	5	25	15	5	65	50	5	65	60
Temp	-20	5	10	5	5	45	30	5	50	40
° F	-40	5	5	-	5	30	20	5	35	25

* 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.

MAXIMUM ALLOWABLE EXPOSED VENT LENGTH

Table 1 - Maximum Allowable Exposed Vent Length in Unconditioned Space - Meters

Unit Size - 40,000* BTUH

	Pipe Dia. mm	Uninsulated			3/8-in. Insulation			1/2-in. Insulation		
		38	51	64	38	51	64	38	51	64
Winter	-7	6.1	6.1	6.1	6.1	15.2	13.7	6.1	18.3	15.2
Design	-18	3.0	1.5	1.5	6.1	7.6	6.1	6.1	9.1	7.6
Temp	-29	1.5	-	-	6.1	4.6	3.0	6.1	6.1	4.6
° C	-40	-	-	-	4.6	3.0	1.5	4.6	4.6	3.0

Unit Size - 60,000 BTUH

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

Unit Size - 80,000 BTUH

	Pipe Dia. mm	Uninsulated					3/8-in. Insulation					1/2-in. Insulation				
		38	51	64	76	102	38	51	64	76	102	38	51	64	76	102
Winter	-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
Design	-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
Temp	-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
° C	-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

	Pipe Dia. mm	Uninsulated				3/8-in. Insulation				1/2-in. Insulation			
		51	64	76	102	51	64	76	102	51	64	76	102
Winter	-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
Design	-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
Temp	-29	4.6	3.0	1.5	-	6.1	10.7	9.1	6.1	6.1	13.7	10.7	7.6
° C	-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

	Pipe Dia. mm	Uninsulated			3/8-in. Insulation			1/2-in. Insulation		
		64	76	102	64	76	102	64	76	102
Winter	-7	3.0	15.2	12.2	3.0	22.9	28.9	3.0	22.9	32.0
Design	-18	3.0	6.1	4.6	3.0	16.8	13.7	3.0	19.8	15.2
Temp	-29	3.0	3.0	-	3.0	10.7	7.6	3.0	13.7	9.1
° C	-40	3.0	1.5	-	3.0	7.6	4.6	3.0	9.1	6.1

Unit Size - 140,000* BTUH

	Pipe Dia. mm	Uninsulated			3/8-in. Insulation			1/2-in. Insulation		
		64	76	102	64	76	102	64	76	102
Winter	-7	1.5	16.7	15.2	1.5	19.8	32.0	1.5	19.8	38.1
Design	-18	1.5	7.6	4.6	1.5	19.8	15.2	1.5	19.8	18.3
Temp	-29	1.5	3.0	1.5	1.5	13.7	9.1	1.5	15.2	12.2
° C	-40	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.

MAXIMUM EQUIVALENT VENT LENGTH - FT. (M)

NOTE: Maximum Equivalent Vent Length (MEVL) includes standard and concentric vent termination and does NOT

include elbows. Use Table 3 - Deductions from Maximum Equivalent Vent Length to determine allowable vent length for each application.

Maximum Equivalent Vent Length – Feet

Unit Size	Pipe Dia. (in)	40,000'			60,000'				80,000					100,000				120,000'		
		1-1/2	2	2-1/2	1-1/2	2	2-1/2	3	1-1/2	2	2-1/2	3	4	2	2-1/2	3	4	2-1/2	3	4
Altitude (feet)	0-2000	40	155	185	20	100	175	200	15	55	130	175	200	20	80	175	200	10	75	185
	2001-3000	35	150	175	20	95	165	185	10	49	125	165	185	15	75	165	185	10	70	175
	3001-4000	30	135	160	16	90	155	175	10	49	115	155	175	15	75	155	175	5	65	165
	4001-4500	25	130	155	15	85	150	170	10	44	110	150	165	10	70	155	170	N/A	60	160
	4501-5000	25	125	145	15	80	145	165	10	44	110	145	160	10	65	150	165	N/A	60	160
	5001-6000	20	120	130	15	75	140	155	10	41	100	135	150	10	65	140	155	N/A	60	155
	6001-7000	15	110	120	13	70	130	145	N/A	38	90	125	140	10	60	135	145	N/A	50	140
	7001-8000	10	100	110	10	65	120	135	N/A	36	90	120	125	N/A	55	125	135	N/A	46	130
	8001-9000	10	90	95	5	60	115	125	N/A	33	80	110	115	N/A	50	115	125	N/A	43	120
	9001-10000	5	80	85	N/A	55	105	115	N/A	30	75	100	105	N/A	45	100	115	N/A	39	115

Maximum Equivalent Vent Length – Meters

Unit Size	Pipe Dia. (mm)	40,000'			60,000'				80,000					100,000				120,000'		
		38	51	64	38	51	64	76	38	51	64	76	102	51	64	76	102	64	76	102
Altitude (meters)	0-610	12.1	47.2	56.3	6.0	30.4	53.3	60.9	4.5	16.7	39.6	53.3	60.9	6.0	24.3	53.3	60.9	3.0	22.8	56.3
	611-914	10.6	45.7	53.3	6.0	28.9	50.2	56.3	3.0	14.9	38.1	50.2	56.3	4.5	22.8	50.2	56.3	3.0	21.3	53.3
	915-1219	9.1	41.1	48.7	4.8	27.4	47.2	53.3	3.0	14.9	35.0	47.2	53.3	4.5	22.8	47.2	53.3	1.5	19.8	50.2
	1220-1370	7.6	39.6	47.2	4.5	25.9	45.7	51.8	3.0	13.4	33.5	45.7	50.2	3.0	21.3	47.2	51.8	N/A	18.2	48.7
	1371-1524	7.6	38.1	44.1	4.5	24.3	44.1	50.2	3.0	13.4	33.5	44.1	48.7	3.0	19.8	45.7	50.2	N/A	18.2	48.7
	1525-1829	6.0	36.5	39.6	4.5	22.8	42.6	47.2	3.0	12.4	30.4	41.1	45.7	3.0	19.8	42.6	47.2	N/A	18.2	47.2
	1830-2134	4.5	33.5	36.5	3.9	21.3	39.6	44.1	N/A	11.5	27.4	38.1	42.6	3.0	18.2	41.1	44.1	N/A	15.2	42.6
	2135-2438	3.0	30.4	33.5	3.0	19.8	36.5	41.1	N/A	10.9	27.4	36.5	38.1	N/A	16.7	38.1	41.1	N/A	14.0	39.6
	2439-2743	3.0	27.4	28.9	1.5	18.2	35.0	38.1	N/A	10.0	24.3	33.5	35.0	N/A	15.2	35.0	38.1	N/A	13.1	36.5
	2744-3048	1.5	24.3	25.9	N/A	16.7	32.0	35.0	N/A	9.1	22.8	30.4	32.0	N/A	13.7	30.4	35.0	N/A	11.8	35.0

1. Inducer Outlet Restrictor disk (P/N 337683-401; 1.25-in. (32 mm) Dia.) shipped in the loose parts bag or available through Replacement Components required under 10-ft. (3 M) TEVL in all orientations. Required for installations from 0 - 2000 (0 to 610 M) above sea level. Failure to use an outlet restrictor may result in flame disturbances or flame sense lock-out.
2. Inducer Outlet Restrictor disk (P/N 337683-401; 1.25-in. (32 mm) Dia.) available through Replacement Components required for less than 5-ft. (1.5 M) TEVL in downflow and horizontal orientations only. Required for installations from 0 - 2000 (0 to 610 M) above sea level.
3. Inducer Outlet Restrictor disk (P/N 337683-402; 1.50-in. (38 mm) Dia.) available through Replacement Components required for less than 5-ft. (1.5 M) TEVL in downflow and horizontal orientations only. Required for installations from 0 - 2000 (0 to 610 M) above sea level.

MAXIMUM EQUIVALENT VENT LENGTH - FT. (M)

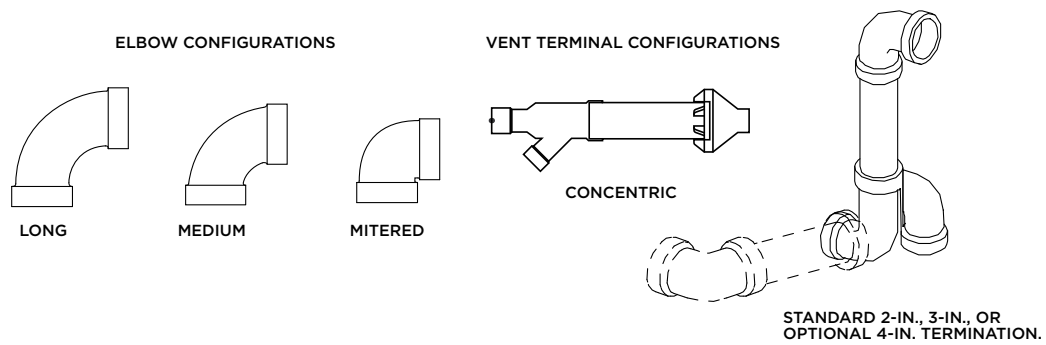


Table 3 - Deductions from Maximum Equivalent Vent Length - Ft. (M)

Pipe Diameter (in):	1-1/2		2		2-1/2		3		4	
Mitered 90° Elbow	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)
Medium Radius 90° Elbow	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)
Long Radius 90° Elbow	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)
Mitered 45° Elbow	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)
Medium Radius 45° Elbow	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)
Long Radius 45° 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	N/A	N/A	0	(0.0)	N/A	N/A	0	(0.0)	N/A	N/A
Standard Vent Termination	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)

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 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.

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 equivalent 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** that one 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. (640M). Venting system includes **FOR EACH PIPE:**

70 feet (22 M) of vent pipe, 65 feet (20 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" (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					70 ft. (22 M)	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3	x	3 ft. (0.9 M)	=	9 ft. (2.7 M)	From Table 3
Add equiv length of (2) 45° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	2	x	1.5 ft. (0.5 M)	=	3 ft. (0.9 M)	From Table 3
Add equiv length of factory concentric vent term					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)					82 ft. (25 M)	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)					95 ft. (29 M)	For 2" pipe from Table 1
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. (640M). Venting system includes **FOR EACH PIPE:**

100 feet (30 M) of vent pipe, 95 feet (29 M) of combustion air inlet pipe, (3) 90° long-radius elbows, and a polypropylene concentric vent kit. Also includes 20 feet

(6.1 M) of flexible polypropylene vent pipe, included within the 100 feet (30 M) of vent pipe.

VERIFY FROM POLYPROPYLENE VENT MANUFACTURER'S INSTRUCTIONS for the multiplier correction for flexible vent pipe.

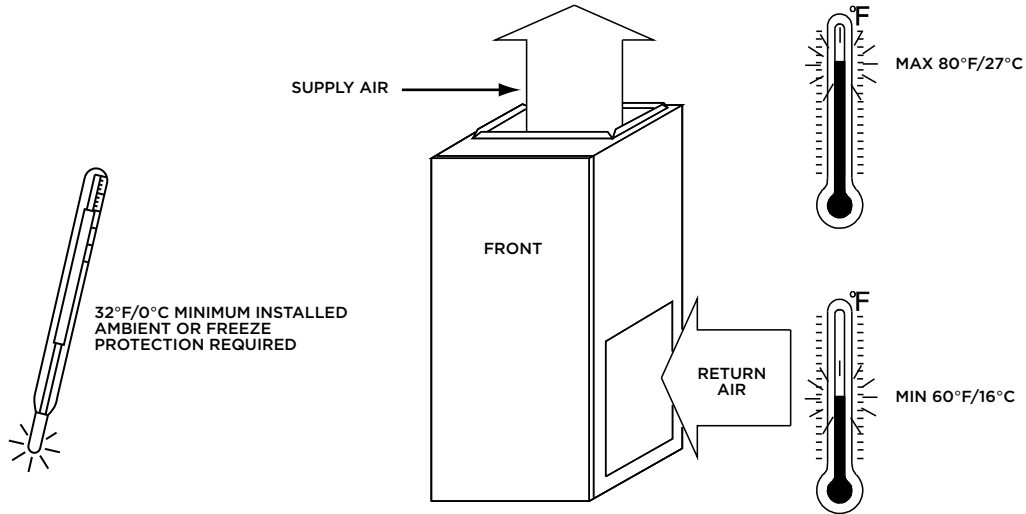
Can this application use 60mm o.d. (2") polypropylene vent piping? If not, what size piping can be used?

Measure the required linear length of RIGID air inlet and vent pipe; insert the longest of the two here: 100 ft. Of rigid pipe – 20 ft. Of flexible pipe					80 ft. (24 M)	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3	x	5 ft. (1.5 M)	=	15 ft. (4.6 M)	Example from polypropylene vent manufacturer's instructions, Verify from vent manufacturer's instructions.
Add equiv length of 45° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	0	x		=	0 ft. (0 M)	
Add equiv length of factory concentric vent term	9	x	3.3 ft (0.9 M)	=	30 ft. (9 M)	
Add correction for flexible vent pipe, if any	2*	x	20 ft. (6.1 M)	=	40 ft. (12.2 M)	
* VERIFY FROM VENT MANUFACTURER'S INSTRUCTIONS; For example only, assume 1 meter of flexible 60mm (2") or 80mm (3") polypropylene pipe equals 2.0 meters (6.5 ft.) of PVC/ABS pipe.						
Total Equivalent Vent Length (TEVL)					165 ft. (50 M)	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)					95 ft. (29 M)	For 2" pipe from Table 2
Is TEVL less than MEVL?					NO	Therefore, 60mm (2") pipe may NOT be used; try 80mm (3")
Maximum Equivalent Vent Length (MEVL)					185 ft. (57 M)	For 3" pipe from Table 2
Is TEVL less than MEVL?					YES	Therefore, 80mm (3") pipe MAY be used

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(13°C) db such as when used with a night setback

thermometer. Return-air temperature must not exceed 80°F(27°C) db. Failure to follow these return air limits may affect reliability of heat exchangers, motors and controls.

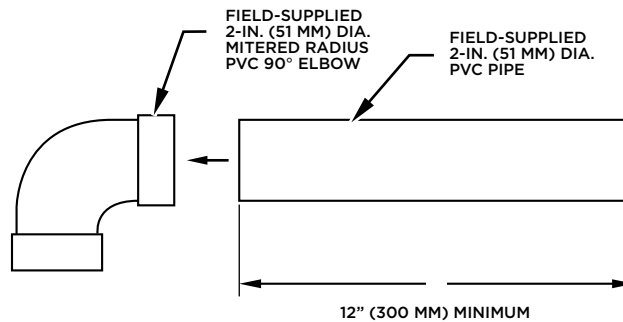


MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS

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)

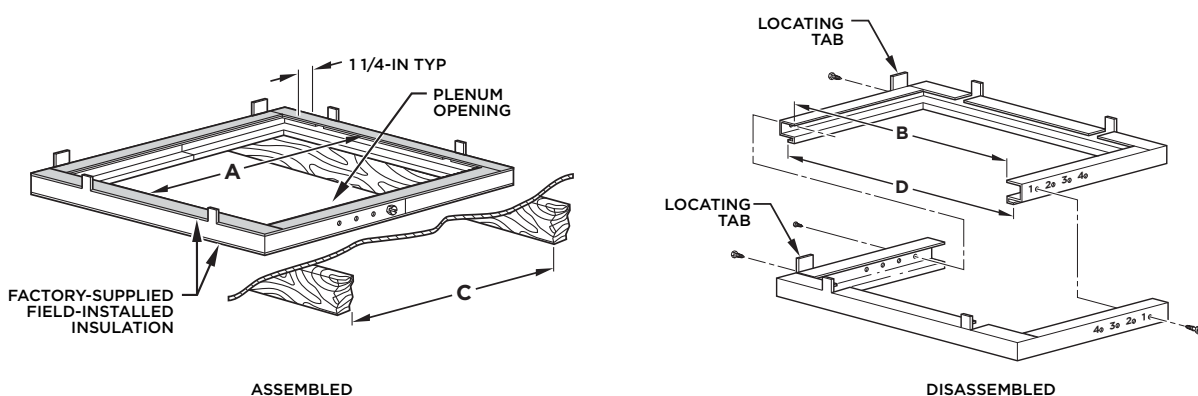
* Recommended **Consult your local building codes

COMBUSTION-AIR PIPE FOR NON-DIRECT (1-PIPE) VENT APPLICATION



Note: See installation instructions for specific venting configurations.

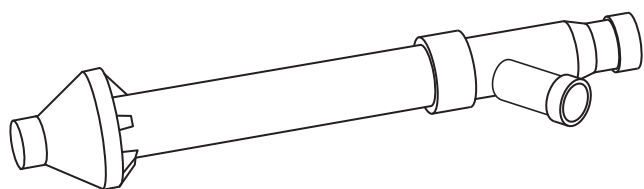
DOWNFLOW SUBBASE



DIMENSIONS (IN. / MM)

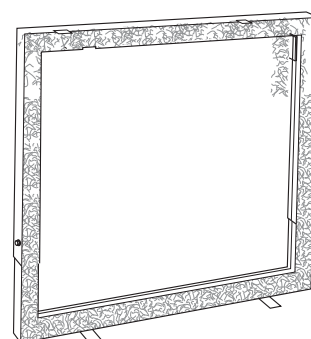
FURNACE CASING WIDTH	FURNACE IN DOWNFLOW APPLICATION	PLENUM OPENING*		FLOOR OPENING		HOLE NO. FOR WIDTH ADJUSTMENT
		A	B	C	D	
14-3/16 (360)	Furnace with or without Cased Coil Assembly or Coil Box	11-3/16 (322)	19 (483)	13-7/16 (341)	20-5/8 (600)	4
17-1/2 (445)	Furnace with or without Cased Coil Assembly or Coil Box	15-1/8 (384)	19 (483)	16-3/4 (426)	20-5/8 (600)	3
21 (533)	Furnace with or without Cased Coil Assembly or Coil Box	18-5/8 (396)	19 (483)	20-1/4 (514)	20-5/8 (600)	2
24-1/2 (622)	Furnace with or without Cased Coil Assembly or Coil Box	22-1/8 (562)	19 (483)	23-3/4 (603)	20-5/8 (600)	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

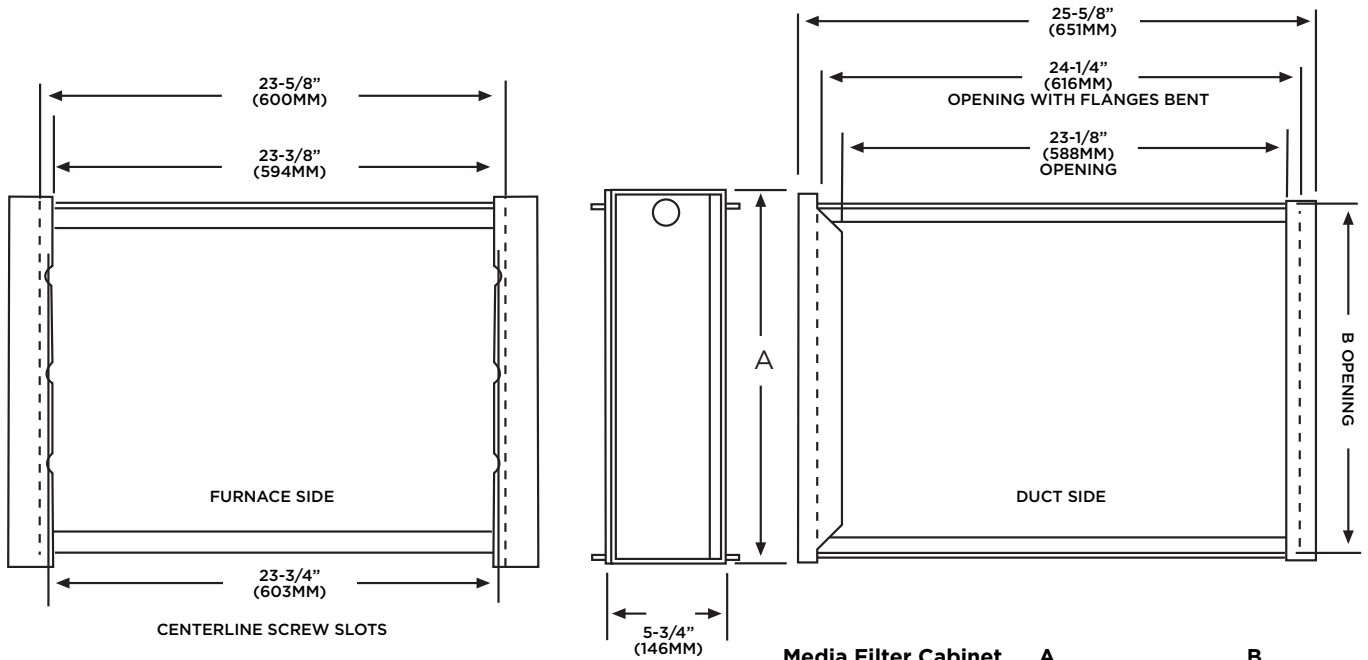
A concentric vent kit allows vent and combustion-air pipes to terminate through a single exit in a roof or side wall. One pipe runs inside the other allowing venting through the inner pipe and combustion air to be drawn in through the outer pipe.



Downflow Subbase

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 cased coil is used. It is CSA design certified for use with a branded furnaces when installed in downflow applications.

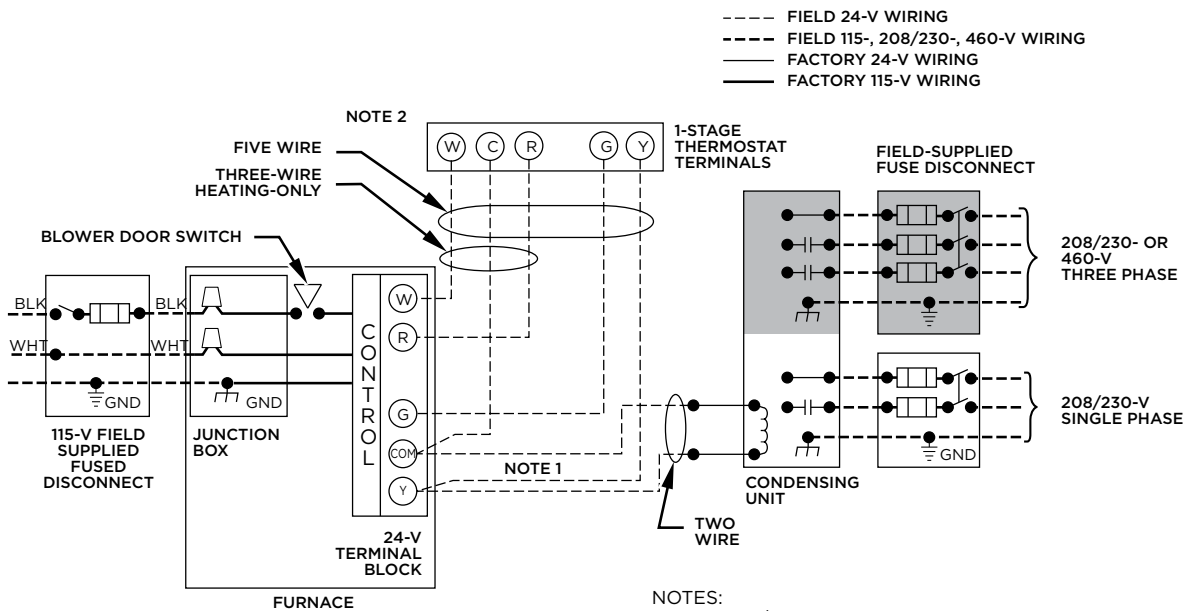
MEDIA FILTER CABINET



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

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

TYPICAL WIRING SCHEMATIC

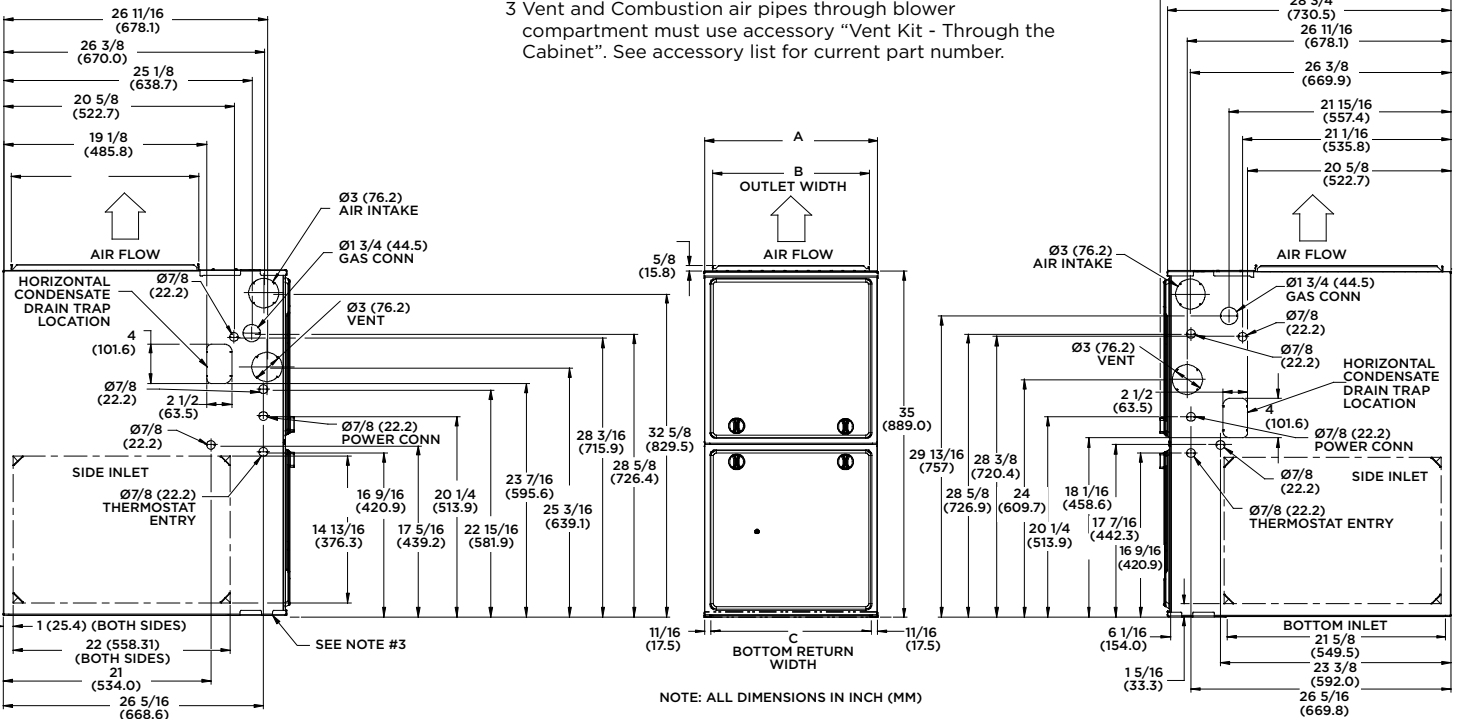
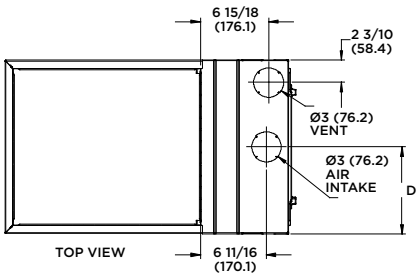


NOTES:
 1 Connect Y/Y2-terminal as shown for proper operation.
 2 Some thermostats require a "C" terminal connection as shown.
 3 If any of the original wire, as supplied, must be replaced, use same type or equivalent wire.

DIMENSIONAL DRAWING

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. (406mm) round or 14 1/2 x 12-in. (368 x 305mm) rectangle.
 - b. For 1200 CFM-20-in. (508mm) round or 14 1/2 x 19 1/2-in. (368 x 495mm) rectangle.
 - c. For 1600 CFM-22-in. (559mm) 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.



FURNACE SIZE	A CABINET WIDTH	B OUTLET WIDTH	C BOTTOM INLET WIDTH	D AIR INTAKE	SHIP WT. LB (KG)
30040A	14-3/16 (361)	12-1/2 (319)	12-9/16 (322)	7-18 (181)	123 (55.8)
36040B	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	133 (60.3)
36060A	14-3/16 (361)	12-1/2 (319)	12-9/16 (322)	7-1/8 (181)	132 (59.9)
42060B	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	139 (63.0)
48080B	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	147 (66.7)
60080C	21 (533)	19-3/8 (492)	19-1/2 (495)	10-1/2 (267)	156 (70.7)
60100C	21 (533)	19-3/8 (492)	19-12 (495)	10-1/2 (267)	170 (77.1)
66120D	24-1/2 (622)	22-7/8 (581)	23 (584)	12-1/4 (311)	190 (86.2)

General System Description

Furnish a _____ 4-way Multi-position gas-fired condensing furnace for use with natural gas or propane (factory--authorized conversion kit required for propane).

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.

Primary Heat Exchangers

- Primary heat exchangers shall be 3-Pass corrosion-resistant 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 low heat, high heat, 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 a 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.

Warranty (for inclusion by specifying engineer)

- U.S. and Canada only.

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 600-1200 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 two--speed PSC design.



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