

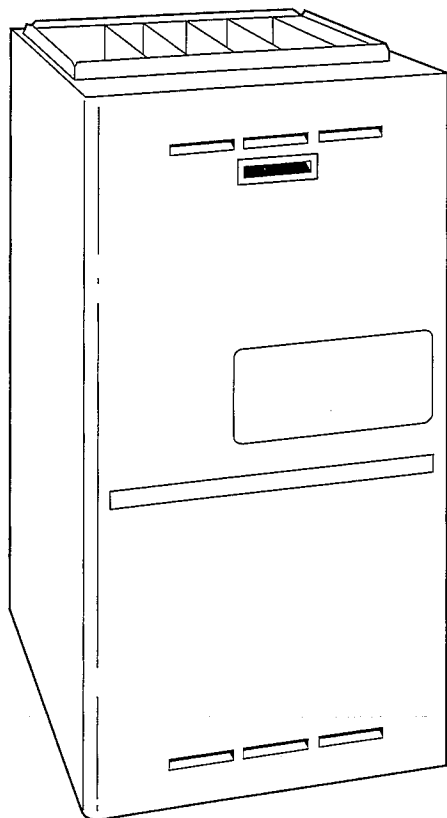


Heating & Cooling

DELUXE 4-WAY MULTIPOISE VARIABLE-CAPACITY CONDENSING GAS FURNACE

355MAV

Sizes 040, 060, 080, and 100
Series B



Building on our industry-leading condensing furnace technology, the model 355MAV is our greatest innovation in comfort control and operating efficiency.

Modern technology provides the Plus 90i™ design with great reliability, high efficiency, and ultra-quiet operation. Efficiencies are up to 96.6% Annual Fuel Utilization Efficiency (AFUE).

The model 355MAV Plus 90i Condensing Gas-Fired Furnace incorporates the electronic intelligence of a microprocessor. The microprocessor control center interacts with a 2-stage gas valve, a variable-speed inducer motor, and a variable-speed blower motor, allowing the Plus 90i to adjust combustion air, firing rate, and airflow to maintain peak efficiency throughout the operating cycle.

The variable-capacity system provides the ultimate in heating comfort while minimizing electrical and gas consumption.

FEATURES

4-Way Multipoise Design—Allows the model 355MAV to be installed in an upflow, downflow, or horizontal orientation. Simple changes in the drain connections are all it takes to change to any of the 4 possible positions.

The model 355MAV is available in 4 heat/airflow combinations. When combined with the 4-way design, the 355MAV allows for 16 different application types.

ICM Electronic Variable-Speed Motors—Special motors (Integrated Control and Motor) provide variable-speed operation to improve the comfort levels in the home. They are also more economical to operate than standard motors. Variable-speed motors have the ability to adapt to changing conditions and provide consistent, comfortable, and quiet heating. Motors and electronic controls are covered by a 5-year Limited Warranty.

2-Stage Gas Valve—The 355MAV has a special 2-stage gas valve to vary the amount of gas being used. This intelligent heating machine constantly monitors operating conditions to adjust for greater efficiency and comfort. The control reserves the high-firing rate for times when the heating demand is high.

Integrated Control Center—The microprocessor controls the Plus 90i to provide superior comfort. The integrated control center has these additional features:

- dedicated terminals for electrical connections of electronic air cleaners or humidifiers
- adjustable blower off time
- LED fault code display to aid in servicing
- selectable airflow to match cooling unit
- emergency heat setting
- setting to increase airflow for bypass-type humidifier
- selectable constant fan airflow
- a multizone setting for use with zoned air distribution systems
- a special dehumidification terminal to provide greater humidity control in summer months

Sealed Combustion (Direct Vent) System—Enclosed burner assembly isolates operating noise without the expense of sound-deadening devices. With the sealed combustion (direct vent) system, outdoor air is brought directly into the combustion chamber, cutting cold air infiltration into the structure and reducing heat loss.

3-Pass Primary Heat Exchangers—This design accelerates heat transfer and extracts heat that conventional heat exchangers waste up the flue. The primary heat exchanger is made of aluminized steel for corrosion resistance.

Flow-Through Secondary Heat Exchangers—Each cell is laminated with our patented Everlastic™ Polypropylene for greater resistance to corrosion and is epoxy coated externally to prevent oxidation. This breakthrough in heating technology (Patent No. 4,738,307) helps extend the life of the furnace for years of reliable performance. The heat exchangers are positioned in the furnace to extract additional heat from the combustion products regardless of furnace orientation.

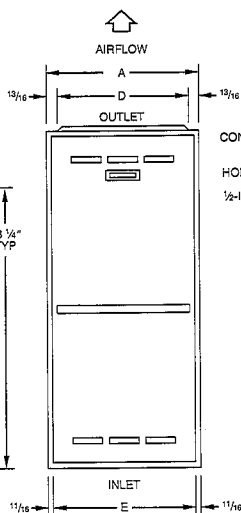
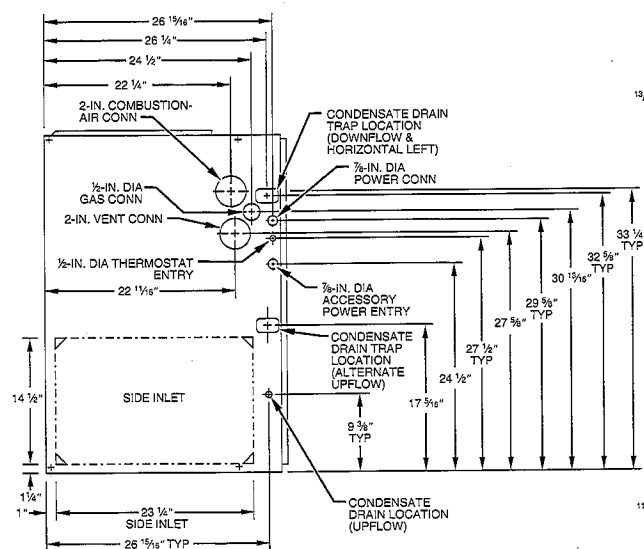
Warranty—Limited Lifetime Warranty on the heat exchangers for the lifetime of the original owner in single family residence; 20 years in other residential and commercial applications. Contact your dealer for details. Five-year Warranty on microprocessor control, variable-speed motors, and a 3-year Warranty on hot surface ignitor.

Monoport Inshot Burners—Produce precise air-to-gas mixture for clean burning. The large monoport on the inshot or injection-type burners seldom, if ever, needs cleaning.

Combustion Air and Ventilation—The 355MAV design is so advanced that Schedule 40PVC, PVC-DWV, SDR-21 PVC, SDR-26 PVC, ABS-DWV, or ABS-F628 Schedule 40 pipe can be used to bring outdoor air into the furnace for combustion. The extracted heat lowers the temperature of the combustion products (typically below 115°F) to a point that PVC pipe can also be used for venting combustion products outside the structure. The combustion-air and vent pipes can terminate through a side wall or through the roof when using our approved vent termination kits.

Fully-Insulated Casing—Foil-faced insulation in the heat exchanger section cuts the heat loss; double-density insulation in the blower section reduces noise levels. The casing also has the required openings for left- or right-side connection of gas, electric, drain, and vent connections.

Certifications—The 355MAV units are A.G.A. and C.G.A. design certified for use with natural and propane gases, as well as GAMA efficiency rating certified. The model 355MAV meets the oxides of nitrogen (NO_x) emission levels set by South Coast and Bay Area Air Quality Management Districts in California.



- NOTES:** Minimum return-air opening at furnace:
1. For 800 CFM—16-in. round or 14 1/2 x 12-in. rectangle.
 2. For 1200 CFM—20-in. round or 14 1/2 x 19 1/2-in. rectangle.
 3. For 1600 CFM—22-in. round or 14 1/2 x 23 1/4-in. rectangle.
 4. For airflow requirements above 1800 CFM, use both side inlets, a combination of 1 side inlet and the bottom, or the bottom only.

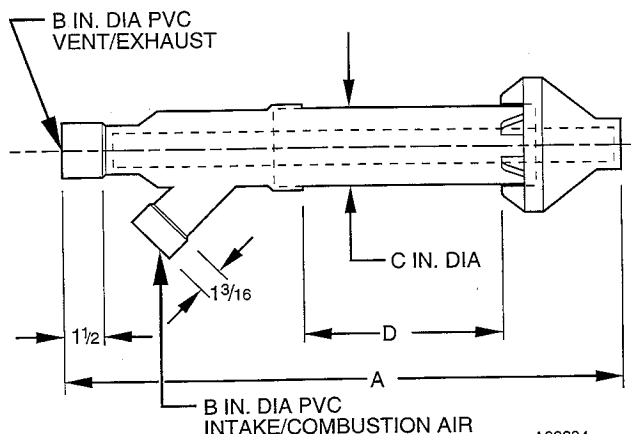
A93023

DIMENSIONS (IN.)

UNIT SIZE	A	D	E	SHIP. WEIGHT
042040*	24-1/2*	22-7/8*	22*	205
042060	17-1/2	15-7/8	16	170
042080	21	19-3/8	18-1/2	182
060100	21	19-3/8	18-1/2	203

*These dimensions reflect the wider casing for the 96.6% AFUE furnace.

CONCENTRIC VENT



DIMENSIONS (IN.)

PART NO.	A*	B	C	D†
KGAVT0501CVT	41-1/8	2	3-1/2	27-1/4
KGAVT0601CVT	46-3/4	3	4-1/2	31-7/8

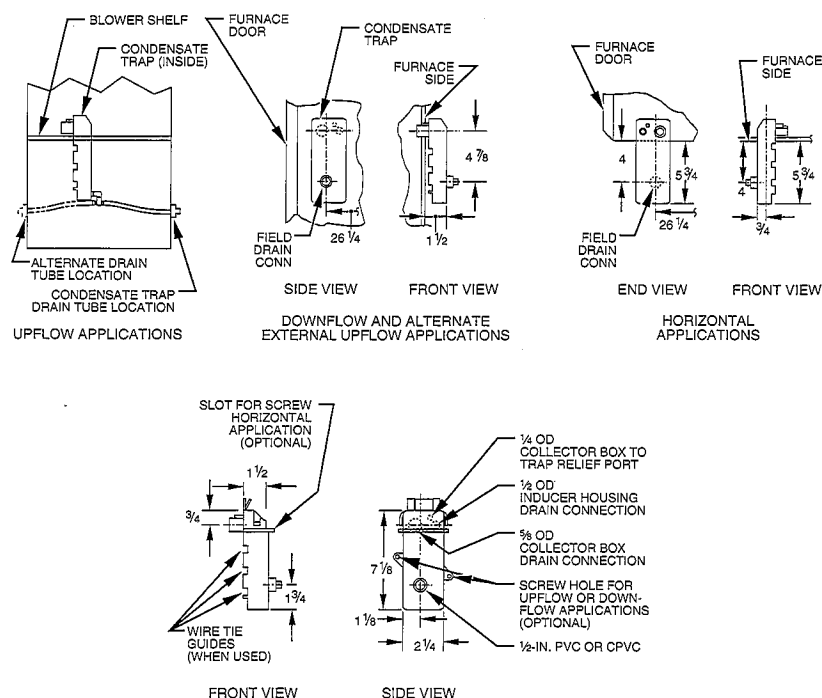
* Dimension A will change accordingly as dimension D is lengthened or shortened.

† Dimension D may be lengthened to 60 in. maximum. Dimension D may also be shortened by cutting the pipes provided in the kit to 12 in. minimum.



A93294

CONDENSATE TRAP



A93026

This unit complies with CAN/CGA 2.3 M86, CAN/CSA C22.2 No. 0-M91, CSA C22.2 No.3-1988 standards.

This appliance is equipped only for altitudes 0 - 2,000 ft (0-610 m) for use with natural gas and propane. A conversion kit, supplied by the manufacturer, shall be used to convert to the alternate fuel or elevation.

This direct-vent, forced-air furnace is for indoor installation in a building constructed on site. For installation in alcove or closet at minimum clearances from combustible material as shown below, minimum front clearance for service is 30 inches. (762 mm).

This furnace is for use with schedule-40 PVC, PVC-DWV, or ABS-DWV pipe, and must not be vented in common with other gas-fired appliances. Construction through which vent/air intake pipes may be installed is maximum 24 inches (600 mm), minimum 3/4 inches (19 mm) thickness (including roofing materials).

Special venting system required. In Canada use certified venting system specified by furnace manufacturer. See Installation Instructions provided with furnace. Flue gas temperature 131°F (55°C) vent pressure positive.

MINIMUM CLEARANCE TO COMBUSTIBLE MATERIAL

INCHES	TOP	BOTTOM	SIDES	BACK	FRONT	VENT	
	1	0	0	0	3	0	UPFLOW
	1	++	0	0	3	0	DOWNFLOW
	1	0+	1 *	0	3	0	HORIZONTAL

++ For Installation on combustible floors only when installed on special base No. KGASB0201ALL.

* Clearance shown is for air inlet and air outlet end.

Horizontal position: Line contact is permissible only between lines formed by intersections of top and two sides of furnace jacket, and building joists, studs, or framing.

+ 120,000 BTU Input Furnaces require 1 inch bottom clearance to combustible materials.

A93060



MEETS DOE RESIDENTIAL CONSERVATION SERVICES PROGRAM STANDARDS.

Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

SPECIFICATIONS

UNIT SIZE		042040	042060	042080	060100
RATINGS AND PERFORMANCE					
Input Btuh (Low/High)*		26,000/40,000	39,000/60,000	52,000/80,000	65,000/100,000
Output Capacity Btuh (Low/High)†		ICS 25,000/39,000	37,000/57,000	49,000/76,000	61,000/95,000
AFUE%‡		ICS 96.6	94.0	94.0	94.0
Certified Temperature Rise Range °F (Low/High)		35—45/40—50	60—70/50—60	60—70/50—60	60—70/60—70
Certified External Static Pressure (ESP) (In. wc)	Heating	0.10	0.12	0.15	0.20
	Cooling	0.50	0.50	0.50	0.50
Airflow, CFM (Low/High)‡	Heating	565 (650†††)/780	515 (590†††)/925	690 (795†††)/1235	860 (990†††)/1320
	Cooling (Max)	1400	1400	1400	2000
ELECTRICAL					
Unit Volts—Hertz—Phase		115—60—1			
Operating Voltage Range Min—Max††		104—127			
Maximum Unit Amps		9.0	9.0	9.0	13.0
Unit Ampacity†††		12.0	12.0	12.0	18.1
Minimum Wire Size, AWG		14	14	14	12
Maximum Wire Length (Ft)**		30	30	30	32
Maximum Fuse Size or Ckt Bkr Amps‡‡		15	15	15	20
Transformer (24v)		40VA			
External Control	Heating	25VA			
	Cooling	34VA			
Power Available		Standard			
Accessory Relay		Standard			
CONTROLS					
Limit Control		SPST			
Heating Blower Control (Off-Delay)		Selectable 90, 135, 180 or 225 Sec Intervals			
Burners (Monoport)		2	3	4	5
Gas Connection Size		1/2-in. NPT			
GAS CONTROLS					
Gas Valve (Redundant 2-Stage)	Manufacturer	White-Rodgers			
	Minimum Inlet Pressure (In. wc)	4.5 (Natural Gas)			
	Maximum Inlet Pressure (In. wc)	13.6 (Natural Gas)			
Ignition Device		Hot Surface			
BLOWER DATA					
Direct-Drive Motor HP (ICM)		1/2	1/2	1/2	1
Motor Full Load Amps		7.0	7.0	7.0	12.0
RPM (Nominal)—Speeds		Variable 300—1300			
Blower Wheel Diameter x Width (In.)		11 x 10	10 x 7	11 x 10	11 x 10
Filter Size (In.)—Permanent Washable		(1) 16 x 25 x 1	(1) 16 x 25 x 1	(1) 20 x 25 x 1	(2) 16 x 25 x 1
DEALER-INSTALLED OPTIONS					
Electronic Air Cleaner***		Model 901K			
Humidifier		Model 913B			
Side Filter Rack*** (Upflow only)		KGAFR0206ALL			
Return-Air Drop Duct (Upflow only)		KGARP0201ALL			
Downflow Base (For Combustible Floors, With or Without A/C Coil)		KGASB0201ALL			
Gas Conversion Kit—Natural-to-Propane		KGANP24012SP			
Gas Conversion Kit—Propane-to-Natural		KGAPN20012SP			
Vent Termination Kit (Bracket Only for 2 Pipes)		2-in.—KGAVT0101BRA		3-in.—KGAVT0201BRA	
Concentric Vent Termination Kit (Single Pipe)		2-in.—KGAVT0501CVT		3-in.—KGAVT0601CVT	
Side-Wall Vent Terminal Cover		2-in.—KGAVT0301COV		3-in.—KGAVT0401COV	

* Gas input ratings are certified for elevations to 2000 ft. For elevations above 2000 ft, reduce ratings 4% for each 1000 ft above sea level. In Canada, from 2000 to 4500 ft above sea level, derate the unit 10%.

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

‡ Air delivery above 1800 CFM requires that both sides, a combination of 1 side and bottom, or bottom only of the furnace be used for return air. A filter is required for each return-air supply.

** Length shown is measured 1 way along wire path between unit and service panel for maximum 2% voltage drop.

†† Permissible voltage limits for proper furnace operation.

‡‡ Time-delay fuse is recommended.

*** An external filter is required for right-side return-air installations.

††† Low heat CFM when bypass humidifier switch (SW3) on control center is used.

‡‡‡ Unit ampacity = 125% of largest component's full load amps plus 100% of all other potential operating component's (EAC, humidifier, etc.).

ICS—Isolated Combustion System.

ICM—Integrated Control and Motor.

COMBUSTION-AIR AND VENT PIPING
MAXIMUM ALLOWABLE PIPE LENGTH (FT)

ALTITUDE	UNIT SIZE	TERMINATION TYPE	PIPE SIZE DIA (IN.)*	NUMBER OF 90° ELBOWS					
				1	2	3	4	5	6
0 to 2000	042040	2 Pipe or 2-In. Concentric	1-1/2	50	45	40	35	30	25
			2	70	70	70	70	70	70
	042060	2 Pipe or 2-In. Concentric	1-1/2	50	45	40	35	30	25
			2	70	70	70	70	70	70
	042080	2 Pipe or 2-In. Concentric	1-1/2	30	25	20	15	10	5
			2	70	70	70	70	70	70
	060100	2 Pipe or 2-In. Concentric	2	45	40	35	30	25	20
			2-1/2	70	70	70	70	70	70
2001 to 3000	042040	2 Pipe or 2-In. Concentric	1-1/2	45	40	35	30	25	20
			2	70	70	70	70	70	70
	042060	2 Pipe or 2-In. Concentric	1-1/2	45	40	35	30	25	20
			2	70	70	70	70	70	70
	042080	2 Pipe or 2-In. Concentric	1-1/2	26	21	16	11	6	NA
			2	70	70	70	70	70	70
	060100	2 Pipe or 2-In. Concentric	2	40	35	30	25	20	15
			2-1/2	70	70	70	70	70	70
3001 to 4000	042040	2 Pipe or 2-In. Concentric	1-1/2	42	37	32	27	22	17
			2	70	70	70	70	70	70
	042060	2 Pipe or 2-In. Concentric	1-1/2	42	37	32	27	22	17
			2	70	70	70	70	70	70
	042080	2 Pipe or 2-In. Concentric	1-1/2	25	20	15	10	5	NA
			2	70	70	70	70	70	70
	060100	2 Pipe or 2-In. Concentric	2	38	33	28	23	18	13
			2-1/2	70	70	70	70	70	70
4001 to 5000†	042040	2 Pipe or 2-In. Concentric	1-1/2	40	35	30	25	20	15
			2	70	70	70	70	70	70
	042060	2 Pipe or 2-In. Concentric	1-1/2	40	35	30	25	20	15
			2	70	70	70	70	70	70
	042080	2 Pipe or 2-In. Concentric	1-1/2	23	18	13	8	NA	NA
			2	70	70	70	70	70	68
	060100	2 Pipe or 2-In. Concentric	2	36	31	26	21	16	11
			2-1/2	70	70	70	70	70	70
5001 to 6000†	042040	2 Pipe or 2-In. Concentric	1-1/2	37	32	27	22	17	12
			2	70	70	70	70	70	70
	042060	2 Pipe or 2-In. Concentric	1-1/2	37	32	27	22	17	12
			2	70	70	70	70	70	70
	042080	2 Pipe or 2-In. Concentric	1-1/2	22	17	12	7	NA	NA
			2	70	70	70	70	68	63
	060100	2 Pipe or 2-In. Concentric	2	33	18	23	18	13	8
			2-1/2	70	70	70	70	70	70
6001 to 7000†	042040	2 Pipe or 2-In. Concentric	1-1/2	35	30	25	20	15	10
			2	70	70	68	67	66	64
	042060	2 Pipe or 2-In. Concentric	1-1/2	35	39	25	29	15	10
			2	70	70	68	67	66	64
	042080	2 Pipe or 2-In. Concentric	1-1/2	20	15	10	5	NA	NA
			2	70	70	68	67	62	57
	060100	2 Pipe or 2-In. Concentric	2	31	26	21	16	11	6
			2-1/2	70	70	68	67	66	64
7001 to 8000†	042040	2 Pipe or 2-In. Concentric	1-1/2	32	27	22	17	12	7
			2	66	65	63	62	60	59
	042060	2 Pipe or 2-In. Concentric	1-1/2	32	27	22	17	12	7
			2	66	65	63	62	60	59
	042080	2 Pipe or 2-In. Concentric	1-1/2	18	13	8	NA	NA	NA
			2	66	65	63	62	57	52
	060100	2 Pipe or 2-In. Concentric	2	29	24	19	14	9	NA
			2-1/2	66	65	63	62	60	59

See notes on page 6.

MAXIMUM ALLOWABLE PIPE LENGTH (FT) Continued

ALTITUDE	UNIT SIZE	TERMINATION TYPE	PIPE SIZE DIA (IN.)*	NUMBER OF 90° ELBOWS					
				1	2	3	4	5	6
8001 to 9000†	042040	2 Pipe or 2-In. Concentric	1-1/2	30	25	20	15	10	5
			2	62	60	58	56	55	53
	042060	2 Pipe or 2-In. Concentric	1-1/2	30	25	20	15	10	5
			2	62	60	58	56	55	53
	042080	2 Pipe or 2-In. Concentric	1-1/2	17	12	7	NA	NA	NA
			2	62	60	58	56	51	46
	060100	2 Pipe or 2-In. Concentric	2	27	22	17	12	7	NA
			2-1/2	62	60	58	56	55	53
9001 to 10,000†	042040	2 Pipe or 2-In. Concentric	1-1/2	27	22	17	12	7	NA
			2	57	55	53	51	49	47
	042060	2 Pipe or 2-In. Concentric	1-1/2	27	22	17	12	7	NA
			2	57	55	53	51	49	47
	042080	2 Pipe or 2-In. Concentric	1-1/2	15	10	5	NA	NA	NA
			2	57	55	53	51	49	47
	060100	2 Pipe or 2-In. Concentric	2	24	19	14	9	NA	NA
			2-1/2	57	55	53	51	49	47

* Disk usage—Unless otherwise stated, use perforated disk assembly (factory supplied in loose parts bag).

† Vent sizing for Canadian installations above 4500 ft (1730m) above sea level are subject to acceptance by the local authorities having jurisdiction.

NA—Not Allowed; pressure switch will not make.

NOTES:

1. Do not use pipe size greater than those specified in table or incomplete combustion, flame disturbance, or flame sense lockout may occur.
2. Size both the combustion-air and vent pipe independently, then use the larger diameter for both pipes.
3. Assume two 45° elbows equal one 90° elbow. Long radius elbows are desirable and may be required in some cases.
4. Elbows and pipe sections within the furnace casing and at the vent termination should not be included in vent length or elbow count.
5. The minimum pipe length is 5 ft for all applications.

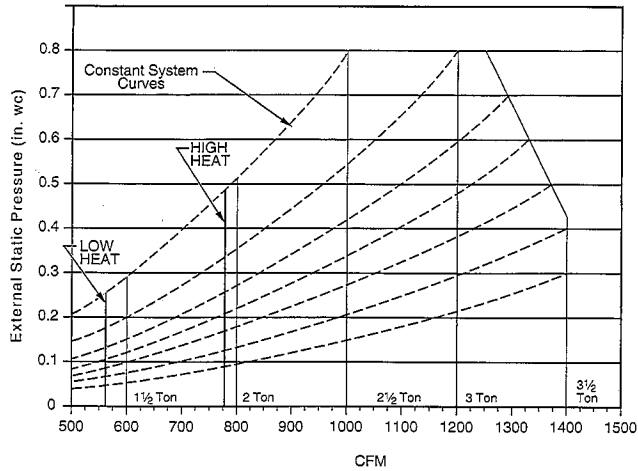
MAXIMUM ALLOWABLE EXPOSED VENT PIPE LENGTH (FT) WITH INSULATION IN WINTER DESIGN TEMPERATURE AMBIENT*

UNIT SIZE	WINTER DESIGN TEMP °F	MAXIMUM PIPE DIA (IN.)	INSULATION THICKNESS (IN.)†				
			0	3/8	1/2	3/4	1
042040	20	2	21	37	42	50	57
	0	2	10	22	25	30	35
	-20	2	5	14	17	21	25
042060	20	2	30	55	61	70	70
	0	2	16	33	38	46	53
	-20	2	9	23	26	33	38
042080	20	2	37	65	70	70	70
	0	2	20	39	45	55	63
	-20	2	11	27	31	39	45
060100	20	2-1/2	41	70	70	70	70
	0	2-1/2	21	42	48	59	68
	-20	2-1/2	11	28	33	41	49

* Pipe length (ft) specified for maximum vent pipe lengths located in unconditioned spaces. Vent pipes located in unconditioned space cannot exceed the total allowable pipe length as specified in maximum allowable pipe length table.

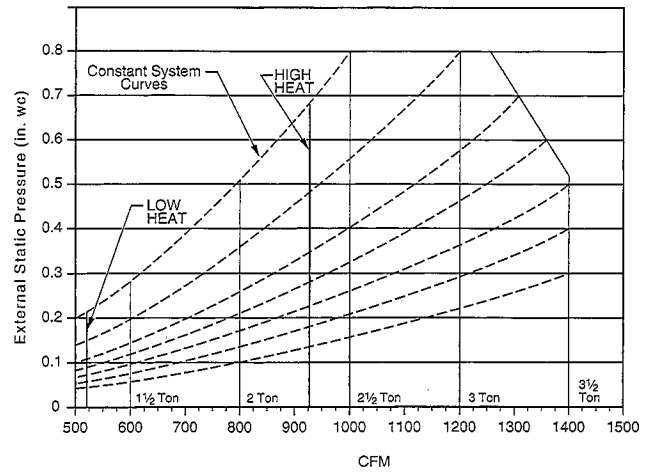
† Insulation thickness based on R value of 3.5 per in.

AIR DELIVERY CURVE—042040



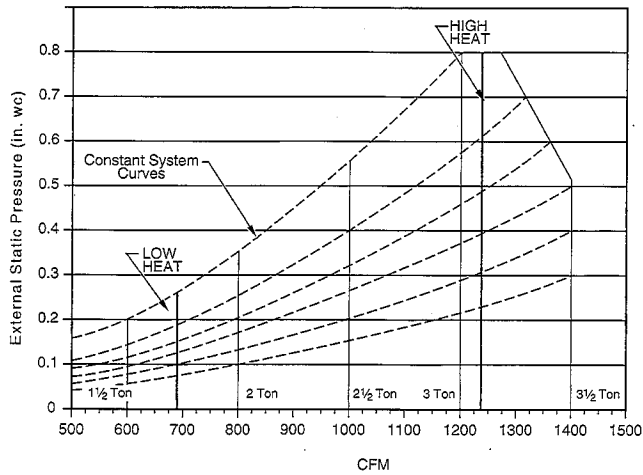
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AIR DELIVERY CURVE—042060



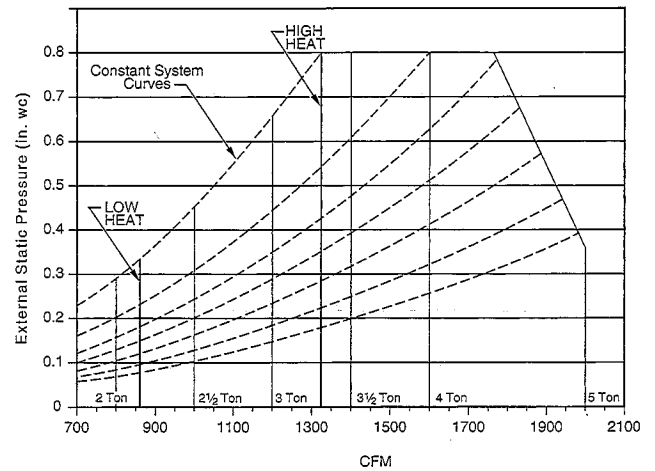
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AIR DELIVERY CURVE—042080



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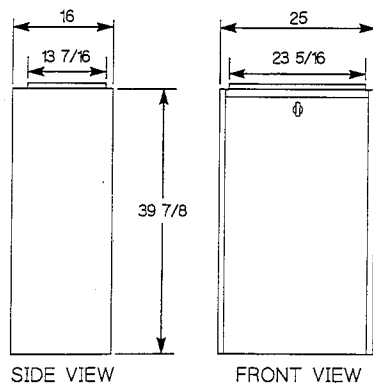
AIR DELIVERY CURVE—060100



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ACCESSORIES

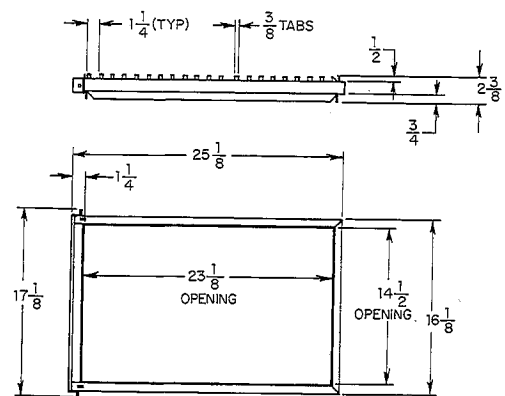
RETURN FILTER PLENUM*



A93078

*Includes two 20 x 25 x 1 in. washable filters.

SIDE FILTER RACK*



A80199

*Accepts one 16 x 25 x 1 in. filter.

AIR DELIVERY—CFM (With Filter)*

AIRFLOW CFM		OPERATIONAL EXTERNAL STATIC PRESSURE RANGE*
042040		
Low Heat	565 (650‡)	0—0.26
High Heat	780	0—0.49
1-1/2-Ton A/C Setting	600	0—0.29†
2-Ton A/C Setting	800	0—0.51
2-1/2-Ton A/C Setting	1000	0—0.80
3-Ton A/C Setting	1200	0—0.80
3-1/2-Ton A/C Setting	1400	0—0.50
042060		
Low Heat	551 (590‡)	0—0.27
High Heat	925	0—0.68
1-1/2-Ton A/C Setting	600	0—0.29†
2-Ton A/C Setting	800	0—0.51†
2-1/2-Ton A/C Setting	1000	0—0.80
3-Ton A/C Setting	1200	0—0.80
3-1/2-Ton A/C Setting	1400	0—0.50
042080		
Low Heat	690 (795‡)	0—0.26
High Heat	1235	0—0.80
1-1/2-Ton A/C Setting	600	0—0.20†
2-Ton A/C Setting	800	0—0.36†
2-1/2-Ton A/C Setting	1000	0—0.56†
3-Ton A/C Setting	1200	0—0.80†
3-1/2-Ton A/C Setting	1400	0—0.50
060100		
Low Heat	860 (990‡)	0—0.34
High Heat	1320	0—0.80
2-Ton A/C Setting	800	0—0.29†
2-1/2-Ton A/C Setting	1000	0—0.46†
3-Ton A/C Setting	1200	0—0.66†
3-1/2-Ton A/C Setting	1400	0—0.80
4-Ton A/C Setting	1600	0—0.80
5-Ton A/C Setting	2000	0—0.50

* Actual external static pressure (ESP) can be determined by using the fan laws (CFM² proportional to ESP); such as, a system with 925 CFM at 0.5 ESP would operate at cooling airflow of 800 CFM at 0.37 ESP and low-heating airflow of 515 CFM at 0.15 ESP. (See fan curves.)

† Ductwork must be sized for high-heating CFM within the operational range of ESP.

‡ Low heat CFM when bypass humidifier switch (SW3) on control center is used.



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

UNIT MUST BE INSTALLED IN ACCORDANCE
WITH INSTALLATION INSTRUCTIONS

Cancels: PDS 355M.40.1P