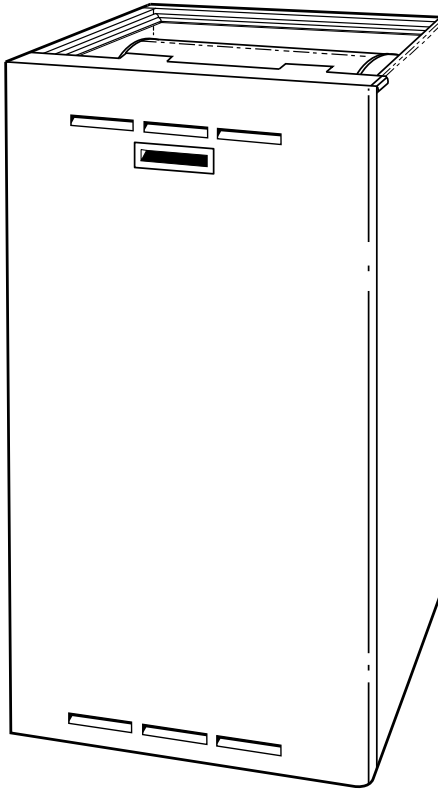




# DIRECT-VENT DOWNFLOW CONDENSING GAS FURNACE for MANUFACTURED HOUSING

## 351DAS

Size 080  
Series A



Utilizing the extensive resources available to Bryant, a new standard of excellence has been achieved with the model 351DAS Downflow Furnace for manufactured (mobile) or modular homes.

The model 351DAS is a unique downflow condensing furnace with features like no other product in its class. The 351DAS builds on the many Bryant successes in the furnace industry and establishes a new standard for high-efficiency gas furnaces.

### FEATURES

**Factory Configuration**—Factory configured for downflow applications in manufactured (mobile) or modular homes.

The model 351DAS is available in 3 heat/airflow combinations.

**Sealed Combustion (Direct-Vent) System**—Enclosed burner assembly isolates operating noise without the expense of sound deadening devices. The sealed combustion (direct-vent) system brings outdoor air directly into the combustion chamber, reducing infiltration of cold air 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 weld-free primary heat exchangers are 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. This breakthrough in heating technology helps extend the life of the furnace for years of trouble-free performance.

**Warranty**—Limited 20-year Warranty on the heat exchangers for the original owner in single family residence. Contact your dealer for details. Two-year limited parts and labor warranty on entire unit.

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

**Control Center**—The printed-circuit board and all internal wiring are factory installed. Convenient terminals permit quick-connection of a thermostat, a humidifier, an air cleaner, and air conditioning control circuits.

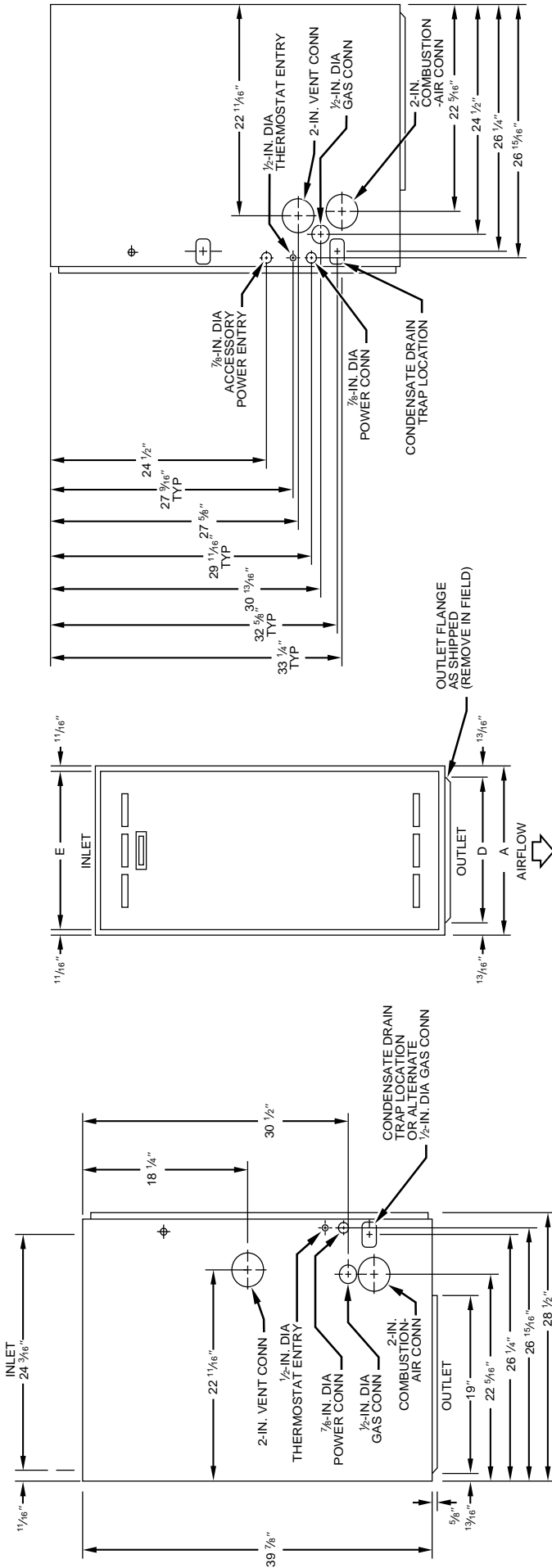
As an added feature, the control has a built-in status indicator and self-test feature. The status indicator flashes to indicate a problem condition and assists the servicer in diagnosis. The self-test feature allows for a complete check of the major components in only seconds.

**Combustion Air and Ventilation**—The 351DAS advanced design allows Schedule 40PVC, PVC-DWV, SDR-21 PVC, SDR-26 PVC (not approved in Canada), ABS-DWV, or ABS-F628 Schedule 40 pipe to bring outdoor air into the furnace for combustion. The extracted heat lowers the temperature of the combustion products to a point (typically below 115°F) that any of the approved types of 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 1 of our approved vent termination kits.

**Fully-Insulated Casing**—Foil-faced insulation in the heat exchanger section cuts heat loss, and 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 351DAS 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 furnace is factory-shipped for use with natural and propane gases. (All parts necessary to convert the gas valve for propane gas use are shipped with the furnace.) Model 351DAS is design certified for installation in manufactured (mobile) homes.

**Quality Registration**—The 351DAS is engineered and manufactured under an ISO 9001 registered quality system.



**NOTES:** Minimum return-air opening at furnace, based on metal duct. If flex duct is used, see flex duct manufacturer's recommendation for equivalent diameters:

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.

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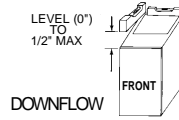
**DIMENSIONS (in.)**

UNIT SIZE	A	D	E	SHIP. WEIGHT (Lb)
036080	17-1/2	15-7/8	16	172
048080	17-1/2	15-7/8	16	175
060080	21	19-3/8	19-1/2	197

## INSTALLATION

This forced air furnace is equipped for use with natural or propane gas at altitudes 0 - 10,000 ft (0 - 3,050m). This furnace is for indoor installation in a manufactured (mobile) or modular home. This furnace may be installed on combustible flooring in alcove or closet at minimum clearance from combustible material. This appliance requires a special venting system. Refer to the installation instructions for parts list and method of installation. 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).

Furnace must be installed level, or pitched forward within 1/2 inch of level for proper drainage. Failure will result in equipment or property damage.

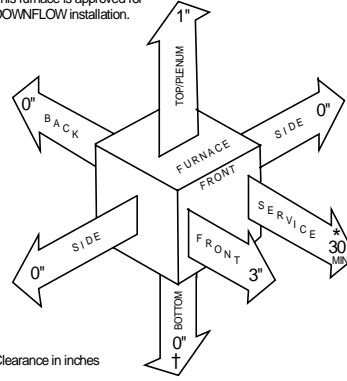


### MINIMUM INCHES CLEARANCE TO COMBUSTIBLE CONSTRUCTION

**DOWNFLOW POSITION:**

- \* Minimum front clearance for service 30 inches (762mm).
- † For installation on combustible floors only when installed on special base No. KGASB0201ALL, Coil Assembly, Part No. CD5 or CK5, or Coil Casing, Part No. KCAKC.

This furnace is approved for DOWNFLOW installation.



### MANUFACTURED MOBILE HOME STANDARDS

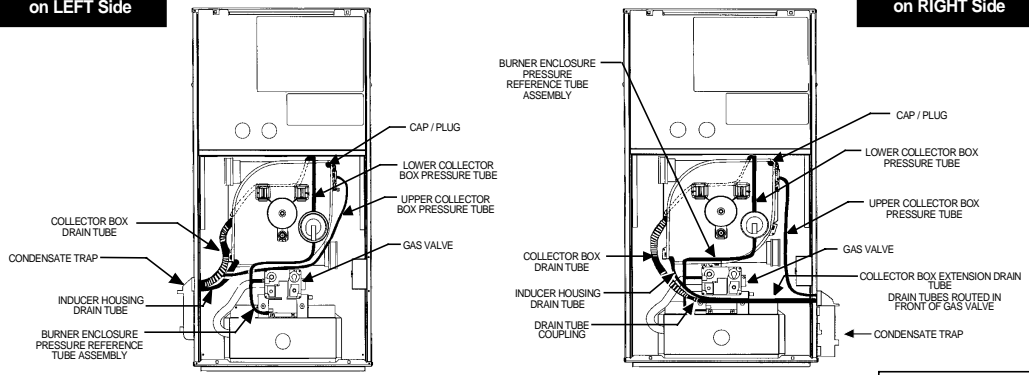
This furnace must be installed in accordance with the manufacturer's instructions and Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 or, when such standard is not applicable, the ANSI A225.1, Standard for Manufactured Home Installation (Manufactured Home Sites, Communities and Set-Ups), or the Mobile Homes Standard CAN/CSA-Z240 MH Series-M86.

This furnace must be installed with a direct vent (combustion air and flue) system, and use a factory accessory termination kit.

**Condensate Trap on LEFT Side**

### TUBE ROUTING

**Condensate Trap on RIGHT Side**



**NOTE:** 1. All tubing must be connected securely and routed to avoid kinks and traps.

324997-201 REV. A / LIT

A99001e

## CONTROLS—THERMOSTATS AND ZONING

THERMOSTAT—NON-PROGRAMMABLE	For Use with 1-Speed Air Conditioner—TSTATBBNAC01-B For Use with 2-Speed Air Conditioner—TSTATBBN2S01-B For Use with 2-Speed Heat Pump—TSTATBBN2S01-B
THERMOSTAT—PROGRAMMABLE	For Use with 1-Speed Air Conditioner—TSTATBBPAC01-B For Use with 2-Speed Air Conditioner—TSTATBBP2S01-B For Use with 1-Speed Heat Pump—TSTATBBPDF01-B For Use with 2-Speed Heat Pump—TSTATBBP2S01-B or TSTATBBPDF01-B
THERMIDISTAT—PROGRAMMABLE THERMOSTAT with Humidity Control	TSTATBBPRH01-B

## SPECIFICATIONS

UNIT SIZE	036080	048080	060080
<b>RATINGS AND PERFORMANCE</b>			
Input Btuh*	80,000	80,000	80,000
Output Capacity† ICS Downflow	75,000	75,000	75,000
AFUE%† Nonweatherized ICS Downflow	90.0	90.0	90.0
Certified Temperature Rise Range °F	40—70	30—60	20—50
Certified External Static Pressure	Heating	0.15	0.15
	Cooling	0.50	0.50
Airflow CFM‡	Heating	1190	1285
	Cooling	1245	1525
<b>ELECTRICAL</b>			
Unit Volts—Hertz—Phase	115—60—1		
Operating Voltage Range Min—Max**	104—127		
Maximum Unit Amps	7.6	10.0	14.1
Unit Ampacity††	10.4	13.4	18.4
Minimum Wire Size	14	14	12
Maximum Wire Length (Ft)‡‡	36	28	31
Maximum Fuse Size or Ckt Bkr Amps (Time-Delay Fuse Recommended)	15	15	20
Transformer (24v)	40va		
External Control Power Available	Heating	12va	
	Cooling	21va	
Air Conditioning Blower Relay	Standard		
<b>CONTROLS</b>			
Limit Control	SPST		
Heating Blower Control (Off Delay)	Factory Set at 135 Sec		
Burners (Monoport)	4	4	4
Gas Connection Size	1/2-in. NPT		
<b>GAS CONTROLS</b>			
Gas Valve (Redundant/Gas Convertible)	Manufacturer	White-Rodgers	
	Min Inlet Pressure (In. wc)	4.5 (Natural Gas) 11.0 (Propane)	
	Max Inlet Pressure (In. wc)	13.6 (Natural and Propane Gases)	
Ignition Device	Hot Surface		
<b>BLOWER DATA</b>			
Direct-Drive Motor HP (Permanent Split Capacitor)	1/3	1/2	3/4
Motor Full Load Amps	5.8	7.9	11.1
RPM (Nominal)—Speeds	1075—4		
Blower Wheel Diameter x Width (In.)	10 x 7	11 x 8	11 x 10
Filter Size (In.)—Permanent Washable	(1) 16 x 25 x 1		(1) 20 x 25 x 1
<b>FACTORY-AUTHORIZED AND LISTED, DEALER-INSTALLED OPTIONS</b>			
Downflow Base***	KGASB0201ALL		
Vent Termination Kit (Bracket Only for 2 Pipes)	2-in.—KGAVT0101BRA 3-in.—KGAVT0201BRA		
Concentric Vent Termination Kit (Single Exit)	2-in.—KGAVT0501CVT 3-in.—KGAVT0601CVT		
Condensate Freeze Protection Kit	KGAHT0101CFP		
Electronic/Mechanical Air Cleaner	Model AIRA or 902B or MACA		
Humidifier	Model HUM		
Heat/Energy Recovery Ventilator	Model VA3B, VB5B, VC5B, or VL3A		

\* Gas input ratings are certified for elevations to 2000 ft. For elevations above 2000 ft, reduce ratings 2% for each 1000 ft above sea level. In Canada, derate the unit 5% from 2000 to 4500 ft above sea level.

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

‡ Airflow shown is for top only return-air supply.

\*\* Permissible voltage limits for proper furnace operation.

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

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

\*\*\* Required for installation on combustible floors when no coil box is used, or when any coil box other than a Bryant CD5 or CK5 cased coil is used.

ICS—Isolated Combustion System

## COMBUSTION-AIR AND VENT PIPING

### MAXIMUM ALLOWABLE PIPE LENGTH (FT)

ALTITUDE ABOVE SEA LEVEL (FT)	UNIT SIZE	TERMINATION TYPE	PIPE DIA (IN.)*	NUMBER OF 90° ELBOWS					
				1	2	3	4	5	6
0 to 2000	036080 048080 060080	2 Pipe or 2-In. Concentric	1-1/2	10	NA	NA	NA	NA	NA
			2	55	50	35	30	30	20
			2-1/2	70	70	70	70	70	70
2001 to 3000	036080 048080 060080	2 Pipe or 2-In. Concentric	2	49	44	30	25	25	15
			2-1/2	70	70	70	70	70	70
3001 to 4000	036080 048080 060080	2 Pipe or 2-In. Concentric	2	46	41	28	23	22	13
			2-1/2	70	70	70	70	70	70
4001 to 5000†	036080 048080 060080	2 Pipe or 2-in Concentric	2	44	39	26	21	20	11
			2-1/2	70	70	70	70	70	70
5001 to 6000†	036080 048080 060080	2 Pipe or 2-In. Concentric	2	41	36	23	18	17	8
			2-1/2	70	70	70	70	70	70
6001 to 7000†	036080 048080 060080	2 Pipe or 2-In. Concentric	2	38	33	21	16	15	6
			2-1/2	70	70	68	67	66	64
7001 to 8000†	036080 048080 060080	2 Pipe or 2-In. Concentric	2	36	31	19	14	12	NA
			2-1/2	66	65	63	62	60	59
8001 to 9000†	036080 048080 060080	2 Pipe or 2-In. Concentric	2	33	28	17	12	10	NA
			2-1/2	62	60	58	56	55	53
9001 to 10,000†	036080 048080 060080	2 Pipe or 2-In. Concentric	2	30	25	14	9	7	NA
			2-1/2	57	55	53	51	49	47

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

† Vent sizing for Canadian installations over 4500 ft (1370m) 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.

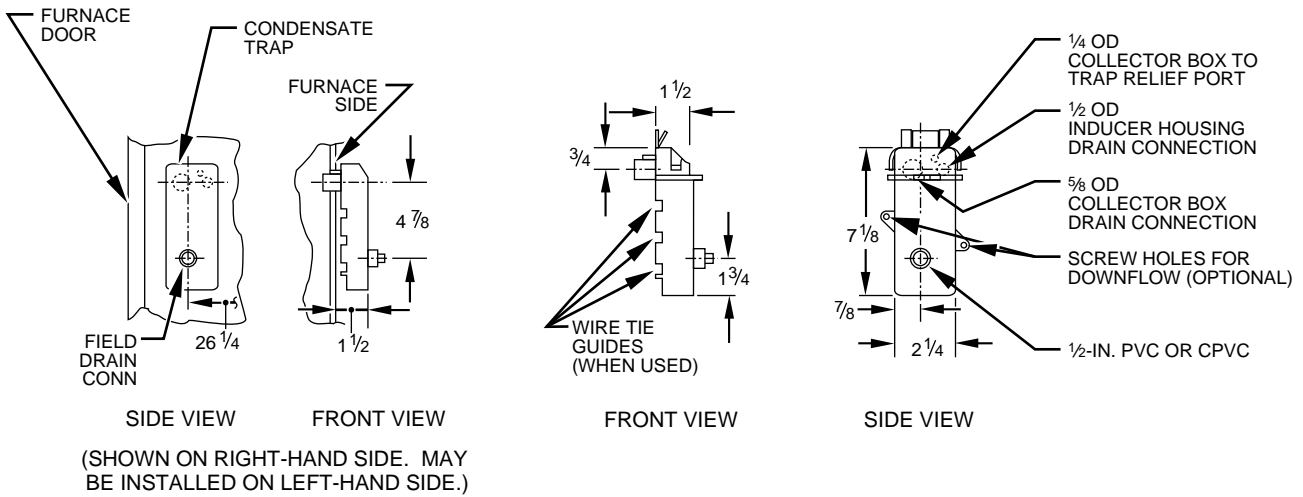
### MAXIMUM ALLOWABLE EXPOSED VENT PIPE LENGTH (FT) WITH AND WITHOUT INSULATION IN WINTER DESIGN TEMPERATURE AMBIENT\*

UNIT SIZE	WINTER DESIGN TEMPERATURE (°F)	MAX PIPE DIAMETER (IN.)	WITHOUT INSULATION	WITH 3/8-IN. OR THICKER INSULATION†
036080 048080 060080	20	2-1/2	70	70
	0	2-1/2	47	70
	-20	2-1/2	28	70

\* 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.

## CONDENSATE TRAP



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MEETS DOE RESIDENTIAL CONSERVATION SERVICES PROGRAM STANDARDS.

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



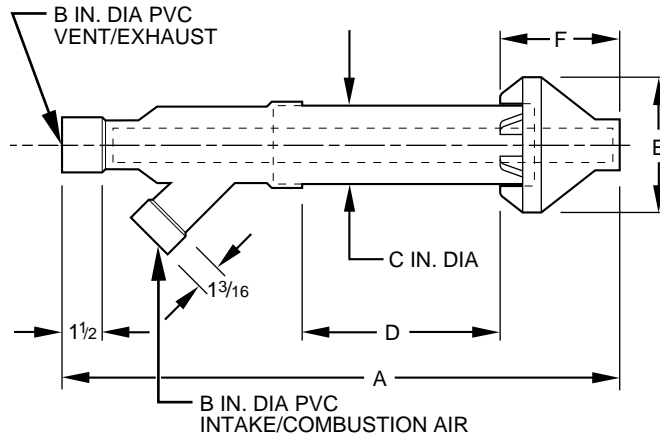
REGISTERED QUALITY SYSTEM

As an ENERGY STAR<sup>SM</sup> Partner, Bryant Heating & Cooling Systems has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

These products are engineered and manufactured under an ISO 9001 registered quality system.

# ACCESSORIES

## CONCENTRIC VENT



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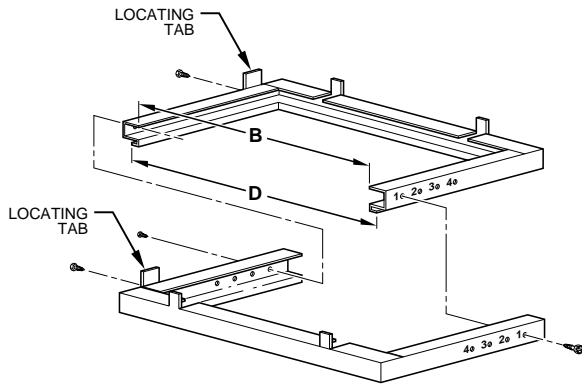
### DIMENSIONS (In.)

PART NO.	A*	B	C	D†	E	F
KGAVT0501CVT	33-3/8	2	3-1/2	16-5/8	6-1/4	5-3/4
KGAVT0601CVT	38-7/8	3	4-1/2	21-1/8	7-3/8	6-1/2

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

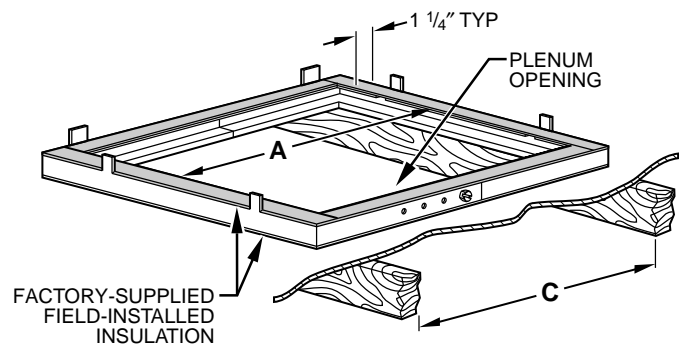
†Dimension D may be lengthened to 60 in. maximum. Dimension D may also be shortened by cutting the pipes provided in the kit to 12 in. minimum.

## ACCESSORY DOWNFLOW SUBBASE



Disassembled

A88207



Assembled

A97427

FURNACE CASING WIDTH	FURNACE IN DOWNFLOW APPLICATION	PLENUM OPENING*		FLOOR OPENING		HOLE NO. FOR WIDTH ADJUSTMENT
		A	B	C	D	
17-1/2	Furnace with or without CD5 or CK5 Coil Assembly or KCAKC Coil Box	15-1/8	19	16-3/4	20-3/8	3
21	Furnace with or without CD5 or CK5 Coil Assembly or KCAKC Coil Box	18-5/8	19	20-1/4	20-3/8	2

\* The plenum should be constructed 1/4 in. smaller in width and depth than the plenum dimensions shown above.

## AIR DELIVERY—CFM (With Filter)\*

UNIT SIZE	RETURN-AIR SUPPLY	SPEED	EXTERNAL STATIC PRESSURE (In. wc)							
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
036080	Top	High	1535	1470	1405	1330	1245	1160	1065	935
		Med-High	1395	1350	1300	1225	1155	1080	985	880
		Med-Low	1200	1175	1125	1065	1030	970	890	780
		Low	1040	1020	990	960	910	860	785	680
048080	Top	High	1750	1685	1635	1575	1525	1445	1380	1310
		Med-High	1495	1455	1405	1355	1305	1250	1185	1120
		Med-Low	1310	1260	1225	1170	1125	1095	1040	980
		Low	1135	1105	1075	1040	995	995	910	860
060080	Top	High	2200	2175	2085	2025	1925	1820	1735	1635
		Med-High	2100	2025	1945	1865	1785	1700	1620	1540
		Med-Low	1815	1760	1720	1670	1620	1550	1480	1405
		Low	1560	1555	1515	1460	1435	1390	1340	1270

\* A filter is required for return-air supply.

## SERVICE TRAINING

**Packaged Service Training** programs are an excellent way to increase your knowledge of the equipment discussed in this manual, including:

- Unit Familiarization
- Maintenance
- Installation Overview
- Operating Sequence

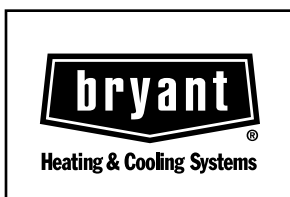
A large selection of product, theory, and skills programs is available, using popular video-based formats and materials. All include video and/or slides, plus companion book.

**Classroom Service Training** plus "hands-on" the products in our labs can mean increased confidence that really pays dividends in faster troubleshooting, fewer callbacks. Course descriptions and schedules are in our catalog.

**CALL FOR FREE CATALOG 1-800-962-9212**

[ ] Packaged Service Training      [ ] Classroom Service Training

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SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

UNIT MUST BE INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS

Cancels: New