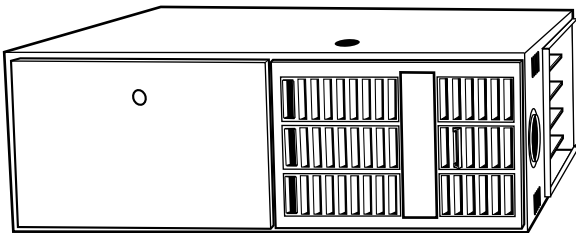
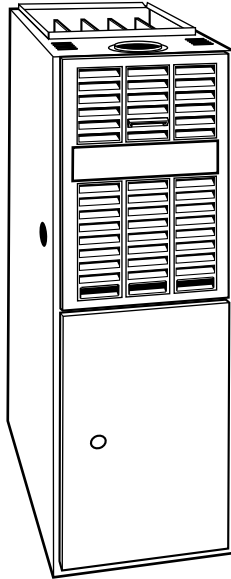




# PLUS 80 VARIABLE-SPEED UPFLOW/HORIZONTAL INDUCED COMBUSTION FURNACE

**333BAV**  
**333JAV**  
Sizes 060 thru 120  
Series A



With a unique approach to induced-combustion design, a 40-in. tall cabinet, a 4-pass heat exchanger, an inshot burner system, and its safety features, this furnace is without peer. The Plus 80 Variable-Speed Upright/Horizontal Furnace achieves an 80% Annual Fuel Utilization Efficiency (AFUE) rating. The benefits of variable-speed operation in reducing sound and improving comfort put it in a class well ahead of the competition. The Plus 80 Variable-Speed has the kind of overall performance needed in today's homes. All models are GAMA efficiency rating certified. The model 333JAV furnaces are certified for use in California Air Quality Management Districts.

## FEATURES

**EFFICIENCY**—The Plus 80 Variable-Speed Induced-Combustion Gas Furnace provides the efficiency customers want with 80.0% AFUE and improves air conditioner or heat pump performance up to 1-1/2 points.

**HOT SURFACE IGNITION**—No pilot to waste gas with this field-proven ignition system.

**ALUMINIZED HEAT EXCHANGER**—The patented 4-pass heat exchanger is made of aluminized steel and backed by a 20-year Limited Warranty.

**INTELLIGENT CONTROL**—The Plus 80 Variable-Speed has an intelligent control that monitors the operation of the furnace. This control also has a component-test feature that enables the servicing technician to verify operation of the control, the high and low inducer speeds, the hot surface ignitor, and high-, medium-, and low-speed blower operation. The control features a 3-amp fuse that protects the transformer and control. We guarantee the reliability of the control with a 3-year Limited Warranty.

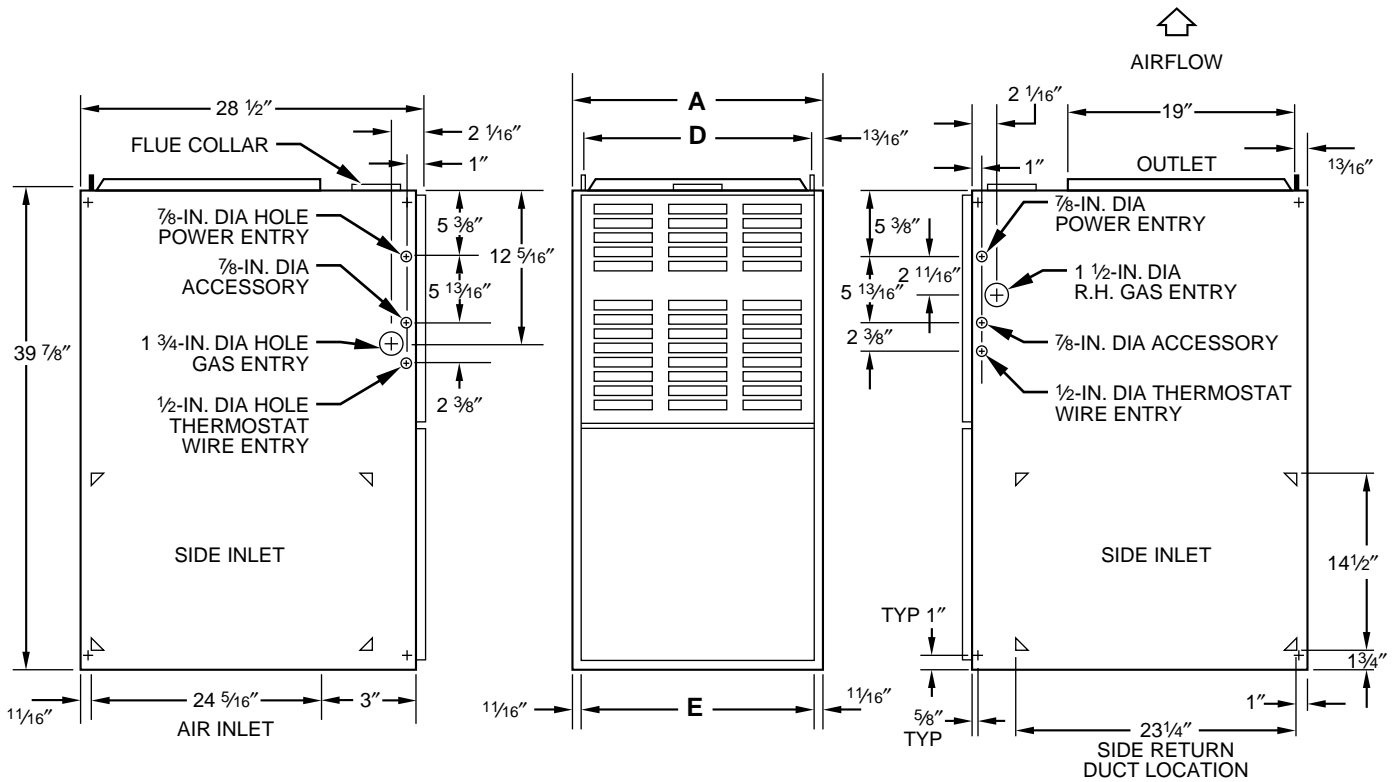
**40-IN. HEIGHT**—The Plus 80 Variable-Speed cabinet height is only 40 in. This simplifies installation in alcoves, attics, basements (ideal for short basement), closets, and utility rooms, especially with a taller high-efficiency cooling coil.

**PREPAINTED CABINET**—The Plus 80 Variable-Speed uses prepainted sheet metal for the cabinet. This is the same high-quality finish found on refrigerators and other appliances today. We ensure its durability by using a galvanized steel substrate to provide superior rust protection.

**PATENTED DRAFT SAFEGUARD**—Our induced-combustion furnace has a patented draft safeguard switch. The safeguard switch will stop furnace operation if the vent system becomes blocked or is not operating properly.

**EASY INSTALLATION**—The Plus 80 Variable-Speed has many features that make installation easier: left or right gas and electrical connections, heating and cooling airflow selector, matching coil sizes, accessory low-voltage connections, and many more.

**QUIET OPERATION**—A soft mount inducer assembly and 2-stage slow-opening gas valve reduce sound level. The 2-stage heating operation capability minimizes furnace and air noise for total home comfort.



- NOTES:**
1. Two additional 7/8-in. dia knockouts are located in the top plate.
  2. Minimum return-air opening at furnace:
    - a. For 800 CFM—16-in. round or 14 1/2 x 12-in. rectangle.
    - b. For 1200 CFM—20-in. round or 14 1/2 x 19 1/2-in. rectangle.
    - c. For 1600 CFM—22-in. round or 14 1/2 x 23 1/4-in. rectangle.
    - d. For airflow requirements above 1800 CFM, use both side inlets, a combination of 1 side inlet and the bottom, or the bottom only.

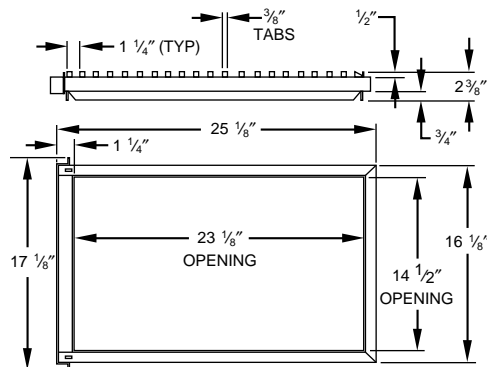
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**DIMENSIONS (In.)**

UNIT SIZE	A	D	E	VENT CONNECTION*	SHIPPING WEIGHT (LB)
036060	14-3/16	12-9/16	12-11/16	4	134
048080	21	19-3/8	19-1/2	4	154
060100	24-1/2	22-7/8	23	4	184
060120	24-1/2	22-7/8	23	5	194

\* Refer to the furnace Installation Instructions for proper venting procedures.

**DIMENSIONAL DRAWINGS OF OPTIONAL SIDE FILTER RACK**



A80199

## SPECIFICATIONS

UNIT SIZE		036060††	048080	060100	060120
<b>RATINGS AND PERFORMANCE</b>					
Gas Input (Btuh)*	High Stage	60,000	80,000	100,000	117,000
	Low Stage	39,000	52,000	65,000	78,000
Output Capacity (Btuh)†	High Stage	49,000	65,000	82,000	96,000
	Low Stage	31,000	42,000	53,000	63,000
Nonweatherized ICS					
AFUE%‡	Nonweatherized ICS	80.0	80.0	80.0	80.0
Certified Temperature Rise Range (°F)	High Stage	25—55	30—60	25—55	40—70
	Low Stage	15—45	15—45	15—45	25—55
Certified External Static Pressure	Heat/Cool	0.12/0.70	0.15/0.50	0.20/0.70	0.20/0.70
Airflow CFM‡	High/Low	1250/1135	1310/1395	1935/1630	1720/1605
	Cooling (Max)	1260	1635	2085	2010
<b>ELECTRICAL</b>					
Unit Volts—Hertz—Phase		115—60—1			
Operating Voltage Range		104—127			
Maximum Unit Amps		10.1	10.6	12.6	13.9
Maximum Wire Length (Measured 1 Way) Ft		36	34	29	26
Minimum Wire Size		14	14	14	14
Maximum Fuse Size		15	15	15	15
Transformer (24v)		40va			
External Control		Heating 19va			
Power Available		Cooling 35va			
Air Conditioning Blower Relay		Standard			
<b>CONTROLS</b>					
Limit Control		SPST (Auto-Reset)			
Heating Blower Control		Solid-State Time Operation			
Inducer		2-Speed			
Burners (Monoport)		3	4	5	6
Gas Connection Size		1/2-in. NPT			
<b>GAS CONTROLS</b>					
2-Stage Redundant Gas Valve		White-Rodgers			
Min Inlet Pressure (In. wc)		4.5 (Natural Gas)			
Max Inlet Pressure (In. wc)		13.6 (Natural Gas)			
Ignition Device		Hot Surface			
<b>BLOWER DATA</b>					
Direct-Drive Motor HP (ICM Variable Speed)		1/2	1/2	3/4	1
Motor Full Load Amps		7.7	7.7	9.6	12.0
RPM (Nominal)—Speeds		300 to 1400	300 to 1400	300 to 1400	300 to 1400
Blower Wheel Diameter x Width (In.)		10 x 6	10 x 8	11 x 10	11 x 10
Filter Size (In.)—Permanent Washable (Supplied)		(1) 16 x 25 x 1	(1) 20 x 25 x 1	(2) 16 x 25 x 1	(2) 16 x 25 x 1
<b>FACTORY-AUTHORIZED DEALER-INSTALLED ACCESSORIES</b>					
High-Altitude Pressure Switch Kit**		KGAA5701PSW			
Gas Conversion Kit—Natural-to-Propane		KGANP24012SP			
Gas Conversion Kit—Propane-to-Natural		KGAPN20012SP			
Electronic Air Cleaner		Model 901KAX			
Humidifier		Model 913BAX			
Thermostat		See Thermostat Price Page			
Sidewall Power Venter Kit		KGASW03012SP			
Side Filter Rack (Accepts 1 Filter)†† In.		KGAFR0201ALL (Filter Size 16 x 25 x 1)			
Return Filter Cabinet (With 2 Washable Filters) In.		KGARP0201ALL (Filter Size 20 x 25 x 1)			

\* 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. Refer to National Fuel Gas Code Table F4. In Canada, derate the unit 10% for elevations 2000 ft to 4500 ft above sea level.

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

‡ Air delivery above 1800 CFM requires that both sides, or 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 inlet.

\*\* 5500 ft and higher above sea level.

†† Side filter rack must be used for upflow right-side return with 036060 size.

ICS—Isolated Combustion System

## CLEARANCES FROM COMBUSTIBLE MATERIALS (In.)

UNIT SIZE		060	080-120
<b>UPFLOW</b>			
<b>Furnace Sides</b>	Single-Wall Vent	1	0
	Type B-1 Double-Wall Vent	0	0
<b>Furnace Back</b>		0	0
<b>Plenum Top</b>		1	1
<b>Furnace Front (See Notes)</b>	Single-Wall Vent	6	6
	Type B-1 Double-Wall Vent	3	3
<b>Vent</b>	Single-Wall Vent	6	6
	Type B-1 Double-Wall Vent	1	1
<b>HORIZONTAL POSITION (IN ALCOVE, ATTIC, OR CRAWLSPACE)</b>			
<b>Sides*‡</b>		1	1
<b>Back</b>		0	0
<b>Top</b>	Single-Wall Vent	1	1
	Type B-1 Double-Wall Vent	1	1
<b>Furnace Front† (See Notes)</b>	Single-Wall Vent	6	6
	Type B-1 Double-Wall Vent	3	3
<b>Vent</b>	Single-Wall Vent	6	6
	Type B-1 Double-Wall Vent	1	1
<b>HORIZONTAL POSITION (IN CLOSET)</b>			
<b>Sides*‡</b>		1	1
<b>Back</b>		0	0
<b>Top</b>	Single-Wall Vent	2	2
	Type B-1 Double-Wall Vent	2	2
<b>Furnace Front (See Notes)</b>	Single-Wall vent	6	6
	Type B-1 Double-Wall Vent	3	3
<b>Vent</b>	Single-Wall Vent	6	6
	Type B-1 Double-Wall Vent	1	1

\* Clearance shown is for the outlet end. The inlet end must maintain 6 in. clearance from flue to combustible materials when using single-wall vent.

† 18-in. front clearance required for alcove.

‡ Indicates supply or return sides when furnace is in the horizontal position.

**NOTES:**

1. Provide 30-in. front clearance for servicing. An open door in front of the furnace can meet this requirement.
2. A minimum clearance of 3 in. must be provided in front of the furnace for combustion air and proper operation.



**MEETS DOE RESIDENTIAL  
CONSERVATION SERVICES  
PROGRAM STANDARDS.**

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

## AIR DELIVERY—NOMINAL CFM (With filter)

### GAS HEAT AIRFLOW

FURNACE SIZE	GAS HEAT TEMP RISE		GAS HEAT TEMP RISE (°F)*		GAS HEAT AIRFLOW (CFM)	
	JUMPER POSITION‡		HIGH-STAGE	LOW-STAGE	HIGH-STAGE	LOW-STAGE
	Red Wire	Violet Wire				
060	HI	A	51	45	925	615
	M-HI	A	46	38	1085	730
	MID	D	40	30	1250	1135
080	HI	A	58	44	970	790
	M-HI	A	51	39	1140	925
	MID	D	45	29	1310	1395
100	HI	A	51	44	1430	1035
	M-HI	A	45	39	1685	1215
	MID	D	40	30	1935	1630
120	HI	A	69	49	1330	1240
	M-HI	A	59	43	1560	1460
	MID	D	55	40	1720	1605

AC/HP JUMPER POSITION: AC AIR CONDITIONING, COOLING AIRFLOW  
 HP—EFFY HEAT PUMP—EFFICIENCY, COOLING AND HEATING AIRFLOW  
 HP—CFMT HEAT PUMP—COMFORT, COOLING AIRFLOW

FURNACE SIZE	AIRFLOW SELECTION		SINGLE-SPEED			TWO-SPEED (HIGH / LOW)					
	COOL SIZE	JUMPER POSITION	CFM			CFM					
			COOL CFM PER TON			COOL CFM PER TON JUMPER POSITION					
			JUMPER POSITION			400		350		315	
	TONS	400	350	315	HIGH	LOW	HIGH	LOW	HIGH	LOW	
060	LO	1-1/2	600	530	500†	630	500†	550	500†	500†	500†
	M-LO	2	800	700	630	865	510	735	500†	660	500†
	M-HI	2-1/2	1000	880	790	1060	650	920	570	825	510
	HI	3	1200	1050	945	1260	780	1100	680	990	585
080	LO	2-1/2	1000	875	790	1050	660	920	595	830	545
	M-LO	3	1215	1050	945	1260	790	1100	700	990	625
	M-HI	3-1/2	1400	1225	1100	1470	910	1280	805	1155	715
	HI	4	1600	1400	1250	1635	1040	1470	915	1325	820
100	LO	3	1195	1045	950	1260	780	1090	775	990	700†
	M-LO	3-1/2	1400	1225	1090	1470	910	1285	830	1155	715
	M-HI	4	1600	1400	1260	1680	1040	1465	915	1325	820
	HI	5	2000	1750	1575	2085	1300	1840	1150	1655	1025
120	LO	3	1160	1050	955	1195	865	1085	785	985	785
	M-LO	3-1/2	1400	1220	1090	1420	970	1265	875	1150	845
	M-HI	4	1600	1395	1250	1650	1070	1465	975	1315	930
	HI	5	2000	1750	1565	2110	1300	1835	1140	1640	1080

AC/HP JUMPER POSITION: HP—CMFT HEAT PUMP—COMFORT, HEATING AIRFLOW

FURNACE SIZE	AIRFLOW SELECTION		SINGLE-SPEED			TWO-SPEED (HIGH / LOW)					
	COOL SIZE	JUMPER POSITION	CFM			CFM					
			COOL CFM PER TON			COOL CFM PER TON JUMPER POSITION					
			JUMPER POSITION			400		350		315	
	TONS	400	350	315	HIGH	LOW	HIGH	LOW	HIGH	LOW	
060	LO	1-1/2	540	500†	500†	565	500†	500†	500†	500†	500†
	M-LO	2	720	630	570	780	500†	660	500†	595	500†
	M-HI	2-1/2	900	790	710	945	585	830	515	740	500†
	HI	3	1080	945	855	1135	700	990	610	895	555
080	LO	2-1/2	900	785	710	945	605	825	535	755	500†
	M-LO	3	1080	945	850	1135	715	990	630	895	560
	M-HI	3-1/2	1260	1100	990	1325	830	1150	725	1040	655
	HI	4	1440	1260	1135	1510	940	1325	825	1190	740
100	LO	3	1075	940	855	1130	700	980	700	890	700†
	M-LO	3-1/2	1260	1100	990	1325	820	1155	750	1040	700†
	M-HI	4	1440	1260	1130	1510	935	1320	825	1190	740
	HI	5	1800	1575	1420	1890	1170	1655	1035	1490	920
120	LO	3	1045	945	860	1075	780	975	750	885	750
	M-LO	3-1/2	1260	1100	980	1280	875	1140	790	1035	760
	M-HI	4	1440	1255	1125	1485	965	1320	880	1185	835
	HI	5	1800	1575	1410	1900	1170	1650	1025	1475	970

\* Within ± 2°F

† Minimum airflow is set for electronic air cleaner: 060—500 CFM, 080—500 CFM, 100—700 CFM, 120—700 CFM

‡ Use only listed jumper position combinations.

### NOTES:

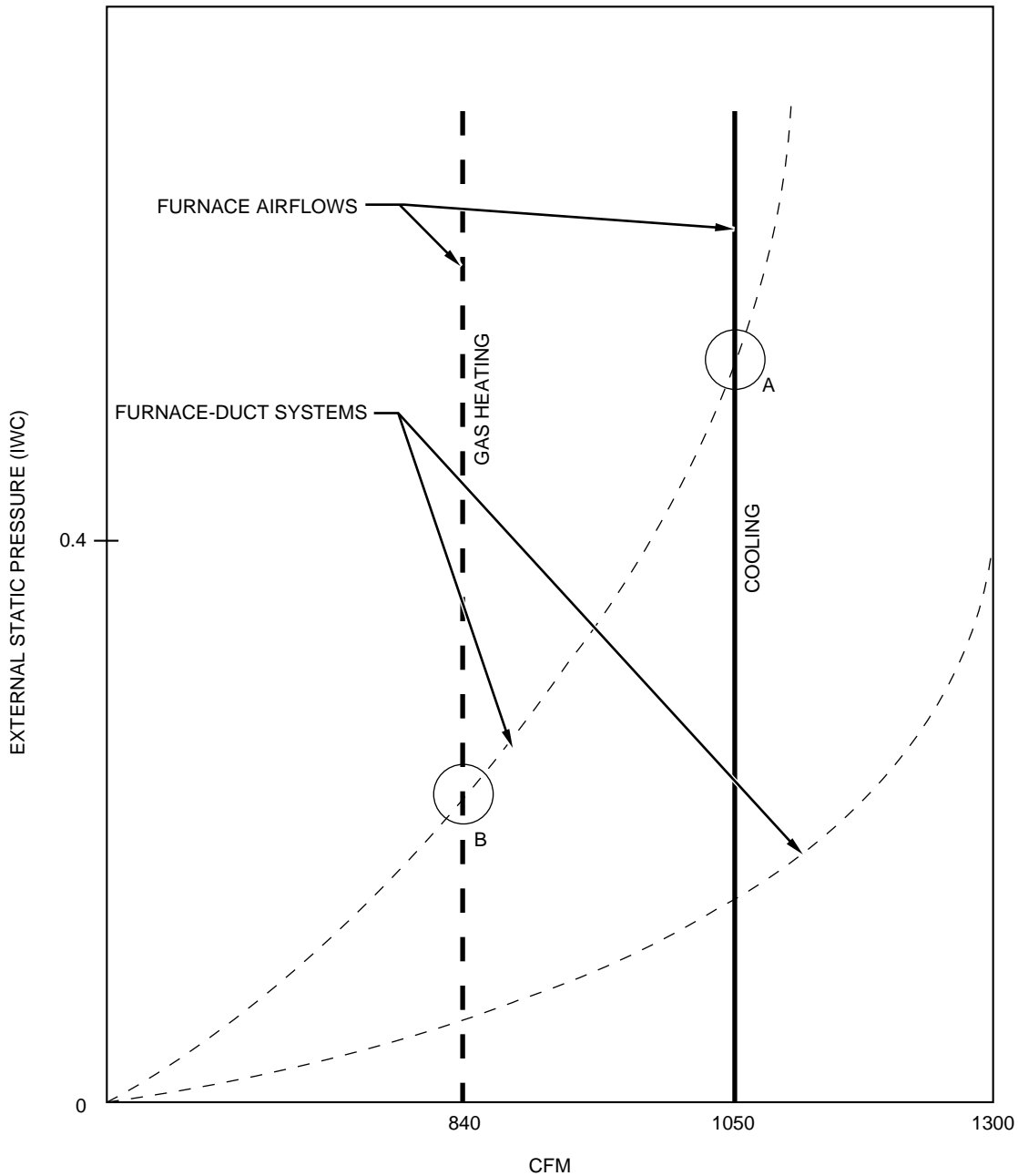
- A humidistat can be used to further reduce airflow when increased humidity is sensed. This feature reduces the selected airflow by 20%, but no lower than 280 CFM per ton.
- Continuous-fan selections are 50%, 65%, or 100% of selected cooling airflow. 100% is not recommended for 2-speed air conditioning or heat pumps.†
- See the following airflow curves for CFM versus ESP at 350 CFM per ton.

The airflow performance charts for the model 333BAV and 333JAV Furnaces provide nominal airflow in cubic ft per minute (CFM) versus external static pressure (ESP) in in. water column (IWC) for gas heating, cooling, and heat pump operating modes. Each model has 2 chart pages: gas heating and single-speed cooling on the first page, and 2-speed cooling on the second page. Gas heating airflow is shown with dashed lines for HIGH-GAS HEAT and with dot-dash lines for LOW-GAS HEAT for all 3 air temperature rise selections. Single-speed cooling airflow is shown with solid lines for all 4 size selections. Two-speed airflow is shown with solid lines for HIGH-COOLING and with dot-dash for lines LOW-COOLING for all 4 size selections.

The curved, dotted lines are furnace-duct system characteristic curves. System curves can be used to predict the ESP imposed by a building's supply and return air duct system at any airflow, if a single actual airflow CFM versus ESP is known.

Example: If CFM and ESP at point A in example below are known, the CFM and ESP at point B can be determined by following the system curve from A to B. If a point falls between 2 system curves, follow an imaginary system curve parallel to and between the 2 system curves.

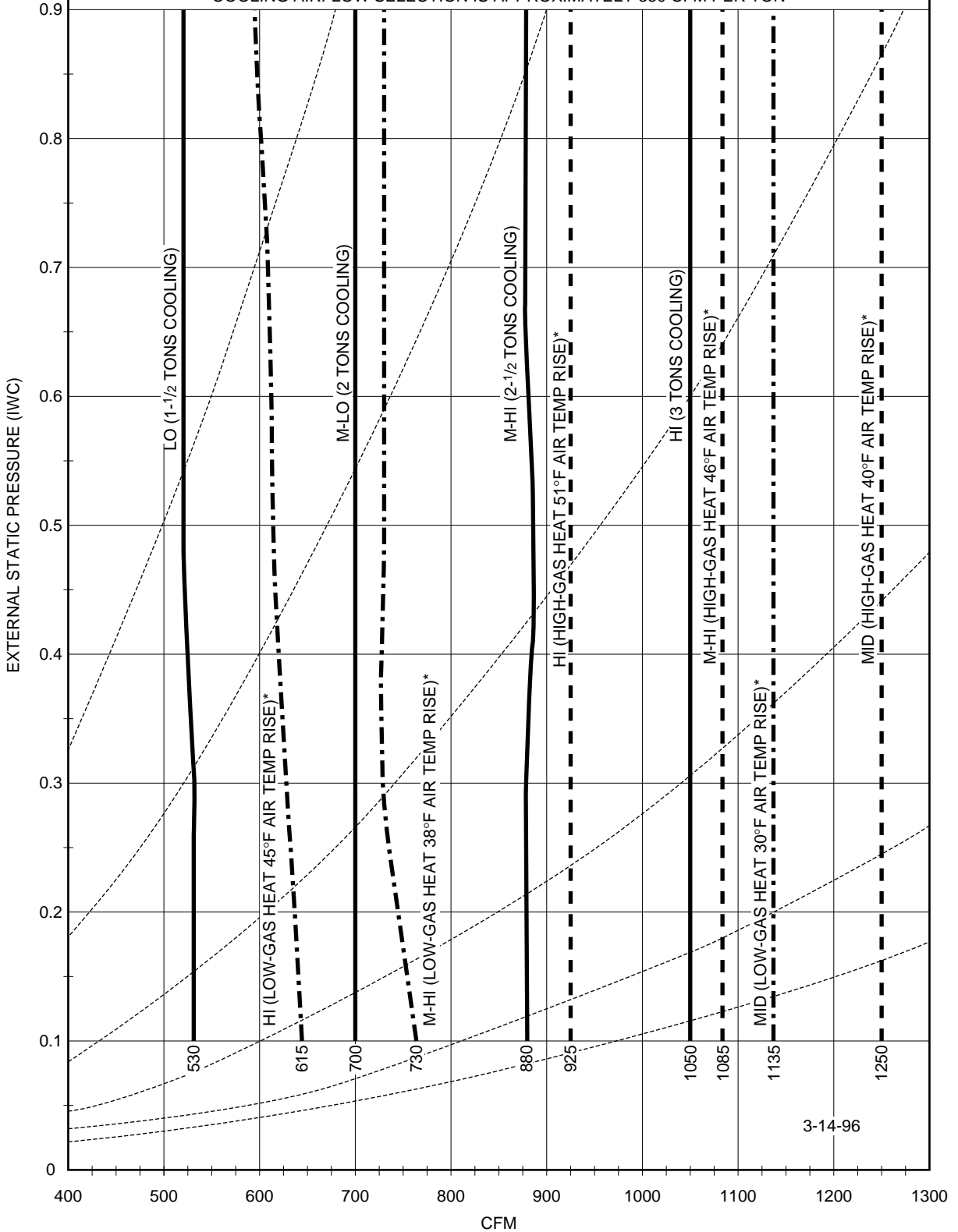
EXAMPLE AIRFLOW (CFM versus ESP)



**FURNACE SIZE**  
**60,000 BTUH HEATING INPUT**  
**36,000 BTUH COOLING**

\*See Air Delivery Table for jumper positions.

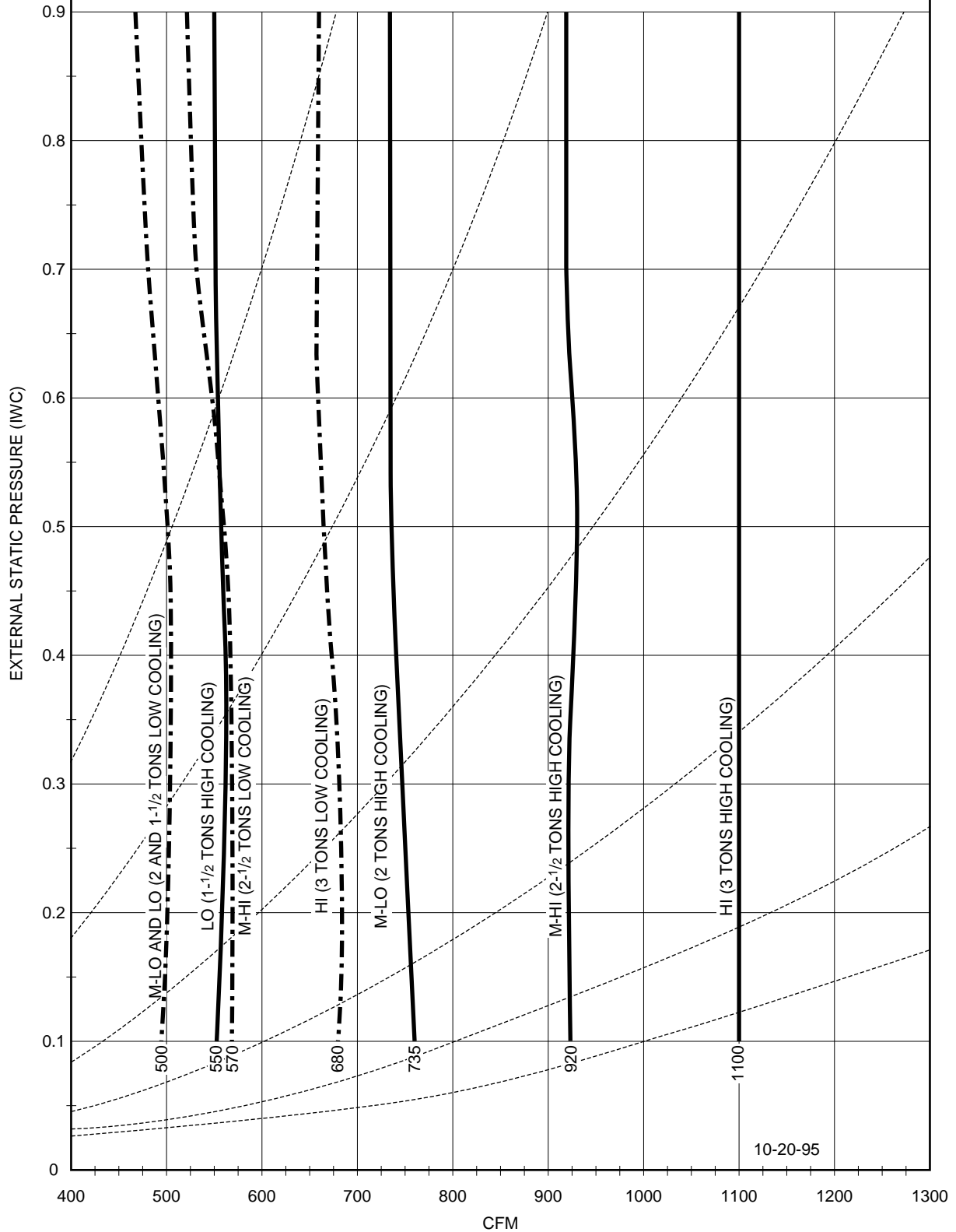
TWO-STAGE GAS HEATING WITH FILTER  
 SINGLE-SPEED COOLING WITH FILTER  
 COOLING AIRFLOW SELECTION IS APPROXIMATELY 350 CFM PER TON



3-14-96

FURNACE SIZE  
60,000 BTUH HEATING INPUT  
36,000 BTUH COOLING

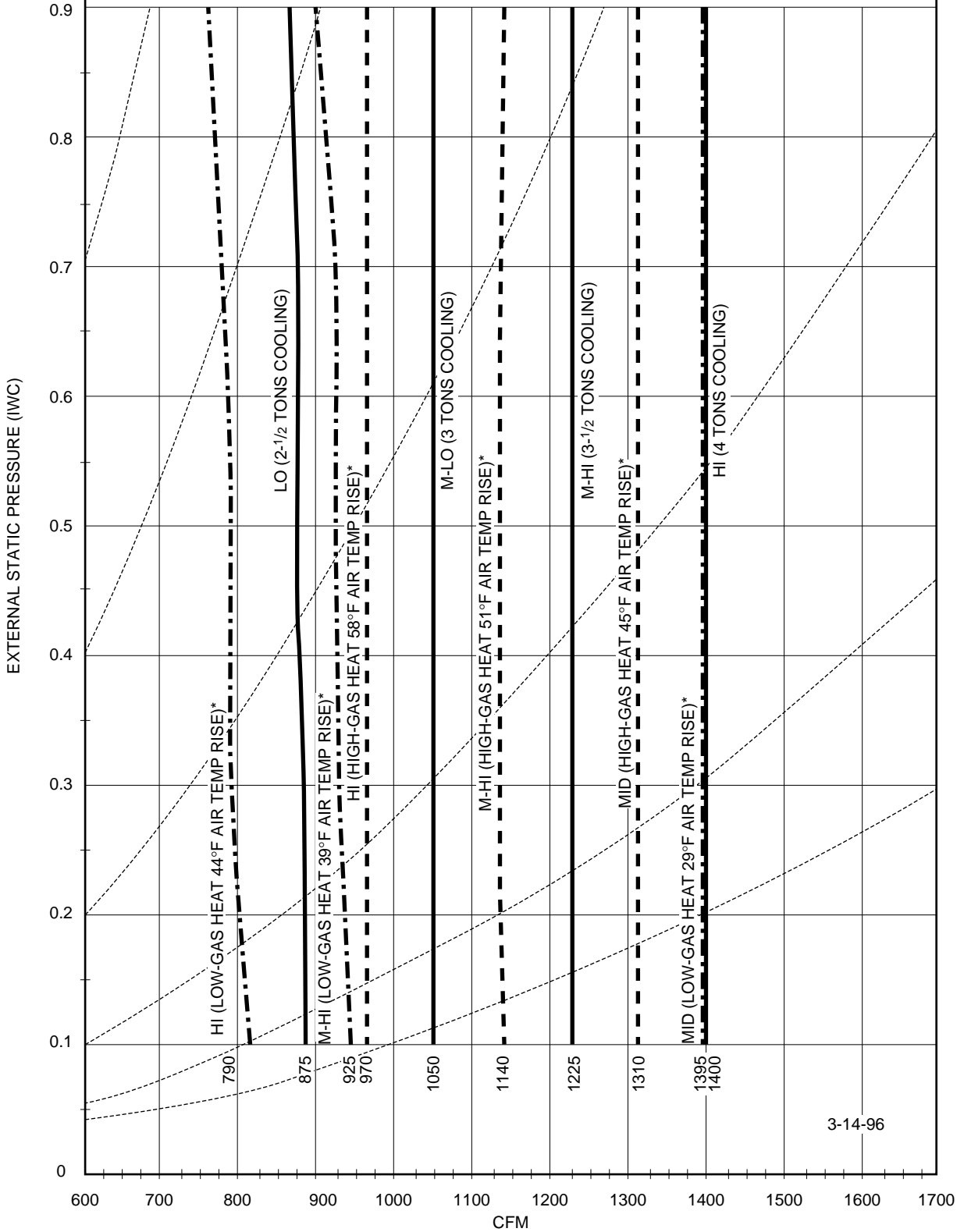
TWO-SPEED COOLING WITH FILTER  
COOLING AIRFLOW SELECTION IS APPROXIMATELY 350 CFM PER TON



**FURNACE SIZE**  
**80,000 BTUH HEATING INPUT**  
**48,000 BTUH COOLING**

\*See Air Delivery Table for  
 jumper positions.

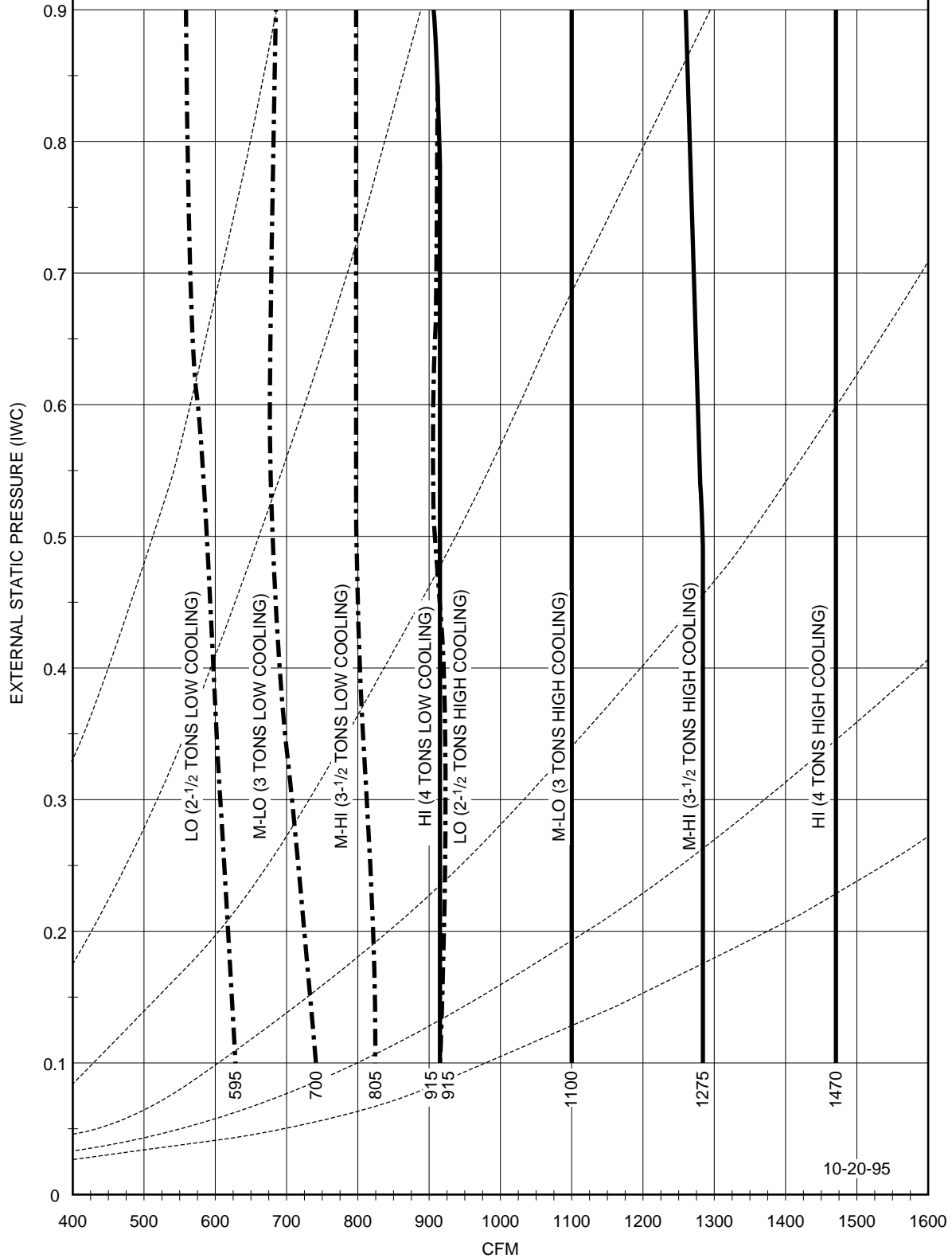
TWO-STAGE GAS HEATING WITH FILTER  
 SINGLE-SPEED COOLING WITH FILTER  
 COOLING AIRFLOW SELECTION IS APPROXIMATELY 350 CFM PER TON



3-14-96

FURNACE SIZE  
80,000 BTUH HEATING INPUT  
48,000 BTUH COOLING

TWO-SPEED COOLING WITH FILTER  
COOLING AIRFLOW SELECTION IS APPROXIMATELY 350 CFM PER TON

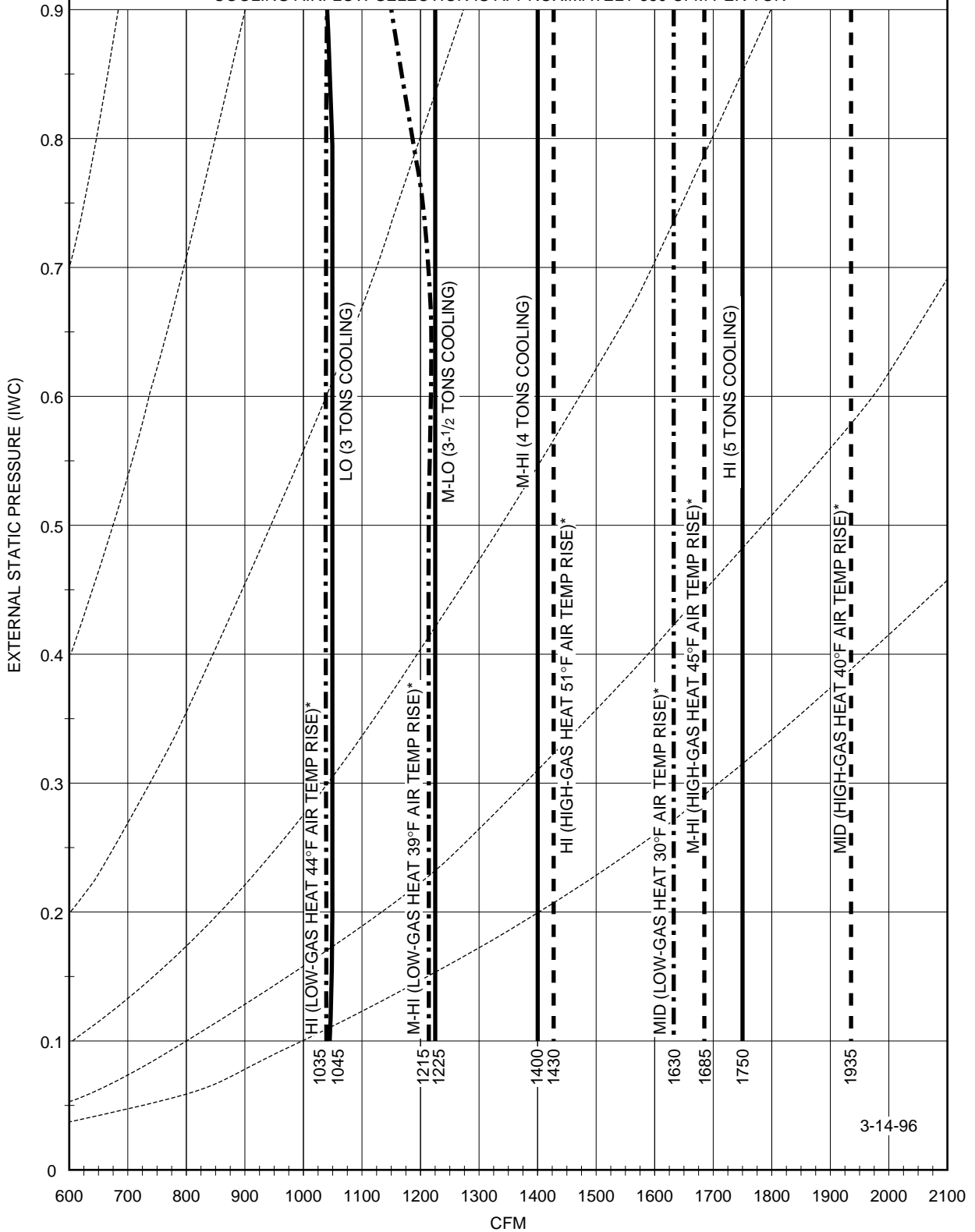


10-20-95

**FURNACE SIZE**  
**100,000 BTUH HEATING INPUT**  
**60,000 BTUH COOLING**

\*See Air Delivery Table for  
 jumper positions.

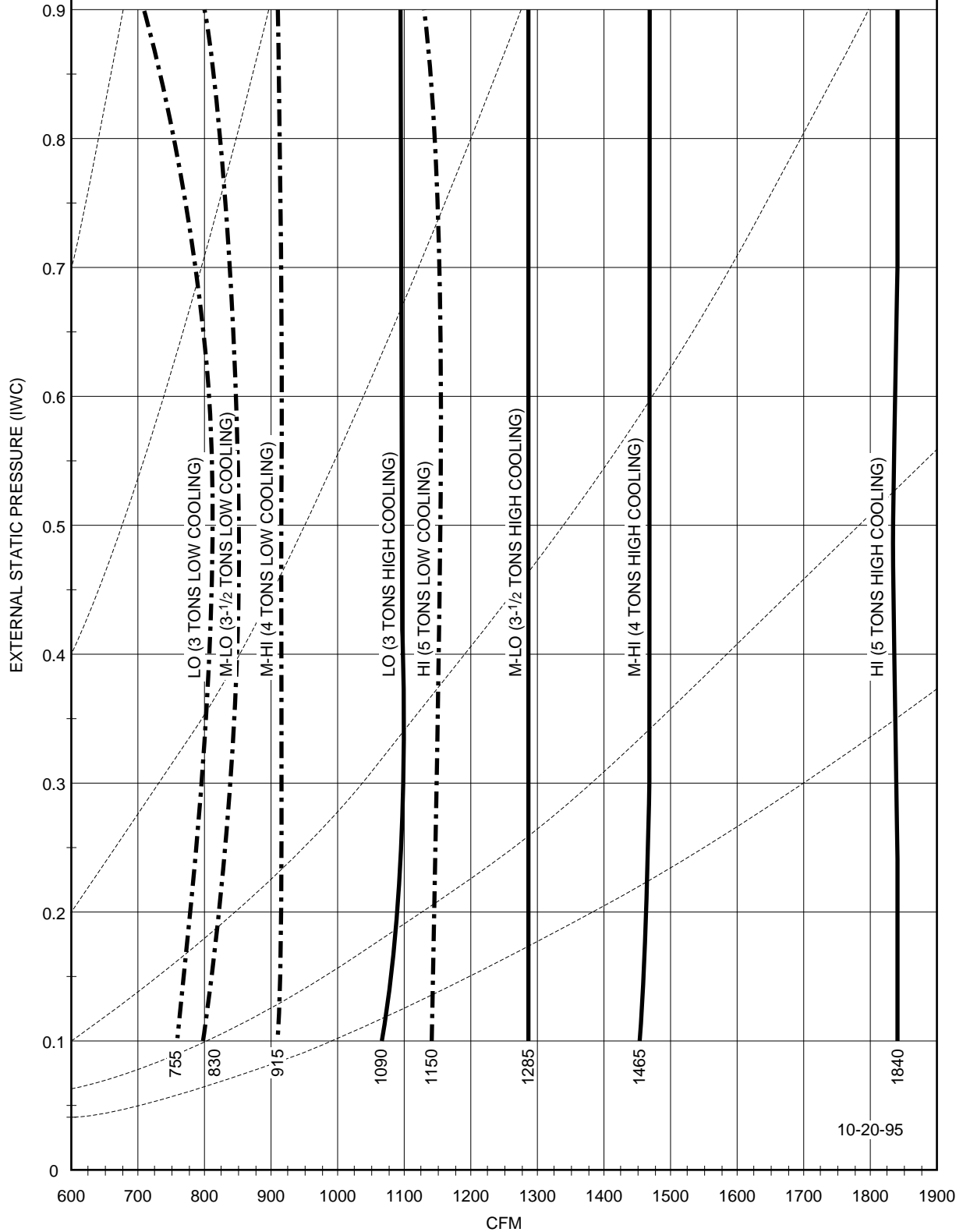
TWO-STAGE GAS HEATING WITH FILTER  
 SINGLE-SPEED COOLING WITH FILTER  
 COOLING AIRFLOW SELECTION IS APPROXIMATELY 350 CFM PER TON

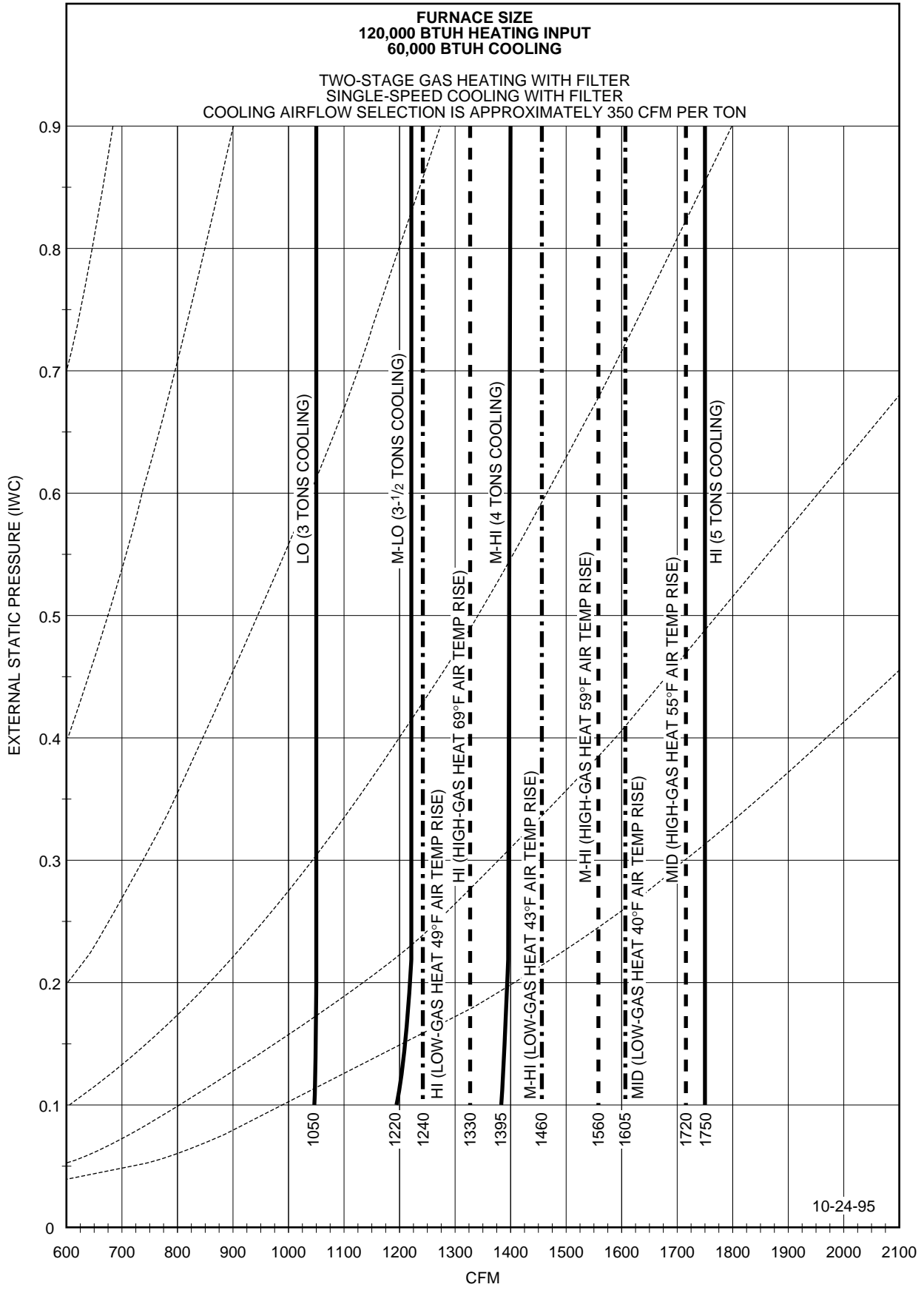


3-14-96

FURNACE SIZE  
 100,000 BTUH HEATING INPUT  
 60,000 BTUH COOLING

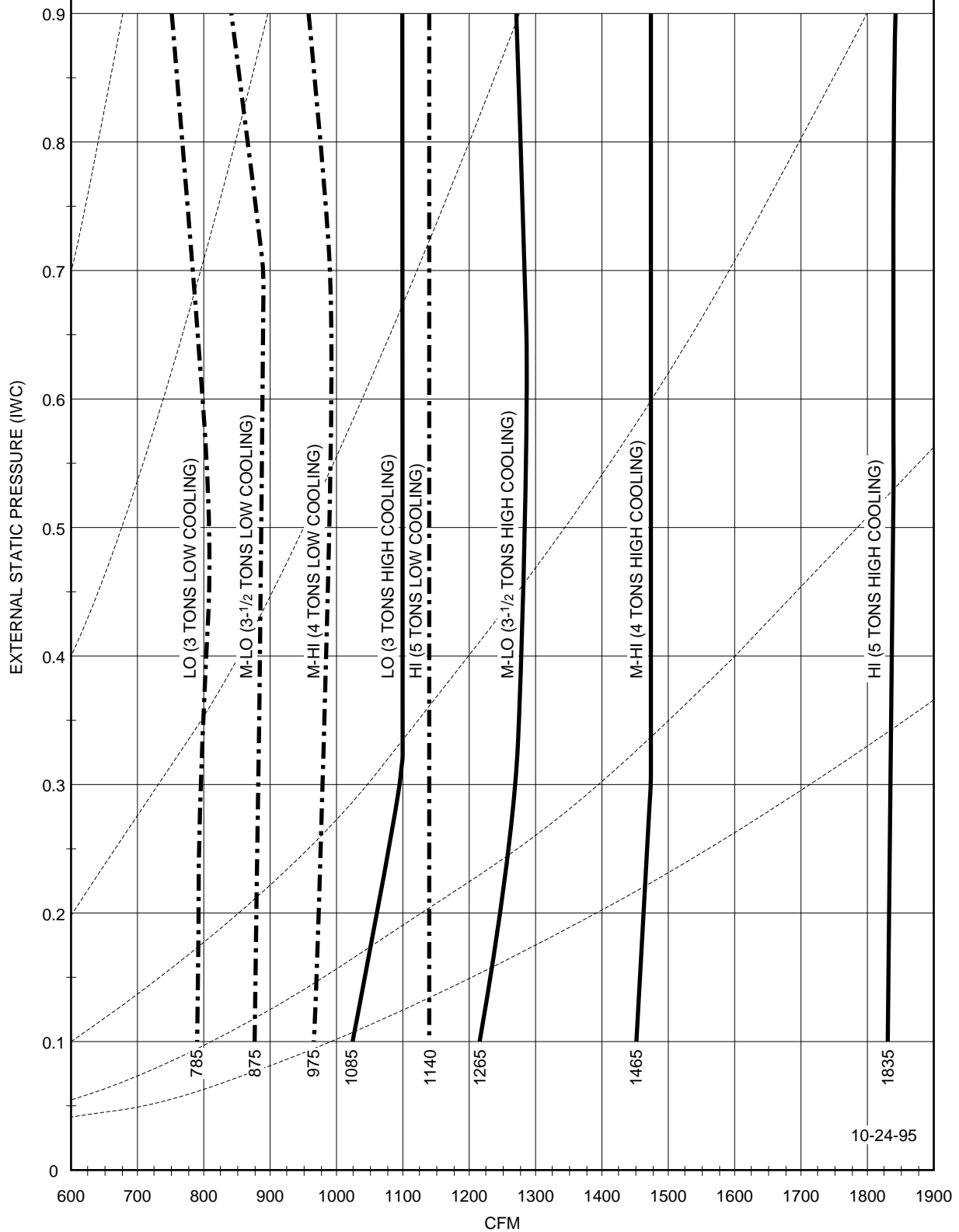
TWO-SPEED COOLING WITH FILTER  
 COOLING AIRFLOW SELECTION IS APPROXIMATELY 350 CFM PER TON





10-24-95

**FURNACE SIZE**  
**120,000 BTUH HEATING INPUT**  
**60,000 BTUH COOLING**  
 TWO-SPEED COOLING WITH FILTER  
 COOLING AIRFLOW SELECTION IS APPROXIMATELY 350 CFM PER TON



10-24-95

A96026

# SERVICE TRAINING

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

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- Maintenance
- Installation Overview
- Operating Sequence

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Packaged Service Training

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A94328



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

UNIT MUST BE INSTALLED IN ACCORDANCE  
WITH INSTALLATION INSTRUCTIONS

Cancels: PDS 333B.60.1B