



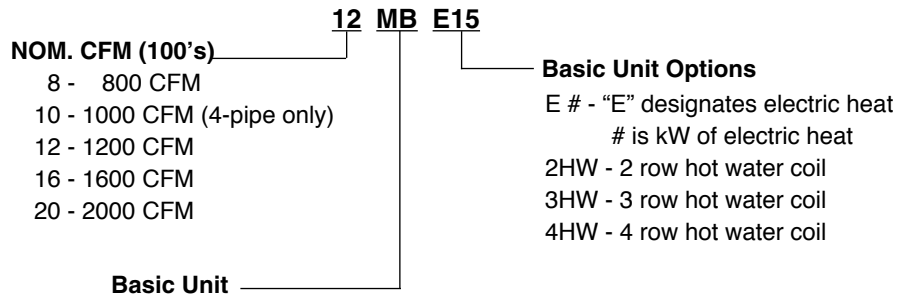
MBE

Multi-Position Chilled Water Fan Coil

- 230V (277V) Multi-speed Motor
- 2 Pipe Cooling and Heating
- 240/24V Relay/Transformer
- Direct Drive Motor



NOMENCLATURE



MBE SERIES

MBE Series (230V)

The **MBE** Series 2-pipe fan coil comes with a 4 row cooling coil, 230V multi-speed motor, 230/24 transformer, and up to 25kW of factory installed electric heat. Models with more than 10kW also include a circuit breaker for branch circuit protection. Control voltage is 24V.

MBE Series (277V)

This fan coil comes with a 4 row cooling coil, 277V multi-speed motor, and up to 10kW of factory installed electric heat. **All models are ETL Listed.**

Basic Unit

All models are manufactured with **heavy gauge galvanized steel** to resist corrosion.

Each cabinet is fully insulated.

Coil connections are stubbed out the cabinet for easier installation.

Coils

Coils have **3/8 inch copper tubing** expanded to high efficiency aluminum fins.

Manual air vents are provided and all coils are pressure tested to 350 psig.

Drain Pans

All fan coils can be installed vertically or horizontally (right-to-left airflow) with no modification. Horizontal drain pans can be repositioned within the cabinet to allow horizontal installation with left-to-right airflow. Each drain pan is coated with a "mastic" material to reduce corrosion. Threaded primary and secondary drain connections are also provided.

Motors

Standard motors are **PSC type** with internal thermal overload protection and are mounted with rubber isolation bushings.

Blower wheels are centrifugal, forward curved, and dynamically balanced.

Filters

One inch throw away filters are factory installed.

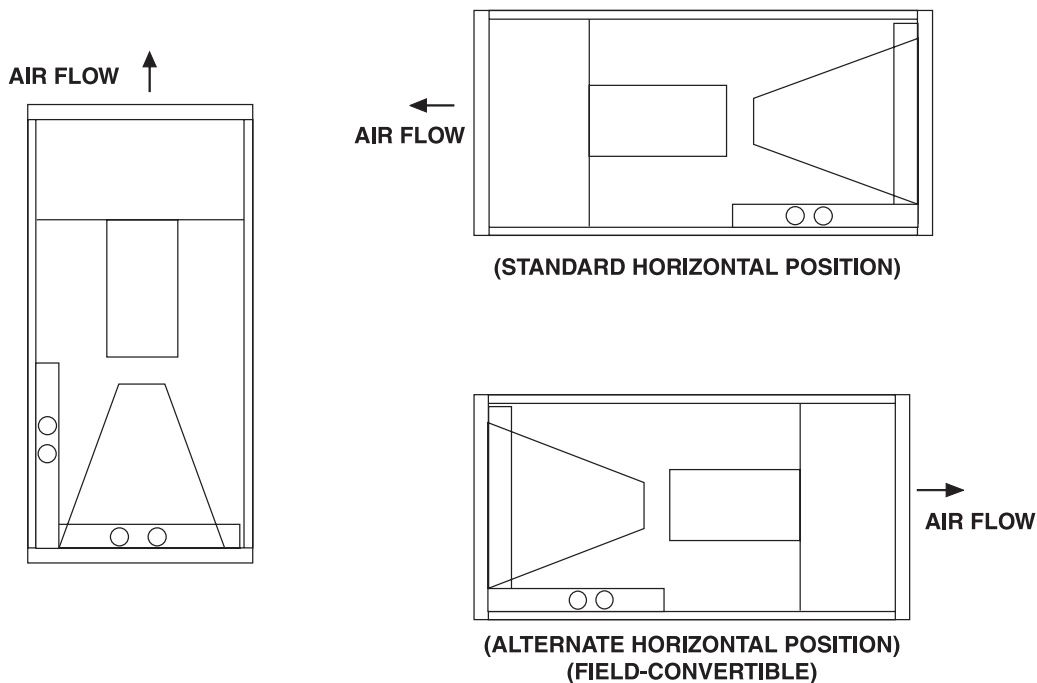
Agency Listing

All standard models are **ETL Listed**.

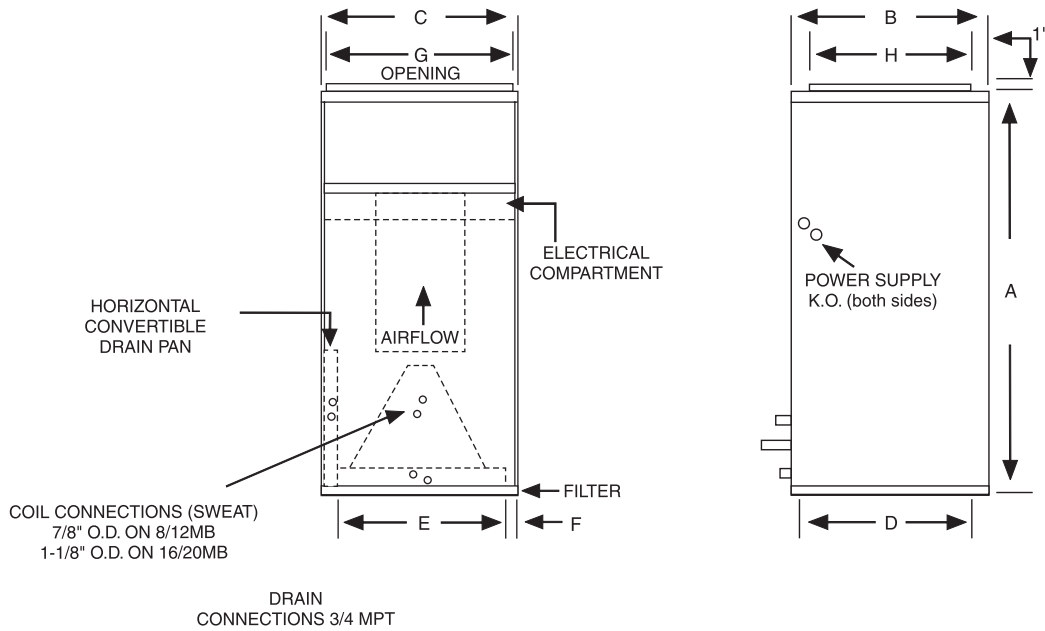
Optional "Autospeed 24V" control:

The MB and MB-HW models are available with an optional 24V 3-speed control board and a 24V 3-speed digital wall thermostat. This option, called the "Autospeed 24V", provides maximum comfort and efficiency by automatically selecting the appropriate High, Medium, or Low fan speed, depending on room temperature and thermostat temperature setting.

3-WAY AIRFLOW



DIMENSIONS



PHYSICAL DIMENSIONS											
UNIT MODEL	A	B	C	D	E	F	G	H	COIL CONNEC-TIONS	FILTER SIZE	SHIP WT. (LBS)
8MBE	40	20	20	18-1/2	16	2	18	16	7/8 SWEAT	18 X 20 X 1	115
12MBE	42	23	20	21-1/2	16	2	18	17	7/8 SWEAT	20 X 22 X 1	120
16/20MBE	48	28	21-1/4	26-1/4	17-1/4	2	19-1/4	18	1-1/8 SWEAT	20 X 25 X 1	210

Features:

1. Factory installed electric heat
2. 4 row cooling coil
3. 208/230V motor
4. 230/24V transformer
5. Circuit breaker disconnect (above 10kW) (Except 277V)
6. Manual air vent
7. Throw away filter
8. Vertical / horizontal drain pan (right-to-left and left-to-right airflow)
9. 277 V models available (10kW max) (See below)



In keeping with its policy of continuous progress and product improvement, First Operations reserves the right to make changes without notice.

ELECTRICAL DATA

ELECTRICAL DATA (230 / 208V)											
UNIT MODEL	ELECTRIC HEAT CAPACITY				TOTAL AMPS		MIN. CIR. AMPACITY		MAX. FUSE OR HACR BREAKER		
	kW		BTUH								
	230V	208V	230V	208V	230V	208V	230V	208V	230V	208V	
8MBE	3	3	2.3	10,200	7,700	14	13	18	16	20	20
	4	4	3	13,600	10,200	19	16	23	20	25	20
	5	5	3.8	17,000	13,000	23	20	28	25	30	25
	6	6	4.5	20,500	15,400	27	24	36	29	40	30
	8	8	6	27,300	20,500	35	31	46	38	50	40
	10	10	7.5	34,100	25,600	44	38	54	47	60	50
12MBE	5	5	3.8	17,000	13,000	24	21	30	26	30	30
	8	8	6	27,300	20,500	36	32	46	40	50	40
	10	10	7.5	34,100	25,600	45	39	56	49	60	50
	(1) 15	15	11.3	51,100	38,500	45	39	56	49	60	50
						21	18	26	23	30	25
16MBE	5	5	3.8	17,000	13,000	25	22	30	27	30	30
	8	8	6	27,300	20,500	37	33	47	40	50	40
	10	10	7.5	34,100	25,600	46	40	57	50	60	50
	(1) 15	15	11.3	51,100	38,500	46	40	57	50	60	50
						21	18	27	23	30	25
	(1) 20	20	15	68,200	51,100	46	40	57	50	60	50
						42	36	53	46	60	50
	(1) 25	25	18.75	85,250	63,900	46	40	57	50	60	50
						42	36	53	46	60	50
					21	18	27	23	30	25	
20MBE	5	5	3.8	17,000	13,000	27	24	34	30	35	30
	8	8	6	27,300	20,500	40	35	49	44	50	45
	10	10	7.5	31,100	25,600	48	42	60	53	60	60
	(1) 15	15	11.3	51,100	38,500	48	42	60	53	60	60
						21	18	27	23	30	25
	(1) 20	20	15	68,200	51,100	48	42	60	53	60	60
						42	36	53	46	60	50
	(1) 25	25	18.75	85,300	63,900	48	42	60	53	60	60
					42	36	53	46	60	50	
					21	18	27	23	30	25	

(1) 15kW and 20kW models require 2 supply circuits. 25kW models require 3 supply circuits.

NOTES:

Units suitable for installation with 0" clearance to combustible material.

ELECTRICAL DATA (277V)						
UNIT MODEL	ELECTRIC HEAT CAPACITY			TOTAL AMPS	MIN. CIR. AMPACITY	MAX. FUSE OR HACR BREAKER
	kW	HP	BTUH			
8MBE	0		-	1.2	-	-
	3	1/6	10,200	12	15	15
	5		17,000	20	24	25
	6		20,500	23	29	30
	8		27,300	30	38	40
10	34,100		38	47	50	
12MBE	0	1/3	-	2.4	-	-
	5		17,000	21	26	30
	8		27,300	32	40	40
	10		34,100	39	49	50
16MBE	0	1/2	-	3.0	-	-
	5		17,000	21	27	30
	8		27,300	32	40	40
	10		34,100	39	49	50
20MBE	0	3/4	-	4.0	-	-
	5		17,000	22	28	30
	8		27,300	33	40	40
	10		34,100	40	50	50

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MBE DATA

BLOWER DATA												
UNIT MODEL	NOM. COOL TONS	MOTOR HP-AMP (230V)	MOTOR SPEED	DUTY	CFM vs. EXTERNAL STATIC PRESSURE							
					0.05	0.10	0.15	0.20	0.30	0.40	0.50	
8MBE	2	1/6-2.0	High Low	Cool Heat	900	880	860	830	790	700	600	
					740	710	690	660	630	570	490	
12MBE	3	1/3-2.5	High Low	Cool Heat	1410	1380	1340	1310	1270	1190	1060	
					1710	1150	1130	1100	1080	1030	970	
16MBE	4	1/2-3.5	High Med Low	Cool Cool Heat	1760	1730	1680	1640	1580	1480	1360	
					1490	1460	1430	1400	1370	1300	1210	
20MBE	5	3/4-5.0	High Low	Cool Heat	2130	2110	2090	2060	2025	1930	1820	
					1690	1680	1660	1640	1620	1580	1540	

NOTE:

16MBE is factory wired on high speed for cooling.

CHILLED WATER COOLING CAPACITY - 4 ROW (MB, MB-HW, MBE SERIES)															
UNIT MODEL	CFM	GPM	P.D. (FT. WTR.)	45° ENTERING WATER						42° ENTERING WATER					
				80° DB/67°F WB ENT. AIR			75° DB/63°F WB ENT. AIR			80° DB/67°F WB ENT. AIR			75° DB/63°F WB ENT. AIR		
				TOTAL MBH	SENS. MBH	TEMP. RISE	TOTAL MBH	SENS. MBH	TEMP. RISE	TOTAL MBH	SENS. MBH	TEMP. RISE	TOTAL MBH	SENS. MBH	TEMP. RISE
8MB	600	3.0	2.5	19.0	13.8	12.7	14.5	12.1	9.7	20.7	14.4	13.8	15.8	12.6	10.5
		4.5	5.5	22.4	15.1	9.9	17.1	13.1	7.6	24.4	15.9	10.8	18.6	13.7	8.3
		6.0	9.5	24.4	15.9	8.2	18.7	13.7	6.2	26.6	16.8	8.9	20.3	14.4	6.8
8MB	800	3.5	3.4	23.1	17.3	13.2	17.6	15.3	10.1	25.2	18.1	14.4	19.2	15.8	11.0
		5.0	6.7	26.9	18.7	10.7	20.5	16.3	8.2	29.3	19.6	11.7	22.4	17.1	8.9
		6.5	11.0	29.2	19.6	9.0	22.3	17.0	6.9	31.8	20.6	9.8	24.3	17.8	7.5
10/12MB	1000	4.0	2.4	28.3	21.6	14.1	21.6	19.0	10.8	30.8	22.5	15.4	23.6	19.7	11.8
		6.0	4.8	33.9	23.7	11.3	25.9	20.6	8.6	36.9	24.8	12.3	28.2	21.6	9.4
		8.0	7.9	37.3	25.0	9.3	28.5	21.7	7.1	40.6	26.3	10.2	31.0	22.7	7.8
10/12MB	1200	5.0	3.5	33.7	25.5	13.5	25.8	22.4	10.3	36.8	26.6	14.7	28.1	23.3	11.3
		6.5	5.5	38.0	27.1	11.7	29.1	23.7	8.9	41.5	28.4	12.8	31.7	24.7	9.7
		8.0	7.9	41.0	28.2	10.3	31.3	24.6	7.8	44.7	29.6	11.2	34.1	25.7	8.5
16MB	1400	4.5	2.0	36.2	29.2	16.1	27.7	25.8	12.3	39.5	30.3	17.6	30.1	26.7	13.4
		6.0	3.3	42.4	31.4	14.1	32.4	27.6	10.8	46.2	32.8	15.4	35.3	28.7	11.8
		7.5	4.8	46.9	33.1	12.5	35.8	28.9	9.6	51.1	34.7	13.6	39.0	30.2	10.4
16MB	1600	6.0	3.3	44.2	34.1	14.7	33.8	30.0	11.3	48.2	35.5	16.1	36.8	31.2	12.3
		8.0	5.4	51.0	36.6	12.7	38.9	32.0	9.7	55.5	38.3	13.9	42.4	33.4	10.6
		10.0	7.9	55.7	38.4	11.1	42.5	33.4	8.5	60.7	40.3	12.1	46.3	34.9	9.3
20MB	1600	6.5	3.8	46.1	34.8	14.2	35.2	30.6	10.8	50.3	36.3	15.5	38.4	31.8	11.8
		8.5	6.0	52.3	37.1	12.3	39.9	32.4	9.4	57.0	38.8	13.4	43.5	33.8	10.2
		10.5	8.6	56.6	38.7	10.8	43.2	33.7	8.2	61.7	40.7	11.8	47.1	35.2	9.0
20MB	2000	7.0	4.3	52.4	40.9	15.0	40.0	36.1	11.4	57.1	42.6	16.3	43.6	37.4	12.5
		10.0	7.9	61.7	44.3	12.3	47.1	38.8	9.4	67.3	46.4	13.5	51.4	40.5	10.3
		13.0	12.5	67.5	46.5	10.4	51.6	40.5	7.9	73.6	48.8	11.3	56.2	42.4	8.6

NOTE:

1. All cooling coils have four rows.
2. Contact factory for capacities at other conditions.

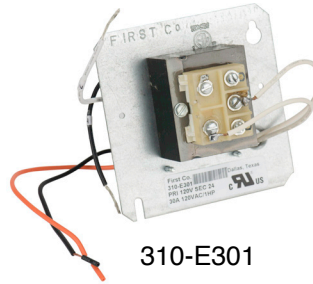
ACCESSORIES



Power Head



Valve Body
(2-way)



310-E301



CP905

ACCESSORIES (field installed) MB, MB-HW, MBE Series	
Power Heads: (two power heads required for 4-pipe) - For all units	
E50131180	24V
E50132180	110V/50Hz - 120V/60Hz
E50137180	277V
E50138180	220V/50Hz - 230/60Hz
Seperate Valve Bodies: (order power heads seperately)	
E421317	3/4" 2-way - For (PHYB, 8-12MB/MBE/MB-HW (and 8-16MB-HW htg.coil)
E431317	3/4" 3-way - For (PHYB, 8-12MB/MBE/MB-HW (and 8-16MB-HW htg.coil)
E421417	1" 2-way - For 16 - 20MB/MBE/MB-HW (and 20MB-HW htg. coil)
E431417	1" 3-way - For 16 - 20MB/MBE/MB-HW (and 20MB-HW htg. coil)
Hand Valves: (Combination balance / shut-off) (2 usually req'd per coil)	
CP90	3/4" For 8-12MB/MBE/MB-HW)8-16MB-HW Htg. coil)
CP905	1" For 16-20MB/MBE/MB-HW (16 and 20MB-HW Htg. coil)
Relay - Transformer	
310-E301	120 / 24V for ALL 120V motors

NOTE:

1. Power head leads are 18".

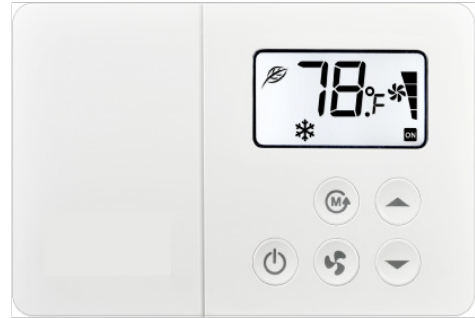


Autospeed 24V™ Thermostats

(Part #'s T200/T201)

Accurate, Efficient, and Quiet Fan Coil Operation

The new Autospeed 24V™ thermostat (part's # T200 **and** T201) provides 24V AC single stage temperature control of 2 pipe and 4 pipe fan coil applications. The T200/T201 thermostat offers maximum comfort and efficiency by **automatically selecting the appropriate High, Medium, or Low fan speed**, depending on room temperature and thermostat temperature setting. This automatic fan speed control not only brings the room temperature to the desired set point quickly, it maintains the room temperature with the most efficient fan speed selection. Once the desired room temperature is achieved the fan coil operates on low speed for extremely quiet operation. The fan coil control board (which is factory installed in all CW units) is a circuit board that provides control of a 3-speed line voltage fan motor. The control board allows the thermostat to control the fan motor even though, by itself, the thermostat does not have the amperage capability nor the voltage rating capability to control the fan motor.



(T200 shown with wall plate)

T200/T201 Thermostat Features

- Compatible with 2 pipe and 4 pipe fan coils:
Series HBC/PHBC/RHBC/CHBC,
MB/MB-HW, HYB/PHYB, and CW/CW-HW
- Cycle fan or continuous fan operation
- **T200**-Manual Heat / Cool changeover switch
- **T201**-Automatic Heat / Cool changeover switch
- Large LED digital display
- Allows less expensive 24V control wiring from the fan coil to the thermostat, rather than larger, more expensive line voltage wiring.
- 3-speed fan operation, with speed indicator lights
- Fan speed determination:
 - If room temperature is 4 degrees (F.) off thermostat set point, fan will operate on High speed.
 - If 3 degrees off set point, fan will operate on Medium speed.
 - If within 2 degrees of set point, fan will operate on Low speed.
- One or 3 hour Auto override - Fan speed defaults to "Auto" mode after 1 hour if the user manually changes it to a particular fan speed.
- Temperature set range: 64-88 degrees F.
- Adjustable high and low temperature set points
- Selectable Fahrenheit / Centigrade display
- Power switch turns system off/on
- Requires 7-wire 24V thermostat wire
- No batteries required
- Set points are permanently retained in memory in case of power interruption
- Simple operation
- Mercury Free
- Wall plate included

DISPLAY CODES		
DISPLAY	STEADY	FLASHING
P1	Auto fan timer - 1 hour (default)	Auto fan timer - 3 hour
P2	Continuous fan (default)	Cycled fan
P3	°F (default)	°C
P4	Cycled fan standard	Cycled fan overdrive (default)
P5	Low temp limit 64 °F (default)	Low temp limit 67 °F
P6	Hi temp limit 88 °F (default)	Hi temp limit 84 °F



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