Electrical
Refrigerant Detection System

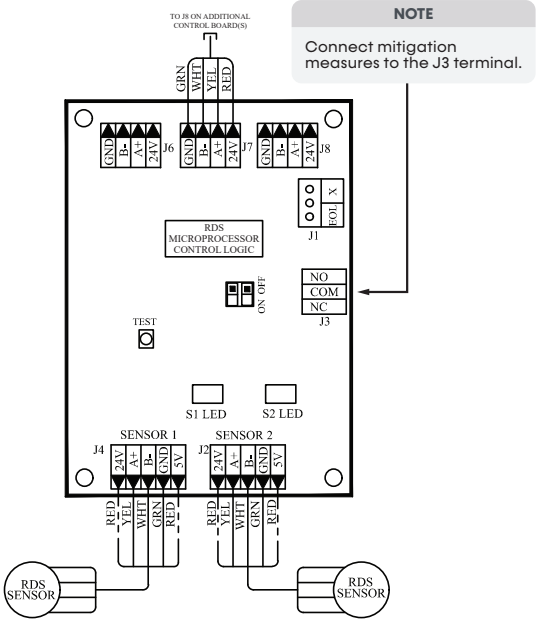
Models:
MB
072-300

REFRIGERANT DETECTION SYSTEM (RDS)

The function, operation, and required servicing measures for the Refrigerant Detection System (RDS) include the following:

- The RDS monitors the status of the refrigerant sensor(s) in the unit. If refrigerant is detected above the maximum threshold, the control enables the unit blower, disables the compressor(s), and enables the pilot relay on the RDS control board. You can use this relay to open external zoning dampers and/or activate external mechanical ventilation. The relay is normally closed (NC) and can control a signal with a maximum of 28VA @ 24VAC.
- A fault is enabled if the RDS control board loses communication with a refrigerant sensor or if the main control board loses communication with the RDS board. See Functional Troubleshooting for steps to troubleshoot the RDS.
- The End of Line (EoL) termination is used to prevent signal reflection issues in the communication network. When the EoL termination is enabled, it places a resistor at the end of the communication line, ensuring proper signal integrity and reducing potential communication errors. Add the EoL termination resistor when the RDS board is the end of a daisy-chain, and the total length of the wire is greater than 50 feet.

Figure 19: RDS Board



NOTE

Connect mitigation measures to the J3 terminal.

RDS SENSOR PLACEMENT

Large vertical units come standard with factory-installed RDS. There are two sensors included: One in the compressor section, and one in the blower section. The RDS board is mounted on the control box cover.

If a sensor needs to be replaced, consult the RDS AOM. The manufacturer utilizes two brands of sensors, and each sensor has a specific connector. However, you can mix sensors without issue in the field.

⚠ ATTENTION

The sensors cannot be installed in a way that exposes it to water. Install them using the orientation displayed in the **RDS Sensor Installation** figures.

Figure 20: RDS Sensor Installation

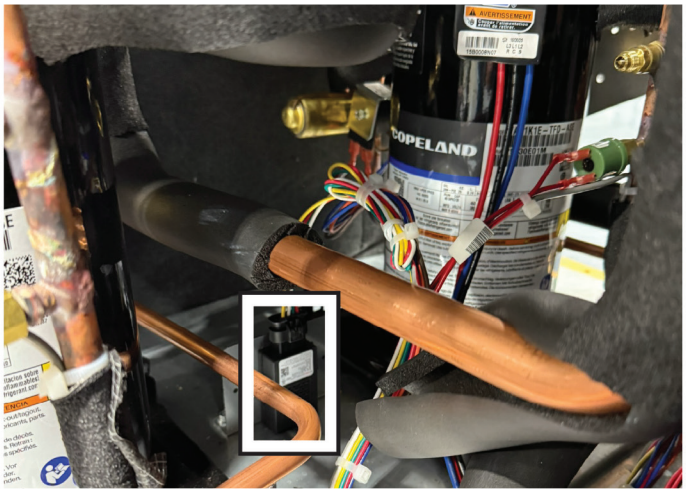
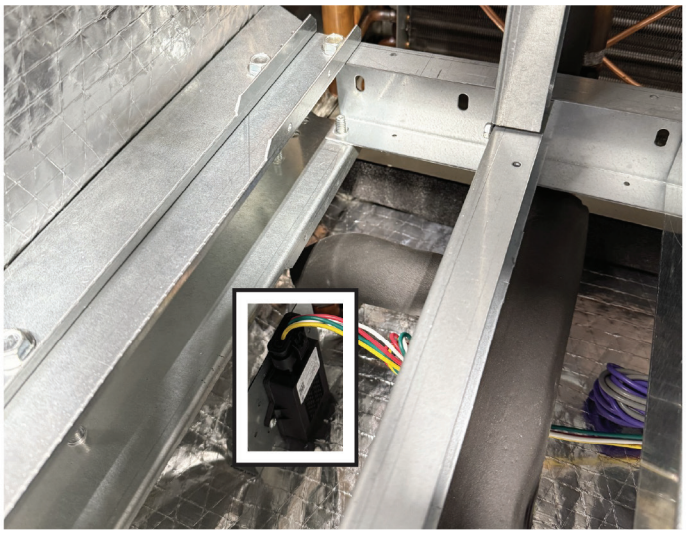


Figure 21: RDS Sensor Installation



Models:
MB
072-300

Electrical
CXM2, RDS, and Wireless Service Tool

CXM2 Communicating Controls

For detailed controller information, see the CXM2 Application, Operation, and Maintenance (AOM) manual (part # 97B0137N01). To confirm the controller type of your particular unit, refer to digit 9 on the unit model number and the unit nomenclature diagram found on page 3 of this manual.

Refrigerant Detection System

For detailed controller information, see the Refrigerant Detection System Application, Operation, and Maintenance (AOM) manual (part # 97B0152N01).

Wireless Service Tool

For detailed controller information, see the Wireless Service Tool Application, Operation, and Maintenance (AOM) manual (part # 97B0169N01). The Wireless Service Tool port is located on the corner post of most models.

Blower Adjustment

Models:
MB
072-300

⚠ CAUTION

Always disconnect all power supply(s) to unit prior to making belt or sheave adjustments. Inadvertently starting of the motor can cause damage to the equipment and personal injury.

AIRFLOW AND EXTERNAL STATIC PRESSURE

Selection Adjustment

The MB Series is available with standard, low, and high static options. These options will substitute a different blower drive sheave for each static range. In addition certain static ranges (see blower tables) may require the optional large fan motor. Please specify static range and motor horsepower when ordering. See model nomenclature.

Sheave Adjustment

The MB Series is supplied with variable sheave drive on the fan motor to adjust for differing airflows at various ESP conditions. Select an airflow requirement on the left side of the table, then move horizontally to right under the required ESP. Contractor is responsible for balancing airflow, and maintaining static in duct as needed. Sheaves can be adjusted through the outlined static range at the selected airflows. Fully closed, the sheave will produce the highest static capability (higher rpm). To adjust sheave position: loosen belt tension and remove belt, loosen set screw on variable sheave (on fan motor) and open sheave to desired position. Re-tighten set screw and replace belt and set belt tension as below.

Sheave and Pulley Alignment

Verify belt is straight; misalignment will cause premature belt failure. Adjust sheave if needed.

Belt Tensioning

An overly loose belt will, upon motor start, produce a slippage 'squeel' and cause premature belt failure and or intermittent airflow. An overly-tight belt can cause premature belt, motor, or blower bearing failure.

Use the following steps to ensure proper belt tensioning:

1. Remove belt from motor sheave
2. Lift motor assembly
3. Loosen the 5⁄16-inch hex nuts on the grommet motor adjustment bolts (two per bolt). To increase the belt tension loosen the top hex nut. To decrease the belt tension loosen the bottom hex nut.
4. Turn the bolts by hand to the desired position then tighten the 5⁄16-inch hex nuts (two per bolt).
5. Lower the motor assembly
6. Install the belt
7. The belt should be tensioned with a tensioning gauge method such as the Browning Belt Tensioner to set proper belt tension (See next page).

NOTES:

- **Motor position should not need adjustment.**
- **Motor sheave position is at mid position of each sheave. Thus the motor sheave is typically 2.5 turns open on a 5-turn sheave.**

Special Note for AHRI Testing

The Units should be adjusted as follows for rated airflow:

- MB072 - 2400cfm/2.5 turns and 0.57 in wg ESP
- MB096 - 3200cfm/3.0 turns and 0.62 in wg ESP
- MB120 - 4000cfm/3.0 turns and 0.59 in wg ESP

Models:
MB
072-300

VFD Operation

SINGLE ZONE VARIABLE AIR VOLUME (VAV)

Products with option "6" or "F" in the 14th digit of the model number come with a variable frequency drive (VFD) and are intended to be applied in single zone VAV applications. MB units use two CXM2 in a dual-board configuration. The VFD is controlled by board 2. The VFD receives a modulating 0-10VDC signal from the CXM2, and varies the output frequency directly proportionally to the input signal. With 60Hz frequency, a signal of 10VDC results in a 60Hz frequency to the motor and 100% fan speed. If the signal is 5VDC, the VFD output is 30Hz (50% fan speed).

VFD BLOWER OPERATION

If the CXM2 is configured for VFD blower operation, the CXM2 controls an external VFD using a 0–10VDC control signal on AO1, and will default to the LAT control mode.

NOTE: VFD output is 50% of last value during heating or cooling blower off delay times.

The actual operating range for the VFD when the blower should be active is 2–10VDC associated to the operating speed of 0–100%. When the VFD should be off, the output should be set to 0VDC.

For each unit size, there is maximum and minimum operating speed at which the VFD can operate for any mode, defined in the **VFD Control Values** table.

The VFD blower may be operated in discrete speed or LAT control modes. If configured for discrete speed operation, the VFD speed is operated using one of the three set operating speeds for each unit size, defined the **VFD Control Values** table. If configured for LAT operation, the VFD speed is controlled by the CXM2 to achieve or maintain the selected target LAT value for the current operating mode.

DISCRETE SPEED VFD OPERATION

When the CXM2 is configured for discrete-speed VFD operation, the VFD speed is set to the selected operating speed (A, B or C) for full-load heating or cooling. Full-load operation is defined as the second stage enabled in either heating or cooling. The possible discrete operating speeds for each unit size are defined in the **VFD Control Values** table.

When the CXM2 is configured for discrete-speed VFD operation, the VFD operating speed may be increased or decreased by 10%. The speed offset option defaults to normal (no offset). To increase the VFD operating speed by 10%, set the speed offset option to Increase. To decrease the VFD operating speed by 10%, set the speed offset option decrease.

When operating in first-stage heating or cooling, the VFD speed is set to the percentage multiplier of the selected full-load operating speed (A, B or C, plus or minus adjustment) listed for each unit size as defined in the **VFD Control Values** table.

LAT CONTROL VFD OPERATION

When the CXM2 is configured for LAT control operation, the VFD speed is controlled by the CXM2 to maintain the selected target LAT for heating or cooling operation.

When a compressor demand is recognized, the VFD output is set to the most recent operating speed of the VFD in the current operating mode (heating or cooling). If there is no value stored from a previous heating or cooling cycle, the VFD speed is initially set to 75% or 8.0 VDC. After the VFD speed is initially set, the VFD control signal is not adjusted until after 90 seconds of compressor operation, then is periodically checked and adjusted every 10 seconds if needed to maintain the LAT.

VFD Operation

Models:
MB
072-300

If the control switches from the heating mode to cooling, or cooling to heating without de-activating the compressor, the VFD control voltage immediately switches to the last stored control voltage for the new operating mode, then is not adjusted for the first 90 seconds of operation in the new operating mode.

The VFD control voltage is increased or decreased incrementally based on the magnitude of the differential between the current LAT and the target LAT, using the following:

LAT differential |Actual – Target|	VFD adjust (VDC)
ΔT ≤ 1.0°F	0.0
1.0 < ΔT ≤ 2.0°F	0.1
2.0 < ΔT ≤ 3.0°F	0.2
3.0 < ΔT ≤ 5.0°F	0.3
ΔT > 5.0°F	0.4

The VFD control voltage is increased or decreased based on both the operating mode and whether the current LAT is above or below the target LAT, using the following:

Operating mode	LAT differential (Actual – Target)	VFD voltage adjustment
Heat	Above	Increase
	Below	Decrease
Cool	Above	Decrease
	Below	Increase

NOTE: Blower speed is directly proportional to VFD output frequency and voltage

When the control stages from first to second stage operation, the output voltage signal is immediately increased by 25% of the current value, not to exceed the maximum speed (voltage) for the selected heat pump family and size. The blower speed is not adjusted further for 90 seconds after transition from first to second stage operation.

When making VFD speed adjustments for LAT control, the VFD speed should never go above the maximum speed (voltage) or below the minimum speed (voltage), for the selected heat pump family and size.

CONTINUOUS FAN VFD OPERATION

When the CXM2 is configured for VFD blower operation, the continuous fan operating speed is a selectable value. The default continuous fan operating speeds (default fan speeds) are shown in the **VFD Control Values** table, along with the minimum and maximum operating speed values.

NOTE: In VFD operation (Blower Type = 128), the VFD enable signal is triggered by the K1 relay. A01 output voltage for continuous fan operation will change to a percentage for the selected blower speed from the values presented in the VFD Control Values table or for full load airflow needs.

Models:
MB
072-300

VFD Operation

Table 8: VFD Control Values

Model	Minimum VFD Speed	Maximum VFD Speed	VFD Fixed Speed A	VFD Fixed Speed B	VFD Fixed Speed C	Part Load Multiplier	Default Fan Speed
MB072	3.7	10.0	7.4	6.2	9.0	71%	5.2
MB096	3.8	10.0	7.0	6.0	9.0	75%	5.0
MB120	4.2	10.0	8.0	7.0	9.0	70%	6.0
MB168	4.1	10.0	7.9	6.4	9.0	76%	5.4
MB192	4.4	10.0	8.0	7.0	9.0	73%	6.0
MB240	4.2	10.0	8.0	7.0	9.0	70%	6.0
MB300	5.0	10.0	8.0	8.0	9.5	71%	7.0

Table 9: Operating Temperatures

Model	Minimum Heat LAT	Maximum Heat LAT	Default Heat LAT	Minimum Cool LAT	Maximum Cool LAT	Default Cool LAT
MB072	85°	125°	105°	45°	65°	55°
MB096	85°	125°	105°	45°	65°	55°
MB120	85°	125°	105°	45°	65°	55°
MB168	85°	125°	105°	45°	65°	55°
MB192	85°	125°	105°	45°	65°	55°
MB240	85°	125°	105°	45°	65°	55°
MB300	85°	125°	105°	45°	65°	55°

ADVANCED CONTROL ALGORITHM

Option: The CXM2 is a communicating controller which also features two-stage control of cooling and two-stage control of heating modes for exacting temperature and dehumidification purposes. This control system coupled with a multi-stage thermostat will better dehumidify room air by automatically running the heat pump's fan at lower speed on the first stage of cooling thereby implementing low sensible-heat-ratio cooling.

When higher cooling performance is needed, the system will activate the second stage of cooling and automatically switch the fan to the higher fan speed setting.

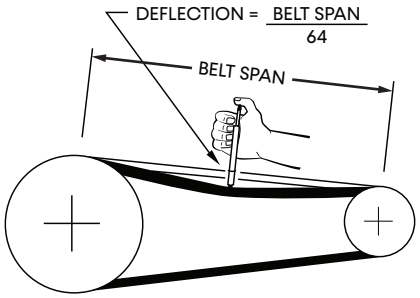
When CXM2 is connected to the handheld service tool the installer/service technician can check and set CFM, toggle between discrete and LAT modes, select fixed fan speed, or LAT set point.

Tensioning V-Belt Drives

Models:
MB
072-300

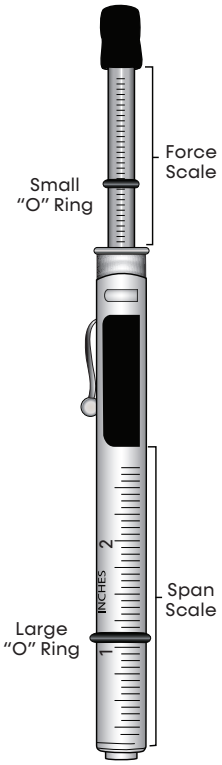
GENERAL RULES OF TENSIONING

1. Ideal tension is the lowest tension at which the belt will not slip under peak load conditions.
2. Check tension frequently during the first 24-48 hours of operation.
3. Over tensioning shortens belt and bearing life.
4. Keep belts free from foreign material which may cause slip.
5. Inspect the V-drive on a periodic basis. Tension when slipping. Never apply belt dressing as this will damage the belt and cause early failure.



TENSION MEASUREMENT PROCEDURE

6. Measure the belt span (see sketch).
7. Position bottom of the large "O" ring on the span scale at the measured belt span.
8. Set the small "O" ring on the deflection force scale to zero.
9. Place the tension checker squarely on one belt at the center of the belt span. Apply a force on the plunger and perpendicular to the belt span until the bottom of the large "O" ring is even with the top of the next belt or with the bottom of a straight edge laid across the sheaves.
10. Remove the tension checker and read the force applied from the bottom of the small "O" ring on the deflection force scale.



11. Compare the force you have applied with the values given in the **Belt Deflection** table. The force should be between the minimum and maximum shown. The maximum value is shown for "New Belt" and new belts should be tensioned at this value to allow for expected tension loss. Used belts should be maintained at the minimum value as indicated in the **Belt Deflection** table.

NOTE: The ratio of deflection to belt span is 1:64.

Table 10: Belt Deflection

Cross Section	Smallest Sheave Diameter Range	RPM Range	Belt Deflection Force			
			Super Gripbelts and Unnotched Gripbands		Gripnotch Belts and Notched Gripbands	
			Used Belt	New Belt	Used Belt	New Belt
A, AX	7.6 - 9.1	1000 - 2500 2501 - 4000	16.458 12.454	24.464 18.682	18.237 15.123	27.133 22.240
	9.6 - 12.2	1000 - 2500 2501 - 4000	20.016 16.902	30.246 25.354	22.240 19.126	32.915 28.467
	12.7 - 17.8	1000 - 2500 2501 - 4000	24.019 20.906	35.584 31.136	25.354 22.685	41.811 33.805
B, BX	8.6 - 10.7	860 - 2500 2501 - 4000	- -	- -	21.795 18.682	32.026 27.578
	11.2 - 14.2	860 - 2500 2501 - 4000	23.574 20.016	35.139 29.802	36.029 31.581	46.704 40.477
	14.7 - 21.8	860 - 2500 2501 - 4000	28.022 26.688	41.811 39.587	37.808 32.470	56.045 48.483

Models:
MB
072-300

Blower Sheave Information

Horizontal

Model Size	Drive Package	Sheave			Belt
		Motor	Blower	Bushing	
72	1,A	1VP34 X 7/8 B	BK67 X 1 B	-	V-BELT BX47
	2,B	1VP34 X 7/8 B	BK85 X 1 B	-	V-BELT BX50
	3.C	1VP44 X 7/8 B	BK67 X 1 B	-	V-BELT BX48
	4,D	1VP34 X 7/8 B	BK67 X 1 B	-	V-BELT BX47
	5,6,E,F	1VP44 X 7/8 B	BK67 X 1 B	-	V-BELT BX48
96	1,A	1VP40 X 7/8 B	BK67 X 1 B	-	V-BELT BX47
	2,B	1VP34 X 7/8 B	BK77 X 1 B	-	V-BELT BX48
	3.C	1VP44 X 7/8 B	BK62H	-	V-BELT BX47
	4,D	1VP40 X 7/8 B	BK67 X 1 B	-	V-BELT B49
	5,6,E,F	1VP44 X 7/8 B	BK62H	-	V-BELT B49
120	1,A	1VP44 X 7/8 B	BK67 X 1 B	-	V-BELT BX50
	2,B	1VP34 X 7/8 B	BK67 X 1 B	-	V-BELT B49
	3.C	1VP50 X 7/8 B	BK67 X 1 B	-	V-BELT BX51
	4,D	1VP44 X 1-1/8	BK67 X 1 B	-	V-BELT BX50
	5,6,E,F	1VP50 X 1-1/8 B	BK67 X 1 B	-	V-BELT BX51

Vertical

Model Size	Drive Package	Sheave			Belt
		Motor	Blower	Bushing	
72	1,A	1VP34 X 7/8 B	BK67 X 1 B	-	V-BELT BX56
	2,B	1VP34 X 7/8 B	BK85 X 1 B	-	V-BELT BX59
	3.C	1VP44 X 7/8 B	BK67 X 1 B	-	V-BELT BX57
	4,D	1VP34 X 7/8 B	BK67 X 1 B	-	V-BELT BX56
	5,6,E,F	1VP44 X 7/8 B	BK67 X 1 B	-	V-BELT BX57
96	1,A	1VP40 X 7/8 B	BK67 X 1 B	-	V-BELT BX56
	2,B	1VP34 X 7/8 B	BK77 X 1 B	-	V-BELT BX57
	3.C	1VP44 X 7/8 B	BK62H	-	V-BELT BX56
	4,D	1VP40 X 7/8 B	BK67 X 1 B	-	V-BELT BX54
	5,6,E,F	1VP44 X 7/8 B	BK62H	-	V-BELT BX54
120	1,A	1VP44 X 7/8 B	BK67 X 1 B	-	V-BELT BX55
	2,B	1VP34 X 7/8 B	BK67 X 1 B	-	V-BELT BX54
	3.C	1VP50 X 7/8 B	BK67 X 1 B	-	V-BELT BX56
	4,D	1VP44 X 1-1/8	BK67 X 1 B	-	V-BELT BX55
	5,6,E,F	1VP50 X 1-1/8 B	BK67 X 1 B	-	V-BELT BX56
168	1,A	1VP44 X 7/8 B	BK80H	H x 1-3.16	V-BELT BX51
	2,B	1VP40 X 7/8 B	BK80H	H x 1-3.16	V-BELT BX51
	3.C	1VP50 X 7/8 B	BK80H	H x 1-3.16	V-BELT BX52
	4,D	1VP44 X 1-1/8	BK80H	H x 1-3.16	V-BELT BX51
	5,6,E,F	1VP50 X 1-1/8 B	BK80H	H x 1-3.16	V-BELT BX52
192	1,A	1VP44 X 7/8 B	BK77H	H x 1-3.16	V-BELT BX51
	2,B	1VP44 X 7/8 B	BK95H	H x 1-3.16	V-BELT BX54
	3.C	1VP50 X 7/8 B	BK70H	H x 1-3.16	V-BELT BX51
	4,D	1VP44 X 1-1/8	BK77H	H x 1-3.16	V-BELT BX51
	5,6,E,F	1VP50 X 1-1/8 B	BK70H	H x 1-3.16	V-BELT BX51
240	1,A	1VP60 X 1-1/8 B	BK90H	H x 1-3.16	V-BELT BX55
	2,B	1VP50 X 1-1/8 B	BK90H	H x 1-3.16	V-BELT BX54
	3.C	1VP60 X 1-1/8 B	BK80H	H x 1-3.16	V-BELT BX53
	6,F	2VP60 X 1-3/8	2BK80H	H x 1-3.16	V-BELT BX52
300	6,F	2VP62 X 1-3/8	2BK80H	H x 1-3.16	V-BELT BX53

Blower Performance MB072

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
1,800	BHP			0.28	0.32	0.35	0.39	0.42	0.45	0.48	0.52	0.56	0.60	0.64	0.69	0.72	0.76
	Sheave/Mtr			B	B	B	A	A	A	A	A	A	C	C	C	C	C
	RPM			599	645	690	735	775	815	850	885	910	940	965	995	1015	1040
1,900	BHP			0.31	0.36	0.40	0.44	0.49	0.53	0.58	0.62	0.65	0.69	0.73	0.76	0.80	0.84
	Sheave/Mtr			B	B	A	A	A	A	A	A	C	C	C	C	C	C
	RPM			604	655	695	740	780	820	855	890	920	950	980	1005	1030	1055
2,000	BHP		0.31	0.34	0.39	0.45	0.50	0.54	0.59	0.63	0.67	0.72	0.75	0.79	0.82	0.86	0.90
	Sheave/Mtr		B	B	B	A	A	A	A	A	A	C	C	C	C	C	C
	RPM		568	615	660	705	750	785	825	860	895	930	960	990	1015	1040	1065
2,100	BHP	0.33	0.38	0.42	0.46	0.50	0.54	0.59	0.65	0.70	0.74	0.78	0.81	0.85	0.89	0.94	0.98
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	531	583	630	670	715	755	795	835	875	905	940	970	1000	1025	1055	1080
2,200	BHP	0.37	0.40	0.45	0.49	0.55	0.60	0.65	0.70	0.75	0.79	0.83	0.87	0.92	0.96	1.00	1.04
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	C	C	C	C	C	E	E
	RPM	552	599	645	685	730	770	810	850	885	915	950	980	1010	1040	1065	1090
2,300	BHP	0.42	0.47	0.51	0.56	0.60	0.65	0.70	0.75	0.80	0.84	0.89	0.94	1.00	1.05	1.10	1.16
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	C	C	C	E	E	E	E
	RPM	573	620	660	705	745	785	820	860	895	925	960	990	1020	1050	1075	1105
2,400	BHP	0.48	0.52	0.57	0.61	0.66	0.72	0.78	0.83	0.87	0.92	0.97	1.02	1.07	1.13	1.19	1.25
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	C	C	E	E	E	E	E
	RPM	604	645	690	730	765	805	845	880	910	945	975	1010	1035	1065	1095	1125
2,500	BHP	0.52	0.57	0.61	0.66	0.72	0.78	0.83	0.89	0.94	1.00	1.03	1.08	1.14	1.20	1.25	1.31
	Sheave/Mtr	B	B	A	A	A	A	A	A	C	E	E	E	E	E	E	E
	RPM	620	660	700	740	780	815	850	885	920	950	985	1015	1045	1075	1100	1130
2,600	BHP	0.56	0.61	0.66	0.70	0.76	0.82	0.88	0.93	0.98	1.04	1.08	1.14	1.20	1.26	1.32	1.37
	Sheave/Mtr	B	A	A	A	A	A	A	A	C	E	E	E	E	E	E	E
	RPM	635	675	715	750	790	825	860	895	925	960	990	1020	1050	1080	1110	1135
2,700	BHP	0.61	0.66	0.71	0.76	0.82	0.87	0.93	0.98	1.04	1.10	1.15	1.21	1.27	1.33	1.39	1.45
	Sheave/Mtr	B	A	A	A	A	A	A	A	E	E	E	E	E	E	E	E
	RPM	655	695	730	770	805	840	875	905	940	970	1000	1030	1060	1090	1120	1145
2,800	BHP	0.66	0.72	0.77	0.83	0.88	0.93	0.99	1.05	1.11	1.16	1.22	1.30	1.37	1.44	1.51	1.57
	Sheave/Mtr	B	A	A	A	A	A	A	D	E	E	E	E	E	E	E	E
	RPM	670	710	750	785	815	850	885	915	950	980	1010	1040	1070	1100	1130	1155
2,900	BHP	0.71	0.77	0.82	0.87	0.93	0.98	1.04	1.10	1.16	1.22	1.30	1.36	1.43	1.50	1.57	1.63
	Sheave/Mtr	A	A	A	A	A	A	D	E	E	E	E	E	E	E	E	E
	RPM	685	725	765	795	830	860	895	925	955	985	1020	1045	1075	1105	1135	1160
3,000	BHP	0.79	0.84	0.90	0.95	1.01	1.07	1.13	1.19	1.25	1.31	1.38	1.46	1.52	1.59	1.66	
	Sheave/Mtr	A	A	A	A	A	D	D	E	E	E	E	E	E	E	E	
	RPM	710	745	780	815	850	885	915	945	975	1005	1035	1065	1090	1120	1150	

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Models:
MB
072-300

Blower Performance
MB072 with VFD

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
1,800	BHP			0.28	0.32	0.35	0.39	0.42	0.45	0.48	0.52	0.56	0.60	0.64	0.69	0.72	0.76
	Discrete Spd Setting			B	B	B	A	A	A	A	A	A	C	C	C	C	C
	RPM			599	645	690	735	775	815	850	885	910	940	965	995	1015	1040
1,900	BHP			0.31	0.36	0.40	0.44	0.49	0.53	0.58	0.62	0.65	0.69	0.73	0.76	0.80	0.84
	Discrete Spd Setting			B	B	A	A	A	A	A	A	C	C	C	C	C	C
	RPM			604	655	695	740	780	820	855	890	920	950	980	1005	1030	1055
2,000	BHP		0.31	0.34	0.39	0.45	0.50	0.54	0.59	0.63	0.67	0.72	0.75	0.79	0.82	0.86	0.90
	Discrete Spd Setting		B	B	B	A	A	A	A	A	A	C	C	C	C	C	C
	RPM		568	615	660	705	750	785	825	860	895	930	960	990	1015	1040	1065
2,100	BHP	0.33	0.38	0.42	0.46	0.50	0.54	0.59	0.65	0.70	0.74	0.78	0.81	0.85	0.89	0.94	0.98
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	531	583	630	670	715	755	795	835	875	905	940	970	1000	1025	1055	1080
2,200	BHP	0.37	0.40	0.45	0.49	0.55	0.60	0.65	0.70	0.75	0.79	0.83	0.87	0.92	0.96	1.00	1.04
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	C	C	C	C	C	E	E
	RPM	552	599	645	685	730	770	810	850	885	915	950	980	1010	1040	1065	1090
2,300	BHP	0.42	0.47	0.51	0.56	0.60	0.65	0.70	0.75	0.80	0.84	0.89	0.94	1.00	1.05	1.10	1.16
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	C	C	C	C	C	C	C
	RPM	573	620	660	705	745	785	820	860	895	925	960	990	1020	1050	1075	1105
2,400	BHP	0.48	0.52	0.57	0.61	0.66	0.72	0.78	0.83	0.87	0.92	0.97	1.02	1.07	1.13	1.19	1.25
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	RPM	604	645	690	730	765	805	845	880	910	945	975	1010	1035	1065	1095	1125
2,500	BHP	0.52	0.57	0.61	0.66	0.72	0.78	0.83	0.89	0.94	1.00	1.03	1.08	1.14	1.20	1.25	1.31
	Discrete Spd Setting	B	B	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	RPM	620	660	700	740	780	815	850	885	920	950	985	1015	1045	1075	1100	1130
2,600	BHP	0.56	0.61	0.66	0.70	0.76	0.82	0.88	0.93	0.98	1.04	1.08	1.14	1.20	1.26	1.32	1.37
	Discrete Spd Setting	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	RPM	635	675	715	750	790	825	860	895	925	960	990	1020	1050	1080	1110	1135
2,700	BHP	0.61	0.66	0.71	0.76	0.82	0.87	0.93	0.98	1.04	1.10	1.15	1.21	1.27	1.33	1.39	1.45
	Discrete Spd Setting	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	RPM	655	695	730	770	805	840	875	905	940	970	1000	1030	1060	1090	1120	1145
2,800	BHP	0.66	0.72	0.77	0.83	0.88	0.93	0.99	1.05	1.11	1.16	1.22	1.30	1.37	1.44	1.51	1.57
	Discrete Spd Setting	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	RPM	670	710	750	785	815	850	885	915	950	980	1010	1040	1070	1100	1130	1155
2,900	BHP	0.71	0.77	0.82	0.87	0.93	0.98	1.04	1.10	1.16	1.22	1.30	1.36	1.43	1.50	1.57	
	Discrete Spd Setting	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	
	RPM	685	725	765	795	830	860	895	925	955	985	1020	1045	1075	1105	1135	
3,000	BHP	0.79	0.84	0.90	0.95	1.01	1.07	1.13	1.19	1.25	1.31	1.38	1.46	1.52	1.59		
	Discrete Spd Setting	A	A	A	A	A	A	A	C	C	C	C	C	C	C		
	RPM	710	745	780	815	850	885	915	945	975	1005	1035	1065	1090	1120		

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance MB096

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
2,400	BHP	0.45	0.50	0.54	0.59	0.63	0.69	0.74	0.80	0.85	0.90	0.94	0.99	1.04	1.10	1.16	1.22
	Sheave/Mtr	B	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C
	RPM	578	625	665	705	745	785	820	860	895	925	960	990	1020	1050	1080	1110
2,500	BHP	0.50	0.55	0.59	0.64	0.69	0.75	0.81	0.88	0.92	0.97	1.01	1.06	1.12	1.17	1.23	1.29
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	599	645	685	725	765	800	835	875	905	940	970	1005	1035	1060	1090	1120
2,600	BHP	0.55	0.60	0.65	0.69	0.75	0.80	0.86	0.92	0.97	1.02	1.08	1.13	1.19	1.25	1.30	1.36
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	625	665	705	740	780	815	850	885	920	950	985	1015	1045	1075	1100	1130
2,700	BHP	0.60	0.65	0.70	0.75	0.80	0.86	0.91	0.97	1.02	1.08	1.14	1.20	1.26	1.32	1.38	1.44
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	645	685	725	760	795	830	865	900	930	960	995	1025	1055	1085	1115	1140
2,800	BHP	0.65	0.71	0.76	0.82	0.87	0.93	0.98	1.04	1.10	1.16	1.21	1.28	1.36	1.43	1.50	1.56
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	665	705	745	780	810	845	880	910	945	975	1005	1035	1065	1095	1125	1150
2,900	BHP	0.71	0.76	0.82	0.87	0.92	0.98	1.03	1.09	1.16	1.22	1.29	1.36	1.43	1.50	1.57	1.63
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	685	720	760	795	825	860	890	920	955	985	1015	1045	1075	1105	1135	1160
3,000	BHP	0.78	0.84	0.89	0.95	1.00	1.06	1.12	1.18	1.24	1.30	1.37	1.43	1.50	1.58	1.64	1.71
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	700	740	775	810	845	880	910	940	970	1000	1030	1055	1085	1115	1140	1170
3,100	BHP	0.85	0.91	0.96	1.02	1.08	1.14	1.22	1.29	1.36	1.44	1.50	1.57	1.63	1.70	1.76	1.82
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	720	755	790	825	860	890	925	955	985	1015	1040	1070	1095	1125	1150	1175
3,200	BHP	0.93	1.00	1.07	1.14	1.20	1.26	1.32	1.38	1.44	1.51	1.57	1.64	1.70	1.78	1.85	1.92
	Sheave/Mtr	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	740	775	810	845	875	905	935	965	995	1025	1050	1080	1105	1135	1160	1185
3,300	BHP	1.01	1.08	1.14	1.21	1.28	1.33	1.39	1.45	1.51	1.58	1.64	1.72	1.78	1.84	1.93	2.00
	Sheave/Mtr	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	E
	RPM	755	790	820	855	890	915	945	975	1005	1035	1060	1090	1115	1140	1170	1195
3,400	BHP	1.08	1.15	1.22	1.29	1.35	1.41	1.47	1.53	1.59	1.68	1.75	1.83	1.90	1.96	2.02	2.08
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	A	C	C	C	C	E	E
	RPM	765	800	835	870	900	930	960	990	1015	1045	1070	1100	1125	1150	1175	1200
3,500	BHP	1.16	1.23	1.29	1.36	1.42	1.48	1.54	1.60	1.66	1.73	1.79	1.85	1.92	2.01	2.09	2.17
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	C	C	C	C	E	E	E
	RPM	780	815	845	880	910	940	970	1000	1025	1055	1080	1105	1130	1160	1185	1210

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Table continued on next page.

Models:
MB
072-300

Blower Performance
MB096

Table continued from previous page.

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
3,600	BHP	1.24	1.30	1.37	1.44	1.51	1.58	1.65	1.72	1.78	1.86	1.92	1.98	2.06	2.13	2.21	2.29
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	C	C	C	E	E	E	E
	RPM	795	825	860	890	920	950	980	1010	1035	1065	1090	1115	1145	1165	1190	1215
3,700	BHP	1.34	1.40	1.46	1.53	1.61	1.68	1.75	1.82	1.90	1.97	2.06	2.13	2.21	2.28	2.36	2.44
	Sheave/Mtr	A	A	A	A	A	A	A	A	C	C	E	E	E	E	E	E
	RPM	820	850	880	910	940	970	1000	1025	1055	1080	1110	1135	1160	1180	1205	1230
3,800	BHP	1.43	1.49	1.56	1.63	1.70	1.78	1.86	1.94	2.02	2.12	2.20	2.28	2.34	2.42	2.50	2.58
	Sheave/Mtr	A	A	A	A	A	A	A	A	E	E	E	E	E	E	E	E
	RPM	840	870	900	930	960	990	1020	1045	1070	1100	1125	1150	1170	1195	1220	1245
3,900	BHP	1.58	1.64	1.71	1.78	1.85	1.93	2.01	2.09	2.19	2.27	2.35	2.41	2.49	2.57	2.65	
	Sheave/Mtr	A	A	A	A	A	A	D	D	E	E	E	E	E	E	E	
	RPM	865	890	920	950	980	1010	1035	1060	1090	1115	1140	1160	1185	1210	1235	
4,000	BHP	1.68	1.75	1.83	1.92	2.00	2.08	2.16	2.26	2.34	2.42	2.50	2.56	2.64	2.72	2.80	
	Sheave/Mtr	A	A	A	A	D	D	D	E	E	E	E	E	E	E	E	
	RPM	885	910	940	970	1000	1025	1050	1080	1105	1130	1155	1175	1200	1225	1250	

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance MB096 with VFD

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
2,400	BHP	0.45	0.50	0.54	0.59	0.63	0.69	0.74	0.80	0.85	0.90	0.94	0.99	1.04	1.10	1.16	1.22
	Discrete Spd Setting	B	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C
	RPM	578	625	665	705	745	785	820	860	895	925	960	990	1020	1050	1080	1110
2,500	BHP	0.50	0.55	0.59	0.64	0.69	0.75	0.81	0.88	0.92	0.97	1.01	1.06	1.12	1.17	1.23	1.29
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	599	645	685	725	765	800	835	875	905	940	970	1005	1035	1060	1090	1120
2,600	BHP	0.55	0.60	0.65	0.69	0.75	0.80	0.86	0.92	0.97	1.02	1.08	1.13	1.19	1.25	1.30	1.36
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	625	665	705	740	780	815	850	885	920	950	985	1015	1045	1075	1100	1130
2,700	BHP	0.60	0.65	0.70	0.75	0.80	0.86	0.91	0.97	1.02	1.08	1.14	1.20	1.26	1.32	1.38	1.44
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	645	685	725	760	795	830	865	900	930	960	995	1025	1055	1085	1115	1140
2,800	BHP	0.65	0.71	0.76	0.82	0.87	0.93	0.98	1.04	1.10	1.16	1.21	1.28	1.36	1.43	1.50	1.56
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	665	705	745	780	810	845	880	910	945	975	1005	1035	1065	1095	1125	1150
2,900	BHP	0.71	0.76	0.82	0.87	0.92	0.98	1.03	1.09	1.16	1.22	1.29	1.36	1.43	1.50	1.57	1.63
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	685	720	760	795	825	860	890	920	955	985	1015	1045	1075	1105	1135	1160
3,000	BHP	0.78	0.84	0.89	0.95	1.00	1.06	1.12	1.18	1.24	1.30	1.37	1.43	1.50	1.58	1.64	1.71
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	700	740	775	810	845	880	910	940	970	1000	1030	1055	1085	1115	1140	1170
3,100	BHP	0.85	0.91	0.96	1.02	1.08	1.14	1.22	1.29	1.36	1.44	1.50	1.57	1.63	1.70	1.76	1.82
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	720	755	790	825	860	890	925	955	985	1015	1040	1070	1095	1125	1150	1175
3,200	BHP	0.93	1.00	1.07	1.14	1.20	1.26	1.32	1.38	1.44	1.51	1.57	1.64	1.70	1.78	1.85	1.92
	Discrete Spd Setting	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	740	775	810	845	875	905	935	965	995	1025	1050	1080	1105	1135	1160	1185
3,300	BHP	1.01	1.08	1.14	1.21	1.28	1.33	1.39	1.45	1.51	1.58	1.64	1.72	1.78	1.84	1.93	2.00
	Discrete Spd Setting	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	755	790	820	855	890	915	945	975	1005	1035	1060	1090	1115	1140	1170	1195
3,400	BHP	1.08	1.15	1.22	1.29	1.35	1.41	1.47	1.53	1.59	1.68	1.75	1.83	1.90	1.96	2.02	2.08
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	765	800	835	870	900	930	960	990	1015	1045	1070	1100	1125	1150	1175	1200

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Table continued on next page.

Models:
MB
072-300

Blower Performance
MB096 with VFD

Table continued from previous page.

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
3,500	BHP	1.16	1.23	1.29	1.36	1.42	1.48	1.54	1.60	1.66	1.73	1.79	1.85	1.92	2.01	2.09	2.17
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	RPM	780	815	845	880	910	940	970	1000	1025	1055	1080	1105	1130	1160	1185	1210
3,600	BHP	1.24	1.30	1.37	1.44	1.51	1.58	1.65	1.72	1.78	1.86	1.92	1.98	2.06	2.13	2.21	2.29
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	RPM	795	825	860	890	920	950	980	1010	1035	1065	1090	1115	1145	1165	1190	1215
3,700	BHP	1.34	1.40	1.46	1.53	1.61	1.68	1.75	1.82	1.90	1.97	2.06	2.13	2.21	2.28	2.36	2.44
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	RPM	820	850	880	910	940	970	1000	1025	1055	1080	1110	1135	1160	1180	1205	1230
3,800	BHP	1.43	1.49	1.56	1.63	1.70	1.78	1.86	1.94	2.02	2.12	2.20	2.28	2.34	2.42	2.50	2.58
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	RPM	840	870	900	930	960	990	1020	1045	1070	1100	1125	1150	1170	1195	1220	1245
3,900	BHP	1.58	1.64	1.71	1.78	1.85	1.93	2.01	2.09	2.19	2.27	2.35	2.41	2.49	2.57	2.65	
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	
	RPM	865	890	920	950	980	1010	1035	1060	1090	1115	1140	1160	1185	1210	1235	
4,000	BHP	1.68	1.75	1.83	1.92	2.00	2.08	2.16	2.26	2.34	2.42	2.50	2.56	2.64	2.72	2.80	
	Discrete Spd Setting	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	
	RPM	885	910	940	970	1000	1025	1050	1080	1105	1130	1155	1175	1200	1225	1250	

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance MB120

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
3,000	BHP	0.75	0.81	0.86	0.91	0.97	1.03	1.09	1.15	1.21	1.27	1.34	1.41	1.47	1.54	1.61	1.67
	Sheave/Mtr	B	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A
	RPM	680	720	755	790	825	860	895	925	955	985	1015	1045	1070	1100	1130	1155
3,100	BHP	0.82	0.88	0.94	0.99	1.04	1.10	1.17	1.26	1.33	1.40	1.46	1.53	1.59	1.66	1.72	1.80
	Sheave/Mtr	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C
	RPM	700	735	775	805	840	875	905	940	970	1000	1025	1055	1080	1110	1135	1165
3,200	BHP	0.90	0.96	1.03	1.10	1.17	1.23	1.29	1.35	1.41	1.47	1.55	1.61	1.68	1.74	1.81	1.89
	Sheave/Mtr	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C
	RPM	720	755	790	825	860	890	920	950	980	1010	1040	1065	1095	1120	1145	1175
3,300	BHP	0.98	1.04	1.11	1.18	1.25	1.31	1.37	1.43	1.49	1.55	1.62	1.68	1.75	1.81	1.88	1.95
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	A	A	A	A	C
	RPM	740	770	805	840	875	905	935	965	995	1020	1050	1075	1105	1130	1155	1180
3,400	BHP	1.06	1.13	1.19	1.26	1.33	1.38	1.44	1.50	1.56	1.65	1.72	1.80	1.87	1.94	2.00	2.06
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C
	RPM	755	790	820	855	890	915	945	975	1005	1035	1060	1090	1115	1140	1165	1190
3,500	BHP	1.14	1.21	1.27	1.34	1.40	1.46	1.52	1.58	1.65	1.71	1.77	1.84	1.90	1.98	2.06	2.14
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	A	A	A	A	C	C
	RPM	770	805	835	870	900	930	960	990	1020	1045	1070	1100	1125	1150	1175	1200
3,600	BHP	1.23	1.29	1.36	1.42	1.50	1.57	1.64	1.71	1.77	1.84	1.90	1.96	2.05	2.13	2.21	2.27
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	790	820	855	885	915	945	975	1005	1030	1060	1085	1110	1140	1165	1190	1210
3,700	BHP	1.32	1.38	1.44	1.51	1.58	1.65	1.73	1.81	1.88	1.96	2.03	2.10	2.18	2.26	2.34	2.42
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	810	840	870	900	930	960	990	1020	1045	1075	1100	1125	1150	1175	1200	1225
3,800	BHP	1.41	1.47	1.54	1.61	1.68	1.75	1.82	1.91	1.99	2.07	2.17	2.25	2.31	2.39	2.47	2.55
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	830	860	890	920	950	980	1005	1035	1060	1085	1115	1140	1160	1185	1210	1235
3,900	BHP	1.54	1.60	1.67	1.74	1.82	1.89	1.96	2.04	2.14	2.22	2.30	2.38	2.46	2.52	2.60	2.68
	Sheave/Mtr	B	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	850	875	905	935	965	995	1020	1045	1075	1100	1125	1150	1175	1195	1220	1245
4,000	BHP	1.63	1.71	1.78	1.86	1.94	2.03	2.11	2.19	2.27	2.37	2.45	2.51	2.59	2.67	2.75	2.85
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	865	895	920	950	980	1010	1035	1060	1085	1115	1140	1160	1185	1210	1235	1260
4,100	BHP	1.73	1.81	1.90	1.97	2.05	2.12	2.20	2.27	2.34	2.42	2.52	2.62	2.70	2.80	2.90	
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C	
	RPM	885	915	945	970	1000	1025	1055	1080	1105	1130	1155	1180	1200	1225	1250	
4,200	BHP	1.87	1.94	2.02	2.08	2.16	2.24	2.32	2.40	2.48	2.58	2.68	2.76	2.86	2.96		
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	A	C	C	C	C		
	RPM	905	935	965	990	1020	1045	1070	1095	1120	1145	1170	1190	1215	1240		

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Table continued on next page.

Models:
MB
072-300

Blower Performance
MB120

Table continued from previous page.

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
4,300	BHP	2.00	2.07	2.16	2.23	2.31	2.41	2.49	2.57	2.66	2.74	2.84	2.94	3.02	3.15		
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	C	C	C	E	E		
	RPM	930	955	985	1010	1035	1065	1090	1115	1140	1160	1185	1210	1230	1255		
4,400	BHP	2.14	2.22	2.32	2.40	2.48	2.56	2.65	2.74	2.82	2.92	3.00	3.10	3.18			
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	C	E	E	E			
	RPM	950	975	1005	1030	1055	1080	1110	1135	1155	1180	1200	1225	1245			
4,500	BHP	2.30	2.38	2.46	2.54	2.62	2.72	2.80	2.88	3.00	3.08	3.16	3.26				
	Sheave/Mtr	A	A	A	A	A	A	A	A	D	E	E	E				
	RPM	970	995	1020	1045	1070	1100	1125	1145	1170	1195	1215	1240				
4,600	BHP	2.39	2.45	2.54	2.63	2.72	2.83	2.92	3.00	3.10	3.18	3.28	3.38				
	Sheave/Mtr	A	A	A	A	A	A	A	D	D	E	E	E				
	RPM	980	1000	1025	1050	1075	1105	1130	1150	1175	1195	1220	1245				
4,700	BHP	2.46	2.52	2.62	2.72	2.82	2.92	3.02	3.12	3.22	3.32	3.40	3.50				
	Sheave/Mtr	A	A	A	A	A	A	D	D	E	E	E	E				
	RPM	985	1005	1030	1055	1080	1105	1130	1155	1180	1205	1225	1250				
4,800	BHP	2.57	2.64	2.74	2.84	2.94	3.04	3.14	3.24	3.32	3.42	3.52	3.60				
	Sheave/Mtr	A	A	A	A	A	D	D	D	E	E	E	E				
	RPM	990	1010	1035	1060	1085	1110	1135	1160	1180	1205	1230	1250				
4,900	BHP	2.68	2.78	2.88	3.00	3.06	3.16	3.26	3.36	3.44	3.54	3.64	3.75				
	Sheave/Mtr	A	A	A	D	D	D	D	E	E	E	E	E				
	RPM	995	1020	1045	1070	1090	1115	1140	1165	1185	1210	1235	1255				
5,000	BHP	2.82	2.92	3.00	3.10	3.20	3.28	3.38	3.48	3.56	3.66	3.74					
	Sheave/Mtr	A	A	D	D	D	D	D	E	E	E	E					
	RPM	1005	1030	1050	1075	1100	1120	1145	1170	1190	1215	1235					

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance MB120 with VFD

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
3,000	BHP	0.75	0.81	0.86	0.91	0.97	1.03	1.09	1.15	1.21	1.27	1.34	1.41	1.47	1.54	1.61	1.67
	Discrete Spd Setting	B	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A
	RPM	680	720	755	790	825	860	895	925	955	985	1015	1045	1070	1100	1130	1155
3,100	BHP	0.82	0.88	0.94	0.99	1.04	1.10	1.17	1.26	1.33	1.40	1.46	1.53	1.59	1.66	1.72	1.80
	Discrete Spd Setting	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C
	RPM	700	735	775	805	840	875	905	940	970	1000	1025	1055	1080	1110	1135	1165
3,200	BHP	0.90	0.96	1.03	1.10	1.17	1.23	1.29	1.35	1.41	1.47	1.55	1.61	1.68	1.74	1.81	1.89
	Discrete Spd Setting	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C
	RPM	720	755	790	825	860	890	920	950	980	1010	1040	1065	1095	1120	1145	1175
3,300	BHP	0.98	1.04	1.11	1.18	1.25	1.31	1.37	1.43	1.49	1.55	1.62	1.68	1.75	1.81	1.88	1.95
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	A	A	A	A	C
	RPM	740	770	805	840	875	905	935	965	995	1020	1050	1075	1105	1130	1155	1180
3,400	BHP	1.06	1.13	1.19	1.26	1.33	1.38	1.44	1.50	1.56	1.65	1.72	1.80	1.87	1.94	2.00	2.06
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C
	RPM	755	790	820	855	890	915	945	975	1005	1035	1060	1090	1115	1140	1165	1190
3,500	BHP	1.14	1.21	1.27	1.34	1.40	1.46	1.52	1.58	1.65	1.71	1.77	1.84	1.90	1.98	2.06	2.14
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	A	A	A	A	C	C
	RPM	770	805	835	870	900	930	960	990	1020	1045	1070	1100	1125	1150	1175	1200
3,600	BHP	1.23	1.29	1.36	1.42	1.50	1.57	1.64	1.71	1.77	1.84	1.90	1.96	2.05	2.13	2.21	2.27
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	790	820	855	885	915	945	975	1005	1030	1060	1085	1110	1140	1165	1190	1210
3,700	BHP	1.32	1.38	1.44	1.51	1.58	1.65	1.73	1.81	1.88	1.96	2.03	2.10	2.18	2.26	2.34	2.42
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	810	840	870	900	930	960	990	1020	1045	1075	1100	1125	1150	1175	1200	1225
3,800	BHP	1.41	1.47	1.54	1.61	1.68	1.75	1.82	1.91	1.99	2.07	2.17	2.25	2.31	2.39	2.47	2.55
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	830	860	890	920	950	980	1005	1035	1060	1085	1115	1140	1160	1185	1210	1235
3,900	BHP	1.54	1.60	1.67	1.74	1.82	1.89	1.96	2.04	2.14	2.22	2.30	2.38	2.46	2.52	2.60	2.68
	Discrete Spd Setting	B	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	850	875	905	935	965	995	1020	1045	1075	1100	1125	1150	1175	1195	1220	1245
4,000	BHP	1.63	1.71	1.78	1.86	1.94	2.03	2.11	2.19	2.27	2.37	2.45	2.51	2.59	2.67	2.75	2.85
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	865	895	920	950	980	1010	1035	1060	1085	1115	1140	1160	1185	1210	1235	1260
4,100	BHP	1.73	1.81	1.90	1.97	2.05	2.12	2.20	2.27	2.34	2.42	2.52	2.62	2.70	2.80	2.90	
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C	
	RPM	885	915	945	970	1000	1025	1055	1080	1105	1130	1155	1180	1200	1225	1250	
4,200	BHP	1.87	1.94	2.02	2.08	2.16	2.24	2.32	2.40	2.48	2.58	2.68	2.76	2.86	2.96		
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	A	C	C	C	C		
	RPM	905	935	965	990	1020	1045	1070	1095	1120	1145	1170	1190	1215	1240		
4,300	BHP	2.00	2.07	2.16	2.23	2.31	2.41	2.49	2.57	2.66	2.74	2.84	2.94	3.02	3.15		
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	C	C	C	E	E		
	RPM	930	955	985	1010	1035	1065	1090	1115	1140	1160	1185	1210	1230	1255		

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Table continued on next page.

Models:
MB
072-300

Blower Performance
MB120 with VFD

Table continued from previous page.

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
4,400	BHP	2.14	2.22	2.32	2.40	2.48	2.56	2.65	2.74	2.82	2.92	3.00	3.10	3.18			
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	C	C	C	C			
	RPM	950	975	1005	1030	1055	1080	1110	1135	1155	1180	1200	1225	1245			
4,500	BHP	2.30	2.38	2.46	2.54	2.62	2.72	2.80	2.88	3.00	3.08	3.16	3.26				
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	C	C	C				
	RPM	970	995	1020	1045	1070	1100	1125	1145	1170	1195	1215	1240				
4,600	BHP	2.39	2.45	2.54	2.63	2.72	2.83	2.92	3.00	3.10	3.18	3.28	3.38				
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	C	C	C				
	RPM	980	1000	1025	1050	1075	1105	1130	1150	1175	1195	1220	1245				
4,700	BHP	2.46	2.52	2.62	2.72	2.82	2.92	3.02	3.12	3.22	3.32	3.40	3.50				
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C				
	RPM	985	1005	1030	1055	1080	1105	1130	1155	1180	1205	1225	1250				
4,800	BHP	2.57	2.64	2.74	2.84	2.94	3.04	3.14	3.24	3.32	3.42	3.52	3.60				
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C				
	RPM	990	1010	1035	1060	1085	1110	1135	1160	1180	1205	1230	1250				
4,900	BHP	2.68	2.78	2.88	3.00	3.06	3.16	3.26	3.36	3.44	3.54	3.64	3.75				
	Discrete Spd Setting	A	A	A	A	A	A	A	C	C	C	C	C				
	RPM	995	1020	1045	1070	1090	1115	1140	1165	1185	1210	1235	1255				
5,000	BHP	2.82	2.92	3.00	3.10	3.20	3.28	3.38	3.48	3.56	3.66	3.74					
	Discrete Spd Setting	A	A	A	A	A	A	A	C	C	C	C					
	RPM	1005	1030	1050	1075	1100	1120	1145	1170	1190	1215	1235					

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance
MB168

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
4,200	BHP			0.69	0.78	0.86	0.95	1.02	1.11	1.21	1.32	1.41	1.50	1.57	1.64	1.72	1.80
	Sheave/Mtr			B	B	B	B	A	A	A	A	A	A	A	C	C	C
	RPM			547	594	640	685	725	765	805	845	880	915	945	975	1005	1030
4,400	BHP			0.75	0.83	0.92	1.01	1.11	1.21	1.31	1.41	1.51	1.60	1.68	1.76	1.85	1.94
	Sheave/Mtr			B	B	B	B	A	A	A	A	A	A	A	C	C	C
	RPM			563	609	655	695	735	775	815	855	890	925	955	985	1015	1045
4,600	BHP		0.75	0.85	0.95	1.03	1.11	1.19	1.30	1.40	1.50	1.60	1.70	1.78	1.89	2.00	2.10
	Sheave/Mtr		B	B	B	B	B	A	A	A	A	A	A	C	C	C	C
	RPM		526	573	625	665	705	745	785	825	860	895	930	960	995	1025	1050
4,800	BHP		0.83	0.94	1.03	1.12	1.20	1.30	1.40	1.53	1.63	1.73	1.82	1.92	2.00	2.12	2.22
	Sheave/Mtr		B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM		542	594	640	680	720	760	795	835	870	905	935	970	1000	1030	1055
5,000	BHP		0.93	1.02	1.11	1.20	1.31	1.41	1.52	1.64	1.76	1.85	1.95	2.03	2.12	2.24	2.36
	Sheave/Mtr		B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM	563	609	650	690	735	770	805	840	880	910	945	975	1005	1035	1065	
5,200	BHP	0.93	1.02	1.10	1.20	1.29	1.39	1.50	1.61	1.72	1.83	1.94	2.06	2.15	2.26	2.38	2.50
	Sheave/Mtr	B	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM	542	583	625	665	705	745	780	815	850	885	920	955	985	1015	1045	1075
5,400	BHP	1.03	1.10	1.19	1.29	1.39	1.50	1.59	1.70	1.80	1.92	2.03	2.16	2.26	2.38	2.50	2.62
	Sheave/Mtr	B	B	B	B	B	A	A	A	A	A	A	C	C	C	C	C
	RPM	563	599	640	680	720	760	790	825	860	895	925	960	990	1020	1050	1080
5,600	BHP	1.12	1.19	1.28	1.39	1.50	1.61	1.72	1.84	1.93	2.06	2.17	2.29	2.40	2.54	2.69	2.83
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	583	620	655	695	735	770	805	840	870	905	935	970	1000	1030	1060	1090
5,800	BHP	1.17	1.28	1.39	1.49	1.60	1.70	1.81	1.90	2.02	2.14	2.28	2.40	2.52	2.67	2.81	2.96
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	588	630	670	710	750	780	815	845	880	910	945	975	1005	1035	1065	1095
6,000	BHP	1.25	1.40	1.51	1.61	1.73	1.84	1.94	2.05	2.18	2.30	2.42	2.54	2.67	2.79	2.94	3.08
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	E
	RPM	604	645	685	720	760	795	825	860	895	925	955	985	1015	1040	1070	1100
6,200	BHP	1.40	1.51	1.62	1.75	1.86	1.98	2.09	2.20	2.34	2.49	2.63	2.78	2.92	3.06	3.18	
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	C	C	C	E	E	
	RPM	625	660	695	735	770	805	840	875	905	935	965	995	1025	1055	1080	
6,400	BHP	1.55	1.68	1.79	1.90	2.04	2.18	2.32	2.44	2.56	2.68	2.80	2.92	3.07	3.19	3.33	
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	C	C	E	E	E	
	RPM	640	680	715	750	785	820	855	885	915	945	975	1005	1035	1060	1090	
6,600	BHP	1.73	1.84	1.94	2.06	2.20	2.34	2.46	2.58	2.70	2.82	2.94	3.07	3.19	3.34	3.46	
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	A	C	E	E	E	E	
	RPM	665	700	730	765	800	835	865	895	925	955	985	1015	1040	1070	1095	
6,800	BHP	1.87	1.98	2.08	2.20	2.34	2.48	2.62	2.74	2.86	2.96	3.08	3.24	3.38	3.55		
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	C	E	E	E	E		
	RPM	685	715	745	775	810	845	880	910	940	965	995	1025	1050	1080		
7,000	BHP	2.03	2.13	2.22	2.36	2.50	2.62	2.76	2.88	3.00	3.12	3.22	3.37	3.49	3.61		
	Sheave/Mtr	B	A	A	A	A	A	A	A	D	E	E	E	E	E		
	RPM	705	730	755	790	825	855	890	920	950	980	1005	1035	1060	1085		

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Models:
MB
072-300

Blower Performance
MB168 with VFD

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
4,200	BHP			0.69	0.78	0.86	0.95	1.02	1.11	1.21	1.32	1.41	1.50	1.57	1.64	1.72	1.80
	Discrete Spd Setting			B	B	B	B	A	A	A	A	A	A	A	C	C	C
	RPM			547	594	640	685	725	765	805	845	880	915	945	975	1005	1030
4,400	BHP			0.75	0.83	0.92	1.01	1.11	1.21	1.31	1.41	1.51	1.60	1.68	1.76	1.85	1.94
	Discrete Spd Setting			B	B	B	B	A	A	A	A	A	A	A	C	C	C
	RPM			563	609	655	695	735	775	815	855	890	925	955	985	1015	1045
4,600	BHP		0.75	0.85	0.95	1.03	1.11	1.19	1.30	1.40	1.50	1.60	1.70	1.78	1.89	2.00	2.10
	Discrete Spd Setting		B	B	B	B	B	A	A	A	A	A	A	C	C	C	C
	RPM		526	573	625	665	705	745	785	825	860	895	930	960	995	1025	1050
4,800	BHP		0.83	0.94	1.03	1.12	1.20	1.30	1.40	1.53	1.63	1.73	1.82	1.92	2.00	2.12	2.22
	Discrete Spd Setting		B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM		542	594	640	680	720	760	795	835	870	905	935	970	1000	1030	1055
5,000	BHP		0.93	1.02	1.11	1.20	1.31	1.41	1.52	1.64	1.76	1.85	1.95	2.03	2.12	2.24	2.36
	Discrete Spd Setting		B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM		563	609	650	690	735	770	805	840	880	910	945	975	1005	1035	1065
5,200	BHP	0.93	1.02	1.10	1.20	1.29	1.39	1.50	1.61	1.72	1.83	1.94	2.06	2.15	2.26	2.38	2.50
	Discrete Spd Setting	B	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM	542	583	625	665	705	745	780	815	850	885	920	955	985	1015	1045	1075
5,400	BHP	1.03	1.10	1.19	1.29	1.39	1.50	1.59	1.70	1.80	1.92	2.03	2.16	2.26	2.38	2.50	2.62
	Discrete Spd Setting	B	B	B	B	B	A	A	A	A	A	A	C	C	C	C	C
	RPM	563	599	640	680	720	760	790	825	860	895	925	960	990	1020	1050	1080
5,600	BHP	1.12	1.19	1.28	1.39	1.50	1.61	1.72	1.84	1.93	2.06	2.17	2.29	2.40	2.54	2.69	2.83
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	583	620	655	695	735	770	805	840	870	905	935	970	1000	1030	1060	1090
5,800	BHP	1.17	1.28	1.39	1.49	1.60	1.70	1.81	1.90	2.02	2.14	2.28	2.40	2.52	2.67	2.81	2.96
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	588	630	670	710	750	780	815	845	880	910	945	975	1005	1035	1065	1095
6,000	BHP	1.25	1.40	1.51	1.61	1.73	1.84	1.94	2.05	2.18	2.30	2.42	2.54	2.67	2.79	2.94	3.08
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	604	645	685	720	760	795	825	860	895	925	955	985	1015	1040	1070	1100
6,200	BHP	1.40	1.51	1.62	1.75	1.86	1.98	2.09	2.20	2.34	2.49	2.63	2.78	2.92	3.06	3.18	
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	
	RPM	625	660	695	735	770	805	840	875	905	935	965	995	1025	1055	1080	
6,400	BHP	1.55	1.68	1.79	1.90	2.04	2.18	2.32	2.44	2.56	2.68	2.80	2.92	3.07	3.19	3.33	
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	
	RPM	640	680	715	750	785	820	855	885	915	945	975	1005	1035	1060	1090	
6,600	BHP	1.73	1.84	1.94	2.06	2.20	2.34	2.46	2.58	2.70	2.82	2.94	3.07	3.19	3.34	3.46	
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	
	RPM	665	700	730	765	800	835	865	895	925	955	985	1015	1040	1070	1095	
6,800	BHP	1.87	1.98	2.08	2.20	2.34	2.48	2.62	2.74	2.86	2.96	3.08	3.24	3.38	3.55		
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	C	C	C	C	C		
	RPM	685	715	745	775	810	845	880	910	940	965	995	1025	1050	1080		
7,000	BHP	2.03	2.13	2.22	2.36	2.50	2.62	2.76	2.88	3.00	3.12	3.22	3.37	3.49	3.61		
	Discrete Spd Setting	B	A	A	A	A	A	A	A	A	C	C	C	C	C		
	RPM	705	730	755	790	825	855	890	920	950	980	1005	1035	1060	1085		

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance MB192

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
4,800	BHP		0.98	1.07	1.16	1.24	1.34	1.47	1.59	1.69	1.78	1.87	1.96	2.06	2.18	2.30	2.42
	Sheave/Mtr		B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM		615	660	700	740	775	815	855	890	920	955	985	1015	1045	1075	1105
5,000	BHP	0.99	1.07	1.18	1.27	1.37	1.49	1.60	1.73	1.82	1.92	2.00	2.10	2.22	2.32	2.44	2.56
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	594	635	680	720	760	795	830	870	900	935	965	1000	1030	1055	1085	1115
5,200	BHP	1.09	1.18	1.28	1.36	1.48	1.59	1.70	1.82	1.93	2.02	2.14	2.24	2.36	2.48	2.60	2.72
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	620	660	700	735	775	810	845	880	915	945	980	1010	1040	1070	1100	1130
5,400	BHP	1.19	1.29	1.39	1.48	1.59	1.70	1.80	1.92	2.03	2.16	2.26	2.38	2.50	2.62	2.74	2.87
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	640	680	720	755	790	825	860	895	925	960	990	1020	1050	1080	1110	1140
5,600	BHP	1.30	1.40	1.51	1.62	1.74	1.85	1.95	2.08	2.18	2.31	2.42	2.57	2.71	2.86	2.98	3.12
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	E
	RPM	660	700	740	775	810	845	875	910	940	975	1005	1035	1065	1095	1120	1150
5,800	BHP	1.41	1.52	1.63	1.73	1.84	1.95	2.06	2.18	2.32	2.44	2.57	2.72	2.86	3.00	3.15	3.27
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	A	C	C	C	E	E	E
	RPM	680	720	760	790	825	860	890	920	955	985	1015	1045	1075	1105	1135	1160
6,000	BHP	1.56	1.67	1.78	1.89	2.00	2.12	2.24	2.36	2.48	2.60	2.74	2.89	3.01	3.15	3.30	3.42
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	C	C	C	E	E	E	E
	RPM	700	740	775	810	845	880	910	940	970	1000	1030	1060	1085	1115	1145	1170
6,200	BHP	1.70	1.83	1.94	2.06	2.17	2.30	2.44	2.58	2.73	2.87	3.02	3.14	3.28	3.40	3.54	3.66
	Sheave/Mtr	B	A	A	A	A	A	A	A	A	C	E	E	E	E	E	E
	RPM	720	760	795	830	865	895	925	955	985	1015	1045	1070	1100	1125	1155	1180
6,400	BHP	1.88	2.02	2.16	2.28	2.42	2.54	2.66	2.78	2.90	3.04	3.16	3.31	3.43	3.58	3.72	3.86
	Sheave/Mtr	B	A	A	A	A	A	A	A	C	E	E	E	E	E	E	E
	RPM	745	780	815	845	880	910	940	970	1000	1030	1055	1085	1110	1140	1165	1190
6,600	BHP	2.06	2.18	2.32	2.46	2.58	2.70	2.82	2.94	3.07	3.19	3.34	3.46	3.60	3.74	3.88	4.02
	Sheave/Mtr	A	A	A	A	A	A	A	A	E	E	E	E	E	E	E	E
	RPM	765	795	830	865	895	925	955	985	1015	1040	1070	1095	1125	1150	1175	1200
6,800	BHP	2.22	2.36	2.50	2.62	2.74	2.86	3.00	3.10	3.27	3.41	3.58	3.72	3.85	3.97	4.11	4.23
	Sheave/Mtr	A	A	A	A	A	A	D	D	E	E	E	E	E	E	E	E
	RPM	780	815	850	880	910	940	970	1000	1030	1055	1085	1110	1135	1160	1190	1215

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Table continued on next page.

Models:
MB
072-300

Blower Performance
MB192

Table continued from previous page.

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
7,000	BHP	2.40	2.54	2.66	2.80	2.92	3.04	3.14	3.27	3.39	3.54	3.66	3.78	3.96	4.12	4.28	4.44
	Sheave/Mtr	A	A	A	A	A	D	D	E	E	E	E	E	E	E	E	E
	RPM	800	835	865	900	930	960	985	1015	1040	1070	1095	1120	1150	1175	1200	1225
7,200	BHP	2.58	2.70	2.85	2.99	3.14	3.28	3.42	3.54	3.66	3.81	3.93	4.06	4.22	4.38	4.54	4.70
	Sheave/Mtr	A	A	A	A	D	D	E	E	E	E	E	E	E	E	E	E
	RPM	820	850	885	915	945	975	1005	1030	1055	1085	1110	1135	1160	1185	1210	1235
7,400	BHP	2.76	2.88	3.02	3.16	3.31	3.45	3.61	3.75	3.92	4.06	4.20	4.36	4.52	4.68	4.81	4.97
	Sheave/Mtr	A	A	D	D	D	D	E	E	E	E	E	E	E	E	E	E
	RPM	840	870	900	930	960	990	1020	1045	1075	1100	1125	1150	1175	1200	1220	1245
7,600	BHP	2.94	3.07	3.22	3.36	3.50	3.63	3.82	3.98	4.14	4.34	4.50	4.66	4.78	4.94		
	Sheave/Mtr	A	D	D	D	D	E	E	E	E	E	E	E	E	E		
	RPM	860	890	920	950	980	1005	1035	1060	1085	1115	1140	1165	1185	1210		
7,800	BHP	3.22	3.34	3.49	3.63	3.78	3.96	4.12	4.28	4.44	4.63	4.76	4.92				
	Sheave/Mtr	D	D	D	D	D	E	E	E	E	E	E	E				
	RPM	880	905	935	965	995	1025	1050	1075	1100	1130	1150	1175				
8,000	BHP	3.41	3.58	3.75	3.92	4.06	4.26	4.42	4.58	4.74	4.90						
	Sheave/Mtr	D	D	D	D	E	E	E	E	E	E						
	RPM	895	925	955	985	1010	1040	1065	1090	1115	1140						

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance MB192 with VFD

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
4,800	BHP		0.98	1.07	1.16	1.24	1.34	1.47	1.59	1.69	1.78	1.87	1.96	2.06	2.18	2.30	2.42
	Discrete Spd Setting		B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM		615	660	700	740	775	815	855	890	920	955	985	1015	1045	1075	1105
5,000	BHP	0.99	1.07	1.18	1.27	1.37	1.49	1.60	1.73	1.82	1.92	2.00	2.10	2.22	2.32	2.44	2.56
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	594	635	680	720	760	795	830	870	900	935	965	1000	1030	1055	1085	1115
5,200	BHP	1.09	1.18	1.28	1.36	1.48	1.59	1.70	1.82	1.93	2.02	2.14	2.24	2.36	2.48	2.60	2.72
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	620	660	700	735	775	810	845	880	915	945	980	1010	1040	1070	1100	1130
5,400	BHP	1.19	1.29	1.39	1.48	1.59	1.70	1.80	1.92	2.03	2.16	2.26	2.38	2.50	2.62	2.74	2.87
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	640	680	720	755	790	825	860	895	925	960	990	1020	1050	1080	1110	1140
5,600	BHP	1.30	1.40	1.51	1.62	1.74	1.85	1.95	2.08	2.18	2.31	2.42	2.57	2.71	2.86	2.98	3.12
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	660	700	740	775	810	845	875	910	940	975	1005	1035	1065	1095	1120	1150
5,800	BHP	1.41	1.52	1.63	1.73	1.84	1.95	2.06	2.18	2.32	2.44	2.57	2.72	2.86	3.00	3.15	3.27
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	680	720	760	790	825	860	890	920	955	985	1015	1045	1075	1105	1135	1160
6,000	BHP	1.56	1.67	1.78	1.89	2.00	2.12	2.24	2.36	2.48	2.60	2.74	2.89	3.01	3.15	3.30	3.42
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	RPM	700	740	775	810	845	880	910	940	970	1000	1030	1060	1085	1115	1145	1170
6,200	BHP	1.70	1.83	1.94	2.06	2.17	2.30	2.44	2.58	2.73	2.87	3.02	3.14	3.28	3.40	3.54	3.66
	Discrete Spd Setting	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	RPM	720	760	795	830	865	895	925	955	985	1015	1045	1070	1100	1125	1155	1180
6,400	BHP	1.88	2.02	2.16	2.28	2.42	2.54	2.66	2.78	2.90	3.04	3.16	3.31	3.43	3.58	3.72	3.86
	Discrete Spd Setting	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	RPM	745	780	815	845	880	910	940	970	1000	1030	1055	1085	1110	1140	1165	1190
6,600	BHP	2.06	2.18	2.32	2.46	2.58	2.70	2.82	2.94	3.07	3.19	3.34	3.46	3.60	3.74	3.88	4.02
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	RPM	765	795	830	865	895	925	955	985	1015	1040	1070	1095	1125	1150	1175	1200
6,800	BHP	2.22	2.36	2.50	2.62	2.74	2.86	3.00	3.10	3.27	3.41	3.58	3.72	3.85	3.97	4.11	4.23
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	RPM	780	815	850	880	910	940	970	1000	1030	1055	1085	1110	1135	1160	1190	1215

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Table continued on next page.

Models:
MB
072-300

Blower Performance
MB192 with VFD

Table continued from previous page.

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
7,000	BHP	2.40	2.54	2.66	2.80	2.92	3.04	3.14	3.27	3.39	3.54	3.66	3.78	3.96	4.12	4.28	4.44
	Discrete Spd Setting	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C
	RPM	800	835	865	900	930	960	985	1015	1040	1070	1095	1120	1150	1175	1200	1225
7,200	BHP	2.58	2.70	2.85	2.99	3.14	3.28	3.42	3.54	3.66	3.81	3.93	4.06	4.22	4.38	4.54	4.70
	Discrete Spd Setting	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C
	RPM	820	850	885	915	945	975	1005	1030	1055	1085	1110	1135	1160	1185	1210	1235
7,400	BHP	2.76	2.88	3.02	3.16	3.31	3.45	3.61	3.75	3.92	4.06	4.20	4.36	4.52	4.68	4.81	4.97
	Discrete Spd Setting	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C
	RPM	840	870	900	930	960	990	1020	1045	1075	1100	1125	1150	1175	1200	1220	1245
7,600	BHP	2.94	3.07	3.22	3.36	3.50	3.63	3.82	3.98	4.14	4.34	4.50	4.66	4.78	4.94		
	Discrete Spd Setting	A	D	D	D	D	C	C	C	C	C	C	C	C	C		
	RPM	860	890	920	950	980	1005	1035	1060	1085	1115	1140	1165	1185	1210		
7,800	BHP	3.22	3.34	3.49	3.63	3.78	3.96	4.12	4.28	4.44	4.63	4.76	4.92				
	Discrete Spd Setting	A	A	A	A	A	C	C	C	C	C	C	C				
	RPM	880	905	935	965	995	1025	1050	1075	1100	1130	1150	1175				
8,000	BHP	3.41	3.58	3.75	3.92	4.06	4.26	4.42	4.58	4.74	4.90						
	Discrete Spd Setting	A	A	A	A	C	C	C	C	C	C						
	RPM	895	925	955	985	1010	1040	1065	1090	1115	1140						

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance MB240

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
6,000	BHP				1.78	1.89	2.00	2.12	2.24	2.36	2.48	2.60	2.74	2.89	3.01	3.15	3.30
	Sheave/Mtr				B	B	B	A	A	A	A	A	A	A	A	C	C
	RPM				775	810	845	880	910	940	970	1000	1030	1060	1085	1115	1145
6,200	BHP			1.82	1.93	2.04	2.15	2.30	2.44	2.58	2.73	2.87	2.99	3.14	3.26	3.40	3.52
	Sheave/Mtr			B	B	B	B	A	A	A	A	A	A	A	C	C	C
	RPM			755	790	825	860	895	925	955	985	1015	1040	1070	1095	1125	1150
6,400	BHP			2.00	2.14	2.26	2.40	2.52	2.64	2.76	2.88	3.02	3.14	3.28	3.40	3.56	3.70
	Sheave/Mtr			B	B	B	B	A	A	A	A	A	A	A	C	C	C
	RPM			775	810	840	875	905	935	965	995	1025	1050	1080	1105	1135	1160
6,600	BHP		2.02	2.16	2.30	2.42	2.56	2.68	2.80	2.92	3.05	3.17	3.29	3.43	3.55	3.71	3.85
	Sheave/Mtr		B	B	B	B	A	A	A	A	A	A	A	A	C	C	C
	RPM		755	790	825	855	890	920	950	980	1010	1035	1060	1090	1115	1145	1170
6,800	BHP		2.18	2.32	2.46	2.58	2.70	2.84	2.94	3.06	3.21	3.35	3.52	3.66	3.82	3.94	4.06
	Sheave/Mtr		B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM		770	805	840	870	900	935	960	990	1020	1045	1075	1100	1130	1155	1180
7,000	BHP	2.22	2.34	2.48	2.62	2.74	2.86	2.98	3.10	3.22	3.34	3.49	3.61	3.73	3.90	4.06	4.22
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	755	785	820	855	885	915	945	975	1005	1030	1060	1085	1110	1140	1165	1190
7,200	BHP	2.38	2.52	2.64	2.78	2.92	3.06	3.21	3.35	3.47	3.62	3.74	3.88	4.00	4.16	4.32	4.48
	Sheave/Mtr	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	770	805	835	870	900	930	960	990	1015	1045	1070	1100	1125	1150	1175	1200
7,400	BHP	2.56	2.68	2.82	2.95	3.09	3.24	3.38	3.53	3.67	3.84	3.98	4.12	4.26	4.42	4.58	4.74
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	790	820	855	885	915	945	975	1005	1030	1060	1085	1110	1135	1160	1185	1210
7,600	BHP	2.74	2.86	2.98	3.12	3.26	3.41	3.55	3.70	3.89	4.05	4.21	4.40	4.53	4.69	4.85	
	Sheave/Mtr	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	
	RPM	810	840	870	900	930	960	990	1015	1045	1070	1095	1125	1145	1170	1195	
7,800	BHP	2.98	3.13	3.25	3.39	3.54	3.68	3.83	3.99	4.15	4.34	4.50	4.66	4.82	4.95		
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	C	C	C	C	C		
	RPM	830	860	885	915	945	975	1005	1030	1055	1085	1110	1135	1160	1180		
8,000	BHP	3.18	3.30	3.44	3.61	3.78	3.94	4.10	4.29	4.45	4.61	4.77	4.93				
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	C	C	C				
	RPM	850	875	900	930	960	990	1015	1045	1070	1095	1120	1145				

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Table continued on next page.

Models:
MB
072-300

Blower Performance
MB240

Table continued from previous page.

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
8,200	BHP	3.35	3.48	3.65	3.79	3.96	4.13	4.27	4.44	4.58	4.72	4.88					
	Sheave/Mtr	B	A	A	A	A	A	A	A	A	C	C					
	RPM	865	890	920	945	975	1005	1030	1060	1085	1110	1135					
8,400	BHP	3.62	3.74	3.89	4.03	4.18	4.33	4.49	4.65	4.81	4.97						
	Sheave/Mtr	A	A	A	A	A	A	A	A	C	C						
	RPM	880	905	935	965	995	1020	1045	1070	1095	1120						
8,600	BHP	3.81	3.98	4.12	4.29	4.46	4.62	4.78	4.94								
	Sheave/Mtr	A	A	A	A	A	A	A	A								
	RPM	895	925	950	980	1010	1035	1060	1085								
8,800	BHP	4.06	4.22	4.41	4.57	4.73	4.92										
	Sheave/Mtr	A	A	A	A	A	A										
	RPM	915	940	970	995	1020	1050										
9,000	BHP	4.38	4.54	4.70	4.86												
	Sheave/Mtr	A	A	A	A												
	RPM	935	960	985	1010												
9,200	BHP	4.65	4.76	4.90													
	Sheave/Mtr	A	A	A													
	RPM	955	975	1000													
9,400	BHP	4.83	4.94														
	Sheave/Mtr	A	A														
	RPM	970	990														
9,600	BHP																
	Sheave/Mtr																
	RPM																

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance MB240 with VFD

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
6,000	BHP				1.78	1.89	2.00	2.12	2.24	2.36	2.48	2.60	2.74	2.89	3.01	3.15	3.30
	Discrete Spd Setting				B	B	B	A	A	A	A	A	A	A	A	C	C
	RPM				775	810	845	880	910	940	970	1000	1030	1060	1085	1115	1145
6,200	BHP			1.82	1.93	2.04	2.15	2.30	2.44	2.58	2.73	2.87	2.99	3.14	3.26	3.40	3.52
	Discrete Spd Setting			B	B	B	B	A	A	A	A	A	A	A	C	C	C
	RPM			755	790	825	860	895	925	955	985	1015	1040	1070	1095	1125	1150
6,400	BHP			2.00	2.14	2.26	2.40	2.52	2.64	2.76	2.88	3.02	3.14	3.28	3.40	3.56	3.70
	Discrete Spd Setting			B	B	B	B	A	A	A	A	A	A	A	C	C	C
	RPM			775	810	840	875	905	935	965	995	1025	1050	1080	1105	1135	1160
6,600	BHP		2.02	2.16	2.30	2.42	2.56	2.68	2.80	2.92	3.05	3.17	3.29	3.43	3.55	3.71	3.85
	Discrete Spd Setting		B	B	B	B	A	A	A	A	A	A	A	A	C	C	C
	RPM		755	790	825	855	890	920	950	980	1010	1035	1060	1090	1115	1145	1170
6,800	BHP		2.18	2.32	2.46	2.58	2.70	2.84	2.94	3.06	3.21	3.35	3.52	3.66	3.82	3.94	4.06
	Discrete Spd Setting		B	B	B	B	A	A	A	A	A	A	A	C	C	C	C
	RPM		770	805	840	870	900	935	960	990	1020	1045	1075	1100	1130	1155	1180
7,000	BHP	2.22	2.34	2.48	2.62	2.74	2.86	2.98	3.10	3.22	3.34	3.49	3.61	3.73	3.90	4.06	4.22
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	755	785	820	855	885	915	945	975	1005	1030	1060	1085	1110	1140	1165	1190
7,200	BHP	2.38	2.52	2.64	2.78	2.92	3.06	3.21	3.35	3.47	3.62	3.74	3.88	4.00	4.16	4.32	4.48
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	770	805	835	870	900	930	960	990	1015	1045	1070	1100	1125	1150	1175	1200
7,400	BHP	2.56	2.68	2.82	2.95	3.09	3.24	3.38	3.53	3.67	3.84	3.98	4.12	4.26	4.42	4.58	4.74
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	790	820	855	885	915	945	975	1005	1030	1060	1085	1110	1135	1160	1185	1210
7,600	BHP	2.74	2.86	2.98	3.12	3.26	3.41	3.55	3.70	3.89	4.05	4.21	4.40	4.53	4.69	4.85	5.01
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	810	840	870	900	930	960	990	1015	1045	1070	1095	1125	1145	1170	1195	1220
7,800	BHP	2.98	3.13	3.25	3.39	3.54	3.68	3.83	3.99	4.15	4.34	4.50	4.66	4.82	4.95	5.11	5.27
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	RPM	830	860	885	915	945	975	1005	1030	1055	1085	1110	1135	1160	1180	1205	1230
8,000	BHP	3.18	3.30	3.44	3.61	3.78	3.94	4.10	4.29	4.45	4.61	4.77	4.93	5.09	5.25	5.38	5.54
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	RPM	850	875	900	930	960	990	1015	1045	1070	1095	1120	1145	1170	1195	1215	1240

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Table continued on next page.

Models:
MB
072-300

Blower Performance
MB240 with VFD

Table continued from previous page.

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
8,200	BHP	3.35	3.48	3.65	3.79	3.96	4.13	4.27	4.44	4.58	4.72	4.88	5.08	5.24	5.44	5.64	
	Discrete Spd Setting	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	
	RPM	865	890	920	945	975	1005	1030	1060	1085	1110	1135	1160	1180	1205	1230	
8,400	BHP	3.62	3.74	3.89	4.03	4.18	4.33	4.49	4.65	4.81	4.97	5.16	5.36	5.56	5.72	5.92	
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	
	RPM	880	905	935	965	995	1020	1045	1070	1095	1120	1145	1170	1195	1215	1240	
8,600	BHP	3.81	3.98	4.12	4.29	4.46	4.62	4.78	4.94	5.10	5.28	5.48	5.64	5.84	6.04	6.20	
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	
	RPM	895	925	950	980	1010	1035	1060	1085	1110	1135	1160	1180	1205	1230	1250	
8,800	BHP	4.06	4.22	4.41	4.57	4.73	4.92	5.08	5.24	5.40	5.60	5.76	5.96	6.16	6.32		
	Discrete Spd Setting	A	A	A	A	A	A	A	C	C	C	C	C	C	C		
	RPM	915	940	970	995	1020	1050	1075	1100	1125	1150	1170	1195	1220	1240		
9,000	BHP	4.38	4.54	4.70	4.86	5.02	5.18	5.34	5.50	5.68	5.88	6.08	6.24				
	Sheave/Mtr	A	A	A	A	A	A	A	C	C	C	C	C				
	RPM	935	960	985	1010	1035	1060	1085	1110	1135	1160	1185	1205				
	Turns Open	4.5	4	3.5	3	2	1.5	1	3.5	3	2.5	2	1.5				
9,200	BHP	4.65	4.76	4.90	5.08	5.26	5.44	5.62	5.80	6.00	6.16						
	Discrete Spd Setting	A	A	A	A	A	A	C	C	C	C						
	RPM	955	975	1000	1025	1050	1075	1100	1125	1150	1170						
9,400	BHP	4.83	4.94	5.12	5.32	5.52	5.72	5.92	6.12	6.32	6.48						
	Discrete Spd Setting	A	A	A	A	A	A	C	C	C	C						
	RPM	970	990	1015	1040	1065	1090	1115	1140	1165	1185						
9,600	BHP	5.10	5.24	5.44	5.64	5.84	6.04	6.24	6.40								
	Discrete Spd Setting	A	A	A	A	A	C	C	C								
	RPM	985	1005	1030	1055	1080	1105	1130	1150								

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool.
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Blower Performance MB300

Models:
MB
072-300

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
8,100	RPM	935	965	995	1025	1055	1085	1115	1145	1170	1195	1220	1245	1265	1285	1310	1330
8,400	BHP	3.36	3.52	3.74	3.92	4.14	4.36	4.57	4.75	4.93	5.11	5.29	5.47	5.62	5.80	5.94	6.12
	Sheave/Mtr	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	955	985	1020	1045	1075	1105	1135	1160	1185	1210	1235	1260	1280	1305	1325	1350
8,700	BHP	3.60	3.79	4.00	4.22	4.43	4.65	4.83	5.01	5.19	5.37	5.55	5.76	5.97	6.14	6.35	6.56
	Sheave/Mtr	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	975	1005	1035	1065	1095	1125	1150	1175	1200	1225	1250	1275	1300	1320	1345	1370
9,000	BHP	3.90	4.12	4.30	4.51	4.73	4.91	5.09	5.30	5.48	5.66	5.89	6.08	6.32	6.56	6.76	
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	
	RPM	1000	1030	1055	1085	1115	1140	1165	1195	1220	1245	1270	1290	1315	1340	1360	
9,300	BHP	4.34	4.56	4.74	4.96	5.14	5.35	5.53	5.71	5.89	6.08	6.29	6.50	6.67	6.88	7.05	
	Sheave/Mtr	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	
	RPM	1020	1050	1075	1105	1130	1160	1185	1210	1235	1260	1285	1310	1330	1355	1375	
9,600	BHP	4.64	4.85	5.03	5.25	5.46	5.67	5.88	6.13	6.34	6.52	6.66	6.84	7.02	7.16		
	Sheave/Mtr	A	A	A	A	A	A	A	A	C	C	C	C	C	C		
	RPM	1040	1070	1095	1125	1150	1175	1200	1230	1255	1280	1300	1325	1350	1370		
9,900	BHP	4.93	5.15	5.33	5.53	5.78	5.99	6.20	6.41	6.62	6.83	7.04	7.21	7.42			
	Sheave/Mtr	A	A	A	A	A	A	A	C	C	C	C	C	C			
	RPM	1060	1090	1115	1140	1170	1195	1220	1245	1270	1295	1320	1340	1365			
10,200	BHP	5.36	5.57	5.77	5.95	6.17	6.35	6.53	6.74	6.94	7.18	7.42	7.61				
	Sheave/Mtr	A	A	A	A	A	A	C	C	C	C	C	E				
	RPM	1085	1110	1135	1160	1190	1215	1240	1265	1285	1310	1335	1355				
10,500	BHP	5.52	5.75	5.99	6.23	6.47	6.71	6.95	7.19	7.43	7.62	7.86	8.10				
	Sheave/Mtr	A	A	A	A	A	A	C	C	C	E	E	E				
	RPM	1100	1130	1155	1180	1205	1230	1255	1280	1305	1325	1350	1375				
10,800	BHP	6.00	6.24	6.48	6.72	6.96	7.20	7.39	7.63	7.87	8.11	8.30					
	Sheave/Mtr	A	A	A	A	A	C	C	E	E	E	E					
	RPM	1125	1150	1175	1200	1225	1250	1270	1295	1320	1345	1365					

Notes:
- A, 1 = Standard RPM/Standard Blower Motor
- E, 5 = High RPM/Large Blower Motor
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Models:
MB
072-300

Blower Performance
MB300 with VFD

SCFM	ESP (in.w.c.)	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
7,500	BHP	2.69	2.84	2.96	3.11	3.27	3.45	3.60	3.78	3.96	4.08	4.23	4.38	4.53	4.69	4.86	5.03
	Discrete Spd Setting	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C
	RPM	890	925	955	990	1020	1050	1075	1105	1135	1155	1180	1205	1230	1255	1275	1295
7,800	BHP	2.87	3.04	3.18	3.36	3.54	3.72	3.87	4.05	4.20	4.35	4.50	4.65	4.80	4.97	5.14	5.30
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C
	RPM	910	945	975	1010	1040	1070	1095	1125	1150	1175	1200	1225	1250	1270	1290	1310
8,100	BHP	3.10	3.26	3.42	3.60	3.78	3.96	4.14	4.34	4.52	4.70	4.88	5.06	5.21	5.35	5.53	5.68
	Discrete Spd Setting	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	935	965	995	1025	1055	1085	1115	1145	1170	1195	1220	1245	1265	1285	1310	1330
8,400	BHP	3.36	3.52	3.74	3.92	4.14	4.36	4.57	4.75	4.93	5.11	5.29	5.47	5.62	5.80	5.94	6.12
	Discrete Spd Setting	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C
	RPM	955	985	1020	1045	1075	1105	1135	1160	1185	1210	1235	1260	1280	1305	1325	1350
8,700	BHP	3.60	3.79	4.00	4.22	4.43	4.65	4.83	5.01	5.19	5.37	5.55	5.76	5.97	6.14	6.35	6.56
	Discrete Spd Setting	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	RPM	975	1005	1035	1065	1095	1125	1150	1175	1200	1225	1250	1275	1300	1320	1345	1370
9,000	BHP	3.90	4.12	4.30	4.51	4.73	4.91	5.09	5.30	5.48	5.66	5.89	6.08	6.32	6.56	6.76	
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	
	RPM	1000	1030	1055	1085	1115	1140	1165	1195	1220	1245	1270	1290	1315	1340	1360	
9,300	BHP	4.34	4.56	4.74	4.96	5.14	5.35	5.53	5.71	5.89	6.08	6.29	6.50	6.67	6.88	7.05	
	Discrete Spd Setting	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	
	RPM	1020	1050	1075	1105	1130	1160	1185	1210	1235	1260	1285	1310	1330	1355	1375	
9,600	BHP	4.64	4.85	5.03	5.25	5.46	5.67	5.88	6.13	6.34	6.52	6.66	6.84	7.02	7.16		
	Discrete Spd Setting	A	A	A	A	A	A	A	A	C	C	C	C	C	C		
	RPM	1040	1070	1095	1125	1150	1175	1200	1230	1255	1280	1300	1325	1350	1370		
9,900	BHP	4.93	5.15	5.33	5.53	5.78	5.99	6.20	6.41	6.62	6.83	7.04	7.21	7.42			
	Discrete Spd Setting	A	A	A	A	A	A	A	C	C	C	C	C	C			
	RPM	1060	1090	1115	1140	1170	1195	1220	1245	1270	1295	1320	1340	1365			
10,200	BHP	5.36	5.57	5.77	5.95	6.17	6.35	6.53	6.74	6.94	7.18						
	Discrete Spd Setting	A	A	A	A	A	A	C	C	C	C						
	RPM	1085	1110	1135	1160	1190	1215	1240	1265	1285	1310						
10,500	BHP	5.52	5.75	5.99	6.23	6.47	6.71	6.95	7.19								
	Discrete Spd Setting	A	A	A	A	A	A	C	C								
	RPM	1100	1130	1155	1180	1205	1230	1255	1280								
10,800	BHP	6.00	6.24	6.48	6.72	6.96	7.20	7.39	7.63								
	Discrete Spd Setting	A	A	A	A	A	C	C	C								
	RPM	1125	1150	1175	1200	1225	1250	1270	1295								

Notes:
- Motor Sheave set to 1-turn open from factory.
- Factory torque setting is A. Torque setting is field-adjustable to any torque setting listed in drive table through the Wireless Service Tool
- The unit can control the blower through LAT control. Enable this setting in the field with the Wireless Service Tool.
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

Operating Limits and Commissioning Conditions

Models:
MB
072-300

OPERATING LIMITS

Environment – Units are designed for indoor installation only. Never install units in areas subject to freezing or where humidity levels could cause cabinet condensation (such as unconditioned spaces subject to 100% outside air).

Power Supply – Voltage utilization shall comply with AHRI Standard 110 or values provided in the *Electrical Data* section.

Three factors determine the operating limits of water-source heat pumps: return air temperature, water temperature, and ambient temperature. When any one of these factors is at minimum or maximum levels, the other two factors should be at normal levels to ensure proper unit operation. Extreme variations in temperature and humidity and/or corrosive water or air adversely affects unit performance, reliability, and service life.

COMMISSIONING CONDITIONS

Starting conditions vary depending upon model and are based upon the following notes:

NOTES:

1. Commissioning Conditions are not normal or continuous operating conditions. Minimum/maximum limits are startup conditions to bring the building space up to occupancy temperatures. Units are not designed to operate under these conditions on a regular basis.
2. Voltage utilization range complies with AHRI Standard 110.

Table 11: Operating Limits

Operating Limits	Cooling	Heating
Air Limits		
Min. ambient air, DB[1 3]	10°F [-12°C]	10°F [-12°C]
Max. ambient air, DB[3]	130°F [54.4°C]	130°F [54.4°C]
Min. entering air, DB/WB	60/50°F [16/10°C]	50°F [10°C]
Max. entering air, DB/WB	90/73°F [32/23°C]	80°F [27°C]
Min/Max Airflow (CFM/Ton)[2]	300 to 500 CFM/Ton	
Water Limits		
Min. entering water (072-120)[1]	30°F [-1°C]	20°F [-6.7°C]
Min. entering water (168-300)[1]	30°F [-1°C]	30°F [-1°C]
Operating range	50-110°F [10-43°C]	30-70°F [-1 to 21°C]
Max. entering water	120°F [49°C]	90°F [32°C]
Water Flow Range[3]	1.5 to 3.0 gpm/ton [1.6 to 3.2 l/m per kW]	

Notes:
1. Circulating fluid shall be protected to ensure that freezing will not occur when not in operation.
2. All information is provided at rated cfm (400cfm/ton).
3. For units equipped with flow-control automation, cooling & heating min/max ambient temps are 15°F (-9°C) / 120°F (49°C).

Table 12: Commissioning Conditions

Commissioning Conditions	Cooling	Heating
Air Limits		
Min. ambient air, DB[1 3]	10°F [-12°C]	10°F [-12°C]
Max. ambient air, DB[3]	130°F [54°C]	130°F [54°C]
Min. entering air, DB/WB	60/50°F [16/10°C]	50°F [10°C][5]
Max. entering air, DB/WB	90/73°F [32/23°C][4]	80°F [27°C]
Min/Max Airflow (CFM/Ton)[2]	300 to 500 CFM/Ton	
Water Limits		
Min. entering water (072-120)[1]	30°F [-6.7°C]	20°F [-6.7°C]
Min. entering water (168-300)[1]	30°F [-1°C]	30°F [-1°C]
Operating range	50-110°F [10-43°C]	30-70°F [-1 to 21°C]
Max. entering water	120°F [49°C]	90°F [32°C]
Water Flow Range[3]	1.5 to 3.0 gpm/ton [1.6 to 3.2 l/m per kW]	

Notes:
1. Circulating fluid shall be protected to ensure that freezing will not occur when not in operation.
2. All information is provided at rated cfm (400cfm/ton).
3. For units equipped with flow-control automation, cooling & heating min/max ambient temps are 15°F (-9°C) / 120°F (49°C).
4. Commission units for cooling at entering air temperatures of 100/75°F [38/24°C] only at rated water flow or 3 gpm/ton.
5. Commission units for heating at entering air temperature of 40°F [4.4°C] only at rated water flow or 3 gpm/ton.

Unit Maximum Water Working Pressure

Configuration	Max Pressure PSIG [kPa]
Base Unit	300 [2,068]
MWV	300 [2,068]
MOD Valve	300 [2,068]

Use the lowest maximum pressure rating when multiple options are combined.

Models:
MB
072-300

Piping System Cleaning and Flushing

PIPING SYSTEM CLEANING AND FLUSHING

Cleaning and flushing the WLHP piping system is the single most important step to ensure proper startup and continued efficient operation of the system.

Follow the instructions below to properly clean and flush the system:

1. Ensure that electrical power to the unit is disconnected.
2. Install the system with the supply hose connected directly to the return riser valve. Use a single length of flexible hose.
3. Fill the system with water. DO NOT allow system to overflow. Bleed all air from the system. Pressurize and check the system for leaks and repair as appropriate. Models with Waterside Economizer also manually open economizer valve and coil air vents (2) to bleed air from coil.
4. Verify that all strainers are in place (the manufacturer recommends a strainer with a #20 stainless-steel wire mesh). Start the pumps, and systematically check each vent to ensure that all air is bled from the system.
5. Verify that make-up water is available. Adjust make-up water as required to replace the air which was bled from the system. Check and adjust the water/air level in the expansion tank.
6. Set the boiler to raise the loop temperature to approximately 86°F [30°C]. Open a drain at the lowest point in the system. Adjust the make-up water replacement rate to equal the rate of bleed.
7. Refill the system and add trisodium phosphate in a proportion of approximately one pound per 150 gallons (0.8 kg per 1000 l) of water (or other equivalent approved cleaning agent) Reset the boiler to raise the loop temperature to 100°F (38°C). Circulate the solution for a minimum of 8 to 24 hours. At the end of this period, shut off the circulating pump and drain the solution. Repeat system cleaning if desired.
8. When the cleaning process is complete, remove the short-circuited hoses. Reconnect the hoses to the proper supply, and return the connections to each of the units. Refill the system and bleed off all air.
9. Test the system pH with litmus paper. The system water should be in the range of pH 6.0 - 8.5 (see the **Water Quality Requirements** table). Add chemicals, as appropriate to maintain neutral pH levels.
10. When the system is successfully cleaned, flushed, refilled and bled, check the main system panels, safety cutouts and alarms. Set the controls to properly maintain loop temperatures.

⚠ WARNING

Polyolester Oil, commonly known as POE oil, is a synthetic oil used in many refrigeration systems including those with R-454B refrigerant. POE oil, if it ever comes in contact with PVC or CPVC piping, may cause failure of the PVC/CPVC. PVC/CPVC piping should never be used as supply or return water piping with water-source heat pump products containing R-454B as system failures and property damage may result.

⚠ CAUTION

DO NOT use Stop Leak or similar chemical agent in this system. Addition of chemicals of this type to the loop water will foul the heat exchanger and inhibit unit operation.

NOTE: The manufacturer strongly recommends all piping connections, both internal and external to the unit, be pressure tested by an appropriate method prior to any finishing of the interior space or before access to all connections is limited. Test pressure may not exceed the maximum allowable pressure for the unit and all components within the water system. The manufacturer will not be responsible or liable for damages from water leaks due to inadequate or lack of a pressurized leak test, or damages caused by exceeding the maximum pressure rating during installation.

Unit and System Checkout

Models:
MB
072-300

UNIT CHECKOUT

BEFORE POWERING SYSTEM, please check the following:

- ☐ **Line voltage and wiring:** Verify that voltage is within an acceptable range for the unit and wiring and fuses/breakers are properly sized. Verify that low voltage wiring is complete.
- ☐ **Unit control transformer:** Ensure that transformer has the properly selected voltage tap.
- ☐ **Balancing/shutoff valves:** Ensure that all isolation valves are open (after system flushing - see System Checkout) and water control valves are wired.
- ☐ **Entering water and air:** Ensure that entering water and air temperatures are within operating limits of **Operating Limits** and **Commissioning Conditions** tables.
- ☐ **Low water temperature cutout:** Verify that low water temperature cut-out on the CXM2 is properly set.
- ☐ **Unit blower wheel:** Manually rotate blower wheel to verify free rotation and ensure that all blower wheels are secured to the blower motor shaft and centered in housing.
- ☐ **Blower motor:** Verify motor bolts are tight. DO NOT oil motors upon startup. Fan motors are pre-oiled at the factory.
- ☐ Ensure shaft pillow blocks, sheave, and pulley are tight
- ☐ **Sheave:** Verify sheave has been set to turns in design requirement. Record turns on start up log sheet.
- ☐ **Belt:** Verify belt is straight and proper tension
- ☐ **Condensate line:** Verify that condensate line is open, trapped, vented and properly pitched toward drain.
- ☐ **Water flow balancing:** Record inlet and outlet water temperatures for each heat pump upon startup. This check can eliminate nuisance trip outs and high velocity water flow that could erode heat exchangers.
- ☐ **Unit air coil and filters:** Ensure that filter is clean and accessible. Clean air coil of all manufacturing oils.
- ☐ **Unit controls:** Verify that CXM2 field-selection options are properly set.

SYSTEM CHECKOUT

- ☐ **System water temperature:** Check water temperature for proper range and also verify heating and cooling setpoints for proper operation.
- ☐ **System pH:** Check and adjust water pH if necessary to maintain a level between 6 and 8.5. Proper pH promotes longevity of hoses and fittings. Verify these requirements using the **Water Quality Requirements** table.
- ☐ **System flushing:** Verify that all hoses are connected end to end when flushing to ensure that debris bypasses the unit heat exchanger, water valves and other components. Water used in the system must be potable quality initially and clean of dirt, piping slag, and strong chemical cleaning agents. Verify that all air is purged from the system. Air in the system can cause poor operation or system corrosion.
- ☐ **Cooling tower/boiler:** Check equipment for proper setpoints and operation.
- ☐ **Standby pumps:** Verify that the standby pump is properly installed and in operating condition.
- ☐ **System controls:** Verify that system controls function and operate in the proper sequence.
- ☐ **Low water temperature cutout:** Verify that low water temperature cut-out controls are provided for the outdoor portion of the loop. Otherwise, operating problems may occur.
- ☐ **System control center:** Verify that the control center and alarm panel have appropriate setpoints and are operating as designed.
- ☐ **Miscellaneous:** Note any questionable aspects of the installation.

⚠ CAUTION

Verify that ALL water control valves are open and allow water flow prior to engaging the compressor. Freezing of the coax or water lines can permanently damage the heat pump.

⚠ CAUTION

To avoid equipment damage, DO NOT leave system filled in a building without heat during the winter unless antifreeze is added to the water loop. Heat exchangers never fully drain by themselves and will freeze unless winterized with antifreeze.

Models:
MB
072-300

Unit Startup Procedure

1. After checkouts are complete, turn on power to the unit. It is recommended (but not necessary for startup) to plug in the Wireless Service Tool to the port on the corner post. You can check unit configuration and monitor operation during startup. Turn the thermostat fan position to "ON". The blower should start.
2. Balance air flow at registers.
3. Adjust all valves to their full open positions. Turn on the line power to all heat pumps.
4. Room temperature should be within the minimum-maximum ranges of the **Commissioning Conditions** table. During startup checks, loop water temperature entering the heat pump should be within the minimum-maximum ranges of the table above.
5. Three factors determine the operating limits of the manufacturer's heat pumps: return air temperature, water temperature, and ambient temperature. When any one of these factors is at a minimum or maximum level, the other factor must be at normal level to ensure proper unit operation.

   A. Adjust the unit thermostat to the warmest setting. Place the thermostat mode switch in the "COOL" position. Slowly reduce thermostat setting until the compressor activates.

   B. Check for cool air delivery at the unit grille within a few minutes after the unit has begun to operate.

      NOTE: Bypass the unit's 5-minute time delay in the control circuit on the unit control as shown in the Test Mode Button figure. See the control AOM for specific details.

   C. Verify that the compressor is on and that the water flow rate is correct by measuring pressure drop through the heat exchanger using the P/T plugs and comparing to the **Coax Water Pressure Drop** table.

   D. Check the elevation and cleanliness of the condensate lines. Dripping may be a sign of a blocked line. Check that the condensate trap is filled to provide a water seal. Check the temperature of both entering and leaving water. If temperature is within range, proceed with the test. If temperature is outside of the operating range, check refrigerant pressures and compare to the **Coax Water Pressure Drop** table. Verify correct water flow by comparing unit pressure drop across the heat exchanger versus the data in the **Coax Water Pressure Drop** table. Heat of rejection (HR) can be calculated and compared to submittal data capacity pages. The formula for HR for systems with water is as follows:

      HR (Btuh) = TD x GPM x 500

      where TD is the temperature difference between the entering and leaving water, and GPM is the flow rate in U.S. GPM, determined by comparing the pressure drop across the heat exchanger to table 10. In S-I units, the formula is as follows:

      HR (kW) = TD x l/s x 4.18

   E. Check air temperature drop across the air coil when compressor is operating. Air temperature drop should be between 15°F and 25°F (8°C and 14°C).

   F. Turn thermostat to "OFF" position. A hissing noise indicates proper functioning of the reversing valve.

6. Allow fifteen minutes between tests for pressure to equalize before beginning heating test.

   A. Adjust the thermostat to the lowest setting Place the thermostat mode switch in the "HEAT" position.

   B. Slowly raise the thermostat to a higher temperature until the compressor activates.

Unit Startup Procedure

Models:
MB
072-300

C. Check for warm air delivery within a few minutes after the unit has begun to operate.

D. Use the **Typical Unit Operating Pressures and Temperatures table** for reference. Check the temperature of both entering and leaving water. If temperature is within range, proceed with the test. If temperature is outside of the operating range, check refrigerant pressures and compare to the **Coax Water Pressure Drop** table. Verify correct water flow by comparing unit pressure drop across the heat exchanger versus the data in the **Coax Water Pressure Drop** table. Heat of extraction (HE) can be calculated and compared to submittal data capacity pages. The formula for HE for systems with water is as follows:

HE (Btuh) = TD x GPM x 500

where TD is the temperature difference between the entering and leaving water, and GPM is the flow rate in U.S. GPM, determined by comparing the pressure drop across the heat exchanger to the **Coax Water Pressure Drop** table. In S-I units, the formula is as follows:

HE (kW) = TD x l/s x 4.18.

E. Check air temperature rise across the air coil when compressor is operating. Air temperature rise should be between 20°F and 30°F (11°C and 17°C).

F. Check for vibration, noise, and water leaks.

7. If unit fails to operate, perform troubleshooting analysis (see troubleshooting section). If the check described fails to reveal the problem and the unit still does not operate, contact a trained service technician to ensure proper diagnosis and repair of the equipment.

8. When testing is complete, set system to maintain desired comfort level.

9. **BE CERTAIN TO FILL OUT AND FORWARD ALL WARRANTY REGISTRATION PAPERS PER YOUR WARRANTY'S REGISTRATION PROCESS.**

NOTE: If performance during any mode appears abnormal, refer to the CXM2 section or troubleshooting section of this manual. To obtain maximum performance, clean the air coil before startup. A 10% solution of dishwasher detergent and water is recommended.

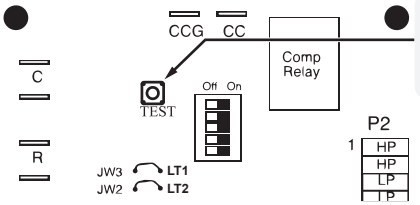
⚠ WARNING

When the disconnect switch is closed, high voltage is present in some areas of the electrical panel. Exercise caution when working with energized equipment.

⚠ CAUTION

Verify that ALL water control valves are open and allow water flow prior to engaging the compressor. Freezing of the coax or water lines can permanently damage the heat pump.

Test Mode Button



Press the Test button to enter Test Mode and bypass timing and delays for 20 minutes.

Table 13: Coax Water Pressure Drop

Model	GPM	Pressure Drop (psi)				
		30°F[1]	50°F	70°F	90°F	110°F
072	9.00	1.7	1.2	1.0	0.9	0.9
	13.50	3.3	2.4	2.0	2.0	1.8
	18.00	5.1	3.9	3.4	3.2	3.1
096	12.00	2.6	2.1	1.9	1.8	1.7
	18.00	5.4	4.6	4.1	3.8	3.7
	24.00	8.3	7.1	6.4	5.9	5.6
120	15.00	2.8	2.6	2.5	2.4	2.3
	22.50	5.9	5.3	5.0	4.7	4.5
	30.00	9.0	8.0	7.5	7.1	6.7
168	21.00	1.4	1.3	1.2	1.1	1.1
	31.50	2.7	2.5	2.3	2.2	2.1
	42.00	4.5	4.1	3.8	3.7	3.6
192	24.00	2.2	2.0	2.0	1.9	1.8
	36.00	4.8	4.4	4.2	4.0	3.9
	48.00	7.4	6.7	6.4	6.2	5.9
240	30.00	1.8	1.6	1.5	1.4	1.3
	45.00	4.2	3.6	3.4	3.2	3.1
	60.00	6.5	5.7	5.3	5.0	4.8
300	37.50	2.4	2.0	1.8	1.7	1.6
	56.25	5.4	4.5	4.0	3.8	3.6
	75.00	8.4	7.0	6.3	5.9	5.7

1. Based on 20% methanol antifreeze solution.

Table 14: Motorized Water Valve and Modulating Valve Adders

Size	Flow	MWV					MOD Valve				
		C_v	Close Off Pressure	MOPD	Pressure Drop		C_v	Close Off Pressure	MOPD	Pressure Drop	
					PSI	FT				PSI	FT
072	9.00	37	200	50	0.06	0.1	10	200	50	0.81	1.9
	13.50				0.13	0.3				1.82	4.2
	18.00				0.24	0.5				3.24	7.5
096	12.00	37	200	50	0.11	0.2	10	200	50	1.44	3.3
	18.00				0.24	0.5				3.24	7.5
	24.00				0.42	1.0				5.76	13.3
120	15.00	37	200	150	0.16	0.4	19	200	50	0.62	1.4
	22.50				0.37	0.9				1.40	3.2
	30.00				0.66	1.5				2.49	5.8
168	21.00	37	200	150	0.32	0.7	29	200	50	0.52	1.2
	31.50				0.72	1.7				1.18	2.7
	42.00				1.29	3.0				2.10	4.8
192	24.00	37	200	150	0.42	1.0	29	200	50	0.68	1.6
	36.00				0.95	2.2				1.54	3.6
	48.00				1.68	3.9				2.74	6.3
240	30.00	37	200	150	0.66	1.5	29	200	50	1.07	2.5
	45.00				1.48	3.4				2.41	5.6
	60.00				2.63	6.1				4.28	9.9
300	37.50	57	200	150	0.43	1.0	29	200	50	1.67	3.9
	56.25				0.97	2.2				3.76	8.7
	75.00				1.73	4.0				6.69	15.4

- PSI values are calculated based on manufacturer-recommended 70°F entering water temperature.

Unit Operating Conditions

Models:
MB
072-300

Operating Pressure/Temperature tables include the following notes:

- Entering air is based upon 70°F (21°C) DB in heating and 80/67°F (27/19°C) in cooling
- Subcooling is based on head pressure reading taken at the compressor discharge service port and line temperature reading on the discharge line by the compressor discharge service port.
- Cooling air and water values can vary greatly with changes in humidity level
- For operation in the shaded area, when water is used in lieu of antifreeze, the LWT must be calculated. Flow must be maintained to a level such that the LWT is maintained above 42°F (5.6°C).

Table 15: Typical Unit Operating Pressures and Temperatures

MB 072	Entering Water Temp (°F)	Water Flow GPM/ton	CKT1 Discharge Pressure CKT1 (PSIG)	CKT1 Suction Pressure CKT1 (PSIG)	CKT1 Superheat CKT1 (°F)	CKT1 Subcooling CKT1 (°F)	CKT2 Discharge Pressure CKT2 (PSIG)	CKT2 Suction Pressure CKT2 (PSIG)	CKT2 Superheat CKT2 (°F)	CKT2 Subcooling CKT2 (°F)	Water Temp Rise (°F)	Air Temp Drop (°F) DB	Water Temp Drop (°F)"	Air Temp Rise (°F) DB
Full Load Cooling	30[1]	9	162 - 182	107 - 117	17 - 21	13 - 17	152 - 172	100 - 110	13 - 17	13 - 17	19 - 21	19 - 25		
		13.5	152 - 172	105 - 115	16 - 20	14 - 18	142 - 162	99 - 109	11 - 15	14 - 18	14 - 16	19 - 25		
		18	142 - 162	103 - 113	14 - 18	15 - 19	133 - 153	99 - 109	9 - 13	15 - 19	10 - 12	18 - 24		
	50	9	220 - 240	116 - 126	15 - 19	9 - 13	210 - 230	110 - 120	10 - 14	9 - 13	19 - 21	18 - 24		
		13.5	207 - 227	114 - 124	13 - 17	10 - 14	197 - 217	108 - 118	9 - 13	10 - 14	14 - 16	18 - 24		
		18	193 - 213	112 - 122	12 - 16	12 - 16	184 - 204	105 - 115	8 - 12	12 - 16	9 - 11	18 - 24		
	70	9	295 - 315	123 - 133	14 - 18	7 - 11	283 - 303	118 - 128	8 - 12	7 - 11	19 - 21	17 - 23		
		13.5	277 - 297	122 - 132	12 - 16	8 - 12	267 - 287	115 - 125	7 - 11	8 - 12	14 - 16	17 - 23		
		18	260 - 280	120 - 130	10 - 14	9 - 13	251 - 271	113 - 123	7 - 11	9 - 13	9 - 11	17 - 23		
	90	9	382 - 402	129 - 139	15 - 19	6 - 10	368 - 388	124 - 134	7 - 11	6 - 10	18 - 20	16 - 22		
		13.5	363 - 383	128 - 138	12 - 16	6 - 10	351 - 371	123 - 133	6 - 10	6 - 10	14 - 16	16 - 22		
		18	343 - 363	127 - 137	10 - 14	7 - 11	333 - 353	121 - 131	5 - 9	7 - 11	9 - 11	16 - 22		
	120	9	535 - 555	136 - 146	17 - 21	5 - 9	518 - 538	133 - 143	6 - 10	5 - 9	18 - 20	14 - 20		
		13.5	515 - 535	135 - 145	15 - 19	5 - 9	500 - 520	132 - 142	5 - 9	5 - 9	13 - 15	14 - 20		
		18	495 - 515	134 - 144	13 - 17	5 - 9	482 - 502	130 - 140	4 - 8	5 - 9	8 - 10	15 - 21		
Full Load Heating	30[1]	9	265 - 285	60 - 70	8 - 12	6 - 10	259 - 279	60 - 70	8 - 12	6 - 10			8 - 10	18 - 24
		13.5	268 - 288	63 - 73	8 - 12	6 - 10	262 - 282	63 - 73	9 - 13	6 - 10			6 - 8	18 - 24
		18	271 - 291	66 - 76	8 - 12	6 - 10	265 - 285	66 - 76	9 - 13	6 - 10			4 - 6	19 - 25
	50	9	292 - 312	87 - 97	12 - 16	8 - 12	284 - 304	85 - 95	5 - 9	8 - 12			11 - 13	24 - 30
		13.5	296 - 316	90 - 100	12 - 16	9 - 13	288 - 308	89 - 99	6 - 10	9 - 13			8 - 10	25 - 31
		18	300 - 320	94 - 104	12 - 16	9 - 13	292 - 312	92 - 102	6 - 10	9 - 13			5 - 7	26 - 32
	70	9	318 - 338	112 - 122	12 - 16	11 - 15	309 - 329	110 - 120	5 - 9	11 - 15			14 - 16	30 - 36
		13.5	324 - 344	117 - 127	12 - 16	12 - 16	314 - 334	115 - 125	5 - 9	12 - 16			10 - 12	31 - 37
		18	329 - 349	123 - 133	13 - 17	12 - 16	319 - 339	119 - 129	5 - 9	12 - 16			7 - 9	32 - 38
	90	9	344 - 364	139 - 149	12 - 16	14 - 18	334 - 354	136 - 146	4 - 8	14 - 18			17 - 19	35 - 41
		13.5	351 - 371	146 - 156	12 - 16	16 - 20	340 - 360	142 - 152	4 - 8	16 - 20			13 - 15	36 - 42
		18	358 - 378	153 - 163	12 - 16	17 - 21	347 - 367	149 - 159	4 - 8	17 - 21			9 - 11	37 - 43
	120	9												
		13.5												
		18												

1. Based on 20% methanol antifreeze solution.

Models:
MB
072-300

Unit Operating Conditions

MB 096	Entering Water Temp (°F)	Water Flow GPM/ ton	CKT1		CKT1		CKT2		CKT2		Water Temp Rise (°F)	Air Temp Drop (°F) DB	Water Temp Drop (°F)"	Air Temp Rise (°F) DB
			Discharge Pressure CKT1 (PSIG)	Suction Pressure CKT1 (PSIG)	Superheat CKT1 (°F)	Subcooling CKT1 (°F)	Discharge Pressure CKT2 (PSIG)	Suction Pressure CKT2 (PSIG)	Superheat CKT2 (°F)	Subcooling CKT2 (°F)				
Full Load Cooling	30[1]	12	167 - 187	106 - 116	16 - 20	12 - 16	161 - 181	106 - 116	5 - 9	12 - 16	20 - 22	20 - 26		
		18	155 - 175	104 - 114	14 - 18	13 - 17	150 - 170	104 - 114	3 - 7	13 - 17	15 - 17	20 - 26		
		24	144 - 164	101 - 111	11 - 15	13 - 17	139 - 159	101 - 111	1 - 5	13 - 17	10 - 12	20 - 26		
	50	12	217 - 237	115 - 125	15 - 19	9 - 13	210 - 230	113 - 123	11 - 15	9 - 13	21 - 23	19 - 25		
		18	202 - 222	112 - 122	13 - 17	10 - 14	197 - 217	111 - 121	9 - 13	10 - 14	15 - 17	19 - 25		
		24	188 - 208	110 - 120	12 - 16	11 - 15	183 - 203	109 - 119	7 - 11	11 - 15	10 - 12	19 - 25		
	70	12	284 - 304	122 - 132	15 - 19	8 - 12	276 - 296	120 - 130	11 - 15	8 - 12	21 - 23	18 - 24		
		18	266 - 286	120 - 130	13 - 17	8 - 12	260 - 280	118 - 128	9 - 13	8 - 12	15 - 17	18 - 24		
		24	249 - 269	118 - 128	11 - 15	9 - 13	244 - 264	117 - 127	7 - 11	9 - 13	10 - 12	18 - 24		
	90	12	367 - 387	128 - 138	15 - 19	6 - 10	357 - 377	126 - 136	10 - 14	6 - 10	20 - 22	17 - 23		
		18	347 - 367	126 - 136	12 - 16	6 - 10	339 - 359	125 - 135	8 - 12	6 - 10	15 - 17	17 - 23		
		24	327 - 347	125 - 135	10 - 14	7 - 11	321 - 341	124 - 134	6 - 10	7 - 11	10 - 12	17 - 23		
	120	12	519 - 539	135 - 145	17 - 21	4 - 8	508 - 528	133 - 143	22 - 26	4 - 8	19 - 21	15 - 21		
		18	497 - 517	134 - 144	14 - 18	5 - 9	488 - 508	132 - 142	20 - 24	5 - 9	14 - 16	15 - 21		
		24	476 - 496	134 - 144	12 - 16	5 - 9	468 - 488	132 - 142	17 - 21	5 - 9	9 - 11	15 - 21		
Full Load Heating	30[1]	12	274 - 294	58 - 68	14 - 18	8 - 12	268 - 288	57 - 67	12 - 16	8 - 12			6 - 8	19 - 25
		18	272 - 292	57 - 67	13 - 17	8 - 12	267 - 287	55 - 65	11 - 15	8 - 12			7 - 9	19 - 25
		24	270 - 290	55 - 65	13 - 17	7 - 11	265 - 285	54 - 64	11 - 15	7 - 11			7 - 9	18 - 24
	50	12	299 - 319	80 - 90	16 - 20	9 - 13	293 - 313	79 - 89	14 - 18	9 - 13			11 - 13	25 - 31
		18	304 - 324	84 - 94	16 - 20	10 - 14	299 - 319	83 - 93	14 - 18	10 - 14			8 - 10	26 - 32
		24	309 - 329	89 - 99	16 - 20	10 - 14	304 - 324	88 - 98	14 - 18	10 - 14			6 - 8	27 - 33
	70	12	330 - 350	107 - 117	16 - 20	11 - 15	324 - 344	107 - 117	14 - 18	11 - 15			15 - 17	31 - 37
		18	337 - 357	114 - 124	16 - 20	11 - 15	331 - 351	114 - 124	14 - 18	11 - 15			11 - 13	32 - 38
		24	344 - 364	120 - 130	16 - 20	12 - 16	339 - 359	121 - 131	13 - 17	12 - 16			8 - 10	34 - 40
	90	12	364 - 384	139 - 149	14 - 18	13 - 17	358 - 378	140 - 150	11 - 15	13 - 17			19 - 21	38 - 44
		18	372 - 392	147 - 157	14 - 18	14 - 18	367 - 387	148 - 158	10 - 14	14 - 18			14 - 16	39 - 45
		24	381 - 401	155 - 165	13 - 17	15 - 19	375 - 395	157 - 167	9 - 13	15 - 19			10 - 12	41 - 47
	120	12												
		18												
		24												

1. Based on 20% methanol antifreeze solution.

Unit Operating Conditions

Models:
MB
072-300

MB 120	Entering Water Temp (°F)	Water Flow GPM/ ton	CKT1		CKT1		CKT2		CKT2		Water Temp Rise (°F)	Air Temp Drop (°F) DB	Water Temp Drop (°F)"	Air Temp Rise (°F) DB
			Discharge Pressure CKT1 (PSIG)	Suction Pressure CKT1 (PSIG)	Superheat CKT1 (°F)	Subcooling CKT1 (°F)	Discharge Pressure CKT2 (PSIG)	Suction Pressure CKT2 (PSIG)	Superheat CKT2 (°F)	Subcooling CKT2 (°F)				
Full Load Cooling	30[1]	15	184 - 204	93 - 103	34 - 38	18 - 22	188 - 208	91 - 101	32 - 36	18 - 22	23 - 25	17 - 23		
		22.5	163 - 183	86 - 96	29 - 33	25 - 29	167 - 187	82 - 92	16 - 20	25 - 29	16 - 18	15 - 21		
		30	141 - 161	78 - 88	25 - 29	31 - 35	145 - 165	73 - 83	0 - 4	31 - 35	9 - 11	14 - 20		
	50	15	226 - 246	107 - 117	22 - 26	13 - 17	229 - 249	106 - 116	20 - 24	13 - 17	21 - 23	18 - 24		
		22.5	209 - 229	100 - 110	21 - 25	18 - 22	212 - 232	101 - 111	15 - 19	18 - 22	15 - 17	17 - 23		
		30	193 - 213	93 - 103	20 - 24	23 - 27	195 - 215	96 - 106	9 - 13	23 - 27	9 - 11	16 - 22		
	70	15	290 - 310	115 - 125	18 - 22	9 - 13	293 - 313	115 - 125	16 - 20	9 - 13	20 - 22	17 - 23		
		22.5	274 - 294	111 - 121	17 - 21	12 - 16	276 - 296	113 - 123	14 - 18	12 - 16	15 - 17	17 - 23		
		30	257 - 277	106 - 116	16 - 20	15 - 19	259 - 279	110 - 120	12 - 16	15 - 19	9 - 11	17 - 23		
	90	15	374 - 394	120 - 130	19 - 23	6 - 10	379 - 399	121 - 131	16 - 20	6 - 10	20 - 22	16 - 22		
		22.5	355 - 375	118 - 128	16 - 20	7 - 11	358 - 378	120 - 130	14 - 18	7 - 11	15 - 17	16 - 22		
		30	335 - 355	117 - 127	14 - 18	9 - 13	338 - 358	119 - 129	12 - 16	9 - 13	9 - 11	16 - 22		
	120	15	529 - 549	126 - 136	20 - 24	3 - 7	535 - 555	126 - 136	19 - 23	3 - 7	19 - 21	14 - 20		
		22.5	506 - 526	126 - 136	18 - 22	4 - 8	511 - 531	127 - 137	16 - 20	4 - 8	14 - 16	15 - 21		
		30	483 - 503	126 - 136	15 - 19	5 - 9	487 - 507	127 - 137	13 - 17	5 - 9	9 - 11	15 - 21		
Full Load Heating	30[1]	15	278 - 298	51 - 61	16 - 20	5 - 9	277 - 297	50 - 60	14 - 18	5 - 9			8 - 10	19 - 25
		22.5	281 - 301	54 - 64	17 - 21	5 - 9	281 - 301	53 - 63	14 - 18	5 - 9			6 - 8	20 - 26
		30	285 - 305	57 - 67	17 - 21	5 - 9	285 - 305	56 - 66	15 - 19	5 - 9			4 - 6	20 - 26
	50	15	313 - 333	78 - 88	18 - 22	4 - 8	312 - 332	76 - 86	15 - 19	4 - 8			11 - 13	26 - 32
		22.5	318 - 338	82 - 92	18 - 22	4 - 8	318 - 338	81 - 91	15 - 19	4 - 8			8 - 10	27 - 33
		30	324 - 344	86 - 96	17 - 21	4 - 8	324 - 344	85 - 95	15 - 19	4 - 8			5 - 7	28 - 34
	70	15	346 - 366	106 - 116	18 - 22	7 - 11	347 - 367	104 - 114	16 - 20	7 - 11			14 - 16	32 - 38
		22.5	355 - 375	113 - 123	17 - 21	7 - 11	355 - 375	111 - 121	15 - 19	7 - 11			11 - 13	34 - 40
		30	363 - 383	120 - 130	17 - 21	7 - 11	364 - 384	118 - 128	15 - 19	7 - 11			7 - 9	35 - 41
	90	15	385 - 405	140 - 150	16 - 20	10 - 14	385 - 405	137 - 147	14 - 18	10 - 14			18 - 20	39 - 45
		22.5	393 - 413	145 - 155	17 - 21	14 - 18	394 - 414	144 - 154	15 - 19	14 - 18			14 - 16	41 - 47
		30	401 - 421	151 - 161	18 - 22	17 - 21	402 - 422	151 - 161	15 - 19	17 - 21			9 - 11	42 - 48
	120	15												
		22.5												
		30												

1. Based on 20% methanol antifreeze solution.

Models:
MB
072-300

Unit Operating Conditions

MB 168	Entering Water Temp (°F)	Water Flow GPM/ ton	CKT1		CKT1		CKT2		CKT2		Water Temp Rise (°F)	Air Temp Drop (°F) DB	Water Temp Drop (°F)"	Air Temp Rise (°F) DB
			Discharge Pressure CKT1 (PSIG)	Suction Pressure CKT1 (PSIG)	Superheat CKT1 (°F)	Subcooling CKT1 (°F)	Discharge Pressure CKT2 (PSIG)	Suction Pressure CKT2 (PSIG)	Superheat CKT2 (°F)	Subcooling CKT2 (°F)				
Full Load Cooling	30[1]	21	158 - 178	103 - 113	18 - 22	14 - 18	169 - 189	104 - 114	22 - 26	14 - 18	21 - 23	21 - 27		
		31.5	146 - 166	97 - 107	18 - 22	17 - 21	155 - 175	97 - 107	21 - 25	17 - 21	15 - 17	20 - 26		
		42	134 - 154	92 - 102	17 - 21	19 - 23	142 - 162	90 - 100	20 - 24	19 - 23	9 - 11	19 - 25		
	50	21	213 - 233	110 - 120	16 - 20	9 - 13	224 - 244	108 - 118	22 - 26	9 - 13	20 - 22	20 - 26		
		31.5	199 - 219	108 - 118	14 - 18	11 - 15	207 - 227	106 - 116	19 - 23	11 - 15	15 - 17	20 - 26		
		42	184 - 204	106 - 116	12 - 16	12 - 16	191 - 211	103 - 113	17 - 21	12 - 16	9 - 11	20 - 26		
	70	21	284 - 304	115 - 125	15 - 19	7 - 11	295 - 315	112 - 122	22 - 26	7 - 11	20 - 22	19 - 25		
		31.5	267 - 287	114 - 124	13 - 17	8 - 12	277 - 297	111 - 121	19 - 23	8 - 12	14 - 16	19 - 25		
		42	250 - 270	113 - 123	10 - 14	9 - 13	258 - 278	110 - 120	16 - 20	9 - 13	9 - 11	19 - 25		
	90	21	368 - 388	120 - 130	16 - 20	6 - 10	382 - 402	116 - 126	22 - 26	6 - 10	19 - 21	19 - 25		
		31.5	350 - 370	119 - 129	13 - 17	7 - 11	361 - 381	115 - 125	19 - 23	7 - 11	14 - 16	19 - 25		
		42	331 - 351	118 - 128	11 - 15	7 - 11	341 - 361	115 - 125	16 - 20	7 - 11	9 - 11	19 - 25		
	120	21	520 - 540	126 - 136	16 - 20	5 - 9	534 - 554	124 - 134	21 - 25	5 - 9	18 - 20	17 - 23		
		31.5	499 - 519	126 - 136	14 - 18	5 - 9	512 - 532	123 - 133	18 - 22	5 - 9	13 - 15	17 - 23		
		42	479 - 499	125 - 135	12 - 16	6 - 10	489 - 509	123 - 133	16 - 20	6 - 10	9 - 11	17 - 23		
Full Load Heating	30[1]	21	284 - 304	55 - 65	10 - 14	13 - 17	282 - 302	54 - 64	9 - 13	13 - 17			3 - 5	18 - 24
		31.5	279 - 299	52 - 62	9 - 13	13 - 17	277 - 297	51 - 61	8 - 12	13 - 17			5 - 7	17 - 23
		42	274 - 294	48 - 58	8 - 12	13 - 17	272 - 292	47 - 57	7 - 11	13 - 17			6 - 8	16 - 22
	50	21	310 - 330	74 - 84	13 - 17	13 - 17	306 - 326	71 - 81	13 - 17	13 - 17			9 - 11	23 - 29
		31.5	316 - 336	78 - 88	13 - 17	13 - 17	312 - 332	75 - 85	14 - 18	13 - 17			7 - 9	24 - 30
		42	321 - 341	83 - 93	14 - 18	14 - 18	318 - 338	80 - 90	14 - 18	14 - 18			5 - 7	25 - 31
	70	21	344 - 364	101 - 111	15 - 19	15 - 19	340 - 360	96 - 106	16 - 20	15 - 19			13 - 15	29 - 35
		31.5	350 - 370	107 - 117	15 - 19	15 - 19	346 - 366	102 - 112	16 - 20	15 - 19			10 - 12	30 - 36
		42	357 - 377	113 - 123	15 - 19	16 - 20	353 - 373	108 - 118	17 - 21	16 - 20			7 - 9	31 - 37
	90	21	380 - 400	133 - 143	14 - 18	17 - 21	374 - 394	126 - 136	16 - 20	17 - 21			17 - 19	35 - 41
		31.5	388 - 408	139 - 149	14 - 18	18 - 22	382 - 402	132 - 142	16 - 20	18 - 22			12 - 14	36 - 42
		42	396 - 416	146 - 156	14 - 18	19 - 23	390 - 410	139 - 149	16 - 20	19 - 23			8 - 10	37 - 43
	120	21												
		31.5												
		42												

1. Based on 20% methanol antifreeze solution.

Unit Operating Conditions

Models:
MB
072-300

MB 192	Entering Water Temp (°F)	Water Flow GPM/ ton	CKT1		CKT1		CKT2		CKT2		Water Temp Rise (°F)	Air Temp Drop (°F) DB	Water Temp Drop (°F)"	Air Temp Rise (°F) DB
			Discharge Pressure CKT1 (PSIG)	Suction Pressure CKT1 (PSIG)	Superheat CKT1 (°F)	Subcooling CKT1 (°F)	Discharge Pressure CKT2 (PSIG)	Suction Pressure CKT2 (PSIG)	Superheat CKT2 (°F)	Subcooling CKT2 (°F)				
Full Load Cooling	30[1]	24	173 - 193	104 - 114	20 - 24	11 - 15	179 - 199	103 - 113	21 - 25	11 - 15	23 - 25	20 - 26		
		36	151 - 171	101 - 111	15 - 19	14 - 18	156 - 176	100 - 110	16 - 20	14 - 18	16 - 18	20 - 26		
		48	129 - 149	97 - 107	10 - 14	16 - 20	132 - 152	97 - 107	10 - 14	16 - 20	9 - 11	19 - 25		
	50	24	208 - 228	112 - 122	16 - 20	8 - 12	213 - 233	111 - 121	17 - 21	8 - 12	20 - 22	20 - 26		
		36	195 - 215	110 - 120	14 - 18	10 - 14	199 - 219	109 - 119	15 - 19	10 - 14	15 - 17	20 - 26		
		48	182 - 202	107 - 117	12 - 16	11 - 15	185 - 205	106 - 116	13 - 17	11 - 15	9 - 11	20 - 26		
	70	24	268 - 288	118 - 128	15 - 19	7 - 11	273 - 293	117 - 127	17 - 21	7 - 11	19 - 21	19 - 25		
		36	256 - 276	116 - 126	14 - 18	7 - 11	260 - 280	115 - 125	16 - 20	7 - 11	14 - 16	19 - 25		
		48	243 - 263	114 - 124	13 - 17	8 - 12	247 - 267	113 - 123	14 - 18	8 - 12	9 - 11	19 - 25		
	90	24	348 - 368	122 - 132	17 - 21	6 - 10	353 - 373	121 - 131	19 - 23	6 - 10	18 - 20	19 - 25		
		36	333 - 353	121 - 131	15 - 19	6 - 10	337 - 357	119 - 129	17 - 21	6 - 10	13 - 15	19 - 25		
		48	318 - 338	119 - 129	13 - 17	7 - 11	320 - 340	118 - 128	14 - 18	7 - 11	9 - 11	19 - 25		
	120	24	496 - 516	129 - 139	18 - 22	5 - 9	499 - 519	128 - 138	19 - 23	5 - 9	17 - 19	17 - 23		
		36	478 - 498	128 - 138	16 - 20	6 - 10	480 - 500	127 - 137	17 - 21	6 - 10	12 - 14	17 - 23		
		48	461 - 481	127 - 137	14 - 18	6 - 10	461 - 481	126 - 136	15 - 19	6 - 10	8 - 10	17 - 23		
Full Load Heating	30[1]	24	254 - 274	51 - 61	9 - 13	8 - 12	252 - 272	53 - 63	5 - 9	8 - 12			7 - 9	16 - 22
		36	257 - 277	54 - 64	9 - 13	8 - 12	255 - 275	56 - 66	5 - 9	8 - 12			5 - 7	17 - 23
		48	261 - 281	57 - 67	10 - 14	7 - 11	258 - 278	59 - 69	5 - 9	7 - 11			3 - 5	18 - 24
	50	24	283 - 303	78 - 88	12 - 16	10 - 14	279 - 299	77 - 87	8 - 12	10 - 14			10 - 12	22 - 28
		36	287 - 307	82 - 92	13 - 17	10 - 14	283 - 303	81 - 91	8 - 12	10 - 14			7 - 9	23 - 29
		48	292 - 312	87 - 97	13 - 17	10 - 14	287 - 307	85 - 95	8 - 12	10 - 14			5 - 7	24 - 30
	70	24	311 - 331	107 - 117	12 - 16	10 - 14	306 - 326	104 - 114	8 - 12	10 - 14			13 - 15	28 - 34
		36	317 - 337	114 - 124	11 - 15	11 - 15	311 - 331	110 - 120	8 - 12	11 - 15			10 - 12	29 - 35
		48	323 - 343	121 - 131	10 - 14	11 - 15	317 - 337	116 - 126	7 - 11	11 - 15			7 - 9	31 - 37
	90	24	341 - 361	141 - 151	9 - 13	13 - 17	334 - 354	135 - 145	5 - 9	13 - 17			17 - 19	34 - 40
		36	347 - 367	147 - 157	8 - 12	14 - 18	340 - 360	142 - 152	4 - 8	14 - 18			13 - 15	35 - 41
		48	353 - 373	154 - 164	8 - 12	15 - 19	345 - 365	149 - 159	4 - 8	15 - 19			9 - 11	36 - 42
	120	24												
		36												
		48												

1. Based on 20% methanol antifreeze solution.

Models:
MB
072-300

Unit Operating Conditions

MB 240	Entering Water Temp (°F)	Water Flow GPM/ ton	CKT1		CKT1		CKT2		CKT2		Water Temp Rise (°F)	Air Temp Drop (°F) DB	Water Temp Drop (°F)"	Air Temp Rise (°F) DB
			Discharge Pressure CKT1 (PSIG)	Suction Pressure CKT1 (PSIG)	Superheat CKT1 (°F)	Subcooling CKT1 (°F)	Discharge Pressure CKT2 (PSIG)	Suction Pressure CKT2 (PSIG)	Superheat CKT2 (°F)	Subcooling CKT2 (°F)				
Full Load Cooling	30[1]	30	181 - 201	105 - 115	18 - 22	12 - 16	191 - 211	108 - 118	19 - 23	12 - 16	22 - 24	19 - 25		
		45	158 - 178	97 - 107	16 - 20	17 - 21	165 - 185	100 - 110	17 - 21	17 - 21	15 - 17	19 - 25		
		60	136 - 156	89 - 99	13 - 17	22 - 26	139 - 159	92 - 102	15 - 19	22 - 26	9 - 11	18 - 24		
	50	30	218 - 238	112 - 122	16 - 20	9 - 13	227 - 247	113 - 123	16 - 20	9 - 13	20 - 22	19 - 25		
		45	205 - 225	110 - 120	14 - 18	11 - 15	211 - 231	111 - 121	15 - 19	11 - 15	15 - 17	19 - 25		
		60	191 - 211	107 - 117	12 - 16	12 - 16	195 - 215	109 - 119	13 - 17	12 - 16	9 - 11	19 - 25		
	70	30	280 - 300	117 - 127	15 - 19	7 - 11	289 - 309	117 - 127	15 - 19	7 - 11	19 - 21	18 - 24		
		45	265 - 285	116 - 126	13 - 17	8 - 12	271 - 291	116 - 126	13 - 17	8 - 12	14 - 16	18 - 24		
		60	250 - 270	115 - 125	10 - 14	8 - 12	254 - 274	115 - 125	10 - 14	8 - 12	9 - 11	18 - 24		
	90	30	363 - 383	121 - 131	16 - 20	5 - 9	372 - 392	121 - 131	15 - 19	5 - 9	18 - 20	17 - 23		
		45	342 - 362	119 - 129	13 - 17	6 - 10	348 - 368	119 - 129	12 - 16	6 - 10	13 - 15	17 - 23		
		60	321 - 341	118 - 128	10 - 14	7 - 11	325 - 345	118 - 128	8 - 12	7 - 11	8 - 10	17 - 23		
	120	30	516 - 536	127 - 137	18 - 22	5 - 9	523 - 543	128 - 138	15 - 19	5 - 9	17 - 19	16 - 22		
		45	497 - 517	126 - 136	15 - 19	5 - 9	502 - 522	127 - 137	13 - 17	5 - 9	13 - 15	16 - 22		
		60	477 - 497	126 - 136	13 - 17	5 - 9	480 - 500	127 - 137	10 - 14	5 - 9	8 - 10	16 - 22		
Full Load Heating	30[1]	30	260 - 280	60 - 70	16 - 20	7 - 11	270 - 290	56 - 66	17 - 21	7 - 11			3 - 5	17 - 23
		45	262 - 282	54 - 64	16 - 20	8 - 12	267 - 287	51 - 61	17 - 21	8 - 12			5 - 7	17 - 23
		60	263 - 283	48 - 58	17 - 21	9 - 13	263 - 283	47 - 57	16 - 20	9 - 13			7 - 9	16 - 22
	50	30	289 - 309	94 - 104	17 - 21	7 - 11	303 - 323	85 - 95	19 - 23	7 - 11			4 - 6	23 - 29
		45	294 - 314	85 - 95	19 - 23	8 - 12	301 - 321	80 - 90	19 - 23	8 - 12			7 - 9	23 - 29
		60	299 - 319	75 - 85	20 - 24	8 - 12	298 - 318	74 - 84	19 - 23	8 - 12			10 - 12	23 - 29
	70	30	352 - 372	119 - 129	21 - 25	10 - 14	349 - 369	117 - 127	19 - 23	10 - 14			7 - 9	33 - 39
		45	343 - 363	111 - 121	21 - 25	10 - 14	340 - 360	109 - 119	19 - 23	10 - 14			10 - 12	31 - 37
		60	335 - 355	104 - 114	21 - 25	9 - 13	332 - 352	102 - 112	20 - 24	9 - 13			13 - 15	30 - 36
	90	30	395 - 415	155 - 165	19 - 23	14 - 18	392 - 412	154 - 164	16 - 20	14 - 18			9 - 11	41 - 47
		45	385 - 405	146 - 156	19 - 23	12 - 16	381 - 401	144 - 154	17 - 21	12 - 16			13 - 15	39 - 45
		60	374 - 394	138 - 148	20 - 24	11 - 15	371 - 391	134 - 144	18 - 22	11 - 15			17 - 19	37 - 43
	120	30												
		45												
		60												

1. Based on 20% methanol antifreeze solution.

Unit Operating Conditions

Models:
MB
072-300

MB 300	Entering Water Temp (°F)	Water Flow GPM/ton	CKT1 Discharge Pressure CKT1 (PSIG)	CKT1 Suction Pressure CKT1 (PSIG)	CKT1 Superheat CKT1 (°F)	CKT1 Subcooling CKT1 (°F)	CKT2 Discharge Pressure CKT2 (PSIG)	CKT2 Suction Pressure CKT2 (PSIG)	CKT2 Superheat CKT2 (°F)	CKT2 Subcooling CKT2 (°F)	Water Temp Rise (°F)	Air Temp Drop (°F) DB	Water Temp Drop (°F)"	Air Temp Rise (°F) DB
Full Load Cooling	30[1]	37.5	171 - 191	112 - 122	4 - 8	4 - 8	178 - 198	113 - 123	14 - 18	4 - 8	21 - 23	19 - 25		
		56.25	166 - 186	113 - 123	4 - 8	5 - 9	171 - 191	115 - 125	10 - 14	5 - 9	16 - 18	19 - 25		
		75	161 - 181	114 - 124	4 - 8	6 - 10	164 - 184	117 - 127	6 - 10	6 - 10	12 - 14	19 - 25		
	50	37.5	216 - 236	114 - 124	5 - 9	4 - 8	225 - 245	116 - 126	14 - 18	4 - 8	20 - 22	19 - 25		
		56.25	205 - 225	114 - 124	3 - 7	4 - 8	212 - 232	116 - 126	11 - 15	4 - 8	15 - 17	19 - 25		
		75	194 - 214	114 - 124	2 - 6	5 - 9	199 - 219	116 - 126	7 - 11	5 - 9	10 - 12	19 - 25		
	70	37.5	280 - 300	118 - 128	7 - 11	3 - 7	291 - 311	120 - 130	15 - 19	3 - 7	20 - 22	18 - 24		
		56.25	265 - 285	117 - 127	4 - 8	4 - 8	274 - 294	119 - 129	12 - 16	4 - 8	15 - 17	18 - 24		
		75	250 - 270	117 - 127	2 - 6	4 - 8	257 - 277	119 - 129	9 - 13	4 - 8	9 - 11	18 - 24		
	90	37.5	361 - 381	122 - 132	8 - 12	3 - 7	374 - 394	124 - 134	15 - 19	3 - 7	19 - 21	17 - 23		
		56.25	344 - 364	121 - 131	6 - 10	3 - 7	355 - 375	123 - 133	12 - 16	3 - 7	14 - 16	17 - 23		
		75	326 - 346	120 - 130	3 - 7	3 - 7	335 - 355	123 - 133	9 - 13	3 - 7	9 - 11	17 - 23		
	120	37.5	508 - 528	129 - 139	9 - 13	2 - 6	525 - 545	131 - 141	15 - 19	2 - 6	18 - 20	15 - 21		
		56.25	489 - 509	128 - 138	7 - 11	2 - 6	503 - 523	130 - 140	12 - 16	2 - 6	13 - 15	15 - 21		
		75	471 - 491	128 - 138	5 - 9	2 - 6	482 - 502	130 - 140	10 - 14	2 - 6	9 - 11	16 - 22		
Full Load Heating	30[1]	37.5	266 - 286	48 - 58	6 - 10	7 - 11	267 - 287	47 - 57	7 - 11	7 - 11			6 - 8	16 - 22
		56.25	271 - 291	52 - 62	7 - 11	7 - 11	271 - 291	51 - 61	7 - 11	7 - 11			5 - 7	17 - 23
		75	275 - 295	55 - 65	7 - 11	7 - 11	275 - 295	54 - 64	8 - 12	7 - 11			3 - 5	18 - 24
	50	37.5	301 - 321	74 - 84	11 - 15	6 - 10	301 - 321	74 - 84	13 - 17	6 - 10			10 - 12	23 - 29
		56.25	306 - 326	78 - 88	11 - 15	6 - 10	307 - 327	79 - 89	14 - 18	6 - 10			7 - 9	24 - 30
		75	311 - 331	83 - 93	12 - 16	6 - 10	313 - 333	83 - 93	15 - 19	6 - 10			5 - 7	25 - 31
	70	37.5	337 - 357	104 - 114	14 - 18	7 - 11	338 - 358	102 - 112	17 - 21	7 - 11			14 - 16	30 - 36
		56.25	345 - 365	111 - 121	13 - 17	7 - 11	346 - 366	109 - 119	17 - 21	7 - 11			10 - 12	32 - 38
		75	353 - 373	118 - 128	13 - 17	7 - 11	355 - 375	116 - 126	17 - 21	7 - 11			7 - 9	33 - 39
	90	37.5	376 - 396	138 - 148	11 - 15	8 - 12	379 - 399	135 - 145	17 - 21	8 - 12			18 - 20	37 - 43
		56.25	387 - 407	148 - 158	10 - 14	9 - 13	388 - 408	145 - 155	16 - 20	9 - 13			13 - 15	39 - 45
		75	398 - 418	159 - 169	9 - 13	9 - 13	398 - 418	155 - 165	15 - 19	9 - 13			9 - 11	41 - 47
	120	37.5												
		56.25												
		75												

1. Based on 20% methanol antifreeze solution.

Models:
MB
072-300

Startup Log Sheet

Installer: Complete *Unit and System Checkout* and follow *Unit Startup Procedures* in the IOM. Use this form to record unit information, temperatures, and pressures during startup. Keep this form for reference.

Job Name: _____

Street Address: _____

Model Number: _____ **Serial Number:** _____

Unit Location in Building: _____

Date: _____ **Sales Order Number:** _____

In order to minimize troubleshooting and costly system failures, complete the following checks and data entries before the system is put into full operation.

External Static: _____

Sheave Setting: _____ Turns Open

Temperatures (check one): ☐ °F ☐ °C Antifreeze: _____ %

Pressures (check one): ☐ PSIG ☐ kPa Type: _____

	Cooling Mode		Heating Mode
Entering Fluid Temperature			
Leaving Fluid Temperature			
Fluid Temperature Differential			
Return-Air Temperature	DB	WB	DB
Supply-Air Temperature	DB	WB	DB
Air Temperature Differential			
Water Coil Heat Exchanger (Water Pressure IN)			
Water Coil Heat Exchanger (Water Pressure OUT)			
Pressure Differential			
Flow Rate GPM (l/s)			
Compressor			
Amps			
Volts			
Discharge Line Temperature			
Motor			
Amps			
Volts			

NOTES:
1. Allow unit to run 15 minutes in each mode before taking data.
2. Never connect refrigerant gauges during startup procedures.
3. Conduct water-side analysis using P/T ports to determine water flow and temperature difference.
4. If water-side analysis shows poor performance, refrigerant troubleshooting may be required.
5. Connect refrigerant gauges as a last resort.

Preventative Maintenance

Models:
MB
072-300

WATER COIL MAINTENANCE (WATER LOOP APPLICATIONS)

Generally water coil maintenance is not needed for closed loop systems. However, if the piping is known to have high dirt or debris content, it is best to establish a periodic maintenance schedule with the owner so the water coil can be checked regularly. Dirty installations are typically the result of deterioration of iron or galvanized piping or components in the system. Open cooling towers requiring heavy chemical treatment and mineral buildup through water use can also contribute to higher maintenance. Should periodic coil cleaning be necessary, use standard coil cleaning procedures, which are compatible with both the heat exchanger material and copper water lines. Generally, the more water flowing through the unit, the less chance for scaling. However, flow rates over 3 gpm per ton (3.9 l/m per kW) can produce water (or debris) velocities that can erode the heat exchanger wall and ultimately produce leaks.

HOT WATER GENERATOR COILS

See water coil maintenance for ground water units. If the potable water is hard or not chemically softened, the high temperatures of the desuperheater will tend to scale even quicker than the water coil and may need more frequent inspections. In areas with extremely hard water, a HWG is not recommended.

FILTERS

Filters must be clean to obtain maximum performance. Filters should be inspected every month under normal operating conditions and be replaced when necessary. Units should never be operated without a filter.

CONDENSATE DRAIN

In areas where airborne bacteria may produce a "slimy" substance in the drain pan, it may be necessary to treat the drain pan chemically with an algaecide approximately every three months to minimize the problem. The condensate pan may also need to be cleaned periodically to ensure indoor air quality. The condensate drain can pick up lint and dirt, especially with dirty filters. Inspect the drain twice a year to avoid the possibility of plugging and eventual overflow.

COMPRESSOR

Conduct annual amperage checks to ensure that amp draw is no more than 10% greater than indicated on the serial dataplate.

AIR COIL

The air coil must be cleaned to obtain maximum performance. Check once a year under normal operating conditions and, if dirty, brush or vacuum clean. Care must be taken not to damage the aluminum fins while cleaning.

⚠ CAUTION

Fin edges are sharp and may cause injury.

BELT

Ensure the belt is tight. Retighten if needed. Replace if it is split or cracked.

CABINET

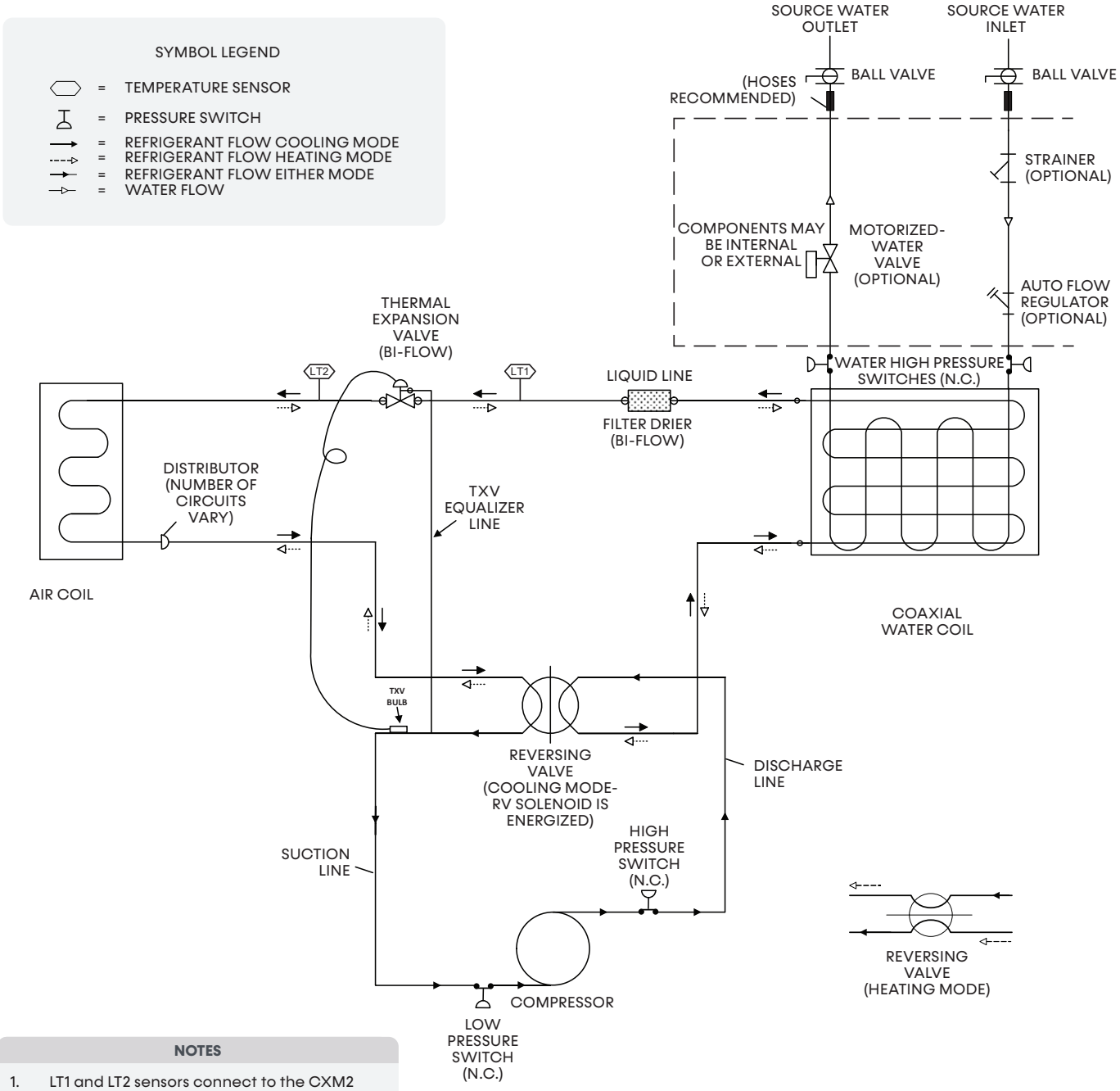
Do not allow water to stay in contact with the cabinet for long periods of time to prevent corrosion of the cabinet sheet metal. Generally, vertical cabinets are set up from the floor a few inches (7 - 8 cm) to prevent water from entering the cabinet. The cabinet can be cleaned using a mild detergent.

REPAIRS TO SEALED COMPONENTS

Sealed electrical components shall be replaced.

Models:
MB
072-300

Circuit Diagram with Safety Devices



NOTES

1. LT1 and LT2 sensors connect to the CXM2
2. Refrigerant high and low pressure switches connect to the CXM2
3. Water high-pressure switches are wired in series with refrigerant high-pressure switch.

Troubleshooting
Troubleshooting Table

Models:
MB
072-300

Fault LED/Fault/Symptom	HT	CL	Possible Cause	Solution
Main power problems	X	X	Green Status LED off	• Check the line voltage circuit breaker and disconnect. • Check for line voltage between L1 and L2 on the contactor. • Check for 24VAC between R and C on the unit control. • Check primary/secondary voltage on transformer.
Flash Code 2 **HP Fault** **High Pressure**		X	Reduced or no water flow in cooling	• Check pump operation or valve operation/setting. • Check water flow adjust to proper flow rate.
		X	Water temperature out of range in cooling	Bring water temp within design parameters.
	X		Reduced or no airflow in heating	• Check for dirty air filter and clean or replace. • Check fan motor operation and airflow restrictions. • Dirty air coil. Clean out construction dust etc. • Too high of external static? Check static vs blower table.
	X		Air temperature out of range in heating	Bring return air temp within design parameters.
	X	X	Non-condensables in system	Vacuum system and re-weigh in charge.
	X	X	Restricted metering device	Check superheat and subcooling per chart. Replace.
	X	X	Unit overcharged	Check superheat/subcooling vs typical operating condition table.
	X	X	Bad HP switch	Check switch continuity and operation. Replace.
Flash Code 3 **LP/LOC Fault** **Low Pressure** **Loss of Charge**	X	X	Insufficient charge	Check for refrigerant leaks.
	X	X	Bad LP switch	Check switch continuity and operation. Replace
	X		Reduced water flow in heating	• Check pump operation or water valve operation/setting. • Plugged strainer or filter? Clean or replace. • Check water flow. Adjust to proper flow rate.
	X		Water temperature out of range	Bring water temperature within design parameters.
		X	Reduced airflow in cooling	• Check for dirty air filter then clean or replace. • Check fan motor operation and airflow restrictions. • Is external static too high? Check static against blower table.
		X	Air temperature out of range	Is there too much cold vent air? Bring air temperature within design parameters.
	X		Compressor pump down at startup	Check charge and startup water flow.
Flash Code 4 **LT1 Fault** **Water Coil Low Temperature Limit**	X		Reduced or no water flow in heating	• Check pump operation or water valve operation/setting. • Plugged strainer or filter? Clean or replace. • Check water flow. Adjust to proper flow rate.
	X		Inadequate antifreeze level	Check antifreeze density with hydrometer.
	X		Improper temperature limit setting (30°F vs 10°F [-1°C vs -2°C])	Clip JW3 jumper for antifreeze (10°F [-12°C]) use.
	X		Water temperature out of range	Bring water temp within design parameters.
	X	X	Bad thermistor	Check temp and impedance correlation per chart.
Flash Code 5 **LT2 Fault** **Air Coil Low Temperature Limit**		X	Reduced or no airflow in cooling	• Check for dirty air filter and clean or replace. • Check fan motor operation and airflow restrictions. • Too high of external static? Check static against blower table.
		X	Air temperature out of range	Too much cold vent air? Bring entering air temp within design parameters.
		X	Improper temperature limit setting (30°F vs 10°F [-1°C vs -12°C])	Normal air side applications require 30°F (-1°C) only.
	X	X	Bad thermistor	Check temp and impedance correlation per chart.

Table continued on next page.

Models:
MB
072-300

Troubleshooting
Troubleshooting Table

Table continued from previous page.

Fault LED/Fault/Symptom	HT	CL	Possible Cause	Solution
Flash Code 6 **Condensate Fault**	X	X	Blocked drain	Check for blockage and clean drain.
	X	X	Improper trap	Check trap dimensions and location ahead of vent.
		X	Poor drainage	• Check for piping slope away from unit. • Check slope of unit toward outlet. • Poor venting? Check vent location.
		X	Moisture on sensor	Check for moisture shorting to air coil.
	X	X	Plugged air filter	Replace air filter.
	X	X	Restricted return airflow	Find and eliminate restriction. Increase return duct and/or grille size.
Flash Code 7 **Over/Under Voltage (Auto Resetting)**	X	X	Under voltage	• Check power supply and 24VAC voltage before and during operation. • Check power supply wire size. • Check compressor starting. Need hard start kit? • Check 24VAC and unit transformer. Tap for correct power supply voltage.
	X	X	Over voltage	• Check power supply voltage and 24VAC before and during operation. • Check 24VAC and unit transformer. Tap for correct power supply voltage.
Flash Code 8 **Unit Performance Sentinel**	X		Heating mode LT2>125°F (52°C)	Check for poor airflow or overcharged unit.
		X	Cooling Mode LT1>125°F (52°C) OR LT2< 40°F (4°C)	Check for poor water flow or airflow.
Flash Code 9 **Swapped Thermistor**	X	X	LT1 and LT2 swapped	Reverse position of thermistors
Flash Code 13 **Low Water Flow**	X	X	Reduced or no water flow	• Check pump or valve operation setting. • Check water flow and adjust to proper flow rate. • Clogged Y strainer, replace mesh.
	X		Inadequate antifreeze level	Check antifreeze density with hydrometer.
	X	X	Bad flow switch	Confirm applied flow to looks vs minimum flow switch setpoint on label.
Flash Code 14 **Leaving Water Temperature Low**	X		Reduced or no water flow in heating	• Check pump or valve operation setting. • Check water flow and adjust to proper flow rate.
	X		Inadequate antifreeze level	Check antifreeze density with hydrometer.
	X		Improper temperature limit setting (30°F vs 15°F [-1°C vs -9°C])	Clip JW3 jumper for antifreeze (15°F [-9°C]) use.
	X		Water temperature out of range	Bring water temperature within design parameters.
	X	X	Bad thermistor	Check temperature impedance correlation per chart.
Flash Code 15 **Refrigerant and RDS**	X	X	Refrigerant leak	Check the refrigerant charge. If the charge is low, identify and repair the leak.
			Faulty RDS sensor	Check the refrigerant charge. If the charge is not low, replace the RDS sensor.
No Fault Code Shown	X	X	No compressor operation	See the *Only Fan Runs* symptom.
	X	X	Compressor overload	Check and replace, if necessary.
	X	X	Control board	Reset power and check operation.

Table continued on next page.

Troubleshooting
Troubleshooting Table

Models:
MB
072-300

Table continued from previous page.

Fault LED/Fault/Symptom	HT	CL	Possible Cause	Solution
Unit Short Cycles	X	X	Dirty air filter	Check and clean air filter.
	X	X	Unit in Test mode	Reset power or wait 30 minutes for auto exit.
	X	X	Unit selection	Unit may be oversized for space. Check sizing for actual load of space.
	X	X	Compressor overload	Check and replace, if necessary.
Only Fan Runs	X	X	Thermostat position	Ensure thermostat set for heating or cooling operation.
	X	X	Unit locked out	Check for lockout codes. Reset power.
	X	X	Compressor overload	Check compressor overload. Replace if necessary.
	X	X	Thermostat wiring	Check thermostat wiring at heat pump. Jumper Y and R for compressor operation in test mode.
Only Compressor Runs	X	X	Thermostat wiring	• Check G wiring at heat pump. Jumper G and R for fan operation. • Check thermostat wiring at heat pump. Jumper Y and R for compressor operation in test mode.
	X	X		
	X	X	Fan motor relay	• Jumper G and R for fan operation. Check for line voltage across BR contacts. • Check fan power enable relay operation (if present).
	X	X		
	X	X	Fan motor	Check for line voltage at motor. Check capacitor.
Unit Doesn't Operate in Cooling		X	Reversing valve	Set for cooling demand and check 24VAC on RV coil and at the unit control.
		X		If RV is stuck, increase high pressure by reducing water flow and while operating engage and disengage RV coil voltage to push valve.
		X	Thermostat setup	Check for 'O' RV setup not 'B'.
		X	Thermostat wiring	Check O wiring at heat pump. Jumper O and R for RV coil 'click'.
		X		Put thermostat in cooling mode. Check 24VAC on O (check between C and O); check for 24VAC on W (check between W and C). There should be voltage on O, but not on W. If voltage is present on W, the thermostat may be bad or wired incorrectly.

Models:
MB
072-300

Troubleshooting
Functional Troubleshooting Form

Customer:

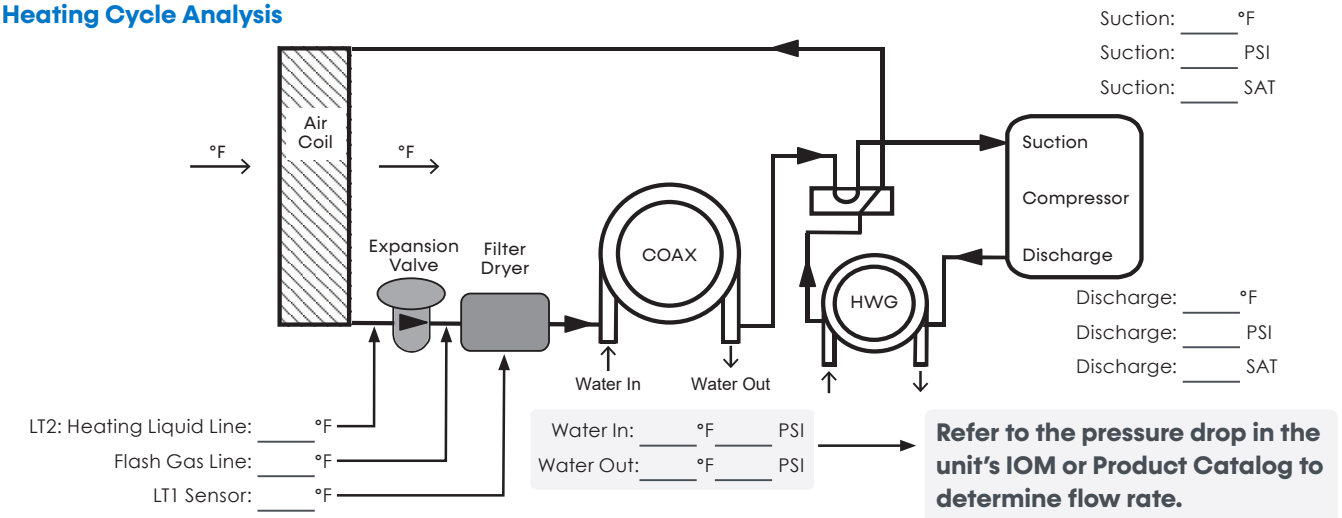
Street Address:

Model Number: **Serial Number:**

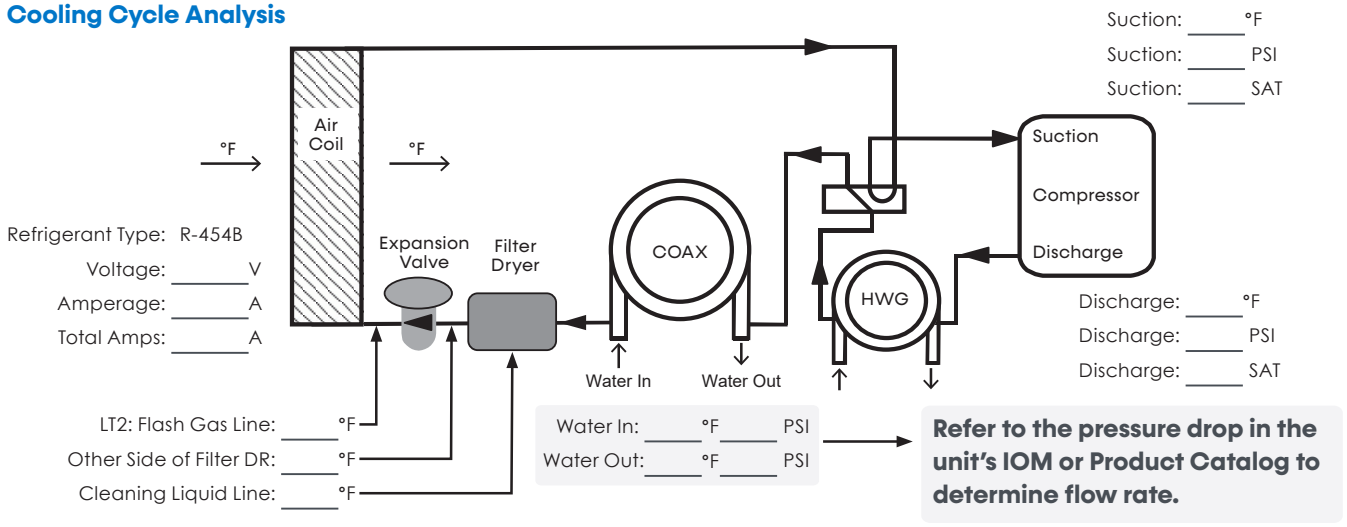
Loop Type: **Antifreeze:**

Complaint: **Date:**

Heating Cycle Analysis



Cooling Cycle Analysis



Heat of Extraction (Absorption) or Heat of Rejection =

_____ flow rate (GPM) x _____ temperature differential (°F) x _____ fluid factor† = _____

Superheat = Suction temperature - suction saturation temperature = _____

Supercooling = Discharge saturation temperature - liquid line temperature = _____

NOTES:

- † Use 500 water for water, 485 for antifreeze.

NOTE: Never connect refrigerant gauges during startup procedures. Conduct water-side analysis using P/T ports to determine water flow and temperature difference. If water-side analysis shows poor performance, refrigerant troubleshooting may be required. Connect refrigerant gauges as a last resort.

Warranty

Models:
MB
072-300

LIMITED EXPRESS WARRANTY - MB SERIES WATER-SOURCE HEAT PUMP - COMPACT

Congratulations on purchasing your new HVAC equipment. It has been designed for long life and reliable service, and is backed by one of the strongest warranties in the industry. Your unit automatically qualifies for the warranty coverage listed below, provided you keep your proof of purchase (receipt) for the equipment and meet the warranty conditions.

LIMITED ONE (1) YEAR PARTS EXPRESS WARRANTY

Heat Controller/Comfort-Aire/Century warrants all parts of the MB Series water-source heat pump used in commercial applications to be free from defects in workmanship and materials for normal use and maintenance for one (1) year from the date of purchase by the original consumer for the original installation. This Express Limited Warranty applies only when the water-source heat pump is installed as part of a complete matched system, and only when the system is installed per Comfort-Aire/Century installation instructions and in accordance with all local, state and national codes for normal use.

LIMITED FIVE (5) YEAR EXTENDED EXPRESS WARRANTY ON COMPRESSOR

We will replace a compressor which proves to be defective for a period of five (5) years from date of heat pump purchase. All restrictions, limitations and procedures for the one year parts warranty apply to the additional compressor warranty period.

EXCEPTIONS

The Limited Express Warranty does not cover normal maintenance—Comfort-Aire/Century recommends that regular inspection/maintenance be performed at least once a season and proof of maintenance be kept. Additionally, labor charges, transportation charges for replacement parts, replacement of refrigerant or filters, any other service calls/repairs are not covered by this Limited Warranty. It also does not cover any portion or component of the system that is not supplied by Comfort-Aire/Century, regardless of the cause of failure of such portion or component.

CONDITIONS OF WARRANTY COVERAGE

- Unit must be operated according to Comfort-Aire/Century operating instructions included with the unit and cannot have been subjected to accident, alteration, improper repair, neglect or misuse, or an act of God (such as a flood)
- Serial numbers and/or rating plate have not been altered or removed
- Installation was done by a trained, licensed or otherwise qualified geothermal dealer/contractor
- Performance cannot be impaired by use of any product not authorized by Comfort-Aire/Century, or by any adjustments or adaptations to components
- Damage has not been a result of inadequate wiring or voltage conditions, use during brown-out conditions, or circuit interruptions
- Air flow around any section of the unit has not been restricted
- Unit remains in the original installation
- Unit was not purchased over the internet

DURATION OF WARRANTY & REGISTRATION

The warranty begins on the date of purchase by the original consumer. The consumer must register their product at www.heatcontroller.com within 90 days of purchase. The consumer must retain a receipted bill of sale as proof of warranty period. Without this proof, the express warranty begins on the date of shipment from the factory.

REMEDY PROVIDED BY THE LIMITED EXPRESS WARRANTY

The sole remedy under the Limited Warranty is replacement of the defective part. If replacement parts are required within the period of this warranty, Comfort-Aire/Century replacement parts shall be used; any warranty on the replacement part(s) shall not affect the applicable original unit warranty. Labor to diagnose and replace the defective part is not covered by this Limited Express Warranty. Access to the unit for service is the owner's responsibility. If for any reason the replacement part/product is no longer available during the warranty period, Comfort-Aire/Century shall have the right to allow a credit in the amount of the current suggested retail price of the part/product instead of providing repair or replacement.

LIMITATION OF LIABILITY

1. **EXCLUSION OF ALL IMPLIED WARRANTIES AND LIMITATION. There are no other express or implied warranties. Comfort-Aire/Century makes no warranty of merchantability.** We do not warrant that the unit is suitable for any particular purpose or can be used in buildings or rooms of any particular size or condition except as specifically provided in this document. There are no other warranties, express or implied, which extend beyond the description in this document.
2. All warranties implied by law are limited in duration to the five-year term of the Parts Warranty. Your exclusive remedy is limited to the replacement of defective parts. **We will not be liable for any consequential or incidental damages caused by any defect in this unit.**
3. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. Some states do not allow limitation on how long an implied warranty lasts or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.
4. No warranties are made for units sold outside the continental United States and Canada. Your distributor or final seller may provide a warranty on units sold outside these areas.
5. Comfort-Aire/Century will not be liable for damages if our performance regarding warranty resolution is delayed by events beyond our control including accident, alteration, abuse, war, government restrictions, strikes, fire, flood, or other acts of God.

Please follow the below steps to register your product.

- ***Please log onto our website www.heatcontroller.com***
- ***Resources***
- ***Product Registration***
- ***Complete the requested information in all caps, especially the Email Address***
- ***Press the "Continue" button at the bottom***
- ***A copy of the registration will be sent to the email address that you entered at the top of the page for your records***

KEEP THIS INFORMATION AS A RECORD OF YOUR PURCHASE

Apply Serial Number and Model Number sticker here (from product carton). if unavailable, write serial number and model number below (can be found on unit rating plate).

_____

_____ Date of Purchase

_____ Date Installation Completed

☐ Component of new HVAC system ☐ Replacement heat pump only

Remember to retain your bill of sale as proof of warranty period and ownership.

HEAT CONTROLLER

Please visit www.heatcontroller.com to register your new product

MB Series_WARRANTY_3/2026

Models:
MB
072-300

Notes

Notes

Models:
MB
072-300

Models:
MB
072-300

Revision History

Date	Section	Description
03/25/26	Model Nomenclature	Updated
	Dimensional Data MB072-120 Horizontal	Updated header column names
	Dimensional Data MB072-120 Horizontal with WSE	Updated header column names
	Electrical CXM2, RDS, and Wireless Service Tool	Added the Refrigerant Detection System (RDS) AOM's QR code
12/18/25	Vertical Installation Service Access	Updated the mandatory service access to 3 feet (91.4 cm)
	Refrigerant Detection System	Updated
	Troubleshooting Table	Consolidated functional and performance troubleshooting into a single table
10/01/25	Model Nomenclature	Updated model nomenclature including product revision
	Physical Data	Added horsepower and kW values for Standard MB300 units
		Added weights for units with WSE (packaged and unpackaged)
	Horizontal Installation Service Access	Added section
	Vertical Installation Service Access	Added section
	Electrical Data	Updated the following for Standard and Dual Point Power units: • Min/max voltage columns • Added data for additional voltage options for size 240-300 models
	Electrical Example VFD Wiring Diagram	Added section
	Electrical VFD Adjustment	Added section
	Blower Performance	Added Standard MB300 performance
	Operating Limits and Commissioning Conditions	Updated MOD and MWV working water pressures
	Blower Performance	Updated size 072 models at 0.80 BHP for 1,900 SCFM to 0.58
	All	Updated organization, figure references, and table references

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Due to ongoing product improvements, specifications and dimensions are subject to change and correction without notice or incurring obligations. Determining the application and suitability for use of any product is the responsibility of the installer. Additionally, the installer is responsible for verifying dimensional data on the actual product prior to beginning any installation preparations.

Incentive and rebate programs have precise requirements as to product performance and certification. All products meet applicable regulations in effect on date of manufacture; however, certifications are not necessarily granted for the life of a product. Therefore, it is the responsibility of the applicant to determine whether a specific model qualifies for these incentive/rebate programs.

Engineered and assembled in the USA.

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