**23 34 16 CENTRIFUGAL HVAC FANS**

**Part 1 – GENERAL**

* 1. **SECTION INCLUDES**
1. Indoor Blower Daikin **MBVC–** Multi-position, Multi-speed Modular Blower with variable-speed ECM Motor.
	1. Model Numbers:
* MBVC1200AA-1\*\*
* MBVC1600AA-1\*\*
* MBVC2000AA-1\*\*
	1. **QUALITY ASSURANCE**
1. The unit(s) shall be tested by a Nationally Recognized Testing Laboratory (NRTL), in accordance with ANSI/UL 1995 – Heating and Cooling Equipment and bear the Listed Mark These meets the National Electric Code (NEC) and Canadian Electrical Code (CEC) requirements.
2. The Unit(s) will be produced in an ISO 9001 and ISO 14001 facility, which are standards set by the International Standard Organization (ISO). The unit(s) shall be factory tested for safety and function.
	1. **DELIVERY, STORAGE AND HANDLING**
3. Unit(s) shall be stored and handled according to the manufacturer’s recommendations.
	1. **WARRANTY**
		1. NON-OWNER OCCUPIED RESIDENCE WARRANTY
			1. This warranty is provided to you by Daikin Manufacturing Company, L.P. (“Daikin”), which warrants all parts of this heating or air conditioning unit, as described below.
			2. This warranty applies to heating and air conditioning units installed in residences not occupied by the owner.
			3. This warranty covers defects in materials and workmanship that appear under normal use and maintenance.
			4. Warranty coverage begins on the “installation date.” The installation date is one of two dates:

(1) The installation date is the date that the unit is originally installed.

(2) If the date the unit is originally installed cannot be verified, the installation date is three months after the manufacture date. The first four digits of the serial number (YYMM) on the unit indicate the manufacture date. For example, a serial number beginning with “1306” indicates the unit was manufactured in June 2013.

* + - 1. Registration is not required to obtain warranty coverage, but registration entitles the owner to the Registered Additional Term Warranty described in the following paragraph. If the unit is not registered, the warranty lasts for a period up to 5 YEARS after the installation date (the “Initial Term Warranty”). If the unit is properly registered online within 60 days after the installation date, an additional warranty (the “Registered Additional Term Warranty”) is provided an lasts for as long as the original registered owner (“registered owner”) owns the residence in which the unit was originally installed for a period up to 10 YEARS after the installation date. To register, go to www.daikincomfort.com and click “PRODUCT Registration.” Neither of these warranties continues after the unit is removed from the location where it was originally installed. The replacement of a part under this warranty does not extend the warranty period. In other words, Daikin warrants a replacement part only for the period remaining in the warranty that commenced on the installation date
			2. Complete warranty details available from your local Daikin representative or at [www.daikincomfort.com](http://www.daikincomfort.com).

**Part 2 – PERFORMANCE**

**2.01 DESIGN BASIS**

The HVAC equipment basis of design is Daikin. All bidders shall furnish the minimum system standards as defined by the base bid model numbers, model families or as otherwise specified herein (see Appendix A for general information on HVAC equipment alternate supplier). In any event the contractor shall be responsible for all specified items and intents of this document without further compensation.

**Part 3 – PRODUCTS**

**3.01 MBVC – MULTI-POSITION MULTI-SPEED MODULAR BLOWER**

1. General:

The blower unit shall be a multi-position (vertical, horizontal left, horizontal right, or downflow) modular blower with direct-drive variable-speed ECM motor type fan for installation within a conditioned space.

When installed in a vertical configuration, it shall have top discharge air and bottom return air. When installed in a horizontal right or horizontal left configuration, it shall have a horizontal discharge air and horizontal return air. When installed in a downflow configuration, it shall have bottom discharge and top return air.

This compact design with pre-painted heavy-gauge steel casing shall be available to match with nominal capacities from 1.5-ton to 5-ton.

The blower shall have connectivity with the Daikin FIT outdoor unit, model - DX17VSS air-conditioning and DZ17VSA heat pump outdoor.

The blower shall have connectivity with Daikin EEV cased coils - CAPE/CAPEA and CHPE.

General product specifications are:

|  |  |  |  |
| --- | --- | --- | --- |
| **MODEL** | **MBVC****1200AA-1\*\*** | **MBVC****1600AA-1\*\*** | **MBVC****2000AA-1\*\*** |
| **BLOWER**DiameterWidth | 10"8" | 10"8" | 11"10" |
| **ELECTRICAL DATA**VoltageMin Circuit AmpacityMax. Overcurrent Device (Amps) | 208/2304.915 | 208 / 2306.515 | 208 / 2306.515 |
| **BLOWER MOTOR**Horsepower (HP) | 1/2 | 3/4 | 3/4 |
| Ship Weight (lbs.) | 67 | 80 | 86 |
| * Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) for blower without supplemental heat installed. Refer to unit nameplate for these specifications with approved accessory heaters installed.
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1. Performance:

The models’ airflow data shall range from 0.1 to 0.9 inch WC of total external static pressure (for more information refer to the Specification Sheet SS-MBVC).

1. Indoor Unit:
2. The blower unit components shall be completely factory assembled and tested. Included in the unit is factory wiring, control circuit board, fan motor thermal protector.
3. Return air shall be through an optional or field supplied filter.
4. The blower unit shall be separately powered with 208~230V/1-phase/60Hz.
5. The voltage range shall be 253 volts maximum and 187 volts minimum.
6. Unit Cabinet:
7. The cabinet shall be constructed with sound absorbing, foil-faced insulation.
8. The installer shall select an installation location with adequate structural support, space for service access and clearance for air return and supply duct connections.
9. A field supplied secondary drain pan shall be installed where required by national, state, or local code.
10. Cabinet air leakage shall be less than 2.0% at 1.0 inch H20 when tested in accordance with ASHRAE standard 193.
11. Cabinet air leakage shall be less than 1.4% at 0.5 inch H20 when tested in accordance with ASHRAE standard 193.
12. The blower dimensions shall be:

|  |  |  |  |
| --- | --- | --- | --- |
| **MODEL** | **W** | **D** | **H** |
| MBVC1200AA-1\*\* | 171/2" | 21" | 26" |
| MBVC1600AA-1\*\* | 21" | 21" | 30" |
| MBVC2000AA-1\*\* | 241/2" | 21" | 30" |

1. The blower shall be screw-less sides and back.
2. The blower shall have galvanized, leather grain-embossed finish.
3. The blower shall have glue-less cabinet insulation retention.
4. Fan:
5. The fan shall be a variable-speed direct-drive ECM type fan, statically and dynamically balanced impeller.
6. The fan motor shall operate on 208/230 volts, 1 phase, 60 Hz with a motor output range 1/2 to 3/4 HP.
7. Filter:
8. The return air shall be filtered by means of an optional or field supplied filter (See Section I).
9. Electrical:
10. The blower shall be factory tested.
11. A separate power supply shall be required of 208/230 volts, 1 phase, 60 Hz. The acceptable voltage range shall be 187 to 253 volts.
12. Transmission (control) wiring between the blower and outdoor unit shall be a maximum of 250 ft.
13. The blower shall have electrical inlets provided in the upper sides and top of the cabinet.
14. The blower shall have a factory install circuit breaker cover.
15. Control:
16. The blower shall have controls provided by Daikin to perform input functions necessary to operate the system.
17. The blower shall be compatible with Daikin communicating outdoor units interfacing with ClimateTalk protocol.
18. The blower shall be compatible with the Daikin *One*+ Smart Thermostat.
19. The blower control board shall have a fan delay in the cooling mode and is isolated from the air stream.
20. The blower shall have a self-diagnostic control board with constant memory fault code history output to dual 7-segment display and shall display troubleshooting codes through the display.
21. The blower shall have a fault recall of six most recent faults.
22. Optional accessories available:
	1. Heater Kits (see Specification Sheet SS-MBVC).
23. (optional) Highly efficient media filter accessories:
	* 1. In-line air cleaner Daikin Premium Air Cleaner (DPAC). The DPAC has a high efficiency MERV 15 media filter removes more than 85% of particles down to 0.3 microns in size at 492 fpm. For more information visit [www.daikincomfort.com](http://www.daikincomfort.com).
		2. (optional) CLEAN COMFORT product line of media air cleaners. For more information visit [www.cleancomfort.com](http://www.cleancomfort.com).

**APPENDIX A**

**HVAC EQUIPMENT ALTERNATE (GENERAL INFORMATION)**

1. The alternate equipment supplier shall provide to the bidding mechanical contractor a complete equipment data package.
	1. This package shall include, but is not limited to, equipment capacities at the design condition, power requirements, indoor units CFM/static pressures, fan curves, installation requirements, and physical dimensions. Nominal performance data is not acceptable.
	2. The mechanical contractor shall request and receive the equipment data package \_\_ days prior to bid date and submit this package with the alternate bid.
	3. The mechanical contractor shall list the equipment supplier and submit the required data package with the bid detailing a complete comparison of the proposed alternate equipment to the specified equipment and the associated cost reduction of the alternate equipment. The contractor bids an alternate manufacturer with full knowledge that that manufactures product may not be acceptable or approved.
	4. All equipment must have visible and permanent label clearly identifying the original manufacturer of the equipment. These labels shall have original manufacturer’s name and contact information and be located both inside and outside the equipment and on all equipment-related literature. Submittals shall include the above statement as confirmation by supplier that all conditions are agreed to and complied to. Failure to comply with these requirements shall be sufficient cause for rejection of the submittal and product with no further consideration.
2. The alternate equipment supplier shall furnish a complete drawing package to the mechanical contractor \_\_ days prior to bid day for bidding and installation.
	1. The drawing format shall be .dxf or equivalent, on 30"x42" sheets.
	2. The HVAC and electrical series design documents will be made available in electronic format for use by the equipment supplier in preparing their drawings.
	3. The alternate equipment supplier shall prepare the following drawings:
		1. XXX HVAC Floor Plan
		2. XXX HVAC Refrigerant Piping/Controls Details
		3. XXX HVAC Details
		4. XXX HVAC Schedules
	4. The alternate equipment supplier shall draft all refrigerant piping components, overall building control schematic, detailed control wiring diagrams, system details and schedules for their system. The drawings shall convey all requirements to successfully install the alternate equipment suppliers system.
	5. Provide (2) drawing package sets plotted on 20 lb. vellum. Provide (1) drawing package in electronic format (.dxf files) on CD.
	6. The submitted documents shall be complete system designs and show no less information than the HVAC equipment/controls contract bid documents.
3. The equipment supplier shall submit, as part of the equipment data package, outdoor unit data sheets. Data sheets to include the following:
	1. COOLING capacities at project design conditions:
		1. Cooling (Btu/h)
		2. Cooling Input Power (kW)
		3. SEER
		4. EER
	2. HEATING capacities at project design conditions:
		1. Heating (Btu/h)
		2. Heating Input Power (Btu/h)
	3. The submitted capacity and efficiency performance must meet or exceed the listed performance on the schedule at the designed outdoor ambient and indoor space temperature conditions including de-rate factors for defrost.
		1. HSPF
		2. COP
		3. OPERATING TEMPERATURE RANGE:
			1. Cooling
			2. Heating
		4. POWER SUPPLY:
			1. Maximum Circuit Amps (MCA)
			2. Maximum Overcurrent Protection Amps (MOP)
			3. Maximum Starting Current (MSC)
			4. Outdoor Fan Motor
		5. UNIT DATA:
			1. Sound pressure level at 3.3 ft (dBA)
			2. Weight (lbs)
			3. Dimensions
4. The equipment supplier shall guarantee the performance of their system and all published data submitted. Performance shall be based on the design criteria below.
	1. Room Temperature (Cooling)
	2. Room Temperature (Heating)
	3. Ambient Temperature (Summer)
	4. Ambient Temperature (Winter)
5. The alternate equipment supplier shall submit with bid, indoor unit data sheets. Data sheets to include the following:
	1. Capacities at project design conditions:
		1. Cooling (Btu/h)
		2. Heating (Btu/h)
		3. Air Flow (CFM)
		4. SEER
		5. EER
		6. HSPF
		7. COP
	2. External Static Pressure (ESP)
	3. Electrical Data (MCA, MOP, MSC, RLA)
	4. Weight (lbs)
	5. Dimensions