



Manufacturer: MacroAir Technologies, Inc.  
794 South Allen Street  
San Bernardino, CA 92408-2210  
Macroairfans.com

## SECTION 15830 – INDUSTRIAL/COMMERCIAL CEILING FANS

### **MacroAir AirVolution-D 370 HVLS Fans**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

The AirVolution-D 370 High Volume, Low Speed (HVLS) fans from MacroAir create large air movement and a comfortable environment while delivering substantial cost savings. They utilize a D-Drive next-generation DC motor that eliminates the need for a gearbox, which reduces noise and moving parts.

##### **1.2 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used shall include:
  - 1. Preparation instructions and recommendations
  - 2. Storage and handling requirements and recommendations
  - 3. Power and mounting requirements
  - 4. Application Drawings: Submit plan, section, elevation and isometric views as necessary to convey the information required to detail all installation conditions for each unit specified.

##### **1.3 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: MacroAir shall provide sole source for design, engineering, manufacturing and warranty claims handling.

- B. Installer Qualifications: Any and all work outside the scope of the installation guide shall be outsourced. Factory trained installers are recommended and available upon request.

#### **1.4 REFERENCES**

- A. Underwriters Laboratories (UL 507) – COMING SOON

#### **1.5 PROJECT CONDITIONS**

- A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimal results. Do not install products in environmental conditions outside MacroAir's absolute limits. The storage of all MacroAir products prior to installation will be in an “out of weather” position. Failure to maintain the integrity of the shipment is not the responsibility of MacroAir.

#### **1.6 COORDINATION**

- A. The fan shall be capable of receiving a stop command from the fire panel, an ASD (Aspirating Smoke Detection) device, or any number of smoke, flame or heat detectors.
- B. The fans shall be as follows:
  - 1. The fan shall meet the air velocity requirements of FM Global’s 2.0 data sheet for ESFR sprinklers.
  - 2. If required by the local fire prevention authority or desired by the purchaser, the fan shall be wired into the building’s fire suppression system so that the fan will automatically shut off within a maximum of 90 seconds after sprinklers are activated. To facilitate this automatic shutdown, the low voltage wire and relay needed to accomplish this must be supplied by the Fire Alarm installer. See Manufactures installation instructions for further details.
  - 3. Upon fire detection as described above, the fans shall coast to stop as required by NFPA guidelines.

#### **1.7 WARRANTY**

- A. MacroAir shall repair or replace warranted defective parts as follows:
  - 1. Lifetime warranty on airfoils and mounting

2. 50,000-hour warranty on all other components, which include but are not limited to:

- a. Motor
- b. Integrated Drive
- c. Controller/Remote

B. At project closeout, provide to Owner or Owner's Representative an executed copy of MacroAir's standard limited warranty against manufacturing defect, outlining its terms, conditions and exclusions from coverage.

**PART 2 PRODUCTS**

**2.1 APPROVED MANUFACTURERS**

A. Acceptable Manufacturer: MacroAir Technologies, Inc., which is located at: 794 South Allen Street, San Bernardino, CA 92408-2210 Toll Free Tel: 866-668-3247; Tel: 909-890-2270; Web: macroairfans.com

B. Substitutions: Not permitted

C. Requests for substitutions will be considered in accordance with provisions of Section 01600

**2.2 MACROAIR – COMMERCIAL / INDUSTRIAL HVLS FANS**

A. Performance

Model #	Diameter	Horsepower	Hanging Weight	RPM	Power Usage	Forward Displacement**	Reverse Displacement**	Industry Spacing***	Max Affected Area****	Max dBA*****
MA06XS3706	6 ft [1.83 m]	0.25 HP	58 lb [26.3 kg]	1-140 RPM	110 W	19,000 CFM [540 CMM]	7,000 CFM [200 CMM]	28 ft [8.5 m]	1,300 ft <sup>2</sup> [121 m <sup>2</sup> ]	40
MA08XS3706	8 ft [2.44 m]	0.25 HP	65 lb [29.5 kg]	1-140 RPM	270 W	38,000 CFM [1,090 CMM]	21,000 CFM [600 CMM]	36 ft [11 m]	2,200 ft <sup>2</sup> [204 m <sup>2</sup> ]	48
MA10XS3706	10 ft [3.05 m]	0.25 HP	72 lb [32.7 kg]	1-93.5 RPM	190 W	47,000 CFM [1,330 CMM]	34,000 CFM [970 CMM]	40 ft [12.2 m]	2,700 ft <sup>2</sup> [251 m <sup>2</sup> ]	44
MA12XS3706	12 ft [3.66 m]	0.25 HP	79 lb [35.8 kg]	1-65.2 RPM	140 W	54,000 CFM [1,520 CMM]	39,000 CFM [1,100 CMM]	48 ft [14.6 m]	3,500 ft <sup>2</sup> [325 m <sup>2</sup> ]	41

\*Data will be added when additional testing and/or information is ready

\*\*Calculation based on AMCA 230-99 equation

\*\*\*Delivers 2.8-4.2 ft/s [0.86-1.27 m/s] of average air speed in the occupied space. This relates to perceived cooling or set point change of 4.9-6.1 F [2.7-4.3 C]. Consult our online AirViz tool for more details

\*\*\*\*Delivers 2.7-3.8 ft/s [0.82-1.16 m/s] of average air speed in the occupied space. This relates to a perceived cooling or set point change of 4.8-5.8 F [2.6-3.2 C]. Consult our online AirViz tool for more details.

\*\*\*\*\*Sound testing taken with the sensor 5 ft above the ground and 20 ft from the center of the fan with the fan running full speed and mounted at 20 ft high.

## B. Airfoils

The fan shall be equipped with three (3) XS airfoils. The airfoils shall consist of anodized 6061 T4 precision extruded aluminum and be of the MacroAir XS design, with fan diameters ranging from 6 to 12 feet in two (2) foot increment.

1. Number of Airfoils: 6
2. Airfoil Material: 6061 T4 Extruded Aluminum
3. Airfoil Finish: Anodized
4. Option Airfoil Finish: Custom powder coated colors per Drylac RAL color chart

## C. Motor

The fan shall be equipped with a Transverse Flux brushless DC motor designed for low speed high torque applications.

1. Motor Type: Transverse Flux Brushless DC Motor
2. Continuous Torque: 9.58 lbf (13 Nm)
3. Pole Count: 96
4. IP Rating: 65
5. Insulation Class: K (200 C)
6. Motor Housing: AISI 383 (ADC12)

## D. Integrated Drive

1. Electrical Requirements
  - a. Operation: -10°C to 60°C. 110-240 VAC single (1) phase 50/60 Hz
2. Environment
  - a. Operation: -10°C to 60°C
  - b. Humidity: 0-95% non-condensing
  - c. Cooling: Centrifugal cooling through blades
3. Operating Frequency: 20-50 KHz
4. Firmware Updates: Via RJ45 (Remote) connector

5. Dynamic acceleration and deceleration
6. Modbus 485 (19.2 8-N-1)
7. Network touch-screen option available with:
  - a. Live fault code monitor
  - b. Live fan speed monitor
  - c. Impact and solvent resistant
  - d. IP65 rated

#### E. Mounting

The fan mounting system shall be equipped with hardware. The fan shall be equipped with an adjustable mount. The fan mount shall encompass multiple mounting options for I-beam, Purlin and Glulam applications (specified upon order).

1. Standard Mount: Rapid mount with 2' drop
2. Optional Mounting Hardware: Standard Mount for single angled mounting points with guy wires for drop lengths over 5', Glulam Mounting Brackets.
3. Mounting Drops: Drop heights available in two (2) to ten (10) foot lengths in one (1) foot increments (custom sizes available)
4. Mounting and Extension Material: Aluminum for up to 5' drop. Steel for 5'-10' drop
5. Mount Finish: Black powder coating

#### F. Safety System

The fan shall include a 1/8" safety cable attached to the lowest point of the fan. The fan shall include four (4) guy wires attached to the building structure at recommended 45° angles to level and secure fan position if there is cross wind or the drop length is over 5'. Each fan shall be E-stop compatible for fire and building automated systems (BAS).

1. Safety Cable Material: 1/8" x 7 x 19 Braided Steel
2. Safety Cable Finish: Galvanized
3. Guy Wire Material: 1/8" x 7 x 10 Aircraft Grade Braided Steel
4. Guy Wire Finish: Galvanized

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. Check accuracy of dimensions indicated for openings to receive fans.
- B. Check location and availability of utility services to ensure proper voltage and installation preparation.
- C. Coordinate location and installation of the HVLS Fans.
- D. Ensure building structural members are sufficient to support the weight and operation of the fan. Consult professional engineer or registered architect as required.

### **3.2 INSTALLATION**

- A. Install units per manufacturer's written instructions.
- B. Fan airfoil height to be a minimum of 10 feet from the floor in accordance with MacroAir guidelines.
- C. Fan must be placed no closer than 1.5 times the diameter of the fan to a wall or similar obstruction.
- D. All safety and support features must be installed. These include any guy wires and safety cables when applicable.
- E. Adjust unit as required for proper operation in accordance with manufacturer's installation instructions.
- F. Securely anchor units.
- G. Ensure that operating parts turn freely prior to initial startup.
- H. Repair or replace damaged parts, dents, buckles, abrasions or other damage affecting appearance or serviceability, as acceptable to Architect.

### **3.3 PROTECTION**

- A. Protect finished Work until date of Substantial Completion.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

### **3.4 CLEANING**

- A. Clean Work per Section 01 74 00.

- B. Clean and inspect fans per manufacturer's instructions.
- C. Remove temporary protective cover at date of Substantial Completion.

END OF SECTION