SECTION 23 34 39

AIR DESTRATIFICATION FANS

Display hidden notes to specifier. (Don't know how? [Click Here](http://www.theairpear.com/display_hidden_notes.html))

\*\* NOTE TO SPECIFIER \*\* The Air Pear Thermal Equalizer is designed to equalize the layers of hot and cold air in facilities with high ceilings. This state-of-the-art energy saving product is designed to create a more pleasant indoor environment and to reduce total energy consumption, which results in significant annual cost savings. The Air Pear is an extremely efficient air turbine that is hung at the top of the space. Each unit takes in resident hot ceiling air and silently transports it to the floor in the form of a slow moving air column. During the heating season, thermal equalization creates a more thermally pleasant environment while reducing heating system cycle times and intensity. During the cooling season in non-conditioned spaces, air speed is increased to create enough air movement for occupants to perceive a cooling effect. During the cooling season in conditioned spaces, there are reduced startup loads, short cycling, and wear on the air conditioning system. If you have any questions in regards to product selection or the available options, please contact us via one of the methods listed below.

Keywords: Airius, LLC; HVAC Fans, destratification fans, ceiling fans, commercial ceiling fans, industrial ceiling fans.

Contact Information:

Airius, LLC  
811 South Sherman Street  
Longmont, CO 80501  
Toll Free Tel: 888-247-7327  
Tel: 303-772-2633  
Email: request info (info@airiusfans.com)   
Web: www.airiusfans.com  
  
[[ Click Here ]](http://www.theairpear.com) for additional information.

May be covered by one or more of the following United States Patents: 7,381,129 B2; D514688. Other patents pending.

1. GENERAL
   * + 1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + - * 1. Destratification fans for thermal equalization of buildings.
      1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + - * 1. Section 26 00 00, "Common Work Results for Electrical".
      1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + - * 1. UL 507: Underwriters Laboratory Standard for Electric Fans
        2. CAN/CSA C22.2#60335-1: Safety of household and similar electrical appliances.
        3. CE: Product is certified to meet EU consumer safety, health or environmental requirements.
        4. UL 94 5VA: Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
        5. NEC: National Electric Code.
        6. ETL: Listed for US and Canada in Intertek Directory of Listed Products.
      1. SUBMITTALS
         1. Submit under provisions of Section 01 33 00, "Administrative Requirements".
         2. Product Data: Manufacturer's data sheets for each product, including:

Preparation instructions and recommendations.

Storage and handling requirements and recommendations.

Power requirements and mounting recommendations.

* + - * 1. Shop Drawings:

Placement Drawings: Include manufacturer’s placement recommendation diagram.

Wiring Diagrams.

Mounting details, including seismic restraint where required.

* + - * 1. Manufacturer’s Instructions: Provide manufacturer’s “Installation & Operation Guide”
        2. Schedule
      1. QUALITY ASSURANCE
         1. Manufacturer Qualifications: Minimum of ten (10) years of product experience. Providing sole source for design, engineering, manufacturing and warranty claims handling.
      2. DELIVERY, STORAGE, AND HANDLING
         1. Deliver products and materials to project site in manufacturer's unopened packaging.
         2. Store products in manufacturer’s unopened packaging until ready for installation.
      3. PROJECT CONDITIONS
         1. Maintain temperature, humidity, and ventilation within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
      4. WARRANTY
         1. Warranty: 30-day money-back customer satisfaction guarantee. Refer to warranty information contained in the “Installation, Operation & Maintenance Guide”.
         2. Factory Refurbish Program: Users can purchase a motor replacement or a new discounted system upon failure outside the warranty period. Contact manufacturer for details.

1. PRODUCTS
   * + 1. MANUFACTURERS
          1. Acceptable Manufacturer: Airius, LLC, which is located at: 811 S. Sherman St., Longmont, CO 80501 Toll Free Tel: 888-247-7327; Tel: 303-772-2633; Email: [info@theairpear.com](mailto:info@theairpear.com); Web: www.theairpear.com
       2. AIRIUS AIR PEAR DESTRATIFICATION FANS
          1. Performance: Coordinated design of housing, stator and motor shall provide columnar laminar airflow to produce a minimum of 100 fpm at center of column at grade level when installed in an Acoustical Ceiling Tile(ACT) Ceiling.
          2. Housing: The fan housing shall be made of PC/ABS resin, rated 5VA for flame resistance.

Housing color:

PMS Cool Gray 2C (off white)

* + - * 1. Safety Cable: Models 10 through 45 are supplied with tabs in each corner of faceplate to affix safety wire to building structure.
        2. Motor Mounting: Enclosed in housing, above stator.
        3. Stator: The fan shall be equipped with a patented multiple-vane stator coordinated with fan design for maximizing columnar laminar flow.
        4. Certification: UL Standard 507 for Safety Electric Fans, CAN/CSA C22.2#60335-1and UL 94 5VA as certified by nationally recognized testing laboratory. Acceptable laboratories include ETL, UL or other nationally recognized testing laboratories.
        5. Identification: Permanently affixed manufacturer’s nameplate including the following: Model Number, Serial Number, Motor Power Specifications, Country of Manufacture and Safety Marks: ETL (US & CA) & CE (EU).
        6. Power Cord: 6 foot, 300-volt AC, UL rated. Motors within the range of 100-130VAC are provided with a standard 3-prong plug. Motors within the range of 200-277VAC are not provided with a plug.

\*\* NOTE TO SPECIFIER \*\* Retain one or more of the following destratification fans. If using multiple destratification fan sizes, give each a unique designation and schedule fans on Drawings or at the end of this Section.

Consult Airius for product selection and recommended layout.

The Air Pear Model 10 is designed for smaller spaces with a ceiling height up to 12 feet. It is available in Standard and Short housings. Short housing is typically used in low ceiling applications. The Air Pear Model 10 provides exceptional thermal equalization through columnar laminar flow from ceiling to floor. Consult manufacturer on proper product selection and layout. Motor data is provided by motor manufacturer and is subject to change at any time. Delete if not required.

* + - * 1. Destratification Fan **[DF-1]** shall be a Suspended Ceiling Air Pear Model 10.

Size and Weight:

\*\* NOTE TO SPECIFIER \*\* Delete housing size not required for project.

Standard: 19 inch total height; 24 inch by 24 inch square faceplate, 13 inch diameter; 16 lb (7.25kg).

Short: 15 inch total height; 24 inch by 24 inch square faceplate; 13 inch diameter; 16 lb (7.25 kg).

Motor:

Shaded pole motor. Blades molded in one piece with hub. Ball bearings shall be permanently lubricated and shielded. Up to 318 cfm, 1050 rpm, 32 dBA. Thermally protected motor with an operating range of -4° F (-20° C) to +175° F (+80° C).

Recommended ACT ceiling height up to 12 feet (3.8 m) with 11.5 inches of clearance above ceiling and area coverage up to 500 sq. ft (46.5 sq. m); 12.5 feet (3.8 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

120V AC, single phase, 50/60 Hz.; 0.11/0.13 Amps; 13/15 watts

230V AC, single phase, 50/60 Hz.; 0.06/0.06 Amps; 12/13 watts

Controls shall be coordinated with motor electrical requirements.

\*\* NOTE TO SPECIFIER \*\* Delete controls not required for project.

Shall be an inline, wall mounted, TRIAC controller for variable speed and on/off.

Shall be an inline SMART TRIAC controller. Accepts 0-10VDC control signal from BAS. See wiring diagram.

None

Motor (EC): Electronically commutated motor, up to 92% efficient. Plastic blades and hub. Ball bearings shall be permanently lubricated and shielded. Up to 318 cfm, 1000 rpm, 24 dBA. Thermally protected motor with an operating range of -22° F (-30° C) to +122° F (50° C).

Recommended ACT height up to 12 feet (3.8 m) with 11.5 inches of clearance above ceiling and area coverage up to 500 sq. ft (46.5 sq. m); 12.5 feet (3.8 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

100-130V AC, single phase, 50/60 Hz.; 0 – 0.12 Amps; 0 - 7 watts

200-250V AC, single phase, 50/60 Hz.; 0 – 0.06 Amps; 0 - 7 watts

Controls

Shall be controlled by 0-10VDC control signal via BAS. Uses low voltage control circuit. See wiring diagram.

Shall be controlled by wall mounted potentiometer. Uses low voltage control circuit. See wiring diagram.

Shall be 2-speed, factory programmed. Wired at floor level to two single-pole switches for on/off and speed one/speed two operations. Uses mains and 3rd conductor for speed switching.

None

\*\* NOTE TO SPECIFIER \*\* The Air Pear Model 15 is designed for smaller spaces with a ceiling height up to 18 feet. It is available in Standard and Short housings. Short housing is typically used in low ceiling applications. The Air Pear Model 15 provides exceptional thermal equalization through columnar laminar flow from ceiling to floor. Consult manufacturer on proper product selection and layout. Motor data is provided by motor manufacturer and is subject to change at any time. Delete if not required.

* + - * 1. Destratification Fan **[DF-2]** shall be a Suspended Ceiling Air Pear Model 15.

Size and Weight:

\*\* NOTE TO SPECIFIER \*\* Delete housing size not required for project.

Standard: 19 inch total height; 24 inch by 24 inch square faceplate, 13 inch diameter; 16 lb (7.25kg).

Short: 15 inch total height; 24 inch by 24 inch square faceplate; 13 inch diameter; 16 lb (7.25 kg).

Motor (SP): Shaded pole motor. Blades molded in one piece with hub. Ball bearings shall be permanently lubricated and shielded. Up to 406 cfm, 1260 rpm, 36 dBA. Thermally protected motor with an operating range of -4° F (-20° C) to +175° F (+80° C).

Recommended ACT height up to 18 feet (5.5 m) with 11.5 inches of clearance above ceiling and area coverage up to 800 sq. ft (75 sq. m); 16 feet (4.88 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

120V AC, single phase, 50/60 Hz.; 0.11/0.14 Amps; 13.5/17 watts

230V AC, single phase, 50/60 Hz.; 0.06/0.07 Amps; 15/17 watts

Controls shall be coordinated with motor electrical requirements.

\*\* NOTE TO SPECIFIER \*\* Delete controls not required for project.

Shall be an inline, wall mounted, TRIAC controller for variable speed and on/off.

Shall be an inline SMART TRIAC controller. Accepts 0-10VDC control signal from BAS. See wiring diagram. See wiring diagram.

None

Motor (EC): Electronically commutated motor, up to 92% efficient. Plastic blades and hub. Ball bearings shall be permanently lubricated and shielded. Up to 406 cfm, 1260 rpm, 29 dBA. Thermally protected motor with an operating range of -22° F (-30° C) to +122° F (50° C).

Recommended ACT height up to 18 feet (5.5 m) with 11.5 inches of clearance above ceiling and area coverage up to 800 sq. ft (75 sq. m); 16 feet (4.88 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

100-130V AC, single phase, 50/60 Hz.; 0 – 0.17 Amps; 0 - 11 watts

200-250V AC, single phase, 50/60 Hz.; 0 – 0.08 Amps; 0 - 11 watts

Controls

Shall be controlled by 0-10VDC control signal via BAS. Uses low voltage control circuit. See wiring diagram. See wiring diagram.

Shall be controlled by wall mounted potentiometer. Uses low voltage control circuit. See wiring diagram. See wiring diagram.

Shall be 2-speed, factory programmed. Wired at floor level to two single-pole switches for on/off and speed one/speed two operations. Uses mains and 3rd conductor for speed switching. See wiring diagram.

None

\*\* NOTE TO SPECIFIER \*\* The Air Pear Model 25 is designed for a ceiling height up to 25 feet. It is available in Standard and Short housings. Short housing is typically used in low ceiling applications. The Air Pear Model 25 provides exceptional thermal equalization through columnar laminar flow from ceiling to floor. Consult manufacturer on proper product selection and layout. Motor data is provided by motor manufacturer and is subject to change at any time. Delete if not required.

* + - * 1. Destratification Fan **[DF-3]** shall be a Suspended Ceiling Air Pear Model 25.

Size and Weight:

\*\* NOTE TO SPECIFIER \*\* Delete housing size not required for project.

Standard: 19 inch total height; 24 inch by 24 inch square faceplate, 13 inch diameter; 16 lb (7.25kg).

Short: 15 inch total height; 24 inch by 24 inch square faceplate; 13 inch diameter; 16 lb (7.25 kg).

Motor (SP): Shaded pole motor. Blades molded in one piece with hub. Ball bearings shall be permanently lubricated and shielded. Up to 550 cfm, 1650 rpm, 50 dBA. Thermally protected motor with an operating range of -4° F (-20° C) to +175° F (+80° C).

Recommended ACT height up to 25 feet (7.6 m) with 11.5 inches of clearance above ceiling and area coverage up to 1200 sq. ft (112 sq. m); 20 feet (6 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

120V AC, single phase, 50/60 Hz.; 0.30/0.32 Amps; 30/35 watts

230V AC, single phase, 50/60 Hz.; 0.13/0.14 Amps; 31/33 watts

277V AC, single phase, 50/60 Hz.; 0.13/0.14 Amps; 31/33 watts

Controls shall be coordinated with motor electrical requirements.

\*\* NOTE TO SPECIFIER \*\* Delete controls not required for project.

Shall be an inline, wall mounted, TRIAC controller for variable speed and on/off.

Shall be an inline SMART TRIAC controller. Accepts 0-10VDC control signal from BAS. See wiring diagram.

None.

Motor (EC): Electronically commutated motor, up to 92% efficient. Plastic blades and hub. Ball bearings shall be permanently lubricated and shielded. Up to 620 cfm, 1700 rpm, 51 dBA. Thermally protected motor with an operating range of -22° F (-30° C) to +122° F (50° C).

Recommended ACT height up to 25 feet (7.6 m) with 11.5 inches of clearance above ceiling and area coverage up to 1200 sq. ft (112 sq. m); 20 feet (6 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

100-130V AC, single phase, 50/60 Hz.; 0 – 0.4 Amps; 0 - 30 watts

200-250V AC, single phase, 50/60 Hz.; 0 – 0.26 Amps; 0 - 30 watts

Controls

Shall be controlled by 0-10VDC control signal via BAS. Uses low voltage control circuit. See wiring diagram.

Shall be controlled by wall mounted potentiometer. Uses low voltage control circuit. See wiring diagram.

Shall be 2-speed, factory programmed. Wired at floor level to two single-pole switches for on/off and speed one/speed two operations. Uses mains and 3rd conductor for speed switching. See wiring diagram.

None

\*\* NOTE TO SPECIFIER \*\* Designed for taller spaces with a ceiling height up to 45 feet. The Air Pear Model 45 provides exceptional thermal equalization through columnar laminar flow from ceiling to floor. Consult manufacturer on proper product selection and layout. Motor data is provided by motor manufacturer and is subject to change at any time. Delete if not required.

* + - * 1. Destratification Fan **[DF-4]** shall be a Suspended Ceiling Air Pear Model 45.

Size and Weight: 21 inch total height, 24 inch by 24 inch square faceplate, 15 inch diameter, 21 lb (9.5 kg).

\*\* NOTE TO SPECIFIER \*\* See article "Destratification Fan Motors" for distinctions among motor types. Delete motor type not required for project.

Motor (P2): Permanent split capacitor, 2-pole motor. Steel blades welded to steel hub. Ball bearings shall be permanently lubricated and shielded. Up to 1300 cfm, 2900 rpm, 71 dBA. Thermally protected motor with an operating range of -13° F (-25° C) to +160° F (+70° C).

Recommended ACT height up to 45 feet (13.7 m) with 15 inches of clearance above the ceiling and area coverage up to 1500 sq. ft (140 sq. m); 22 feet (6.75 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

120V AC, single phase, 50/60 Hz.; 1.05/1.48 Amps; 120/175 watts

230V AC, single phase, 50/60 Hz.; 0.54/0.7 Amps; 125/165 watts

277V AC, single phase, 50/60 Hz.; NA/0.7 Amps; NA/190 watts

Controls shall be coordinated with motor electrical requirements.

\*\* NOTE TO SPECIFIER \*\* Delete controls not required for project.

Shall be an inline, wall mounted, TRIAC controller for variable speed and on/off.

Shall be an inline SMART TRIAC controller. Accepts 0-10VDC control signal from BAS. See wiring diagram.

None.

Motor (P4): Permanent split capacitor, 4-pole motor. Steel blades welded to steel hub. Ball bearings shall be permanently lubricated and shielded. Up to 715 cfm, 1650 rpm, 58 dBA. Thermally protected motor with an operating range of -13° F (-25° C) to +160° F (+70° C).

Recommended ACT height up to 38 feet (11.6 m) with 15 inches of clearance above the ceiling and area coverage up to 1200 sq. ft. (112 sq. m); 20 feet (6 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

120V AC, single phase, 50/60 Hz.; 0.40/0.41 Amps; 44/46 watts

230V AC, single phase, 50/60 Hz.; 0.19/0.2 Amps; 42/45 watts

277V AC, single phase, 50/60 Hz.; 0.19/0.2 Amps; 42/45 watts

Controls shall be coordinated with motor electrical requirements.

\*\* NOTE TO SPECIFIER \*\* Delete controls not required for project.

Shall be an inline, wall mounted, TRIAC controller for variable speed and on/off.

Shall be an inline SMART TRIAC controller. Accepts 0-10VDC control signal from BAS. See wiring diagram.

None.

Motor (EC or EL): Electronically commutated motor, up to 92% efficient. Steel blades welded to steel hub. Ball bearings shall be permanently lubricated and shielded. Up to 1290 cfm, 3050 rpm, 79 dBA. Thermally protected motor with an operating range of -13° F (-25° C) to +140° F (+60° C).

Recommended ACT height up to 45 feet (13.7 m) with 15 inches of clearance above the ceiling and area coverage up to 1500 sq. ft (140 sq. m); 22 feet (6.75 m) from the fan's center in all directions.

Electrical Requirements:

\*\* NOTE TO SPECIFIER \*\* Delete electrical requirement not required for project.

100-130V AC, single phase, 50/60 Hz.; 0 – 2.2 Amps; 0 - 170 watts

200-277V AC, single phase, 50/60 Hz.; 0 – 1.4 Amps; 0 - 175 watts

Controls shall be coordinated with motor selection (EC or EL).

EC motor shall be controlled by 0-10VDC control signal via BAS. Uses low voltage control circuit. See wiring diagram.

EC motor shall be controlled by wall mounted potentiometer. Uses low voltage control circuit. See wiring diagram.

EL motor shall be controlled by FanCenter management system with the ability to control/monitor speed, blade rotation direction, runtime, 24/7/365 scheduling and error reporting. Requires 120VAC, single phase power. Monitoring/control connection is made via an Ethernet cable directly to a PC or a PC on a local area network (LAN). An Ethernet drop should be provided within 6 ft of the FanCenter Manager installation location if connecting to a LAN.

Wired. Daisy chained low voltage wires between fans and linked to FanCenter Manager.

Wireless mesh network, 2.4Ghz modified ZigBee protocol.

None

* + - 1. ACCESSORIES

\*\* NOTE TO SPECIFIER \*\* PHI Kit is available for Air Pear Models 10, 15, 25 and 45. Coordinate PHI cell size with housing size.

* + - * 1. PHI Air Purification Kit: Photohydroionization cell for mitigation of airborne bacteria, viruses, odors, and VOCs.

Product: RGF Environmental; PHI-Cell Kit.

Size: Coordinate with standard or short housing size.

Small: 5 inch cell, sized to fit Short Air Pear housings.

Medium: 9 inch cell, sized to fit Standard Air Pear housings.

1. EXECUTION
   * + 1. EXAMINATION
          1. Do not begin installation until supporting structure and interior work have been properly completed.
          2. Check location and availability of utility services to ensure proper voltage and installation preparation.
          3. Installation of miscellaneous support, if required, electrical wire and wiring, conduit, fuses, and disconnect switches other than those provided by fan manufacturer are specified in other sections.
          4. Examine the substrate and conditions under which the Fan is to be installed. Notify the Architect in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
       2. INSTALLATION
          1. Install destratification fan according to manufacturer's written recommendations.
          2. Fan to be mounted at a maximum of 2’-0” from ceiling deck to ensure thermal/humidity equalization from ceiling to floor.
          3. Adjust unit as required for proper operation in accordance with manufacturer’s installation instructions.
       3. PROTECTION
          1. Protect installed products until completion of project.
          2. Touch-up, repair or replace damaged products before Substantial Completion.
       4. DESTRATIFICATION FAN SCHEDULE

\*\* NOTE TO SPECIFIER \*\* Values in schedule are examples only; modify schedule to suit project requirements. Delete schedule if not required.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tag** | **Location** | **Manufacturer** | **Model** | **Weight (lb)** | **Size** | **Height (in.)** | **Max Airflow (CFM)** | **RPM** | **Watts** | **Volts** | **Phase** | **Remarks** |
| DF-1 | Office 305 | Airius | S-25-EC-SH | 16 | 24 x 24 | 15 | 620 | 1700 | 30 | 120 | 1 | 1,2 |
| DF-2 | Main Gym | Airius | S-45-EC-STD | 21 | 24 x 24 | 21.5 | 1180 | 1660 | 170 | 100-130 | 1 | 1,2 |

1: Mount within 2’-0” of ceiling deck

2: Daisy chain low voltage control wire and link to wall mounted potentiometer.

END OF SECTION

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