

## SECTION 23 34 33

## AIR DOORS

*Berner Star Series* air doors are competitively priced for indoor or outdoor use at entry doors.

*Star Model STF* is designed for customer entries up to 6 ft wide with door heights up to 9 ft for environmental separation and up to 8 ft for insect control. *Star Model STF* air doors can resist winds up to 10 MPH and are generally mounted inside building to recirculate warm air which has risen towards the ceiling.

*Star Model STN* meets requirements of NSF Standard 37 for doors 3 ft and 3-1/2 ft wide with door heights up to 7 ft for insect control.

*Star Model STR* is designed for service doors up to 6 ft wide with door heights up to 10 ft for environmental separation and up to 9 ft for insect control. *Star Model STR* can resist winds up to 13 MPH and can be mounted inside or outside the building.

Optimum protection is provided when units are mounted on inside of building, flush to the wall and as close to top of door opening as possible. To ensure peak performance keep air stream free of obstructions. Air doors may not be fully effective where negative air pressure exists on one side of door; contact Berner for additional information.

Star models are come standard with a 3/4 HP motor; an optional 1/2 HP motor is available. Star air doors can be wall mounted or suspended from the ceiling. Maximum recommended mounting height is 8 ft above floor. Electric heated unit shall be installed indoors only and require a minimum clearance of 6 ft between the bottom of unit and floor and 4-in between sides and top of the unit and any combustible material. A minimum of 4-in is recommended above top for installation and removal of housing.

Edit guide specification to include only information specific to your project. Delete or add text, select appropriate bracketed phrases, and fill in blanks as required. Go to Berner catalog or website to select specific models and sizes that are required for project and to obtain data necessary to edit this document.

Coordinate specification with information shown on project drawings and schedules. In general, drawings indicate locations of air doors and switches and special mounting requirements, while sizes and capacities of air doors and utilities should be described in specifications or schedules. Cross check mechanical and architectural drawings.

Turn on "Hidden Text" function in your word processor to display "Specifier Notes."

Selection guide is available at [www.berner.com](http://www.berner.com) to suggest models appropriate for typical applications.

For additional information or name of Berner representative in your area, call Berner International Corporation at 800-245-4455 in U.S. or 800-242-4455 in Canada, or visit [www.berner.com](http://www.berner.com). A selection guide is available at [www.berner.com](http://www.berner.com) to suggest models appropriate for typical applications.

## PART 1 - GENERAL

## 1.1 CONDITIONS AND REQUIREMENTS

- A. The General Conditions, Supplementary Conditions, and Division 01 – General Requirements apply.

## 1.2 SECTION INCLUDES

*Specifier Note: Delete option in the first paragraph below if electric heated air door is not required for a specific project.*

- A. Air doors[, electric heated].
- B. [Insert item description.]

## 1.3 RELATED REQUIREMENTS

*Specifier Note: In this article, specify work specified in other sections that is related to work of this section.*

- A. Section 04 22 00 - Concrete Unit Masonry: Blocking or reinforcing in wall as required for attachment of air door.
- B. Section 05 40 00 - Cold-Formed Metal Framing: Reinforcing in wall as required for attachment of air door.
- C. Section 06 10 00 - Rough Carpentry: Blocking in wall as required for attachment of air door.

*Specifier Note: If switches for air doors are mounted on door frames, retain either Section 08 11 00 or 08 41 00 below to facilitate coordination.*

- D. Section 08 11 00 - Metal Doors and Frames: Coordinate installation of switches.

*Specifier Note: Strip doors can be used in conjunction with air doors to provide an even higher level of separation. Retain first paragraph below if required for a specific project. Consult Berner catalog for a complete list of available strip doors.*

- E. Section 08 38 13 - Flexible Strip Doors: Coordinate installation of strip doors with installation of air doors.
- F. Section 08 41 00 - Entrances and Storefronts: Coordinate installation of switches.
- G. Section 08 71 00 - Door Hardware: Coordinate with installation of hardware.

*Specifier Note: Retain any of the three following paragraphs if air doors are mounted above ceiling. Delete if no units installed above ceiling.*

- H. Section 09 22 16 - Non-Structural Metal Framing: Framing and blocking above ceiling as required for installation of air door.
- I. Section 09 29 00 - Gypsum Board: Ceiling finish abutting air door.
- J. Section 09 51 13 - Acoustical Panel Ceilings: Ceiling finish abutting air door.

*Specifier Note: Retain the first paragraph below if air door cabinets are to be field painted. Protect electrical contacts and moveable parts from paint.*

- K. Section 09 91 00 - Painting: Field applied finishes.
- L. Division 26 - Electrical: Connection of electrical service and controls.

*Specifier Note: The following paragraph is a sample that may be used in this article. Add to or delete from the following as appropriate for the specific project.*

- M. Section [xxxxx] – [Section Title]: [Include brief description of work specified in another section that is related to the work of this section.]

#### 1.4 REFERENCE STANDARDS

- A. Air Movement & Control Association International, Inc. (AMCA):
  - 1. AMCA 211 - Certified Ratings Program - Product Rating Manual for Fan Air Performance.
  - 2. AMCA 220 - Laboratory Methods of Testing Air Curtains for Aerodynamic Performance Ratings.
  - 3. AMCA 222 - Application Manual for Air Curtain Units.
- B. National Electrical Manufacturers Association (NEMA):
  - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- C. NSF International (NSF):
  - 1. NSF/ANSI 37 - Air Curtains for Entranceways in Food and Food Service Establishments.
- D. Underwriters Laboratories (UL):
  - 1. UL 507 - Electric Fans.
  - 2. UL 2021 - Fixed and Location-Dedicated Electric Room Heaters.

#### 1.5 SUBMITTALS

*Specifier Note: In this article, specify various types of data to be furnished by the contractor before, during, or after construction. Topics included in this article are: product data, shop*

*drawings, samples, design data, test reports, certificates, manufacturers' instructions, manufacturers' field reports, qualification statements, and closeout submittals.*

- A. Submit under provisions of Section [01 33 00] [\_\_\_\_\_].
- B. Product Data: Submit for [\_\_\_\_\_] including:
  - 1. [\_\_\_\_\_].
- C. Shop Drawings: For air door components not adequately described by product data. Show configuration of non-standard units. Include plans, elevations, sections, details, and attachments to other work.
- D. Operation and Maintenance Data: For air doors to include in maintenance manuals.
- E. Warranties: Sample of special warranties.

## 1.6 QUALITY ASSURANCE

*Specifier Note: In this article, describe qualifications, regulatory requirements, certifications, field samples, mock-ups, and pre-installation meetings.*

- A. Manufacturers: Firms regularly engaged in manufacture of air doors of the types and sizes required, whose products have been in satisfactory use in similar service for not less than 10 years. Provide air doors produced by a manufacturer listed in this section.
- B. Source Limitations: Obtain each type of air door through one (1) source from a single manufacturer.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

*Specifier Note: Retain the following paragraph if specifying the ambient type of air curtain in this section.*

- D. Comply with AMCA 211 for airflow rate, average outlet velocity, outlet velocity uniformity, velocity projection and power rating.
- E. Certification:

*Specifier Note: Retain either of the following two subparagraphs to agree with type of unit selected for a project and delete the other. Retain both subparagraphs if project has both types of units.*

- 1. Unheated Units: Test units in accordance with AMCA 220. Provide units with AMCA Certified Ratings Seal.

*Specifier Note: Retain the following subparagraph if retaining Star Unheated Model STN for a specific project.*



## STAR GUIDE SPECIFICATIONS

2. Unheated Units: NSF Certified for customer entry in accordance with NSF/ANSI 37.
3. Heated Units: Test units in accordance with AMCA 220 except for inclusion of heating.

F. Unheated and electric heated units to be UL Listed in the United States and Canada.

### 1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver air doors in factory labeled packages.
- B. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
- C. Protect from damage due to weather, excessive temperature, and construction operations.

### 1.8 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of air doors that fail in materials or workmanship within specified warranty period.

*Specifier Note: Retain either of the following two subparagraphs to agree with type of unit selected for a project and delete the other. Retain both subparagraphs if project has both types of units.*

1. Five-year limited warranty for unheated units.
2. Two-year limited warranty for heated units.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis-of-Design Manufacturer: The design for air doors is based on products manufactured by Berner International Corporation, 111 Progress Avenue, New Castle; PA, Telephone: 724-658-3551; Toll-Free Telephones: 800-245-4455 (U.S.), 800-242-4455 (Canada); Fax: 724-652-0682; email: [airdoors@berner.com](mailto:airdoors@berner.com); Website: [www.berner.com](http://www.berner.com).

*Specifier Note: Retain one of the following two paragraphs and delete the other.*

- B. Substitutions are not permitted.
- C. Substitutions will be considered under provisions of Section 01 60 00.

## 2.2 AIR DOORS

*Specifier Note: Retain model types in the following paragraph as required for specific project. Delete those that are required.*

- A. Acceptable Products: Berner Model Star [STF Single Speed Unheated Customer Entry] [STF Single Speed Electric Heated Customer Entry] [STR Single Speed Unheated Service Entry] [STR Single Speed Electric Heated Service Entry] [STN Unheated] [STR Three Speed Unheated] [STR Three Speed Electric Heated].
- B. Construction: Provide factory-assembled units of sufficient structural strength to be supported from ends without intermediate support. Ship units completely assembled.
- C. Cabinet:

*Specifier Note: Delete the last sentence in the following subparagraph if not required.*

- 1. Material: Corrosion-resistant [aluminum with polyester white on white painted finish] [stainless steel] riveted construction with stainless steel rivets. [Tamper-resistant construction; parts cannot be disassembled without special tool provided by manufacturer.]
- 2. Dimensions: Not to exceed 14-1/4 in (36 mm) high by 13-in (33 mm) deep.
- 3. Mounting: Provide with keyhole slots in back plate for quick wall mounting.
- 4. Removable cover for access.

*Specifier Note: Retain the motor type that is required after editing the unit model in Paragraph 2.2A above and delete the others. 3/4-HP motor is standard; 1/2-HP motor is optional.*

- D. Motors: [3/4-HP, ball bearings single speed] [1/2-HP, three (3) speed, sleeve bearings], permanently lubricated and sealed bearings, double extended shafts, continuous duty, with internal thermal-overload protection.
- E. Fans: Balanced forward curved type, double inlet, mounted in matched fan housings with aerodynamically formed air inlet venturis. Manufacture wheels and housings from galvanized steel.
- F. Discharge Nozzles:
  - 1. Provide uniform velocity across width of air door.
  - 2. Aperture: 3-1/2 inch (9 mm) slot by width of air door.
- G. Vanes: Constructed of airfoil-shaped aluminum extrusions; adjustable plus or minus 20 degrees to deflect airflow.
- H. Inlet:
  - 1. Location: Front.
  - 2. Screen: Perforated pattern constructed of same material used in housing.

*Specifier Note: Retain the following paragraph if optional filters are required for a specific project.*

- I. [Air Inlet Filter: Flat-faced recleanable aluminum with integral filter clips.]

*Specifier Note: Delete the following paragraph if electric heated units are specified on a specific project. Damper plates are not to be used on electric heated units.*

- J. [Damper Plate: Mount on [one] [both] end[s] of fan housing.]

## 2.3 HEATING ELEMENTS

- A. Electric Heating Coil: UL-approved, factory-mounted, factory-wired, thermally-protected, galvanized steel frame.
1. Helical coil with point suspension of elements, [single] [three (3)] phase.
  2. Thermal Cutout: Locks out electric heaters when prolonged abnormal over-temperature conditions exist.

## 2.4 CONTROLS

*Specifier Note: STANDARD CONTROLS BASED ON UNIT OPTIONS:*

*Unheated ¾ HP Single Speed – Standard: Switch not included*

*Unheated ½ HP Three Speed – Standard: Built-in, on-off, high-med-low switches*

*Electric Heated ¾ HP Single Speed – Standard: Built-in, fan-off-fan/heat switch*

*Electric ½ HP Three Speed – Standard: Built-in, fan-off-fan/heat, high-med-low switches*

- A. Switching:

*Specifier Note: Retain the following subparagraph for use with unheated 3/4-HP single speed models.*

1. [Manual Switch: [Factory installed on/off switch] [Remote mount rotary cam hand-off-auto, 1-1/2 HP at 120V/1, 3-HP at 208V/1, 240V/1, 480V/1 or 575V/1].]
2. [Wall On/Off Switch and Cover Plate: Single phase power only, rated for commercial use max 20 amps at 120V-277V/1, mounted in a wall box.]

*Specifier Note: Retain the following subparagraph for use with unheated 1/2-HP three-speed models.*

3. [Unheated Remote Fan Speed Selector Switch: Three speed capacity - 1-1/2 HP at 120V/1 and 3-HP at 208V/1, 240V/1, 480V/1 or 575V/1.]

*Specifier Note: Retain the following subparagraph for use with electric heated 3/4-HP single speed models.*

4. [Electric Heat Remote Fan Selector Switch: Single speed capacity –1-1/2 HP at 120V/1, 3-HP at 208V/1, 240V/1, 480V/1 or 575V/1.]



*Specifier Note: Retain the following subparagraph for use with electric heated 1/2-HP three-speed models.*

5. [Electric Heat Remote Fan Speed Selector Switch: Three-speed capacity – 1-1/2 HP at 120V/1, 3-HP at 208V/1, 240V/1, 480V/1 or 575V/1.]

*Specifier Note: Retain one of the following three paragraphs and delete the other two. In the first paragraph the air curtain turns on when door is opened and shuts off when door is closed.*

- B. Basic Control Package: Air curtain turns on when door is opened and shuts off when door is closed.

*Specifier Note: Retain either NEMA Type 1 or 4 door switch in the first option in the following subparagraph and delete the other one. Retain either style door switch and delete the other one.*

1. Line Voltage Control: [NEMA Type [1] [4] plunger] [NEMA Type 1 roller] style door switch.

*Specifier Note: Retain either NEMA Type 1 or 4 door switch in the first option in the following subparagraph and delete the other one. Retain one style door switch and delete the other two.*

2. 24 Volt Control: [NEMA Type [1] [4] plunger] [NEMA Type 1 roller] [magnetic reed] style door switch.

*Specifier Note: In the following paragraph, the air curtain turns on when door is opened and shuts off when door is closed and unit remains on until set delay time expires.*

- C. Deluxe Control Package: Air curtain turns on when the door is opened and shuts off when door is closed, unit remains on until set delay time expires.

*Specifier Note: Retain either NEMA Type 1 or 4 door switch in the first option in the following subparagraph and delete the other one. Retain either style door switch and delete the other one.*

1. Line Voltage Control: [NEMA Type [1] [4] plunger] [NEMA Type 1 roller] style door switch, and factory-installed time delay.

*Specifier Note: Retain either NEMA Type 1 or 4 door switch in the first option in the following subparagraph and delete the other one. Retain one style door switch and delete the other two.*

2. 24 Volt Control: [NEMA Type [1] [4] plunger] [NEMA Type 1 roller] [magnetic reed] style door switch, and factory-installed time delay.

*Specifier Note: Retain the following paragraph only if three-speed electric heated units are required for a specific project.*

- D. Comfort Plus 24 Volt Control Package: Provides supplemental heat when door is closed and allows air curtain to run at selected speed to protect the opening when door



is opened. When door is closed air curtain runs at low speed for supplemental heat until thermostat is satisfied.

1. Provide package complete with [magnetic reed] [plunger] [roller arm] style door switch, factory-installed transformer and time delay, remote thermostat and remote speed selector switch.

*Specifier Note: Retain the following paragraph for electric heated units when thermostat is not included in a control package.*

- E. Thermostat: Prevents operation of heater when inside air temperature exceeds desired temperature.

*Specifier Note: Use of a disconnect switch on unit simplifies power shut-off when servicing air door.*

- F. Disconnect Switch: Provide [factory] [remote] mounted non-fused toggle disconnects based on number of power supplies required.

*Specifier Note: Retain the following paragraph to coordinate operational sequence of air door controls.*

- G. Sequencing: [\_\_\_\_\_].]

## 2.5 MOUNTING ACCESSORIES

*Specifier Note: Show mounting brackets on Drawings if required.*

- A. Provide brackets and other mounting accessories as required to permit installation and proper functioning of air door to meet project conditions of use.
- B. Fabricate top mounting brackets from galvanized steel with white painted enamel finish.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that door frame and adjacent construction are installed correctly and are ready to receive work of this Section.
- B. Verify that utilities are in correct location and are of correct capacities for specified products.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

*Specifier Note: Delete the optional text in the following paragraph if shop drawings are not required for a specific project.*

- A. Install air doors where indicated on Drawings and accordance with [shop drawings and] manufacturer's instructions. Provide clearance to permit servicing and maintenance.
- B. Securely install air doors plumb, level, and as close as practical to top of opening and face of wall.
- C. Install switches where indicated on Drawings.

### 3.3 CONNECTIONS

*Specifier Note: Retain the following paragraph if electric heated air doors are retained in Part 2 - Products.*

- A. Connect air door to utilities as specified in Division 26 sections.

### 3.4 FIELD QUALITY CONTROL

- A. Provide a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Test and operate air door to be sure that it performs as intended.

### 3.5 ADJUSTING

- A. Adjust fan speed to prepare installed products to perform properly.

*Specifier Note: Delete the optional text in the following paragraph if not required for a specific project.*

- B. Adjust discharge nozzles to deflect air outward [unless otherwise required].

### 3.6 CLEANING

- A. Clean air door prior to commissioning.
- B. Repair or repaint damage to finishes on exposed-to-view surfaces.

### 3.7 SYSTEM STARTUP

*Specifier Note: Retain optional text in paragraph below if required for a specific project.*

- A. Test and operate air doors to ensure that they perform as intended. Adjust discharge nozzles to deflect air outward [unless otherwise required].



## STAR GUIDE SPECIFICATIONS

### 3.8 DEMONSTRATION

- A. Demonstrate for Owner's maintenance personnel how to adjust, operate, and maintain air curtains.

END OF SECTION

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