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**Twin City Fan & Blower Guide Specification
HVAC Gravity Dome Ventilators: Model GRV**

Twin City Fan & Blower Model GRV Series, HVAC Gravity Dome Ventilators, are low silhouette spun aluminum units that match the appearance of spun aluminum power roof ventilators.

**Application**

The GRV provides for natural gravity ventilation and may also be used as an intake. For intake units, a minimum curb height of 12" is recommended.

Throat Opening (Round): 9.00 to 48.38 inches (229 mm to 1,229 mm)

Airflow: Up to 25,100 CFM (42,645 m3/hour)

Static Pressure: Up to 0.375 inches wg (93 Pa)

Twin City Fan & Blower (TCF) is an industry leading designer and manufacturer of high quality commercial and industrial fans and is a division of Twin City Fan Companies, Ltd. Our extensive product line includes centrifugal fans and blowers, axial fans, and power roof ventilators. For the commercial market, TCF supplies ventilation fans for retail and office buildings, restaurants, schools, hospitals, and government buildings. TCF’s industrial fans are used in a wide variety of process applications for numerous industries including Petrochemical, Nuclear, Cement, Steel, and Air Pollution Control. Special materials, construction, coatings, and accessories are available to fit any application requirements.

TCF has completed thousands of successful installations across the globe and has a proven track record for tackling the most technically complex applications within the fan industry. TCF is also known for its technical design capabilities, comprehensive testing services, and responsive sales team. Due to the company’s extensive expertise and long-standing reputation for proven quality, TCF products continue to be specified around the globe.

TCF occupies over 1,000,000 sq. ft. of manufacturing space across ten facilities in the U.S, with expanded manufacturing and service operations located in South America, Europe, India, China, and Singapore. Headquarters are located in Minneapolis, Minnesota, which houses the management, sales and marketing, accounting, human resources, material management, engineering personnel, as well as a state-of-the-art AMCA accredited testing lab.

We recommend you consult with your Twin City Fan & Blower Sales Representative, who can be contacted through: Twin City Fan & Blower, Minneapolis MN; (763) 551-7600; email: tcf\_sales@tcf.com; [www.tcf.com](http://www.tcf.com).

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SECTION 23 37 23.13 – HVAC GRAVITY DOME VENTILATORS

1. GENERAL
	* + 1. SUMMARY
				1. Section includes HVAC gravity dome ventilators.
			2. REFERENCE STANDARDS
				1. National Fire Protection Association (NFPA): [www.nfpa.org](http://www.nfpa.org):

NFPA 70 - National Electric Code

* + - 1. ACTION SUBMITTALS
				1. Product Data: Include the following:

Rated capacities and operating characteristics.

Flow Performance Data: Flow performance curves with flow, and static pressure.

Specifier: Retain the following paragraph and subparagraphs only if the units specified include electrical components.

Electrical characteristics.

Furnished specialty components.

Specified accessories.

Dimensioned standard drawings indicating dimensions, weights, and attachments to other work.

Specifier: If Contractor will be required to provide engineering drawings and calculations for vibration, seismic, or high wind design, insert requirements here.

* + - 1. INFORMATIONAL SUBMITTALS
				1. Source quality-control reports.
				2. Field quality-control reports.
				3. ISO-9001 certificate.
			2. CLOSEOUT SUBMITTALS
				1. Operation and Maintenance Data: Include routine maintenance, adjustment requirements, safety information, and troubleshooting guide.
			3. QUALITY ASSURANCE
				1. Manufacturer Qualifications: Approved ISO 9001-compliant manufacturer listed in this Section with minimum 10 years' experience in manufacture of similar products in successful use in similar applications, and with an ASME NQA-1 compliant Program.

Specifier: Retain paragraph below if Owner allows substitutions but requires strict control over qualifying of substitutions.

Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:

Product data, including certified independent test data indicating compliance with requirements.

Project references: Minimum of 5 installations not less than 5 years old, with Owner contact information.

Sample warranty.

Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.

Approved manufacturers must meet separate requirements of Submittals Article.

* + - 1. COORDINATION
				1. Coordinate sizes and locations of supports required for HVAC gravity dome ventilators.
				2. Coordinate sizes and locations of roof curbs, and roof penetrations.
			2. FIELD CONDITIONS
				1. Handling and Storage: Handle and store units in accordance with manufacturer's published instructions. Examine units upon delivery for damage. Store units protected from weather.
			3. WARRANTY

Specifier: Consult TCF for available special Project-specific warranties.

* + - * 1. Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to furnish replacement components for units that demonstrate defects in workmanship or materials under normal use within warranty period specified.

Warranty Period: 12 months from startup or 18 months from shipment by manufacturer, whichever first occurs.

1. PRODUCTS
	* + 1. MANUFACTURER
				1. Basis-of-Design Manufacturer: Provide HVAC gravity dome ventilators manufactured by **Twin City Fan & Blower**, Minneapolis MN; (763) 551-7600; email: tcf\_sales@tcf.com; website: [www.tcf.com](http://www.tcf.com).
				2. Source Limitations: Obtain HVAC gravity dome ventilators from a single manufacturer.
			2. PERFORMANCE REQUIREMENTS
				1. HVAC Gravity Dome Ventilator Performance Ratings: [Project site elevation-based] [Sea level elevation-based].

Specifier: Retain following paragraph for gravity roof ventilators with electric actuators, limit switches, or other electrical accessories.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70.
			1. HVAC GRAVITY DOME VENTILATORS
				1. Description: Provide HVAC gravity dome ventilators.

Basis of Design Product: **Twin City Fan & Blower, Model GRV**.

* + - * 1. Gravity relief and/or intake ventilators shall be of the spun aluminum type, Model GRV as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.
				2. Fabricate units of aluminum.
				3. Provide unit top covers of spun aluminum, with rolled bead edge.
				4. Provide units with inlet venturi of sufficient depth to prevent against snow and rain entry into building.

Specifier: A bird screen is included as a standard feature of the GRV ventilator. In the following paragraph, select standard galvanized steel or optional aluminum material.

* + - * 1. Provide [galvanized steel] [aluminum] wire mesh bird screen
				2. Finish: Galvanized mill finish internal parts, and uncoated external [aluminum] and [galvanized steel] parts exposed to weather.

Specifier: The first paragraph below is manufacturer's standard finish. Those that follow are optional finishes. Select finish that is required.

If fans specified for the project have different finishes, include the finish for each fan on the Drawings and delete here.

[None]

[Enamel, Gray]

[Enamel, Color Matched]

[Epoxy, Black]

[Phenolic Heresite, Gray]

[Carbocoat 30, Black]

[Transcoat 161, Black].

* + - * 1. Accessories:

Specifier: Accessories listed in subparagraphs below are optional TCF features for this unit. Consult TCF representative for recommended options based upon Project requirements.

Specifier: Select roof curb options in the following paragraph that coordinate with building design and roof membrane system.

The straight sided roof curb option has the same construction as a self-flashing curb, but has the dimensions of a canted curb.

Roof Curb: [Straight sided] Minimum [12 inches (300 mm)] [\_\_\_\_\_] high, unvented [, with 1-1/2 inch (38 mm) thick insulation] and [canted] [self-flashing] base, as required by the roofing system. Refer to Division 07, Roofing.

Specifier: Select roof curb material in the following paragraph.

Fabricate curb from [18 gage (0.0516 inch) (1.3 mm) galvanized steel] [0.063 inch (1.6 mm) aluminum].

Curb Hinge: Piano-type hinge for curb base mounted on standard canted curb, for access to exhaust fan, backdraft damper, and duct [, with retaining chain] [and security hasp].

Specifier: Select one of the following two paragraphs if backdraft dampers are required. Note that the dampers indicated are suitable for exhaust applications only.

For backdraft dampers in supply applications, contact TCF Sales for quote and details to add to specifications.

Backdraft Damper, Automatic: Parallel-blade type, mounted inside roof curb.

Backdraft Damper, Motorized: Parallel-blade type mounted at fan outlet with actuator suitable for [24] [115] [208] [230] [460] [575] VAC, single phase. Provide transformer for 575 V actuator.

Curb Hinge: Piano type design. For use with canted roof curbs only.

Retaining Chain: used in conjunction with the curb hinge arrangement to stabilize the unit and to prevent damage from occurring to the unit while servicing and cleaning.

Security Hasp: used in conjunction with the curb hinge arrangement to prevent removal of the unit from the unit curb cap.

Specifier: Bird screen is standard feature. Retain following paragraph and select option when insect screen is required.

Note that insect screen introduces considerable pressure drop as air velocity through the ventilator increases. Contact Twin City Fan literature or product representative for more details.

Provide aluminum wire mesh insect screen at dome opening.

1. EXECUTION
	* + 1. EXAMINATION
				1. Examine areas to receive fans. Notify Engineer regarding conditions that may adversely affect installation, operation, or maintenance of HVAC gravity dome ventilators. Proceed with installation once conditions are in accordance with manufacturer's published instructions.
			2. PROTECTION
				1. Protect adjacent construction and finished surfaces during installation and testing.
				2. Except for operational testing, do not operate fan during construction.
			3. INSTALLATION
				1. Install HVAC gravity dome ventilators in accordance with Contract documents and manufacturer's published instructions.

Specifier: Insert applicable installation requirements for vibration, seismic, and high wind design if applicable to installation.

* + - * 1. Install HVAC gravity dome ventilator units with adequate clearances for service and maintenance.

Specifier: Coordinate duct installation and specialty arrangements with schematics on Drawings and with requirements specified in duct systems. If Drawings are explicit enough, these requirements may be reduced or omitted.

* + - * 1. Duct Connections: Drawings indicate general arrangement of ducts and duct accessories. Where indicated on Drawings, make final duct connections with flexible connectors. Flexible connectors are specified in Division 23 section "Air Duct Accessories."

Install connecting ducts with adequate clearances for service and maintenance.

Specifier: Retain the following paragraph and subparagraphs only if the units specified include electrical components.

* + - * 1. Electrical Connections: Connect wiring in accordance with NFPA 70 and Division 26 section "Low-Voltage Electrical Power Conductors and Cables."

Ground and bond equipment according to Division 26 section "Grounding and Bonding for Electrical Systems."

* + - * 1. Equipment Identification: Label units according to Division 23 section "Identification for HVAC Piping and Equipment."
			1. FIELD QUALITY CONTROL

Specifier: Select option in paragraph below to define the party responsible for final tests and inspections to be performed.

* + - * 1. [Owner will retain] [Contractor shall retain] qualified testing agency to perform field tests and inspections.

Specifier: Retain first paragraph below to describe tests and inspections to be performed.

* + - * 1. Tests and Inspections:

Verify that unit is secured to supports, and that [duct] and [electrical] connections are complete.

Verify that cleaning and adjusting are complete.

* + - * 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
				2. Submit test and inspection reports.
			1. ADJUSTING AND CLEANING
				1. Adjust, clean, and maintain installed units in accordance with manufacturer's published instructions.

END OF SECTION