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**Twin City Fan & Blower Guide Specification
HVAC Gravity Upblast Ventilators: Model LUG**

**Twin City Fan & Blower Model LUG Series**, low profile gravity relief ventilators shall be of the roof mounted upblast type, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

Upblast model TUB includes a heavy-duty, galvanized steel or aluminum stack cap with butterfly dampers to discharge air upward and prevent recirculation into the building. A splash guard located over the damper pivot area protects against rain entry.

**Application**

Model LUG is a roof mounted upblast gravity ventilator intended for use on high velocity exhaust systems.

Sizes (wheel diameters): 14 to 60 inches (356 mm to 1,524 mm)

Airflow: Up to 90,000 CFM (152,908 m3/hour)

Static Pressure: Up to 1.5 inches wg (373 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.

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 23.19 – HVAC GRAVITY UPBLAST VENTILATORS

1. GENERAL
	* + 1. SUMMARY
				1. Section includes low profile gravity upblast roof ventilators.
			2. ACTION SUBMITTALS
				1. Product Data: Include the following:

Rated capacities and operating characteristics.

Sound Performance Data: Fan outlet sound power levels in eight octave bands and, A-weighted overall outlet sound power level or sone values.

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 ventilator units.
				2. Coordinate sizes and locations of equipment supports, roof curbs, and roof penetrations.
			2. FIELD CONDITIONS
				1. Handling and Storage: Handle and store ventilator 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 fan 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 fan units 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 mixed flow fans from a single manufacturer.
			2. PERFORMANCE REQUIREMENTS
				1. Performance Ratings: [Project site elevation- based] [Sea level elevation-based].
			3. HVAC GRAVITY UPBLAST VENTILATORS
				1. Low profile upblast ventilator, configured for vertical flow from high velocity exhaust systems.

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

Discharge Cap: Provide [galvanized steel] [aluminum] stack cap with gravity operated [galvanized steel] [aluminum] butterfly dampers at ventilator discharge. Include gasket and pre-punched flange holes to enable bolted connection to roof curb. Finish with manufacturer's standard finish.

Velocity: 1,800 to 3,000 feet/min (9.1 to 15.2 m/s).

Fabricate with rain channel to promote runoff and prevent rain entry into building.

Curb Cap: Galvanized steel, one-piece, weather-tight construction, to adapt from square roof curb to round ventilator inlet venturi. Fabricate from galvanized steel and include pre-punched flange to mate with roof curb.

* + - * 1. 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.

Roof Curb: [Canted] [Self-flashing] [\_\_\_\_\_], [8 inches (203 mm.)] [12 inches (305 mm)] [18 inches (457 mm)] [\_\_\_\_\_] high, unvented [, with 1-1/2 inch (38 mm) thick insulation].

Specifier: Retain options in the following paragraph for fans that have backdraft dampers, and where hasp hardware is required.

Curb Hinge: Provide piano hinge type assembly to allow for access to fan [and backdraft damper] from above. [Include retaining chain attached to curb cap and roof curb.] [Provide hasp hardware that accepts [Owner furnished] padlock.]

Bird Screen: Welded [galvanized] [aluminum] wire screen, mounted at ventilator outlet.

Insect Screen: Woven aluminum wire mesh screen, mounted between ventilator and roof curb.

Specifier: The manufacturer's standard damper material is steel, but aluminum is an option for circumstances in which the fan may have insufficient flow to push steel dampers open.

Fusible Link: Provide spring loaded discharge cap dampers and a fusible link that melts at 165 def. F (74 deg. C). When fusible link melts, discharge cap dampers remain open at all times.

Magnetic Damper Latches: Provide magnetic components to hold steel discharge cap dampers closed when fan is off.

Tie-Down Connections: Provide housing mounted connections for use with field-furnished tie-down cables.

1. EXECUTION
	* + 1. EXAMINATION
				1. Examine areas to receive ventilators. Notify Engineer regarding conditions that may adversely affect installation, operation, or maintenance. 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.
			3. INSTALLATION
				1. Install 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 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.

* + - * 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.

Submit test and inspection reports.

* + - 1. ADJUSTING AND CLEANING
				1. Adjust, clean, and maintain installed ventilator units in accordance with manufacturer's published instructions.

END OF SECTION