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TWIN CITY FAN

INDUSTRIAL PROCESS AND
COMMERCIAL VENTILATION SYSTEMS

SQUARE INLINE MIXED FLOW FANS

MODEL DSI

Model DSI
Direct Drive

GRIDSMART™
EC MOTORS

see page 5

All DSI models are UL/cUL 705 listed, for electrical, File No. E158680.

Twin City Fan & Blower certifies that the Model DSI shown herein are licensed to bear the AMCA Seal. Certified performance data may be found in Twin City Fan & Blower's Fan Selector software.

Scan the QR code to search Twin City Fan & Blower's AMCA-certified products.

For complete product performance, drawings and available accessories, download our Fan Selector software at *tcf.com*.

Overview

DSI

Twin City Fan & Blower's Model DSI direct drive square inline mixed flow fans are designed for supply, exhaust and return air in duct applications handling relatively clean air. These fans deliver market-leading efficiency and quiet operation in a compact inline design that can be mounted in horizontal, vertical or angular orientations. Outward bent flanges with optional slip fit companion flanges simplify installation, and side access panels allow service without removing duct connections.

Model DSI mixed flow units feature airfoil-bladed mixed flow impellers that combine axial airflow with centrifugal pressure capability. This advanced aerodynamic design reduces brake horsepower and promotes low sound levels, delivering exceptional lifetime value through energy savings and lower operating costs while maintaining required system performance. Units are statically and dynamically balanced and manufactured under strict quality standards to ensure reliable, long-term operation.

Not intended for outdoor applications.

Typical Applications Include

General HVAC (exhaust, filtration, return and supply, air of commercial buildings), Air Pollution Control, Airport Exhaust, Automotive, Fertilizer, Food & Beverage, Laboratory Exhaust, Metal & Mineral Processing, Office Exhaust, Restroom Exhaust, Warehouse Exhaust and Water Treatment

Impeller Type

Mixed Flow

Certifications

AMCA Sound/Air and FEI, UL 705 Listed for Electrical

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Overview

DSI

Model DSI

20 to 30 inches (510 mm to 765 mm)
Airflow to 16,000 CFM (27,200 m^3/hour)
Static pressure to 3" w.g. (750 Pa)

General HVAC
(90 Degree Turn)

Energy Regulations

Twin City Fan & Blower supports energy efficiency regulations enacted by the U.S. Department of Energy (DOE) and specific states. The selection and application of fan products is a significant part of these regulations. Engineers and specifiers must understand how to apply TCF products to their specific applications to meet applicable DOE and state regulatory requirements. Twin City Fan & Blower has made significant investments in product testing and development to provide efficient products. Developments in Twin City Fan & Blower's Fan Selector software are in place to aid your decision in product selection to assist with meeting the efficiency requirements as stipulated in the applicable regulations.

General HVAC
(Straight Inline)

CONSTRUCTION FEATURES

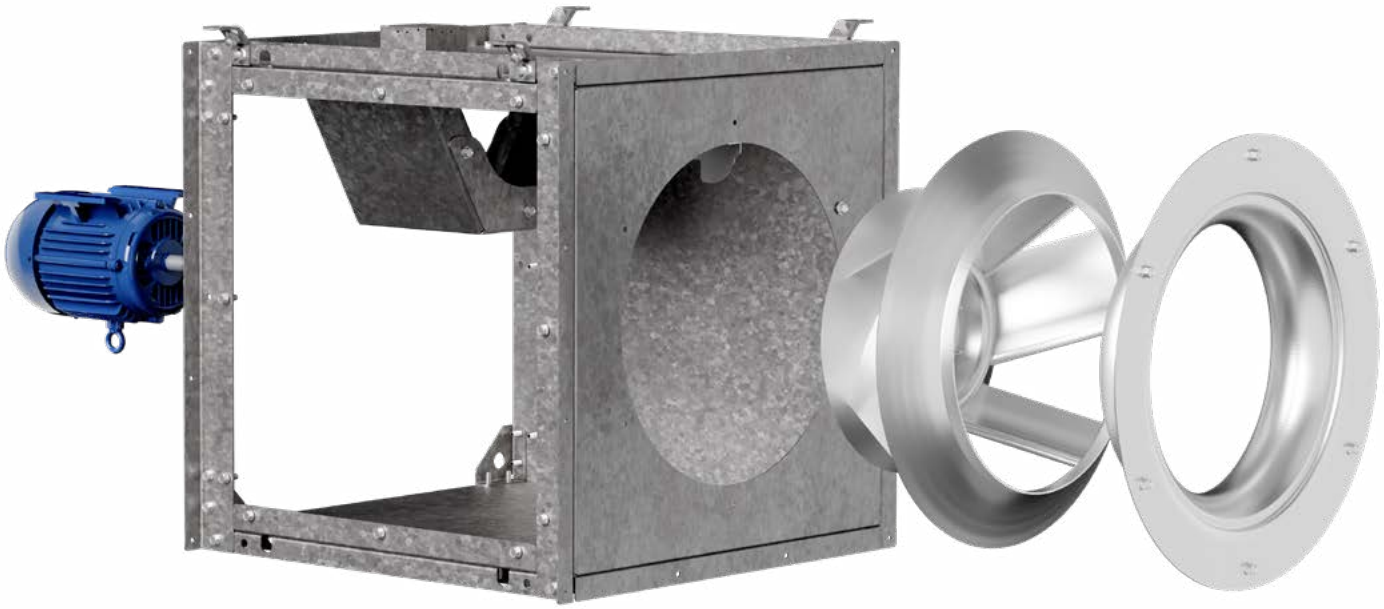
Housings - Housing assembly features heavy-gauge galvanized steel construction

Removable Side Panels - Removable side panels provide easy access for service and maintenance without the need to remove duct connections. Complete removal of the power assembly is also possible through side access panels. Side panels can provide a 90-degree side discharge. Requires optional side discharge accessory.

Impeller - Airfoil mixed flow, non-overloading, all-aluminum impeller and hub statically and dynamically balanced to assure long life and quiet operation.

Mounting Brackets - Galvanized steel mounting brackets for easy mounting in horizontal or vertical position.

Disconnect Switch - Mounted and prewired NEMA 1 disconnect switch provided as standard for servicing the unit without the danger of an accidental start.



DISCONNECT SWITCHES

NEMA 1 Disconnect Switch

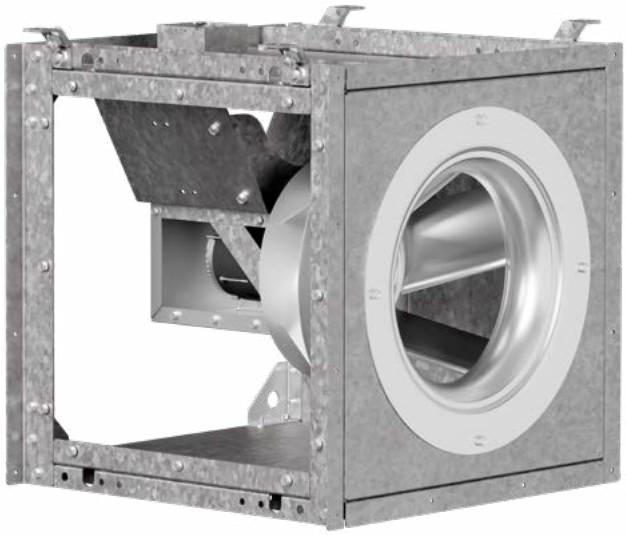
Disconnect switches provide positive electrical shutoff during fan cleaning or maintenance.

NEMA 1 Disconnect Switch (Standard)

A NEMA 1 disconnect switch is available shipped loose for field mounting and wiring or factory mounted and wired with ODP or TEFC motors.

Twin City Fan & Blower offers its own line of custom-engineered GridSmart™ Electronically Commutated (EC) motors, which utilize an electronic circuit board to control the functionality of the motor. They combine the best of AC and DC technologies and deliver exceptional energy efficiency and performance. EC motors are designed to meet or exceed new Department of Energy fan regulations while also reducing operating costs.

GRIDSMART™ EC MOTORS



Model DSI
With GridSmart™ EC Motor

Benefits

- **High Efficiency** up to 87.5%, providing big energy savings over traditional PSC motors, up to 66%!
- **Easy Installation and Commissioning** EC motors up to 2 HP, single-phase or factory-mounted and wired drives with induction motors up to 5 HP, three-phase
- **Consistent Performance** maintains efficiency as the motor speed is varied
- **Quiet & Smooth Operation** with soft start technology for reduced noise
- **Longer Life** due to lower operating tempatures and permanent lubrication
- **Wide Turndown Capability** with 80% usable turndown range compared with 40% maximum on PSC motors
- **Low Maintenance** benefits of direct drive fans with performance similar to belt driven fans

Model DSI
with GridSmart™
Pre-Wired Microdrive

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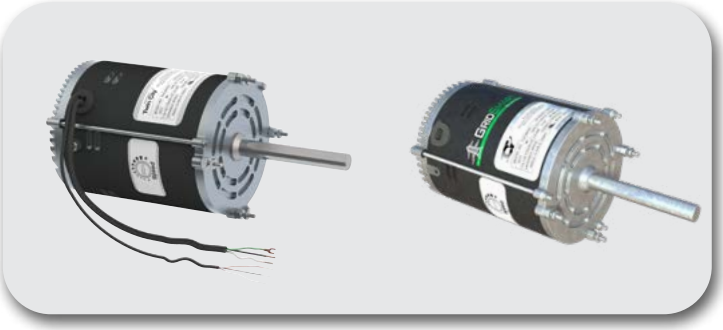
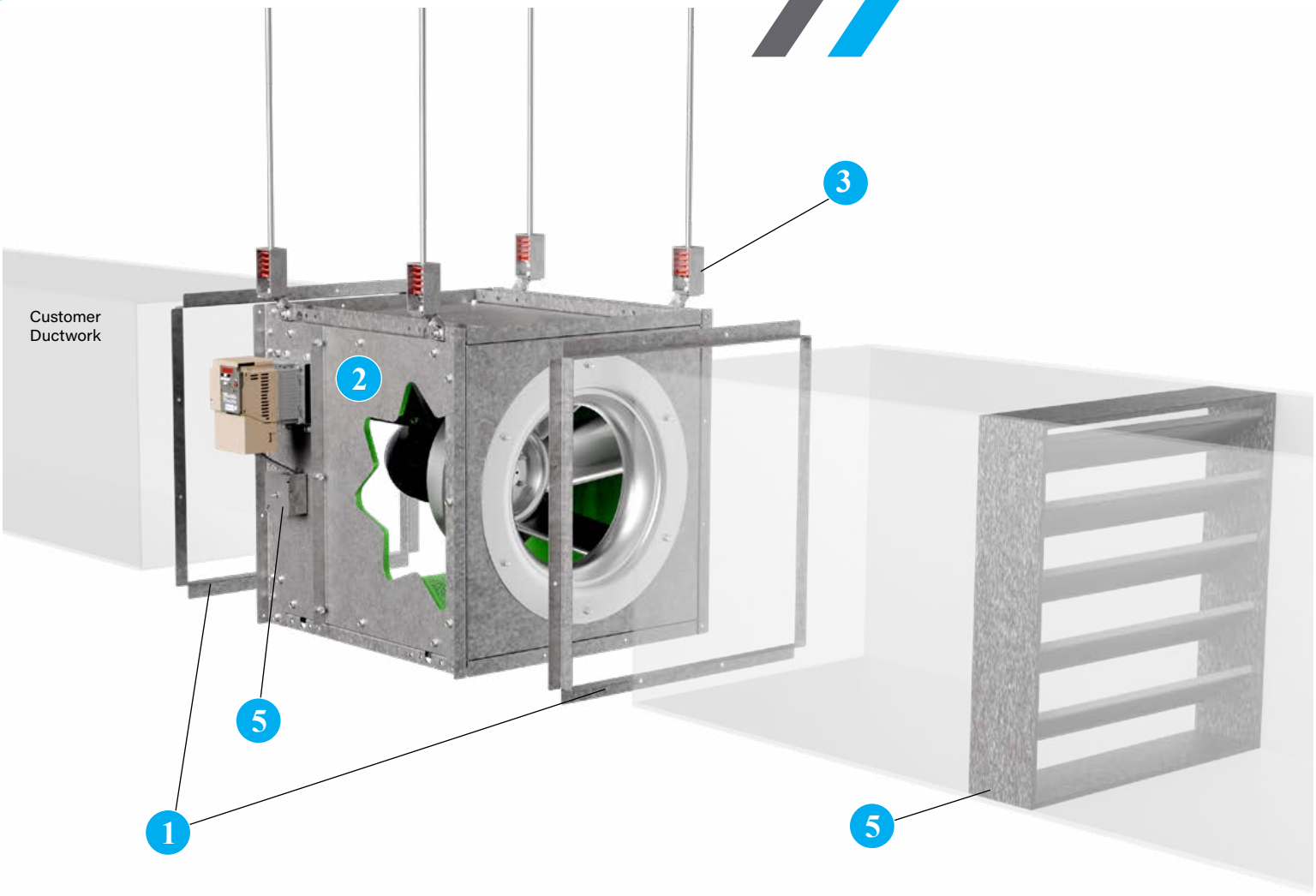


GridSmart™ EC Motors

GridPoint Controller

OPTIONS/ACCESSORIES



1 **Slip Fit Companion Flanges** streamline duct installation by eliminating the frustration of tight tolerances and difficult alignment. The slip fit design allows for quick positioning and secure attachment to duct sections, reducing field labor time and improving overall jobsite efficiency. The result is faster installs, fewer adjustments and a smoother workflow.

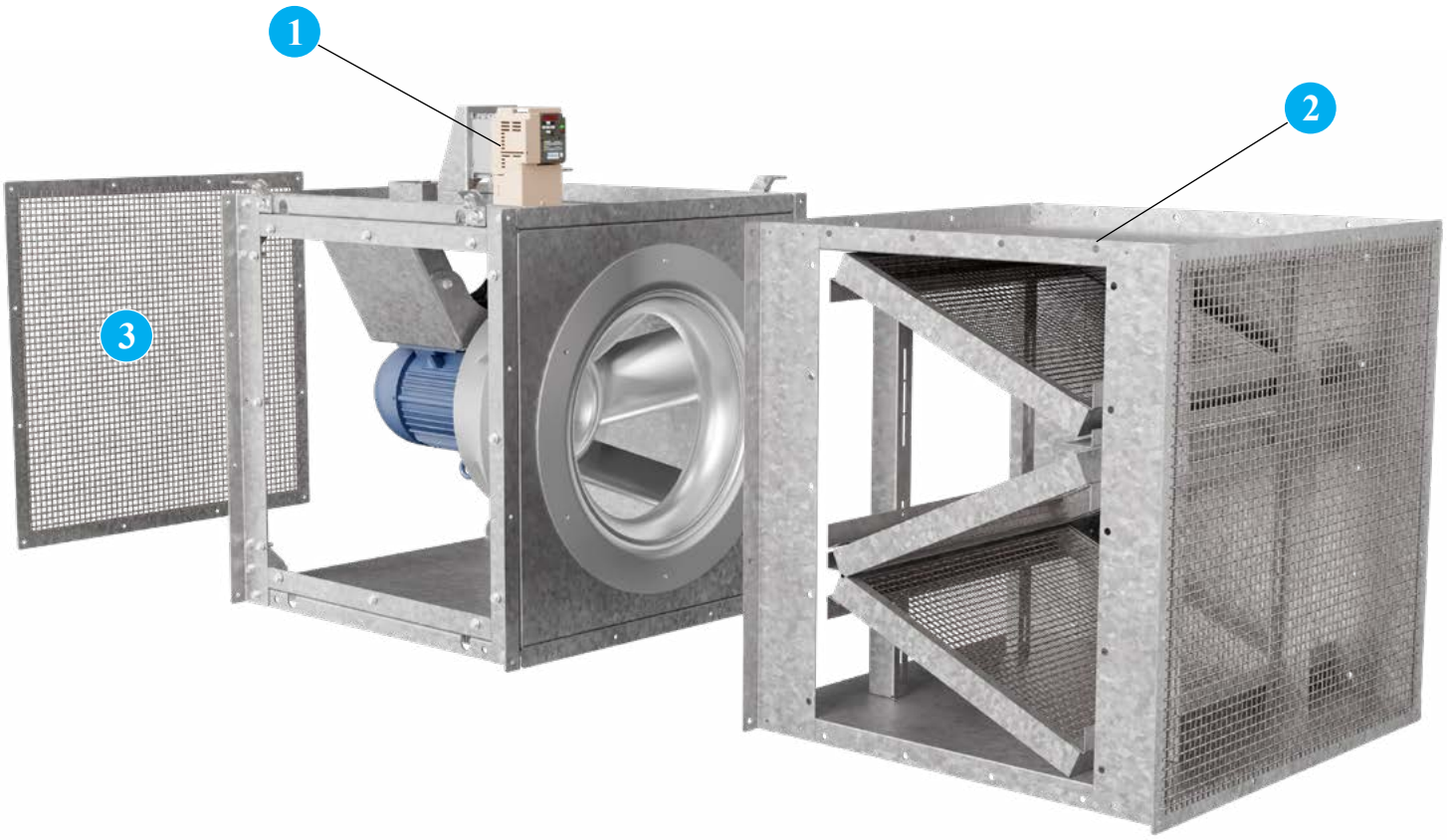
2 **Insulated Housing** are available in neoprene or fiberglass to help reduce casing-radiated noise and improve overall acoustic performance. By minimizing sound transmission through the housing, they support quieter operation and help projects meet noise-sensitive requirements without additional field modifications.

3 **Vibration Isolators** Spring or neoprene type vibration isolators are available for ceiling suspended or floor mounted installations.

4 **NEMA 1 Disconnect Switches** are available in pre-wired and mounted or shipped loose configurations for positive electrical shutoff of the fan and the protection of service personnel.

5 **Backdraft Dampers**, with automatic or motorized operation, feature felt-edged damper blades for quiet operation. Damper frames are constructed of galvanized steel and blades are constructed of 26-gauge aluminum. All dampers ship loose for field mounting in ductwork.

Motorized dampers are recommended for low CFM applications to ensure unrestricted airflow. Motorized dampers are available with 115, 208, 230, 460, 575 or 24 volt service. End switches are available. See dimensional data for sizing.



1 **GridSmart™ Drive** The GridSmart™ drive is a factory-mounted and wired, preprogrammed variable frequency drive designed to optimize ventilation system performance. Housed in a NEMA 1 enclosure, the GridSmart™ drive provides reliable operation, simplified installation and efficient motor control for a wide range of ventilation applications. For horizontal discharges, drives can be mounted on the top, left or right side with the pedestal up (as viewed from the inlet side). For vertical discharges, the mounting location is fixed.

2 **Filter Box** A filter box containing two inch aluminum wire mesh, removable and washable filters is available for attachment to the fan inlet side. The filter box is constructed of galvanized steel, with duct collars for easy mounting and removable side panels for easy filter cleaning or replacement. MERV 8 disposable paper filters are also available. For filter box pressure drops contact factory. See page 10 for dimensional data.

3 **Outlet Guard** Inlet and outlet guards are available for all models.

Other Accessories Include:

- Special Coatings
- Aluminum Construction
- Stainless Steel Hardware

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SIDE DISCHARGE OPTIONS

Side discharge kits (including panels, mounting collars and necessary hardware) are available to provide one-way, two-way or three-way discharges. This option provides exceptional adaptability for any installation, as well as avoiding the system effect of disrupted airflow when the ductwork has to take a 90-degree turn.

Configurations

OPTION	FIGURE	CONFIGURATION
Standard	A	Rear
One-Way	B	Left
	C	Right
Two-Way	D	Left and Right
	E	Left and Rear
	F	Right and Rear
Three-Way	G	Left, Right and Rear

NOTE: Performance will change depending on the position of the discharge. See correction factor table below. Percentages based on (inline) cataloged performance, but are not AMCA certified. Always check BHP when selecting motor HP and fan size.

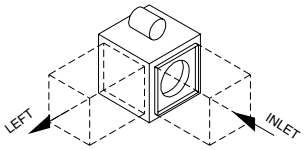

FIG. B

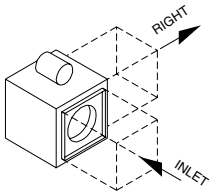

FIG. C

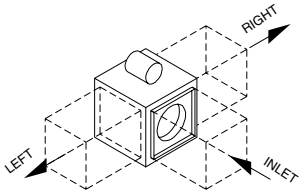

FIG. D

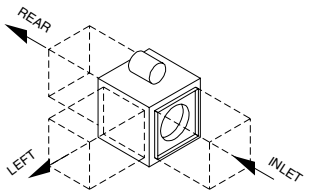

FIG. E

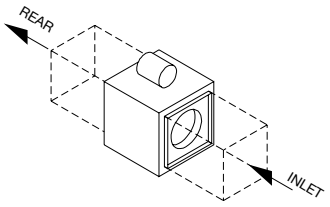

Fig. A

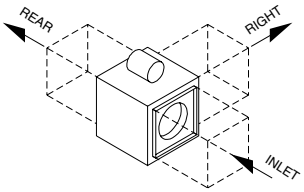

FIG. F

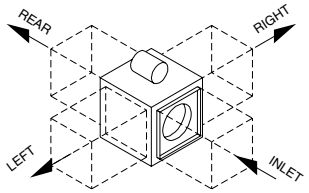

FIG. G

Performance Correction Factors

DISCHARGE	0.50" SP		1.00" SP		1.50" SP		2.00" SP		AVG.	
	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
One-Way	110.7%	113.0%	114.0%	110.8%	115.8%	108.5%	120.0%	102.3%	115.1%	108.7%
Two-Way	114.7%	106.5%	118.1%	109.7%	120.3%	112.4%	126.8%	114.0%	120.0%	110.7%
Three-Way	113.2%	105.9%	117.4%	109.7%	121.6%	113.0%	127.1%	114.0%	119.8%	110.7%

NOTE: The performance correction factors shown above are not licensed to bear the AMCA Certified Ratings Seal.

Duct Openings

MODEL DSI	LEFT AND RIGHT DISCHARGE			REAR DISCHARGE/INLET		
	DUCT COLLAR		DUCT SIZE REQUIRED	OPTL. DUCT COLLAR		DUCT SIZE REQUIRED
	WIDTH	HEIGHT		WIDTH	HEIGHT	
165X	20.88	20.88	21.00 x 21.00	23.88	23.88	24.00 x 24.00
182X	23.38	23.38	23.50 x 23.50	26.63	26.63	26.75 x 26.75
200X	25.88	25.88	26.00 x 26.00	29.38	29.38	29.50 x 29.50
222X	27.88	27.88	28.00 x 28.00	31.88	31.88	32.00 x 32.00
245X	30.88	30.88	31.00 x 31.00	35.38	35.38	35.50 x 35.50

NOTE: Damper size should be 1/8" less than duct size required or same size as duct collar.

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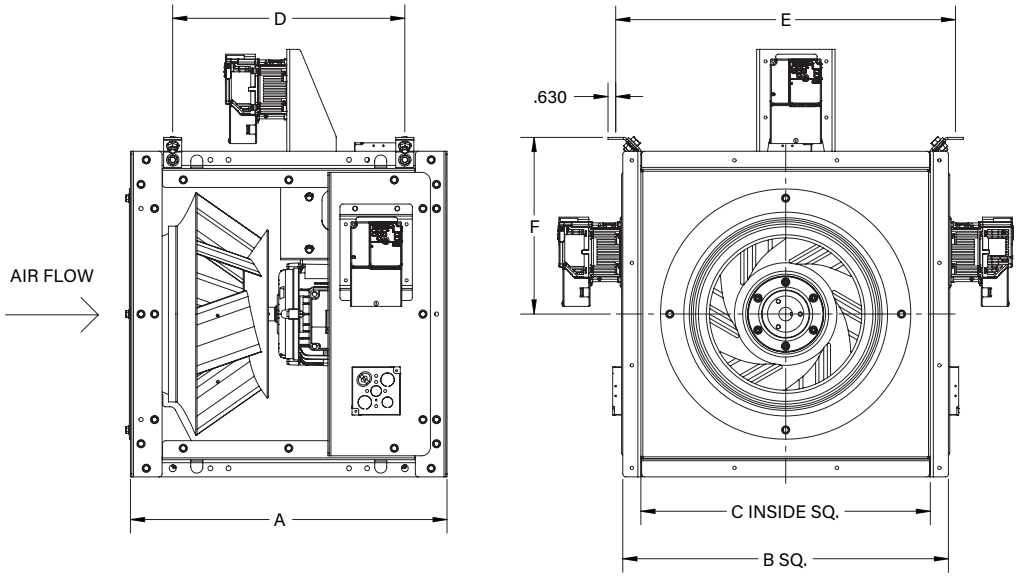
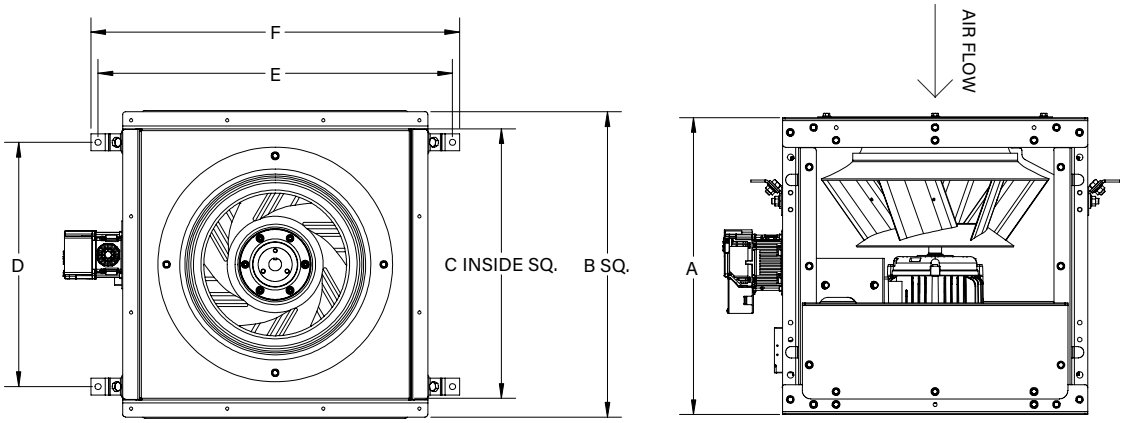
Model DSI, Direct Drive



Horizontal Mount



Vertical Mount

MODEL DSI	A	B	C	D	E		F		DAMPER SIZE	AVG. SHIP WT. (LBS.)		SIDE DISCHARGE SIZE
					HOR.	VER.	HOR.	VER.		GALV.	ALUM.	
165X	26.25	27.00	24.00	21.61	28.18	31.35	14.65	32.61	24.00 X 24.00	212	165	21.00 X 21.00
182X	29.00	29.75	26.75	24.36	30.93	34.10	16.02	35.36	26.75 X 26.75	244	189	23.50 X 23.50
200X	32.00	32.38	29.38	26.98	33.55	36.73	17.34	37.99	29.25 X 29.25	269	203	26.00 X 26.00
222X	36.25	35.00	32.00	29.61	36.40	39.35	18.65	40.61	32.00 X 32.00	386	304	28.00 X 28.00
245X	40.25	38.50	35.50	33.11	39.90	42.85	20.40	44.11	35.50 X 35.50	429	328	31.00 X 31.00

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500072522

Notes:
1. All figures are in inches unless noted otherwise.
2. Average ship weight is for fan and motor assembly.
3. Dimensions are not to be used for construction.
4. Microdrive location may be on the left, right or top as viewed from inlet on horizontal mount. Location is fixed for vertical mount fan as shown.

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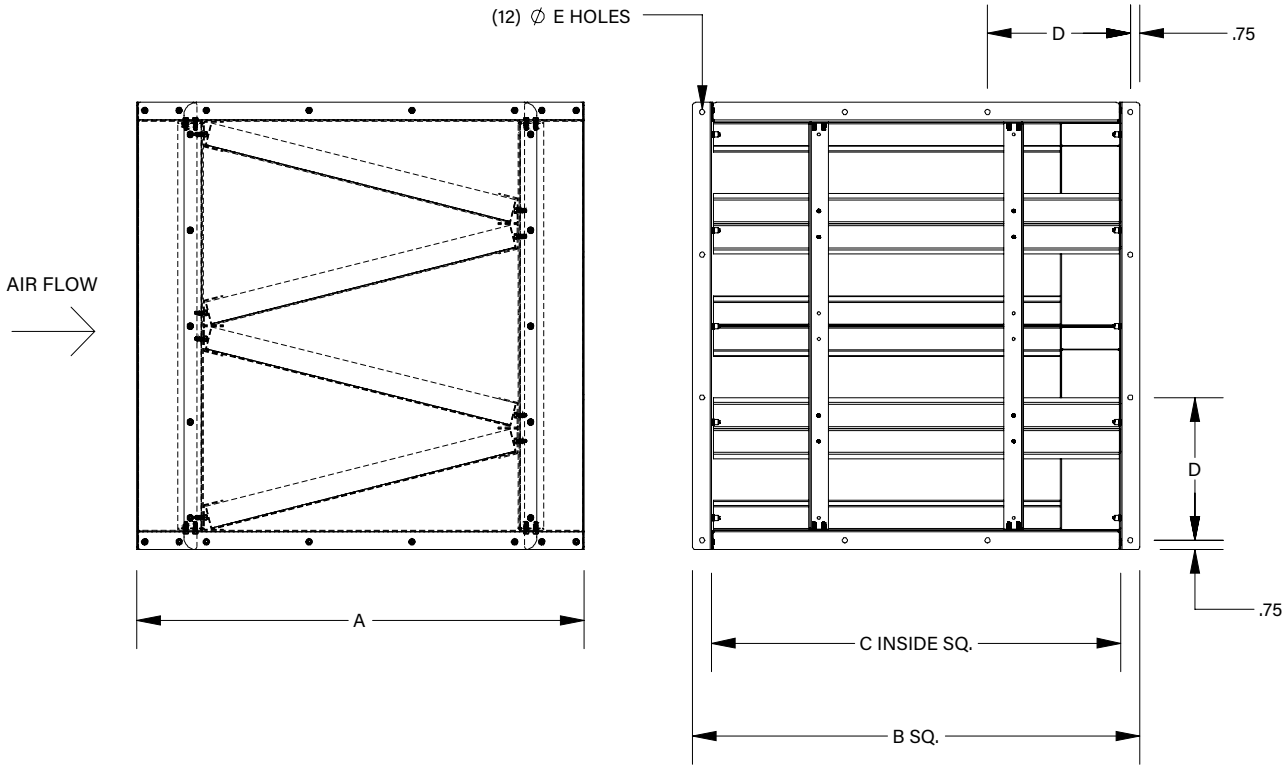
Filter Box Assembly



Filter Box Assembly

MODEL DSI	A	B	C	D	E
165X	35.00	27.00	24.00	8.50	0.34
182X	35.00	29.75	26.75	9.42	0.34
200X	35.00	32.38	29.38	10.29	0.40
222X	35.00	35.00	32.00	11.17	0.40
245X	35.00	38.50	35.50	12.33	0.40

500073435

Notes:
1. All figures are in inches unless noted otherwise.
2. Filter box option is shipped separately for field installation.
3. For filter box information, see page 7.
4. Disposable paper filters are rated for MERV 8.

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Model

DSI

Supply or exhaust fans shall be of the direct drive model DSI mixed flow square inline type, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

PERFORMANCE — Performance ratings shall conform to AMCA Standard 211 (air performance) and 311 (sound performance). Fans shall be tested in accordance with ANSI/AMCA Standard 210 (air performance) and 300 (sound performance) in an AMCA accredited laboratory. Fans shall be licensed to bear the AMCA certified ratings seal for both sound and air, and fan energy index (FEI). Model DSI shall be UL 705 listed.

CONSTRUCTION — Unit exterior shall be constructed of heavy-gauge galvanized steel. The fan housing shall be square in shape and readily attachable to building ductwork. Unit side panels shall be removable for easy access for maintenance and service. The power assembly shall be removable as a complete module through the side access panel. Fan housings shall have universal mounting brackets to accommodate horizontal or vertical installations. Fans shall bear a permanently attached nameplate displaying model and serial number of the unit for future identification.

IMPELLER — Fan impellers shall be of the non-overloading airfoil mixed flow type, constructed of aluminum and containing a matching inlet venturi for optimum unit performance. Each impeller shall be statically and dynamically balanced in accordance with ANSI/AMCA 204-96 "Balance Quality and Vibration Levels for Fans" to Balance Quality Grade G6.3.

MOTOR — Motors shall be of the heavy-duty ball bearing type, closely matched to the fan load. A disconnect switch shall be factory installed and wired to the fan motor as standard. All motors shall be UL recognized.

ACCESSORIES — When specified, accessories such as backdraft damper, insulated housing, vibration isolators, side discharge, inlet and outlet guards, special coatings and filter box option shall be provided by Twin City Fan & Blower to maintain one source responsibility.

FACTORY RUN TEST — All fans prior to shipment shall be completely assembled and test run as a unit at operating speed or maximum RPM allowed for the particular construction type. Records shall be maintained and a written copy shall be available upon request.

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CENTRIFUGAL FANS | UTILITY SETS | PLENUM & PLUG FANS | INLINE CENTRIFUGAL FANS
MIXED FLOW FANS | TUBEAXIAL & VANEAXIAL FANS | WALL MOUNTED FANS | ROOF VENTILATORS
CENTRIFUGAL ROOF & WALL EXHAUSTERS | CEILING VENTILATORS | GRAVITY VENTILATORS | DUCT BLOWERS
RADIAL BLADED FANS | RADIAL TIP FANS | HIGH EFFICIENCY INDUSTRIAL FANS | PRESSURE BLOWERS
LABORATORY EXHAUST FANS | FILTERED SUPPLY FANS | MANCOOLERS | FIBERGLASS FANS | CUSTOM FANS

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5959 TRENTON LANE N. | MINNEAPOLIS, MN 55442 | PHONE: 763-551-7600 | FAX: 763-551-7601