TCF

TWIN CITY FAN

INDUSTRIAL PROCESS AND
COMMERCIAL VENTILATION SYSTEMS

TUBULAR CENTRIFUGAL INLINE FANS

Model TSL

Model TSL
Arr. 9

Overview

TSL

The TSL is an inline centrifugal flow fan featuring the reliable performance of a centrifugal fan with the space saving advantages of an axial type fan. The TSL offers high efficiencies in the commonly selected area. The TSL has a higher and broader efficiency range compared to competitive tubular fans and square inline fans. Lower operating speed for a given performance provides longer and more reliable operation. Also, higher efficiency leads to quieter operation. The unique impeller design allows air to flow with a minimum of turbulence and losses. Extra-wide blade design delivers a larger air volume. A removable discharge cone facilitates maintenance and service. Applications with larger motors utilize a pivot-style motor base for ease of belt tension adjustments.

Typical Applications Include

Data Center Exhaust, General HVAC, Generator Room Ventilation, Swimming Pool Exhaust, Kitchen Exhaust, Dishwasher Exhaust, Elevator Shaft Exhaust/Pressurization, Emergency Smoke Exhaust, Stairwell Pressurization

Arrangements

Available in Arrangement 4 (Direct Drive) and Arrangement 1 or 9 (Belt Driven) Configurations; Horizontal and Vertical Mounting

Impeller Type

Backward Inclined (Size 122, 150), Airfoil (Size 182 - 890)

Standard Construction

Class I, II and III

Optional Construction

Clamshell Construction, Swingout Construction, Special Materials, Fume Hood Design, Spark Resistant, UL 705, Lab Exhaust

Certifications

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

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.

Model TSL is available with the UL/cUL 705 listing for electrical, File No. E158680.

Twin City Fan & Blower certifies that the Model TSL Fans 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

TSL

Tubular centrifugal fans such as the TSL are used primarily for low to medium pressure return air systems in heating, ventilating and air conditioning applications. They are generally more compact than comparable scroll type centrifugal fans and often will fit into tight spaces or in overhead ductwork where other fans of the same duty may not. This is particularly true of the TSL inline fans, which were specifically engineered with a wider efficiency range. This allows selection of smaller fans while maintaining high efficiencies and low operating costs.

While there are many considerations that must be taken into account when selecting a fan for a particular application, the first and most obvious is the operating characteristic of the fan. The fan selected must be capable of moving the required amount of air against the calculated system static pressure. Fans selected at or just below the maximum static efficiency point (underlined figures in the performance tables) will provide the most efficient and quietest operation. This, however, does not necessarily mean that a fan selected at this point is the best fan for the job. The most efficient fan is usually the largest fan that can be chosen to provide stable operation for a given performance. Usually there is a trade-off between higher equipment cost vs. lower operating cost. There are also many site-specific considerations such as physical size and quiet operation that must be evaluated before a final selection is made.

This is one area where the unique features of the TSL fan can provide a real advantage over other inline fans. A smaller TSL fan operating further down from the maximum efficiency figures may be selected without significantly increasing the horsepower requirements, RPM or sound power levels. This means you have less of a compromise to make between size and cost vs. operating cost and quiet operation. With the TSL fan, you can have both high efficiency and lower first cost.

All of the features that give the standard TSL its high efficiency are utilized on all styles and arrangements that Twin City Fan & Blower offers. When supplied with a curb cap, stack cap and weather cover, the TSL fan becomes a quiet, efficient and stable upblast style roof exhauster. TSL fans can also be specified for many industrial applications, such as paint spray booths. These installations typically utilize special features such as clamshell or swingout construction, which allow easy access for cleaning and maintenance.

Sizes and Performance

- 12.25" to 89" impeller diameters
- Airflow to 221,700 CFM
- Static pressure to 9" w.g.

Horizontal Ceiling Mount
Connected to Ductwork

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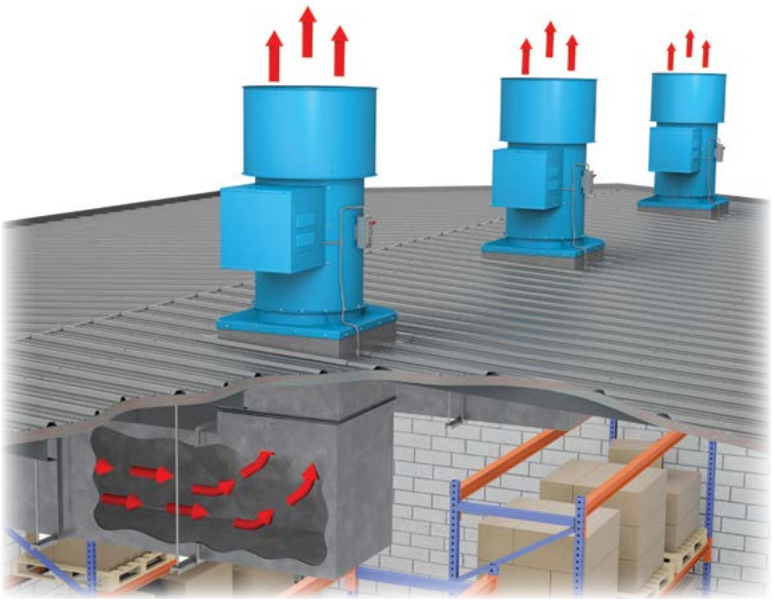
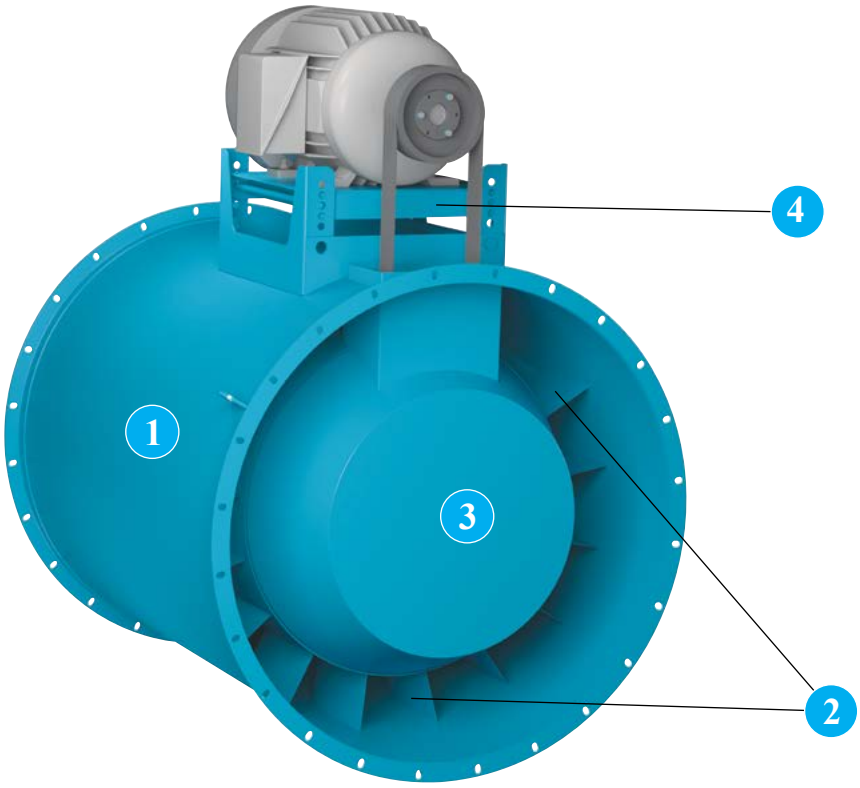


General HVAC
Warehouse Exhaust

CONSTRUCTION FEATURES



1 Housings

All fans are constructed of heavy-gauge steel and continuously-welded for strength and rigidity. The tubular shape of the housing provides a streamlined airflow giving TSL fans much higher efficiencies when compared to square inline fans. All TSL fans are provided with punched inlet and outlet flanges as standard. A sealed belt tube is also standard.

2 Straightening Vanes

Straightening vanes convert tangential velocity pressure into useful static pressure potential, reducing turbulence and increasing efficiency. Extensive testing of various shapes and locations has resulted in the most efficient aerodynamic design of the straightening vanes. This efficient construction, coupled with the new impeller design, is responsible for the higher and broader efficiency range in the most commonly selected region of the fan curve.

3 Inner Cylinder

The inner tube is rigidly constructed to support the shaft and bearings. The removable discharge cone provides full access to the shaft, bearings and fan sheave. It is strongly recommended that an access door be provided in the ductwork adjacent to the discharge end of the fan for such service.

A rectangular belt tube encloses the drive. The rectangular design allows a larger fan sheave to be placed closer to the bearings and thus increase the drive side bearing life.

4 Motor Mounting Platform

Heavy-duty design for handling large motors. Catalog drawings indicate the maximum frame size for different fan sizes. The motor mounting platform allows easy adjustment of belt tension. The motor mounting platform is offered in eight standard locations to allow for motor accessibility and space requirements. Both styles of motor bases allow for a large range of belt centers in case the v-belt drive has to be changed.

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Swingout Construction

Provides full access to the impeller and inner casing. The entire impeller/shaft/bearing assembly is mounted on a large swingout door. Since the inlet cone pivots with the door, fan performance is preserved. Ideal for systems requiring frequent cleaning without removal of ductwork. Swingout construction is available for vertical mounting only. Available on sizes 222-445, Arrangement 4 or 9 only.

Swingout Construction

Clamshell Construction

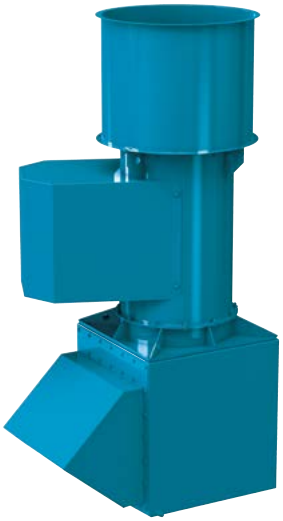
Clamshell construction is ideal for applications needing regular cleaning. Depending on the size, one door (sizes 122-270) or two doors (sizes 300-445) are secured with quick access latches. These doors open outward and allow access to the internal components of the fan. As standard, there is an access door on the inner cylinder, allowing easy access to clean around the bearings. It is essential to follow proper safety precautions during cleaning. If bearing, shaft or impeller replacement is required, the fan should be removed from the ductwork or roof to facilitate safe replacement of parts. If replacement of these parts while ducted or on the roof is required, it is recommended to use swingout construction. Arrangement 4 or 9 only.

Single Door Clamshell Construction

Fume Hood Exhaust Construction

Twin City Fan & Blower offers a specially modified version of the TSL fan designated as "TFE" (Tubular Fume Exhaust) for laboratory fume hood exhaust applications, available in sizes 90 through 542. The TFE fan consists of a vertically mounted TSL unit with a reinforced curb cap and a modified stack cap. The stack cap includes an outlet venturi to permit the outlet velocity to meet the specific roof exhaust requirements. TFE fans in a standard configuration utilize an extended discharge with optional stack extensions available. The heavy-duty curb cap will permit stack extensions up to 10 feet (120 inches) total height from the roof line without need for guide wires.

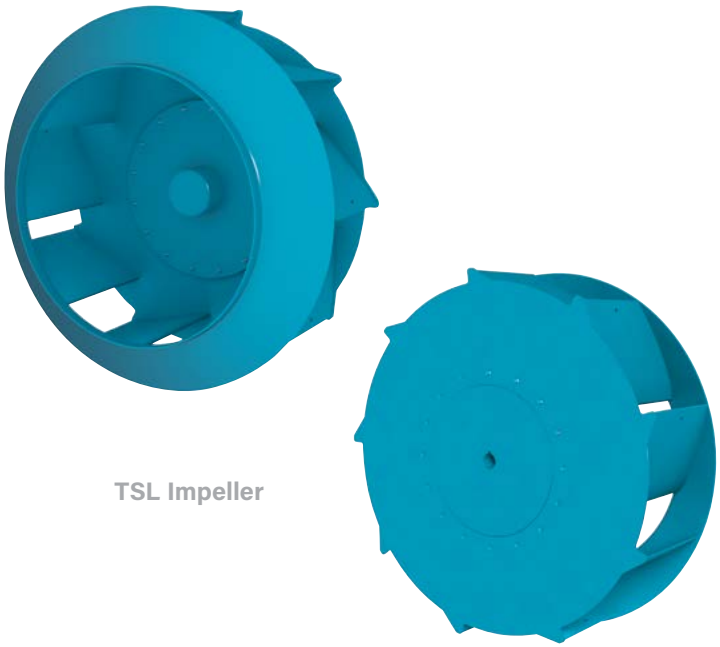
Refer to Catalog 1500 for selection and specifications.



Fume Hood Exhuast Design
(Model TFE)

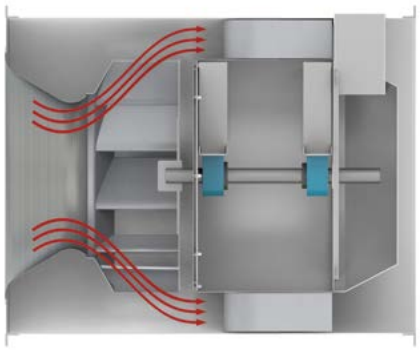
Double Door Clamshell Construction

IMPELLER DESIGN

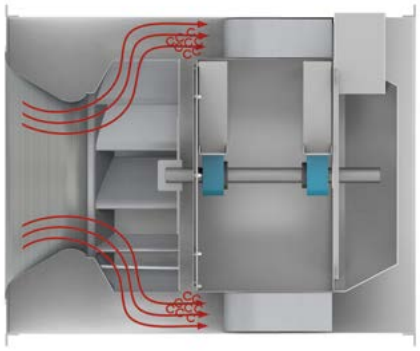


TSL Impeller

The TSL Tubular Centrifugal Fan employs a specially designed non-overloading airfoil impeller. In a tubular centrifugal fan, the air turns 90° after leaving the impeller. Twin City Fan & Blower's unique impeller design with open back plate (patent #5,171,128) allows this turn to be made with a minimum of turbulence and loss. Also, the extra-wide blade design helps deliver a larger air volume for a given impeller diameter. The TSL impeller improves overall efficiency and reduces overall sound levels.

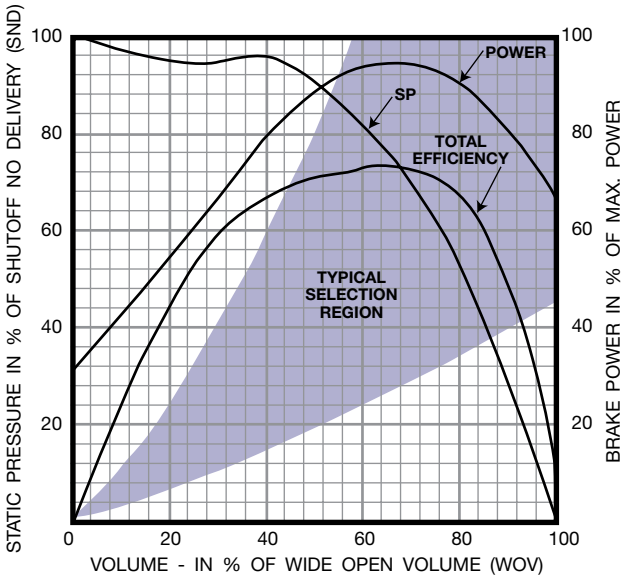


Model TSL Design: Streamlined airflow makes use of the open back plate impeller design.



Competition's Design: Turbulent airflow causes loss of efficiency.

Typical Non-overloading Characteristic Curve For Model TSL Tubular Centrifugal Fans



Horizontal Construction

Horizontal Base Mounted (HBM) — Support legs are provided at each end of the fan for floor mounting.

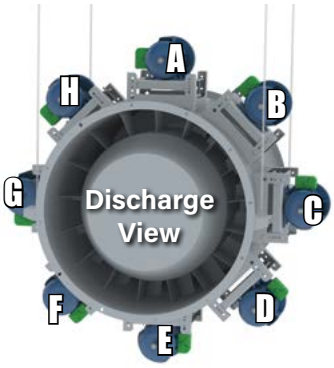
Horizontal Ceiling Hung (HCH) — For duct mounted fans, four suspension clips are welded to the fan casing to allow ceiling suspension using rod hangers.

Vertical Construction

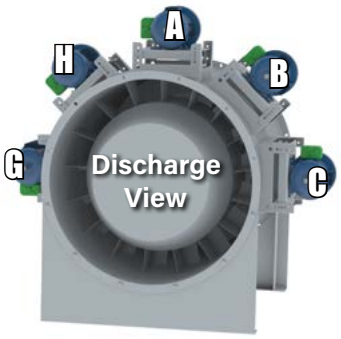
Vertical construction is available in sizes 122 through 542. Consult factory for larger sizes.

Floor or Ceiling Mounted — Four vertical brackets are welded to either end of the fan housing. Bracket location is determined by airflow direction and support details (see drawing below).

Roof Mounted — A curb cap provides weathertight seal for roof curb mounted fans. A stack cap and weather cover are also available for the upblast style roof ventilator.



HCH
Horizontal Ceiling Hung



HBM
Horizontal Base Mounted

VRM
Vertical Roof Mounted

VUI
Vertical Discharge Up, Floor Mount Support Brackets On Inlet

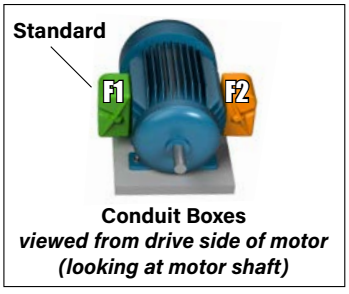
VUO
Vertical Discharge Up,Ceiling Hung Support Brackets On Outlet

VUN
Vertical Up No Brackets

VDI
Vertical Discharge Down, Ceiling Hung Support Brackets On Inlet

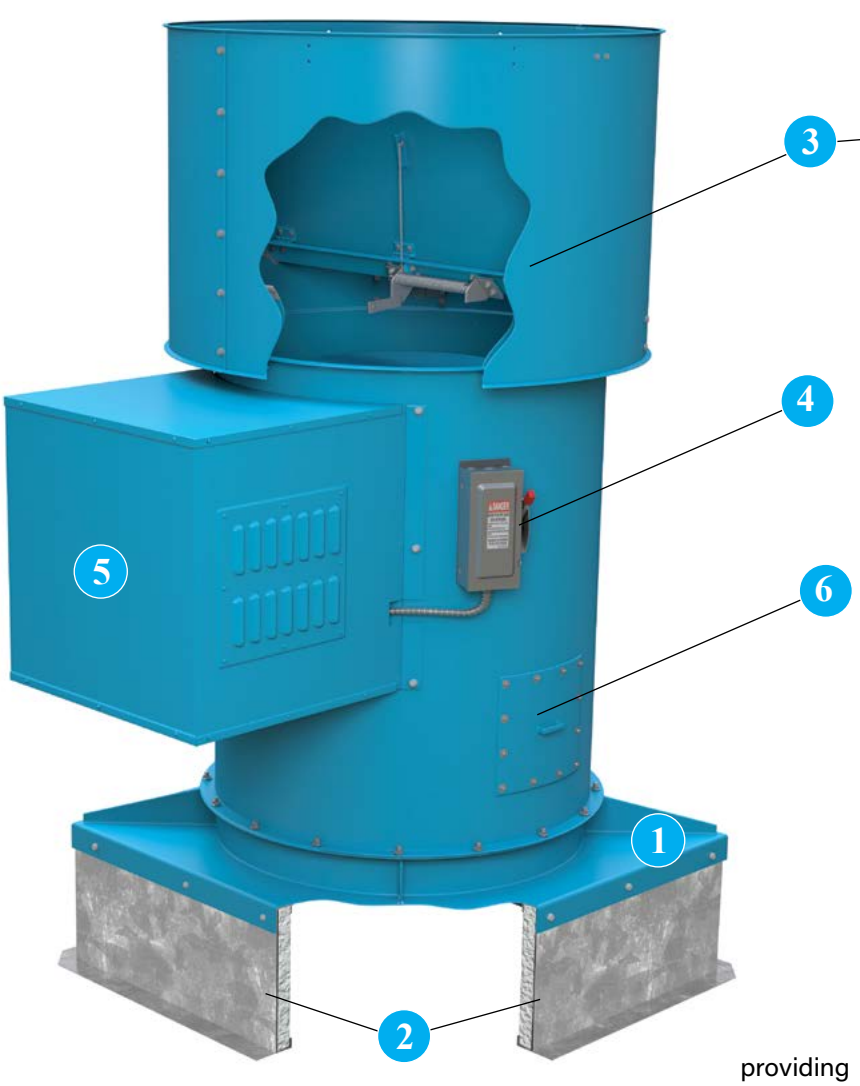
VDO
Vertical Discharge Down, Floor Mount Support Brackets On Outlet

VDN
Vertical Down No Brackets



Conduit Boxes
viewed from drive side of motor (looking at motor shaft)

OPTIONS/ACCESSORIES



Fusible
Link Assembly

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1 **Curb Cap** can be supplied with a curb cap, attached to the fan's inlet flange for curb mounting.

2 **Insulated Roof Curb** Standard roof curbs are 12" high and are constructed of heavy-duty galvanized steel and include 1 1/2" thick insulation. Contact factory for other roof curb options.

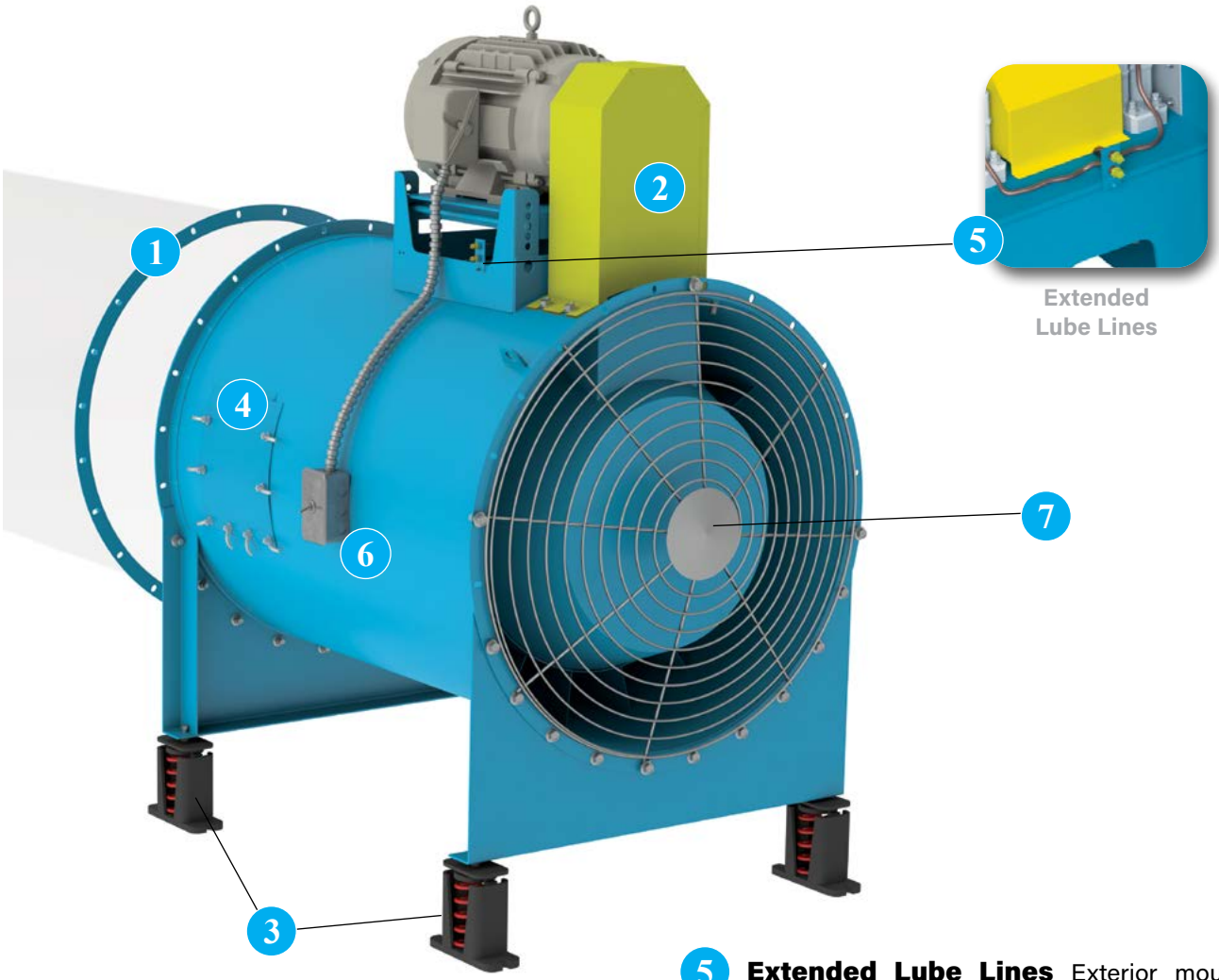
3 **Stack Cap with Fusible Link** TSL units can be provided with a stack cap for rooftop mounting. Stack caps are designed for vertical discharge with butterfly type dampers to seal out the weather when the fan is shut off and minimal flow obstruction when the fan is operating. A fusible link assembly can be added to the standard butterfly dampers in the stack cap. When the temperature through the ventilator exceeds 165°F, the fusible link releases a spring operated damper opener, providing gravity ventilation in case electricity to the ventilator is interrupted in a fire. See page 12, Table 2 for minimum flow rates.

4 **NEMA 3R Disconnect Switch** Provided with a NEMA 3R rain-tight disconnect switch, externally mounted when ODP or TEFC motors are used. Available shipped loose for field mounting and wiring or factory mounted and wired.

5 **Weather Cover** For outdoor installations, the weather cover completely encloses the motor and V-belt drive from the elements. Provided with slots for ventilation, the cover is easily removable for inspection and maintenance. Weather covers are available for either horizontal or vertical flow fans.

6 **Bolted Access Door** For quick impeller inspection and maintenance. Access doors are specified where examination and cleaning of the fan interior is required.

OPTIONS/ACCESSORIES



Extended
Lube Lines

1 **Companion Flanges** For ease of installation of adjacent ductwork, companion flanges can be provided. Flanges are rolled angle rings, drilled to match the fan's inlet or outlet flange.

2 **Belt Guard** Available in Arrangement 9 belt driven fans, the belt guard encloses the motor sheave and V-belts. The guard is easily removable for inspection and maintenance.

3 **Vibration Isolation** Model TSL fans can be provided with spring or rubber-in-shear isolators as an option. Spring isolators can be provided for floor mount or ceiling hung orientation.

4 **Quick Open Access Door** For quick impeller inspection and maintenance. Access doors are specified where examination and cleaning of the fan interior is required.

5 **Extended Lube Lines** Exterior mounting zerk fittings are available with lines to the fan shaft bearings for relubrication from outside the unit.

6 **NEMA 1 Disconnect Switch** Available shipped loose for field mounting and wiring or factory mounted and wired with ODP or TEFC motors.

7 **Inlet and Outlet Screens** Safety screening can be provided for installation in the fan inlet or outlet.

Other Accessories Include:

- Hinged Weather Cover
- Magnetic Damper Latches
- Piezometer Ring
- Pressure Transducers
- Shaft Seal
- Variable Inlet Vanes

PREFABRICATED ROOF CURBS

Canted Roof Curbs

- Constructed of 18-gauge galvanized steel with continuously-welded seams
- Large 3" built-in 45° cant to accommodate roofing material to top of curb. Cant is beveled at corners for better support of roofing material
- Wood nailer ($1^1/_2$") secured to top ledge
- Lined with $1^1/_2$" fiberglass fire-resistant, sound-absorbing insulation
- Damper shelf standard
- Options: Aluminum (16-gauge) construction, burglar security bars, metal liner (galvanized or aluminum), special heights up to 24", single- or double-pitched curbs for sloping roofs

Self-Flashing & Straight Sided Roof Curbs

- Constructed of 18-gauge galvanized steel with continuously-welded seams
- Wide base plate (flashing) to insure watertight seal to roof
- Top ledge covered with $^3/_{16}$" polystyrene gasket for weather seal and to reduce metal-to-metal conducted noise
- Lined with $1^1/_2$" fiberglass fire-resistant, sound-absorbing insulation
- Damper shelf standard
- Straight-sided roof curbs are constructed with the same features as the self-flashing curbs, but are sized smaller to allow for field supplied cants and roofing material to be brought up to the top of the curb
- Options: Aluminum (16-gauge) construction, burglar security bars, metal liner (galvanized or aluminum), special heights up to 24", wood nailer ($1^1/_2$") secured to top ledge in lieu of polystyrene gasket, single- or double-pitched curbs for sloping roofs

Self-Flashing Vented Roof Curbs

For High Temperature Applications

- Completely assembled unit, easier to install and less expensive than a field constructed curb
- Constructed of 18-gauge galvanized steel with continuous welded seams and wide base flashing for watertight seal to roof
- Meets NFPA-96 code requirements
- Top ledge covered with $^3/_{16}$" polystyrene gasket
- Furnished with ventilation slots

Curb Adapters

- Constructed of heavy-gauge galvanized steel with continuously-welded seams
- Top ledge covered with $^3/_{16}$" polystyrene gasket to reduce metal-to-metal conducted noise and act as a weather seal
- Available in enlarger or reducer (shown) models

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

NEMA 1 Disconnect Switch

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

NEMA 3R Disconnect Switch

A NEMA 3R, rain proof, disconnect is available shipped loose for field mounting and wiring or factory mounted and wired externally.

NEMA 4 Disconnect Switch

A NEMA 4, water and dust tight, disconnect is available shipped loose for field mounting and wiring or factory mounted and wired externally.

NEMA 7/9 Disconnect Switch

A NEMA 7/9 disconnect switch is recommended on fans with explosion proof motors. The NEMA 7/9 switch is designed for use with fans operating in hazardous environments. Available shipped loose for field mounting and wiring. (Not shown.)

NEMA 1
Disconnect Switch

NEMA 3R
Disconnect Switch

NEMA 4
Disconnect Switch

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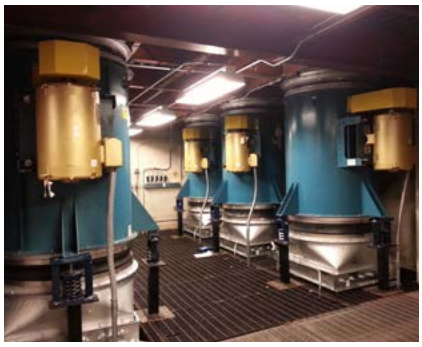
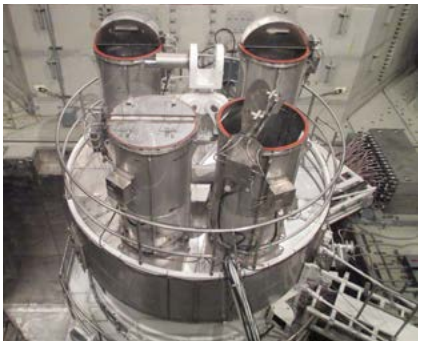
INSTALLATION PHOTOS



Animal Research Lab



Nuclear Reactor Head Cooling

Sewage Treatment Odor Control

Table 1. Maximum RPM, Impeller Weights and WR^2 (moment of inertia in lb-ft^2)

FAN SIZE	CLASS I			CLASS II			CLASS III		
	MAX. RPM	WEIGHT LB	WR^2 LB-FT^2	MAX. RPM	WEIGHT LB	WR^2 LB-FT^2	MAX. RPM	WEIGHT LB	WR^2 LB-FT^2
122	3583	14	1.8	4676	19	2.6	—	—	—
150	2927	20	4.3	3819	26	5.8	—	—	—
182	2237	32	9.3	2917	36	10	3689	57	15
200	2042	38	13	2662	41	14	3367	64	20
222	1835	62	23	2393	62	23	3026	92	35
245	1667	74	35	2173	74	35	2748	105	49
270	1486	86	51	1938	86	51	2441	121	71
300	1338	101	77	1745	119	95	2197	141	107
330	1216	123	114	1586	144	134	1998	183	179
365	1081	157	185	1410	181	216	1776	243	293
402	981	194	273	1279	216	321	1611	278	404
445	887	274	430	1157	328	563	1457	405	672
490	806	317	622	1051	384	822	1323	468	968
542	728	411	1060	949	480	1237	1195	576	1506
600	658	524	1705	858	573	1854	1081	680	2212
660	598	748	2573	780	807	2888	983	965	3576
730	541	944	4230	705	944	4250	888	1121	5039
807	489	1151	6595	638	1217	7080	833	1356	8032
890	444	1841	12706	579	1843	12606	729	1920	13674

Table 2. Minimum Volume Required to Open Stack Cap

SIZE	CFM
122	1051
150	1707
182	2532
200	3527
222	3527
245	4693
270	6574
300	7605
330	8712
365	11158
402	15891
445	15891
490	20904
542	26613

NOTE: The terminal velocity of rain is approximately 2,000 feet per minute. Selections below this point are not recommended if rain entry into the building is a concern.

Table 3. Bare Fan Weights (lb)

FAN SIZE	ARRANGEMENT 1			ARRANGEMENT 9		
	CLASS I	CLASS II	CLASS III	CLASS I	CLASS II	CLASS III
122	—	—	—	220	240	—
150	—	—	—	240	260	—
182	355	391	430	273	300	330
200	396	436	479	330	363	379
222	460	506	556	360	396	435
245	540	594	653	405	446	490
270	680	748	822	490	539	598
300	1050	1155	1270	780	838	943
330	1450	1595	1754	1010	1111	1222
365	1600	1760	1936	1250	1375	1512
402	1990	2189	2407	1400	1540	1694
445	2465	2712	2983	1900	2090	2299
490	3000	3300	3630	2400	2640	2904
542	3700	4070	4477	3200	3520	3872
600	5200	5720	6292	4300	4730	5203
660	6500	7150	7865	5850	6435	7078
730	9000	9900	10890	7800	8580	9438
807	11000	12100	13810	9900	10890	11979
890	14500	15950	17545	13000	14300	15730

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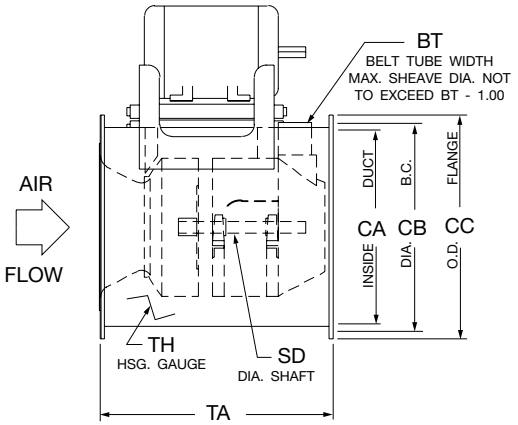
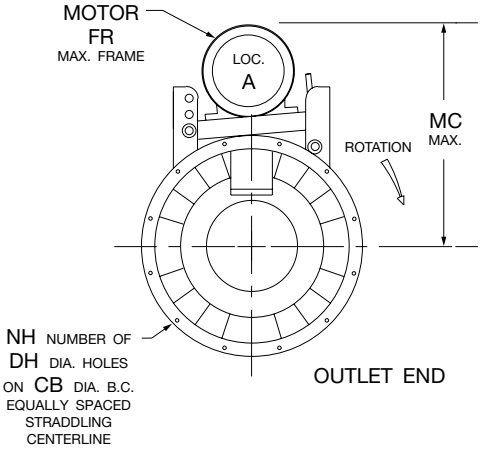
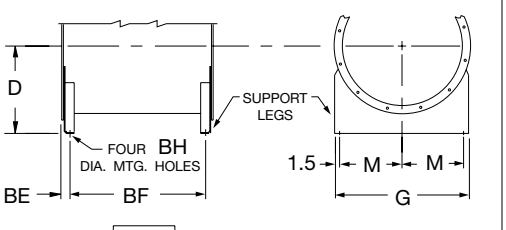
Horizontal

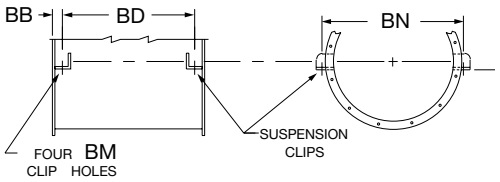




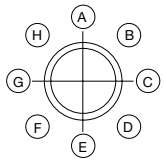
HOR - HORIZONTAL DISCHARGE



HBM HORIZONTAL BASE MOUNTED



HCH HORIZONTAL CEILING HUNG



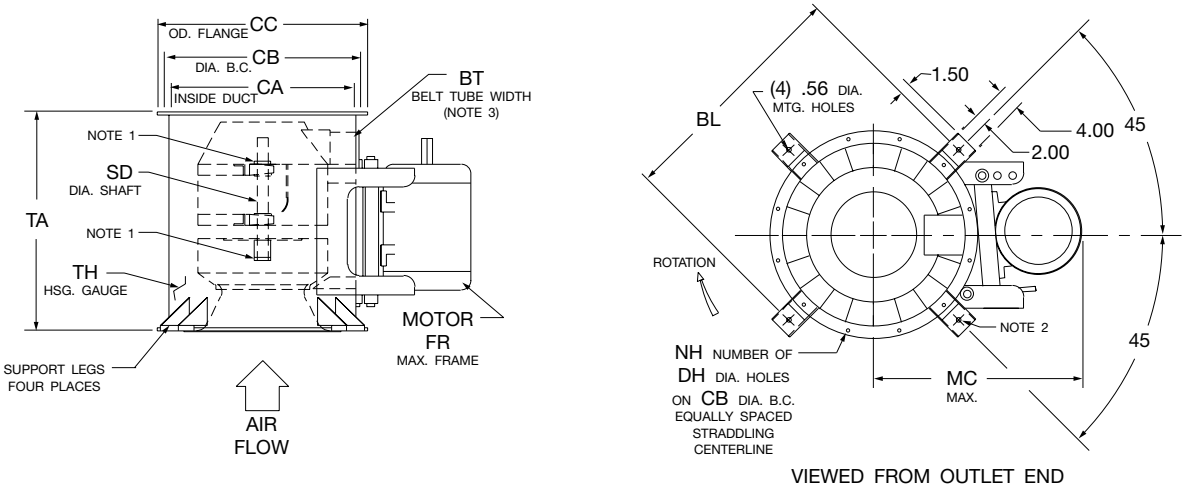
MOTOR LOCATION
VIEWED FROM
OUTLET END

SIZE	BB	BD	BE	BF	BH	BM	BN	BT	CA	CB	CC	D	DH	FR	G	M	MC	NH	SD			TA	TH
																			CL I	CL II	CL III		
122	1.00	23.25	1.06	23.13	0.44	0.56	19.75	5.25	16.56	18.50	19.75	12.00	0.56	184T	19.75	8.38	23.13	8	1.000	1.000	—	25.25	10
150	1.00	27.75	1.06	27.63	0.44	0.56	23.50	6.50	20.25	22.13	23.38	14.00	0.56	215T	23.38	10.19	25.73	8	1.000	1.187	—	29.75	10
182	1.50	28.25	1.06	29.19	0.44	0.56	27.75	6.50	24.69	26.75	28.00	16.00	0.69	256T	28.00	12.50	34.45	12	1.187	1.437	1.437	31.25	12
200	1.50	31.50	1.06	32.44	0.56	0.56	30.13	7.25	27.06	29.13	30.31	18.00	0.81	256T	30.31	13.66	36.20	12	1.437	1.437	1.437	34.50	12
222	1.50	35.50	1.31	35.94	0.56	0.56	33.13	8.00	30.06	32.13	33.38	20.00	0.81	286T	33.38	15.19	39.15	12	1.437	1.437	1.437	38.50	12
245	1.50	40.75	1.31	41.19	0.56	0.81	36.25	8.93	33.13	35.13	36.38	21.00	0.81	365T	36.38	16.69	43.61	12	1.437	1.937	1.937	43.75	12
270	1.50	44.25	1.31	44.69	0.56	0.81	39.63	9.75	36.50	38.50	39.75	23.00	0.81	365T	39.75	18.38	46.41	12	1.687	1.937	2.187	47.25	12
300	1.50	49.50	1.31	49.88	0.56	0.81	43.75	10.93	40.56	43.13	44.88	25.00	0.81	365T	44.88	20.94	49.38	16	1.937	2.187	2.437	52.50	10
330	1.50	54.75	1.31	55.13	0.56	0.81	47.88	12.00	44.63	47.25	49.00	27.00	0.81	365T	49.00	23.00	50.81	16	1.937	2.187	2.437	57.75	10
365	2.00	60.25	1.56	61.13	0.56	0.81	52.56	13.25	49.38	52.00	53.75	29.00	0.81	365T	53.75	25.38	53.75	16	1.937	2.437	2.437	64.25	10
402	2.00	66.75	1.69	67.38	0.81	0.81	57.56	14.75	54.38	57.50	59.75	33.00	0.81	405T	59.75	28.38	61.77	16	2.187	2.437	2.937	70.75	10
445	2.00	74.63	1.69	75.25	0.81	0.81	63.38	16.25	60.19	63.25	65.50	36.00	0.81	445T	65.50	31.25	66.72	16	2.437	2.687	3.437	78.63	10
490	2.00	82.38	1.69	83.00	0.81	0.81	69.44	18.00	66.25	69.38	71.63	39.00	0.81	445T	71.63	34.31	70.18	24	2.687	2.937	3.437	86.38	10
542	2.00	91.63	2.44	90.75	0.81	1.06	76.56	19.88	73.38	77.00	79.75	43.00	0.81	445T	79.75	38.38	74.01	24	2.937	3.437	3.937	95.63	10
600	2.50	100.63	2.44	100.75	0.81	1.06	85.38	22.13	81.19	84.75	87.50	47.00	0.81	445T	87.50	42.25	78.41	24	2.937	3.437	3.937	105.63	10
660	2.50	111.38	2.44	111.50	1.06	1.06	93.56	24.25	89.31	92.88	95.63	52.00	0.81	445T	95.63	46.31	82.77	24	3.437	3.937	3.937	116.38	10
730	2.50	123.50	2.44	123.63	1.06	1.06	102.94	26.88	98.75	104.38	107.13	57.00	0.81	445T	107.13	52.06	87.76	24	3.437	3.937	4.437	128.50	10
807	2.56	137.00	2.44	137.25	1.06	1.06	115.50	29.50	109.25	114.63	117.63	62.00	0.81	445T	117.63	57.31	93.25	24	3.937	4.437	4.937	142.13	7
890	2.56	151.13	2.44	151.38	1.06	1.06	126.56	32.63	120.31	126.06	128.75	68.50	0.81	445T	128.75	62.88	99.06	24	3.937	4.937	5.437	156.25	7

AC14028B

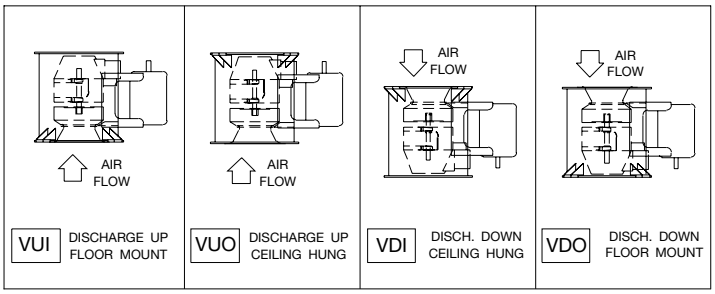
DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE ON REQUEST.

Vertical



VIEWED FROM OUTLET END

VUI - VERTICAL UP DISCHARGE WITH FLOOR MOUNT SUPPORT LEGS (SEE NOTE 2)



NOTES:

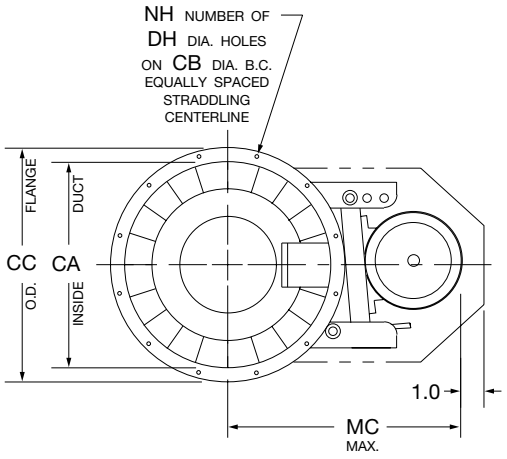
1. Two locking collars are included to prevent shifting of components.
2. Support legs shown are provided as an accessory.
3. Maximum sheave diameter not to exceed "BT" - 1.00.

SIZE	BL	BT	CA	CB	CC	DH	FR	MC	NH	SD			TA	TH
										CL I	CL II	CL III		
122	21.75	5.25	16.56	18.50	19.75	0.56	184T	23.13	8	1.000	1.000	—	25.25	10
150	25.38	6.50	20.25	22.13	23.38	0.56	215T	25.73	8	1.000	1.187	—	29.75	10
182	33.00	6.50	24.69	26.75	28.00	0.69	256T	34.45	12	1.187	1.437	1.437	31.25	12
200	35.38	7.25	27.06	29.13	30.31	0.81	256T	36.20	12	1.437	1.437	1.437	34.50	12
222	38.00	8.00	30.06	32.13	33.38	0.81	286T	39.15	12	1.437	1.437	1.437	38.50	12
245	41.38	8.93	33.13	35.13	36.38	0.81	365T	43.61	12	1.437	1.937	1.937	43.75	12
270	44.75	9.75	36.50	38.50	39.75	0.81	365T	46.41	12	1.687	1.937	2.187	47.25	12
300	49.88	10.93	40.56	43.13	44.88	0.81	365T	49.38	16	1.937	2.187	2.437	52.50	10
330	54.00	12.00	44.63	47.25	49.00	0.81	365T	50.81	16	1.937	2.187	2.437	57.75	10
365	58.75	13.25	49.38	52.00	53.75	0.81	365T	53.75	16	1.937	2.437	2.437	64.25	10
402	64.75	14.75	54.38	57.50	59.75	0.81	405T	61.77	16	2.187	2.437	2.937	70.75	10
445	70.50	16.25	60.19	63.25	65.50	0.81	445T	66.72	16	2.437	2.687	3.437	78.63	10
490	76.63	18.00	66.25	69.38	71.63	0.81	445T	70.18	24	2.687	2.937	3.437	86.38	10
542	84.75	19.88	73.38	77.00	79.75	0.81	445T	74.01	24	2.937	3.437	3.937	95.63	10

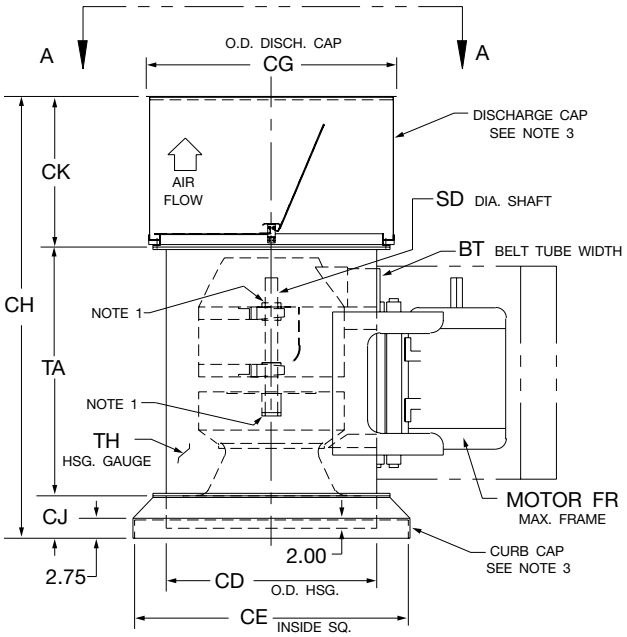
AC14029

DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE ON REQUEST.

Vertical w/ Curb & Dishcarge Cap



VIEW A - A
WITHOUT DISCHARGE CAP



VRM - VERTICAL DISCHARGE WITH DISCHARGE CAP AND CURB CAP

NOTES:

1. Two locking collars are included to prevent shifting of components.
2. Maximum sheave diameter not to exceed BT - 1.00.
3. Discharge cap and curb cap are optional accessories.

SIZE	BT	CA	CB	CC	CD	CE	CG	CH	CJ	CK	DH	FR	MC	NH	SD			TA	TH
															CL I	CL II	CL III		
122	5.25	16.56	18.50	19.75	16.81	23.75	27.00	45.75	5.50	15.00	0.56	184T	23.13	8	1.000	1.000	—	25.25	10
150	6.50	20.25	22.13	23.38	20.50	27.38	30.00	50.75	6.00	15.00	0.56	215T	25.73	8	1.000	1.187	—	29.75	10
182	6.50	24.69	26.75	28.00	24.88	34.88	34.00	55.88	6.63	18.00	0.69	256T	34.45	12	1.187	1.437	1.437	31.25	12
200	7.25	27.06	29.13	30.31	27.25	37.38	40.00	62.25	6.75	21.00	0.81	256T	36.20	12	1.437	1.437	1.437	34.50	12
222	8.00	30.06	32.13	33.38	30.25	40.38	40.00	66.25	6.75	21.00	0.81	286T	39.15	12	1.437	1.437	1.437	38.50	12
245	8.93	33.13	35.13	36.38	33.31	43.38	46.00	74.75	7.00	24.00	0.81	365T	43.61	12	1.437	1.937	1.937	43.75	12
270	9.75	36.50	38.50	39.75	36.69	46.75	46.00	78.50	7.25	24.00	0.81	365T	46.41	12	1.687	1.937	2.187	47.25	12
300	10.93	40.56	43.13	44.88	40.81	51.00	53.00	87.25	7.75	27.00	0.81	365T	49.38	16	1.937	2.187	2.437	52.50	10
330	12.00	44.63	47.25	49.00	44.88	55.13	59.00	95.50	7.75	30.00	0.81	365T	50.81	16	1.937	2.187	2.437	57.75	10
365	13.25	49.38	52.00	53.75	49.63	59.88	60.00	102.00	7.75	30.00	0.81	365T	53.75	16	1.937	2.437	2.437	64.25	10
402	14.75	54.38	57.50	59.75	54.63	64.88	67.00	111.75	8.00	33.00	0.81	405T	61.77	16	2.187	2.437	2.937	70.75	10
445	16.25	60.19	63.25	65.50	60.44	69.63	73.00	123.13	8.50	36.00	0.81	445T	66.72	16	2.437	2.687	3.437	78.63	10
490	18.00	66.25	69.38	71.63	66.50	78.00	80.00	135.38	9.00	40.00	0.81	445T	70.18	24	2.687	2.937	3.437	86.38	10
542	19.88	73.35	77.00	79.75	73.63	88.75	86.50	154.50	9.25	49.63	0.81	445T	74.01	24	2.937	3.437	3.937	95.63	10

AC14030D

DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE ON REQUEST.

Model

TSL

Fans shall be Model TSL Tubular Centrifugal Inline Fans, of the non-overloading design, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

Fans shall be designed for maximum efficiency. Fans shall have a sharply rising pressure characteristic extending through the operating range and continuing to rise well beyond the efficiency peak to assure quiet and stable operation under all conditions. Horsepower characteristics shall be truly self-limiting and shall reach a peak in the normal selection area.

PERFORMANCE — Fans shall be tested in accordance with AMCA 211 and AMCA 311 test codes for air moving devices and shall be guaranteed by the manufacturer to deliver rated published performance levels. Fans shall be licensed to bear the AMCA certified ratings seal for both sound and air.

HOUSING — Housings shall be cylindrical and welded steel throughout. Inlets shall be fully streamlined. Housings shall be suitably braced to prevent vibration or pulsation.

IMPELLER — Impeller diameters shall be in accordance with the standard sizes adopted by AMCA Standard 99-2414 for centrifugal tubular type fans. Fan impeller sizes 122 and 150 shall have single thickness plate-type blades. Fan impeller sizes 182 and larger shall have die-formed airfoil blades designed for maximum efficiency and quiet operation. Blades shall be continuously-welded to the back plate and impeller cone. Partial welding is not acceptable. The impeller shall be specifically designed for inline fans to offer a higher and broader efficiency range. The back plate of the impeller shall be designed to offer lower resistance to the air leaving the impeller. Impellers shall be statically and dynamically balanced and the complete fan assembly shall be test balanced at or near the operating speed at the factory prior to shipment.

SHAFT — Shafts shall be AISI 1040 or 1045 hot rolled steel, accurately turned, ground, polished and ring-gauged for accuracy. Shafts shall be sized for the first critical speed of at least 1.43 times the maximum speed.

BEARINGS — Bearings shall be heavy-duty, grease lubricated, anti-friction ball or roller, self-aligning, pillow block type and selected for an average bearing life (AFBMA L-50) in excess of 200,000 hours at the maximum fan RPM. Bearings shall be equipped with extended lubrication lines with grease fittings outside of the fan housing.

DRIVE — Motor sheaves shall be cast iron, variable pitch on applications 20 HP and smaller, and fixed pitch on 25 HP and larger.

INLET VANES — Inlet vanes, where specified, shall be of the external type for sizes 122 & 150 and nested for sizes 182 and larger. Inlet vanes shall be designed for economical, stable and efficient air volume control at partial load conditions.

ACCESSORIES — When specified, accessories such as belt guards (standard or OSHA), weather covers, bolted or quick-opening access doors, inlet and outlet companion flanges, and other accessories as required by the application shall be provided by Twin City Fan & Blower to maintain one source responsibility.

FINISH AND COATING — The entire fan assembly, excluding the shaft, shall be properly washed and pretreated before application of a rust-preventative primer, if called out on the order. After the fan is completely assembled, a finish coat of paint shall be applied to the entire assembly, if called out on the order. The fan shaft shall be coated with a petroleum-based rust protectant. Aluminum components shall be unpainted.

FACTORY RUN TEST — All fans with motors and drives mounted by Twin City Fan shall be completely assembled and test run as a unit at the specified operating speed prior to shipment. Each impeller shall be statically and dynamically balanced in accordance with ANSI/AMCA 204-96 “Balance Quality and Vibration Levels for Fans” to Fan Application Category BV-3, Balance Quality Grade G6.3. Balance readings shall be taken by electronic type equipment in the axial, vertical and horizontal directions on each of the bearings. Records shall be maintained and a written copy shall be available upon request.

INDUSTRIAL PROCESS AND COMMERCIAL VENTILATION SYSTEMS

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
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