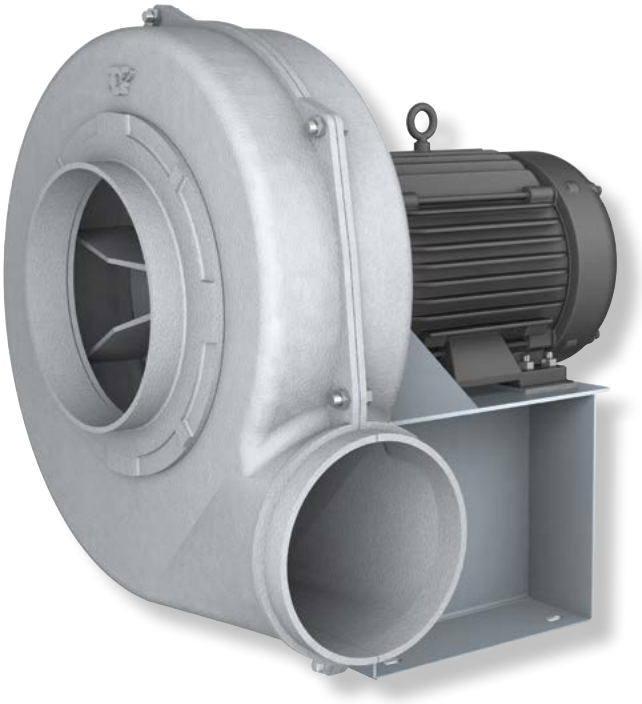
TCF

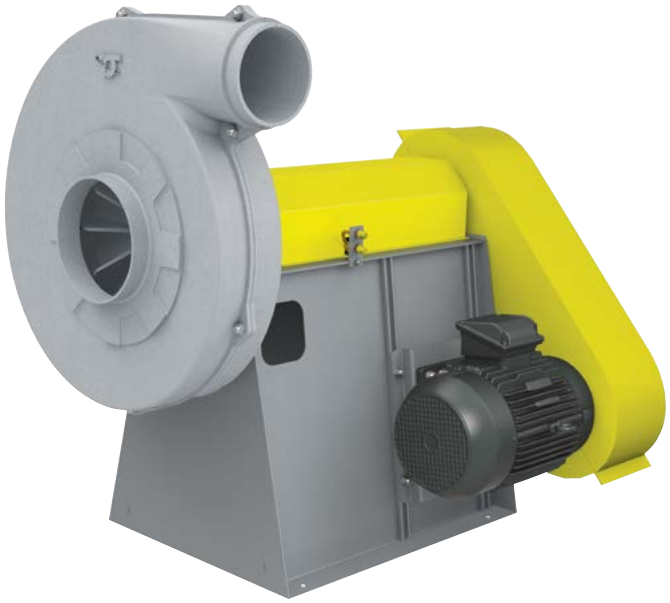
TWIN CITY FAN

INDUSTRIAL PROCESS AND
COMMERCIAL VENTILATION SYSTEMS

# CAST ALUMINUM PRESSURE BLOWERS

## TPD | TPB





Arrg. 9 TPB Cast Aluminum Pressure Blower
Shown with Optional Belt, Shaft and Bearing Guards

# Overview

## TPD | TPB

Twin City Fan & Blower's Cast Aluminum Pressure Blowers are the perfect choice for providing low volume, high pressure air for cooling, ventilating and exhaust systems that handle dust, materials or corrosive fumes. These direct drive (TPD) or belt driven (TPB) blowers feature heavy-duty cast aluminum housings with cast aluminum impellers for extra long life and trouble-free service.

### Typical Applications Include

Laboratory Fume Hood Exhaust, Polishing and Grinding Machine Dust Removal, Welding Fume Exhaust, Combustion Air Supply, Raw Materials, Waste and Fibers Conveying, Drying Processes, General Exhaust Applications

### Impeller Types

Radial Bladed, Backward Curved

### Arrangements

Available in direct and belt driven Arrangements 1, 4, 4HI, 9

### Optional Construction

Flanged inlet and outlet

# 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.

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

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# Overview

## TPD | TPB

### Performance Flexibility

Cast aluminum pressure blowers are available in seven housing sizes that can be fitted with multiple impeller and inlet configurations to meet any performance requirement. In the event that performance needs change, a simple change of the impeller and/or inlet can be made. These fans have been air and sound tested in Twin City Fan's AMCA accredited Test Laboratory.

### Capabilities

- Seven housing sizes: 8", 9", 10", 12", 14", 15" and 18"
- Six inlet sizes: 4", 5", 6", 7", 8" and 10"
- Two impeller types: Radial Bladed and Backward Curved
- 81 unique housing, impeller and inlet combinations
- Airflow to 2,400 CFM
- Static pressures to 22" w.g.
- Arrangements 1, 4, 4HI and 9 available
- Temperatures to 150°F for Arrangements 4 and 4HI and 200°F for Arrangements 1 and 9

### Model TPD

7" to 18" impeller diameters
Airflow to 2,800 CFM
Static pressure to 20" w.g.

### Model TPB

8" to 18" impeller diameters
Airflow to 2,400 CFM
Static pressure to 22" w.g.

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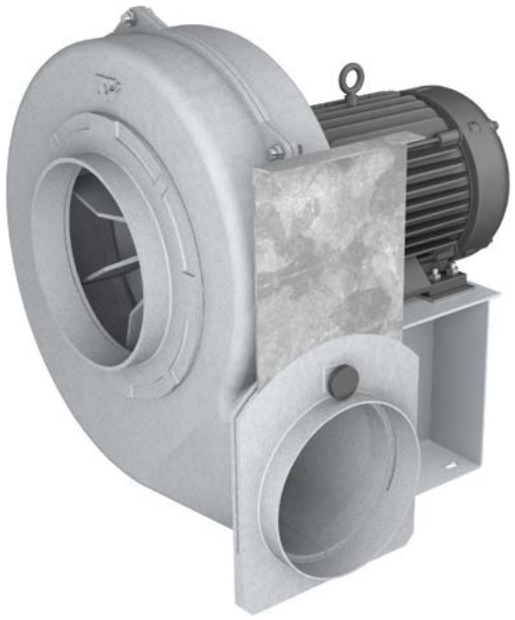
Bag Break Station Application

# CONSTRUCTION FEATURES



Arrg. 9 TPD Cast Aluminum Pressure Blower
Shown with Slide Gate Damper

**Corrosion Resistant**
Cast aluminum construction requires no painting and provides for a maintenance free fan in moist air environments.

**Spark Resistant**
Cast aluminum impellers and housings meet AMCA Type B spark resistant requirements.

**Self-Cleaning Impellers**
Radial bladed impellers provide a self-cleaning, maintenance free design.

**High Strength/Lightweight**
Cast aluminum housings are lightweight and provide superior strength over other materials.

**Split Housings**
Housings are split and provide ease of maintenance.

**Rotatable Housings**
Housings are field rotatable to seven standard discharges.

**Easy Duct Connections**
Round inlet and outlets provide easy duct connections.

**Reduced Noise Levels**
Cast housings absorb sound and reduce noise levels.

**Non-Magnetic**
Aluminum is non-magnetic, making these fans ideal for electronic applications.

**Bearings**
200,000 hour average life bearings are provided on belt driven arrangements.

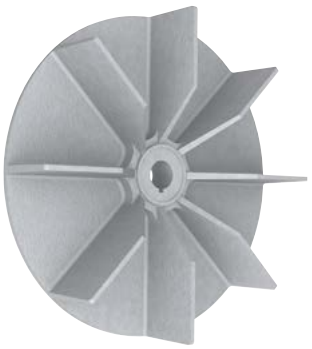
**Motor Pedestals**
Heavy-gauge steel motor pedestals provide rigidity. Not provided on Arrangement 4HI fans.

## IMPELLER DESIGN

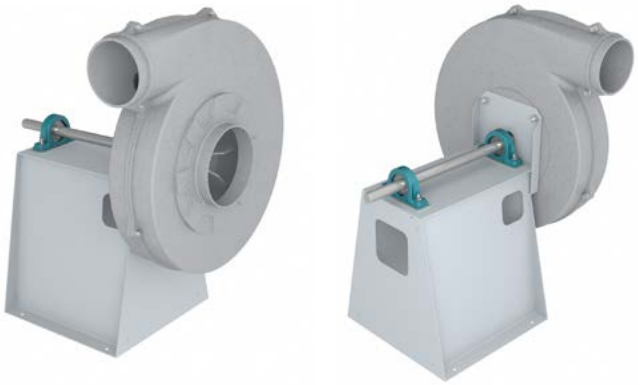
**Radial Bladed - Type "R"**
Cast aluminum radial bladed impellers are designed for material handling applications and are inherently self-cleaning.

**Backward Curved - Type "B"**
Cast aluminum backward curved impellers are designed for clean air applications where low sound levels are a consideration.

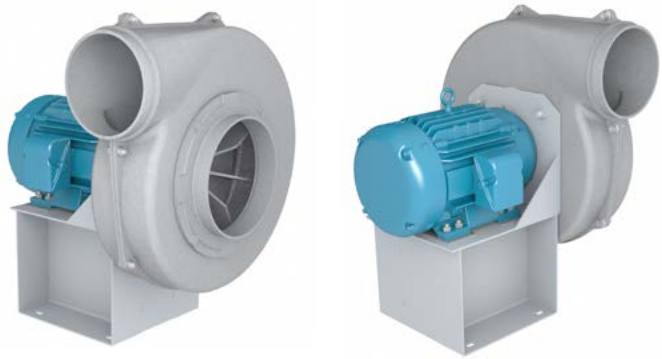
Type "B" Backward
Curved Impeller



Type "R" Radial
Blade Impeller

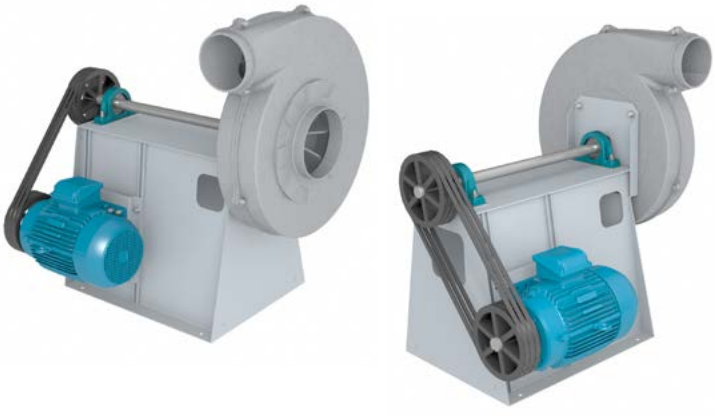


**Arrangement 1**
Belt driven fan with the impeller overhung on the shaft. Fan bearings are mounted on a pedestal out of the airstream. Recommended for contaminated air applications or high temperature applications up to 200°F.



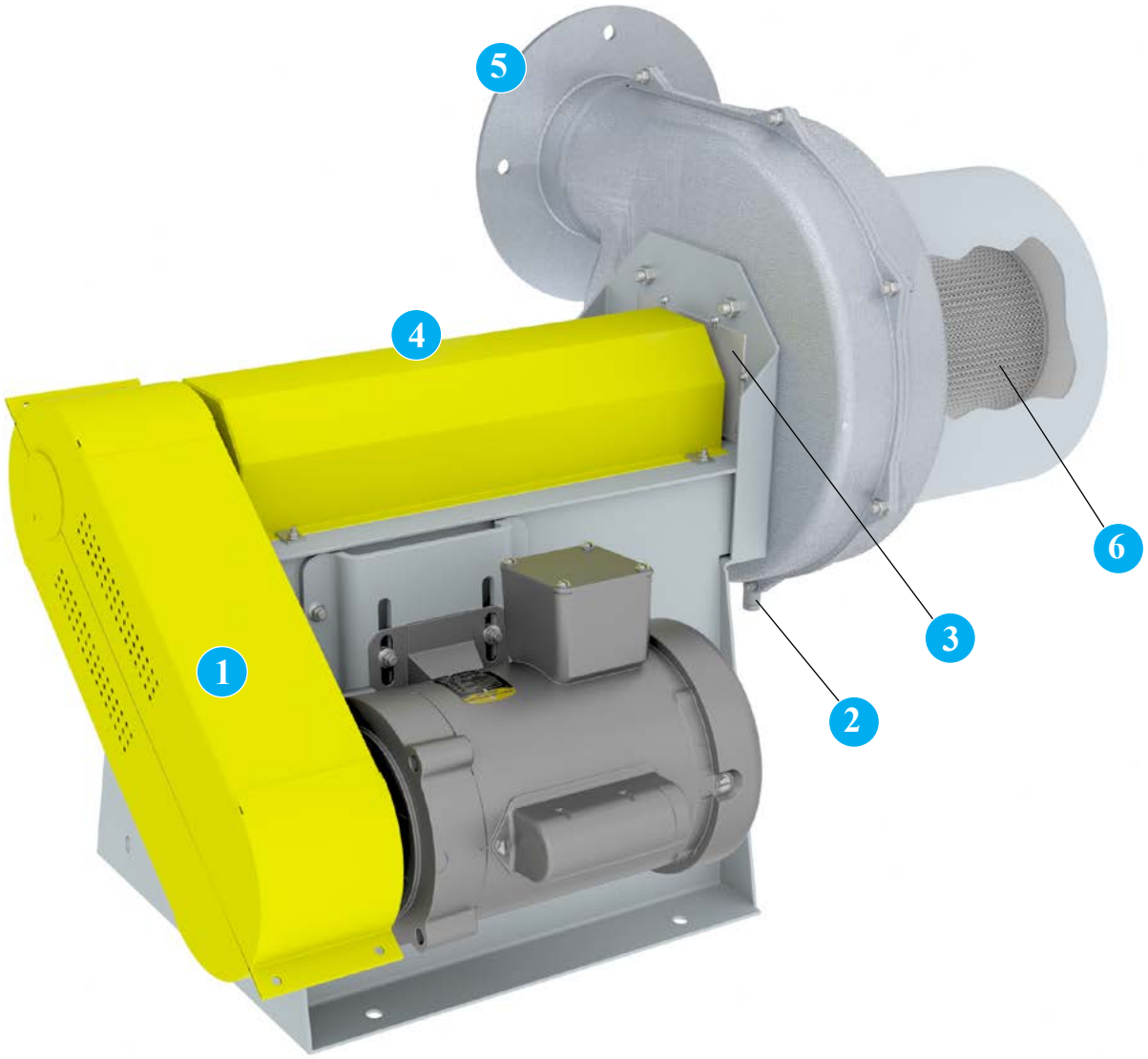
**Arrangement 4**
Direct drive fan with the impeller mounted directly to the motor shaft. Compact and easy to maintain design for applications where exact requirements are established. Maximum temperature is 150°F.

**Arrangement 4HI**
Arrangement 4 fan with the motor mounted in a vertical position without a motor pedestal.



**Arrangement 9**
Belt driven fan with the motor mounted on the side of the bearing pedestal. Designed for contaminated air applications or applications where temperatures will reach 200°F. Unit ships as a complete assembly with motor and drive mounted.

# OPTIONS/ACCESSORIES




1 **Belt Guard** OSHA belt guard covers the sheaves and belts, protecting personnel from moving drive parts. Solid sheet, painted steel construction.

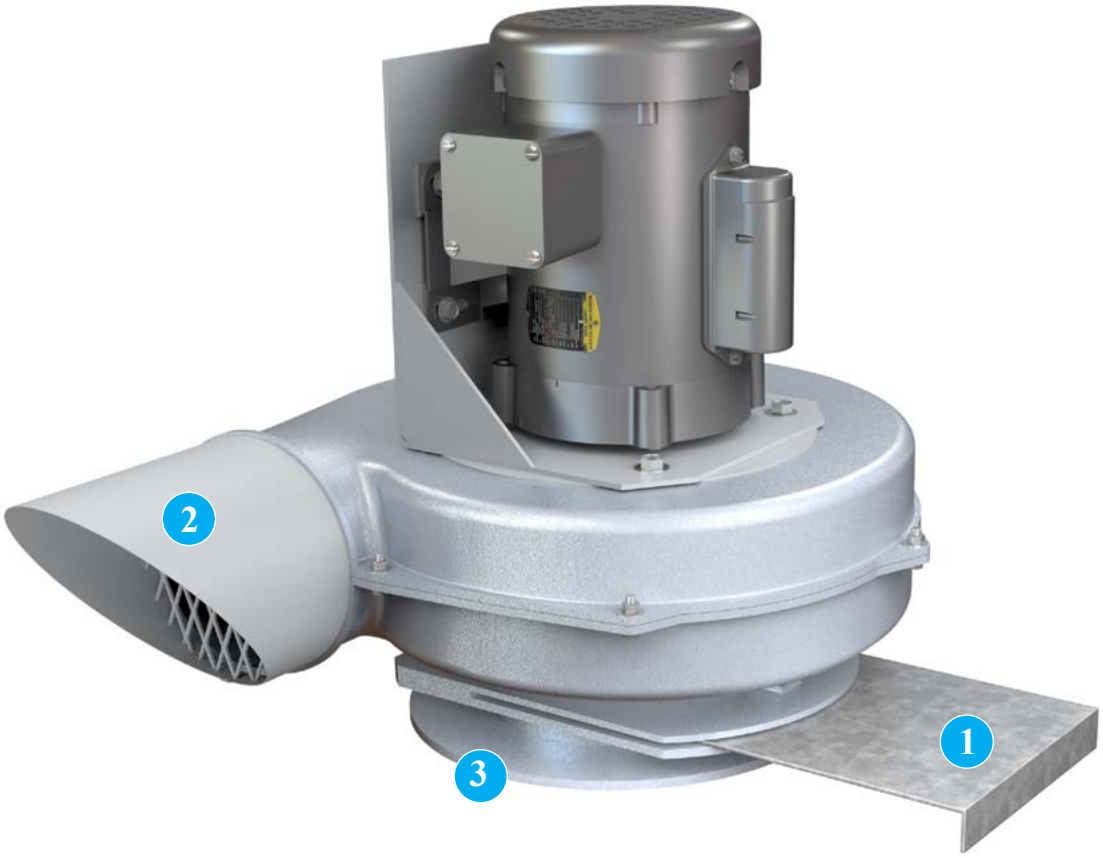
2 **Drain with Plug** Threaded pipe coupling welded to the lowest point in the housing scroll. All fans come with a weep hole in the bottom of the housing as standard.

3 **Shaft Seal** A shaft seal reduces leakage and protects the bearings and motor from a contaminated airstream. Shaft seals are heavy Teflon type secured to the inside of the fan housing.

4 **Shaft & Bearing Guard** Sheet metal guards cover shaft and bearings and come with extended lube lines to a common point outside of the guard. A guard spanning the shaft between the bearings is available to provide open access to bearings for lubrication and vibration monitoring.

5 **Punched Outlet Flange** Punched outlet flanges are installed on the fan outlet.

6 **Inlet Filter** Filters are recommended where heavy dust conditions exist. Filter housing constructed of carbon steel with baked enamel finish. Polyester, paper or wire-mesh filter media available as well as a powder coated steel hood. Specify standard stub inlet of fan for mounting.




1 **Slide Gate Damper** Dampers feature cast aluminum frame with galvanized steel gate. Available on inlet or outlet. Slide gate type dampers provide manual adjustment of airflow and flexibility to meet any application.

2 **Weather Hood** Weather hood with bird screen provides protection from the elements. The enamel-finished steel hood is available for the inlet or outlet.

3 **Unpunched Inlet Flange** Unpunched inlet flanges are installed on the fan outlet. Optional inlet flange can be supplied punched if required.

**Other Accessories Include:**

- Inlet/Outlet Guard

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# STANDARD CONFIGURATIONS

## CLOCKWISE (CW) - ROTATION & DISCHARGE (ROTATION VIEW FROM DRIVE SIDE)

**UBD**
Upblast
CW 360

**TAU**
Top Angular Up
CW 45

**THD**
Top Horizontal
CW 90

**TAD**
Top Angular Down
CW 135

**DBD**
Downblast
CW 180

**BHD**
Bottom Horizontal
CW 270

**BAU**
Bottom Angular Up
CW 315

## COUNTER CLOCKWISE (CCW) - ROTATION & DISCHARGE (ROTATION VIEW FROM DRIVE SIDE)

**UBD**
Upblast
CCW 360

**TAU**
Top Angular Up
CCW 45

**THD**
Top Horizontal
CCW 90

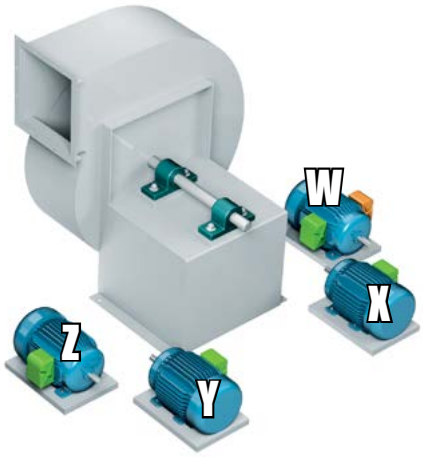
**TAD**
Top Angular Down
CCW 135

**DBD**
Downblast
CCW 180

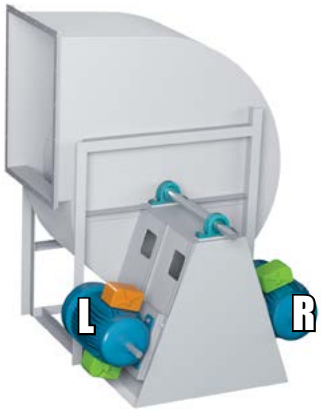
**BHD**
Bottom Horizontal
CCW 270

**BAU**
Bottom Angular Up
CCW 315

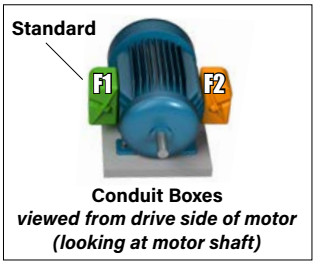
## Motor Positions




**Arrangement 1**




**Arrangement 9**




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

Pneumatic conveying embraces both dust collecting and conveying. In a typical system the amount of material transported is low compared to the amount of air used. Usually, a large quantity of fast-flowing air is needed to assure entrainment of material. Consequently, the materials moved have little effect on the performance of the fan.

Where the sole purpose of the pneumatic system is to convey as much material as possible, different factors are involved.

*Table 1. Dust Collecting & Fume Removal Duct Velocities*

| MATERIAL | VELOCITY (FPM) |
|---|---|
| BUFFING LINT, DRY | 3000 |
| BUFFING LINT, WET | 4000 |
| CARBON BLACK | 3500 |
| COTTON | 3000 |
| COTTON LINT | 2000 |
| GRAIN DUST | 3000 |
| Grinding Dust | 5000 |
| JUTE DUST | 3500 |
| JUTE LINT | 3000 |
| METALLIZING BOOTH | 3500 |
| PAINT SPRAY | 2000 |
| SAWDUST, DRY | 3000 |
| SAWDUST, WET | 4000 |
| Shavings, Dry | 3000 |
| SHAVINGS, WET | 4000 |
| SOLDERING FUMES | 2000 |
| Wood Flour | 2000 |
| WOOL | 4000 |

*Chart A. Friction For Conveying*

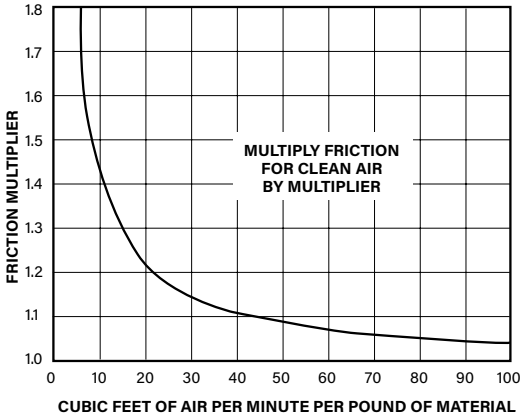



*Table 2. Material Conveying Duct Velocities*

| MATERIAL | VELOCITY (FPM) |
|---|---|
| COTTON | 4000 |
| FLOUR | 3500 |
| GROUND FEED | 5000 |
| HEMP | 4500 |
| JUTE | 4500 |
| SAWDUST | 4000 |
| VEGETABLE PULP, DRY | 4500 |
| WOOD FLOUR | 4000 |
| WOOL | 4500 |

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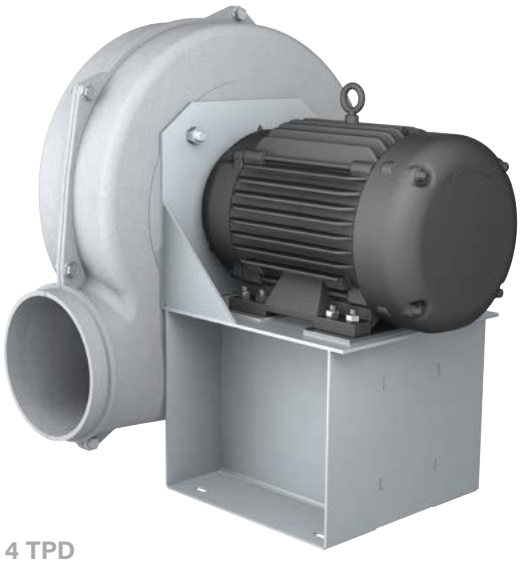


Arrg. 4 TPD

## Dust Collecting & Fume Removal

All airborne material, except fumes and the finest of dusts, will settle in ducts and fans if a minimum velocity is not maintained. In dust collecting, the air quantity is determined by the hood size and velocity, therefore it is usually most economical to maintain the lowest duct velocity that will keep the material in suspension. Raising the velocity raises the horsepower. For example, assume 1,000 CFM through a 12" pipe at 1,280 FPM with 0.2" resistance per 100 feet. Doubling the velocity while maintaining the same CFM would require an $8^{1}/_{2}$" pipe at 1.2" resistance per 100 feet.

Some state codes give minimum velocities. Where no code applies, the figures shown in Table 1 on page 9 may be used.

When choosing the fan size for a dust collecting system, be certain that the velocity at the fan inlet and outlet is not lower than the minimum velocity required to keep the dust suspended.

## Material Conveying

The problem of inducing the material into a conveying system is often a difficult one. The best overall method is one that feeds the material into the airstream evenly by either mechanical or gravity means. It is often required that the fan pick the material up as well as convey it. One misbelief frequently encountered is that the ability of a system to pick up material is due to the fan's suction pressure. Suction in itself is useless. It is the velocity moving past the material that induces it to flow. For this reason, it is important not to plug up the entrance of the duct with material to be conveyed.

When figuring entrance loss to a conveying system, it should be remembered that where an appreciable amount of bulky material is to be moved, it may reduce the effective area of the inlet and thus increase the entrance velocity and loss.

Since the purpose of a conveying system is to move a lot of material (as contrasted to dust collecting), the ratio of material to air volume is quite important. Experience has established good minimum velocities for common materials and these are given in Table 2 on page 9.

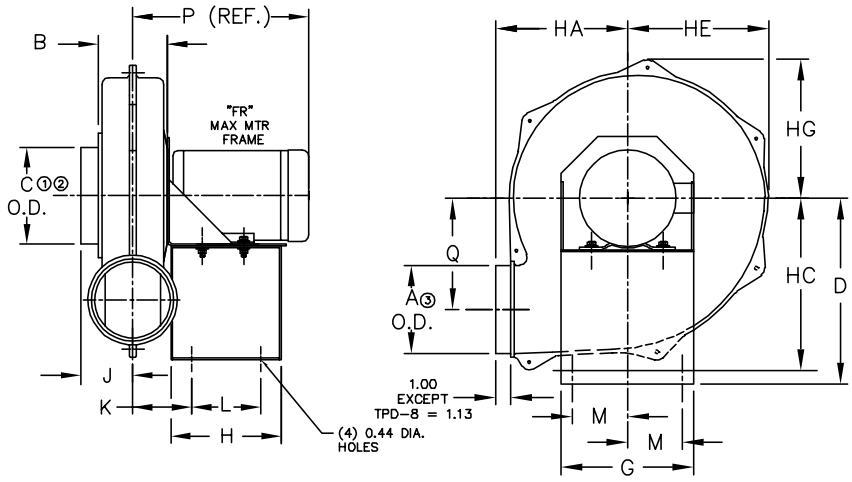
Wherever material is airborne, the fan must provide the energy to move the material. In small concentrations this is negligible, but in most conveying systems it is important. It is reflected as an increased resistance. Chart A on page 9 gives the ratio of friction loss of the conveying system to the same system handling clean air.

The material conveying capacity of a system varies as the square of the velocity since it is a function of the velocity pressure.

# INSTALLATION

General Exhaust Application

# Direct Drive – Arrangement 4




① TPD–14 also available with 6" and 8" inlets.
② TPD–15 and TPD–18 also available with 6" and 10" inlets.
③ All models: Discharge flange not available for downblast position.

**NOTES:**
01. CW shown, CCW similar but opposite.
02. See AC1001220 for inlet flange and optional outlet flange dimensions.
**03. Nominal inlet and outlet diameter.

| HOUSING SIZE | DIMENSIONS (IN.) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A** ③ | B | C** ①② | D | FR | G | H | HA | HC | HE | HG | J | K | L | M | P | Q |
| TPD-8 | 4.00 | 3.88 | 4.00 | 8.56 | 56C | 7.00 | 7.13 | 5.75 | 7.13 | 5.69 | 4.88 | 2.88 | 3.19 | 5.00 | 2.75 | 13.38 | 4.31 |
| TPD-9 | 4.00 | 4.00 | 5.00 | 10.44 | 56C | 7.00 | 7.88 | 7.44 | 8.94 | 7.25 | 6.50 | 3.13 | 3.38 | 5.75 | 2.75 | 13.56 | 5.63 |
| | | | | 11.88 | 143-145TC | 9.00 | 8.00 | | | | | | 4.19 | 5.00 | 3.75 | 14.19 | |
| TPD-10 | 5.00 | 5.00 | 6.00 | 10.44 | 56C | 7.00 | 7.88 | 8.00 | 10.25 | 9.44 | 7.75 | 3.38 | 3.56 | 5.75 | 2.75 | 13.94 | 6.56 |
| | | | | 11.88 | 143-145TC | 9.00 | 8.00 | | | | | | 4.25 | 5.00 | 3.75 | 14.56 | |
| TPD-12 | 6.00 | 6.00 | 7.00 | 11.88 | 56C | 9.00 | 8.00 | 9.00 | 11.38 | 9.63 | 9.44 | 3.75 | 4.63 | 5.00 | 3.75 | 14.25 | 7.25 |
| | | | | | 143-145TC | 9.00 | 8.00 | | | | | | 4.63 | 5.00 | 3.75 | 14.88 | |
| | | | | | 182-184T | 12.00 | 11.75 | | | | | | 5.00 | 8.75 | 4.94 | 16.25 | |
| TPD-14 | 6.00 | 6.00 | 7.00 | 15.19 | 143-145T | 12.00 | 11.75 | 9.81 | 12.13 | 10.38 | 10.06 | 4.25 | 5.50 | 8.75 | 4.94 | 15.13 | 8.06 |
| | | | | | 182-184T | | | | | | | | | | | 16.50 | |
| | | | | | 213-215T | | | | | | | | | | | 19.81 | |
| TPD-15 | 8.00 | 8.00 | 8.00 | 15.19 | 182-184T | 12.00 | 11.75 | 11.00 | 13.00 | 11.44 | 10.81 | 4.88 | 6.13 | 8.75 | 4.94 | 17.32 | 7.88 |
| | | | | | 213-215T | | | | | | | | | | | 20.63 | |
| | | | | | 254-256T | 16.50 | 16.00 | | | | | | | 13.00 | | 25.19 | |
| TPD-18 | 6.00 | 8.00 | 8.00 | 15.19 | 182-184T | 12.00 | 11.75 | 11.50 | 14.56 | 12.75 | 12.25 | 4.25 | 5.63 | 8.75 | 4.94 | 16.69 | 10.69 |
| | | | | | 213-215T | | | | | | | | | | | 20.00 | |
| | | | | | 254-256T | 16.50 | 16.00 | | | | | | | 13.00 | | 24.56 | |

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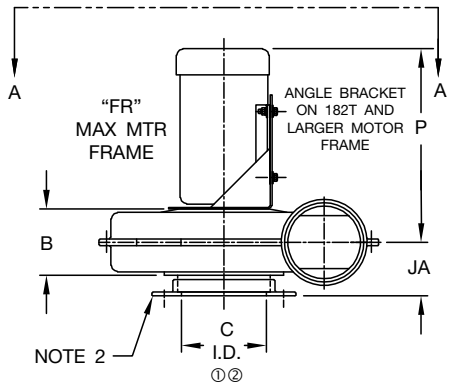
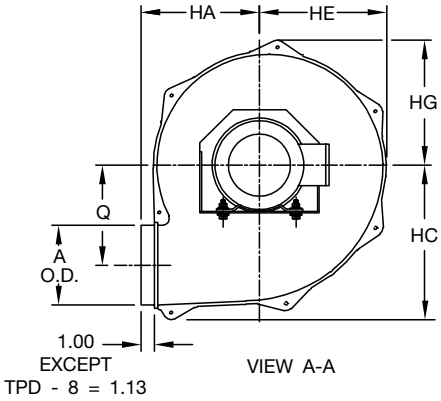
## Direct Drive – Arrangement 4HI




| HOUSING SIZE | DIMENSIONS (IN.) | |
|---|---|---|
| | FR | P |
| TPD-8 | 56C | 13.38 |
| TPD-9 | 56C | 13.56 |
| | 143-145TC | 14.19 |
| TPD-10 | 56C | 13.94 |
| | 143-145TC | 14.56 |
| TPD-12 | 56C | 14.25 |
| | 143-145TC | 14.88 |
| | 182-184T | 16.25 |
| TPD-14 | 143-145T | 15.13 |
| | 182-184T | 16.50 |
| | 213-215T | 19.80 |
| TPD-15 | 182-184T | 17.32 |
| | 213-215T | 20.63 |
| TPD-18 | 182-184T | 16.69 |
| | 213-215T | 20.00 |

① TPD–14 also available with 5.50" and 7.50" inlets.
② TPD–15 and TPD–18 also available with 5.50" and 9.69" inlets.

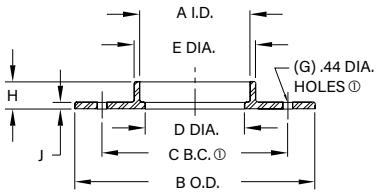
**NOTES:**
01. CW shown, CCW similar but opposite.
02. See AC1001220B for inlet flange and optional outlet flange dimensions.
*03. Nominal outlet diameter.

| HOUSING SIZE | DIMENSIONS (IN.) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | A* | B | C ①② | HA | HC | HE | HG | JA | Q |
| TPD-8 | 4.00 | 3.88 | 3.63 | 5.75 | 7.13 | 5.69 | 4.88 | 3.25 | 4.31 |
| TPD-9 | 4.00 | 4.00 | 4.56 | 7.44 | 8.94 | 7.25 | 6.50 | 3.44 | 5.63 |
| TPD-10 | 5.00 | 4.19 | 5.50 | 8.00 | 10.25 | 9.44 | 7.75 | 3.69 | 6.56 |
| TPD-12 | 6.00 | 4.94 | 6.44 | 9.00 | 11.38 | 9.63 | 9.44 | 4.06 | 7.25 |
| TPD-14 | 6.00 | 5.75 | 6.44 | 9.81 | 12.13 | 10.38 | 10.06 | 4.56 | 8.06 |
| TPD-15 | 8.00 | 6.88 | 7.50 | 11.00 | 13.00 | 11.44 | 10.81 | 5.19 | 7.88 |
| TPD-18 | 6.00 | 5.63 | 7.50 | 11.50 | 14.56 | 12.75 | 12.25 | 4.56 | 10.69 |

AC1001219G

## Accessories

### Inlet & Outlet Flange

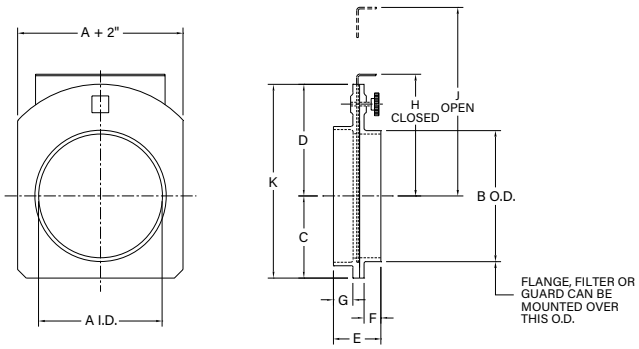



| INLET AND OUTLET SIZE | DIMENSIONS (IN.) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | A | B | C ① | D | E | G ① | H | J |
| 4 | 4.06 | 9.00 | 7.50 | 3.69 | 4.56 | 4.00 | 1.25 | 0.34 |
| 5 | 5.06 | 11.00 | 8.50 | 4.56 | 5.56 | 4.00 | 1.25 | 0.31 |
| 6 | 6.06 | 11.00 | 9.50 | 5.50 | 6.56 | 4.00 | 1.38 | 0.31 |
| 7 | 7.06 | 11.00 | 9.00 | 6.44 | 7.69 | 8.00 | 1.25 | 0.34 |
| 8 | 8.06 | 13.50 | 11.75 | 7.50 | 8.63 | 8.00 | 1.28 | 0.31 |
| 10 | 10.06 | 16.00 | 14.25 | 9.69 | 10.56 | 8.00 | 1.34 | 0.38 |

AC1001220B

NOTES:
① Holes will not be drilled unless customer specifies. If drilled per std. dimensions shown, holes will be on centerline unless otherwise specified. Custom hole patterns available at additional charge.
2. Discharge flanges not available on downblast discharge configurations.

### Slide Gate Damper

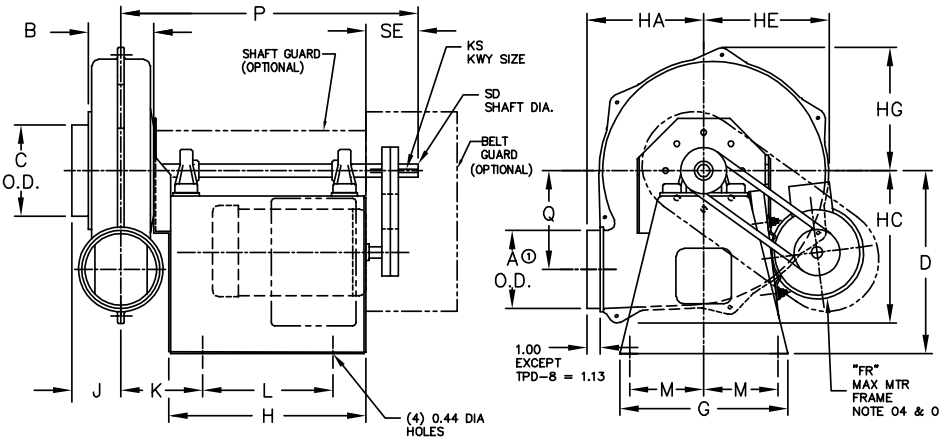



| INLET AND OUTLET SIZE | DIMENSIONS (IN.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | J | K |
| 4 | 4.06 | 3.94 | 3.25 | 4.50 | 2.69 | 1.00 | 1.06 | 5.63 | 9.00 | 7.75 |
| 5 | 5.06 | 4.94 | 3.50 | 5.50 | 2.56 | 1.13 | 0.88 | 6.13 | 10.50 | 9.00 |
| 6 | 6.06 | 5.94 | 4.00 | 5.50 | 2.69 | 1.06 | 1.00 | 6.25 | 11.50 | 9.50 |
| 7 | 7.06 | 6.94 | 4.50 | 5.50 | 2.88 | 1.13 | 1.13 | 6.25 | 12.50 | 10.00 |
| 8 | 8.06 | 7.94 | 5.00 | 6.75 | 2.81 | 1.00 | 1.19 | 7.75 | 15.00 | 11.75 |
| 10 | 10.06 | 9.94 | 6.00 | 8.00 | 3.06 | 1.31 | 1.00 | 9.00 | 18.50 | 14.00 |

AC1001221A

**NOTE:**
1. Slide gate damper not available on downblast or bottom angular down discharge positions.

# Belt Driven – Arrangements 1 or 9




① All models: Discharge flange not available for downblast position.

**NOTES:**
01. CW shown, CCW similar but opposite.
02. See AC1001220 for optional inlet flange and outlet flange dimensions.
**03. Nominal inlet and outlet diameter.
04. Arr. 1 – Less motor
Arr. 9 – With motor
05. Standard motor is on right (as shown) regardless of rotation. Left side optional.

| HOUSING SIZE | DIMENSIONS (IN.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A** ① | B | C** | D | G | H | HA | HC | HE | HG |
| TPB-8 | 4.00 | 3.88 | 4.00 | 14.00 | 12.88 | 14.75 | 5.75 | 7.13 | 5.69 | 4.88 |
| TPB-9 | 4.00 | 4.00 | 5.00 | 14.00 | 12.88 | 14.75 | 7.44 | 8.94 | 7.25 | 6.50 |
| TPB-10 | 5.00 | 4.19 | 6.00 | 14.00 | 12.88 | 14.75 | 8.00 | 10.25 | 9.44 | 7.75 |
| TPB-12 | 6.00 | 5.00 | 7.00 | 18.00 | 17.50 | 17.75 | 9.00 | 11.38 | 9.63 | 9.44 |
| TPB-14 | 6.00 | 5.75 | 7.00 | 18.00 | 17.50 | 17.75 | 9.81 | 12.13 | 10.38 | 10.06 |
| TPB-15 | 8.00 | 6.88 | 8.00 | 23.00 | 19.00 | 24.25 | 11.00 | 13.00 | 11.44 | 10.81 |
| TPB-18 | 6.00 | 5.63 | 8.00 | 23.00 | 19.00 | 24.25 | 11.50 | 14.56 | 12.75 | 12.25 |

| HOUSING SIZE | DIMENSIONS (IN.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | J | K | L | M | P | Q | SE | SD | KS | FR |
| TPB-8 | 2.88 | 5.38 | 10.00 | 5.69 | 21.13 | 4.31 | 3.00 | 0.75 | .19 x .09 | 56-145T |
| TPB-9 | 3.13 | 5.81 | 10.00 | 5.69 | 21.31 | 5.63 | 3.00 | 0.75 | .19 x .09 | 56-145T |
| TPB-10 | 3.38 | 5.88 | 10.00 | 5.69 | 21.44 | 6.56 | 3.00 | 0.75 | .19 x .09 | 56-145T |
| TPB-12 | 3.75 | 6.25 | 13.00 | 8.00 | 25.25 | 7.25 | 4.00 | 1.00 | .25 x .13 | 56-215T |
| TPB-14 | 4.25 | 6.75 | 13.00 | 8.00 | 25.81 | 8.06 | 4.00 | 1.44 | .38 x .19 | 56-215T |
| TPB-15 | 4.88 | 7.38 | 19.50 | 8.63 | 32.94 | 7.88 | 4.00 | 1.44 | .38 x .19 | 182-256T |
| TPB-18 | 4.25 | 6.88 | 19.50 | 8.63 | 32.44 | 10.69 | 4.00 | 1.69 | .38 x .19 | 182-256T |

AC1001218H

TCF
TWIN CITY FAN

# Models

## TPD | TPB

Furnish and install Model TPD/TPB Cast Aluminum Pressure Blowers, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota. Fans shall be of the size and arrangement as indicated in the fan schedule.

**HOUSINGS** — All housings shall be heavy-duty cast aluminum construction. All units shall be built with an adjustable discharge housing that can be field rotated to any of the eight standard positions.

**IMPELLERS** — The impeller shall be of the radial bladed back plate or backward curved design and shall be cast aluminum construction. Impellers shall be suitable for exhaust purposes where low volume and high pressure applications exist.

**BEARINGS** — Bearings on belt driven units shall be selected to have a minimum average life of 200,000 hours (L-10 minimum life of 40,000 hours) based on AFBMA rating designations. The bearings shall be pillow block type, heavy-duty, anti-friction, self-aligning ball bearings.

**SHAFTS** — Fan shafts on belt drive units shall be per AISI 1040 or 1045 hot rolled steel, accurately turned, ground, polished and ring-gauged for accuracy. Shafts shall be sized so that the first critical speed will be at least 1.40 times the maximum operating speed.

**MOTORS** — Fan motors shall be foot-mounted or C-Face NEMA Design B, standard industrial, continuous duty, ball bearing, variable torque type suitable for operation on voltage, phase and hertz, as listed in the fan schedule. Motor bearings shall have a minimum L-10 life, as defined by AFBMA, of at least 40,000 hours (200,000 hours average life).

**BALANCING** — Prior to shipment all fans shall be completely assembled and test run as a unit at the operating speed. Final balance of the completed fan assembly shall be taken by electronic equipment. Records of the vibration readings in the axial, vertical and horizontal planes shall be maintained and a written copy of this record shall be available upon request.

**SUBMITTALS** — Submittals for approval of equipment shall include copies of outline drawings and pressure-volume performance curves showing point of operation.

**ACCESSORIES** — The fans shall be supplied with the following optional accessories:

- Drain with Plug
- Flanged Inlet (Punching Optional)
- Flanged Outlet (Punching Optional)
- Inlet or Outlet Guard
- Inlet Filter
- Inlet Silencer
- Slide Gate Damper (Inlet or Outlet)
- OSHA Belt Guard (Arr. 1 or 9)
- OSHA Shaft and Bearing Guard (Arr. 1 or 9)
- Teflon Shaft Seal
- Floor Mount Isolators, RIS
- Floor Mount Isolators, Spring
- Weather Hood (Inlet or Outlet)
- CE Mark

**Fan Weights Without Motor**

| ARRANGEMENT | Size 8 | Size 9 | Size 10 | Size 12 | Size 14 | Size 15 | Size 18 |
|---|---|---|---|---|---|---|---|
| 4 | 30 | 35 | 40 | 50 | 85 | 105 | 115 |
| 4HI | 25 | 30 | 35 | 44 | 77 | 96 | 105 |
| 1 and 9 | 85 | 90 | 110 | 120 | 175 | 205 | 220 |

**Motor Weights**

| FRAME | 48 | 56 | 143T | 145T | 182T | 184T |
|---|---|---|---|---|---|---|
| ODP | 30 | 33 | 35 | 44 | 66 | 68 |
| TEFC | 30 | 33 | 35 | 44 | 67 | 75 |

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# INDUSTRIAL PROCESS AND COMMERCIAL VENTILATION SYSTEMS

CENTRIFUGAL FANS | UTILITY SETS | PLENUM & PLUG FANS | INLINE CENTRIFUGAL FANS
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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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WWW.TCF.COM

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