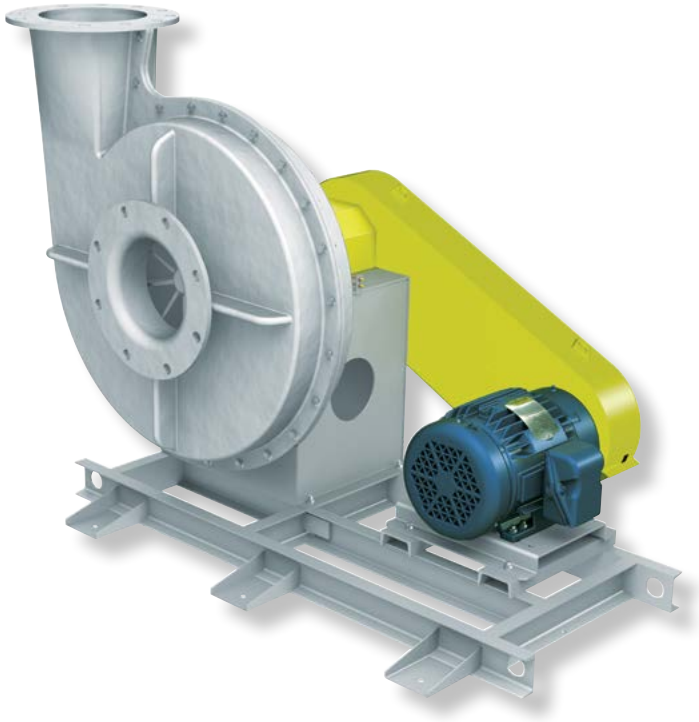
TCF
TWIN CITY FAN

INDUSTRIAL PROCESS AND
COMMERCIAL VENTILATION SYSTEMS

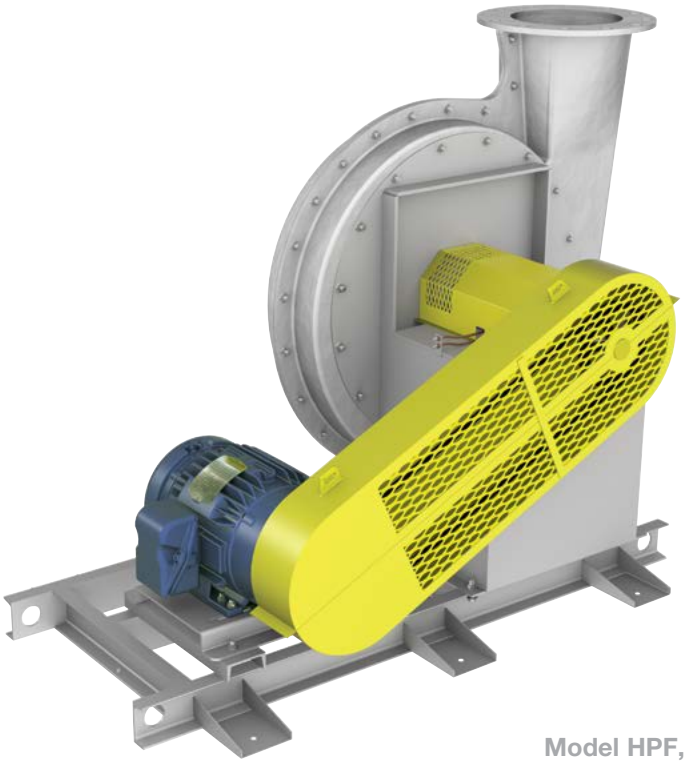
# FIBERGLASS PRESSURE BLOWER

## Model HPF



# Overview

## HPF



Model HPF, Arrg. 1

Twin City Fan & Blower Series 14 Fiberglass Pressure Blowers are recommended for relatively small, but constant, volumes of air at high static pressure.

All airstream parts are constructed of fiberglass reinforced plastic, with excellent corrosion resistance to most chemicals. The radial type impeller is resin transfer molded (RTM) from a fire-retardant resin-glass mixture providing optimal strength and corrosion resistance. All impellers are dynamically and statically balanced after testing.

Belt driven Arrangement 1 or direct drive Arrangement 8, 9 and 10 are available and are supplied with heavy-gauge steel bases, finished with two coats of light grey epoxy paint. Arrangement 1 can be furnished with a slide rail base for ease in adjusting belt tension.

Twin City Fan & Blower recommends an Arrangement 1 furnished with an optional steel unitary base constructed of structural channel and finished with two coats of light grey epoxy paint. This configuration allows assembly of the fan, motor and drive as an integral unit.

### Impeller Design

Cast from a resin-glass mixture providing optimal strength and corrosion resistance.

### Sizes and Performance

18" to 28" impeller diameters
Airflow to 4,700 CFM
Static pressure to 36" w.g.

HPF Impeller

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

# Accessories

## HPF

**Belt Guard** The belt guard is made of mild steel and is available for Arrangement 1 and 9 sizes.

**Coupling Guard** The coupling guard is made of mild steel and is available for all Arrangement 8 sizes.

**Inlet/Outlet Flange** Fiberglass flanges are standard on the inlet and outlet. Drilling of holes in the flange is available as an option.

**Shaft and Bearing Guard** The mild steel shaft and bearing guard is available on Arrangements 1, 8, 9 and 10.

**Shaft Seal** The Viton shaft seal rides against a heavy Teflon wear plate. It is suitable for operation up to 225°F.

**Housing Drain** The housing drain is provided with 1" PVC threaded pipe coupling located at the low point of the scroll. A plug is also available.

**Graphite Impregnation** Static grounding by graphite impregnation is available as an option.

**316 Stainless Steel Fan Shaft** A 316SS shaft is available as an option.

**Special Fiberglass Materials** Vinyl ester, resin, synthetic veil, abrasion-resistant construction and static-grounding are available as options.

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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

**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

**BHD**
Bottom Horizontal
CCW 270

**BAU**
Bottom Angular Up
CCW 315

# PERFORMANCE CORRECTION FOR TEMPERATURE & ALTITUDE

The performance tables in this catalog are based on standard air density: 70°F at sea level (0.075 lbs./cu.ft. density). The fan performance tables provide the fan RPM and brake horsepower requirements for the given CFM and static pressure, at standard air density.

When the fan performance is not at standard conditions, the performance must be converted to standard conditions before entering the fan performance tables. The fan performance is converted to standard conditions by using the "Temperature and Altitude Density Ratio" from Table 1 shown below.

The following is an example explaining how to convert the fan's performance to standard conditions.

**Example:** A Size 22/10 HPF is to provide 2,200 CFM at 12" SP, at 200°F at 2,000 ft. elevation (0.056 lbs./cu. ft. density).

- For 200°F and 2,000 ft. elevation, Table 1 shows a density ratio of 0.747.
- The operating static pressure is 12" SP.
- Using the temperature and altitude density ratio, the static pressure at standard conditions is determined as follows:

| *Operating Static Pressure* | ÷ | *Temp. & Alt. Density Ratio* | = | *Static Pressure at Standard Conditions* |
|---|---|---|---|---|

**For this example:**
12" SP ÷ 0.747 =16" SP at Standard Conditions

Turn to page 5 for the Size 22/10 HPF fan performance table. Using 2,200 CFM at 16" SP at standard conditions, find the RPM and brake horsepower. The answer is 2,471 RPM and 9.03 BHP. Note: 9.03 BHP is the brake horsepower required at standard conditions and is also referred to as the "cold brake horsepower" or "starting brake horsepower."

The actual brake horsepower at the operating condition of 200°F and 2,000 ft. elevation is determined by the following equation:

| *Brake HP at Standard Conditions* | x | *Temp. & Alt. Density Ratio* | = | *Brake HP at Operating Conditions* |
|---|---|---|---|---|

**For this example:**
9.03 x 0.747 = 6.75 BHP at Operating Conditions

Therefore, the Size 22/10 HPF fan providing 2,200 CFM at 12" SP, at 200°F will run at 2,471 RPM and will require 6.75 BHP at operating conditions and 9.03 BHP at starting.

**Maximum Safe Speeds**
When operating at temperatures other than 70°F, the maximum speed of the fan is affected. To determine the maximum speed, at the operating temperature, a "Maximum Safe Speed Factor" (Table 3) is applied to the maximum speed of the fan (Table 2).

**Example:** The maximum safe speed for a Size 22/10 HPF operating at 200°F is 3,600 RPM. The calculation is shown below.

| *Max. RPM at 70°F (Table 2)* | x | *Temp. Factor (Table 3)* | = | *Max. RPM at Operating Temp.* |
|---|---|---|---|---|

**For this example:**
3,600 x 0.85 = 3,060 Max. RPM at 200°F

*Table 2.*
*Max. Safe Speeds (at 70°F)*

| SIZE | MAX. RPM |
|---|---|
| 18/8 | 4000 |
| 22/10 | 3600 |
| 28/12 | 2500 |

*Table 3.*
*Max. Safe Speed Factors*

| TEMP. | FACTOR |
|---|---|
| 150°F | 1.00 |
| 200°F | 0.85 |
| 225°F | 0.60 |

*Table 4. Metric Conversion Factors*

| | ENGLISH | FACTOR | METRIC |
|---|---|---|---|
| **VOL. FLOW** | CFM | 0.000472 | $m^3/s$ |
| **PRESSURE** | SP | 0.24836 | kPa |
| **POWER** | BHP | 0.7457 | bkW |
| **VELOCITY** | FPM | 0.00508 | m/s |
| **DENSITY** | $lbs/ft^3$ | 16.018 | $kg/m^3$ |
| **SPEED** | RPM | 0.01667 | rps |
| **AREA** | $ft^2$ | 0.0929 | $m^2$ |
| **CIRCUMFERENCE** | ft. | 0.3048 | m |
| **DIAMETER** | in. | 25.4 | mm |

*Table 1. Temperature and Altitude Density Ratios*

| AIR TEMP °F | ALTITUDE IN FEET ABOVE SEA LEVEL | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1000 | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 | 8000 | 9000 | 10000 | 15000 |
| | BAROMETRIC PRESSURE IN INCHES OF MERCURY | | | | | | | | | | | |
| | 29.92 | 28.86 | 27.82 | 26.82 | 25.84 | 24.90 | 23.98 | 23.09 | 22.22 | 21.39 | 20.58 | 16.89 |
| –50 | 1.293 | 1.247 | 1.201 | 1.159 | 1.116 | 1.076 | 1.036 | 0.997 | 0.960 | 0.924 | 0.889 | 0.729 |
| 0 | 1.152 | 1.111 | 1.071 | 1.032 | 0.995 | 0.959 | 0.923 | 0.889 | 0.856 | 0.824 | 0.792 | 0.650 |
| 50 | 1.039 | 1.003 | 0.967 | 0.932 | 0.897 | 0.864 | 0.833 | 0.801 | 0.772 | 0.743 | 0.715 | 0.586 |
| 70 | 1.000 | 0.964 | 0.930 | 0.896 | 0.864 | 0.832 | 0.801 | 0.772 | 0.743 | 0.714 | 0.688 | 0.564 |
| 100 | 0.946 | 0.912 | 0.880 | 0.848 | 0.818 | 0.787 | 0.758 | 0.730 | 0.703 | 0.676 | 0.651 | 0.534 |
| 150 | 0.869 | 0.838 | 0.808 | 0.770 | 0.751 | 0.723 | 0.696 | 0.671 | 0.646 | 0.620 | 0.598 | 0.490 |
| 200 | 0.803 | 0.774 | 0.747 | 0.720 | 0.694 | 0.668 | 0.643 | 0.620 | 0.596 | 0.573 | 0.552 | 0.453 |
| 250 | 0.747 | 0.720 | 0.694 | 0.669 | 0.645 | 0.622 | 0.598 | 0.576 | 0.555 | 0.533 | 0.514 | 0.421 |

## HPF Size 18/8 Fiberglass High Pressure Blower

Impeller Dia.: 18" Tip Speed, FPM = 4.71 x Fan RPM Outlet Dia.: 8" Max. RPM 4000

| CFM | OV | 4" SP | | 6" SP | | 8" SP | | 10" SP | | 12" SP | | 14" SP | | 16" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 175 | 500 | 1426 | 0.32 | | | | | | | | | | | | |
| 350 | 1000 | 1413 | 0.42 | 1732 | 0.68 | 2004 | 0.99 | 2245 | 1.34 | 2464 | 1.72 | 2665 | 2.13 | 2852 | 2.56 |
| 525 | 1500 | 1440 | 0.58 | 1739 | 0.89 | 1999 | 1.23 | 2234 | 1.59 | 2448 | 1.98 | 2647 | 2.41 | 2832 | 2.87 |
| 700 | 2000 | 1498 | 0.80 | 1780 | 1.17 | 2026 | 1.56 | 2248 | 1.98 | 2454 | 2.41 | 2645 | 2.85 | 2826 | 3.32 |
| 875 | 2500 | 1579 | 1.07 | 1842 | 1.50 | 2077 | 1.96 | 2290 | 2.43 | 2486 | 2.92 | 2669 | 3.43 | 2842 | 3.96 |
| 1050 | 3000 | 1678 | 1.42 | 1923 | 1.91 | 2143 | 2.42 | 2348 | 2.96 | 2537 | 3.52 | 2714 | 4.09 | 2881 | 4.67 |
| 1225 | 3500 | 1791 | 1.86 | 2018 | 2.40 | 2226 | 2.97 | 2419 | 3.57 | 2600 | 4.19 | 2771 | 4.82 | 2933 | 5.47 |
| 1400 | 4000 | 1913 | 2.40 | 2128 | 3.01 | 2322 | 3.64 | 2505 | 4.29 | 2677 | 4.97 | 2840 | 5.66 | 2997 | 6.38 |
| 1575 | 4500 | 2041 | 3.06 | 2245 | 3.74 | 2430 | 4.43 | 2602 | 5.14 | 2766 | 5.87 | 2922 | 6.62 | 3071 | 7.38 |
| 1750 | 5000 | 2176 | 3.86 | 2368 | 4.59 | 2545 | 5.35 | 2710 | 6.13 | 2865 | 6.91 | 3014 | 7.71 | 3158 | 8.54 |
| 1925 | 5500 | 2313 | 4.78 | 2497 | 5.60 | 2666 | 6.42 | 2825 | 7.27 | 2974 | 8.12 | 3116 | 8.98 | 3252 | 9.84 |
| 2100 | 6000 | 2454 | 5.86 | 2631 | 6.77 | 2792 | 7.65 | 2944 | 8.55 | 3088 | 9.47 | 3225 | 10.40 | 3357 | 11.34 |

| CFM | OV | 18" SP | | 20" SP | | 22" SP | | 24" SP | | 26" SP | | 28" SP | | 30" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 175 | 500 | | | | | | | | | | | | | | |
| 350 | 1000 | 3029 | 3.02 | 3196 | 3.51 | | | | | | | | | | |
| 525 | 1500 | 3007 | 3.35 | 3172 | 3.86 | 3330 | 4.39 | 3480 | 4.93 | 3625 | 5.51 | 3765 | 6.10 | 3899 | 6.70 |
| 700 | 2000 | 2997 | 3.82 | 3160 | 4.34 | 3315 | 4.88 | 3464 | 5.45 | 3608 | 6.05 | 3746 | 6.66 | 3879 | 7.29 |
| 875 | 2500 | 3007 | 4.50 | 3165 | 5.05 | 3316 | 5.61 | 3462 | 6.20 | 3602 | 6.79 | 3738 | 7.41 | 3869 | 8.05 |
| 1050 | 3000 | 3039 | 5.27 | 3191 | 5.88 | 3337 | 6.51 | 3478 | 7.15 | 3614 | 7.80 | 3746 | 8.46 | 3874 | 9.13 |
| 1225 | 3500 | 3087 | 6.13 | 3235 | 6.81 | 3376 | 7.49 | 3513 | 8.19 | 3645 | 8.90 | 3772 | 9.62 | 3897 | 10.37 |
| 1400 | 4000 | 3147 | 7.10 | 3290 | 7.84 | 3428 | 8.59 | 3561 | 9.35 | 3689 | 10.11 | 3814 | 10.90 | 3935 | 11.69 |
| 1575 | 4500 | 3215 | 8.17 | 3354 | 8.97 | 3489 | 9.79 | 3618 | 10.61 | 3744 | 11.45 | 3865 | 12.29 | 3984 | 13.15 |
| 1750 | 5000 | 3296 | 9.38 | 3429 | 10.24 | 3558 | 11.11 | 3684 | 12.00 | 3807 | 12.90 | 3926 | 13.81 | | |
| 1925 | 5500 | 3385 | 10.74 | 3514 | 11.66 | 3639 | 12.59 | 3760 | 13.53 | 3878 | 14.49 | 3993 | 15.46 | | |
| 2100 | 6000 | 3483 | 12.28 | 3606 | 13.24 | 3728 | 14.24 | 3845 | 15.23 | 3959 | 16.24 | | | | |

Underlined figures indicate maximum static efficiency.

## HPF Size 22/10 Fiberglass High Pressure Blower

Impeller Dia.: 22" Tip Speed, FPM = 5.76 x Fan RPM Outlet Dia.: 10" Max. RPM 3600

| CFM | OV | 4" SP | | 6" SP | | 8" SP | | 10" SP | | 12" SP | | 14" SP | | 16" SP | | 18" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 275 | 500 | 1157 | 0.39 | 1425 | 0.66 | | | | | | | | | | | | |
| 550 | 1000 | 1139 | 0.56 | 1398 | 0.89 | 1620 | 1.27 | 1817 | 1.68 | 1996 | 2.12 | 2160 | 2.59 | 2314 | 3.09 | 2458 | 3.60 |
| 825 | 1500 | 1170 | 0.82 | 1405 | 1.23 | 1611 | 1.67 | 1800 | 2.13 | 1974 | 2.62 | 2136 | 3.15 | 2287 | 3.70 | 2430 | 4.28 |
| 1100 | 2000 | 1236 | 1.13 | 1451 | 1.66 | 1643 | 2.19 | 1818 | 2.73 | 1980 | 3.30 | 2132 | 3.89 | 2277 | 4.50 | 2415 | 5.12 |
| 1375 | 2500 | 1326 | 1.56 | 1522 | 2.12 | 1699 | 2.80 | 1864 | 3.45 | 2017 | 4.11 | 2161 | 4.78 | 2297 | 5.46 | 2427 | 6.16 |
| 1650 | 3000 | 1430 | 2.20 | 1612 | 2.74 | 1777 | 3.41 | 1928 | 4.22 | 2073 | 5.02 | 2210 | 5.81 | 2340 | 6.59 | 2464 | 7.38 |
| 1925 | 3500 | 1544 | 2.89 | 1713 | 3.72 | 1868 | 4.31 | 2012 | 5.02 | 2146 | 5.93 | 2274 | 6.89 | 2398 | 7.82 | 2517 | 8.73 |
| 2200 | 4000 | 1662 | 3.80 | 1825 | 4.68 | 1969 | 5.63 | 2105 | 6.30 | 2235 | 7.02 | 2356 | 7.97 | 2471 | 9.03 | 2583 | 10.13 |
| 2475 | 4500 | 1783 | 4.97 | 1940 | 5.82 | 2080 | 6.88 | 2208 | 7.96 | 2329 | 8.77 | 2447 | 9.44 | 2559 | 10.40 | 2665 | 11.51 |
| 2750 | 5000 | 1908 | 6.39 | 2059 | 7.30 | 2195 | 8.32 | 2318 | 9.51 | 2434 | 10.72 | 2544 | 11.73 | 2651 | 12.44 | 2755 | 13.29 |
| 3025 | 5500 | 2034 | 8.03 | 2181 | 9.09 | 2312 | 10.10 | 2433 | 11.27 | 2545 | 12.60 | 2650 | 13.93 | 2752 | 15.14 | 2851 | 16.06 |
| 3300 | 6000 | 2163 | 9.94 | 2305 | 11.17 | 2433 | 12.28 | 2550 | 13.41 | 2659 | 14.69 | 2762 | 16.15 | 2860 | 17.62 | 2954 | 19.00 |

| CFM | OV | 20" SP | | 22" SP | | 24" SP | | 26" SP | | 28" SP | | 30" SP | | 32" SP | | 34" SP | | 36" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 275 | 500 | | | | | | | | | | | | | | | | | | |
| 550 | 1000 | 2595 | 4.15 | 2725 | 4.71 | 2850 | 5.30 | 2969 | 5.90 | | | | | | | | | | |
| 825 | 1500 | 2565 | 4.88 | 2694 | 5.51 | 2817 | 6.15 | 2936 | 6.82 | 3050 | 7.50 | 3160 | 8.20 | 3267 | 8.93 | 3370 | 9.66 | 3471 | 10.42 |
| 1100 | 2000 | 2547 | 5.77 | 2674 | 6.44 | 2795 | 7.14 | 2912 | 7.85 | 3025 | 8.60 | 3134 | 9.36 | 3240 | 10.15 | 3342 | 10.94 | 3442 | 11.76 |
| 1375 | 2500 | 2552 | 6.90 | 2673 | 7.65 | 2789 | 8.40 | 2902 | 9.17 | 3012 | 9.96 | 3119 | 10.76 | 3223 | 11.59 | 3324 | 12.43 | 3422 | 13.28 |
| 1650 | 3000 | 2584 | 8.19 | 2698 | 9.00 | 2809 | 9.83 | 2917 | 10.69 | 3021 | 11.56 | 3123 | 12.45 | 3223 | 13.35 | 3320 | 14.25 | 3416 | 15.18 |
| 1925 | 3500 | 2632 | 9.65 | 2742 | 10.57 | 2849 | 11.49 | 2952 | 12.42 | 3053 | 13.37 | 3151 | 14.33 | 3246 | 15.29 | 3340 | 16.29 | 3431 | 17.29 |
| 2200 | 4000 | 2692 | 11.20 | 2799 | 12.25 | 2902 | 13.30 | 3001 | 14.33 | 3099 | 15.39 | 3193 | 16.43 | 3286 | 17.50 | 3376 | 18.57 | 3464 | 19.64 |
| 2475 | 4500 | 2767 | 12.70 | 2867 | 13.93 | 2965 | 15.16 | 3062 | 16.36 | 3156 | 17.54 | 3247 | 18.70 | 3337 | 19.89 | 3424 | 21.06 | 3510 | 22.24 |
| 2750 | 5000 | 2855 | 14.41 | 2950 | 15.63 | 3043 | 16.95 | 3134 | 18.32 | 3223 | 19.69 | 3311 | 21.05 | 3397 | 22.36 | 3482 | 23.67 | 3566 | 24.99 |
| 3025 | 5500 | 2947 | 16.82 | 3041 | 17.83 | 3131 | 19.04 | 3219 | 20.38 | 3304 | 21.80 | 3387 | 23.28 | 3469 | 24.78 | 3550 | 26.30 | | |
| 3300 | 6000 | 3046 | 20.19 | 3136 | 21.09 | 3224 | 21.94 | 3310 | 23.03 | 3393 | 24.33 | 3474 | 25.76 | 3553 | 27.27 | | | | |

Underlined figures indicate maximum static efficiency.

Performance shown is for installation type B: Free inlet, Ducted outlet.
Power rating (BHP) does not include drive losses.
Performance ratings do not include the effects of appurtenances in the airstream.

## HPF Size 28/12 Fiberglass High Pressure Blower

Impeller Dia.: 28" Tip Speed, FPM = 7.33 x Fan RPM Outlet Dia.: 12" Max. RPM 2500

| CFM | OV | 4" SP | | 6" SP | | 8" SP | | 10" SP | | 12" SP | | 14" SP | | 16" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 395 | 500 | | | | | | | | | | | | | | |
| 790 | 1000 | 882 | 0.76 | | | | | | | | | | | | |
| 1185 | 1500 | 895 | 1.10 | 1081 | 1.66 | 1247 | 2.27 | 1397 | 2.91 | | | | | | |
| 1580 | 2000 | 935 | 1.56 | 1107 | 2.23 | 1260 | 2.94 | 1398 | 3.68 | 1527 | 4.46 | 1649 | 5.27 | 1765 | 6.12 |
| 1975 | 2500 | 994 | 2.16 | 1151 | 2.94 | 1293 | 3.76 | 1424 | 4.63 | 1545 | 5.51 | 1659 | 6.42 | 1767 | 7.36 |
| 2370 | 3000 | 1064 | 2.91 | 1210 | 3.85 | 1341 | 4.78 | 1463 | 5.74 | 1579 | 6.75 | 1688 | 7.79 | 1791 | 8.84 |
| 2765 | 3500 | 1141 | 3.84 | 1278 | 4.93 | 1402 | 6.02 | 1517 | 7.12 | 1624 | 8.21 | 1727 | 9.35 | 1826 | 10.52 |
| 3160 | 4000 | 1224 | 4.99 | 1353 | 6.22 | 1469 | 7.45 | 1578 | 8.70 | 1681 | 9.95 | 1778 | 11.20 | 1871 | 12.47 |
| 3555 | 4500 | 1312 | 6.38 | 1433 | 7.76 | 1544 | 9.14 | 1647 | 10.53 | 1744 | 11.92 | 1838 | 13.34 | 1927 | 14.74 |
| 3950 | 5000 | 1403 | 8.04 | 1517 | 9.56 | 1622 | 11.08 | 1721 | 12.63 | 1814 | 14.17 | 1903 | 15.73 | 1989 | 17.30 |
| 4345 | 5500 | 1495 | 9.97 | 1605 | 11.67 | 1705 | 13.34 | 1799 | 15.02 | 1889 | 16.73 | 1974 | 18.42 | 2056 | 20.13 |
| 4740 | 6000 | 1589 | 12.21 | 1695 | 14.09 | 1791 | 15.93 | 1881 | 17.76 | 1967 | 19.60 | 2049 | 21.44 | 2128 | 23.30 |

| CFM | OV | 18" SP | | 20" SP | | 22" SP | | 24" SP | | 26" SP | | 28" SP | | 30" SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP | RPM | BHP |
| 395 | 500 | | | | | | | | | | | | | | |
| 790 | 1000 | | | | | | | | | | | | | | |
| 1185 | 1500 | | | | | | | | | | | | | | |
| 1580 | 2000 | 1875 | 6.99 | 1979 | 7.89 | | | | | | | | | | |
| 1975 | 2500 | 1871 | 8.35 | 1970 | 9.33 | 2067 | 10.36 | 2161 | 11.42 | 2251 | 12.49 | 2338 | 13.58 | 2423 | 14.71 |
| 2370 | 3000 | 1889 | 9.91 | 1984 | 11.02 | 2075 | 12.14 | 2163 | 13.29 | 2248 | 14.46 | 2331 | 15.64 | 2413 | 16.87 |
| 2765 | 3500 | 1921 | 11.73 | 2011 | 12.93 | 2099 | 14.17 | 2184 | 15.44 | 2266 | 16.71 | 2345 | 17.99 | 2423 | 19.32 |
| 3160 | 4000 | 1961 | 13.76 | 2049 | 15.11 | 2133 | 16.46 | 2215 | 17.84 | 2294 | 19.22 | 2371 | 20.63 | 2446 | 22.06 |
| 3555 | 4500 | 2012 | 16.14 | 2094 | 17.55 | 2175 | 19.02 | 2254 | 20.51 | 2331 | 22.03 | 2405 | 23.54 | 2478 | 25.09 |
| 3950 | 5000 | 2072 | 18.87 | 2151 | 20.42 | 2227 | 21.96 | 2302 | 23.55 | 2375 | 25.15 | 2447 | 26.79 | | |
| 4345 | 5500 | 2135 | 21.84 | 2212 | 23.56 | 2287 | 25.29 | 2359 | 27.00 | 2429 | 28.72 | 2497 | 30.43 | | |
| 4740 | 6000 | 2204 | 25.16 | 2278 | 27.03 | 2350 | 28.91 | 2420 | 30.78 | 2489 | 32.68 | | | | |

Underlined figures indicate maximum static efficiency.

Performance shown is for installation type B: Free inlet, Ducted outlet.
Power rating (BHP) does not include drive losses.
Performance ratings do not include the effects of appurtenances in the airstream.

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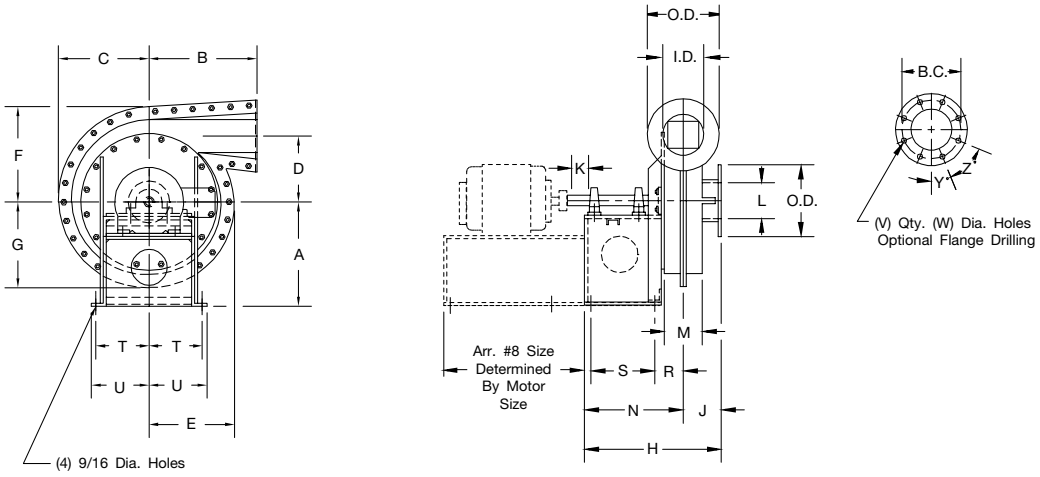
## Arrangement 1 & 8




**NOTE:** Phantom drawing illustrates an Arrangement 8 Model HPF pressure blower.

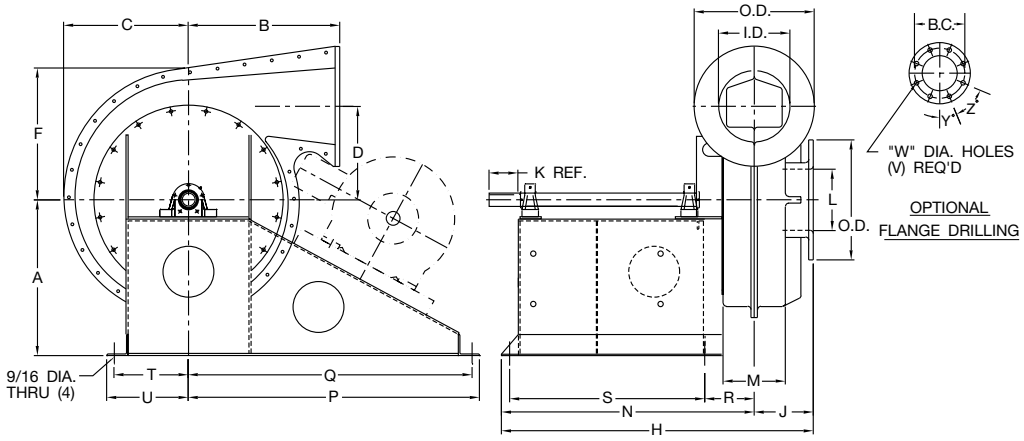
| SIZE | SHAFT DIA. | A | B | C | D | a | b | c | d | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **18" – 8"** | 1.50 | 18.38 | 17.00 | 14.00 | 10.50 | 13.63 | 20.13 | 14.38 | 12.88 | 12.50 | 14.75 | 13.25 | 24.25 | 6.63 |
| **22" – 10"** | 1.50 | 24.38 | 22.00 | 18.19 | 14.88 | 17.63 | 31.13 | 18.63 | 16.63 | 19.19 | 19.19 | 17.19 | 24.44 | 6.75 |
| **28" – 12"** | 1.94 | 30.00 | 28.00 | 22.75 | 18.88 | 22.00 | 39.63 | 23.25 | 20.75 | 24.00 | 24.00 | 21.50 | 26.63 | 8.00 |

| SIZE | K | L | M | N | R | S | T | U | V | W | Y | Z | B.C. | O.D. | I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **18" – 8"** | 3.50 | 6.88 | 7.00 | 17.63 | 4.63 | 12.00 | 8.75 | 9.63 | 8.00 | 0.88 | 22.50 | 45.00 | 11.75 | 13.50 | 8.00 |
| **22" – 10"** | 4.00 | 9.00 | 7.13 | 17.69 | 4.69 | 12.00 | 11.00 | 11.88 | 12.00 | 1.00 | 15.00 | 30.00 | 14.25 | 16.00 | 10.00 |
| **28" – 12"** | 5.00 | 12.00 | 9.00 | 18.63 | 5.66 | 12.00 | 12.38 | 13.25 | 12.00 | 1.00 | 15.00 | 30.00 | 17.00 | 19.00 | 12.00 |

See page 3 for discharge positions.

AC1005856
AC1005857

## Arrangement 9

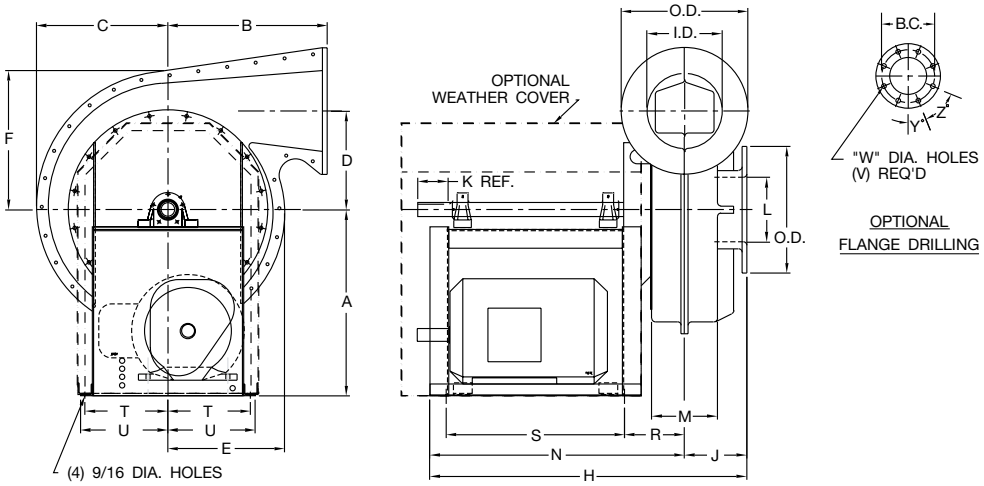



| SIZE | SHAFT DIA. | A | B | C | D | a | b | c | d | e | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **18" – 8"** | 1.50 | 18.38 | 17.00 | 14.00 | 10.50 | 13.63 | 20.13 | 14.38 | 12.88 | 12.50 | 14.75 | 13.25 | 34.25 | 6.63 |
| **22" – 10"** | 1.50 | 24.38 | 22.00 | 18.19 | 14.88 | 17.63 | 31.13 | 18.63 | 16.63 | 16.19 | 19.19 | 17.19 | 39.06 | 6.75 |
| **28" – 12"** | 1.94 | 30.00 | 28.00 | 22.75 | 18.88 | 22.00 | 39.63 | 23.25 | 20.75 | 20.25 | 24.00 | 21.50 | 43.69 | 8.00 |

| SIZE | K | L | M | N | P | Q | R | S | T | U | V | W | Y | Z | O.D. | I.D. | B.C. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **18" – 8"** | 4.00 | 6.88 | 7.00 | 27.63 | 34.31 | 33.44 | 5.63 | 17.00 | 8.75 | 9.63 | 8.00 | 0.88 | 22.50 | 45.00 | 13.50 | 8.00 | 11.75 |
| **22" – 10"** | 4.00 | 9.00 | 7.13 | 32.31 | 36.88 | 35.63 | 5.81 | 20.50 | 10.19 | 11.88 | 12.00 | 1.00 | 15.00 | 30.00 | 16.00 | 10.00 | 14.25 |
| **28" – 12"** | 5.00 | 12.00 | 9.00 | 35.69 | 39.50 | 38.25 | 6.69 | 28.00 | 11.75 | 13.00 | 12.00 | 1.00 | 15.00 | 30.00 | 19.00 | 12.00 | 17.00 |

See page 3 for discharge positions. Please note that clockwise 45° downblast and counter-clockwise bottom horizontal discharges are not available on Arrangement 9 units.

## Arrangement 10




| SIZE | SHAFT DIA. | A | B | C | D | a | b | c | d | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **18" – 8"** | 1.50 | 19.88 | 17.00 | 14.00 | 10.50 | 13.63 | 20.13 | 14.38 | 12.88 | 12.50 | 14.75 | 13.25 | 33.75 | 6.63 |
| **22" – 10"** | 1.50 | 23.31 | 22.00 | 18.19 | 14.88 | 17.63 | 31.13 | 18.63 | 16.63 | 16.19 | 19.19 | 17.19 | 38.75 | 6.75 |
| **28" – 12"** | 1.94 | 31.13 | 28.00 | 22.75 | 18.88 | 22.00 | 39.63 | 23.25 | 20.75 | 20.25 | 24.00 | 21.50 | 43.63 | 8.00 |

| SIZE | K | L | M | N | R | S | T | U | V | W | Y | Z | O.D. | I.D. | B.C. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **18" – 8"** | 4.00 | 6.88 | 7.00 | 27.13 | 6.38 | 19.00 | 8.81 | 9.31 | 8.00 | 0.50 | 22.50 | 45.00 | 13.50 | 8.00 | 11.75 |
| **22" – 10"** | 4.00 | 9.00 | 7.13 | 32.00 | 6.75 | 23.25 | 10.88 | 11.50 | 12.00 | 1.00 | 15.00 | 30.00 | 16.00 | 10.00 | 14.25 |
| **28" – 12"** | 5.00 | 12.00 | 9.00 | 35.63 | 8.63 | 24.50 | 12.13 | 13.00 | 12.00 | 1.00 | 15.00 | 30.00 | 19.00 | 12.00 | 17.00 |

See page 3 for discharge positions.

TCF
TWIN CITY FAN

# Model

## HPF

Fans shall be of the Fiberglass Reinforced Plastic Pressure Blower type, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota, and shall be of the size and capacity as indicated in the fan schedule. Centrifugal fans shall be tested in accordance with ANSI/ASHRAE 51-1985 and ANSI/AMCA 210-85 test codes and guaranteed by the manufacturer to deliver at the rated published performance levels. In addition, each unit shall be factory run tested prior to shipment.

**CONSTRUCTION** — All airstream components shall be fabricated of corrosion resistant fiberglass reinforced polyester resin. The radial type impeller shall be resin transfer molded from a fire-retardant resin-glass mixture, providing optimal strength and corrosion resistance and an extremely smooth surface to maximize aerodynamic performance. The fan housing shall be molded of fiberglass reinforced fire-retardant polyester.

**ARRANGEMENT** — The pressure blower shall be fabricated for either belt driven Arrangement 1, 9 and 10 or direct drive Arrangement 8 configuration as indicated in the fan schedule. Where indicated on the drawings or schedules, the Arrangement 1 pressure blower may be furnished with a unitary base to allow mounting of the fan and motor on a common frame.

**IMPELLER** — The radial type impeller is resin transfer molded (RTM) from a resin-glass mixture providing optimal strength and corrosion resistance. All impellers are dynamically and statically balanced after testing.

**BEARINGS** — Bearings shall be oversized to ensure maximum bearing life. The belts and sheaves furnished by the manufacturer shall be selected to provide additional allowances of 1.3 to 2 times the normal satisfactory capacity.

**BALANCING** — The propeller assembly 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. In addition, belt driven fan propellers shall be balanced on the fan shaft after final assembly in the fan casing, in the manufacturing facility, to the following peak velocity values, filter-in, at the fan test speed:

| Fan Application Category | Rigidly Mounted - (in./s) | Flexibly Mounted - (in./s) |
|---|---|---|
| BV-3 | 0.15 | 0.20 |

**MOTORS** — Fan motors shall be foot mounted NEMA Design B, standard industrial continuous duty, ball bearing (ODP, TEFC, EXPL), 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).

**FINISH** — All steel parts are finished with an air dry epoxy paint. All fiberglass parts are coated inside and outside with resin (with UV inhibitor), approximately 10 mils in thickness, to seal the surface and provide a smooth, shiny finish. Optional resins and finishes include:

- Vinyl Ester
- Synthetic Surface Veil
- Fire-Retardant Resin
- Aluminum Oxide

**ACCESSORIES** — The units shall be furnished complete with:

- Flange Drilling
- Drain
- Belt Guard, OSHA
- Graphite Impregnation with Static Grounding
- Coupling Guard (Arrangement 8 Only)
- Viton Shaft Seal
- 316SS Shaft
- Abrasion-Resistant Airstream
- Unitary Base
- Vibration Isolation (RIS/Spring)
- Shaft and Bearing Guard

# 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

LABORATORY EXHAUST FANS | FILTERED SUPPLY FANS | MANCOOLERS | FIBERGLASS FANS | CUSTOM FANS

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