

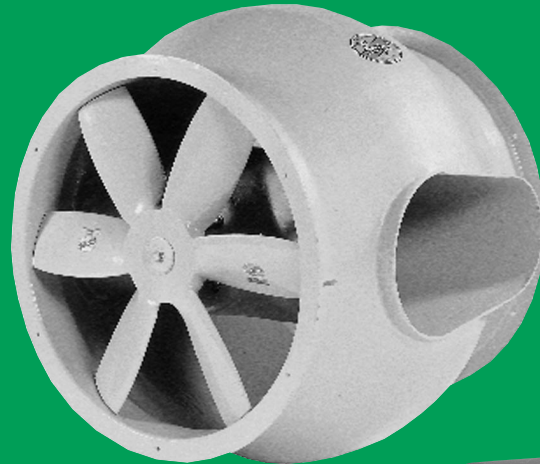
Fiberglass Axial Flow Fans

Series 28
Series 28B

Series 29
Series 29B

Series 34

Series 35
Series 35V



HARTZELL®

Hartzell Fan, Inc., Piqua, Ohio 45356
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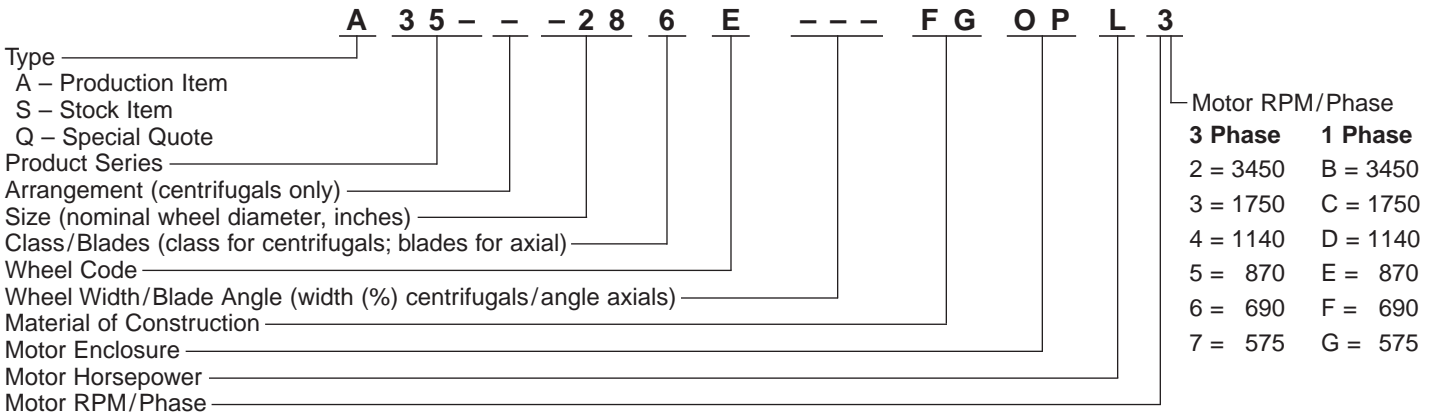
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Certified Ratings for Air Performance

Hartzell Fan, Inc. certifies that the Series 28 Fiberglass Direct Drive Duct Fans on pages 8 and 9; Series 34 Fiberglass Belt Drive Duct Fans on pages 10 and 11; and Series 35 Fiberglass Belt Drive Duct Axial® Fan and Series 35V Fiberglass Belt Drive Duct Vaneaxial Fans shown on pages 12 through 17, are licensed to bear the AMCA Seal for air performance. The ratings shown are based on tests and procedures performed in accordance with AMCA Standard 211 and comply with the requirements of the AMCA Certified Ratings Program.

Hartzell Model Code Explanation



Motor Horsepower

Horsepower	1/4	1/3	1/2	3/4	1	1 1/2	2	3	5	7 1/2	10	15	20	25	30	40	50	60
Code Letter	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U

How To Use Model Code Index:

Assume a needed performance of 12,000 CFM at 1" SP, standard air. Reading the 28" rating table on page 15, we find a fan RPM of 1715 and brake horsepower (BHP) of 4.74. Required motor horsepower is 5.

The model code can be constructed as follows: Type will be a production item (code A), product series for the Fiberglass Duct Axial® (belt drive) Fan is 35, size of the wheel is 28",

number of blades on the fan is 6, blade code for this item is E, material of construction is fiberglass (code FG), motor enclosure is open protected drip proof (code OP), motor horsepower is 5 (code L), and motor RPM/phase is 1750 (code 3).

Note: All other informational fields must be filled in with hyphens/dashes (-) if they are not applicable to the fan being considered.

This bulletin lists Hartzell's complete line of Fiberglass (Axial Flow) Fans and accessories. More than 70 Hartzell offices can provide specific performance and installation data to meet your requirements. Call your Hartzell representative for assistance. Visit our website (www.hartzellfan.com) or call toll-free (1-800-336-3267) for the name of your Hartzell representative.



General Fiberglass Construction Features

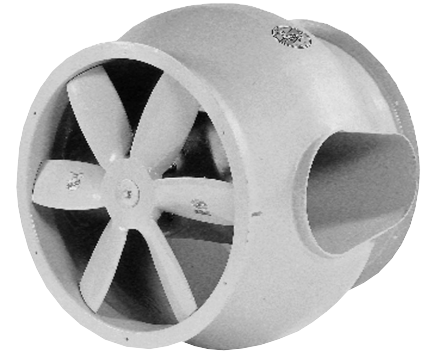
A variety of corrosion problems plague industry today. Fans and blowers made of coated steel or metals such as stainless and monel can handle some problem areas. Please refer to the corrosion resistance table on page 18 of this bulletin. Fiberglass fans can be used in most applications where corrosive elements exist in fume and vapor form. The resistance to corrosive elements is a major advantage, but the physical properties of fiberglass equipment offer these additional advantages:

- Fiberglass equipment is corrosion resistant.
- Fiberglass equipment weighs 25% less than comparable equipment made of carbon steel.
- Fiberglass has an extremely high strength-to-weight ratio, stronger than steel on a per-pound basis.
- Dimensional stability of fiberglass is excellent.
- Fiberglass air moving equipment will not become brittle at low temperatures and at 0°F the laminated fiberglass will be stronger than at room temperature.

Hartzell Fan, Inc. conforms to ASTM D4167-97, Standard Specification for fiber-reinforced plastic fans and blowers, when optional surfacing veil, electrical grounding, and dynamic balancing to ASTM D4167-97 levels, are added to the fan.

The following are standard Hartzell fiberglass construction features:

- Corrosion resistant polyester resin, having a class I flame spread rate of 25 or less is used for all housings and propellers.
- All structural parts in the airstream are fiberglass and resin. All fiberglass surfaces are protected with a minimum 10-mil thickness of chemical, flame, and ultraviolet resistant resin.
- Fan shafts, on belt drive units, are 304 stainless steel turned, ground, polished, and keyed at both ends. Shafts are sized to operate well below critical speed. 316 stainless steel or monel shafting is available as an option at extra cost.
- Internal hardware (airstream), is Type 304 stainless steel. All internal hardware (airstream) is encapsulated. All external hardware (out of airstream) is zinc plated as standard. Where metal is subject to attack by the corrosive elements being handled, all metal parts can be resin-coated after assembly.
- Propellers are of one piece construction, die formed of individual laminations of cloth mat plus woven roving. Adjustable pitch propellers incorporate die-formed blades.
- Bearing covers on belt drive fans are sealed with foam gasket and bolted to the bearing base.
- A fiberglass and neoprene shaft seal is placed where the shaft leaves the bearing cover along with a neoprene shaft slinger between the seal and wheel on belt drive units. (Seal is not gas tight.)
- Bearings on belt drive units are heavy duty, deep row radial ball or double row spherical roller type self-aligning and shielded in cast iron housings. Long inner races insure even load distribution, providing a high radial and thrust load capacity. Bearings are relubricable for continuous service with lubrication tubes extended to the exterior of fan base as necessary.
- V-Belt Drives, when necessary, are standard and are oversized for long life and continuous duty. Fixed pitch or variable pitch drives are available. Belts are oil, heat, and static resistant type.



Series 28B



Series 29



Series 35V

Selection Guide

How To Use Capacity Tables

1. Select size, RPM and BHP for a given air delivery and pressure of an axial flow fan from the rating tables, pages 7, 9, 11, or 14-17. Performance ratings are based on standard air conditions, sea level 70°F and 29.92 inches barometric pressure giving an air density of .075 lbs. per cubic foot. The specific gravity of air equals 1.00 at these conditions.
2. If non-standard temperature or altitude is involved, correct to standard air density (see Table 1).
3. For speeds above ratings consult factory.

Altitude – Temperature Correction

Temperatures above or below 70°F at sea level (0 ft.) are read vertically between the double lines giving the proper correction factors. Altitudes above sea level at a constant 70°F temperature are read horizontally between the double lines giving those factors. Any other factors are obtained by reading down to the desired temperature, then across to the desired altitude.

EXAMPLE: Assume the required performance to be 16,500 CFM, .75" SP, 175°F, and 3000 ft. altitude.

1. Table 1 gives a factor of 1.34.
2. .75" SP x 1.34 = 1.00 SP for 70°F at sea level.
3. A 36" Series 29 Direct Drive Duct Axial® Fan selected from the Rating Table on page 9 for the new conditions shows 16,511 CFM, 1.00 SP at 1160 RPM with 4.36 BHP.
4. Correct the horsepower and pressure in Step 3 to non-standard performance by dividing by the factors:

$$1.00" \text{ SP} / 1.34 = .75" \text{ SP}$$

$$4.36 \text{ BHP} / 1.34 = 3.25 \text{ BHP}$$

5. Final performance of the direct drive Duct Axial® fan at the assumed conditions:

16,500 CFM, .75" SP, 1160 RPM,
3.25 BHP, 175°F, and 3000 ft. altitude.

Table 1 Combined Altitude – Temperature Correction Factors

°F TEMP	ALT. FT.												
	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
-50	0.77	0.80	0.83	0.86	0.89	0.92	0.96	1.00	1.04	1.08	1.12	1.16	1.21
-25	0.82	0.85	0.89	0.92	0.95	0.98	1.03	1.07	1.11	1.15	1.20	1.24	1.29
0	0.87	0.90	0.94	0.97	1.01	1.04	1.09	1.13	1.17	1.22	1.27	1.31	1.37
25	0.91	0.95	0.98	1.02	1.06	1.09	1.14	1.18	1.23	1.27	1.33	1.37	1.43
50	0.96	1.00	1.04	1.08	1.11	1.15	1.20	1.25	1.30	1.34	1.40	1.45	1.51
70	1.00	1.04	1.08	1.12	1.16	1.20	1.25	1.30	1.35	1.40	1.46	1.51	1.57
100	1.06	1.10	1.14	1.19	1.23	1.27	1.33	1.38	1.43	1.48	1.55	1.60	1.66
125	1.10	1.14	1.19	1.23	1.28	1.32	1.38	1.43	1.49	1.54	1.61	1.66	1.73
150	1.15	1.20	1.24	1.29	1.33	1.38	1.44	1.50	1.55	1.61	1.68	1.74	1.81
175	1.20	1.25	1.30	1.34	1.39	1.44	1.50	1.56	1.62	1.68	1.75	1.81	1.88
200	1.25	1.30	1.35	1.40	1.45	1.50	1.56	1.63	1.69	1.75	1.83	1.89	1.96

Note: Table 1 has inverted values.

Actual density ratio is the reciprocal of the above values.

Table 2 Maximum Safe Speeds @ 70°F

Series 34		Series 35	
Size	Max. Speed (RPM)	Size	Max. Speed (RPM)
12	4275	12	4215
16	3240	16	3205
18	2890	18	3270
20	2605	24	2475
24	2185	28	2130
28	1875	32	1870
32	1645	36	1665
36	1465	44	1365
40	1320	48	1255
44	1200	54	1115
48	1100	60	1000
54	835		
60	755		

Maximum operating temperature: 200°F.

Table 3 Maximum Safe Speeds Correction Factors*

Temp	0° F	70°	100°	150°	175°	200°
FRP	1.00	1.00	1.00	0.98	0.945	0.91

*To correct maximum safe operating speeds (Table 2) for high temperatures, multiply those speeds by correction factors from Table 3.



Discharge Cones

Ratings shown in this bulletin are for axial flow fans with inlet and outlet ducts of the same diameter as the fan. Discharge cones may be used on the duct fans to adapt to larger diameters (see Fig. A). The result is a static pressure regain.

Table 2 shows the amount of additional static pressure capability, which results from using the discharge cone. Add the amount of .45 (VP₁-VP₂) to the fan's static pressure.

$$SP_2 = SP_1 + .45(VP_1 - VP_2)$$

Thus, a fan selected for 4000 FPM O.V. at 3/4" SP using a size 18"-21" cone, the static pressure capability would be raised from .750" to .957" static pressure. Regain calculations are approximate and are not part of the AMCA certified ratings.

Discharge cones may also be used to transform large ducts to the fan inlet size (see Fig. B). Since these cones have gently tapered sides, the friction loss is negligible, about .08 x the difference in velocity pressures (see Table 3).

If the fan is to be used with ducts smaller in diameter than the unit (see Fig. C), the difference in velocity pressure across the cone must be added to the static pressure for which the fan is used.

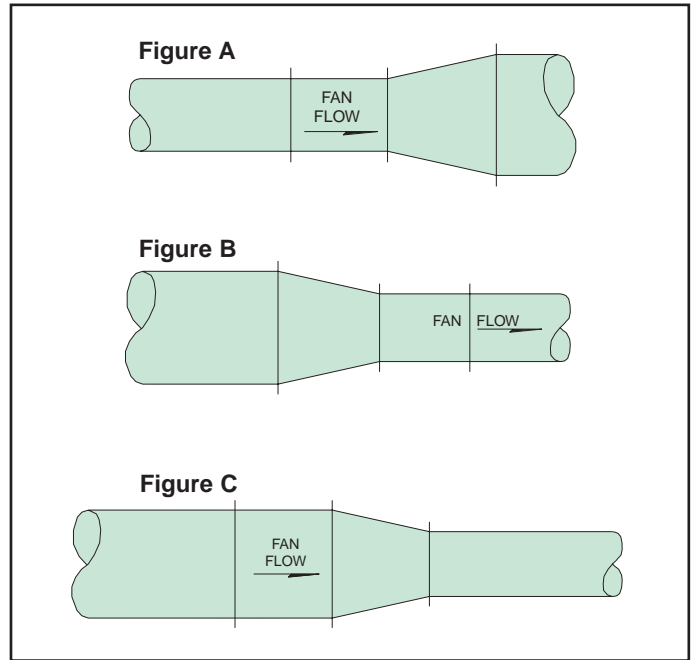


Table 1 Additional Static Pressure Capability (Regain) Inches W.G.

F.P.M. VELOCITY	PRESSURE INCHES	F.P.M. VELOCITY	PRESSURE INCHES	F.P.M. VELOCITY	PRESSURE INCHES
1000	0.012	2750	0.099	4500	0.261
1250	0.020	3000	0.117	4750	0.290
1500	0.029	3250	0.138	5000	0.323
1750	0.040	3500	0.160	5250	0.356
2000	0.052	3750	0.183	5500	0.392
2250	0.065	4000	0.207	5750	0.428
2500	0.081	4250	0.233	6000	0.467

Note: For an included cone angle of 25°-30°.

Table 2 Corresponding Air Velocities for Various Pressures in inches of water (air weight: .07488 lbs. per cu.ft.)

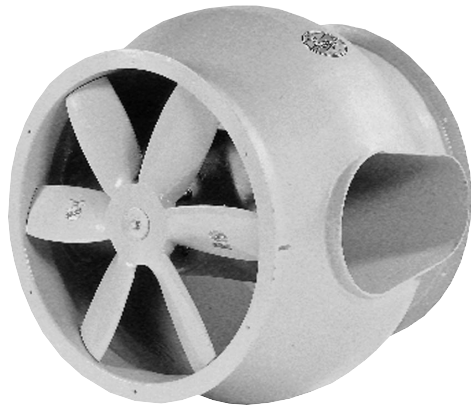
F.P.M. VELOCITY	PRESSURE INCHES	F.P.M. VELOCITY	PRESSURE INCHES
500	0.0156	2250	0.316
600	0.0225	2500	0.391
700	0.0305	2750	0.473
800	0.0400	3000	0.562
900	0.0504	3250	0.661
1000	0.0625	3500	0.768
1100	0.0758	3750	0.880
1200	0.0900	4000	1.000
1300	0.1060	4250	1.130
1400	0.1220	4500	1.265
1500	0.1410	4750	1.410
1600	0.1600	5000	1.560
1700	0.1810	5250	1.720
1800	0.2030	5500	1.890
1900	0.2260	5750	2.060
2000	0.2500	6000	2.250

Metric Conversion Table

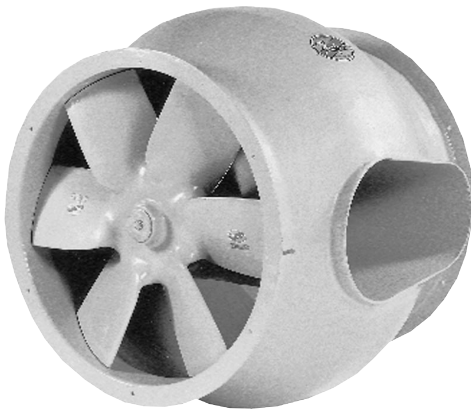
FROM	TO	MULTIPLY BY
Inches (in.)	Millimeter (mm)	25.400
Feet (ft.)	Meter (m)	0.3048
Velocity (ft./min.)	Meter/Second (m/s)	0.00508
Volume Flow (cfm)	Cubic Meter/Second (m ³ /s)	0.00047195
Pressure (in. w.g.)	Pascal (N/m ²)	248.36
Density (lb./ft ³)	Kilogram/Cubic Meter (Kg/m ³)	16.018
Power (hp)	Watt (w)	745.70
Square Foot (ft ²)	Square Meter (m ²)	0.09290
Square Inch (in ²)	Square Meter (m ²)	0.0006451



Fiberglass Bifurcated Fan (Direct Drive)



Series 28B



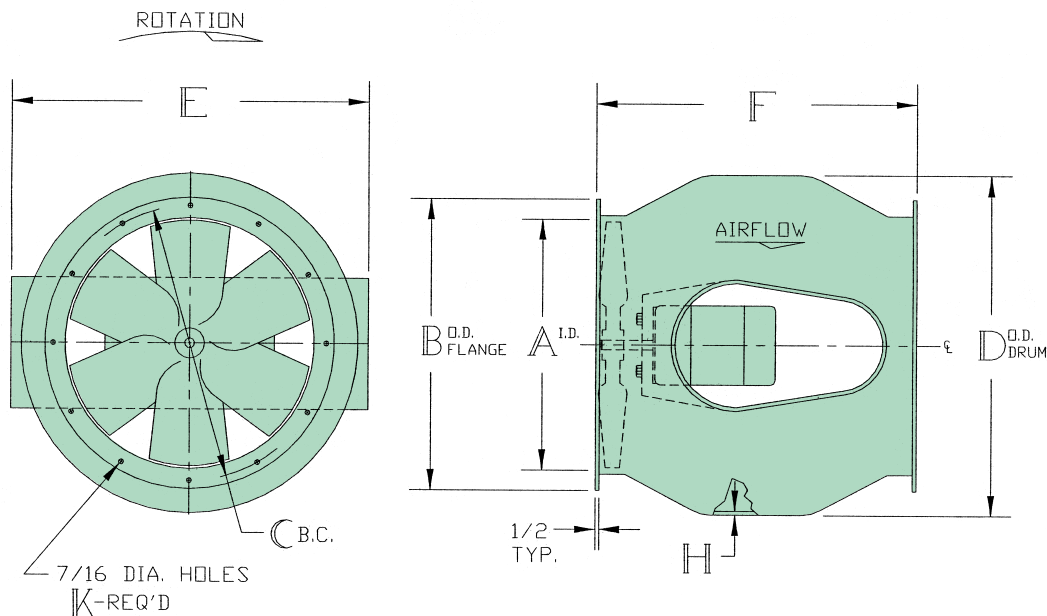
Series 29B

Hartzell Fiberglass, Direct Drive, Axial Flow Bifurcated Fans are designed and built to be used in a variety of corrosive applications. Suitable for temperatures up to 200°F with specially insulated motors (104°F is standard), these fans can be installed in any position from vertical to horizontal. They provide an excellent alternative to belt drive fans, minimizing required periodic maintenance.

Refer to the Material Corrosion Resistance Guide in Hartzell Engineering Bulletin (A-108) or on page 18 of this book for assistance in proper selection of fiberglass fans.

General Features

- Structural airstream parts are fiberglass and corrosion resistant resin. Taped joints inside casing are minimum three layers; two-ounce material. All fiberglass surfaces are protected with a minimum 12 mil. thickness of a chemical, flame, and ultraviolet resistant resin. Resin has Class I flame spread rate of 25 or less. Internal hardware is Austenitic Stainless Steel, encapsulated with a layer of fiberglass and resin.
- Propellers are of one-piece construction, die formed, of individual laminations of fiberglass, cloth mat, plus woven roving.
 - Sizes 24" – 48", 6 blade, type FW, low pressure (Series 28B)
 - Sizes 24" – 48", 6 blade, type E, medium pressure (Series 29B)
- **Performance** – ranges from 6,015 CFM to 46,865 CFM at free air.
- **Motor Mount** – C-face mounted; direct connected to prop, motor body enclosed in aerodynamic tube, protected from airstream.
- **Motor** – extended shaft, C-face, TEFC motors are standard. Mill and chemical duty motors are available. Contact factory for availability of other motor enclosures.
- **Shaft Seal** – neoprene, sandwich type design seals motor shaft at inner tube.
- **Extended Lube Tubes** – from motor to external duct surface of motor mounting tube, are standard.
- **Accessories** – see page 19.



Performance Data

A28B-- 6FW---FG

Size	Model	Motor (Fan)		Peak Fan BHP	Cubic Feet Per Minute vs. Static Pressure				
		HP	RPM		Free Air	1/4"	1/2"	3/4"	1"
24	A28B--246FW---FG_G4	¾	1140	0.73	6275	5347	2575	1134	482
	A28B--246FW---FG_J3	2	1750	2.23	9632	9100	8477	7590	5354
28	A28B--286FW---FG_I4	1½	1160	1.61	10328	9383	8150	4727	3036
	A28B--286FW---FG_L3	5	1750	5.66	15581	14971	14334	13672	12931
32	A28B--326FW---FG_I5	1½	870	1.58	11988	10668	7986	3735	2342
	A28B--326FW---FG_K4	3	1160	3.41	15984	15009	13985	12477	7546
36	A28B--366FW---FG_J5	2	870	2.21	16709	15130	13055	6521	4144
	A28B--366FW---FG_L4	5	1160	5.62	22279	21099	19901	18462	15903
40	A28B--406FW---FG_L5	5	870	4.89	21236	19615	17896	15448	9028
	A28B--406FW---FG_N4	10	1160	10.73	28314	27108	25882	24618	23208
44	A28B--446FW---FG_L5	5	870	5.68	27435	25412	23417	20526	13350
	A28B--446FW---FG_N4	10	1160	11.25	36579	35058	33549	32081	30435
48	A28B--486FW---FG_L6	5	690	4.68	26412	24052	20784	13375	8670
	A28B--486FW---FG_M5	7½	870	8.04	33303	31484	29461	26809	21968
	A28B--486FW---FG_O4	15	1160	16.80	44404	43069	41658	40169	38522

Performance shown is for installation Type D: ducted inlet/ducted outlet.
Performance ratings do not include the effects of appurtenances in the airstream.

Bold-type information provided in the Rating Table above is needed when preparing a model code. See page 2 for the complete Hartzell model code explanation and example.

A29B 6-E---FG

Size	Model	No. of Blades	Blade Type	Motor		Peak Fan BHP	Cubic Feet Per Minute vs. Static Pressure						
				HP	RPM		0"	1/4"	1/2"	3/4"	1"	1½"	2"
24	A29B--246-E---FG_H4	6	E	1	1160	1.06	6015	5420	4666	2468	1702		
	A29B--246-E---FG_K3	6	E	3	1750	3.33	9074	8687	8290	7868	7366	4539	3063
28	A29B--286-E---FG_I4	6	E	1½	1160	1.56	9650	8963	8193	7146	4588		
	A29B--286-E---FG_L3	6	E	5	1750	5.69	14559	14115	13653	13172	12662	11438	8359
32	A29B--326-E---FG_I5	6	E	1½	870	1.63	10787	9641	8356	4844	3589		
	A29B--326-E---FG_L4	6	E	3	1160	3.42	14382	13506	12671	11765	10545	5776	
36	A29B--366-E---FG_K5	6	E	3	870	3.10	15041	13920	12492	10261	6428	3484	
	A29B--366-E---FG_L4	6	E	5	1160	5.55	20055	19251	18346	17299	16109	10745	
40	A29B--406-E---FG_L5	6	E	5	870	5.63	20745	19450	18034	16282	11846	7445	4340
	A29B--406-E---FG_N4	6	E	10	1160	11.08	27660	26707	25708	24661	23526	20613	13261
44	A29B--446-E---FG_M5	6	E	7½	870	8.56	27187	25949	24494	22727	20574	12440	9053
	A29B--446-E---FG_O4	6	E	15	1160	16.65	36250	35348	34375	33306	32112	29308	25137
48	A29B--486-E---FG_L6	6	E	5	690	5.35	27877	26132	23920	21049	14378		
	A29B--486-E---FG_N5	6	E	10	870	10.77	35149	33814	32299	30514	28430	19839	14446
	A29B--486-E---FG_P4	6	E	20	1160	22.75	46865	45888	44848	43732	42506	39685	36320

Performance shown is for installation Type D: ducted inlet/ducted outlet.
Performance ratings do not include the effects of appurtenances in the airstream.

Bold-type information provided in the Rating Table above is needed when preparing a model code. See page 2 for the complete Hartzell model code explanation and example.

Dimensions

Principal Dimensions – Series 28B and 29B

Fan Size	A	B	C	D	E	F	H	K	Series 28B Weight Less Motor	Series 29B Weight Less Motor	Max. Motor Frame
24	24%	28%	26%	33%	36	32	¼	6	114	115	182TC
28	28%	32%	30%	34½	36	33	¼	6	147	153	184TC
32	33	36%	34%	42½	44%	43	¼	6	190	194	215TC
36	37	40%	38%	45½	47%	45	¼	6	223	234	215TC
40	41	44%	43%	51%	54	49	⅝	12	347	360	256TC
44	45	48%	47%	58%	60%	51	⅝	12	390	409	284TC
48	49%	53%	51%	61%	63%	58	⅝	12	439	476	286TC



Duct and Duct Axial[®] Fan (Direct Drive)



Series 28



Hartzell Fan, Inc. certifies that the Series 28 Fiberglass Direct Drive Duct Fan shown hereon is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Standard 211 and comply with the requirements of the Certified Ratings Program.



**Series 29 (shown)
Series 29V (with vanes)**

Fiberglass Direct Drive Axial Flow Fans are engineered and built to be installed in duct systems for process ventilation applications. Suitable for temperatures up to 180°F with specially insulated motors (104°F is standard), where there is some corrosive concentration. Units can be used in any position, from vertical to horizontal.

Features

- **Sizes** – 12" to 60"
- **Internal Hardware** – stainless steel is standard. Monel hardware is available at extra cost.
- **Motor** – totally enclosed mill and chemical motors are standard. Other motors, including standard totally enclosed are available on request.
- **Rigid motor mounts** – fiberglass supports for foot mounted motors are designed for minimum resistance to airflow.
- **Extended lube tubes** – from motor to exterior of fan housing are standard. **Extended motor leads** to exterior of housing are available as an option.
- **Accessories** – see page 19.

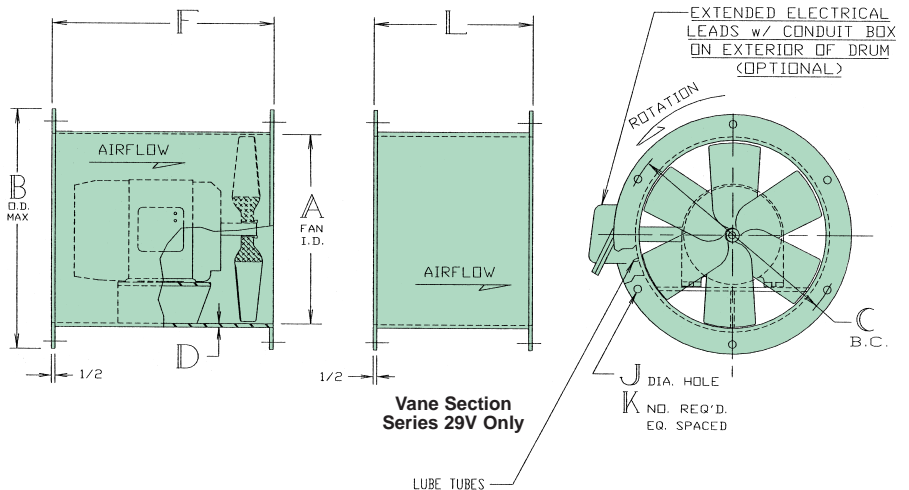
DUCT FAN - Series 28 – performance from 1314 to 65,788 CFM at free air.

- **Propellers** – one-piece, solid fiberglass.
 Sizes 12" to 48" – 6 blade, Type FW
 Sizes 54" and 60" – 2 blade, Type M
 Sizes 54" and 60" – two single propellers on a common shaft - 4 blade, Type M

DUCT AXIAL[®] FAN - Series 29 – performance from 1163 to 68,066 CFM at free air.

- **Propellers** – one-piece, solid fiberglass, 6 bladed airfoil design with a higher hub-to-blade ratio for moving large volumes of air at medium pressures. Blade type E.
- **Vane section** – the addition of the vane section to the discharge side of a duct axial fan makes it perform efficiently as a low-powered vaneaxial on the upper side of its pressure curve.
- **Accessories** – See page 19.

The AMCA Certified Ratings Seal does not apply to Series 29, Duct Axial[®] and 29V Duct Vaneaxial Fans.



Principal Dimensions – Series 28, 29, and 29V

Fan Size	A	B	C	D	F	J	K	L	Max Motor Frame	*Max Fan Weight	Vane Section Weight
12	12 $\frac{1}{2}$	16 $\frac{1}{4}$	14 $\frac{1}{2}$	$\frac{3}{16}$	20	$\frac{5}{16}$	6	6	56	25	15
16	16 $\frac{1}{2}$	20	18 $\frac{1}{2}$	$\frac{3}{16}$	21	$\frac{5}{16}$	6	10	182T	30	20
18	18 $\frac{1}{2}$	22 $\frac{1}{2}$	20 $\frac{1}{2}$	$\frac{1}{4}$	22	$\frac{5}{16}$	6	11	182T	45	25
20	20 $\frac{1}{2}$	24 $\frac{1}{2}$	22 $\frac{1}{2}$	$\frac{1}{4}$	25	$\frac{5}{16}$	6	12	182T	60	30
24	24 $\frac{1}{2}$	28 $\frac{1}{2}$	26 $\frac{1}{2}$	$\frac{1}{4}$	25	$\frac{5}{16}$	6	13	182T	80	40
28	28 $\frac{1}{2}$	32 $\frac{1}{2}$	30 $\frac{1}{2}$	$\frac{1}{4}$	25	$\frac{7}{16}$	6	13	184T	100	50
32	33	36 $\frac{1}{2}$	34 $\frac{1}{2}$	$\frac{1}{4}$	28	$\frac{7}{16}$	6	15	215T	125	65
36	37	40 $\frac{1}{2}$	38 $\frac{1}{2}$	$\frac{1}{4}$	28	$\frac{7}{16}$	6	16	215T	150	80
40	41	44 $\frac{1}{2}$	43 $\frac{1}{2}$	$\frac{5}{16}$	36	$\frac{7}{16}$	12	--	256T	220	--
44	45	48 $\frac{1}{2}$	47 $\frac{1}{2}$	$\frac{5}{16}$	36	$\frac{7}{16}$	12	19	286T	270	105
48	49 $\frac{1}{2}$	53 $\frac{1}{2}$	51 $\frac{1}{2}$	$\frac{5}{16}$	36	$\frac{7}{16}$	12	22	326T	335	135
54	55 $\frac{1}{2}$	59 $\frac{1}{2}$	57 $\frac{1}{2}$	$\frac{5}{16}$	40	$\frac{7}{16}$	12	23	364T	410	160
60	61 $\frac{1}{2}$	65 $\frac{1}{2}$	63 $\frac{1}{2}$	$\frac{5}{16}$	40	$\frac{7}{16}$	12	25	364T	480	190

*Weight without motor and accessories



Duct Fan (Belt Drive)



Series 34

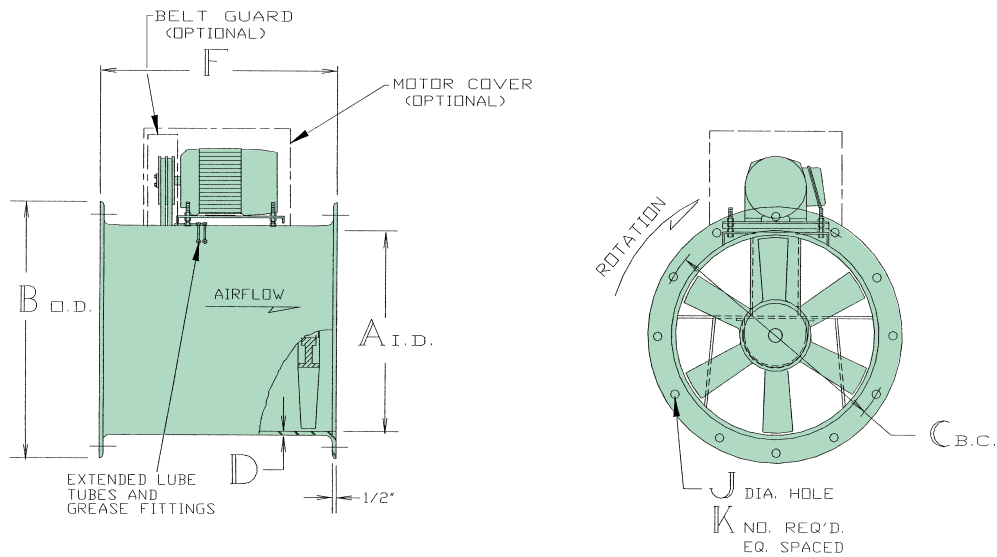
Hartzell Fiberglass Belt Drive Duct Fans are engineered and built to be installed in duct systems for process ventilation applications where the nature of the corrosive airstream warrants isolation of the motor and drive assembly from the airstream. See construction features. Duct fans are best suited for applications with low static pressure characteristics from free air to 1" static pressure.

Features

- **Sizes** – 12" to 60"...**performance** from 1021 CFM at 1/4" to 43,000 CFM at 1" static pressure.
- **Motor out of the airstream** – exterior mounting. Propeller shaft rotates in two heavy-duty bearings mounted on fiberglass supports taped to the inner shell with "T" reinforcements.
- **Corrosion duty construction** – belts, bearings, sheaves and shaft are enclosed and protected from the airstream. Drive compartment is located on the negative pressure (suction) side of the propeller drawing ambient air from outside the fan in and over the belts and bearings. Ensures contaminate-free drive compartment.
- **Propellers** – single piece, solid fiberglass construction.
 - SIZES 12" to 48" – 6-blade, Type FW
 - SIZES 54" and 60" – 6-blade adjustable, Type AF
- **Motor** – open end protected motors are standard. Special motors are available upon request.
- **Drive Assembly** – shafts are stainless steel, keyed at both ends. Bearings are heavy-duty, self-aligning, deep-row, radial-ball type shielded and mechanically sealed in cast iron or malleable housing. Relubricable type for continuous service. Minimum 50,000 hrs. L-10 bearing life. Belts are oil-, heat- and static-resistant type, over-sized for continuous duty. Variable pitch drives are standard on units up to and including 10 HP. Variable-pitch drives can be furnished on higher horse-power units upon request.
- **Extended lube tubes** – from bearings to exterior of fan housing are standard.
- **Shaft** – is stainless steel with neoprene slinger, neoprene seal, and fiberglass cover plate.
- **Internal bolts** – are stainless steel and resin coated after assembly. Monel bolts and shafts are optional.
- **Accessories** – see page 19.



Hartzell Fan, Inc. certifies that the Series 34, Fiberglass Belt Drive Duct Fan, shown hereon is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Standard 211 and comply with the requirements of the Certified Ratings Program.



Principal Dimensions – Series 34

Fan Size	A	B	C	D	F	J	K	Max Motor Frame	*Max Fan Weight
12	12 $\frac{1}{2}$	16 $\frac{1}{4}$	14 $\frac{1}{2}$	$\frac{3}{16}$	20	$\frac{5}{16}$	6	145T	90
16	16 $\frac{1}{2}$	20	18 $\frac{1}{2}$	$\frac{3}{16}$	21	$\frac{5}{16}$	6	145T	100
18	18 $\frac{1}{2}$	22 $\frac{1}{2}$	20 $\frac{1}{2}$	$\frac{1}{4}$	22	$\frac{5}{16}$	6	184T	125
20	20 $\frac{1}{2}$	24 $\frac{1}{2}$	22 $\frac{1}{2}$	$\frac{1}{4}$	25	$\frac{5}{16}$	6	143T	140
24	24 $\frac{1}{2}$	28 $\frac{1}{2}$	26 $\frac{1}{2}$	$\frac{1}{4}$	25	$\frac{5}{16}$	6	215T	170
28	28 $\frac{1}{2}$	32 $\frac{1}{2}$	30 $\frac{1}{2}$	$\frac{1}{4}$	25	$\frac{5}{16}$	6	254T	200
32	33	36 $\frac{1}{2}$	34 $\frac{1}{2}$	$\frac{1}{4}$	28	$\frac{5}{16}$	6	254T	280
36	37	40 $\frac{1}{2}$	38 $\frac{1}{2}$	$\frac{1}{4}$	28	$\frac{5}{16}$	6	256T	325
40	41	44 $\frac{1}{2}$	43 $\frac{1}{2}$	$\frac{5}{16}$	36	$\frac{5}{16}$	12	215T	440
44	45	48 $\frac{1}{2}$	47 $\frac{1}{2}$	$\frac{5}{16}$	36	$\frac{5}{16}$	12	286T	510
48	49 $\frac{1}{2}$	53 $\frac{1}{2}$	51 $\frac{1}{2}$	$\frac{5}{16}$	36	$\frac{5}{16}$	12	324T	600
54	55 $\frac{1}{2}$	59 $\frac{1}{2}$	57 $\frac{1}{2}$	$\frac{5}{16}$	40	$\frac{5}{16}$	12	326T	835
60	61 $\frac{1}{2}$	65 $\frac{1}{2}$	63 $\frac{1}{2}$	$\frac{5}{16}$	40	$\frac{5}{16}$	12	364T	930

*Weight without motor and accessories



Performance Data

A34--- 6 --- FG

Size	Model	Motor		Peak Fan BHP	Fan RPM	Cubic Feet Per Minute vs. Static Pressure											
		HP	RPM			0"	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	
						CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM
12	A34---126FW---FG__D3	3/4	1750	0.28	2000	1370	1249	1021	621	431	326	235	163				
	A34---126FW---FG__E3	3/4	1750	0.37	2203	1509	1403	1251	817	623	456	364	281	210			
	A34---126FW---FG__F3	3/4	1750	0.56	2538	1738	1649	1538	1366	935	762	607	490	417	344	277	
16	A34---166FW---FG__G3	3/4	1750	0.84	2278	3676	3530	3382	3200	2969	2648	2088	1769	1517	1273		
	A34---166FW---FG__H3	1	1750	1.11	2507	4045	3913	3780	3633	3452	3230	2935	2401	2071	1824	1600	
	A34---186FW---FG__D3	3/4	1750	0.27	1303	3087	2795	2186	1242								
18	A34---186FW---FG__F3	3/4	1750	0.56	1544	3658	3426	3101	2327	1545	1218	898	691	517	349		
	A34---186FW---FG__G3	3/4	1750	0.75	1764	4179	3982	3737	3389	2547	1834	1537	1246	988	811		
	A34---186FW---FG__H3	1	1750	0.98	1946	4611	4434	4229	3964	3586	2664	2049	1773	1521	1251	1040	
20	A34---206FW---FG__F3	3/4	1750	0.57	1340	4070	3795	3416	2225	1535	1098	700	402	191			
	A34---206FW---FG__G3	3/4	1750	0.78	1535	4662	4428	4146	3715	2468	1849	1482	1091	765	502		
	A34---206FW---FG__H3	1	1750	1.00	1690	5133	4924	4682	4379	3846	2573	2056	1728	1368	1038	764	
24	A34---246FW---FG__H3	1	1750	1.14	1286	6853	6483	6048	5433	4106	2807	2175	1590	1165	791	474	
	A34---246FW---FG__J3	2	1750	1.90	1625	8660	8374	8062	7715	7307	6721	5727	4379	3538	3022		
	A34---246FW---FG__K3	3	1750	2.77	1856	9891	9643	9379	9094	8783	8433	7978	7340	6339	5135	4295	
28	A34---286FW---FG__H3	1	1750	1.06	994	8729	8177	7597	6817	4362	3279	2475					
	A34---286FW---FG__J3	2	1750	2.07	1253	11003	10570	10122	9661	9168	8346	6052	4886	4094	3435		
	A34---286FW---FG__K3	3	1750	3.07	1434	12592	12216	11829	11433	11028	10600	10027	8987	6647	5723	4995	
32	A34---326FW---FG__J3	2	1750	2.24	986	13490	12895	12273	11599	10660	8818	5866	4813	3973			
	A34---326FW---FG__K3	3	1750	3.26	1128	15433	14916	14377	13825	13221	12423	11277	8492	6524	5635		
	A34---326FW---FG__L3	5	1750	5.44	1338	18306	17873	17426	16969	16505	16014	15459	14763	13873	12443		
36	A34---326FW---FG__M3	7 1/2	1750	7.89	1515	20728	20346	19956	19556	19152	18741	18314	17861	17329	16698	15934	
	A34---366FW---FG__K3	3	1750	3.19	969	17995	17296	16532	15672	14615	12853	8782	7320	6064	4931	3864	
	A34---366FW---FG__L3	5	1750	4.62	1149	21337	20755	20136	19475	18753	17924	16934	15315	11465	9676		
40	A34---366FW---FG__M3	7 1/2	1750	7.08	1325	24606	24105	23581	23030	22451	21833	21155	20390	19507	18246	15585	
	A34---406FW---FG__J3	2	1750	2.20	704	16132	15267	14329	13130	10774	7111	5491	4198				
	A34---406FW---FG__K3	3	1750	3.28	806	18469	17721	16929	16063	14945	13143	9185	7465	6109	4977		
44	A34---406FW---FG__L3	5	1750	5.30	961	22021	21400	20750	20077	19356	18512	17462	15915	12586	10144		
	A34---406FW---FG__M3	7 1/2	1750	7.78	1092	25023	24479	23916	23334	22737	22104	21399	20566	19571	18156		
	A34---406FW---FG__N3	10	1750	11.22	1193	27337	26840	26330	25803	25267	24712	24129	23491	22754	21908	20902	
48	A34---446FW---FG__K3	3	1750	3.39	740	22535	21429	20281	19061	17415	14708	10914	8648	6976	5280		
	A34---446FW---FG__L3	5	1750	5.14	877	26707	25780	24821	23848	22822	21608	19936	17500	14191	11573		
	A34---446FW---FG__M3	7 1/2	1750	7.66	1002	30514	29705	28876	28027	27174	26281	25314	24064	22481	20349		
54	A34---446FW---FG__N3	10	1750	10.30	1106	33681	32950	32204	31442	30672	29894	29085	28226	27196	25939	24385	
	A34---486FW---FG__J3	2	1750	2.21	600	22181	20839	19320	17172	13297	9426						
	A34---486FW---FG__K3	3	1750	3.39	688	25435	24259	23032	21560	19556	16329	12508	9872				
60	A34---486FW---FG__L3	5	1750	5.52	816	30167	29164	28188	27107	25878	24360	22364	19481	16133	13390		
	A34---486FW---FG__M3	7 1/2	1750	8.20	932	34455	33570	32723	31837	30874	29813	28564	27077	25174	22636		
	A34---486FW---FG__N3	10	1750	11.01	1028	38004	37196	36425	35653	34819	33933	32970	31866	30602	29105	27219	
54	A34---546AF250FG__L3	5	1750	5.42	539	37091	34932	33078	30958	27415	17578	14136	9652				
	A34---546AF250FG__M3	7 1/2	1750	8.07	616	42390	40470	38776	37172	35198	32374	22910	18672	15513	11490		
	A34---546AF250FG__N3	10	1750	10.82	679	46725	44967	43365	41922	40406	38508	35957	28829	21962	19240		
60	A34---606AF250FG__O3	15	1750	16.06	775	53331	51774	50322	48994	47732	46427	44860	43010	40443	34418	26102	
	A34---606AF250FG__L3	5	1750	5.72	472	43397	40684	37640	34620	28522	17461	12014					
	A34---606AF250FG__M3	7 1/2	1750	8.61	539	49557	47221	44597	42018	39232	34342	23059	17669	12912			
60	A34---606AF250FG__N3	10	1750	11.18	594	54614	52512	50200	47748	45494	42771	38305	28261	21614	17438		
	A34---606AF250FG__O3	15	1750	16.76	680	62521	60701	58768	56658	54522	52565	50463	47538	43084	34215	26662	

Performance shown is for installation Type D: ducted inlet/ducted outlet.
 Power rating (BHP) includes drive losses.
 Performance ratings do not include the effects of appurtenances in the airstream.

Bold-type information provided in the Rating Table above is needed when preparing a model code. See page 2 for the complete Hartzell model code explanation and example.



Duct Axial® Fan (Belt Drive)



Series 35

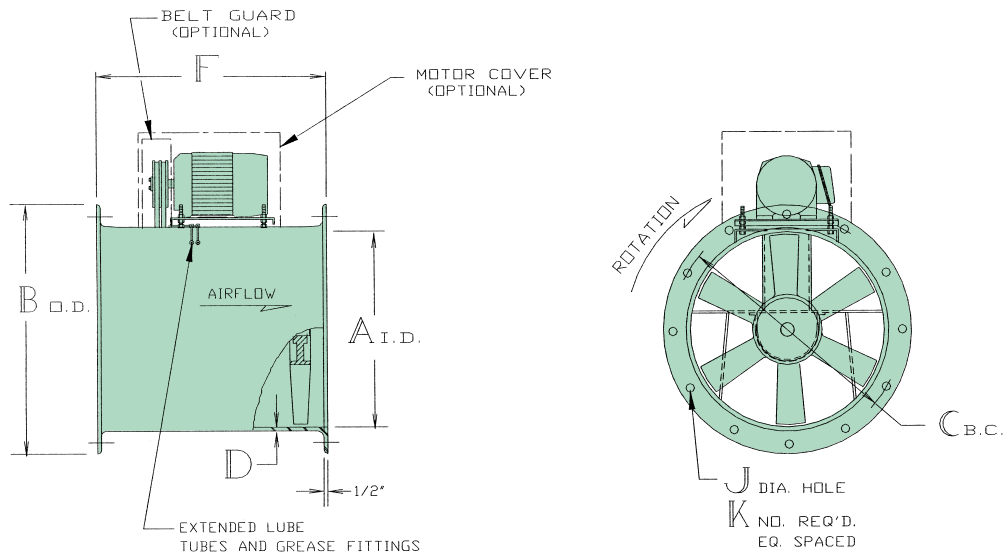


Hartzell Fan, Inc. certifies that the Series 35, Fiberglass Belt Drive Duct Axial Fan, shown hereon is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Standard 211 and comply with the requirements of the Certified Ratings Program.

Fiberglass Belt Drive Duct Axial Fans combine many of the best features of the rugged, highly efficient Vaneaxial Blower with the economical performance of the Hartzell Duct Fan. Duct Axial® fans give maximum efficiency in the static pressure range from 1" to 3" at low speeds and with surprisingly low noise characteristics. The Hartzell belt drive fiberglass duct axial fan is designed for duct installations where the nature of the corrosive airstream warrants isolation of the motor and drive assembly from the airstream.

Features

- **Sizes** – 12" to 60"...performance from 600 CFM at 1" to 30,000 CFM at 4 1/2" static pressure.
- **Motor out of the airstream** – exterior mounting. Propeller shaft rotates in two heavy-duty bearings mounted on fiberglass supports taped to the inner shell with "T" reinforcements.
- **Corrosion duty construction** – belts, bearings, sheaves and shaft are enclosed and protected from the airstream. Drive compartment is located on the negative pressure (suction) side of the propeller drawing ambient air from outside the fan in and over the belts and bearings. Ensures contaminate-free drive compartment.
- **Propellers** – single piece, solid fiberglass construction, 6-bladed. Airfoil type propeller designed to move large volumes of air at medium static pressures. Blade type E
- **Motor** – open end protected motors are standard. Special motors are available upon request.
- **Drive Assembly** – shafts are stainless steel, keyed at both ends. Bearings are heavy-duty, self-aligning, deep-row, radial-ball type shielded and mechanically sealed in cast iron or malleable housing. Relubricable type for continuous service. Minimum 50,000 hrs. L-10 bearing life. Belts are oil-, heat- and static-resistant type, over-sized for continuous duty. Variable pitch drives are standard on units up to and including 10 HP. Variable-pitch drives can be furnished on higher horsepower units upon request.
- **Extended lube tubes** – from bearings to exterior of fan housing are standard.
- **Shaft** – is stainless steel with neoprene slinger, neoprene seal, and fiberglass cover plate.
- **Internal bolts** – are stainless steel and resin coated after assembly. Monel bolts and shafts are optional.
- **Accessories** – see page 19.



Principal Dimensions – Series 35

Fan Size	A	B	C	D	F	J	K	Max Motor Frame	*Max Fan Weight
12	12 $\frac{1}{2}$	16 $\frac{1}{2}$	14 $\frac{1}{2}$	$\frac{3}{16}$	20	$\frac{5}{16}$	6	145T	90
16	16 $\frac{1}{2}$	20	18 $\frac{1}{2}$	$\frac{3}{16}$	21	$\frac{5}{16}$	6	145T	100
18	18 $\frac{1}{2}$	22 $\frac{1}{2}$	20 $\frac{1}{2}$	$\frac{1}{4}$	22	$\frac{5}{16}$	6	184T	125
24	24 $\frac{1}{2}$	28 $\frac{1}{2}$	26 $\frac{1}{2}$	$\frac{1}{4}$	25	$\frac{1}{16}$	6	215T	170
28	28 $\frac{1}{2}$	32 $\frac{1}{2}$	30 $\frac{1}{2}$	$\frac{1}{4}$	25	$\frac{1}{16}$	6	254T	200
32	33	36 $\frac{1}{2}$	34 $\frac{1}{2}$	$\frac{1}{4}$	28	$\frac{1}{16}$	6	254T	280
36	37	40 $\frac{1}{2}$	38 $\frac{1}{2}$	$\frac{1}{4}$	28	$\frac{1}{16}$	6	256T	325
44	45	48 $\frac{1}{2}$	47 $\frac{1}{2}$	$\frac{3}{16}$	36	$\frac{1}{16}$	12	286T	510
48	49 $\frac{1}{2}$	53 $\frac{1}{2}$	51 $\frac{1}{2}$	$\frac{3}{16}$	36	$\frac{1}{16}$	12	324T	600
54	55 $\frac{1}{2}$	59 $\frac{1}{2}$	57 $\frac{1}{2}$	$\frac{3}{16}$	40	$\frac{1}{16}$	12	326T	835
60	61 $\frac{1}{2}$	65 $\frac{1}{2}$	63 $\frac{1}{2}$	$\frac{3}{16}$	40	$\frac{1}{16}$	12	364T	930

*Weight without motor and accessories



Duct Vaneaxial Fan (Belt Drive)



Series 35V

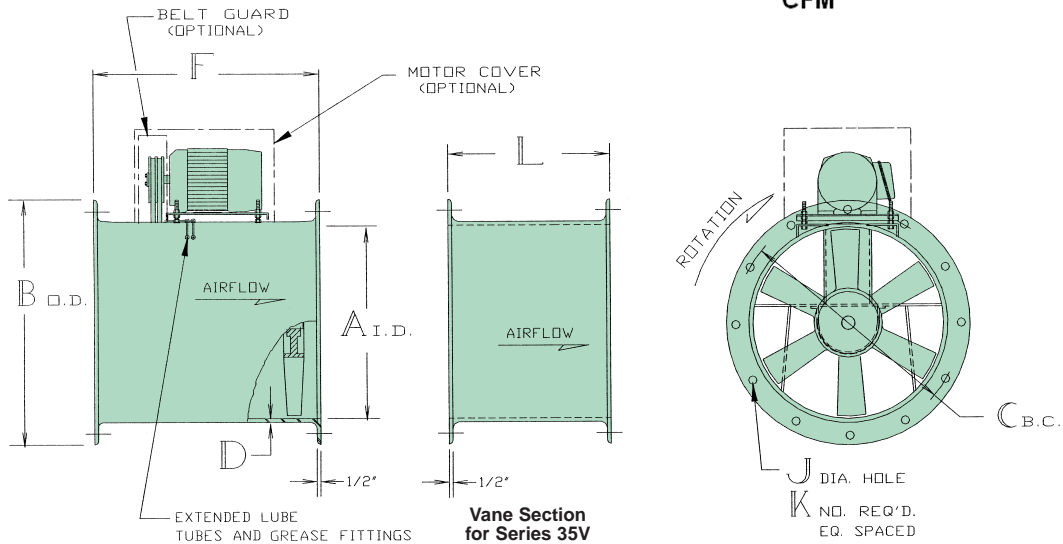
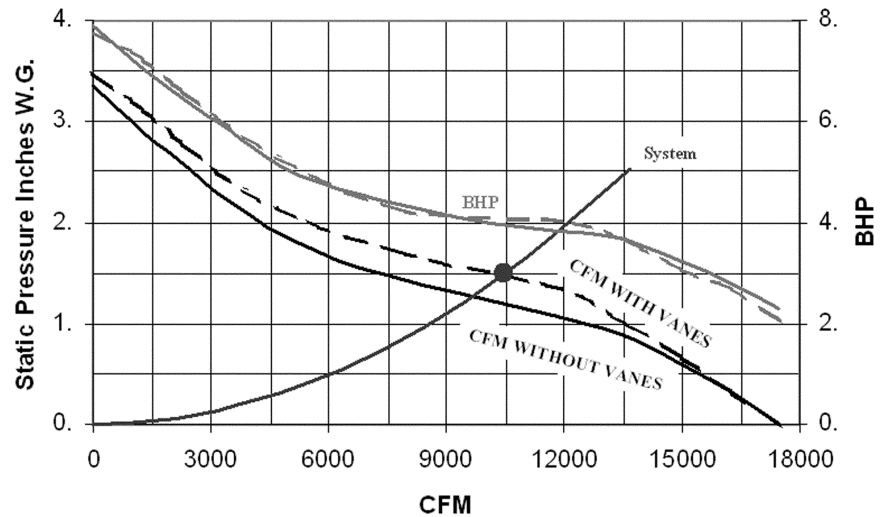


Hartzell Fan, Inc. certifies that the Series 35V, Fiberglass Belt Drive Duct Vaneaxial Fan, shown hereon is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Standard 211 and comply with the requirements of the Certified Ratings Program.

The addition of a specially designed vane section to the duct axial fan changes the design configuration to a fiberglass duct vaneaxial. The addition of the vane section to the discharge side of any duct axial fan makes it perform efficiently as a low-powered vaneaxial on the upper side of its pressure curve. Near free air the guide vanes offer no advantages but beyond the mid-range, the vanes provide about 30% more static pressure with the same horsepower.

The purpose of the discharge vane is two-fold: Air leaves any axial fan wheel with a rotational component to the flow that increases from free air to block-off. The rotational component (spin) is straightened by the vanes to give a smoother flow leaving the fan discharge. A large part of the rotational kinetic energy is converted to potential energy resulting in higher static pressure for the fan.

Comparison of 36" Duct Axial Fans, with and without Vane Section.



Principal Dimensions – Series 35V

Fan Size	A	B	C	D	F	J	K	L	Max Motor Frame	*Max Fan Weight
12	12%	16%	14½	⅜	20	⅝	6	6	145T	105
16	16%	20	18½	⅜	21	⅝	6	10	145T	120
18	18%	22½	20½	¼	22	⅝	6	11	184T	150
24	24%	28½	26%	¼	25	⅝	6	13	215T	210
28	28%	32%	30%	¼	25	⅝	6	13	254T	250
32	33	36½	34%	¼	28	⅝	6	15	254T	345
36	37	40%	38%	¼	28	⅝	6	16	256T	405
44	45	48%	47%	⅝	36	⅝	12	19	286T	615
48	49%	53%	51%	⅝	36	⅝	12	22	324T	735
54	55%	59%	57%	⅝	40	⅝	12	23	326T	995
60	61%	65%	63%	⅝	40	⅝	12	25	364T	1120

*Weight without motor and accessories



Size 54 A35---546-E---FG ___ ___ and A35V--546-E---FG ___ ___

Series	CFM	Outlet Velocity FPM	Static Pressure															
			0"		1/2"		1"		1 1/2"		2"		2 1/2"		3"		4"	
			RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
35	16000	957	285	0.37	465	2.69	606	6.15	698	10.30	771	14.90	834	19.70	892	24.70	995	35.50
35V			286	0.36	430	2.19	559	4.94	659	8.35	733	12.10	798	16.30	856	20.90	961	31.10
35	20000	1196	357	0.72	498	3.23	640	7.00	746	11.40	827	16.40	892	21.80	950	27.60	1052	39.60
35V			358	0.70	477	2.81	585	5.60	687	9.16	773	13.30	843	17.70	902	22.50	1006	32.90
35	24000	1435	428	1.24	543	3.95	668	7.93	780	12.70	870	18.00	944	23.70	1006	29.80	1109	43.20
35V			430	1.20	531	3.59	623	6.57	713	10.10	799	14.40	876	19.10	943	24.20	1052	35.10
35	28000	1674	500	1.96	598	4.86	701	9.04	808	14.10	903	19.70	983	25.70	1052	32.20		
35V			501	1.91	588	4.59	671	7.85	747	11.50	825	15.70	901	20.50	970	25.80		1091
35	32000	1913	571	2.93	658	6.06	743	10.40	838	15.60	931	21.50	1015	27.90	1088	34.60		
35V			573	2.85	650	5.84	724	9.35	793	13.30	859	17.50	927	22.30	995	27.70	1118	39.50
35	36000	2153	642	4.18	719	7.64	795	12.00	875	17.40	960	23.50	1042	30.20	1118	37.30		
35V			644	4.06	714	7.39	779	11.10	844	15.30	905	19.80	963	24.60	1023	29.90		
35	40000	2392	714	5.73	783	9.56	852	14.00	920	19.60	995	25.80	1072	32.70				
35V			716	5.57	779	9.24	838	13.20	897	17.70	954	22.50	1009	27.50	1061	32.80		
35	44000	2631	785	7.62	848	11.80	911	16.30	973	22.00	1037	28.50	1106	35.50				
35V			788	7.41	846	11.40	900	15.70	953	20.30	1007	25.50	1058	30.80	1107	36.30		
35	48000	2870	856	9.90	914	14.50	972	19.20	1029	24.90	1085	31.60						
35V			859	9.62	913	14.00	963	18.50	1012	23.40	1061	28.80	1110	34.40				
35	52000	3109	928	12.60	981	17.60	1035	22.60	1088	28.20								
35V			931	12.20	980	16.90	1027	21.80	1072	26.90	1118	32.50						

Size 60 A35---606-E---FG ___ ___ and A35V--606-E---FG ___ ___

Series	CFM	Outlet Velocity FPM	Static Pressure															
			0"		1/2"		1"		1 1/2"		2"		2 1/2"		3"		4"	
			RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
35	20000	973	261	0.47	421	3.34	548	7.64	632	12.70	698	18.40	755	24.40	807	30.60	900	44.00
35V			262	0.46	389	2.73	505	6.13	595	10.30	663	15.00	722	20.20	774	25.90	868	38.40
35	25000	1217	327	0.92	451	4.03	579	8.70	675	14.20	749	20.30	807	27.00	860	34.20	952	49.20
35V			328	0.90	434	3.53	529	6.97	621	11.40	699	16.40	763	22.00	816	27.80	910	40.80
35	30000	1460	392	1.59	493	4.95	604	9.88	706	15.80	787	22.30	854	29.40	911	36.90	1004	53.50
35V			393	1.55	483	4.53	565	8.22	645	12.60	722	17.80	791	23.60	852	29.90	952	43.50
35	35000	1704	457	2.53	545	6.13	636	11.30	731	17.50	817	24.40	889	31.90	952	39.90		
35V			459	2.46	536	5.79	610	9.85	678	14.40	746	19.60	814	25.50	877	32.00	986	46.30
35	40000	1947	522	3.78	600	7.68	675	13.00	759	19.50	842	26.70	917	34.60	984	43.00		
35V			524	3.67	593	7.41	658	11.80	720	16.60	779	21.90	839	27.80	900	34.40	1011	49.00
35	45000	2190	588	5.38	656	9.71	724	15.10	794	21.80	870	29.30	943	37.50	1011	46.30		
35V			590	5.23	651	9.38	710	14.00	767	19.30	821	24.80	873	30.80	926	37.30		
35	50000	2434	653	7.38	715	12.20	776	17.60	836	24.60	902	32.30	970	40.70				
35V			655	7.18	711	11.80	764	16.70	816	22.20	867	28.20	915	34.50	962	41.00		
35	55000	2677	718	9.82	774	15.10	830	20.60	885	27.70	941	35.70	1003	44.40				
35V			721	9.55	772	14.60	820	19.80	868	25.60	915	32.00	961	38.60	1005	45.50		
35	60000	2920	784	12.80	835	18.50	886	24.40	937	31.40	987	39.60						
35V			786	12.40	834	17.90	878	23.50	922	29.60	966	36.20	1009	43.30				
35	65000	3164	849	16.20	896	22.50	944	28.70	991	35.60								
35V			852	15.80	896	21.60	937	27.70	978	34.10								

Performance shown is for belt drive fans, installation Type D: ducted inlet/ducted outlet. Power ratings (BHP) include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

Series 35 denotes standard configuration. Series 35V denotes addition of guide vane section. Series, class of construction, and information provided in the Rating Table(s) is needed when preparing a model code. See page 2 for the complete Hartzell model code explanation and example.



Corrosion Resistance Guide

Temperature values shown are for immersion or condensate contact applications. Where temperature values are shown, resin is suitable for hood and duct type applications for the full operating temperature range of the product. See product specifications for materials of construction and maximum operating temperature limits.

Environment	Hetron 693 Ashland F.	6694 Reichold F.	510A Dow F.	Environment	Hetron 693 Ashland F.	6694 Reichold F.	510A Dow F.	Environment	Hetron 693 Ashland F.	6694 Reichold F.	510A Dow F.
ACIDS				ALKALIES (Synthetic Veil)				SALTS (cont'd.)			
Acetic to 10%	180	200	210	Ammonium Bicarbonate to 50%	140	\$170	160	Sodium Ferricyanide	220	220	210
Acetic to 50%	90	160	180	Ammonium Carbonate	120	\$140	150	Sodium Fluoride	-	\$180	\$180
Acetic to 100%	-	NR	NR	Ammonium Hydroxide to 5%	\$90	\$180	\$180	Sodium Nitrate	220	220	210
Acrylic to 25%	-	100	100	Ammonium Hydroxide to 10%	\$90	\$170	\$150	Sodium Nitrite	-	220	NR
Benzene Sulfonic to 25%	180	210	150	Ammonium Hydroxide to 29%	NR	\$100	\$100	Sodium Silicate PH less than 1	160	210	NR
Benzene Sulfonic 25% up	90	210	NR	Barium Carbonate	180	\$240	210	Sodium Sulfate	180	240	210
Benzoic	250	220	210	Barium Hydroxide to 10%	-	\$170	150	Sodium Sulfite	-	220	210
Boric	180	220	210	Calcium Hydroxide to 15%	160	\$210	\$180	Stannic Chloride	*180	*220	*210
Butyric to 50%	150	150	210	Magnesium Carbonate	160	\$210	180	Stannous Chloride	*200	*220	*210
Butyric 50% up	-	100	80	Potassium Bicarbonate to 10%	90	\$170	\$150	Zinc Chloride	200	*220	*210
Carbonic	160	220	NR	Potassium Carbonate to 10%	90	\$180	\$150	Zinc Nitrate	180	220	210
Chloroacetic to 25%	NR	*180	*150	Potassium Hydroxide to 25%	NR	\$120	\$150	Zinc Sulfate	150	220	NR
Chloroacetic 25% to 50%	NR	*150	*120	Sodium Bicarbonate to 10%	140	\$210	\$180	SOLVENTS			
Chromic to 5%	100	110	150	Sodium Carbonate to 35%	90	\$180	\$180	Acetone to 10%	NR	180	180
Chromic to 10% to 20%	-	NR	150	Sodium Hydroxide to 10%	NR	\$160	\$180	Benzene	90	80	NR
Citic	*200	*220	*210	Sodium Hydroxide to 25%	NR	\$160	\$180	Carbon Disulfide	NR	NR	NR
Fluoboric	*\$90	*\$220	*\$210	Sodium Sulfide	90	\$220	\$210	Carbon Tetrachloride	90 VAPOR	110	150
Glucosilicic up to 10%	\$100	\$150	\$180	Trisodium Phosphate to 50%	-	\$175	210	Chlorobenzene	NR	NR	NR
Formic up to 10%	200	150	180	SALTS				Ethyl Acetate	NR	NR	NR
Gluconic to 50%	120	180	180	Aluminum Chloride	*120	*240	*210	Ethyl Chloride	90 VAPOR	NR	NR
Hydrobromic to 25%	*160	*170	*180	Aluminum Potassium Sulfate	160	240	210	Ethylene Dibromide	NR	NR	NR
Hydrochloric to 15%	*230	*210	*180	Aluminum Sulfate	250	240	210	Ethylene Glycol	250	220	210
Hydrocyanic to 10%	200	170	210	Ammonium Chloride	*200	*220	*210	n-Heptane	120	210	210
Hydrofluoric to 10%	***\$100	***\$150	***\$150	Ammonium Nitrate	200	220	220	Hexane	-	150	160
Hydrofluorsilicic up to 10%	*\$100	*\$150	*\$180	Ammonium Persulfate	150	200	180	Methyl Ethyl Ketone to 10%	NR	80	NR
Hypochlorous to 20%	90	110	NR	Ammonium Persulfate, saturate	150	NR	NR	Naphtha	200	210	180
Lactic	*200	*220	*210	Ammonium Sulfate	200	220	220	Naphthalene	130	220	210
Maleic	170	210	210	Aniline Sulfate to 25%	150	220	210	Tetrachloroethylene	NR	100	80
Nitric to 5%	200	170	150	Aniline Sulfate, saturated	150	220	NR	Toluene	90	NR	80
Nitric 5% to 20%	-	140	120	Barium Chloride	200	240	210	Xylene	90	80	80
Oleic	200	220	210	Barium Sulfide	NR	\$210	180	BLEACHES			
Oxalic	*220	*220	*210	Calcium Chlorate	180	220	220	Calcium Chlorate	180	220	220
Perchloric to 10%	H&D	**150	**150	Calcium Chloride	250	240	220	Calcium Hypochlorite	100	NR	\$160
Phosphoric	*220	*\$210	*\$210	Calcium Sulfate	*200	*240	*210	Chlorine Dioxide up to 15%	-	160	*200
Phosphoric, super	-	*\$210	*\$210	Copper Chloride	*250	*220	*220	Chlorine Water	*125	*210	*200
Phthalic Anhydride	*150	*210	*210	Copper Cyanide	90	\$220	210	Hydrogen Peroxide to 30%	120	100	150
Picric to 10%	100	170	NR	Copper Fluoride	NR	\$170	NR	Sodium Chlorate	90	210	210
Silicic	-	220	NR	Copper Sulfate	250	240	210	Sodium Hypochlorite to 15%	NR	125	\$180
Stearic	200	220	210	Ferric Chloride	*250	*220	*210	OTHERS			
Sulfamic to 25%	160	150	NR	Ferric Nitrate	170	220	210	Alum. Chlorohydroxide to 50%	-	220	210
Sulfuric to 25%	*200	*220	*210	Ferric Sulfate	200	220	210	Ammonium Phosphate	150	210	210
Sulfuric to 50%	*200	*200	*180	Ferrous Chloride	*220	*220	*210	Aqua Regia	NR	*80	NR
Sulfuric to 70%	*150	*180	*100	Ferrous Nitrate	160	220	210	Detergents	120	170	150
Sulfuric to 80%	NR	80	NR	Ferrous Sulfate	220	220	210	Glycerine	200	220	210
Sulfurous to 10%	90	110	120	Lead Acetate	200	220	210	Kerosene	120	210	180
Tannic	200	220	210	Magnesium Chloride	220	240	210	Photographic Solutions	-	80	NR
Tartaric	220	220	210	Magnesium Hydroxide	-	\$210	210	Perchloroethylene	NR	100	80
Trichloroacetic to 50%	*90	*220	*200	Magnesium Sulfate	200	210	210	Sodium Tetraborate	180	\$210	180
ALCOHOLS				Mercuric Chloride	*210	*220	*210	Sodium Tripolyphosphate	125	210	210
Amyl	200	210	120	Mercurous Chloride	210	220	210	Sodium Xylene Sulfonate	-	170	160
Benzyl	NR	100	NR	Nickel Chloride	220	220	210	Sorbitol Solutions	180	220	160
Butyl	190	150	120	Nickel Nitrate	220	220	210	Urea	90	170	150
Ethyl	90	120	80	Nickel Sulfate	220	220	210	Urea-Ammonium-Nitrate	-	120	120
Methyl	90	80	NR	Potassium Chloride	200	240	210	Fertilizer Fumes	100	120	150
GASES AND VAPORS				Potassium Dichromate	200	220	210	Shell-D-D	NR	100	NR
Ammonia, Dry	90	170	100	Potassium Ferricyanide	200	220	210	Steam Vapor	180	210	180
Ammonia, Wet	90	NR	NR	Potassium Nitrate	200	220	210				
Bromine, Wet	90	*100	NR	Potassium Permanganate	150	210	210				
Carbon Dioxide	250	250	250	Potassium Persulfate	90	220	210				
Carbon Monoxide	200	250	250	Potassium Sulfate	200	240	210				
Chlorine, Dry	*200	*210	NR	Silver Nitrate	200	220	210				
Fluorine	-	NR	80	Sodium Acetate	150	220	210				
Hydrogen Fluoride, Vapor	*90	*\$180	*\$180	Sodium Bisulfate	200	220	210				
Hydrogen Sulfide to 5%	250	240	180	Sodium Chloride	200	240	180				
Sulfur Dioxide, Dry	200	250	210	Sodium Chlorite to 10%	175	170	150				
Sulfur Dioxide, Wet	200	250	210	Sodium Cyanide	100	220	210				
Sulfur Trioxide, Wet	-	220	210	Sodium Dichromate	160	220	210				

Reference
C.R.G.1.1

NOTES: NR = Not Recommended S = Synthetic surfacing veil or mat required. Contact factory. "-" = No test data available

- * Special shaft and hardware required, contact factory.
 - ** Special design considerations required (explosive environment), contact factory.
 - *** Do not use HartKoate. Special shaft and hardware required, contact factory.
- For environments not shown, or when temperatures exceed the maximum listed, contact factory.
Hydrocarbon fuel environments may require static grounding, contact factory.
Do not use HartKoate (Alum. Oxide) with Hydrofluoric acid.

SAFETY ACCESSORIES, APPLICATION AND USE WARNING

The safe application and use of equipment supplied by Hartzell Fan, Inc. is the responsibility of the installer, the user, the owner, and the employer. Since the application and use of its equipment can vary greatly, Hartzell Fan, Inc. offers various product types, optional safety accessories, and sound performance data per laboratory tests. Hartzell Fan, Inc. sells its equipment with and without safety accessories, and accordingly, it can supply such safety accessories only upon receipt of an order. The need for safety accessories will frequently depend upon the type of system, fan location and operating procedures being employed. The proper protective safety accessories to meet company standards, local codes, and the requirements of the Occupational Safety and Health Act must be determined by the user since safety requirements vary depending on the location and use of the equipment. If applicable local conditions, standards, codes or OSHA rules require the addition of the safety accessories, the user should specify and obtain the required safety accessories from Hartzell Fan, Inc. and should not allow the operation of the equipment without them.

Owners, employers, users and installers should read "RECOMMENDED SAFETY PRACTICES FOR USERS AND INSTALLERS OF INDUSTRIAL AND COMMERCIAL FANS" published by the Air Movement and Control Association International, Inc., 30 West University Drive, Arlington Heights, Illinois 60004. A copy of this publication is enclosed with each fan shipped from Hartzell Fan, Inc., and is also available upon request at Hartzell's office in Piqua, Ohio 45356.

Please contact Hartzell Fan, Inc. or your local Hartzell representative for more information on product types, safety accessories, and sound performance estimates.

Remember, the selection of safety accessories and the safe application and use of equipment supplied by Hartzell Fan, Inc. is **your** responsibility.



General Construction Options

Abrasive/Erosive Resistant Coating

HartKoate is an abrasive/erosive resistant coating developed by Hartzell Fan for application in environments where abrasive/erosive conditions may exist. HartKoate helps prevent premature deterioration of equipment in environments where uncoated fans may fail.

Impact resistant HartKoate is applied to a 50-60 mil thickness suitable for temperatures to 200°F.

HartKoate is particularly appropriate for use when water mist and/or abrasive particles exist in the airstream.

Contact your Hartzell representative for further details concerning the application of HartKoate coating to fiberglass fans in corrosive atmospheres.

Caution: The drive assembly or the periphery of the blades of a fan less than seven (7) feet above the floor or working level must be guarded to be in accordance with OSHA regulations.

Hi-Cor Construction

For duct, duct axial and vaneaxial fans, extra flange mounting holes are provided.

All airstream surfaces exposed to the corrosive environment will be protected with a layer of Synthetic (Nexus) surfacing veil. An additional final coat of resin will be applied for extra corrosion resistance.

When Hi-Cor Construction is required, the factory should be consulted concerning the corrosive environment involved.

Electrostatically Grounded Fiberglass Fans

For applications in which fiberglass fans are handling gas fumes that are not only corrosive but also potentially explosive, the equipment should be specially constructed to control and remove static electricity. Interior airstream surfaces can be coated with a "carbon rich" resin coat and grounding straps secured from the side of the housing to the fan's steel base. All that remains to effectively ground the airstream is to ground the fan base at the time of installation.

ASTM D4167-97 Construction

(ASTM D4167-97, Standard Specification for Fiber-Reinforced Plastic Fans and Blowers) For corrosive systems where ASTM construction is specified this construction option adds: synthetic veil and electrostatically conductive surface coating applied to airstream housing and impeller surfaces, special nameplates, and special final dynamic balancing to fan.

Options and Accessories

Duct and Duct Axial® Accessories

Companion Flanges

Drilled to fit the flanges of the duct fan; allows easy installation. Fiberglass construction.

Fiberglass Motor Cover

Designed to fit fiberglass duct and duct axial fans. Covers are solid fiberglass, die-formed, with injection molded louvers.



Combination Motor Cover and Belt Guard

Designed to fit belt drive duct fans. Covers are vented. Specify horizontal or vertical mounting. Steel construction, epoxy coated.

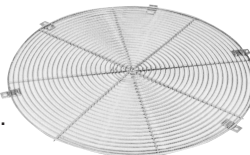
Belt Guard

Covers motor sheave and belts outside fan housing. Steel construction, epoxy coated.



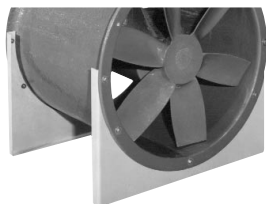
Guards

Inlet and outlet guards are available for fiberglass axial flow units. OSHA approved. Steel construction, epoxy coated.



Mounting Feet

Bolted to the inlet and discharge flanges, mounting feet allow positioning of the duct fan on the floor, ceiling, wall or platform. Can be used with vibration isolators. Steel construction, epoxy coated.



Ceiling Suspension

Mounting feet bolted to inlet and discharge flanges provide a convenient method of ceiling suspension. Can be used with vibration isolators. Steel construction, epoxy coated. Also available in rigid PVC, contact factory.

Roof Mounted Upblast

Together with a fiberglass curb panel and fiberglass stack cap, the Hartzell fiberglass duct fan or bifurcated fan can be mounted as a roof exhaustor. Stack cap has back draft dampers to provide weathertight closure for vertical air discharge. See Bulletin A-141.



Hooded

When required, the Hartzell fiberglass duct fan or bifurcated fan can be supplied with a fiberglass weather hood. These power roof ventilators can be used for intake or exhaust. See Bulletin A-141.



Hartzell Warranty

LIMITED WARRANTIES

Hartzell represents to Buyer that any goods to be delivered hereunder will be produced in compliance with the requirements of the Fair Labor Standards Act of 1938 as amended.

Hartzell also warrants to Buyer its goods to be free from defects in workmanship and material under normal use and service for one (1) year after tender of delivery by Hartzell, plus six (6) months allowance for shipment to approved stocking dealers and distributors. No warranty extends to future performance of goods and any claims for breach of warranty or otherwise accrues upon tender of delivery. The foregoing constitute Hartzell's sole and exclusive warranties in lieu of all other warranties, whether written, oral, express, implied or statutory.

LIMITATION OF LIABILITY FOR BREACH OF WARRANTY

Hartzell's obligation for any breach of warranty is limited to repairing or replacing, at its option, without cost to Buyer at its factory any goods which shall, within such a warranty period, be returned to it with transportation charges prepaid, and which its examination shall disclose to its satisfaction to have been defective. Any request for repair or replacement should be directed to Hartzell Fan, Inc., P.O. Box 919, Piqua, Ohio 45356. Hartzell will not pay for any repairs made outside its factory without its prior written consent. This does not apply to any such Hartzell goods which have failed as a result of faulty installation or abuse, or incorrect electrical connections or alterations, made by others, or use under abnormal operating conditions or misapplication of the goods.

LIMITATION OF LIABILITY

To the extent the above limitation of liability for breach of warranty is not applicable, the liability of Hartzell on any claim of any kind, including negligence, for any loss or damage arising out of or connected with, or resulting from the sale and purchase of the goods or services covered by these Terms and Conditions of Sale or from the performance or breach of any contract pertaining to such sale or purchase or from the design manufacture, sale, delivery, resale, installation, technical direction installation, inspection repair, operation or use of any goods or services covered by these Terms and Conditions shall, in no case exceed the price allocable to the goods or services which gave rise to the claim and shall terminate one year after tender of delivery of said goods or services.

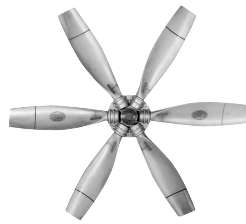
In no event whether as a result of breach of contract, or warranty or alleged negligence, defects incorrect advice or other causes, shall Hartzell be liable for special or consequential damages, including, but not limited to, loss of profits or revenue, loss of use of the equipment or any associated equipment, cost of substitute equipment, facilities or services, down time costs, or claims of customers of the Buyer for such damages. Hartzell neither assumes nor authorizes any person to assume for it any other liability in connection with the sale of its goods or services.

NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS

HARTZELL DOES NOT WARRANT THAT SAID GOODS ARE OF MERCHANTABLE QUALITY OR THAT THEY ARE FIT FOR ANY PARTICULAR PURPOSE. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY AND THERE IS NO IMPLIED WARRANTY OF FITNESS.



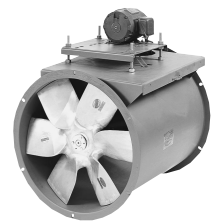
Propeller Fans



Cooling Tower &
Heat Exchanger Fans



Duct Fans



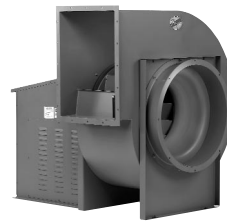
Duct Axial Fans



Vaneaxial Blowers



Cool Blast & Utility Fans



Steel Centrifugal Blowers



Roof Ventilators –
Steel & Fiberglass



Heating Equipment –
Gas & Steam



Fiberglass
Axial Flow Fans



Fiberglass Centrifugal
Blowers



Marine –
Mine Duty Blowers

Hartzell Fan, Inc., Piqua, Ohio 45356 • Plants in Piqua, Ohio and Portland, Indiana.