Hartzell
AIR MOVEMENT

Fiberglass Duct & Duct Axial Flow Fans

SERIES 28, 28B, 29, 29B, 34, 35, 35V

Hartzell Air Movement
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Website
www.hartzellairmovement.com

THE HARTZELL DIFFERENCE

Building the highest quality fans in America for generations

QUALITY AT EVERY TURN.

Hartzell Air Movement exceeds the standard in the air movement industry, committed to delivering top-quality, reliable products. And our relationship with our customers, and our knowledgeable, inventive, flexible and hardworking employees are the reasons we've continued and thrived, right here in the USA, for six generations.

Customers choose Hartzell for our:

- Durability and high performance
- Low cost of ownership
- Leadership in performance testing and certification
- Advanced engineering and manufacturing processes
- Innovative design and manufacturing
- Trusted brand name

Experienced Hartzell team to assist you from design to shipping

ISO 9001:2015 Certification
AMCA Accredited Laboratory
Complete Fans and Blowers
Centrifugal Wheels
Airfoil Propellers

HARTZELL ADVANTAGES

A LIFETIME OF VALUE

- ☐ Industrial fans are field proven, 100% tested, with virtually no incident of return
- ☐ Energy efficient designs that provide a lower total cost of ownership

LEADERSHIP IN PERFORMANCE

- ☐ Products certified by AMCA that meet DOE recommended efficiencies
- ☐ Highly efficient industrial fan designs that are the quietest in the market
- ☐ Airfoil shape blades with industry leading measured efficiencies

ADVANCED ENGINEERING & MANUFACTURING

- ☐ Proven manufacturing techniques on state of the art equipment in ISO 9001:2015 registered facilities
- ☐ Engineering team utilizes the latest design tools in 3D CAD and other modeling software

CREATIVE DESIGN & MANUFACTURING TEAM

- ☐ Offering the greatest number of industrial fan design choices
- ☐ Building products to meet your rigorous application; no limiting catalog

TRUSTED BRAND NAME

- ☐ Extensive talent pool bringing over 145 years of knowledge and experience to you

5-YEAR WARRANTY

- ☐ The industry's first and only manufacturer that stands behind their products for a full 5-years

amca INTERNATIONAL MEMBER
ISO 9001:2015 REGISTERED
ABS

- ☑ Register your 5 year warranty
- ☑ Download your installation manual
- ☑ Order replacement parts

Hartzell AIR MOVEMENT

For more information, contact your local Hartzell Sales Representative. info@hartzell.com

HARTZELL WARRANTY

LIMITED WARRANTIES, LIMITATION OF LIABILITY, AND LIMITATION OF LIABILITY FOR BREACH OF WARRANTY

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.

The details of the Hartzell warranty can be found at
http://www.hartzellairmovement.com/warranty-service

PERFORMANCE GUARANTEED

Your products are only as good as the components that go into them. We know you have high expectations, and so does Hartzell Air Movement. We know you expect the most reliable and durable industrial air movement products available, so we're holding ourselves to a higher standard. We're so sure that our products will out-perform industry standards, we're backing that promise with the industry's first – and only – five-year warranty.

At Hartzell, these are words we live by. They guide us every day. Good enough isn't how you design your products. It's not how we engineer, build and support our products — or provide ongoing service to our customers. When we looked at the industry standard two-year warranty, we knew we had to do better. And we did — by offering the Hartzell FIVE-YEAR WARRANTY.

Register for your 5year warranty at
https://www.hartzellairmovement.com/warranty-and-parts/five-year-warranty

Hartzell Air Movement proudly manufactures our fans right here in the USA!

MADE IN U.S.A.

Content

ADVANTAGES OF FIBERGLASS CONSTRUCTION

A variety of corrosion problems plague the water and wastewater industry. Although fans and blowers made of coated steel or metals such as stainless, Hastelloy and monel can handle some of these challenges, Hartzell's fiberglass products provide unsurpassed resistance to a great majority of corrosive elements at a cost substantially below that of corrosion resistant metals.

ADVANTAGES

☑ FIBERGLASS OFFERS SUPERIOR CORROSION RESISTANT PROPERTIES

- ☑ Weighs 25% - 50% less than comparable equipment made of metal alloys
- ☑ Has an extremely high strength-to-weight ratio, stronger than steel on a per-pound basis
- ☑ Has excellent dimensional stability
- ☑ Will not become brittle at low temperatures and at -40°F laminated fiberglass will be stronger than at room temperature
- ☑ Offers a distinct price advantage over stainless and Monel (as much as 1/3 in original cost)
- ☑ Has a longer service life and requires less maintenance
- ☑ Offers weather-resistant characteristics – it will not tarnish and will never need painting
- ☑ Is extremely durable and highly resistant to impact

When optional surface veil, electrical grounding and dynamic balancing are applied, Hartzell Air Movement conforms to ASTM D4167-21 and ASTM E84-2008 Standard Specifications for Fiber-Reinforced Plastic (FRP) Fans and Blowers.

SUPERIOR CORROSION RESISTANCE

RESIN TRANSFER MOLDED

- ☑ Solid, one-piece design from an RTM mold – up to 60" dia.
- ☑ Consistent wheels and propellers with 98%+ exact wheels and propellers. Only variation is in the requested finishes.

Hartzell offers the *ONLY* fiberglass wheels & propellers available in a solid, one-piece design from the mold.

- ☑ Repeatable Process
- ☑ Available in 12" - 60" diameters
- ☑ Much stronger wheels and propellers

Hartzell's fiberglass wheels and propellers are unique in the fan and blower industry.

They are manufactured as a single fiberglass piece using a multi-section RTM mold, ensuring that each wheel and prop is aerodynamically identical and provides reliable, repeatable performance without the variability of hand-made and taped components.

The superior design is a result of a substantial investment in research, development, tooling, and manufacturing methods by Hartzell Air Movement.

Fiberglass Axial Flow Fans

Standard Construction

- **FRP Construction –** 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. Corrosion resistant vinylester resin, having a Class I flame spread rate of 25 or less is used for all housings and propellers.
- **Hardware –** All internal hardware (airstream) is Type 304 stainless steel and 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 –** One piece construction, die formed of individual laminations of cloth mat plus woven roving. Adjustable pitch propellers incorporate die-formed blades.

For Belt Drive Units:

- **Fan shafts –** 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.
- **Shaft Seal –**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. The seal is not gas tight.
- **Bearings –** 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.
- **Bearing covers –** Sealed with foam gasket and bolted to the bearing base.
- **V-Belt Drives –** Oversized for long life and continuous duty. Fixed pitch or variable pitch drives are available upon request. Belts are oil, heat, and static resistant type.

Discharge Cones

Performance Data Charts for axial flow fans with inlet and outlet ducts of the same diameter as the fan can be found at www.hartzellflow.com. 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 (VP_1–VP_2) 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 2).

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°.

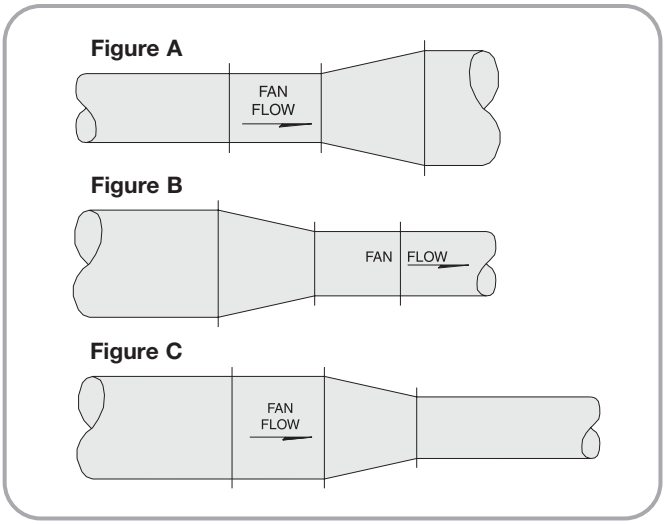


Table 2:
Corresponding Air Velocities for Various Pressures in Inches of Water (Air Weight = .07488 lbs. per cu. ft.)

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

Options and Accessories

Abrasive/Erosive Resistant Coating

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

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.

Hi-Cor Construction

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

For applications in which fiberglass products 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.

Grounding straps are 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 D4167-21 Construction

(ASTM D4167-21, 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.

Companion Flanges

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

Fiberglass Motor Cover

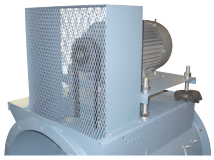
Designed to fit fiberglass duct and duct axial fans. The cover is solid fiberglass and die-formed with injection molded louvers.

Combination Motor Cover & Belt Guard

Designed to fit belt drive duct fans. Covers are vented. Specify horizontal or vertical mounting. Epoxy coated steel construction.

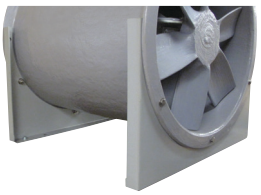
Belt Guard

Covers motor sheave and belts outside the fan housing. Epoxy coated steel construction.



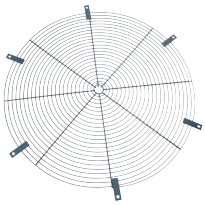
Mounting Feet/Ceiling Suspension

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



Inlet and Outlet Guards

Constructed of epoxy coated steel or stainless steel. OSHA approved.



Roof Mounted – Upblast

Together with a fiberglass curb panel and fiberglass stack cap, a Hartzell Duct Fan or Bifurcated Fan can be mounted as a roof exhauster. The stack cap has back draft dampers to provide a weather-tight closure for vertical air discharge.

Roof Mounted – Hooded

When required, a Hartzell Duct Fan or Bifurcated Fan can be supplied with a fiberglass weather hood. These power roof ventilators can be used for intake or exhaust.

Series 28 & 29 | *Fiberglass Duct & Duct Axial Flow Fans, Direct Drive*

Hartzell Series 28 and Series 29 Fiberglass Duct and Duct Axial® Flow Fans are engineered and built to be installed in duct systems for process ventilation applications in corrosive environments. The units can be used in any position, from vertical to horizontal.

Features:

- **Temperature Limitations –** Suitable for temperatures up to 180°F. Note: Temperature correction factors must be applied when operating at other than ambient conditions (70°F). See Maximum Safe Speed Correction Factors chart on page 15. (Specially insulated motors are required for temperatures above 104°F.)
- **Sizes –** 12" to 60"
- **Hardware –** Internal hardware is stainless steel as standard. Monel hardware is available at an extra cost.
- **Rigid Motor Mounts –** Fiberglass supports for foot mounted motors are designed for minimum resistance to airflow.
- **Extended Lube Tubes –** Extended tubes from motor to exterior of fan housing are standard. Extended motor leads to exterior of housing are available as an option.

SERIES 28 – DUCT FAN

- **Performance –** 1,325 CFM to 66,700 CFM
- **Propellers –** One-piece, solid fiberglass construction
  – Sizes 12" to 48" – 6 blade, Type FW
  – Sizes 54" and 60" – 2 blade, Type M
  – Sizes 54" and 60" – 4 blade*, Type M
  **Note: The 4-blade propeller is achieved by using (2) 2-blade propellers on a common shaft.*
- **Motor –** Totally enclosed mill and chemical motor is standard. Other motors, including standard totally enclosed are available on request.

SERIES 29 – DUCT AXIAL® FAN

- **Performance –** 1,204 to 68,950 CFM at free air
- **Propellers –** One-piece, solid fiberglass construction. The 6-blade, Type E, airfoil design with a higher hub-to-blade ratio moves large volumes of air at medium pressures.
- **Motor –** Totally enclosed mill and chemical motors are standard. Other motors, including standard totally enclosed are available on request.
- **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.

Series 28 Fiberglass Direct Drive Duct Fan in Caustic Soda Room at a Water Treatment Plant

Series 28

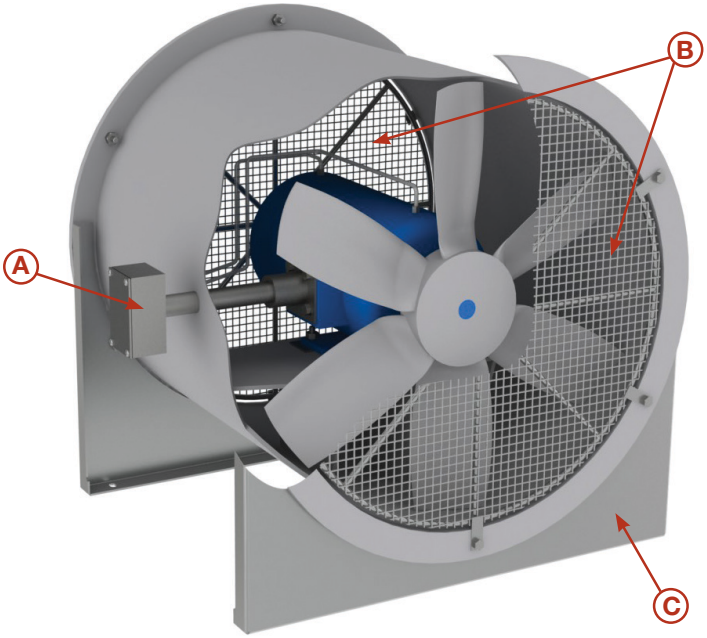
Hartzell Air Movement certifies that the Series 28 Fiberglass Duct & Duct Axial Flow Fan shown herein is licensed to bear the AMCA seal for sound and air performance. Ratings are based on tests and procedures performed in accordance with AMCA Publication 211 and Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. For performance and sound data, please visit www.hartzellflow.com or contact your local sales representative.

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

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

For performance data, please visit www.hartzellflow.com or contact your local sales representative.

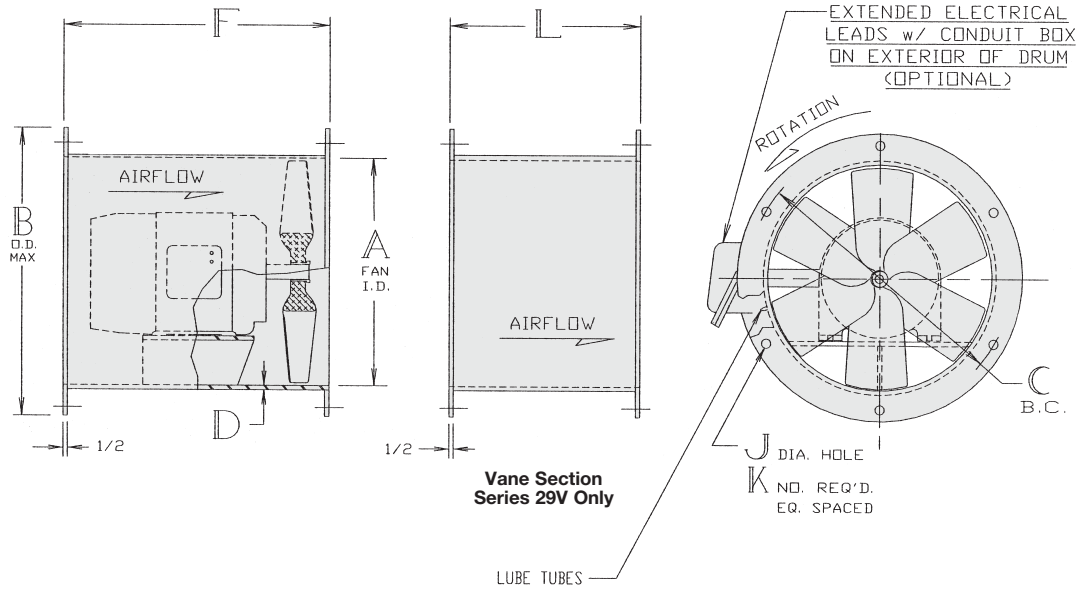
Series 28 Sectional View



A. Extended Motor Leads (Optional)
Extension to the exterior of housing allowing for easy access.

B. Inlet and Outlet Guards (Optional)
Epoxy coated steel or stainless steel guards available to protect the propeller.

C. Mounting Feet (Optional)
Bolted to the inlet and discharge flanges, mounting feet allow for positioning of the duct fan on a floor, ceiling, wall or platform. Can be used with vibration isolators. Epoxy coated steel construction.



Principal Dimensions (inches) – Series 28, 29, 29V

Fan Size	A	B	C	D	F	J	K	L	Max Motor Frame	*Max Fan Weight	Vane Section Weight
12	12⅞	16¼	14½	3/16	20	5/16	6	6	56	25	15
16	16⅞	20	18½	3/16	21	5/16	6	10	182T	30	20
18	18⅞	22⅛	20½	¼	22	5/16	6	11	182T	45	25
20	20⅞	24⅛	22½	¼	25	5/16	6	12	182T	60	30
24	24⅞	28½	26⅝	¼	25	7/16	6	13	182T	80	40
28	28⅞	32⅜	30⅝	¼	25	7/16	6	13	184T	100	50
32	33	36½	34⅛	¼	28	7/16	6	15	215T	125	65
36	37	40⅝	38⅛	¼	28	7/16	6	16	215T	150	80
40	41	44⅛	43⅛	5/16	36	7/16	12	--	256T	220	--
44	45	48⅛	47⅛	5/16	36	7/16	12	19	286T	270	105
48	49⅛	53⅜	51⅛	5/16	36	7/16	12	22	326T	335	135
54	55⅜	59⅝	57⅞	5/16	40	7/16	12	23	364T	410	160
60	61⅜	65⅝	63⅜	5/16	40	7/16	12	25	364T	480	190

*Weight without motor and accessories.

Series 28B & 29B | *Fiberglass Axial Flow Bifurcated Fans, Direct Drive*

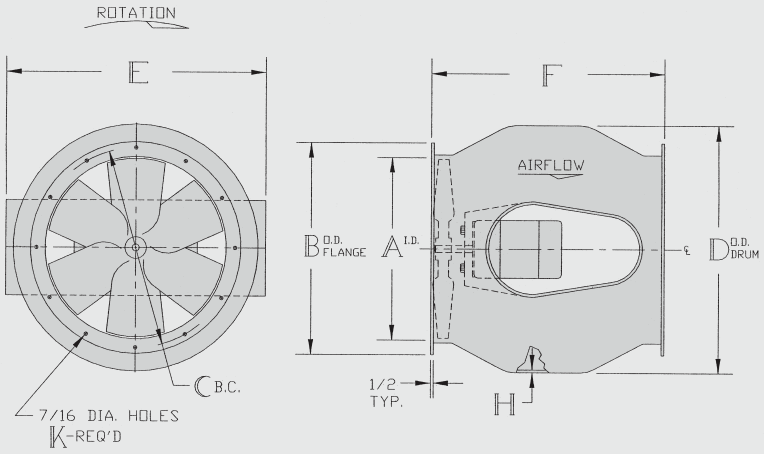
Hartzell Series 28B and 29B Fiberglass Axial Flow Bifurcated Fans are designed and built to be used in a variety of corrosive applications. They can be installed in any position from vertical to horizontal and provide an excellent alternative to belt drive fans because the direct drive motor requires minimal periodic maintenance. Series 28B utilizes the Type FW propeller for low pressure applications and Series 29B utilizes the Type E propeller for medium pressure applications.

Features:

- **Temperature Limitations –** Suitable for temperatures up to 200°F. Note: Temperature correction factors must be applied when operating at other than ambient conditions (70°F). See Maximum Safe Speed Correction Factors chart on page 15. (Specially insulated motors are required for temperatures above 104°F.)
- **Sizes –** 24" – 48"
- **Performance –** 6,012 CFM to 46,145 CFM at free air
- **Propellers –** One-piece construction, die formed of individual laminations of fiberglass, cloth mat, plus woven roving
  - Sizes 24" to 48" – 6-blade, Type FW, low pressure
  - Sizes 24" to 48" – 6-blade, Type E, medium pressure
- **Motor –** Extended shaft, C-face, TEFC motors are standard. Mill and chemical duty motors are available. Contact factory for availability of other motor enclosures.
- **Motor Mount –** C-face mounted, directly connected to prop with motor body enclosed in aerodynamic tube and protected from the airstream.
- **Shaft Seal –** A neoprene, sandwich-type design seals the motor shaft at the inner tube.
- **Extended Lube Tubes –** An extended lubrication tube from the motor to the external duct surface of motor mounting tube is standard.

Series 28B
Type FW Low Pressure Propeller

Series 29B
Type E Medium Pressure Propeller



For performance data, please visit www.hartzellflow.com or contact your local sales representative.

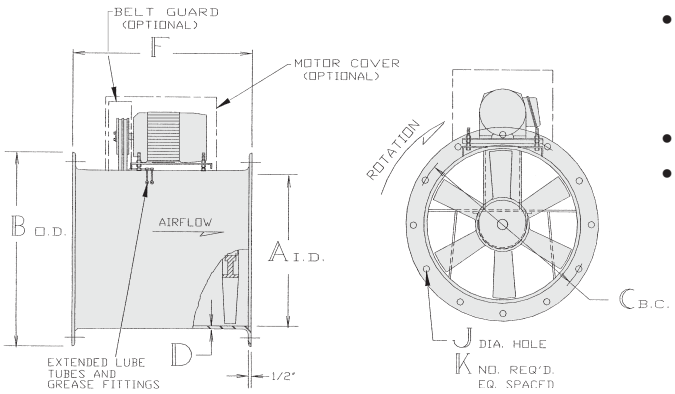
Principal Dimensions (inches) – Series 28B & 29B

Fan Size	A	B	C	D	E	F	H	K	Series 28B Weight Less Motor	Series 29B Weight Less Motor	Maximum Motor Frame
24	24⅛	28½	26⅝	33⅜	36	32	¼	6	114	115	182TC
28	28⅛	32⅝	30⅝	34½	36	33	¼	6	147	153	184TC
32	33	36½	34⅛	42½	44¾	43	¼	6	190	194	215TC
36	37	40⅝	38⅛	45½	47¾	45	¼	6	223	234	215TC
40	41	44¼	43⅛	51⅝	54	49	5⁄16	12	347	360	256TC
44	45	48⅛	47⅛	58⅝	60⅝	51	5⁄16	12	390	409	284TC
48	49⅛	53⅜	51⅝	61⅛	63⅜	58	5⁄16	12	439	476	286TC

Options and Accessories | *Series 37, 57, and 58E*

For performance data, please visit www.hartzellflow.com or contact your local sales representative.

Hartzell Air Movement certifies that the Series 37, 57, and 58E, Backward Curved Centrifugal Fan, shown herein is licensed to bear the AMCA seal for sound and air performance. Ratings are based on tests and procedures performed in accordance with AMCA Standard 211 and 311 comply with the requirements of the AMCA Certified Ratings Program. For performance and sound data, please visit www.hartzellflow.com or contact your local sales representative.



Series 34 Fiberglass Duct Fans are engineered for installation 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. They are best suited for applications with low static pressure characteristics from free air to 1" static pressure.

Features:

- **Temperature Limitations –** Suitable for temperatures up to 200°F. Note: Temperature correction factors must be applied when operating at other than ambient conditions (70°F). See Maximum Safe Speed Correction Factors chart on page 15. (Specially insulated motors are required for temperatures above 104°F.)
- **Sizes –** 12" to 60"
- **Performance –** 1,021 CFM at 1/4" to 43,000 CFM at 1" S.P.
- **Motor –** Motors are exterior mounted out of the airstream. The propeller shaft rotates in two heavy-duty bearings mounted on fiberglass supports taped to the inner shell with "T" reinforcements. Totally enclosed fan cooled motors are standard. Special motors are available upon request.
- **Corrosion-Duty Construction –** Belts, bearings, sheaves and shaft are enclosed and protected from the airstream. The drive compartment is located on the negative pressure (suction) side of the propeller drawing ambient air in from outside the fan and over the belts and bearings. This ensures a contaminate-free drive compartment.
- **Propellers –** One piece, solid fiberglass construction
  – Sizes 12" to 48" – 6-blade, Type FW
  – Sizes 54" and 60" – 6-blade adjustable, Type AF
- **Shaft –** Stainless steel with a neoprene slinger, neoprene seal and fiberglass cover plate. Keyed at both ends. Monel shafts available on request.
- **Bearings –** Heavy-duty, self-aligning, deep-row, radial-ball type shielded and mechanically sealed in cast iron or malleable housing. Bearings are relubricable for continuous service. Minimum 50,000 hrs. L-10 bearing life.
- **V-Belt Drives –** Over-sized for long life and 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. Belts are oil, heat and static-resistant type.
- **Extended Lube Tubes –** Extend from bearings to exterior of fan housing.
- **Hardware –** Internal bolts are stainless steel and resin coated after assembly. Monel bolts are optional.

Principal Dimensions (inches) – Series 34

Fan Size	A	B	C	D	F	J	K	Max Motor Frame	Max Fan Weight
12	12⅞	16¼	14½	⅜	20	⅝	6	145T	90
16	16⅞	20	18½	⅜	21	⅝	6	145T	100
18	18⅞	22⅛	20½	¼	22	⅝	6	184T	125
20	20⅞	24⅛	22½	¼	25	⅝	6	143T	140
24	24⅞	28½	26⅝	¼	25	⅞	6	215T	170
28	28⅞	32⅝	30⅝	¼	25	⅞	6	254T	200
32	33	36½	34⅞	¼	28	⅞	6	254T	280
36	37	40⅝	38⅞	¼	28	⅞	6	256T	325
40	41	44⅛	43⅛	⅝	36	⅞	12	215T	440
44	45	48⅛	47⅛	⅝	36	⅞	12	286T	510
48	49⅛	53⅜	51⅝	⅝	36	⅞	12	324T	600
54	55⅜	59⅝	57⅞	⅝	40	⅞	12	326T	835
60	61⅜	65⅝	63⅝	⅝	40	⅞	12	364T	930

*Weight without motor and accessories.

Series 35 | *Fiberglass Duct Axial Fan, Belt Drive*

Series 35 Fiberglass 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 provide maximum efficiency in the static pressure range from 1" to 3" at low speeds and with surprisingly low noise characteristics. They are designed for duct installations where the nature of the corrosive airstream warrants isolation of the motor and drive assembly from the airstream.

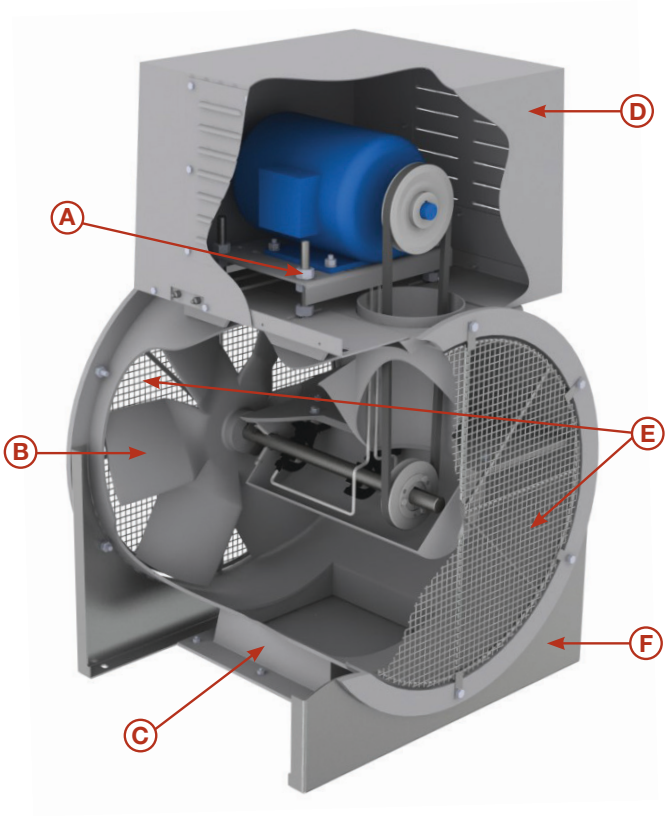
Features:

- **Temperature Limitations –** Suitable for temperatures up to 200°F. Note: Temperature correction factors must be applied when operating at other than ambient conditions (70°F). See Maximum Safe Speed Correction Factors chart on page 15. (Specially insulated motors are required for temperatures above 104°F.)
- **Sizes –** 12" to 60"
- **Performance –** 600 CFM at 1" to 30,000 CFM at 4 1/2" S.P.
- **Motor –** Motors are exterior mounted out of the airstream. The propeller shaft rotates in two heavy-duty bearings mounted on fiberglass supports taped to the inner shell with "T" reinforcements. Totally enclosed fan cooled motors are standard. Special motors are available upon request.
- **Corrosion-Duty Construction –** Belts, bearings, sheaves and shaft are enclosed and protected from the airstream. The drive compartment is located on the negative pressure (suction) side of the propeller drawing in ambient air from outside the fan and over the belts and bearings. This ensures a contaminate-free drive compartment.
- **Propellers –** One piece, solid fiberglass construction. The 6-blade, Type E, airfoil design moves large volumes of air at medium pressures.
- **Bearings –** Heavy-duty, self-aligning, deep-row, radial-ball type shielded and mechanically sealed in cast iron or malleable housing. Bearings are relubricable for continuous service. Minimum 50,000 hrs. L-10 bearing life.
- **V-Belt Drives –** 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. Belts are oil, heat and static-resistant type.
- **Extended Lube Tubes –** Extend from bearings to exterior of fan housing.
- **Shaft –** Stainless steel and keyed at both ends with a neoprene slinger, neoprene seal, and fiberglass cover plate. Monel shafts are available on request.
- **Hardware –** Internal bolts are stainless steel and resin coated after assembly. Monel bolts are optional.

For performance data, please visit www.hartzellflow.com or contact your local sales representative.

Hartzell Air Movement certifies that the Series 35, Backward Curved Centrifugal Fan, shown herein is licensed to bear the AMCA seal for sound and air performance. Ratings are based on tests and procedures performed in accordance with AMCA Standard 211 and 311 comply with the requirements of the AMCA Certified Ratings Program. For performance and sound data, please visit www.hartzellflow.com or contact your local sales representative.

Series 35 Sectional View



A. Drive Tensioning Bolts
Provides easy method to adjust belt tension

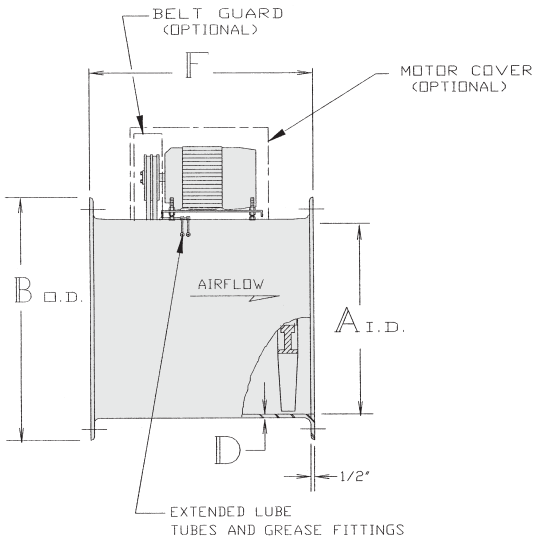
B. Propeller
One piece, solid fiberglass construction, die formed of individual laminations of cloth mat plus woven roving for additional strength. Series 35 fans use a 6-blade (Type E) propeller with an airfoil design to move large volumes of air at medium pressures.

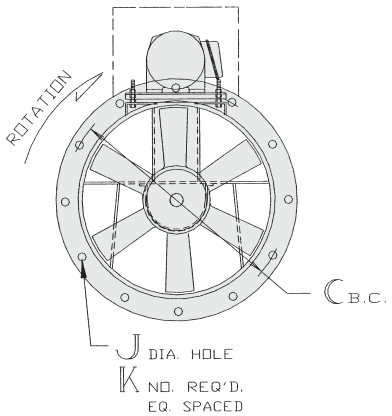
C. Access Door (Optional)
Raised, bolted door held in place with zinc plated bolts and gasketed for a tight seal. Allows for easy access to the propeller compartment.

D. Motor Cover (Optional)
Solid fiberglass construction, die-formed with injection molded louvers. Protects the drive assembly.

E. Inlet and Outlet Guard (Optional)
Epoxy coated steel or stainless steel guards available to protect the propeller.

F. Mounting Feet (Optional)
Bolted to the inlet and discharge flanges, mounting feet allow for positioning of the duct fan on a floor, ceiling, wall or platform. Can be used with vibration isolators. Epoxy coated steel construction.





Principal Dimensions (inches) – Series 35

Fan Size	A	B	C	D	F	J	K	Max Motor Frame	Max Fan Weight
12	12⅞	16¼	14½	3/16	20	5/16	6	145T	90
16	16⅞	20	18½	3/16	21	5/16	6	145T	100
18	18⅞	22⅛	20½	¼	22	5/16	6	184T	125
24	24⅞	28½	26⅝	¼	25	7/16	6	215T	170
28	28⅞	32⅝	30⅝	¼	25	7/16	6	254T	200
32	33	36½	34⅞	¼	28	7/16	6	254T	280
36	37	40⅝	38⅞	¼	28	7/16	6	256T	325
44	45	48⅛	47⅛	5/16	36	7/16	12	286T	510
48	49⅛	53⅜	51⅝	5/16	36	7/16	12	324T	600
54	55⅜	59⅝	57⅞	5/16	40	7/16	12	326T	835
60	61⅜	65⅝	63⅜	5/16	40	7/16	12	364T	930
54	55⅜	59⅝	57⅞	5/16	40	7/16	12	326T	835
60	61⅜	65⅝	63⅜	5/16	40	7/16	12	364T	930

*Weight without motor and accessories.

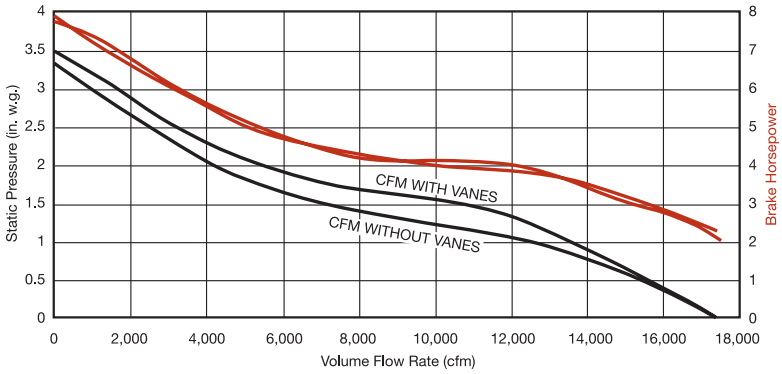
Series 35V | *Fiberglass Duct Axial*

The addition of a specially designed vane section to the Series 35 Fiberglass Duct Axial® Fan changes the design configuration to a Duct Vaneaxial Fan. 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.

For performance data, please visit www.hartzellflow.com or contact your local sales representative.

Comparison of 36" Duct Axial Fans: With and Without Vane Section

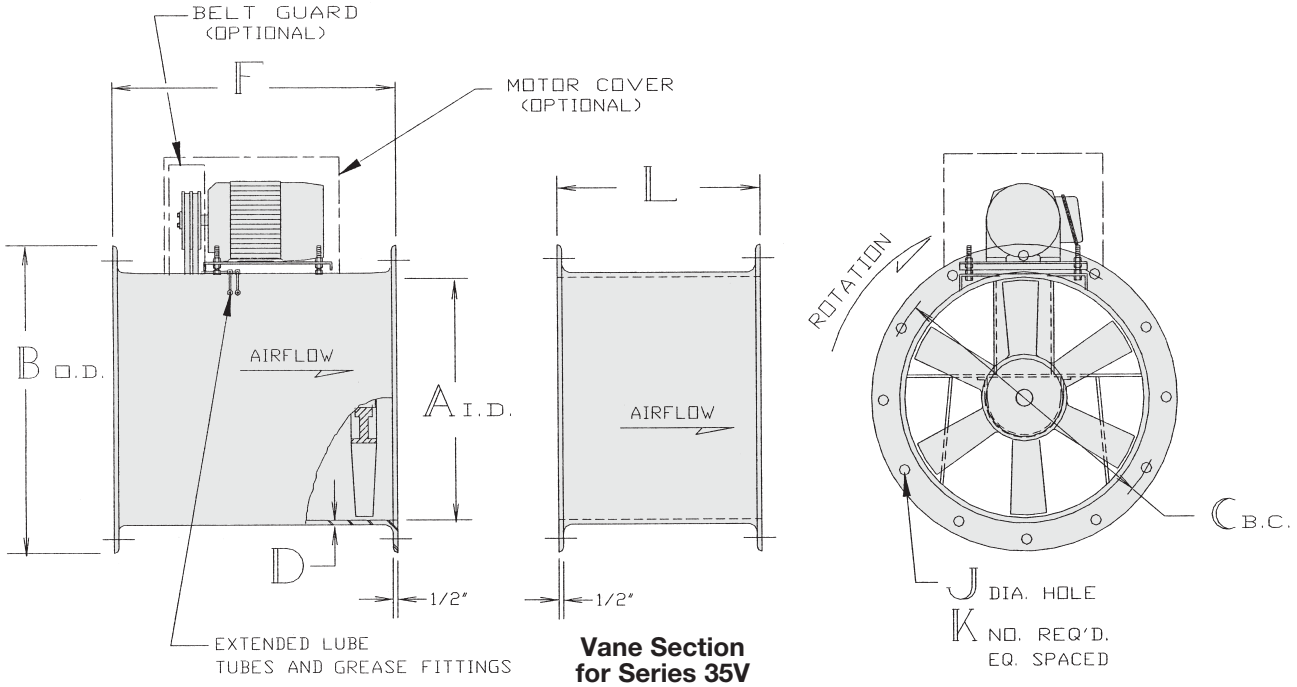


Hartzell Air Movement certifies that the Series 35V, Backward Curved Centrifugal Fan, shown herein is licensed to bear the AMCA seal for sound and air performance. Ratings are based on tests and procedures performed in accordance with AMCA Standard 211 and 311 comply with the requirements of the AMCA Certified Ratings Program. For performance and sound data, please visit www.hartzellflow.com or contact your local sales representative.

Series 35V Fiberglass Duct Vaneaxial Fan

Not looking for a fiberglass fan? Hartzell Air Movement manufactures hundreds of different steel, aluminum and stainless steel fans for corrosive environments applications as well. Contact your local sales representative for details!

Dimensions



Vane Section for Series 35V

Principal Dimensions (inches) – Series 35V

Fan Size	A	B	C	D	F	J	K	L	Max Motor Frame	*Max Fan Weight
12	12⅛	16¼	14½	⅜	20	5/16	6	6	145T	105
16	16⅛	20	18½	⅜	21	⅜	6	10	145T	120
18	18⅛	22⅛	20½	¼	22	5/16	6	11	184T	150
24	24⅛	28½	26⅝	¼	25	7/16	6	13	215T	210
28	28⅛	32⅝	30⅝	¼	25	7/16	6	13	254T	250
32	33	36½	34⅞	¼	28	7/16	6	15	254T	345
36	37	40⅝	38⅝	¼	28	7/16	6	16	256T	405
44	45	48⅛	47⅛	5/16	36	7/16	12	19	286T	615
48	49⅛	53⅜	51⅜	5/16	36	7/16	12	22	324T	735
54	55⅜	59⅝	57⅞	5/16	40	7/16	12	23	326T	995
60	61⅜	65⅝	63⅜	5/16	40	7/16	12	25	364T	1120

*Weight without motor and accessories.

Performance Guaranteed

Your products are only as good as the components that go into them. We know you have high expectations, and so does Hartzell Air Movement. We know you expect the most reliable and durable industrial air movement products available, so we're holding ourselves to a higher standard. We're so sure that our products will out-perform industry standards, we're backing that promise with the industry's first – and only – five-year warranty.

At Hartzell, these are words we live by. They guide us every day. Good enough isn't how you design your products. It's not how we engineer, build and support our products — or provide ongoing service to our customers. When we looked at the industry standard two-year warranty, we knew we had to do better. And we did — by offering the Hartzell FIVE-YEAR WARRANTY.

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.

							FIBERGLASS***	COATINGS			
	Aluminum	Stainless 304	Stainless 316	Carbon Steel	Monel	Neoprene	Derakane 510-A & B	Epoxy (250°F)	Inorganic Zinc (150°F)	Coal Tar Epoxy (300°F)	Plasite 7122L (HAR, TFE)
Acetic Acid, to 10% (Fumes Only)	G	G	G	F	F	G	210	G	NR	G	F
Acetone (Fumes Only)	G	G	G	G	G	F	180	G	G	-	F
Alcohol - Ethyl (15%)	G	G	G	G	F	G	80	G	G	-	F
Aluminum Acetate	F	G	G	-	F	F	-	G	NR	-	F
Aluminum Hydroxide	G	G	G	G	NR	G	180	G	NR	-	F
Aluminum Sulphate	G	F	G	G	F	G	210	G	NR	-	G
Ammonia (Dry - 1%)	G	G	G	G	NR	G	100	G	NR	G	G
Ammonia (Moist - 1%)	F	G	G	G	NR	G	NR	G	NR	-	F
Ammonium Chloride	NR	F	F	NR	F	G	*210	G	NR	G	G
Ammonium Hydroxide to 5%	F	G	G	F	NR	G	180S	G	NR	G(10)	F
Ammonium Nitrate	G	G	G	NR	NR	F	220	G	NR	G(30)	G
Ammonium Perchlorate	G	G	G	-	-	-	-	NR	-	-	G
Ammonium Persulfate (Saturated)	F	G	G	G	NR	G	180	NR	-	-	G
Ammonium Phosphate	G	G	G	NR	F	G	210	G	-	-	G
Ammonium Sulphate	NR	G	G	F	F	G	220	F	-	G(10)	G
Ammonium Sulphite	NR	G	G	-	NR	-	150	G	-	-	G
Barium Chloride	NR	G	G	F	F	G	210	G	-	-	G
Barium Hydroxide	NR	-	G	F	-	G	150	G	NR	-	G
Barium Nitrate	G	G	G	G	NR	G	-	F	-	-	G
Barium Sulphate	G	G	G	G	F	G	210	F	-	-	G
Benzene	G	G	G	F	G	NR	NR	G	-	-	G
Benzoic Acid	G	G	G	-	F	NR	210	G	G	-	G
Boric Acid (5%)	G	G	G	F	F	G	210	G	NR	-	G
Bromine, Wet Gas	NR	NR	NR	NR	NR	F	NR	G	NR	G	F
Butyric Acid, to 50%	G	G	G	-	F	NR	210	NR	-	-	G
Calcium Carbonate	F	G	G	G	F	G	180S	G	-	-	G
Calcium Chlorate	-	G	G	-	F	G	220	G	-	-	F
Calcium Chloride	F	F	F	F	F	G	220	G	NR	-	G
Calcium Hydroxide	F	G	G	F	F	G	180SS	G	NR	-	F
Carbolic Acid	G	G	G	NR	F	NR	NR	NR	-	G(5)	NR
Carbon Monoxide Gas	G	G	G	-	NR	G	250	G	-	-	G
Carbon Tetrachloride	G	G	G	NR	G	NR	150	G	F	G	G
Chlorine Gas (Dry)	F	F	F	NR	G	F	*220SS	F	NR	-	F
Chlorine Gas (Moist)	NR	NR	NR	NR	NR	NR	*180SS	F	NR	-	NR
Chlorine Water	NR	-	-	NR	NR	NR	*180SS	G	NR	G	F
Chlorobenzene	G	G	G	F	G	NR	NR	F	F	-	F
Chromic Acid, to 5%	F	F	G	NR	NR	NR	150	G(20)	NR	NR	F
Citric Acid	F	G	G	NR	F	G	*210	G	NR	G	F
Copper Acetate	NR	G	G	NR	NR	F	-	G	-	-	F
Copper Chloride	NR	NR	NR	NR	NR	G	*210	G	-	-	G
Copper Cyanide	NR	G	G	NR	NR	G	210	G	-	-	F
Copper Nitrate	NR	G	G	NR	NR	G	210	F	-	-	F
Copper Sulphate	NR	G	G	NR	NR	G	210	F	-	-	G
Detergents	G	F	F	G	-	F	150	G	-	G	G
Ethyl Chloride	F	G	G	NR	F	NR	NR	G	F	-	NR
Ethylene Chloride	F	G	G	NR	-	NR	NR	G	F	-	NR
Ferric Nitrate	NR	G	G	-	NR	G	210	F	-	-	-
Ferric Sulphate	NR	F	F	NR	F	G	210	F	-	-	-
Ferrous Sulphate	G	F	G	NR	F	G	210	F	-	-	G
Fluoboric Acid	NR	NR	F	NR	-	G	210SS	NR	-	-	F
Formalin Formaldehyde	G	G	G	G	G	NR	150	G(20)	NR	G	F
Formic Acid, to 10%	F	G	G	NR	F	G	180	NR	NR	-	F
Furfural, to 10%	G	G	G	G	F	F	NR	F	NR	-	F
Gallic Acid	G	G	G	NR	F	F	-	F	-	-	-
Gasoline	G	G	G	G	G	F	120	G	G	G	G
Hydrobromic Acid, to 25%	NR	NR	NR	NR	NR	NR	*180	NR	NR	-	-
Hydrochloric Acid, to 15%	NR	NR	NR	NR	F	G	*210SS	NR	NR	G	F
Hypochlorous Acid	NR	NR	NR	NR	-	-	100	NR	-	-	-
Hydrocyanic Acid, to 10%	G	G	G	F	-	G	210	NR	-	-	F
Hydrofluosilicic Acid, to 10%	NR	NR	NR	-	F	F	*180SS	NR	-	-	G
Hydrofluoric Acid, to 10%	NR	NR	NR	NR	G	G	*150SS	NR	NR	-	NR
Hydrogen Peroxide, to 30%	G	G	G	NR	F	F	150	G	NR	G	F
Hydrogen Sulfide, to 5%	G	F	G	G	NR	G	180	F	NR	G	F
Lactic Acid	F	F	G	NR	NR	G	*210	NR	NR	-	G
Magnesium Carbonate	F	G	G	-	F	G	180	G	-	-	-
Magnesium Chloride	NR	F	G	F	G	G	210	G	NR	-	G
Magnesium Nitrate	G	G	G	-	F	G	210	F	-	-	-
Magnesium Oxychloride	NR	NR	NR	-	-	-	-	NR	-	-	-
Maleic Acid	G	G	G	G	F	NR	210	NR	-	-	G
Manganese Carbonate	F	G	G	-	F	-	-	G	-	-	-
Mercurous Nitrate	NR	G	G	-	NR	-	-	F	-	-	F

							FIBERGLASS***	COATINGS			
	Aluminum	Stainless 304	Stainless 316	Carbon Steel	Monel	Neoprene	Derakane 510-A & B	Epoxy (250°F)	Inorganic Zinc (150°F)	Coal Tar Epoxy (300°F)	Plasite 7122L (HAR, TFE)
Methyl Ethyl Ketone, to 10%	G	G	G	G	-	NR	NR	G	G	F	F
Mehtylene Chloride	NR	G	G	G	F	NR	NR	NR	F	-	F
Naphtha	G	G	G	G	F	NR	180	G	G	G	G
Napthalensulfonic Acid	NR	NR	NR	-	-	NR	-	NR	-	-	G
Nickel Chloride	NR	F	F	NR	F	F	210	G	-	-	G
Nickel Nitrate	NR	G	G	NR	NR	-	210	F	-	-	-
Nickel Sulphate	NR	F	F	NR	F	G	210	F	-	-	-
Nitric Acid, to 5%	NR	G	G	NR	NR	F	150	NR	NR	F	F
Nitrous Acid	F	G	G	-	NR	NR	-	NR	-	-	F
Oleic Acid	G	G	G	F	G	F	210	G	NR	-	G
Oxalic Acid, to 10%	NR	G	G	NR	F	F	*120	G	NR	G(20)	G
Ozone							NR				
Perchloric Acid, to 10%**	NR	NR	NR	NR	G	F	150	NR	NR	-	F
Phenol, to 10%	G	G	G	NR	F	-	NR	G(10)	F	-	NR
Phosphoric Acid, to 10%	NR	G	G	NR	F	F	*210	NR	NR	NR	F
Phosphoric Anhydride	G	G	G	-	-	F	-	F	-	-	-
Picric Acid, to 10%	G	G	G	NR	NR	G	NR	NR	-	-	F
Potassium Bromide	F	G	G	NR	F	G	-	G	-	-	G
Potassium Chloride	F	G	G	G	F	G	210	G	-	-	G
Potassium Cyanide	NR	G	G	G	F	G	-	F	-	-	G
Potassium Dichromate	G	G	G	F	F	G	210	F	NR	-	-
Potassium Ferricyanide	G	G	G	-	F	G	210	G	-	-	-
Potassium Ferrocyanide	G	G	G	F	F	G	210	G	-	-	G
Potassium Hydroxide, to 25%	NR	G	G	G	G	G	150SS	G	NR	G	G
Potassium Hypochlorite	NR	NR	NR	-	NR	-	-	G	-	-	-
Potassium Nitrate	G	G	G	G	F	G	210	G	-	-	G
Potassium Permanganate	G	G	G	G	F	-	210	F	-	G(5)	-
Potassium Sulphate	F	G	G	G	G	G	210	G	-	-	F
Pyrogallic Acid	G	G	G	G	F	-	-	F	-	-	-
Salt Spray	F	G	G	NR	G	G	210	G	G	G	G
Silver Bromide	NR	F	G	-	F	-	-	G	-	-	-
Silver Nitrate	NR	G	G	NR	NR	G	210	G	-	-	F
Sodium Acetate	G	G	G	F	G	F	210	G	NR	-	-
Sodium Bisulfate	F	G	G	NR	F	F	210	G	-	-	G
Sodium Borate	F	G	G	F	F	F	210	G	NR	-	-
Sodium Carbonate, to 35%	NR	G	G	G	G	G	180SS	G	NR	-	G
Sodium Chlorate	F	G	G	F	G	G	210	NR	NR	-	G
Sodium Chloride	F	F	G	F	G	G	180	G(30)	NR	G	G
Sodium Citrate	NR	G	G	-	-	-	-	F	-	-	G
Sodium Dichromate	G	-	-	G	-	F	210	F	NR	-	-
Sodium Ferricyanide	G	G	G	-	F	-	210	G	-	-	-
Sodium Fluoride	F	G	G	NR	G	NR	180SS	F	-	-	-
Sodium HyDroxide, to 10%	NR	G	G	G	G	G	150SS	G	NR	G	F
Sodium Hypochlorite, to 15%	NR	F	F	NR	NR	G	150SS	F	NR	G(5)	F
Sodium Hyposulfite	NR	G	G	-	F	-	-	F	-	-	-
Sodium Nitrate	G	G	G	G	F	F	210	F	-	-	G
Sodium Nitrite	G	G	G	-	F	-	-	F	-	-	G
Sodium Perchlorate, to 10%	G	G	G	-	-	-	-	NR	-	-	-
Sodium Peroxide	F	G	G	F	F	G	-	F	-	-	-
Sodium Phosphate	NR	G	G	-	G	F	210	G	-	G(10)	F
Sodium Salicylate	NR	-	G	-	-	-	-	G	-	-	F
Sodium Silicate	F	G	G	G	F	G	-	G	NR	-	G
Sodium Sulfate	F	G	G	G	G	G	210	F	NR	-	F
Sodium Sulfite	F	G	G	-	F	G	210	F	NR	-	G
Sodium Sulfide	NR	G	G	G	F	G	210	G	NR	-	G
Stannic Chloride	NR	NR	NR	NR	NR	F	*210	NR	-	-	-
Stannous Chloride	NR	F	F	NR	F	G	*210	F	-	-	G
Steam Vapor	G	G	G	G	G	G	180	F	-	-	NR
Stearic Acid	G	G	G	F	F	F	210	G	NR	-	G
Strontium Hydroxide	NR	G	G	-	-	-	-	G	-	-	-
Strontium Nitrate	NR	G	G	-	G	-	-	F	-	-	-
Sulfur Dioxide Gas	G	G	G	G	NR	G	210	NR	NR	-	G
Sulfuric Acid, to 25%	NR	NR	NR	NR	F	G	*210S	NR	NR	G	F
Sulfurous Acid, to 10%	F	F	F	NR	NR	NR	120	NR	NR	-	F
Tannic Acid	F	G	G	F	F	G	210	G(50)	NR	G	G
Tartaric Acid	F	G	G	NR	F	G	210	G	NR	-	F
Trichlorethylene	F	G	G	G	G	NR	NR	NR	F	-	F
Water (Moisture)	G	G	G	NR	G	G	200	G	G	G	G
Xylol-Toluol	G	G	G	G	-	NR	80	G	G	G	G
Zinc Chloride	NR	G	G	NR	F	G	*210	G	-	-	G
Zinc Cyanide (Moist)	NR	G	G	-	-	-	180SS	G	-	-	-
Zinc Nitrate	F	G	G	-	-	-	210	F	-	-	-
Zinc Sulfate	F	G	G	NR	F	G	210	F	-	-	-

NOTES: * Special shaft and hardware required, contact factory.
**** Special design considerations required (explosive environment), contact factory.**
***** Temperature values shown for fiberglass resins are for immersion or condensate contact applications.**

KEY **G = Good** **F = Fair** **NR = Not Recommended**
- = Unknown **S = Synthetic Veil Required (HiCor)** **SS = Double Veil**

Hartzell

AIR MOVEMENT

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ROOF VENTILATORS

HOODED ROOF VENTILATORS

PRESSURE BLOWERS

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IN-LINE CENTRIFUGAL FANS

FIXED BLADE LOUVERS

CENTER-PIVOTED DAMPERS

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