

# Fiberglass Wall Ventilators

Series 59



# HARTZELL®

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# Index

<b>Construction Features</b> .....	<b>Page 2</b>
<b>Performance Data</b> .....	<b>Page 3</b>
<b>Dimensions</b> .....	<b>Page 4</b>
<b>Accessory Mounting Configurations</b> .....	<b>Page 5</b>
<b>Corrosion Resistance Guide</b> .....	<b>Page 6</b>
<b>Options and Accessories</b> .....	<b>Page 7</b>

## Wall Ventilators (Direct Drive)



### Series 59



Hartzell Fan, Inc. certifies that the Series 59, Fiberglass Direct Drive Wall Ventilator 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.

Hartzell Fiberglass Direct Drive Wall Ventilators are designed for general ventilation applications where corrosive elements exist in fume or vapor form.

When supplied with the solid fiberglass accessories shown herein, the Hartzell Series 59, Fiberglass Wall Fan System, offers a wall ventilation system completely manufactured and assembled out of fiberglass (with the obvious exception of the electric motor). The unit is designed so that by itself, or with accessories, the Hartzell Series 59 system can be passed through a framed up wall opening as a complete assembly. The Hartzell fiberglass products can be applied where concentrations of corrosive elements exceed the limits of standard fans and motors.

The Hartzell Series 59 incorporates a highly efficient airfoil type propeller constructed entirely of fiberglass. The fan housing is also constructed entirely of fiberglass. It incorporates the Hartzell Air Seal, which allows the orifice ring to overlap the propeller tips, which practically eliminates back flow of air and increases efficiency by 10% or more. The curved air seal orifice increases efficiency by minimizing air friction through the fan.

### Features

- **Sizes** – 12" to 60"... performance from 1315 CFM to 55,500 CFM at free air.
- **Temperature Limitations** – Suitable for temperatures up to 180°F (specially insulated motors are required for temperatures above 104°F).
- **FRP Construction** – Standard FRP components are constructed of fiberglass and Ashland 693 resin. See Corrosion Resistance Guide on page 6 for resin characteristics. Other resins are available.
- **Unit Construction** –
  - Fan housing – One piece molded fiberglass fan housing with solid fiberglass motor support base. Fan housing includes venturi orifice to increase efficiency and seal propeller tips.
  - Motor mounting base is fabricated of solid fiberglass, designed to maximize strength and minimize restrictions to air flow.
  - Propellers – One piece fiberglass airfoil construction, electronically balanced on unit at operating speed.
- **Motors** – Totally enclosed mill and chem motors are standard. Other motors, including standard totally enclosed, are available upon request.
- **Hardware** – Stainless Steel motor mounting hardware is standard. Monel hardware is available at extra cost. Fiberglass accessory mounting hardware is standard.
- **Mounting Accessories** – The following fiberglass mounting accessories are available. Typical configurations are shown on page 5. Please refer to page 7 for details on these accessories.
  - Solid fiberglass automatic back draft damper.
  - Solid fiberglass mounting boot
  - Solid fiberglass front and rear guards

This bulletin lists Hartzell's line of Fiberglass Wall Ventilators 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](http://www.hartzellfan.com)) or call toll-free 1(800) 336-3267 for the name of your Hartzell representative.



# Performance Data

## Rating Table – Series 59 – Fiberglass Wall Ventilator A59---FG

Size	Model	Motor		Peak Fan BHP	Cubic Feet Per Minute vs. Static Pressure				
		HP	RPM		0"	¼"	½"	¾"	1"
12	A59---126FW---FG_D3	¼	1725	0.09	1316	1135			
16	A59---166FW---FG_E3	¼	1725	0.33	2924	2673	2428		
18	A59---186FW---FG_D5	¼	860	0.06	2158				
	A59---186FW---FG_D4	¼	1140	0.14	2860	2488			
	A59---186FW---FG_F3	½	1725	0.49	4328	4101	3848	3480	
20	A59---206FW---FG_D4	¼	1140	0.22	3707	3277			
	A59---206FW---FG_G3	¾	1750	0.80	5690	5422	5136	4817	
24	A59---246FW---FG_D5	¼	850	0.23	4731	3991			
	A59---246FW---FG_F4	½	1140	0.56	6345	5844	5198		
	A59---246FW---FG_J3	2	1750	2.04	9739	9431	9097	8735	8326
28	A59---286FW---FG_F5	½	860	0.52	7615	6867	5572		
	A59---286-M---FG_F4	½	1140	0.73	8150	7395	6518		
	A59---286FW---FG_I4	1½	1160	1.28	10271	9718	9160	8448	
30	A59---306FW---FG_F6	½	690	0.51	8347	7324			
	A59---306FW---FG_H5	1	870	1.03	10524	9703	8862		
	A59---306FW---FG_J4	2	1160	2.43	14032	13414	12808		
32	A59---326FW---FG_F6	½	690	0.66	9507				
	A59---326FW---FG_H5	1	860	1.28	11850	11001			
	A59---326FW---FG_J4	2	1160	3.13	15984				
36	A59---366FW---FG_H6	1	690	0.92	13154	11754	9794		
	A59---366FW---FG_I5	1½	870	1.84	16586	15514			
	A59---366FW---FG_L4	5	1160	4.37	22114	21331	20494	19600	18609
40	A59---406FW---FG_I6	1½	690	1.54	17065	15888	14491		
	A59---406FW---FG_K5	3	870	3.08	21516	20609	19617	18498	16873
	A59---406FW---FG_M4	7½	1160	7.31	28688	28021	27320	26580	25805
42	A59---426FW---FG_J6	2	690	2.33	19591	18231	16866	14430	8898
	A59---426FW---FG_K5	3	870	4.66	24702	23622	22546	21481	20036
	A59---426FW---FG_M4	7½	1160	11.05	32936	32125	31316	30509	29716
44	A59---446FW---FG_J6	2	690	2.80	21528	20148	18786	16757	10730
	A59---446-M---FG_J5	2	870	2.63	23156	21590	19976	18043	14996
	A59---446FW---FG_L5	5	870	5.61	27144	26048	24958	23887	22582
48	A59---486FW---FG_J7	2	575	2.49	22188	20584	18511	14433	9283
	A59---486FW---FG_K6	3	690	4.30	26626	25331	23828	21943	18881
	A59---486-M---FG_L5	5	870	4.07	30693	28963	27182	25216	22791
	A59---486FW---FG_M5	7½	870	8.63	33571	32569	31480	30276	28911
54	A59---542-M---FG_L5	5	870	5.62	43992	40866	36923	33585	29600
60	A59---602-M---FG_M5	7½	870	7.16	55666	51716	47669	43194	36816

Performance certified is for installation Type B: free inlet/ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Bold-type information provided in the Rating Table above is needed when preparing a model code. See below for the complete Hartzell model code explanation and example.

## Hartzell Model Explanation

Type **A 5 9 - - - 1 8 6 F W - - - F G A O D 5**

A – Production Item  
 S – Stock Item  
 Q – Special Quote

Product Series

Arrangement (applies only to centrifugals)

Size (nominal wheel diameter, inches)

No. of Blades

Blade Code

Blade Angle (applies only to adjustable pitch fans)

Material of Construction

Motor Enclosure

Motor Horsepower

Motor Horsepower

Horsepower	¼	⅓	½	¾	1	1½	2	3	5	7½	10
Code Letter	D	E	F	G	H	I	J	K	L	M	N

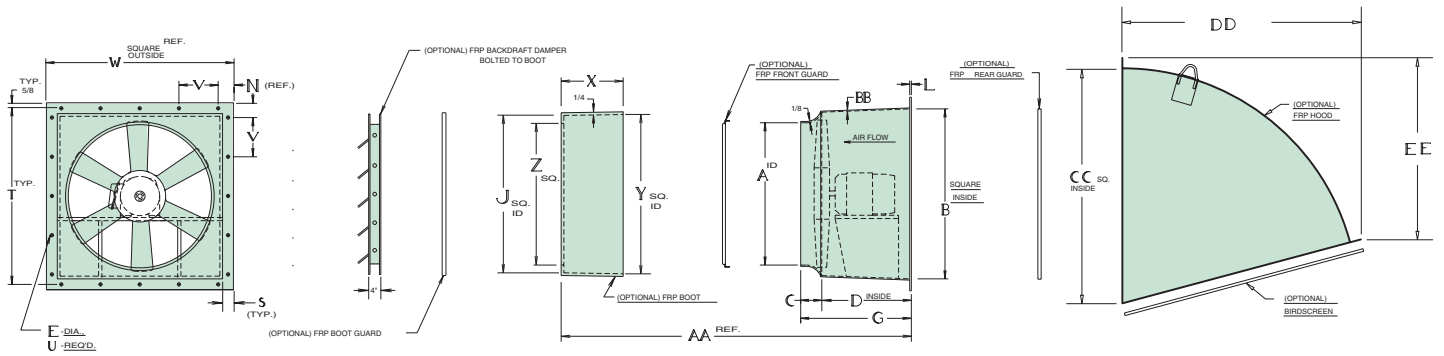
Motor RPM/Phase  
**3 Phase 1 Phase**  
 2 = 3450 B = 3450  
 3 = 1750 C = 1750  
 4 = 1140 D = 1140  
 5 = 870 E = 870  
 6 = 690 F = 690  
 7 = 575 G = 575

### EXAMPLE:

Assume a performance of 2,000 CFM at 0" S.P.W.G., at standard conditions, is required. Reading Rating Table above, we find Series 59 Direct Drive Wall Ventilator with a 18" blade diameter and a performance of 2,160 CFM at 0" S.P.; 860 RPM with a .06 BHP. In looking at our Model Code, we see this fan has 6 blades, type FW. The fan is constructed of fiberglass and has a Totally Enclosed Air Over motor enclosure. Motor horsepower required is 1/4; therefore, horsepower code is "D". Motor RPM required is 870; therefore, motor RPM code is "5".



# Dimensions



Fan Size	A	B	C	D	E	G	J	L	N	R	S	T	U
12	12 <sup>1</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>8</sub>	13 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	15	16 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	4	17 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	18 <sup>3</sup> / <sub>4</sub>	12
16	16 <sup>5</sup> / <sub>16</sub>	20 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>8</sub>	13 <sup>7</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	16	20 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	4	21 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	22 <sup>3</sup> / <sub>4</sub>	12
18	18 <sup>1</sup> / <sub>4</sub>	22 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>4</sub>	15 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>16</sub>	18	22 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	4	23 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	24 <sup>3</sup> / <sub>4</sub>	12
20	20 <sup>5</sup> / <sub>16</sub>	25 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>	15 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>16</sub>	18	25 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	27 <sup>3</sup> / <sub>4</sub>	12
24	24 <sup>5</sup> / <sub>16</sub>	28 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>	15 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>16</sub>	19	28 <sup>3</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>4</sub>	29 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	31 <sup>1</sup> / <sub>4</sub>	20
28	28 <sup>5</sup> / <sub>16</sub>	33 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>	16 <sup>1</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>16</sub>	19 <sup>1</sup> / <sub>2</sub>	33 <sup>3</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>4</sub>	34 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	36 <sup>1</sup> / <sub>4</sub>	20
30	30 <sup>5</sup> / <sub>16</sub>	35 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>2</sub>	17 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>16</sub>	20 <sup>3</sup> / <sub>4</sub>	35 <sup>3</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>	36 <sup>3</sup> / <sub>4</sub>	2	39 <sup>1</sup> / <sub>4</sub>	20
32	32 <sup>5</sup> / <sub>16</sub>	36 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>8</sub>	18 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	21 <sup>1</sup> / <sub>2</sub>	36 <sup>3</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>	37 <sup>3</sup> / <sub>4</sub>	2	40 <sup>1</sup> / <sub>4</sub>	20
36	36 <sup>5</sup> / <sub>16</sub>	42 <sup>3</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>8</sub>	19 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	22 <sup>3</sup> / <sub>4</sub>	42 <sup>3</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>	43 <sup>3</sup> / <sub>4</sub>	2	46 <sup>1</sup> / <sub>4</sub>	20
40	40 <sup>5</sup> / <sub>16</sub>	47	3 <sup>5</sup> / <sub>8</sub>	23 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	27	46 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>	48 <sup>1</sup> / <sub>4</sub>	2	50 <sup>3</sup> / <sub>4</sub>	20
42	42 <sup>5</sup> / <sub>16</sub>	49	4 <sup>3</sup> / <sub>4</sub>	22 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>16</sub>	27	48 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	50 <sup>1</sup> / <sub>4</sub>	2	52 <sup>3</sup> / <sub>4</sub>	20
44	44 <sup>5</sup> / <sub>16</sub>	51	4 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>16</sub>	29	50 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	6	52 <sup>1</sup> / <sub>4</sub>	2	54 <sup>3</sup> / <sub>4</sub>	20
48	48 <sup>5</sup> / <sub>16</sub>	55	4 <sup>1</sup> / <sub>4</sub>	24 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>16</sub>	29	54 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>16</sub>	56 <sup>1</sup> / <sub>4</sub>	2	58 <sup>3</sup> / <sub>4</sub>	28
54	54 <sup>5</sup> / <sub>16</sub>	61	4 <sup>3</sup> / <sub>8</sub>	24 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	29	60 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>16</sub>	62 <sup>1</sup> / <sub>4</sub>	2	64 <sup>3</sup> / <sub>4</sub>	28
60	60 <sup>5</sup> / <sub>16</sub>	67	5 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>16</sub>	30	66 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>16</sub>	68 <sup>1</sup> / <sub>4</sub>	2	70 <sup>3</sup> / <sub>4</sub>	28

Fan Size	V	W	X	Y	Z	AA	BB	CC	DD	EE	Max. Motor Frame	Approx. Wt.# Less Motor & Options
12	6	20	13 <sup>3</sup> / <sub>4</sub>	16 <sup>3</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>2</sub>	27 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>4</sub>	21	22 <sup>1</sup> / <sub>4</sub>	17 <sup>1</sup> / <sub>16</sub>	48	30
16	8	24	14 <sup>1</sup> / <sub>8</sub>	20 <sup>3</sup> / <sub>8</sub>	16 <sup>1</sup> / <sub>2</sub>	28 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	30	31 <sup>1</sup> / <sub>16</sub>	23 <sup>3</sup> / <sub>4</sub>	56	35
18	9	26	14 <sup>1</sup> / <sub>2</sub>	22 <sup>3</sup> / <sub>8</sub>	18 <sup>1</sup> / <sub>2</sub>	30 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	30	31 <sup>1</sup> / <sub>16</sub>	23 <sup>3</sup> / <sub>4</sub>	56	40
20	10	29	14 <sup>1</sup> / <sub>2</sub>	25 <sup>3</sup> / <sub>8</sub>	20 <sup>1</sup> / <sub>2</sub>	30 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	30	31 <sup>1</sup> / <sub>16</sub>	23 <sup>3</sup> / <sub>4</sub>	184T	45
24	5 <sup>3</sup> / <sub>4</sub>	32 <sup>1</sup> / <sub>2</sub>	15 <sup>1</sup> / <sub>2</sub>	28 <sup>3</sup> / <sub>8</sub>	24 <sup>1</sup> / <sub>2</sub>	31 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	39	39 <sup>5</sup> / <sub>8</sub>	30 <sup>7</sup> / <sub>16</sub>	184T	60
28	7	37 <sup>1</sup> / <sub>2</sub>	15 <sup>1</sup> / <sub>2</sub>	33 <sup>3</sup> / <sub>8</sub>	28 <sup>1</sup> / <sub>2</sub>	31 <sup>7</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	39	39 <sup>5</sup> / <sub>8</sub>	30 <sup>7</sup> / <sub>16</sub>	184T	75
30	7 <sup>1</sup> / <sub>2</sub>	40 <sup>1</sup> / <sub>2</sub>	15 <sup>1</sup> / <sub>2</sub>	35 <sup>3</sup> / <sub>8</sub>	30 <sup>1</sup> / <sub>2</sub>	32 <sup>7</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	48	48 <sup>3</sup> / <sub>8</sub>	37 <sup>1</sup> / <sub>16</sub>	215T	85
32	7 <sup>3</sup> / <sub>4</sub>	41 <sup>1</sup> / <sub>2</sub>	15 <sup>1</sup> / <sub>2</sub>	36 <sup>3</sup> / <sub>8</sub>	32 <sup>1</sup> / <sub>2</sub>	34	1 <sup>1</sup> / <sub>4</sub>	48	48 <sup>3</sup> / <sub>8</sub>	37 <sup>1</sup> / <sub>16</sub>	215T	110
36	9 <sup>1</sup> / <sub>4</sub>	47 <sup>1</sup> / <sub>2</sub>	16	42 <sup>3</sup> / <sub>8</sub>	36 <sup>1</sup> / <sub>2</sub>	35 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	56	56	43	215T	125
40	10 <sup>1</sup> / <sub>4</sub>	52	16 <sup>3</sup> / <sub>8</sub>	46 <sup>3</sup> / <sub>8</sub>	40 <sup>1</sup> / <sub>2</sub>	39 <sup>7</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	69	68 <sup>5</sup> / <sub>8</sub>	52 <sup>5</sup> / <sub>8</sub>	254T	230
42	10 <sup>1</sup> / <sub>16</sub>	54	16 <sup>3</sup> / <sub>4</sub>	48 <sup>3</sup> / <sub>8</sub>	42 <sup>1</sup> / <sub>2</sub>	39 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	69	68 <sup>5</sup> / <sub>8</sub>	52 <sup>5</sup> / <sub>8</sub>	254T	240
44	11	56	16 <sup>3</sup> / <sub>4</sub>	50 <sup>3</sup> / <sub>8</sub>	44 <sup>1</sup> / <sub>2</sub>	41 <sup>3</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	69	68 <sup>5</sup> / <sub>8</sub>	52 <sup>5</sup> / <sub>8</sub>	254T	255
48	8 <sup>5</sup> / <sub>16</sub>	60	16 <sup>3</sup> / <sub>4</sub>	54 <sup>3</sup> / <sub>8</sub>	48 <sup>1</sup> / <sub>2</sub>	41 <sup>5</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	69	68 <sup>5</sup> / <sub>8</sub>	52 <sup>5</sup> / <sub>8</sub>	256T	290
54	9 <sup>5</sup> / <sub>16</sub>	66	17	60 <sup>3</sup> / <sub>8</sub>	54 <sup>1</sup> / <sub>2</sub>	41 <sup>3</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>8</sub>	79	78 <sup>1</sup> / <sub>4</sub>	60 <sup>1</sup> / <sub>16</sub>	256T	305
60	10 <sup>5</sup> / <sub>16</sub>	72	17 <sup>1</sup> / <sub>2</sub>	66 <sup>3</sup> / <sub>8</sub>	60 <sup>1</sup> / <sub>2</sub>	42 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	89	87 <sup>7</sup> / <sub>8</sub>	67 <sup>7</sup> / <sub>16</sub>	256T	320



# Accessory Mounting Configurations



**NOTES:**

1. The Series 59 fiberglass panel fan is designed with a slight draft in the fan housing to accommodate slip-fit installation. Mounting flange located at inlet side of housing is standard. **An optional fiberglass mounting flange can be supplied on the housing at a customer specified location.**
2. Fiberglass hoods are available for exhaust flow applications. This configuration requires special space and mounting considerations. Please contact the factory.



# 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 Ashland F.	Environment	Hetron 693 Ashland F.	6694 Reichold F.	510A Ashland F.	Environment	Hetron 693 Ashland F.	6694 Reichold F.	510A Ashland F.
<b>ACIDS</b>				<b>ALKALIES (Synthetic Veil)</b>				<b>SALTS (cont'd.)</b>			
Acetic to 10%	180	200	210	Ammonium Bicarbonate to 50%	140	S170	160	Sodium Ferricyanide	220	220	210
Acetic to 50%	90	160	180	Ammonium Carbonate	120	S140	150	Sodium Fluoride	-	S180	S180
Acetic to 100%	-	NR	NR	Ammonium Hydroxide to 5%	S90	S180	S180	Sodium Nitrate	220	220	210
Acrylic to 25%	-	100	100	Ammonium Hydroxide to 10%	S90	S170	S150	Sodium Nitrite	-	220	NR
Benzene Sulfonic to 25%	180	210	150	Ammonium Hydroxide to 29%	NR	S100	S100	Sodium Silicate PH less than 1	160	210	NR
Benzene Sulfonic 25% up	90	210	NR	Barium Carbonate	180	S240	210	Sodium Sulfate	180	240	210
Benzoic	250	220	210	Barium Hydroxide to 10%	-	S170	150	Sodium Sulfite	-	220	210
Boric	180	220	210	Calcium Hydroxide to 15%	160	S210	S180	Stannic Chloride	*180	*220	*210
Butyric to 50%	150	150	210	Magnesium Carbonate	160	S210	180	Stannous Chloride	*200	*220	*210
Butyric 50% up	-	100	80	Potassium Bicarbonate to 10%	90	S170	S150	Zinc Chloride	200	*220	*210
Carbonic	160	220	NR	Potassium Carbonate to 10%	90	S180	S150	Zinc Nitrate	180	220	210
Chloroacetic to 25%	NR	*180	*150	Potassium Hydroxide to 25%	NR	S120	S150	Zinc Sulfite	150	220	NR
Chloroacetic 25% to 50%	NR	*150	*120	Sodium Bicarbonate to 10%	140	S210	S180	<b>SOLVENTS</b>			
Chromic to 5%	100	110	150	Sodium Carbonate to 35%	90	S180	S180	Acetone to 10%	NR	180	180
Chromic to 10% to 20%	-	NR	150	Sodium Hydroxide to 10%	NR	S160	S180	Benzene	90	80	NR
Citic	*200	*220	*210	Sodium Hydroxide to 25%	NR	S160	S180	Carbon Disulfide	NR	NR	NR
Fluoboric	*S90	*S220	*S210	Sodium Sulfide	90	S220	S210	Carbon Tetrachloride	90 VAPOR	110	150
Gluosilicic up to 10%	S100	S150	S180	Trisodium Phosphate to 50%	-	S175	210	Chlorobenzene	NR	NR	NR
Formic up to 10%	200	150	180	<b>SALTS</b>				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%	***S100	***S150	***S150	Ammonium Nitrate	200	220	220	Hexane	-	150	160
Hydrofluosilicic up to 10%	*S100	*S150	*S180	Ammonium Persulfate	150	200	180	Methyl Ethyl Ketone to 10%	NR	80	NR
Hypochlorous to 20%	90	110	NR	Ammonium Sulfate	200	220	220	Naphtha	200	210	180
Lactic	*200	*220	*210	Ammonium Persulfate, saturate	150	NR	NR	Naphthalene	130	220	210
Maleic	170	210	210	Ammonium Sulfate	200	220	220	Tetrachloroethylene	NR	100	80
Nitric to 5%	200	170	150	Aniline Sulfate to 25%	150	220	210	Toluene	90	NR	80
Nitric 5% to 20%	-	140	120	Aniline Sulfate, saturated	150	220	NR	Xylene	90	80	80
Oleic	200	220	210	Barium Chloride	200	240	210	<b>BLEACHES</b>			
Oxalic	*220	*220	*210	Barium Sulfide	NR	S210	180	Calcium Chlorate	180	220	220
Perchloric to 10%	H&D	*150	*150	Calcium Chlorate	180	220	220	Calcium Hypochlorite	100	NR	S160
Phosphoric	*220	*S210	*S210	Calcium Chloride	250	240	220	Chlorine Dioxide up to 15%	-	160	*200
Phosphoric, super	-	*S210	*S210	Calcium Sulfate	*200	*240	*210	Chlorine Water	*125	*210	*200
Phthalic Anhydride	*150	*210	*210	Copper Chloride	*250	*220	*220	Hydrogen Peroxide to 30%	120	100	150
Picric to 10%	100	170	NR	Copper Cyanide	90	S220	210	Sodium Chlorate	90	210	210
Silicic	-	220	NR	Copper Fluoride	NR	S170	NR	Sodium Hypochlorite to 15%	NR	125	S180
Stearic	200	220	210	Copper Sulfate	250	240	210	<b>OTHERS</b>			
Sulfamic to 25%	160	150	NR	Ferric Chloride	*250	*220	*210	Alum. Chlorohydroxide to 50%	-	220	210
Sulfuric to 25%	*200	*220	*210	Ferric Nitrate	170	220	210	Ammonium Phosphate	150	210	210
Sulfuric to 50%	*200	*200	*180	Ferric Sulfate	200	220	210	Aqua Rega	NR	*80	NR
Sulfuric to 70%	*150	*180	*100	Ferrous Chloride	*220	*220	*210	Detergents	120	170	150
Sulfuric to 80%	NR	80	NR	Ferrous Nitrate	160	220	210	Glycerine	200	220	210
Sulfurous to 10%	90	110	120	Ferrous Sulfate	220	220	210	Kerosene	120	210	180
Tannic	200	220	210	Lead Acetate	160	220	210	Photographic Solutions	-	80	NR
Tartaric	220	220	210	Magnesium Chloride	220	240	210	Perchloroethylene	NR	100	80
Trichloroacetic to 50%	*90	*220	*200	Magnesium Hydroxide	-	S210	210	Sodium Tetraborate	180	S210	180
<b>ALCOHOLS</b>				Magnesium Sulfate	200	210	210	Sodium Tripolyphosphate	125	210	210
Amyl	200	210	120	Mercuric Chloride	*210	*220	*210	Sodium Xylene Sulfonate	-	170	160
Benzyl	NR	100	NR	Mercurous Chloride	210	220	210	Sorbitol Solutions	180	220	160
Butyl	190	150	120	Nickel Chloride	220	220	210	Urea	90	170	150
Ethyl	90	120	80	Nickel Nitrate	220	220	210	Urea-Ammonium-Nitrate	-	120	120
Methyl	90	80	NR	Nickel Sulfate	220	220	210	Fertilizer Fumes	100	120	150
<b>GASES AND VAPORS</b>				Potassium Chloride	200	240	210	Shell-D-D	NR	100	NR
Ammonia, Dry	90	170	100	Potassium Dichromate	200	220	210	Steam Vapor	180	210	180
Ammonia, Wet	90	NR	NR	Potassium Ferricyanide	200	220	210				
Bromine, Wet	90	*100	NR	Potassium Nitrate	200	220	210				
Carbon Dioxide	250	250	250	Potassium Permanganate	150	210	210				
Carbon Monoxide	200	250	250	Potassium Persulfate	90	220	210				
Chlorine, Dry	*200	*210	NR	Potassium Sulfate	200	240	210				
Fluorine	-	NR	80	Silver Nitrate	200	220	210				
Hydrogen Fluoride, Vapor	*90	*S180	*S180	Sodium Acetate	150	220	210				
Hydrogen Sulfide to 5%	250	240	180	Sodium Bisulfate	200	220	210				
Sulfur Dioxide, Dry	200	250	210	Sodium Chloride	200	240	180				
Sulfur Dioxide, Wet	200	250	210	Sodium Chlorite to 10%	175	170	150				
Sulfur Trioxide, Wet	-	220	210	Sodium Cyanide	100	220	210				
				Sodium Dichromate	160	220	210				

Reference  
C.R.G.1.2

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 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.





# Options and Accessories

## 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.

### Hi-Cor Construction

All airstream surfaces exposed to 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.

### Guards

Solid fiberglass front guards, rear guards and shutter boot guards are available.

**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.**

### ASTM D4167-97 Construction

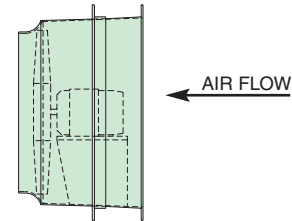
ASTM D4167-97, Standard Specification for Fiber-Reinforced Plastic Fans and Blowers. For corrosive systems where ASTM construction is specified this construction option adds: synthetic veil and electrostatically conductive surface coating applied to airstream housing and impeller surfaces, special nameplates,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

**CONTACT YOUR LOCAL HARTZELL  
REPRESENTATIVE FOR ASSISTANCE.  
1-800-336-3267**

## Mounting Accessories

### Mounting Flange

Fiberglass construction permanently mounted to the fan at the factory per customer specified location. This flange allows the fan to be mounted in the wall opening at customer's specified depths. Flange will be shipped loose if location is not specified.



### Shutter Mounting Boot

Solid fiberglass construction. This boot is molded to the fan housing at the factory, and is used to ensure proper spacing between the fan and the optional shutters.



### Fiberglass Shutter

Solid fiberglass shutters are available. Epoxy coated steel shutters, or shutters constructed of galvanized steel, stainless steel or aluminum are also available. Shutters can be furnished end or center pivoted, automatic, manual, or motor operated.



The Hartzell solid fiberglass automatic back draft damper is constructed entirely of fiberglass, minimizing corrosion problems associated with metal in the airstream. These shutters are available in standard sizes to match the Hartzell shutter mounting boot. These shutters are also available built to specified customer dimensions. Contact your local Hartzell representative for assistance.



# 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 & 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.

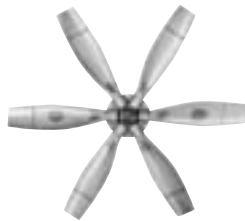
In no event whether as a result of breach of contract, or warranty or alleged negligence, defects incorrect advice or other causes, shall Hartzell be liable for special or consequential damages, including, but not limited to, loss of profits or revenue, loss of use of the equipment or any associated 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.