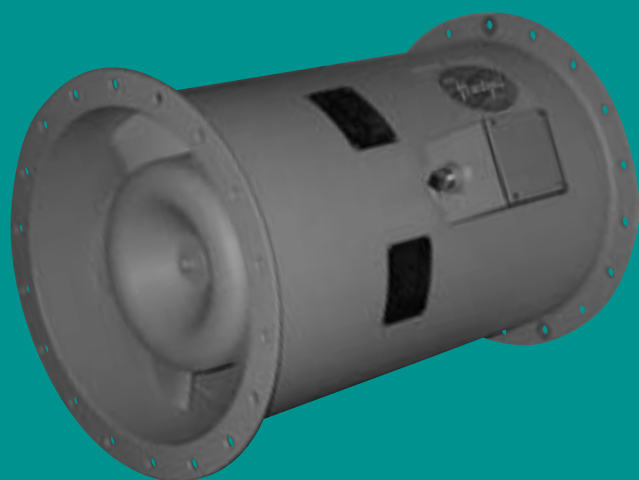
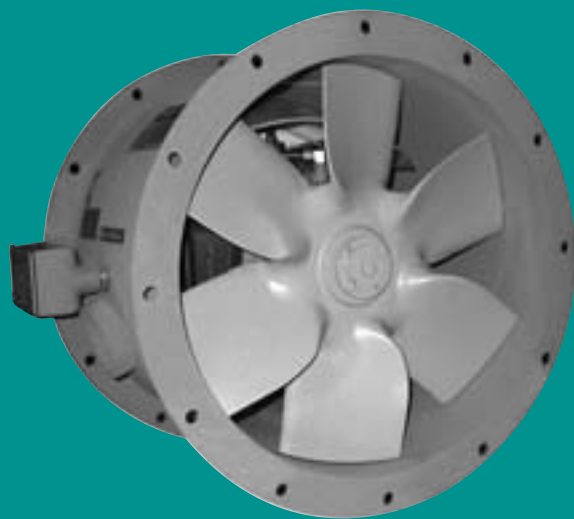


Marine Duty Fans and Blowers

Series 03 M Series 07 M Series 18 M Series 25 M
Series 38 M Series 39 M Series 44VM Series 50 M
Series 52 M Series 53CM Series 56 M Series 65(C)M
Series NST Series NSV



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Hartzell Fan, Inc., Piqua, Ohio 45356
www.hartzellfan.com

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Certified Ratings for Sound and Air Performance

Hartzell Fan, Inc. certifies that the Special Duty Blowers, Wheel Type DA, Series 03 M, Marine Duty Backward Curved Centrifugal, Direct Drive; Series 53CM, Marine Duty Vaneaxial, VP, Direct Drive; Series 65(C)M, Marine Duty Direct Drive, Adjustable Pitch Vaneaxial Fan, C-Faced Motor shown on Pages 18, 20, and 24, are licensed to bear the AMCA Seal for Sound and Air Performance. The ratings shown are based on tests and procedures performed in accordance with AMCA Publications 211 and 311 comply with the requirements of the AMCA Certified Ratings Program.



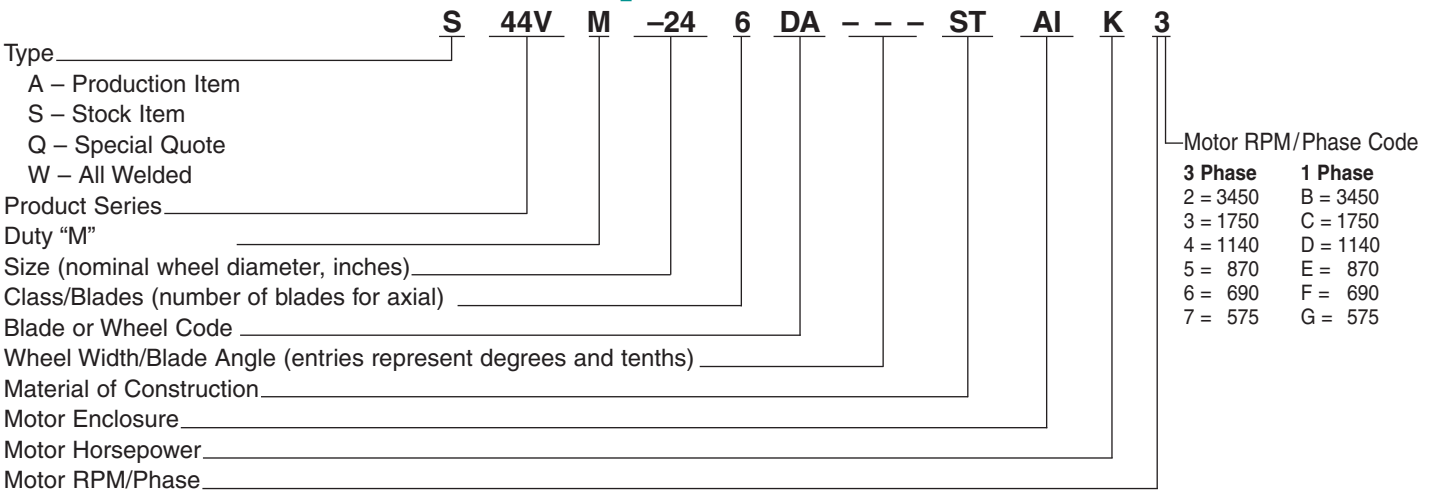
Certified Ratings for Air Performance

Hartzell Fan, Inc. certifies that the Special Duty Blowers, Wheel Type DA, Series 38 M, Marine Duty Duct Fan, Direct Drive; Series 44(V)M, Marine Duty Ductaxial Fan, Direct Drive; Series 50 M, Marine Duty Vaneaxial, Direct Drive shown on Pages 6-7 and 14-17 are licensed to bear the AMCA Seal for Air Performance. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.



Hartzell Fan, Inc. certifies that the Adjustable Pitch Vaneaxial Blowers, Series 65 M, shown on page 20, is authorized to bear CE Marking in accordance with Machinery Safety Directive 98/37/EC of the European Union. Reference Technical File E.S. 13.2.1.

Hartzell Model Code Explanation



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	75	100	125	150	200
Code Letter	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Example:

Assume a needed performance of 6,500 CFM at 1 1/2" SP, standard air. Reading the performance table on page 7 we find a Series 44V with vane section, Size 24" with a 6 bladed type DA blade type and a fan RPM of 1,760 and brake horsepower (BHP) of 2.39. Required motor horsepower is 3.

The model code can be constructed as follows: Type will be a Stock item (code S), product series for the Marine Duct Axial Blower is 44V with Vane Section is required (code “M”) Marine

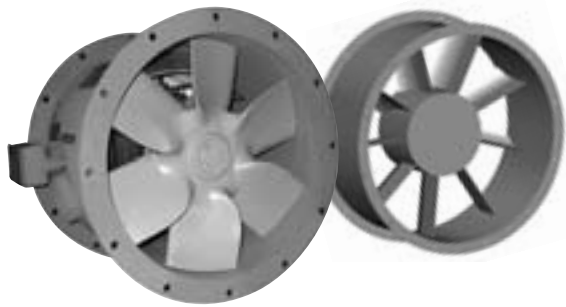
Duty, size is 24, Number of blades is 6, Blade Type is DA, material for construction is Steel (code ST), motor enclosure will be Totally Enclosed Air Over, IEEE 45 USCG Approved 50°C Ambient below deck Marine Duty Motor (code AI), motor horsepower is 3 (code K), and motor RPM/phase is 1750 (code 3).

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

This bulletin lists Hartzell’s line of Marine Duty Blowers, 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.



Marine Duty Fans and Blowers



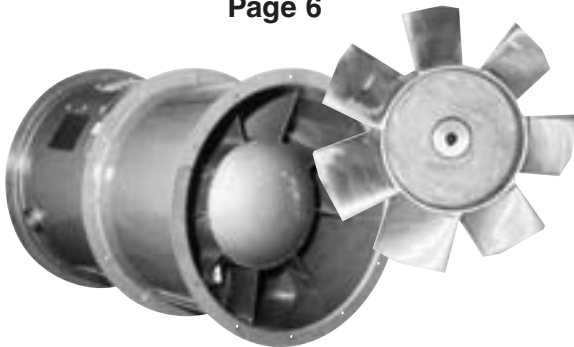
**Series 44(V)M
(with optional Vane Section)
Marine Duty Duct Axial® Fan,
Direct Drive
Page 6**



**Series 52 M
Marine Duty Tubeaxial,
Direct Drive
Page 8**



**Series 39 M
Adjustable Pitch
Marine Duty Duct Fan,
Direct Drive
Page 9**



**Series 50 M
Marine Duty Vaneaxial,
Type VA, Direct Drive
Page 14**



**Series 38 M
Marine Duty Duct Fan,
Direct Drive
Page 16**



**Series 53CM
Marine Duty Vaneaxial,
Direct Drive, C-Faced Motor
Page 18**



**Series 56 M
Marine Duty Vaneaxial,
Type VB, Direct Drive
Page 19**



**Series 65 M/65CM
Adjustable Pitch Vaneaxial,
Direct Drive,
Page 20**



**Series 25 M, Series 07 M
Compact Marine Duty Fans
Page 21**



**Series 18 M
MarAd Vaneaxial Blower
Page 22**



**Series NSV, Series NST
Navy Standard Fans
Page 23**



**Series 03 M Marine Duty,
Backward Curved Centrifugal,
Direct Drive
Page 24**



Hartzell Marine Duty Fans and Blowers

Marine Duty installations require more than a standard industrial fan or blower, they require Hartzell Marine Duty Fans and Blowers. The reliability, low maintenance, long life, corrosion resistance, heavy duty construction, and the flow and pressure capability in a compact package all required come together in the Hartzell Marine Duty Fans and Blowers. The Hartzell Marine Duty Fans and Blowers are constructed to meet or exceed United States Coast Guard and U.S. Maritime Administration standards. Standard construction and materials are as follows:

General Features

- **Axial Fans and Blowers** are designed for mounting in any position from horizontal to vertical.
- **Centrifugal Blowers** are designed for foot mounting.
- **Housings** are extra heavy, with barstock flanges. Guide vane sections are welded, with rolled steel flanges and steel vanes welded into exact position.
- **Standard finish** is a marine duty inorganic zinc coating, applied to sand blasted steel housings and components and a epoxy polyamide amine coating applied to cast aluminum impellers.
- **Axial Impellers** are true airfoil design, solid cast aluminum alloy, ground, buff finished, and precision balanced. In most cases impellers can be operated in reverse also, at lower flow and pressure.
- **Centrifugal Impellers** are cast aluminum or fabricated per fan selection and design and precision balanced.

- **Motors** are totally enclosed Marine duty, certified to meet IEEE 45, USCG approved, 50°C ambient below deck type as standard. Custom and other ABS specification motors are available.
- **Motors** supplied with re-lubricable bearings include extended lubrication tubes and lubrication fitting guard as standard where required. Fractional HP and small motors are supplied with permanently lubricated bearings for maintenance free installation.
- **Extended Electrical Leads** to watertight conduit boxes located on the exterior of axial fan housing is standard.
- **Stainless Steel** name tag on fan is standard.
- **Special Features and Options** such as inlet bells, companion flanges, louvers, dampers, suspension brackets, mounting feet, vibration isolators, lifting lugs, sound mufflers, special coatings and construction, non-sparking construction, and guards are available.
- **All Welded Construction – Type W.** All joints continuously welded, minimum ¼" material, cast junction boxes mounted on outside of housing.

Marine Installations



Hartzell direct drive marine duty fans and blowers provide continuous, reliable service, above or below deck, for engine room supply air...



... equipment, quarters, and work center ventilation...

Your Features

Ventilation Solutions - Hartzell Fan has a wide range of designs, configurations, performances, sizes, materials, finishes, and motors in-stock and from production to fit your ventilation requirements.

- Materials to meet your requirements including Steel, Aluminum, Stainless, and Fiberglass.
- Motors to meet your specifications such as explosion proof, nodular construction, or high temperature are available.
- Non-sparking construction per USCG standard is available.
- A complete selection of accessory items is available. Refer to page 26.
- Special coatings and finishes are available. Refer to page 27.
- Complete sound power level information in eight octave bands is available.
- Many sizes of the Hartzell Series 44 M are available from stock.



... cargo hold ventilation, exhaust and supply... or any marine application where dependable ventilation is required.



Marine Installations (contd)



Hartzell direct drive marine duty fans and blowers provide continuous, reliable service, above or below deck, for heating and air conditioning supply...

... toilet, locker and stores supply and exhaust...



... machinery space ventilation and mud pit exhaust...

... or any marine application where dependable ventilation is required.



Marine Fan and Blower Selection

Select your Marine Duty Fans and Blowers from Hartzell's complete line. Ventilation requirements may vary greatly from vessel to vessel. The Hartzell Marine Blower Selection Guide available from your Hartzell Fan representative may be reproduced and completed for each item on your blower list (and included in the specification) to ensure proper equipment selection.

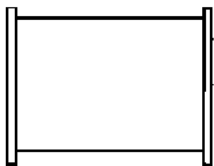
Note that the blower performances shown on the following pages are based on standard air conditions (sea level, 70°F, and 29.92 in. barometric pressure). High temperature air requirements must be cor-

rected to standard air. And, special motor insulation may be required for ambient temperatures in excess of 105°F. When placing your order, be sure to specify the Hartzell Model Code. The example on page 2 demonstrates our coding system.

Be sure to include your performance requirements and voltage, as well as a list of accessory items, if required. (See pages 22 and 23.)

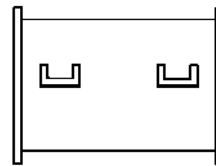
CONTACT YOUR LOCAL HARTZELL REPRESENTATIVE FOR ASSISTANCE.

Mounting Arrangements



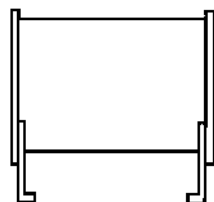
Duct Mounting

Inlet and discharge flanges allow direct mounting to duct work, providing the duct system is structured to support the unit. Can be mounted in the vertical, horizontal or inclined position.



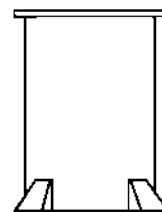
Ceiling Suspension

Side-angle supports enable suspension of unit from the ceiling. Can be used with vibration isolators. Also available for vertical mountings.



Mounting Feet

Bolted to the inlet and discharge flange, mounting feet allow positioning of the unit on the floor, ceiling, wall or platform. Can be used with vibration isolators.



Floor Mounting

Alternate method of mounting fans in vertical position. Brackets ensure rigid, flush mounting of fan to floor. Specify vertical up or vertical down air flow.



Series 44 M Marine Duct Axial® Blowers

Series 44 M – Type DA with vane section



Hartzell Fan, Inc. certifies that the Series 44(V)M, Marine Duty Duct Axial®, Direct Drive Fans shown hereon are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

Series 44 M – Type DA

The DA wheel used in the duct axial line is an airfoil design, 6-bladed, one-piece impeller cast of aluminum and is the result of many years of research and development. It combines the best features of a vaneaxial impeller and the economical performance of a Hartzell duct fan propeller. Its design is rugged; its function is to move large volumes of air at medium static pressures of 1" to 4".



Solid Cast Aluminum

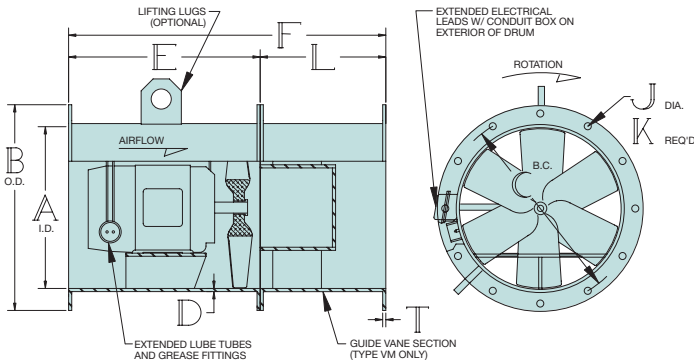
Series 44 M Marine Duty Duct Axial® Blowers

Hartzell's heavy-duty line of direct drive marine duct axial blowers is available in sizes 12" through 60". Air deliveries range from 225 to 92,000 CFM. Units operate efficiently up to 3" static pressure. The DA blower is a duct axial fan type combining the best features of the rugged, highly efficient vaneaxial blower and the economical performance of a duct fan. The wheel design, however, is completely original. Rigid motor mounts provide support for the foot mounted totally enclosed air over motor that is furnished as standard. Model 44VM blowers have a vane section for increased performance at 1" to 4" static pressure with the same or less horsepower. **(See page 4 for standard construction features.)**

Stock Models Available in Hartzell's HRS Program.

Vane Section

The addition of a specially designed vane section to DA blowers changes the design configuration to a Duct Vane Axial blower. Adding the vane section on the discharge side of a DA blower makes it perform efficiently as a low powered vaneaxial on the upper side of the pressure curve. Near free air, the vane section offers no advantages, but beyond the mid-range, the blower with the vane section added provides up to 30% more static pressure with the same horsepower.



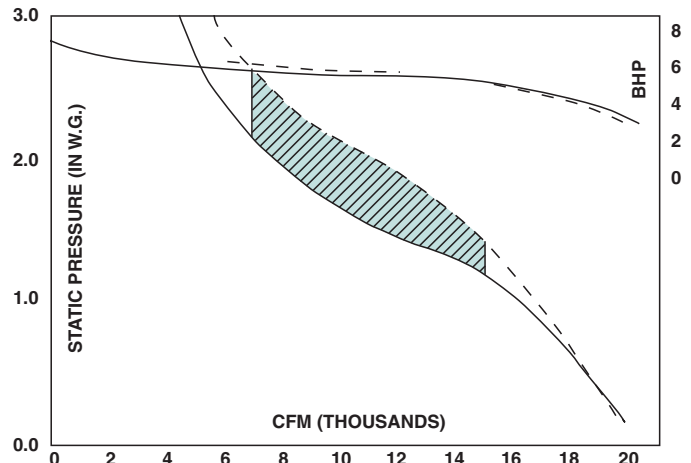
Note: Rotation is opposite shown for fan sizes 40, 54, and 60.

Principal Dimensions – Series 44 M

Fan Size	A	B	C	D	E	F	J	K	L	T	Max. Motor Frame
12	12 $\frac{1}{2}$ "	16 $\frac{7}{16}$ "	15 $\frac{1}{2}$ "	$\frac{1}{4}$ "	15	21	$\frac{9}{16}$ "	12	6	$\frac{1}{4}$ "	56
14	14 $\frac{1}{2}$ "	18 $\frac{7}{16}$ "	17 $\frac{1}{2}$ "	$\frac{1}{4}$ "	15	25	$\frac{9}{16}$ "	12	10	$\frac{1}{4}$ "	182T
16	16 $\frac{1}{2}$ "	20 $\frac{7}{16}$ "	19 $\frac{1}{2}$ "	$\frac{1}{4}$ "	15	25	$\frac{9}{16}$ "	12	10	$\frac{1}{4}$ "	184T
18	18 $\frac{1}{2}$ "	22 $\frac{7}{16}$ "	21 $\frac{1}{2}$ "	$\frac{1}{4}$ "	15	26	$\frac{9}{16}$ "	12	11	$\frac{1}{4}$ "	184T
24	24 $\frac{1}{2}$ "	29 $\frac{7}{16}$ "	27 $\frac{1}{2}$ "	$\frac{1}{4}$ "	23	36	$\frac{9}{16}$ "	12	13	$\frac{1}{4}$ "	184T
28	28 $\frac{1}{2}$ "	33 $\frac{7}{16}$ "	31 $\frac{1}{2}$ "	$\frac{1}{4}$ "	23	36	$\frac{9}{16}$ "	12	13	$\frac{1}{4}$ "	184T
32	33	37 $\frac{7}{16}$ "	35 $\frac{1}{2}$ "	$\frac{1}{4}$ "	24	39	$\frac{9}{16}$ "	12	15	$\frac{1}{4}$ "	215T
36	37	41 $\frac{7}{16}$ "	39 $\frac{1}{2}$ "	$\frac{1}{4}$ "	28	44	$\frac{9}{16}$ "	12	16	$\frac{1}{4}$ "	256T
40	41	45 $\frac{7}{16}$ "	43 $\frac{1}{2}$ "	$\frac{1}{4}$ "	30	48	$\frac{9}{16}$ "	12	18	$\frac{1}{4}$ "	286T
44	45	49 $\frac{7}{16}$ "	47 $\frac{1}{2}$ "	$\frac{1}{4}$ "	32	51	$\frac{9}{16}$ "	12	19	$\frac{1}{4}$ "	326T
48	49 $\frac{1}{2}$ "	54 $\frac{1}{16}$ "	52 $\frac{1}{2}$ "	$\frac{1}{4}$ "	36	58	$\frac{9}{16}$ "	12	22	$\frac{1}{4}$ "	365T
54	55 $\frac{1}{2}$ "	61 $\frac{1}{16}$ "	59	$\frac{3}{8}$ "	40	63	$\frac{9}{16}$ "	12	23	$\frac{3}{8}$ "	365T
60	61 $\frac{1}{2}$ "	67 $\frac{1}{16}$ "	65	$\frac{3}{8}$ "	40	65	$\frac{9}{16}$ "	12	25	$\frac{3}{8}$ "	365T

Note: For an included cone angle of 25°- 30°. Dimensions and specifications are subject to change. Certified prints are available.

Series 44 M and 44VM – 36" Direct Drive 1160 RPM – 5HP



Series 52 M Marine Tubeaxial Fan

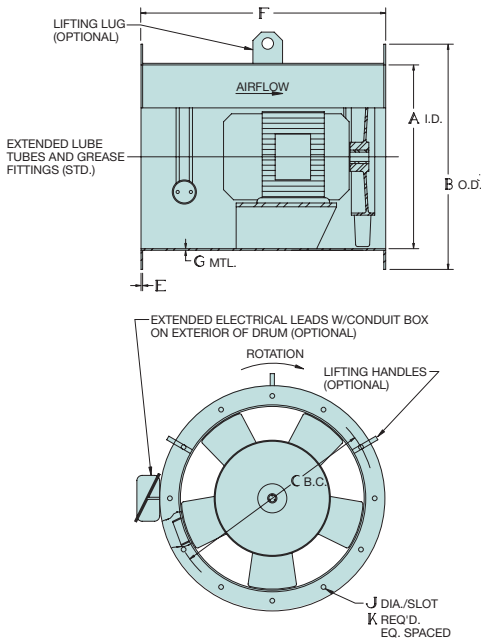


Shown with optional mounting feet and handles.



Series 52 M

- **Applications** – Marine Duty applications requiring medium to high flow under pressure at temperatures not exceeding the motor rating, designed for flange mounting in any position from horizontal to vertical. The Series 52 M fits the performance between duct fans and duct axial fans.
- **Sizes** – Available in sizes 12" to 24" with **performance** from 400 CFM to 12,000 CFM at free air and pressures from 0" SP to 6" SP.
- **Housings** are heavy rolled steel with rolled steel flanges.
- **Axial Impellers** are true airfoil design, solid cast aluminum alloy, ground, buff finished, and precision balanced. Multiple impeller types allow precise selection and performance can be adjusted in the field by change out of impeller if necessary.
- **Standard Finish** is a marine duty inorganic zinc coating, applied to sand blasted steel housings and a epoxy polyamide amine coating applied to cast aluminum impellers.
- **Motors** are TEAO or TEFC Marine duty, certified to meet IEEE 45, USCG approved, 50°C ambient below deck type as standard.
- **Motor Lubrication** – Motors supplied with re-lubricable bearings include extended lubrication tubes and lubrication fitting guard as standard. Fractional HP and small motors are supplied with permanently lubricated bearings for maintenance free installation.
- **Extended Electrical Leads** to watertight conduit boxes located on the exterior of fan housing is standard.
- **Special Features and Options** – such as inlet bells, companion flanges, louvers, dampers, suspension brackets, mounting feet, vibration isolators, lifting lugs, sound mufflers, special coatings and construction, and guards are available. See pages 26 and 27.



Principal Dimensions

Fan Size	A	B	C	E		F	G		J	K
				STD	W		STD	W		
12	12	14 ¹³ / ₁₆	13 ³ / ₈	1/8	1/4	16	12 GA	1/4	5/16	6
14	14	16 ¹³ / ₁₆	15 ¹ / ₂	1/8	1/4	16	12 GA	1/4	5/16	6
16	16	19 ⁹ / ₁₆	18	1/8	1/4	18	12 GA	1/4	5/16 X 5/8	6
18	18	21 ⁹ / ₁₆	19 ³ / ₄	1/8	1/4	18	12 GA	1/4	7/16 X 3/4	12
20	20	23 ⁹ / ₁₆	21 ¹ / ₂	1/8	1/4	18	12 GA	1/4	7/16 X 3/4	12
22	22	25 ⁹ / ₁₆	23 ³ / ₄	1/8	1/4	22	12 GA	1/4	7/16 X 3/4	12
24	24	27 ³ / ₈	26	3/16	1/4	28	7 GA	1/4	7/16 X 3/4	12

NOTES: Dimensions and specifications are subject to change. Certified prints are available.

Rating Table — Series 52 M – Marine Duty Tubeaxial Fan, Direct Drive

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"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	5"	6"
12	_52-M-126-T---STAI E2	1/2	3450	0.37	1501	1430	1341	1209	842	404							
	_52-M-127-T---STAI G2	3/4	3450	0.62	1867	1807	1738	1653	1538								
14	_52-M-147VA---STAI I2	1 1/2	3450	1.33	3229	3140	3044	2940	2826	2541							
16	_52-M-165-T---STAI I2	1 1/2	3450	1.54	3602	3494	3385	3275	3171	2932	1613	1203	918	644	391		
	_52-M-167-T---STAI K2	3	3450	3.17	5374	5262	5145	5023	4896	4621	4291						
18	_52-M-185-T---STAI J2	2	3450	2.29	4359	4263	4163	4057	3945	3697	3355	2522	1979	1492	1186	734	
20	_52-M-205-T---STAI K2	3	3450	3.27	5838	5724	5606	5482	5352	5073	4742	4269	3367	2679	2243	1643	978
22	_52-M-225TB---STAI H3	1	1750	1.05	5135	4863	4562	4220	3733	1765	896						
	_52-M-225TA---STAI L2	5	3450	5.72	8068	7953	7834	7711	7583	7309	7007	6661	6235	5648	4621	3037	2367
	_52-M-225TB---STAI M2	7 1/2	3450	8.13	10124	9990	9853	9713	9570	9271	8957	8624	8254	7802	7203	4401	3307
24	_52-M-245TB---STAI M2	7 1/2	3450	7.76	9845	9717	9586	9450	9310	9012	8691	8331	7895	7305	6612	5304	4189
	_52-M-245TA---STAI N2	10	3450	9.89	11878	11742	11603	11461	11315	11011	10688	10345	9971	9548	9044	7456	5913

Performance shown is for installation Type D: ducted 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 page 2 for the complete Hartzell Model Code Explanation and example. Shaded units available from HRS Stock.



Series 39 M Adjustable Pitch Marine Duty Duct Fans



Series 39 M

Adjustable Pitch Marine Duty Duct Fan (Shown with 6 Blade Propeller Assembly)

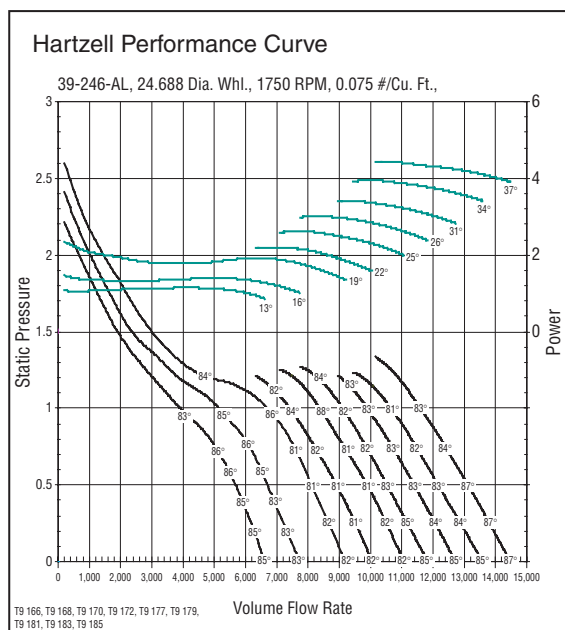


Hartzell Fan, Inc. certifies that the Series 39 M, Adjustable Pitch Marine Duty Duct Fans, Type AL & AA, with and without vane section, air and sound performance ratings shown herein are reliable and

accurate and in accordance with industry standards. The ratings shown are based on tests and procedures performed in accordance with AMCA Standard 210, Standard 300, and Standard 301.

Sound Performance data is available upon request. Please contact the factory and ask for Engineering Publication #SD-39.

Typical Fan Performance Curve



The Hartzell Series 39 M Adjustable Pitch Marine Duty Duct Fan is best suited for applications requiring high flow and low to medium pressure at temperatures not exceeding the motor rating where adjustable pitch blades allow fans to be accurately set. Propellers are high efficiency and quiet. **Low Speed Ultra Quiet selections can reduce sound levels by 5-10 dBA.**

- **Stable Performance** – Wide range in flow volume from low to high blade angle settings.
- **Sizes** – Available in sizes 16", 18", 24", 30", 32" and 36" for AL props and 40" and 48" for AA prop. Performance from 2,200 CFM to 59,000 CFM at free air and pressures from 0" SP to 2½" SP.
- **Housings** – Housings are steel heavy-duty welded construction and are flanged and punched for easy duct connection.
- **Axial Impellers** – Assemblies are cast aluminum with steel hardware. True airfoil design blades with varying twist and sweep to move air evenly across the entire blade length to reduce system effects. Cast aluminum hub with split taper lock bushing as standard to insure secure mounting to shaft. Multiple blade configurations allow precise selection and performance can be adjusted in the field by change of blade angle if necessary.
- **Motors** are TEAO or TEFC Marine duty, certified to meet IEEE 45, USCG approved, 50°C ambient below deck type as standard, or per customer specifications. **Some 24" fans at 870 RPM and 36" fans at 690 RPM with motor frame sizes within construction limits, are available through ESP selection software.**
- **Extended Electrical Leads** to watertight conduit boxes located on the exterior of fan housing is standard.
- **Rigid Motor Mount** – Welded steel base provides support for foot-mounted motors and is designed for minimum resistance to air flow.
- **Balancing** – The fan is electronically statically and dynamically balanced to the requirements of Fan Application Category BV-3 of AMCA ANSI Std. 204-96. All fans receive an inspection prior to shipment and, whenever possible, fans are test run
- **Mounting** – Designed for flange mounting directly in ductwork in any position from horizontal to vertical
- **Extended Lubrication Tubes** – Motors supplied with re-lubricable bearings include extended lubrication tubes as standard. Fractional HP and small motors are supplied with permanently lubricated bearings for maintenance free installation
- **Standard Finish** – is a marine duty inorganic zinc coating, applied to sand blasted steel housings and epoxy-polyamide coating applied to cast aluminum impellers. Alternative coatings are available.
- **Vane Section Construction** – Bolt on vane section to increase the performance in some fan systems. See page 3.
- **Non-Sparking Fan Construction** – American Bureau of Shipping (ABS Type) Non-Sparking Fan construction is an available option, please contact factory.
- **Special Materials of Construction** – Alternate materials of construction; stainless steel, aluminum, and other materials are available upon request.
- **Options and Accessories** – Standard options and accessories are available. See pages 26-27.



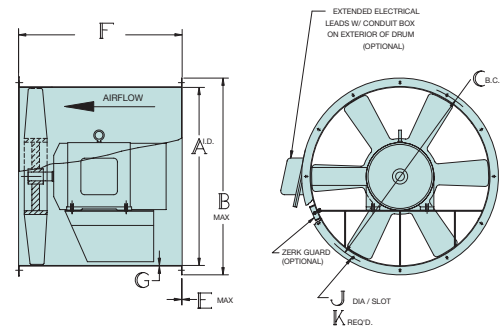
Optional Vane Section
(Series 39VM)



Rating Tables — Series 39-M, Size 16

FAN SIZE 16	A	B	C	E		F	Est. Weight
	16 ⁷ / ₈	19 ¹ / ₁₆	18 ⁵ / ₈	STD	W		
	G		J	K	Motor Frame		
	STD	W			Min.	Max.	
12 GA	1/4	5/16 X 5/8	6	48	184T	60	

16" NOTES: Vane Section is available. Vane section adds 10 inches downstream of dimension F, estimated weight is 32 lbs. Dimensions and specifications are subject to change. For reduced "F" dimension housing, contact factory. Certified prints are available. Weight shown is without motor and options.



Series 39-M, Size 16, 1750 RPM – Ultra-Quiet

Model 39-M-163AL ST _____, (3 - Blade)				Model 39-M-164AL ST _____, (4 - Blade)				Model 39-M-166AL ST _____, (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range
2,200 - 3,600	0"	70 - 72	0.10 - 0.29	2,250 - 4,000	0"	71 - 74	0.11 - 0.42	2,100 - 3,900	0"	74 - 76	0.13 - 0.43
2,000 - 3,600	1/16"	69 - 72	0.10 - 0.34	2,000 - 4,000	1/16"	71 - 73	0.10 - 0.46	1,900 - 3,900	1/16"	74 - 76	0.14 - 0.51
1,800 - 3,400	1/8"	69 - 73	0.10 - 0.33	2,000 - 4,000	1/8"	71 - 74	0.12 - 0.51	1,900 - 3,700	1/8"	73 - 76	0.18 - 0.54
1,800 - 3,400	3/16"	69 - 72	0.10 - 0.39	1,750 - 3,750	3/16"	71 - 73	0.11 - 0.48	1,900 - 3,300	3/16"	72 - 76	0.21 - 0.51
1,600 - 3,200	1/4"	69 - 73	0.10 - 0.38	1,750 - 3,500	1/4"	70 - 73	0.12 - 0.45	2,300 - 3,100	1/2"	72 - 77	0.34 - 0.58
1,600 - 3,000	5/16"	69 - 73	0.12 - 0.39	1,500 - 3,500	5/16"	70 - 73	0.11 - 0.51	---	---	---	---

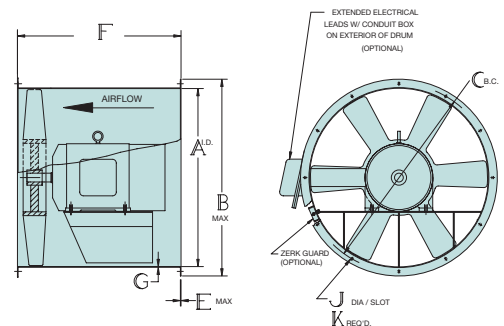
Series 39-M, Size 16, 3450 RPM

Model 39-M-163AL ST _____, (3 - Blade)				Model 39-M-164AL ST _____, (4 - Blade)				Model 39-M-166AL ST _____, (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range
4,000 - 6,800	0"	87 - 90	0.66 - 1.97	4,500 - 7,500	0"	88 - 94	0.85 - 2.61	4,000 - 7,500	0"	92 - 95	0.99 - 3.04
4,000 - 6,800	1/4"	87 - 90	0.76 - 2.28	4,000 - 7,500	3/16"	88 - 91	0.87 - 3.32	4,000 - 7,500	3/16"	92 - 94	1.12 - 3.52
3,600 - 6,800	1/2"	86 - 90	0.75 - 2.71	3,500 - 7,500	3/4"	87 - 91	0.87 - 3.83	3,500 - 7,500	3/4"	92 - 96	1.08 - 4.06
3,600 - 6,400	3/4"	86 - 89	0.82 - 2.63	3,000 - 7,000	1 1/8"	87 - 90	0.84 - 3.84	3,500 - 7,000	1 1/8"	91 - 94	1.32 - 3.99
3,200 - 6,000	1"	86 - 89	0.81 - 2.58	2,500 - 6,500	1 1/2"	87 - 90	0.88 - 4.00	3,000 - 6,500	1 1/2"	91 - 93	1.34 - 4.00
2,800 - 5,600	1 1/4"	87 - 89	0.84 - 2.62	2,500 - 4,500	1 3/4"	88 - 90	1.22 - 2.61	2,500 - 6,000	1 3/4"	92 - 93	1.45 - 4.10

Rating Tables — Series 39-M, Size 18

FAN SIZE 18	A	B	C	E		F	Est. Weight
	18 ⁷ / ₈	21 ¹ / ₁₆	20 ⁵ / ₈	STD	W		
	G		J	K	Motor Frame		
	STD	W			Min.	Max.	
12 GA	1/4	5/16 X 5/8	6	48	184T	63	

18" NOTES: Vane Section is available. Vane section adds 11 inches downstream of dimension F, estimated weight is 43 lbs. Dimensions and specifications are subject to change. For reduced "F" dimension housing, contact factory. Certified prints are available. Weight shown is without motor and options.



Series 39-M, Size 18, 1750 RPM – Ultra-Quiet

Model 39-M-183AL ST _____, (3 - Blade)				Model 39-M-184AL ST _____, (4 - Blade)				Model 39-M-186AL ST _____, (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range
2,750 - 4,500	0"	72 - 75	0.11 - 0.36	3,000 - 5,250	0"	73 - 76	0.15 - 0.58	3,000 - 5,250	0"	76 - 79	0.28 - 0.68
2,500 - 4,500	1/16"	71 - 74	0.12 - 0.42	3,000 - 5,250	1/16"	73 - 76	0.18 - 0.65	3,000 - 5,250	1/16"	76 - 77	0.33 - 0.77
2,250 - 4,500	1/8"	71 - 74	0.12 - 0.48	2,750 - 5,250	1/8"	72 - 77	0.17 - 0.71	2,750 - 5,250	1/8"	75 - 78	0.34 - 0.90
2,250 - 4,500	3/16"	70 - 74	0.13 - 0.53	2,750 - 5,000	3/16"	72 - 76	0.20 - 0.70	2,750 - 5,000	3/16"	74 - 77	0.38 - 0.95
2,000 - 4,250	1/4"	70 - 73	0.12 - 0.52	2,750 - 4,750	1/4"	71 - 75	0.22 - 0.68	2,750 - 4,750	1/4"	74 - 78	0.43 - 1.01
2,000 - 4,000	5/16"	71 - 73	0.14 - 0.51	2,750 - 4,750	5/16"	71 - 76	0.24 - 0.75	2,750 - 4,250	5/16"	75 - 78	0.51 - 0.99

Series 39-M, Size 18, 3450 RPM

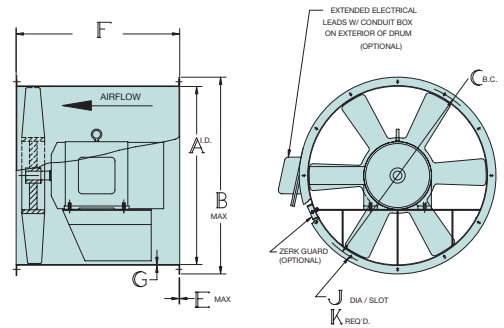
Model 39-M-183AL ST _____, (3 - Blade)				Model 39-M-184AL ST _____, (4 - Blade)				Model 39-M-186AL ST _____, (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range
5,500 - 9,000	0"	89 - 95	0.88 - 2.92	6,000 - 9,500	0"	90 - 94	1.22 - 3.35	6,000 - 10,000	0"	94 - 96	2.19 - 4.82
5,000 - 9,000	1/4"	88 - 91	0.92 - 3.36	5,500 - 9,500	3/16"	90 - 93	1.27 - 4.05	6,000 - 10,000	1/4"	94 - 94	2.53 - 5.56
4,500 - 9,000	1/2"	88 - 91	0.91 - 3.81	5,000 - 9,500	3/4"	89 - 93	1.36 - 4.90	5,500 - 10,000	1"	92 - 95	2.64 - 6.44
4,500 - 9,000	3/4"	88 - 91	1.01 - 4.28	4,500 - 9,500	1 1/8"	88 - 95	1.44 - 5.70	5,000 - 10,000	1 1/2"	92 - 95	2.72 - 7.58
4,000 - 8,500	1"	87 - 91	0.99 - 4.19	4,500 - 8,500	1 1/2"	89 - 93	1.76 - 5.10	5,000 - 9,000	2"	92 - 95	3.12 - 7.38
4,000 - 8,000	1 1/4"	88 - 90	1.15 - 4.12	5,500 - 8,000	1 3/4"	90 - 94	2.91 - 5.40	5,000 - 8,500	2 1/2"	92 - 95	3.72 - 7.95

Air and Sound Performance Data is available in Hartzell ESP (Electronic Support Package). Please visit www.hartzellfan.com to request a copy. Performance certified is for Installation Type D: ducted inlet/ducted out. Performance data is based on standard air conditions (0.075#/ft³). Performance ratings do not include the effects of appurtenances (accessories). Sound levels shown are in dBA for fan inlet or outlet and based on a hemispherical free field (Q=2), at a distance of 5 feet. To complete model code and blade angle, motor horsepower code, and motor speed code, refer to page 2 for model code information.



Rating Tables — Series 39-M, Size 24

FAN SIZE 24	A	B	C	E		F	Est. Weight
	24 ³ / ₈	29 ¹ / ₄	26 ³ / ₈	STD	W		
	G		J	K	Motor Frame		
	STD	W			Min.	Max.	
10 GA	¹ / ₄	⁷ / ₁₆ X ³ / ₄	6	56	184T	130	



24" NOTES: Vane Section is available. Vane section adds 13 inches downstream of dimension F, estimated weight is 84 lbs. Dimensions and specifications are subject to change. For reduced "F" dimension housing, contact factory. Certified prints are available. Weight shown is without motor and options.

Series 39-M, Size 24, 1160 RPM – Ultra-Quiet

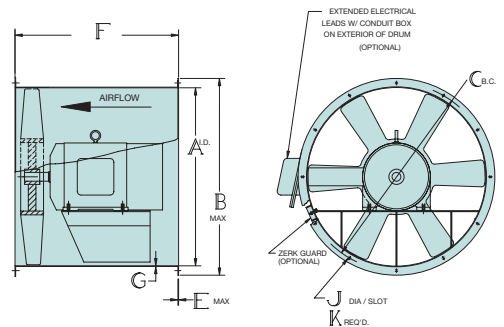
Model 39-M-243AL ST (3 - Blade)				Model 39-M-244AL ST (4 - Blade)				Model 39-M-246AL ST (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range
4,800 - 7,600	0"	67 - 70	0.20 - 0.60	5,000 - 8,500	0"	69 - 74	0.24 - 0.89	4,500 - 9,000	0"	70 - 74	0.27 - 1.02
4,400 - 7,600	¹ / ₁₆ "	66 - 70	0.19 - 0.67	5,000 - 8,000	¹ / ₁₆ "	69 - 73	0.27 - 0.83	4,500 - 9,000	¹ / ₁₆ "	70 - 74	0.29 - 1.08
4,000 - 7,600	¹ / ₈ "	66 - 71	0.20 - 0.77	4,500 - 8,000	¹ / ₈ "	67 - 74	0.27 - 0.93	4,500 - 9,000	¹ / ₈ "	70 - 74	0.32 - 1.17
3,600 - 7,200	³ / ₁₆ "	66 - 70	0.21 - 0.77	4,500 - 7,500	³ / ₁₆ "	67 - 73	0.30 - 0.89	4,000 - 8,500	¹ / ₄ "	70 - 74	0.34 - 1.21
3,600 - 6,800	¹ / ₄ "	67 - 70	0.26 - 0.78	4,000 - 7,500	¹ / ₄ "	68 - 74	0.30 - 0.98	4,000 - 8,000	³ / ₈ "	70 - 74	0.42 - 1.25
4,400 - 4,800	³ / ₈ "	68 - 69	0.49 - 0.54	3,500 - 6,500	³ / ₈ "	69 - 74	0.35 - 0.95	4,500 - 7,000	¹ / ₂ "	71 - 76	0.64 - 1.21

Series 39-M, Size 24, 1750 RPM

Model 39-M-243AL ST (3 - Blade)				Model 39-M-244AL ST (4 - Blade)				Model 39-M-246AL ST (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range
7,250 - 12,500	0"	78 - 83	0.66 - 2.55	7,700 - 12,600	0"	80 - 85	0.84 - 2.87	7,200 - 13,600	0"	81 - 85	0.97 - 3.47
6,500 - 11,750	¹ / ₁₆ "	77 - 82	0.62 - 2.40	7,700 - 12,600	¹ / ₁₆ "	80 - 85	0.93 - 3.12	6,400 - 12,800	¹ / ₁₆ "	81 - 85	1.02 - 3.95
6,500 - 11,000	¹ / ₄ "	77 - 82	0.75 - 2.31	7,000 - 11,900	¹ / ₄ "	78 - 85	0.92 - 2.99	6,400 - 12,800	¹ / ₂ "	81 - 85	1.20 - 4.03
5,750 - 11,000	³ / ₁₆ "	76 - 81	0.72 - 2.60	6,300 - 11,200	¹ / ₂ "	78 - 84	1.02 - 3.14	5,600 - 12,000	³ / ₄ "	81 - 85	1.24 - 4.08
5,000 - 10,250	¹ / ₂ "	77 - 80	0.71 - 2.51	5,600 - 10,500	³ / ₄ "	80 - 84	1.14 - 3.32	5,600 - 11,200	1"	82 - 85	1.56 - 4.15
5,000 - 8,750	³ / ₄ "	79 - 83	1.01 - 2.36	7,000 - 7,700	1"	80 - 81	2.02 - 2.31	10,400 - 10,400	1 ¹ / ₄ "	82 - 82	4.31 - 4.31

Rating Tables — Series 39-M, Size 30

FAN SIZE 30	A	B	C	E		F	Est. Weight
	30 ³ / ₈	35 ¹ / ₄	33	STD	W		
	G		J	K	Motor Frame		
	STD	W			Min.	Max.	
10 GA	¹ / ₄	⁷ / ₁₆ X ³ / ₄	6	56	215T	186	



30" NOTES: Vane Section is available. Vane section adds 15 inches downstream of dimension F, estimated weight is 122 lbs. Dimensions and specifications are subject to change. For reduced "F" dimension housing, contact factory. Certified prints are available. Weight shown is without motor and options.

Series 39-M, Size 30, 1160 RPM – Ultra-Quiet

Model 39-M-303AL ST (3 - Blade)				Model 39-M-304AL ST (4 - Blade)				Model 39-M-306AL ST (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range
9,000 - 15,000	0"	75 - 78	0.53 - 1.91	8,400 - 15,600	0"	75 - 79	0.55 - 2.15	9,000 - 17,000	0"	78 - 80	0.81 - 2.85
8,000 - 15,000	¹ / ₁₆ "	74 - 80	0.58 - 2.32	8,400 - 15,600	¹ / ₁₆ "	74 - 79	0.69 - 2.50	8,000 - 17,000	¹ / ₁₆ "	77 - 80	0.81 - 3.30
8,000 - 14,000	¹ / ₈ "	74 - 79	0.73 - 2.30	7,200 - 14,400	¹ / ₈ "	74 - 78	0.67 - 2.37	8,000 - 16,000	¹ / ₄ "	77 - 80	0.93 - 3.21
6,000 - 13,000	³ / ₁₆ "	76 - 79	0.66 - 2.32	6,000 - 14,400	³ / ₁₆ "	74 - 79	0.64 - 2.78	8,000 - 16,000	³ / ₈ "	77 - 80	1.06 - 3.64
5,000 - 12,000	¹ / ₂ "	76 - 80	0.72 - 2.38	4,800 - 13,200	¹ / ₂ "	75 - 80	0.67 - 2.71	7,000 - 15,000	¹ / ₂ "	77 - 80	1.06 - 3.58
9,000 - 9,000	⁵ / ₈ "	79 - 79	1.83 - 1.83	3,600 - 12,000	⁵ / ₈ "	75 - 79	0.69 - 2.68	7,000 - 14,000	⁵ / ₈ "	78 - 80	1.25 - 3.52

Series 39-M, Size 30, 1750 RPM

Model 39-M-303AL ST (3 - Blade)				Model 39-M-304AL ST (4 - Blade)				Model 39-M-306AL ST (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range	CFM Range	SP	dB _A Range	BHP Range
13,500 - 22,500	0"	85 - 89	1.80 - 6.45	12,000 - 22,500	0"	86 - 88	1.77 - 6.36	13,500 - 24,000	0"	88 - 90	2.78 - 8.02
12,000 - 22,500	¹ / ₄ "	85 - 90	1.90 - 7.63	12,000 - 22,500	¹ / ₄ "	85 - 89	2.10 - 7.49	12,000 - 24,000	³ / ₁₆ "	87 - 90	2.90 - 9.82
12,000 - 21,000	¹ / ₂ "	84 - 89	2.34 - 7.43	10,500 - 22,500	¹ / ₂ "	84 - 89	2.05 - 8.50	12,000 - 24,000	³ / ₄ "	87 - 90	3.46 - 11.8
10,500 - 19,500	³ / ₄ "	86 - 89	2.38 - 7.32	10,500 - 22,500	³ / ₄ "	85 - 89	2.52 - 9.88	10,500 - 22,500	1 ¹ / ₄ "	87 - 91	3.58 - 12.1
9,000 - 18,000	1"	87 - 90	2.55 - 7.29	9,000 - 21,000	1"	85 - 90	2.55 - 9.59	9,000 - 21,000	1 ¹ / ₂ "	88 - 92	3.86 - 12.4
7,500 - 16,500	1 ¹ / ₄ "	88 - 90	2.74 - 7.37	7,500 - 19,500	1 ¹ / ₄ "	86 - 90	2.68 - 9.53	9,000 - 19,500	1 ³ / ₄ "	90 - 92	5.77 - 13.2

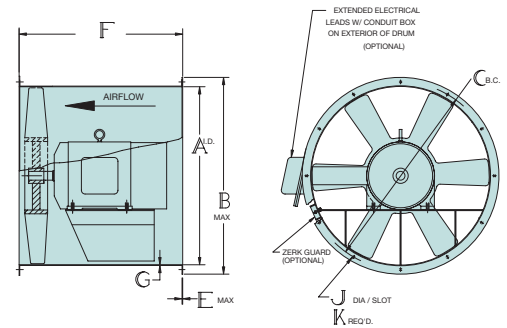
Air and Sound Performance Data is available in Hartzell ESP (Electronic Support Package). Please visit www.hartzellfan.com to request a copy. Performance certified is for Installation Type D: ducted inlet/ducted out. Performance data is based on standard air conditions (0.075#/ft³). Performance ratings do not include the effects of appurtenances (accessories). Sound levels shown are in dBA for fan inlet or outlet and based on a hemispherical free field (Q=2), at a distance of 5 feet. To complete model code add blade angle, motor horsepower code, and motor speed code. Refer to page 2 for model code information.



Rating Tables — Series 39-M, Size 32

FAN SIZE 32	A	B	C	E		F	Est. Weight
	33	37 $\frac{3}{8}$	35	STD	W	34	
	G		J	K	Motor Frame		
STD	W	Min.		Max.			
	10 GA	$\frac{1}{4}$	$\frac{7}{16} \times \frac{3}{4}$	6	56	215T	202

32" NOTES: Vane Section is available. Vane section adds 15 inches downstream of dimension F, estimated weight is 131 lbs. Dimensions and specifications are subject to change. For reduced "F" dimension housing, contact factory. Certified prints are available. Weight shown is without motor and options.



Series 39-M, Size 32, 1160 RPM

Model 39-M-323AL — ST — (3- Blade)			
CFM Range	SP	dB _A Range	BHP Range
10,500 - 18,000	0"	75 - 80	0.63 - 2.62
9,000 - 16,500	$\frac{1}{8}$ "	74 - 79	0.63 - 2.51
7,500 - 16,500	$\frac{1}{4}$ "	74 - 80	0.62 - 2.90
7,500 - 15,000	$\frac{3}{8}$ "	76 - 79	0.81 - 2.77
6,000 - 13,500	$\frac{1}{2}$ "	77 - 79	0.84 - 2.65
3,000 - 10,500	$\frac{5}{8}$ "	77 - 79	0.69 - 2.06

Model 39-M-324AL — ST — (4- Blade)			
CFM Range	SP	dB _A Range	BHP Range
9,800 - 19,600	0"	77 - 88	0.73 - 3.28
9,800 - 19,600	$\frac{1}{8}$ "	76 - 83	0.85 - 3.83
9,800 - 18,200	$\frac{1}{4}$ "	75 - 83	1.01 - 3.62
8,400 - 16,800	$\frac{3}{8}$ "	75 - 80	0.97 - 3.44
7,000 - 16,800	$\frac{1}{2}$ "	77 - 81	0.97 - 3.92
5,600 - 15,400	$\frac{5}{8}$ "	78 - 81	0.97 - 3.77

Model 39-M-326AL — ST — (6- Blade)			
CFM Range	SP	dB _A Range	BHP Range
10,400 - 19,500	0"	80 - 82	1.00 - 3.44
9,100 - 19,500	$\frac{1}{8}$ "	80 - 82	0.98 - 3.95
9,100 - 19,500	$\frac{1}{4}$ "	79 - 82	1.10 - 4.45
9,100 - 18,200	$\frac{3}{8}$ "	79 - 82	1.23 - 4.23
7,800 - 16,900	$\frac{1}{2}$ "	79 - 83	1.20 - 3.98
6,500 - 16,900	$\frac{5}{8}$ "	80 - 83	1.18 - 4.51

Series 39-M, Size 32, 1750 RPM

Model 39-M-323AL — ST — (3- Blade)			
CFM Range	SP	dB _A Range	BHP Range
14,000 - 26,000	0"	85 - 89	1.84 - 7.77
14,000 - 26,000	$\frac{1}{4}$ "	85 - 90	2.21 - 9.30
12,000 - 24,000	$\frac{1}{2}$ "	84 - 89	2.17 - 8.94
12,000 - 24,000	$\frac{3}{4}$ "	86 - 91	2.71 - 10.1
10,000 - 22,000	1"	87 - 90	2.81 - 9.79
6,000 - 20,000	1 $\frac{1}{4}$ "	88 - 91	2.36 - 9.59

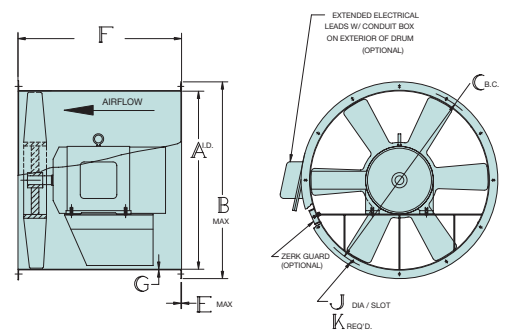
Model 39-M-324AL — ST — (4- Blade)			
CFM Range	SP	dB _A Range	BHP Range
16,000 - 30,000	0"	87 - 94	2.78 - 11.8
16,000 - 28,000	$\frac{1}{4}$ "	86 - 97	3.22 - 11.0
14,000 - 28,000	$\frac{1}{2}$ "	85 - 92	3.06 - 12.6
14,000 - 26,000	$\frac{3}{4}$ "	86 - 92	3.57 - 11.9
12,000 - 26,000	1"	85 - 92	3.45 - 13.4
10,000 - 24,000	1 $\frac{1}{4}$ "	88 - 91	3.43 - 12.7

Model 39-M-326AL — ST — (6- Blade)			
CFM Range	SP	dB _A Range	BHP Range
16,000 - 30,000	0"	90 - 93	3.50 - 12.5
14,000 - 30,000	$\frac{1}{8}$ "	90 - 92	3.57 - 14.9
14,000 - 28,000	$\frac{3}{8}$ "	89 - 92	4.13 - 14.6
12,000 - 26,000	1 $\frac{1}{8}$ "	89 - 92	4.16 - 14.2
10,000 - 24,000	1 $\frac{1}{2}$ "	90 - 93	4.32 - 13.9
10,000 - 22,000	1 $\frac{3}{4}$ "	91 - 93	5.51 - 14.1

Rating Tables — Series 39-M, Size 36

FAN SIZE 36	A	B	C	E		F	Est. Weight
	37	41 $\frac{3}{8}$	39	STD	W	34	
	G		J	K	Motor Frame		
STD	W	Min.			Max.		
	10 GA	$\frac{1}{4}$	$\frac{7}{16} \times \frac{3}{4}$	6	182T	256T	227

36" NOTES: Vane Section is available. Vane section adds 16 inches downstream of dimension F, estimated weight is 157 lbs. Dimensions and specifications are subject to change. For reduced "F" dimension housing, contact factory. Certified prints are available. Weight shown is without motor and options.



Series 39-M, Size 36, 870 RPM – Ultra-Quiet

Model 39-M-363AL — ST — (3- Blade)			
CFM Range	SP	dB _A Range	BHP Range
10,000 - 18,000	0"	72 - 75	0.42 - 1.56
10,000 - 18,000	$\frac{1}{16}$ "	71 - 75	0.49 - 1.80
9,000 - 18,000	$\frac{1}{8}$ "	70 - 76	0.49 - 2.03
9,000 - 18,000	$\frac{3}{16}$ "	70 - 76	0.57 - 2.26
8,000 - 18,000	$\frac{1}{4}$ "	71 - 76	0.57 - 2.48
8,000 - 17,000	$\frac{5}{16}$ "	71 - 76	0.67 - 2.44

Model 39-M-364AL — ST — (4- Blade)			
CFM Range	SP	dB _A Range	BHP Range
11,000 - 20,000	0"	73 - 77	0.61 - 2.23
10,000 - 20,000	$\frac{1}{16}$ "	72 - 77	0.59 - 2.49
10,000 - 20,000	$\frac{1}{8}$ "	72 - 76	0.67 - 2.69
10,000 - 20,000	$\frac{3}{16}$ "	72 - 76	0.75 - 2.88
10,000 - 20,000	$\frac{1}{4}$ "	72 - 76	0.83 - 3.08
10,000 - 19,000	$\frac{5}{16}$ "	72 - 76	0.94 - 3.03

Model 39-M-366AL — ST — (6- Blade)			
CFM Range	SP	dB _A Range	BHP Range
11,000 - 20,000	0"	75 - 77	0.80 - 2.33
10,000 - 20,000	$\frac{1}{16}$ "	75 - 78	0.84 - 2.84
10,000 - 20,000	$\frac{1}{8}$ "	74 - 78	0.99 - 3.34
10,000 - 19,000	$\frac{3}{16}$ "	73 - 78	1.16 - 3.46
10,000 - 17,000	$\frac{1}{2}$ "	74 - 77	1.35 - 3.23
10,000 - 16,000	$\frac{5}{8}$ "	75 - 78	1.77 - 3.44

Series 39-M, Size 36, 1160 RPM

Model 39-M-363AL — ST — (3- Blade)			
CFM Range	SP	dB _A Range	BHP Range
14,000 - 20,000	0"	79 - 81	1.08 - 2.27
13,000 - 20,000	$\frac{1}{8}$ "	78 - 81	1.13 - 2.67
12,000 - 20,000	$\frac{1}{4}$ "	77 - 82	1.20 - 3.11
11,000 - 20,000	$\frac{3}{8}$ "	78 - 82	1.27 - 3.59
10,000 - 20,000	$\frac{1}{2}$ "	79 - 82	1.37 - 4.23
10,000 - 20,000	$\frac{5}{8}$ "	79 - 82	1.63 - 4.83

Model 39-M-364AL — ST — (4- Blade)			
CFM Range	SP	dB _A Range	BHP Range
15,000 - 24,000	0"	80 - 84	1.48 - 3.82
13,500 - 24,000	$\frac{1}{8}$ "	80 - 84	1.65 - 4.92
10,500 - 24,000	$\frac{1}{2}$ "	80 - 84	1.56 - 6.35
9,000 - 22,500	$\frac{3}{8}$ "	81 - 85	1.86 - 6.78
9,000 - 16,500	1"	83 - 86	2.62 - 4.95
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Model 39-M-366AL — ST — (6- Blade)			
CFM Range	SP	dB _A Range	BHP Range
15,000 - 24,000	0"	83 - 85	1.95 - 4.13
13,500 - 24,000	$\frac{1}{4}$ "	83 - 86	2.06 - 5.12
13,500 - 24,000	$\frac{1}{2}$ "	82 - 86	2.47 - 6.37
10,500 - 24,000	$\frac{3}{4}$ "	81 - 86	2.31 - 7.81
9,000 - 22,500	1"	82 - 87	2.55 - 8.22
9,000 - 16,500	1 $\frac{1}{4}$ "	83 - 86	3.21 - 5.95

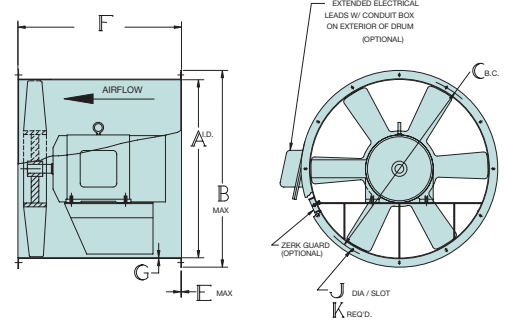
Air and Sound Performance Data is available in Hartzell ESP (Electronic Support Package). Please visit www.hartzellfan.com to request a copy. Performance certified is for Installation Type D: ducted inlet/ducted out. Performance data is based on standard air conditions (0.075#/ft³). Performance ratings do not include the effects of appurtenances (accessories). Sound levels shown are in dBA for fan inlet or outlet and based on a hemispherical free field (Q=2), at a distance of 5 feet. To complete model code add blade angle, motor horsepower code, and motor speed code. Refer to page 2 for model code information.



Rating Tables — Series 39-M, Size 40

FAN SIZE 40	A	B	C	E		F	Est. Weight
	41	45 ³ / ₈	43 ¹ / ₂	STD	W	42	
	G		J	K	Motor Frame		
	STD	W			Min.	Max.	
10 GA	1/4	7/16 X 3/4	12	213T	254T	315	

40" NOTES: Vane Section is available. Vane section adds 18 inches downstream of dimension F, estimated weight is 217 lbs. Dimensions and specifications are subject to change. For reduced "F" dimension housing, contact factory. Certified prints are available. Weight shown is without motor and options.



Series 39-M, Size 40, 870 RPM – Ultra-Quiet

Model 39-M-406AA _ _ ST _ _ _ _ , (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
20,850 - 33,800	0"	82 - 85	1.83 - 7.24
19,650 - 32,550	1/8"	82 - 85	1.98 - 7.30
18,550 - 31,150	1/4"	81 - 85	2.10 - 7.36
17,500 - 29,800	3/8"	81 - 85	2.21 - 7.35
16,350 - 28,250	1/2"	81 - 85	2.30 - 7.32
14,530 - 26,400	3/4"	82 - 85	2.37 - 7.25

Series 39-M, Size 40, 1160 RPM

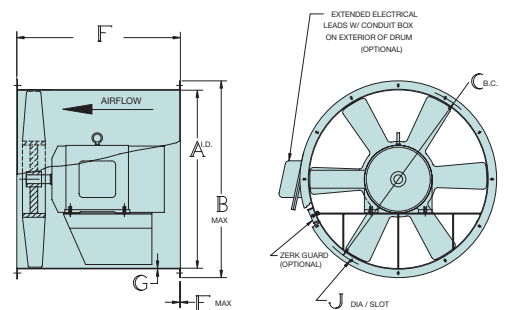
Model 39-M-404AA _ _ ST _ _ _ _ , (4 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
19,100 - 40,750	0"	88 - 91	1.35 - 12.80
16,950 - 38,500	1/4"	88 - 91	1.53 - 12.76
14,050 - 35,900	1/2"	88 - 90	1.64 - 12.65
9,400 - 32,800	3/4"	88 - 89	1.58 - 12.44
4,00 - 29,650	1"	86 - 88	1.30 - 12.10
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Model 39-M-406AA _ _ ST _ _ _ _ , (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
19,400 - 41,250	0"	90 - 92	2.44 - 17.43
17,680 - 41,200	1/4"	90 - 92	2.54 - 17.43
16,000 - 41,100	1/2"	90 - 92	2.56 - 17.43
13,900 - 38,950	3/4"	90 - 92	2.62 - 17.41
11,100 - 36,500	1"	89 - 92	2.58 - 17.27
8,180 - 33,300	1 1/4"	87 - 92	2.50 - 17.03

Rating Tables — Series 39-M, Size 48

FAN SIZE 48	A	B	C	E		F	Est. Weight
	49 ¹ / ₈	53 ¹ / ₂	51 ⁵ / ₈	3/8	3/8	42	
	G		J	K	Motor Frame		
	STD	W			Min.	Max.	
10 GA	1/4	7/16 X 3/4	12	215T	284T	404	

48" NOTES: Vane Section is available. Vane section adds 22 inches downstream of dimension F, estimated weight is 304 lbs. Dimensions and specifications are subject to change. For reduced "F" dimension housing, contact factory. Certified prints are available. Weight shown is without motor and options.



Series 39-M, Size 48, 870 RPM – Ultra-Quiet

Model 39-M-486AA _ _ ST _ _ _ _ , (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
25,000 - 52,130	0"	88 - 93	2.53 - 13.88
23,590 - 50,250	1/8"	88 - 93	2.60 - 13.91
22,250 - 48,450	1/4"	88 - 93	2.65 - 13.94
20,950 - 46,650	3/8"	88 - 93	2.67 - 13.97
19,480 - 44,700	1/2"	88 - 93	2.69 - 13.98
15,250 - 39,940	3/4"	87 - 93	2.71 - 13.94

Series 39-M, Size 48, 1160 RPM

Model 39-M-484AA _ _ ST _ _ _ _ , (4 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
30,100 - 59,000	0"	89 - 94	2.71 - 18.90
26,650 - 58,500	1/4"	90 - 98	3.03 - 23.19
22,690 - 56,400	1/2"	91 - 97	3.25 - 23.06
18,100 - 52,900	3/4"	91 - 97	3.30 - 22.84
12,170 - 48,400	1"	90 - 97	3.10 - 22.49
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Air and Sound Performance Data is available in Hartzell ESP (Electronic Support Package). Please visit www.hartzellfan.com to request a copy. Performance certified is for Installation Type D: ducted inlet/ducted out. Performance data is based on standard air conditions (0.075#/ft³). Performance ratings do not include the effects of appurtenances (accessories). Sound levels shown are in dBA for fan inlet or outlet and based on a hemispherical free field (Q=2), at a distance of 5 feet. To complete model code add blade angle, motor horsepower code, and motor speed code. Refer to page 2 for model code information.



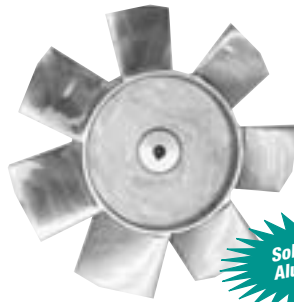
Series 50 M Marine Vaneaxial Blowers (Type VA)



Series 50 M



Hartzell Fan, Inc. certifies that the Series 50 M, Marine Duty Vaneaxial, Direct Drive Fan, shown hereon is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.



Series 50 M VA Marine Duty Vaneaxial Blowers

Hartzell direct drive Marine Duty VA vaneaxial blowers are available in sizes 12" to 60". Air deliveries range from 1,620 to 124,000 CFM. Units are designed to be used from 2" to 5" static pressure. Their rugged, two-piece design makes them a natural for this application. Housings are heavy gauge welded steel with one section containing the cast aluminum wheel and motor. Rigid motor mounts provide support for the foot mounted totally enclosed air over motor that is furnished as standard. The second section contains the vanes, which are aerodynamic in design to straighten out airflow. The vanes are welded to the inner and outer shells forming a rigid section. (See page 4 for standard construction features.)

The VA wheel used in the Hartzell vaneaxial line is an airfoil design, 7-bladed, one-piece impeller developed and proven after many years of tests and thousands of installations. It is scientifically designed to move large volumes of air at high pressures. The large hub prevents backflow of air, which is an important feature in the design of this wheel.

Rating Table — Series 50 M – Marine Duty Vaneaxial, Direct Drive

Size	Model	Motor (Fan)		CFM @ Static Pressure													
				0"		½"		1"		1½"		2"		2½"		3"	
		HP	RPM	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
12	_50-M-127VA---STAIH2	1	3450	2480	0.80	2317	0.87	2143	0.92	1928	0.97	1620	0.99				
18	_50-M-187VA---STAIM2	7½	3500	7939	4.45	7723	4.74	7506	5.02	7288	5.30	7066	5.58	6837	5.85	6595	6.10
21	_50-M-217VA---STAI02	15	3500	12664	9.69	12411	10.15	12158	10.60	11905	11.06	11650	11.51	11391	11.95	11128	12.39
26	_50-M-267VA---STAIL3	5	1750	12606	4.00	12039	4.41	11479	4.75	10837	5.14	10118	5.45	9235	5.61		
29	_50-M-297VA---STAIN3	10	1760	18768	6.43	18036	6.98	17258	7.46	16533	8.02	15951	8.76	15250	9.46	14185	9.87
36	_50-M-367VA---STAIR3	30	1780	36449	19.73	35549	20.80	34640	21.84	33671	22.75	32743	23.75	31900	24.93	31189	26.38
	_50-M-367VA---STAIM4	7½	1180	24163	5.75	22786	6.44	21390	7.10	20308	8.06						
42	_50-M-427VA---STAIU3	60	1780	58009	42.80	56958	44.50	55909	46.20	54820	47.78	53688	49.22	52588	50.77	51554	52.50
	_50-M-427VA---STAIW4	20	1175	38293	12.31	36702	13.43	35008	14.42	33471	15.60	32252	17.18	30363	18.38	28196	19.22
48	_50-M-487VA---STAIW3	100	1780	86397	83.14	85196	85.67	83997	88.19	82799	90.72	81534	92.99	80240	95.14	78968	97.38
	_50-M-487VA---STAIS4	40	1180	57274	24.22	55465	25.90	53577	27.43	51676	28.95	49978	30.80	48596	33.15	46949	35.37
54	_50-M-547VA---STAIZ3	200	1785	123575	151.53	122228	155.14	120881	158.75	119536	162.37	118191	165.99	116761	169.18	115306	172.25
	_50-M-547VA---STAIW4	75	1185	82037	44.33	80008	46.73	77959	49.08	75774	51.13	73682	53.38	71784	56.05	70184	59.31
	_50-M-547VA---STAIQ5	25	870	60230	17.54	57467	19.30	54528	20.85	51992	22.87	49801	25.36	45880	26.78	42138	28.04
60	_50-M-607VA---STAIW4	125	1190	113167	76.21	110920	79.52	108677	82.83	106310	85.80	103904	88.66	101607	91.82	99485	95.44
	_50-M-607VA---STAIT5	50	870	82735	29.78	79665	32.20	76413	34.35	73317	36.72	70774	39.85	68212	43.21	63720	45.11

Performance certified is for installation Type D: ducted 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 page 2 for the complete Hartzell Model Code Explanation and example.

Rating Table — Series 50 M – Marine Duty Vaneaxial, Direct Drive

Size	Model	Motor (Fan)		CFM @ Static Pressure									
				3½"		4"		4½"		5"			
		HP	RPM	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP		
12	_50-M-127VA---STAIH2	1	3450										
18	_50-M-187VA---STAIM2	7½	3500	6332	6.30	6031	6.44	5660	6.52				
21	_50-M-217VA---STAI02	15	3500	10858	12.81	10575	13.20	10277	13.57	9952	13.84		
26	_50-M-267VA---STAIL3	5	1750										
29	_50-M-297VA---STAIN3	10	1760	13194	10.26	11678	10.37						
36	_50-M-367VA---STAIR3	30	1780	30511	27.93	29492	29.13	28098	29.86	26955	30.72		
	_50-M-367VA---STAIM4	7½	1180										
42	_50-M-427VA---STAIU3	60	1780	50600	54.47	49773	56.78	49002	59.27	48115	61.61		
	_50-M-427VA---STAIW4	20	1175	25769	19.86								
48	_50-M-487VA---STAIW3	100	1780	77744	99.79	76585	102.46	75497	105.40	74501	108.68		
	_50-M-487VA---STAIS4	40	1180	44225	36.62	41921	37.95	39213	38.94	34722	38.83		
54	_50-M-547VA---STAIZ3	200	1785	113864	175.38	112454	178.66	111092	182.17	109786	185.97		
	_50-M-547VA---STAIW4	75	1185	68654	62.80	66341	65.49	63203	67.13	60627	69.06		
	_50-M-547VA---STAIQ5	25	870										
60	_50-M-607VA---STAIW4	125	1190	97582	99.63	95957	104.49	94159	109.19	91413	112.66		
	_50-M-607VA---STAIT5	50	870	59769	46.99	54691	48.14						

Performance certified is for installation Type D: ducted inlet/ducted outlet.

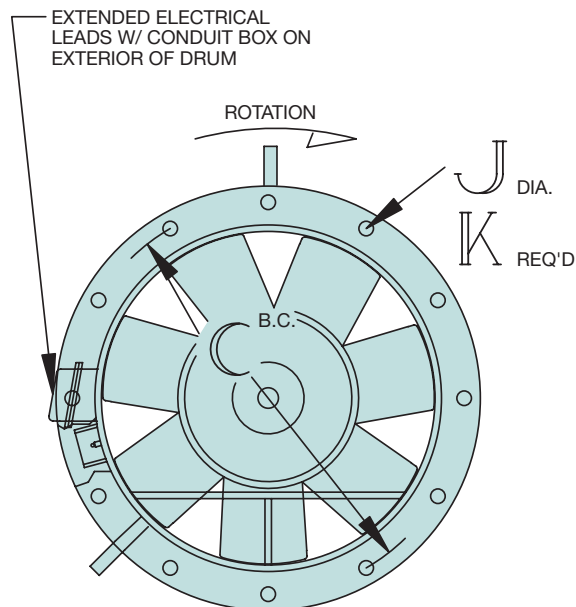
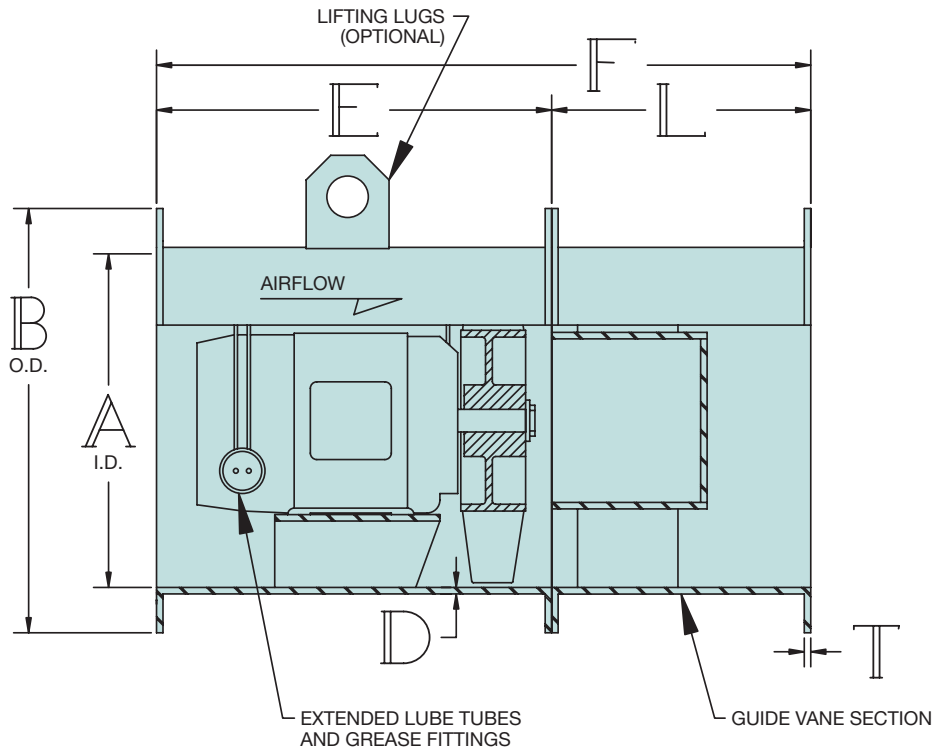
Performance ratings do not include the effects of appurtenances (accessories).



Principal Dimensions – Series 50 M

Fan Max Motor Size	A	B	C	D	E	F	J	K	L	T	Frame
12	12	15 $\frac{1}{16}$	14 $\frac{1}{8}$	$\frac{1}{4}$	20	34	$\frac{1}{6}$	12	14	$\frac{1}{4}$	56
18	18	21 $\frac{1}{16}$	20 $\frac{1}{4}$	$\frac{1}{4}$	20	34	$\frac{1}{6}$	12	14	$\frac{1}{4}$	215T
21	21	24 $\frac{1}{16}$	23 $\frac{1}{4}$	$\frac{1}{4}$	26	43	$\frac{1}{6}$	12	17	$\frac{1}{4}$	256T
26	26	30 $\frac{1}{16}$	28 $\frac{1}{4}$	$\frac{1}{4}$	30	51	$\frac{1}{6}$	12	21	$\frac{1}{4}$	184T
29	29	33 $\frac{1}{16}$	31 $\frac{1}{4}$	$\frac{1}{4}$	31	54	$\frac{1}{6}$	12	23	$\frac{1}{4}$	215T
36	36	40 $\frac{1}{16}$	38 $\frac{1}{4}$	$\frac{1}{4}$	36	65	$\frac{1}{5}$	16	29	$\frac{1}{4}$	286T
42	42	46 $\frac{1}{16}$	44 $\frac{1}{4}$	$\frac{1}{4}$	36	69	$\frac{1}{5}$	16	33	$\frac{1}{4}$	364T
48	48	53 $\frac{1}{16}$	51 $\frac{1}{4}$	$\frac{1}{4}$	39	79	$\frac{1}{6}$	16	40	$\frac{1}{4}$	405T
54	54	59 $\frac{1}{16}$	57 $\frac{1}{4}$	$\frac{3}{8}$	45	85	$\frac{1}{5}$	16	40	$\frac{3}{8}$	445T
60	60	65 $\frac{1}{16}$	63 $\frac{1}{4}$	$\frac{3}{8}$	45	90	$\frac{1}{5}$	16	45	$\frac{3}{8}$	445T

Dimensions and specifications are subject to change. Certified prints are available.



Series 38 M Marine Duct Fan

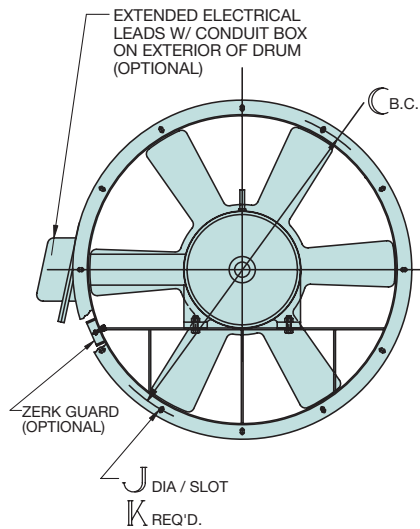
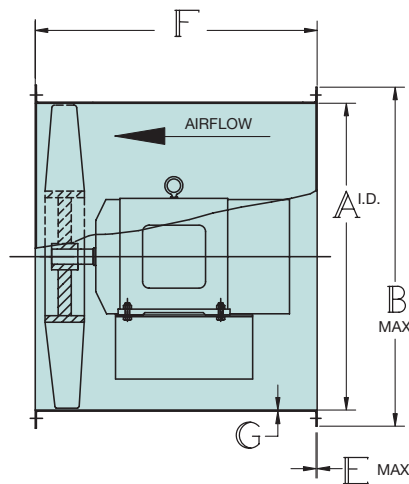


Series 38 M



Hartzell Fan, Inc. certifies that the Series 38 M Marine Duty Duct, Direct Drive Fans, shown hereon is licensed to bear the AMCA Seal for Air Performance. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

- **Applications** – Marine Duty applications requiring high flow to pressure ratio at temperatures not exceeding the motor rating, designed for flange mounting in any position from horizontal to vertical.
- **Sizes** – Available in sizes 12" to 48" with **performance** from 140 CFM to 45,500 CFM at free air and pressures from 0" SP to 1 1/4" SP.
- **Housings** are heavy rolled steel with rolled steel flanges.
- **Axial Impellers** are true airfoil design, solid cast aluminum alloy, ground, buff finished, and precision balanced. Multiple impeller types allow precise selection and performance can be adjusted in the field by change out of impeller if necessary.
- **Standard Finish** is a marine duty inorganic zinc coating, applied to sand blasted steel housings and an epoxy polyamide amine coating applied to cast aluminum impellers.
- **Motors** are TEAO or TEFC Marine duty, certified to meet IEEE 45, USCG approved, 50°C ambient below deck type as standard.
- **Motor Lubrication** – Motors supplied with re-lubricable bearings include extended lubrication tubes and lubrication fitting guard as standard. Fractional HP and small motors are supplied with permanently lubricated bearings for maintenance free installation.
- **Extended Electrical Leads** to watertight conduit boxes located on the exterior of fan housing is standard.
- **Special Features and Options** – such as inlet bells, companion flanges, louvers, dampers, suspension brackets, mounting feet, vibration isolators, lifting lugs, sound mufflers, special coatings and construction, and guards are available. See pages 26 and 27.



Principal Dimensions

Fan Size	A	B	C	E		F	G		J	K	Motor Frame		Estimated Weight
				STD	W		STD	W			Min.	Max.	
12	12 ⁷ / ₈	15 ¹ / ₁₆	14 ⁵ / ₈	7 GA.	1/4	22	12 GA.	1/4	5/16	6	48	56	49
14	14 ⁷ / ₈	17 ¹ / ₁₆	16 ⁵ / ₈	7 GA.	1/4	22	12 GA.	1/4	5/16	6	48	56	57
16	16 ⁷ / ₈	19 ¹ / ₁₆	18 ⁵ / ₈	7 GA.	1/4	25	12 GA.	1/4	5/16 x 5/8	6	48	182T	74
18	18 ⁷ / ₈	21 ¹ / ₁₆	20 ⁵ / ₈	7 GA.	1/4	25	12 GA.	1/4	5/16 x 5/8	6	48	182T	86
20	20 ⁷ / ₈	23 ¹ / ₁₆	22 ³ / ₈	7 GA.	1/4	31	12 GA.	1/4	5/16 x 5/8	6	56	182T	115
24	24 ⁷ / ₈	29 ¹ / ₄	26 ⁷ / ₈	7 GA.	1/4	31	10 GA.	1/4	7/16 x 3/4	6	56	182T	136
28	28 ⁷ / ₈	33 ¹ / ₄	30 ⁷ / ₈	7 GA.	1/4	31	10 GA.	1/4	7/16 x 3/4	6	56	184T	178
30	30 ⁷ / ₈	35 ¹ / ₄	33	7 GA.	1/4	34	10 GA.	1/4	7/16 x 3/4	6	56	184T	193
32	33	37 ³ / ₈	35	7 GA.	1/4	34	10 GA.	1/4	7/16 x 3/4	6	56	215T	207
36	37	41 ³ / ₈	39	7 GA.	1/4	34	10 GA.	1/4	7/16 x 3/4	6	182T	254T	223
40	41	45 ³ / ₈	43 ¹ / ₂	3/8	3/8	42	10 GA.	1/4	7/16 x 3/4	12	213T	254T	315
42	42 ⁷ / ₈	47 ¹ / ₄	45	3/8	3/8	42	10 GA.	1/4	7/16 x 3/4	12	213T	254T	327
44	45	49 ³ / ₈	47 ¹ / ₂	3/8	3/8	42	10 GA.	1/4	7/16 x 3/4	12	213T	256T	339
48	49 ⁷ / ₈	53 ¹ / ₂	51 ⁵ / ₈	3/8	3/8	42	10 GA.	1/4	7/16 x 3/4	12	215T	284T	404

NOTES: Max. weight is less motor & options. Specifications are subject to change. Certified prints are available.



Performance Data – Series 38 M

Rating Table — Series 38 M – Marine Duty Duct Fan, Direct Drive

Size	Model	Motor (Fan)		Peak Fan BHP	Cubic Feet Per Minute vs. Static Pressure										
		HP	RPM		Free Air	¼"	½"	¾"	1"	1½"	2"	2½"	3"	3½"	4"
					0.25	0.59	1.11	1.66	2.21	2.76	3.31	3.86	4.41	4.96	5.51
12	_A38-M-126-P---STAI2	¾	3450	0.25	1806	1666	1488	1245	1020	745	594	417	261	138	
	_A38-M-126-W---STAI2	¾	3450	0.59	2674	2614	2547	2469	2372	2242	1985	1430	1261	1136	1028
	_A38-M-126-W---STAI3	¾	1750	0.11	1356	1210	656	443	291	167	68				
14	_A38-M-146-W---STAI3	¾	1750	0.25	2097	1929	1698	1085	713	486	290	166	57		
	_A38-M-166-P---STAI3	¾	1750	0.16	2626	2289	1782	1001	599	202					
16	_A38-M-166-W---STAI3	¾	1750	0.36	3064	2883	2659	2318	1420	968	686	424	248		
	_A38-M-183-L---STAI3	¾	1750	0.36	3722	3435	3132	2753	1836	1247					
18	_A38-M-186-W---STAI3	¾	1750	0.81	4551	4380	4206	4008	3730	3243	2064	1534	1170	841	630
	_A38-M-203-L---STAI3	¾	1750	0.54	4991	4660	4291	3896	3390	2203					
20	_A38-M-206-W---STAI3	1	1750	1.06	5964	5760	5545	5318	5054	4724	3872	2464	2027	1519	1108
	_A38-M-243-L---STAI3	1½	1750	1.47	8728	8292	7916	7551	7120	6656	6118	5345	3930	2701	1988
24	_A38-M-246WB---STAI3	2	1750	2.20	10089	9776	9470	9179	8884	8560	8191	7744	7138	6085	4531
	_A38-M-246WA---STAI4	3	1750	2.75	10452	10236	10014	9786	9549	9296	9005	8671	8269	7753	7017
	_A38-M-243-L---STAI4	¾	1160	0.37	5786	5182	4552	3647	1734						
	_A38-M-246WA---STAI4	¾	1160	0.82	6928	6596	6239	5788	5097	3283	2443	1946			
	_A38-M-286PA---STAI3	2	1750	2.30	12348	11849	11348	10828	10276	9681	9018	8188	7042	5558	4375
28	_A38-M-286-W---STAI3	5	1750	4.81	16081	15756	15435	15117	14807	14507	14204	13891	13547	13155	12715
	_A38-M-283-L---STAI4	¾	1160	0.78	8580	7773	7058	6187	4307	2827	1751				
	_A38-M-286-W---STAI4	1½	1160	1.72	10659	10173	9705	9244	8691	7945	5689	4296	3584	2761	2062
32	_A38-M-323-L---STAI4	1½	1160	1.62	13325	12677	11849	10902	9924	8675	6310	3857	2435		
	_A38-M-326PA---STAI4	2	1160	2.28	14931	14155	13412	12568	11281	8592	6452	5045	3811	2484	1277
	_A38-M-326-W---STAI4	3	1160	3.21	16601	16121	15641	15174	14691	14129	13441	12435	9099	7204	6295
	_A38-M-323-L---STAI5	¾	870	0.73	9994	9038	7772	6077	2759	1133					
	_A38-M-326-W---STAI5	1½	870	1.72	12451	11811	11182	10437	9201	5482	4290	3110	2241	1574	986
36	_A38-M-368CD---STAI4	2	1160	2.26	15018	14437	13782	13035	12347	11686	10858	9803			
	_A38-M-368CA---STAI4	3	1160	3.30	18649	18022	17408	16801	16135	15370	14500	13472	12078	10270	8453
	_A38-M-366-W---STAI4	5	1160	4.50	22464	21902	21310	20681	20015	19327	18620	17841	16830	15459	11496
	_A38-M-363-L---STAI5	1	870	1.12	14494	13177	11912	10474	7724						
	_A38-M-366-W---STAI5	2	870	2.24	16848	16083	15237	14322	13305	11730	6826	5234	4066	2802	1929
40	_A38-M-406PB---STAI4	5	1160	4.92	28295	27154	26246	25419	24226	22872	21717	20175	17443	13085	11052
	_A38-M-406-W---STAI4	7½	1160	7.75	28835	28331	27823	27309	26805	26285	25735	25052	24227	23200	22072
	_A38-M-406PB---STAI5	2	870	2.07	21221	19822	18613	16868	14964	10082	7506	5576	3815	2248	836
	_A38-M-406-W---STAI5	3	870	3.31	21626	20952	20272	19580	18726	17495	15923	13727	10178	8292	7039
44	_A38-M-446-P---STAI4	5	1160	5.47	31482	30417	29227	27917	26658	25355	23911	22074	19519	16256	13891
	_A38-M-443-L---STAI4	7½	1160	7.38	33989	32882	31784	30701	29609	28489	27323	26084	24732	23148	21214
	_A38-M-446-W---STAI4	10	1160	9.59	36023	35383	34723	34041	33343	32615	31844	30983	30003	28885	27585
	_A38-M-446-P---STAI5	2	870	2.27	23612	22130	20412	18670	16373	12447	9494	7417			
	_A38-M-446-W---STAI5	5	870	4.81	27017	26154	25242	24273	23160	21763	19940	17421	13991	11753	10445
48	_A38-M-483-L---STAI4	10	1160	11.05	45340	43909	42586	41382	40219	38995	37649	36249	34873	33422	31734
	_A38-M-483-L---STAI5	5	870	5.65	34005	32154	30552	28916	27073	25192	22813	18584	12175	9259	6366
	_A38-M-486-W---STAI5	7½	870	6.83	33303	32416	31484	30508	29461	28260	26809	24911	21968	18308	15750
	_A38-M-486-W---STAI6	5	690	4.18	26412	25278	24052	22649	20784	17568	13375	10659	8670	6788	5117
	_A38-M-486-W---STAI7	2	575	2.16	22010	20625	19032	16663	11811	8532	6220	4166			

Performance certified is for installation Type D: ducted inlet/ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Speed (RPM) shown is nominal. Performance is based on actual speed of test.



Series 53CM Marine Vaneaxial (Internal Vanes) Blower

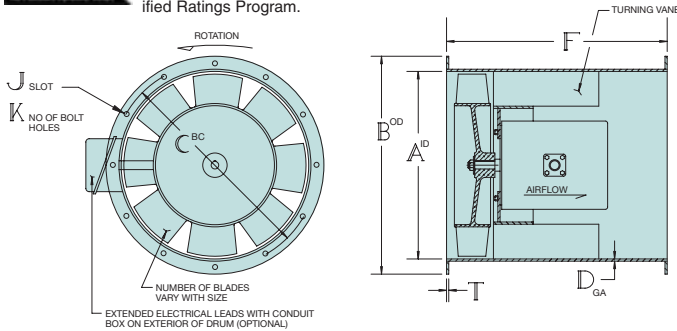


Solid Cast Aluminum Impeller

Series 53CM



Hartzell Fan, Inc. certifies that the Series 53 M Marine Duty Vaneaxial, Direct Drive, C-Faced Motor Fans shown hereon is licensed to bear the AMCA Seal for Air Performance. The ratings shown are based on tests and procedures performed in accordance with AMCA Publications 211 and 311 comply with the requirements of the AMCA Certified Ratings Program.



- Applications** – Marine Duty applications requiring performance from 2,900 CFM to 119,000 CFM at free air and pressures from 0" SP to 5" SP at temperatures not exceeding the motor rating, designed for flange mounting in any position from horizontal to vertical. Available in sizes 18" to 60".
- Housings** are heavy gauge, hot rolled steel with continuously welded drum and rolled steel flanges. Internal guide vanes are designed to insure maximum efficiency with minimal turbulence.
- Axial Impellers** are 7-blade airfoil design, solid cast aluminum alloy, mounted with split taper-lock bushing, ground, buff finished, and precision balanced. Large hub to blade ratio prevents backflow of air, moves large volumes of air at high pressures.
- Standard Finish** is a marine duty inorganic zinc coating, applied to sand blasted steel housings and an epoxy polyamide amine coating applied to cast aluminum impellers.
- Motors** are TEAO or TEFC Marine duty, certified to meet IEEE 45, USCG approved, 50°C ambient below deck type "C" Face mounted with extended electrical leads to watertight conduit boxes located on the exterior of the fan as standard.
- Motor Lubrication** – Motors supplied with re-lubricable bearings include extended lubrication tubes and lubrication fitting guard as standard. Fractional HP and small motors are supplied with permanently lubricated bearings for maintenance free installation.
- Special Features and Options** – are available. See pages 26 and 27.

Principal Dimensions

Fan Size	A	B	C	D		F	J	K	T
				STD	W				
18	18	21 ⁵ / ₁₆	19 ³ / ₄	10 GA	1/4	19	7/16 x 3/4	12	1/4
21	21	24 ⁵ / ₁₆	22 ³ / ₄	10 GA	1/4	20	7/16 x 3/4	12	1/4
26	26	30 ⁷ / ₁₆	28	7 GA	1/4	22	7/16 x 3/4	12	1/4
29	29	33 ⁷ / ₁₆	31	7 GA	1/4	25	7/16 x 3/4	12	1/4
36	36	40 ⁷ / ₁₆	38	7 GA	1/4	32	9/16 x 13/16	16	1/4
42	42	46 ⁷ / ₁₆	44 ³ / ₈	7 GA	1/4	37	9/16 x 13/16	16	3/8
48	48	53 ⁷ / ₁₆	50 ¹ / ₂	7 GA	1/4	42	9/16 x 13/16	16	3/8
54	54	59 ⁹ / ₁₆	56 ¹ / ₂	1/4	1/4	46	9/16 x 13/16	16	3/8
60	60	65 ⁹ / ₁₆	63 ¹ / ₄	1/4	1/4	46	9/16 x 13/16	16	3/8

Note: Dimensions and specifications are subject to change. Certified prints are available.

Rating Table — Series 53CM – Marine Duty Vaneaxial, Direct Drive, C-Faced Motor

Size	Model	Motor (Fan)		Peak Fan BHP	Cubic Feet Per Minute vs. Static Pressure											
		HP	RPM		Free Air	1/2"	1"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	
18	53CM-187VA---STAI G3	3/4	1730	0.76	3856	3436	2878									
	53CM-217VA---STAI F4	1/2	1140	0.51	4297	3393										
21	53CM-217VA---STAI J3	2	1730	1.89	6520	6005	5366	4662								
	53CM-267VA---STAI I4	1 1/2	1155	1.62	8349	7401	6223									
26	53CM-267VA---STAI L3	5	1730	5.53	12506	11889	11243	10572	9790	8721	6890					
	53CM-297VA---STAI K4	3	1170	3.10	12002	10995	9749	8047								
29	53CM-297VA---STAI N3	10	1755	10.47	18002	17362	16674	15919	15078	14156	13125	11606				
	53CM-367VA---STAI M4	7 1/2	1165	8.54	22399	21272	20057	18727	17160	14847						
36	53CM-367VA---STAI Q3	25	1760	28.67	33839	33103	32353	31575	30769	29935	29067	28147	27159	26074	24840	
	53CM-427VA---STAI O4	15	1170	16.58	35802	34502	33137	31690	30137							
42	53CM-427VA---STAI P4	20	1170	18.80	35802	34502	33137	31690	30137	28402	26337	23209				
	53CM-427VA---STAI T3	50	1770	57.17	54162	53307	52448	51567	50664	49736	48781	47809	46803	45758		
48	53CM-487VA---STAI M6	7 1/2	690	7.96	32217	29376	25816	20527								
	53CM-487VA---STAI O5	15	880	16.47	41088	38938	36521	33704	30484	25305						
54	53CM-487VA---STAI R4	30	1180	33.31	55095	53525	51869	50099								
	53CM-487VA---STAI S4	40	1180	39.71	55095	53525	51869	50099	48172	46072	43806	41383	38439	33876		
60	53CM-487VA---STAI W3	100	1775	113.90	82876	81842	80795	79720	78616	77480	76310	75102				
	53CM-547VA---STAI O6	15	690	14.32	45951	42817	39115	34677	27298							
54	53CM-547VA---STAI Q5	25	880	27.80	58604	56210	53605	50684	47384							
	53CM-547VA---STAI U4	60	1180	68.46	78583	76824	74996	73074	71044	68862	66531	64037	61441			
60	53CM-547VA---STAI Z3	200	1780	211.32	118540	117379	116213	115023	113809	112569	111301	110003	108674	107310	105895	
	53CM-607VA---STAI O7	15	575	14.07	52601	48369	43180	36455								
60	53CM-607VA---STAI Q6	25	690	24.28	63121	59683	55791	51229	45950	36873						
	53CM-607VA---STAI S5	40	875	44.75	80045	77385	74547	71461	68046							
60	53CM-607VA---STAI T5	50	875	49.61	80045	77385	74547	71461	68046	64278	60240	55138	47118			
	53CM-607VA---STAI W4	100	1175	112.79	107489	105531	103515	101420	99235	96944	94509	91941	89228	86363		

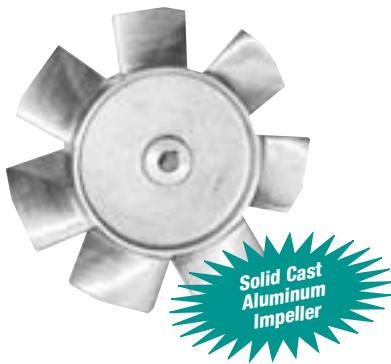
Performance certified is for installation Type D: ducted inlet/ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Bold-type information provided in the Rating Table above is needed when preparing a model code. See page 2 for the complete Hartzell Model Code Explanation and example.



Series 56 M Marine Vaneaxial Blowers (Type VB)



Series 56 M



Series 56 M VB Marine Duty Vaneaxial Blowers

Hartzell direct drive Marine Duty VB vaneaxial blowers are available in sizes 14" to 48" with air deliveries from 500 to 53,500 CFM. They are designed to be used from 4" to 14" static pressure. VB blowers were developed to meet the demand for equipment handling low volume, high-pressure requirements. In external appearance and in all details of construction, the VB blowers are identical to the VA line. Only the wheel and guide vanes are different. All units are furnished with a totally enclosed air over motor as standard. (See page 4 for standard construction features.)

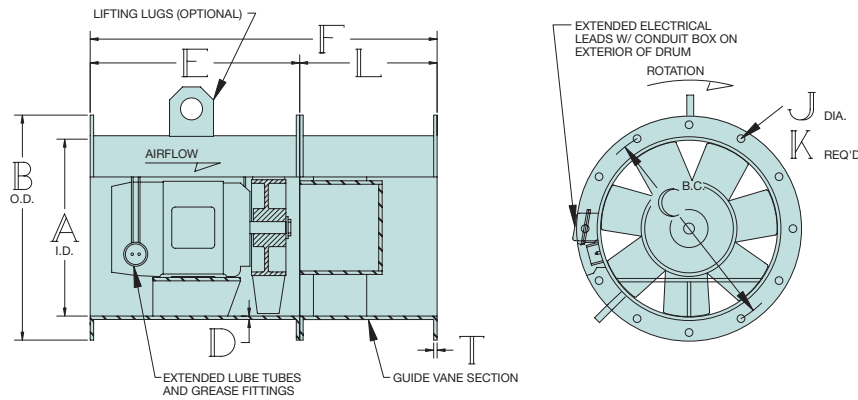
The VB wheel was developed to meet the demand for low volume, high-pressure requirements. A low pitch and a higher hub to diameter ratio make this impeller more effective than the VA models at high pressures while moving a relatively smaller volume of air.

All of these wheels are cast aluminum, machined and hand ground. They are dynamically balanced to ensure vibration-free operation at high tip speeds.

Principal Dimensions

Fan Size	A	B	C	D	E	F	J	K	L	T
14	14	17 ⁹ / ₁₆	16	¹ / ₄	20	34	⁹ / ₁₆	12	14	¹ / ₄
18	18	21 ⁹ / ₁₆	20 ¹ / ₄	¹ / ₄	20	34	⁹ / ₁₆	12	14	¹ / ₄
21	21	24 ⁹ / ₁₆	23 ¹ / ₄	¹ / ₄	26	43	⁹ / ₁₆	12	17	³ / ₈
24	24	28 ⁹ / ₁₆	26 ³ / ₄	¹ / ₄	28	51	⁹ / ₁₆	12	23	³ / ₈
26	26	30 ⁹ / ₁₆	28 ³ / ₄	¹ / ₄	30	51	⁹ / ₁₆	12	21	³ / ₈
29	29	33 ⁹ / ₁₆	31 ³ / ₄	¹ / ₄	31	54	⁹ / ₁₆	12	23	³ / ₈
33	33	37 ¹³ / ₁₆	35 ³ / ₄	³ / ₈	35	61	⁹ / ₁₆	16	26	¹ / ₂
36	36	40 ¹³ / ₁₆	38 ³ / ₄	³ / ₈	36	65	⁹ / ₁₆	16	29	¹ / ₂
48	48	53 ¹³ / ₁₆	51 ¹ / ₄	³ / ₈	39	79	⁹ / ₁₆	16	40	¹ / ₂

Note: Dimensions and specifications are subject to change. Certified prints are available.



Rating Table — Series 56 M – Marine Duty Vaneaxial, Type VB, Direct Drive

Size	Model	Motor (Fan)		CFM @ Static Pressure													
				2"		3"		4"		6"		8"		10"		12"	
		HP	RPM	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
14	_56-M-147VA---STAI12	1½	3450	2572	1.65	976	1.28	437	1.52								
18	_56-M-187VB---STAI2	5	3500	4589	2.55	4223	2.98	3629	3.26	1767	3.66	652	4.32				
21	_56-M-217VB---STAI2	7½	3500	7427	5.68	7108	6.42	6718	7.12	5492	8.04						
24	_56-M-247VB---STAI2	20	3525	13938	14.2	13480	15.3	12991	16.4	11861	18.5	10393	20.2				
26	_56-M-267VB---STAI2	30	3550	18072	21.3	17575	22.6	17079	24.0	15942	26.7	14625	29.3	12850	31.1		
29	_56-M-297VB---STAI2	40	3540	22301	28.2	21855	30.3	21417	32.4	20451	36.4	19240	39.4	17839	42.3	13075	41.0
29	_56-M-297BV---STAI2	50	3540	27144	41.8	26670	43.8	26220	45.8	25248	49.6	24026	52.7	22660	56.6		
33	_56-M-337VB---STAI2	60	3560	29322	39.5	28831	42.4	28308	45.5	27176	51.4	26031	56.1	24824	59.9	23144	64.2
36	_56-M-367VB---STAI2	100	3560	38321	59.7	37795	63.5	37248	67.4	36055	75.3	34784	82.7	33547	88.2	32210	92.9
48	_56-M-487VB---STAI3	75	1780	53580	56.4	51904	60.7	50148	64.9	46062	72.5	39175	77.6	24323	74.1	18692	77.4

Performance certified is for installation Type D: ducted inlet/ducted outlet. Performance data is based on standard air conditions (0.075 #/ft.³). 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 page 2 for the complete Hartzell Model Code Explanation and example.



Series 65 M & 65CM Adjustable Pitch Vaneaxial Blower (Type AV)



Hartzell Fan, Inc. certifies that the Series 65CM, Adjustable Pitch Vaneaxial, Direct Drive, C-Faced Motor Fan, shown hereon is licensed to bear the AMCA Seal for Air and Sound. The ratings shown are based on tests and procedures performed in accordance with AMCA Publications 211 and 311 comply with the requirements of the AMCA Certified Ratings Program.



Hartzell Fan, Inc. certifies that the Adjustable Pitch Vaneaxial Blowers, Series 65 shown is authorized to bear CE Marking in accordance with Machinery Safety Directive 98/37/EC of the European Union. Reference Technical File E.S. 13.2.1.



Series 65CM

Solid Cast Aluminum Impeller

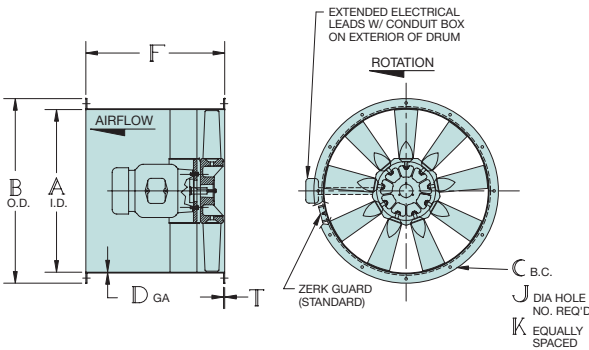


Series 65 M

Solid Cast Aluminum Impeller

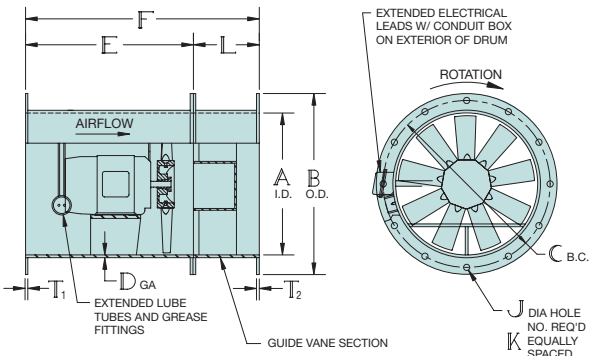
- **Applications** – For systems requiring high volumes of air and static pressures to 6". Adjustable Pitch propeller assembly allows for precise adjustment of flow and pressure to specification. Temperature shall not exceed motor rating. Sizes – 35" to 79"... performance from 5,000 to 200,000 CFM at free air. Detailed performance data is available in "Adjustable Pitch Vaneaxial Fans", Hartzell Bulletin A-142.
- **Marine Duty Construction** – Specify Marine Duty Construction for Marine Duty Zinc and epoxy coating, Marine Duty IEEE 45 USCG approved motor with extended electrical leads.
- **Series 65CM** – designed with internal guide vane section and for "C" Face mounted motors for maximum airflow in a compact light weight package. Extended motor leads to exterior of fan housing are standard.
- **Series 65 M** – is designed with external, bolt on, guide vane section and for standard foot mounted motors. Extended motor leads to exterior of fan housing are optional.
- **Housings** – Heavy gauge, hot rolled steel housing with continuously welded steel drum and rolled steel flanges with guide vane section designed to ensure maximum efficiency in converting velocity pressure to static pressure with minimal turbulence.
- **Motors** – Totally enclosed fan cooled are standard. Special motors are available upon request.
- **Propellers** – Type AV Adjustable Pitch Vaneaxial Propeller is designed for maximum efficiency. Solid Cast Aluminum blades mounted in a machined cast aluminum hub.
- **Extended Lube Tubes** from motor to exterior of fan housing are standard.
- **Special Features and Options** – such as inlet bells, companion flanges, louvers, dampers, suspension brackets, mounting feet, vibration isolators, lifting lugs, sound mufflers, special coatings and construction, and guards are available. See pages 26 and 27.

Note: Air and Sound Performance Data is available in Hartzell ESP (Electronic Support Package). Please visit www.hartzellfan.com to request a copy.



Series 65CM Principal Dimensions

Fan Size	Size (MM)	A	B	C	D		F	J	K	T	Max Mtr Frame
					STD	W					
35	900	35½	39½	38	7 GA	¼	30	⅞	12	¼	286TC**
39	1000	39½	43½	41½	7 GA	¼	30	⅞	12	⅜	286TC**
44	1120	44½	49½	47½	7 GA	¼	34	⅞	12	⅝	326TC**
49	1250	49½	54½	52½	7 GA	¼	34	⅞	12	⅝	326TC**
57	1450	57½	62½	60½	¼	¼	42	⅞	12	⅝	405TC
63	1600	63	68½	66¼	¼	¼	42	1⅞	16	⅝	405TC
71	1800	70½	77½	75	¼	¼	54	1⅞	16	½	449TC
79	2000	78½	85½	82½	¼	¼	54	1⅞	16	½	449TC



Series 65M Principal Dimensions

Fan Size	Size (MM)	A	B	C	D		E	F	J	K	L	T ₁	T ₂	Max Mtr Frame
					STD	W								
35	900	35½	39½	38	7 GA	¼	34	46½	⅞	12	12½	¼	¼	326T
39	1000	39½	43½	41½	¼	¼	38	51¼	⅞	12	13¼	⅝	⅝	365T
44	1120	44½	49½	47½	¼	¼	42	56	⅞	12	14	⅝	⅝	405T
49	1250	49½	54½	52½	¼	¼	48	62½	⅞	12	14½	⅝	⅝	449T
57	1450	57½	62½	60½	¼	¼	48	66¾	⅞	12	18¼	⅝	⅝	449T
63	1600	63	68½	66¼	¼	¼	48	68	1⅞	16	20	⅝	⅝	449T
71	1800	70½	77½	75	⅝	⅝	56	77½	1⅞	16	21½	½	⅝	449TY
79	2000	78½	85½	82½	⅝	⅝	56	78½	1⅞	16	22½	½	⅝	449TY

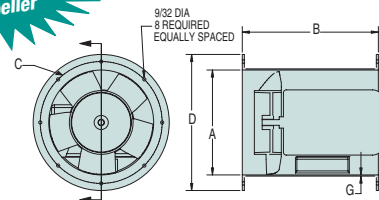


Series 25 M Miniature Vaneaxial Blower



Series 25 M

Solid Cast Aluminum Impeller



Principal Dimensions

Fan Size	A	B	C	D	G
8	8 ¹ / ₂	12	10	11 ¹ / ₄	10 Ga.
9	9 ¹ / ₄	12	10 ³ / ₄	12	10 Ga.

Note: Dimensions and specifications are subject to change. Certified prints are available.

Rating Table — Series 25 M – Marine Duty, Miniature Vaneaxial, Direct Drive

Size	Model	Motor (Fan)		Peak Fan BHP	Cubic Feet Per Minute vs. Static Pressure													
		HP	RPM		Free Air	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"							
8	A25-M--85TA---STAID3	1/4	1750	0.01	329													
	A25-M--85TA---STAIF2	1/2	3450	0.15	648	609	570	509										
8	A25-M--85VA---STAID3	1/4	1750	0.02	371	291												
	A25-M--85VA---STAIF2	1/2	3450	0.19	732	690	658	614	567	500								
9	A25-M--95TA---STAID3	1/4	1750	0.03	483	391												
	A25-M--95TA---STAIF2	1/2	3450	0.22	953	909	864	820	764									
9	A25-M--95VA---STAID3	1/4	1750	0.03	508	423												
	A25-M--95VA---STAIF2	1/2	3450	0.25	1002	960	917	873	828	777	696							

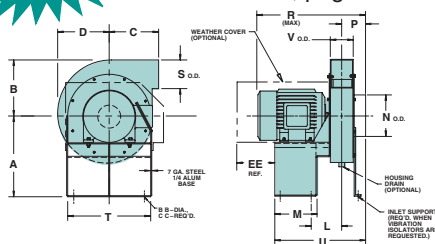
Performance certified is for installation Type D: ducted inlet/ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Bold-type information provided in the Rating Table above is needed when preparing a model code. See page 2 for the complete Hartzell Model Code Explanation and example.

Series 07 M Miniature Centrifugal Blower



Series 07 M

Solid Cast Aluminum Impeller



Principal Dimensions

Fan Size	A	B	C	D	N	P	S	T	U	V	Max Mtr
11	12 ¹ / ₈	8 ³ / ₄	7 ⁵ / ₈	8	6 ³ / ₁₆	3 ¹⁵ / ₁₆	4	13	14 ¹⁵ / ₁₆	3 ¹ / ₂	145T
12	14 ¹ / ₈	9 ³ / ₄	8 ⁵ / ₈	9	7 ³ / ₁₆	4 ³ / ₁₆	5	14 ¹ / ₂	15 ¹⁵ / ₁₆	3	184T
14	16 ¹ / ₈	11 ⁷ / ₈	11	11 ¹ / ₈	8 ³ / ₁₆	5 ¹ / ₁₆	7 ¹ / ₈	15 ¹ / ₂	19 ⁷ / ₁₆	5 ³ / ₄	213T

Note: Dimensions and specifications are subject to change. Certified prints are available.

Rating Table — Series 07 M – Marine Duty Centrifugal Pressure Blower, Direct Drive

Size	Model	Motor (Fan)		Peak Fan BHP	Cubic Feet Per Minute vs. Static Pressure															
		HP	RPM		0"	1/2"	1"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	
11	A07-M-11-I---STAIE3	1/2	1750	0.19	407	349	285	199	63											
	A07-M-11-I---STAI2	1 1/2	3450	1.47		765	736	711	685	656	625	553	463	377	267					
12	A07-M-12-I---STAIE3	1/2	1750	0.34		564	497	423	340	212										
	A07-M-12-I---STAIK2	3	3450	2.96					1108	1077	1047	971	888	822	737	650	533	351		
14	A07-M-14-I---STAIH3	1	1750	0.82	1193	1056	912	779	631	419										
	A07-M-14-I---STAIL2	5	3450	5.67					2143	2073	2000	1925	1782	1642	1515	1378	1197	979	766	511
	A07-M-14-I---STAIM2	7 1/2	3450	6.27					2213	2143	2073	2000	1925	1782	1642	1515	1378	1197	979	766

Performance certified is for installation Type D: ducted inlet/ducted outlet. Performance data is based on standard air conditions (0.075 #/ft.³). 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 page 2 for the complete Hartzell Model Code Explanation and example.

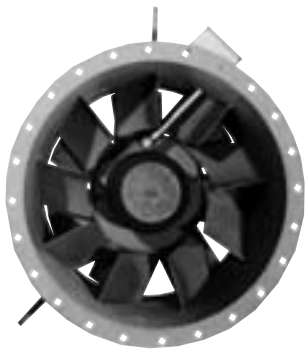


Series 18 M MarAd Vaneaxial Blower



Solid Cast Aluminum Impeller

Series 18 M



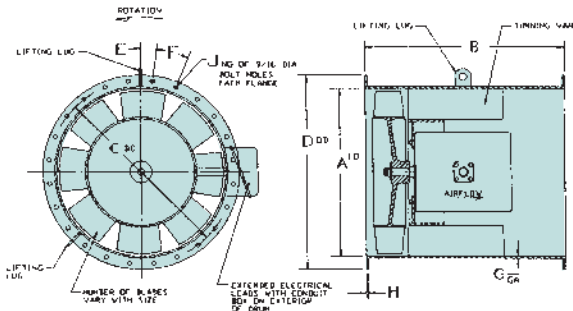
Hartzell MarAd vaneaxial blowers (Series 18 M) are constructed per Plan #S38-1-102 as specified by the U.S. Department of Commerce Maritime Administration. A complete range of sizes, 10AF through 400AF, are available. Please see below for fan performance information. Standard construction and materials for the Hartzell Series 18 M Blowers are as follows:

- **Housings** are constructed of heavy gauge steel and extend completely over the fan and motor assembly. Two lifting lugs are provided, and fans are equipped with turning vanes to direct the air through the fan at the correct angle.
- **Wheels** are of airfoil design and cast aluminum alloy construction. Wheels are fastened to the motor shaft by a key and castellated nut.
- **Motors** are totally enclosed air over type. C-face design. Pre-lubricated sealed bearing systems are incorporated so that in-service lubrication is not necessary. Marine Duty IEEE 45 USCG motors with lubrication fittings extended for relubrication are also available. Motors are removable without damage to the housing and suitable for operation in horizontal or vertical position.
- **Conduit Boxes** are watertight and mounted on the outside of the fan casing. Connection to the motor is through a removable, water tight conduit.
- **Fan Casing, Vanes and Supports** are hot-dip galvanized. The outside of all fan casings are given one coat of metal primer.
- **Arrows** indicating the direction of airflow through the fan and the rotation of the wheel are provided.

The Hartzell Series 18 M blowers can be modified to meet the particular requirements of each contract specification. Such modifications may include special motors, non-sparking construction, alternate coatings or accessory items. If your fan requirements exceed the provisions of MarAd Plan #S38-1-102, Hartzell offers a wide range of vaneaxial blowers which are constructed to meet or exceed MarAd standards.

CONTACT YOUR LOCAL HARTZELL REPRESENTATIVE FOR ASSISTANCE.

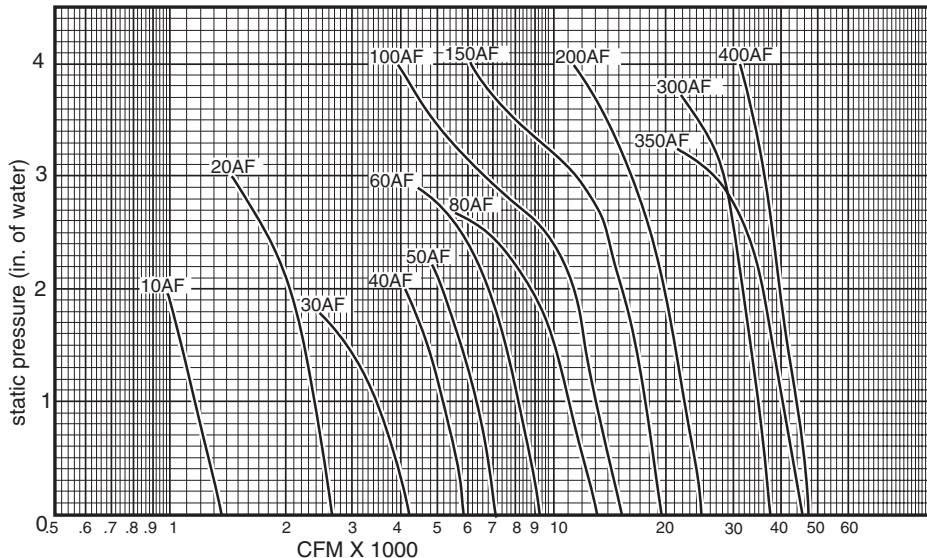
Principal Dimensions



Fan Size	Hartzell Model	CFM		SP	RPM	HP	A	B	C	D	G	H	J
		MarAd	Hartzell										
10AF	A18-M-107VA---GHCIF2	1000	1055	1.5	3450	1/2	10 1/2	20	12 1/8	13 1/3	10	1/4	14
20AF	A18-M-147VA---GHCIH2	2000	2215	1.5	3450	1	14 1/4	21	16 1/4	17 4/7	10	1/4	16
30AF	A18-M-187VB---GHCIH3	3000	2940	1.5	1750	1	18 3/4	24	20 3/4	22 1/5	7	1/4	22
40AF	A18-M-217VA---GHCIJ3	4000	4130	2	1750	2	21 1/4	25	23 1/4	24 2/3	7	1/4	24
50AF	A18-M-228VB---GHCIK3	5000	5080	2	1750	3	22 1/4	27	24 1/2	25 2/3	7	1/4	24
60AF	A18-M-237VA---GHCIK3	6000	6040	2	1750	3	23 1/4	28	25 1/4	26 2/3	7	1/4	26
80AF	A18-M-277VA---GHCIL3	8000	8445	2	1750	5	27 1/4	30	29 1/4	30 2/3	7	1/4	30
100AF	A18-M-296DA---GHCIL3	10500	10675	2	1750	5	29 1/4	32	31 1/4	32 4/5	1/4	3/8	32
150AF	A18-M-316DA---GHCIJ3	15000	14965	2	1750	7 1/2	31 1/4	34	33 1/3	34 4/5	1/4	3/8	36
200AF	A18-M-368VV---GHCIJ3	20000	20560	2	1750	10	36	36	38	39 4/7	1/4	3/8	40
300AF	A18-M-429AV290GHCIQ4	30000	27550	2	1160	15	42 1/4	42	44 1/2	45 4/5	1/4	3/8	46
350AF	A18-M-486DA---GHCIQ4	35000	36860	2	1160	20	48 1/4	45	51	52 4/5	1/4	3/8	52
400AF	A18-M-487VB---GHCIQ4	40000	40730	2	1150	25	48 1/4	45	51	52 4/5	1/4	3/8	52

Note: Dimensions and specifications are subject to change. Certified prints are available.

Performance Data — Series 18 M — MarAd Vaneaxial Blower



Contact Factory for Pricing.

Performance shown is for installation Type D: ducted inlet/ducted outlet. Performance data is based on standard air conditions (0.075 #/ft.³). 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. Refer to page 2 for more information.**



Navy Standard Fans



Series NSV (Shown)
Series NST

Navy Standard Models

Standard Lead Times

Model	Type
A 1/2A4W6	Navy Standard Vaneaxial
A 1-1/2A4W6	Navy Standard Vaneaxial
A 2A4W6	Navy Standard Vaneaxial
A 2-1/2A4W6	Navy Standard Vaneaxial
A 6A4W6	Navy Standard Vaneaxial
A10A4W6	Navy Standard Vaneaxial
L 1/2A1W6	Navy Standard Tubeaxial

Long Lead Times

Model	Type
A 1/4A4W6	Navy Standard Vaneaxial
A 1A4W6	Navy Standard Vaneaxial
A 3A4W6	Navy Standard Vaneaxial
A 3-1/2A4W6	Navy Standard Vaneaxial
A 4A4W6*	Navy Standard Vaneaxial
A 4-1/2A4W6	Navy Standard Vaneaxial
A 5A4W6	Navy Standard Vaneaxial
A 7A4W6	Navy Standard Vaneaxial
A 8A4W6	Navy Standard Vaneaxial
A11A4W6	Navy Standard Vaneaxial
A12A4W6	Navy Standard Vaneaxial
A16A4W6	Navy Standard Vaneaxial
A17A4W6	Navy Standard Vaneaxial
A20A4W6	Navy Standard Vaneaxial
A25A4W6	Navy Standard Vaneaxial
A28A4W6	Navy Standard Vaneaxial
A30A4W6	Navy Standard Vaneaxial
L 1A1W6	Navy Standard Tubeaxial
L 2A4W6	Navy Standard Tubeaxial
L 3A4W6	Navy Standard Tubeaxial

* NSV For Replacement Use Only

MIL-F-18953 Construction – Designed in accordance with Military Specifications and Qualified Product Listed Vaneaxial and Tubeaxial. Available in sizes 8" to 44"... performance 250 to 40,000 CFM, and static pressure capability up to 7" W.G. Standardized performance, Contact factory for equipment data sheets.

Classifications – Fans are of the following types as specified:

- Type A - Vaneaxial, Fixed, Navy Standard (HI-Shock)
- Type L - Tubeaxial, Fixed, Navy Standard (HI-Shock)
- Type X-A - Vaneaxial, Fixed, Navy Standard (Non-Shock Rated)
- Type X-L - Tubeaxial, Fixed, Navy Standard (Non-Shock Rated)

- **Applications** – For ventilation and air conditioning applications onboard ships and craft of the United States Navy and United States Coast Guard.
- **Impellers** – Airfoil design, cast A356-T6 aluminum construction with 300 series corrosion resisting steel hub insert. Large hub-to-blade ratio prevents backflow of air. Moves large volumes of air at high pressures.
- **Housing** – One-piece, heavy gauge steel housing with continuously welded steel drum and steel flanges. Precision made for close tolerance motor, impeller and flange connections. Non-Magnetic construction also available.
- **Dimensions** – Standard fit and interface package. Contact factory for equipment data sheets.
- **Guide Vanes** – Heavy gauge steel discharge guide vanes are welded in the fan housing.
- **Motors** – In accordance with Military Specifications MIL-M-17059 and MIL-M-17060. HI-Shock rated with sealed or Non Sealed insulation system as required per application. Non-Shock rated USCG approved Marine duty motors are also available. Spraytight, explosion-proof, and watertight enclosures, AC and DC models for 440, 220, 115 Volts are available.
- **Accessories** – Inlet bells and standard accessories are available.
- **Centrifugal Models** – Navy Standard Centrifugal Models per MIL-F-19004 are available, Contact factory for equipment data sheets.
- **Custom Models** – Specialty models in a variety of sizes and performances to meet High Impact Shock and Vibration requirements as well as many Navy Standard Equipment models are available. Please contact factory for additional information.



Solid Cast
Aluminum
Impeller



Series 03 M Marine Duty Centrifugal

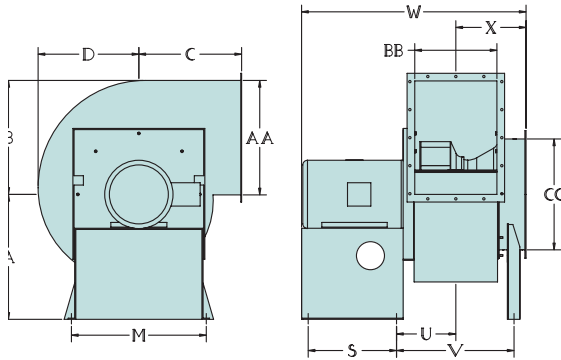


Series 03 M



Hartzell Fan, Inc. certifies that the Series 03 M Marine Duty, Backward Curved Centrifugal, Direct Drive Fans shown hereon is licensed to bear the AMCA Seal for Air Performance. The ratings shown are based on tests and procedures performed in accordance with AMCA Publications 211 and 311 comply with the requirements of the AMCA Certified Ratings Program.

- **Applications** – Marine Duty applications requiring performance from 1,000 CFM to 27,000 CFM at free air and pressures from 0" SP to 10" SP at temperatures not exceeding 200°F, designed for foot mounting in horizontal position. Sizes – Available in sizes 12" to 33".
- **Housings** are continuously welded heavy gauge, hot rolled steel with Internal cone designed to insure maximum efficiency with minimal turbulence.
- **Inlet & Outlet Flanges** – Punched inlet and outlet flanges for easy installation are standard.
- **Centrifugal Impellers** – Type BC single thickness airfoil design, continuously welded steel, mounted with split taperlock bushing, statically and dynamically precision balanced.
- **Standard Finish** is a Marine Duty inorganic zinc coating, applied to sand blasted steel housing and steel impeller.
- **Motors** are TEFC Marine Duty, certified to meet IEEE 45, USCG approved, 50°C ambient below deck type foot mounted as standard.
- **Motor Lubrication** – Motors supplied with re-lubricable bearings include extended lubrication tubes when required for access as standard. Fractional HP and small motors are supplied with permanently lubricated bearings for maintenance free installation.
- **Spark Resistant Construction** – AMCA Type A, B, and C is available, Neoprene shaft seal is standard with AMCA Spark Resistant Construction. Explosion proof motors are also available.
- **Special Features and Options** – such as inlet bells, companion flanges, louvers, dampers, suspension brackets, mounting feet, vibration isolators, lifting lugs, sound mufflers, special coatings and construction, and guards are available. See pages 26 and 27.



Principal Dimensions

Fan Size	A	B	C	D	M	W	X	AA	BB	CC	Max. Mtr Frame
12	16	13 ¹ / ₄	14 ¹ / ₄	11 ³ / ₄	18 ¹ / ₄	30 ³ / ₁₆	10 ⁷ / ₈	13 ¹ / ₈	9 ¹ / ₂	12 ¹¹ / ₁₆	184T
15	18 ³ / ₄	16 ⁵ / ₈	16 ⁹ / ₁₆	14 ³ / ₄	21 ¹ / ₂	39 ⁵ / ₁₆	12 ¹ / ₁₆	16 ¹ / ₂	11 ¹⁵ / ₁₆	15 ¹⁵ / ₁₆	256T
18	22	20	18 ⁷ / ₈	17 ¹¹ / ₁₆	24 ³ / ₄	44 ⁹ / ₁₆	13 ⁵ / ₁₆	19 ⁷ / ₈	14 ³ / ₈	19 ³ / ₁₆	286T
22	26 ³ / ₄	24 ⁷ / ₁₆	22	21 ⁹ / ₁₆	29	47 ⁷ / ₈	14 ¹⁵ / ₁₆	24 ⁵ / ₁₆	17 ⁹ / ₁₆	23 ¹ / ₂	286T
24	28 ¹ / ₂	26 ⁹ / ₁₆	23 ⁹ / ₁₆	23 ¹ / ₂	31 ³ / ₄	49 ⁷ / ₁₆	15 ¹¹ / ₁₆	26 ⁷ / ₁₆	19 ³ / ₈	25 ⁹ / ₁₆	286T
27	32 ¹ / ₄	29 ¹³ / ₁₆	25 ³ / ₄	26 ⁵ / ₈	35 ¹ / ₄	51 ³ / ₄	16 ⁷ / ₈	29 ¹¹ / ₁₆	21 ¹ / ₂	28 ¹¹ / ₁₆	286T
30	34 ³ / ₄	32 ³ / ₈	27 ¹ / ₂	28 ⁵ / ₈	37 ³ / ₄	56 ¹ / ₄	17 ¹³ / ₁₆	32 ³ / ₁₆	23 ⁵ / ₁₆	31 ¹ / ₈	326T
33	38	35 ⁵ / ₈	30	31 ¹ / ₂	41 ¹ / ₄	60 ⁷ / ₈	19	35 ⁷ / ₁₆	25 ¹¹ / ₁₆	34 ¹ / ₄	365T

Note: Dimensions and specifications are subject to change. Certified prints are available.

Rating Table — Series 03 M – Marine Duty, Backward Curved Centrifugal, Direct Drive

Size	Model	Motor (Fan)		Peak Fan BHP	Cubic Feet Per Minute vs. Static Pressure													
		HP	RPM		0"	½"	1"	1½"	2"	2½"	3"	4"	5"	6"	7"	8"	9"	10"
12	_03-M-121BC---STAF3	½	1750	0.39	1700	1482	1285	970										
	_03-M-121BC---STAIK2	3	3450	2.95	3351	3217	3102	3003	2912	2819	2719	2508	2239	1851				
15	_03-M-151BC---STAI3	1½	1750	1.22	3620	3366	3084	2759	2391	1875								
	_03-M-152BC---STAIN2	10	3450	9.35	7136	7012	6885	6755	6621	6484	6342	6045	5725	5376	4987	4634	4154	3535
18	_03-M-181BC---STAI4	¾	1160	0.83	4070	3681	3216	2513										
	_03-M-181BC---STAIK3	3	1750	2.86	6139	5891	5629	5337	5035	4682	4224	2829						
22	_03-M-183BC---STAI2	20	3450	21.9								10780	10468	10162	9854	9508	9108	
	_03-M-221BC---STAIJ4	2	1160	2.28	7444	6980	6455	5876	5072	3863								
24	_03-M-221BC---STAIM3	7½	1750	7.83	11230	10929	10617	10294	9946	9568	9203	8285	7095	5131				
	_03-M-241BC---STAIL4	5	1160	3.83	10023	9499	8923	8358	7633	6669	5430							
27	_03-M-242BC---STAI03	15	1750	13.1	15121	14768	14425	14072	13673	13299	12933	12095	10959	9641	7809			
	_03-M-271BC---STAIK5	3	870	2.87	10613	9818	8961	7852	6311									
30	_03-M-271BC---STAIM4	7½	1160	6.80	14150	13560	12940	12302	11643	10809	9745	6796						
	_03-M-272BC---STAIQ3	25	1750	23.3	21348	20952	20562	20179	19769	19319	18894	18066	17112	15890	14447	12869	10534	
33	_03-M-301BC---STAIL5	5	870	4.33	13592	12741	11808	10795	9329	7389								
	_03-M-301BC---STAIN4	10	1160	10.3	18123	17479	16835	16113	15440	14682	13733	11328	7209					
33	_03-M-302BC---STAIS3	40	1750	35.3	27341	26910	26484	26069	25648	25182	24692	23793	22866	21795	20465	18913	17270	15175
	_03-M-331BC---STAIM5	7½	870	6.87	18169	17258	16256	15192	13964	12332	10607							
33	_03-M-331BC---STAI04	15	1160	16.3	24225	23554	22851	22105	21323	20528	19692	17619	15008	10630				
	_03-M-333BC---STAIU3	60	1750	55.9						34257	33765	32746	31698	30634	29507	28217	26745	25020

Performance certified is for installation Type D: ducted inlet/ducted outlet. Performance data is based on standard air conditions (0.075 #/ft.³). 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 page 2 for the complete Hartzell Model Code Explanation and example.



Also Available

Propeller Fans

Ideal for hull ventilation, a complete line of propeller type fans is available from Hartzell. These fans meet or exceed Maritime Administration Plan #S38-1-103 and are available in ring or panel type construction, direct or belt driven.

Rings and panels are constructed of heavy gauge steel. Airfoil type propellers are cast aluminum. Hartzell's exclusive patented air seal, by which the ring overlaps the propeller tips, practically eliminates back-flow of air, and increases air delivery by 10% or more. A curved orifice further increases efficiency by minimizing air friction.

Motor base is heavy gauge, plate steel; frame is solid rod steel. Standard motors are totally enclosed air over. Marine motors are available.

These fans are licensed to bear the AMCA Certified Ratings Seal. Refer to Hartzell Propeller Fans and Wall Ventilators, Bulletin A-109.

Other Axial Flow Fans

Additional duct and vaneaxial fans are available constructed to meet the intent of MarAd specifications. These heavy gauge steel fans with cast aluminum airfoil type blades are available in sizes ranging from 12" to 79" diameter. Fan delivery ranges from 770 CFM to 199,000 CFM at 2" S.P.; horsepower ranges from 1/2 to 200.

These fans, such as the adjustable pitch vaneaxial pictured, are available with a full line of Marine accessories including special coatings and Marine motors to satisfy a broad range of applications.

Many of these fans are licensed to bear the AMCA Certified Ratings Seal.

Centrifugal Blowers

Hartzell Bulletins A-147, A-134 and A-155 will provide you with complete information regarding centrifugal blowers. Both radial and backward curve airfoil type, these blowers are built to meet or exceed Maritime Administration Plan #S38-1-101.

As with our axial flow and propeller fans, optional coatings such as hot dip galvanizing and inorganic zinc coatings are available. Also, non-sparking construction per USCG specifications can be furnished if required.

Wheel sizes 11" to 57" deliver from 690 CFM to 41,700 CFM at 2" S.P.

Available in arrangements #1, #4, #9, and #10.

Many of these fans are licensed to bear the AMCA Certified Ratings Seal.

Bug Blowers

Hartzell portable bug blowers are available in 12" through 60" sizes. Rugged steel housing and skid construction provide many years of dependable yard service. Special features such as explosion proof motors and factory-mounted starters are available depending on your application. For spot cooling or space ventilating, these airfoil propeller fans offer proven efficiency and reliability.

CONTACT YOUR LOCAL HARTZELL REPRESENTATIVE FOR ASSISTANCE. SEE PAGE 2.



Options and Accessories

Guard

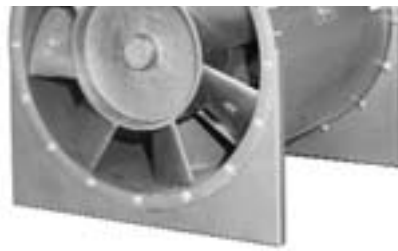
Heavy-duty spiral ring guard offers protection on intake or discharge side.



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

Mounting Feet

Bolted to the inlet and discharge flanges, mounting feet allow positioning of the blower on the floor, ceiling, wall or platform. Can be used with vibration isolators.



Inlet Bells

Spun inlet orifice bells may be used in place of the inlet duct in installations where no ductwork precedes the fan. (See page 6.)



Inspection Door

For maintenance of the internal parts of axial flow blowers. Door is bolted to blower housing. Gasket is provided for a proper seal.



Overhead Suspension

Side mounting brackets can be used with vibration isolators. Also available for vertical mounting.



Companion Flanges

Drilled to fit the flanges of the marine blower; allows easy installation.



Lifting Lugs

Welded to the blower housing in two positions, these lugs provide ease of handling and installation. (Standard on Series 18 blowers.)

Inlet Bell

The ratings shown in the bulletin are for axial flow blowers with inlet and outlet ducts. A spun orifice inlet bell may be used in place of the inlet duct with no loss in blower performance. When no inlet duct or bell is used, entrance loss must be added to the static pressure calculated for the system. For bare inlets that loss is equal to 50% of the blower velocity pressure.

$$V.P. = (CFM / (A \times 4005))^2$$

Where A = Blower Area in sq. ft. (See Table I)

V.P. = Velocity Pressure inches W.G.

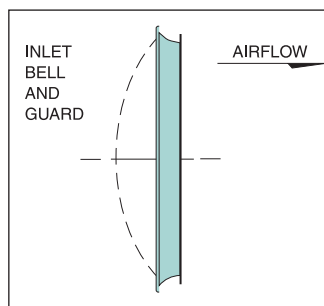


Table 1 – Blower Area in square feet.

Blower Diam. in Inches	Area Square Feet	Blower Diam. in Inches	Area Square Feet
8	0.349	29	4.59
9	0.442	30	4.91
10	0.545	32	5.59
12	0.785	33	5.94
16	1.40	36	7.07
18	1.77	42	9.62
21	2.41	44	10.6
24	3.14	48	12.6
26	3.69	54	15.9
28	4.28	60	19.6

Discharge Cones

Ratings shown in this bulletin are for blowers with inlet and outlet ducts of the same diameter as the blower. Discharge cones may be used on the blowers 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 duct fan's static pressure, or fan with cone (SP₂):

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

Discharge cones may also be used to transform large ducts to the blower 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 duct fan is used.

Figure A

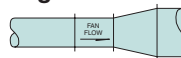


Figure B

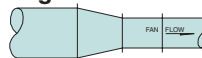


Figure C

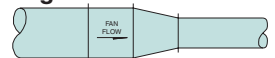


Table 2 Velocity Pressure for Corresponding Air Velocities and Static Pressure Regain (0.075 lbs./ft.³, 25°- 30° included angle.)

Velocity FPM	Velocity Pressure	SP Regain	Velocity FPM	Velocity Pressure	SP Regain	Velocity FPM	Velocity Pressure	SP Regain
1000	0.06	0.013	2750	0.47	0.098	4500	1.26	0.262
1250	0.10	0.020	3000	0.56	0.116	4750	1.41	0.292
1500	0.14	0.029	3250	0.66	0.137	5000	1.56	0.323
1750	0.19	0.040	3500	0.76	0.158	5250	1.72	0.357
2000	0.25	0.052	3750	0.88	0.182	5500	1.89	0.391
2250	0.32	0.065	4000	1.00	0.207	5750	2.06	0.428
2500	0.39	0.081	4250	1.13	0.234	6000	2.24	0.466

Note: SP regain is based on 25-30° included cone angle.



Coatings

Hartzell Marine Blowers are supplied with a completely inorganic zinc coating, applied to sandblasted metal housing. Cast aluminum wheels furnished are epoxy polyamide amine coated. Inorganic zinc is for applications involving severe weather and salt air.

Hot dip galvanizing is also available. This process, as well as inorganic zinc, will meet Maritime Administration specifications.

Our epoxy coating is also available as a chemical resistant finish. Your local Hartzell representative can assist you in selecting the proper coating.

Sound Mufflers



This sound attenuator device is a simple lined tube that can be used on either the intake or exhaust side of a Hartzell mine blower to reduce the noise. It should not be used in wet atmosphere or with air velocities over 5,000 FPM or above 250°F in airstream. The resistance to airflow is negligible since the internal surface is fairly smooth and the internal diameter of the muffler is the same as the blower with no internal obstruction to impede airflow.

In general, the muffler should be mounted between the blower and the area of concern (the listener).

If both the intake and exhaust of the blower are critical, use a muffler on both sides of the blower.

The outstanding features of this muffler are:

- The typical attenuation for blowers with discharge velocities from 1,500-3,000 FPM is approximately as follows for one muffler:

Band	1	2	3	4	5	6	7	8
Db Attenuation	0	1	3	10	13	12	10	8

- For one muffler the reduction in some value is approximately 35%. With a muffler on both intake and exhaust, the noises are reduced approximately 50%.
- There is no appreciable static pressure loss when one or two mufflers are inserted into a duct system.
- The mounting flanges match the corresponding blower flanges and are drilled for easy attachment. By using flexible connections between blower and muffler, the sound attenuation is helped, particularly in the lower bands.
- The absorbent material has a black rubberized surface next to the airstream, which prevents erosion up to 5,000 FPM velocity, and is held in place with an expanded metal liner.

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 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.



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 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 and are 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, plus six months allowance for shipment to approved stocking dealers and distributors. In no event will Hartzell be responsible or liable for any labor or other incidental costs associated with the removal or replacement of defective products or materials.

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.

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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.