

Duct Fans, Adjustable & Fixed, Direct & Belt Drive

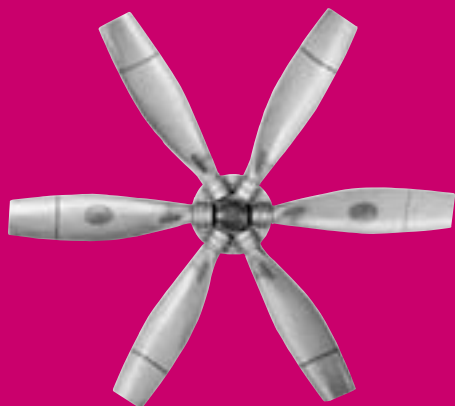
Series 31
Series 39(V)

Series 31U
Series 52

Series 38



**US PATENT
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HARTZELL®

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

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Certificates of Design Assessment are issued by the American Bureau of Shipping. The assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. The certificates, by itself, do not reflect that the products are Type Approved.

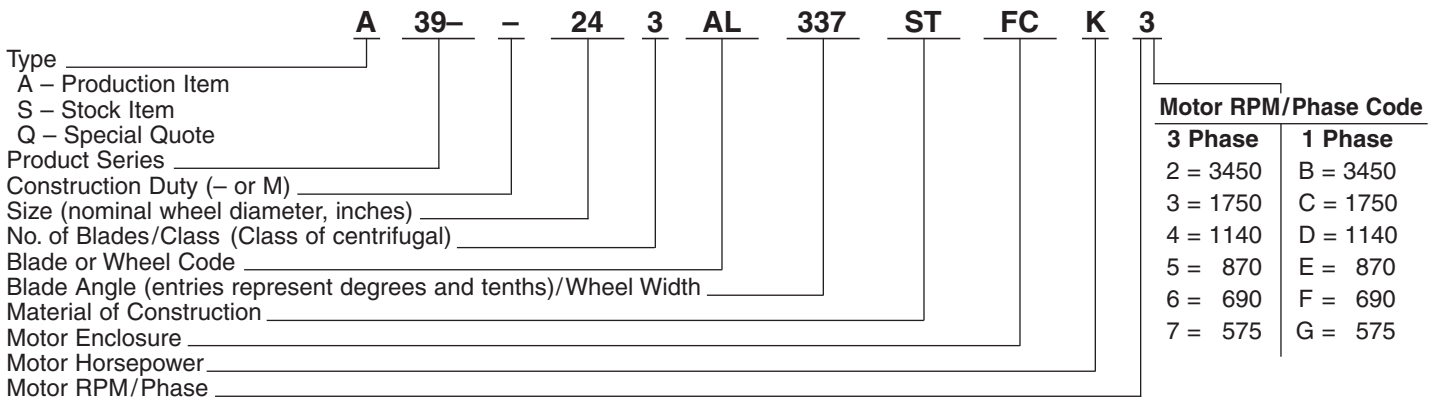


Certified Ratings for Air Performance

Hartzell Fan, Inc. certifies that the Series 38, Direct Drive Fixed Pitch Duct Fans, shown on page 8, and Series 31, Belt Drive Drive Duct Fans, shown on pages 15-18 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.

CE Hartzell Fan, Inc. certifies that the Adjustable Pitch Duct Fans, Series 39, shown on page 9, are authorized to bear CE Marking in accordance with Machinery Safety Directive 98/37/EC of the European Union. Reference Technical File E.S. 13.2.2.

Hartzell Model Code Explanation



Motor Horsepower

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

Example:

Assume a needed performance of 10,000 CFM at _" SP, standard air. Reading the rating table on page 11 we find a Series 39-, Size 24" with a 3 blade type AL propeller. Review of the selection in Hartzell Fan's Electronic Support Package (ESP) shows a angle of 33.7° is required and a fan RPM of 1,160 and brake horsepower (BHP) of 2.4. Required motor horsepower is 3. The model code can be constructed as follows: Type will be a production item (code A), product series for the Adjustable Pitch Duct Fan is 39-, standard industrial duty for the series (code "-"),

size is 24, number of blades is 3, propeller type is AL with a blade angle of 337, material for construction is Steel (code ST), motor enclosure will be Totally Enclosed, Fan Cooled (code FC), motor horsepower is 3 (code K) with RPM/phase of 1750 (code 3).

Note: All other informational fields must be filled with hyphens/dashes (-) if they are not applicable to the fan being considered. A similar selection of a belt drive Series 31, size 24, on page 15 would have a model code of: A31---246WB---STFCK3.

This bulletin lists Hartzell's complete line of Duct 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.



Duct Fans



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Direct Drive Tubeaxial Fan
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Series 38
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Series 39
Direct Drive Adjustable Pitch Duct Fan
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Series 39V
Optional Vane Section
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Series 31U
Belt Drive Utility Duct Fan
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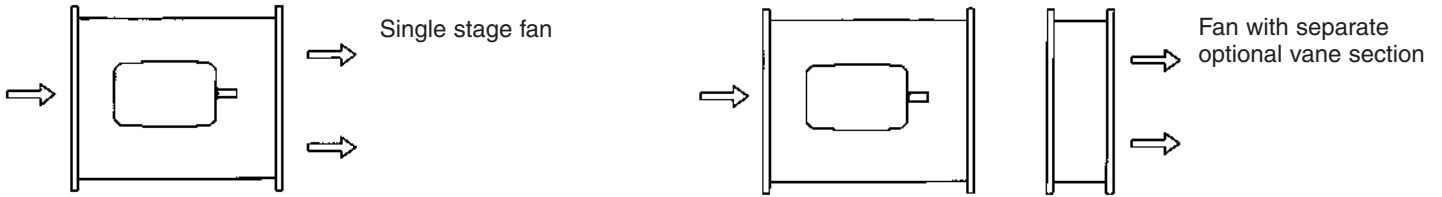
Series 31
Belt Drive Duct Fan
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Drive and Mounting Arrangements

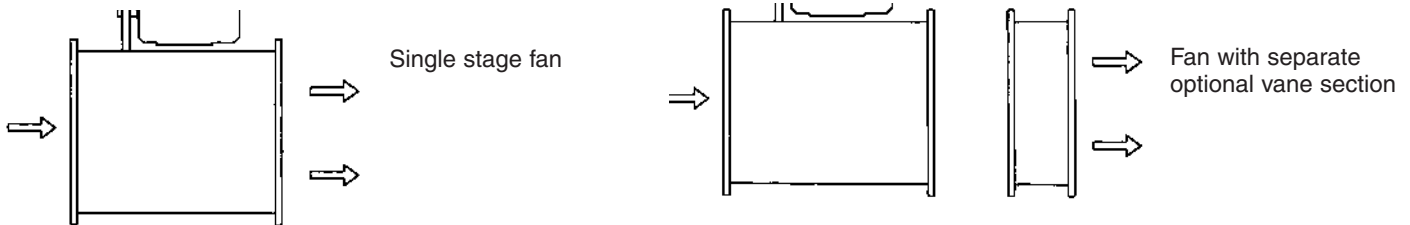
Arrangement #4

For direct drive. Wheel overhung on motor shaft. Motor supported within casing. For vertical, horizontal or inclined mounting positions.

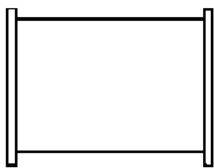


Arrangement #9

For belt drive, wheel overhung on a shaft supported by bearings mounted within casing. Designed for mounting of motor on outside of casing. For vertical, horizontal or inclined mounting positions.

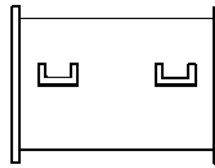


Mounting Arrangements



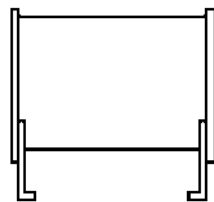
Duct Mounting

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.



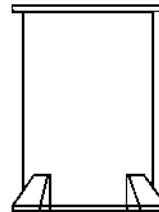
Ceiling Suspension

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



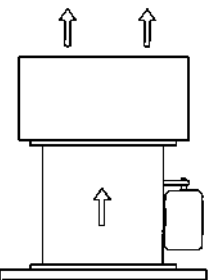
Mounting Feet

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.



Roof Mounting

When desirable, the belt driven Vaneaxial fan can be mounted as a roof exhauster. Together with a stack cap and panel, the three elements combine to provide a roof exhauster unit with high static pressure capabilities. Back draft dampers offer weatherproof closure for vertical air discharge.

CFM Limitations for Damper Lids Operation

FAN SIZE	CFM		FAN SIZE	CFM		FAN SIZE	CFM	
	Min.*	Max.**		Min.*	Max.**		Min.*	Max.**
12"	1,110	2,725	28"	5,760	14,175	54"	21,255	52,315
14"	1,490	3,670	32"	7,490	18,435	60"	26,170	64,410
16"	1,930	4,750	36"	9,445	23,250	66"	30,885	76,025
18"	2,425	5,975	40"	11,630	28,630	72"	36,755	90,480
20"	2,980	7,335	44"	14,040	34,560	84"	50,030	123,150
24"	4,255	10,475	48"	16,680	41,055	96"	65,400	160,700

*Minimum CFM to open damper lids. **Maximum CFM to prevent lid damage.



General Construction Features

Duct fans are best suited for applications with low pressure characteristics from free air to 1-1/2" static pressure. These versatile and dependable fans can be used to remove fumes, dirt-laden air, steam, hot air, and smoke; or to supply air for cooling, drying, and general ventilation; or in air makeup applications. They are well suited for air moving applications requiring high flow and low to medium pressure where adjustable pitch blades allow fans to be accurately set. Some high speed tube axial fans may be effectively used up to 4-1/2" static pressure, where noise is not a factor. Low speed ultra quiet selections are available for installations where low sound levels must be maintained. Lower speed operation can reduce sound levels by 5-10 dBA.

Hartzell offers a broad line of duct fans, both direct and belt drive, ranging in sizes from 12" to 96" and performance from 1,345 to 156,800 CFM at free air. Standardized components on belt drive duct fans allow substitution of motors to meet changing air delivery requirements without removing the fan from the duct work. Because all Hartzell belt drive duct fans of a given diameter use identical duct, bearing cover, assembly base, shaft and bearings, any fan of a given size can be changed to any other fan of the same size by substituting motor, drive and, in some cases, the propeller. A wide and stable performance range for the propeller allows for field adjustment to match system requirements.

- **Cast Aluminum Alloy Airfoil Type Propellers** with ample safety factors (non-ferrous alloy for non-sparking) are individually ground for balance and fitted with taper-lock bushings for easy removal.
- **Adjustable Pitch and Fixed Pitch Propellers** are available in multiple blade configurations to match the fan and system requirement. Adjustable pitch propellers allow precise selection and performance can be adjusted in the field by change of blade angle if necessary.
- **Housings** are of hot rolled steel. Stainless steel and aluminum housing available upon request.
- **Self-aligning bearings** on belt drive units are deep row radial ball type. Shielded and mechanically sealed in case iron or malleable housings. Relubricable type for continuous service. Lubrication tubes, extended to the exterior of the fan housing, are standard on both direct and belt drive models.
- **Steel shafts** are turned, ground, polished, keyed at both ends, and sized to operate well below critical speed.
- **Variable pitch drives** are standard on most models. Speed adjustment is simple, accurate and positive.
- **Motors** totally-enclosed are standard on direct drive duct fans. Belt-drive models feature open-end, dripproof, motor out of the airstream as standard. Totally enclosed fan-cooled and other special motors can be furnished at extra cost.
- **Belts** are oil, heat and static resistant type, over sized for continuous duty.
- **Welded steel motor base plate** on direct and belt drive models.
- **For easy maintenance** and servicing, access doors, bomb bay, and swing out construction are available (see pages 18-19.)



Direct drive duct fans used as part of a process heat and fume exhaust system.



**Blade Angle
Adjustment Tool**



Vane Section Construction

A vane section is available to bolt onto the fan as an option. Vane section improves performance and lowers sound level in some systems and is also beneficial in systems with elbow or reducer cone on discharge of fan. Performance for fans with vane sections is available in the Hartzell ESP (Electronic Support Package) or through your local Hartzell Representative.

**Optional Vane
Section
(39V)**



Selection Guide

How To Use Capacity Tables

Select size, RPM and BHP for a given air delivery and pressure of a duct fan from the rating tables on pages 7-8 and 11-13.

Performance ratings are based on standard air conditions, sea level 70°F and 29.92 inches barometric pressure giving an air density of .075 lbs. per cubic foot. The specific gravity of air equals 1.00 at these conditions.

If non-standard temperature or altitude is involved, correct to standard air density (see Table 1).

For speeds above ratings consult factory.

Altitude – Temperature Correction

For an application where the fan operates at other than ambient conditions (temperature, altitude, or both), correction factors must be applied to the selection of the fan. In addition, the standard construction of the fan must be modified.

Correction factors for temperatures and altitudes are provided in Table 1. When a fan operates at other than ambient conditions, the correction factors in Table 1 will be required to correct static pressure and horsepower.

Table 1 Combined Altitude/Temperature Correction Factors

Temp.* (°F)	-50	-25	0	25	50	70	100	125	150	175	200	225	250	275	300	325	350
Factor	0.77	0.82	0.87	0.92	0.96	1.00	1.06	1.10	1.15	1.20	1.25	1.29	1.34	1.39	1.43	1.48	1.53

Alt.** (Ft.)	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
Factor	1.00	1.04	1.08	1.12	1.16	1.20	1.25	1.30	1.35	1.40	1.46

Above table has inverted values. Actual density is the reciprocal of the above values.

*At sea level. **At 70°F.

For corrections involving both temperature and altitude, correction factors should be multiplied.

Example: 150°F at 7,000 ft.: Temperature factor 1.15 x altitude factor 1.30 = 1.50 combined correction factor.

First select size, RPM and BHP of the fan needed. If temperature or altitude is involved, correct to standard air.

Example: Assume the required performance to be 14,000 CFM at $\frac{3}{8}$ " SP, 175°F and 3000 feet altitude.

1. Temperature factor 1.20 x altitude factor 1.12 = 1.34 combined correction factor.
2. 0.375" SP x 1.34 = 0.50" SP for 70°F at sea level.
3. A Series 31-, size 32", 6 bladed, type W, selected from the rating table (page 11) for the new conditions show 14,030 CFM, 0.50" SP at 1,151 RPM at 3.33 Peak Fan BHP.
4. Correct the horsepower and static pressure in item 3 to non-standard performance by dividing by the factor:
 $0.50" \text{ SP} \div 1.34 = 0.375" \text{ SP} (\frac{3}{8}" \text{ SP})$
 $3.33 \text{ BHP} \div 1.34 = 2.49 \text{ BHP}$
5. Final performance of the unit at the assumed conditions:
 14,000 CFM at $\frac{3}{8}$ " SP, 1,151 RPM, 2.5 BHP at 175°F and 3,000 feet altitude.
6. Size motor for cold startups and use a special high altitude motor if altitude exceeds 3,300 feet.

Discharge Cones

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

Table 2 shows the amount of additional static pressure capability, which results from using the discharge cone. Add the amount of .45 (VP₁ - VP₂) to the 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 duct fan inlet size (see Fig. B). Since these cones have gently tapered sides, the friction loss is negligible, about .08 x the difference in velocity pressures (see Table 3).

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

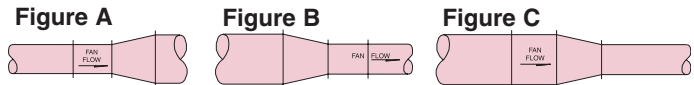


Table 2 Velocity Pressure for Corresponding Air Velocities and Static Pressure Regain (0.075 lbs./ft.³, 25°- 30° included angle.)

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

High Temperature Construction

Direct Drive Duct Fans – Series 38, 39, and 52

Temperature: 104°F standard.

104° to 140°F – Class F insulation required on motor.

140° to 176°F – Class H insulation required on motor.

176° to 212°F – Class HH insulation required on motor.

For direct drive units with airstream temperatures above 212°F, contact factory.

Belt Drive Duct Fans – Series 31 and 31U

Maximum Temperature for the Series 31U is 200°F.

Maximum Temperature for the Series 31 is 350°F. For applications with airstream temperatures between 200°F and 350°F, high temperature construction consists of purging fan bearings with high temperatures grease as well as opening the end of the bearing cover so that cool ambient air is drawn over the belts and bearings. If the motor ambient temperature is higher than 104°F, specially insulated motors are required. For airstream temperatures above 350°F, contact factory.



Series 52 Tubeaxial Fan

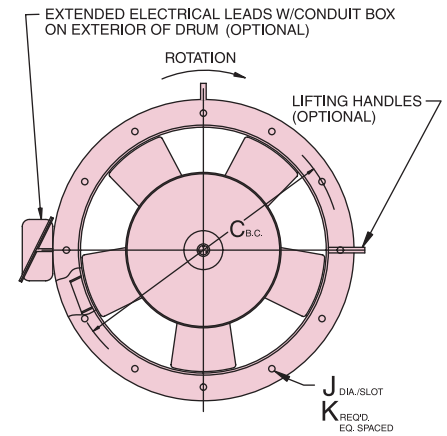
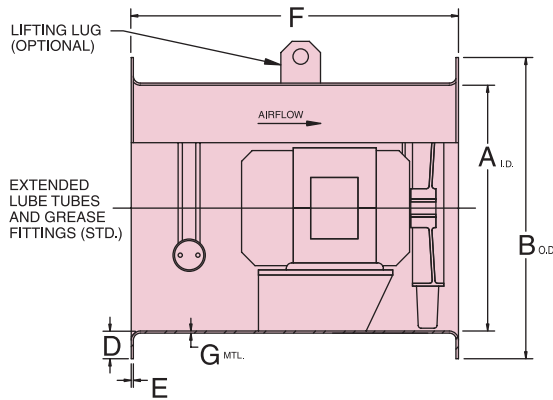


Shown with optional mounting feet and handles.

Series 52

- **Applications** – For systems requiring high volumes of air under static pressures to 6". TA fans fill a gap in performance between standard duct fans and duct axial fans. Because of high RPM, TA fans are not recommended where noise is a factor. Temperature shall not exceed motor rating.
- **Sizes** – 12" to 24" ... **performance** from 1501 to 11,878 CFM at free air.
- **Rigid motor mounts** provide support for foot-mounted motors. Designed for minimum resistance to airflow.
- **Propellers** – TA propeller is designed with a higher hub-to-blade ratio to perform at high volume and static pressure. Blade Type-T.
- **Extended lube tubes** from motor to exterior of fan housing are standard. Extended motor leads to exterior of housing are optional.
- **Flanges** – Size 12" and 14" have welded ring flanges. Sizes 16" through 24" with 215T Frame and smaller have self-formed flanges.
- **Accessories** – See page 19.
- **Protective Coatings** – See page 19.

ABS Certificate of Design Assessment Received



Principal Dimensions

FAN SIZE	A	B	C	D	E	F	G	J	K
12	12	14 ^{13/16}	13 ^{3/8}	1 ^{1/4}	1/8	16	12 Ga.	5/16	6
14	14	16 ^{13/16}	15 ^{1/2}	1 ^{1/4}	1/8	16	12 Ga.	5/16	6
16	16	19 ^{5/16}	18	1 ^{1/2}	1/8	18	10 Ga.	5/16 X 5/8	6
18	18	21 ^{5/16}	19 ^{3/4}	1 ^{1/2}	1/8	18	10 Ga.	7/16 X 3/4	12
20	20	23 ^{5/16}	21 ^{1/2}	1 ^{1/2}	1/8	18	10 Ga.	7/16 X 3/4	12
22	22	25 ^{5/16}	23 ^{3/4}	1 ^{1/2}	1/8	22	10 Ga.	7/16 X 3/4	12
24	24	27 ^{3/8}	26	1 ^{1/2}	3/8	28	7 Ga.	7/16 X 3/4	12

NOTES: Drums, sizes 16" thru 22" have self formed flanges, provided motor frame size is 215T or smaller. Drums will be 10 Ga. Drums, sizes 16" through 22" with frame sizes over 215T will have angle ring flanges and a drum of 12 Ga. Dimensions and specification are subject to change. Certified prints are available.

Rating Table — Series 52 – Direct Drive Tubeaxial Fans

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--126-T---STFCE2	1/2	3450	0.37	1501	1430	1341	1209	842	404									
	52--127-T---STFCG2	3/4	3450	0.62	1867	1807	1738	1653	1538										
14"	52--147VA---STFCI2	1 1/2	3450	1.33	3229	3140	3044	2940	2826	2541									
	52--165-T---STFCI2	1 1/2	3450	1.54	3602	3494	3385	3275	3171	2932	1613	1203	918	644	391				
16"	52--167-T---STFCK2	3	3450	3.17	5374	5262	5145	5023	4896	4621	4291								
	52--185-T---STFCJ2	2	3450	2.29	4359	4263	4163	4057	3945	3697	3355	2522	1979	1492	1186	734			
20"	52--205-T---STFCK2	3	3450	3.27	5838	5724	5606	5482	5352	5073	4742	4269	3367	2679	2243	1643	978		
	52--225TB---STFCH3	1	1750	1.05	5135	4863	4562	4220	3733	1765	896								
22"	52--225TA---STFCL2	5	3450	5.72	8068	7953	7834	7711	7583	7309	7007	6661	6235	5648	4621	3037	2367		
	52--225TB---STFCM2	7 1/2	3450	8.13	10124	9990	9853	9713	9570	9271	8957	8624	8254	7802	7203	4401	3307		
24"	52--245TB---STFCM2	7 1/2	3450	7.76	9845	9717	9586	9450	9310	9012	8691	8331	7895	7305	6612	5304	4189		
	52--245TA---STFCN2	10	3450	9.89	11878	11742	11603	11461	11315	11011	10688	10345	9971	9548	9044	7456	5913		

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. Refer to page 2 for more information.



Series 38 Fixed Pitch Duct Fan



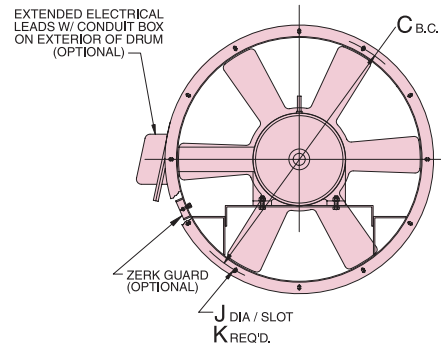
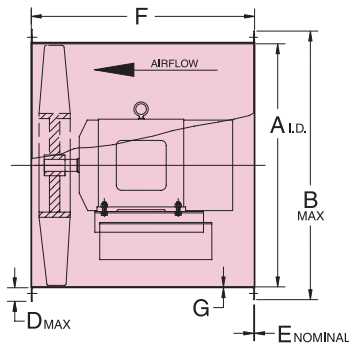
Series 38

ABS Certificate
of Design Assessment
Received



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- **Applications** – Handling relatively clean and corrosive-free air at temperatures not exceeding the motor rating. See below for rating table.
- **Sizes** – 12", 14", 20", 28", 40", 44", and 48"... performance from 100 to 45,500 CFM at free air.
- **Propeller** – Solid cast aluminum airfoil propellers are standard on all models. Six bladed, Type W, P, and PB, propellers and three bladed, Type L, are available based on performance requirements. Propellers are mounted with steel taper lock bushings.
- **Motors** – Motors are totally enclosed as standard. Motors can be furnished as High Efficiency Mill & Chem or per customer specification. Extended electrical leads to the exterior of fan housing are available as an option.
- **Rigid motor mounts** provide support for foot mounted motors. Designed for minimum resistance to airflow.
- **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.
- **Flanges** – Size 12" through 48" have self-formed flanges.
- **Protective Coatings** – See page 19.
- **Accessories** – See page 19.



Principal Dimensions

FAN SIZE	A	B MAX.	C	D MAX.	E ALUM	F	G		J	K	WT. STL.	WT. ALUM	MOTOR FRAME	
							STL.	ALUM					MIN.	MAX.
12	12 ⁷ / ₈	15 ³ / ₄	14 ³ / ₄	1 ¹ / ₄	7GA	22	12GA	125	5 ¹ / ₁₆	6	49	27	48	56
14	14 ⁷ / ₈	17 ¹¹ / ₁₆	16 ³ / ₈	1 ¹ / ₄	7GA	22	12GA	125	5 ¹ / ₁₆	6	57	31	48	56
20	20 ⁷ / ₈	23 ¹¹ / ₁₆	22 ³ / ₈	1 ¹ / ₄	7GA	31	12GA	125	5 ¹ / ₁₆ X 3 ¹ / ₈	6	115	68	56	182T
28	28 ⁷ / ₈	33 ³ / ₄	30 ³ / ₈	2	7GA	31	10GA	190	7 ¹ / ₁₆ X 3 ¹ / ₄	6	178	105	56	184T
40	41	45 ⁵ / ₈	43 ¹ / ₂	2	.375	42	10GA	190	7 ¹ / ₁₆ X 3 ¹ / ₄	12	315	230	213T	254T
44	45	49 ³ / ₈	47 ¹ / ₂	2	.375	42	10GA	190	7 ¹ / ₁₆ X 3 ¹ / ₄	12	339	244	213T	256T
48	49 ³ / ₈	53 ¹ / ₂	51 ³ / ₈	2	.375	42	10GA	190	7 ¹ / ₁₆ X 3 ¹ / ₄	12	404	309	215T	284T

NOTES: Weight is less motor and options. For additional sizes not shown and for reduced length "F" Dimension housing please contact factory. Dimensions and specifications are subject to change. Certified prints are available.

Rating Table — Series 38 – Fixed Pitch Duct Fans

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 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	
12"	38---126-P---STFCD2	1/4	3450	0.25	1806	1666	1488	1245	1020	745	594	417	261	138		
	38---126-W---STFCF2	1/2	3450	0.59	2674	2614	2547	2469	2372	2242	1985	1430	1261	1136	1028	
	38---126-W---STFCF3	3/4	1750	0.11	1356	1210	656	443	291	167	68					
14"	38---146-W---STFCF3	1/4	1750	0.25	2097	1929	1698	1085	713	486	290	166	57			
	38---203-L---STFCF3	1/2	1750	0.54	4991	4660	4291	3896	3390	2203						
20"	38---206-W---STFCH3	1	1750	1.06	5964	5760	5545	5318	5054	4724	3872	2464	2027	1519	1108	
	38---286PA---STFCJ3	2	1750	2.30	12348	11849	11348	10828	10276	9681	9018	8188	7042	5558	4375	
	38---286-W---STFCL3	5	1750	4.81	16081	15756	15435	15117	14807	14507	14204	13891	13547	13155	12715	
	38---283-L---STFCG4	3/4	1160	0.78	8580	7773	7058	6187	4307	2827	1751					
	38---286-W---STFCI4	1 1/2	1160	1.72	10659	10173	9705	9244	8691	7945	5689	4296	3584	2761	2062	
40"	38---406PB---STFCL4	5	1160	4.92	28295	27154	26246	25419	24226	22872	21717	20175	17443	13085	11052	
	38---406-W---STFCM4	7 1/2	1160	7.75	28835	28331	27823	27309	26805	26285	25735	25052	24227	23200	22072	
	38---406PB---STFCJ5	2	870	2.07	21221	19822	18613	16868	14964	10082	7506	5576	3815	2248	836	
	38---406-W---STFCJ5	3	870	3.31	21626	20952	20272	19580	18726	17495	15923	13727	10178	8292	7039	
	38---446-P---STFCL4	5	1160	5.47	31482	30417	29227	27917	26658	25355	23911	22074	19519	16256	13891	
44"	38---443-L---STFCM4	7 1/2	1160	7.38	33989	32882	31784	30701	29609	28489	27323	26084	24732	23148	21214	
	38---446-W---STFCN4	10	1160	9.59	36023	35383	34723	34041	33343	32615	31844	30983	30003	28885	27585	
	38---446-P---STFCJ5	2	870	2.27	23612	22130	20412	18670	16373	12447	9494	7417				
	38---446-W---STFCL5	5	870	4.81	27017	26154	25242	24273	23160	21763	19940	17421	13991	11753	10445	
	38---483-L---STFCN4	10	1160	11.05	45340	43909	42586	41382	40219	38995	37649	36249	34873	33422	31734	
48"	38---483-L---STFCL5	5	870	5.65	34005	32154	30552	28916	27073	25192	22813	18584	12175	9259	6366	
	38---486-W---STFCM5	7 1/2	870	6.83	33303	32416	31484	30508	29461	28260	26809	24911	21968	18308	15750	
	38---486-W---STFCL6	5	690	4.18	26412	25278	24052	22649	20784	17568	13375	10659	8670	6788	5117	
	38---486-W---STFCJ7	2	575	2.16	22010	20625	19032	16663	11811	8532	6220	4166				

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. Refer to page 2 for more information.



Series 39 Adjustable Pitch Duct Fan

US PATENT GRANTED



Series 39 Adjustable Pitch Duct Fan
(Shown with 6 Blade Propeller Assembly)



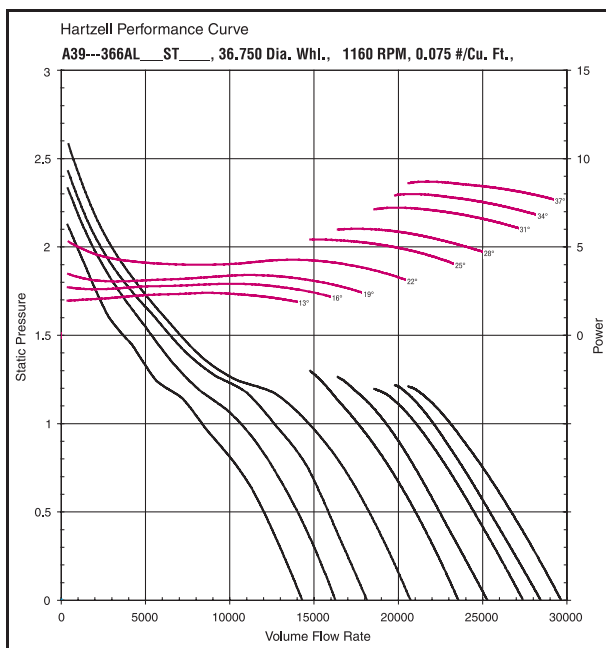
Hartzell Fan, Inc. certifies that the Series 39, Adjustable Pitch Duct Fans, Type AL, with and without vane section, air and sound performance ratings shown herein are reliable and accurate and in accordance with industry standards. The ratings shown are based on tests and procedures performed in accordance 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.



Hartzell Fan, Inc. certifies that the Adjustable Pitch Duct Fans, Series 39, herein, are authorized to bear CE Marking in accordance with Machinery Safety Directive 98/37/EC of the European Union. Reference Technical File E.S. 13.2.2.

Typical Fan Performance Curve



The Hartzell Series 39 Adjustable Pitch Duct Fan, Direct Drive, 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.

Construction and Features

- **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; 40" and 48" for AA props, with performance from 2,200 CFM to 59,000 CFM at free air and pressures from 0" SP to 2½" SP. For performance outside those shown, please consult Hartzell Fan's ESP program.
- **Housing** – Housings are steel heavy-duty welded construction and are flanged and punched for easy duct connection.
- **Axial Propellers** – 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 ensure 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** – Motors are totally enclosed as standard. Motors can be furnished as Mill and Chemical Duty, high efficiency, or per customer specifications. Extended electrical leads to the exterior of fan housing are available as an option. **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** – Extended electrical leads to watertight conduit box located on 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 relubricable bearings include extended lubrication tubes as standard. Fractional HP and small motors are supplied with permanently lubricated bearings for maintenance free installation.
- **Finish** – Standard fan housing and accessories are pretreated and painted with blue industrial duty air dry enamel. Propeller is cast aluminum. Alternative coatings are available.
- **Vane Section Construction** – Bolt on vane section to increase the performance in some fan systems. See page 5.
- **Spark Resistant Construction** – Spark Resistant 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. Refer to page 19.



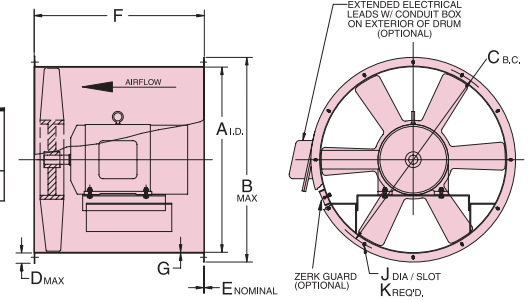
Optional Vane Section (Series 39V)



Rating Tables — Series 39-, Size 16

FAN SIZE 16	A	B	C	E		F	Est. Weight
	16 ⁷ / ₈	19 ¹ / ₁₆	18 ⁵ / ₈	STD	W	25	
	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-, Size 16, 1750 RPM – Ultra-Quiet

Model 39---163AL __ ST ____, (3 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
2,200 - 3,600	0"	70 - 72	0.10 - 0.29
2,000 - 3,600	1/16"	69 - 72	0.10 - 0.34
1,800 - 3,400	1/8"	69 - 73	0.10 - 0.33
1,800 - 3,400	3/16"	69 - 72	0.10 - 0.39
1,600 - 3,200	1/4"	69 - 73	0.10 - 0.38
1,600 - 3,000	5/16"	69 - 73	0.12 - 0.39

Model 39---164AL __ ST ____, (4 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
2,250 - 4,000	0"	71 - 74	0.11 - 0.42
2,000 - 4,000	1/16"	71 - 73	0.10 - 0.46
2,000 - 4,000	1/8"	71 - 74	0.12 - 0.51
1,750 - 3,750	3/16"	71 - 73	0.11 - 0.48
1,750 - 3,500	1/4"	70 - 73	0.12 - 0.45
1,500 - 3,500	5/16"	70 - 73	0.11 - 0.51

Model 39---166AL __ ST ____, (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
2,100 - 3,900	0"	74 - 76	0.13 - 0.43
1,900 - 3,900	1/8"	74 - 76	0.14 - 0.51
1,900 - 3,700	1/4"	73 - 76	0.18 - 0.54
1,900 - 3,300	3/8"	72 - 76	0.21 - 0.51
2,300 - 3,100	1/2"	72 - 77	0.34 - 0.58
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Series 39-, Size 16, 3450 RPM

Model 39---163AL __ ST ____, (3 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
4,000 - 6,800	0"	87 - 90	0.66 - 1.97
4,000 - 6,800	1/8"	87 - 90	0.76 - 2.28
3,600 - 6,800	1/2"	86 - 90	0.75 - 2.71
3,600 - 6,400	3/4"	86 - 89	0.82 - 2.63
3,200 - 6,000	1"	86 - 89	0.81 - 2.58
2,800 - 5,600	1 1/4"	87 - 89	0.84 - 2.62

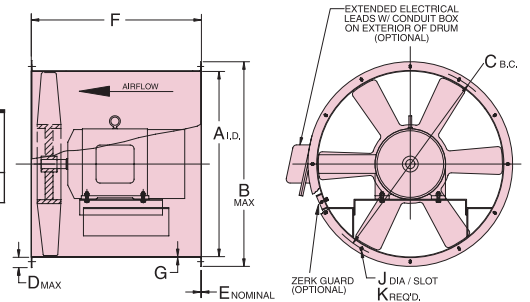
Model 39---164AL __ ST ____, (4 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
4,500 - 7,500	0"	88 - 94	0.85 - 2.61
4,000 - 7,500	3/8"	88 - 91	0.87 - 3.32
3,500 - 7,500	1/2"	87 - 91	0.87 - 3.83
3,000 - 7,000	1 1/8"	87 - 90	0.84 - 3.84
2,500 - 6,500	1 1/2"	87 - 90	0.88 - 4.00
2,500 - 4,500	1 3/4"	88 - 90	1.22 - 2.61

Model 39---166AL __ ST ____, (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
4,000 - 7,500	0"	92 - 95	0.99 - 3.04
4,000 - 7,500	3/8"	92 - 94	1.12 - 3.52
3,500 - 7,500	1/2"	92 - 96	1.08 - 4.06
3,500 - 7,000	1 1/8"	91 - 94	1.32 - 3.99
3,000 - 6,500	1 1/2"	91 - 93	1.34 - 4.00
2,500 - 6,000	1 3/4"	92 - 93	1.45 - 4.10

Rating Tables — Series 39-, Size 18

FAN SIZE 18	A	B	C	E		F	Est. Weight
	18 ⁵ / ₈	21 ¹ / ₁₆	20 ⁵ / ₈	STD	W	25	
	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-, Size 18, 1750 RPM – Ultra-Quiet

Model 39---183AL __ ST ____, (3 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
2,750 - 4,500	0"	72 - 75	0.11 - 0.36
2,500 - 4,500	1/16"	71 - 74	0.12 - 0.42
2,250 - 4,500	1/8"	71 - 74	0.12 - 0.48
2,250 - 4,500	3/16"	70 - 74	0.13 - 0.53
2,000 - 4,250	1/4"	70 - 73	0.12 - 0.52
2,000 - 4,000	5/16"	71 - 73	0.14 - 0.51

Model 39---184AL __ ST ____, (4 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
3,000 - 5,250	0"	73 - 76	0.15 - 0.58
3,000 - 5,250	1/16"	73 - 76	0.18 - 0.65
2,750 - 5,250	1/8"	72 - 77	0.17 - 0.71
2,750 - 5,000	3/16"	72 - 76	0.20 - 0.70
2,750 - 4,750	1/4"	71 - 75	0.22 - 0.68
2,750 - 4,750	5/16"	71 - 76	0.24 - 0.75

Model 39---186AL __ ST ____, (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
3,000 - 5,250	0"	76 - 79	0.28 - 0.68
3,000 - 5,250	1/8"	76 - 77	0.33 - 0.77
2,750 - 5,250	1/4"	75 - 78	0.34 - 0.90
2,750 - 5,000	3/8"	74 - 77	0.38 - 0.95
2,750 - 4,750	1/2"	74 - 78	0.43 - 1.01
2,750 - 4,250	5/8"	75 - 78	0.51 - 0.99

Series 39-, Size 18, 3450 RPM

Model 39---183AL __ ST ____, (3 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
5,500 - 9,000	0"	89 - 95	0.88 - 2.92
5,000 - 9,000	1/4"	88 - 91	0.92 - 3.36
4,500 - 9,000	1/2"	88 - 91	0.91 - 3.81
4,500 - 9,000	3/4"	88 - 91	1.01 - 4.28
4,000 - 8,500	1"	87 - 91	0.99 - 4.19
4,000 - 8,000	1 1/4"	88 - 90	1.15 - 4.12

Model 39---184AL __ ST ____, (4 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
6,000 - 9,500	0"	90 - 94	1.22 - 3.35
5,500 - 9,500	3/8"	90 - 93	1.27 - 4.05
5,000 - 9,500	1/2"	89 - 93	1.36 - 4.90
4,500 - 9,500	1 1/8"	88 - 95	1.44 - 5.70
4,500 - 8,500	1 1/2"	89 - 93	1.76 - 5.10
5,500 - 8,000	1 3/4"	90 - 94	2.91 - 5.40

Model 39---186AL __ ST ____, (6 - Blade)			
CFM Range	SP	dB _A Range	BHP Range
6,000 - 10,000	0"	94 - 96	2.19 - 4.82
6,000 - 10,000	1/2"	94 - 94	2.53 - 5.56
5,500 - 10,000	1"	92 - 95	2.64 - 6.44
5,000 - 10,000	1 1/2"	92 - 95	2.72 - 7.58
5,000 - 9,000	2"	92 - 95	3.12 - 7.38
5,000 - 8,500	2 1/2"	92 - 95	3.72 - 7.95

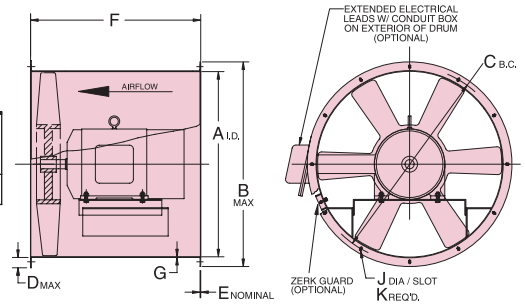
Air and Sound Performance Data is available in Hartzell ESP (Electronic Support Package). Please visit www.hartzellfan.com to request a copy. Performance certified is for Installation Type D: ducted inlet/ducted out. Performance data is based on standard air conditions (0.075#/ft³). Performance ratings 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-, Size 24

FAN SIZE 24	A	B	C	E		F	Est. Weight 130
	24 ⁷ / ₈	29 ¹ / ₄	26 ⁷ / ₈	STD	W	31	
	G		J	K	Motor Frame		
	STD	W			Min.	Max.	
	10 GA	¹ / ₄	⁷ / ₁₆ X ³ / ₄	6	56	184T	

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-, Size 24, 1160 RPM – Ultra-Quiet

Model 39---243AL		ST		(3 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
4,800 - 7,600	0"	67 - 70	0.20 - 0.60		
4,400 - 7,600	¹ / ₁₆ "	66 - 70	0.19 - 0.67		
4,000 - 7,600	¹ / ₈ "	66 - 71	0.20 - 0.77		
3,600 - 7,200	³ / ₁₆ "	66 - 70	0.21 - 0.77		
3,600 - 6,800	¹ / ₄ "	67 - 70	0.26 - 0.78		
4,400 - 4,800	³ / ₈ "	68 - 69	0.49 - 0.54		

Model 39---244AL		ST		(4 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
5,000 - 8,500	0"	69 - 74	0.24 - 0.89		
5,000 - 8,000	¹ / ₁₆ "	69 - 73	0.27 - 0.83		
4,500 - 8,000	¹ / ₈ "	67 - 74	0.27 - 0.93		
4,500 - 7,500	³ / ₁₆ "	67 - 73	0.30 - 0.89		
4,000 - 7,500	¹ / ₄ "	68 - 74	0.30 - 0.98		
3,500 - 6,500	³ / ₈ "	69 - 74	0.35 - 0.95		

Model 39---246AL		ST		(6 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
4,500 - 9,000	0"	70 - 74	0.27 - 1.02		
4,500 - 9,000	¹ / ₁₆ "	70 - 74	0.29 - 1.08		
4,500 - 9,000	¹ / ₈ "	70 - 74	0.32 - 1.17		
4,000 - 8,500	¹ / ₄ "	70 - 74	0.34 - 1.21		
4,000 - 8,000	³ / ₈ "	70 - 74	0.42 - 1.25		
4,500 - 7,000	¹ / ₂ "	71 - 76	0.64 - 1.21		

Series 39-M, Size 24, 1750 RPM

Model 39---243AL		ST		(3 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
7,250 - 12,500	0"	78 - 83	0.66 - 2.55		
6,500 - 11,750	¹ / ₈ "	77 - 82	0.62 - 2.40		
6,500 - 11,000	¹ / ₄ "	77 - 82	0.75 - 2.31		
5,750 - 11,000	³ / ₈ "	76 - 81	0.72 - 2.60		
5,000 - 10,250	¹ / ₂ "	77 - 80	0.71 - 2.51		
5,000 - 8,750	³ / ₄ "	79 - 83	1.01 - 2.36		

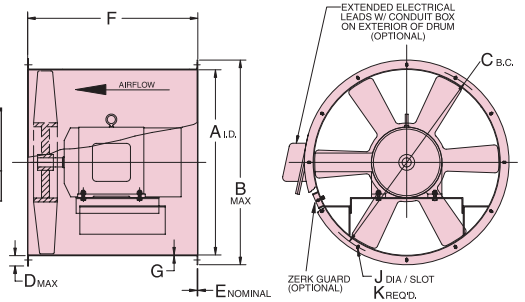
Model 39---244AL		ST		(4 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
7,700 - 12,600	0"	80 - 85	0.84 - 2.87		
7,700 - 12,600	¹ / ₈ "	80 - 85	0.93 - 3.12		
7,000 - 11,900	¹ / ₄ "	78 - 85	0.92 - 2.99		
6,300 - 11,200	¹ / ₂ "	78 - 84	1.02 - 3.14		
5,600 - 10,500	³ / ₄ "	80 - 84	1.14 - 3.32		
7,000 - 7,700	1"	80 - 81	2.02 - 2.31		

Model 39---246AL		ST		(6 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
7,200 - 13,600	0"	81 - 85	0.97 - 3.47		
6,400 - 12,800	¹ / ₄ "	81 - 85	1.02 - 3.95		
6,400 - 12,800	¹ / ₂ "	81 - 85	1.20 - 4.03		
5,600 - 12,000	³ / ₄ "	81 - 85	1.24 - 4.08		
5,600 - 11,200	1"	82 - 85	1.56 - 4.15		
10,400 - 10,400	1 ¹ / ₄ "	82 - 82	4.31 - 4.31		

Rating Tables — Series 39-, Size 30

FAN SIZE 30	A	B	C	E		F	Est. Weight 186
	30 ³ / ₈	35 ¹ / ₄	33	STD	W	34	
	G		J	K	Motor Frame		
	STD	W			Min.	Max.	
	10 GA	¹ / ₄	⁷ / ₁₆ X ³ / ₄	6	56	215T	

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-, Size 30, 1160 RPM – Ultra-Quiet

Model 39---303AL		ST		(3 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
9,000 - 15,000	0"	75 - 78	0.53 - 1.91		
8,000 - 15,000	¹ / ₈ "	74 - 80	0.58 - 2.32		
8,000 - 14,000	¹ / ₄ "	74 - 79	0.73 - 2.30		
6,000 - 13,000	³ / ₈ "	76 - 79	0.66 - 2.32		
5,000 - 12,000	¹ / ₂ "	76 - 80	0.72 - 2.38		
9,000 - 9,000	⁵ / ₈ "	79 - 79	1.83 - 1.83		

Model 39---304AL		ST		(4 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
8,400 - 15,600	0"	75 - 79	0.55 - 2.15		
8,400 - 15,600	¹ / ₈ "	74 - 79	0.69 - 2.50		
7,200 - 14,400	¹ / ₄ "	74 - 78	0.67 - 2.37		
6,000 - 14,400	³ / ₈ "	74 - 79	0.64 - 2.78		
4,800 - 13,200	¹ / ₂ "	75 - 80	0.67 - 2.71		
3,600 - 12,000	⁵ / ₈ "	75 - 79	0.69 - 2.68		

Model 39---306AL		ST		(6 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
9,000 - 17,000	0"	78 - 80	0.81 - 2.85		
8,000 - 17,000	¹ / ₈ "	77 - 80	0.81 - 3.30		
8,000 - 16,000	¹ / ₄ "	77 - 80	0.93 - 3.21		
8,000 - 16,000	³ / ₈ "	77 - 80	1.06 - 3.64		
7,000 - 15,000	¹ / ₂ "	77 - 80	1.06 - 3.58		
7,000 - 14,000	⁵ / ₈ "	78 - 80	1.25 - 3.52		

Series 39-, Size 30, 1750 RPM

Model 39---303AL		ST		(3 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
13,500 - 22,500	0"	85 - 89	1.80 - 6.45		
12,000 - 22,500	¹ / ₄ "	85 - 90	1.90 - 7.63		
12,000 - 21,000	¹ / ₂ "	84 - 89	2.34 - 7.43		
10,500 - 19,500	³ / ₄ "	86 - 89	2.38 - 7.32		
9,000 - 18,000	1"	87 - 90	2.55 - 7.29		
7,500 - 16,500	1 ¹ / ₄ "	88 - 90	2.74 - 7.37		

Model 39---304AL		ST		(4 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
12,000 - 22,500	0"	86 - 88	1.77 - 6.36		
12,000 - 22,500	¹ / ₄ "	85 - 89	2.10 - 7.49		
10,500 - 22,500	¹ / ₂ "	84 - 89	2.05 - 8.50		
10,500 - 22,500	³ / ₄ "	85 - 89	2.52 - 9.88		
9,000 - 21,000	1"	85 - 90	2.55 - 9.59		
7,500 - 19,500	1 ¹ / ₄ "	86 - 90	2.68 - 9.53		

Model 39---306AL		ST		(6 - Blade)	
CFM Range	SP	dBA Range	BHP Range		
13,500 - 24,000	0"	88 - 90	2.78 - 8.02		
12,000 - 24,000	³ / ₈ "	87 - 90	2.90 - 9.82		
12,000 - 24,000	¹ / ₂ "	87 - 90	3.46 - 11.8		
10,500 - 22,500	1 ¹ / ₄ "	87 - 91	3.58 - 12.1		
9,000 - 21,000	1 ¹ / ₂ "	88 - 92	3.86 - 12.4		
9,000 - 19,500	1 ³ / ₄ "	90 - 92	5.77 - 13.2		

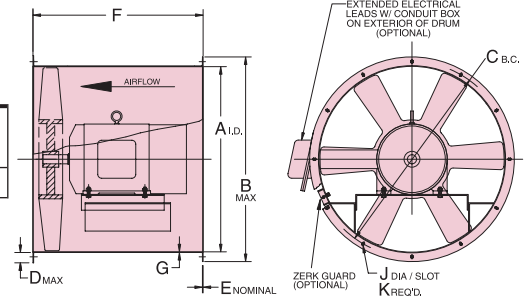
Air and Sound Performance Data is available in Hartzell ESP (Electronic Support Package). Please visit www.hartzellfan.com to request a copy. Performance certified is for Installation Type D: ducted inlet/ducted out. Performance data is based on standard air conditions (0.075#/ft³). Performance ratings 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-, 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-, Size 32, 1160 RPM

Model 39---323AL __ ST ____, (3 - Blade)			
CFM Range	SP	dBA 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---324AL __ ST ____, (4 - Blade)			
CFM Range	SP	dBA 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---326AL __ ST ____, (6 - Blade)			
CFM Range	SP	dBA 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-, Size 32, 1750 RPM

Model 39---323AL __ ST ____, (3 - Blade)			
CFM Range	SP	dBA Range	BHP Range
14,000 - 26,000	0"	85 - 89	1.84 - 7.77
14,000 - 26,000	$\frac{1}{8}$ "	85 - 90	2.21 - 9.30
12,000 - 24,000	$\frac{1}{4}$ "	84 - 89	2.17 - 8.94
12,000 - 24,000	$\frac{3}{8}$ "	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

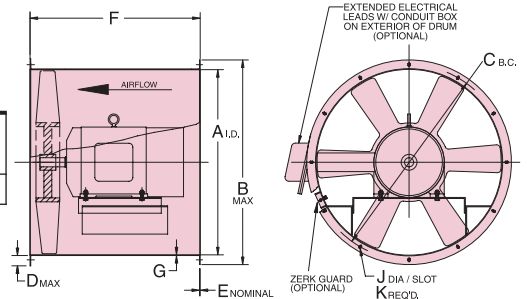
Model 39---324AL __ ST ____, (4 - Blade)			
CFM Range	SP	dBA Range	BHP Range
16,000 - 30,000	0"	87 - 94	2.78 - 11.8
16,000 - 28,000	$\frac{1}{8}$ "	86 - 97	3.22 - 11.0
14,000 - 28,000	$\frac{1}{4}$ "	85 - 92	3.06 - 12.6
14,000 - 26,000	$\frac{3}{8}$ "	86 - 92	3.57 - 11.9
12,000 - 26,000	1"	85 - 92	3.45 - 13.4
10,000 - 24,000	1 $\frac{1}{4}$ "	88 - 91	3.43 - 12.7

Model 39---326AL __ ST ____, (6 - Blade)			
CFM Range	SP	dBA 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	$\frac{1}{4}$ "	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 $\frac{3}{8}$ "	91 - 93	5.51 - 14.1

Rating Tables — Series 39-, Size 36

FAN SIZE 36	A	B	C	E		F	Est. Weight
	37	41 $\frac{1}{2}$	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-, Size 36, 870 RPM – Ultra-Quiet

Model 39---363AL __ ST ____, (3 - Blade)			
CFM Range	SP	dBA Range	BHP Range
10,000 - 18,000	0"	72 - 75	0.42 - 1.56
10,000 - 18,000	$\frac{1}{8}$ "	71 - 75	0.49 - 1.80
9,000 - 18,000	$\frac{1}{4}$ "	70 - 76	0.49 - 2.03
9,000 - 18,000	$\frac{3}{8}$ "	70 - 76	0.57 - 2.26
8,000 - 18,000	$\frac{1}{2}$ "	71 - 76	0.57 - 2.48
8,000 - 17,000	$\frac{5}{8}$ "	71 - 76	0.67 - 2.44

Model 39---364AL __ ST ____, (4 - Blade)			
CFM Range	SP	dBA Range	BHP Range
11,000 - 20,000	0"	73 - 77	0.61 - 2.23
10,000 - 20,000	$\frac{1}{8}$ "	72 - 77	0.59 - 2.49
10,000 - 20,000	$\frac{1}{4}$ "	72 - 76	0.67 - 2.69
10,000 - 20,000	$\frac{3}{8}$ "	72 - 76	0.75 - 2.88
10,000 - 20,000	$\frac{1}{2}$ "	72 - 76	0.83 - 3.08
10,000 - 19,000	$\frac{5}{8}$ "	72 - 76	0.94 - 3.03

Model 39---366AL __ ST ____, (6 - Blade)			
CFM Range	SP	dBA Range	BHP Range
11,000 - 20,000	0"	75 - 77	0.80 - 2.33
10,000 - 20,000	$\frac{1}{8}$ "	75 - 78	0.84 - 2.84
10,000 - 20,000	$\frac{1}{4}$ "	74 - 78	0.99 - 3.34
10,000 - 19,000	$\frac{3}{8}$ "	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-, Size 36, 1160 RPM

Model 39---363AL __ ST ____, (3 - Blade)			
CFM Range	SP	dBA 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---364AL __ ST ____, (4 - Blade)			
CFM Range	SP	dBA 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	$\frac{1}{4}$ "	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---366AL __ ST ____, (6 - Blade)			
CFM Range	SP	dBA Range	BHP Range
15,000 - 24,000	0"	83 - 85	1.95 - 4.13
13,500 - 24,000	$\frac{1}{8}$ "	83 - 86	2.06 - 5.12
13,500 - 24,000	$\frac{1}{4}$ "	82 - 86	2.47 - 6.37
10,500 - 24,000	$\frac{3}{8}$ "	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).

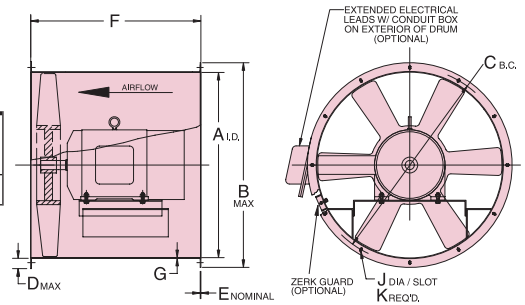
Sound levels shown are in dBA for fan inlet or outlet and based on a hemispherical free field (Q=2), at a distance of 5 feet. To complete model code add blade angle, motor horsepower code, and motor speed code. Refer to page 2 for model code information.



Rating Tables — Series 39-, Size 40

FAN SIZE 40	A	B	C	E		F	Est. Weight
	41	45 $\frac{5}{8}$	43 $\frac{1}{2}$	STD	W	42	
	$\frac{3}{8}$	$\frac{3}{8}$					
Motor Frame	G		J	K	Motor Frame		Est. Weight
	STD	W			Min.	Max.	
	10 GA	$\frac{1}{4}$	$\frac{7}{16} \times \frac{3}{4}$		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-, Size 40, 870 RPM – Ultra-Quiet

Model 39--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	$\frac{1}{8}$ "	82 - 85	1.98 - 7.30		
18,550 - 31,150	$\frac{1}{4}$ "	81 - 85	2.10 - 7.36		
17,500 - 29,800	$\frac{3}{8}$ "	81 - 85	2.21 - 7.35		
16,350 - 28,250	$\frac{1}{2}$ "	81 - 85	2.30 - 7.32		
14,530 - 26,400	$\frac{3}{4}$ "	82 - 85	2.37 - 7.25		

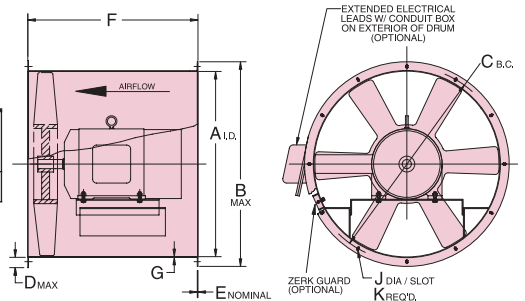
Series 39-, Size 40, 1160 RPM

Model 39--404AA				ST				(4 - 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
19,100 - 40,750	0"	88 - 91	1.35 - 12.80	19,400 - 41,250	0"	90 - 92	2.44 - 17.43	17,680 - 41,200	$\frac{1}{4}$ "	90 - 92	2.54 - 17.43
16,950 - 38,500	$\frac{1}{4}$ "	88 - 91	1.53 - 12.76	16,000 - 41,100	$\frac{1}{2}$ "	90 - 92	2.56 - 17.43	13,900 - 38,950	$\frac{3}{4}$ "	90 - 92	2.62 - 17.41
14,050 - 35,900	$\frac{1}{2}$ "	88 - 90	1.64 - 12.65	11,100 - 36,500	1"	89 - 92	2.58 - 17.27	8,180 - 33,300	1 $\frac{1}{4}$ "	87 - 92	2.50 - 17.03
9,400 - 32,800	$\frac{3}{4}$ "	88 - 89	1.58 - 12.44								
4,00 - 29,650	1"	86 - 88	1.30 - 12.10								
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Rating Tables — Series 39-, Size 48

FAN SIZE 48	A	B	C	E		F	Est. Weight
	49 $\frac{1}{8}$	53 $\frac{1}{2}$	51 $\frac{5}{8}$	STD	W	42	
	$\frac{3}{8}$	$\frac{3}{8}$					
Motor Frame	G		J	K	Motor Frame		Est. Weight
	STD	W			Min.	Max.	
	10 GA	$\frac{1}{4}$	$\frac{7}{16} \times \frac{3}{4}$		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-, Size 48, 870 RPM – Ultra-Quiet

Model 39--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	$\frac{1}{8}$ "	88 - 93	2.60 - 13.91		
22,250 - 48,450	$\frac{1}{4}$ "	88 - 93	2.65 - 13.94		
20,950 - 46,650	$\frac{3}{8}$ "	88 - 93	2.67 - 13.97		
19,480 - 44,700	$\frac{1}{2}$ "	88 - 93	2.69 - 13.98		
15,250 - 39,940	$\frac{3}{4}$ "	87 - 93	2.71 - 13.94		

Series 39-, Size 48, 1160 RPM

Model 39--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	$\frac{1}{4}$ "	90 - 98	3.03 - 23.19		
22,690 - 56,400	$\frac{1}{2}$ "	91 - 97	3.25 - 23.06		
18,100 - 52,900	$\frac{3}{4}$ "	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 31U Belt Drive Utility Duct Fan

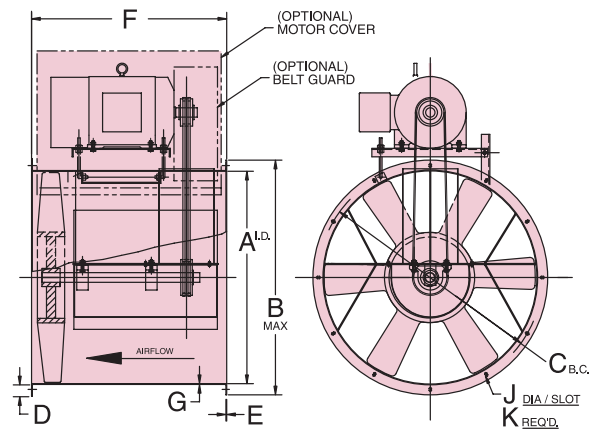
The Hartzell **Series 31U** Belt Drive Utility Duct Fan is best suited for applications with low pressure requirements from free air to 1¼ inches of static pressure. These versatile and dependable fans can be used to remove fumes and hot air; or for cooling, drying and general ventilation; can also be used for paint spray exhaust systems.



Series 31U

Features

- **Sizes** – 12", 16", 20", 24", 30", 34", 36", 42", 48", and 60" diameters with Belt Drive Arrangement. Maximum operating temperature is 200°F.
- **Propellers** – Solid cast aluminum airfoil propellers are standard on all models. Six bladed, Type W, propellers are standard on sizes 12" through 48". Three bladed, Type L, are standard on sizes 54" and 60". Propellers are mounted with steel taper lock bushings.
- **Housings** – Housings are 12 gauge steel for sizes 12" through 20", and 10 gauge steel for sizes 24" through 60". All have heavy duty welded construction and are flanged and punched for easy duct connection.
- **Finish** – Housings, motor bases, and accessories are pretreated in a 5-stage process and painted with blue industrial duty air dry enamel.
- **Shafts** – Shafts are turned ground and polished, keyed at both ends and sized to operate well below critical speed.
- **Bearings** – Bearings are heavy duty, self-aligning, ball or roller type, in cast iron pillow block housings, selected for a minimum L-50 Life at maximum catalog speed, horsepower, and static pressure of 350,000 hours in horizontal applications and 250,000 hours in vertical applications. Bearing lubrication fittings are extended to the exterior of the fan housing as standard for easy relubrication.
- **Motor Out of the Airstream** – Exterior mounting of dripproof protected motor on a pivot style motor base for easy electrical connection, adjustment of belts, and lubrication is available. Motors can be furnished as TEFC, Mill and Chemical Duty, or to specifications upon request. Motor HP and frame size limits are identified in dimensions table.
- **Drives** – V-Belt Drives are oversized for long life and continuous duty and are fixed pitch as standard. Variable pitch drives are available upon request. Belts are oil, heat, and static resistant type.
- **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 Operational Test, whenever possible, and inspection prior to shipment.
- **Shipping Configuration** – Belts and motors are shipped loose.
- **Options and Accessories** – See page 19.



Principal Dimensions

FAN SIZE	A	B	C	D	E	F	G	J	K	Weight Standard	Minimum Motor Frame	Maximum Motor Frame
12	12 ³ / ₈	15 ⁵ / ₈	14 ¹ / ₈	1 ¹ / ₄	12 GA	18	12 GA	5 ⁵ / ₁₆ X 5 ⁵ / ₈	6	84	48	145T
16	16 ³ / ₈	19 ⁹ / ₈	18 ³ / ₈	1 ¹ / ₄	12 GA	18	12 GA	5 ⁵ / ₁₆ X 5 ⁵ / ₈	6	119	48	145T
20	20 ³ / ₈	23 ³ / ₈	21 ⁷ / ₈	1 ¹ / ₄	12 GA	23	12 GA	5 ⁵ / ₁₆ X 5 ⁵ / ₈	6	169	48	145T
24	24 ³ / ₈	27 ¹¹ / ₁₆	26 ¹ / ₂	1 ¹ / ₂	10 GA	23	10 GA	7 ¹ / ₁₆ X 3 ³ / ₄	6	231	48	213T
30	30 ³ / ₈	33 ¹¹ / ₁₆	32 ¹ / ₂	1 ¹ / ₂	10 GA	28	10 GA	7 ¹ / ₁₆ X 3 ³ / ₄	6	308	56	213T
34	34 ³ / ₈	37 ¹¹ / ₁₆	36 ¹ / ₂	1 ¹ / ₂	10 GA	28	10 GA	7 ¹ / ₁₆ X 3 ³ / ₄	6	360	56	213T
36	36 ¹ / ₂	40 ³ / ₁₆	38 ¹ / ₂	1 ³ / ₄	10 GA	28	10 GA	7 ¹ / ₁₆ X 3 ³ / ₄	6	385	56	213T
42	42 ³ / ₈	46 ³ / ₁₆	44 ¹ / ₂	1 ³ / ₄	10 GA	34	10 GA	7 ¹ / ₁₆ X 3 ³ / ₄	12	536	143T	215T
48	48 ³ / ₈	52 ¹⁵ / ₁₆	51 ¹ / ₈	2	10 GA	34	10 GA	7 ¹ / ₁₆ X 3 ³ / ₄	12	677	145T	215T
54	54 ³ / ₈	59 ¹⁵ / ₁₆	56 ⁷ / ₈	2 ¹ / ₂	¼	34	10 GA	7 ¹ / ₁₆ X 3 ³ / ₄	12	940	145T	215T
60	60 ³ / ₈	65 ¹⁵ / ₁₆	62 ⁷ / ₈	2 ¹ / ₂	¼	34	10 GA	7 ¹ / ₁₆ X 3 ³ / ₄	12	1042	145T	215T

NOTES: Dimensions and specification are subject to change. Certified prints are available. Weight is less motor and options.



Series 31 Belt Drive Duct Fan



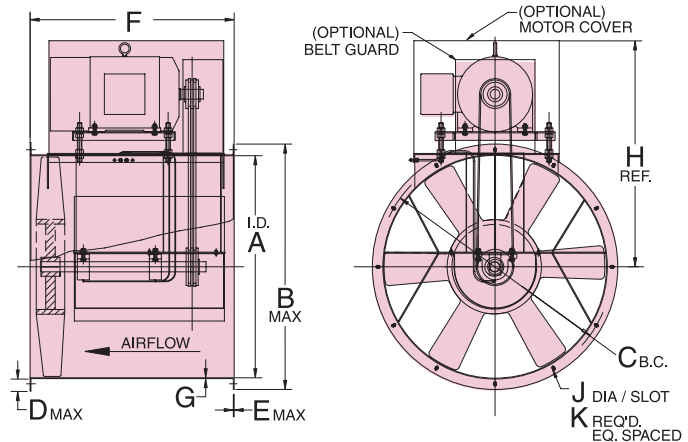
Series 31



Hartzell Fan, Inc. certifies that the Series 31, Belt Drive Duct Fans, shown on pages 15-17 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.

ABS Certificate of Design Assessment Received

- **Applications** – Where it is advantageous to have the motor out of the airstream (fumes, hot or moist air, dirt-laden). If corrosive air exists, refer to protective coating information, page 18.
- **Motor out of the airstream**, exterior mounting. Propeller shaft rotates in two ball bearings mounted on steel supports welded to the inner shell of the housing.
- **Sizes** – 12" through 96"... **performance** 1680 to 156,800 CFM at free air. Maximum temperature 200 degrees F°, standard construction. For temperatures to 350 degrees F°, see page 6, "High temperature construction".
- **Propeller** – Cast aluminum airfoil type:
 - SIZES 12" to 48" – 6 blade – Type W
 - SIZES 20" to 60" – 3-blade – Type L
 - SIZES 54" to 60" – 6-blade adjustable – Type AW
 - SIZES 72" to 96" – 4-blade adjustable – Type A
- **Extended lube tubes** from bearings to exterior of fan housing are standard.
- **Motor Covers** for Series 31 are optional, see page 18.
- **Series 31** belt drive duct fan, size 12" through 48" have self-formed flanges. Welded ring flanges are supplied on sizes 54" through 96", and all aluminum units. Contact factory for size 12" through 48" fan requiring larger motors than shown below.
- **Drive Protection** – drive components (belts, sheave, shaft and bearings) are enclosed in an inner drum and protected from the airstream. This casing is positioned on the negative air pressure side of the propeller. Access to shaft and bearings is through a removable bearing cover. Shaft seal and cover plate are an available accessory. (See page 18.)
- **Accessories** – See page 19.
- **Protective Coatings** – See page 19.



Principal Dimensions

FAN SIZE	A	B MAX.	C	D MAX.	E		F	G		H	J	K	WT. STL.	WT. ALUM.	MOTOR FRAME	
					STL.	ALUM.		STL.	ALUM.						MIN.	MAX.
12	12 $\frac{7}{8}$	15 $\frac{5}{8}$	14 $\frac{5}{8}$	1	7GA	.190	22	12GA	.125	24 $\frac{3}{8}$	$\frac{5}{16}$ X $\frac{5}{8}$	6	84	47	48	145T
14	14 $\frac{7}{8}$	17 $\frac{5}{8}$	16 $\frac{5}{8}$	1	7GA	.190	22	12GA	.125	25 $\frac{3}{8}$	$\frac{5}{16}$ X $\frac{5}{8}$	6	91	50	48	145T
16	16 $\frac{7}{8}$	19 $\frac{5}{8}$	18 $\frac{5}{8}$	1 $\frac{1}{4}$	7GA	.190	25	12GA	.125	30 $\frac{3}{8}$	$\frac{5}{16}$ X $\frac{5}{8}$	6	119	65	56	182T
18	18 $\frac{7}{8}$	21 $\frac{5}{8}$	20 $\frac{5}{8}$	1 $\frac{1}{4}$	7GA	.190	25	12GA	.125	31 $\frac{1}{8}$	$\frac{5}{16}$ X $\frac{5}{8}$	6	136	76	48	213T
20	20 $\frac{7}{8}$	23 $\frac{5}{8}$	22 $\frac{3}{8}$	1 $\frac{1}{4}$	7GA	.190	31	12GA	.125	32 $\frac{3}{8}$	$\frac{5}{16}$ X $\frac{5}{8}$	6	169	92	48	213T
24	24 $\frac{7}{8}$	29 $\frac{5}{8}$	26 $\frac{3}{8}$	2	7GA	.250	31	10GA	.190	39 $\frac{3}{8}$	$\frac{7}{16}$ X $\frac{3}{4}$	6	231	131	56	215T
28	28 $\frac{7}{8}$	33 $\frac{5}{8}$	30 $\frac{3}{8}$	2	7GA	.250	31	10GA	.190	41 $\frac{7}{8}$	$\frac{7}{16}$ X $\frac{3}{4}$	6	265	161	143T	215T
30	30 $\frac{7}{8}$	34 $\frac{5}{8}$	33	2	7GA	.250	34	10GA	.190	43 $\frac{3}{4}$	$\frac{7}{16}$ X $\frac{3}{4}$	6	308	189	56	215T
32	33	37 $\frac{1}{4}$	35	2	7GA	.250	34	10GA	.190	45 $\frac{1}{4}$	$\frac{7}{16}$ X $\frac{3}{4}$	6	350	216	143T	215T
36	37	41 $\frac{1}{8}$	39	2	7GA	.250	34	10GA	.190	47 $\frac{1}{4}$	$\frac{7}{16}$ X $\frac{3}{4}$	6	385	252	143T	215T
40	41	45 $\frac{5}{8}$	43 $\frac{1}{2}$	2	$\frac{3}{8}$	.250	42	10GA	.190	56 $\frac{3}{4}$	$\frac{7}{16}$ X $\frac{3}{4}$	12	495	309	182T	215T
42	42 $\frac{7}{8}$	46 $\frac{1}{2}$	45	2	$\frac{3}{8}$	.250	42	10GA	.190	57 $\frac{3}{4}$	$\frac{7}{16}$ X $\frac{3}{4}$	12	536	351	145T	215T
44	45	49 $\frac{5}{8}$	47 $\frac{1}{2}$	2	$\frac{3}{8}$	.250	42	10GA	.190	58 $\frac{3}{4}$	$\frac{7}{16}$ X $\frac{3}{4}$	12	576	393	143T	215T
48	49 $\frac{5}{8}$	53 $\frac{1}{2}$	51 $\frac{5}{8}$	2	$\frac{3}{8}$	.375	42	10GA	.190	60 $\frac{3}{4}$	$\frac{7}{16}$ X $\frac{3}{4}$	12	677	462	143T	215T
54	55 $\frac{3}{8}$	60 $\frac{5}{8}$	57 $\frac{5}{8}$	2 $\frac{1}{2}$	$\frac{3}{8}$	.375	42	10GA	.190	47	$\frac{7}{16}$ X $\frac{3}{4}$	12	719	467	254T	256T
60	61 $\frac{3}{8}$	66 $\frac{5}{8}$	63 $\frac{5}{8}$	2 $\frac{1}{2}$	$\frac{3}{8}$	.375	42	10GA	.190	52	$\frac{7}{16}$ X $\frac{3}{4}$	12	850	553	254T	256T
66	67	73 $\frac{1}{16}$	71 $\frac{1}{2}$	3	$\frac{3}{8}$	.375	42	10GA	.190	54	$\frac{5}{16}$ X 1	16	1016	660	256T	326T
72	73	79 $\frac{1}{4}$	76 $\frac{3}{4}$	3	$\frac{3}{8}$	.375	42	10GA	.190	58	$\frac{5}{16}$ X 1	16	1181	768	284T	326T
84	85 $\frac{1}{4}$	91 $\frac{5}{8}$	88 $\frac{3}{4}$	3	$\frac{3}{8}$	.375	42	10GA	.190	64	$\frac{5}{16}$ X 1	16	1344	874	284T	326T
96	97 $\frac{3}{8}$	103 $\frac{3}{4}$	101 $\frac{3}{8}$	3	$\frac{3}{8}$	.375	48	7GA	.250	70	$\frac{5}{16}$ X 1	16	2001	1301	286T	326T

NOTES: Dimensions and specification are subject to change. Certified prints are available. Weight is less motor and options.



Performance Data – Series 31 & Series 31U

Series	Size	Model	Motor		Peak Fan BHP	Fan RPM	Cubic Feet Per Minute vs. Static Pressure											
			HP	Code			Free Air	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	
31U	36"	31U--36-W--ST_G3	¾	1750	0.75	640	11230	10095	8850	4685								
	36"	31U--36-W--ST_H3	1	1750	1.10	725	12720	11715	10735	8590	5095							
	36"	31U--36-W--ST_I3	1½	1750	1.61	815	14300	13395	12525	11595	8940	5805	4445					
	36"	31U--36-W--ST_J3	2	1750	2.19	905	15880	15065	14275	13495	12515	9695	6625	5445				
	36"	31U--36-W--ST_K3	3	1750	3.27	1035	18160	17435	16750	16065	15380	14570	12570	8605	7435	6395		
	36"	31U--36-W--ST_L3	5	1750	5.48	1235	21670	21065	20475	19895	19325	18755	18165	17485	16365	13965	10235	
31-	36"	31U--36-W--ST_M3	7½	1750	8.17	1415	24830	24300	23780	23260	22760	22275	21765	21280	20740	20160	19350	
	36"	31--36-L--ST_J3	2	1750	2.29	983	14889	14008	12934	11577	9674	6580	4504	2955	1655			
	36"	31--36-L--ST_K3	3	1750	3.38	1128	17085	16333	15478	14437	13224	11738	8869	6773	5011	3657	2484	
	36"	31--36-W--ST_K3	3	1750	3.57	1040	19294	18703	18052	17322	16523	15633	14496	12808	8647	7084		
	36"	31--36-W--ST_L3	5	1750	5.42	1195	22170	21660	21116	20524	19878	19187	18447	17612	16565	15193	11716	
	36"	31--36-W--ST_M3	7½	1750	8.12	1367	25361	24919	24455	23964	23437	22876	22279	21662	21001	20276	19410	
31-	40"	31--40-L--ST_K3	3	1750	3.40	944	19533	18525	17341	15853	14134	10828	7835	5530	3793	2290		
	40"	31--40-W--ST_K3	3	1750	3.33	864	20790	20065	19328	18573	17667	16391	14180	10629	8767	7388		
	40"	31--40-L--ST_L3	5	1750	5.30	1140	23589	22772	21874	20849	19643	18298	16790	14089	11034	8938		
	40"	31--40-W--ST_L3	5	1750	5.54	1024	24641	24031	23410	22789	22154	21459	20581	19457	17822	15008		
	40"	31--40-L--ST_M3	7½	1750	7.88	1310	27106	26403	25650	24834	23921	22885	21732	20543	19177	16922		
	40"	31--40-W--ST_M3	7½	1750	8.04	1165	28033	27498	26956	26407	25863	25306	24719	24031	23210	22205		
	40"	31--40-L--ST_N3	10	1750	10.5	1444	29879	29245	28575	27862	27096	26243	25301	24271	23202	22067	20687	
	40"	31--40-W--ST_N3	10	1750	11.0	1286	30945	30461	29972	29477	28979	28487	27982	27456	26877	26195	25411	
31U	42"	31U--42-W--ST_H3	1	1750	1.10	575	15050	13930	12480	9905	5520							
	42"	31U--42-W--ST_I3	1½	1750	1.61	655	17140	16170	15065	13545	10375	6700						
	42"	31U--42-W--ST_J3	2	1750	2.16	720	18840	17950	17015	15820	14260	9440	7450					
	42"	31U--42-W--ST_K3	3	1750	3.27	825	21590	20825	20040	19130	18055	16740	14805	9910	8320	6645		
	42"	31U--42-W--ST_L3	5	1750	5.49	980	25645	24985	24345	23670	22920	22055	21085	19940	18520	14630	11600	
	42"	31U--42-W--ST_M3	7½	1750	8.17	1120	29310	28740	28175	27600	26995	26350	25645	24845	23955	22915	21780	
31-	42"	31U--42-W--ST_N3	10	1750	11.0	1250	32710	32205	31690	31175	30655	30120	29565	28910	28233	27500	26705	
	42"	31--42-W--ST_K3	3	1750	3.25	785	21712	21262	20767	20191	19441	17045	13411	9364	7050	5319		
	42"	31--42-L--ST_K3	3	1750	3.38	865	22163	20746	19413	18113	16547	14460	9748	6026	3888	1893		
	42"	31--42-W--ST_L3	5	1750	5.43	930	25723	25345	24950	24516	24031	23471	22636	20313	17150	13909		
	42"	31--42-L--ST_L3	5	1750	5.45	1025	26263	25054	23898	22798	21704	20501	18993	17177	12866	9697		
	42"	31--42-W--ST_M3	7½	1750	7.92	1065	29457	29126	28791	28434	28049	27629	27164	26633	25785	24041		
	42"	31--42-L--ST_M3	7½	1750	8.21	1175	30106	29041	28025	27024	26081	25130	24132	22973	21603	20034	17983	
	42"	31--42-W--ST_N3	10	1750	11.1	1200	33191	32896	32604	32297	31974	31632	31266	30870	30437	29951	29199	
31-	44"	31--44-L--ST_K3	3	1750	3.44	810	22233	20931	19348	17346	14611	9978	6879	4546	2606			
	44"	31--44-W--ST_K3	3	1750	3.37	758	23867	22955	21962	20824	19455	17632	13246	10200	7201	5507		
	44"	31--44-L--ST_L3	5	1750	5.21	957	26268	25190	23980	22535	20821	18928	15484	11732	9050	6800		
	44"	31--44-W--ST_L3	5	1750	5.47	899	28307	27541	26745	25879	24923	23841	22572	20975	18088	13798		
	44"	31--44-L--ST_M3	7½	1750	7.82	1117	30660	29750	28763	27678	26420	24991	23466	21734	18760	15073		
	44"	31--44-W--ST_M3	7½	1750	8.19	1029	32400	31730	31052	30334	29566	28737	27830	26819	25665	24281		
	44"	31--44-L--ST_N3	10	1750	10.8	1233	33844	33025	32152	31213	30179	29010	27713	26338	24873	22959	19808	
	44"	31--44-W--ST_N3	10	1750	11.2	1140	35895	35288	34685	34054	33391	32690	31944	31141	30269	29307	28227	
31U	48"	31U--48-W--ST_I3	1½	1750	1.60	555	19945	18285	16550	13710	8805	6280						
	48"	31U--48-W--ST_J3	2	1750	2.17	615	22100	20590	19095	17245	13990	9550	7265					
	48"	31U--48-W--ST_K3	3	1750	3.28	705	25335	24000	22720	21360	19645	16935	12165	10150	8125			
	48"	31U--48-W--ST_L3	5	1750	5.43	840	30185	29070	27975	26905	25755	24510	22825	20425	16160	13610	11985	
	48"	31U--48-W--ST_M3	7½	1750	8.22	975	35035	34055	33125	32205	31270	30295	29270	28115	26640	24645	22330	
	48"	31U--48-W--ST_N3	10	1750	10.9	1075	38630	37735	36895	36040	35205	34355	33480	32550	31530	30380	28910	
31-	48"	31--48-W--ST_J3	2	1750	2.23	592	23113	21233	19299	17465	13583	9222	6666					
	48"	31--48-W--ST_K3	3	1750	3.35	677	26431	24785	23120	21441	19842	16882	12062	9479	7278			
	48"	31--48-L--ST_L3	5	1750	5.43	829	29459	28094	26530	24602	22374	19251	14031	10576	7681	5394		
	48"	31--48-W--ST_L3	5	1750	5.48	803	31351	29952	28578	27156	25721	24409	22968	20180	15613	12928		
	48"	31--48-L--ST_M3	7½	1750	7.95	969	34434	33285	32026	30604	28935	27054	25016	21781	17109	14004		
	48"	31--48-W--ST_M3	7½	1750	8.22	919	35880	34645	33455	32238	30990	29733	28569	27396	26086	23711		
	48"	31--48-L--ST_N3	10	1750	11.3	1077	38272	37246	36145	34948	33597	32065	30365	28608	26433	22676	18607	
	48"	31--48-W--ST_N3	10	1750	11.0	1012	39511	38379	37303	36211	35092	33956	32814	31746	30699	29587	28281	
31U	54"	31U--54-L--ST_J3	2	1750	2.18	540	29275	26415	23105	18460	9675							
	54"	31U--54-L--ST_K3	3	1750	3.30	620	33610	31095	28525	25125	20995	12275						
	54"	31U--54-L--ST_L3	5	1750	5.48	735	39845	37735	35615	33335	30540	27030	23325	14675				
	54"	31U--54-L--ST_M3	7½	1750	8.20	840	45535	43620	41865	40020	37930	35560	32540	29510	25860	17295	14045	
	54"	31U--54-L--ST_N3	10	1750	11.0	925	50145	48390	46775	45130	43410	41535	39270	36565	33805	31030	26745	
	54"	31--54AW250ST_L3	5	1750	5.42	539	37091	34932	33078	30958	27415	17578	14136	9652				
31-	54"	31--54-L--ST_L3	5	1750	5.51	700	41114	38477	35934	33297	30485	27246	23465	15301	10905			
	54"	31--54AW250ST_M3	7½	1750	8.07	616	42390	40470	38776	37172	35198	32						

Performance Data – Series 31 & Series 31U

Series	Size	Model	Motor		Peak Fan BHP	Fan RPM	Cubic Feet Per Minute vs. Static Pressure											
			HP	Code			Free Air	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	
31U	60"	31U--60-L---ST_J3	2	1750	2.13	455	34785	29850	25835	16250								
	60"	31U--60-L---ST_K3	3	1750	3.30	525	40140	35630	32115	28410	18655							
	60"	31U--60-L---ST_L3	5	1750	5.42	615	47020	43015	39800	36925	33760	27355	17780					
	60"	31U--60-L---ST_M3	7 1/2	1750	8.11	705	53900	50285	47265	44630	42205	39530	35455	27405	19840			
	60"	31U--60-L---ST_N3	10	1750	10.9	775	59250	55795	53075	50590	48255	46005	43565	40170	34045	25165	20460	
31-	60"	31---60AW250ST_L3	5	1750	5.72	472	43397	40684	37640	34620	28522	17461	12014					
	60"	31---60-L---ST_L3	5	1750	5.60	591	47966	43363	40148	36805	33261	28441	21567	12477				
	60"	31---60AW250ST_M3	7 1/2	1750	8.61	539	49557	47221	44597	42018	39232	34342	23059	17669	12912			
	60"	31---60AW250ST_N3	10	1750	11.2	594	54614	52512	50200	47748	45494	42771	38305	28261	21614	17438		
	60"	31---60-L---ST_M3	7 1/2	1750	8.31	676	54864	50539	47621	44826	41874	38799	35327	29523	23717	15218		
	60"	31---60-L---ST_N3	10	1750	11.0	745	60465	56318	53578	51053	48457	45760	42969	39915	35549	29972		
	60"	31---60AW250ST_O3	15	1750	16.8	680	62521	60701	58768	56658	54522	52565	50463	47538	43084	34215	26662	
	60"	31---60-L---ST_O3	15	1750	16.7	856	69473	65556	63037	60758	58575	56325	54001	51616	49173	46544	43352	
31-	72"	31---72-A220ST_N3	10	1750	11.0	553	73809	68800	63708	57599	50207	36778	5493					
	72"	31---72-A220ST_O3	15	1750	16.4	633	84487	80210	75616	71262	65486	59124	50846	21604	4881			
	72"	31---72-A220ST_P3	20	1750	22.0	697	93029	89206	84972	80986	76850	71267	65478	58578	45041	12335	2746	
31-	84"	31---84-A220ST_O3	15	1750	16.5	490	103854	97293	90526	83052	73458	60574	15032					
	84"	31---84-A220ST_P3	20	1750	21.9	539	114239	108373	102087	96114	88103	79339	67485	24647	5188			
	84"	31---84-A220ST_Q3	25	1750	27.5	581	123141	117768	111860	106315	100160	92194	83850	72297	33016	9358		
	84"	31---84-A220ST_R3	30	1750	32.9	617	130771	125753	120173	114873	109644	102706	95161	87029	75135	36360	11843	
31-	96"	31---96BA220ST_P3	20	1750	22.0	432	136674	128181	119390	109853	97452	81535	23206					
	96"	31---96BA220ST_Q3	25	1750	27.4	465	147115	139324	131020	123075	112211	100428	82856	23206	2883			
	96"	31---96BA220ST_R3	30	1750	32.9	494	156290	149032	149032	141127	133701	124798	113990	102208	81373	21609		

Performance certified is for installation Type D: ducted inlet/ducted outlet. Power rating (BHP) includes transmission losses. Performance data is based on standard air conditions (0.075 "/math>ft.^3</math>). Performance ratings do not include the effects of appurtenances (accessories). The AMCA Certified Ratings Seal does not apply to Series 31U. **Bold-type information provided in the Rating Table above is needed when preparing a model code. Refer to page 2 for more information.**

General Construction Options

Duct Fan with Bomb Bay Construction

The Bomb Bay arrangement offers easy access to the drive assembly. Unlatching the Bomb Bay section facilitates maintenance of belts, bearings, propeller and shaft of belt drive units and motor and propeller of direct drive units without removing the fan from the system.



Swing Out Construction

Duct Fans are available with a fan casing that is split, and swings out away from the assembly on a heavy-duty hinge. This feature allows easy, safe access to the fan propeller, shaft, bearing and drive components for inspection, cleaning, maintenance or removal without removing the entire fan or having personnel working directly over the roof opening.

Dimensions on Bomb Bay and Swing Out construction vary from standard units. Request certified prints.

Roof Mounted

Upblast

Together with stack cap and curb panel (shown), the Hartzell duct fans can be mounted as upblast roof exhausters. The backdraft dampers in the stack cap offer weather proof closure for vertical air discharge. The venturi curb panel offers a secure mounting base for the fan and an efficient inlet air condition.

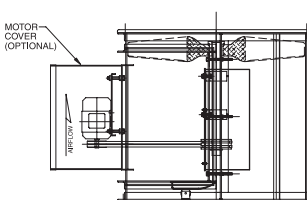
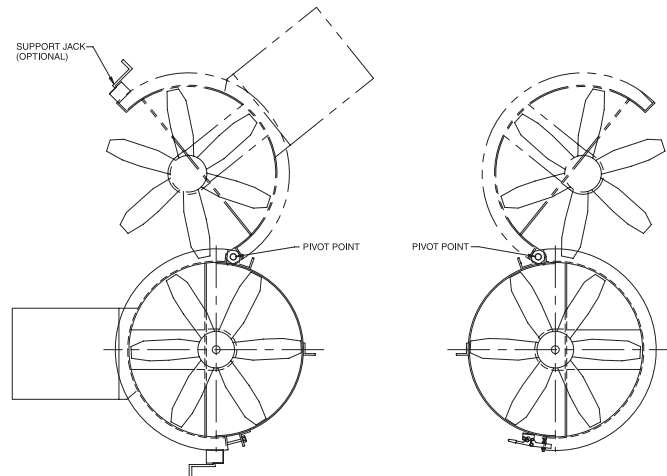


Minimum velocity required through the stack cap for damper operation is 1300 fpm – maximum is 3200 fpm. For performance, refer to the appropriate duct fan rating table in this bulletin, allowing approximately 1/8" static pressure for stack cap resistance.

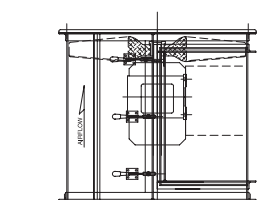
Hooded

When required, the Hartzell duct fans with curb panels can be supplied with a weather hood. These built-up hooded power roof ventilators can be configured for exhaust or to supply air flow.

Air delivery and pressure drop through the hood are affected by air velocity. Please contact the factory for selection.



BELT DRIVE DUCT FAN



DIRECT DRIVE TUBEAXIAL FAN



Options and Accessories

Companion Flanges

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



Guards

Spiral ring guard offers protection on intake or discharge side. Available in steel only.

Belt Guard

Covers motor sheave and belts outside fan housing. Steel construction.



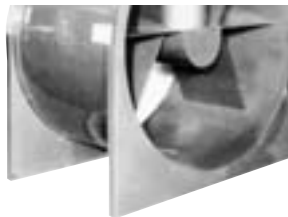
Combination Motor Cover and Belt Guard

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

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

Mounting Feet

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



Ceiling Suspension

Horizontal or vertical mount. Brackets can be used with vibration isolators. Horizontal mounting shown.

Vibration Isolators

Rubber-in-shear or spring type isolators available on all models.

Shaft Seal and Slinger

Neoprene shaft seal held in position by coated steel cover plate, along with a neoprene shaft slinger, which is positioned between the bearing cover and propeller, are optional on standard and coated steel belt drive duct fans. These should be used when fans are placed in corrosive atmospheres which warrant protective coating and/or stainless steel shafting or hardware. Seal is not gas tight. (Note: shaft seal, cover plate and neoprene slinger are standard on aluminum belt duct fans.)

Protective Coatings

For corrosive applications, fans can be furnished with suitable protective coatings or constructed of stainless steel or fiberglass.

Inlet/Outlet Cone

Spun inlet orifice cone may be used in place of the inlet duct in installations where no duct work precedes the fan.



Protective Coatings

For corrosive applications, fans can be furnished with suitable protective coatings or constructed of stainless steel or fiberglass.

Extended Electrical Leads

Motor electrical leads extended to the exterior of the fan casing are optional on direct drive duct fans.

Access Door

Hinged, quick release latches on access door allows for maintenance of internal parts of duct fans. Available for direct and belted drive units. Standard position for access door of belt drive duct fans is at 6 o'clock when motor is at 12. For direct drive units, standard position is at 10 o'clock.



Sound Muffler

This sound attenuative device is a simple lined tube that can be used on either the intake or exhaust side of a Hartzell duct fan to reduce the noise. *It cannot be used in wet atmosphere or with air velocities over 5000 FPM or above 250°F in the 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 fan with no internal obstruction to impede airflow.



- The typical attenuation for fans with discharge velocities from 1500-3000 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

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 Occupation 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 (6) months allowance for shipment to approved stocking dealers and distributors. No warranty extends to future performance of goods and any claims for breach of warranty or otherwise accrues upon tender of delivery. The foregoing constitute Hartzell's sole and exclusive warranties in lieu of all other warranties, whether written, oral, express, implied or statutory.

LIMITATION OF LIABILITY FOR BREACH OF WARRANTY

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

LIMITATION OF LIABILITY

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

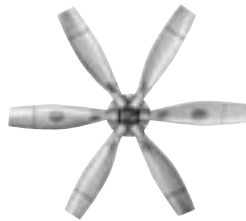
In no event whether as a result of breach of contract, or warranty or alleged negligence, defects incorrect advice or other causes, shall Hartzell be liable for special or consequential damages, including, but not limited to, loss of profits or revenue, loss of use of the equipment or any associated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

NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS

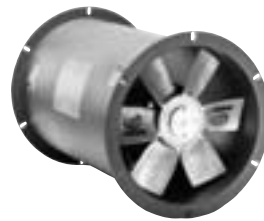
HARTZELL DOES NOT WARRANT THAT SAID GOODS ARE OF MERCHANTABLE QUALITY OR THAT THEY ARE FIT FOR ANY PARTICULAR PURPOSE. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY AND THERE IS NO IMPLIED WARRANTY OF FITNESS.



Propeller Fans



Cooling Tower &
Heat Exchanger Fans



Duct Fans



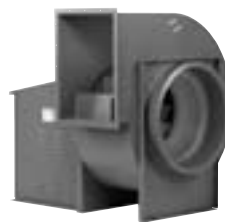
Duct Axial Fans



Vaneaxial Blowers



Cool Blast & Utility Fans



Steel Centrifugal Blowers



Roof Ventilators –
Steel & Fiberglass



Heating Equipment –
Gas & Steam



Fiberglass
Axial Flow Fans



Fiberglass
Centrifugal Blowers



Marine –
Mine Duty Blowers

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