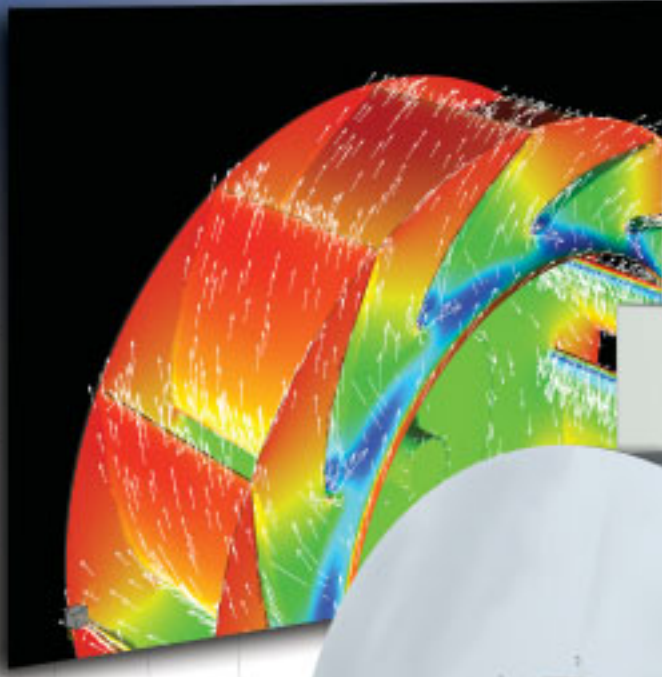


Quiet Efficient Plenum Fan Model QEP



 **GREENHECK**
The Solution Company.

September 2003

QUIET & EFFICIENT PLENUM MODEL QEP

Greenheck, the world's largest manufacturer of air movement and control products, has been providing top quality ventilation solutions for more than 50 years.

PLENUM FAN

QEP plenum fans are designed and engineered for superior performance and reliability. Quiet and efficient operation is achieved through a 12-bladed wheel. The wheel combined with quality component parts and thorough product testing makes the QEP a product that is second to none. The QEP brings sound quality, efficiency, low vibration and reduced installation cost all at a competitive first cost.

The Model QEP plenum fan is the quietest plenum fan in the industry!

Typical Plenum Applications:

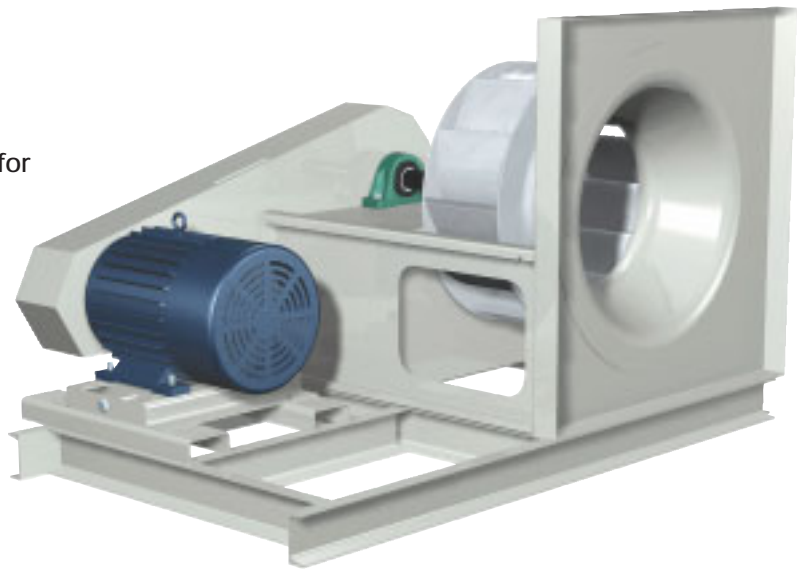
The Model QEP is recommended for any air handler or pressurized plenum room application that requires low sound and high efficiency!

Plenum fans are designed for unhooded operation within a pressurized plenum. This results in a savings of the space normally occupied by the fan housing. Additional space savings are realized in applications where multiple duct take-offs are required. Ductwork is connected directly to the plenum without intermediate transitions. The compact size of the plenum fan makes it an excellent selection for retrofit and replacement applications as well as in variable air volume systems.

- Performance as cataloged is assured. All sizes are licensed to bear the AMCA Certified Sound (both inlet and outlet) and Air Performance Seal.
- All sizes are operated and vibration tested before they leave the factory to ensure trouble free operation at the job site.
- Air handling quality bearings are 100% inspected for swivel torque, noise level and bore tolerance.
- Greenheck subjects these products to extensive life testing, assuring you that the fans will provide many years of reliable performance.

Model QEP - Plenum Fan

- 18 Sizes, 12 thru 73
- Volume Range: 1,750 - 210,000 cfm (0.83 - 99 m³/s)
- Static Pressure: Up to 12 in. wg (3 kPa)



Greenheck certifies that the Model QEP plenum fans shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

All Greenheck products are supported by the industry's best product literature, electronic media, and Computer Aided Product Selection program (CAPS). You'll also find extensive product and Installation and Operation Manual (IOM) information on the Internet.



And, of course, you can always count on the personal service and expertise of our national and international representative organization. To locate your nearest Greenheck representative call 715-359-6171 or visit our website at www.greenheck.com

The QEP wheel underwent extensive engineering analysis and verification using computational fluid dynamics, finite element analysis, strain gauges and AMCA certified air and sound chambers. In addition to having a lighter weight aluminum wheel, constructing the airfoil profile blades from extrusions, up to size 33, provides precise size and weight for better wheel balance.



AIR AND SOUND COMPARISON

Performance Criteria of 5,500 CFM @ 5 in. wg Ps						
Wheel Type	Unit Size	RPM	Brake HP	Motor HP Size	Static Eff.	LwA
9-Blade	18	2607	7.76	10	56%	96
QEP	18	2400	6.37	7.5	68%	90
Performance Criteria of 21,500 CFM @ 5 in. wg Ps						
Wheel Type	Unit Size	RPM	Brake HP	Motor HP Size	Static Eff.	LwA
9-Blade	33	1469	26.9	30	63%	96
QEP	33	1416	23.9	25	71%	92

The 12-bladed QEP wheel design has higher efficiencies and better sound qualities over a traditional 9-bladed centrifugal wheel. The examples used here illustrate these advantages and explain how they translate into lower energy consumption, lower initial cost from smaller motors and a better sounding fan.

Performance Comparison - Size 33 @ 1400 RPM

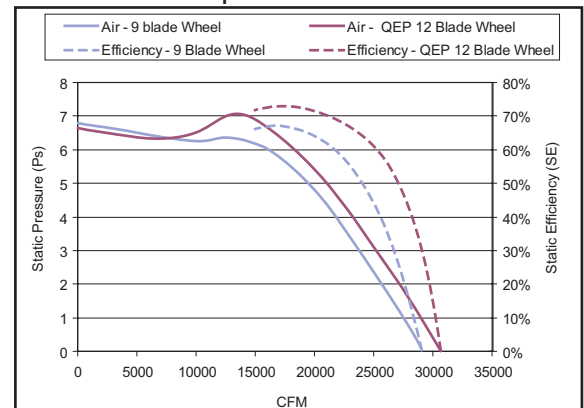


Figure 1

Air Performance

Figure 1 plots the fan performance and efficiency of two fans running at the same fan RPM. Increased wheel efficiency allows the QEP 12-bladed fan to produce more air flow while using less energy.

Sound Performance

Figures 2 and 3 show the inlet and outlet sound spectrums for the size 33 unit used in the above performance comparison.

Lower Sound Power (LwA)

The overall A-weighted sound power levels for identical performance requirements show that the QEP 12-bladed wheel design is quieter.

Easy to Attenuate

High sound power levels in the first and second octave bands are difficult to attenuate. The QEP 12-bladed wheel generates less low frequency sound power.

Improved Sound Quality

A sound spectrum with a dominant tone can be annoying to a listener. Greenheck's QEP 12-bladed wheel provides balanced sound power levels across the octave bands. This results in a sound that is pleasing to the listener.

Inlet Sound Comparison - Size 33

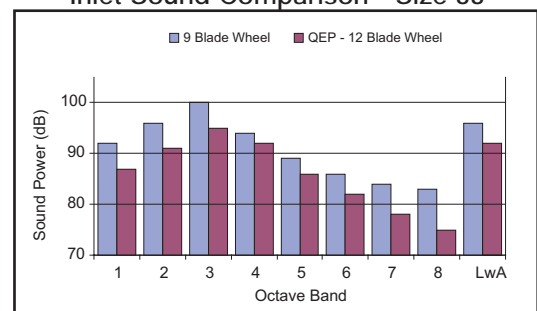


Figure 2

Outlet Sound Comparison - Size 33

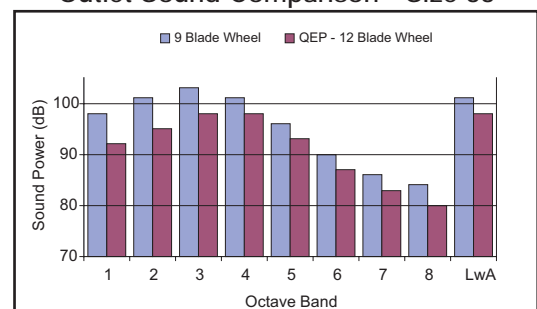
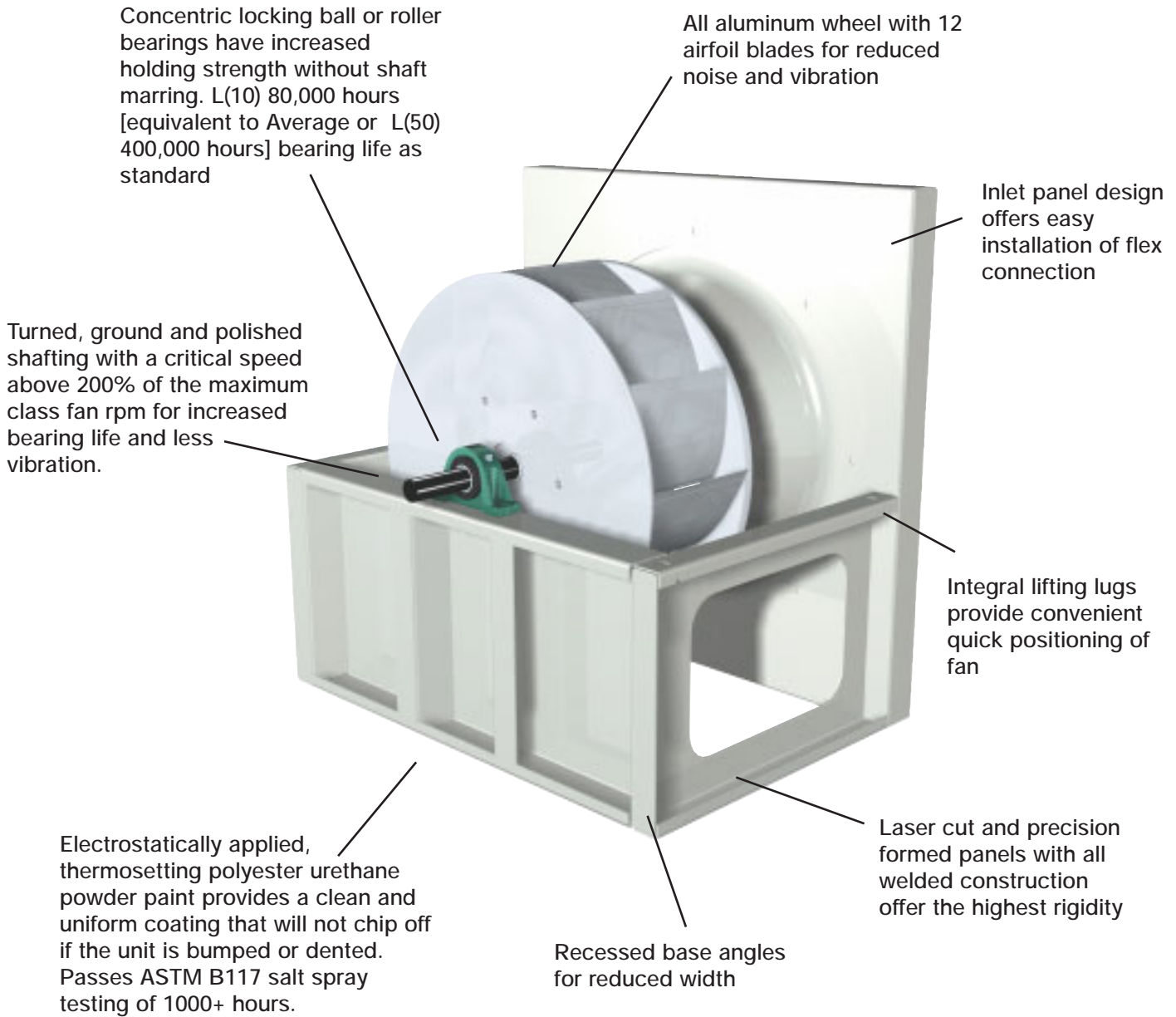
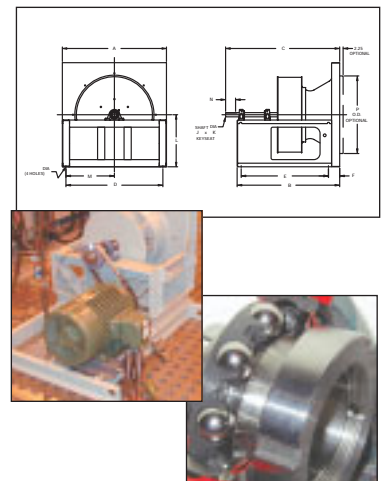


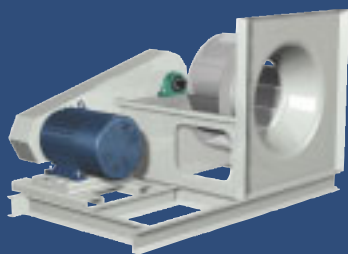
Figure 3



Value Added Features as Standard

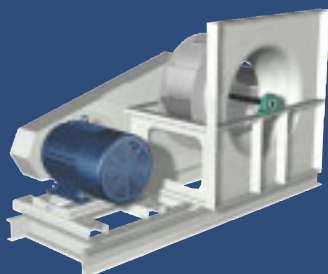
- CAD drawings available at Greenheck's website
- AMCA licensed Sound and Air performance (inlet and outlet)
- Complete assembly vibration testing. Readings taken in three planes at the fan's selected design speed. Fan, motor, and drives are tested together on a base to ensure smooth, problem free operation. Maximum belt drive tolerance of 0.15 in/sec peak velocity, filter-in, in three planes (0.08 in/sec peak for direct drive units)
- Air-Handling quality bearings that are specifically manufactured and tested for HVAC applications. Greenheck's bearings also have concentric locking mechanisms and a basic life rating of L(10) 80,000 hrs; equivalent to L(50) 400,000 hrs
- Aluminum, 12 bladed, airfoil wheel





Horizontal - Arrangement 1 Sizes 12 - 73
(shown with optional base & belt guard)

- No bearings in the fan inlet to effect performance
- Requires separate structural base for motor mounting
- Motor frame size does not limit availability



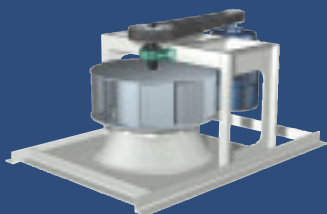
Horizontal - Arrangement 3 Sizes 18 - 73
(shown with optional base & belt guard)

- Reduced length with a bearing located in the inlet
- Requires separate structural base for motor mounting
- Motor frame size does not limit availability



Horizontal - Arrangement 4 Sizes 15 - 60

- Minimal maintenance with no belts or pulleys
- Low vibration levels
- Compact, space saving design with motor directly connected to wheel
- Different performances through wheel width and motor rpm variations
- Elimination of belt residue that can contaminate the airstream



Vertical - Motor on Side Sizes 12 - 54

- Compact design with motor mounted to side of fan
- No separate structural base required for mounting motor
- Limited availability based on motor frame size
- Motor slide base provides for convenient belt tightening



Horizontal - Motor on Side Sizes 12 - 73

- Compact design with motor mounted to side of fan
- Used in installations with tight spaces and lower overhead clearance
- No separate base required for mounting motor
- Limited availability based on motor frame size
- Motor slide base provides for convenient belt tightening



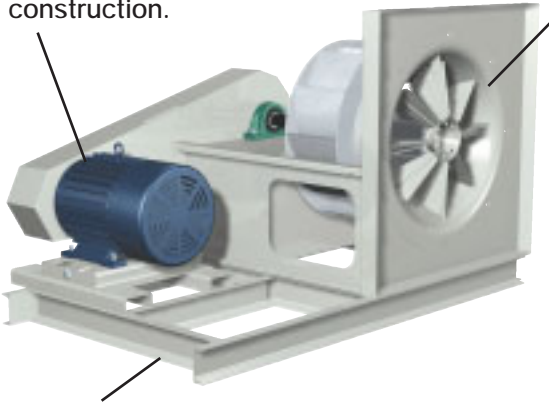
Horizontal - Motor on Top Sizes 12 - 73

- Compact design with motor mounted to top of fan
- No separate base required for mounting motor
- Limited availability based on motor frame size
- Motor slide base provides for convenient belt tightening

Serving the market as a single source supplier, Greenheck can provide many advantages to its customers. A one stop shop ensures compatibility of parts, vibration testing as a complete factory assembly, one shipment to track, one assembly to install and single source responsibility.

Motors

Available to meet specified system requirements including vendor, VFD compatibility and construction.



Structural Steel Base

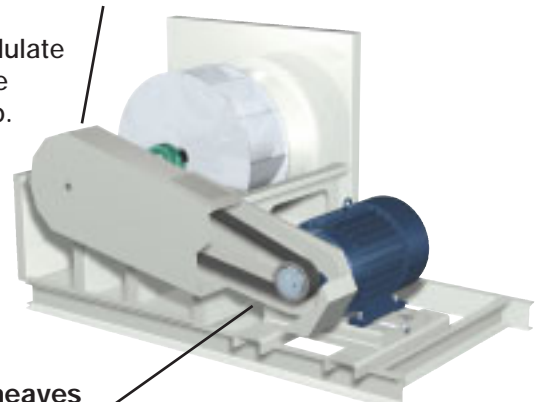
Provides a known space envelope for the complete fan assembly. Compact C-channel platform welded for superior rigidity and solid foundation.

Inlet Vanes

Continuously modulate air flow or balance system at start-up.

Belt Guards

Custom guarding with two tach holes and belt tension inspection door, assembled and mounted.



Belts & Sheaves

Cast iron sheaves and matched belts standard with a 1.5 drive service factor. Installed and aligned to provide reduced vibration levels and minimize installation costs.

Disconnect Switches

Toggle type and heavy duty disconnect switches are available for positive electrical shut-off and safety when servicing fans.

Extended Life Bearings

Air handling quality, pillow block bearings meet a basic rating fatigue life L(10), per ABMA standards, in excess of 200,000 hours at maximum operating speed. Equivalent to Average or L(50) life of 1,000,000 hours.

Extended Lube Lines

Relocates grease lubrication points to a single readily accessible location. Available mounted or in kits.



Inlet Collars

Welded to the fan inlet panel (arr 3) or inlet cone (arr 1 & 4) for round slip-fit connections.

Inlet Flanges

Circular inlet flanges with prepunched holes are available for all fan sizes. These flanges, welded to the inlet collar, provide an easy means for bolted connection to ductwork. Matching bolt on companion flanges are also available.



Inlet Guards

Assembled and mounted low pressure loss, zinc coated guards.



Isolators

Base mount isolators are available in either neoprene or spring mounts. The isolators are sized to match the fan weight at each mounting point.

Plenum Cage

Totally enclosed guard to protect personnel from unhooded spinning wheel.



Shaft Guards

Formed guard that covers the shaft between the belt guard and the plenum cage (Arrangement 1 only).

Special Coatings

Special coatings are available for protective purposes. Coatings are applied before assembly so that each manufactured component is coated inside and out. See Greenheck's Product Application Guides for a complete list of coatings available and their chemical resistance. Available on-line at

www.greenheck.com

Plenum Design Guidelines

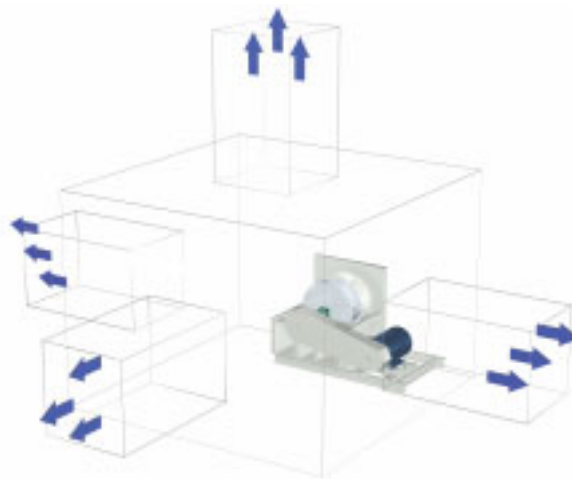
To assure optimum performance and be able to use the system effect coefficients below, the following guidelines should be adhered to in the plenum design:

1. Flexible connections at the inlet are recommended to isolate vibration. The inlet connection can be square (connected to the inlet panel) or round (connected to an optional inlet collar).
2. Plenum walls should be at least one-half of a wheel diameter away from the fan.
3. Dampers or coils should be at least three-quarters of a wheel diameter away from the fan to assure an even velocity distribution through them.
4. Fans operating in parallel within a plenum should have a minimum of one wheel diameter between the fan wheels. To provide maximum air volume with minimum plenum height in a plenum application, fans in parallel may be used. If the fans are started at different times, optional backstop clutches should be used to prevent wind milling of the fan not energized.

Fans operating in parallel should not be selected near the top of the fan curve or unstable operation may result. See AMCA Publication 201 for additional information on this subject.

Duct System Effect

Reduction in cataloged air performance due to a plenum around the fan is called a system effect. System effect is a pressure loss which must be added to the total external static pressure of the duct system in order to make the proper fan selection from catalog data. The pressure loss calculation is based on the velocity of the air in the discharge ductwork. As shown below, it is derived by multiplying the appropriate coefficient by the velocity pressure.

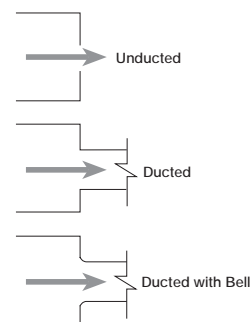


$$\text{SYSTEM EFFECT PRESSURE LOSS (in. WG)} = \text{Co} \times \text{Velocity Pressure (in. WG)} = \text{Co} \times \text{Air Density [lb/ft}^3\text{]} \times (\text{Duct Velocity [fpm]/1096})^2$$

In a properly sized plenum, the system effect coefficients (Co) depend on the direction of air discharge and the duct connection configuration. On fans with multiple discharges, choose the one with the highest loss coefficient for calculating the system effect.

System Effect Coefficients	Co	
	Radial	Axial
Unducted	2.0	2.3
Ducted	1.5	1.8
Ducted w/Bell	1.1	1.4

Discharge Configurations



Selection Example:

An 18-QEP is selected to deliver 6500 CFM at 5.91 in. total external static pressure at standard air density (0.075 lb/ft³). The plenum is adequately sized and has two radial ducted discharges that measure 20 in. x 24 in. (3.33 ft² each duct)

Outlet Velocity in duct = 6500 CFM / (2 x 3.33 ft²) = 975 fpm

From chart, with a Ducted Radial discharge, Co = 1.5

System Effect pressure loss (from formula above) = 1.5 x (0.075) x (975/1096)² = 0.09 in. static pressure

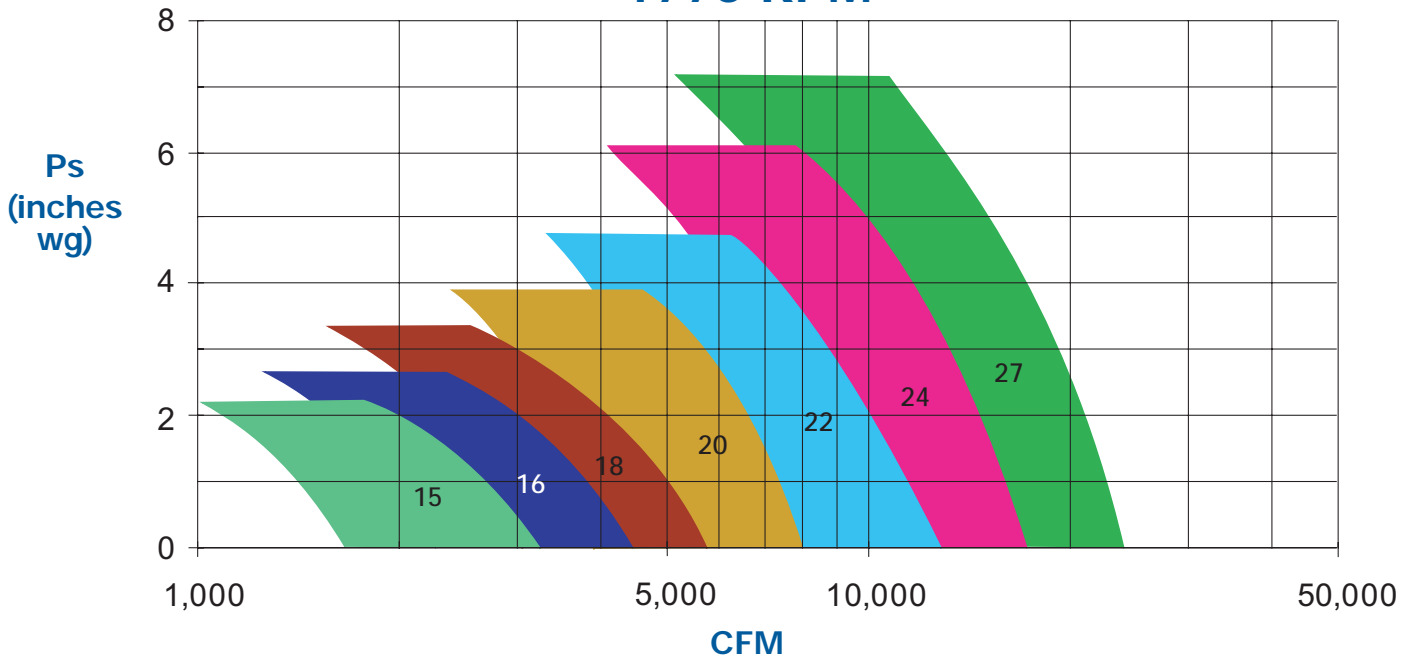
Required performance selection: 6500 CFM at 5.91 in. + 0.09 in. or 6.0 in. static pressure

DIRECT DRIVE SELECTIONS

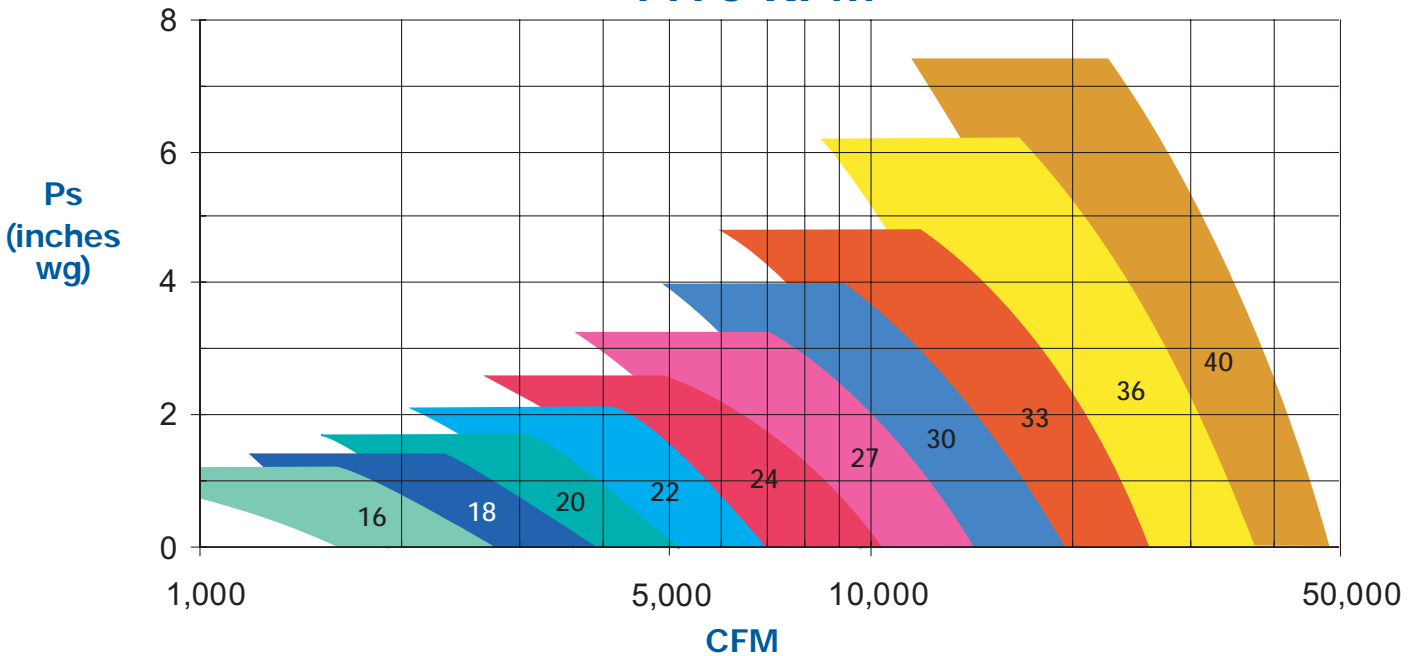
Direct drive units (arrangement 4) use partial wheel width and multiple motor speeds to attain multiple performances. The quick select charts below and on the following page are a convenient method for selecting a fan for a required performance. Colored bands for a given size in each chart represent the entire operating range available for that size and speed.



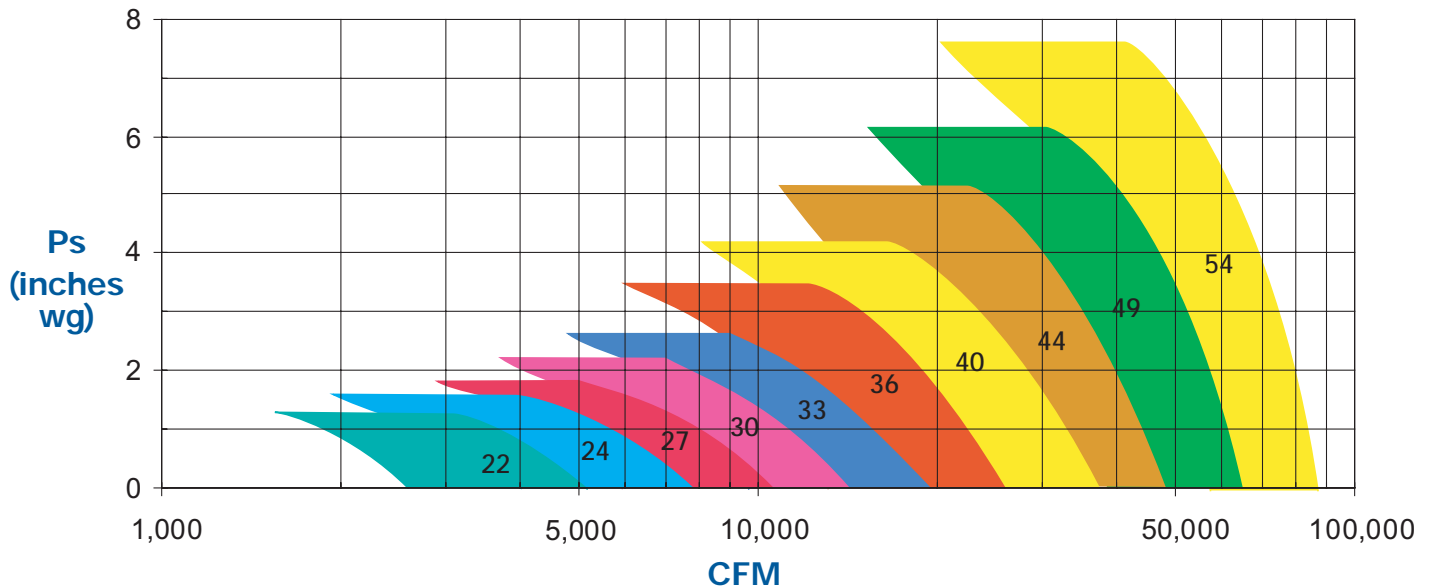
1770 RPM



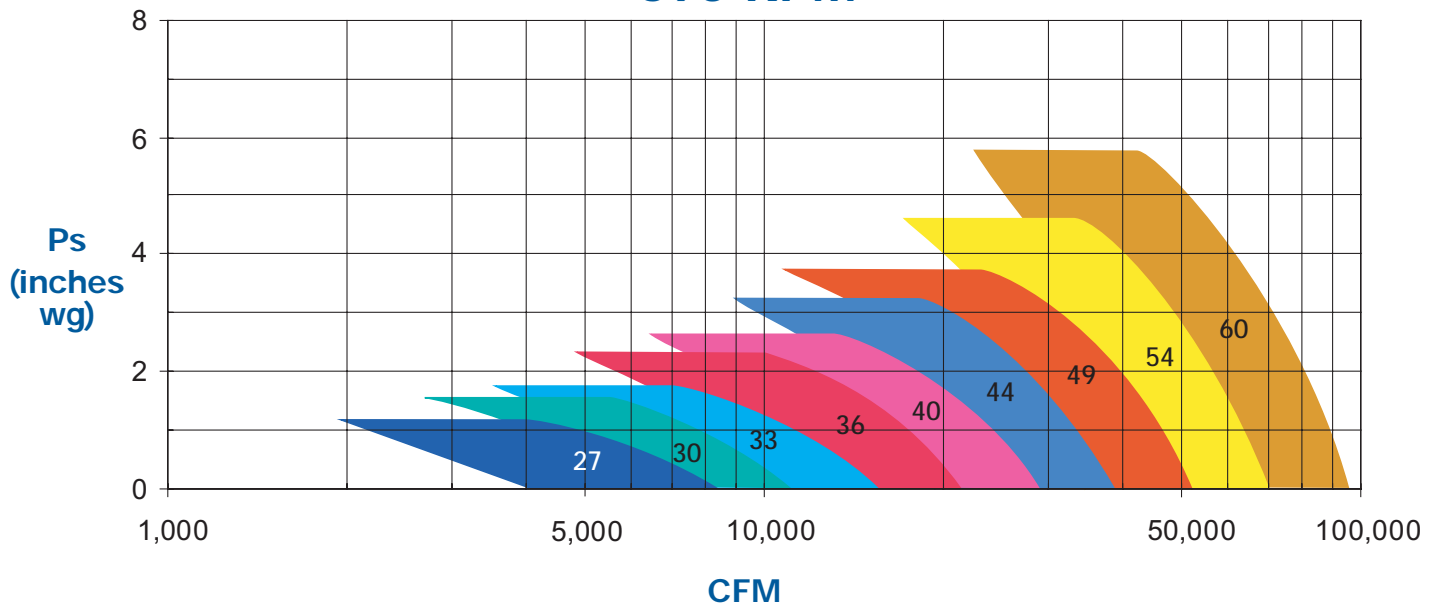
1170 RPM



870 RPM



690 RPM



Direct Drive: Percent Wheel Width

The centrifugal wheels for direct drive units are optimized for performance requirements by the use of partial wheel widths. This is necessary because the fan RPM is fixed and identical to the motor RPM. By adjusting the physical wheel size, the amount of air that the fan is capable of moving changes. QEP wheel widths are available in 5% increments from 50 - 100% width.

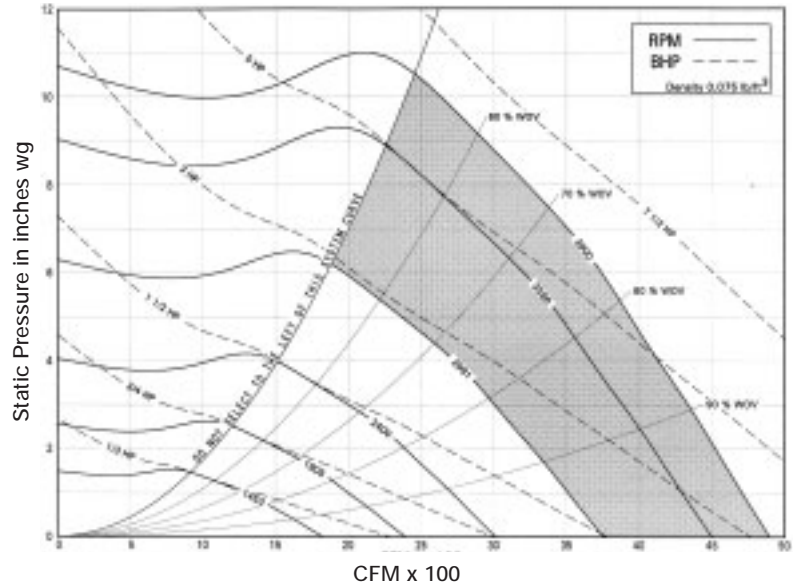
Applications involving the use of a VFD can in effect simulate a partial wheel width. Selecting a performance using a higher percentage wheel width and then slowing down the motor rpm reduces the speed of the wheel as well as the amount of air movement. This method allows for system balancing and can accommodate future performances if the initial selection is sized for that future performance.

Specifications

Maximum Class I Fan RPM = 2991
 Maximum Class II Fan RPM = 3900

Maximum Motor on Frame Size = 184T
 Wheel Diameter = 15.00 in.
 Minimum Motor Starting HP = 1/3

Maximum Bhp = (Fan RPM / 2097)³
 Outlet Velocity (FPM) = CFM / 1.12
 Tip Speed (FPM) = Fan RPM x 3.93
 % WOV = (CFM x 100) / (Fan RPM x 1.26)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
2000	1785	1904	0.58	2157	0.99	2399	1.44	2620	1.92	2820	2.43	3006	2.94							
2130	1901	1992	0.65	2232	1.07	2465	1.54	2682	2.04	2879	2.57	3062	3.11	3234	3.66					
2260	2017	2081	0.73	2316	1.16	2536	1.65	2745	2.17	2941	2.71	3120	3.28	3290	3.85	3450	4.44			
2390	2133	2171	0.81	2401	1.26	2608	1.76	2809	2.31	3003	2.87	3181	3.45	3346	4.06	3506	4.66	3657	5.28	
2520	2250	2262	0.89	2486	1.37	2681	1.88	2879	2.44	3066	3.03	3243	3.63	3407	4.25	3562	4.90	3712	5.53	
2650	2366	2355	0.99	2573	1.48	2760	2.00	2951	2.58	3130	3.19	3305	3.81	3468	4.46	3622	5.12	3768	5.80	
2780	2482	2449	1.09	2660	1.61	2845	2.15	3023	2.73	3199	3.36	3368	4.01	3530	4.67	3683	5.35	3827	6.05	
2910	2598	2544	1.20	2747	1.74	2929	2.30	3096	2.89	3270	3.53	3431	4.21	3593	4.89	3744	5.59	3888	6.31	
3040	2714	2640	1.32	2836	1.87	3014	2.45	3174	3.06	3342	3.72	3502	4.41	3657	5.12	3807	5.83			
3170	2830	2736	1.45	2925	2.02	3101	2.62	3259	3.24	3415	3.91	3573	4.62	3721	5.35	3870	6.09			
3300	2946	2832	1.58	3015	2.18	3187	2.80	3343	3.44	3488	4.11	3644	4.83	3791	5.59					
3430	3062	2929	1.73	3105	2.34	3275	2.99	3428	3.65	3569	4.33	3717	5.06	3862	5.83					

		Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]										Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]									
RPM	% WOV	1	2	3	4	5	6	7	8	LwiA	RPM	% WOV	1	2	3	4	5	6	7	8	LwoA
1200	100	76	70	73	66	62	62	58	47	70	1200	100	72	67	73	67	66	65	64	54	72
	80	75	68	68	63	61	60	54	45	67	80	71	66	71	66	65	65	61	53	71	
	60	77	69	72	63	57	55	53	46	67	60	70	67	70	66	64	65	61	54	71	
	50	77	69	74	63	56	55	54	47	68	50	70	67	70	66	63	65	60	54	71	
1600	100	82	72	74	72	67	65	64	56	74	1600	100	78	70	74	73	72	71	69	63	78
	80	77	71	73	70	64	64	61	53	72	80	77	69	74	72	70	69	68	61	76	
	60	75	69	73	70	62	61	59	54	71	60	77	69	72	74	68	69	66	61	76	
	50	75	70	74	70	62	60	60	55	71	50	78	70	75	73	68	68	66	62	76	
2200	100	86	77	74	84	74	73	71	70	83	2200	100	79	72	75	80	80	79	78	75	85
	80	86	78	74	85	71	71	69	64	83	80	83	73	74	79	77	77	74	71	83	
	60	84	77	75	82	70	70	67	64	81	60	83	73	74	79	76	76	73	70	82	
	50	85	77	79	81	70	68	67	64	80	50	81	74	78	78	76	75	72	70	82	
2900	100	80	82	80	86	79	79	78	78	87	2900	100	87	81	80	86	85	85	84	84	91
	80	77	81	79	89	77	78	77	74	88	80	88	82	81	85	82	82	82	79	89	
	60	76	79	79	87	77	77	75	71	86	60	90	81	82	85	82	81	81	77	88	
	50	77	79	80	88	77	75	74	72	86	50	91	83	82	87	82	81	79	77	89	
3900	100	86	90	89	90	90	85	85	84	94	3900	100	92	92	89	90	93	91	91	90	98
	80	82	88	88	92	91	84	84	81	94	80	93	94	89	91	91	89	88	87	96	
	60	81	86	87	91	89	83	82	79	93	60	96	94	89	91	91	88	88	85	96	
	50	82	87	88	91	90	82	81	80	94	50	96	95	90	92	92	88	87	84	96	

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

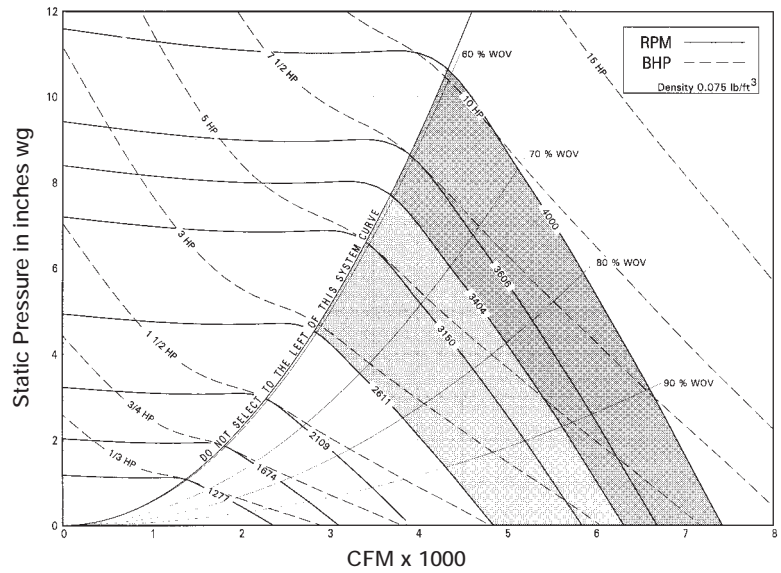
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 2611
 Maximum Class II Fan RPM = 3404
 Maximum Class III Fan RPM = 4000

Maximum Motor on Frame Size = 213T
 Wheel Diameter = 15.00 in.
 Minimum Motor Starting HP = 1/3

Maximum Bhp = (Fan RPM / 1842)³
 Outlet Velocity (FPM) = CFM / 1.72
 Tip Speed (FPM) = Fan RPM x 3.93
 % WOV = (CFM x 100) / (Fan RPM x 1.86)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
3100	1802	1956	0.95	2196	1.53	2409	2.14	2605	2.77	2784	3.44									
3290	1912	2044	1.06	2277	1.67	2485	2.31	2673	2.97	2851	3.66	3014	4.38							
3480	2023	2134	1.18	2359	1.82	2560	2.49	2744	3.18	2918	3.89	3079	4.63							
3670	2133	2224	1.32	2442	1.98	2636	2.68	2817	3.39	2986	4.14	3146	4.90	3295	5.70					
3860	2244	2316	1.46	2527	2.16	2716	2.88	2893	3.63	3056	4.40	3213	5.19	3361	6.00	3501	6.85			
4050	2354	2409	1.61	2612	2.34	2797	3.10	2969	3.87	3129	4.67	3282	5.48	3428	6.32	3567	7.19	3698	8.08	
4240	2465	2503	1.77	2700	2.53	2880	3.32	3045	4.14	3205	4.95	3352	5.80	3496	6.66	3634	7.55	3764	8.46	
4430	2575	2597	1.94	2787	2.74	2963	3.56	3125	4.40	3280	5.25	3426	6.12	3565	7.02	3701	7.93	3830	8.86	
4620	2686	2692	2.13	2876	2.96	3047	3.81	3206	4.68	3356	5.57	3500	6.46	3636	7.38	3769	8.32	3897	9.28	
4810	2796	2787	2.33	2965	3.20	3131	4.08	3288	4.97	3433	5.90	3576	6.82	3710	7.77	3838	8.74	3965	9.72	
5000	2906	2883	2.55	3055	3.45	3218	4.35	3370	5.28	3513	6.24	3652	7.20	3784	8.17	3911	9.16			
5190	3017	2979	2.78	3145	3.72	3305	4.65	3454	5.61	3595	6.59	3728	7.59	3860	8.58	3985	9.60			

		Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]										Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]									
RPM	% WOV	1	2	3	4	5	6	7	8	LwiA	RPM	% WOV	1	2	3	4	5	6	7	8	LwoA
1200	100	84	78	73	69	63	62	57	48	71	1200	100	68	80	73	69	71	70	64	55	76
	80	86	86	77	66	61	61	53	46	74	80	69	77	72	67	70	69	61	53	75	
	60	82	87	72	65	58	57	52	47	73	60	70	75	70	66	67	66	61	54	72	
	50	83	87	72	64	57	56	52	47	73	50	70	75	68	65	66	66	61	54	72	
1600	100	73	78	75	73	68	67	65	56	75	1600	100	73	75	81	75	75	75	74	63	81
	80	75	75	74	70	64	64	61	54	72	80	74	75	81	73	73	71	68	61	79	
	60	73	74	73	70	63	63	59	55	71	60	73	76	78	72	71	70	67	61	77	
	50	74	73	73	69	63	63	59	56	71	50	73	76	77	72	71	70	67	61	77	
2200	100	75	79	75	86	75	74	73	68	85	2200	100	77	76	78	85	83	80	78	74	88
	80	74	79	75	88	72	71	68	64	85	80	77	77	79	86	80	78	75	70	86	
	60	73	80	75	88	70	69	67	64	85	60	78	76	77	83	78	76	74	69	84	
	50	74	80	76	87	70	69	67	65	84	50	78	76	79	82	78	76	74	69	84	
2900	100	84	84	79	86	80	79	78	78	87	2900	100	87	82	83	91	89	88	86	85	95
	80	89	86	78	86	77	77	75	74	86	80	87	84	83	92	86	84	81	79	92	
	60	85	86	78	86	76	76	74	72	86	60	86	83	82	88	84	83	80	77	90	
	50	84	86	78	86	76	75	73	72	86	50	87	83	82	88	84	82	80	76	90	
4000	100	90	93	90	91	91	86	85	85	95	4000	100	93	93	91	95	98	95	94	93	102
	80	96	97	90	90	89	84	83	82	94	80	93	95	92	96	97	92	90	87	100	
	60	92	95	90	90	89	83	82	80	93	60	92	94	91	93	94	91	89	85	98	
	50	91	94	89	90	89	83	81	80	93	50	93	94	91	93	94	90	88	85	98	

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

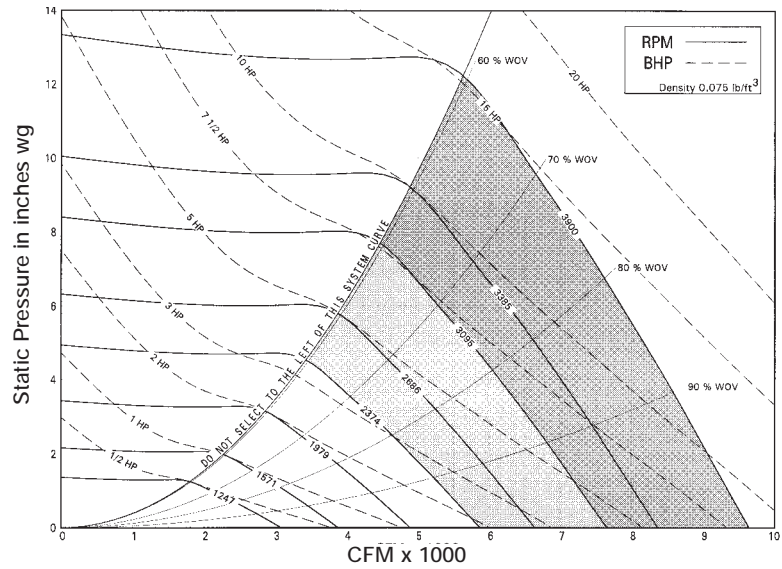
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 2374
 Maximum Class II Fan RPM = 3095
 Maximum Class III Fan RPM = 3900

Maximum Motor on Frame Size = 215T
 Wheel Diameter = 16.50 in.
 Minimum Motor Starting HP = 1/3

Maximum Bhp = $(\text{Fan RPM} / 1571)^3$
 Outlet Velocity (FPM) = $\text{CFM} / 2.08$
 Tip Speed (FPM) = $\text{Fan RPM} \times 4.32$
 % WOV = $(\text{CFM} \times 100) / (\text{Fan RPM} \times 2.47)$



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
3700	1778	1760	1.12	1980	1.82	2175	2.54	2355	3.30	2518	4.10									
4120	1980	1908	1.37	2115	2.13	2300	2.92	2468	3.74	2628	4.59	2776	5.48							
4540	2182	2058	1.66	2253	2.49	2428	3.35	2590	4.23	2741	5.14	2886	6.08	3021	7.05					
4960	2384	2212	1.99	2395	2.89	2562	3.81	2717	4.77	2862	5.73	3000	6.73	3133	7.76	3258	8.81	3377	9.90	
5380	2586	2369	2.37	2541	3.34	2700	4.33	2847	5.36	2988	6.39	3120	7.44	3246	8.53	3370	9.63	3487	10.8	
5800	2788	2526	2.80	2688	3.85	2840	4.90	2982	5.99	3115	7.11	3245	8.22	3367	9.36	3484	10.5	3599	11.7	
6220	2990	2685	3.29	2838	4.42	2984	5.53	3120	6.68	3249	7.86	3371	9.06	3492	10.3	3605	11.5	3714	12.7	
6640	3192	2846	3.84	2991	5.03	3130	6.22	3260	7.44	3385	8.68	3503	9.95	3618	11.2	3730	12.5	3836	13.8	
7060	3394	3007	4.45	3146	5.71	3277	6.99	3403	8.26	3523	9.57	3638	10.9	3748	12.3	3856	13.6			
7480	3596	3169	5.13	3302	6.46	3427	7.82	3548	9.16	3664	10.5	3776	11.9	3883	13.3					
7900	3798	3332	5.89	3459	7.28	3578	8.72	3695	10.1	3807	11.6									
8320	4000	3495	6.72	3617	8.18	3732	9.69	3844	11.2											

RPM	% WOV	Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]										
		1	2	3	4	5	6	7	8	LwiA	1	2	3	4	5	6	7	8	LwoA		
1100	100	84	78	73	69	64	62	57	48	72	1100	100	71	80	73	70	72	71	64	54	76
	80	87	86	77	67	62	61	53	46	74	80	71	77	73	69	71	69	61	53	75	
	60	84	86	72	65	59	58	52	47	72	60	72	76	70	67	68	66	61	54	73	
	50	85	86	72	64	58	57	52	48	72	50	72	75	69	67	67	66	61	54	72	
1500	100	75	80	77	74	69	68	66	57	77	1500	100	75	78	83	77	77	76	74	64	83
	80	77	77	76	71	66	65	62	55	74	80	75	77	83	75	74	73	69	61	80	
	60	75	75	75	71	64	64	60	56	73	60	75	78	80	73	72	72	68	62	78	
	50	76	75	75	70	64	64	60	57	73	50	75	78	79	73	72	71	68	62	78	
2000	100	76	79	77	86	75	75	73	68	85	2000	100	78	77	80	86	83	80	78	75	88
	80	76	79	78	87	73	72	68	65	84	80	78	78	81	86	80	78	75	71	87	
	60	75	80	78	86	70	70	67	65	84	60	78	77	79	83	78	77	74	69	84	
	50	75	81	78	85	70	69	67	65	83	50	79	77	80	82	78	76	74	70	84	
2800	100	86	86	82	89	82	81	80	80	90	2800	100	89	85	86	94	91	90	88	87	97
	80	92	88	81	88	79	79	77	76	88	80	90	87	86	94	88	86	83	81	95	
	60	88	88	81	89	78	78	76	74	88	60	88	86	85	91	86	85	82	79	92	
	50	87	88	81	89	78	77	75	74	88	50	89	86	84	91	86	84	82	78	92	
3900	100	93	96	92	93	93	88	88	88	97	3900	100	96	96	94	98	100	98	96	95	105
	80	99	99	92	92	92	86	86	84	96	80	96	98	95	98	99	95	92	90	103	
	60	94	98	93	92	91	85	84	82	95	60	95	96	94	96	96	93	91	88	100	
	50	94	97	92	92	91	85	84	82	95	50	96	97	93	96	96	92	90	87	100	

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of apertures in the airstream.

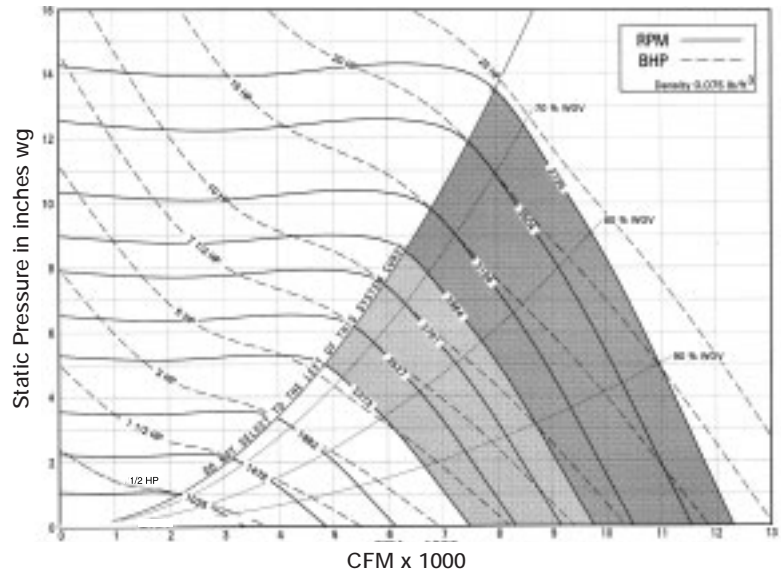
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 2273
 Maximum Class II Fan RPM = 2964
 Maximum Class III Fan RPM = 3735

Maximum Motor on Frame Size = 215T
 Wheel Diameter = 18.25 in.
 Minimum Motor Starting HP = 1/3

Maximum Bhp = (Fan RPM / 1291)³
 Outlet Velocity (FPM) = CFM / 2.54
 Tip Speed (FPM) = Fan RPM x 4.78
 % WOV = (CFM x 100) / (Fan RPM x 3.30)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
4600	1811	1590	1.58	1763	2.40	1927	3.28	2083	4.18											
5110	2011	1729	1.97	1887	2.84	2039	3.80	2184	4.79	2322	5.80									
5620	2212	1870	2.44	2014	3.35	2156	4.38	2292	5.46	2423	6.55	2548	7.66							
6130	2413	2012	2.98	2148	3.96	2280	5.04	2405	6.19	2529	7.37	2649	8.56	2764	9.77					
6640	2614	2157	3.62	2285	4.66	2406	5.78	2526	7.00	2642	8.25	2754	9.55	2865	10.8	2972	12.1	3074	13.5	3174
7150	2814	2303	4.34	2424	5.45	2536	6.61	2650	7.89	2758	9.22	2866	10.6	2970	12.0	3074	13.4	3174	14.8	3274
7660	3015	2449	5.17	2564	6.35	2671	7.57	2777	8.88	2881	10.3	2980	11.7	3082	13.2	3179	14.7	3275	16.2	3375
8170	3216	2597	6.11	2706	7.35	2809	8.64	2905	9.98	3006	11.4	3103	13.0	3196	14.5	3291	16.1	3381	17.7	3477
8680	3417	2745	7.16	2849	8.47	2947	9.83	3040	11.2	3133	12.7	3227	14.3	3316	15.9	3404	17.5	3493	19.2	3579
9190	3618	2894	8.33	2993	9.71	3087	11.1	3177	12.6	3263	14.1	3353	15.7	3440	17.4	3524	19.1	3607	20.9	3683
9700	3818	3044	9.64	3139	11.1	3229	12.6	3315	14.1	3398	15.7	3480	17.3	3565	19.1	3647	20.8	3726	22.7	3793
10210	4019	3194	11.1	3285	12.6	3371	14.1	3455	15.8	3535	17.4	3612	19.1	3692	20.8					

RPM	% WOV	Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									LwiA	Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]									LwoA
		1	2	3	4	5	6	7	8	1		2	3	4	5	6	7	8			
1000	100	76	71	77	71	77	67	57	48	79	71	71	79	75	80	73	65	55	82	82	
	80	73	69	77	68	70	60	50	44	73	69	72	77	70	72	65	59	55	75	75	
	60	73	67	73	65	61	56	50	46	68	67	76	74	69	66	65	59	55	72	72	
	50	73	69	70	64	59	56	51	47	67	73	80	76	69	66	64	59	55	73	73	
1400	100	76	75	85	79	80	78	69	58	84	75	76	85	83	84	76	64	88	88		
	80	74	75	82	74	72	72	61	54	79	74	76	83	79	77	76	65	60	82		
	60	73	73	80	71	66	66	59	56	75	76	74	81	79	73	73	65	61	80		
	50	73	73	79	70	65	65	60	57	74	74	76	82	78	72	71	64	61	80		
1900	100	79	80	87	98	84	85	78	73	96	80	83	88	93	90	89	83	81	95		
	80	78	78	84	91	79	79	71	64	90	81	82	85	89	84	84	75	69	90		
	60	78	77	82	87	74	74	69	65	85	81	81	84	87	81	80	75	70	88		
	50	76	76	82	86	73	73	69	66	84	82	81	85	88	81	80	74	71	88		
2600	100	87	86	89	97	91	92	86	82	98	85	90	91	101	98	97	91	88	103		
	80	85	84	87	94	86	86	81	74	94	87	89	90	95	92	91	84	78	97		
	60	82	83	85	90	82	81	78	74	90	87	90	89	93	89	88	84	79	95		
	50	82	82	83	92	81	81	78	76	91	86	89	88	92	88	87	83	79	94		
3735	100	94	96	96	101	102	99	97	93	106	92	98	100	105	108	105	102	98	112		
	80	92	95	95	99	99	94	92	86	102	93	98	99	101	102	99	95	90	106		
	60	89	93	93	96	94	90	88	85	98	93	98	98	100	100	97	94	90	104		
	50	88	92	92	96	95	89	88	85	99	92	97	98	99	98	96	93	89	103		

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

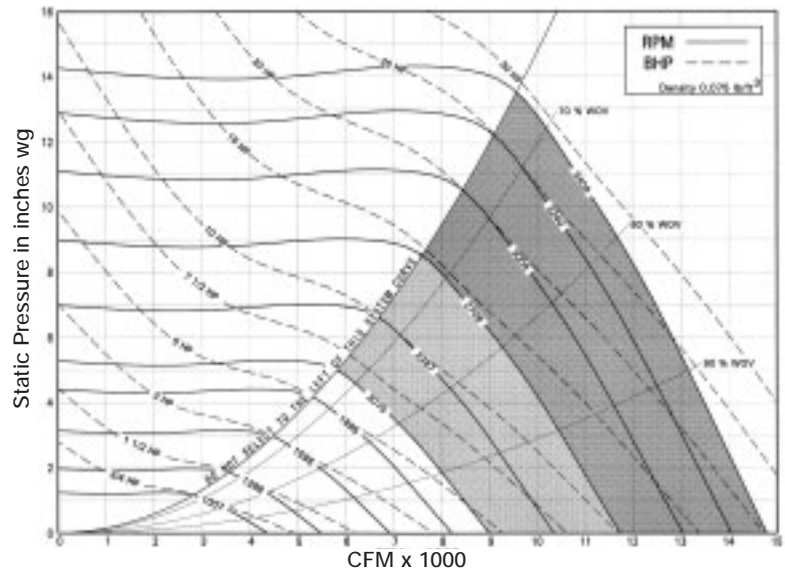
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 2075
 Maximum Class II Fan RPM = 2706
 Maximum Class III Fan RPM = 3409

Maximum Motor on Frame Size = 254T
 Wheel Diameter = 20.00 in.
 Minimum Motor Starting HP = 1/3

Maximum Bhp = (Fan RPM / 1108)³
 Outlet Velocity (FPM) = CFM / 3.05
 Tip Speed (FPM) = Fan RPM x 5.24
 % WOV = (CFM x 100) / (Fan RPM x 4.34)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
5500	1803	1446	1.88	1604	2.86	1755	3.92	1897	5.00											
6110	2003	1572	2.35	1717	3.39	1856	4.53	1989	5.72	2115	6.93									
6720	2203	1700	2.90	1832	4.00	1962	5.23	2087	6.52	2207	7.82	2321	9.15							
7330	2403	1829	3.55	1953	4.71	2074	6.01	2190	7.38	2302	8.80	2413	10.2	2518	11.7					
7940	2603	1961	4.30	2078	5.55	2189	6.89	2298	8.34	2405	9.85	2507	11.4	2609	12.9	2707	14.5	2800	16.1	
8550	2803	2093	5.16	2204	6.49	2306	7.87	2411	9.41	2510	11.0	2609	12.6	2704	14.3	2799	16.0	2890	17.6	
9160	3003	2226	6.14	2331	7.55	2430	9.02	2526	10.6	2622	12.3	2713	14.0	2806	15.7	2894	17.5	2983	19.3	
9770	3203	2361	7.26	2460	8.74	2554	10.3	2643	11.9	2736	13.6	2823	15.4	2909	17.3	2996	19.2	3078	21.1	
10380	3403	2495	8.50	2590	10.1	2680	11.7	2765	13.4	2851	15.2	2936	17.0	3018	19.0	3099	20.9	3180	22.9	
10990	3603	2631	9.89	2721	11.5	2807	13.3	2890	15.0	2968	16.8	3051	18.8	3130	20.8	3207	22.8	3283	24.9	
11600	3803	2767	11.4	2853	13.2	2936	15.0	3015	16.8	3091	18.7	3166	20.6	3244	22.7	3319	24.9	3391	27.0	
12210	4003	2903	13.2	2986	15.0	3065	16.8	3142	18.7	3215	20.7	3285	22.7	3359	24.8					

RPM	% WOV	Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]								
		1	2	3	4	5	6	7	8	LwiA	1	2	3	4	5	6	7	8	LwoA
900	100	75	73	77	72	76	66	56	47	78	71	73	79	76	79	72	64	54	81
	80	73	71	76	69	69	59	50	43	73	80	70	73	76	71	72	65	59	75
	60	72	69	72	65	61	56	50	46	68	60	73	75	74	69	66	64	59	72
	50	73	69	70	64	59	56	51	47	66	50	75	79	75	69	66	64	59	73
1200	100	75	76	84	78	79	75	66	55	83	74	78	85	82	83	80	73	60	87
	80	73	76	82	73	72	69	59	52	78	80	74	77	82	78	76	73	63	81
	60	72	74	79	70	65	64	58	54	74	60	75	75	80	77	72	70	63	79
	50	73	74	78	69	64	63	59	55	73	50	74	77	81	76	72	69	63	78
1700	100	80	81	90	96	85	84	77	73	95	81	84	89	93	90	89	83	81	95
	80	79	79	86	90	79	79	71	63	89	80	81	83	86	88	84	83	74	90
	60	78	79	83	85	74	74	69	64	84	60	82	82	84	87	81	80	74	88
	50	76	77	83	84	73	73	69	65	83	50	83	82	86	87	81	79	74	88
2300	100	87	86	90	96	91	91	86	82	98	86	86	90	93	101	98	96	91	103
	80	85	85	88	94	86	85	80	73	94	80	87	90	91	95	92	90	83	97
	60	83	83	86	89	82	81	78	74	89	60	87	90	89	93	89	88	83	95
	50	82	83	85	91	81	81	78	75	90	50	86	89	89	92	88	87	83	94
3409	100	95	97	98	101	102	100	97	93	106	94	94	99	101	106	108	106	102	112
	80	93	96	96	99	99	95	92	86	103	80	95	99	100	102	102	100	95	106
	60	90	94	94	96	94	90	88	85	99	60	95	99	99	100	100	97	94	104
	50	89	93	93	97	95	90	88	86	99	50	94	98	99	99	99	96	94	103

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

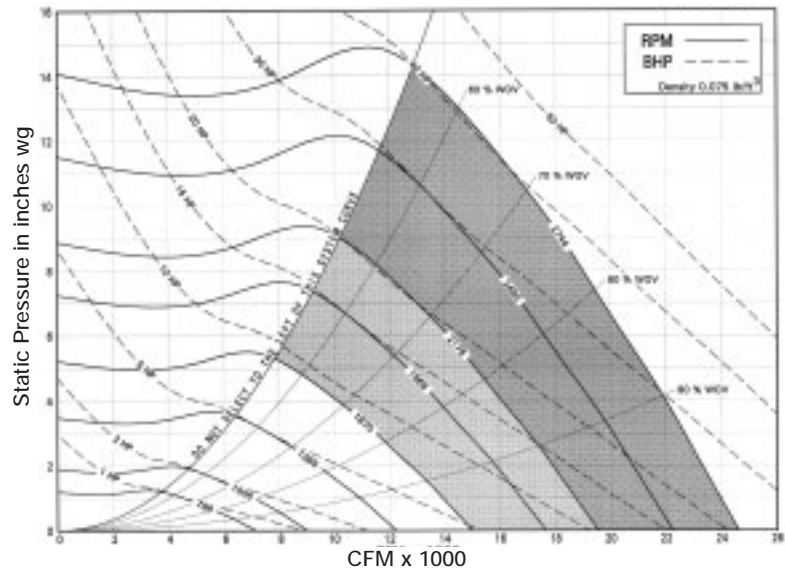
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 1670
 Maximum Class II Fan RPM = 2178
 Maximum Class III Fan RPM = 2744

Maximum Motor on Frame Size = 256T
 Wheel Diameter = 24.50 in.
 Minimum Motor Starting HP = 3/4

Maximum Bhp = $(\text{Fan RPM} / 798)^3$
 Outlet Velocity (FPM) = $\text{CFM} / 4.57$
 Tip Speed (FPM) = $\text{Fan RPM} \times 6.41$
 % WOV = $(\text{CFM} \times 100) / (\text{Fan RPM} \times 8.96)$



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
8200	1794	1106	2.17	1261	3.70	1403	5.38	1532	7.06	1656	8.82									
9120	1995	1191	2.59	1339	4.26	1472	6.07	1595	7.93	1710	9.81	1822	11.8	1925	13.8					
10040	2196	1279	3.09	1421	4.89	1545	6.80	1662	8.86	1772	10.9	1876	13.0	1979	15.1	2075	17.3			
10960	2398	1369	3.66	1505	5.60	1622	7.62	1734	9.78	1838	12.1	1939	14.3	2033	16.5	2128	18.9	2219	21.2	
11880	2599	1462	4.31	1590	6.38	1703	8.53	1808	10.8	1909	13.2	2005	15.7	2097	18.0	2185	20.5	2273	23.0	
12800	2800	1556	5.06	1676	7.24	1786	9.55	1886	11.9	1981	14.4	2075	17.0	2163	19.7	2249	22.2	2331	24.9	
13720	3002	1652	5.89	1763	8.20	1870	10.7	1967	13.1	2056	15.7	2147	18.4	2233	21.3	2315	24.1	2396	26.8	
14640	3203	1747	6.83	1851	9.26	1955	11.8	2050	14.5	2137	17.2	2221	20.0	2305	22.9	2385	25.9	2462	29.0	
15560	3404	1844	7.88	1942	10.4	2041	13.1	2134	16.0	2219	18.8	2299	21.7	2378	24.7	2457	27.8	2532	31.0	
16480	3606	1941	9.04	2035	11.7	2128	14.5	2218	17.5	2302	20.5	2380	23.5	2455	26.6	2530	29.8	2604	33.1	
17400	3807	2039	10.3	2129	13.1	2216	16.1	2304	19.1	2386	22.3	2463	25.4	2536	28.6	2605	31.9	2677	35.4	
18320	4008	2137	11.7	2223	14.7	2305	17.7	2390	20.9	2471	24.2	2546	27.5	2617	30.8	2686	34.3			

RPM	% WOV	Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]										
		1	2	3	4	5	6	7	8	LwiA	1	2	3	4	5	6	7	8	LwoA		
750	100	71	87	79	69	67	68	57	52	76	750	100	76	85	78	74	74	62	54	80	
	80	71	83	76	66	64	59	51	45	72	750	80	79	82	76	73	72	64	57	76	
	60	81	82	78	67	61	56	49	43	72	750	60	78	81	74	71	71	64	58	75	
	50	81	82	78	67	61	56	49	43	72	750	50	77	82	72	69	70	64	58	74	
1000	100	75	80	91	78	74	72	67	60	84	1000	100	75	83	90	85	81	78	73	63	87
	80	72	86	90	75	70	68	60	55	83	1000	80	73	84	87	82	77	73	65	60	84
	60	73	83	84	71	66	64	58	55	78	1000	60	77	85	84	80	75	70	64	62	82
	50	72	82	85	71	66	64	58	55	78	1000	50	78	85	83	80	74	69	64	64	81
1400	100	79	83	98	85	83	81	76	70	92	1400	100	82	84	101	94	91	86	82	74	97
	80	76	81	97	82	78	76	70	66	90	1400	80	79	83	98	90	87	82	76	70	93
	60	75	79	92	77	73	72	68	65	85	1400	60	81	83	93	85	83	78	73	70	89
	50	74	78	90	75	71	70	67	66	82	1400	50	82	83	91	83	81	77	71	70	87
2000	100	88	88	95	100	94	91	86	82	100	2000	100	89	91	98	105	102	96	91	88	106
	80	84	86	91	96	89	86	80	76	96	2000	80	88	90	95	102	97	92	85	81	102
	60	83	89	92	94	83	81	77	75	93	2000	60	91	94	94	96	92	86	81	79	97
	50	82	90	93	92	81	79	76	75	91	2000	50	94	95	96	93	90	84	80	78	95
2744	100	93	97	100	105	103	99	95	91	107	2744	100	94	99	102	110	110	106	101	96	113
	80	89	93	96	102	99	94	90	85	103	2744	80	93	98	101	108	107	101	96	90	110
	60	89	95	98	100	95	89	85	82	100	2744	60	97	101	102	102	101	96	91	87	105
	50	88	95	99	99	93	87	84	82	99	2744	50	100	104	104	100	98	94	89	86	103

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

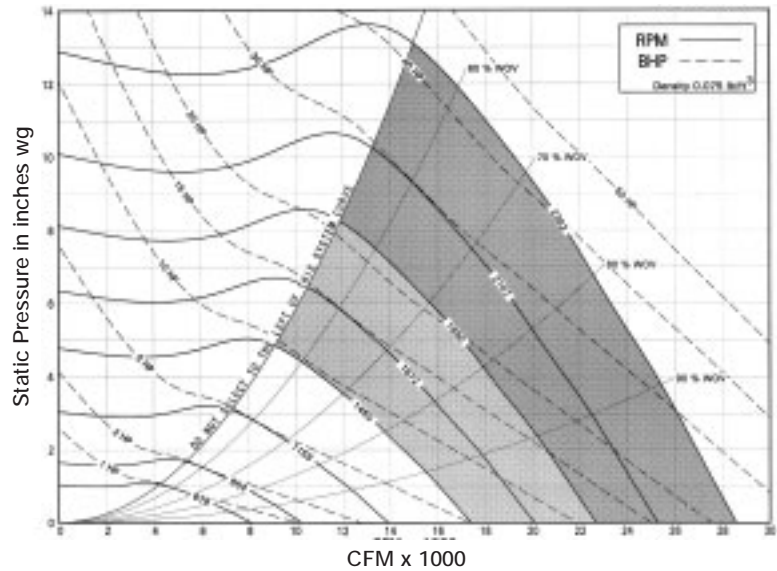
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 1450
 Maximum Class II Fan RPM = 1890
 Maximum Class III Fan RPM = 2382

Maximum Motor on Frame Size = 256T
 Wheel Diameter = 27.00 in.
 Minimum Motor Starting HP = 3/4

Maximum Bhp = $(\text{Fan RPM} / 678)^3$
 Outlet Velocity (FPM) = $\text{CFM} / 5.55$
 Tip Speed (FPM) = $\text{Fan RPM} \times 7.07$
 % WOV = $(\text{CFM} \times 100) / (\text{Fan RPM} \times 12.0)$



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																	
		1		2		3		4		5		6		7		8		9	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
10000	1801	1006	2.65	1147	4.52	1275	6.56	1391	8.61	1504	10.8								
11110	2001	1083	3.17	1218	5.19	1338	7.39	1449	9.66	1553	12.0	1654	14.3	1749	16.8				
12220	2201	1163	3.77	1291	5.96	1403	8.28	1510	10.8	1610	13.3	1702	15.8	1797	18.4	1884	21.1		
13330	2401	1244	4.46	1367	6.82	1473	9.27	1574	11.9	1669	14.7	1760	17.3	1845	20.1	1932	22.9	2014	25.8
14440	2601	1328	5.25	1443	7.76	1546	10.4	1641	13.1	1733	16.0	1820	19.0	1904	21.9	1983	24.9	2063	27.9
15550	2801	1413	6.14	1521	8.80	1621	11.6	1711	14.5	1798	17.5	1883	20.7	1963	23.9	2041	27.0	2115	30.2
16660	3001	1498	7.15	1600	9.96	1697	12.9	1785	16.0	1866	19.1	1948	22.4	2026	25.8	2101	29.3	2174	32.6
17770	3201	1585	8.29	1679	11.2	1774	14.4	1859	17.6	1939	20.9	2015	24.3	2091	27.8	2163	31.5	2233	35.2
18880	3401	1672	9.55	1761	12.7	1851	15.9	1935	19.3	2012	22.8	2085	26.3	2156	29.9	2228	33.7	2297	37.6
19990	3601	1760	11.0	1845	14.2	1930	17.6	2011	21.2	2087	24.8	2158	28.5	2226	32.2	2294	36.1	2361	40.2
21100	3801	1848	12.5	1929	15.9	2009	19.5	2088	23.2	2163	27.0	2232	30.8	2299	34.7	2362	38.7		
22210	4001	1936	14.1	2015	17.8	2089	21.5	2166	25.3	2239	29.3	2308	33.3	2372	37.4				

Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]											Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]										
RPM	% WOV	1	2	3	4	5	6	7	8	LwiA	RPM	% WOV	1	2	3	4	5	6	7	8	LwoA
650	100	74	88	76	68	67	65	56	50	76	650	100	78	86	77	74	74	71	60	53	79
	80	73	84	74	65	63	58	50	44	72		80	80	83	75	73	70	63	56	50	75
	60	81	83	75	66	60	54	47	42	71		60	79	82	74	71	69	62	56	51	74
	50	81	83	75	66	60	54	47	42	71		50	78	83	71	69	69	63	57	52	73
900	100	76	83	90	78	74	72	67	60	83	900	100	77	85	90	85	81	78	72	62	87
	80	75	87	89	75	70	67	60	55	82		80	76	86	87	82	77	72	65	60	84
	60	76	84	83	71	67	64	58	55	77		60	79	85	84	80	75	70	64	62	82
	50	74	83	83	71	66	64	58	55	77		50	80	85	83	80	74	69	65	65	81
1300	100	81	86	100	87	84	82	77	70	93	1300	100	84	88	103	95	92	87	82	75	98
	80	79	85	99	83	79	77	71	66	91		80	81	87	99	91	88	83	76	71	94
	60	77	82	94	78	75	73	69	66	86		60	83	86	95	87	84	79	74	71	90
	50	76	81	91	76	72	71	68	67	84		50	84	86	93	84	82	77	73	71	88
1700	100	87	89	95	98	92	89	85	80	98	1700	100	89	92	99	104	100	94	90	86	104
	80	83	86	92	94	87	84	79	75	94		80	88	91	96	101	95	90	84	79	101
	60	84	89	91	91	82	79	76	74	91		60	91	93	94	94	90	84	80	78	95
	50	83	90	92	89	80	78	75	74	89		50	94	95	94	92	88	83	79	77	93
2382	100	94	97	101	105	102	98	94	90	107	2382	100	95	100	104	110	109	105	100	95	113
	80	90	94	97	102	98	93	89	84	102		80	94	99	102	108	105	100	94	89	109
	60	90	96	98	99	93	88	85	82	99		60	98	102	102	102	100	95	90	86	104
	50	89	96	99	98	91	86	83	81	98		50	100	104	103	100	97	93	88	85	102

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

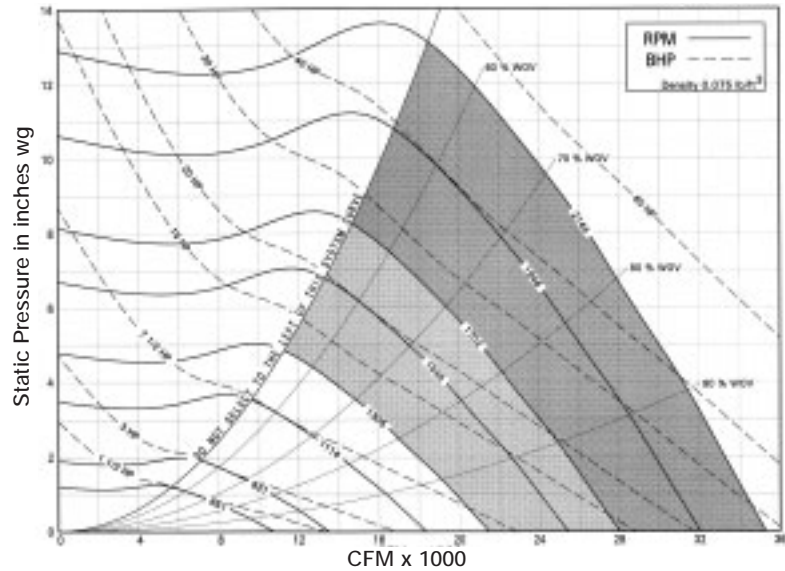
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 1305
 Maximum Class II Fan RPM = 1702
 Maximum Class III Fan RPM = 2144

Maximum Motor on Frame Size = 284T
 Wheel Diameter = 30.00 in.
 Minimum Motor Starting HP = 3/4

Maximum Bhp = $(\text{Fan RPM} / 569)^3$
 Outlet Velocity (FPM) = $\text{CFM} / 6.85$
 Tip Speed (FPM) = $\text{Fan RPM} \times 7.85$
 % WOV = $(\text{CFM} \times 100) / (\text{Fan RPM} \times 16.5)$



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
12300	1795	903	3.25	1030	5.55	1146	8.07	1251	10.6	1352	13.2									
13700	2000	974	3.90	1095	6.40	1203	9.12	1304	11.9	1397	14.7	1488	17.7	1573	20.7					
15100	2204	1047	4.66	1163	7.36	1263	10.2	1359	13.3	1449	16.4	1532	19.5	1617	22.7	1696	26.0			
16500	2408	1121	5.53	1232	8.46	1328	11.5	1418	14.7	1504	18.2	1586	21.5	1662	24.9	1740	28.4	1814	32.0	
17900	2613	1199	6.53	1303	9.64	1395	12.9	1480	16.3	1563	19.9	1640	23.6	1716	27.2	1787	30.9	1859	34.6	
19300	2817	1277	7.67	1374	11.0	1464	14.4	1545	18.0	1623	21.8	1699	25.7	1771	29.7	1841	33.5	1908	37.5	
20700	3021	1356	8.96	1446	12.4	1534	16.1	1613	19.9	1686	23.8	1759	27.9	1829	32.1	1896	36.4	1962	40.5	
22100	3226	1436	10.4	1520	14.1	1604	18.0	1681	22.0	1752	26.0	1820	30.2	1888	34.6	1954	39.2	2016	43.8	
23500	3430	1516	12.0	1595	15.9	1676	19.9	1751	24.2	1820	28.4	1886	32.8	1950	37.3	2013	42.0	2075	46.9	
24900	3635	1596	13.8	1672	17.9	1748	22.1	1821	26.5	1889	31.0	1953	35.6	2014	40.3	2074	45.1	2135	50.1	
26300	3839	1677	15.8	1750	20.0	1821	24.5	1892	29.1	1959	33.9	2022	38.6	2081	43.4	2138	48.4			
27700	4043	1759	17.9	1829	22.4	1895	27.0	1964	31.8	2029	36.8	2091	41.8							

RPM	% WOV	Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]								
		1	2	3	4	5	6	7	8	LwiA	1	2	3	4	5	6	7	8	LwoA
600	100	77	89	77	70	69	65	57	51	77	81	88	79	76	75	71	61	53	80
	80	76	86	74	67	64	58	50	45	73	80	84	77	74	71	63	57	51	76
	60	83	84	76	67	61	55	48	43	72	81	84	75	72	70	63	57	52	75
	50	83	84	76	67	61	55	48	43	72	80	84	72	71	70	64	58	53	74
800	100	78	86	88	78	75	72	66	59	83	79	87	90	85	81	77	71	62	87
	80	78	89	86	74	70	66	60	55	81	80	87	87	82	77	72	65	60	83
	60	78	84	81	71	67	63	58	55	76	81	85	84	80	75	69	65	63	81
	50	77	84	81	71	67	63	58	55	76	81	85	83	79	74	69	65	66	81
1100	100	81	89	97	85	83	80	75	68	91	84	91	101	94	90	86	80	73	97
	80	79	88	95	82	78	75	70	65	88	81	89	97	90	86	81	75	70	93
	60	77	85	90	77	74	71	68	65	83	83	88	93	86	82	77	73	70	89
	50	76	83	88	74	72	70	68	66	81	83	87	90	83	80	76	72	70	87
1500	100	87	91	97	97	92	89	84	80	98	89	94	101	103	99	94	90	86	104
	80	84	88	93	93	87	84	79	74	94	88	92	99	100	95	89	83	79	100
	60	85	90	92	89	82	79	76	74	90	92	94	94	94	90	84	80	78	95
	50	85	91	91	87	80	78	75	74	89	94	96	93	92	87	82	79	78	93
2144	100	95	99	102	106	102	98	94	90	107	97	101	106	111	109	105	100	96	113
	80	91	95	99	102	98	93	89	84	103	95	100	104	109	106	100	94	89	110
	60	92	97	100	99	93	88	85	82	100	99	103	103	103	100	95	90	86	104
	50	91	97	100	98	91	86	84	82	99	102	105	103	101	98	93	89	86	103

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

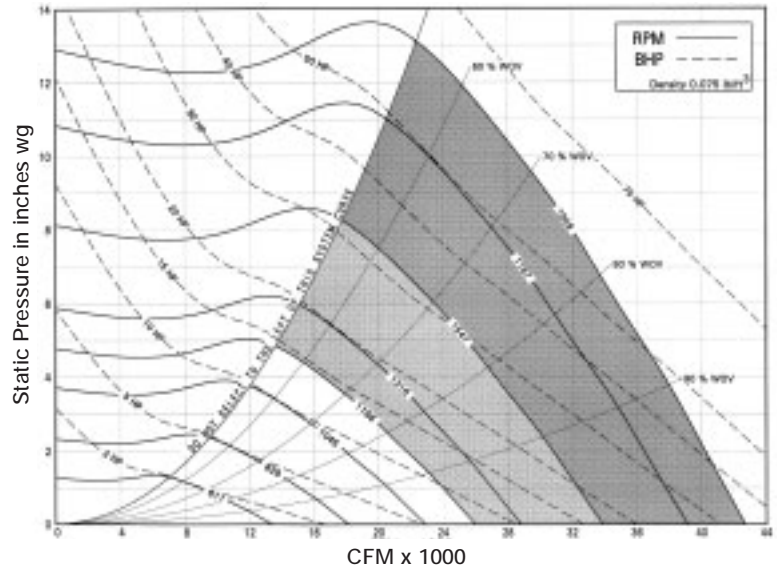
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Specifications

Maximum Class I Fan RPM = 1186
 Maximum Class II Fan RPM = 1547
 Maximum Class III Fan RPM = 1949

Maximum Motor on Frame Size = 286T
 Wheel Diameter = 33.00 in.
 Minimum Motor Starting HP = 1 1/2

Maximum Bhp = (Fan RPM / 485)³
 Outlet Velocity (FPM) = CFM / 8.29
 Tip Speed (FPM) = Fan RPM x 8.64
 % WOV = (CFM x 100) / (Fan RPM x 21.9)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
14900	1797	822	3.94	937	6.73	1042	9.77	1138	12.8	1230	16.0									
16600	2002	887	4.73	996	7.76	1094	11.1	1186	14.4	1271	17.9	1354	21.4	1431	25.1					
18300	2207	953	5.66	1058	8.93	1149	12.4	1236	16.2	1318	19.9	1394	23.6	1471	27.5	1542	31.5			
20000	2412	1021	6.72	1122	10.3	1208	13.9	1290	17.9	1368	22.0	1443	26.0	1512	30.2	1583	34.4	1650	38.7	
21700	2617	1092	7.94	1186	11.7	1270	15.6	1347	19.8	1422	24.1	1492	28.6	1561	33.0	1626	37.4	1691	42.0	
23400	2822	1163	9.32	1251	13.3	1333	17.5	1406	21.8	1477	26.4	1546	31.1	1611	36.0	1675	40.7	1736	45.5	
25100	3027	1235	10.9	1317	15.1	1396	19.6	1468	24.1	1534	28.9	1600	33.8	1664	38.9	1725	44.2	1785	49.2	
26800	3232	1308	12.7	1384	17.1	1461	21.8	1531	26.7	1595	31.6	1657	36.7	1719	42.0	1778	47.5	1835	53.1	
28500	3437	1381	14.6	1453	19.3	1526	24.2	1594	29.4	1657	34.5	1717	39.8	1775	45.3	1832	51.0	1888	56.8	
30200	3642	1454	16.8	1523	21.7	1592	26.9	1658	32.2	1720	37.7	1778	43.2	1833	48.9	1888	54.7	1943	60.8	
31900	3848	1528	19.2	1594	24.4	1658	29.7	1723	35.3	1784	41.1	1841	46.9	1895	52.7	1946	58.8			
33600	4053	1603	21.8	1666	27.3	1726	32.9	1789	38.7	1848	44.7	1904	50.8							

RPM	% WOV	Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]								
		1	2	3	4	5	6	7	8	LwiA	1	2	3	4	5	6	7	8	LwoA
550	100	80	88	77	71	70	65	57	51	76	83	87	79	77	76	71	61	53	80
	80	79	85	74	67	64	58	51	45	73	80	84	77	75	71	64	57	51	77
	60	84	84	75	67	61	55	49	43	72	82	83	75	73	70	63	58	52	75
	50	84	84	75	67	61	55	49	43	72	81	83	73	72	70	64	58	53	75
750	100	80	89	88	79	76	73	67	60	84	81	89	91	86	82	78	72	62	88
	80	81	91	87	75	72	67	61	56	81	80	88	83	78	72	66	61	84	
	60	80	86	82	72	68	64	59	56	77	83	86	85	81	76	70	66	83	
	50	79	86	82	72	68	64	60	57	77	83	86	85	80	75	70	67	82	
1050	100	84	92	97	87	85	82	76	70	92	86	95	102	96	92	87	82	74	98
	80	81	91	96	83	80	76	71	66	89	83	92	99	92	88	82	76	71	94
	60	80	88	91	79	76	73	70	67	85	85	91	94	87	84	79	74	71	90
	50	79	86	88	76	73	72	69	68	83	85	90	92	85	82	77	73	72	88
1400	100	89	93	99	98	93	90	85	81	99	91	96	103	105	100	95	91	87	105
	80	86	90	95	94	88	84	80	75	95	80	94	101	101	96	90	84	80	101
	60	87	92	94	90	83	80	77	75	91	83	95	96	95	90	85	81	79	96
	50	87	93	93	88	81	79	76	76	90	86	97	94	93	88	83	81	79	94
1949	100	96	100	104	106	103	99	95	90	107	98	102	108	112	110	105	100	96	114
	80	93	97	101	102	98	93	89	84	103	97	101	106	109	106	100	94	89	110
	60	93	98	101	99	93	89	86	83	100	101	104	103	103	100	95	90	87	105
	50	93	99	101	98	91	87	85	83	99	103	106	103	101	98	93	89	86	103

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

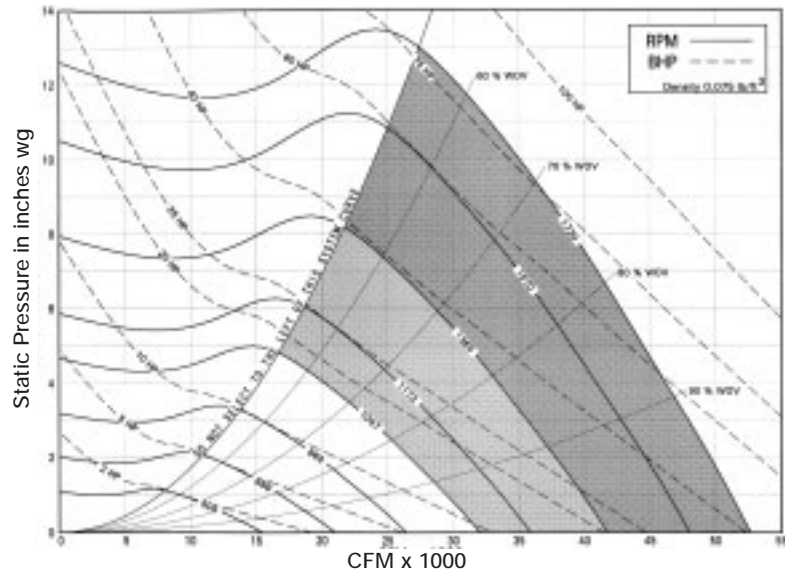
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 1047
 Maximum Class II Fan RPM = 1365
 Maximum Class III Fan RPM = 1720

Maximum Motor on Frame Size = 324T
 Wheel Diameter = 36.50 in.
 Minimum Motor Starting HP = 1 1/2

Maximum Bhp = (Fan RPM / 401)³
 Outlet Velocity (FPM) = CFM / 10.2
 Tip Speed (FPM) = Fan RPM x 9.56
 % WOV = (CFM x 100) / (Fan RPM x 30.6)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																	
		1		2		3		4		5		6		7		8		9	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
18300	1802	725	4.87	829	8.27	922	12.0	1007	15.8	1088	19.8								
20300	2000	781	5.80	878	9.48	966	13.5	1048	17.6	1123	21.9	1197	26.3	1265	30.9				
22300	2197	837	6.89	930	10.9	1013	15.1	1090	19.6	1164	24.1	1231	28.8	1299	33.7	1362	38.7		
24300	2394	895	8.12	983	12.4	1062	16.9	1136	21.7	1205	26.6	1272	31.5	1334	36.7	1397	41.9	1456	47.3
26300	2591	953	9.51	1037	14.1	1113	18.9	1184	23.9	1250	29.1	1314	34.5	1375	39.8	1433	45.4	1490	51.0
28300	2788	1012	11.1	1092	16.0	1165	21.1	1232	26.3	1297	31.8	1358	37.5	1417	43.3	1474	49.0	1528	54.9
30300	2985	1072	12.8	1149	18.1	1218	23.5	1283	29.0	1345	34.7	1404	40.7	1460	46.8	1516	53.0	1569	59.1
32300	3182	1133	14.8	1205	20.4	1273	26.1	1335	31.8	1394	37.8	1452	44.0	1507	50.4	1559	57.0	1611	63.6
34300	3379	1194	17.0	1263	22.9	1328	28.9	1388	35.0	1446	41.2	1500	47.6	1554	54.3	1605	61.1	1655	68.2
36300	3576	1255	19.4	1322	25.6	1384	31.9	1442	38.4	1498	44.9	1551	51.5	1602	58.4	1652	65.5	1701	72.7
38300	3773	1316	22.1	1381	28.6	1440	35.2	1497	42.0	1551	48.8	1603	55.7	1651	62.8	1701	70.1		
40300	3970	1379	25.0	1440	31.8	1498	38.8	1553	45.8	1605	53.0	1655	60.2	1703	67.5				

		Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]										
RPM	% WOV	1	2	3	4	5	6	7	8	LwiA	RPM	% WOV	1	2	3	4	5	6	7	8	LwoA
500	100	79	87	76	68	72	62	58	53	76	500	100	77	85	79	78	78	70	66	56	81
	80	77	84	73	63	62	56	53	49	71		80	76	85	75	74	73	66	62	55	77
	60	78	83	71	61	59	55	52	48	70		60	78	81	73	73	72	63	60	55	76
	50	81	79	70	62	60	55	53	49	68		50	80	80	72	73	72	61	59	55	75
700	100	83	95	84	76	78	74	68	62	84	700	100	79	92	85	84	83	78	75	68	87
	80	81	91	80	71	70	64	62	57	79		80	79	92	83	81	80	72	70	64	84
	60	80	90	78	68	67	62	59	57	77		60	81	89	84	81	79	71	67	63	83
	50	80	91	80	68	67	62	60	58	78		50	89	91	87	85	82	74	69	64	87
1000	100	86	95	100	87	85	83	78	74	94	1000	100	84	92	100	95	91	87	84	79	97
	80	86	93	100	83	79	75	71	68	92		80	84	90	98	92	87	82	80	75	94
	60	84	93	95	80	75	71	68	67	87		60	85	92	95	90	85	80	78	72	92
	50	84	96	96	80	75	71	69	67	89		50	88	98	96	91	87	81	78	73	93
1300	100	93	95	101	94	93	88	85	81	98	1300	100	92	96	104	102	99	93	90	87	104
	80	88	91	99	90	89	82	77	75	94		80	91	93	102	99	95	88	84	81	100
	60	86	89	97	87	85	77	75	74	91		60	93	95	100	95	92	85	82	78	97
	50	86	92	101	87	83	77	76	75	94		50	93	98	102	95	91	85	82	77	98
1720	100	98	101	105	103	99	96	93	89	105	1720	100	97	102	107	109	106	102	97	94	111
	80	93	97	103	100	95	91	85	82	101		80	96	100	104	107	102	97	92	88	107
	60	91	95	100	98	92	86	82	80	98		60	98	102	104	104	99	94	89	86	105
	50	90	97	104	100	91	86	82	81	100		50	98	103	107	105	98	94	89	85	105

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

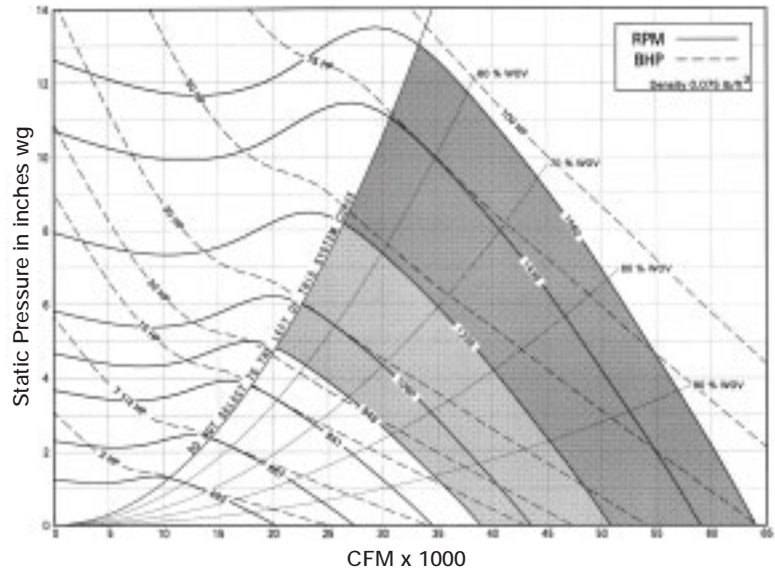
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 949
 Maximum Class II Fan RPM = 1238
 Maximum Class III Fan RPM = 1560

Maximum Motor on Frame Size = 326T
 Wheel Diameter = 40.25 in.
 Minimum Motor Starting HP = 2

Maximum Bhp = $(\text{Fan RPM} / 341)^3$
 Outlet Velocity (FPM) = $\text{CFM} / 12.3$
 Tip Speed (FPM) = $\text{Fan RPM} \times 10.5$
 % WOV = $(\text{CFM} \times 100) / (\text{Fan RPM} \times 41.0)$



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
22200	1799	657	5.89	751	10.0	836	14.5	912	19.1	986	24.0									
24700	2001	708	7.07	797	11.5	876	16.4	950	21.4	1018	26.6	1085	32.0	1147	37.6					
27200	2204	761	8.43	845	13.3	920	18.4	990	24.0	1056	29.4	1118	35.2	1179	41.1	1237	47.2			
29700	2406	814	9.97	894	15.2	966	20.7	1033	26.5	1095	32.6	1156	38.6	1212	44.8	1268	51.2	1322	57.8	
32200	2609	869	11.7	945	17.4	1013	23.2	1078	29.3	1137	35.7	1195	42.3	1250	48.8	1303	55.5	1354	62.5	
34700	2811	924	13.7	997	19.8	1062	25.9	1122	32.3	1181	39.1	1236	46.1	1289	53.1	1341	60.2	1390	67.4	
37200	3014	980	16.0	1049	22.4	1112	29.0	1170	35.7	1226	42.7	1279	50.0	1330	57.6	1380	65.1	1429	72.6	
39700	3217	1037	18.5	1102	25.3	1163	32.3	1219	39.4	1272	46.7	1324	54.3	1373	62.1	1421	70.2	1468	78.3	
42200	3419	1093	21.3	1156	28.5	1214	35.8	1269	43.4	1320	51.0	1369	58.8	1417	67.0	1464	75.4	1509	84.0	
44700	3622	1151	24.4	1211	31.9	1267	39.7	1319	47.7	1369	55.6	1417	63.8	1463	72.2	1508	80.9	1552	89.8	
47200	3824	1208	27.8	1266	35.7	1319	43.9	1371	52.2	1419	60.6	1465	69.1	1510	77.8	1554	86.8			
49700	4027	1266	31.5	1321	39.8	1373	48.5	1422	57.1	1469	66.0	1515	74.8	1558	83.9					

		Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]										
RPM	% WOV	1	2	3	4	5	6	7	8	LwiA	RPM	% WOV	1	2	3	4	5	6	7	8	LwoA
450	100	81	86	76	69	71	62	58	53	76	450	100	79	85	80	79	77	70	66	56	81
	80	79	83	72	64	62	56	53	49	71		80	78	84	76	75	72	66	61	54	77
	60	79	82	70	62	59	55	52	48	69		60	79	81	74	74	71	63	60	54	75
	50	81	79	69	62	60	56	53	49	68		50	80	79	73	73	71	62	59	55	75
600	100	85	95	82	76	76	72	66	61	83	600	100	82	92	85	84	82	77	73	66	86
	80	82	91	78	70	69	63	60	56	78		80	81	92	82	80	78	71	69	63	83
	60	81	89	76	68	65	61	58	56	76		60	82	89	83	80	77	70	66	62	82
	50	82	91	77	68	66	61	59	57	77		50	89	91	86	84	80	72	67	62	85
850	100	88	96	97	86	84	81	76	72	91	850	100	85	94	98	94	90	86	83	77	96
	80	87	95	96	82	78	73	70	67	89		80	85	92	96	91	85	81	78	74	93
	60	85	92	91	78	74	70	67	66	85		60	86	92	94	88	83	79	76	71	90
	50	86	95	92	78	74	70	68	67	86		50	89	96	94	89	85	79	76	71	91
1200	100	94	97	102	95	94	89	86	82	99	1200	100	94	98	105	103	100	94	91	87	105
	80	90	94	100	91	89	83	78	76	95		80	92	95	103	99	95	89	85	82	101
	60	88	91	98	88	85	78	76	75	92		60	95	97	101	96	92	86	83	79	98
	50	88	94	102	88	84	78	77	76	95		50	95	100	103	96	91	86	82	78	99
1560	100	99	103	107	103	100	97	93	89	106	1560	100	98	104	108	110	106	102	98	95	111
	80	94	99	104	100	95	91	86	82	102		80	97	101	106	107	102	97	92	89	108
	60	92	97	101	98	92	86	82	81	99		60	99	103	105	104	99	94	90	86	105
	50	92	99	105	99	91	86	83	82	101		50	99	105	108	105	99	94	89	85	106

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

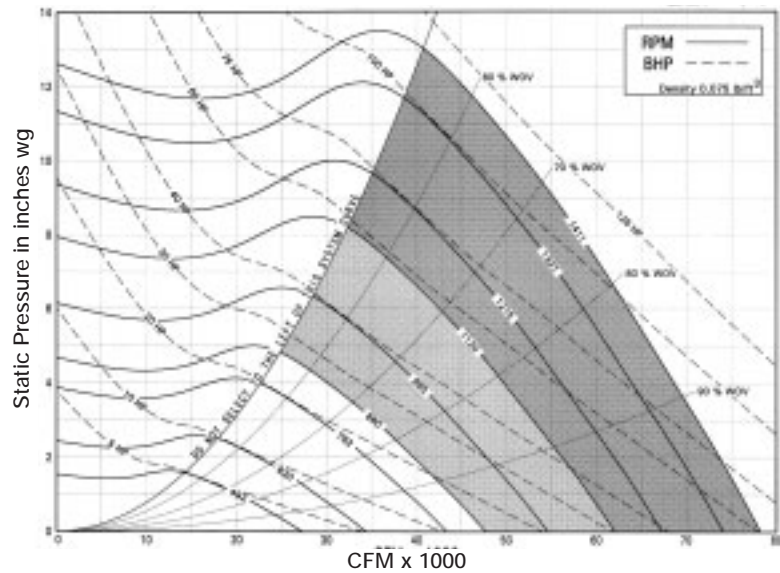
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 860
 Maximum Class II Fan RPM = 1120
 Maximum Class III Fan RPM = 1411

Maximum Motor on Frame Size = 326T
 Wheel Diameter = 44.50 in.
 Minimum Motor Starting HP = 3

Maximum Bhp = $(\text{Fan RPM} / 288)^3$
 Outlet Velocity (FPM) = $\text{CFM} / 15.1$
 Tip Speed (FPM) = $\text{Fan RPM} \times 11.7$
 % WOV = $(\text{CFM} \times 100) / (\text{Fan RPM} \times 55.4)$



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																	
		1		2		3		4		5		6		7		8		9	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
27200	1802	595	7.23	680	12.3	756	17.8	826	23.4	893	29.4								
30200	2001	641	8.64	721	14.1	793	20.1	860	26.2	921	32.5	982	39.1	1038	46.0				
33200	2200	687	10.3	764	16.2	831	22.5	894	29.2	955	35.9	1010	42.9	1066	50.1	1118	57.6		
36200	2398	735	12.1	807	18.5	872	25.2	933	32.3	989	39.7	1044	47.0	1095	54.6	1146	62.4	1195	70.5
39200	2597	784	14.2	852	21.1	914	28.2	973	35.6	1026	43.5	1079	51.4	1129	59.4	1176	67.6	1223	76.0
42200	2796	833	16.6	898	23.9	958	31.5	1012	39.3	1065	47.5	1115	56.0	1164	64.6	1210	73.1	1255	81.9
45200	2995	882	19.2	945	27.1	1002	35.1	1055	43.3	1105	51.8	1153	60.7	1200	69.9	1245	79.0	1289	88.2
48200	3194	932	22.2	992	30.5	1047	39.0	1098	47.6	1146	56.5	1194	65.7	1238	75.3	1281	85.2	1324	94.9
51200	3392	983	25.5	1040	34.3	1093	43.3	1142	52.4	1189	61.6	1233	71.2	1277	81.1	1319	91.3	1360	102
54200	3591	1033	29.2	1088	38.4	1139	47.9	1187	57.5	1232	67.1	1275	77.1	1317	87.3	1358	97.9	1398	109
57200	3790	1084	33.3	1137	42.9	1186	52.9	1232	62.9	1276	73.1	1318	83.4	1358	94.0	1399	105		
60200	3989	1136	37.7	1186	47.8	1233	58.3	1278	68.7	1321	79.5	1362	90.2	1401	101				

RPM	% WOV	Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]								
		1	2	3	4	5	6	7	8	LwiA	1	2	3	4	5	6	7	8	LwoA
400	100	83	85	75	71	70	62	58	52	75	81	85	80	79	77	70	64	54	81
	80	81	82	71	64	62	56	53	48	70	80	83	76	75	72	66	61	54	77
	60	81	81	69	62	59	55	52	48	68	80	80	74	74	70	63	59	54	75
	50	80	77	68	62	59	56	53	48	67	80	79	74	74	70	62	59	54	75
550	100	88	94	82	77	77	72	67	61	83	85	92	86	85	82	78	73	66	87
	80	85	90	78	72	69	64	61	57	78	84	92	83	81	78	72	69	63	84
	60	84	89	76	69	66	62	59	57	76	85	90	84	81	77	70	67	62	83
	50	85	90	77	69	66	62	60	58	77	90	92	87	85	80	73	68	63	86
800	100	90	98	97	87	85	82	78	74	93	88	96	99	95	91	87	84	79	97
	80	90	97	96	83	79	75	72	69	90	87	95	98	92	87	82	80	75	94
	60	88	94	91	80	75	71	69	67	86	89	95	95	90	85	81	77	72	92
	50	89	97	92	79	75	72	69	68	87	92	98	95	91	86	81	77	72	93
1100	100	96	99	102	96	94	90	87	82	100	96	100	106	104	100	95	92	88	105
	80	92	96	100	92	89	83	79	77	96	94	98	104	100	96	90	86	83	101
	60	89	93	98	89	85	79	77	76	93	96	99	102	97	92	87	83	79	99
	50	90	97	101	89	84	79	78	77	95	97	102	103	97	92	87	83	79	99
1411	100	101	104	108	104	100	97	93	90	106	100	105	110	110	107	102	98	95	111
	80	96	101	105	100	95	91	86	83	102	99	103	107	107	103	97	92	89	108
	60	94	98	103	98	92	87	83	81	99	101	104	107	104	99	94	90	86	105
	50	94	101	107	99	91	87	84	83	101	101	106	110	105	99	94	90	86	106

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

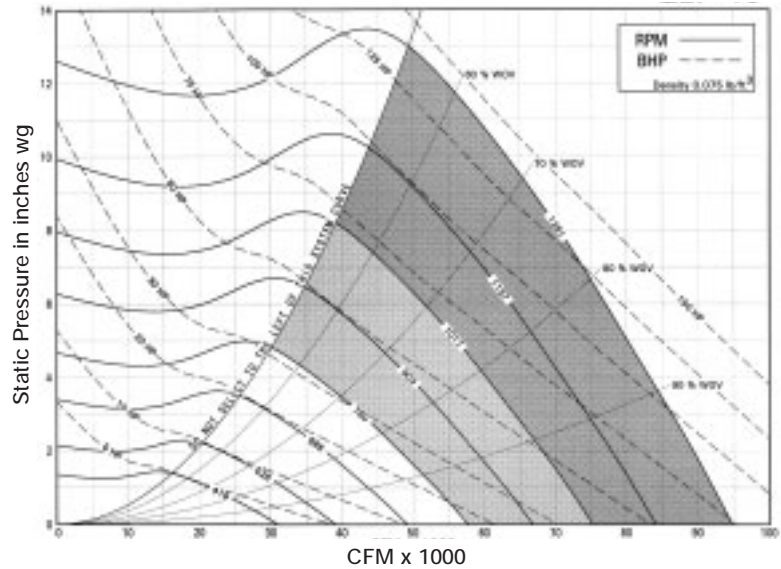
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 780
 Maximum Class II Fan RPM = 1017
 Maximum Class III Fan RPM = 1281

Maximum Motor on Frame Size = 326T
 Wheel Diameter = 49.00 in.
 Minimum Motor Starting HP = 3

Maximum Bhp = (Fan RPM / 245)³
 Outlet Velocity (FPM) = CFM / 18.3
 Tip Speed (FPM) = Fan RPM x 12.8
 % WOV = (CFM x 100) / (Fan RPM x 74.0)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
32900	1798	539	8.73	617	14.9	686	21.5	749	28.4	810	35.6									
36600	2001	582	10.5	654	17.1	720	24.3	781	31.7	836	39.4	892	47.4	942	55.7					
40300	2203	625	12.5	694	19.7	755	27.3	813	35.5	867	43.6	918	52.1	968	60.9	1016	69.9			
44000	2405	669	14.8	735	22.5	793	30.6	848	39.3	899	48.2	949	57.1	995	66.4	1042	75.9	1086	85.6	
47700	2607	714	17.4	776	25.7	832	34.3	885	43.4	934	52.9	981	62.6	1027	72.3	1070	82.3	1112	92.5	
51400	2810	759	20.3	818	29.3	872	38.4	922	47.9	969	57.9	1015	68.3	1059	78.7	1101	89.1	1141	99.8	
55100	3012	805	23.6	861	33.2	913	42.9	961	52.9	1007	63.2	1050	74.1	1092	85.3	1133	96.4	1173	108	
58800	3214	851	27.3	905	37.5	955	47.8	1001	58.3	1045	69.1	1088	80.4	1128	92.0	1167	104	1205	116	
62500	3417	898	31.5	949	42.1	997	53.1	1042	64.2	1084	75.5	1124	87.1	1164	99.2	1202	112	1239	124	
66200	3619	945	36.0	994	47.3	1040	58.8	1083	70.6	1124	82.3	1163	94.4	1201	107	1238	120	1274	133	
69900	3821	992	41.1	1039	52.9	1083	65.0	1125	77.3	1165	89.7	1203	102	1239	115	1276	128			
73600	4024	1040	46.6	1085	59.0	1127	71.8	1168	84.6	1206	97.7	1244	111	1279	124					

RPM	% WOV	Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]								
		1	2	3	4	5	6	7	8	LwiA	1	2	3	4	5	6	7	8	LwoA
350	100	85	83	73	71	68	61	57	51	74	83	84	80	79	75	69	62	52	80
	80	82	79	69	64	60	56	52	48	69	80	81	76	75	70	65	59	52	76
	60	82	78	67	62	58	54	51	47	67	80	80	78	74	74	68	62	58	74
	50	79	76	67	62	58	55	52	48	66	79	77	74	74	68	61	58	53	74
500	100	91	93	82	78	77	72	67	61	83	87	92	87	85	82	78	73	66	88
	80	88	89	77	72	69	65	61	57	77	87	91	84	82	78	73	69	63	84
	60	86	88	75	69	66	62	59	57	75	87	89	84	81	77	71	67	63	83
	50	87	89	76	69	66	63	61	58	76	92	92	88	85	80	73	68	63	86
700	100	92	99	95	87	85	81	77	73	92	90	98	99	94	90	87	83	78	97
	80	91	99	93	83	78	74	71	68	88	88	97	96	91	86	82	79	74	93
	60	90	94	88	79	74	71	69	67	84	90	95	94	89	84	80	76	71	91
	50	92	96	89	79	74	71	69	68	85	94	96	94	90	85	80	76	71	92
1000	100	97	101	102	97	95	91	87	83	100	97	102	107	104	100	95	92	89	106
	80	93	98	100	93	89	84	79	77	96	95	100	104	101	96	90	86	83	102
	60	91	95	97	90	85	79	78	77	93	97	100	102	97	92	87	84	80	99
	50	92	99	100	89	84	80	79	78	94	99	103	103	97	92	87	83	79	99
1281	100	102	106	109	104	101	97	94	90	107	102	107	111	111	107	102	98	96	112
	80	98	102	107	100	96	91	86	83	103	100	104	108	107	103	97	93	90	108
	60	95	100	104	98	92	87	84	82	100	102	105	108	104	99	95	90	87	106
	50	96	103	108	99	91	87	84	83	102	103	108	111	105	99	94	90	86	107

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

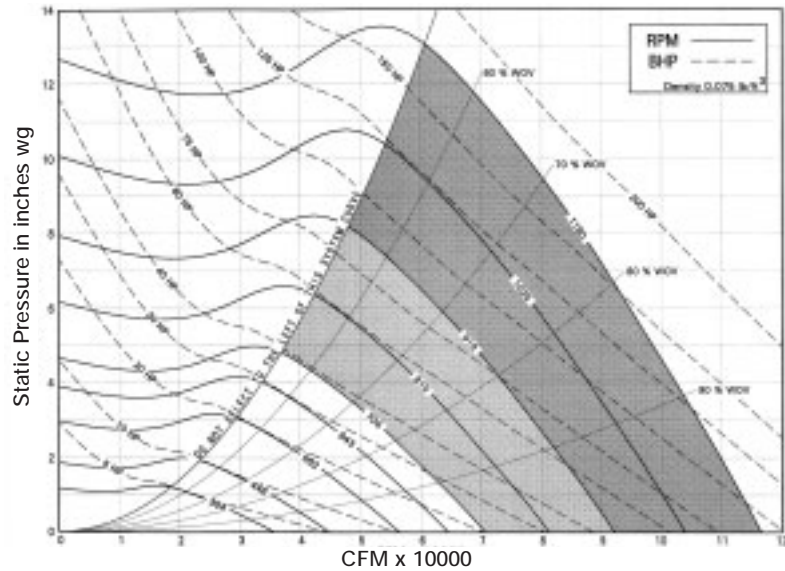
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 704
 Maximum Class II Fan RPM = 918
 Maximum Class III Fan RPM = 1160

Maximum Motor on Frame Size = 364T
 Wheel Diameter = 54.25 in.
 Minimum Motor Starting HP = 5

Maximum Bhp = $(\text{Fan RPM} / 207)^3$
 Outlet Velocity (FPM) = $\text{CFM} / 22.4$
 Tip Speed (FPM) = $\text{Fan RPM} \times 14.2$
 % WOV = $(\text{CFM} \times 100) / (\text{Fan RPM} \times 100)$



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																			
		1		2		3		4		5		6		7		8		9			
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP		
40400	1801	488	10.7	557	18.3	620	26.4	677	34.8	732	43.7										
44900	2002	526	12.9	591	21.0	650	29.8	705	38.9	755	48.4	805	58.2	851	68.4						
49400	2203	564	15.3	627	24.1	682	33.5	734	43.5	783	53.5	829	63.9	875	74.6	917	85.7				
53900	2404	604	18.1	663	27.6	716	37.5	765	48.1	812	59.1	857	70.0	899	81.3	941	93.0	981	105		
58400	2604	644	21.2	700	31.5	751	42.0	799	53.1	843	64.8	886	76.6	927	88.5	966	101	1004	113		
62900	2805	685	24.8	738	35.8	787	47.0	832	58.6	875	70.8	916	83.5	955	96.3	994	109	1030	122		
67400	3006	726	28.8	777	40.5	824	52.4	867	64.6	908	77.3	948	90.6	985	104	1022	118	1058	132		
71900	3206	767	33.3	816	45.7	861	58.4	903	71.2	942	84.4	981	98.2	1017	112	1052	127	1087	142		
76400	3407	809	38.3	855	51.4	899	64.7	939	78.3	978	92.1	1014	106	1049	121	1084	136	1117	152		
80900	3608	851	43.9	896	57.6	937	71.7	976	86.1	1014	100	1049	115	1083	131	1116	146	1149	162		
85400	3809	893	50.0	936	64.3	976	79.2	1014	94.2	1050	109	1085	125	1117	141	1150	157				
89900	4009	936	56.6	977	71.7	1015	87.4	1052	103	1087	119	1121	135	1153	151						

		Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]										Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]									
RPM	% WOV	1	2	3	4	5	6	7	8	LwiA	RPM	% WOV	1	2	3	4	5	6	7	8	LwoA
300	100	86	80	71	72	66	60	55	50	73	300	100	85	82	79	79	73	68	60	50	79
	80	83	77	67	64	59	55	51	47	67		80	84	79	76	74	68	64	58	51	75
	60	83	75	65	61	57	53	50	46	65		60	80	76	74	73	66	62	57	52	73
	50	78	73	65	61	57	55	51	46	65		50	79	75	74	73	65	61	57	52	73
450	100	93	92	81	79	78	72	67	61	83	450	100	90	91	87	86	82	79	73	66	88
	80	90	88	77	73	69	65	61	57	77		80	90	84	83	77	73	69	63	84	
	60	89	86	75	70	66	62	60	58	75		60	89	89	84	82	76	71	67	63	83
	50	90	88	75	70	66	63	61	59	76		50	93	91	88	86	79	73	68	63	86
650	100	95	102	95	88	86	82	78	74	93	650	100	92	101	100	96	91	88	84	79	98
	80	94	101	92	84	79	75	72	69	90		80	91	99	97	92	87	83	80	75	94
	60	92	96	88	80	75	72	70	68	85		60	93	97	95	90	85	81	77	72	92
	50	95	98	89	80	76	72	71	69	86		50	97	97	95	91	86	81	77	72	93
900	100	99	103	102	98	95	91	87	83	100	900	100	99	105	107	105	100	96	92	89	106
	80	94	100	99	93	89	84	80	78	96		80	97	102	104	101	95	90	87	83	102
	60	92	97	96	90	85	80	78	77	93		60	99	102	102	97	92	88	84	80	99
	50	94	101	99	89	84	81	79	78	94		50	100	105	103	97	92	87	83	79	99
1160	100	104	107	110	105	101	98	94	90	107	1160	100	104	108	112	111	107	102	99	96	112
	80	99	104	107	101	96	91	87	83	103		80	102	106	110	108	103	97	93	90	109
	60	97	102	104	98	92	87	84	83	100		60	104	107	109	105	100	95	91	87	106
	50	98	105	108	98	91	87	85	84	102		50	105	109	111	105	99	95	90	86	107

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

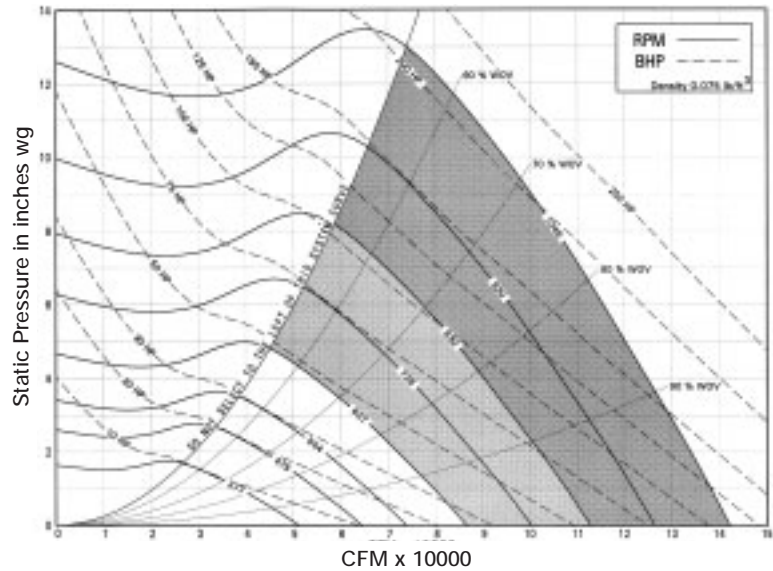
The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

Specifications

Maximum Class I Fan RPM = 637
 Maximum Class II Fan RPM = 830
 Maximum Class III Fan RPM = 1046

Maximum Motor on Frame Size = 365T
 Wheel Diameter = 60.00 in.
 Minimum Motor Starting HP = 5

Maximum Bhp = (Fan RPM / 175)³
 Outlet Velocity (FPM) = CFM / 27.4
 Tip Speed (FPM) = Fan RPM x 15.7
 % WOV = (CFM x 100) / (Fan RPM x 136)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																			
		1		2		3		4		5		6		7		8		9			
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP		
49400	1800	441	13.1	504	22.3	561	32.3	612	42.6	662	53.4										
54900	2001	475	15.7	535	25.6	588	36.5	637	47.6	683	59.1	728	71.1	770	83.6						
60400	2201	510	18.7	567	29.4	617	40.9	663	53.2	708	65.4	749	78.1	791	91.2	829	105				
65900	2402	546	22.1	599	33.7	647	45.8	692	58.8	734	72.2	775	85.6	812	99.4	850	114	887	128		
71400	2602	582	25.9	633	38.5	679	51.3	722	64.9	762	79.2	800	93.7	838	108	873	123	908	138		
76900	2803	619	30.3	667	43.7	711	57.4	752	71.6	791	86.5	828	102	864	118	898	133	931	149		
82400	3004	656	35.2	702	49.5	744	64.1	784	78.9	821	94.5	856	111	891	127	924	144	957	161		
87900	3204	693	40.7	737	55.9	778	71.3	816	87.0	852	103	887	120	919	137	951	155	983	173		
93400	3405	731	46.8	773	62.8	812	79.1	849	95.7	884	113	916	130	948	148	980	167	1010	186		
98900	3605	769	53.6	809	70.3	847	87.6	882	105	916	123	948	141	979	160	1009	179	1039	199		
104400	3806	807	61.1	846	78.6	882	96.8	916	115	949	134	980	152	1010	172	1039	192				
109900	4006	846	69.2	883	87.6	918	107	951	126	982	146	1013	165	1042	185						

RPM % WOV		Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]								
		1	2	3	4	5	6	7	8	LwiA	1	2	3	4	5	6	7	8	LwoA
300	100	90	83	74	75	69	63	58	53	76	88	85	82	82	76	71	63	53	82
	80	87	80	70	67	62	58	54	50	70	80	87	82	79	77	71	67	61	78
	60	86	78	68	64	60	57	53	49	68	60	84	79	77	76	69	65	60	76
	50	82	76	68	64	60	58	54	49	68	50	82	78	77	76	68	64	60	76
400	100	96	90	80	80	77	72	66	61	83	93	90	87	87	82	79	72	65	88
	80	92	86	76	74	68	65	61	57	76	80	93	88	84	83	76	74	69	84
	60	91	84	73	70	66	62	60	58	74	60	91	88	84	82	75	71	67	83
	50	92	86	74	70	66	63	61	59	75	50	94	91	88	86	78	73	68	86
600	100	97	103	94	89	87	83	79	75	94	100	94	103	100	96	92	89	85	99
	80	96	103	92	85	80	76	73	70	91	80	93	101	98	93	87	84	80	95
	60	95	98	88	81	76	73	71	70	86	60	95	98	96	91	86	82	78	93
	50	97	99	88	81	76	73	72	71	87	50	100	99	96	92	86	82	78	94
800	100	99	104	101	98	94	91	87	83	100	100	100	106	107	105	99	96	92	106
	80	95	102	98	94	89	83	80	78	95	80	97	104	104	101	95	90	87	102
	60	93	99	95	90	84	80	79	78	92	60	99	103	102	97	92	88	84	99
	50	95	103	96	89	84	81	80	79	93	50	102	106	102	97	92	87	83	99
1046	100	105	109	109	105	101	98	94	91	107	100	105	110	113	111	107	103	99	113
	80	101	106	107	101	96	91	87	84	103	80	103	107	111	108	103	97	94	109
	60	98	103	104	98	92	87	85	83	100	60	105	108	109	105	100	95	91	106
	50	100	106	107	98	91	88	86	85	102	50	106	110	111	105	99	95	91	107

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

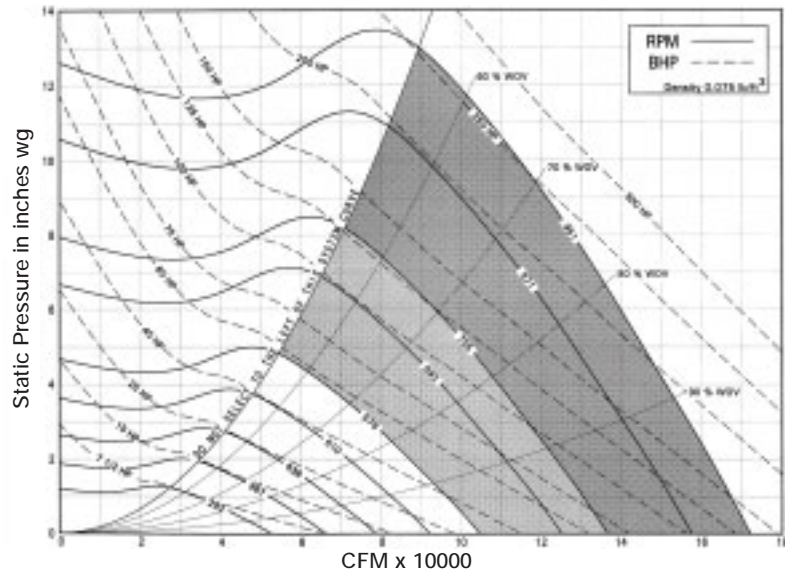
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Specifications

Maximum Class I Fan RPM = 579
 Maximum Class II Fan RPM = 755
 Maximum Class III Fan RPM = 951

Maximum Motor on Frame Size = 365T
 Wheel Diameter = 66.00 in.
 Minimum Motor Starting HP = 7 1/2

Maximum Bhp = (Fan RPM / 149)³
 Outlet Velocity (FPM) = CFM / 33.2
 Tip Speed (FPM) = Fan RPM x 17.3
 % WOV = (CFM x 100) / (Fan RPM x 181)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																		
		1		2		3		4		5		6		7		8		9		
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
59700	1798	400	15.9	458	27.0	509	39.0	556	51.5	602	64.5									
66300	1997	431	18.9	485	31.0	534	44.1	579	57.5	620	71.4	662	85.9	699	101					
72900	2196	463	22.5	514	35.5	560	49.4	602	64.2	643	78.9	680	94.2	718	110	753	126			
79500	2395	495	26.6	544	40.6	587	55.2	628	70.9	666	87.1	703	103	738	120	772	137	805	155	
86100	2594	528	31.2	574	46.3	616	61.8	655	78.2	691	95.4	726	113	760	130	792	148	824	167	
92700	2793	561	36.4	605	52.5	645	69.0	682	86.2	717	104	751	123	784	142	815	161	845	180	
99300	2991	594	42.2	636	59.4	675	77.0	711	95.0	745	114	777	133	808	154	839	174	868	194	
105900	3190	628	48.7	668	67.0	705	85.7	740	105	772	124	804	144	834	165	863	187	892	208	
112500	3389	662	56.0	700	75.3	736	95.0	769	115	801	135	831	156	860	178	889	201	916	224	
119100	3588	696	64.1	733	84.3	767	105	799	126	830	147	859	169	888	192	915	215	942	239	
125700	3787	730	73.0	766	94.1	799	116	830	138	860	161	888	183	915	206	942	230			
132300	3986	765	82.7	799	105	831	128	861	151	890	175	918	198	944	222					

		Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]										
RPM	% WOV	1	2	3	4	5	6	7	8	LwiA	RPM	% WOV	1	2	3	4	5	6	7	8	LwoA
250	100	90	79	71	75	65	61	56	50	75	250	100	88	82	81	81	73	69	59	49	81
	80	86	75	66	65	59	56	52	47	68		80	87	78	77	76	69	65	58	51	76
	60	86	74	64	62	57	55	51	47	66		60	83	76	76	75	66	63	58	52	75
	50	82	72	65	63	58	56	52	47	66		50	82	75	76	75	64	62	58	53	74
350	100	98	87	79	81	77	71	65	60	82	350	100	95	88	87	86	81	78	71	64	87
	80	94	83	74	73	67	65	60	56	76		80	95	86	84	83	75	73	67	62	83
	60	92	81	71	70	65	62	60	58	73		60	92	87	84	82	74	70	66	62	82
	50	94	83	71	70	65	63	61	59	74		50	94	89	88	86	77	72	67	61	86
500	100	98	103	90	88	86	81	77	73	92	500	100	95	103	98	94	90	87	82	77	97
	80	96	103	86	83	78	74	71	68	89		80	93	101	95	90	85	83	78	74	93
	60	95	97	83	79	74	71	70	68	85		60	95	98	93	88	83	81	75	70	91
	50	98	99	83	78	74	72	70	69	86		50	101	98	94	90	84	81	76	71	92
700	100	99	105	99	98	93	90	86	82	100	700	100	100	108	107	104	98	95	92	88	105
	80	95	103	95	93	87	82	80	77	95		80	97	105	104	100	93	89	86	82	101
	60	93	101	93	90	82	79	78	77	92		60	99	104	100	97	91	87	83	79	98
	50	96	105	93	88	82	80	80	79	93		50	102	106	101	96	90	87	82	78	98
951	100	106	110	109	105	102	98	95	91	108	951	100	106	111	114	112	107	103	100	97	113
	80	102	107	106	101	97	91	87	84	103		80	104	109	112	108	103	98	94	91	109
	60	100	105	104	98	92	87	85	84	100		60	106	109	109	105	100	95	91	88	107
	50	101	108	106	97	92	88	86	85	101		50	108	112	111	105	99	95	91	87	107

Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

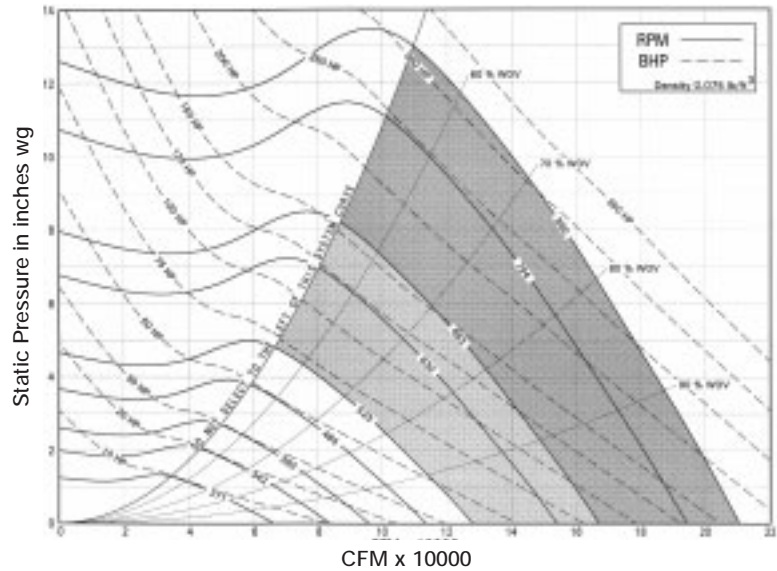
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Specifications

Maximum Class I Fan RPM = 523
 Maximum Class II Fan RPM = 683
 Maximum Class III Fan RPM = 860

Maximum Motor on Frame Size = 365T
 Wheel Diameter = 73.00 in.
 Minimum Motor Starting HP = 7 1/2

Maximum Bhp = (Fan RPM / 126)³
 Outlet Velocity (FPM) = CFM / 40.6
 Tip Speed (FPM) = Fan RPM x 19.1
 % WOV = (CFM x 100) / (Fan RPM x 245)



Performance Data

CFM	OV	STATIC PRESSURE IN INCHES WG																			
		1		2		3		4		5		6		7		8		9			
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP		
73100	1800	362	19.4	414	33.0	460	47.8	503	63.0	544	79.0										
81200	2000	390	23.2	439	37.9	483	54.0	523	70.4	561	87.5	598	105	633	124						
89300	2199	419	27.6	465	43.5	506	60.5	545	78.6	582	96.6	615	115	650	135	681	155				
97400	2399	448	32.6	492	49.8	532	67.7	568	86.9	603	107	636	126	667	147	699	168	728	190		
105500	2598	478	38.3	520	56.8	557	75.8	593	95.8	625	117	657	138	688	160	717	182	746	205		
113600	2798	508	44.6	548	64.4	584	84.7	617	106	649	128	679	151	709	174	738	197	765	220		
121700	2997	538	51.8	576	72.9	611	94.5	643	116	674	139	703	163	731	188	759	213	785	237		
129800	3197	569	59.9	605	82.3	638	105	670	128	699	152	728	177	755	203	781	229	807	256		
137900	3396	599	68.9	634	92.5	666	117	697	141	725	166	752	192	778	219	804	246	829	274		
146000	3596	630	78.8	664	104	695	129	724	155	752	181	778	208	804	235	828	264	852	293		
154100	3795	662	89.7	694	116	723	143	752	170	779	197	804	225	829	253	853	283				
162200	3995	693	102	724	129	752	157	780	185	806	214	831	243	855	273						

		Inlet Sound Power, Lwi [dB ref 10 ⁻¹² watts]									Outlet Sound Power, Lwo [dB ref 10 ⁻¹² watts]										
RPM	% WOV	1	2	3	4	5	6	7	8	LwiA	RPM	% WOV	1	2	3	4	5	6	7	8	LwoA
250	100	93	83	74	78	68	64	59	53	78	250	100	91	85	84	84	76	72	62	52	84
	80	90	79	69	68	62	59	55	50	71		80	90	81	80	79	72	68	61	54	79
	60	89	77	67	65	61	58	54	50	69		60	87	79	79	78	69	66	61	55	78
	50	85	76	68	66	61	59	55	50	69		50	86	78	79	78	67	65	61	56	77
300	100	97	85	79	80	75	69	64	59	81	300	100	95	88	87	85	80	76	69	62	86
	80	93	81	73	72	66	63	59	55	74		80	95	85	83	81	74	72	66	60	82
	60	92	79	71	69	64	61	59	57	72		60	92	86	83	80	73	69	65	61	81
	50	93	80	71	69	64	62	60	58	73		50	94	89	87	83	75	70	65	60	84
450	100	99	102	90	88	86	81	77	73	92	450	100	97	103	98	95	90	87	82	77	97
	80	98	101	86	83	78	75	72	69	88		80	95	101	95	90	85	83	78	74	93
	60	96	96	83	79	74	72	70	69	84		60	96	98	93	88	84	81	75	70	91
	50	99	97	83	79	75	72	71	70	85		50	101	99	94	90	84	81	76	71	92
600	100	100	105	98	97	92	89	85	80	99	600	100	101	108	106	103	97	94	91	87	104
	80	96	103	94	92	86	81	79	76	94		80	98	106	102	99	92	88	85	81	100
	60	94	101	91	88	81	79	78	77	91		60	100	104	99	95	89	86	82	77	97
	50	97	105	91	87	81	80	79	78	92		50	103	106	99	95	89	85	81	77	97
860	100	107	111	109	105	102	99	95	91	108	860	100	108	113	115	112	108	103	100	97	114
	80	103	109	106	101	97	91	88	84	103		80	106	110	113	108	103	98	94	91	110
	60	101	106	104	98	92	88	86	84	100		60	108	110	110	105	100	95	92	88	107
	50	103	110	106	97	92	88	87	86	101		50	109	113	111	104	100	95	91	87	107

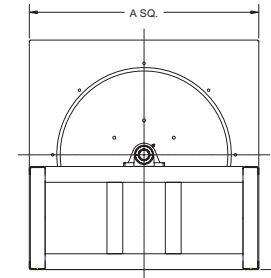
Performance shown is for installation type A: Free inlet, Free outlet. Power rating (BHP) does not include drive losses. Performance ratings do not include the effects of appurtenances in the airstream.

The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lwi, LwiA and outlet Lwo, LwoA sound power levels for Installation Type A: Free inlet, Free outlet. Outlet ratings do not include the effects of duct end correction.

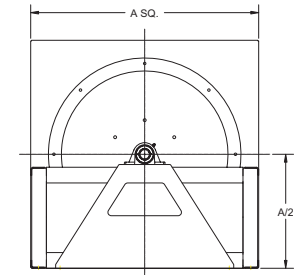
For additional dimensional data, including arrangement 4, please refer to the CAPS program.

Horizontal - Arrangement 1

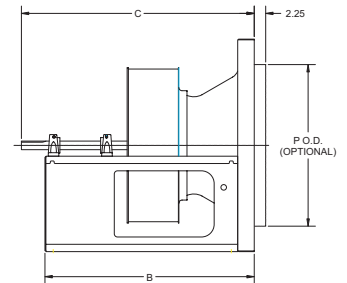
Size	A	A/2	B	C			P	Weight		
				I	II	III		I	II	III
12	22.75	11.38	22.88	25.63	26.25	26.88	15.88	85	90	-
15	22.75	11.38	22.88	25.63	26.25	26.88	15.88	85	90	100
16	24.50	12.25	24.25	27.00	27.63	28.25	17.50	100	110	110
18	27.50	13.75	26.75	30.13	31.38	31.38	19.28	120	130	130
20	29.50	14.75	29.13	32.50	33.75	33.75	21.13	140	160	170
22	31.50	15.75	32.13	35.50	36.13	37.38	23.00	170	200	220
24	35.50	17.75	34.88	38.25	38.88	40.13	25.88	230	240	260
27	37.50	18.75	37.88	41.88	42.50	43.13	28.50	260	270	290
30	41.75	20.88	41.50	45.50	46.13	47.38	31.75	330	350	420
33	44.75	22.38	45.38	49.38	50.63	51.25	34.88	360	380	460
36	48.50	24.25	49.13	53.13	54.38	56.38	38.50	400	470	510
40	52.50	26.25	53.88	58.50	59.13	61.13	42.00	490	570	600
44	58.00	29.00	59.50	64.13	65.38	68.00	46.50	570	690	730
49	62.50	31.25	64.88	70.13	70.75	73.38	51.00	780	830	950
54	68.00	34.00	71.00	76.25	78.25	79.50	56.50	970	1100	1300
60	75.00	37.50	78.38	83.63	86.88	88.88	62.50	1400	1500	1500
66	81.50	40.75	85.00	90.88	95.50	95.50	69.00	1700	1700	1700
73	92.00	46.00	93.88	99.75	102.38	104.38	76.00	2000	2000	2100



Sizes 12 - 30



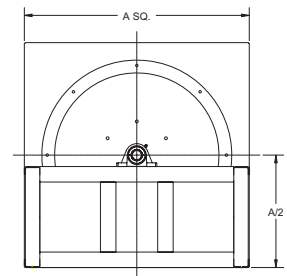
Sizes 33 - 73



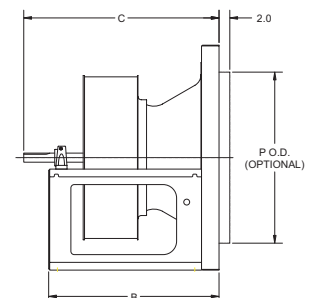
Sizes 12 - 73

Horizontal - Arrangement 3

Size	A	A/2	B	C			P	Weight		
				I	II	III		I	II	III
18	27.50	13.75	21.25	24.63	25.88	25.88	19.25	120	130	140
20	29.50	14.75	22.75	26.13	27.38	27.38	21.13	140	170	170
22	31.50	15.75	25.38	28.75	29.38	30.63	23.00	180	210	220
24	35.50	17.75	27.13	30.50	31.13	32.38	25.88	230	240	270
27	37.50	18.75	29.13	33.13	33.75	34.38	28.50	250	260	300
30	41.75	20.88	31.75	35.75	36.38	37.63	31.75	320	340	410
33	44.75	22.38	34.88	38.88	40.13	40.75	34.88	360	400	480
36	48.50	24.25	37.63	41.63	42.88	44.88	38.50	410	490	530
40	52.5	26.25	40.50	45.13	45.75	47.75	42.00	500	580	620
44	58.00	29.00	44.50	49.13	50.38	53.00	46.50	600	710	770
49	62.50	31.25	48.13	53.38	54.00	56.63	51.00	790	820	980
54	68.00	34.00	52.75	58.00	60.00	61.25	56.50	960	1200	1300
60	75.00	37.50	58.50	63.75	67.00	69.00	62.50	1400	1500	1600
66	81.50	40.75	63.13	69.00	73.63	73.63	69.00	1600	1700	1800
73	92.00	46.00	69.25	75.13	77.75	79.75	76.00	2000	2100	2200

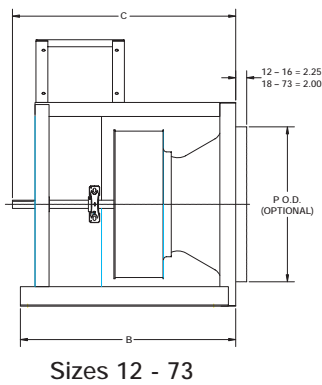
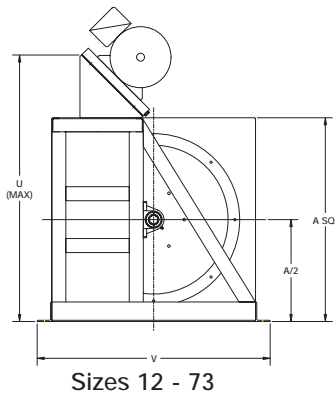


Sizes 12 - 73



Sizes 12 - 73

Horizontal - Motor on Frame, Mounted on Top



Motor Frame Size Range				
Size	Class I		Class II	
	Min	Max	Min	Max
12	56	184	143	213
15	56	213	145	213
16	56	213	145	215
18	56	213	145	215
20	56	215	182	254
22	56	215	182	254
24	56	254	184	256
27	56	256	213	256
30	56	256	213	284
33	56	284	215	286
36	143	284	215	324
40	145	286	254	326
44	145	324	256	326
49	182	326	284	326
54	182	364	286	364
60	184	364	286	365
66	184	365	324	365
73	213	365	326	365

Size	A	A/2	B	C		P	U	V	Weight	
				I	II				I	II
12	22.75	11.38	24.88	25.63	26.25	15.88	35.00	26.75	130	150
15	22.75	11.38	24.88	25.63	26.25	15.88	35.00	26.75	140	150
16	24.50	12.25	26.25	27.00	27.63	17.50	36.75	28.50	160	160
18	27.50	13.75	23.25	24.63	25.88	19.25	39.75	31.50	180	190
20	29.50	14.75	25.75	26.13	27.38	21.13	43.00	35.50	200	240
22	31.50	15.75	28.38	28.75	29.38	23.00	45.00	37.50	240	290
24	35.50	17.75	30.13	30.50	31.13	25.88	49.00	41.50	310	320
27	37.50	18.75	32.13	33.13	33.75	28.50	51.00	43.50	340	350
30	41.75	20.88	34.75	35.75	36.38	31.75	55.75	47.75	420	450
33	44.75	22.38	37.88	38.88	40.13	34.88	58.75	50.75	480	510
36	48.50	24.25	40.63	41.63	42.88	38.50	64.75	54.50	530	610
40	52.50	26.25	43.50	45.13	45.75	42.00	68.75	58.50	630	720
44	58.00	29.00	47.50	49.13	50.38	46.50	74.25	64.00	760	870
49	62.50	31.25	51.13	53.38	54.00	51.00	78.75	68.50	960	990
54	68.00	34.00	56.75	58.00	60.00	56.50	86.25	76.00	1300	1400
60	75.00	37.50	62.50	63.75	67.00	62.50	93.25	83.00	1700	1800
66	81.50	40.75	67.13	69.00	73.63	69.00	99.75	89.50	1900	2000
73	92.00	46.00	73.25	75.13	77.75	76.00	110.3	100.0	2300	2400

Horizontal - Motor on Frame, Mounted on Side

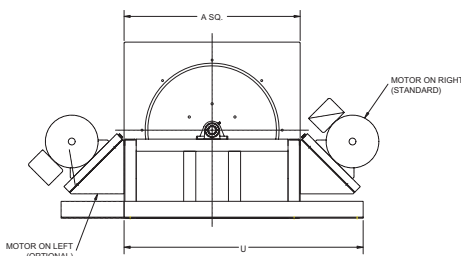
Motor Frame Size Range				
Size	Class I		Class II	
	Min	Max	Min	Max
12	56	184	143	213
15	56	213	145	213
16	56	213	145	215
18	56	56	-	-
20	56	56	-	-
22	56	56	-	-
24	56	145	-	-
27	56	145	-	-
30	56	184	-	-
33	56	184	-	-
36	143	184	-	-
40	145	184	-	-
44	145	215	-	-
49	182	215	-	-
54	182	256	-	-
60	184	286	286	286
66	184	286	-	-
73	213	326	326	326

Size	A	A/2	B	C		P	U	Weight	
				I	II			I	II
12	22.75	11.38	24.88	25.63	26.25	15.88	38.00	140	140
15	22.75	11.38	24.88	25.63	26.25	15.88	38.00	140	140
16	24.50	12.25	26.25	27.00	27.63	17.50	40.00	150	160

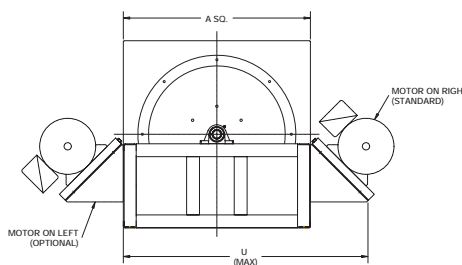
Size	A	A/2	B	C		P	U	Weight	
				I	II			I	II
18	27.50	13.75	21.25	24.63	-	19.25	35.00	140	-
20	29.50	14.75	25.75	26.13	-	21.13	37.00	150	-
22	31.50	15.75	28.38	28.75	-	23.00	39.00	190	-
24	35.50	17.75	30.13	30.50	-	25.88	43.00	240	-
27	37.50	18.75	32.13	33.13	-	28.50	45.00	270	-
30	41.75	20.88	34.75	35.75	-	31.75	51.50	350	-
33	44.75	22.38	37.88	38.88	-	34.88	54.50	390	-
36	48.50	24.25	40.63	41.63	-	38.50	58.25	430	-
40	52.50	26.25	43.50	45.13	-	42.00	62.25	530	-
44	58.00	29.00	47.50	49.13	-	46.50	70.25	640	-
49	62.50	31.25	51.13	53.38	-	51.00	74.75	840	-
54	68.00	34.00	56.75	58.00	-	56.50	81.50	1100	-
60	75.00	37.50	62.50	63.75	67.00	62.50	89.00	1500	1600
66	81.50	40.75	67.13	69.00	-	69.00	95.50	1700	-
73	92.00	46.00	73.25	75.13	77.75	76.00	108.25	2000	2200

" - " Not available in this size, see additional chart for availability

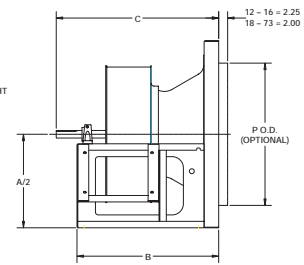
Dimensional drawings for above tables



Sizes 12 - 16

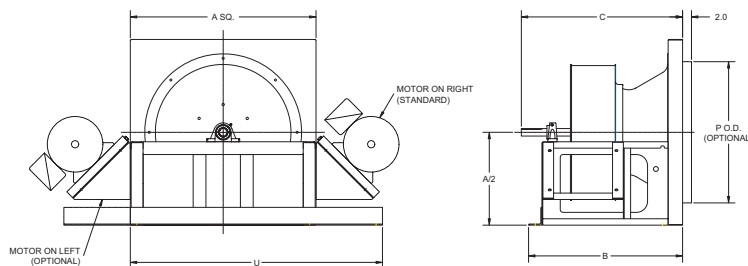


Sizes 18 - 73



(Sizes 12 - 16 will be arrangement 1, arrangement 3 shown)

Dimensional drawings for Horizontal - Motor on Frame, Mounted on Side tables on opposite page



Sizes 18 - 73

Horizontal - Motor on Frame, Mounted on Side (Continued)

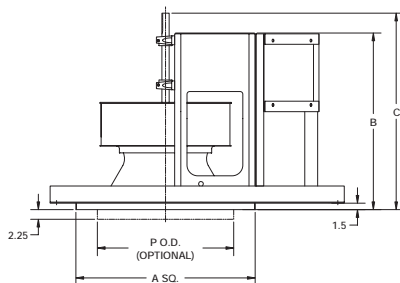
Motor Frame Size Range				
Size	Class I		Class II	
	Min	Max	Min	Max
18	143	213	145	215
20	143	215	182	254
22	143	215	182	254
24	182	254	184	256
27	182	256	213	256
30	213	256	213	284
33	213	284	215	286
36	213	284	215	324
40	213	286	254	326
44	254	324	256	326
49	254	326	284	326
54	284	364	286	364
60	324	365	324	365
66	324	365	324	365
73	364	365	364	365

Size	A	A/2	B	C		P	U		Weight	
				I	II		I	II	I	II
18	27.50	13.75	21.25	24.63	25.88	19.25	43.00	43.00	170	180
20	29.50	14.75	25.75	26.13	27.38	21.13	45.00	45.00	200	240
22	31.50	15.75	28.38	28.75	29.38	23.00	46.00	46.00	230	280
24	35.50	17.75	30.13	30.50	31.13	25.88	53.00	53.00	300	310
27	37.50	18.75	32.13	33.13	33.75	28.50	55.00	55.00	330	340
30	41.75	20.88	34.75	35.75	36.38	31.75	58.00	61.75	400	430
33	44.75	22.38	37.88	38.88	40.13	34.88	63.75	63.75	460	490
36	48.50	24.25	40.63	41.63	42.88	38.50	66.75	71.75	500	610
40	52.50	26.25	43.50	45.13	45.75	42.00	68.50	75.25	600	700
44	58.00	29.00	47.50	49.13	50.38	46.50	79.25	79.25	720	840
49	62.50	31.25	51.13	53.38	54.00	51.00	80.75	80.75	920	950
54	68.00	34.00	56.75	58.00	60.00	56.50	89.50	89.50	1200	1400
60	75.00	37.50	62.50	63.75	67.00	62.50	95.50	95.50	1700	1700
66	81.50	40.75	67.13	69.00	73.63	69.00	102.0	102.0	1800	1900
73	92.00	46.00	73.25	75.13	77.75	76.00	112.8	112.8	2200	2300

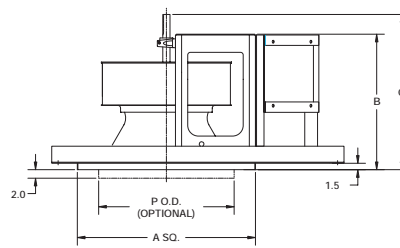
Vertical - Motor on Frame

Motor Frame Size Range				
Size	Class I		Class II	
	Min	Max	Min	Max
12	56	184	143	213
15	56	213	145	213
16	56	213	145	215
18	143	213	145	215
20	143	215	182	254
22	143	215	182	254
24	182	254	184	256
27	182	256	213	256
30	213	256	213	284
33	213	284	215	286
36	213	284	215	324
40	213	286	254	326
44	254	324	256	326
49	254	326	284	326
54	284	364	286	364

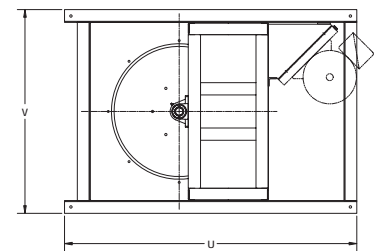
Size	A	B	C		P	U		V	Weight	
			I	II		I	II		I	II
12	22.75	22.88	25.63	26.25	15.88	45.25	45.25	26.75	160	170
15	22.75	22.88	25.63	26.25	15.88	45.25	45.25	26.75	170	170
16	24.50	24.25	27.00	27.63	17.50	47.25	47.25	28.50	190	190
18	27.50	21.25	24.63	25.88	19.25	50.25	50.25	31.50	210	220
20	29.50	22.75	26.13	27.38	21.13	53.50	56.00	35.50	260	300
22	31.50	25.38	28.75	29.38	23.00	54.50	58.00	37.50	300	340
24	35.50	27.13	30.50	31.13	25.88	62.00	62.00	41.50	370	380
27	37.50	29.13	33.13	33.75	28.50	64.00	64.00	43.50	400	410
30	41.75	31.75	35.75	36.38	31.75	66.63	70.38	47.75	480	510
33	44.75	34.88	38.88	40.13	34.88	72.38	72.38	50.75	540	570
36	48.50	37.63	41.63	42.88	38.50	75.38	80.38	54.50	600	720
40	52.50	40.50	45.13	45.75	42.00	77.13	83.88	58.50	700	810
44	58.00	44.50	49.13	50.38	46.50	87.63	87.63	64.00	840	950
49	62.50	48.13	53.38	54.00	51.00	89.13	89.13	68.50	1100	1100
54	68.00	52.75	58.00	60.00	56.50	99.38	99.38	76.00	1400	1600



Sizes 12 - 16



Sizes 18 - 54



Sizes 12 - 54

Model QEP PLENUM FAN

Plenum fans shall be of the unhusd belt driven centrifugal type with airfoil bladed wheels.

The fan framework and bearing support structure shall be constructed of heavy gauge, precision laser cut and die formed ASTM A-569 low carbon steel to provide a rigid structure and reduce low frequency vibration. Inlet panels shall have fully accessible integral formed flanges to improve ease of flex connection installation. Fan base angles shall be recessed to reduce overall width of the assembly.

Fan wheels shall be of the non-overloading backward inclined type having airfoil blades. Flat bladed wheels are not acceptable. All wheels are to have a minimum of 12 airfoil blades to move the blade pass frequency into the mid octave bands. The entire wheel is to be constructed of aluminum to reduce the rotational weight of the wheel and reduce vibration. Fan sizes through 33 shall use 6063-T5 extruded aluminum blades while fan sizes above 33 shall use 5052 H32 laser cut and die formed aluminum blades to ensure precision blade tolerances to improve efficiency and reduce vibration. Wheel hubs shall be cast of 319 aluminum alloy. Aluminum fan wheels shall not require finish coating.

AISI 1018 steel thru 2 inch diameter and AISI 1045 greater than 2 inch diameter turned, precision ground and polished steel shafts shall be sized such that the first critical speed is 200% over the maximum fan operating speed.

Bearings are to be heavy duty, grease lubricated, self-aligning ball or roller pillow block type. Bearings shall be "Air Handling Quality" to ensure smooth operation, precision shaft tolerance, and reduced swivel torque. Bearings are to

incorporate concentric locking collar design to improve shaft centering and eliminate inherent vibrations. Set screw mounted bearings are not acceptable. Bearings are to be selected for a minimum life of L(10) in excess of 80,000 hours [Equivalent to Average or L(50) 400,000 hours] at the maximum operating speed and horsepower.

After fabrication all carbon steel components shall be cleaned and chemically treated by a phosphating process to insure proper removal of grease, oil, scale, etc. Steel components shall then be coated with 2-4 mils dft of Permator, an electrostatically applied baked polyester urethane powder coating. Paint must exceed 1,000 hour salt spray under ASTM B117 test method.

Each assembled fan shall be test run at the factory at the specified fan RPM. Vibration signatures shall be recorded for each bearing in 3 planes; horizontal, vertical, and axial. Fan impellers shall be statically and dynamically balanced to balance grade G6.3 per ANSI S2.19 (ISO 1940). The maximum allowable fan vibration must not exceed 0.15 in/sec. peak velocity, filter-in as measured at the fan design RPM. A vibration report for every unique fan shall be provided at no charge to the customer upon request.

Fan shall be licensed to bear the AMCA seal for Sound and Air performance. AMCA licensed sound certification shall include both fan inlet and fan outlet sound power levels.

Plenum fans shall be model QEP as manufactured by Greenheck Fan Corporation, Schofield, WI and shall be supplied as shown on the plans and in the fan schedule.

Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of one year from the purchase date. Any units or parts which prove defective during the warranty period will be replaced at our option when returned to our factory, transportation prepaid.

Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by Greenheck prove defective during this period, they should be returned to the nearest authorized motor service station. Greenheck will not be responsible for any removal or installation costs.

Due to continuing research, Greenheck reserves the right to change specifications without notice.



Number one in air movement and control.



Centrifugal and Vane Axial Fans



Fans and Ventilators



Energy Recovery Ventilators & Make-Up Air Units



Kitchen Ventilation Systems



Dampers and Louvers

Visit the Greenheck website for the most current information available
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