VERANTIS
Environmental Solutions Group

FRP Fans:

CMHB Series 6-8-10-12

Performance and Technical Information

VERANTIS

Environmental Solutions Group

Verantis Environmental Solutions Group provides solutions for most common and complex situations including repair, rebuilding, field balancing, service and installation.

Verantis Environmental Solutions Group certifies that the CMHB series of centrifugal fans shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures made in accordance with AMCA Publication 211 and comply with the requirements of the AMCA certified ratings program. The CMHB-12 is certified for Air and Sound.

OTHER VERANTIS FANS INCLUDE:

- **CLUB Centrifugal High Efficiency Low to Medium Pressure**
- **CLM Centrifugal Low to Medium Pressure**
- **CMH Centrifugal Medium to High Pressure**
- **CH/CHP Centrifugal High Pressure**
- **FL/FLR Tube Axial Low Pressure**

FRP Centrifugal Fans

Verantis CMHB Series fiberglass fans offer the widest range of performance from any Fiberglass Reinforced Plastic (FRP) fan on the market. For over 40 years, Verantis fans have provided industry leading reliability and service in corrosive environments.

Designed and built to the highest standards.

Housings are made of premium corrosion-resistant, fire retardant vinyl ester resin systems. Impellers are manufactured using premium vinyl ester to assure structural integrity under the intense dynamic forces of rotation. All fiberglass components are fabricated in accordance with ASTM C582 and ASTM 4167 specifications for fiberglass laminates and fiberglass blowers.

All metal parts exposed to the process gasses are fully encapsulated in FRP to assure maximum protection against chemical attack. Fan and motor bases are heavy-gauge steel coated with polyurethane. Additional Verantis protective coatings are available for other severe service conditions.

Wide choice of sizes and performance characteristics.

The CMHB series is available in sizes 6", 8", and 10" providing exhaust volumes up to 3000 CFM and static pressures up to 14" WG.

Every unit pretested.

Impellers are statically and dynamically balanced prior to assembly. Each fan is factory tested before shipment to ensure proper function and service. Fan performance data is obtained from tests conducted in accordance with AMCA standards.

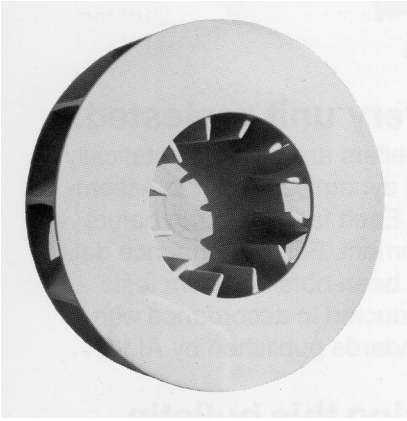
Using this bulletin.

The following pages include information to select a CMHB Series fan for most applications. If you require technical assistance, call your Verantis representative or the Verantis Corporate Office. Phone numbers are listed at www.verantis.com.

Engineering Features

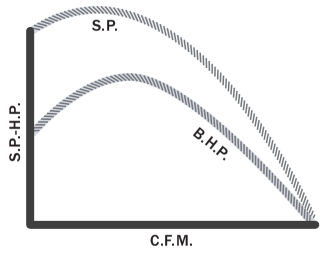
- Low noise
- Lower operating speeds for increased service life
- Oversized shafts
- Optimized impeller and housing designs for greater efficiency
- Robust base design
- Taper lock mounting of impeller to shaft for ease of service

High Strength FRP Impellers



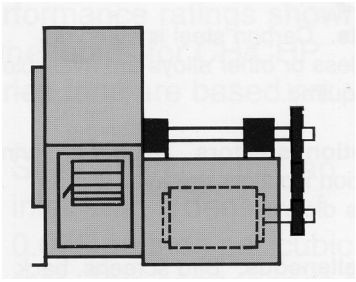
CMHB Backward Curved Impeller

- For forced draft and non-abrasive induced draft applications
- Non-overloading horsepower characteristic
- Increased efficiency
- Stable operation



Arrangement Versatility

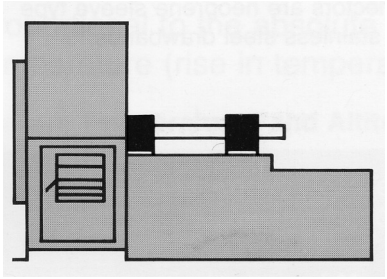
Standard for sizes 6, 8, and 10



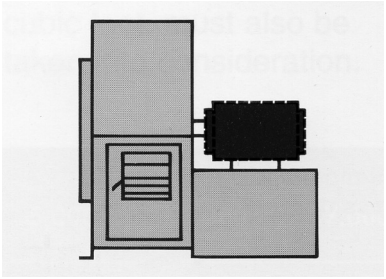
ARR. 10 SWSI - For belt drive. Caster wheel over-hung, two bearings, with prime mover inside base.

Arrangement 10 is standard. Other arrangements are available as an option. Fans are available in clockwise or counter-clockwise rotation and in all 8 standard discharge positions.

Optional arrangements available for special requirements.



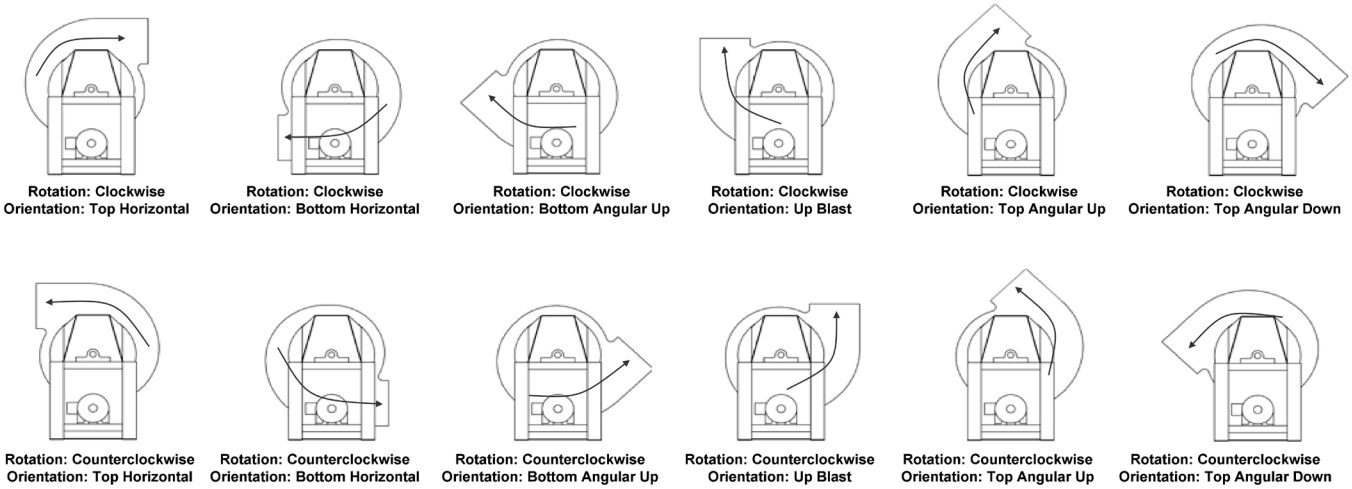
ARR. 8 SWSI - For belt drive or direct connection. Arrangement 1 plus extended base for prime mover.



AAR. 4 SWSI - For direct drive. Wheel overhung on prime mover shaft. No bearings on fan. Prime mover base mounted or directly connected.

Rotation and Discharge Options

Direction of rotation is determined from drive side of fan. On single inlet fans, drive side is always considered as the side opposite fan inlet. Direction of discharge is determined in accordance with diagrams (below). Angle of discharge is referred to the horizontal axis of fan and designated in degrees above or below such standard reference axis. For fan inverted for ceiling suspension or side wall mounting, direction of rotation and discharge is determined when the fan is resting on floor.



Features Available for Design Flexibly

Carbon gel coating. All FRP surfaces exposed to the gas stream are coated with a graphite-impregnated layer to eliminate static buildup. Grounding connectors are located externally.

Access doors. Stud-mounted bolted access doors available on all sizes.

Flanges. Standard and custom available for inlet or outlet. Drilled or undrilled.

Drains. PVC coupling or flanged FRP.

Discharge transition. Rectangular to round are available and can be made integral to the fan or separate.

Shaft seals. Single Teflon® is standard. Depending on application severity, other options available include double and triple Teflon, stuffing box and single or double mechanical.

Canopies. Standard construction includes an FRP OSHA canopy in lieu of belt and shaft guard.

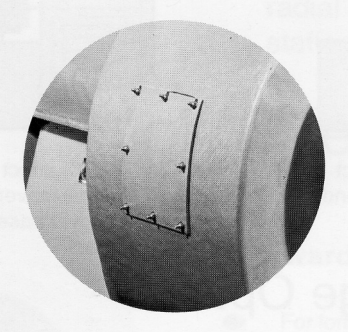
Flexible connectors. Standard connectors are EPDM sleeve type with stainless steel draw bands. Flanged flex connectors are also available.

Shafts. Carbon steel is standard. Stainless steel, Titanium and other alloys and coatings are available as options.

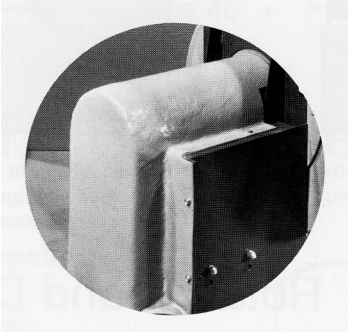
Vibration Isolators. Rubber vibration isolators, spring vibration isolators or other seismic restraints are available as needs dictate.

Miscellaneous. Bird screens, back vanes, inlet boxes, vibration monitors, disconnects, zero speed switches, speed controls, dampers, temperature monitoring, inertia bases and sound enclosures are also available.

Stud mounting access door.



Weather canopy on Arrangement 10 fan.



Class Construction

Verantis fans are designed and fabricated to provide safe and reliable performance throughout the full range listed in the tables. In order to assure an adequate safety factor, we have established the following maximum speeds at 70˚F. For recommendations on applications above 180˚F please contact your Verantis representative.

	CL-II	CL-III	CL-IV
SFPM	12000	14500	19500

How to Select a CMHB Series Fan

Rating table information

Performance ratings shown in the tables for CMHB Series fans are based on:

1. Standard air at the fan inlet, with a density of 0.075 pounds per cubic foot. This corresponds to 70°F and 29.92 inches barometric pressure at sea level.
2. Including V-belt drive and all bearing losses.

Effect of temperature and altitude

For selection of fans not handling standard air, temperature and altitude must be taken into consideration. Since a fan is a constant volume machine, it will deliver the same volume regardless of the air density. The fan static pressure developed and horsepower required will vary directly with the density.

The density of air is inversely proportional to the absolute temperature (rise in temperature gives a lower density) and directly proportional to the absolute pressure (rise in pressure gives a higher density). For example: The ratio to standard conditions for air at 3,000 ft. altitude (26.81" Hg) and at 250°F would be 0.669.

The temperature-pressure relationship is tabulated below. For gases other than air, the gas density, in relationship to standard air density of 0.075 pound per cubic foot, must also be taken into consideration.

Table of Air Density Factors for Various Temperatures and Altitudes

	Altitude in Feet Above Sea Level							
	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000
Air Temp	Barometric Pressure in inches of Mercury							
°F	29.29	28.86	27.82	26.82	25.84	24.90	23.98	23.09
70	1.000	0.0964	0.0930	0.0896	0.864	0.832	0.801	0.772
100	0.946	0.912	0.880	0.848	0.818	0.787	0.758	0.730
125	0.908	0.875	0.846	0.809	0.784	0.755	0.721	0.700
150	0.869	0.838	0.808	0.770	0.751	0.723	0.696	0.671
175	0.836	0.806	0.777	0.745	0.722	0.695	0.669	0.645
200	0.803	0.774	0.747	0.720	0.694	0.668	0.643	0.620
225	0.775	0.747	0.721	0.694	0.669	0.645	0.620	0.598
250*	0.747	0.720	0.720	0.669	0.645	0.622	0.598	0.576

*Maximum allowable operating temperature for FRP construction.

Fan selection

The cold static method is the most common system for fan selection. This method is based on the assumption that, at constant CFM and RPM, the static pressure and BHP vary inversely as the absolute temperature and directly as the air density.

Example:

A fan is required to handle 1,300 ACFM at 12" SP at 200°F and 3,000 ft. altitude.

1. Density factor from Table 1 = 0.720.
2. Convert SP to standard: 12" 0.720=5.85
3. Using the fan performance curves (which are available for your specific requirement) we select a CMHP 8 fan, see figure and read a speed 3,350 RPM and 5.75 BHP.
4. Correct BHP to actual conditions: 5.75 x .72 = 4.14 BHP.
5. BHP at cold start: Density factor at 70°F at 3,000 ft. elevation is 0.848, therefore the cold start BHP is: 5.75 x 0.848 = 4.8 BHP

Therefore we would select a CMHP 8 fan to deliver 1,300 ACFM at 12" SP rotating at 3,350 RPM using 4.14 BHP. At cold start, the BHP would be a 4.8, therefore a 5 HP motor must be supplied.

CMHB-6

(BACKWARD CURVED IMPELLER)

Wheel Diameter = 12" Dia.
Tip Speed = 4.18 x RPM

Inlet Dia. = 6" I.D.
Inlet Area = 0.196 sq.ft.

Outlet Size = 5.5" x 4.875"
Outlet Area = 0.186 sq.ft.

		STATIC PRESSURE (Inches w.g.)																					
CFM	OV	1		2		3		4		5		6		7		8		9		10		12		14	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
100	538	1156	0.1	1612	0.1	1962	0.2	2255	0.3	2503	0.4	2738	0.5	2967	0.6	3180	0.7	3339	0.8	3490	0.9	3775	1.2	4045	1.5
150	806	1188	0.1	1640	0.1	1988	0.2	2288	0.3	2541	0.4	2775	0.5	2999	0.6	3206	0.8	3383	0.9	3552	1.0	3874	1.3	4185	1.6
200	1075	1244	0.1	1671	0.2	2020	0.2	2312	0.3	2571	0.5	2805	0.6	3029	0.7	3223	0.8	3408	1.0	3585	1.1	3925	1.4	4245	1.8
250	1344	1311	0.1	1721	0.2	2050	0.3	2344	0.4	2603	0.5	2834	0.6	3052	0.8	3250	0.9	3438	1.1	3619	1.2	3953	1.6	4250	1.9
300	1613	1391	0.1	1779	0.2	2100	0.3	2376	0.4	2635	0.6	2866	0.7	3083	0.9	3280	1.0	3468	1.2	3648	1.3	3976	1.7	4283	2.1
350	1882	1482	0.1	1849	0.3	2158	0.4	2429	0.5	2670	0.6	2897	0.8	3114	0.9	3312	1.1	3501	1.3	3678	1.5	4006	1.8	4314	2.2
400	2151	1584	0.2	1928	0.3	2222	0.4	2487	0.6	2726	0.7	2942	0.9	3146	1.0	3343	1.2	3534	1.4	3709	1.6	4040	2.0	4342	2.4
450	2419	1702	0.2	2013	0.4	2297	0.5	2549	0.6	2784	0.8	3000	1.0	3199	1.1	3385	1.3	3564	1.5	3739	1.7	4071	2.1	4373	2.5
500	2688	1821	0.3	2105	0.4	2377	0.6	2622	0.7	2846	0.9	3059	1.1	3256	1.3	3442	1.4	3615	1.6	3781	1.8	4100	2.2	4408	2.7
550	2957	1942	0.3	2206	0.5	2463	0.6	2701	0.8	2918	1.0	3121	1.2	3315	1.4	3498	1.6	3673	1.8	3837	2.0	4144	2.4	4436	2.9
600	3226	2064	0.4	2320	0.6	2555	0.7	2783	0.9	2996	1.1	3193	1.3	3379	1.5	3558	1.7	3731	1.9	3894	2.1	4200	2.6	4483	3.1
650	3495	2188	0.5	2439	0.7	2651	0.8	2871	1.0	3077	1.2	3271	1.4	3451	1.6	3624	1.9	3791	2.1	3954	2.3	4257	2.8	4539	3.3
700	3763	2314	0.6	2558	0.8	2760	0.9	2964	1.1	3162	1.4	3351	1.6	3529	1.8	3697	2.0	3859	2.3	4015	2.5	4317	3.0	4596	3.5
750	4032	2442	0.7	2679	0.9	2877	1.1	3060	1.3	3253	1.5	3434	1.7	3609	2.0	3776	2.2	3933	2.4	4085	2.7	4377	3.2	4655	3.7
800	4301	2571	0.8	2800	1.0	2997	1.2	3169	1.4	3347	1.7	3524	1.9	3692	2.1	3856	2.4	4012	2.6	4161	2.9	4444	3.4	4715	4.0
850	4570	2702	0.9	2923	1.1	3116	1.4	3284	1.6	3445	1.8	3616	2.1	3780	2.3	3938	2.6	4092	2.9	4239	3.1	4517	3.7	4780	4.2
900	4839	2834	1.0	3046	1.3	3236	1.5	3404	1.8	3555	2.0	3712	2.3	3872	2.5	4026	2.8	4174	3.1	4320	3.4	4595	3.9	4852	4.5
950	5108	2967	1.2	3172	1.5	3357	1.7	3523	2.0	3671	2.2	3814	2.5	3967	2.8	4117	3.0	4262	3.3	4402	3.6	4674	4.2	4928	4.8

Performance certified is for installation Type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses.

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

CMHB1212-01

☐ Class 1 ☐ Class 2 ☐ Class 3

CMHB-8

(BACKWARD CURVED IMPELLER)

Wheel Diameter = 16" Dia.
Tip Speed = 3.14 x RPM

Inlet Dia. = 8" I.D.
Inlet Area = 0.349 sq.ft.

Outlet Size = 7.375" x 6.5"
Outlet Area = 0.333 sq.ft.

		STATIC PRESSURE (Inches w.g.)																					
CFM	OV	1		2		3		4		5		6		7		8		9		10		12		14	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
300	901	906	0.1	1239	0.2	1500	0.4	1720	0.6	1920	0.8	2090	1.0	2250	1.2	2403	1.4	2551	1.6	2690	1.9	2924	2.4	3143	3.0
400	1201	956	0.1	1269	0.3	1527	0.5	1747	0.7	1939	0.9	2115	1.1	2276	1.3	2428	1.6	2575	1.8	2704	2.1	2948	2.7	3178	3.2
500	1502	1020	0.2	1318	0.4	1559	0.5	1772	0.8	1966	1.0	2142	1.2	2302	1.5	2451	1.8	2594	2.0	2726	2.3	2975	2.9	3212	3.6
600	1802	1094	0.2	1373	0.4	1607	0.6	1811	0.9	1994	1.1	2168	1.4	2329	1.6	2478	1.9	2620	2.2	2752	2.5	3000	3.2	3228	3.9
700	2102	1178	0.3	1438	0.5	1660	0.7	1860	1.0	2039	1.3	2202	1.5	2355	1.8	2504	2.1	2647	2.4	2778	2.8	3028	3.5	3253	4.2
800	2402	1277	0.4	1510	0.6	1723	0.9	1912	1.1	2088	1.4	2250	1.7	2399	2.0	2539	2.3	2673	2.7	2804	3.0	3054	3.7	3280	4.5
900	2703	1377	0.5	1588	0.7	1791	1.0	1974	1.3	2141	1.6	2299	1.9	2447	2.2	2587	2.6	2717	2.9	2841	3.3	3079	4.0	3308	4.8
1000	3003	1479	0.6	1675	0.9	1864	1.2	2041	1.5	2203	1.8	2353	2.1	2497	2.5	2635	2.9	2765	3.2	2889	3.6	3118	4.4	3335	5.2
1100	3303	1583	0.8	1774	1.1	1943	1.4	2112	1.7	2270	2.0	2416	2.4	2554	2.8	2686	3.1	2815	3.5	2937	3.9	3167	4.7	3377	5.6
1200	3604	1688	0.9	1874	1.3	2028	1.6	2188	1.9	2339	2.3	2483	2.7	2617	3.0	2745	3.4	2868	3.8	2987	4.3	3215	5.1	3427	6.0
1300	3904	1795	1.1	1975	1.5	2125	1.8	2268	2.2	2414	2.6	2552	3.0	2684	3.4	2809	3.8	2929	4.2	3044	4.6	3265	5.5	3474	6.5
1400	4204	1904	1.3	2077	1.7	2225	2.1	2355	2.5	2492	2.9	2626	3.3	2753	3.7	2877	4.2	2994	4.6	3106	5.1	3320	6.0	3525	7.0
1500	4505	2014	1.6	2181	2.0	2326	2.4	2452	2.8	2574	3.2	2703	3.6	2827	4.1	2945	4.5	3061	5.0	3172	5.5	3381	6.5	3579	7.5
1600	4805	2125	1.9	2285	2.3	2427	2.8	2553	3.2	2666	3.6	2784	4.0	2904	4.5	3019	5.0	3131	5.5	3240	6.0	3446	7.0	3639	8.0
1700	5105	2238	2.2	2391	2.6	2529	3.1	2653	3.6	2765	4.0	2871	4.5	2984	4.9	3096	5.5	3205	6.0	3310	6.5	3513	7.5	3703	8.6
1800	5405	2350	2.5	2498	3.0	2632	3.5	2754	4.0	2866	4.5	2967	5.0	3068	5.4	3176	6.0	3282	6.5	3384	7.0	3581	8.1	3770	9.3
1900	5706	2464	2.9	2606	3.4	2736	4.0	2856	4.5	2966	5.0	3067	5.5	3161	6.0	3258	6.5	3361	7.0	3461	7.6	3653	8.8	3838	9.9
2000	6006	2578	3.3	2715	3.9	2841	4.4	2958	5.0	3066	5.5	3167	6.1	3260	6.6	3350	7.1	3442	7.6	3541	8.2	3729	9.4	3908	10.6

Performance certified is for installation Type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses.

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

CMHB1212-02

☐ Class 1 ☐ Class 2 ☐ Class 3

CMHB-10

(BACKWARD CURVED IMPELLER)

Wheel Diameter = 17.25" Dia.	Inlet Dia. = 10" I.D.	Outlet Size = 9.125" x 8.125"
Tip Speed = 4.51 x RPM	Inlet Area = 0.545 sq.ft.	Outlet Area = 0.515 sq.ft.

		STATIC PRESSURE (Inches w.g.)																			
CFM	OV	1		2		3		4		5		6		7		8		10		12		14	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	2330	1212	0.5	1416	0.7	1601	1.0	1775	1.2	1937	1.5	2084	1.8	2225	2.1	2360	2.5	2609	3.1	2837	3.8	3047	4.5
1300	2524	1273	0.5	1476	0.8	1645	1.1	1813	1.4	1969	1.7	2116	2.0	2252	2.3	2382	2.6	2631	3.3	2855	4.0	3065	4.8
1400	2718	1336	0.6	1536	0.9	1694	1.2	1855	1.5	2006	1.8	2149	2.1	2285	2.5	2411	2.8	2651	3.6	2876	4.3	3083	5.1
1500	2913	1399	0.7	1596	1.0	1752	1.3	1899	1.6	2046	2.0	2185	2.3	2317	2.7	2444	3.0	2676	3.8	2896	4.6	3104	5.4
1600	3107	1463	0.8	1656	1.2	1813	1.5	1947	1.8	2089	2.1	2224	2.5	2352	2.9	2476	3.3	2707	4.1	2920	4.9	3125	5.7
1700	3301	1528	0.9	1716	1.3	1873	1.6	2004	2.0	2133	2.3	2265	2.7	2391	3.1	2511	3.5	2740	4.3	2949	5.2	3147	6.0
1800	3495	1594	1.1	1777	1.4	1933	1.8	2065	2.2	2183	2.5	2309	2.9	2432	3.3	2549	3.7	2772	4.6	2980	5.5	3174	6.4
1900	3689	1661	1.2	1839	1.6	1993	2.0	2125	2.4	2240	2.8	2354	3.1	2474	3.6	2590	4.0	2807	4.9	3013	5.8	3205	6.7
2000	3883	1728	1.4	1901	1.8	2053	2.2	2184	2.6	2301	3.0	2407	3.4	2519	3.8	2632	4.3	2845	5.2	3046	6.1	3238	7.1
2100	4078	1796	1.5	1965	2.0	2113	2.4	2245	2.9	2361	3.3	2465	3.7	2567	4.1	2676	4.6	2885	5.5	3082	6.5	3269	7.5
2200	4272	1864	1.7	2029	2.2	2174	2.6	2305	3.1	2421	3.6	2527	4.0	2623	4.4	2721	4.9	2927	5.8	3120	6.9	3304	7.9
2300	4466	1932	1.9	2093	2.4	2235	2.9	2365	3.4	2481	3.9	2586	4.3	2682	4.8	2774	5.2	2970	6.2	3160	7.2	3341	8.3
2400	4660	2002	2.2	2159	2.7	2298	3.2	2425	3.7	2541	4.2	2646	4.6	2743	5.1	2832	5.6	3015	6.6	3202	7.6	3380	8.7
2500	4854	2071	2.4	2224	2.9	2361	3.4	2485	4.0	2601	4.5	2706	5.0	2803	5.5	2893	6.0	3063	7.0	3245	8.1	3420	9.2
2600	5049	2141	2.6	2290	3.2	2424	3.7	2547	4.3	2661	4.8	2766	5.4	2862	5.9	2953	6.4	3118	7.4	3290	8.5	3462	9.7
2700	5243	2212	2.9	2357	3.5	2488	4.0	2609	4.6	2721	5.2	2826	5.7	2922	6.3	3012	6.8	3176	7.9	3335	9.0	3505	10.2
2800	5437	2282	3.2	2424	3.8	2553	4.4	2671	5.0	2781	5.5	2886	6.1	2983	6.7	3072	7.3	3237	8.4	3389	9.5	3550	10.7
2900	5631	2353	3.5	2492	4.1	2618	4.7	2734	5.3	2843	5.9	2946	6.6	3043	7.2	3132	7.8	3297	8.9	3445	10.0	3595	11.2
3000	5825	2424	3.8	2560	4.5	2683	5.1	2798	5.7	2905	6.4	3006	7.0	3103	7.6	3193	8.3	3357	9.4	3505	10.6	3647	11.8

Performance certified is for installation Type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses.

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

CMHB1212-02

☐ Class 1 ☐ Class 2 ☐ Class 3 ☐ Class 4

CMHB – 12

(Backward Curved Impeller)

Wheel Diameter = 19" Dia.
Tip Speed = 4.97 x RPM

Inlet Dia. = 12" I.D.
Inlet Area = .785 sq. ft.

Outlet Size = 11" x 9.75"
Outlet Area = .745 sq. ft.

Airflow		Static Pressure (in.wg)										
(CFM)		1	2	3	4	5	6	7	8	9	10	11
1700	RPM	1216	1427	1587	1744	1884	2024	2153	2273	2387		
	BHP	0.7	1.1	1.4	1.8	2.2	2.7	3.2	3.6	4.1		
2000	RPM	1355	1554	1712	1847	1983	2109	2226	2346	2458	2565	2667
	BHP	0.9	1.4	1.8	2.2	2.7	3.2	3.7	4.2	4.8	5.3	5.9
2300	RPM	1504	1677	1843	1973	2091	2209	2324	2432	2534	2638	2739
	BHP	1.3	1.8	2.3	2.8	3.3	3.8	4.3	4.9	5.5	6.1	6.7
2600	RPM	1656	1805	1964	2104	2218	2324	2426	2532	2633	2728	2820
	BHP	1.7	2.2	2.8	3.4	3.9	4.5	5.1	5.7	6.3	6.9	7.6
2900	RPM	1811	1951	2088	2226	2349	2452	2549	2641	2734	2828	2919
	BHP	2.2	2.8	3.4	4.1	4.7	5.3	6.0	6.6	7.2	7.9	8.6
3200	RPM	1967	2100	2218	2349	2472	2584	2678	2768	2853	2935	3020
	BHP	2.8	3.5	4.1	4.8	5.6	6.3	7.0	7.6	8.3	9.0	9.8
3500	RPM	2125	2252	2364	2475	2594	2706	2810	2897	2981	3061	3139
	BHP	3.5	4.2	5.0	5.7	6.5	7.3	8.1	8.8	9.6	10.3	11.1
3800	RPM	2285	2405	2512	2612	2720	2828	2930	3027	3112	3190	3266
	BHP	4.4	5.2	5.9	6.7	7.5	8.4	9.3	10.2	11.0	11.8	12.6
4100	RPM	2446	2560	2663	2759	2849	2953	3053	3148	3239	3322	3396
	BHP	5.3	6.2	7.0	7.9	8.7	9.6	10.6	11.5	12.5	13.4	14.2
4400	RPM	2608	2716	2815	2907	2994	3080	3177	3270	3360	3445	3528
	BHP	6.5	7.4	8.3	9.2	10.1	11.0	12.0	13.0	14.0	15.0	16.0
		Class 1			Class 2			Class 3			Class 4	

Performance certified is for installation Type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses.
Performance ratings do not include the effect of appurtenances (accessories).

CMHB – 12

(Backward Curved Impeller)

Full Octave Band Center Frequency									Speed	Static Pressure	Volume
1	2	3	4	5	6	7	8		N	Ps	Q
63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	LwA	(rpm)	(in. wg)	(cfm)
112	107	111	101	95	91	86	79	105	2643	0	4670
111	106	109	100	93	89	84	77	103	2637	2.21	4205
111	103	104	96	89	84	79	74	99	2647	6.17	3309
110	102	107	94	87	82	79	77	100	2636	9.83	2365

"The sound power level ratings shown are in decibels, referred to 10-12 watts, calculated per AMCA International Standard 301. Values shown are for (inlet LWi or inlet LWiA) sound power levels for Installation Type B: free inlet, ducted outlet. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301."

How to Specify FRP Fans

■ The following construction details can be used as a guide when writing specifications which demand the highest quality equipment. These specifications are in compliance with accepted design standards.

Fan performance to be certified by the manufacturer that it meets AMCA Standards Handbook 99, Test Code for Air Moving Devices 210 and Certified Ratings Program for Air Moving Devices 211.

Design Criteria Sizing. Axial and centrifugal fans shall be sized so an increase in speed of 10% will not exceed the maximum RPM of that class of fan.

Performance and Sound Data Provided.

- Design RPM
- Max RPM
- Static Efficiency
- Overall Sound
- Sound Power
- Fan Performance Curve
- Static Efficiency Curve
- Horse Power Curve

Rating. The size and the capacity rating for each fan quoted shall be furnished.

Laminate. Fan housings shall be constructed of a FRP laminate consisting of an appropriate fire-retardant resin and the proper fiberglass or synthetic reinforcement capable of resisting continuous fume temperatures of 180°F for standard resins. Other options available up to 230°F.

The fire-retardant qualities which equal or exceed the ASTME-84 Tunnel Test Rating of less than 25. For optimum structural integrity, the impeller shall be constructed of vinyl ester resin.

All interior surfaces exposed to the corrosive air stream shall be resin rich and contain not more than 20% of the appropriate surface veil, such as “C” grade fiberglass veil for most service conditions and Nexus surface veil when fluorides are present.

All surfaces exposed to the atmosphere shall be resin rich of a paraffinated resin stabilized against ultraviolet degradation and include a reinforcement not to exceed more than 20% of “C” grade fiberglass, to serve as protection against weathering, fumes, spillage and ultraviolet attack.

Immediately beneath the surfacing veil of the interior and exterior surfaces, the laminate shall be layers of chopped strand mat of Type E glass.

When conductivity is required, the interior of the fan housing and the impeller shall have a carbon gel coat that has a surface conductivity range of 0-30,000 ohms resistance. A grounding lug shall be provided to facilitate the discharging of static electricity to an external ground.

Metal Parts. No metal parts shall be exposed to the corrosive air stream.

Shaft. The shaft shall be of such design and size so as to operate below its first critical speed.

Bearings. Fan to be equipped with heavy-duty bearings, rated for a L-10 life of 100,000 hours, grease packed and sealed against dust and moisture.

Belt drives. Fan to be equipped with belt drives using matched “deep V” type V-belts sized to handle 1.5 times the rated brake horsepower of the fan motor and incorporating industrial type companion sheaves.

Balancing. Fan shall be statically and dynamically balanced at its rated operating speed and a certificate of compliance supplied at the time of delivery.

Guards & Canopies. Provide OSHA approved FRP belt, shaft, and bearing guards, properly ventilated for drive belt and bearing cooling for arrangement 9. Provide OSHA approved one piece FRP Canopy for Arrangement 10. FRP guards to be supplied with UV resistant top coat.

Impeller. The fan impeller shall be constructed of premium-grade vinyl ester resin in accordance with ASTM D4167 and the laminate shall meet or exceed the requirements for defects per ASTM D2563 Level II. Customer inspections are available to ensure compliance. The fan impellers shall be made using a non-fire retardant vinyl ester resin chosen for strength characteristics. Resin for the fan impellers is to be DION 9800 or approved equal. Steel impeller hub shall be encapsulated in FRP to ensure corrosion resistant integrity and constructed so that the shaft remains outside of the airstream. Metal-constructed impellers coated with FRP, or impellers permanently bonded to shaft are not acceptable.

Hardware.

- All hardware to be Type 316 Stainless Steel.

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