

# SHELDONS

## FUME EXHAUST FANS

FOR CORROSIVE SERVICE

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CATALOGUE 667B



CAST IRON FANS

WATER-WASHED INDUCTION VENTURIS

PVC & FRP EXHAUSTERS

PVC 2-STAGE BIFURCATORS



**SHELDONS ENGINEERING LIMITED**

Cambridge, Ontario; Montreal, Toronto, Hamilton, London, Ottawa, Edmonton, Vancouver

Representatives in principal cities across Canada

Sheldons Manufacturing Corporation, Elgin, Illinois



# SHELDONS FUME EXHAUST FAN SYSTEMS

Sheldons now offer the first complete line of fume exhaust fans in one catalogue.

Based on research and field experience each fume exhaust system has been designed specifically for the job of handling exhaust fumes from laboratory fume hoods.

Each system outlined in this catalogue is complete and separate in itself, thus allowing the most economical and practical choice to be made of the fume exhaust fans most suitable for any installation. For actual hood design data, refer to ASHRAE guide.

## 5 SYSTEM DESIGNS AVAILABLE

Select the exhaust fan most suitable for the corrosive service and space layout.

1. **CAST IRON FUME FANS** . . . Lowest initial cost.
2. **PVC & FRP EXHAUST FANS** . . . For ultimate in corrosion resistance.
3. **WATER-WASHED INDUCTION VENTURIS**... For perchloric acid fume exhaust and other explosive and hazardous gases.
4. **PVC BIFURCATORS** . . . For ultimate in corrosion resistance and ease of installation, with minimum space requirements.
5. **COATED FANS** . . . Wide choice of coating materials on fan case and wheel — for specific fumes.

**SPECIAL MATERIAL FANS** . . . Stainless steel; monel, aluminum or titanium fans are available to meet very exacting corrosion problems.

## COMPLETE INFORMATION PROVIDED . . .

All information packaged to provide a guide to the selection of the most practical solution to fume exhaust problems.

- Details of construction
- Dimensions
- Engineering data
- Corrosion resistance charts
- Fan ratings on all sizes listed
- Recommendations on equipment application
- Accessories available and listed

## 1 CAST IRON FANS



See Page 4

Sheldons offers the most complete line of cast iron centrifugal fans in this field. Heavy cast iron casings, with a choice of 2 wheel types and 7 sizes provide an extremely wide range of capacities.

One piece cast iron fan cases with coated mild steel wheels, offer the most economical system of exhausting mildly corrosive fumes. For more severe fume concentrations, stainless steel wheels and shafts can be incorporated.

## 2 PVC & FRP CENTRIFUGAL EXHAUSTERS



See Page 8

PVC (polyvinyl chloride) and FRP (fibreglass reinforced plastic) are often the only practical solution to the more severe corrosive service conditions.

PVC Centrifugal fans have both fan case and wheel fabricated from rigid PVC for the ultimate resistance to corrosion.

FRP Centrifugal fans have fan case and wheel fabricated or moulded from solid FRP. FRP is advantageous on certain severe fume applications, and is able to withstand higher temperatures than PVC.

Long life of fan case and wheel are assured with the use of PVC or FRP fans under the severest conditions.



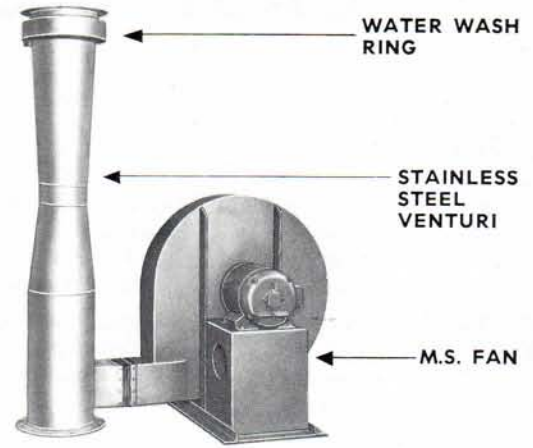
### 3 WATER-WASHED INDUCTION VENTURIS

Exhaust fumes are induced through a venturi by supplying air to a jet nozzle from an external fan or blower.

A water ring flushes the walls of the venturi and lower duct work clean of any dangerous build-up of crystals. Water runs down into wet-type fume hood designed to handle the water flow.

Induction venturis are useful where exhaust fumes are hazardous, or could be explosive if handled directly through a fan.

These units were designed particularly for exhausting perchloric acid fumes, which form explosive compounds on the walls of ducts and in fan cases.



INDUCED FUMES See Page 12

### 4 AXIAL AND MIXED FLOW

Sheldons 2-stage PVC Bifurcators are designed for ease of installation in straight duct runs, and with their solid PVC fan case and plastisol-coated wheels, provide the ultimate in corrosion resistance.

Two-stage axial flow fan keeps speeds down and reduces noise level. The two-way (bifurcated) air passage around the bearing well keeps bearings and drive out of the gas stream.

Special shaft seals protect the bearings from possible fume contamination and corrosion.

These PVC bifurcators can be mounted either vertically or horizontally and 4 different mounting cradle arrangements are available to adapt to any installation layout.



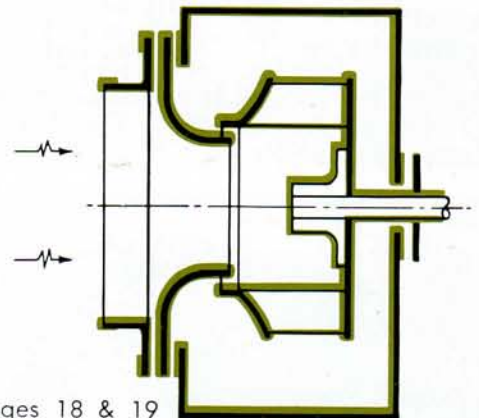
2 - STAGE PVC BIFURCATOR See Page 14

### 5 COATED FANS

Nearly all the fans fabricated by Sheldons in mild steel and cast iron can be successfully coated with a variety of materials such as plastisol, neoprene, hypalon, rubber, baked phenolic resin, epoxy and polyester resins. There are some exceptions to this and these are listed under "Coated Fans" on page 23.

For smaller fume exhaust systems, Sheldons small direct-connected Utility fans can be used, and these fans are available with coatings of baked phenolic resin, Eisenheiss acid-resisting paint, or epoxy paint.

These small Utility fans are usually employed for general intermittent use where conditions are not severe, as in public school laboratories.



See Pages 18 & 19

COATED WHEEL AND LINED FAN CASE

\* PVC — polyvinyl chloride



# CAST IRON FUME FANS

Sheldons offers a wide range of cast iron fume fans with two wheel types. These fans have all the characteristics of the forward curve and backward inclined centrifugal fans with high efficiency, low speed and low sound levels. They are used with mild steel wheels for low fume concentrations; for more severe fume concentration, coated wheels or stainless steel wheels and shafts can be incorporated.

**CONSTRUCTION** — The heavy cast iron fan case is a one piece casting with the inlet cast integrally with the fan case. This eliminates a gasket and reduces chance of fume leaks.

A tapped drain hole is provided at the low point of fan casing. A mild steel inlet side support is provided on all sizes.

**MOTOR AND BEARING PEDESTAL** — This is fabricated from mild steel, braced for maximum stiffness at both bearing and motor supports, in a space-saving Arr. 10 for compact installation. An adjustable V-belt drive, belt guard, and heavy duty greasable ball bearings are standard in Arr. 10. A weather cover for outdoor installation is also available.

**DUCT CONNECTIONS** — Slip joints are provided at inlet and outlet. Flanged inlets and outlets are not available.

**WHEELS** — Sheldons cast iron fume exhaust fans are available with either a type F forward-curved wheel, or with a type B backward-inclined non-overloading wheel in sizes 100 through 165. In size 91, type F wheels only are recommended.

Wheels are fabricated in mild steel as standard, but stainless steel wheels and shafts are also available to meet more severe fume applications. Where necessary, mild steel wheels should be coated to resist corrosion. The following materials and maximum thicknesses are recommended.

**COATINGS:** Mild Steel Wheels

PLASTISOL  
HYPALON  
NEOPRENE



SIZES	MAXIMUM THICKNESS
91F to 122F	30 mil
135F to 165F	1/16"
100B to 122B	1/16"
135B to 165B	3/32"

**BAKED PHENOLIC** coatings are a maximum of 30 mil for all sizes. For details of other coatings possible with these wheels, see page 23.



## ACCESSORIES

**DRAIN PLUG** — provided at low point of fan case as standard.

**SHAFT-SEAL** — of appropriate material is provided where the shaft enters the fan case, as an optional extra.

**ACCESS DOORS** — not available on cast iron fans.

**WEATHER-HOOD** — provided as optional extra.

**VIBRATION ISOLATION** — both rubber-in-shear and springs available as extra.

**OUTLET SHUTTERS** — standard design has aluminum blades, but can also be furnished in stainless steel.

## APPLICATION DATA

1. Cast iron fume fans are extremely useful in applications where fume concentration is low. The hard surface of cast iron resists corrosive attack, and adds to the long life expected from this fume exhaust fan.

2. The choice of either Forward Curved or Backward Inclined wheels makes it ideal for a wide variety of applications. In general, for the same size fan selected at maximum efficiency and for the same capacity, the type F wheel will usually be quieter due to the lower mechanical noise at its lower fan speed.

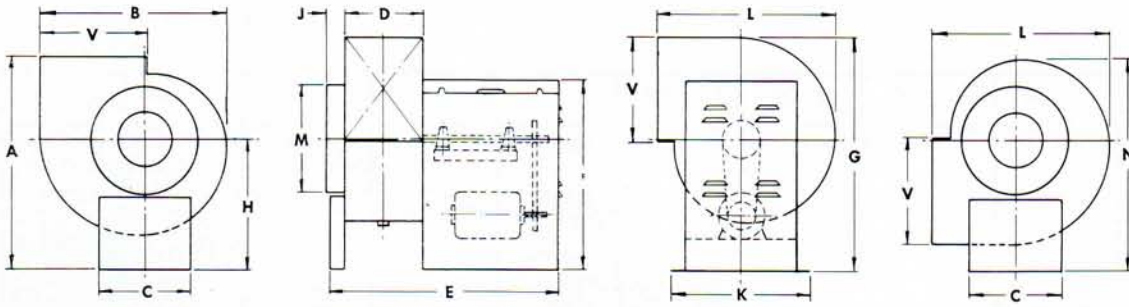
3. The performance ratings indicate areas of relative quietness of operation. Sound power levels in 8 octave bands for all sizes and speeds are available on request.

4. In general, when handling any fumes from laboratory fume hoods, it is recommended that the mild steel wheels be coated to withstand corrosion and to prolong the life of the installation.

5. If fans are to be roof-mounted, it is recommended that the fan discharge vertically up for maximum fume dispersion.



# DIMENSIONS . . . . . CAST IRON FUME FANS



**NOTE :**  
DOWN  
DISCHARGE  
NOT  
AVAILABLE

SIZE	A	B	C	D OUTS.	E	F	G	H	J	K	L	M DIA.	N	V OUTS.	FAN SHAFT DIA.	MAX. WT.
91	23	18	10	7 <sup>5</sup> / <sub>8</sub>	23 <sup>3</sup> / <sub>4</sub>	21 <sup>1</sup> / <sub>4</sub>	25 <sup>1</sup> / <sub>8</sub>	15	2	15	17 <sup>1</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>4</sub>	22 <sup>7</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>16</sub>	220
100	24	19 <sup>7</sup> / <sub>8</sub>	10	8 <sup>3</sup> / <sub>8</sub>	24 <sup>1</sup> / <sub>2</sub>	21 <sup>1</sup> / <sub>4</sub>	26 <sup>1</sup> / <sub>8</sub>	15	2	15	19 <sup>1</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>2</sub>	23 <sup>3</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>2</sub>	1 <sup>3</sup> / <sub>16</sub>	240
111	26	22	11 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>4</sub>	26 <sup>3</sup> / <sub>8</sub>	23	28 <sup>3</sup> / <sub>8</sub>	16	2	16 <sup>1</sup> / <sub>2</sub>	21	12 <sup>3</sup> / <sub>4</sub>	25 <sup>3</sup> / <sub>4</sub>	12 <sup>9</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>	260
122	27 <sup>1</sup> / <sub>4</sub>	24 <sup>1</sup> / <sub>8</sub>	13	10 <sup>1</sup> / <sub>8</sub>	28 <sup>3</sup> / <sub>4</sub>	24 <sup>1</sup> / <sub>4</sub>	30 <sup>1</sup> / <sub>8</sub>	16 <sup>1</sup> / <sub>2</sub>	2	18	23	14	27 <sup>1</sup> / <sub>8</sub>	13 <sup>7</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>	290
135	28	26 <sup>7</sup> / <sub>8</sub>	13	11	29 <sup>5</sup> / <sub>8</sub>	24 <sup>1</sup> / <sub>4</sub>	31 <sup>1</sup> / <sub>2</sub>	16 <sup>1</sup> / <sub>2</sub>	2	18	25	15 <sup>1</sup> / <sub>2</sub>	28 <sup>1</sup> / <sub>8</sub>	15 <sup>1</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>16</sub>	350
150	31 <sup>1</sup> / <sub>4</sub>	29 <sup>1</sup> / <sub>2</sub>	15	12 <sup>1</sup> / <sub>4</sub>	34 <sup>7</sup> / <sub>8</sub>	27 <sup>1</sup> / <sub>4</sub>	35 <sup>1</sup> / <sub>8</sub>	18 <sup>1</sup> / <sub>2</sub>	2	20 <sup>1</sup> / <sub>2</sub>	27 <sup>5</sup> / <sub>8</sub>	17	31 <sup>3</sup> / <sub>8</sub>	17	1 <sup>3</sup> / <sub>16</sub>	450
165	34	32 <sup>3</sup> / <sub>8</sub>	15	13 <sup>3</sup> / <sub>8</sub>	36	28 <sup>3</sup> / <sub>4</sub>	38 <sup>1</sup> / <sub>4</sub>	20	2	20 <sup>1</sup> / <sub>2</sub>	30 <sup>3</sup> / <sub>8</sub>	18 <sup>3</sup> / <sub>4</sub>	34 <sup>1</sup> / <sub>8</sub>	18 <sup>1</sup> / <sub>2</sub>	1 <sup>3</sup> / <sub>16</sub>	530

# RATINGS . . . . . CAST IRON FUME FANS

## SIZE 91 F

WHEEL DIA. 9<sup>1</sup>/<sub>8</sub>"  
OUTLET AREA .495 SQ FT

CFM	O.V. FPM	1/4" SP		1/2" SP		3/4" SP		1" SP		1 1/4" SP		1 1/2" SP		1 3/4" SP		2" SP		2 1/4" SP		2 1/2" SP	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
395	800	650	.05	900	.08																
445	900	680	.06	930	.09	1110	.15	1300	.18	1420	.20										
495	1000	700	.07	910	.10	1100	.17	1310	.20	1435	.23	1570	.28	1660	.30						
595	1200	750	.08	950	.15	1110	.19	1300	.22	1450	.28	1600	.35	1700	.35	1820	.40	1915	.50		
695	1400	850	.10	1025	.16	1160	.20	1300	.23	1430	.30	1600	.38	1700	.42	1860	.48	1935	.60	2015	.62
795	1600	930	.12	1100	.20	1210	.22	1330	.29	1460	.35	1590	.42	1700	.47	1850	.55	1950	.62	2030	.70
895	1800	1020	.22	1170	.24	1270	.30	1400	.35	1510	.40	1610	.47	1710	.50	1850	.60	1950	.70	2050	.75
995	2000	1110	.25	1250	.30	1375	.40	1460	.43	1555	.50	1650	.54	1740	.58	1840	.63	1950	.75	2050	.85
1090	2200	1180	.30	1325	.42	1420	.46	1525	.50	1625	.57	1700	.63	1780	.67	1875	.74	1960	.82	2050	.90
1190	2400	1300	.42	1400	.50	1500	.55	1600	.62	1700	.70	1775	.72	1850	.77	1925	.85	2000	.90	2070	1.00
1290	2600	1400	.55	1500	.60	1590	.68	1680	.72	1775	.79	1850	.82	1910	.90	1980	.96	2050	1.06	2100	1.10

## SIZE 100 F

WHEEL DIA. 10"  
OUTLET AREA .601 SQ FT

480	800	600	.02	820	.05																
540	900	605	.02	820	.07	950	.12	1160	.20	1300	.22										
600	1000	640	.03	850	.10	1020	.14	1160	.23	1330	.23	1440	.32	1530	.39						
720	1200	700	.05	890	.12	1040	.17	1180	.25	1330	.30	1450	.40	1550	.42	1640	.48	1750	.60		
840	1400	800	.07	940	.19	1050	.23	1180	.30	1340	.34	1460	.42	1550	.50	1670	.56	1780	.70	1855	.76
960	1600	850	.12	1000	.26	1100	.30	1200	.35	1350	.41	1460	.48	1560	.55	1670	.65	1795	.80	1880	.85
1080	1800	950	.17	1090	.33	1175	.38	1250	.42	1370	.47	1480	.56	1570	.58	1690	.70	1800	.85	1880	.92
1200	2000	1025	.25	1140	.42	1220	.45	1310	.50	1410	.55	1500	.60	1600	.70	1690	.77	1800	.93	1890	1.10
1320	2200	1110	.30	1200	.50	1300	.55	1400	.60	1475	.66	1550	.76	1630	.81	1700	.90	1800	1.02	1895	1.15
1440	2400	1200	.40	1270	.61	1390	.65	1470	.72	1550	.85	1630	.90	1700	.98	1790	1.07	1850	1.15	1900	1.20
1560	2600	1300	.50	1390	.75	1460	.85	1550	.94	1630	1.00	1700	1.07	1780	1.15	1830	1.22	1900	1.32	1950	1.35

## SIZE 100 BI

WHEEL DIA. 10"  
OUTLET AREA .601 SQ FT

480	800	1193	.04	1441	.08	1641	.12	1823	.16	1996	.20										
540	900	1272	.06	1518	.09	1712	.13	1879	.18	2041	.22	2192	.27								
600	1000	1353	.07	1586	.11	1780	.15	1949	.20	2098	.25	2245	.30	2381	.35	2522	.41				
721	1200	1527	.10	1741	.15	1924	.20	2092	.25	2236	.31	2370	.36	2491	.41	2619	.48	2734	.54	2848	.60
841	1400	1715	.14	1903	.20	2077	.26	2232	.32	2383	.38	2507	.44	2632	.50	2747	.56	2853	.63	2959	.70
961	1600	1907	.20	2071	.26	2237	.33	2386	.39	2522	.46	2660	.53	2777	.60	2882	.66	2993	.74	3095	.81
1081	1800	2103	.27	2256	.34	2401	.41	2544	.48	2676	.56	2798	.63	2918	.71	3036	.79	3138	.86	3231	.94
1201	2000	2301	.36	2444	.43	2573	.50	2707	.58	2835	.67	2954	.75	3066	.84	3172	.92	3283	1.01	3385	1.09
1322	2200	2499	.46	2636	.54	2758	.62	2874	.70	2997	.79	3113	.88	3222	.98	3325	1.07	3424	1.16	3519	1.26
1442	2400	2698	.58	2831	.67	2947	.76	3055	.84	3164	.93	3275	1.03	3381	1.14	3482	1.24	3579	1.34	3672	1.44
1562	2600	2900	.72	3028	.82	3138	.91	3241	1.01	3339	1.10	3441	1.20	3544	1.31	3642	1.42	3737	1.53	3827	1.64

VERY QUIET



QUIET



SLIGHT

NOISE





# RATINGS (cont.) . . . . . CAST IRON FUME FANS

## SIZE 111 F

WHEEL DIA. 11 1/8"  
OUTLET AREA .74 SQ FT

CFM	O.V. FPM	1/4" SP		1/2" SP		3/4" SP		1" SP		1 1/4" SP		1 1/2" SP		1 3/4" SP		2" SP		2 1/4" SP		2 1/2" SP	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
590	800	500	.05	770	.08																
665	900	490	.06	790	.10	920	.18	1040	.25	1170	.27										
740	1000	500	.07	750	.12	935	.20	1040	.28	1190	.28	1295	.40	1380	.48						
890	1200	550	.10	800	.15	940	.22	1060	.31	1195	.37	1300	.50	1390	.52	1480	.60	1575	.75		
1040	1400	650	.12	850	.22	950	.28	1080	.36	1200	.45	1305	.52	1400	.62	1500	.70	1600	.87	1670	.94
1190	1600	800	.17	900	.31	1000	.35	1110	.42	1210	.50	1310	.59	1405	.68	1500	.80	1615	.99	1690	1.05
1340	1800	875	.25	950	.37	1080	.42	1150	.50	1225	.56	1320	.65	1410	.72	1510	.87	1610	1.05	1690	1.11
1480	2000	930	.32	1030	.45	1120	.54	1190	.61	1250	.66	1330	.75	1420	.85	1500	.96	1600	1.11	1700	1.36
1630	2200	1000	.40	1100	.60	1180	.67	1240	.73	1310	.85	1380	.90	1450	1.04	1510	1.10	1590	1.20	1710	1.43
1780	2400	1100	.50	1175	.76	1240	.83	1300	.91	1350	1.00	1450	1.12	1500	1.20	1560	1.30	1630	1.37	1715	1.48
1920	2600	1150	.65	1230	.92	1290	1.00	1350	1.10	1410	1.20	1500	1.29	1550	1.35	1610	1.42	1680	1.53	1750	1.65

## SIZE 111 BI

WHEEL DIA. 11 1/8"  
OUTLET AREA .74 SQ FT

591	800	1069	.06	1292	.10	1472	.14	1636	.19	1793	.25										
665	900	1140	.07	1361	.12	1536	.17	1687	.22	1832	.27	1969	.33								
739	1000	1213	.09	1422	.14	1597	.19	1749	.25	1883	.30	2015	.37	2138	.43	2266	.51				
887	1200	1368	.12	1560	.19	1726	.25	1876	.31	2006	.38	2126	.44	2236	.51	2351	.59	2455	.67	2558	.75
1035	1400	1535	.18	1705	.24	1862	.32	2001	.39	2137	.47	2248	.54	2362	.62	2464	.69	2560	.77	2657	.86
1183	1600	1707	.25	1855	.32	2004	.40	2139	.48	2261	.57	2385	.65	2490	.74	2585	.82	2686	.91	2777	1.00
1331	1800	1882	.33	2020	.41	2151	.50	2280	.59	2399	.68	2509	.78	2618	.87	2722	.97	2814	1.06	2898	1.15
1479	2000	2059	.44	2188	.53	2305	.61	2426	.72	2541	.82	2648	.92	2748	1.03	2844	1.13	2945	1.24	3036	1.35
1627	2200	2236	.56	2360	.66	2470	.76	2575	.86	2686	.97	2790	1.09	2888	1.20	2981	1.31	3070	1.43	3157	1.54
1775	2400	2414	.71	2534	.82	2638	.92	2736	1.03	2834	1.15	2935	1.27	3030	1.39	3121	1.52	3208	1.64	3292	1.77
1923	2600	2594	.88	2710	1.00	2809	1.12	2902	1.23	2990	1.35	3083	1.47	3176	1.61	3264	1.74	3349	1.88	3431	2.02

## SIZE 122 F

WHEEL DIA. 12 1/4"  
OUTLET AREA 0.86 SQ FT

686	800	470	.05	655	.11																
773	900	487	.06	650	.12	800	.18														
859	1000	510	.08	649	.13	750	.20	875	.27												
1031	1200	560	.11	676	.17	794	.23	895	.31	1040	.40										
1203	1400	606	.16	717	.22	817	.28	918	.36	1035	.45	1140	.57	1235	.66						
1375	1600	655	.21	768	.28	852	.35	941	.43	1028	.51	1135	.62	1228	.73	1320	.86				
1547	1800	707	.28	815	.36	899	.43	975	.52	1053	.61	1130	.70	1214	.81	1310	.93	1390	1.10		
1719	2000	762	.37	861	.45	950	.54	1019	.62	1087	.71	1158	.81	1228	.92	1295	1.02	1387	1.20	1450	1.35
1891	2200	821	.47	911	.56	997	.65	1070	.74	1131	.84	1193	.94	1257	1.05	1321	1.16	1383	1.28	1456	1.42
2063	2400	882	.57	962	.69	1043	.79	1119	.89	1180	.99	1237	1.10	1293	1.21	1352	1.33	1411	1.45	1469	1.57
2235	2600	944	.71	1014	.83	1091	.94	1164	1.05	1231	1.17	1285	1.27	1337	1.39	1389	1.51	1443	1.63	1497	1.77

## SIZE 122 BI

WHEEL DIA. 12 1/4"  
OUTLET AREA 0.86 SQ FT

687	800	909	.06	1107	.11	1280	.16	1437	.21	1582	.28										
773	900	969	.08	1157	.13	1320	.18	1470	.23	1608	.30										
859	1000	1028	.09	1210	.15	1366	.20	1508	.26	1641	.33										
1031	1200	1153	.13	1326	.20	1468	.26	1600	.33	1720	.39	1837	.47	1948	.55	2052	.63	2155	.72	2254	.82
1203	1400	1283	.18	1446	.26	1583	.34	1703	.41	1818	.49	1925	.56	2027	.64	2127	.73	2223	.82	2316	.91
1375	1600	1417	.25	1570	.33	1702	.42	1818	.51	1924	.60	2026	.68	2122	.77	2215	.85	2304	.94	2393	1.04
1547	1800	1554	.33	1697	.42	1822	.52	1938	.62	2039	.72	2135	.82	2225	.91	2315	1.01	2400	1.11	2482	1.20
1719	2000	1694	.43	1828	.53	1948	.64	2057	.74	2159	.85	2251	.97	2338	1.08	2421	1.19	2502	1.29	2581	1.40
1891	2200	1835	.54	1961	.66	2076	.77	2180	.89	2278	1.01	2371	1.13	2455	1.25	2535	1.37	2612	1.50		
2063	2400	1978	.68	2097	.80	2206	.93	2307	1.06	2400	1.18	2490	1.32	2575	1.45						
2235	2600	2123	.84	2236	.97	2339	1.11	2436	1.25	2527	1.39										

## SIZE 135 F

WHEEL DIA. 13 1/2"  
OUTLET AREA 1.04 SQ FT

830	800	425	.06	593	.13																
935	900	442	.08	585	.15	722	.22														
1039	1000	462	.09	589	.16	680	.25	795	.33												
1247	1200	507	.13	612	.20	721	.28	812	.38	950	.49										
1455	1400	548	.19	650	.26	740	.34	832	.43	940	.56	1040	.69	1125	.80						
1663	1600	593	.25	695	.34	772	.42	853	.52	932	.62	1030	.75	1115	.88	1200	1.05				
1871	1800	639	.34	738	.43	814	.52	883	.62	955	.73	1024	.84	1101	.97	1190	1.15	1265	1.33		
2079	2000	690	.44	780	.54	861	.64	923	.75	985	.86	1049	.98	1113	1.10	1173	1.24	1260	1.45	1320	1.64
2287	2200	742	.56	824	.67	902	.79	968	.90	1024	1.01	1081	1.14	1139	1.27	1197	1.40	1254	1.54	1315	1.70
2495	2400	797	.68	870	.83	944	.95	1013	1.08	1069	1.19	1120	1.32	1171	1.46	1225	1.60	1279	1.74	1332	1.90
2703	2600	853	.85	917	1.00	987	1.13	1054	1.27	1115	1.41	1164	1.53	1211	1.67	1258	1.82	1308	1.97	1357	2.14

VERY QUIET

QUIET

SLIGHT NOISE



# RATINGS (cont.) . . . . . CAST IRON FUME FANS

## SIZE 135 BI

WHEEL DIA. 13½"  
OUTLET AREA 1.04 SQ FT

CFM	O.V. FPM	¼" SP		½" SP		¾" SP		1" SP		1¼" SP		1½" SP		1¾" SP		2" SP		2¼" SP		2½" SP	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
831	800	821	.08	1002	.13	1159	.19	1301	.26	1434	.34										
935	900	875	.09	1047	.15	1195	.21	1331	.28	1456	.36										
1039	1000	929	.11	1094	.18	1236	.24	1365	.31	1486	.39										
1247	1200	1042	.16	1199	.24	1327	.32	1447	.40	1557	.47	1663	.56	1763	.66	1858	.76	1952	.87	2041	.99
1455	1400	1158	.22	1306	.31	1431	.40	1540	.50	1644	.59	1742	.68	1835	.77	1926	.88	2012	.99	2097	1.10
1663	1600	1279	.30	1418	.40	1538	.51	1643	.61	1740	.72	1832	.82	1920	.92	2004	1.03	2085	1.14	2166	1.26
1871	1800	1402	.39	1533	.51	1646	.62	1751	.74	1843	.86	1930	.99	2012	1.10	2094	1.22	2171	1.33	2246	1.45
2079	2000	1528	.51	1650	.63	1759	.76	1859	.89	1951	1.03	2034	1.16	2113	1.30	2189	1.43	2263	1.56	2335	1.69
2287	2200	1655	.65	1770	.79	1875	.93	1969	1.07	2058	1.21	2142	1.36	2219	1.51	2291	1.66	2361	1.80	2429	1.95
2495	2400	1784	.81	1893	.97	1992	1.12	2084	1.27	2168	1.42	2250	1.58	2327	1.74	2398	1.91				
2703	2600	1915	1.00	2017	1.17	2111	1.33	2200	1.50			2359	1.83								

## SIZE 150 F

WHEEL DIA. 15"  
OUTLET AREA 1.28 SQ FT

1030	800	385	.07	535	.16																
1151	900	397	.10	530	.18	655	.27														
1279	1000	415	.11	530	.19	615	.30	715	.41												
1535	1200	455	.17	551	.25	649	.34	732	.47	850	.60										
1791	1400	493	.23	584	.32	666	.42	749	.52	847	.68	932	.86	1020	.98						
2047	1600	533	.31	625	.41	694	.52	762	.61	837	.74	930	.93	1000	1.10	1080	1.30				
2303	1800	574	.41	663	.53	731	.64	788	.73	853	.86	919	1.01	995	1.22	1070	1.40	1135	1.70		
2559	2000	619	.54	701	.66	773	.79	820	.88	879	1.02	938	1.16	996	1.31	1060	1.55	1130	1.80	1185	2.05
2815	2200	666	.60	741	.82	811	.96	859	1.05	910	1.19	964	1.34	1018	1.51	1077	1.72	1128	1.90	1190	2.09
3071	2400	716	.84	782	1.01	848	1.16	900	1.26	948	1.40	995	1.55	1045	1.72	1101	1.97	1150	2.14	1198	2.33
3327	2600	766	1.03	824	1.23	887	1.39	936	1.48	989	1.64	1033	1.80	1076	1.97	1131	2.23	1176	2.42	1221	2.62

## SIZE 150 BI

WHEEL DIA. 15"  
OUTLET AREA 1.28 SQ FT

1023	800	738	.09	901	.16	1042	.23	1171	.32	1290	.42										
1151	900	786	.11	941	.19	1074	.26	1197	.35	1310	.45										
1279	1000	835	.14	983	.22	1111	.30	1228	.39	1336	.48										
1535	1200	935	.19	1077	.29	1193	.39	1301	.49	1400	.58	1495	.69	1588	.81	1674	.94	1758	1.08		
1791	1400	1040	.27	1174	.38	1286	.50	1384	.61	1478	.72	1566	.83	1652	.95	1734	1.08	1812	1.22		
2047	1600	1148	.36	1273	.49	1382	.62	1477	.75	1563	.88	1647	1.01	1729	1.14	1805	1.27	1878	1.40		
2303	1800	1259	.48	1377	.62	1479	.76	1573	.91	1656	1.06	1734	1.21	1812	1.36	1885	1.50	1955	1.64		
2559	2000	1372	.62	1482	.78	1580	.94	1670	1.10	1753	1.26	1828	1.43	1903	1.60	1971	1.76	2037	1.92		
2815	2200	1486	.80	1590	.96	1684	1.14	1769	1.31	1849	1.49	1925	1.67	1997	1.86	2063	2.04	2126	2.22		
3071	2400	1602	1.00	1699	1.18	1789	1.37	1871	1.56	1948	1.75	2021	1.95	2095	2.15	2159	2.35	2220	2.54		
3327	2600	1718	1.23	1811	1.43	1896	1.63	1975	1.84	2049	2.04	2119	2.24	2191	2.47	2256	2.68	2316	2.90		

## SIZE 165 F

WHEEL DIA. 16½"  
OUTLET AREA 1.56 SQ FT

1250	800	358	.09	484	.20																
1403	900	362	.12	480	.22	592	.33														
1559	1000	378	.14	482	.23	556	.37	650	.49												
1871	1200	415	.20	502	.30	589	.42	663	.57	770	.73										
2183	1400	450	.28	533	.39	606	.51	681	.65	765	.82	845	1.04	915	1.20						
2495	1600	486	.38	570	.51	633	.63	698	.78	763	.93	840	1.13	910	1.33	977	1.57				
2807	1800	525	.51	605	.65	667	.78	724	.93	782	1.10	839	1.27	901	1.46	970	1.70	1030	2.00		
3119	2000	566	.66	639	.81	706	.97	757	1.12	807	1.29	860	1.48	912	1.66	961	1.86	1025	2.20	1075	2.46
3431	2200	609	.84	676	1.01	740	1.18	794	1.35	840	1.52	886	1.71	933	1.91	981	2.10	1027	2.32	1076	2.55
3743	2400	655	1.03	714	1.25	774	1.43	831	1.62	876	1.80	918	1.99	960	2.19	1003	2.40	1047	2.62	1091	2.85
4055	2600	700	1.28	753	1.51	810	1.71	864	1.91	914	2.12	954	2.31	993	2.52	1031	2.74	1072	2.96	1112	3.21

## SIZE 165 BI

WHEEL DIA. 16½"  
OUTLET AREA 1.56 SQ FT

1248	800	641	.09	802	.16																
1403	900	673	.10	829	.18	965	.26														
1559	1000	707	.12	860	.20	988	.29														
1871	1200	792	.17	930	.27	1044	.36	1152	.47	1254	.58										
2184	1400	880	.24	994	.34	1116	.46	1211	.57	1303	.69	1394	.82	1480	.95						
2496	1600	973	.32	1078	.43	1179	.56	1283	.70	1367	.82	1448	.95	1528	1.09	1605	1.24	1681	1.39		
2808	1800	1069	.43	1165	.55	1252	.68	1347	.83	1438	.98	1515	1.13	1585	1.27	1658	1.42	1729	1.58		
3119	2000	1168	.56	1254	.69	1337	.83	1414	.97	1503	1.15	1585	1.32	1657	1.48	1720	1.63	1785	1.80		
3432	2200	1274	.73	1347	.86	1425	1.01	1497	1.16	1568	1.32	1649	1.52	1725	1.71	1793	1.89	1854	2.06		
3744	2400	1381	.92	1441	1.05	1513	1.21	1584	1.38	1648	1.54	1714	1.73	1788	1.94	1860	2.15	1925	2.35		
4056	2600	1488	1.15	1538	1.28	1606	1.45	1672	1.63	1735	1.81	1794	1.98	1854	2.19	1922	2.41	1990	2.65		

VERY QUIET

QUIET

SLIGHT  
NOISE



# PVC\* AND FRP† CENTRIFUGAL EXHAUST FANS

The use of PVC\* and FRP† in fume exhaust systems has increased enormously over the past few years as designers become more aware of the tremendous advantage of these materials over conventional metals in resisting corrosion.

PVC and FRP offer the ultimate resistance to many common corrosive fumes, and thus increase the useful life of any fume exhaust installation.

Sheldons have had considerable experience in the design of both PVC and FRP fans for all pressures and capacities.

The Sheldons type "XS" exhauster is available in either PVC or FRP construction, in 5 practical sizes for use in fume exhaust system design. These fans have the desirable characteristics of centrifugal fans with a relatively flat pressure curve, low speed, low sound levels, and high efficiencies.



PVC  
EXHAUSTER  
ARR. 10

## • • • • • CONSTRUCTION • • • • •

### PVC EXHAUSTERS

The fan casings are fabricated from high impact rigid PVC, using moulding and hot air welding techniques. External reinforcement where necessary is also of PVC.

Large well-filletted bosses are provided on fan case for bolting directly to mild steel bearing and motor pedestal. Mounting bolts do not project into fan case.

Fan casings are furnished with reinforced slip-fit connections as standard at both inlet and outlet. Flanged inlets and outlets can be supplied as an optional extra. The thick flanges with reinforcing ribs provide warp-free surfaces for adequate tightening to ensure leak-proof joints.

Fan casings are normally made non-reversible, but can be mounted in any discharge position (except down discharge).

\* PVC — polyvinyl chloride

### FRP EXHAUSTERS

Fan casings are moulded from fibreglass reinforced polyester resin, using hand lay-up techniques. Since FRP is basically very strong for its weight, very little additional external reinforcement is required. Steel studs for mounting the fan case and for holding the inlet are moulded into the fibreglass with a mild steel holding ring. Extra fibreglass is overlaid on the mild steel ring to provide maximum corrosion protection.

Slip-fit connections are provided as standard at inlet and outlet. Flanged connections are an optional extra.

Fan cases are non-reversible but can be mounted in any discharge position (except down discharge).

† FRP — fibreglass reinforced plastic



# WHEEL DESIGN . . . . . PVC and FRP EXHAUSTERS

## PVC WHEELS

Sheldons type "XS" exhauster wheel is fabricated entirely from rigid PVC, using moulding and hot air welding techniques. The steel hub is encapsulated in PVC and extends out through fan casing to keep shaft out of the fume stream.

PVC balance patches are used exclusively for dynamic balance.

**NOTE:** PVC wheels in this catalogue are limited to a maximum tip speed of 8500 fpm at 70° F. At the maximum operating temperature of 130° F., the tip speed is limited to approx. 7500 fpm.

## FRP WHEELS

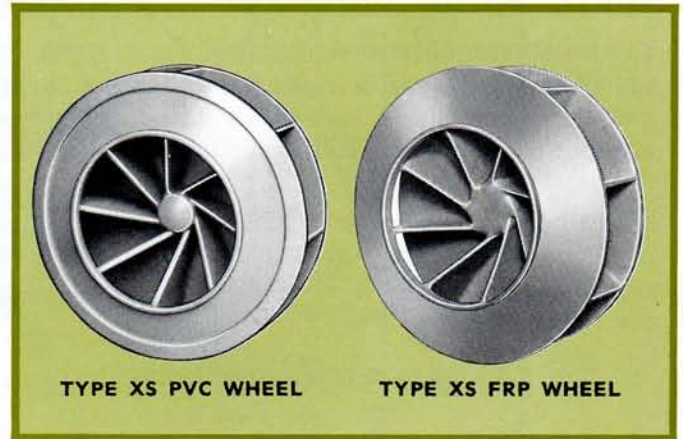
Sheldons Type "XS" exhauster wheel is fabricated entirely from FRP using moulds and hand lay-up techniques to ensure excellent bonding between layers of glass mat.

The steel hub is encapsulated in FRP and extends out through fan casing. The shaft seal rides on this FRP hub extension thus keeping the shaft out of the airstream. Wheels are dynamically balanced before assembly.

**NOTE:** FRP wheels in this catalogue are limited to a maximum tip speed of 10,000 fpm, and a maximum temperature of 250° F.

### PROPERTIES OF PVC and FRP

	PVC	FRP
Density lbs./cu. ft.	88	100
Glass content approx. %	—	20-30
Ultimate Tensile strength - psi 70° F	8000	9-12,000
Flame spread rating (ASTM-E-162-60-T)	30-40	20-25
Coeff. of expansion ins./°F/inch	$3.7 \times 10^{-5}$	$1.7 \times 10^{-5}$
Maximum operating temperature - °F	130°	250°
Minimum operating temperature - °F	-20°	-50°
Maximum design tip speed - 70° F	8500	10,000



### CONSTRUCTION DETAILS COMMON TO BOTH PVC and FRP FANS

**MOTOR AND BEARING PEDESTAL** — fabricated from mild steel and reinforced to provide mounting support for both bearings and motor, in a practical space-saving arrangement #10 (see photo page 8). Heavy duty greasable ball bearings with special seals are supplied as standard.

**BELT GUARD** — is also standard and is made easily removable for access to drive. Adjustable V-belt drive is provided as standard.

**DRAIN** — PVC half-coupling is provided at low point of scroll housing as standard on both PVC and FRP exhausters.

### ACCESSORIES

**SHAFT SEAL** — of linear polyethylene, or other suitable material, is provided as standard.

**INSPECTION ACCESS DOOR** — bolted gasketed inspection door is available. Normally provided on flat section of fan scroll.

**WEATHER-HOOD** — can be supplied as an extra. A foam plastic seal keeps rain and snow out of the motor compartment. Ventilation louvres keep motor compartment cool.

**OUTLET SHUTTERS** — can be provided in stainless steel, PVC or FRP as an extra.

## APPLICATION DATA

When designing with PVC and FRP fans and duct work, the following points should be considered.

1. The type "XS" exhauster is capable of high static pressures at relatively low speeds and sound levels. This feature makes it economical to consider designing to higher system pressures using smaller size piping, and thus produce a substantial economy in expensive PVC and FRP duct work.

2. Both PVC and FRP fans are generally much lighter than mild steel, even though gauges used in construction are much heavier. See tabulated data above.

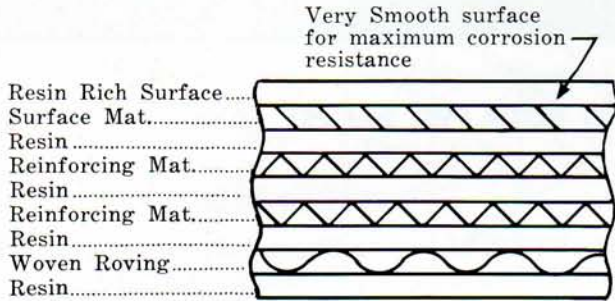
3. Maximum operating temperature of PVC is 130° F, whereas FRP could be used to 250° F, and even higher if special resins are used in construction.



# APPLICATION DATA (cont.) . . . . . PVC and FRP EXHAUSTERS

4. FRP is much more resistant than PVC to knocks such as occur in shipping and erection. Fan design has taken this into account, but more than normal care should be used when handling plastic fans to prevent unnecessary breakages.
5. The resistance to impact of PVC fans is reduced at low temperatures. It is not recommended for use in outdoor installations where the temperature falls below  $-20^{\circ}\text{F}$  for any length of time. FRP, however, actually increases in impact resistance at lower temperatures.
6. It is not recommended that standard PVC fans be used to support duct work, or vertical stacks. FRP fans can support fairly short runs of duct work.
7. Flexible connections at inlet and outlet should be provided. These may be made from neoprene, hypalon, or plastisol sheet to withstand fume corrosion attack. Flexible connections are not supplied with the fan.
8. FRP fans are made with a resin-rich layer on the inside of the fan case, giving the maximum corrosion resistance where it is needed. Details of lay-up are shown below.

### TYPICAL LAY-UP SEQUENCE



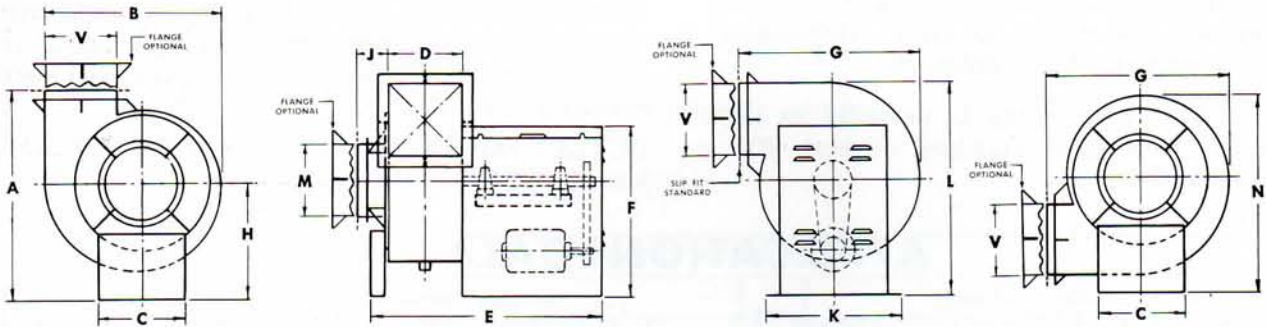
9. The standard material used on Sheldon's PVC exhausters is C.I.L. Darvic<sup>‡</sup>, whose properties are listed below. FRP fans have Atlac<sup>®</sup> 382-FRB-05 self-extinguishing polyester resin as standard material.
10. The corrosion resistance of PVC and FRP is listed on the charts on pages 23 through 27. PVC is generally chemically inert to the majority of inorganic compounds, although some compounds such as aromatic and chlorinated hydrocarbons cause PVC to swell and lose strength. FRP is generally superior to PVC for use with organic solvents.
11. Rubber-in-shear or spring type vibration isolation can be mounted on PVC and FRP fans without any special problems.

12. Performance ratings of both PVC and FRP fans are the same. Larger sizes of fans can be provided if necessary to meet higher capacities and pressures.
13. Expansion of PVC is approximately 6 times that of mild steel, and this factor should be considered in long duct runs. FRP has only 3 times the expansion of mild steel and is not normally a problem.

14. Both PVC and FRP fans are spark proof, also require no painting.
15. The performance ratings indicate areas of relative quietness of operation. Sound power levels in 8 octave bands are available on request.

<sup>‡</sup> Darvic is a product of Canadian Industries Limited.  
 © Atlac — 382 is a product of Atlas Chemical Industries.

## DIMENSIONS . . . . .



**NOTE:**  
 DOWN DISCHARGE NOT AVAILABLE

FAN SIZE	A	B	C	D	E	F	G	H	J	K	L	M DIA.	N	V OUTS.	FAN SHAFT DIA.	MAX. WT.
7	26 1/2	19	13 3/4	6 3/8	23 7/8	23 1/4	19 7/8	16	3 5/8	16 1/2	26 1/2	7 3/8	24 5/8	7 1/8	1 5/16	165
9	29	24 3/8	14	8	27	24 1/4	24 1/2	16 1/2	4 1/8	18	30	9 3/8	27 1/2	9	1 3/16	225
11	34 3/4	30	16	9 5/8	32 5/8	28 3/4	29 1/2	20	4 1/8	20 1/2	36 1/2	11 1/4	33 1/2	10 7/8	1 3/16	320
13	40 1/2	35 5/8	18	11 3/8	34 1/2	32 1/4	34 1/2	23 1/2	4 5/8	20 1/2	43 1/8	13 3/8	39 5/8	12 3/4	1 1/16	375
15	45 1/2	41	20	13	36 1/8	34 3/4	39 5/8	26	5 1/8	20 1/2	48 5/8	15 3/8	44 1/2	14 5/8	1 1/16	410



# RATINGS . . . . . PVC and FRP EXHAUSTERS

## SIZE 7 XS

WHEEL DIA. 12<sup>1</sup>/<sub>4</sub>"  
OUTLET AREA 0.27 SQ FT

CFM	O.V. FPM	1/4" SP		1/2" SP		3/4" SP		1" SP		1 1/2" SP		2" SP		2 1/2" SP		3" SP		4" SP		5" SP	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
272	1000	700	.02	875	.04	1031	.05	1165	.07	1401	.11	1605	.14	1788	.17						
327	1200	767	.03	923	.05	1070	.07	1202	.09	1425	.13	1625	.17	1797	.20	1967	.25				
381	1400	848	.04	987	.06	1121	.08	1240	.11	1460	.15	1650	.19	1820	.24	1978	.29	2255	.40		
435	1600	910	.06	1055	.08	1170	.10	1295	.13	1495	.17	1670	.22	1835	.27	1986	.33	2265	.45	2525	.57
490	1800	987	.07	1128	.10	1232	.12	1350	.15	1542	.20	1712	.26	1870	.31	2015	.37	2285	.50	2535	.63
544	2000	1052	.09	1201	.12	1291	.14	1410	.18	1595	.23	1760	.30	1910	.36	2055	.42	2318	.55	2555	.69
600	2200	1112	.11	1275	.15	1380	.18	1472	.21	1652	.27	1815	.34	1960	.40	2095	.47	2355	.61	2585	.75
653	2400	1210	.13	1330	.18	1460	.22	1538	.25	1712	.31	1868	.38	2010	.46	2142	.53	2390	.67		
707	2600	1265	.16	1395	.21	1527	.26	1605	.29	1772	.37	1925	.43	2060	.51	2195	.59	2435	.74		
761	2800	1410	.20	1470	.25	1578	.30	1678	.33	1835	.42	1982	.50	2120	.57	2250	.65				

## SIZE 9 XS

WHEEL DIA. 15<sup>5</sup>/<sub>8</sub>"  
OUTLET AREA 0.44 SQ FT

442	1000	546	.03	684	.06	805	.08	908	.11	1093	.17	1252	.22	1395	.28						
531	1200	598	.05	720	.08	835	.10	938	.14	1113	.19	1260	.27	1402	.32	1535	.39				
609	1400	662	.07	770	.10	874	.13	968	.17	1138	.23	1287	.30	1422	.38	1542	.46	1760	.64		
708	1600	709	.09	824	.12	913	.16	1010	.20	1167	.28	1305	.35	1432	.43	1550	.52	1768	.71	1970	.91
795	1800	770	.12	880	.15	961	.20	1052	.24	1202	.32	1337	.41	1458	.50	1572	.59	1782	.79	1980	.99
885	2000	820	.15	938	.19	1008	.23	1100	.28	1245	.37	1372	.47	1490	.57	1602	.66	1808	.87	1992	1.09
974	2200	868	.18	995	.24	1078	.28	1148	.34	1290	.43	1418	.54	1530	.64	1635	.75	1838	.96	2015	1.20
1061	2400	944	.21	1038	.29	1138	.35	1200	.39	1338	.50	1458	.61	1568	.72	1671	.84	1867	1.07	2040	1.31
1150	2600	987	.26	1088	.34	1192	.41	1252	.46	1382	.58	1502	.69	1610	.81	1712	.93	1900	1.18	2070	1.44
1238	2800	1100	.32	1148	.40	1232	.48	1308	.53	1432	.66	1548	.79	1655	.90	1753	1.03	1940	1.30		

## SIZE 11 XS

WHEEL DIA. 19<sup>1</sup>/<sub>8</sub>"  
OUTLET AREA .66 SQ FT

660	1000	441	.05	551	.09	649	.12	733	.16	882	.24	1010	.32	1125	.40						
792	1200	483	.07	581	.11	674	.15	756	.20	897	.28	1022	.39	1130	.47	1238	.57				
924	1400	534	.10	621	.14	705	.19	780	.24	918	.34	1038	.44	1145	.55	1243	.66	1420	.92		
1056	1600	572	.13	664	.18	736	.23	814	.29	940	.40	1051	.51	1155	.63	1249	.76	1424	1.03	1588	1.32
1188	1800	621	.17	710	.22	775	.28	849	.34	970	.46	1078	.59	1176	.72	1269	.86	1439	1.14	1595	1.44
1320	2000	662	.21	756	.28	813	.33	886	.41	1003	.54	1108	.68	1202	.82	1292	.96	1458	1.26	1607	1.58
1452	2200	700	.26	803	.35	869	.41	926	.49	1040	.62	1141	.78	1232	.93	1319	1.08	1481	1.40	1625	1.74
1584	2400	761	.31	837	.42	918	.50	967	.57	1078	.72	1175	.88	1264	1.05	1349	1.21	1505	1.55	1647	1.90
1716	2600	796	.37	877	.49	960	.59	1010	.67	1116	.84	1211	1.00	1298	1.17	1381	1.35	1532	1.71	1670	2.09
1848	2800	887	.47	925	.58	993	.69	1054	.77	1155	.96	1248	1.14	1334	1.31	1414	1.50	1563	1.89	1697	2.29

## SIZE 13 XS

WHEEL DIA. 22<sup>5</sup>/<sub>8</sub>"  
OUTLET AREA 0.92 SQ FT

923	1000	372	.07	465	.13	548	.17	619	.22	745	.34	853	.45	950	.56						
1108	1200	408	.10	491	.15	569	.21	639	.28	758	.39	865	.55	956	.66	1045	.80				
1290	1400	451	.14	525	.20	596	.27	659	.34	776	.48	876	.62	967	.77	1050	.92	1198	1.29		
1472	1600	483	.18	561	.25	622	.32	688	.41	794	.56	888	.71	976	.88	1055	1.06	1203	1.44	1342	1.84
1656	1800	525	.24	600	.31	654	.39	719	.47	820	.64	911	.82	994	1.01	1072	1.20	1216	1.59	1348	2.01
1840	2000	559	.29	638	.39	686	.46	749	.57	848	.75	936	.95	1016	1.14	1092	1.34	1232	1.76	1358	2.21
2024	2200	591	.36	677	.49	734	.57	782	.68	879	.87	964	1.09	1041	1.30	1115	1.51	1251	1.95	1373	2.43
2208	2400	644	.43	707	.59	775	.70	817	.80	911	1.01	993	1.23	1068	1.47	1140	1.69	1272	2.16	1392	2.65
2392	2600	673	.52	741	.69	811	.83	853	.94	943	1.17	1023	1.40	1097	1.63	1167	1.88	1295	2.39	1411	2.92
2576	2800	748	.66	781	.81	837	.97	891	1.07	976	1.34	1055	1.59	1127	1.83	1195	2.09	1321	2.64	1434	3.20

## SIZE 15 XS

WHEEL DIA. 26<sup>1</sup>/<sub>8</sub>"  
OUTLET AREA 1.22 SQ FT

1220	1000	323	.09	403	.17	475	.22	539	.30	645	.44	738	.59	832	.74						
1465	1200	354	.13	425	.20	493	.28	553	.37	657	.52	747	.72	827	.87	905	1.05				
1708	1400	390	.19	454	.26	516	.35	571	.44	671	.63	759	.81	837	1.02	910	1.22	1038	1.70		
1852	1600	418	.24	485	.33	538	.43	596	.54	688	.75	769	.95	845	1.18	914	1.42	1042	1.92	1162	2.46
2196	1800	455	.31	519	.41	567	.52	621	.63	710	.86	789	1.10	861	1.34	929	1.60	1053	2.13	1168	2.69
2440	2000	484	.39	553	.52	594	.61	649	.77	734	1.01	811	1.27	880	1.53	946	1.79	1067	2.35	1176	2.95
2684	2200	512	.48	587	.65	635	.76	678	.91	761	1.16	835	1.46	902	1.74	966	2.01	1084	2.61	1190	3.25
2928	2400	557	.57	612	.78	671	.93	708	1.06	789	1.34	860	1.64	925	1.96	987	2.26	1102	2.89	1206	3.55
3172	2600	581	.68	641	.91	702	1.09	739	1.25	817	1.57	886	1.87	950	2.18	1011	2.52	1121	3.19	1222	3.90
3416	2800	648	.87	677	1.07	726	1.28	772	1.44	845	1.79	914	2.13	976	2.44	1035	2.80	1144	3.53	1242	4.27

VERY QUIET

QUIET

SLIGHT NOISE



# INDUCTION VENTURI — WATER WASH DESIGN

For many fume exhaust applications such as those involving hazardous fumes or vapours, the conventional exhaust method of passing the gases through the fan case could be potentially very dangerous.

With exhausts from perchloric fume hoods in particular, a build-up of crystals can occur on duct walls and fans, which is a definite explosive hazard.

To overcome this problem, Sheldon's water-wash Induction Venturi has been designed specifically to handle the hazardous exhaust conditions experienced with the use of anhydrous perchloric acid as an oxydiser in laboratory fume hoods.

**METHOD OF OPERATION** — By supplying a fairly high velocity jet of air inside a specially designed venturi, a flow of gas can be induced at the inlet to the venturi. This induced flow can then be used to exhaust hazardous gases without any of the gas having to pass through the fan.

In the case of perchloric hood exhaust systems, a special safe-guard against build-up of crystal formation on duct walls is provided by a flushing ring mounted at the top of the venturi. Water from the flushing ring runs down the walls of the venturi and into the duct work, washing away crystal formations. The flushing water runs directly into a "wet" hood designed specifically for handling water wash-down systems.

## TWO DESIGNS AVAILABLE

1. **Duct mounted venturi** — should be mounted at high point in duct run on inside of building, or additional flushing rings added above top of venturi.
2. **Curb mounted venturi** — for use on roofs. Unit is insulated and provided with galvanized sheet metal cover, and has a curb cap. Water line runs down inside insulation for freeze protection.

## CONSTRUCTION

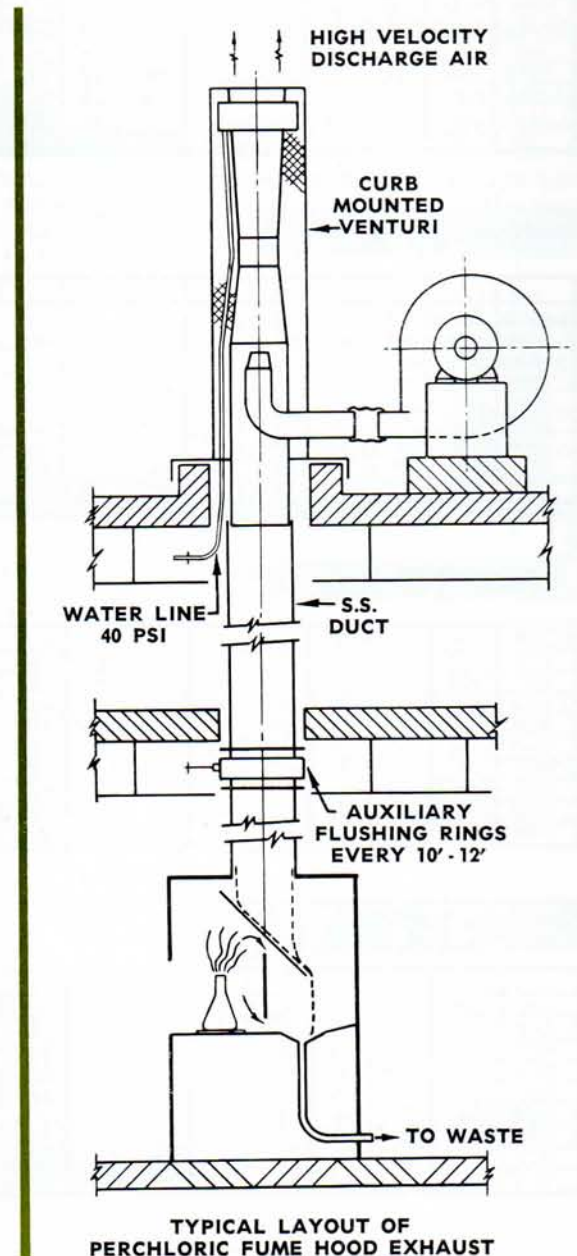
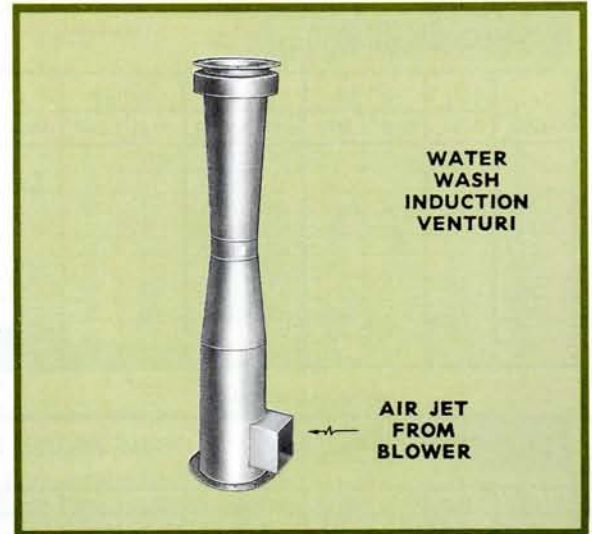
**VENTURI** — fabricated from 316L stainless steel throughout, flanged at inlet and outlet. Air jet connection is a slip fit for a flexible connection to the pressure blower. Water manifold ensures even flow to flushing ring.

**BLOWER** — fabricated from mild steel, and made direct drive Arr. 4 for ease of maintenance. Blower is usually mounted alongside the venturi in any convenient position. Each venturi has its own blower designed for the rated performance listed, but a cut-off damper provides some field adjustment of induced airflow. For outside use, a weatherhood over the motor is available. An inlet screen is supplied as standard.

## APPLICATION DATA

1. Perchloric acid is extremely unstable at room temperatures, decomposing rapidly to form an explosive mixture of gaseous products including chlorine dioxide. The decomposition may be spontaneous with violent explosion. It is important that precautions be taken in original exhaust system design to provide wash-down facilities in all duct work.

2. Both the Induction Venturi, and duct work should be mounted vertically, to ensure that water from flushing rings clings to wall of duct. Even when vertical, water tends to channel into rivulets after approximately 10 to 12 feet, and additional flushing rings are recommended for long duct runs if these are unavoidable.





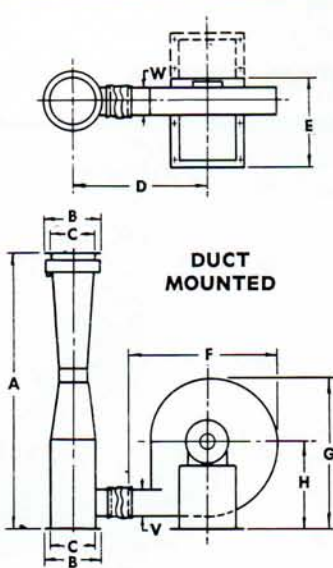
# APPLICATION DATA (cont.) . . . . . INDUCTION VENTURIS

- Horizontal duct runs are **not** recommended, but if unavoidable should have stainless steel spray nozzles provided at regular intervals, (approximately 4 to 5 feet) for flushing the duct periodically with water. Drains should also be provided.
- The use of organic materials for flange sealers or for nozzle pipe threads is extremely dangerous. The use of Teflon is suggested for these applications.
- It is only necessary to use the flushing rings about twice a day for about 15 minutes. A valve should be provided at the hood to control the flushing operation. The jet blower should be shut down during this operation.

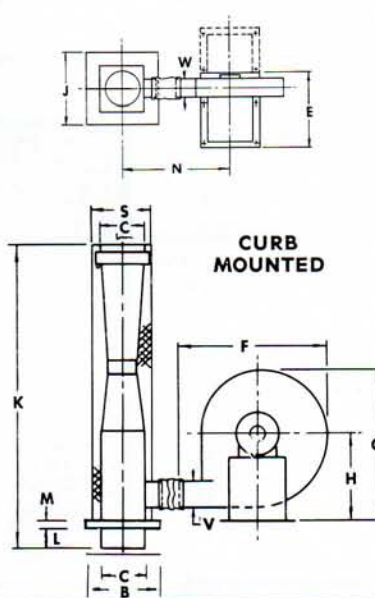
- Water pressure of approximately 2 psi is required at the flushing rings. Flow rate is about 10 - 15 U. S. gpm.
- Sheldons Induction Venturi may be mounted in any location in a vertical duct. If it is not at the high point in system, then additional flushing rings must be mounted above the venturi to ensure all duct work is washed down.
- Jet blower can be mounted in any convenient location, and either indoor or outdoor air ducted to the venturi.

## RATINGS . . . . . Series 23-6

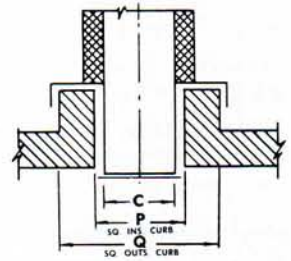
VENTURI SIZE	BLOWER SIZE	MOTOR HP @ 1750 RPM	INDUCED CFM							
			1/4" SP	1/2" SP	3/4" SP	1" SP	1 1/4" SP	1 1/2" SP	1 3/4" SP	2" SP
623-6	1602-PH	1/2	285	270	248	226	210	190	167	140
723-6	1602-PH	3/4	395	365	333	307	282	256	226	195
823-6	1603-PH	1	510	475	435	400	372	342	300	255
923-6	1603-PH	1	645	600	555	508	470	430	376	320
1023-6	1606-PH	1	800	746	684	626	580	530	470	400
1123-6	1606-PH	1 1/2	970	900	830	760	705	644	570	480
1223-6	1610-PH	1 1/2	1170	1092	995	915	854	780	690	585
1323-6	1610-PH	1 1/2	1350	1260	1150	1055	984	900	792	675
1423-6	1616-PH	2	1575	1470	1330	1225	1150	1040	900	770
1523-6	1616-PH	3	1820	1680	1530	1410	1310	1200	1050	900
1623-6	1616-PH	3	2070	1920	1750	1600	1500	1370	1200	1025
1723-6	11 XB	3	2320	2150	1960	1800	1680	1530	1350	1150
1823-6	11 XB	3	2600	2420	2200	2010	1890	1720	1510	1300
1923-6	11 XB	5	2900	2680	2450	2250	2100	1910	1680	1430
2023-6	11 XB	5	3225	2980	2700	2490	2340	2130	1870	1590



DUCT MOUNTED

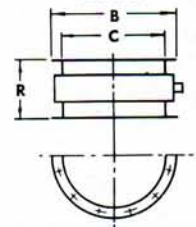


CURB MOUNTED



CURB DETAIL

AUXILIARY FLUSHING RINGS



VENTURI SIZE	A	B DIA.	C DIA.	D	E	F	G	H	J SQ	K	L	M	N	P	Q	R	S	V	W
623-6	39	9	6	25 1/2	15 1/2	30 5/8	31 3/4	17 1/2	18 1/2	53	12	2	27 1/2	10	18	6	10	3 3/8	3 3/8
723-6	44 1/2	10	7	26	15 1/2	30 3/8	31 3/4	17 1/2	19 1/2	58 1/2	12	2	28	11	19	6	11	3 3/8	3 3/8
823-6	50 1/2	11	8	25	16 1/8	27 1/2	28 3/4	16 1/4	20 1/2	64 1/2	12	2	27	12	20	6	12	4 1/2	4 1/2
923-6	56	12	9	25 1/2	16 1/8	27 1/2	28 3/4	16 1/4	21 1/2	70	12	2	27 1/2	13	21	6	13	4 1/2	4 1/2
1023-6	62	13	10	29 1/2	18	33 3/8	34	19 1/2	22 1/2	76 1/2	12	2 1/2	31 1/2	14	22	6	14	6	6
1123-6	67	14	11	30	19	33 3/8	34	19 1/2	23 1/2	81 1/2	12	2 1/2	32	15	23	6	15	6	6
1223-6	73	15	12	31	20 3/4	35 3/8	38 1/2	22 3/4	24 1/2	88	12	3	33	16	24	6	16	6 1/4	6 1/4
1323-6	80	16	13	31 1/2	20 3/4	35 3/8	38 1/2	22 3/4	25 1/2	95	12	3	33 1/2	17	25	6	17	6 1/4	6 1/4
1423-6	85	17	14	38	20 3/4	41 1/4	38 7/8	23 1/4	26 1/2	100	12	3	40	18	26	6	18	8 3/4	7 1/8
1523-6	90	18	15	38 1/2	20 3/4	41 1/4	38 7/8	23 1/4	27 1/2	105 1/2	12	3 1/2	40 1/2	19	27	6	19	8 3/4	7 1/8
1623-6	96	19	16	39	20 3/4	41 1/4	38 7/8	23 1/4	28 1/2	111 1/2	12	3 1/2	41	20	28	6	20	8 3/4	7 1/8
1723-6	103	20	17	28 1/2	22 1/4	27 3/8	31 7/8	18 1/2	29 1/2	118 1/2	12	3 1/2	30 1/2	21	29	6	21	10 3/8	9 3/8
1823-6	109	21	18	29	22 1/4	27 3/8	31 7/8	18 1/2	30 1/2	125	12	4	31	22	30	6	22	10 3/8	9 3/8
1923-6	115	22	19	29 1/2	23 1/4	27 3/8	31 7/8	18 1/2	31 1/2	131	12	4	31 1/2	23	31	6	23	10 3/8	9 3/8
2023-6	121	23	20	30	23 1/4	27 3/8	31 7/8	18 1/2	32 1/2	137	12	4	32	24	32	6	24	10 3/8	9 3/8



# PVC\* BIFURCATORS AXIAL

Sheldons exclusive solid PVC\* Bifurcators were designed to meet the need for an absolutely non-corrosive fan for laboratory fume hood exhaust systems, where available space is limited.

With PVC construction, and ease of installation, they provide the maximum corrosion resistance in the minimum space.

The axial flow arrangement of the Bifurcator lends itself to installation in duct work with the minimum of elbows and bends. The fan is designed to operate vertically or horizontally to suit any installation layout.

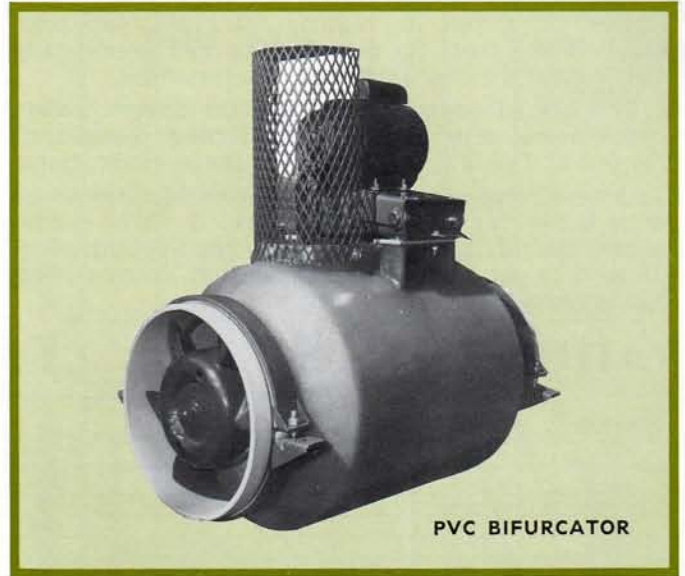
Four different mounting designs are available to suit a variety of installation configurations.

## CONSTRUCTION FEATURES

- The entire fan case, including bearing mounting plates and internal bearing well is fabricated from rigid PVC, using mouldings and hot air welding techniques. The outside of the fan casing is then covered with a layer of FRP to provide an extremely strong and durable unit, well able to withstand the knocks occurring during shipping and erection.

**NOTE:** This same design of Bifurcator is also available in mild steel or stainless steel to meet specific requirements.

- The two-way (bifurcated) air passage around the bearing well keeps bearings and drive out of the gas stream. (see sketch on page 15).
- Internal guide vanes minimize shock and turbulence from wheel and increase efficiency.
- The 2-stage axial flow fan provides high static pressures at lower speeds for lower noise levels.
- Shaft seal of linear polyethylene provides minimum fume leakage, and guards against gas condensate corrosion.
- Extended grease nipples are provided for easy maintenance.
- Split V-belt available for ease of replacement.
- Standard belt supplied on original installation for extremely long belt life.
- Slip collar connection provided at inlet and outlet for joining to flexible connections.
- Heavy duty ball bearings provided for long life and trouble free service.



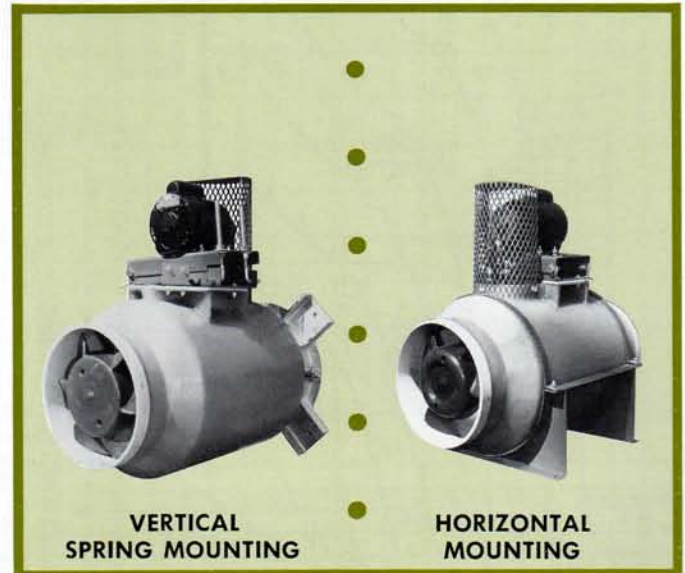
PVC BIFURCATOR

## SOUND LEVELS

Measurement of sound power levels in each octave band have been made under test laboratory conditions. Sound power levels at any speed for all 6 sizes of Bifurcator are available on request.

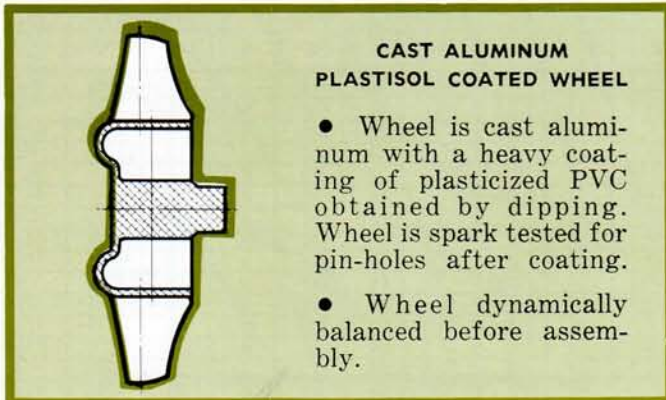
For extreme quietness, silencers should be provided at the inlet to the bifurcator.

## MOUNTING CRADLES



VERTICAL  
SPRING MOUNTING

HORIZONTAL  
MOUNTING



CAST ALUMINUM  
PLASTISOL COATED WHEEL

- Wheel is cast aluminum with a heavy coating of plasticized PVC obtained by dipping. Wheel is spark tested for pin-holes after coating.
- Wheel dynamically balanced before assembly.

\* - polyvinyl chloride

**MOUNTING CRADLES** — PVC bifurcators require a mounting arrangement that will not distort or crack the case.

Sheldons 4 different mounting designs provide metal attachments that the contractor can use to support the bifurcator without imposing any strains on the fan casing. (See details on page 15). These mounting cradles permit use of spring or rubber-in-shear vibration isolators.



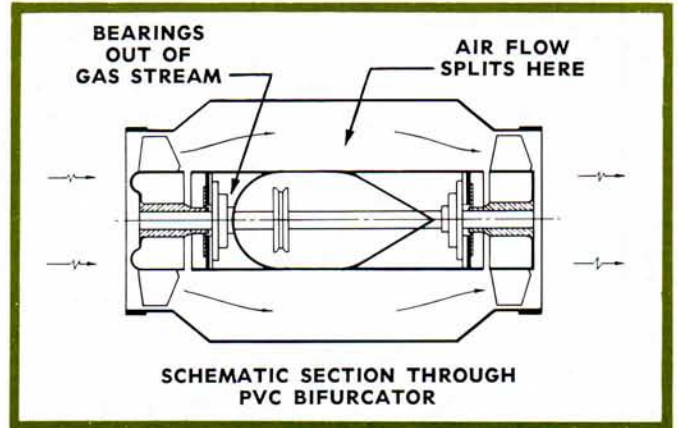
# APPLICATION DATA ..... PVC BIFURCATORS

1. The corrosion resistance of PVC is shown on the charts on pages 23 through 27.

2. The maximum operating temperature of Sheldon's PVC Bifurcator is 130° F. Above this temperature the plastic begins to lose its structural strength and also corrosive resistance.

3. **DUCT CONNECTIONS** — Flexible PVC connections should be provided at both inlet and outlet to prevent duct strains on the fan case. It is important that duct sizes are maintained at the same diameter as the fan outlet. Any reduction in duct size at the fan discharge will seriously reduce the fan performance. Reduction of inlet duct has far less effect on fan performance, but for maximum fan performance, the inlet duct should not be less than the fan size.

4. Motor HP shown on each fan performance curve has been selected to cover the fan HP over the speed range shown and to provide adequate starting

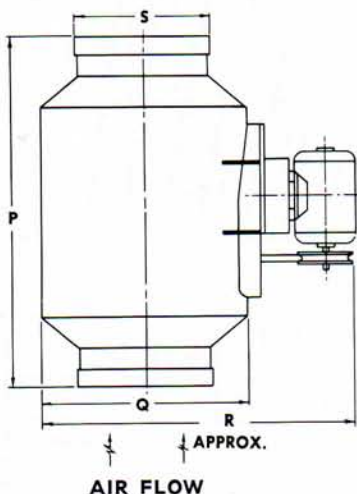
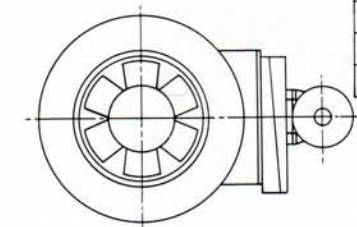


torque. Any economy in motor HP below that shown may result in poor starting characteristics.

5. A ground lead from bearings to motor bracket is provided on PVC Bifurcators to eliminate any possibility of build-up of static charge on the wheels.

## DIMENSIONS .....

FAN SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q DIA.	R	S DIA.	Wt. #
10	34½	15¾	18¾	14	5/8	20	14½	24	14¾	20	18	15¼	19¼	28¾	17	29	10¾	110
12	34½	15¾	18¾	14	5/8	21	14½	24	16¾	20	18	15¼	19¼	28¾	17	29	12¾	115
14	34½	15¾	18¾	14	5/8	22	14½	24	18¾	20	18	15¼	19¼	28¾	17	29	14¾	120
16	46½	24	26¾	21	1	26½	17½	34	20¾	29	25	20	25¼	40	24	36	16¾	180
18	46½	24	26¾	21	1	27½	17½	34	22¾	29	25	20	25¼	40	24	38	18¾	200
20	46½	24	26¾	21	1	28½	17½	34	24¾	29	25	20	25¼	40	24	38	20¾	210



**VERTICAL MOUNTING CRADLE** **A**

MOTOR AVAILABLE ONLY AS SHOWN

**CEILING MOUNTING CRADLE** **B**

SPRING HANGERS

N.B.: MOTOR POSSIBLE IN ANY POSITION

**VERTICAL MOUNTING** **D**

R.I.S. ISOLATOR

MOTOR AVAILABLE ANY POSITION

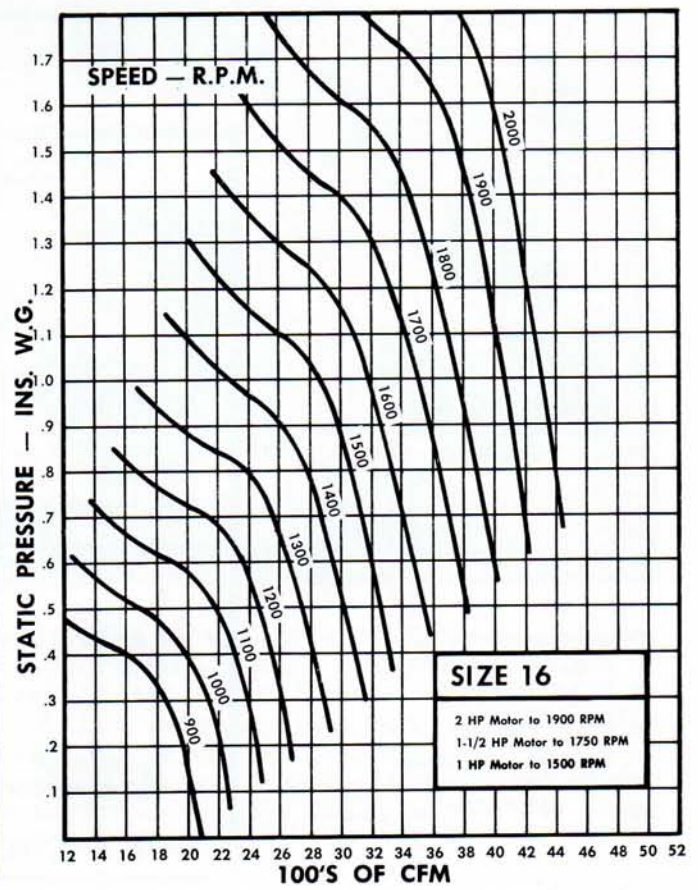
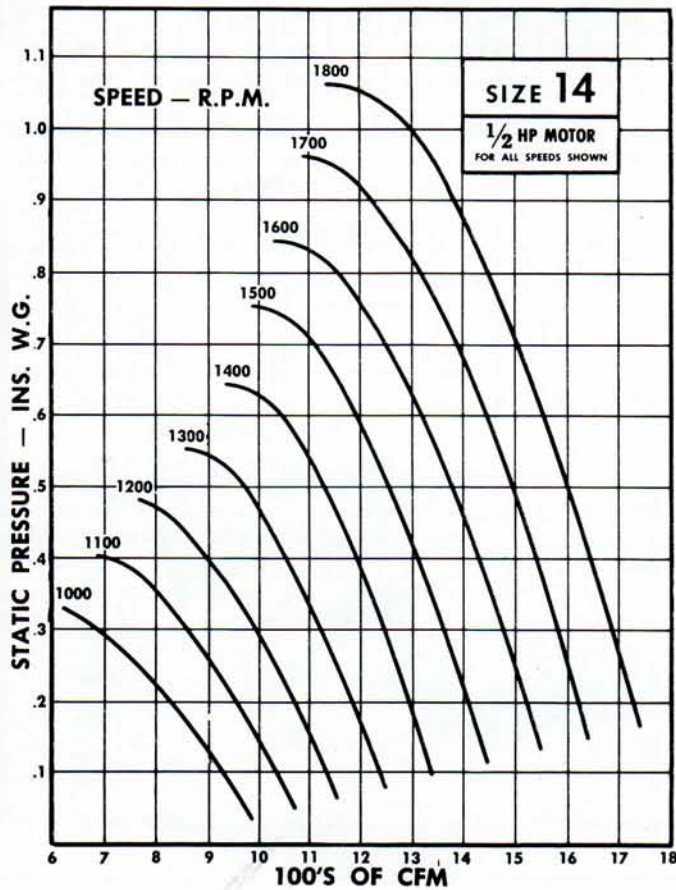
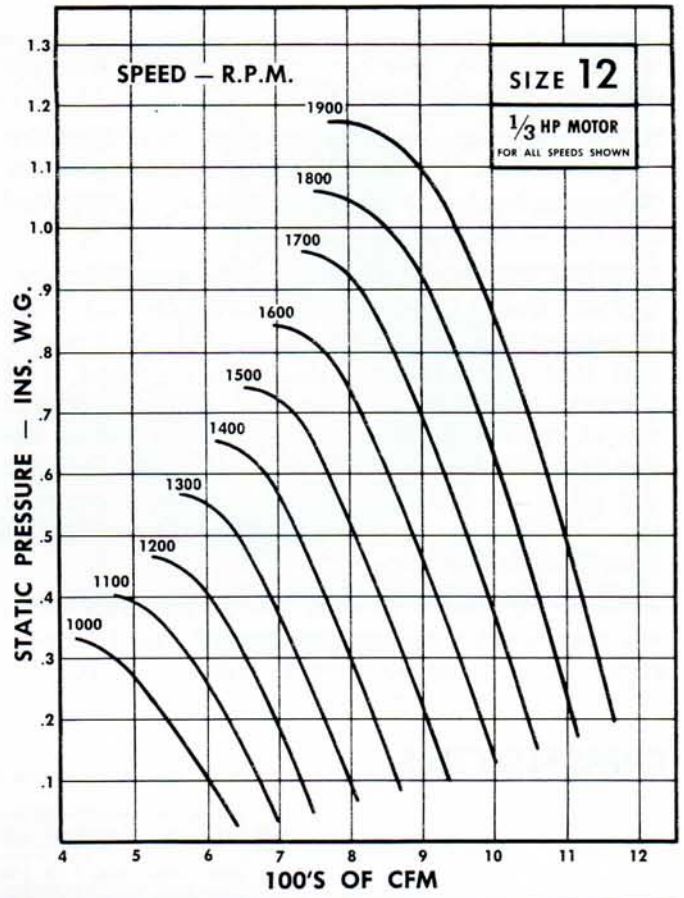
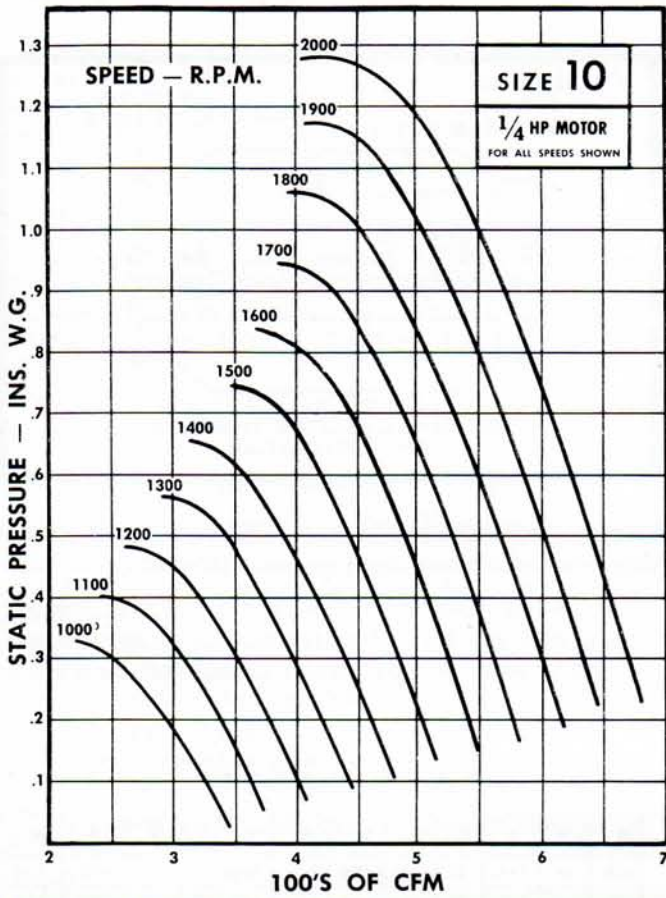
**FLOOR MOUNTED CRADLE** **C**

FOAM RUBBER PAD

MOTOR AVAILABLE ON TOP ONLY

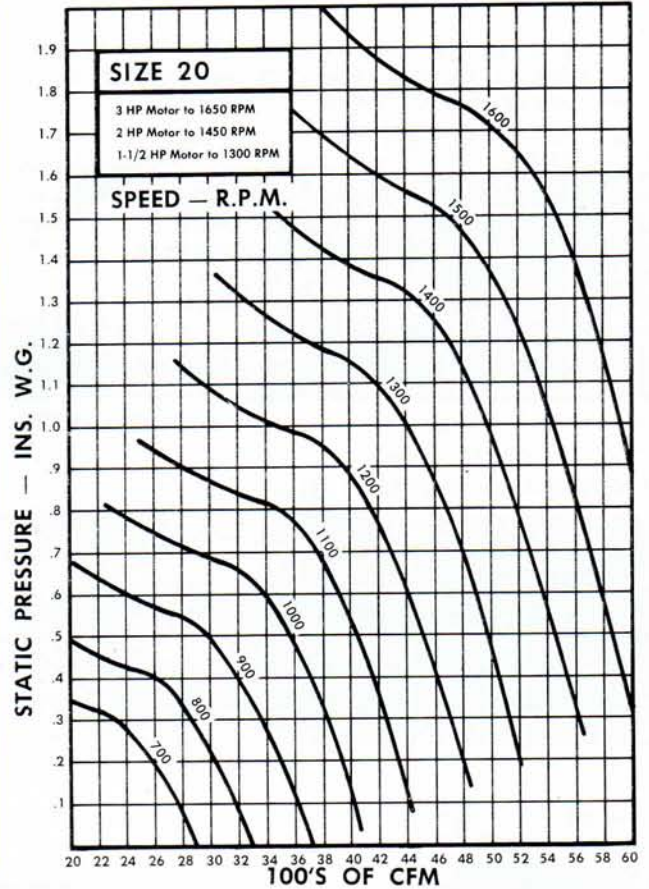
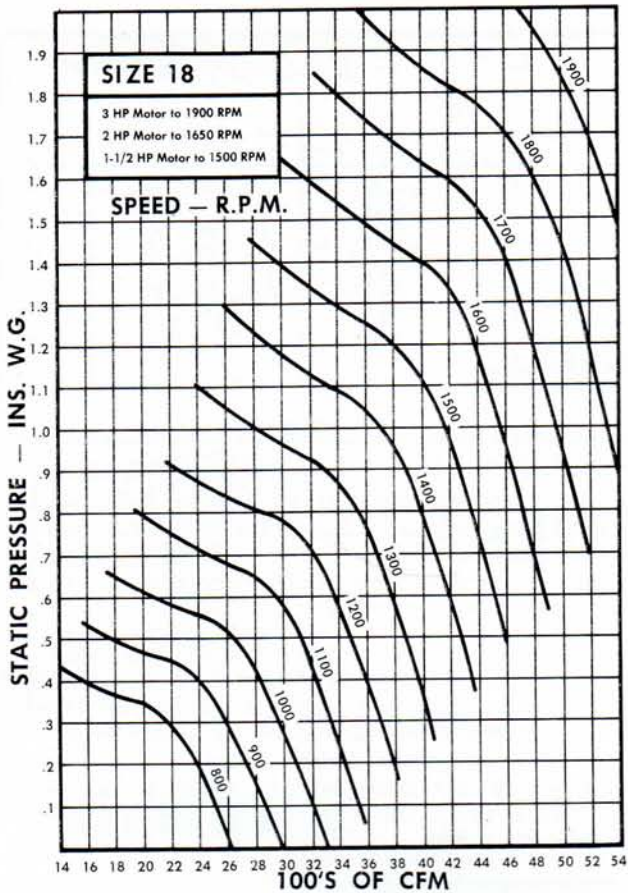


# RATINGS ..... PVC BIFURCATORS

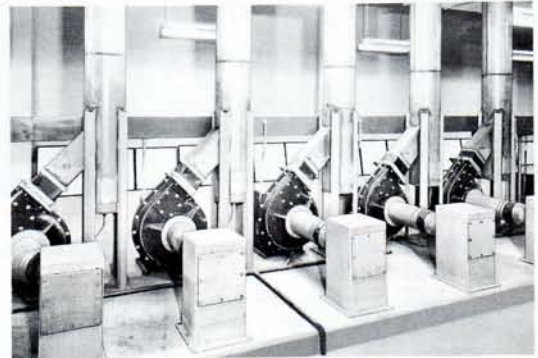




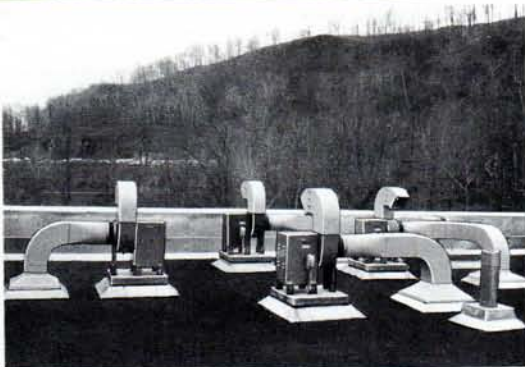
# RATINGS (cont.) ..... PVC BIFURCATORS



Pent-house installation of Sheldon's PVC Bifurc Fans used for exhausting fumes from Chemistry laboratories at large University.



View of Sheldon's FRP centrifugal fume exhaust fans installed in Zoology laboratory.



Sheldon's Cast Iron fume exhaust fans mounted on roof of large Hospital laboratory.



FRP Fume Fans in Zoology laboratory.



# MIXED FLOW – PVC BIFURCATORS

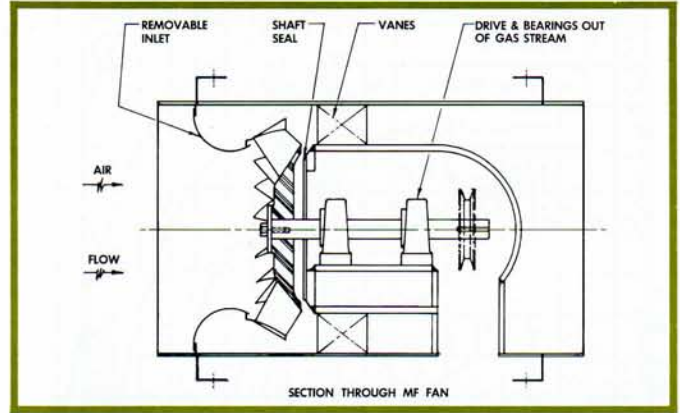
Sheldons Type MF Bifurcators have been designed as an addition to the Axial PVC Bifurcators shown on page 14 of this catalogue.

Fabricated from rigid PVC, these MF Bifurcators are ideally suited for fume exhaust applications requiring larger airflows and higher static pressures. An important feature of this design maintains straight through airflow, thus permitting installation in straight duct runs. The fan is designed to be mounted vertically or horizontally.

The performance of the MF Bifurcator is attributable to the special centrifugal axial wheel design fabricated from die formed wheel components, and with straightening vanes to ensure smoother airflow from the fan discharge.

## CONSTRUCTION FEATURES:

- Solid PVC fan case and wheel, with a layer of FRP on the outside of the fan case for additional strength.
- Polyethylene shaft seal for minimum fume leakage.
- Ball bearings with extended grease fittings.
- Slip collar at inlet and outlet for flexible connections.
- Bearings grounded to motor pedestal to leak away static charges.
- Sound power levels available in 8 octave bands at speeds shown.



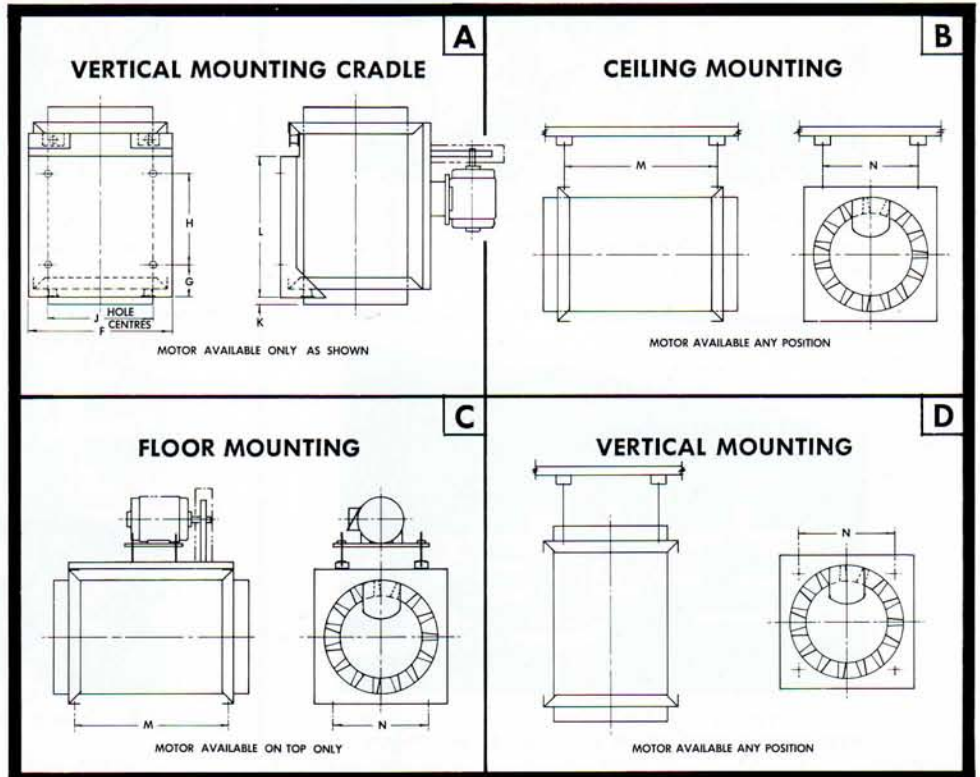
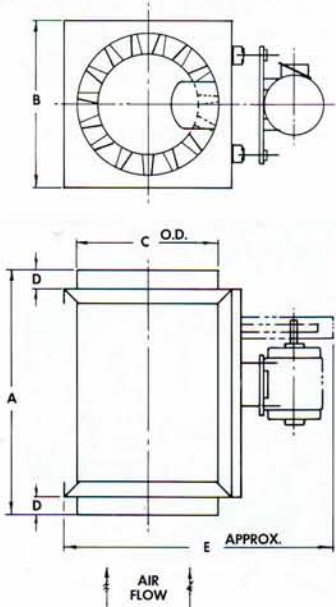
## FAN SELECTION

The fan computerized curves shown indicate the practical range of performance for this fan. The HP lines are curves of constant motor HP. Once the SP and cfm point is established, estimate the fan HP at that same point from the constant HP curves.

This performance curve presentation has been designed so that system resistance lines are straight lines radiating from the origin. Four typical system lines are shown which also serve to separate the fan performance into three sound zones. The additional db's shown in each zone must be added to the sound levels taken from the chart when a fan selection falls in these zones.

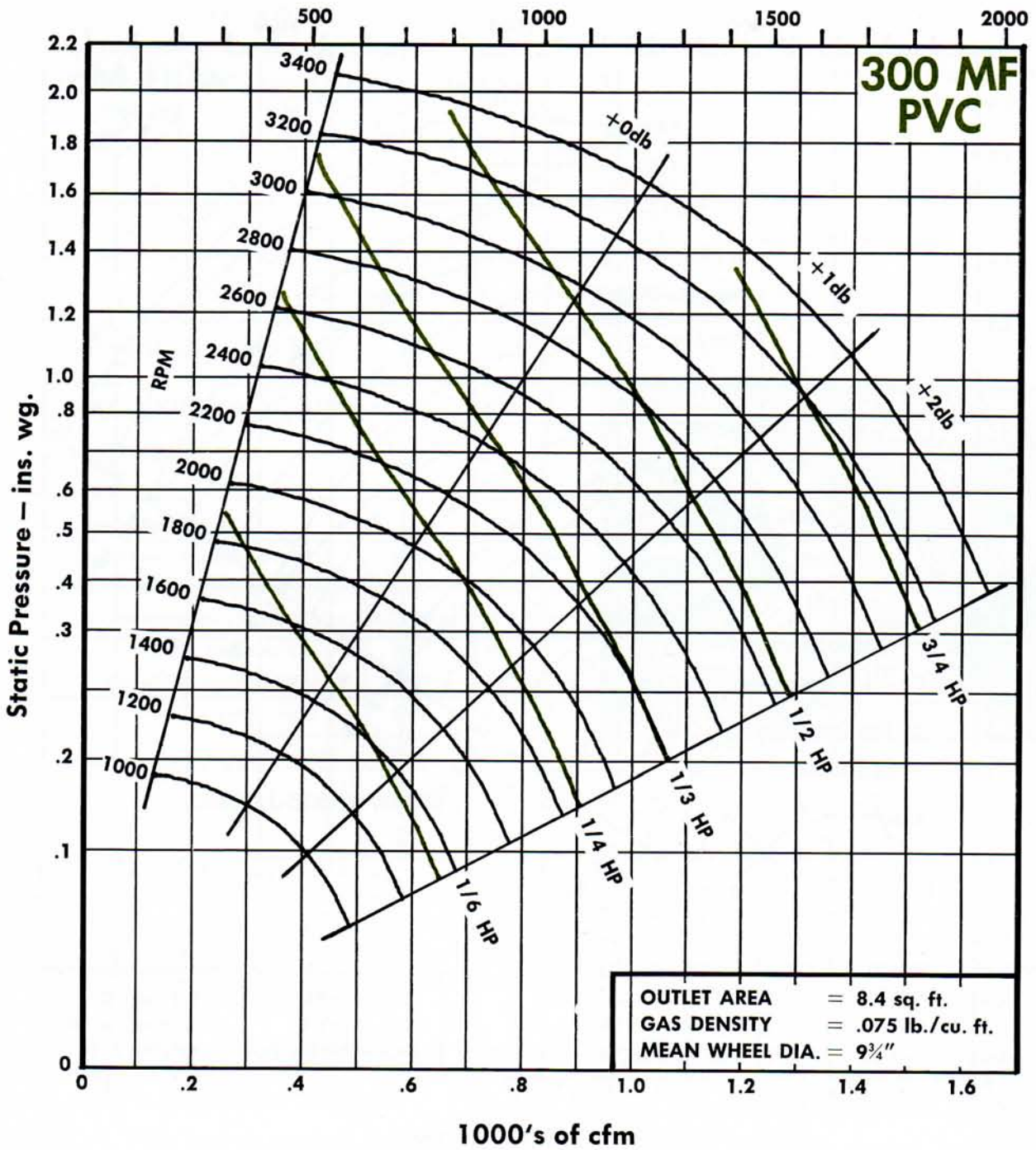
## DIMENSIONS . . .

Fan Size	A	B	C	D	E	F	G	H	J	K	L	M	N	Wt. (Motor Not Incl.) Arr. A	Wt. (Motor Not Incl.) Arr. B, C, D
300	19½	15	12⅞	2½	28	18	4	4	15	1¼	9½	13	11½	80	65
400	21½	18¼	16⅞	2½	33	20½	4	6	17½	1¼	11½	15	14	110	90
500	23½	22¼	20⅞	2½	40	23½	5	7	20	1¼	13½	17	16¾	140	116





## Outlet Velocity – fpm

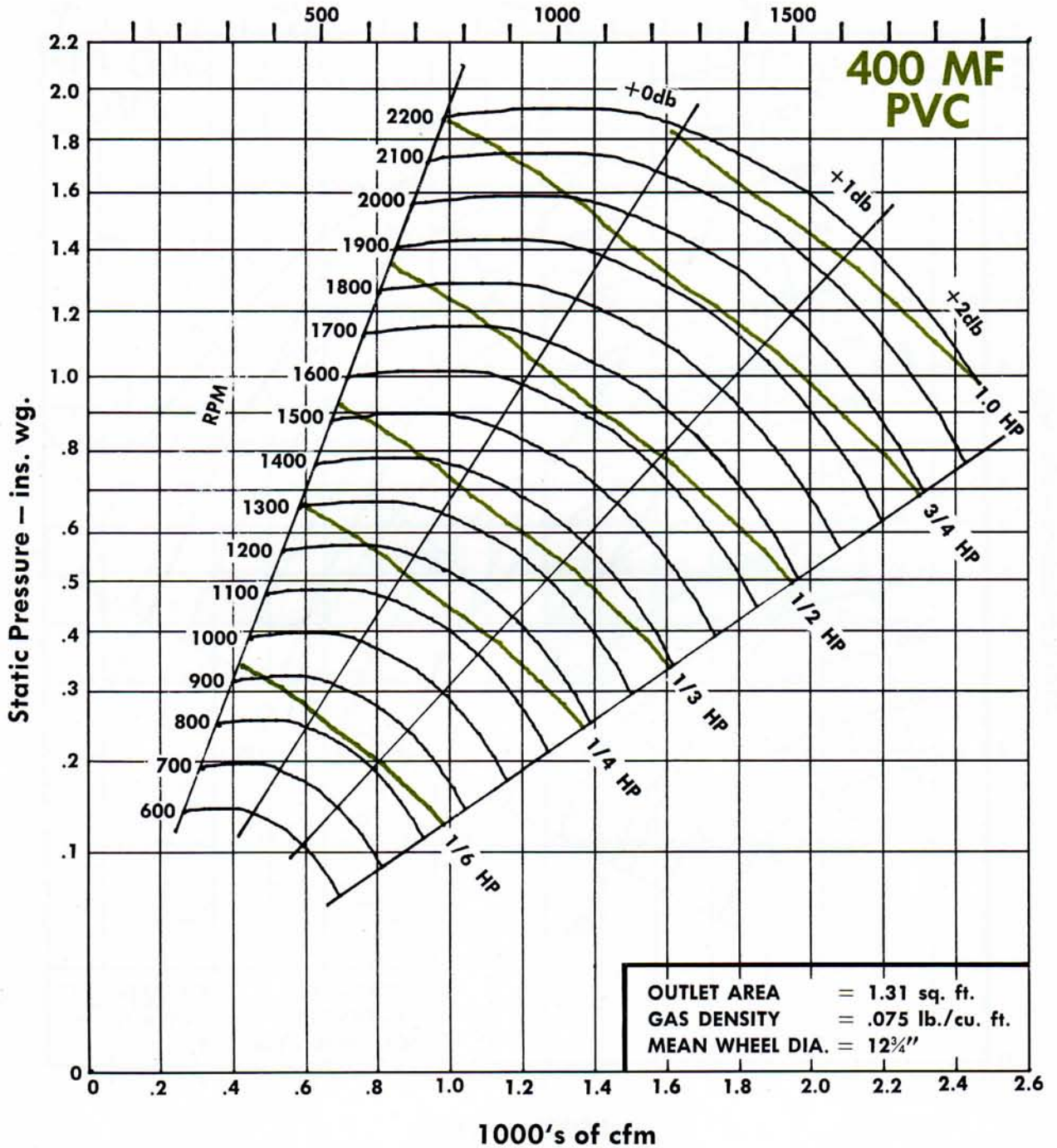


### SOUND POWER LEVELS

RPM	MID-BAND FREQUENCY HZ.								RPM	MID-BAND FREQUENCY HZ.							
	63	125	250	500	1000	2000	4000	8000		63	125	250	500	1000	2000	4000	8000
1000	65	64	64	62	56	47	38	29	2300	91	83	82	82	80	76	67	58
1100	67	66	66	64	59	50	41	32	2400	93	84	83	83	81	77	68	59
1200	69	68	68	66	62	53	44	35	2500	94	85	84	84	82	79	70	61
1300	71	70	70	68	65	56	47	38	2600	96	86	85	85	83	80	71	62
1400	73	71	72	70	67	58	49	40	2700	97	87	86	86	84	81	72	63
1500	75	73	74	72	70	61	52	43	2800	98	88	86	87	85	83	74	65
1600	77	74	75	73	71	63	54	45	2900	100	89	87	88	86	84	75	66
1700	80	76	76	75	73	65	56	47	3000	101	90	88	89	87	85	76	67
1800	82	77	77	76	74	67	58	49	3100	101	91	89	89	88	86	77	68
1900	84	79	78	78	76	69	60	51	3200	102	92	89	90	88	86	78	69
2000	86	80	80	79	77	71	62	53	3300	103	94	90	91	89	87	79	70
2100	88	81	81	80	78	73	64	55	3400	103	95	91	91	90	88	80	71
2200	89	82	81	81	79	74	65	56									



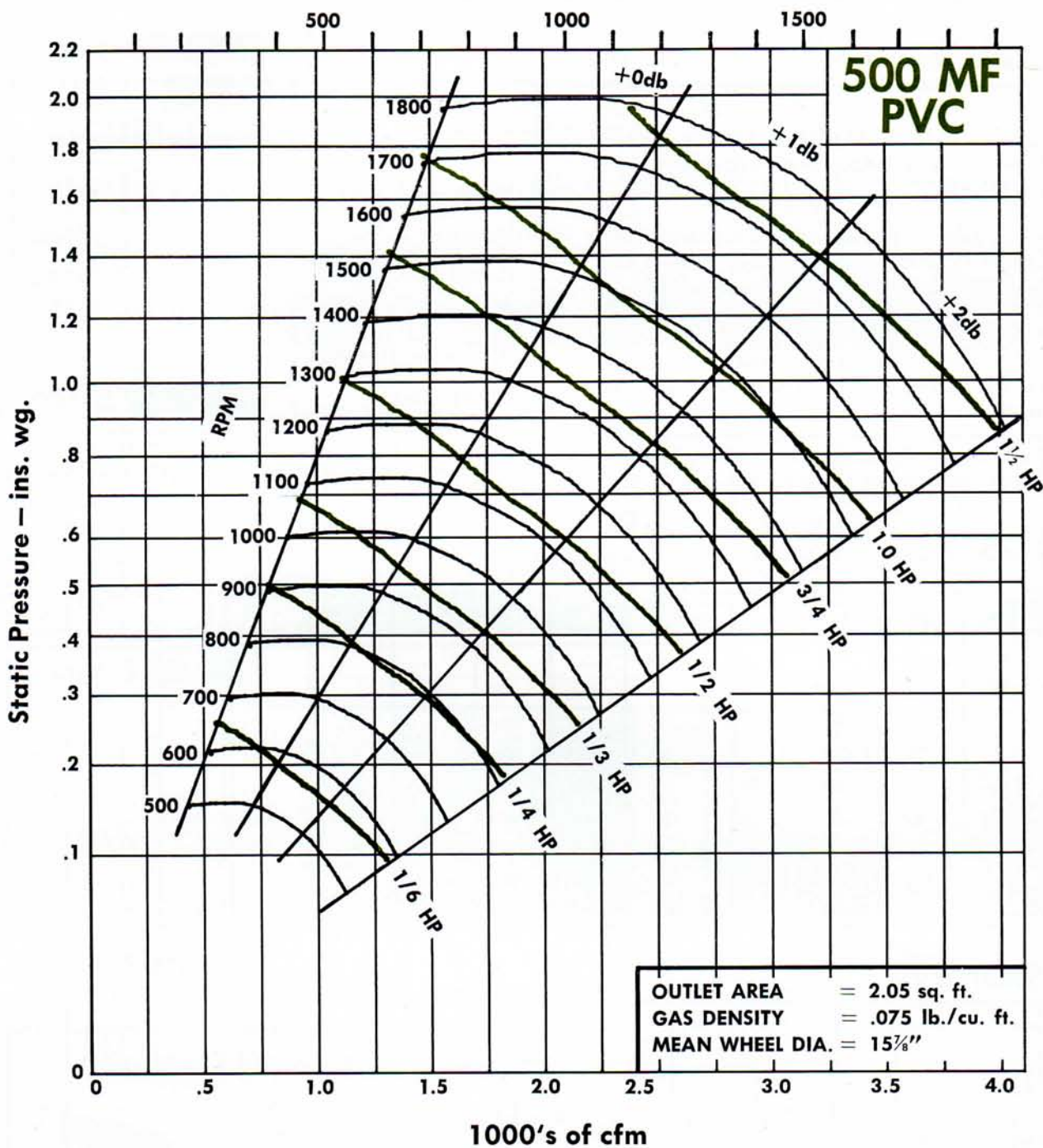
### Outlet Velocity – fpm



SOUND POWER LEVELS																	
RPM	MID-BAND FREQUENCY HZ.								RPM	MID-BAND FREQUENCY HZ.							
	63	125	250	500	1000	2000	4000	8000		63	125	250	500	1000	2000	4000	8000
600	61	61	59	55	46	37	28	19	1500	83	81	82	80	78	69	60	51
700	64	65	63	61	52	43	34	25	1600	86	83	83	82	80	71	62	53
800	68	68	67	65	56	47	38	29	1700	88	84	84	83	81	73	64	55
900	70	71	69	67	60	51	42	33	1800	90	85	86	84	82	75	66	57
1000	73	73	72	70	64	55	46	37	1900	92	87	87	86	84	77	68	59
1100	75	75	74	72	67	58	49	40	2000	94	88	88	87	85	79	70	61
1200	77	76	76	74	70	61	52	43	2100	96	89	89	88	86	81	72	63
1300	79	78	78	76	73	64	55	46	2200	98	90	90	89	87	82	73	64
1400	81	80	80	78	76	67	58	49									



### Outlet Velocity – fpm



SOUND POWER LEVELS																	
RPM	MID-BAND FREQUENCY HZ.								RPM	MID-BAND FREQUENCY HZ.							
	63	125	250	500	1000	2000	4000	8000		63	125	250	500	1000	2000	4000	8000
500	64	64	62	56	47	38	29	20	1200	84	83	83	81	77	68	59	50
600	68	68	66	62	53	44	35	26	1300	86	85	85	83	80	71	62	53
700	71	72	70	67	58	49	40	31	1400	88	86	87	85	82	73	64	55
800	74	75	73	71	63	54	45	36	1500	90	88	89	87	85	76	67	58
900	77	77	76	74	67	58	49	40	1600	92	89	90	88	86	78	69	60
1000	80	79	79	77	71	62	53	44	1700	95	91	91	90	88	80	71	62
1100	82	81	81	79	74	65	56	47	1800	97	92	92	91	89	82	73	64



# UTILITY FUME EXHAUST FANS

Sheldons small direct-connected utility fans are available with several different types of acid-resisting coatings for general fume cabinet exhaust. They are ideal where corrosive conditions are not severe, and where the duty is intermittent, such as in public school laboratories.

These small utility fans have mild steel cases with forward curved mild steel wheels. The usual coatings available with these fans are listed below.

In these small sizes only coated mild steel fan cases and mild steel wheels are available. Stainless steel wheels are not available. Shaft seals are not normally supplied with this fan.

These fans cannot be coated with sheet linings, such as rubber, because of their small size.

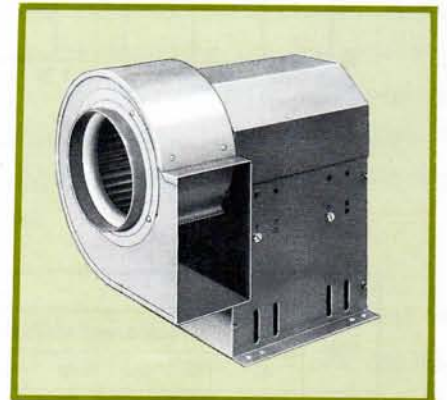
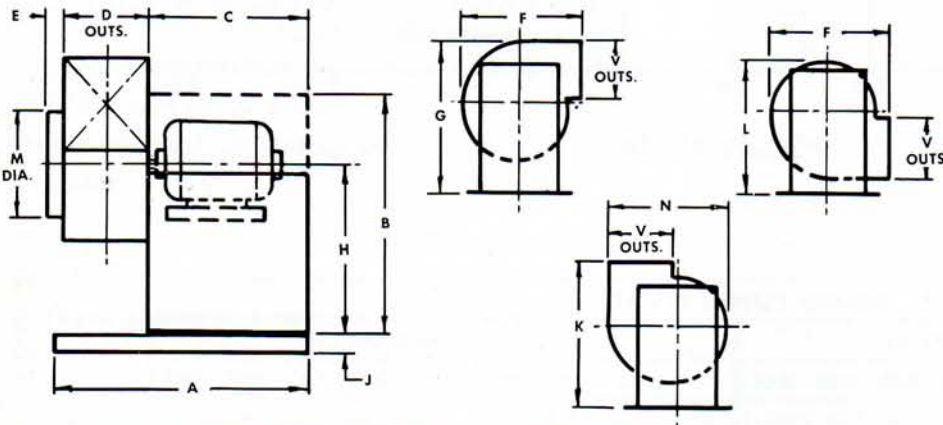
COATING**	STANDARD THICKNESS	MAXIMUM THICKNESS
Hypalon	10 mil	20 mil
Neoprene	10 mil	20 mil
Plastisol	10 mil	20 mil
Baked Phenolic	10 mil	20 mil
Eisenheiss	5 - 7 mil	10 mil
Air Dried Heresite	5 - 7 mil	10 mil
Epoxy Paint	5 - 7 mil	10 mil

\*\* - The corrosion resistance of these coatings is shown on pages 23 and 27.

## RATINGS

UNIT SIZE	MOTOR HP	MOTOR RPM	TIP SPEED fpm	1/8" SP	1/4" SP	3/8" SP	1/2" SP	5/8" SP	3/4" SP	7/8" SP	1" SP	1 1/4" SP	1 1/2" SP
				CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM
60M	1/20	1140	1790	362	268	.....	.....	.....	.....	.....	.....	.....	.....
60H	1/6	1725	2710	591	552	512	452	377	.....	.....	.....	.....	.....
75M	1/6	1140	2240	576	531	476	377	.....	.....	.....	.....	.....	.....
75H	1/3	1725	3390	.....	865	840	805	773	732	691	632	.....	.....
100L	1/4	850	2230	1065	945	820	765	.....	.....	.....	.....	.....	.....
100M	1/2	1140	2980	1480	1395	1305	1230	1140	1045	1005	910	.....	.....
100H	1-1/2	1725	4520	.....	2175	2110	2065	2000	1935	1890	1835	1725	1600
110L	1/2	850	2460	.....	1655	1520	1300	1160	.....	.....	.....	.....	.....
110M	1	1140	3310	.....	2255	2205	2095	1975	1840	1700	1600	1485	.....

## DIMENSIONS



FAN SIZE	A	B	C	D OUTS.	E	F	G	H	J	K	L	M DIA.	N	V OUTS.
60	15 1/2	15 1/2	10 3/4	5 7/8	1	12 1/4	18	11	2	17 5/8	16	7	12	6 1/4
75	15 1/2	15 1/2	10 3/4	5 1/4	1	12 3/4	18	11	2	17 1/8	16 1/2	7	12 1/2	8
100	26	20 1/4	18	8 3/4	2	15 1/4	23	14	2	21 3/8	21	10	15 3/4	10 3/8
110	26	20 1/4	18	9 7/8	2	16 3/4	24	14	2	22	21 3/4	11	17 1/2	11 1/2



# COATED FANS

Almost all the fans fabricated by Sheldons in mild steel can be successfully coated with a variety of corrosion resistant materials, such as plastisol, neoprene, hypalon, baked phenolic resin, rubber, epoxy and polyester resins.

The exceptions to this are as follows:

1. Forward curve wheels even in large sizes can only be dip-coated which limits the maximum practical coating thickness to about 30 mil.
2. Small wheels of other types should be limited to 1/8" thickness or less.
3. The maximum tip speed of wheels having sheet material coatings, such as rubber, hypalon sheet, neoprene sheet, etc., are limited to about 15,000 fpm, depending on the coating thickness and wheel shape. Coatings applicable to all fan ratings shown in this catalogue operate well below this figure.

Special design of standard fans is necessary to ensure that no metal parts project into the gas stream. Studs must be provided in place of bolts, and standard tolerances and wheel clearances must be changed to allow for the lining.

The corrosion resistance and maximum temperature possible with each coating is listed on Pages 23 through 27.

The type of coating and the maximum coating thickness for any special application should be determined by the end user, with his more intimate knowledge of the fumes being handled.

However, the chart below gives a guide to the maximum practical thickness of coatings for different wheel types and sizes. In general, the lining thicknesses applied to fan cases can be at least 50% greater than the thicknesses indicated for the fan wheels.

## MAXIMUM COATING THICKNESSES ON WHEELS

WHEEL DIAMETER, INCHES	WHEEL TYPE			
	A, B	F, Medium	XS, XB etc.	Axials
6 - 8"	—	20 mil	—	—
9 - 12"	1/16	30 mil	—	—
13 - 18"	1/16	30 mil	1/16	30 mil
20 - 33"	3/32	30 mil	3/32	1/16
36 - 49"	1/8	1/16	1/8	3/32
54 - 80"	3/16	—	3/16	1/8
89 - 108"	1/4	—	1/4	3/16

Above thicknesses apply to both dip-coats and sheet coatings.

## SPECIAL METALS

Where required by Consulting Engineers for special installations, Sheldons can usually supply any of their standard lines of fan equipment fabricated from special materials, such as stainless steel, Monel, aluminum, and even specialty metals such as titanium.

# CORROSION RESISTANCE CHART

The Corrosion Charts on the following pages have been compiled from the available data provided by the suppliers of the corrosion resistant materials listed, and are intended to serve only as a guide to the comparative usefulness of the listed materials.

*NOTE: Sheldons make no specific guarantee against damage by corrosion, erosion or abrasion in the application of any of these materials in any corrosive environment.*

No attempt has been made to limit the contents of the Corrosion Chart to corrosive fumes exclusively. Corrosive liquids and solids have also been included for convenient reference.

In some applications, particularly with stainless steel, the dilution of fumes with air may actually accelerate the corrosion rate. In most other applications, the dilution of the corrosive agent with air will produce longer and more satisfactory service than that indicated by the usual tests carried out on immersed specimens.

For more severe conditions than those listed, materials should be tested under actual service environments to ensure suitability of application.

The Corrosion Charts listed have been condensed slightly from more detailed information, which is available on request.

CORROSIVE AGENT	CAST IRON		304 SS		316 SS		MONEL	ALUMINIUM	PVC & PLASTISOL	FRP - EPOXY	FRP - POLYESTER	BAKED PHENOLIC	BAKED HERESTITE	AIR - DRY HER.	EISENHEIFS	EPOXY PAINT	RUBBER	NEOPRENE	HYPALON
	U	G	E	F	U	E													
Acetaldehyde							120	U	100					U					
Acetic Acid - 10%	U	G	E	U	E	140	F	220	160	160				100	U	U	U	U	U
Acetic Acid - 50%	U	G	E	F	120	140	U	140	160	160				G	U	U	U	U	U
Acetic Acid Glacial	U	G	G	G	E	U	U	U	160	160				U	U	U	U	U	U
Acetic Anhydride		G	E	G	E	U	U	U	160	160				U	U				
Acetone	U	E	E	E	E	U	U	80	160	160				U	G	U	U	U	U
Acetonitrile					E	U	U							U					
Acetophenone					E	U	U								F				
Adipic Acid					E	70					120	120		150			100	100	
Alcohol, Allyl					E	U	180				120	120							
Alcohol, Amyl					G	70	180	220	120	120				150					
Alcohol, Benzyl					E	U	180	80	120	120									
Alcohol, Butyl					E	70	180	180	120	120						U	U	U	U
Alcohol, Cetyl						140	180		120	120									
Alcohol, Ethyl	U	E	E		G	70	180	180	120	120				150	E	100	70	80	
Alcohol, Furfuryl					U	180			120	120									

RESULTS SIMILAR TO BAKED HERESTITE BUT WILL HAVE MUCH SHORTER LIFE

E - Excellent    G - Good    F - Fair    U - Unsatisfactory

\*Epoxy paint results based on tests at approximately 90°F. Numbers indicate maximum temperature at which coating is satisfactory.











CORROSIVE AGENT	RESULTS SIMILAR TO BAKED HERESITE BUT WILL HAVE MUCH SHORTER LIFE.															
	CAST IRON	304 SS	316 SS	MONEL	ALUMINIUM	PVC & PLASTISOL	FRP - EPOXY	FRP - POLYESTER	BAKED PHENOLIC	BAKED HERESITE	AIR - DRY HER.	EISENHEISS	*EPOXY PAINT	RUBBER	NEOPRENE	HYALON
Hydrogen Chloride					U	140					150	U				
Hydrogen Fluoride		G	G	E	U	140						U				
Hydrogen Peroxide		E	E	G	E	140	160	U	U		150		U	U	U	
Hydrogen Sulphide	F	G	E		E	140	180	160	160		150		U	U		
Hydroquinone					E	140			160	160						
Hydrochlorous Acid					U	U		220	U	U				U	U	U
Iodine		U	F		U	U							U	U	U	
Lactic Acid - 10%	U	G	G	U	G	140		220	120	120			150	150	90	
Lactic Acid - 100%	U	F	G	U	E	U	U	220	120	120			150	150	90	
Lanoline					E	140						U	G			
Lead Acetate		E	E		U	140	180	220	120	120						
Lead Arsenate	U				E	140	180									
Lead Nitrate	U				U	140	180	180	100	100						
Lead Tetraethyl					G	140								100	100	150
Magnesium Carbonate		E	E		E	140	180	220						U	U	U
Magnesium Chloride		G	E	E	F	140	180	220	120	120				200	200	150
Magnesium Hydroxide		E	E	E	U	140	180		140	140				200	200	150
Magnesium Nitrate		E	E		G	140	180	180	100	100				200	200	150
Magnesium Sulphate		E	E	E	G	140	180	220						200	200	175
Maleic Acid					G	70		220						150	100	80
Malic Acid		G	G		G	70			160	160				150	100	80
Manganese Sulphate		E	E			140	180		120	120				150	150	200
Mercuric Chloride		U	F	U	U	U		220	100	100				200	U	U
Mercuric Cyanide		E	E		U	140										
Mercurous Nitrate		E	E		U	140										
Mercury		E	E	G	U	140			150	150						
Methanol		E	E		E	70	100		100	100				150	G	150
Methyl Acetate					E	U								U	G	70
Methyl Bromide					F	U										
Methyl Chloride		E	E		U	U										
Methyl Ethyl Ketone					E	U		80						U	G	
Methyl Sulphate					E	70										
Methylated Spirits						70	180									
Methylene Chloride		E			G	U								U	E	
Mineral Oils					E	140	180			160	160			U	E	
Mixed Acids - All Concs.		140	140		U	U										
Naphtha	U	E	E		E	140	180	220	120	120				150	E	U
Naphthalene	U	E	E		F	U		220	120	120				150	U	U
Nickel Chloride		G	G	G	U	140	180	220	120	120				150	200	200
Nickel Nitrate		E	E		U	140	180	220	100	100				150	200	100
Nickel Sulphate		E	E	E	U	140	180	220	120	120				150	200	200
Nitric Acid - 5% soln.	U	E	E	U	G	70	80	160	U	U				150	U	150
Nitric Acid - 25% soln.	U	E	E	U	E	70	U	80	U	U				150	U	U
Nitric Acid - 50% soln.	U	E	E	U	E	70	U		U	U				150	U	U
Nitric Acid - 70% soln.	U	G	G	U	G	U	U		U	U				150	U	U
Nitric Acid - 95% soln.	U	G	G	U	F	U	U		U	U				U	U	U
Nitrobenzene					E	U		U						U	U	U
Nitrous Fumes		E	E		E	U			U	U				U	U	U
Octane						70	180		120	120				E	U	U
Octanol					E	70	180							F	E	
Oleic Acid	U	G	E	E	F	140		220	120	120				150		
Oxalic Acid		G	E	F	G	140		220	120	120				150	U	150
Palmitic Acid		E	E		E	140								150		
Paraffin, Kerosene		E	E		E	140	180	220						150	E	U
Pentane					E	70	180		120	120				150	E	U
Perchloric Acid - 10%		G	E	E	F	70		160						U	U	U
Perchlorethylene	U				F			80						U		
Petrol/Benzene Mix.					G	U								U	F	U
Phenol	U	E	E		120	70		140						U	U	U
Phenylcarbinol					E	U								U	U	U
Phosphates					U	140	180							150		
Phosphoric Acid - All solns.	U	U	G	G	U	140		220	160	160				150	U	U
Phthalic Anhydride					E	140		220	120	120				150		
Pickling Soln.					F			180						U		
Picric Acid (in Alcohol)		E	E	U	E	140		160								
Plating Soln. - Except Conc. Caustic					U	140		180							U	U
Polyglycol Ethers					U									U	U	U
Potassium Acid Sulphate					G	140			120	120				150	200	170
Potassium Bicarbonate		E	E		E	140	180	180	120	120				150	G	200
Potassium Bichromate		E	E		E	140			120	120				150	U	150
Potassium Bisulphite					E	140			70	70				150	200	U
Potassium Borate						140	180		120	120				150		
Potassium Bromate						140			120	120				150		
Potassium Bromide		F	G		F	140	180	140	120	120				150		
Potassium Carbonate		E	E		U	140	180	80	120	120				150	G	200
Potassium Chlorate		E	E		E	140			120	120				150		
Potassium Chloride		G	G	E	E	140	180	220	120	120				150	G	200
Potassium Chromate					E	140			120	120				150	U	150
Potassium Cyanide		E	E		U	140	180	180	120	120					200	150
Potassium Dichromate		E	E		E	140		220	120	120				150	U	150

\*Epoxy paint results based on tests at approximately 90°F.

E - Excellent

G - Good

F - Fair

U - Unsatisfactory

Numbers indicate maximum temperature at which coating is satisfactory.



CORROSIVE AGENT	RESULTS SIMILAR TO BAKED HERESITE BUT WILL HAVE MUCH SHORTER LIFE.														
	CAST IRON	304 SS	316 SS	MONEL	ALUMINIUM	PVC & PLASTISOL	FRP - EPOXY	FRP - POLYESTER	BAKED PHENOLIC	BAKED HERESITE	AIR - DRY HER.	EISENHHEISS	*EPOXY PAINT	RUBBER	NEOPRENE
Potassium Ferrocyanide		E	E		E	140		220			150		100	U	80
Potassium Fluoride					G	140	180				150				
Potassium Hydroxide - 10%		E	E	E	U	140	180	160	120	120	150	G	150	220	200
Potassium Hydroxide - conc.		E	E		U	140	180	80	U	U	150	G	150	220	200
Potassium Hypochlorite		70	70		F	140	F		100	100	150		100	U	U
Potassium Nitrate		E	E		E	140	180	220	120	120	150	G	180	200	200
Potassium Permanganate		E	E		E	140		220	U	U	150		150	U	U
Potassium Persulphate					U	140		220	120	120	150				
Potassium Phosphate					U	140	180		120	120	105		200	200	200
Potassium Sulphate		E	E	E	E	140	180	220	120	120	105		200	200	200
Potassium Sulphide		E	E		U	140	180		100	100	150				
Potassium Thiosulphate						140			120	120	150		200	70	
Propane		E	E	E	E	70	180				150	G	U	G	U
Propylene Dichloride					U	U			110	110					
Propylene Glycol					E	140	G		100	100		G			
Salicylic Acid					G	140			120	120	150				
Sea Water	U			E	E	140	180	G	120	120	150	G	U	E	E
Silver Cyanide		E	E		U	140		180			150				
Silver Nitrate		E	E		U	140		220			150				
Sodium Acetate		E	E		E	140	180	220	120	120	150		175	100	125
Sodium Acid Sulphate					G	140			120	120	150		200	170	175
Sodium Aluminate					U	140	180		100	100	150				
Sodium Benzoate					E	70		180			150				
Sodium Bicarbonate		E	E	E	E	140	180	180	120	120	150	G	200	200	200
Sodium Bisulphate		E	E	E	G	140	180	220	100	100	150		200	170	175
Sodium Bisulphite		E	E		E	140		220	70	70	150		200	U	U
Sodium Borate		E	E		E	140	180		120	120	150				
Sodium Bromide	U	G	G		G	140	180		120	120	150				
Sodium Carbonate	E	E	E	E	G	140	180	140	120	120	150	G	200	200	200
Sodium Chlorate		E	E		G	140			120	120	150		200	200	200
Sodium Chloride	U	G	E	E	G	140	180	220	120	120	150	G	200	200	200
Sodium Cyanide	F	G	E	E	U	140		220	120	120	150		200	150	150
Sodium Ferricyanide					U	140		220			150		100	U	80
Sodium Fluoride					E	140	180				150				
Sodium Hydroxide - 10% soln.	U	E	E	E	U	140	180	180	100	100	150	G	200	220	200
Sodium Hydroxide - 25% soln.	U	E	E	E		140	180	80			150	G	200	220	200
Sodium Hydroxide conc.	U	G	G		U	140	180					G	150	220	200
Sodium Hydrochlorite	U	F	G	F	G	140		180	100	100	150		100		
Sodium Metaphosphate		E	E	E	E	140	180				150				
Sodium Nitrate		E	E	E	E	140	180	220	120	120	150		180	200	200
Sodium Nitrite		E	E		E	140		220	120	120	150			150	175
Sodium Perborate		E	E	E	E	140					150				
Sodium Peroxide		E	E	E	F	140					150				
Sodium Phosphate	E	E	E	E	U	140	180		120	120	150		200	200	200
Sodium Silicate		E	E	E	G	140	180	220	120	120	150		200	200	
Sodium Sulphate		E	E	E	E	140	180	220	120	120	150		200	200	200
Sodium Sulphide		E	G	F	U	140					150				
Sodium Sulphite		E	E		G	140		220	120	120	150		200	150	150
Sodium Thiosulphate		E	E	G	E	140			120	120	150		200	200	200
Stannic Chloride	U	U	U		U	140		220	120	120	150		200	150	125
Stannous Chloride		G	G		U	140		220	120	120	150		200	100	150
Stearic Acid		E	E	E	G	140		220	120	120	150				
Sulphur - Colloidal		E	E	F	E	140	180								
Sulphur Dioxide - Dry		E	E	E	E	140	180	220	80	80	150		150	U	U
Sulphur Dioxide - Moist		G	E	U	G	70		220	70	70	150		150	U	U
Sulphur Dioxide - Liquid				U	G	U			70	70	150		150	U	U
Sulphuric Acid - To 80% soln.	U	U	U	U	G	140		160	U	U	150		U	U	U
Sulphuric Acid - 95% soln.	F	F	G	U	E	70		U	U	U			U	U	U
Sulphuric Acid - Fuming		G	G	U	E	U			U	U			U	U	U
Sulphurous Acid - 30% soln.	U	F	G	U	G	140		180	U	U	150		150	U	U
Sulphur Trioxide					E	140		220			150				
Tannic Acid	U	E	E		E	140		220	140	140	150		150	200	
Tartaric Acid		G	E	G	E	140		220	120	120	150		200	100	125
Tolvene		E	E	E	E	U	120	80	120	120	U	G			
Trichloroethylene		E	E	E	E	U			160	160	U				
Trichlorobenzene					E	U					U				
Tricresyl Phosphate					E	U					U				
Triethanolamine					G	140			100	100	U				
Triethylene Glycol						140	150				U	G			
Trimethylpropane						70	180				F	G			
Trisodium Phosphate					U	140	180	220	120	120	150		200	200	200
Turpentine		E	E	E	E	140	180		120	120	F	G	U	U	U
Urea					E	140	180		100	100	150				
Wines & Spirits	U	E	E	E	G	70	180		100	100	150		G	G	U
Xylene		E	E	E	E	U	100	80	120	120	U	G	U	U	U
Xylenol					E	U					U	G	U	U	U
Zinc Carbonate						140	180				150	G			
Zinc Chloride		U	G	F	U	140	180	220	100	100	150		200	150	150
Zinc Oxide					G	140	180				150				
Zinc Sulphate	U	E	E	F	E	140	180	220	120	120	150		200	150	175

\*Epoxy paint results based on tests at approximately 90°F.

E - Excellent

G - Good

F - Fair

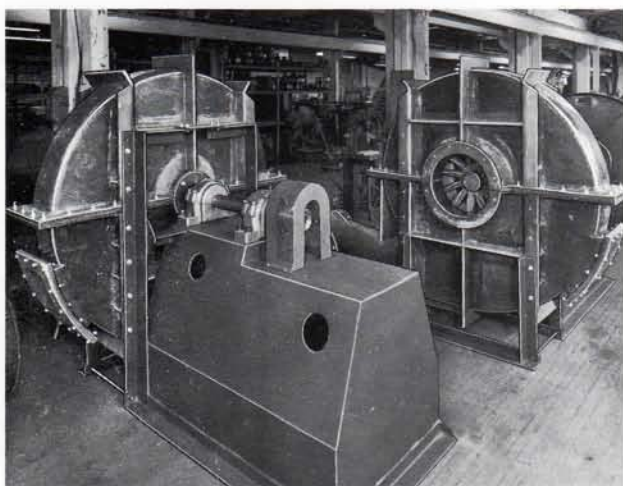
U - Unsatisfactory

Numbers indicate maximum temperature at which coating is satisfactory.

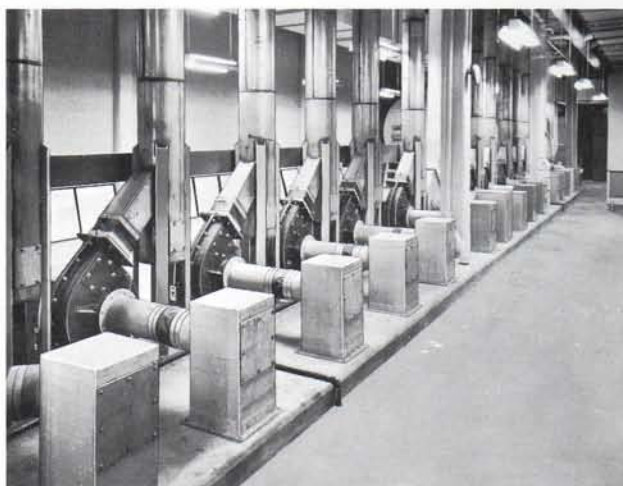


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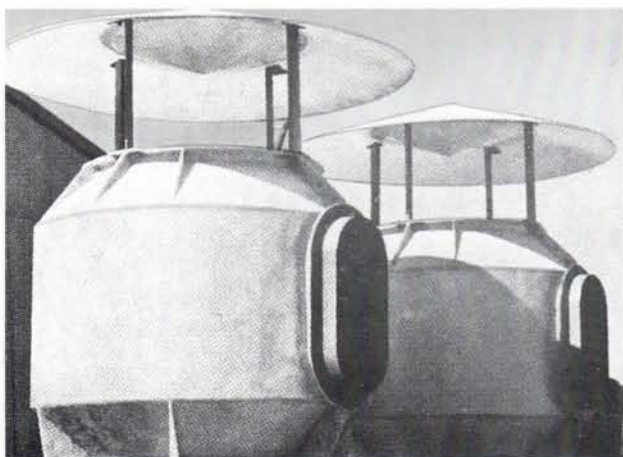
## ... OTHER SHELDONS PRODUCTS EXHAUSTING CORROSIVE FUMES ...



High pressure blowers of FRP construction with titanium wheels, used in major Canadian steel plant for handling severe corrosive fumes.



FRP fume exhaust fans installed in Canadian University.



48" diameter roof mounted FRP Bifurcators used to exhaust corrosive fumes in large Canadian Pulp & Paper Mill.



Water-wash design Induction Venturi being used to exhaust perchloric acid fumes from major Canadian Steel plant.

**Sheldons**

**SHELDONS ENGINEERING LIMITED**

Cambridge, Ontario; Montreal, Toronto, Hamilton, London, Ottawa, Edmonton, Vancouver

Representatives in principal cities across Canada

Sheldons Manufacturing Corporation, Elgin, Illinois