



# Productivity Through Comfort



Energy Efficient—Exceptional Performance

the FrigiKing Commercial Cooler Series by Phoenix Manufacturing, Inc. is ideally suited for the rigorous demands of commercial applications. *Productivity Through Comfort.*



U.L. Listed Models  
also available  
See complete marking on product

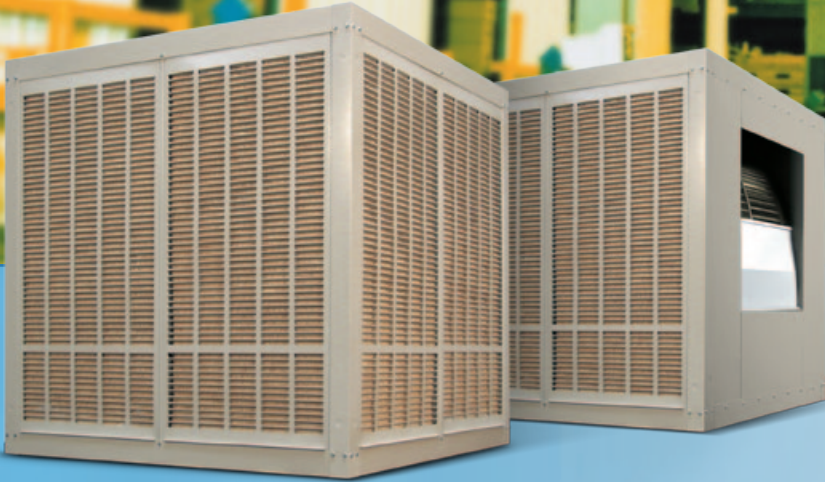


FRIGIKING<sup>®</sup>  
COMMERCIAL COOLERS

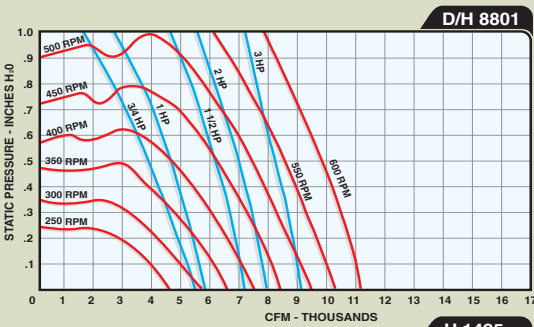




# Efficiency Performance & Comfort



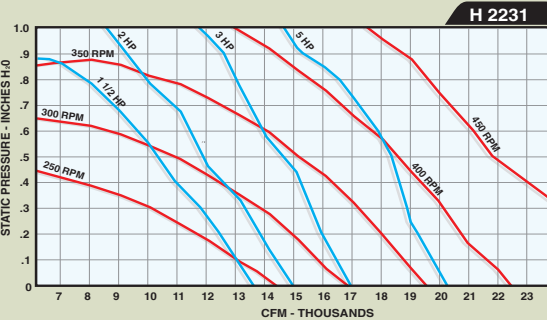
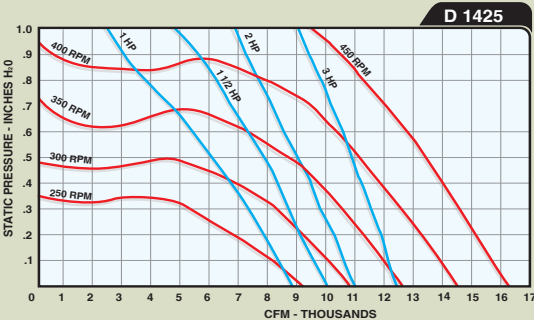
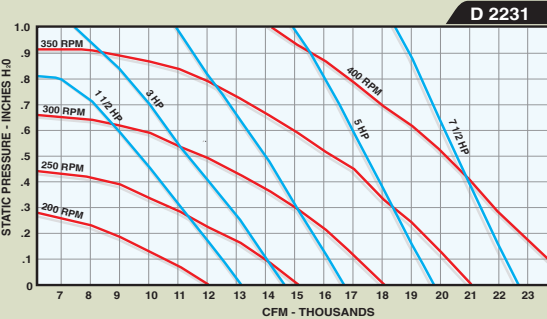
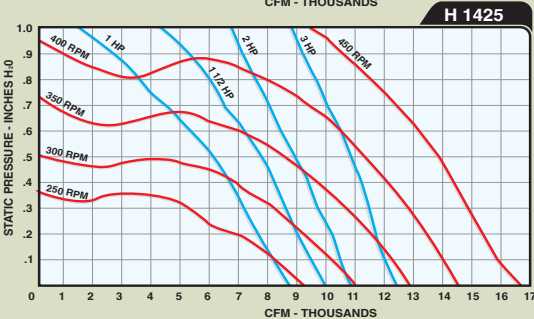
Increase Productivity >>



## Energy Efficiency & Exceptional Performance >>

Specification of critical components is vital in obtaining the required discharge volume through the unit. Motor horse power, voltage, motor shaft outside diameter, motor sheave outside and inside diameter all directly relate to the revolutions per minute (RPM) of the blower wheel. Equally important is the reduction in electrical usage and water required for operation.

The Commercial Cooler Series by Phoenix Manufacturing, Inc. enhances productivity though comfort sustaining energy efficiency with exceptional performance.



Phoenix Manufacturing, Inc. certifies that the evaporative coolers shown are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

Performance shown is installation Type B - free inlet, duct outlet. Power Rating (B.H.P.) does not include drive losses. Performance ratings include the effects of evaporative media in the airstream.

All stages of our manufacturing processes emphasize rigid quality and efficiency standards thereby maintaining quality products with subsequent performance. The cabinet is constructed of hot dipped galvanized steel and treated with our 5-stage, durable **Peblar XT** appliance type finishing process. Using plane separation technology, our computerized dynamic wheel balancer provides the smoothest running vibration free wheel possible. Engineered and designed for reliable performance and long life, these commercial units will last through the years with minimum maintenance and optimum cooling capacity.

Induction of fresh air today into the workplace is often a crucial requirement that must be met in order to comply with various federal,

state and local codes. Phoenix Manufacturing Commercial Coolers deliver the industry optimum fresh air with motor horse power ranges from ¾ Hp up to 7 ½ Hp to meet the most challenging design requirements. Often referred to as air washers, these units also provide filtering to induction air prior to entering workplace environments through ducts or single inlet discharge aperture. Similarly, used as air handlers without the use of water, fresh make-up air requirements in restaurant kitchens, industrial work environments and dry cleaning industries can be met cost effectively and energy efficiently.

Evaporative air coolers provide a lucrative means to cooling diverse atmospheres while substantially reducing associated operating and maintenance costs when compared to

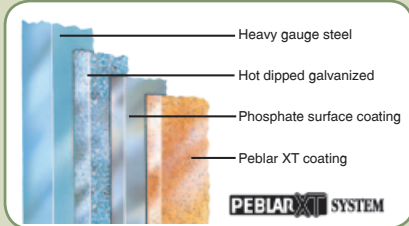
mechanical refrigeration. Analysis of the application may justify the use of our Commercial Fan model in low static applications.



### Higher CFM available for low static applications

Our 2 Hp Commercial Fan unit delivers as much air as the 5 Hp blower model realizing a fraction of the energy consumption. These models are also available in ¾ , 1 and 1 ½ Hp single and three phase configurations.

Sound, effective, application flexible equipment design and performance has maintained Phoenix Manufacturing's position as a leader in the commercial evaporative air cooling industry—this is our business. Increasing productivity and efficiency for your client through maximum comfort is your business.



## Environmentally Friendly Cooling...

Evaporative coolers contain no ozone harmful CFC's typically found in typical mechanical refrigeration processes of large areas. Along with filtering capabilities, these units also introduce fresh, cool air into work areas and storage environments. Saving as much as 75% of the cost incurred with air conditioning, these units reduce the electrical demand realized by utilities and ultimately reduce operating costs while raising efficiencies.



## Choosing the Right Model To Meet Your Needs

Choosing the right Phoenix Manufacturing, Inc. Industrial Cooler model is important for proper operation. These air coolers are designed to operate at maximum efficiency with minimal maintenance. All Commercial air coolers use efficient Aspen media to deliver colder air while reducing the overall cost of replacing the media.

For maximum performance, choose the model with the proper rating and motor as well as the correct duct configuration. Ask your qualified contractor to help you choose the correct Commercial Cooler Series model that best fits your needs.

Down Discharge



Side Discharge



**Commercial**  
Coolers



# Technical Information

Performance shown is installation Type B - free inlet, duct outlet. Power Rating (B.H.P.) does not include drive losses. Performance ratings include the effects of evaporative media in the airstream.

## Certified Air Delivery at Various External Static Pressures

- Blower RPM Values based on motor RPM 1725  
- AMCA Licensed Ratings

Model Number	Static Pressure Max HP Required	.0"		.1"		.2"		.3"		.4"		.5"		.6"		.7"		.8"		.9"		1.0"	
		CFM	RPM	CFM	RPM	CFM	RPM	CFM	RPM	CFM	RPM	CFM	RPM	CFM	RPM	CFM	RPM	CFM	RPM	CFM	RPM	CFM	RPM
D/H 8801	3/4	5480	303	5200	317	4950	332	4650	348	4350	366	4000	385	3631	406	3274	428	2790	457	2191	492	1617	521
D/H 8801	1	6030	332	5800	347	5550	360	5300	373	5020	388	4700	406	4400	425	4075	441	3770	461	3400	483	2909	512
D/H 8801	1 1/2	7230	384	6997	395	6769	408	6544	420	6316	432	6084	445	5849	458	5607	472	5354	486	5107	499	4883	513
D/H 8801	2	7958	384	7746	409	7538	444	7332	455	7127	466	6919	478	6708	489	6496	500	6279	513	6052	526	5822	538
D/H 8801	3	9110	483	8923	492	8741	502	8560	511	8381	522	8202	532	8021	541	7838	551	7654	561	7468	571	7280	582
D 1425	1	8675	240	8153	255	7679	267	7144	282	6636	297	6111	312	5505	332	4685	357	3774	394	3080	420	2552	439
D 1425	1 1/2	9930	275	9462	286	9053	299	8618	311	8146	323	7701	337	7257	350	6771	365	6218	383	5506	404	4777	434
D 1425	2	10930	302	10497	313	10120	324	9744	335	9329	347	8901	358	8499	370	8099	382	7671	394	7205	410	6666	427
D 1425	3	12511	346	12126	356	11785	365	11462	375	11131	384	10770	395	10393	404	10029	414	9681	425	9333	436	8966	446
H 1425	1	8616	235	8114	248	7662	263	7148	279	6614	295	6003	310	5498	333	4553	362	3506	395	2917	417	2635	437
H 1425	1 1/2	9862	269	9411	287	9021	294	8606	307	8152	320	7691	335	7164	347	6664	364	6221	384	5400	407	4386	441
H 1425	2	10855	296	10438	307	10077	318	9720	330	9322	342	8909	355	8490	367	8019	379	7535	391	7141	411	6677	426
H 1425	3	12426	339	12053	348	11727	357	11420	369	11104	378	10758	389	10396	399	10037	411	9666	422	9254	432	8822	442
D 2231	1 1/2	13131	219	12494	229	11804	241	11100	254	10382	266	9642	280	8908	294	8172	310	7049	332	5637	364	4762	386
D 2231	2	14453	241	13879	250	13261	260	12623	272	11982	283	11323	295	10651	307	9982	320	9328	334	8555	350	7340	374
D 2231	3	16545	276	16049	283	15520	292	14970	302	14411	312	13852	322	13283	332	12700	342	12112	353	11527	364	10952	375
D 2231	5	19616	327	19203	333	18767	340	18314	348	17850	356	17380	364	16909	373	16437	381	15959	390	15472	398	14978	407
D 2231	7 1/2	22454	374	22096	380	21722	386	21335	392	20937	399	20532	406	20122	413	19711	420	19300	428	18887	435	18471	443
H 2231	1 1/2	13466	239	12747	249	12361	262	11672	271	10769	281	10316	295	9637	308	8651	320	7902	336	6851	361	5664	392
H 2231	2	14821	263	14122	271	13756	284	13325	294	12514	301	11770	311	11376	324	10830	336	9931	346	9157	360	8462	376
H 2231	3	16966	301	16304	308	15927	318	15631	329	15216	337	14519	343	13766	350	13299	361	12976	373	12510	383	11762	392
H 2231	5	20115	357	19512	362	19114	369	18836	379	18590	388	18292	396	17854	402	17233	406	16573	412	16056	420	15722	430

### Sizing Instructions

Use the performance tables above and the procedure below to properly size these Commercial Cooler units. The performance or Sensible Heat Capacity of any evaporative cooler is a function of both the CFM and the efficiency (air di charge temperature). Both of these specifications should be considered to properly size the units.

Static pressure, or duct system resistance, also impacts air delivery. Once the model number, CFM air delivery required and static pressure are known, identify the blower wheel RPM in the column to the right of that CFM air delivery. This will ensure a properly sized sheave.

- 1 Determine design Conditions
  - Outside Dry-Bulb (DB)
  - Outside Wet-Bulb (WB)
  - Inside Dry-Bulb (TI)
- 2 Determine the design Sensible Heat Load. (Btuh)
- 3 Determine the Cooler Leaving Air Temperature (LAT)
 
$$LAT = DB - [(DB - WB)EFF]$$
 Where EFF = .80 for Aspen media
- 4 Determine the CFM required
 
$$CFM = \frac{0.925 \times \text{Sensible Heat Load}}{(TI - LAT)}$$
- 5 Determine the cooler(s) required by referring to the air flow charts below.

### Sheave Selection

All sheaves listed are adjustable to meet the blower speed RPM requirements for your application. Using the model number combined with the motor horse power and blower RPM, use this chart to locate the corresponding part number in the far right column.

Motors of varying and identical horse power may have different motor shaft sizes. Be certain the motor shaft diameter and motor sheave bore size are the same size.



U.L. Listed Models also available See complete marking on product

### UL Classified Models

The Commercial Cooler models are UL Classified. In order to maintain this U.L. Classified designation, these models must be used in conjunction with PMI supplied Motors, Sheaves, Pumps and Junction Box kits (JBK). See price sheets for details.

### UL Listed Models

To specify and order a U.L. Listed model, add a "U" prefix to the front of the appropriate model number.

Example: **UD2231**

## Sheave Selection

Blower RPM Values based on motor RPM 1725

Model Number	Motor H.P.	I.D.	Blower RPM - Sheave Turns Open						PMI Part	Browning
			5	4	3	2	1	0		
D/H 8801	3/4, 1, 1 1/2, 2	5/8	234	259	283	308	333	357	S1	1VL 34
D/H 8801	3/4, 1, 1 1/2, 2	7/8	234	259	283	308	333	357	S1A	1VL 34
D/H 8801	3/4, 1, 1 1/2, 2	5/8	296	320	345	370	394	419	S2	1VP 40
D/H 8801	3/4, 1, 1 1/2, 2	7/8	296	320	345	370	394	419	S2A	1VL 40
D/H 8801	3/4, 1, 1 1/2, 2	5/8	345	370	394	419	444	468	S3	1VL 44
D/H 8801	3/4, 1, 1 1/2, 2	7/8	345	370	394	419	444	468	S3A	1VL 44
D/H 8801	3/4, 1, 1 1/2, 2	5/8	419	444	468	493	518	542	S4A	1VM 50
D/H 8801	3/4, 1, 1 1/2, 2	7/8	419	444	468	493	518	542	S4	1VM 50
D/H 8801	3	1 1/8	419	444	468	493	518	542	S4B	1VP 50
D/H 8801	3	1 1/8	492	518	542	567	592	616	S11B	1VP 56
D/H 1425	1, 1 1/2, 2	5/8	230	249	268	288	307	326	S2	1VP 40
D/H 1425	1, 1 1/2, 2	7/8	230	249	268	288	307	326	S2A	1VL 40
D/H 1425	1, 1 1/2, 2	5/8	268	288	307	326	345	364	S3	1VL 44
D/H 1425	1, 1 1/2, 2	7/8	268	288	307	326	345	364	S3A	1VL 44
D/H 1425	1, 1 1/2, 2	5/8	326	345	364	383	403	422	S4A	1VM 50
D/H 1425	1, 1 1/2, 2	7/8	326	345	364	383	403	422	S4	1VM 50
D/H 1425	1, 1 1/2, 2	5/8	383	403	422	441	460	479	S11	1VP 56
D/H 1425	1, 1 1/2, 2	7/8	383	403	422	441	460	479	S11A	1VP 56
D/H 1425	3	1 1/8	326	345	364	383	403	422	S4B	1VP 50
D/H 1425	3	1 1/8	383	403	422	441	460	479	S11B	1VP 56
D/H 2231	1 1/2, 2	5/8	192	211	230	249	268	288	S5A	2VP 36
D/H 2231	1 1/2, 2	7/8	192	211	230	249	268	288	S5	2VP 36
D/H 2231	1 1/2, 2	5/8	249	268	288	307	326	345	S6A	2VP 42
D/H 2231	1 1/2, 2	7/8	249	268	288	307	326	345	S6	2VP 42
D/H 2231	1 1/2, 2	5/8	326	345	364	383	403	422	S8A	2VP50
D/H 2231	1 1/2, 2	7/8	326	345	364	383	403	422	S8B	2VP 50
D/H 2231	3, 5	1 1/8	249	268	288	307	326	345	S7	2VP 42
D/H 2231	3, 5	1 1/8	326	345	364	383	403	422	S8	2VP 50
D/H 2231	5	1 1/8	403	422	441	460	479	498	S9	2VP 60
D 2231	7 1/2	1 3/8	355	374	393	413	431	452	S8C	-
D 2231	7 1/2	1 3/8	403	422	441	460	479	498	S9C	2VP68

## Water Bleed Off Rate

Model	Motor H.P.	MAX (GPH) Usage including Bleed off	Bleed Off (GPH)
D/H 8801	3/4	25	3.8
D/H 8801	1	28	3.8
D/H 8801	1 1/2	34	6.2
D/H 8801	2	37	6.2
D/H 8801	3	43	6.2
D/H 1425	1	41	6.2
D/H 1425	1 1/2	47	6.2
D/H 1425	2	51	6.2
D/H 1425	3	59	6.2
D/H 2231	1 1/2	56	6.2
D/H 2231	2	61	6.2
D/H 2231	3	70	6.2
D/H 2231	5	82	6.2
D 2231	7 1/2	90	6.2

## Pump Specifications

Pump Model	Volts	Amps	Watts	GPM AT 5' HEAD
PK60LA	115	1.7	105	7.3
PK62LA	230	1.1	105	7.3

## Required Belt Change

Model	Motor H.P.	Belt Size
H 8801	3	A79
D 8801	1 1/2 HP & UP	A76
D/H 1425	3	A98
D 2231	7 1/2	A105

## Technical Motor Specifications

Model Number	H.P.	Phase	Volt	Amperage	Weight/lbs.	Base	Frame	Shaft O.D.
*M180	3/4 - 2 spd.	1	115	10.5-5.8	32.3	Resilient	56	5/8
*M161	3/4	1	115 / 208-230	10.6 / 5.3	24.2	Resilient	56	5/8
*M162	3/4 - 2 spd.	1	230	5.8 / 3.5	25.5	Resilient	56	5/8
M163B	3/4	3	208-230 / 460	2.7-2.8/1.4	22	Resilient	56	5/8
*M181A	1 - 2 spd.	1	115	11.8 / 6.1	32.3	Resilient	56	5/8
*M165	1	1	115 / 208-230	14.0 / 7.0	30.2	Resilient	56	5/8
M166C	1	3	208-230 / 460	3.3-3.1 / 1.6	40	Rigid	143T	7/8
M167B	1	3	200	3.6	40	Rigid	143T	7/8
*M168	1 - 2 spd.	1	230	7.2	32.4	Resilient	56	5/8
*M169A	1 1/2	1	115 / 208-230	18 / 9.3-9	41.7	Resilient	56H	5/8
M170C	1 1/2	3	208-230 / 460	4.6-4.4 / 2.2	40	Rigid	145T	7/8
M171B	1 1/2	3	200	5.1	40	Rigid	145T	7/8
*M172A	2	1	115 / 208-230	21 / 11.3-10	50	Resilient	56H	5/8
M173C	2	3	208-230 / 460	6.2-5.8 / 2.9	44	Rigid	145T	7/8
M174B	2	3	200-208	6.7 / 6.0	44	Rigid	145T	7/8
M176C	3	3	208-230 / 460	8.4-7.8 / 3.9	75	Rigid	182T	1 1/8
M177B	3	3	200-208	10.6 / 10.2	55	Rigid	182T	1 1/8
M178C	5	3	208-230 / 460	13.6-12.4 / 6.2	81	Rigid	184T	1 1/8
M179B	5	3	200-208	15.2-14.6	70	Rigid	184T	1 1/8
M182B	7 1/2	3	208-230 / 460	19.2-9.6	121	Rigid	213T	1 3/8

All 3 phase motors, 1 HP or greater, are high-efficiency motors. Their efficiency levels meet or exceed U.S. EPCACT

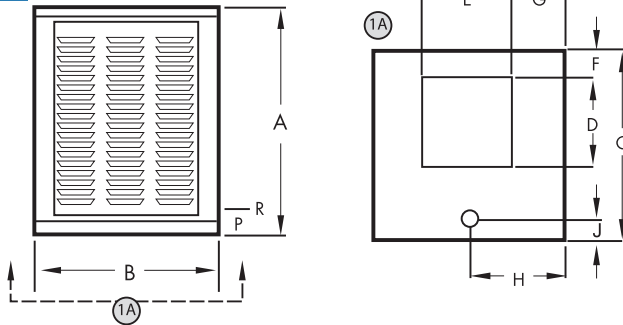
\*Indicates the motor is thermally protected, eliminating the need for external starting devices.

## Commercial Evaporative Coolers Feature:

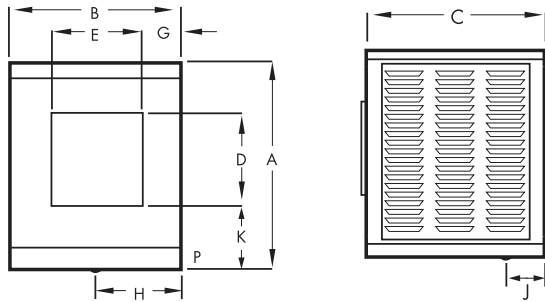
- Up to 22,000 CFM Capacity (Industry Standard Rating)\*
- AMCA licensed ratings
- City of Los Angeles Approved
- Solid shaft for strength & durability
- All welded, hot dipped galvanized steel construction cabinet
- Heavy duty UL Recognized motor & pump available
- Multilayer bottom pan finish
- Peblar XT™ architectural finish, protects against rust
- Dynamically balanced blower wheels
- Belt and bleed off included

		Blower Module	Wet Module	CFM	E.S.P.	Motor Specifications			
Model #	QTY					H.P.	Voltage	Phase	Amps
Model #	QTY					H.P.	Voltage	Phase	Amps
Model #	QTY					H.P.	Voltage	Phase	Amps
Model #	QTY					H.P.	Voltage	Phase	Amps
Model #	QTY					H.P.	Voltage	Phase	Amps
Model #	QTY					H.P.	Voltage	Phase	Amps

## Bottom Discharge



## Side Discharge



## Optional Accessories

## Notes:

Contractor

Submitted By:

Phoenix Manufacturing, Inc. produces this equipment, with pride and craftsmanship, in the **U.S.A.** As a leader in our country's evaporative cooler production, we continuously strive to offer product improvements and reserve the right to change specifications and designs without notice.

## Commercial/Industrial Engineering Data

Model Number	Blower Wheel		Belt Size D/H	Blower Pulley Pitch Diameter	Cabinet Dimensions (Inches)											Approx. Oper. Wt.	Approx. Cabinet Ship Wt.	Pad Filler Dimensions			
	Dia.	Width			A	B	C	D	E	F	G	H	J	K	P			Riser R	No.	Ht.	Width
D/H 8801	21	20	A74/A76	14 Single	52	41	41	21 3/4	21 3/4	4 3/8	9 5/8	20 1/2	4 1/2	15 7/8	3 1/2	6	476	280	4/3	45	35
D/H 1425	24	24	A94/A94	18 Single	52	52	52	26 3/4	26 3/4	4 1/2	12 5/8	26	4 1/2	21 1/4	3 1/2	6	721	415	8/6	45	22
D/H 2231	28	28	A102/A98	18 Dual	60	62	62	31 3/4	31 3/4	8 1/8	15 1/8	31	4 1/2	23 3/4	3 1/2	7	1006	550	8/6	54	26

Phoenix Evaporative Coolers and components are designed and tested in accordance with one or more of the following standards or agencies: **AIR DELIVERY** - data published derived from tests conducted in accordance with A.M.C.A. (Air Movement and Control Assoc.) standard 210. **ASPEN PADS** - built to federal specification PP-E-911 for Type 1, Class A, Grade 4. **SEALANT** - water immersion per ASTM D870. **FLEXIBILITY** - per ASTM D756. **CORROSION RESISTANCE** - per ASTM B117. **PENCIL HARDNESS** - per ASTM D3363. **IMPACT RESISTANCE** - per D2794. **FLEXIBILITY** - per ASTM D522. **SPECULAR GLOSS** - per ASTM D523. **SURFACE BURNING CHARACTERISTICS** of building materials (best rating) per UL 723 and ASTM E-84. **PUMPS** recognized under the UL standard #778 for operating water pumps with thermal overload and locked rotor protection. **POLYMERIC MATERIALS** listed in accordance with UL 94 and 746C. **MOTORS** recognized under UL component standard #1004 for motor certification. **MOTORS** tested under UL standard #547 for locked rotor and heat rise protection. **BLOWER WHEEL** - balanced in accordance with ISO 1940 and A.N.S.I. standard S2.19, quality grade G6.3. City of Los Angeles (C.O.L.A.), RR8075 Mechanical, RR930159 Electrical (11/2 HP Maximum, Single Phase).



**PHOENIX MANUFACTURING, INC.**  
"Committed to Customer Success"™

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