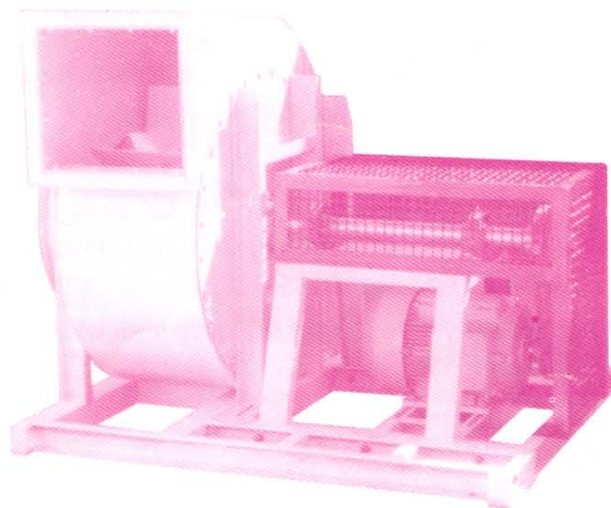


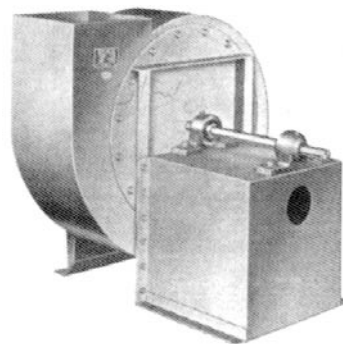
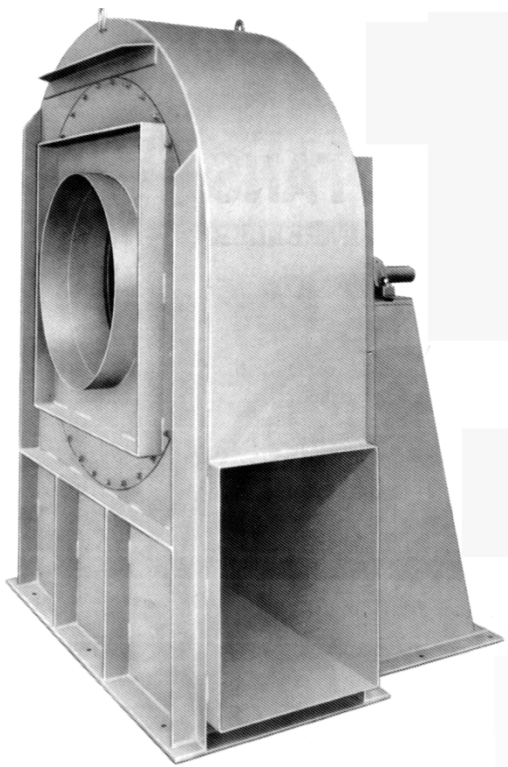
**TAHVIEH HAMOON**

# **INDUSTRIAL RADIAL FANS**

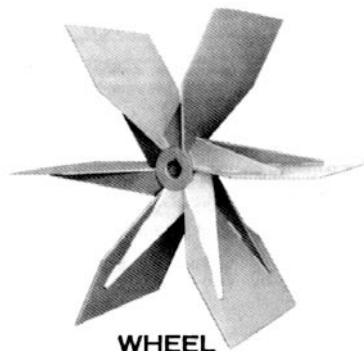
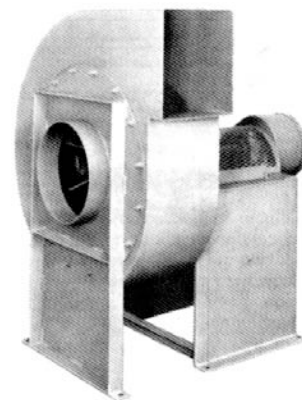
**QUICK REPLACEABLE IMPELLER**



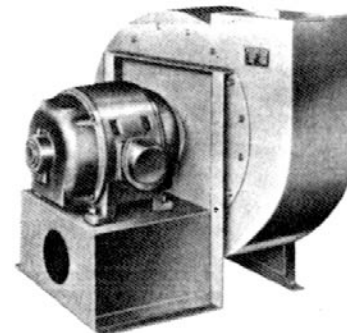
- FOR**
- . INDUSTRIAL EXHAUST SYSTEMS**
  - . MATERIAL HANDLING**
  - . TEXTILE ENGINEERING APPLICATIONS**
  - . DUST COLLECTION SYSTEMS**
  - . INCINERATORS**



ARRANGEMENT NO. 1—For belt drive wheel overhung, two bearings mounted on pedestal.



WHEEL



ARRANGEMENT NO. 4—For direct drive wheel overhung on motor shaft.

## STRONG AIR IS OUR BUSINESS

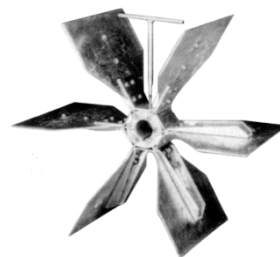
... Versatile, durable centrifugal fans designed for industrial moving and light material handling applications...

Performance \_\_ 14" through 85" wheel diameters offer capacities to 86,900 CFM with static pressure to 20" WG

Stability \_\_ operates smoothly from wide – open to closed – off.

Temperatures to 800F \_\_ see page 5 for construction details.

Wheels \_\_ non – clogging radial design .



## WHEEL DESIGNS

T.H. wheel \_\_ available in size 144 through 854...flat radial blade design... ideal for pneumatic conveying of particulate matter, coarse material, and sticky or heavy dust.

## **INDUSTRIAL PROCESS APPLICATION**

The series TAHVIEH HAMOON industrial fan is manufactured in a wide choice of sizes, arrangements and special duty wheel types to meet the air volume, pressure and temperature requirements for all types of industrial process applications. Ruggedly built, these fans are designed for trouble – free continuous duty when operating under the most severe conditions required for material handling or for exhausting hot, dirty fumes or gases.

**WHEELS** Three basic wheel types are available to meet various field requirements. All wheels are inter – changeable in the same fan housing and are readily re – movable through the sides of the fan housing. Wheels are continuously welded to provide a rigid, durable assembly and can be furnished in both standard and extra heavy construction. For spark resistant, corrosion or other spe – cial applications, wheels can be furnished in stainless steel, monel, bronze, brass or aluminum. When required, wheels can also be coated with special corrosion and heat resistant paints, or a variety of other finishes for lasting performance under the most severe conditions.

**HOUSINGS** Housing for TAHVIEH HAMOON Industrial fans are fabricated from heavy side sheets continuously welded to scroll sheet to provide gas – tight sturdily constructed assembly. Sizes 9 through 36 are rotatable and convert – ible as to discharge; larger sizes have fixed discharge. Inlets and outlets are designed for slip connections, but when required, can be flanged and punched for convenient bolting. Housings fabricated from stainless steel, monel, bronze, brass or aluminum are also available.

## MODIFICATIONS

TAHVIEH HAMOON fan can be modified or furnished with accessory equipment to meet many special conditions or requirements.

### INLET VANE DAMPERS

Inlet van dampers can be furnished to provide an effective means of reducing or regulating air volume flow when required. Dampers can be furnished for manual or automatic control.

### OUTLET DAMPERS

Outlet dampers can be furnished in number of types for regulating air volume. Types available are: single blade, parallel or opposed acting. Streamlined, parallel or opposed acting.

### ACCESS DOORS

Two types of access doors are available for cleaning of fan wheel and scroll. A quick release door is recommended where frequent cleaning is necessary.

### SHAFT COOLING WHEEL

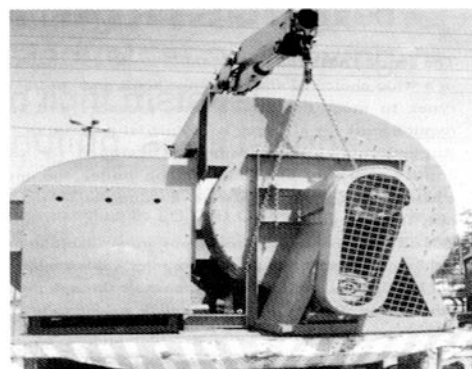
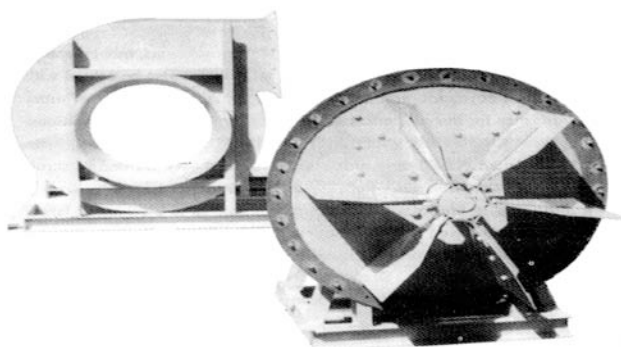
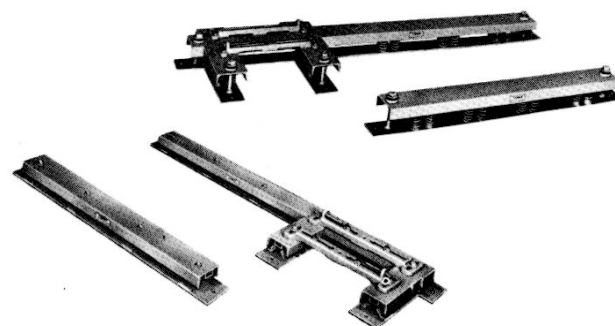
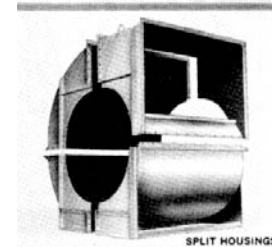
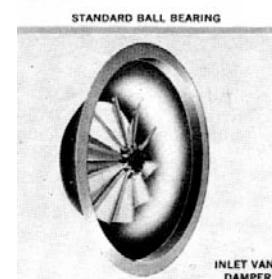
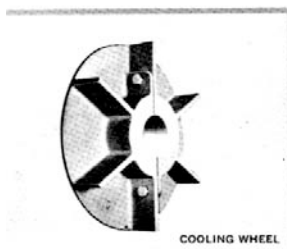
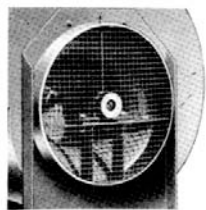
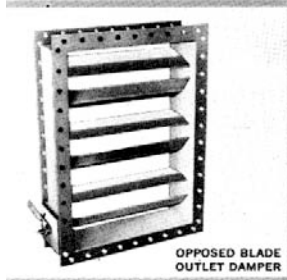
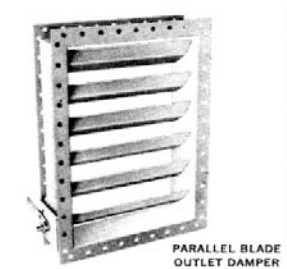
Shaft cooling wheels can be furnished for high temperature application to protect the inboard bearing from radiated heat from the fan housing and convected heat from the shaft.

### INLET SCREENS

Accessory inlet screens of 1½" mesh wire are available where there is no duct connected to the fan inlet. Screens are bolted to the fan inlet for easy removal.

### VIBRATION BASES

Vibration bases are available in a number of types to provide an efficient method of isolating fans and motors, thereby reducing the transmission of vibration to the building structure.



# SPECIAL APPLICATIONS \_\_ HEAT FAN ENGINEERING

## HANDLING CORROSIVES

Corrosion problems may result when the air being handled contains one or more Chemicals which are corrosive in nature. The extent of the corrosion problem, however, is dependent upon the specific properties of each of the chemicals and the resulting mixture, the concentrations, and the mixture. Many types of protective coatings and special construction are available to combat corrosion problems.

**Special metal construction \_\_ HT fans** can be constructed of aluminum or various stainless steels.

**Thin film coatings (5 to 10 mil thickness) \_\_** special paints and spray coating are available under a variety of trade names. T.H works with coating applicators who can supply most brands or their equivalents. Standard TH fans with all – welded construction are especially suited to these coatings.

## HEAT FAN ENGINEERING

GI fans may be modified for operation at elevated temperatures. For successful operation, consideration must be given to decreased material strength at various temperatures.

The chart below gives applicable safe speeds.

Maximum temperatures for each arrangement are given on page 4. Heat fan modifications include shaft coolers and modifications include shaft coolers and guards on all arrangements and motor heat shields for arrangement 9 and 10.

Aluminum shaft coolers are designed to move ambient air over the inboard bearing and dissipate heat transferred through the fan shaft.

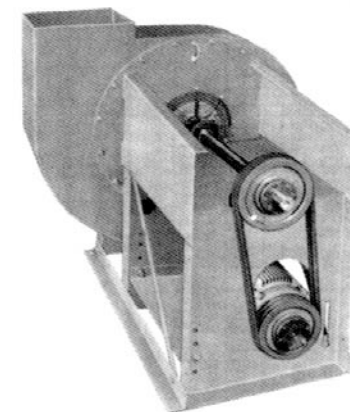
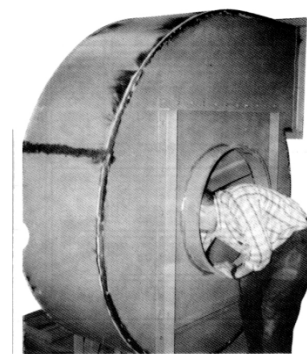


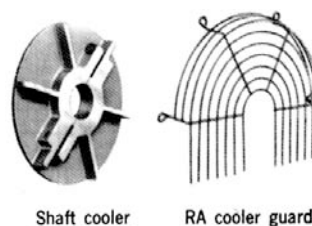
CHART I  
MAXIMUM SAFE SPEEDS FOR WHEELS  
AT VARIOUS TEMPERATURES (mild steel)

size	70°- 400°	500°	600°	700°	800°
144	4605	4448	4328	4200	3742
174	3745	3618	3520	3415	3055
224	2635	2545	2477	2403	2150
264	2280	2202	2143	2079	1860
294	1995	1927	1875	1819	1628
334	1850	1787	1739	1687	1510
364	1670	1613	1570	1523	1363
404	1490	1439	1400	1358	1216
454	1325	1279	1245	1208	1081
504	1185	1145	1114	1081	967
574	1040	1004	977	948	848
644	930	898	874	848	759
714	840	811	790	766	685
784	765	738	719	698	624
854	700	676	658	638	571

CHART II  
MAXIMUM SAFE SPEED FACTORS  
FOR ALLOY WHEEL CONSTRUCTION

Material	70°	200°	300°	400°	500°	600°	700°	800°
Aluminum	1.00	0.97	—	—	—	—	—	—
304 Stainless	1.00	0.89	0.82	0.78	0.75	0.73	0.71	0.70
316 Stainless	0.95	0.90	0.88	0.86	0.83	0.80	0.78	0.77
347 Stainless	1.00	1.00	0.99	0.97	0.97	0.97	0.97	0.96

Factors shown in chart I should be applied to the maximum safe speeds shown in the 70°-400° column of chart III as the tinted area indicates.



Shaft cooler

RA cooler guard

# HOW TO USE CAPACITY TABLES

For a given fan size. Wheel design, CFM, and static pressure; capacity tables can be used to obtain outlet velocity, wheel RPM and BHP. If capacities are at conditions other than 70 ° F, sea level or standard density (0.75 lbs./CU.FT.), correction factors must be applied to static pressure and BHP.

1. Select size, RPM and BHP of fan from capacity table.
2. If temperature or altitude is involved, correct for air density (see charts III and IV).
3. Check the maximum safe speed of the fan at the operating temperature as shown in chart I.
4. All ratings shown between the gray lines on capacity tables are within five percent of maximum mechanical efficiency.
5. BHP shown includes bearing drag on smaller sizes where such drag is significant.

**EXAMPLE:** size 224 fan, wheel, and heat fan to furnish 1860 CFM at 5” SP at 600°F. At 0.075 lbs./cu .ft density.

1. Chart III gives a 2.00 factor for 600 ° F.
2. 5” SP \* 2.00 = 10” SP at 70 ° F.
3. Capacity tables show 1876 RPM, 5.25 BHP for 224 at 1860 CFM at 10” SP at 70 ° F.
4. Divide BHP and SP by the temperature factor.

$$10 \div 2.00 = 5” \text{ SP}$$

$$5.25 \div 2.00 = 2.63 \text{ BHP}$$

5. Actual performance: 1860 CFM at 5” SP at 1876 RPM at 2.63 BHP at 600 ° F.

6. Check safe speed for standard size 224 at 600 ° F. (chart I on page 5). RPM shown is 2477. Fan is satisfactory for operation at 600 ° F.

## **CALCULATING FANS AT ALTITUDES OTHER THAN SEA LEVEL { 29.92 in. }**

If speed, capacity and temperature are kept constant, static pressure and horsepower will vary directly as the density of the air. The method for correcting for altitude is the same as for temperature except using the factors in chart VI instead of chart V.

**CHART VIII****CORRECTION FACTOR FOR TEMPERATURE (°F)**

Temp	Factor	Temp	Factor	Temp	Factor	Temp	Factor	Temp	Factor
-50°	.77	80°	1.02	225°	1.29	400°	1.62	750°	2.28
-25°	.82	100°	1.06	250°	1.34	450°	1.72	800°	2.38
0°	.87	120°	1.09	275°	1.39	500°	1.81		
20°	.91	140°	1.13	300°	1.43	550°	1.91		
40°	.94	160°	1.17	325°	1.48	600°	2.00		
60°	.98	180°	1.21	350°	1.53	650°	2.10		
70°	1.00	200°	1.25	375°	1.58	700°	2.19		

**CHART IV****CORRECTION FACTORS FOR ALTITUDE (FEET ABOVE SEA LEVEL)**

Alt.	Factor	Alt.	Factor	Alt.	Factor	Alt.	Factor	Alt.	Factor
0	1.00	2000	1.08	4000	1.16	6000	1.25	8000	1.35
500	1.02	2500	1.10	4500	1.18	6500	1.27	8500	1.37
1000	1.04	3000	1.12	5000	1.20	7000	1.30	9000	1.40
1500	1.06	3500	1.14	5500	1.22	7500	1.32	10000	1.45

NOTE: if correction factor for temperature and altitude is required, multiply factors from charts III and VI together: 3000' and 600° F.  
 $1.12 * 2.00 = 2.24$  (combined factor).



## ARRANGEMENTS

### ARRANGEMENTS 1

Suitable for V-belt drive ... provides a wide range of V-belt drive and motor combinations.  
Maximum temperatures: standard fan - 300° F, heat fan – 800° F.  
Heat fan construction includes shaft cooler and cooler guard.

### ARRANGEMENT 9

Provides a fan, motor and V – belt drive combination in an integral unit . . . built to same dimensional specifications as arrangement 1, but with motor slide base mounted on right or left side of fan pedestal.

Maximum temperatures: standard fan - 300° F, heat fan – 600° F.

Heat fan construction includes shaft cooler, cooler guard and motor heat shield.

When ordering arrangement 9 fans. Complete motor and drive information is necessary to locate motor slide rails.

### ARRANGEMENT 10

Available with LS wheel only in Sizes 144 through 294 .

Offers fan, motor, and drive in one compact, easy – to – install and maintain packaged assembly.

Maximum temperatures: standard fan - 200° F, head fan – 600° F.

Heat fan construction includes shaft cooler, cooler guard and motor heat shield. . .

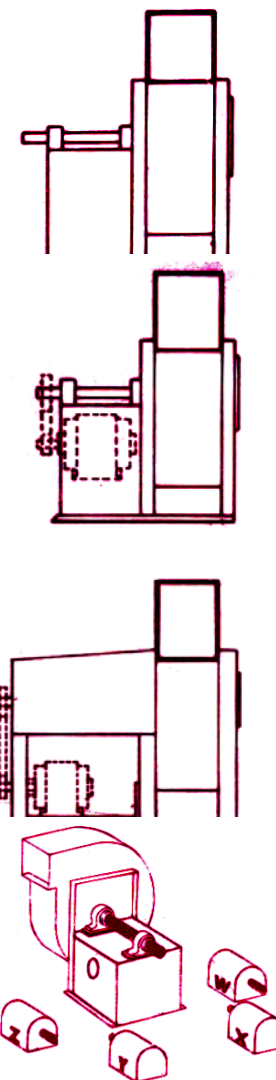
### MOTOR POSITION DESIGNATION

Drawing at left shows AMCA motor position designations for Arrangement 1 fans.

These designations are required when ordering:

1. V–belt drives.
2. Vibration bases and unitary bases.
3. Belt guards.

Motor positions are independent of fan rotation and discharge positions and are determined by viewing fan from drive and selecting W, X, Y or Z.





# MATERIAL SPECIFICATIONS

U.S STANDARD SHEET GAUGE TO 7 GAUGE \_ DIMENSIONS IN INCHES

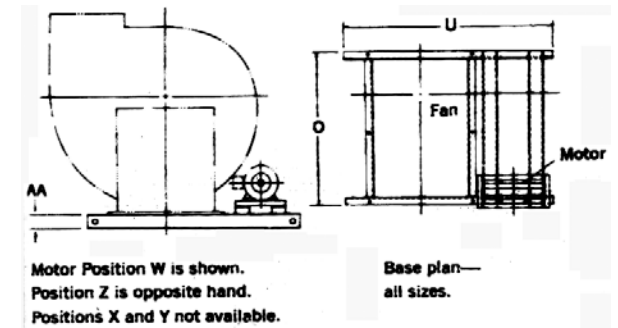
SIZE	Bare fan weight (lbs.)	Housing					Bearing base Arr.1 and 9		Shaft diameter and bearing type			Wheels					
		Side			inlet Collar	Scroll	Side sheets	Base flange	LS Arr.1 and 9	Arr.10	Blades		DH front plate	DH black plate	WR <sup>2</sup>		
		sheets	plates								LS	DH			Wt.	lb. ft. <sup>2</sup>	
			Drive	Inlet													
144	130	12	10	12	12	10	10	1 3/16 -B	17/16 -A	12	-	-	-	14	1.5		
174	175	12	10	10	10	10	10	1 7/16-B	17/16 -A	12	-	-	-	17	2.8		
224	165	10	10	10	7	10	7	1 11/16-D	115/16 -A	7	-	-	-	45	13		
264	435	10	10	10	7	10	7	1 15/16-D	115/16 -A	7	-	-	-	77	30		
294	680	10	10	10	7	10	1/4	1 15/16-D	1 15/16 -B	7	-	-	-	85	42		
334	920	10	10	10	7	10	1/4	2 3/16-D	-	7	10	7	1/4	103	63		
364	1135	10	7	7	7	10	1/4	2 3/16 -E	-	7	10	7	1/4	115	86		
404	1340	7	-	7	7	7	1/4	2 7/16-E	-	7	7	1/4	1/4	126	114		
454	1830	7	-	7	7	7	1/4	2 11/16-E	-	1/4	7	1/4	1/4	256	294		
504	2205	7	-	7	7	7	1/4	2 15/16-E	-	1/4	7	1/4	1/4	287	423		
574	2955	7	-	7	7	7	1/4	2 15/16-E	-	1/4	7	1/4	3/8	338	630		
644	4665	1/4	-	1/4	1/4	7	3/8	3 7/16-E	-	1/4	1/4	1/4	3/8	552	1290		
714	5255	1/4	-	1/4	1/4	7	3/8	3 15/16-E	-	1/4	1/4	1/4	3/8	609	1744		
784	6440	1/4	-	1/4	1/4	7	3/8	3 15/16-E	-	1/4	1/4	1/4	3/8	860	2970		
854	8145	1/4	-	1/4	1/4	7	3/8	4 7/16-F	-	1/4	1/4	1/4	3/8	927	3800		

# UNITARY BASE FOR ARRAGEMENT 1

## DIMENSIONS (Inches)

Size	AA		O	U		Max. motor frame
	Unitray base with isolation	Standard unitary base		Min.	Max.	
144	3*	3*	20½	40	45¼	256T
174	3*	3*	25	40¾	53	284T
224	3*	3*	30¾	44⅝	64½	286T
264	4†	4†	34½	49¼	73	324T
294	4†	4†	38	51½	76¾	326T
334	4†	4†	42¼	55¾	85⅞	364T
364	6	6	45⅝	58⅝	88 <sup>13/16</sup>	365T
404	6	6	53	64	99¼	404T
454	6	6	57¼	67⅞	106	405T
504	6	6	62¼	69¾	114⅞	444T
574	8	6	68½	77	124¾	445T
644	8	6	74½	94	136¼	449T
714	8	6	80¾	104⅞	146½	449T
784	8	6	88	111¼	156⅝	449T
854	8	6	95¼	117⅞	165⅞	449T

structural steel channel base integrates fan, motor and drive into one packaged unit... also available with spring or rubber - in - shear vibration isolation ...dimensions shown are maximums for unitary bases with out isolation... submit details to T.H for dimensions on unitary bases with isolation... buits - in motor rails furnished on all unitary bases ... down blast fan require special construction.



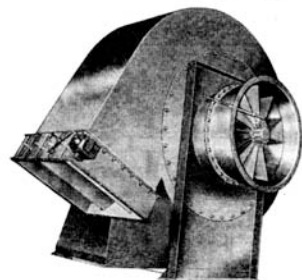
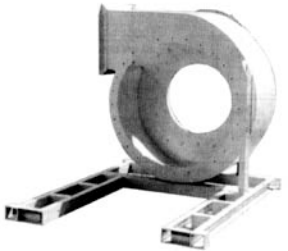
\*4" channel used for motors larger than 215 T .

†6" channel used for motors larger than 286 T .

NOTE: Sizes 144 through 454 can be pre-assembled at factory and shipped as a unit at extra cost. Sizes 504 and larger must be assembled in the field  
Tolerance  $\pm \frac{1}{8}$ "



TAHVIEH HAMOON



DOWEN BLAST WITH INLET AIR REGULATING DAMPER

### OPTIONAL ACCESSORIES

**OUTLET DAMPERS** Standard outlet dampers are designed with blades operating in parallel. For more uniform volume regulation, opposed blade dampers can also be furnished.

**INLET VANE DAMPERS** Inlet vane dampers can be furnished to provide an effective means of reducing or regulating air flow when required.

**COOLING WHEELS** Shaft mounted cooling wheels are available for fans handling gases exceeding 400 F -

# STRONG AIR IS OUR BUSINESS

Air Density Factors for Various Temperatures and Altitudes

AIR TEMP °F.	ALTITUDE IN FEET ABOVE SEA LEVEL												
	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	15000	20000
	BAROMETRIC PRESSURE IN INCHES												
	29.92	28.86	27.82	26.81	25.84	24.89	23.98	23.09	22.22	21.38	20.58	16.88	13.75
70	1.000	0.964	0.930	0.896	0.864	0.832	0.801	0.772	0.743	0.714	0.688	0.564	0.460
100	0.946	0.912	0.880	0.848	0.818	0.787	0.758	0.730	0.703	0.676	0.651	0.534	0.435
150	0.869	0.838	0.808	0.770	0.751	0.723	0.696	0.671	0.646	0.620	0.598	0.490	0.400
200	0.803	0.774	0.747	0.720	0.694	0.688	0.643	0.620	0.596	0.573	0.552	0.453	0.369
250	0.747	0.720	0.694	0.669	0.645	0.622	0.598	0.576	0.555	0.533	0.514	0.421	0.344
300	0.697	0.672	0.648	0.624	0.604	0.580	0.558	0.538	0.518	0.498	0.480	0.393	0.321
350	0.654	0.631	0.608	0.586	0.565	0.544	0.524	0.505	0.486	0.467	0.450	0.369	0.301
400	0.616	0.594	0.573	0.552	0.532	0.513	0.493	0.476	0.458	0.440	0.424	0.347	0.283
450	0.582	0.561	0.542	0.522	0.503	0.484	0.466	0.449	0.433	0.416	0.401	0.328	0.268
500	0.552	0.532	0.513	0.495	0.477	0.459	0.442	0.426	0.410	0.394	0.380	0.311	0.254
550	0.525	0.506	0.488	0.470	0.454	0.437	0.421	0.405	0.390	0.375	0.361	0.296	0.242
600	0.500	0.482	0.465	0.448	0.432	0.413	0.400	0.386	0.372	0.352	0.344	0.282	0.230
650	0.477	0.460	0.444	0.427	0.412	0.397	0.382	0.368	0.540	0.341	0.328	0.269	0.219
700	0.457	0.441	0.425	0.410	0.395	0.380	0.366	0.353	0.340	0.326	0.315	0.258	0.210
750	0.438	0.422	0.407	0.392	0.378	0.364	0.351	0.338	0.325	0.313	0.301	0.247	0.202
800	0.421	0.406	0.391	0.377	0.363	0.350	0.337	0.325	0.313	0.300	0.289	0.237	0.194
850	0.405	0.390	0.376	0.363	0.350	0.337	0.324	0.312	0.301	0.289	0.278	0.228	0.186
900	0.390	0.376	0.362	0.349	0.337	0.324	0.312	0.301	0.290	0.278	0.268	0.220	0.179
950	0.376	0.362	0.350	0.337	0.325	0.313	0.301	0.290	0.279	0.268	0.259	0.212	0.173
1000	0.363	0.350	0.338	0.325	0.314	0.302	0.291	0.280	0.270	0.259	0.250	0.205	0.167