

# HEAVY-DUTY FANS

D T-1000 Series

TURBO FANS

透浦送風機



*Castle Blower, Inc.*

## About us

We have devoted ourselves in designing and manufacturing fans and blowers for industrial usages. Features of our fans and blowers include: high efficiency, low vibration, low noise, long life, and low running cost. The experiences of solving all types of problems that our clients had encountered have enriched our knowledge and capability.

DT Series fans are designed for industrial processes, dust collecting, pneumatic conveying and air conditioning. We also design other fans and blowers according to your specific requests. DT Series are excellent and best choice for your process solution.

## Designs & Constructions

### Gas Delivered

Air, Steam, Gas and Fume that is hot, erosive, corrosive, dust-content, explosive and toxic gas

### Materials

Carbon Steel, Heat-Resistant Steel, Stainless Steel, Titanium, Nickel and other alloys,

Corrosion-Resistant Coating: Rubber and Fiber-glass

Wear-Resistant Treatment: Liner, Ceramic, Beads of Weld, and Spray Coating

### Tightness

Standard: no special requirements for gas conveying under general conditions

Gas-Tight: used when the gas delivered shall not leak

### Seals

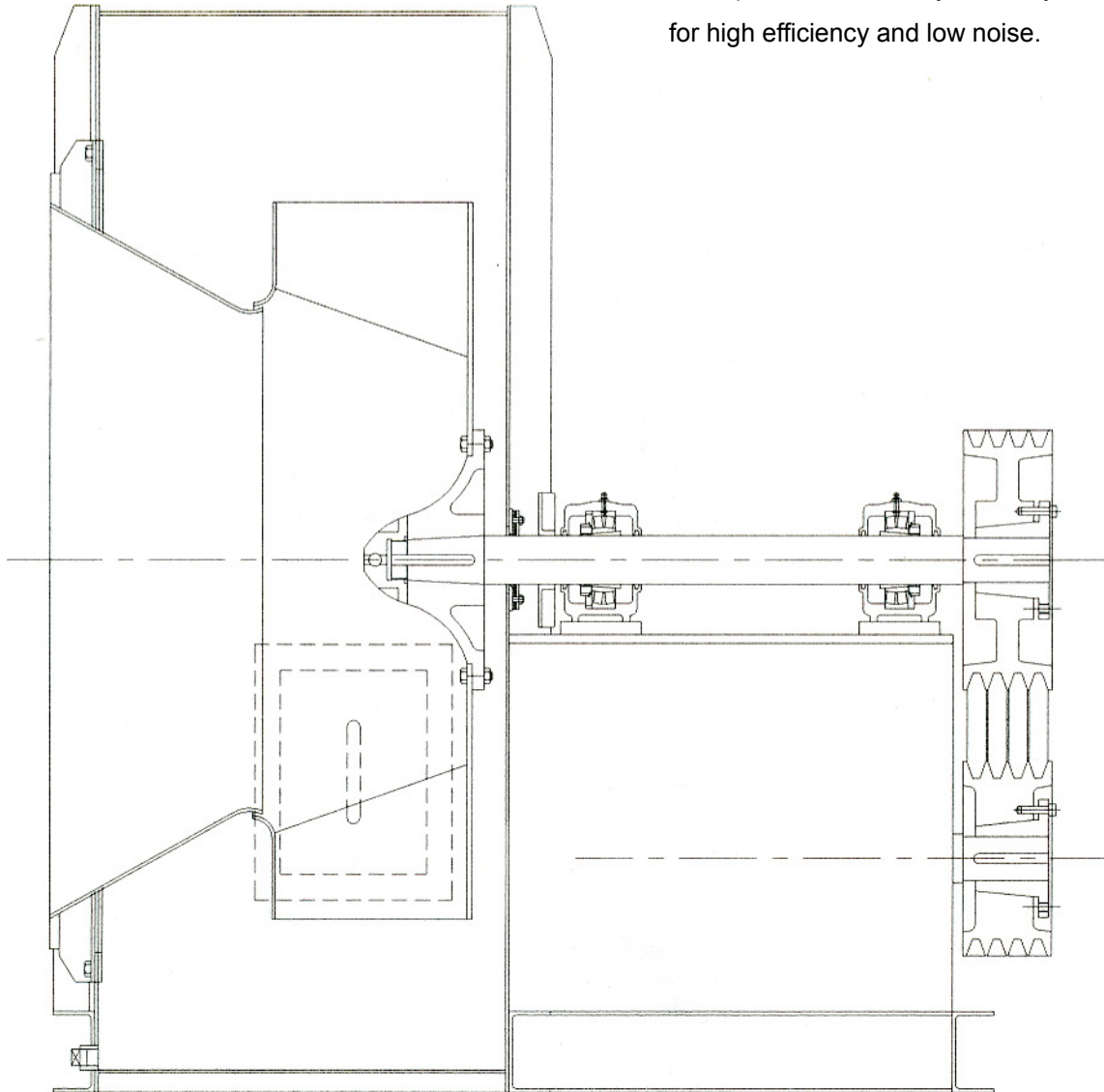
V-Ring Seal, Multi-plate Seal, Labyrinth Seal, Gland Packing Seal, Mechanical Seal, Water Seal



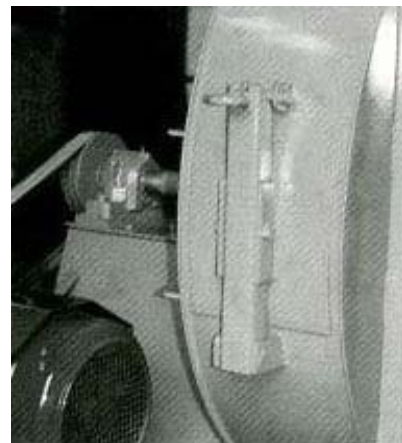
DT-1300S : with sound absorption material, and effectively reduces the noise.

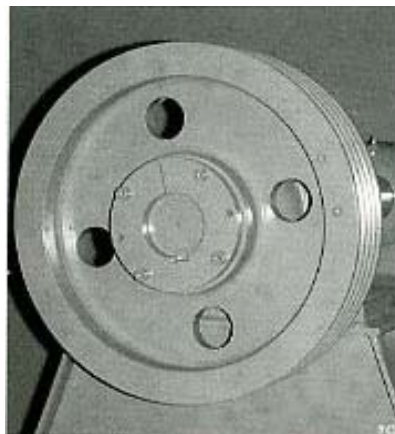
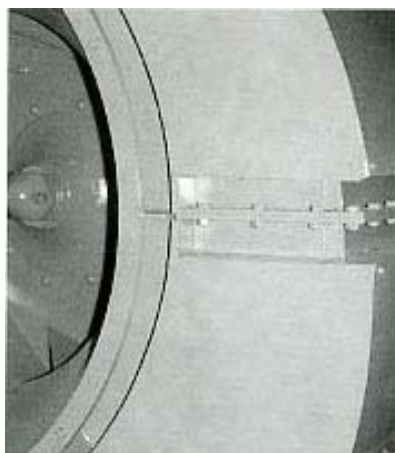
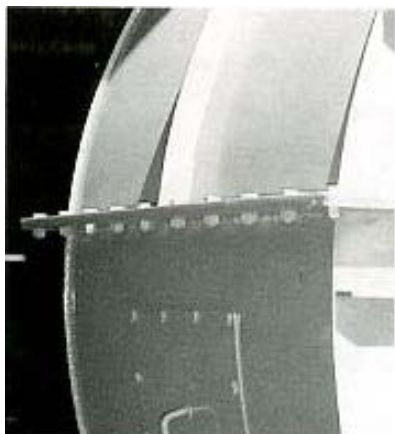
## Designs & Constructions

- ✓ All impellers are aerodynamically designed for high efficiency and low noise.



- ✓ A manhole and drain-hole are standard accessories. It is encased in a casing with smooth interior to ensure smooth airflow, and very convenient to check and clean the impeller.
- ✓ Located at top of a fan/blower, the hanging hook, fabricated from a complete steel sheet, is suitable for hanging in all directions and will not be deformed due to varied hanging direction.





- ✓ With precise and solid outside welding, the seams of scroll casing are free from moisture seepage and rusting corrosion.
- ✓ A unique design of inlet cone solves ineffective circular flow within the casing to improve efficiency and reduce noise
- ✓ The rotating elements are dynamically balanced by “HOFFMANN” computer balancing machines.
- ✓ The inlet cone and impeller is connected by insertion which ensures smooth airflow, back-stream and low noise.
- ✓ The entire series are fitted with tapered sleeve V-belt, featuring precise center alignment, easy dismantling and reloading of the conveyor pulley without requiring a puller.
- ✓ The connection of impeller and shaft uses tapered shaft configuration that ensures tight fit, precise center alignment and easy dismantling and reloading.
- ✓ The coupling of fan/blower operates on a tapered sleeve, featuring precise center alignment, easy dismantling and reloading without requiring a puller.
- ✓ The entire series of fan/blower are fitted with Sweden-imported SKF bearings.
- ✓ The entire series are fitted with German-imported “Opti-belt”, high tensile V-belt featuring long life time and strong transmission horsepower.

## Technical Data

### Terminology

- Capacity: Capacity at inlet condition
- Static pressure: Outlet pressure of blower (at inlet STP of air)
- Power (HP): Motor rated required at the point of capacity and static pressure
- STP: 20 °C, 1atm, RH = 65% ( $\gamma=1.2\text{kg/m}^3$  for Air)
- NTP: 0 °C, 1atm, RH = 0% ( $\gamma=1.293\text{kg/m}^3$  for Air)
- $\eta_{\text{max}}$ : The highest efficiency point

### Conversion

Capacity in this catalogue is the inlet capacity.

Static Pressure is the outlet pressure (Inlet gas is STP air).

If the operation specifications differ from the above conditions, please convert according to the following formulas.

#### **Capacity (Q):**

When Capacity is  $Q_N$  (NTP) condition, please convert it into Q (STP).

$$Q = Q_N \times \frac{273 + T_1}{273} \times \frac{10332}{P_1 - 0.378\phi P_{\text{sat}}} \text{ (m}^3\text{/min)}$$

$Q(\text{m}^3/\text{min})$ : Capacity showing in this catalogue

$Q_N(\text{Nm}^3/\text{min})$ : Capacity at NTP condition

$t_1(^{\circ}\text{C})$ : The temp at the inlet of a blower

#### **Static Pressure (Ps):**

1. When the temp of the suction is not at 20°C,

$$P_s = P_{s0} \times \frac{273 + t_1}{293} \text{ (mmAq)}$$

2. When  $P_s$  is at vacuum (suction) condition,

$$P_s = P_{s0} \times \frac{10332}{10332 - P_{s0}} \text{ (mmAq)}$$

$P_s(\text{mmAq})$ : Static Pressure showing in this catalogue

$P_{s0}(\text{mmAq})$ : Operating Static Pressure

$P_1(\text{mmAq})$ : Inlet absolute pressure

$\phi(\%)$ : Relative humidity

$P_{\text{sat}}(\text{mmAq})$ : Saturated vapor pressure

### Blower Similarity Laws

$$\frac{Q_2}{Q_1} = \frac{N_2}{N_1}$$

$$\frac{P_{s2}}{P_{s1}} = \left(\frac{N_2}{N_1}\right)^2 = \frac{Y_2}{Y_1}$$

$$\frac{HP_2}{HP_1} = \left(\frac{N_2}{N_1}\right)^3 = \frac{Y_2}{Y_1}$$

Q: Capacity

$P_s$ : Static Pressure

HP: Power

N: RPM of a blower

$\gamma$ : Gas Density

## Model Instruction

There are 11 models in DT-1000 series single suction fans:

### DT-1000S ~ DT-2000S

#### Selection Procedure:

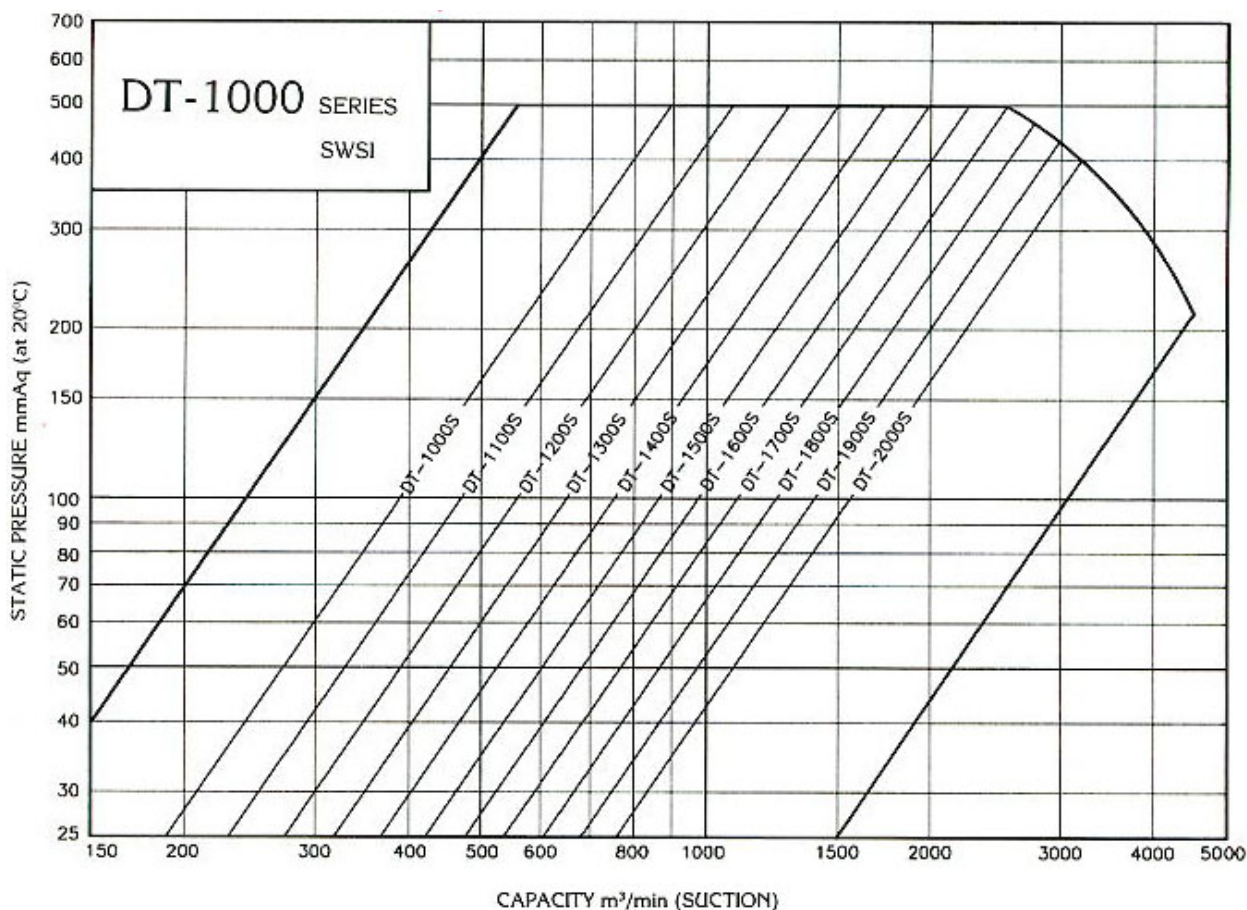
1. Choose the most suitable model by Capacity and Static Pressure.
2. Choose the right RPM
3. Motor rated = BHP x 1.15~1.20

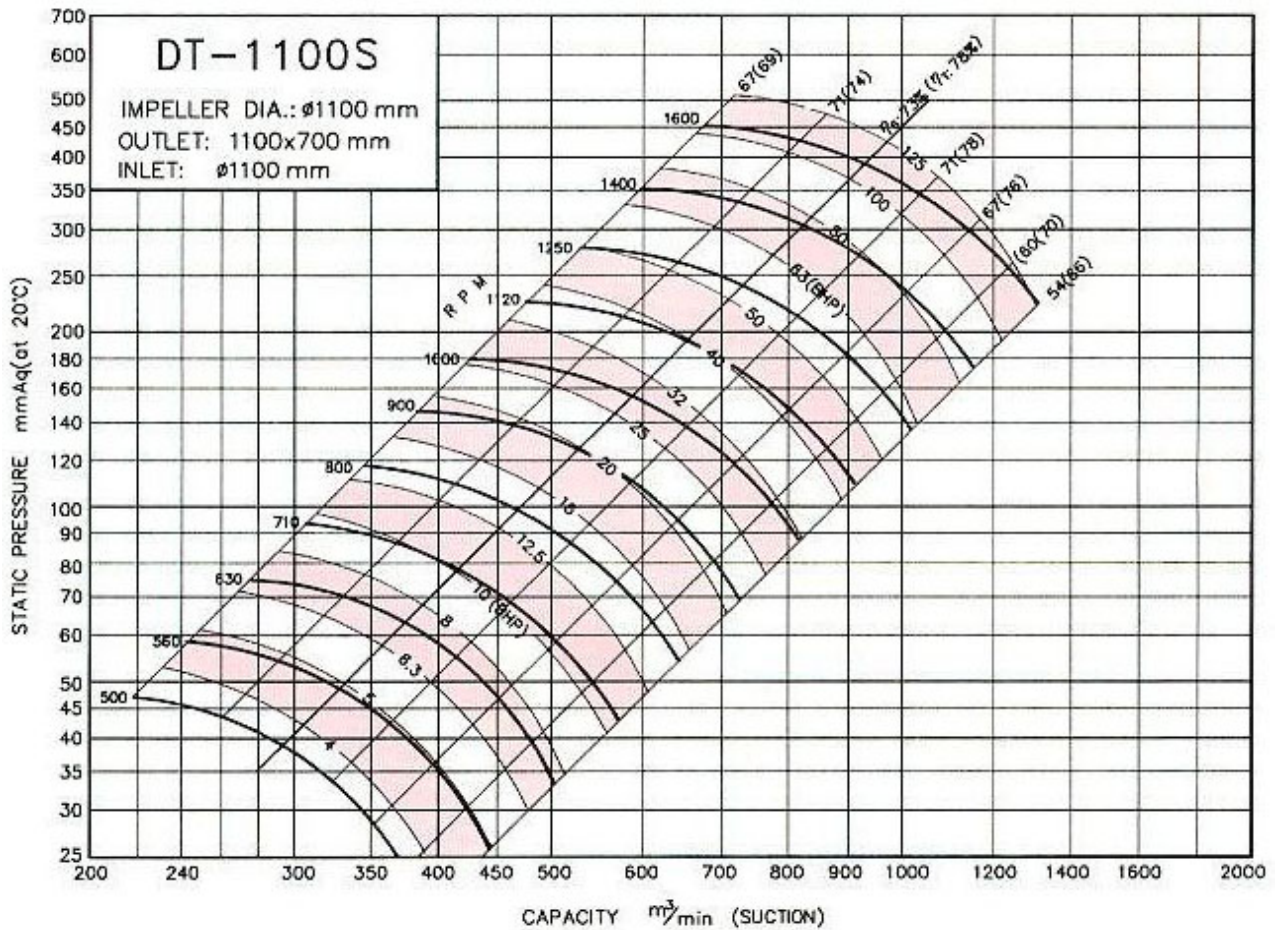
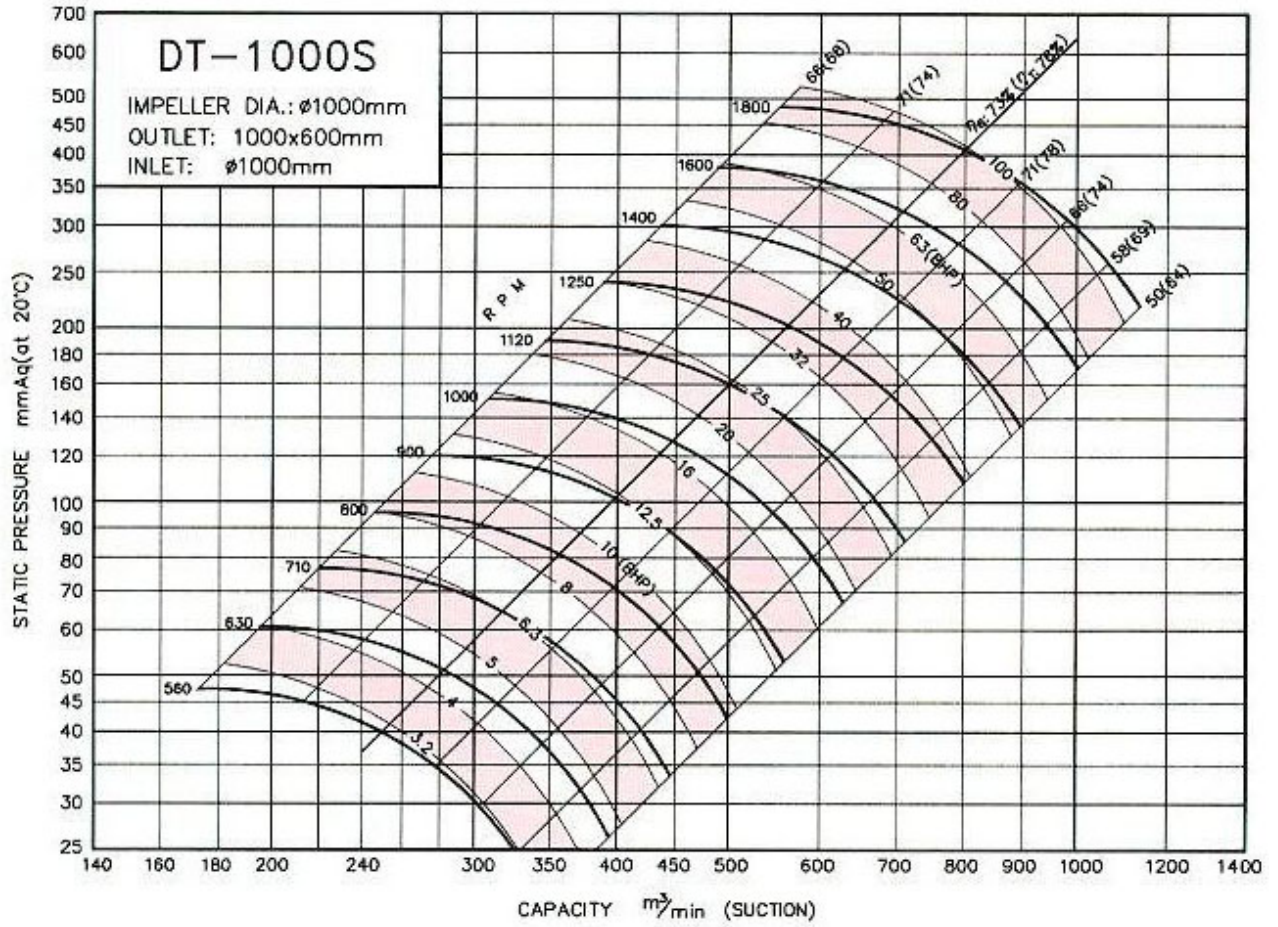
**Example:**  
Under STP Condition, Q = 1450 m<sup>3</sup>/min, Ps = 250 mmAq

Model	RPM	BHP	Motor rated	Unit Price	Running Cost
DT-1600S	1200RPM	117HP	117HPx1.15=135HP → 150HP	Lower	Higher
DT-1500S	950RPM	107HP	107HPx1.15=123HP → 125HP	Higher	Lower

Therefore, Model B is more economical in a long term.

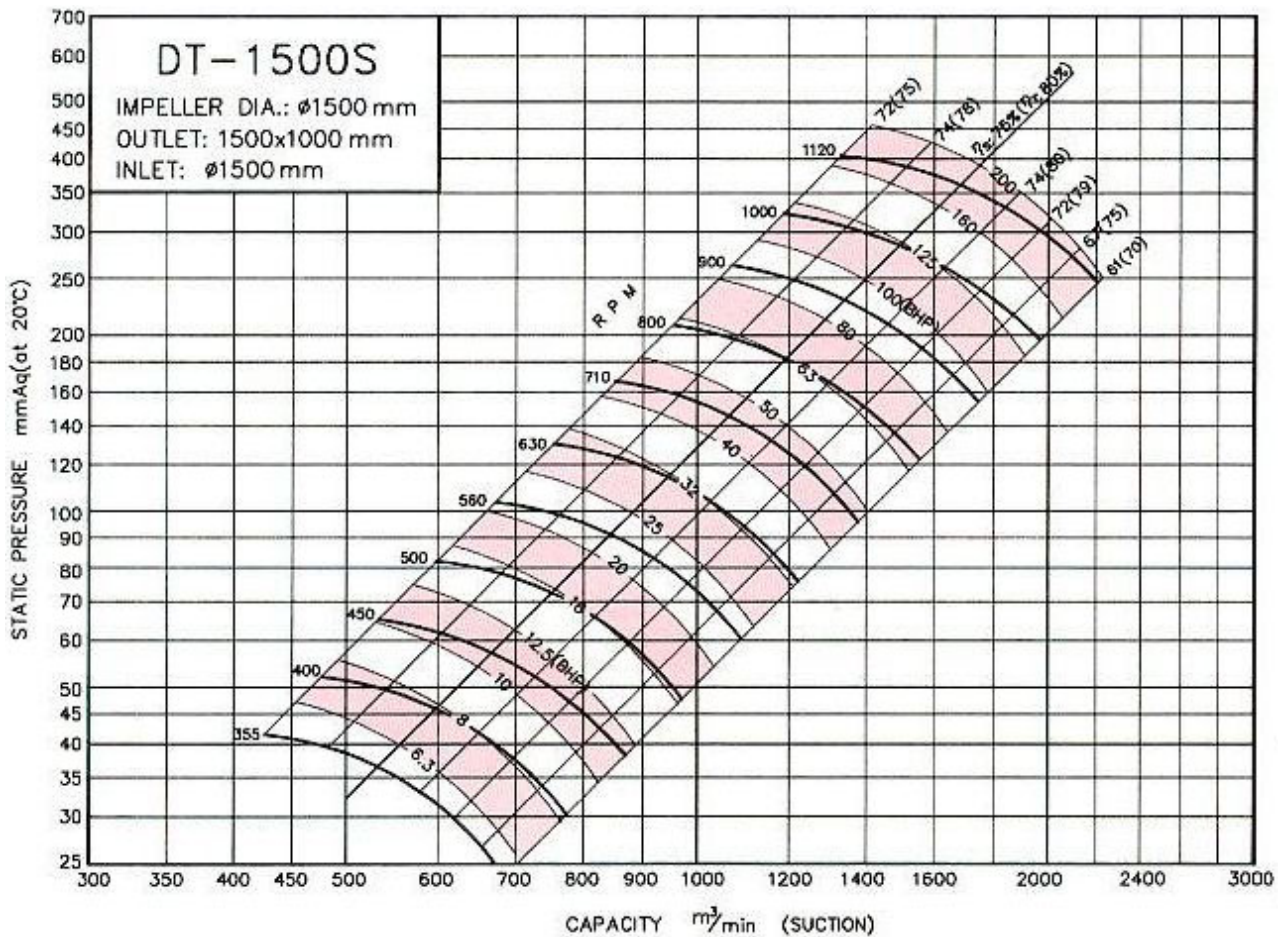
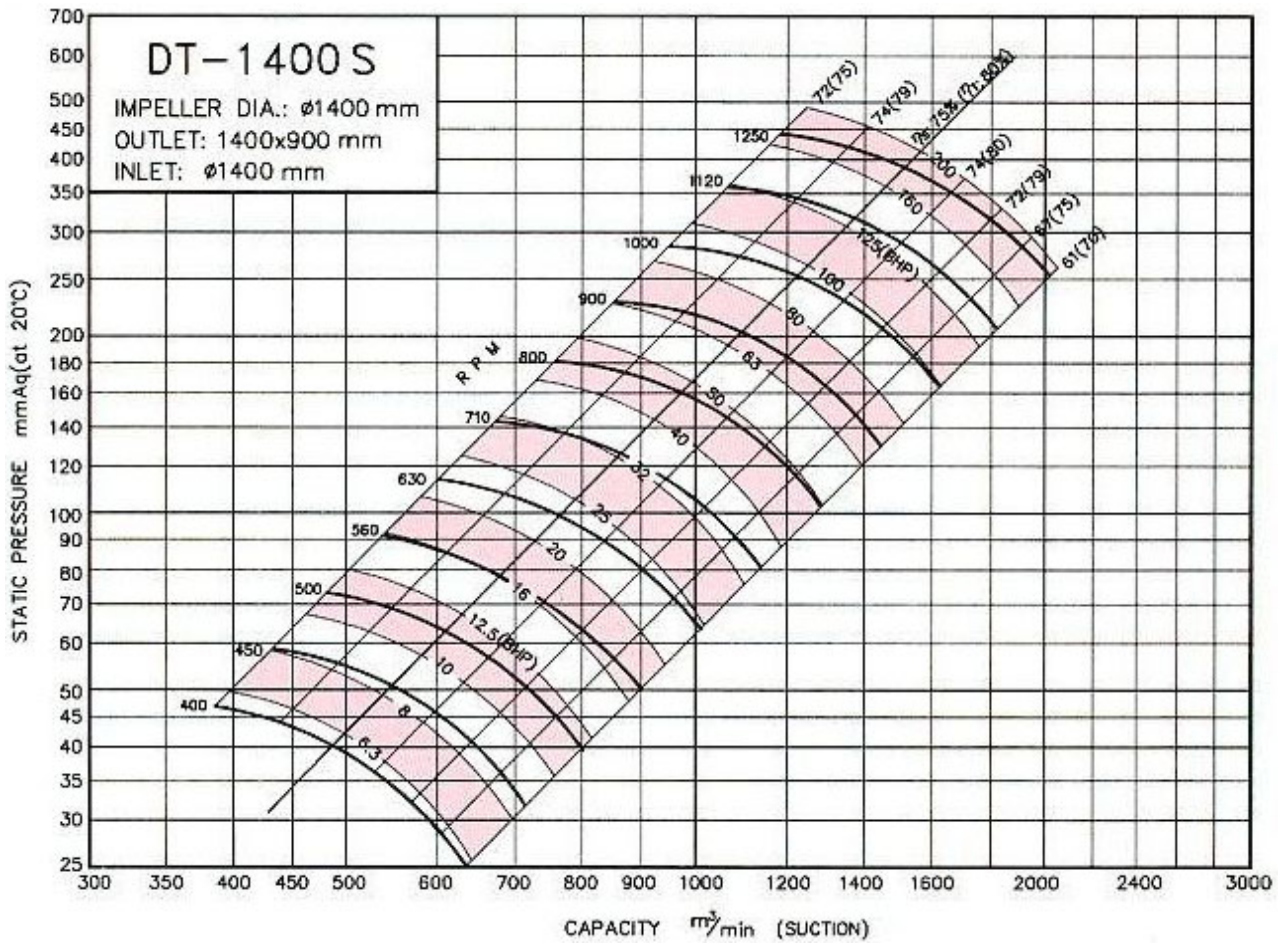
## General Performance



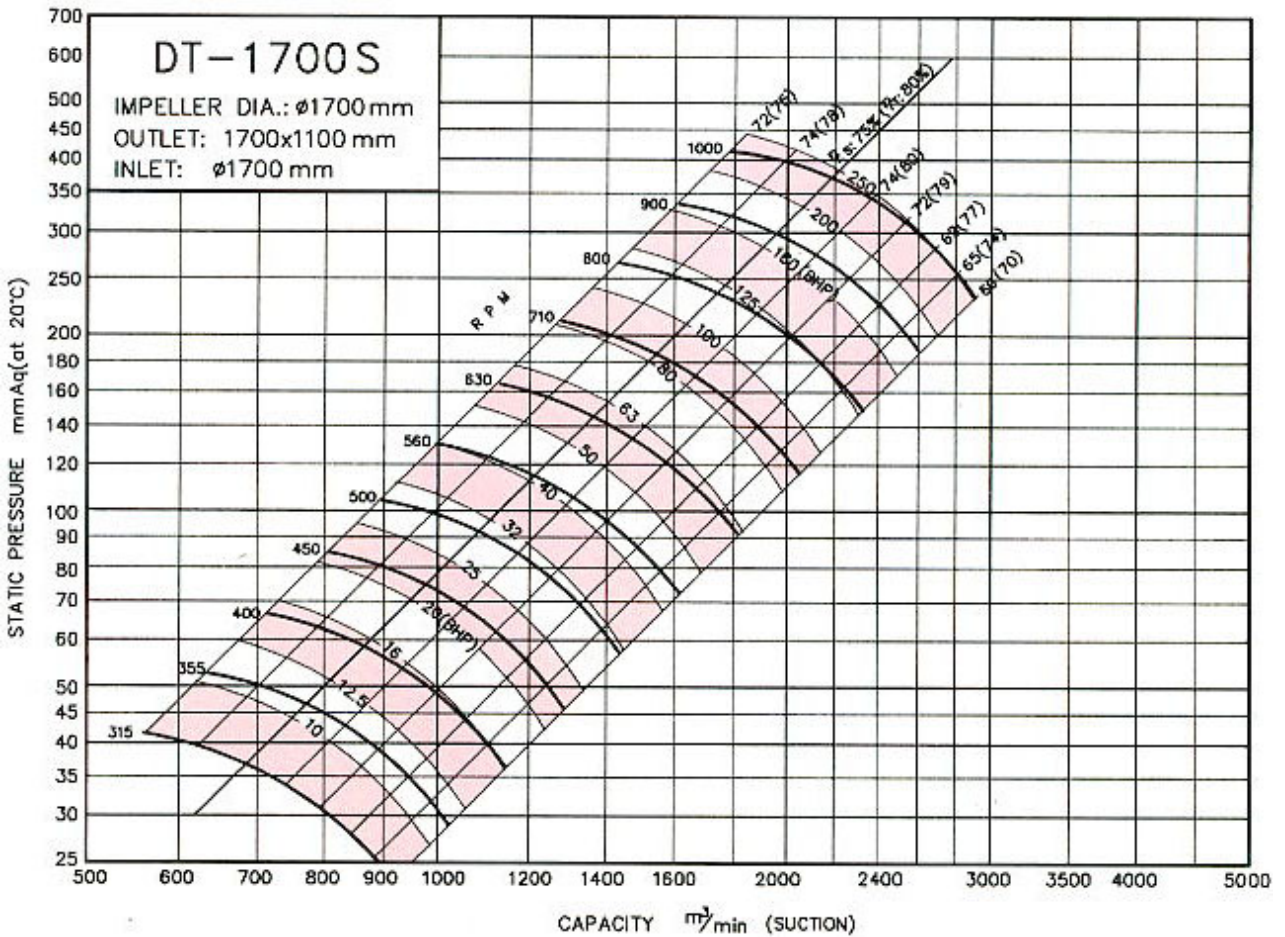
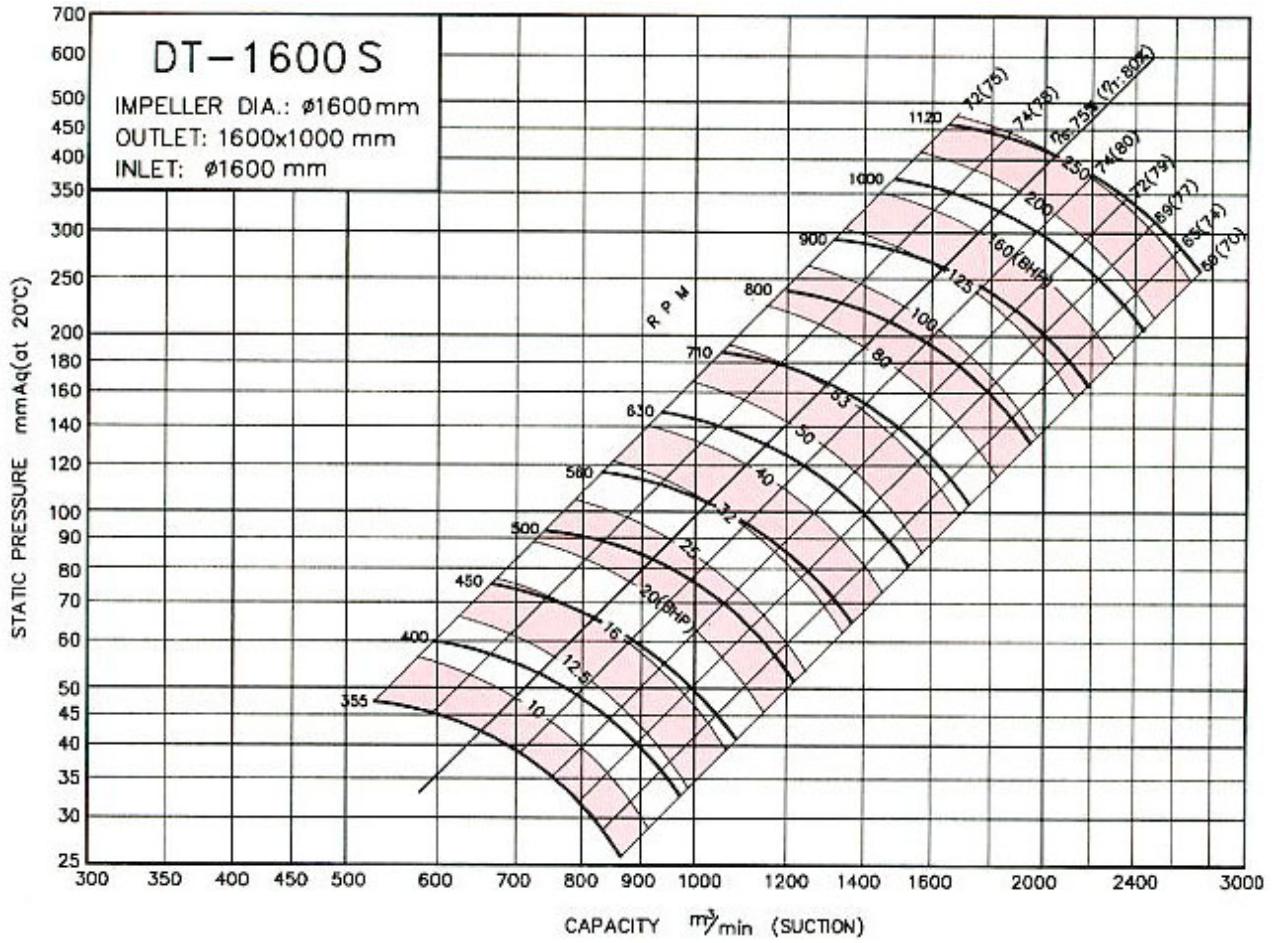


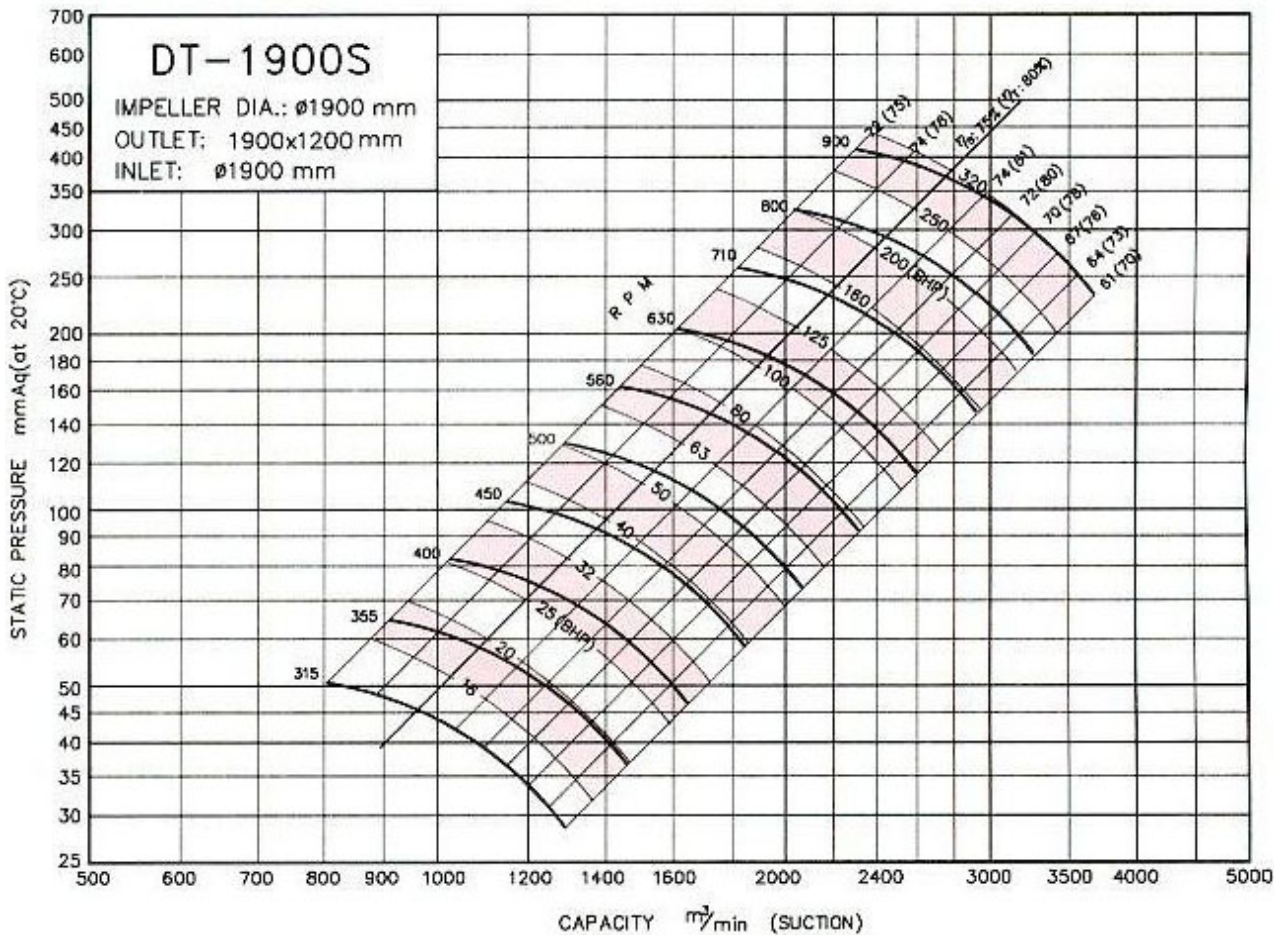
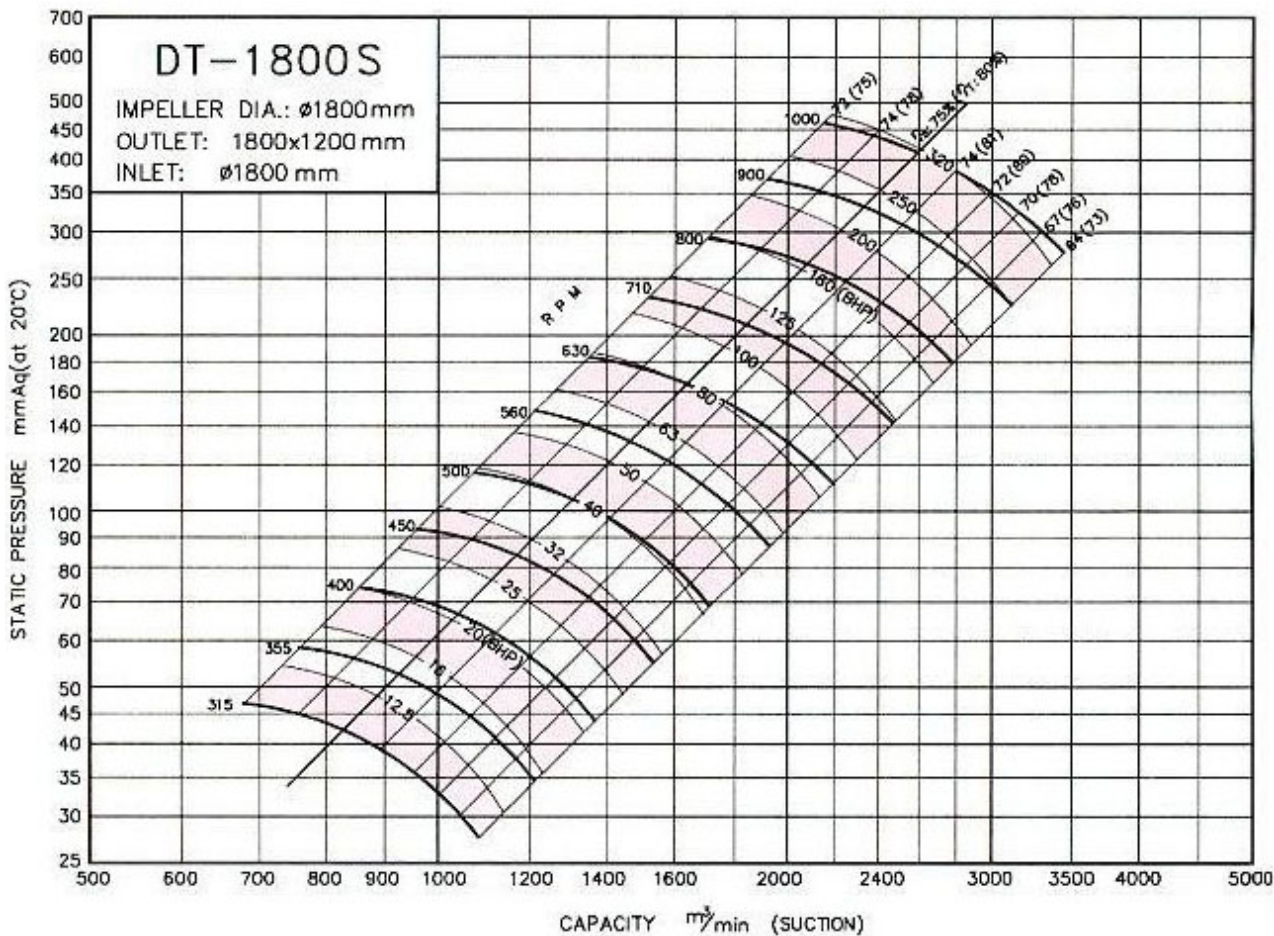






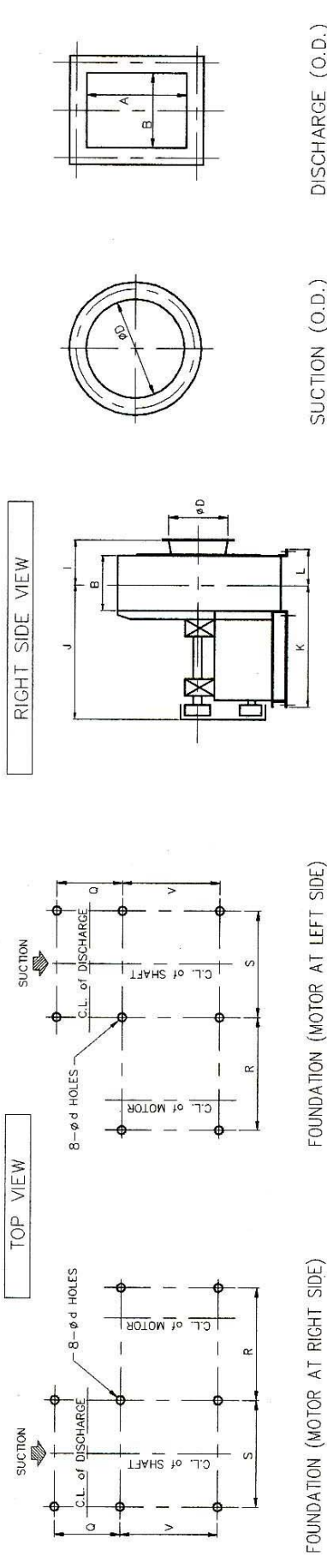
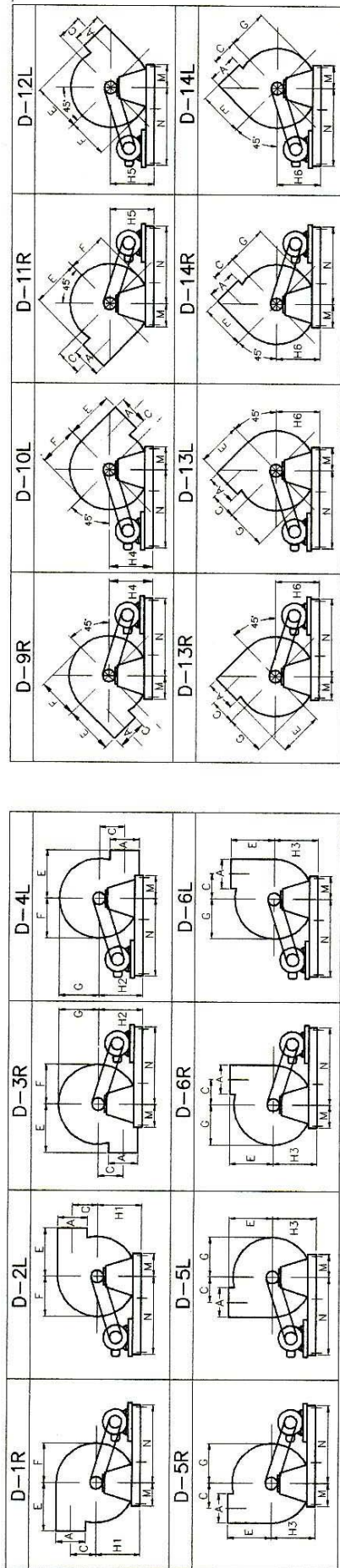
# Castle Blower







**Direction of Outlet**

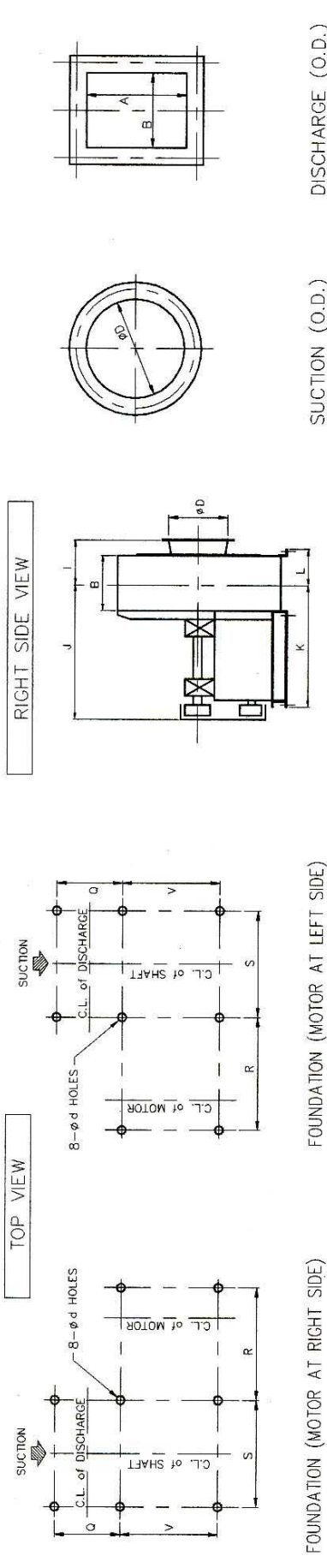
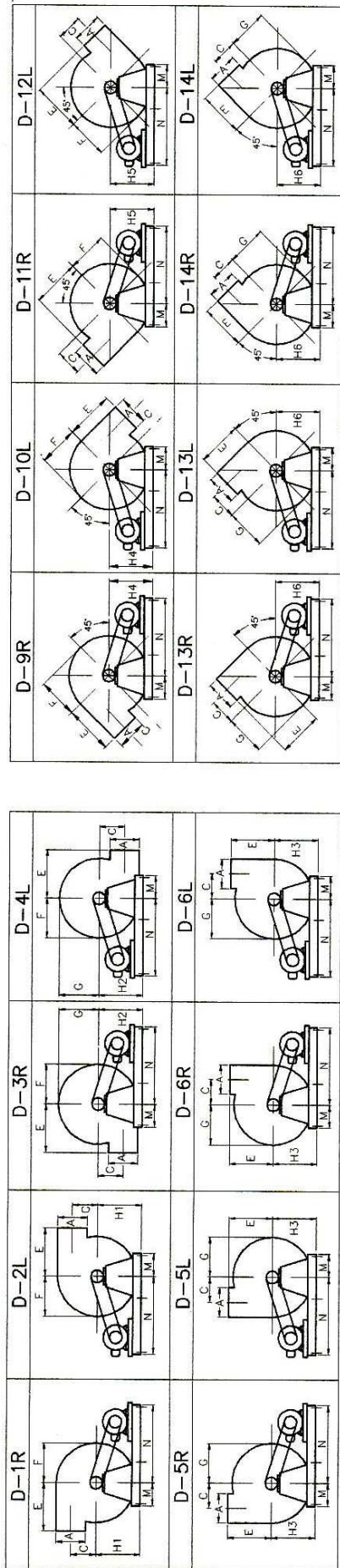


HP	15, 20	25, 30	40, 50, 60, 75	100, 125	150, 175, 200, 250
BEARINGS	22215K+H	22215K+H	22217K+H	22219K+H	22222K+H
COMMON BASE	[125x65x6]	[125x65x6]	[125x65x6]	[150x75x6.5]	[150x75x6.5]

# Castle Blower

MODEL	HP	4P	A	B	C	ΦD	E	F	G	H1		H2	H3	H4	H5	H6	I	J	K	L	M	N	Q	R	S	V	Φd	Weight (without motor)
										D-1 D-2	D-3 D-4																	
DT-1000S	7.5, 10		1000	600	600	1000	700	1010	860	900	1250	1050	800	1100	950	390	1250	1085	365	500	1200	670	700	940	720	19	700	
			1000	600	600	1000	700	1010	860	900	1250	1050	800	1100	950	390	1250	1085	365	500	1200	670	700	940	720	19	700	
	25, 30		1000	600	600	1000	700	1010	860	900	1250	1050	800	1100	950	390	1250	1085	365	500	1200	670	700	940	720	19	700	
			1000	600	600	1000	700	1010	860	900	1250	1050	800	1100	950	390	1400	1245	365	500	1350	670	850	940	880	19	800	
	100, 125		1000	600	600	1000	700	1010	860	900	1250	1050	800	1100	950	390	1500	1355	375	500	1500	690	1000	940	980	24	900	
DT-1100S	7.5, 10		1100	700	660	1100	800	1050	885	950	1350	1100	850	1200	1000	440	1300	1135	415	550	1200	770	650	1040	720	19	800	
			1100	700	660	1100	800	1050	885	950	1350	1100	850	1200	1000	440	1300	1135	415	550	1200	770	650	1040	720	19	800	
	25, 30		1100	700	660	1100	800	1050	885	950	1350	1100	850	1200	1000	440	1300	1135	415	550	1200	770	650	1040	720	19	800	
			1100	700	660	1100	800	1050	885	950	1350	1100	850	1200	1000	440	1450	1295	415	550	1350	770	800	1040	880	19	900	
	100, 125		1100	700	660	1100	800	1050	885	950	1350	1100	850	1200	1000	440	1550	1405	425	550	1500	790	950	1040	980	24	1000	
DT-1200S	15, 20		1200	800	720	1200	850	1145	965	1000	1450	1200	900	1250	1100	490	1350	1185	465	600	1200	870	600	1140	720	19	900	
			1200	800	720	1200	850	1145	965	1000	1450	1200	900	1250	1100	490	1350	1185	465	600	1200	870	600	1140	720	19	900	
	40, 50, 60, 75		1200	800	720	1200	850	1145	965	1000	1450	1200	900	1250	1100	490	1500	1345	465	600	1350	870	750	1140	880	19	1000	
			1200	800	720	1200	850	1145	965	1000	1450	1200	900	1250	1100	490	1600	1455	475	600	1500	890	900	1140	980	24	1000	
	150, 175, 200		1200	800	720	1200	850	1145	965	1000	1450	1200	900	1250	1100	490	1760	1555	475	600	1650	890	1050	1140	1080	24	1200	
DT-1300S	15, 20		1300	800	780	1300	900	1235	1035	1100	1600	1300	950	1350	1150	490	1350	1185	465	650	1350	870	700	1240	720	19	1100	
			1300	800	780	1300	900	1235	1035	1100	1600	1300	950	1350	1150	490	135	1185	465	650	1350	870	700	1240	720	19	1100	
	40, 50, 60, 75		1300	800	780	1300	900	1235	1035	1100	1600	1300	950	1350	1150	490	1500	1345	465	650	1500	870	850	1240	880	19	1200	
			1300	800	780	1300	900	1235	1035	1100	1600	1300	950	1350	1150	490	1600	1455	475	650	1650	890	1000	1240	980	24	1300	
	150, 175, 200		1300	800	780	1300	900	1235	1035	1100	1600	1300	950	1350	1150	490	1760	1555	475	650	1800	890	1150	1240	1080	24	1400	
DT-1400S	15, 20		1400	900	840	1400	1000	1340	1130	1200	1700	1400	1050	1500	1250	540	1400	1235	515	700	1350	970	650	1340	720	19	1300	
			1400	900	840	1400	1000	1340	1130	1200	1700	1400	1050	1500	1250	540	1400	1235	515	700	1350	970	650	1340	720	19	1300	
	40, 50, 60, 75		1400	900	840	1400	1000	1340	1130	1200	1700	1400	1050	1500	1250	540	1550	1395	515	700	1500	970	800	1340	880	19	1400	
			1400	900	840	1400	1000	1340	1130	1200	1700	1400	1050	1500	1250	540	1650	1505	525	700	1650	990	950	1340	980	24	1500	
	150, 175, 200		1400	900	840	1400	1000	1340	1130	1200	1700	1400	1050	1500	1250	540	1810	1605	525	700	1800	990	1100	1340	1080	24	1600	

**Direction of Outlet**



HP	15, 20	25, 30	40, 50, 60, 75	100, 125	150, 175, 200, 250	320, 400
BEARINGS	22215K+H	22215K+H	22217K+H	22219K+H	22222K+H	22224K+H
COMMON BASE	[125x65x6	[125x65x6	[125x65x6	[150x75x6.5	[150x75x6.5	[200x80x7.5

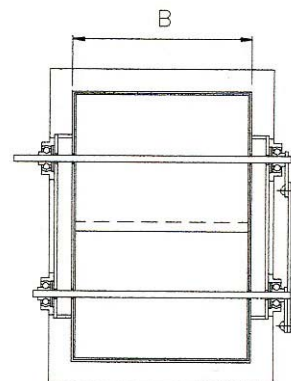
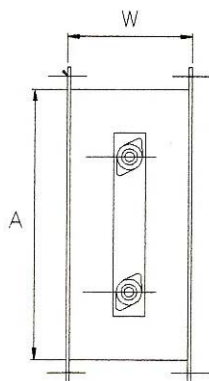
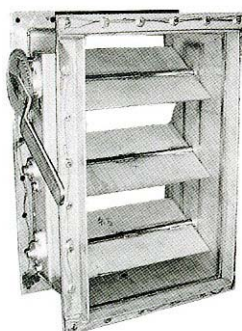
# Castle Blower

MODEL	HP	4P	A	B	C	ΦD	E	F	G	H1		H2	H3	H4	H5	H6	I	J	K	L	M	N	Q	R	S	V	Φd	Weight (without motor)
										D-1 D-2	D-3 D-4	D-5 D-6	D-9 D-10	D-11 D-12	D-13 D-14													
DT-1500S	15, 20		1500	1000	900	1500	1050	1425	1200	1250	1800	1500	1500	1150	1600	1350	590	1450	1285	565	750	1350	107	600	1440	720	19	1500
			1500	1000	900	1500	1050	1425	1200	1250	1800	1500	1500	1150	1600	1350	590	1450	1285	565	750	1350	1070	600	1440	720	19	1500
	40, 50, 60, 75		1500	1000	900	1500	1050	1425	1200	1250	1800	1500	1500	1150	1600	1350	590	1600	1445	565	750	1500	1070	750	1440	880	19	1600
DT-1600S	100, 125		1500	1000	900	1500	1050	1425	1200	1250	1800	1500	1500	1150	1600	1350	590	1700	1555	575	750	1650	1090	900	1440	980	19	1700
			1500	1000	900	1500	1050	1425	1200	1250	1800	1500	1500	1150	1600	1350	590	1860	1655	575	750	1800	1090	1050	1440	1080	24	1800
	25, 30		1600	1000	960	1600	1150	1525	1285	1350	1900	1600	1200	1700	1450	590	1450	1285	565	800	1500	1070	700	1540	720	19	1700	
DT-1700S	40, 50, 60, 75		1600	1000	960	1600	1150	1525	1285	1350	1900	1600	1200	1700	1450	590	1600	1445	565	800	1650	1070	850	1540	880	19	1800	
			1600	1000	960	1600	1150	1525	1285	1350	1900	1600	1200	1700	1450	590	1700	1555	575	800	1800	1090	1000	1540	980	24	1900	
	150, 175, 200, 250		1600	1000	960	1600	1150	1525	1285	1350	1900	1600	1200	1700	1450	590	1860	1655	575	800	1950	1090	1150	1540	1080	24	2000	
DT-1800S	25, 30		1700	1100	1020	1700	1200	1625	1375	1450	2050	1700	1300	1800	1400	1900	1650	640	1500	1355	615	850	1170	650	1640	720	19	1900
			1700	1100	1020	1700	1200	1625	1375	1450	2050	1700	1300	1800	1400	1900	1650	640	1650	1495	615	850	1650	1170	800	1640	880	19
	40, 50, 60, 75		1700	1100	1020	1700	1200	1625	1375	1450	2050	1700	1300	1800	1400	1900	640	1750	1605	625	850	1800	1190	950	1640	980	24	2300
DT-1900S	150, 175, 200, 250		1700	1100	1020	1700	1200	1625	1375	1450	2050	1700	1300	1800	1400	1900	1650	640	1910	1705	625	850	1190	1100	1640	1080	24	2500
			1800	1200	1080	1800	1300	1730	1470	1500	2150	1800	1400	1900	1400	1900	1650	690	1700	1545	665	900	1800	1270	900	1740	880	19
	100, 125		1800	1200	1080	1800	1300	1730	1470	1500	2150	1800	1400	1900	1400	1900	690	1800	1655	675	900	1950	1290	1050	1740	980	24	2600
DT-2000S	150, 175, 200, 250		1800	1200	1080	1800	1300	1730	1470	1500	2150	1800	1400	1900	1400	1900	690	1960	1755	675	900	2100	1290	1200	1740	1080	24	2800
			1800	1200	1080	1800	1300	1730	1470	1500	2150	1800	1400	1900	1400	1900	690	2165	1860	680	900	2250	1300	1350	1740	1180	28	3000
	320		1900	1200	1140	1900	1350	1825	1540	1600	2300	1900	1450	2050	1800	1800	690	1700	1545	665	950	1800	1270	850	1840	880	19	2900
DT-2000S	40, 50, 60, 75		1900	1200	1140	1900	1350	1825	1540	1600	2300	1900	1450	2050	1800	1800	690	1800	1655	675	950	1950	1290	1000	1840	980	24	3100
			1900	1200	1140	1900	1350	1825	1540	1600	2300	1900	1450	2050	1800	1800	690	1960	1755	675	950	2100	1290	1150	1840	1080	24	3300
	150, 175, 200, 250		1900	1200	1140	1900	1350	1825	1540	1600	2300	1900	1450	2050	1800	1800	690	2165	1860	680	950	2250	1300	1300	1840	1180	28	3500
DT-2000S	40, 50, 60, 75		2000	1300	1200	2000	1400	1920	1620	1650	2400	2000	1500	2150	1850	1850	740	1750	1595	715	1000	1800	1370	800	1940	880	19	3400
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	100, 125		2000	1300	1200	2000	1400	1920	1620	1650	2400	2000	1500	2150	1850	740	2010	1805	725	1000	2100	1390	1100	1940	1080	24	3800	
DT-2000S	150, 175, 200, 250		2000	1300	1200	2000	1400	1920	1620	1650	2400	2000	1500	2150	1850	1850	740	2215	1910	730	1000	2250	1400	1250	1940	1180	28	4000
			2000	1300	1200	2000	1400	1920	1620	1650	2400	2000	1500	2150	1850	1850	740	2215	1910	730	1000	2250	1400	1250	1940	1180	28	4000
	320, 400		2000	1300	1200	2000	1400	1920	1620	1650	2400	2000	1500	2150	1850	740	2215	1910	730	1000	2250	1400	1250	1940	1180	28	4000	



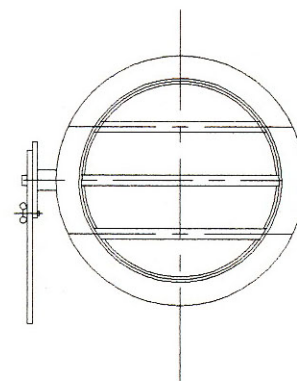
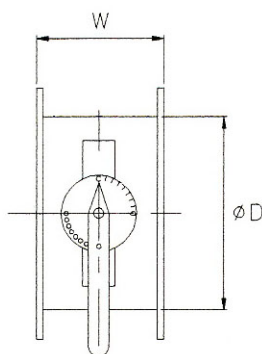
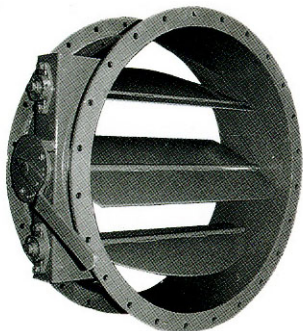
## Flow Control

### Discharge Damper



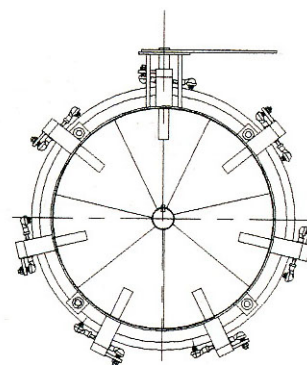
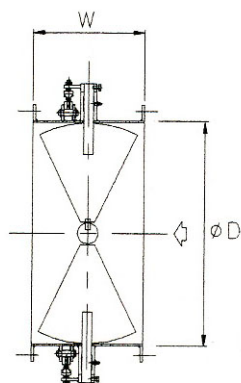
A	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
B	600	700	800	800	900	1000	1100	1100	1200	1200	1300
W	300	300	300	350	350	350	350	350	350	400	400

### Suction Damper



ØD	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
W	350	350	400	400	400	450	450	450	450	500	500

### Inlet Vane Controller (IVC)



ØD	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
W	350	350	350	400	400	400	400	400	400	400	400

**Please provide the following information in an inquiry.**

**1. Application and Condition**

Describe the purpose of usage. Are the blowers operating continuously or intermittently?

**2. Flow Rate**

Describe whether the flow rate is at standard condition or normal condition.

Unless specified, the flow rate is calculated under suction condition, and is not seen as discharge flow rate)

**3. Pressure**

Describe whether the pressure is constant or variable, if variable; specify the range and the relationship between air flow rate and pressure.

Describe whether the pressure shows static pressure of the discharge or the difference between suction and discharge pressure.

State whether suction pressure is atmospheric pressure; otherwise specify suction and discharge pressure respectively.

**4. Type of Gas and Specific Gravity**

Specify the following:

Type of gas and its components, content of impurities and their sizes, specific gravity, chemical prosperities, suggestions for materials, explosive and/or toxic nature (regarded as normal temperature, normal-pressure air unless specified)

**5. Gas Temperature**

DT Series turbo fans are normally used for normal temperature at suction.

If suction temperature is higher than normal temperature, please let us know.

**6. Type of Prime Mover**

When a motor is used as prime mover, specify the voltage, frequency and power supply condition.

**7. Painting**

#3 is the standard color or DT Series blowers, if other colors are required, please let us know.

## Unit Conversion

### Pressure

	mmAq	Pa=N/m <sup>2</sup>	daPa	mbar	psi	kgf/m <sup>2</sup>	atm
1mmAq	1	9.8	0.98	$9.807 \times 10^{-2}$	$1.422 \times 10^{-3}$	1	$9.677 \times 10^{-5}$
1Pa=1N/m <sup>2</sup>	0.102	1	0.1	$1 \times 10^{-2}$	$1.451 \times 10^{-4}$	0.102	$9.872 \times 10^{-6}$
1daPa	1.02	10	1	0.1	$1.451 \times 10^{-3}$	1.02	$9.872 \times 10^{-5}$
1mbar	10.2	100	10	1	$1.451 \times 10^{-2}$	10.2	$9.872 \times 10^{-4}$
1psi	703	6888	688.8	68.88	1	703	$6.802 \times 10^{-2}$
1kgf/m <sup>2</sup>	1	9.8	0.98	$9.807 \times 10^{-2}$	$1.422 \times 10^{-3}$	1	$9.677 \times 10^{-5}$
1atm	10332	101300	10130	1013	14.7	10332	1

### Capacity

	m <sup>3</sup> /min	m <sup>3</sup> /s	m <sup>3</sup> /h	ft <sup>3</sup> /min=cfm
1m <sup>3</sup> /min	1	0.017	60	35.31
1m <sup>3</sup> /s	60	1	3600	2118.6
1m <sup>3</sup> /h	0.017	$2.777 \times 10^{-4}$	1	0.589
1ft <sup>3</sup> /min=cfm	0.0283	$4.720 \times 10^{-4}$	1.699	1

### Power

	HP	kW	kg-m/sec	PS
1 HP	1	0.746	76.038	1.014
1 kW	1.341	1	101.967	1.360
1 kg-m/sec	0.013	$9.807 \times 10^{-3}$	1	0.013
1 PS	0.986	0.736	74.988	1

### Pressure Conversion Formula

- 1 Pa = 0.102 mmAq
- 1daPa = 10 Pa
- 1mbar = 10.197 mmAq
- 1mmHg = 13.6 mmAq
- 1psi = 703 mmAq
- 1Torr = 133.3 Pa
- 1Torr = 1.333 mbar

## Main Products

Cutter Blowers  
Gas Tight Blowers  
Conveyor Blowers  
Low Noise Blowers  
Explosion Proof Blowers  
Wear-Resistance Blowers  
Corrosion-Resistance Blowers  
High Temperature Resistance Blowers

Mild Steel Fans & Blowers  
Mild Steel Multi-Steel Blowers  
Casting Blowers  
Casting Multi-Stage Blowers  
Leakless Dampers  
Accessories of Fan & Blowers  
Special Applications Fans & Blowers



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