



HASCONWING[®]

VENTILATION TECHNOLOGY

HASCON ENGINEERING DIVISION



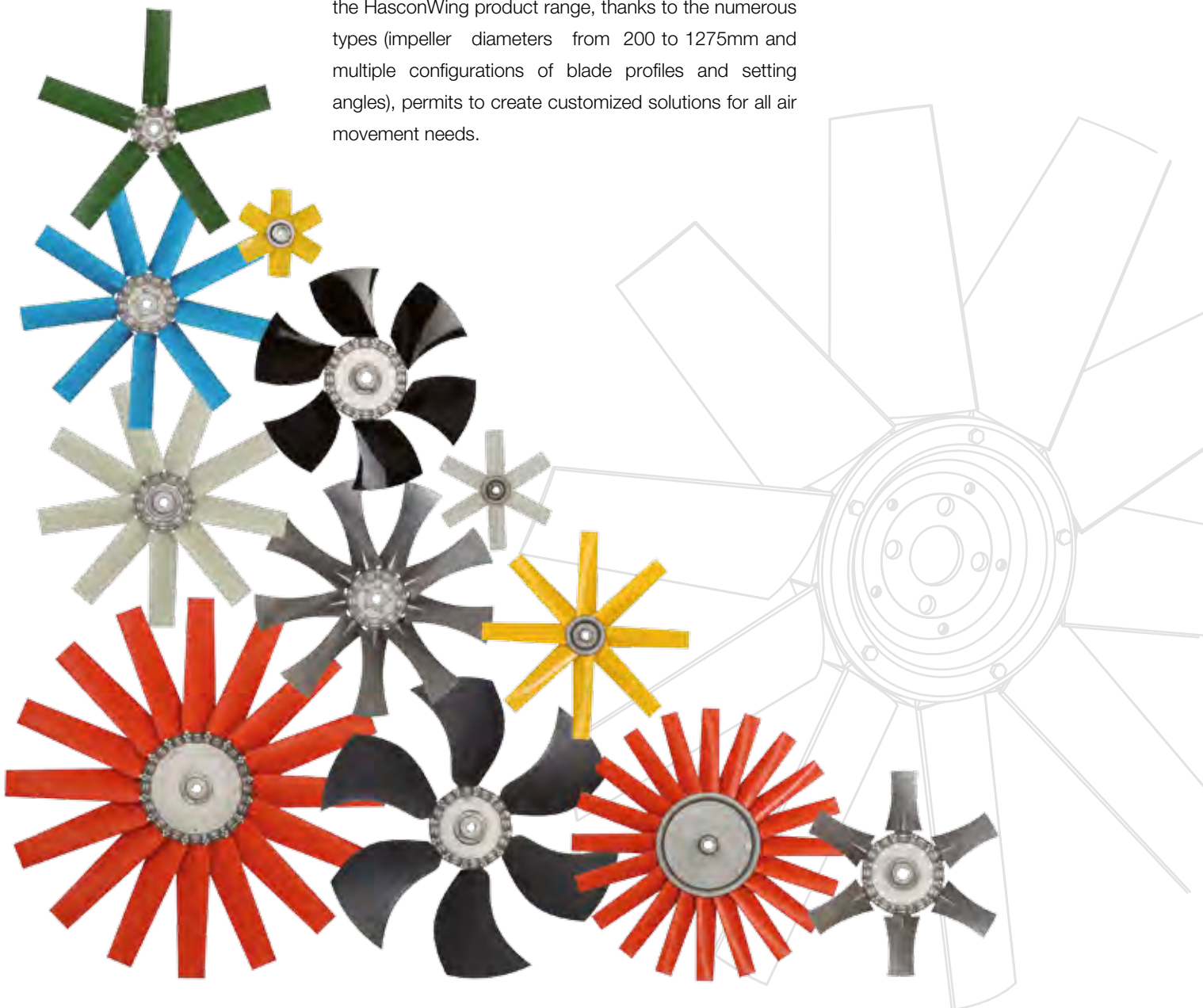
HasconWing[®]

Fixed or variable airfoil profile
axial impellers

A cleaner world.




Hascon Engineering has been operating in the ventilation field for more than thirty years and our reliable and high quality axial impellers are the result of this rich experience. Since 1997 we have been operating in compliance with ISO 9001 standards, with each phase, starting from the procurement of material passing through all of the process sequences until post sales support, being carried out according to well tested and continuously improving criteria, permitting us to emerge in the international market due to our high quality, efficiency and timeliness, making us a leading company in this sector. In addition, the HasconWing product range, thanks to the numerous types (impeller diameters from 200 to 1275mm and multiple configurations of blade profiles and setting angles), permits to create customized solutions for all air movement needs.



Features and advantages

The wide range of HasconWing axial impellers can satisfy all your ventilation needs thanks to following advantages.

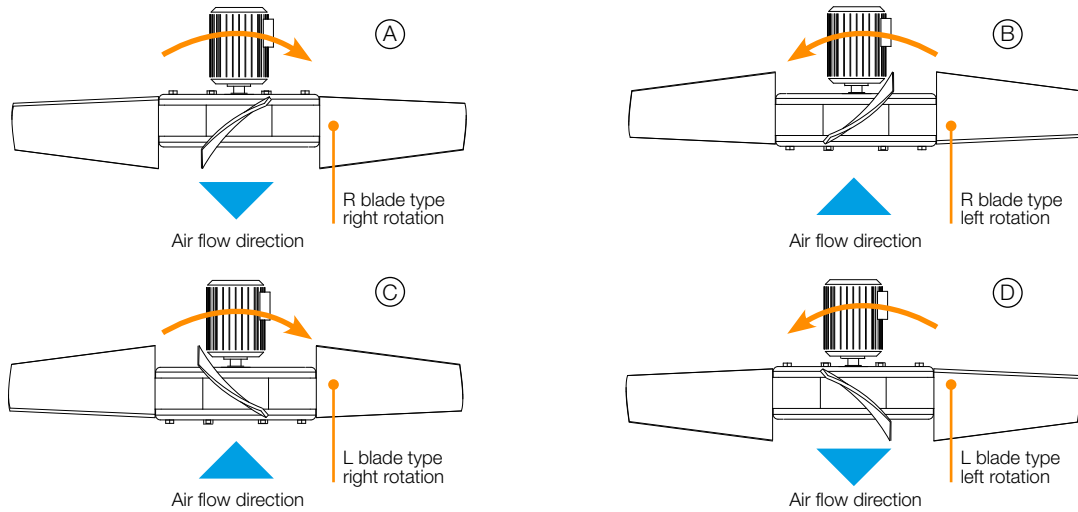
- **Possibility of extremely high rotation speeds**
based on the impeller diameters
- **Operating temperature**
with standard materials (on stock) -40° to + 120°C, with special material from -40° to +200°C.
- **Light weight**
- **Low noise levels**
due to the profile type, high smoothness surface and soundproof characteristics of the selected material
- **Elasticity**
together with high mechanical resistance that guarantees a long life even for the most demanding applications
- **Corrosion proof -High abrasion resistance**
immune to corrosive fumes, salt air, etc...
- **Accurately manufactured and easy to assemble**
- **Optimal price/quality ratio**
- **Higher operating safety**
The use of HascoWing impellers is particularly suitable for environments with high risk of fire explosion (as they are spark-proof) or that are dusty (as they prevent the formation of deposits resulting in unbalance and vibrations) as well as in low temperature environments, to - 40°C (as they prevent the formation of ice)
- **Standard, semi-finished products on stock**
- **Ready to deliver**
Availability of standard, semi-finished products and components on stock
- **Flexibility**
Able to satisfy clients with small or large orders
- **Special materials and colours upon request**
Permanent antistatic ATEX 
Magnetically shielded
Flame-retardant
For cryogenic temperatures
- **Accurately manufactured and easy to assemble**
G 6.3/G 2.5 (on request) grade electronic balancing
- **Research and development**
SolidWorks, FEM analysis with Cosmos Works, AutoCad and test performance laboratory
- **Selfan impellers selection programme**
innovative selection program, easy to use
- **Wide performance range**

Applications



- Radiators
- Blowing units
- Ventilation
- Axial ventilators
- Generator units
- Electric welding machines
- Lift trucks
- Earth moving machines
- Agricultural machines and tractors
- Heat exchangers
- Cooling towers
- Animal farms
- Agricultural sprayers
- Refrigeration units
- Air conditioning
- Refrigeration and freezing
- Devices
- Hovercraft
- Car and industrial vehicle air conditioners
- Snow cannons

Flow diagrams

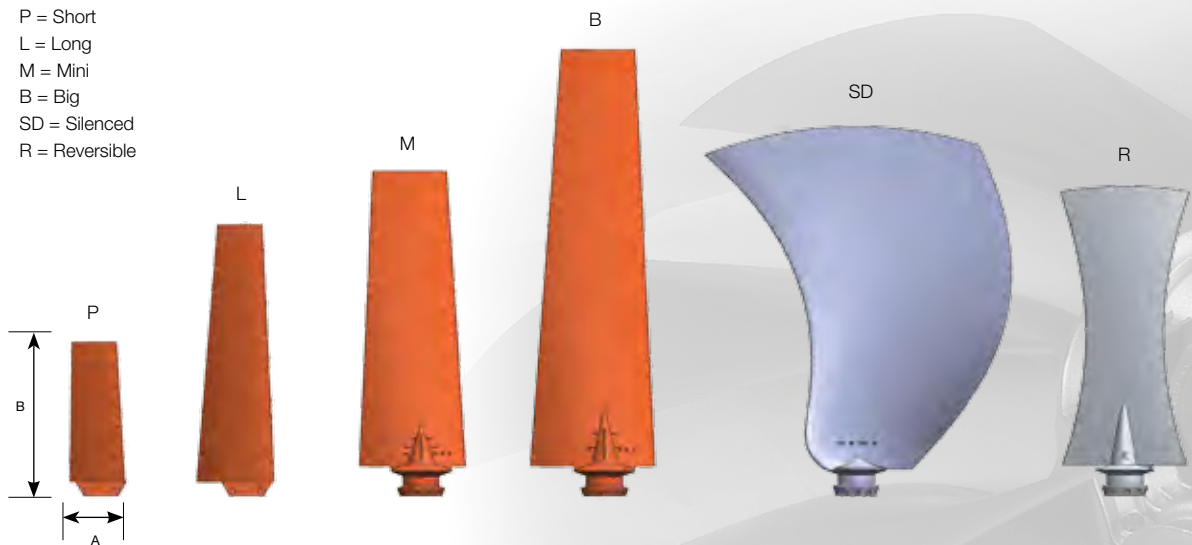


HasconWing blades are manufactured with leading right edges (R) and leading left edges (L).

HasconWing blades

	P	L	M	B	SD	R
A = chord	65	83	115	135	120	145
B = length	150	280	320	450	360	300
Max ø impellers	542	900	1010	1275	1100	1000

P = Short
L = Long
M = Mini
B = Big
SD = Silenced
R = Reversible



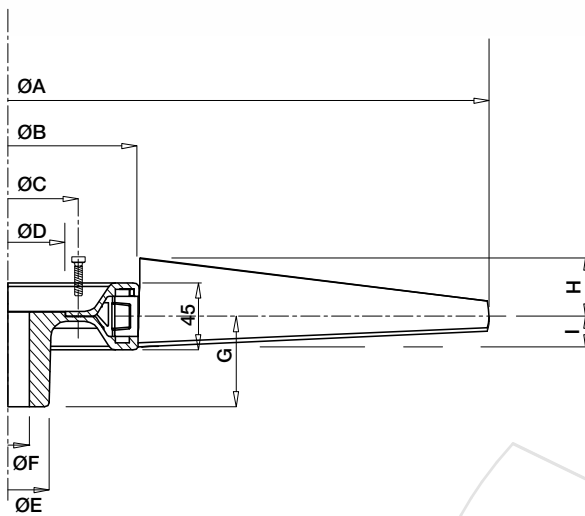
Material (*)	Description	Colour (**)	Behaviour at vibrations
PP_	polypropilene	yellow	+
PPG	polypropilene+glass fiber	orange	++
PAG	nylon+glass fiber	white	+++
PAS (SD)	nylon+glass fiber	black	+++
ALU	aluminium light alloy	silver	contact Tec Dpt
RYT	ryton	brown	contact Tec Dpt
PAA	PA+antistatic properties	black	++
PAX	PA+antistatic+self estingush properties	black	++
PAM	PA+antistatic+self estingush+magnetically shielded properties	black	++

(*) Special material on request - (**) Special colour on request

HasconWing HF

Fixed airfoil profile axial impellers up to Ø900 mm

HasconWing HF impellers are manufactured with airfoil profile blades in polypropylene (yellow PP), polypropylene glass reinforced (orange PPG) and polyamide glass reinforced (white PAG) and a light aluminium alloy hub. The impellers can work to highest rotation speeds with 6/8/10/14/20 (L) long or (P) short blades with right or left setting angles from 25° to 50° producing a sucking or blowing flow.



Blades n°	Blade type -	A max Ø mm	B Ø mm	C Ø mm	D Ø mm	E Ø mm	F Ø mm	G Ø mm	Holes n°
6	P	400	96	42	28	24÷34	9÷20	0-30-41	3
	L	650							
8	P	440	134	56	40	34÷40	11÷28	0-30-42	4
	L	690							
10	P	475	172	90	75	44÷54	14÷30	0-42-52	5
	L	725							
14	-	-	242	160	88	50÷65	19÷30	0-52-62	7
	L	795							
20	-	-	348	270	240	60	28÷38	0-62	10
	L	900							

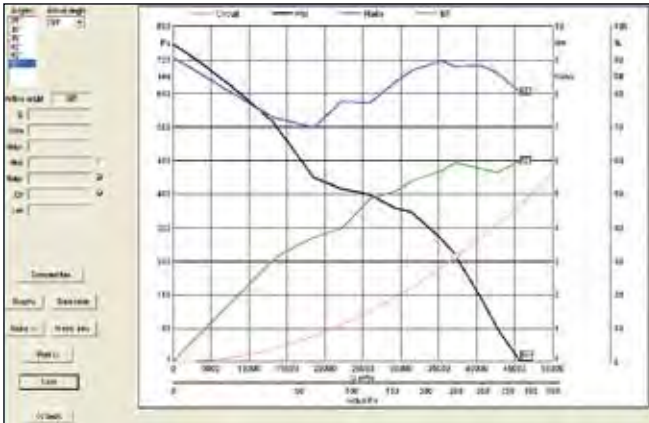
Blade type		25°	30°	35°	40°	45°	50°
P	I	10	12	14	16	18	-
	H	20	23	26	28	31	-
L	I	13	15	18	20	22	23
	H	27	31	35	38	40	42

Tolerance ± 2 mm

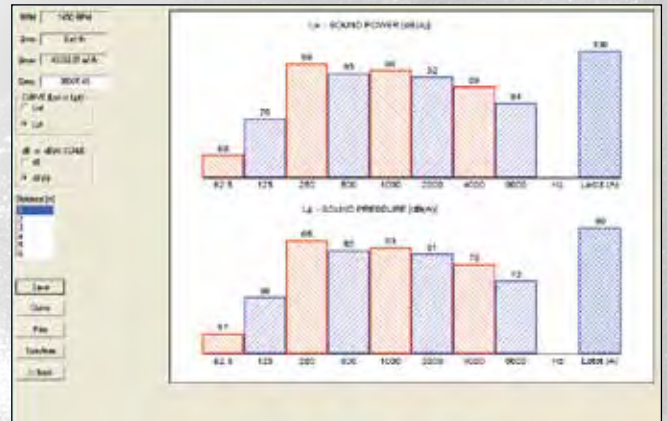
HF impeller application types

In particular, HF impellers can be used in the following applications:

- Blowing units
- Ventilation
- Axial ventilators
- Generator units
- Electric welding machines
- Lift trucks
- Earth moving machines
- Agricultural machines
- Car and industrial vehicle air conditioners
- Heat exchangers
- Cooling towers
- Animal farms
- Agricultural sprayers
- Refrigeration units
- Air conditioning
- Refrigeration and freezing
- Devices
- Radiators



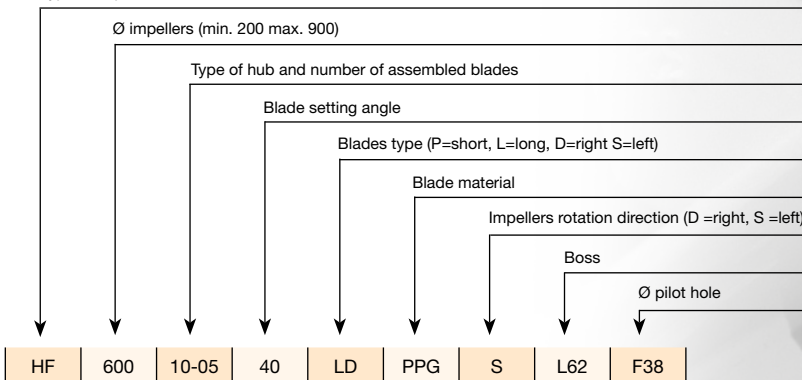
Aerologic diagrams



Noise information

Example of how to order HasconWing HF impellers :
 HF 600/10-05/40/LD/PPG/S/L62F38

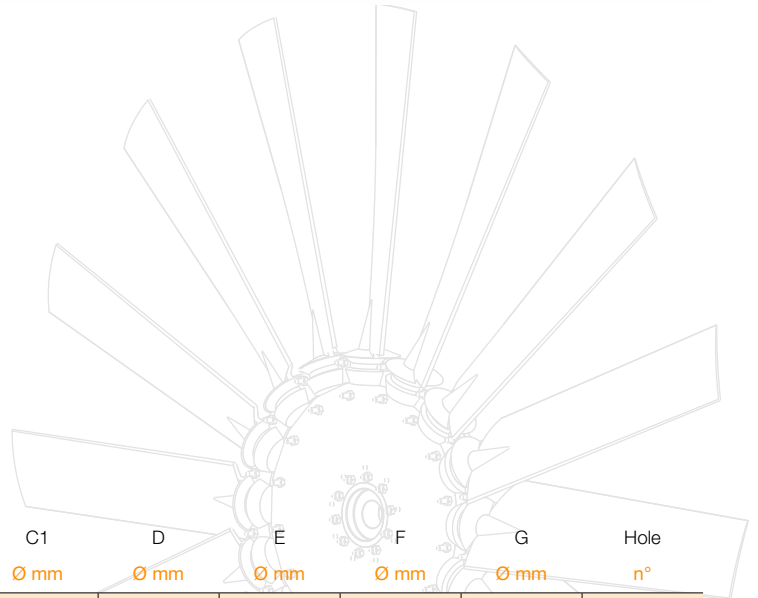
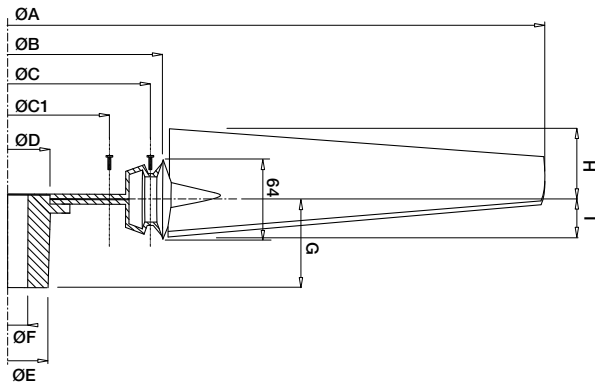
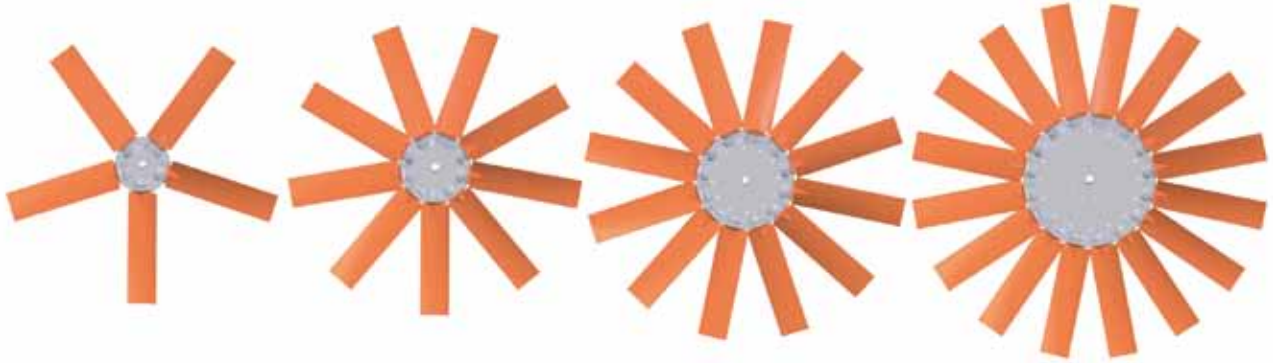
Type of impellers: fixed



HasconWing HV

Variable airfoil profile axial impellers up to Ø1270 mm

HasconWing HV impellers are manufactured with airfoil profile blades in polypropylene glass reinforced (orange PPG) and polyamide glass reinforced (white PAG) and a light aluminium alloy hub. The impellers can work to the highest rotation speeds with 5/9/12/16 mini (M) or big (B) blades, with right or left setting angles from 20° to 50°, producing a sucking or blowing flow. Available also with ALU blades.



Blade	Blade type	A	B	C	C1	D	E	F	G	Hole
n°	-	max Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	n°
5	M	780	158	139	-	55	44÷52	14÷34	42-62	5
	B	1040								
9	M	830	202	184	110	95	45÷73	14÷42	0-42-52 62-82-112	9*
	B	1090								
12	M	910	280	264	185	170	45÷95	14÷55	0-42-52 62-82-112	12*
	B	1170								
16	M	1010	375	358	280	240	45÷95	14÷55	0-42-52 62-82-112	16*
	B	1270								

* 5 Ø 6.5 holes on Ø 90 for interchangeable nose connections.

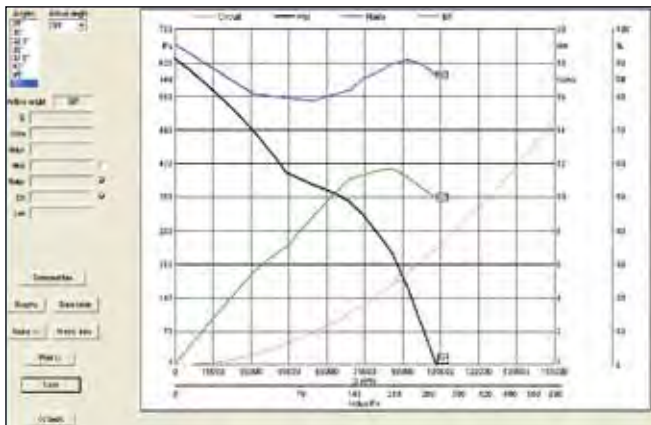
Blade type		20°	25°	30°	32,5°	35°	37,5°	40°	45°	50°
M	I	-	15	19	20	22	24	26	29	-
	H	29	35	40	43	45	47	49	52	-
B	I	-	17	22	25	27	29	31	34	38
	H	-	42	48	51	53	56	59	63	67

Tolerance ± 2 mm

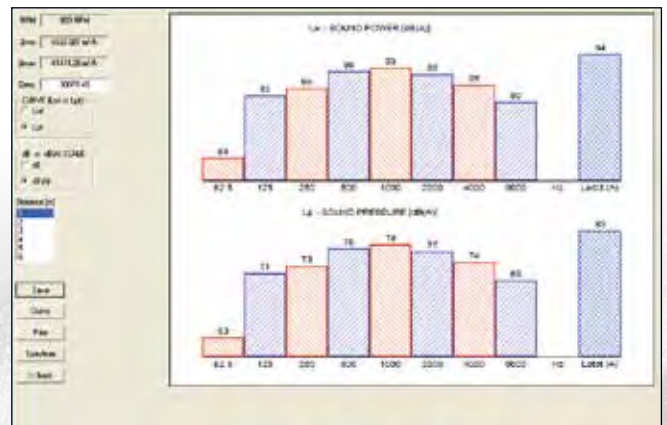
HV impeller application types

In particular, HV impellers can be used in the following applications:

- Blowing units
- Ventilation
- Generator units
- Earth moving machines
- Exchangers
- Cooling towers
- Snow cannons
- Hovercraft



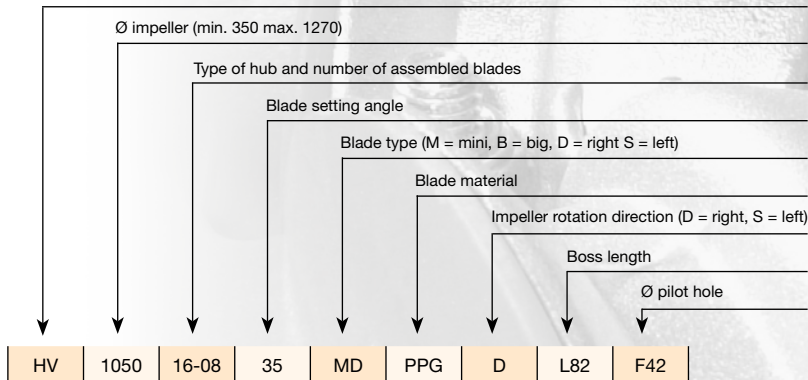
Aerualic diagrams



Noise information

Example of how to order the HasconWing HV impellers:
 HV 1050/16-08/35/MD/PPG/D/L82F42

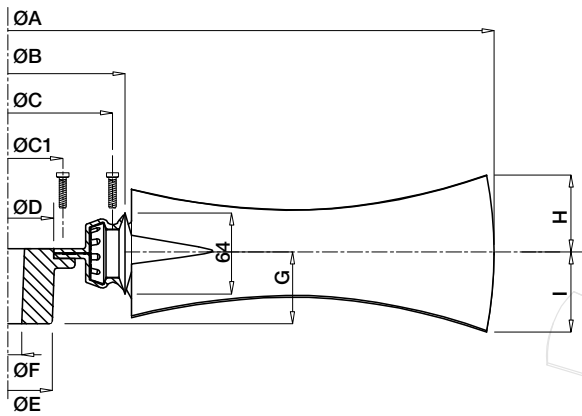
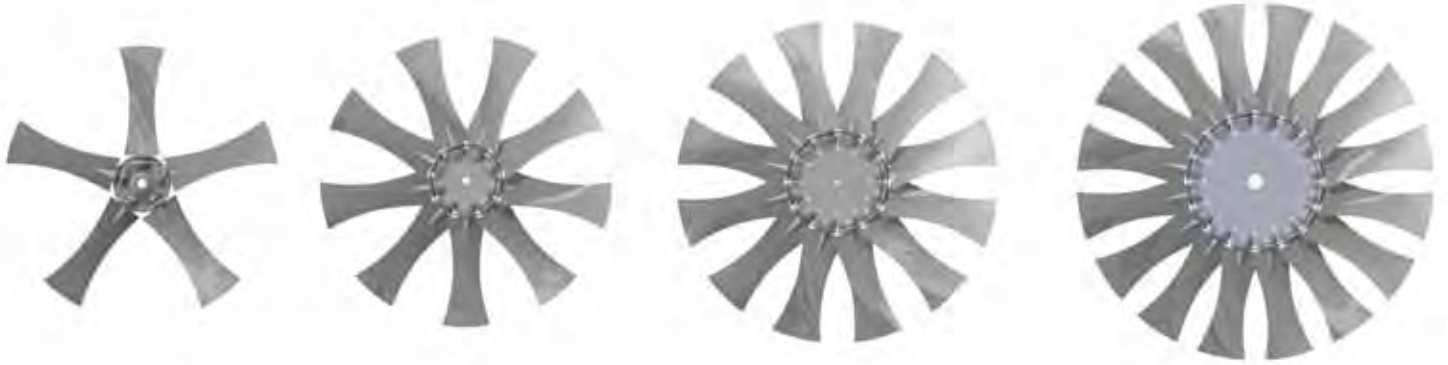
Type of impeller: variable



HasconWing R

Reversible profile axial impellers up to Ø975 mm

HasconWing R impellers are manufactured with reversible profile blades in light aluminium alloy (ALU) and light aluminium alloy hub. Impellers can perform with high temperature especially for drying room with 5/9/12/16 blades with angles from 20° to 45° producing a reversible flow.



Blade n°	Blade type -	A max Ø mm	B Ø mm	C Ø mm	C1 Ø mm	D Ø mm	E Ø mm	F Ø mm	G Ø mm	Hole n°
5	R	750	158	139	-	55	44÷52	14÷34	42-62	5
9		800	202	184	110	95	45÷73	14÷42	0-42-52 62-82-112	9*
12		880	280	264	185	170	45÷95	14÷55	0-42-52 62-82-112	12*
16		975	375	358	280	240	45÷95	14÷55	0-42-52 62-82-112	16*

* 5 ø 6.5 holes on ø 90 for interchangeable nose connections.

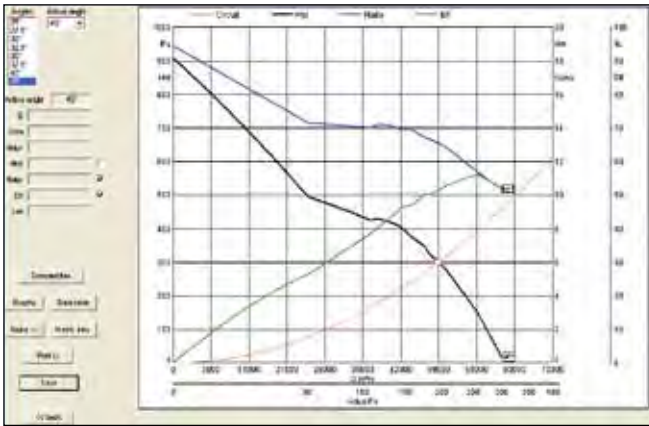
Blade type		25°	27,5°	30°	32,5°	35°	37,5°	40°	45,0°
R	H	34	38	40	44	47	49	52	54
	I	34	38	40	44	47	49	52	54

Tolerance ± 2 mm

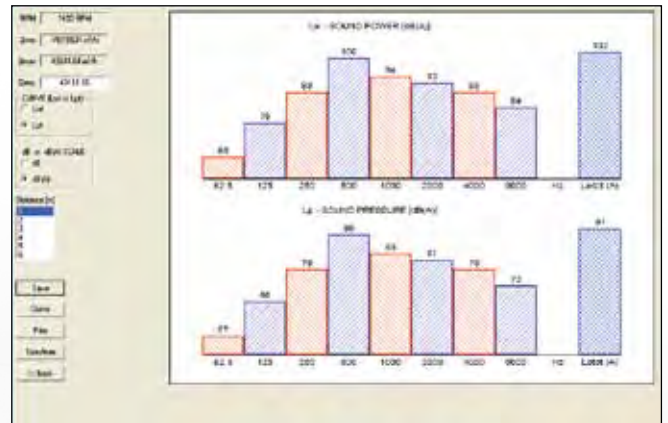
R impeller application types

In particular, R impellers can be used in the following applications:

- Drying processes of wood
- Drying processes of bricks
- Drying processes of skins
- Ventilation of tunnels
- Ventilation of garages
- High temperatures
- Heat exchangers
- Cooling towers



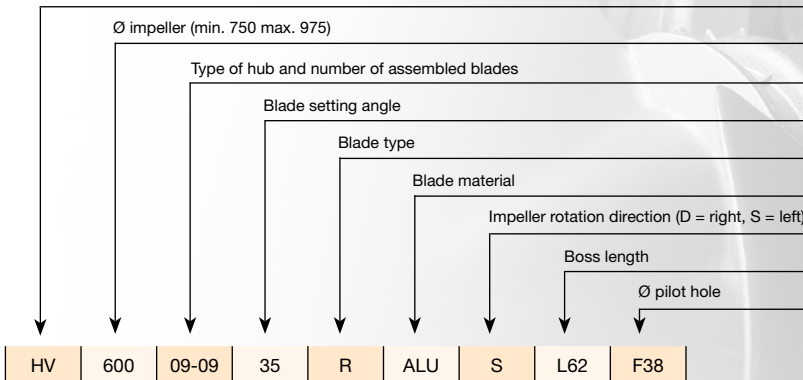
Aerologic diagrams



Noise information

Example of how to order the HasconWing R impellers:
 HV 600/09-09/35/R/ALU/S/L62/F38

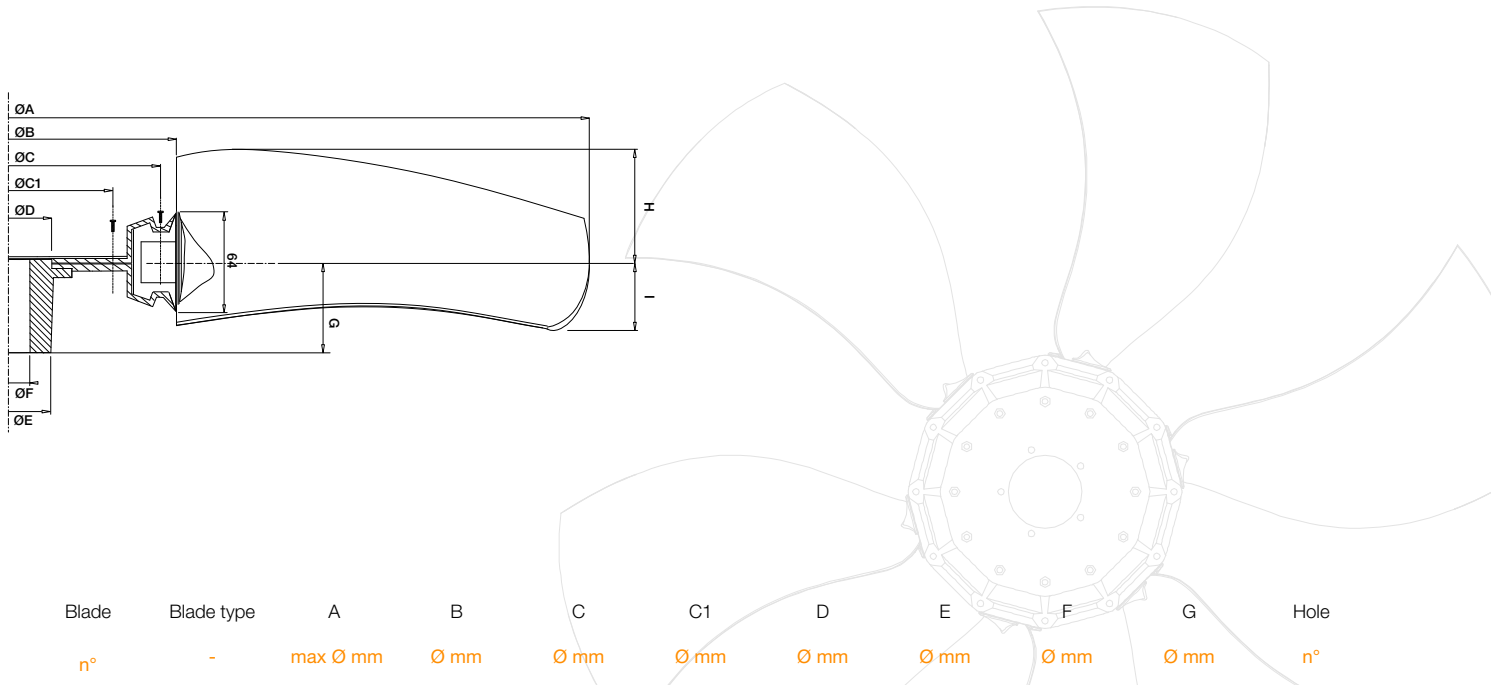
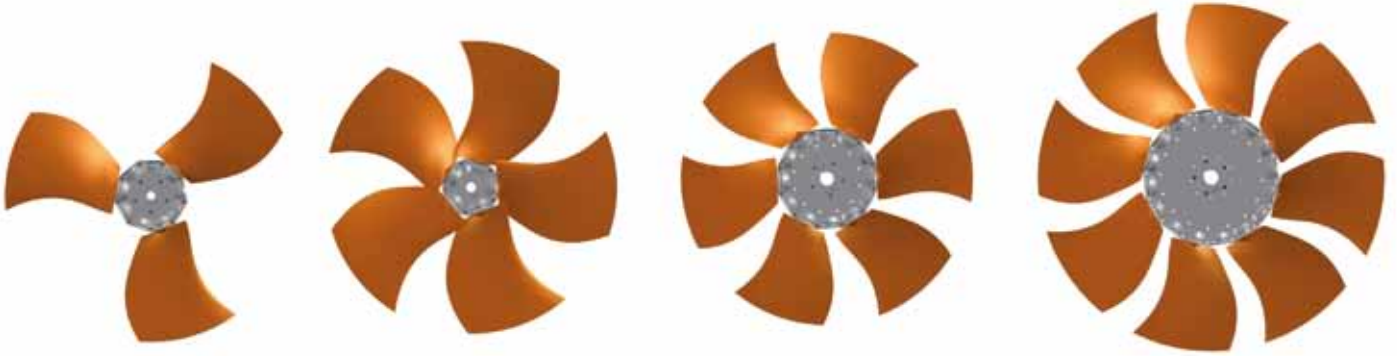
Type of impeller: variable



HasconWing SD

Silent Profile axial impellers up to Ø1100 mm

HasconWing SD impellers are manufactured with silent profile blades with high solidity and excellent performance at low rpm. Made in polypropylene glass reinforced (orange PPG) and polyamide glass reinforced (white PAG) with light aluminium alloy hub, the impellers can be assembled with HV family hub for 5/9/12/16 blades, configurable with 3/5/6/8 blades. The Silence Right blade can have setting angles from 20° to 37.5° producing a blowing or sucking flow.



Blade	Blade type	A	B	C	C1	D	E	F	G	Hole
n°	-	max Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	Ø mm	n°
3	SD	925	202	184	110	95	45÷73	14÷42	0-42-52-62-82-112	9*
5		880	158	139	-	55	44÷52	14÷34	42-62	5
6		1005	280	264	185	170	45÷95	14÷55	0-42-52-62-82-112	12*
8		1100	375	358	280	240	45÷95	14÷55	0-42-52-62-82-112	16*

* 5 ø 6.5 holes on ø 90 for interchangeable nose connections.

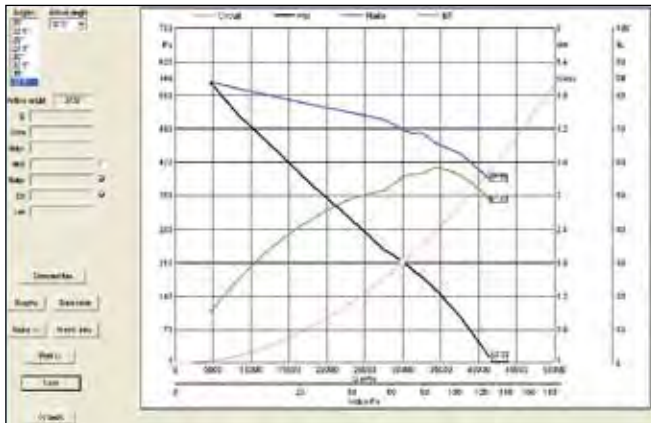
Blade type		20°	22,5°	25°	27,5°	30°	32,5°	35°	37,5°
SD	I	25	26	29	30	34	36	37	39
	H	52	54	55	58	60	64	65	67

Tolerance ± 4 mm

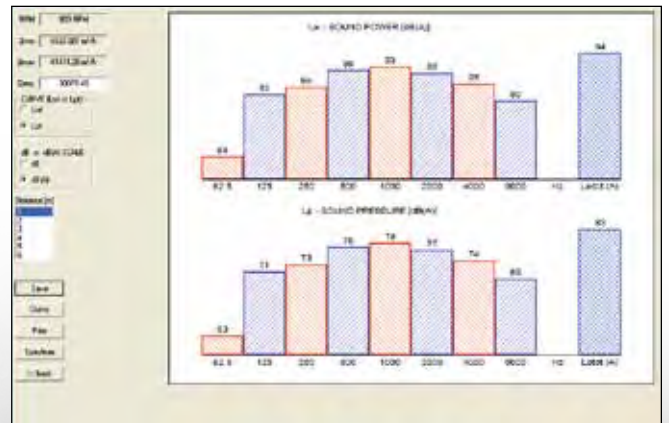
SD impeller application types

In particular, SD impellers can be used in the following applications:

- Ventilation
- Axial ventilators
- Generator units
- Earth moving machines
- Agricultural machines and tractors
- Heath Exchanger
- Cooling towers
- Condensers
- Snow cannons
- Animal farms
- Agricultural sprayers
- Air conditioning
- Refrigeration and freezing units
- Radiators



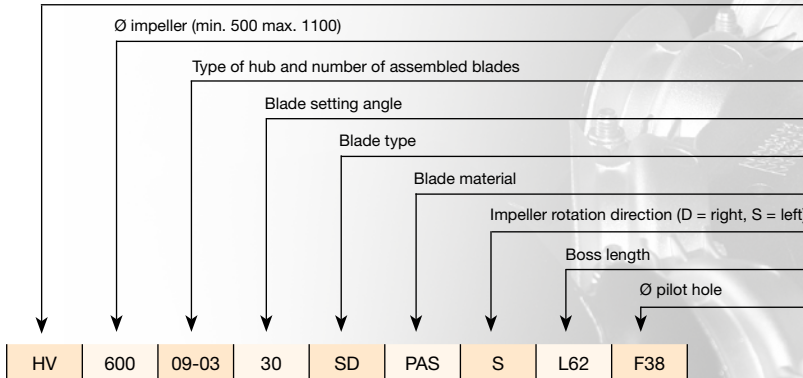
Aerologic diagrams



Noise information

Example of how to order the HasconWing SD impellers:
 HV 600/09-03/40/SD/PAS/S/L62F38

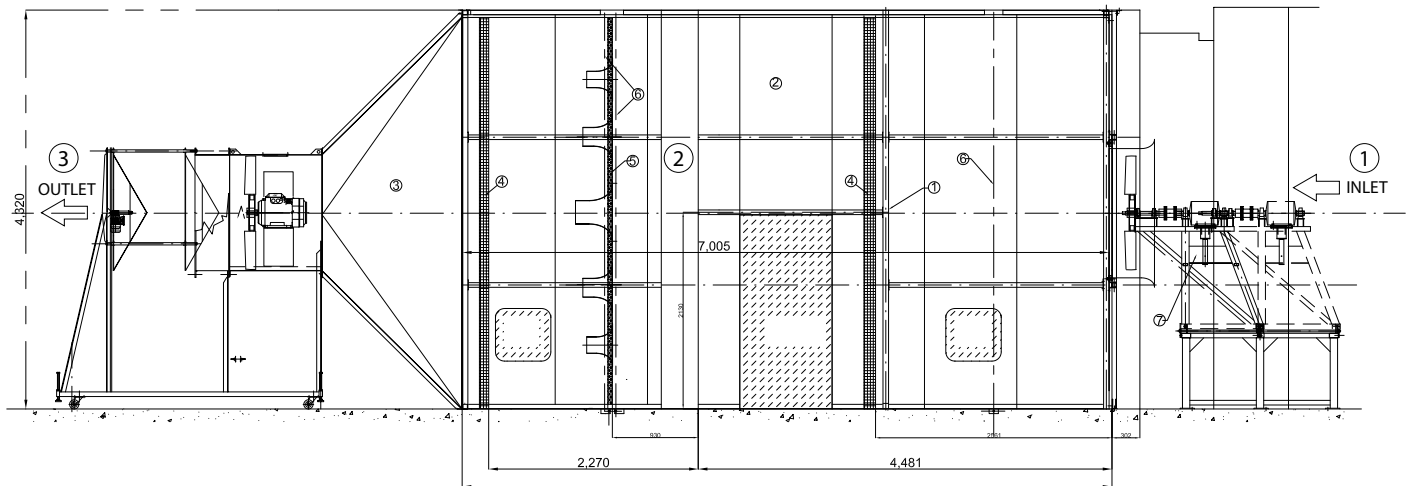
Type of impeller: variable



HasconWing Wind Tunnel

Main features

- Designed to AMCA 210/07
- Extremely reliable in order to test performance data for axial impellers
- Source of performance data for SELFAN22, our selection program
- A tool to develop different solutions of blades for all industrial markets
- Benefit to customer to study their customized solution



Description

The open loop tunnel is characterized by a length of 10m and a test chamber with a rectangular section 4.7m x 4.2m x 7m.

The airflow enters the chamber pushed by the fan under test and passes through the inlet made of an interchangeable duct, with a set diameter and radius of curvature. Then, the airflow passes through two grids to break the large-scale vortices of turbulence thus to obtain a smaller scale. After that, in the center of the room the air meets a wall on which are installed converging nozzles of different diameters according to different requirements.

Airflow then, exits the chamber: at the end of the room there is an extraction duct with an Hasconwing® fan to extract the air together with a metal hopper so as to allow the closing and pressurisation of the chamber.

Inside the chamber are located some pitot tubes to measure pressure, as well as some thermocouples to complete the test apparatus.



1. Inlet



2. Interchangeable ducts



3. Outlet

DEFINITIONS

Air flow	q	[m ³ /s]
Static pressure	p _s	[Pa]
Dynamic pressure	p _d	[Pa] = [N/m ²]
Total pressure	p _t	[Pa]
Air temperature	t	[°C]
Rotation speed	n	[RPM]
Tip speed	V _t	[m/s]
Diameter	d	[m]
Density	ρ	[kg/m ³]
Efficiency	η	-
Power	P	[W]
Axial thrust	F	[N] = [kgm/s ²]

Temperature conversion

Temperature ratio	$k = \frac{T_1}{T_2}$	where T = t + 273
The air flow is not influenced by the temperature		
Pressure	$p_2 = p_1 \cdot k$	
Power	$P_2 = P_1 \cdot k$	

Rotation speed conversion

Rotation speed ratio	$k = \frac{n_2}{n_1}$	
Air flow	$q_2 = q_1 \cdot k$	
Pressure	$p_2 = p_1 \cdot k^2$	
Power	$P_2 = P_1 \cdot k^3$	

Diameter conversion

Formulas valid for diameter differences limited to +/- 10% in comparison to the reference.

Diameter ratio	$k = \frac{d_2}{d_1}$	
Air flow	$q_2 = q_1 \cdot k^3$	
Pressure	$p_2 = p_1 \cdot k^2$	
Power	$P_2 = P_1 \cdot k^5$	

Other useful formulas

Total pressure	$p_t = p_s + p_d$
Dynamic pressure	$p_d = \frac{8 \cdot q^2 \cdot \rho}{d^4 \cdot \pi^2}$
Peripheral speed	$V_t = \frac{n \cdot \pi \cdot d}{60}$
Efficiency	$\eta = \frac{p_t \cdot q}{P}$
Axial thrust	$F = \frac{\rho \cdot q^2 \cdot 4}{d^2 \cdot \pi} + \frac{p_s \cdot d^2 \cdot \pi}{4}$

Note: Index "1" related to the curve of reference, index "2" related to the curve to be calculated



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