

FWISQ
Inline Square Centrifugal Fan



FläktWoods

Centrifugal Wheel

OPTIMIZED DESIGN

The most up-to-date hydro-field simulating technology was used during the design process. The backward inclined wheel is highly efficient, produces minimal noise and guarantees stable performance.

BALANCING LEVEL

Every wheel is statically and dynamically balanced to the level of G2.5 ISO Standard No.1940 (typical products are of G6.3 only), for better longer term reliability and performance.

NON-OVERLOADING DESIGN

Wheels naturally have a peak value on the shaft power curve, engineers can easily choose the proper motor to ensure non-overload to cater for jobsite conditions making field commissioning easy.

PRECISE VENTURI INLET

The Venturi inlets of the wheel and fan inlet bell are precisely matched to each other, the noise and energy loss caused by turbulence are reduced.

Product Features

✓ Wide performance range

- Centrifugal Wheel: low noise
- Large selection: maximum wheel diameter is 1 meter
- Compact cabinet size

✓ Centrifugal In-line: obvious advantage in RPM and noise

- Compared with axial/mixed flow fans, rotation speed is reduced 20~30%
- The sound pressure level range is reduced by 10~15 dB(A)

✓ Plug fan structure

- Plug fan directly suck air into wheel and pressurizes chamber improving air flow
- Direct drive: no dust generated, suitable for clean rooms, water fab, pharmaceutical and food industry applications

FWISQ



✓ AMCA Seal: sound and air performance certified

- The sound & air performance is approved by AMCA
- Sound & Air Performance Seal is applied to each fan

✓ Square casing with multi - discharge, easier to connect

- Square inlet/outlet sleeve flange as standard accessories: round/square conversion duct is not needed
- Duct connection cost reduced, and jobsite working time saved
- Motor can be multi-position
- Multi-discharge: More convenient and flexible for design & construction

FWISQ-D





Optional accessories

Back-draft damper

Back-draft damper include inlet/outlet flange and protective casing.
The damper is installed separately from the fan body.

Filter section

Washable aluminum mesh filter, disposable plate or bag type filter are available.

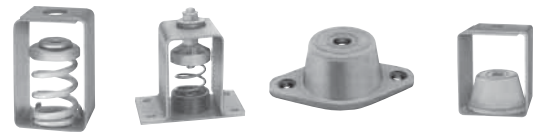
Motor cover (Apply for belt drive type only)

With discharge window to exhaust heat, extend motor life and reduce motor noise.

Acoustical housing

Additional high class acoustical material inside the fan casing reduces sound pressure level at about 6~8 dB(A).

Vibration isolators



Vibration isolators can be hung or floor-mounted, material can be neoprene or spring type.

Nomenclature

FWISQ — 300 (D4) — 0.25 — (LF)

①

②

③

④

⑤

Motor Power: 0.25kW.

D4: Direct drive 4 pole motor
(Belt drive without D)

300: Nominal wheel diameter is 300 mm

MODEL FWISQ: Inline Square Centrifugal Duct Fan

Meaning of suffix letters

L	R	F	E
Left side discharge	Right side discharge	With filter section	Epoxy coated

* Discharge direction is based on facing the fan inlet.

Catalogue Introduction

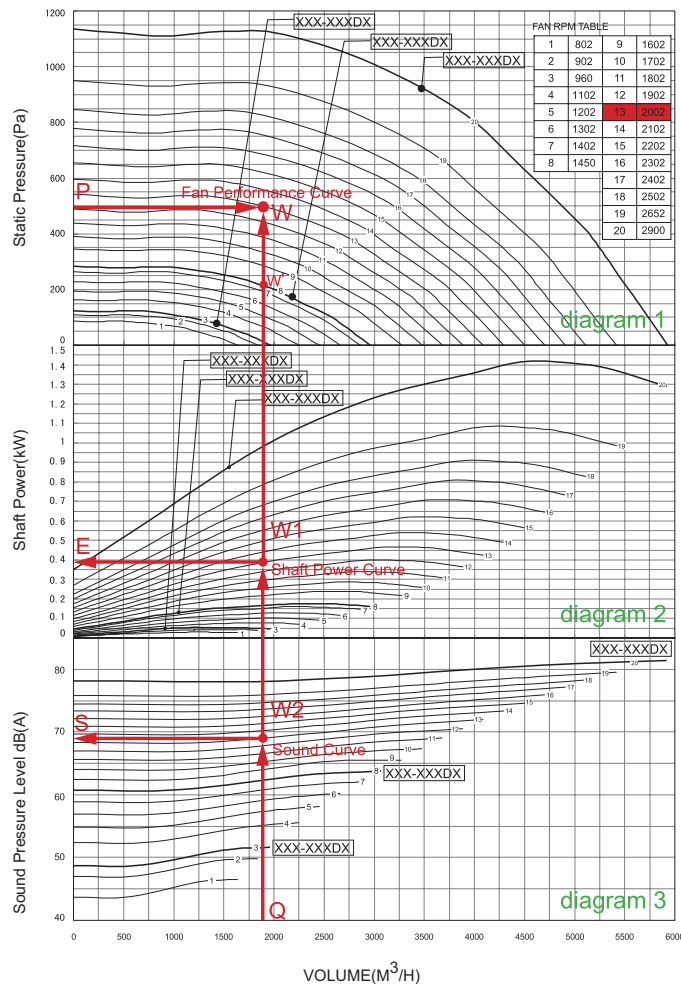
Each fan performance is plotted by a group of curves for different RPM.

The bolded curves indicate the fan is direct drive which means the wheel is installed on the motor shaft directly. All direct drive models shall have a suffix letter D followed by motor pole number (which is already marked on the drawing). The attached table shows motor RPM at different number of poles.

The non-bolded curves means the fan is belt drive. The belt drive models establish different RPM by choosing different diameter of the 2 pulleys, while the motor is always 4-pole.

Shaft Power Curve displays the fan actual power consumption.

The sound pressure level curve indicated the noise level at 1.5 meter distance.



Example: 1800M³/h, 500Pa Static Pressure

Step 1: From given volume (Point Q: 1800M³/H) draw a vertical line upwards, from given static pressure (Point P: 500Pa) draw a horizontal line to the right, the intersection point W is the working point. Find a fan curve close to the point, which would be curve No. 13. As highlighted in the RPM table, it is 2002RPM.

Step 2: The intersection point between the vertical line and the curve No. 13 in diagram 2 is marked as point W1. Draw a horizontal line from point W1 to the left coordinate, which makes point E. The point E (about 0.39kW) is the shaft power. According to the shaft power, a 0.55kW motor shall be equipped.

Step 3: The intersection point between the vertical line and the curve No.13 in diagram 3 is marked as point W2 to the left coordinate, which makes point S (about 69dB(A)). It is the fan sound pressure level.

Step 4: According to above steps, the primary model selection would be FWISQ-300-0.55, belt drive, and factory set to 2002 RPM. If lower shaft power or noise is expected, you may select a larger fan.

Step 5: Furthermore, if customer needs 1800M³/H at 200Pa static pressure, you would find point W' close to curve No.8 (bolded, indicates 1450 RPM 4 pole direct drive). A more economical direct drive fan (FWISQ-300D4-0.37) can be selected in this case.

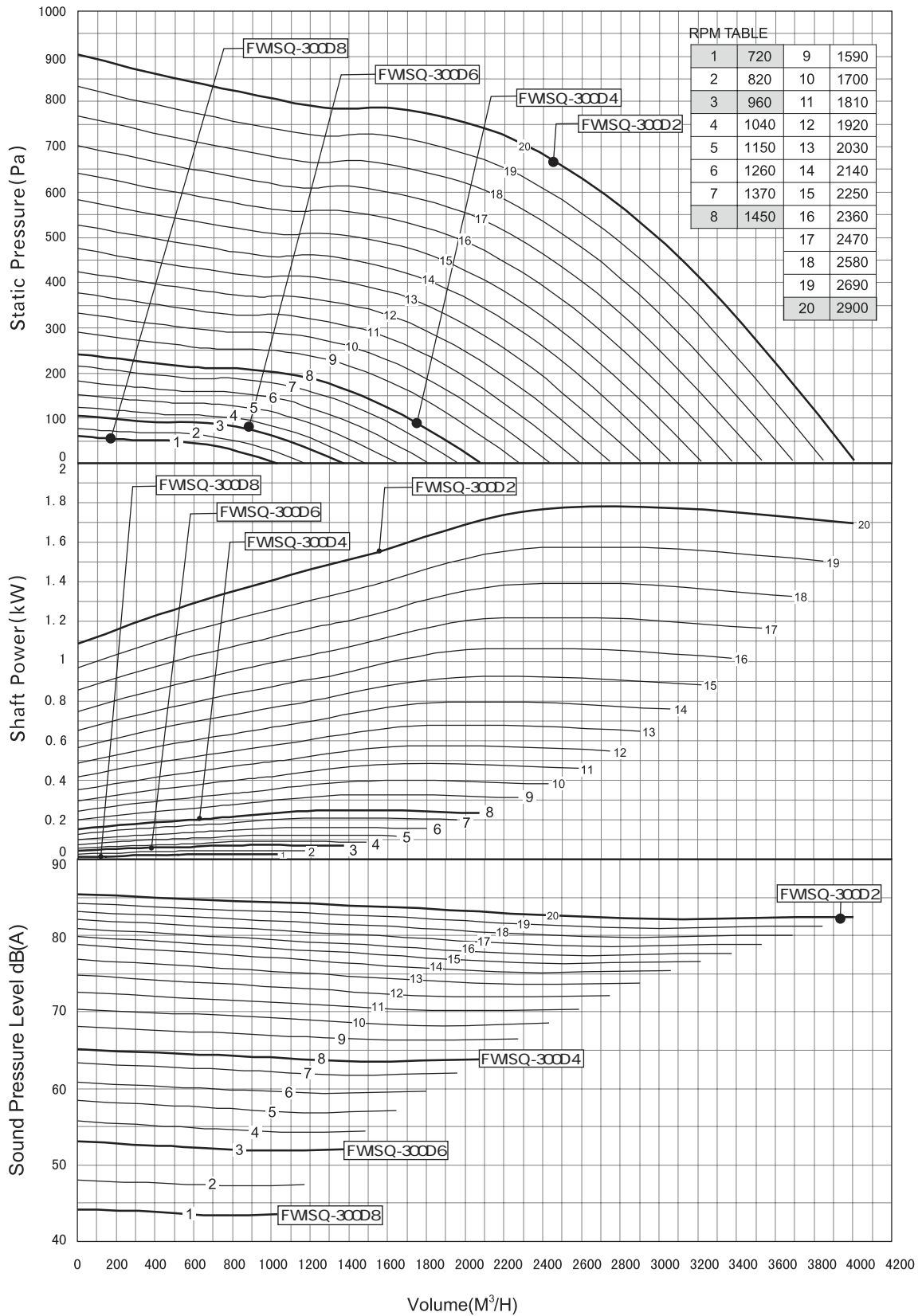
Performance Curve

Certified performance is based on B type installation: free inlet, ducted outlet. Power parameter already includes transmission loss. Rotation speed is nominal. Performance parameter is based on tested speed. Sound power level LwiA of catalog is based on NO.301 publication, B type installation: free inlet, ducted outlet. The parameter unit of sound power level is decibel. Calculated according to AMCA 301 based on 10-12 watt. Duct end correction is not included. DB (A) sound pressure level parameter is calculated on the basis of each octave from 1.5 meter, 11.5 DB attenuation. AMCA only certificates sound power level parameter, excludes sound pressure level parameter.

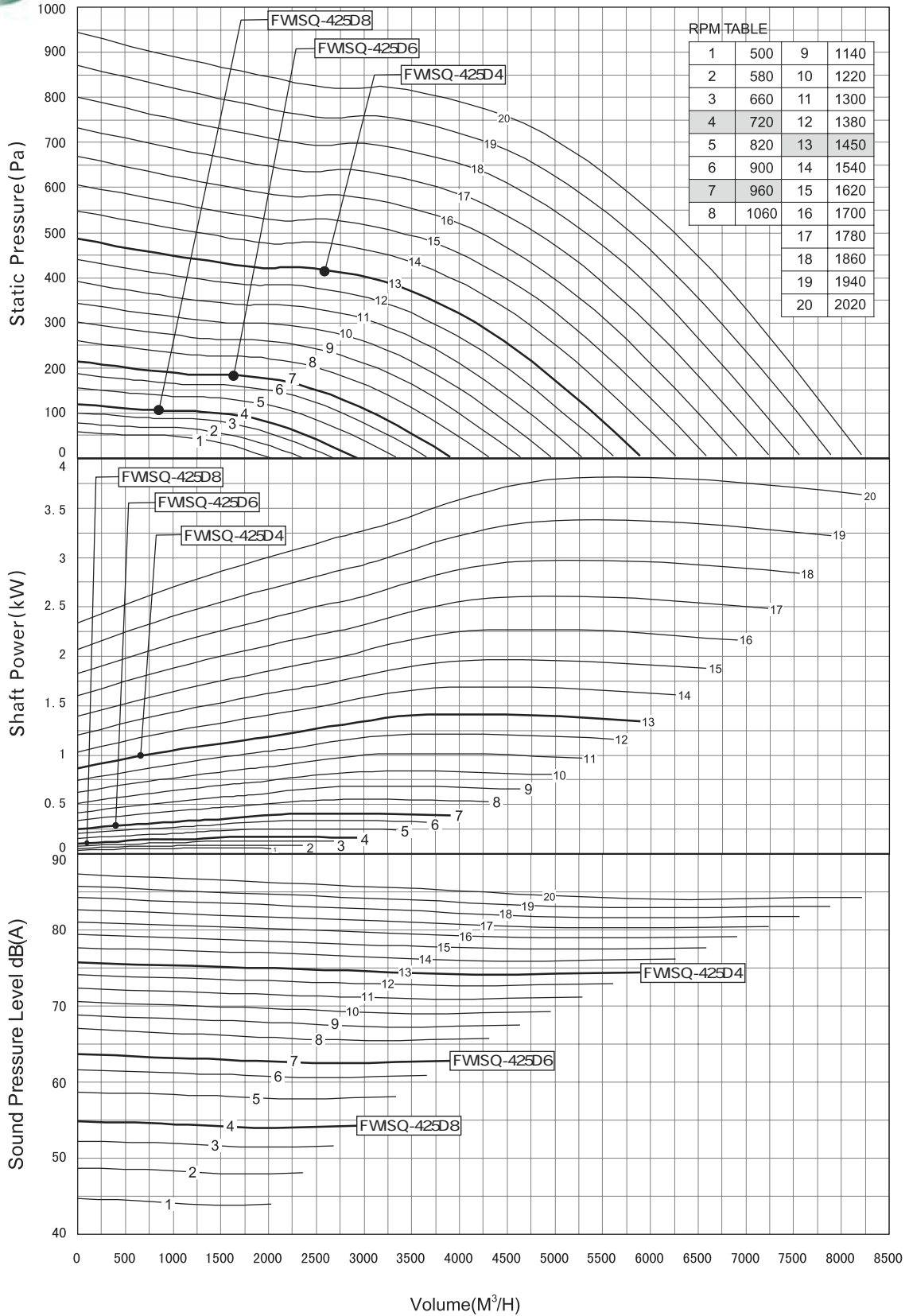
Motor Speed

No. of poles	RPM (Approx)
2	2900
4	1450
6	960
8	720

Model: FWISQ-300

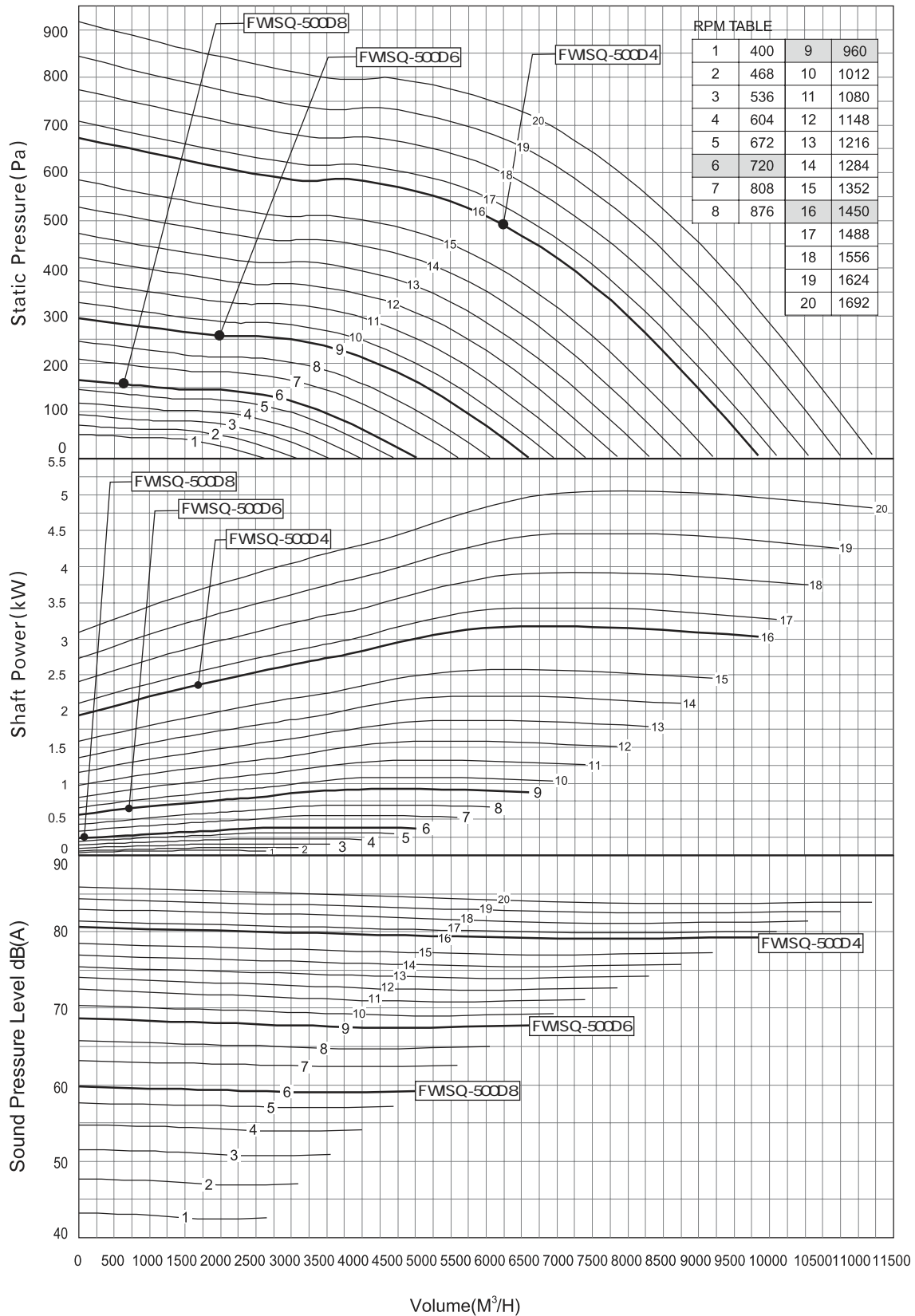


Performance certified is for installation type B - free inlet, duct outlet. Power rating (kW) includes transmission losses. Speed (RPM or RPS) shown is nominal. Performance is based on actual speed of test. Values shown are for inlet LwA sound power levels for Installation Type B: Free inlet, duct outlet. The sound power level ratings shown are in decibels, referred to as 10⁻¹² watts, calculated per AMCA International Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Ratings do not include the effects of duct end correction. dB(A) A-weighted sound pressure level is based on 11.5dB sound attenuation per octave band at 1.5m. Note that dB(A) levels are not licensed by AMCA International.



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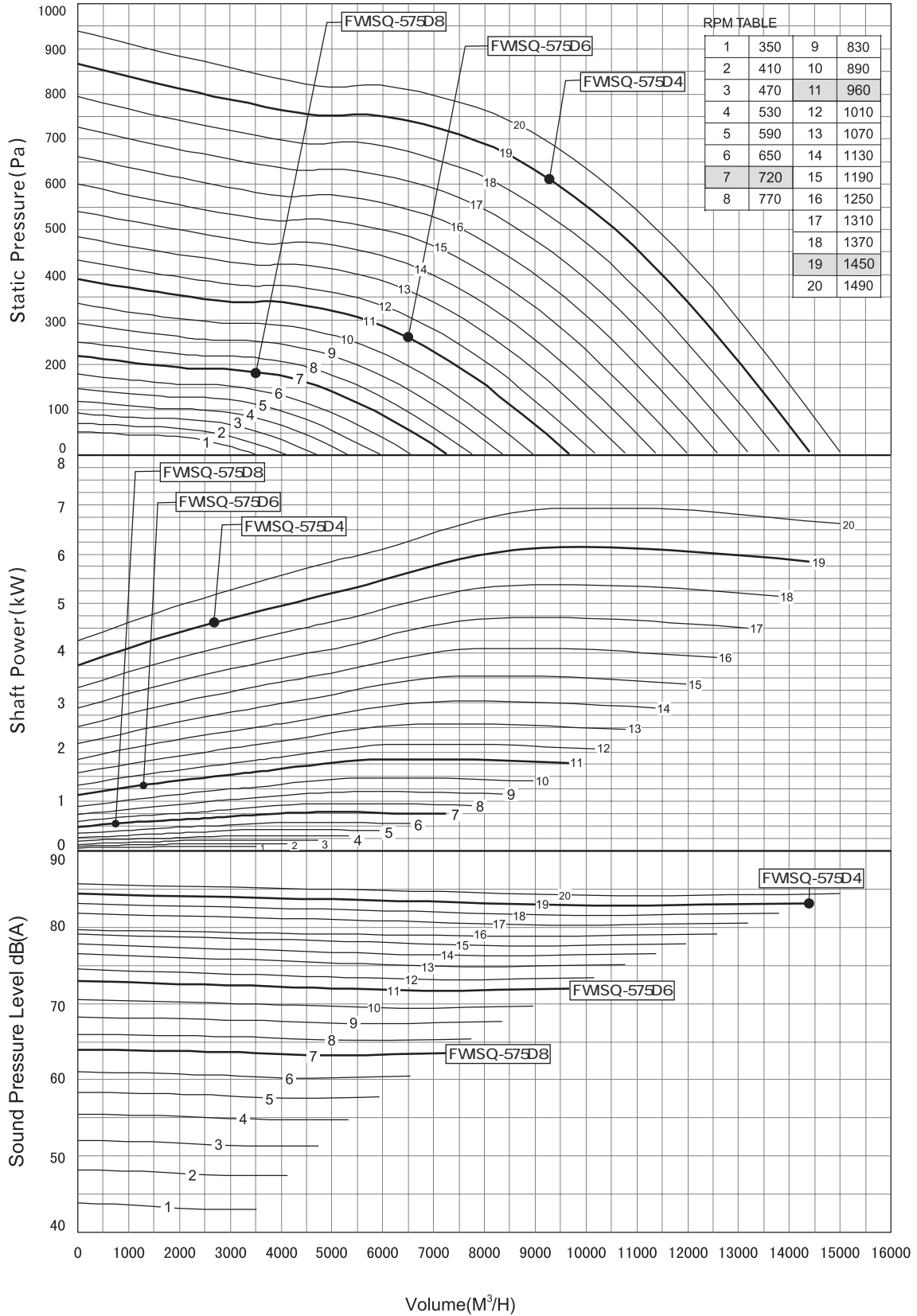
Model:FWISQ-500



Performance certified is for installation type B - free inlet, duct outlet. Power rating (kW) includes transmission losses. Speed (RPM or RPS) shown is nominal. Performance is based on actual speed of test. Values shown are for inlet LwA sound power levels for Installation Type B: Free inlet, duct outlet. The sound power level ratings shown are in decibels, referred to as 10⁻¹² watts, calculated per AMCA International Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Ratings do not include the effects of duct end correction. dB(A) A-weighted sound pressure level is based on 11.5dB sound attenuation per octave band at 1.5m. Note that dB(A) levels are not licensed by AMCA International.

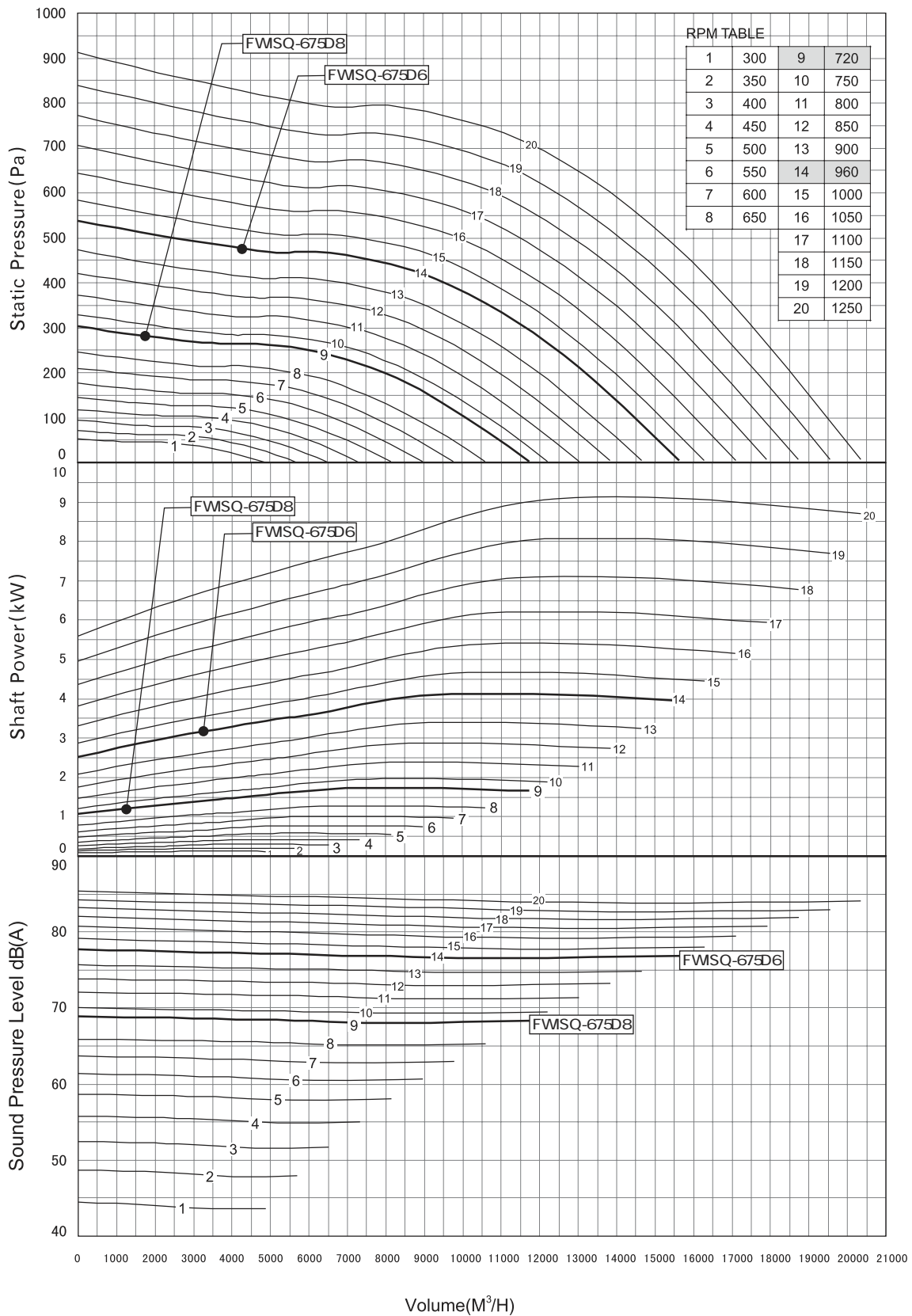


Model: FWISQ-575



Performance certified is for installation type B - free inlet, duct outlet. Power rating (kW) includes transmission losses. Speed (RPM or RPS) shown is nominal. Performance is based on actual speed of test. Values shown are for inlet Lw/A sound power levels for Installation Type B: Free inlet, duct outlet. The sound power level ratings shown are in decibels, referred to as 10⁻¹² watts, calculated per AMCA International Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Ratings do not include the effects of duct end correction. dB(A) A-weighted sound pressure level is based on 11.5dB sound attenuation per octave band at 1.5m. Note that dB(A) levels are not licensed by AMCA International.

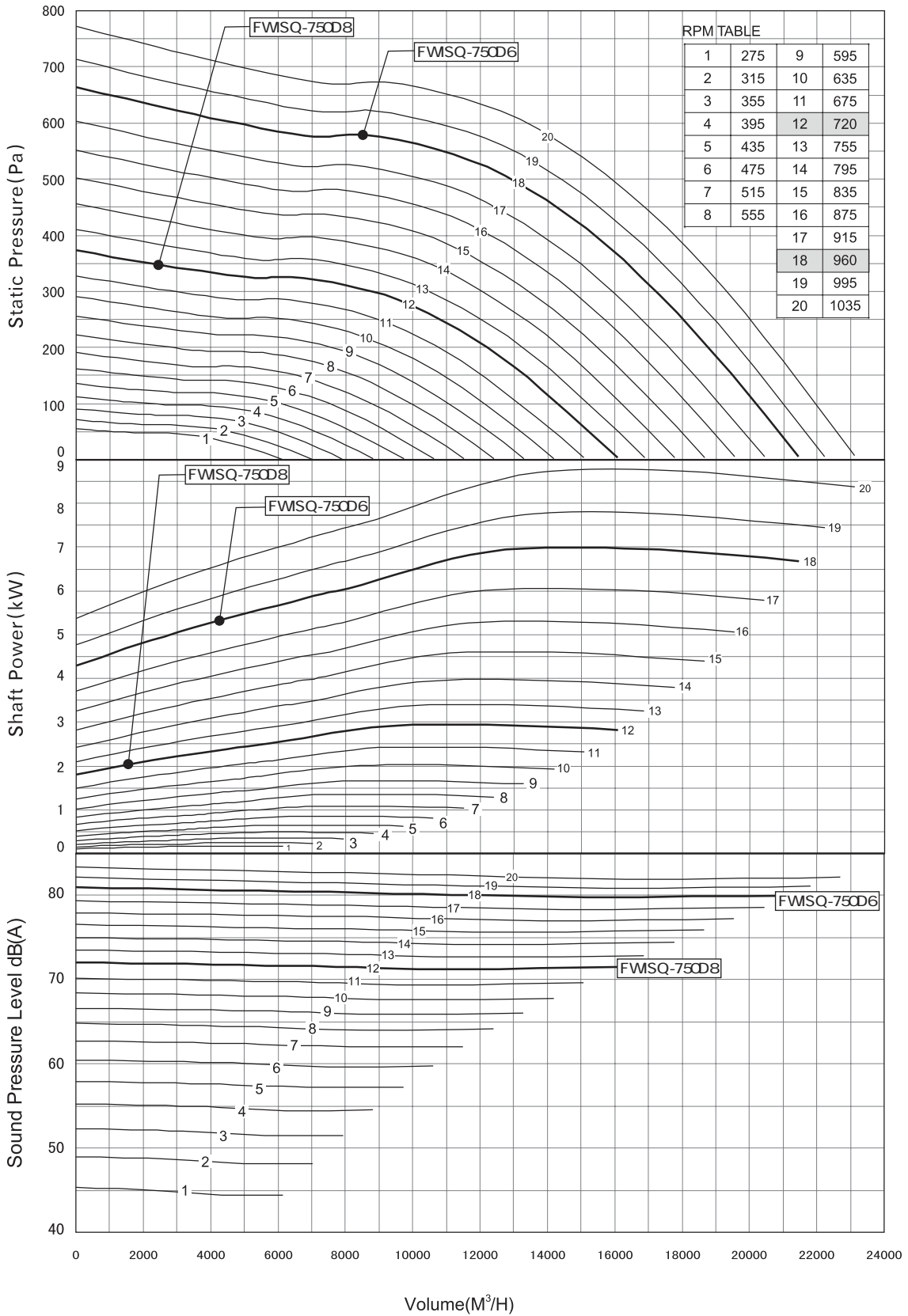
Model: FWISQ-675



Performance certified is for installation type B - free inlet, duct outlet. Power rating (kW) includes transmission losses. Speed (RPM or RPS) shown is nominal. Performance is based on actual speed of test. Values shown are for inlet Lw/A sound power levels for Installation Type B: Free inlet, duct outlet. The sound power level ratings shown are in decibels, referred to as 10⁻¹² watts, calculated per AMCA International Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Ratings do not include the effects of duct end correction. dB(A) A-weighted sound pressure level is based on 11.5dB sound attenuation per octave band at 1.5m. Note that dB(A) levels are not licensed by AMCA International.

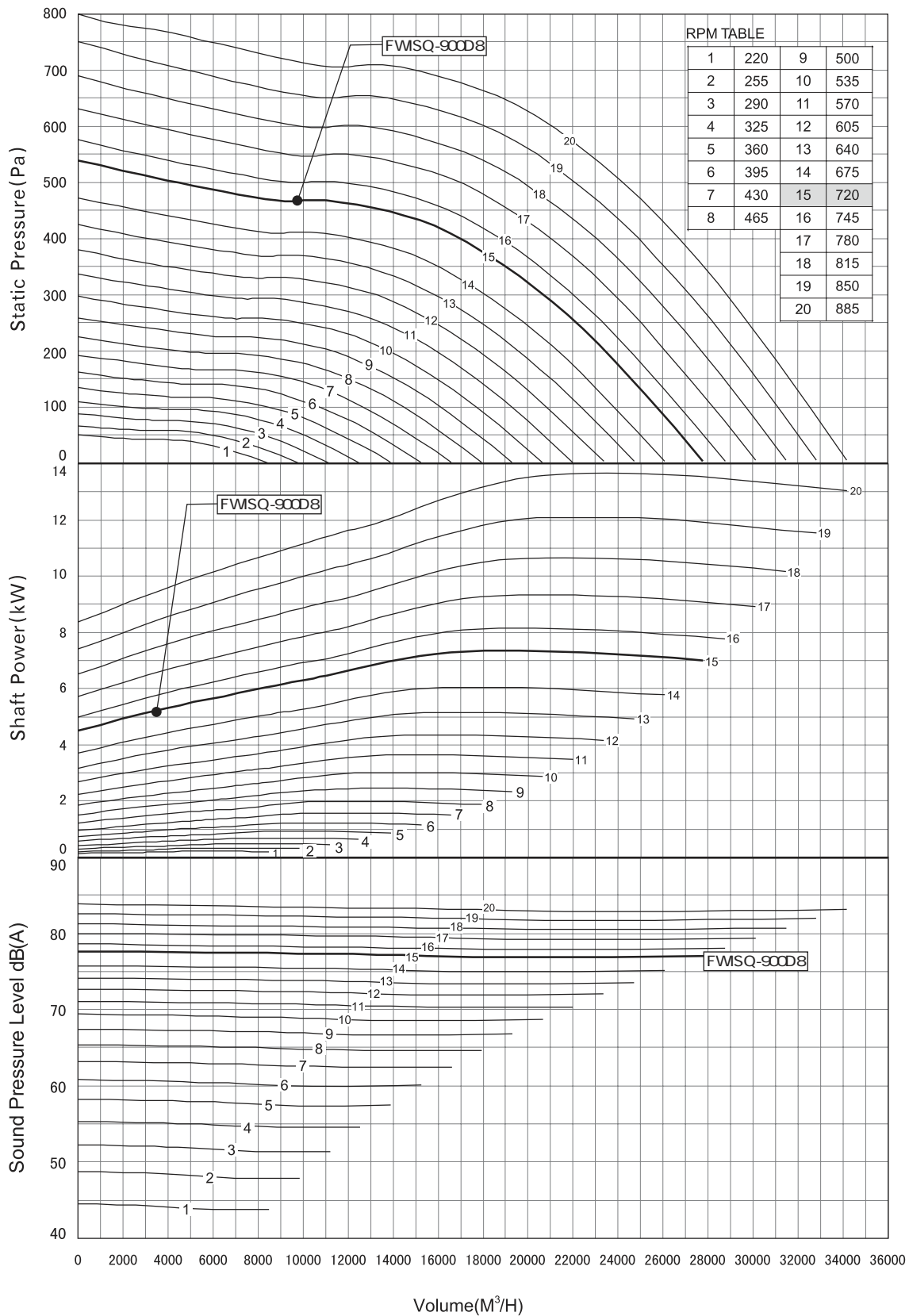


Model: FWISQ-750



Performance certified is for installation type B - free inlet, duct outlet. Power rating (kW) includes transmission losses. Speed (RPM or RPS) shown is nominal. Performance is based on actual speed of test. Values shown are for inlet LwA sound power levels for Installation Type B: Free inlet, duct outlet. The sound power level ratings shown are in decibels, referred to as 10⁻¹² watts, calculated per AMCA International Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Ratings do not include the effects of duct end correction. dB(A) A-weighted sound pressure level is based on 11.5dB sound attenuation per octave band at 1.5m. Note that dB(A) levels are not licensed by AMCA International.

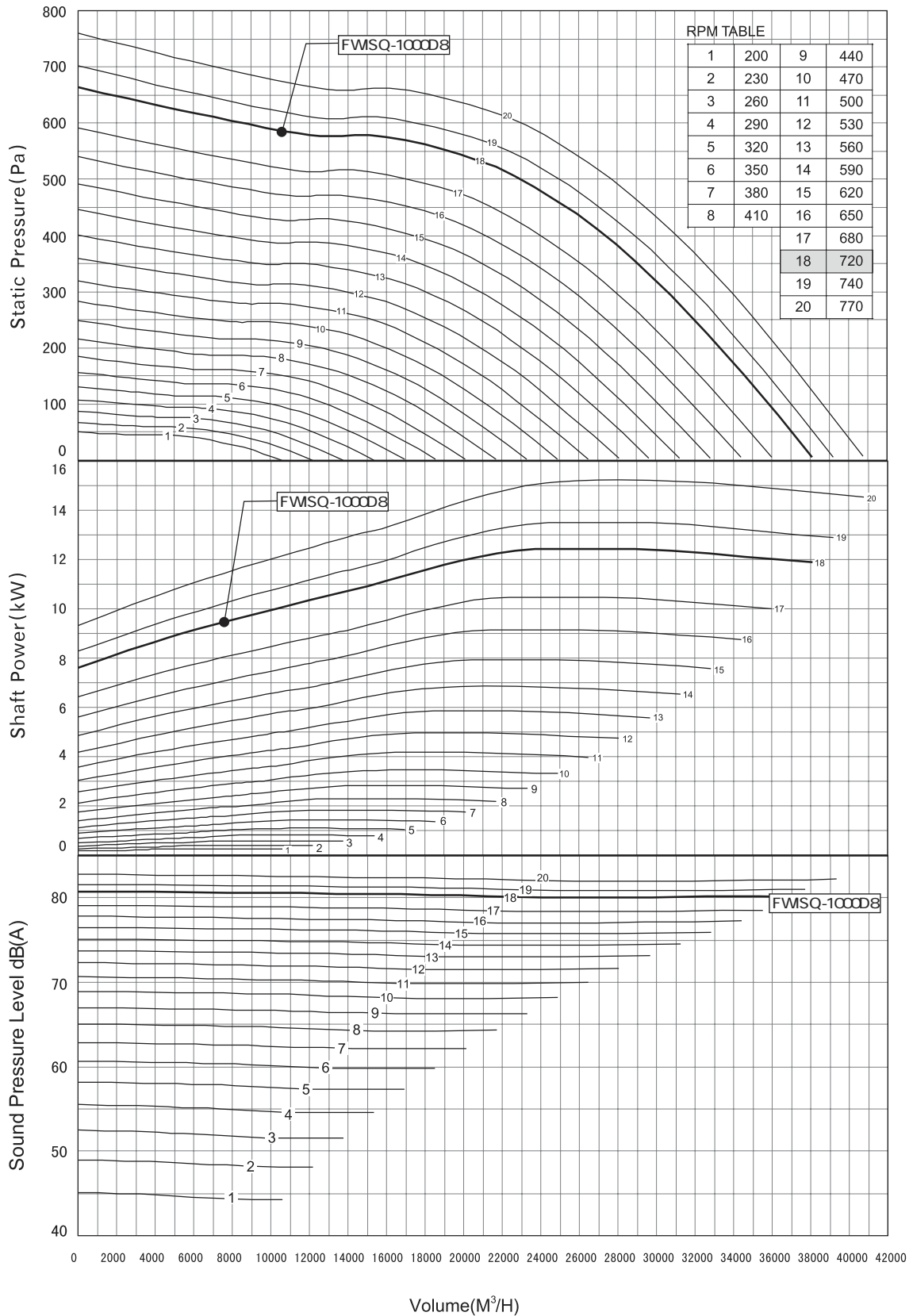
Model: FWISQ-900



Performance certified is for installation type B - free inlet, duct outlet. Power (kW) includes transmission losses. Speed (RPM or RPS) shown is nominal. Performance is based on actual speed of test. Values shown are for inlet LwA sound power levels for Installation Type B: Free inlet, duct outlet. The sound power level ratings shown are in decibels, referred to as 10^{-12} watts, calculated per AMCA International Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Ratings do not include the effects of duct end correction. dB(A) A-weighted sound pressure level is based on 11.5dB sound attenuation per octave band at 1.5m. Note that dB(A) levels are not licensed by AMCA International.



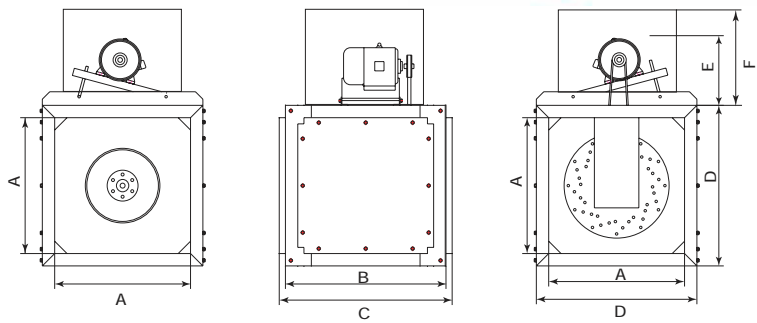
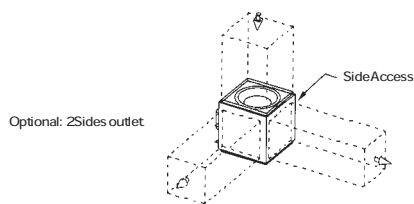
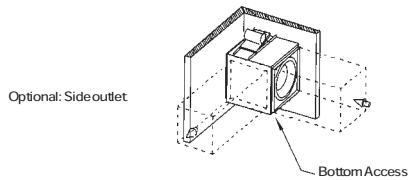
Model: FWISQ-1000



Performance certified is for installation type B - free inlet, duct outlet. Power rating (kW) includes transmission losses. Speed (RPM or RPS) shown is nominal. Performance is based on actual speed of test. Values shown are for inlet LwA sound power levels for Installation Type B: Free inlet, duct outlet. The sound power level ratings shown are in decibels, referred to as 10⁻¹² watts, calculated per AMCA International Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Ratings do not include the effects of duct end correction. dB(A) A-weighted sound pressure level is based on 11.5dB sound attenuation per octave band at 1.5m. Note that dB(A) levels are not licensed by AMCA International.

Unit size and installation

Installation sizing info and construction

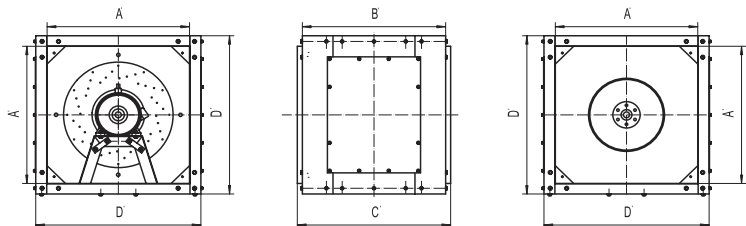


Unit: mm

FMSQ	A	B	C	D	E _{Max}	F _{Optional}	KG*
FMSQ-300	400	500	550	470	380	420	32
FMSQ-425	550	650	700	650	420	460	62
FMSQ-500	650	780	830	750	460	500	85
FMSQ-575	750	880	950	850	460	500	102
FMSQ-675	900	950	1020	1000	500	550	129
FMSQ-750	1000	980	1050	1100	500	550	143
FMSQ-900	1200	1030	1100	1300	550	600	199
FMSQ-1000	1350	1080	1050	1450	550	600	222

* The weight in the above table does not include motor weight

Power (kW)	Motor Weight (kg)			
	2P	4P	6P	8P
0.18	14	13.5	14	16
0.25	14.5	14	14.5	17
0.37	15	14.5	16	24
0.55	15.5	15	17	28
0.75	15	16	22	30
1.1	16	21	24	32
1.5	21	23	32	40
2.2	24	33	41	64
3	33	35	63	78
4	41	41	72	105
5.5	63	65	81	115
7.5	70	76	118	145
11	110	118	145	160
15	122	137	180	235
18.5	142	170	231	290



FMSQ-D	A'	B'	C'	D'	KG*	Unit: mm
FMSQ-300D	400	500	550	470	29	
FMSQ-425D	550	650	700	650	56	
FMSQ-500D	650	650	700	750	76	
FMSQ-575D	750	700	770	850	91	
FMSQ-675D	900	825	895	1000	107	
FMSQ-750D	1000	900	970	1100	125	
FMSQ-900D	1170	1020	1120	1270	179	
FMSQ-1000D	1300	1060	1160	1400	200	

* The weight in the above table does not include motor weight

How to mount the fan

The FMSQ is provided with four universal mounting feet, which can be mounted to the top of the fan to connect hanging vibration isolators through threaded rods. The feet can also be mounted on the bottom of the fan for floor-mounted vibration isolators. Meanwhile, the motor can be located on top, side or bottom.

The FMSQ is provided with universal mounting feet for installation in any horizontal or vertical position. These feet are shipped loose for field installation in the desired location.

Multi-discharge

The FMSQ configuration allows air to exit from any one side except the motor & motor opposite side of the unit at jobsite. Remove the side panel of the desired outlet direction, change it to flange, and seal the original flange, all the above can be easily finished by contractors at jobsite.



Product Specification

Section 1: Quality standards.

In-line centrifugal fans shall be tested and approved according to AMCA standard 210 & 300, each fan shall have AMCA Sound & Air Performance Seal.

Section 2: Fan Type

Fan shall be in-line centrifugal type, with aluminum backward inclined centrifugal wheel directly facing incoming air. The fan wheel Venturi shall have round curved section to smoothly transition the air to the wheel cone. The wheel shall be statically and dynamically balanced to Level G2.5 as per ISO Standard No. 1940.

Section 3: Fan Housing

Material: The fan housing shall be constructed of heavy gauge galvanized steel panel (Option: acid/alkali washed, phosphated and statically applied epoxy coated cold roll steel panel) with a rigid internal support structure. The thickness of the panel shall be strong to support the weight of the drive and motor. **Profile:** The profile of the housing shall be square basically, with rectangular sleeve flange to avoid round/square transducer duct. The housing shall have optional discharge direction. Large access door shall be equipped on both sides of the housing, which can be used to replace motor without removing ready made duct.

Section 4: Drive *[Apply to belt drive model only]*

Shaft: fan shaft shall be heat treated through soaking furnace to the hardness level of HB370 and the surface shall be hard film corrosion treated. The fan shaft shall be balanced together with the wheel. And the shaft design speed shall at least exceed 25% of the maximum fan operation speed.

Pulleys: fan pulleys shall be sized for a minimum of 150% of driven horsepower. Pulleys shall be of cast iron type, keyed and securely attached to the wheel and motor shafts. Motor pulleys shall be adjustable for final system balancing. Conical (QD) type bushings shall be equipped for easy removal of the pulleys.

Bearings: bearings shall be selected for a minimum (L-10) life in excess of 80,000 hours at maximum cataloged operating speed. Bearing type shall be permanently sealed, re-lubricable pillow block metal ball bearings.

Drive support: drive assemblies shall be supported by heavy gauge powder coated steel. The belt tension shall be adjusted through motor support plate, the design shall make sure the fan shaft and motor shaft is always parallel.

Section 5: Motor

Motor shall be carefully matched to the fan load, IP 54 and insulation class F. The motor bearings shall be re-lubricable ball type.

Section 6: Nameplate

Permanently fixed aluminum nameplate shall be fixed on fan body clearly display fan mark, product model and serial number. The serial number shall be a unique ID for each fan, so that the customer can use this number to find out the parts used to build this fan.

We Bring Air to Life

FläktWoods is a global leader in air management. We specialise in the design and manufacture of a wide range of air climate and air movement solutions. And our collective experience is unrivalled.

Our constant aim is to provide systems that precisely deliver required function and performance, as well as maximise energy efficiency.

Solutions for all your air climate and air movement needs

FläktWoods is providing solutions for ventilation and air climate for buildings as well as fan solutions for Industry and Infrastructure.

● Air Handling Units (AHUs)

Modular, compact and small AHU units. Designed to ensure optimisation of indoor air quality, operational performance and service life.

● Air Terminal Devices and Ducts

Supply and exhaust diffusers and valves for installation on walls, ceiling or floor are all included in our large range and fit all types of applications.

● Chilled Beams

Active induction beams for ventilation, cooling and heating, and passive convection beams for cooling. For suspended or flush-mounted ceiling installation – and multi-service configuration. With unique Comfort Control and Flow Pattern Control features.

● Residential ventilation

A complete range of products for residential ventilation. Consists of ventilation units, exhaust air fans and cooker hoods designed to optimise indoor comfort and save energy.

● Fans

Advanced axial, centrifugal and boxed fans for general and specialist applications. Comprehensive range including high temperature and ATEX compliant options. Engineered for energy efficiency and minimised life cycle cost.

● Chillers

Air-cooled and water-cooled chillers with cooling capacity up to 1800kW. Designed to minimise annual energy consumption in all types of buildings.

● Controls and drives

Variable speed drives and control systems, all tested to ensure total compatibility with our products. Specialist team can advise on energy saving and overall system integration.

Due to a policy of continuous development and improvement the right is reserved to supply products which may differ from those illustrated and described in this publication. Certified dimensions will be supplied on request on receipt of order.