Axial Flow Fans & Performance Data

ELTA

AXIAL FLOW FANS GENERAL INFORMATION

Introduction

This section of the catalogue details the performances of a wide range of axial flow fan types as follows:

Duct Mounted Axial Fans

- AP Series - direct driven
- APS Series - direct driven, smoke spill
- APB Series - belt-driven
- BFA Series - bifurcated, direct driven

Wall Mounted Fans

- SQ Series - square plate, direct driven

Axial Roof Units

- RDE/RDLE Series - downflow cowl, exhaust
- RDS Series - downflow cowl, supply
- RVE/RVLE Series - vertical discharge
- RSS/RSSL Series - vertical discharge, smoke spill
- HC Series - high capacity, vertical discharge
- SS Series - smoke spill

The above fans range in diameter from 315mm to 2000mm.

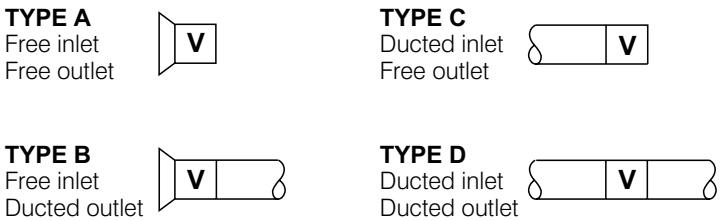
The curves shown on pages 11 to 23 show a range of performances for the AP series of direct-driven axial flow fans in Type D Installation (see below). The other fan types listed above incorporate casings or housings that impact on their performance result. The Intelligent Ventilation Product Selection Program will produce performance curves for these other fan types that have automatically taken these losses into account.

Test Standards

The International Standards Organisation (ISO) achieved a standardised fan test code with the publication of ISO5801:1997. This Standard replaces BS848:Part 1, 1980 upon which it was based.

Fan performances for the Elta 1000 Series diameter have been aerodynamically tested to BS848:Part 1, 1980 and the Elta 1400 and 2000 Series to ISO5801:1997. All three series have been tested to BS848:Part 2, 1985 for sound performance.

The main difference between the above Standards and those they replaced, is the installation Types A, B, C and D such that, if a fan unit is designed for use in any one of these arrangements, the variation in performance should be established and shown.



Both BS848:Part 1, 1980 and ISO5801:1997 reflect the latest understanding of measuring techniques and accuracy in fan performance testing.

If the same fans were tested to pre-1980 airflow and noise Standards and then to the latest Standards, different performances would be obtained. The results from the later Standards give differences of as much as:

- -5% in volume
- -10% in pressure
- -5% in efficiency
- +2 to 6dB in noise

These differences should be borne in mind when making comparisons of fans tested to the different Standards, as they are the result of the test method and not the product.

AXIAL FLOW FANS GENERAL INFORMATION

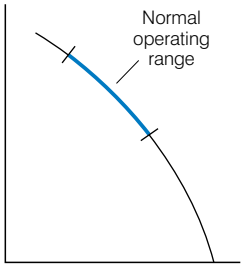
Performance Variations

The achieved fan performances can differ from the test performances shown on the subsequent pages due to two main effects:

a) The encroachment of irregular or abrupt changes within the system close to the fan. If good design practice is followed, then the fan will receive nearly uniform air into its inlet, and discharge its airflow in an almost ideal pattern. If this is achieved the fan will perform to its expected level.

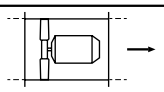
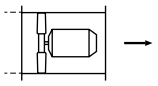
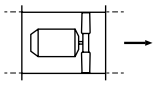
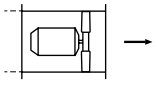
   Reference to the "Do's and Don'ts" tips will assist in avoiding pitfalls. The advice in "Do's and Don'ts" applies to the application of all fans, not just axial flow fans.

b) Changes to the internal elements of the fan: e.g. large junction boxes on motors, belt drive stacks or excessive blade tip clearances.



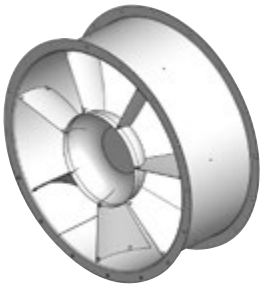
Forms Of Running

The main series of tests were conducted on Form B units and comparative tests were carried out on Form A units. Resultant performance differences occur mainly on the outlet side of the fan, as correct practice should result in the presence of a duct or inlet cone on the fan inlet.

Form	Airflow direction	Installation Type (see previous page)	Airflow variation	Sound variation
B		D	As shown on performance curves	As shown on data sheets
B		A, B & C	As shown on selection program	As shown on data sheets
A		A, B & C	As shown on selection program	+2 to 3 dB
A		D	$q_v \times 1.02$ $P_sF \times 1.04$ } as compared to type 'D' performance	+2 to 3 dB

Down-Stream Gudie Vanes

A normal axial flow fan, whilst being very economical and compact, imparts motion to the air in an axial and rotational direction. The rotating component is usually called 'swirl'. The swirl component eventually dissipates, but by using Down Stream Guide Vanes (DSGV) it can be converted to more useful static pressure. Static pressure increases of 10%-25% can be achieved with DSGVs, thus giving an increase in efficiency. As the work is done after the air leaves the fan, DSGVs do not require any additional fan power. They are most effective at pitch angles over 20° and produce small increase in sound levels of 1-2dB.



AXIAL FLOW FANS GENERAL INFORMATION

Multi-Stage Axial Flow Fans

Multi-stage axial fans with contra-rotating impellers can be supplied up to 2000mm diameter.

A two-stage assembly develops approximately 2.4 times the pressure developed by a single-stage fan and increases the overall sound level by 8 to 10 dB.

To select a contra-rotating axial fan from the curves in this catalogue, divide the specified static pressure by 2.4 and then select as though it were a single-stage unit. The kW derived is for one stage only and the noise level will be 8 to 10 dB higher than the single-stage fan.

NOTE: Reference should be made to Elta for complete selections of these fan arrangements. Alternatively selections can be made using the Intelligent Ventilation Product Selection Program.

Elta Impeller Range

The Elta impeller ranges included in this catalogue have harnessed the latest technology in axial impeller design, resulting in enhanced pressure development, energy efficiency and reduced noise levels.

There are three main ranges: -

Elta 1000: 315 to 1000mm diameter using 150 or 250mm diameter hubs.
Elta 1400: 800 to 1400mm diameter using 255 or 350mm diameter hubs.
Elta 2000: 1250 to 2000mm diameter using 400 or 550mm diameter hubs.

For performances beyond those detailed in this catalogue, and for applications such as mine and tunnel ventilation, please refer to our sales engineers for information.

Impeller Specifications

Blades

The blades have been designed for optimal performance, for both aerodynamic needs as well as noise characteristics. They are available in a range of materials as shown below:

Range of diameters	No of blades	Hub Dia mm	Materials
315 to 900	5 or 10	150	GRP, Nylon, Alum. or Anti-static GRP
560 to 1000	7 or 14	250	GRP, Nylon, Alum. or Anti-static GRP
800 to 1250	3 or 6	255	GRP, Alum. or Anti-static GRP
800 to 1400	3, 6, 9 or 12	350	GRP, Alum. or Anti-static GRP
1000 to 1800	3, 6 or 9	400	GRP or Aluminium
1250 to 2000	3, 6, 9 or 12	550	GRP or Aluminium

Impeller Ranges

The stress limits of the blades vary from one material to another and simplified criteria are incorporated on the curves. However, if selecting fans using the Intelligent Ventilation Product Selection Program, you may find solutions where higher pitch angles are chosen; these selections are quite acceptable.

It should be noted that, as we are constantly reviewing the materials we use, these limits may be extended.

Hubs

All hubs use Elta TECH-LOCK® taper bushes as standard. The bush ensures ease of fitting and removal of the impeller from the motor shaft should adjustment of the pitch angle, cleaning or repair of the impeller prove necessary.

Fixings

All impellers are assembled using high-tensile, zinc-plated set screws and self-locking nuts.

Handing

Right and left-hand blades are available enabling the selection of contra-rotating or multi-stage axial flow fans up to 2000mm diameter. If contra-rotating fans of a larger diameter are required please refer to our sales department.

AXIAL FLOW FANS GENERAL INFORMATION

Standard Material

GRP blades will be supplied for normal clean ventilation applications as standard except where otherwise specified, or where local regulations prohibit their use.

Balance

The balance of all impellers is carefully checked before leaving our facilities to ensure vibration-free running.

Fully-adjustable Blades

All impeller pitch-angles are fully adjustable. For the Elta Range, up to size 1400, the required blade angles are set on jigs but sizes up to 1000 may also be set utilising the graduated scale at the root of each blade. For the Elta 2000 Range, pitch angle setting is by protractor.

Operating Speeds & Temperatures

Impellers installed for O.E.M. applications are submitted to the vibration, cyclic torques and temperature cycles that prevail within the item of equipment. It can therefore be misleading to state maximum conditions unless the full operating environment is known, as all the above points can be inter-related.

The table below should be used as a guide only. For accurate figures use the Elta Product Selection Program.

Blade Material	Temperature Range	Limiting Tip Speed**
Elta 1000 Impeller*		
Aluminium	-40°C to +200°C	115m/s
GRP	-40°C to +70°C	95m/s
Nylon	-40°C to +100°C	115m/s
Anti-static GRP	-40°C to +70°C	95m/s
Elta 1400 & 2000 Impellers#		
Aluminium	-40°C to +200°C	105m/s
GRP	-40°C to +70°C	95m/s
Anti-static GRP***	-40°C to +70°C	95m/s

* Up to 1000mm diameter ** Applicable to 20°C *** 1400 Series only
\# 1400 Series = 800mm to 1400mm; 2000 Series = 1250mm to 2000mm

Reversal Of Airflow

Airflow direction can be reversed on fans fitted with three-phase motors by simply reversing the direction of rotation.

The impact on performance in reverse rotation approximates to:

Airflow reduction	-30%
Pressure reduction	-55%
Power reduction	-25%

Truly Reversible

Equal volume flow in both directions can be achieved by blade reversal procedures carried out when the impeller is being assembled.

The impact on performance when compared to standard performance approximates to:

Airflow reduction	-15%
Pressure reduction	-25%
Power reduction	-20%

AXIAL FLOW FANS GENERAL INFORMATION

Construction

All axial fan casings are rolled and flanged from either pre-galvanised sheet or heavy-gauge mild steel that is hot-dip galvanised after manufacture. All hot-dip galvanising of axial flow fan products is to AS/NZS4792:2006 and is the standard finish on the fans larger than 800mm diameter and their accessories. The standard casings enclose the impeller and motor completely. Weatherproof external terminal boxes are standard.

The motor is wired into the external terminal box through flexible terminal weatherproof conduit and a separate earthing screw is provided.

An inspection hatch is standard on fans 1000mm diameter and over, a 50mm sight hole is fitted on smaller fans. An inspection hatch is available on the smaller fans.

Flameproof or increased-safety motors are wired to the outside of the case and left with a generous length of lead. This is so the client can connect to their own terminal box in accordance with the requirements for the particular hazardous zone.

Axial Flow Fan Range

Duct Mounted

Direct-drive - AP Series (315 to 2000 mm diameter)

The entire range can be provided in a wide choice of speeds to meet an extensive number of performances and applications. If a speed or duty you require is not shown please contact our sales engineers for assistance. In general, all flameproof or special application motors can be fitted if required.

Direct-drive - APV Series (315 to 2000 mm diameter)

The full range of sizes and speeds can be supplied as direct-drive APV units for applications where the fan must be installed vertically. The casing is designed with integral outriggers to facilitate vertical mounting.

Direct-drive - APS Series (315 to 2000 mm diameter)

For smoke spill applications Elta can supply fans up to 2000mm diameter fully tested to meet the Australian Standards AS/NZS1668.1:1998 and AS4429:1999. See page C-8 for more information.

Belt-drive - APB Series (315 to 2000 mm diameter)

The full range of sizes and speeds can be supplied as belt-driven APB units for applications where the motor must be out of the air stream.

When selecting these fans allowance for the additional pressure loss caused by the drive arrangement must be taken into account as follows:

- Open belts: no extra pressure loss
- Sealed belt guard: add 5% to the design pressure.

Bifurcated - BFA Series (400 to 1250 mm diameter)

This range is available in a wide choice of speeds. Bifurcated axial flow BFA fans are designed for handling toxic, noxious, abrasive and hot gases. They can be used as an alternative to the APB belt-driven range.

The maximum air temperature the standard bifurcated fan can handle continuously, and without special treatment to the impeller and motor, is 100°C for an aluminium impeller, or 70°C for GRP.

Bifurcated fans can be built to accommodate temperatures of up to 200°C continuous for sizes up to 1250mm and 250°C for sizes up to 630mm.

For this type of application it is essential the fan be mounted in normal ambient conditions, that the central motor tunnel is aligned vertically and that the motor has Class H insulation and equivalent lubrication of the bearings.

Refer to Elta if the fans are to handle higher temperatures or the motor tunnel is not vertical.

AXIAL FLOW FANS GENERAL INFORMATION

When selecting these fans the following allowances must be made to the duty to compensate for the central shroud:

Sizes 400 to 560 - 1.0 × p_dF
Sizes 630 to 1250 - 0.7 × p_dF

Wall Mounted

Square Plate - SQ Series (315 to 1250 mm diameter)

This range is available in a wide choice of speeds. All square-plate fans, irrespective of airflow direction, incorporate a bell-mouth entry; the direction of airflow must be nominated at the time of order.

Generally all flameproof or increased safety motors can be fitted if required. When selecting these fans installations Type A must be used.

The square plates are of heavy-gauge steel and are hot dip galvanised after manufacture.

Roof Mounted

Alpha & Beta Industrial - RDLE, RVLE & RSSL (500 to 1000mm diameter)

This series of axial roof mounted fans is available in both vertical and downflow configurations. The range can be supplied in a number of speeds and includes a vertical exhaust smoke-spill model (RSSL). Cowls on the downflow units are made from plastic and the vertical discharge windbands are made from galvanised steel.
All models incorporate a pressed galvanised steel base.

New Generation Series - RDE, RDS, RVE & RSS (315 to 1250mm diameter)

These are available in both vertical and downflow configurations and can be supplied in a wide range of speeds. The range includes a downflow supply air model (RDS) and a vertical exhaust smoke-spill model (RSS). The hot dip galvanised heavy-gauge steel base incorporates a bell-mouth entry to optimise the airflow. Downflow cowls are generally plastic and vertical discharge windbands are galvanised steel.

High Capacity and Smoke-Spill Series - HC & SS (500 to 1800mm diameter)

The HC series is for vertical discharge applications only. They have a hot dip galvanised steel construction and can be supplied in a wide range of speeds.
The SS Series is specifically designed for smoke-spill applications.

In general all flameproof and special application motors can be fitted to the axial roof units listed above if required.

See “Smoke-Spill Applications” for more comprehensive information on smoke-spill Standards and the range available.

Use the Intelligent Ventilation Product Selection Program when making accurate selections of any fans listed above.

AXIAL FLOW FANS GENERAL INFORMATION

Smoke-Spill Applications

Smoke-spill fans have to be tested to Standard AS4429:1999 and EN12101-3:2015 to conform with the requirements of AS/NZS1668.1:1998. To meet the Standards Elta conducted an extensive series of tests covering both airflow and temperature. The airflow tests for sizes 315mm to 1000mm diameter conformed to BS848:Part 1, 1980 and to ISO5801 for sizes 1.0m to 2.0m. The temperature tests were conducted in accordance with AS4429:1999, although the 300°C tests were extended from 0.5 hours to 2 hours to ensure we met the needs of some specifications.

The outcome of the series of tests is that we can supply fans ranging in diameter from 315mm to 2000mm at speeds as high as 2 pole depending on size and, for both 50 and 60Hz supply that fully comply with the Standards in all respects**.**

- 200ºC for two hours
- 200ºC for four hours
- 250ºC for four hours
- 280ºC for 0.5 hours
- 300ºC for 0.5 hours
- 300ºC for two hours

The following conditions can be met:

Discharge Damper Fail-open Latching

An additional requirement of the Standards relates to the function of the discharge dampers in unsprinklered buildings. Elta has met the requirements with two designs, the first being a manual release type requiring manual closing after the fan has been run. These may be used for dedicated smoke spill fans. The second design, an electro-mechanical arrangement, permits the shutters to close automatically after the fan stops. These are recommended for use on dual-purpose ventilation/smoke-spill fans. Elta has provisional patents for both designs.

For advice on Smoke-Spill wiring requirements, refer to the above Standard.

Contact our Sales Engineers for additional information.

Computer Selection

The Elta Product Selection Program encompasses the following features:

- a fan selection program
- an attenuator selection program
- an acoustic analysis system
- a project schedule builder
- enables drawings to be downloaded through dwg/dxf files and
- enables revit models to be downloaded
- easily updated with the latest data from our website.

To obtain a copy of our CD contact one of our Sales Offices.

AXIAL FLOW FANS GENERAL INFORMATION

Introduction To Performance Data Graphs

The Elta Impeller data shown on pages 11 to 23 in this edition of the catalogue has been condensed to ensure it remains accurate and current. The graphs show the AP series of direct-drive axial flow fans in two impeller configurations for any one fan size/speed combination. These graphs include the impeller capable of developing the highest static pressure and an impeller with fewer blades that develops less pressure. The second configuration would generally be a cheaper, quieter and, possibly, a more efficient selection.

The performance curves in this section show the free-field sound pressure levels under spherical radiation conditions in dB(A), 3 metres away, on the outlet side of the fan.

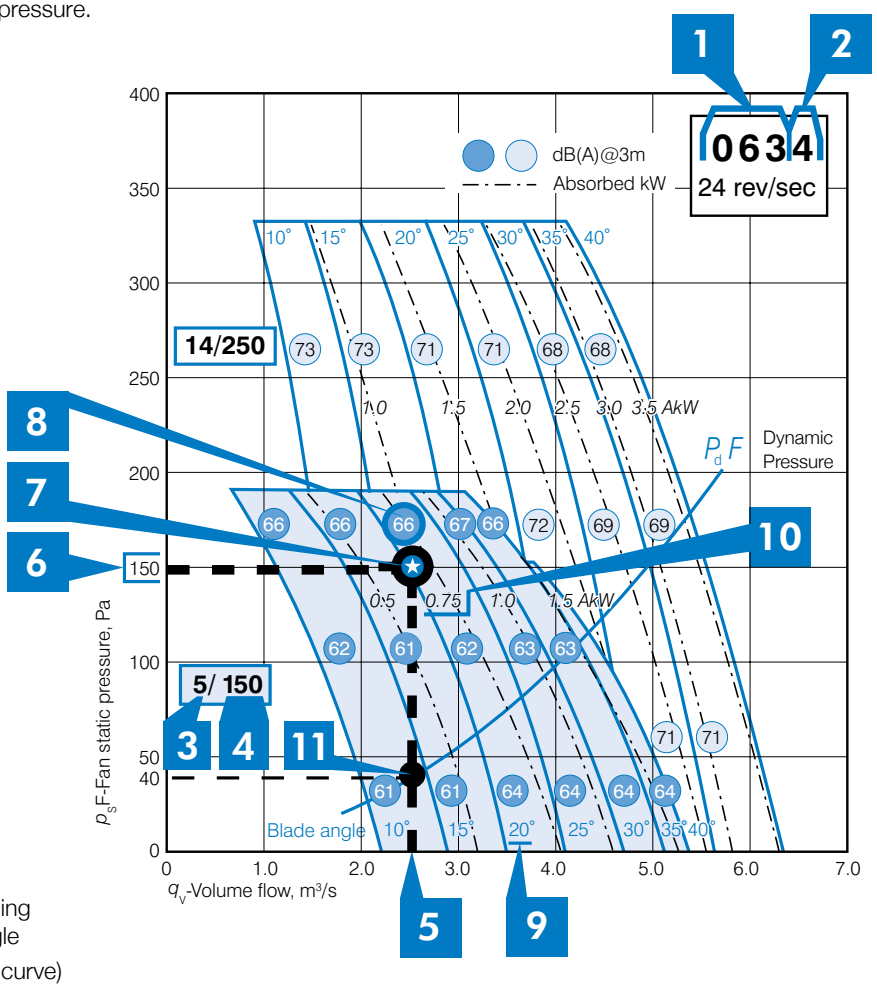
Selecting from these graphs provides a guide only, albeit an accurate one, to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The final selection for any particular fan is best achieved by contacting the nearest Elta sales office, or by using the Intelligent Ventilation product Selection Program. The Program will show other possible impeller combinations between the two illustrated in this catalogue, and will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

To ensure the information we provide our customers on the Elta Impeller range is up to date and reflects new product developments and improvements, performance data is constantly being updated. This updated information is included on the Intelligent Ventilation Product Selection Program and Elta website, the data contained in this catalogue is correct at the time of print.

AXIAL FLOW FANS PERFORMANCE DATA

How The Performance Curves Work

The example shown here is for a 630mm axial flow fan (AP Series) running at 24 rev/sec in Type D installation (fully ducted). It illustrates a duty of 2.5 m³/s at 150Pa static pressure.



1 **Diameter of fan:** 63cm (630mm)

2 **Fan speed:** 4 poles (24 rev/sec)

3 **Number of blades:** 5

4 **Hub diameter:** 150mm

5 **Air volume flow:** 2.5m³/s

6 **Static pressure:** 150 Pa
No correction is required as the curve is plotted for Type D installation.

7 **Duty point:** ✪
The point where the air volume flow line intersects with the static pressure line.

8 **Estimated sound:** 66dB(A)
Estimated sound is the value (in the circle) which is the closest to the duty point.

9 **Blade angle setting:** 20°
The blade angle is determined by interpolating a curve between the two defined blade angle curves either side of duty point. (Solid blue curve)

10 **Fan impeller absorbed power:** P_R = 0.65kW.
The fan impeller power is determined by interpolating a curve between the two defined AkW curves either side of the duty point (broken black curve).

11 **Dynamic pressure:** 39Pa
Dynamic pressure is the Y-axis value where the dynamic pressure curve intersects the vertical line between airflow and duty point.

The Fan Total efficiency can be calculated by using the formula: $\frac{q_v \times p_tF}{10P_R} = \frac{2.5 \times (150+39)}{10 \times 0.65} = 73\%$

where:

q_v = volume flow, m³/s

p_tF = fan total pressure, Pa

= $p_sF + p_dF$

P_R = fan impeller power, kW

AXIAL FLOW FANS PERFORMANCE DATA

Based On The Axial Flow Fan Selected On Previous Page, The Following Steps Will Determine Its Motor Size, Casing Length & How To Order

How To Select The Correct Motor Size

1. Refer to the "Reference Information" document for full motor details.
2. Select fan speed column (24 rev/sec) based on fan selected.
3. Go down column until motor power (kW) is greater than fan impeller absorbed power (0.65 kW).
4. Motor performance data is shown in the same row.
5. The motor frame size in this case will be $D80_B$.

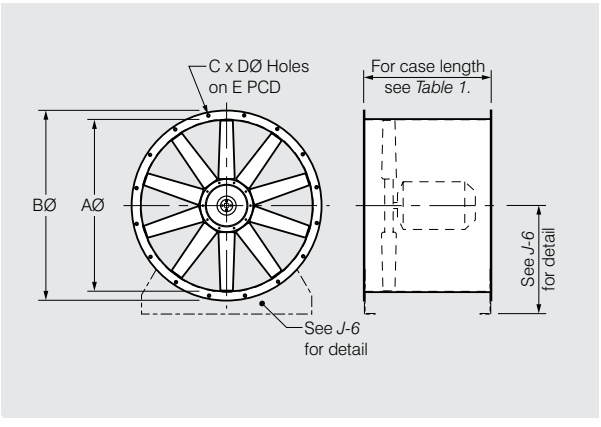
Motor Frame	Motor Shaft Dia.	App. wt. kg**	2 Pole* 48 rev/sec kW#	FLA	LRC	Eff%†	4 Pole* 24 rev/sec kW#	FLA	LRC	Eff%†	6 Pole* 16 rev/sec kW#	FLA	LRC	Eff%†	8 Pole* 12 rev/sec kW#	FLA	LRC	Eff%†
$D71_B$	14	11	0.37	0.9	6.1	67.7	0.37	1.0	4.1	69.3	-	-	-	-	-	-	-	-
D71	14	16	0.55	1.3	6.1	76.0	-	-	-	-	-	-	-	-	-	-	-	-
$D80_A$	19	18	0.75	1.5	7.0	83.4	0.55	1.4	4.8	72.8	0.37	1.1	2.8	66.5	-	-	-	-
$D80_B$	19	22	1.1	2.2	7.3	84.4	0.75	1.9	7.5	82.2	0.55	1.7	3.1	68.2	-	-	-	-

(1) (2) (3) (4) (5)

How To Determine The Fan Casing Length

1. Refer to table 1 on page 25 for full case dimension details.
2. Find fan type/model column (AP/APS).
3. Find motor frame size as selected in table above.
4. Casing length is determined where the fan type/model column intersects the motor frame size row.

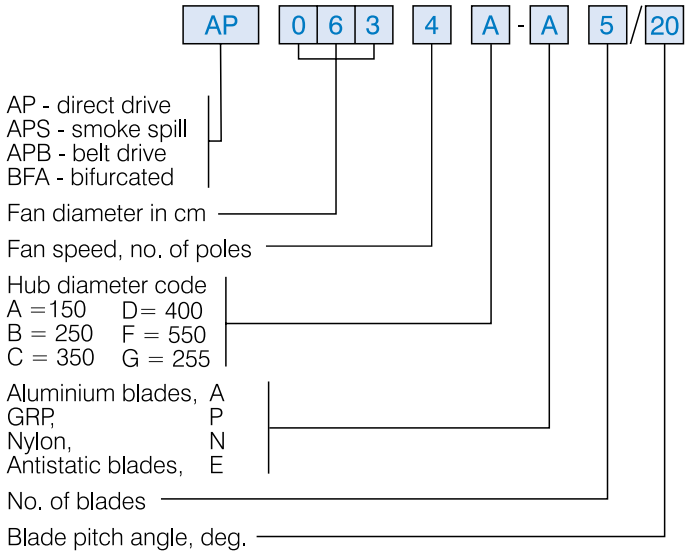
(1)



Motor frame size (2)	Casing length,mm AP/APS	APV	APB
D71	300	400	400
D80 (3)	400 (4)	400	400

How To Order

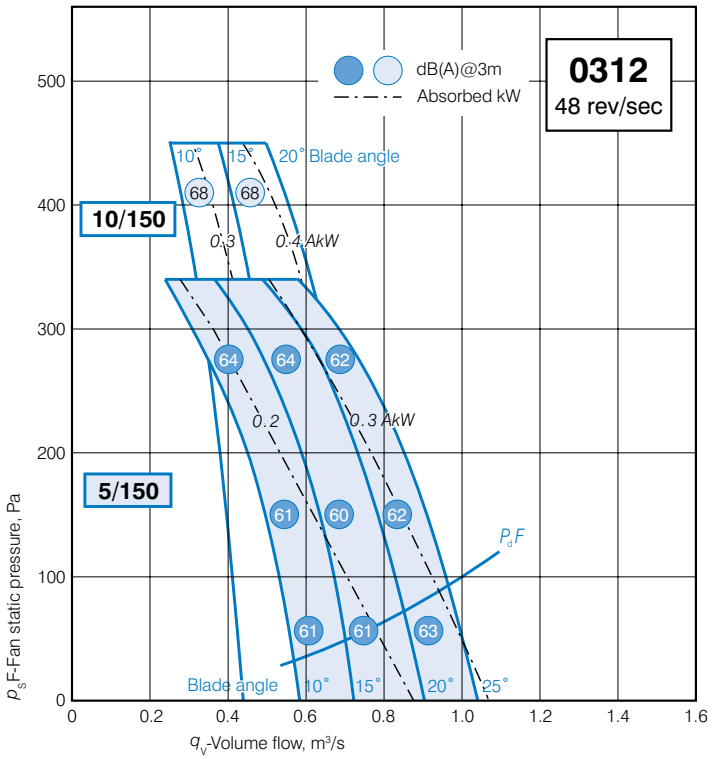
Based on the details determined on these two pages the axial flow fan can be ordered using the how to order chart below. In this case the product code will be **AP0634AA5/20**

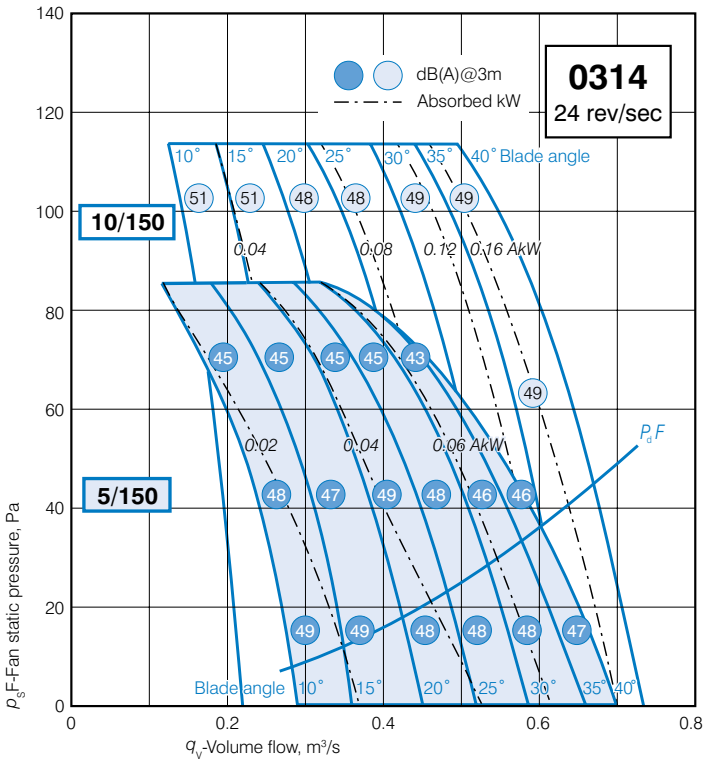


AXIAL FLOW FANS PERFORMANCE DATA

Size 315

V
BS848:Part 1, 1980
Part 2 1985
Type D Installation



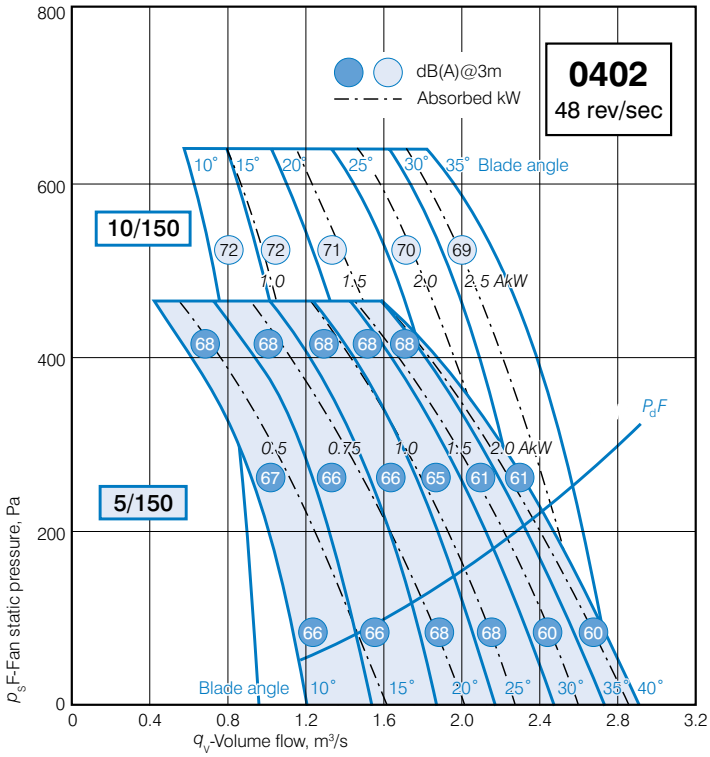


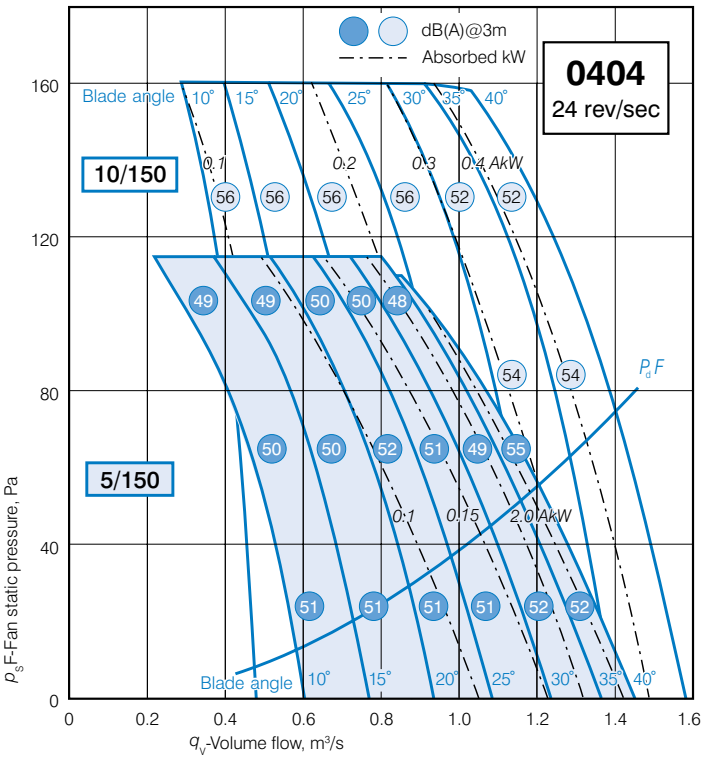
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

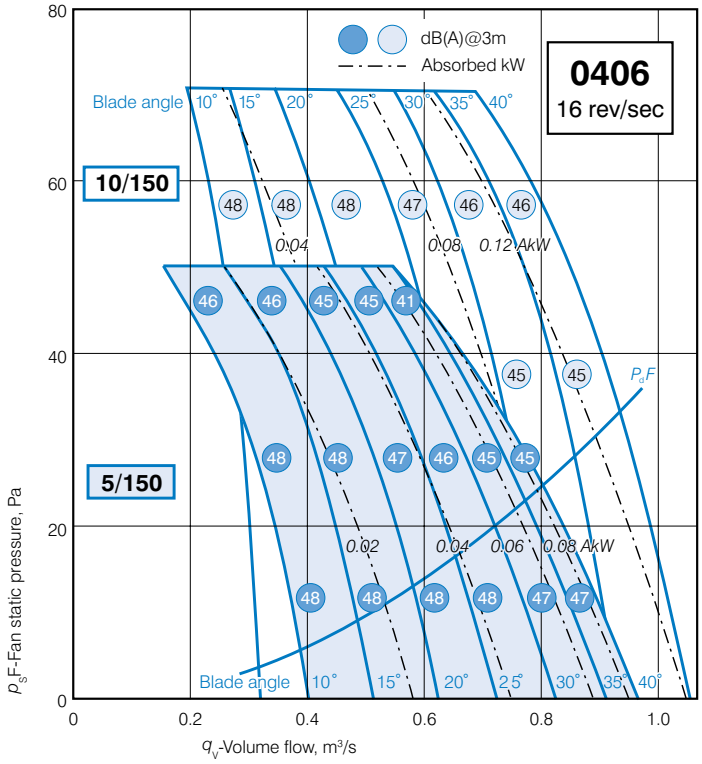
AXIAL FLOW FANS PERFORMANCE DATA

V
BS848:Part 1, 1980
Part 2 1985
Type D Installation

Size 400







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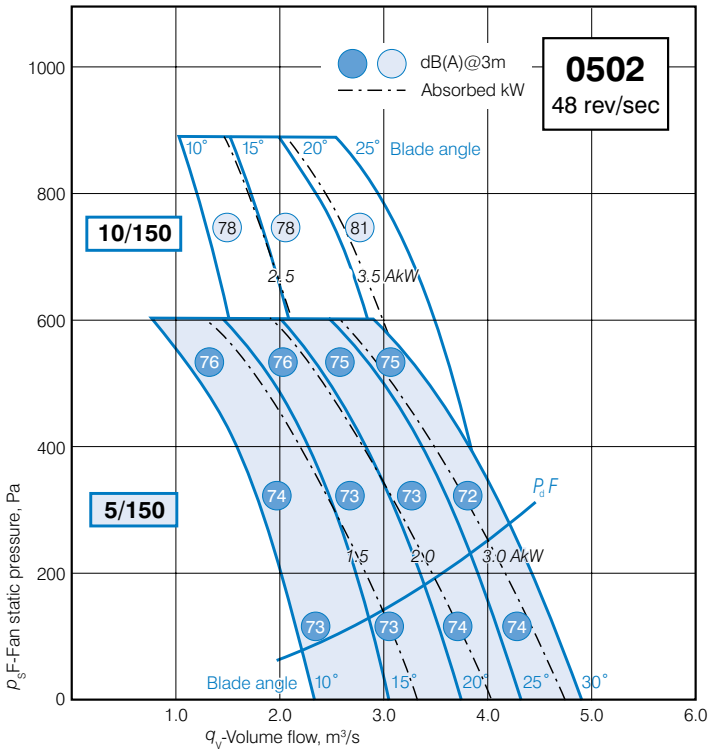
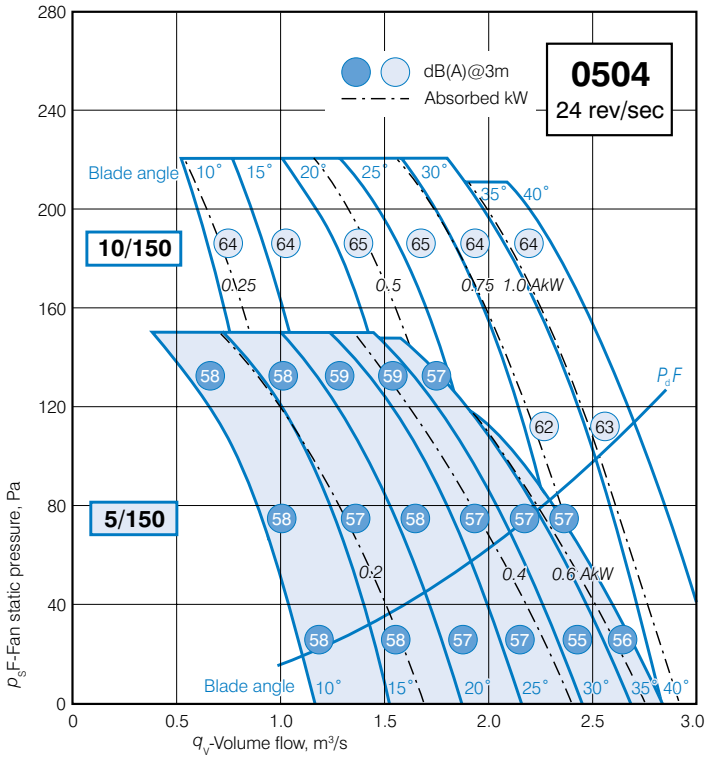
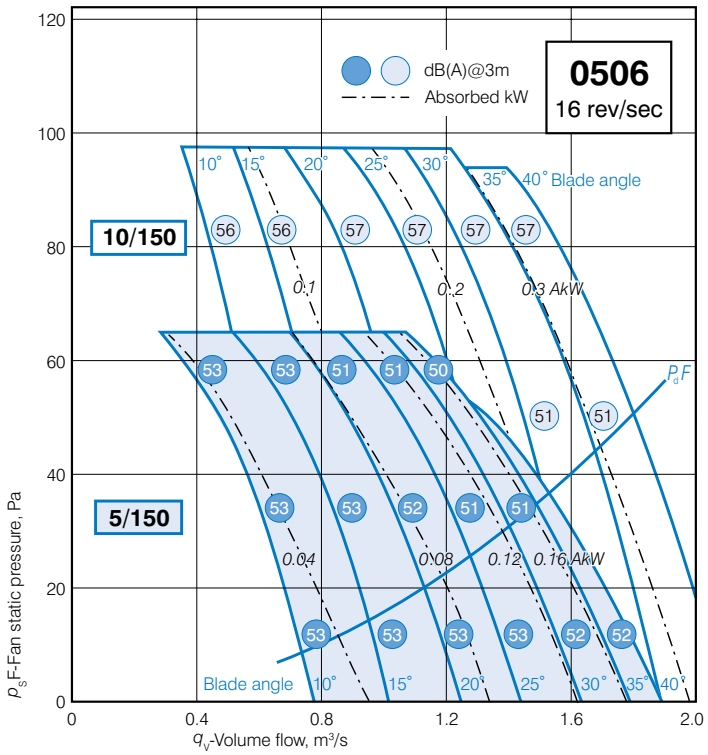
AXIAL FLOW FANS PERFORMANCE DATA

Size 500

V
BS848:Part 1, 1980
Part 2 1985
Type D Installation





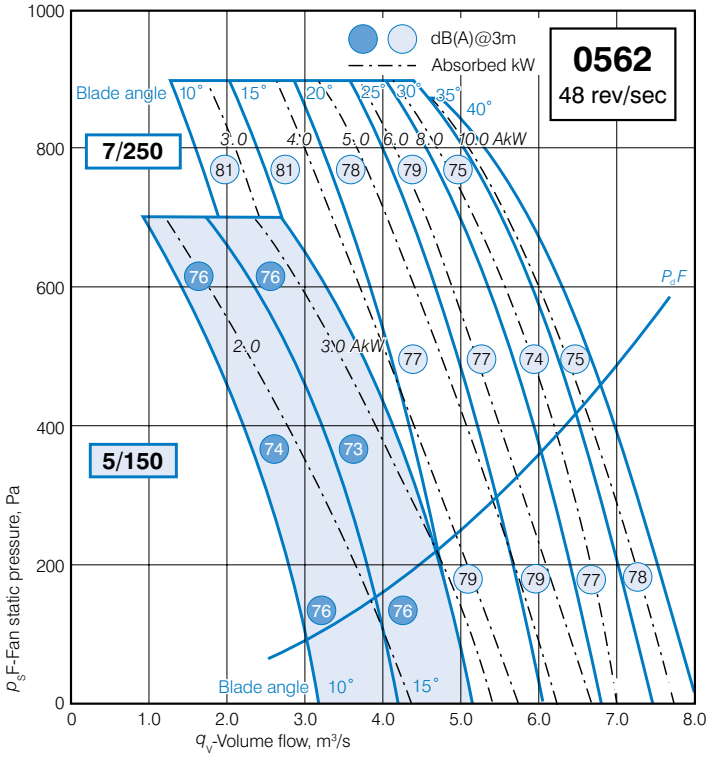


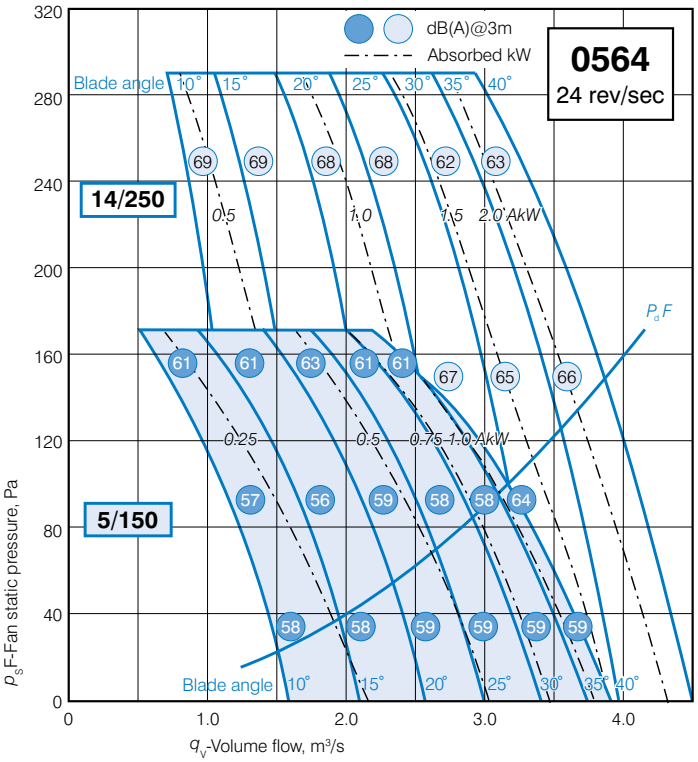
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

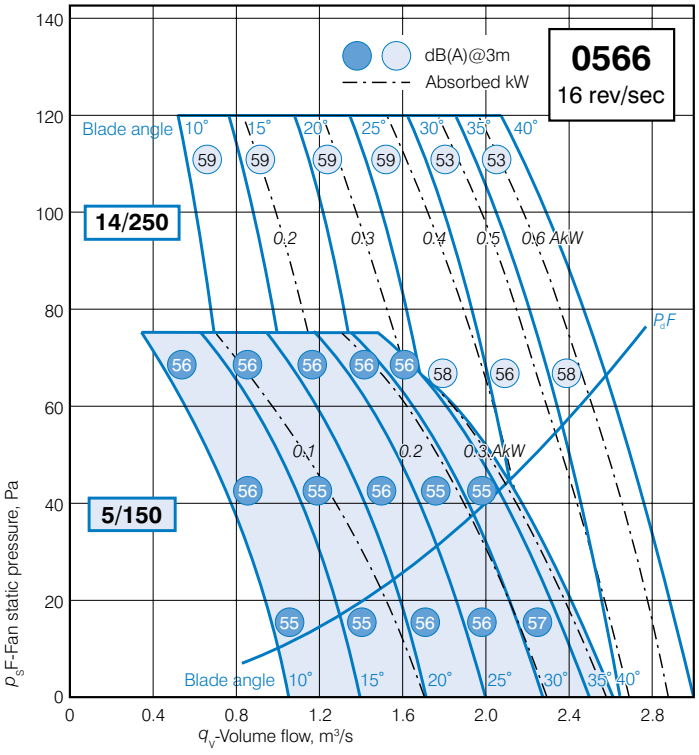
AXIAL FLOW FANS PERFORMANCE DATA

V
BS848:Part 1, 1980
Part 2 1985
Type D Installation

Size 560





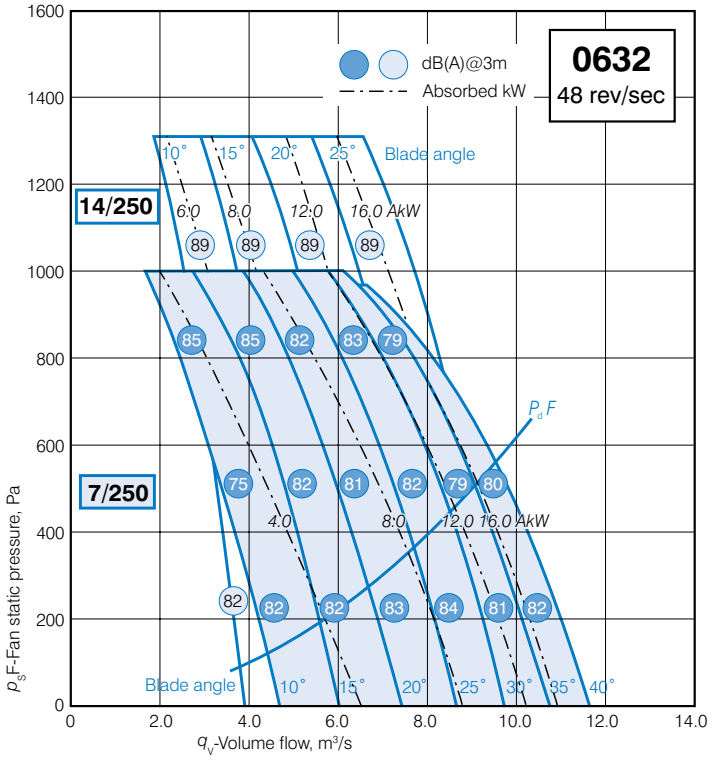


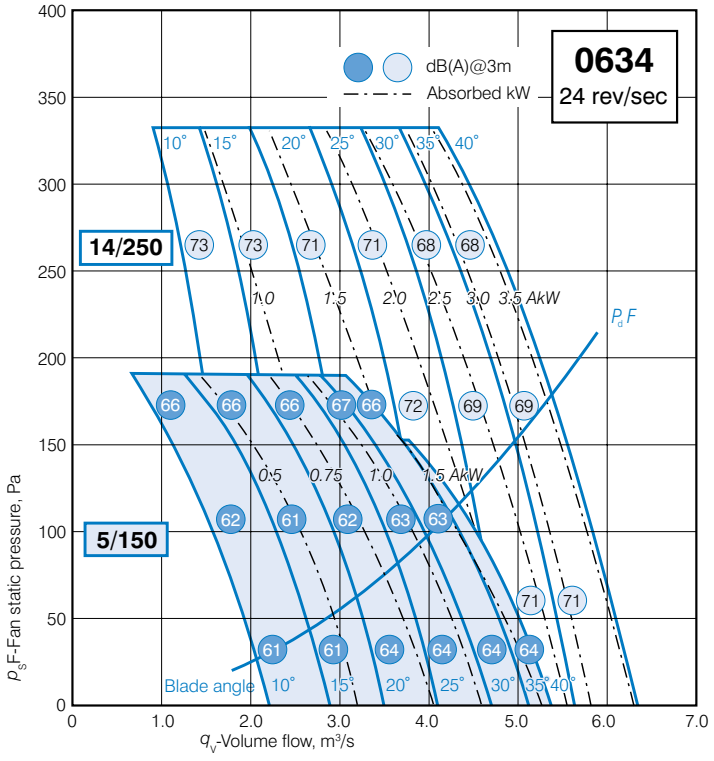
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

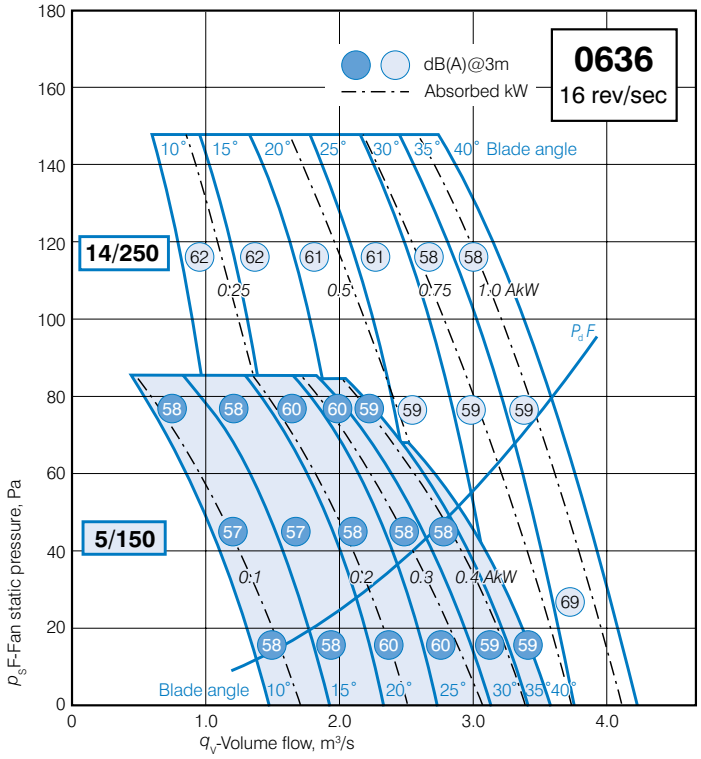
AXIAL FLOW FANS PERFORMANCE DATA

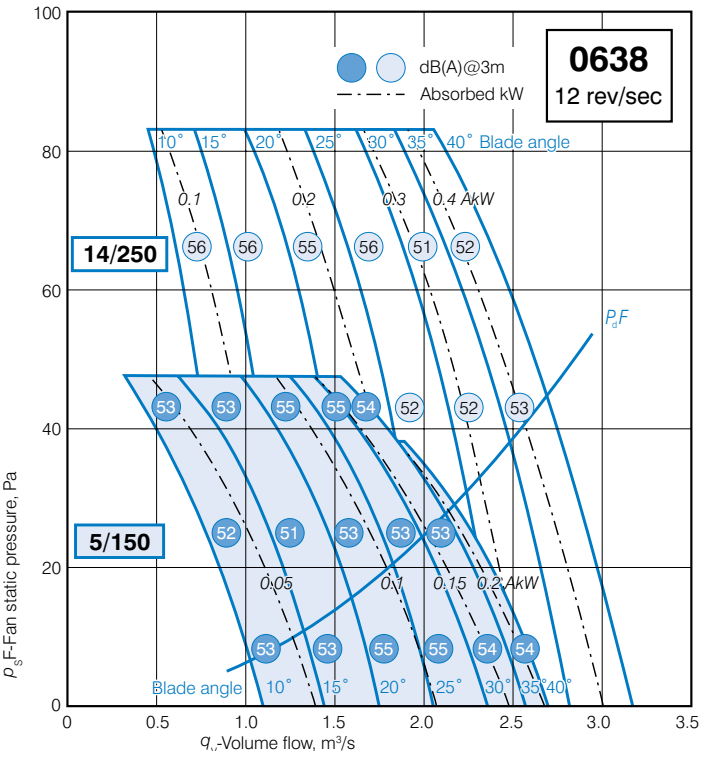
Size 630

V
BS848:Part 1, 1980
Part 2 1985
Type D Installation







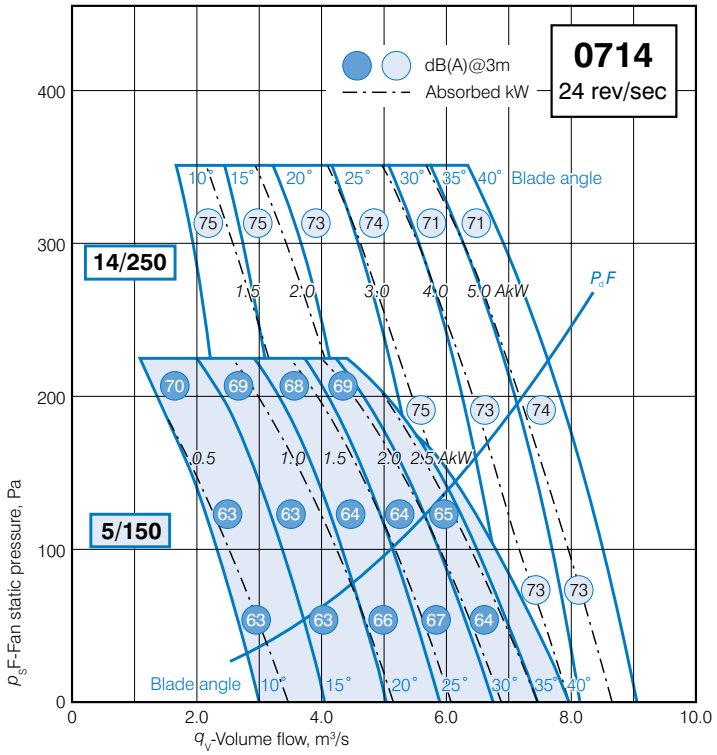


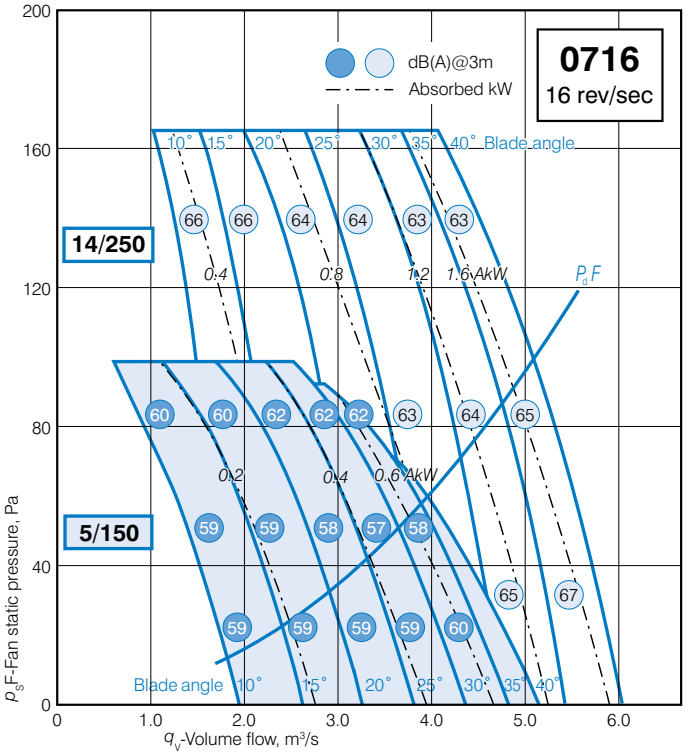
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

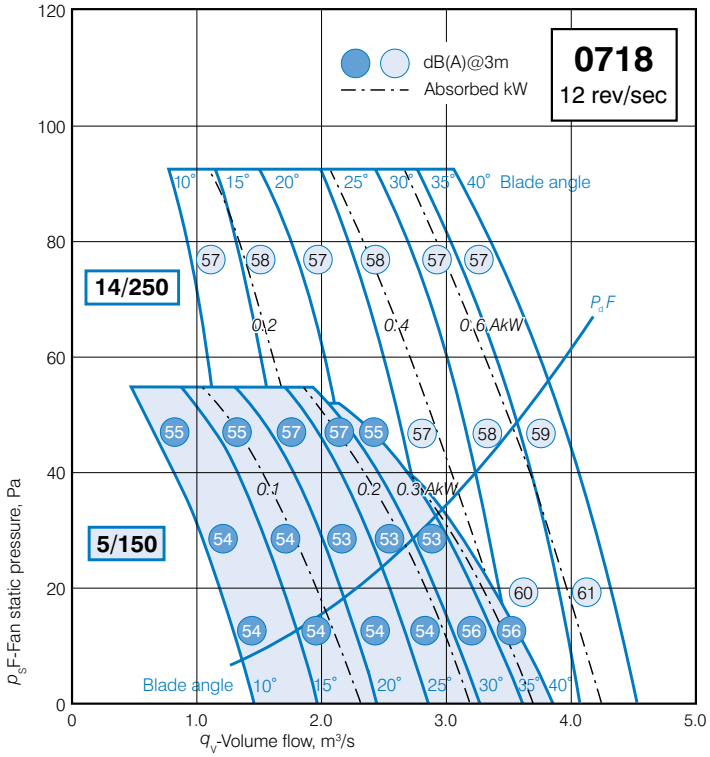
AXIAL FLOW FANS PERFORMANCE DATA

V
BS848:Part 1, 1980
Part 2 1985
Type D Installation

Size 710





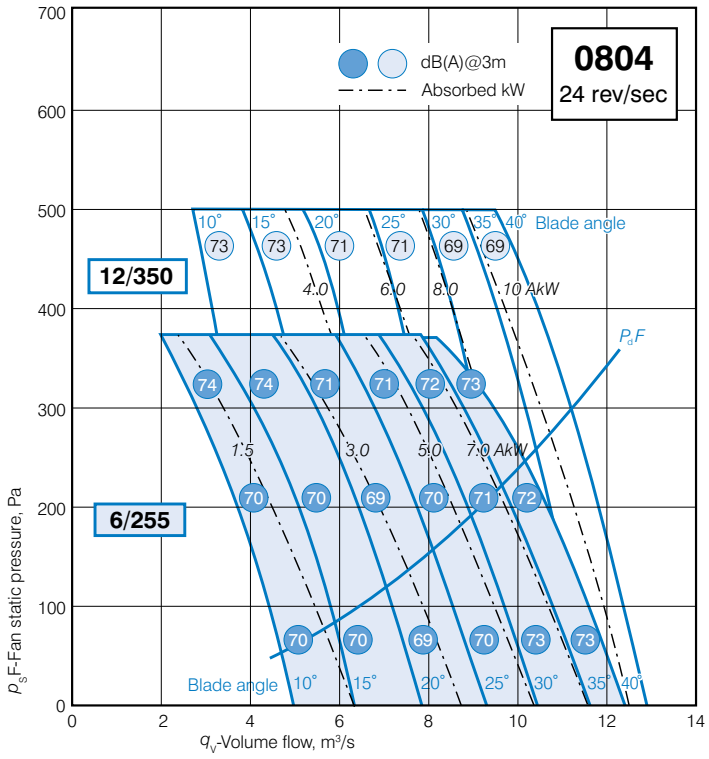


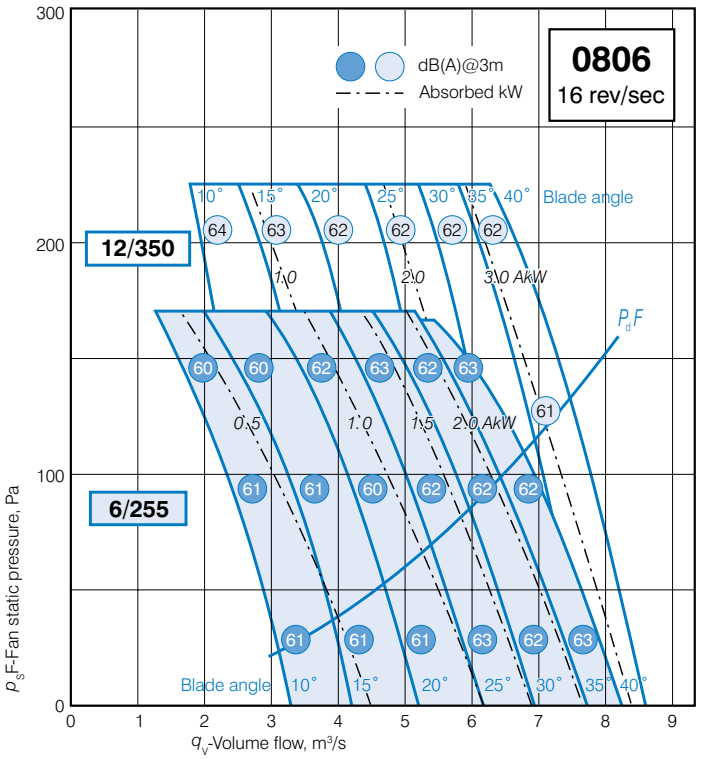
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

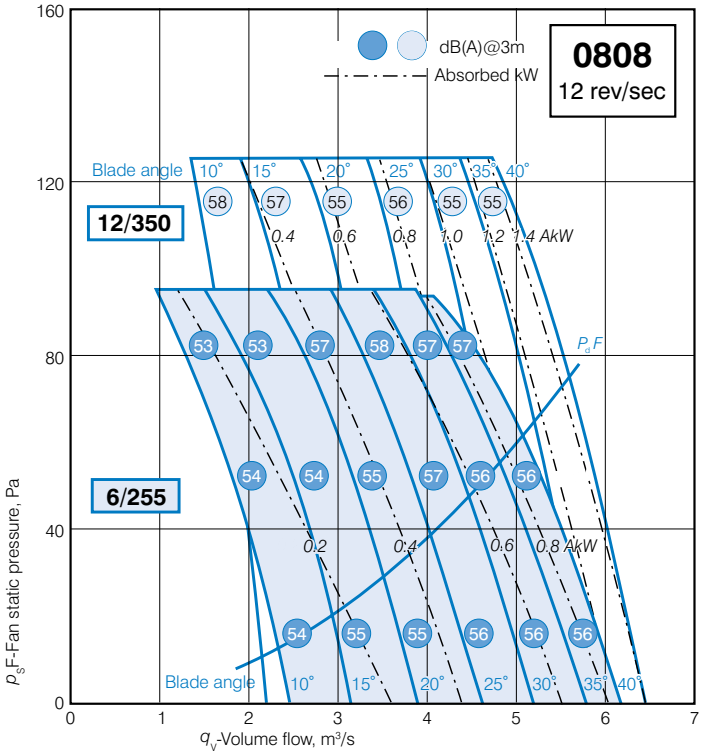
AXIAL FLOW FANS PERFORMANCE DATA

Size 800

ISO5801:1997
BS848:Part 2, 1985
Type D Installation







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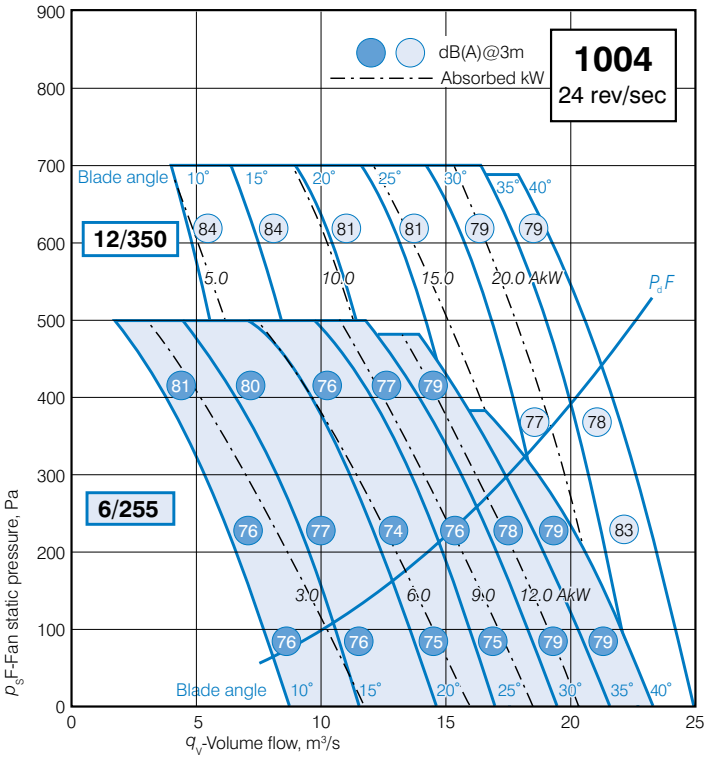
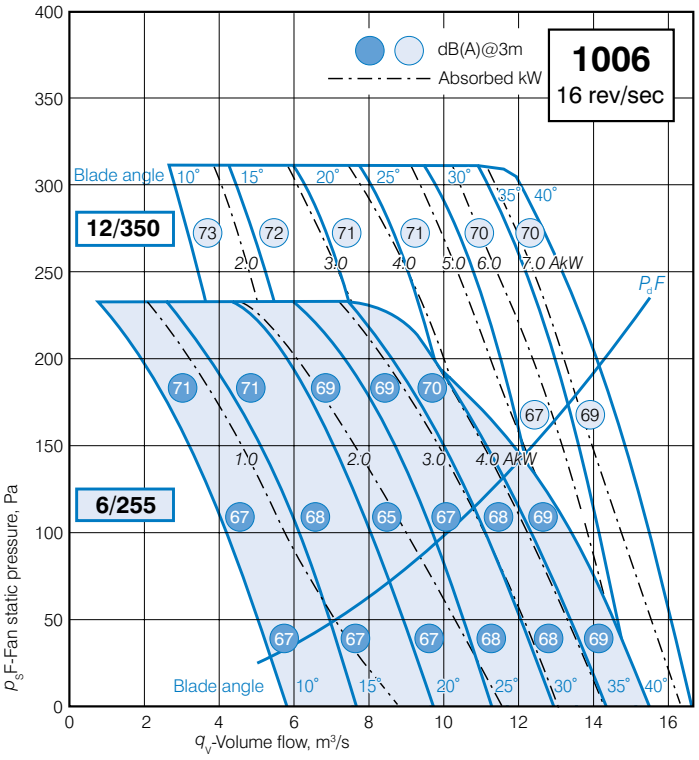
AXIAL FLOW FANS PERFORMANCE DATA

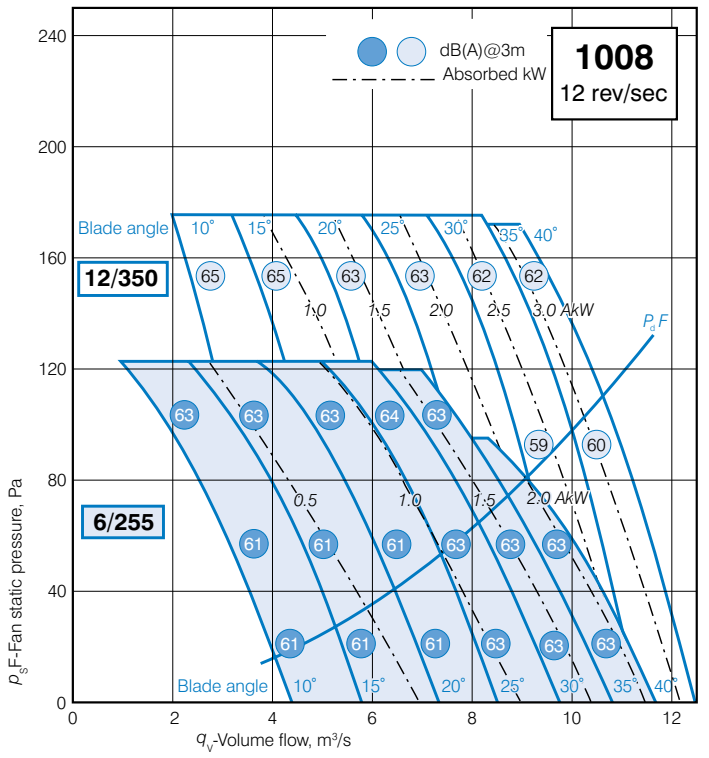
V

ISO5801:1997
BS848:Part 2, 1985
Type D Installation

Size 1000





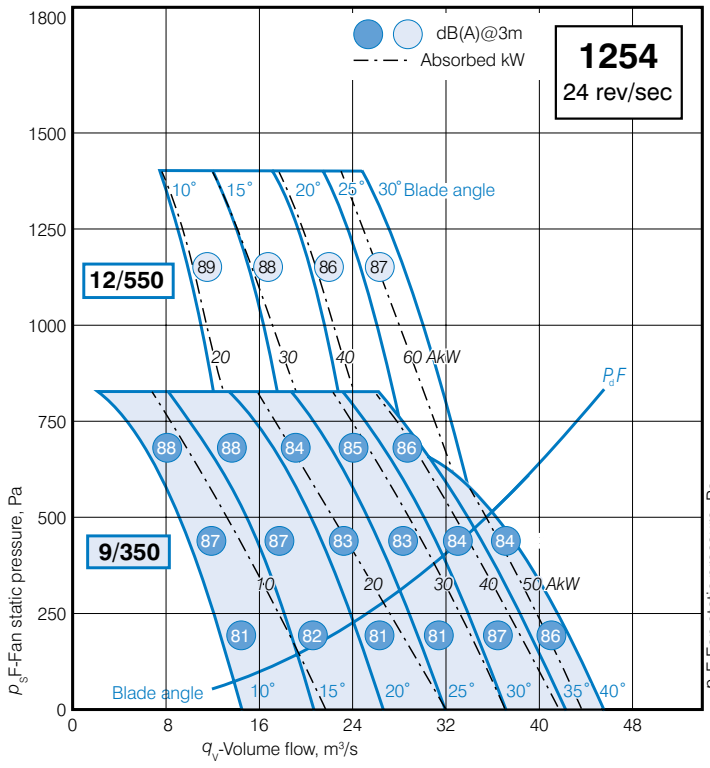


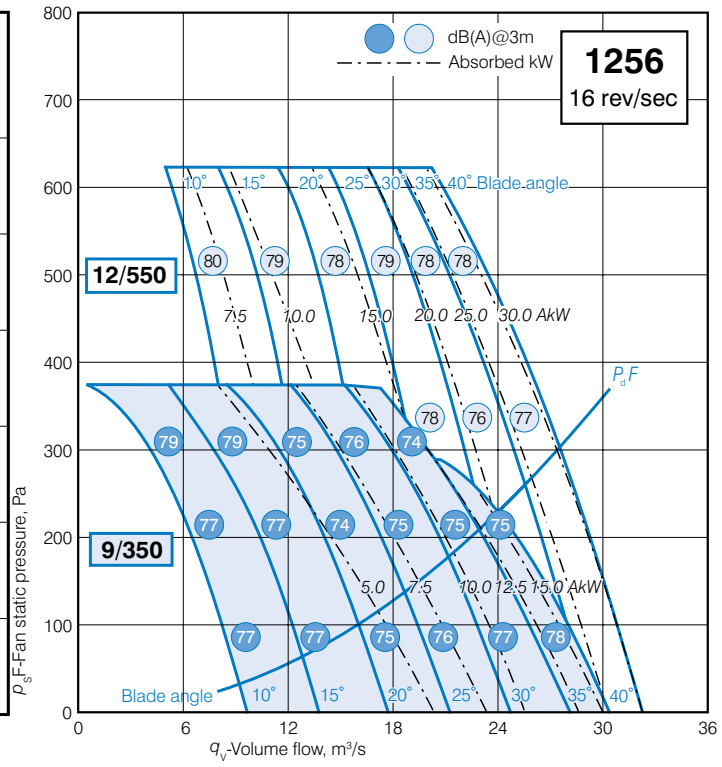
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

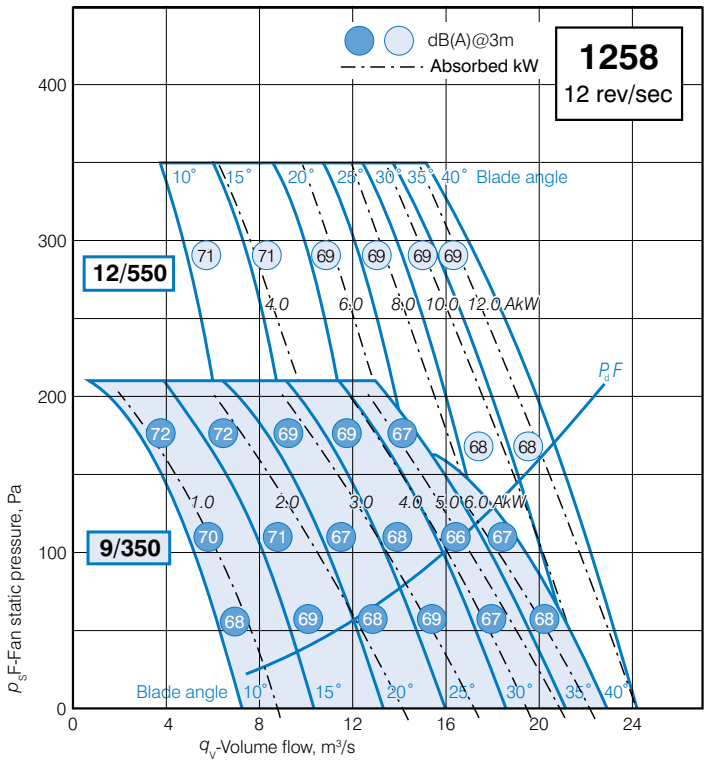
AXIAL FLOW FANS PERFORMANCE DATA

Size 1250

ISO5801:1997
BS848:Part 2, 1985
Type D Installation





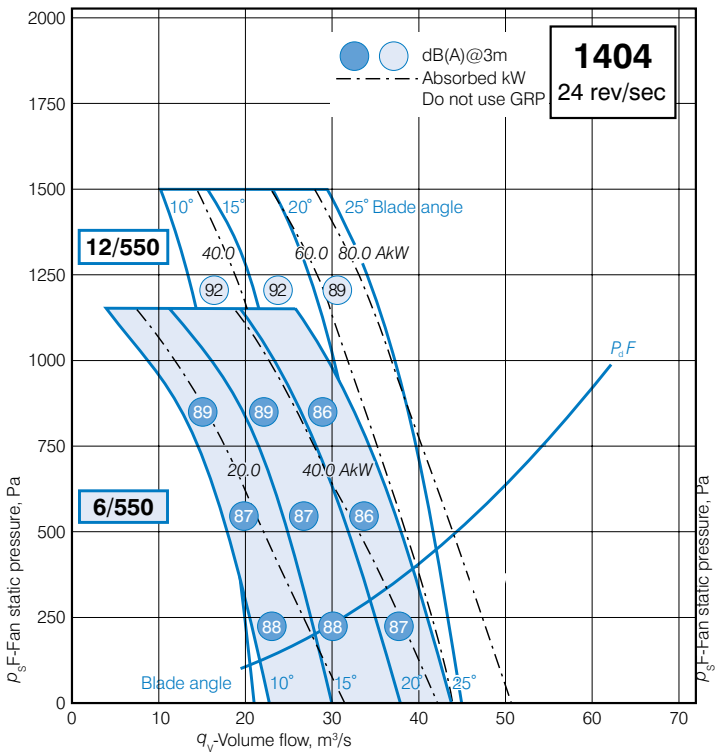


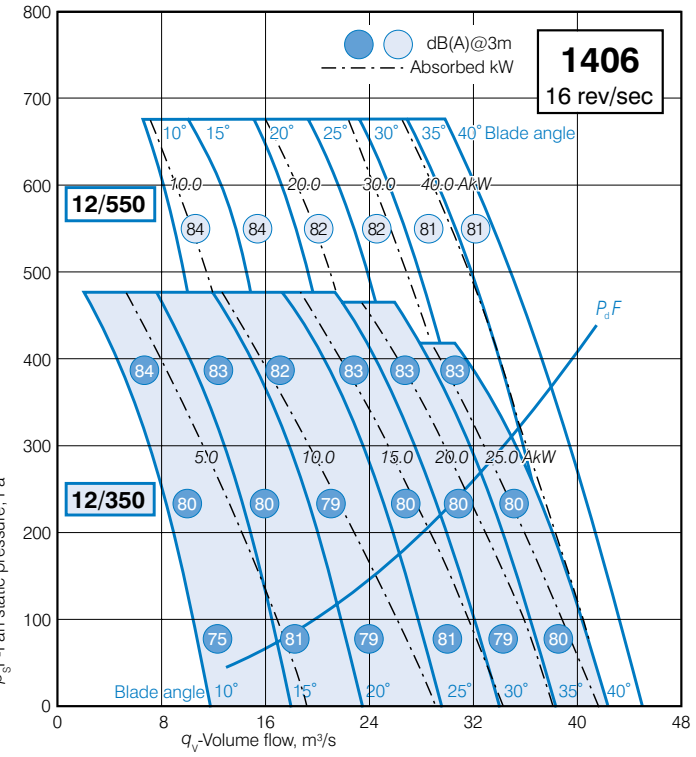
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

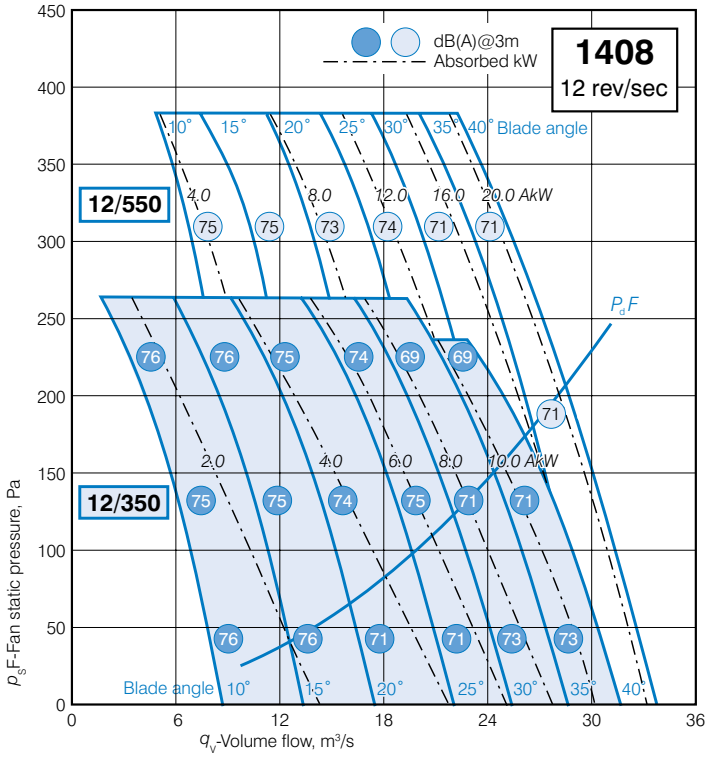
AXIAL FLOW FANS PERFORMANCE DATA

ISO5801:1997
BS848:Part 2, 1985
Type D Installation

Size 1400





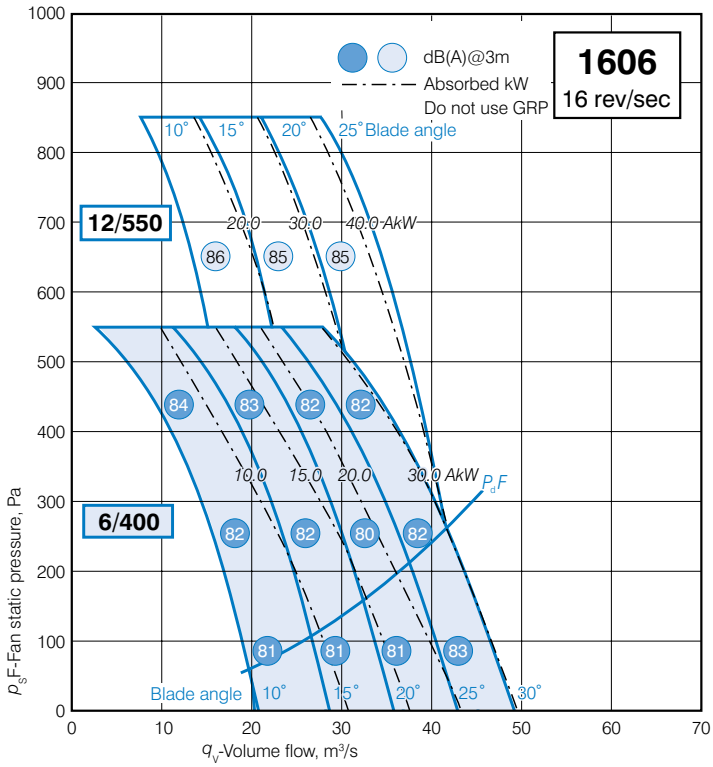


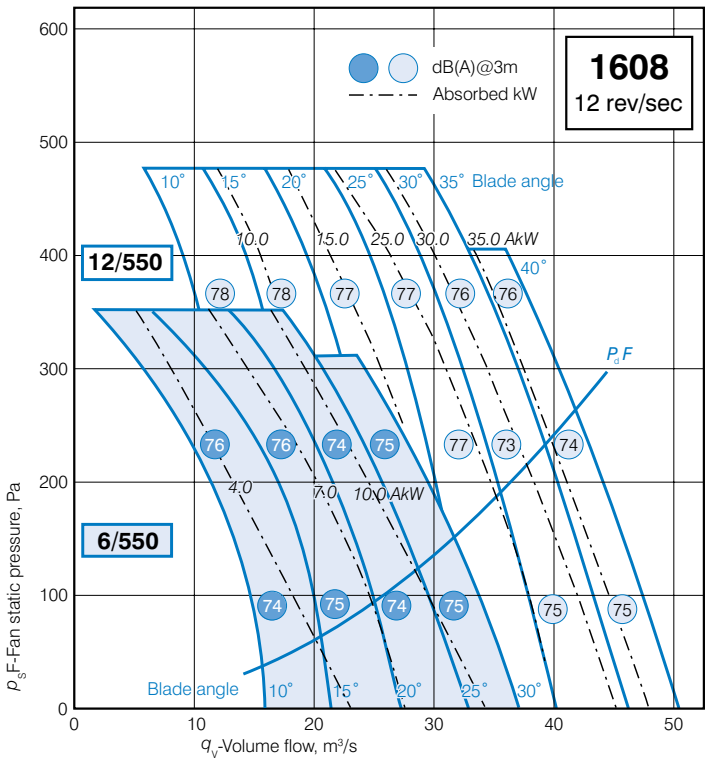
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

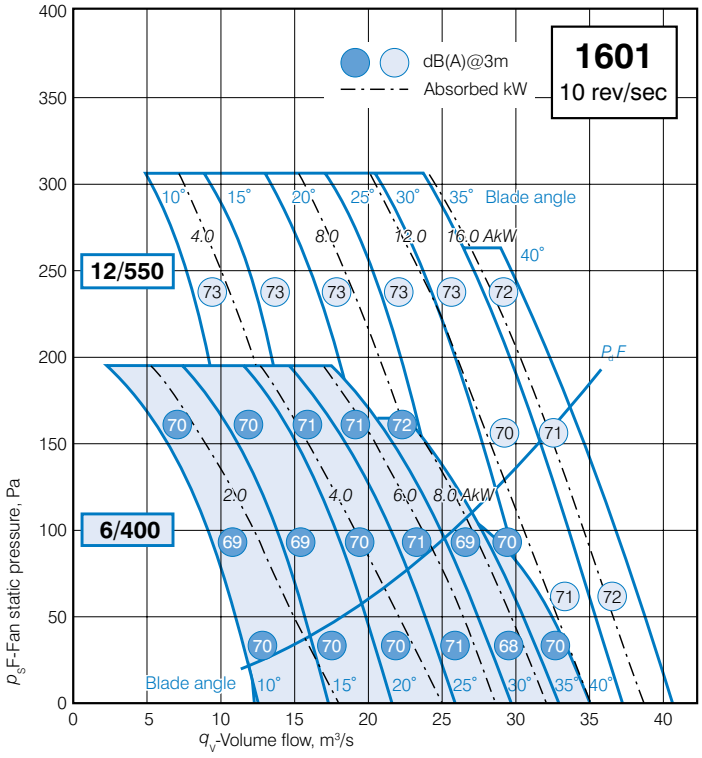
AXIAL FLOW FANS PERFORMANCE DATA

Size 1600

ISO5801:1997
BS848:Part 2, 1985
Type D Installation





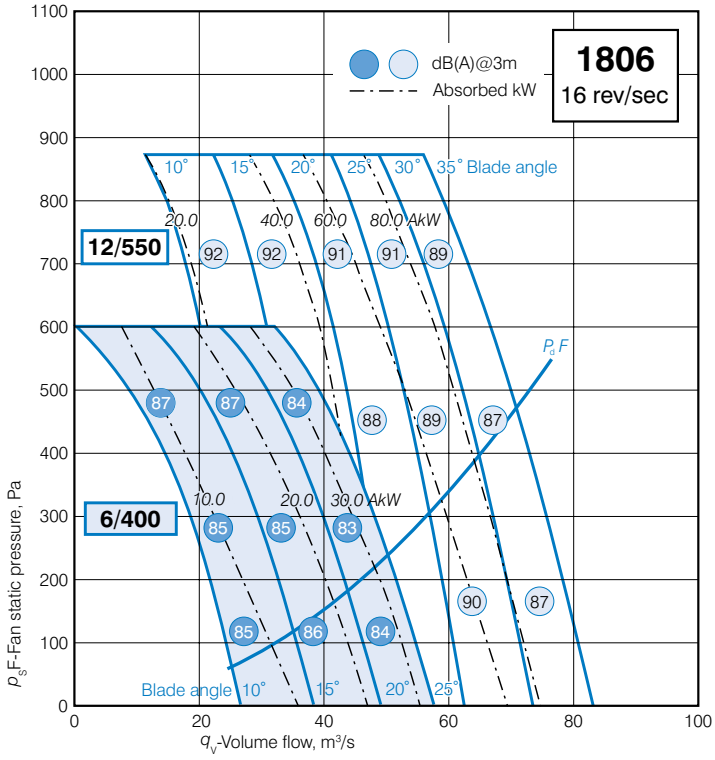


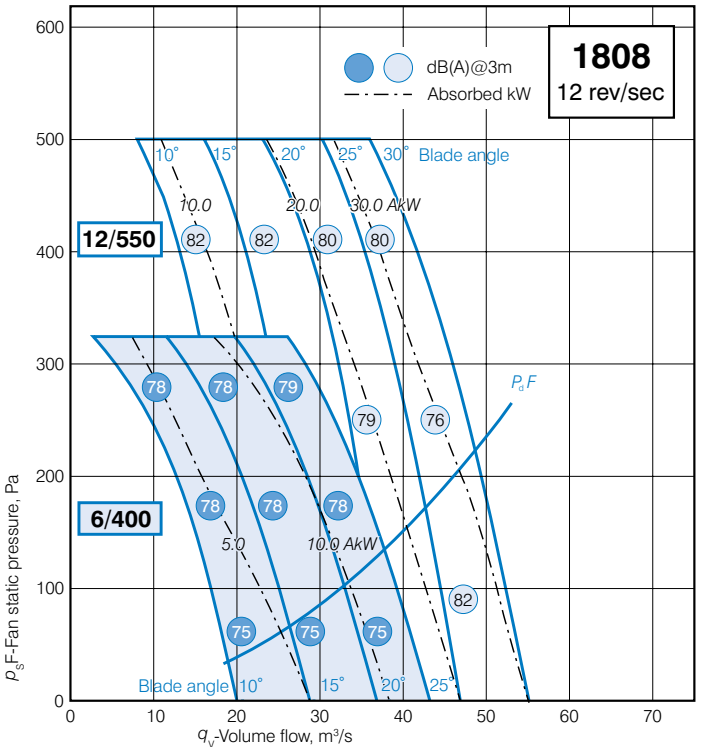
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

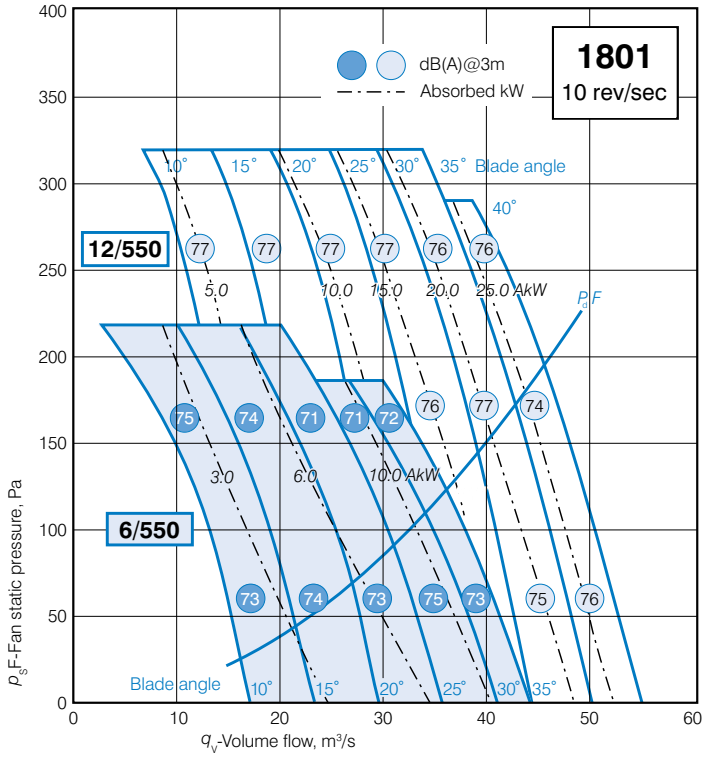
AXIAL FLOW FANS PERFORMANCE DATA

ISO5801:1997
BS848:Part 2, 1985
Type D Installation

Size 1800





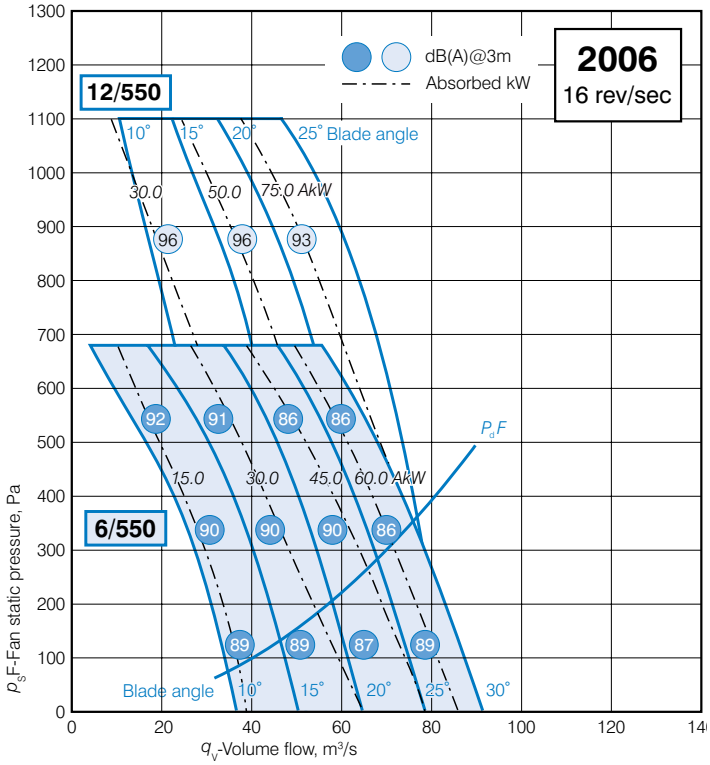


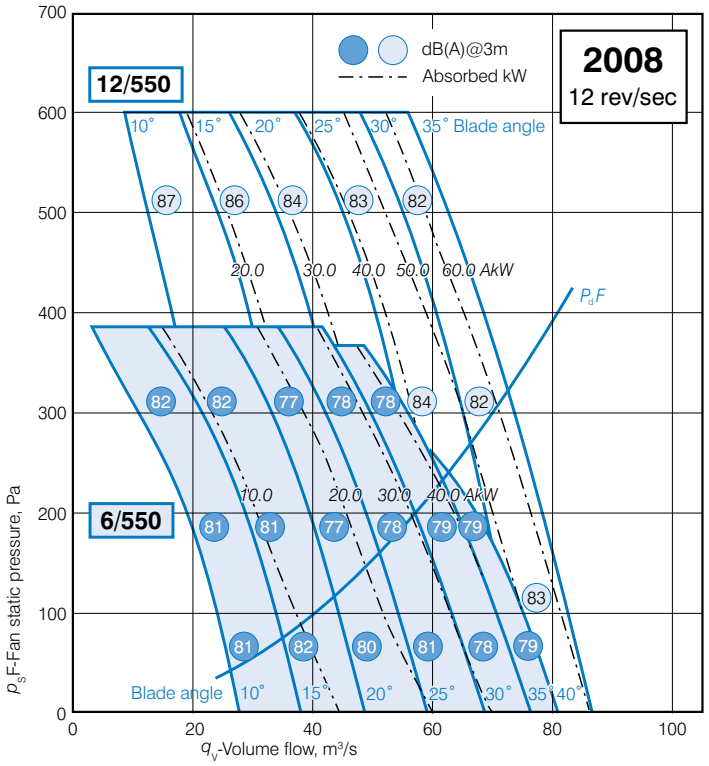
Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

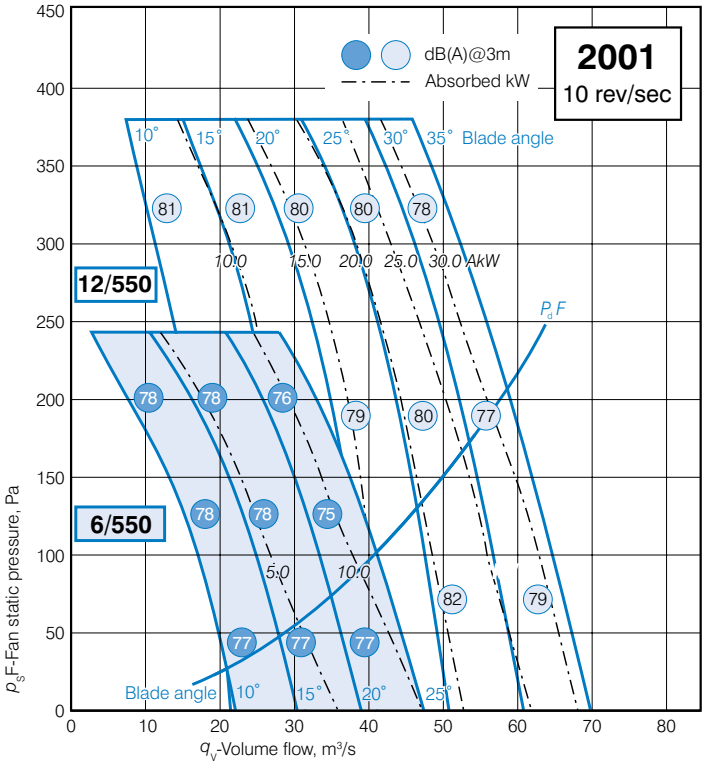
AXIAL FLOW FANS PERFORMANCE DATA

Size 2000

ISO5801:1997
BS848:Part 2, 1985
Type D Installation







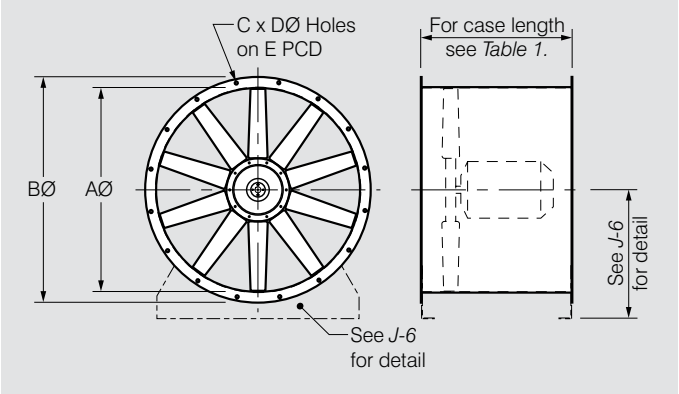
Higher pitch angles available with aluminium blades

Selecting from these graphs provides a guide only to possible selections. Basic noise level data as well as indicative power absorbed figures are incorporated on the graphs. The Intelligent Ventilation Product Selection Program will show other possible impeller combinations between the two illustrated here for each fan size/speed. The Selection Program will provide full performance information including airflow, pressure, noise levels, absorbed power as well as complete dimensional information.

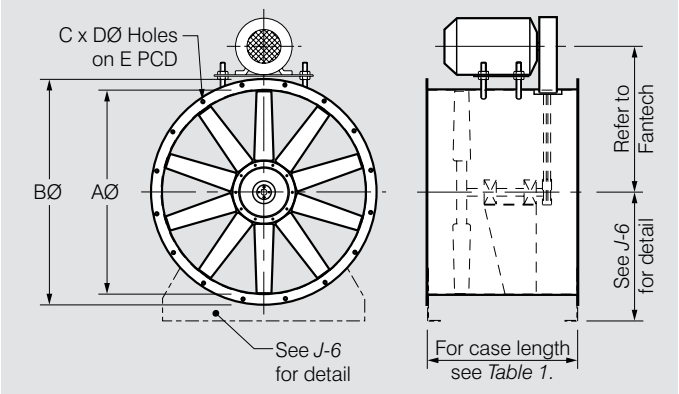
NOTES

AXIAL FLOW FANS DIMENSIONS

AP & APS SERIES



APB SERIES



Model Number AP./APS./APB.	AØ	BØ	C	DØ	E
0312					
0314	315	380	8	10	355
0316					
0402					
0404	400	485	8	12	450
0406					
0502					
0504	500	585	12	12	560
0506					
0562					
0564	560	645	12	12	620
0566					
0632					
0634	630	715	12	12	690
0636					
0638					
0712					
0714	710	795	16	12	770
0716					
0718					
0804					
0806	800	885	16	12	860
0808					
1004					
1006	1000	1106	16	15	1070
1008					
1254					
1256	1250	1356	20	15	1320
1258					
1404					
1406	1400	1526	20	15	1470
1408					
1606					
1608	1600	1730	24	19	1680
1601					
1806					
1808	1800	1960	24	19	1880
1801					
2006					
2008	2000	2160	24	19	2080
2001					

Table 1.

Motor frame Size	Casing length, mm AP/APS	APV	APB	BFA
D71	300	400	400	600
D80	400	400	400	600
D90	400	400	400	800
D100	450	600	600	800
D112	450	600	600	800
D132	600	600	600	800
D160	800	800	800	1000
D180	800	800	800	1000
D200	1000	1000	1000	1000
D225	1000	1000	1000	1000
D250	1000	1000	1000	-
D280	1200	1200	1200	-
D315	1500	1500	1300	-

NOTE: To determine the weight of any selection refer to pages 27-28 where detailed casing, impeller and motor weights are listed. The total weight is the sum of all three components. Ancillary equipment documentation can be downloaded from the **www.elta.asia/knowledge-base**. Motor ratings and speeds, other than those shown, can be provided. Two-speed motors are also available.

Table 2.

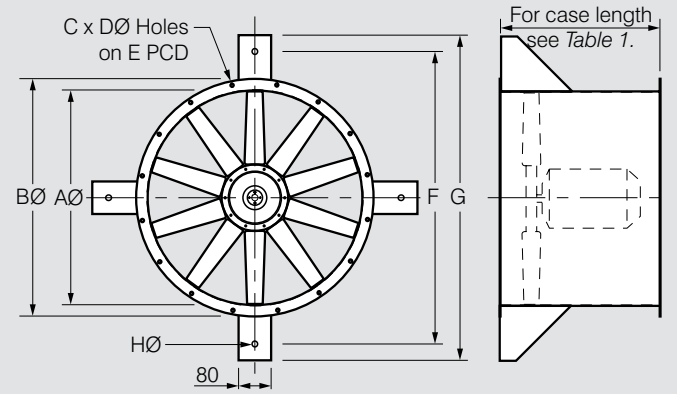
Table of kW ratings

Frame Size	Number of Poles 2 48 rev/sec	4 24 rev/sec	6 16 rev/sec	8 12 rev/sec
D71	0.37/0.55	0.37	-	-
D80A	0.75	0.55	0.37	-
D80A	1.1	0.75	0.55	-
D90S	1.5	1.1	0.75	-
D90L	2.2	1.5	1.1	0.55
D100L	3.0	2.2	1.5	0.75
D100L	-	3.0	-	1.1
D112M	4.0/5.5	4.0	2.2	1.5
D132S	5.5/7.5	5.5	3.0	2.2
D132M	-	7.5/10.0	4.0/5.5	3.0
D160M	11.0/15.0	11.0	7.5	4.0/5.5
D160L	18.5	15.0	11.0	7.5
D180M	22.0	18.5	-	-
D180L	-	22.0	15.0	11.0
D200L	30.0/37.0	30.0	18.5/22.0	15.0
D225S	-	37.0	-	18.5
D225M	45.0	45.0	30.0	22.0
D250S	-	-	37.0	30.0
D250M	55.0	55.0	45.0	37.0
D280S	75.0	75.0	55.0	45.0
D280M	90.0	90.0	75.0	55.0

The above table should be used as a guide only as kW ratings/frame size can vary from one manufacturer to another.

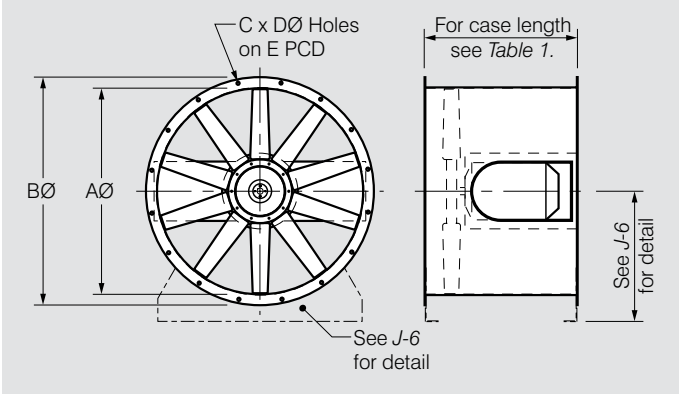
AXIAL FLOW FANS DIMENSIONS

APV SERIES



Model Number APV..	AØ	BØ	C	DØ	E	F	G	HØ
0312								
0314	315	380	8	10	355	531	611	14
0316								
0402								
0404	400	485	8	12	450	618	698	14
0406								
0502								
0504	500	585	12	12	560	720	800	14
0506								
0562								
0564	560	645	12	12	620	780	860	14
0566								
0632								
0634	630	715	12	12	690	851	931	14
0636								
0638								
0712								
0714	710	795	16	12	770	931	1011	14
0716								
0718								
0804								
0806	800	885	16	12	860	1022	1102	14
0808								
1004								
1006	1000	1106	16	15	1070	1296	1396	14
1008								
1254								
1256	1250	1356	20	15	1320	1548	1648	14
1258								
1404								
1406	1400	1526	20	15	1470	1703	1803	14
1408								
1606								
1608	1600	1730	24	19	1680	1904	2004	14
1601								
1806								
1808	1800	1960	24	19	1880	2105	2205	14
1801								
2006								
2008	2000	2160	24	19	2080	2305	2405	14
2001								

BFA SERIES



NOTE: When the fan is mounted horizontally, the cooling tunnel should be in the vertical plane when installed.
Refer to page C-7 for Additional Information that affect selection.

Model Number BFA..	Dimensions, mm AØ	BØ	C	DØ	EØ
0402					
0404	400	463	12	12	438
0502					
0504	503	567	12	12	541
0562					
0564	560	644	16	12	605
0634					
0636	635	721	16	12	674
0714					
0716	716	802	16	12	765
0804					
0806	807	893	16	12	865
1004					
1006	1004	1114	16	12	1070
1008					
1254					
1256	1256	1366	16	14	1320
1258					

Unit weights can be determined from pages *27-28*.

AXIAL FLOW FANS COMPONENT WEIGHTS

Detailed below are the weights of the components that make up various products, the details have been broken up as follows: -

Housing/Casing Weights

- *Table 1.* - Single stage axial flow fans – AP & APS Series
- *Table 2.* - Belt driven axial flow fans – APB Series
- *Table 3.* - Bifurcated axial flow fans – BFA Series
- *Table 4.* - Square plate axial flow fans – SQA & SQB Series
- *Table 5.* - Alpha/Beta Industrial roof units – RVLE & RDLE
- *Table 6.* - New Generation roof units – RVE, RSS, RDE, RSS
- *Table 7.* - High Capacity and Smoke Spill roof units – HC & SS

Impeller Weights

- *Table 8.* – impeller weights from 315 to 2000mm diameter

Motor Weights

- *Table 9.* – motor weights

Ancillary Equipment Weights

- *Table 10.* – ancillary equipment weights

Note: refer to Elta for any fan/motor combination not listed

Example

To determine the weight of an AP Series axial flow fan - 1400mm diameter, 6 pole with 9 blade aluminium impeller 400 dia. hub and 30kW motor.

1. Casing weight, Table 1. for D225M motor frame	256
2. 9 blade impeller weight, Table 8.	53
3. 30kW, 16 rev/sec motor Frame Size D225M, Table 9.	330
4. 2 Matching Flanges & 2 Mounting Feet Table 10.	73.6
	713KG

Reminder Note: As motor weights can vary by a factor of 1.5:1 from one manufacturer to another, please check with our Sales Engineers if the unit weight is critical to the building design.

Housing/Casing Weights

Table 1.
AP & APS Series - single stage axial flow fans
AP..CR Series - single stage × 2

Model AP & APS	Motor Frame Size D80/ D90	D100/ D112	D132	D160/ D180	D200	D225	D250	D280
031	10	15						
040	13	18						
050	16	23						
056	19	27	31					
063	22	30	34					
071	26	35	39					
080	29	40	44	57				
100	47	64	69	89				
125			88	172	209	227	239	283
140			99	193	235	256	269	319
160			113	221	270	294	310	367
180			235	292	347	374	392	457
200			261	325	386	417	437	510

Table 2.
APB Series - belt driven axial flow fans

Model APB	Motor Frame Size D80/ D90	D100/ D112	D132	D160/ D180	D200/225 D250
031	14	26			
040	17	30			
050	20	35			
056	23	39	43		
063	26	42	46		
071	30	48	51		
080	33	55	56	86	
100			81	118	
125			98	200	296
140			110	225	325
160			125	250	370
180			247	321	455
200			273	354	506

Table 3.
BFA Series - bifurcated axial flow fans

Model BFA	Motor Frame Size D80/ D90	D100/ D112	D132	D160/ D180	D200/ D225
040	26				
050	32				
056	36	44	47		
063	41	48	52		
071	47	56	59		
080	53	66	66		
100	83	98	103	138	278
125		122	128	171	346

Table 4.
SQA & SQB Series - square plate axial flow fans

Model SQA & SQB	Motor Frame Size D80/ D90	D100/ D112	D132	D160/ D180
031	11	12		
040	14	15		
050	17	20		
056	21	23	29	
063	23	26	36	44
071	26	29	40	49
080	31	38	46	57
100	50	56	72	87
125		72	91	111

Table 5.
RDLE, RVLE Series -
Alpha/Beta Industrial axial flow roof units

Model RDLE & RVLE	Motor Frame Size D80/ D90	D100/ D112	D132	D160/ D180	D200/ D225
071	49	51			
080	66	68	71		
100		90	94		

AXIAL FLOW FANS COMPONENT WEIGHTS

Table 6.

RVE, RSS, RDE & RDS - New Generation axial flow roof units

Model RDE/S & RVE/SS	Motor Frame Size D80/ D90	D100/ D112	D132	D160/ D180	D200/ D225
031	20	25			
040	28	33			
050	38	44			
056	38	47	47	59	
063	55	63	63	78	
071	57	67	67	82	
080	71	85	86	100	
100	106	123	128	148	253
125	153	174	174	282	338

Table 7.

HC & SS Series - High Capacity & Smoke Spill axial flow roof units

Model HC & SS	Motor Frame Size D80/ D90	D100/ D112	D132	D160/ D180	D200	D225	D250	D280
050	38	45						
056	40	47	51	60				
063	54	62	67	77				
071	60	69	73	84				
080	70	84	85	99				
100		122	127	147	238	252		
125		154	161	262	300	328		
140			192	310	350	371	384	435
160			227	362	410	433	449	508
180			361	418	473	500	518	583

Ancillary Equipment Weights

Table 10.

Approximate ancillary equipment weights

Fan Dia. mm	Matching Flanges kg, each	Mounting Feet kg, each	Inlet Cones No Guard	Inlet Cones With Guard	Wire Guards kg, each
315	0.7	0.6	2.5	3.6	1.1
400	1.0	1.0	4.5	6.1	1.6
500	1.3	1.6	6.2	8.4	2.2
560	1.4	2.1	7.5	10.0	2.5
630	1.6	2.5	9.0	11.6	2.6
710	4.7	2.7	11.1	14.3	3.2
800	5.2	3.2	14.4	17.9	3.5
1000	7.4	8.0	20.0	26.1	6.1
1250	9.1	14	29.0	36.8	7.8
1400	17.8	19	29.7	39.3	9.6
1600	20.3	23	51.3	60.9	9.6
1800	22.8	35	81.2	93.7	12.5
2000	25.3	40	83.2	95.7	12.5

Impeller Weights

Table 8.

Approximate impeller weights

Number of blades	Hub Dia. mm	Max. Dia. mm	Weight, kg GRP	Nylon	Alum.	Anti-static
5	150	900	1.1	1.8	2.6	1.1
10	150	900	2.1	2.5	4.1	2.1
7	250	1000	3.3	3.6	4.9	3.3
14	250	1000	4.2	4.7	7.3	4.2
3	255	1300	5.0	-	7.9	5.2
6	255	1300	6.3	-	11.9	6.6
3	350	1400	9.5	-	12.6	9.6
6	350	1400	10.8	-	16.6	11.1
9	350	1400	12.1	-	20.6	12.5
12	350	1400	13.4	-	24.6	14.0
3	400	1800	19	-	27	-
6	400	1800	24	-	40	-
9	400	1800	29	-	53	-
3	550	2000	25	-	33	-
6	550	2000	30	-	46	-
9	550	2000	35	-	58	-
12	550	2000	40	-	71	-

Motor Weights

Table 9.

Approximate motor weights

Motor Frame	Shaft Dia. mm	App. wt. kg	Motor kW ratings 48 r/s	24 r/s	16 r/s	12 r/s
D71	14	11	0.37	0.37	-	-
D71	14	16	0.55	-	-	-
D80	19	18	0.75	0.55	0.37	-
D80	19	22	1.1	0.75	0.55	-
D90S	24	25	1.5	1.1	0.75	-
D90L	24	30	2.2	1.5	1.1	0.55
D100L	28	38	3	2.2	1.5	0.75
D100L	28	44	-	3	-	1.1
D112M	28	52	4	4	2.2	1.5
D132S	38	73	5.5/7.5	5.5	3	2.2
D132M	38	87	-	7.5/10	4/5.5	3
D160M	42	130	11/15	11	7.50	4/5.5
D160L	42	150	18.50	15	11	7.50
D180M	48	185	22	18.50	-	-
D180L	48	200	-	22	15	11
D200L	55	265	30/37	30	18.5/22	15
D225S	55/60	310	-	37	-	18.50
D225M	55/60	330	45	45	30	22
D250S	60/70	430	-	-	37	30
D250M	60/65	430	55	55	45	37
D280S	65/70	660	75	75	55	45
D280M	65/80	700	90	90	75	55

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