



Ventilation

Axial Flow Fans

- ▲ AXO Series - without Guide Vanes
- ▲ AXN Series - with Outlet Guide Vanes



TLT-Turbo GmbH



TLT-Turbo GmbH

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AXIAL FLOW FANS

002



TLT standard fan production plant at Bad Hersfeld

Our Bad Hersfeld facility has a history going back to 1874, when Benno Schilde and August Büttner founded their factories here.

The “exhausters” traditionally made of cast iron could be built much lighter and cheaper through the use of steel sheet.

At Büttner the focus was initially on blowers for tubular boilers and dryers, then shifted to heavy-duty industrial fans as required specifically in power plant de-dusting applications. Schilde, meanwhile, stepped up its research and development of light-duty ventilating fans and medium-duty industrial blowers. Numerous patents and registered designs testify to a steady flow of engineering breakthroughs. With the erection of its series production facility at Bad Hersfeld, dedicated mainly to the cost-effective production of roof fans, the Babcock-BSH Group gained a leading market position both in Germany and abroad. The Turbo-Lufttechnik GmbH (TLT) – Bad Hersfeld site - was newly established in June 1995, now integrating Babcock-BSH's Air and Thermal Engineering division.

in their own rights, belongs to AG Kühnle, Kopp & Kausch, Frankenthal.

TLT now is one of the world's leading fan manufacturers and our competence is expressed in mature and very economical products. Our two R&D centres at Zweibrücken and Bad Hersfeld guarantee a continuing process of always adapting all TLT products to the latest demands of the market.

The “TLT-Turbo GmbH”, newly established in March 2003 as a company

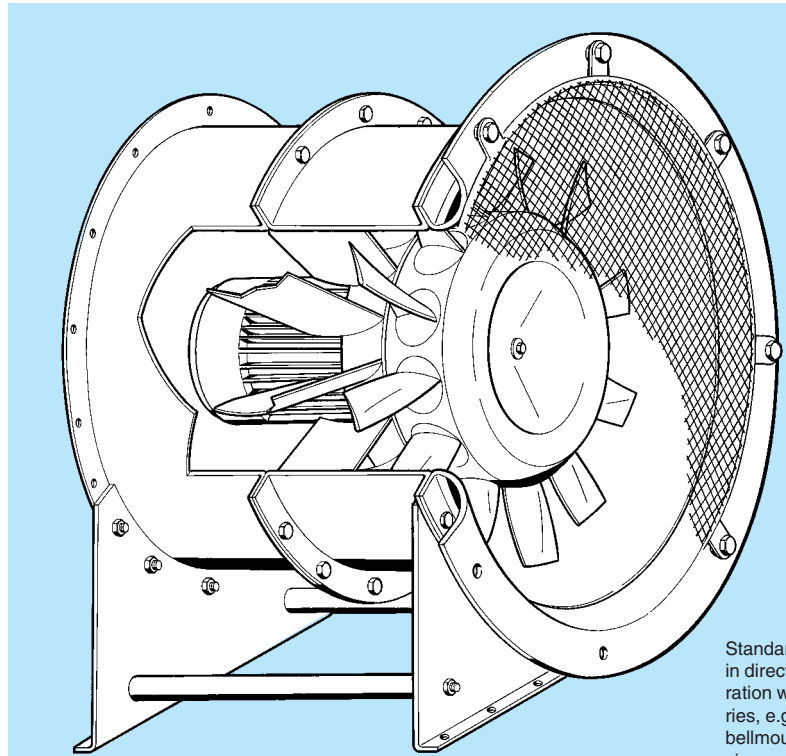
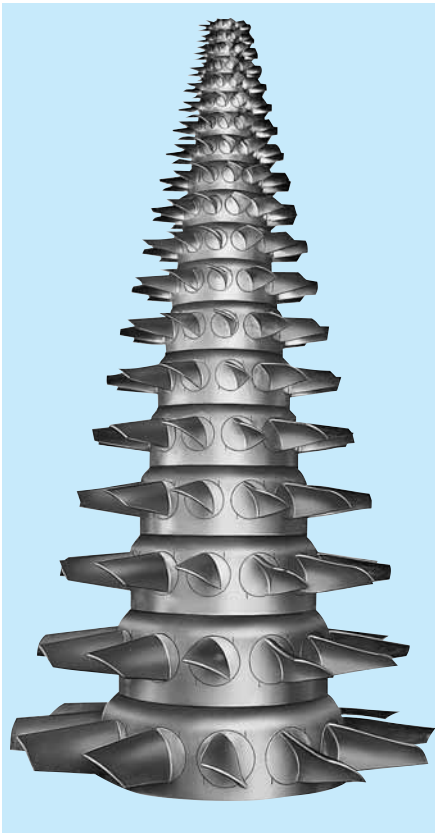


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AXIAL FLOW FANS

003



Standard axial-flow fan in direct-drive configuration with accessories, e.g. wire guard, bellmouth inlet, extension casing and mounting feet

Our broad range of axial flow fans, covering 21 impeller diameters from 250 to 2500mm, offers an optimal choice.

In addition to the fans documented in this catalogue we supply the following axial fan series:

- **axial smoke exhaust fans for use at 200°C / 300°C / 400°C or 600°C (120 minutes)**
- **two-stage axial fans (in series) for use in closed car parks and for elevated pressure ranges, also as smoke exhaust fans for 200°C / 300°C or 600°C / 120 minutes operation.**

All our fan series are tested to EN 12101-part 3 specifications by the Technical University of Munich and hold a General Construction Supervision Approval issued by the German Institute of Construction Engineering (DIBt), Berlin.

Please request our special catalogues "Smoke Exhaust Fans" or "Two-Stage Axial Flow Fans"

Types - Overview
Technical description
Main dimensions
Round silencers
Acoustic insulation
Acoustic data
Electrical notes / circuit charts
Range of Application / Use
Measuring configuration for axial flow fans
Diffusers
Sizing recommendations
Installation examples
Selection examples

Technical Lists AXO series
AXO series characteristics (direct drive)
Specifications

Wall-mounting axial flow fans WAXO

Technical Lists AXN series
AXN series characteristics (direct drive)
Specifications

Wall-mounting axial flow fans WAXN

AXN series characteristics (V-belt-drive)
Specifications

Application examples/References

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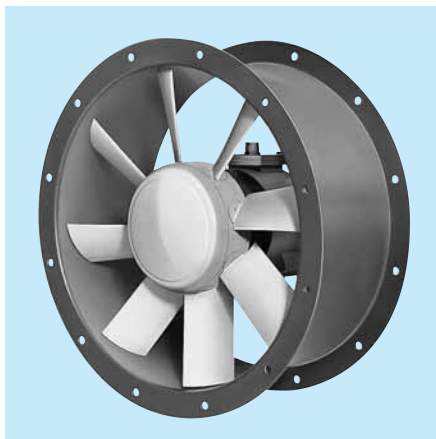
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AXIAL FLOW FANS TYPES - OVERVIEW

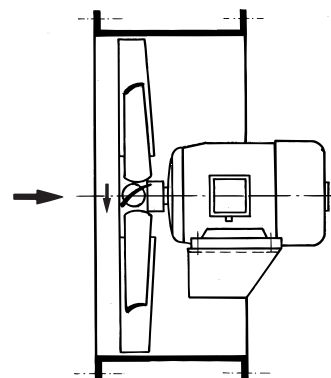
004

**Axial flow fan
standard direct drive model
AXO type = without guide vanes
Airflow direction D (motor in outlet)**

Impeller on motor shaft end.
Fan casing with drilled flanges as per
DIN 24154 – Series 3.
Extension casing optionally
available.
Max. operating temperature
according to motor type
(60° C with standard motor).

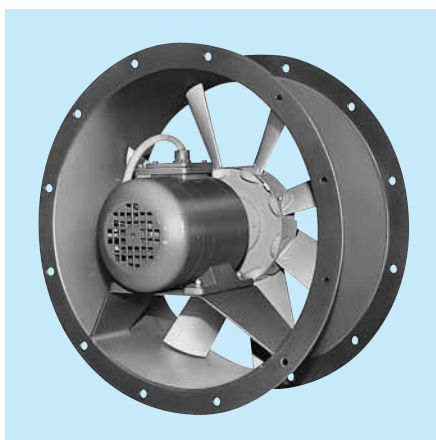


M-D type

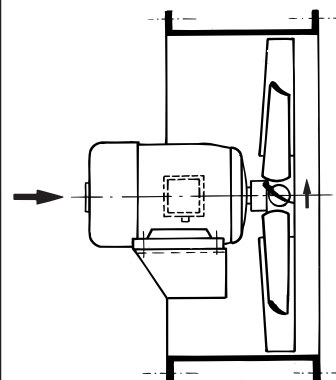


**Axial flow fan
standard direct drive model
AXO type = without guide vanes
Airflow direction S (motor in inlet)**

Impeller on motor shaft end.
Fan casing with drilled flanges as per
DIN 24154 – Series 3.
Extension casing optionally
available.
Max. operating temperature accor-
ding to motor type
(60° C with standard motor).



M-S type

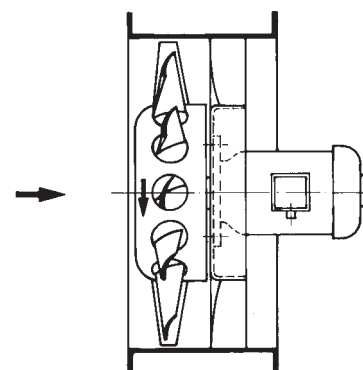


**Axial flow fan
standard direct drive model
AXN type = with outlet guide vanes
Airflow direction D (motor in outlet)**

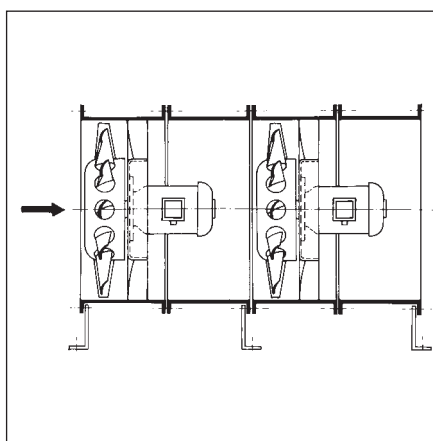
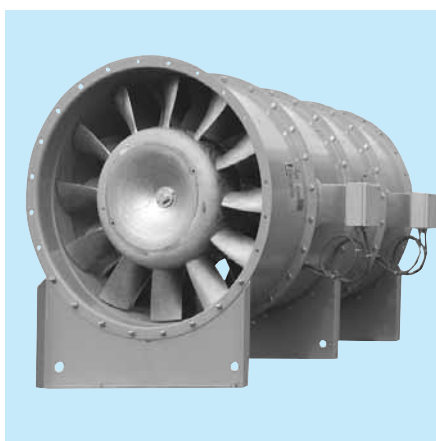
Impeller on motor shaft end.
Fan casing with drilled flanges as per
DIN 24154 – Series 3.
Extension casing optionally available.
Max. operating temperature
according to motor type
(60° C with standard motor).



M-D type



**Please ask for our special
catalogue for 2 stage axial
fans (in series), currently
available in German langu-
age only or see our catalo-
gue “Smoke extraction“.**





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AXIAL FLOW FANS TYPES - OVERVIEW

005

Axial flow fan direct drive model Swing-out type Airflow direction D (motor in outlet)

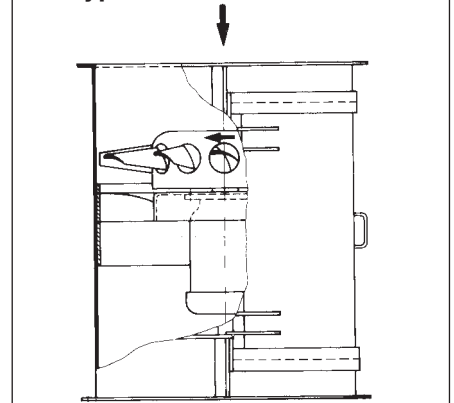
Rugged sheet steel design.
The impeller, motor and guide vane installation can be jointly swung out for inspection.

Fan casing with drilled flanges as per DIN 24154 – Series 4.

Max. operating temperature according to motor type
(60° C with standard motor).



M-A type

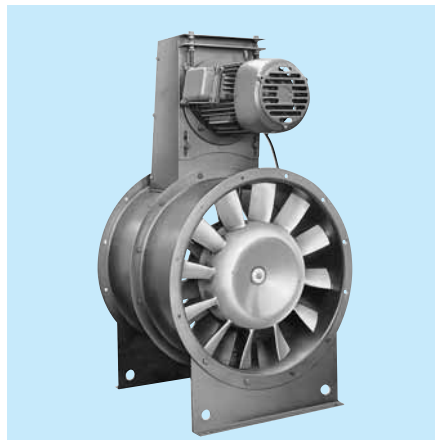


Axial flow fan belt drive model Airflow direction D (outlet over bearing)

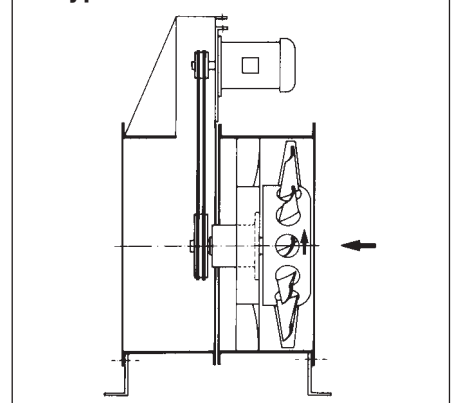
The belt guard housing, doubling as motor support, is mounted on the casing. The impeller is supported in a maintenance-free double flange bearing having a rated service life of approx. 20,000 operating hrs.

Max. operating temperature: 70° C.
With outlet guide vanes.

Fan casing with drilled flanges as per DIN 24154 – Series 3.



R1 type

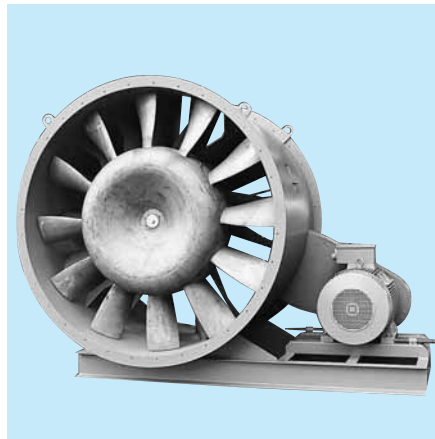


Axial flow fan belt drive model Airflow direction D (outlet over bearing)

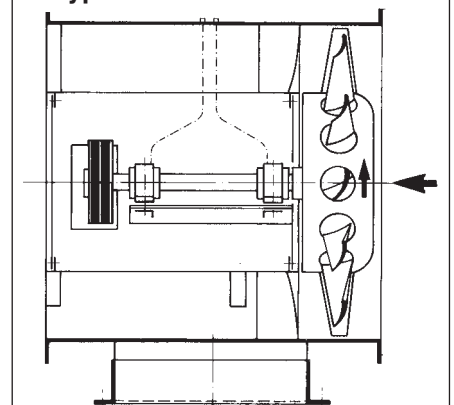
Casing with tensioning device and belt guard on a common baseframe. The impeller is supported in antifriction bearings with grease valve and re-lubricating feature. Rated service life: approx. 50,000 operating hours.
Max. operating temperature: 70° C.

The belt tensioning installation with motor and belt drive are fitted in specially developed mountings. Outlet guide vanes enhance the fan output characteristics.

Fan casing with drilled flanges as per DIN 24154 – Series 3.



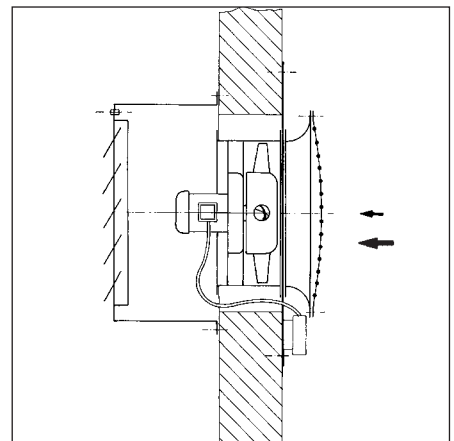
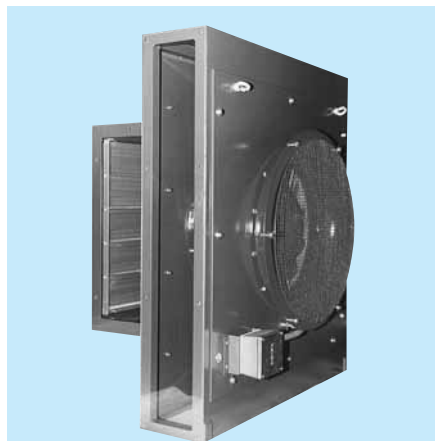
R2 type



Axial flow fan - wall mounting type WAXO/WAXN series for installation into outside walls

System consisting of:

- axial fan direct drive model, impeller with shaft, casing with drilled flanges as per DIN 24154 series 3.
Max. operating temperatures as per motor version. In case of normal motors: 60°C.
- bellmouth with wire guard wall-mounting plate (drilled)
- louvre damper





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AXIAL FLOW FANS

AXO SERIES - WITHOUT GUIDE VANES

AXN SERIES - WITH OUTLET GUIDE VANES

TECHNICAL DESCRIPTION

006

AXN SERIES with outlet Guide Vanes

Technical Description

High output and broad operationg poing adaptability are key features of all fans of this series.

- 21 available design sizes with casing diameters from 250 to 2500 mm
- Two basic designs for direct drive (M) or belt drive (R).
- From optimum pressure coefficiets this series is equipped with outlet guide vanes.
- impeller blades are steplessly pitch-adjustable without having to remove the impeller from the unit. Post-installation adjustments to specific operating points within the motor output range can thus be easily made.
- Impellers can be supplied with 12, 9, 8, 6 or 4 blades (important particularly for direct-driven fans).
- The impeller material is cast solumin, with the exception of the clamping strap which consists fo AlMg 3F-2. A high weather and seawater resistance is thus ensured.
- On R1 and R2 (belt driven) types, an additional operatiin point matching feature is available via the "stepless" impeller rpm adjustment which can be achieved by changing the belt transmission ratio.
- High pressure coefficients permit low tip speeds for minimum operating noise.
- Efficiencies up to 82%
- Tip speeds up to 85 m/s
- Direct-driven fans are normally supplied as airflow direction "D" (outlet over motor) designs. In special cases, airflow direction "S"

(inlet over motor) types are available. The dimensioning for airflow direction "S" axial-flow fans is done by our field representatives or at our company headquarters.

- Their compact design allows these fans to be installed even where space is at a premium.
- All fans are powered by IEC standard motors. Motors with thermocouples or thermistor sensors are available upon request.
- Standard units are rated for up to 80°C, depending on motor insulation class.
- Casings up to size 1250 are made of deep-drawing grade sheet steel with pressed flanges.
- Fans up to size 1205 are surface-finished with a RAL 7030 (pebble-grey) polyester powder coating. As of size 1400, fans are supplied finis-painted in RAL 7030 (pebble-grey) colour.

AXO Series without Guid Vanes

Technical Description

- 7 design size with casing diameters from 315 to 1120 mm.
- Available as type "M" for direct drive.
- Not designed for subsequent impeller blade adjustment.
- Built with 5, 8, 9 or 12 blades, depending on specified output
- Aluminium impeller hub with plastic blades.
- Up to 68% efficiency.
- Tip speeds up to 82 m/s
- Direct-driven fans are normally supplied as airflow direction "D" (outlet over motor) designs. In special cases, airflow direction "S" (inlet over motor) types are available. The demensionins ofor airflow directions "S" axial-flow fans is done by our field representatives or at company headquarters.
- Their compact design allows these fans to be installed even where space is at a premium.
- All fans are powered by IEC standard motors. Motors with thermocouples or thermisotor sensors are available upon request.
- Standard units are rated for up to 60°C, depending on motor insulation class
- Casings up to size 1120 are made of deep-drawing grade sheet steel with pressed flanges.
- Units are surface-finished with a RAL 7030 (pebble-grey) polyester powder coatching.

Unless special precautions are taken, these axial-flow fans are not suitable for outdoor installation (enquiries to be directed to our headquarters).

For planning and installation, please also refer to our Installation, Operating and Maintenance Instructions (MBW).



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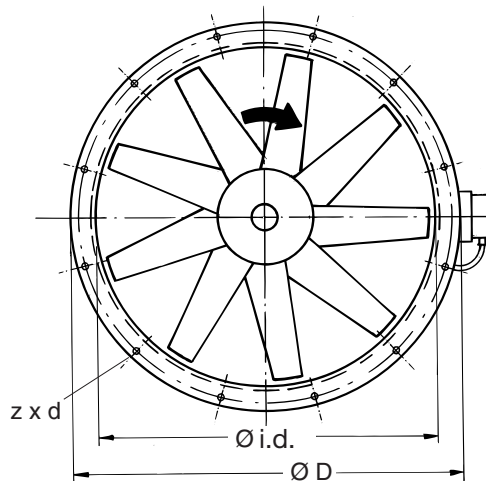
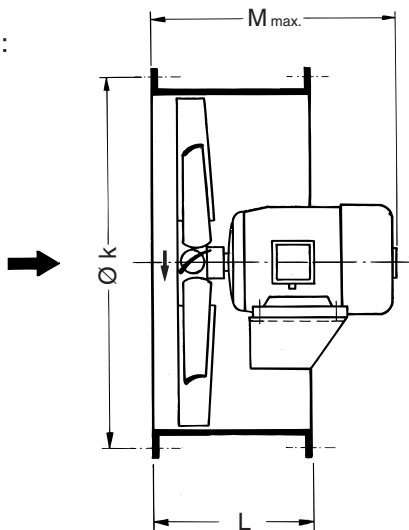
AXIAL FLOW FANS AXO SERIES DIRECT DRIVE MAIN DIMENSIONS TYPE M-D and M-S

007

Important! This fan series is available only with the motor outputs stated in our price lists.

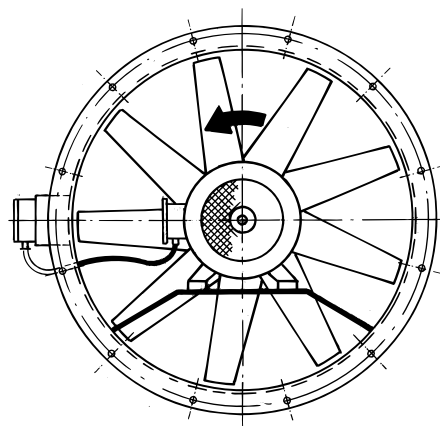
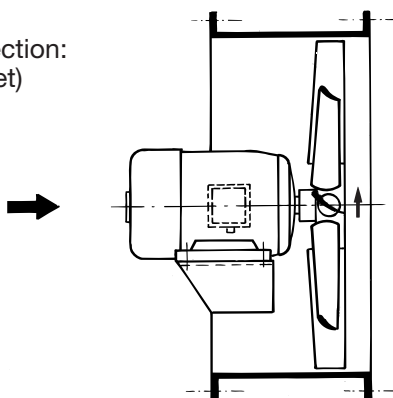
Type M-D

(Airflow direction:
motor in outlet)



Type M-S

(Airflow direction:
motor in inlet)



Size ¹⁾	Motorsize Type B 3	Ø i.d.	Ø k	Ø D	z x d ²⁾	L	M max.	Weight [kg] without motor
315	71	320	356	386	8 x 9,5	150	265	6,0
400	71- 90	401	438	468	12 x 9,5	188	348	11
500	80-100	504	541	571	12 x 9,5	225	390	16
	112-132					450	570	22
630	90-112	634	674	712	16 x 11,5	286	451	30
	132					572	595	42
800	100-132	797	837	875	24 x 11,5	350	575	50
	160					700	810	70
1000	132-180	1003	1043	1081	24 x 11,5	415	730	85
1120	132-200	1124	1174	1214	24 x 11,5	450	825	110

¹⁾ For vibration-damped installation
an extension casing will be required
with certain fan sizes.

²⁾ Connecting dimensions according
to DIN 24 154 – Series 3

Dimensions in mm

Dimensional and design
changes reserved.



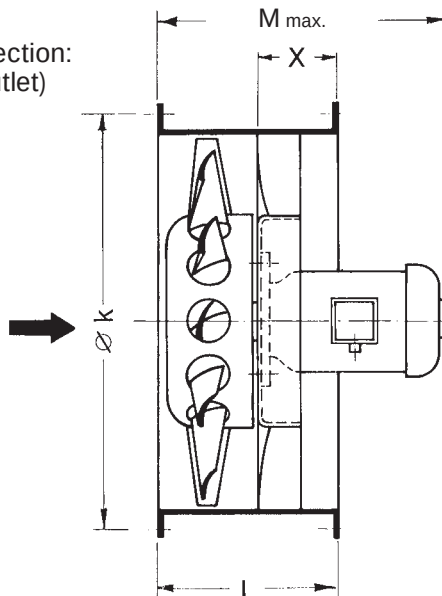
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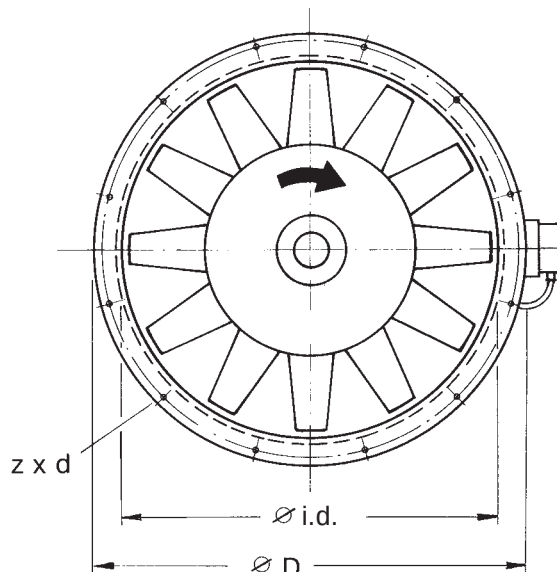
AXIAL FLOW FANS AXN SERIES DIRECT DRIVE MAIN DIMENSIONS TYPE M-D

008

Type M-D
(Airflow direction:
motor in outlet)



Important! This fan series is available only with the motor outputs stated in our price lists.



Size ¹⁾	Ø i. d.	Ø k	Ø D	z x d ²⁾	L	X	Mmax.	Weight [kg] without motor	Motor Size - Type Flange dia. ³⁾ - Shaft dia.					
250	254	286	310	6x 7,0	125	62	275	4,0	63 - B 14 120 - 11	71 - B 14 120 - 14				
280	286	322	352	8x 9,5	135	64	310	5,0	63 - B 14 120 - 11	71 - B 14 120 - 14	80 - B 14 120 - 19			
315	320	356	386	8x 9,5	150	71	320	6,5	71 - B 5 160 - 14	80 - B 14 160 - 19				
355	359	395	425	8x 9,5	165	77	370	8,0	71 - B 5 160 - 14	80 - B 14 160 - 19	90 - B 14 160 - 24			
400	401	438	468	12x 9,5	188	88	430	12	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24	100 - B 14 200 - 28	112 - B 14 200 - 28	
450	450	487	517	12x 9,5	200	88	440	14	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24	100 - B 14 200 - 28	112 - B 14 200 - 28	
500	504	541	571	12x 9,5	225	100	540	18	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38
560	565	605	643	16x11,5	242	100	560	26	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38
630	634	674	712	16x11,5	286	128	570	33	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38
710	711	751	789	16x11,5	305	128	700	45	80 - B 5 200 - 19	90 - B 5 200 - 24	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38	160 - B 5 350 - 42
800	797	837	875	24x11,5	350	150	780	56	90 - B 5 200 - 24	100 - B 5 250 - 28	112 - B 5 250 - 38	132 - B 5 250 - 38	160 - B 5 350 - 42	180 - B 5 350 - 48
900	894	934	972	24x11,5	373	149	930	74	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38	160 - B 5 350 - 42	180 - B 5 350 - 48	
									200 - B 5 350 - 55	225 - B 5 350 - 60				
1000	1003	1043	1081	24x11,5	415	165	960	93	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38	160 - B 5 350 - 42	180 - B 5 350 - 48	
									200 - B 5 450 - 55	225 - B 5 450 - 60				
1120	1124	1174	1214	24x11,5	450	170	1200	120	160 - B 5 350 - 42	180 - B 5 350 - 48	200 - B 5 400 - 55	225 - B 5 450 - 60	250 - B 5 550 - 65	280 - B 5 550 - 75
1250	1261	1311	1351	24x11,5	500	185	1230	145	160 - B 5 350 - 42	180 - B 5 350 - 48	200 - B 5 400 - 55	225 - B 5 450 - 60	250 - B 5 550 - 65	280 - B 5 550 - 75
									160 - B 5 350 - 42	180 - B 5 350 - 48				
1400	1415	1465	1545	24x11,5	900	547	1020	460	200 - B 5 400 - 55	225 - B 5 450 - 60	250 - B 5 550 - 65	280 75 B3/V1/V3	315 80 B3/V1/V3	
					1120	767	1350	495	200 - B 5 400 - 55	225 - B 5 450 - 60	250 - B 5 550 - 65			
1600	1587	1637	1717	32x11,5	900	500	1070	570	200 - B 5 400 - 55	225 - B 5 450 - 60				
					1120	725	1390	610	250 - B 5 550 - 65	280 75 B3/V1/V3	315 80 B3/V1/V3			
1800	1780	1830	1910	32x11,5	1120	675	1340	710	225 - B 5 450 - 60	250 - B 5 550 - 65	280 75 B3/V1/V3			
					1250	805	1670	755	315 80 B3/V1/V3	355 90 B3/V1/V3				
2000	1997	2047	2167	32x11,5	1120	655	1360	900	225 60 B3/V1/V3	250 65 B3/V1/V3	280 75 B3/V1/V3			
					1400	935	1700	960	315 80 B3/V1/V3	355 90 B3/V1/V3				

¹⁾ For vibration-damped installation an extension casing may be required with fans up to size 1000.

²⁾ Connecting dimensions according to DIN 24 145 – Series 3

³⁾ Special flanges may be needed with certain sizes.

For vibration-damped installation two Extension casings should be provided.

Dimensions in mm
Dimensional and design changes reserved.

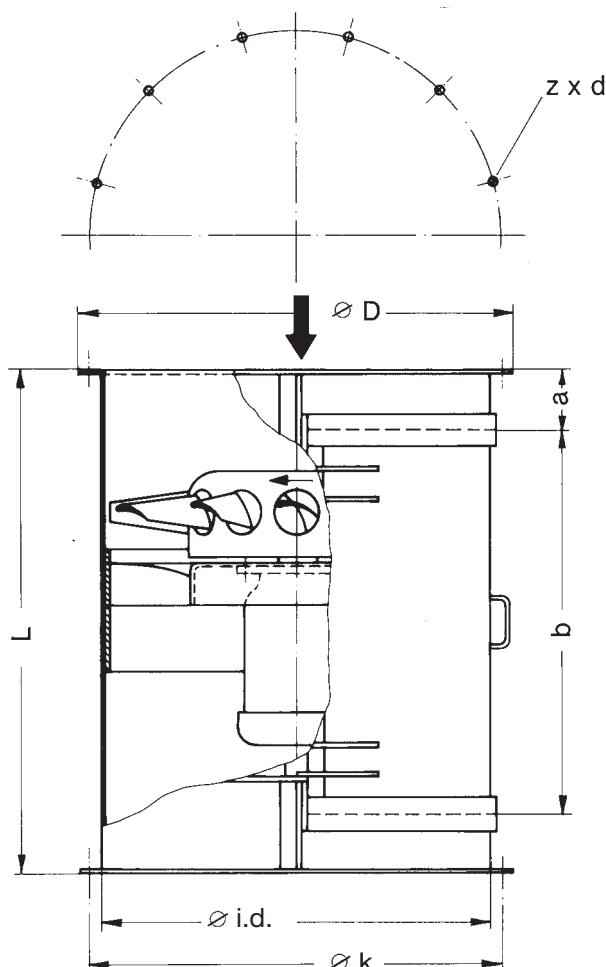


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AXIAL FLOW FANS AXN SERIES DIRECT DRIVE MAIN DIMENSIONS TYPE M-A

009



Size	Ø i.d.	Ø k	Ø D	z x Ø d ¹⁾	L	a	b	Weight [kg] without motor	Motor size - Type Flange dia. 2) - Shaft dia.					
400	401	448	484	12x11,5	600	100	400	80	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24			
450	450	497	533	12x11,5	700	125	450	93	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24			
500	504	551	587	12x11,5	700	125	450	114	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24			
560	565	629	669	16x14	800	125	550	147	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24	100 - B 5 250 - 28	112 - B 5 250 - 28	
630	634	698	738	16x14	900	150	600	188	71 - B 5 160 - 14	80 - B 5 200 - 19	90 - B 5 200 - 24	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38
710	711	775	815	16x14	1000	150	700	245	80 - B 5 200 - 19	90 - B 5 200 - 24	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38	160 - B 5 350 - 42
800	797	861	901	24x14	1150	150	850	333	90 - B 5 200 - 24	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38	160 - B 5 350 - 42	180 - B 5 350 - 48
900	894	958	998	24x14	1200	150	900	400	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38	160 - B 5 350 - 42	180 - B 5 350 - 48	
1000	1003	1067	1107	24x14	1300	200	900	490	100 - B 5 250 - 28	112 - B 5 250 - 28	132 - B 5 250 - 38	160 - B 5 350 - 42	180 - B 5 350 - 48	
1120	1124	1200	1254	32x18	1400	200	1000	706	160 - B 5 350 - 42	180 - B 5 350 - 48	200 - V1 / V3* 400 - 55			
1250	1261	1337	1397	32x18	1500	250	1000	856	160 - B 5 350 - 42	180 - B 5 350 - 48	200 - V1 / V3* 400 - 55			
1400	1415	1491	1545	32x18	1600	250	1100	1055	160 - B 5 350 - 42	180 - B 5 350 - 48	200 - V1 / V3* 400 - 55		225 - V1 / V3* 450 - 60	

¹⁾ Connecting dimensions according to DIN 24 145 Series 4

Available with airflow direction D only.

* For vertical installation use motor types V1 or V3 (flange diameter data available on request).

Dimensions in mm

Dimensional and design changes reserved.

²⁾ Special flanges may be needed with certain sizes.

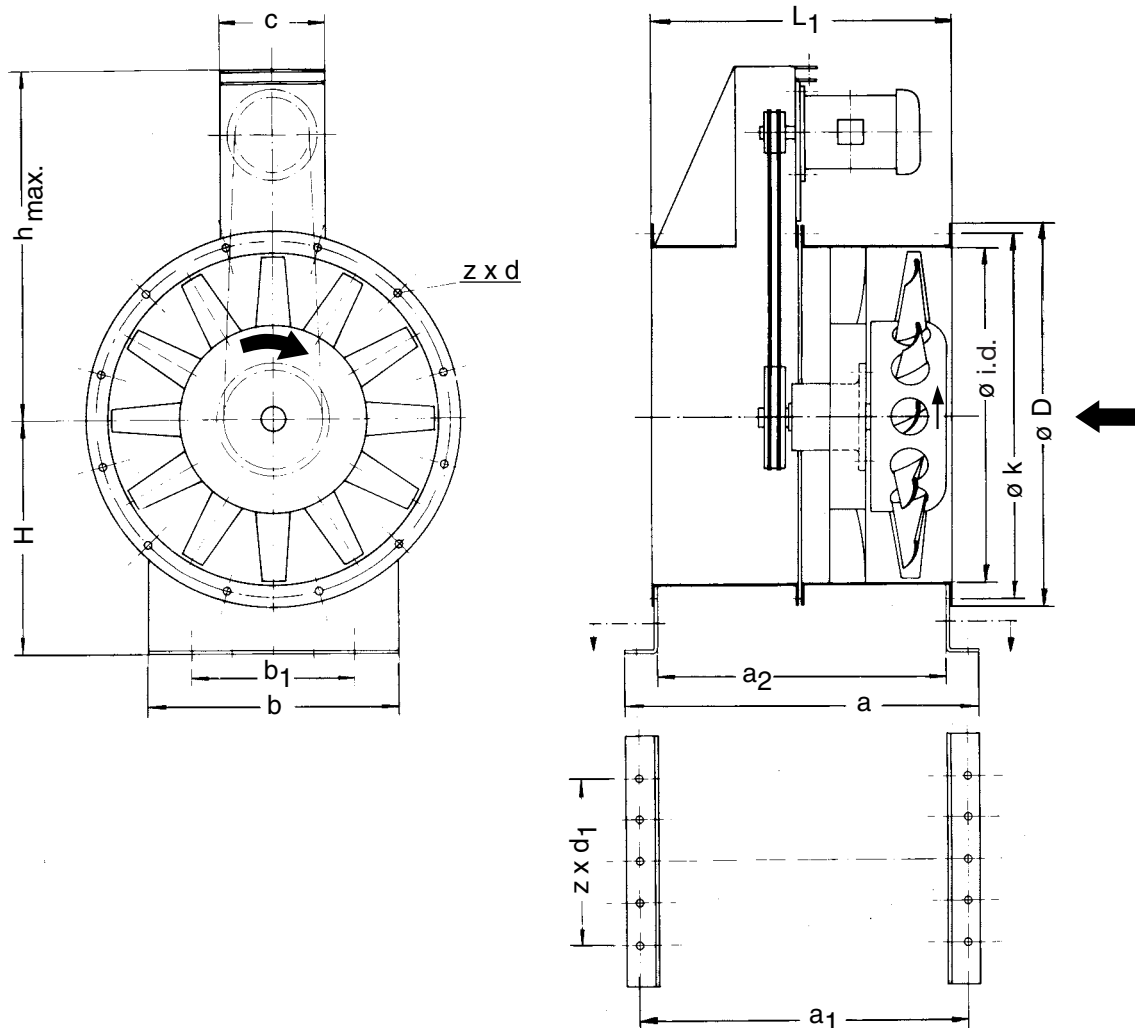


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AXIAL FLOW FANS AXN SERIES BELT DRIVE MAIN DIMENSIONS TYPE R1

010



Size	Ø i.d.	Ø k	Ø D	z x d ¹⁾	L ₁	H	h max.	c	Motor		a	a ₁	a ₂	b	b ₁	z x d ₁	Weight without motor [~ kg]
									Max. size	Flange type dia							
400	401	438	468	12x 9,5	376	300	615	300	bis 112 132 S	B 5 B 5 - 250	436	406	363	370	300	5x 9,5	50
450	450	487	517	12x 9,5	400	335	650	300	bis 112 132 S	B 5 B 5 - 250	460	430	387	410	330	5x 9,5	54
500	504	541	571	12x 9,5	450	375	685	300	bis 112 132 S	B 5 B 5 - 250	510	480	437	460	380	5x 9,5	65
560	565	605	643	16x11,5	484	420	827	300	bis 112 132 S	B 5 B 5 - 250	559	519	470	510	430	5x11,5	80
630	634	674	712	16x11,5	572	470	870	300	bis 112 132 S	B 5 B 5 - 250	647	607	558	550	470	5x11,5	115
710	711	751	789	16x11,5	610	525	920	400	132M	B 5 250	685	645	596	620	530	5x11,5	130
800	797	837	875	24x11,5	700	585	970	400	160M	B 5	775	735	686	730	640	5x11,5	160
900	894	934	972	24x11,5	746	655	1025	400	160M	B 5	831	781	742	730	640	5x11,5	224
1000	1003	1043	1081	24x11,5	830	730	1080	400	160M	B 5	927	881	814	830	740	5x14	275
1120	1124	1174	1254	24x11,5	710	760	1175	460	180M	B 5	797	751	684	920	820	5x14	320
1250	1261	1311	1391	24x11,5	800	855	1225	460	180M	B 5	887	841	774	1030	930	5x14	400

¹⁾ Connecting dimensions according to DIN 24 154 – Series

Available with airflow direction D only.

Dimensions in mm

Dimensional and design changes reserved.

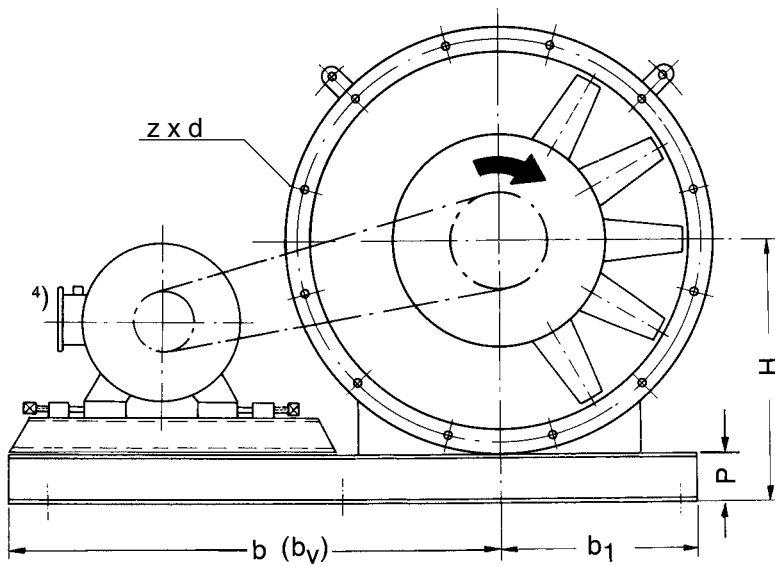


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AXIAL FLOW FANS AXN SERIES BELT DRIVE MAIN DIMENSIONS TYPE R2

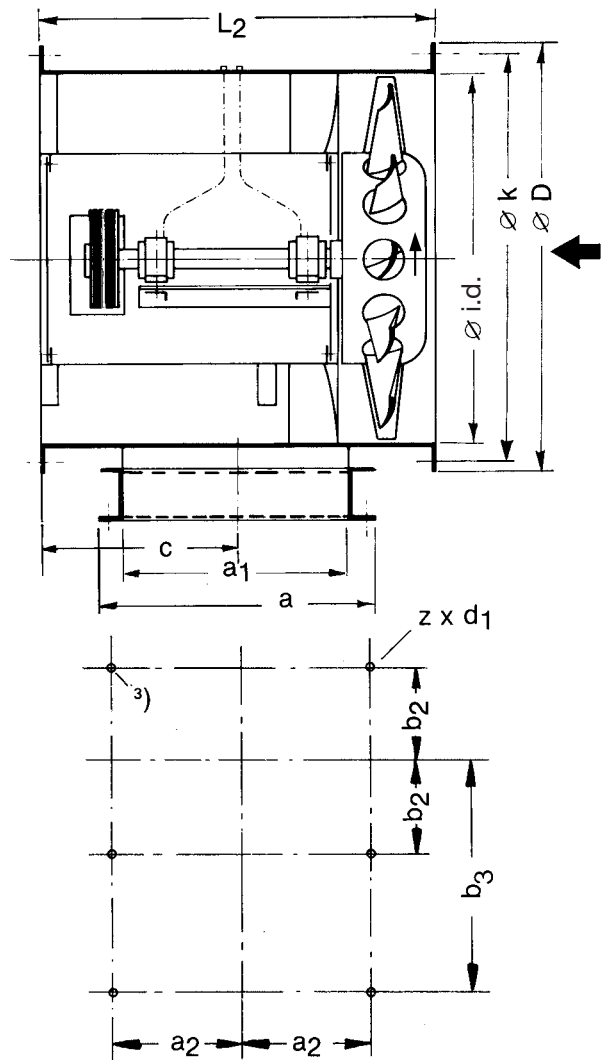
011



Drawing shows motor in airflow direction "left"

Configuration with motor in airflow direction "right" is also available.

Please specify in your purchase order.



Size	Ø i.d.	Ø k	Ø D	z x d ¹⁾	L ₂	H	Motor Type B3 Max. size		a	a ₁	a ₂	b	b _v rein- forced	b ₁	b ₂	b ₃	c	z x d ₁	P (standard)	P (reinforced)	Weight without motor [~ kg] standard
							standard	rein- forced ²⁾													
710	711	751	819	16x11,5	700	525	160 L	180 M	490	400	225	950	950	310	265	905	400	6x11,5	80	80	160
800	797	837	905	24x11,5	800	585	180 L	200 L	570	460	260	1030	1200	355	310	1035	450	6x11,5	120	120	235
900	894	934	1004	24x11,5	900	655	180 L	225 S	574	464	262	1030	1175	360	320	990	450	6x14	120	120	260
1000	1003	1043	1113	24x11,5	1000	730	200 L	225 M	560	420	255	1230	1230	420	370	1180	500	6x14	120	120	340
1120	1124	1174	1254	24x11,5	1100	760	200 L	250 M	610	500	280	1280	1480	470	420	1220	550	6x18	120	140	530
1250	1261	1311	1391	24x11,5	1200	855	225 L	280 S	710	590	330	1315	1600	515	465	1265	600	6x18	140	140	630
1400	1415	1465	1545	24x11,5	1300	930	225 M	280 M	810	690	380	1380	1580	580	530	1330	650	6x18	140	160	780
1600	1587	1637	1717	32x11,5	1400	1020	225 M	315 S	920	790	430	1495	2025	625	565	1435	700	6x18	160	180	1050
1800	1780	1830	1910	32x11,5	1500	1120	225 M	315 M	1020	880	480	1600	2100	700	640	1540	750	6x18	180	200	1300
2000	1997	2047	2167	32x11,5	1500	1250	225 M	315 M	1030	880	480	1900	2100	700	640	1830	750	8x18	200	220	1700
2240	2228	2300	2398	40x14	on request	1375	225 M	315 M	on request												2100
2500	2500	2580	2670	48x14		1500	225 M	315 M													2600

¹⁾ Connecting dimensions according to DIN 24 154 – Series 3

²⁾ Reinforced types available against surcharge.

³⁾ Position of antivibration mounts will be communicated upon specification.

⁴⁾ Please check for correct position of the terminal box when placing your purchase order.

Available only with airflow direction D

Dimensions in mm

Dimensional and design changes reserved.



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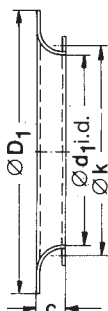
AXIAL FLOW FANS AXO + AXN SERIES MAIN DIMENSIONS ACCESSORIES*

012

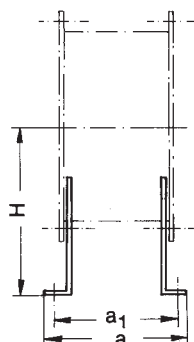
**Wire guard,
inlet side**



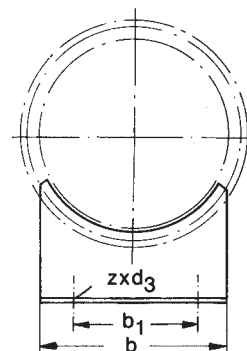
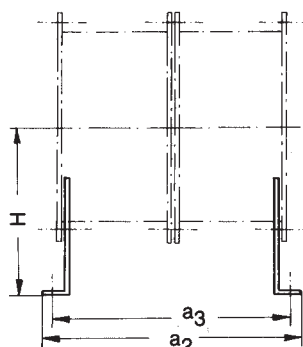
**Bellmouth inlet,
with flange**



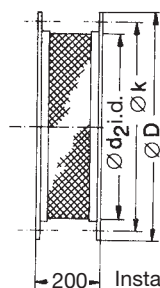
Mounting feet



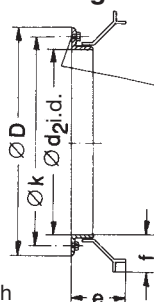
Mounting feet for fans with extension casing
or R1 types



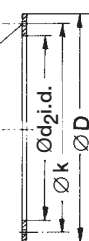
Flexible connector



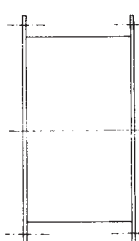
Wall ring



Matching flange



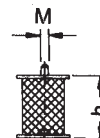
Extension casing



(same dimensions as M-D
fan type, refer to page 008)

Size	Ø D ₁	Ø d ₁ i.d.	c	H	a	a ₁	a ₂	a ₃	b	b ₁	z x d ₃	Ø d ₂ i.d.	Ø k	Ø D	z x d ¹⁾	e	f
250	355	255	50	195	185	155	310	280	240	180	5x 9,5	255	286	310	6x 7,0	70	50
280	398	287	56	225	195	165	330	300	270	208	5x 9,5	287	322	352	8x 9,5	80	50
315	447	321	62	240	208	178	358	328	300	240	5x 9,5	321	356	386	8x 9,5	80	50
355	501	362	69	270	221	191	386	356	330	270	5x 9,5	360	395	425	8x 9,5	80	50
400	562	403	78	300	248	218	436	406	370	300	5x 9,5	403	438	468	12x 9,5	80	50
450	631	452	87	335	260	230	460	430	410	330	5x 9,5	452	487	517	12x 9,5	80	50
500	708	509	98	375	285	255	510	480	460	380	5x 9,5	506	541	571	12x 9,5	80	50
560	794	571	109	420	317	277	559	519	510	430	5x11,5	568	605	643	16x11,5	100	70
630	875	640	95	470	361	321	647	607	550	470	5x11,5	637	674	712	16x11,5	100	70
710	972	717	103	525	380	340	685	645	620	530	5x11,5	714	751	785	16x11,5	100	70
800	1081	801	115	585	425	385	775	735	730	640	5x11,5	800	837	875	24x11,5	100	70
900	1214	898	130	655	452	412	825	781	730	640	5x11,5	897	934	972	24x11,5	100	70
1000	1351	1009	145	730	512	466	927	881	830	740	5x14	1006	1043	1081	24x11,5	100	70
1120	1470	1130	160	760	547	501	997	951	920	820	5x14	1133	1174	1214	24x11,5	110	90
1250	1677	1263	185	855	597	551	1097	1051	1030	930	5x14	1270	1311	1351	24x11,5	110	90
1400	1870	1417	210	930	a ₁ = Casing length +87	a ₁ = - " +41	1140	1040	1140	1040	5x14	1424	1465	1505	24x11,5	130	100
1600	2087	1587	210	1020	a = Casing length +92		1350	1230	1350	1230	5x18	1596	1637	1677	32x11,5	130	100
1800	2300	1780	210	1120	a ₁ = - " +42		1500	1380	1500	1380	5x18	1789	1830	1870	32x11,5	130	100
2000	2540	1997	210	1250	a = 104	a ₁ = +44	1750	1600	1750	1600	5x18	2006	2047	2087	32x11,5	160	120
2240	2950	2235	210	1375	not available							2237	2300	upon request	40x14	160	120
2500	upon request			1500	not available							2509	2580	upon request	48x14	160	120

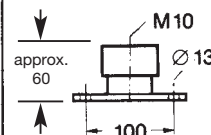
**Rubber antivibration
mounts²⁾**



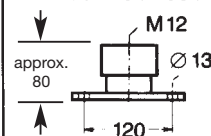
Size	h	M
1	30	6
2	30	8
3	40	8
4	45	10
5	55	12

Spring isolators³⁾

V 101 / 103 / 105 / 108



V 112 / 120 / 130 / 150



Dimensions in mm

1) Connecting dimensions in accordance with DIN 24 154 – Series 3

2) Number and distribution to be determined according to load conditions.

3) Height under load will be communicated upon specification (value is calculated individually for each purchase order).

This accessory is not suitable for type M-A fans (swing-out version).

* All accessories except for mounting feet and extension casings will be supplied loosely.

Dimensional and design changes reserved.



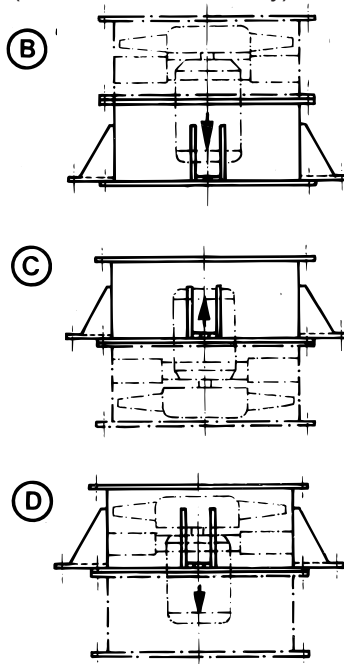
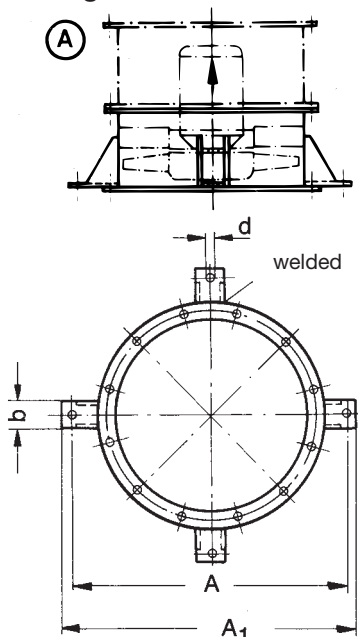
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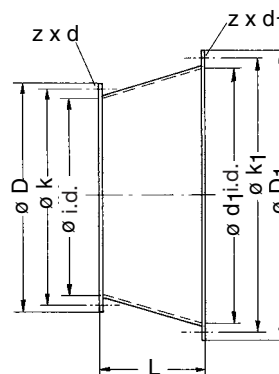
AXIAL FLOW FANS AXO + AXN SERIES MAIN DIMENSIONS ACCESSORIES

013

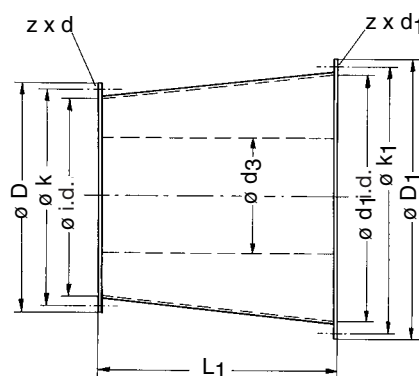
Mounting brackets for vertical installation (direct-driven fans only)



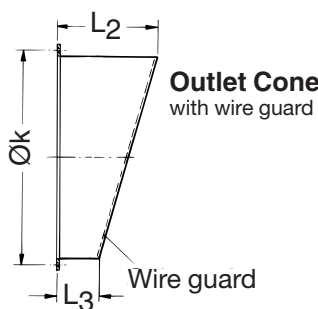
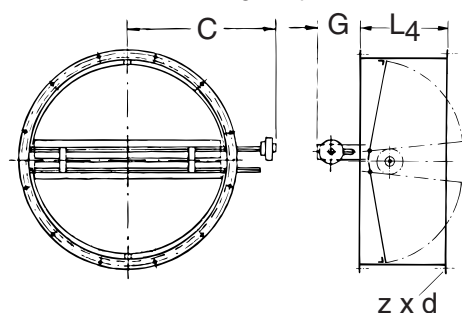
Diffuser (AXO series)
available in sizes 315, 400, 500,
630, 800 and 1000 only.



Diffuser (AXN series)
available as of size 500



Duct with self-activating damper



Bau- größe	A □	A1 □	b	d	Stück. Größe	Ø i.d.	Ø k	Ø D	z x d ²⁾	Ø d1 i.d.	Ø d3	Ø k1	Ø D1	z x d1	L	L1	L2	L3	L4	G	C	
250	380	414	56	10	3 1	254	286	310	6x 7,0	—	—	—	—	—	—	—	250	50	125	40	200	
280	416	450	56	10	4 1	286	322	352	8x 9,5	—	—	—	—	—	—	—	260	60	135	40	210	
315	472	520	68	12	4 2	320	356	386	8x 9,5	401	—	438	468	12x 9,5	160	—	260	60	150	40	230	
355	511	559	68	12	4 2	359	395	425	8x 9,5	—	—	—	—	—	—	—	280	80	165	40	250	
400	554	602	68	12	4 2	401	438	468	12x 9,5	504	—	541	571	12x 9,5	200	—	280	60	188	40	280	
450	603	651	68	12	4 2	450	487	517	12x 9,5	—	—	—	—	—	—	—	290	70	200	200	350	
500	657	705	68	12	4 2	504	541	571	12x 9,5	634	282	674	712	16x11,5	250	600	280	60	225	200	390	
560	783	831	90	14	4 3	565	605	643	16x11,5	711	315	751	789	16x11,5	—	670	330	70	242	200	430	
630	852	900	90	14	4 3	634	674	712	16x11,5	797	355	837	875	24x11,5	315	750	330	70	286	200	470	
710	929	977	90	14	4 3	711	751	789	16x11,5	894	397	934	972	24x11,5	—	850	350	70	305	200	540	
800	1015	1063	90	14	4 3	797	837	875	24x11,5	1003	446	1043	1081	24x11,5	400	950	520	200	350	200	580	
900	1112	1160	90	14	4 3	894	934	972	24x11,5	1124	502	1174	1254	24x11,5	—	1060	585	225	373	200	650	
1000	1221	1269	90	14	4 3	1003	1043	1081	24x11,5	1261	562	1311	1391	24x11,5	500	1200	640	240	415	200	720	
1120	1374	1434	100	18	4 4	1124	1174	1254	24x11,5	1415	630	1465	1545	24x11,5	—	1340	730	250	450	270	790	
1250	1511	1571	100	18	4 4	1261	1311	1391	24x11,5	1587	710	1637	1717	32x11,5	—	1510	810	250	500	270	900	
1400	1665	1725	100	18	4 4	1415	1465	1545	24x11,5	1780	789	1830	1910	32x11,5	—	1690	upon request					
1600	1837	1897	100	18	4 4	1587	1637	1717	32x11,5	1997	888	2047	2167	32x11,5	—	1900	upon request					
1800	2070	2150	120	18	4 5	1780	1830	1910	32x11,5	2228	997	2300	2398	40x14	—	2080	not available					
2000	2287	2367	120	18	4 5	1997	2047	2167	32x11,5	2500	1120	2580	2670	48x14	—	2330	not available					
2240	Mounting brackets not available					2228	2300	2398	40x14	2785	1120	2885	2955	48x14	—	2580	not available					
2500	Mounting brackets not available					2500	2580	2670	48x14	3125	1120	3225	3295	48x14	—	2900	not available					

1) Connecting dimensions in accordance
with DIN 24154 – Series 3



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AXIAL FLOW FANS AXN SERIES ROUND SILENCERS - TSR

014

Complimentary to our AXN 12/56 series (with outlet guide vanes) we supply specially developed round silencers in 13 sizes.

These units substantially reduce the sound level.

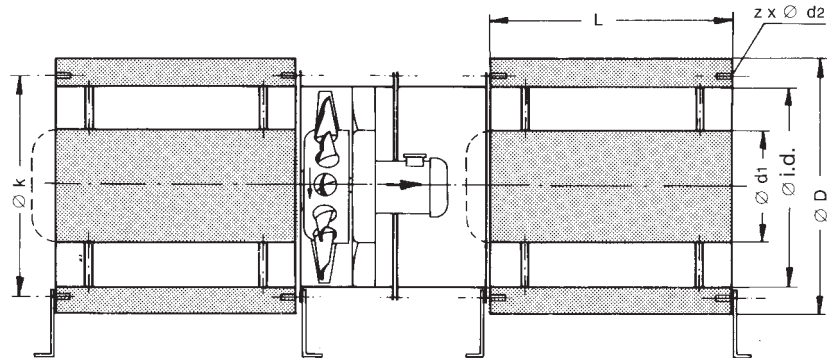
They are easily fitted on the fan inlet or outlet side, without any additional intermediate elements.

The silencer housing consists of Sendzimir galvanized sheet steel.

Mounting nuts are provided internally on the connecting face sides (hole pattern as per DIN 24154 – Series 3).

The interspace between the exterior barrel and the interior sleeve (made of galvanized perforated sheet metal) as well as the interior core are filled with a non-combustible acoustic damping material.

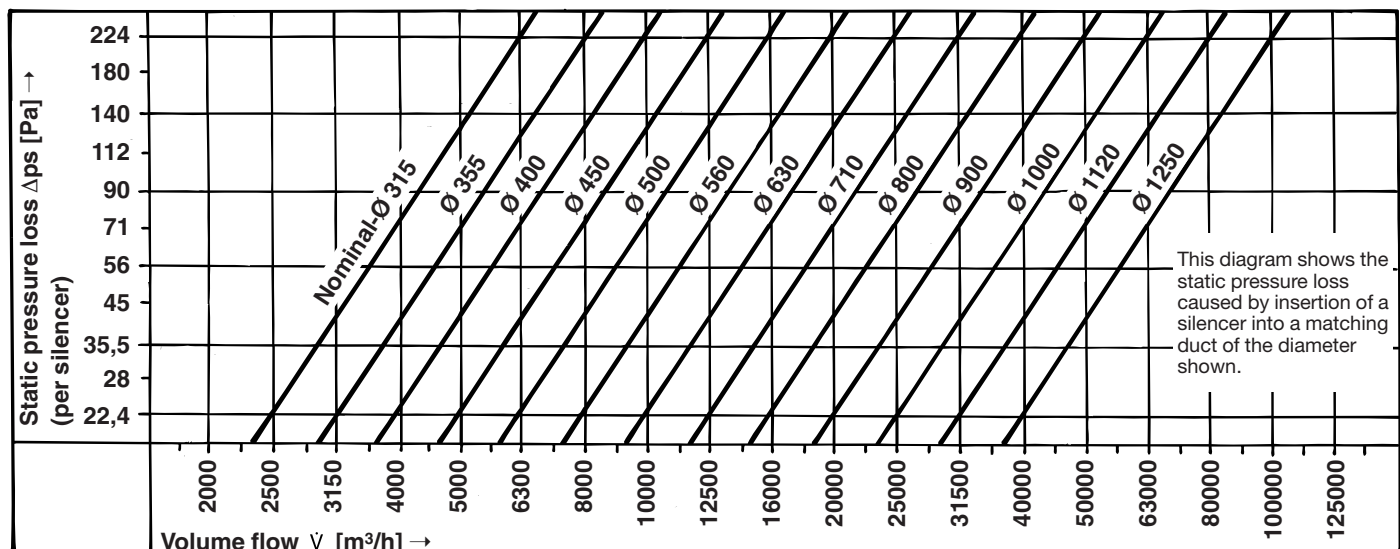
(The sketch shows an axial-flow fan with extension casing and one round silencer each on its inlet and outlet sides).



Insertion attenuation per silencer

Nominal dia.	Insertion attenuation in dB							
	For higher attenuations several silencers of identical diameter may be arranged in series.							
	Octave centre frequency f_o [Hz]							
	63	125	250	500	1000	2000	4000	8000
315	7	13	17	22	24	30	23	19
355	7	13	17	22	24	30	23	19
400	6	12	16	21	23	29	22	18
450	6	11	15	19	21	26	20	16
500	5	10	14	17	19	23	18	14
560	4	9	13	16	18	22	17	13
630	3	8	12	15	17	20	16	12
710	6	11	16	19	21	20	17	13
800	5	10	14	17	19	18	16	12
900	4	9	13	16	18	16	13	9
1000	3	8	12	15	17	14	12	8
1120	4	8	13	16	18	15	13	9
1250	4	9	13	17	18	16	13	9

Nenn-Durchmesser	Ø i.d.	Ø D	Ø k	Ø d ₁	L	z x Ø d ₂	Gewicht [kg]
315	320	490	356	180	930	8 x M 8	31
355	359	525	395	200	930	8 x M 8	39
400	401	570	438	224	930	12 x M 8	50
450	450	620	487	250	930	12 x M 8	56
500	504	675	541	280	930	12 x M 8	60
560	565	735	605	315	930	16 x M 8	68
630	634	885	674	355	930	16 x M 8	76
710	711	960	751	400	1430	16 x M 8	120
800	797	1050	837	450	1430	24 x M 8	137
900	894	1145	934	500	1430	24 x M 8	153
1000	1003	1255	1043	560	1430	24 x M 8	167
1120	1124	1375	1174	630	1430	24 x M 8	207
1250	1261	1515	1311	710	1430	24 x M 8	254





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ACOUSTIC INSULATION FOR AXO + AXN SERIES

015

Description:

shell-design, easy dismanteling, re-usable. For acoustic insulation and/or reduction of thermal emission from the fan casing.

The design of this insulation - compared to some other types - allows a more space saving installation with improved accessibility as well as considerably easier testing and maintenance of the fan.

The Insulation consists of:

A certian number of shells acc. to fan length, split into upper and lower shell, made of galvanized steel sheets for connecting the shells in the vicinity of the fan's mounting feet as well as insulated connections to flexible connectors or ducts. Insulating material made of mineral wool with wire gauze on one side, thickness 80 mm and 120 mm respctively, not inflammable class A1 as per DIN 4102 T4, specific density 60-80 kg/m3. These mats are fixed to the shells.



Axial Fan ZAXN 12/56/1000 with acoustic insulation

**Total insulation value
Axial Fan with insulated casing
[A-weighted]**

**approximative calculation of the A-
weighted acoustic power, emitted
from the insulated fan casing**

$$L_{WA\text{casing}} = L_{W\text{vent.}} - De_{\text{chart}}$$

Insulation value [DE]

	Insulation value [De] dB (A) weighted		
f_D [Hz]	500	250	125
Size 315-560	35	35	36
Size 630-1600	37	38	37

(please ask for exact value of insulation within the octave band)



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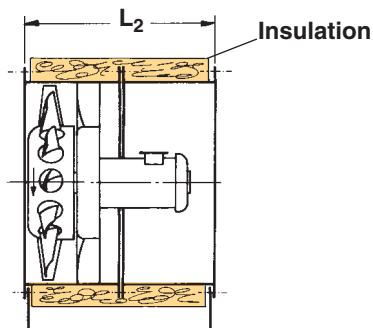
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ACOUSTIC INSULATION MAIN DIMENSIONS

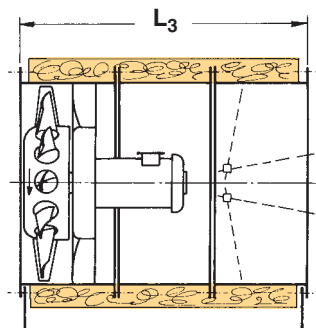
016

Examples for horizontal installation

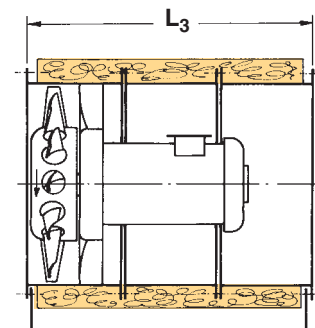
Type A



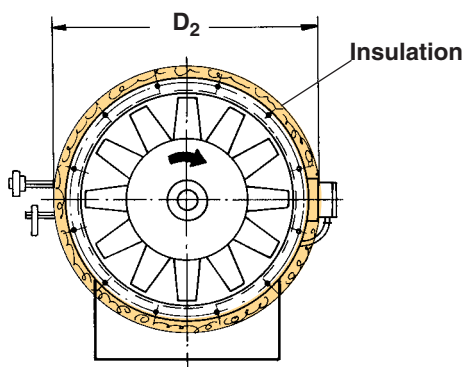
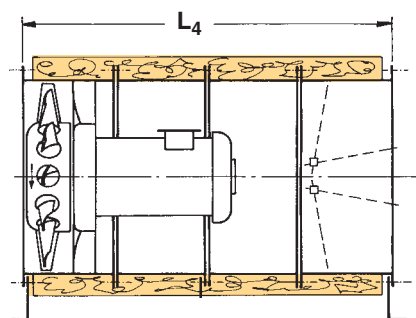
Type B



Type C



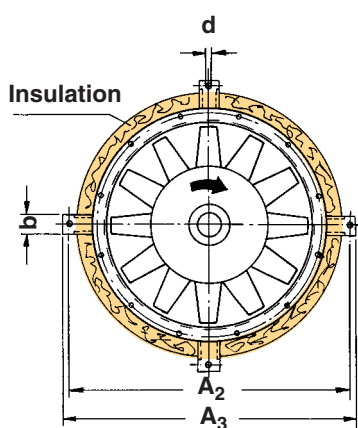
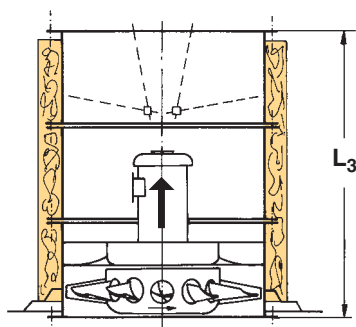
Type D



for dimensions please
see page 017

In case of horizontal outdoor installation a canope is to be erected covering complete insulation (available upon request)

Examples for vertical installation



Size	L ₃	A ₂	A ₃	b	d
355	495	631	679	68	12
400	564	674	722	68	12
450	600	723	771	68	12
500	675	777	825	68	12
560	726	903	951	90	14
630	858	1014	1066	90	14
710	915	1091	1143	90	14
800	1050	1177	1229	90	14
900	1119	1274	1326	90	14
1000	1245	1383	1435	90	14
1120	1350	1504	1564	100	18
1250	1500	1641	1701	100	18

dimensions in mm

This insulation should not be used for
vertical outdoor installation



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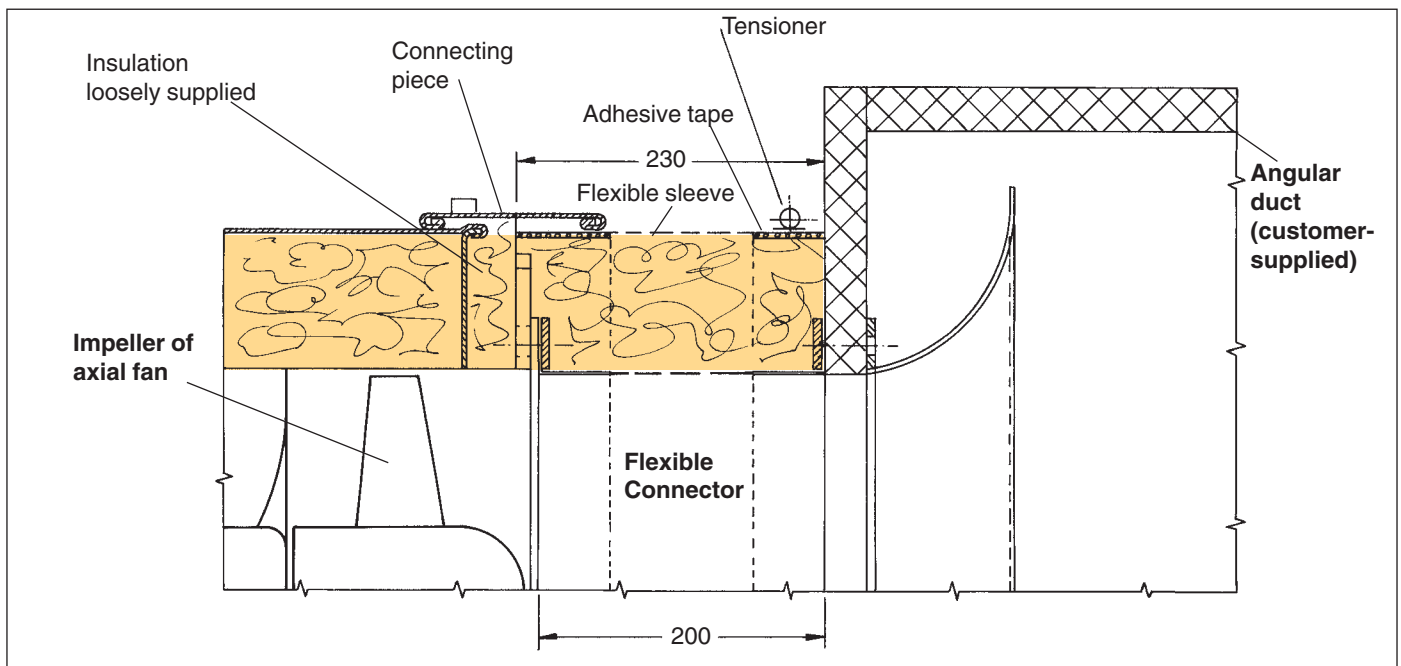
ACOUSTIC INSULATION MAIN DIMENSIONS CONNECTION DETAILS

017

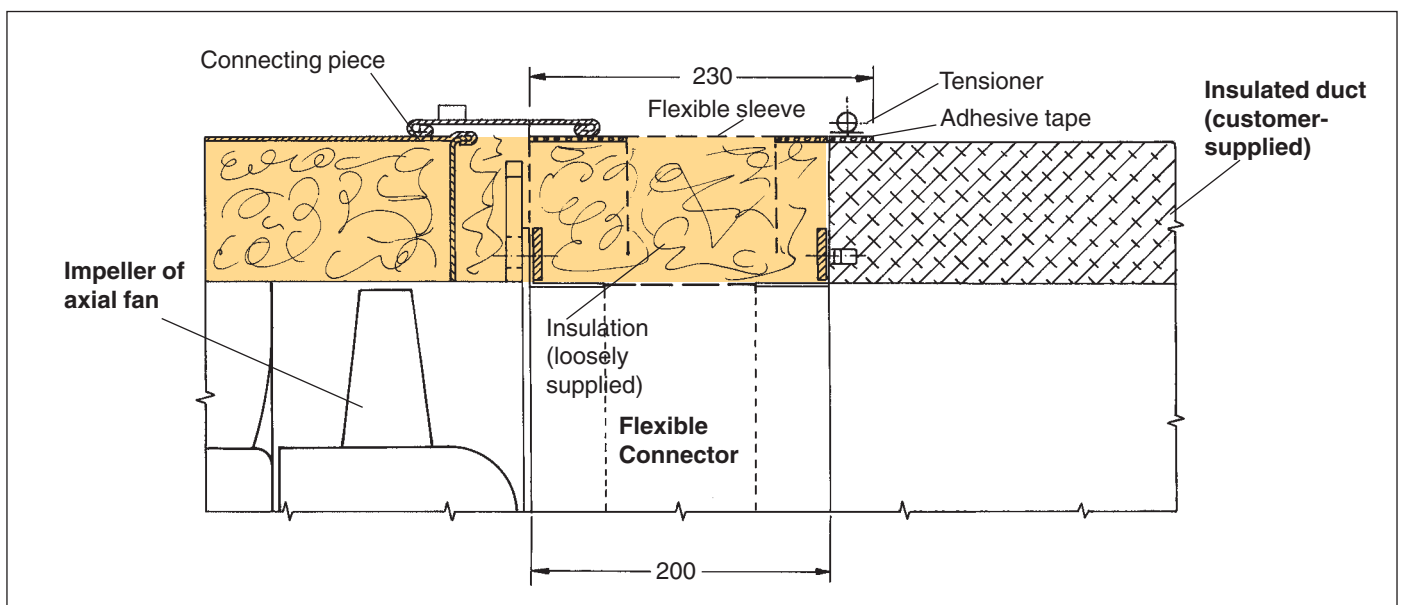
Size	D ₂	L ₂	L ₃	L ₄			
355	525	330	495	660			
400	570	376	564	752			
450	620	400	600	800			
500	675	450	675	900			
560	735	484	726	968			
630	885	572	858	1144			

Size	D ₂	L ₂	L ₃	L ₄			
710	960	610	915	1220			
800	1050	700	1050	1400			
900	1145	746	1119	1492			
1000	1255	830	1245	1660			
1120	1375	900	1350	1800			
1250	1515	1000	1500	2000			

Fan - Flexible connector - angular duct



Fan - Flexible Connector - Duct





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AXIAL FLOW FANS AXO SERIES ACOUSTIC DATA

018

Acoustic level

The total acoustic power level $L_{W,vent.}$ (in dB) of an axial-flow fan can be obtained directly from the characteristic data sheets for each operating point.

Starting from this value, the A-weighted acoustic power level L_{WA} and the

relative acoustic power level $L_{Wrel.}$ can be determined using the tables below. These values are available as the acoustic power emitted into the duct and as the acoustic power emitted from the fan inlet or outlet opening, respectively. The values given were taken from measurements as

per EN 25136 (formerly DIN 45 635, Part 9) duct testing method.

1. Acousting power level emitted into the duct

The level of acoustic power an axial-flow fan emits into the ducting is used for calculating the sound power characteristics of downstream systems, e.g., silencers.

The levels are calculated as follows:

$L_{W,vent.}$ [dB] = total acoustic power emitted by the fan,
(please see respective characteristic curve sheets)

$L_{WA,vent.}$ [dB] = A-weighted acoustic power level, according to the equation

$L_{WA,vent.}$ = $L_{W,vent.} - \text{portion 1.1 [dB]}$

$L_{Wrel,vent.}$ [dB] = relative acoustic power level as expressed by the equation

$L_{Wrel,vent.}$ = $L_{W,vent.} - \text{portion 1.2 [dB]}$

2. Acoustic power emitted from the fan inlet or outlet opening

To determine the sound levels at a given installation site, it is usually necessary to know the level of acoustic power emitted from the fan's inlet or outlet opening. The adjacent tables are based on the outlet reflection pattern assumed in VDI 2081, Case 2.

$L_{WA,op.}$ [dB] = A-weighted level of acoustic power emitted from the fan's opening, expressed by the equation

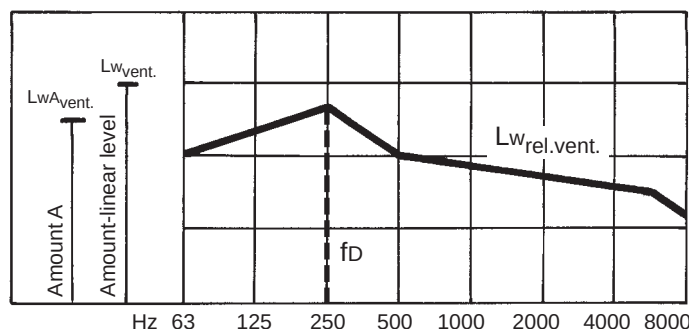
$L_{WA,op.}$ = $L_{W,vent.} - \text{portion 2.1 [dB]}$

$L_{Wrel,op.}$ = relative level of acoustic power emitted from the fan's opening, expressed by the equation

$L_{Wrel,op.}$ = $L_{W,vent.} - \text{portion 2.2 [dB]}$

Blade frequency of the fan is calculated from the number of blades z and the fan speed n [rpm].

$$f_D = \frac{z \cdot n}{60} \text{ [s}^{-1}\text{]}$$



Axial Smoke Exhaust Fan AXO (without guide vanes)

$f_D = \frac{z \cdot n}{60}$	Portion 1.1	Portion 1.2 at mid-octave frequency [Hz]							
		63	125	250	500	1000	2000	4000	8000
500	4	12	9	7	5	11	12	14	15
250	6	9	7	4	10	12	13	15	17
125	7	6	4	10	11	13	14	16	21
63	8	2	8	10	11	13	15	19	24
31,5	8	6	8	9	11	13	17	21	26

Size*	$f_D = \frac{z \cdot n}{60}$	Portion 2.1	Portion 2.2 at mid-octave frequency [Hz]							
			63	125	250	500	1000	2000	4000	8000
315	500	4	24	17	11	6	11	12	14	15
	250	6	21	15	8	12	12	13	15	17
	125	8	18	12	14	13	13	14	16	21
	63	8	13	15	13	12	13	15	19	24
400	500	4	22	16	10	5	11	12	14	15
	250	6	20	13	7	11	12	13	15	17
	125	7	17	10	13	12	13	14	16	21
	63	8	13	15	13	12	13	15	19	24
500	500	4	21	14	9	5	11	12	14	15
	250	6	18	12	6	11	12	13	15	17
	125	7	15	9	11	11	13	14	16	21
	63	8	12	13	12	12	13	15	19	24
630	500	4	20	13	8	5	11	12	14	15
	250	6	17	11	6	10	12	13	15	17
	125	7	14	8	11	11	13	14	16	21
	63	8	10	12	11	11	13	15	19	24
800	500	4	18	12	8	5	11	12	14	15
	250	6	15	10	5	10	12	13	15	17
	125	7	12	7	10	11	13	14	16	21
	63	8	9	11	11	11	13	15	19	24
1000	250	6	14	9	5	10	12	13	15	17
	125	7	11	6	10	11	13	14	16	21
	63	8	8	10	10	11	13	15	19	24

*Intermediate values to be obtained by interpolation.

Note:

Portions 1.1 / 1.2 / 2.1 / 2.2 to be taken from the above spreadsheets.



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AXIAL FLOW FANS AXN SERIES ACOUSTIC DATA

019

Acoustic level

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Starting from this value, the A-weighted acoustic power level L_{WA} and the

relative acoustic power level $L_{Wrel.}$ can be determined using the tables below. These values are available as the acoustic power emitted into the duct and as the acoustic power emitted from the fan inlet or outlet opening, respectively. The values given were taken from measurements as

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The levels are calculated as follows:

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$L_{Wrel,vent.}$ [dB] = relative acoustic power level as expressed by the equation

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2. Acoustic power emitted from the fan inlet or outlet opening

To determine the sound levels at a given installation site, it is usually necessary to know the level of acoustic power emitted from the fan's inlet or outlet opening. The adjacent tables are based on the outlet reflection pattern assumed in VDI 2081, Case 2.

$L_{WA,op.}$ [dB] = A-weighted level of acoustic power emitted from the fan's opening, expressed by the equation

$L_{WA,op.}$ = $L_{W,vent.} - \text{portion 2.1 [dB]}$

$L_{Wrel,op.}$ = relative level of acoustic power emitted from the fan's opening, expressed by the equation

$L_{Wrel,op.}$ = $L_{W,vent.} - \text{portion 2.2 [dB]}$

Axial Smoke Exhaust Fan AXN (with guide vanes)

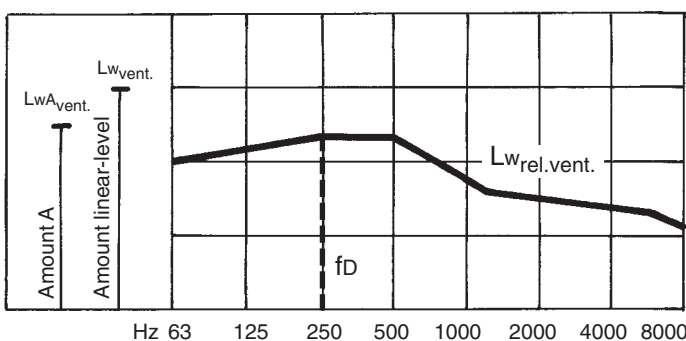
$f_D = \frac{z \cdot n}{60}$	Portion 1.1	Portion 1.2 at mid-octave frequency [Hz]							
		63	125	250	500	1000	2000	4000	8000
500	2	13	10	8	6	6	12	15	16
250	5	10	8	5	5	11	14	16	18
125	7	7	5	5	11	14	16	18	22
63	10	4	4	10	13	15	17	21	25
31,5	11	3	9	12	13	15	20	24	28

Size*	$f_D = \frac{z \cdot n}{60}$	Portion 2.1	Portion 2.2 at mid-octave frequency [Hz]							
			63	125	250	500	1000	2000	4000	8000
315	500	3	25	18	12	7	6	12	15	16
	250	6	23	16	9	7	12	14	16	18
	125	8	20	13	9	12	14	16	18	22
400	500	3	23	17	11	6	6	12	15	16
	250	5	21	14	9	6	11	14	16	18
	125	8	18	11	8	12	14	16	18	22
	63	10	15	11	13	14	15	17	21	25
500	500	2	22	15	10	6	6	12	15	16
	250	5	20	13	8	6	11	14	16	18
	125	8	17	10	7	11	14	16	18	22
	63	10	14	9	12	13	15	17	21	25
630	500	2	21	14	9	6	6	12	15	16
	250	5	18	12	7	6	11	14	16	18
	125	8	15	9	6	11	14	16	18	22
	63	10	12	8	11	13	15	17	21	25
800	500	2	19	13	9	6	6	12	15	16
	250	5	17	11	6	5	11	14	16	18
	125	7	14	8	6	11	14	16	18	22
	63	9	11	7	11	13	15	17	21	25
1000	250	5	15	10	6	5	11	14	16	18
	125	7	12	7	5	11	14	16	18	22
	63	9	9	6	10	13	15	17	21	25
1250	250	5	14	9	6	5	11	14	16	18
	125	7	11	6	5	11	14	16	18	22
	63	9	9	5	10	13	15	17	21	25

*Intermediate values to be obtained by interpolation.

Blade frequency of the fan is calculated from the number of blades z and the fan speed n [rpm].

$$f_D = \frac{z \cdot n}{60} \text{ [s}^{-1}\text{]}$$



Note:

Portions 1.1 / 1.2 / 2.1 / 2.2 to be taken from the above spreadsheets.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**AXIAL FLOW FANS
ELECTRICAL NOTES
GENERAL / MOTOR PROTECTION****020****Drive motors**

Axial-flow fans of the AXO/AXN type are powered by surface-cooled motors according to IEC standards. Up to motor size 180, standard motors with type V1, B14 or B5 flanges are used, depending on the mounting position (AXO types are always supplied with B3 flanges). From motor size 200 upwards, standard B3, V5 or V6 foot-mounted units are selected, again depending on the mounting position. These motors meet VDE 0530 specifications for electrical machinery, protection class IP 44, insulation class B, fitted with noise-tested antifriction bearings.

Standard versions of these axial-flow fans are rated for a maximum operating temperature of 70°C since their impeller material is not resistant to higher thermal loads.

Motor bearings require periodic re-greasing. For guidance, the following lubrication intervals are given:

Motor sizes 63 - 100

n = 3000 rpm 5 000 operating hours
n = 1500 rpm 10 000 operating hours
n = 1000 rpm 20 000 operating hours
n = 750 rpm 20 000 operating hours

Motor sizes 112 - 160

n = 3000 rpm 4 000 operating hours
n = 1500 rpm 8 000 operating hours
n = 1000 rpm 16 000 operating hours
n = 750 rpm 16 000 operating hours

Motor sizes 180 & 200

n = 1500 rpm 5 000 operating hours
n = 1000 rpm 7 000 operating hours
n = 750 rpm 10 000 operating hours

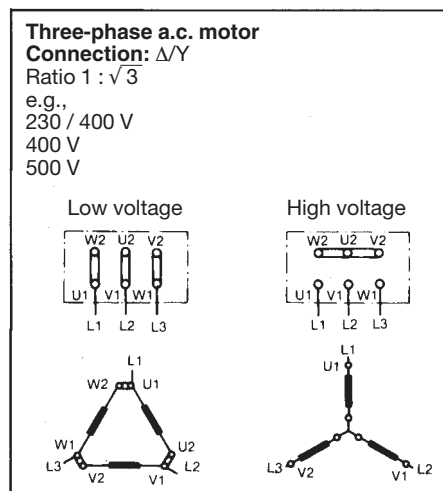
Motor sizes 225 - 280

n = 1500 rpm 2 500 operating hours
n = 1500 rpm 4 000 operating hours
n = 750 rpm 6 000 operating hours

In any case, the motor manufacturer's detailed instructions must be observed (see motor nameplate). Motors up to size 200 in standard version have no relubrication device, on these motors bearing housings must be opened to apply new grease. Motors of size 225 and upwards have a relubricating device with **grease valve**.

Single-speed motors can be run on 230 V or 400 V three-phase a.c. (50 Hz); pole-changing motors require a 400 V / 50 Hz three-phase a.c. operating voltage.

Other voltages, frequencies and class ratings may be available as special versions.

Connecting diagrams**Motor protection**

First of all each power circuit must be fused. Fuses, however, can only protect switchgear and mains feeders against short circuits. They do not protect the motor from overload. Due to the breakaway starting current, which is many times (4 to 6x) the nominal current, these fuses must be rated higher than the nominal motor current would nominally require. To protect the motor itself, the following options are available:

1. Thermal overcurrent release
(bimetal protection switch)

This current-related motor protection device is set to the nominal voltage stated on the motor nameplate. In the case of an overcurrent it interrupts the motor contactor holding circuit. This is the most common overload protection system adopted for electric motors nowadays.

2. Thermocouples

In this system, thermostatic circuit-breakers are incorporated into the motor winding. In the case of an over-temperature they open or close a circuit. They are wired to the motor terminal panel.

3. Full thermistor protection

Thermistors are temperature-sensitive resistors which change their resistance briskly at a given temperature. Three such components are incorporated into the motor winding. In conjunction with a release device they provide an effective motor temperature monitoring function.

Electric motors are primarily at risk from overcurrents due to overloading or phase failure. For this reason, the thermal overcurrent release is the most widespread motor protection system. Thermal cutouts or thermistors monitor the winding temperature directly. Since the winding may overheat not only from excessive electrical loads (i.e., overcurrent) but also due to a malfunction of the motor-cooling or an increase in the coolant temperature, these last-mentioned devices are also referred to as **"full protection" systems**. They are recommended wherever motors are at risk from cooling failures or overheating of the coolant. Moreover, the use of thermocouples or thermistors is recommended on motors with a very high number of poles where in the case of a phase failure, the current in the remaining phases will increase but slightly.



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AXIAL FLOW FANS ELECTRICAL NOTES GENERAL / CIRCUIT DIAGRAMS

021

Hazardous duty

Hazardous-duty motors, whether of the "Ex(e)" increased safety or "(Ex)d" explosion-proof type, are supplied for 400 V three-phase a.c. operation and installed for ignition class G1 to G4. Please enquire about "(Ex)d" type availability. Such "explosion-proof" (pressure-containing) motors are required in rooms and operating facilities in which explosive atmospheres are frequently present (refer to VDE 0165). Whether a location or plant belongs to a hazardous-duty category according to this regulation must be decided by the relevant supervisory body, e.g., a trade supervisory authority or technical inspectorate. These authorities will also determine the applicable protection class. (Conditions may vary from country to country)

Where hazardous-duty motors are specified, the associated fans must

be of a spark-suppressed type. For this application a special slipring is available for installation between the impeller and the casing.

Operation

Direct on-line starting

The breakaway torque may reach 150 – 300% of the nominal torque, depending on output and number of poles. Starting currents may rise to between 4 and 6 times the rated current value.

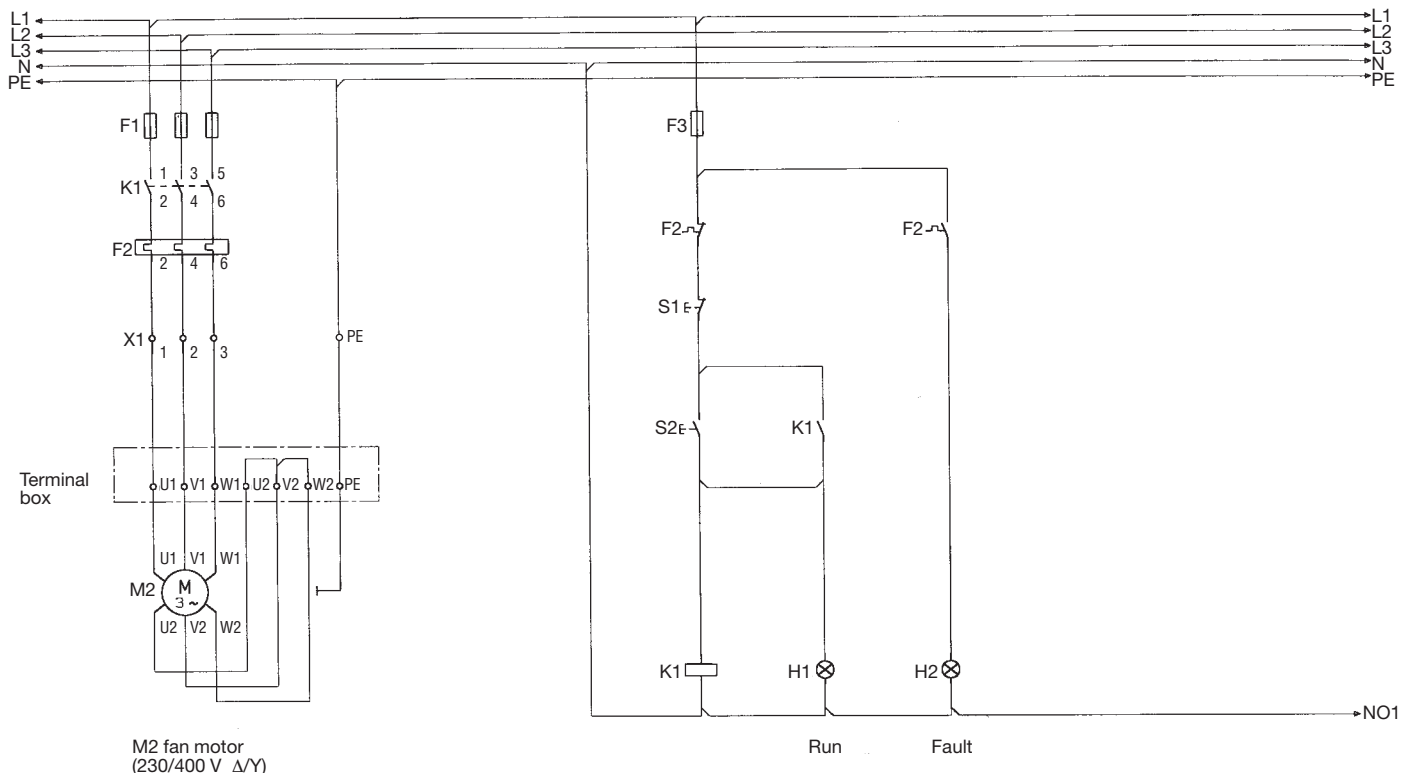
Star-delta starting

Here the starting current and torque are only about one-third of what they would be with direct on-line starting. The motor should be close to its nominal rpm before the changeover is made.

With high-powered motors, please consult with us on fan starting modes and start-up times.

IMPORTANT!

All axial-flow fans are equipped with IEC standard motors sourced from various quality-brand manufacturers. These motors do NOT feature thermocouple or thermistor protection systems. They must therefore be operated with an overcurrent protection device according to VDE 0660. Please enquire about current consumption details. For guidance, refer to the motor manufacturers' catalogues.



Contactor control circuit with over-current protection for one-speed motor with direct on-line starting

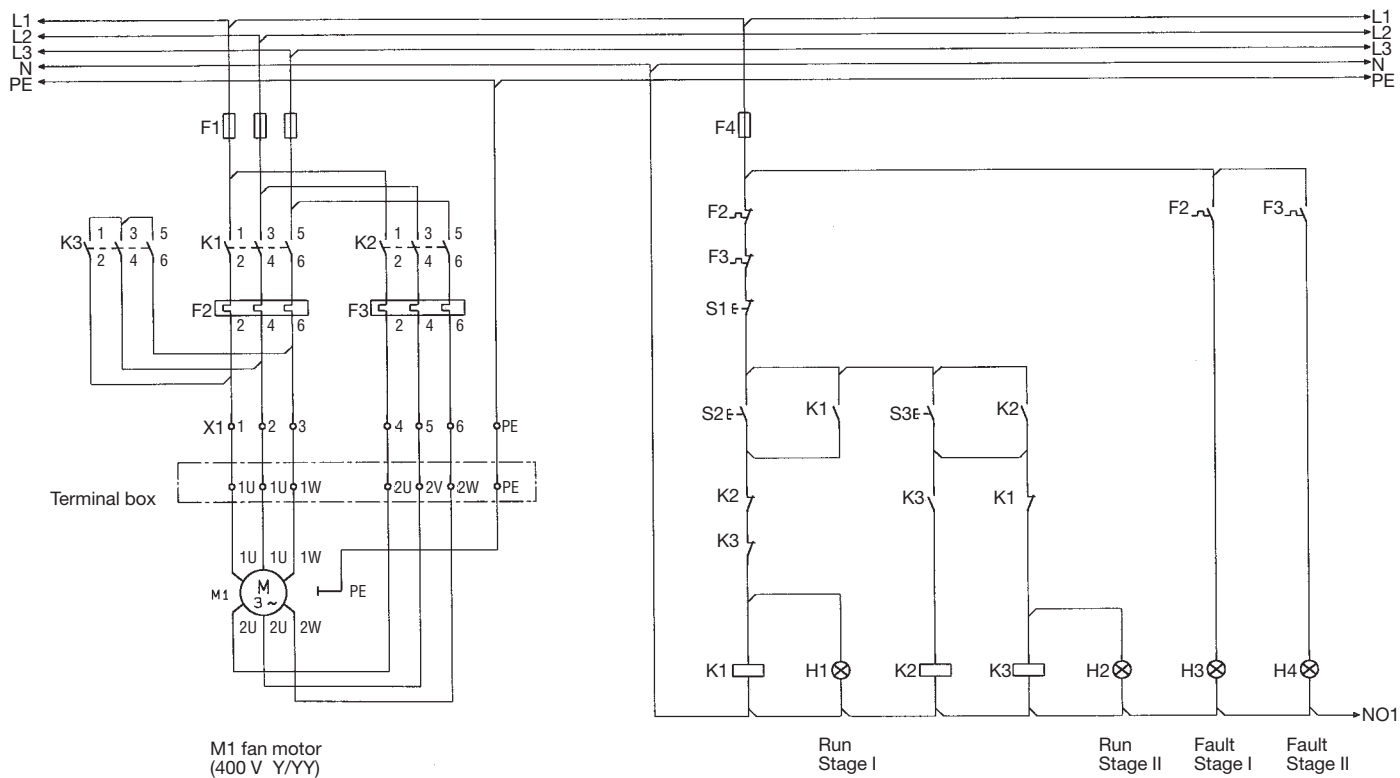


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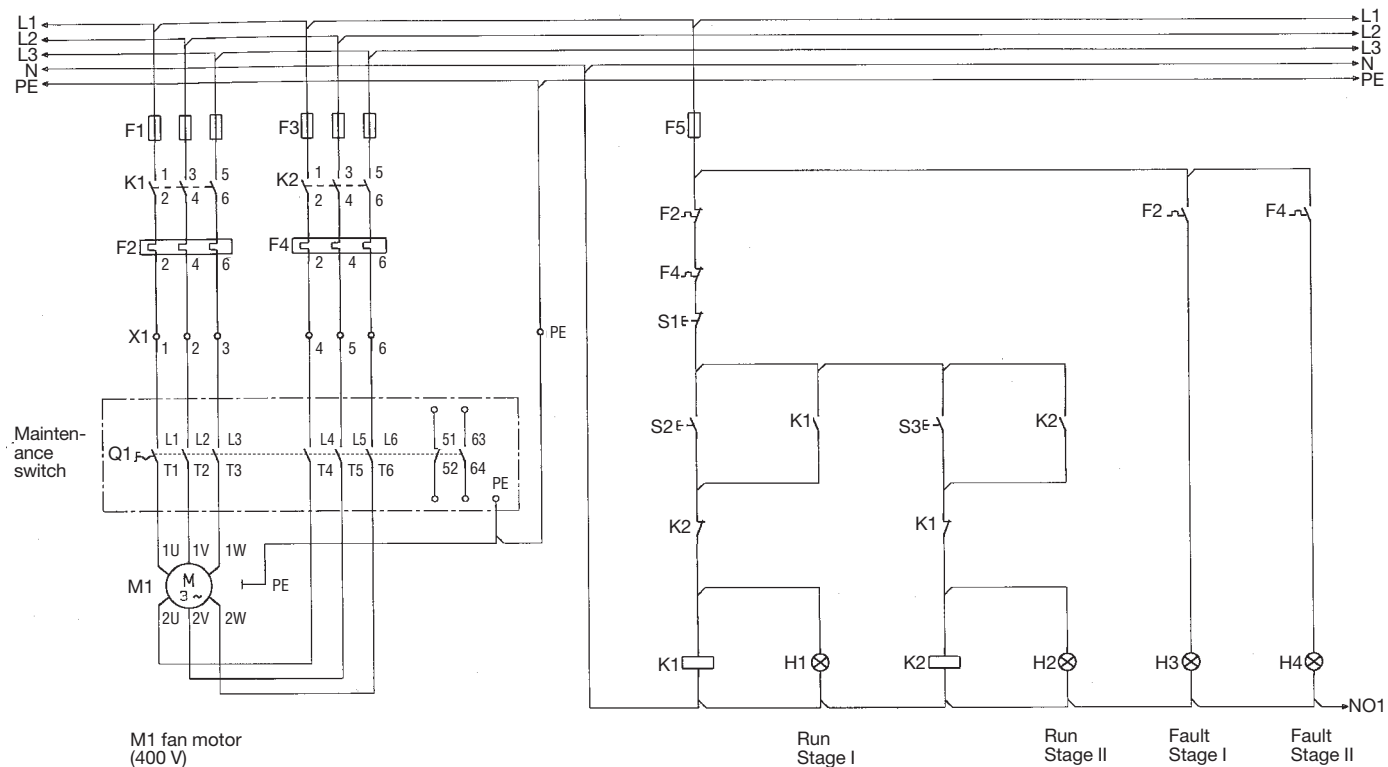
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AXIAL FLOW FANS ELECTRICAL NOTES CIRCUIT DIAGRAMS

022



Contactor control circuit for a two-speed motor with Dahlander pole-changing winding and overcurrent protection



Contactor control circuit for a two-speed motor with separate windings with overcurrent protection

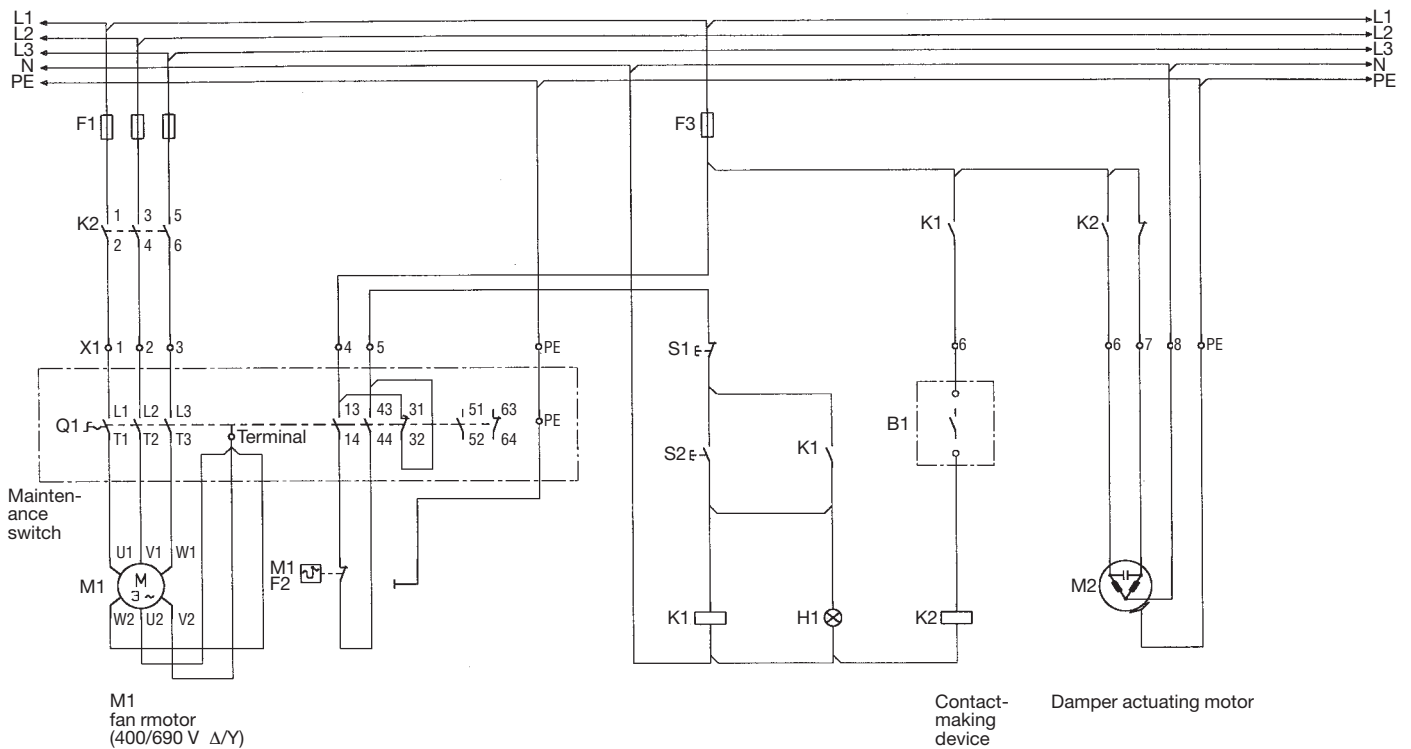


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AXIAL FLOW FANS ELECTRICAL NOTES CIRCUIT DIAGRAMS

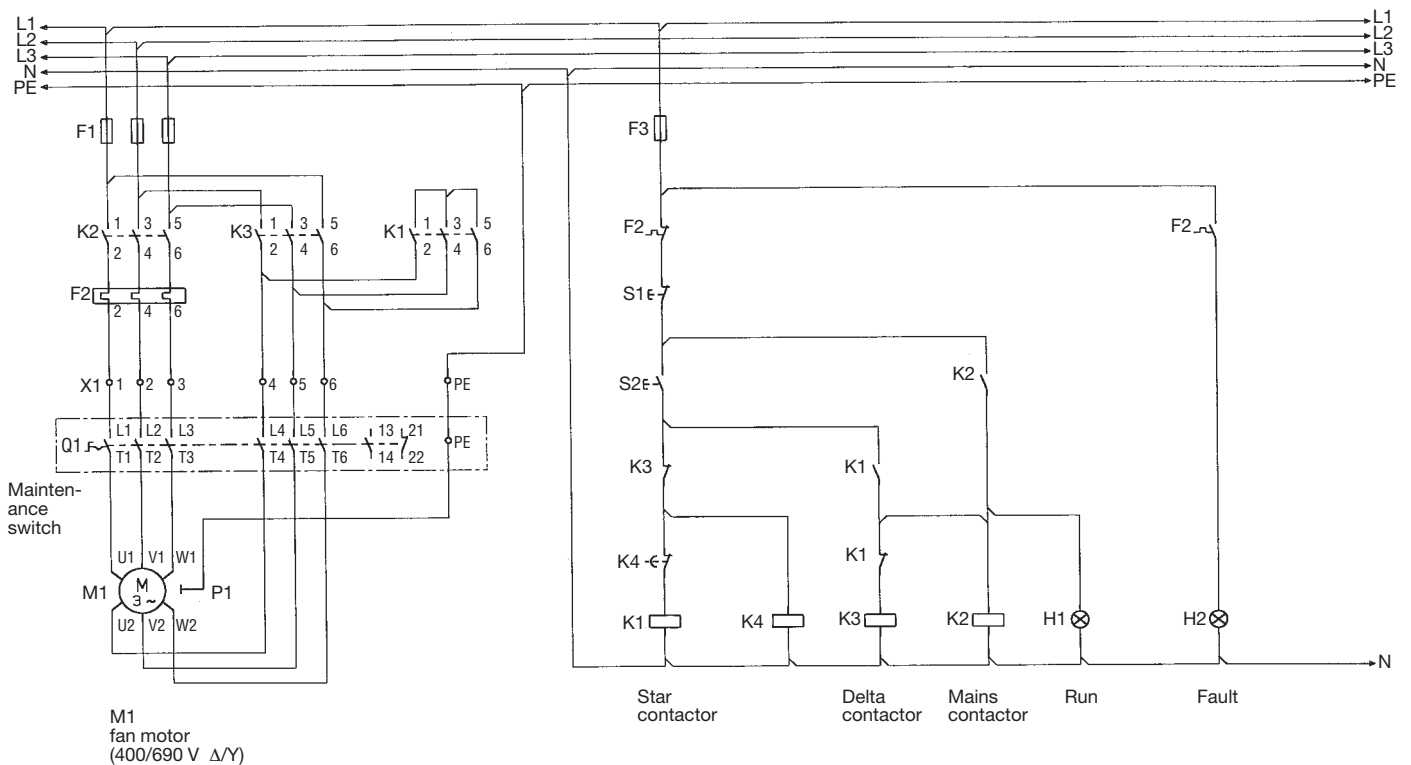
023



Contactor control circuit for a single-speed motor with thermocouple. Auxiliary contacts are provided to open

a damper when the fan motor is running and close it when the motor is stationary. In addition, the system is

equipped for connection of a contact-making device for switching on and off the fan motor.



Contactor control circuit for a single-speed motor with overcurrent protection for star delta starting

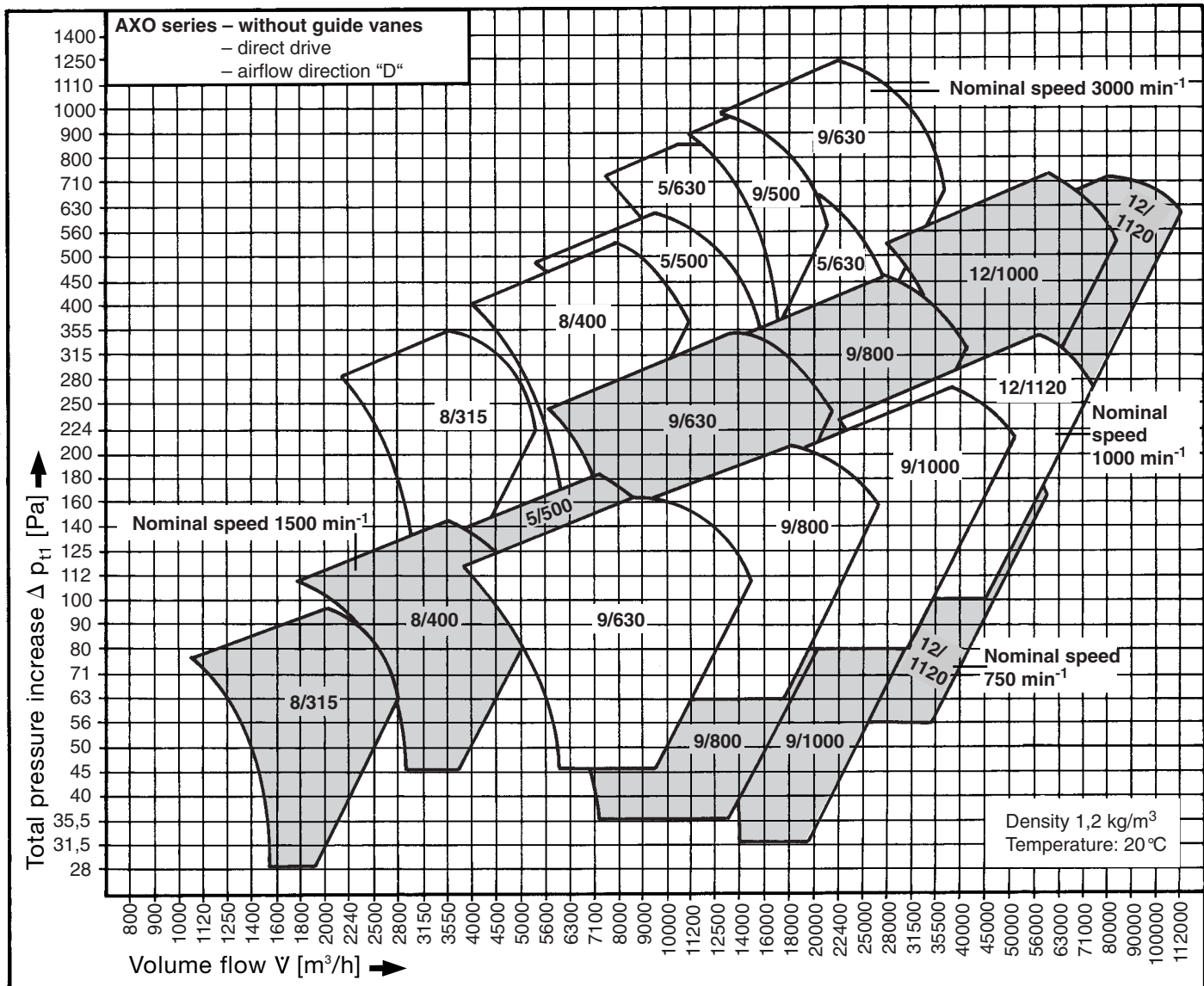


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AXIAL FLOW FANS AXO SERIES DIRECT DRIVE PRE-SELECTION DIAGRAMS RANGE OF APPLICATION / USE

024



M-D Type

Sizes / Nominal speeds

Nominal speed 750 rpm
3 sizes: **800/1000/1120** dia.

Nominal speed 1000 rpm
4 sizes: **630/800/1000/1120** dia.

Nominal speed 1500 rpm
7 sizes: **315/400/500/630/800/1000/1120** dia.

Nominal speed 3000 rpm
3 sizes: **315/400/500** dia.

Number of blades

4, 5, 8, 9, 12 or 16 blades (refer to the above pre-selection diagram and to the characteristic curves on page 038 – 059).

Range of Application

For small to large volume flows against low pressures.

V = approx. 900 m³/h
to 110 000 m³/h
 Δp_t = approx. 30 Pa to 1250 Pa

Use

Preferably in applications in which the system resistance lies on the inlet side, e.g., straightforward air extraction or venting systems, process equipment, cooling towers, condensers, greenhouses, livestock stables, and in dryer exhaust service.

For systems with outlet side resistances, these fans should be used with caution specifically if such resistances are encountered immediately downstream of the fan. The swirl may cause resistances to increase to many times their calculated value. Please consult with our engineering experts in such cases.

**For characteristic curves
refer to pages 038 – 059**

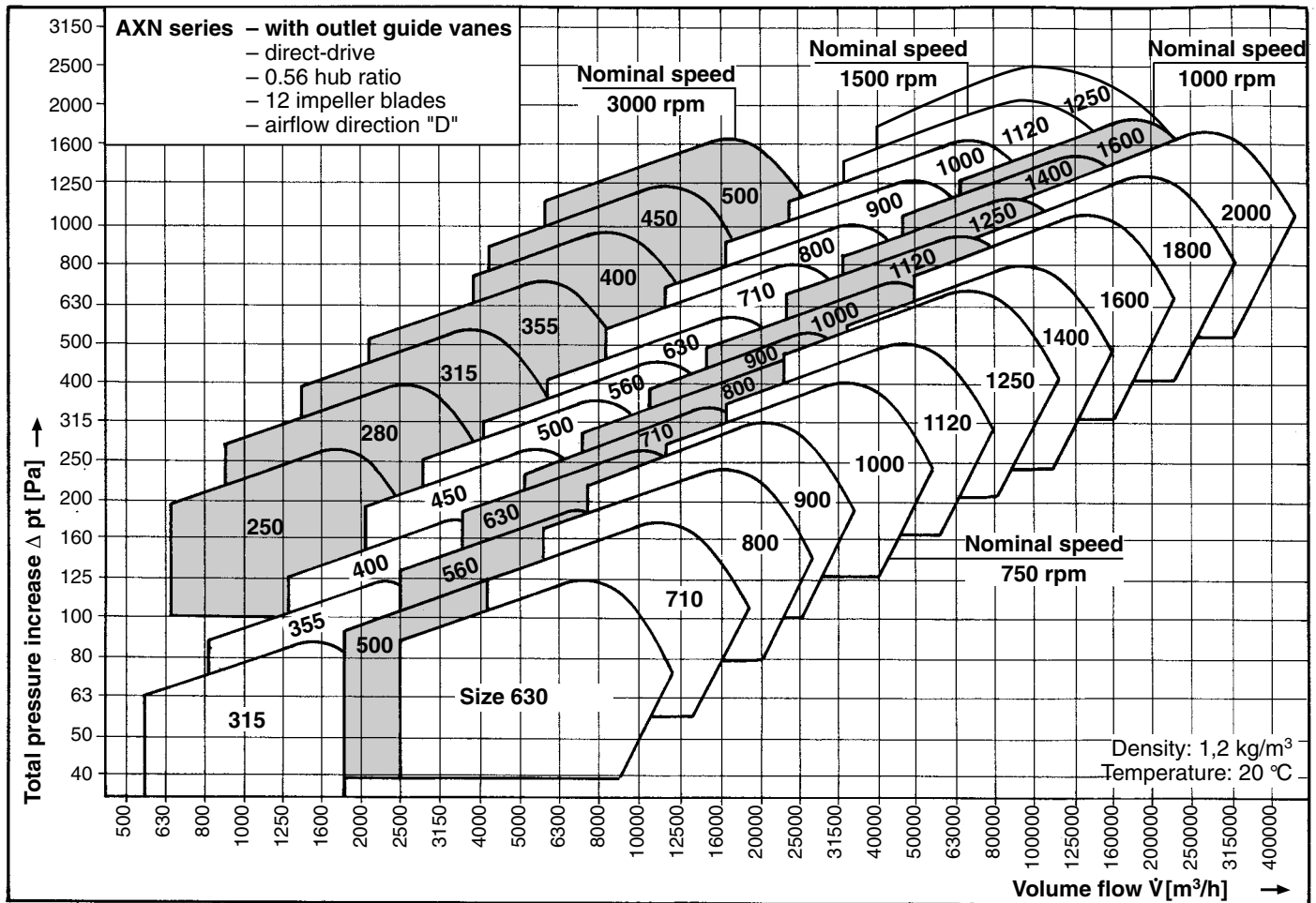


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AXIAL FLOW FANS AXN SERIES DIRECT DRIVE PRE-SELECTION DIAGRAMS RANGE OF APPLICATION / USE

025



M-D Type

Number of blades

Standard fans: **12 blades**
(for characteristic curves refer to the catalogue)

For impellers with 9, 8, 6 or 4 blades:
please enquire about characteristics
and sizing.

Hub ratio

Standard fans **0.56**
(for characteristic curves refer to the catalogue)
Special design: 0.63
(Please enquire about characteristics
and sizing)

Range of Application

From small volume flows against low pressures to very large volume flows against high pressures.

V = approx. 600 to 400 000 m³/h
Δ pt = approx. 50 Pa bis 1800 Pa

Use

Ventilation systems, air conditioning,
air recirculation and air exhaust solu-
tions, process equipment, dryer con-
struction, ship ventilation systems.

Sizes / Nominal Speeds

Nominal speed 750 rpm
11 Sizes **630 to 2000 dia.**

Nominal speed 1000 rpm
11 Sizes **500 to 1600 dia.**

Nominal speed 1500 rpm
12 Sizes **315 to 1250 dia.**

Nominal speed 3000 min⁻¹
7 Sizes **250 bis 500 dia.**

**For characteristic curves
refer to pages 070 - 112**

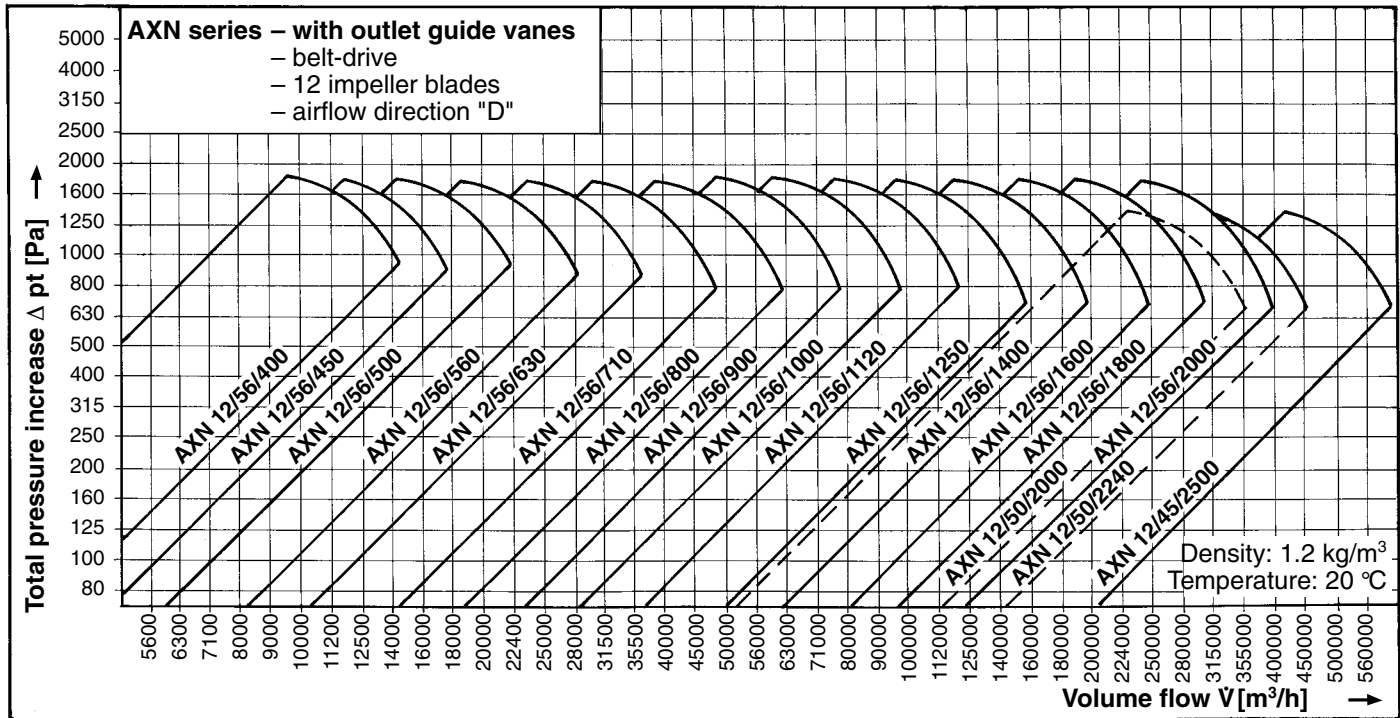


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AXIAL FLOW FANS AXN SERIES BELT DRIVE PRE-SELECTION DIAGRAMS RANGE OF APPLICATION / USE

026



R1 Type

Sizes / Hub ratio

With hub ratio 0.56
15 Sizes **400 to 2000** dia.

With hub ratio 0.50
2 Sizes **2000 and 2240** dia.

With hub ratio 0.45
1 Size **2500** dia.

Number of blades

12 impeller blades on all versions
(for characteristic curves refer to the catalogue)

An optimum adjustment to the required operating point is achieved via the fan speed by changing the belt transmission ratio.

Range of Application

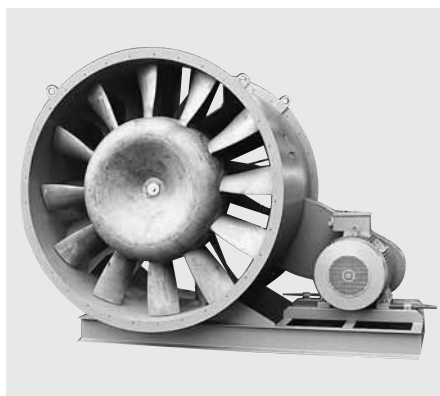
From small volume flows against low pressures to very large volume flows against high pressures.

V = approx. 4000 to 560 000 m³/h
 Δp_t = approx. 80 Pa to 1800 Pa

Use

Ventilation systems, air conditioning, large air supply and extraction centers.

In these environments these fans are particularly suitable for installation in equipment, conventional air conditioning centers, or sandwich-type center configurations.



R2 Type

**For characteristic curves
refer to pages 119- 136**



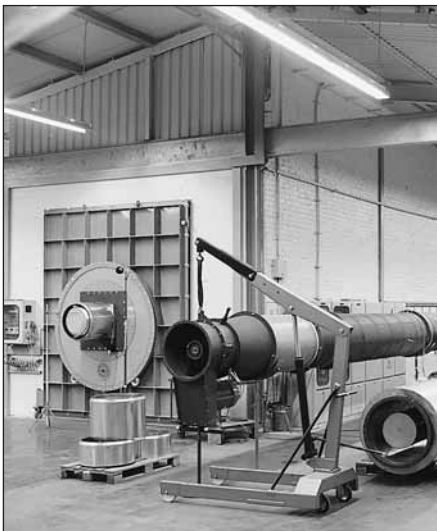
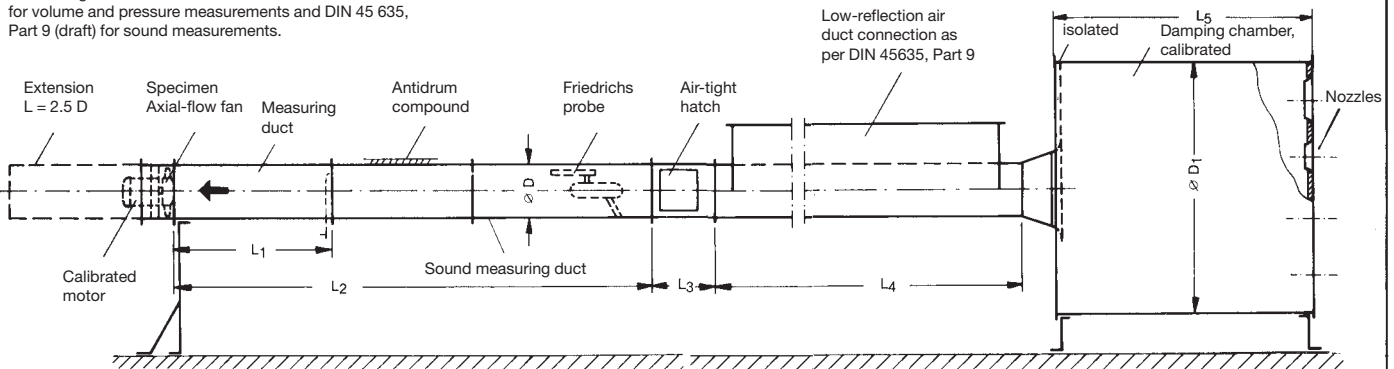
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AXIAL FLOW FANS IN-HOUSE RESEARCH – RELIABLE RESULTS MEASURING CONFIGURATION

027

Our test rig for axial-flow fans conforms to DIN 24 163 for volume and pressure measurements and DIN 45 635, Part 9 (draft) for sound measurements.

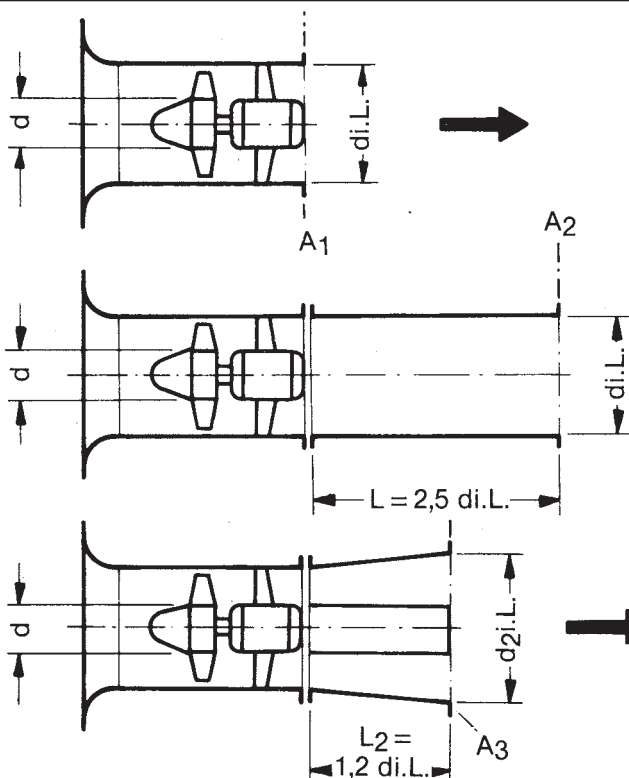


Air handling test station with chamber rig and partial view of the fan measuring duct.



View of the measuring center of our test station. An array of high-precision instruments are needed for the measurements, e.g., a Betz pressure gauge ①, a calibration

unit for the pressure measuring station ②, a frequency analyzer for collecting acoustic data ③, a measured data acquisition computer ④, etc.



Measurement 1

Axial-flow fan, direct discharge

The dynamic pressure (p_d) is related to the annular cross section (A_1).

Application: direct discharge into a large room.

(The dynamic pressure p_{dR} is fully considered as loss. Use red characteristic curves.)

Measurement 2

Axial-flow fan with outlet-side equalizing duct. The dynamic pressure (p_d) is related to the full circular cross-section (A_2).

(The impact loss is reflected in the characteristic curve. Use black characteristic curves.)

Measurement 3

Axial-flow fan with outlet diffuser. The dynamic pressure (p_d) is related to the annular cross-section.



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AXIAL FLOW FANS WITH DIFFUSER

028

Why provide diffusers?

Axial-flow fans generate a total pressure increase (Dpt) which comprises a static pressure portion (ps) and a dynamic one (pd).

The impeller of an axial-flow fan consists of blades and hub, located in the airflow. This Installation generates a circular flow which may often attain significant velocities. The increased flow velocity (c) represents a high dynamic pressure. If, as is often the case, an axial-flow fan is allowed to discharge its output freely into a large room, the entire dynamic pressure portion (related to the ring cross section) will be lost, i.e., an efficiency loss occurs. A diffuser will greatly reduce the fan outlet velocity and thereby prevent much of this loss. In other words, to achieve an otherwise identical static pressure differential, the total pressure increase to be generated can be reduced, and so can be the output of the fan motor. Another benefit is the increase in outlet surface area, which results in a more uniform input into downstream components.

TLT diffusers – for AXN type axial-flow fans

AXN type axial-flow fans with outlet guide vanes have a 0.56 hub ratio. This hub diameter is retained for the interior diffuser tube, while the outside diameter of the diffuser is increased by two standard diameters. If we put the full circular cross-sectional area of a TLT-Axial-flow fan at 100%, its annular cross-sectional area will be 69%. The diffuser outlet area, which is likewise annular, is equivalent to 125% by comparison. In a similar manner, the diffuser outlet velocity is reduced by 45% compared to that of the annular fan flow; the corresponding dynamic pressure is even 70% lower. TLT diffusers have been optimized over a long period of trials and development. The result is a fairly small cone angle which lets these diffusers become fairly long. It has been found however, that larger cone angles give rise to non-laminar flow patterns which cause the diffuser to perform inadequately.

Diffuser sizing

Diffusers are sized on the basis of in-house documentation and software programmes.

Please contact our field service or in-house staff who will be glad to determine an optimum sizing for your application.



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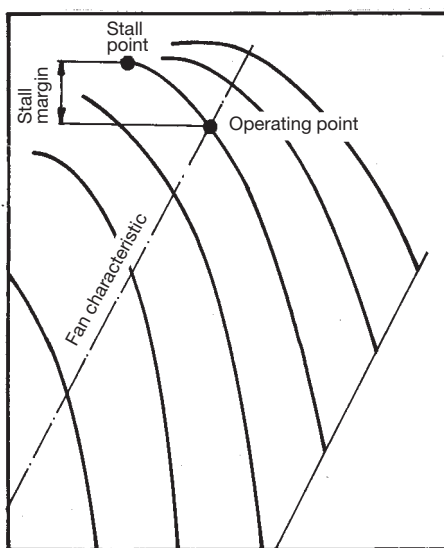
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AXIAL FLOW FANS WITH ADJUSTABLE BLADES AT REST SIZING INFORMATION

029

Important design notice:

Axial-flow fans have a pronounced stall range starting on the left of the respective curve end. Due to the risk of fatigue failure, an axial-flow fan must not be operated in stall mode. It is therefore important when sizing these fans to allow for an appropriate safety margin around the stall point. The operating point should be located on the right-hand (steep) side of the curve. A pressure margin of approx. 15% from the stall point is recommended.



In selecting fans and their control systems, care should be taken to ensure that all operating points of the envisaged control range lie within the stable area of the fan characteristic.

Flow direction

Direct-driven fans are available with the airflow direction "D" (motor in outlet) or "S" (motor in inlet). The catalogue shows the characteristic curves for airflow direction "D" units. For "S" type fans, a correction of the fan characteristic must be applied as follows:

Volume flow + 5 %
Total pressure increase + 10 %
In addition, 5% should be deducted from the efficiency value.
Belt-driven fans are available with airflow direction "D" only.
If - for whatever reason - a belt guard is to be provided inside the fan, an output reduction must be expected. The impellers are not designed for reversible or contra-rotating operation.

Air inlet/outlet

Our characteristic curves are based on the assumption that a uniformly swirl-free velocity distribution prevails at the fan inlet. It may therefore be necessary to install a bellmouth inlet in the case of free intake configurations, or to fit appropriate guide panels if the fan operates immediately downstream of a duct elbow.

Antivibration mounts

Size 224 - 900 fans operating at 1000+ rpm and size 1000 - 2000 fans with speeds exceeding 750 rpm can be fitted on rubber antivibration mounts.

Determining motor output

We recommend that the calculated shaft horsepower (PW) should be increased by the following percentages:

Direct-driven fans +5% to 10%
Belt-driven fans +10% to 20%

Motor terminal box for AXO types

All fans of this type (sizes 315 - 1000) are supplied with an exterior terminal box fitted on the casing and wired to the motor terminal box.

Motor terminal box for AXN types

Fans up to size 1250 are supplied with an exterior terminal box fitted on the casing and wired to the motor terminal box.

Important notes:

Direct-driven fans are available only with the motor output ratings indicated in our price lists.

(Please inquire for special motors).

The max. motor outputs for belt-drive fans are stated on the characteristic curve sheets on page 119 - 136.

For maximum acceptable motor sizes please refer to the dimensional diagrams on pages 007 - 011.

Acoustics

All acoustic performance data are given in the characteristic curve sheets and on the "Acoustic Data" pages. The information supplied is valid for the stated rotational speeds. Acoustic data for other rpm levels can be derived by approximation using the following formulas:

For lower rpm:

$$L_1 = L_2 - 45 \left[\log \left(\frac{n_2}{n_1} \right) \right]$$

For higher rpm:

$$L_2 = L_1 + 45 \left[\log \left(\frac{n_2}{n_1} \right) \right]$$

To correct for a greater distance:

Distance in m					
4	8	16	32	64	128
0	4,5	9	13,5	18	22,5
Decrease in sound pressure level (dB)					

The acoustic emissions of multiple axial-flow fans operating at the same sound volume can be determined using the following table:

Number of units											
2	3	4	5	6	8	10	15	20	30		
3	5	6	7	8	9	10	12	13	15		
Increase in sound level (dB)											

If two not equally loud axial-flow fans are operated simultaneously, the following correction values should be added to the higher acoustic level:

Level difference [dB]											
0	1	2	3	4	5	6	7	8	10	15	20
0	0	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0
Value to be added [dB]											

Fans with two or more speeds

In the characteristic curves appearing below, the effect of the **Reynolds number** has been taken into account. As a result, the known laws of proportionality are **not** applicable to all fan sizes, specifically at small diameters and low speeds.



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AXIAL FLOW FANS INSTALLATION EXAMPLES

030

The **ideal mounting configuration** corresponds to that of the test airflow duct, with inlet and outlet tube diameters of $2.5 \times D$ (D = fan diameter).

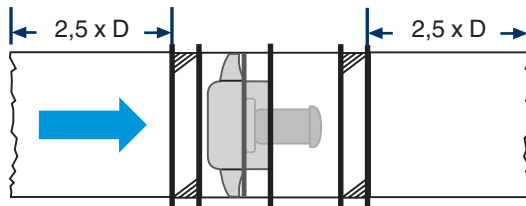
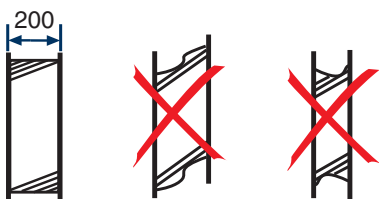
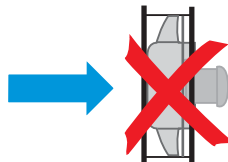


Fig. 1

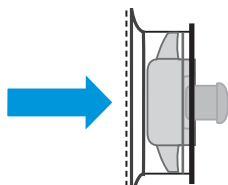


Flexible duct connectors upstream and downstream of the fan must be fitted carefully with zero offset, taking into account the installed length. Failure to observe this rule will result in performance loss and increased acoustic emissions. Flexible connectors are not intended as "elastic fit" adapters compensating for installation inaccuracies!

Fig. 2/2.1/2.2

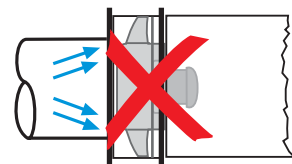


On free inlet fans, the use of an optimized bellmouth is mandatory. Failure to install this would result in severely degraded fan performance and increased noise levels.

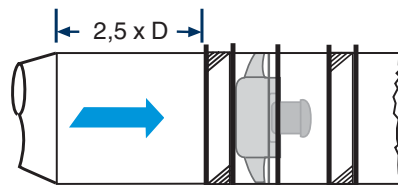


To satisfy accident prevention rules, a wire guard must be fitted to the front of the bellmouth.

Fig. 3/3.1

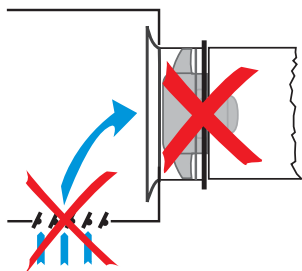


Connections of the above type are absolutely unacceptable in practice.

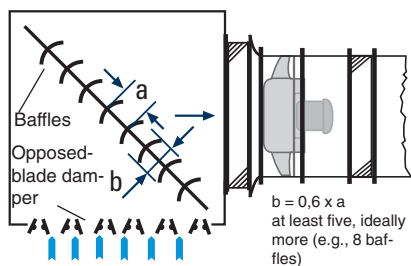


In special cases, i.e., where no alternative is feasible, an adapter cone and $2.5 D$ tube section (D = fan diameter) must be fitted as shown.

Fig. 4/4.1

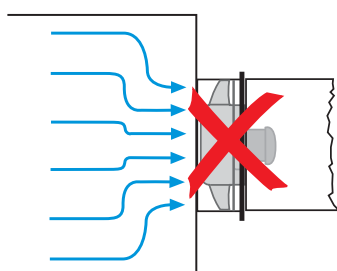


Where dampers must be fitted in airflows arriving vertically from below (e.g., through a ceiling or inlet duct), an opposed-blade damper type should be used to ensure an appropriate approach flow onto downstream deflector or baffle elements.

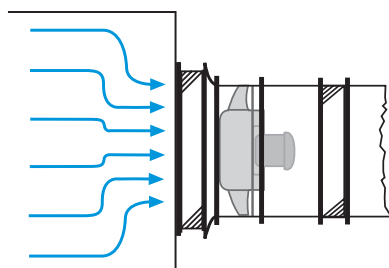


The flexible duct connector (two nominal sizes $>$ nominal fan size) ensures an additional improvement in incoming flow conditions and superior acoustic performance.

Fig. 5/5.1

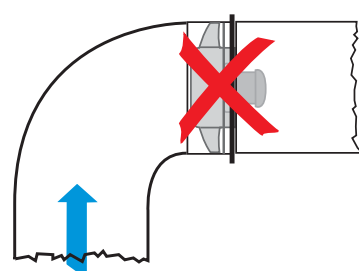


With horizontal approach flows from a larger duct or inlet chamber, an oversized flexible connector (two nominal sizes $>$ nominal fan size) in conjunction with the bellmouth will greatly improve incoming flow conditions and noise output.

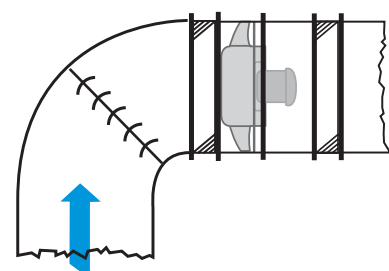


An approach flow situation as shown in Fig. 6 will result in a greatly impaired fan performance.

Fig. 6/6.1



Installation of an axial-flow fan directly downstream of a curved duct section will give rise to substantial performance losses and noise increase.



If a $2.5 \times D$ inlet flow section cannot be fitted, baffles should be used (for configuration and sizes refer to Fig. 5.1)

Fig. 7/7.1



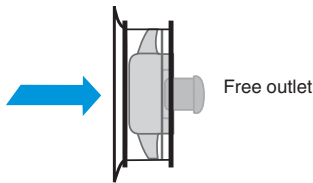
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AXIAL FLOW FANS INSTALLATION EXAMPLES

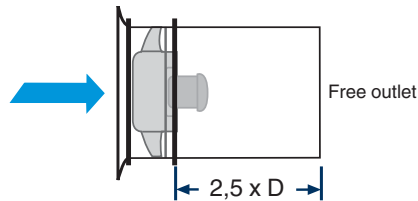
031

Maximum impact loss



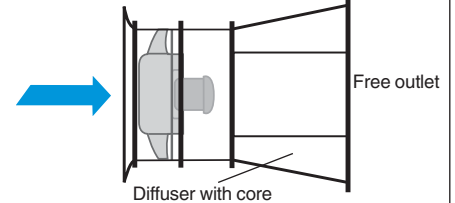
In a free-outlet configuration, the dynamic pressure acting on the fan's annular surface area (fan surface minus hub surface) must be taken into account as impact loss.

50% reduced impact loss



On a free outlet system with 2.5 x D outlet duct, the entire surface area as determined from the nominal fan size may be used for the impact loss calculation (rectified flow).

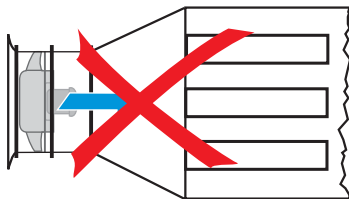
70% reduced impact loss



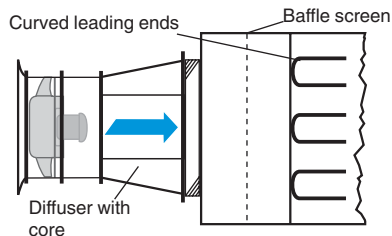
Diffusers can reduce impact loss by about 70% when compared to the configuration shown in Fig. 8.

Fig. 8/8.1/8.2

High impact loss

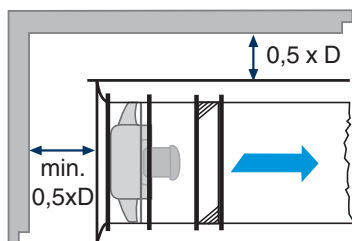


To avoid high impact loss, turbulence effects and excessive noise, downstream splitter attenuators should be connected via a diffuser with internal core and an interposed pressure chamber. In systems with large cross sections, the pressure chamber may be additionally provided



with a built-in baffle screen (perforated metal panel). This recommendation also applies to filters, heaters, etc. The splitters should have curved leading ends.

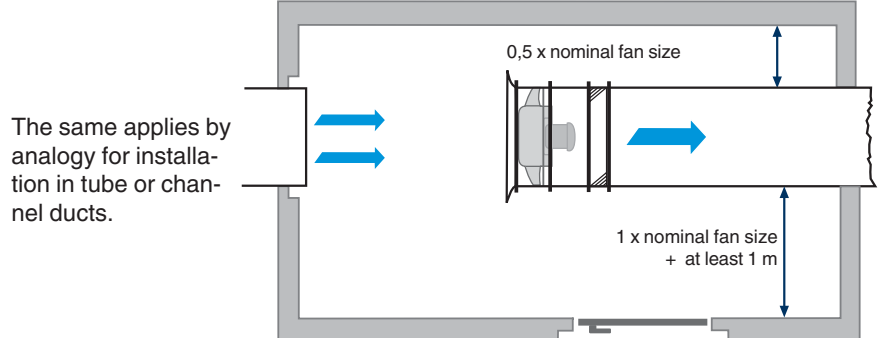
Fig. 9/9.1



For in-chamber installation specified minimum distance must be observed. If multiple fans are mounted next to each other, the distance between their bellmouths must be at least 0.5 D.

Fig. 10

In-chamber installation



The same applies by analogy for installation in tube or channel ducts.

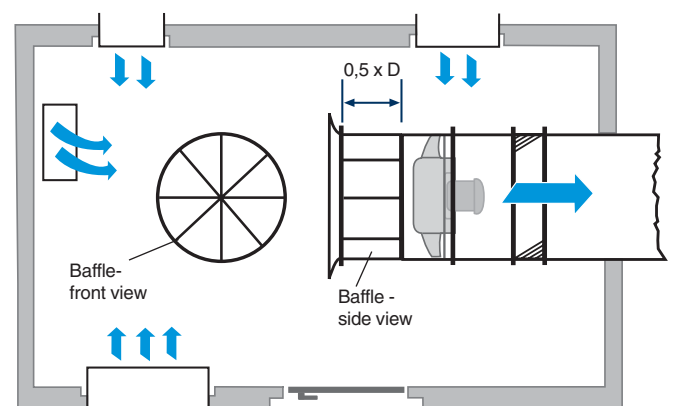
In practice, fans are often mounted in such cramped conditions that proper maintenance or repairs are impossible or extremely costly to carry out. Fans are machines which comprise wearing parts. It is therefore important to provide adequate free space around the unit for maintenance or repair access. On roofs (especially warm roofs), the availability

of sufficiently strong support areas is important. It should be possible to erect scaffolding above and around the fans for installation and maintenance.

Fig. 11

Plenum inlet chamber

Vortex flow effects are often encountered in configurations of this type. The use of an anti-vortex baffle is recommended.



In large inlet chambers with multiple air streams, vortex effects may impair the airflow at the fan inlet. Performance losses are an inevitable result. In this type of operating situation, the recommended anti-vortex baffle should either be fitted from the start or planned in such a way it can be installed later.

Please also observe other fan technology fundamentals as described in the relevant academic and trade literature (e.g., TLT Fan Primer, published by Promoter Verlag, Karlsruhe). Our staff will be glad to answer your questions on this subject.

Fig. 12



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AXIAL FLOW FANS – AXN SERIES DIRECT DRIVE SELECTION EXAMPLE (FAN OUTLET INTO DUCT)

032

Instruction for using the characteristic curve sheet:

Given:

Volume flow $\dot{V} = 14 \text{ m}^3/\text{s}$
Total pressure increase $\Delta p_t = 1000 \text{ Pa}$
(ca. 100 kp/m²)
Density $\rho = 1.2 \text{ kg/m}^3$
Temperature $t = 20^\circ\text{C}$
Speed $n = 1450 \text{ rpm}$

Sought:

Fan size, power input requirement,
overall acoustic power level

Selected:

Axial-flow fan
Typ AXN 12/56/900/M-D
(direct-drive)

Specifications:

Peripheral speed $u = 67 \text{ m/s}$
Flow velocity $c = 22.4 \text{ m/s}$
Efficiency $\eta = 76\%$

Shaft power input:

$$P_w = \frac{\dot{V} \cdot \Delta p_t}{\eta \cdot 1000 \cdot 3600} = \frac{50000 \cdot 1000}{0.76 \cdot 1000 \cdot 3600} = 18.3 \text{ kW}$$

Recommended

motor output $P_M = 22 \text{ kW}$

Total acoustic power level $L_w = 103.5 \text{ dB}$

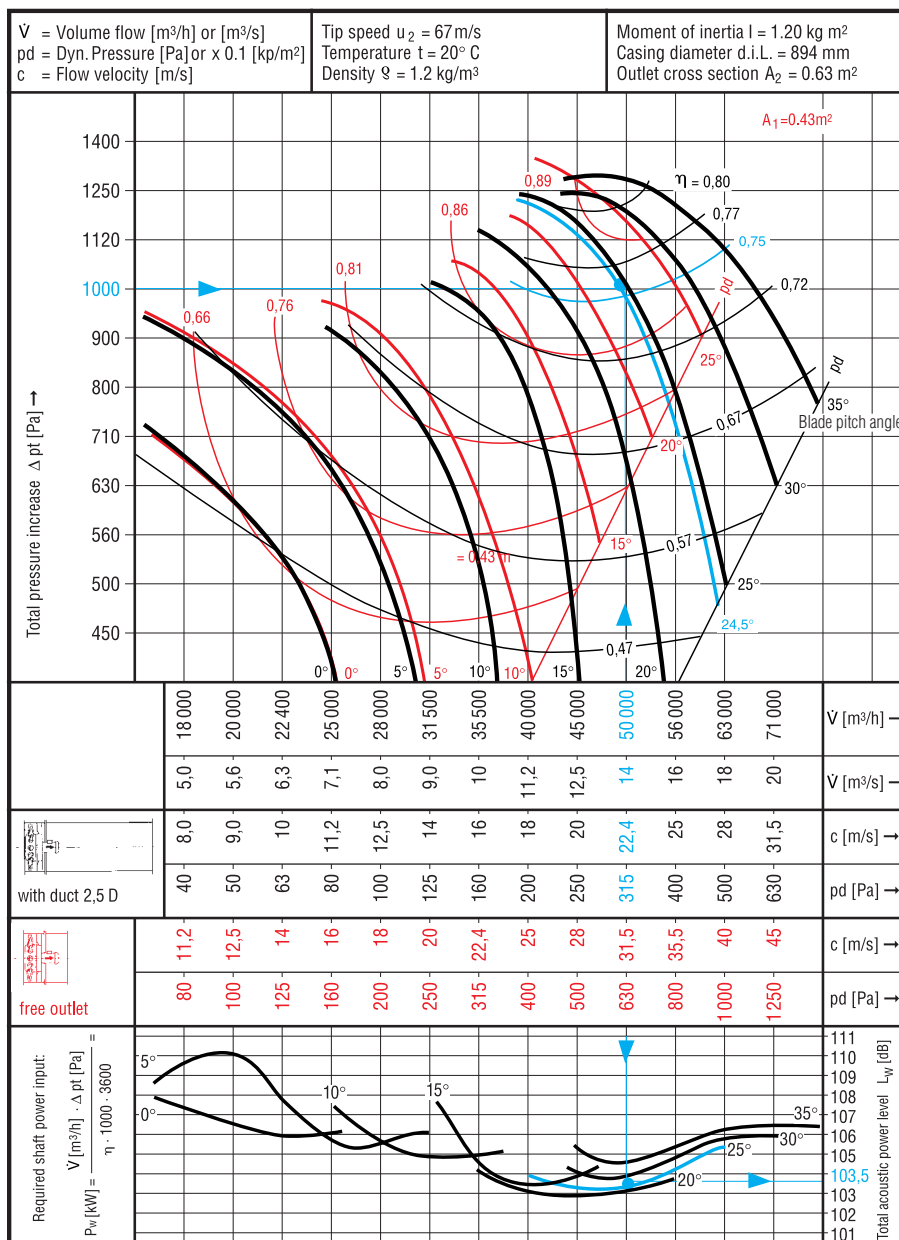


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CHARACTERISTIC CURVES - AXIAL-FLOW FANS DIRECT DRIVE WITH OUTLET GUIDE VANES TYP AXN 12/56/900/D*

ROTATION SPEED: 1450 rpm



* Airflow direction D (motor in outlet) – Airflow direction S (motor in inlet) upon request – Values rounded to standard figures

Key to the type designations:

AXN 12 / 56 / 900 / M – D

Airflow direction D, motor in outlet

Type M (directly coupled motor)

Size (nominal design size)

Hub ratio
(outer impeller dia. / hub dia.)

Impeller with 12 blades

With outlet guide vanes

Axial-flow fan

All fans are available only with the
motor outputs stated in our price
lists.



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AXIAL FLOW FANS – AXN SERIES BELT DRIVE SELECTION EXAMPLE (FAN OUTLET INTO DUCT)

033

Instruction for using the characteristic curve sheets:

Given:

Volume flow $\dot{V} = 40.000 \text{ m}^3/\text{h}$
Total pressure increase $\Delta p_t = 900 \text{ Pa}$
(ca. 90 kp/m²)
Density $\rho = 1.2 \text{ kg/m}^3$
Temperature $t = 20^\circ\text{C}$

Sought:

Fan size, rpm, power input requirement, etc.

Selected:

Axial-flow fan
Typ AXN 12/56/900 R1
(belt-driven)

Specifications:

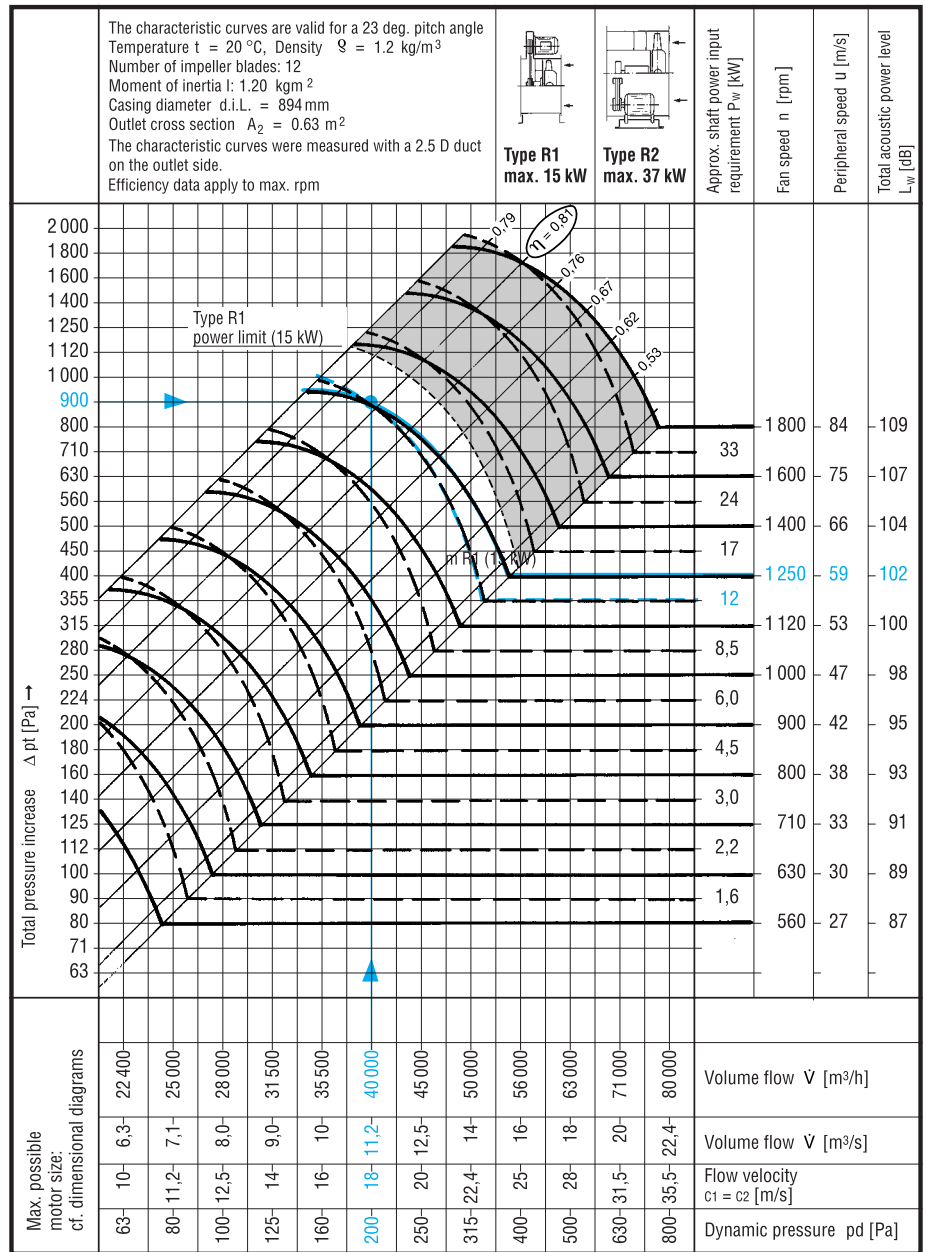
Fan speed $n = 1250 \text{ rpm}$
Peripheral speed $u = 59 \text{ m/s}$
Flow velocity $c = 18 \text{ m/s}$
Efficiency $\eta = 81\%$
Shaft power input requirement $P_W = 12 \text{ kW}$
Recommended motor output $P_M = 15 \text{ kW}$
Total acoustic power level $L_{W \text{ Vent}} = 102 \text{ dB}$



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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/900/D*



* Airflow direction D (motor in outlet) - values rounded to standard figures

Key to the type designations

AXN 12 / 56 / 900 R1

- Type R1, belt-driven
- Size (nominal design size)
- Hub ratio
(outer impeller dia. / hub dia.)
- Impeller with 12 blades
- With outlet guide vanes
- Axial-flow fan

**Belt-drive fans are available only
with the maximum motor outputs
stated on the characteristic curve
sheets.**

AXO series (without guide vanes)

– Technical Lists	pages 036 - 037
– Characteristic curves	pages 038 - 059
– Specification	pages 060 - 061

AXN series (with guide vanes)

– Technical Lists	pages 064 - 069
– Characteristic curves (direct drive)	pages 070 - 112
– Specification	pages 113 - 116

– Characteristic curves (belt drive)	pages 119 - 136
– Specification	pages 137 - 140

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100**AXIAL FLOW FANS
TECHNICAL LISTS (AVAILABLE MODELS)
AXO SERIES****036**

Fan	Motor 400 V, 50 Hz					
Size	Nominal speed [rpm]		Output [kW]	Nominal current [A] ¹	Size	Type

315	1500		0,25	0,76	71	B3
	3000		0,37	0,95	71	B3
			0,55	1,3	71	B3
	1500/750		0,2/0,035 ^(A)	0,65/0,25	71	B3
	3000/1500		0,3/0,06 ^(A)	0,9/0,2	71	B3
			0,45/0,09 ^(A)	1,3/0,3	71	B3

400	1500		0,25	0,76	71	B3
			0,37	1,0	71	B3
	3000		1,1	2,5	80	B3
			1,5	3,25	90	B3
			2,2	4,6	90	B3
	1500/750		0,37/0,06 ^(A)	1,07/0,37	71	B3
	1500/1000		0,4/0,12 ^(A)	1,15/0,53	80	B3
	3000/1500		0,95/0,25 ^(A)	2,1/0,62	80	B3
			1,3/0,25 ^(A)	3,0/0,65	90	B3
			1,8/0,37 ^(A)	4,1/0,9	90	B3

500	1500		0,55	1,4	80	B3
			0,75	1,9	80	B3
			1,1	2,8	90	B3
			1,5	3,5	90	B3
	3000		3,0	6,7	100	B3
			4,0	8,3	112	B3
			5,5	11	132	B3
			7,5	14,6	132	B3
			11	20,5	132	B3
	1500/750		0,55/0,12 ^(A)	1,4/0,6	80	B3
			0,7/0,15 ^(A)	1,8/0,8	80	B3
			1,0/0,25 ^(A)	2,50/1,05	90	B3
	1500/1000		0,4/0,12 ^(A)	1,15/0,53	80	B3
			0,55/0,18 ^(A)	1,52/0,68	80	B3
			0,9/0,28 ^(A)	2,2/1,15	90	B3
			1,2/0,37 ^(A)	3,0/1,35	90	B3
	3000/1500		4,8/1,2 ^(A)	9,4/2,4	112	B3
			8,0/2,0 ^(A)	16/4,0	132	B3

630	750		0,55	1,8	90	B3
	1000		0,75	2,2	90	B3
			1,1	3,15	90	B3
	1500		1,1	2,8	90	B3
			1,5	3,5	90	B3
			2,2	5,5	100	B3
			3,0	7,1	100	B3

Fan	Motor 400 V, 50 Hz					
Size	Nominal speed [rpm]		Output [kW]	Nominal current [A] ¹	Size	Type

630	3000		5,5 ^(S)	11	112	B3
			7,5 ^(S)	14,5	112	B3
			8,25 ^(S)	15,5	112	B3
			11 ^(S)	21	132	B3
			15 ^(S)	30	132	B3
	1000/500		0,55/0,1 ^(L)	1,9/0,65	90	B3
			0,75/0,13 ^(L)	2,8/0,97	90	B3
	1500/750		1,0/0,25 ^(A)	2,50/1,05	90	B3
			1,4/0,35 ^(A)	3,3/1,4	90	B3
			2,2/0,55 ^(A)	5,2/1,75	100	B3
	1500/1000		1,2/0,37 ^(A)	3,0/1,35	90	B3
			1,7/0,55 ^(A)	3,9/1,80	100	B3
			2,2/0,75 ^(A)	5,2/2,1	100	B3
			3,0/0,9 ^(A)	6,7/2,9	112	B3
	3000/1500		5,5/1,5 ^(S)	11,0/3,0	112	B3
			12/3,3 ^(S)	23/6,8	132	B3

800	750		0,75	2,2	100	B3
			1,1	3,15	100	B3
	1000		1,5	3,9	100	B3
			2,2	5,4	112	B3
	1500		4,0	8,6	112	B3
			5,5	11,4	132	B3
			7,5	15,4	132	B3
	1500/750		3,6/0,9 ^(A)	7,6/3,0	112	B3
			5,5/1,4 ^(A)	12/4,7	132	B3
			7,0/1,7 ^(A)	15/6,0	132	B3

¹ Nominal current = appr. values for 400 V motors, brand EMOD. Brands ATB and Loher marked (A) and (L) respectively.
It is important to check nominal current in case of other motor brands. *ATB motors

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TECHNICAL LISTS (AVAILABLE MODELS)****AXO SERIES****037**

Fan	Motor 400 V, 50 Hz					
Size	Nominal speed [rpm]		Output [kW]	Nominal current [A] ①	Size	Type

1000	750		2,2	5,4	132	B3	
			3,0	7,6	132	B3	
			4,0	9,2	160	B3	
	1000		3,0	7,4	132	B3	
			4,0	9,2	132	B3	
			5,5	12,7	132	B3	
	1500		7,5	15,7	160	B3	
			7,5	15,4	132	B3	
			11	22	160	B3	
			15	29,5	160	B3	
			18,5	36,	180	B3	
			22	43	180	B3	
			30	52	200	B3	
	1000/500		3,2/0,7(L)	6,8/3,8	132	B3	
			4,4/1,0(L)	9,0/4,5	132	B3	
			6,2/1,3(L)	13,3/3,6	160	B3	
	1500/750		5,5/1,4(A)	12/4,7	132	B3	
			7,0/1,7(A)	15/6,0	132	B3	
			11/3,0(A)	22/8,0	160	B3	
			14/3,5(A)	27,5/9,3	160	B3	
			20/5,5(A)	38/12	180	B3	
			28/7,0(A)	53/15	200	B3	

1120	1000		5,5	12,7	12	B3	
			7,5	15,7	160	B3	
			11	22	160	B3	
			15	29,5	180	B3	
	1500		11	22	160	B3	
			15	29,5	160	B3	
			18,5	36	180	B3	
			22	43	180	B3	
			30	52	200	B3	
			37	68	200	B3	
	1500/750		11/3,0(A)	22/8,0	160	B3	
			16/4,0(A)	33/11,5	180	B3	
			20/5,5(A)	38/12	180	B3	
			28/7,0(A)	53/15	200	B3	
			36/9,0(A)	78/24	200	B3	

Fan	Motor 400 V, 50 Hz - ex-geschützt					
Size	Nominal speed [rpm]		Output [kW]	Nominal current [A] ①	Size	Type

315	1500		0,25	0,83	71	B3	
	3000		0,37	1,05	71	B3	
			0,55	1,36	71	B3	

400	1500		0,25	0,83	71	B3	
			0,37	1,1	71	B3	
	3000		1,1	2,2	80	B3	
			1,5	3,05	90	B3	
			2,0	3,8	90	B3	

500	1500		0,55	1,51	80	B3	
			0,75	1,94	80	B3	
			1,1	2,55	90	B3	
			1,5	3,35	90	B3	
	3000		4,6	8,2	132	B3	
			5,5	9,6	132	B3	

630	750		0,55	1,69	90	B3	
	1000		0,75	2,05	90	B3	
	1500		1,1	2,55	90	B3	
			2,0	4,0	100	B3	

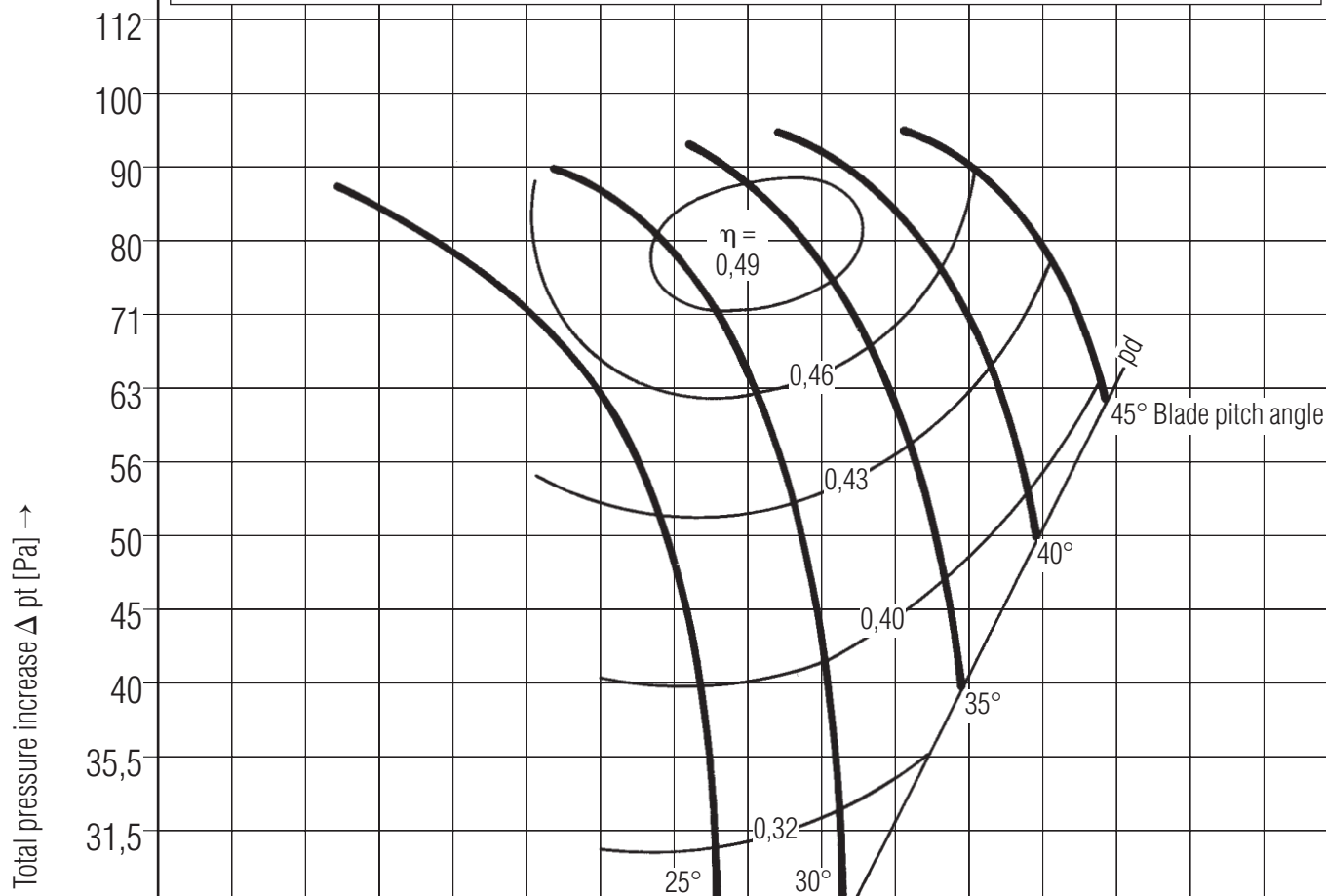
800	1000		1,35	3,4	100	B3	
			1,9	4,65	112	B3	
			2,6	6,5	132	B3	
	1500		3,6	7,6	112	B3	
			6,8	13,3	132	B3	

1000	750		2,6	6,3	132	B3	
			3,5	8,6	160	B3	
	1000		4,8	10,9	132	B3	
			6,6	14,3	160	B3	

① Nominal current = appr. values for 400 V motors, brand EMOD. Brands ATB and Loher marked (A) and (L) respectively.
It is important to check nominal current in case of other motor brands. *ATB motors

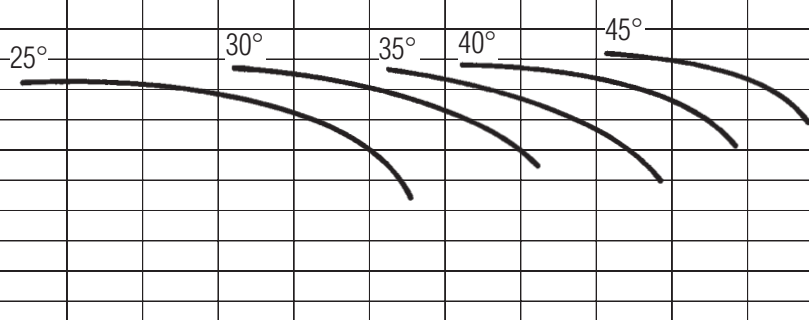
**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 8/315/D*
ROTATIONAL SPEED 1450 RPM****038** V = Volume flow [m^3/h] bzw. [m^3/s]
 pd = Dynamic pressure [Pa] or $\times 0,1$ [kp/ m^2]
 c = Flow velocity [m/s]Tip speed $u_2 = 23$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1,2$ kg/ m^3 Moment of inertia $I =$ kg m^2
Casing diameter d.i.L. = 320 mm
Outlet cross section $A_2 = 0,08$ m^2

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta pt [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$$



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

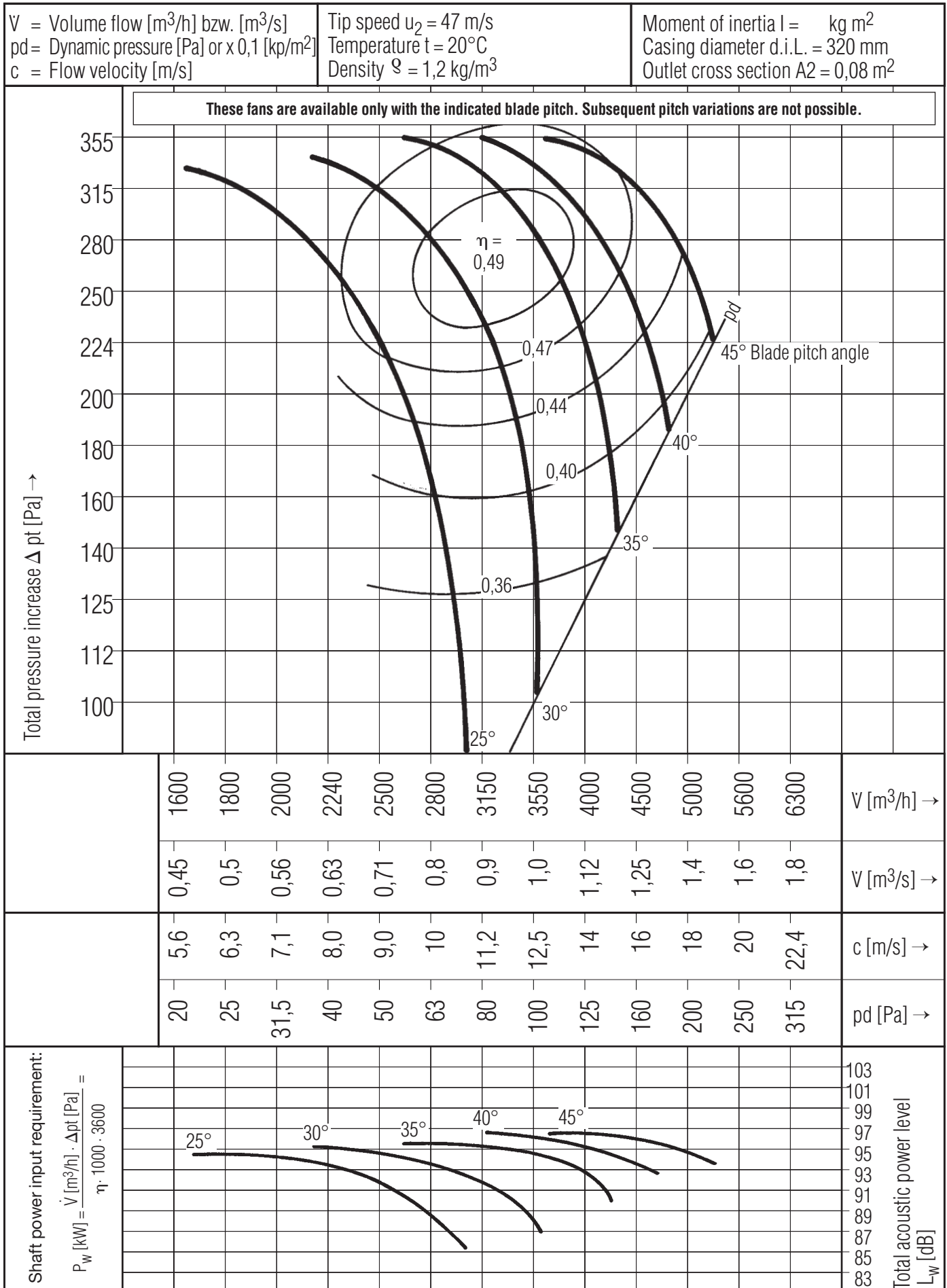


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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 8/315/D*
ROTATIONAL SPEED 2800 RPM**

039



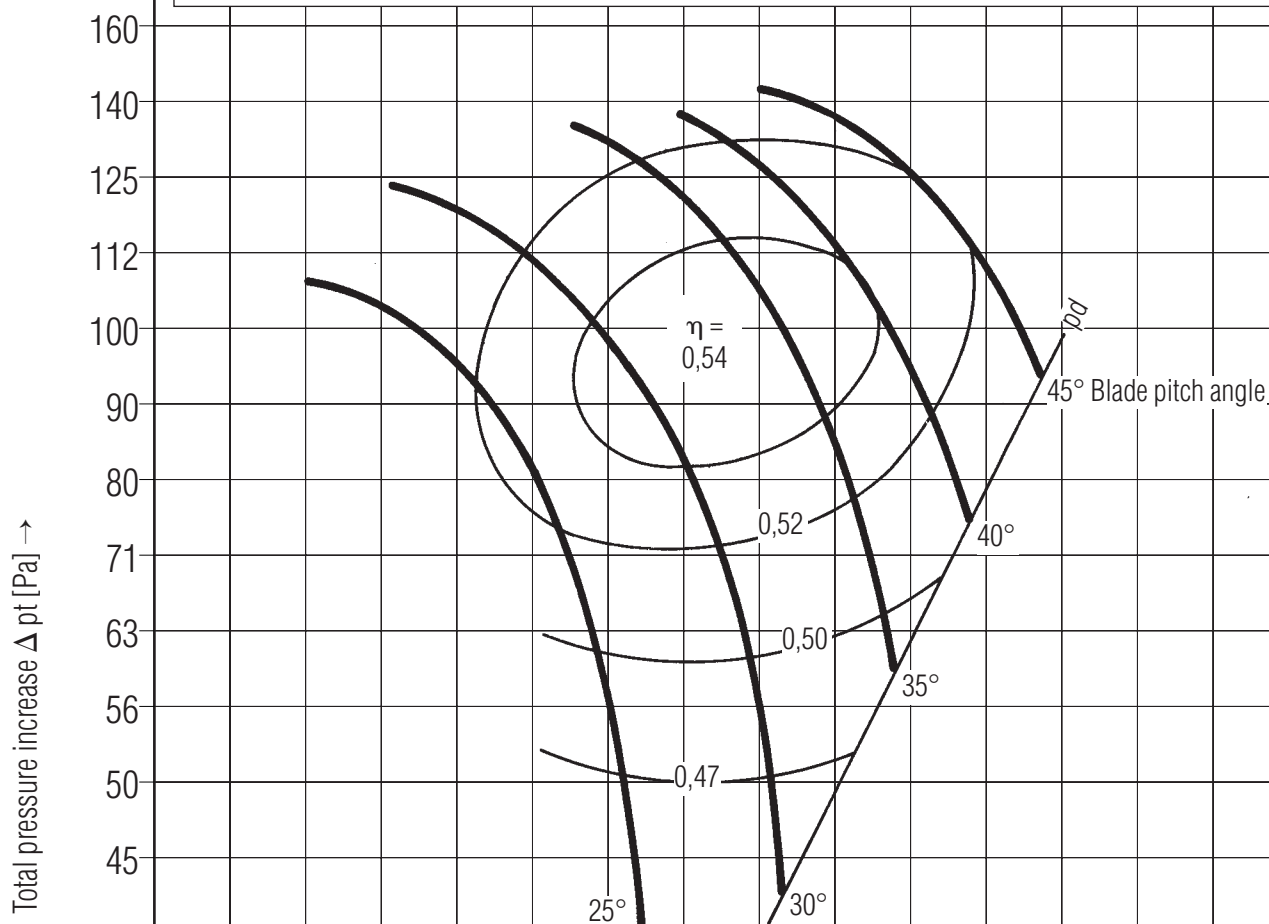
**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 8/400/D*
ROTATIONAL SPEED 1450 RPM****040**

V = Volume flow [m³/h] bzw. [m³/s]
 pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 30$ m/s
 Temperature $t = 20^\circ\text{C}$
 Density $\varrho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
 Casing diameter d.i.L. = 401 mm
 Outlet cross section $A_2 = 0,126$ m²

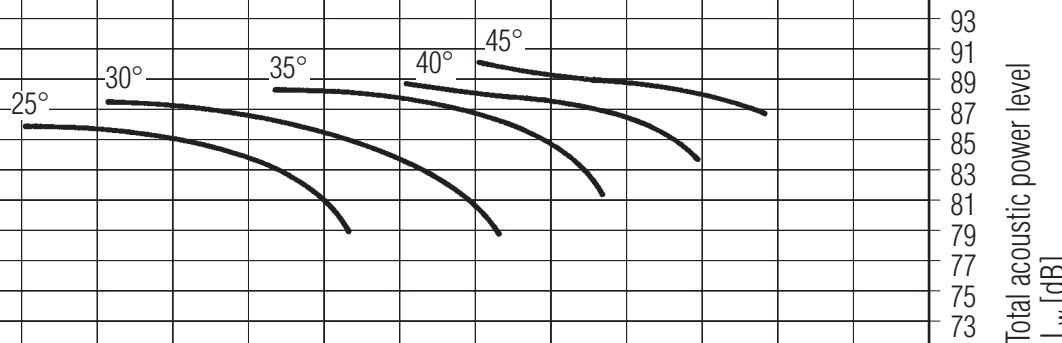
These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



1600	1800	2000	2240	2500	2800	3150	3550	4000	4500	5000	5600	6300	V [m ³ /h] →
0,45	0,5	0,56	0,63	0,71	0,8	0,9	1,0	1,12	1,25	1,4	1,6	1,8	V [m ³ /s] →
3,55	4,0	4,5	5,0	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	c [m/s] →
8,0	10	12,5	16	20	25	31,5	40	50	63	80	100	125	pd [Pa] →

Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$$



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

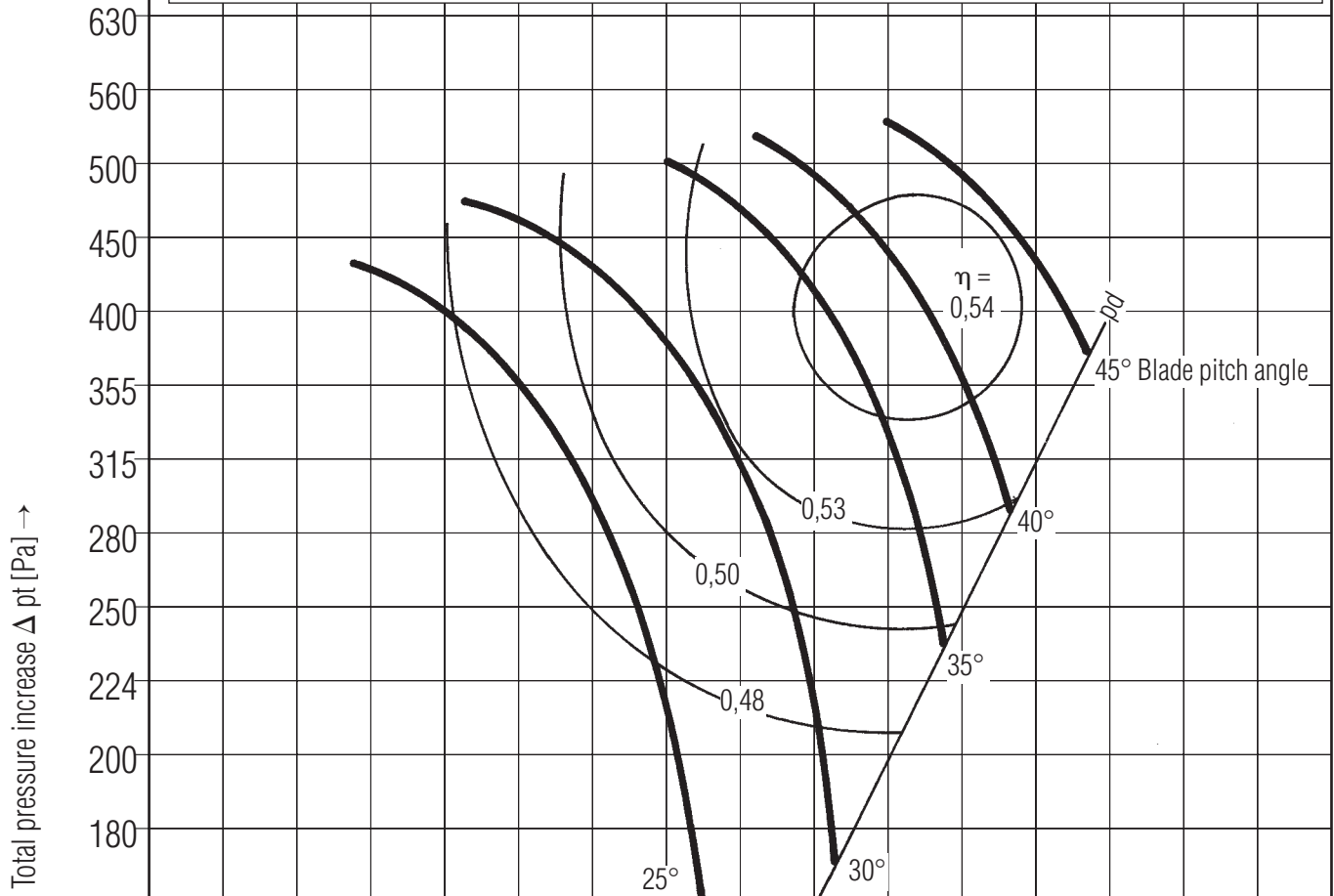
**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 8/400/D*
ROTATIONAL SPEED 2870 RPM****041**

V = Volume flow [m³/h] bzw. [m³/s]
 pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 60$ m/s
 Temperature $t = 20^\circ\text{C}$
 Density $\rho = 1,2$ kg/m³

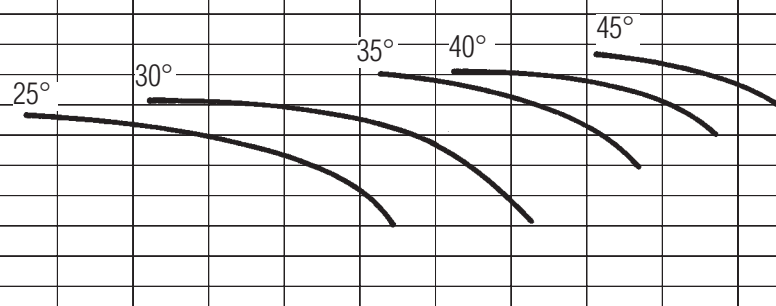
Moment of inertia $I =$ kg m²
 Casing diameter d.i.L. = 401 mm
 Outlet cross section $A_2 = 0,126$ m²

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$$

**AXO-Direct-drive**

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITHOUT GUIDE VANES TYPE AXO 5/500/D* ROTATIONAL SPEED 1450 RPM

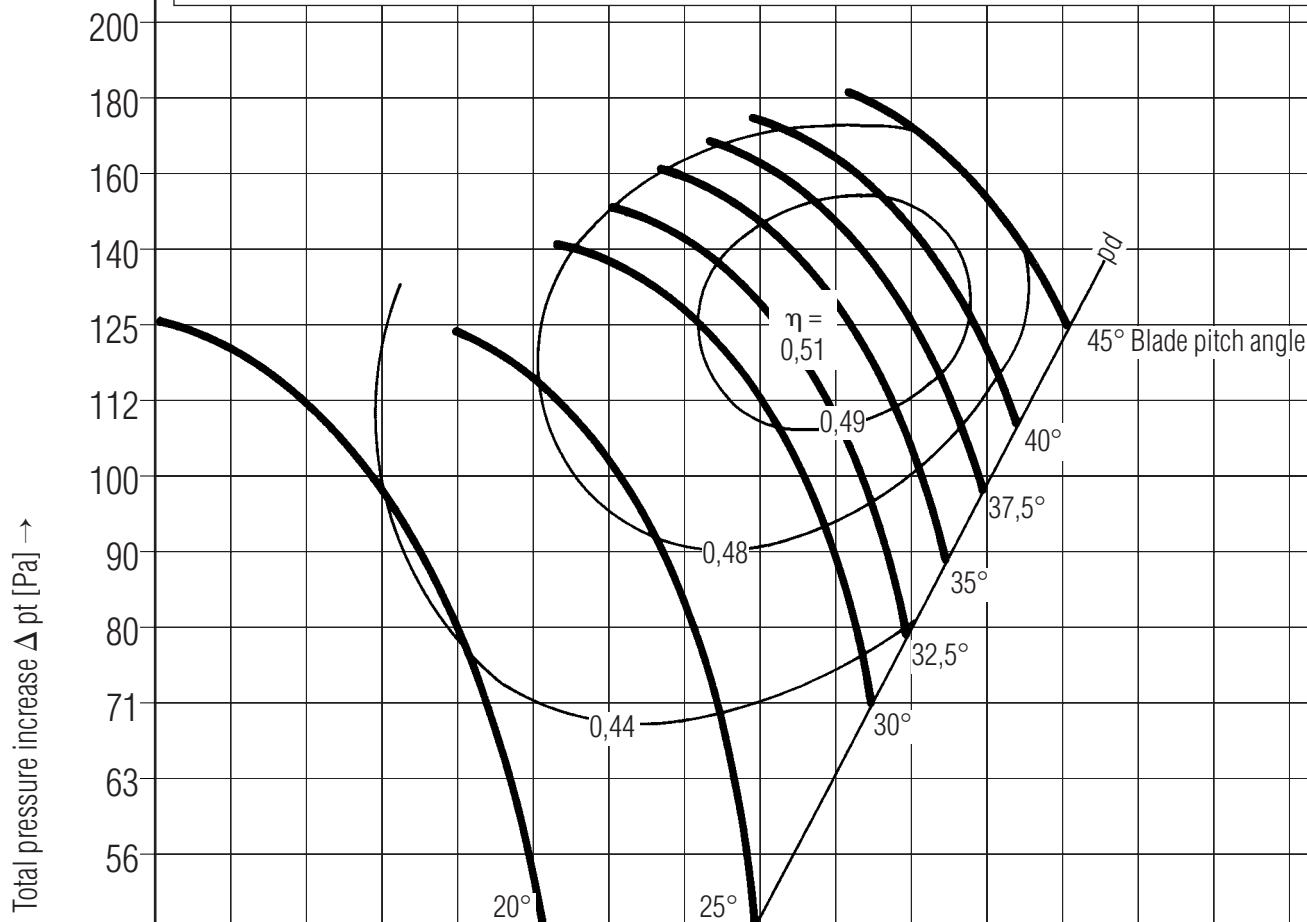
042

V = Volume flow [m³/h] bzw. [m³/s]
pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
c = Flow velocity [m/s]

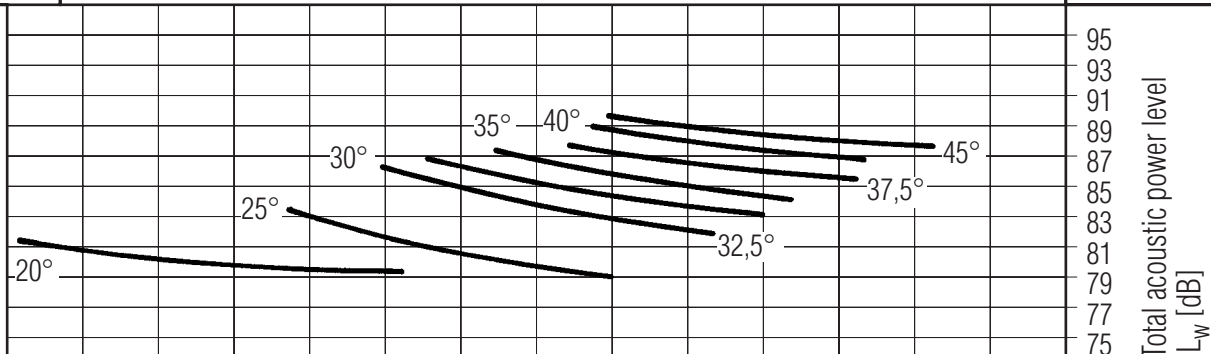
Tip speed $u_2 = 38$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\varrho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 504 mm
Outlet cross section $A_2 = 0,2$ m²

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



Shaft power input requirement:
 $P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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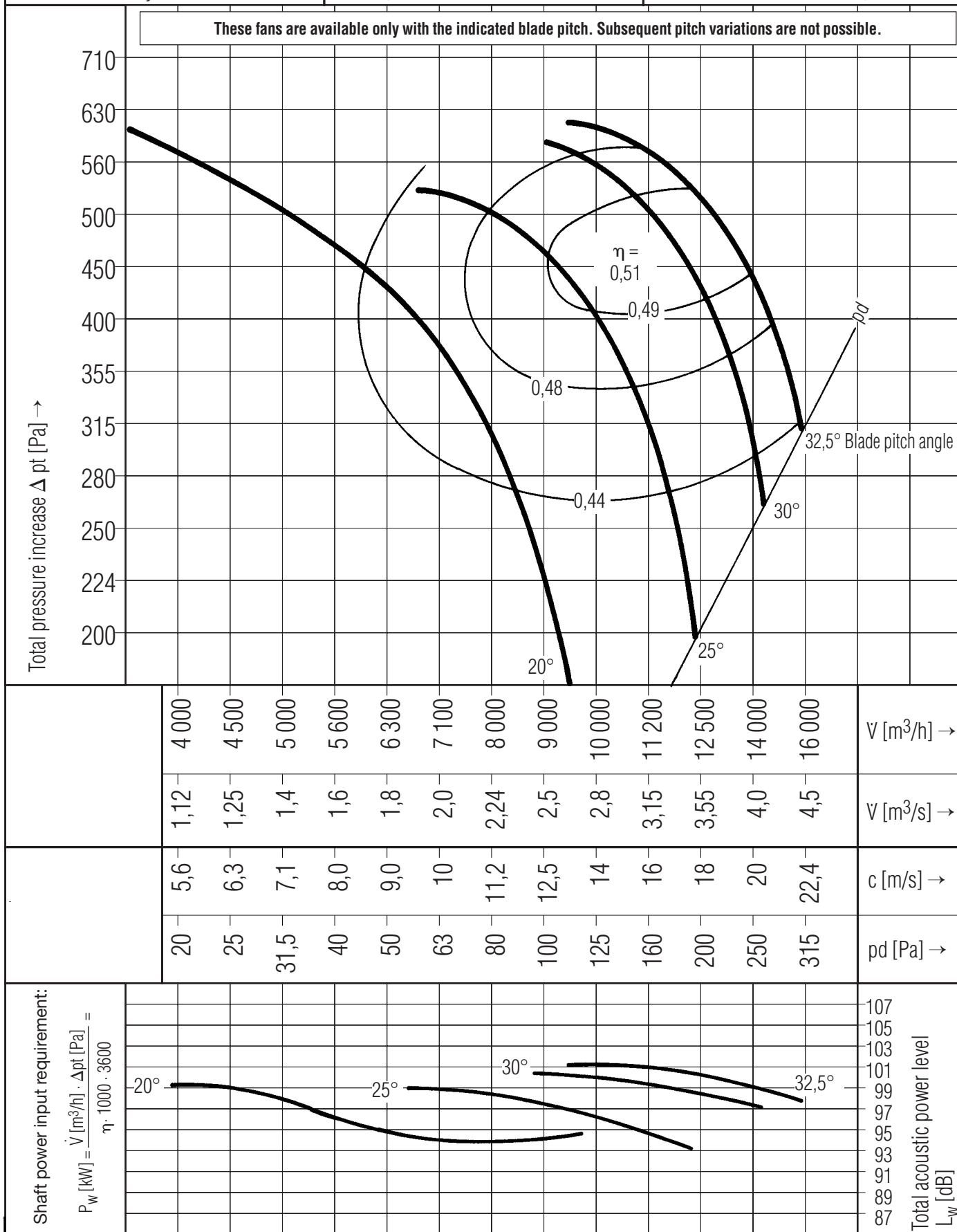
**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 5/500/D*
ROTATIONAL 2870 RPM**

043

V = Volume flow [m³/h] bzw. [m³/s]
pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 76$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 504 mm
Outlet cross section $A_2 = 0,2$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITHOUT GUIDE VANES TYPE AXO 9/500/D* ROTATIONAL SPEED 2870 RPM

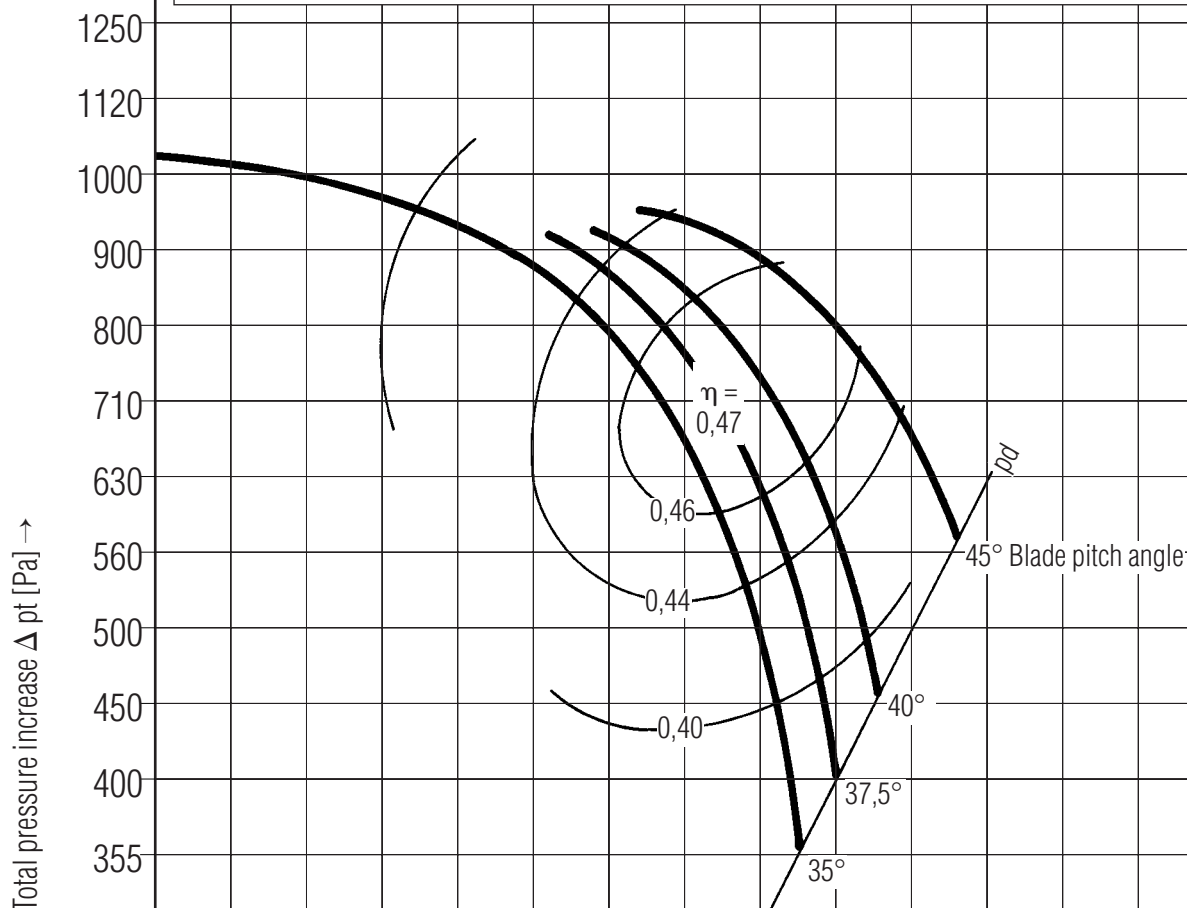
044

V = Volume flow [m³/h] bzw. [m³/s]
pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 76$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1,2$ kg/m³

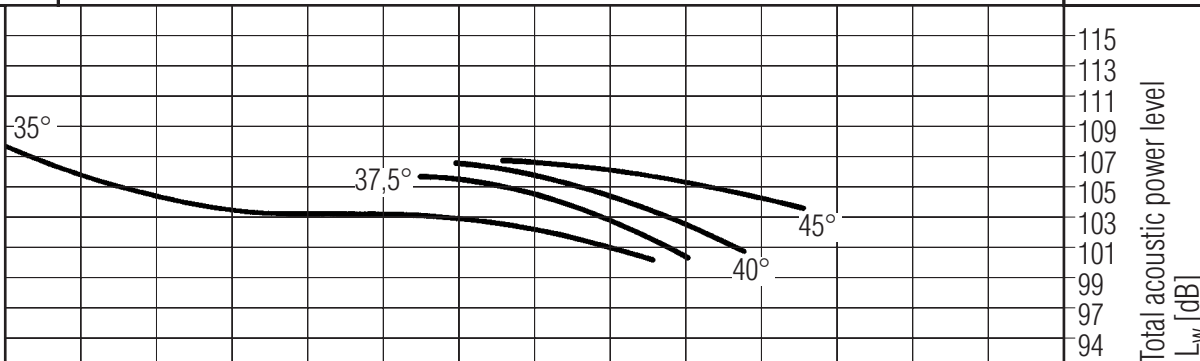
Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 504 mm
Outlet cross section $A_2 = 0,2$ m²

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



7100	8000	9000	10000	11200	12500	14000	16000	18000	20000	22400	25000	28000	V [m³/h] →
2,0	2,24	2,5	2,8	3,15	3,55	4,0	4,5	5,0	5,6	6,3	7,1	8,0	V [m³/s] →
10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	40	c [m/s] →
63	80	100	125	160	200	250	315	400	500	630	800	1000	pd [Pa] →

Shaft power input requirement:
 $P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

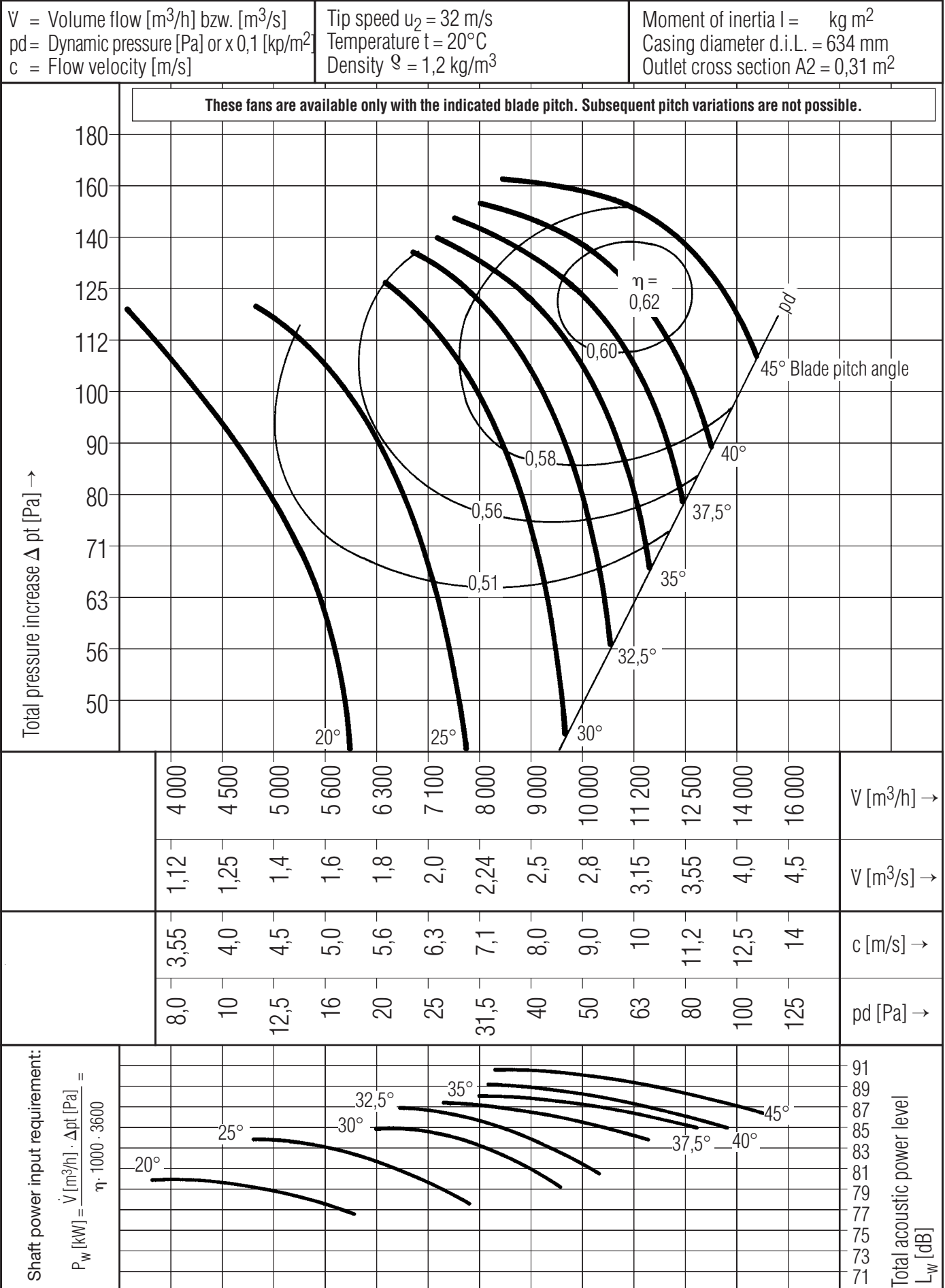


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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITHOUT GUIDE VANES TYPE AXO 9/630/D* ROTATIONAL SPEED 980 RPM

045

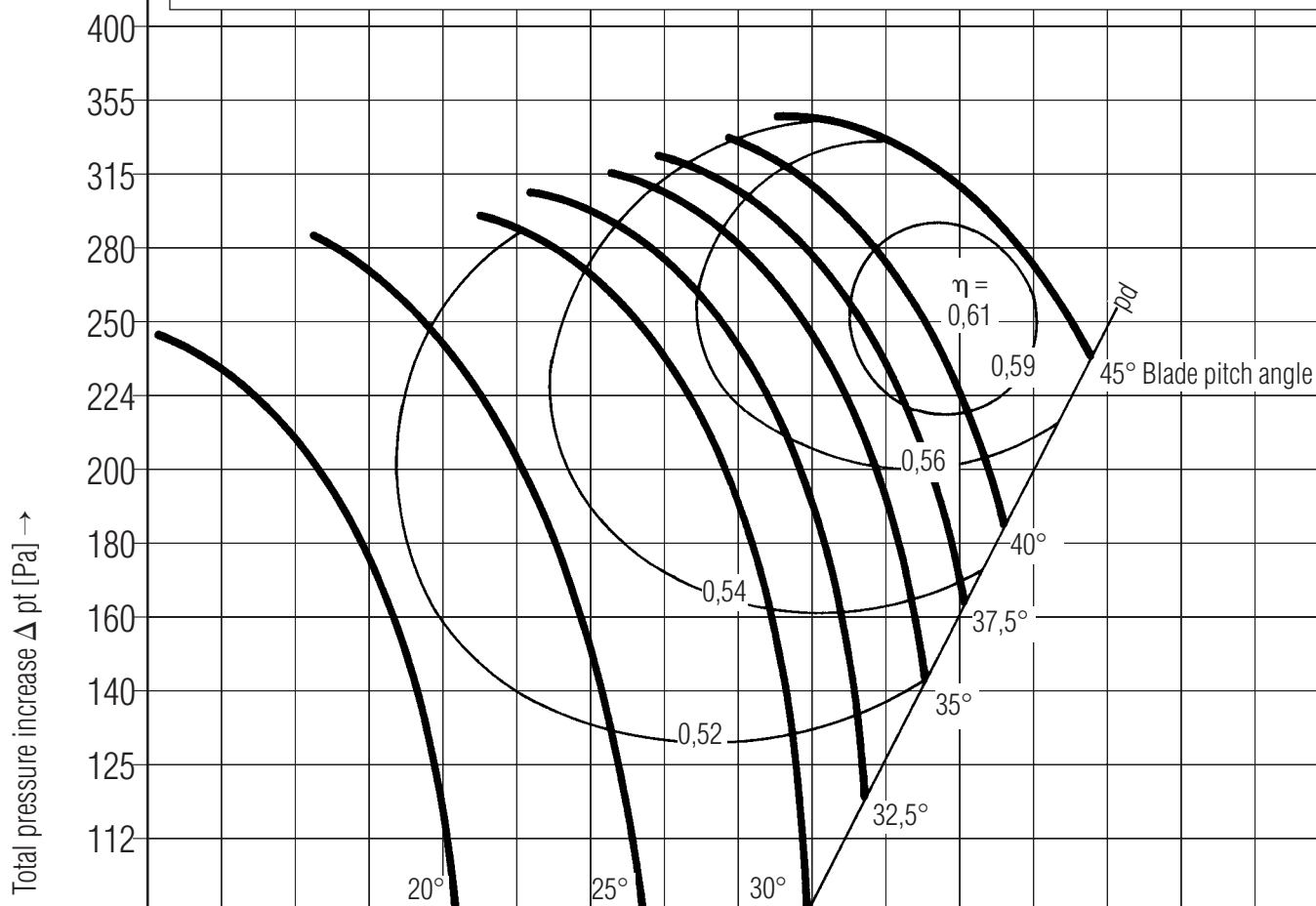


* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 9/630/D*
ROTATIONAL SPEED 1450 RPM****046** V = Volume flow [m^3/h] bzw. [m^3/s]
 pd = Dynamic pressure [Pa] or x 0,1 [kp/m^2]
 c = Flow velocity [m/s]Tip speed $u_2 = 46 \text{ m/s}$
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1,2 \text{ kg}/\text{m}^3$ Moment of inertia $I = \quad \text{kg m}^2$
Casing diameter d.i.L. = 634 mm
Outlet cross section $A_2 = 0,31 \text{ m}^2$

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



5600 6300 7100 8000 9000 10000 11200 12500 14000 16000 18000 20000 22400

 $V [\text{m}^3/\text{h}] \rightarrow$

1,6 1,8 2,0 2,24 2,5 2,8 3,15 3,55 4,0 4,5 5,0 5,6 6,3

 $V [\text{m}^3/\text{s}] \rightarrow$

5,0 5,6 6,3 7,1 8,0 9,0 10 11,2 12,5 14 16 18 20

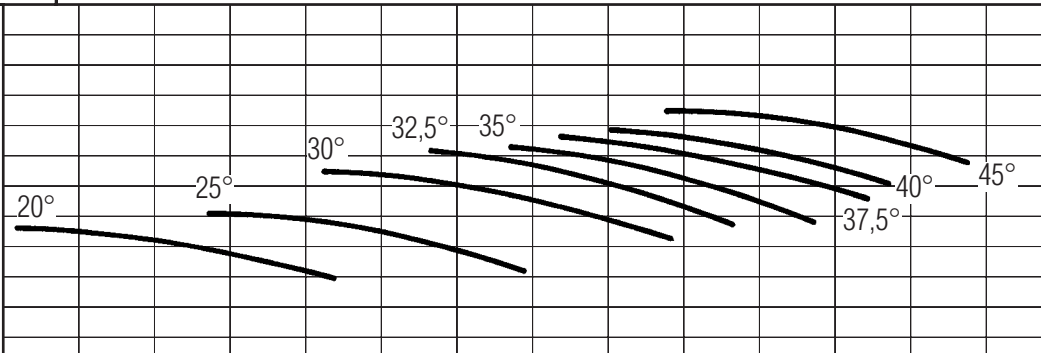
 $c [\text{m}/\text{s}] \rightarrow$

16 20 25 31,5 40 50 63 80 100 125 160 200 250

 $pd [\text{Pa}] \rightarrow$

Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600} =$$

103
101
99
97
95
93
91
89
87
85
83
Total acoustic power level
 $L_w [\text{dB}]$

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

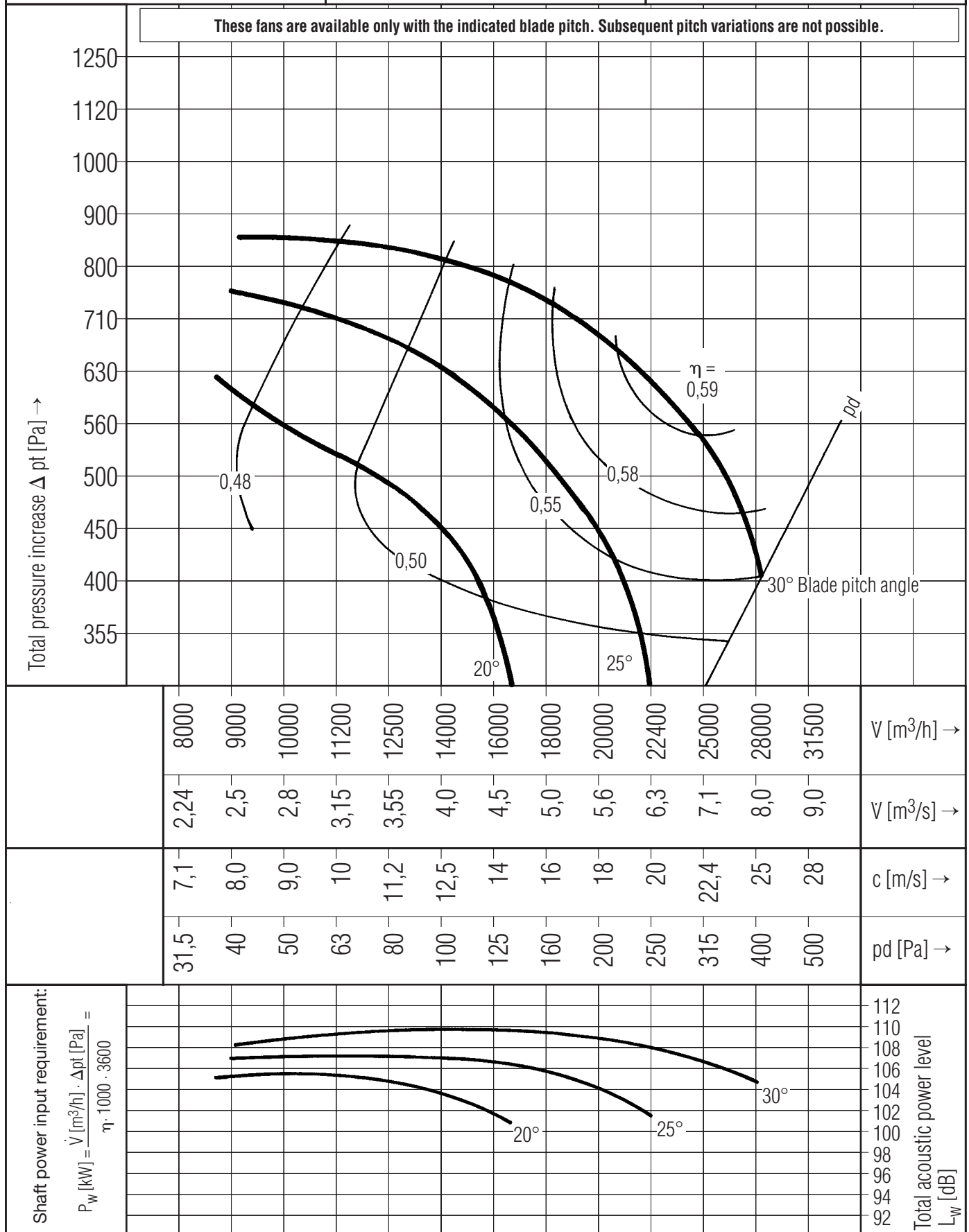
Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 5/630/D*
ROTATIONAL SPEED 2880 RPM****047**

V = Volume flow [m³/h] bzw. [m³/s]
 pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 94$ m/s
 Temperature $t = 20^\circ\text{C}$
 Density $\varrho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
 Casing diameter d.i.L. = 634 mm
 Outlet cross section $A_2 = 0,31$ m²

**AXO-Direct-drive**

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

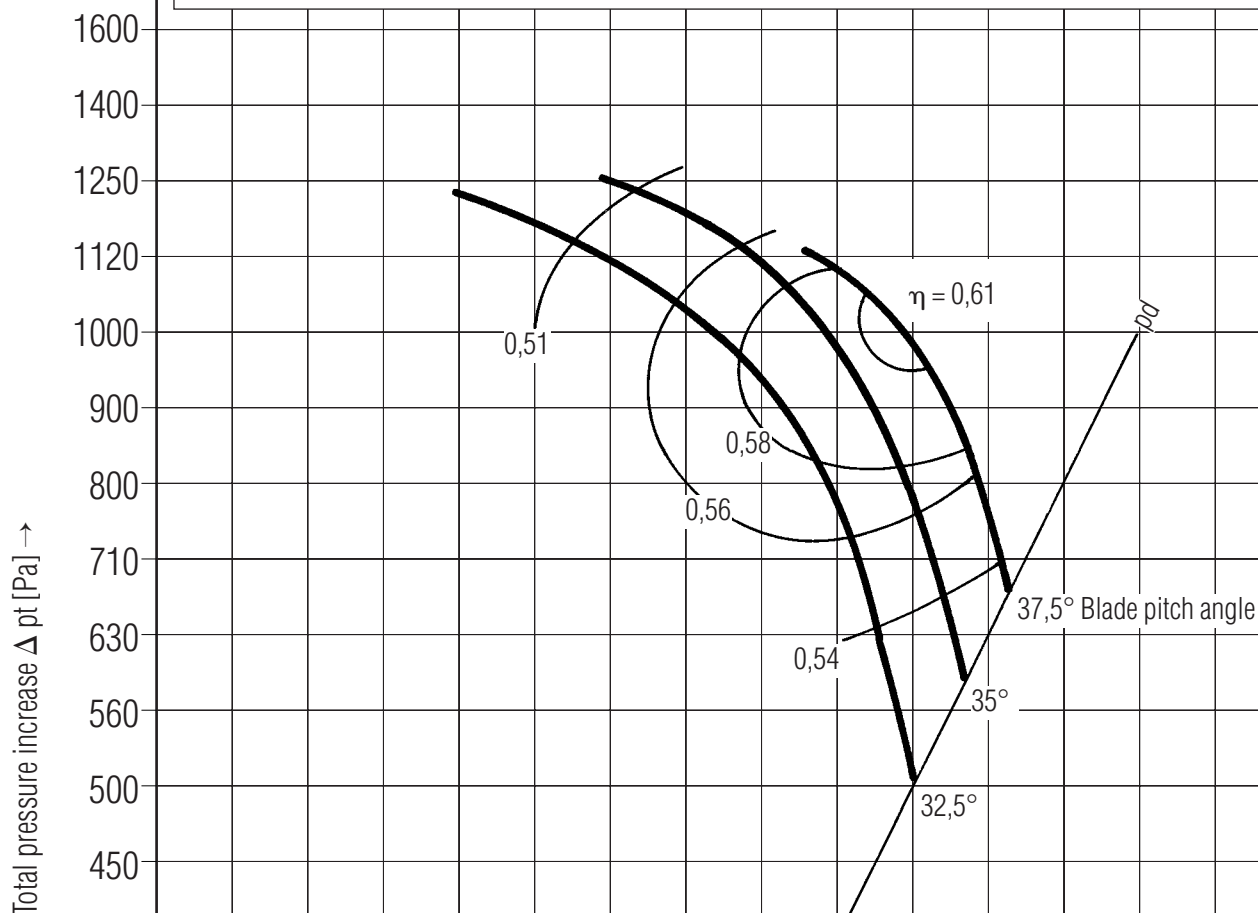
**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 9/630/D*
ROTATIONAL SPEED 2880 RPM****048**

V = Volume flow [m³/h] bzw. [m³/s]
 pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 94$ m/s
 Temperature $t = 20^\circ\text{C}$
 Density $\varrho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
 Casing diameter d.i.L. = 634 mm
 Outlet cross section $A_2 = 0,31$ m²

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



11200 12500 14000 16000 18000 20000 22400 25000 28000 31500 35500 40000 45000

V [m³/h] →

3,15 3,55 4,0 4,5 5,0 5,6 6,3 7,1 8,0 9,0 10 11,2 12,5

V [m³/s] →

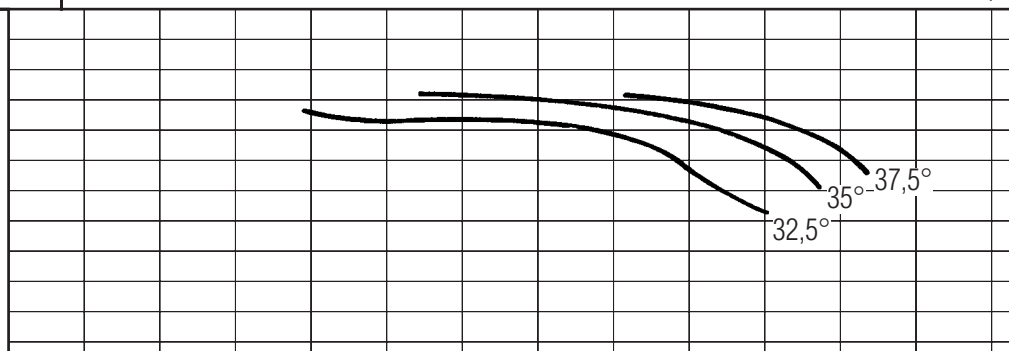
10 11,2 12,5 14 16 18 20 22,4 25 28 31,5 35,5 40

c [m/s] →

63 80 100 125 160 200 250 315 400 500 630 800 1000

pd [Pa] →

Shaft power input requirement:
 $P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$



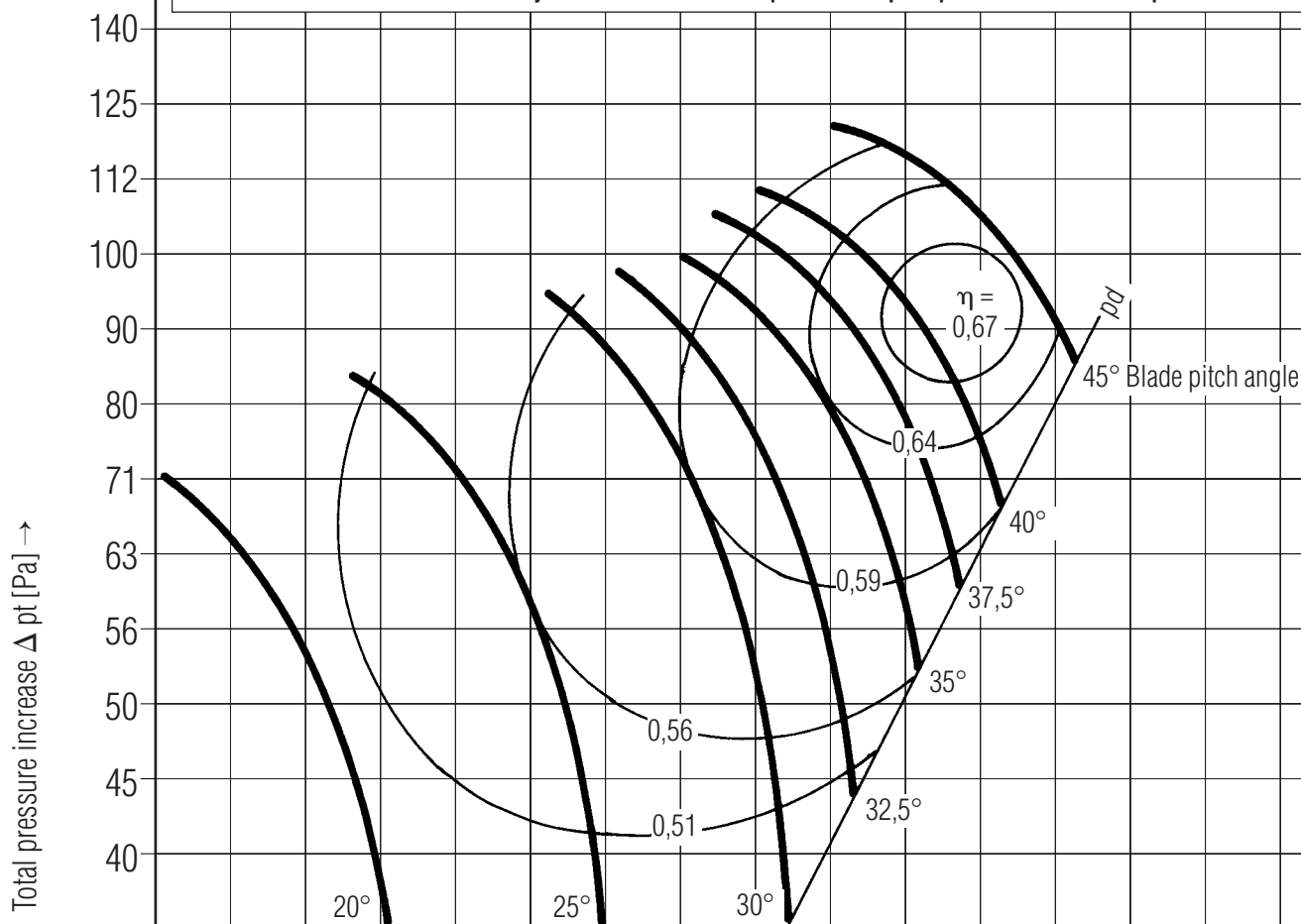
Total acoustic power level
 L_w [dB]

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 9/800/D*
ROTATIONAL SPEED 740 RPM****049** V = Volume flow [m^3/h] bzw. [m^3/s]
 pd = Dynamic pressure [Pa] or x 0,1 [kp/m^2]
 c = Flow velocity [m/s]Tip speed $u_2 = 30 \text{ m/s}$
Temperature $t = 20^\circ\text{C}$
Density $\varrho = 1,2 \text{ kg}/\text{m}^3$ Moment of inertia $I = \quad \text{kg m}^2$
Casing diameter d.i.L. = 797 mm
Outlet cross section $A_2 = 0,5 \text{ m}^2$

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



5 600 6 300 7 100 8 000 9 000 10 000 11 200 12 500 14 000 16 000 18 000 20 000 22 400

1,6 1,8 2,0 2,24 2,5 2,8 3,15 3,55 4,0 4,5 5,0 5,6 6,3

 $V [\text{m}^3/\text{h}] \rightarrow$ $V [\text{m}^3/\text{s}] \rightarrow$

3,15 3,55 4,0 4,5 5,0 5,6 6,3 7,1 8,0 9,0 10 11,2 12,5

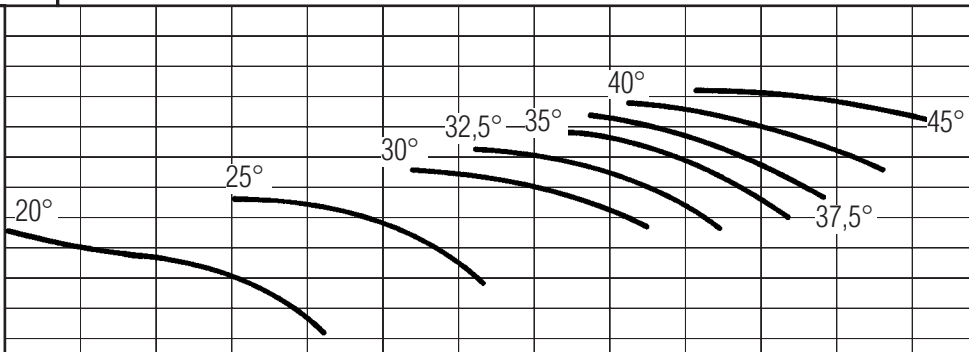
 $c [\text{m}/\text{s}] \rightarrow$

6,3 8,0 10 12,5 16 20 25 31,5 40 50 63 80 100

 $pd [\text{Pa}] \rightarrow$

Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta pt [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$$

Total acoustic power level
 $L_w [\text{dB}]$

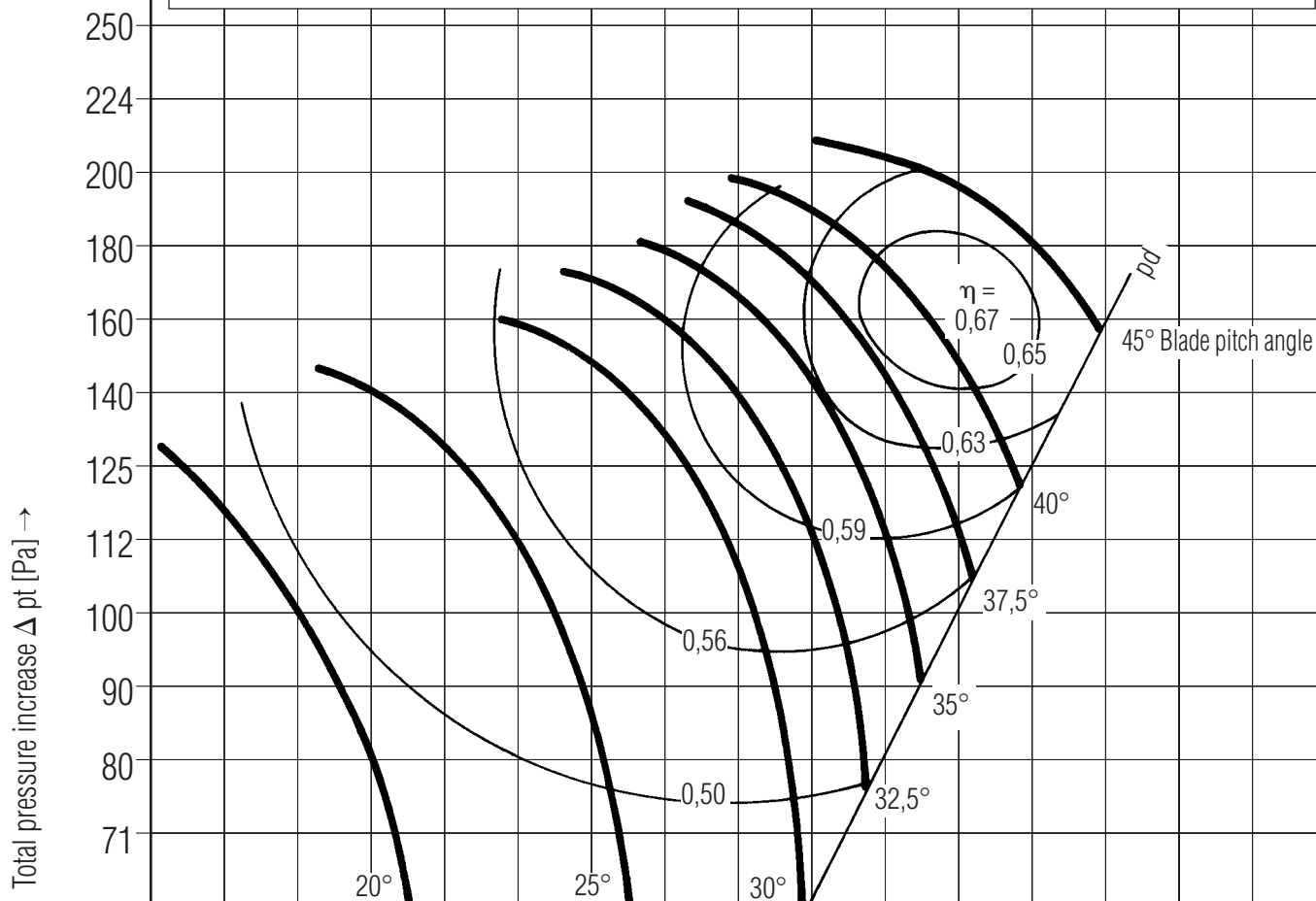
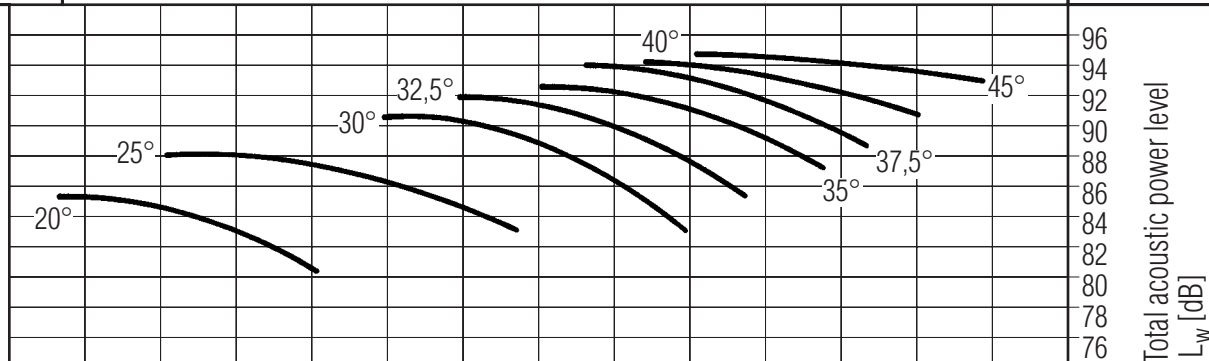
AXO-Direct-drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 9/800/D*
ROTATIONAL SPEED 980 RPM****050** V = Volume flow [m^3/h] bzw. [m^3/s]
 p_d = Dynamic pressure [Pa] or x 0,1 [kp/m^2]
 c = Flow velocity [m/s]Tip speed $u_2 = 39 \text{ m/s}$
Temperature $t = 20^\circ\text{C}$
Density $\varrho = 1,2 \text{ kg}/\text{m}^3$ Moment of inertia $I = \quad \text{kg m}^2$
Casing diameter d.i.L. = 797 mm
Outlet cross section $A_2 = 0,5 \text{ m}^2$

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.

Shaft power input requirement:
$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$$


* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 9/800/D*
ROTATIONAL SPEED 1450 RPM**

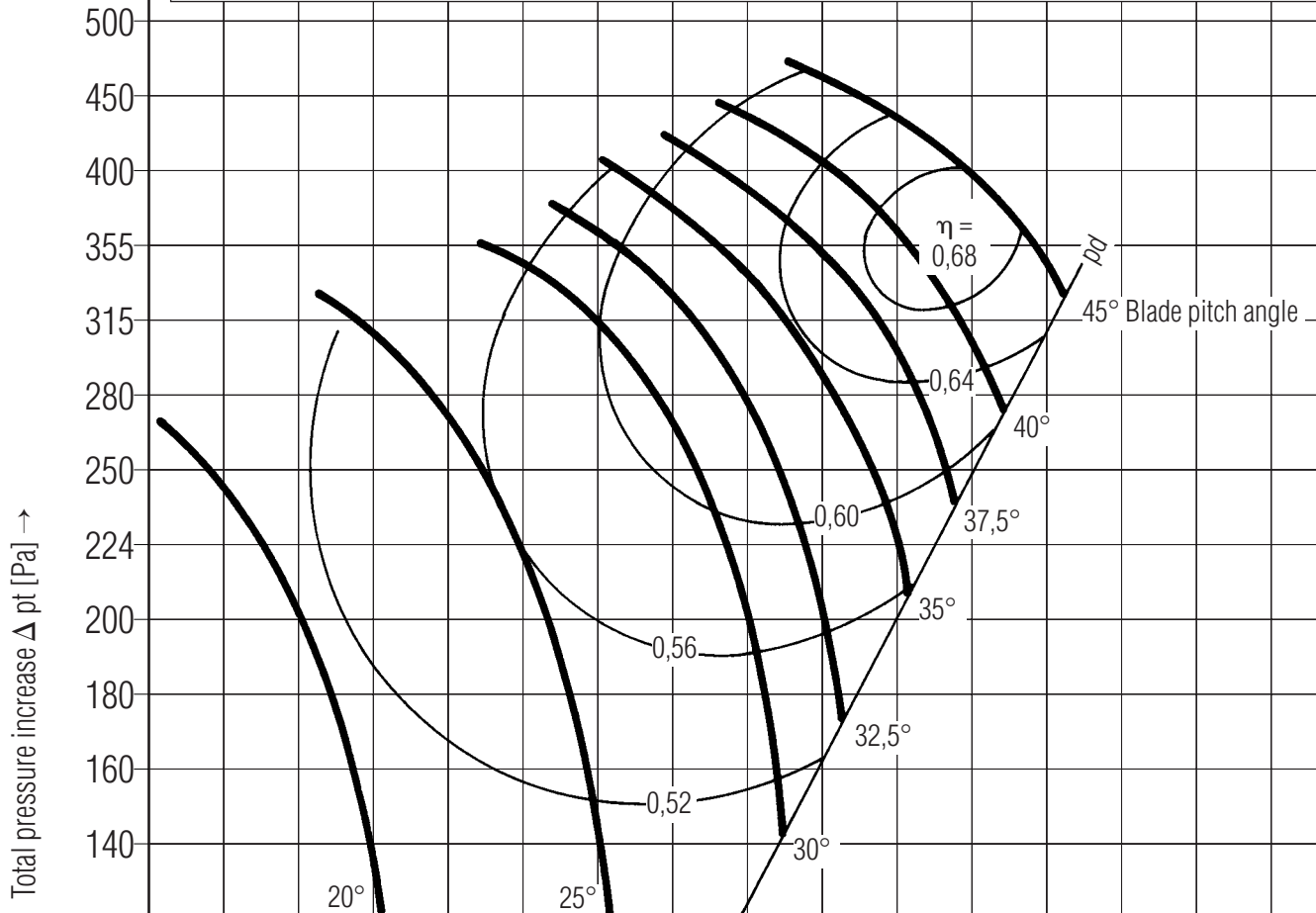
051

V = Volume flow [m³/h] bzw. [m³/s]
pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 60$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 797 mm
Outlet cross section $A_2 = 0,5$ m²

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



11 200 12 500 14 000 16 000 18 000 20 000 22 400 25 000 28 000 31 500 35 500 40 000 45 000

3,15 3,55 4,0 4,5 5,0 5,6 6,3 7,1 8,0 9,0 10 11,2 12,5

6,3 7,1 8,0 9,0 10 11,2 12,5 14 16 18 20 22,4 25

25 31,5 40 50 63 80 100 125 160 200 250 315 400

V [m³/h] →

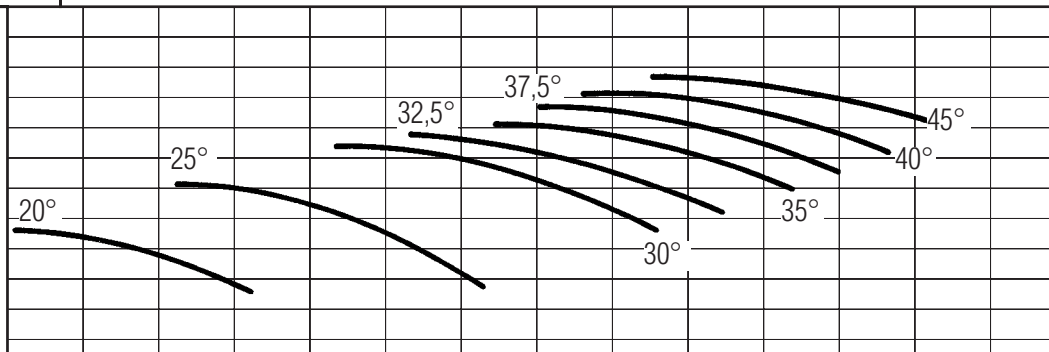
V [m³/s] →

c [m/s] →

pd [Pa] →

Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600} =$$



106
104
102
100
98
96
94
92
90
88
86

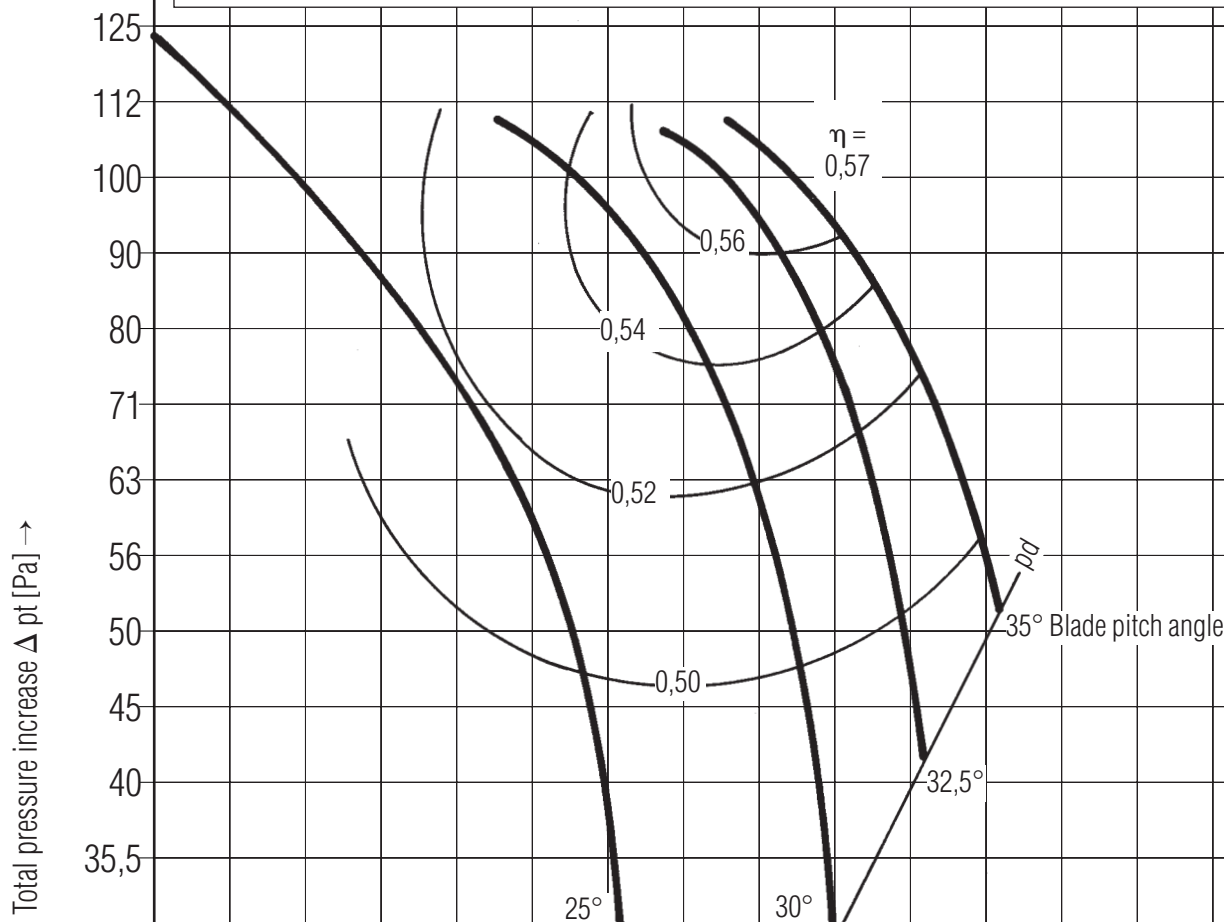
Total acoustic power level
 L_w [dB]

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 9/1000/D*
ROTATIONAL SPEED 740 RPM****052** V = Volume flow [m³/h] bzw. [m³/s]
 p_d = Dynamic pressure [Pa] or x 0,1 [kp/m²]
 c = Flow velocity [m/s]Tip speed $u_2 = 38$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1,2$ kg/m³Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 1003 mm
Outlet cross section $A_2 = 0,79$ m²

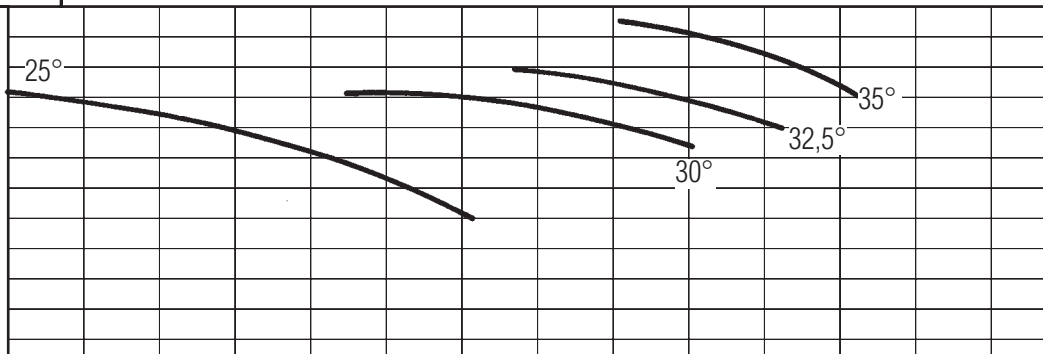
These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



8 000	9 000	10 000	11 200	12 500	14 000	16 000	18 000	20 000	22 400	25 000	28 000	31 500	V [m ³ /h] →
2,24	2,5	2,8	3,15	3,55	4,0	4,5	5,0	5,6	6,3	7,1	8,0	9,0	V [m ³ /s] →
2,8	3,15	3,55	4,0	4,5	5,0	5,6	6,3	7,1	8,0	9,0	10	11,2	c [m/s] →
5,0	6,3	8,0	10	12,5	16	20	25	31,5	40	50	63	80	p_d [Pa] →

Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$$



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



TLT-Turbo GmbH

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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITHOUT GUIDE VANES TYPE AXO 9/1000/D* ROTATIONAL SPEED 980 RPM

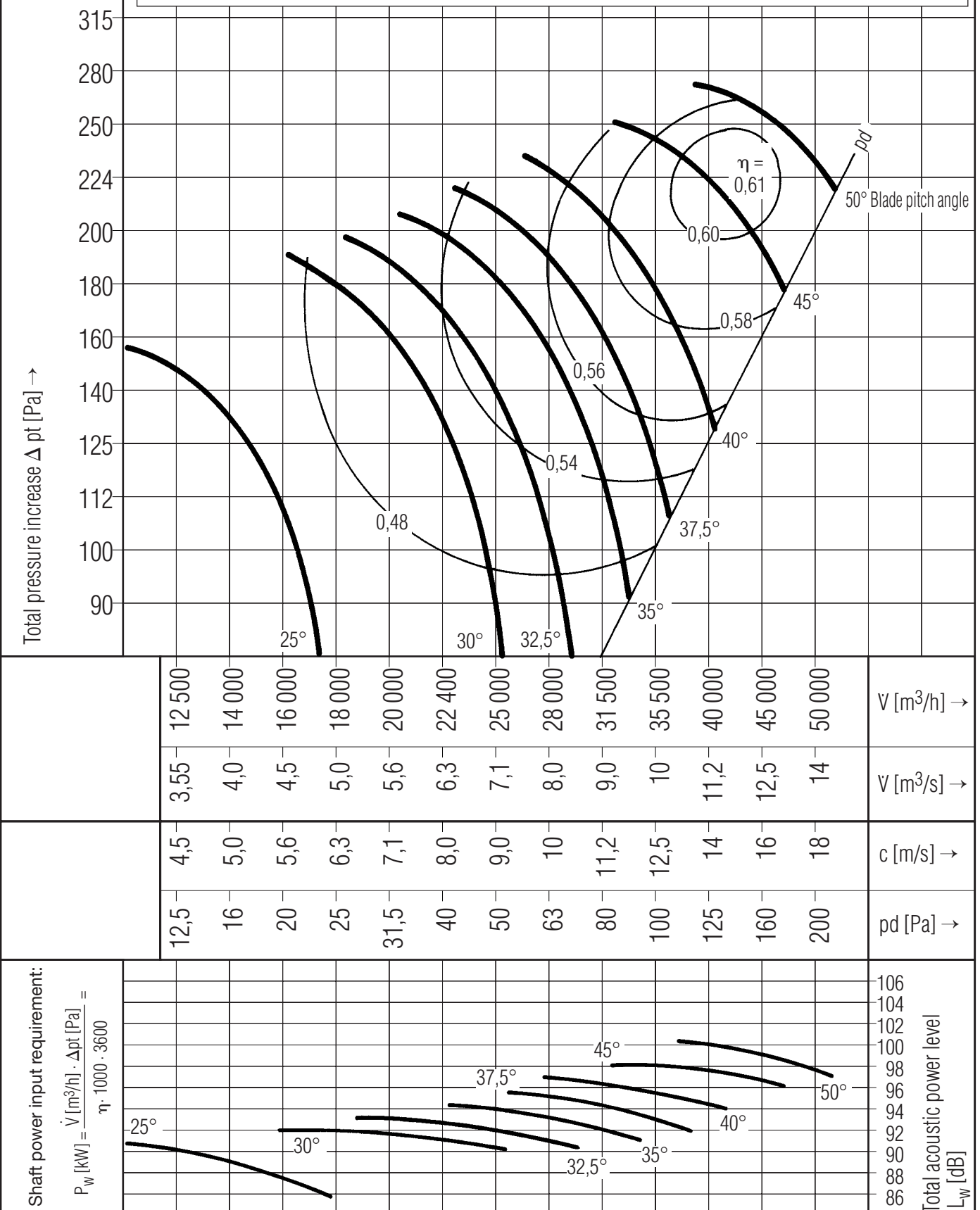
053

V = Volume flow [m³/h] bzw. [m³/s]
pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 51$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 1003 mm
Outlet cross section $A_2 = 0,79$ m²

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

AXO-Direct-drive



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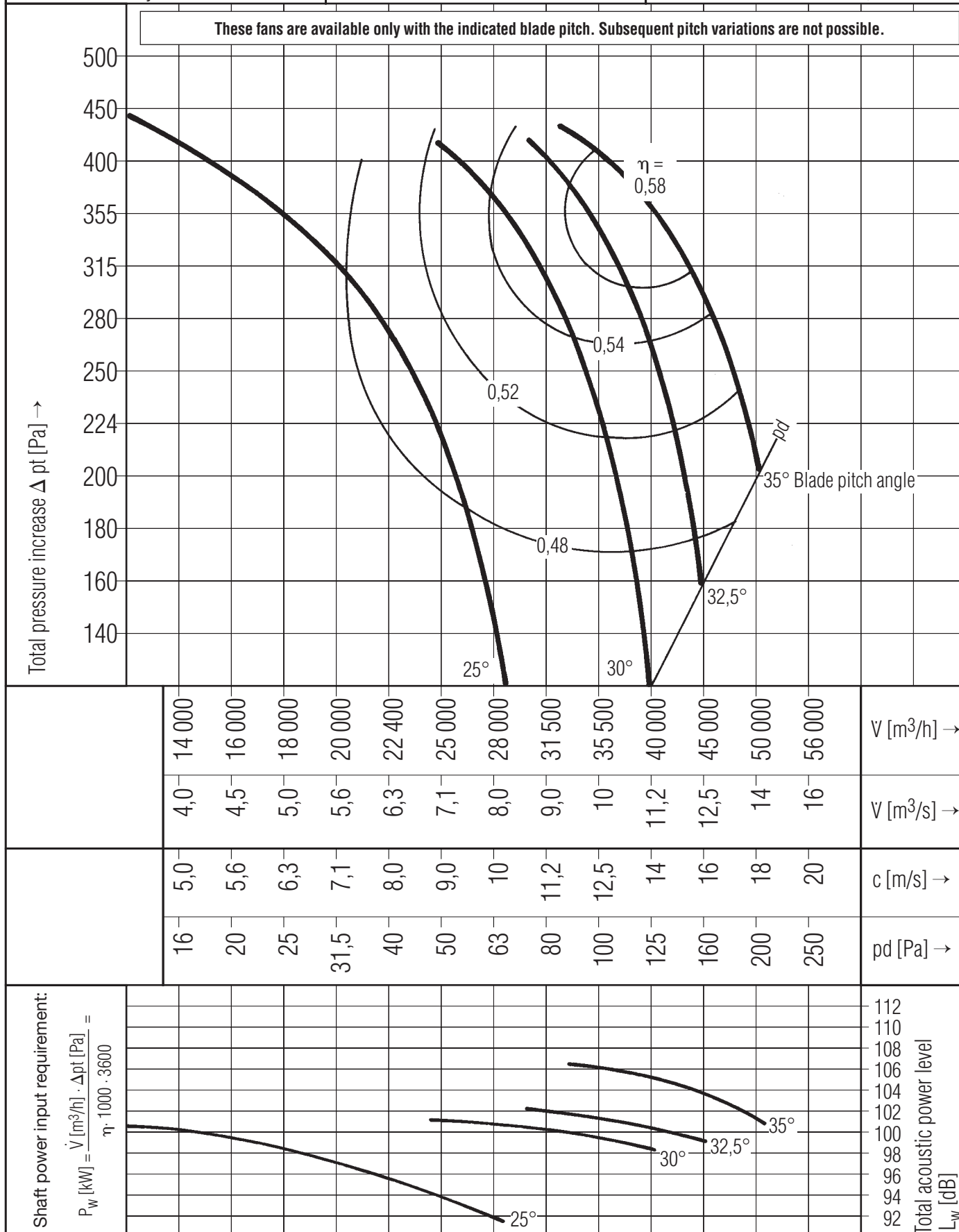
**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 9/1000/D*
ROTATIONAL SPEED 1450 RPM**

054

V = Volume flow [m³/h] bzw. [m³/s]
pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 76$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\varrho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 1003 mm
Outlet cross section $A_2 = 0,79$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

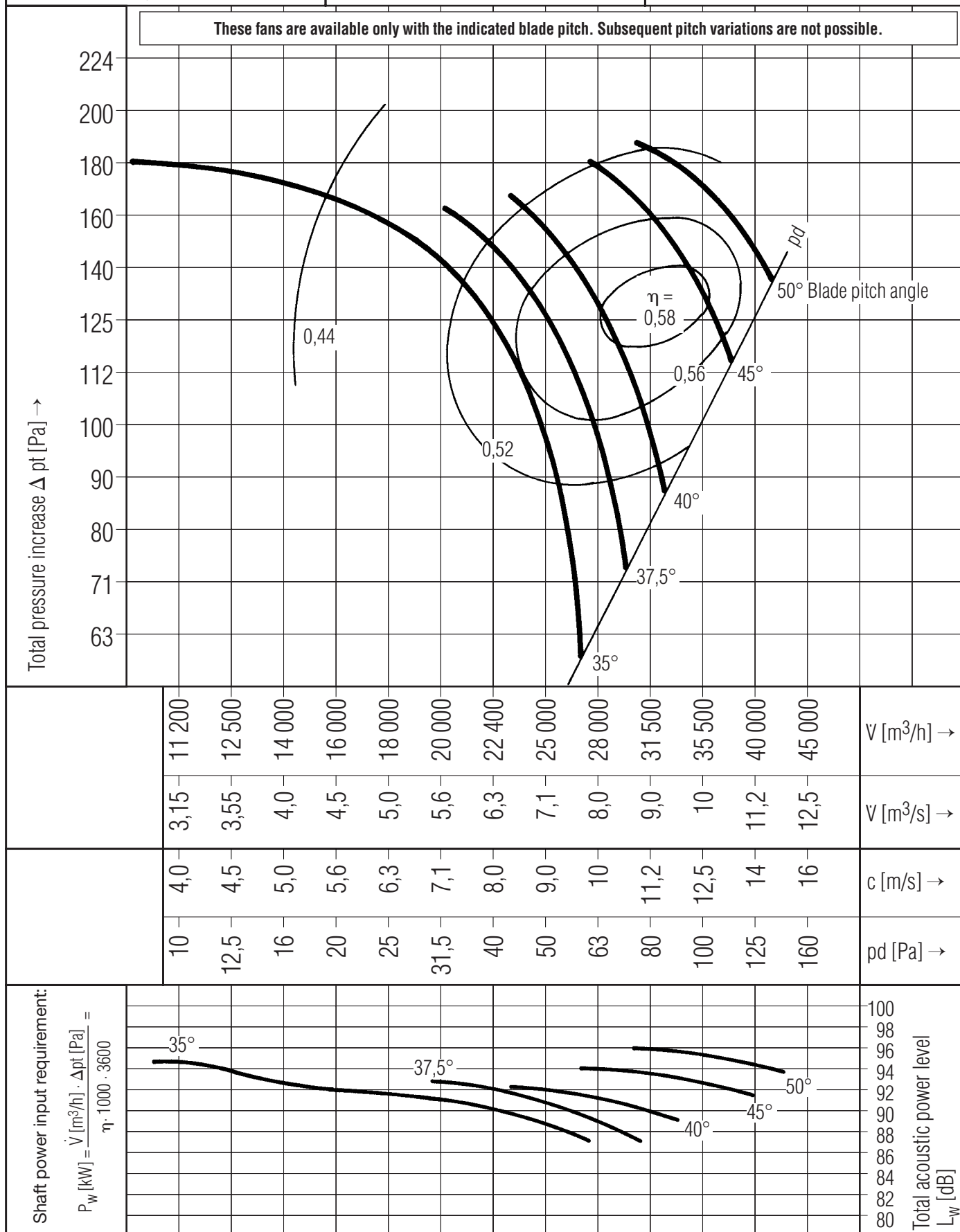
Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 12/1000/D*
ROTATIONAL SPEED 740 RPM****055**

V = Volume flow [m³/h] bzw. [m³/s]
 pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
 c = Flow velocity [m/s]

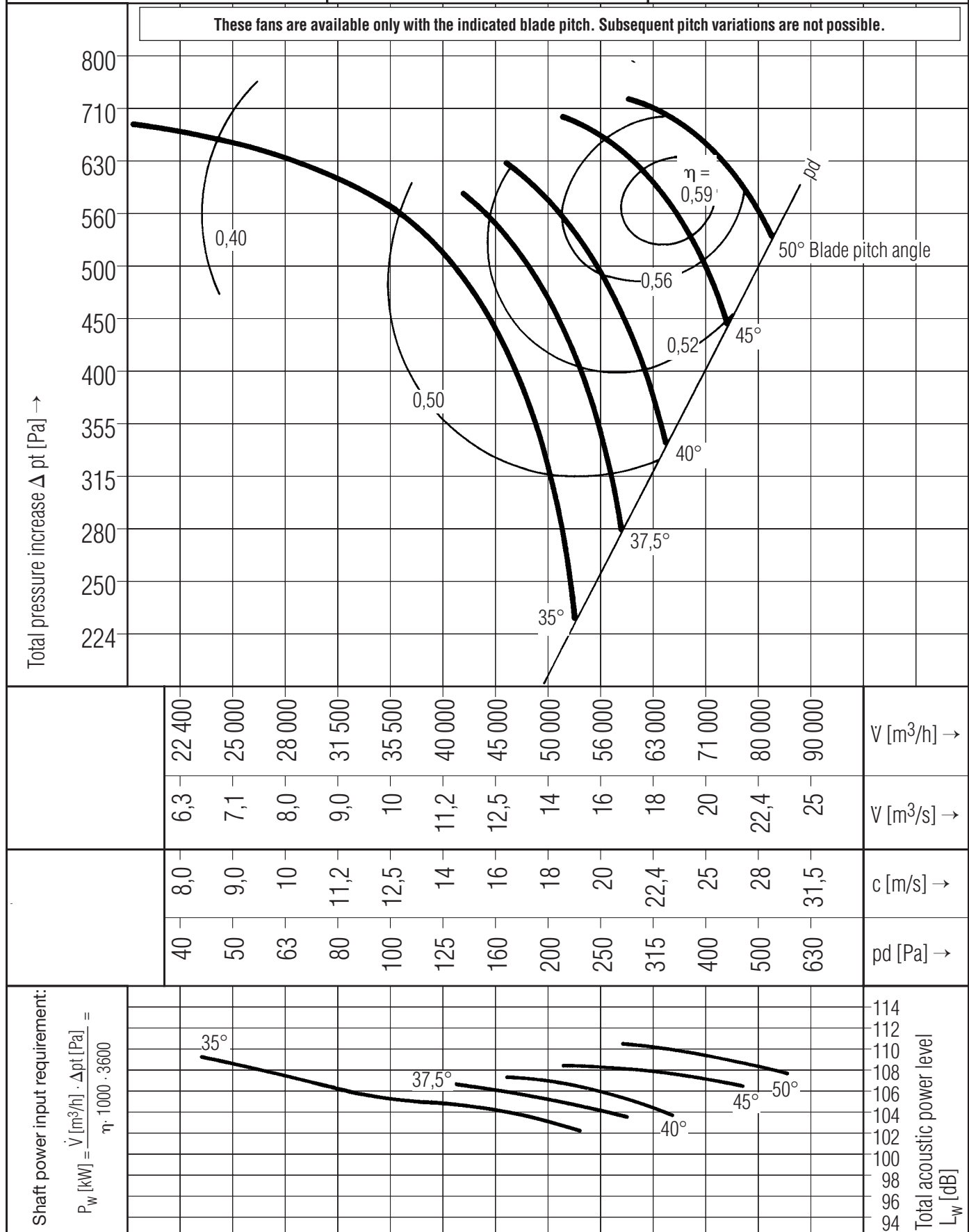
Tip speed $u_2 = 38$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\varrho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 1003 mm
Outlet cross section $A_2 = 0,79$ m²

**AXO-Direct-drive**

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 12/1000/D*
ROTATIONAL SPEED 1450 RPM****056** V = Volume flow [m³/h] bzw. [m³/s]
 p_d = Dynamic pressure [Pa] or x 0,1 [kp/m²]
 c = Flow velocity [m/s]Tip speed $u_2 = 76$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1,2$ kg/m³Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 1003 mm
Outlet cross section $A_2 = 0,79$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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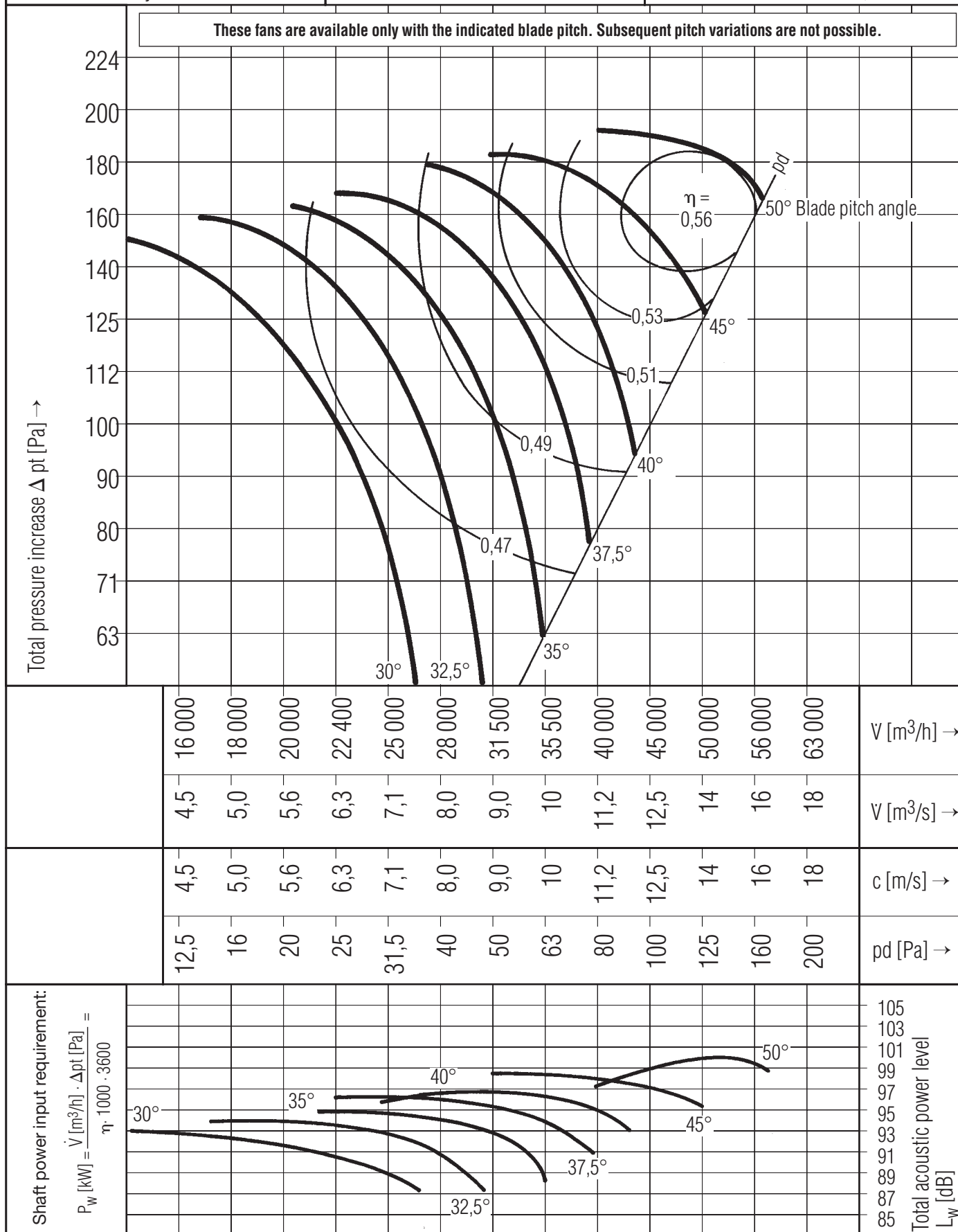
CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITHOUT GUIDE VANES TYPE AXO 12/1120/D* ROTATIONAL SPEED 740 RPM

057

V = Volume flow [m³/h] bzw. [m³/s]
pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
c = Flow velocity [m/s]

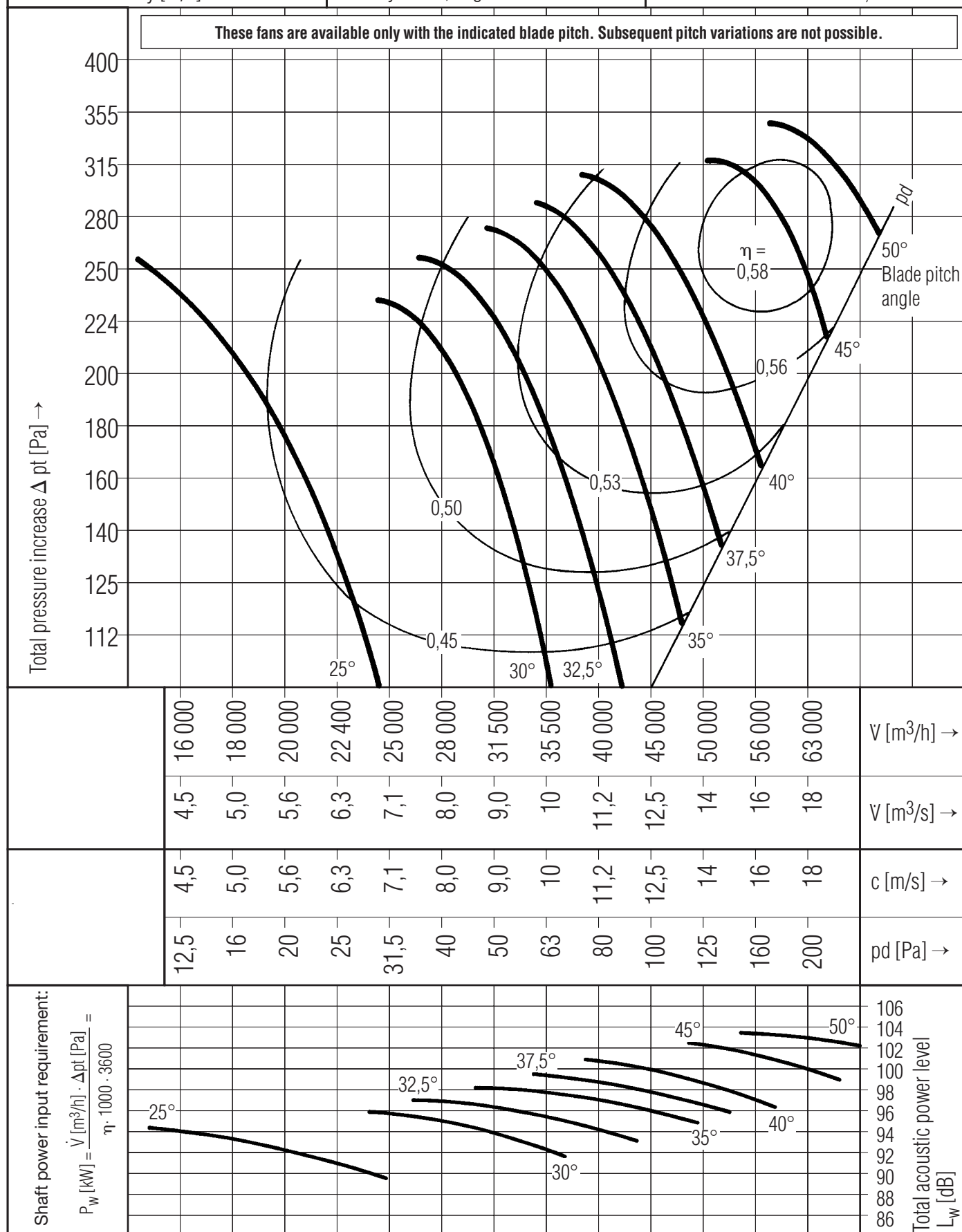
Tip speed $u_2 = 42$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\varrho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 1124 mm
Outlet cross section $A_2 = 1,0$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITHOUT GUIDE VANES
TYPE AXO 12/1120/D*
ROTATIONAL SPEED 980 RPM****058** V = Volume flow [m^3/h] bzw. [m^3/s]
 pd = Dynamic pressure [Pa] or $\times 0,1$ [kp/ m^2]
 c = Flow velocity [m/s]Tip speed $u_2 = 57$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1,2$ kg/ m^3 Moment of inertia $I =$ kg m^2
Casing diameter d.i.L. = 1124 mm
Outlet cross section $A_2 = 1,0$ m^2 

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITHOUT GUIDE VANES TYPE AXO 12/1120/D* ROTATIONAL SPEED 1440 RPM

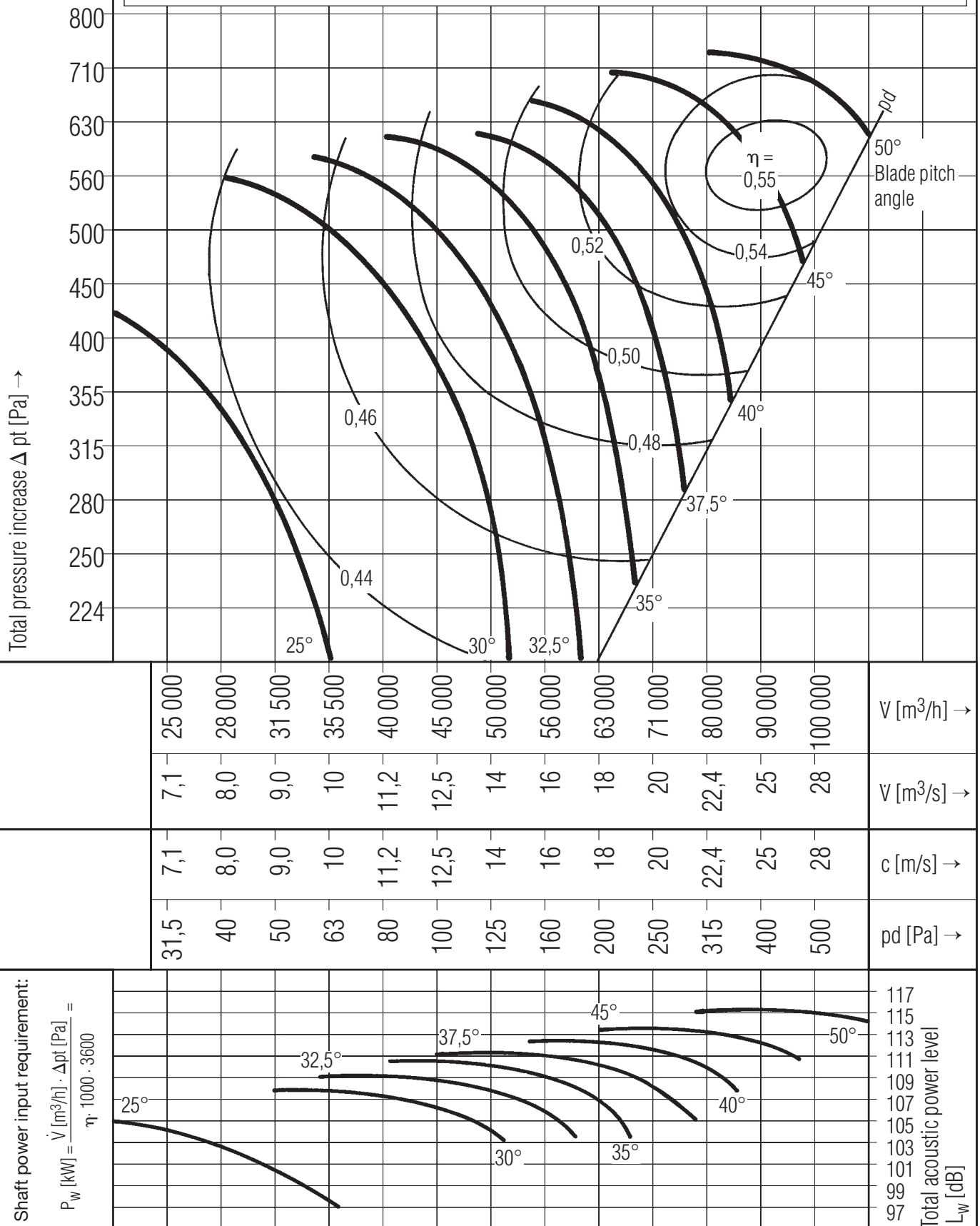
059

V = Volume flow [m³/h] bzw. [m³/s]
pd = Dynamic pressure [Pa] or x 0,1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 84$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\varrho = 1,2$ kg/m³

Moment of inertia $I =$ kg m²
Casing diameter d.i.L. = 1124 mm
Outlet cross section $A_2 = 1,0$ m²

These fans are available only with the indicated blade pitch. Subsequent pitch variations are not possible.



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

Item Nr.	Qty.	Description	Unit price €	Total €
		Carryover Options: • Galvanized fan • Fan with special coating • Extension casing (without inspection hatch) • Inspection hatch • Bellmouth inlet with flange • Wire guard on inlet • Wire guard on extension casing (motor side) • Flexible connector, inlet side * • Flexible connector, outlet side * • Matching flange, inlet side * • Matching flange, outlet side * • Angular wall ring with brackets * • Set of mounting feet (2 pcs.) • Set of spring-type antivibration mounts * • Brackets for vertical fan installation • Diffuser without interior core * • Outlet duct with wire guard * • Duct with self-activating damper * • Insulating casing Note: Please see our Installation, Operating and Maintenance Instructions, available upon request.		
		* Loosely supplied		

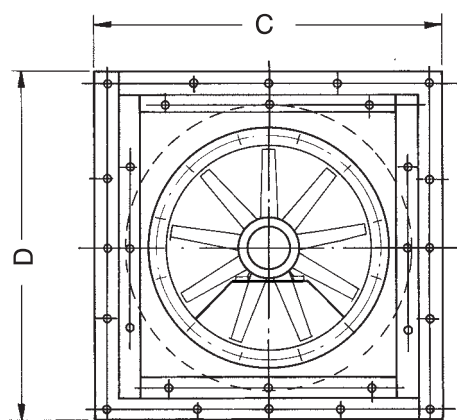
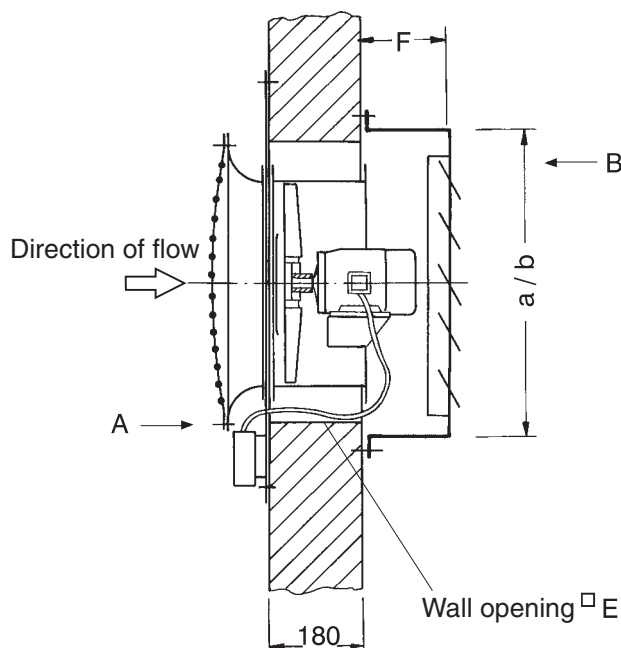
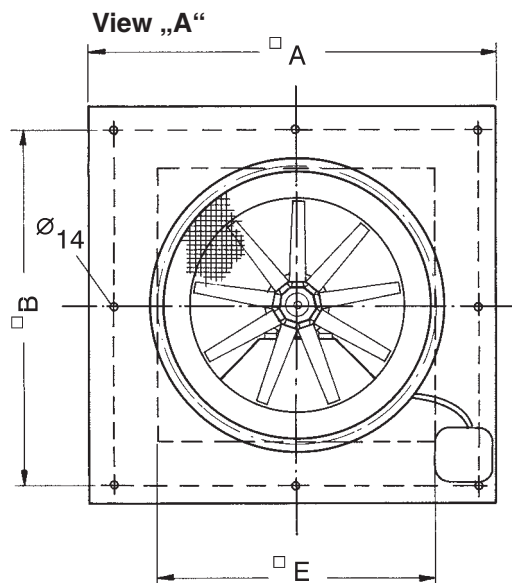


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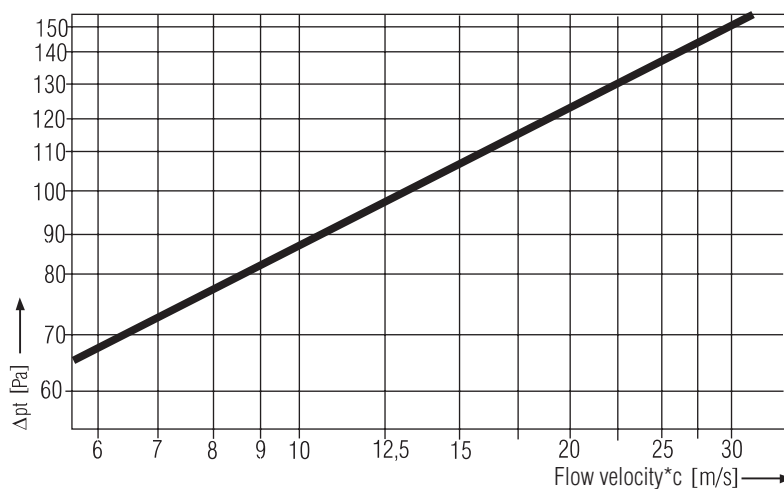
WALL-MOUNTING AXIAL FANS WAXO SERIES

062



View "B"
(shown without louvre-type damper)

Pressure loss across shutoff damper (overpressure louvre)



Pressure losses of fan and shutoff damper sum up to the total pressure increase needed for the sizing of complete fan units (assuming free inlet / free outlet conditions).

*For flow velocities please refer to the characteristic curves.

Please refer to characteristic curves on pages 040 to 051.

Size	□ A	□ B	C	D	□ E	F	a	b				Weight approx. [kg] (without motor)
400	800	720	677	695	550	330	602	583				25
500	900	820	777	795	650	430	702	683				40
630	1050	3 x 325 975	977	995	900	450	902	883				65
800	1400	4 x 330 1320	1177	1195	1000	450	1102	1083				90

Dimensions in mm

For planning and installation please also refer to our Installation, Operating and Maintenance Instructions (MBW).

Item Nr.	Qty.	Description	Unit price €	Total €																																
	or or	Wall-mounting Axial Flow Fan, WAXO Series Type M-D Airflow direction: motor in outlet, direct drive. Wall-mounting type Consisting of: Duct casing of welded sheet steel construction, with drilled flanges according to DIN 24154 - Series 3, 3-phase a.c. standard motor arranged in the flow, with terminal box fitted on the casing. Surface protection: • Polyester powder coating, colour: RAL 7030 Louvre damper slats: made of aluminium Louvre damper frame and wire guard: galvanized. • Impeller made of cast aluminium, directly mounted on motor shaft, non-adjustable blades • Bellmouth with wire guard • Wall-mounting plate (inside) • Outlet box (outside) • Louvre damper (outside) Specifications: <table><tr><td>Volume flow</td><td>m³/h</td></tr><tr><td>Temperature (design)</td><td>°C</td></tr><tr><td>Dynamic pressure</td><td>Pa</td></tr><tr><td>Total pressure increase</td><td>Pa</td></tr><tr><td>Fan speed</td><td>rpm</td></tr><tr><td>Blade pitch angle</td><td>°</td></tr><tr><td>Total sound power level L_w</td><td>dB</td></tr><tr><td>Efficiency</td><td>%</td></tr><tr><td>Power requirement</td><td>kW</td></tr></table> Three-phase motor: single-speed with Dahlander pole-changing type pole-changing type with separate windings <table><tr><td>Motor speed</td><td>rpm</td></tr><tr><td>Motor output</td><td>kW</td></tr><tr><td>Nominal motor current</td><td>A</td></tr><tr><td>Voltage</td><td>V</td></tr><tr><td>Frequency</td><td>Hz</td></tr><tr><td>Protection class</td><td>IP</td></tr><tr><td>Style</td><td>B</td></tr><tr><td>Size</td><td></td></tr></table> Weight of fan with accessories	Volume flow	m³/h	Temperature (design)	°C	Dynamic pressure	Pa	Total pressure increase	Pa	Fan speed	rpm	Blade pitch angle	°	Total sound power level L _w	dB	Efficiency	%	Power requirement	kW	Motor speed	rpm	Motor output	kW	Nominal motor current	A	Voltage	V	Frequency	Hz	Protection class	IP	Style	B	Size	
Volume flow	m³/h																																			
Temperature (design)	°C																																			
Dynamic pressure	Pa																																			
Total pressure increase	Pa																																			
Fan speed	rpm																																			
Blade pitch angle	°																																			
Total sound power level L _w	dB																																			
Efficiency	%																																			
Power requirement	kW																																			
Motor speed	rpm																																			
Motor output	kW																																			
Nominal motor current	A																																			
Voltage	V																																			
Frequency	Hz																																			
Protection class	IP																																			
Style	B																																			
Size																																				

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**AXIAL FLOW FANS
TECHNICAL LISTS (AVAILABLE MODELS)
AXN 12/56 SERIES****064**

Fan	Motor 400 V, 50 Hz						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current [A] ❶	Size	Type	Flange dia.

250	3000	0-20	0,25 •	0,65	63	B14	120
		21-30	0,37 •	1,0	71	B14	120
		31-35	0,55 •	1,35	71	B14	120
	3000/1500	0-30	0,37/0,08 •	0,75/0,23	71	B14	120

280	3000	0-10	0,25 •	0,65	63	B14	120
		11-20	0,37 •	1,0	71	B14	120
		21-30	0,55 •	1,35	71	B14	120
		31-35	0,75 •	1,7	80	B14	120
	3000/1500	0-20	0,37/0,08 •	0,75/0,23	71	B14	120
		21-30	0,55/0,13 •	1,33/0,32	71	B14	120
		31-35	0,75/0,2 •	1,7/0,5	80	B14	120

315	1500	0-35	0,25 •	0,75	71	B5	160
	3000	0-13	0,55 •	1,35	71	B5	160
		14-20	0,75 v	1,7	80	B14	160
		21-32	1,1 •	2,4	80	B14	160
	1500/750	0-35	0,22/0,05	0,95/0,38	71	B5	160
	3000/1500	0-13	0,55/0,13 •	1,33/0,32	71	B5	160
		14-20	0,75/0,2 •	1,7/0,5	80	B14	160
		21-32	1,1/0,26 •	2,5/0,7	80	B14	160

355	1500	0-32	0,25 •	0,75	71	B5	160
	3000	0-7	0,75 •	1,7	80	B14	160
		8-16	1,1 •	2,4	80	B14	160
		17-25	1,5 •	3,3	90	B14	160
		26-35	2,2 •	4,6	90	B14	160
	1500/750	0-30	0,22/0,05	0,95/0,38	71	B5	160
	3000/1500	0-7	0,75/0,2 •	1,7/0,5	80	B14	160
		8-16	1,1/0,26 •	2,5/0,7	80	B14	160
		17-30	1,8/0,37 •	4,1/0,9	90	B14	160

400	1500	0-20	0,25 •	0,75	71	B5	160
		21-30	0,37	1,0	71	B5	160
		31-35	0,55 •	1,5	80	B5	200
	3000	0-10	1,5 •	3,3	90	B5	200
		11-19	2,2 •	4,6	90	B5	200
		20-27	3,0 •	6,2	100	B14	200
		28-35	4,0 •	7,9	112	B14	200
	1500/750	0-23	0,3/0,06	1,15/0,43	71	B5	160
		24-35	0,55/0,12 •	1,4/0,6	80	B5	200
	3000/1500	0-15	1,8/0,37 •	4,1/0,9	90	B5	200
		16-27	3,0/0,75	6,7/1,7	100	B14	200
		28-35	4,8/1,2 •	9,4/2,4	112	B14	200

Fan	Motor 400 V, 50 Hz						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current [A] ❶	Size	Type	Flange dia.

450	1500	0-22	0,55 •	1,5	80	B5	200
		23-31	0,75 •	2,0	80	B5	200
		32-35	1,1 •	2,7	90	B5	200
	3000	0-13	3,0 •	6,2	100	B14	200
		14-20	4,0 •	7,9	112	B14	200
		21-30	5,5	11,7	112	B14	200
		31-35	7,5	16,6	112	B14	200
	1500/750	0-22	0,55/0,12 •	1,4/0,6	80	B5	200
		23-30	0,7/0,18	2,0/0,8	80	B5	200
	3000/1500	0-13	3,0/0,75	6,7/1,7	100	B14	200
		14-25	4,8/1,2 •	9,4/2,4	112	B14	200

500	1000	0-35	0,55	1,6	80	B5	200
	1500	0-15	0,75 •	2,0	80	B5	200
		16-25	1,1 •	2,7	90	B5	200
		26-35	1,5 •	3,5	90	B5	200
	3000	0-5	4,0 •	7,9	112	B14	200
		6-12	5,5	11	132	B5	250
		13-20	7,5	14,6	132	B5	250
		21-30	11	21	132	B5	250
		31-35	15	30	132	B5	250
	1000/500	0-30	0,33/0,05	1,15/0,33	80	B5	200
	1500/750	0-14	0,7/0,18	2,0/0,8	80	B5	200
		15-25	1,0/0,25 •	2,5/1,05	90	B5	200
		26-35	1,4/0,35 •	3,3/1,4	90	B5	200
	1500/1000	0-25	1,1/0,37	2,8/1,35	90	B5	200
		26-35	1,6/0,6	3,9/1,8	100	B5	250
	3000/1500	0-10	4,8/1,2 •	9,4/2,4	112	B5	250
		11-15	6,0/1,5	13,3/3,2	132	B5	250
		16-22	7,8/2,0	16,2/4,1	132	B5	250

560	1000	0-26	0,55	1,6	80	B5	200
		27-35	0,75	2,2	90	B5	200
	1500	0-13	1,1 •	2,7	90	B5	200
		14-20	1,5 •	3,5	90	B5	200
		21-30	2,2 •	4,8	100	B5	250
		31-35	3,0 •	6,6	100	B5	250
	1000/500	0-35	0,80/0,15	2,3/0,9	90	B5	200
	1500/750	0-17	1,4/0,35 •	3,3/1,4	90	B5	200
		18-35	2,6/0,65 •	5,9/2,1	100	B5	250
	1500/1000	0-13	1,1/0,37	2,8/1,35	90	B5	200
		14-20	1,6/0,6	3,9/1,8	100	B5	250
		21-30	2,2/0,75	5,3/2,3	100	B5	250
		31-35	3,0/1,0	6,3/3,0	112	B5	250

❶ Nominal current = appr. values for 400 V motors, brand EMOD. Brands ATB and Loher marked (A) and (L) respectively.
It is important to check nominal current in case of other motor brands. *ATB motors

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
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TECHNICAL LISTS (AVAILABLE MODELS)
AXN 12/56 SERIES****065**

Fan	Motor 400 V, 50 Hz						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current ^① [A]	Size	Type	Flange dia.

630	750	0-35	0,55	1,8	90	B5	200
	1000	0-12	0,55	1,6	80	B5	200
		13-20	0,75	2,2	90	B5	200
		21-30	1,1	3,15	90	B5	200
		31-35	1,5	3,9	100	B5	250
	1500	0-6	1,5 •	3,5	90	B5	200
		7-15	2,2 •	4,8	100	B5	250
		16-23	3,0 •	6,6	100	B5	250
		24-30	4,0 •	8,8	112	B5	250
		31-35	5,5 •	11,5	132	B5	250
	1000/500	0-20	0,8/0,15	2,3/0,9	90	B5	200
		21-33	1,2/0,22	3,1/1,15	100	B5	250
	1500/750	0-20	2,6/0,65 •	5,9/2,1	100	B5	250
		21-26	3,6/0,9 •	7,6/3,0	112	B5	250
		27-35	5,5/1,4	11,4/4,3	132	B5	250
	1500/1000	0-15	2,2/0,75	5,3/2,3	100	B5	250
		16-23	3,0/1,0	6,3/3,0	112	B5	250
		24-35	6,0/2,0	12,5/5,4	132	B5	250

710	750	0-17	0,55	1,8	90	B5	200
		18-25	0,75	2,2	100	B5	250
		26-35	1,1	3,15	100	B5	250
	1000	0-12	1,1	3,15	90	B5	200
		13-19	1,5	3,9	100	B5	250
		20-30	2,2	5,4	112	B5	250
		31-35	3,0	7,4	132	B5	250
	1500	0-6	3,0 •	6,6	100	B5	250
		7-13	4,0 •	8,8	112	B5	250
		14-20	5,5 •	11,5	132	B5	250
		21-28	7,5 •	15,5	132	B5	250
		29-35	11	22	160	B5	350
	1000/500	0-12	1,2/0,22	3,0/1,15	100	B5	250
		13-35	3,3/0,75	9,3/3,6	132	B5	250
	1500/750	0-20	5,5/1,4	11,4/4,3	132	B5	250
		21-26	7,0/1,7 •	15/6,0	132	B5	250
		27-35	11/3,0	24/9,5	160	B5	350
	1500/1000	0-16	4,5/1,5	9,5/3,8	132	B5	250
		17-25	6,0/2,0	12,5/5,4	132	B5	250
		26-30	8,5/3,0	17,9/7,6	160	B5	350
		31-35	12/3,5	24/9,5	160	B5	350

Fan	Motor 400 V, 50 Hz						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current ^① [A]	Size	Type	Flange dia.

800	750	0-15	1,1	3,15	100	B5	250
		16-25	1,5	5,15	112	B5	250
		26-35	2,2	5,4	132	B5	250
	1000	0-13	2,2	5,4	112	B5	250
		14-22	3,0	7,4	132	B5	250
		23-31	4,0	9,2	132	B5	250
		32-35	5,5	12,7	132	B5	250
	1500	0-8	5,5 •	11,5	132	B5	250
		9-14	7,5 •	15,5	132	B5	250
		15-25	11	22	160	B5	350
		26-32	15	29,5	160	B5	350
		33-35	18,5	36	180	B5	350
	1000/500	0-12	1,85/0,33	4,6/1,6	112	B5	250
		13-25	3,3/0,75	9,3/3,6	132	B5	250
		26-35	4,4/1,1	11/4,4	132	B5	250
	1500/750	0-8	5,5/1,4	11,4/4,3	132	B5	250
		9-13	7,0/1,7 •	15/6,0	132	B5	250
		14-25	11/3,0	24/9,5	160	B5	350
		26-30	14/3,5	30,5/11,4	160	B5	350
		31-34	16/4,0	32,5/11,9	180	B5	350
	1500/1000	0-10	6,0/2,0	12,5/5,4	132	B5	250
		11-16	8,5/3,0	17,9/7,6	160	B5	350
		17-26	12/3,5	24/9,5	160	B5	350
		27-30	14/4,8	30/12	180	B5	350
		31-35	18/6,0	36/14	180	B5	350

900	750	0-5	1,1	3,15	100	B5	250
		6-12	1,5	5,15	112	B5	250
		13-21	2,2	5,4	132	B5	250
		22-30	3,0	7,6	132	B5	250
		31-35	4,0	9,3	160	B5	350
	1000	0-8	3,0	7,4	132	B5	250
		9-14	4,0	9,2	132	B5	250
		15-22	5,5	12,7	132	B5	250
		23-31	7,5	15,7	160	B5	350
		32-35	11	22	160	B5	350
	1500	0-10	11	22	160	B5	350
		11-17	15	29,5	160	B5	350
		18-22	18,5	36	180	B5	350
		23-26	22	43	180	B5	350
		27-35	30	52	200	B5	350
	1000/500	0-10	3,3/0,75	9,3/3,6	132	B5	250
		11-16	4,4/1,1	11/4,4	132	B5	250
		17-26	6,3/1,5	15,7/5,4	160	B5	350
		27-35	8,8/2,2	20,5/7,0	160	B5	350

① Nominal current = appr. values for 400 V motors, brand EMOD. Brands ATB and Loher marked (A) and (L) respectively.
It is important to check nominal current in case of other motor brands. *ATB motors

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TECHNICAL LISTS (AVAILABLE MODELS)
AXN 12/56 SERIES****066**

Fan	Motor 400 V, 50 Hz						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current [A]	Size	Type	Flange dia.

900	1500/750	0-10	11/3,0	24/9,5	160	B5	350
		11-15	14/3,5	30,5/11,4	160	B5	350
		16-18	16/4,0	32,5/11,9	180	B5	350
		19-25	20/5,5	39/16,2	180	B5	350
		26-35	28/7,0	52/16,2	200	B5	350
	1500/1000	0-11	12/3,5	24/9,5	160	B5	350
		12-15	14/4,8	30/12	180	B5	350
		16-22	18/6,0	36/14	180	B5	350
		23-25	20/7,0	41/16,2	200	B5	350
		26-30	25/9,0	47/18,5	200	B5	350

1000	750	0-7	2,2	5,40	132	B5	250
		8-15	3,0	7,60	132	B5	250
		16-21	4,0	9,20	160	B5	350
		22-30	5,5	11,40	160	B5	350
		31-35	7,5	16,10	160	B5	350
	1000	0-10	5,5	12,70	132	B5	250
		11-17	7,5	15,70	160	B5	350
		18-27	11	22,00	160	B5	350
		28-35	15	29,50	180	B5	350
	1500	0-3	15	29,50	160	B5	350
		4-7	18,5	36,00	180	B5	350
		8-13	22	43,00	180	B5	350
		14-21	30	52,00	200	B5	350
		22-25	37	66,00	225	B5	450
		26-30	45	82,00	225	B5	450
		28-35	55	100,00	250	B5	450
	1000/500	0-7	4,4/1,0	11,00/4,40	132	B5	250
		8-13	6,3/1,5	15,70/5,40	160	B5	350
		14-22	8,8/2,2	20,50/7,00	160	B5	350
		23-30	12,5/3,0	32,50/11,00	180	B5	350
		31-35	15,5/4,4	40,00/13,30	200	B5	350
	1500/750	0-6	16/4,0	32,50/11,90	180	B5	350
		7-10	20/5,5	39,00/16,20	180	B5	350
		11-18	28/7,0	52,00/16,20	200	B5	350
		19-23	32/8,0	60,00/19,00	225	B5	450
		24-25	37/10	69,00/24,50	225	B5	450
	1500/1000	0-7	18/6,0	36,00/14,00	180	B5	350
		8-10	20/7,0	41,00/16,20	200	B5	350

1120	750	0-5	4,0	9,3	160	B5	350
		6-13	5,5	11,4	160	B5	350
		14-21	7,5	16,1	160	B5	350
		22-27	11	23,5	180	B5	350
		28-35	15	31	200	B5	400

Fan	Motor 400 V, 50 Hz						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current [A]	Size	Type	Flange dia.

1120	1000	0-2	7,5	15,7	160	B5	350
		3-9	11	22	160	B5	350
		10-14	15	29,5	180	B5	350
		15-20	18,5(L)	36	200	B5	400
		21-23	20	40	200	B5	400
		24-25	22	43	200	B5	400
		26-34	30	57	225	B5	450
	1000/500	0-1	6,3/1,5	15,7/5,4	160	B5	350
		2-44	8,8/2,2	20,5/7,0	160	B5	350
		55-12	12,5/3,0	32,5/11	180	B5	350
		13-16	15,5/3,3	34/11	200	B5	400
		17-20	18,5/4,4	40/13,3	200	B5	400
	1500	0-4	30	52	200	B5	400
		5-10	37	66	225	B5	450
		11-14	45	82	225	B5	450
		15-20	55(L)	97	250	B5	550
		21-27	75(L)	132	280	B5	550
		28-32	90(L)	157	280	B5	550
	1500/750	0-5	32/8,0	60/19	225	B5	450
		6-10	37/10	69/24,5	225	B5	450
		11-14	44/11(L)	78/24	225	B5	450
		15-23	68/17(L)	125/43,5	280	B5	550
		24-28	80/20(L)	140/48	280	B5	550

1250	750	0-1	5,5	11,4	160	B5	350
		2-6	7,5	16,1	160	B5	350
		7-14	11	23,5	180	B5	350
		15-21	15	31	200	B5	400
		22-28	18,5	37	225	B5	450
		29-35	22	44,5	225	B5	450
		0-3	15	29,5	180	B5	350
		4-10	20	40	200	B5	400
		11-15	22	43	200	B5	400
		16-20	30	57	225	B5	450
		21-32	45	85	280	B5	550
	1500	0-1	45	82	225	B5	450
		2-5	55(L)	97	250	B5	550
		6-13	75(L)	132	280	B5	550
		14-16	90(L)	157	280	B5	550
		17-22	110(L)	200	315	auf Anfrage	
		23-26	132(L)	240	315		
		27-32	160(L)	285	315		
	1500/750	0-1	44/11(L)	78/24	225	B5	450
		2-3	49/11(L)	84/23	250	B5	550
		4-10	68/17(L)	125/43,5	280	B5	550
		11-15	80/20(L)	140/48	280	B5	550

① Nominal current = appr. values for 400 V motors, brand EMOD. Brands ATB and Loher marked (A) and (L) respectively. It is important to check nominal current in case of other motor brands. * ATB motors

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TECHNICAL LISTS (AVAILABLE MODELS)
AXN 12/56 SERIES****067**

Fan	Motor 400 V, 50 Hz						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current [A] ❶	Size	Type	Flange dia.

1400	750	0-3	11	23,5	180	B5	350
		4-10	15	31	200	B3	
		11-13	18,5	37	225	B3	
		14-18	22	44,5	225	B3	
		19-27	30(L)	60	250	B3	
		28-35	45(L)	88	280	B3	
	1000	0-4	30	57	225	B3	
		5-10	37(L)	74	250	B3	
		11-14	45(L)	81	280	B3	
		15-20	55(L)	99	280	B3	
		21-27	75(L)	136	315	B3	
		28-35	90(L)	160	315	B3	
	1000/500	0-1	27/6,0(L)	51/18	225	B3	
		2-4	30/7,0(L)	58/19	250	B3	
		5-11	40/8,0(L)	74/24	280	B3	
		12-15	48/9,5(L)	88/28	280	B3	
		16-21	60/12(L)	106/22	315	B3	
		22-24	70/14(L)	125/33	315	B3	

1600	750	0-3	22	44,5	225	B3	
		4-11	30(L)	60	250	B3	
		12-16	37(L)	73	280	B3	
		17-21	45(L)	88	280	B3	
		22-27	55(L)	110	315	B3	
	1000	0-1	45(L)	81	280	B3	
		2-7	55(L)	97	280	B3	
	1000/500	8-13	75(L)	138	315	B3	
		14-17	90(L)	160	315	B3	
		18-23	110(L)	195	315	B3	
		0-2	48/9,5(L)	88/28	280	B3	
		3-9	60/12(L)	106/22	315	B3	
		10-13	70/14(L)	125/33	315	B3	
		14-16	85/16(L)	150/37	315	B3	
		17-22	105/20(L)	185/47	315	B3	

❶ Nominal current = appr. values for 400 V motors, brand EMOD. Brands ATB and Loher marked (A) and (L) respectively. It is important to check nominal current in case of other motor brands. *ATB motors

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TECHNICAL LISTS (AVAILABLE MODELS)
AXN 12/56 SERIES with explosion-proof motors****068**

Fan	Motor 400 V, 50 Hz - explosion-proof						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current [A] ❶	Size	Type	Flange dia.

250	3000	0-20	0,25	0,77	63	B14	120
		21-30	0,37	0,95	71	B14	120
		31-35	0,55	1,28	71	B14	120

280	3000	0-10	0,25	0,77	63	B14	120
		11-20	0,37	0,95	71	B14	120
		21-30	0,55	1,28	71	B14	120
		31-35	0,75	1,74	80	B14	120

315	1500	0-35	0,25	0,81	71	B5	160
	3000	0-13	0,55	1,28	71	B5	160
		14-20	0,75	1,74	80	B14	160
		21-31	1,0	2,4	80	B14	160

355	1500	0-32	0,25	0,81	71	B5	160
	3000	33-35	0,37	1,1	71	B5	160
		0-7	0,75	1,74	80	B14	160
		8-15	1,0	2,4	80	B14	160
		16-25	1,5	3,1	90	B14	160
		26-35	1,85	3,8	90	B14	160

400	1500	0-20	0,25	0,81	71	B5	160
		21-30	0,37	1,1	71	B5	160
		31-35	0,55	1,43	80	B5	200
		0-10	1,5	3,1	90	B5	200
	3000	11-114	1,85	3,8	90	B5	200
		15-21	2,5	4,65	100	B14	200
		22-28	3,3	6,7	112	B14	200

450	1500	0-22	0,55	1,43	80	B5	200
		23-31	0,75	1,9	80	B5	200
		32-35	1,1	2,75	90	B5	200
	3000	0-14	3,3	6,7	112	B14	200

500	1000	0-35	0,55	1,57	80	B5	200
	1500	0-15	0,75	1,9	80	B5	200
		16-25	1,1	2,75	90	B5	200
		0-7	4,6	9,5	132	B5	250
	3000	8-12	5,5	10,5	132	B5	250

Fan	Motor 400 V, 50 Hz - explosion-proof						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current [A] ❶	Size	Type	Flange dia.

560	1000	0-26	0,55	1,57	80	B5	200
		27-35	0,75	2,1	90	B5	200
	1500	0-13	1,1	2,75	90	B5	200
		14-20	1,5	3,5	90	B5	200
		21-30	2,1	4,75	100	B5	250
		31-34	2,6	5,8	100	B5	250

630	750	0-35	0,55	1,71	90	B5	200
	1000	0-12	0,55	1,57	80	B5	200
		13-30	1,0	2,75	90	B5	200
		31-35	1,5	3,9	100	B5	250
	1500	0-6	1,5	3,5	90	B5	200
		7-15	2,1	4,75	100	B5	250
		16-20	2,6	5,8	100	B5	250
		21-30	4,0	8,2	112	B5	250
		31-35	5,5	10,9	132	B5	250

710	750	0-17	0,55	1,71	90	B5	200
		18-22	0,65	1,9	100	B5	250
		23-32	0,95	2,85	100	B5	250
	1000	0-19	1,5	3,9	100	B5	250
		20-30	2,2	4,9	112	B5	250
		31-35	3,0	7,4	132	B5	250
	1500	0-13	4,0	8,2	112	B5	250
		14-20	5,5	10,9	132	B5	250
		21-28	7,5	15,4	132	B5	250

800	750	0-13	0,95	2,85	100	B5	50
		14-22	1,3	4,0	112	B5	250
		23-32	1,9	5,0	132	B5	250
	1000	0-13	2,2	4,9	112	B5	250
		14-22	3,0	7,4	132	B5	250
		23-35	4,8	11,4	132	B5	250
	1500	0-8	5,5	10,9	132	B5	250
		9-14	7,5	15,4	132	B5	250
		15-24	10	19,2	160	B5	350
		25-29	13,5	25	160	B5	350
		30-32	15	28,5	180	B5	350
		33-35	17,5	32,5	180	B5	350

❶ Nominal current = appr. values for 400 V motors, brand EMOD. Brands ATB and Loher marked (A) and (L) respectively.
It is important to check nominal current in case of other motor brands. *ATB motors

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TECHNICAL LISTS (AVAILABLE MODELS)
AXN 12/56 SERIES with explosion-proof motors****069**

Fan	Motor 400 V, 50 Hz - explosion-proof						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current [A] ❶	Size	Type	Flange dia.

900	750	0-9	1,3	4,0	112	B5	250
		10-19	1,9	5,0	132	B5	250
		20-22	2,6	6,75	132	B5	250
		23-35	3,5	8,4	132	B5	250
	1000	0-8	3,0	7,4	132	B5	250
		9-20	4,8	11,4	132	B5	250
		21-27	6,6	14,7	160	B5	350
		28-35	9,7	18,2	160	B5	350
	1500	0-12	13,5	25	160	B5	350
		13-17	15	28,5	180	B5	350
		18-21	17,5	32,5	180	B5	350
		22-28	24	42	200	B5	350
		29-35	29	50	225	B5	350

Fan	Motor 400 V, 50 Hz - explosion-proof						
Size	Nominal speed [rpm]	Blade pitch angle (black curve)	Output [kW]	Nominal current [A] ❶	Size	Type	Flange dia.

1250	750	0-1	5,5	12,2	160	B5	350
		2-5	6,6	15	160	B5	350
		6-12	9,7	20	180	B5	350
		13-20	13,2	28	200	B5	400
		21-26	16,5	36	225	B5	450
		27-32	20	43	225	B5	450
	1000	0-1	13,2	26,6	180	B5	350
		2-5	16,5	33,5	200	B5	400
		6-10	20	39	200	B5	400
		11-17	27	47,5	225	B5	450

1000	750	0-10	2,6	6,75	132	B5	250
		11-18	3,5	8,4	132	B5	250
		19-27	4,8	10,6	160	B5	350
	1000	0-6	4,8	11,4	132	B5	250
		7-14	6,6	14,7	160	B5	350
		15-23	9,7	18,2	160	B5	350
		24-33	13,2	26,6	180	B5	350
	1500	0-3	15	28,5	180	B5	350
		4-6	17,5	32,5	180	B5	350
		7-14	24	42	200	B5	350
		15-20	29	50	225	B5	450
		21-25	36	62	225	B5	450

1120	750	0-12	4,8	10,6	160	B5	350
		13-18	6,6	15	160	B5	350
		19-26	9,7	20	180	B5	350
		27-35	13,2	28	200	B5	400
	1000	0-1	6,6	14,7	160	B5	350
		2-6	9,7	18,2	160	B5	350
		7-13	13,2	26,6	180	B5	350
		14-18	16,5	33,5	200	B5	400
		19-23	20	39	200	B5	400
	1500	0-4	29	50	225	B5	450
		5-10	36	62	225	B5	450

❶ Nominal current = appr. values for 400 V motors, brand EMOD. Brands ATB and Loher marked (A) and (L) respectively. It is important to check nominal current in case of other motor brands. *ATB motors



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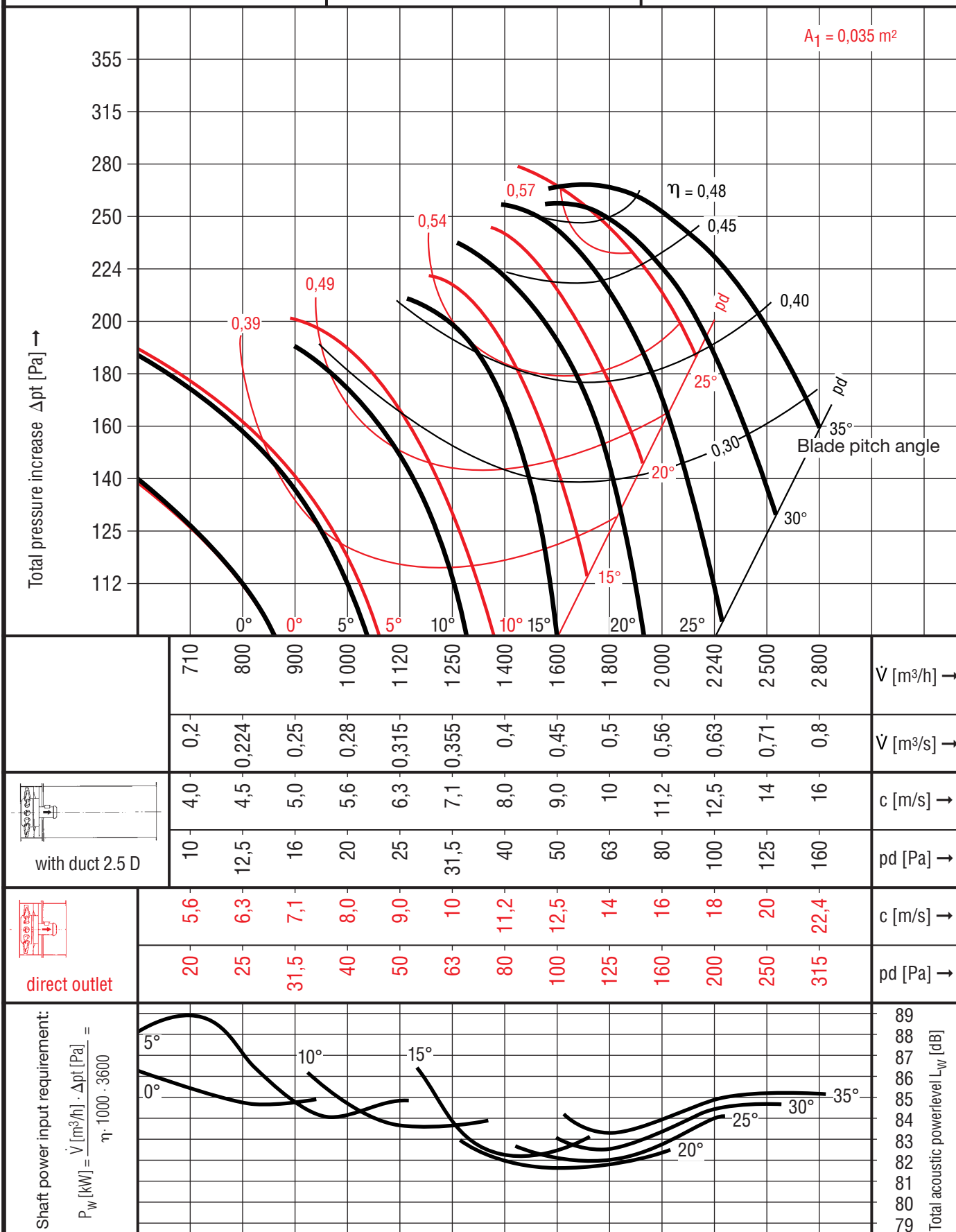
CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/250/D* ROTATIONAL SPEED 2800 RPM

070

$\dot{V}$ = Volume flow [m³/h] or [m³/s]
 p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 37$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0.0025$ kg m²
Casing diameter d.i.L. = 254 mm
Outlet cross section $A_2 = 0.05$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/280/D* ROTATIONAL SPEED 2780 RPM

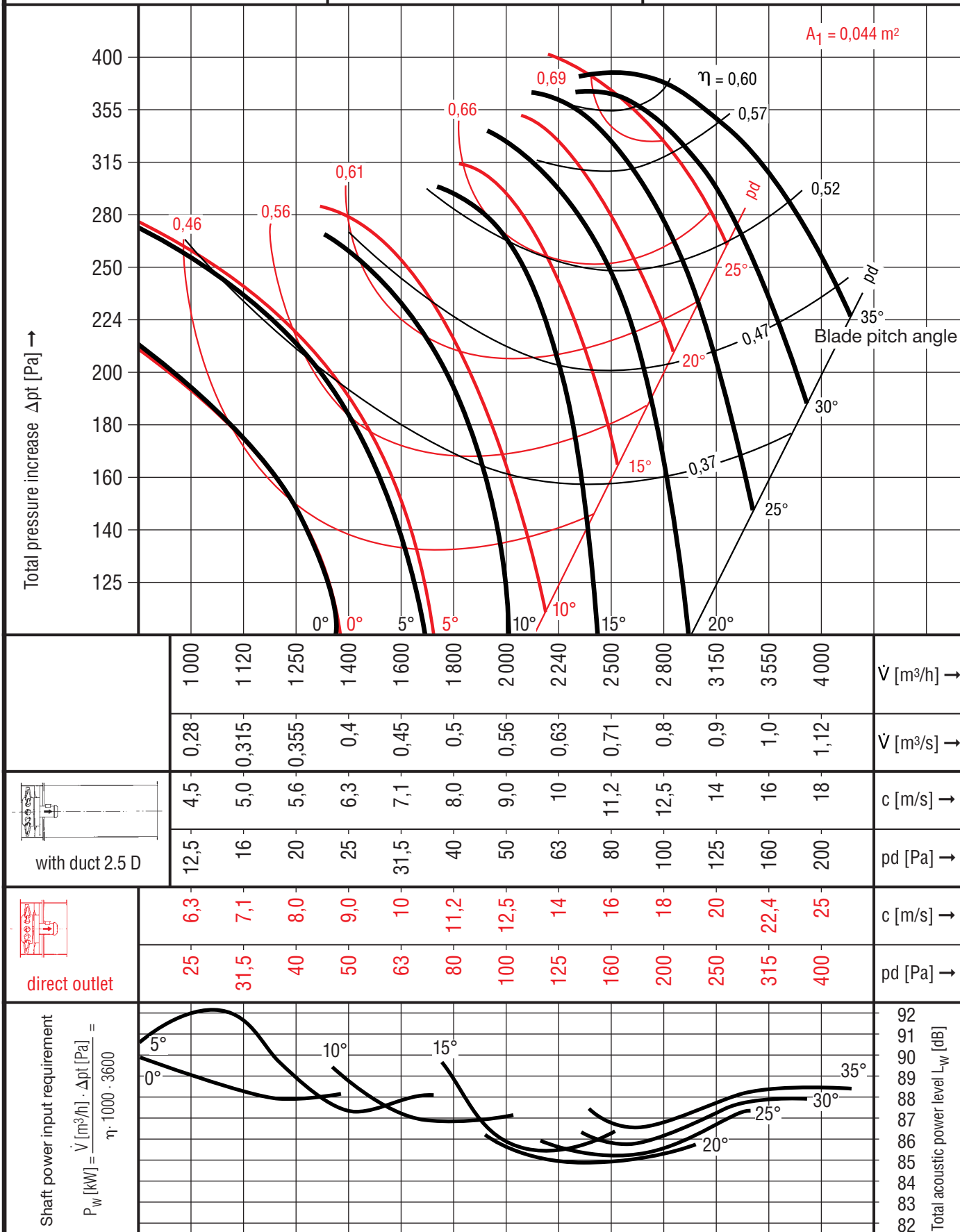
071

V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 41$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0.0045$ kg m²
Casing diameter d.i.L. = 286 mm
Outlet cross section $A_2 = 0.064$ m²

$A_1 = 0,044$ m²



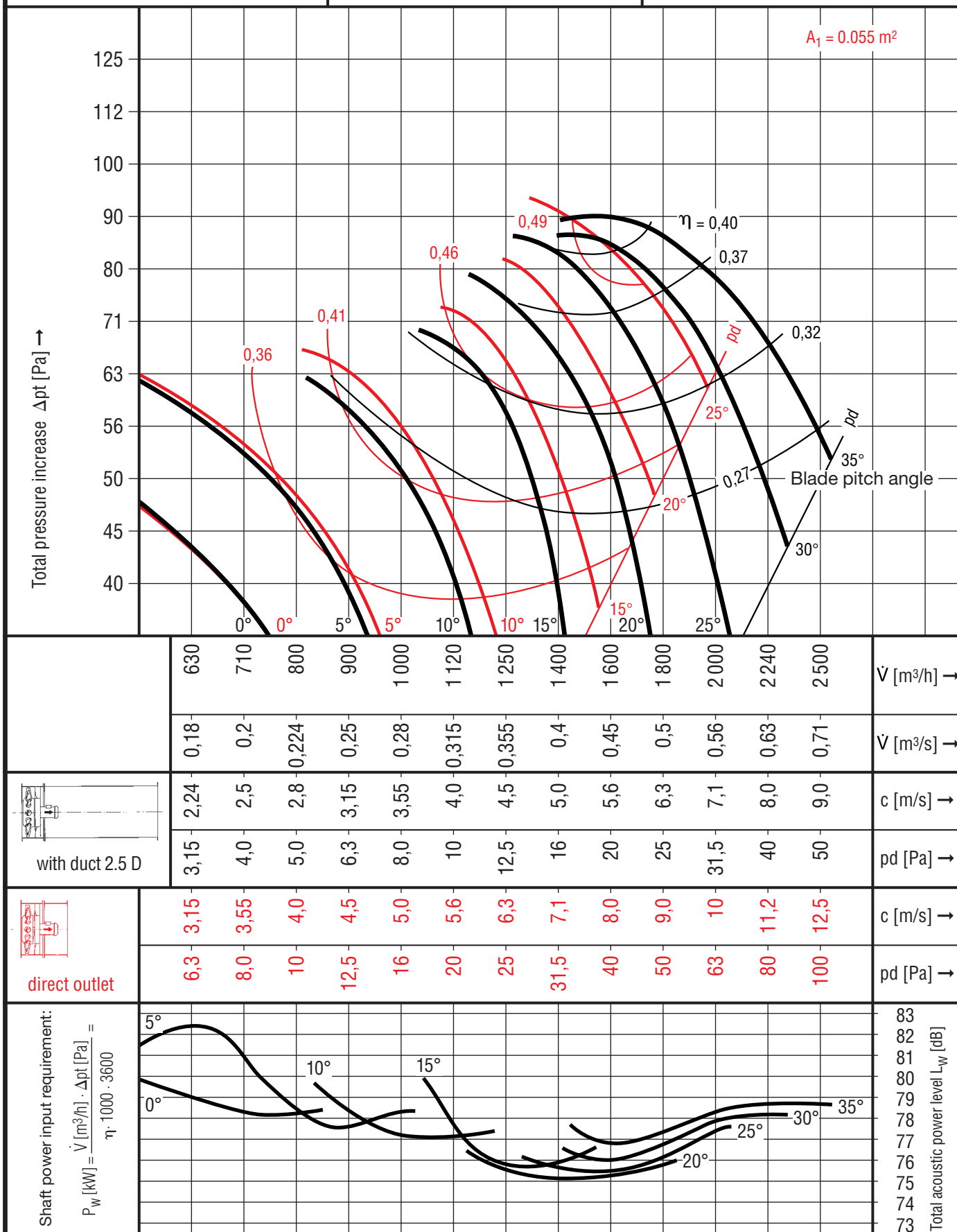
AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/315/D*
ROTATIONAL SPEED 1360 RPM****072** V = Volume flow [m³/h] or [m³/s] pd = Dynamic pressure [Pa] or x 0.1 [kp/m²] c = Flow velocity [m/s]Tip speed $u_2 = 23$ m/sTemperature $t = 20^\circ\text{C}$ Density $\varrho = 1.2$ kg/m³Moment of inertia $I = 0,007$ kg m²

Casing diameter d.i.L. = 320 mm

Outlet cross section $A_2 = 0.08$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/315/D* ROTATIONAL SPEED 2800 RPM

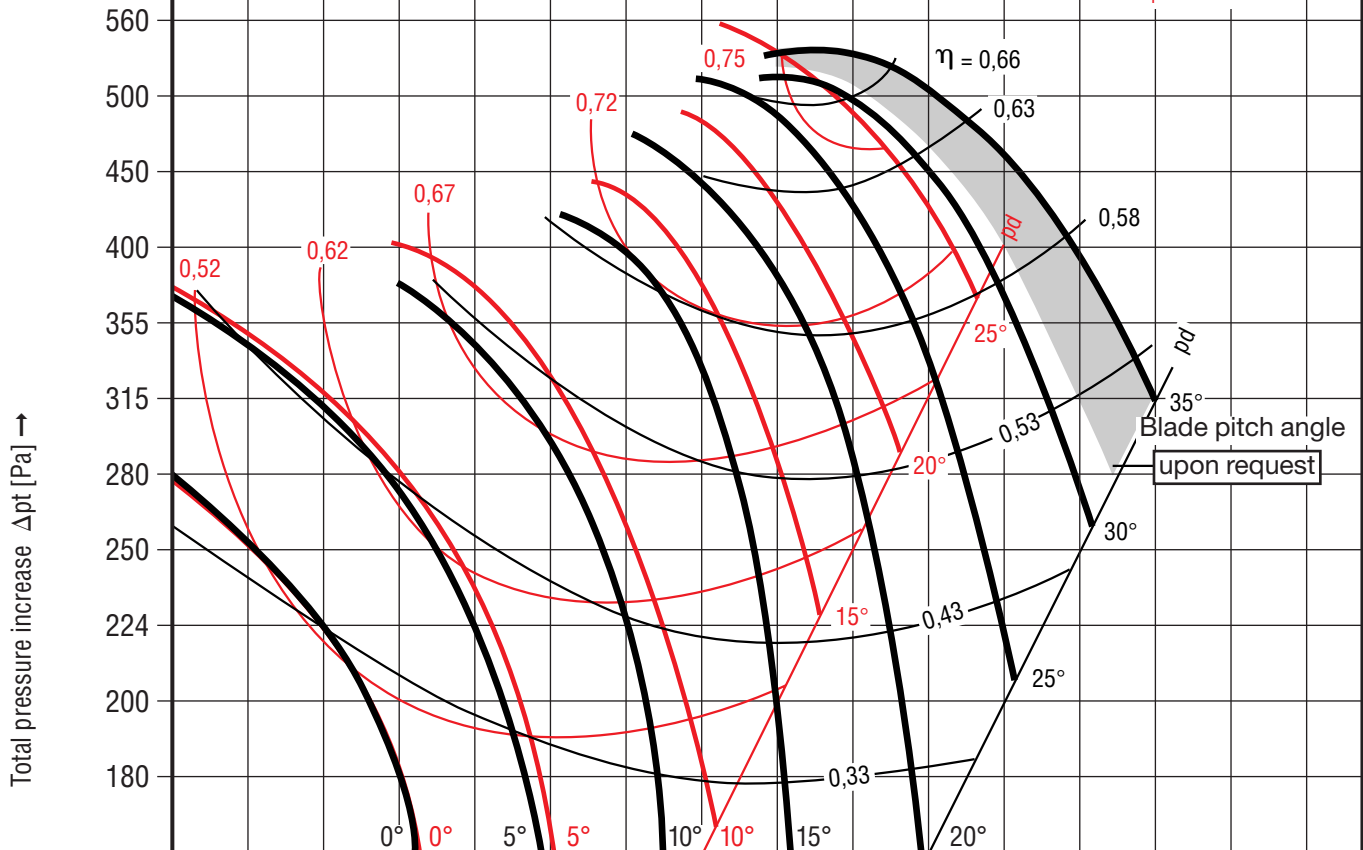
073

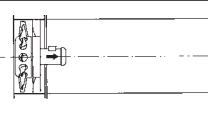
V = Volume flow [m³/h] or [m³/s]
 p_d = Dynamic pressure [Pa] or $\times 0.1$ [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 47$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0,007$ kg m²
Casing diameter d.i.L. = 320 mm
Outlet cross section $A_2 = 0.08$ m²

$A_1 = 0.055$ m²



	1600	1800	2000	2240	2500	2800	3150	3550	4000	4500	5000	5600	6300	V [m ³ /h] →
	0,45	0,5	0,56	0,63	0,71	0,8	0,9	1,0	1,12	1,25	1,4	1,6	1,8	V [m ³ /s] →
with duct 2.5 D	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	c [m/s] →
	20	25	31,5	40	50	63	80	100	125	160	200	250	315	p_d [Pa] →
	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	c [m/s] →
	40	50	63	80	100	125	160	200	250	315	400	500	630	p_d [Pa] →
direct outlet	5°	10°	15°	20°	25°	30°	35°							
Shaft power input requirement: $P_w [\text{kW}] = \frac{V [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$	97	96	95	94	93	92	91	90	89	88	87			Total acoustic power level L_w [dB]

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

AXN-Direct drive



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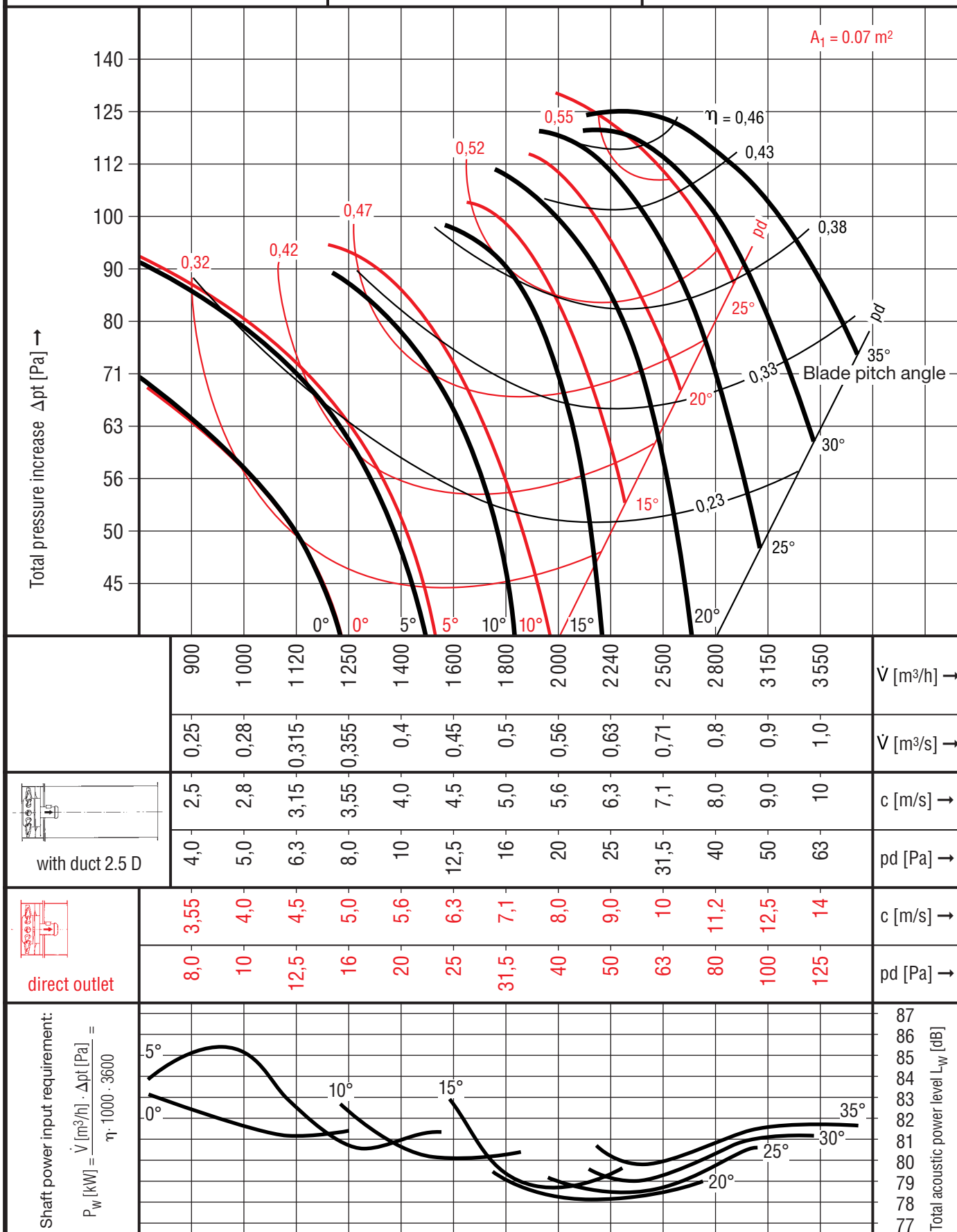
CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/355/D* ROTATIONAL SPEED 1360 RPM

074

V = Volume flow [m³/h] or [m³/s]
 p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 26$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0.014$ kg m²
Casing diameter d.i.L. = 359 mm
Outlet cross section $A_2 = 0.10$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

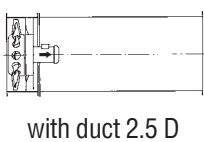
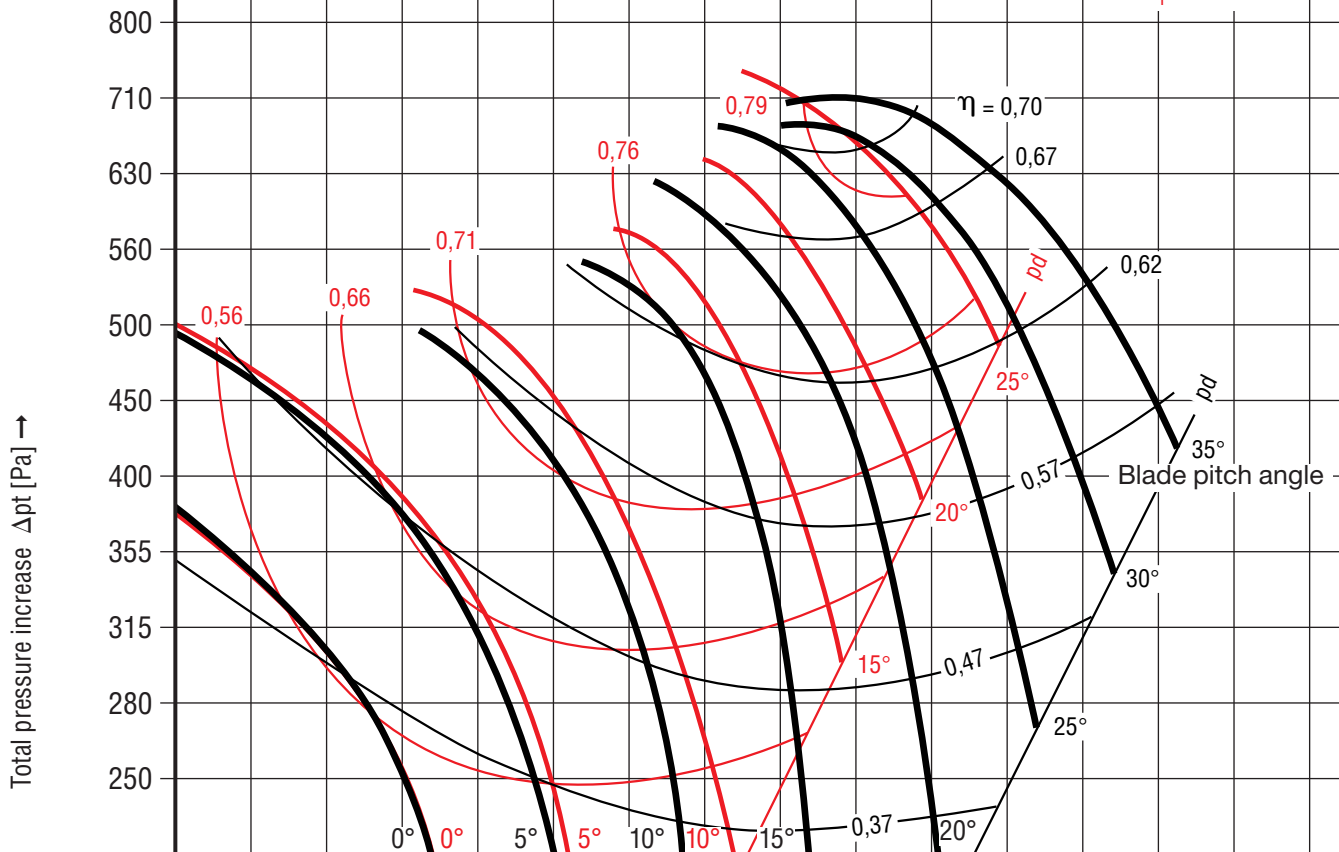
Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/355/D*
ROTATIONAL SPEED 2820 RPM****075**

V = Volume flow [m³/h] or [m³/s]
 pd = Dynamic pressure [Pa] or $\times 0.1$ [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 52$ m/s
 Temperature $t = 20^\circ\text{C}$
 Density $\varrho = 1.2$ kg/m³

Moment of inertia $I = 0.014$ kg m²
 Casing diameter d.i.L. = 359 mm
 Outlet cross section $A_2 = 0.10$ m²

 $A_1 = 0.07$ m²

with duct 2.5 D

2240	2500	2800	3150	3550	4000	4500	5000	5600	6300	7100	8000	9000	V [m ³ /h] →
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0,63	0,71	0,8	0,9	1,0	1,12	1,25	1,4	1,6	1,8	2,0	2,24	2,5	V [m ³ /s] →
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direct outlet

6,3	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	c [m/s] →
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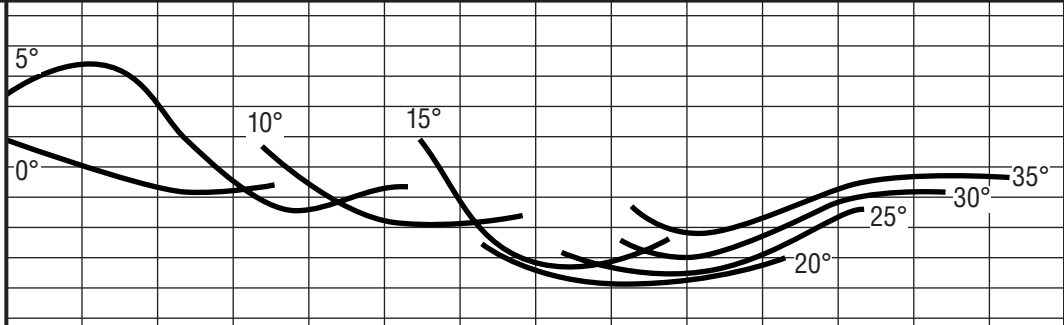
25	31,5	40	50	63	80	100	125	160	200	250	315	400	pd [Pa] →
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9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	c [m/s] →
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50	63	80	100	125	160	200	250	315	400	500	630	800	pd [Pa] →
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Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$$

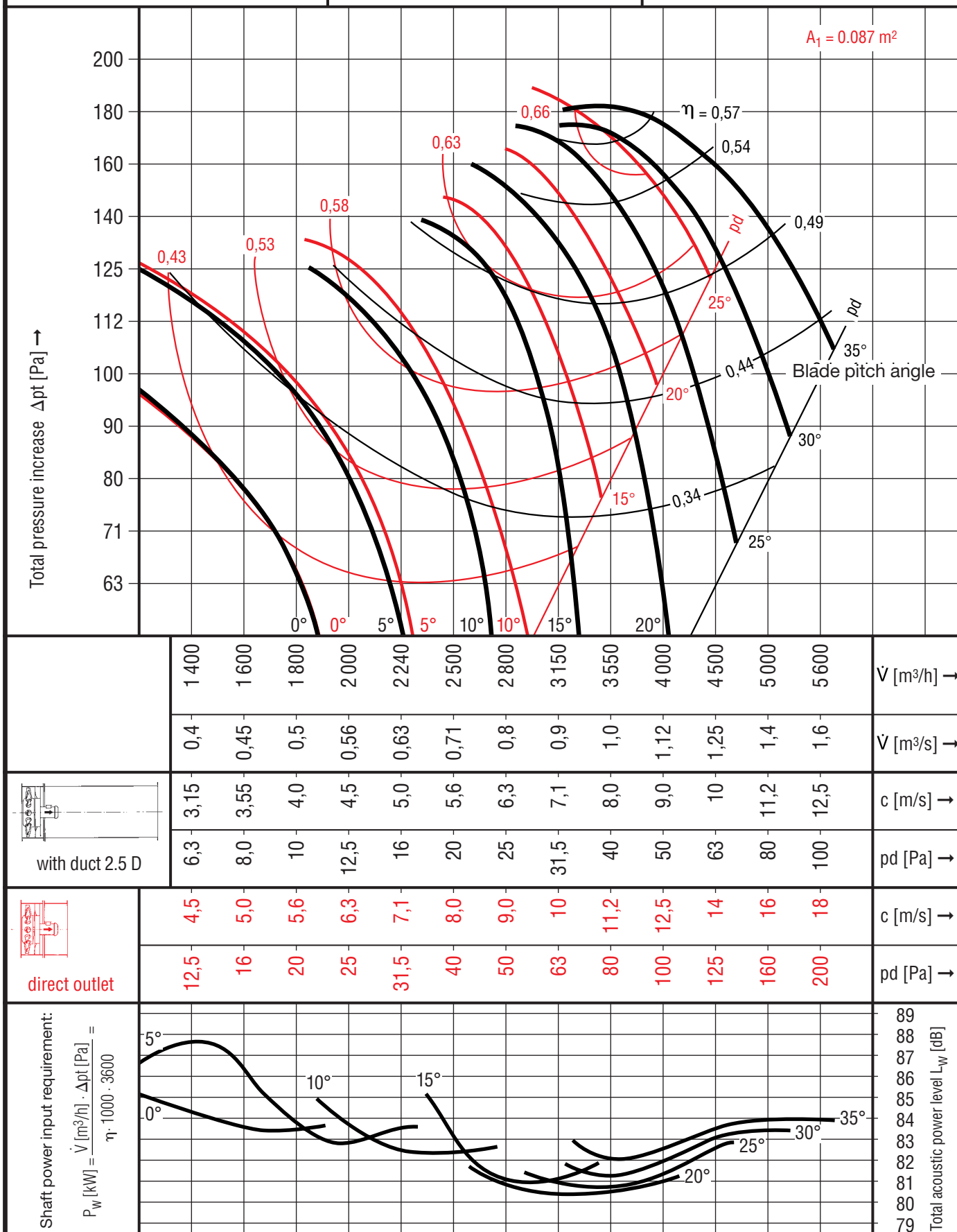


* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/400/D*
ROTATIONAL SPEED 1360 RPM****076** V = Volume flow [m³/h] or [m³/s] p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²] c = Flow velocity [m/s]Tip speed $u_2 = 28$ m/sTemperature $t = 20^\circ\text{C}$ Density $\rho = 1.2$ kg/m³Moment of inertia $I = 0.024$ kg m²

Casing diameter d.i.L. = 401 mm

Outlet cross section $A_2 = 0.126$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

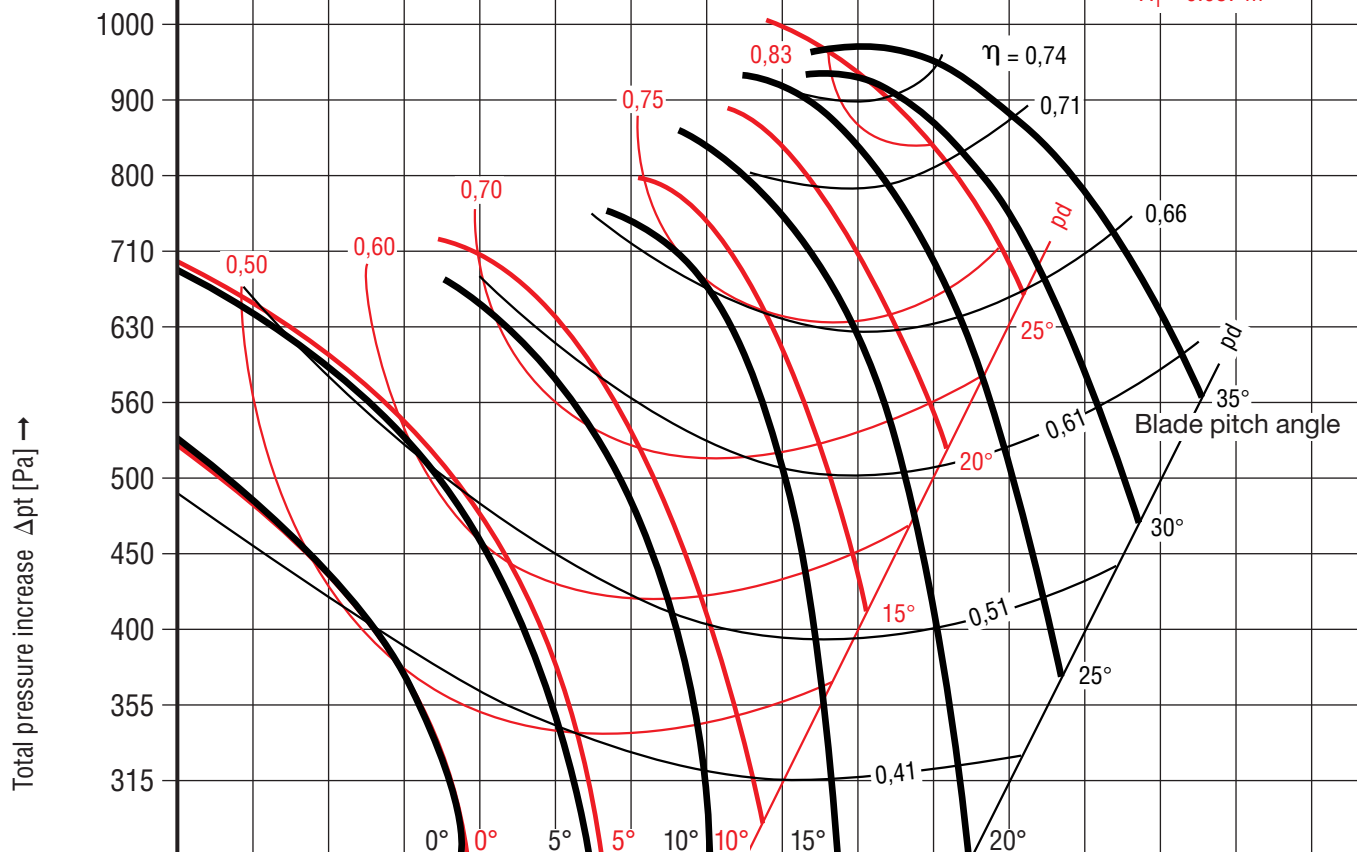
Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/400/D*
ROTATIONAL SPEED 2895 RPM****077**

V = Volume flow [m³/h] or [m³/s]
 pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 59$ m/s
 Temperature $t = 20^\circ\text{C}$
 Density $\varrho = 1.2$ kg/m³

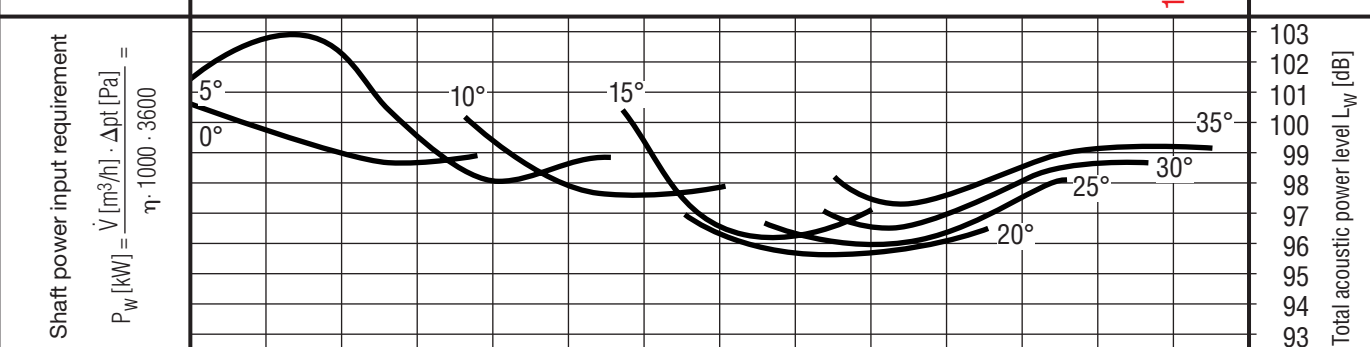
Moment of inertia $I = 0.024$ kg m²
 Casing diameter d.i.L. = 401 mm
 Outlet cross section $A_2 = 0.126$ m²

 $A_1 = 0.087$ m²

	3150	3550	4000	4500	5000	5600	6300	7100	8000	9000	10000	11200	12500	V [m³/h] →
	0,9	1,0	1,12	1,25	1,4	1,6	1,8	2,0	2,24	2,5	2,8	3,15	3,55	V [m³/s] →

	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	c [m/s] →
with duct 2.5 D	31,5	40	50	63	80	100	125	160	200	250	315	400	500	pd [Pa] →

	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	40	c [m/s] →
direct outlet	63	80	100	125	160	200	250	315	400	500	630	800	1000	pd [Pa] →

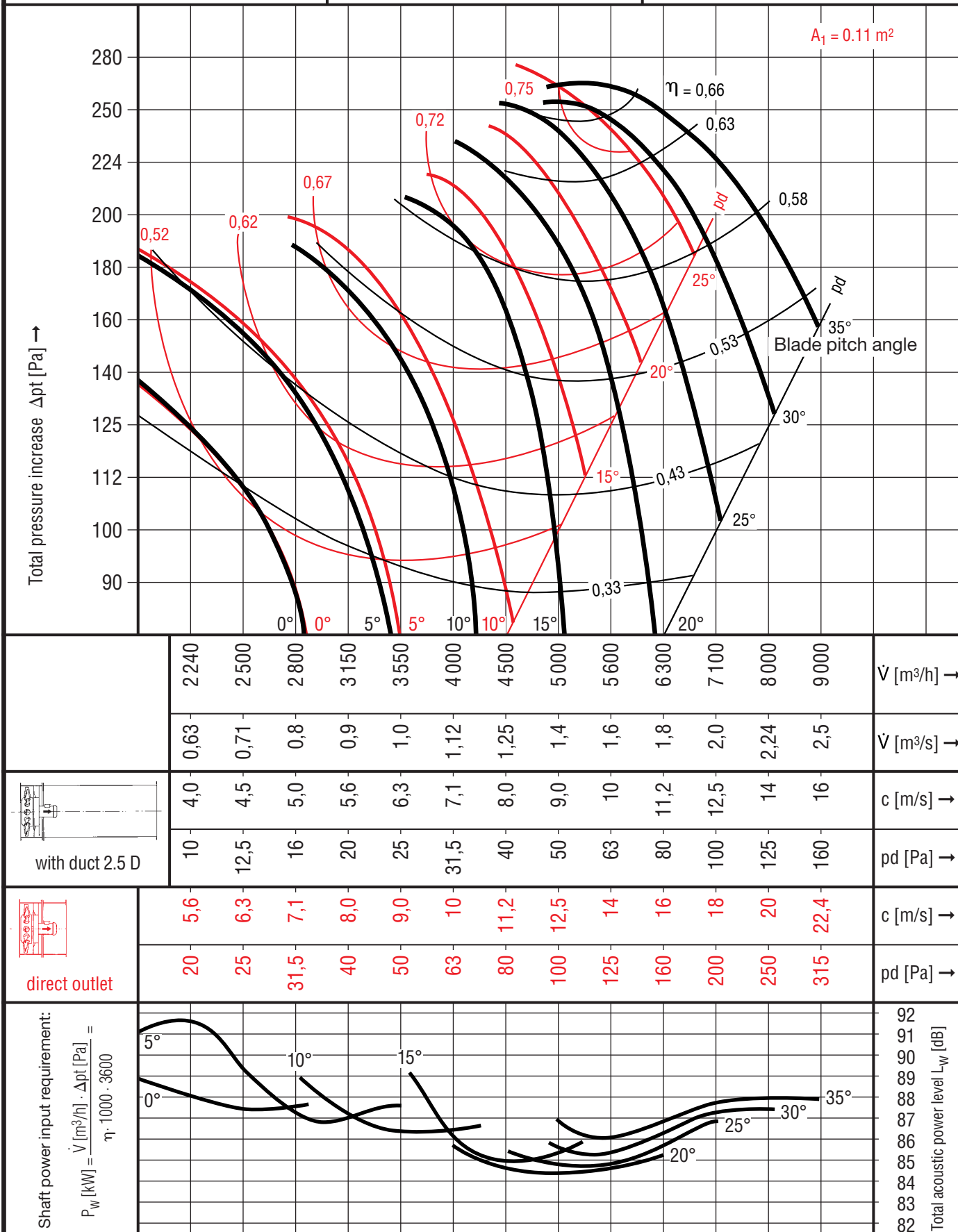


* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/450/D*
ROTATIONAL SPEED 1400 RPM****078** V = Volume flow [m³/h] or [m³/s] p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²] c = Flow velocity [m/s]Tip speed $u_2 = 33$ m/sTemperature $t = 20^\circ\text{C}$ Density $\rho = 1.2$ kg/m³Moment of inertia $I = 0.041$ kg m²

Casing diameter d.i.L. = 450 mm

Outlet cross section $A_2 = 0.159$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/450/D* ROTATIONAL SPEED 2860 RPM

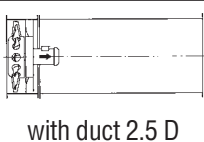
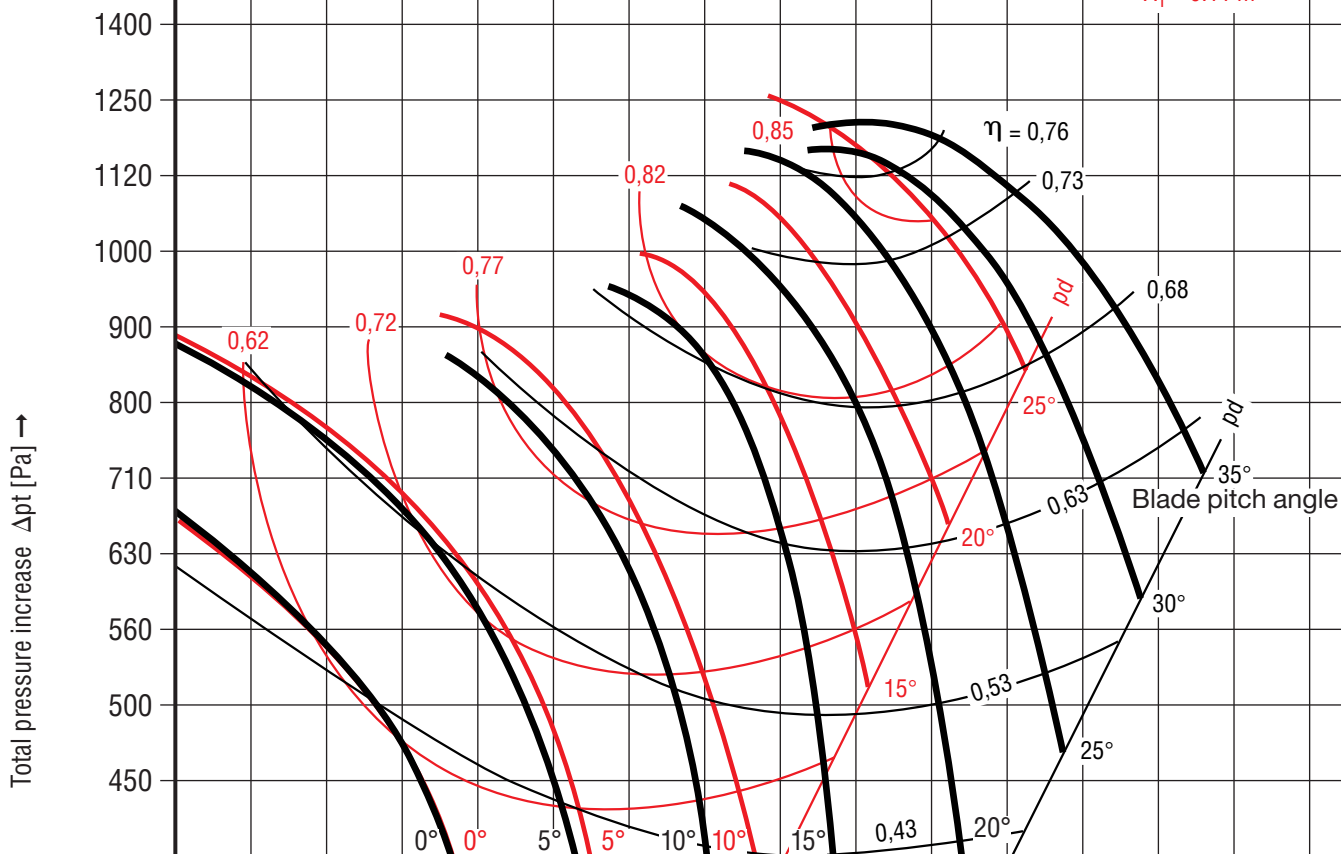
079

V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 67$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0.041$ kg m²
Casing diameter d.i.L. = 450 mm
Outlet cross section $A_2 = 0.159$ m²

$A_1 = 0.11$ m²



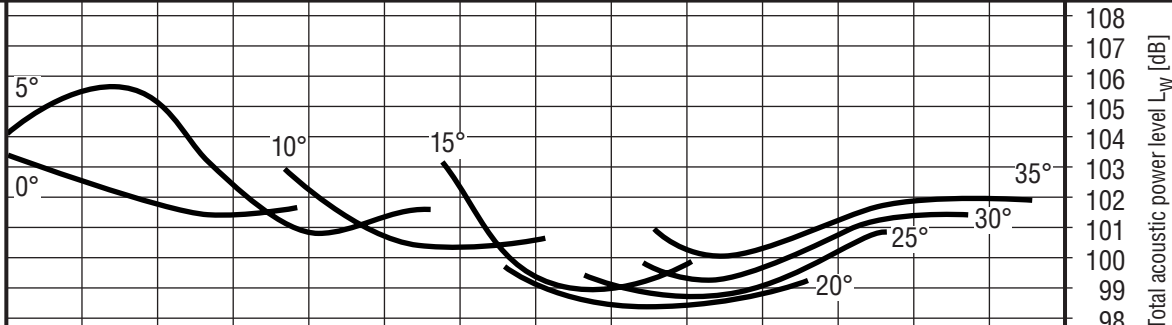
with duct 2.5 D



direct outlet

Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$$



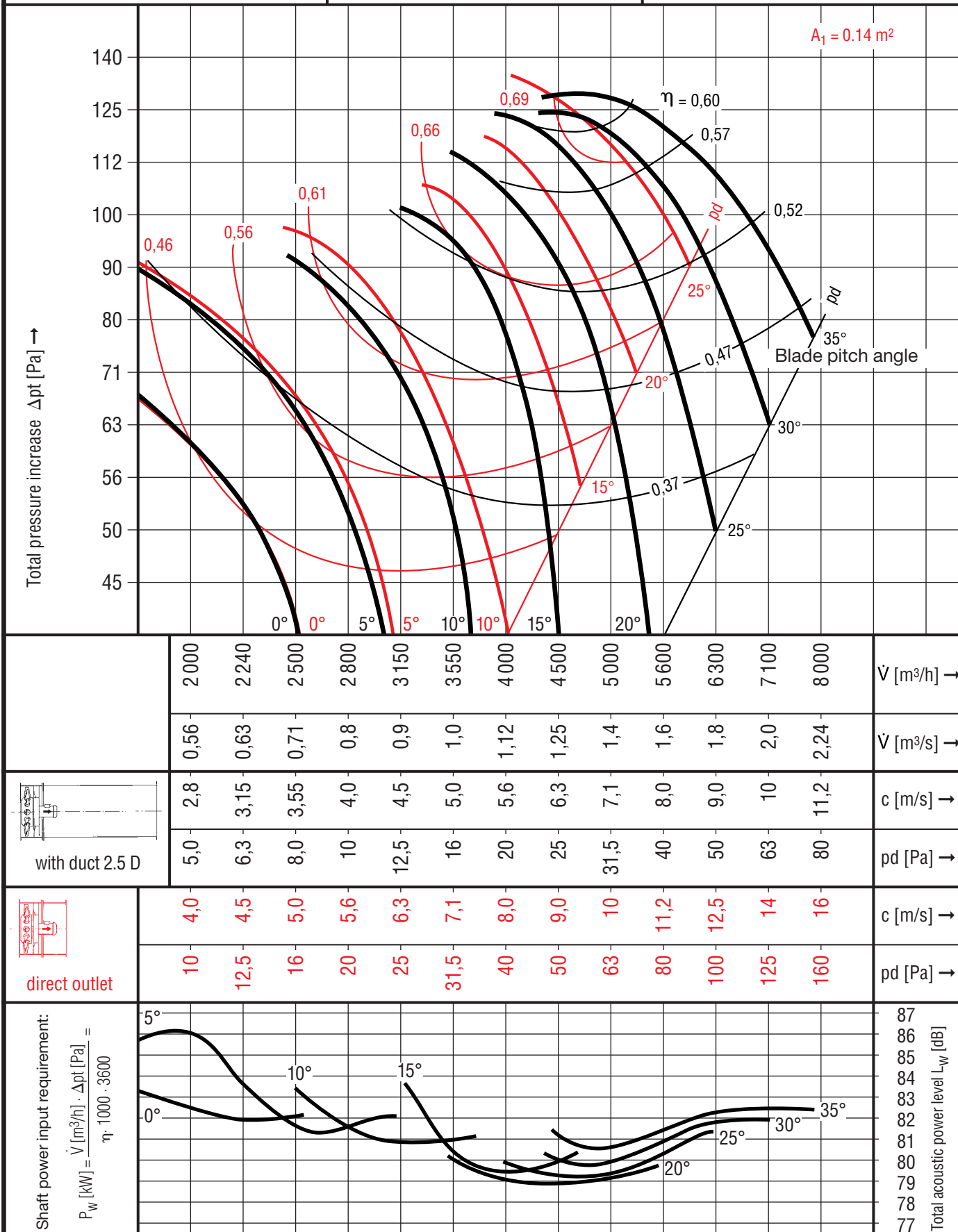
AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/500/D*
ROTATIONAL SPEED 910 RPM****080** $\dot{V}$ = Volume flow [m³/h] or [m³/s] p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²] c = Flow velocity [m/s]Tip speed $u_2 = 24$ m/sTemperature $t = 20^\circ\text{C}$ Density $\rho = 1.2$ kg/m³Moment of inertia $I = 0.073$ kg m²

Casing diameter d.i.L. = 504 mm

Outlet cross section $A_2 = 0.2$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/500/D* ROTATIONAL SPEED 1400 RPM

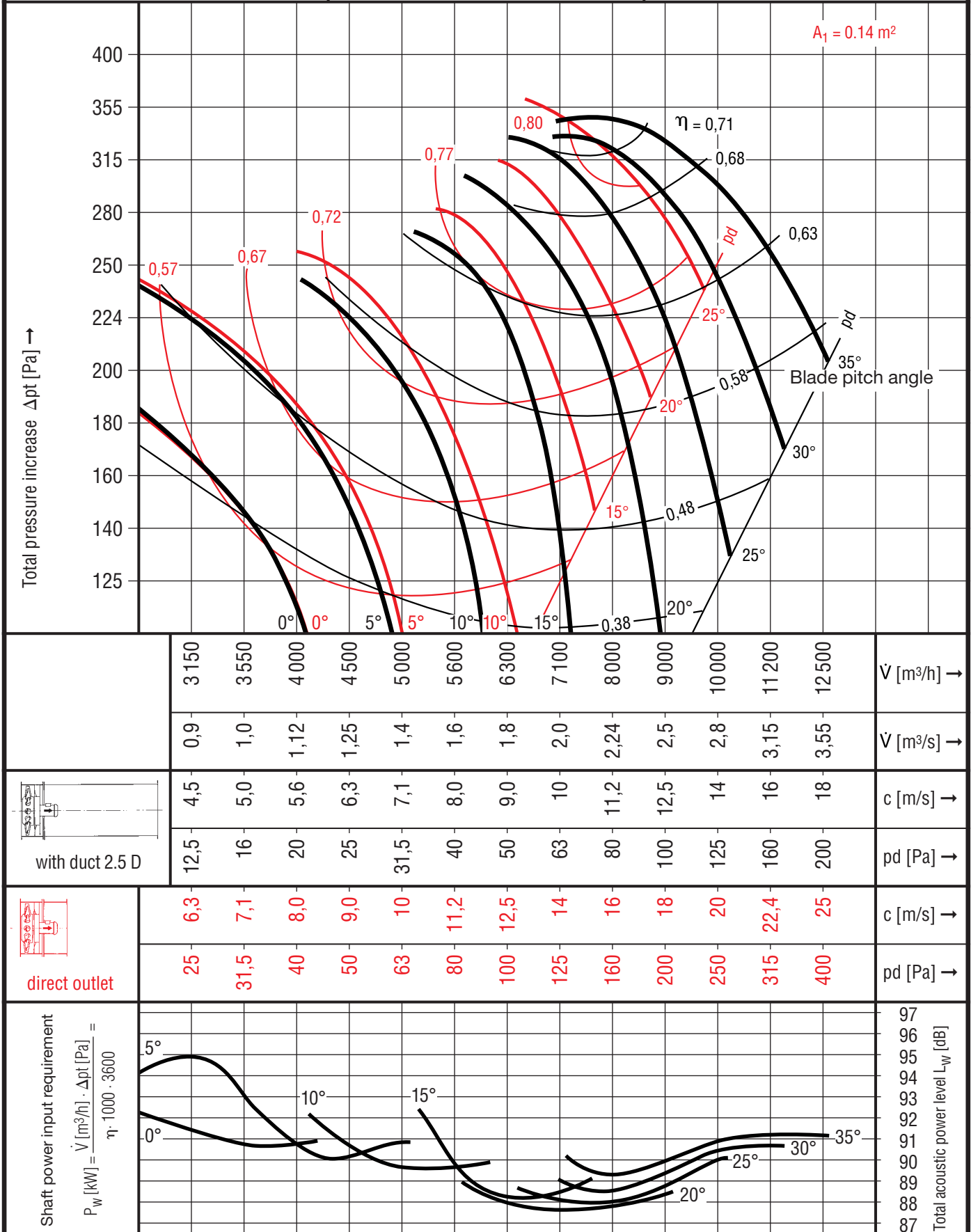
081

V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 38$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0.073$ kg m²
Casing diameter d.i.L. = 504 mm
Outlet cross section $A_2 = 0.2$ m²

$A_1 = 0.14$ m²



AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/500/D*
ROTATIONAL SPEED 2880 RPM**

082

$\dot{V}$ = Volume flow [m³/h] or [m³/s]

p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]

c = Flow velocity [m/s]

Tip speed $u_2 = 76$ m/s

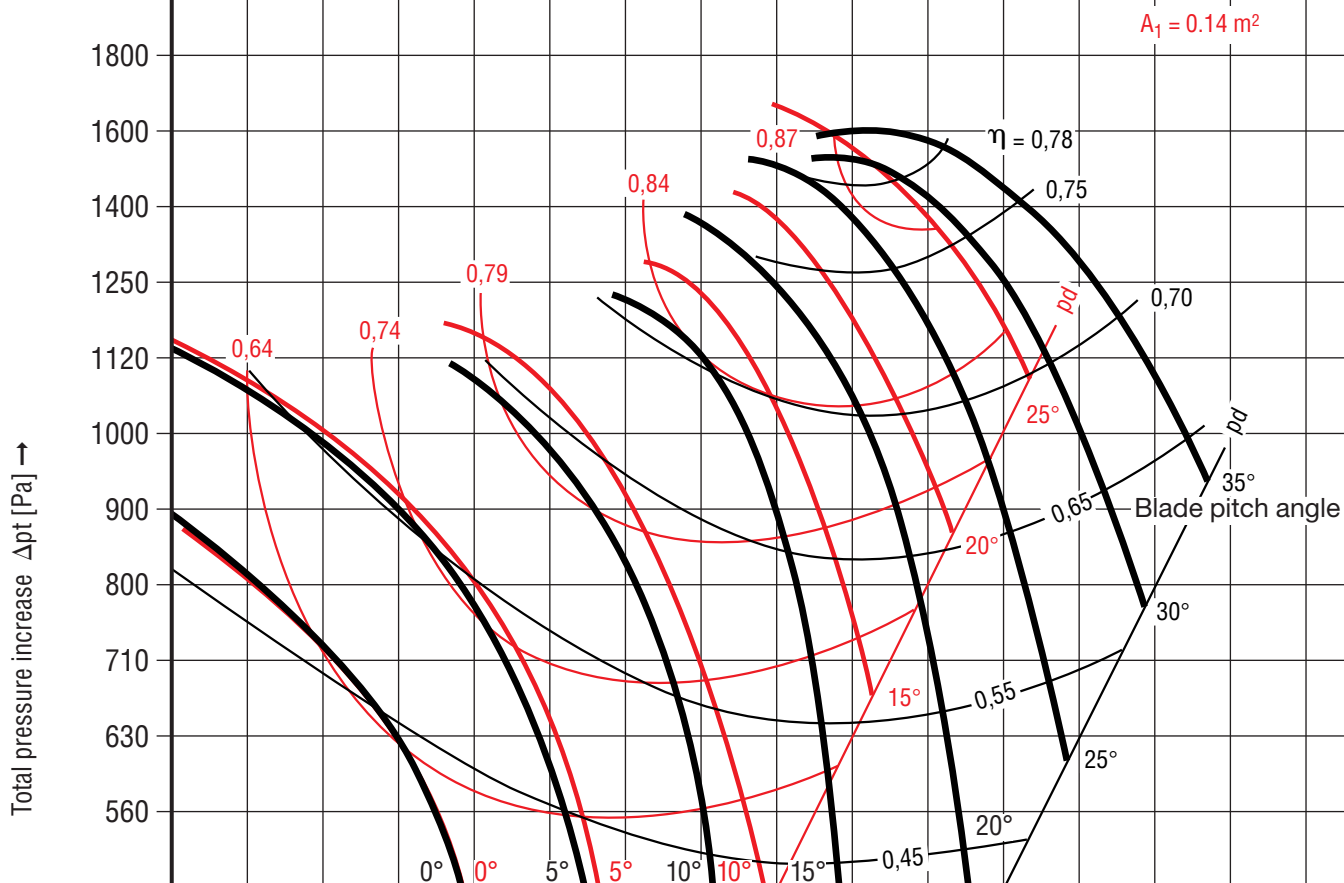
Temperature $t = 20^\circ\text{C}$

Density $\rho = 1.2$ kg/m³

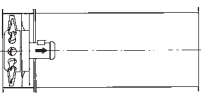
Moment of inertia $I = 0.073$ kg m²

Casing diameter d.i.L. = 504 mm

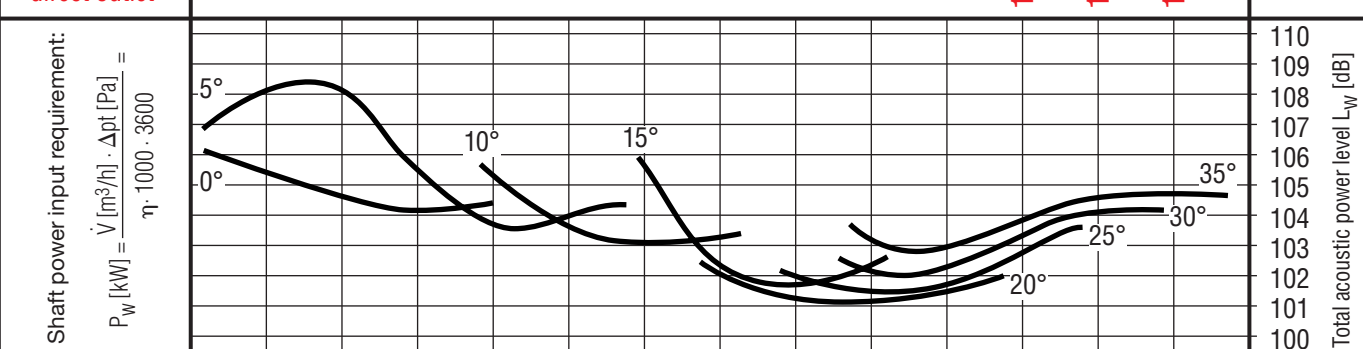
Outlet cross section $A_2 = 0.2$ m²



	6300	7100	8000	9000	10000	11200	12500	14000	16000	18000	20000	22400	25000	$\dot{V}$ [m ³ /h] →
	1,8	2,0	2,24	2,5	2,8	3,15	3,55	4,0	4,5	5,0	5,6	6,3	7,1	$\dot{V}$ [m ³ /s] →

	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	c [m/s] →
with duct 2.5 D	50	63	80	100	125	160	200	250	315	400	500	630	800	p_d [Pa] →

	12,5	14	16	18	20	22,4	25	28	31,5	35,5	40	45	50	c [m/s] →
direct outlet	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	p_d [Pa] →



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

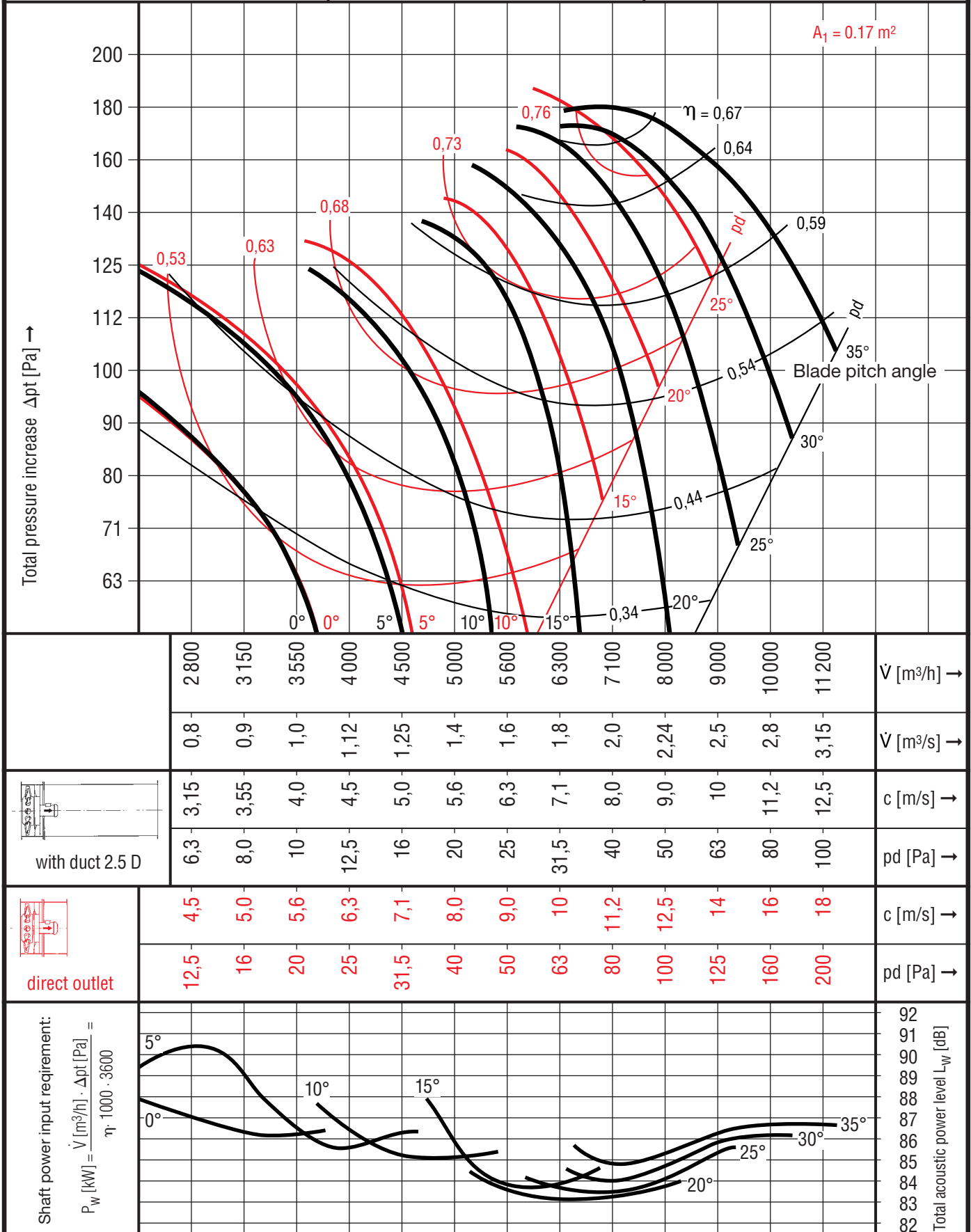
Values rounded to standard figures.

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/560/D*
ROTATIONAL SPEED 920 RPM****083**

V = Volume flow [m³/h] or [m³/s]
 pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 27 \text{ m/s}$
 Temperature $t = 20^\circ \text{C}$
 Density $\rho = 1.2 \text{ kg/m}^3$

Moment of inertia $I = 0.12 \text{ kg m}^2$
 Casing diameter d.i.L. = 565 mm
 Outlet cross section $A_2 = 0.25 \text{ m}^2$

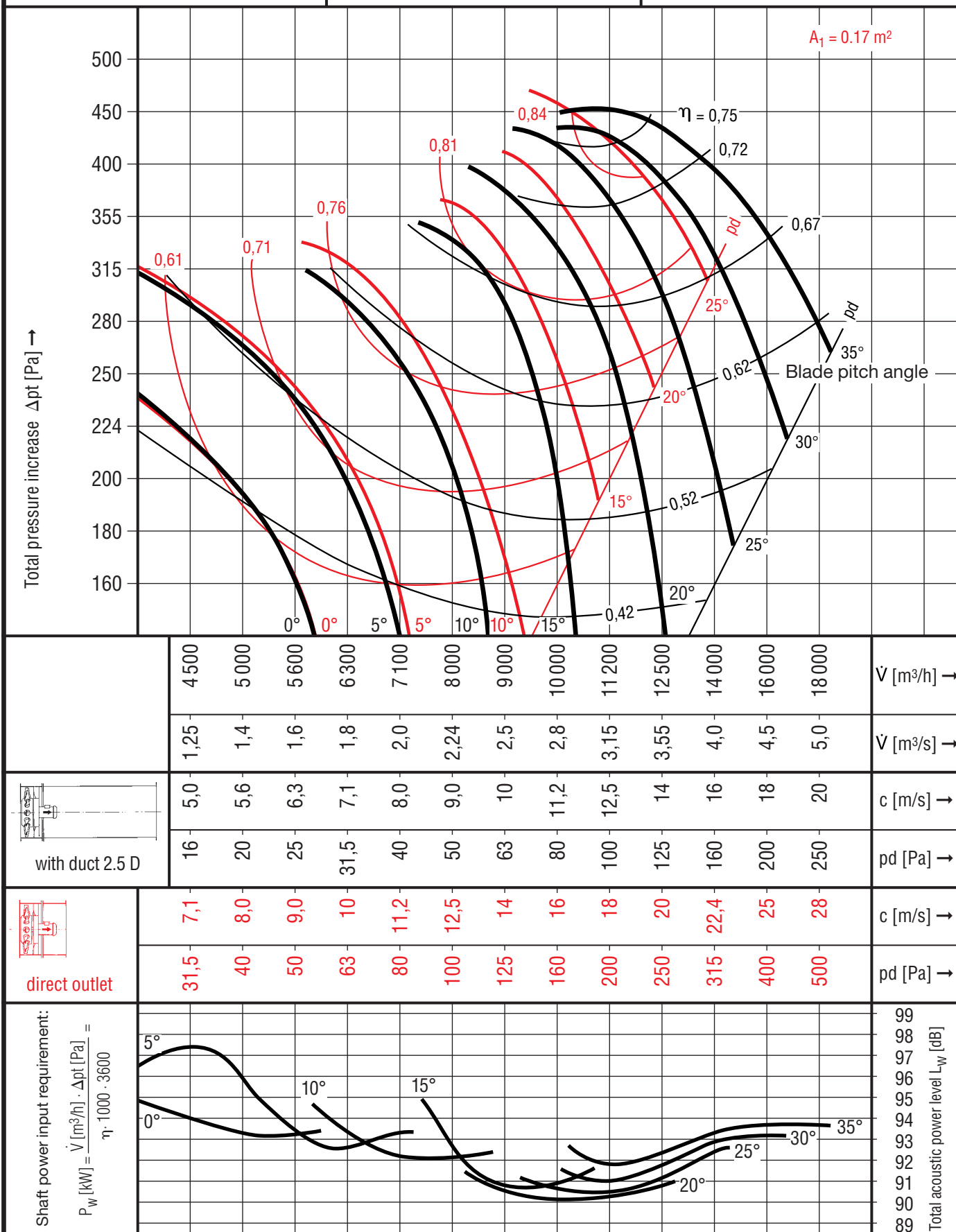
 $A_1 = 0.17 \text{ m}^2$ **AXN-Direct drive**

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/560/D*
ROTATIONAL SPEED 1400 RPM****084** V = Volume flow [m³/h] or [m³/s] p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²] c = Flow velocity [m/s]Tip speed $u_2 = 41$ m/sTemperature $t = 20^\circ\text{C}$ Density $\rho = 1.2$ kg/m³Moment of inertia $I = 0.12$ kg m²

Casing diameter d.i.L. = 565 mm

Outlet cross section $A_2 = 0.25$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/630/D*
ROTATIONAL SPEED 690 RPM**

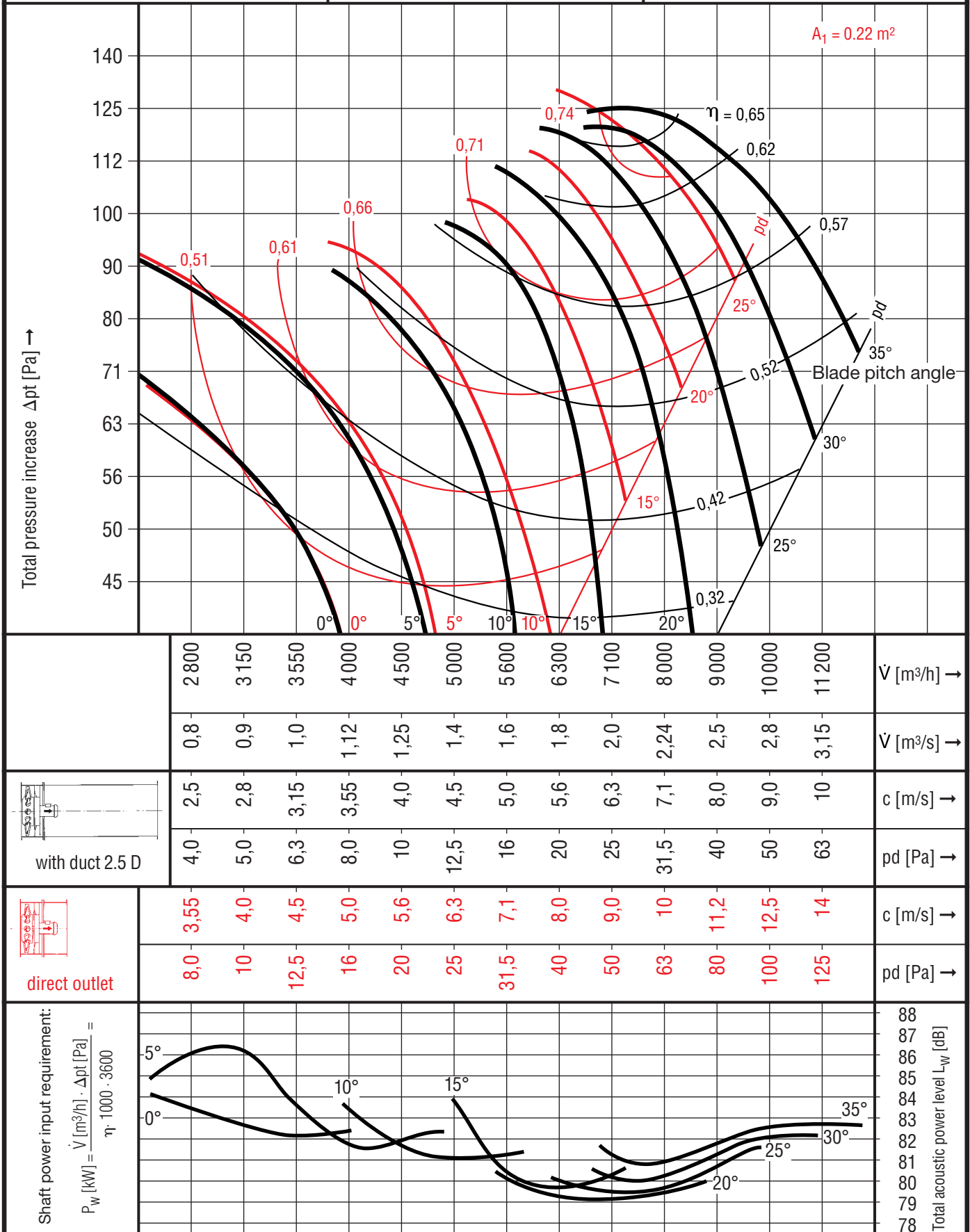
085

V = Volume flow [m^3/h] or [m^3/s]
 pd = Dynamic pressure [Pa] or $\times 0.1$ [kp/m^2]
 c = Flow velocity [m/s]

Tip speed $u_2 = 23 \text{ m/s}$
Temperature $t = 20^\circ \text{C}$
Density $\rho = 1.2 \text{ kg}/\text{m}^3$

Moment of inertia $I = 0.223 \text{ kg m}^2$
Casing diameter d.i.L. = 634 mm
Outlet cross section $A_2 = 0.31 \text{ m}^2$

$A_1 = 0.22 \text{ m}^2$



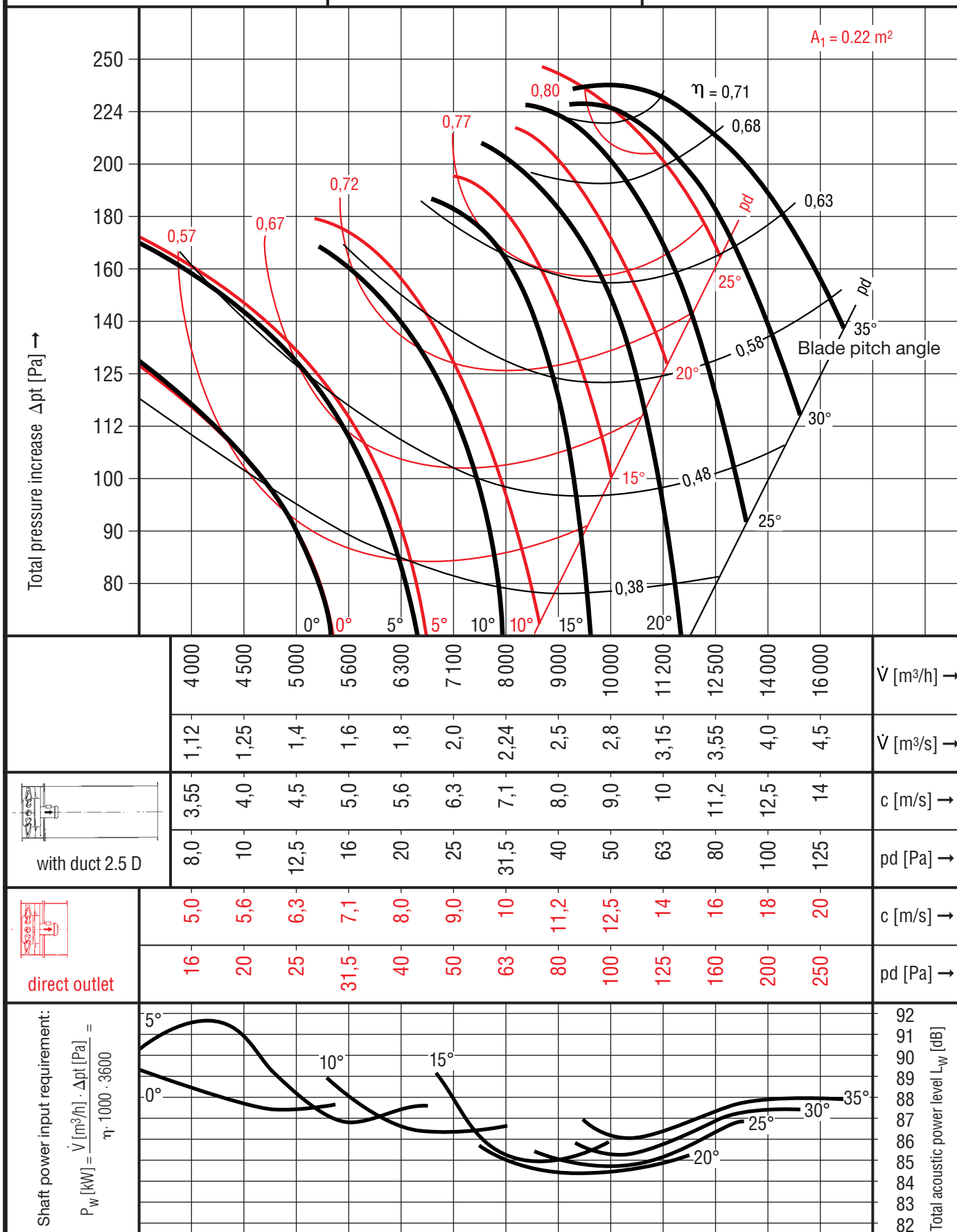
AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/630/D*
ROTATIONAL SPEED 920 RPM****086** V = Volume flow [m³/h] or [m³/s] p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²] c = Flow velocity [m/s]Tip speed $u_2 = 30$ m/sTemperature $t = 20^\circ\text{C}$ Density $\rho = 1.2$ kg/m³Moment of inertia $I = 0.223$ kg m²

Casing diameter d.i.L. = 634 mm

Outlet cross section $A_2 = 0.31$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/630/D* ROTATIONAL SPEED 1400 RPM

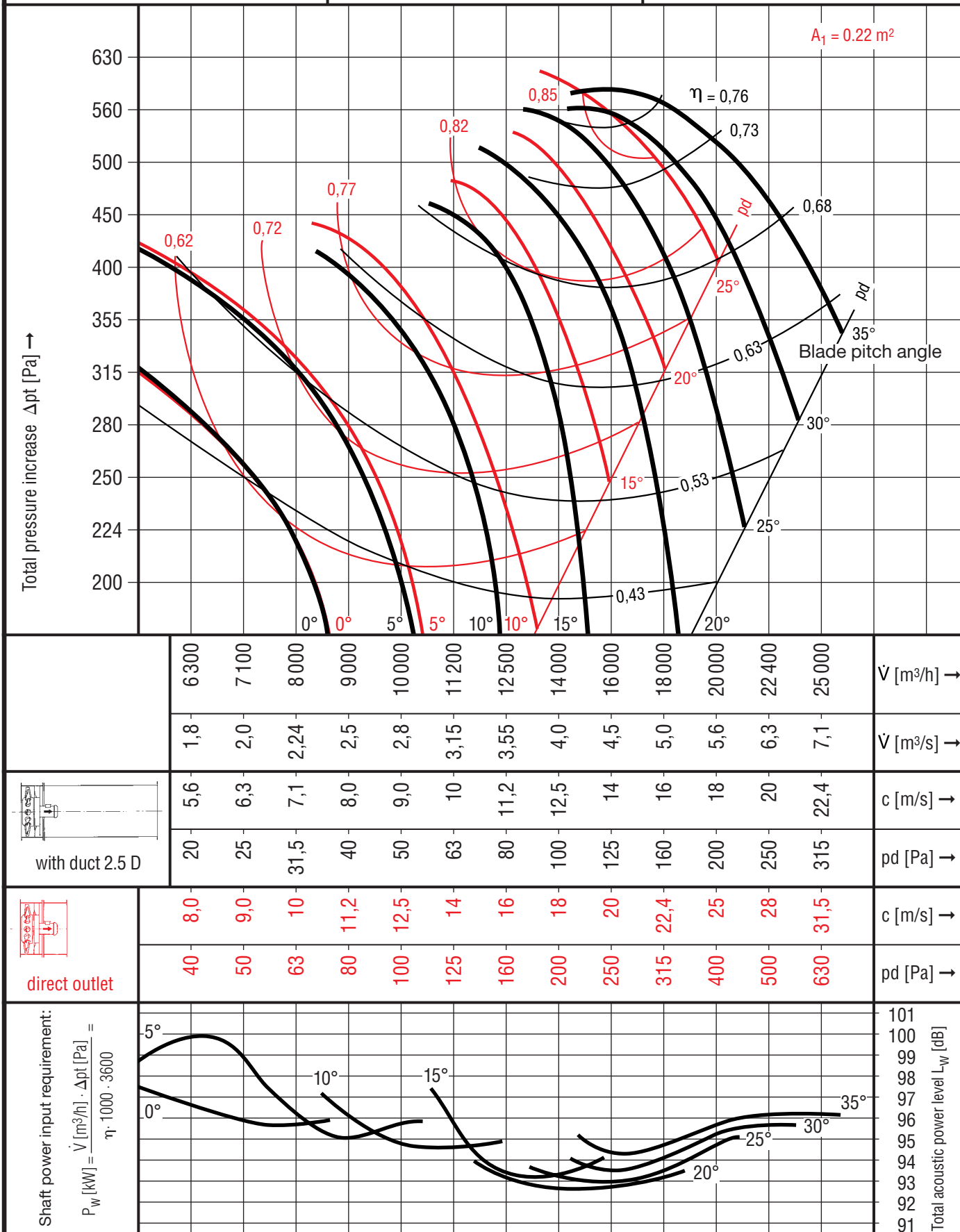
087

V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 46$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0.223$ kg m²
Casing diameter d.i.L. = 634 mm
Outlet cross section $A_2 = 0.31$ m²

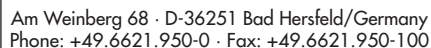
$A_1 = 0.22$ m²



AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



088

Moment of inertia $I = 0,40 \text{ kg m}^2$
Casing diameter d.i.L. = 711 mm
Outlet cross section $A_2 = 0,39 \text{ m}^2$



with duct 2.5 D



direct outlet

Shaft power input requirement:

$$P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$$
Total acoustic power level L_W [dB]

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/710/D* ROTATIONAL SPEED 950 RPM

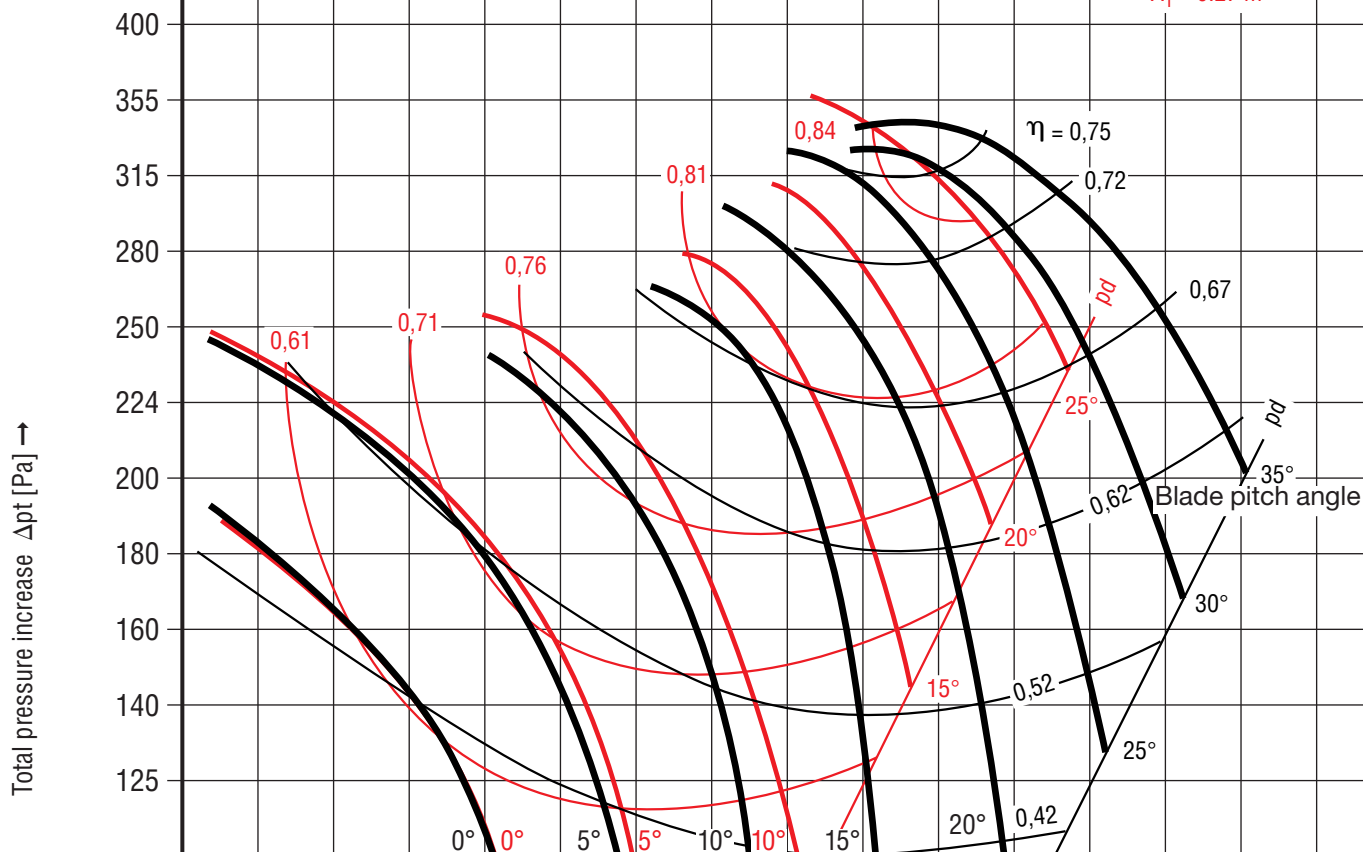
089

V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

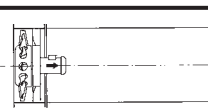
Tip speed $u_2 = 35$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\varrho = 1.2$ kg/m³

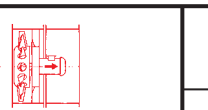
Moment of inertia $I = 0.40$ kg m²
Casing diameter d.i.L. = 711 mm
Outlet cross section $A_2 = 0.4$ m²

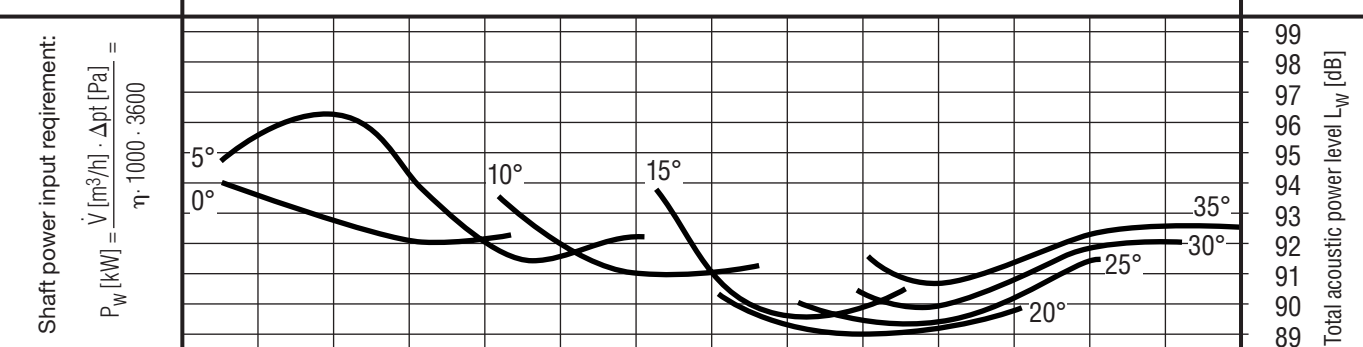
$A_1 = 0.27$ m²



	5600	6300	7100	8000	9000	10000	11200	12500	14000	16000	18000	20000	22400	V [m³/h] →
	1,6	1,8	2,0	2,24	2,5	2,8	3,15	3,55	4,0	4,5	5,0	5,6	6,3	V [m³/s] →

	4,0	4,5	5,0	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	16	c [m/s] →
with duct 2.5 D	10	12,5	16	20	25	31,5	40	50	63	80	100	125	160	pd [Pa] →

	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	c [m/s] →
direct outlet	20	25	31,5	40	50	63	80	100	125	160	200	250	315	pd [Pa] →



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/710/D*
ROTATIONAL SPEED 1430 RPM**

090

V = Volume flow [m³/h] or [m³/s]

p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]

c = Flow velocity [m/s]

Tip speed $u_2 = 53$ m/s

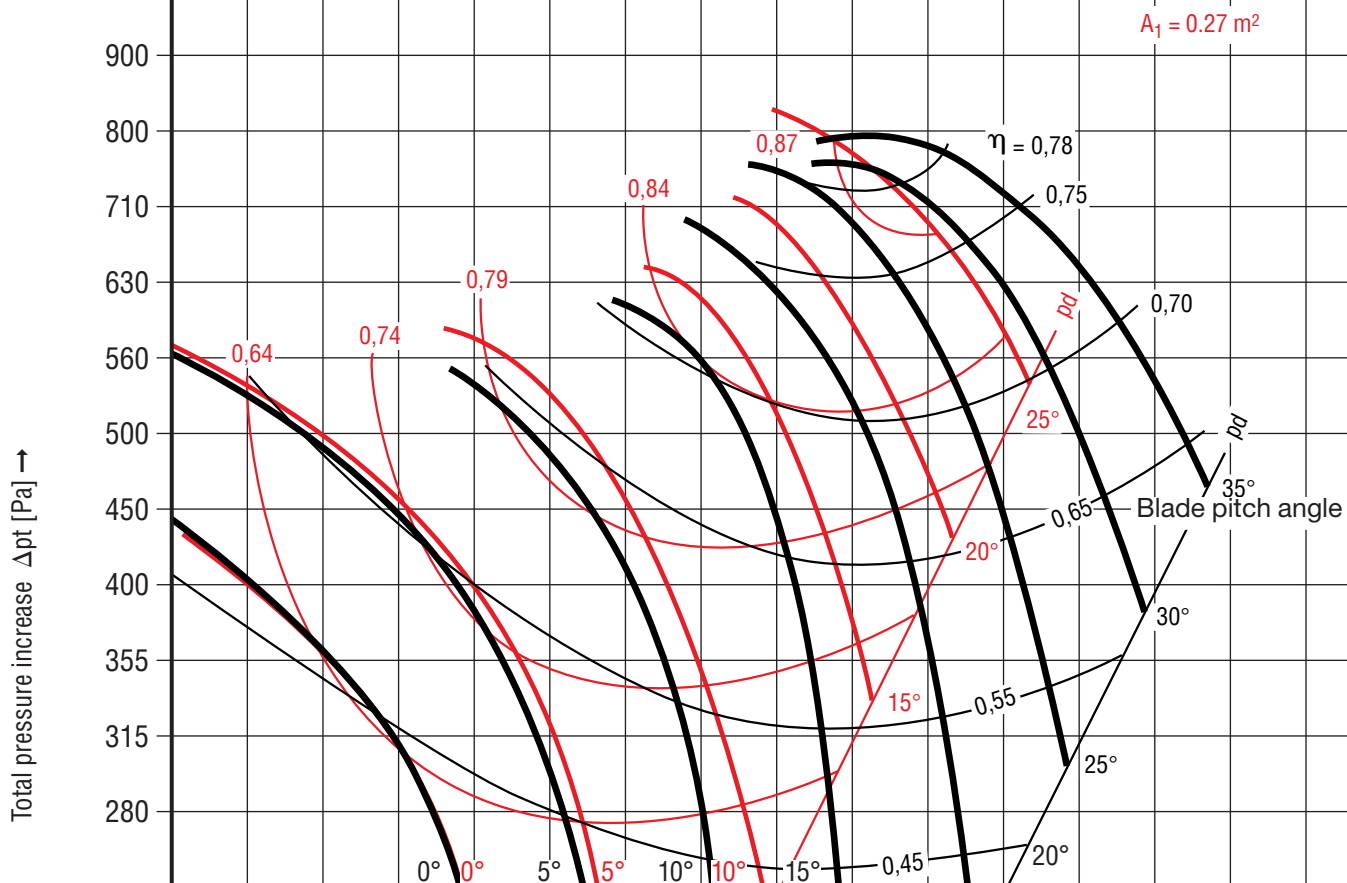
Temperature $t = 20^\circ\text{C}$

Density $\rho = 1.2$ kg/m³

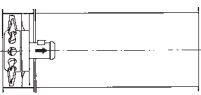
Moment of inertia $I = 0.40$ kg m²

Casing diameter d.i.L. = 711 mm

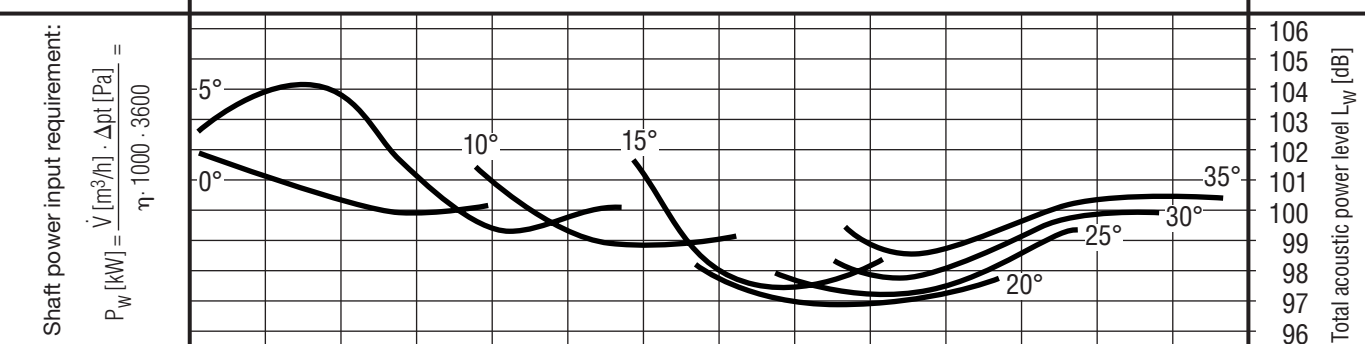
Outlet cross section $A_2 = 0.4$ m²



	9000	10000	11200	12500	14000	16000	18000	20000	22400	25000	28000	31500	35500	V [m ³ /h] →
	2,5	2,8	3,15	3,55	4,0	4,5	5,0	5,6	6,3	7,1	8,0	9,0	10	V [m ³ /s] →

	6,3	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	c [m/s] →
with duct 2.5 D	25	31,5	40	50	63	80	100	125	160	200	250	315	400	p_d [Pa] →

	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	c [m/s] →
direct outlet	50	63	80	100	125	160	200	250	315	400	500	630	800	p_d [Pa] →



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/800/D* ROTATIONAL SPEED 720 RPM

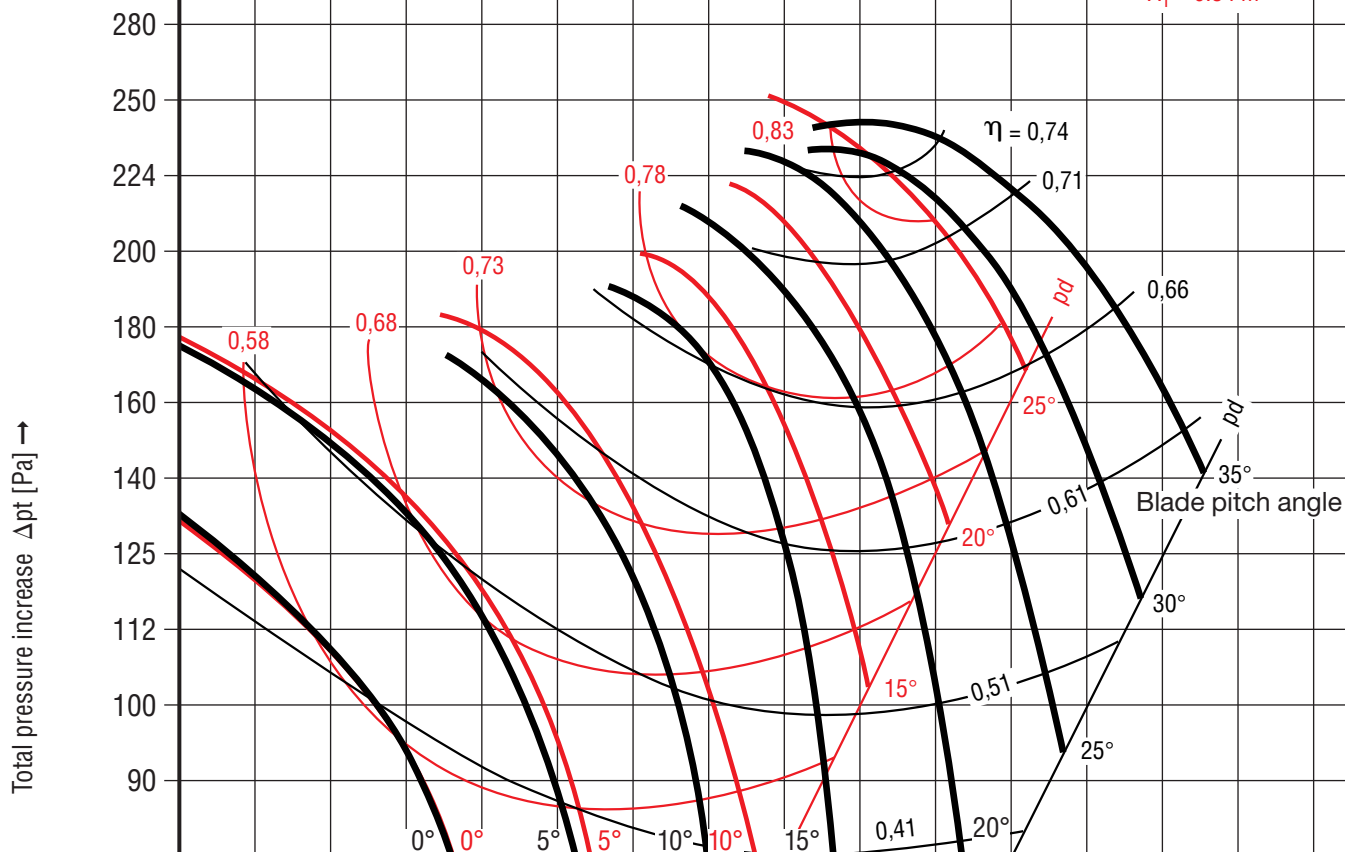
091

V = Volume flow [m³/h] or [m³/s]
 pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 30$ m/s
Temperature $t = 20^\circ$ C
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0.69$ kg m²
Casing diameter d.i.L. = 797 mm
Outlet cross section $A_2 = 0.5$ m²

$A_1 = 0.34$ m²



	6300	7100	8000	9000	10000	11200	12500	14000	16000	18000	20000	22400	25000	$\dot{V}$ [m³/h] →
	1,8	2,0	2,24	2,5	2,8	3,15	3,55	4,0	4,5	5,0	5,6	6,3	7,1	$\dot{V}$ [m³/s] →
with duct 2.5 D	3,55	4,0	4,5	5,0	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	c [m/s] →
	8,0	10	12,5	16	20	25	31,5	40	50	63	80	100	125	pd [Pa] →
	5,0	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	c [m/s] →
	16	20	25	31,5	40	50	63	80	100	125	160	200	250	pd [Pa] →
Shaft power input requirement P_w [kW] = $\frac{\dot{V} \text{ [m³/h]} \cdot \Delta p_t \text{ [Pa]}}{\eta \cdot 1000 \cdot 3600}$														96
	Total acoustic power level L_w [dB]													95
														94
														93
														92
														91
														90
														89
														88
														87
														86

AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/800/D* ROTATIONAL SPEED 950 RPM

092

$\dot{V}$ = Volume flow [m³/h] or [m³/s]

p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]

c = Flow velocity [m/s]

Tip speed $u_2 = 39$ m/s

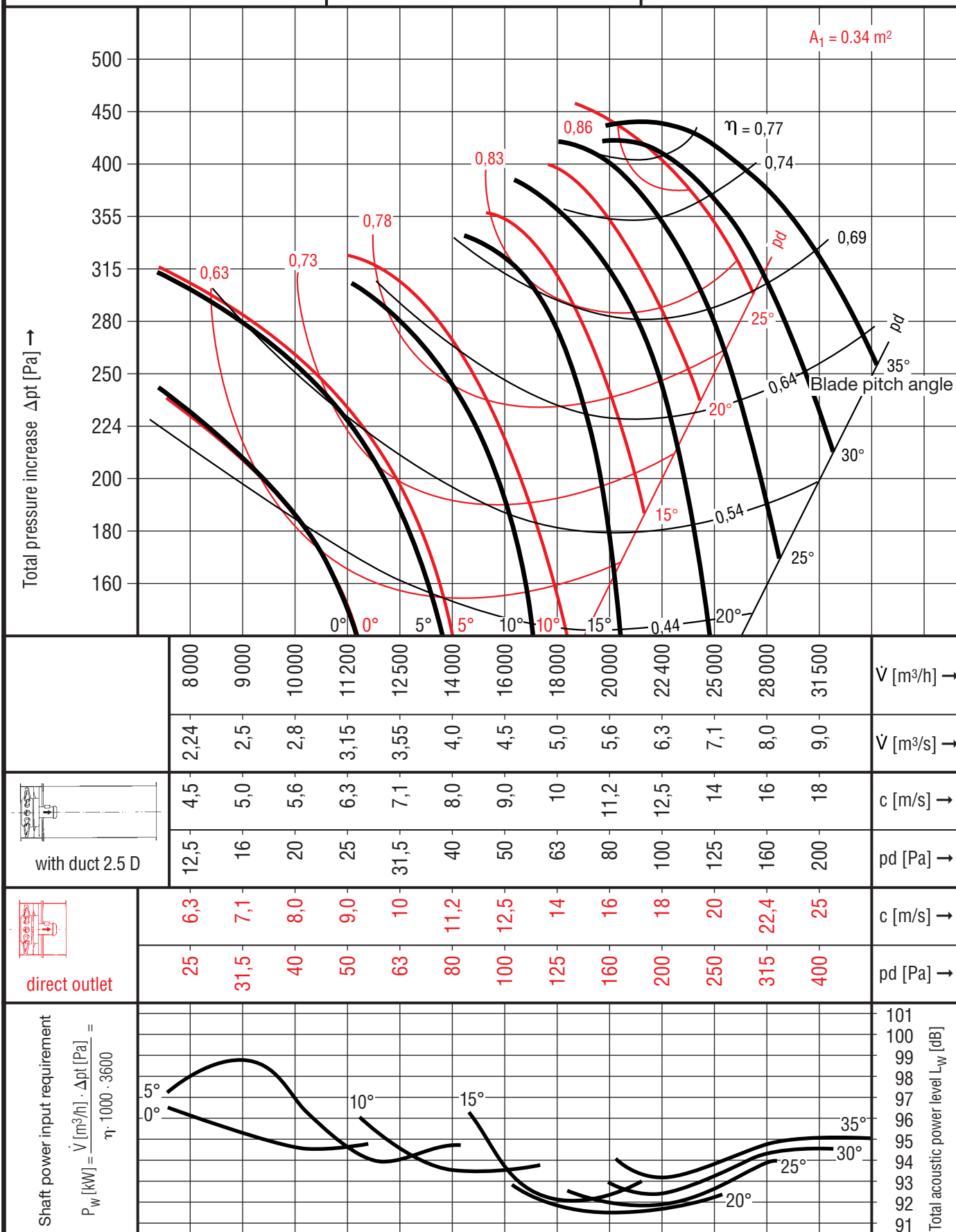
Temperature $t = 20^\circ$ C

Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0.69$ kg m²

Casing diameter d.i.L. = 797 mm

Outlet cross section $A_2 = 0.5$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/800/D* ROTATIONAL SPEED 1450 RPM

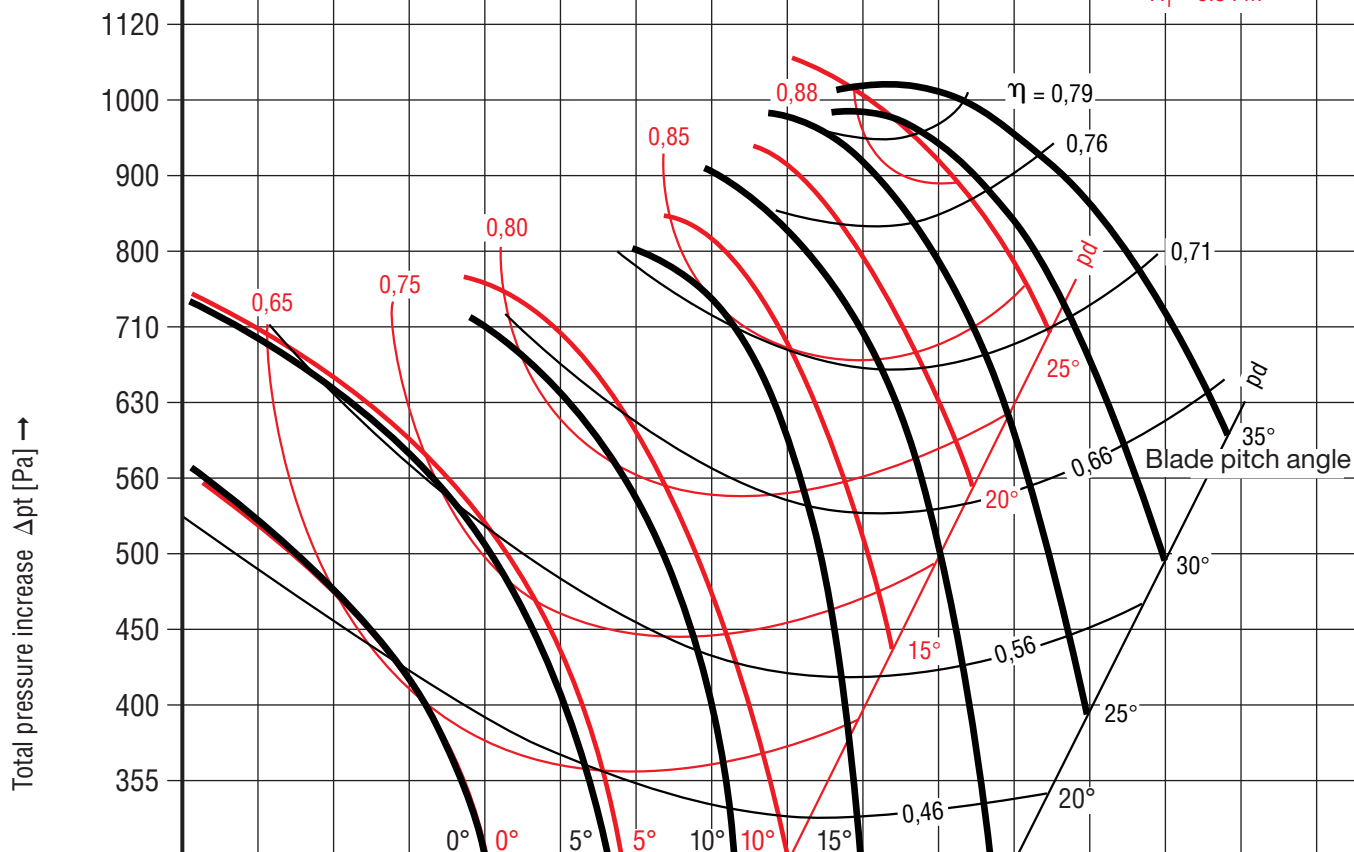
093

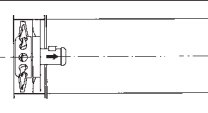
V = Volume flow [m³/h] or [m³/s]
 pd = Dynamic pressure [Pa] or $\times 0.1$ [kp/m²]
 c = Flow velocity [m/s]

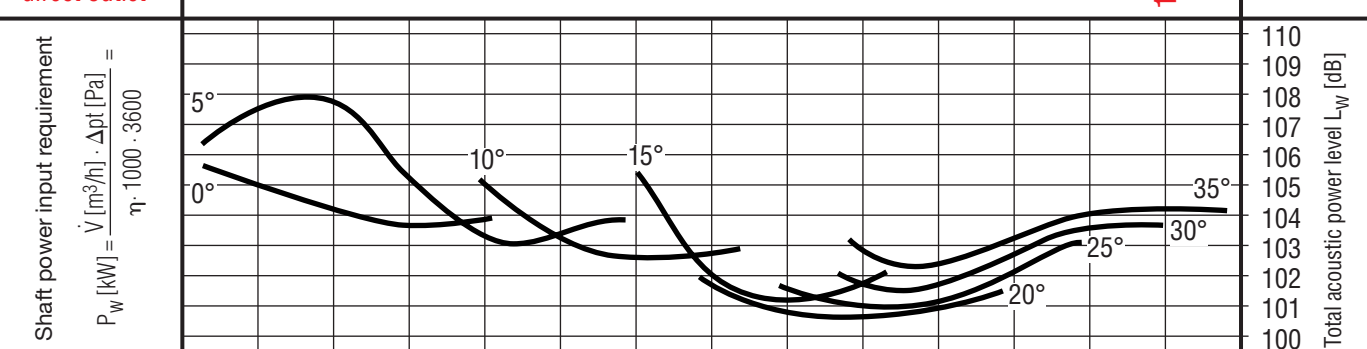
Tip speed $u_2 = 60$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 0.69$ kg m²
Casing diameter d.i.L. = 797 mm
Outlet cross section $A_2 = 0.5$ m²

$A_1 = 0.34$ m²



	12 500	14 000	16 000	18 000	20 000	22 400	25 000	28 000	31 500	35 500	40 000	45 000	50 000	V [m ³ /h] →
	3,55	4,0	4,5	5,0	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	V [m ³ /s] →
with duct 2.5 D	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	c [m/s] →
	31,5	40	50	63	80	100	125	160	200	250	315	400	500	pd [Pa] →
	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	40	c [m/s] →
	63	80	100	125	160	200	250	315	400	500	630	800	1000	pd [Pa] →
direct outlet														



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/900/D*
ROTATIONAL SPEED 720 RPM**

094

V = Volume flow [m³/h] or [m³/s]

pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]

c = Flow velocity [m/s]

Tip speed $u_2 = 33$ m/s

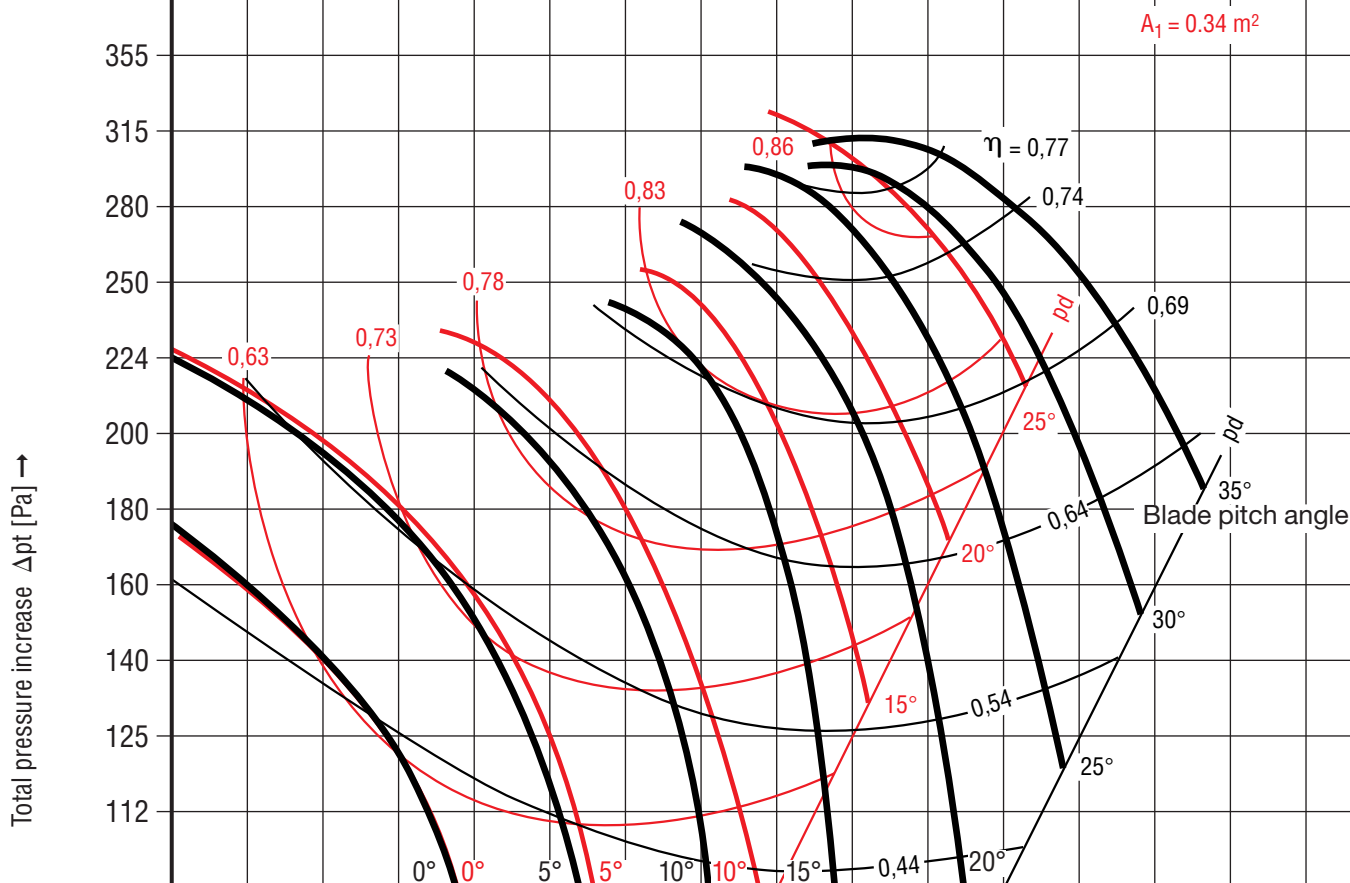
Temperature $t = 20^\circ$ C

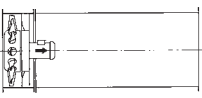
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 1.20$ kg m²

Casing diameter d.i.L. = 894 mm

Outlet cross section $A_2 = 0.63$ m²



	9000	10000	11200	12500	14000	16000	18000	20000	22400	25000	28000	31500	35500	V [m ³ /h] →
	2,5	2,8	3,15	3,55	4,0	4,5	5,0	5,6	6,3	7,1	8,0	9,0	10	V [m ³ /s] →
with duct 2.5 D	4,0	4,5	5,0	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	16	c [m/s] →
	10	12,5	16	20	25	31,5	40	50	63	80	100	125	160	pd [Pa] →
	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	c [m/s] →
	20	25	31,5	40	50	63	80	100	125	160	200	250	315	pd [Pa] →
direct outlet														
Shaft power input requirement: $P_w [kW] = \frac{V [m^3/h] \cdot \Delta pt [Pa]}{\eta \cdot 1000 \cdot 3600}$	5°													99
	0°													98
														97
														96
														95
														94
														93
														92
														91
														90
														89

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

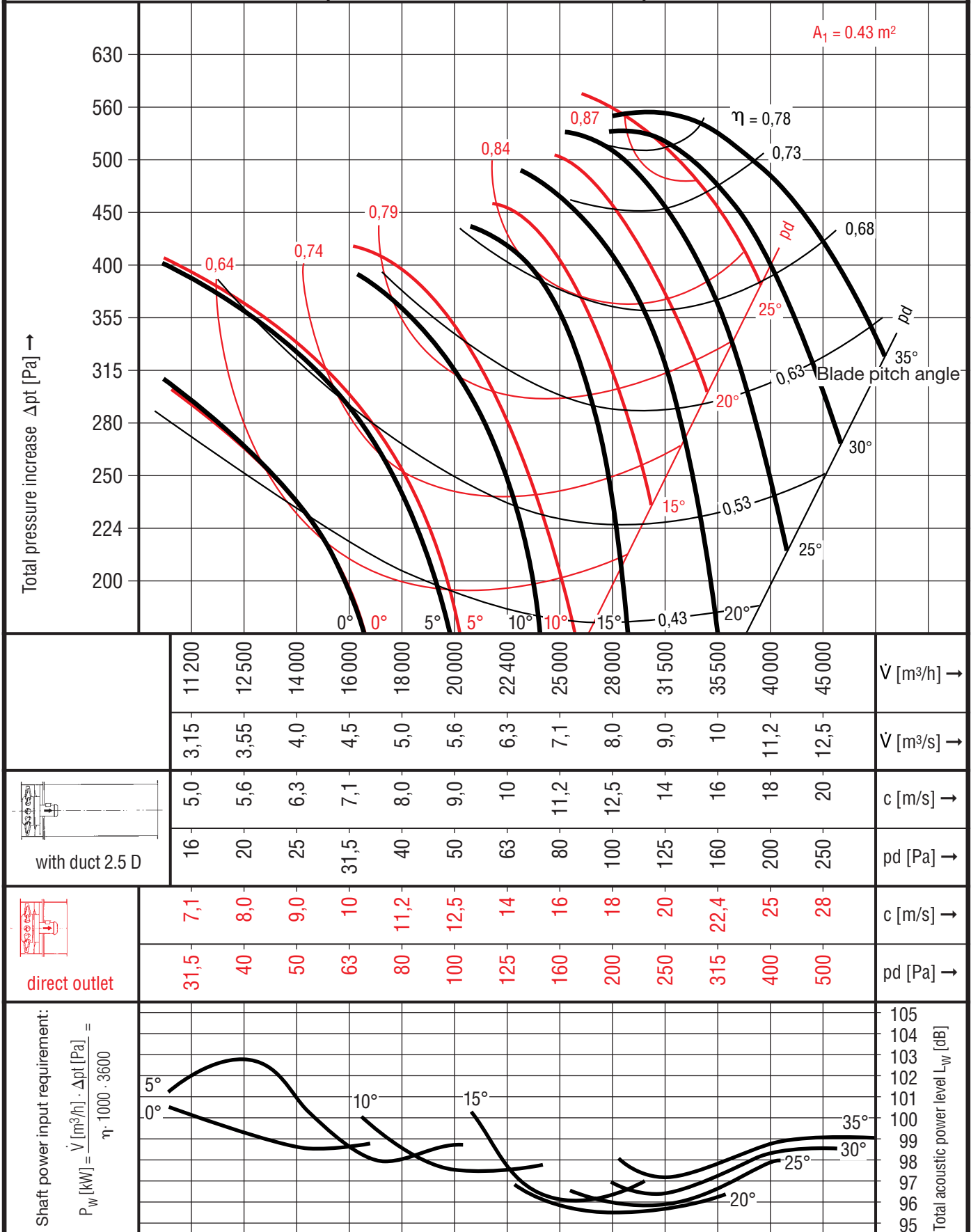
Values rounded to standard figures.

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/900/D*
ROTATIONAL SPEED 950 RPM****095**

V = Volume flow [m³/h] or [m³/s]
 pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 44$ m/s
 Temperature $t = 20^\circ\text{C}$
 Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 1.20$ kg m²
 Casing diameter d.i.L. = 894 mm
 Outlet cross section $A_2 = 0.63$ m²

 $A_1 = 0.43$ m²

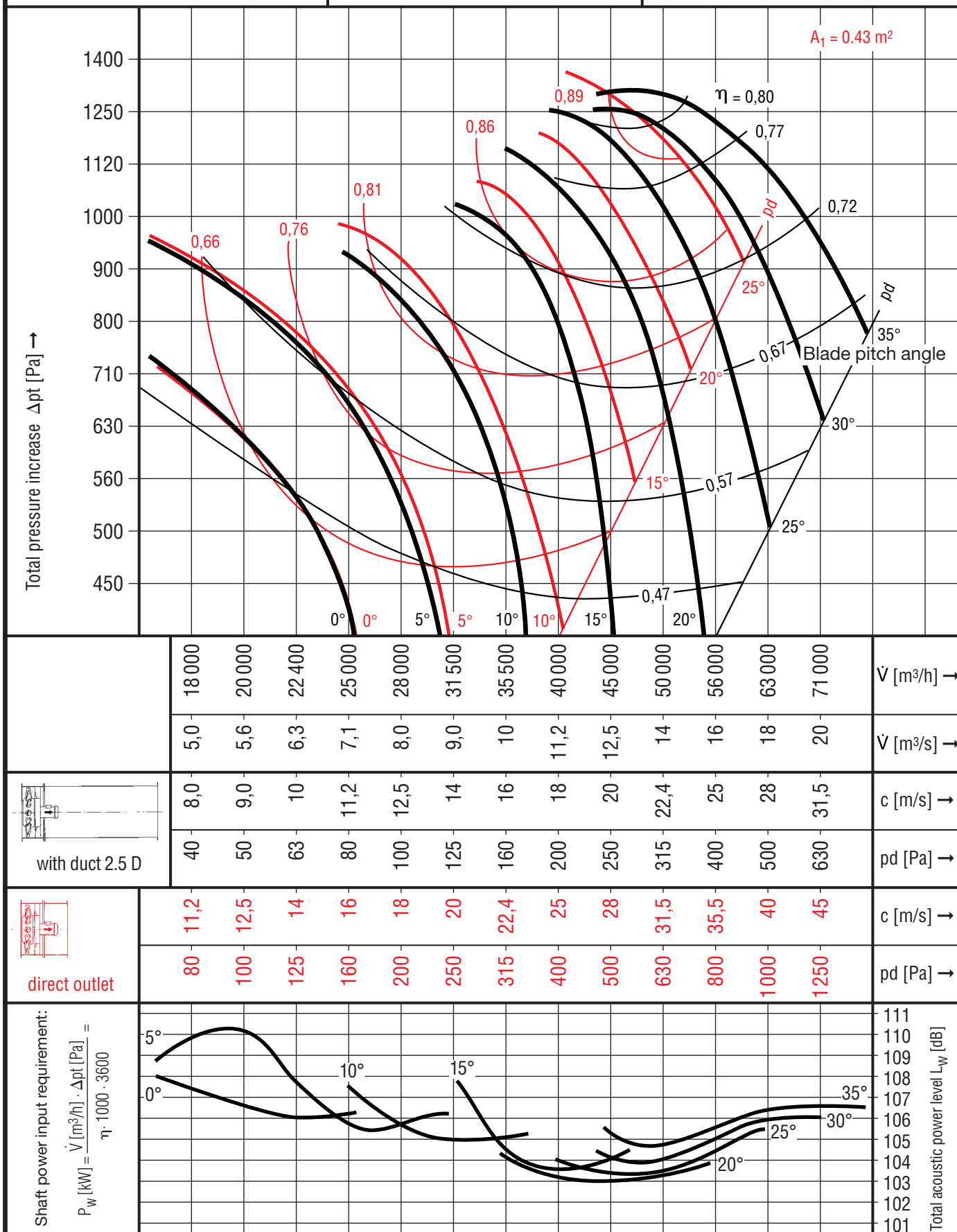
AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

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DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/900/D*
ROTATIONAL SPEED 1450 RPM****096** V = Volume flow [m³/h] or [m³/s] p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²] c = Flow velocity [m/s]Tip speed $u_2 = 67$ m/sTemperature $t = 20^\circ\text{C}$ Density $\rho = 1.2$ kg/m³Moment of inertia $I = 1.20$ kg m²

Casing diameter d.i.L. = 894 mm

Outlet cross section $A_2 = 0.63$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/1000/D* ROTATIONAL SPEED 720 RPM

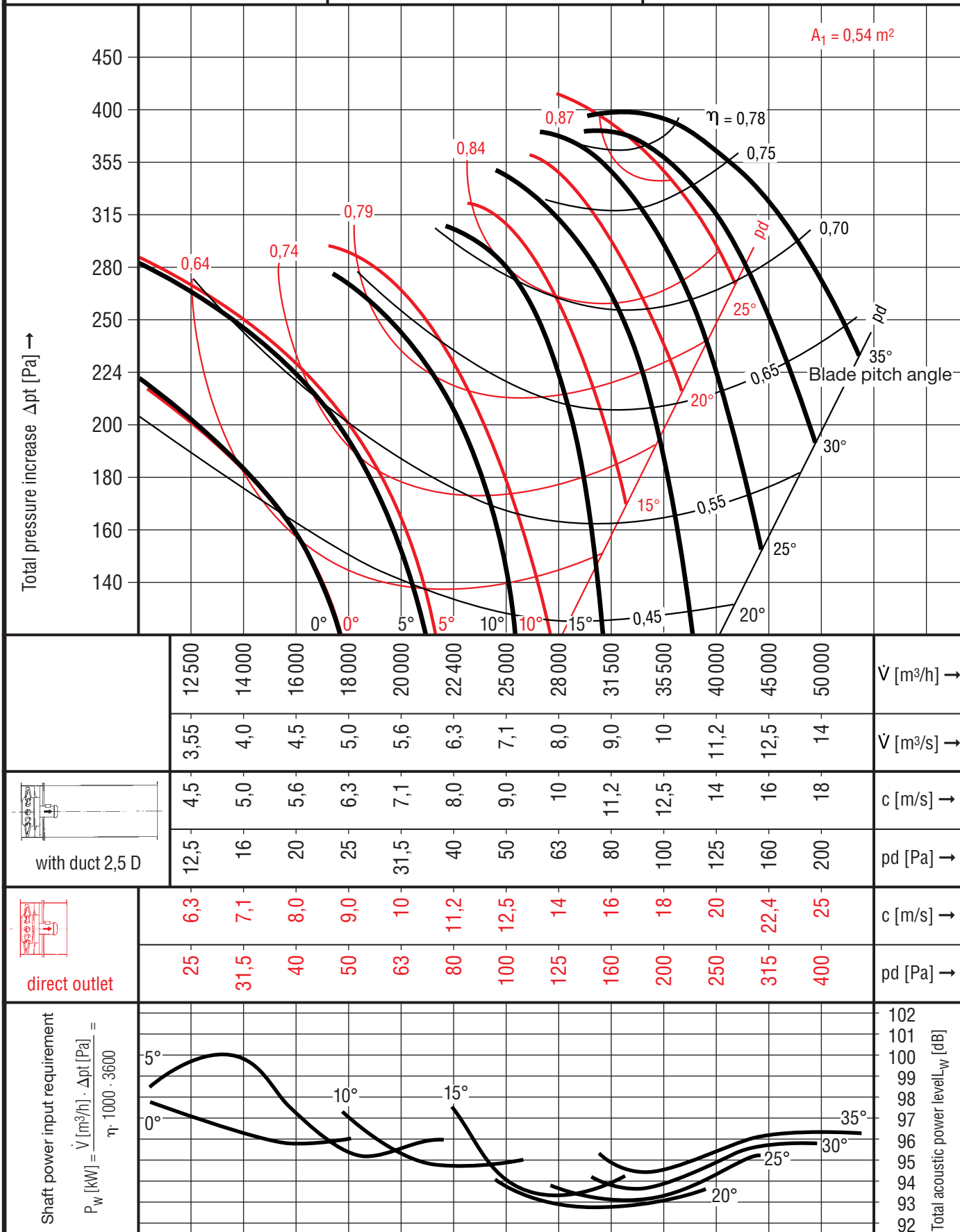
097

V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 38$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 2.05$ kg m²
Casing diameter d.i.L. = 1003 mm
Outlet cross section $A_2 = 0.79$ m²

$A_1 = 0.54$ m²



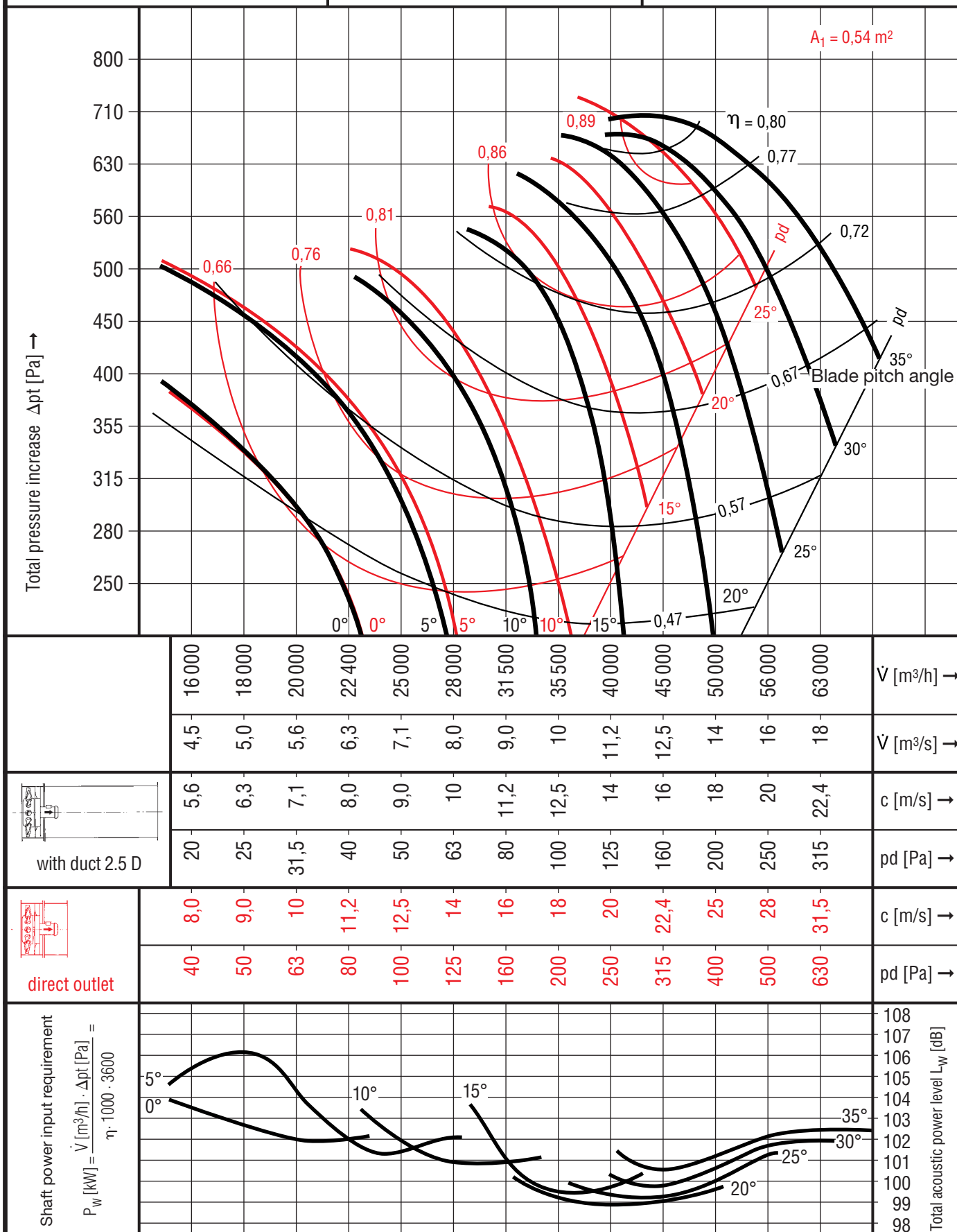
AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
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DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/1000/D*
ROTATIONAL SPEED 950 RPM****098** V = Volume flow [m³/h] or [m³/s] p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²] c = Flow velocity [m/s]Tip speed $u_2 = 50$ m/sTemperature $t = 20^\circ\text{C}$ Density $\rho = 1.2$ kg/m³Moment of inertia $I = 2.05$ kg m²

Casing diameter d.i.L. = 1003 mm

Outlet cross section $A_2 = 0.79$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/1000/D* ROTATIONAL SPEED 1450 RPM

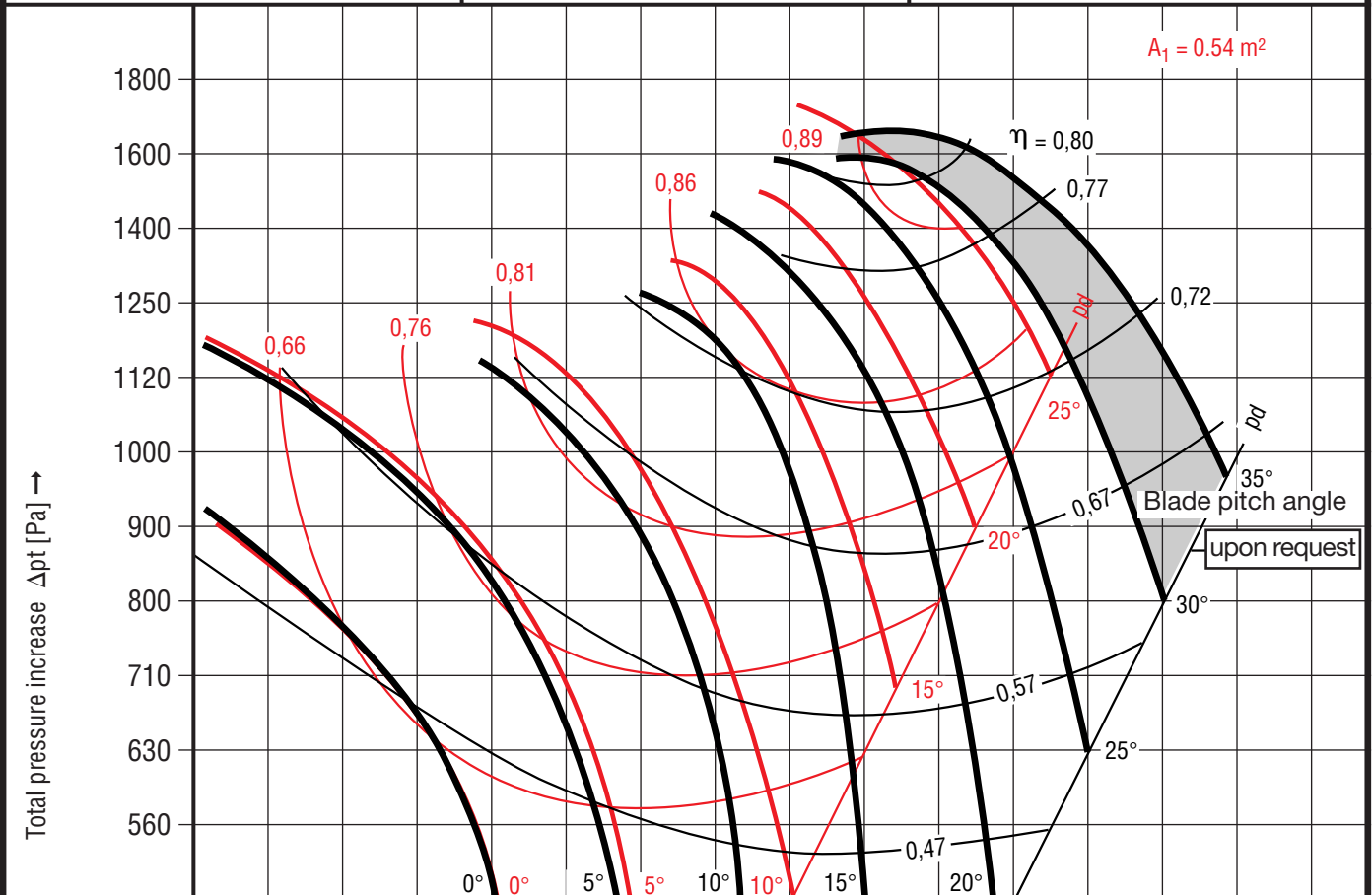
099

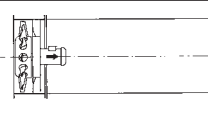
V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 76$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 2.05$ kg m²
Casing diameter d.i.L. = 1003 mm
Outlet cross section $A_2 = 0.79$ m²

$A_1 = 0.54$ m²



	25 000	28 000	31 500	35 500	40 000	45 000	50 000	56 000	63 000	71 000	80 000	90 000	100 000	$\dot{V}$ [m³/h] →
	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	$\dot{V}$ [m³/s] →
with duct 2.5 D	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	c [m/s] →
	50	63	80	100	125	160	200	250	315	400	500	630	800	pd [Pa] →
	12,5	14	16	18	20	22,4	25	28	31,5	35,5	40	45	50	c [m/s] →
	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	pd [Pa] →
direct outlet	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	Total acoustic power level L_{w} [dB]
	10°	10°	10°	10°	10°	10°	10°	10°	10°	10°	10°	10°	10°	
Shaft power input requirement: $P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$	15°	15°	15°	15°	15°	15°	15°	15°	15°	15°	15°	15°	15°	Total acoustic power level L_{w} [dB]
	20°	20°	20°	20°	20°	20°	20°	20°	20°	20°	20°	20°	20°	
	25°	25°	25°	25°	25°	25°	25°	25°	25°	25°	25°	25°	25°	Total acoustic power level L_{w} [dB]
	30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	
	35°	35°	35°	35°	35°	35°	35°	35°	35°	35°	35°	35°	35°	Total acoustic power level L_{w} [dB]
	35°	35°	35°	35°	35°	35°	35°	35°	35°	35°	35°	35°	35°	

AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/1120/D*
ROTATIONAL SPEED 720 RPM**

100

$\dot{V}$ = Volume flow [m³/h] or [m³/s]

p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]

c = Flow velocity [m/s]

Tip speed $u_2 = 42$ m/s

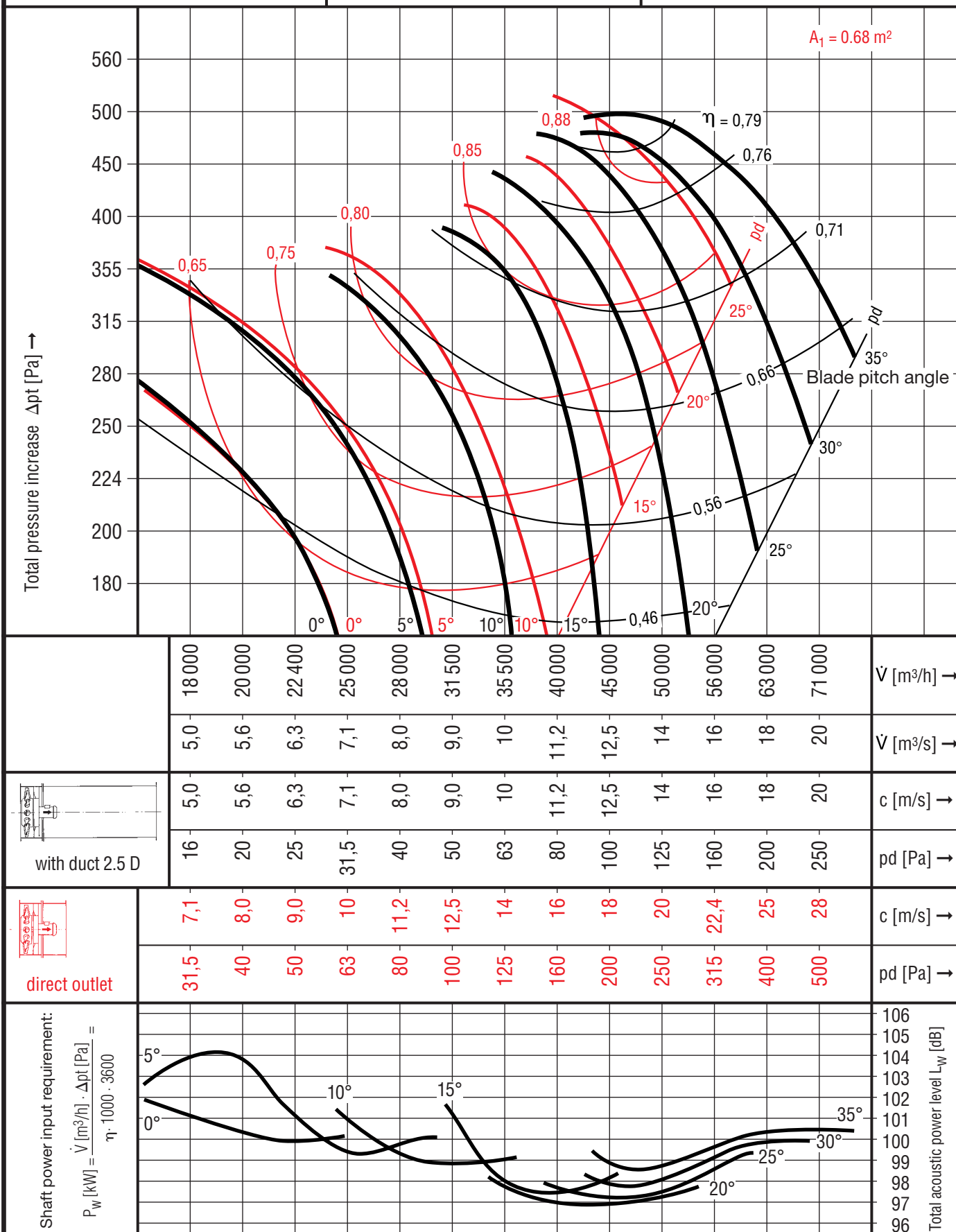
Temperature $t = 20^\circ\text{C}$

Density $\rho = 1,2$ kg/m³

Moment of inertia $I = 3.63$ kg m²

Casing diameter d.i.L. = 1124 mm

Outlet cross section $A_2 = 1.0$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/1120/D* ROTATIONAL SPEED 980 RPM

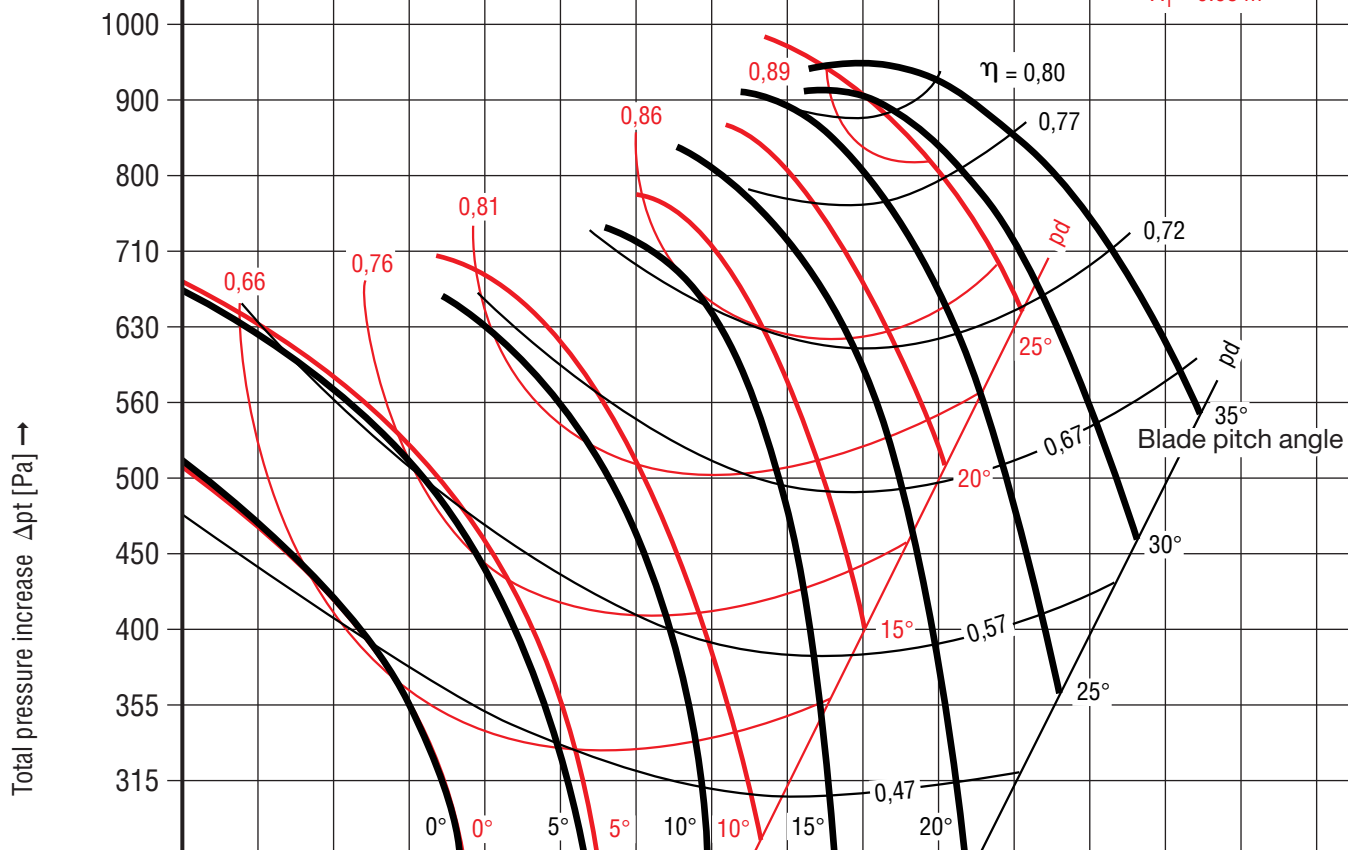
101

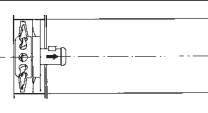
V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 57$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 3.63$ kg m²
Casing diameter d.i.L. = 1124 mm
Outlet cross section $A_2 = 1.0$ m²

$A_1 = 0.68$ m²



	25 000	28 000	31 500	35 500	40 000	45 000	50 000	56 000	63 000	71 000	80 000	90 000	100 000	$\dot{V}$ [m³/h] →
	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	$\dot{V}$ [m³/s] →
with duct 2.5 D	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	c [m/s] →
	31,5	40	50	63	80	100	125	160	200	250	315	400	500	pd [Pa] →
	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	40	c [m/s] →
	63	80	100	125	160	200	250	315	400	500	630	800	1000	pd [Pa] →
direct outlet	5°	10°	15°	20°	25°	30°	35°							
Shaft power input requirement: $P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$	111	110	109	108	107	106	105	104	103	102	101			

AXN-Direct Drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/1120/D*
ROTATIONAL SPEED 1450 RPM**

102

$\dot{V}$ = Volume flow [m³/h] or [m³/s]

p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]

c = Flow velocity [m/s]

Tip speed $u_2 = 82$ m/s

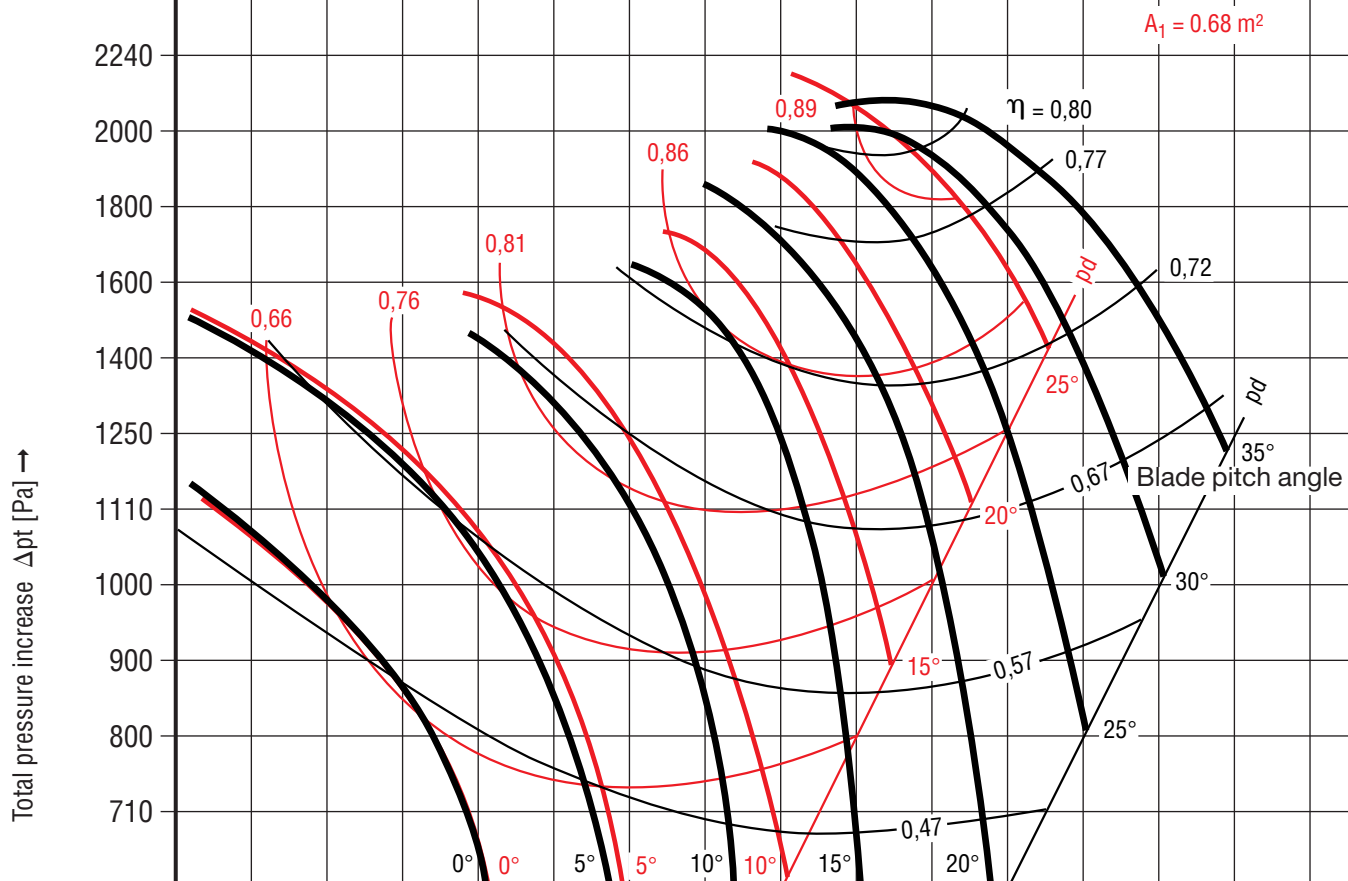
Temperature $t = 20^\circ\text{C}$

Density $\rho = 1.2$ kg/m³

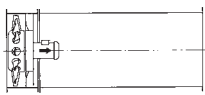
Moment of Inertia $I = 3.63$ kg m²

Casing Diameter d.i.L. = 1124 mm

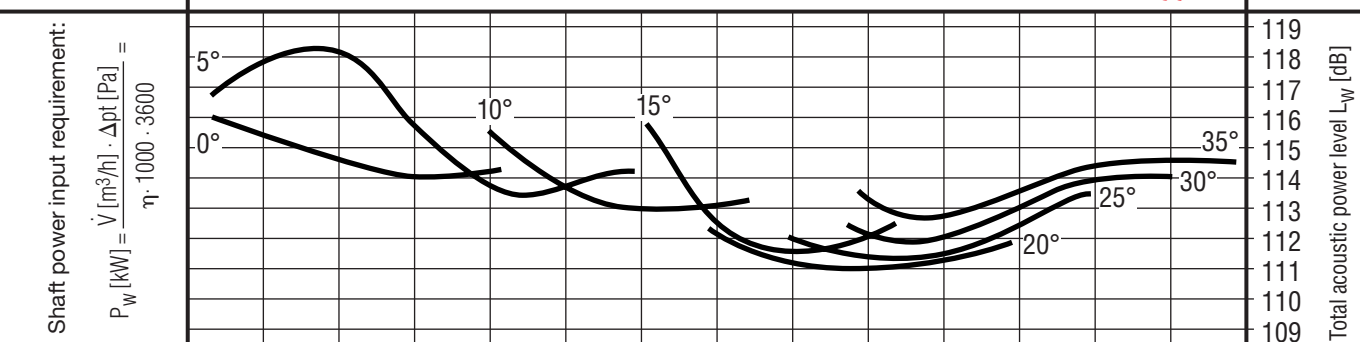
Outlet cross section $A_2 = 1.0$ m²



	35 500	40 000	45 000	50 000	56 000	63 000	71 000	80 000	90 000	100 000	112 000	125 000	140 000	$\dot{V}$ [m ³ /h] →
	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	40	$\dot{V}$ [m ³ /s] →

	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	40	c [m/s] →
with duct 2.5 D	63	80	100	125	160	200	250	315	400	500	630	800	1000	p_d [Pa] →

	14	16	18	20	22,4	25	28	31,5	35,5	40	45	50	56	c [m/s] →
direct outlet	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	p_d [Pa] →



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/1250/D* ROTATIONAL SPEED 740 RPM

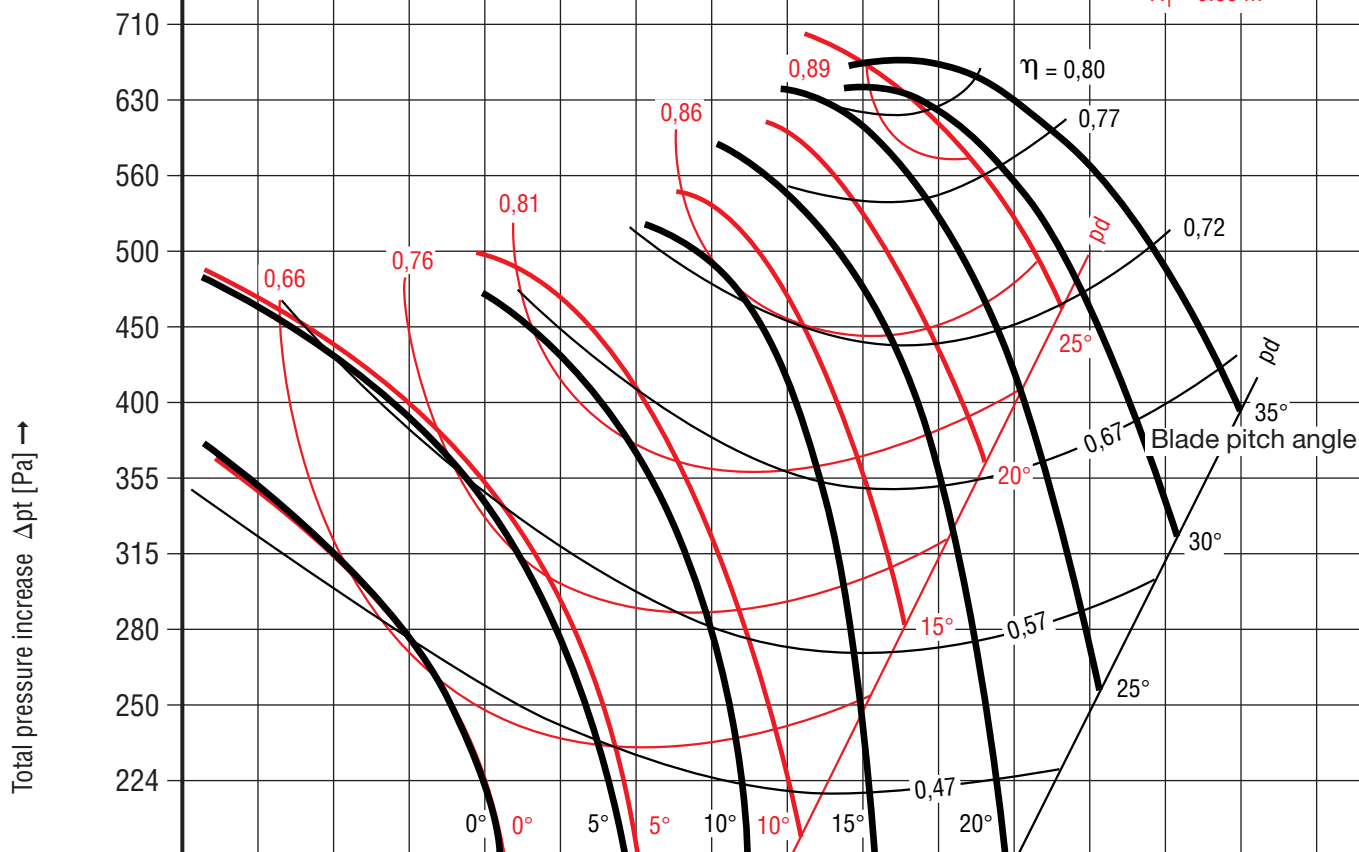
103

V = Volume flow [m³/h] or [m³/s]
 p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]
 c = Flow velocity [m/s]

Tip speed $u_2 = 49$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 6.25$ kg m²
Casing diameter d.i.L. = 1261 mm
Outlet cross section $A_2 = 1.25$ m²

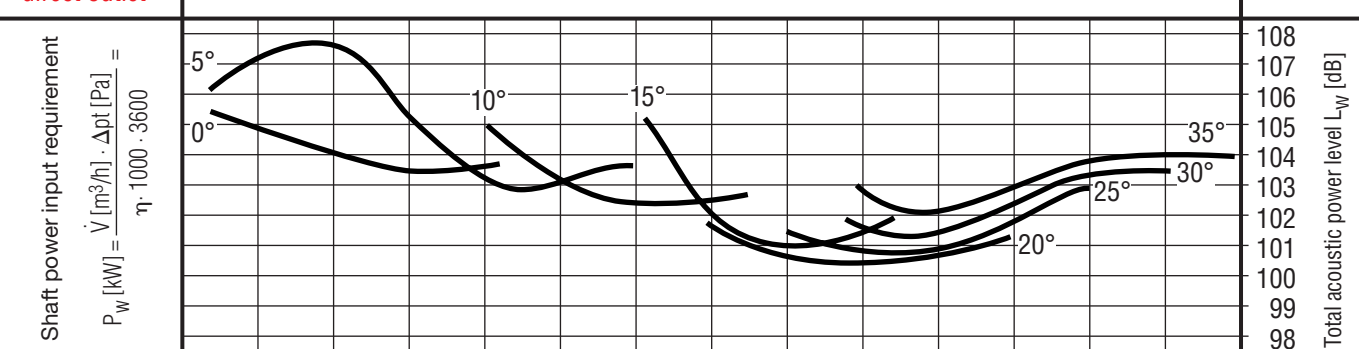
$A_1 = 0.85$ m²



	25 000	28 000	31 500	35 500	40 000	45 000	50 000	56 000	63 000	71 000	80 000	90 000	100 000	$\dot{V}$ [m ³ /h] →
	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	$\dot{V}$ [m ³ /s] →

	5,6	6,3	7,1	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	c [m/s] →
	20	25	31,5	40	50	63	80	100	125	160	200	250	315	p_d [Pa] →

	8,0	9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	c [m/s] →
	40	50	63	80	100	125	160	200	250	315	400	500	630	p_d [Pa] →

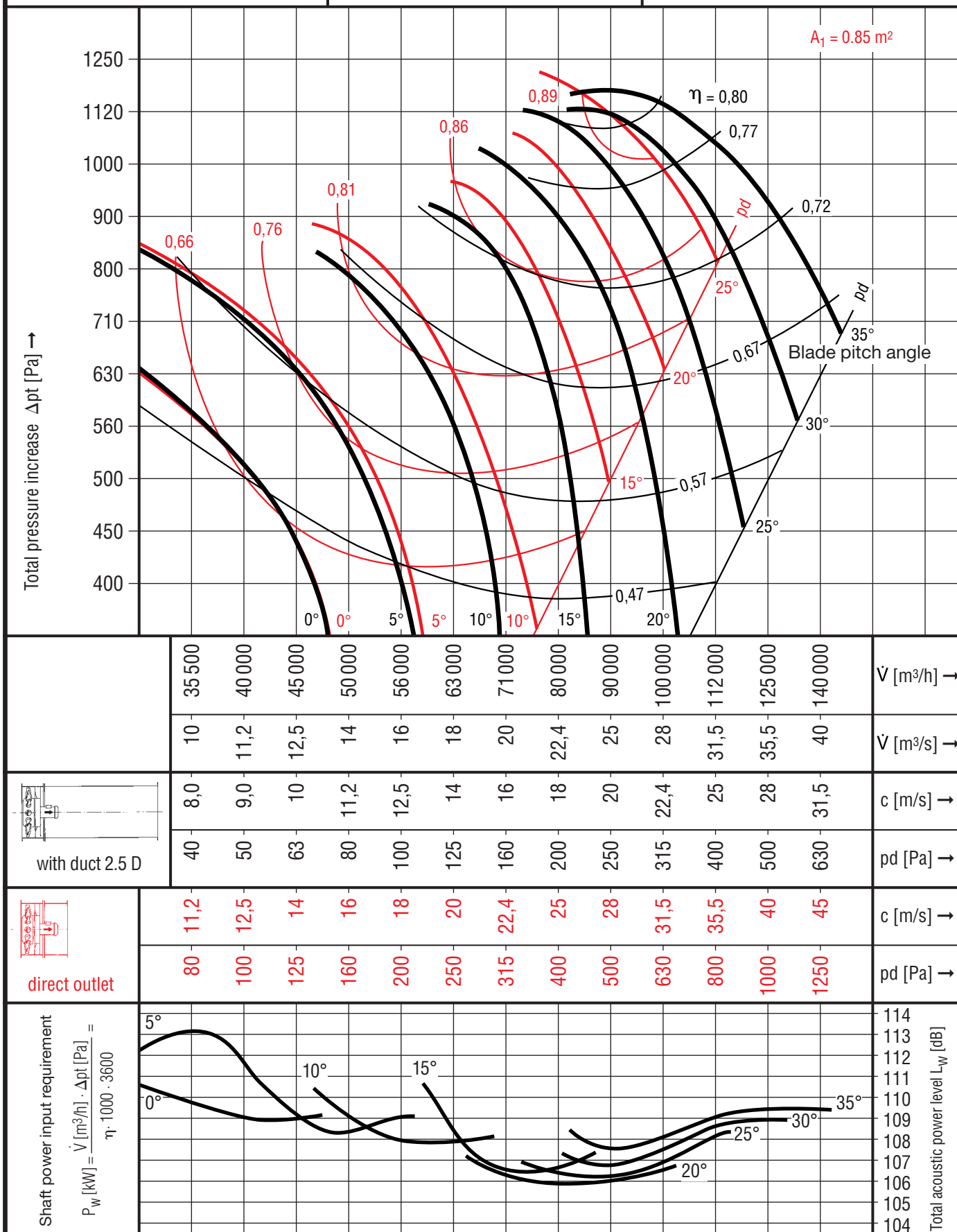


* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
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DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/1250/D*
ROTATIONAL SPEED 980 RPM****104** $\dot{V}$ = Volume flow [m³/h] or [m³/s] p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²] c = Flow velocity [m/s]Tip speed $u_2 = 64$ m/sTemperature $t = 20^\circ\text{C}$ Density $\rho = 1.2$ kg/m³Moment of inertia $I = 6.25$ kg m²

Casing diameter d.i.L. = 1261 mm

Outlet cross section $A_2 = 1.25$ m²

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/1250/D* ROTATIONAL SPEED 1450 RPM

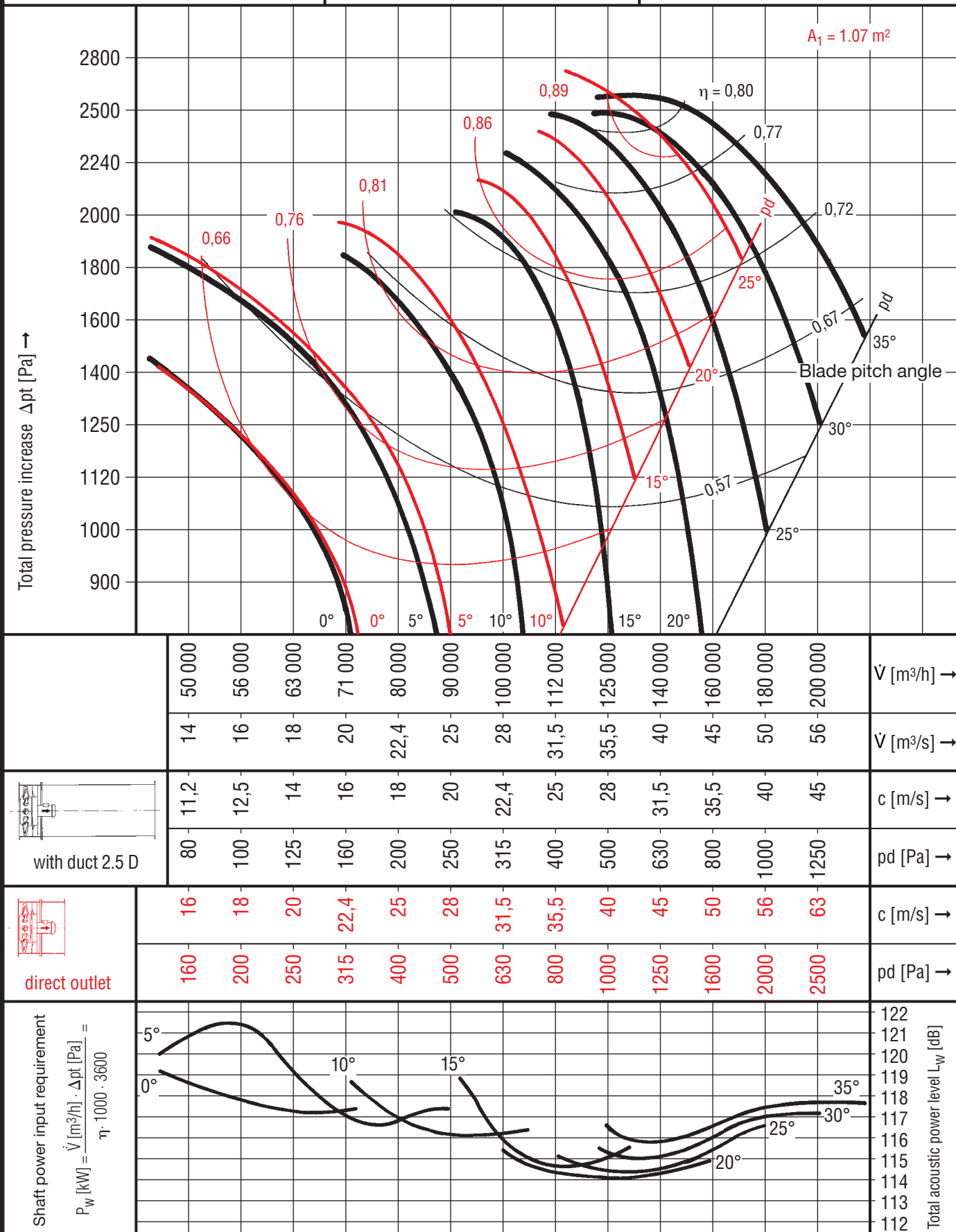
105

V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 95$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 6.25$ kg m²
Casing diameter d.i.L. = 1261 mm
Outlet cross section $A_2 = 1.25$ m²

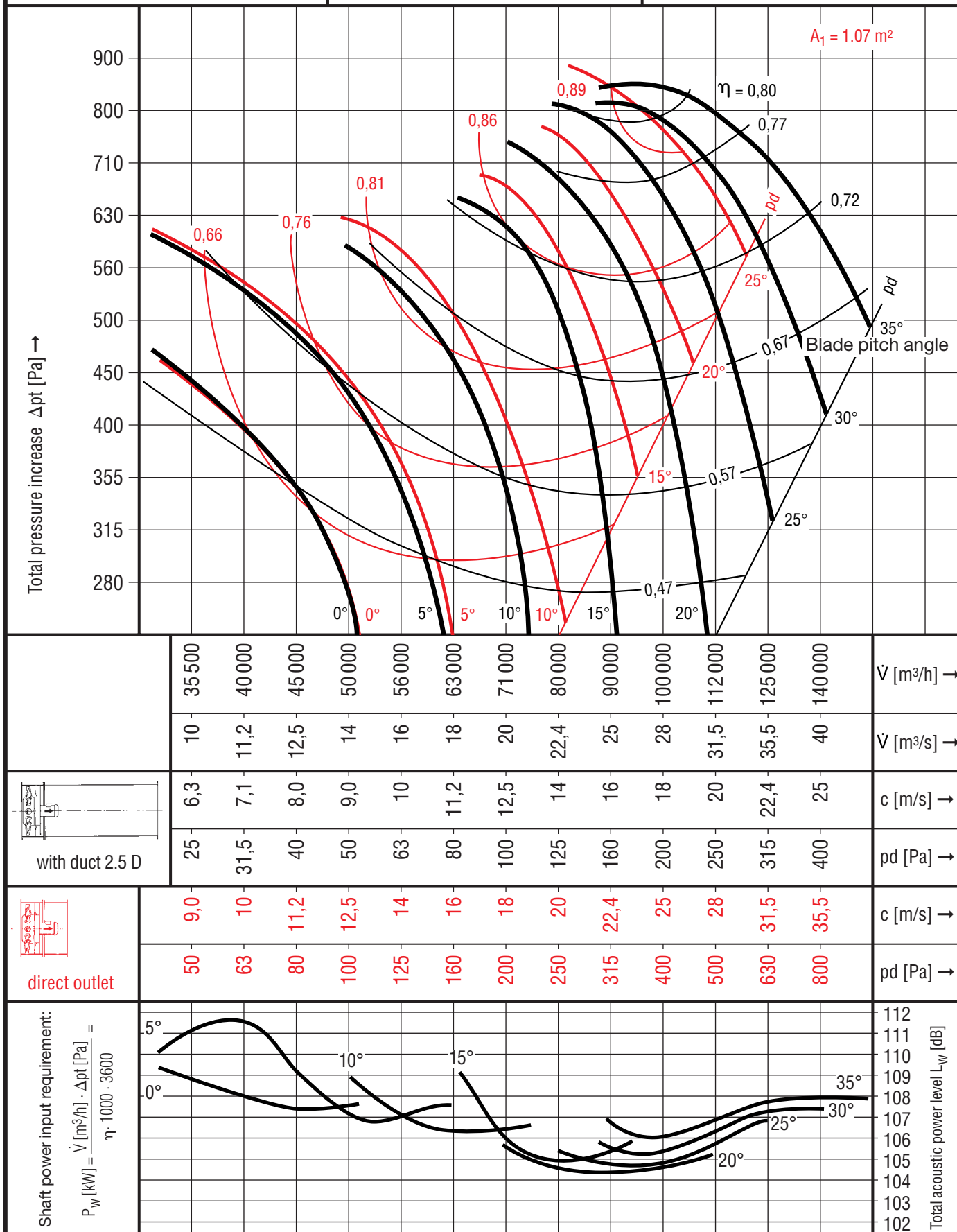
$A_1 = 1.07$ m²



AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

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DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/1400/D*
ROTATIONAL SPEED 740 RPM****106** V = Volume flow [m³/h] or [m³/s]
 p_d = Dynamic pressure [Pa] or $\times 0.1$ [kp/m²]
 c = Flow velocity [m/s]Tip speed $u_2 = 54$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\varrho = 1.2$ kg/m³Moment of inertia $I = 10.05$ kg m²
Casing diameter d.i.L. = 1415 mm
Outlet cross section $A_2 = 1.57$ m²



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/1400/D* ROTATIONAL SPEED 980 RPM

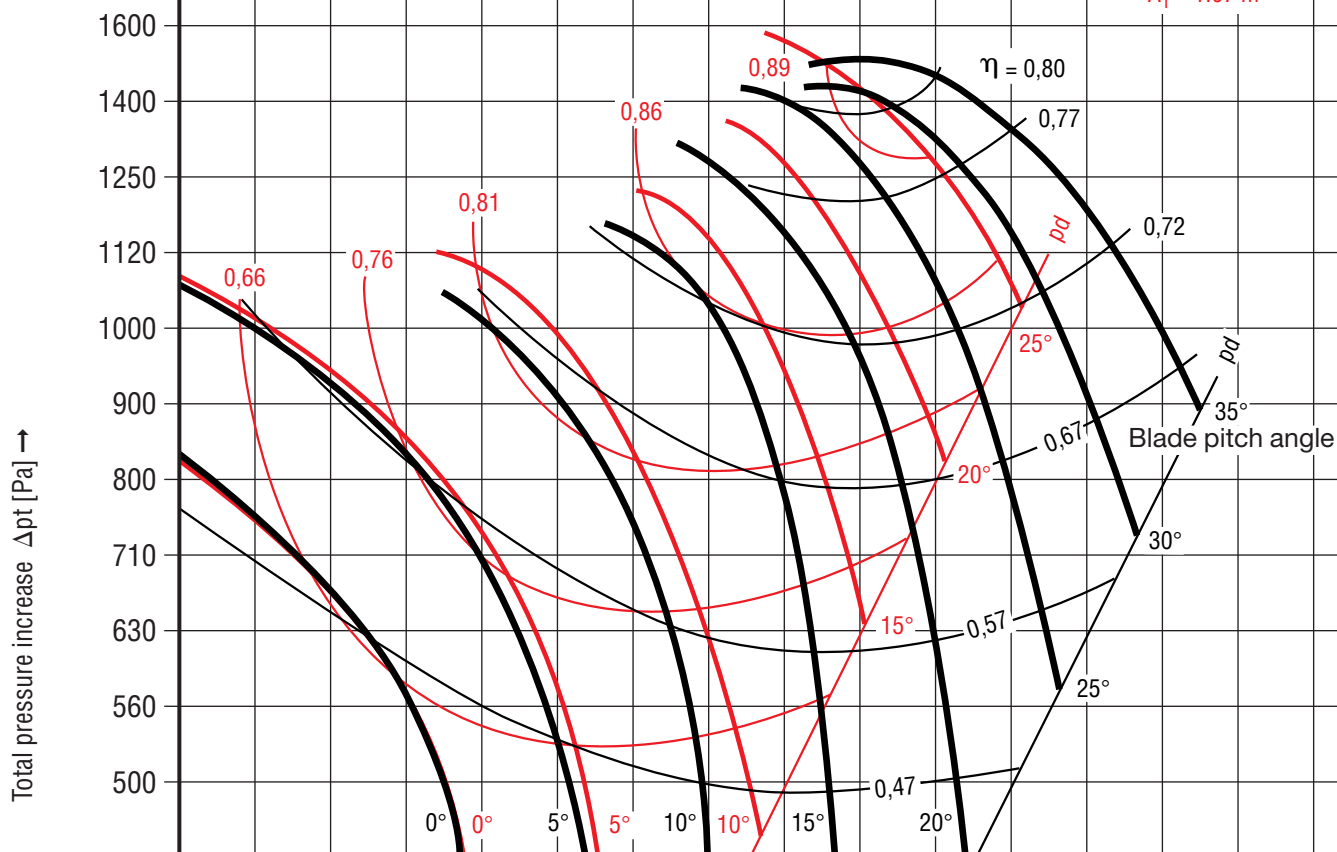
107

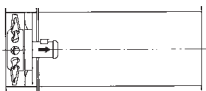
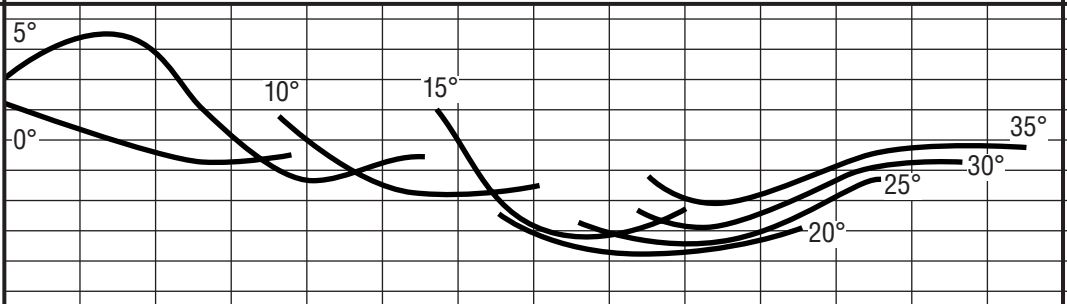
V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 72$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 10.05$ kg m²
Casing diameter d.i.L. = 1415 mm
Outlet cross section $A_2 = 1.57$ m²

$A_1 = 1.07$ m²



 with duct 2.5 D		50 000	56 000	63 000	71 000	80 000	90 000	100 000	112 000	125 000	140 000	160 000	180 000	200 000	$\dot{V}$ [m³/h] →
		14	16	18	20	22,4	25	28	31,5	35,5	40	45	50	56	$\dot{V}$ [m³/s] ↓
		9,0	10	11,2	12,5	14	16	18	20	22,4	25	28	31,5	35,5	c [m/s] →
		50	63	80	100	125	160	200	250	315	400	500	630	800	pd [Pa] →
 direct outlet		12,5	14	16	18	20	22,4	25	28	31,5	35,5	40	45	50	c [m/s] →
		100	125	160	200	250	315	400	500	630	800	1000	1250	1600	pd [Pa] →
Shaft power input requirement $P_w \text{ [kW]} = \frac{\dot{V} \text{ [m³/h]} \cdot \Delta p_t \text{ [Pa]}}{\eta \cdot 1000 \cdot 3600} =$															117
															116
															115
															114
															113
															112
															111
															110
															109
															108
															107

AXN-Direct drive

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/1600/D*
ROTATIONAL SPEED 740 RPM**

108

$\dot{V}$ = Volume flow [m³/h] or [m³/s]

p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]

c = Flow velocity [m/s]

Tip speed $u_2 = 61$ m/s

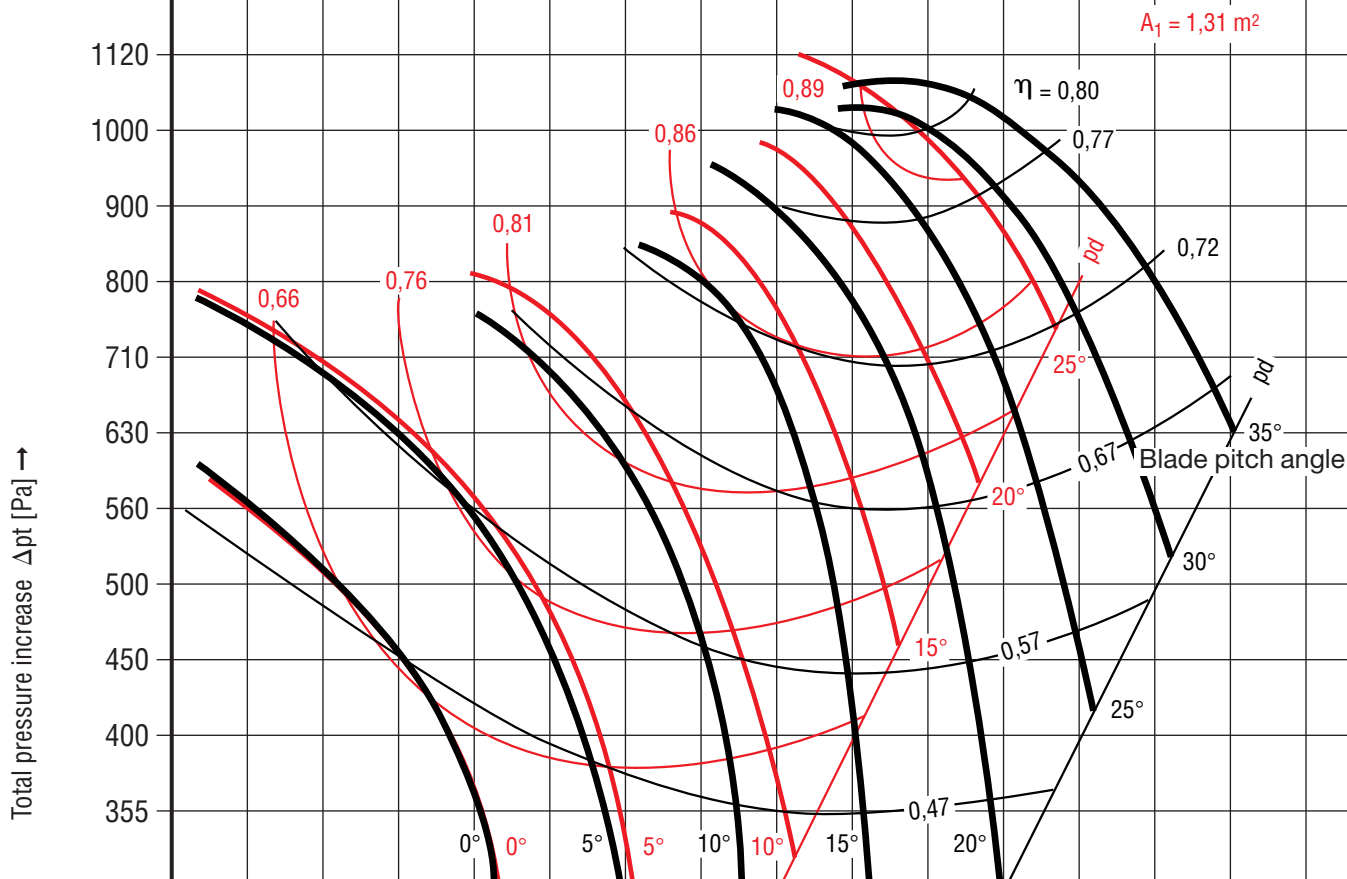
Temperature $t = 20^\circ\text{C}$

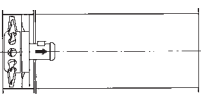
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 17.25$ kg m²

Casing diameter d.i.L. = 1587 mm

Outlet cross section $A_2 = 1.98$ m²



	50 000	56 000	63 000	71 000	80 000	90 000	100 000	112 000	125 000	140 000	160 000	180 000	200 000	$\dot{V}$ [m ³ /h] →
	14	16	18	20	22.4	25	28	31.5	35.5	40	45	50	56	$\dot{V}$ [m ³ /s] →
with duct 2.5 D	7.1	8.0	9.0	10	11.2	12.5	14	16	18	20	22.4	25	28	c [m/s] →
	31.5	40	50	63	80	100	125	160	200	250	315	400	500	p_d [Pa] →
	10	11.2	12.5	14	16	18	20	22.4	25	28	31.5	35.5	40	c [m/s] →
	63	80	100	125	160	200	250	315	400	500	630	800	1000	p_d [Pa] →
direct outlet	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	5°	
	10°	10°	10°	10°	10°	10°	10°	10°	10°	10°	10°	10°	10°	
Shaft power input requirement $P_w [\text{kW}] = \frac{\dot{V} [\text{m}^3/\text{h}] \cdot \Delta p_t [\text{Pa}]}{\eta \cdot 1000 \cdot 3600}$	114	113	112	111	110	109	108	107	106	105	104			Total acoustic power level L_w [dB]
	114	113	112	111	110	109	108	107	106	105	104			

* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/1600/D* ROTATIONAL SPEED 980 RPM

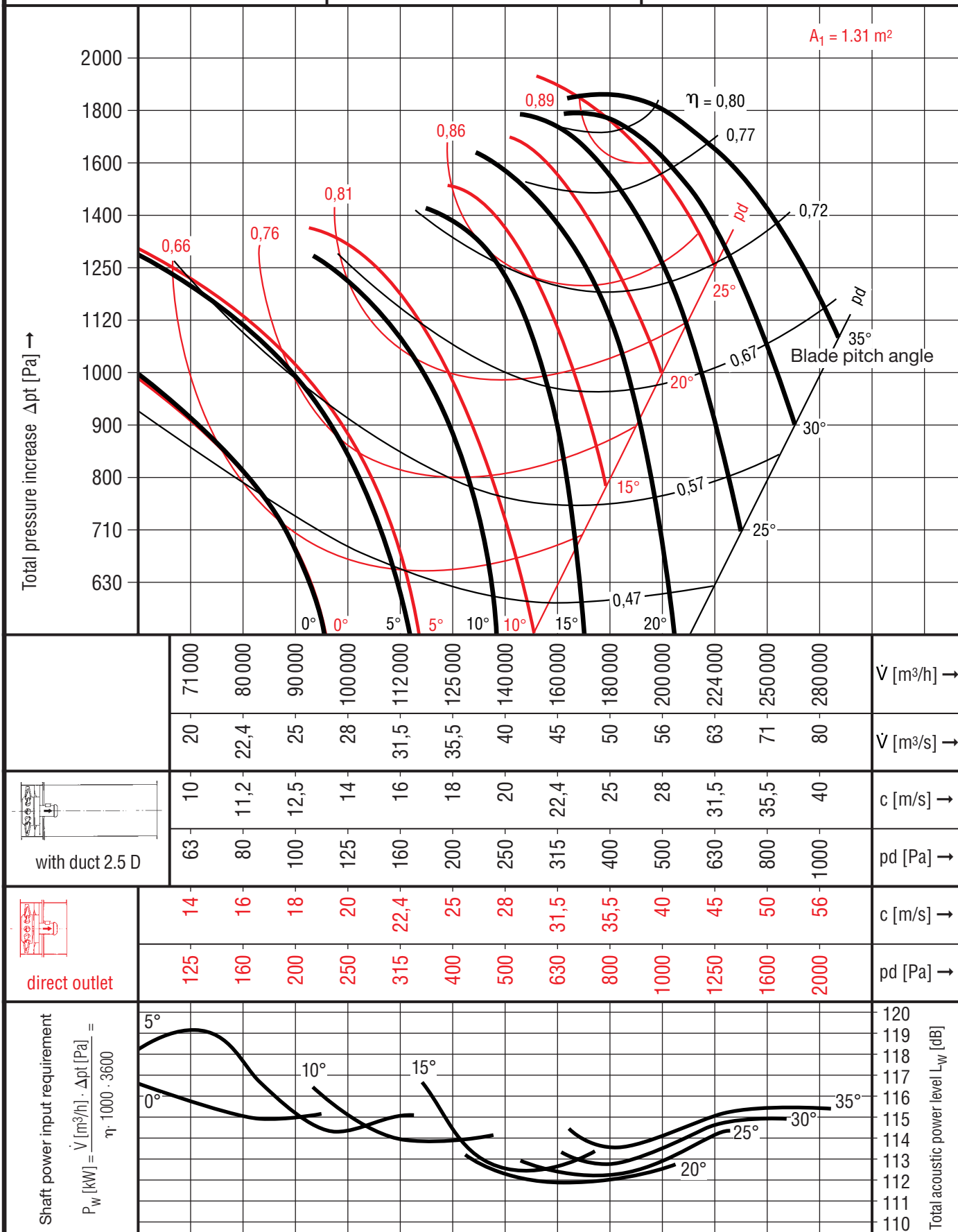
109

V = Volume flow [m³/h] or [m³/s]
pd = Dynamic pressure [Pa] or x 0.1 [kp/m²]
c = Flow velocity [m/s]

Tip speed $u_2 = 81$ m/s
Temperature $t = 20^\circ\text{C}$
Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 17.25$ kg m²
Casing diameter d.i.L. = 1587 mm
Outlet cross section $A_2 = 1.98$ m²

$A_1 = 1.31$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

AXN-Direct drive



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**CHARACTERISTIC CURVES – AXIAL FLOW FANS
DIRECT DRIVE, WITH OUTLET GUIDE VANES
TYPE AXN 12/56/1800/D*
ROTATIONAL SPEED 740 RPM**

110

V = Volume flow [m³/h] or [m³/s]

p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]

c = Flow velocity [m/s]

Tip speed $u_2 = 68$ m/s

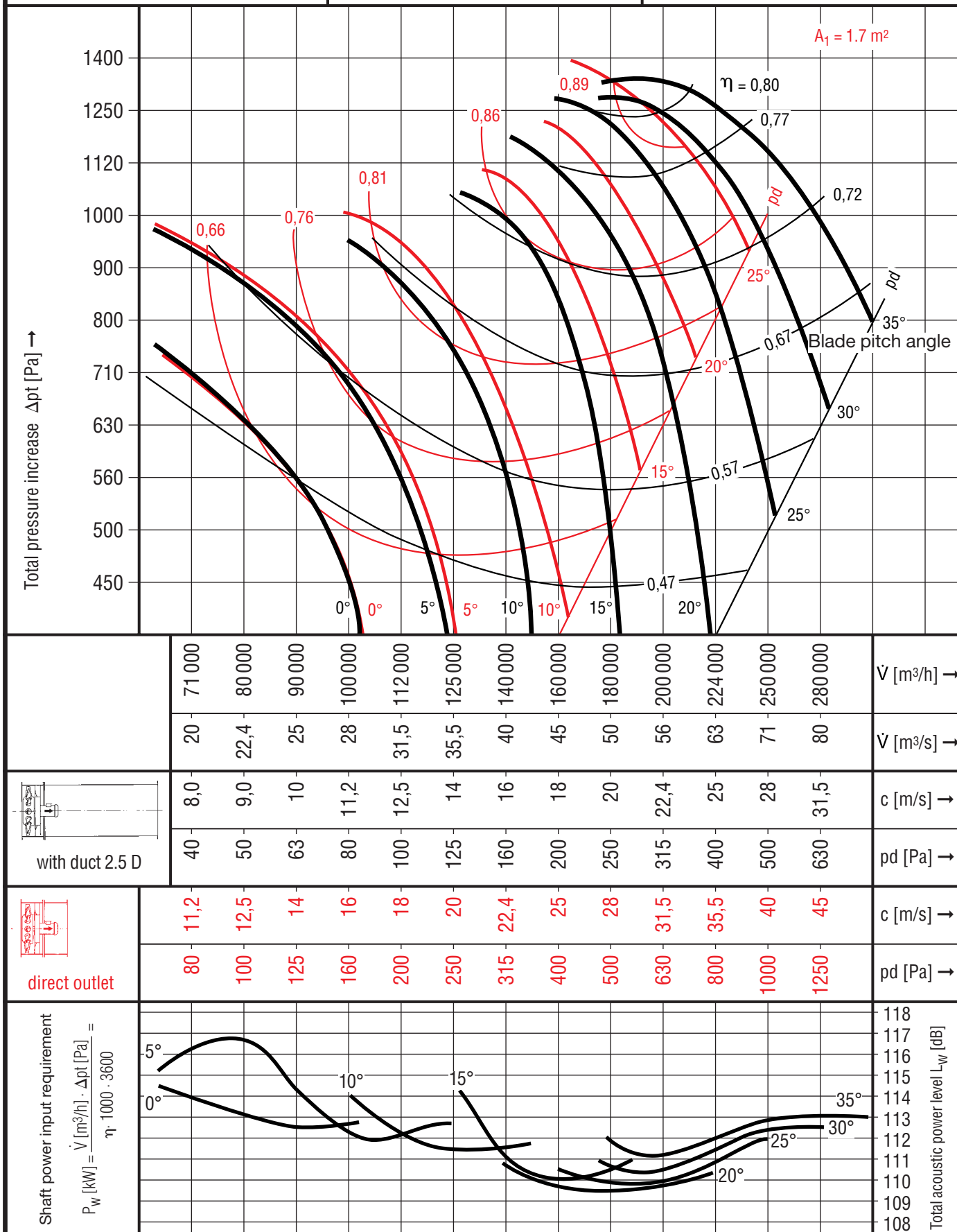
Temperature $t = 20^\circ\text{C}$

Density $\varrho = 1.2$ kg/m³

Moment of inertia $I = 28.75$ kg m²

Casing diameter d.i.L. = 1780 mm

Outlet cross section $A_2 = 2.49$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/2000/D* ROTATIONAL SPEED 580 RPM

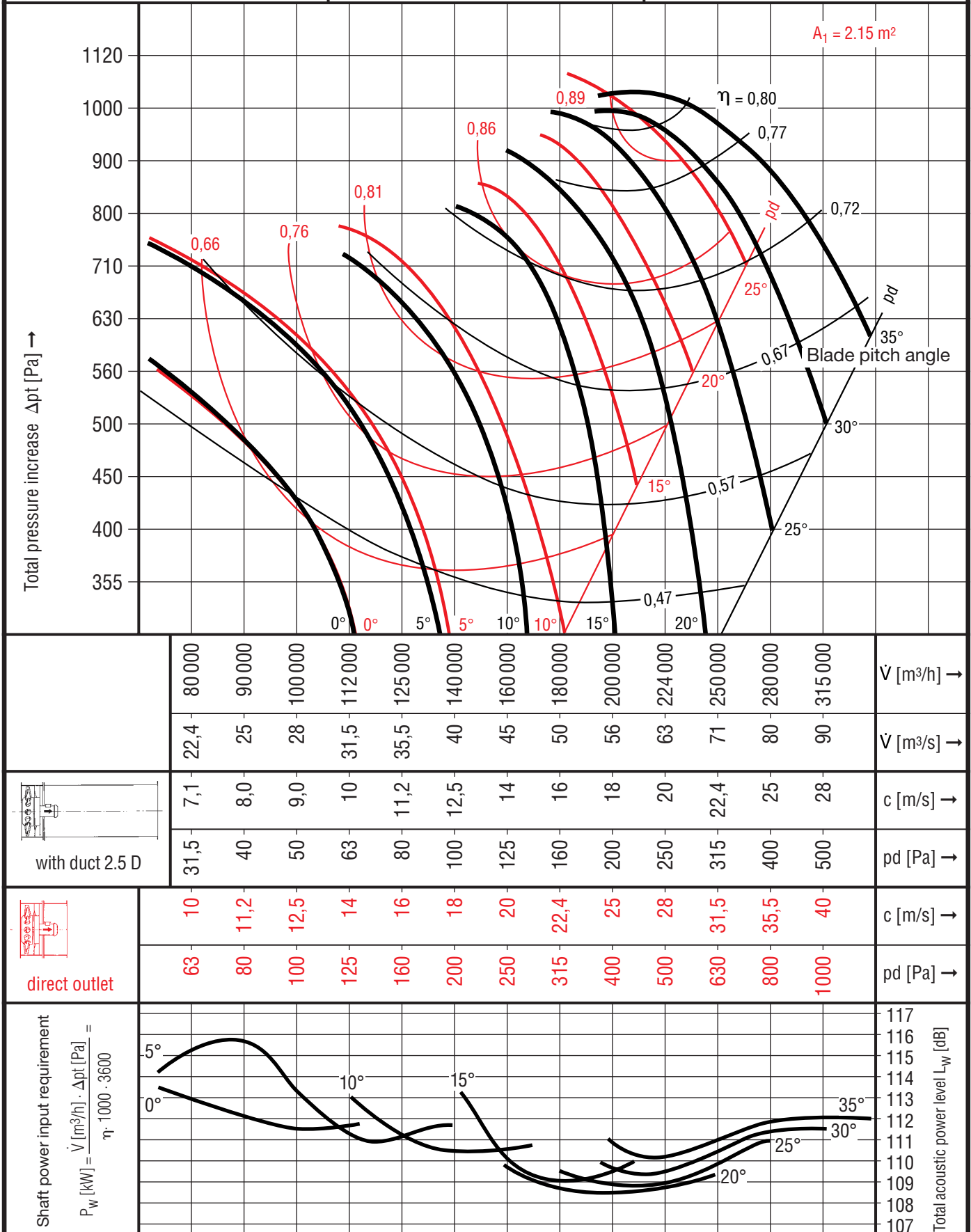
111

V = Volume flow [m^3/h] or [m^3/s]
 pd = Dynamic pressure [Pa] or $\times 0.1$ [kp/ m^2]
 c = Flow velocity [m/s]

Tip speed $u_2 = 60$ m/s
Temperature $t = 20^\circ \text{C}$
Density $\varrho = 1.2$ kg/ m^3

Moment of inertia $I = 43.75$ kg m^2
Casing diameter d.i.L. = 1997 mm
Outlet cross section $A_2 = 3.13$ m^2

$A_1 = 2.15$ m^2



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.



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CHARACTERISTIC CURVES – AXIAL FLOW FANS DIRECT DRIVE, WITH OUTLET GUIDE VANES TYPE AXN 12/56/2000/D* ROTATIONAL SPEED 740 RPM

112

V = Volume flow [m³/h] or [m³/s]

p_d = Dynamic pressure [Pa] or x 0.1 [kp/m²]

c = Flow velocity [m/s]

Tip speed $u_2 = 77$ m/s

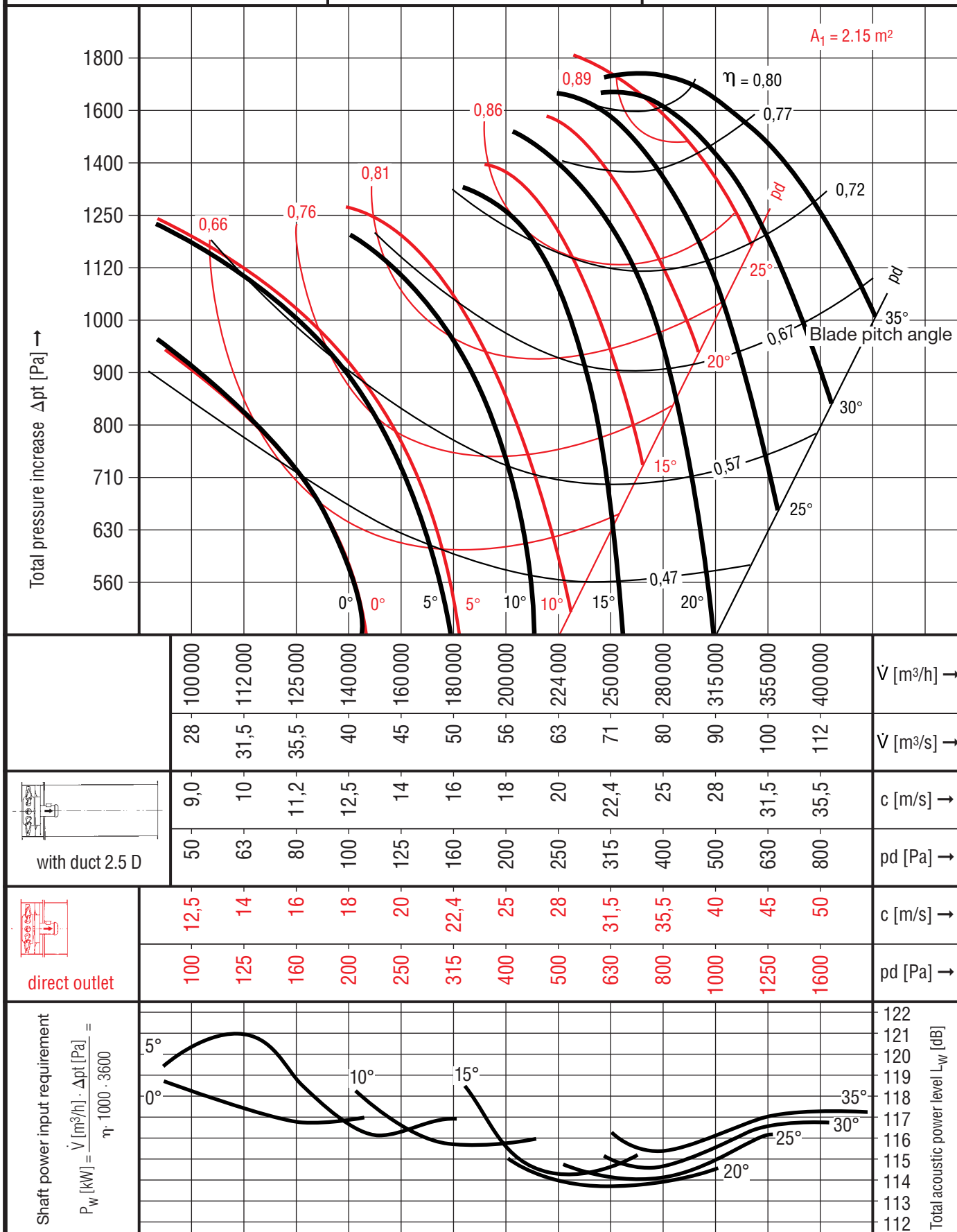
Temperature $t = 20^\circ\text{C}$

Density $\rho = 1.2$ kg/m³

Moment of inertia $I = 43.75$ kg m²

Casing diameter d.i.L. = 1997 mm

Outlet cross section $A_2 = 3.13$ m²



* Airflow direction D (motor in outlet) – Please inquire for Airflow direction S (motor in inlet)

Values rounded to standard figures.

Item Nr.	Qty.	Description	Unit price €	Total €																																				
		Axial Flow Fan – AXN Series, Type M-D Airflow direction: motor in outlet Direct-drive type consisting of Casing of welded sheet steel construction with drilled flanges according to DIN 24 154, Series 3. Outlet guide vanes for boosting outlet pressure and achieving an essentially swirl-free outlet flow Surface protection: • Polyester powder coating Colour: RAL 7030 • as of nominal size 1120: with full paint finish Colour: RAL 7030 Aluminium impeller, blade pitch steplessly adjustable when fan is at rest, directly mounted on motor shaft end. Outlet-side installation: • Duct connection • Direct outlet without diffuser • Outlet into diffuser (optional) Specifications <table><tr><td>Volume flow</td><td>m³/h</td></tr><tr><td>Temperature / humidity</td><td>°C / % RH</td></tr><tr><td>Dynamic pressure</td><td>Pa</td></tr><tr><td>Total pressure increase</td><td>Pa</td></tr><tr><td>Fan speed</td><td>rpm</td></tr><tr><td>Blade pitch angle</td><td>deg.</td></tr><tr><td>Total acoustic power level L_w</td><td>dB</td></tr><tr><td>Efficiency</td><td>%</td></tr><tr><td>Power input requirement</td><td>kW</td></tr></table> Three-phase a.c. motor • single speed • Dahlander pole-changing type • pole-changing type with seperate windings <table><tr><td>Motor speed</td><td>rpm</td></tr><tr><td>Motor output</td><td>kW</td></tr><tr><td>Current consumption</td><td>A</td></tr><tr><td>Voltage</td><td>Volt</td></tr><tr><td>Frequency</td><td>Hz</td></tr><tr><td>Protection class IP</td><td></td></tr><tr><td>Type B</td><td></td></tr><tr><td>Size</td><td></td></tr><tr><td>Weight</td><td>kg</td></tr></table> Manufacturer: TLT-Turbo GmbH Type: AXN 12/56/ M-D	Volume flow	m³/h	Temperature / humidity	°C / % RH	Dynamic pressure	Pa	Total pressure increase	Pa	Fan speed	rpm	Blade pitch angle	deg.	Total acoustic power level L _w	dB	Efficiency	%	Power input requirement	kW	Motor speed	rpm	Motor output	kW	Current consumption	A	Voltage	Volt	Frequency	Hz	Protection class IP		Type B		Size		Weight	kg		
Volume flow	m³/h																																							
Temperature / humidity	°C / % RH																																							
Dynamic pressure	Pa																																							
Total pressure increase	Pa																																							
Fan speed	rpm																																							
Blade pitch angle	deg.																																							
Total acoustic power level L _w	dB																																							
Efficiency	%																																							
Power input requirement	kW																																							
Motor speed	rpm																																							
Motor output	kW																																							
Current consumption	A																																							
Voltage	Volt																																							
Frequency	Hz																																							
Protection class IP																																								
Type B																																								
Size																																								
Weight	kg																																							
		Carryover																																						

Item Nr.	Qty.	Description	Unit price €	Total €
		Carryover Options: • Electric motor • Exterior terminal box wired to electric motor • Assembly cost for supplied motor • Galvanized fan • Fan with special coating • Extension casing without inspection hatch • Extension casing with inspection hatch • Inspection hatch in standard duct (nominal size 1120 and over) • Bellmouth inlet with flange • Wire guard on bellmouth or motor side • Wire guard on extension casing • Flexible connector, inlet side * • Flexible connector, outlet side * • Matching flange * • Angular wall ring with brackets * • Set of mounting feet (2 pcs.) * • Set of rubber antivibration mounts * • Set of spring-type antivibration mounts * • Brackets for vertical fan installation • Spark-proof equipment (hazardous-duty models only) • Diffuser with interior core * • Round silencer, TSR type * • Insulating casing Note: Please see our Installation, Operating and Maintenance Instructions available upon request.		
		* Loosely supplied		

Item Nr.	Qty.	Description	Unit price €	Total €
		Axial Flow Fan – AXN Series, Type M-A swing-out design, direct-drive type consisting of Casing of heavy-duty welded sheet steel construction with drilled flanges according to DIN 24 154, Series 4. Outlet guide vanes for boosting outlet pressure and achieving an essentially swirl-free outlet flow Surface protection: • Full paint finish, colour: RAL 7030 Aluminium impeller, blade pitch steplessly adjustable when fan is at rest, directly mounted on motor shaft end. Guide vane installation, motor mounting (with motor) and impeller can be jointly swivelled out for maintenance and cleaning. Outlet-side installation: • Duct connection • Direct outlet without diffuser • Outlet into diffuser (option) Specifications Volume flow m³/h Temperature / humidity °C / % RH Dynamic pressure Pa Total pressure increase Pa Fan speed rpm Blade pitch angle deg. Total acoustic power level L_w dB Efficiency % Power input requirement kW Three-phase a.c. motor • single speed • Dahlander pole-changing type • pole-changing type with separate windings Motor speed rpm Motor output kW Current consumption A Voltage Volt Frequency Hz Protection class IP Type B Size Weight kg Manufacturer: TLT-Turbo GmbH Type: AXN 12/56/ M-A		
		Carryover		

Item Nr.	Qty.	Description	Unit price €	Total €
		Carryover Options: • Electric motor • Exterior terminal box wired to electric motor • Assembly cost for supplied motor • Galvanized fan • Fan with special coating • Bellmouth inlet with flange • Wire guard on bellmouth or motor side • Wire guard on extension casing • Flexible connector, inlet side * • Flexible connector, outlet side * • Matching flange * • Angular wall ring with brackets * • Set of mounting feet (2 pcs.) * • Set of rubber antivibration mounts * • Set of spring-type antivibration mounts * • Brackets for vertical fan installation • Spark-proof equipment (hazardous-duty models only) • Diffuser with interior core * • Round silencer, TSR type * Note: Please see our Installation, Operating and Maintenance Instructions available upon request.		
		* Loosely supplied		



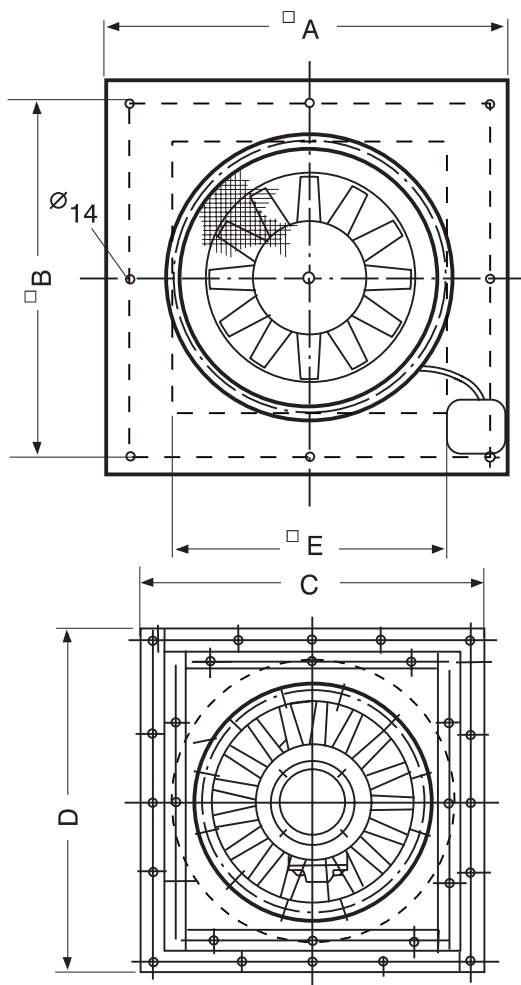
TLT-Turbo GmbH

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100

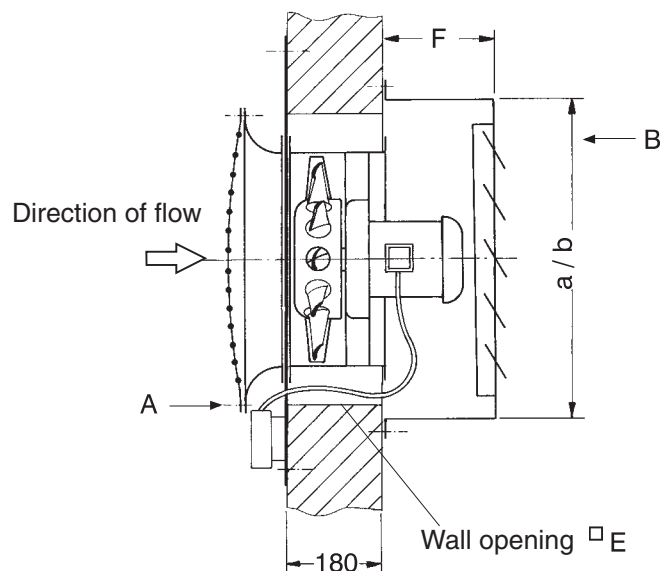
WALL-MOUNTING AXIAL FANS WAXN SERIES

117

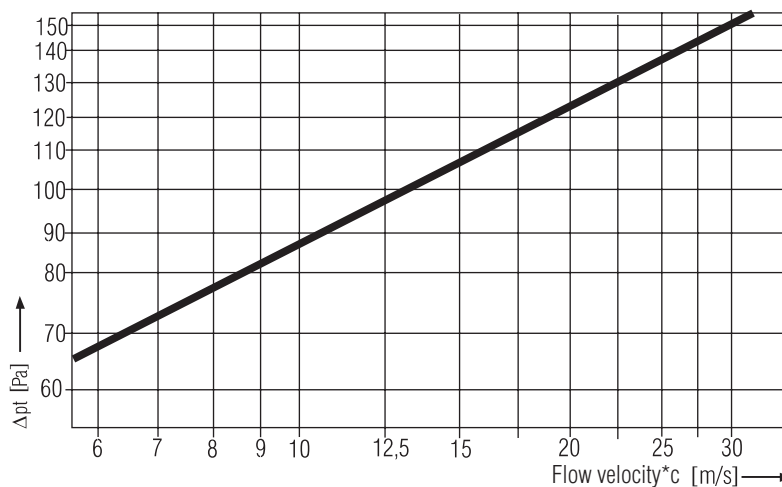
View „A“



View "B"
(shown without louvre-type damper)



Pressure loss across shutoff damper (overpressure louvre)



Pressure losses of fan and shutoff damper sum up to the total pressure increase needed for the sizing of complete fan units (assuming free inlet / free outlet conditions).

*For flow velocities please refer to the characteristic curves „free outlet“ installation (red curves and numbers)

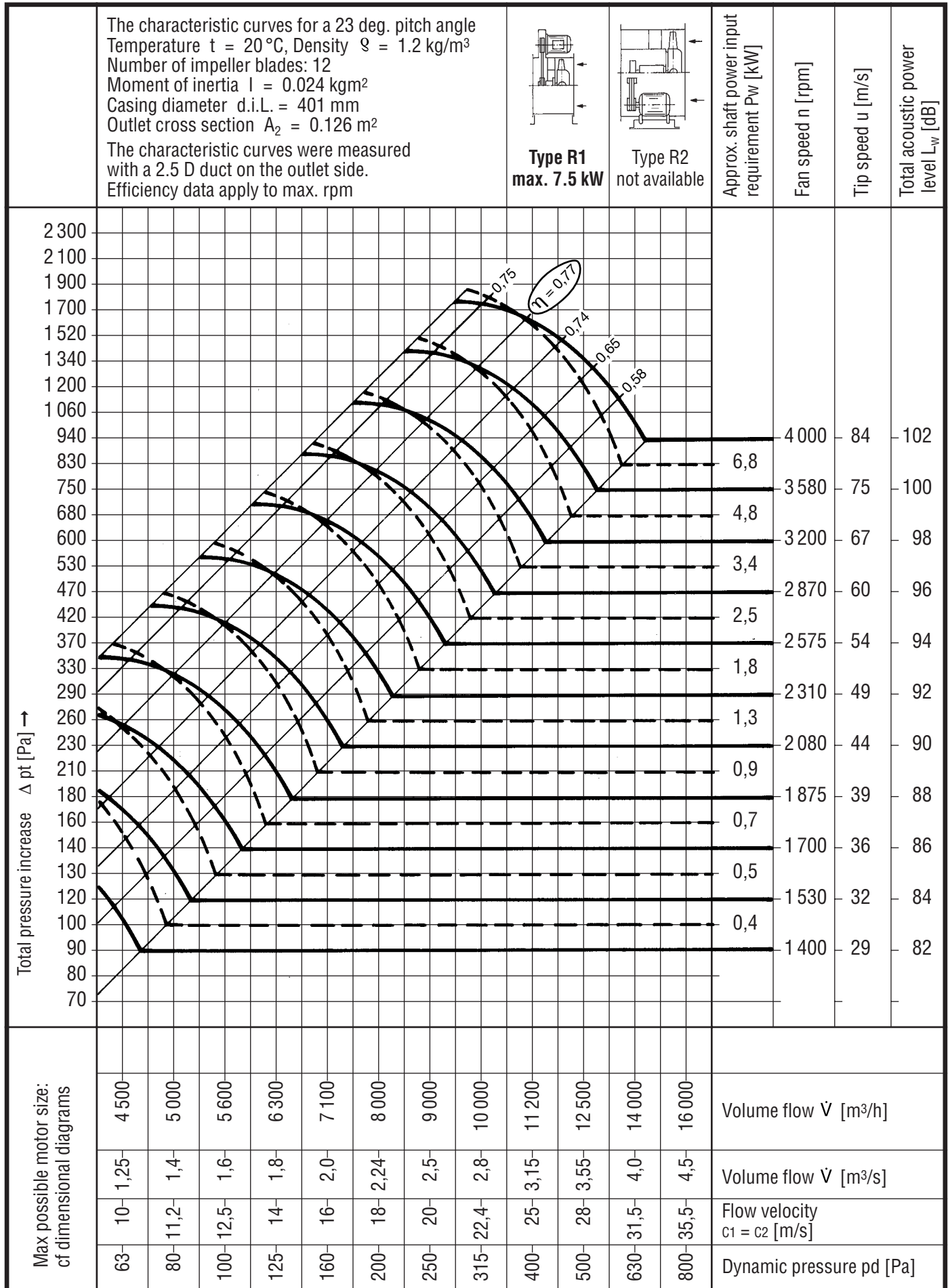
Please refer to characteristic curves on pages 077 to 093.

Size	A	B	C	D	E	F	a	b	Weight approx. [kg] (without motor)
400	800	720	677	695	550	330	602	583	35
500	900	820	777	795	650	430	702	683	50
630	1050	3 x 325 975	977	995	900	450	902	883	75
800	1400	4 x 330 1320	1177	1195	1000	650	1102	1083	115

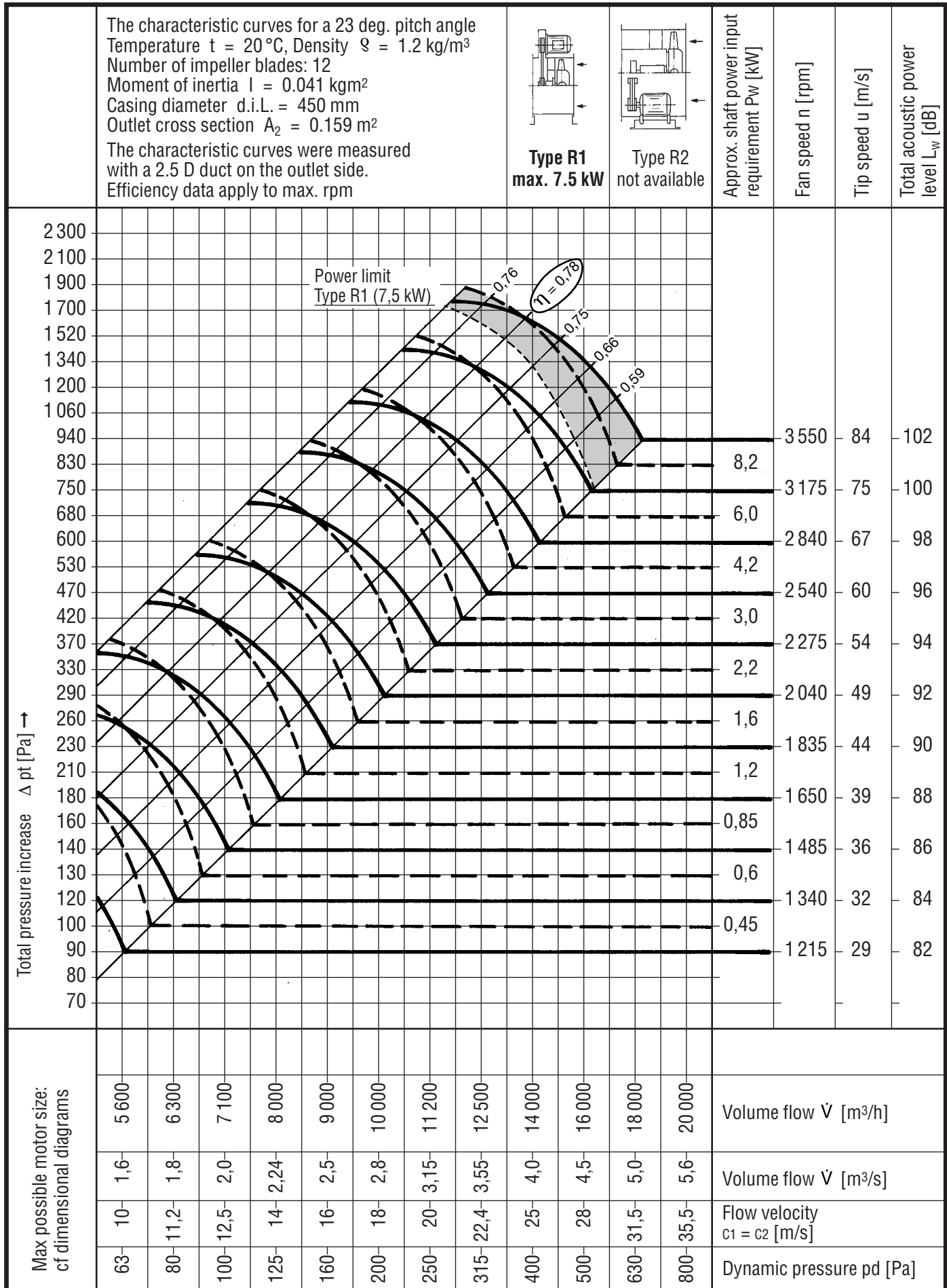
Dimensions in mm

For planning and installation please also refer to our Installation, Operating and Maintenance Instructions (MBW).

WAXN 12/56

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
BELT DRIVE
TYPE AXN 12/56/400/D*****119**

* Airflow direction D (motor in outlet) – values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
BELT DRIVE
TYPE AXN 12/56/450/D*****120**

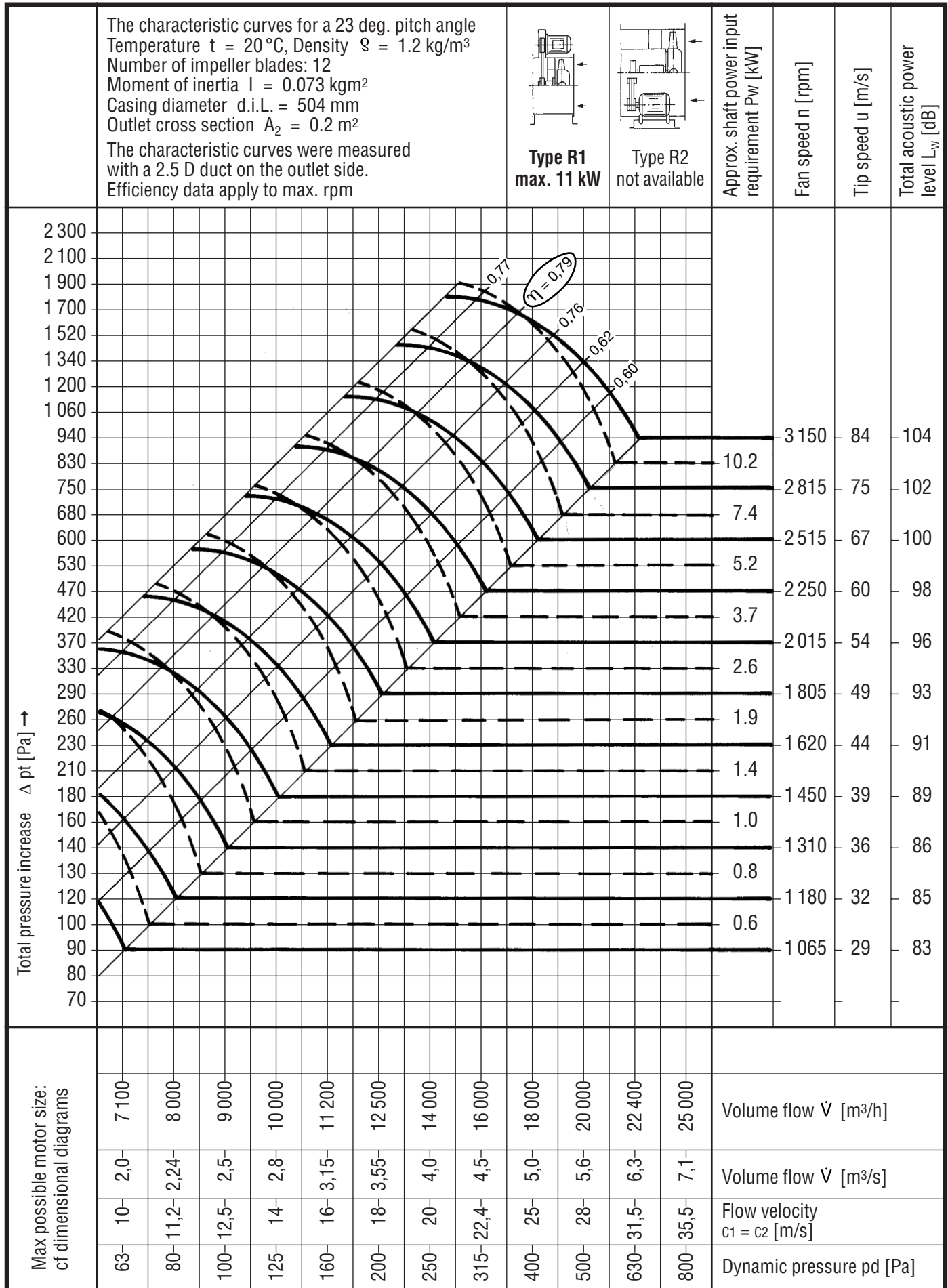


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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/500/D*

121



Belt drive

* Airflow direction D (motor in outlet) – values rounded to standard figures.

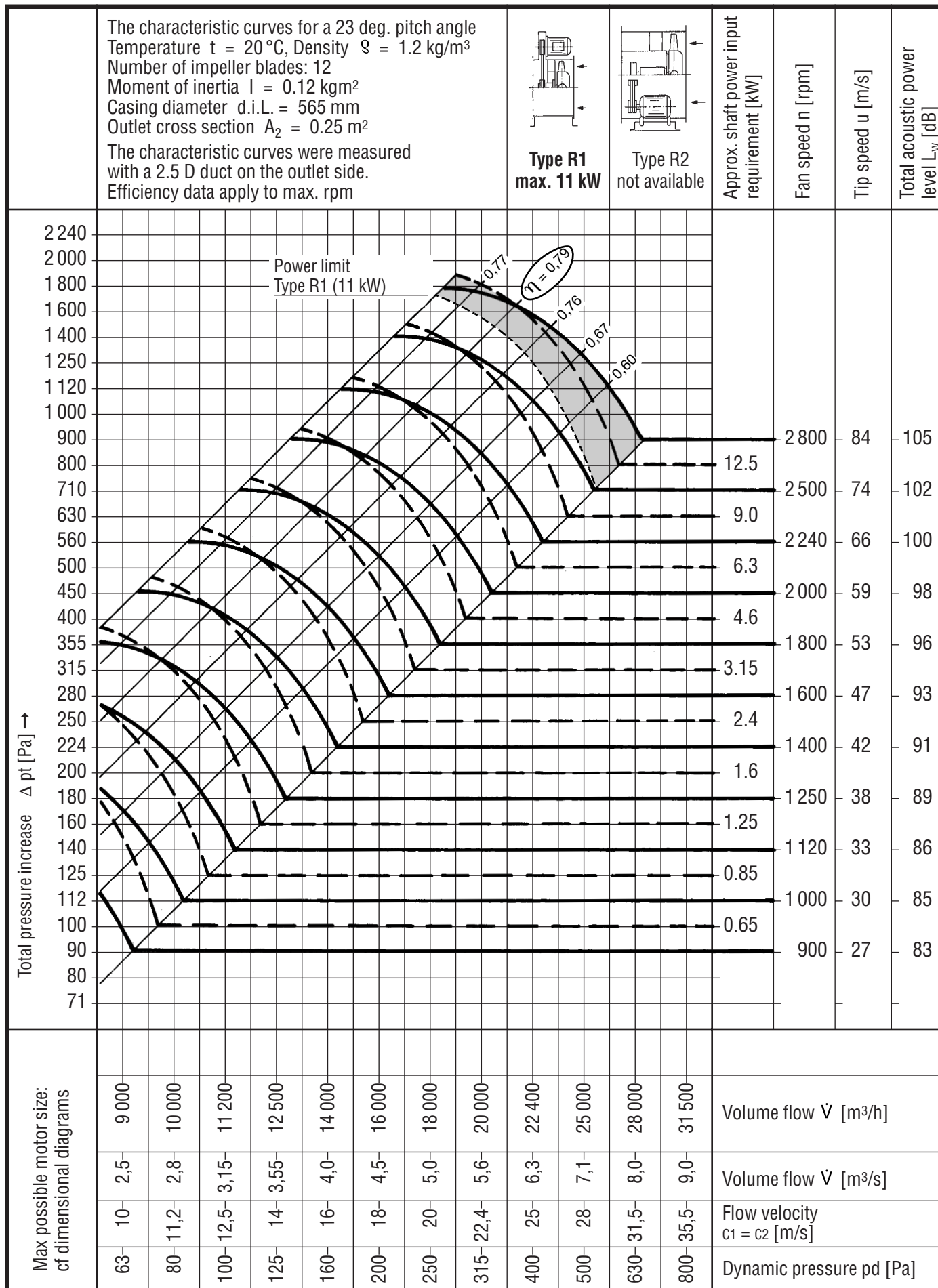


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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/560/D*

122



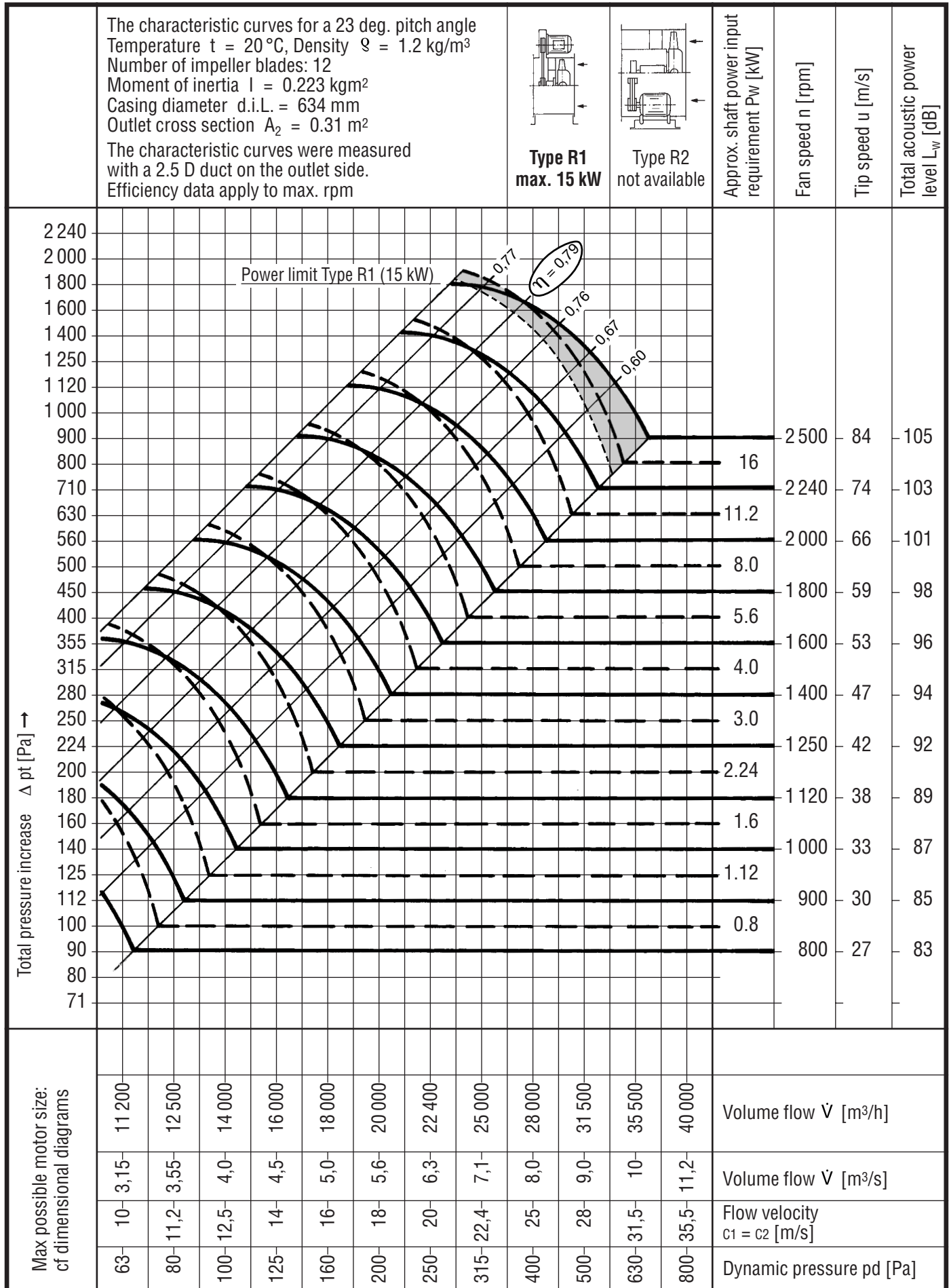


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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/630/D*

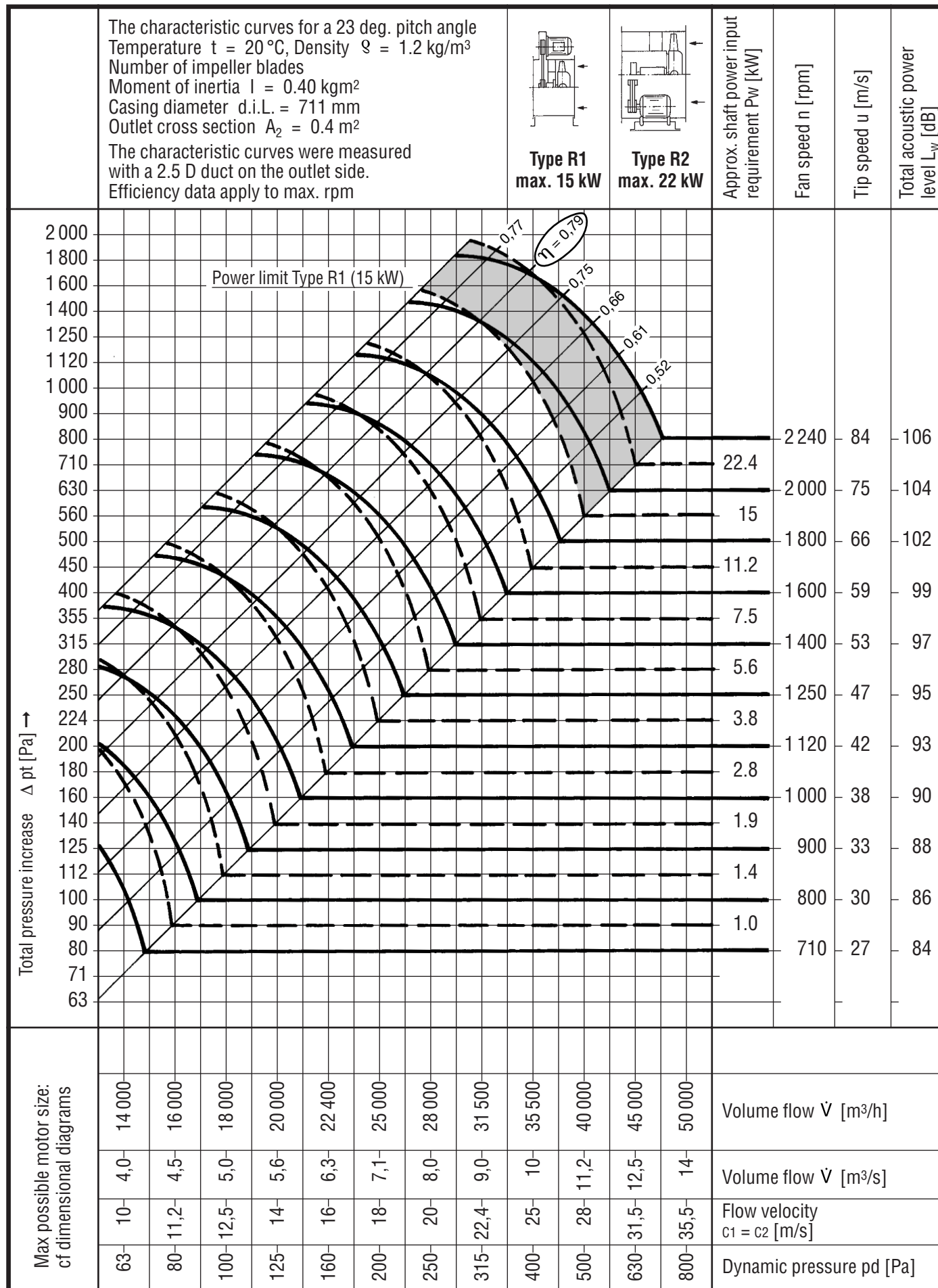
123



Belt drive

Fans with operating point in grid area upon request

* Airflow direction D (motor in outlet) – values rounded to standard figures.

**TLT-Turbo GmbH**Am Weinberg 68 · D-36251 Bad Hersfeld/Germany
Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
BELT DRIVE
TYPE AXN 12/56/710/D*****124**

* Airflow direction D (motor in outlet) – values rounded to standard figures.

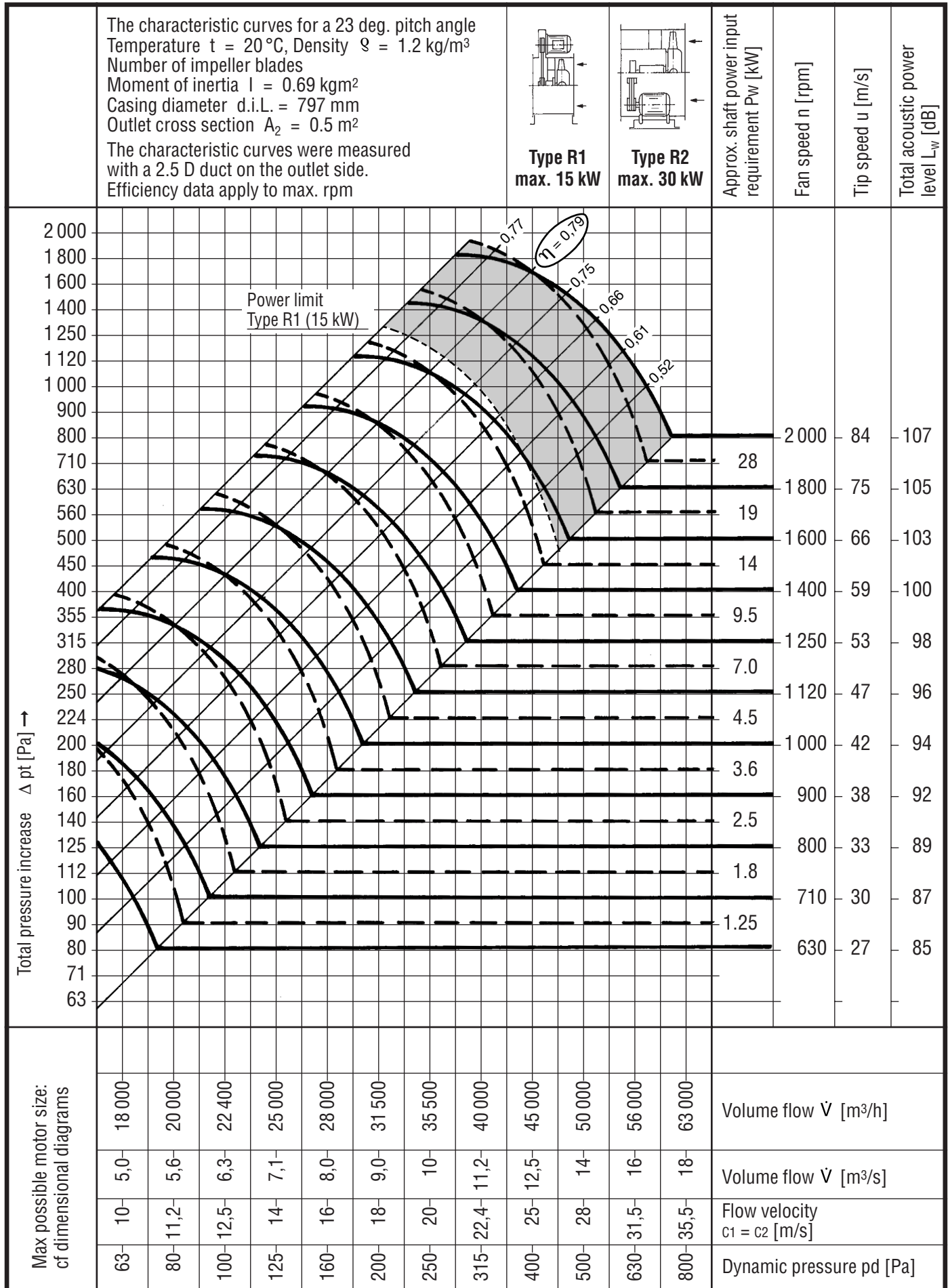


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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/800/D*

125



* Airflow direction D (motor in outlet) – values rounded to standard figures.

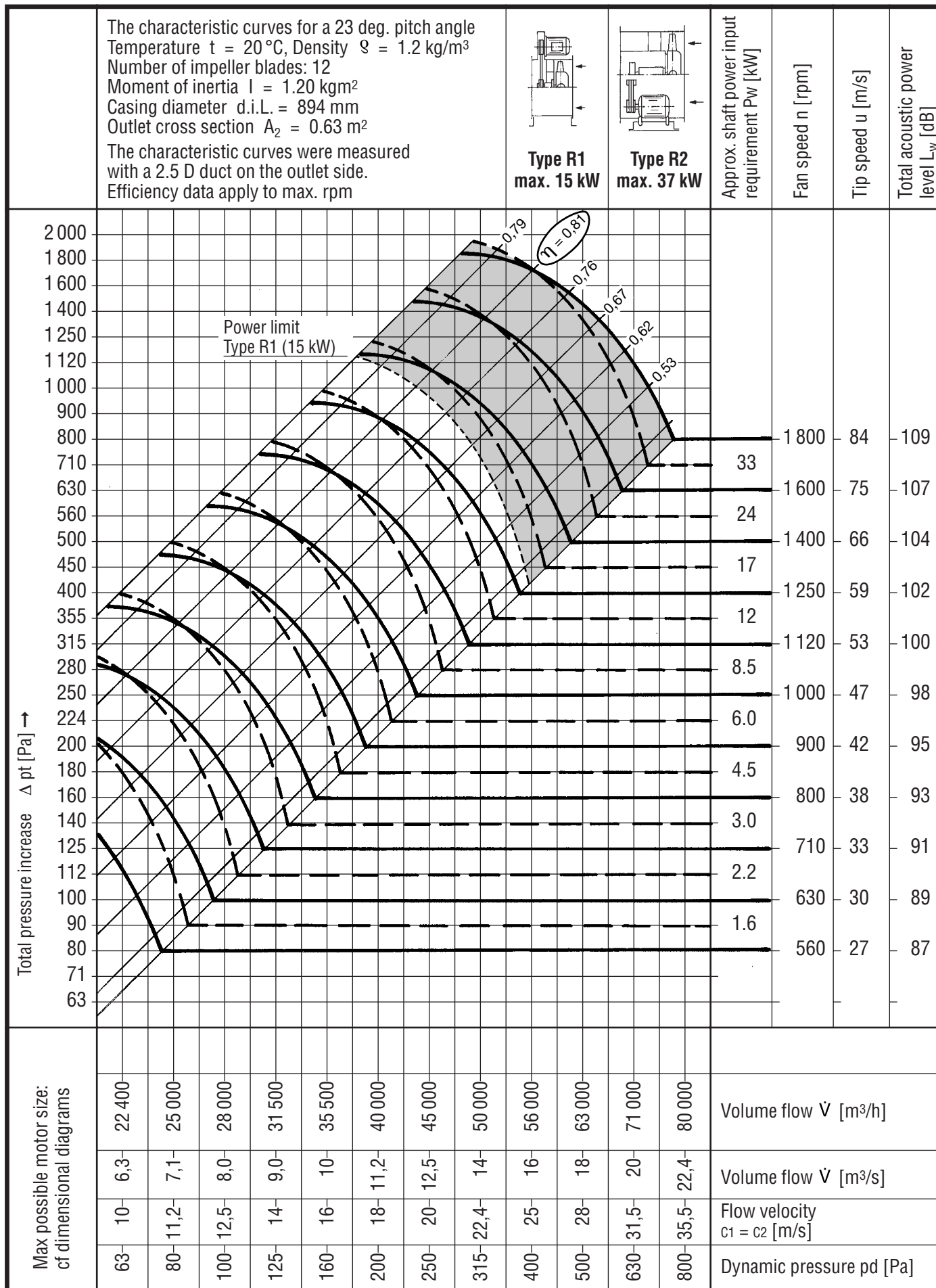


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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/900/D*

126



* Airflow direction D (motor in outlet) – values rounded to standard figures.

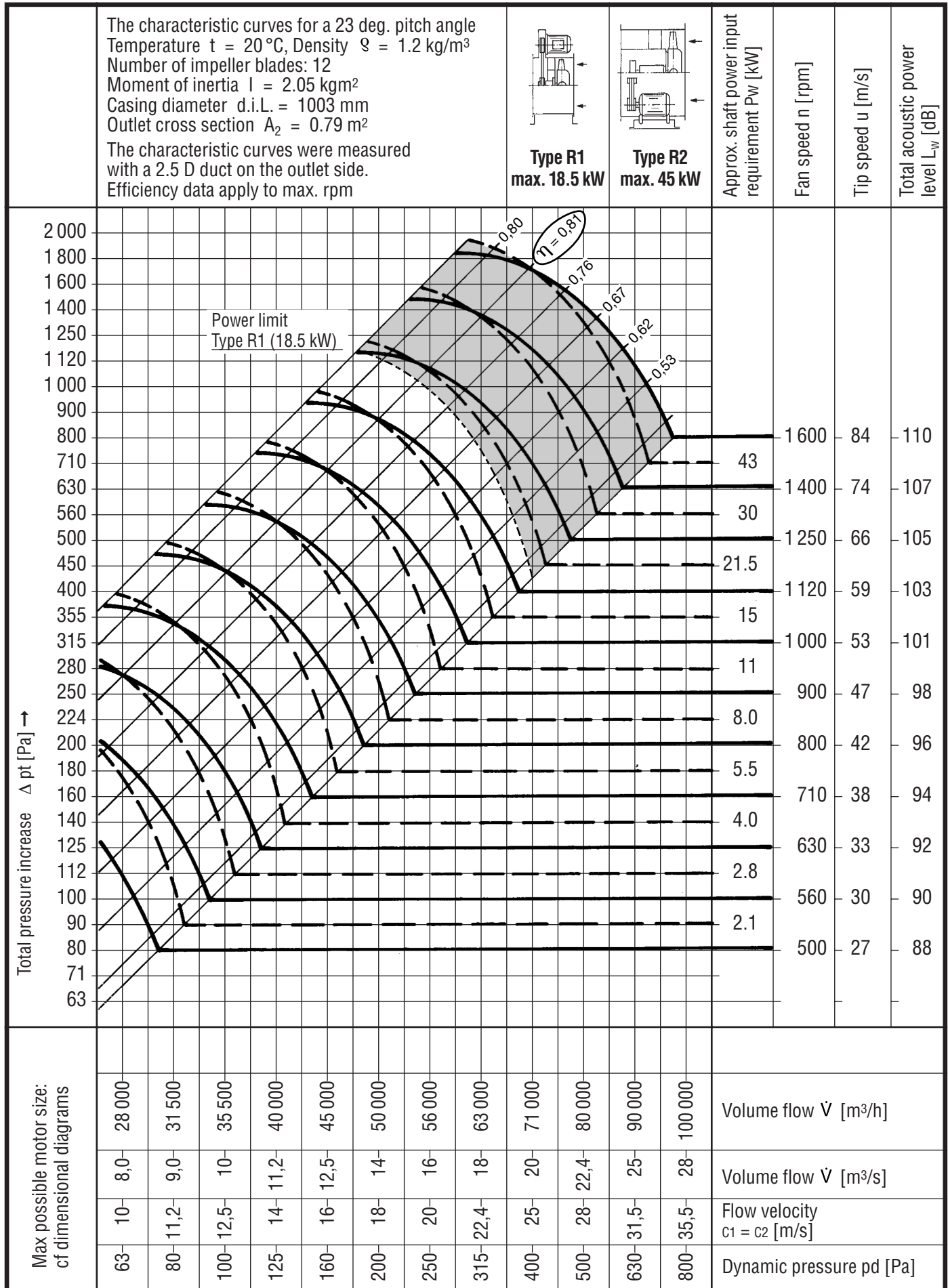


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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/1000/D*

127



* Airflow direction D (motor in outlet) – values rounded to standard figures.

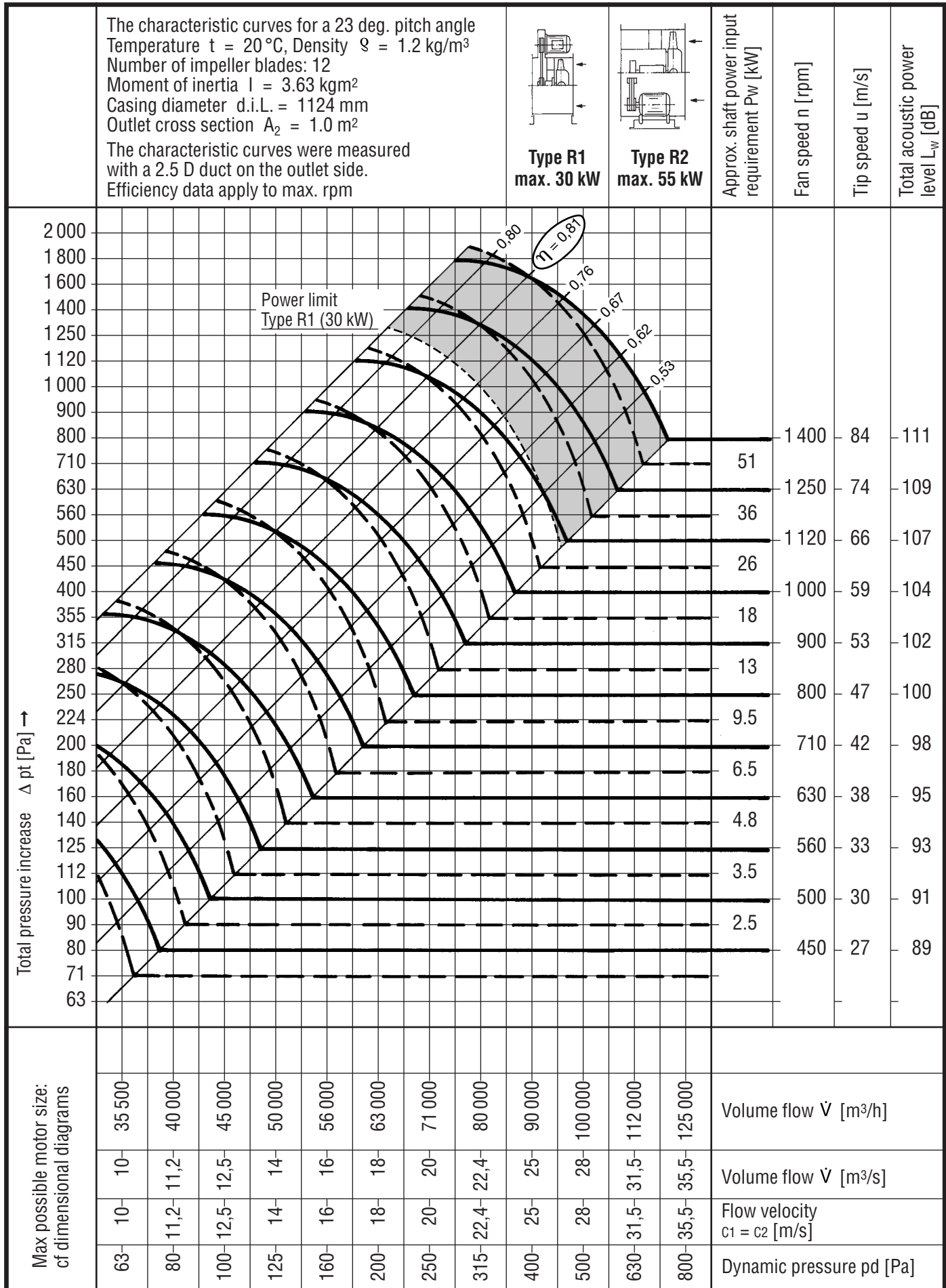


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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/1120/D*

128



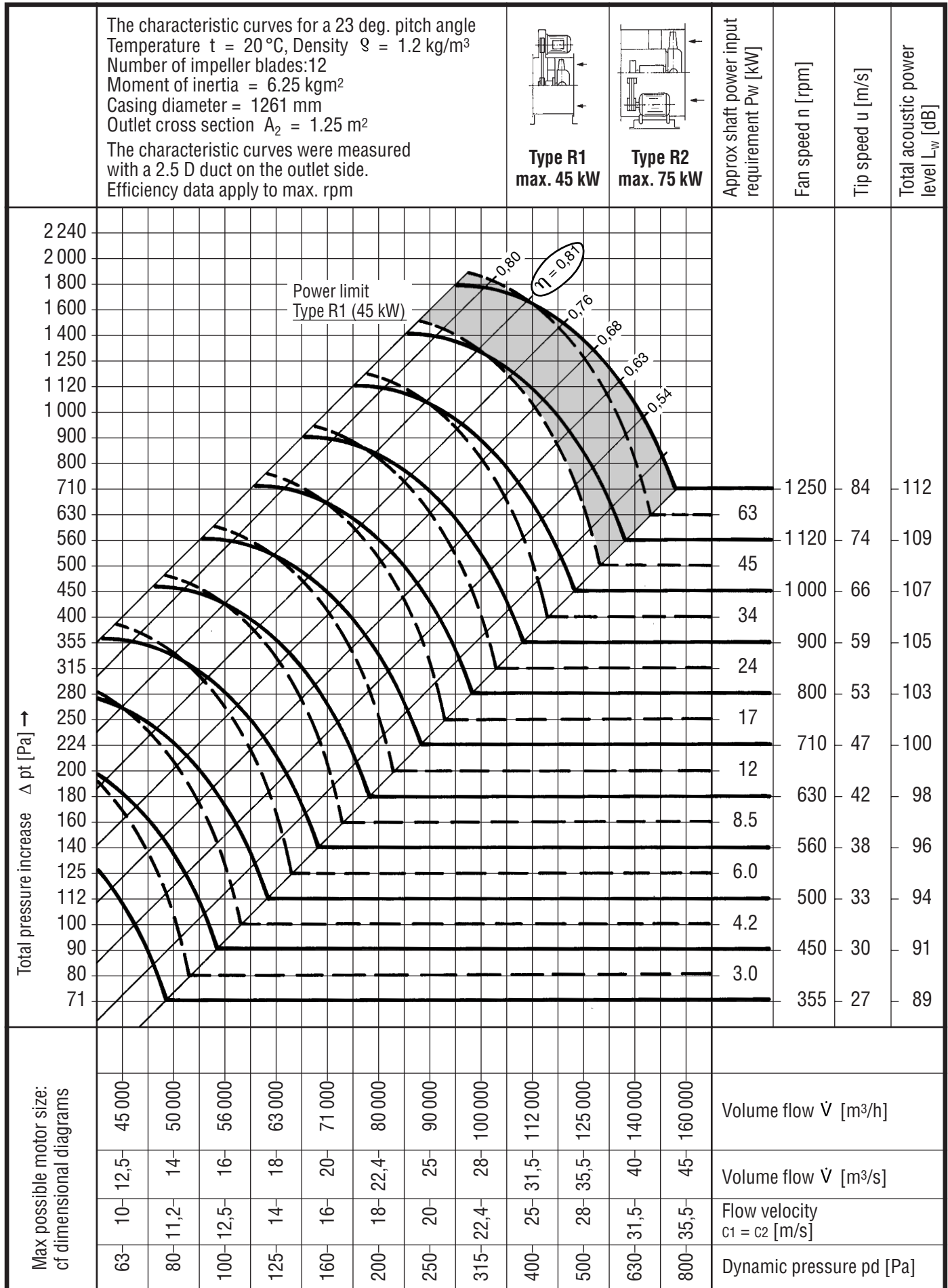


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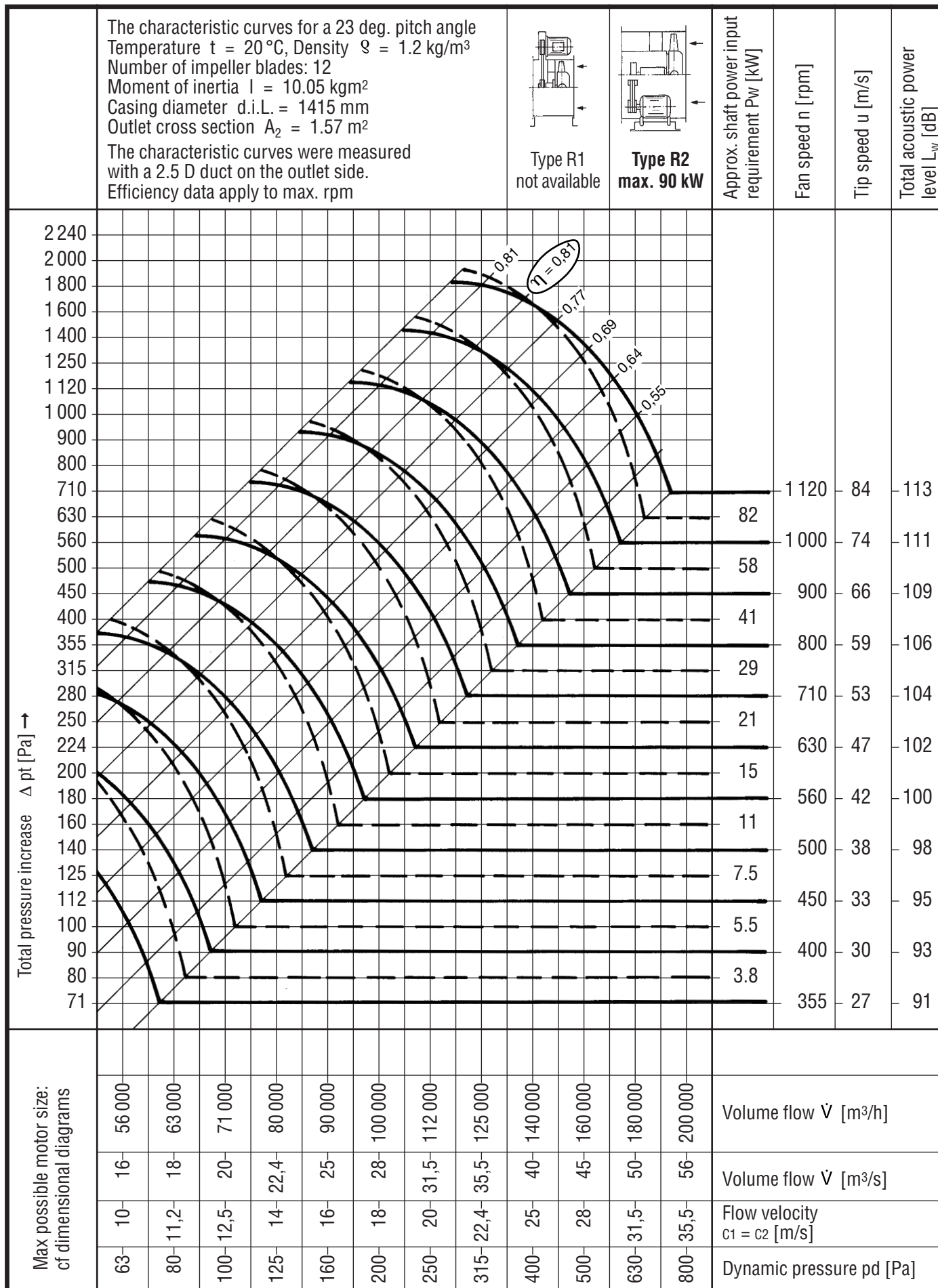
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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/1250/D*

129



* Airflow direction D (motor in outlet) – values rounded to standard figures.

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
BELT DRIVE
TYPE AXN 12/56/1400/D*****130**

* Airflow direction D (motor in outlet) – values rounded to standard figures.

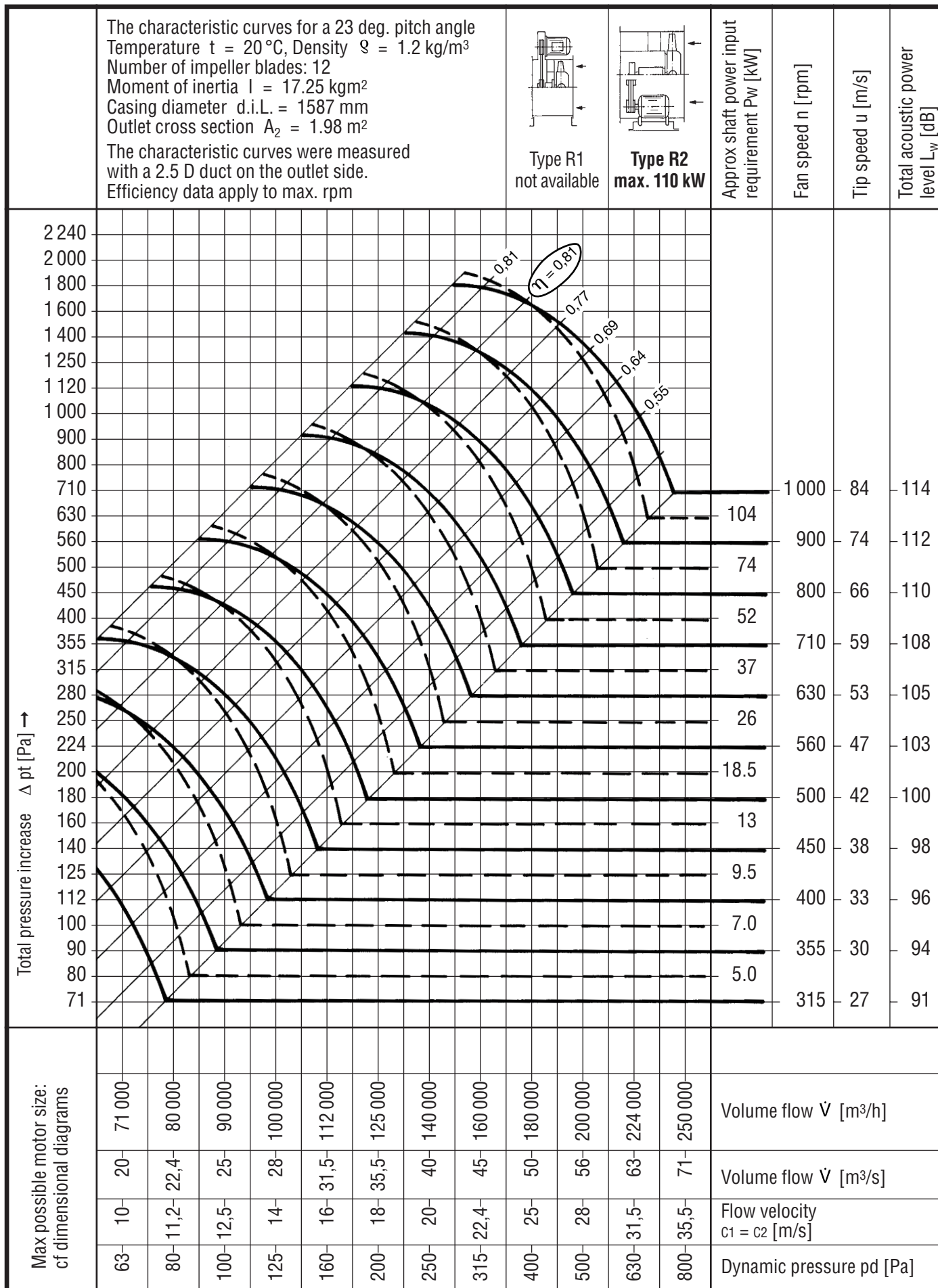


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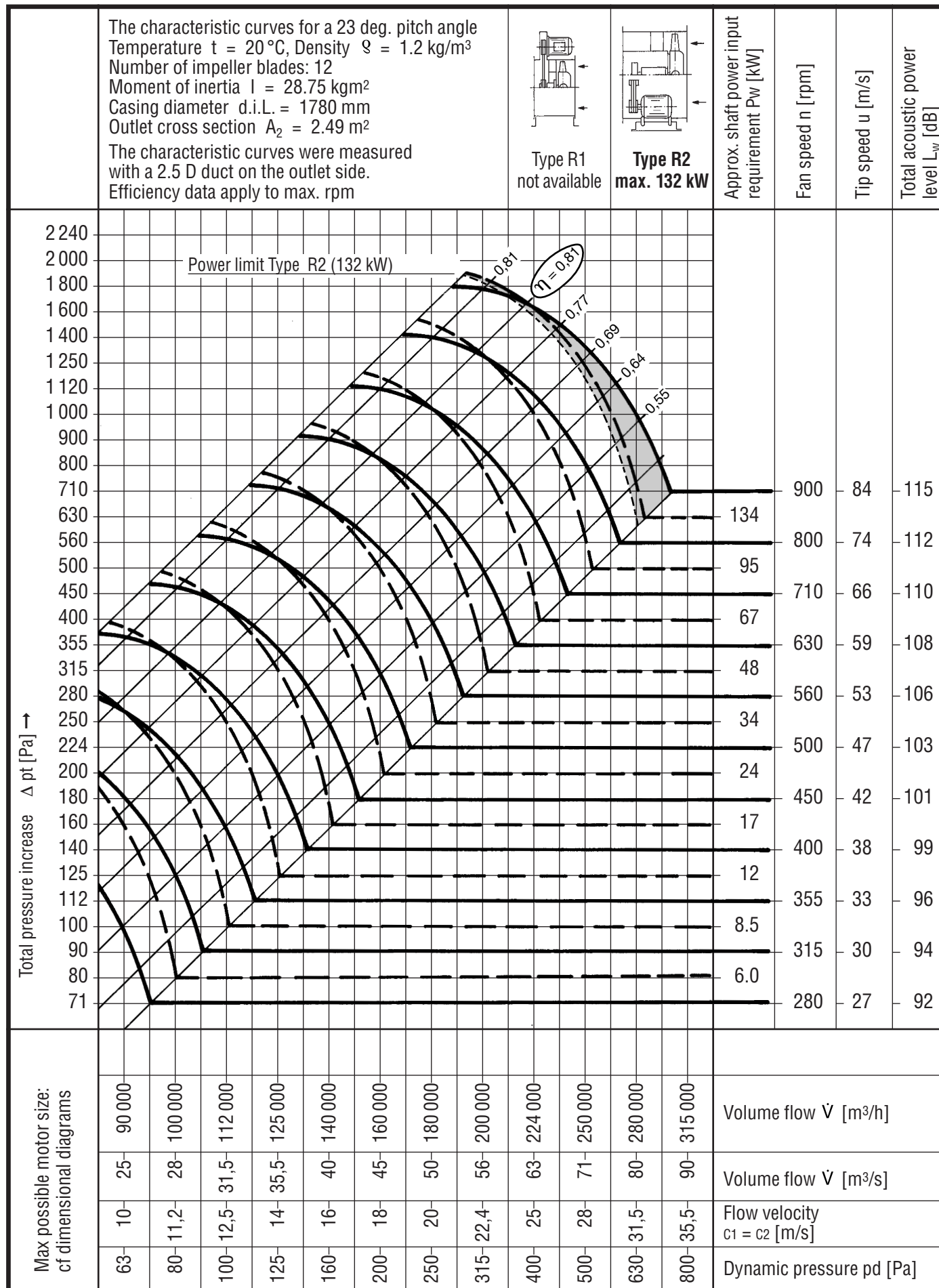
CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/1600/D*

131



* Airflow direction D (motor in outlet) – values rounded to standard figures.

Belt drive

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
BELT DRIVE
TYPE AXN 12/56/1800/D*****132**

Fans with operating point in grid area upon request

* Airflow direction D (motor in outlet) – values rounded to standard figures.

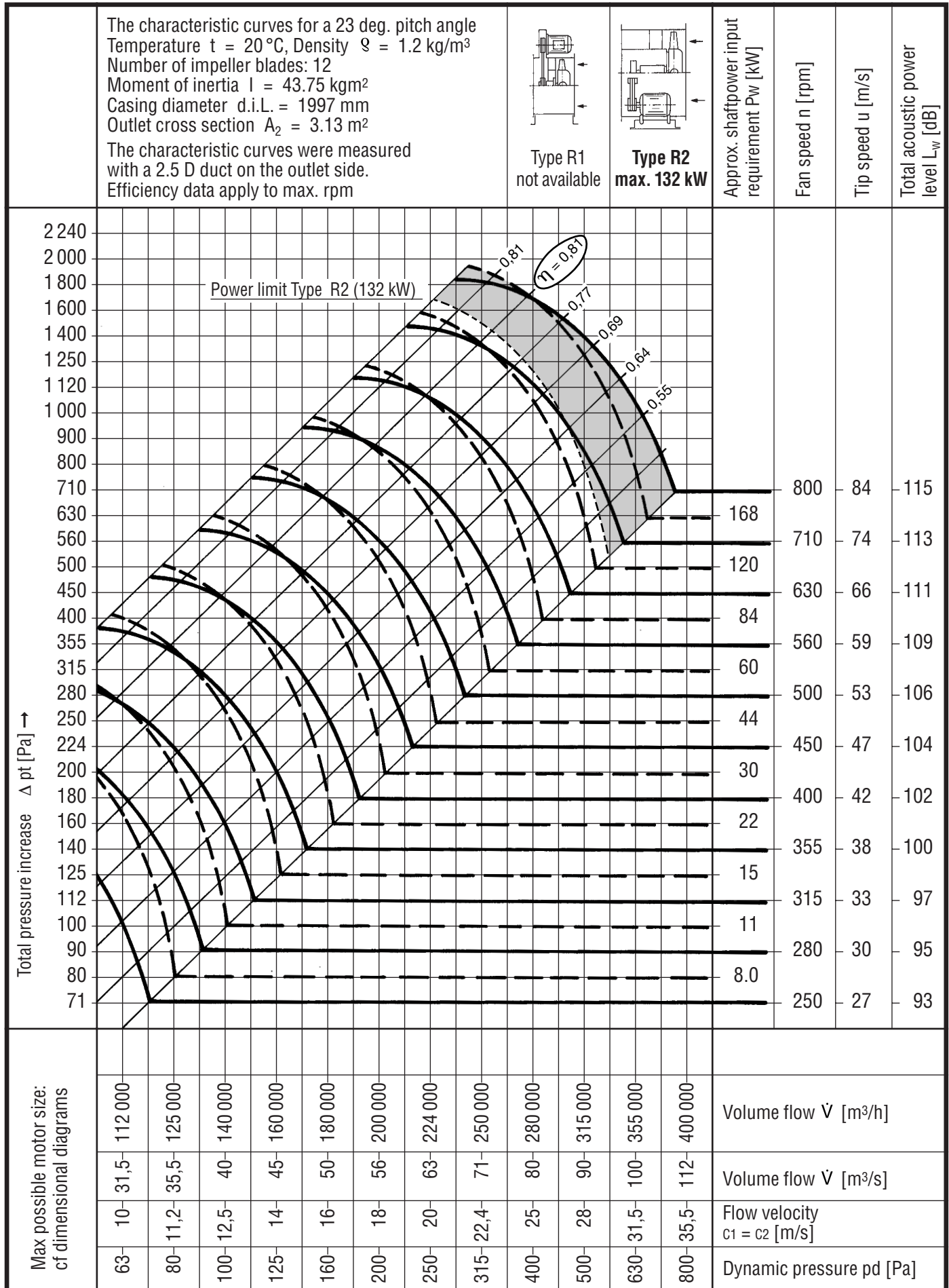


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Phone: +49.6621.950-0 · Fax: +49.6621.950-100

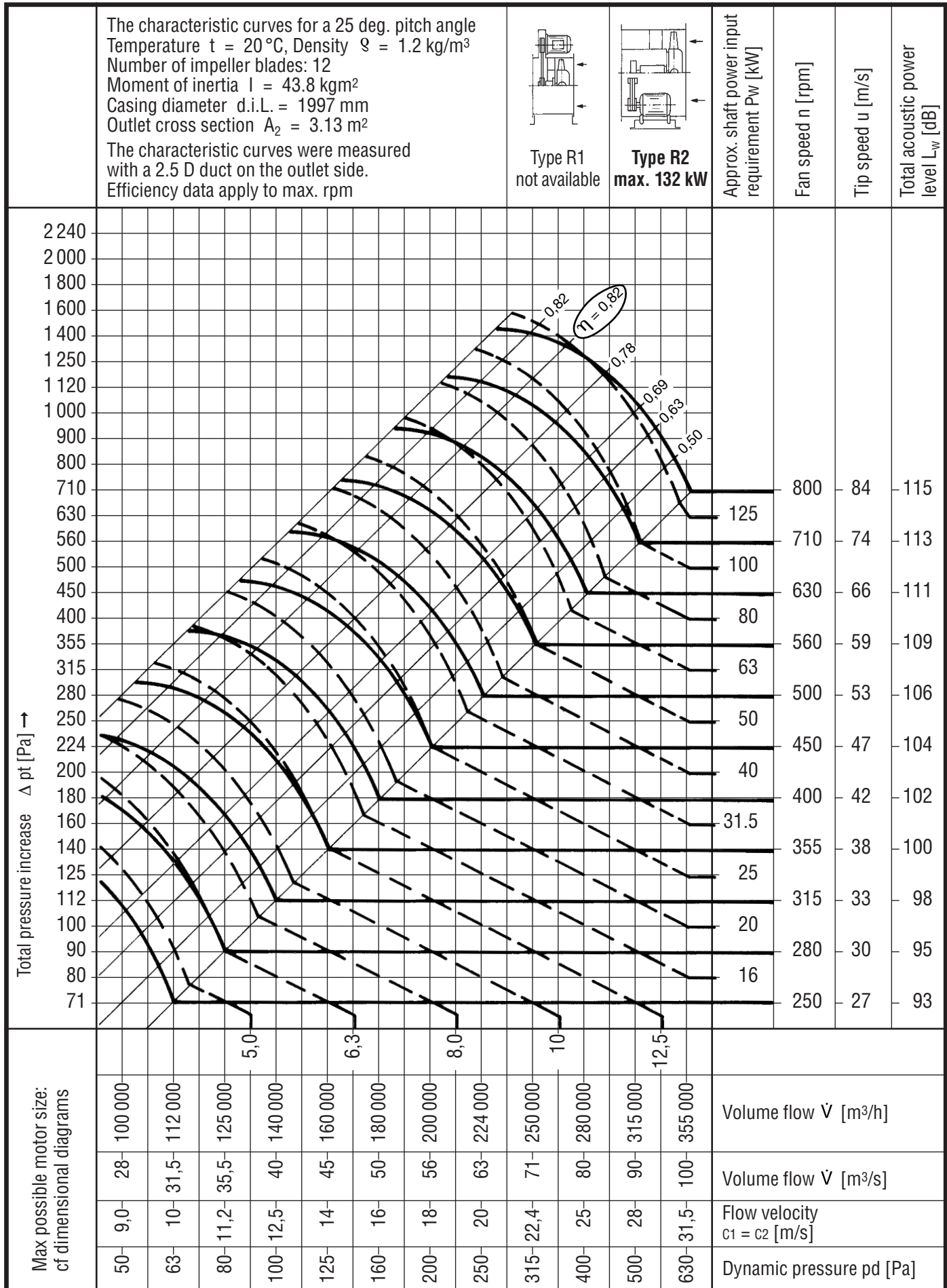
CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/56/2000/D*

133



Fans with operating point in grid area upon request

* Airflow direction D (motor in outlet) – values rounded to standard figures.

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Phone: +49.6621.950-0 · Fax: +49.6621.950-100**CHARACTERISTIC CURVES – AXIAL FLOW FANS
BELT DRIVE
TYPE AXN 12/50/2000/D*****134**

* Airflow direction D (motor in outlet) – values rounded to standard figures.

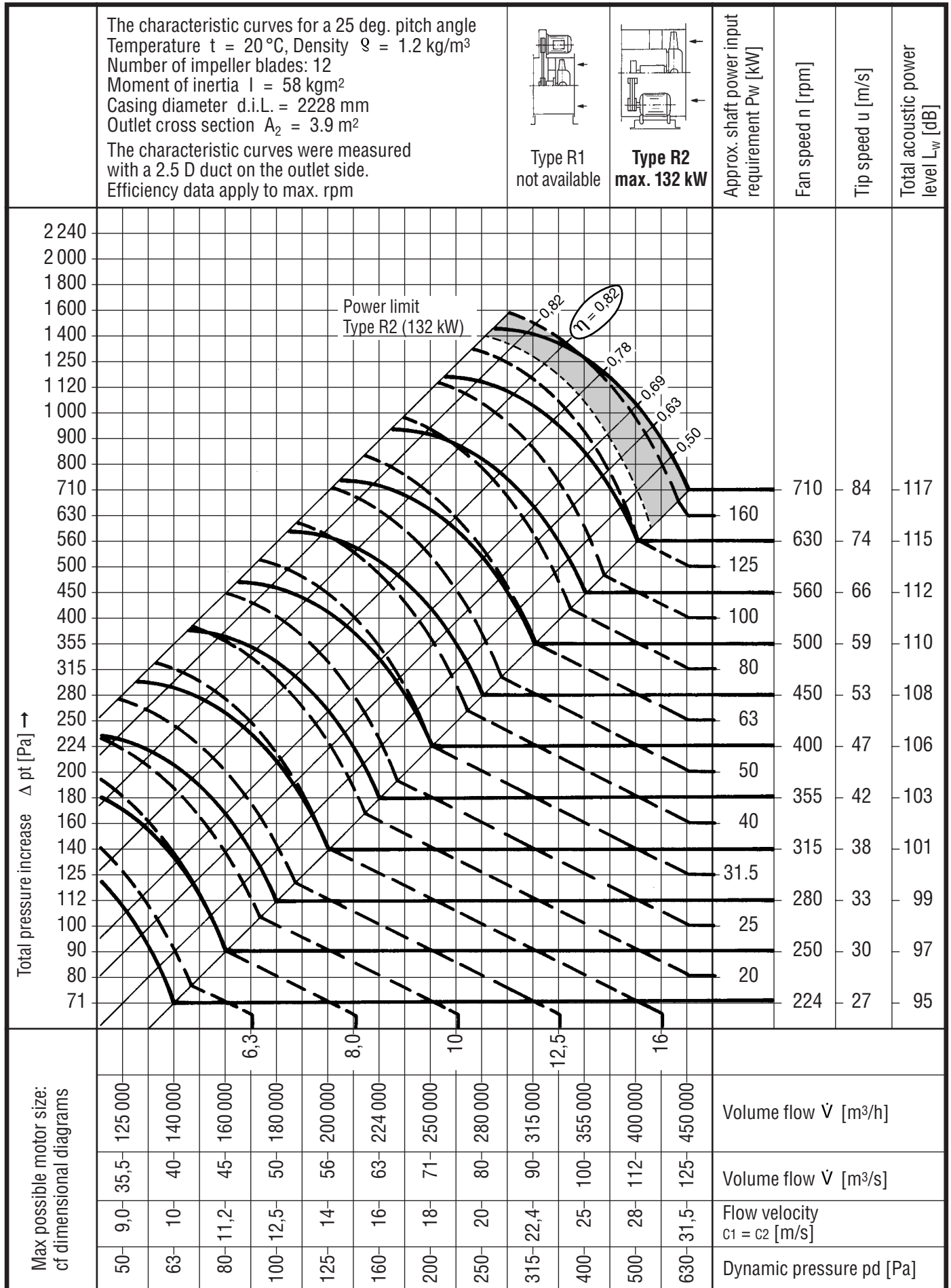


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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/50/2240/D*

135



Fans with operating point in grid area upon request

* Airflow direction D (motor in outlet) – values rounded to standard figures.

Belt drive

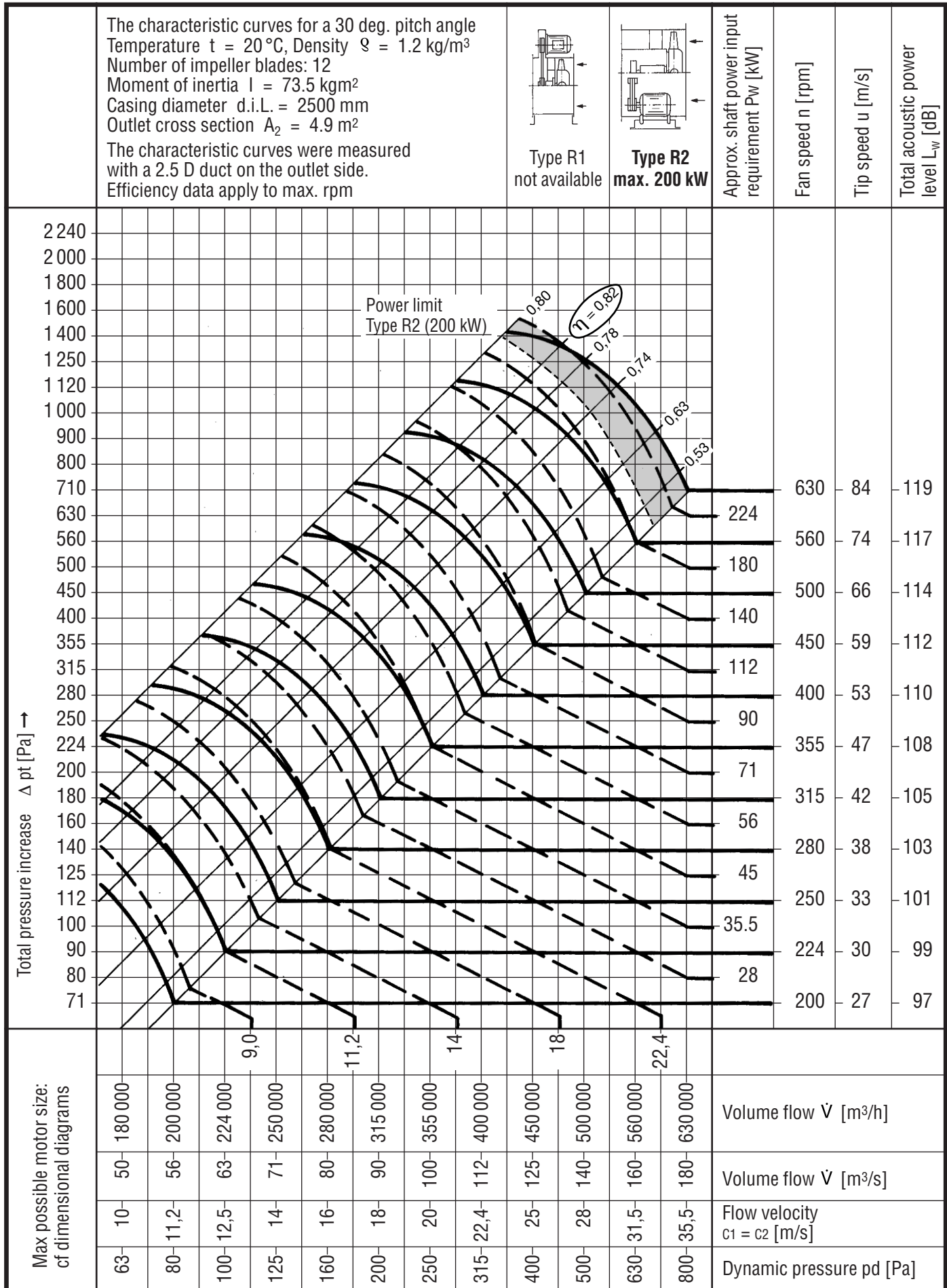


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CHARACTERISTIC CURVES – AXIAL FLOW FANS BELT DRIVE TYPE AXN 12/45/2500/D*

136

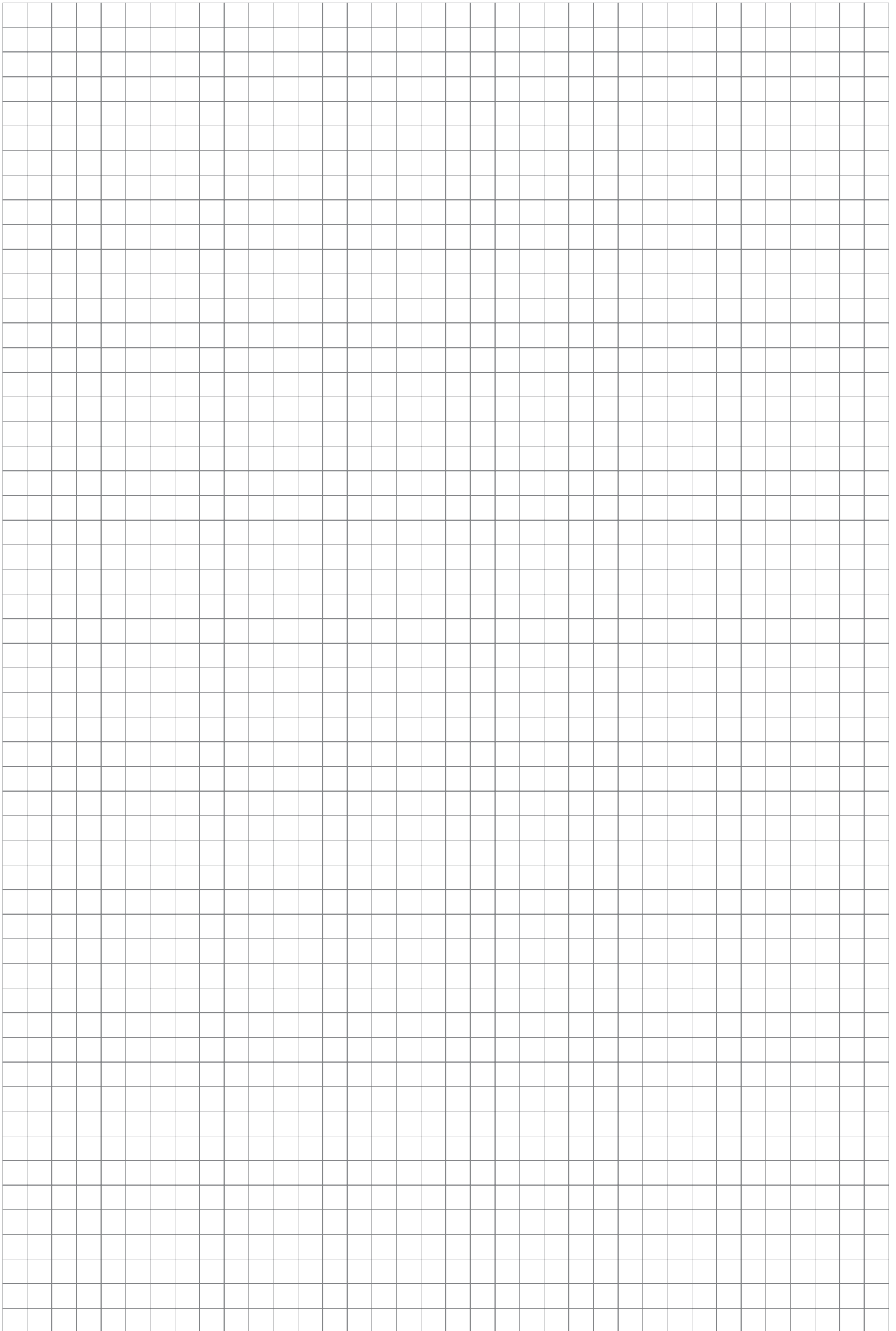


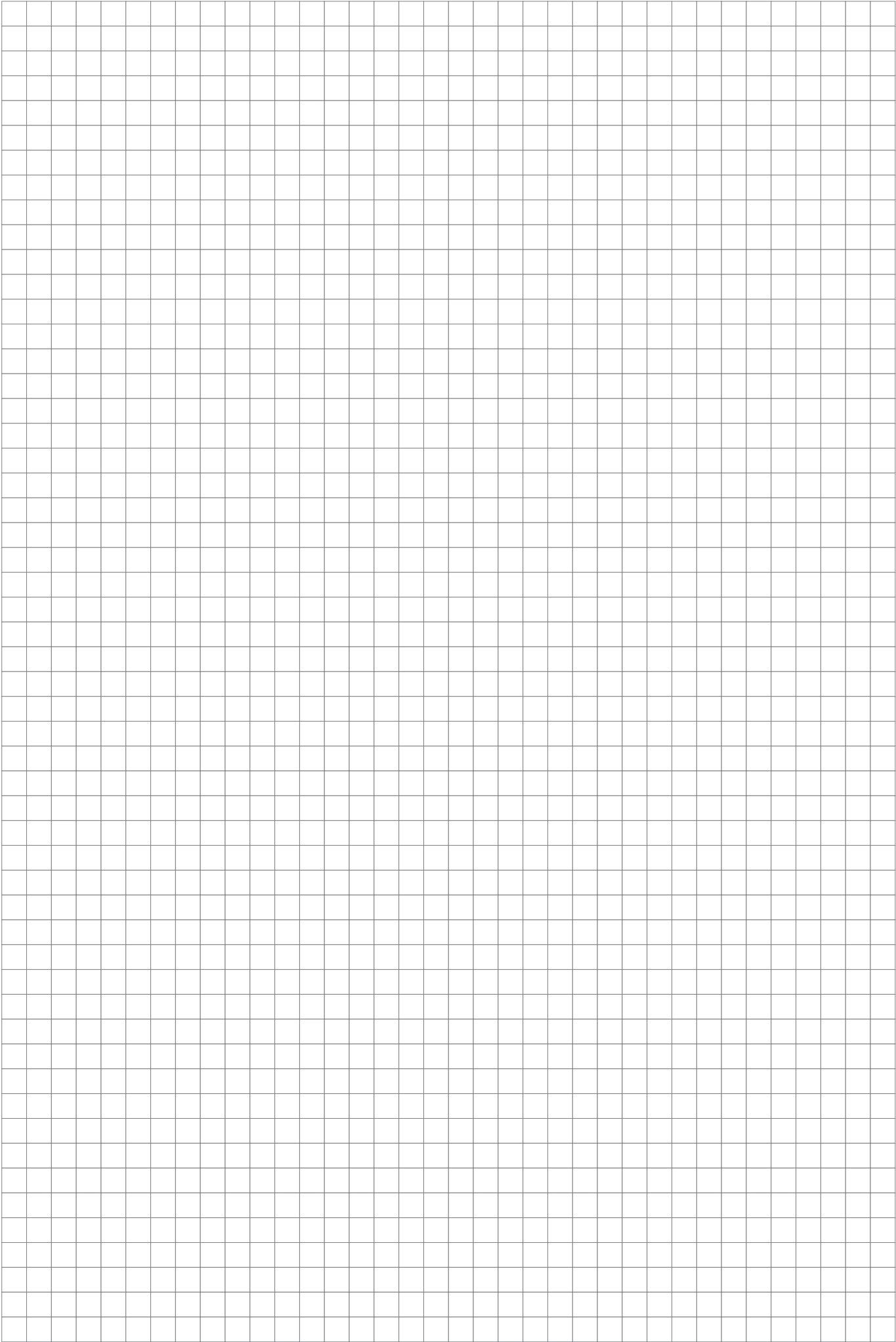
Item Nr.	Qty.	Description	Unit price €	Total €
	or 			

Item Nr.	Qty.	Description	Unit price €	Total €
		Carryover Options: • Electric motor • Exterior terminal box wired to electric motor • Assembly cost for supplied motor • Galvanized fan • Fan with special coating • Bellmouth inlet with flange • Wire guard on bellmouth or motor side • Wire guard on extension casing • Flexible connector, inlet side * • Flexible connector, outlet side * • Matching flange * • Angular wall ring with brackets * • Set of mounting feet (2 pcs.) * • Set of rubber antivibration mounts * • Set of spring-type antivibration mounts * • Brackets for vertical fan installation • Spark-proof equipment (hazardous-duty models only) • Diffuser with interior core * • Round silencer, TSR type * Note: Please see our Installation, Operating and Maintenance Instructions available upon request.		
		* Loosely supplied		

Item Nr.	Qty.	Description	Unit price €	Total €
	or or <			

Item Nr.	Qty.	Description	Unit price €	Total €
		Carryover Options: • Electric motor • Exterior terminal box wired to electric motor • Assembly cost for supplied motor • Galvanized fan • Fan with special coating • Bellmouth inlet with flange • Wire guard on bellmouth or motor side • Wire guard on extension casing • Flexible connector, inlet side * • Flexible connector, outlet side * • Matching flange * • Angular wall ring with brackets * • Set of mounting feet (2 pcs.) * • Set of rubber antivibration mounts * • Set of spring-type antivibration mounts * • Brackets for vertical fan installation • Spark-proof equipment (hazardous-duty models only) • Diffuser with interior core * • Round silencer, TSR type * Note: Please see our Installation, Operating and Maintenance Instructions available upon request.		
		* Loosely supplied		







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AXIAL FLOW FANS APPLICATION EXAMPLES / REFERENCES

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Forced-draught tubular heat exchangers equipped with **AXN 12/56/100/M-S axial-flow fans** (high-efficiency filtration)



Type AXN 12/56/1600 R2 axial-flow fans in the air conditioning centre of a large office building (Hamburg-Mannheimer Versicherung)



AXN 12/56/500 M-D axial-flow fans cooling a tobacco warehouse (Bremer Lagerhaus-Gesellschaft)



AXN 12/56/710 M-D axial-flow fan with accessories: Extension casing, bellmouth inlet with wire guard and mounting feet.



Two-stage axial flow fans, e.g., for car park ventilation or operation against high pressures, are a recent addition to our product range. These units are also available for 200° C / 300° C or 400° C – 120 min. operation (tested to EN 12101 – T3 standard specifications).



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Website: www.tlt.de

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