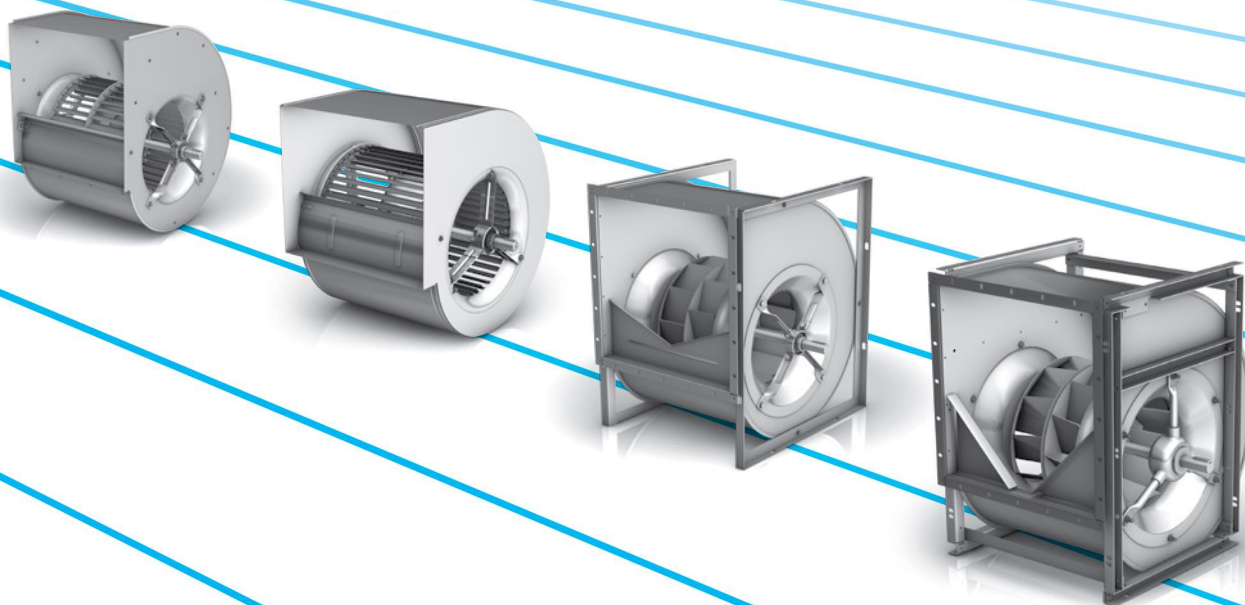


Centrifugal Fans RZR

belt driven

Issue 2.5 EN
August 2013

LUFTBERG
WENTYLATORY



LUFTBERG Spółka z o.o.

ul. Sikorki 23/14 | 31-589 Kraków | Poland

Mob1: +48 600-100-371 | Mob2: +48 604-959-199

E-Mail: biuro@luftberg.pl | Homepage: www.luftberg.pl

NICOTRA | **Gebhardt**

fan|tastic solutions



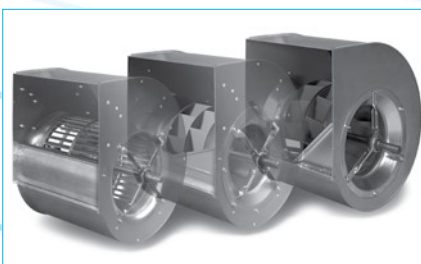
Nicotra Gebhardt S.p.A. (Italy) certifies that
ADH-E fans of the E0, E2, E4, E6 and E7 versions,
from sizes 0160 to 0560,
RDH-E fans of the E0, E2, E4, E6 and E7 versions,
from sizes 0180 to 0560,
ADH and RDH fans of the L, R, K, K1 and K2 versions,
from sizes 0630 to 1000,
AT fans of the S, SC, C and TIC versions,
from sizes 7/7 to 30/28,
shown herein are licensed to bear the AMCA Seal.

Nicotra Gebhardt GmbH (Germany) certifies that
RZR fans of the 11, 12, 15 versions, from sizes 0355 to 1000,
shown herein are licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

Air performance with Installation Type "A" ("with free outlet"), and that of the twin fan versions G2L, G2R, G2K, G2K2, G2E0, G2E2, G2E4, G2E7, SC2, G2C and G2C-C2, and that of the triple fan versions G3C and G3C-C2 in any installation type is not AMCA licensed.

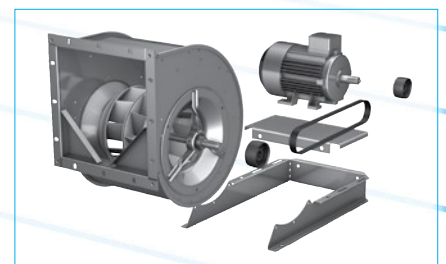
Nicotra Gebhardt stands for:



► Maximised flexibility and minimised design effort for customers, because all radial fan casings have identical dimensions – no matter what kind of impeller geometry



► Top product quality and shorter delivery times – thanks to state-of-the-art production technology



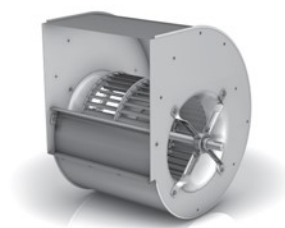
► Energy efficiency through comprehensive system know-how

The Nicotra Gebhardt portfolio

A strong provider for many optimal solutions

When it comes to radial fans, we are the first people you should talk to. From belt-driven radial fans to plugfans, it's all there in our product portfolio. We offer the largest, most comprehensive range of products in this area – and of course the matching services.

ADH-E / ADH



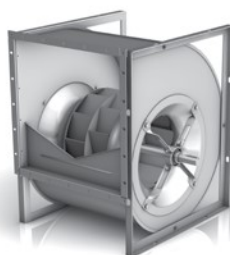
double-inlet
forward-curved
impeller geometry

AT



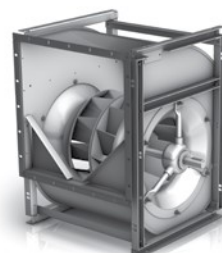
double-inlet
inch diameters
forward-curved impeller
geometry

RDH-E / RDH



double-inlet
backward-curved
impeller geometry

RZR



double-inlet
hollow aerofoil
impeller geometry

When everything fits

To us, perfection in our product portfolio means that all product series in the area of encased radial fans are attuned to one another and are 100% compatible in their dimensions.

How did we do it?

By using an identical design for the connection dimensions of every fan size in our newly developed series ADH-E and RDH-E and carefully coordinating our options and accessories.

In this way, we have standardised and harmonised our product portfolio in all relevant areas.

Well designed, easy to install, economical

A system that saves space, time, and money – in an air handling unit or any other application: our compact base frame offers decisive advantages:

- The frame lengths have been optimised and adjusted for the casing position and motor installation height to achieve the smallest possible overall height and length
- Exact, optimised coordination of all components, all the way through to installation, adjustment and testing
- Suitable for all fans of the series ADH-E0, RDH-E0 and RZR-11 up to size 0500



The compact base frame from Nicotra Gebhardt

proSELECTA II

proSELECTA II is a technical selection program that allows you to configure your own individually designed fan. It provides you with the opportunity to choose from the entire range of fan types and their associated options.



Simple and reliable selection

The result from **proSELECTA II** is the provision of all the technical data for your fan, including sound level data, dimension specifications and accessories. Apart from that, as a registered user, your purchase prices are provided. Additionally fully dimensioned drawings in DXF format are available, which can be downloaded and transferred straight into your CAD system.

So that you can be sure

Models and options that are technically not permissible, are automatically excluded in proSELECTA II. So there is no chance that you will configure a "wrong" device option.



What else is important to you

During the fan selection process, you can choose any of the standardised ATEX options.

Free registration and many advantages

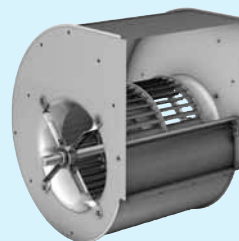
You can register as a proSELECTA II user with us, which enables us to offer you faster order processing. What this means for you is:

- ▶ The complete configuration of your fan with its associated system accessories and belt drive layout.
- ▶ The possibility to produce fans that operate via a frequency inverter.
- ▶ The option of saving your own fan configuration on our server.
- ▶ The opportunity to modify your saved configuration, even over the phone to your Nicotra Gebhardt representative.

High performance centrifugal fan ADH

double inlet for belt drive
impeller with forward curved blades of galvanised sheet steel

- ▶ Volume
up to 300,000 m³/h
- ▶ Pressure
up to 2,200 Pa

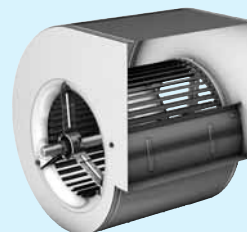


ADH

High performance centrifugal fan AT

double inlet for belt drive
impeller with forward curved blades of galvanised sheet steel

- ▶ Volume
up to 65,000 m³/h
- ▶ Pressure
up to 2,500 Pa

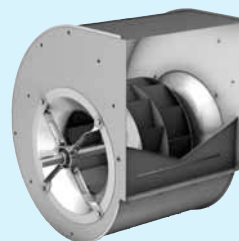


AT

High performance centrifugal fan RDH

double inlet for belt drive
centrifugal impeller with backward inclined blades

- ▶ Volume
up to 290,000 m³/h
- ▶ Pressure
up to 3,500 Pa

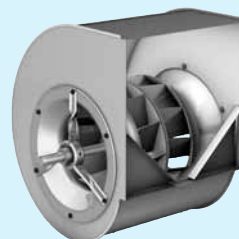


RDH

High performance centrifugal fan RZR

double inlet for belt drive
high performance impeller with backward curved hollow section true aerofoil blades

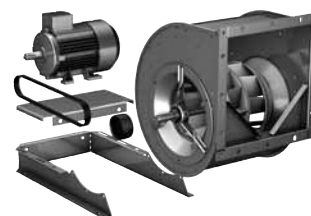
- ▶ Volume
up to 300,000 m³/h
- ▶ Pressure
up to 3,500 Pa



RZR

Fittings / Accessories

- ▶ complete system accessories
- ▶ miscellaneous fittings



Accessories

Description

- ▶ technical description
- ▶ operating limits



Description

Highest system performance and best energy efficiency



The RZR series

It is not difficult to make a centrifugal fan for an air conditioning unit a few euros cheaper.

But to construct it so that it saves valuable energy during operation is a real technological challenge.

In this respect, the RZR from Nicotra Gebhardt continues to provide the technology with the highest level of system performance and with that, the best solution where energy efficiency counts.

rotavent – the efficient fan technology with centrifugal impeller and airfoil blades.

Top quality for performance and a long service life!

The advantages:

- ▶ Wide range of application even for high pressures
- ▶ Easy adaption to changed operating conditions thanks to the belt drive
- ▶ Easy and reliable layout, performance data complying with tolerance class 1
- ▶ High degree of performance density at the best efficiency
- ▶ Low level of noise thanks to the blade profile, a patented blade positioning and the V-cut off
- ▶ Easy selection via the proSELECTA II electronic catalogue

We do it very precisely!

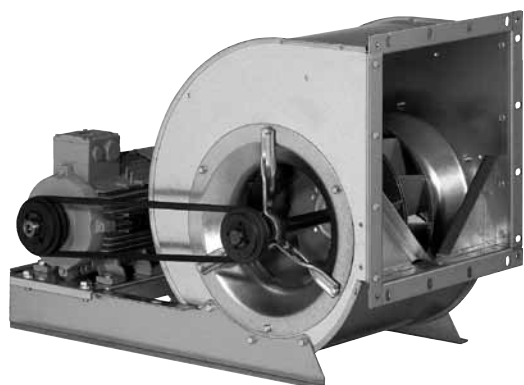
Or

Why you should not compare apples with pears!

Nicotra-Gebhardt manufactures its centrifugal fans RZR with tolerance class 1 in compliance with DIN 24166.

This gives you the necessary degree of security that you need when designing and planning ventilation installations. The tolerance class is also an important criterion for the objective comparison of fans.

If you compare the price/performance ratio of two fans, you should also always take the tolerance class of each into account, only then do you avoid comparing "apples with pears"!



Performance data		Deviations per tolerance class		
		1	2	3
Volume flow	q_V	2.5 %	5 %	10 %
Pressure increase	p_F	2.5 %	5 %	10 %
Power consumption	P	+3 %	+8 %	+16 %
Efficiency	η	-2 %	-5 %	-
Sound power level (A weighted)	L_{WA}	+3 dB	+4 dB	+6 dB

Variety has a name

RZR *rotavent*

RZR fans, double inlet with patented impeller geometry and tapered trailing airfoil blades are the leading edge for standard fans for ventilation and air conditioning units.

Series RZR

- Sizes 0200/-1600
- Lap jointed scroll of galvanised sheet steel with V-Cut off (RZR 11; 12; 14; 15; 18)
- Scroll casing stitch welded and coated, with V-cut off (RZR 13; 19)
- Centrifugal impeller with 11 backward inclined steel blades, welded and coated (0200/-0280)
- High performance impeller with 12 hollow section true airfoil blades (0315/-1600)

Series RZR

- Volume up to 300,000 m³/h
- Pressure up to 3,500 Pa

The right fan for every specification!

Depending on the fan size, the RZR series have up to 7 mechanical versions of the single fan. In this way, we ensure that we have the perfect model for all requirements and any application.

Version	Description	Figure
RZR 11-0200/-0710	Lap jointed scroll with multi-position feet and discharge flange. Light duty bearing execution with pressed steel housing/strut assemblies.	
RZR 12-0200/-0710	Lap jointed scroll with rectangular side frame and discharge flange. Light duty bearing execution with pressed steel housing/strut assemblies.	
RZR 15-0400/-1000	Lap jointed scroll with heavy duty reinforced side frames and discharge flange. Medium-heavy duty bearing execution with cast iron housing/strut assemblies.	
RZR 18-0400/-1000	Lap jointed scroll with discharge flange and heavy duty reinforced side frames. Heavy duty bearing execution with split-type plummer block, mounted on robust pedestal.	

Version	Description	Figure
RZR 19-0200/-0355	Scroll casing stitch welded with discharge flange and multi-position feet. Medium-heavy bearing execution with cast iron housing and tubular struts.	
RZR 19-0400/-1000	Scroll casing stitch welded with discharge flange, and heavy duty reinforced side frames, epoxy coated. Medium-heavy bearing execution with cast iron housing and tubular struts.	
RZR 13-0400/-1000	Scroll casing stitch welded with discharge flange and heavy duty reinforced side frames, epoxy coated. Heavy duty bearing execution with split-type plummer blocks, mounted on robust pedestal.	
RZR 13-1120/-1600	Heavy duty casing of sheet steel with stiffening members, step welded and painted, with discharge flange. Casing is split on one axis (Size 1120), split on two axis (Sizes 1250, 1400, 1600). Heavy duty bearing execution with split-type plummer blocks, mounted on robust pedestal.	

Technical Data

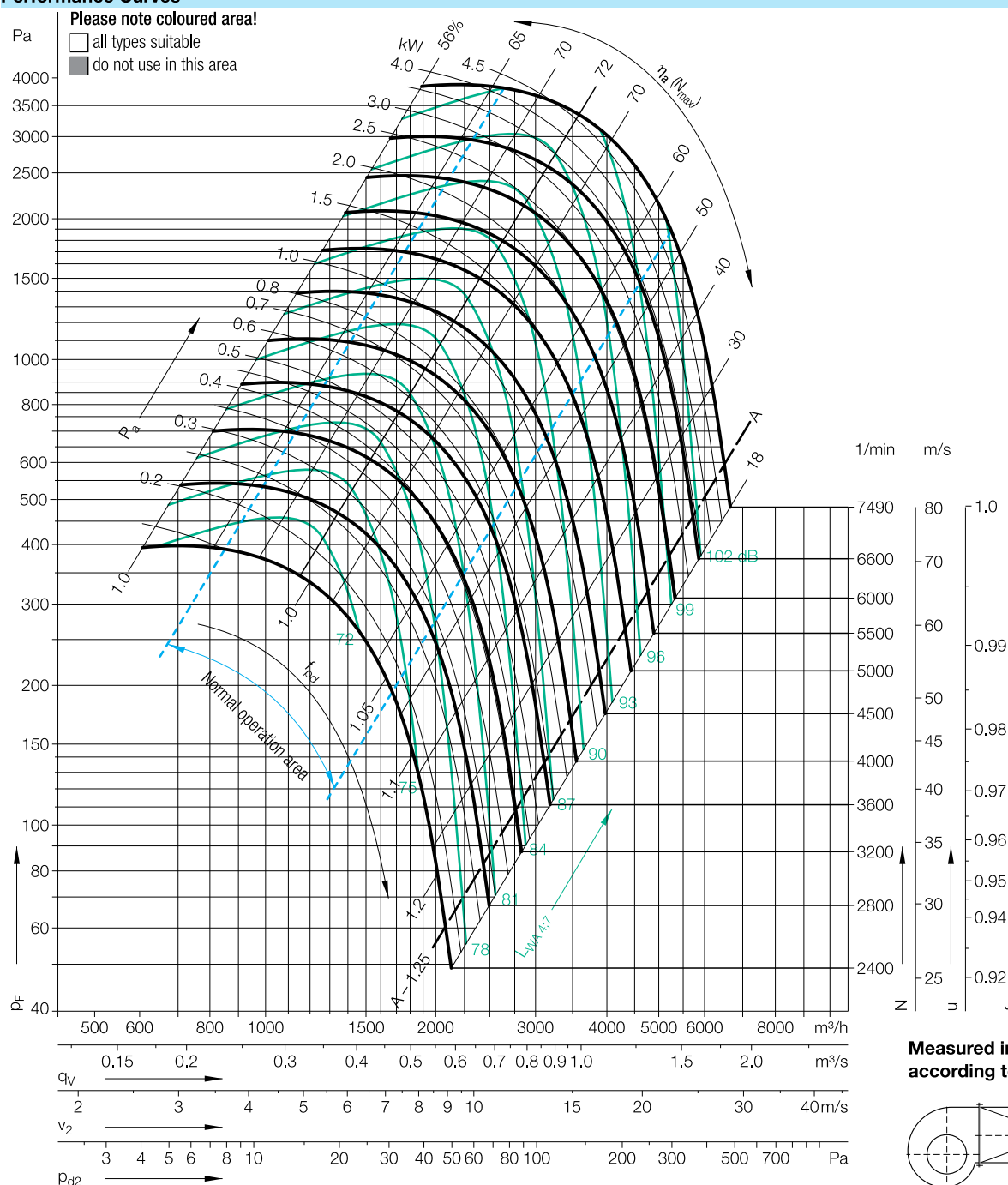
Impeller Data			
Impeller diameter	D_r	204	mm
Number of blades	z	11	
Moment of Inertia	J	0.020	kgm ²

Impeller Data			
Impeller weight	m	2.7	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		2	

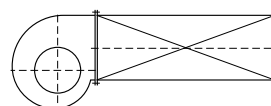
Speed limits $N_{\max}$ for ATEX execution

Speed limits $v_{\max}$ for ATEX excavator
RZR 11/12/19 6513 1/min

Performance Curves



**Measured in installation B
according to ISO 5801:**



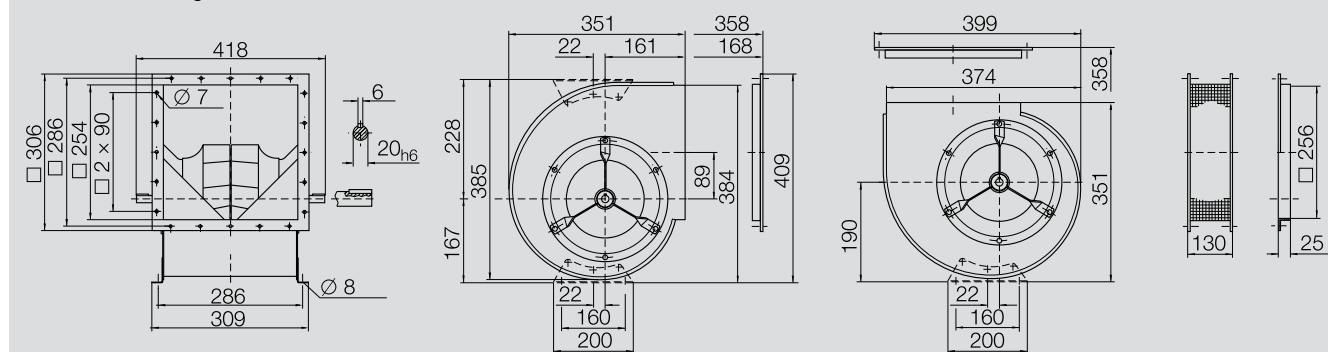
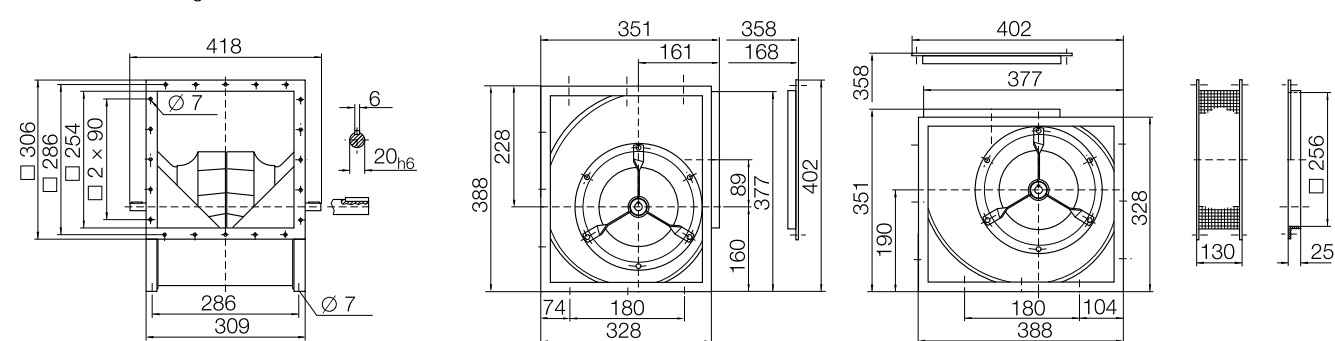
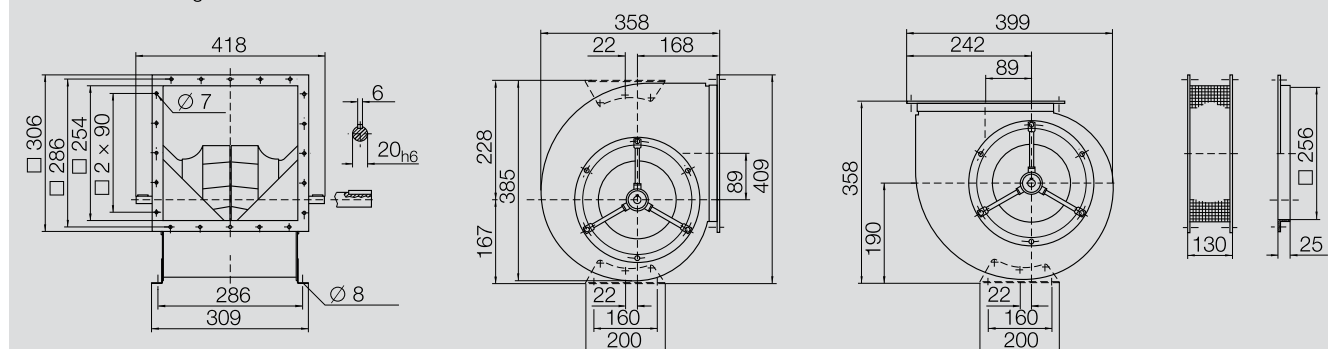
Speed	Duty point
≤3745 1/min	≤0.8 q _{Vopt}
	>0.8-1.2 q _{Vopt}
	>1.2-1.6 q _{Vopt}
	>1.6 q _{Vopt}
Speed	Duty point
>3745 1/min	≤0.8 q _{Vopt}
	>0.8-1.2 q _{Vopt}
	>1.2-1.6 q _{Vopt}
	>1.6 q _{Vopt}

Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
-4	2	0	-2	-5	-10	-14	-21	dB
-7	0	-2	-2	-5	-9	-14	-22	dB
-10	-4	-4	-2	-4	-8	-15	-24	dB
-12	-7	-6	-2	-4	-8	-13	-24	dB
63	125	250	500	1000	2000	4000	8000	Hz
-7	-1	-2	-2	-4	-10	-16	-23	dB
-12	-4	-5	-3	-4	-10	-15	-23	dB
-14	-7	-8	-4	-4	-9	-12	-21	dB
-15	-10	-11	-4	-4	-9	-12	-19	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
11	8	3	-2	-8	-13	-19	-29	dB
7	5	1	-1	-7	-11	-18	-29	dB
5	3	-1	-1	-6	-9	-17	-20	dB
6	1	-2	-2	-6	-8	-14	-29	dB
63	125	250	500	1000	2000	4000	8000	Hz
8	7	2	-2	-6	-11	-19	-28	dB
4	3	-2	-4	-6	-8	-15	-26	dB
2	0	-4	-5	-6	-8	-13	-24	dB
4	0	-4	-6	-6	-8	-12	-21	dB

RZR_-0200**Dimensions** in mm, subject to change.**RZR 11-0200** 11 kg**RZR 12-0200** 12 kg**RZR 19-0200** 13 kg

RZR -0225

Technical Data

Impeller Data			
Impeller diameter	D_r	230	mm
Number of blades	z	11	
Moment of Inertia	J	0.030	kgm ²

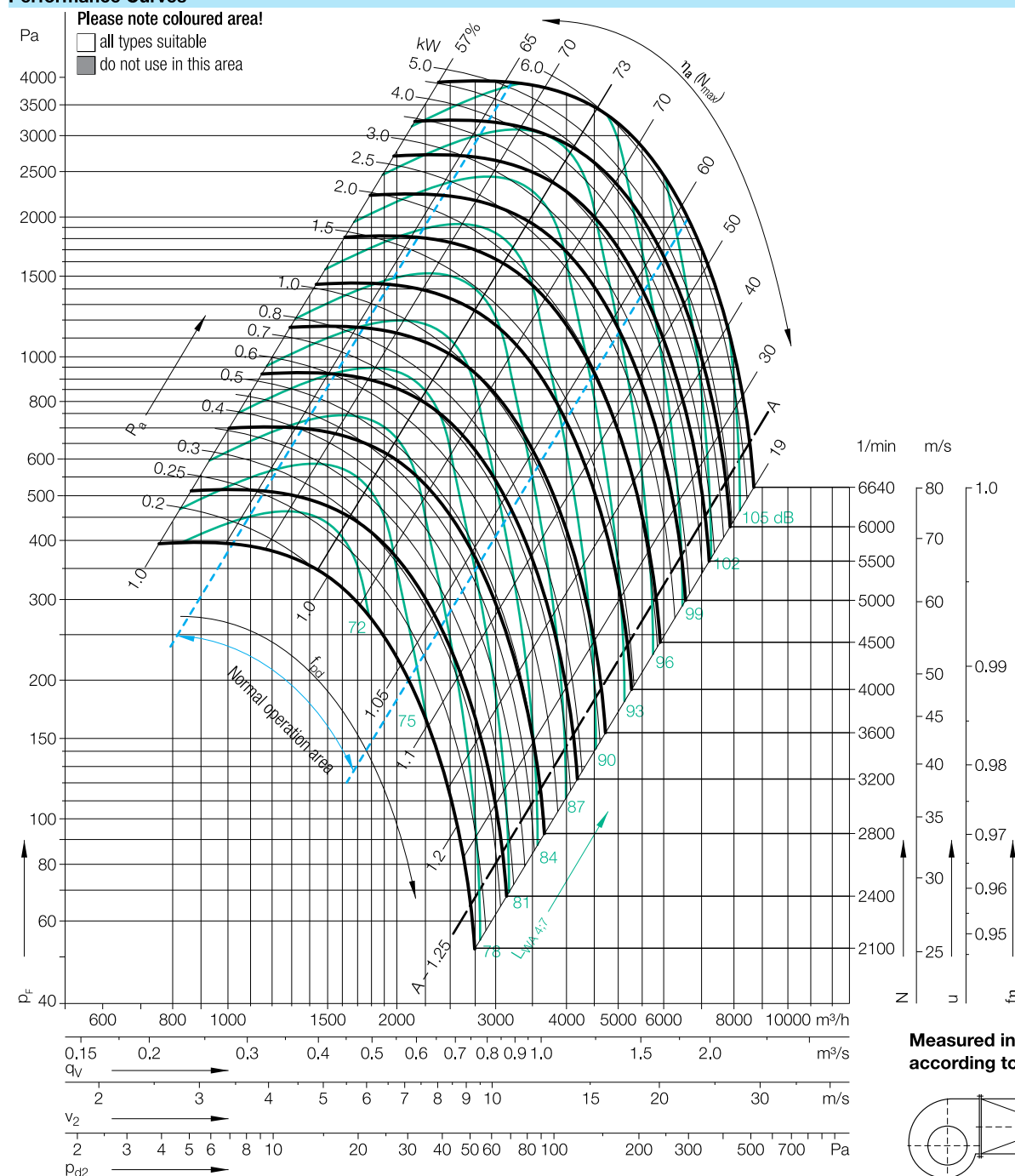
Impeller Data

Impeller weight	m	3.5	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		2	

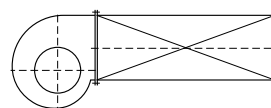
Speed limits $N_{\max}$ for ATEX execution

RZR 11/12/19	5774	1/min
--------------	------	-------

Performance Curves



**Measured in installation B
according to ISO 5801:**



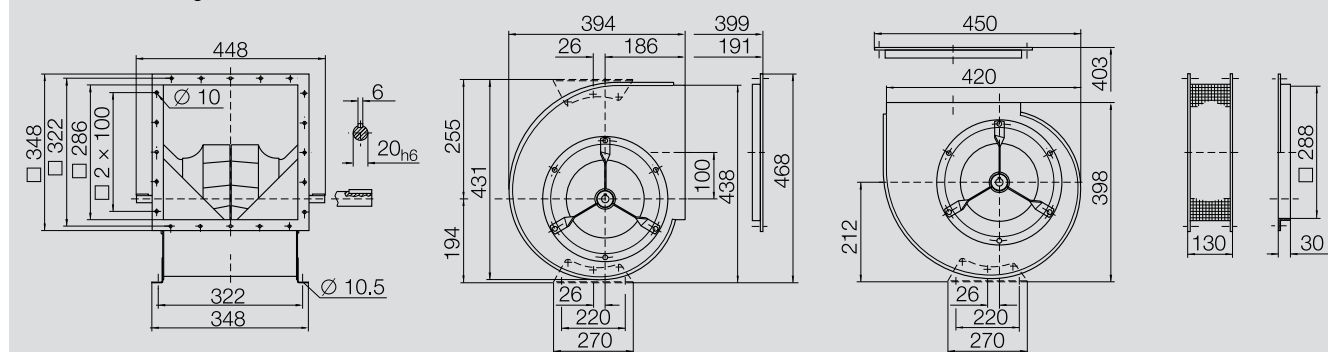
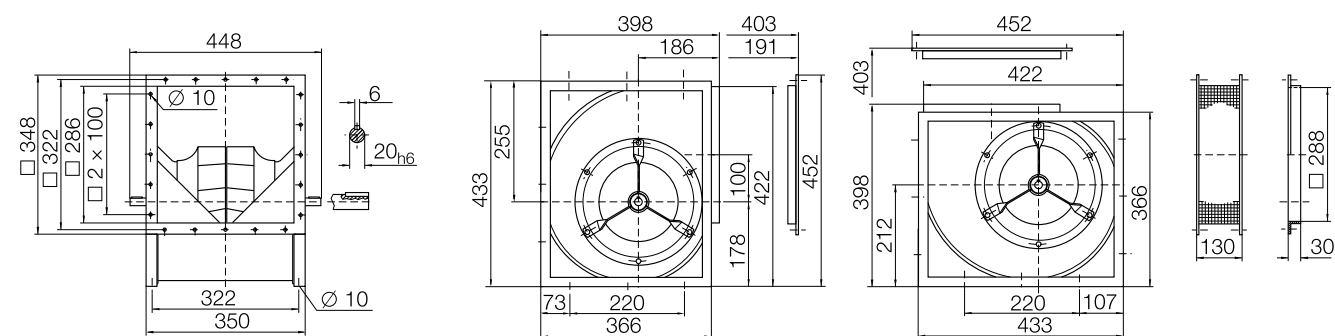
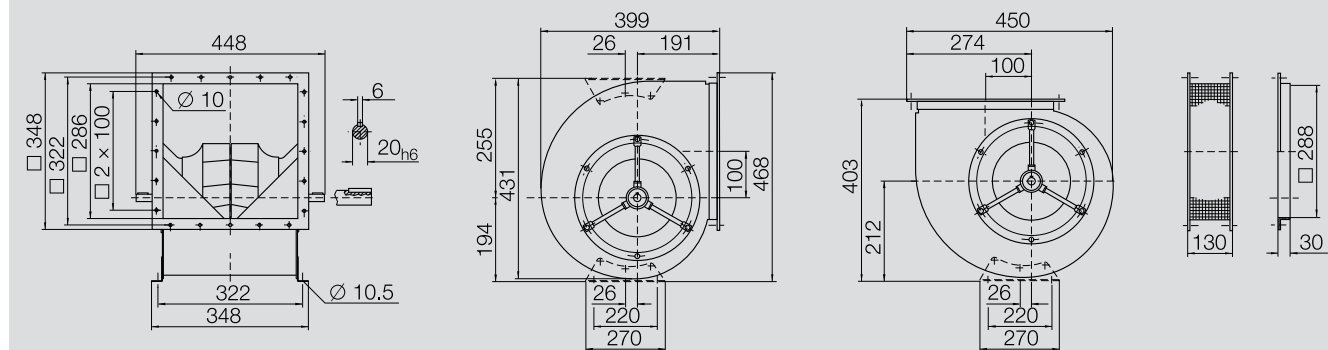
Speed	Duty point
≤3321 1/min	≤0.8 q _{Vopt}
	>0.8-1.2 q _{Vopt}
	>1.2-1.6 q _{Vopt}
	>1.6 q _{Vopt}
Speed	Duty point
>3321 1/min	≤0.8 q _{Vopt}
	>0.8-1.2 q _{Vopt}
	>1.2-1.6 q _{Vopt}
	>1.6 q _{Vopt}

Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
-4	2	0	-2	-5	-10	-14	-21	dB
-7	0	-2	-2	-5	-9	-14	-22	dB
-10	-4	-4	-2	-4	-8	-15	-24	dB
-12	-7	-6	-2	-4	-8	-13	-24	dB
63	125	250	500	1000	2000	4000	8000	Hz
-7	-1	-2	-2	-4	-10	-16	-23	dB
-12	-4	-5	-3	-4	-10	-15	-23	dB
-14	-7	-8	-4	-4	-9	-12	-21	dB
-15	-10	-11	-4	-4	-9	-12	-19	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
11	8	3	-2	-8	-13	-19	-29	dB
7	5	1	-1	-7	-11	-18	-29	dB
5	3	-1	-1	-6	-9	-17	-20	dB
6	1	-2	-2	-6	-8	-14	-29	dB
63	125	250	500	1000	2000	4000	8000	Hz
8	7	2	-2	-6	-11	-19	-28	dB
4	3	-2	-4	-6	-8	-15	-26	dB
2	0	-4	-5	-6	-8	-13	-24	dB
4	0	-4	-6	-6	-8	-12	-21	dB

RZR_-0225**Dimensions** in mm, subject to change.**RZR 11-0225** 13 kg**RZR 12-0225** 15 kg**RZR 19-0225** 16 kg

Technical Data

Impeller Data

Impeller diameter	D_r	256	mm
Number of blades	z	11	
Moment of Inertia	J	0.052	kgm ²

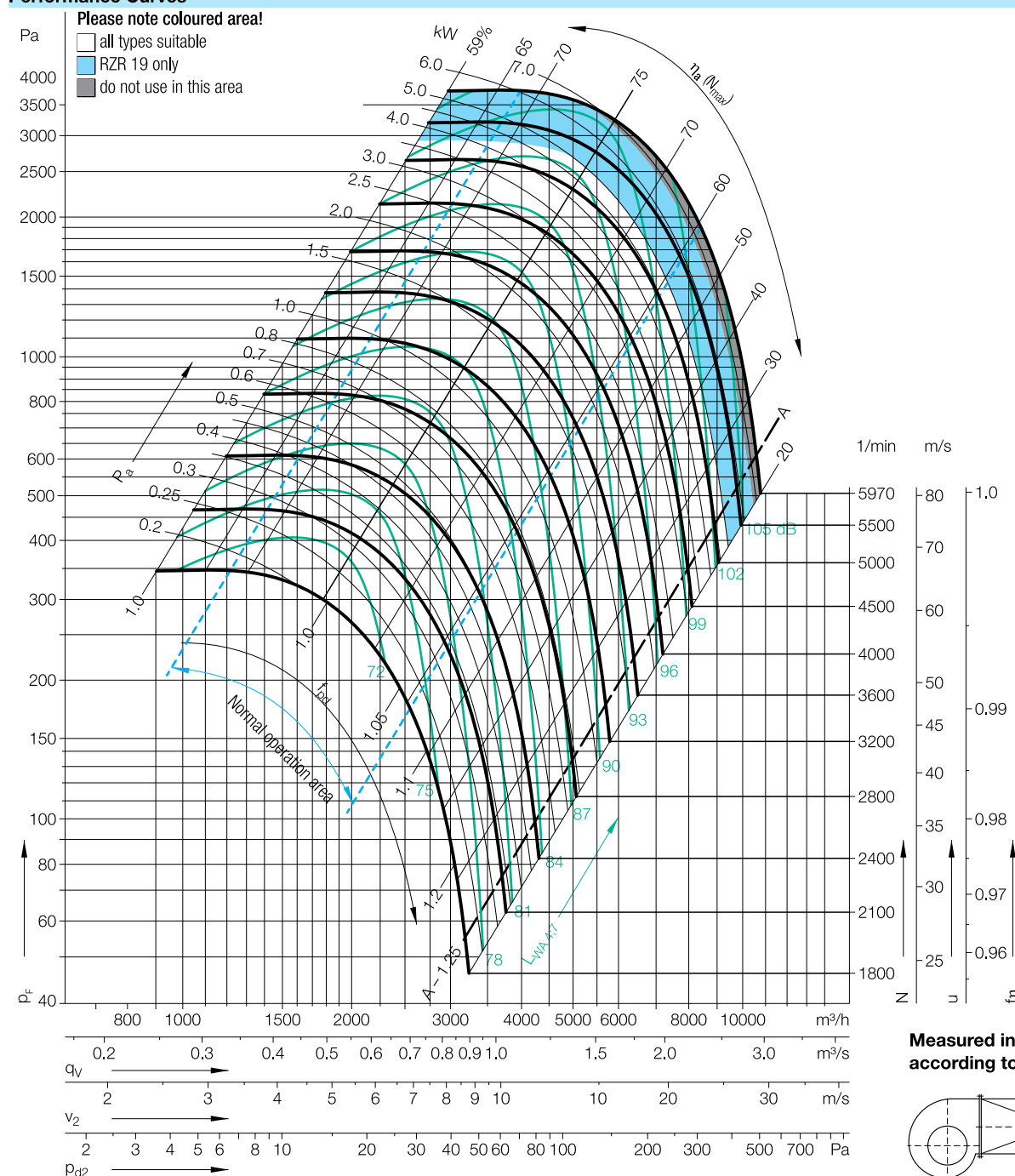
Impeller Data

Impeller weight	m	4.8	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		2	

Speed limits N_{max} for ATEX execution

RZR 11/12	4620	1/min
RZR 19	5076	1/min

Performance Curves

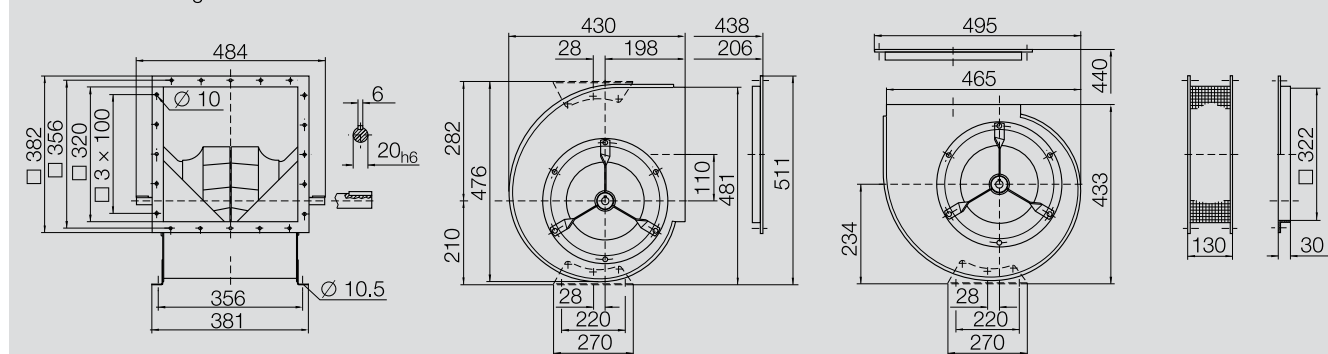
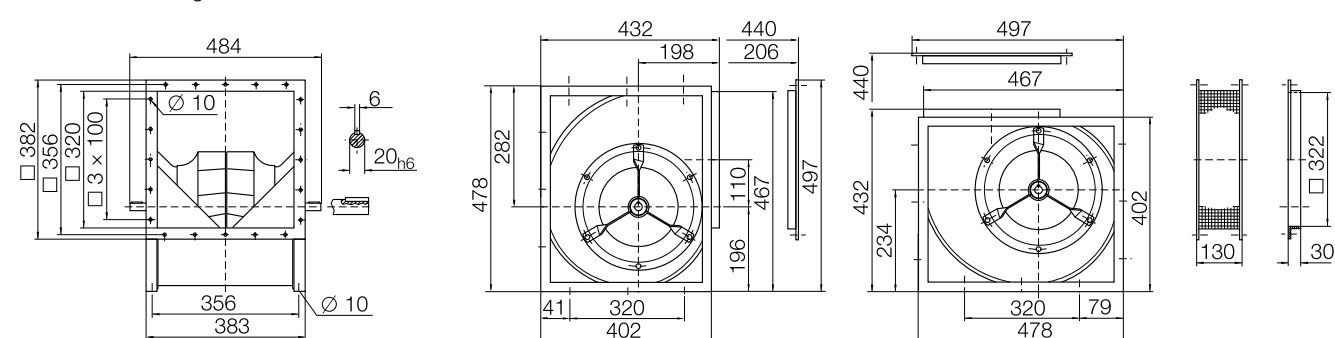
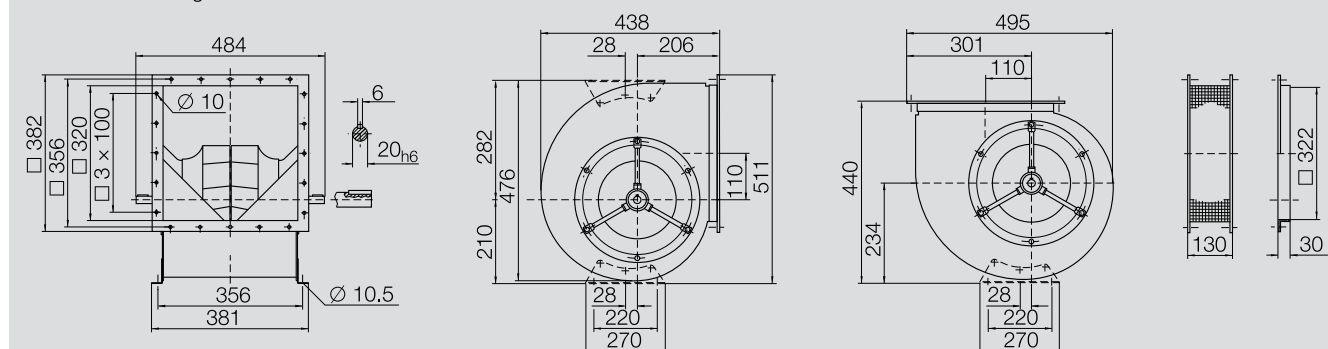


Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 2984 1/min	$\leq 0.8 q_{Vopt}$	-4	2	0	-2	-5	-10	-14	-21	dB
	$> 0.8-1.2 q_{Vopt}$	-7	0	-2	-2	-5	-9	-14	-22	dB
	$> 1.2-1.6 q_{Vopt}$	-10	-4	-4	-2	-4	-8	-15	-24	dB
	$> 1.6 q_{Vopt}$	-12	-7	-6	-2	-4	-8	-13	-24	dB
> 2984 1/min	$\leq 0.8 q_{Vopt}$	-7	-1	-2	-2	-4	-10	-16	-23	dB
	$> 0.8-1.2 q_{Vopt}$	-12	-4	-5	-3	-4	-10	-15	-23	dB
	$> 1.2-1.6 q_{Vopt}$	-14	-7	-8	-4	-4	-9	-12	-21	dB
	$> 1.6 q_{Vopt}$	-15	-10	-11	-4	-4	-9	-12	-19	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 2984 1/min	$\leq 0.8 q_{Vopt}$	11	8	3	-2	-8	-13	-19	-29	dB
	$> 0.8-1.2 q_{Vopt}$	7	5	1	-1	-7	-11	-18	-29	dB
	$> 1.2-1.6 q_{Vopt}$	5	3	-1	-1	-6	-9	-17	-20	dB
	$> 1.6 q_{Vopt}$	6	1	-2	-2	-6	-8	-14	-29	dB
> 2984 1/min	$\leq 0.8 q_{Vopt}$	8	7	2	-2	-6	-11	-19	-28	dB
	$> 0.8-1.2 q_{Vopt}$	4	3	-2	-4	-6	-8	-15	-26	dB
	$> 1.2-1.6 q_{Vopt}$	2	0	-4	-5	-6	-8	-13	-24	dB
	$> 1.6 q_{Vopt}$	4	0	-4	-6	-6	-8	-12	-21	dB

RZR_-0250**Dimensions** in mm, subject to change.**RZR 11-0250** 15 kg**RZR 12-0250** 17 kg**RZR 19-0250** 17 kg

Technical Data

Impeller Data

Impeller diameter	D_r	288 mm
Number of blades	z	11
Moment of Inertia	J	0.082 kgm ²

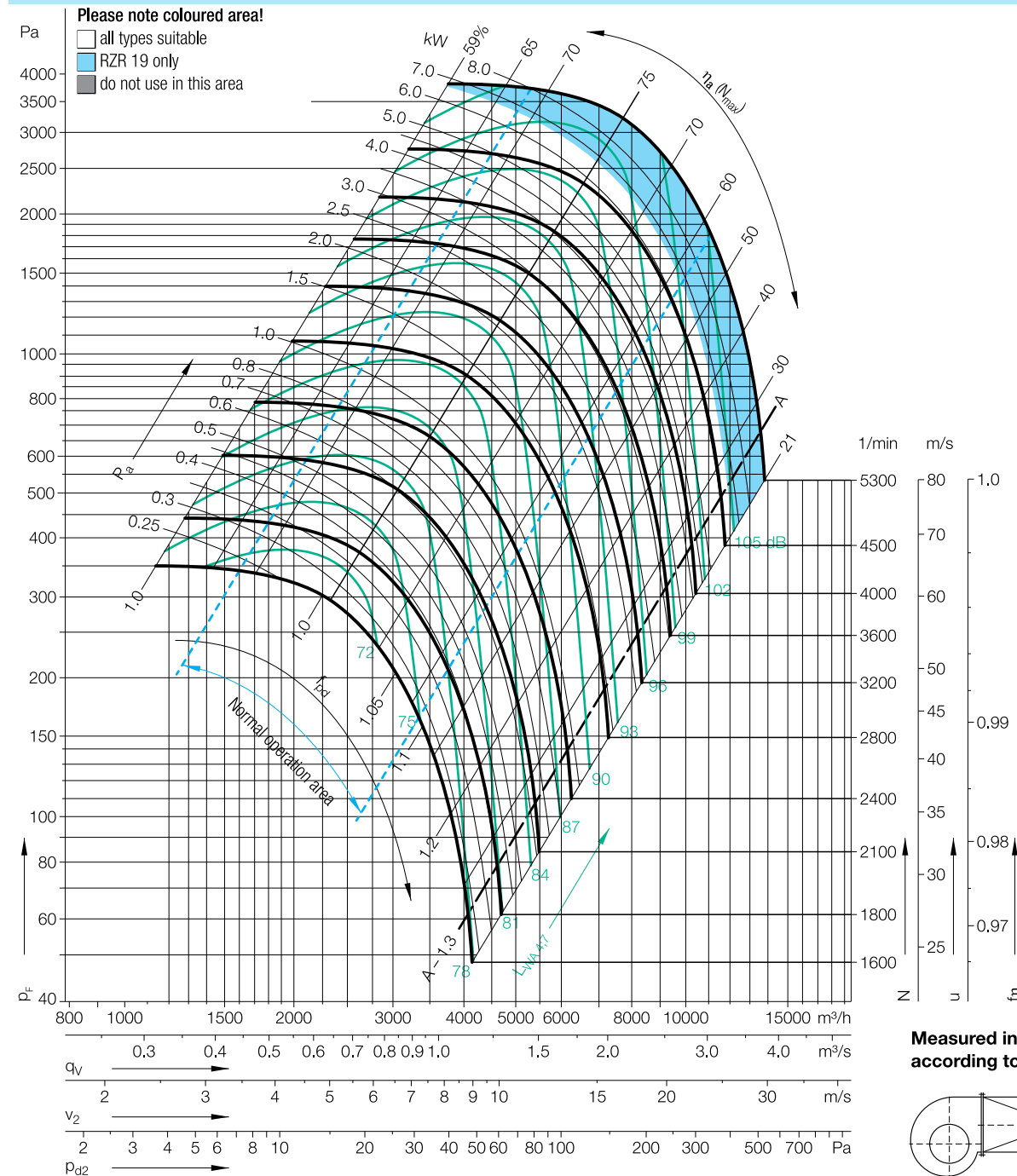
Impeller Data

Impeller weight	m	5.7 kg
Density of media	ρ_1	1.2 kg/m ³
Tolerance class (DIN 24166)		2

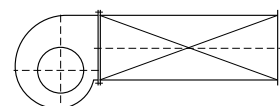
Speed limits N_{max} for ATEX execution

RZR 11/12/19	4582	1/min
--------------	-------------	-------

Performance Curves



Measured in installation B according to ISO 5801:

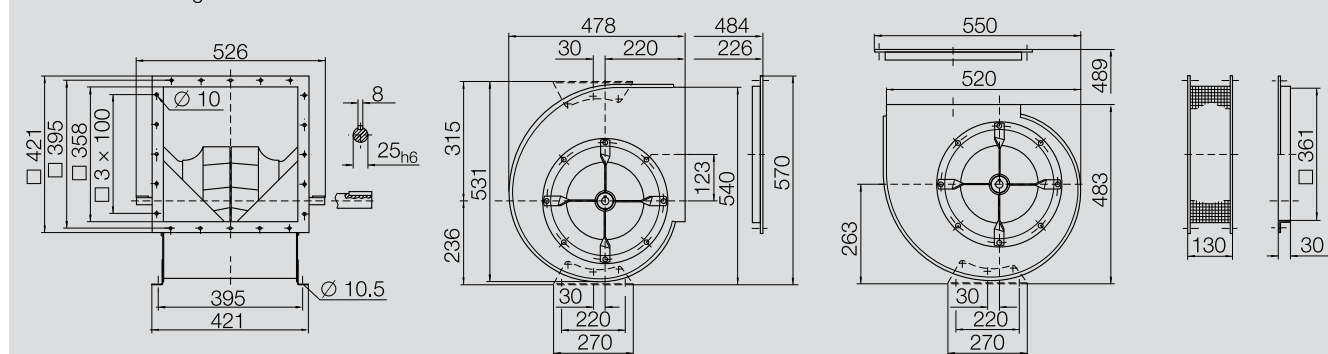
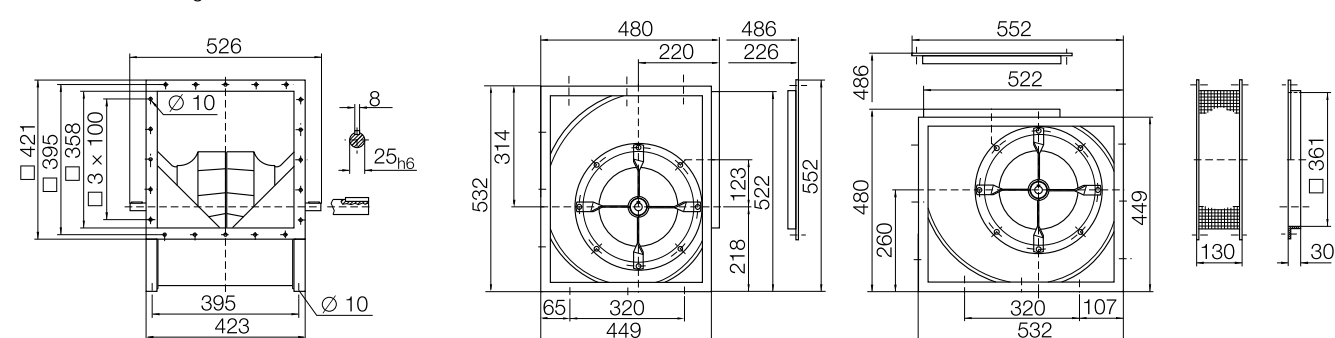
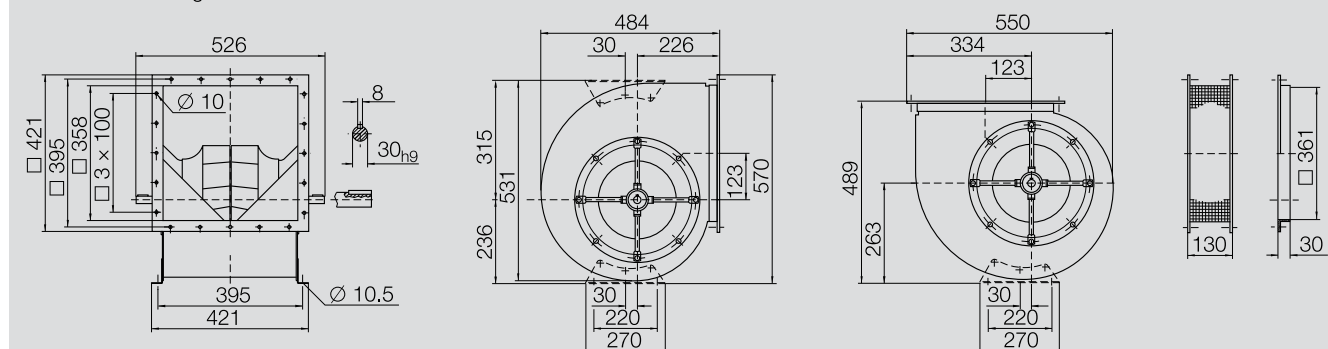


Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 2653 1/min	$\leq 0.8 q_{Vopt}$	-4	2	0	-2	-5	-10	-14	-21	dB
	$> 0.8-1.2 q_{Vopt}$	-7	0	-2	-2	-5	-9	-14	-22	dB
	$> 1.2-1.6 q_{Vopt}$	-10	-4	-4	-2	-4	-8	-15	-24	dB
	$> 1.6 q_{Vopt}$	-12	-7	-6	-2	-4	-8	-13	-24	dB
Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
> 2653 1/min	$\leq 0.8 q_{Vopt}$	-7	-1	-2	-2	-4	-10	-16	-23	dB
	$> 0.8-1.2 q_{Vopt}$	-12	-4	-5	-3	-4	-10	-15	-23	dB
	$> 1.2-1.6 q_{Vopt}$	-14	-7	-8	-4	-4	-9	-12	-21	dB
	$> 1.6 q_{Vopt}$	-15	-10	-11	-4	-4	-9	-12	-19	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
11	8	3	-2	-8	-13	-19	-29	dB
7	5	1	-1	-7	-11	-18	-29	dB
5	3	-1	-1	-6	-9	-17	-20	dB
6	1	-2	-2	-6	-8	-14	-29	dB
63	125	250	500	1000	2000	4000	8000	Hz
8	7	2	-2	-6	-11	-19	-28	dB
4	3	-2	-4	-6	-8	-15	-26	dB
2	0	-4	-5	-6	-8	-13	-24	dB
4	0	-4	-6	-6	-8	-12	-21	dB

RZR_-0280**Dimensions** in mm, subject to change.**RZR 11-0280** 20 kg**RZR 12-0280** 23 kg**RZR 19-0280** 23 kg

RZR _-0315

Technical Data

Impeller Data

Impeller diameter	D_r	323	mm
Number of blades	z	12	
Moment of Inertia	J	0.126	kgm ²

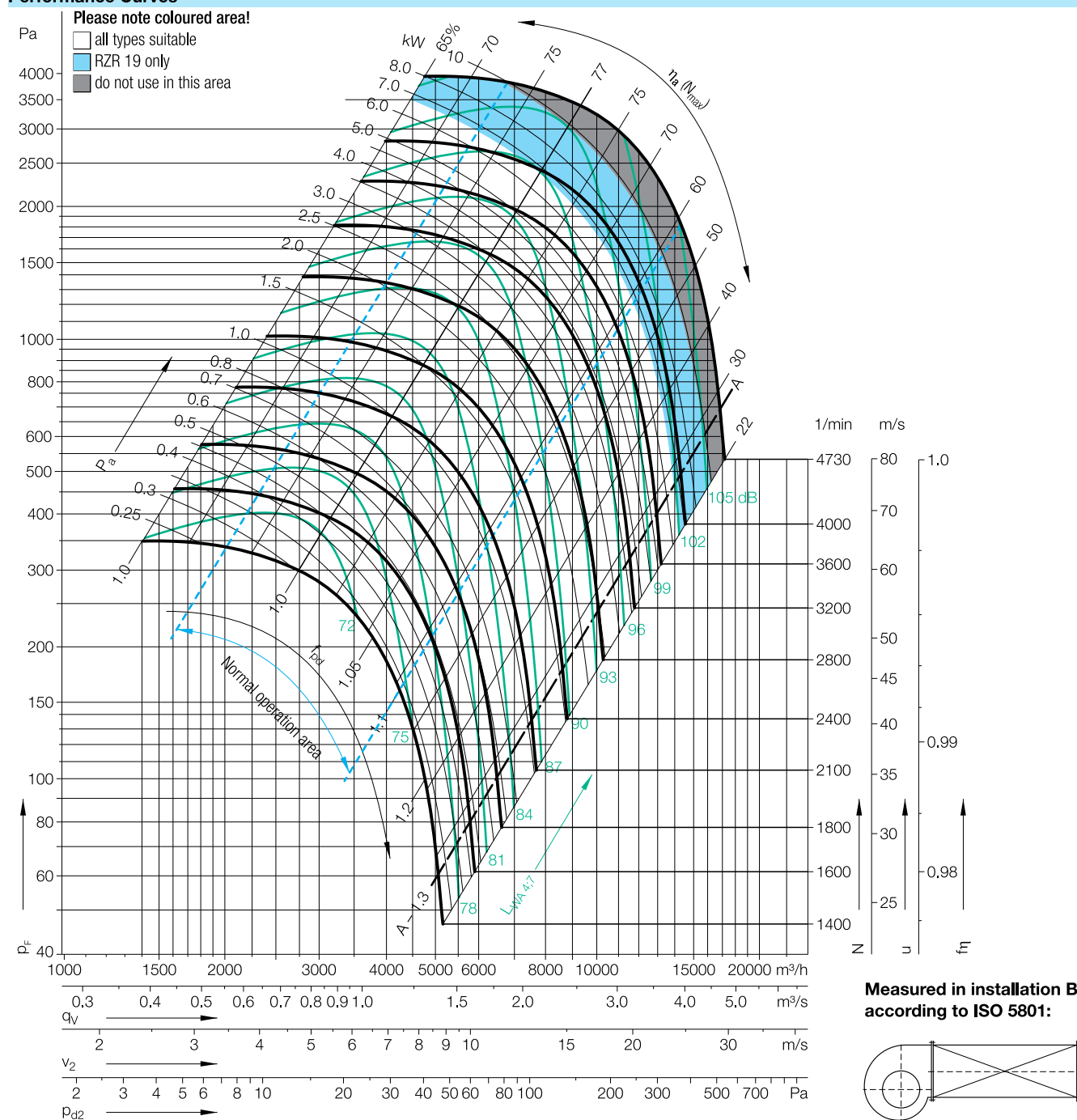
Impeller Data

Impeller weight	m	7.1	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 11/12	3793	1/min
RZR 19	4113	1/min

Performance Curves



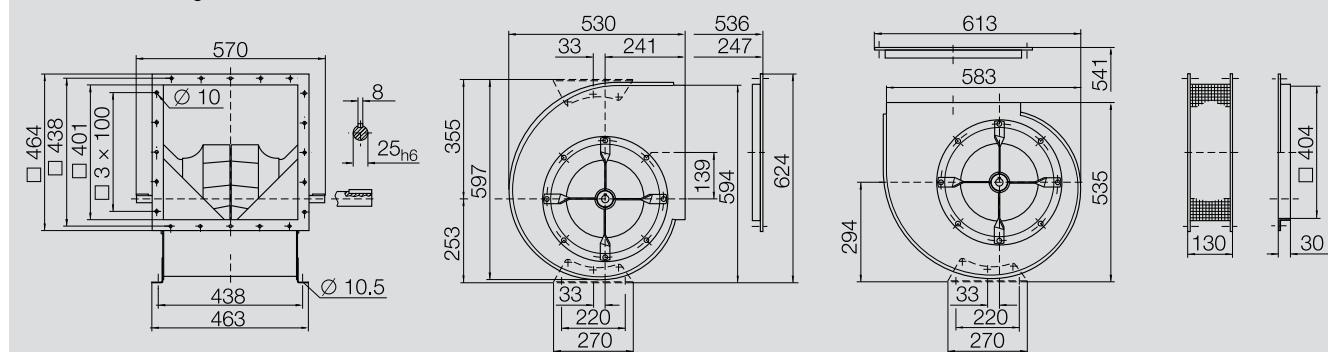
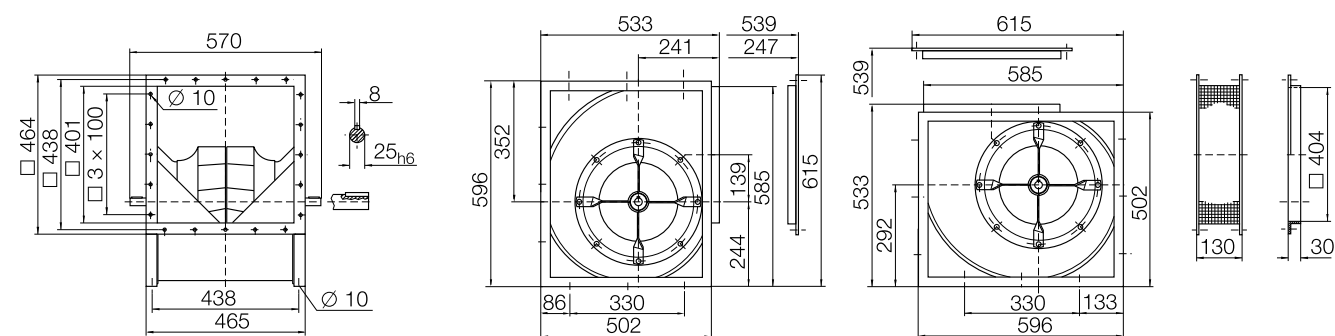
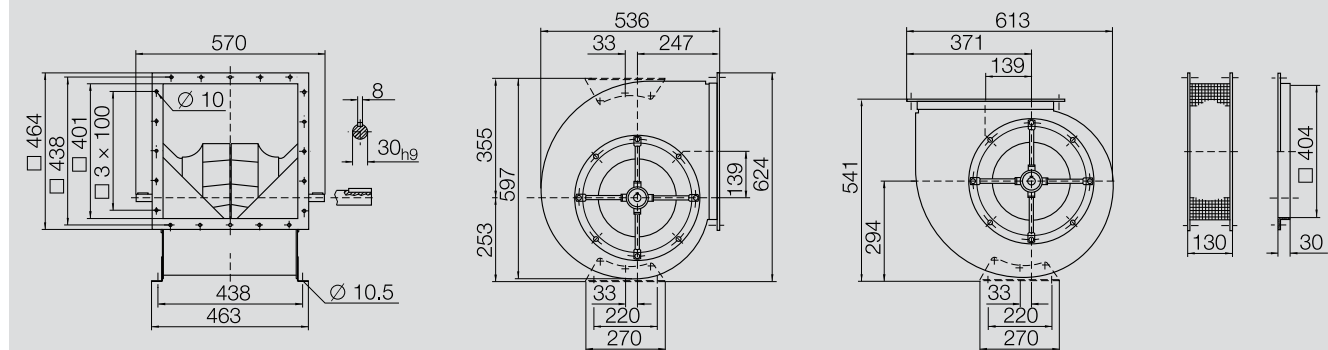
Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

Speed	Duty point
≤ 2365 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8 - 1.2 q_{Vopt}$
	$> 1.2 - 1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$
Speed	Duty point
> 2365 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8 - 1.2 q_{Vopt}$
	$> 1.2 - 1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

RZR_-0315**Dimensions** in mm, subject to change.**RZR 11-0315** 24 kg**RZR 12-0315** 27 kg**RZR 19-0315** 28 kg

RZR _-0355

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

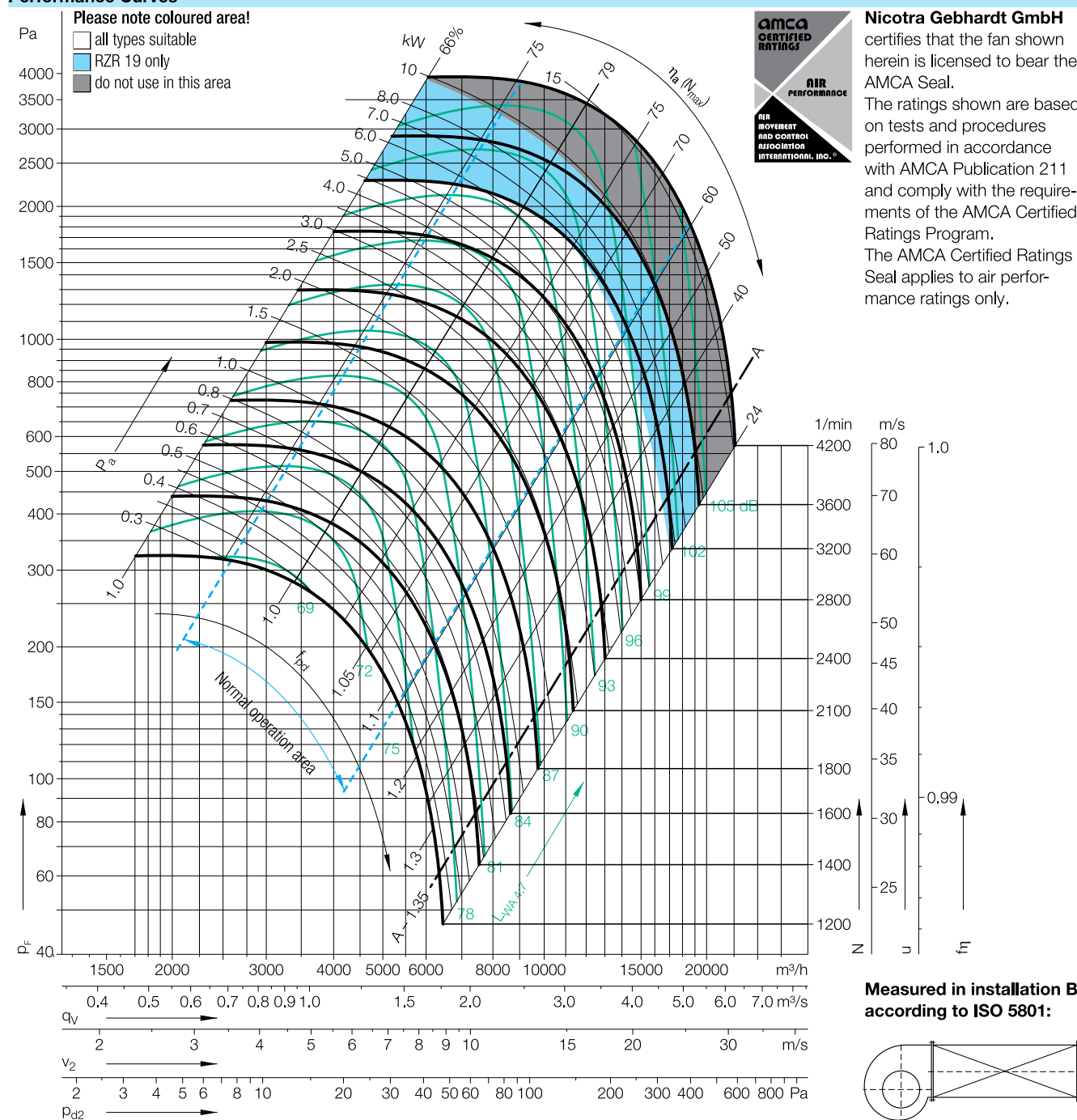
Impeller diameter	D_r	363	mm
Number of blades	z	12	
Moment of Inertia	J	0.220	kgm ²

Impeller Data

Impeller weight	m	9.1	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 11/12	3110	1/min
RZR 19	3555	1/min

Performance Curves**Nicotra Gebhardt GmbH**

certifies that the fan shown herein is licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings only.

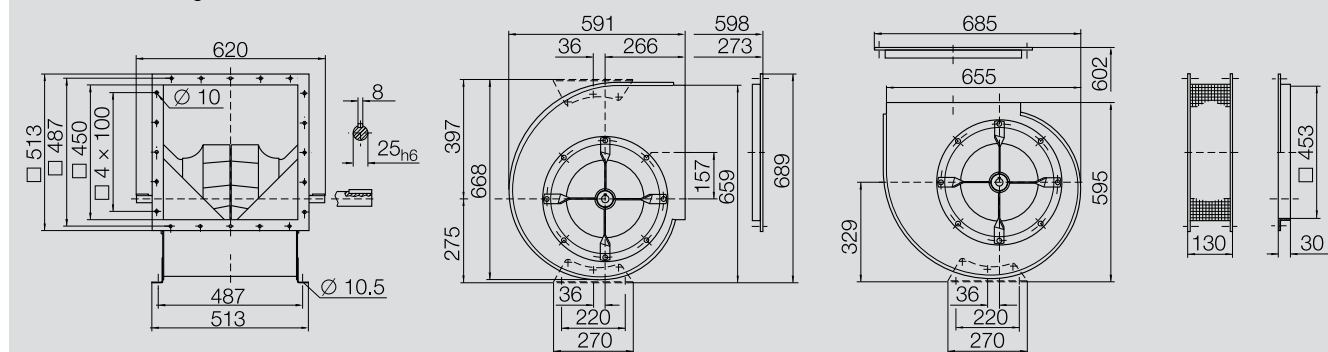
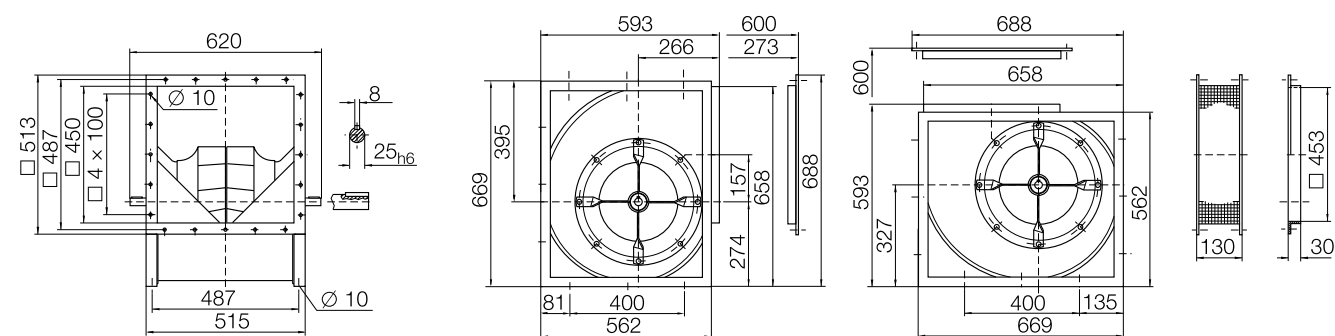
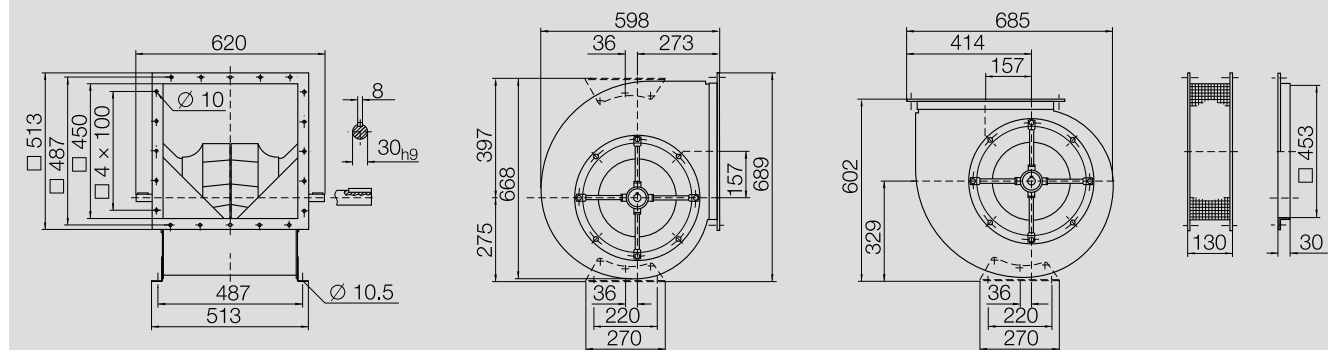
Speed	Duty point
≤2105 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}
Speed	Duty point
>2105 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}

Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

RZR_-0355**Dimensions** in mm, subject to change.**RZR 11-0355** 33 kg**RZR 12-0355** 36 kg**RZR 19-0355** 39 kg

RZR _-0400

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

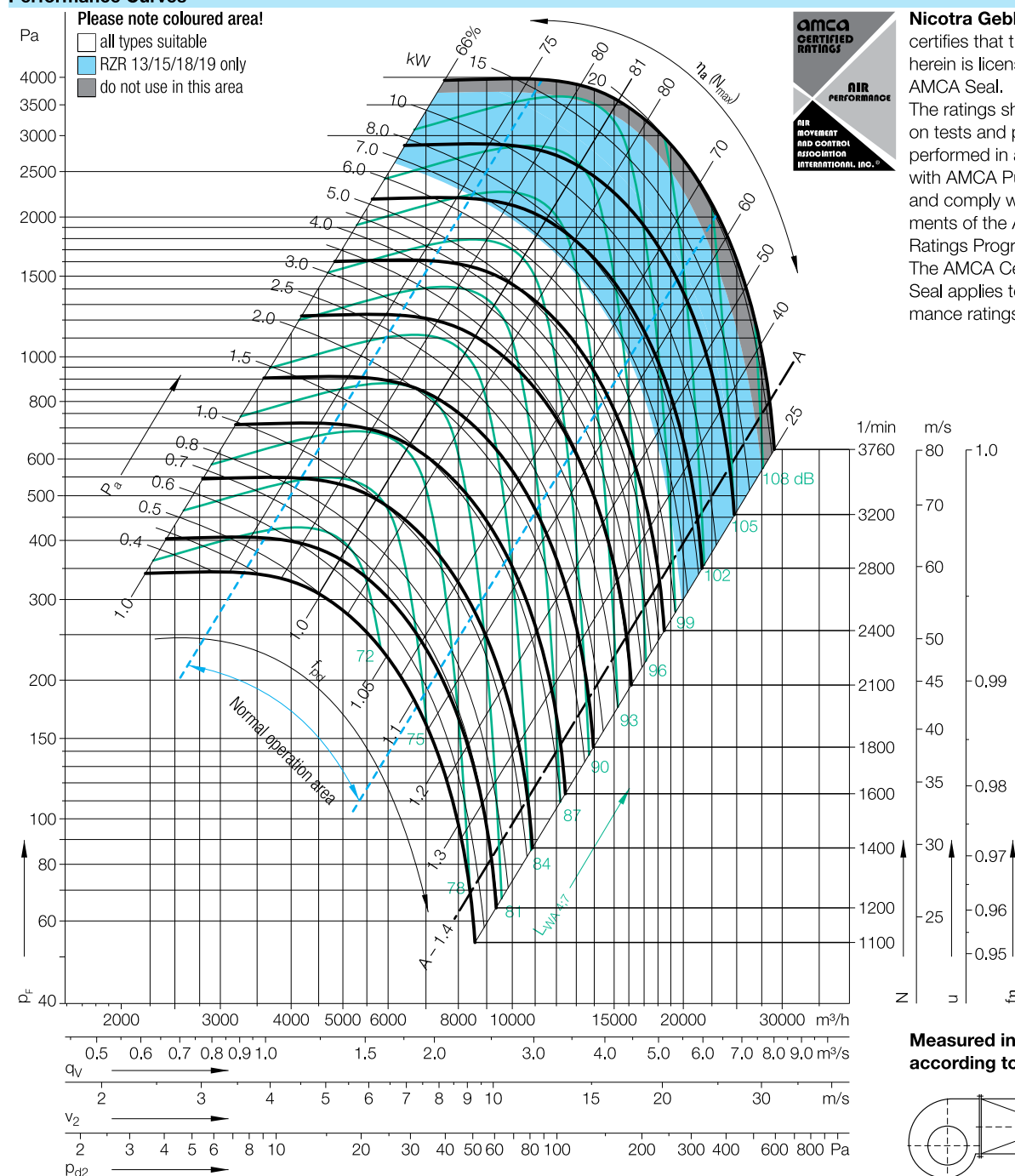
Impeller diameter	D_r	406	mm
Number of blades	z	12	
Moment of Inertia	J	0.33	kgm ²

Impeller Data

Impeller weight	m	10.5	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

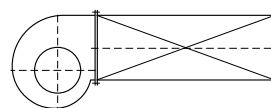
Speed limits N_{max} for ATEX execution

RZR 11/12	2552	1/min
RZR 18	2913	1/min
RZR 13	3145	1/min

Performance Curves**Nicotra Gebhardt GmbH**

certifies that the fan shown herein is licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings only.

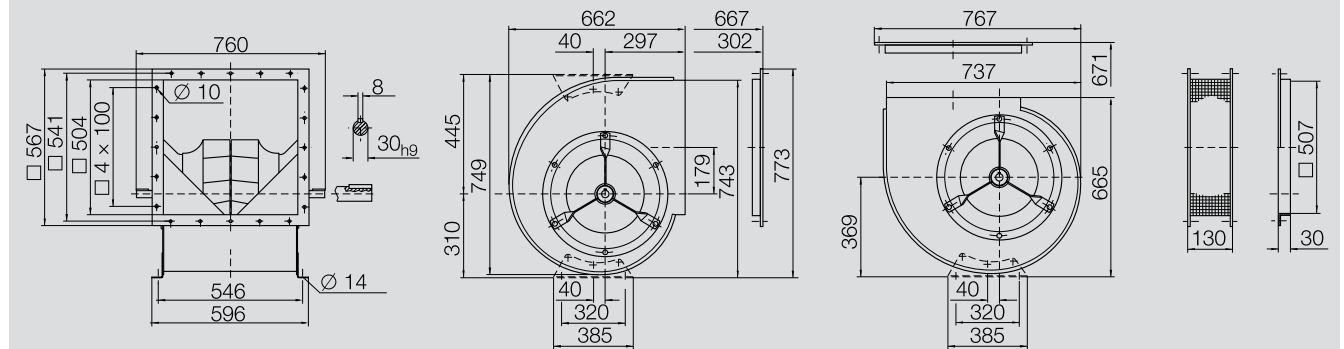
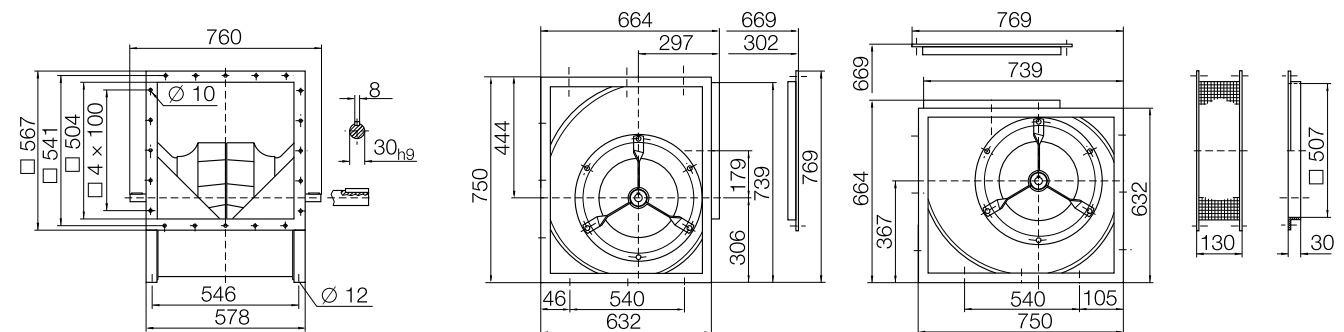
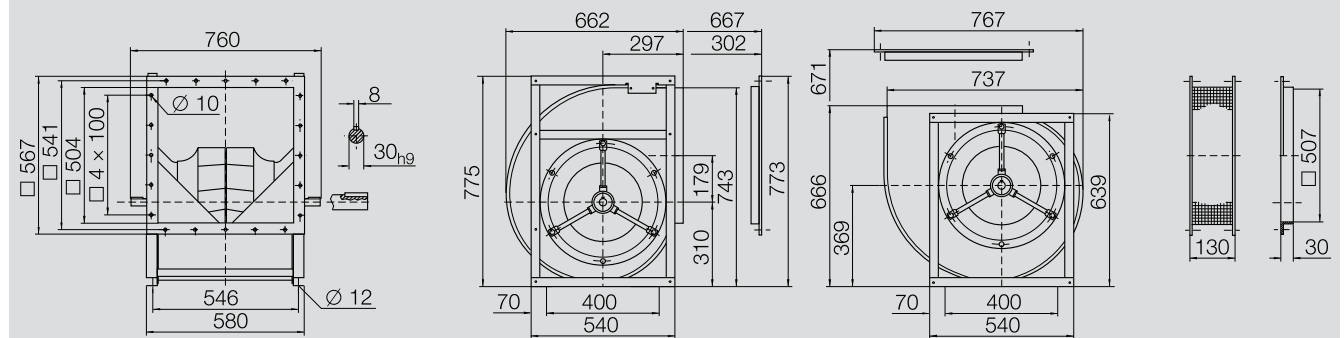
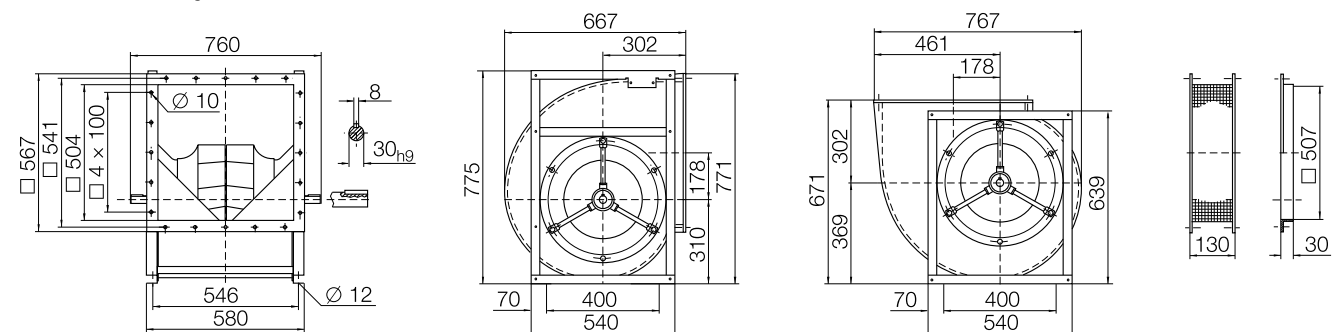
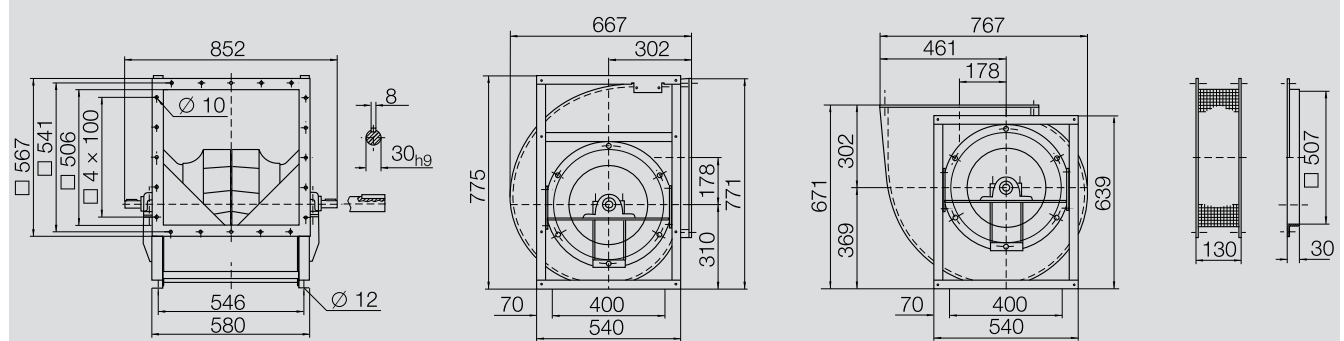
Measured in installation B according to ISO 5801:

Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤1882 1/min	≤0.8 q_{Vopt}	0	2	0	-3	-6	-9	-12	-19	dB
	>0.8-1.2 q_{Vopt}	-2	1	-2	-3	-6	-8	-14	-20	dB
	>1.2-1.6 q_{Vopt}	-3	0	-1	-3	-6	-8	-14	-21	dB
	>1.6 q_{Vopt}	-5	-3	-3	-3	-6	-7	-13	-21	dB
>1882 1/min	≤0.8 q_{Vopt}	-2	-1	-3	-1	-6	-10	-15	-21	dB
	>0.8-1.2 q_{Vopt}	-7	-4	-5	-1	-6	-9	-14	-21	dB
	>1.2-1.6 q_{Vopt}	-10	-7	-8	-1	-5	-8	-13	-21	dB
	>1.6 q_{Vopt}	-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤1882 1/min	≤0.8 q_{Vopt}	13	7	4	-3	-8	-14	-17	-25	dB
	>0.8-1.2 q_{Vopt}	10	5	3	-2	-7	-13	-17	-25	dB
	>1.2-1.6 q_{Vopt}	7	2	2	-2	-6	-12	-18	-27	dB
	>1.6 q_{Vopt}	5	1	1	-2	-6	-10	-17	-27	dB
>1882 1/min	≤0.8 q_{Vopt}	11	4	2	0	-7	-12	-17	-24	dB
	>0.8-1.2 q_{Vopt}	7	1	-2	-3	-6	-10	-15	-23	dB
	>1.2-1.6 q_{Vopt}	3	-2	-4	-3	-5	-9	-14	-23	dB
	>1.6 q_{Vopt}	2	-3	-5	-3	-5	-9	-12	-21	dB

RZR_-0400**Dimensions** in mm, subject to change.**RZR 11-0400** 43 kg**RZR 12-0400** 49 kg**RZR 15-0400** 61 kg**RZR 19-0400** 66 kg**RZR 18-0400** 70 kg **RZR 13-0400** 75 kg

RZR _-0450

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

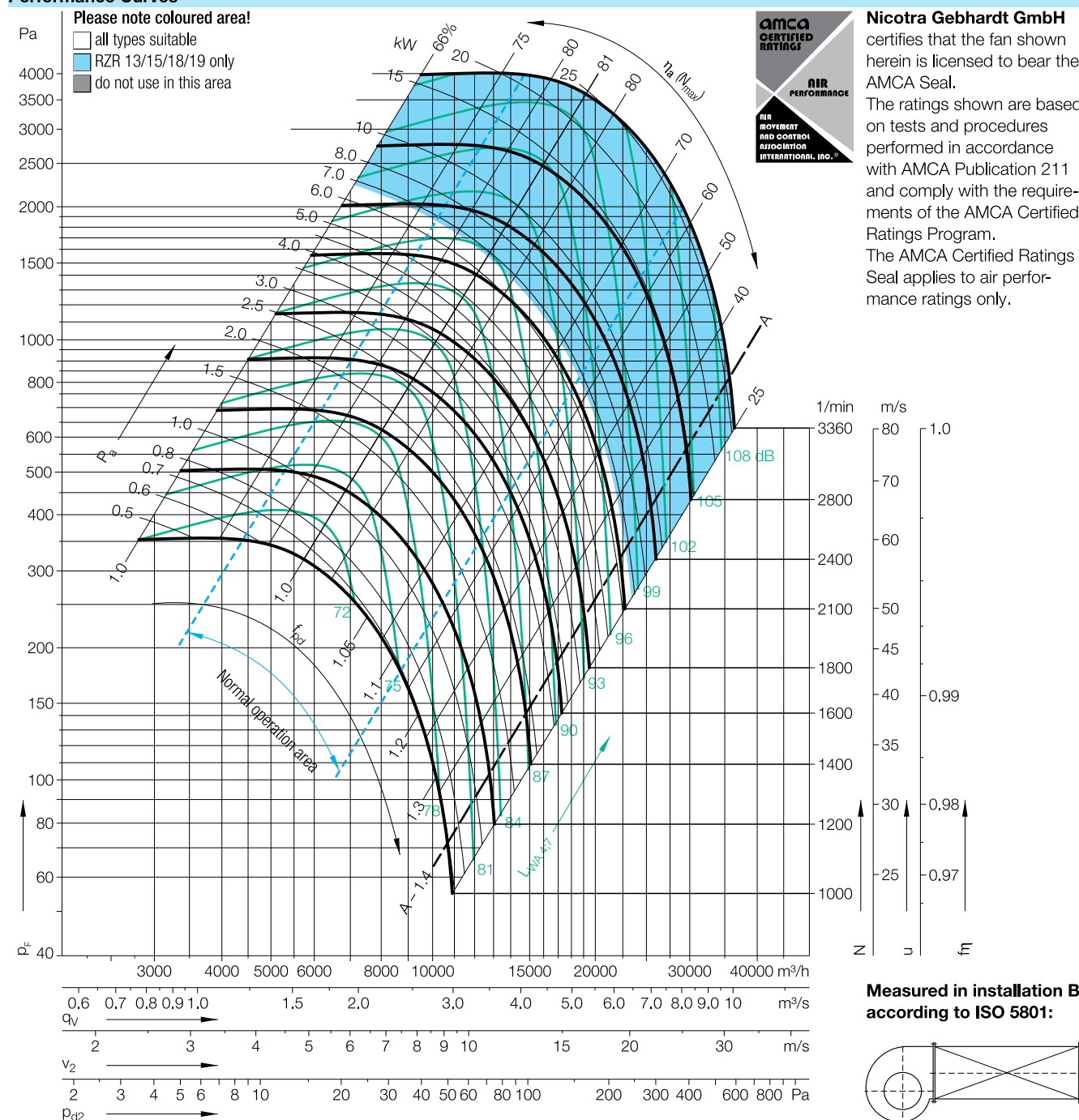
Impeller diameter	D_r	455	mm
Number of blades	z	12	
Moment of Inertia	J	0.6	kgm ²

Impeller Data

Impeller weight	m	15.8	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 11/12	2111	1/min
RZR 18	2410	1/min
RZR 13	2922	1/min

Performance Curves**Nicotra Gebhardt GmbH**

certifies that the fan shown herein is licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings only.

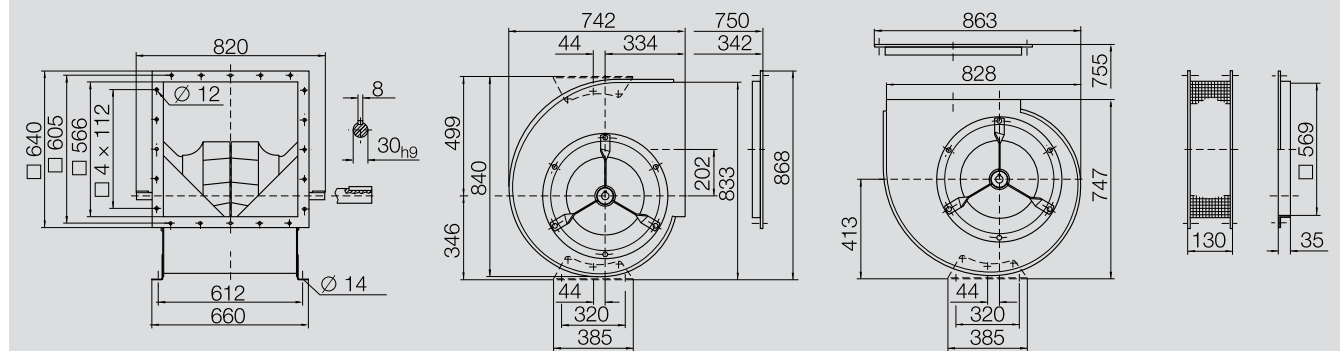
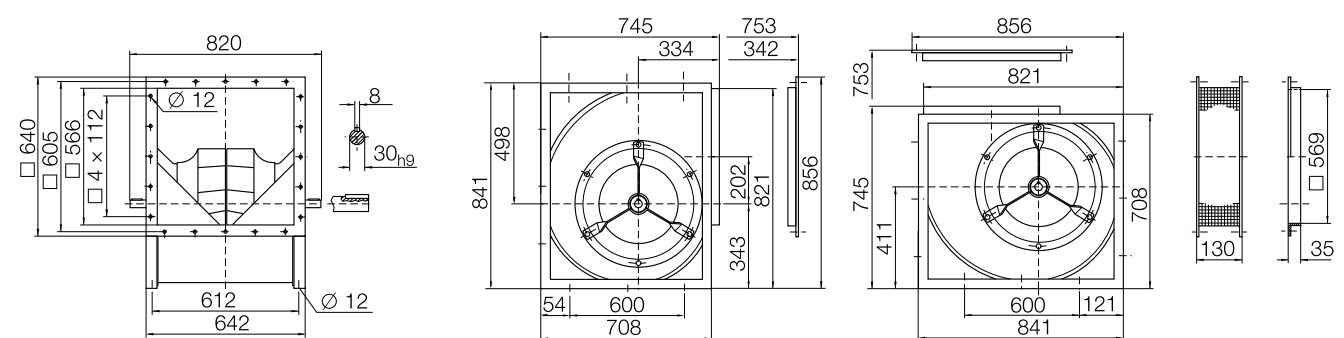
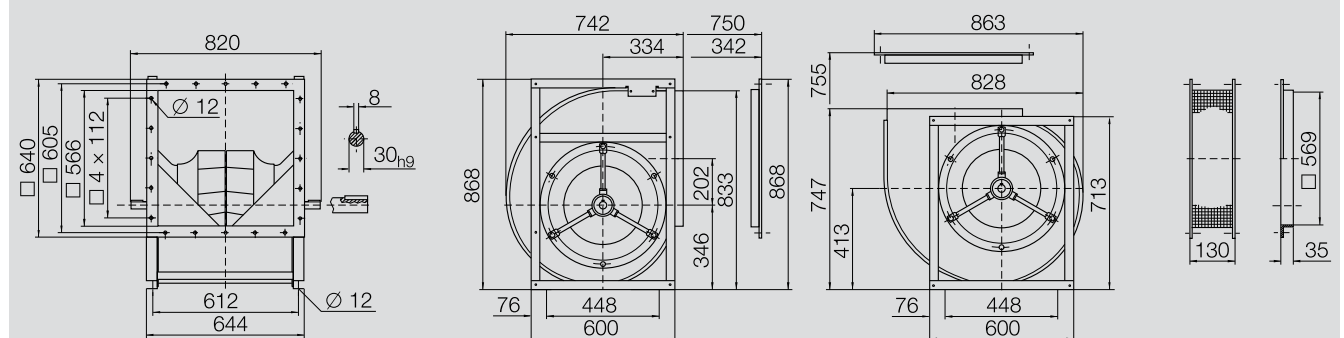
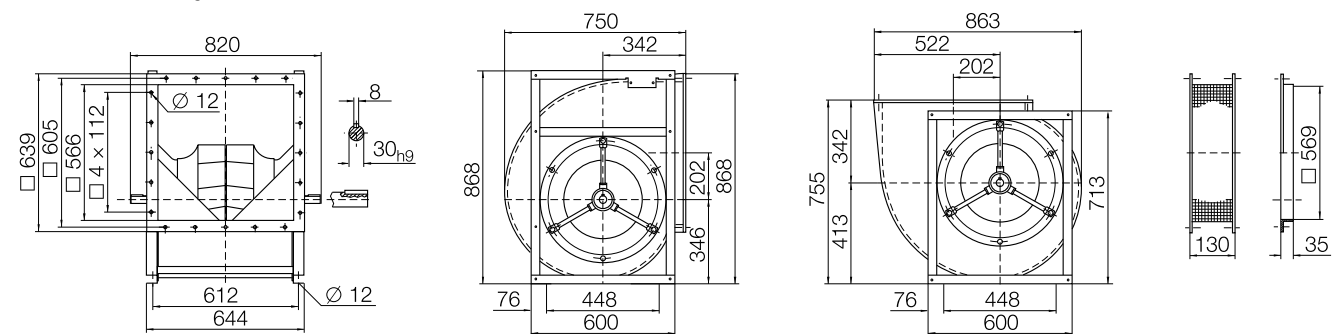
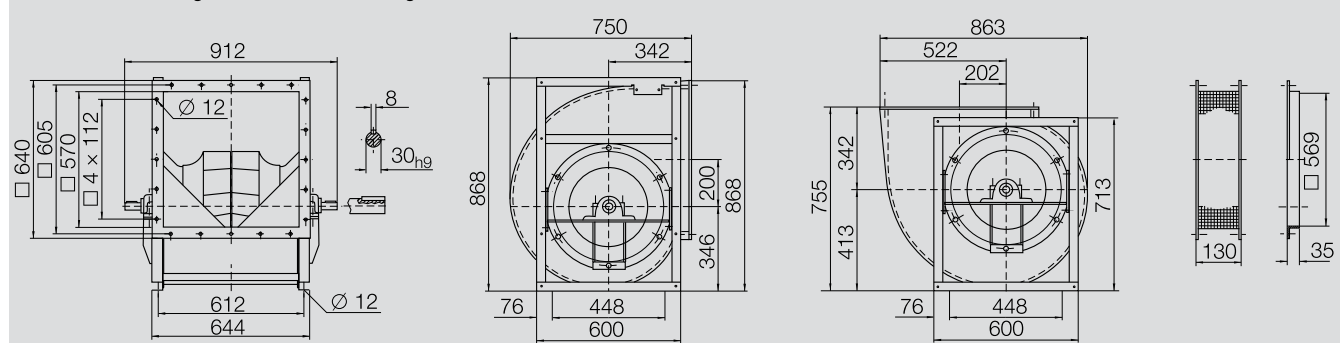
Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

Speed	Duty point
≤1679 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}
Speed	Duty point
>1679 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

RZR_-0450**Dimensions** in mm, subject to change.**RZR 11-0450** 54 kg**RZR 12-0450** 60 kg**RZR 15-0450** 73 kg**RZR 19-0450** 82 kg**RZR 18-0450** 83 kg **RZR 13-0450** 92 kg

RZR _-0500

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

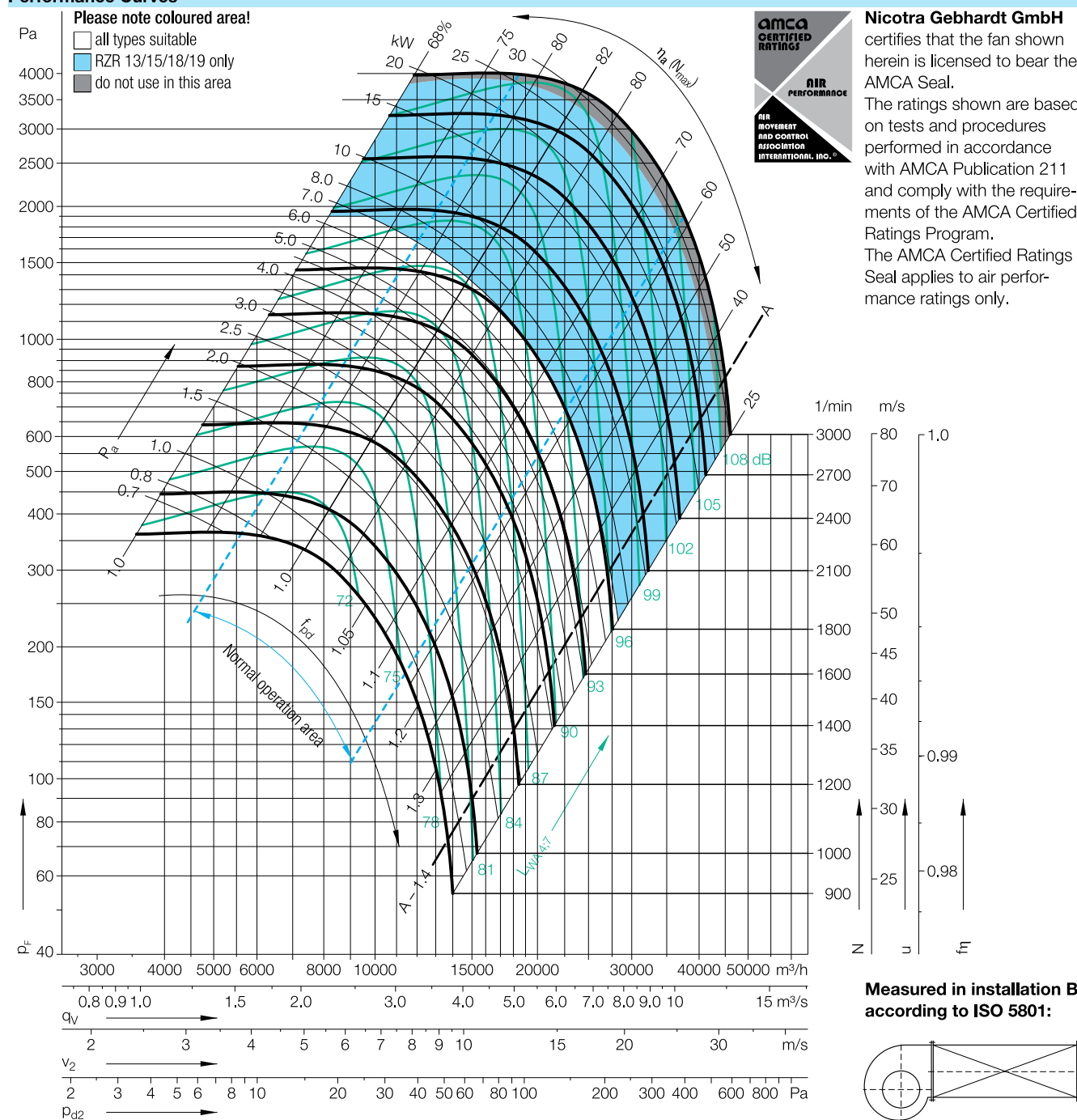
Impeller diameter	D_r	510	mm
Number of blades	z	12	
Moment of Inertia	J	0.9	kgm ²

Impeller Data

Impeller weight	m	19.9	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 11/12	1752	1/min
RZR 18	2000	1/min
RZR 13	2534	1/min

Performance Curves

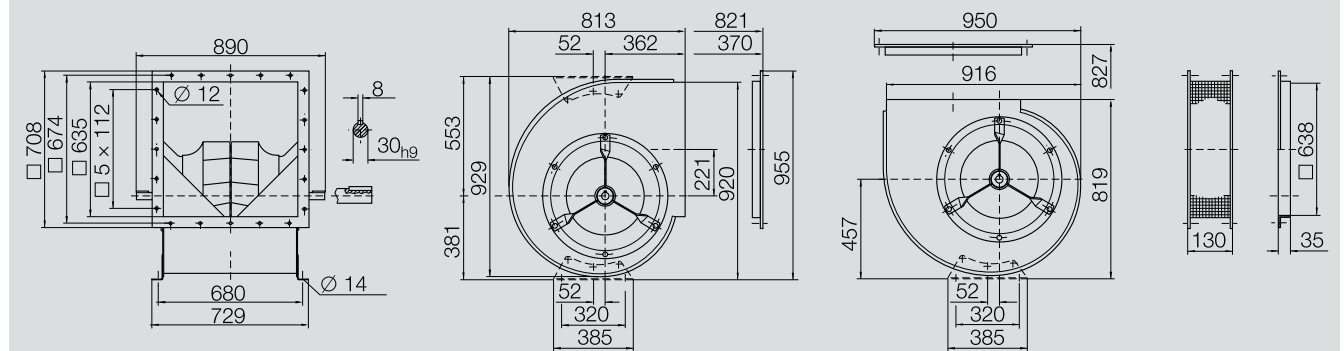
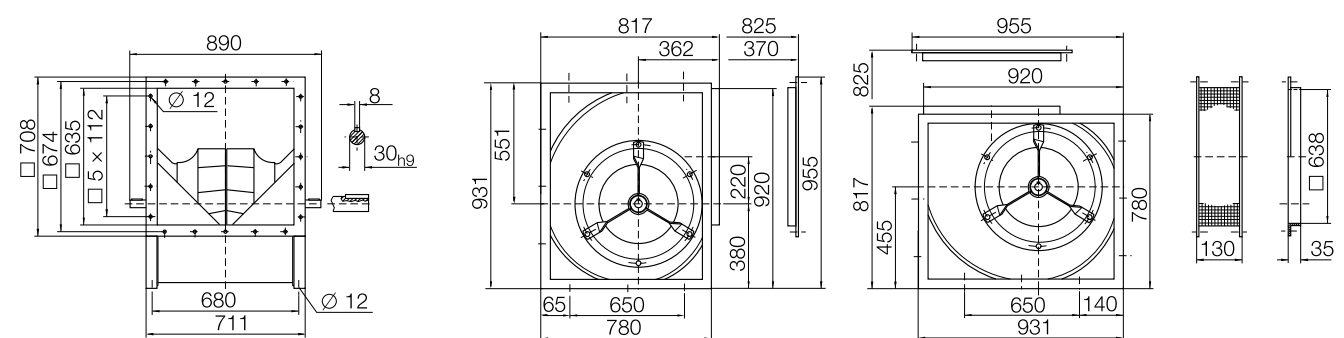
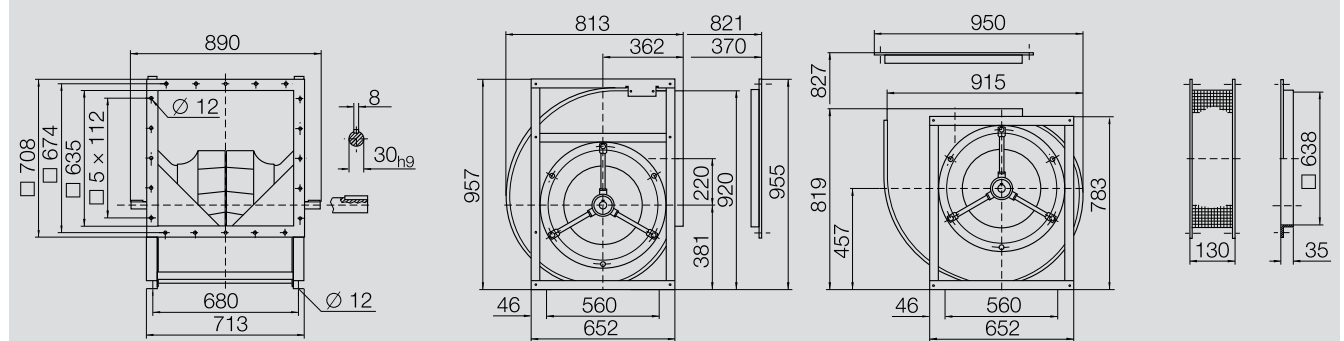
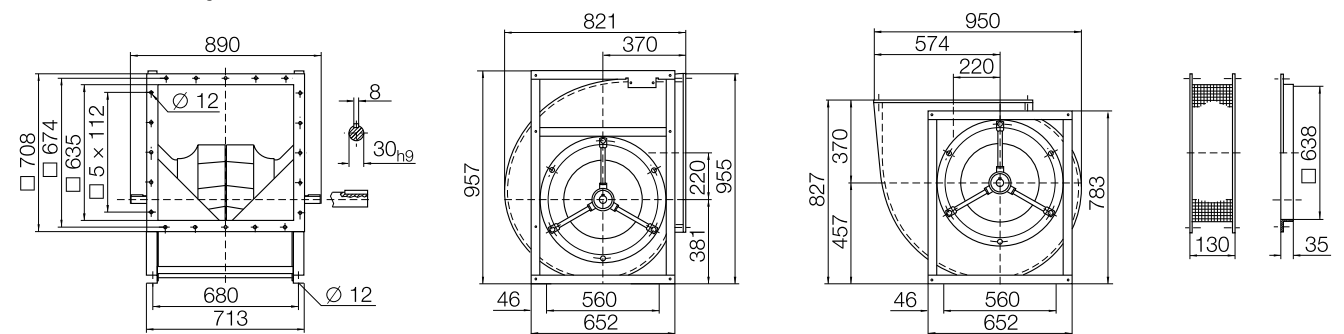
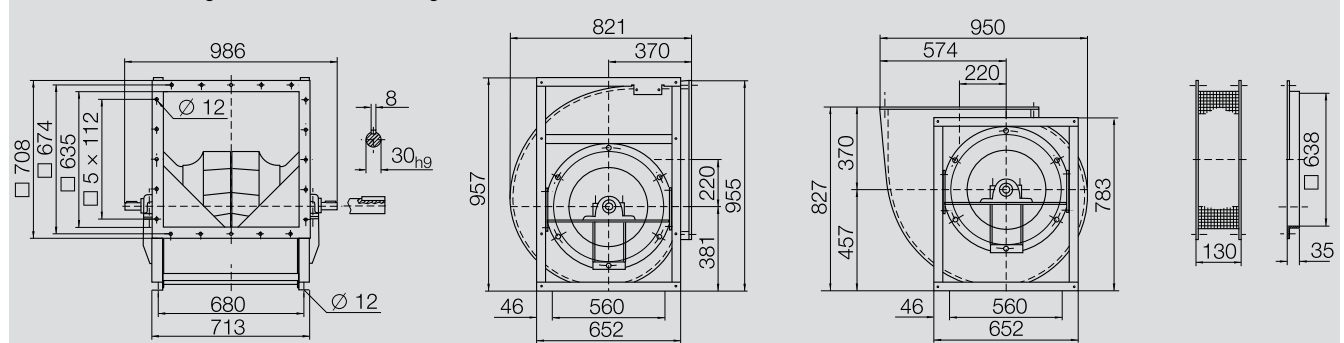
Speed	Duty point
≤1498 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}
Speed	Duty point
>1498 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}

Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

RZR_-0500**Dimensions** in mm, subject to change.**RZR 11-0500** 65 kg**RZR 12-0500** 72 kg**RZR 15-0500** 94 kg**RZR 19-0500** 105 kg**RZR 18-0500** 105 kg **RZR 13-0500** 116 kg

RZR _-0560

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

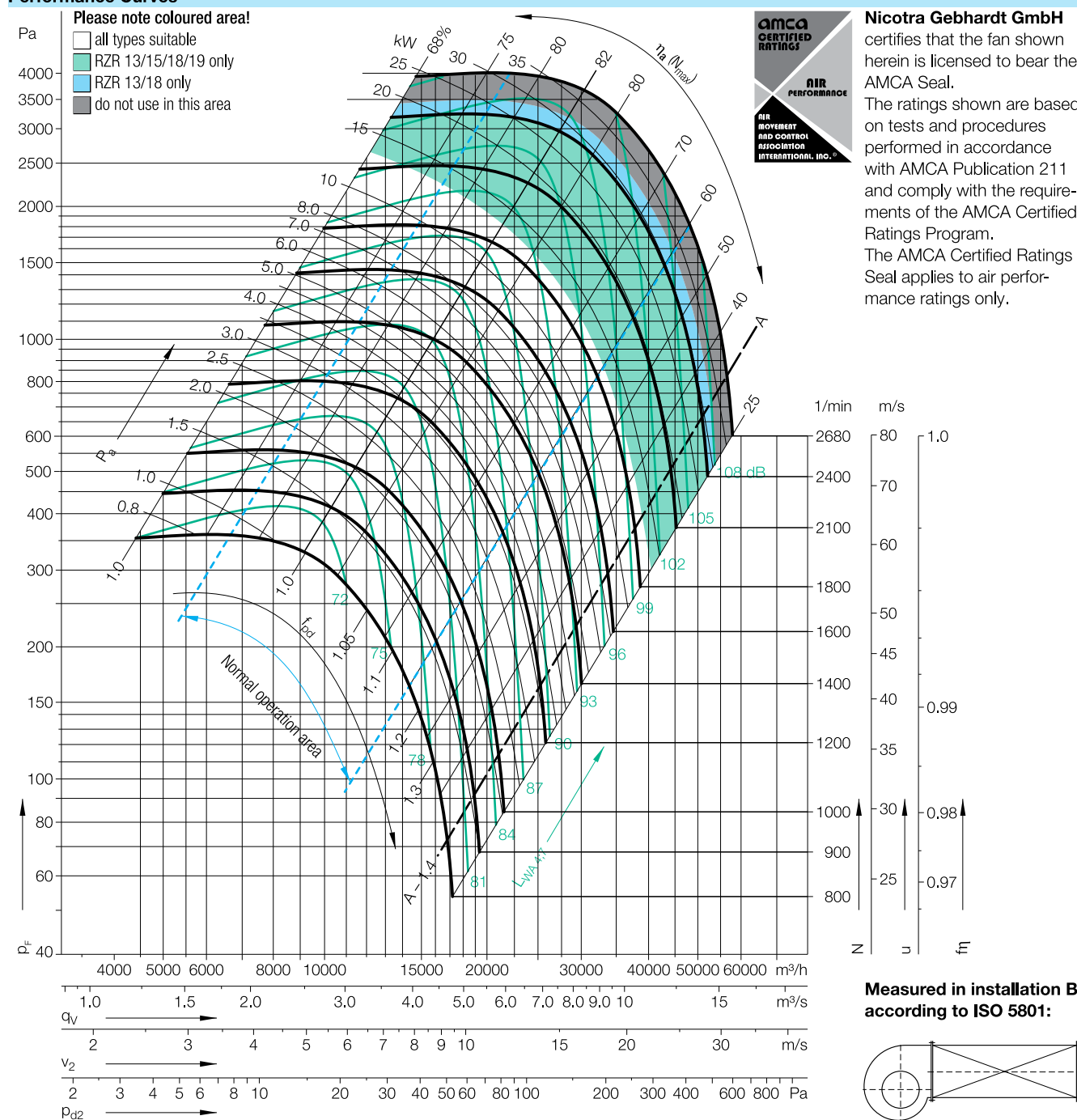
Impeller diameter	D_r	570 mm
Number of blades	z	12
Moment of Inertia	J	1.7 kgm ²

Impeller Data

Impeller weight	m	30 kg
Density of media	ρ_1	1.2 kg/m ³
Tolerance class (DIN 24166)		1

Speed limits N_{max} for ATEX execution

RZR 11/12/18	1660	1/min
RZR 13	2163	1/min

Performance Curves

Speed	Duty point
≤1340 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}
Speed	Duty point
>1340 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}

Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

RZR _-0630

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

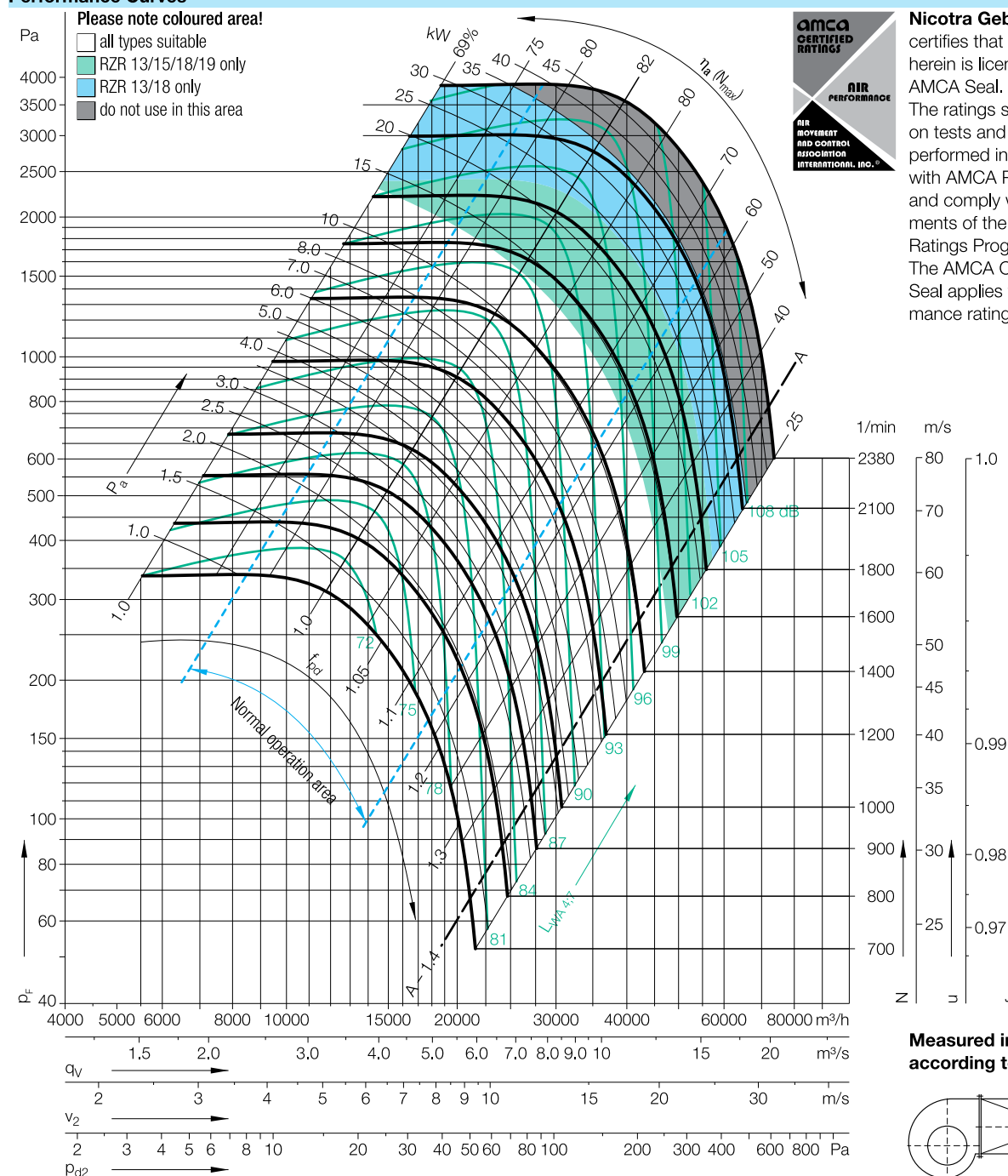
Impeller diameter	D_r	640	mm
Number of blades	z	12	
Moment of Inertia	J	2.4	kgm ²

Impeller Data

Impeller weight	m	38	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

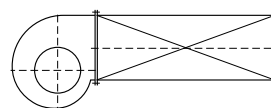
Speed limits N_{max} for ATEX execution

RZR 11/12/18	1367	1/min
RZR 13	2055	1/min

Performance Curves**Nicotra Gebhardt GmbH**

certifies that the fan shown herein is licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings only.

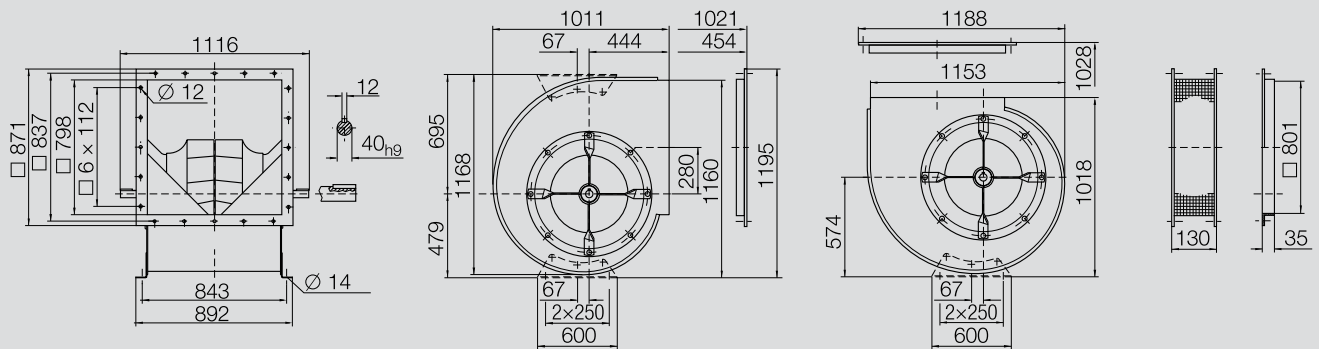
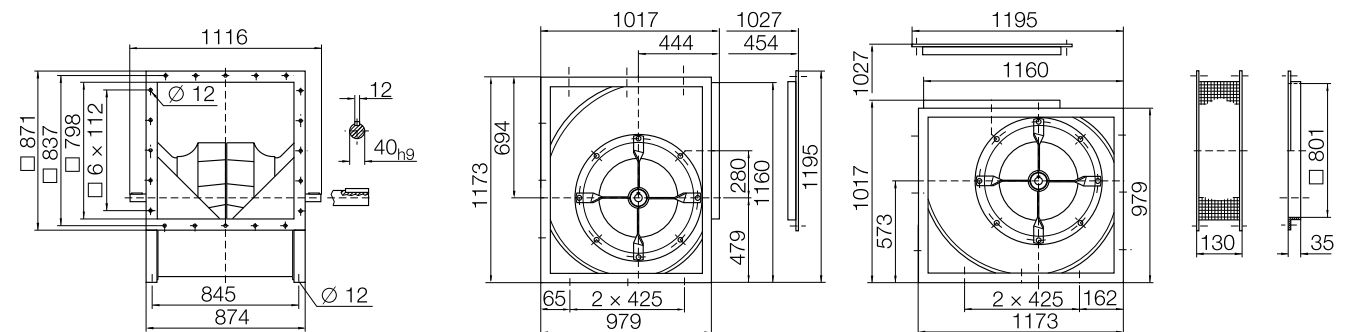
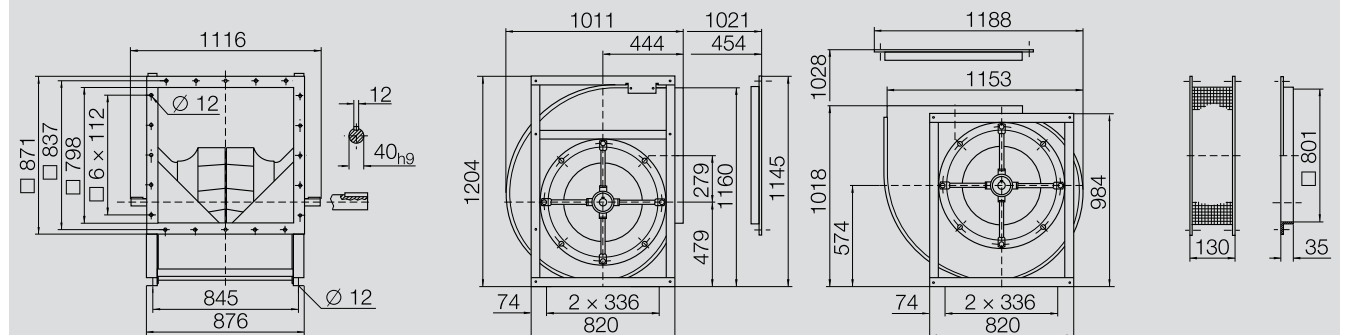
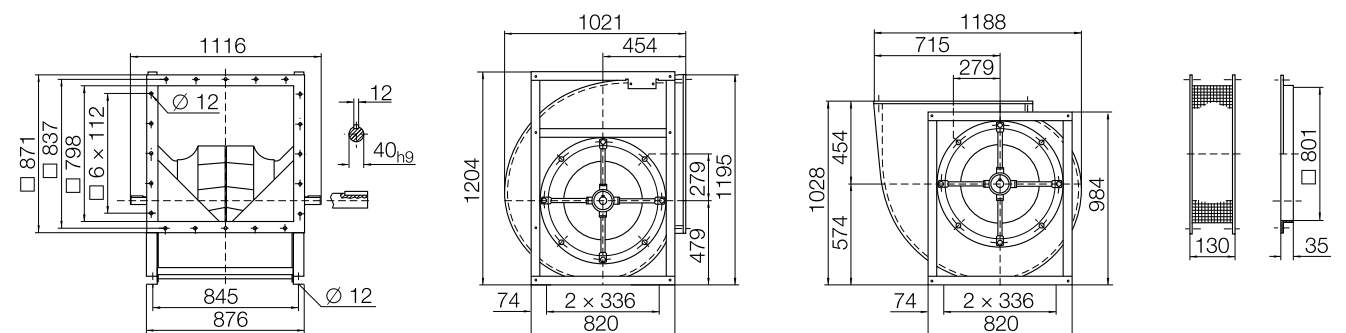
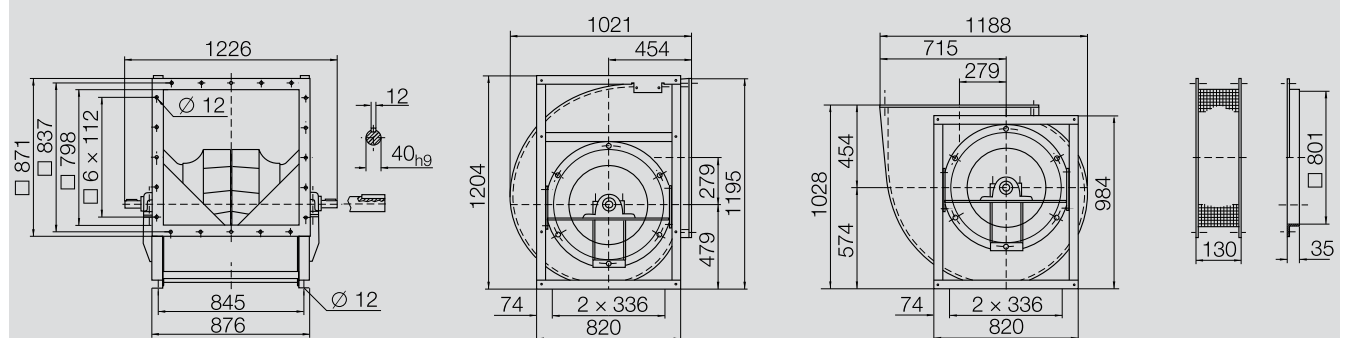
Measured in installation B according to ISO 5801:

Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤1194 1/min	≤0.8 q_{Vopt}	0	2	0	-3	-6	-9	-12	-19	dB
	>0.8-1.2 q_{Vopt}	-2	1	-2	-3	-6	-8	-14	-20	dB
	>1.2-1.6 q_{Vopt}	-3	0	-1	-3	-6	-8	-14	-21	dB
	>1.6 q_{Vopt}	-5	-3	-3	-3	-6	-7	-13	-21	dB
>1194 1/min	≤0.8 q_{Vopt}	-2	-1	-3	-1	-6	-10	-15	-21	dB
	>0.8-1.2 q_{Vopt}	-7	-4	-5	-1	-6	-9	-14	-21	dB
	>1.2-1.6 q_{Vopt}	-10	-7	-8	-1	-5	-8	-13	-21	dB
	>1.6 q_{Vopt}	-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤1194 1/min	≤0.8 q_{Vopt}	13	7	4	-3	-8	-14	-17	-25	dB
	>0.8-1.2 q_{Vopt}	10	5	3	-2	-7	-13	-17	-25	dB
	>1.2-1.6 q_{Vopt}	7	2	2	-2	-6	-12	-18	-27	dB
	>1.6 q_{Vopt}	5	1	1	-2	-6	-10	-17	-27	dB
>1194 1/min	≤0.8 q_{Vopt}	11	4	2	0	-7	-12	-17	-24	dB
	>0.8-1.2 q_{Vopt}	7	1	-2	-3	-6	-10	-15	-23	dB
	>1.2-1.6 q_{Vopt}	3	-2	-4	-3	-5	-9	-14	-23	dB
	>1.6 q_{Vopt}	2	-3	-5	-3	-5	-9	-12	-21	dB

RZR _-0630**Dimensions** in mm, subject to change.**RZR 11-0630** 124 kg**RZR 12-0630** 132 kg**RZR 15-0630** 149 kg**RZR 19-0630** 162 kg**RZR 18-0630** 167 kg **RZR 13-0630** 180 kg

RZR _-0710

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

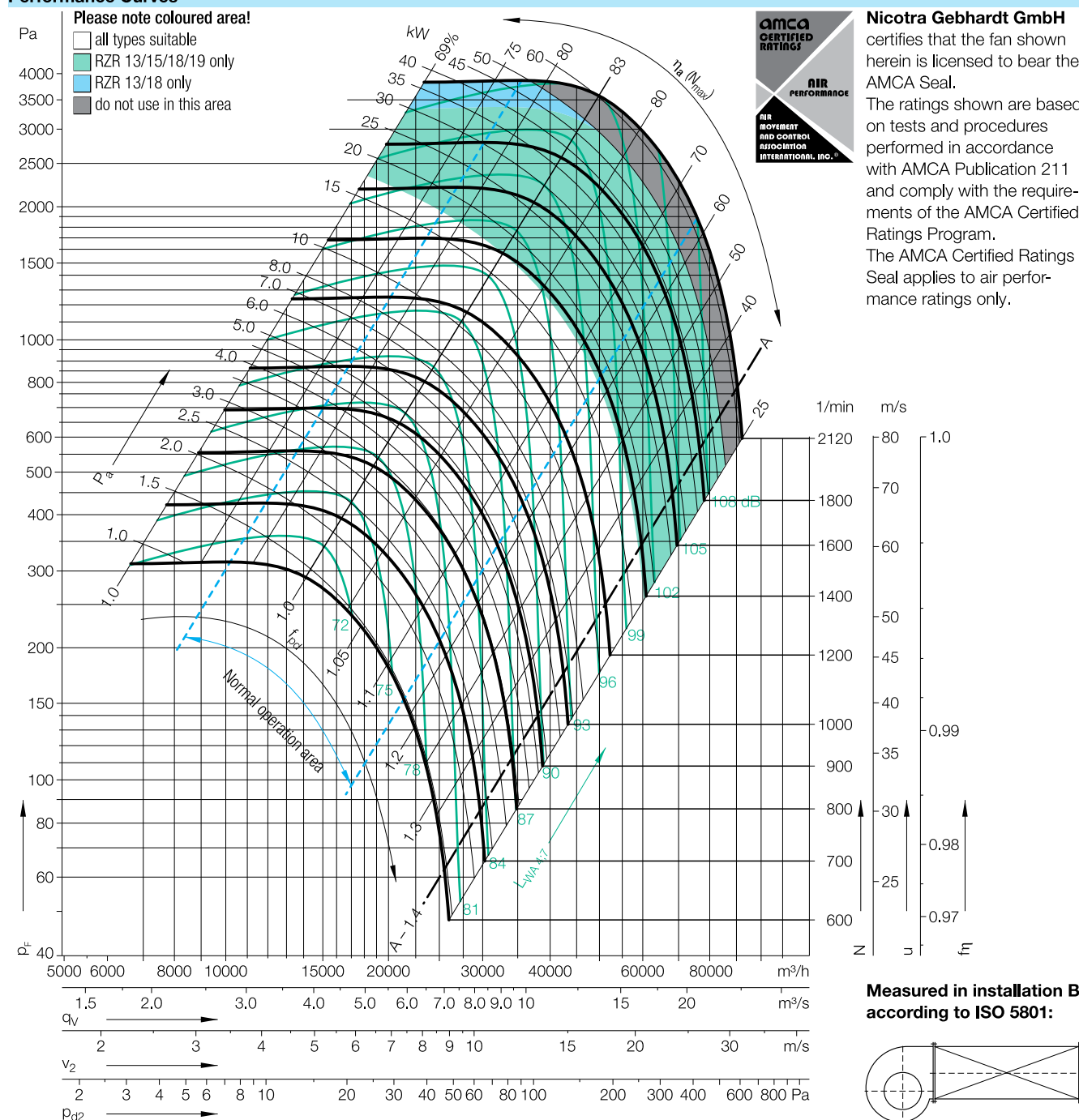
Impeller diameter	D_r	718	mm
Number of blades	z	12	
Moment of Inertia	J	4.8	kgm ²

Impeller Data

Impeller weight	m	52	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

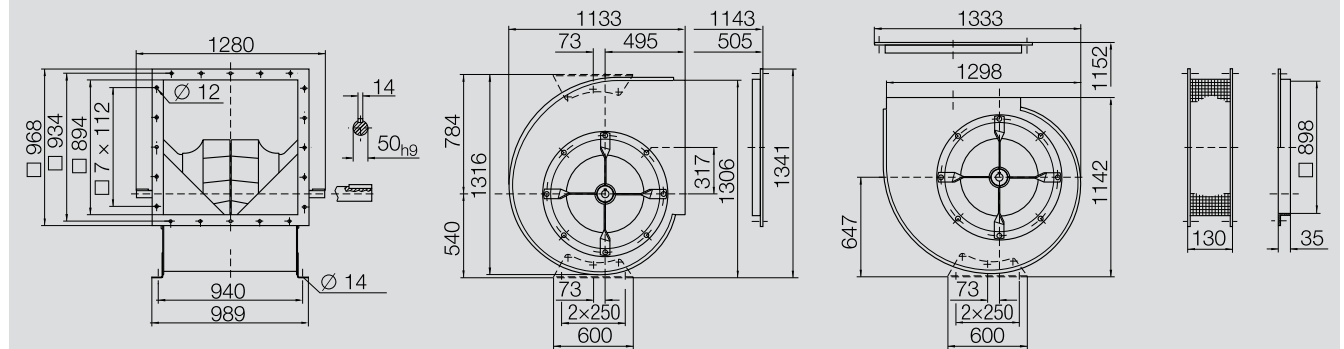
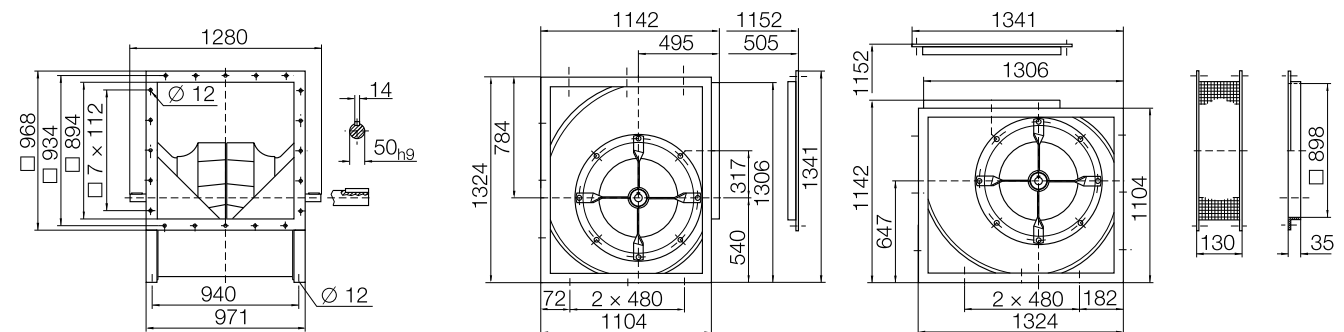
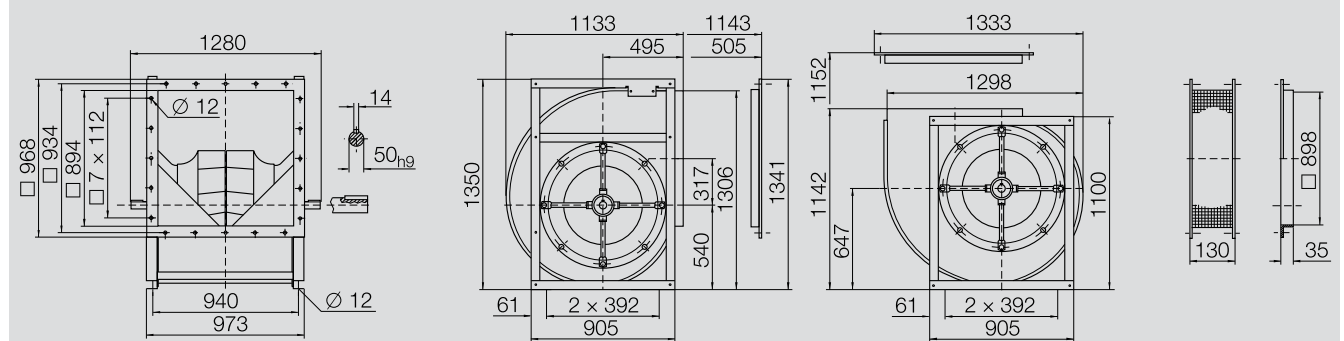
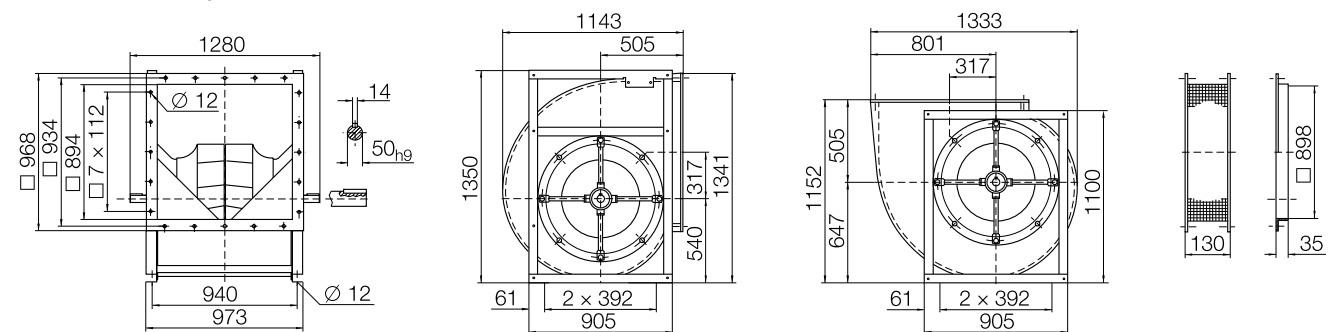
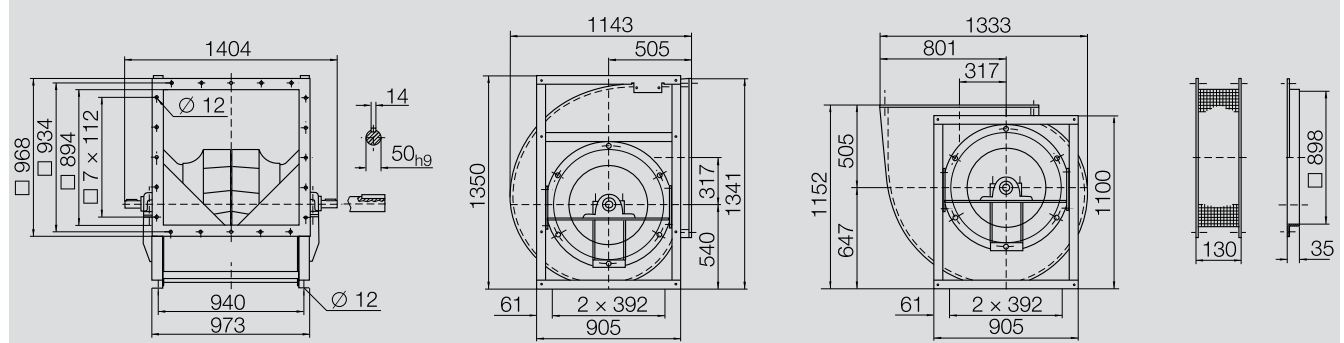
RZR 11/12/18	1128	1/min
RZR 13	1825	1/min

Performance CurvesRelative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

RZR_-0710**Dimensions** in mm, subject to change.**RZR 11-0710** 177 kg**RZR 12-0710** 194 kg**RZR 15-0710** 201 kg**RZR 19-0710** 225 kg**RZR 18-0710** 230 kg **RZR 13-0710** 254 kg

RZR _-0800

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

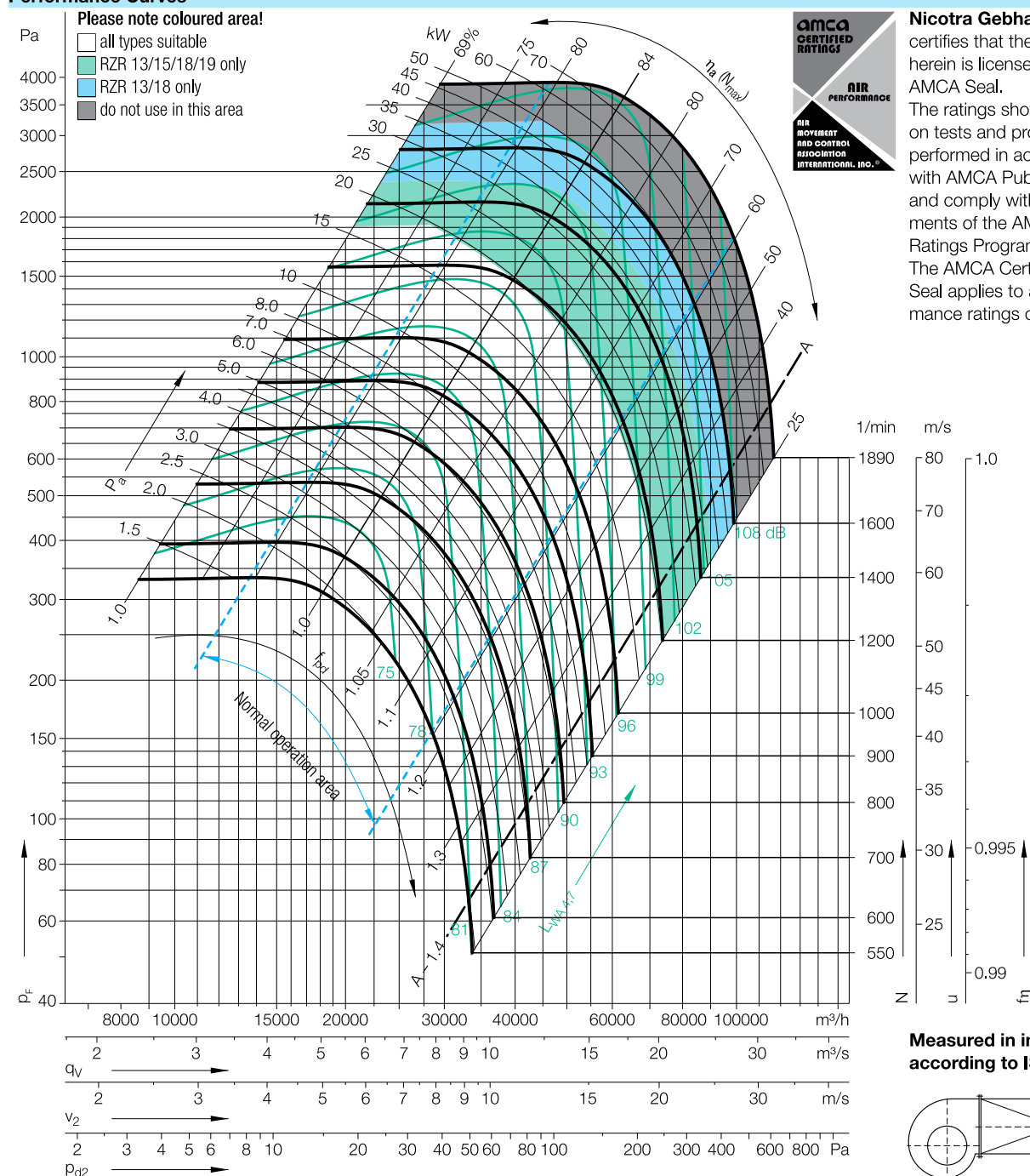
Impeller diameter	D_r	808	mm
Number of blades	z	12	
Moment of Inertia	J	6.85	kgm ²

Impeller Data

Impeller weight	m	69	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 11/18	927	1/min
RZR 13	1474	1/min

Performance Curves**Nicotra Gebhardt GmbH**

certifies that the fan shown herein is licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings only.

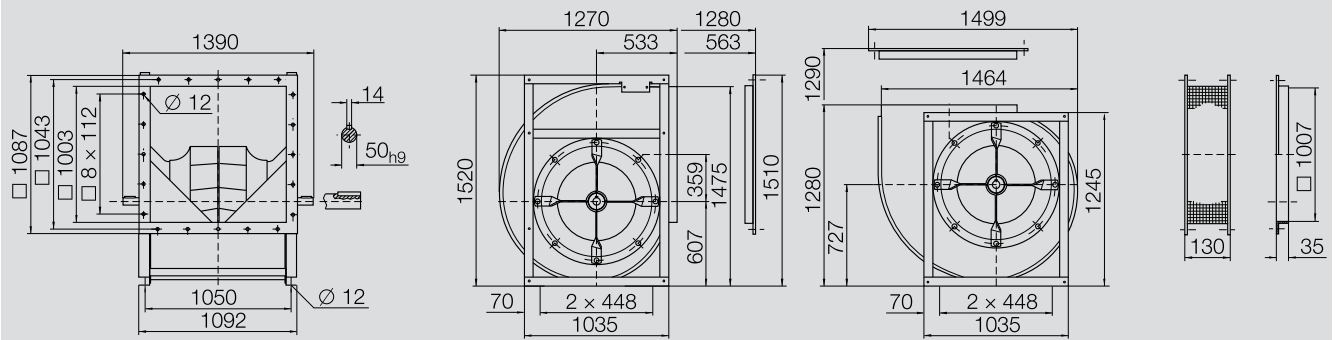
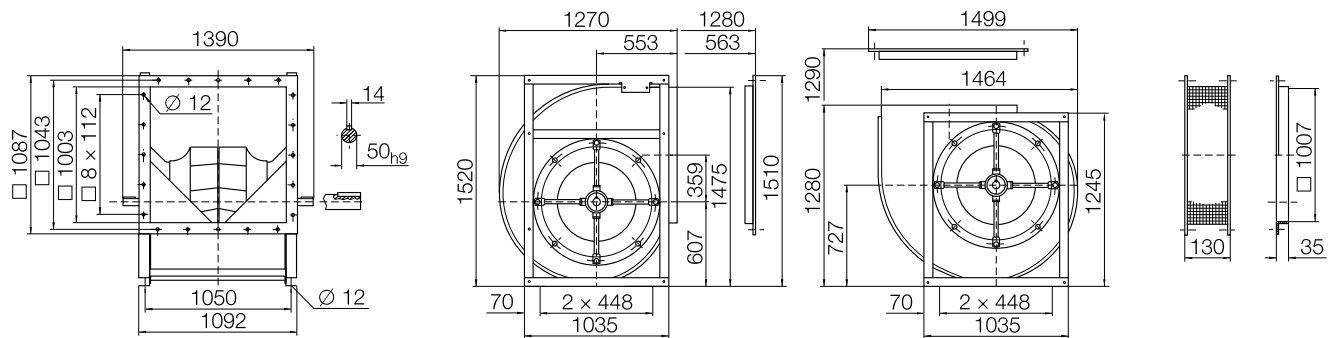
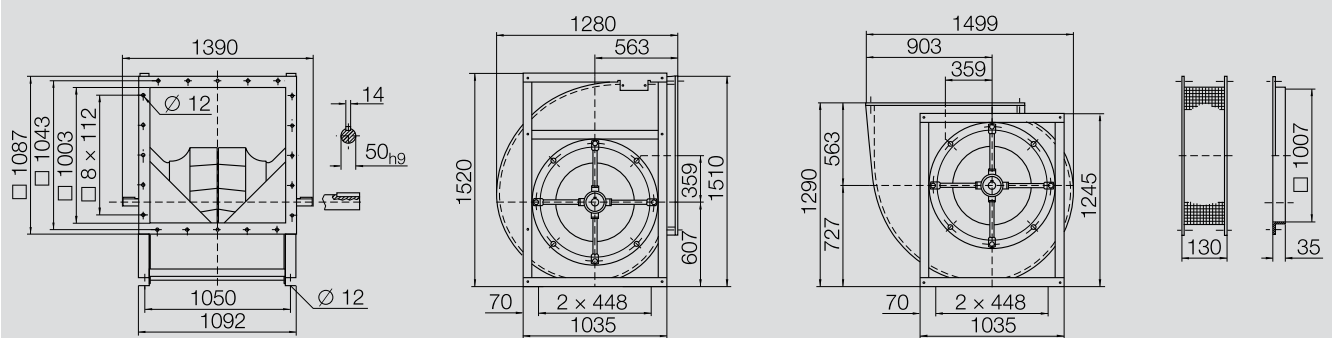
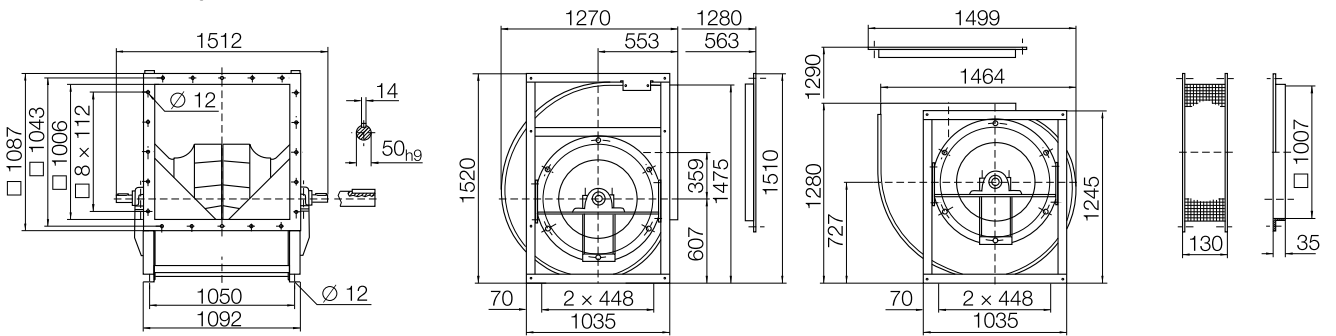
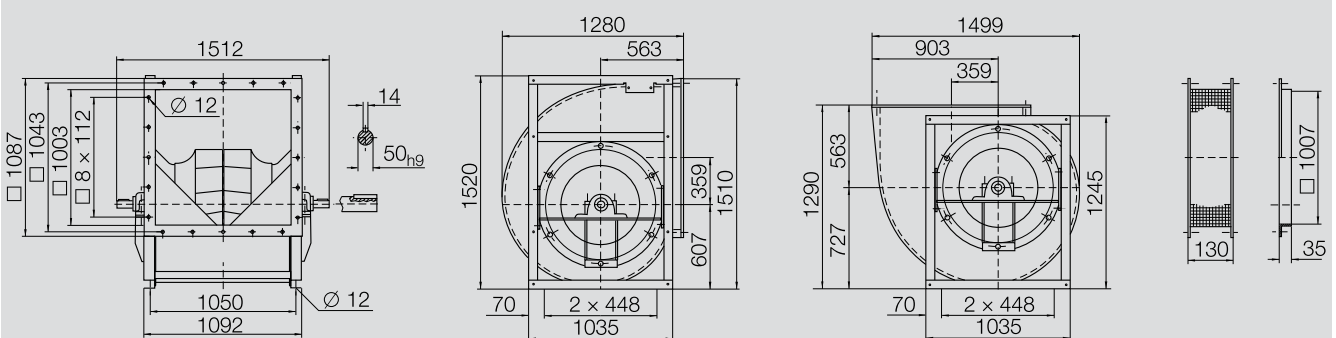
Speed	Duty point
≤ 945 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8 - 1.2 q_{Vopt}$
	$> 1.2 - 1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$
Speed	Duty point
> 945 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8 - 1.2 q_{Vopt}$
	$> 1.2 - 1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$

Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

RZR_-0800**Dimensions** in mm, subject to change.**RZR 11-0800** 250 kg**RZR 15-0800** 250 kg**RZR 19-0800** 280 kg**RZR 18-0800** 289 kg**RZR 13-0800** 319 kg

RZR _-0900

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

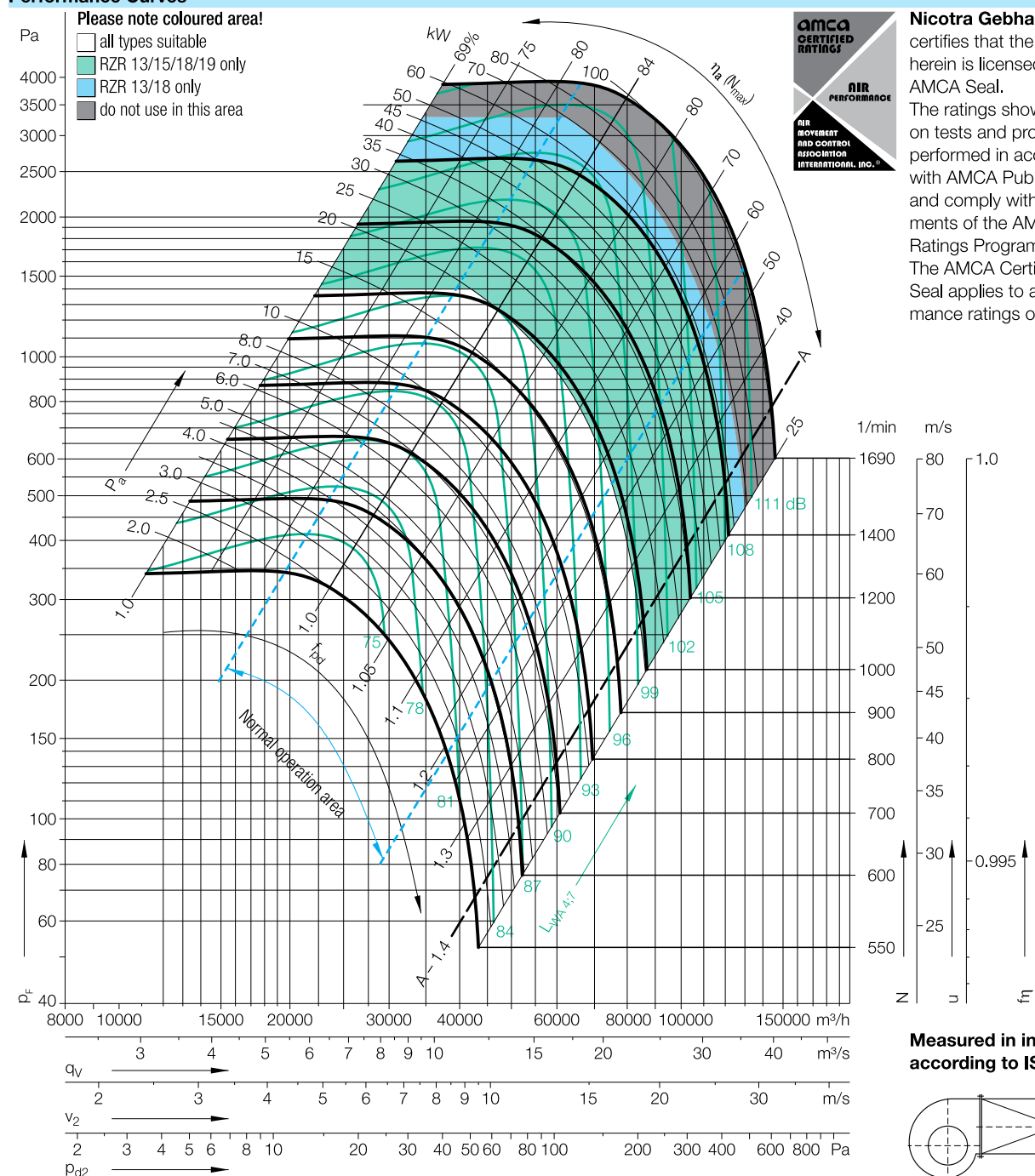
Impeller diameter	D_r	905	mm
Number of blades	z	12	
Moment of Inertia	J	15.5	kgm ²

Impeller Data

Impeller weight	m	109	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 11/18	767	1/min
RZR 13	1339	1/min

Performance Curves

Nicotra Gebhardt GmbH certifies that the fan shown herein is licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings only.

Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

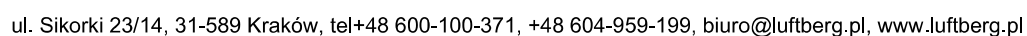
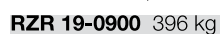
Speed	Duty point
≤ 844 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8 - 1.2 q_{Vopt}$
	$> 1.2 - 1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$
Speed	Duty point
> 844 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8 - 1.2 q_{Vopt}$
	$> 1.2 - 1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

RZR 11-0900 358 kg



RZR _-1000

Performance certified is for installation type B - free inlet, ducted outlet.

Power rating (kW) does not include transmission losses.

Performance ratings do not include the effects of appurtenances (accessories).

Technical Data**Impeller Data**

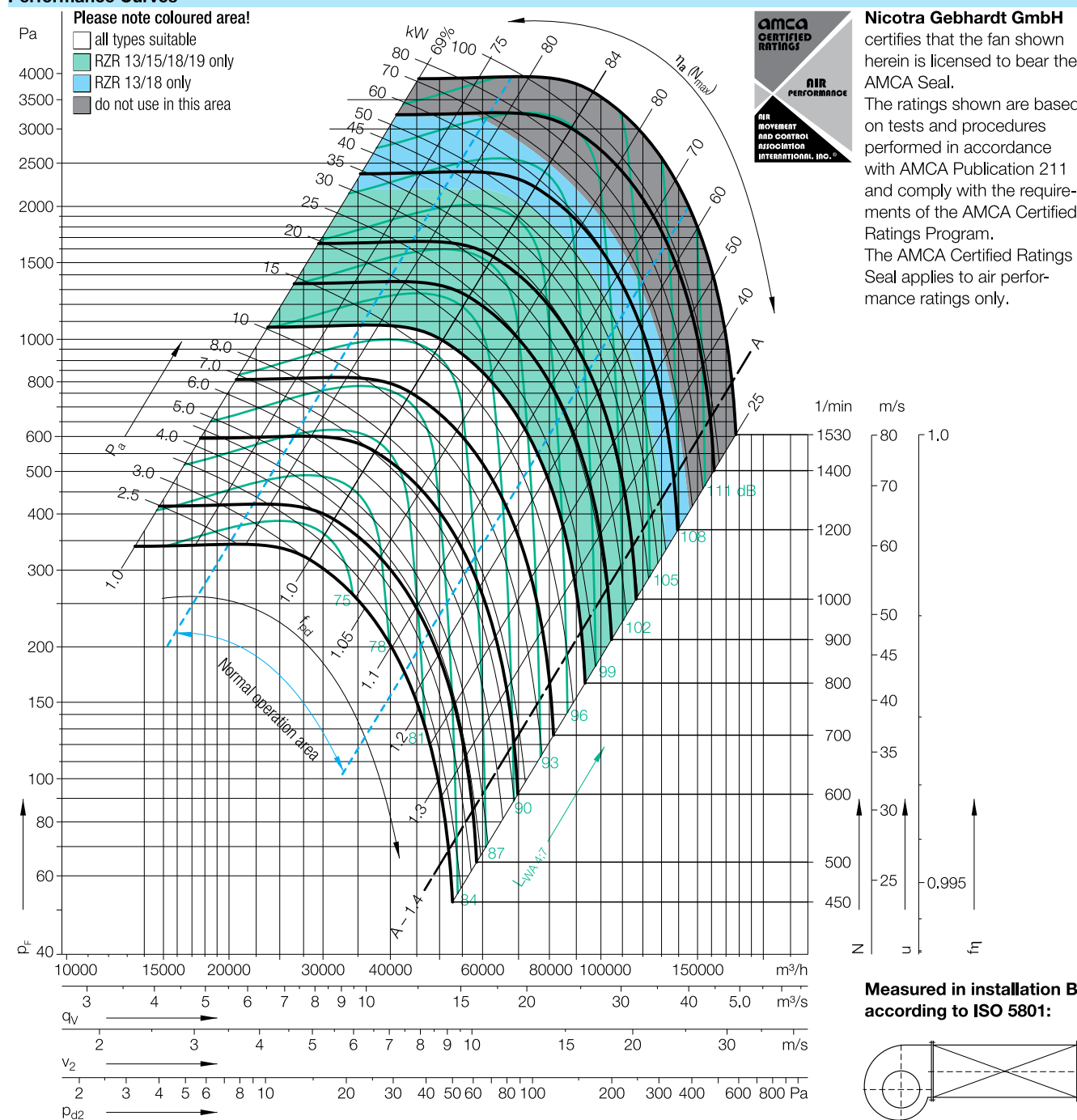
Impeller diameter	D_r	1000	mm
Number of blades	z	12	
Moment of Inertia	J	22	kgm ²

Impeller Data

Impeller weight	m	133	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

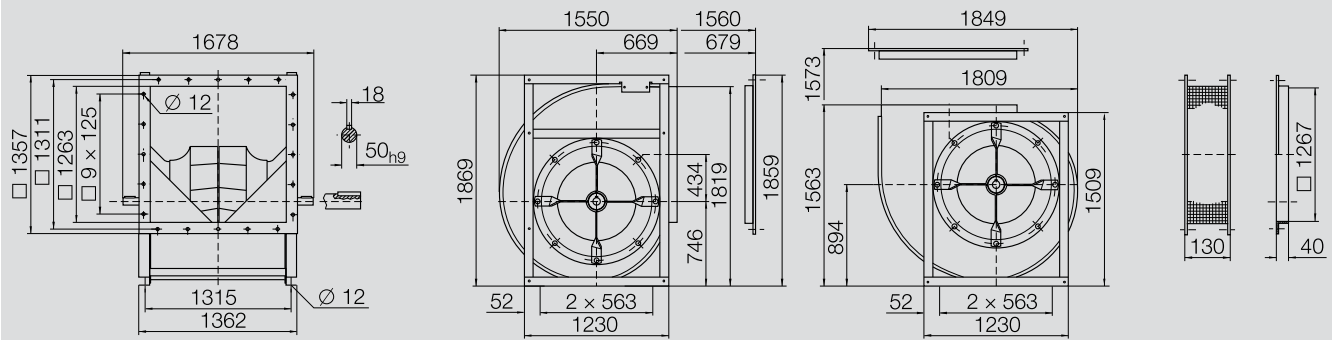
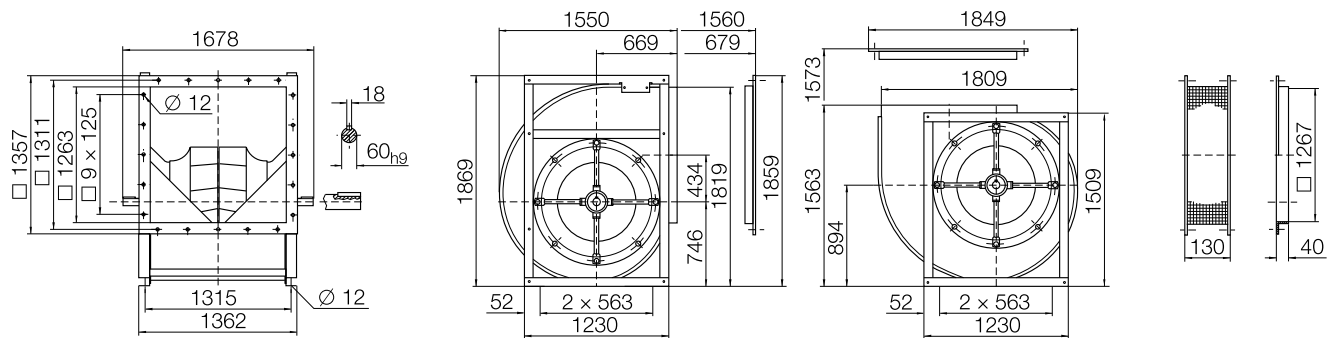
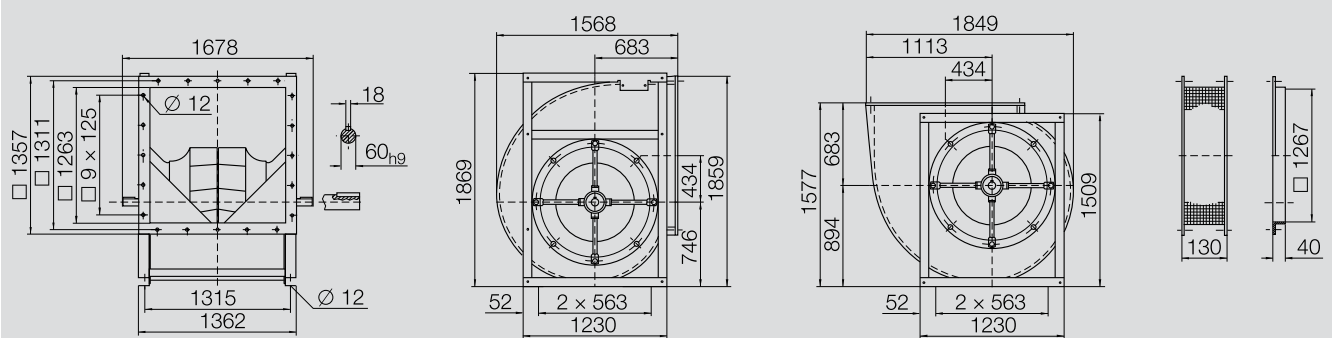
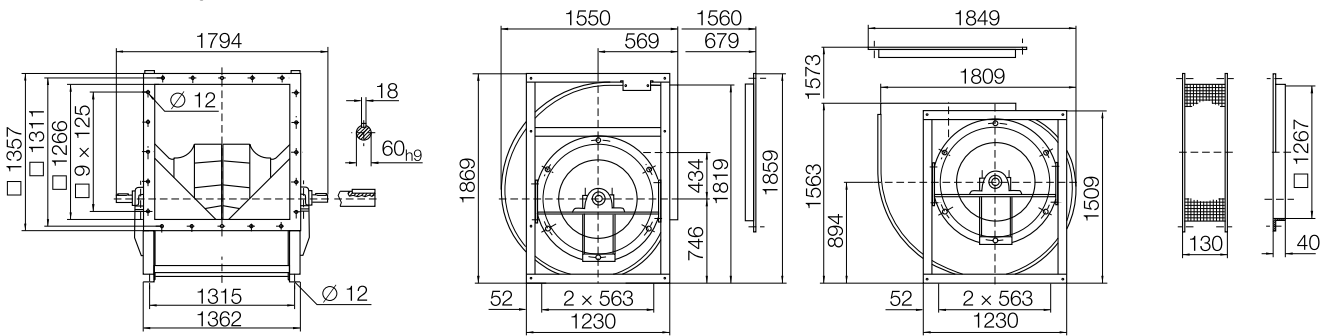
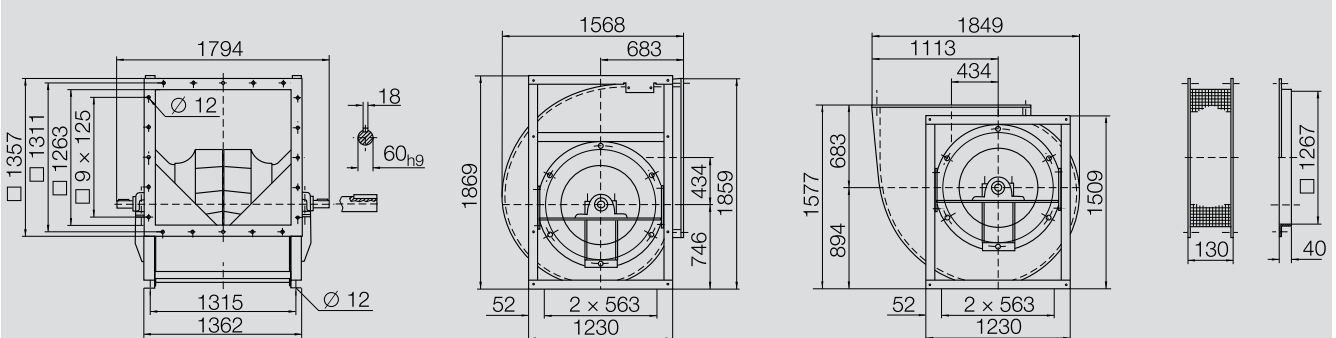
RZR 11/18	650	1/min
RZR 13	1217	1/min

Performance CurvesRelative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

RZR_-1000**Dimensions** in mm, subject to change.**RZR 11-1000** 416 kg**RZR 15-1000** 416 kg**RZR 19-1000** 462 kg**RZR 18-1000** 471 kg**RZR 13-1000** 517 kg

RZR _-1120

Technical Data

Impeller Data

Impeller diameter	D_r	1120	mm
Number of blades	z	12	
Moment of Inertia	J	32	kgm ²

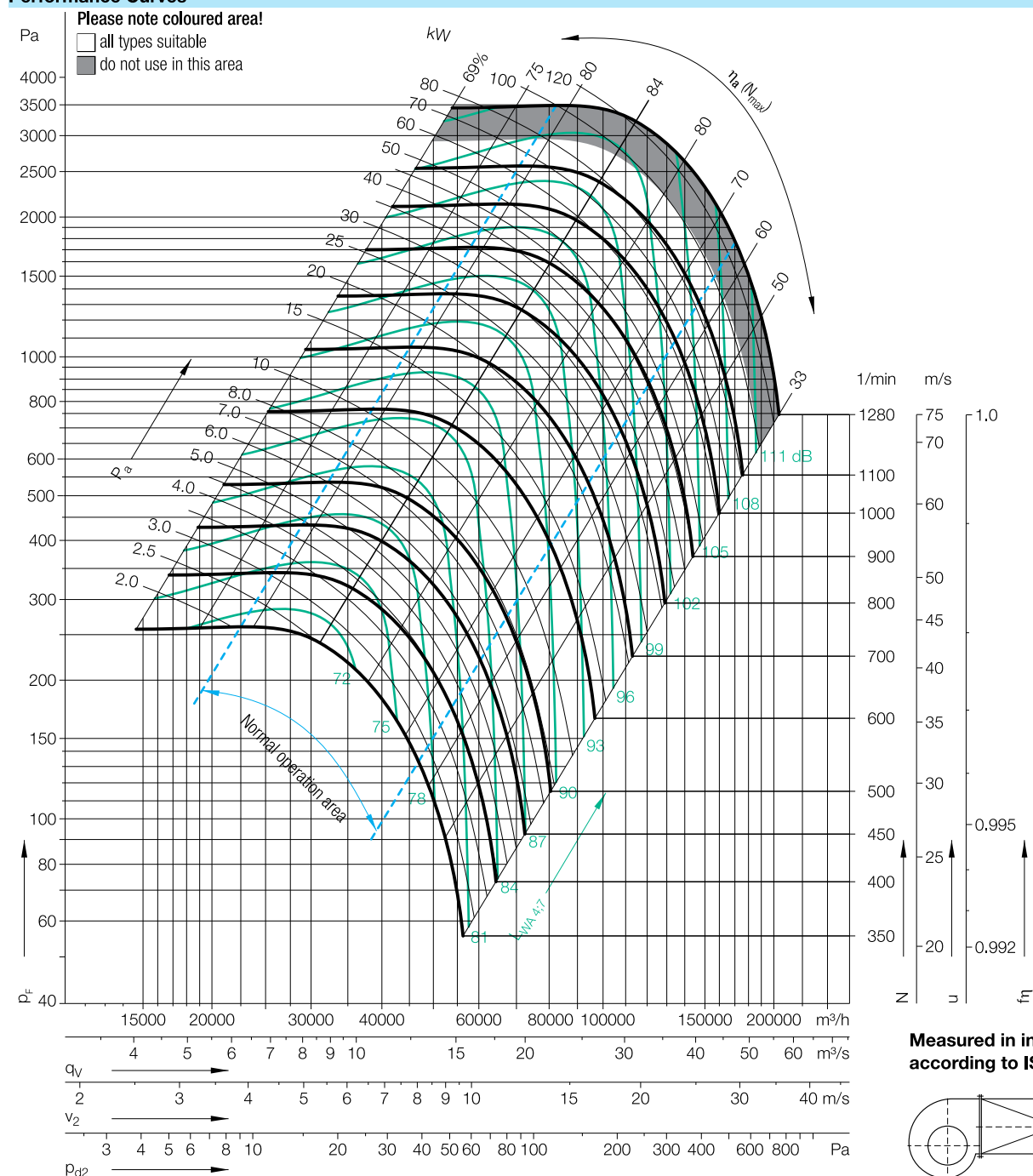
Impeller Data

Impeller weight	m	200	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 13	1026	1/min
--------	------	-------

Performance Curves



Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
0	3	1	-2	-6	-9	-13	-20	dB
-1	2	1	-2	-6	-9	-14	-21	dB
-2	1	1	-3	-5	-8	-15	-21	dB
-5	-3	-2	-3	-5	-7	-14	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-1	-1	-3	-2	-7	-11	-16	-21	dB
-6	-4	-6	-2	-7	-10	-15	-21	dB
-10	-7	-8	-3	-6	-9	-14	-21	dB
-10	-7	-8	-3	-6	-8	-11	-20	dB

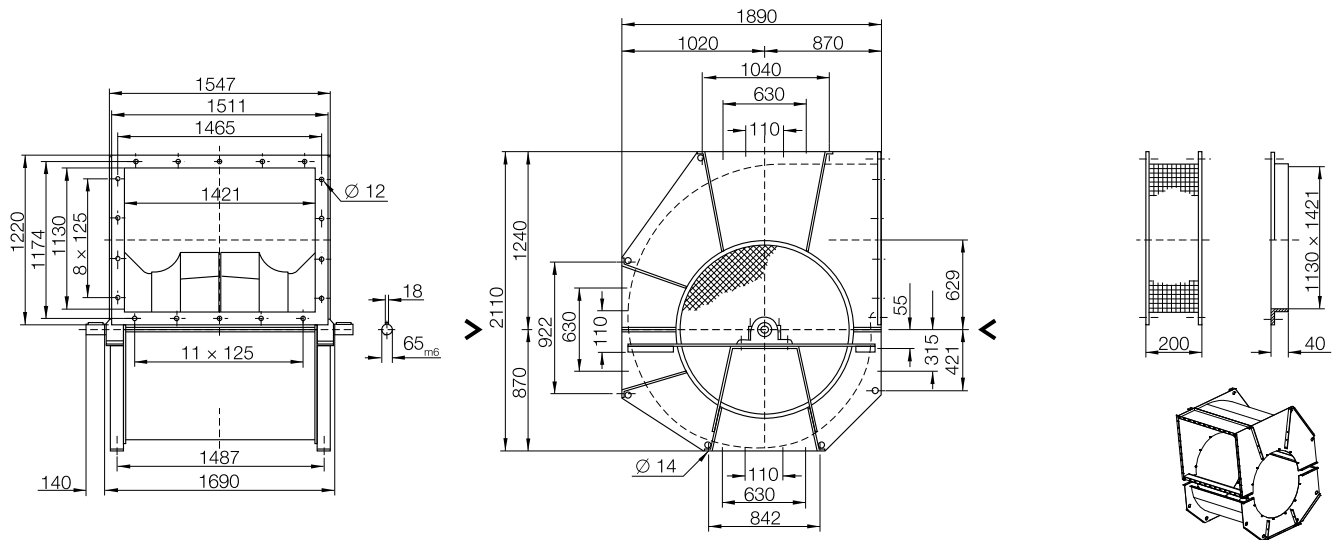
Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
12	7	4	-3	-8	-14	-18	-26	dB
10	5	3	-3	-8	-14	-19	-28	dB
7	2	3	-3	-6	-13	-20	-28	dB
4	1	2	-3	-6	-12	-19	-28	dB
63	125	250	500	1000	2000	4000	8000	Hz
10	4	1	-1	-7	-13	-18	-25	dB
6	2	-2	-3	-6	-12	-15	-25	dB
2	-3	-3	-3	-6	-11	-15	-25	dB
1	-3	-5	-3	-6	-11	-13	-22	dB

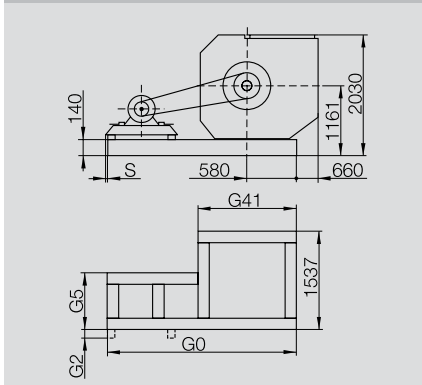
RZR_-1120

Dimensions in mm, subject to change.

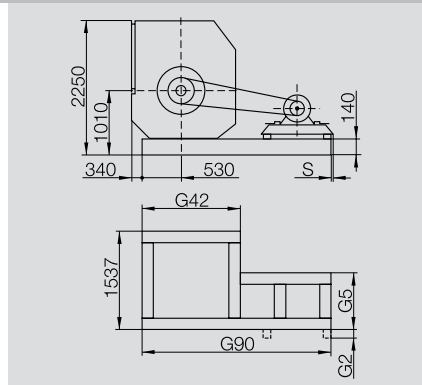
RZR 13-1120 710 kg



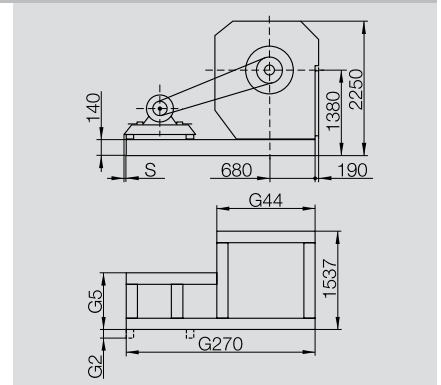
LG 0



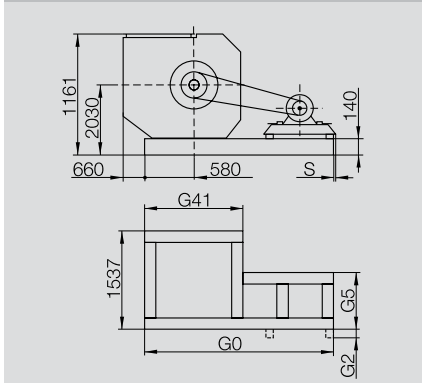
LG 90



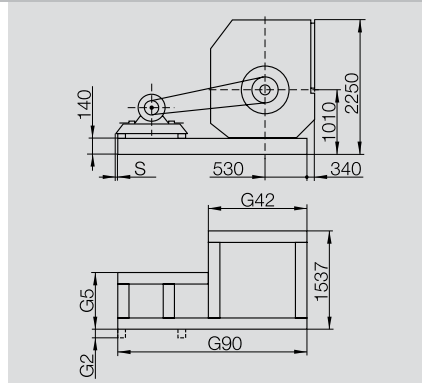
LG 270



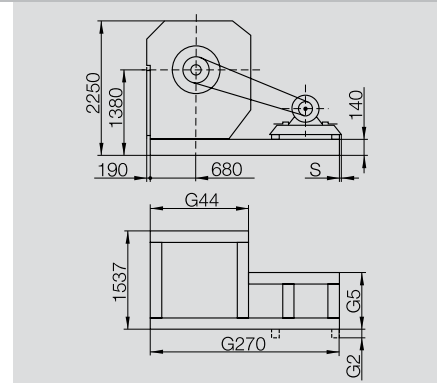
RD 0



RD 90



RD 270



	G0	G90	G270	G41	G42	G44	G2	G5	S
112	1870	2040	2040	1310	1480	1480	52.5	410	-
132	1870	2040	2040	1310	1480	1480	52.5	410	-
160	2110	2210	2360	1480	1580	1730	-	410	3
180	2110	2210	2360	1480	1580	1730	-	410	3
200	2410	2480	2530	1610	1680	1730	-	510	7
225	2410	2480	2530	1610	1680	1730	-	510	7
250	2610	2680	2730	1610	1680	1730	-	660	11
280	2610	2680	2730	1610	1680	1730	-	660	11
315	2630	2680	2880	1380	1430	1630	-	760	15
355	2630	2680	2880	1380	1430	1630	-	760	15

RZR _-1250

Technical Data

Impeller Data

Impeller diameter	D_r	1250	mm
Number of blades	z	12	
Moment of Inertia	J	62.5	kgm ²

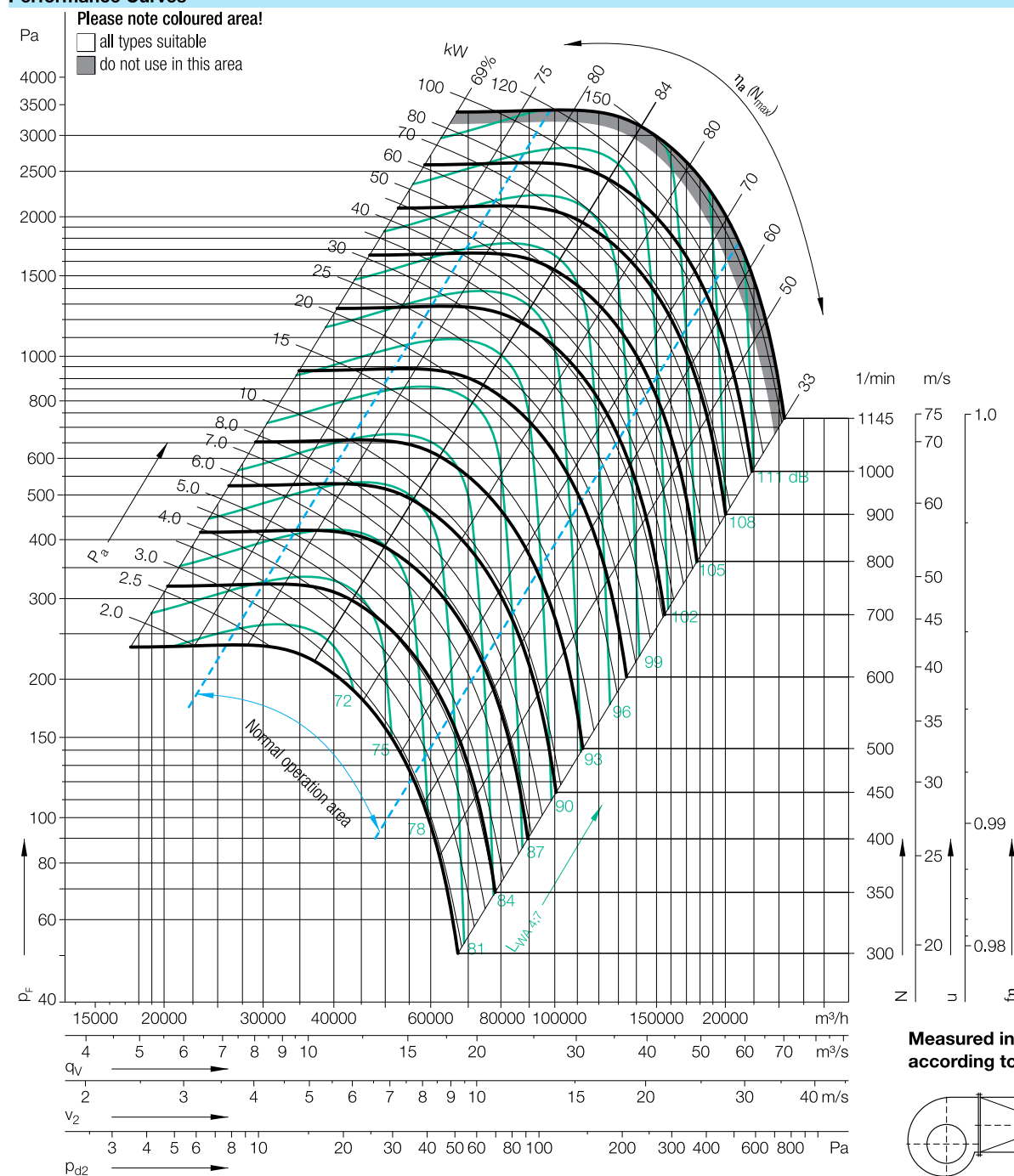
Impeller Data

Impeller weight	m	263	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 13	957	1/min
--------	-----	-------

Performance Curves



Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

Speed	Duty point
≤ 611 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8-1.2 q_{Vopt}$
	$> 1.2-1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$
Speed	Duty point
> 611 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8-1.2 q_{Vopt}$
	$> 1.2-1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	3	1	-2	-6	-9	-13	-20	dB
-1	2	1	-2	-6	-9	-14	-21	dB
-2	1	1	-3	-5	-8	-15	-21	dB
-5	-3	-2	-3	-5	-7	-14	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-1	-1	-3	-2	-7	-11	-16	-21	dB
-6	-4	-6	-2	-7	-10	-15	-21	dB
-10	-7	-8	-3	-6	-9	-14	-21	dB
-10	-7	-8	-3	-6	-8	-11	-20	dB

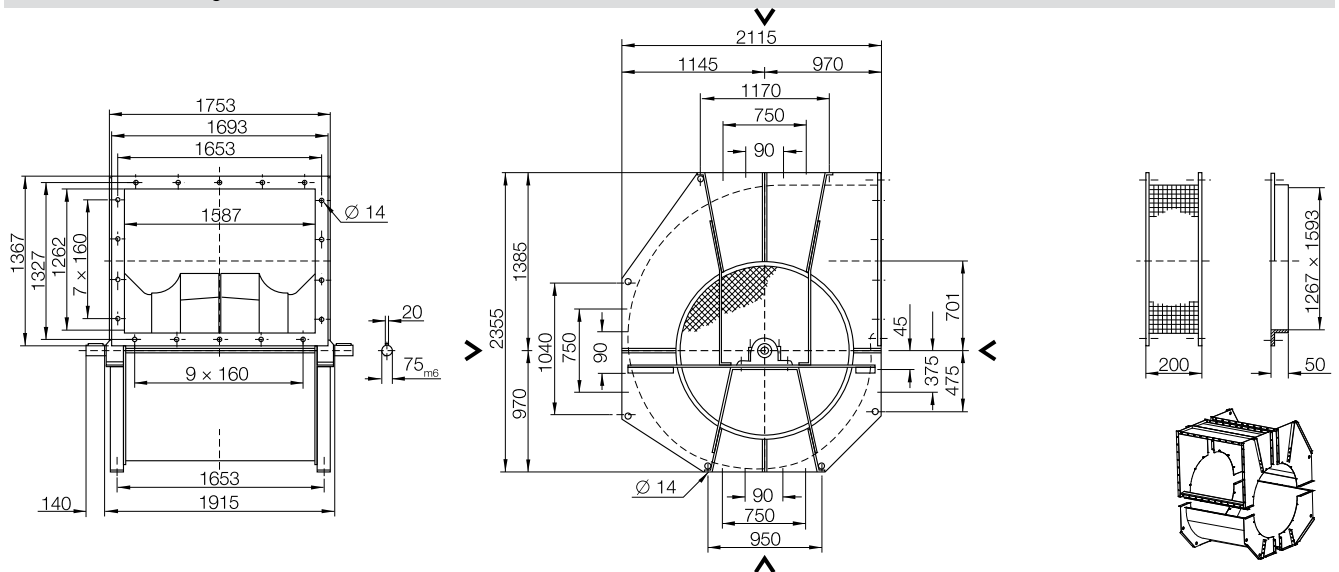
Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
12	7	4	-3	-8	-14	-18	-26	dB
10	5	3	-3	-8	-14	-19	-28	dB
7	2	3	-3	-6	-13	-20	-28	dB
4	1	2	-3	-6	-12	-19	-28	dB
63	125	250	500	1000	2000	4000	8000	Hz
10	4	1	-1	-7	-13	-18	-25	dB
6	2	-2	-3	-6	-12	-15	-25	dB
2	-3	-3	-3	-6	-11	-15	-25	dB
1	-3	-5	-3	-6	-11	-13	-22	dB

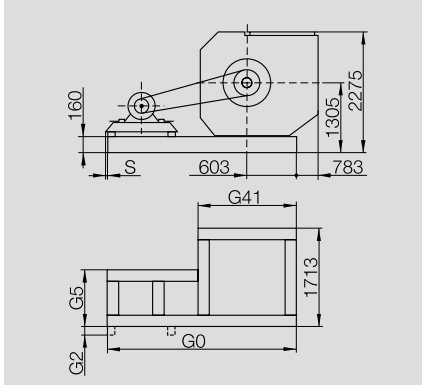
RZR_-1250

Dimensions in mm, subject to change.

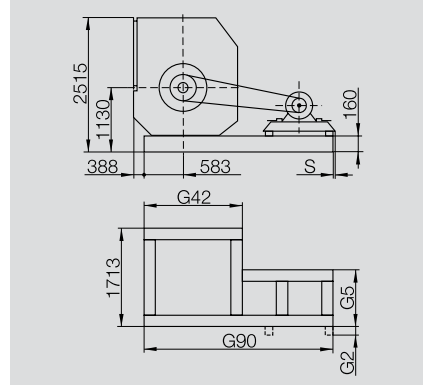
RZR 13-1250 1100 kg



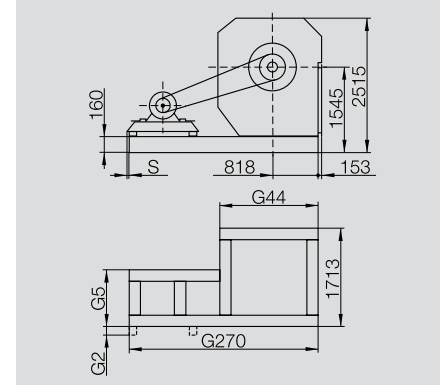
LG 0



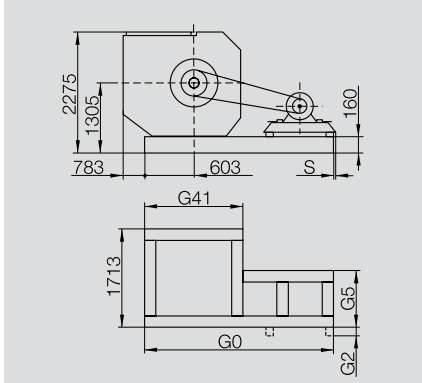
LG 90



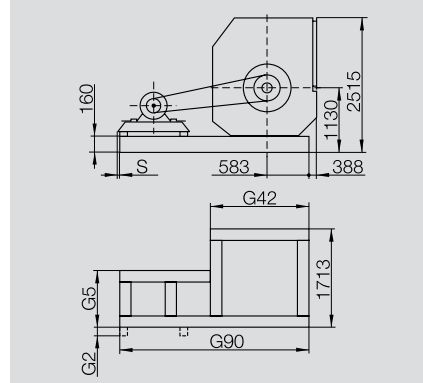
LG 270



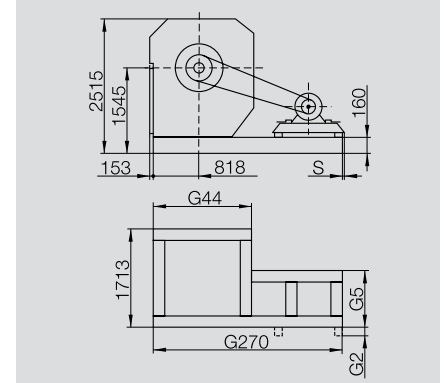
RD 0



RD 90



RD 270



	G0	G90	G270	G41	G42	G44	G2	G5	S
112	1965	2220	2255	1405	1660	1695	85	450	-
132	1965	2220	2255	1405	1660	1695	85	450	-
160	2235	2390	2525	1605	1760	1895	-	415	-
180	2235	2390	2525	1605	1760	1895	-	415	-
200	2505	2660	2795	1705	1860	1995	-	515	2
225	2505	2660	2795	1705	1860	1995	-	515	2
250	2735	2860	2995	1735	1860	1995	-	665	6
280	2735	2860	2995	1735	1860	1995	-	665	6
315	2985	3160	3295	1735	1910	2045	-	1015	10
355	2985	3160	3295	1735	1910	2045	-	1015	10

RZR_-1400

Technical Data

Impeller Data

Impeller diameter	D_r	1400	mm
Number of blades	z	12	
Moment of Inertia	J	120	kgm ²

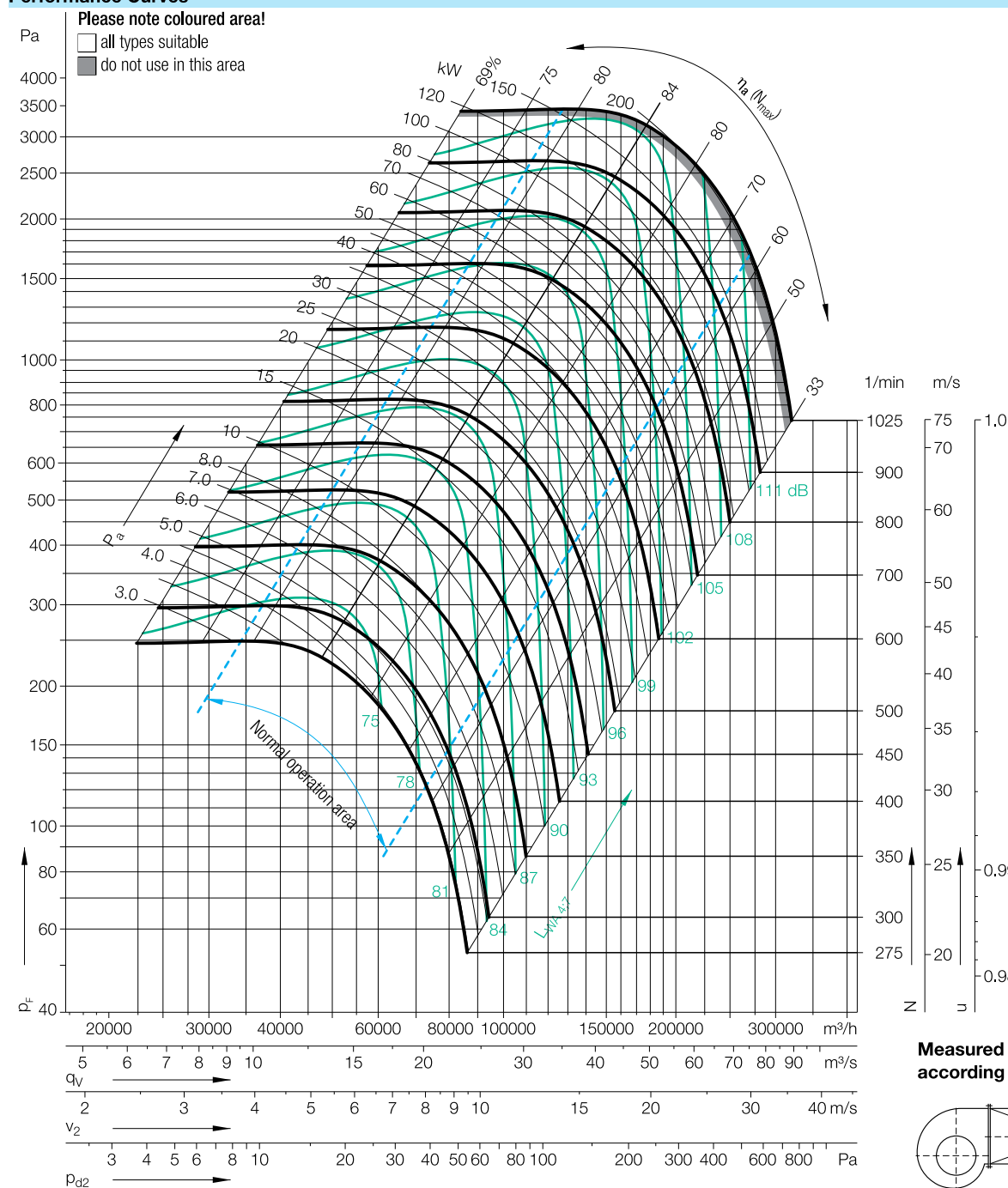
Impeller Data

Impeller weight	m	335	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 13	870	1/min
--------	-----	-------

Performance Curves



Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

Speed	Duty point
≤546 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}
Speed	Duty point
>546 1/min	≤0.8 q_{Vopt}
	>0.8-1.2 q_{Vopt}
	>1.2-1.6 q_{Vopt}
	>1.6 q_{Vopt}

63	125	250	500	1000	2000	4000	8000	Hz
0	3	1	-2	-6	-9	-13	-20	dB
-1	2	1	-2	-6	-9	-14	-21	dB
-2	1	1	-3	-5	-8	-15	-21	dB
-5	-3	-2	-3	-5	-7	-14	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-1	-1	-3	-2	-7	-11	-16	-21	dB
-6	-4	-6	-2	-7	-10	-15	-21	dB
-10	-7	-8	-3	-6	-9	-14	-21	dB
-10	-7	-8	-3	-6	-8	-11	-20	dB

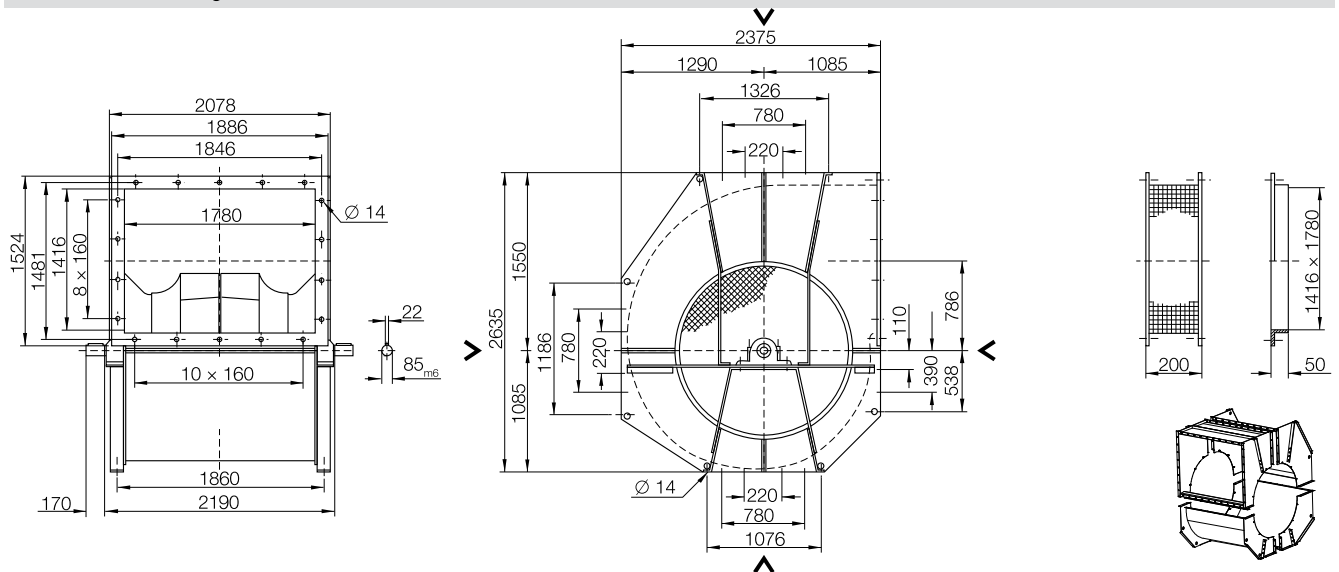
Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
12	7	4	-3	-8	-14	-18	-26	dB
10	5	3	-3	-8	-14	-19	-28	dB
7	2	3	-3	-6	-13	-20	-28	dB
4	1	2	-3	-6	-12	-19	-28	dB
63	125	250	500	1000	2000	4000	8000	Hz
10	4	1	-1	-7	-13	-18	-25	dB
6	2	-2	-3	-6	-12	-15	-25	dB
2	-3	-3	-3	-6	-11	-15	-25	dB
1	-3	-5	-3	-6	-11	-13	-22	dB

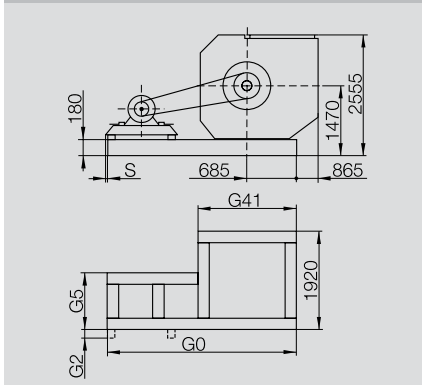
RZR_-1400

Dimensions in mm, subject to change.

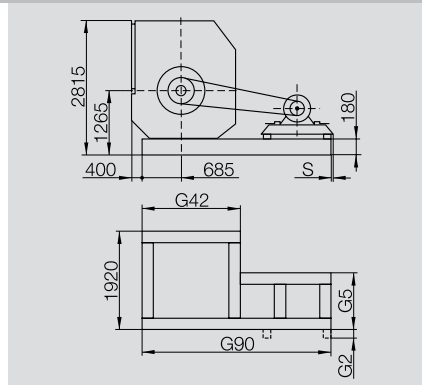
RZR 13-1400 1390 kg



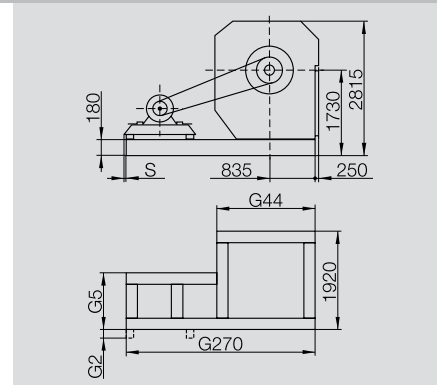
LG 0



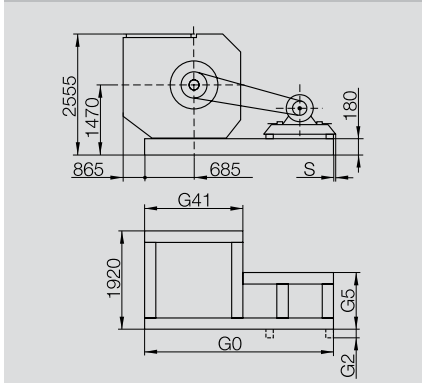
LG 90



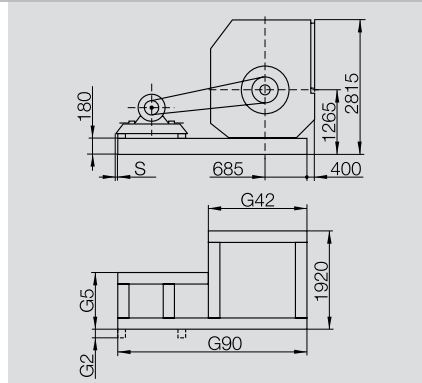
LG 270



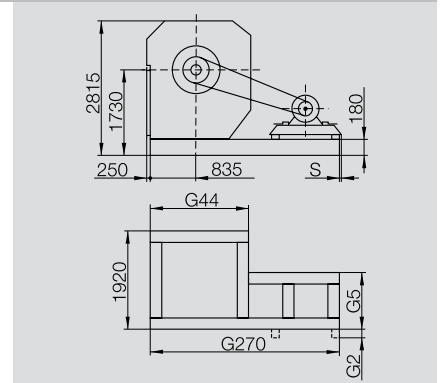
RD 0



RD 90



RD 270



	G0	G90	G270	G41	G42	G44	G2	G5	S
160	2225	2550	2580	1505	1830	1860	87	420	-
180	2225	2550	2580	1505	1830	1860	87	420	-
200	2495	2800	2950	1605	1910	2060	62	470	-
225	2495	2800	2950	1605	1910	2060	62	470	-
250	2775	2960	3160	1775	1960	2160	-	670	6
280	2775	2960	3160	1775	1960	2160	-	670	6
315	3055	3230	3410	1805	1980	2160	-	1020	10
355	3055	3230	3410	1805	1980	2160	-	1020	10

RZR _-1600

Technical Data

Impeller Data

Impeller diameter	D_r	1600	mm
Number of blades	z	12	
Moment of Inertia	J	186	kgm ²

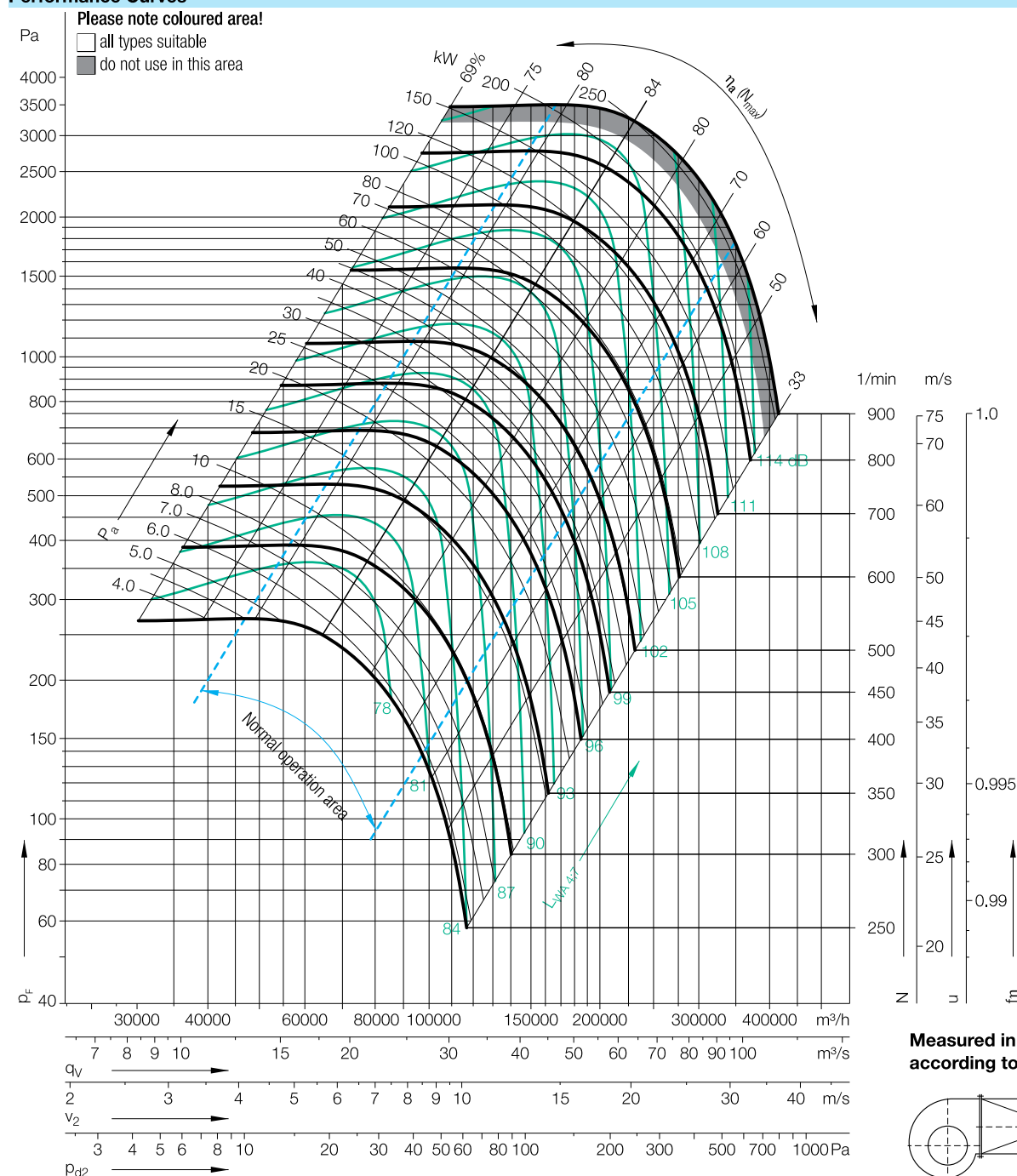
Impeller Data

Impeller weight	m	486	kg
Density of media	ρ_1	1.2	kg/m ³
Tolerance class (DIN 24166)		1	

Speed limits N_{max} for ATEX execution

RZR 13	748	1/min
--------	-----	-------

Performance Curves



Relative sound power level for inlet side L_{Wrel7} at octave centre frequencies f_c

Speed	Duty point
≤ 478 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8-1.2 q_{Vopt}$
	$> 1.2-1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$
Speed	Duty point
> 478 1/min	$\leq 0.8 q_{Vopt}$
	$> 0.8-1.2 q_{Vopt}$
	$> 1.2-1.6 q_{Vopt}$
	$> 1.6 q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	3	1	-2	-6	-9	-13	-20	dB
-1	2	1	-2	-6	-9	-14	-21	dB
-2	1	1	-3	-5	-8	-15	-21	dB
-5	-3	-2	-3	-5	-7	-14	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-1	-1	-3	-2	-7	-11	-16	-21	dB
-6	-4	-6	-2	-7	-10	-15	-21	dB
-10	-7	-8	-3	-6	-9	-14	-21	dB
-10	-7	-8	-3	-6	-8	-11	-20	dB

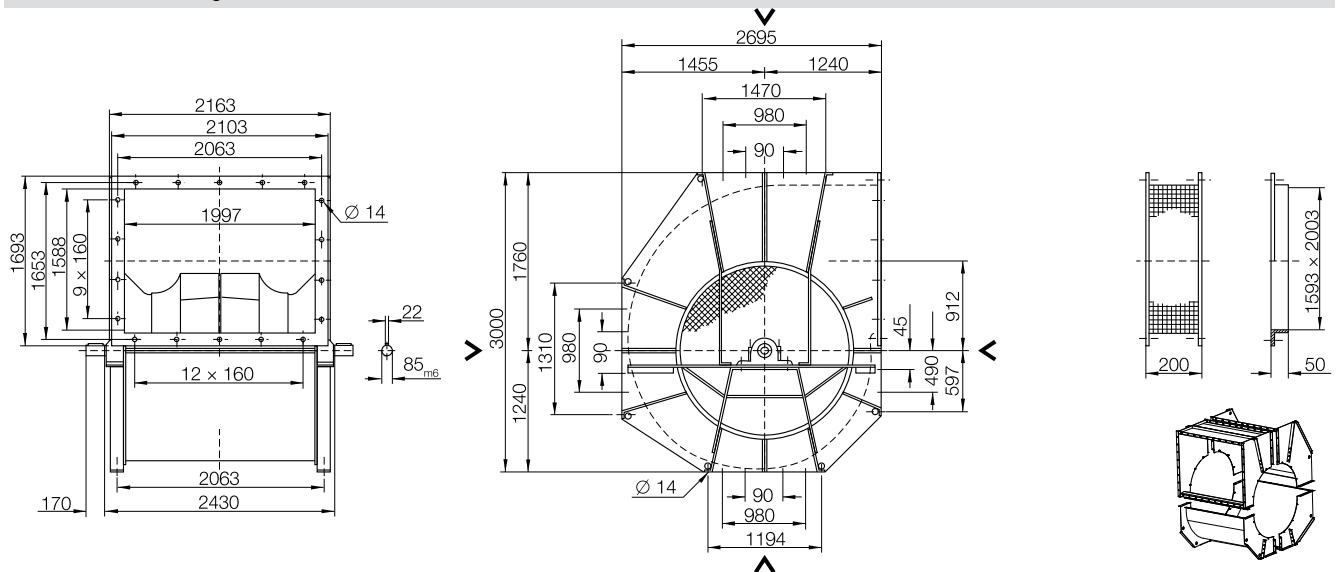
Relative sound power level for discharge side L_{Wrel4} at octave centre frequencies f_c

63	125	250	500	1000	2000	4000	8000	Hz
12	7	4	-3	-8	-14	-18	-26	dB
10	5	3	-3	-8	-14	-19	-28	dB
7	2	3	-3	-6	-13	-20	-28	dB
4	1	2	-3	-6	-12	-19	-28	dB
63	125	250	500	1000	2000	4000	8000	Hz
10	4	1	-1	-7	-13	-18	-25	dB
6	2	-2	-3	-6	-12	-15	-25	dB
2	-3	-3	-3	-6	-11	-15	-25	dB
1	-3	-5	-3	-6	-11	-13	-22	dB

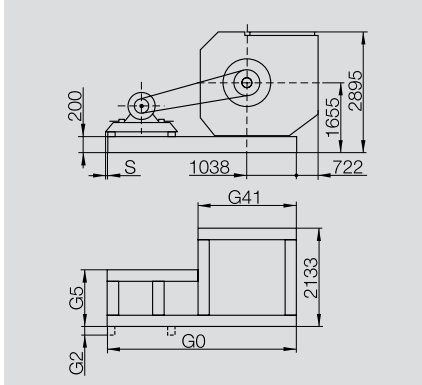
RZR_-1600

Dimensions in mm, subject to change.

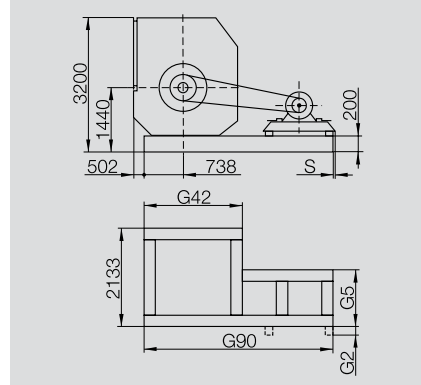
RZR 13-1600 1870 kg



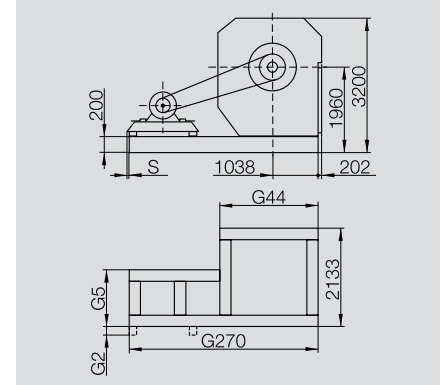
LG 0



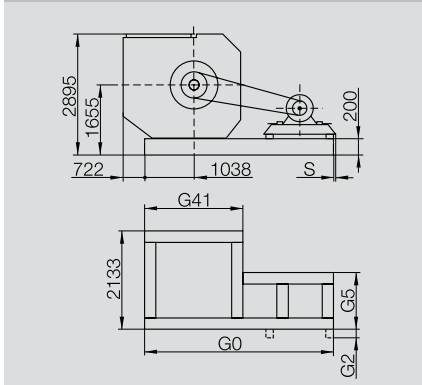
LG 90



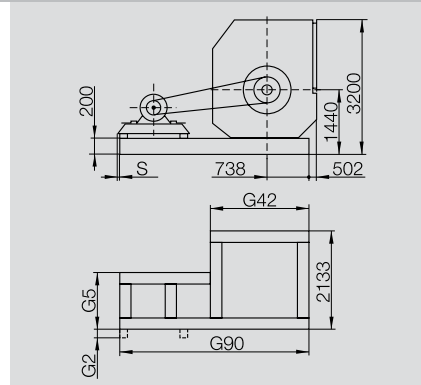
LG 270



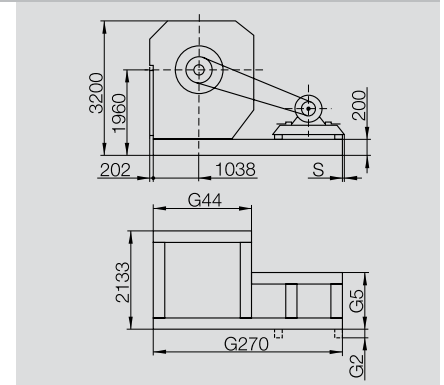
RD 0



RD 90



RD 270



	G0	G90	G270	G41	G42	G44	G2	G5	S
160	2736	2786	2901	2016	2066	2181	105.0	425	—
180	2736	2786	2901	2016	2066	2181	105.0	425	—
200	3066	3016	3231	2166	2116	2331	75.5	425	—
225	3066	3016	3231	2166	2116	2331	75.5	425	—
250	3316	3166	3481	2316	2166	2481	—	675	1
280	3316	3166	3481	2316	2166	2481	—	675	1
315	3804	3704	4019	2316	2216	2531	—	1154	57
355	3804	3704	4019	2316	2216	2531	—	1154	57

RZR 11-0200/-1000

Specifications



High performance centrifugal fan RZR 11

double inlet belt drive.

Lap jointed scroll of galvanised sheet steel with discharge flange and bolt on multi-position feet (Size 0200/-0710), with heavy duty side frames (Size 0800/-1000).

High performance impeller with 12 hollow section true airfoil blades (Size 0315/-1000), with 11 backward curved laminar blades (Size 0200/-0280) inclined obliquely to the shaft axis, welded in position and epoxy coated.

Throat plate inclined obliquely in opposition to blade inclination.

Inlet cones matched to the impeller reduce entry losses to a minimum.

Impeller and shaft balanced as an assembly in according to DIN ISO 1940.

Noise tested maintenance free, radial insert ball bearings mounted in pressed steel housing/strut assemblies with rubber interliners.

As an option – relubricatable in operation within cast iron housings, supported from the fan casing by tubular struts (0200/-1000).

Performance data to DIN 24166 Class 1 / BS 848 Class "A" (Size 0315/-1000) or Class 2 / BS 848 Class "B" (Size 0200/-0280).

Fan data

Fan type		
Volume flow	Q_V	m ³ /h
Total pressure increase	p_F	Pa
Static pressure	p_{sF}	Pa
Air density at fan inlet	ρ_1	kg/m ³
Air medium temperature	t	°C
Shaft power	P_a	kW
Efficiency	(η_a)	
Speed	N	1/min
Sound power level (A weighted)	L_{WA}	dB
Weight	m	kg

Fittings / Accessories

- Drain plug R1/2" (B.S.P. 1/2")
- Access door
- Special coating Class S40, K90 or P100
- Centrifugal fan in Ex-Execution in Acc. to ATEX
- Impeller blades continuously welded
- Shaft made of stainless steel (1.4305)
- Nuts and bolts of stainless steel (1.4305)
- Volumeter
- Copper inlet cone
- Relubrication in Operation IWN01 or IWN11 (sizes 0200/-0710)

- Inlet Guards
- Discharge Guard
- Shaft guard
- Discharge Flange
- Discharge Flex (with flexible sleeve)
- Base frame with integrated strain-sledge (sizes 0200/-0500)
- Base frame with motor rails (sizes 0400/-1000)
- Pick-a-Back (for attaching motor fan)
- Belt drive, V-belt or flat Belt
- Belt guard
- Belt guard split horizontally
- Motor
- Anti-vibration mounts

RZR 12-0200/-0710

Specifications



High performance centrifugal fan RZR 12

double inlet belt drive.

Lap jointed scroll of galvanised sheet steel with discharge flange and rectangular, angle side frames.

High performance impeller with 12 hollow section true airfoil blades (Size 0315/-0710, with 11 backward curved laminar blades (Size 0200/-0280) inclined obliquely to the shaft axis, welded in position and epoxy coated.

Throat plate inclined obliquely in opposition to blade inclination.

Inlet cones matched to the impeller reduce entry losses to a minimum.

Impeller and shaft balanced as an assembly in according to DIN ISO 1940.

Noise tested maintenance free, radial insert ball bearings mounted in pressed steel housing/strut assemblies with rubber interliners. As an option – relubricatable in operation within cast iron housings, supported from the fan casing by tubular struts.

Performance data to DIN 24166 Class 1 / BS 848 Class "A" (Size 0315/-0710) or Class 2 / BS 848 Class "B" (Size 0200/-0280).

Fan data

Fan type		
Volume flow	Q_V	m ³ /h
Total pressure increase	p_F	Pa
Static pressure	p_{SF}	Pa
Air density at fan inlet	ρ_1	kg/m ³
Air medium temperature	t	°C
Shaft power	P_a	kW
Efficiency	(η_a)	
Speed	N	1/min
Sound power level (A weighted)	L_{WA}	dB
Weight	m	kg

Fittings / Accessories

- Drain plug R1/2" (B.S.P. 1/2")
- Access door
- Special coating Class S40, K90 or P100
- Centrifugal fan in Ex-Execution in Acc. to ATEX
- Impeller blades continuously welded
- Shaft made of stainless steel (1.4305)
- Nuts and bolts of stainless steel (1.4305)
- Volumeter
- Copper inlet cone
- Relubrication in operation IWN01 or IWN11
- Inlet Guards
- Discharge Guard
- Shaft guard
- Discharge Flange
- Discharge Flex (with flexible sleeve)
- Base frame with motor rails
- Pick-a-Back (for attaching motor fan)
- Belt drive, V-belt or flat Belt
- Belt guard
- Belt guard split horizontally
- Motor
- Anti-vibration mounts

RZR 15-0400/-1000

Specifications



High performance centrifugal fan RZR 15

double inlet belt drive.
Lap jointed scroll of galvanised sheet steel with discharge flange and heavy duty reinforced side frames.
High performance impeller with 12 hollow section true airfoil blades inclined obliquely to the shaft axis, welded in position and epoxy coated.
Throat plate inclined obliquely in opposition to blade inclination.
Inlet cones matched to the impeller reduce entry losses to a minimum.
Impeller and shaft balanced as an assembly in according to DIN ISO 1940.
Self aligning double row ball bearings secured by adapter sleeve, mounted within a cast iron housing packed with long life, high performance grease. Can be relubricated when not in service.
Performance data to DIN 24166 Class 1 / BS 848 Class "A".

Fan data

Fan type		
Volume flow	Q_V	m ³ /h
Total pressure increase	p_F	Pa
Static pressure	p_{sF}	Pa
Air density at fan inlet	ρ_1	kg/m ³
Air medium temperature	t	°C
Shaft power	P_a	kW
Efficiency	(η_a)	
Speed	N	1/min
Sound power level (A weighted)	L_{WA}	dB
Weight	m	kg

Fittings / Accessories

- Drain plug R1/2" (B.S.P. 1/2")
- Access door
- Special coating Class S40, K90 or P100
- Impeller blades continuously welded
- Shaft made of stainless steel (1.4305)
- Nuts and bolts of stainless steel (1.4305)
- Tapped hole for measurement of shock impulse
- Volumeter
- Copper inlet cone
- Relubrication in operation IWN01 or IWN11

- Inlet Guards
- Discharge Guard
- Shaft guard
- Discharge Flange
- Discharge Flex (with flexible sleeve)
- Base frame with motor rails
- Pick-a-Back (for attaching motor fan)
- Belt drive, V-belt or flat Belt
- Belt guard
- Belt guard split horizontally
- Motor
- Anti-vibration mounts

RZR 18-0400/-1000

Specifications



High performance centrifugal fan RZR 18
double inlet belt drive.
Lap jointed scroll of galvanised sheet steel with discharge flange and heavy duty reinforced side frames.
High performance impeller with 12 hollow section true airfoil blades inclined obliquely to the shaft axis,
welded in position and epoxy coated.
Throat plate inclined obliquely in opposition to blade inclination.
Inlet cones matched to the impeller reduce entry losses to a minimum.
Impeller and shaft balanced as an assembly in according to DIN ISO 1940.
Self aligning double row ball bearings within standard plummer blocks, mounted on robust pedestal, packed with long life, high performance grease. Can be relubricated when not in service.
Performance data to DIN 24166 Class 1 / BS 848 Class "A".

Fan data

Fan type		
Volume flow	Q_V	m ³ /h
Total pressure increase	p_F	Pa
Static pressure	p_{sF}	Pa
Air density at fan inlet	ρ_1	kg/m ³
Air medium temperature	t	°C
Shaft power	P_a	kW
Efficiency	(η_a)	
Speed	N	1/min
Sound power level (A weighted)	L_{WA}	dB
Weight	m	kg

Fittings / Accessories

- Drain plug R1/2" (B.S.P. 1/2")
- Access door
- Special coating Class S40, K90 or P100
- Centrifugal fan in Ex-Execution in Acc. to ATEX
- Impeller blades continuously welded
- Shaft made of stainless steel (1.4305)
- Nuts and bolts of stainless steel (1.4305)
- Tapped hole for measurement of shock impulse
- Volumeter
- Copper inlet cone
- Relubrication in operation IWN01 or IWN11

- Inlet Guards
- Discharge Guard
- Shaft guard
- Discharge Flange
- Discharge Flex (with flexible sleeve)
- Base frame with motor rails
- Pick-a-Back (for attaching motor fan)
- Belt drive, V-belt or flat Belt
- Belt guard
- Belt guard split horizontally
- Motor
- Anti-vibration mounts

RZR 19-0200/-0355

Specifications



High performance centrifugal fan RZR 19-0200/-0355

double inlet belt drive.
Scroll casing stitch welded with discharge flange and bolt on multi-position feet.
High performance impeller with 12 hollow section true airfoil blades (Size 0315/-0355), with 11 backward curved laminar blades (Size 0200/-0280) inclined obliquely to the shaft axis, welded in position and epoxy coated.
Throat plate inclined obliquely in opposition to blade inclination.
Inlet cones matched to the impeller reduce entry losses to a minimum.
Impeller and shaft balanced as an assembly in according to DIN ISO 1940.
Noise tested, maintenance free, radial insert ball bearings with spherical outer ring mounted within castiron housings, supported from the fan casing by tubular struts.
Performance data to DIN 24166 Class 1 / BS 848 Class "A" (Size 0315/-0355) or Class 2 / BS 848 Class "B" (Size 0200/-0280).

Fan data

Fan type		
Volume flow	Q_V	m ³ /h
Total pressure increase	p_F	Pa
Static pressure	p_{sF}	Pa
Air density at fan inlet	ρ_1	kg/m ³
Air medium temperature	t	°C
Shaft power	P_a	kW
Efficiency	(η_a)	
Speed	N	1/min
Sound power level (A weighted)	L_{WA}	dB
Weight	m	kg

Fittings / Accessories

- Drain plug R1/2" (B.S.P. 1/2")
- Access door
- Special coating Class K90 or P100
- Centrifugal fan in Ex-Execution in Acc. to ATEX
- Impeller blades continuously welded
- Casing continuously welded inside
- Casing continuously welded inside and outside
- Shaft made of stainless steel (1.4305)
- Nuts and bolts of stainless steel (1.4305)
- Volumeter
- Copper inlet cone
- Relubrication in operation IWN01 or IWN11
- Inlet Guards
- Discharge Guard
- Shaft guard
- Discharge Flange
- Discharge Flex (with flexible sleeve)
- Base frame with integrated motor strain-sledge
- Pick-a-Back (for attaching motor fan)
- Belt drive, V-belt or flat Belt
- Belt guard
- Belt guard split horizontally
- Motor
- Anti-vibration mounts

RZR 19-0400/-1000

Specifications



High performance centrifugal fan RZR 19-0400/-1000

double inlet belt drive.

Scroll casing stitch welded with discharge flange, and heavy duty reinforced side frames, epoxy coated.

High performance impeller with 12 hollow section true airfoil blades inclined obliquely to the shaft axis, welded in position and epoxy coated.

Throat plate inclined obliquely in opposition to blade inclination.

Inlet cones matched to the impeller reduce entry losses to a minimum.

Impeller and shaft balanced as an assembly in accordance to DIN ISO 1940.

Self aligning double row ball bearings secured by adapter sleeve, mounted within a cast iron housing packed with long life, high performance grease. Can be relubricated when not in service.

Performance data to DIN 24166 Class 1 / BS 848 Class "A".

Fan data

Fan type		
Volume flow	Q_V	m ³ /h
Total pressure increase	p_F	Pa
Static pressure	p_{sF}	Pa
Air density at fan inlet	ρ_1	kg/m ³
Air medium temperature	t	°C
Shaft power	P_a	kW
Efficiency	(η_a)	
Speed	N	1/min
Sound power level (A weighted)	L_{WA}	dB
Weight	m	kg

Fittings / Accessories

- Drain plug R1/2" (B. S. P. 1/2")
- Access door
- Special coating Class K90 or P100
- Impeller blades continuously welded
- Casing continuously welded inside
- Casing continuously welded inside and outside
- Casing in 2 horizontal sections (Size 0560 upwards)
- Shaft made of stainless steel (1.4305)
- Nuts and bolts of stainless steel (1.4305)
- Tapped hole for measurement of shock impulse
- Volumeter
- Copper inlet cone
- Relubrication in operation IWN01 or IWN11
- Inlet Guards
- Discharge Guard
- Shaft guard
- Discharge Flange
- Discharge Flex (with flexible sleeve)
- Base frame with motor rails
- Pick-a-Back (for attaching motor fan)
- Belt drive, V-belt or flat Belt
- Belt guard
- Belt guard split horizontally
- Motor
- Anti-vibration mounts

RZR 13-0400/-1000

Specifications



High performance centrifugal fan RZR 13-0400/-1000

double inlet belt drive.
Scroll casing stitch welded with discharge flange and heavy duty reinforced side frames, epoxy coated.
High performance impeller with 12 hollow section true airfoil blades inclined obliquely to the shaft axis,
welded in position and epoxy coated.
Throat plate inclined obliquely in opposition to blade inclination.
Inlet cones matched to the impeller reduce entry losses to a minimum.
Impeller and shaft balanced as an assembly in according to DIN ISO 1940.
Self aligning double row ball bearings within standard plummer blocks, mounted on robust pedestal, packed with long life, high performance grease. Can be relubricated when not in service.
Performance data to DIN 24166 Class 1 / BS 848 Class "A".

Fan data

Fan type		
Volume flow	Q_V	m ³ /h
Total pressure increase	p_F	Pa
Static pressure	p_{sF}	Pa
Air density at fan inlet	ρ_1	kg/m ³
Air medium temperature	t	°C
Shaft power	P_a	kW
Efficiency	(η_a)	
Speed	N	1/min
Sound power level (A weighted)	L_{WA}	dB
Weight	m	kg

Fittings / Accessories

- Drain plug R1/2" (B.S.P. 1/2")
- Access door
- Special coating Class K90 or P100
- Centrifugal fan in Ex-Execution in Acc. to ATEX
- Impeller blades continuously welded
- Casing continuously welded inside
- Casing continuously welded inside and outside
- Casing in 2 horizontal sections (sizes 0500/-1000)
- Shaft made of stainless steel (1.4305)
- Nuts and bolts of stainless steel (1.4305)
- Tapped hole for measurement of shock impulse
- Volumeter
- Copper inlet cone
- Relubrication in operation IWN01 or IWN11

- Inlet Guards
- Discharge Guard
- Shaft guard
- Discharge Flange
- Discharge Flex (with flexible sleeve)
- Base frame with motor rails
- Pick-a-Back (for attaching motor fan)
- Belt drive, V-belt or flat Belt
- Belt guard
- Belt guard split horizontally
- Motor
- Anti-vibration mounts

RZR 13-1120/-1600

Specifications



High performance centrifugal fan RZR 1120/-1600

double inlet belt drive.

Heavy duty casing of sheet steel with stiffening members, step welded and painted, with discharge flange.

Casing is split on one axis (Size 1120), split on two axis (Sizes 1250, 1400, 1600).

High performance impeller with 12 hollow section true airfoil blades inclined obliquely to the shaft axis, welded in position and epoxy coated.

Inlet cones matched to the impeller reduce entry losses to a minimum.

Impeller and shaft balanced as an assembly in accordance to DIN ISO 1940.

Self aligning double row roller bearings within standard plummer blocks, mounted on robust pedestal, packed with long life, high performance grease. Can be relubricated when not in service.

Inlet guard fitted as a standard in accordance with DIN EN 294.

Performance data to DIN 24166 Class 1 / BS 848 Class "A".

Fan data

Fan type		
Volume flow	Q_V	m ³ /h
Total pressure increase	p_F	Pa
Static pressure	p_{sF}	Pa
Air density at fan inlet	ρ_1	kg/m ³
Air medium temperature	t	°C
Shaft power	P_a	kW
Efficiency	(η_a)	
Speed	N	1/min
Sound power level (A weighted)	L_{WA}	dB
Weight	m	kg

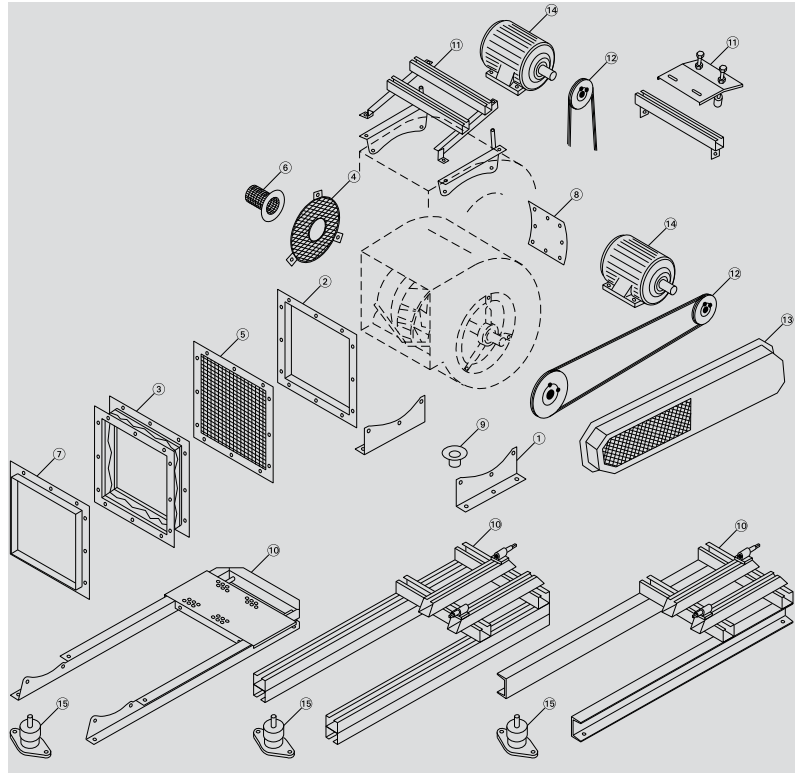
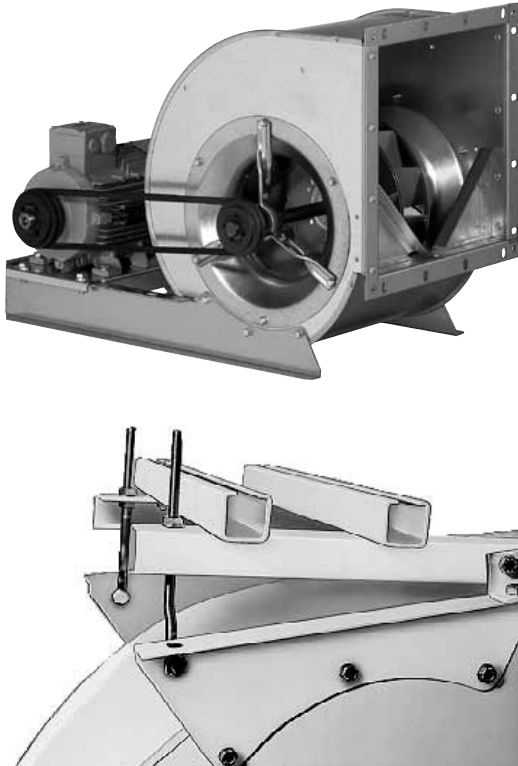
Fittings / Accessories

- Drain plug R1"
- Access door
- Special coating Class K90 or P100
- Centrifugal fan in Ex-Execution in Acc. to ATEX
- Impeller blades continuously welded
- Casing continuously welded inside
- Casing continuously welded inside and outside
- Shaft made of stainless steel (1.4305)
- Nuts and bolts of stainless steel (1.4305)
- Tapped hole for measurement of shock impulse
- Volumeter
- Copper inlet cone
- Relubrication in operation IWN01 or IWN11
- Discharge Guard
- Shaft guard
- Discharge Flange
- Discharge Flex (with flexible sleeve)
- Base frame with motor rails
- Belt drive, V-belt or flat Belt
- Belt guard
- Belt guard split horizontally
- Motor
- Anti-vibration mounts

Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, light gray lines. There are no margins, text, or other markings on the page.

Fittings / Accessories



- [1] Mounting feet
- [2] Discharge flange
- [3] Discharge flex
- [4] Inlet guard
- [5] Discharge guard
- [6] Shaft guard
- [7] Mounting flange
- [8] Inspection door
- [9] Drain plug
- ▶ extended corrosion protection
- ▶ ATEX-Execution (RZR)
- ▶ Impellerblades continuously welded (RZR)
- ▶ Casing continuously welded-inside (RZR)
- ▶ Casing continuously welded- inside/outside (RZR)
- ▶ Split casing (RZR 13/19)
- ▶ Shaft from stainless steel
- ▶ Nuts and bolts from stainless steel
- ▶ Thread for impuls sensor fitting
- ▶ Volumeter (RDH / RZR)
- ▶ Copper inlet cone
- ▶ Aluminium inlet cone (ADH / AT / RDH)
- ▶ hot dip galvanised side frame (ADH / RDH)
- ▶ relubricatable bearings (relubrication during operation, RZR)

Fan set (ADH / AT / RDH on request)

- [10] Base frame
- [11] Pick-a-Back
- [12] Belt drive
- [13] Drive guard
- ▶ Belt guard split horizontally
- ▶ Access door on belt guard
- ▶ Opening on belt guard for speed measuring device
- [14] Drive motor
- [15] Anti-vibration mounts

Gebhardt fan systems – the "completely carefree" package for installation fans with belt drive

Fan systems with components tailored for each other, precisely assembled and adjusted, individually tested, delivered quickly and on time, allow for problem-free processing and ensure long and reliable operation.

Size has its price so we build as small as possible

- ▶ Optimised base frame lengths, tailored to the casing position and motor size and small system construction heights save valuable space in the air conditioning unit
- ▶ Various casing and drive positions allow for individual adjustment to the most diverse applications
- ▶ Optimised flat belt drives allow for efficient operation with a high level of convenience

Where required, we deliver our fan systems with safety equipment complying with DIN EN ISO 13857 for safe operation!

e.g. Belt guard

- ▶ also as segmented design
- ▶ also with inspection hole
- ▶ also with rotation speed measurement opening.

Fan set diversity

Version	Description	Figure
Pick-A-Back	for sizes 0200/-0355	
Pick-A-Back	for sizes 0400/-1000	
Compact base frame	Integrated compact base frame for sizes up to 0500.	
Base Frame, CC-profile	Base frames made from CC-profiles with length optimisation.	
Base Frame, U-profile	Heavy duty base frame made from U-profiles, welded and painted, from size 0800 upward.	

Fittings / Accessories

Drain Plug



If the fan is installed outside, or if conveying a medium containing humidity, condensation of water may accumulate inside the fan scroll.

For extraction of this water a condense water drain has to be installed at the lowest point of the scroll.

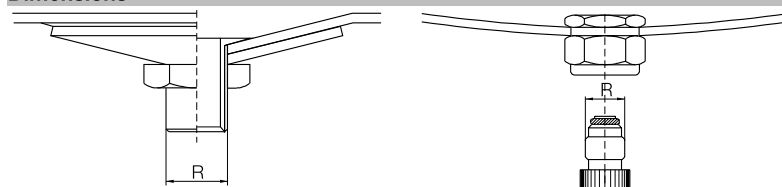
The drain will be provided with a thread for connecting it to a piping.

At order please indicate the required casing position.

Connecting thread / hole

- ▶ ADH / RDH = female thread R 1/8"
- ▶ AT = drain hole
- ▶ RZR 0200/-1000 = male thread R 1/2"
- ▶ RZR 1120/-1600 = male thread R 1"

Dimensions



Inspection Door



For the purposes of maintenance and cleaning there is an opening, which can be securely closed by means of an access door, in the fan casing.

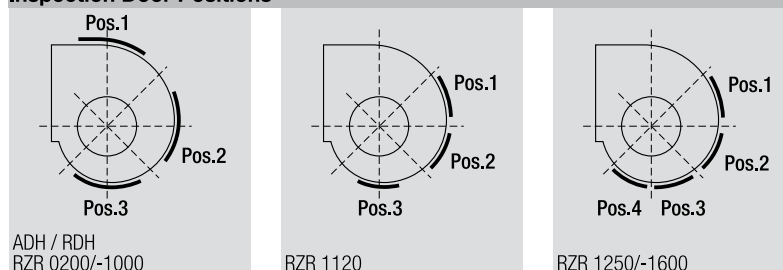
As it can only be opened with a tool, the access door complies with safety and accident prevention regulations. Additional securing with locking bars can be supplied on request.

The site and orientation of the inspection opening depends on the casing position.

The position should be specified when ordering according to the following diagram:

e.g. Access door, Pos. 2.

Inspection Door Positions



Dimensions in mm, subject to change.

ADH ..-		RDH ..-		RZR ..-	
0160/-0180	100 × 230	0180	100 × 230	-	
0200/-0280	240 × 240	0200/-0280	240 × 240	0200	160 × 160
0315/-0560	360 × 360	0315/-0560	360 × 360	0225/-0315	210 × 210
0630/-1000	500 × 500	0630/-1000	500 × 500	0355/-1000	310 × 310
-	500 × 500	1120/-1400	500 × 500	1120/-1600	500 × 500

Fittings / Accessories

Corrosion Protection Systems



Nicotra Gebhardt fans are treated with high quality corrosion protection as standard. Under extreme operating conditions, however, additional corrosion protection is advisable.

ADH / AT / RDH

Extended corrosion protection for series ADH, AT and RDH only available on request.

RZR

Depending on the use to which the fan is to be put and the degree of exposure to corrosion, we offer various anti-corrosion protection measures.

Corrosion protection - Class S40

Degreasing, ironphosphating

► **Powder coating** Layer thickness $\geq 40 \mu\text{m}$, Colour RAL 7039

► **Wet lacquering** Layer thickness $\geq 40 \mu\text{m}$ (primer + lacquer finish), Colour RAL 7039

Corrosion protection - Class K90

Degreasing, ironphosphating

► **Powder coating** Layer thickness $\geq 90 \mu\text{m}$, Colour RAL 7039

► **Wet lacquering** Layer thickness $\geq 90 \mu\text{m}$ (primer + lacquer finish), Colour RAL 7039

Corrosion protection - Class P100

Degreasing, ironphosphating

► **Thermoplastic powder coating** Layer thickness $\geq 100 \mu\text{m}$, Colour RAL 7001

Continuously welded blades



Impeller blades can be continuously welded in order to increase the corrosion resistance when conveying a humid or slightly aggressive medium. The continuous welding has no influence on the material resistance or on the max. tip speed.

Continuously welded scroll



The casing can be continuously welded in order to increase the corrosion resistance when conveying a humid or slightly aggressive medium. By continuous welding the casing is provided with additional impermeability.

► **GEH 01** - Casing inside continuously welded

► **GEH 02** - Casing inside and outside continuously welded

Fittings / Accessories

Split Casing

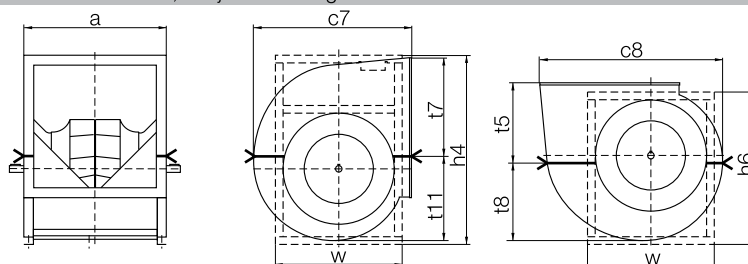


There may be a lot of reasons to choose a split casing, the advantages of split casings are:

- ▶ smaller openings for fan chambers
- ▶ easier refitting of fan
- ▶ easier transport to site
- ▶ easier access to impeller for cleaning and maintenance

The joint face on the casing position runs horizontally above or under the fan axis (see drawing). The reinforced side frames are not divisible. The fan is supplied fully assembled.

Dimensions in mm, subject to change.



RZR	RZR		a	c7	c8	h4	h6	t5	t7	t8	t11	w
13-	19-	0500	709	822	950	957	783	410	473	409	477	652
13-	19-	0560	785	914	1061	1083	884	458	531	456	530	743
13-	19-	0630	872	1021	1188	1204	984	511	594	510	594	820
13-	19-	0710	967	1143	1331	1350	1100	572	666	571	665	905
13-	19-	0800	1086	1280	1498	1520	1245	640	749	640	749	1035
13-	19-	0900	1219	1439	1686	1707	1386	719	843	720	843	1140
13-	19-	1000	1356	1568	1847	1869	1509	784	923	784	924	1230

Stainless Steel Shaft



For applications where there is an increased risk of corrosion, an optional shaft made of stainless steel can be supplied.

▶ ADH / AT / RDH

Stainless steel 1.4301 / AISI 304 / XCrNi18-10

▶ RZR

Stainless steel 1.4305

Stainless Steel Nuts and Bolts



For applications where there is an increased risk of corrosion, the connecting elements of the fan can be ordered made of stainless steel.

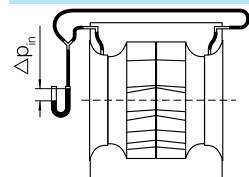
Impuls Sensor Thread



A tapped hole M6 or M8 can be provided in the pedestal bearing cast housing for admission of sensors to measure the shock impulses.
(The measuring connecting piece is not included in the scope of delivery).

Fittings / Accessories

Volumeter



$$q_V = K \times \sqrt{\frac{2}{\rho} \times \Delta p_{Dü}}$$



Measuring connector in inlet cone

Hose pipe to connecting piece in the side wall

Connecting piece (external diameter of 6mm) for the pressure measurement



With the flow measuring device it is possible to easily measure/monitor the flow rate after the fan is installed. A pressure tapping at a predetermined position on the inlet cone is provided whereby the differential pressure in relation to the static pressure is measured in front of the inlet cone in a static atmosphere.
Permissible media temperature: +80 °C (RZR), +70 °C (RDH).

In order to calculate the flow rate, a calibrating factor "K" is required. This factor is determined by comparative measurement on a standard test rig.

Standard-calibration factor K

Where fans are built into a plenum, the pressure difference between the static pressure in the inlet side plenum and the pressure on the inlet cone is to be measured.

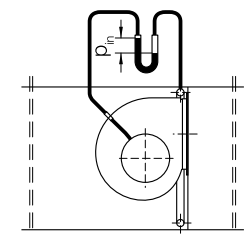
It must be ensured that the static pressure to be measured in front of the inlet cone is not tampered by dynamic pressure fractions.

It is often recommended to arrange a ring of points on the wall facing the outlet side as illustrated in the sketch.

When using the K-factors specified below, a minimum clearance of 0.5×D between the inlet cone of the fan and the side wall of the plenum must be maintained.

Indentations that obstruct the flow to the cone can lead to faults when measuring the flow rate.

In the event that the differential pressure is fed via a pressure sensor, the signal can also be used for regulating purposes.



- ▶ volume flow q_V [m³/h]
- ▶ calibration factor K [m²s/h]
- ▶ density of media ρ [kg/m³]
- ▶ pressure difference at cone $\Delta p_{Dü}$ [Pa]

Calibration factors

Type	Standard calibration factor K m²s/h
IMV 13-0200	100
IMV 13-0225	115
IMV 13-0250	140
IMV 13-0280	165
IMV 13-0315	190
IMV 13-0355	235
IMV 13-0400	290
IMV 13-0450	360
IMV 13-0500	460
IMV 13-0560	560
IMV 13-0630	730
IMV 13-0710	960
IMV 13-0800	1180
IMV 13-0900	1450
IMV 13-1000	1850
IMV 13-1120	2400
IMV 13-1250	3000
IMV 13-1400	3800
IMV 13-1600	4700

Inlet Cones



Inlet cone of copper or aluminium prevent the production of sparks during operation. These can be employed when spark protection is required, but ATEX is not mandatory.

Hot Dip Galvanised Side Frame



Fan Ranges ADH/RDH E4, E6, E7 or K, K1, K2

For applications where an increased corrosion protection is required the reinforcing side frames of the casing can be executed in hot dip galvanisation as an option.

Fittings / Accessories

Relubrications



ADH / AT / RDH



RZR

Series RZR

The lubrication unit IWN allows the fan bearings to be greased even when in operation.

The lubrication tubes screwed into the bearing housing are lead out and fastened at the side wall of the fan.

If desired, the lubrication tubes can be lead to the drive side of the fan.

► **IWN 01** - uses standard grease

► **IWN 11** - uses moisture resistant grease

For more details see "Technical Description" - "Bearings"!

Series ADH / RDH

The bearing housings of the fan ranges ADH / RDH E4, E6, E7 or K, K1, K2 and AT AR, TIC are equipped with directly fitted grease nipples.

Mounting feet



Feet made from galvanized steel, either mounted or loose, enable the fan to be installed with a 0, 90 and 270 orientation.

Protection guards



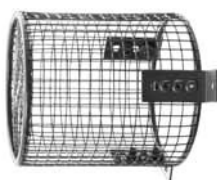
The fans are designed for installation in equipment and as standard are not equipped with protective guards.

They should not be put into operation before all protective devices are fitted and connected!

Protective measures must be carried out as set out in DIN EN ISO 12100 "Safety of machinery - Basic concepts, general principles for design".

If the application of the fan allows free access to the inlet and discharge apertures, safety devices must be put in place on the fan in accordance with DIN EN ISO 13857! Suitable safety guards are available as an optional extra.

Shaft Guards



Contact guard for the free end of the shaft for double inlet centrifugal fans. Models in accordance with DIN EN ISO 13857, made of painted steel mesh.

Flanges



Made from galvanized or painted steel, to connect ducts and system components to the fan outlet side.

Flexible Connections



Connecting piece with elastic intermediate section for the vibration or impact-noise decoupled connection of the fan to the system or unit. Made out of two connecting flanges with elastic intermediate section.

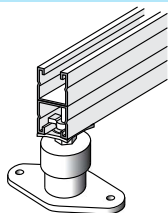
Temperature range / Application

► Standard up to +80 °C

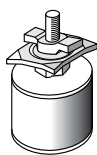
► ATEX max. +60 °C

Fittings / Accessories

Anti Vibration Mounts



Fastening for CC-profile



Fastening for U-profile

AV mounts are designed to prevent noise and vibrations being transmitted through the base of the fan.

AV mounts should be mounted beneath the fan base frame so the weight and spring deflections are evenly distributed. They should not be mounted symmetrically because a counter force is induced into the system by the pressure created by the working fan.

It is difficult for the manufacturer to establish the position of the AV mounts to suit all types of application.

Vibration and noise insulation can also be improved by ensuring that the fan is connected to its external environment by a flexible coupling.

Rubber pads and **buffers** for both vibration and noise insulation at fan speeds above 1400 rpm or 850 rpm.

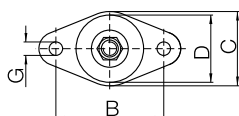
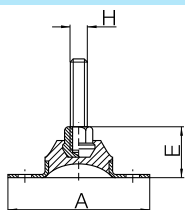
Rubber buffers for noise insulation only at fan speeds under 800 rpm or 1700 rpm.

Spring diffusers with noise insulation layer and height adjustment, for both vibration and noise insulation at fan speeds above 400 rpm.

Available AV mounts for different fans, see proSELECTA II.

The AVM-mounts are supplied with the suitable mounting material for the base frame.

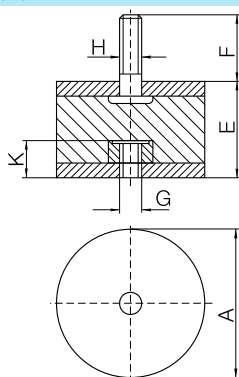
Anti Vibration Rubber Pads



ZBD	ZBD	A	B	C	D	E	G	H
21-6035A*	21-6035C*	60	45	35	30	20	5	M6
21-6065A*	21-6065C*	60	45	35	30	20	6	M6
21-5935A*	21-5935C*	90	70	50	45	32	9	M10
21-5950A*	21-5950C*	90	70	50	45	32	9	M10

* A = for U-profile, C = for CC-profile

Anti Vibration Rubber Buffers

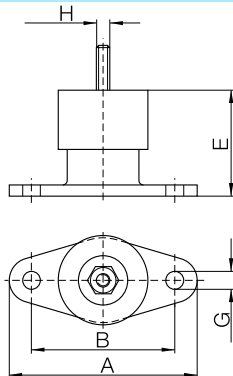


ZBD	ZBD	A	E	F	G	H	K
01-0405A*	01-0405C*	20	25	16	M 6	M 6	6.5
03-0503A*	03-0503C*	25	15	11	M 6	M 6	6.5
01-0504A*	01-0504C*	25	20	11	M 6	M 6	6.5
03-0806A*	03-0806C*	40	30	21	M 8	M 8	9.5
03-1007A*	03-1007C*	50	34	26.5	M 10	M 10	10.5
03-1510A*	03-1510C*	75	50	39	M 12	M 12	12.5
02-2008A*	02-2008C*	100	40	44	M 16	M 16	16.5

* A = for U-profile, C = for CC-profile

Fittings / Accessories

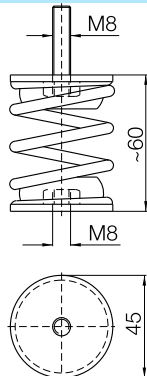
Anti Vibration Spring Diffusers



ZBD	ZBD	A	B	C	D	~ E	~ F	G	H
60-0101A*	60-0101C*	130	100	70	72	70-50	35	13	M10
60-0103A*	60-0103C*	130	100	70	72	70-50	35	13	M10
60-0105A*	60-0105C*	130	100	70	72	70-50	35	13	M10
60-0108A*	60-0108C*	130	100	70	72	70-50	35	13	M10
60-0112A*	60-0112C*	150	120	82	92	90-75	35	13	M12
60-0120A*	60-0120C*	150	120	82	92	90-75	35	13	M12
60-0130A*	60-0130C*	150	120	82	92	90-75	35	13	M12
60-0150A*	60-0150C*	150	120	82	92	110-85	35	13	M12

* A = for U-profile, C = for CC-profile

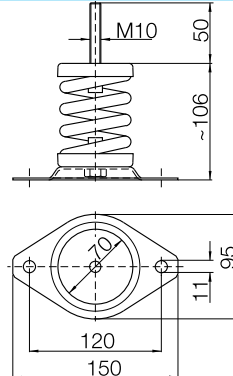
Anti Vibration Spring Diffusers



ZBD	ZBD
SP-7701A*	SP-7701C*
SP-7702A*	SP-7702C*
SP-7703A*	SP-7703C*
SP-7704A*	SP-7704C*
SP-7705A*	SP-7705C*
SP-7706A*	SP-7706C*
SP-7707A*	SP-7707C*

* A = for U-profile, C = for CC-profile

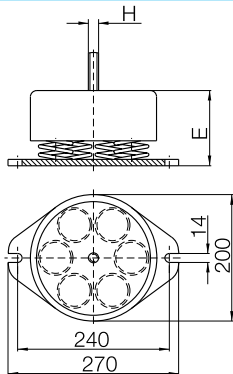
Anti Vibration Spring Diffusers



ZBD	ZBD
SP-7501A*	SP-7501C*
SP-7502A*	SP-7502C*
SP-7503A*	SP-7503C*
SP-7504A*	SP-7504C*
SP-7505A*	SP-7505C*
SP-7506A*	SP-7506C*
SP-7507A*	SP-7507C*
SP-7508A*	SP-7508C*

* A = for U-profile, C = for CC-profile

Anti Vibration Spring Diffusers



ZBD	ZBD	E	H	kg
80-W603A*	80-W603C*	68-101	M 16	8.3
80-W605A*	80-W605C*	76-101	M 16	8.6
80-W608A*	80-W608C*	86-105	M 16	9.0
80-W612A*	80-W612C*	84-104	M 16	9.3
80-W616A*	80-W616C*	92-105	M 24	9.7

* A = for U-profile, C = for CC-profile

Fan Sets

Base Frame with Belt Tensioning Device

G2Z-component size 0200/-0500 (only RZR 11/19)



This compact base frame with integrated motor tensioning slider provides optimum compactness and easiest handling.

- The base frame made of galvanized sheet steel is screwed directly onto the fan (without any casing feet) – the result being the low overall height of the system.
- The overall length depending on the casing position and size of the motor is a further factor influencing the optimum compactness.
- The integrated tensioning slider considerably simplifies re-adjustment of the belt drive during maintenance and service work.

G1Z-component size 0400/-0710



The base frames up to motor size 180 are manufactured from galvanized CC-profiles. The anti-vibration mounts in the CC-profile provide infinitely variable adjustment. From motor size 200 the base frames are of U-profile, welded and painted. Fitted motor tensioning tracks that allow the motor to be shifted longitudinally, allow for the simple adjustment of the belt tension.

G1Z-component size 0800/-1600



Base frame of stable U-profiles, welded and painted, with holes for attaching the anti-vibration mounts.

Fitted motor tensioning tracks that allow the motor to be shifted longitudinally, allow for the simple adjustment of the belt tension.

Equipment

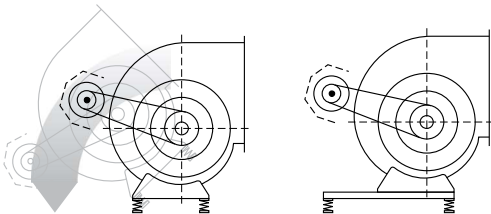
- FKS hot-dip galvanized for U-profile base frame

Pick-A-Back



This allows the motor to be fixed directly onto the fan casing, where space around the fan is limited. One side of the pick-a-back is fixed to the casing so that it swivels, while the other is supported on a spindle. Thus the pick-a-back becomes adjustable to leave room for tensioning the drive belt. The various motor arrangements and casing positions are shown in the drawings.

The accompanying tables also show the maximum permissible motor sizes. When using a pick-a-back arrangement and fitting anti vibration mounts (AVM) an additional base frame for fitting the AVM may be required depending on the position of the centre of gravity of the whole fan set.



Fan Sets

Belt Drive

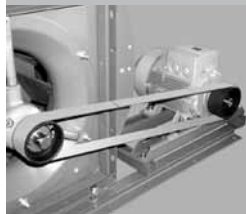
Wedge Belts



High performance narrow V-belts in accordance with DIN 7753 are temperature stable up to +80 °C, resistant to mineral oils and electrostatically conductive.

The belt pulleys are made of high quality cast iron and, depending on the peripheral velocity and number of grooves, are statically (G 16) or dynamically (G 6.3) balanced. They are fastened to the shaft of the motor or fan by means of a clamping bush.

Flat Belts



The flat belt drives employed are made using the most modern technology and materials. They are the centrepiece of highly developed, powerful belt drives.

This modern flat belt drive has distinct advantages over traditionally employed V-belt drives and exceeds it in efficiency, quiet running and economy.

Overview of the advantages:

- ▶ higher efficiency
- ▶ longer service life
- ▶ quieter running
- ▶ easy to install
- ▶ low maintenance
- ▶ no wear on the belt - so it is possible to dispense with the 2nd filter stage in the air conditioning unit (in accordance with VDI 6022)

Belt Guard



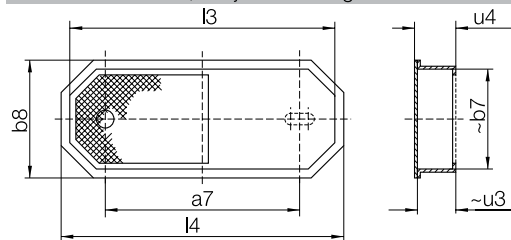
Totally enclosed belt guards are made from galvanised sheet steel in accordance with DIN EN ISO 13857.

The front section can be removed for maintenance. If there is no standard belt guard available for the selected belt drive (see table), a suitable belt guard will be made as a welded construction and then coated.

Features

- ▶ belt guard split horizontally
- ▶ access door on belt guard
- ▶ opening on belt guard for speed measuring device

Dimensions in mm, subject to change.



RBS	a7 _{max}	DW _{max}	b8	b7	s5	u4	u3	I4	I3
01-....-01	250	90	194	159	97	72	69	444	404
01-....-02	300	90	194	159	97	72	69	494	454
01-....-03	350	160	264	229	132	72	69	614	574
01-....-04	400	160	264	229	132	72	69	664	624
01-....-05	450	160	264	229	132	72	69	714	674
01-....-06	500	160	264	229	132	72	69	764	724
01-....-07	600	160	264	229	132	72	69	864	824
01-....-08	700	125	264	229	132	72	69	964	924
01-....-09	800	125	264	229	132	72	69	1064	1024
01-....-10	900	125	264	229	132	72	69	1164	1124
01-....-11	450	250	344	304	172	122	119	794	754
01-....-12	500	250	344	304	172	122	119	844	804
01-....-13	600	250	344	304	172	122	119	944	904
01-....-14	700	315	484	444	242	122	119	1184	1144
01-....-15	800	315	484	444	242	122	119	1284	1244
01-....-16	900	315	484	444	242	122	119	1384	1344
01-....-17	1000	315	484	444	242	122	119	1484	1444
01-....-18	1100	315	484	444	242	122	119	1584	1544
01-....-19	1200	315	484	444	242	122	119	1684	1644

.... Spaceholder for fan-size

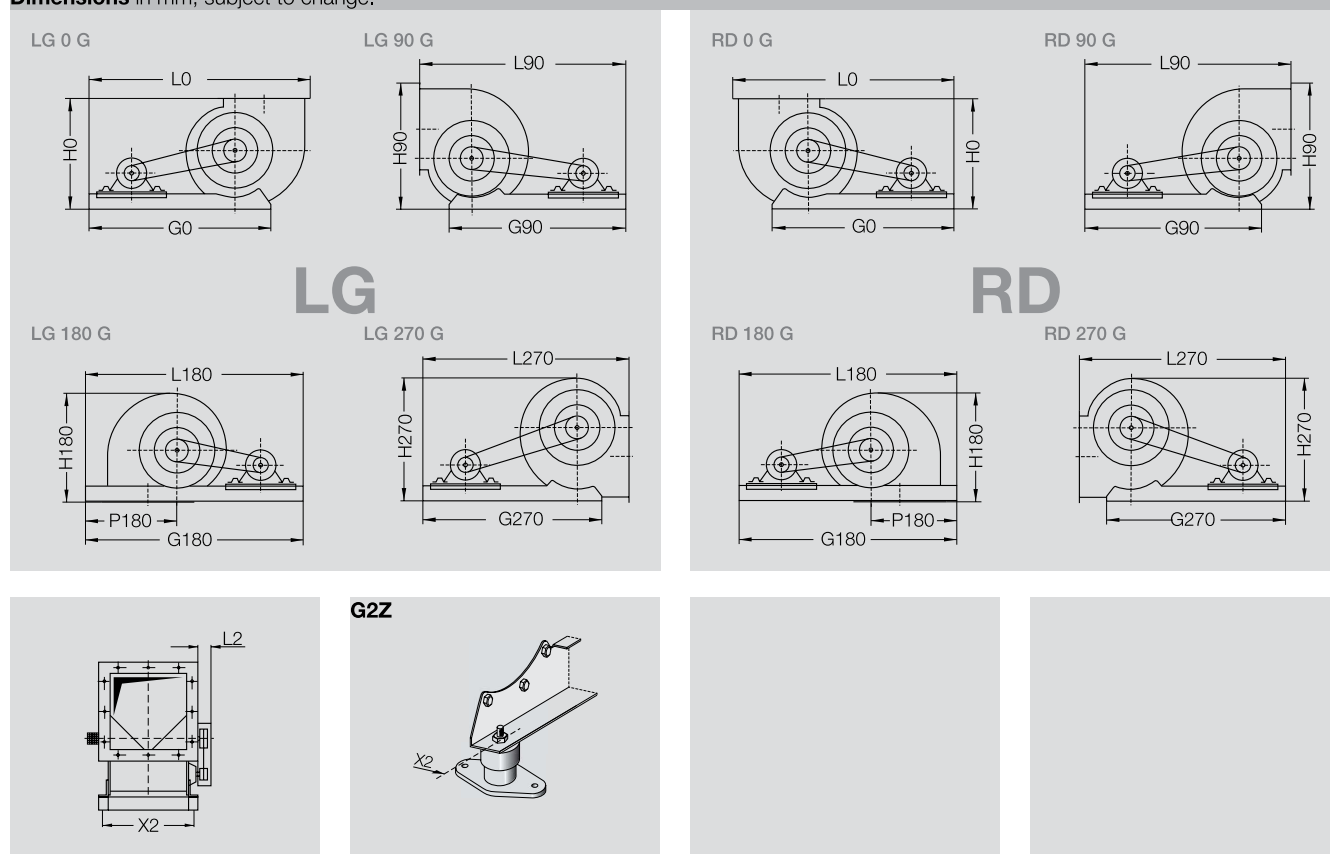
DW_{max} Diameter of the biggest pulley

a7_{max} Maximum axle centre distance

RZR 11-0200/-0500

Fan set arrangement with base frame

Dimensions in mm, subject to change.



RZR			②	②	②	②				
RZR			G0	G90	G180	G270	H0	H90	H180	H270
11-	19-	0200	625	650	880	650	358	408	356	386
11-	19-	0225	680	710	925	710	404	467	401	431
11-	19-	0250	705	730	974	730	440	510	438	477
11-	19-	0280	725	755	1031	755	489	569	485	531
11-	19-	0315	750	785	1094	785	542	623	537	597
11-	19-	0355	845	885	1207	885	603	689	601	670
11-		0400	990	970	1350	970	671	773	667	749
11-		0450	1030	1010	1440	910	755	868	750	840
11-		0500	1070	1050	1530	1050	827	956	821	929

			②	②	②	②			Motor	Base frame ~ kg
RZR	RZR		L0	L90	L180	L270	L2	P180	X2	max.
11-	19-	0200	745	740	880	740	100	396	286	132 6
11-	19-	0225	793	792	925	792	100	423	322	132 7
11-	19-	0250	843	829	974	829	100	450	356	132 7.5
11-	19-	0280	893	876	1031	876	100	482	395	132 8
11-	19-	0315	952	931	1094	931	100	520	438	132 9
11-	19-	0355	1087	1090	1207	1060	100	552	487	160 10
11-		0400	1219	1120	1350	1120	120	587	546	180 11
11-		0450	1315	1203	1440	1203	120	646	612	180 12
11-		0500	1400	1279	1530	1279	120	700	680	180 14

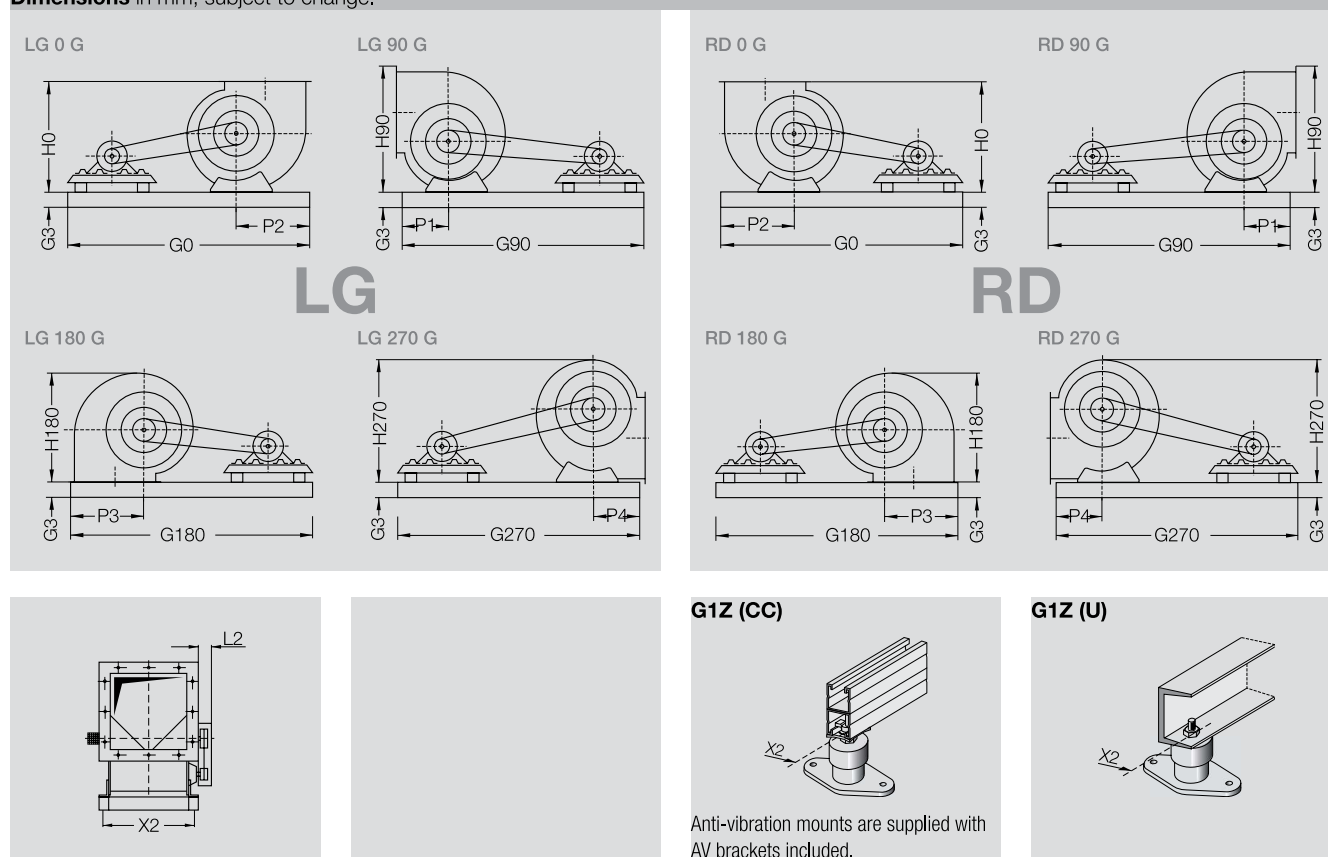
② The base frame length has been determined with the always largest admitted motor size. With smaller motors the frame length will be reduced.

For accurate dimensions use proSELECTA II or on request.

RZR 11-0400/-0710

Fan set arrangement with base frame

Dimensions in mm, subject to change.



RZR		②	②	②	②	G3 for motor size					
		G0	G90	G180	G270	63-71	80-90	100-132	160-180	200-225	250-280
11-	0400	1240	1300	1650	1240	82-CC	82-CC	82-CC	82-CC	80-U ③	—
11-	0450	1300	1350	1740	1298	82-CC	82-CC	82-CC	82-CC	80-U ③	—
11-	0500	1434	1405	1772	1405	82-CC	82-CC	82-CC	82-CC	80-U ③	—
11-	0560	1558	1508	1908	1508	82-CC	82-CC	82-CC	82-CC	80-U ③	—
11-	0630	1600	1574	2006	1574	—	82-CC	82-CC	82-CC	80-U ③	—
11-	0710	1708	1680	2145	1680	—	82-CC	82-CC	82-CC	—	—
11-	0710-U	1700	1700	2115	1700	—	—	—	—	100-U	120-U ③

RZR		H0	H90	H180	H270	L2	P1	P2	P3	P4	X2	Motor Base frame ~ kg max. CC 80-U 100-U		
11-	0400	671	773	667	749	120	275	355	669	275	550	225	31	③ ③
11-	0450	755	868	750	840	120	320	408	718	320	614	225	32	③ ③
11-	0500	827	956	821	929	120	348	452	766	348	682	225	33	60 —
11-	0560	921	1071	914	1041	150	384	502	851	384	759	225	34	63 —
11-	0630	1028	1195	1021	1168	150	432	566	915	432	846	225	35	68 —
11-	0710	1152	1341	1143	1316	180	479	625	1014	479	943	180	37	— —
11-	0710-U	1152	1341	1143	1316	180	—	—	—	—	943	250	—	94 145

② The base frame length has been determined with the always largest admitted motor size. With smaller motors the frame length will be reduced.

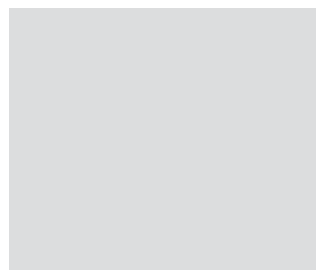
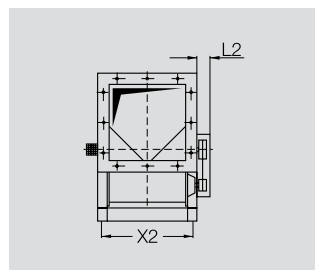
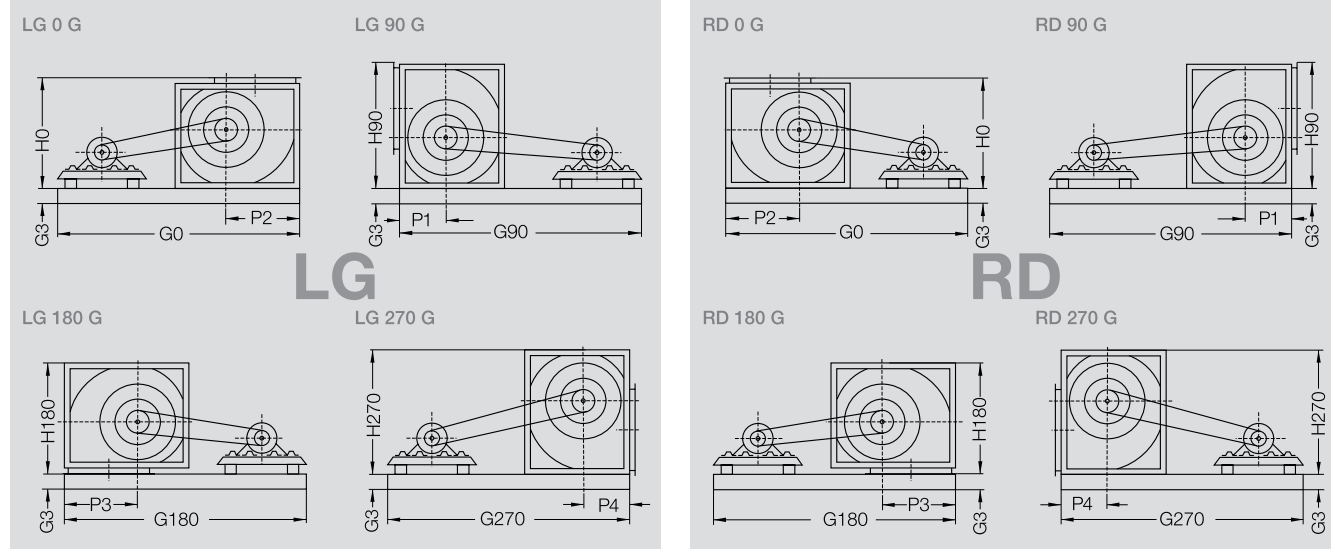
For accurate dimensions use proSELECTA II or on request.

③ Dimensions on request

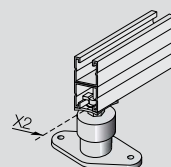
RZR 12-0200/-0710

Fan set arrangement with base frame

Dimensions in mm, subject to change.

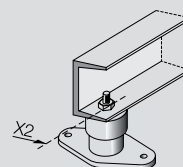


G1Z (CC)



Anti-vibration mounts are supplied with AV brackets included.

G1Z (U)



RZR	② G0	② G90	② G180	② G270
12- 0200	④	④	④	④
12- 0225	④	④	④	④
12- 0250	④	④	④	④
12- 0280	④	④	④	④
12- 0315	④	④	④	④
12- 0355	④	④	④	④
12- 0400	1430	1312	1655	1312
12- 0450	1522	1388	1740	1388
12- 0500	1610	1460	1830	1460
12- 0560	1736	1561	1958	1561
12- 0630	1865	1670	2078	1670
12- 0710	2008	1784	2235	1784
12- 0710-U	2035	1840	2235	1840

G3 for motor size

63-71	80-90	100-132	160-180	200-225	250-280
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
82-CC	82-CC	82-CC	82-CC	80-U ③	—
82-CC	82-CC	82-CC	82-CC	80-U ③	—
82-CC	82-CC	82-CC	82-CC	80-U ③	—
82-CC	82-CC	82-CC	82-CC	80-U ③	—
—	82-CC	82-CC	82-CC	80-U ③	—
—	82-CC	82-CC	82-CC	—	—
—	—	—	—	100-U	120-U ③

RZR	H0	H90	H180	H270	L2	X2	Motor max.	Base frame ~ kg CC 80-U 100-U
12- 0200	④	④	④	④	④	④	④	④
12- 0225	④	④	④	④	④	④	④	④
12- 0250	④	④	④	④	④	④	④	④
12- 0280	④	④	④	④	④	④	④	④
12- 0315	④	④	④	④	④	④	④	④
12- 0355	④	④	④	④	④	④	④	④
12- 0400	669	769	669	750	120	550	225	31 ③ ③
12- 0450	753	865	753	841	120	614	225	32 ③ ③
12- 0500	825	955	825	931	120	682	225	33 60 —
12- 0560	920	1067	920	1046	150	759	225	34 63 —
12- 0630	1027	1195	1027	1173	150	846	225	35 68 —
12- 0710	1152	1341	1152	1324	180	943	180	37 — —
12- 0710-U	1152	1341	1152	1324	180	—	250	— 94 155

② The base frame length has been determined with the always largest admitted motor size. With smaller motors the frame length will be reduced.

For accurate dimensions use proSELECTA II or on request.

③ Dimensions on request

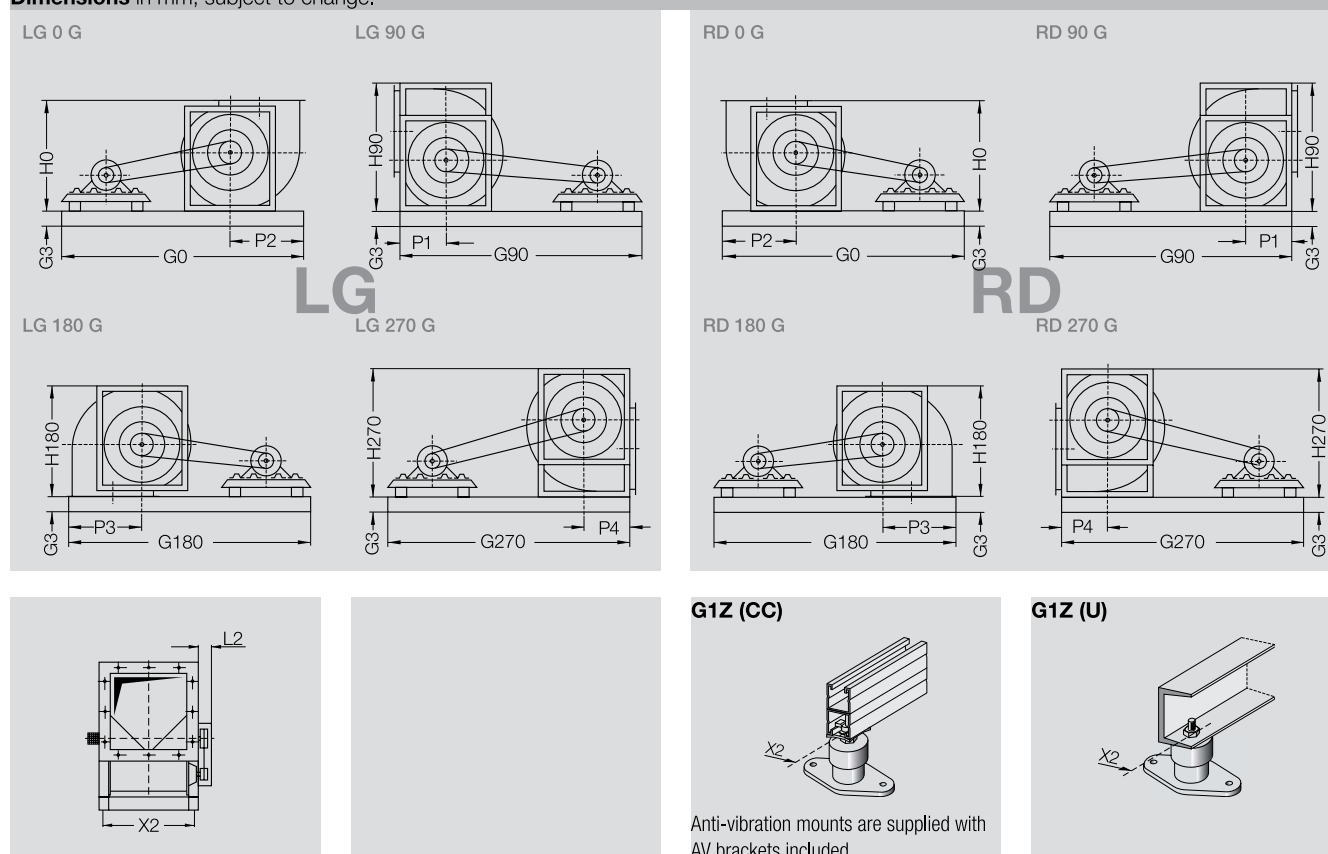
④ The RZR 12-0200 to 0355 can only be supplied as standard basic models.

RZR 13-0400/-1000

RZR 18-0400/-1000

Fan set arrangement with base frame

Dimensions in mm, subject to change.



RZR	RZR		G0		G90		G180		G270		G3 for motor size					
			CC②	U	CC②	U	CC②	U	CC②	U	63-71	80-90	100-132	160-180	200-225	250-280
13-	18-	0400	1240	—	1300	—	1650	—	1240	—	82-CC	82-CC	82-CC	82-CC	80-U ③	—
13-	18-	0450	1300	—	1350	—	1740	—	1298	—	82-CC	82-CC	82-CC	82-CC	80-U ③	—
13-	18-	0500	1411	—	1411	—	1772	—	1411	—	82-CC	82-CC	82-CC	82-CC	80-U ③	—
13-	18-	0560	1468	—	1468	—	1908	—	1468	—	82-CC	82-CC	82-CC	82-CC	80-U ③	—
13-	18-	0630	1564	—	1564	—	2006	—	1564	—	82-CC	82-CC	82-CC	82-CC	80-U ③	—
13-	18-	0710	1660	1700	1660	1700	2145	2115	1660	1700	82-CC	82-CC	82-CC	82-CC	100-U	120-U ③
13-	18-	0800	—	2300	—	2300	—	2885	—	2300	80-U	80-U	80-U	80-U	100-U	120-U
13-	18-	0900	—	2410	—	2410	—	3052	—	2410	80-U	80-U	80-U	80-U	100-U	120-U
13-	18-	1000	—	2505	—	2505	—	3180	—	2505	80-U	80-U	80-U	80-U	100-U	120-U

RZR												Motor Base frame ~ kg					
			H0	H90	H180	H270	L2	P1	P2	P3	P4	X2	max.	CC	80-U	100-U	120-U
13-	18-	0400	671	775	671	775	170	290	290	669	290	550	225	31	③	③	③
13-	18-	0450	755	868	755	868	170	316	316	718	316	614	225	32	③	③	③
13-	18-	0500	827	957	827	957	170	345	345	766	345	682	225	33	60	—	—
13-	18-	0560	921	1083	921	1083	210	382	382	851	382	759	225	34	63	—	—
13-	18-	0630	1028	1204	1028	1204	210	410	410	915	410	846	225	35	68	—	—
13-	18-	0710	1152	1350	1152	1350	240	464	464	1014	464	943	250	37	94	155	—
13-	18-	0800	1290	1520	1290	1520	250	518	518	1155	518	1048	250	—	67	98	155
13-	18-	0900	1448	1707	1448	1707	260	570	570	1276	570	1179	280	—	72	105	165
13-	18-	1000	1577	1869	1577	1869	260	620	620	1317	620	1316	280	—	77	111	165

② The base frame length has been determined with the always largest admitted motor size. With smaller motors the frame length will be reduced.

For accurate dimensions use proSELECTA II or on request.

③ Dimensions on request

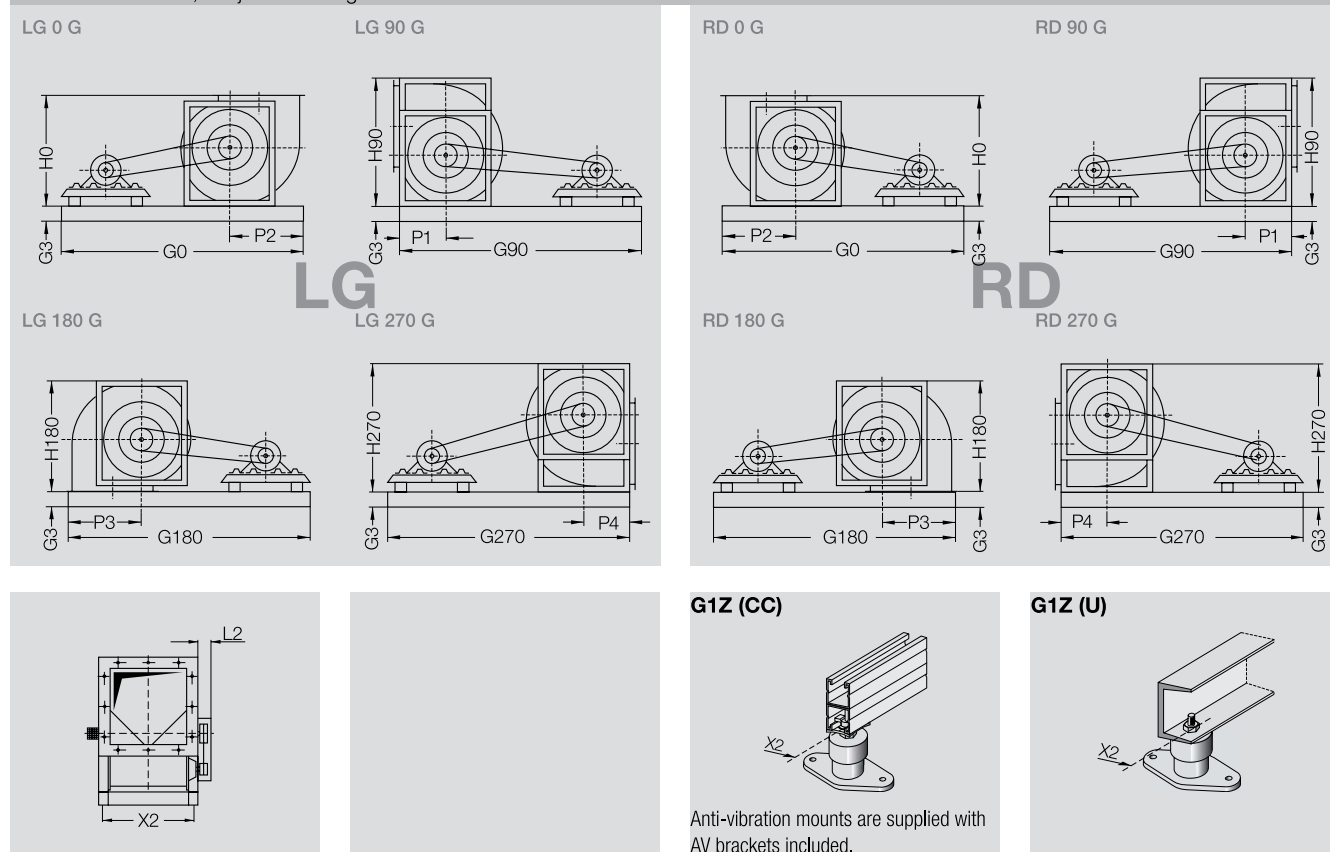
RZR 11-0800/-1000

RZR 15-0400/-1000

RZR 19-0400/-1000

Fan set arrangement with base frame

Dimensions in mm, subject to change.



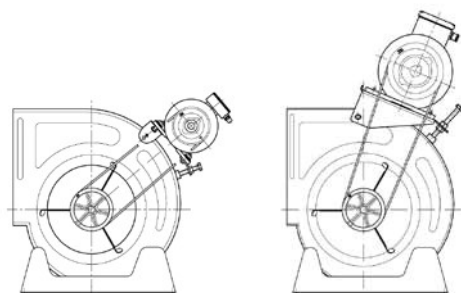
RZR	RZR	RZR	G0		G90		G180		G270		G3 for motor size					
			CC(2)	U	CC(2)	U	CC(2)	U	CC(2)	U	63-71	80-90	100-132	160-180	200-225	250-280
15-	19-	0400	1240	-	1300	-	1650	-	1240	-	82-CC	82-CC	82-CC	82-CC	80-U ③	-
15-	19-	0450	1300	-	1350	-	1740	-	1298	-	82-CC	82-CC	82-CC	82-CC	80-U ③	-
15-	19-	0500	1411	-	1411	-	1772	-	1411	-	82-CC	82-CC	82-CC	82-CC	80-U ③	-
15-	19-	0560	1468	-	1468	-	1908	-	1468	-	82-CC	82-CC	82-CC	82-CC	80-U ③	-
15-	19-	0630	1564	-	1564	-	2006	-	1564	-	82-CC	82-CC	82-CC	82-CC	80-U ③	-
15-	19-	0710	1660	1700	1660	1700	2145	2115	1660	1700	82-CC	82-CC	82-CC	82-CC	100-U	120-U ③
11-	15-	19-	0800	-	2300	-	2300	-	2885	-	80-U	80-U	80-U	80-U	100-U	120-U
11-	15-	19-	0900	-	2410	-	2410	-	3052	-	80-U	80-U	80-U	80-U	100-U	120-U
11-	15-	19-	1000	-	2505	-	2505	-	3180	-	80-U	80-U	80-U	80-U	100-U	120-U

RZR	RZR	RZR											Motor Base frame ~ kg				
			H0	H90	H180	H270	L2	P1	P2	P3	P4	X2	max.	CC	80-U	100-U	120-U
15-	19-	0400	671	775	671	775	170	290	290	669	290	550	225	31	③	③	③
15-	19-	0450	755	868	755	868	170	316	316	718	316	614	225	32	③	③	③
15-	19-	0500	827	957	827	957	170	345	345	766	345	682	225	33	60	—	—
15-	19-	0560	921	1083	921	1083	210	382	382	851	382	759	225	34	63	—	—
15-	19-	0630	1028	1204	1028	1204	210	410	410	915	410	846	225	35	68	—	—
15-	19-	0710	1152	1350	1152	1350	240	464	464	1014	464	943	250	37	94	155	—
11-	15-	19-	0800	1290	1520	1290	1520	250	518	518	1155	518	1048	250	—	67	98 155
11-	15-	19-	0900	1444	1707	1444	1707	260	570	570	1276	570	1179	280	—	72	105 165
11-	15-	19-	1000	1573	1869	1573	1869	260	620	620	1317	620	1316	280	—	77	111 165

- ② The base frame length has been determined with the always largest admitted motor size. With smaller motors the frame length will be reduced.
For accurate dimensions use proSELECTA II or on request.
- ③ Dimensions on request

AT 7/7-18/18

Fan set arrangement with Pick-A-Back



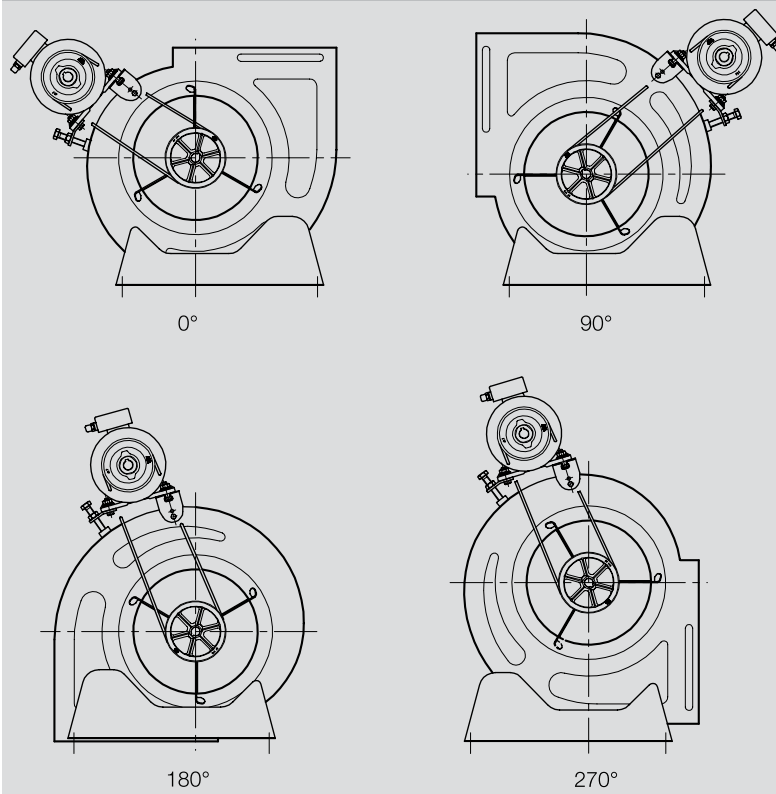
Version 1

Version 2

Using these specially designed motor brackets, the motor can be fixed, Pick-A-Back, directly on the scroll of the S-version fans.

When the motor must be held on the fan side-frames, the customer will need providing an appropriate slide or bracket, to connect it to the fixing holes on the standard frames.

Motor positions



Permissible Motor Power

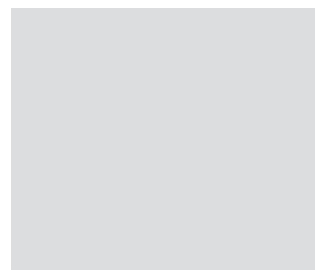
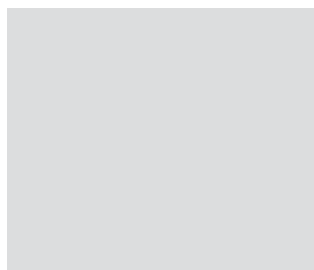
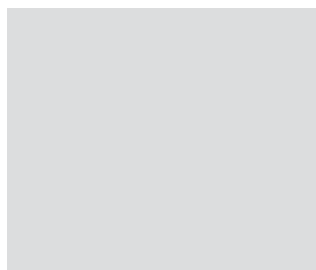
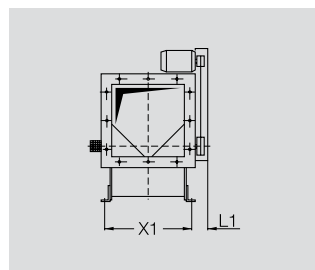
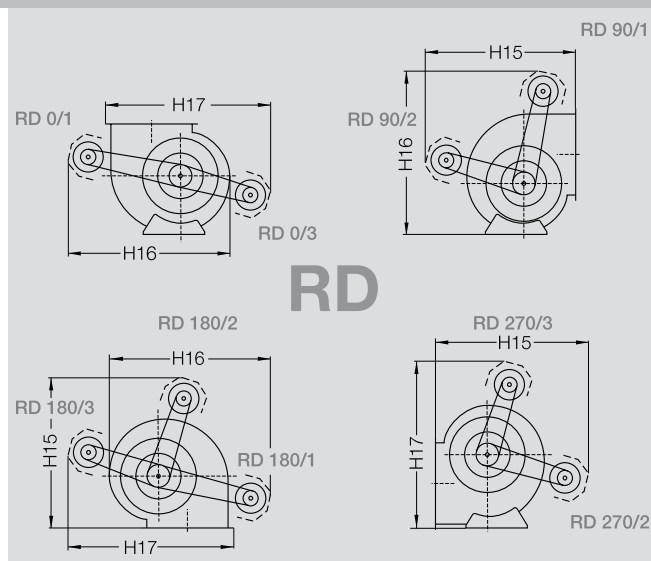
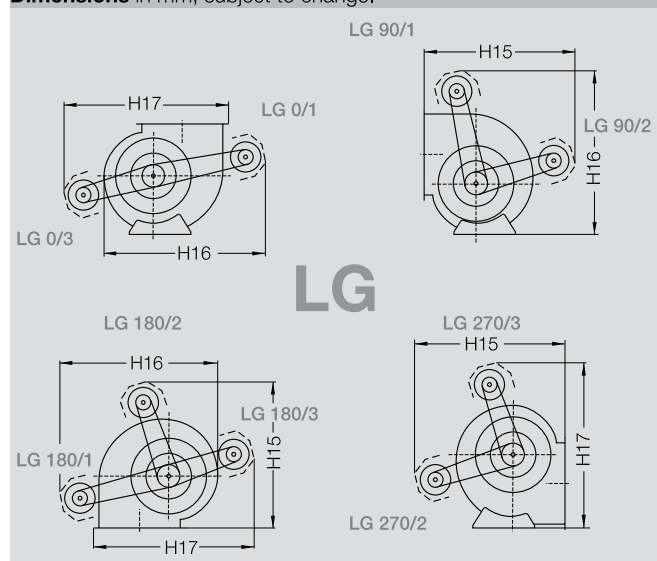
Size AT	Version 1		Version 2	
	Article-code	Max. permissible motor power kW	Article-code	Max. permissible motor power kW
7/7	687303	0.75	687940	—
9/7	687303	0.75	687940	1.1
9/9	687308	0.75	687941	1.1
10/8	687312	0.75	687942	1.5
10/10	687314	0.75	687943	1.5
12/9	687318	0.75	687944	2.2
12/12	687320	0.75	687945	2.2
15/11	687335	0.75	687546	3.0
15/15	687338	0.75	687947	3.0
18/13	687346	0.75	687948	3.0
18/18	687348	0.75	687949	3.0

RZR 11-0200/-0710

RZR 19-0200/-0355

Fan set arrangement with Pick-A-Back

Dimensions in mm, subject to change.



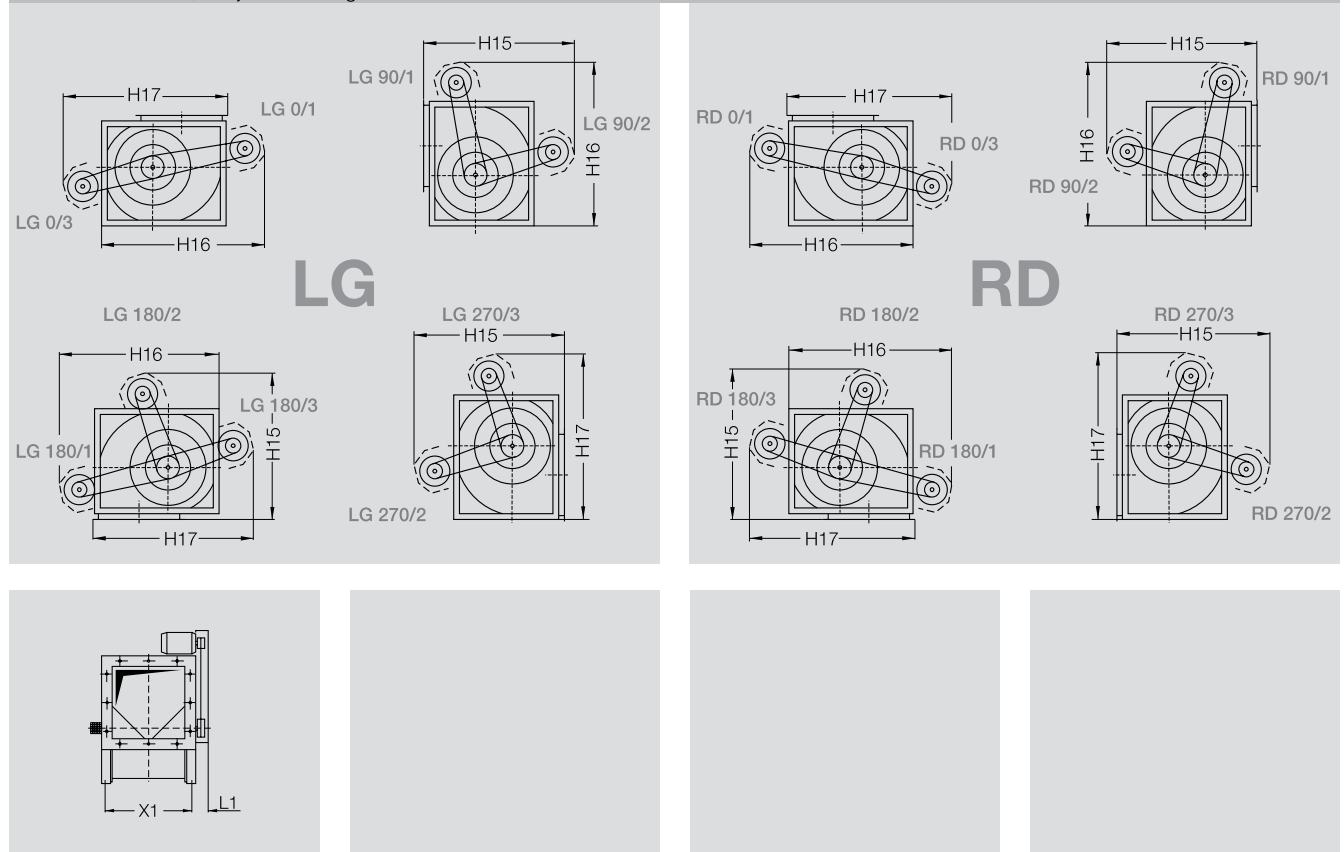
RZR	RZR		① ~ H15	① ~ H16	① ~ H17	L1	X1	Motor max.	Weight ~ kg
11-	19-	0200	650	720	680	100	286	90	1
11-	19-	0225	700	760	720	100	322	100	2
11-	19-	0250	750	850	810	100	356	100	2
11-	19-	0280	860	930	890	100	395	112	3
11-	19-	0315	880	970	960	100	438	112	3
11-	19-	0355	960	1080	1070	100	487	112	3
11-		0400	1280	1290	1280	120	546	132	8
11-		0450	1330	1430	1380	120	612	132	8
11-		0500	1360	1470	1560	120	680	132	8
11-		0560	1510	1630	1740	150	756	132	11
11-		0630	1660	1800	1820	150	843	160	12
11-		0710	1810	1960	2010	180	940	160	17

① This dimensions have been calculated with the largest appropriate applicable motor in mind.

RZR 12-0200/-0710

Fan set arrangement with Pick-A-Back

Dimensions in mm, subject to change.



RZR		① ~ H15	① ~ H16	① ~ H17	~ L1	X1	Motor max.	Weight ~ kg
12-	0200	670	670	690	100	286	90	1
12-	0225	710	730	780	100	322	100	1
12-	0250	850	840	860	100	356	100	2
12-	0280	880	920	930	100	395	112	2
12-	0315	950	950	1030	100	438	112	3
12-	0355	1080	1090	1130	100	487	112	3
12-	0400	1190	1290	1280	120	546	132	7
12-	0450	1330	1430	1390	120	612	132	7
12-	0500	1360	1470	1560	120	680	132	8
12-	0560	1500	1620	1630	150	756	132	11
12-	0630	1650	1790	1810	150	843	160	12
12-	0710	1800	1950	2000	180	940	160	17

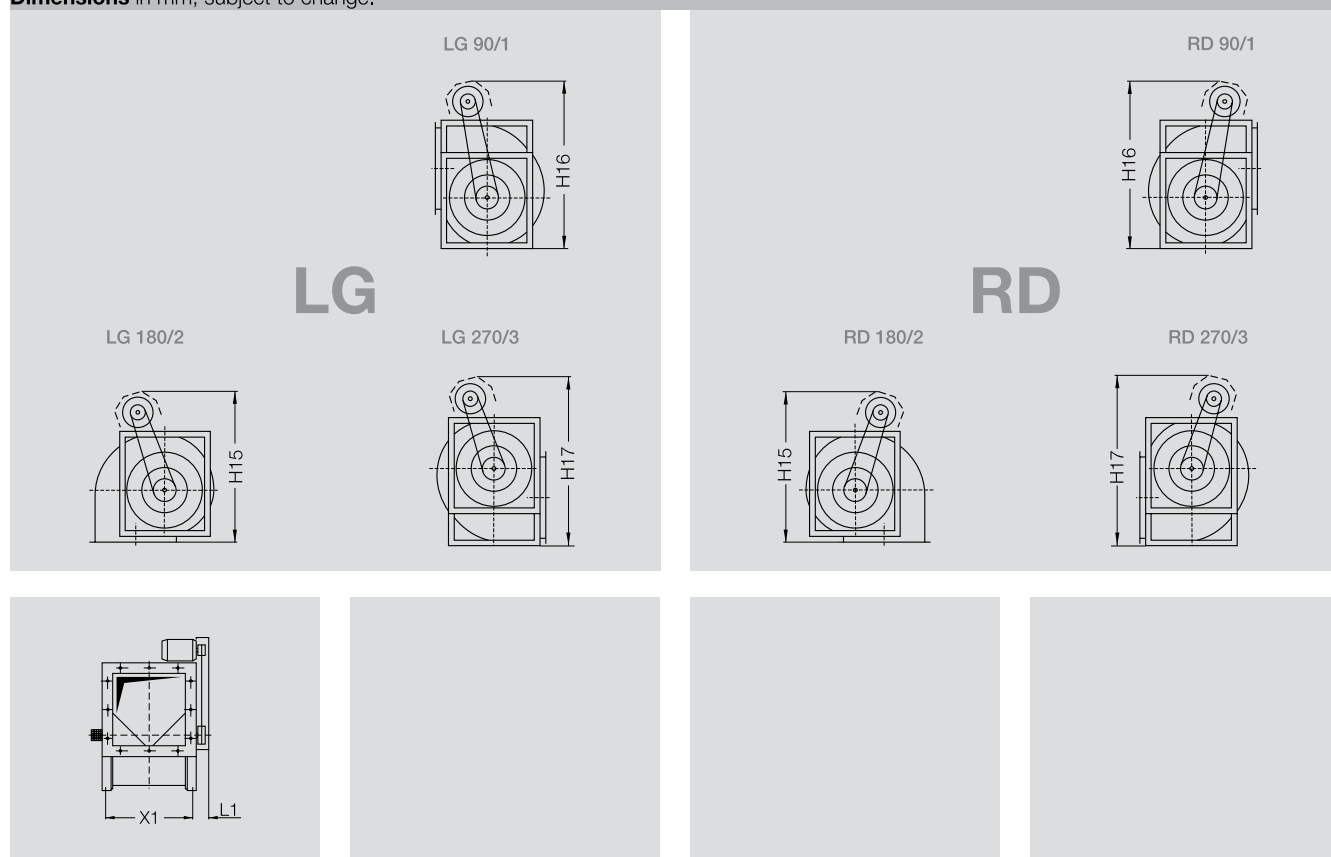
① This dimensions have been calculated with the largest appropriate applicable motor in mind.

RZR 13-0400/-1000

RZR 18-0400/-1000

Fan set arrangement with Pick-A-Back

Dimensions in mm, subject to change.



RZR	RZR		① ~ H15	① ~ H16	① ~ H17	~ L1	X1	Motor max.	Weight ~ kg
13-	18-	0400	1280	1300	1300	170	548	132	10
13-	18-	0450	1320	1430	1380	170	612	132	11
13-	18-	0500	1350	1560	1550	170	683	132	12
13-	18-	0560	1530	1700	1730	210	759	160	15
13-	18-	0630	1640	1870	1820	210	845	160	16
13-	18-	0710	1800	1970	2010	240	942	160	23
13-	18-	0800	1970	2150	2150	250	1053	160	30
13-	18-	0900	2150	2400	2350	260	1179	160	33
13-	18-	1000	2230	2630	2550	260	1317	160	36

① This dimensions have been calculated with the largest appropriate applicable motor in mind.

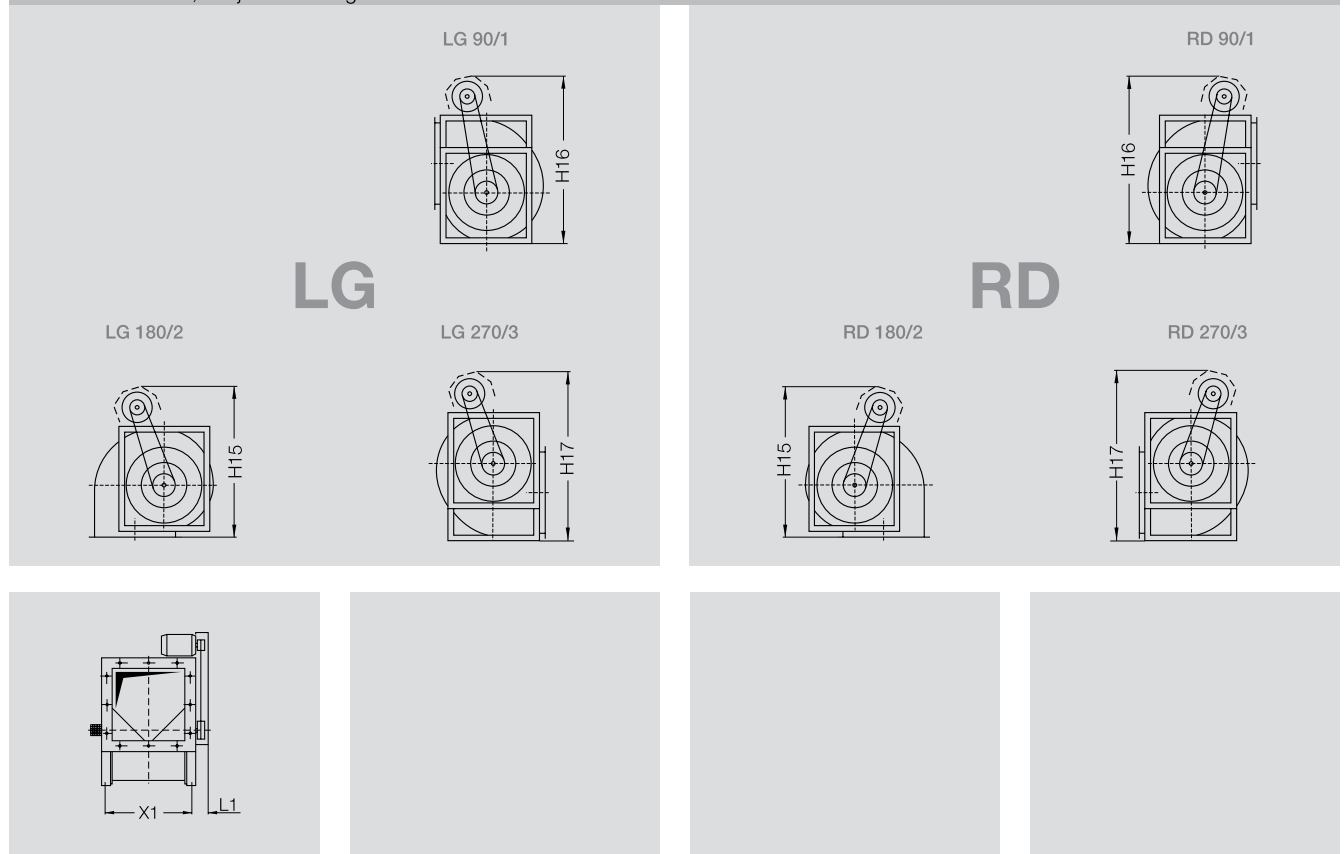
RZR 11-0800/-1000

RZR 15-0400/-1000

RZR 19-0400/-1000

Fan set arrangement with Pick-A-Back

Dimensions in mm, subject to change.



RZR	RZR	RZR	① ~ H15	① ~ H16	① ~ H17	~ L1	X1	Motor max.	Weight ~ kg
15-	19-	0400	1280	1300	1300	170	548	132	10
15-	19-	0450	1320	1430	1380	170	612	132	11
15-	19-	0500	1350	1560	1550	170	683	132	12
15-	19-	0560	1530	1700	1730	210	759	160	15
15-	19-	0630	1640	1870	1820	210	845	160	16
15-	19-	0710	1800	1970	2010	240	942	160	23
11-	15-	19-	0800	1970	2150	250	1053	160	30
11-	15-	19-	0900	2150	2400	260	1179	160	33
11-	15-	19-	1000	2230	2630	260	1317	160	36

① This dimensions have been calculated with the largest appropriate applicable motor in mind.

Fan Sets

Min. Pulley-Diameter, Bearings Life Expectency

As a principle, the fans are only equipped with noise tested precision bearings designed for a nominal bearing life time (L10h acc. to DIN ISO 281-1) of 40,000 operating hours.

In order to not exceed the admitted bearing loads there are minimum pulley diameters defined to be respected when sizing the belt drive.

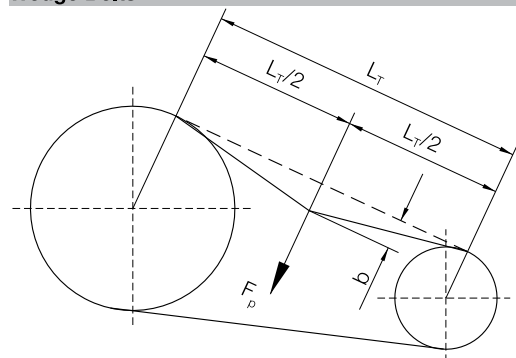
The minimum pulley diameters indicated are to be applied for belt drives selected according to the state of the art and tensioned according to the prescriptions.

For flat belt drives the minimum pulley diameters are to be increased of 40 % to the indicated figure!

A correct design of a belt drive may be achieved with our selection software where all relevant parameters will be kept automatically.

For correct design of a belt drive made by external means, dimensioning and the application of the tensioning forces have to be made in full respect of all specification data indicated.

Wedge Belts



L_T = Shaft Centres

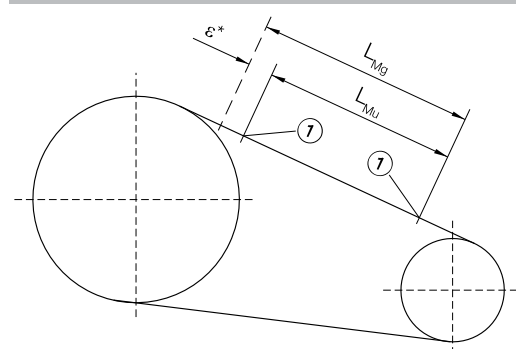
b = Deflection of belt in mm under test force F_p

F_p = Test force N as prescribed by Nicotra Gebhardt-Documents

Belt Tensioning

The correct tension is achieved when the test force F_p results in a deflection of 16 mm / metre of span.

Flat Belts



L_{Mu} = Measuring Marks ① before Tensioning

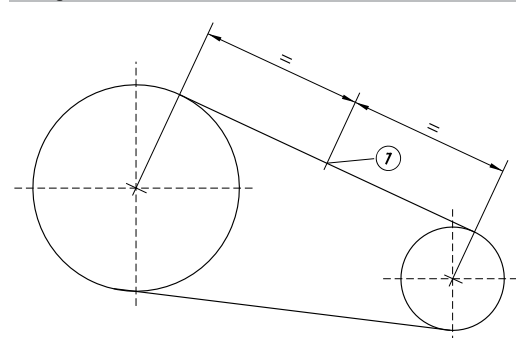
L_{Mg} = Measuring Marks ① After Tensioning

ϵ^* = Stretching Values as specified by Nicotra Gebhardt-Documents

Belt Tensioning

The correct belt tension is achieved when the measuring marks L_{Mu} have increased by the stretching value ϵ^* . This should be carried out in two stages to prevent over-stressing of the bearing.

Wedge- and Flat Belts



A further simple method for setting or checking the correct belt tension is via the static frequency of the drive belt.

Here the flat or V-belt is set to oscillate freely through striking it whilst stationary.

These vibrations are measured using an electronic measuring unit (e.g. a belt tension gauge). The vibration frequency in Hz must then be set to the specified value (documentation / nameplate).

① = Measuring point

Detailed instruction on tensioning are included within the operating and maintenance manuals.

Fan Sets

Min. recommended Pulley Diameter for ADH															
Fan size	Fan model	Nominal motor power in kW													
		2.2	3	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75
160	E0 / E2	63	71												
	G2E0 / E2	63	71												
180	E0 / E2	63	80												
	G2E0 / E2	63	80												
200	E0 / E2 / E4	71	95	125											
	G2E0 / E2	71	95	140											
225	E0 / E2 / E4	80	112	140											
	G2E0 / E2	80	100	160											
250	E0 / E2	80	112	150											
	E4		90	112	140	180									
	G2E0 / E2	80	100	132											
	G2E4		95	125	160	224									
280	G2E7					100	118	160							
	E0 / E2		100	140	180										
	E4			90	112	140	212								
	G2E0 / E2		112	140	180										
315	G2E4			100	118	150	224								
	G2E7					112	112	140	180	224					
	E0 / E2		100	125	180										
	E4			90	125	160	250								
	E6						160	224	250						
	G2E0 / E2		112	140	200										
355	G2E4			112	140	180	250								
	G2E7							160	190	212	300				
	E0 / E2			100	132	180									
	E4				112	150	224	280							
	E6						125	180	224	236					
	G2E0 / E2			112	140	200									
400	G2E4				112	150	224	280							
	G2E7							160	180	212	300				
	E0 / E2			100	132	180									
	E4				112	150	224	280							
	E6						140	180	212	250					
	G2E0 / E2			100	132	180									
450	G2E4				100	140	200	280							
	G2E7								160	190	250	300			
	E0 / E2				112	132	212								
	E4					118	180	250							
	E6							180	212	250	315				
	G2E0 / E2				118	140	200								
500	G2E4					112	160	224							
	G2E7								160	180	250	300			
	E0 / E2				112	132	200								
	E4					112	180	224							
	E6							150	190	224	315				
	E7								180	250	315				
560	G2E0 / E2				118	140	200								
	G2E4					112	160	224							
	G2E7								180	212	250	300			
	E0 / E2					132	180	224							
	E4						150	200	236						
	E6								160	190	250				
630	E7								160	180	212	236			
	G2E2					132	180	212							
	G2E4						132	180	224						
	G2E7								160	224	250	280			
	L / R					132	160	215							
	K						132	200	224						
710	K1								160	180	250				
	K2									160	180	200	224		
	G2R					132	180	200							
	G2K						132	180	224						
	G2K2									180	224	280	355		
	L / R					132	150	180	250						
800	K						132	180	224	250					
	K1									180	212	236			
	K2										180	200	224	280	
	G2K									160	190	212			
	G2K2										180	200	224	224	280
	K							180	224	250					
900	K1									180	212	236	280		
	K2											200	224	224	280
	G2K									180	200	236			
	G2K2										200	224	224	224	280
	K								180	212	280				
	K2										200	224	224	280	
1000	G2K									180	200	250			
	G2K2										180	190	224	280	

Fan Sets

Min. recommended Pulley Diameter for AT																
Fan size	Fan model	Nominal motor power in kW														
		1.1	1.5	2.2	3	4	5.5	7.5	11	15	18.5	22	30	37	45	55
7/7	S / SC	63	63	80	112											
	G2L / SC2	63	63	90	118											
9/7	S / SC	63	63	85	112											
	AR	—	—	—	80	100	140	200								
9/9	G2L / SC2	63	63	90	125											
	G2C	—	—	—	71	80	100	150								
9/9	S / SC	—	63	90	125											
	AR	—	—	—	85	112	150	224								
10/8	G2L / SC2	63	71	95	132											
	G2C	—	—	—	—	80	112	150								
10/10	S / SC	63	71	85	112											
	AR	—	—	—	80	100	150	200								
10/10	G2L / SC2	63	71	95	132											
	G2C	—	—	—	—	80	100	150								
12/9	S / SC	—	—	71	90	118	180									
	AR	—	—	—	85	118	160	236								
12/9	G2L / SC2	—	—	85	95	118	180									
	G2C	—	—	—	—	80	90	118	224							
12/12	G3C	—	—	—	—	100	112	118	180							
	S / SC	—	—	90	112	140	200									
12/12	AR	—	—	—	—	100	140	190	280							
	G2L / SC2	—	—	80	112	140	200									
12/12	G2C	—	—	—	—	85	112	140	200							
	G3C	—	—	—	—	90	112	140	200							
15/11	S / SC	—	—	85	112	132	180									
	AR	—	—	—	—	90	118	160	236							
15/11	G2L / SC2	—	—	80	100	140	200									
	G2C	—	—	—	—	85	112	150	224							
15/15	G3C	—	—	—	—	—	100	118	180	250						
	S / SC	—	—	80	100	132	180									
15/15	AR	—	—	—	—	95	132	180	250							
	G2L / SC2	—	—	80	100	132	180									
15/15	G2C	—	—	—	—	85	100	132	200							
	G3C	—	—	—	—	—	100	118	160	224						
18/13	S / SC	—	—	—	100	132	180	250								
	AR	—	—	—	—	—	100	140	200	280						
18/13	G2L / SC2	—	—	—	95	125	180	250								
	G2C	—	—	—	—	—	95	112	160	224						
18/18	G3C	—	—	—	—	—	100	112	160	224						
	S / SC	—	—	—	100	132	180	250								
18/18	AR	—	—	—	—	—	100	132	190	280						
	G2L / SC2	—	—	—	90	118	180	224								
20/15	G2C	—	—	—	—	—	95	112	160	224						
	G3C	—	—	—	—	—	100	112	140	200						
20/15	TIC	—	—	—	—	—	100	140	200	280						
	G2C	—	—	—	—	—	—	112	160	250	280					
20/20	G2C-C2	—	—	—	—	—	—	—	—	—	—	150	180	200	224	
	G3C	—	—	—	—	—	—	112	150	200	280					
20/20	G3C-C2	—	—	—	—	—	—	—	—	—	—	150	180	200	224	
	TIC	—	—	—	—	—	100	132	200	280						
22/15	G2C	—	—	—	—	—	—	112	160	224	280					
	G2C-C2	—	—	—	—	—	—	—	—	—	—	150	180	200	224	
22/22	G3C	—	—	—	—	—	—	112	140	200	250					
	G3C-C2	—	—	—	—	—	—	—	—	—	—	150	180	190	224	
25/20	TIC	—	—	—	—	—	90	118	160	224						
	G2C	—	—	—	—	—	—	112	140	200						
25/25	G2C-C2	—	—	—	—	—	—	—	—	—	—	250	150	180	190	224
	G3C	—	—	—	—	—	—	112	132	180	224					
28/20	G3C-C2	—	—	—	—	—	—	—	—	—	—	150	180	190	224	224
	TIC	—	—	—	—	—	—	100	150	200	250					
28/28	G2C	—	—	—	—	—	—	112	132	180	224					
	G2C-C2	—	—	—	—	—	—	—	—	—	—	150	180	190	224	224
30/20	G3C	—	—	—	—	—	—	112	125	160	200					
	G3C-C2	—	—	—	—	—	—	—	—	—	—	150	180	190	224	224
30/28	TIC	—	—	—	—	—	—	100	140	200	250					
	G2C	—	—	—	—	—	—	100	125	180	224					
30/28	G2C-C2	—	—	—	—	—	—	—	—	—	—	150	180	190	212	224
	G3C	—	—	—	—	—	—	100	125	160	200					
30/28	G3C-C2	—	—	—	—	—	—	—	—	—	—	150	180	190	224	224

Fan Sets

Min. recommended Pulley Diameter for RDH															
Fan size	Fan model	Nominal motor power in kW													
		2.2	3	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75
0180	E0 / E2	63	63												
0200	E0 / E2 / E4	63	63												
0225	E0 / E2 / E4	63	63	71											
0250	E0 / E2		71	80											
	E4		71	71	90										
	G2E4		80	80	90										
	G2E7				85	112									
0280	E0 / E2			80	100										
	E4				90	100									
	G2E0 / E2														
	G2E4			90	100										
0315	G2E7					90	125								
	E0 / E2			90	118										
	E4				90	112									
	E6					90	100								
	G2E0 / E2														
0355	G2E4			80	90										
	G2E7					90	112								
	E0 / E2			85	100	112									
	E4				90	112	125								
	E6					100	112	118							
0400	G2E0 / E2														
	G2E4				90	125									
	G2E7					90	112								
	E0 / E2				112	140									
	E4					100	132	180							
0450	E6						118	140	150						
	G2E4			100	112	112									
	G2E7						112	125	160						
	E0 / E2				112	125	180								
	E4					112	140	180							
0500	E6						125	140	160	212					
	G2E4				100	118	140								
	G2E7						112	125	160						
	E0 / E2				125	132	160								
	E4					132	150	200							
	E6							140	140	150	200				
0560	E7								118	125	150	200			
	G2E4				100	118	150								
	G2E7								140	150	180				
	E0 / E2					140	180	224							
	E4						150	200	224						
	E6								150	160	212				
0630	E7									140	160	160			
	G2E2														
	G2E4					112	140								
	G2E7								180	200	280				
	R					140	180	250							
	K						150	200	250						
0710	K1								180	180	236				
	K2									150	180	190	224		
	G2K						140	190							
	G2K2								180	200	280	355			
	R						180	224							
	K							224	250	315					
0800	K1									180	212	250			
	K2											212	224	224	
	G2K								180	190	250				
	G2K2												224	250	280
	K								160	180	250				
0900	K1										212	250	280		
	K2												224	224	280
	G2K									224	250	315			
	G2K2													224	280
	K									180	236	315			
1000	K2												224	224	300
	G2K									190	224	280			
	G2K2													224	280
	G2K2														

Fan Sets

Min. recommended Pulley Diameter for RZR																				
Fan size	Fan model	Nominal motor power in kW																		
		3	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200	250
0200	11 / 12 / 19	71	71	71	90															
0225	11 / 12 / 19	71	71	80	100															
0250	11 / 12 / 19	71	71	90	112															
	11 / 12	71	71	90	118															
0280	19	71	71	71	85	112														
0315	11 / 12	71	85	106	132															
	19	71	71	75	95	125														
0355	11 / 12	75	95	118	150															
	19	71	71	85	106	140														
0400	11 / 12	71	80	100	125															
	13 / 15 / 18 / 19	71	71	71	71	85	106	125	140	180										
0450	11 / 12	71	90	112	140															
	13 / 15 / 18 / 19	71	71	71	71	95	118	140	160	200										
0500	11 / 12	80	100	125	160															
	13 / 15 / 18 / 19	71	71	71	80	106	132	160	180	224										
0560	11 / 12	71	71	85	112	150	190													
	13 / 15 / 18 / 19	71	71	71	71	90	112	132	150	190	224									
0630	11 / 12	71	80	100	132	180	224													
	13 / 15 / 18 / 19	71	71	71	75	100	125	150	170	224	250									
0710	11 / 12	71	85	112	140	190	236	280												
	13 / 15 / 18 / 19	71	71	71	71	85	106	118	140	180	212	250	280							
0800	11	80	100	125	160	224	280	315	355											
	13 / 15 / 18 / 19	71	71	71	71	95	118	140	160	212	236	280	315							
0900	11	95	118	150	200	280	355	400	450											
	13 / 15 / 18 / 19	71	71	71	71	85	106	125	140	180	212	250	300	375						
1000	11	112	140	180	224	315	400	450	500											
	13 / 15 / 18 / 19	71	71	71	71	95	118	140	160	212	236	280	315	425						
1120	13	–	–	–	–	315	315	315	315	315	315	315	315	355	355	400	450			
1250	13	–	–	–	–	315	315	315	315	315	315	315	315	355	355	400	400	450		
1400	13	–	–	–	–	315	315	315	315	315	315	315	315	355	355	400	400	450	450	
1600	13	–	–	–	–	315	315	315	315	315	315	315	315	355	355	400	400	450	500	560

For flat-belt-drives the listed recommended pulley diameter must be enlarged up to approx. 40 %.

Description

General

The high-performance centrifugal fans are the result of extensive and systematic development work.
These technically first-rate products are distinguished by their high efficiency, the large pressure differences attainable and low noise levels.
The sizes are geometrically scaled in accordance with the standard range R 20 and the nominal size stated is the external diameter of the impeller.

Media



The fans are suitable for handling air and other non aggressive gases from -20 °C up to +80 °C, resp. +100 °C.
The ambient temperature at the drive motor must not exceed +40 °C.

Protective installations



The fans are designed for installation in equipment and as standard are not equipped with protective guards.

They should not be put into operation before all protective devices are fitted and connected!

Protective measures must be carried out as set out in DIN EN ISO 12100 "Safety of machinery - Basic concepts, general principles for design".

If the application of the fan allows free access to the inlet and discharge apertures, safety devices must be put in place on the fan in accordance with DIN EN ISO 13857! Suitable safety guards are available as an optional extra.

Shafts

Shafts ADH / AT / RDH



The fan shafts are manufactured of ground, precisely rounded carbon steel C40. They are principally prepared without being stepped at both ends.

The shafts of the RDH K1 and K2 ranges, size 1000 are machined on both ends for fitting a pulley.

ADH / AT from size 12/9 / RDH

The shafts are equipped with a keyway (open shape) at both ends and a key (type 2).
AT 7/7 up to 10/10

The standard construction is the version with flats on shaft ends (type 1), it is also available the version with keyways (type 2).

For corrosion protection the shafts are galvanised up to fan size 0560 and 30/28. From size 0630 and larger the shaft are covered, between bearing and hub, with a paint in order to ensure corrosion protection.

The shaft ends are covered with a wax product easy to remove.

Shafts RZR



The shafts are manufactured of precisely rounded carbon steel C35, pared and polished.

Up to size 1000 they are not stepped at the shaft end.

For sizes 1120 up to 1600 the shafts are machined on both ends for fitting a pulley.

The shafts are equipped with a keyway at both ends and a key executed according to DIN 6885-1.

► Groove shape N2 (open) Sizes 0200 up to 1000

► Groove shape N1 Sizes 1120 up to 1600

The shafts are covered with a easily removable wax product for corrosion protection.

Housig feet / Side frames ADH / AT / RDH



For easier installation of the fan the mounting feet and reinforcing frames are provided with eye holes.

Description

Bearings ADH / AT / RDH



**ADH E0 / ADH L
ADH E2 / ADH R
AT S / AT SC
AT G2L / AT SC2
RDH E0
RDH E2 / RDH R**

Maintenance free, self aligning radial insert ball bearings, mounted in pressed steel housing/strut assemblies with rubber interliners.



**ADH E4 / ADH K
AT AR / AT TIC / AT
G2C
RDH E4 / RDH K**

Monobloc pedestal cast iron pillow block bearings with relubrication nipple, mounted on a robust frame. Integrated, maintenance free self aligning radial ball bearings, fixed by eccentric clamp.



**ADH E6 / ADH K1 /
ADH E7-0500
RDH E6 / RDH K1 /
RDH E7-0500**

Pillow block cast iron bearings with relubrication nipple, mounted on a robust frame. Integrated self aligning radial ball bearings, fixed by conical sleeve and locknut.



**ADH E7-0560;
ADH K2-0630/-0800
AT G2C-C2
RDH E7-0560;
RDH K2-0630/-0800**

Split-type plummer block bearings with relubrication nipple, mounted on a robust frame, integrated self aligning double row ball-bearings fixed by conical sleeve, lubricated with long life high performance grease.

**ADH K2-0900-1000
RDH K2-0900-1000
RDH X1
RDH X2**

Single piece plummer block housing, with grease nipple, mounted on robust pedestal, equipped with self aligning double row roller bearing, fixed to impeller shaft by a concentric shaft clamp, lubricated with long life high performance grease.

Twin Fans

The twin fans up to size 0630 are equipped with one single shaft and 3 bearings. From size 0710 the two separate fans are connected by an elastic coupling. For the models G2K2 the bearings from size 0710 and larger are – due to different loads – of a different execution inside compared to outside.

Description

Bearings RZR



**RZR 11-0200/-1000;
RZR 12-0200/-0710**
(without lubricators)

Radial insert ball bearings with spherical outer Ring mounted in pressed steel housing/strut assemblies with rubber interliners.

**RZR 11-0200/-0710;
RZR 12-0200/-0710**
(with relubricators)

Radial insert ball bearings with spherical outer Ring mounted within cast iron housing, supported from the fan casing by tubular struts. Relubrication is effected via extended tubes and nipples.



RZR 19-0200/-0355
(without lubricators)

Radial insert ball bearings with spherical outer Ring mounted within cast iron housing, supported from the fan casing by tubular struts.

RZR 19-0200/-0355
(with relubricators)

Relubrication is effected via extended tubes and nipples.



**RZR 15-0400/-1000;
RZR 19-0400/-1000**
(without lubricators)

Self aligning double row ball bearings secured by adapter sleeve, mounted within a cast iron housing.

**RZR 15-0400/-1000;
RZR 19-0400/-1000**
(with relubricators)

Relubrication is effected via extended tubes and nipples.



**RZR 13-0400/-1600;
RZR 18-0400/-1000**
(without lubricators)

Self aligning double row ball bearings within standard plummer blocks, mounted on robust pedestal.

**RZR 13-0400/-1600;
RZR 18-0400/-1000**
(with relubricators)

Relubrication is effected via extended tubes and nipples.

Lubricators for relubrication during operation

The Bearings are charged with long life high performance grease. Relubrication is effected via extended tubes and nipples.
See operating and maintenance instructions.

► **IWN 01** - Standard grease, Gadus S2 V100 3

► **IWN 11** - Klüber-Staburags NBU12/300KP

Description

Motors



Standard motors of wellknown brands, type of protection IP55, thermal class F, are used. During commissioning and maintenance the detailed instructions provided by the motor manufacturer (type plate/motor operating instructions) must be followed, this also applies to the motor protection devices required onsite. The motors are equipped with PTC resistors/temperature sensors as standard. Motors with integrated frequency inverters may be supplied on request.

EX-ATEX motors

Fan sets of centrifugal fans according to Ex-ATEX execution are equipped with motors of the correspondent category.

For frequency inverter operation the motors will be of pressure resistant execution.

Speed regulation

A suitable speed variation system is required for the optimum adjustment of the desired operating point.

Our frequency converters are perfectly tuned for the operation of RZR centrifugal fans. The use of the newest power semi-conductors guarantees high efficiency and minimum motor noise thanks to the especially fine pulse pattern.

See also the technical description "Performance".

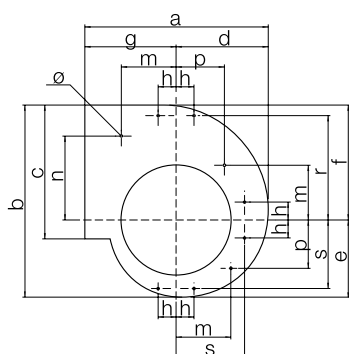
Electric connection

Centrifugal fan systems are delivered ready for installation. The motor terminal box can be easily accessed.

Electric installation must be carried out according to the applicable provisions in compliance with local regulations. A terminal board circuit diagram showing correct connection is enclosed with every motor.

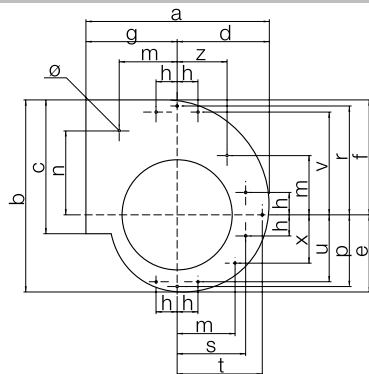
Attachment points on the side plates ADH/RDH

ADH/RDH 0160/-0180



	a	b	c	d	e	f	g	h	m	n	p	r	s	t
0160	281	291	205	141	119	172	140	30	92	121	67	155	101	4
0180	310	326	229	157	131	195	153	30	92	141	81	175	115	4

ADH/RDH 0200/-0250



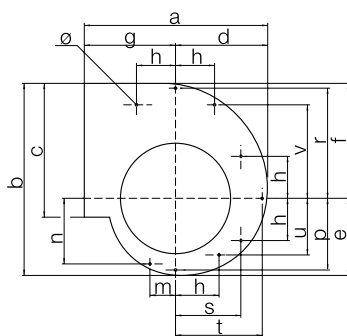
	a	b	c	d	e	f	g	h	m	n
0200	341	362	256	177	147	215	164	40	110	155
0225	379	407	288	199	165	242	180	40	110	184
0250	416	452.5	322	221	183.5	269	195	40	110	209

	p	r	s	t	u	v	z	x	ø
0200	134	202	129	163	126	190	94	91	4
0225	152	229	149	185	142	219	114	107	4
0250	171	256	172	208	155	244	137	120	4

Description

Attachment points on the side plates ADH/RDH

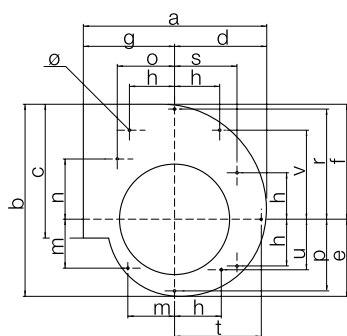
ADH/RDH 0280/-0315



	a	b	c	d	e	f	g	h	m	n	p	r	s	t	u	v	Ø
0280	464	508	361	249	206	302	215	113	71	170	191	287	169	233	150	245	6.2
0315	515	571	404	279	232	339	236	113	71	195	215	323	197	263	175	284	6.2

Scroll dimensions are referred to the external surface of the back plate

ADH/RDH 0355/-0450

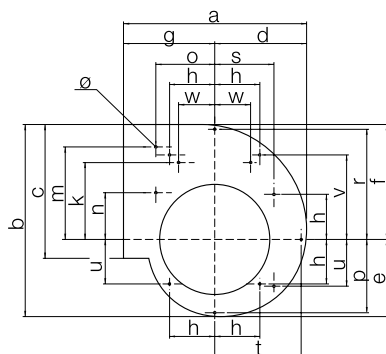


	a	b	c	d	e	f	g	h	m
0355	576	643	453	315	261	382	261	156	158
0400	644	733	507	354	302	431	290	156	186
0450	721	817.5	569	399	332.5	485	322	213	168

	n	o	p	r	s	t	u	v	Ø
0355	197.5	197.5	241	364	204	295	158	295	6.2
0400	220	230	275	411	243	336	186	346	6.2
0450	245	256	311	466	271	379	168	350	M10

Scroll dimensions are referred to the external surface of the back plate

ADH/RDH 0500

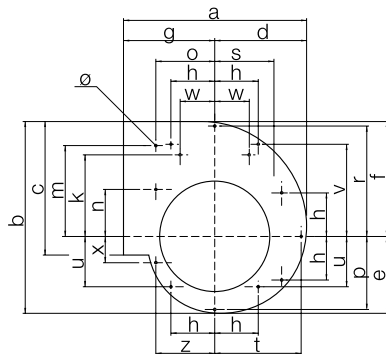


	a	b	c	d	e	f	g	h	m	n
0500	794	906	638	442	368	538	352	231	439	220

	o	p	r	s	t	u	v	k	w	Ø
0500	281	349	519	280	423	207	400	354	181	M10

Scroll dimensions are referred to the external surface of the back plate

ADH/RDH 0560/-0710



	a	b	c	d	e	f	g	h	m	n	o
0560	886	1016	715	496	413	603	390	235	490	245	310
0630	993	1142	801	559	463	679	434	235	553.5	260	353
0710	1119	1295	898	634	530	765	485	265	626.5	267.5	393

	p	r	s	t	u	v	z	x	k	w	Ø
0560	389	581	362	472	276	494	310	140	394	180	M10
0630	441	656	431	521	328	567	356	160	—	—	M10
0710	496	737	476	605	371	637	397	200	—	—	M10

Scroll dimensions are referred to the external surface of the back plate

Screw to be used to attach mounting feet

Size	Type of screw	Thread
0160/-0250	Self-threading screw	AB 6.3 ISO 1478
0280/-0400	Self-threading screw	AB 8 ISO 1478
0450/-0710	Metric screw	M10 ISO 724

Description

Operating limits ADH

ADH	Permissible nominal motor power kW	Permissible fan speed 1/min	Permissible bearing load N	Permissible media temperature °C	Fan weight kg	ADH	Permissible nominal motor power kW	Permissible fan speed 1/min	Permissible bearing load N	Permissible media temperature °C	Fan weight kg
E0-0160	3	4200	420	-20 / +80	5	E0-0500	11	1200	1180	-20 / +80	57
E2-0160	3	4200	420	-20 / +80	6.6	E2-0500	11	1200	1180	-20 / +80	65
G2E0-0160	3	3400	420	-20 / +80	10.5	E4-0500	15	1300	1320	-20 / +100	85
G2E2-0160	4	3400	420	-20 / +80	14.5	E6-0500	30	1400	1800	-20 / +100	86
E0-0180	3	4000	420	-20 / +80	6	E7-0500	37	1400	2200	-20 / +100	105
E2-0180	3	4000	420	-20 / +80	7.8	G2E0-0500	11	900	1180	-20 / +80	120
G2E0-0180	3	3200	420	-20 / +80	12.6	G2E2-0500	11	900	1180	-20 / +80	140
G2E2-0180	4	3200	420	-20 / +80	17	G2E4-0500	15	1000	1320	-20 / +100	176
E0-0200	4	3800	420	-20 / +80	7.1	G2E7-0500	45	1400	4000	-20 / +100	221
E2-0200	4	3800	420	-20 / +80	9.1	E0-0560	15	1100	1450	-20 / +80	72
E4-0200	4	3800	420	-20 / +100	12.6	E2-0560	15	1100	1450	-20 / +80	86
G2E0-0200	4	2900	420	-20 / +80	15	E4-0560	18.5	1200	1760	-20 / +100	134
G2E2-0200	4	2900	420	-20 / +80	20	E6-0560	30	1300	2550	-20 / +100	142
E0-0225	4	3400	420	-20 / +80	8.5	E7-0560	45	1300	3700	-20 / +100	150
E2-0225	4	3400	420	-20 / +80	10.7	G2E2-0560	15	800	1450	-20 / +80	185
E4-0225	4	3400	420	-20 / +100	14.5	G2E4-0560	18.5	900	1760	-20 / +100	268
G2E0-0225	4	2600	420	-20 / +80	18	G2E7-0560	45	1200	4000	-20 / +100	319
G2E2-0225	4	2600	420	-20 / +80	24	L-0630	15	900	1450	-20 / +80	91
E0-0250	4	2800	420	-20 / +80	10.5	R-0630	15	900	1450	-20 / +80	106
E2-0250	4	2800	420	-20 / +80	13	K-0630	18.5	1000	1760	-20 / +100	170
E4-0250	7.5	3000	450	-20 / +100	18	K1-0630	30	1100	2550	-20 / +100	175
G2E0-0250	4	2200	420	-20 / +80	22	K2-0630	45	1100	3700	-20 / +100	180
G2E2-0250	4	2200	420	-20 / +80	29	G2R-0630	15	700	1450	-20 / +80	230
G2E4-0250	7.5	2300	450	-20 / +100	38	G2K-0630	18.5	750	1760	-20 / +100	342
G2E7-0250	15	2800	1250	-20 / +100	44	G2K2-0630	55	1000	4000	-20 / +100	393
E0-0280	5.5	2500	530	-20 / +80	14.2	L-0710	18.5	750	1800	-20 / +80	118
E2-0280	5.5	2500	530	-20 / +80	18	R-0710	18.5	750	1800	-20 / +80	135
E4-0280	11	2700	660	-20 / +100	24	K-0710	22	850	1900	-20 / +100	201
G2E0-0280	5.5	2000	530	-20 / +80	30	K1-0710	37	900	3550	-20 / +100	208
G2E2-0280	5.5	2000	530	-20 / +80	39	K2-0710	55	900	5800	-20 / +100	225
G2E4-0280	11	2200	660	-20 / +100	50	G2K-0710	30	700	3000	-20 / +100	532
G2E7-0280	22	2400	1700	-20 / +100	59	G2K2-0710	75	800	7000	-20 / +100	537
E0-0315	5.5	2100	530	-20 / +80	18	K-0800	22	750	1900	-20 / +100	249
E2-0315	5.5	2100	530	-20 / +80	22	K1-0800	37	800	3550	-20 / +100	261
E4-0315	11	2400	660	-20 / +100	29	K2-0800	55	800	5800	-20 / +100	278
E6-0315	18.5	2400	1050	-20 / +100	30	G2K-0800	30	600	3000	-20 / +100	665
G2E0-0315	5.5	1600	530	-20 / +80	38	G2K2-0800	75	700	7000	-20 / +100	670
G2E2-0315	5.5	1600	530	-20 / +80	48	K-0900	30	650	3000	-20 / +100	306
G2E4-0315	11	1900	660	-20 / +100	60	K1-0900	45	700	3900	-20 / +100	316
G2E7-0315	30	2100	2000	-20 / +100	73	K2-0900	75	700	7000	-20 / +100	320
E0-0355	7.5	1800	840	-20 / +80	23	G2K-0900	37	500	3000	-20 / +100	801
E2-0355	7.5	1800	840	-20 / +80	29	G2K2-0900	75	600	7000	-20 / +100	806
E4-0355	15	2000	940	-20 / +100	41	K-1000	37	600	3000	-20 / +100	333
E6-0355	22	2000	1450	-20 / +100	42	K1-1000	45	600	3900	-20 / +100	356
G2E0-0355	7.5	1500	840	-20 / +80	49	K2-1000	75	650	7000	-20 / +100	360
G2E2-0355	7.5	1500	840	-20 / +80	63	G2K-1000	37	450	3000	-20 / +100	894
G2E4-0355	15	1700	940	-20 / +100	84	G2K2-1000	75	500	7000	-20 / +100	899
G2E7-0355	30	1900	2000	-20 / +100	98						
E0-0400	7.5	1600	840	-20 / +80	31						
E2-0400	7.5	1600	840	-20 / +80	38						
E4-0400	15	1800	940	-20 / +100	52						
E6-0400	22	1800	1450	-20 / +100	53						
G2E0-0400	7.5	1200	840	-20 / +80	66						
G2E2-0400	7.5	1200	840	-20 / +80	82						
G2E4-0400	15	1400	940	-20 / +100	108						
G2E7-0400	37	1800	2950	-20 / +100	133						
E0-0450	11	1400	1180	-20 / +80	42						
E2-0450	11	1400	1180	-20 / +80	50						
E4-0450	15	1500	1320	-20 / +100	66						
E6-0450	30	1500	1800	-20 / +100	67						
G2E0-0450	11	1000	1180	-20 / +80	90						
G2E2-0450	11	1000	1180	-20 / +80	107						
G2E4-0450	15	1200	1320	-20 / +100	135						
G2E7-0450	37	1400	2950	-20 / +100	159						

Description

Operating limits AT

	Permissible nominal motor power kW	Permissible fan speed 1/min	Permissible bearing load N	Permissible media temperature °C	Fan weight kg		Permissible nominal motor power kW	Permissible fan speed 1/min	Permissible bearing load N	Permissible media temperature °C	Fan weight kg
AT						AT					
S-7/7	3	2600	350	-20 / +85	5	S-18/13	7.5	1200	620	-20 / +85	27
SC-7/7	3	2600	350	-20 / +85	6	SC-18/13	7.5	1200	620	-20 / +85	33
G2L-7/7	3	2400	350	-20 / +85	11.7	AR-18/13	15	1200	1200	-20 / +100	33
SC2-7/7	3	2600	350	-20 / +85	13.7	G2L-18/13	7.5	1100	620	-20 / +85	57.8
S-9/7	3	2500	350	-20 / +85	6.6	SC2-18/13	7.5	1200	620	-20 / +85	69.8
SC-9/7	3	2500	350	-20 / +85	8.3	G2C-18/13	15	1200	1600	-20 / +100	91
AR-9/7	7.5	2500	620	-20 / +100	8.3	G3C-18/13	15	1000	1600	-20 / +100	118
G2L-9/7	3	2400	350	-20 / +85	14.9	S-18/18	7.5	1100	620	-20 / +85	32.5
SC2-9/7	3	2500	350	-20 / +85	18	SC-18/18	7.5	1100	620	-20 / +85	38.2
G2C-9/7	7.5	2500	1000	-20 / +100	23.5	AR-18/18	15	1100	1200	-20 / +100	38.2
S-9/9	3	2100	350	-20 / +85	7.9	G2L-18/18	7.5	800	620	-20 / +85	70.5
SC-9/9	3	2100	350	-20 / +85	9.5	SC2-18/18	7.5	800	620	-20 / +85	81.9
AR-9/9	7.5	2100	620	-20 / +100	9.5	G2C-18/18	15	1000	1600	-20 / +100	106
G2L-9/9	3	2000	350	-20 / +85	18.1	G3C-18/18	15	700	1600	-20 / +100	137
SC2-9/9	3	2100	350	-20 / +85	21.8	TIC-20/15	15	1300	1200	-20 / +100	71
G2C-9/9	7.5	2100	1000	-20 / +100	27	G2C-20/15	18.5	1300	1600	-20 / +100	137
S-10/8	3	2500	350	-20 / +85	8.3	G2CC2-20/15	45	1300	6500	-20 / +100	144
SC-10/8	3	2500	350	-20 / +85	9.8	G3C-20/15	18.5	900	1600	-20 / +100	315
AR-10/8	7.5	2500	620	-20 / +100	9.8	G3CC2-20/15	45	1100	6500	-20 / +100	319
G2L-10/8	3	2100	350	-20 / +85	18.5	TIC-20/20	15	1300	1200	-20 / +100	78
SC2-10/8	3	2500	350	-20 / +85	21.8	G2C-20/20	18.5	900	1600	-20 / +100	150
G2C-10/8	7.5	2500	1000	-20 / +100	27	G2CC2-20/20	45	1200	6500	-20 / +100	158
S-10/10	4	2000	350	-20 / +85	9.3	G3C-20/20	18.5	700	1600	-20 / +100	355
SC-10/10	4	2000	350	-20 / +85	11	G3CC2-20/20	45	800	6500	-20 / +100	359
AR-10/10	7.5	2000	620	-20 / +100	11	TIC-22/15	15	1300	1200	-20 / +100	73
G2L-10/10	3	1800	350	-20 / +85	21.1	G2C-22/15	18.5	1300	1600	-20 / +100	141
SC2-10/10	3	2000	350	-20 / +85	23.5	G2CC2-22/15	45	1300	6500	-20 / +100	148
G2C-10/10	7.5	1700	1000	-20 / +100	31	G3C-22/15	18.5	800	1600	-20 / +100	340
S-12/9	5.5	2000	620	-20 / +85	12.7	G3CC2-22/15	45	1000	6500	-20 / +100	347
SC-12/9	5.5	2000	620	-20 / +85	16	TIC-22/22	15	1200	1200	-20 / +100	82.5
AR-12/9	11	2000	1000	-20 / +100	16	G2C-22/22	18.5	900	1600	-20 / +100	165
G2L-12/9	5.5	1800	620	-20 / +85	28.2	G2CC2-22/22	45	1000	6500	-20 / +100	173
SC2-12/9	5.5	2000	620	-20 / +85	34.8	G3C-22/22	18.5	600	1600	-20 / +100	425
G2C-12/9	11	2000	1200	-20 / +100	45.5	G3CC2-22/22	45	800	6500	-20 / +100	438
G3C-12/9	11	2000	1200	-20 / +100	70	TIC-25/20	15	1000	1600	-20 / +100	93
S-12/12	5.5	1500	620	-20 / +85	15.2	G2C-25/20	18.5	700	1600	-20 / +100	195
SC-12/12	5.5	1500	620	-20 / +85	18.4	G2CC2-25/20	45	800	6500	-20 / +100	202
AR-12/12	11	1500	1000	-20 / +100	18.4	G3C-25/20	18.5	600	1600	-20 / +100	432
G2L-12/12	5.5	1400	620	-20 / +85	33.8	G3CC2-25/20	45	700	6500	-20 / +100	436
SC2-12/12	5.5	1500	620	-20 / +85	40.2	TIC-25/25	15	900	1600	-20 / +100	105
G2C-12/12	11	1400	1200	-20 / +100	51	G2C-25/25	18.5	700	1600	-20 / +100	202
G3C-12/12	11	1400	1200	-20 / +100	81	G2CC2-25/25	55	800	6500	-20 / +100	210
S-15/11	5.5	2000	620	-20 / +85	17.7	G3C-25/25	18.5	500	1600	-20 / +100	480
SC-15/11	5.5	2000	620	-20 / +85	20.9	G3CC2-25/25	55	600	6500	-20 / +100	484
AR-15/11	11	2000	1000	-20 / +100	20.9	TIC-28/20	18.5	800	1600	-20 / +100	120
G2L-15/11	5.5	1400	620	-20 / +85	39.7	G2C-28/20	18.5	600	1600	-20 / +100	210
SC2-15/11	5.5	2000	620	-20 / +85	46.1	G2CC2-28/20	55	800	7000	-20 / +100	218
G2C-15/11	11	1500	1200	-20 / +100	57.4	G3C-28/20	18.5	600	1600	-20 / +100	474
G3C-15/11	15	1500	1600	-20 / +100	90	G3CC2-28/20	55	650	7000	-20 / +100	478
S-15/15	5.5	1200	620	-20 / +85	20.6	TIC-28/28	18.5	800	1600	-20 / +100	127
SC-15/15	5.5	1200	620	-20 / +85	24.5	G2C-28/28	18.5	600	1600	-20 / +100	235
AR-15/15	11	1200	1000	-20 / +100	24.5	G2CC2-28/28	55	700	7000	-20 / +100	244
G2L-15/15	5.5	1100	620	-20 / +85	45.3	G3C-28/28	18.5	400	1600	-20 / +100	539
SC2-15/15	5.5	1200	620	-20 / +85	53.1	G3CC2-28/28	55	550	7000	-20 / +100	543
G2C-15/15	11	950	1200	-20 / +100	68	TIC-30/20	18.5	800	1600	-20 / +100	131
G3C-15/15	15	1000	1600	-20 / +100	108	G2C-30/20	18.5	600	1600	-20 / +100	245
						G2CC2-30/20	55	700	7000	-20 / +100	253
						G3C-30/20	18.5	550	1600	-20 / +100	505
						G3CC2-30/20	55	600	7000	-20 / +100	509
						TIC-30/28	18.5	800	1600	-20 / +100	138
						G2C-30/28	18.5	600	1600	-20 / +100	302
						G2CC2-30/28	55	700	7000	-20 / +100	310
						G3C-30/28	18.5	400	1600	-20 / +100	577
						G3CC2-30/28	55	500	7000	-20 / +100	581

Description

Operating limits RDH

	Permissible nominal motor power kW	Permissible fan speed 1/min	Permissible bearing load N	Permissible media temperature °C	Fan weight kg		Permissible nominal motor power kW	Permissible fan speed 1/min	Permissible bearing load N	Permissible media temperature °C	Fan weight kg
RDH						RDH					
E0-0180	2,2	6800	420	-20 / +80	5,3	R-0710	15	1300	1800	-20 / +80	165
E2-0180	2,2	6800	420	-20 / +80	7,1	K-0710	22	1500	1900	-20 / +100	220
E0-0200	3	6000	420	-20 / +80	6,6	K1-0710	37	1700	3550	-20 / +100	240
E2-0200	3	6000	420	-20 / +80	8,5	K2-0710	55	2000	5800	-20 / +100	250
E4-0200	3	6800	420	-20 / +100	11,8	G2K-0710	30	1400	3000	-20 / +100	580
E0-0225	4	5800	420	-20 / +80	7,8	G2K2-0710	75	1700	7000	-20 / +100	586
E2-0225	4	5800	420	-20 / +80	9,9	K-0800	22	1200	1900	-20 / +100	270
E4-0225	4	6000	420	-20 / +100	13,6	K1-0800	37	1400	3550	-20 / +100	297
E0-0250	4	4600	420	-20 / +80	13,3	K2-0800	55	1650	5800	-20 / +100	305
E2-0250	4	4600	420	-20 / +80	15,7	G2K-0800	30	1150	3000	-20 / +100	747
E4-0250	5,5	5400	450	-20 / +100	21	G2K2-0800	75	1400	7000	-20 / +100	753
G2E4-0250	5,5	2900	450	-20 / +100	46	K-0900	30	1100	3000	-20 / +100	343
G2E7-0250	7,5	3500	660	-20 / +100	49	K1-0900	45	1250	3900	-20 / +100	355
E0-0280	5,5	4000	530	-20 / +80	17,8	K2-0900	75	1500	7000	-20 / +100	375
E2-0280	5,5	4000	530	-20 / +80	21	G2K-0900	37	1000	3000	-20 / +100	883
E4-0280	7,5	4700	660	-20 / +100	28	G2K2-0900	75	1100	7000	-20 / +100	889
G2E4-0280	5,5	3000	660	-20 / +100	61	K-1000	37	1000	3000	-20 / +100	415
G2E7-0280	11	3400	940	-20 / +100	65	K1-1000	45	1000	3900	-20 / +100	430
E0-0315	5,5	3500	530	-20 / +80	21	K2-1000	75	1300	7000	-20 / +100	450
E2-0315	5,5	3500	530	-20 / +80	25	G2K-1000	37	800	3000	-20 / +100	1048
E4-0315	7,5	4100	660	-20 / +100	32	G2K2-1000	75	800	7000	-20 / +100	1054
E6-0315	11	4500	1050	-20 / +100	34	X1-1120	55	900	8000	-20 / +100	610
G2E4-0315	5,5	2200	660	-20 / +100	70	X2-1120	110	1170	8000	-20 / +100	890
G2E7-0315	11	3300	1320	-20 / +100	79	X1-1250	75	800	8000	-20 / +100	950
E0-0355	7,5	3300	840	-20 / +80	29	X2-1250	132	1050	10000	-20 / +100	1140
E2-0355	7,5	3300	840	-20 / +80	34	X1-1400	90	720	9000	-20 / +100	1370
E4-0355	11	3800	940	-20 / +100	46	X2-1400	160	930	12500	-20 / +100	1390
E6-0355	15	4000	1450	-20 / +100	47						
G2E4-0355	7,5	2000	940	-20 / +100	104						
G2E7-0355	11	2600	1320	-20 / +100	109						
E0-0400	7,5	2700	840	-20 / +80	36						
E2-0400	7,5	2700	840	-20 / +80	42						
E4-0400	15	3100	940	-20 / +100	57						
E6-0400	22	3500	1450	-20 / +100	58						
G2E4-0400	7,5	1600	940	-20 / +100	126						
G2E7-0400	18,5	2800	1760	-20 / +100	144						
E0-0450	11	2500	1180	-20 / +80	50						
E2-0450	11	2500	1180	-20 / +80	57						
E4-0450	15	2800	1320	-20 / +100	73						
E6-0450	30	3200	1800	-20 / +100	75						
G2E4-0450	11	1400	1320	-20 / +100	160						
G2E7-0450	18,5	2200	1760	-20 / +100	176						
E0-0500	11	2100	1180	-20 / +80	62						
E2-0500	11	2100	1180	-20 / +80	70						
E4-0500	15	2350	1320	-20 / +100	90						
E6-0500	30	2650	1800	-20 / +100	92						
E7-0500	37	2800	2200	-20 / +100	110						
G2E4-0500	11	1200	1320	-20 / +100	197						
G2E7-0500	30	2200	3000	-20 / +100	235						
E0-0560	15	1950	1450	-20 / +80	79						
E2-0560	15	1950	1450	-20 / +80	92						
E4-0560	18,5	2100	1760	-20 / +100	141						
E6-0560	30	2400	2550	-20 / +100	148						
E7-0560	37	2600	3700	-20 / +100	153						
G2E4-0560	11	1100	1760	-20 / +100	301						
G2E7-0560	30	1900	3000	-20 / +100	336						
R-0630	15	1600	1450	-20 / +80	119						
K-0630	18,5	1700	1760	-20 / +100	173						
K1-0630	30	2000	2550	-20 / +100	180						
K2-0630	45	2300	3700	-20 / +100	185						
G2K-0630	15	1000	1760	-20 / +100	370						
G2K2-0630	37	1400	3000	-20 / +100	408						

Description

Operating limits RZR

	Permissible nominal motor power	Permissible fan speed	Permissible bearing load	Permissible media temperature	Fan weight		Permissible nominal motor power	Permissible fan speed	Permissible bearing load	Permissible media temperature	Fan weight
RZR	kW	1/min	N	°C	kg	RZR	kW	1/min	N	°C	kg
11-0200	7.5	7490	480	-20 / +80	11	18-0900	75	1540	6000	-20 / +80	409
12-0200	7.5	7490	480	-20 / +80	12	13-0900	75	1540	6000	-20 / +80	447
19-0200	7.5	7490	480	-20 / +80	13	11-1000	22	800	2200	-20 / +80	416
11-0225	7.5	6640	500	-20 / +80	13	15-1000	75	1140	6200	-20 / +80	416
12-0225	7.5	6640	500	-20 / +80	15	19-1000	75	1140	6200	-20 / +80	462
19-0225	7.5	6640	500	-20 / +80	16	18-1000	75	1400	6200	-20 / +80	471
11-0250	7.5	5250	540	-20 / +80	15	13-1000	75	1400	6200	-20 / +80	517
12-0250	7.5	5250	540	-20 / +80	17	13-1120	132	1220	10000	-20 / +80	710
19-0250	7.5	5970	540	-20 / +80	17	13-1250	160	1100	15000	-20 / +80	1100
11-0280	7.5	5235	630	-20 / +80	20	13-1400	200	1000	20000	-20 / +80	1390
12-0280	7.5	5235	630	-20 / +80	23	13-1600	250	860	20000	-20 / +80	1870
19-0280	11	5300	850	-20 / +80	23						
11-0315	7.5	4418	660	-20 / +80	24						
12-0315	7.5	4418	660	-20 / +80	27						
19-0315	11	4730	910	-20 / +80	28						
11-0355	7.5	3200	720	-20 / +80	33						
12-0355	7.5	3200	720	-20 / +80	36						
19-0355	11	4187	950	-20 / +80	39						
11-0400	7.5	3027	1020	-20 / +80	43						
12-0400	7.5	3027	1020	-20 / +80	49						
15-0400	30	3600	1970	-20 / +80	61						
19-0400	30	3600	1970	-20 / +80	66						
18-0400	30	3600	1970	-20 / +80	70						
13-0400	30	3600	1970	-20 / +80	75						
11-0450	7.5	2504	1080	-20 / +80	54						
12-0450	7.5	2504	1080	-20 / +80	60						
15-0450	30	3360	2000	-20 / +80	73						
19-0450	30	3360	2000	-20 / +80	82						
18-0450	30	3360	2000	-20 / +80	83						
13-0450	30	3360	2000	-20 / +80	92						
11-0500	7.5	2050	1140	-20 / +80	65						
12-0500	7.5	2050	1140	-20 / +80	72						
15-0500	30	2920	2040	-20 / +80	94						
19-0500	30	2920	2040	-20 / +80	105						
18-0500	30	2920	2040	-20 / +80	105						
13-0500	30	2920	2040	-20 / +80	116						
11-0560	15	2205	1830	-20 / +80	103						
12-0560	15	2205	1830	-20 / +80	109						
15-0560	37	2400	2950	-20 / +80	125						
19-0560	37	2400	2950	-20 / +80	136						
18-0560	37	2490	2950	-20 / +80	140						
13-0560	37	2490	2950	-20 / +80	151						
11-0630	15	1838	1960	-20 / +80	124						
12-0630	15	1838	1960	-20 / +80	132						
15-0630	37	1880	3000	-20 / +80	149						
19-0630	37	1880	3000	-20 / +80	162						
18-0630	37	2380	3000	-20 / +80	167						
13-0630	37	2380	3000	-20 / +80	180						
11-0710	18.5	1627	2080	-20 / +80	177						
12-0710	18.5	1627	2080	-20 / +80	194						
15-0710	55	2000	4400	-20 / +80	201						
19-0710	55	2000	4400	-20 / +80	225						
18-0710	55	2120	4400	-20 / +80	230						
13-0710	55	2120	4400	-20 / +80	254						
11-0800	22	1300	2150	-20 / +80	250						
15-0800	55	1470	4500	-20 / +80	250						
19-0800	55	1470	4500	-20 / +80	280						
18-0800	55	1700	4500	-20 / +80	289						
13-0800	55	1700	4500	-20 / +80	319						
11-0900	22	1000	2180	-20 / +80	358						
15-0900	75	1430	6000	-20 / +80	358						
19-0900	75	1430	6000	-20 / +80	396						

Description

Performance



The curves show the total pressure rise p_F as a function of the volume flow rate q_V plotted in a double logarithmical diagram. The throttle curves (system resistance parabolas) are then represented by straight lines.

The curves are established with a reference density of $\rho_1 = 1.2 \text{ kg/m}^3$ at the fan intake.

The pressure and impeller input power are directly proportional to density ρ_1 .

Outlet velocity v_2 and the dynamic pressure p_{d2} refer to the flanged cross section area at the fan discharge.

$$p_{sF} = p_F - p_{d2}$$

The increase in static pressure p_{sF} when a duct is fitted to the discharge (Installation B) can be calculated from the equation:

$$p_{sF} = p_F - f_{pd} \times p_{d2}$$

Where no duct is fitted (Installation A) there is no static pressure regain. The increase in pressure p_{sF} can be calculated from formula:

The limits of application indicated in the fan curves (by blue dotted lines) outline the recommended functional range of the fans, where a stable operation with high efficiency can be expected.

The efficiency marked on the straight system lines is only applicable at the maximum fan speed N_{max} ; it decreases with lower fan speed.

	ADH		RDH		RZR
	0160/-0560	0630/-1000	0180/-1000	1120/-1400	1120/-1600
f_{pd}	1.9	1.66	1.74	1.15	1.00

RZR 0200/-1000 see fan curves

	AT									
	7/7	9/7	9/9	10/8	10/10	12/9	12/12	15/11	15/15	18/13
f_{pd}	1.96	2.16	1.95	2.08	2.24	1.83	1.94	2.10	2.17	1.98
	18/18	20/15	20/20	22/15	22/22	25/20	25/25	28/20	30/20	30/28
f_{pd}	1.86	2.48	2.26	2.46	2.42	2.48	2.49	2.37	2.44	2.41

$$\eta_a = \eta_r \times \frac{P_r}{P_r + P_b}$$

Efficiency ADH / AT / RDH

The performance curves P_r of the fan curve diagram correspond to the absorbed power of the fan impeller.

The vertical scales shown at the right side of the diagram indicate the bearing power loss P_b of the different fan executions and depending on the fan speed.

The resulting power absorbed on fan shaft is found by adding the absorbed power P_r of the fan impeller and the bearing power losses P_b . As a consequence the resulting fan efficiency is to be calculated according to the formula:

Efficiency RZR

The actual efficiency value for a fan speed lower N_{max} is calculated by multiplying the efficiency at N_{max} by the factor f_η for the appropriate speed. (f_η to be found with the scale on the right side of the page).

$$P_N \geq P_a \times f_p$$

Motor nominal power ADH / AT / RDH / RZR

To determine the motor rating P_N , the fan absorbed shaft power P_r must be increased by a safety factor to accommodate belt drive losses and possible fan speed differences.

The factor f_p is an estimated value. As an approximate value, the figures below are suggested.

ADH / AT		RDH / RZR	
$P_a < 0.75 \text{ kW}$	$f_p = 1.30$	$P_a < 0.75 \text{ kW}$	$f_p = 1.25$
$P_a \geq 0.75 \text{ kW} \dots < 10 \text{ kW}$	$f_p = 1.20$	$P_a \geq 0.75 \text{ kW} \dots < 10 \text{ kW}$	$f_p = 1.15$
$P_a \geq 10 \text{ kW}$	$f_p = 1.15$	$P_a \geq 10 \text{ kW}$	$f_p = 1.12$

Description

Performance

$$t_A = \frac{8 \times J \times N^2}{P_N \times 10^6}$$

When selecting the motor, the run up time must be checked whether being within permitted limits.

The run up time can be worked out approximately according to the following formula: where:

t_A = run time in seconds

J = moment of inertia in kgm^2

N = fan speed in rpm

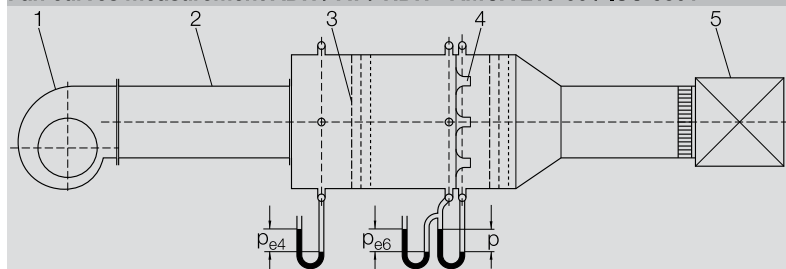
P_N = nominal motor power in kW

(Impeller weight and moment of inertia can be found on the performance diagram for each fan size.)

If t_A exceeds the motor manufacturer's recommendation or the tripping period of the electrical gear, a larger motor must be used or the starting gear has to be selected for heavy starting.

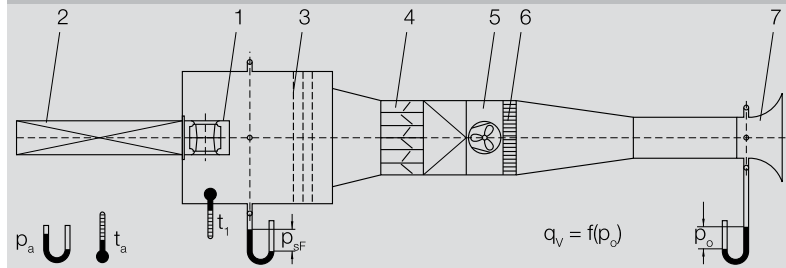
- 1 = Test fan
- 2 = Discharge duct
- 3 = Screen
- 4 = Multiple nozzles
- 5 = Auxiliary fan and damper

Fan curves measurement ADH / AT / RDH - AMCA 210-99 / ISO 5801



- 1 = Test fan
- 2 = Discharge duct acting as a pressure regain unit
- 3 = Screen
- 4 = Variable damper
- 5 = Compensating fan
- 6 = Flow straightener
- 7 = Inlet cone

Fan curves measurement RZR - ISO 5801 / DIN 24163



Performance data of twin fan units

The performance data of twin fan units (Identification "G2") can be calculated, starting from that in the corresponding operating point of a single fan, with the following formulas:

► Fan Pressure:	$P_{F\ G2} = P_F \times 1$
► Volume flow rate:	$q_{V\ G2} = q_V \times 2$
► Fan shaft power:	$P_{a\ G2} = P_a \times 2,15$
► Rotational speed:	$N_{G2} = N \times 1,05$
► Sound:	$L_{WA\ G2} = L_{WA} + 3\ \text{dB}$

AMCA



Nicotra Gebhardt S.p.A. (Italy) certifies that

ADH E fans of the E0, E2, E4, E6 and E7 versions, from sizes 0160 to 0560, RDH E fans of the E0, E2, E4, E6 and E7 versions, from sizes 0180 to 0560, ADH and RDH fans of the L, R, K, K1 and K2 versions, from sizes 0630 to 1000, AT fans of the S, SC, C and TIC versions, from sizes 7/7 to 30/28, shown herein are licensed to bear the AMCA Seal.

Nicotra Gebhardt GmbH (Germany) certifies that RZR fans of the 11, 12, 15 versions, from sizes 0355 to 1000, shown herein are licensed to bear the AMCA Seal.

The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

Air performance with Installation Type "A" ("with free outlet"), and that of the twin fan versions G2L, G2R, G2K, G2K2, G2E0, G2E2, G2E4, G2E7, SC2, G2C and G2C-C2, and that of the triple fan versions G3C and G3C-C2 in any installation type is not AMCA licensed.

Description

Sound



- 1 = Air permeable sound screen
- 2 = Microphone positions for envelope method
- 3 = Test fan
- 4 = Measuring duct
- 5 = Microphone with sampling tube
- 6 = Anechoic termination
- 7 = Step less adjustable throttle

Noise measurements are undertaken in accordance with DIN 45635-38 "Noise Measurement of Machines: Fans".

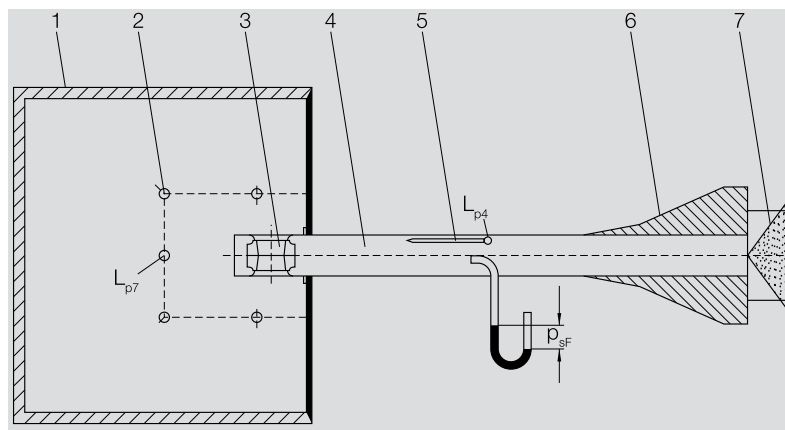
Induct Method for the Discharge

The induct method is specified with DIN EN ISO 5136. It determines the sound power emitted at discharge of a test fan.

The test duct, as a main feature, is equipped with an anechoic termination fitted to avoid end reflection going back into the duct.

Envelope Method – Free Inlet

The Envelope Method is described with DIN 45635-1 and -38, which specifies a hypothetical box shaped measurement surface with several prescribed measurement points.



The sound data of the fan curves are given as "A" weighted sound power levels.

A-sound power level RZR

The "A" weighted sound power level are identical for fan intake (L_{WA7}) as well as for fan discharge (L_{WA4}).

$$L_{WA4} = L_{WA7} + \Delta L_{Wrel4}(A)$$

A-sound power level ADH / AT / RDH

The "A" weighted sound power level (see curves) are apply for fan intake (L_{WA7}). The fan discharge sound power level L_{WA4} is obtained by calculating:

The correction value $\Delta L_{Wrel4}(A)$ is found with the table (left below) at the corresponding fan curve page (ADH / RDH) by introducing fan speed and flow rate.

ADH / AT / RDH:

$$L_{Wfc7} = L_{WA7} + L_{Wrel7}$$

$$L_{Wfc4} = L_{WA7} + L_{Wrel4}$$

RZR:

$$L_{Wfc7} = L_{WA4;7} + L_{Wrel7}$$

$$L_{Wfc4} = L_{WA4;7} + L_{Wrel4}$$

An approximation of the "A" weighted sound pressure levels L_{pA7}/L_{pA6} at a distance of 1 m may be obtained by subtracting 7 dB from the relative "A" weighted sound power levels.

It should be noted that site acoustics, duct design, reverberation, natural frequencies etc. can all influence noise to a greater or lesser extent.

For more accurate calculations to determine noise protection measures, the sound power level in each octave band is of more value:

The noise correction data L_{Wrel4} und L_{Wrel7} , in function of the fan speed and flow rate, are to be found with the corresponding table on the fan curve page.

In some cases the noise level - calculated by this way - may in some cases be higher than expected at the blade passing frequency.

f_s = Blade passing frequency in Hz

N = Fan speed in 1/min

z = No of blades (see curve pages)

$$f_{BP} = \frac{N \times z}{60}$$

Description

Sound

$$L_{Wfc6} = L_{Wfc4} + L_{Wer}$$

For a free discharge situation i.e. without duct connected the sound level will be lower because of an end reflection.

This is specially true for low frequencies. For this case a correction may be applied to L_{Wfc4} of the first 3 octave bands as follows:

ADH / AT / RDH / RZR	f_c	63	125	250	Hz
0160/-0280	L_{Wer}	-14	-9	-4	dB
0315/-0800	L_{Wer}	-9	-4	-2	dB
0900/-1600	L_{Wer}	-4	-1	0	dB

Explosion protection according to ATEX



Fans for use in explosive atmospheres must comply with EC Directive 94/9/EG (ATEX 95). Equipment in Group II (all applications except mining) is categorised in accordance with the required degree of safety for designated use in equipment categories 1, 2 and 3. Depending on suitability, a distinction is in addition made between G (gas, vapours) and D (dust). Harmonised European standards and national guidelines must be observed. Equipment in class 2 and 3 is not subject to compulsory specifications nor to type testing. The manufacturer declares conformity with the EC directive.

For the standard designs of our fans, the following ignition sources are essentially to be considered:

- ▶ Hot surfaces, e.g. due to heat of friction or seizure of a bearing or due to blockage of an impeller
- ▶ Rubbing-, grinding- or beating sparks, e.g. as a result of contact of the impeller with stationary components
- ▶ Sparks resulting from discharge of electrostatically loaded, non-conducting components, e.g. of plastic panels, surfaces with strong layer thickness.

Preconditions for operating:

- ▶ **In the proximity of the motor, the temperature limits -20 °C and +40 °C must not be exceeded.**
- ▶ **The temperature limits of -20 °C und +60 °C for the flow medium must not be exceeded. If the temperature of the flow medium should exceed +60 °C on the pressure side, then the fan must be switched off!**
- ▶ **The fans may only be employed with a horizontal shaft.**
- ▶ **The fans are to be protected against the falling-in or sucking-in of foreign objects. Protection guards must be ordered separately as an accessories.**
- ▶ **On the machine plate the max. permitted fan speed is indicated.**
- ▶ **Fans for operation in ex-hazardous areas are marked as such on the machine plate and they are accompanied by an EU conformity declaration and with operation and maintenance instructions.**

The operation and maintenance instructions have strictly to be observed.

The conformity is always related to the fan system supplied.

If the fan is completed with motor and belt drive by the customer the conformity of this fan set has to be declared at new.

Fans of the series ADH / AT / RDH in ATEX-Execution on request.

Description

Operating limits RZR ATEX

	Permissible fan speed	Permissible shaft power	Permissible nominal motor power
RZR	1/min	kW	kW
11-0200-2G	6513	4.7	5.5
12-0200-2G	6513	4.7	5.5
19-0200-2G	6513	4.7	5.5
11-0225-2G	5774	4.7	5.5
12-0225-2G	5774	4.7	5.5
19-0225-2G	5774	4.7	5.5
11-0250-2G	4620	4.7	5.5
12-0250-2G	4620	4.7	5.5
19-0250-2G	5076	4.7	5.5
11-0280-2G	4582	6.5	7.5
12-0280-2G	4582	6.5	7.5
19-0280-2G	4582	9.7	11
11-0315-2G	3793	6.5	7.5
12-0315-2G	3793	6.5	7.5
19-0315-2G	4113	9.7	11
11-0355-2G	3110	6.5	7.5
12-0355-2G	3110	6.5	7.5
19-0355-2G	3555	9.7	11
11-0400-2G	2552	6.5	7.5
12-0400-2G	2552	6.5	7.5
13-0400-2G	3145	16.4	18.5
18-0400-2G	2913	9.7	11
11-0450-2G	2111	6.5	7.5
12-0450-2G	2111	6.5	7.5
13-0450-2G	2922	21.3	24
18-0450-2G	2410	9.7	11
11-0500-2G	1752	6.5	7.5
12-0500-2G	1752	6.5	7.5
13-0500-2G	2534	21.3	24
18-0500-2G	2000	9.7	11
11-0560-2G	1660	9.7	11
12-0560-2G	1660	9.7	11
13-0560-2G	2163	26.6	30
18-0560-2G	1660	9.7	11
11-0630-2G	1367	9.7	11
12-0630-2G	1367	9.7	11
13-0630-2G	2055	32.8	37
18-0630-2G	1367	9.7	11
11-0710-2G	1128	9.7	11
12-0710-2G	1128	9.7	11
13-0710-2G	1825	40.9	45
18-0710-2G	1128	9.7	11
11-0800-2G	927	9.7	11
18-0800-2G	927	9.7	11
13-0800-2G	1474	40.9	45
11-0900-2G	767	9.7	11
18-0900-2G	767	9.7	11
13-0900-2G	1339	68	75
11-0100-2G	650	9.7	11
18-1000-2G	650	9.7	11
13-1000-2G	1217	68	75
13-1120-2G	1026	83.6	92
13-1250-2G	957	122	135
13-1400-2G	870	145	160
13-1600-2G	748	181	200

Description

Symbol / Unit / Definition					
The following symbols are used in this catalogue:			The following symbols are used in this catalogue:		
A-A	-	Operational range (free discharge)	P_N	kW	Motor power (nominal)
A_2	mm ²	Fan outlet area	p_{sF}	Pa	Fan static pressure (free discharge)
b	mm	Deflection of belt under test force	Δp	Pa	Differential pressure
D_r	mm	Impeller diameter	Δp_0	Pa	Pressure difference at the inlet measuring device
f_{BP}	Hz	Blade passing frequency	$\Delta p_{Dü}$	Pa	Pressure difference at the inlet cone
f_c	Hz	Octave centre frequency	q_v	m ³ /h	Volume flow rate
f_p	-	Motor size correction factor	q_{vopt}	m ³ /h	Volume flow at optimum efficiency
F_p	N	Test force	R_W	J/kg×K	Specific gas constant
f_{pd}	-	Dynamic pressure correction factor (free discharge)	t	°C	Temperature of flow medium
f_η	-	Correction at actual efficiency	t_a	°C	Temperature of discharge air in test chamber
J	kgm ²	Moment of inertia	t_A	s	Acceleration time
K	m ² s/h	Calibration factor for volumeter	t_1	°C	Air temperature
L_T	mm	Centre distance	Θ	K	Thermodynamic temperature at fan inlet
L_{Mg}	mm	Measuring marks before tensioning (flat belts)	u	m/s	Tip speed
L_{Mu}	mm	Measuring marks after tensioning (flat belts)	v_2	m/s	Outlet velocity
L_{pA4}	dB	A weighted sound pressure level (discharge)	v_{m2}	m/s	Average fluid velocity at discharge
L_{pA7}	dB	A weighted sound pressure level (inlet)	X	mm	Pulley position on shaft extension relative to bearing
L_{WA}	dB	A weighted sound power level	z	-	No. of blades
L_{WA4}	dB	In duct sound power level (discharge)	ε^*	mm	Stretching value of flat belt
L_{WA7}	dB	Casing and free inlet sound power level	η_a	%	Total efficiency at max speed
L_{Wfc4}	dB	Discharge sound power in the octave bands	η_r	%	Impeller efficiency
L_{Wfc7}	dB	Inlet sound power in the octave band	η_s	%	Fan total efficiency at max speed
L_{Wrel4}	dB	Relative sound power (discharge)	ρ	kg/m ²	Air density
L_{Wrel7}	dB	Relative sound Power (inlet)	ρ_1	kg/m ²	Air density at fan inlet
L_{10h}	h	Nominal bearing life			
m	kg	Mass			
N	1/min	Fan speed			
N_{max}	1/min	Maximum fan speed			
p_a	Pa	Atmospheric pressure			
P_a	kW	Absorbed fan power			
P_b	kW	Bearing power losses			
p_{d2}	Pa	fan dynamic pressure at discharge			
p_F	Pa	Total fan pressure			

Notes

Quality management system

DIN EN ISO 9001

Nicotra Gebhardt quality is the result of a continuous company policy intended to guarantee that our product properties and features are clearly superior to comparable products.

This already established company maxim led in April 1985 to the auditing and certification of the existing quality management system. In the following years it was updated to match the changing international and European standards. Modern production processes, monitored by our quality management system, guarantee a high repeat accuracy in production.

This ongoing high standard of quality permits the establishing of the performance data in classes of accuracy in accordance with DIN 24166.

The narrow tolerances ensure a high level of data reliability for our products.

Machine Safety

The fans contained in this catalogue are not machines in the sense of the EC Machine Directive. They are delivered with a manufacturer "Declaration of incorporation".

The assessment of the dangers associated with the fan and necessary safety measures are based on the VDMA Unit sheet 24167: Fans; Safety requirements.

The operating instructions give which safety measures are still necessary on assembly to ensure that the fans comply with the Machine Directive 2006/42/EC.

Catalogue data

We reserve the right to change any measurements and technical data in this catalogue in accordance with further development of our products. All information valid at the time of printing.

Nicotra Gebhardt worldwide



LUFTBERG Spółka z o.o.

ul. Sikorki 23/14 | 31-589 Kraków | Poland

phone: +48 600-100-371 | phone: +48 604-959-199

e-mail: biuro@luftberg.pl | homepage: www.luftberg.pl

nicotra-gebhardt.com

AUSTRALIA

65 Yale Drive,
Epping, VIC 3076
Phone +61 3 9017 5333
Fax +61 3 8401 3969
E-mail info@nicotra.com.au

BELGIUM

Haeghensgoed, 13 - 00/01
9270 Laarne
Phone +32 (0)9-336-00-01
Fax +32 (0)9-336-00-05
E-mail info.nicotra@nicotra.be

CHINA

88 Tai'An Road, XinQiao, Shiji, Panyu
Guangzhou 511450
PR CHINA
Phone +86 (0)20-2293 5700
Fax +86 (0)20-2293 5701
E-mail sales@nicotra-china.com

FRANCE

Leader's Park Bat A1
3 chemin des Cytises
69340 Francheville
Phone +33 (0)4 72 79 01 20
Fax +33 (0)4 72 79 01 21
E-mail g.cauche@nicotra-gebhardt.com

GERMANY

Gebhardtstraße 19-25
74638 Waldenburg
Phone +49 (0)7942 101 0
Fax +49 (0)7942 101 170
E-mail info@nicotra-gebhardt.com

GREAT BRITAIN

Unit D, Rail Mill Way
Parkgate Business Park
Rotherham
South Yorkshire
S62 6JQ
Phone +044 01709-780760
Fax +044 01709-780762
E-mail sales@nicotra.co.uk

INDIA

Plot no 28F & 29, Sector-31, Kasna,
Greater Noida-201 308 U.P (India)
Phone +91 120 4783400
Phone +91 22 65702056 (Mumbai)
Phone +91 80 25727830 (Bangalore)
E-mail info@nicotraindia.com

ITALY

Via Modena, 18
24040 Zingonia (BG)
Phone +39 035 873 111
Fax +39 035 884 319
E-mail info@nicotra-gebhardt.com



MALAYSIA

Lot 1799, Jalan Balakong
Taman Perindustrian Bukit Belimbing
43300 Seri Kembangan
Selangor
Phone +603 8961-2588
Fax +603 8961-8337
E-mail info_malaysia@nicotra-gebhardt.com

SPAIN

Ctra. Alcalá-Villar del Olmo, Km. 2,830
28810 Villalbilla-Madrid
Phone +34 918-846110
Fax +34 918-859450
E-mail info@nicotra.es

SINGAPORE

3, Science Park Drive, # 04-07, The Franklin
Singapore Science Park 1
Singapore 118223
Phone +65 6265 1522
Fax +65 6265 2400
E-mail info_singapore@nicotra-gebhardt.com

SWEDEN

Kraketorpsgratan 30
43153 Mölndal
Phone 0046 101-302600
Fax 0046 31-878590
E-mail info.se@nicotra-gebhardt.com

THAILAND

6/29 Soi Suksawadi 2, Moo 4, Suksawadi Road,
Kwang Jomthong, Khet Jomthong,
Bangkok 10150
Phone +662 476-1823-6
Fax +662 476-1827
E-mail sales@nicotra.co.th

UNITED STATES

PO BOX 900921
Sandy, Utah 84090
Phone 001(801) 733-0248
Fax 001(801) 315-9400
Mobile 001(801) 682 0898
E-mail mike.sehgal@gebhardtffans.com
<http://www.gebhardtffans.com/>

Nicotra Gebhardt Germany

Nicotra Gebhardt GmbH
Gebhardtstraße 19-25
74638 Waldenburg
Germany
Phone +49 (0)7942 101 0
Fax +49 (0)7942 101 170
E-Mail info@nicotra-gebhardt.com

Nicotra Gebhardt Italy

Nicotra Gebhardt S.p.A
Via Modena, 18
24040 Zingonia (BG)
Italy
Phone +39 035 873 111
Fax +39 035 884 319
E-Mail info@nicotra-gebhardt.com

NICOTRA | Gebhardt
fan|tastic solutions