Product Data Sheet RET85-42/14/2TDLOR-402

ebmpapst

The engineer's choice

GREEN TECH

RET85-42/14/2TDLOR-402

INDEX

1 General

Fan type	Blower without chassis with intake nozzle	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air in axially, Air out radially	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

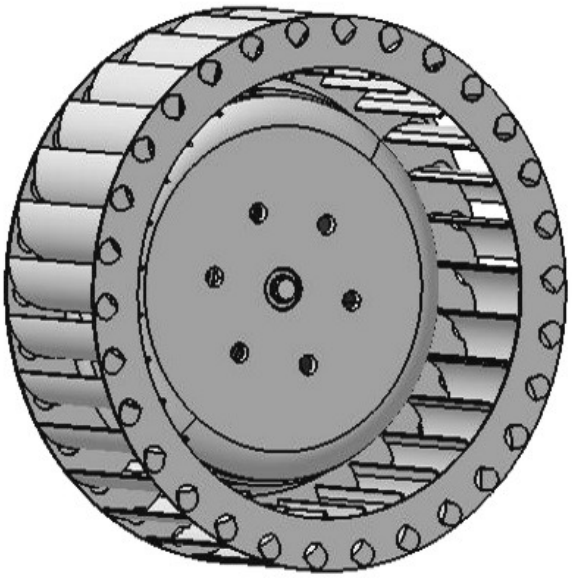
2 Mechanics

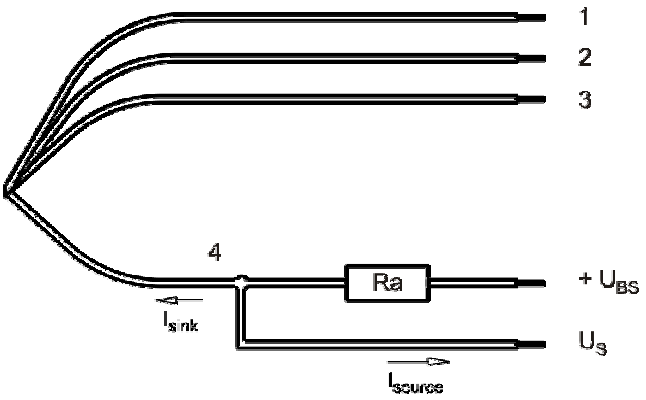
2.1 General

Depth	69 mm	
Diameter	85 mm	
Mass	0,45 kg	
Housing material	Metal	
Impeller material	Metal	

2.2 Connections

Electrical connection	Wires	
Lead wire length Tolerance	L = 620 mm +- 10 mm	
Tube length Tolerance	S = 560 mm +- 5 mm	
Wire size (AWG)	24	
Insulation diameter	1,1 mm	





Wire	Color	Operation
1	red	+ UB
2	blue	- GND
3	violet	CONTR
4	white	Tacho

3 Operating Data

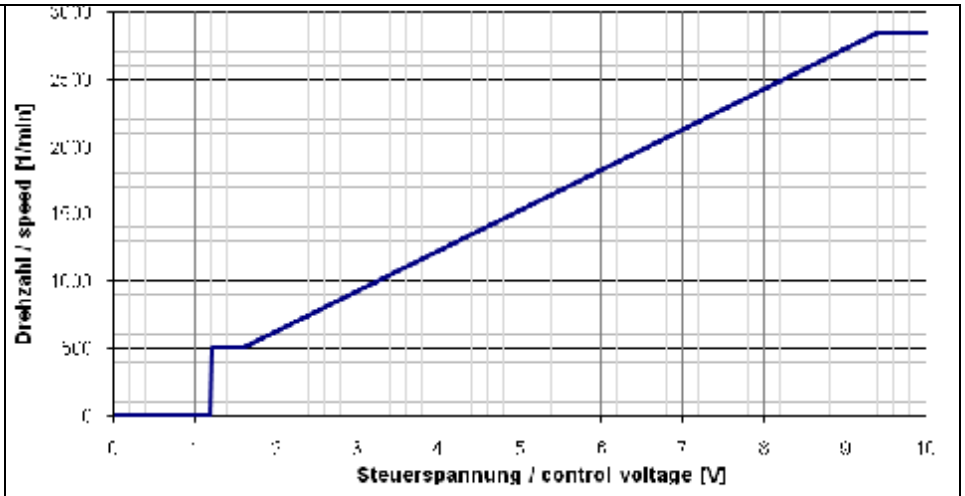
3.1 Operating Data - Electrical Interface - Input

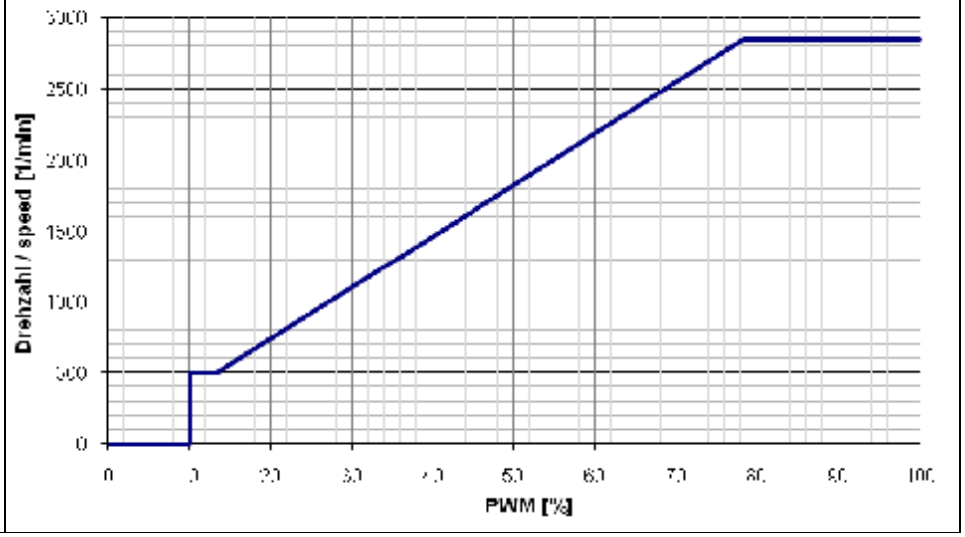
Control input	Analog

Features

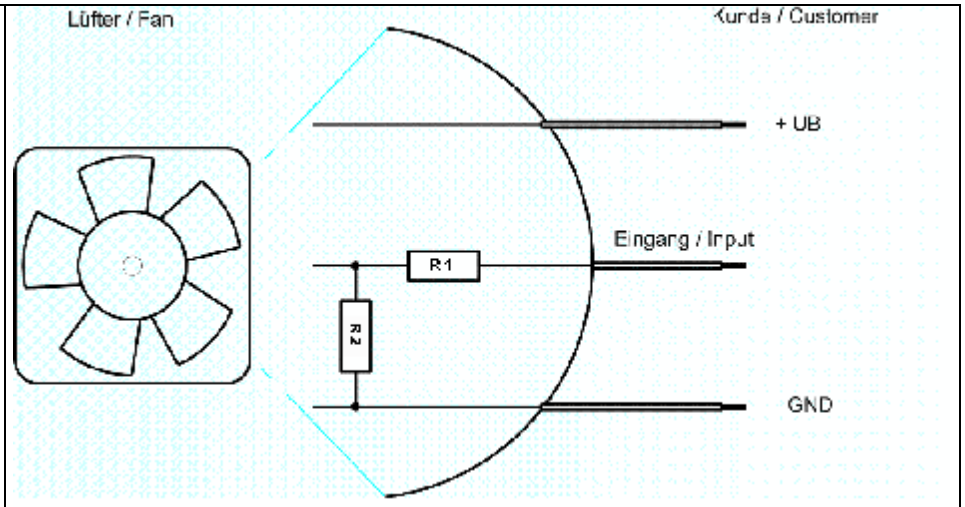
Inpute type	Active PWM	
PWM - Frequency		1 kHz - 10 kHz typical: 2 kHz

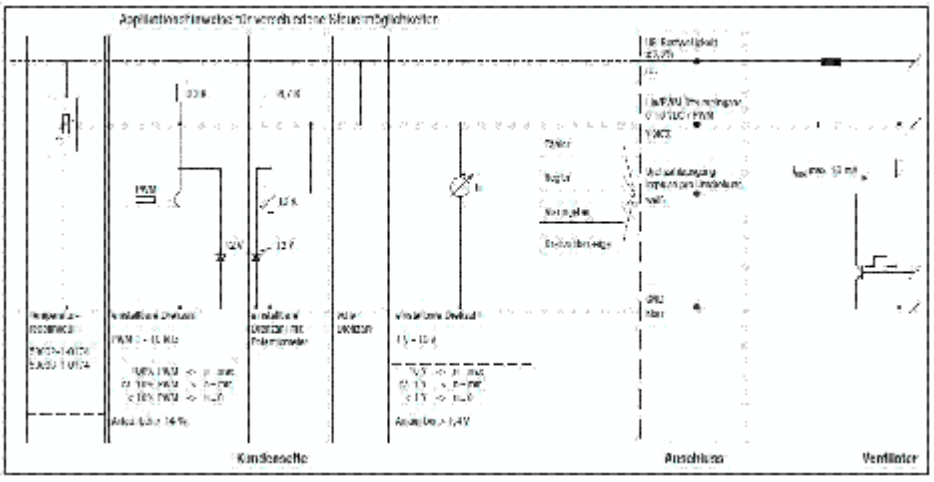
Characteristics





Schematics





Speed control:
Aktiv PWM (12V) and analog voltage (0...10V)
Information to the curve

aktiv PWM:

0 % - 10 % PWM:	0 1/min
10 % - 14 % PWM:	500 1/min (corresponding to min. speed)
14% - 78 % PWM:	linear increasing curve
78% - 100% PWM:	2.850 1/min (corresponding to max. speed)
10 % PWM:	500 1/min (Fan on, comming from 0% PWM)
8 % PWM:	0 1/min (Fan off, comming from 100% PWM)

analog voltage:

0 V - 1,2 V:	0 1/min
1,2 V - 1,6 V:	500 1/min (corresponding to min. speed)
1,6 V - 9,2 V:	linear increasing curve
9,2 V - 10 V:	2.850 1/min (corresponding to max. speed)
1,2V:	500 1/min (Fan on, comming from 0% PWM)
1 V:	0 1/min (Fan off, comming from 100% PWM)

The fan has no sensor break detection.

3.2 Electrical Operating Data

Measurement conditions:	Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; Motor axis horizontal; warm-up time before measuring 5 minutes (unless otherwise specified). In the intake and outlet area should not be any solid obstruction within 0,5 m.

Δp = 0: corresp. to free air flow (see section 3.5)
I: corresp. to arithm. mean current value

Name	Condition		
U Contr. 0001	U Contr.: 10 V		

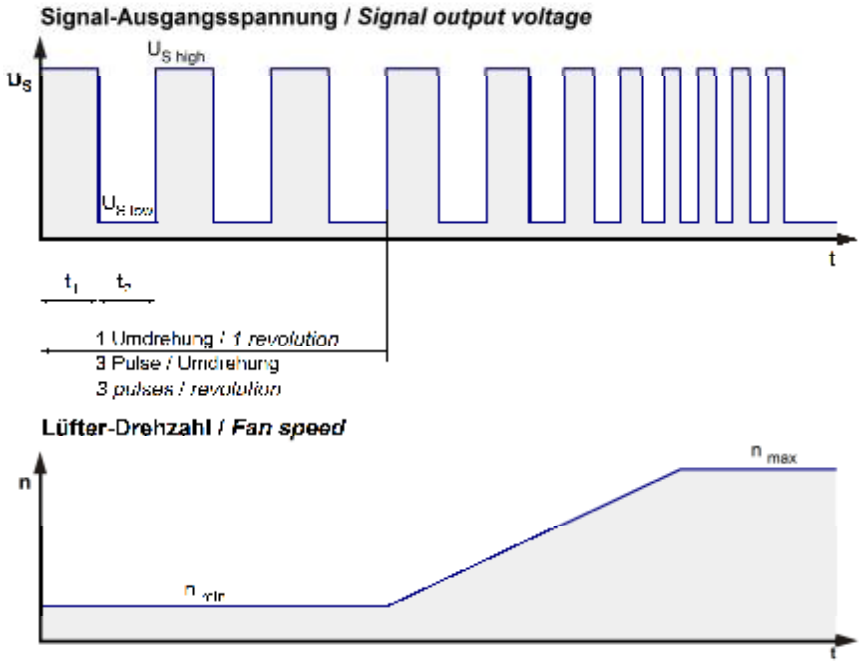
Measurement with spiral casing SK0150004614

Features	Condition	Symbol	Values		
Voltage range		U	20 V		28 V
Nominal voltage		U_N		24 V	
Power consumption Tolerance	Δp = 0 U Contr. 0010	P	6,6 W +- 10,0 %	11,3 W +- 10,0 %	11,4 W +- 10,0 %
Current consumption Tolerance	Δp = 0 U Contr.0010	I	330 mA +- 10,0 %	470 mA +- 10,0 %	280 mA +- 10,0 %
Speed Tolerance	Δp = 0 U Contr. 0010	n	2.700 1/min +- 5 %	2.850 1/min +- 5 %	2.850 1/min +- 5 %

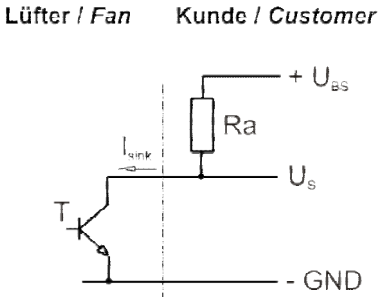
Measurement with spiral housing SK0150004614

3.3 Operating Data - Electrical Interface - Output

Tacho type	/2 (open collector)



$$Ra = \frac{U_{BS} - U_{S\,low}}{I_{sink}}$$

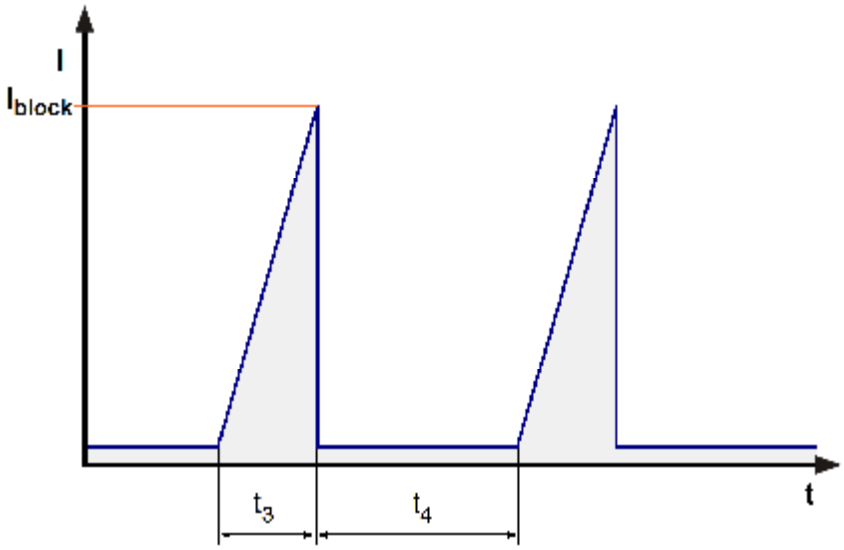


Features		Note	Values
Tacho operating voltage	U_{BS}		<= 60 V
Tacho signal Low	$U_{S\,low}$	I sink: 2 mA	<=<= 0,4 V
Tacho signal High	$U_{S\,high}$	I source: 0 mA	<=60 V
Maximum sink current	I_{sink}		<= 4 mA
Maximum source current			0 mA
External resistor		External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency		(3 x n) / 60	
Tacho isolated from motor		No	
Slew rate			=> 0,5 V/us

n = revolutions per minute (1/min)

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at U_N	N-CH FET I_F <= 5 mA	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 1.000 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 3 s / 10 s	



The tolerance of the blocking clock is + -10%.

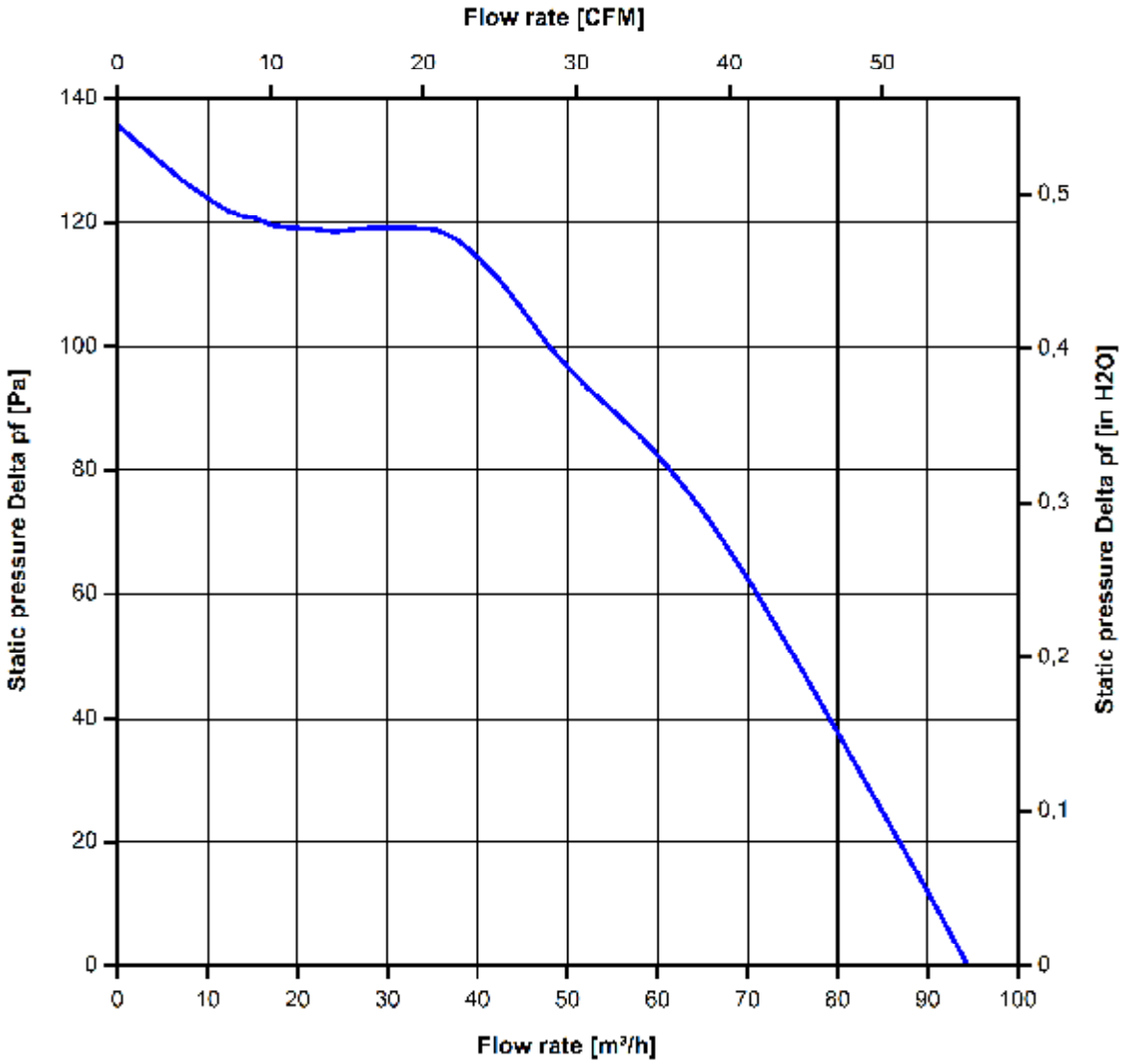
3.5 Aerodynamics

Measurement conditions:	Measured with a double chamber intake rig acc. to DIN EN ISO 5801. Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; In the intake and outlet area should not be any solid obstruction within 0,5 m. The information is only valid under the specified test conditions and may be changed by the installation conditions. If there are deviations from the standard test conditions, the characteristic values must be checked under the installed conditions.

a.) Operation condition:

2.850 1/min at free air flow	U Contr. 10 V		

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	94,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	135 Pa	
at free air flow		
at free air flow		



3.6 Sound Data

Measurement conditions:	Sound pressure level: 1 meter distance between microphone and the air intake. Sound power level: Acc. to DIN 45635 part 38 (ISO 10302) Measured in a semianchoic chamber with a background noise level of Lp(A) < 5 dB(A) For further measurement conditions see section 3.5

a.) Operation condition:

2.850 1/min at free air flow	U Contr. 10 V		

Optimal operating point	36,0 m3/h @ 105 Pa	
Sound power level at the optimal operating point	5,6 bel(A)	
Sound pressure level at free air flow, measured in rubber bands		
at free air flow		
at free air flow		

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-25 °C	
Max. permitted ambient temperature TU max.	60 °C	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	80 °C	

4.2 Climatic Requirements

Humidity requirements	humid heat, cyclic; according to DIN EN 60068-2-30, 6 cycle	
Water exposure	None	
Dust requirements	Dust check; according to DIN EN 60068-2-68, 6g/m2d, 1 day	
Salt fog requirements	None	

Permitted application area:
The product is for the use in sheltered rooms with limited controlled temperature. Occasionally condensed water is allowed. Direct exposure to water must be avoided. Saline ambient conditions must be avoided.

Pollution degree 2 (according DIN EN 60664-1)
It occurs only non-conductive pollution. Occassionally, temporary conductivity caused by condensation occurs.

Please require severity levels and specification parameters from the responsible development departments.

5 Safety

5.1 Electrical Safety

Dielectric strength DIN EN 60950 (VDE 0805) and DIN EN 60335 (VDE 0700) A.) Type test Measuring conditions: After 48h of storage at 95% R.H. and 25°C. No arcing or breakdown is allowed! All connections together to ground. B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	500 VAC / 1 Min. 500 VAC / 1 Sec.	
Isolation resistance Measuring conditions: After 48h of storage at 95% R.H. and 25°C measured with U=500 VDC for 1 min.	RI > 10 MOhm	
Clearance / creepage distance	1,0 mm / 1,2 mm	
Protection class	III	

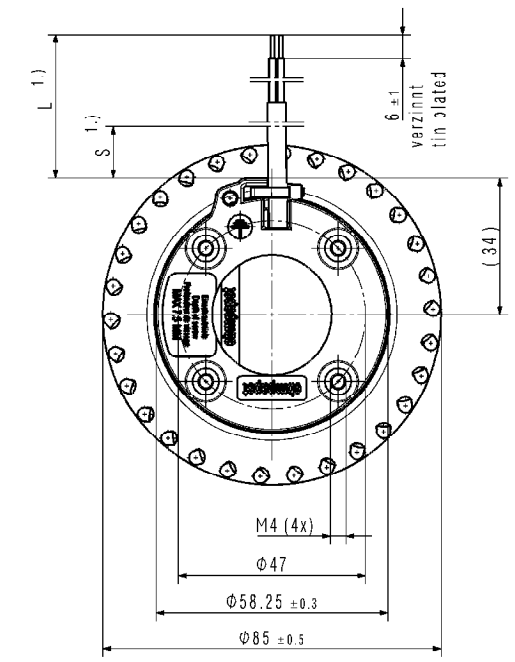
5.2 Approval Tests

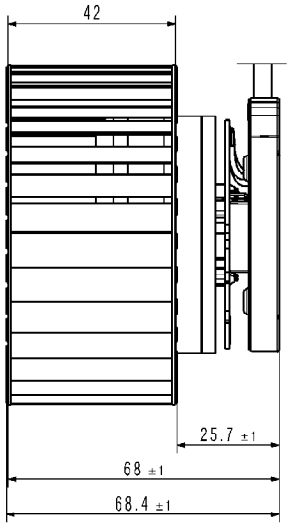
CE	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	No
VDE	Association for Electrical, Electronic and Information Technologies	No
CSA	Canadian Standards Association	No
CCC	China Compulsory Certification	Not applicable

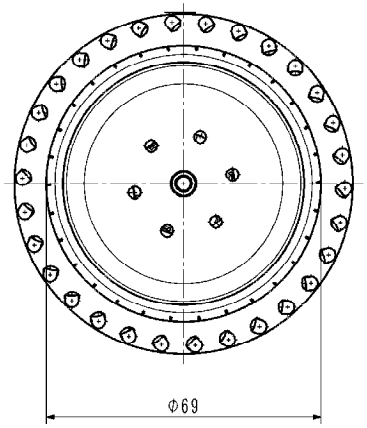
6 Reliability

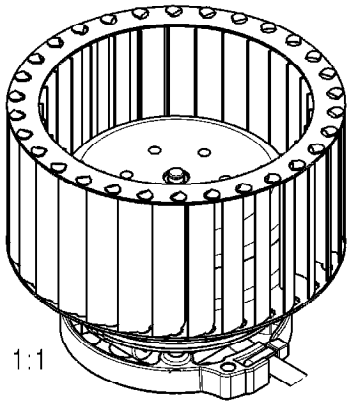
6.1 General

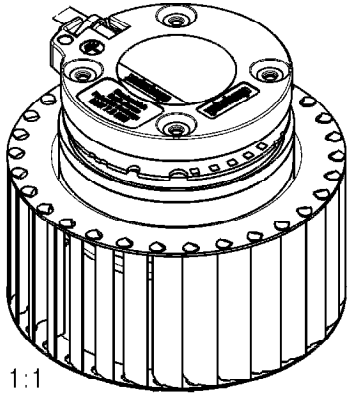
Life expectancy L10 at TU = 40 °C	95.000 h	
Life expectancy L10 at TU = 60 °C	60.000 h	











1.) Anzahl und Lange der Litzen / Schlauch siehe Produktspezifikation
1.) length and number of wires / tube see product specification

- Axialspiel der Kugellager mit Feder spielfrei gelagert.
- ball bearing without clearance by a pre-load spring.

SAP-Status/State	Aend.-Nr./ Change No.	CATIA-System-Version/ CATIA-System-Version	CAD-Umgebung/ CAD-Environment	Werkstoff / Material: -	Volumen / Volume (mm^3):
		9594314491 GPR000A			Gewicht / Mass (g):
		3D-Referenzmodell / 3D-Reference model		Artikel / Title:	
Tolerierung / Tolerances:		Datum	Name		
		Bearb./ Drawn			
Allgemeintoleranzen / Gen. Tolerances:		Gepr./ Checked		Zchg.-Nr./ Drawing No:	Ers.f.Zchg. / Replaces:
		Freig./ Releas.			
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