Product Data Sheet #4312/2MI-208

ebmpapst

Die Wahl der Ingenieure



GREEN TECH

#4312/2MI-208

INDEX

1 General 3

2 Mechanics 3

2.1 General 3
2.2 Connections 3

3 Operating Data 5

3.1 Operating Data - Electrical Interface - Input 5
3.2 Electrical Operating Data 6
3.3 Operating Data - Electrical Interface - Output 7
3.4 Electrical Features 8
3.5 Aerodynamics 9
3.6 Sound Data 10

4 Environment 10

4.1 General 10
4.2 Climatic Requirements*) 10

5 Safety 11

5.1 Electrical Safety 11
5.2 Approval Tests 11

6 Reliability 11

6.1 General 11

1 General

Fan type	Axial fan	
Rotating direction looking at rotor	Clockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position	Any	

2 Mechanics

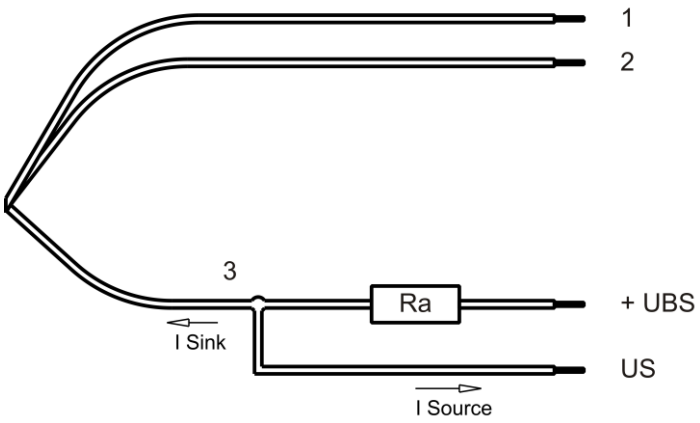
2.1 General

Width	119,0 mm	
Height	119,0 mm	
Depth	32,0 mm	
Mass	0,200 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	wire outlet corner: 20 Ncm remaining corners: 20 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires - Plug	
Lead wire length Tolerance	L = 843 mm +- 10,0 mm	
Wire size (AWG)	26	
Insulation diameter	1,35 mm	
Contact	See drawing	





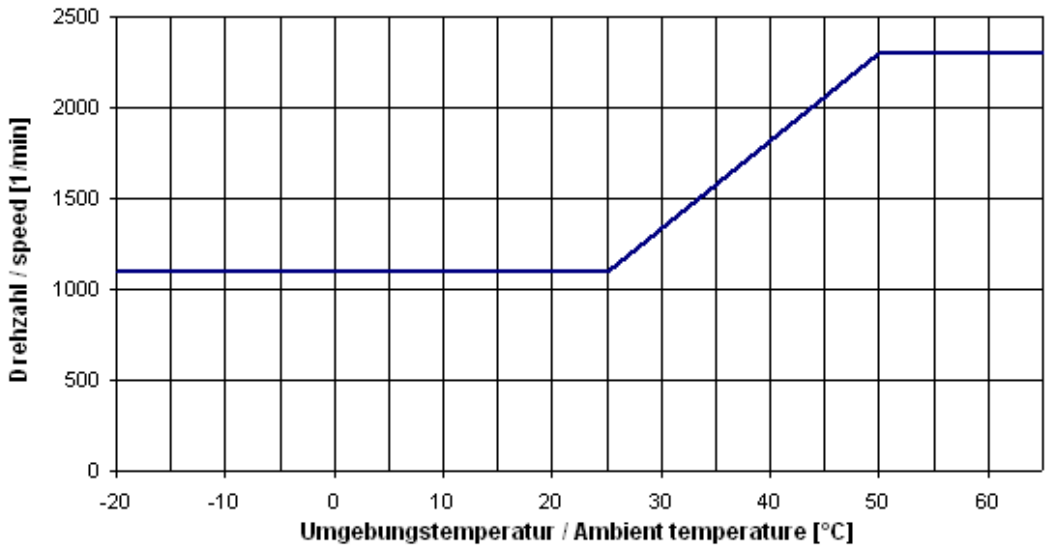
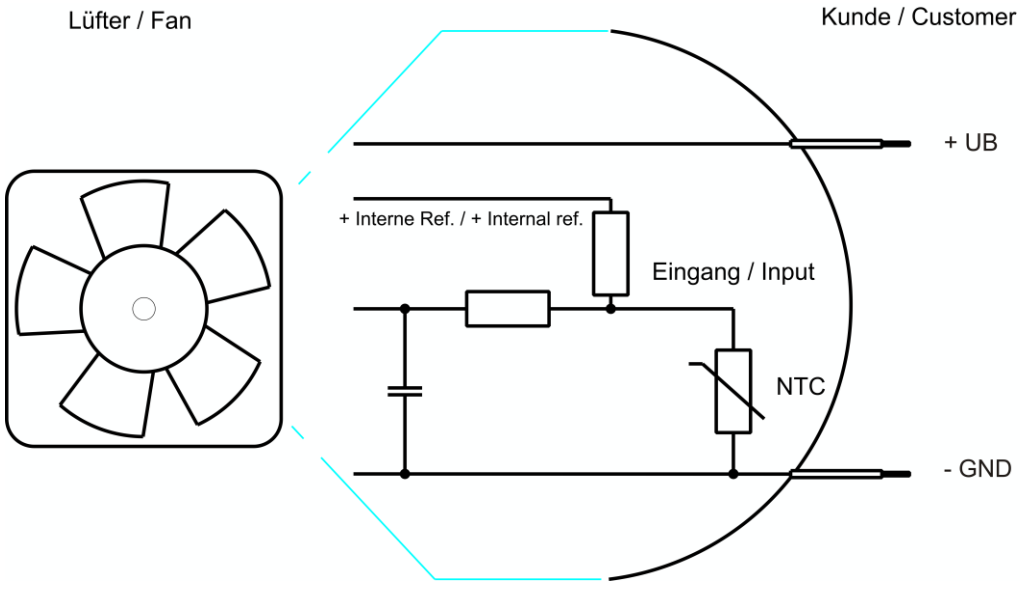
	Colour	Operation	plug connection
Wire 1	red	+ UB	Pin 2
Wire 2	blue	- GND	Pin 1
Wire 3	white	Tacho	Pin 3

3 Operating Data

3.1 Operating Data - Electrical Interface - Input

Control input	Internal Temperature Sensor

Features

Characteristics	
Schematics	

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		
TU 0001	TU: >= 50 °C		
NTC 0001			

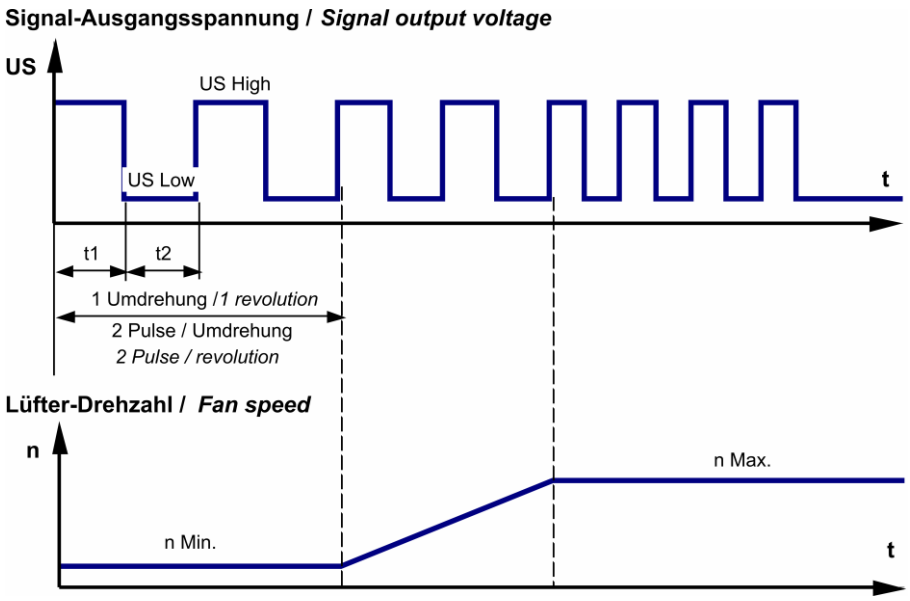
Features	Condition	Symbol	Values		
Voltage range	Δp = 0	U	8,0 V		15,0 V
Nominal voltage	Δp = 0	U_N		12,0 V	
Power consumption Tolerance	Δp = 0 TU / NTC 0001	P	1,3 W +- 25,0 %	3,3 W +- 25,0 %	5,6 W +- 25,0 %
Current consumption Tolerance	Δp = 0 TU / NTC 0001	I	160 mA +- 25,0 %	275 mA +- 25,0 %	370 mA +- 25,0 %
Speed Tolerance	Δp = 0 TU / NTC 0001	n	1.500 1/min +- 15,0 %	2.300 1/min +- 15,0 %	2.800 1/min +- 15,0 %
Starting current consumption				1.200 mA	

Name	Condition		
TU 0001	TU: <= 25 °C		
NTC 0001			

Features	Condition	Symbol	Values		
Voltage range	Δp = 0	U	8,0 V		15,0 V
Nominal voltage	Δp = 0	U_N		12,0 V	
Power consumption Tolerance	Δp = 0 TU / NTC 0001	P	1,3 W +- 25,0 %	1,1 W +- 25,0 %	1,4 W +- 25,0 %
Current consumption Tolerance	Δp = 0 TU / NTC 0002	I	80 mA +- 25,0 %	90 mA +- 25,0 %	95 mA +- 25,0 %
Speed Tolerance	Δp = 0 TU / NTC 0002	n	1.100 1/min +- 15,0 %	1.100 1/min +- 15,0 %	1.100 1/min +- 15,0 %

3.3 Operating Data - Electrical Interface - Output

Tacho type	/2 (open collector)



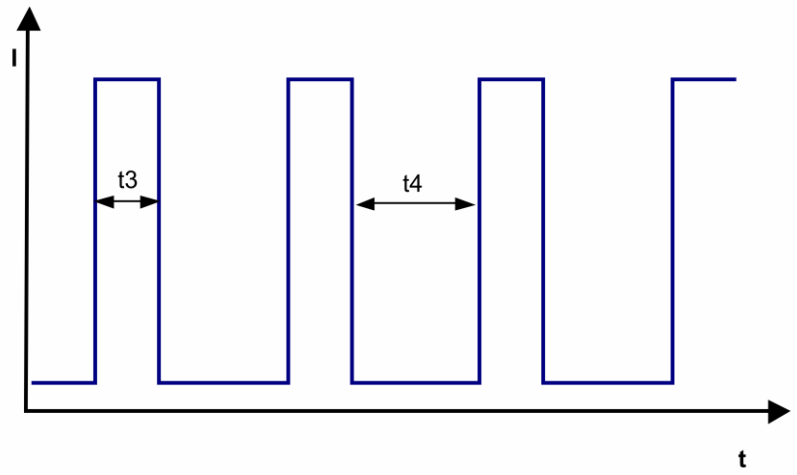
$$Ra = \frac{UBS - US\ Low}{I\ Sink}$$

Features	Note	Values
Tacho operating voltage (UBS)		<= 60 V
Tacho signal Low	I sink: 2 mA	<= 0,4 V
Tacho signal High	I source: 0 mA	<= 60 V
Maximum sink current		4 mA
External resistor	External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency	(2 x n) / 60	77 Hz
Tacho isolated from motor	No	
Slew rate		=> 0,5 V/us

Alarm type	None

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection Max. residual current at Un	Rectifying diode IF <= 10 mA	
Locked rotor protection	Auto restart	
Locked rotor current at Un	approx. 1.200 mA	
Clock signal t3/t4 at locked rotor	Typical: 1,0 s / 10 s	



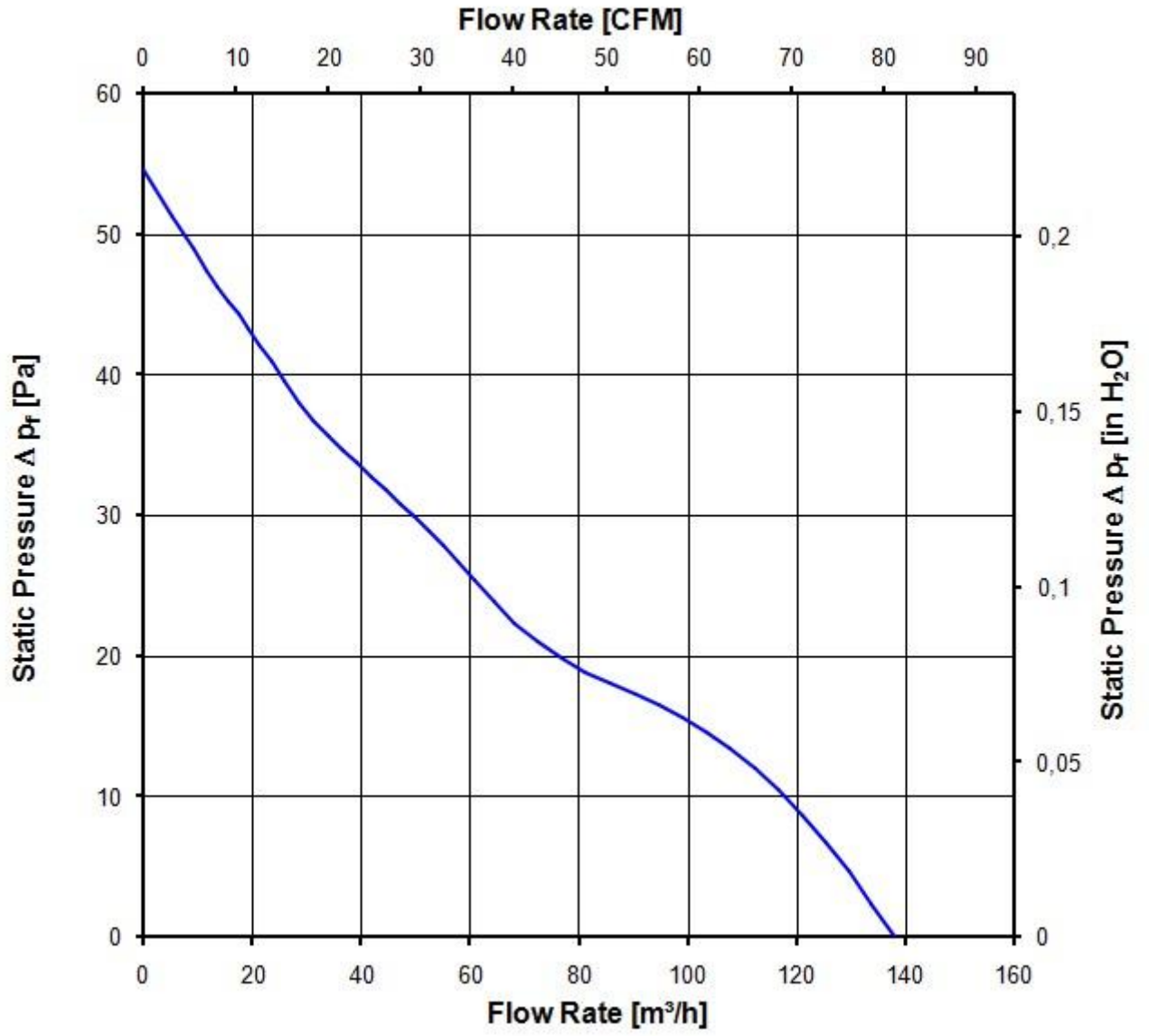
3.5 Aerodynamics

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:

2.300 1/min at free air flow			

Max. free-air flow (Δp = 0 / $\dot{V}$ = max.)	138,0 m3/h	
Max. static pressure (Δp = max. / $\dot{V}$ =0)	54 Pa	



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:

2.300 1/min at free air flow	TU >= 50 °C		

Optimal operating point	118,0 m3/h @ 9 Pa	
Sound power level at the optimal operating point	5,3 bel(A)	
Sound pressure level at free air flow, measured in rubber bands	39,0 dB(A)	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	65 °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, constant; according to DIN EN 60068-2-78, 14 days	
Water exposure	None	
Dust requirements	None	
Salt fog requirements	None	

*) Permittet application area:
The product is intended for use in sheltered rooms with controlled temperature and controlled humidity. Directly exposure to water must be avoided.

Pollution degree 1 (according DIN EN 60664-1)
There is either no pollution or it occurs only dry, non-conductive pollution. The pollution has no negative impact.

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	Yes / UL507, Electric Fans
VDE	Association for Electrical, Electronic and Information Technologies	Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment
CSA	Canadian Standards Association	Yes / C22.2 No. 113 Fans and Ventilators
CCC	China Compulsory Certification	Yes / GB 12350 Safety Requirements for small Power Motors

6 Reliability

6.1 General

Life expectancy L10 at TU = 40 °C	70.000 h	
Life expectancy L10 at TU max.	40.000 h	
Life expectancy L10 IPC (40 °C)	117.500 h	

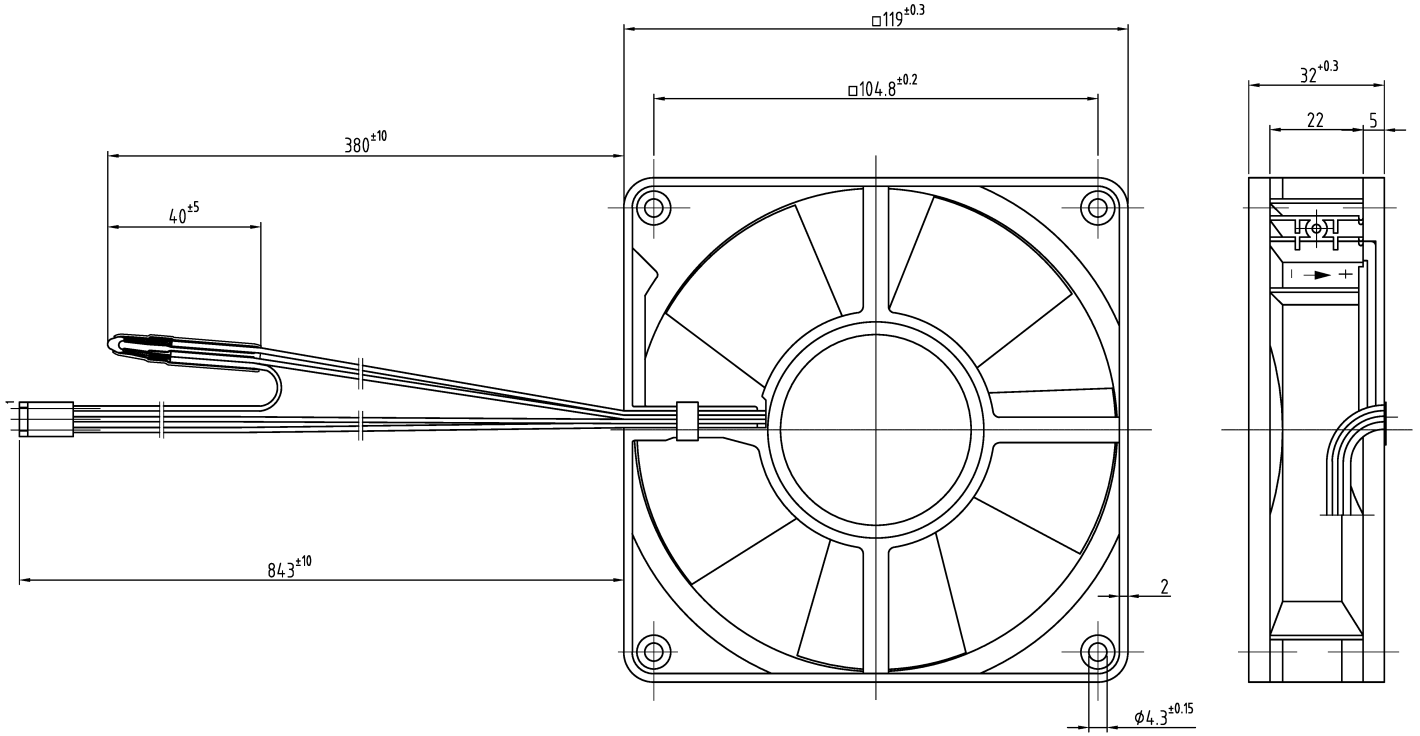
Copying of this document, and giving it to others and the use or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights are reserved in the event of the grant of a patent or the registration of a utility model or design.

Schutzvermerk nach DIN ISO 16016 beachten/
Refer to protection notice DIN ISO 16016!

Steckergehäuse /
plug housing:
22-01-2035 Fa. Molex
Kontakt / contact:
08-50-0113 Fa. Molex

Steckerbelegung /
plug connection:

Pin 1 = blau/ blue (GND)
Pin 2 = rot/ red (+5V)
Pin 3 = weiß/ white (Tacho)
= violett/violett (NTC)



–Axialspiel bei Kugellagerung (K): 0 (durch Federausgleich) –axial clearance by ball bearing (K): 0 (by a pre–loaded spring)
–Axialspiel bei Gleitlagerung (G): 0.1 – 0.6 –axial clearance by seeve bearing (G): 0.1 – 0.6

SAP-Status/State	Aend.-Nr./Change-No.	AutoCAD-System-Version	ebmpapst CAD-Umgebung/ CAD-Enviroment	Werkstoff/Material:	Volumen/Volume (mm³):
		Datum/Date	Name/Name		Gewicht/Mass (g):
Tolerierung/Tolerances:		Bearb./ Drawn		Artikel/Title	
		Gepr./ Checked			
Allgemeintoleranzen/Gen. tolerances:		Freig./ Releas.			
		ebmpapst		Zchg.-Nr./ Drawing.-No.:	Ers.f.Zchg./ Replaces:
		ebm-papst St. Georgen GmbH & Co. KG		Dokumenttyp/Type of Document / Teildokument (Blatt/Page) / Index/Index / Format/Size: / Massstab/scale	

11/09