Product Data Sheet 3212 J/2HHP

ebmpapst

The engineer's choice



GREEN TECH

3212 J/2HHP

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6.1 General 11

1 General

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

2 Mechanics

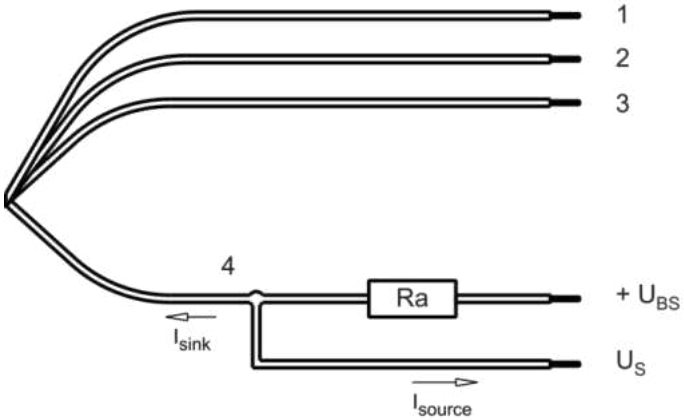
2.1 General

Width	92,0 mm	
Height	92,0 mm	
Depth	38,0 mm	
Mass	0,25 kg	
Housing material	Plastic	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	Wire outlet corner: 250 Ncm Remaining corners: 250 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Lead wire length Tolerance	L = 160 mm +- 10,0 mm	
Tube length Tolerance	S = 146 mm +- 10 mm	
Wire size (AWG)	22	
Insulation diameter	1,7 mm	





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

The auxilliaries shown on the schematic diagram (which are required for the intended use) are not part of our delivery.

3 Operating Data

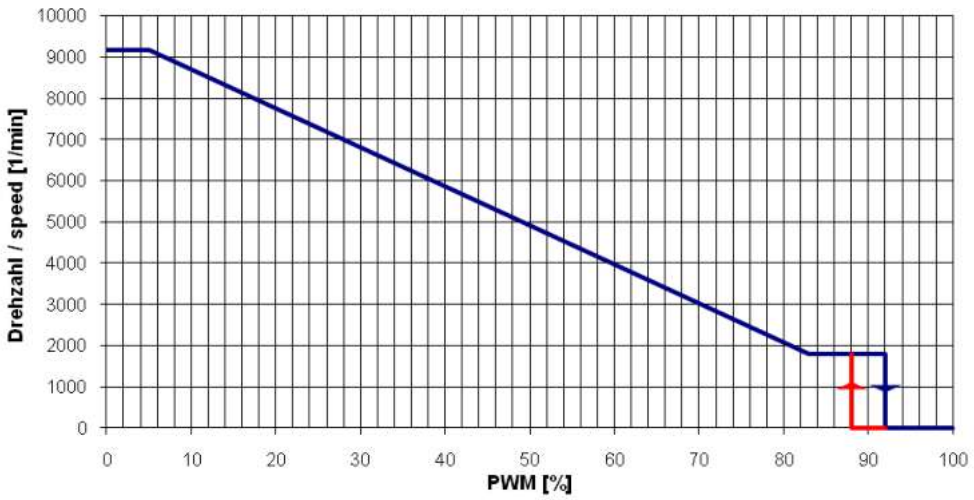
3.1 Electrical Interface - Input

Control input	PWM

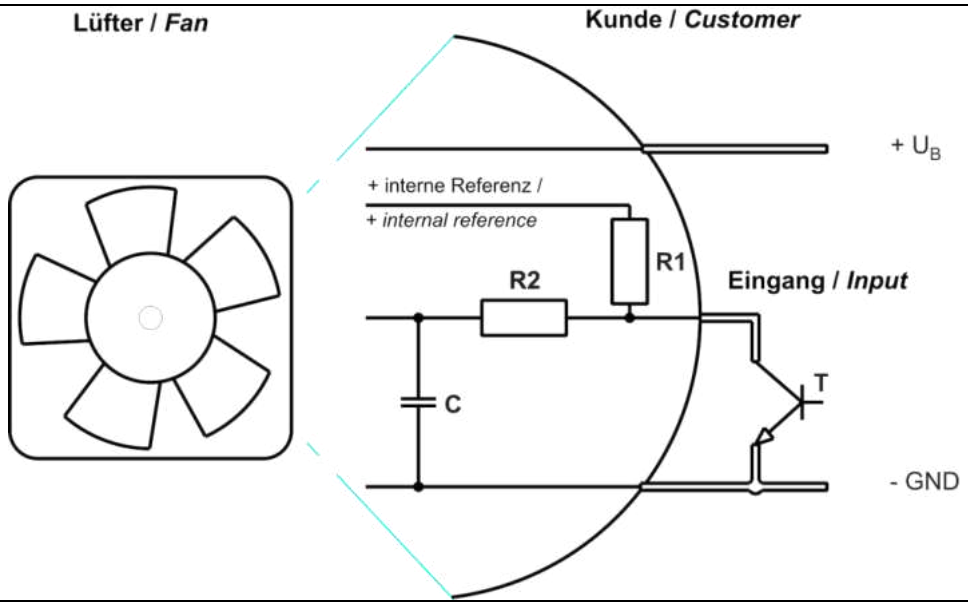
Features

Inpute type	Open collector	
PWM - Frequency		typical: 5 kHz
Max. voltage for logic "Low"		0,2 V
Maximum source current	short circuit current	3 mA
Typical time until warm restart	After shutdown by PWM	~ 9 s

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.

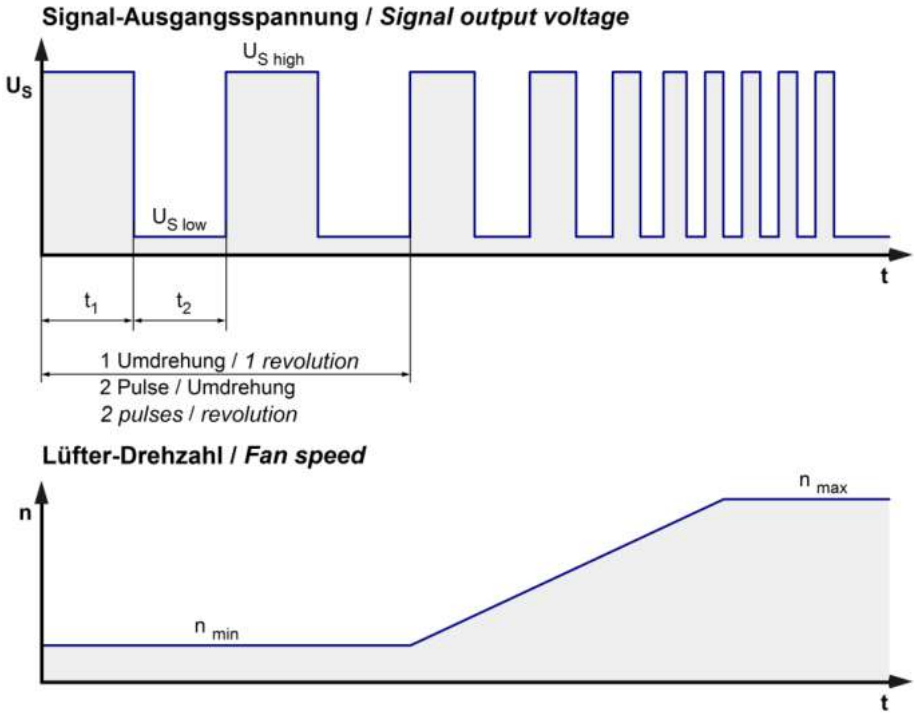
Δp = 0: corresp. to free air flow (see section 3.5)
I: corresp. to arithm. mean current value

Name	Condition		
PWM 0001	PWM: 0 %; f: 5 kHz	f: 1 kHz	f: 30 kHz

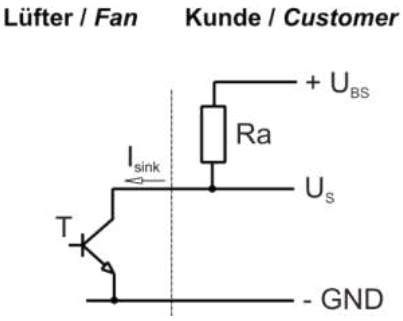
Features	Condition	Symbol	Values		
Voltage range		U	10,0 V		16 V
Nominal voltage		U_N		12 V	
Power consumption Tolerance	Δp = 0 PWM 0010	P	14,5 W +- 17,5 %	19 W +- 17,5 %	19 W +- 25 %
Current consumption Tolerance	Δp = 0 PWM 0010	I	1.450 mA +- 17,5 %	1.600 mA +- 17,5 %	1.200 mA +- 25 %
Speed Tolerance	Δp = 0 PWM 0010	n	8.400 1/min +- 12,5 %	9.200 1/min +- 5 %	9.200 1/min +- 5 %
Starting current consumption				<= 1.400 mA	

3.3 Electrical Interface - Output - Tacho

Tacho type	/2 (open collector)



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

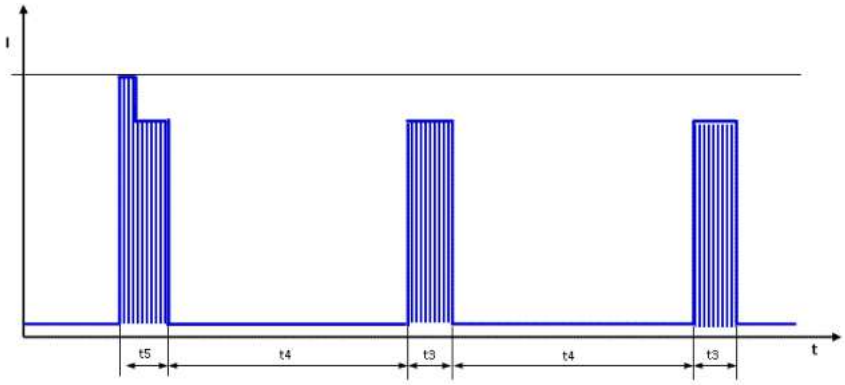


Features		Note	Values
Tacho operating voltage	U_{BS}		<= 60 V
Tacho signal Low	$U_{S\,low}$	I sink: 2 mA	<=0,4 V
Tacho signal High	$U_{S\,high}$	I source: 0 mA	60 V
Maximum sink current	I_{sink}		<= 4 mA
External resistor		External resistor Ra from UBS to US required. All voltages measured to GND.	
Tacho frequency		(2 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	None	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 1.800 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 1 s / 9 s	



First pulse t5 typical 1,6s (1,3 .. 1,9s) followed by t4. Afterwards cyclical t3/t4.

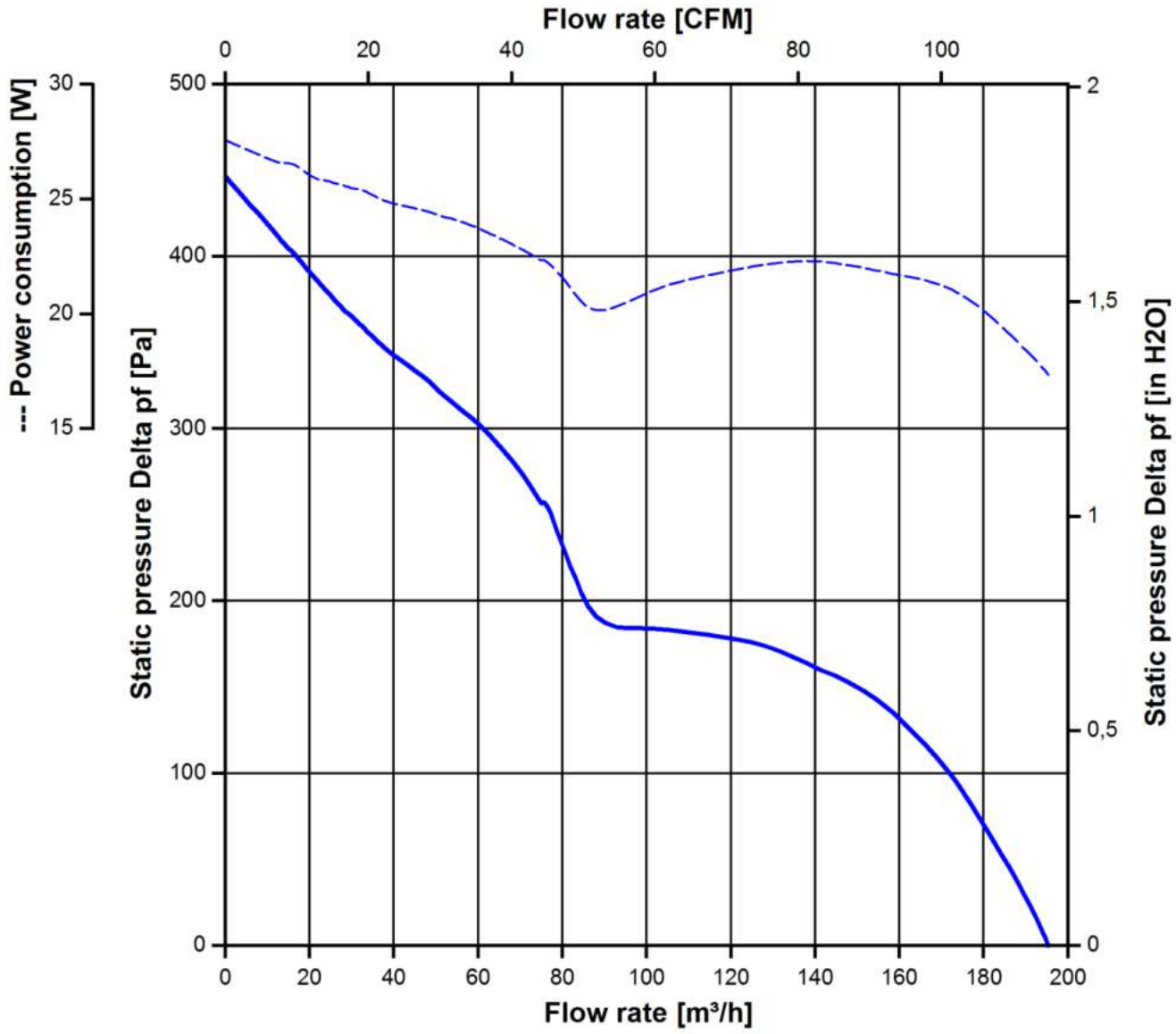
3.5 Aerodynamics

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. Power consumption of the fan motor when operating at normal voltage is shown. Depending on the operating conditions of the application, the power input may be higher.

a.) Operation condition:

9.200 1/min at free air flow	PWM 0 %; f: 5 kHz	f: 1 kHz	f: 30 kHz

Max. free-air flow (Δp = 0 / V̇ = max.)	195 m3/h	
Max. static pressure (Δp = max. / V̇ =0)	446 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:

at free air flow	

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-20 °C	
Max. permitted ambient temperature TU max.	75 °C	
Min. permitted storage temperature TL min.	-40 °C	
Max. permitted storage temperature TL max.	85 °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	

Permitted 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.

4.3 Mechanical Requirements

severity level	stationary use		
1	storage / transportation	Random vibration not in use IEC 60068-2-64 Frequency range / ASD G_{RMS} Axes of vibration Test duration	 Random vibration 5 - 20 Hz : 1,0 m² / s³ 20 - 500 Hz : - 3 dB / Oct 0,91 G 3 3 x 30 min
	storage / transportation	Bump not in use IEC 60068-2-29 Shock spectrum Acceleration Duration Number of bumps (+X, -X, -Y, +Y, -Z, +Z) Total bumps	 Bump half sine 18 G 6 ms 100 in each direction 600
	stationary use	Random vibration in use IEC 60068-2-64 Frequency range / ASD G_{RMS} Axes of vibration Test duration	 Random vibration 5 - 10 Hz : +6 dB / Oct 10 - 50 Hz : 1,0 m^2 / s^3 50 - 200 Hz : - 6 dB / Oct 0,65 G 3 3 x 30 min
	stationary use	Bump in use IEC 60068-2-29 Shock spectrum Acceleration Duration Number of bumps (+X, -X, -Y, +Y, -Z, +Z) Total bumps	 Bump half sine 5 G 11 ms 100 in each direction 600

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	

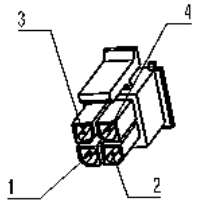
5.2 Approval Tests

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

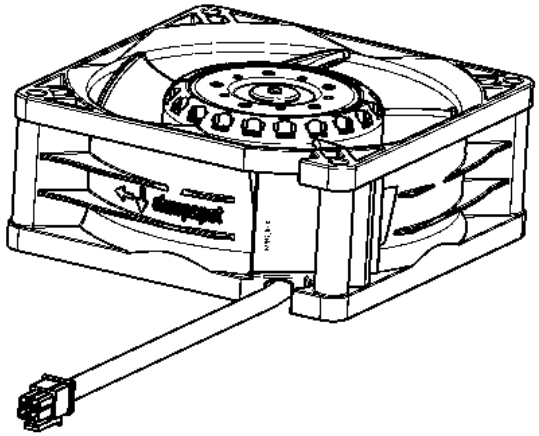
6.1 General

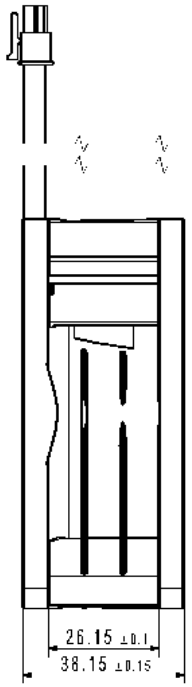
Life expectancy L10 at TU = 40 °C	85.000 h	
Life expectancy L10 at TU max.	42.500 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	142.500 h	

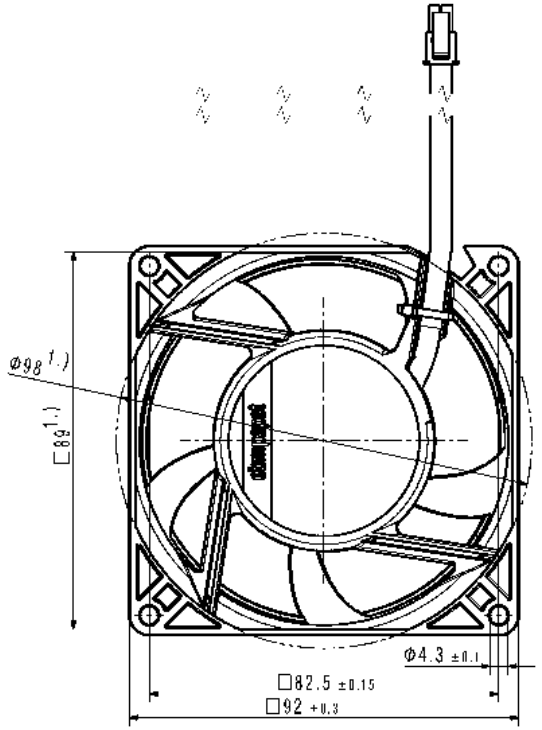


Pin		Farbe / colour
1	+	rot / red
2	-	blau / blue
3	PWM	violett / violet
4	Tacho	weiss / white

released Manufacturers		
MOLEX	4-pin Micro Fit 3.0	43025-0400
	Crimp Terminal female	43030-0003 43030-0009
TYCO	Micro MATE-N-Lok 3	794617-4
	Receptacle contact	1-794606-2 1-794610-2
HUAFENG Sichuan	Connector Body 2x2 F	C3030HF-2X2p
	Crimp Terminal female	C3030F-PS-2







1.) Maße für Montage / dimension for mounting

- Kein Axialspiel bei Kugellager durch Federausgleich
  no axial clearence of ball bearing conditional on a pre-load spring

Dokument-Status / Document-Status		CAD-Version / CATIA Version	CAD Umgebung / CAD-ENVIRONMENT	Werkstoff / Material:		Volumen / Volume [dm³]:	
	Ersatz-Nr. / Change-No.	Bauteilnr. / PART-No.				Gewicht / Mass [g]:	
		3D Referenzmodell / 3D Reference model		Artikel / Title:			
Tolerierung / Tolerances:		Datum	Name				
Allgemeintoleranz / Gen. Tolerances:	Bearb. / Drawn			Zeichn.-Nr. / Drawing No:		Ers. f. Zchg. / Replaces:	
	Gepr. / Checked						
	Freig. / Released			Dokumentart / Type of Document	Nr. / Document (Blatt / Page)	Index / Index	Format / Size: Maßstab / Scale
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