

Product Data Sheet

9695480229

VWS0149XULCZ

6318/19HPU-229

ebmpapst

The engineer's choice



6318/19HPU-229

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1 General

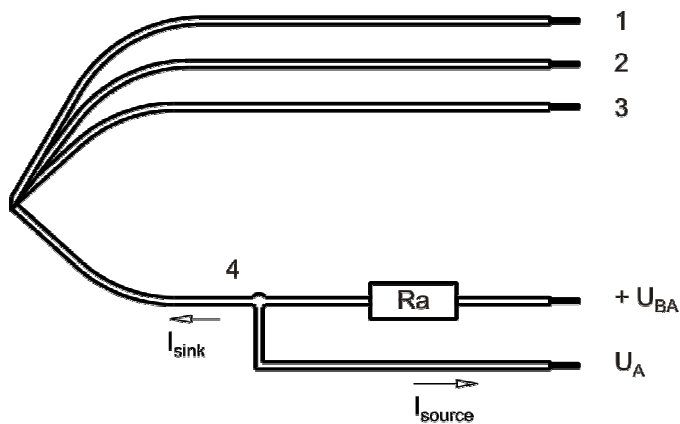
Fan type	Fan	
Rotating direction looking at rotor	Counterclockwise	
Airflow direction	Air outlet over struts	
Bearing system	Ball bearing	
Mounting position - shaft	Any	

2 Mechanics**2.1 General**

Depth	51,0 mm	
Diameter	172,0 mm	
Mass	0,88 kg	
Housing material	Metal	
Impeller material	Plastic	
Max. torque when mounted across both mounting flanges Screw size	Wire outlet corner: 460 Ncm Remaining corners: 460 Ncm ISO 4762 - M4 degreased, without an additional brace and without washer	

2.2 Connections

Electrical connection	Wires	
Lead wire length	L = 500 mm	
Tolerance	+ - 10 mm	
Tube length	S = 160 mm	
Tolerance	+ - 10 mm	



Wire	Color	Operation	Wire size	Insulation diameter
1	red	+ UB	AWG 22	1,7 mm
2	blue	- GND	AWG 22	1,7 mm
3	violet	PWM	AWG 22	1,7 mm
4	yellow	Alarm	AWG 22	1,7 mm

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

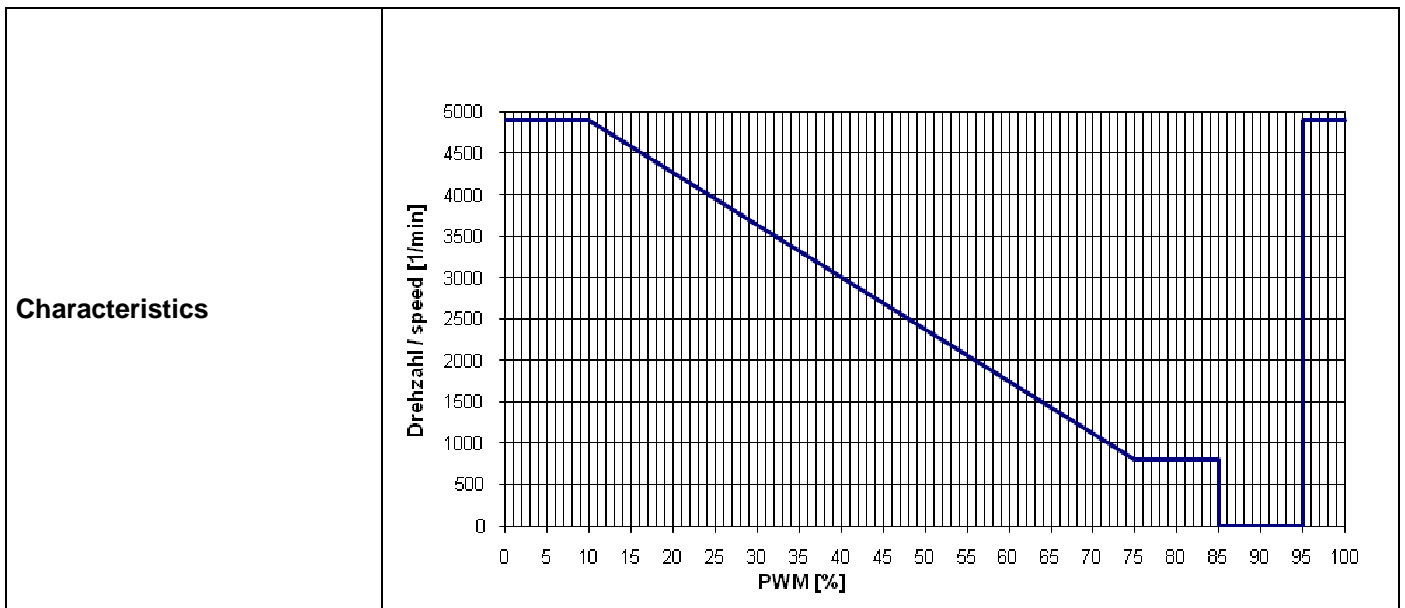
3 Operating Data

3.1 Electrical Interface - Input

Control input	PWM
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Features

PWM - Frequency	1 kHz - 10 kHz typical: 2 kHz
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Lüfter / Fan

Kunde / Customer

Schematics

Internal pullup resistor 4k7 to 5V.

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.

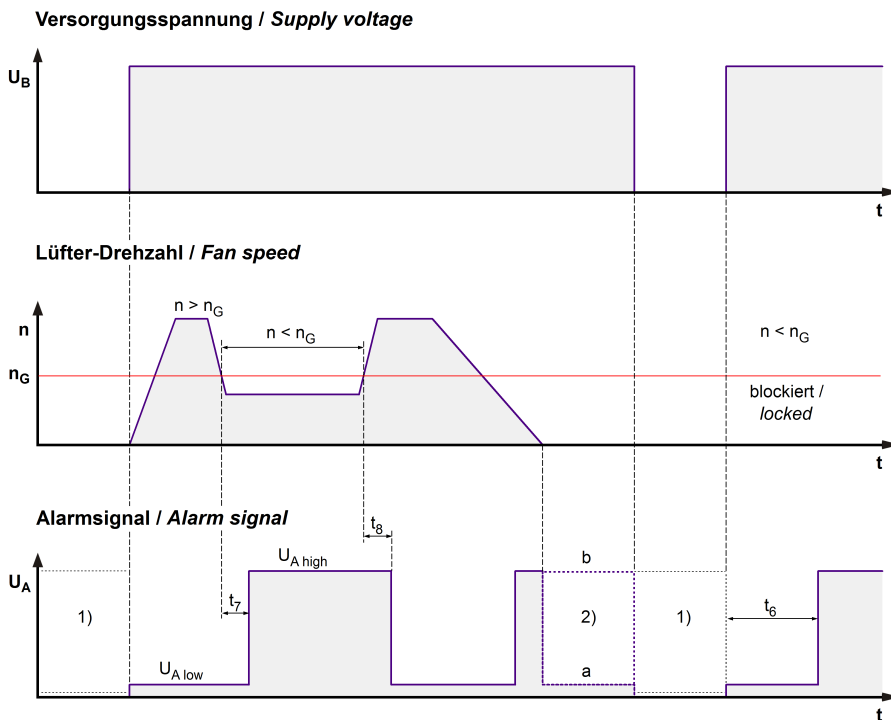
$\Delta p = 0$: corresp. to free air flow (see chapter aerodynamics)
I: corresp. to arithm. mean current value

Name	Condition
PWM 0001	PWM: 0 %; f: 2 kHz

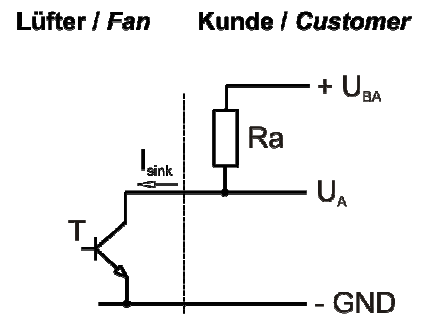
Features	Condition	Symbol	Values		
Voltage range		U	38 V		58,5 V
Nominal voltage		U _N		48 V	
Power consumption	$\Delta p = 0$	P	31,2 W +- 15 %	30 W +- 10 %	32,5 W +- 10 %
Tolerance	PWM 0010				
Current consumption	$\Delta p = 0$	I	820 mA +- 15 %	625 mA +- 10 %	560 mA +- 10 %
Tolerance	PWM 0010				
Speed	$\Delta p = 0$	n	4.900 1/min +- 10 %	4.900 1/min +- 5 %	4.900 1/min +- 5 %
Tolerance	PWM 0010				
Starting current consumption				< 3.000 mA	

3.3 Electrical Interface - Output

Alarm type	/19 (low = ok, open collector inverse)
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$$R_a = \frac{U_{BA} - U_{A\text{low}}}{I_{\text{sink}}}$$



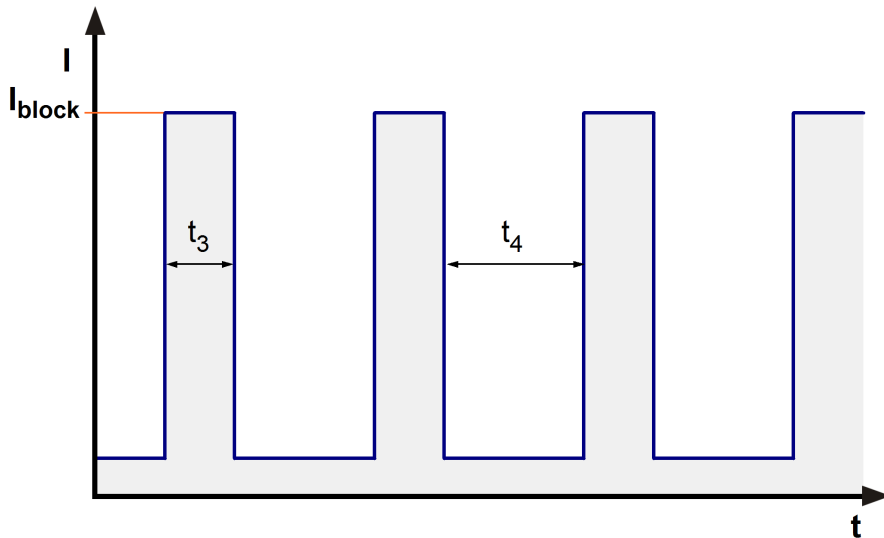
- 1) Wenn der Lüfter abgeschaltet ist, hängt der Zustand des Ausgangssignals U_A von der Kundenapplikation ab.
When the fan is powered off, the output signal U_A depends on the customer's application.
- 2) Für den gültigen Zustand (a oder b) siehe Alarmunterdrückung in der Tabelle.
For the valid condition (a or b) see alarm suppression in the table.

Features	Note	Values
Alarm operating voltage	U_{BA}	$\leq 60,0 \text{ V}$
Alarm signal Low	$U_{A\text{low}}$	$\leq 0,4 \text{ V}$
Maximum sink current	I_{sink}	20 mA
External resistor	External resistor R_a from U_{BA} to U_A required. All voltage measured to GND.	
Alarm start-up delay time	t_6	10 s
Tolerance		+ - 0,2 s
Alarm delay time	t_7	10 s
Tolerance		+ - 0,2 s
Alarm delay time	t_9	10 s
Tolerance		+ - 0,2 s
Alarm at sense failure	No	
Alarm latch	No	
Alarm isolated from motor	No	

Percentage speed alarm: 62 - 67%
Speed alarm hysteresis: 5%

3.4 Electrical Features

Electronic function	Speed-Controlled	
Reversed polarity protection	Rectifying diode	
Max. residual current at U_N	$I_F \leq 10 \text{ mA}$	
Locked rotor protection	Auto restart	
Locked rotor current at U_N	I_{block} approx. 1.400 mA	
Clock signal at locked rotor	t_3 / t_4 typical: 0,5 s / 10,0 s	



Internal Fuse:

Littlefuse NANO2(R) FUSE; Very fast acting 451 Series; 6,3 A (Art.-Nr.: 045106.3MRL)

Current during braking of the rotor

Max. current when decelerate at $U_{\text{nom.}} = < 4.000\text{mA}$ peak

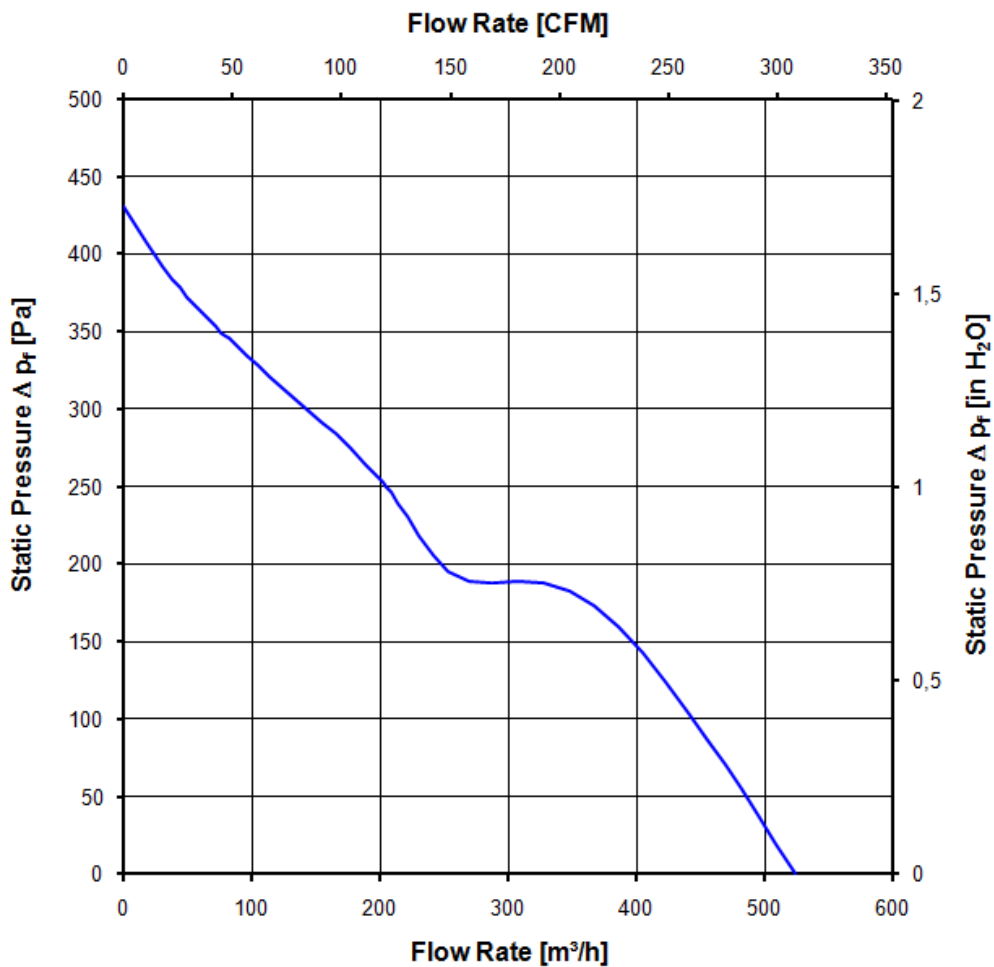
3.5 Aerodynamics

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. Motor shaft horizontal.
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:

4.900 1/min at free air flow	PWM 0 %; f: 2 kHz		
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Max. free-air flow ($\Delta p = 0 / \dot{V} = \text{max.}$)	523,0 m ³ /h	
Max. static pressure ($\Delta p = \text{max.} / \dot{V} = 0$)	530 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 $L_p(A) < 5 \text{ dB(A)}$
For further measurement conditions see chapter aerodynamics.

a.) Operation condition:

4.900 1/min at free air flow	PWM 0 %; f: 2 kHz		
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Optimal operating point	445,0 m ³ /h @ 89 Pa		
Sound power level at the optimal operating point	6,8 bel(A)		
Sound pressure level at free air flow, measured in rubber bands	58,0 dB(A)		

4 Environment

4.1 General

Min. permitted ambient temperature TU min.	-40 °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

IP-protection type (certified)	IP 68 (for fan only, not for connector if applicable) **)	
Humidity requirements	humid temperature, cyclic; according to DIN EN 60068-2-38, 10 cycle and condensation water check; according to DIN EN ISO 6270-2, 14 days	
Salt fog requirements	None	

Permitted application area:

The product is for the use in partial sheltered rooms or open, roofed areas. Direct exposure to water is allowed provided that this does not prevent the normal operation. Saline ambient conditions must be avoided.

Pollution degree 3 (according DIN EN 60664-1)

It occurs conductive pollution or dry non-conductive pollution which becomes conductive due to condensation.

**) The specification of the IP protection refers to the conditions mentioned in certification of the fan. The above mentioned short description of the protection scope is not final. For detailed information of the respective protection scope and definitions, see certification as well as DIN EN 60529 (protection by housings) and ISO 20653 (for vehicles) with the letter K.

Short description of the IP-protection type:

Solid particle Protection: Dust tight.

Protection against deliberate contact: Protected against contact to hazardous parts with a wire.

Protection against water: The fan test according to IP68 (Based on IEC 60529), is conducted in non-operating mode. The fan is tested by a complete immersion in water for a period of 2h at a water-level of 1,2m. Electrical connections are not immersed since they are customer specific.

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.	500 VAC / 1 Min.	
B.) Routine test Measuring conditions: At indoor climate. No arcing or breakdown is allowed! All connections together to ground.	850 VDC / 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 / 1,5 mm	
Protection class	III	

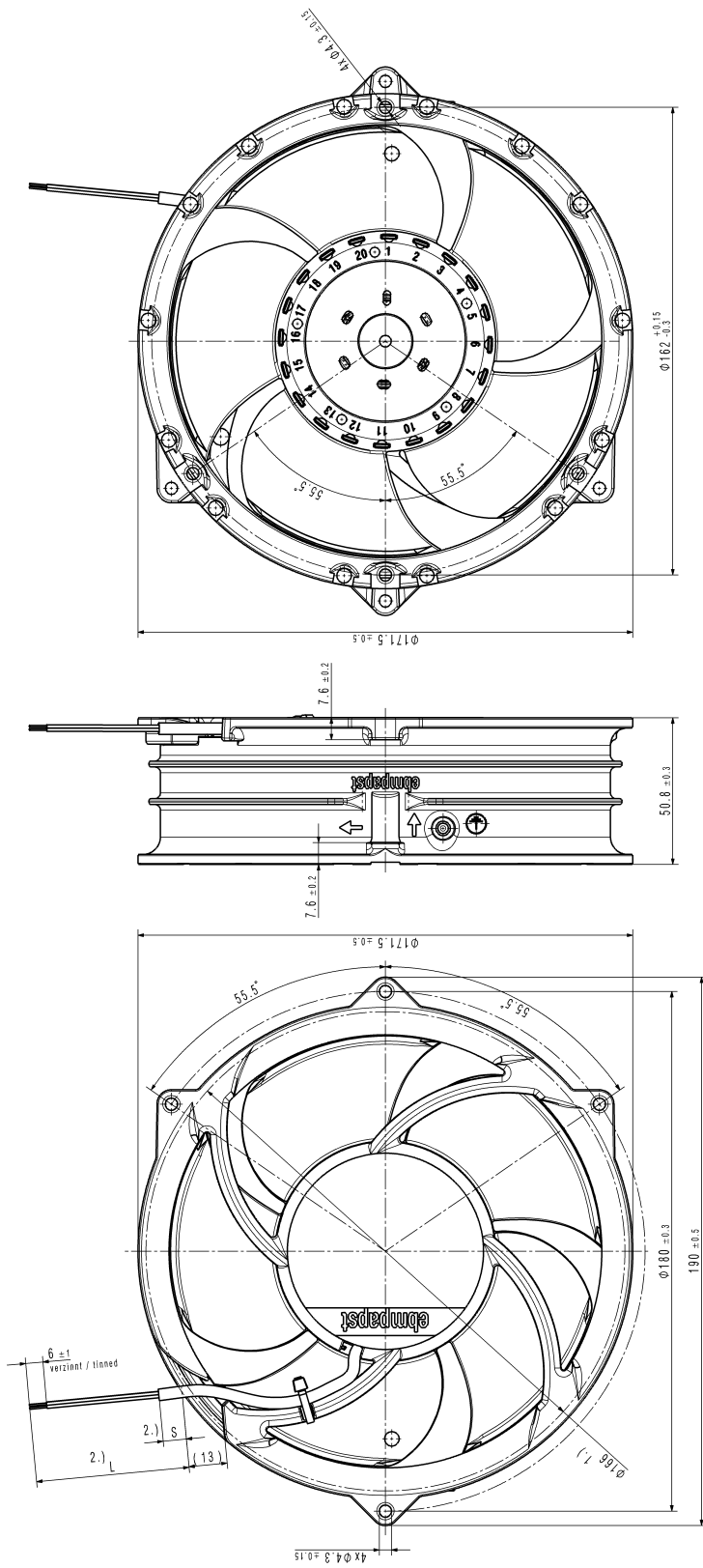
5.2 Approval Tests

CE	EC Declaration of Conformity	Yes
EAC	Eurasian Conformity	Yes
UL	Underwriters Laboratories	Yes / UL507, Electric Fans E38324
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	77.500 h	
Life expectancy L15 at TU = 45 °C	83.000 h	
Life expectancy L10 acc. to IPC 9591 at TU = 40 °C	130.000 h	



- 1.) Maße aus Montageausschnitt
- 2.) Anzahl und Länge der Litzen/Schlauch siehe Produktspezifikation
- 3.) Nur wenn in Stückliste enthalten

- Axialspiel der Kugellager mit Feder spielfrei gelagert

- 1.) measures of mounting cut out
- 2.) length an number of wires/tube see product specification
- 3.) only if it is included in bill of material

- ball bearing without clearance by a pre-load spring

SP-Produktname	Best.Nr. / Drawing No.	Best.Nr. / Drawing No.	Best.Nr. / Drawing No.	Best.Nr. / Drawing No.	Best.Nr. / Drawing No.
Hersteller / Hersteller: ebmpapst		Hersteller / Hersteller: ebmpapst		Hersteller / Hersteller: ebmpapst	
Typ / Typ: ...		Typ / Typ: ...		Typ / Typ: ...	
Material / Material: ...		Material / Material: ...		Material / Material: ...	
Zeichnung / Drawing No.: ...		Zeichnung / Drawing No.: ...		Zeichnung / Drawing No.: ...	
Abmessungen / Dimensions: ...		Abmessungen / Dimensions: ...		Abmessungen / Dimensions: ...	
Datum / Date: ...		Datum / Date: ...		Datum / Date: ...	
Zeichner / Designer: ...		Zeichner / Designer: ...		Zeichner / Designer: ...	
Prüfer / Inspector: ...		Prüfer / Inspector: ...		Prüfer / Inspector: ...	
Fertiger / Manufacturer: ...		Fertiger / Manufacturer: ...		Fertiger / Manufacturer: ...	

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