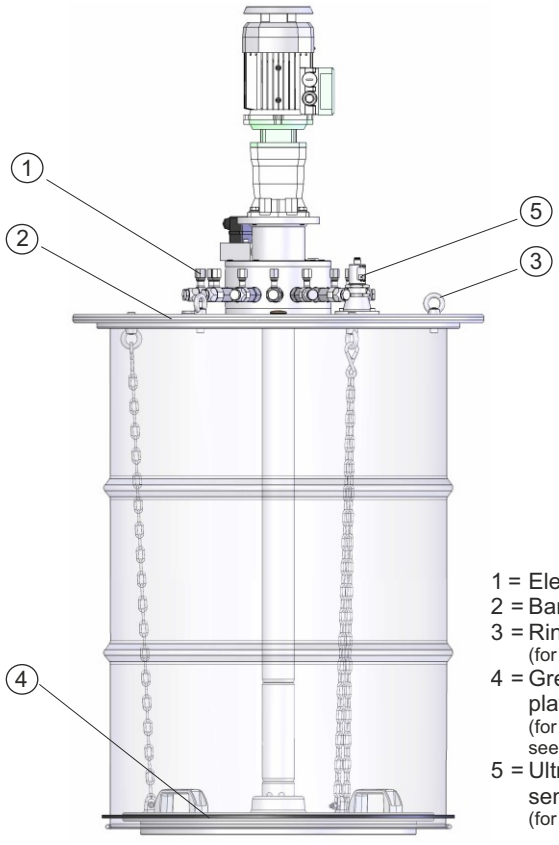
WOERNER
The Experts in Lubrication

Pump for bung-hole

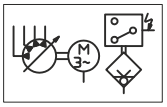
Pump for barrel lid



1 = Elements
2 = Barrel lid
3 = Ring screws
(for 200 l only)
4 = Grease follow-up plate
(for barrel dimesions see 4th page)
5 = Ultrassonic sensor
(for 200 l only)

Pump unit

GMZ-E



Pump used to supply oil and grease from a barrel directly through a lid- or a bung-hole.

Technical data:

Delivery volume per stroke	
Pump element "6":	0,08 cm³/stroke
Number of strokes: [1]	23,9 min^{-1}
Number of pump elements:	1 ... 15
Delivery pressure:	350 bar
Lubricant	
Oil: Viscosity	>180 cP
Grease: Class NLGI	000 ... 2

from class 1 onward follow-up plate required additionally.

Lubricant: The intended lubricant must be suitable for use with centralized lubrication equipment.

Pipe connection:	6, 8 and 10 mm
Temperature range:	-10 ... +40 °C

Lower or higher temperatures by request.

Seal material:	NBR

Electrical data:

Motor:

Voltage	
at 50 Hz D/Y:	220 ... 240/380 ... 415 V
at 60 Hz Y:	440 ... 460 V
Current	
at 50 Hz D/Y:	1,21/0,7 A
at 60 Hz D/Y:	1,07/0,62 A
Rated speed: [1]	1500 min^{-1}
Power rating:	180 W
Protection type:	DIN EN 60529 IP55
Insulation class:	F

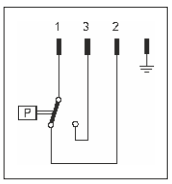
(other motors upon request)

Pressure monitor: (pressure switch)

Switching voltage AC:	max. 250 VAC max. 5 A inductive max. 3 A
Switching voltage DC:	max. 125 VDC max. 0,4 A inductive max. 0,05 A
Plug connector:	DIN EN 175301-803, shape A
Protection type:	DIN EN 60529 IP65

Connection diagram:

Switch position shown represents "barrel empty" (pump casing depressurized)

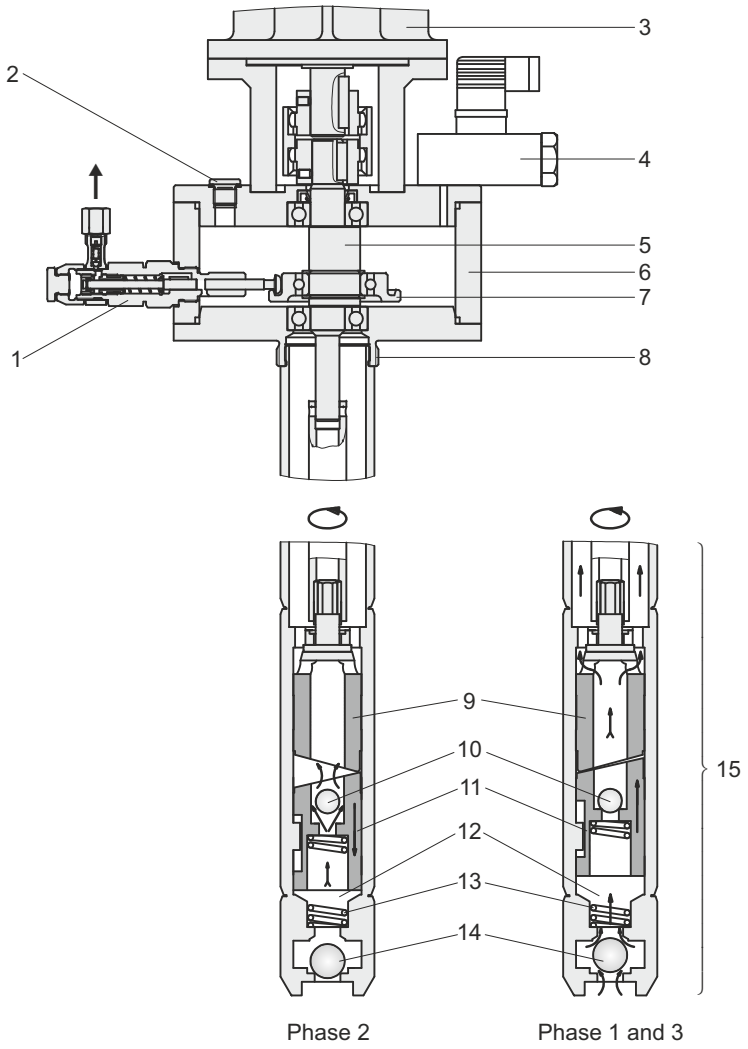


[1] with standard motor and 50 Hz frequency

- Subject to modifications -

EUGEN WOERNER GmbH & Co. KG
Hafenstrasse 2 DE-97877 Wertheim
Tel. +49 9342 803-0 info@woerner.de
Fax +49 9342 803-202 www.woerner.de

Data sheet **P0668.10.18 EN**
Replaces P0668 08.17 EN



Operation of pump:

The barrel pump consists of the following components:

Feed pump (15), pump housing (6), pump elements (1) and drive motor (3). The feed pump (15) is powered by the drive motor (3) via the vertical eccentric shaft (5).

Phase 1
During the suction stroke the delivery piston (11) forced downward by the control piston (9) is pressed upward again by the compression spring (13). The vacuum resulting in the intermediate chamber (12) causes the lubricant to be drawn in via the non-return valve (14).

Phase 2
During the next half revolution of the control piston (9), the delivery piston (11) is forced downward again and the lubricant contained in the intermediate chamber (12) is delivered in upward direction via the non-return valve (10).

Phase 3
Further rotation of the control spool (9) through 180° results in a new suction stroke and the non-return valve (10) closing at the same time enables the spring-loaded delivery piston (11) to force the lubricant above it into the upper pump housing (6).
The pressure monitor (4) signals "barrel empty" when no more lubricant is delivered by the feed pump (15), however there is still lubricant left in the pump housing.

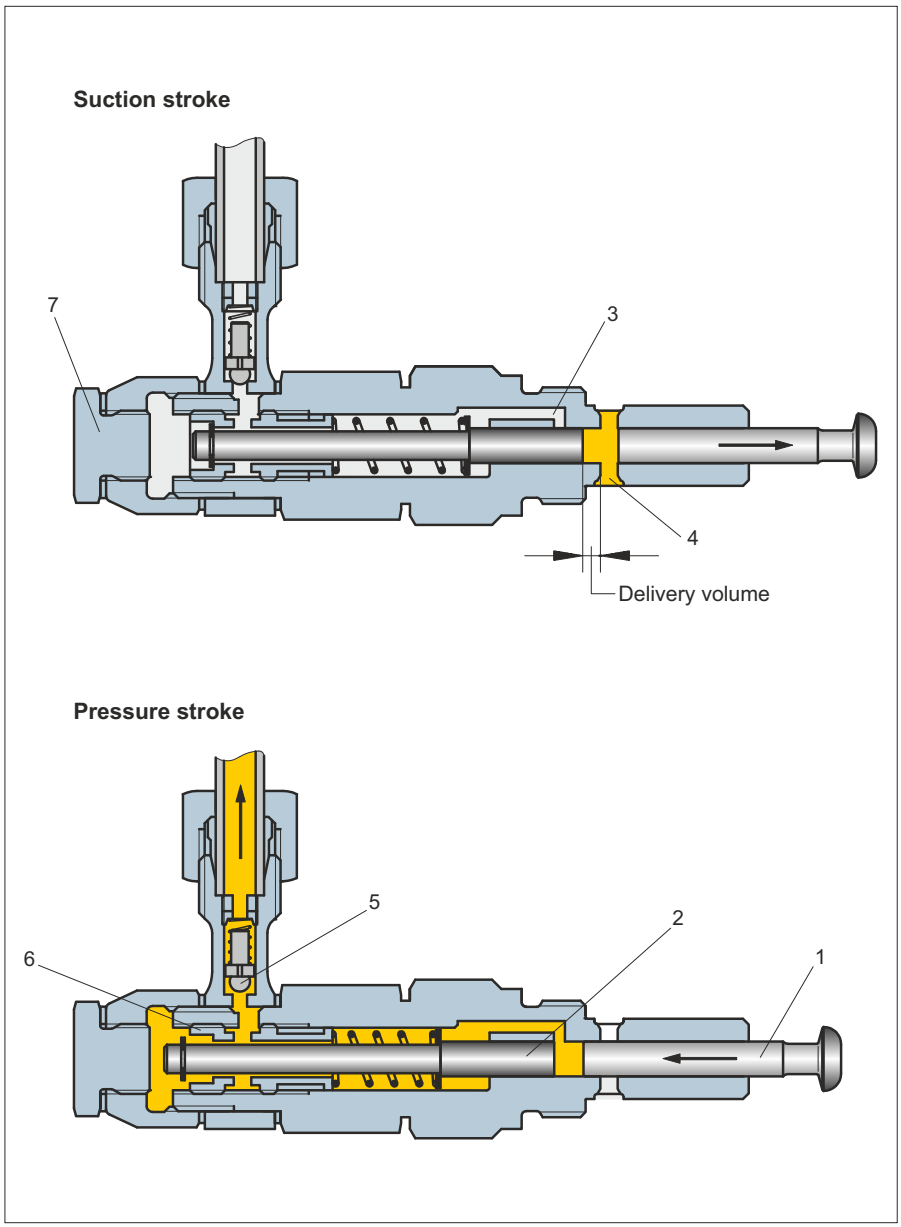
The vertical eccentric shaft (5) drives a pressure ring (7) to which the pump elements (1) are attached. Due to the eccentricity of the pressure ring (7) each delivery piston performs one constant delivery and suction stroke per pump shaft revolution.
The pump elements (1) draw accurately metered quantities of lubricant (dependent on element adjustment) from the lubricant reservoir in the pump housing (6).

1 - Pump element
2 - Vent screw G 1/4
3 - Gear motor
4 - Pressure control
5 - Eccentric shaft
6 - Pump casing
7 - Pressure ring
8 - Threaded connection G2
9 - Control piston
10 - Check valve
11 - Delivery piston
12 - Intermediate chamber
13 - Pressure spring
14 - Check valve
15 - Delivery pump

- Subject to modifications -

EUGEN WOERNER GmbH & Co. KG
Hafenstrasse 2 DE-97877 Wertheim
Tel. +49 9342 803-0 info@woerner.de
Fax +49 9342 803-202 www.woerner.de

- Subject to modifications -



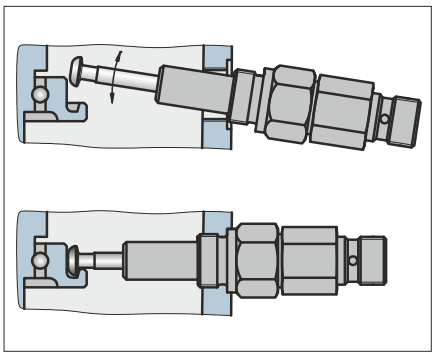
Pump elements mode of operation:

Suction stroke is accomplished by delivery piston **1** and control piston **2**. In this process, delivery piston **1** is actuated by the eccentric shaft, whilst the spring actuates control piston **2**. The control piston closes pressure hole **3** and is kept in a certain position as determined by the preset delivery volume. The delivery piston moves on, causing a vacuum to be built up in the proportioning space. When the delivery piston has opened suction hole **4**, lubricant starts to be sucked from the reservoir.

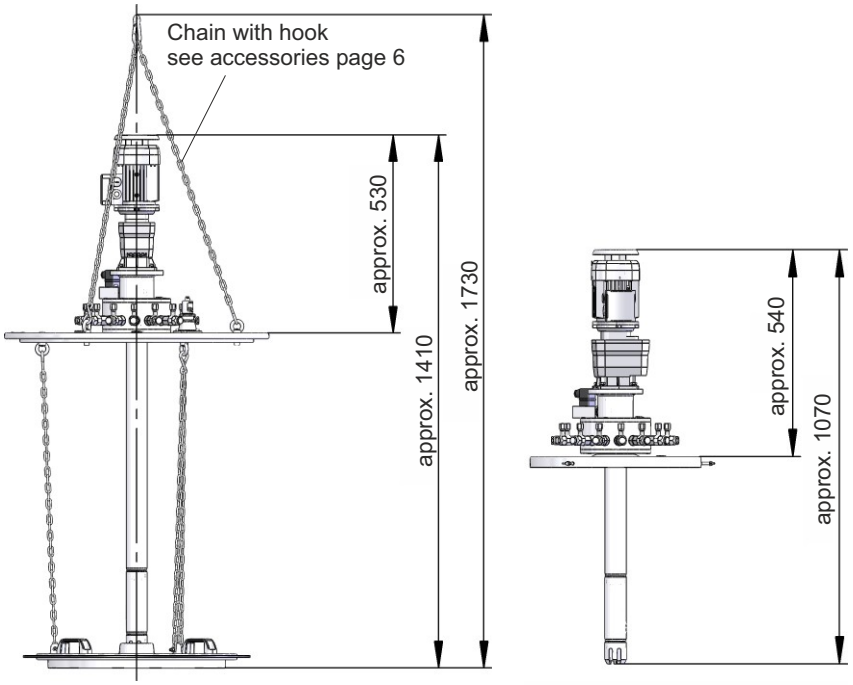
In case of **pressure stroke**, delivery piston **1** moves to the left. In this motion, suction hole **4** is closed and control piston **2** displaced by virtue of the lubricant being available in between the delivery and control pistons until it releases pressure hole **3** and the lubricant is delivered through the delivery piston to the outlet. The pump elements are delivered with maximum delivery volume, i.e. they are set to full stroke.
The **delivery volume** can be reduced to minimum of appr. 25% of the rated one. After having removed lock screw **7**, the stroke is to be changed by means of the enclosed spanner through adjustment nipple **6**. When turning the nippe to the right, delivery volume will decrease. At the adjustment nipple, there is a hexagon against which a spring loaded piston is pressing radially. Thus, any independent change of the delivery volume will be prevented. At the same time, the latching serves as a measure for setting the delivery volume. Six latches equal one rotation of the adjustment nipple and a reduction of the nominal delivery volume by appr. 33%. Precise setting to a specific delivery volume per stroke must ensue, based on volumetric measurements.

PMF pump elements assembly:

When fitting another pump element into the reciprocating pump, please proceed as shown in the sketch beside: With the delivery piston being approximately pulled out half, insert the pump element diagonally upward into the casing's reception hole. Insertion and operation will be easier when the hole that serves to accommodate the delivery piston is filled with grease. Do not put the pump element into horizontal position and screw in, unless the delivery piston's head touches the pressure ring and ratches into the latter's groove.
When demounting, pull the pump element cautiously out of the casing such that the delivery piston will remain within the pump element.



EUGEN WOERNER GmbH & Co. KG
Hafenstrasse 2 DE-97877 Wertheim
Tel. +49 9342 803-0 info@woerner.de
Fax +49 9342 803-202 www.woerner.de



① Pump unit for 200 l barrel

② Pump unit for 50 l barrel

Operating instructions:

Direction of motor rotation:
When connecting the motor make sure the drive shaft rotates counter-clockwise when viewing the fan.

The gear is maintenance-free filled with synthetic oil for its whole working life.

Venting:
Before putting the pump into operation remove the plug (2) to vent the pump housing.

The lubricant supply lines must be clean and allow free passage. Do not connect the lines to the lubrication point before the lubricant flows out bubble-free.

Leak testing:
Inspect all supply line connections for leaks.

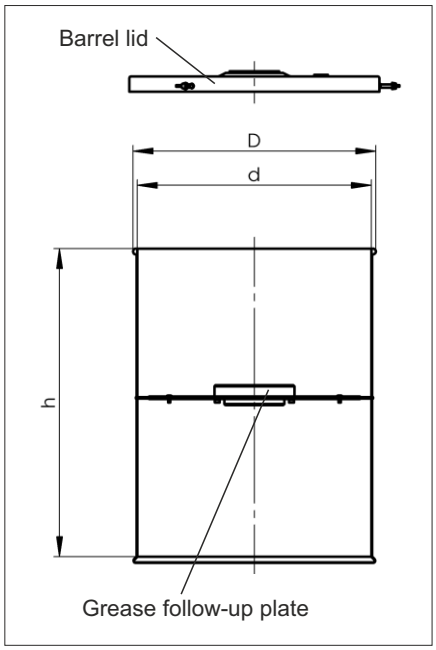
No lubricant return lines may be connected to the pump unit.

Follow-up plate:
Caution: When using the follow-up plate, do not install it in barrels having indentations!

After installation press the rubber seal against the barrel wall.

Version	Barrel dimensions			Barrel
	min. barrel inner height h	Barrel inner diameter d	Barrel outer diameter D	Nominal filling capacity
① 200 l barrel	850 mm	550 ... 570 mm	610 mm	200 l acc. to DIN 6644
② 50 l barrel	540 mm [1)]	300 ... 410 mm [1)]	300 ... 415 mm [1)]	50 l

[1)] see order designation page 6



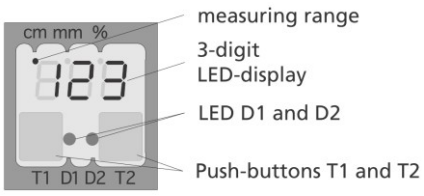
- Subject to modifications -

EUGEN WOERNER GmbH & Co. KG
Hafenstrasse 2 DE-97877 Wertheim
Tel. +49 9342 803-0 info@woerner.de
Fax +49 9342 803-202 www.woerner.de

Level monitoring (ultrasonic sensor)

Technical data:

Operating voltage:	9 V ... 30 VDC reverse polarity protected
No-load supply current:	≤80 mA
Class of protection:	DIN EN 60529 IP67
Type of connection:	M12x1, 5-pin Circular connector
Transducer frequency:	200 kHz



Ultrasonic with one analogue output (A)

Product description:

The ultrasonic sensor with one analogue output measurers the distance to an object, within the detection zone contactless. A signal proportional to distance is created according to the adjusted window margings of the analogue characteristic curve. The sensor automatically detects the load put to the analogue output and switches to current output or voltage output respectively. Light emitting diodes (three-colour LED`s) indicate all operation conditions. The ultrasonic sensor indicate a blind zone, in which the distance cannot be measured.

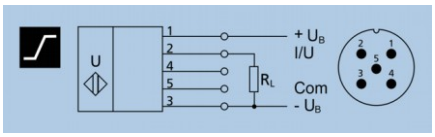
Technical data:

Current output:	4 ... 20 mA
	R_L ≤100 Ω at 9 V ≤U_B ≤20 V
	R_L ≤500 Ω at U_B ≥20 V
Voltage output:	0 ... 10 V
	R_L ≥100 kΩ at U_B ≥15 V
	short-circuit-proof

Measuring range from bottom edge of drum lid:

200 mm	≙ 20 mA
810 mm	≙ 4 mA

Connection diagram:



Ultrasonic with two switched outputs (2)

Product description:

The ultrasonic sensors with two switched outputs measurers the distance to an objekt, within the detection zone contactless. Depending on the adjusted detect distance the switched outputs are set. Light emitting diodes (three-colour LED`s) indicate the switching status. The ultrasonic sensor indicate a blind zone, in which the distance cannot be measured.

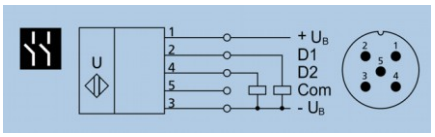
Technical data:

Switched output:	2 x pnp
	U_B -2 V
	I_{max} = 2 x 200 mA
	short-circuit-proof

Measuring range from bottom edge of drum lid:

Preliminary warning	750 mm
Min.	810 mm

Connection diagram:



- Subject to modifications -

Order designation:

Version	Barrel lid	Grease follow-up plate	Element "6" with pipe connection			Motor	Level monitoring barrel [1]
			ø6 Number	ø8 Number	ø10 Number		
(1) for barrel 200 l with pressure monitoring [2] (1A) for barrel 200 l without pressure monitoring	with (D1)	with (F) / without (0)	0 ... 15	0 ... 15	0 ... 15	(A) Standard motor (technical data see 1th page)	(A) Ultrasonic sensor analogue output (2) Ultrasonic sensor 2 switched outputs / without (0)
	without (0)	without (0)					
(2) for barrel 50 l	with [3] for barrel outer øD: ø365 ... 415 mm (D2); ø312 ... 342 mm (D3); ø240 ... 310 mm (D4); without (0)	with for barrel inner ød: ø300 ... 352 mm (F1); ø340 ... 393 mm (F2); ø370 ... 416 mm (F3); without (0)	max. 15 elements possible			(S) Special motor (please state data)	without (0)

Order example:

Pump unit GMZ-E01, version for 200 l barrel, with barrel cover, without transfer plate, 8 pcs. of element 6 with pipe connector ø6, standard motor and without a niveau control.

Order designation:

GMZ-E01 / 1 / D1 / 0 / 8 / 0 / 0 / A / 0

Medium recirculation optional

[1] Only for 200 l barrel and version with barrel lid

[2] Pressure monitoring is not used as level monitoring!

[3] For barrels h <540 mm:

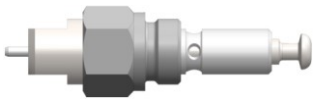
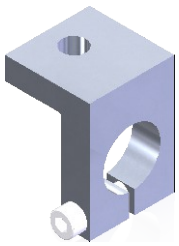
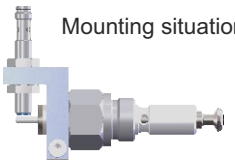
Special adapter Order-no. **111.459-65**

- Subject to modifications -

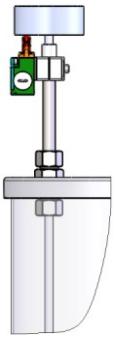
EUGEN WOERNER GmbH & Co. KG
Hafenstrasse 2 DE-97877 Wertheim
Tel. +49 9342 803-0 info@woerner.de
Fax +49 9342 803-202 www.woerner.de

Accessories (please order separately)

Function indication:

Order-no.	Depiction	Mounting place	Use
752.528-69		Instead of a pump element	Optical operating control Function see data sheet P0809
Bracket for proximity switch **752.528-73** M8x1 **752.528-74** M12x1	 Mounting situation 	To the function indication	Electrical operating control

Level monitoring:

Order-no.	Description	Mounting place	Use
752.361-61 for barrel 200 l	 only with grease follow-up plate	Barrel lid	optical
752.361-65 for barrel 200 l **752.361-72** for barrel 50 l	 only with grease follow-up plate	Barrel lid	optical / electrical with position switch

Chain with hook:

Order-no.	Depiction	Mounting place	Use
590.001-65	see figure page 4	Barrel lid	for operation with crane

Technical documents also valid for this product:

B0668 EN Operating instructions GMZ-E
E0668 EN Spare parts GMZ-E

- Subject to modifications -

EUGEN WOERNER GmbH & Co. KG
Hafenstrasse 2 DE-97877 Wertheim
Tel. +49 9342 803-0 info@woerner.de
Fax +49 9342 803-202 www.woerner.de

Important information about this data sheet

Reproduction, also in extracts, only permitted with the approval of the firm of EUGEN WOERNER GmbH & Co. KG.

All the information in this data sheet has been examined for correctness with great care. Nevertheless, WOERNER cannot assume any liability for losses or damage resulting directly or indirectly from the application of the information contained in this data sheet.

All products from WOERNER may only be used as intended and corresponding to the information in this data sheet.
For products supplied with operating instructions, the additional directives and information contained in them are to be complied with.

Materials deviating from those mentioned in this data sheet and the technical documents which further apply may only be poured into and processed in the appliances and systems manufactured and supplied by WOERNER by following agreement with and written approval by WOERNER.
The safety and danger information stated in the safety data sheets of the substances used must be taken into account at all costs.

Transportation of gases, liquefied gases, gases under pressure, vapours and liquids, the vapour pressure of which is more than 0,5 bar above normal atmospheric pressure (1013 mbar) at the maximum admissible temperature, of easy inflammable or explosive media as well as transportation of foodstuffs is forbidden.

Information on EU Directive 2011/95/EU (RoHS)

In its controls and switching devices, WOERNER only uses materials which fulfil the criteria of EU Directive 2011/95/EU. To the extent that hexavalent chromium has been used as corrosion protection in the parts which we produce ourselves, it has already been replaced by other environmentally tolerable protective measures.

The mechanical devices supplied by WOERNER are not affected by EU Directive 2011/95/EU.

But as WOERNER is conscious of its responsibility towards the environment, we shall also use materials fulfilling the requirements of the Directive for devices not covered by EU Directive 2011/95/EU as soon as they are generally available and their use is technically possible.

- Subject to modifications -

EUGEN WOERNER GmbH & Co. KG
Hafenstrasse 2 DE-97877 Wertheim
Tel. +49 9342 803-0 info@woerner.de
Fax +49 9342 803-202 www.woerner.de