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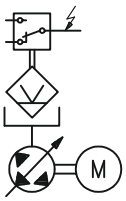
Lubrication Experts since 1922

- Subject to modifications -

Illustration shows example

Pump unit

GMA



Application:

Pump unit in centralized lubrication systems

- ***adjustable delivery volumes***
- ***with level monitoring***
- ***with up to 4 pump elements***
- ***usable for delivery of oil, liquid grease or grease***

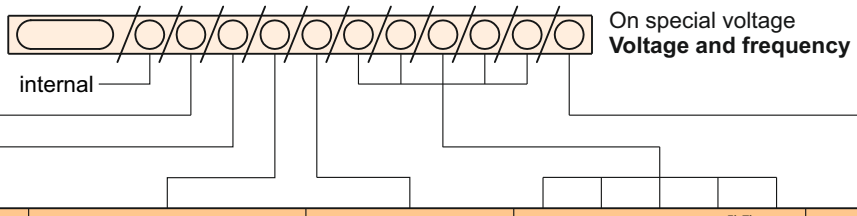
Technical data general:

adm. delivery pressure: max. 250 bar
Number of pump elements: 1 ... 3
Installation at place 1, 3, 5
Number of pump elements: 1 ... 4
Installation at place 1, 2, 4, 5
Delivery capacity per stroke and element
in case of pump element ø6: 0,08 cm³
in case of pump element ø8: 0,15 cm³
Special pump element: 0,22 cm³
(on request)
Temperature range
GMA-B: -20 ... +60 °C
GMA-C: -20 ... +40 °C
In case of low temperatures the grease penetration shall be regarded.
Inserting position: vertically
Material
Housing: Aluminium
Pump element: Steel, galvanized
Gaskets: NBR
Medium: Oil and grease up to NLGI class 2
(Mind the using conditions applicable to the reservoir and level monitoring utility!)
Weight
GMA-B
(without reservoir): approx. 6,5 kg
GMA-C
(without motor,
without reservoir): approx. 4,8 kg

EUGEN WOERNER GmbH & Co. KG
Hafenstraße 2 DE-97877 Wertheim
☎ +49 9342 803-0
info@woerner.de www.woerner.de

Data sheet **P0301.06.24 EN**
Replaces P0301.02.24 EN

Order designation:



Drive see page 3 + 4	**Reservoir** see page 5 - 7	**Level monitoring** see page 8 - 10	**Filling connection** see page 10	**Pump element** [5) 7)] **at position** **1 | 2 | 3 | 4 | 5** see page 2	**Speed at the pump shaft** see page 3
Direct current motor 24 V **GMA-B02** Three-phase current motor 400 V / 50 Hz or special voltage **GMA-C02**	Plastic reservoir 2 l / 4 l / 6 l Standard 2L 4L 6L [1)] Outdoor [1)] 2LA 4LA 6LA Polyester 5 l 5 10 l 10 30 l [1)] 30 stainless steel 4 l 4V 7 l 7V 25 l [1)] 25V Adapter KX [1)] KX	for oil: Ultrasonic [1)] A / D Level switch KFA [3)] K for liquid grease: Ultrasonic [1)] AV / DV Level switch KFA [3)] KV for grease: min. monitoring C1 / C2 [1)] Ultrasonic [1) 2)] AK / DK Level switch KFA [2) 3)] KK without for oil: 0 for (liquid) grease: 0R Min. 1 Min. + pre-warning 2 without 0	C [6)] D F [6)] 0	Pump element **6** with pipe connection ø6 66 | ø8 68 | ø10 610 Pump element **8** with pipe connection ø6 86 | ø8 88 | ø10 810 without pump element, place of installation closed 0 without pump element, place of installation not closed (open treaded bore) L	**GMA-B:** [4)] no sign **GMA-C:** 1 min^{-1} 1 4,5 min^{-1} 4,5 25 min^{-1} 25 25 min^{-1} HAN 6E 25E

[1)] Not for GMA-B02.
[2)] Only with reservoir 2LA, 4LA, 6LA, 5, 10 and 30.
[3)] Also available in stainless steel on request.
see data sheet P0520

[4)] Speed of GMA-B motor see technical data.
[5)] Pump element with larger delivery volume on request:
0,22 cm³/stroke
Order no. **110.990-65**

[6)] Not suitable for oil.
[7)] When attaching pump elements at the locations 2 and 4, never mount another pump element at location 3, then.

Order example:
Pump unit GMA-C02 with reservoir 2 l and level monitoring with level switch for oil, filling connection "D", pump element 8 with pipe connection ø8 at position 1 and pump element 6 with pipe connection ø8 at position 5, motor speed 4,5.

Order designation: GMA-C02 / 00 / 2L / K / D / 88 / 0 / 0 / 0 / 68 / 4,5

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Hafenstraße 2 DE-97877 Wertheim
☎ +49 9342 803-0
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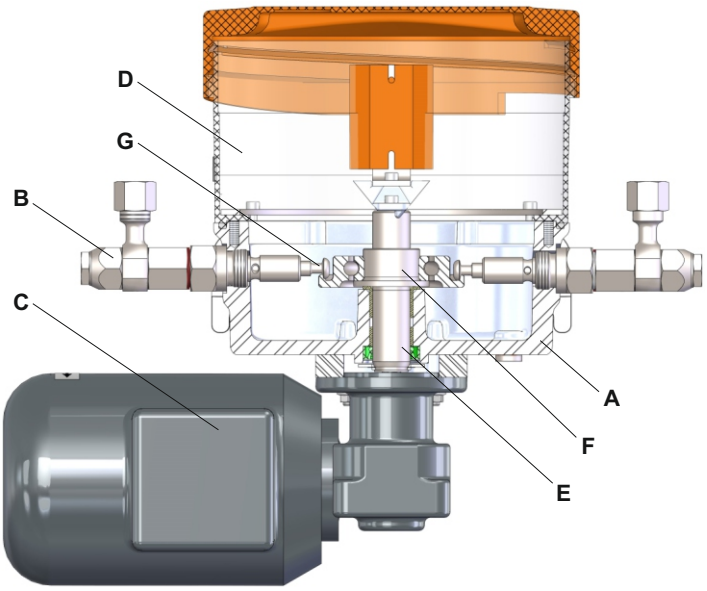
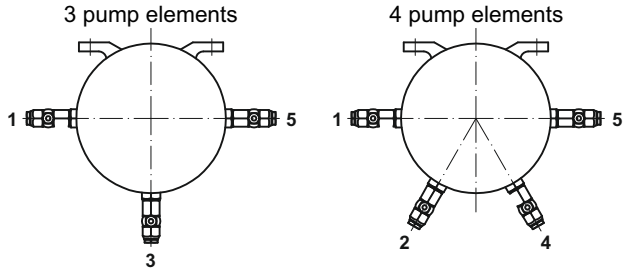




Functional description:

Actuation:
The pump unit **GMA** is actuated by a three-phase A.C. motor or a D.C. motor **(C)**, which is flanged to the pump casing **(A)** from the bottom.

Pump:
At the radial piston pump there are up to four pump elements **(B)** arranged radially around an eccentric **(F)**, which is surrounded by a rolling bearing. On rotation of the actuator or the eccentric shaft **(E)** respectively the pump piston **(G)** of each pump element designs a suction or a delivery stroke per revolution and thus delivers the lubricant out of the reservoir **(D)** to the lubricating points. The delivery volume can be adjusted at each pump element individually. Depending on the operation (lubricant, lubricant supply etc.) the pump unit can be equipped with different pump elements, reservoir and monitoring units.

Operating instructions:
For the lubrication pumps only clean oil or grease from original containers may be used. If, before putting into operation, the lubricant is not filled through the filling nipple, the pump must be filled up to the vane with gear oil during initial filling to ensure good venting. The lubricant lines must be clean and free from obstructions. Do not connect them to the lubrication points before the lubricant emerging from the lines is free from air bubbles. Check all connections of the pressure lines for leakages.
Lubricant: The intended lubricant must be suitable for use with centralized lubrication equipment.

Mode of operation and assembly of pump elements see data sheets ⇨ P0386 ⇨ and P0912.

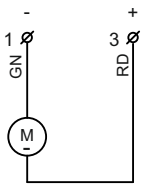
Drive:

GMA-B
Electrical data (motor):

Connecting voltage: 24 VDC
Current: max. 2,5 A
Number of rotations (depending on load)
Connecting voltage 24 V
when connected to 1 and 3: appr. 27 min^{-1}

(Depending on type, the direct current gear motor may be operated in pulse mode only.)

Circuit diagram:



GMA-C
Electrical data (motor):

Connecting voltage: 230/400 V (Δ/人)
Mains frequency: 50 Hz
Protection class: DIN EN 60529 IP55
Insulation class: F
Special voltage upon request

Rotations at the pump shaft		Rated power	Rated current 230/400 V	Weight motor kg
1	n = 1 min^{-1}	45 W	0,38/0,22 A	approx. 5,5
4,5	n = 4,5 min^{-1}			
25 25E	n = 25 min^{-1}	90 W	0,74/0,43 A	approx. 4,5

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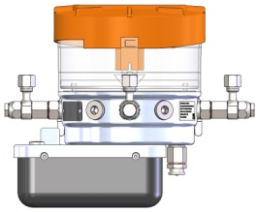
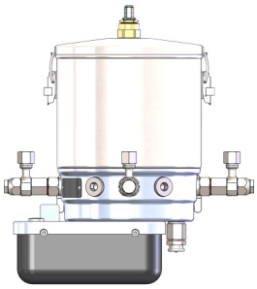
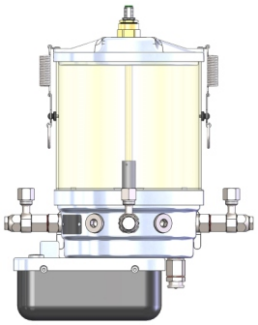
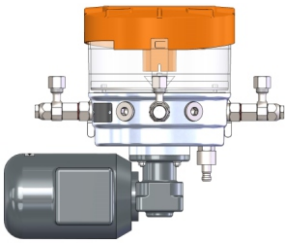
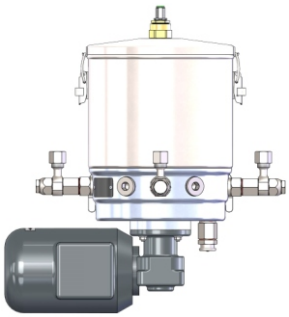
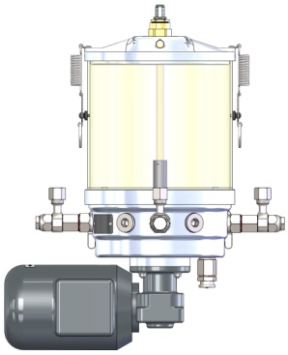
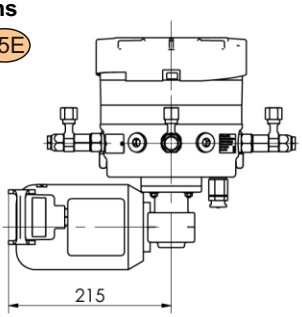
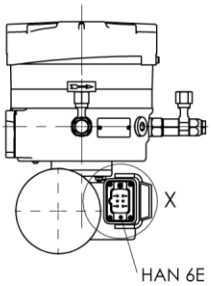
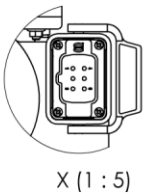
Reservoir size / Reservoir	2 or 4 l translucent	4 or 7 l stainless steel	5 or 10 l Polyester
Pump unit **GMA-B** Drive by means of 24 V direct current motor			
Reservoir size / Reservoir	**2, 4 or 6 l translucent**	**4, 7 or 25 l stainless steel**	**5, 10 or 30 l Polyester**
Pump unit **GMA-C** Drive by means of three-phase current motor			
electr. level monitoring (optional)	for grease NLGI class 1 and 2 (intermittently signal) for oil and liquid grease (float and ultrasonic sensor)	for grease NLGI class 1 and 2 (intermittently signal) for oil and liquid grease (float and ultrasonic sensor)	for grease NLGI class 1 and 2 (static signal) for oil and liquid grease (float and ultrasonic sensor)

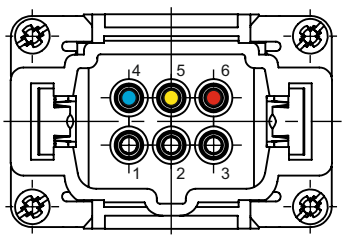
Motor deviations

for HAN 6E (25E)





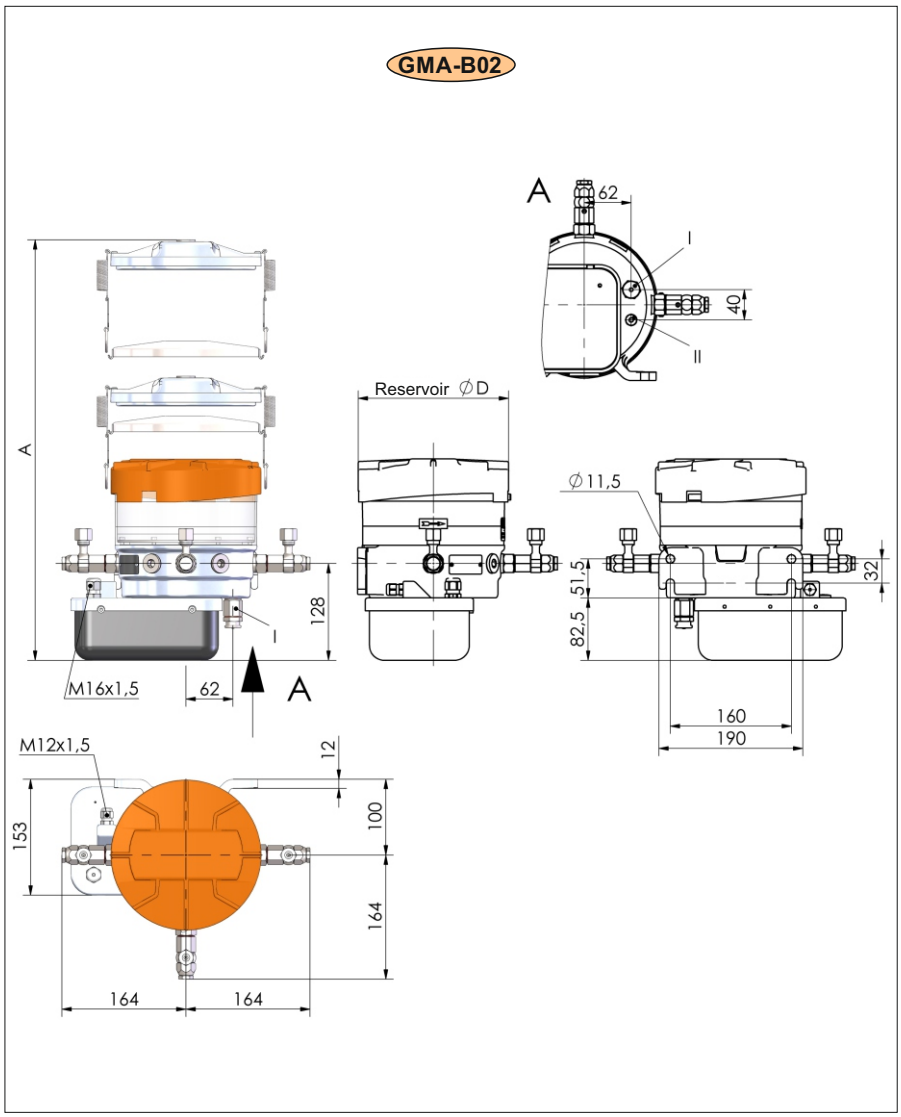




Male series: HAN 6E
Contact arrangement view connection side
Pin assignment of the pin contacts:

			1
			2
			3
L2 =	blue	=	4
L1 =	yellow	=	5
L3 =	red	=	6
PE		=	⏚

- Subject to modifications -



Type	A mm	øD
GMA-B/2L	266	198,5
GMA-B/4V	323	193
GMA-B/4L	342	198,5
GMA-B/7V	422	193
GMA-B/5	376	199
GMA-B/10	556	199

Dimensions and reservoir versions:

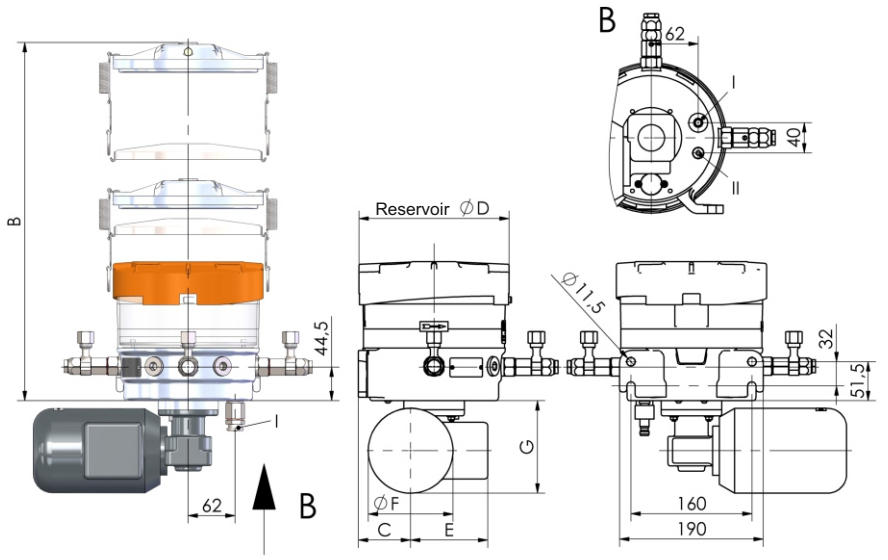
Reservoirs "2L" and "4L" (2L) (4L)
incl. screw cap with snap-on function
Materials
Reservoir: Polypropylene translucent
Cover: Polyamide
Weight without monitoring
"2L": 0,6 kg
Reservoir capacity: 2 l
"4L": 0,7 kg
Reservoir capacity: 4 l
Filling level visually visible!

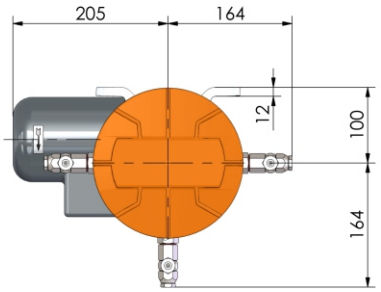
Reservoirs "5" and "10" (5) (10)
Materials
Reservoir: Polyester/aluminium
Cover: Aluminium
Follow-up piston (optional): Aluminium
Weight without monitoring
"5": 1,5 kg
Reservoir capacity: 5 l
"10": 1,95 kg
Reservoir capacity: 10 l
Weight follow-up piston
without monitoring
for reservoir 5 and 10: 0,8 kg
Filling level visually visible!
If a follower piston is used, the usable volume is reduced at:
"5" and "10" by approx. 2,5 l

Reservoirs "4V" and "7V" (4V) (7V)
Materials
Reservoir: stainless steel
Cover: stainless steel
"4V": 1,5 kg
Reservoir capacity: 4 l
"7V": 2,5 kg

(KX) ⇨ see data sheet P0915

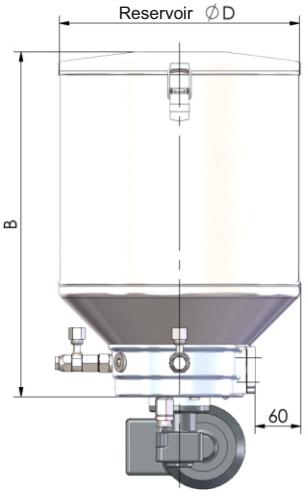
GMA-C02

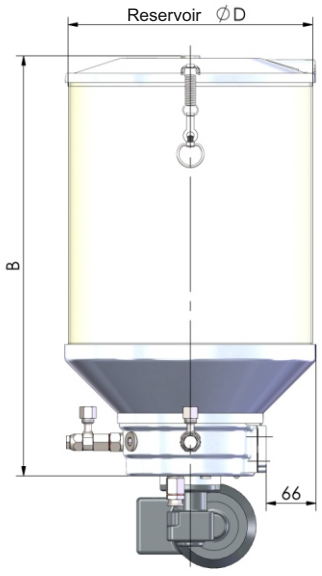




Type	B mm	øD
GMA-C/2L	184	198,5
GMA-C/4V	241	193
GMA-C/4L	260	198,5
GMA-C/7V	340	193
GMA-C/6L	336,5	198,5
GMA-C/25V	456	317
GMA-C/5	293	199
GMA-C/10	473	199
GMA-C/30	555	323

Rotations at the pump shaft	1 / 4,5	25
C mm	79	69
D mm	248	205
E mm	108	102
F mm	125	112
G mm	145	122





Dimensions and reservoir versions:

Reservoirs "2L", "4L", "6L" (2L) (4L) (6L)
incl. screw cap with snap-on function
Materials
Reservoir: Polypropylene translucent
Cover: Polyamide
Weight without monitoring
"2L": 0,6 kg
Reservoir capacity: 2 l
"4L": 0,7 kg
Reservoir capacity: 4 l
"6L": 0,8 kg
Reservoir capacity: 4 l
Filling level visually visible!

Reservoirs "5", "10", "30" (5) (10) (30)
Materials
Reservoir: Polyester/aluminium
Cover: Aluminium
Follow-up piston (optional): Aluminium
Weight without monitoring
"5": 1,5 kg
Reservoir capacity: 5 l
"10": 1,95 kg
Reservoir capacity: 10 l
"30": 4 kg
Reservoir capacity: 30 l
Weight follow-up piston without monitoring
for reservoir 5 and 10: 0,8 kg
for reservoir 30: 2,7 kg
Filling level visually visible!
If a follower piston is used, the usable volume is reduced at:
"5" and "10" by approx. 2,5 l
"30" by approx. 6 l

Reservoirs "4V", "7V", "25V" (4V) (7V) (25V)
Materials
Reservoir: stainless steel
Cover: stainless steel
"4V": 1,5 kg
Reservoir capacity: 4 l
"7V": 2,5 kg
Reservoir capacity: 7 l
"25V": 4,6 kg
Reservoir capacity: 25 l

(KX) ⇨ see data sheet P0915

Remark on the dimensional drawings:

I = Filling connection
(Connection thread G 3/8)
II = Return connection G 1/8

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Hafenstraße 2 DE-97877 Wertheim
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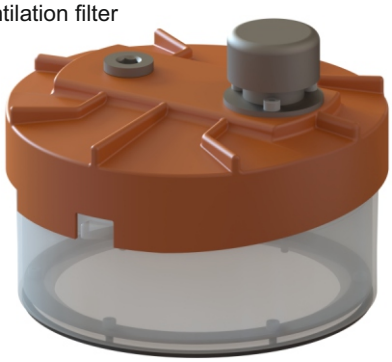
For oil
including filler and ventilation filter
with seal between
cover and reservoir



For liquid grease and grease
with wiper tube

For grease
with grease follower plate

Illustration shows examples

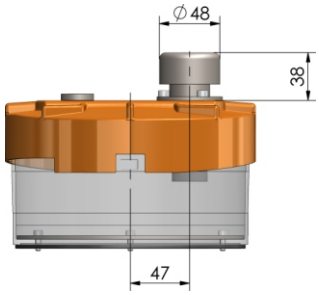
Reservoir versions:

Outdoor versions 2LA 4LA 6LA
for harsh and contaminated environments
Reservoirs "2LA", "4LA", "6LA"

only for GMA-C

Materials and dimensions
⇨ see reservoirs "2L", "4L" and "6L"

Deviating dimensions
for oil version



Weight without monitoring
for oil including filler and ventilation filter
for liquid grease and grease
with wiper tube

"2LA":	2LA	0,8 kg
"4LA":	4LA	0,9 kg
"6LA":	6LA	1,0 kg

for grease
⇨ see reservoirs "2L", "4L" and "6L"

Weight grease follower plate
without monitoring 1,6 kg
Filling level visually visible!

If a follower piston is used, the usable volume is reduced by approx. 1,1 l.

- Subject to modifications -

Level monitoring:

Level monitoring with ultrasonic sensor:

Distance measurement of the level by reflection of the medium surface enables longer switching distances than with level monitoring with KFA.

When checking the level of grease, the use of a follower piston is strongly recommended.

For more information ⇨ see P0920.

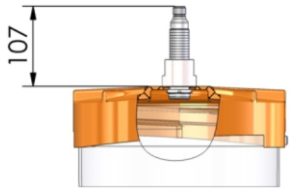


Illustration shows example

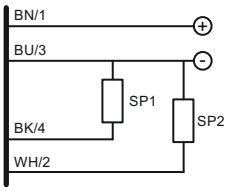
Level control "D" / "DK": Ultrasonic sensor digital with two switching points for oil and grease (D) (DK)

Technical data:

Version digital

Operating voltage:	10 ... 30 VDC
Output type:	NC
Output current:	max. 100 mA
Housing material:	PBT / AISI 316L (DIN 1.4404)
Weight:	100 g
SP1:	Reservoir empty
SP2:	Reservoir at approx 25% residual volume

Circuit diagram:



Level control "A" / "AK": Ultrasonic sensor analog for oil and grease (A) (AK)

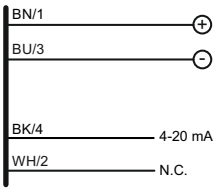
For version with control, 3 switching points are freely selectable.

Technical data:

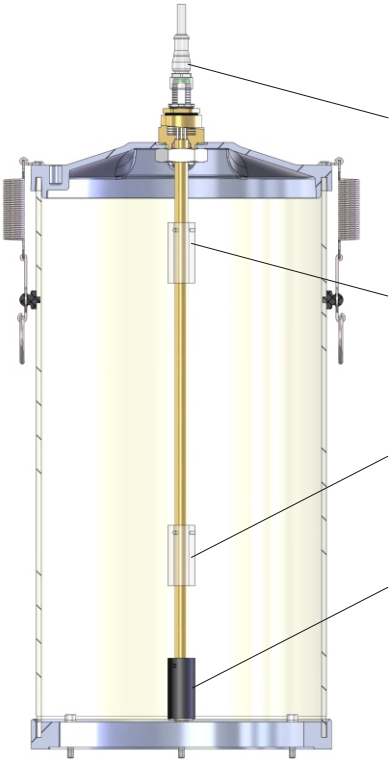
Version analog

Operating voltage:	10 ... 30 VDC
Output type:	4 ... 20 mA
Output current:	–
Housing material:	PBT / AISI 316L (DIN 1.4404)
Weight:	100 g

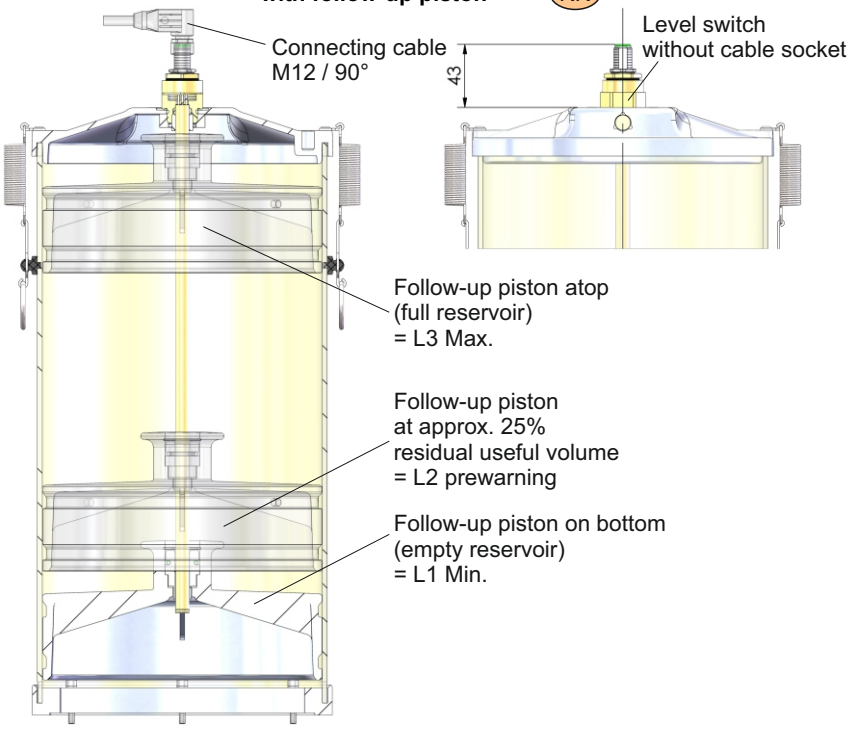
Circuit diagram:



Level control KFA-A without follow-up piston (K) (KV)



Level control KFA-A with follow-up piston (KK)



Level monitoring with level switch KFA: (K) (KV) (KK)

The level monitoring system with level switch KFA offers up to three switching points depending on the reservoir.
When using with grease, a follower piston must be used.

Electrical data:

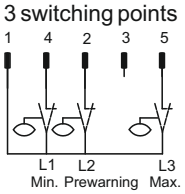
Switching capacity:	max. 30 W
Switching voltage:	max. 30 VDC
Switching current:	max. 0,5 A
For inductive an capacitive loads, suppressor circuits shall be provided for. (Diode, RC element, varistor)	
Protection class:	DIN EN 60529 IP65
Connection type:	Male M12x1, 5-pin
Weight:	0,15 ... 0,26 kg

Circuit diagrams:

Reservoir size:

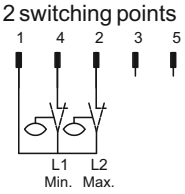
(4L) (4LA) (6L) (6LA) (5) (10) (30) (4V) (7V) (25V)

4 l, 5 l, 6 l, 7 l,
10 l, 25 l, 30 l
3 switching points



(2L) (2LA)

2 l
2 switching points



⇨ see data sheet P0496

Also available on request with KFA-V completely stainless steel.
⇨ see data sheet P0520

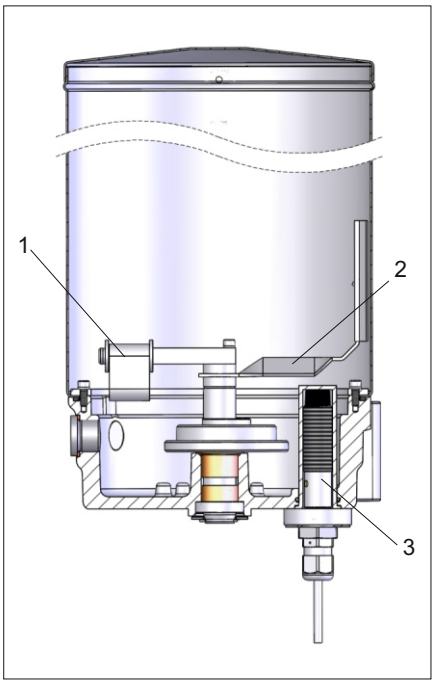
Remark on version "K" and "KV":

The maximum filling speed must not be exceeded.
⇨ see operating instruction B0301

- Subject to modifications -

EUGEN WOERNER GmbH & Co. KG
Hafenstraße 2 DE-97877 Wertheim
☎ +49 9342 803-0
info@woerner.de www.woerner.de

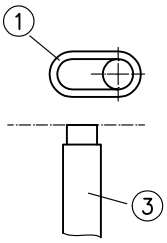
Grease-level monitoring via proximity switch C1 C2



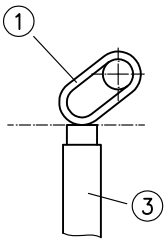
Remark on functional principle:

1 Actuating flap
2 Agitator blade
3 Proximity switch

The grease inside the reservoir causes to lift up the actuating flap (1) upon rotation of the pump driving shaft. No signal will be given.



In case of an empty reservoir and a rotating pump driving shaft the actuating flap (1) will intermittently attenuate the proximity switch (3).



In case of full reservoir, the actuating flap, depending on grease penetration, may fall during standstill and attenuate the proximity switch (3).
Therefore, when evaluating the proximity switch signal, it should be ensured that the proximity switch signal is evaluated delayed (by approx. 10 s).

Electrical data level monitoring

by proximity switch with cable C1
by proximity switch with male C2

Operating voltage:	10 ... 30 VDC
Switching hysteresis:	≤10%
Switching current:	max. 200 mA
Inherent power consumption:	approx. 7,5 mA
Potential drop:	~0,8 V

The "empty" signal will be intermittently.

The function of monitoring "C" has been tested with mineral oil-based lubricants successfully. In case of special lubricants, suitability needs to be tested.

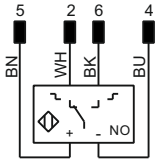
Connection type:

C1	GMA-B:	Terminal stripe
	GMA-C:	Cable 3 m
C2	GMA-B:	(not possible)
	GMA-C:	Male M12x1, 4-pin

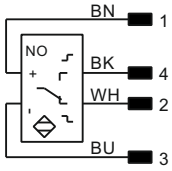
(for matching connecting cable see accessories)

Circuit diagrams: Proximity switch

with cable C1



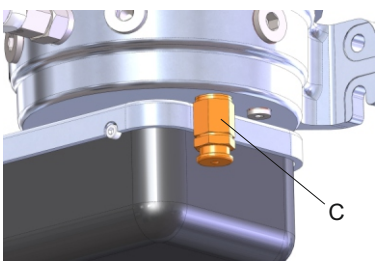
with male C2



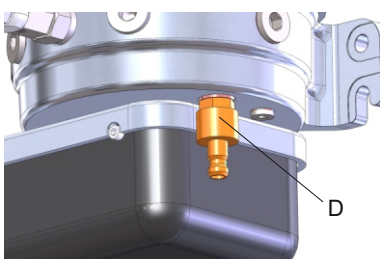
Filling connection:

The filling connection is located under the pump housing.

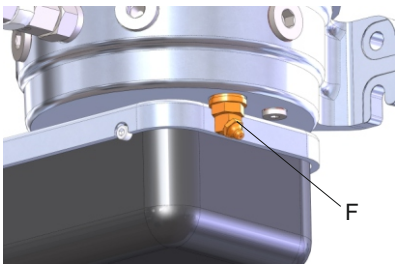
Filling connection "C" [1)] C
Flat lubrication nipple AM16x1,5



Filling connection "D" D
Quick release coupling
G 3/8 - VN-L-8 (DN6)



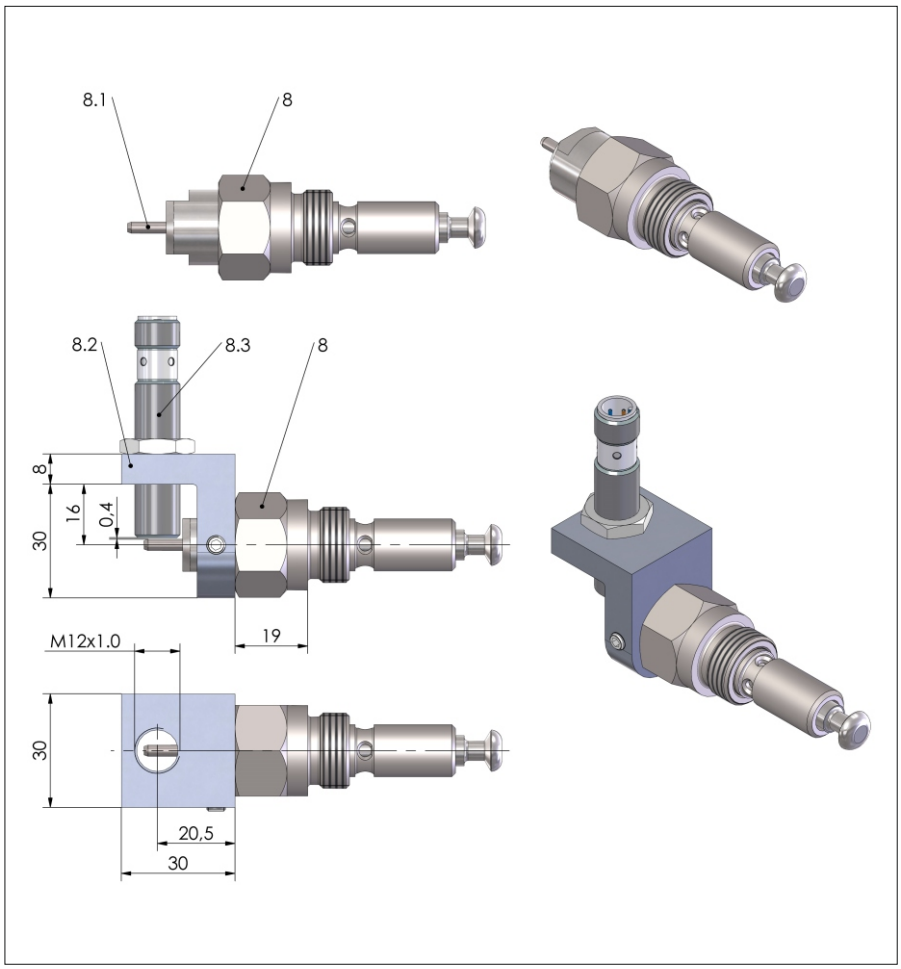
Filling connection "F" [1)] F
Cone lubrication nipple "F" M10x1



[1)] not suitable for oil

EUGEN WOERNER GmbH & Co. KG
Hafenstraße 2 DE-97877 Wertheim
☎ +49 9342 803-0
info@woerner.de www.woerner.de

Accessories: (please order no. specify)

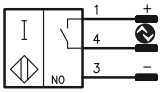


Function monitoring

8	Function monitoring optical	**110.089-61**
8.2	Function monitoring optical, without proximity switch	**110.089-62K**
8.3	Proximity switch *	**913.901-13**

Operating voltage:	10 ... 30 VDC
Residual ripple:	≤10%
Switching function:	NO contact
Switching current:	max. 150 mA
Protection class:	DIN EN 60529 IP67
Connection type:	Male, M12x1, 4-pin

Circuit diagram:



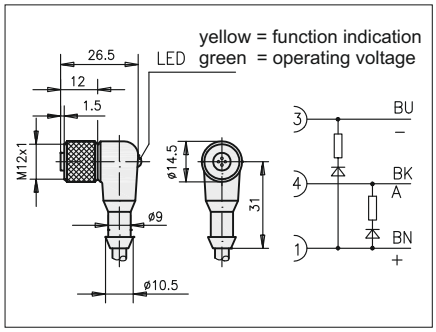
Function:

When the pump rotates, the indicator pin **8.1** of the function monitoring **8** moves in and out.
The proximity switch monitors the indicator pin and outputs a signal once per revolution.

* Special proximity switch on request

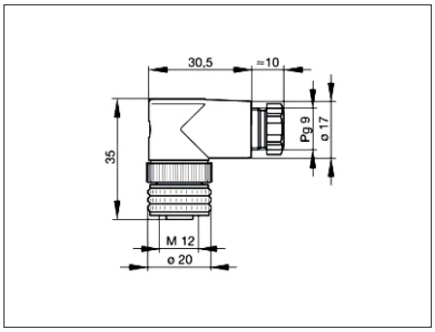
The function monitoring is fitted instead of a pump element.

Connecting cable
for level monitoring "C2"
with LED, with cable 5 m / 90°
Order no. **913.404-19**



Cable cross section:	3x0,34 mm²
Operating voltage:	10 ... 30 VDC
Protection class:	DIN EN 60529 IP68
Ambient temperature:	-40 ... +90 °C

Cable socket
for level monitoring "C2" and "K"
without LED, unmounted / 90° / 5-pin
Order no. **913.404-67**

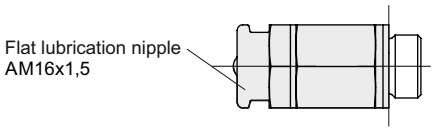
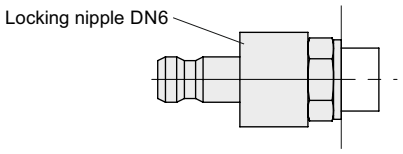
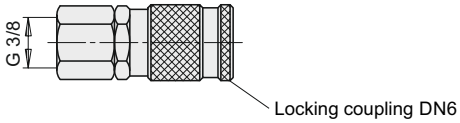
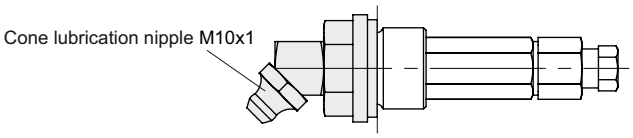


Connection type:	Screws
Connection cross section:	0,75 mm²
Cable diameter:	max. 6 ... 8 mm
Cable gland:	Pg9
Protection class:	DIN EN 60529 IP67
Ambient temperature:	-25 ... +90 °C

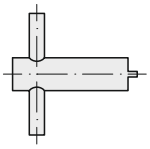
- Subject to modifications -

EUGEN WOERNER GmbH & Co. KG
Hafenstraße 2 DE-97877 Wertheim
☎ +49 9342 803-0
info@woerner.de www.woerner.de

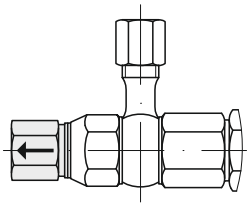
Filling connection reservoir:

Order no.	Depiction	Mounting place
Ⓒ "C" **112.254-65K**		Under the pump housing.
Ⓓ "D" **112.255-65K**		Under the pump housing.
Ⓓ Counterpart for "D" **110.135-65K**		The locking coupling establishes a connection between the locking nipple and the hose.
Ⓕ "F" **112.030-65K**		Under the pump housing.

Adjustment spanner:

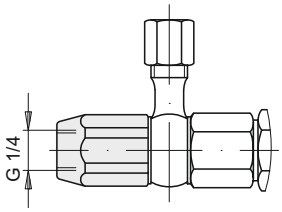
Order no.	Depiction	Use
110.004-65		After removing the screw plug on the pump element, the delivery volume of the pump element can be adjusted with the adjustment spanner (included in delivery = 1 piece per pump)

Pressure control valve:

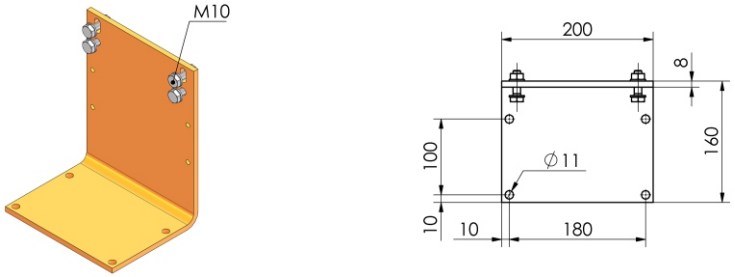
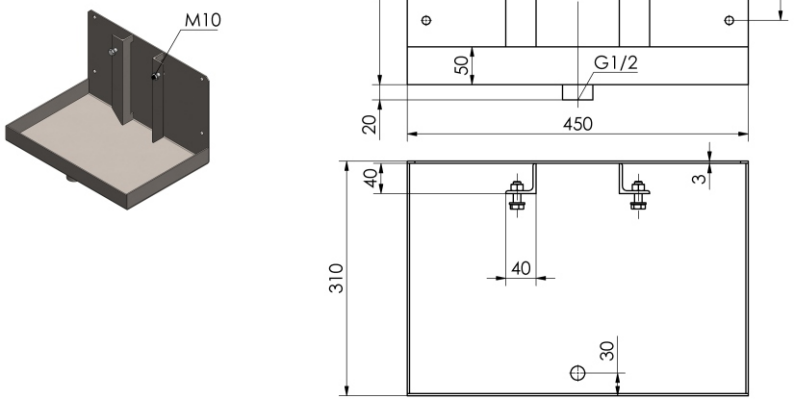
Order no.	Opening pressure	Depiction	Mounting place	Use
110.566-64	70 bar		After removing the screw plug on the pump element the pressure control valve can be screwed in.	To limit max. operating pressure. The opening pressure is fixed and cannot be changed subsequently.
110.569-64	80 bar			
110.565-64	100 bar			
110.564-64	150 bar			
110.563-64	250 bar			
110.568-65	set according to customer specification: from 50 ... 160 bar			
110.562-65	from 160 ... 450 bar			

- Subject to modifications -

Manometer connector:

Order no.	Depiction	Mounting place	Use
110.068-65K		After removal of the locking cap at the pump element, the manometer connector can be screwed in.	To connect a manometer with G 1/4" male thread.

Mounting plates:

Order no.	Depiction	Mounting place
Mounting bracket 112.757-64		On the pump housing and at the mounting holes for floor mounting.
Mounting plate 112.758-67		Mounting plate stainless steel with oil sump for wall mounting.

Technical documents also valid for this product:

B0301 EN Operating instruction GMA-B, -C
E0301 EN Spare parts GMA-B, -C

EUGEN WOERNER GmbH & Co. KG
Hafenstraße 2 DE-97877 Wertheim
☎ +49 9342 803-0
info@woerner.de www.woerner.de

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EUGEN WOERNER GmbH & Co. KG
Hafenstraße 2 DE-97877 Wertheim
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