WOERNER
Lubrication Experts since 1922

Piston pump unit
GMF-F

Technical data sheet

P9003

VERSION 03.2026
EN

IMPORTANT INFORMATION

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ADDITIONAL INSTRUCTIONS

Illustrations

Illustrations in this operating manual are examples to provide a basic understanding of the specified devices.

Dimensions

Unless otherwise stated, dimensions are in millimetres.

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Changes

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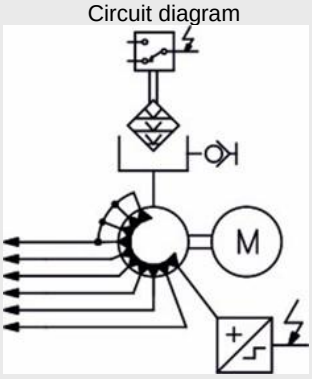
PISTON PUMP UNIT GMF-F

A multi-line piston pump for many applications.

Properties and advantages

- Universally applicable for many applications such as multi-line or progressive systems.
- Can be equipped with various drives. Any direction of rotation.
- Infinitely adjustable pump elements.
- Can be used for oil and grease.
- Versions for areas with a risk of explosion possible.
- WOERNER Easy Lock eccentric with simple and safe installation of the pump elements.
- Wide range of reservoir and monitoring options.
- Simple summary of the outlets.

Circuit diagram



ORDER DESIGNATION

GMF-F [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

internal

Reservoir *	Level monitoring	Filling connec-tor	Drive type 5)	Reduc-tion	Function	Type	Number of pump elements	Outlet
see page 8 ff.	see page 11 ff.	see page 14 ff.	see page 15 ff.	see page 18 ff.	see page 18 ff.	see page 6 ff.	see page 19 ff.	see page 19 ff.
Plastic reservoir 2 l | 4 l | 6 l Standard: 2L, 4L, 6L Outdoor: 2LA, 4LA, 6LA Polyester: 5 l: 5; 10 l: 10; 30 l: 30 stainless steel: 4 l: 4V; 7 l: 7V; 25 l: 25V	**for oil:** Ultrasonic: A, D Level switch KFA 1): K **for fluid grease** Ultrasonic 2): AV, DV Level switch KFA 1) 2): KV **for grease:** 2) Minimum 3): C Ultrasonic 4): AK, DK Level switch KFA 4): KK **without:** for oil: 0 for (fluid) grease 2): 0R	B G V without: 0	M N L only ZAF (gearbox): GM, GN V	for drives M | N | L GM | GN | V: X:1: 60; 97; 160; 316; 625; 1250	with electrical function monitoring 3): E with optical function monitoring without sensor 3): E0 without function monitoring: 0	Single row: 13 with strainer on the pump element: 13S Double row: 26 with strainer on the pump element: 26S	**for types 13 | 13S:** 6, 8, 22; 0 - 13; max. 13 in total **for types 26 | 26S:** 6, 8, 22; 0 - 26; max. 26 in total	ø6: 6 ø8: 8 ø10: 10 G 1/4: 14 without: 0
Adapter KX: KX	KX-System: Min.: 1 Min. + warning: 2 without: 0R	without: 0	O R U without P	for drives O | R | U | P: 7.66; 12.7; 25; 50; 66				

* Others on request

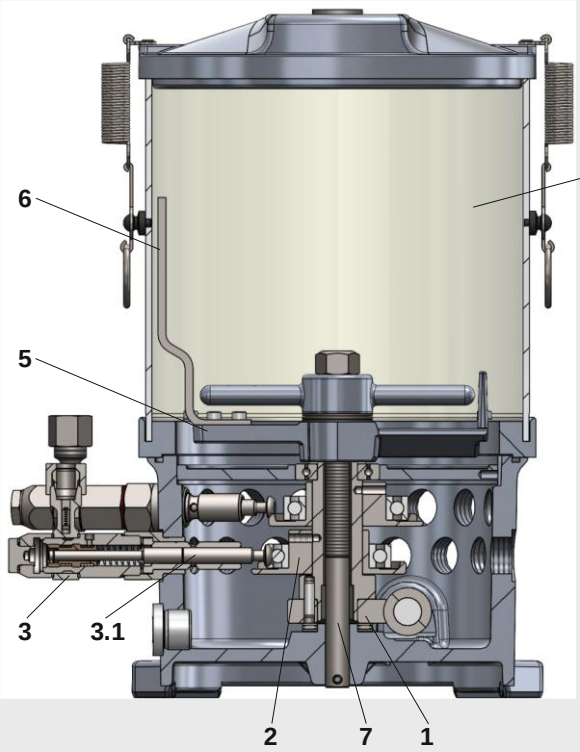
1) Not for plastic reservoirs 2L, 2LA
2) Not for plastic reservoirs 2L, 4L, 6L
3) Reduces the maximum selectable number of pump elements by 1
4) Only with reservoirs 4LA, 6LA, 5, 10, 30
5) Max. motor weight for ZAF gears: 40 kg

Order example: Piston pump GMF-F

- Reservoir 4 l
- Level monitor C
- Filling connector B
- Drive type N
- Reduction 625
- With electrical function monitoring E
- Double-row
- 6 Pump elements 8
- 10 Pump elements 22
- Without outlet

Order designation: GMF-F | 00 | 4L | C | B | N | 625 | E | 26 | 0 | 6 | 10 | 0

PRODUCT AND FUNCTIONAL DESCRIPTION



1 Worm gear
2 Eccentric shaft
3 Pump elements
4 Reservoir
5 Agitator
6 Scraper
7 Shaft

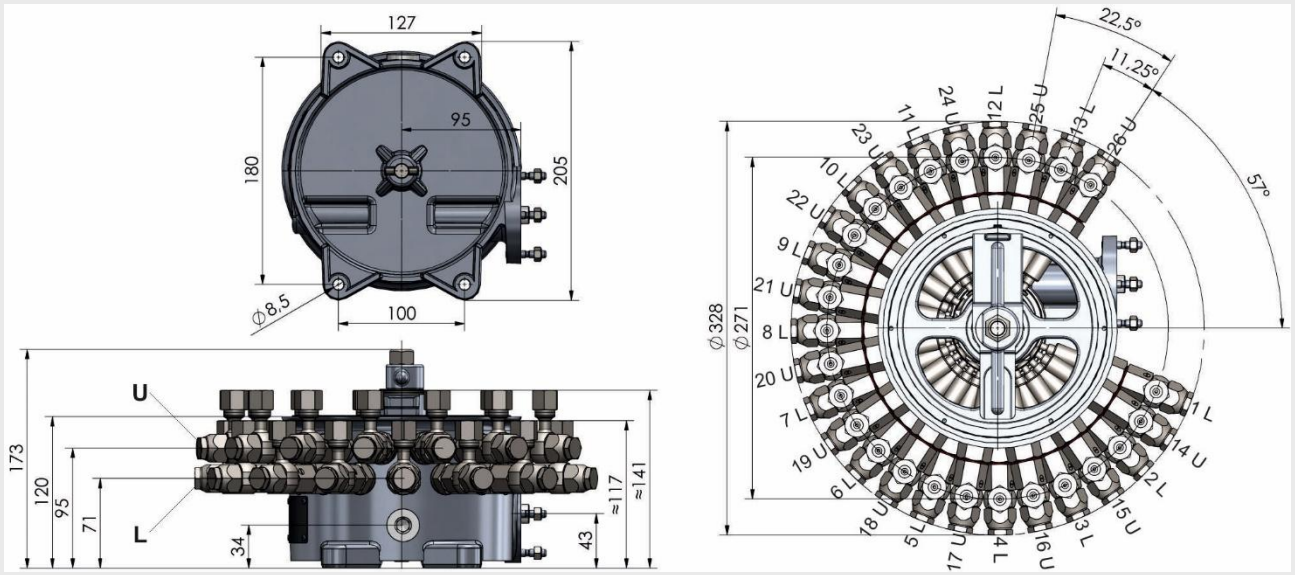
Drive
The piston pump unit GMF-F can be driven externally using various variants. Inside is a worm gear **1** that drives the eccentric shaft **2** rotating around a fixed shaft **7**.

Conveying function
When the eccentric shaft **2** rotates, the delivery piston **3.1** of each pump element **3** forces a suction and pressure stroke per revolution and thereby delivers lubricant from the reservoir **4** to the lubrication points.
Above the pump elements **3**, an agitator **5** including a scraper **6** operates that presses the lubricant to the pump elements **3** and breaks up air bubbles.

WOERNER Easy Lock Eccentric
The piston pump GMF-F features a specially designed WOERNER Easy Lock Eccentric **2** that ensures easy and safe installation of the positively controlled pump elements **3**. For assembly, the pump elements **3** are simply screwed in and then automatically engage with the first eccentric rotation.

TECHNICAL DATA

Dimensions



L	single-row(13)
L + U	double-row (26)

Technical and electrical data

Number of pump elements	1 - 26
Delivery volume per stroke and element	see page 19 ff.
for pump element 6 for pump element 8 for pump element 22	max. 0.08 cm³ (adjustable 25 - 100 %) max. 0.15 cm³ (adjustable 25 - 100 %) max. 0.22 cm³ (adjustable 50 - 100 %)
Delivery pressure	350 bar 400 bar with special ring pieces and outlet fittings on the S series outlets on request
Temperature range without an electric motor	-20 - +80 °C
Temperature range with electric motor	-20 - +40 °C
Medium	Oil and grease up to NLGI-class 3
Output speed	1 - 25 min^{-1} others on request
Direction of rotation of the drive	optional
Material Housing Pump element Seals	 Aluminium Steel NBR

WEIGHT

Depending on the model, the weight of the pump unit is made up of the following components:

- Pump body with drive
- Reservoir
- Follower piston
- Level monitoring
- Pump elements
- Ring pieces (outlets)

All weights in kg

Pump body with drive

Drive	
M	12,5
N	14,9
L	7,7
V	6,4
O	6,8
GM | GN	6,4
R | U	5,2
P	5,1
■ max. motor weight for ZAF gears	40

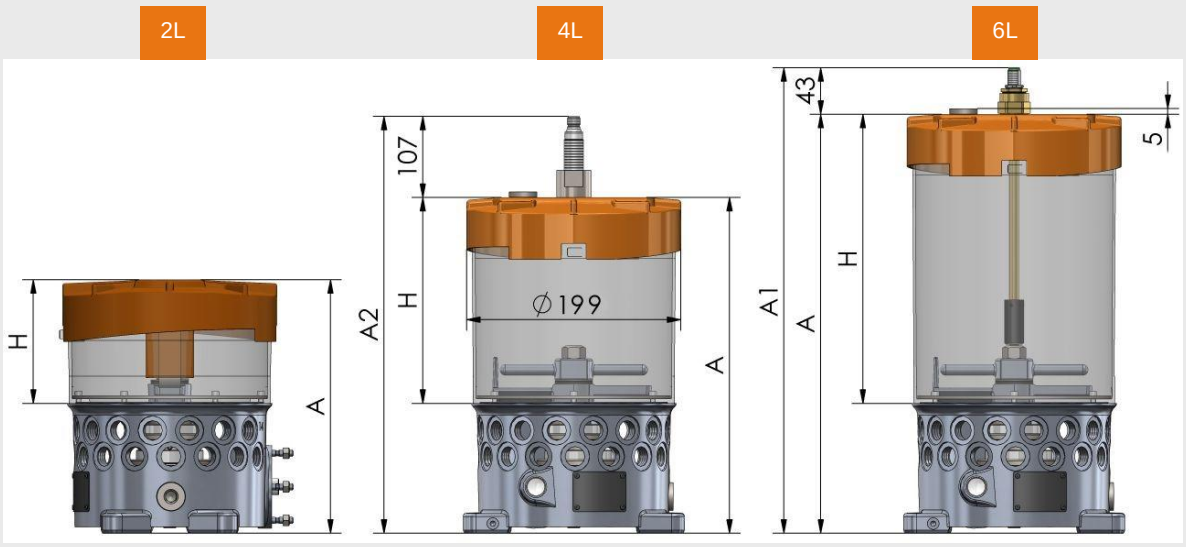
Reservoir (without follower piston)

Material	**Translucent polypropylene**						**Stainless steel**			**Polyester**		
Designation	2L	4L	6L	2LA	4LA	6LA	4V	7V	25V	5	10	30
	0.6	0.7	0.8	0.8	0.9	1.0	1.5	2.5	4.6	1.5	1.95	4.0

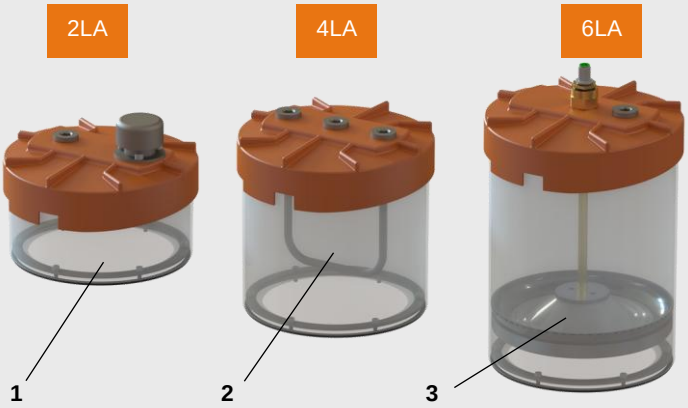
Follower piston	
For reservoirs 5 and 10	0.8
For reservoir 30	2.7
For reservoirs 2LA | 4LA | 6LA	1.6
Level monitoring	0.2
Pump elements 6 | 8 | 22	0.25
Ring piece (outlet) 6 | 8 | 10 | 14	0.05

RESERVOIR

Reservoirs 2L | 4L | 6L including screw lid with snap-in function



Outdoor reservoir variants 2LA | 4LA | 6LA for harsh and contaminated environments



1 For oil including filler and ventilation filter
2 For fluid grease and grease with scraper tube
3 For grease with grease follower plate

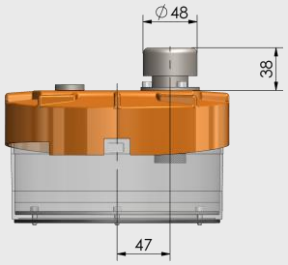
When selecting the outdoor variants, the exact design of the reservoir is determined by the selected level monitoring.

The fill level is visible.
When a follower piston is used, the usable volume is reduced by approx. 1.1 l.

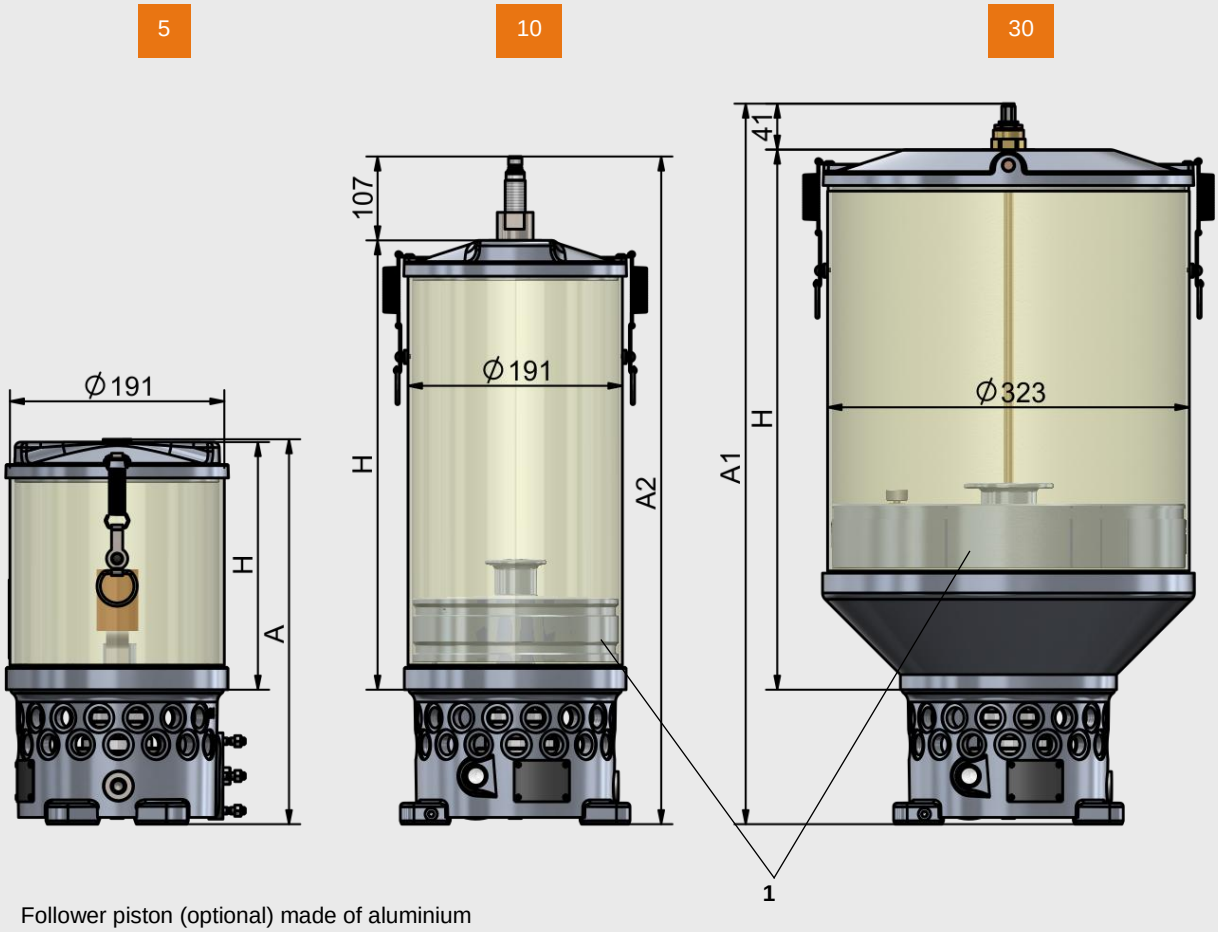
Reservoir	Contents	Dimensions				Material	
		A	A1	A2	H	Reservoir	Lid
2L | 2LA	2 l	234	284	341	114	Translucent polypropylene	Polyamide
4L | 4LA	4 l	310	353	417	190		
6L | 6LA	6 l	387	430	494	267		

A = Reservoir without KFA or ultrasonics
A1 = Reservoir with KFA monitoring
A2 = Reservoir with ultrasonic monitoring
H = Reservoir height

Differing dimensions



Reservoirs 5 | 10 | 30



1 Follower piston (optional) made of aluminium

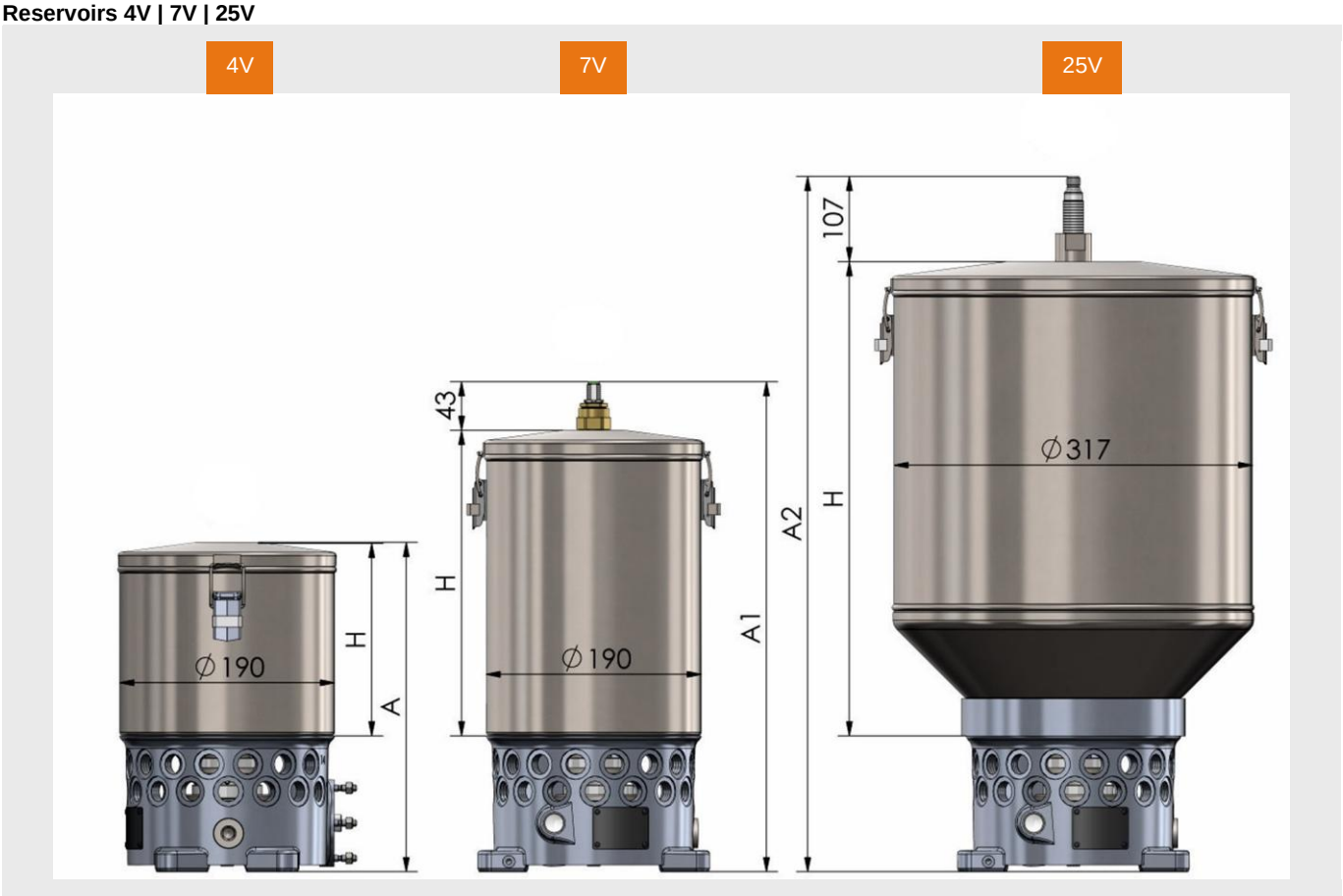
When a follower piston is used, the usable volume is reduced
- for 5 and 10 by approx. 2.5 l and
- for 30 by approx. 6 l

Reservoir	Contents	Dimensions				Material	
		A	A1	A2	H	Reservoir	Lid
5	5 l	344	385	451	224	Polyester / aluminium	Aluminium
10	10 l	524	565	631	404		
30	30 l	604	645	711	482*		

A = Reservoir without KFA or ultrasonics
A1 = Reservoir with KFA monitoring
A2 = Reservoir with ultrasonic monitoring
H = Reservoir height
* When combining reservoir 30 and outlet variant 14, H and A1 increase by 33 mm.

Adapter Kx
This version of the machine is equipped with an adapter for a cartridge system.
➡ For further information, see datasheet P0915 and operating manual B0915.

Reservoirs 4V | 7V | 25V



Reservoir	Contents	Dimensions				Material	
		A	A1	A2	H	Reservoir	Lid
4V	4 l	292	335	399	171	Stainless steel	Stainless steel
7V	7 l	390	433	497	270		
25V	25 l	539	583	647	419		

A = Reservoir without KFA or ultrasonics
A1 = Reservoir with KFA monitoring
A2 = Reservoir with ultrasonic monitoring
H = Reservoir height

LEVEL MONITORING

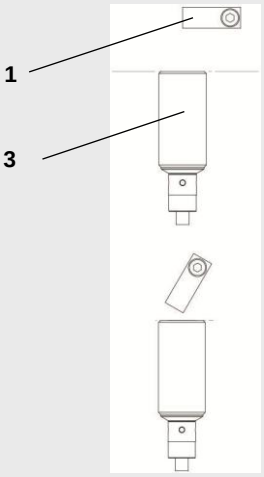
Level monitoring C

C

Minimum level monitoring for grease NLGI classes 1 and 2.

1 Actuating flap
2 Agitator blade
3 Proximity switch
4 Cable gland

The direction of rotation is specified for monitoring C (anticlockwise). This is indicated on the device by an arrow indicating the direction of rotation.



The grease in the reservoir lifts the actuating flap **1** when the pump drive shaft rotates. No signal is issued.

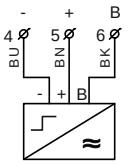
When the reservoir is empty and the pump drive shaft is rotating, the proximity switch **3** is intermittently energised by the actuating flap **1**.

When the reservoir is full, depending on the penetration of the grease, the actuating flap may drop when stationary and energise the proximity switch **3**. When evaluating the proximity switch signal, make sure that the proximity switch signal is evaluated with a delay when the pump is switched on (approx. 10 s). Unless otherwise requested, the cable gland is installed at position 1L.

see page 6 ff.

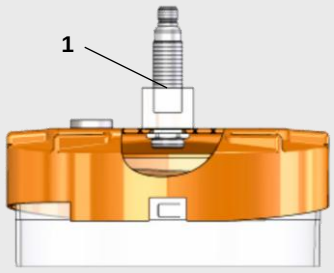
Operating voltage	10 - 30 VDC
Switching hysteresis	≤10%
Switching current	max. 150 mA
Intrinsic power consumption	approx. 6 mA
Voltage drop	~1 V
Degree of protection	DIN EN 60529 IP67
Cable length	2 m

Circuit diagram



The blank signal is intermittent. ATEX variant on request.
The function of monitoring C was successfully tested with mineral oil-based lubricants. Check the suitability for special lubricants!

Level monitoring with ultrasonic sensor D | DV | DK | A | AV | AK

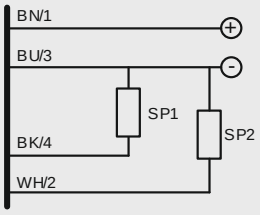
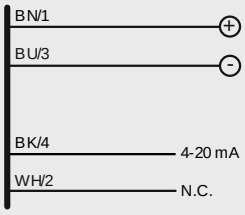


Level monitoring with ultrasonic sensor
Distance measurement of the filling level by reflection of the medium surface.

When monitoring grease levels, the use of a follower piston is strongly recommended. Without a follower piston, the operator/owner must ensure the grease surface to be smooth.

Allows longer switching distances than with level monitoring using level switch KFA (K | KK | KV)

1 Ultrasonic sensor

	Level monitor D DV DK **Digital ultrasonic sensor with two switching points for oil, fluid grease or grease**	**Level monitor** A AV AK **Analogue ultrasonic sensor for oil, fluid grease or grease**
Operating voltage	10 - 30 VDC	10 - 30 VDC
Output type	NC	4 - 20 mA
Output current	max. 100 mA	-
Housing material	PBT/ AISI 316L (DIN 1.4404)	PBT/ AISI 316L (DIN 1.4404)
SP1	Reservoir empty	-
SP2 for reservoirs from 4 l	Reservoir with approx. 25% remaining volume	-
Circuit diagram		

Level monitoring
K | KK

Level monitoring with level switch

K KK

The level monitoring with level switch KFA offers up to three switching points depending on the reservoir:

- Minimum
- Maximum
- Warning

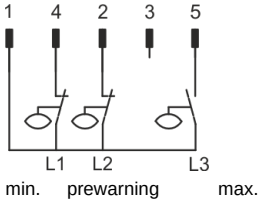
When used with grease, a follower piston must be used; when used with oil, a float is used.

Further information

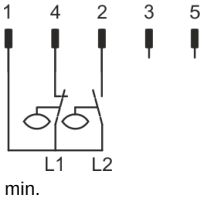
➡ See datasheet P0496.
➡ See datasheet P0520.

Switching capacity	max. 30 W
Switching voltage	max. 30 VDC
Switching current	max. 0,5 A
Degree of protection	DIN EN 60529 IP65
Connection type	male M12x1, 5-pin

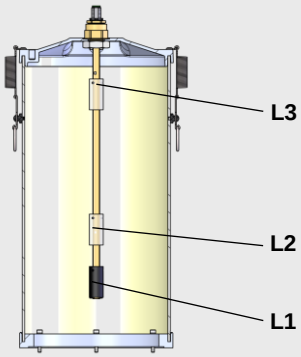
Circuit diagram with 3 switching points for reservoir sizes 4 l, 5 l, 6 l, 7 l, 10 l, 25 l, 30 l



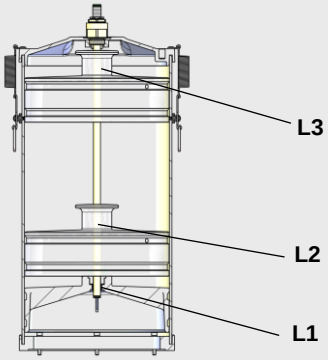
Circuit diagram with 2 switching points for reservoir size 4 l



With float K | KV



With follower piston KK



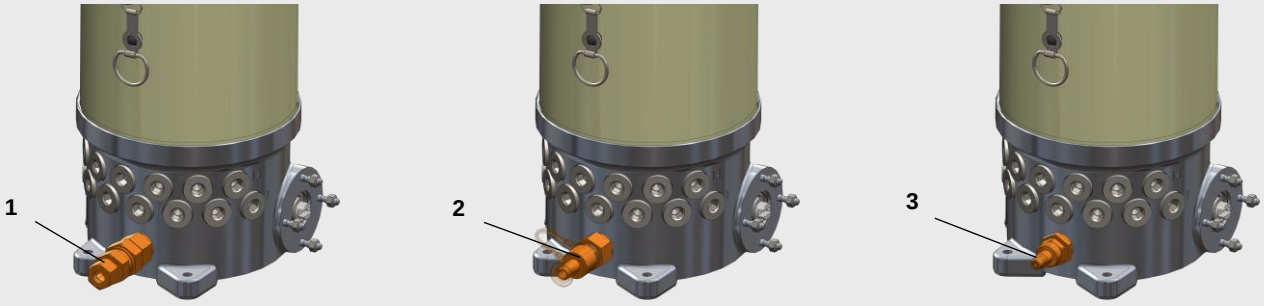
L1 Maximum: Float / follower piston at the top = reservoir is full
L2 Warning: Float / follower piston at approx. 25% remaining usable volume in the reservoir
L3 Maximum: Float / follower piston at the bottom = reservoir is empty

Note on variants K and KV

K KV

The maximum filling speed must not be exceeded.
➡ see Operating manual B9003

FILLING CONNECTOR



1 B Filling connector B: Pipe connection L12

2 G Filling connector G: Closing nipple with dust cap

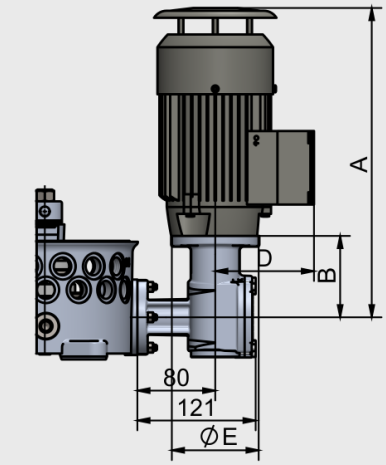
3 V Filling connector V: Closing nipple DN6 with dust cap

Filling connector	**Material**
Filling connector B	Steel
Filling connector G	CuZn / Cu
Filling connector V	Steel / Cu
Matching counterparts	see page 20 ff.

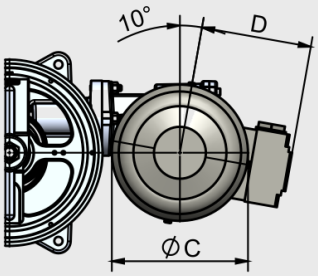
Further filling connector variants on request.

DRIVE TYPE

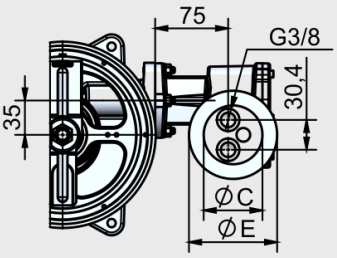
L M N

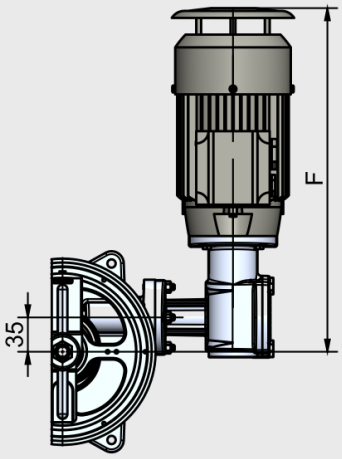


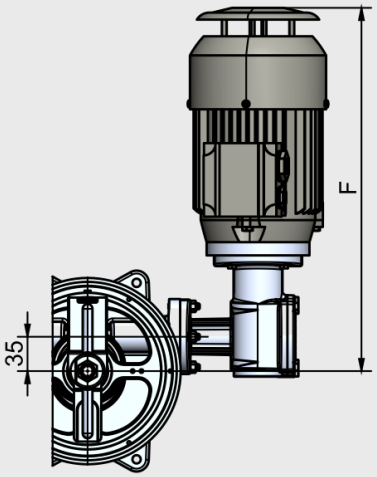
M N



L







Dimensions	Drive M	Drive N	Drive L
A	316	336	215
B	83	97	75
øC	125	139	60
D	101	113	-
øE	-	105	90
F	351	371	250

Electric motor M and N

Technical data of motor M

M

- Design size BG 63
- Design according to DIN EN 60034-7 IM 3611 (V18) with protective cover
- Flange: DIN EN 50347 FT 75 (C90)

Electrical data of motor M

Voltage	At 50 Hz D/Y At 60 Hz Y	220 - 240/380 - 420 V 440 - 480 V
Current	At 50 Hz D/Y At 60 Hz Y	1,07/0,62 A 0,60 A
Output	At 50 Hz At 60 Hz	0,18 kW 0,21 kW
Speed	At 50 Hz At 60 Hz	1385 min^{-1} 1685 min^{-1}
Protection class	-	DIN EN 60529 IP55
Insulation class	-	F
Other motors on request		

Technical data of motor N

N

- Design size BG 71
- Design according to DIN EN 60034-7 IM 3611 (V18) with protective cover
- Flange: DIN EN 50347 FT 85 (C105)

Electrical data of motor N

Voltage	At 50 Hz D/Y At 60 Hz Y	220 - 240/380 - 420 V 440 - 480 V
Current	At 50 Hz D/Y At 60 Hz Y	1,77/1,02 A 1,04 A
Output	At 50 Hz At 60 Hz	0,37 kW 0,43 kW
Speed	At 50 Hz At 60 Hz	1380 min^{-1} 1680 min^{-1}
Protection class	-	DIN EN 60529 IP55
Insulation class	-	F
Other motors on request		

Hydraulic motor L

Technical data of motor L

L

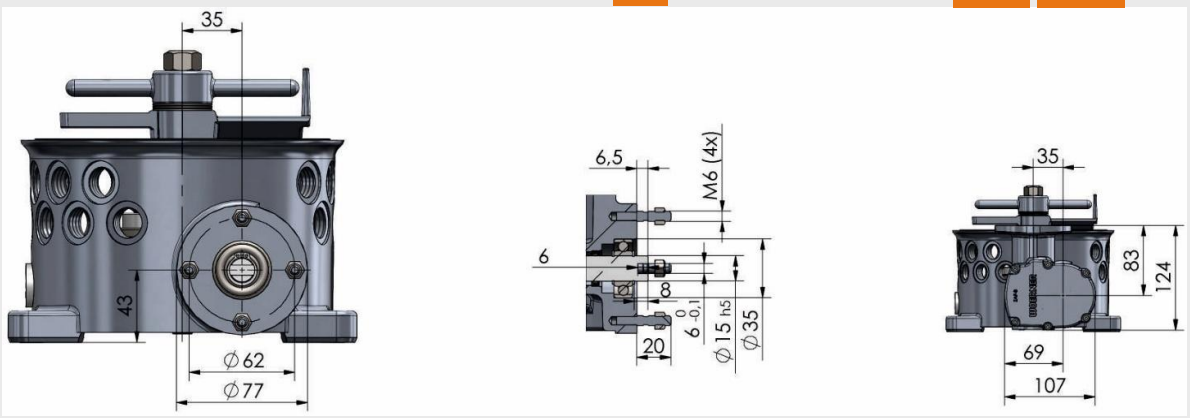
- with gearbox and hydraulic motor

At an oil flow of 3.5 l/min	Output:	0,25 kW
	Speed:	400 min^{-1}
Speed		max. 1950 min^{-1}
Pressure gradient		max. 100 bar
Oil flow		max. 16 l/min mind permissible element stroke number!

Overall reduction as for drives M, N:

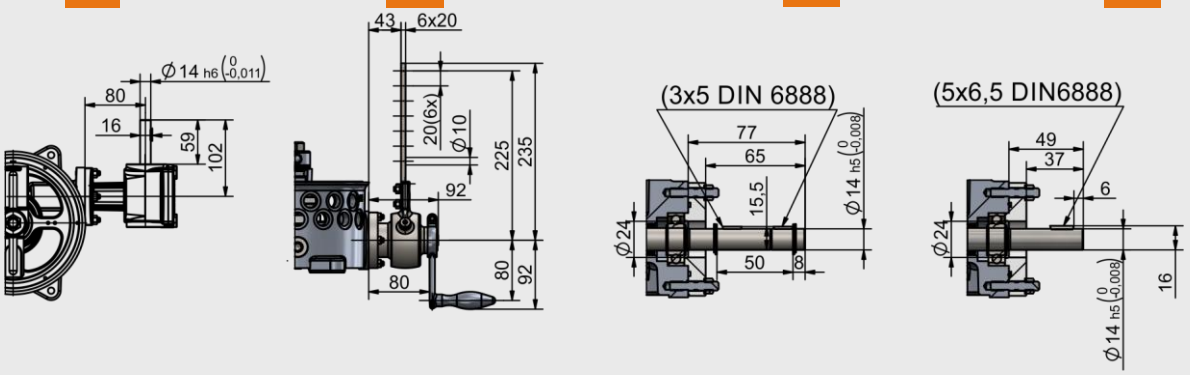
see page 18 ff.

P



GM GN

V O R U



Oscillating drive

O

Without drive P

P

- Without gear

The drive variant P corresponds to the basic pump without a special drive unit.
A ZAF gear can be mounted directly on the acceptance geometry.
➡ See datasheet P0833. Depending on the accessories added, this results in pumps with GM, GN or V drives.

Gear box GM and GN

GM GN

- Drive type GM corresponds to drive type M without an electric motor.
- Drive type GN corresponds to drive type N without an electric motor.

Please note the permissible output speed of the pump.
➡ See datasheet P0833.

see page 15 ff.

Gear box with special shaft V

V

A gear with a special shaft is flanged to the pump housing. Any drive units can be mounted on this shaft. Please note the permissible output speed of the pump.
➡ See datasheet P0833.

Drive shafts R and U

R U

Short and long drive shaft for mounting any drive unit without additional gear. Please note the permissible output speed of the pump.

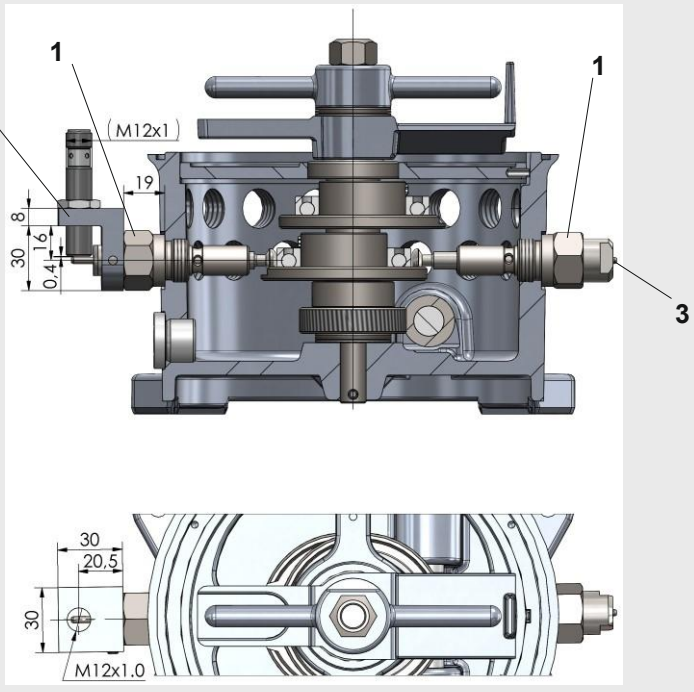
Mounting drives alternatively ➡ see Operating manual B9003
Angular gears and motors can each be rotated by 90°. As standard, the angular gears and motors are mounted as shown. However, depending on the reservoir, pump elements and piping, horizontal installation may be necessary.

REDUKTION

	M | N | L | GM | GN | V	O | R | U | P
Overall reduction	60: 1	7.66: 1
	97: 1	12.7: 1
	160: 1	25: 1
	316: 1	50: 1
	625: 1	66: 1
	1250: 1	-
	2500: 1	-
	* Others on request	

Overall reduction ratio like drives M, N:
➡ see Operating manual B9003

FUNCTION



The indicator pin **3** of the function monitoring **1** moves in and out once for each pump rotation.
The proximity switch monitors the indicator pin and emits a signal once per revolution. Unless otherwise requested, the function monitoring is installed at position 13L.

1 Optical function monitoring (without sensor)
E0
Order no. **110.089-61**

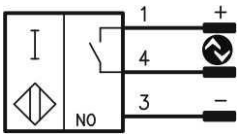
2 Electrical function monitoring (with sensor *)
E

3 Indicator pin

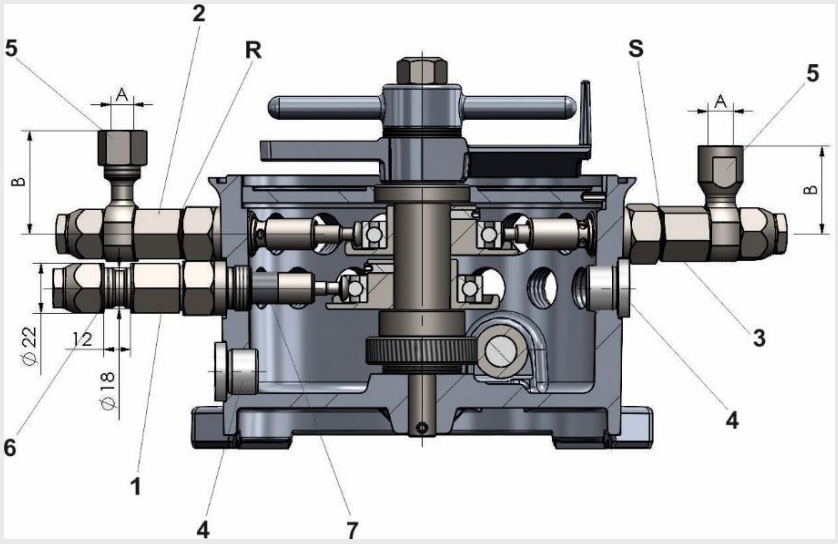
* Special sensors on request

Operating voltage	10 - 30 VDC
Switching hysteresis	≤10%
Switching function	NO contact
Switching current	max. 150 mA
Degree of protection	DIN EN 60529 IP67
Connection type	male, M12x1, 4-pin

Circuit diagram



NUMBER OF PUMP ELEMENTS AND OUTLETS



1	6 Pump element 6 Identification: No marking
2	8 Pump element 8 Identification: Red marking
3	22 Pump element 22 Identification: Black marking
4	Screw plug
5	Outlet: (Ring piece) A = ø6, B = 44 A = ø8, B = 46 A = ø10, B = 46 A = G 1/4, B = 39
6	Outlet (without ring piece)
7	Strainer
R	Red ring
S	Black ring

Delivery volume per stroke

The setting range can be reduced to ≤25% of the actual maximum delivery volume.

- -10% - +20% (at an operating viscosity of the pumped medium of 144 mm²/s and back pressure of 140 bar)
- For each pump element 6: adjustable, max. 0.08 cm³
- For each pump element 8: adjustable, max. 0.15 cm³

The setting range can be reduced to ≤25% of the actual maximum delivery volume.

- -10% - +20% (at an operating viscosity of the pumped medium of 144 mm²/s and back pressure of 140 bar)
- For each pump element 22: adjustable, max. 0.22 cm³

Further Informations

➡ see Order manual B9003

Mounting parts and pressure limits of the pump elements

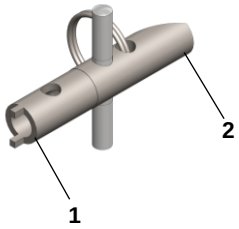
➡ see Data sheet P0386

ACCESSORIES

Couplings for filling connector

Designation	Image	Order no.
Locking coupling with dust plug V		
Connection thread G 1/4 (p_{max} = 200 bar) Connection thread G 3/8 (p_{max} = 200 bar)		**110.135-66K** **110.135-65K**
Locking coupling with dust plug G		
Connection thread G 1/4i (p_{max} = 35 bar)		**110.128-65K**

Adjustment and opening tool

Designation	Use	Image	Order no.
Adjustment and opening tool	Adjustment: After removing the screw plug on the pump element, the delivery volume of the pump element can be adjusted with the adjustment side **1** of the adjustment and opening tool. Opening (for plastic reservoirs 2L, 4L, 6L): The reservoir can be easily opened using the opening side **2** of the adjustment and opening tool. ➡ see operating manual chapter opening and closing plastic reservoirs (included in delivery = 1 piece per pump)	 **1** Adjustment side for delivery volume **2** Opening side for reservoir	**110.004-67**

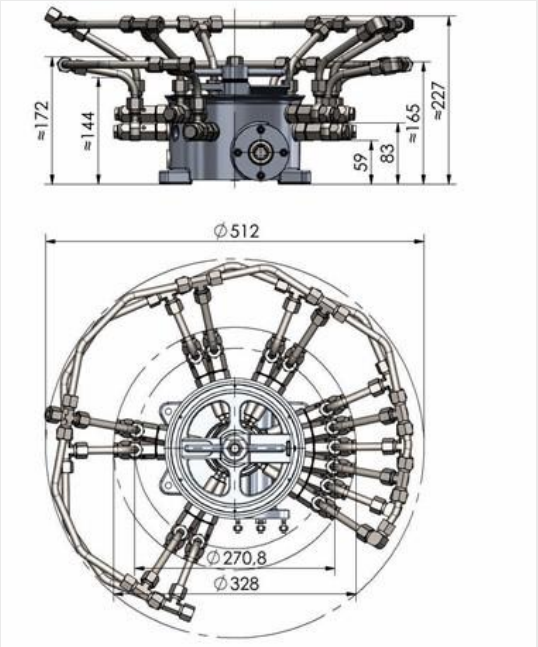
Accessories for power cables

Designation	Order no.
Cable for electrical connection M12x1, 5-pin/ 0°	
Cable length 5 m Cable length 10 m Cable length 15 m Other cables with different lengths on request	**913.406-13** **913.406-14** **913.406-15**
Electrical data **Cable for monitoring**	
Operating voltage Cable cross-section Protection class Connection type	10 - 30 VDC 5x0.34 mm² DIN EN 60529 IP67 Socket

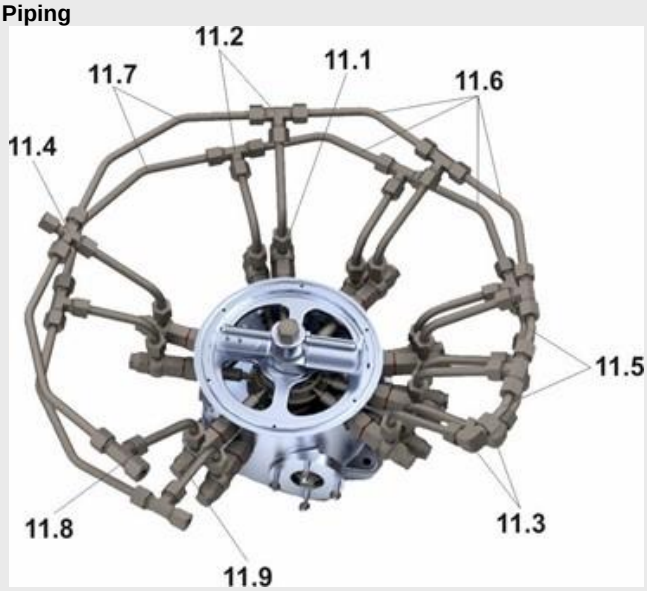
Piping for outlet 10

10

Dimensions



Piping



11.1	Outlet		
11.2	T-screw fitting L-T 10	| Order no.	**950.401-09**
11.3	Elbow screw fitting L-W 10	| Order no.	**950.300-85**
11.4	Cross screw fitting L-K 10	| Order no.	**950.500-59**
11.5	Pipe, connection any point	| Order no.	**112.585-43**
11.6	Pipe, connection every 2nd point	| Order no.	**112.585-43**
11.7	Pipe, connection every 3rd point	| Order no.	**112.585-43**
11.8	Pipe, upper level	| Order no.	**112.585-42**
11.9	Pipe, lower level	| Order no.	**112.585-41**

The outlets of the pump unit can be easily combined using the pipe and screw connection sets listed.

When ordering, please specify which positions should be combined and where exactly the outlet(s) will be placed.

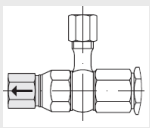
Two combined pump elements must be mounted at adjacent locations (e.g. points 1 and 2 or points 2 and 3).

The outlet size must be ø10.

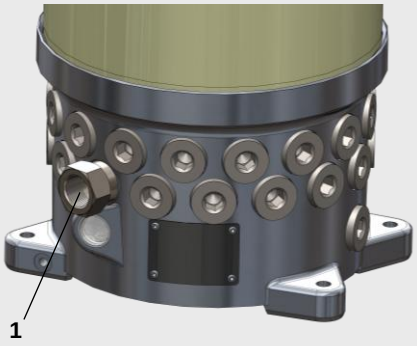
Pressure limiting

Attachments for pump elements and pressure limitations of the pump elements

➡ See datasheet P0386.



Extension



Extension M20x1,5 for point 9 on the pump body

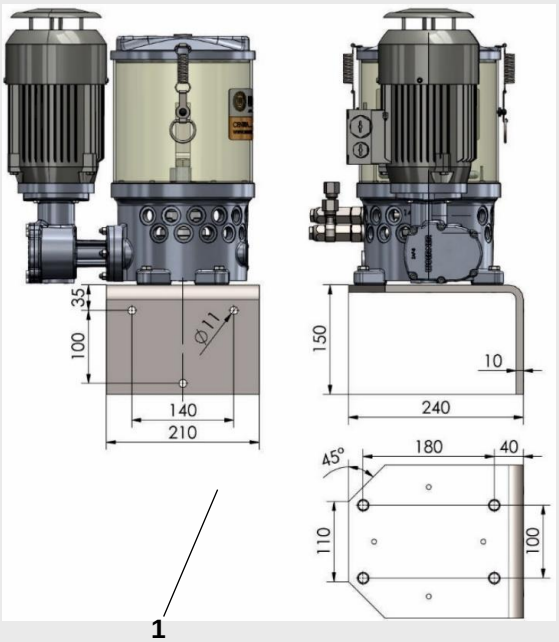
If a component other than a pump element is mounted on the pump body at position 9 (e. g. a reducer for a return line or a filling connection), an extension is required for space reasons.

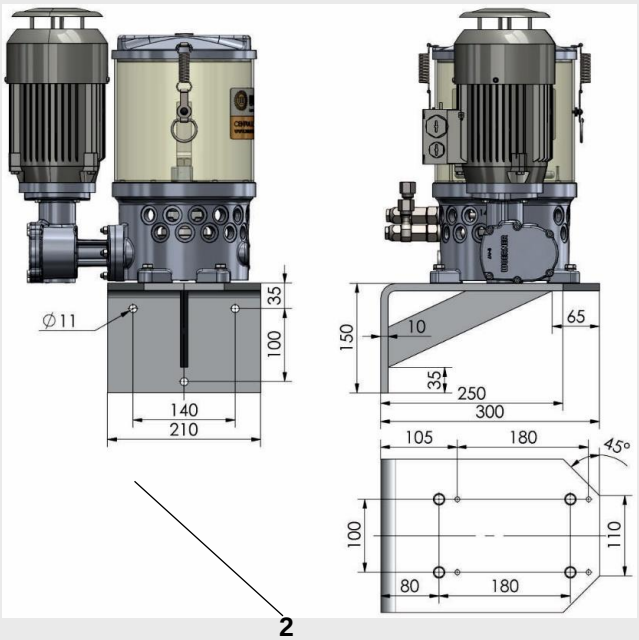
1 Extension M20x1,5

Order no. **505.175-65**

Mounting accessories

Mounting bracket for wall mounting with fastening material for the pump.
The installation space and the possibility of combining the customer-specific pump with the mounting brackets must be checked in each case.





1 Order no. **112.585-65K**
2 Order no. **112.585-66K**

Other applicable technical documentation for this product

Number	Language	Documentation	Unit
B9003	EN	Operating manual	GMF-F
E9003	EN	Spare parts	GMF-F
E0932	EN	Spare parts	Reservoir

NOTES

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