

Electric pump EP-1

The BEKA-MAX central lubrication pump model EP-1 is electrically actuated and has up to a maximum of 3 independently operating lubricant outlets. A separate pump element is required for each outlet. Three pump elements with different flow rates are available, as well as a flow-adjustable pump element (see page 7). This enables the grease quantity to be adapted to the requirement of the individual progressive distributor circuits.

These pumps enable the delivery of commercial lubricants up to NLGI-class 2 at a working pressure of maximum 280 bar (adjusting of pressure relief valve).

The EP-1 series pumps differ in reservoir size and control type. EP-1 can be controlled externally e. g. via PLC or an additional control unit S-EP 6. The pump can also be delivered with a number of different integrated controllers

Integrated controllers:

- EP-tronic
- EP-tronic T1
- BEKA-troniX1
- EP-T2

Technical data:

Motor:

Operating voltage:	12 V DC / 24 V DC
Revolutions:	15 rpm
Current consumption:	
Idling at + 20°C:	0.8 A / 0.4 A
Full load at + 20°C:	2.2 A / 1.1 A
Fuse:	5 A / 3 A

Pump:

Max. operating pressure:	350 bar
Adjusting of pressure relief valve	280 bar
Permissible operating temperature:	-35°C to +70°C
	(depending on the grease type)

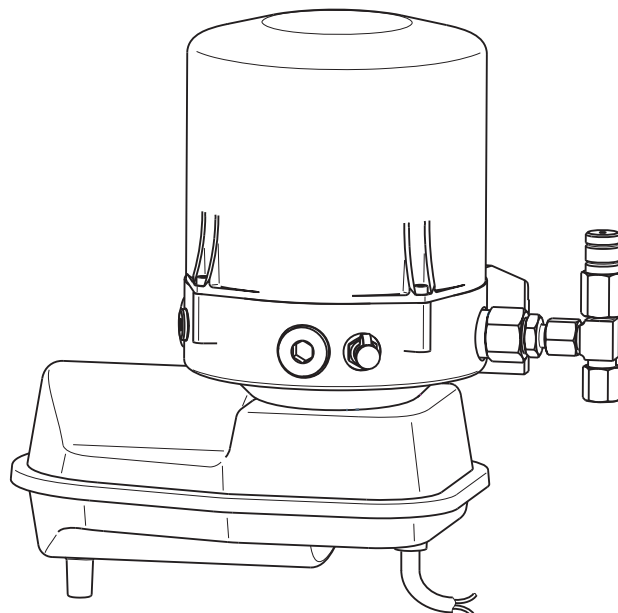
Reservoir size:

Transparent reservoir:	1.9 kg, 2.5 kg, 4 kg 8 kg or 16 kg
Steel reservoir:	2 kg or 4 kg
Stirrer direction:	counterclockwise
Mounting position:	Reservoir in vertical position
Delivery rates:	depending on pump element (see page 7)
Protection type:	IP5K9K as per DIN 40050

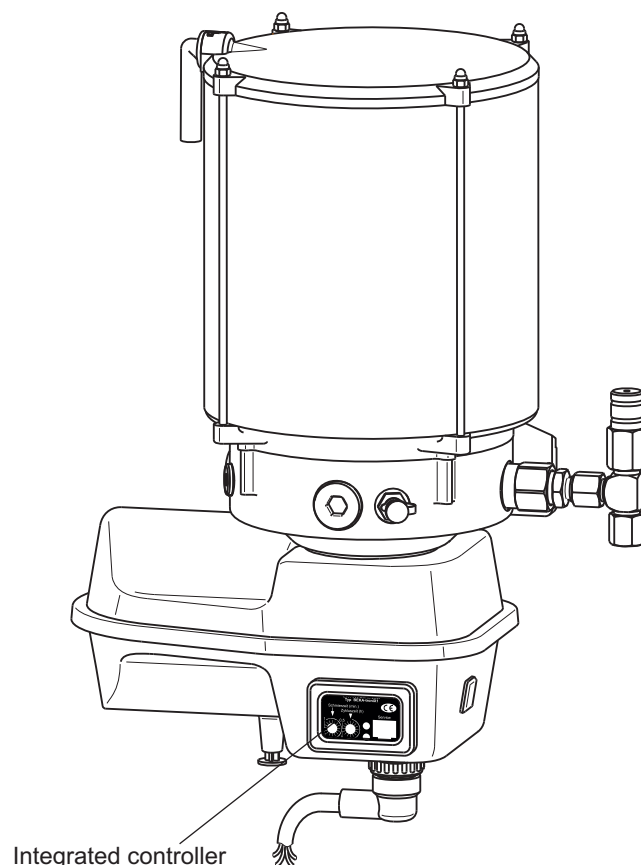
Lubricant:

Greases up to NLGI-cl. 2
(excluding solid lubricants)
Mineral oils from 40 mm²/s (cSt)

Electric pump with 1.9 kg reservoir:



Electric pump EP-1 with 4 kg reservoir and integrated electronic controller:



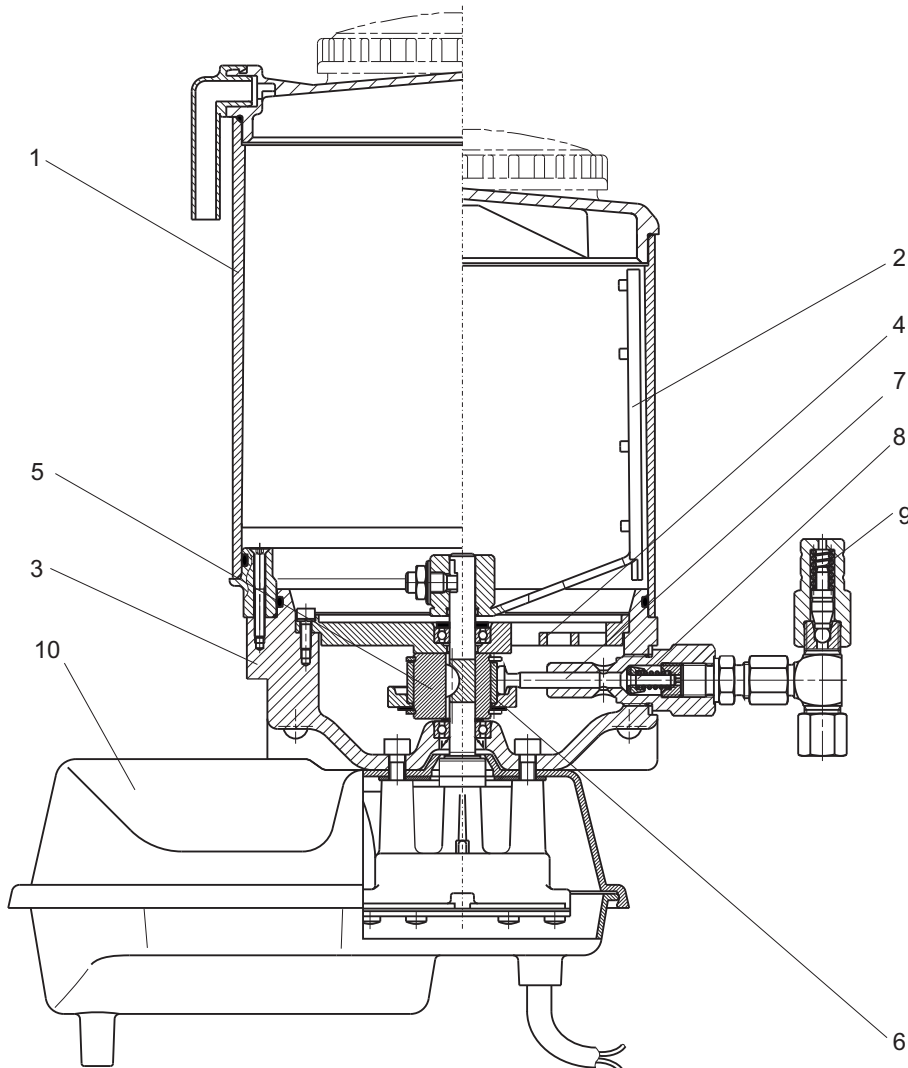
Electric pump EP-1 Operation

A DC motor (10) continually operates the eccentric cam (5) and pressure ring (6). This eccentricity effects the suction and pressure strokes of the delivery piston (7), whereby the integrated non-return valve (8) prevents the delivery media from being sucked back out of the main line.

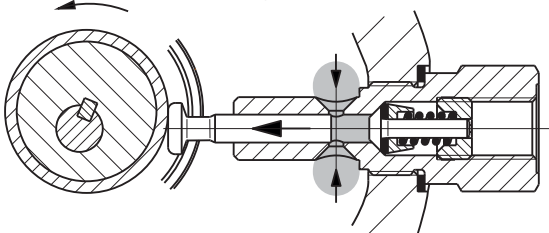
The stirrer (2) pushes the lubricant out of the supply

container (1) through a screen (4), which reduces any air bubbles, to the suction area in the pump housing (3). A scraper on the stirrer (2) enables a visual check of the lubricant volume still present in the transparent supply container (1).

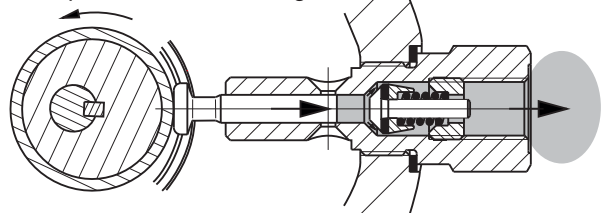
The pressure relief valve (9) is pre-set to 280 bar.



Pump element is drawing in:



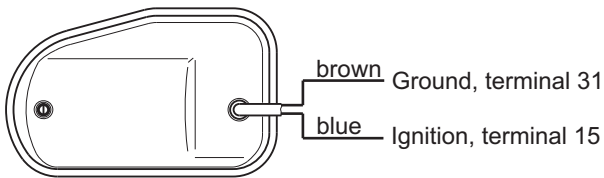
Pump element is delivering:



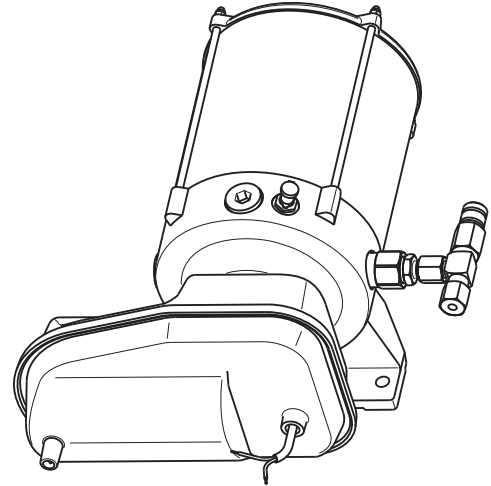
Electric pump EP-1 Connecting cable and terminal plan

In standard configuration, the electric pump EP-1 is supplied directly connected via a 10 m cable.

Terminal diagram:



View from below with the cable directly connected:



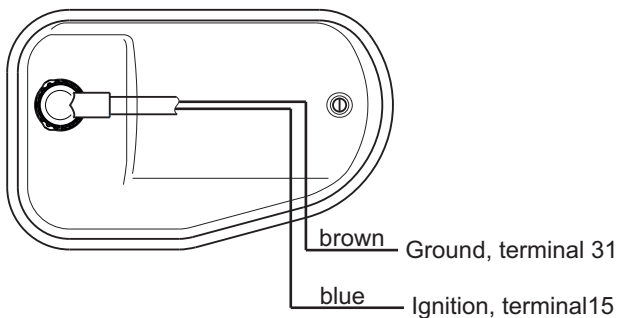
Optional equipment, lower shell with bayonet connector:

At request, the electric pump EP-1 can also be delivered with bayonet connector with 10 m cable connected to the lower motor half-shell.

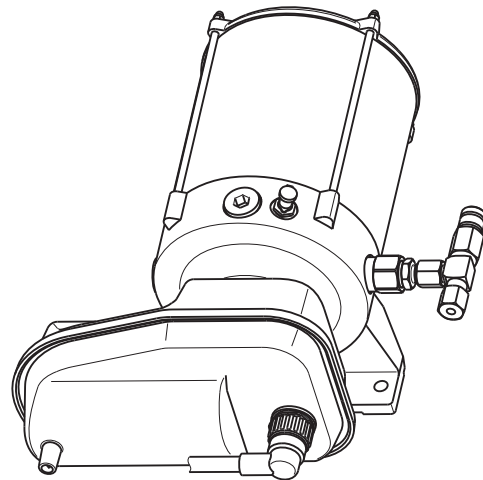
This facilitates the replacement of the connection cable, e. g. after a cable break.

The special design with bayonet connector must be specified in the order (see order key on page 13).

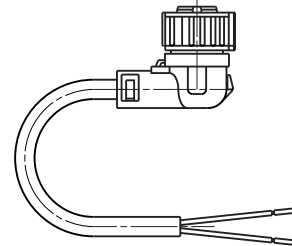
Terminal diagram:



View from below with bayonet connector:



2-wire connecting cable, length 10 m, with bayonet connector:



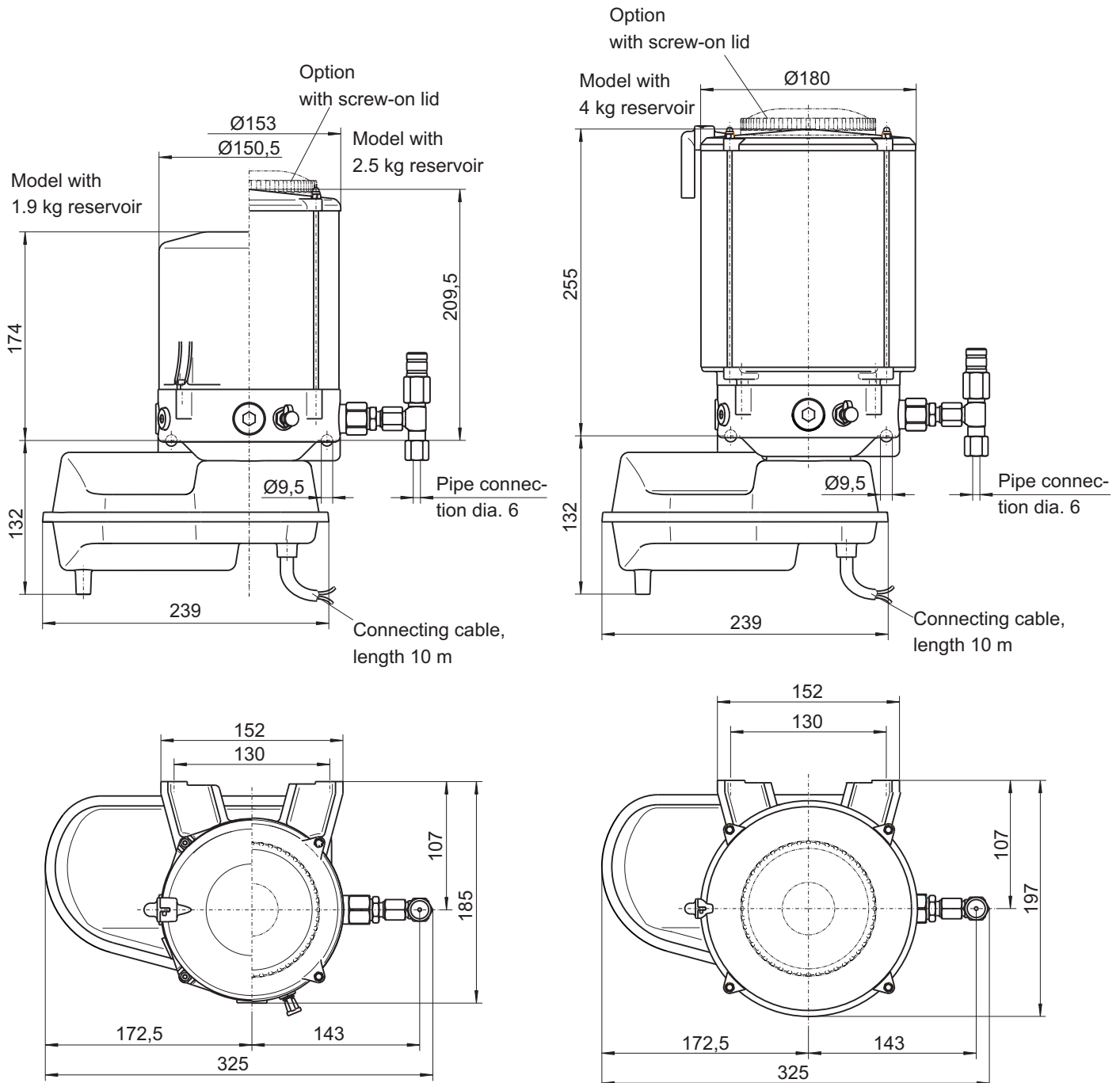
Order-no: FAZ02499-22

Electric pump EP-1 Installation dimensions

Reservoir models and installation dimensions:

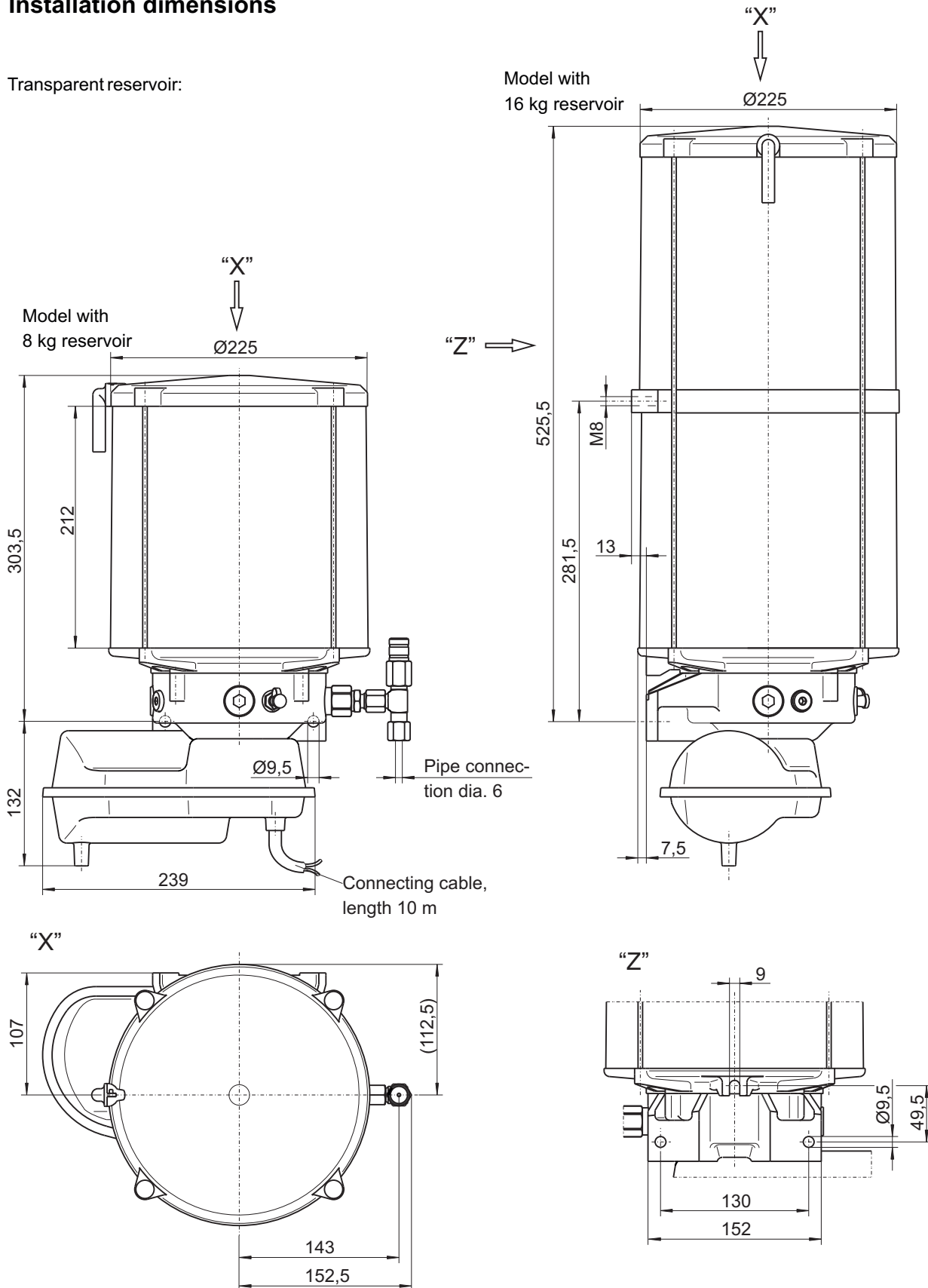
The electric pump EP-1 is available with 5 transparent reservoir sizes and with 2 steel reservoir sizes.

Transparent reservoir models:



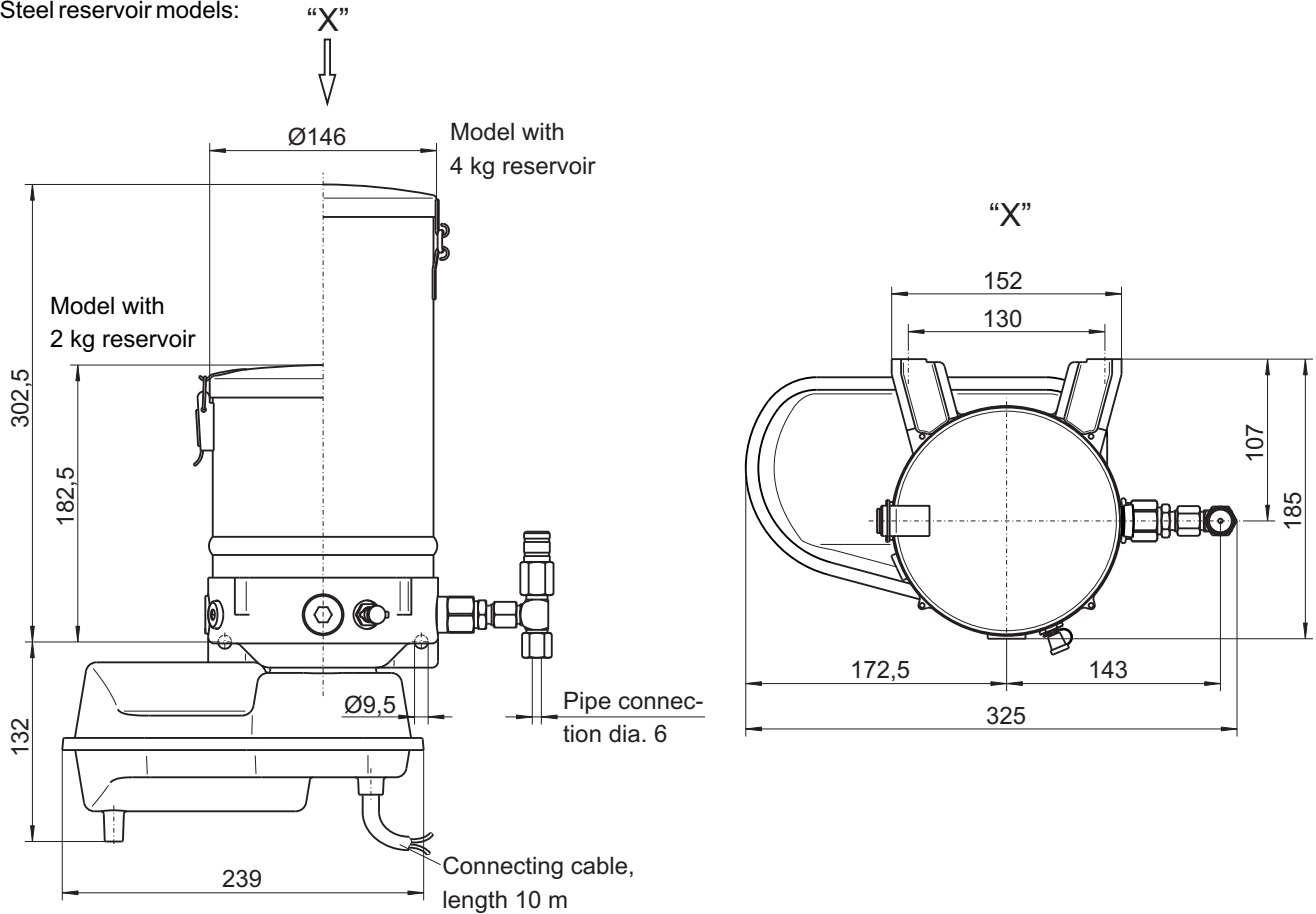
Electric pump EP-1 Installation dimensions

Transparent reservoir:

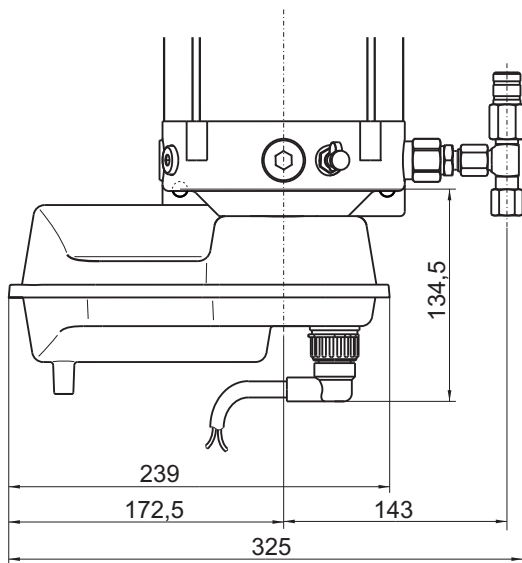


Electric pump EP-1 Installation dimensions

Steel reservoir models:



View from below with bayonet connector:



Electric pump EP-1

Pump elements

Pump elements PE-60, PE-120 and PE-170:

Technical data:

	Delivery rate (cm ³ / stroke or revolution)	Order-no (with pressure relief valve)	Order-no Pressure relief valve
PE-60	0.06	2152 99067 0000	2152 0062
PE-120	0.12	2152 99061 0000	
PE-170	0.17	2152 99069 0000	

Pump element PE-120 V:

Delivery rate:

- All pump element are set to full stroke by the manufacturer
- max. delivery rate 0.12 cm³ at full stroke
- Reduction 0.013 cm³ per notch = 1/2 revolution

Adjusting the delivery rate:

- Remove plug screw (2) with Allen key (SW 5).
- Turn adjusting screw (3) with a screwdriver.
- Turn clockwise to reduce delivery rate.
- Turn counterclockwise to increase delivery rate.
- Maximum stroke of adjusting screw is 2.4 mm = 6 notches.
- 1 turn of adjusting screw is 0.8 mm = 2 notches.
- Tighten plug screw (2) incl. sealing ring.

Technical data:

Delivery rate: 0.04 to 0.12 cm³ / stroke

Regulation of delivery rate:

6 detents each 1/2 revolution

Reduction:

0.013 cm³ per notch

Delivery media:

Greases from NLGI-Cl. 00/000 to NLGI-Cl. 2

Piston return:

forced

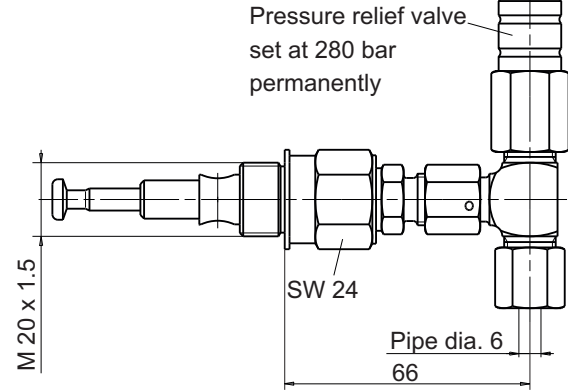
Order-no (with pressure relief valve): 2152 99063 0000

Order-no for pressure relief valve of PE-120 V: 2152 0063

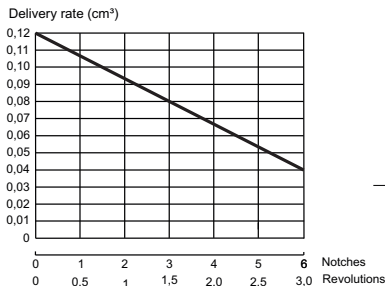
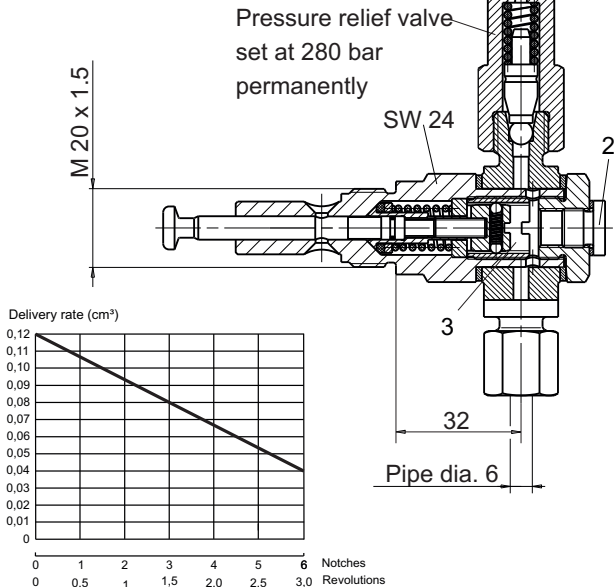
Installation of pump elements in electric pump EP-1:

- Only install / remove when pump is off
- Install pump unit with piston partially extended (4) insert at angle in top of housing bore (see diagram A).
- When the piston head rests on pressure ring - move pump element into vertical position (see diagram B).
- Piston head must run in guide ring groove.
- Tighten pump element.
- For removal, reserve above sequence.
- When removing the pump element, ensure that the piston (4) is not left behind in the pump housing.

Pump element PE-120:



Pump element PE-120 V:



Installation instructions:

Diagram A:

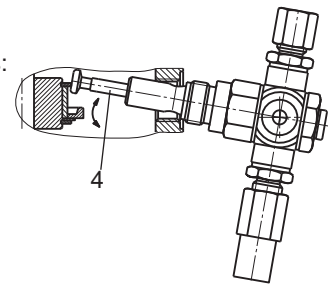
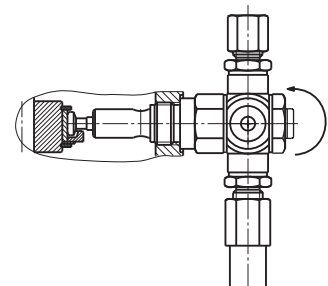


Diagram B:



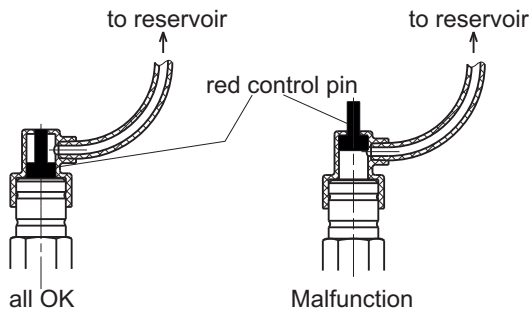
Electric pump EP-1

Special accessories malfunction indicator on pressure relief valve

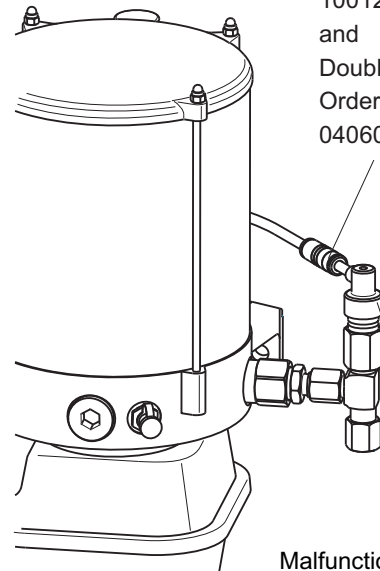
The pump elements for the electric pump EP-1 can be equipped with a visual malfunction indicator. If a malfunction occurs in the central lubrication system and operating pressure rises to 280 bar, the red control pin becomes visible. The grease escaping through the pressure relief valve is returned to the reservoir. Once the malfunction is rectified, the red control pin must be pushed back in.

For ordering, the malfunction indicator must be selected by means of a special variant number (see order key on page 13). Subsequent installation is not possible.

In case of damage, the parts of the malfunction indicator can also be ordered as parts or spare parts. A straight connector (see on right side) is used to connect a torn return hose.



Pump element with visual malfunction indicator:



0.1 m Polyamide tube
Order no:
100120068
and
Double end connector
Order no:
04060759

Malfunction indicator
on pressure relief valve
Order no:
2152990610030
consisting of:
Control pin and
Control pin mounting device

Electric pump EP-1 Special accessories pressure relief valve with microswitch

The microswitch located on the pressure relief valve is used to monitor the maximum operating pressure in the central lubrication system.

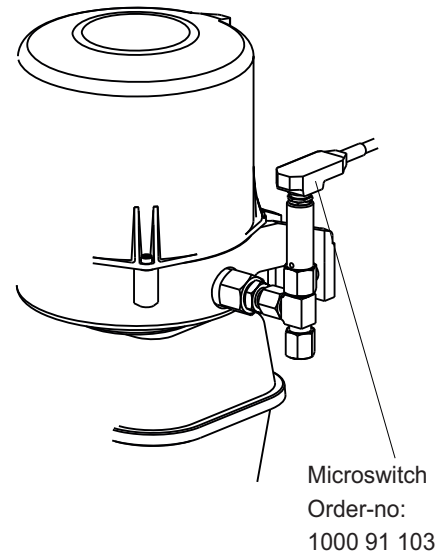
If a malfunction occurs in the system, the microswitch is triggered.

The microswitch signal can be processed by any signal encoder already present, e. g. an on-board processor, or by an external or integrated controller.

Technical data:

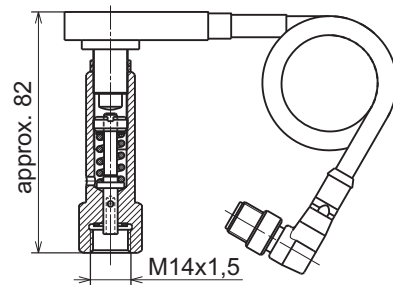
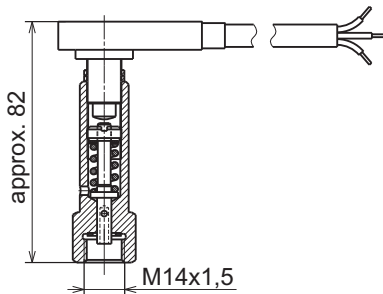
Operating voltage:	10 to 60 V DC
Maximum current load:	I = 1.7 A
Contact type:	1 changeover switch
Temperature range:	-25°C to +85°C
Protection type:	IP 67
Connection:	Cable, length 0.5 m, heat-sealed
Opening pressure:	preadjusted to 280 bar

Pump element with microswitch:

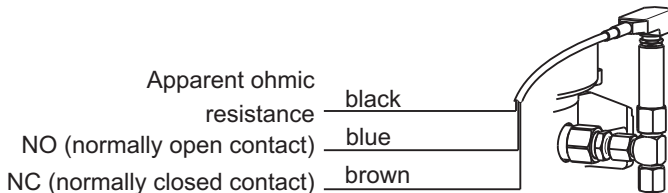


Pressure relief valve with micro switch for PE-60 to PE-170.
Article-no.: 2152990610028

Pressure relief valve with micro switch and elbow plug connection M12 for PE-60 to PE-170.
Article-no.: 215299119



Terminal diagram to connecting the microswitch to a external control unit:



Electric pump EP-1 Special accessories grease level controller

The electric pump EP-1 can be equipped with an electronic grease level controller to control the minimum grease level. A capacitive proximity switch is built into the pump reservoir for this purpose. This emits a signal as long as there is sufficient grease in the reservoir (standard). If the grease level sinks below a certain level, the proximity switch switches off the signal.

The proximity switch can be evaluated by an external control unit or PLC or an integrated control unit.

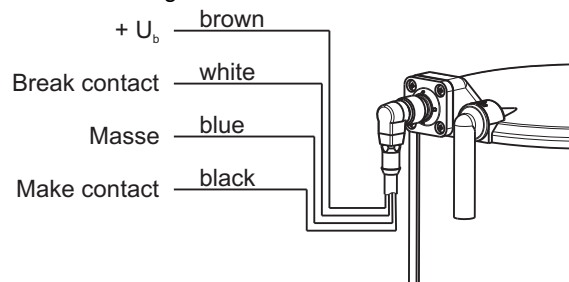
When connecting the grease level control to an intelligent controller (e. g. on-board computer, PLC), it must be taken into account that the grease level signal is only evaluated after a delay of 10 sec., meaning that only if the signal of the capacity proximity switch is missing permanently for over 10 sec., that lubricant reservoir is empty and the pump should be switched off (NO contact - black wire connected). If the white wire is connected (NC contact), the pump may only be switched OFF once the proximity switch issues a permanent signal for more than 10 sec.

To ensure wire break monitoring, the NO contact should be used preferentially!

Technical data:

Operating voltage:	10 to 60 V DC
Connecting method:	PNP-turnkey
Maximum current load:	250 mA
Protection type: Switch:	IP 67
Protection type: Plug:	IP 54
Ambient temperature range:	-25°C to +70°C
Connection:	4-pole M12x1, pluggable

Connection diagram:

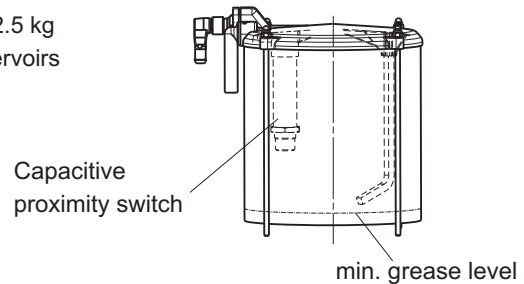


The brown wire (+U_b) and the blue one (ground) are used for the voltage supply of the sensor.

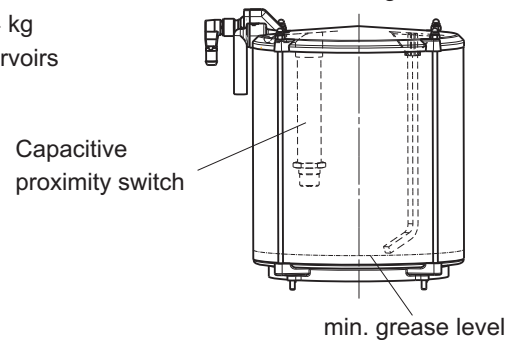
If the black wire is used as output of the sensor, it works as NO contact and signals +U_b as long as there is still grease in the reservoir (OK signal, no line rupture).

If the white wire is connected to +U_b, a signal is received when the grease level sinks below a minimum (NC contact) in the reservoir (empty signal).

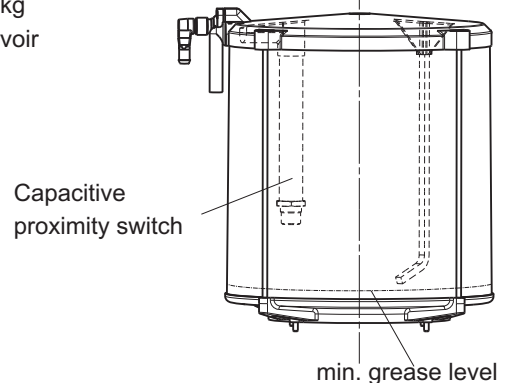
for 2.5 kg reservoirs



for 4 kg reservoirs



for 8 kg reservoir

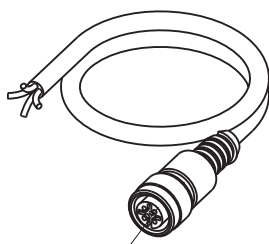


Electric pump EP-1 Cable for connection of the grease level control

The connection cable for the grease level control must be ordered separately.

Two different cable types are available:

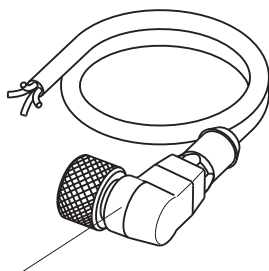
To connect the grease level control, connection cables no. 1 with straight socket M12x1 with cable lengths of 2 m, 5 m and 10 m can be used:



Socket M12x1 for connection to the grease level control

Cable length	Order-no.
2 m	1000 91 2458
5 m	1000 91 1237
10 m	1000 91 2457

Similarly, the connection cable no. 3 with right-angle socket M12x1 and a cable length of 5 m can be used:



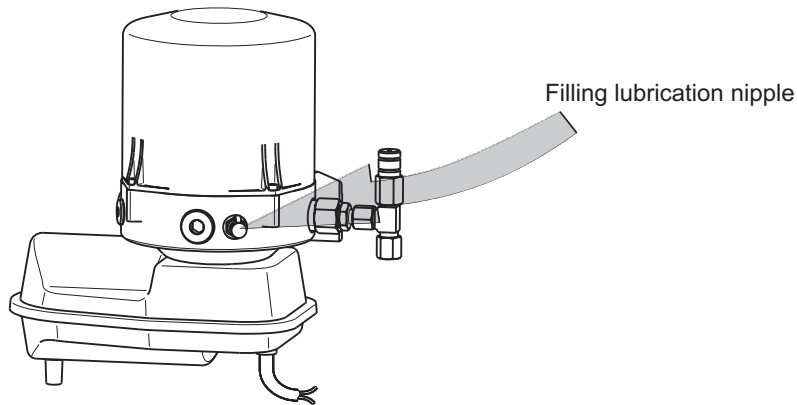
Socket M12x1, angular, to connect the grease level control

Order-no.: 1000 912997

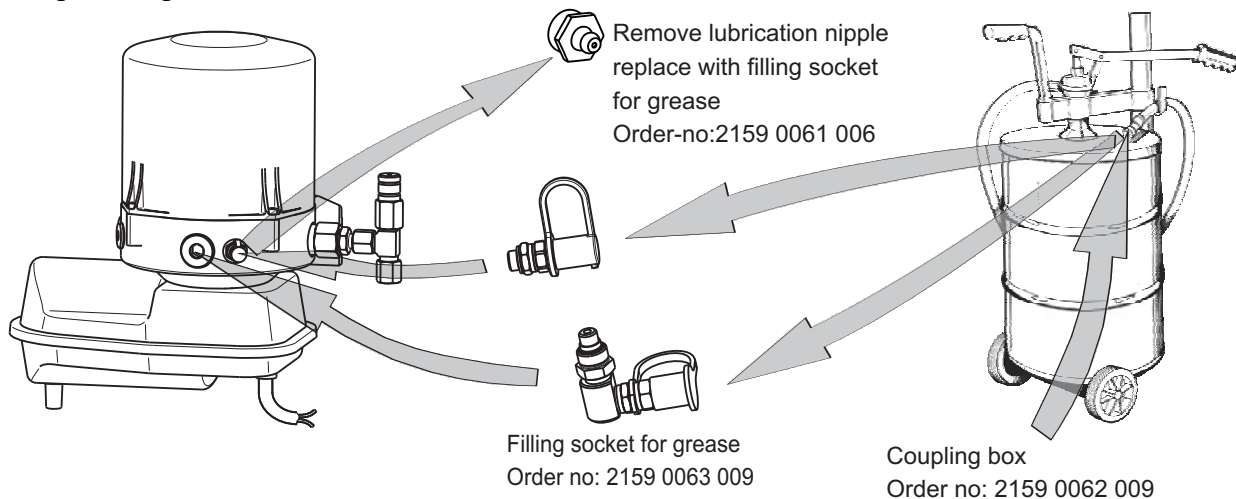


Electric pump EP-1 Filling the pump

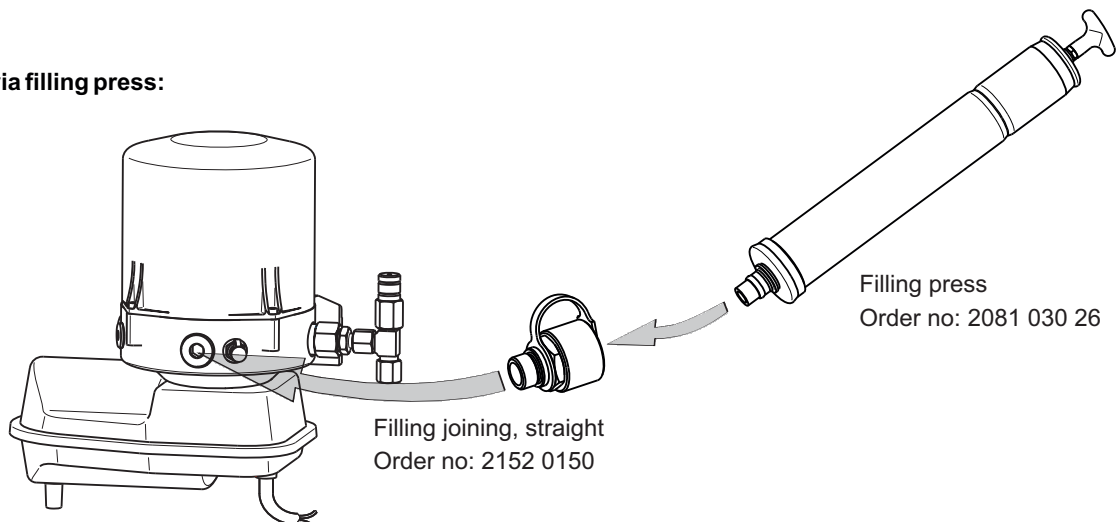
a) Standard filling via lubrication nipple with manual or pneumatic grease gun:



b) Filling via filling socket:



c) Filling via filling press:



Electric pump EP-1

Order key

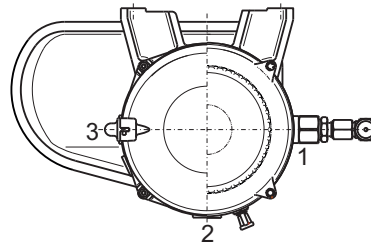
Construction type 2152 . XX . XX . XX . 000

Motor voltage				
	without plug		with bayonet connector	
Voltage	12 V	24 V	12 V	24 V
Code	01	02	03	04

Pump elements	Outlet No		
	1	2	3
without	0	0	0
PE-60	1	1	1
PE-120	2	2	2
PE-120 V	3	3	3
PE-170	4	4	4

Fig.	Code	Fig.	Code	Fig.	Code	Fig.	Code	Fig.	Code
000	00	100	F0	200	01	300	41	400	V0
001	A1	101	F1	201	K1	301	Q1	401	V1
002	A3	102	F2	202	K2	302	Q2	402	V2
003	A4	103	F3	203	K3	303	Q3	403	V3
004	A5	104	F4	204	K4	304	Q4	404	V4
010	B0	110	N0	210	L0	310	R0	410	W0
011	B1	111	G1	211	L1	311	R1	411	W1
012	B2	112	G2	212	L2	312	R2	412	W2
013	B3	113	G3	213	L3	313	R3	413	W3
014	B4	114	G4	214	L4	314	R4	414	W4
020	C0	120	H0	220	02	320	S0	420	X0
021	C1	121	H1	221	M1	321	S1	421	X1
022	C2	122	H2	222	03	322	S2	422	X2
023	C3	123	H3	223	M3	323	S3	423	X3
024	C4	124	H4	224	M4	324	S4	424	X4
030	D0	130	H5	230	52	330	42	430	Y0
031	D1	131	H6	231	N1	331	T1	431	Y1
032	D2	132	H7	232	N2	332	T2	432	Y2
033	D3	133	H8	233	53	333	43	433	Y3
034	D4	134	H9	234	N4	334	T4	434	Y4
040	E0	140	J0	240	P0	340	U0	440	Z0
041	E1	141	J1	241	P1	341	U1	441	Z1
042	E2	142	J2	242	P2	342	U2	442	Z2
043	E3	143	J3	243	P3	343	U3	443	Z3
044	E4	144	J4	244	P4	344	U4	444	Z4

Ordering example pump elements:



1 PE-120 installed in outlet position 1:
Fig. = 200 -> Code = 01

Reservoir size (kg)	Transparent reservoir				Steel reservoir			
	1,9	2,5	4	8	16	2	4	8
without grease level control	27	25	30	35	37	31	26	36
with LM min. plug connection M12x1 in reservoir cover		51	52	53				

Special variants 000

Special variants: 028 = Pump elements with microswitch
257 = Pump elements with malfunction indicator and grease repatriation

