

Pump Manual

ALPB Progressive Lubrication Pump





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Overview

Lubmann progressive centralized lubrication pump type - ALPB has been widely used in industries like wind power, mining, metallurgy, machine tools, textiles, food, ports, commercial vehicles, construction machinery, and heavy mechanical equipment, etc.

Lubmann automatic lubrication system lubricates all lube points as required through progressive lubrication system. It can reduce the friction resistance, reduce contact wear and decrease the friction surface temperature. Meanwhile, it plays a supporting role of anti-rust, shock absorption and sealing.



ALPB Progressive Lubrication Pump + Progressive Dividers

Overview

The ALPB series progressive central lubrication pump is electrically operated and has up to a max. 4 independently operating lubricant outlets, which can be engaged by bypasses. A separate pump element PE is required for each outlet. Three different delivery rates are available. This allows the grease quantity to be metered precisely for the requirements of the individual progressive distributor layouts.

These pumps enable the delivery of lubricants up to NLGI-Class 2 at a working pressure of maximum 300 bar (adjusting of Safety Valve SV).

The ALPB series pumps differ in reservoir size and control type. It can be controlled by the standard integrated controller with current version AK06*, or externally by PLC, board computer or external controller.



Dia. 4.1 Pump with 2/4/6 liter - Outside Diameter. of Reservoir : 160 mm

Technical data:

Motor:		
Operating Voltage:	12V DC ±10%	24V DC ±10%
Revolutions:	20 rpm	
Relative duty cycle:	30% ED S3 30 minutes	
Current consumption at +20°C:		
Idling:	1A	0.6A
Full load:	5A	3A
Fuse:	10A	6A

Pump:	
Max. number of pump elements:	4
Max. Operating pressure:	350 bar
Adjusting of pressure relief valve till:	300 bar
Permissible operating temperature:	-35°C to +70°C
Sound pressure level	<70 dB

Reservoir size:	2/4/6/8/15/20 L
Mounting position:	Vertical
Protection type:	IP65 as per ISO

Lubricant:	Greases up to NLGI- CI.2
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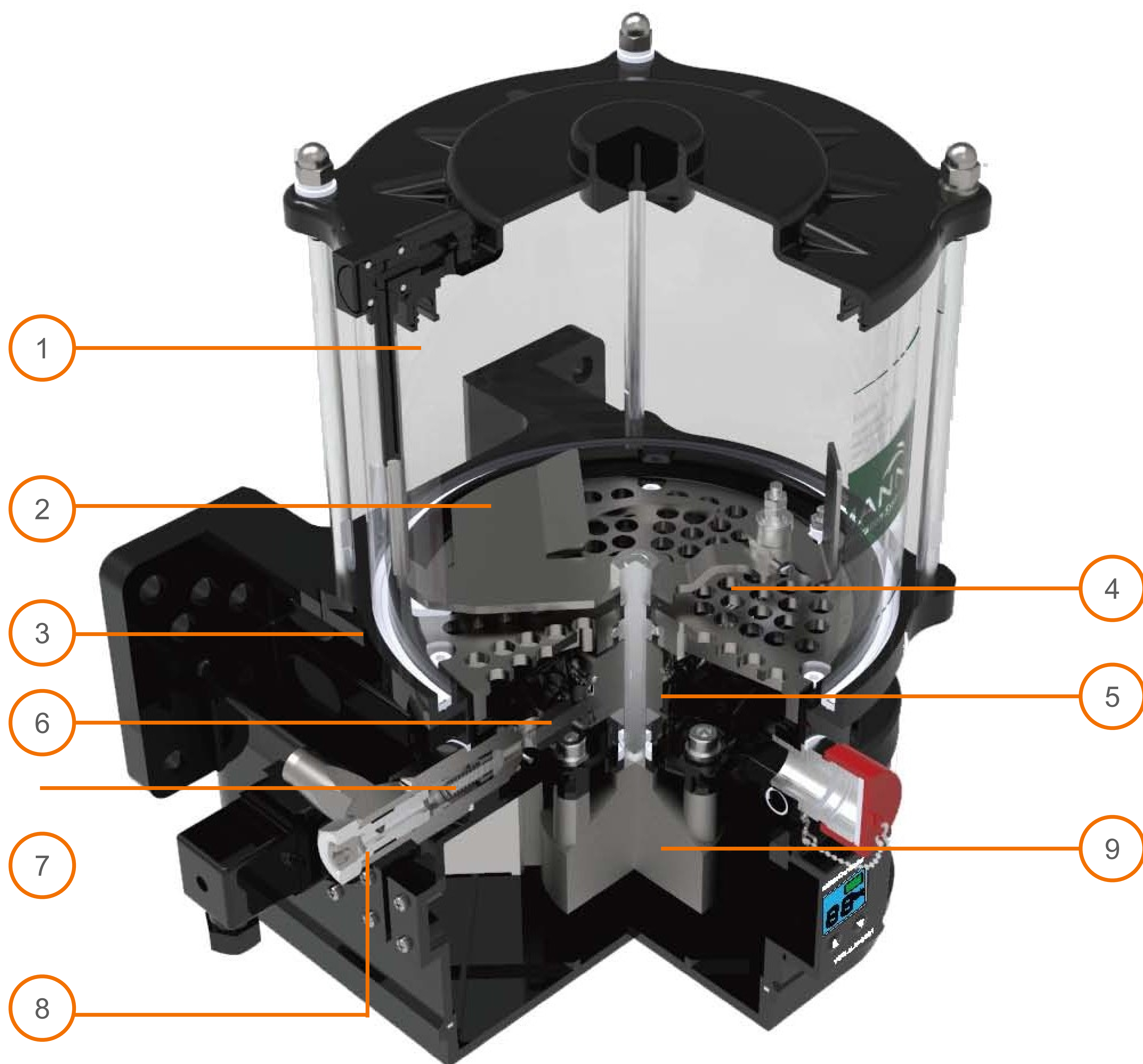
Dia. 4.2 Pump with 8/15/20 liter - Outside Diameter. of Reservoir : 260 mm

Working Principle

A gear DC motor ⑨ continually operates eccentric pressure disc ⑤. This eccentricity effects the suction and pressure strokes of the delivery piston ⑥, whereby the integrated non-return valve ⑦ prevents the delivery media from being sucked back out of the main line.

The stirrer ② pushes the lubricant out of the grease reservoir ① through a screen ④, which reduces any air bubbles, to the suction area in the pump body ③. The stirrer ② enables a visual check of the lubricant volume still present in the transparent supply container ①.

The safety valve (8) is pre-set to 300 bar.



Dia. 5.1 Pump working principle

1. Grease reservoir 2. Stirrer 3. Pump body 4. Screen 5. Eccentric pressure disc 6. Delivery piston 7. Non-return valve 8. Safety valve 9. Motor

Pump Element

ALPB series pumps can be installed -

max. 3 pump elements with type C safety valve (SV-C without bypass) on the pump outlet position 1/2/3

or

max. 2 pump elements with type A safety valve (SV-A with bypass) on the pump outlet position 1/3*.

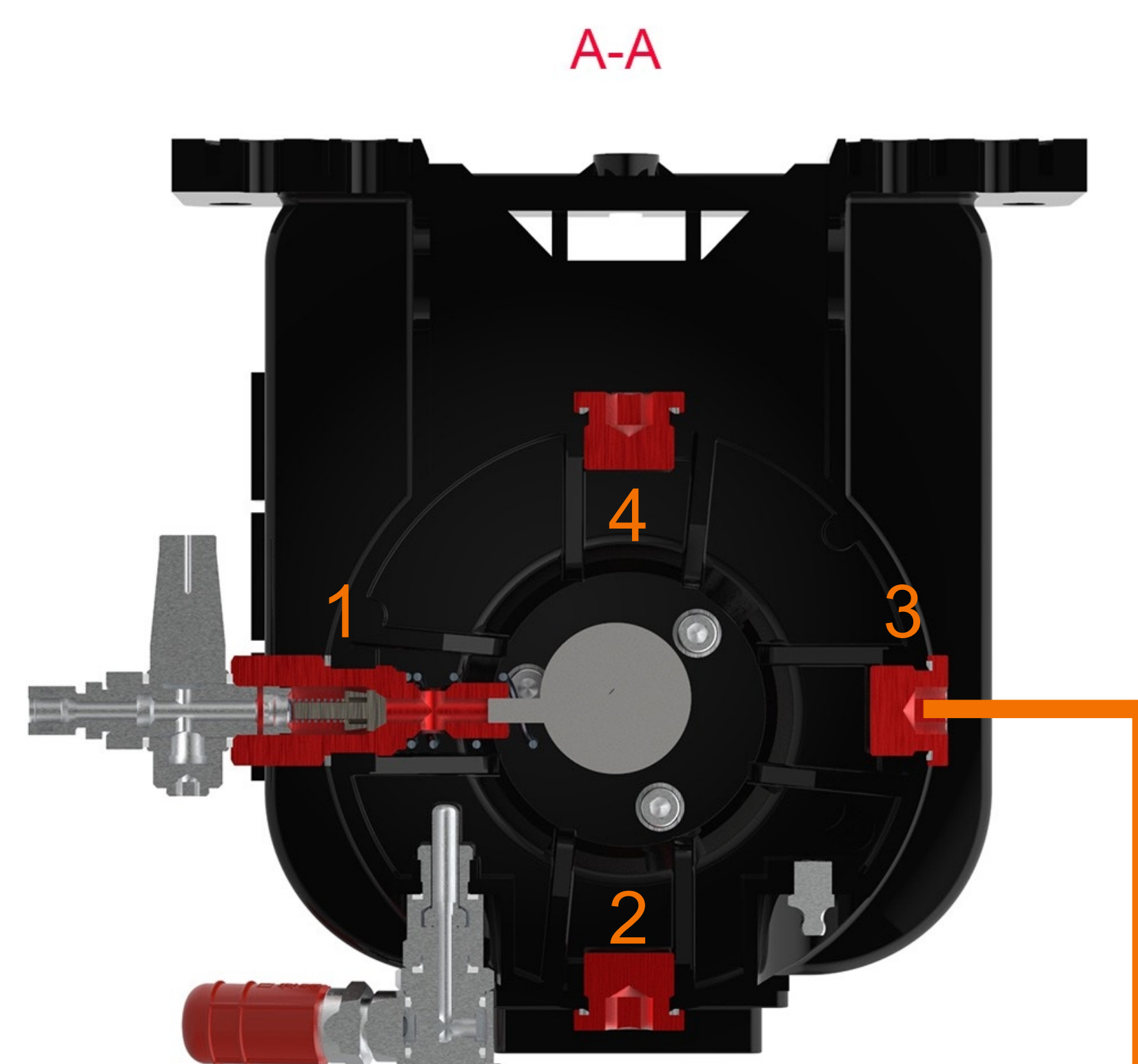
* More possibilities for customized Pump Elements setting please contact us.

Pump elements can deliver the grease separately with the flow rate range between 1.5-4.5 cm³/min or bridge with each other to achieve a higher flow rate till 13.5 cm³/min with SV-A safety valve

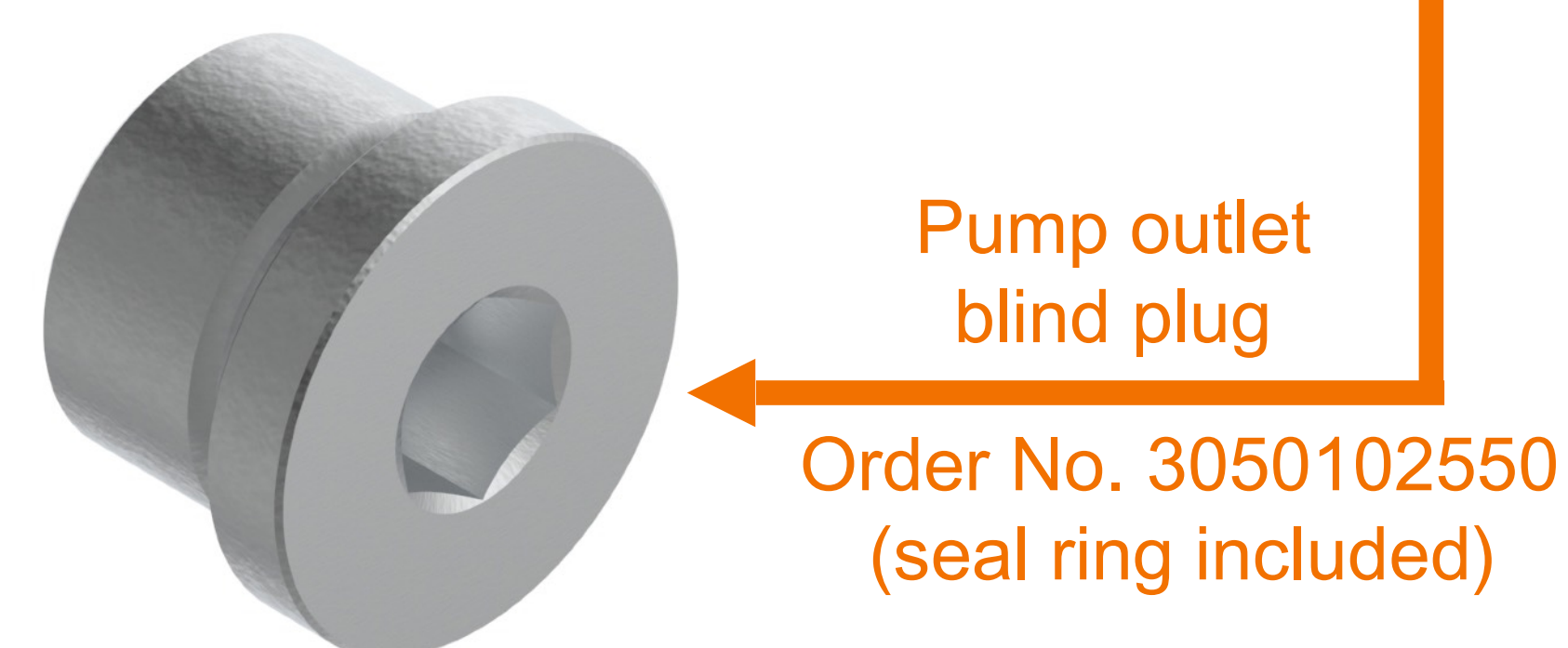
or

till 18 cm³/min with SV-C safety valve*.

* For more information of pump elements bridge please contact us.



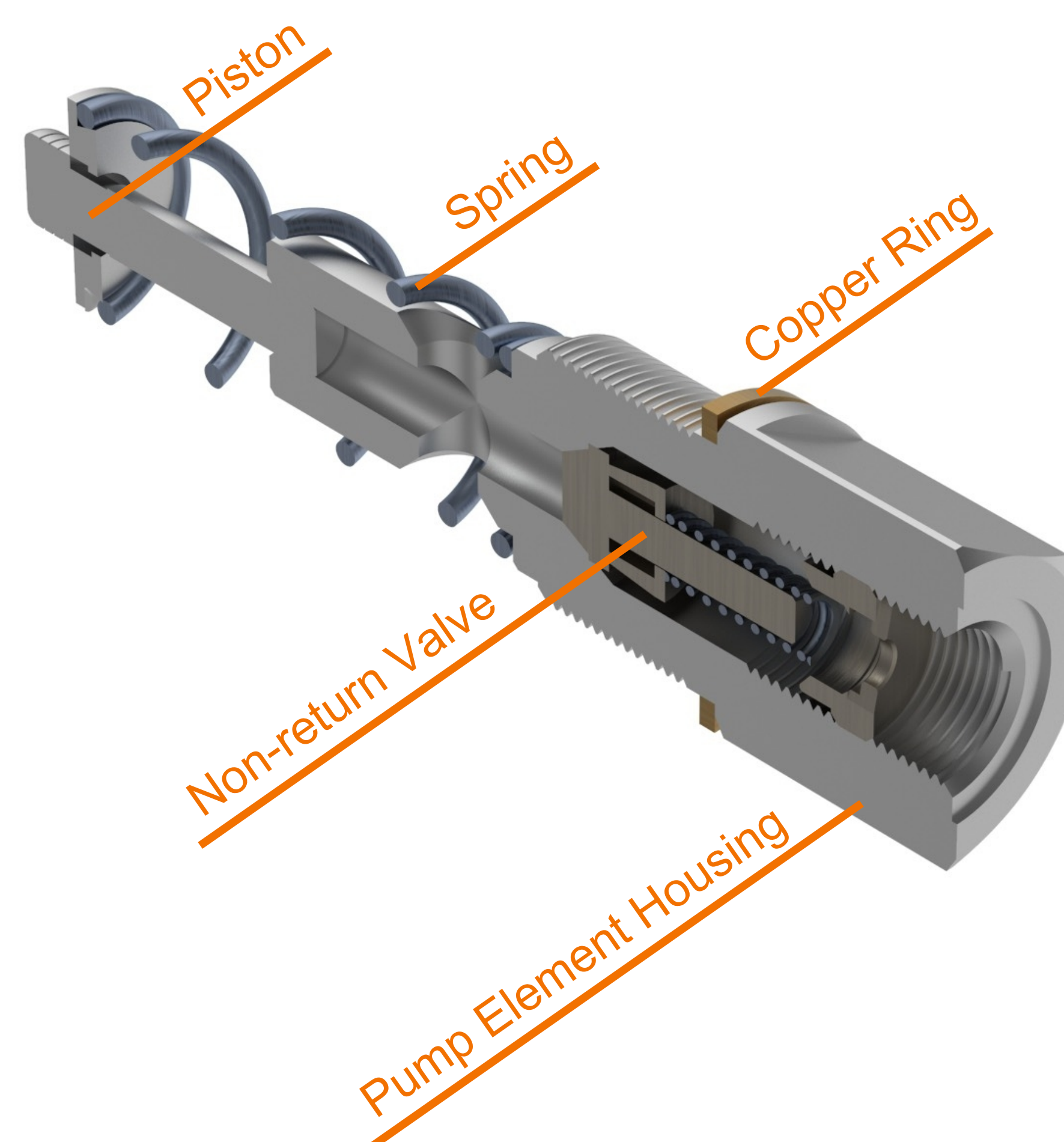
Dia. 6.1 Pump outlets position



Technical Data Pump Element (without safety valve):

	Fixed delivery quantity (cm ³ /min)	Order No.	Connecting thread
PE 1.5	1.5	2011021730*	M22x1.5
PE 2.5	2.5	2011220450*	M22x1.5
PE 4.5	4.5	2011021690*	M22x1.5

* Order No. for PE1.5/2.5/4.5 includes Copper Ring already, but without safety valve.



Dia. 6.2 Pump Element structure

Pump Element

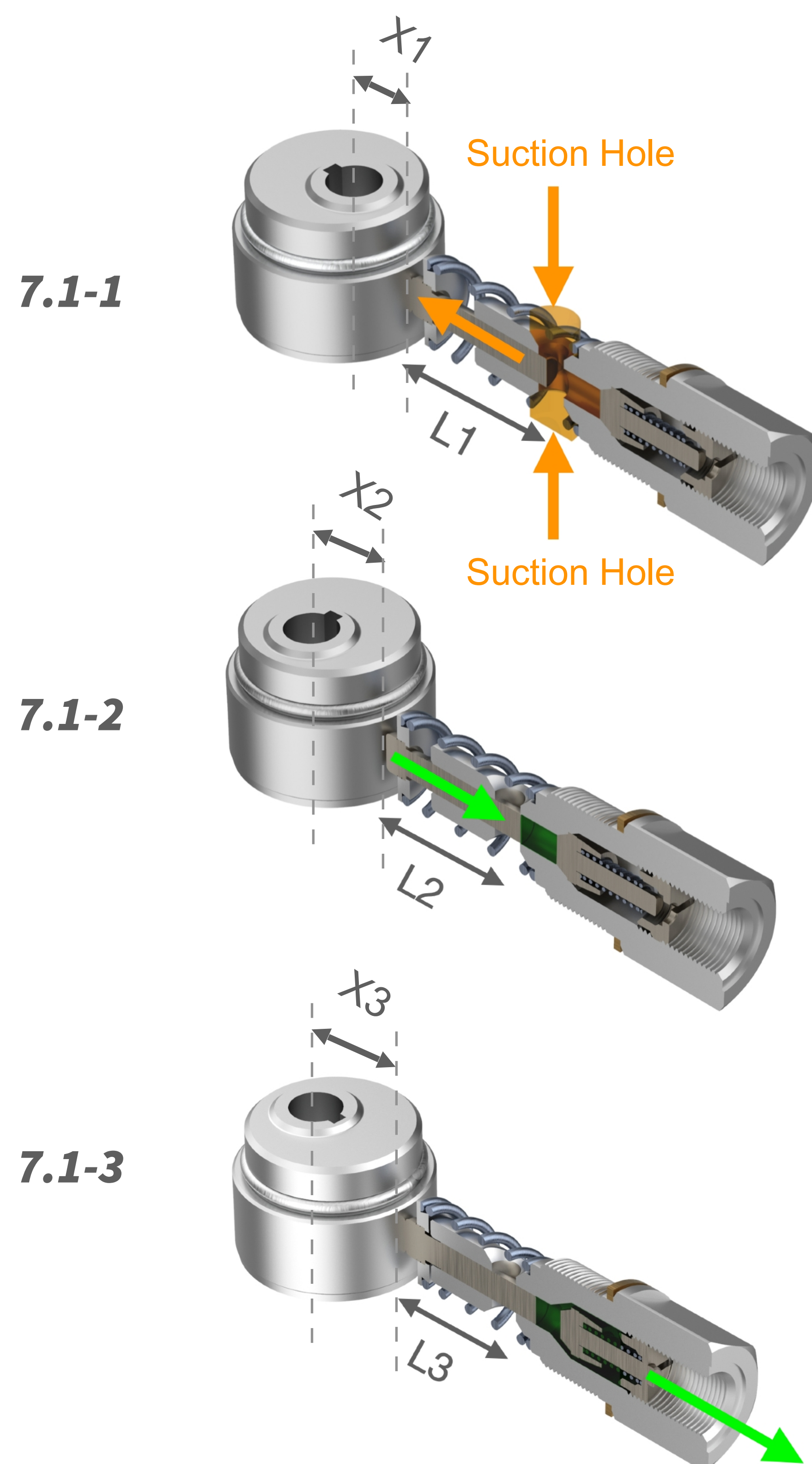
Function of Pump Element

On the vertical shaft of the geared DC motor a eccentric pressure disc EPD with eccentric hole in the centre is mounted. When the pump starts running the EPD will make a back-and-forth movement (X1, X2, X3). The pump element is mounted in the pump body the piston of the pump element will run against the EPD.

When the EPD is moving away from the piston (**Dia. 7.1-1**) the spring on the pump element will push the piston against the EPD. In this suctionstroke grease is sucked into the pump element through the 2 suction holes.

See the 2 arrows in (**Dia. 7.1-1**).The vertical shaft will continue rotating and the EPD will push the piston into the other direction (**Dia. 7.1-2**). In this pump stroke the piston will close the 2 suction holes and pushes the suctioned grease to the non-return valve.

The pressure created by the piston and grease will open the non-return valve (**Dia 7.1-3**) and the grease flows to the outlet of the pump element further into the lubrication system.

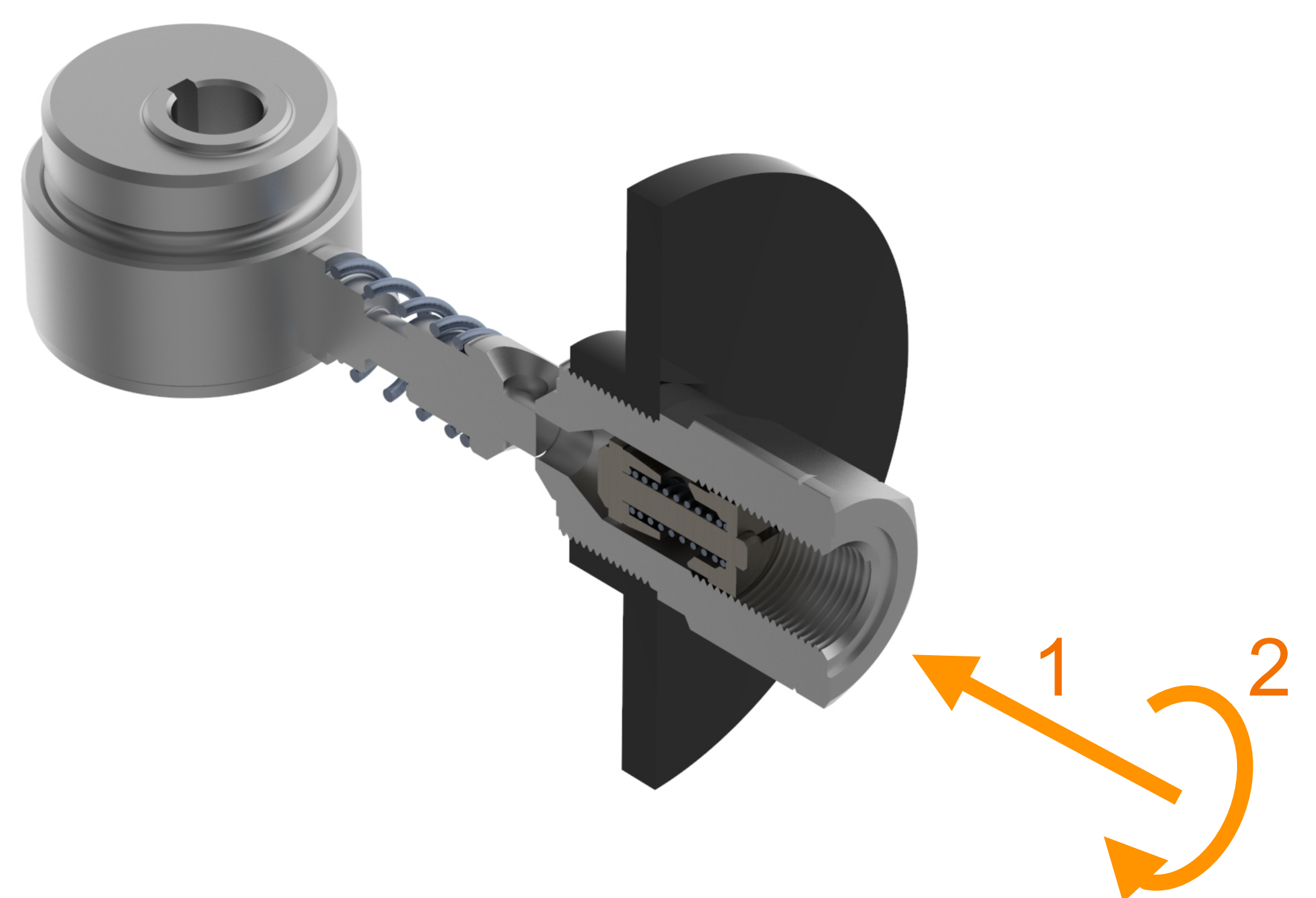


Dia. 7.1 Pump Element Working Principle

Pump Element Installation and Removal

1. Insert the pump element vertically into the pump outlet housing drilling (**Dia. 7.2**).
2. Tighten the pump element clockwise with a torque wrench, the preset value of the torque wrench can not be less than 25 N/m (**Dia. 7.2**).
3. For removal, reserve above sequence.

Only install or remove the pump element when pump power OFF!!!



Dia. 7.2 Pump Element installation and removal

Safety Valve Type C: SV-C for PE (Standard Version)

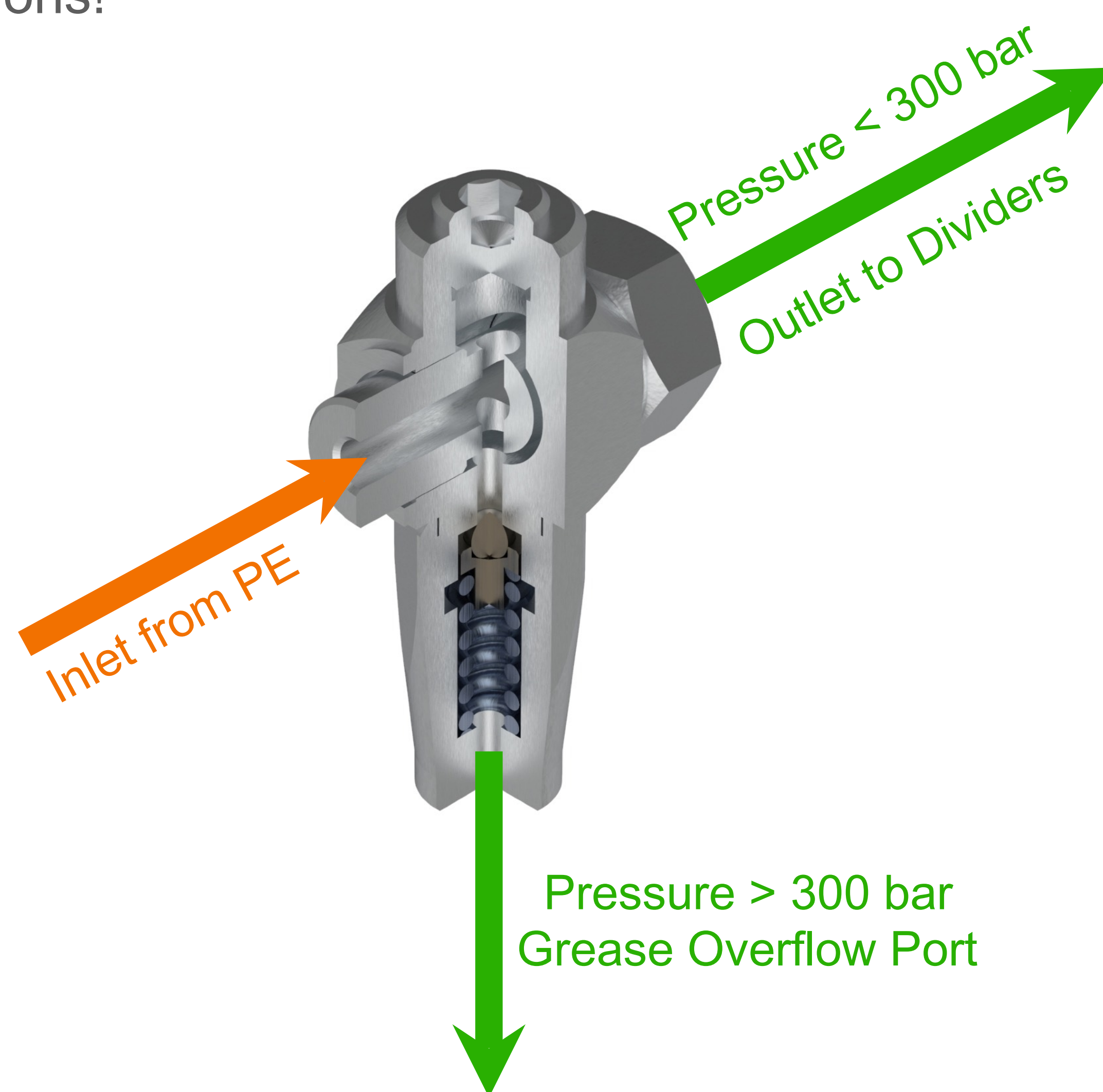
SV-C without bypass function
SV-C is preset to 300 bar

When the system pressure is higher than the pre-set valve (300 bar), the safety valve opens, lubricant flows from the safety valve overflow port out.

Please consider the relevant environmental conditions!

Order No. for SV-C

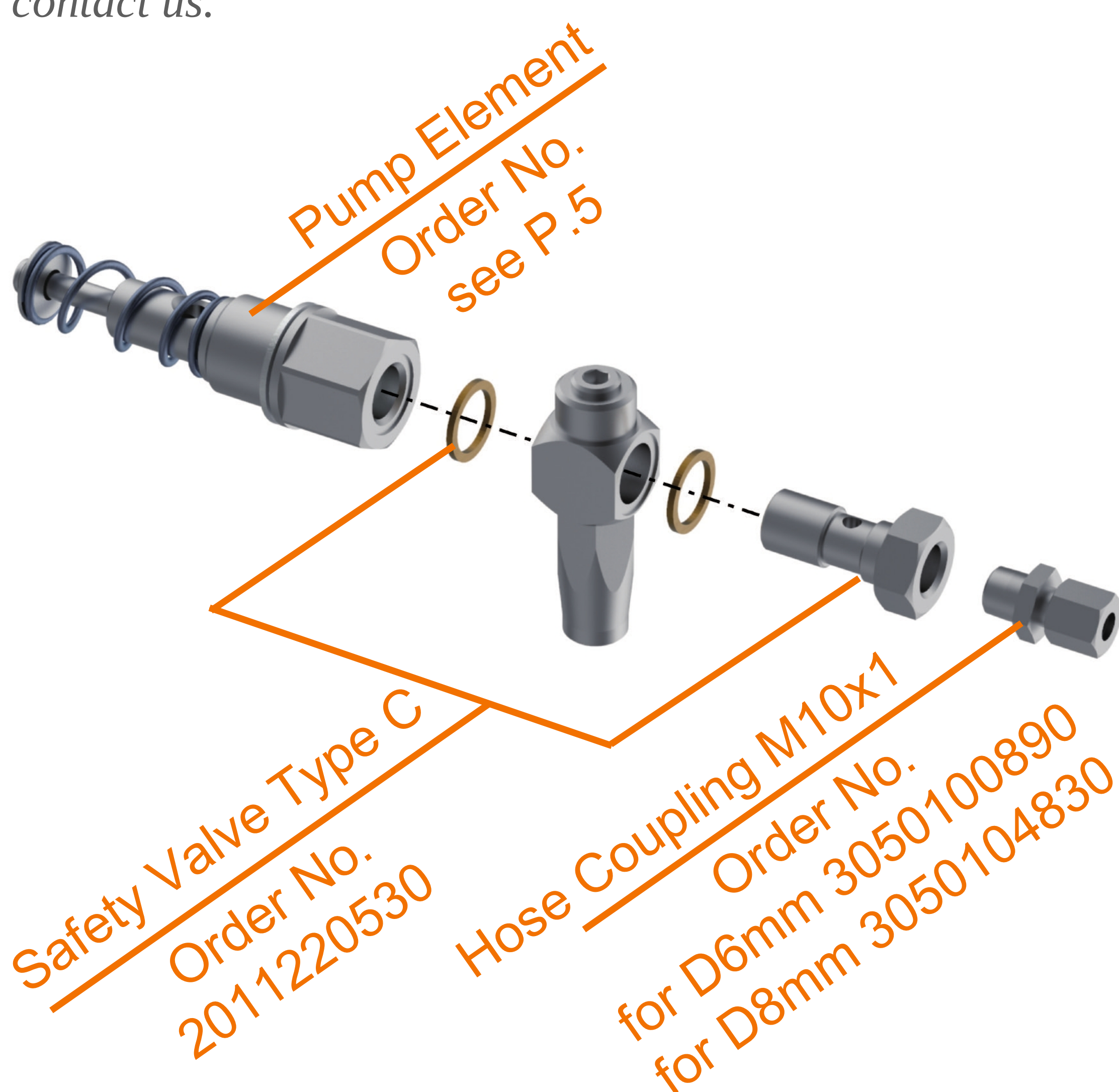
	Option	Order No.
SV-C*	/	2011220530
Straight Coupling*	D6mm	3050100890
	D8mm	3050104830
Copper Ring	/	3040200510
SV-C with PE + Straight Coupling + Copper Ring	PE 1.5 + D6mm	9901630
	PE 2.5 + D6mm	9901631
	PE 4.5 + D6mm	9901632
	PE 1.5 + D8mm	9901633
	PE 2.5 + D8mm	9901634
	PE 4.5 + D8mm	9901635



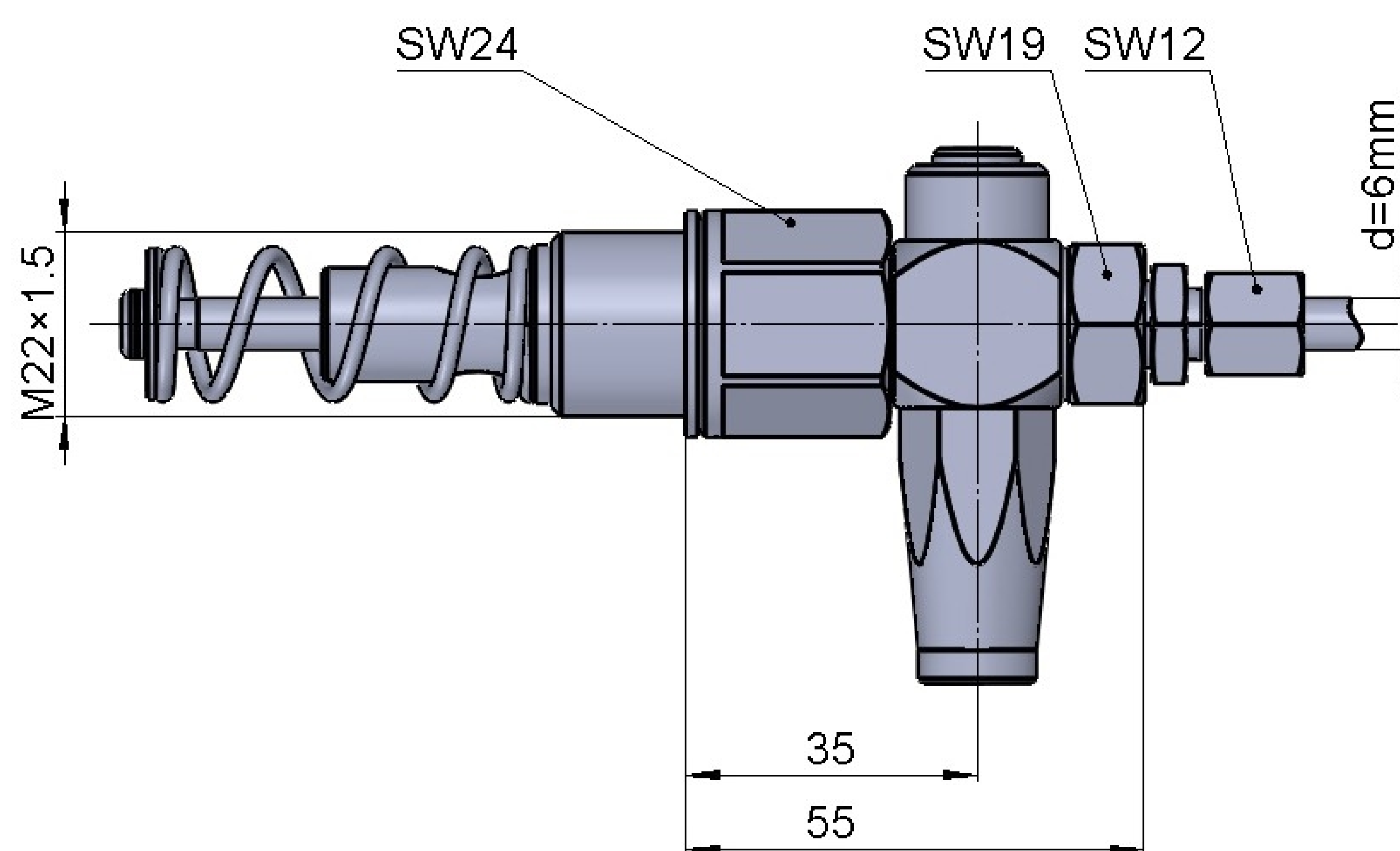
Dia. 8.1 Safety valve C working principle

* For SV-C Order No. 2011220530 already includes the copper rings. For extra Copper Ring Order No. is 3040200510.

* For further information to hose couplings like swivel type or elbow type please check our accessories catalog or contact us.



Dia. 8.2 Explosion for SV-C with PE + Straight Coupling



Dia. 8.3 Installation Dimensions for SV-C + PE

Safety Valve Type A: SV-A for PE

Safety valve Type A/B (SV-A, SV-B): with bypass function
 Safety valve Type A/B (SV-A, SV-B): Preset to 300 bar

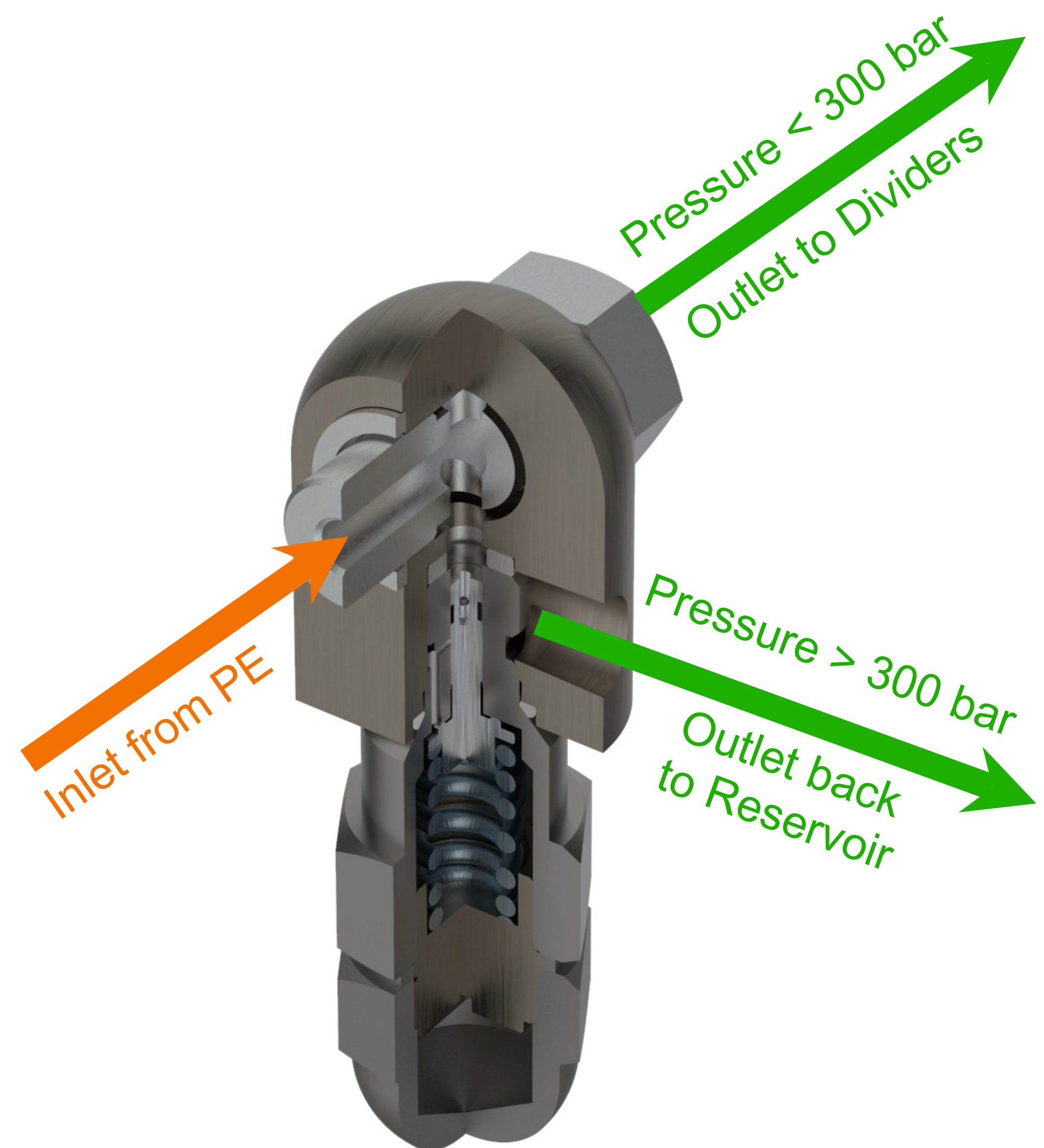
When the system pressure is higher than the pre-set valve (300 bar), the safety valve opens, lubricant flows from the bypass of the safety valve and back to pump reservoir.

Safety valve Type A: single bypass function
 Safety valve Type B: dual bypass function*

* For more information of Safety valve Type B please contact us.

Order No. with Safety Valve Type A

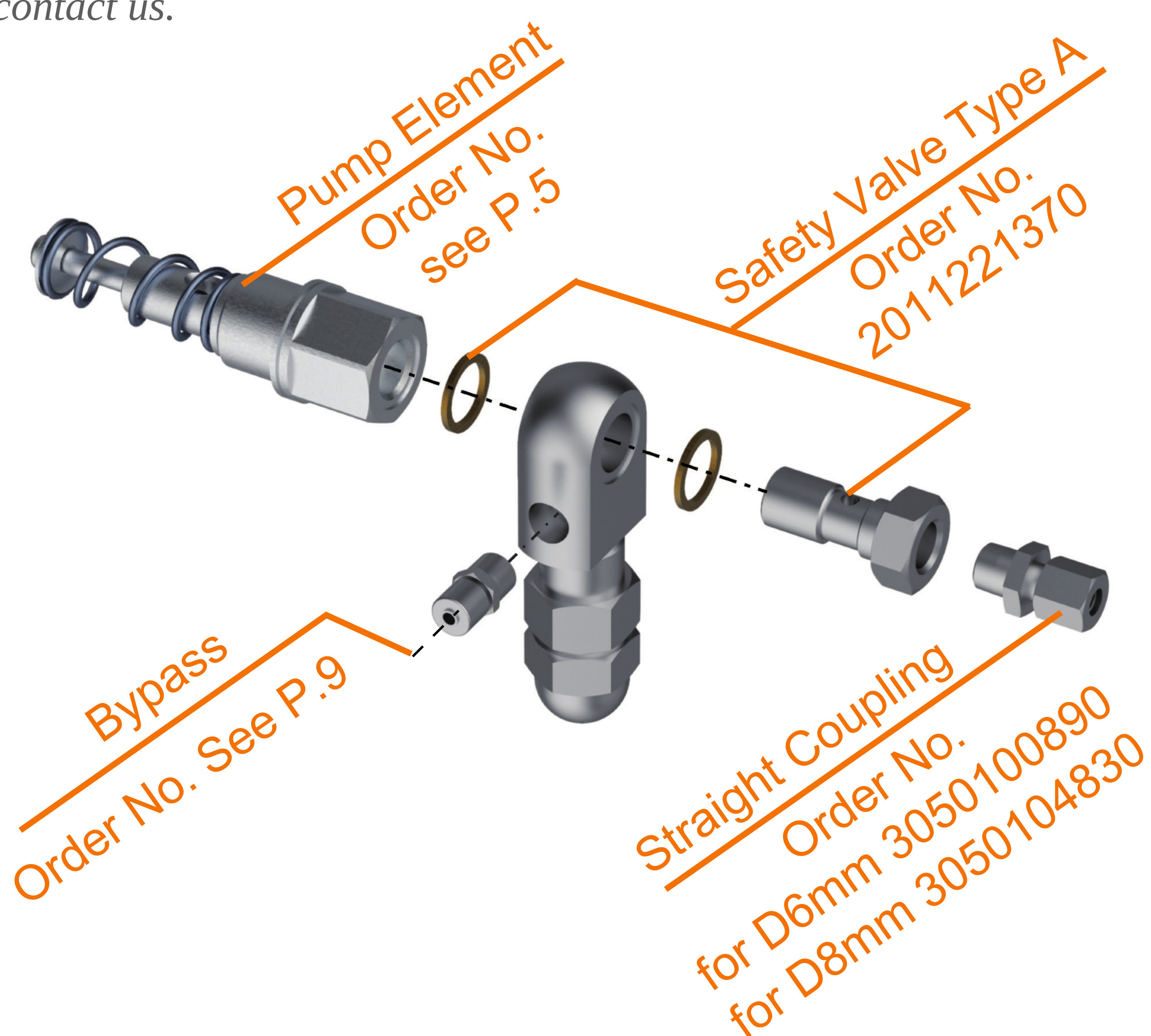
	Option	Order No.
SV-A*	/	2011221370
Bypass	Single bypass	9901642
	Dual bypass	9901643
Straight Coupling*	D6mm	3050100890
	D8mm	3050104830
Copper Ring	/	3040200510
SV-A with PE + Straight Coupling + Copper Ring + Single bypass	PE 1.5 + D6mm	9901636
	PE 2.5 + D6mm	9901637
	PE 4.5 + D6mm	9901638
	PE 1.5 + D8mm	9901639
	PE 2.5 + D8mm	9901640
	PE 4.5 + D8mm	9901641



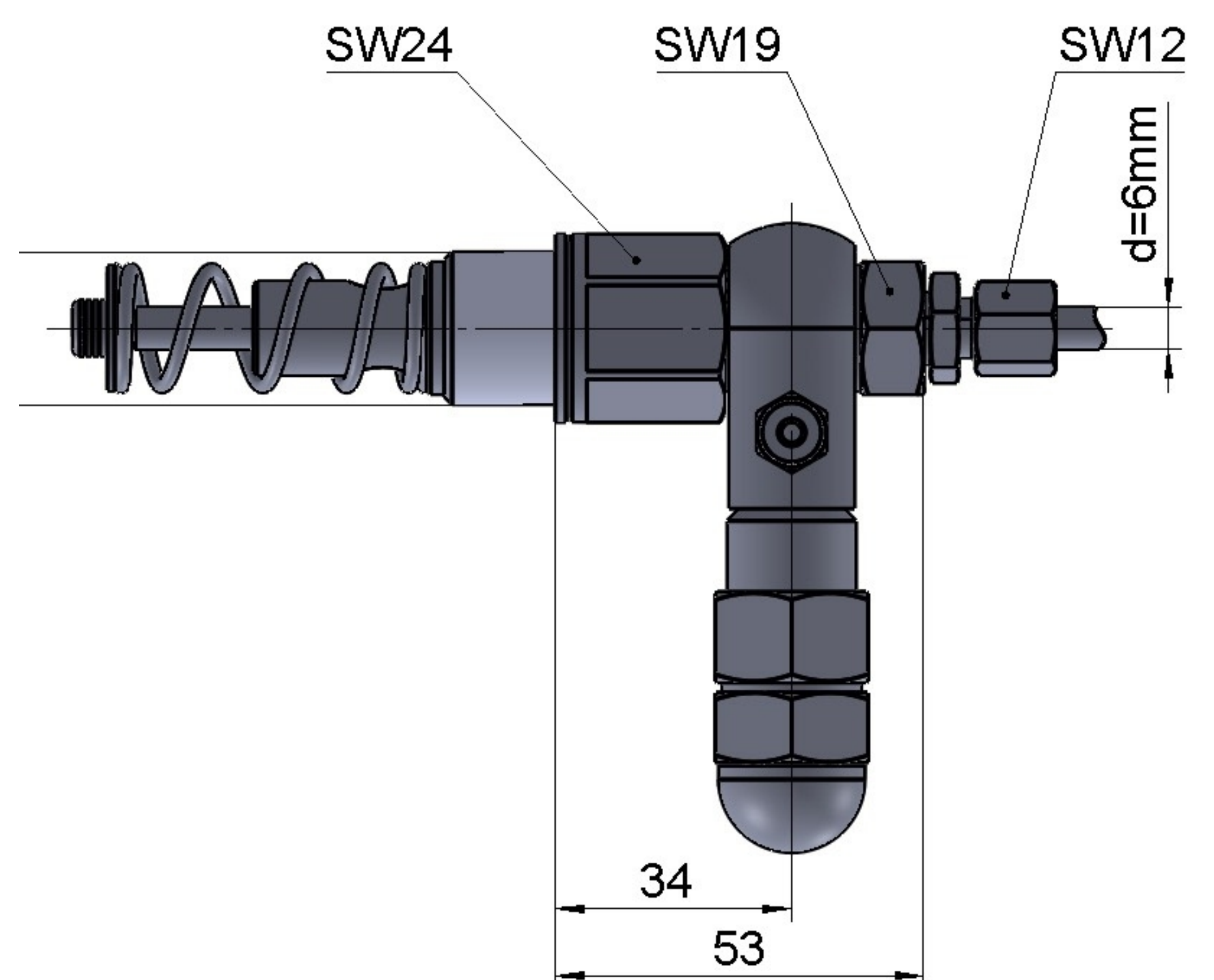
Dia. 9.1 Safety valve A working principle

* For SV-C Order No. 2011220530 already includes the copper rings. For extra Copper Ring Order No. is 3040200510.

* For further information to hose couplings like swivel type or elbow type please check our accessories catalog or contact us.



Dia. 9.2 Explosion for SV-A with PE + Straight Coupling + Bypass



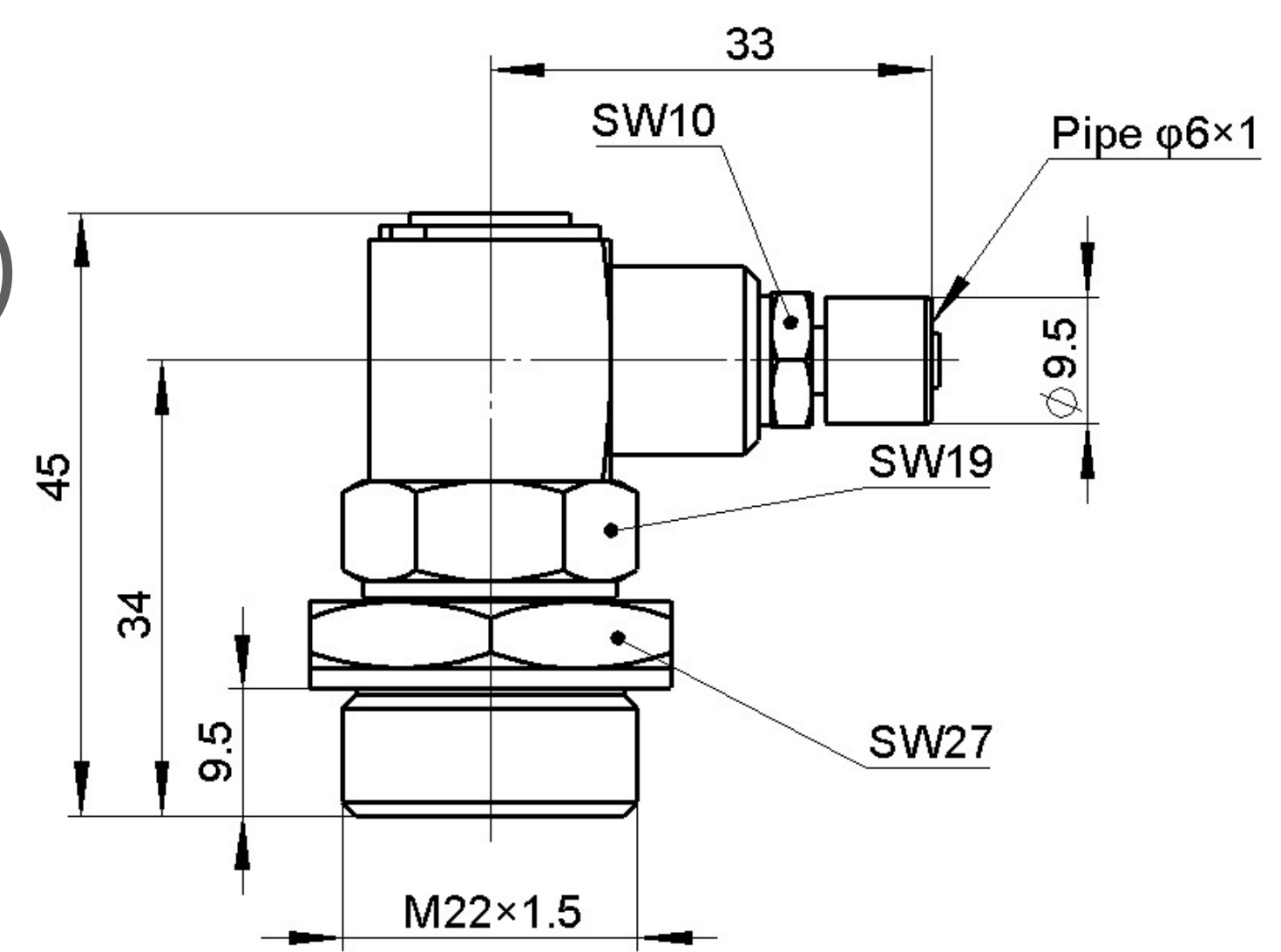
Dia. 9.3 Installation Dimensions for SV-A + PE

Grease Bypass Kit for Safety Valve Type A

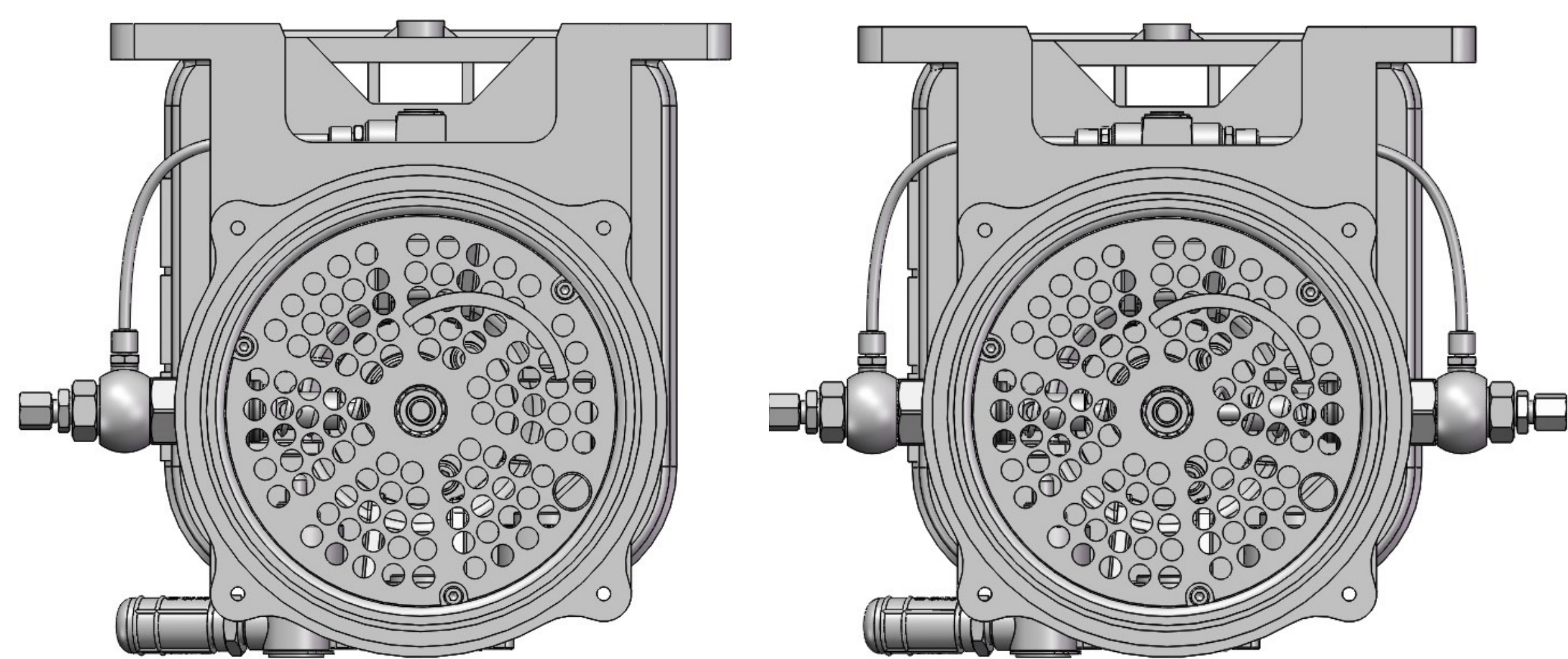
Single Bypass (Order No. 9901642/2011222820)

In **Dia. 10.2** shows the pump with safety valve type A and single bypass, which mainly used for Wind mill application.

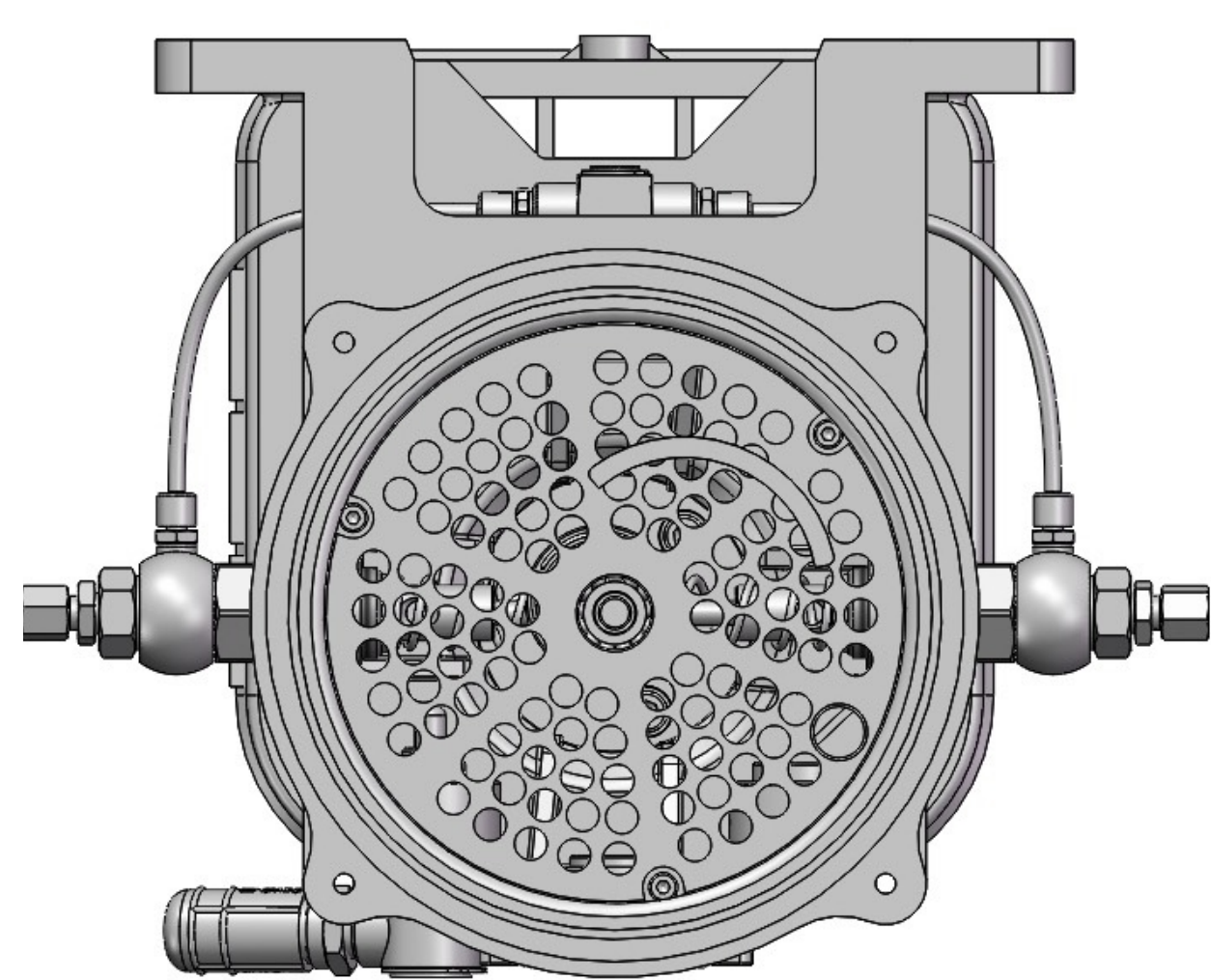
When the pressure is higher than the preset max. value of the safety valve, the grease flows back through the pump element - safety valve - single bypass - pump reservoir.



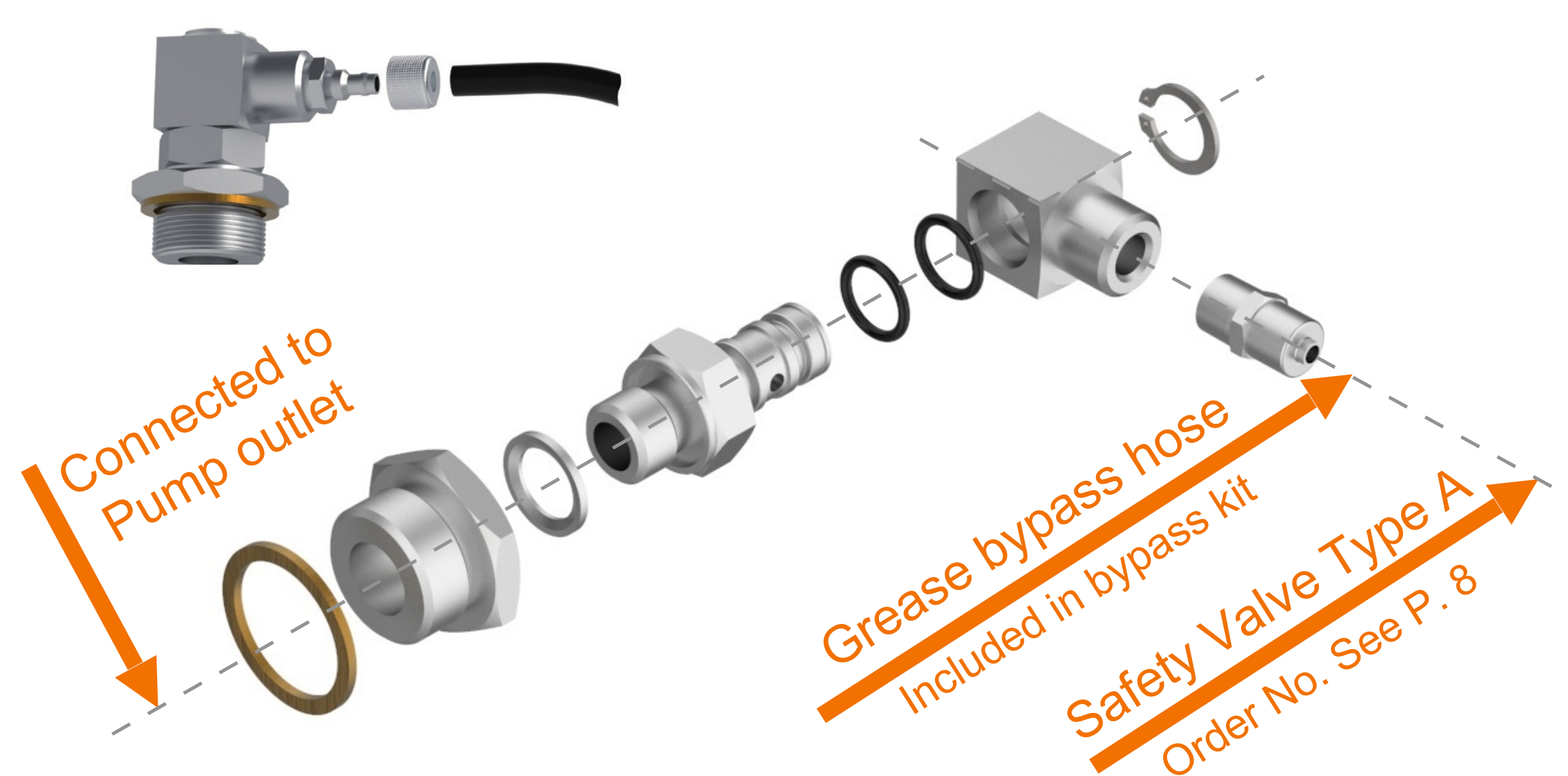
Dia. 10.1 Installation Dimensions of Single Bypass



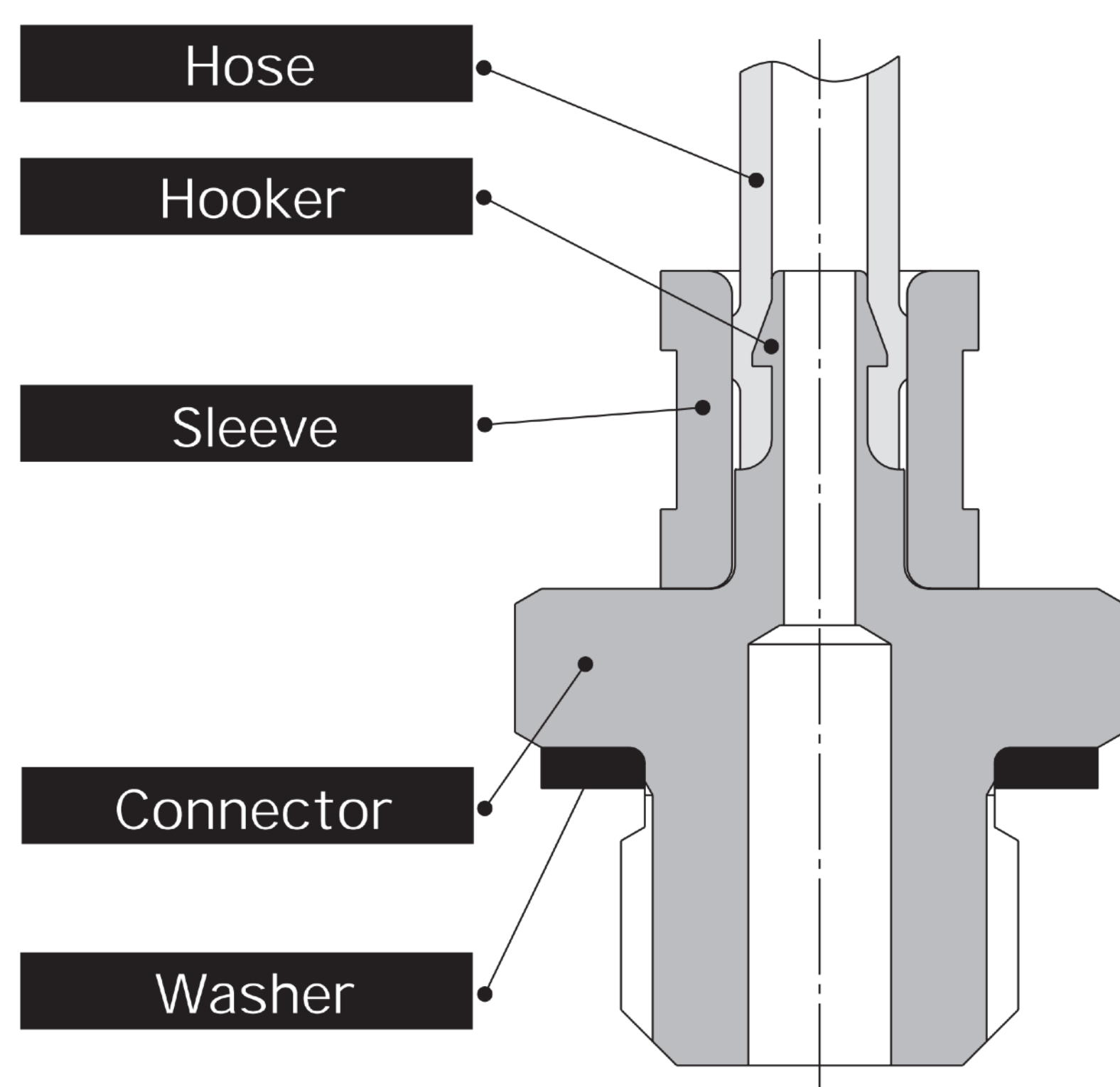
Dia. 10.2 Pump with 1 safety valve type A + Single Bypass



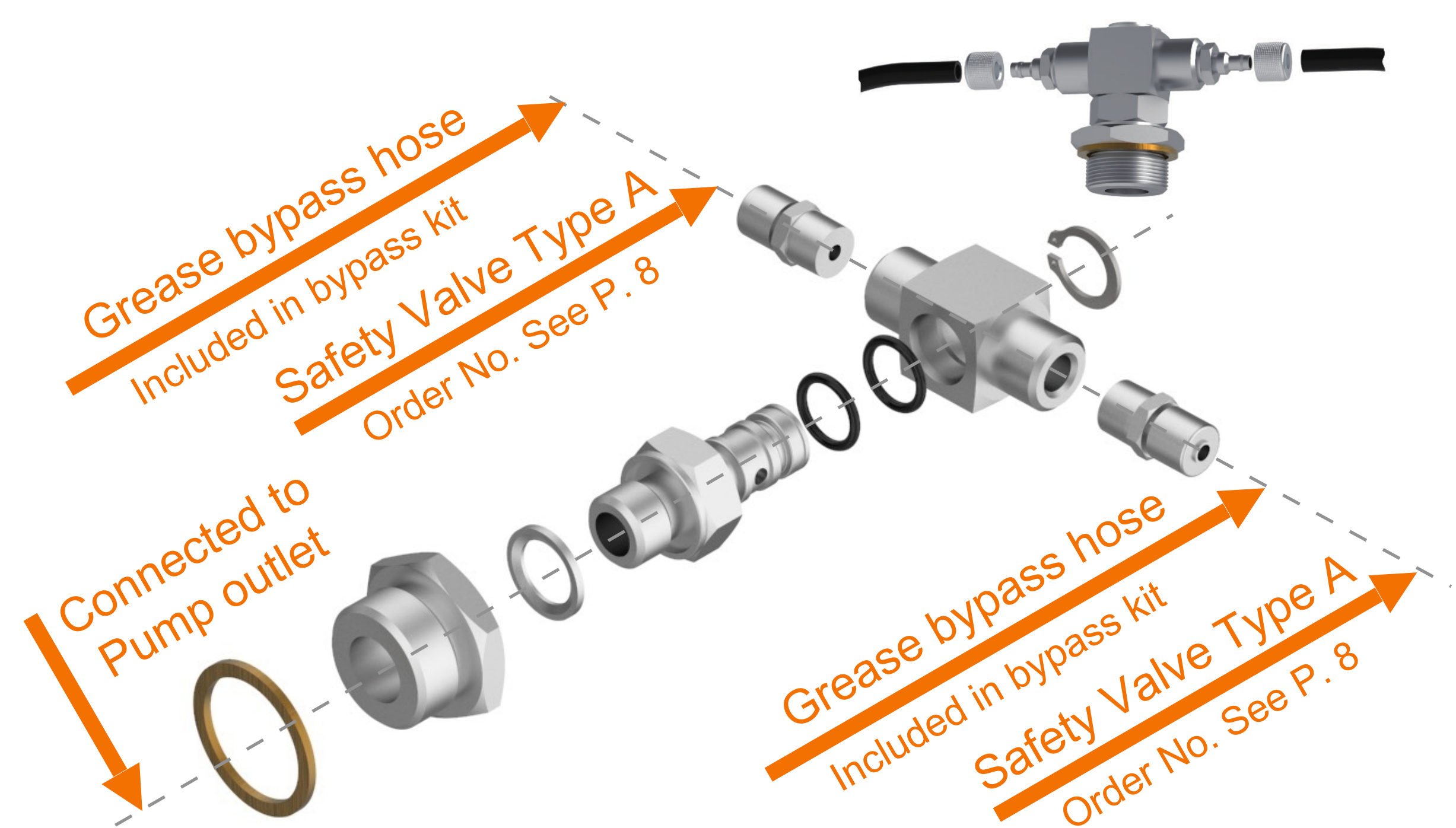
Dia. 10.3 Pump with 2 safety valve type A + Dual Bypass



Dia. 10.4 Explosion of Single Bypass



Dia. 10.5 Connection of hose for Single or Dual Bypass

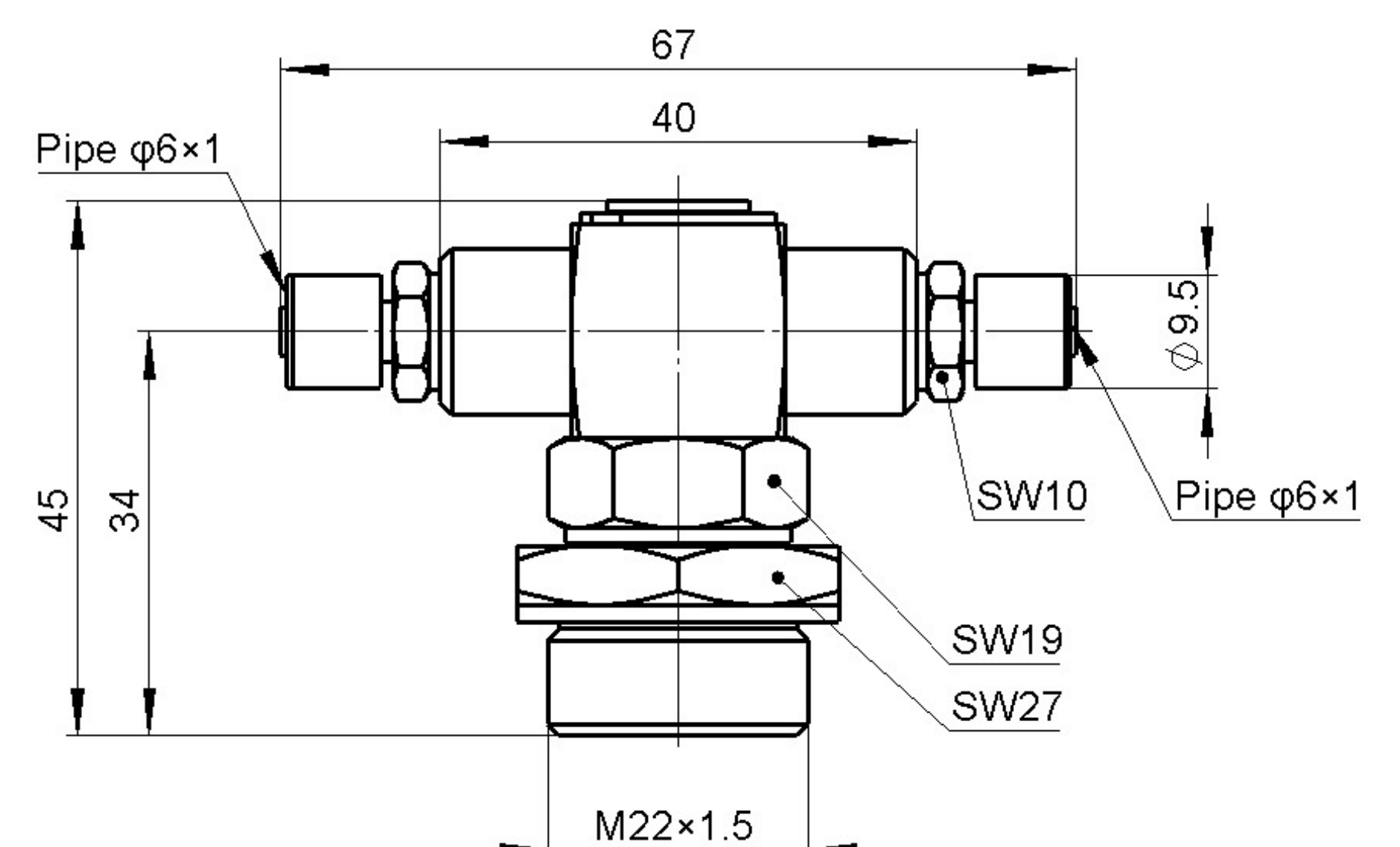


Dia. 10.6 Explosion of Dual Bypass

Dual Bypass (Order No. 9901643)

In **Dia. 10.3** shows the pump with safety valve type A and dual bypass, which mainly used for Wind mill, heavy metal industry application.

When the pressure is higher than the preset max. value of the safety valve, the grease from the 2 pump outlets flows back through the pump element - safety valve - dual bypass and combined back to pump reservoir.



Dia. 10.7 Installation Dimensions of

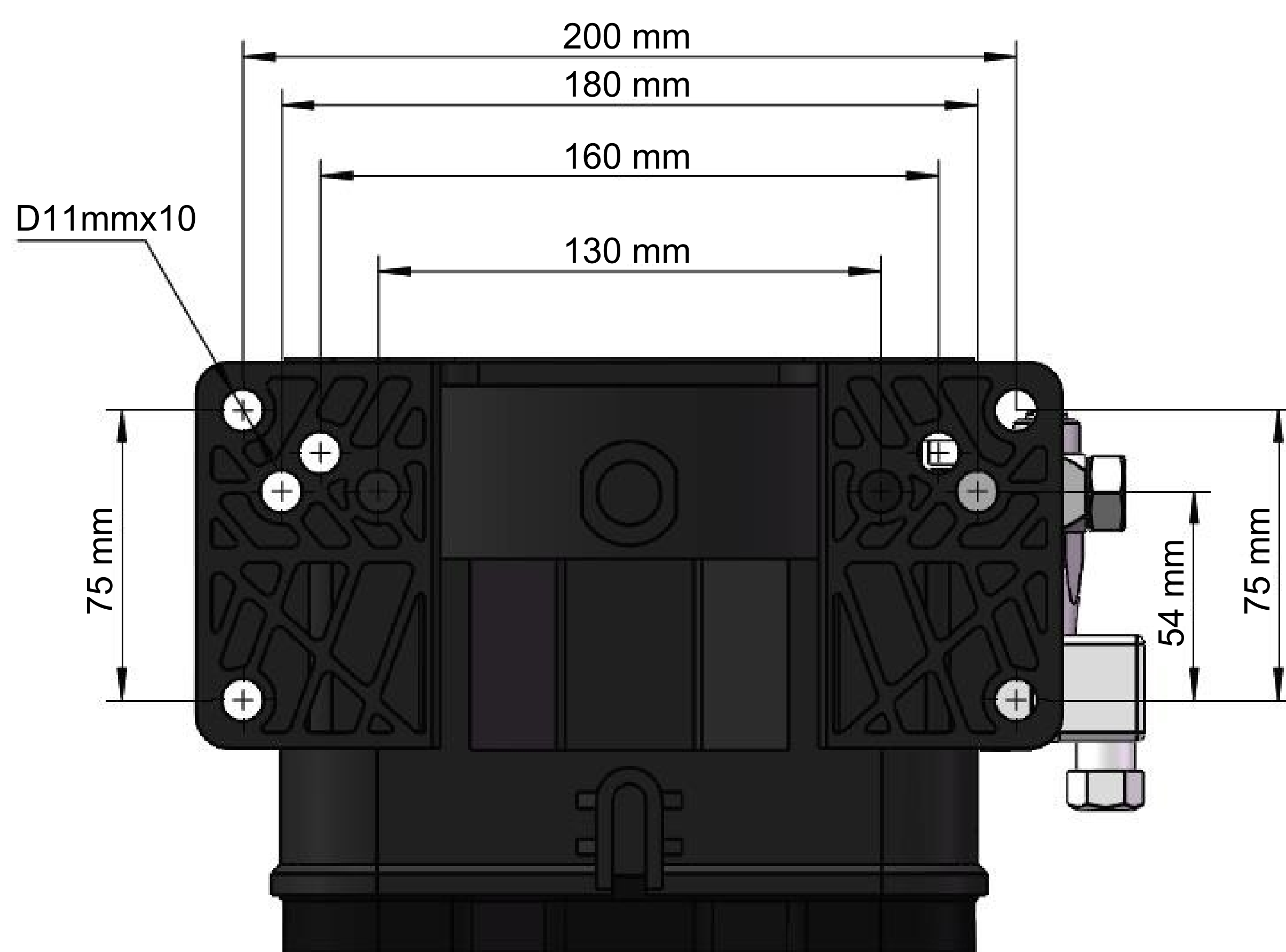
Installation Dimensions



Dia. 11.1 Installation dimensions for ALPB pump (Stirring paddle type)

Installation Dimensions for ALPB Pump (Stirring Paddle Type)

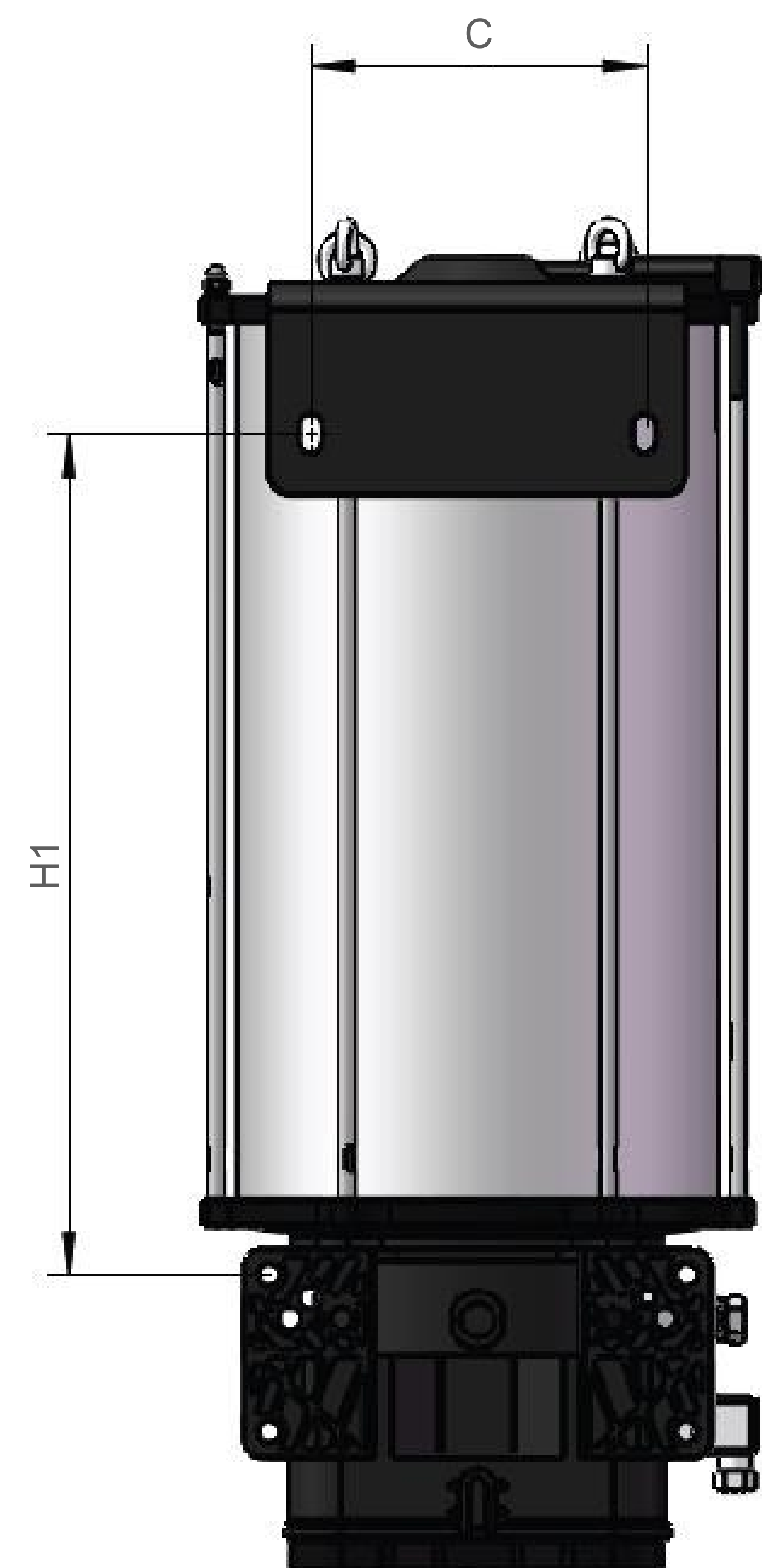
Capacity	2L	4L	6L	8L	15L	20L
A (mm)	242	242	242	259	259	259
B (mm)	245	245	245	265	265	265
H (mm)	317	462	562	521	626	769



Dia. 11.2 Mounting dimensions for ALPB pump (Stirring paddle type) - on Bottom

Mounting Dimensions for ALPB Pump (Stirring Paddle Type)

Capacity	15L	20L
H1 (mm)	402	545
C (mm)	160	160



Dia. 11.3 Mounting dimensions for ALPB pump (Stirring paddle type) on Top for Pump 15L and 20L

Low-level Indication

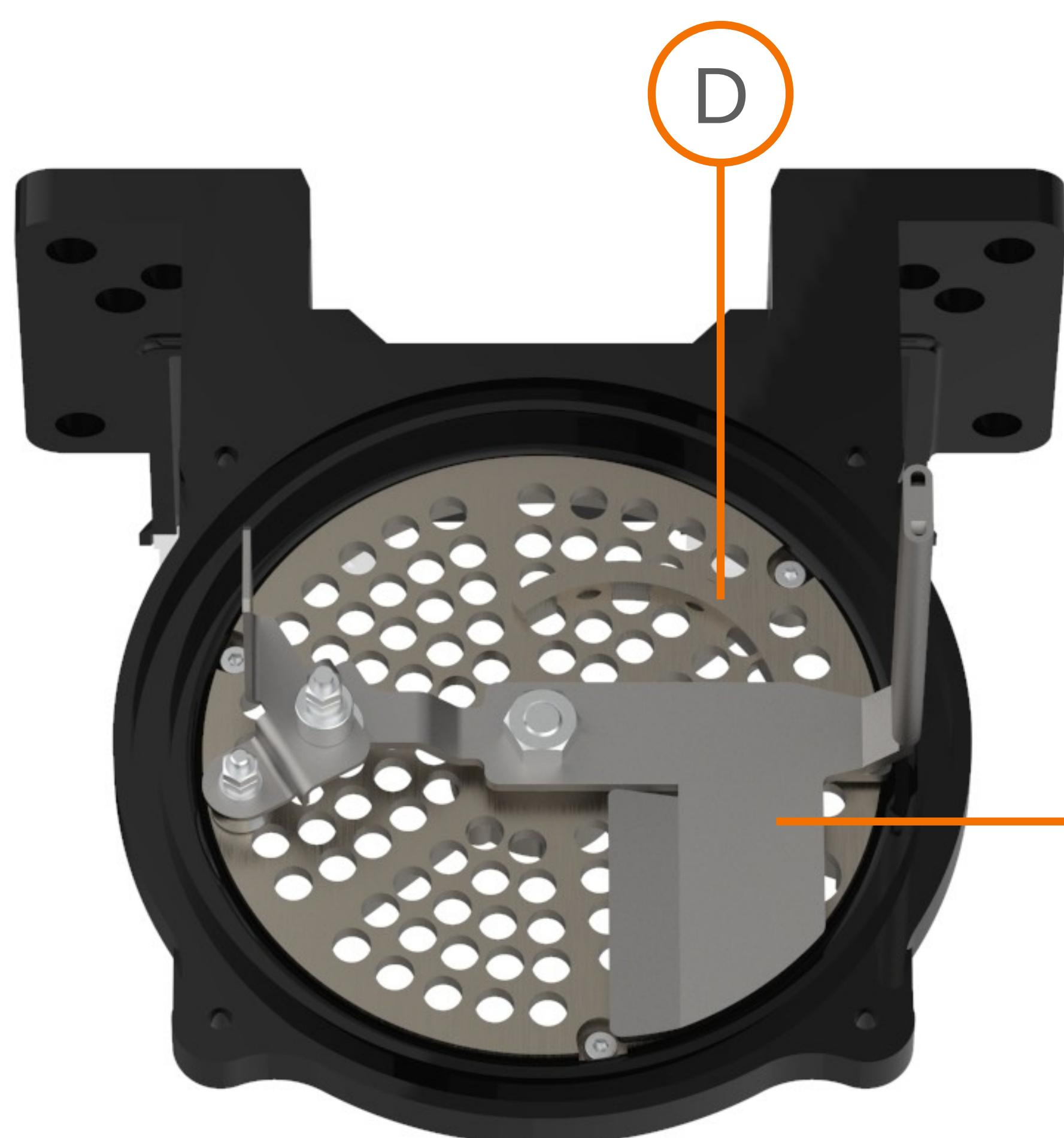
Functioning principle of the intermittent low-level indication

The intermittent low-level indication operates of contact, Its main components are the following:

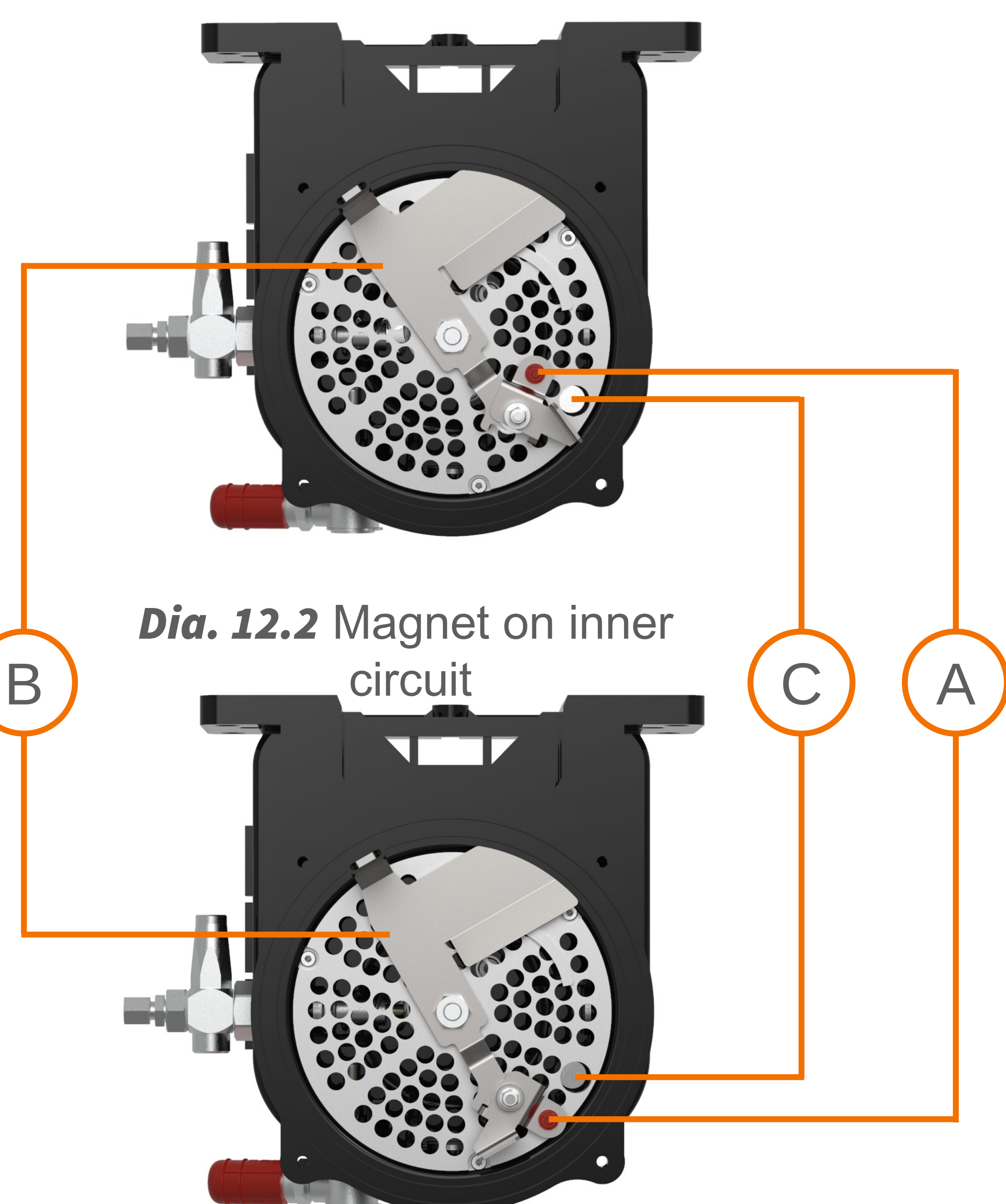
1. firmly positioned magnetic Ⓐ switch inside of the reservoir bottom
2. flexible guide plate Ⓑ connected to the stirring paddle with a magnet Ⓒ and a control curved track Ⓓ

If the reservoir is filled with a lubrication grease suitable for the intermittent low-level indication and the pump is operating, then the guide plate Ⓑ is deflected by the resistance of the lubrication grease. As a consequence the magnet Ⓒ connected to the guide plate Ⓑ is moved on this inner circuit and cannot trigger a pulse at the magnetic switch Ⓐ with its magnetic field .A control curved track Ⓓ positively guides the magnet together with the pivoted guide plate towards the outside during each revolution. As soon as the guide plate leaves the control curved track, the lubricant's resistance pushes the guide plate together with the magnet to the inside again.

As soon as the lubricant inside the reservoir has fallen to that level that the lubricant's resistance is no more sufficient to further deflect the guide plate Ⓑ, the magnet Ⓒ remains on the outer circuit and triggers a pulse each time it slides across the magnetic switch (A). If during an operating cycle the magnet Ⓒ slides across the magnetic switch Ⓐ six times, a low-level signal is sent by the control printed circuit board of the pump. For programming of the external control of the pump, see corresponding chapter in these instructions.



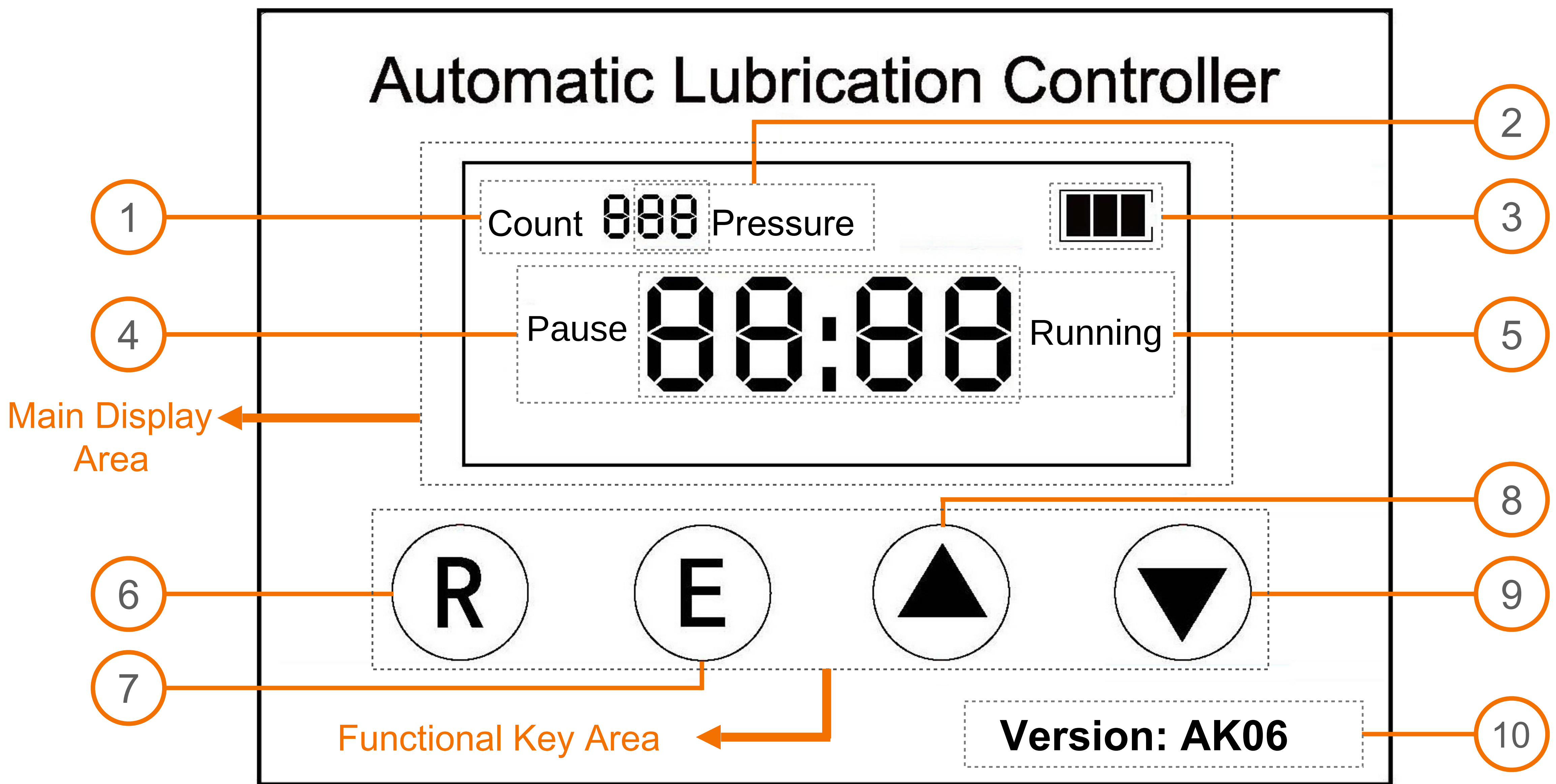
Dia. 12.1 Low-level Indication - Perspective representation



Dia. 12.2 Magnet on inner circuit

Dia. 12.3 Magnet on outer circuit

Integrated Controller



Dia. 13.1 AK06 controller interface

AK06 pump controller is the integrated controller for ALPB series pump. It is built up by main display area and functional keys area (**Dia. 13.1**).

Main display area: shows system status like the number of finished lubrication cycles ①, divider monitoring status ②, grease level status ③, counting down pause time ④ and counting upwards lube time ⑤. If a failure is detected by the controller, the display shows the Error Code instead of pause time or lube time in main display area.

Error Code:

EE-1 Low grease level or no grease in pump reservoir, pump is under risk of empty running

EE-2 Divider monitoring status - “Failure”, pump is under risk of over pressure

** **Very Important!** - The controller has **Fault Tolerance Program**, the error code only starts during the second cycle after the controller gets a failure signal. After the failure has been fixed, the controller needs 2 cycles as well to reset the failure signal automatically.*

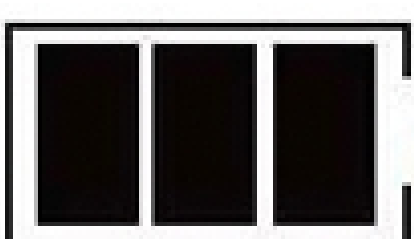






Functional keys area: can adjust the pump parameters which shows on main display area, reset the lubrication cycle and clear the warning alarm.

Parameter Setting - Definition

Pos.	Parameter Description	Adjustable Range / Unit
1P	Pause Time	0 to 99 hrs and 0 to 59 mins Min. 1 min / Max. 99 hrs and 59 mins
2P	Divider Monitoring - Impulse cycles	0 to 99 impulses cycles 0 means system does not detect the impulse
3P	Lube Time	0 to 99 mins and 0 to 59 secs Min. 1 sec / Max. 99 mins and 59 secs
4P	Low Temperature setup	-50 to 0 Celsius Degrees

Integrated Controller

Functions and Display

Pos.	Sign	Description
1	Count 888	Cycles Counting: During the pause time 1P, Pos. 1 shows the number of finished lubrication cycles. The value of Count adds 1 after a full lube time. E. g., Count 168 means the system finished 168 lubrication cycles.
2	88 Pressure	Divider Monitoring: During the running time 3P, Pos. 2 shows the impulse of the divider monitoring. OFF Pressure means controller is counting the detected impulse cycles from the divider monitoring. The Sign turns into ON Pressure after the preset value of impulse cycles from the divider has been detected. Main display turns into EE-2 if the controller has not detected the preset value of impulse cycles during the lube time.
3		Grease Level:  Grease level - Full. Pump grease level is safe, the pump can at least work with more than 6 lubrication cycles.  Grease level - warning. Pump works under low grease level, pump can work max. 6 more lubrication cycles (includes the current cycle). An immediately grease refilling is recommended here.  Grease level - warning. Pump works under low grease level status, system can work max. 4 more lubrication cycles (includes the current cycle).  Pump has NO grease, display shows EE-1 . Pump stops working until is refilled to safe grease level. Push E to clear the warning alarm.
4	Pause 88:88	Pause Time: During the system pause time 1P, the main display shows e.g. Pause 10:28 for the remained actual pause time - 10 hours and 28 minutes and the time continue counting down to 00:00 and switch automatically to lube time.
5	88:88 Running	Lube Time: During the system lube time, the main display shows e.g. 01:28 Running for the actual finished lube time - 1 minute and 28 seconds and the time continue counting upwards till the preset lube time then switch automatically to pause time.
6		Reset button (Test button): Push R during the pause time, main display stops counting down the remained pause time immediately and starts a new cycle with preset lube time. Push R during the lube time, main display stops counting lube time immediately and starts a new cycle with preset pause time.
7		Setting "Enter" button / Warning alarm clear button: For "Enter" function, please check the details in parameter setting. Push E during the system warning or error alarm (EE-1 or EE-2) to clear the alarm.
8	△	Parameter setting "+": Please check the details in parameter setting.
9	▽	Parameter setting "-": Please check the details in parameter setting.
10	Version: AK06	Controller Version: For ALPB internal controller, AK06 is the standard version*. * For more details for ALPB external controller please contact us.

Integrated Controller

Parameter Setting - First connecting to power

For first time connecting the power on the pump, the display shows the program code “**d-12**” up like **Dia. 15.1** or other pump preset program code, depends on pump and software type.

The program code can NOT be changed! The controller has preset parameters which can be changed under needs by following the setup steps. Otherwise the pump runs with the default preset parameter.

After program code “**d-12**” the controller shows 1P Pause Time and is counting down, system cycle is 0 (**Dia. 15.2**).

Parameter Setting - Setup new parameter

Press Δ and ∇ button together with two fingers at the same time over 4 seconds, then release and press **E** to enter **Parameter Editing Mode**.

Press Δ or ∇ button to adjust the 1P Pause Time value for hour (**Dia. 15.3**). Then press **E** button again to enter -1 (Pause Time minute parameter) setting. Press Δ or ∇ button to adjust the -1 value for minutes (**Dia. 15.4**)*.

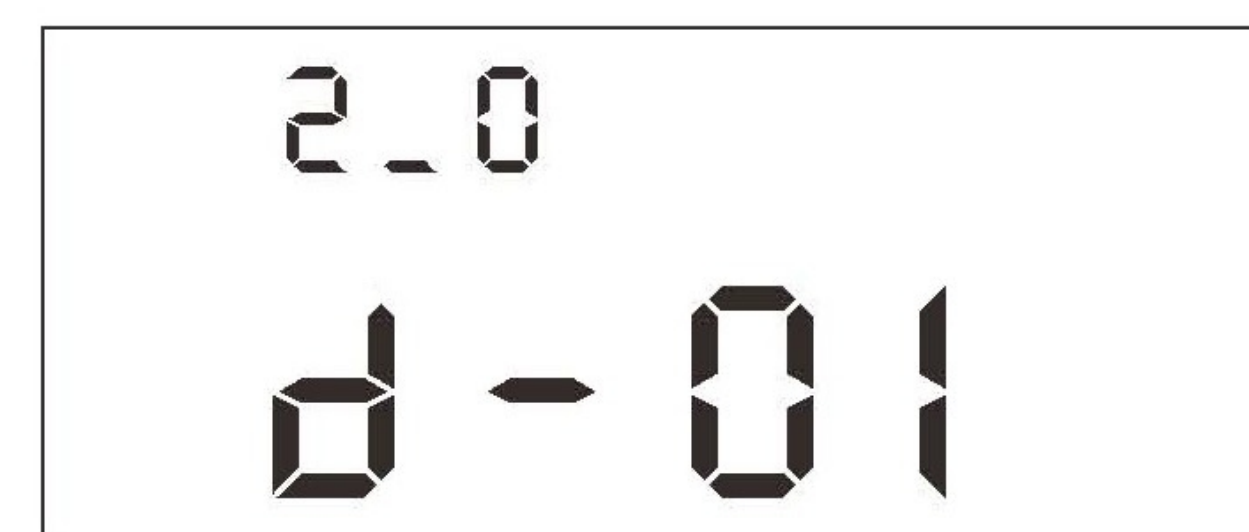
* 1P and -1 can not set as 00 in the same time. If 1P is set as 00, -1 starts with 01.

Press **E** button to switch to 2P divider monitoring parameter setting - impulse cycles from 0 to 99. (**Dia. 15.5**)*.

* For system without divider monitoring sensor (proximity switch), set 2P always as 0.

Press **E** button to switch to 3P Lubricating Time setting. 3P in minutes and -3 in seconds (the same way of setting the parameters we describe for 1P Pause Time and -1 setting) (**Dia. 15.6** and **Dia. 15.7**)*.

* 3P and -3 can not set as 00 in the same time. If 3P is set as 00, -3 starts with 01.



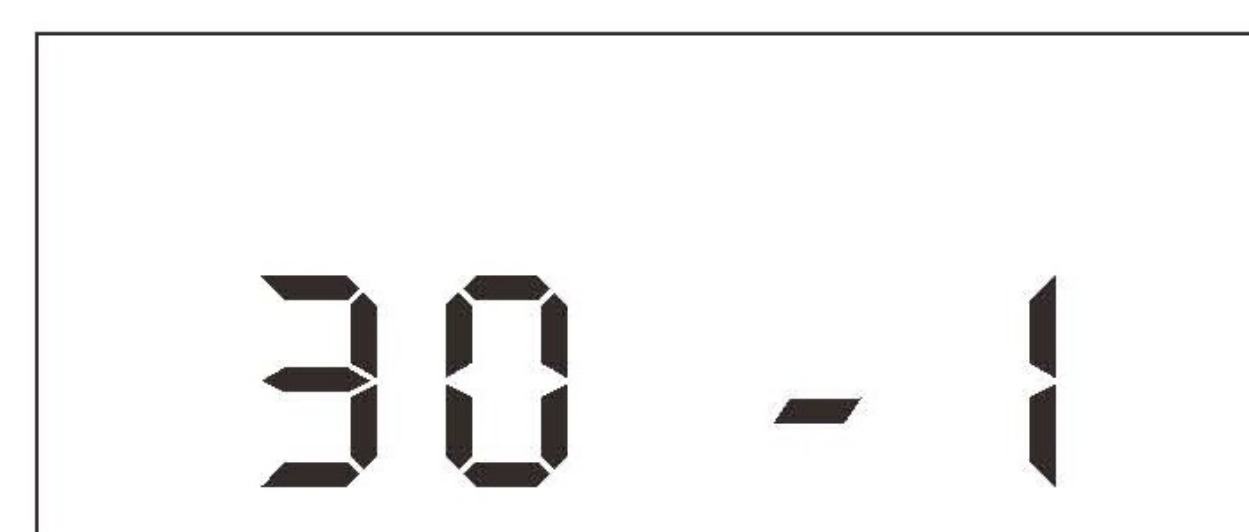
Dia. 15.1 Controller program code



Dia. 15.2 “Pause time” display after first power connection



Dia. 15.3 Setting of 1P - Pause Time in Hour



Dia. 15.4 Setting of 1P - Pause Time in Minute



Dia. 15.5 Setting of 2P - Impulse cycles



Dia. 15.6 Setting of 3P - Lube Time in Minute



Dia. 15.7 Setting of 3P - Lube Time in Second

Integrated Controller

Parameter Setting - Setup new parameter

Press **E** button to switch to 4P Low temperature setting. With this parameter you can stop the pump working at low temperatures. Pre-set temperature is -15°C . Press Δ or ∇ button to adjust the 4P low temperature setup. Press **E** button to confirm your new low temperature setting (**Dia. 16.1**)*.

* System has a temperature sensor. In case the real temperature is under the preset value, the pump stops automatically to avoid the damage of motor.

Push **E** to quit editing mode New parameter setting is done!

Display of controller during lubrication cycles

During 1P Pause Time - e.g. **Pause 10:28**, means pause time is 10 hours and 30 minutes. The Pause time is counting downwards in hours and minutes till 00:00 (**Dia. 16.2**), then 3P Lube Time starts counting upwards.

During 3P Lube Time -The 3P Lube Time starts counting upwards in minutes and seconds. E.g. **01:28 Running** you set up 1 min and 28 seconds as lube time. it is counting upwards from 0 sec to 01 min 28 seconds (**Dia. 16.3**).

A complete lubrication cycles = 1 full pause time + 1 full lube time, only after a complete lubrication cycle, the count of cycles +1 on pos. 1 in **Dia. 13.1**.

Reset of Lubrication cycle

Push **R** during the pause time, main display stops counting down the remained pause time immediately and starts a new cycle with preset lube time (**Dia. 16.4**).

Push **R** during the lube time, main display stops counting lube time immediately and starts a new cycle with preset pause time. (**Dia. 16.5**)

Push **R** always means skipping the current pause/lube time and enter into a new lube/pause time.



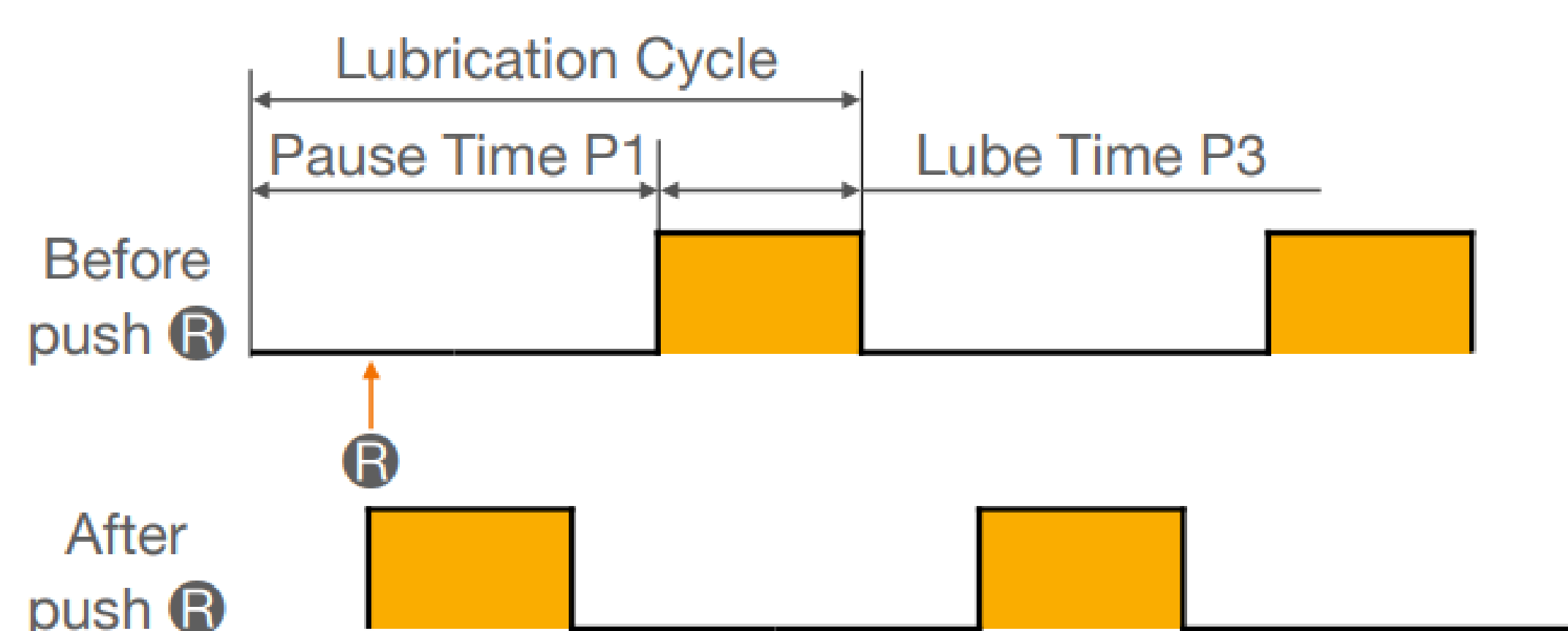
Dia. 16.1 Setting of 4P - Low Temperature



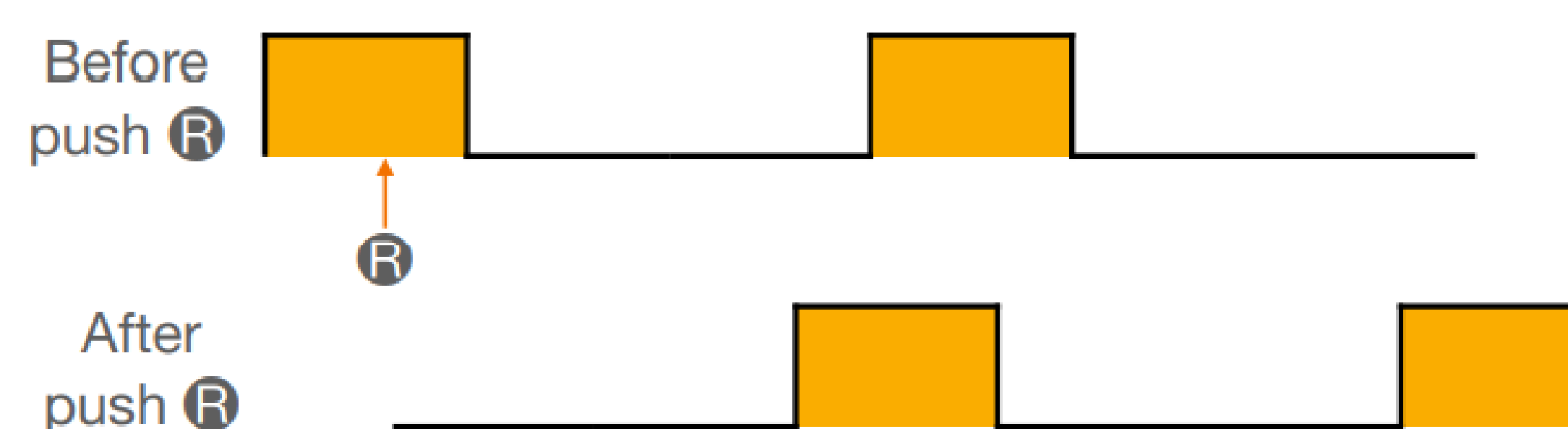
Dia. 16.2 Display for counting down Pause time 1P



Dia. 16.3 Display for counting up Lube time 3P



Dia. 16.4 Cycle changing when push **R** during Pause time



Dia. 16.5 Cycle changing when push **R** during Lube time

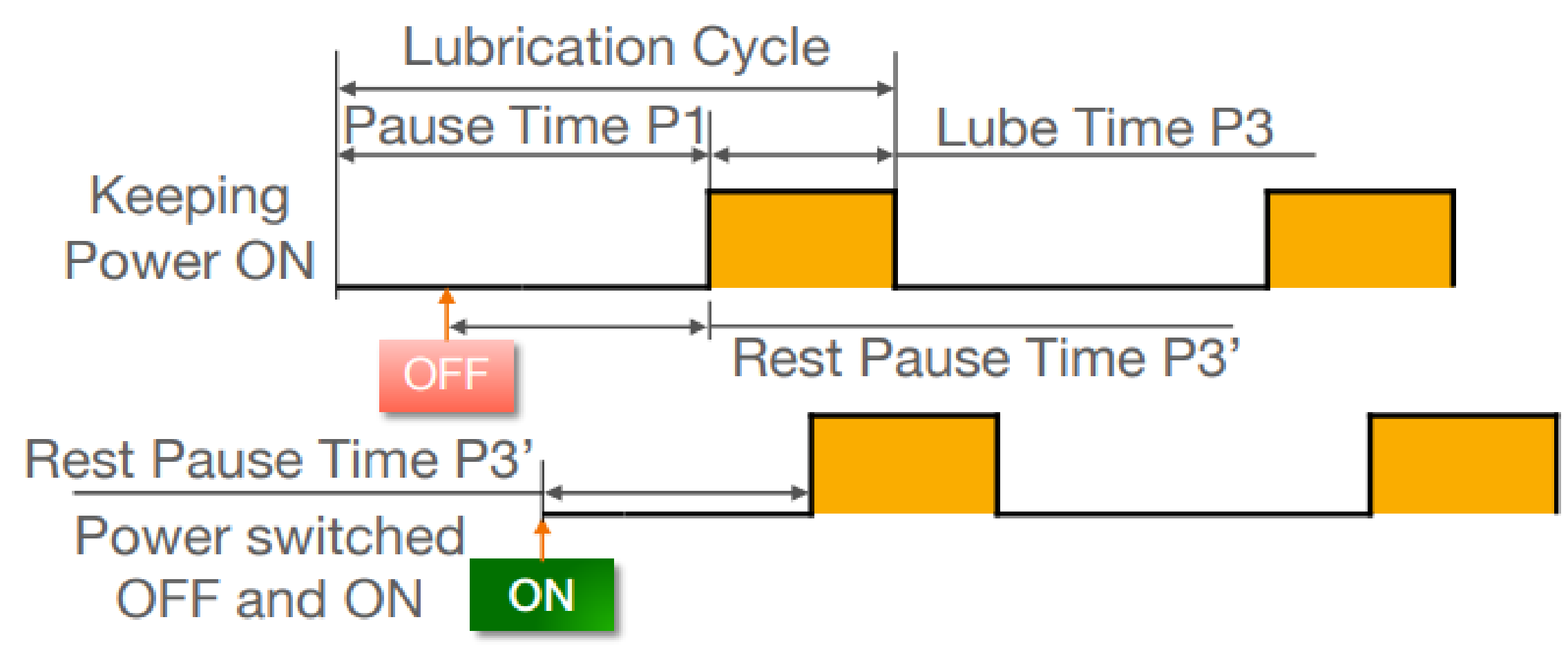
Integrated Controller

Restart of controller by switching off the machine

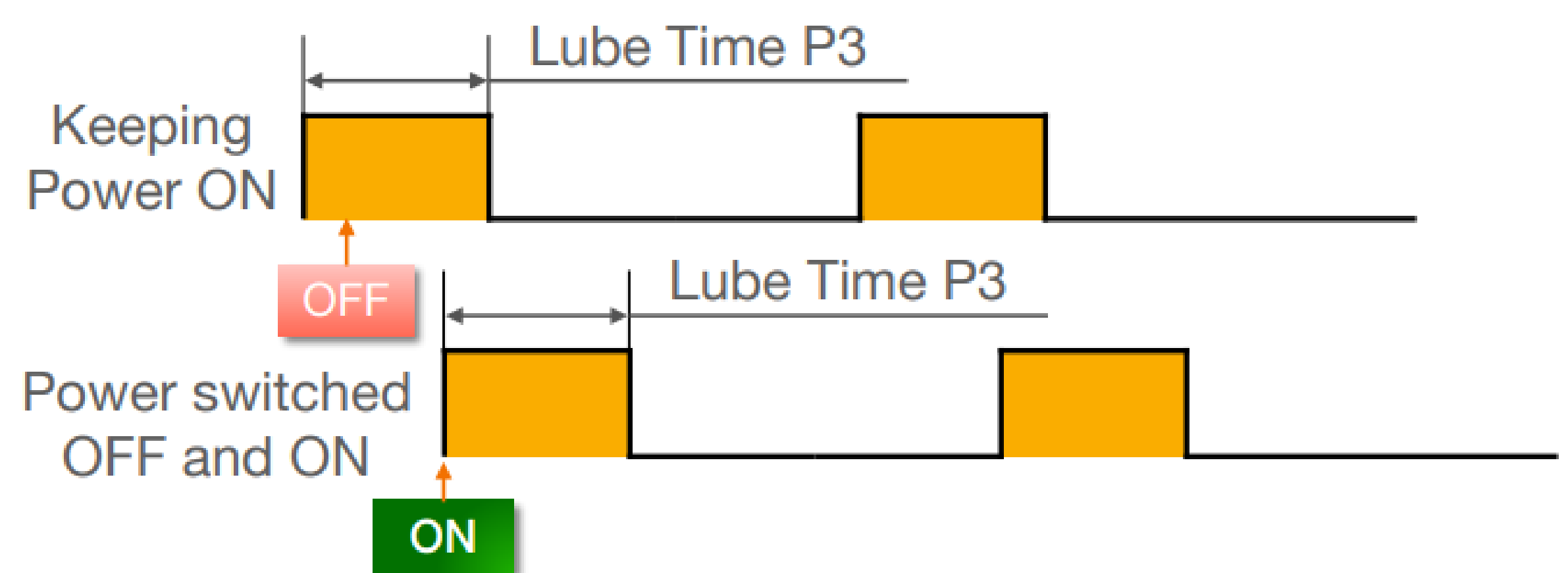
In case power/machine is switched off during a lube time P1 or pause time P3 following happens:

Switching machine on during 1P Pause Time, the 1P Pause time is counting down from the rest pause time where the machine was switched off (**Dia. 17.1**).

In case power / machine is switched off during a 3P Lubrication Time, the Lubrication time starts the full new Lubrication time which you setup (**Dia. 17.2**).



Dia. 17.1 Cycle changing when power switch ON and OFF during Pause time



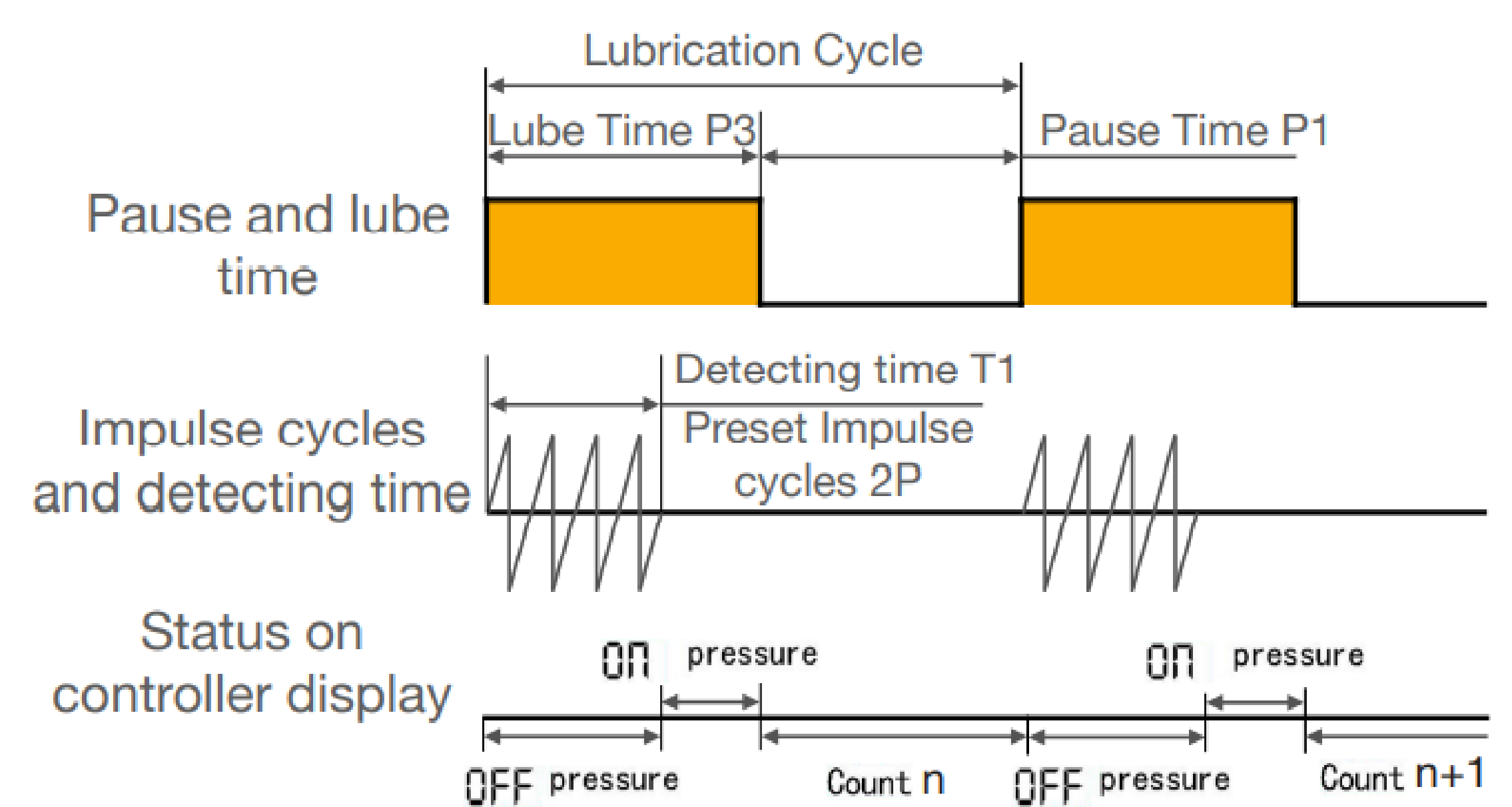
Dia. 17.2 Cycle changing when power switch ON and OFF during Lube time

More information for 2P - Impulse cycles setting with cycles sensor

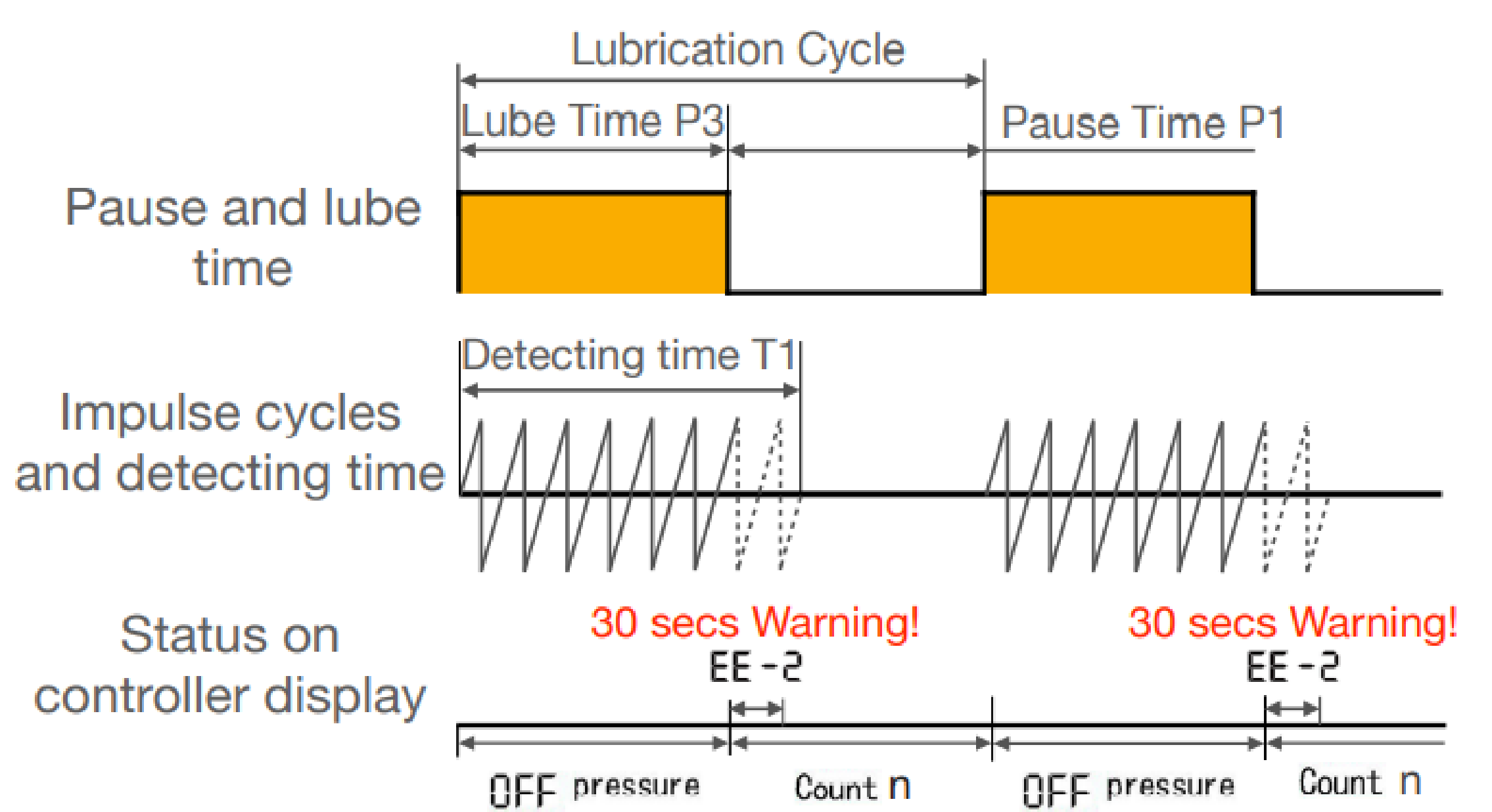
2P divider monitoring, impulse cycles sensor on the divider, 2P can NOT be set as 0.

In case, the Detecting time T1, which is needed to detect the preset value of impulse cycles, is shorter than preset lube time 3P, Display turns from "OFF Pressure" to "ON Pressure" at the end of T1, Controller continues the rest lube time. After the lube time is finished, count of lubrication cycles +1. (**Dia. 17.3**).

In case the theoretical Detecting time T1, which is needed to detect the preset value of impulse cycles, is longer than preset lube time 3P, Display remains "OFF Pressure", and shows **EE-2** error message in the end of 3P and lasts for 30 secs. Lubrication cycles will not be counted. (**Dia. 17.4**).



Dia. 17.3 T1 < 3P



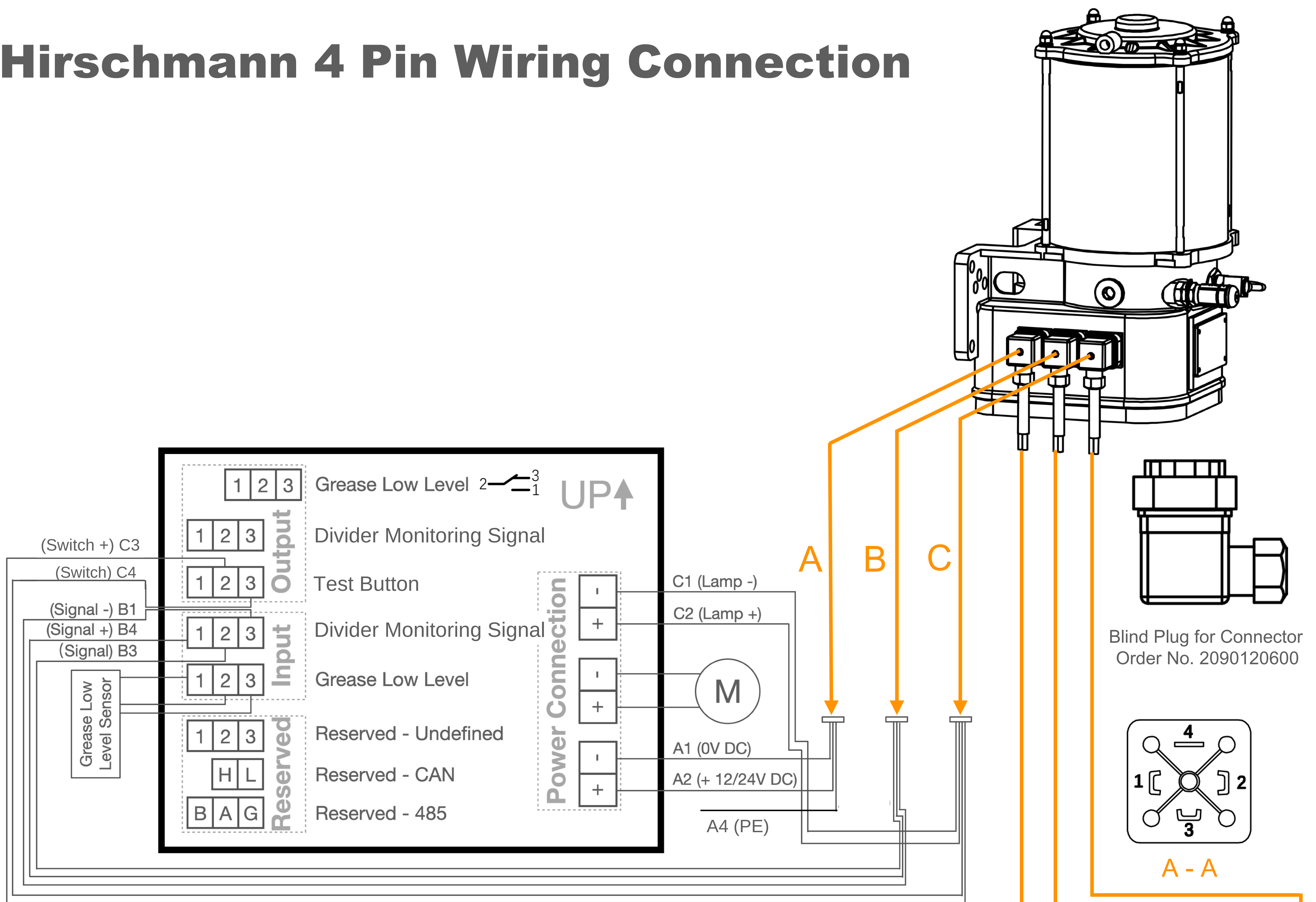
Dia. 17.4 T1 > 3P

For preset value of 3P - lube time less than 5 mins, the preset value of 2P less than 3 is recommended.

For preset value of 3P - lube time less than 10 mins, the preset value of 2P less than 5 is recommended.

The volume of grease for each greasing point only decided by 3P - lube time, not by 2P - impulse cycles.

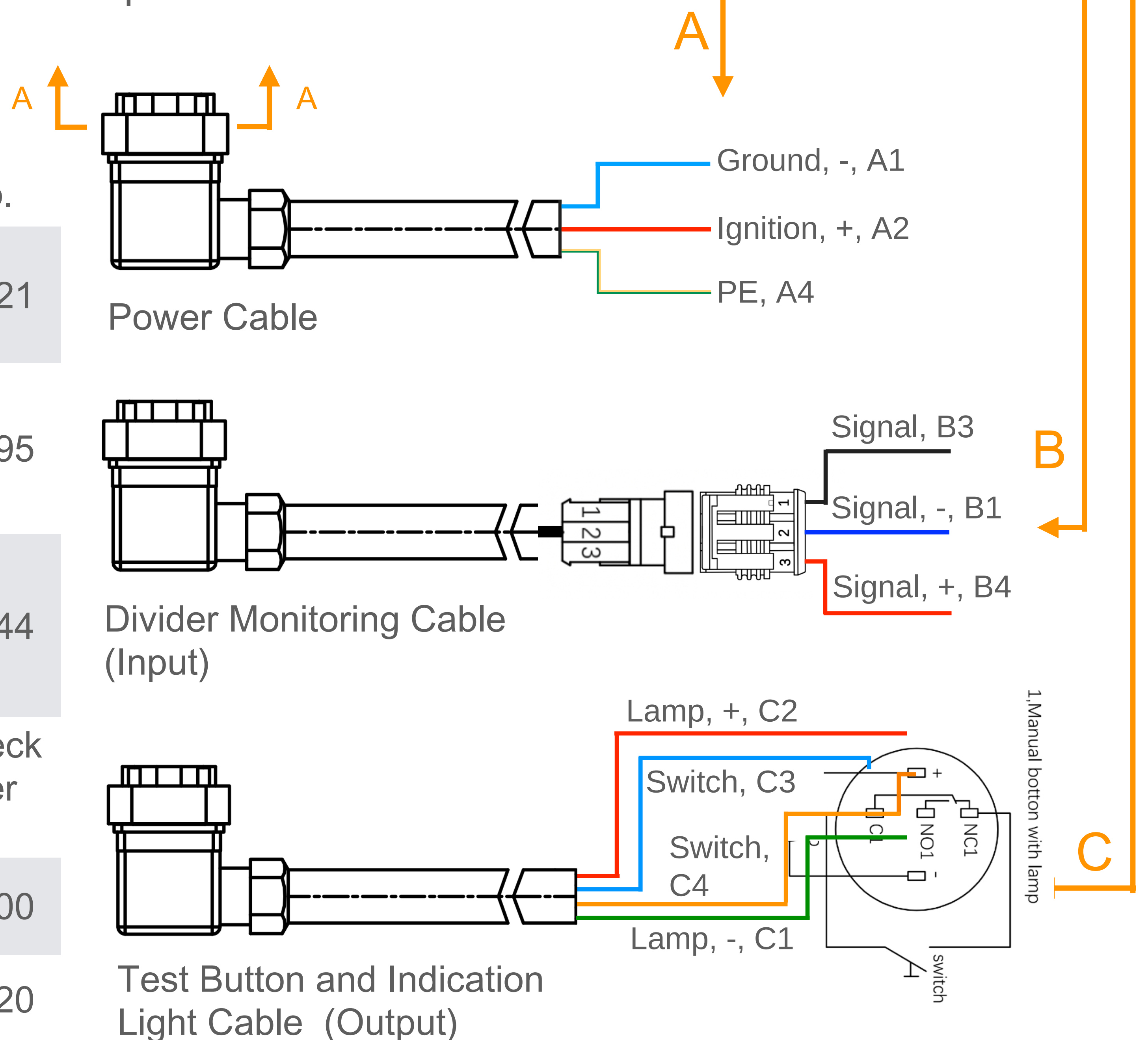
Hirschmann 4 Pin Wiring Connection



Layout of Circuit Board in Pump

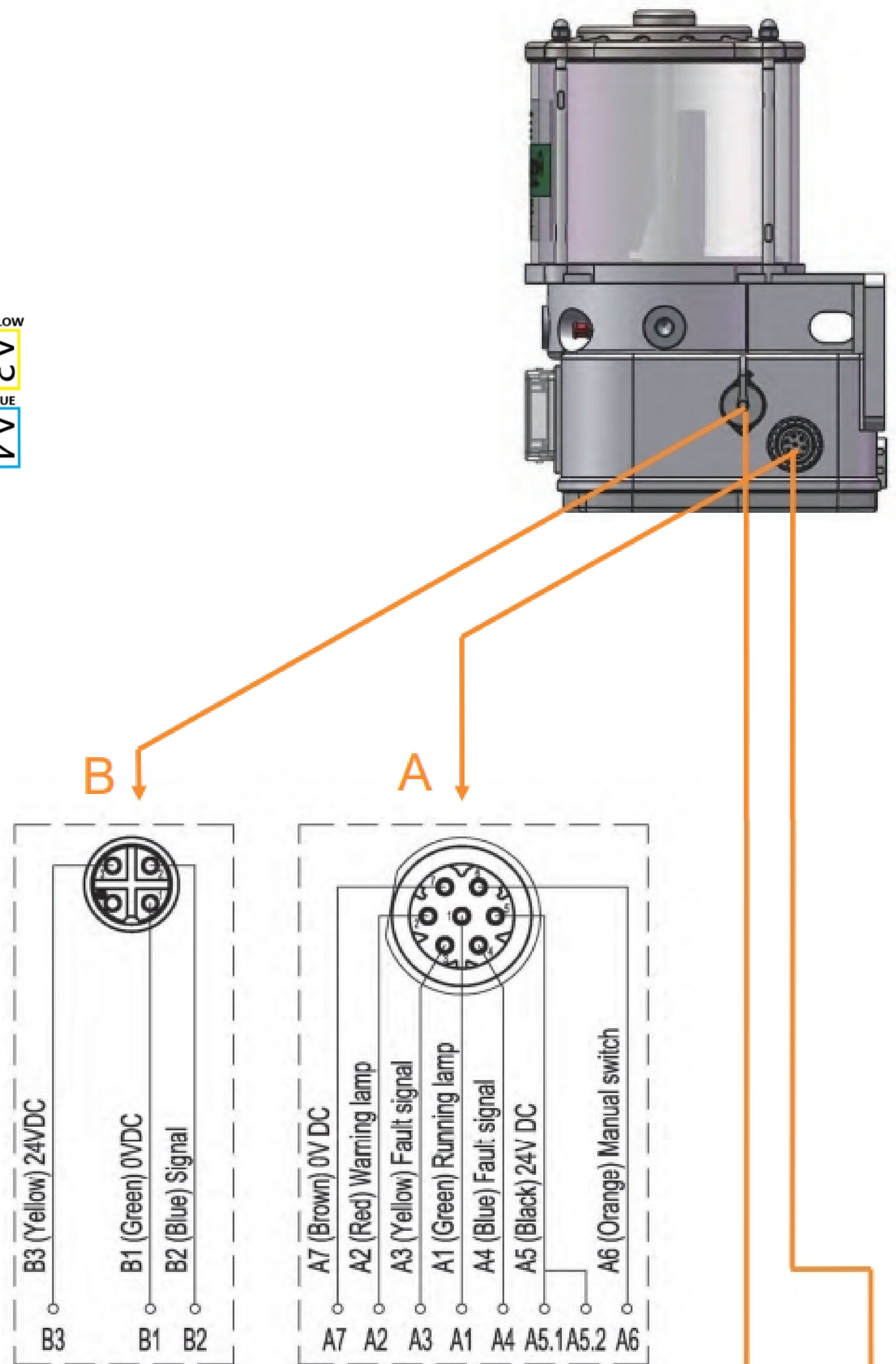
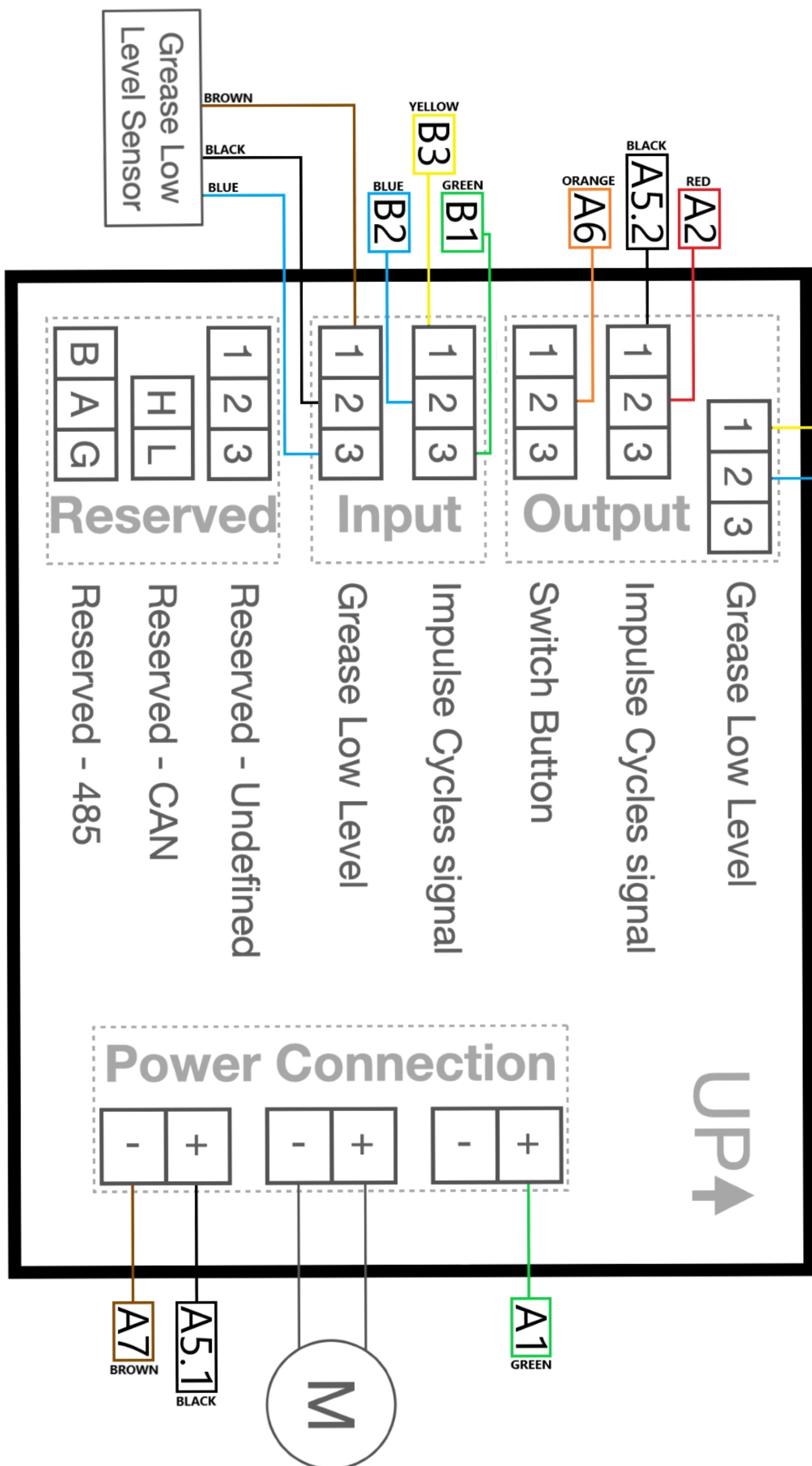
Order No. for Cables and relative Components*

Description	Order No.
7.5 meter - Power Cable Hirschmann 4 Pin - 12/24V DC (DIN EN 175 301-803-A)	2110002621
5 meter - Test Button and Indication Light Cable Hirschmann 4 Pin - 12/24V DC (DIN EN 175 301-803-A)	2110002695
7.5 meter - Test Button and Indication Light Cable Hirschmann 4 Pin - 12/24V DC (DIN EN 175 301-803-A)	2110010244
5 meter - Divider Monitoring Cable Hirschmann 4 Pin to DT 4 Pin	Please check our divider manual
Blind Plug Unit for Pump Connector Hirschman 4 Pin	2090120600
Test Button + Indication Light Green 12V DC	3030600220
Test Button + Indication Light Green 24V DC	3030600200



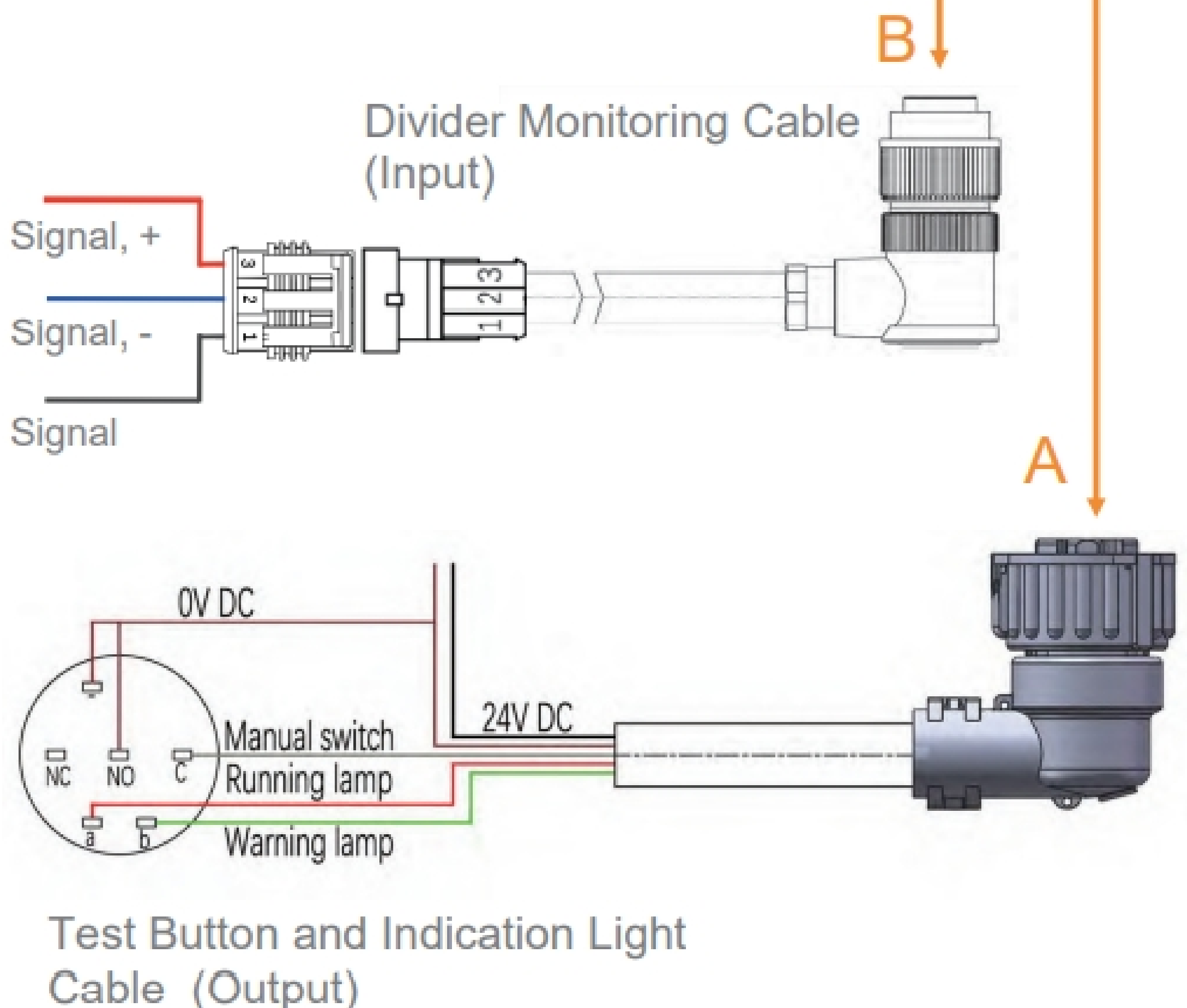
Dia. 18.1 Wiring connection

Bayonet Wiring Connection



Order No. for Cables and relative Components*

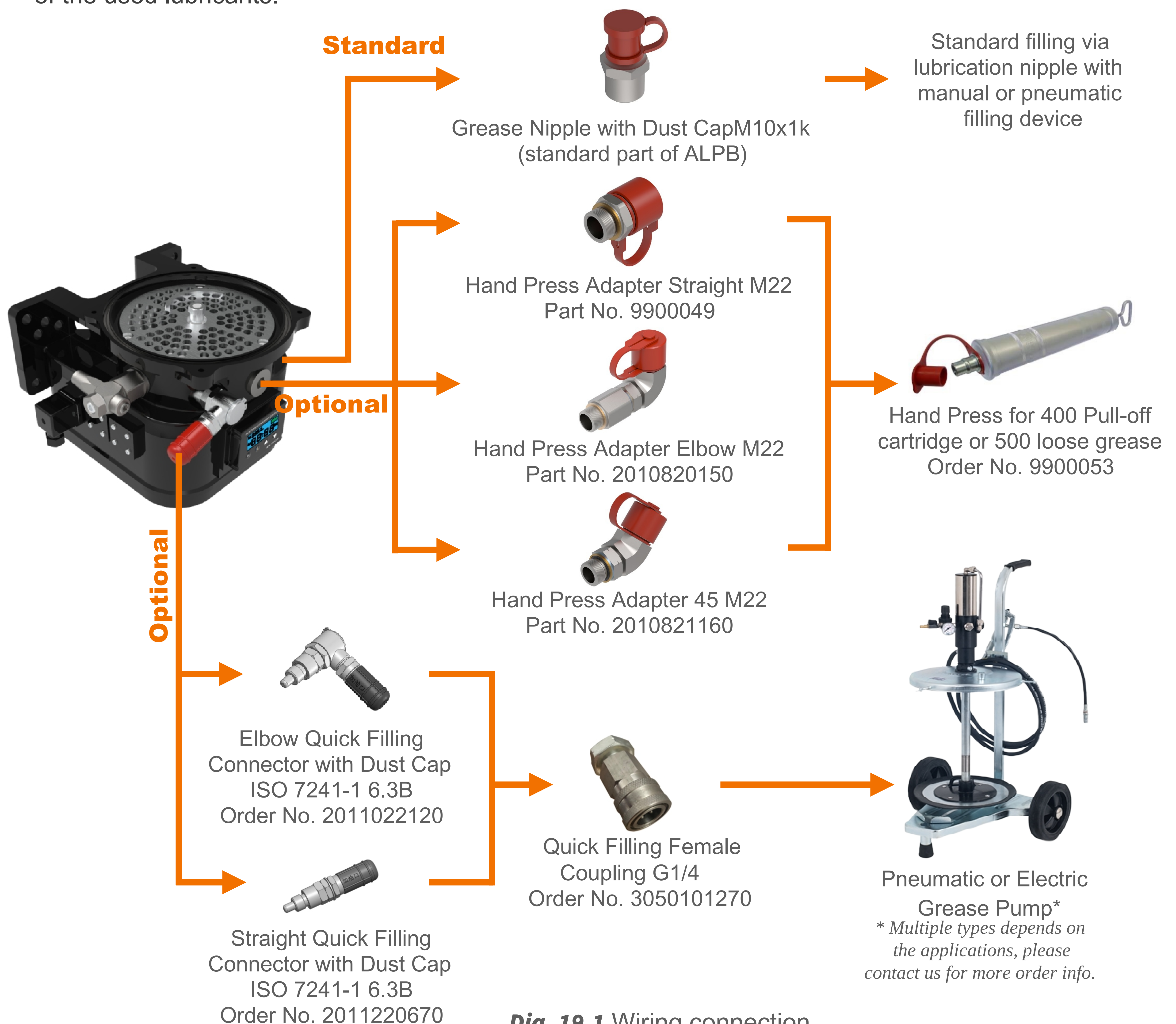
Description	Order No.
Power Cable 7.5 meters - ALPB	
Bayonet Elbow Connector 7 Pin (12/24V DC)	2110012451
Divider Monitoring Signal Input Cable 7.5 meters	2110012409
Power Cable 5 meters - ALPB	
Bayonet Elbow Connector 7 Pin (12/24V DC)	2110012452
Divider Monitoring Signal Input Cable 5 meters	2110012410
Test Button and Indication Light Green/Red 12V DC	3030600310
Test Button and Indication Light Green/Red 24V DC	3030600300



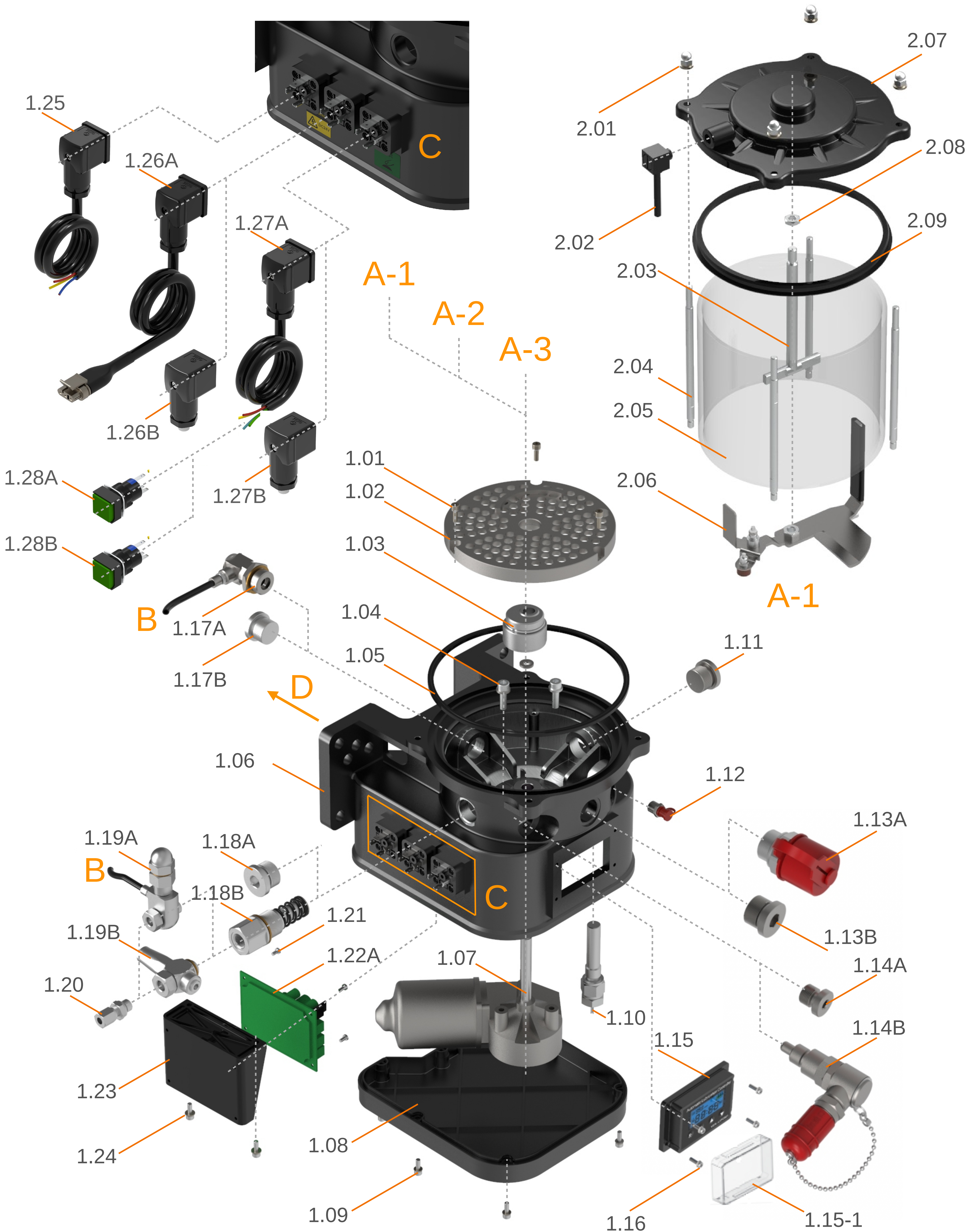
Dia. 18.1 Wiring connection

Filling of the Pump

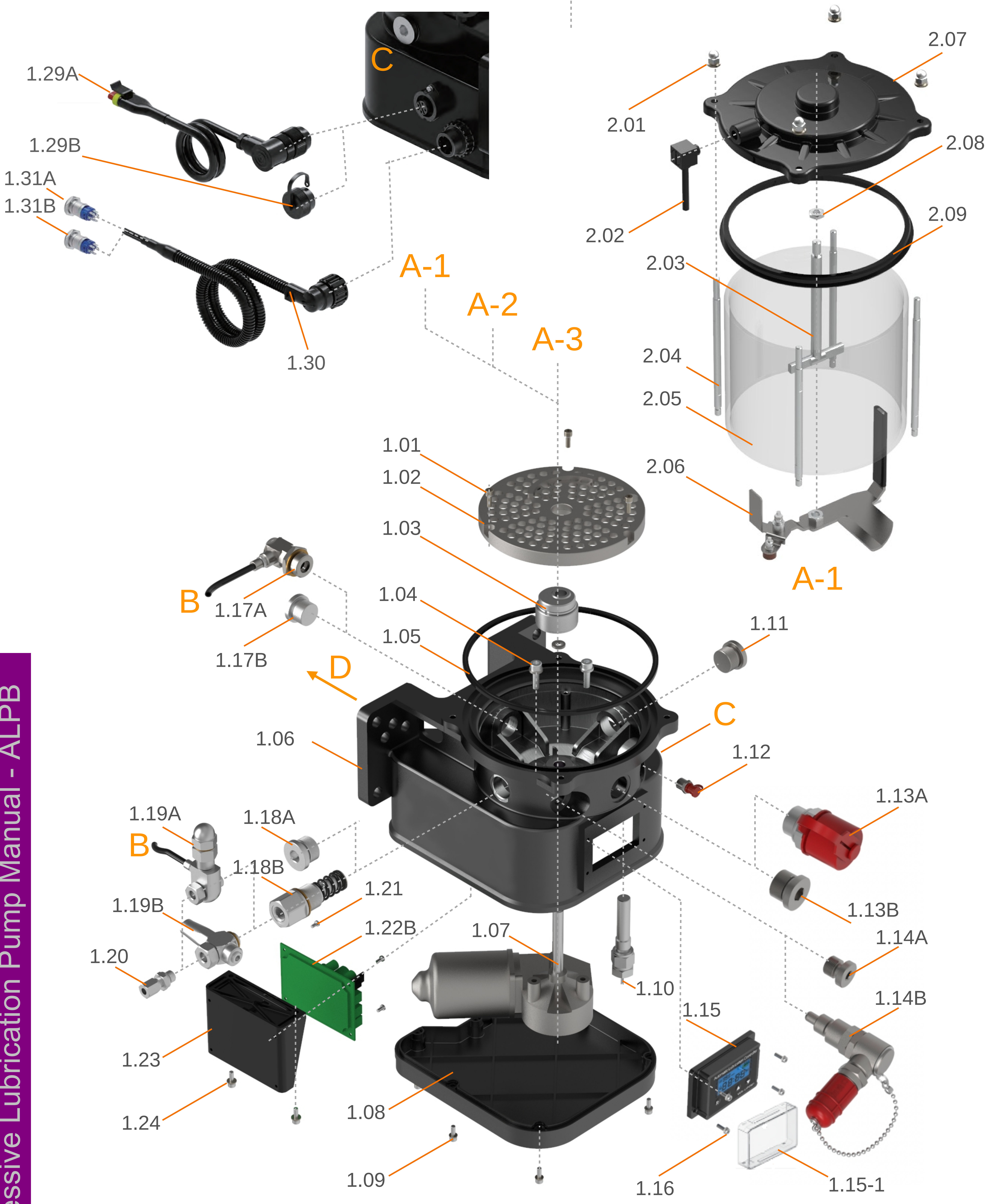
- Lubricant: NLGI CI.0-CI.2, it is strongly recommend using the different special grease under the following temperature:
 - 10°C ~ 70°C , normal grease can be used,
 - 20°C ~ -10°C, low temperature grease -30°C ~ 120°C is recommended,
 - 30°C ~ -20°C, low temperature grease -40°C ~ 120°C is recommended.
- Keep the pump being vertical during the filling process.
- The refilled grease level can not be higher than the “Grease Level Max”. Keep watching the grease level when filling with a pneumatic grease pump, stop the pneumatic grease pump filling machine before the grease level “Grease Level Max” position.
- It is strictly forbidden to remove the top cover of the pump for filling lubricants!
- Only fill in clean lubricants! The service life of the pump elements highly depends on the quality of the used lubricants.



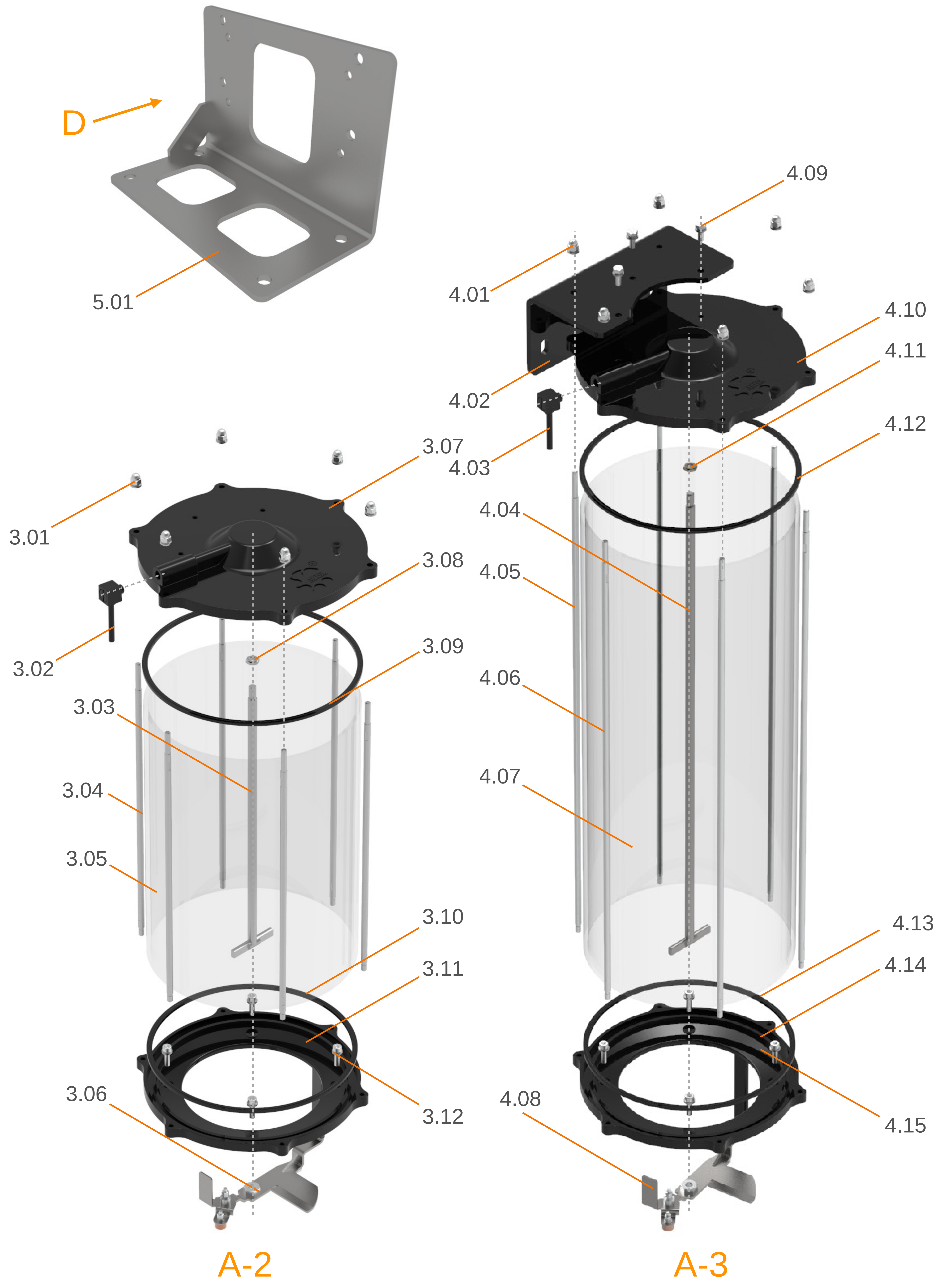
Pump Explosion Drawing (with Hirschmann Connector)



Pump Explosion Drawing (with Bayonet Connector)



Pump Explosion Drawing





General BOM - 1

Pos.	Qty.	Description	Part No.
1.01	3	Set - Cylinder Screw with inner Hex M4 L12 with Flat Washer	3040102800
1.02	1	Perforated Base Plate D142 H12	2011230610
1.03	1	Eccentric Unit	2011220280
1.04-1	3	Cylinder Screw with inner Hex M6 L25	3040102100
1.04-2	3	Flat Washer Set D6	3040200830
1.05	1	Seal Ring D160-170x3	3020200220
1.06	1	Pump Body Housing - ALPB	2011031461
1.07A	0-1	Gear Motor 12V DC	3010404000
1.07B	0-1	Gear Motor 24V DC	3010404170
1.08-1	1	Pump Bottom Cover - ALPB 201x180x23.5	3020101200
1.08-2	1	Seal Ring - ALPB Bottom Cover	3020200420
1.09-1	7	Cylinder Screw with inner Hex M4 L20	3040100360
1.09-2	7	Flat Washer D4	3040102790
1.09-3	7	Spring Washer D4	3040100960
1.10	1	Grease Level Sensor Unit - ALPB SP	2011220570
1.11	1	Pump Outlet Blind Plug (with ED Seal) M22x1.5	3050102550
1.12	1	Grease Refilling Nipple M10x1	2011025060
1.13A	0-1	Hand Press Adapter Straight M22x1.5	9900049
1.13B	0-1	Pump Outlet Blind Plug (with ED Seal) M22x1.5	3050102550
1.14A	0-1	Blind Plug (with ED Seal) M14x1.5	3050101760
1.14B	0-1	Elbow Quick Filling Connector	2011021460
1.15	1	AK06 Controller Unit	2011223180
1.15-1	0-1	Monitor Protective Cover For AK06 Controller Unit	3020102130
	0-1	AK07 Controller Unit (In Cab Monitor)	2090121740
1.16	4	Set - Cylinder Screw with Cross Groove M3 L10 with Flat and Spring Washer	3040103720
1.17A	0-1	Single Bypass Unit	9901642/ 2011222820
1.17B	0-1	Pump Outlet Blind Plug (with ED Seal) M22x1.5	3050102550
1.18A	0-1	Pump Outlet Blind Plug (with ED Seal) M22x1.5	3050102550
1.18B-A	0-1	Pump Element - ALPB/ALP811 1.5cm ³ /Min M22x1.5	2011021730
1.18B-B	0-1	Pump Element - ALPB/ALP811 2.5cm ³ /Min M22x1.5	2011220450
1.18B-C	0-1	Pump Element - ALPB/ALP811 4.5cm ³ /Min M22x1.5	2011021690
1.19A-1	0-1	Safety Valve Type A (SV-A) Unit	2011221370
1.19B-1	0-1	Safety Valve Type C (SV-C) Unit	2011220530
1.20	1	Straight Screw Coupling GE-ZN M10D6	3050100890
1.21	4	Cylinder Screw with Cross Groove M3 L6	3040101630
1.22	1	Circuit Board - Universal Version	2040120500
1.23	1	Fixing Bracket of Circuit Board - ALPB Version	3020101210
1.24	4	Set - Cylinder Screw with inner Hex M4 L14 with Flat and Spring Washer	3040102910
1.25	1	Power Cable 7.5 meter - ALPB Hirschmann 4 Pin	2110002621
1.26A	0-1	Divider Monitoring Cable (Input) - ALPB Hirschmann 4 Pin	Please check Divider Manual
1.26B	0-1	Blind Plug Unit for Pump Connector - ALPB Hirschmann 4 Pin	2090120600
1.27A-A	0-1	Test Button and Indication Light Cable 5m- ALPB Hirschmann 4 Pin	2110002695
1.27A-B	0-1	Test Button and Indication Light Cable 7.5m- ALPB Hirschmann 4 Pin	2110010244
1.27B	0-1	Blind Plug Unit for Pump Connector - ALPB Hirschmann 4 Pin	2090120600



General BOM - 2

Pos.	Qty.	Description	Part No.
1.28A	0-1	Test Button with Indication Light - 12V	3030600220
1.28B	0-1	Test Button with Indication Light - 24V	3030600200
1.29A	0-1	Divider Monitoring Signal Input 5m - ALP811/ALPB Elbow Binder 4 Pin	2110012410
1.29B	1	Blind Plug Unit for Pump Connector - Binder 4 Pin	3030502160
1.30	1	Power Cable 7.5 meters - ALPB Bayonet Elbow Connector 7 Pin	2110012451
1.31A	1	Test Button with Indication Light Green / Red 12V DC	3030600340
1.31B	1	Test Button with Indication Light Green / Red 24V DC	3030600350
2.00A	0-1	Set - ALPB 2 Liter Reservoir Unit (full Package from 2.01-2.09)	2011025480
2.00A-1	0-1	Set - ALPB 2 Liter Reservoir Unit without 2.06 and 2.07	9901669
2.00B	0-1	Set - ALPB 4 Liter Reservoir Unit (full Package from 2.01-2.09)	2011025490
2.00B-1	0-1	Set - ALPB 4 Liter Reservoir Unit without 2.06 and 2.07	9901770
2.00C	0-1	Set - ALPB 6 Liter Reservoir Unit (full Package from 2.01-2.09)	2011025500
2.00C-1	0-1	Set - ALPB 6 Liter Reservoir Unit without 2.06 and 2.07	9901771
2.01-1	4	Acorn Nut M6	3040102200
2.01-2	4	Flat Washer D6	3040101080
2.01-3	4	Spring Washer D6	3040101090
2.02	1	Ventilation Unit	2011025130
2.03A	0-1	T-Type Rod for Grease Mixing (ALPB 2L) D10 L132	3010105470
2.03B	0-1	T-Type Rod for Grease Mixing (ALPB 4L) D10 L277	3010104120
2.03C	0-1	T-Type Rod for Grease Mixing (ALPB 6L) D10 L377	3010104130
2.04A	0 or 4	Connecting Rods (ALPB 2L) D7 M6 L161	3010403060
2.04B	0 or 4	Connecting Rods (ALPB 4L) D7 M6 L306	3010403780
2.04C	0 or 4	Connecting Rods (ALPB 6L) D7 M6 L406	3010404020
2.05A	0-1	Transparent PC Reservoir (ALPB 2L) D160-170 L140	2010530300
2.05B	0-1	Transparent PC Reservoir (ALPB 4L) D160-170 L285	2011030630
2.05C	0-1	Transparent PC Reservoir (ALPB 6L) D160-170 L385	2011030650
2.06	1	Agitator Blade Unit (ALPB 2-6L) incl. fixing parts	2011022850
2.07	1	Reservoir Top Cover (ALPB 2-6L)	3010403680
2.08	1	Hex Nut M8	3040102510
2.09	1	Z-Type Seal Ring	3020200730
3.00	0-1	Set - ALPB 8 Liter Reservoir Unit with Top Cover	2011223000
3.01-1	6	Acorn Nut M6	3040102200
3.01-2	6	Flat Washer D6	3040101080
3.01-3	6	Spring Washer D6	3040101090
3.02	1	Ventilation Unit	2011025130
3.03	1	T-Type Rod for Grease Mixing (ALPB 8L) D10 L334	3010104060
3.04	6	Connecting Rods (ALPB 8L) D7 M6 L348	3010403711
3.05	1	Transparent PC Reservoir (ALPB 8L) D220-230 L322	2011230250
3.06	1	Agitator Blade Unit (ALPB 8-20L) incl. fixing parts	2011220550
3.07	1	Reservoir Top Cover (ALPB 8-20L)	2011430270
3.08	1	Hex Nut M8	3040102510
3.09	1	Seal Ring D220-232x3	3020200290
3.10	1	Seal Ring D220-232x3	3020200290
3.11	1	Intermediate Flange (ALPB 8-20L) D240x22	2011230510
3.12-1	4	Cylinder Screw with inner Hex M6 L20	3040102080
3.12-2	4	Flat Washer Set D6	3040200830



General BOM - 3

Pos.	Qty.	Description	Part No.
3.12-1	4	Cylinder Screw with inner Hex M6 L20	3040102080
3.12-2	4	Flat Washer Set D6	3040200830
4.00A	0-1	Set - ALPB 15 Liter Reservoir Unit with Top Cover	2011223010
4.00B	0-1	Set - ALPB 20 Liter Reservoir Unit with Top Cover	2011223020
4.01-1	6	Acorn Nut M6	3040102200
4.01-2	6	Flat Washer D6	3040101080
4.01-3	6	Spring Washer D6	3040101090
4.02	1	Reservoir Top Cover Fixing Plate (ALPB 15-20L)	3010102041
4.03	1	Ventilation Unit	2011025130
4.04A	0-1	T-Type Rod for Grease Mixing (ALPB 15L) D10 L582	3010404560
4.04B	0-1	T-Type Rod for Grease Mixing (ALPB 20L) D10 L792	3010404570
4.05A	0 or 2	Connecting Rods A (ALPB 15L) D7 M6 L595	3010403641
4.05B	0 or 2	Connecting Rods A (ALPB 20L) D7 M6 L805	3010404580
4.06A	0 or 2	Connecting Rods B (ALPB 15L) D7 M6 L601	3010403651
4.06B	0 or 2	Connecting Rods B (ALPB 20L) D7 M6 L811	3010404590
4.07A	0-1	Transparent PC Reservoir (ALPB 15L) D220-230 L570	2011230790
4.07B	0-1	Transparent PC Reservoir (ALPB 20L) D220-230 L780	2011230800
4.08	1	Agitator Blade Unit (ALPB 8-20L) incl. fixing parts	2011220550
4.09-1	3	Hex Head Screw M6 L15	3040102050
4.09-2	3	Flat Washer D6	3040101080
4.09-3	3	Spring Washer D6	3040101090
4.10	1	Reservoir Top Cover (ALPB 8-20L)	2011430270
4.11	1	Hex Nut M8	3040102510
4.12	1	Seal Ring D220-232x3	3020200290
4.13	1	Seal Ring D220-232x3	3020200290
4.14	1	Intermediate Flange (ALPB 8-20L) D240x22	2011230510
4.15-1	4	Cylinder Screw with inner Hex M6 L20	3040102080
4.15-2	4	Flat Washer Set D6	3040200830
5.01	1	Pump Bracket (ALPB 2-8L)	3010106780