

# LUBRICATION PUMP

# PMP

## APPLICATION

The PMP lubrication pump is used as a pressure lubricant source for central lubricating systems with progressive distributor types BVA, PRA and PRB, for permanent, regular lubrication of various machines and equipment. Furthermore, they can be applied as a pressure source for central lubrication of mobile machines and equipment, mainly for the chassis of lorries, buses, trolley-buses, semi-trailers, trailers, building machines, agriculture and forestry equipment. PMP lubrication pumps are recommended for use in small to medium size lubrication circuits with up to 100 lubricated points. With respect to a variable number of outlets, from 1 to 3, the lubrication pumps of the PMP series may be also used as a direct source of pressure lubricant (multi-outlet lubrication pump).

The PMP lubrication pumps are supplied in both oil and grease versions with a variant lubricant tank volume of 2, 4, 6 or 8 litres with tanks made of organic glass with scraper blade, 2 and 4 litres with tanks made of organic glass with follower plate and also 6, 8 and 12 litres with metal tanks with scraper blade. The number of outlets is selectable from of 1 to 3. Nominal doses can be adjusted from 0.8 to 3.8 cm<sup>3</sup>/min. or fix dose (2.5 and 3.5 cm<sup>3</sup>/min.). The working units are optionally supplied with safety (by-pass) valve and pressure gauge.

Electric motor is supplied in version 12V DC and 24V DC, with protection to IP65. Supply voltage of the lubrication pump is selectable 12V DC, 24V DC, 115V AC and 230V AC, with a built-in toroidal transformer whose output voltage after rectification is 24V DC (65W). Upon customer's request, the PMP lubrication pumps can be supplied without a control automatic system or equipped with a built-in control automatic system, controlling the operation of the lubrication pump and the entire lubrication circuit with progressive distributors.

The control automatic system is supplied by default in a version for connecting a single contactless sensor (on the progressive distributor), or alternatively in a version for connecting up to three contactless sensors at the same time, allowing to control the operation of up to three mutually independent lines of a lubrication circuit with progressive distributors. The control display of the automatic system can be protected by a strong cover from organic glass.

The lubrication pump can also be equipped with external (remote) triggering of the additional lubrication cycle, i.e. a manually entered command to perform one lubrication system in addition to the set operation programme.

For applications requiring on-line monitoring of operation of a lubrication circuit (or multiple circuits), the lubrication pump is supplied in a version with a programmable GSM module which communicates with user's mobile phone using SMS. The messages sent include messages about reaching the minimum lubrication level in the lubrication pump tank, error messages from lubrication checks performed by the contactless sensor (with reporting sensor identification, i.e. identification of the lubrication circuit line), information about motohours worked, and notification about supply voltage failure (after voltage restoration).

## DESCRIPTION

The main part of the lubrication pump is the pump body from aluminium alloy and a cam mechanism that allows fitting the lubrication pump with 1 to 3 dosing units. Each dosing unit has one outlet with G1/4" female thread for an outlet threaded joint for a pipe with 6, 8 or 10 mm external diameter. A lidded lubrication tank is placed vertically on the pump body.

For better grease pumping, the tanks are fitted with a scraper blade or the follower plate. The cam mechanism electromotor is located in the lower part of the pump body and it is protected by a casing that includes in the front side a plastic control panel with a display and electronics of the control unit for automatic operation of the lubrication pump and lubrication circuit with progressive distributors. The left side of the casing can be equipped with up to four connectors.

The connector labelled POWER is designed to lead the supply voltage of 24V DC (12V DC, 115V AC, 230V AC). The ALARM connector is designed as the output for signalling the minimum level and for the E1, E2, E3 alarm – cycle sensor control. The CYCLE connector is designed for connecting the contactless sensor of the progressive distributor. In the lubrication pump version for connecting multiple contactless sensors, the CYCLE connector is an 8-pin version and looks different. The EXTERNAL connector, is designed for connecting the external button of additional lubrication. Under the supply connector (POWER) there is a fuse case with a T 2.5A fuse for all voltages. In version 115V AC and 230V AC, next to the fuse case, there is a cover of the voltage selector switch situated inside the pump.

A lubricating nipple for lubricant filling is located at the front of the pump body. For stationary application of the lubrication pump, a G1/4" tapped hole of the lubricating nipple for direct connection can be used for permanent remote lubricant filling. The body is fitted in the rear with a block with two holes for M8 bolts for attaching the pump to the side of a machine or device.

The control panel of compactly built-in control automatic system with a display is equipped with buttons, LED indicators and a double seven-segment LED display.

1. The START/END button is designed for starting the lubrication pump in the additional lubrication cycle. In the mode for setting the lubrication operation and pause times, it is used for the transition to time value entry mode. At the next push, the set time values are saved in memory and the programme returns to the value setting selection mode.
2. The STOP/ESC button is used to interrupt the lubrication cycle, to reset the time settings without changing these values, and to return from the setting mode to lubrication programme operation. The button is also used to reset the alarm function (resetting the red light signalling the minimum level and the E1 E2, E3 alarm signalling not achieving the required number of cycles). If the button is pressed for 5 seconds, the newly set pause time is loaded immediately in the memory of the control electronics.
3. The "opposing arrows" selection buttons are used to change to the value-browsing mode and to change these values.
4. The operation LED indicator "sun" signals the mode of lubrication operation time or the setting thereof. In the NUMBER OF CYCLES/PAUSE programme and its setting, the control maximum time is determined for achieving the selected number of cycles.
5. The pause LED indicator "moon" signals the pause mode or the setting thereof.
6. The cycle LED indicator "arrow" signals that the device runs in the NUMBER OF CYCLES/PAUSE programme.
7. The hours LED indicator "hour" signals the hours set or being set.
8. The minutes LED indicator "min" signals the minutes set or being set.
9. The seconds LED indicator "sec" signals the seconds set or being set.
10. The alarm LED indicator "drop" signals lack of lubricant in the tank.
11. The LED display shows the time values set or being set, the number of cycles and the alarm symbol – E1 E2, E3.

The control automatic system is provided with read-only memory that stores information about the lubrication cycle course and the set time values even after disconnecting the lubrication pump from an electric power source. After the power supply is restored, the stored values are read from memory and the programme continues from the point of interruption. If the respective value in memory is meaningless (outside the valid values range), it is reset automatically. When the device is turned on, voltage oscillation may occur, causing the control unit programme to "hang" (the display shows meaningless values). This condition is repaired after max. 2 seconds by automatic reset and time values are reread from memory.

## OPERATION

The lubrication pump works on the principle of a piston pump. The electromotor powers the cam mechanism that controls the pistons of pumping units in a direct reciprocating movement. When the piston is drawn out of the pumping unit into the pump body, there ensues negative pressure in the unit's operation cylinder; when it is fully drawn out, the suction duct opens and the suction itself follows; when it is drawn in, lubricant is pressed out and proceeds through a non-return valve to the lubrication pump's outlet. As the central shaft and cam rotate, the scraper blade rotates too, scraping grease from the tank wall and moving it to the suction zone. Its movement allows visual inspection of the lubrication pump operation. In the variant with the follower plate, the lubricant is moved to the suction zone of the spring bias, which allows installation of equipment in any position.

The control unit electronics control the pump operation in two independent programmes. The relevant programme is set automatically according to connection type. The operator sets on the plastic control panel a specific value of the lubrication and pause times and the number of cycles of the lubrication circuit with progressive distributors.

### 1. LUBRICATION TIME – PAUSE TIME

This programme is used for circuits with progressive distributors without signalling or with optical signalling of operation (signalling pin). This connection programme allows you to determine the lubrication time, i.e. the period of time in which the lubrication pump operates, and the pause time, i.e. the period of time in which the pump rests.

### 2. NUMBER OF CYCLES – PAUSE TIME

This programme is used for circuits with progressive distributors, at least one of which (with a maximum of three) is equipped with electric operation signalling (contactless sensor). In this programme, you can determine the pause time, i.e. the period of time in which the pump rests, similarly to programme no.1. The lubrication time is determined by the optional number of lubrication cycles (from 1 to 99).

The number of cycles is given by the number of switches of the contactless control sensor located on one of the progressive distributors. The pump operates continuously until the set number of cycles is finished. To inspect the lubrication circuit operation, there is also set a maximum time in which the set number (1 to 99) of switches of the contactless control switch shall be made. If the set number of switches of the contactless control switch (cycles) is not made in this time period, i.e. any of the lubrication cycles is not completed, E1, E2, or E3 is displayed on the display based on which sensor failed to send the electric signal indicating uncompleted lubrication in the cycles programme.

The E1, E2, E3 alarm signalling can also be connected via the ALARM connector on the lubrication pump body to external light (or sound) signalling.

This E1, E2, E3 alarm signalling operates until the STOP/ESC button is pressed on the control automatic system panel. If the fault in the lubrication circuit is not removed, the failure will be signalled again after the following unsuccessful lubrication (pump operation) or after an uncompleted lubrication cycle.

During this signalling of uncompleted lubrication in the cycles mode, the lubrication pump continues to operate, lubrication (pump operation) is terminated when the set maximum time for cycles operation is reached (i.e. the time till E1, E2, E3 alarm), followed by the pause time after which lubrication in the cycles mode is performed again. If lubrication in the cycles mode fails again (is not completed), lubrication is again terminated after the set time till E1, E2, E3 alarm (maximum time for cycle operation), and the lubrication pump switches to a pause again.

The control automatic system is programmed to automatically switch to the NUMBER OF CYCLES – PAUSE TIME programme when the contactless sensor is connected via the CYCLE connector on the lubrication pump body.

When the contactless switch is disconnected, the automatic system switches again to the LUBRICATION TIME – PAUSE TIME programme, and lubrication time is automatically set to the maximum time for cycles operation, i.e. the time till E1, E2, E3 alarm (set in minutes, 0 seconds). In this case, if the contactless switch is no longer used, it is recommended to make a new setting, optimal for the LUBRICATION TIME – PAUSE TIME mode.

For proper functioning in the NUMBER OF CYCLES – PAUSE TIME mode it is necessary to set the maximum time during which the selected number of cycles (1 to 99) is to be achieved, i.e. the time till triggering the E1, E2, E3 alarm, so that all lubrication cycles are sure to finish before this set time. This time till triggering the E1, E2, E3 alarm is recommended to be by about 50% longer than the time really necessary for proper operation of all selected lubrication cycles. The real time of lubrication is individual for individual lubrication circuits, depending on the lubrication circuit range, number of progressive distributors, selected piping, total length of piping, lubricant, and operating conditions of the system. The real time of lubrication (pump operation) must be measured when the lubrication circuit is installed and put into operation.

All newly selected and read values in the control automatic system's programme are active only after the currently running mode, or time, ends, as newly read values.

Alternatively, the lubrication time start can be initiated with the START/END button, and when it ends, the newly set pause time will count down.

If the lubrication pump is equipped with signalling of minimum level of lubricant in the tank, the lubricant level decrease below the minimum level is signalled on the display of the control automatic system with a blinking red LED light. Minimum level signalling can be connected via the ALARM connector on the lubrication pump body to external light (or sound) signalling. This external signal is not interrupted, as opposed to the signalling LED light on the panel. After refilling the tank with lubricant, the minimum level alarm signalling must be cancelled by pressing the STOP/ESC button on the automatic system panel (alarm reset).

An additional lubrication cycle can be performed at any time in the pause mode using the START/END button. The pause time is reset and when the set time of lubrication (programme no. 1) expires, or when the determined number of cycles is reached (programme no. 2), the set pause time is counted down again, and the control automatic system continues in the selected programme. It is recommended to use the additional lubrication cycle after refilling the tank with lubricant, if its level decreased below the minimum level and the alarm was triggered (minimum level signalling), in case of repairing the lubrication circuit after the cycles control sensor alarm, or after long-term downtime of the machine. When needed, additional lubrication can be stopped by pressing the ESC/STOP button before the contactless switch sends the pulse indicating the completion of the additional lubrication cycle (programme no. 2).

## SERVICE AND MAINTENANCE

The lubrication pump is mounted in a horizontal position through two anchor holes with M8 bolts. Version with grease follower plate can be mounted in any position. A drill template, supplied with the lubrication pump, makes the mounting easier. All corresponding connectors of the lubrication pump are connected according to the wiring scheme. The pump tank is filled with a prescribed clean lubricant through the lubricating nipple (recommended) or from above. Version with follower plate must be filled by coupling and grease version without filling cup is filled by lubricating nipple. The lubrication pump may not be refilled with impure or otherwise debased lubricant. The required lubrication cycle is set on the plastic push-button panel: 1. lubrication time – pause time or 2. number of cycles – pause time. The pump is switched on by turning on the switch of the machine or the switch of the utility vehicle's drive and it is observed, whether it runs smoothly and regularly. The lubricant that remained inside the lubrication pump after the pressure test as preservative is pumped out. If the lubricant flows from the outlet regularly and without air bubbles, the outlet is closed by attaching it to the lubrication circuit pipe.

Lubrication pump can be equipped with two types of working unit. One type working unit with adjustable dose and second type working unit with fixed dose. Fixed dose for each working unit is  $2.5 \text{ cm}^3/\text{min.}$  or  $3.5 \text{ cm}^3/\text{min.}$  Adjustable dose is smoothly regulated independently for each operation unit (outlet) by an adjustable shaft with a safety nut. Maximum dose  $3.8 \text{ cm}^3/\text{min.}$  is set by default; screwing shaft into the body, the dose is lowered to the minimal value  $0.8 \text{ cm}^3/\text{min.}$

Besides the lubricant refilling in the tank, the lubrication pump requires no other maintenance. The lubricant has to be refilled particularly if the empty tank red light starts flashing on the plastic push-button panel.

## TECHNICAL DATA

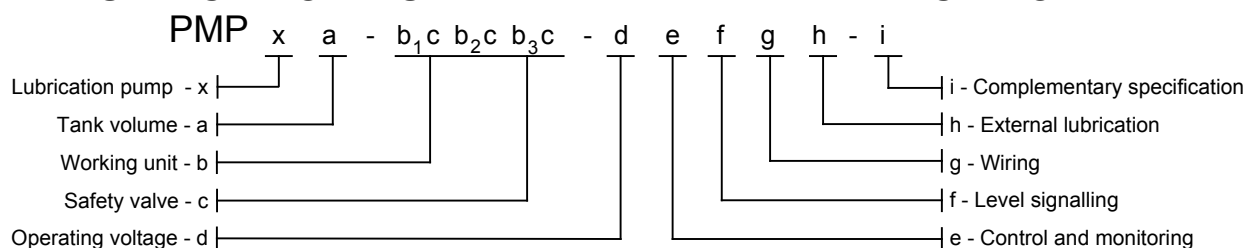
Maximum working pressure	350 bar
Operating pressure	300 bar
Nominal fixed dose	2.5, 3.5 cm <sup>3</sup> /min./outlet
Nominal adjustable dose	0.8 ÷ 3.8 cm <sup>3</sup> /min./outlet
Lubricant tank capacity	2, 4, 6, 8 dm <sup>3</sup> (organic glass - scraper blade) 6, 8, 12 dm <sup>3</sup> (metal - scraper blade) 2, 4 dm <sup>3</sup> (organic glass - follower plate)
Pause time setting	1 to 59 min., 1 min. increment 1 to 99 hours, 1 hour increment
Lubrication time setting	1 to 59 sec., 1 sec. increment 1 to 99 min., 1 min. increment
Number of cycles setting	1 to 99
Setting the control time of cycles	1 to 99 min.
Number of outlets	1 to 3
Outlet threaded joint	G1/4", for tube outside dia. 6, 8, 10 mm
Electromotor	24V DC, 28W, 2.5A 12 V DC, 28W, 5A
Supply voltage of lubrication pump*	24V DC - 2.5A, 12V DC - 5A 115V AC - 0.52 (D), 60Hz 230V AC - 0.26 (D), 50Hz
Supply voltage of external signalling	max. 30V - 1A
Lubricant	grease
	oil
Working environment temperature	-25 to 80°C
Weight	5.8 kg (depending on execution)

\* Lubrication pump PMP is equipped the fuse 2.5A (During operation of the pump PMP may cause a large current consumption, which is caused by the working unit. The amount of peak alternating current is dependent on operating conditions and values of up to 1.5A, in the case of protection electric breaker, is used type D)

### STANDARD SETTING PMP

Lubrication pumps PMP are supplied with the following factory settings: Feed maximum rate - 3.8, (2.5, 3.5) cm<sup>3</sup>/min./outlet. By-pass pressure in a working unit with a safety valve - 300 bar. Lubrication time setting - 1 min. - 0 sec. Pause time setting - 0 hour - 1 min. Number of cycles setting - 3 cycles. E1, E2, E3 alarm time setting - 2 min.

# LUBRICATION PUMP PMP - TYPE IDENTIFICATION KEY



## Lubrication pump - x

for grease, tank with filling cover .....	3
for oil, tank with filling cover .....	4
for grease, tank with follower plate .....	5
for grease, tank without top filling .....	6

## Tank volume - a

2 dm <sup>3</sup> (plastic).....	2
4 dm <sup>3</sup> (plastic).....	4
6 dm <sup>3</sup> (steel).....	6
6 dm <sup>3</sup> (plastic).....	7
8 dm <sup>3</sup> (plastic).....	8
8 dm <sup>3</sup> (steel).....	9
12 dm <sup>3</sup> (steel).....	12

## Working unit - b<sub>1,2,3</sub>

without working unit - plug .....	0
working unit - adjustable 0.8 - 3.8 cm <sup>3</sup> /min .....	1
working unit - fixed dose 2.5 cm <sup>3</sup> /min.....	2
working unit - fixed dose 3.5 cm <sup>3</sup> /min.....	3

## Safety valve - c

without safety valve .....	X
safety valve SZV .....	A
safety valve SZVM (pressure gauge).....	B
safety valve BZV .....	C
safety valve BZVM (pressure gauge) .....	D
without safety valve, only pressure gauge .....	M

## Operating voltage - d

12V DC .....	1
24V DC .....	2
230V AC.....	3
115V AC.....	4

## Control and monitoring timer - e

NO .....	0
YES .....	1
YES + 1 cycle reader .....	2
YES + display protection.....	3
YES + 1 cycle reader + display protection.....	4
YES + 2 or 3 cycle readers .....	5
YES + 2 or 3 cycle readers + display protection.....	6

## Level signalling - f

without signalling .....	0
signalling MIN. level .....	1
signalling MIN. and MAX. level (steel tank 8 and 12 dm <sup>3</sup> ) .....	2

## Wiring - g

connector .....	1
connector + cabel 5m .....	2
connector + cabel 10m .....	3

## External additional lubrication - h

NO .....	0
YES .....	1
YES + cabel 2m.....	2
YES + cabel 5m.....	3
YES + cabel 10m.....	4

## Complementary specification - i

without .....	000
GSM modul .....	G01
safety valve 200 bar .....	P01
safety valve 270 bar .....	P02
safety valve 350 bar .....	P03
filling coupling ID 1072700 .....	F01
filling coupling ID 425000100208 .....	F02
filling coupling ID 425011106007 .....	F03
another specification.....	S00

**x** - code 5 is applied only for plastic tank of volume 2 and 4 liters, code 6 is applied only for plastic tank (for chassis lubrication)

**b** - the position of the outlet working unit is marked by indices 1, 2, 3; the positions of the working units at the pump are shown in the sketch in previous data sheets.

**c** - if this position isn't filled in, the working unit will not be equipped with a safety valve. Safety valves are shown in the accessories data sheets.

**e** - it is recommended to order switchboard for 2 or 3 cycle readers, for the code 5 is recommended ID 8550560, for the code 6 is recommended ID 8550561, both these units are provided only as the accessories.

**f** - code 2 is applied only for steel tanks of volume 8 and 12 liters.

**h** - it is recommended to order the button of external lubrication ID 8450716, as it is shown in the accessories data sheets.

**i** - lubrication pump is standardly equipped with filling lubricator DIN 71412-180, with cover. When the filling with coupling code F02 is possible used 1 or 2 working units. Filling by code F01 and F03 allows 1,2 or 3 working units. In accessories are show filling possibility and other specification.

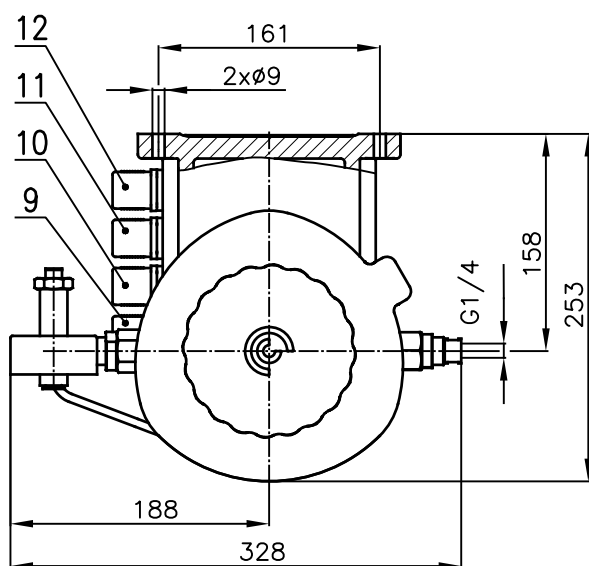
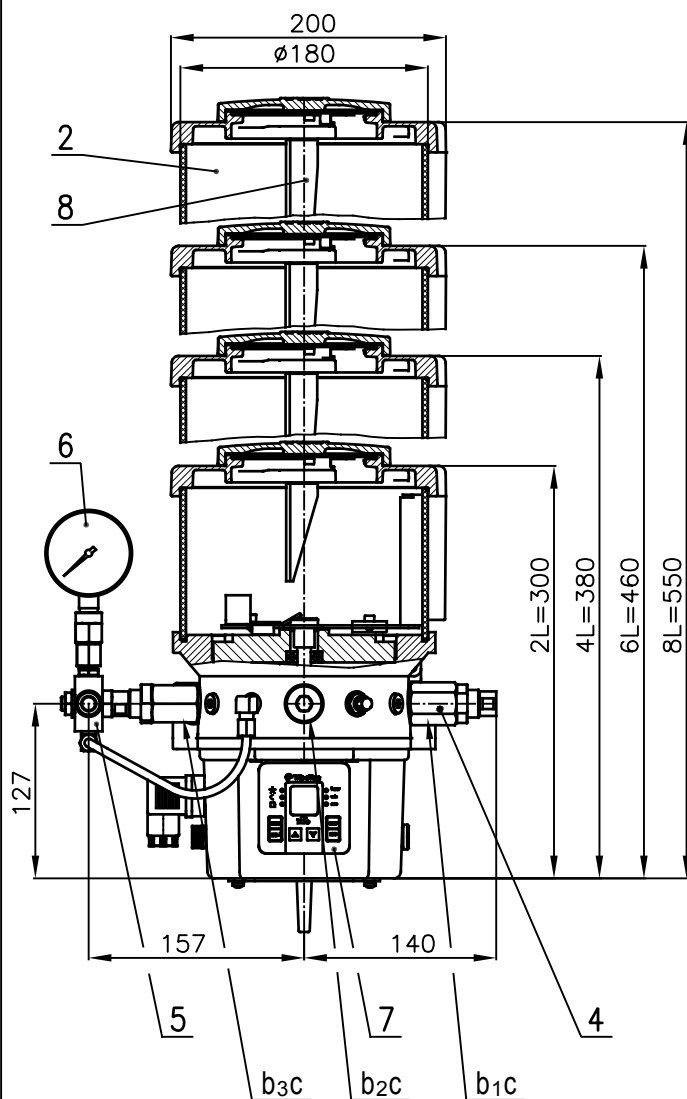
## Example of identification:

Lubrication pump PMP 34 - 0X-1A-3D - 23111 - G01- P02

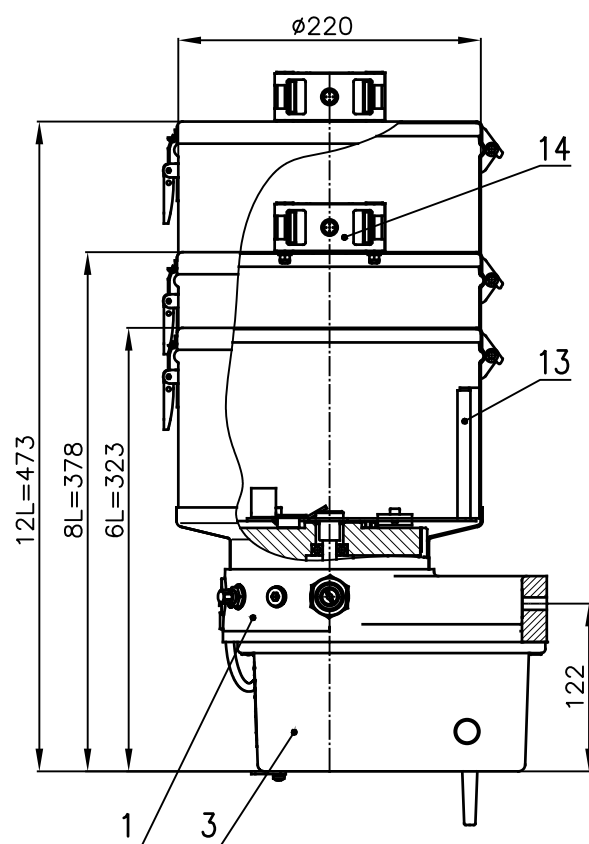
Grease lubrication pump PMP with a tank volume of 4 dm<sup>3</sup>, with a plug on the right side, adjustable working unit (0.8-3.8cm<sup>3</sup>/min) with safety valve SZV on the front side, with fixed dose working unit (3.5 cm<sup>3</sup>/min) with safety valve BZVM on the left side, with voltage supply 24 V DC, with control timer and display protection, with min. level signalling, connector without cable and connector for a switch of external additional lubrication. GSM unit for feedback control. The pressure on safety valves is set on 270 bar.

Name	CODE IDENTIFICATION	<b>Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		


## ORGANIC GLASS TANK



## STEEL TANK

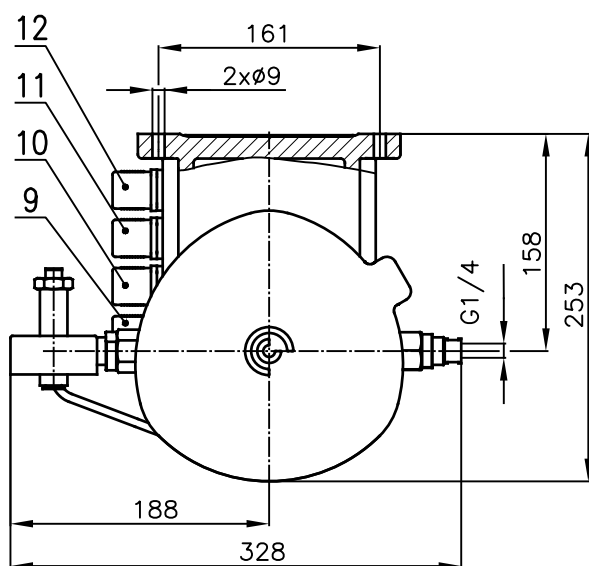
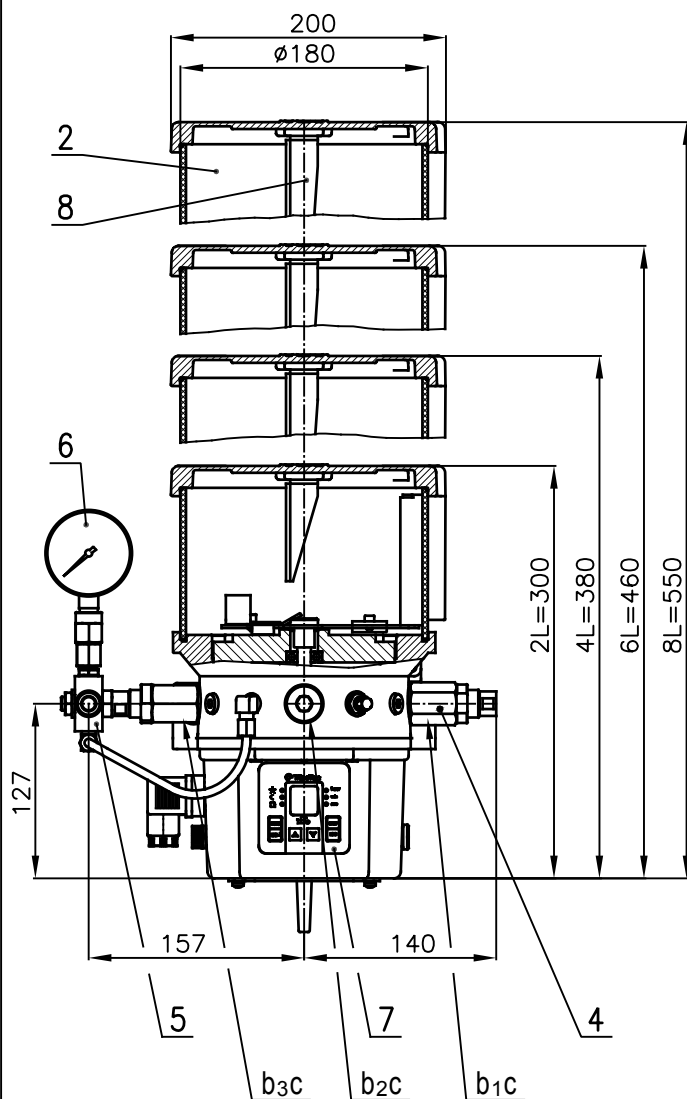


Pos	Name
1	Pump body
2	Lubricant tank
3	Electromotor cover
4	Working unit
5	By-pass valve
6	Pressure gauge
7	Control panel
8	Slide gate
9	Connector - supply voltage
10	Connector - alarm
11	Connector - cycles reader
12	Connector - external lubrication
13	Scraper blade
14	Ultrasonic sensor

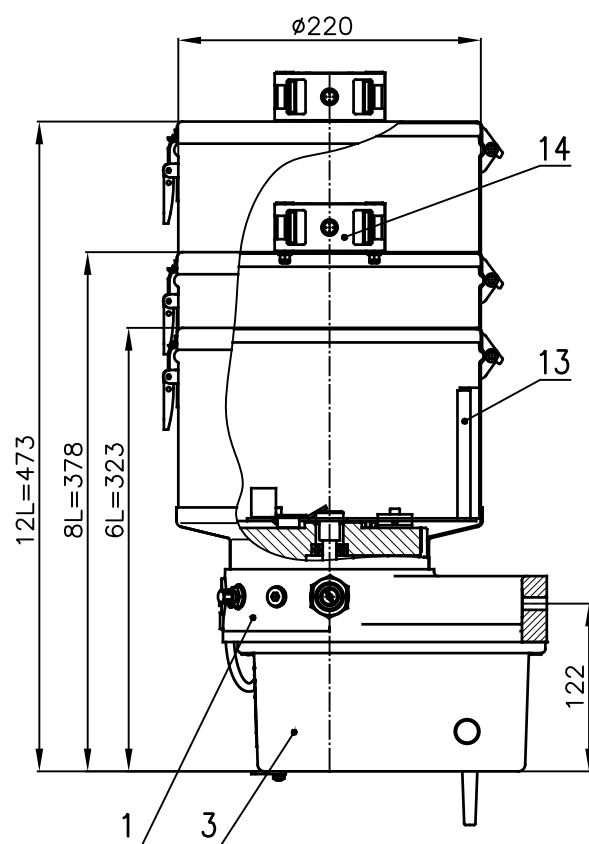
Name	PMP FOR GREASE	 <b>Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		



## ORGANIC GLASS TANK



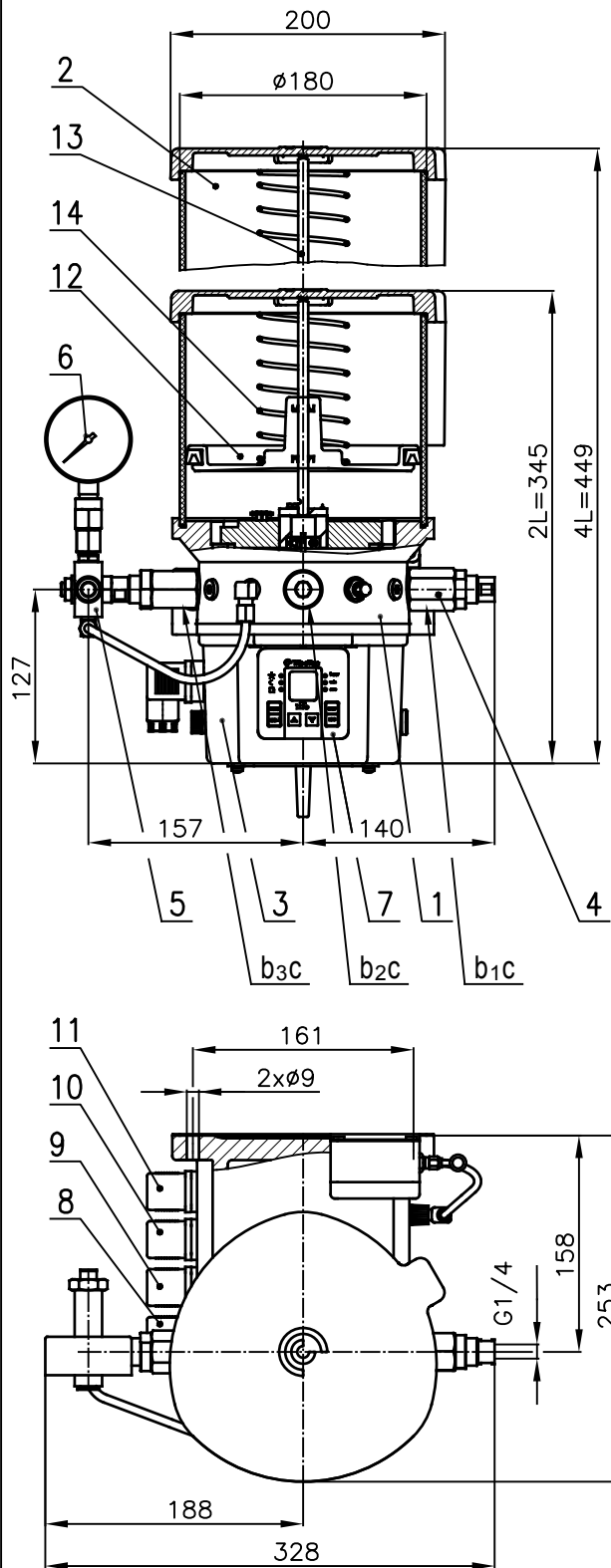
## STEEL TANK



Pos	Name
1	Pump body
2	Lubricant tank
3	Electromotor cover
4	Working unit
5	By-pass valve
6	Pressure gauge
7	Control panel
8	Slide gate
9	Connector - supply voltage
10	Connector - alarm
11	Connector - cycles reader
12	Connector - external lubrication
13	Scraper blade
14	Ultrasonic sensor

Name	PMP FOR GREASE WITHOUT CUP	<b>Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		

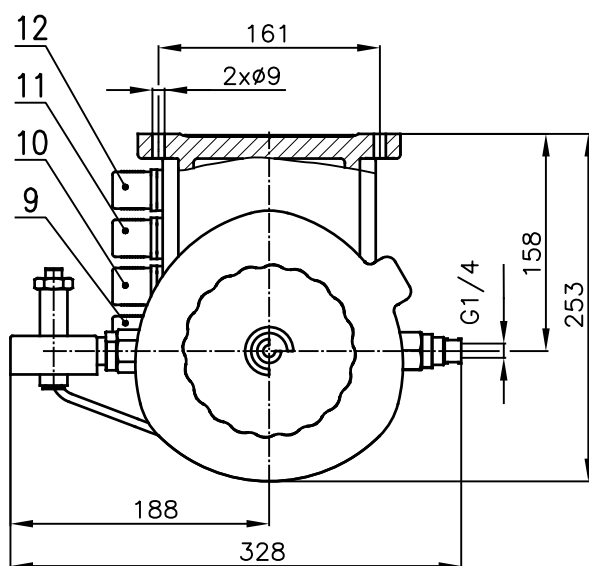
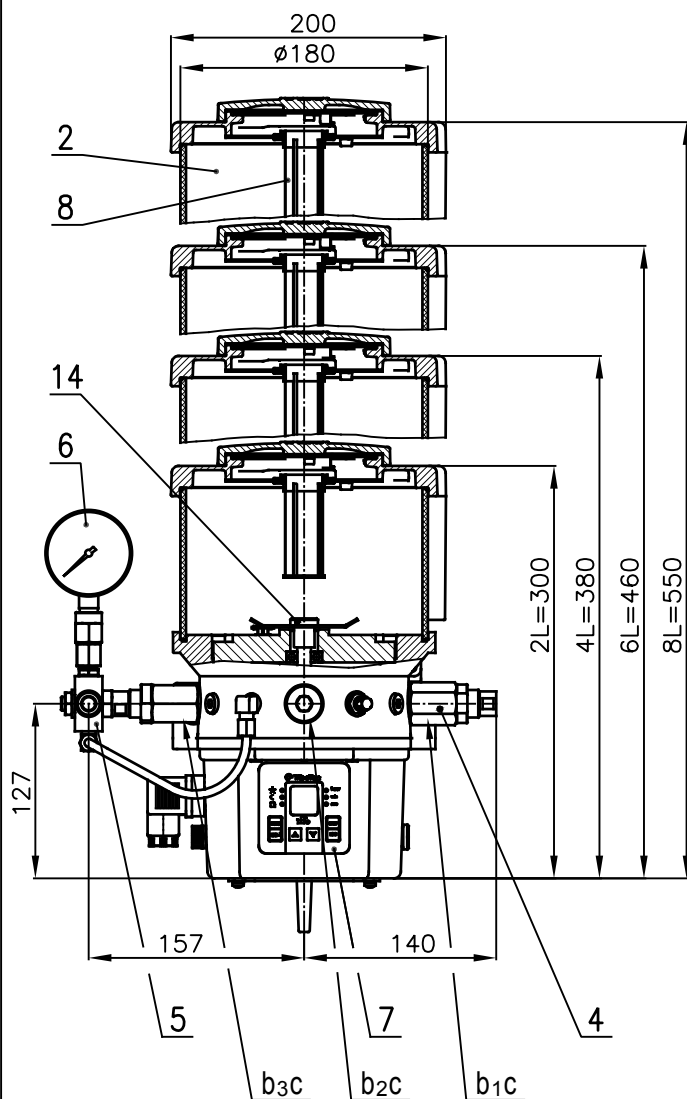
ORGANIC GLASS TANK



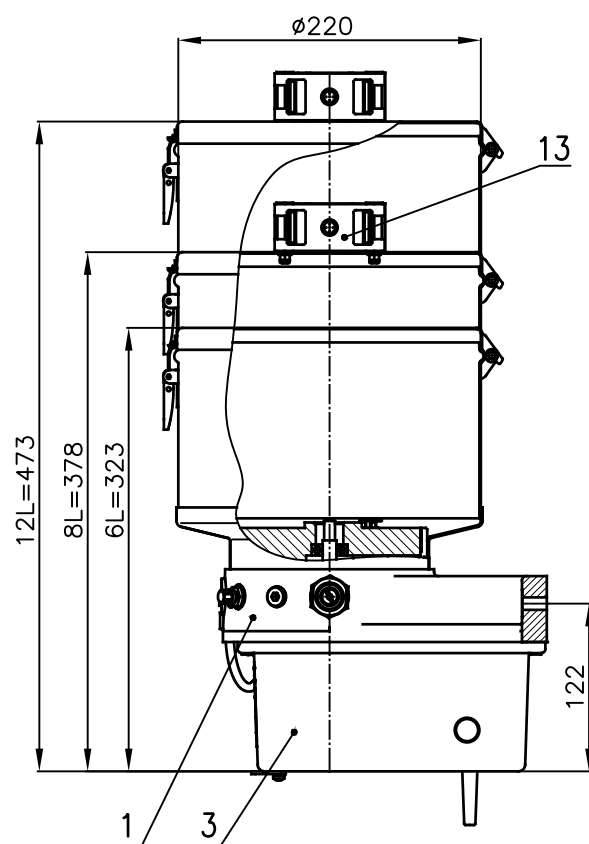
Pos	Name
1	Pump body
2	Lubricant tank
3	Electromotor cover
4	Working unit
5	By-pass valve
6	Pressure gauge
7	Control panel
8	Connector - suply voltage
9	Connector - alarm
10	Connector - cycles reader
11	Connector - external lubrication
12	Follower plate
13	Guide rod
14	Spring

Name	PMP FOR GREASE WITH FOLLOWER PLATE	<b>Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		


## ORGANIC GLASS TANK



## STEEL TANK

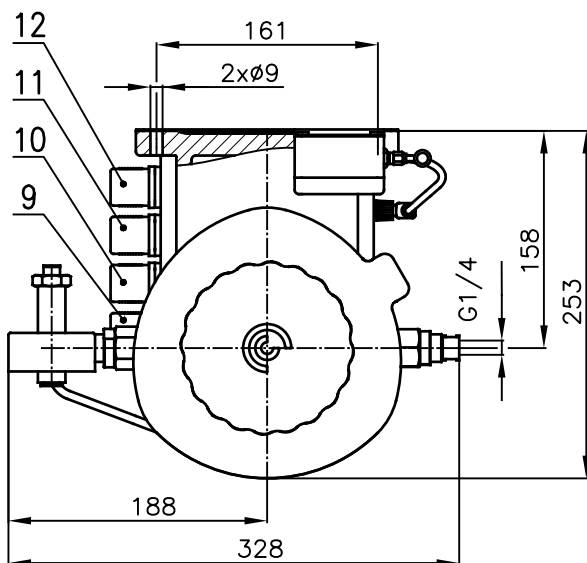


Pos	Name
1	Pump body
2	Lubricant tank
3	Electromotor cover
4	Working unit
5	By-pass valve
6	Pressure gauge
7	Control panel
8	Oil-strainer
9	Connector - supply voltage
10	Connector - alarm
11	Connector - cycles reader
12	Connector - external lubrication
13	Ultrasonic sensor
14	Signalling rotation

Name	PMP FOR OIL	 <b>Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		


Technical drawing of a 4-stage hydraulic pump assembly. The drawing shows a cross-section of the pump with four stages. Key dimensions and labels are as follows:

- Top Dimension:** 200 (overall width) and  $\varnothing 180$  (inner diameter).
- Stage Labels:** 2, 8, 16, 6 (pointing to the stages from top to bottom).
- Height Dimensions:**
  - 2L = 300
  - 4L = 380
  - 6L = 460
  - 8L = 550
- Pressure Gauge:** A circular gauge is shown on the left side, connected to the pump.
- Bottom Labels:** 157, 140, 5, 7, 4 (pointing to various components and ports).
- Port Labels:**  $b_{3C}$ ,  $b_{2C}$ ,  $b_{1C}$  (pointing to the bottom ports).

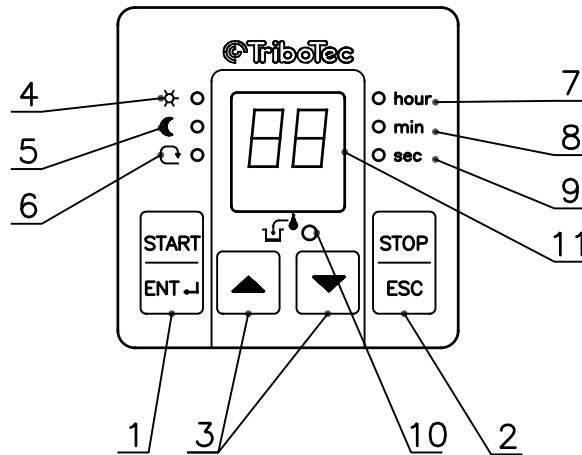


Technical drawing of the front view of a vertical industrial machine, likely a steam boiler or pressure vessel. The drawing shows a cylindrical body with a hemispherical bottom, a top flange, and a base. Key dimensions are indicated: total height 12L=473, main body height 8L=378, and base height 6L=323. The top diameter is Ø220. Various components are labeled with numbers 1 through 15. The drawing is a cross-section, showing internal details like the hemispherical bottom and various fittings.

Pos	Name
1	Pump body
2	Lubricant tank
3	Electromotor cover
4	Working unit
5	By-pass valve
6	Pressure gauge
7	Control panel
8	Filling hole
9	Connector - suply voltage
10	Connector - alarm
11	Connector - cycles reader
12	Connector - external lubrication
13	Scraper blade
14	Ultrasonic sensor
15	GSM modul
16	Signalling rotation

Name	PMP FOR OIL, GREASE WITH GSM MODUL	 <b>TriboTec</b> s.r.o. Košuličova 4 Brno <a href="http://www.tribotec.cz">www.tribotec.cz</a> +420 543 425 611
Type	PMP	
Code		

# CONTROL TIMER

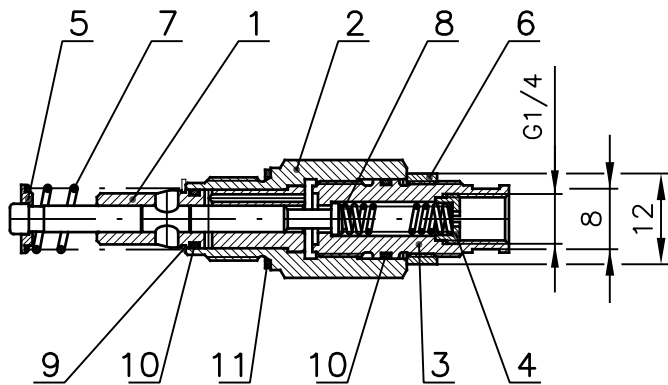


Pos	Name
1	START/ENT button
2	STOP/ESC button
3	Choice button
4	Operation indicator
5	Pause indicator
6	Cycles indicator
7	Hour indicator
8	Minute indicator
9	Second indicator
10	Alarm indicator
11	Display

# WORKING UNIT

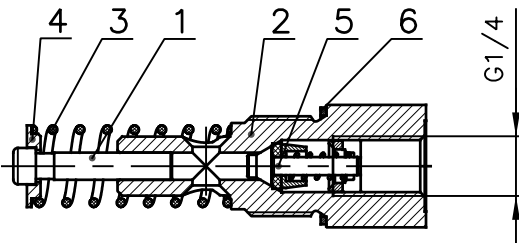
Indication	Code
Adjus. working unit L3 0,8 - 3.8 cm <sup>3</sup> /min	8501627
Fixed working unit L2 2.5 cm <sup>3</sup> /min	8502556
Fixed working unit L1 3.5 cm <sup>3</sup> /min	8502290

# ADJUSTABLE DOSE




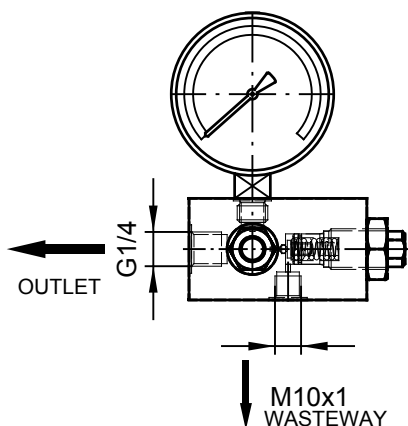
Pos	Name
1	Working unit cylinder
2	Working unit body
3	Adjustable shaft
4	Nut
5	Washer
6	Safety nut
7	Working spring
8	Spring
9	Safety ring
10	"O" ring
11	Sealing ring

# FIXED DOSE

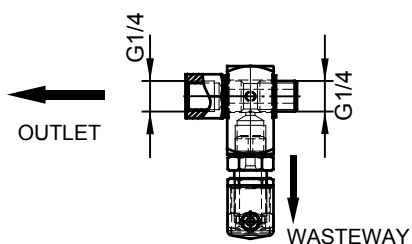


Pos	Name
1	Working unit cylinder
2	Working unit body
3	Spring
4	Washer
5	Return valve
6	Sealing ring

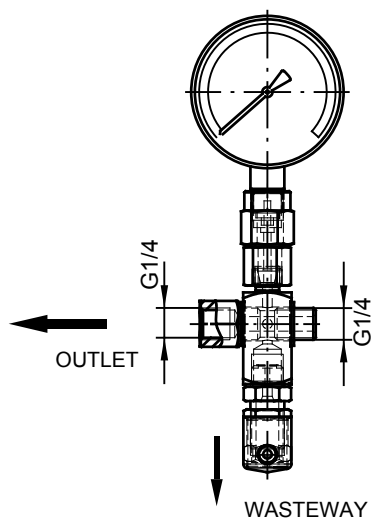
Name	CONTROL TIMER / WORKING UNIT	 <b>Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		



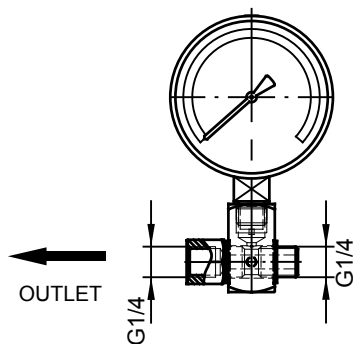
Indication	Code
Safety valve SZV - adjustable 40 - 350 bar	8450705
Safety valve SZVM - adjustable 40 - 350 bar (with pressure gauge)	8450706



Indication	Code
Safety valve BZV - adjustable 40 - 350 bar	8451588
Safety valve BZV - fixed 200 bar	8451589
Safety valve BZV - fixed 270 bar	8451590
Safety valve BZV - fixed 350 bar	8451591

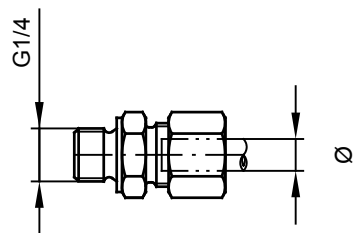


Indication	Code
Safety valve BZVM - adjustable 40 - 350 bar	8451592
Safety valve BZVM - fixed 200 bar	8451593
Safety valve BZVM - fixed 270 bar	8451594
Safety valve BZVM - fixed 350 bar	8451595

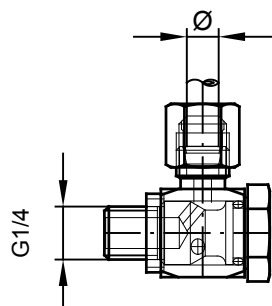


Indication	Code
Manometer block	8451636

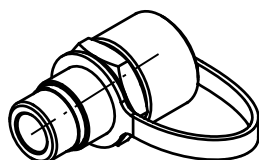
Name	ACCESSORIES	<b>©Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		



Indication	Code
Straight fitting Ø6 / G1/4	703014000052
Straight fitting Ø8 / G1/4	703014000056
Straight fitting Ø10 / G1/4	703014000034

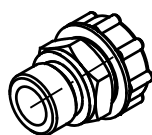


Indication	Code
Banjo fitting Ø6 / G1/4	703017000043
Banjo fitting Ø8 / G1/4	703017000032
Banjo fitting Ø10 / G1/4	703017000023



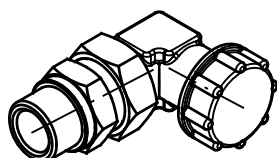
Indication	Code
Filling coupling with sleeve - straight	425000100208

Filling with PRP 05 ič.425100000201 with sleeve or filling with PRP 05 ič.425100100201 with sleeve with pressure gun



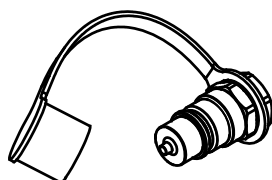
Indication	Code
Filling coupling M26x1.5 - straight	425000100202

Filling with PRP 05 ič.425100000204 thread M 26x1,5 or filling with PRP 05 ič.425100100204 thread M 26x1,5 with pressure gun



Indication	Code
Filling coupling M26x1.5 - elbow	425000100203

Filling with PRP 05 ič.425100000204 thread M 26x1,5 or filling with PRP 05 ič.425100100204 thread M 26x1,5 with pressure gun



Indication	Code
Coupling male KS G1/4	425011106007
Coupling male cover KS G1/4	425000060003



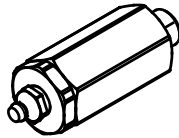
Indication	Code
Direct connection G1/4	425034690404

Direct connection is used like middle part for connect coupling male 425011106007 to body PMP

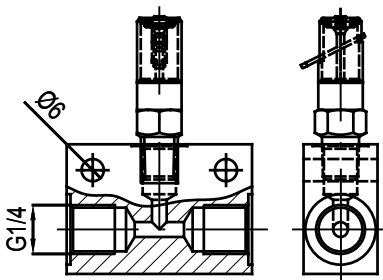
Name	ACCESSORIES	<b>Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		



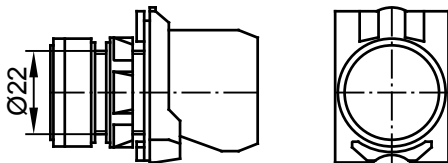
Indication	Code
Coupling female KM G1/4	425111106007
Coupling female cover KM G1/4	425000060002



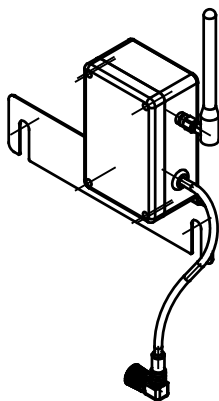
Indication	Code
Refill grease strainer G1/4	1072700



Indication	Code
Pressure indicating switch with memory max.75bar	8451597
Pressure indicating switch with memory max.100bar	8451598
Pressure indicating switch with memory max.150bar	8451599
Pressure indicating switch with memory max.200bar	8451600



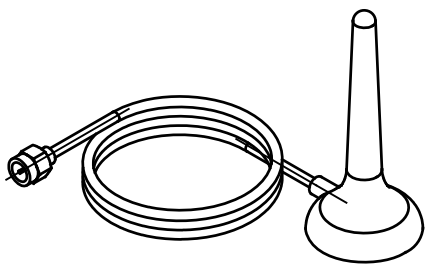
Indication	Code
Button external lubrication	8450716



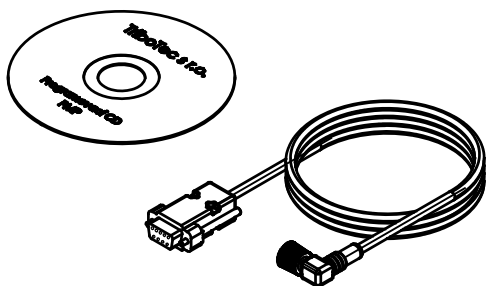
Indication	Code
GSM modul	8451136

Name	ACCESSORIES	<b>©Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		

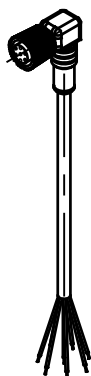




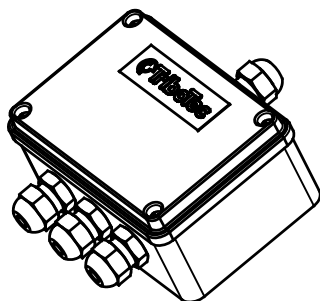
Indication	Code
Antenna GSM 900/1800-2m	625 900 180 050



Indication	Code
Programming set PMP	8550538



Indication	Code
Angle connector with cabel-2m	8550542
Angle connector with cabel-5m	8550543
Angle connector with cabel-10m	8550544



Indication	Code
Switchboard for 2 cycle readers	8550560
Switchboard for 3 cycle readers	8550561

Name	ACCESSORIES	<b>©Tribotec</b> s.r.o. Košuličova 4 Brno www.tribotec.cz +420 543 425 611
Type	PMP	
Code		