Piston pump unit DLS-3000

Technical data sheet

Technical data sheet

VERSION 09.2025 EN

IMPORTANT INFORMATION

Important information about this data sheet

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Information on EU Directive 2011/65/EU (RoHS)

DLS only uses materials complying with the criteria of EU Directive 2011/65/EU in control and switching units. If hexavalent chromium formerly has been used as corrosion protection for in-house produced parts, it has already been replaced by other environmentally compliant protective measures.
The mechanical devices supplied by DLS are not affected by EU Directive 2011/65/EU.
As DLS is aware of their responsibility towards the environment, we will use materials complying with the requirements of the Directive, as soon as they are available and their use is technically possible, also for devices that are not covered by EU Directive 2011/65/EU.

ADDITIONAL INSTRUCTIONS

Illustrations

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

Dimensions

Unless otherwise stated, dimensions are in millimetres.

Copyright

Changes

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TABLE OF CONTENTS

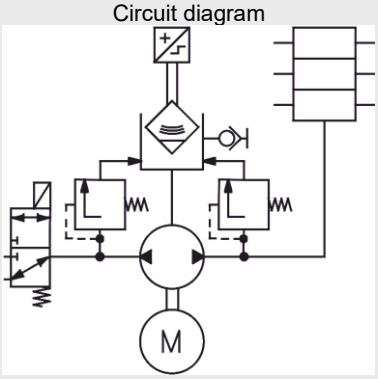
PISTON PUMP UNIT DLS-3000

As pump unit in central lubrication systems

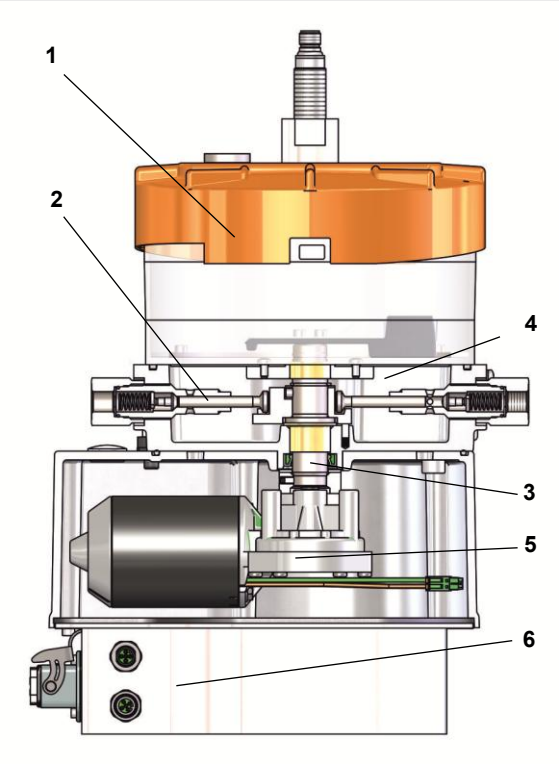
Features and benefits

- For the delivery of oil, liquid grease or grease
- 1 to 3 pump elements
- Up to 44 outlets with progressive distributors flanged-on
- Electric control and monitoring
- Two lubrication circuits separately controllable
- DLS Easy Lock eccentric with simple and safe installation of the positively driven pump elements and additional Lube Care function (agitation without conveying)
- Control with intelligent error output
- Optionally with integrated heating and temperature monitoring
- Wide range of reservoir and monitoring options

Circuit diagram



PRODUCT AND FUNCTIONAL DESCRIPTION



1 Reservoir
2 Delivery piston
3 Eccentric shaft
4 Pump casing
5 Gear motor
6 Power supply unit for 230 V

Drive
The pump unit is driven by a gear motor **5** flanged to the pump casing **4** from downside.
The pump unit can also be operated with 230 V via an additional housing with a power supply unit **6** under the geared motor.

Conveying function
When the eccentric shaft **3** rotates, the delivery piston **2** of every pump element performs a suction and delivery stroke per rotation each, whilst delivering lubricant from the reservoir **1** to the lubrication points.

DLS Easy Lock eccentric with Lube Care

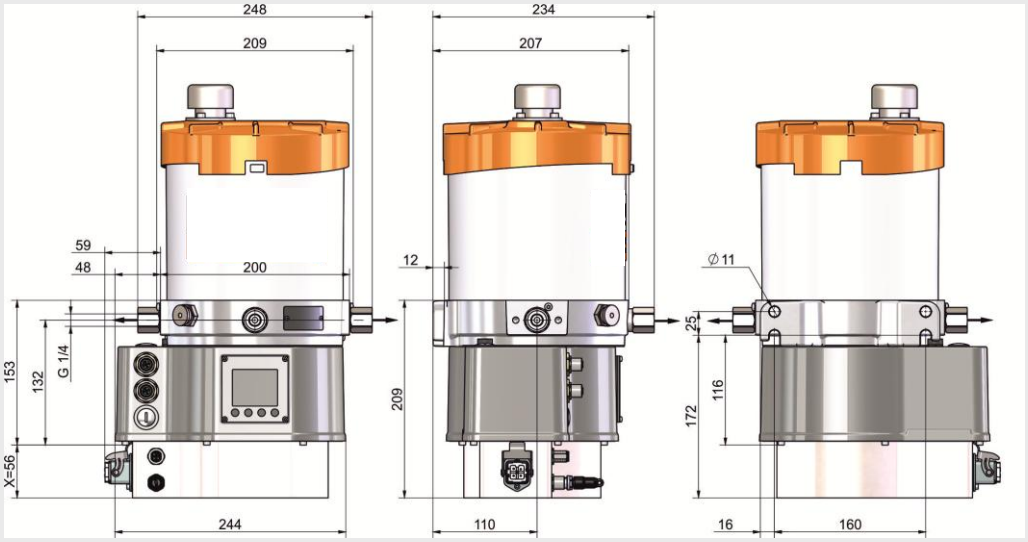
Easy installation of the pump elements
The pump unit DLS-3000 has a specially designed DLS Easy Lock eccentric, which guarantees simple and safe installation of the positively driven pump elements. For assembly, the pump elements are simply screwed in and then hook in automatically with the first eccentric rotation.

Lube Care
Furthermore, the Lube Care function enables an improvement of the lubricant quality and the pumping behaviour by regular agitation of the lubricant. When the eccentric shaft **3** rotates into the one direction of rotation, the pump elements are operating while the stirring device supplies them with the lubricant.
As soon as the eccentric shaft **3** starts to rotate into the other direction, the lubricant is stirred without any delivery operation by the pump elements taking place.

The integrated control allows operating and off-duty periods for both the delivery with stirring and stirring without delivery (Lube care) to be programmed independently from each other.

TECHNICAL DATA

Dimensions



Dimension X=56 Oversize for 230 V supply voltage version

Technical and electrical data

Number of pump elements	1 - 3
Delivery volume per stroke and element with pump element 11 with pump element 08 with pump element 04 with pump element 16	±20% (at an operating viscosity of the pumped liquid of 144 mm²/s and a back pressure of 140 bar)) 0,11 cm³ 0,08 cm³ 0,04 cm³ 0,16 cm³
Delivery pressure	350 bar
Temperature range	-20 - +60 °C
Medium	Oil and grease up to NLGI class 2
Mains voltage	24 VDC 230 V
Power consumption	max. 72 W
Speed (load dependent)	approx. 30 min $^{-1}$
Protection class	DIN EN 60529 IP66/69
Material Casing Pump element Motor Gaskets Medium contacting parts Cover for power supply unit 230 V	 Aluminium Steel Aluminium / Steel / Copper NBR FPM Stainless steel

WEIGHT

The weight of the pump unit is made up of the following components, depending on the version:

- Pump body with monitoring and motor
- Progressive distributor | directional control valve
- Reservoir
- Follower piston
- Level monitoring
- Pump elements

All weights in kg

Pump body with monitoring and motor	
Pump with control and motor	5
Pump with control, motor and power supply unit 230 V	8,1

Progressive distributor | directional control valve	
Attachment B | G | S	0,6
Attachment V	1,1

Reservoir (without follower piston)

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

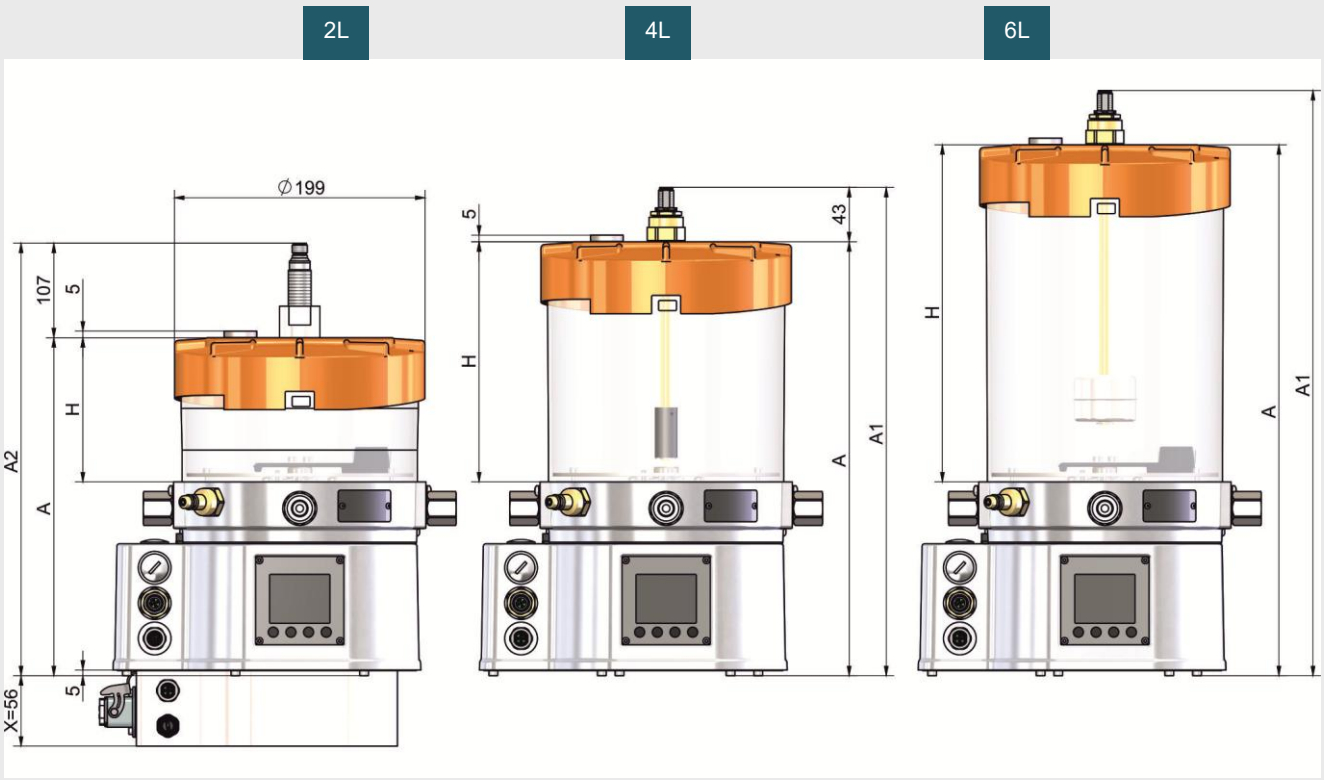
Follower piston	
For reservoirs 5 and 10	0.8
For reservoir 30	2.7
For reservoirs 2LA | 4LA | 6LA	1.6

Level monitors	0.2

Pump element 04 | 08 | 11 | 16	0,25

RESERVOIR

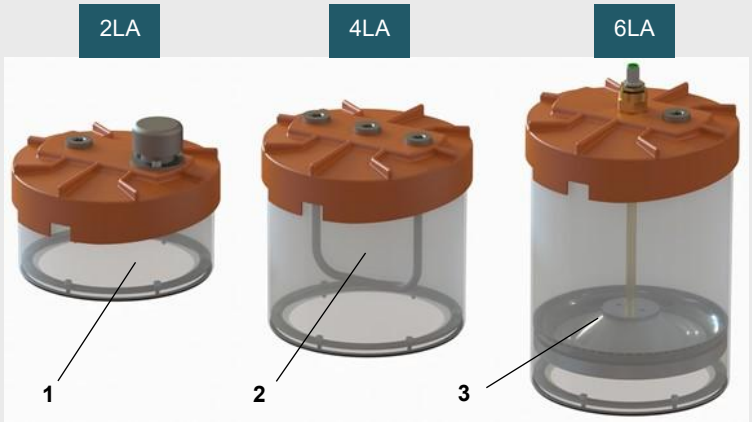
Reservoir 2L | 4L | 6L incl. Screw cap with snap-on function



Reservoir	Capacity	Dimensions					Material	
		A	A1	A2	H	X	Reservoir	Lid
2L | 2LA	2 l	268	311	375	114	56	Polypropylene translucent	Polyamide
4L | 4LA	4 l	344	387	451	190			
6L | 6LA	6 l	421	464	528	267			

A = Reservoir without KFA or Ultrasonic
A1 = Reservoir with monitoring KFA
A2 = Reservoir with monitoring Ultrasonic
H = Reservoir height
X = Height measurement 230 V version

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

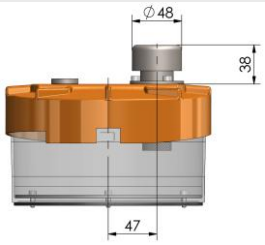


1 For oil including filler and ventilation filter
2 For fluid grease and grease with scraper tube
3 For grease with grease follower plate

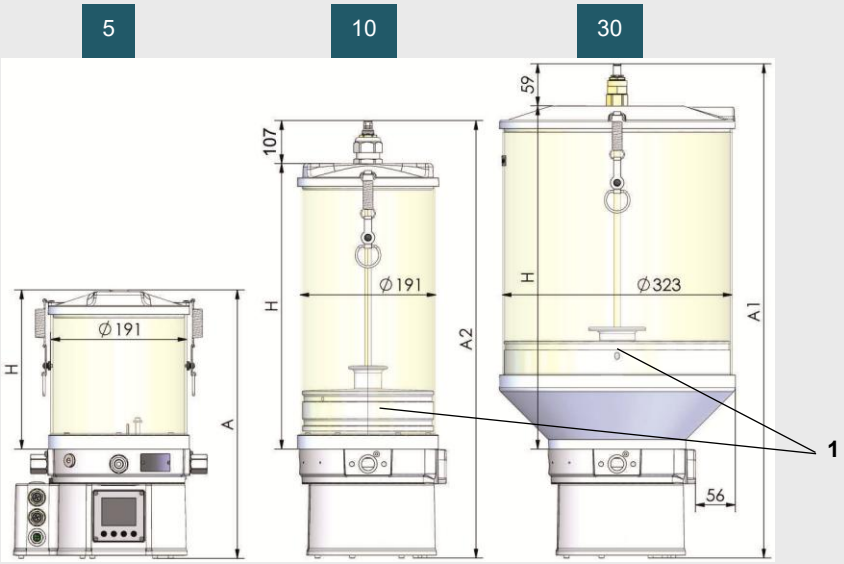
When selecting the outdoor variants, the exact design of the reservoir is determined by the selected level monitoring.

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

Differing dimensions



Reservoir 5 | 10 | 30



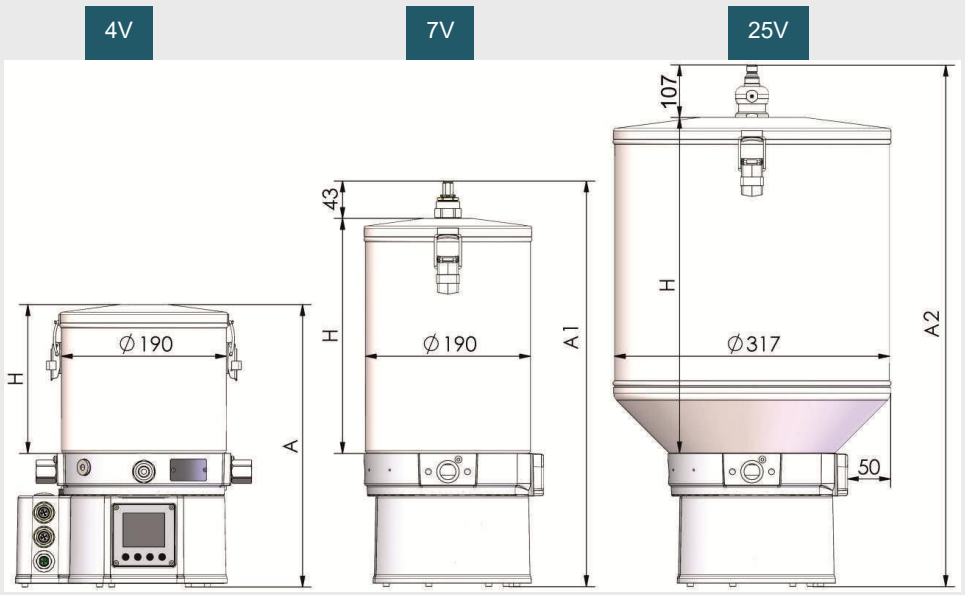
1 Follower piston (optional) made of aluminium

Reservoir	Capacity	Dimensions					Material	
		A	A1	A2	H	X	Reservoir	Lid
5 **10** **30**	5 l 10 l 30 l	377 557 637	434 614 694	484 664 744	224 404 482	56	Polyester/ aluminium	Aluminium

A = Reservoir without KFA or Ultrasonic
A1 = Reservoir with monitoring KFA
A2 = Reservoir with monitoring Ultrasonic
H = Reservoir height
X = Height measurement 230 V version
* When combining reservoir 30 and outlet version 14, H and A1 are increased by 33 mm.

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

Reservoir 4V | 7V | 25V



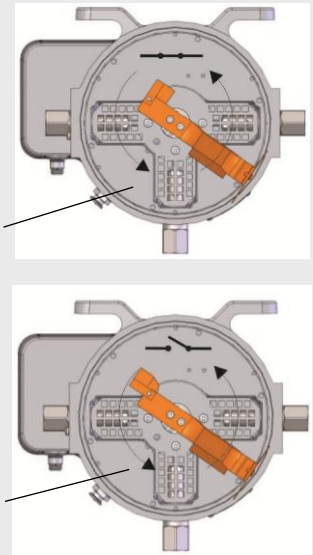
Reservoir	Capacity	Dimensions					Material	
		A	A1	A2	H	X	Reservoir	Lid
4V	4 l	325	368	492	171	56	Stainless steel	Stainless steel
7V	7 l	423	466	530	270			
25V	25 l	540	583	647	386			

A = Reservoir without KFA or Ultrasonic
A1 = Reservoir with monitoring KFA
A2 = Reservoir with monitoring Ultrasonic
H = Reservoir height
X = Height measurement 230 V version

Adapter Kx
This version of the machine is equipped with an adapter for a cartridge system.

LEVEL MONITORING

Level monitoring minimum controls C | F



Level monitoring C

C

Minimum level monitoring for liquid grease NLGI class 000 up to grease NLGI class 2

The contact is switched when the reservoir is empty and the pump drive shaft is rotating.
The empty signal is intermittent.
The switching mechanism can move, e.g. when filling the reservoir.
With external control, the signal must therefore be analysed with a delay when the pump is switched on (approx. 5 s).

1 Lubricant available (permanent signal)
2 No lubricant available (intermittent signal)

Level monitoring F

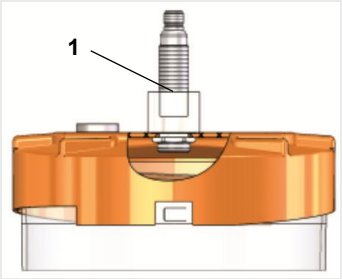
F

Minimum Level monitoring for oil

When the reservoir is empty, the float sinks and a continuous empty signal is emitted.

- Lubricant available — permanent signal
- No lubricant available — no signal

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

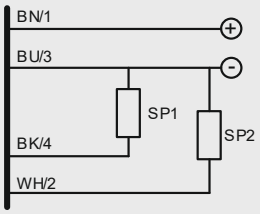
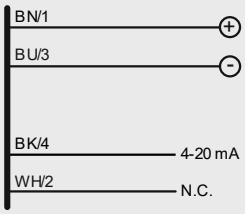


Level monitoring with ultrasonic sensor
Distance measurement of the fill level by reflection of the medium surface.

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

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

1 Ultrasonic sensor

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

Level monitoring K | KV | KK

Level monitoring with level switch

K KV KK

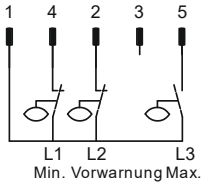
The level monitoring system with level switch KFA offers up to three switching points depending on the reservoir.

- Minimum
- Maximum
- Prewarning

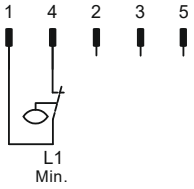
When using with grease, a follower piston must be used.
A float is used for applications with oil and fluid grease.

Switching capacity	max. 30 W
Switching voltage	max. 30 VDC
Switching current	max. 0,5 A
Protection class	DIN EN 60529 IP65
Connection type	Male M12x1, 5-pin

Circuit diagram for 3 switching points for reservoir size
4L(A) | 4V | 5 | 6L(A) | 7V | 10 l 25V l 30

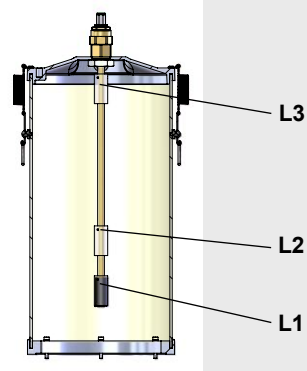


Circuit diagram for 1 switching point for reservoir size
2L(A)

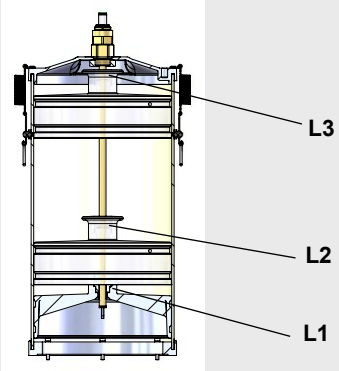


The ultrasonic sensor and the KFA level switch have to be connected separately for the version without control unit

With float K | KV



With follower piston KK



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

FILLING CONNECTOR

Filling connector A

A

Cone lubricator nipple DIN 71412 - AG1/4
Material: Steel

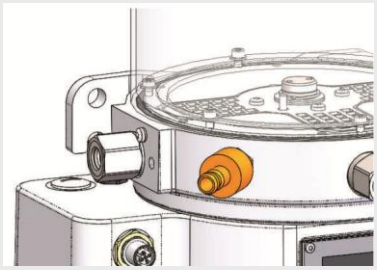
not suitable for oil

Filling connector C

C

Flat lubricator nipple DIN 3404 - M22
Material: Steel/ Cu

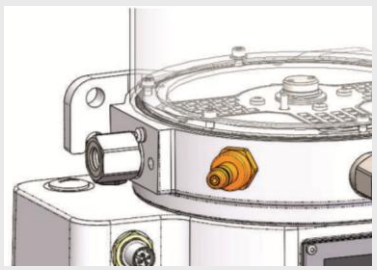
not suitable for oil



Filling connector **D**

D

Closing nipple DN 6 with dust cap
Material: Steel/ Cu

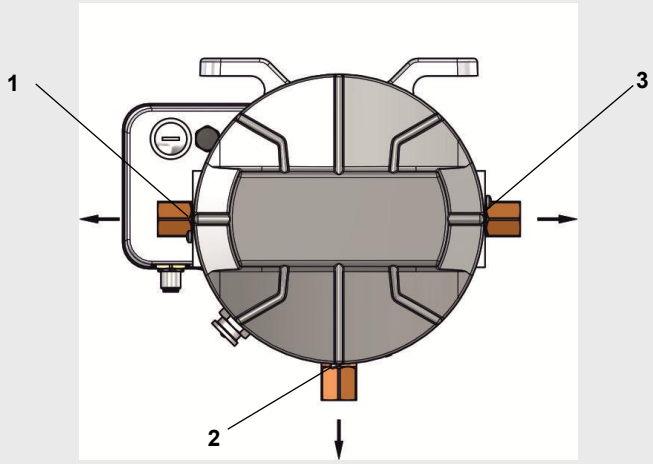


Filling connector G

G

Closing nipple DN 7 with dust cap
Material: CuZn/ Cu

ATTACHMENT AND CONNECTION OPTIONS



1 Pump element at position 1
Attachment:

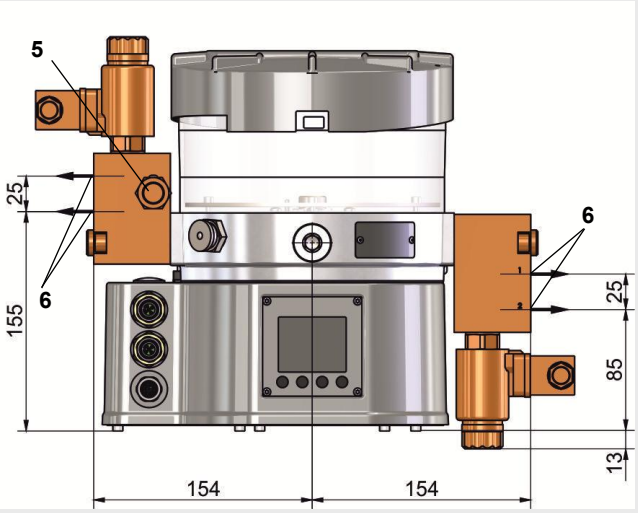
B G S V

2 Pump element at position 2

3 Pump element at position 3
Attachment:

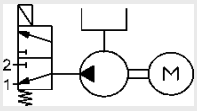
B G S V VL

Pump elements:
Up to 3 pump elements can be mounted on the DLS-3000 pump unit. The position of the pump elements is indicated with position 1 - 3. Pump element connections not required are closed with screw plugs. For easy combining of the pump elements, corresponding screw connection sets can be found in the accessories.

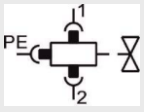


Nominal voltage	24 VDC
Nominal current	1,25 A
Enegized duty rating	100%
Protection class	DIN EN 60529 IP65
Connection type	Male DIN EN 175301-803, shape A

Circuit diagramm pump with directional control valve



Circuit diagramm directional control valve



Directional control valve V

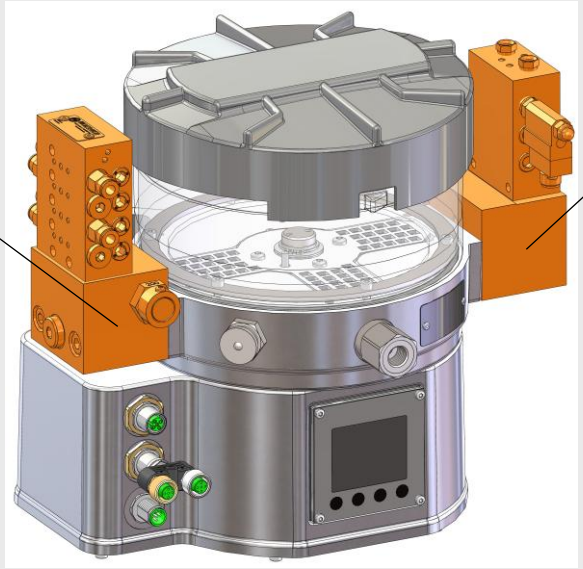
V

- A directional control valve with integrated pressure relief valve **5** can be flanged directly to pump element position 1 or 3. This limits the delivery pressure to an optional 350 bar.
- In conjunction with the D22 and D22A control unit, two lubrication circuits can be controlled separately and two progressive distributors can be monitored directly.
- Two directional control valves can be installed on the version without control unit with directional control valve V.
- If the reservoirs 30 or 25V are selected in combination with directional control valve V, an attachment is mounted at position 3 with a directional control valve positioned downwards for reasons of space.

5 integrated directional control valve
➡ see section **integrated pressure limitation** in this chapter.

6 Connection G 1/4

Connection options for progressive distributor



DLS progressive distributors can be flange-mounted to the pump elements point 1 and point 3 using an adapter. Progressive distributors with up to 22 points each and different dosing volumes are possible.

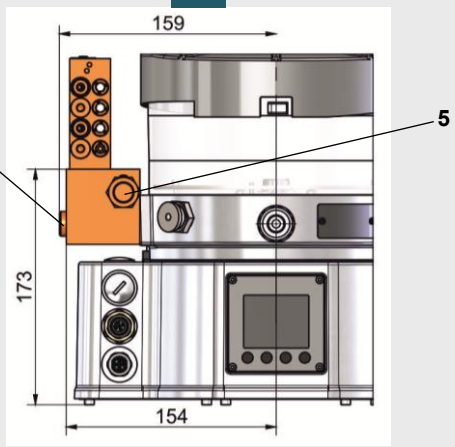
The following progressive distributors can be flange-mounted directly:

1 Connection S: S

2 Connection G: G

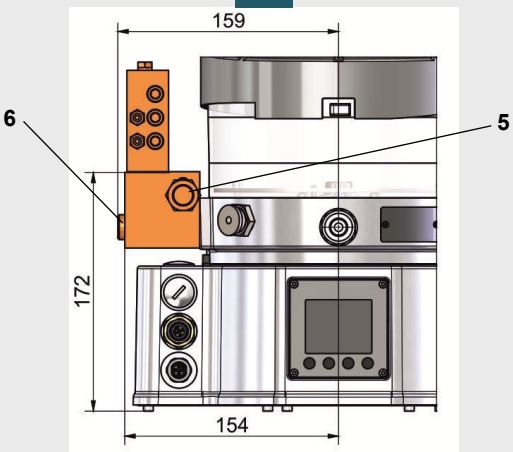
Connection S for VPB-SSV

S



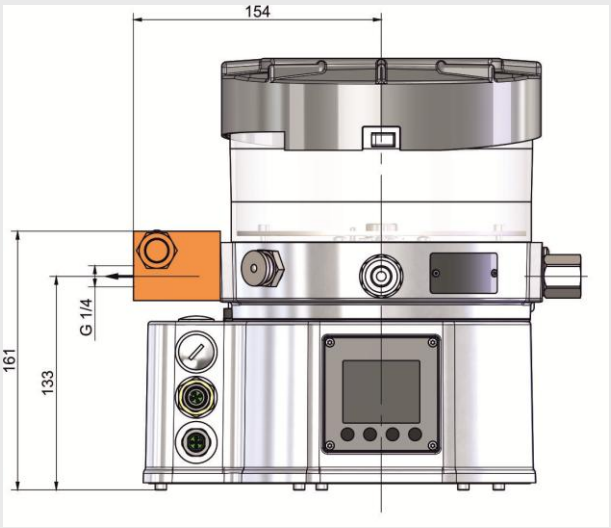
Connection G for VPB-G

G



5 integrated directional control valve
➡ see section **integrated pressure limitation** in this chapter.

6 Connection G 1/4



Connection B

B

With integrated pressure relief valve for pump elements.

Opening pressure
pressure relief valve optionally up to 350 bar.

➡ see section **integrated pressure limitation** in this chapter.

Integrated pressure limitation

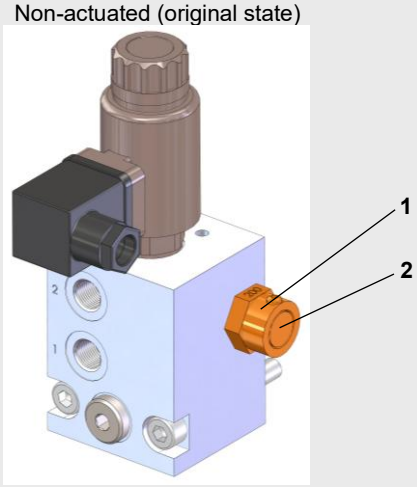
All attachment blocks (V + S + G + B) have an integrated pressure limiter **5**, which automatically returns the medium to the reservoir when the maximum pressure is reached

Function

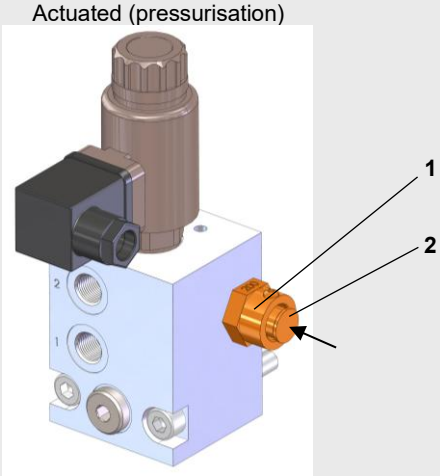
When the maximum pressure of the inserted valve cartridge is reached, the indicator pin **2** (see below) is pushed out and remains in this position until it is pushed in again.
This makes it possible to determine whether the pressure has been exceeded even a long time after pressurisation.
The maximum delivery pressure can also be set afterwards by inserting different valve cartridges.
The following valve cartridges are available:

0 bar (without pressure limitation)	100 bar	250 bar
50 bar	150 bar	300 bar
70 bar	200 bar	350 bar

Non-actuated (original state)



Actuated (pressurisation)



1 Pressure relief valve
2 Indicator pin

Indicator pin **2** is reset to its original state after actuation by pressing manual in the direction of the arrow.

Connection G 1/4

The attachment blocks V + G + S have a G1/4 **6** connection for connecting additional accessories. This connection is closed with a screw plug as standard. For example, external pressure relief valves or pressure indicators can be connected.

ELECTRICAL CONTROL

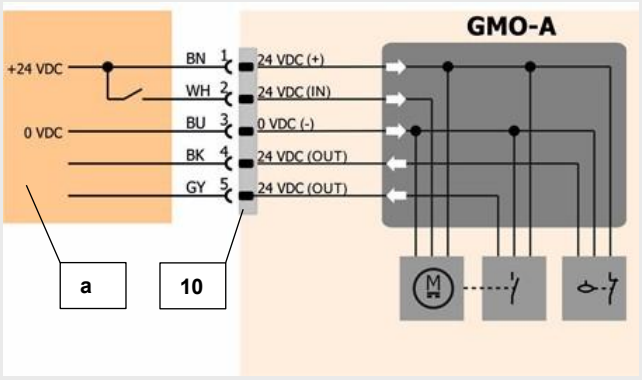
Version without control

There are two different monitoring options:

- Level monitoring
- Drive monitoring

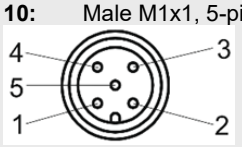
Without electrical control	Version supply voltage 24 V
0	24

Circuit diagram



a Customer

10: Male M1x1, 5-pin



10.2 Agitate
10.4 Level monitoring
10.5 Drive monitoring

Electrical data

Power consumption Standby:	0,5 W
Power consumption typical:*	30 W
Power consumption:	max. 67,5 W
Nominal voltage:	24 VDC
Supply voltage:	11 - 27 VDC
Input voltage:	11 - 27 VDC
Speed (load-dependent):	approx. 30 min^{-1}
Level monitoring:	
Switching current	max. 200 mA
Switching function	NC contact
Switching voltage	11 - 27 VDC
Drive monitoring:	
Switching current	max. 200 mA
Switching function	NC contact
Switching voltage	11 - 27 VDC

The outputs are short-circuit proof.
* Power consumption depends on temperature and medium.

- Motor connection
- Level monitoring and drive monitoring only active when motor is running

Only for level monitoring

F	C

All other level monitoring systems have to be connected separately.

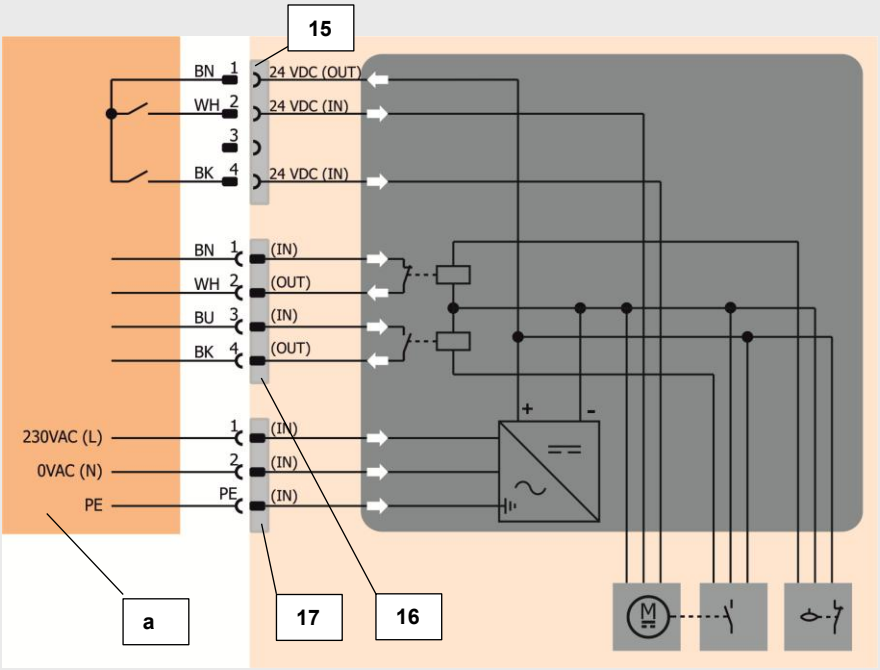
Without electrical control

0

Version supply voltage 230 V

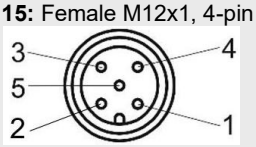
230

Circuit diagram



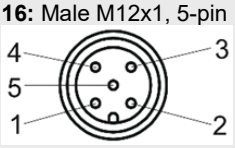
a Customer

15: Female M12x1, 4-pin



15.2 Agitate (input)
15.4 Convey (input)

16: Male M12x1, 5-pin



16.1 + 16.2
Level monitoring (potential-free output contact)

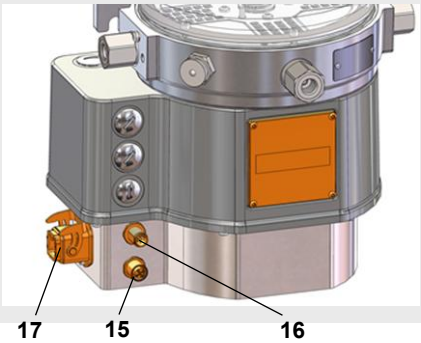
16.3 + 16.4
Drive monitoring (potential-free output contact)

17: Supply line: Power supply unit 230 VAC connector plug

Electrical data

Power consumption standby:	1 VA
Power consumption typical:*	40 VA
Power consumption:	max. 75 VA
Nominal voltage:	230 VAC / 50 Hz
Supply voltage:	100 - 240 VAC / 50 - 60 Hz
Input voltage:	24 VDC
Speed (load-dependent):	approx. 30 min^{-1}
Level monitoring:	
Switching current	max. 6 A
Switching function	NC contact
Switching voltage	max. 125 VDC
Drive monitoring:	
Switching current	max. 6 A
Switching function	NO contact
Switching voltage	max. 125 VDC

The outputs are short-circuit proof.
* Power consumption depends on temperature and medium.



- AC connection
- Potential-free version of the signal contacts
- Level monitoring and drive monitoring only when power supply is active

Only for level monitoring

F C

All other level monitoring systems have to be connected separately.

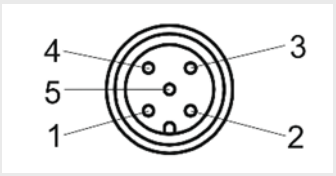
Without electrical control UL-Version

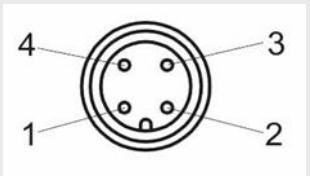
0UL

Version supply voltage 24 V

24

Pin assignment





Motor connection 10: Male M12x1, 5-polig
10.1 +24 VDC[1)]
10.2 n.c.
10.3 0 V (+24 VDC)[1)]
10.4 n.c.
10.5 n.c.

Drive monitoring 11: Female M12x1, 4-pin
11.1 + 24 VDC[1)]
11.2 n.c.
11.3 0 V
11.4 Drive monitoring (NC contact)

[1)] dependent to direction of rotation

Electrical data

Power consumption typical:*	30 W
Power consumption:	max. 60 W
Nominal voltage:	24 VDC
Supply voltage:	11 - 27 VDC
Input voltage:	11 - 27 VDC
Speed (load-dependent):	approx. 30 min^{-1}

The outputs are short-circuit proof.
* Power consumption depends on temperature and medium.

All electrical components shall be UL certified

Version with control

The control is used for monitoring and actuating the pump unit.
It is able to switch the pump on and off both depending on time and load.

Different monitoring options

- Level monitoring
- Drive monitoring
- Function of 3 progressive distributors
- Operating temperature monitoring medium

Other functions:

- The pump can be used and programmed for 2 separate lubrication circuits via an optional directional control valve.
- The medium temperature can be regulated via an optionally installed heater.
- As an interface to a higher-level system, the control unit has one input (wiring is mandatory) and 2 outputs. Various commands and status messages can be exchanged by means of continuous signals or pulse sequences.

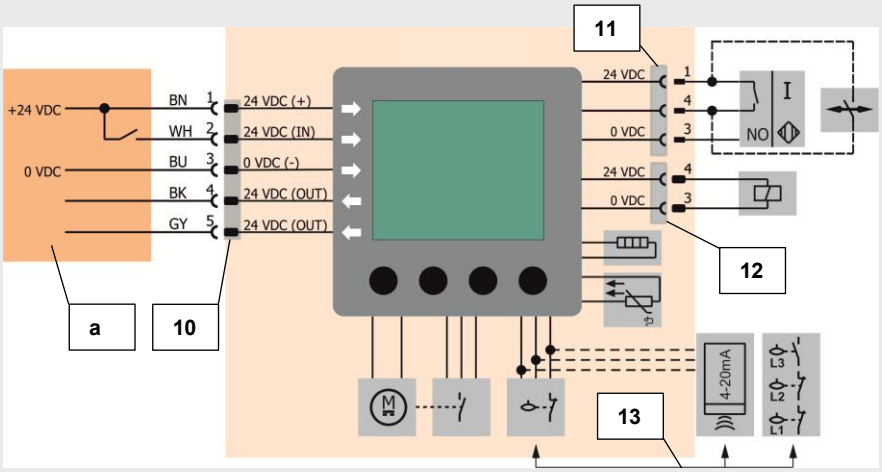
Electrical control

D11 | D12 | D13 | D22

Version supply voltage 24 V

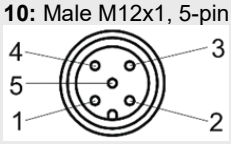
24

Circuit diagram



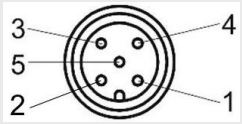
a Customer

10: Male M12x1, 5-pin



Power supply

11 + 12: Female M12x1, 4-pin



Distributor or valve

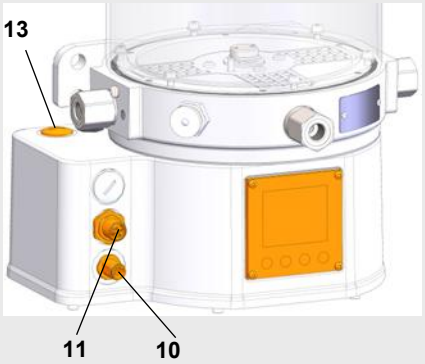
13: Cable gland for level monitoring

Electrical data

Power consumption standby:	0,5 W
Power consumption typical:*	30 W
Power consumption:	max. 67,5 W / 96 W (D22 control)
Nominal voltage:	24 VDC
Supply voltage:	11 - 27 VDC
Input voltage:	11 - 27 VDC
Output 1 and 2:	max. 200 mA/ 5 W

The outputs are short-circuit proof.

* Power consumption depends on temperature and medium.

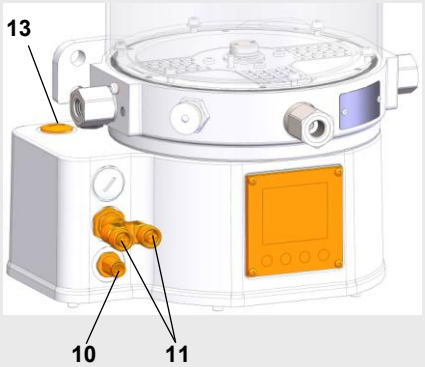


Version control D11

D11

Possibility of monitoring 1 progressive distributor:
Distributor 1:

- Master (Stop conveying in pulse mode)



Version control D12

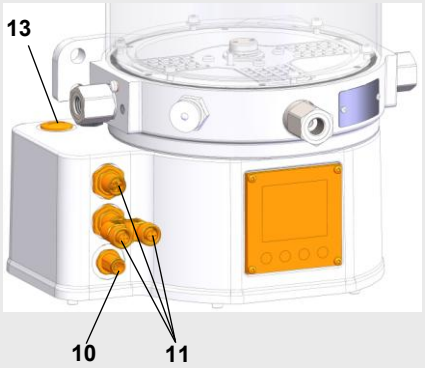
D12

Possibility of monitoring up to 2 progressive distributors:
Distributor 1:

- Master (Stop conveying in pulse mode)

Distributor 2:

- Slave (Monitoring the distributor circulation)



Version control D13

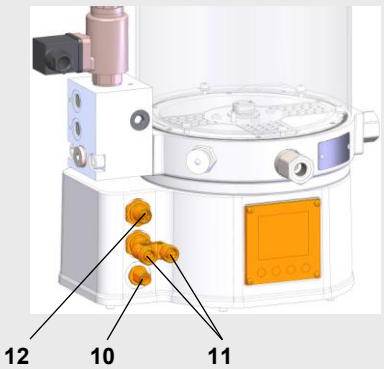
D13

Possibility of monitoring up to 3 progressive distributors:
Distributor 1:

- Master (Stop conveying after distributor circulation in pulse mode)

Distributor 2 and 3:

- Slave (Monitoring the distributor circulation)



Version control D22

D22

For controlling 2 lubrication circuits via the directional control valve V and monitoring2 progressive distributors:
Distributor 1 and 2:

- Master (Stop conveying after distributor circulation in pulse mode)

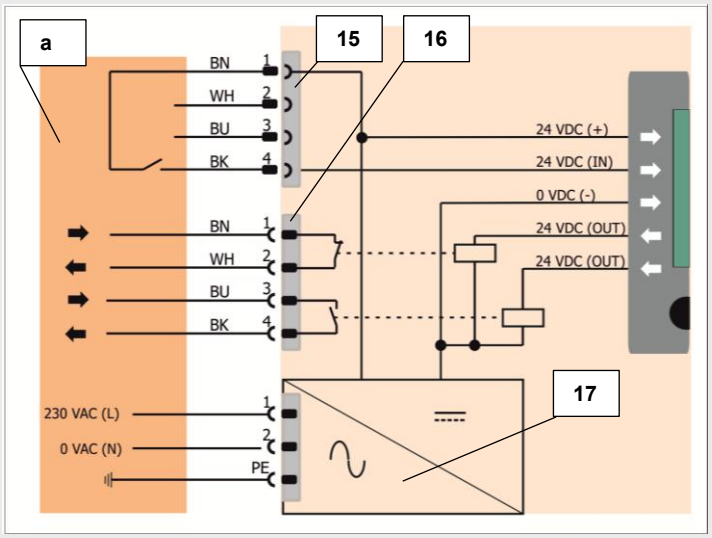
Electrical control

D11 | D12 | D13 | D22

Version supply voltage 230 V

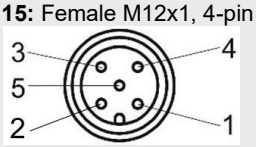
230

Circuit diagram



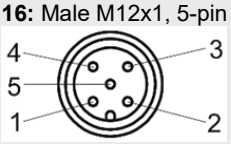
a Customer

15: Female M12x1, 4-pin



15.4 Release input

16: Male M12x1, 5-pin



16.1 + 16.2
Output 1 (potential-free output contact)

16.3 + 16.4
Output 2 (potential-free output contact)

17: Supply line: Power supply unit 230 VAC connector plug

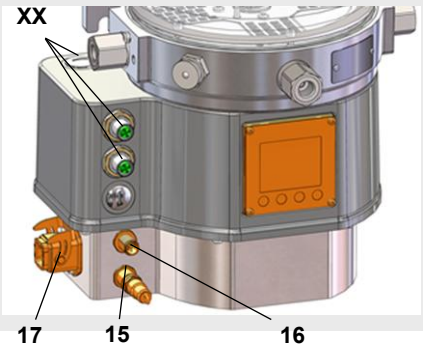
Electrical data

Power consumption standby:	1 VA
Power consumption typical:*	40 VA
Power consumption:	max. 75 VA / 120 VA (D22 control)
Nominal voltage:	230 VAC / 50 Hz
Supply voltage:	100 - 240 VAC / 50 - 60 Hz
Input voltage:	24 VDC
Output 1 and 2:	Potential-free, max. 6 A

The outputs are short-circuit proof.

* Power consumption depends on temperature and medium.

Pin assignment **XX** (11, 12, 13) for versions D11 | D12 | D13 | D22 as for version supply voltage 24



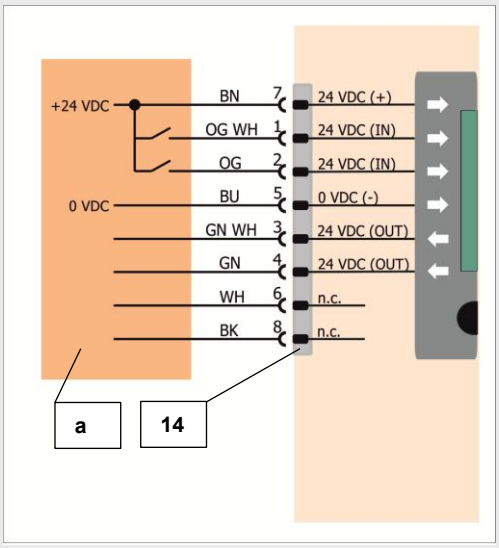
Electrical control

D11A | D12A | D22A

Version supply voltage 24 V

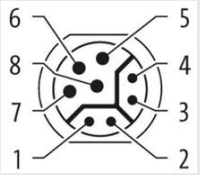
24

Circuit diagram



a Customer

14: Male M12 Power, 8-pin, Y-coded

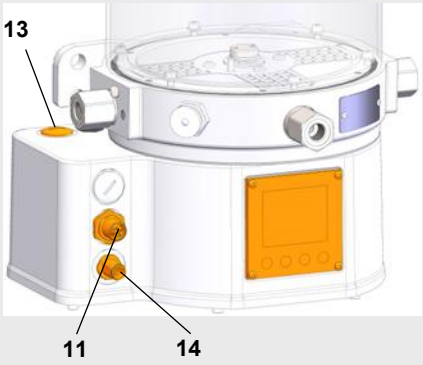


14.1 Release 1 (input 1)
14.2 Release 2 (input 2)
14.3 Output 1
14.4 Output 2

Electrical data

Power consumption standby:	0,5 W
Power consumption typical:*	30 W
Power consumption:	max. 67,5 W / 96 W (D22A control)
Nominal voltage:	24 VDC
Supply voltage:	11 - 27 VDC
Input voltage:	11 - 27 VDC
Output 1 and 2:	max. 200 mA / 5 W

The outputs are short-circuit proof.
* Power consumption depends on temperature and medium.



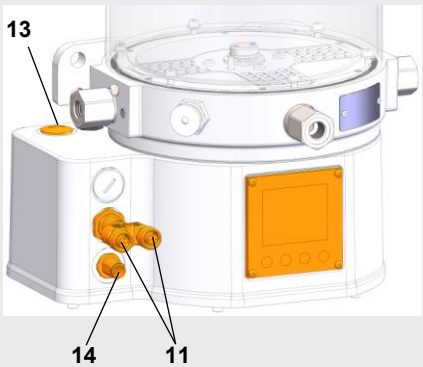
Version control D11A

D11A

Function and pin assignment 11 and 13 as for version D11
supply voltage 24 V

- Possibility of processing 2 sets of parameters via input 1 and 2
- Release 1 (input 1) for activation of program 1
- Release 2 (input 1) for activation of program 2

When both inputs are activated, input 1 has priority



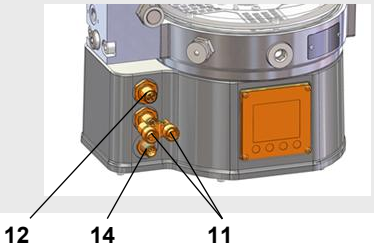
Version Control D12A

D12A

Function and pin assignment 11 and 13 as for version D11
supply voltage 24 V

- Possibility of processing 2 sets of parameters via input 1 and 2
- Release 1 (input 1) for activation of program 1
- Release 2 (input 1) for activation of program 2

When both inputs are activated, input 1 has priority



Version control D22A

D22A

Function and pin assignment 11 and 12 as for version D22
supply voltage 24 V

- 2 independently activatable inputs for lubrication circuit 1 and lubrication circuit 2
- Release 1 (input 1) for activation of program 1
- Release 2 (input 1) for activation of program 2

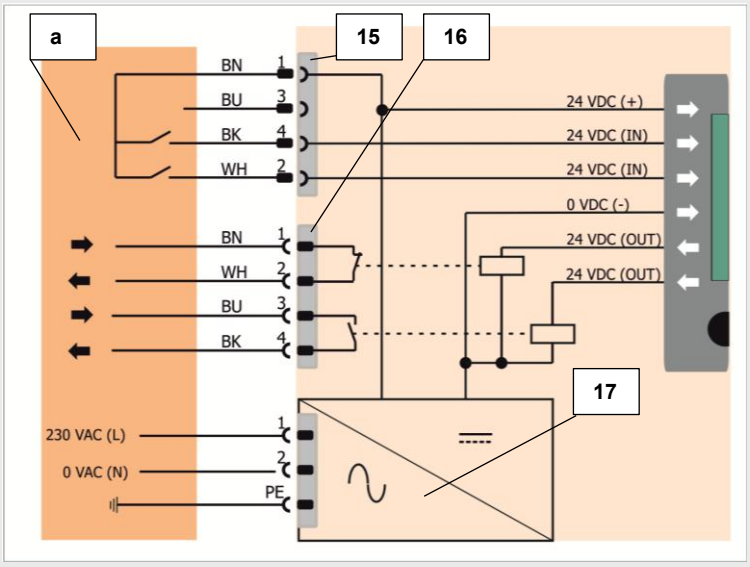
Electrical control

D11A | D12A | D22A

Version supply voltage 230 V

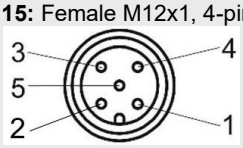
230

Circuit diagram



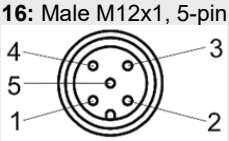
a customer

15: Female M12x1, 4-pin



15.2 Release 2 (input 2)
15.4 Release 1 (input 1)

16: Male M12x1, 5-pin



16.1 + 16.2
Output 1 (potential-free output contact)
16.3 + 16.4
Output 2 (potential-free output contact)

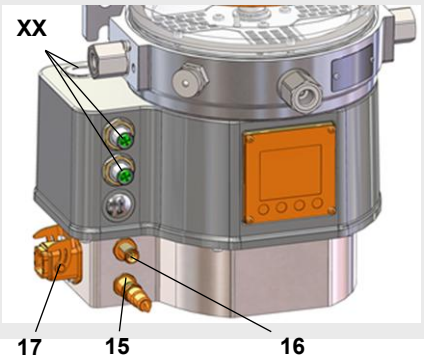
17: Supply line: Power supply unit 230 VAC connector plug

Electrical data

Power consumption standby:	1 VA
Power consumption typical:*	40 VA
Power consumption:	max. 120 VA
Nominal voltage:	230 VAC / 50 Hz
Supply voltage:	100 - 240 VAC / 50 - 60 Hz
Input voltage:	24 VDC
Output 1 and 2:	potential free, max. 6 A

The outputs are short-circuit proof.
* Power consumption depends on temperature and medium.

Pin-assignment **XX** (11, 12, 13) for version D11A | D12A | D22A as for version D11A | D12A | D22A version supply voltage 24 V



- Release 1 (input 1) for activation of program 1
- Release 2 (input 1) for activation of program 2

DRIVE MONITORING

With a rotating eccentric shaft, an NC contact signal is output for each full revolution. In combination with the control unit, control is possible via eccentric rotations and thus precise and time-independent dosing of the pump elements. The duration of a revolution is also monitored.

Switching current	max. 200 mA
Switching function	NC contact

OPERATING TEMPERATURE

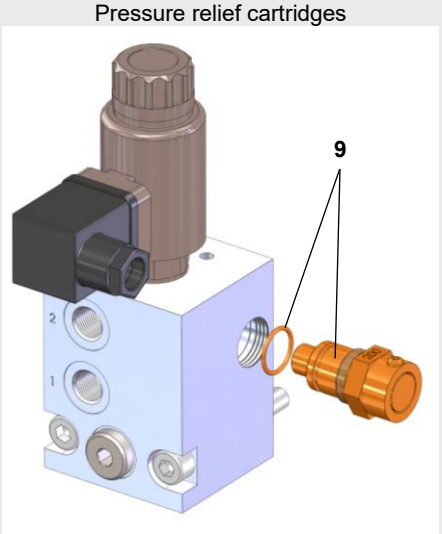
T H

When selecting T or H (only in combination with control):
The temperature monitoring or heating is integrated in the pump housing.

- If T is selected, the operation of the pump is monitored in an adjustable temperature range and the temperature is displayed.
- If H is selected, the functions of T are supplemented by a heating element which heats the medium in the suction area of the pump.

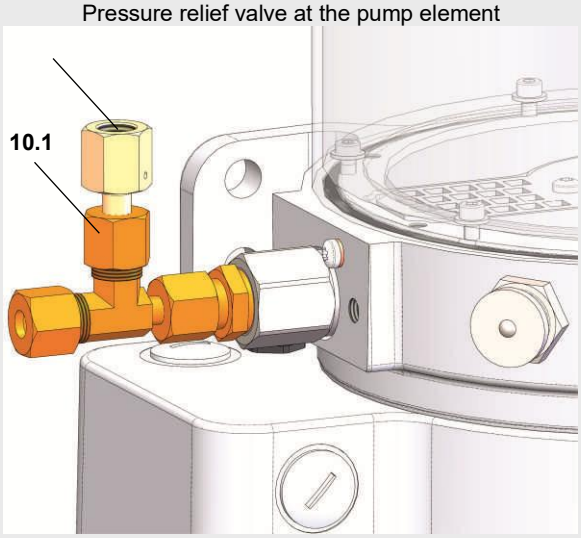
ACCESSORIES

Pressure relief cartridges



9 Pressure relief valve

Pressure relief valve at the pump element



10 Pressure relief valve
10.1 screwing kit

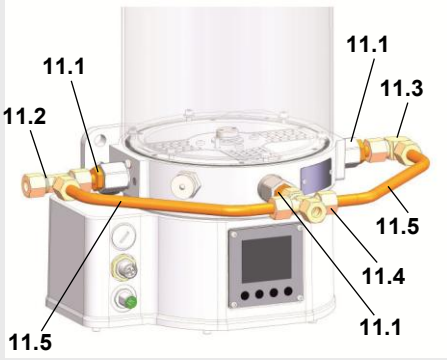
Pressure relief valve:

Pos.	Designation	Order no.
	Pressure relief cartridges in attachment blocks V | S | G | B	
9	Pressure relief valve 0 bar Pressure relief valve 50 bar Pressure relief valve 70 bar Pressure relief valve 100 bar Pressure relief valve 150 bar Pressure relief valve 200 bar Pressure relief valve 250 bar Pressure relief valve 300 bar Pressure relief valve 350 bar	On request
	Pressure relief valves at pump element For operating pressure delimitation, pressure relief valves **10** can be connected to the pump element using screw fitting sets **10.1**.	
10	Pressure relief valve 70 bar Pressure relief valve 150 bar Pressure relief valve 250 bar Pressure relief valve 300 bar Pressure relief valve 350 bar Pressure relief valve customized setting 50 - 160 bar Pressure relief valve customized setting 160 - 300 bar	On request
10.1	Screwing kit for pipe outlet ø6 Screwing kit for pipe outlet ø8 Screwing kit for pipe outlet ø10	On request

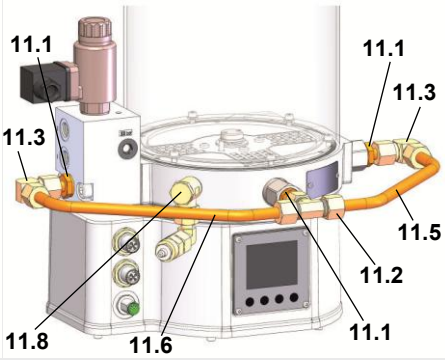
Description

The outlets of the pump unit can be combined in a simple manner using the listed pipe and fitting sets.
External outlets:
See figure **11.2** image without attachment.
Internal outlets:
To the various attachment blocks see figure **11.3** image with attachment.
Two pump elements are to be combined:
they must be mounted at adjacent positions (position 1 and 2 or position 2 and 3).
Assembly dimensions to the side and front:
Approx. 54 mm see image upper position.

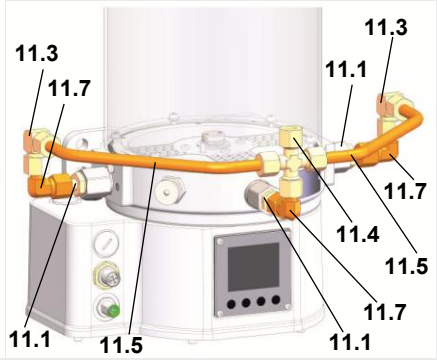
Without attachment



With attachment

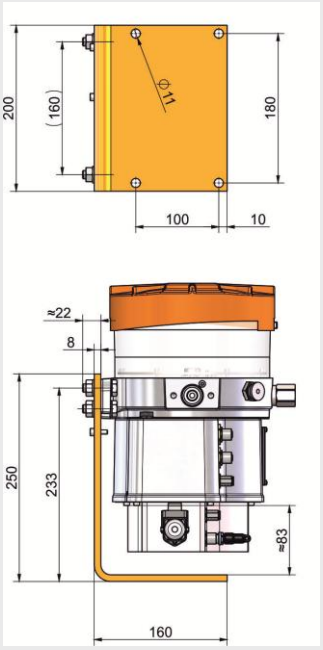


Upper position



11.1	Screw-in socket LR-10R	| Order no.	**On request**
11.2	T-fitting L-T 10	| Order no.	**On request**
11.3	Angle screw connection L-W 10	| Order no.	**On request**
11.4	Cross screw connection L-K 10	| Order no.	**On request**
11.5	Pipe, pump element to pump element	| Order no.	**On request**
11.6	Pipe, attachment to pump element	| Order no.	**On request**
11.7	Angle screw connection EVW 10	| Order no.	**On request**
11.8	Screw connection kit filling connection	| Order no.	**On request**

Mounting accessories



Mounting bracket for floor mounting with mounting material for pump.

Order no. **On request**

Accessories for filling connectors

Designation		Image	Order no.
G	Locking coupling (p_{max} = 35 bar) Connection thread G 1/4i		On request
C	Sliding coupling Connection thread G 1/8		On request
A	M10x1 4-jaw hydraulic clutch		On request
D	Locking coupling (p_{max} = 200 bar), G 3/8i Locking coupling (p_{max} = 200 bar), G 1/4i		On request

Accessories for connection cables

Connection cables for electrical function monitoring progressive distributor to the control:	
Cable length 0,2 m	**On request**
Cable length 0,6 m	**On request**
Cable length 2,0 m	**On request**
Cable length 5,0 m	**On request**
Other cable lengths available on request.	

Electrical data connection cables	
Operating voltage:	max. 30 VDC
Cable diameter:	4x0,34 mm²
Protection class:	DIN EN 60529 IP67
Connection type:	Male/female both-sided M12x1, 4-pin

Accessories for power cables

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

Designation	**Order no.**
Cable for power supply M12, 8-pin/ 0°/ Y- coded/ shielded	
Cable length 15 m Other cable lengths available on request.	**On request**
Electrical data	
Operating voltage Protection class Connection type	50 VUC DIN EN 60529 IP 67 Female

HOW YOU CAN REACH US

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