



# KOSTYRKA

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## HYDRAULIC PRESSURE GENERATOR

**Air-Oil Pressure Intensifier**

**Oil-Oil Pressure Intensifier**

**Screw Pumps**

**Screw Pistons**



**Product Information**

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## KOSTYRKA® Hydraulic Pressure Generator

Clamping devices for circular guides and slideways in machine tools and tensioning and supporting elements in hydraulically operated devices often require higher pressures than those available from the hydraulic system of the respective machine.

In many cases, only compressed air is available rather than a hydraulic system.

KOSTYRKA® has developed different hydraulic pressure generators for providing high-pressure oil at low cost and without additional maintenance effort. The compact design of the KOSTYRKA® hydraulic pressure generators enables installation even in applications where space is tight.

# 1 KOSTYRKA® Air-Oil Pressure Intensifier 1410 series

The Air-Oil Pressure Intensifiers from this series are predominantly used in applications where small

quantities of high-pressure oil are required, yet only compressed air is available.

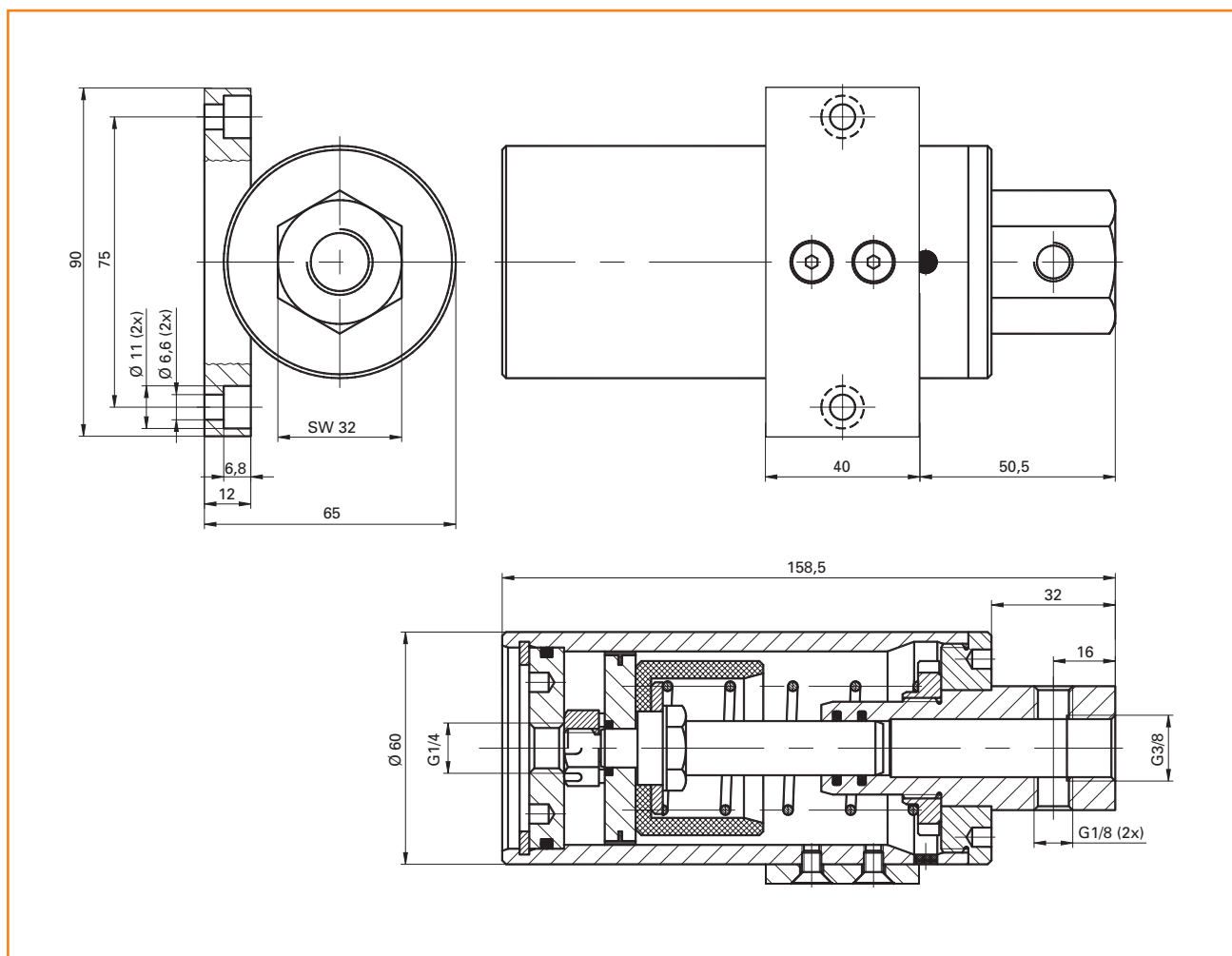


## 1.1 Technological data and dimensions, series

Type	Transmission ratio	Displacement volume	Working air pressure	Working liquid	Mounting position
1410.10	1:12	5,0 ml	3-7 bar (40-100 psi).	Hydraulic oil with a viscosity up to 32 mm <sup>2</sup> /s (32 cSt) at 40°C	Horizontal or upright, with high-pressure part at the top
1410.20	1:34	6,2 ml			
1410.30	1:17	12,0 ml			
1410.35	1:51	15,0 ml			
1410.40	1:25	30,0 ml			

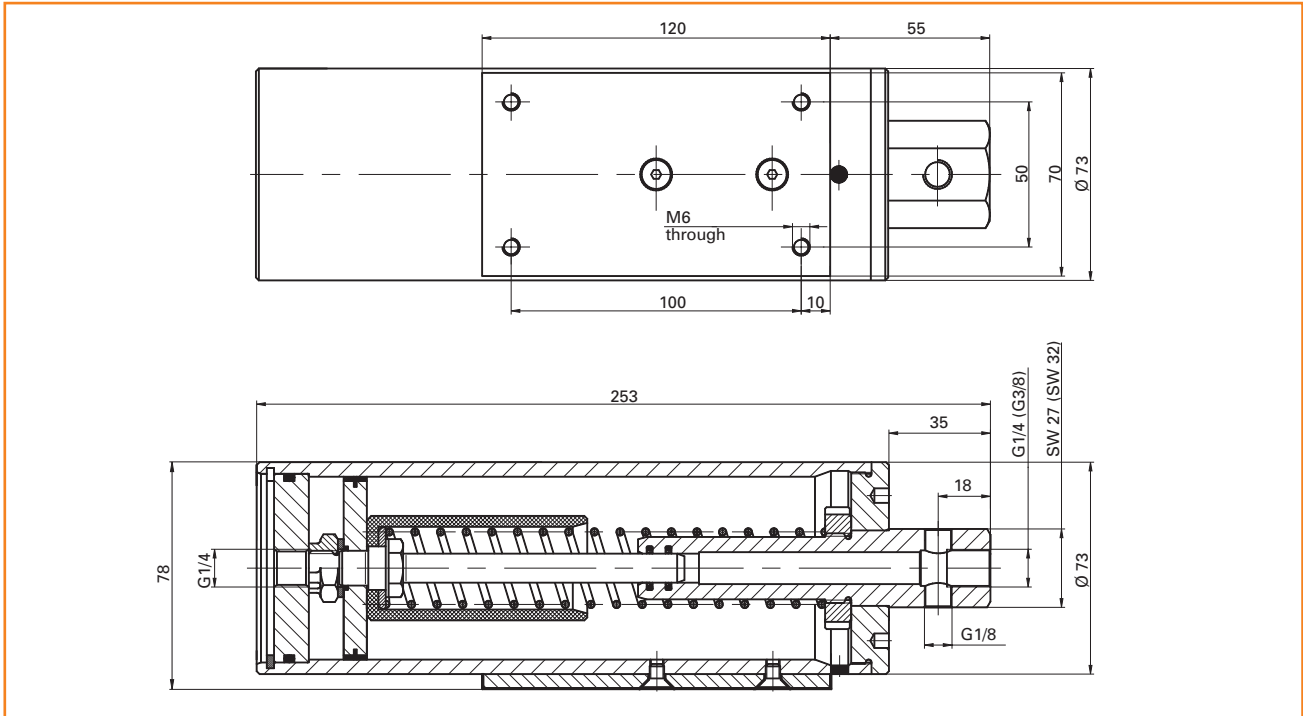
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### Dimensions type 1410.10



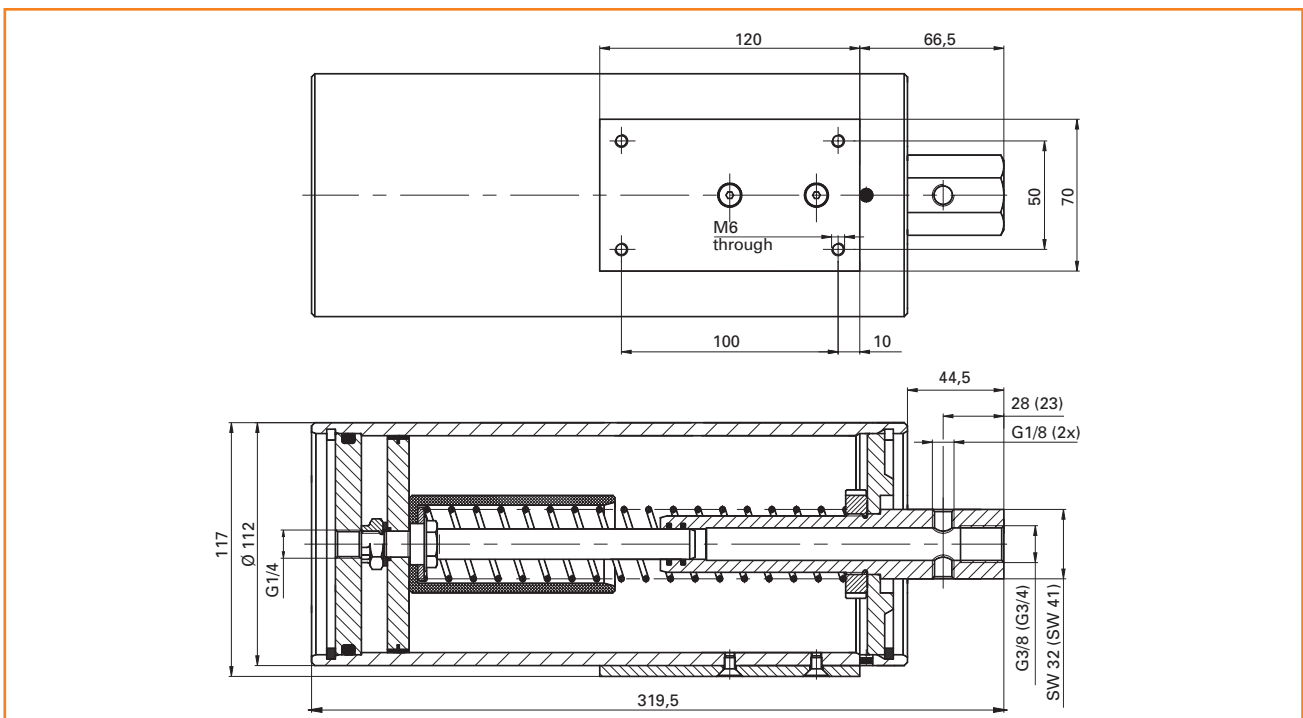
**Dimensions types 1410.20 and 1410.30**

The values in brackets refer to the dimensions of type 1410.30



**Dimensions types 1410.35 and 1410.40**

The values in brackets refer to the dimensions of type 1410.40

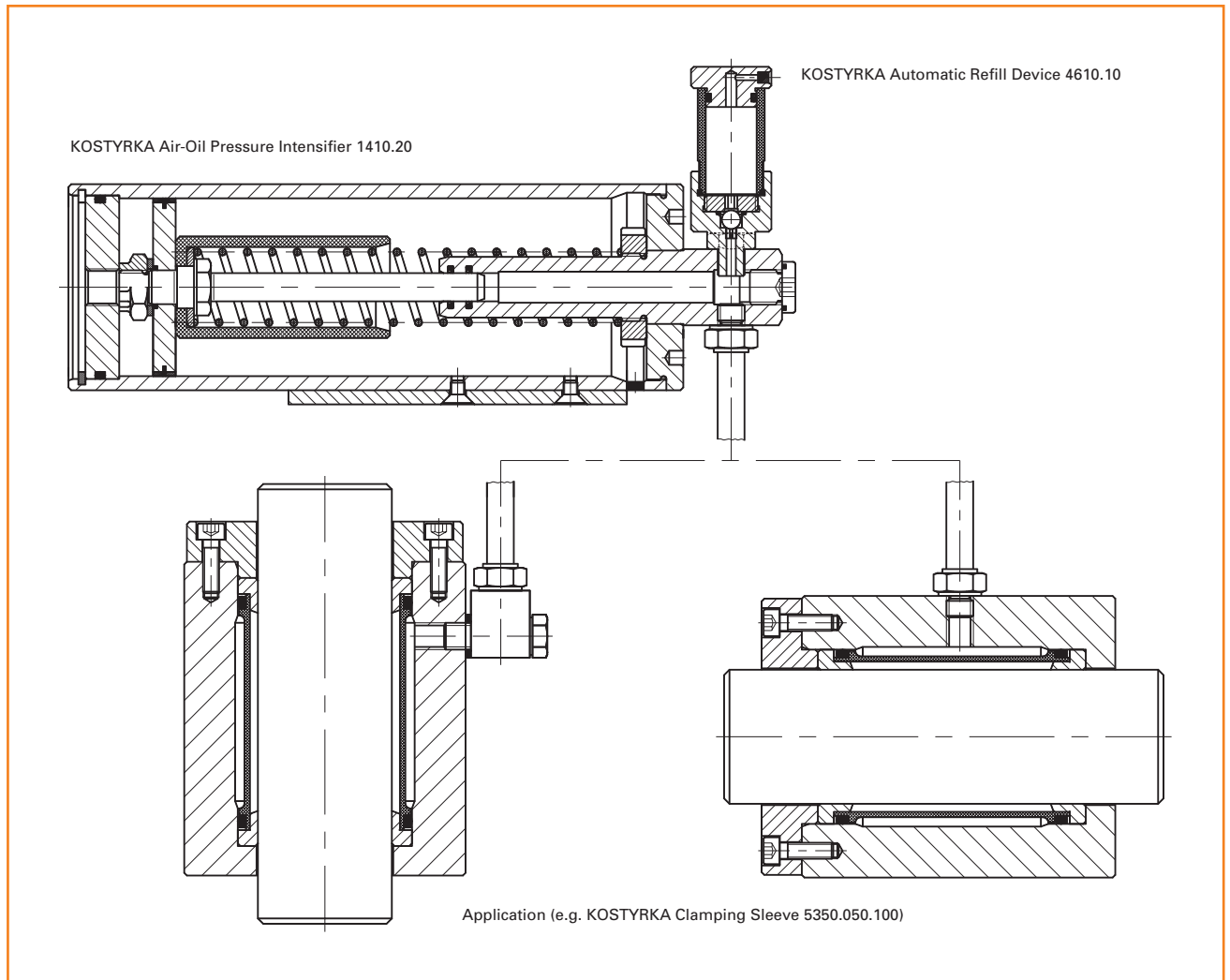


## 1.2 Venting

Due to the limited oil volume available, thorough venting at the highest point of the hydraulic system is required. At this point, the Automatic Refill and Venting Device 4610.10 can be installed.

The following two figures demonstrate the configuration options of the KOSTYRKA® Air-Oil Pressure Intensifiers and Automatic Refill Devices.

If the pressure intensifier is located **above** the application, the pressure oil supply line should always lead to the highest point of the oil chamber; the automatic refill device can remain at the pressure intensifier.

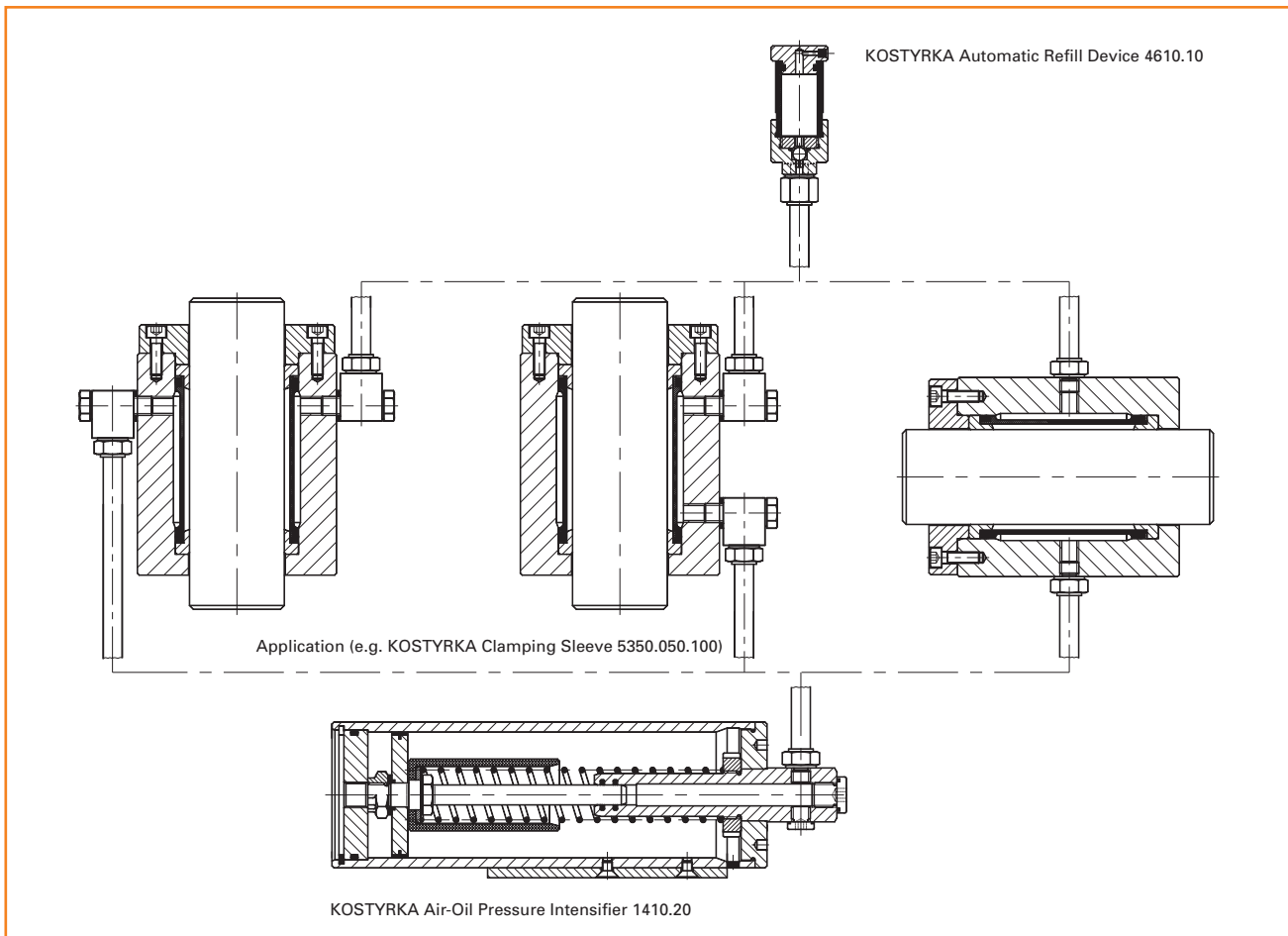


Pressure intensifier above application

If the pressure intensifier is to be installed **below** the application, the Automatic Refill Device has to be separated from the intensifier.

The pressure oil supply line should preferably lead to the lowest point of the application, and continue from its highest point upwards to

the Automatic Refill Device; a pressure oil supply line as shown in the figure on the left is also possible.



Pressure intensifier below application

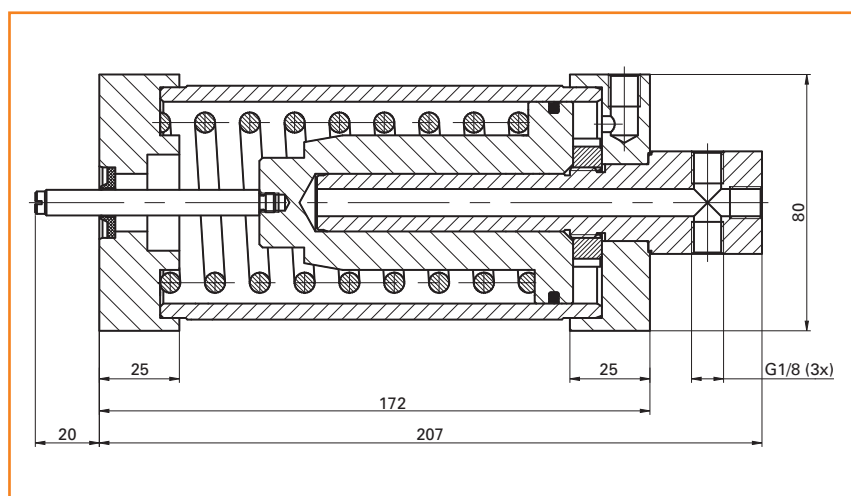
### 1.3 Special models

Further Air-Oil Pressure Intensifiers with a variety of different dimensions and transmission ratios are available on request; we are also able to provide customized designs.

Please contact KOSTYRKA® or your local sales agent.

The hydraulic pressure generator type 1400.34.00 as shown on the right is a special model that was developed for the aviation industry.

In the event of a controlled switch-off or interruption/failure of the compressed air supply, a spring under pre-tension very quickly pushes a piston forward, causing immediate hydraulic clamping at safety-relevant clamping locations.



## 2 KOSTYRKA® Oil-Oil Pressure Intensifier 1450 series

The special feature of the 1450 series Oil-Oil Pressure Intensifiers is the automatic refill function. Any small loss of oil in the high-pressure part of the system is automatically compensated from the feed line via a suction valve. A refill container requiring continuous monitoring is not required.

**Note:** Absolute cleanliness of the oil is essential! Contamination of the pressure medium (suspended matter, paint particles, adhesive residue, chips or similar) may lead to malfunction of the built-in suction valve!

**Note:** The supply pipes should always be as short as possible, since the system is subject to a volume compression of approximately 0.7% for each 100 bar (1,450 psi.) pressure rise. At 400 bar (5,800 psi.), for example, this equates to almost 3% of the effective high pressure oil volume (oil quantity within the ring space around a clamping sleeve, in the feeding bores and within the pipes or hoses and threaded joints)! If flexible hoses are used, their elastic expansion (volume increase) under pressure also has to be considered.



### 2.1 Technological data and dimensions, series

Type	Transmission ratio	Displacement volume	Working pressure	Working liquid	Mounting position
1450.02	1:4	4 ml	max. 100 bar (1,450 psi.) on the low-pressure side	Hydraulic oil with a viscosity up to 32 mm <sup>2</sup> /s (32 cSt) at 40°C	any
1450.04	1:4	15 ml			
1450.14	1:4	23 ml			
1450.15	1:4	74 ml			
1450.16	1:2,2	65 ml			
1450.17	1:2,25	125 ml			

Subject to alteration

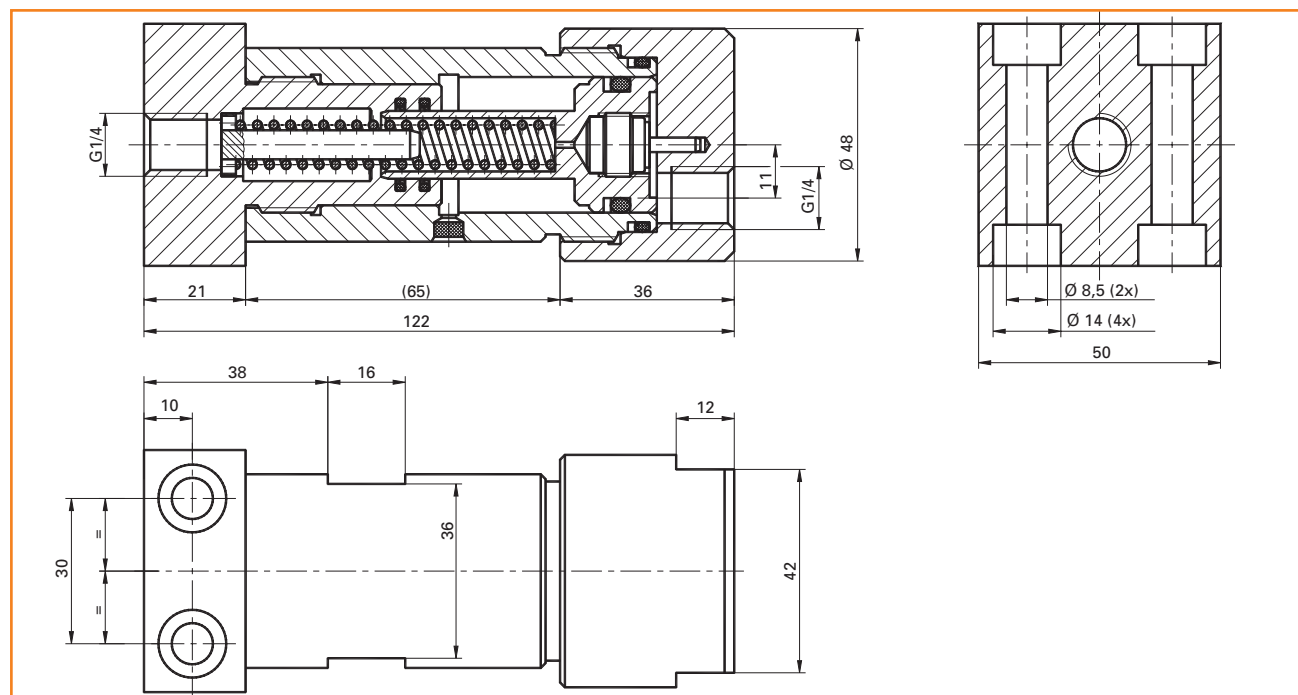
#### Dimensions type 1450.02

If small pressure oil quantities are required (for example for clamping of individual clamping sleeves), the use of the "miniature" pressure intensifier (type 1450.02) is advantageous. Due to its small dimen-

sions, it can be mounted directly at the point of installation of the consumers.

The pressure intensifier type 1450.02 is supplied single-acting (with built-in return spring).

**Note:** Due to the relatively small displacement volume, particularly thorough venting of the high-pressure space and short supply pipes are required. Rigid connections between the intensifier and the oil chamber are recommended.



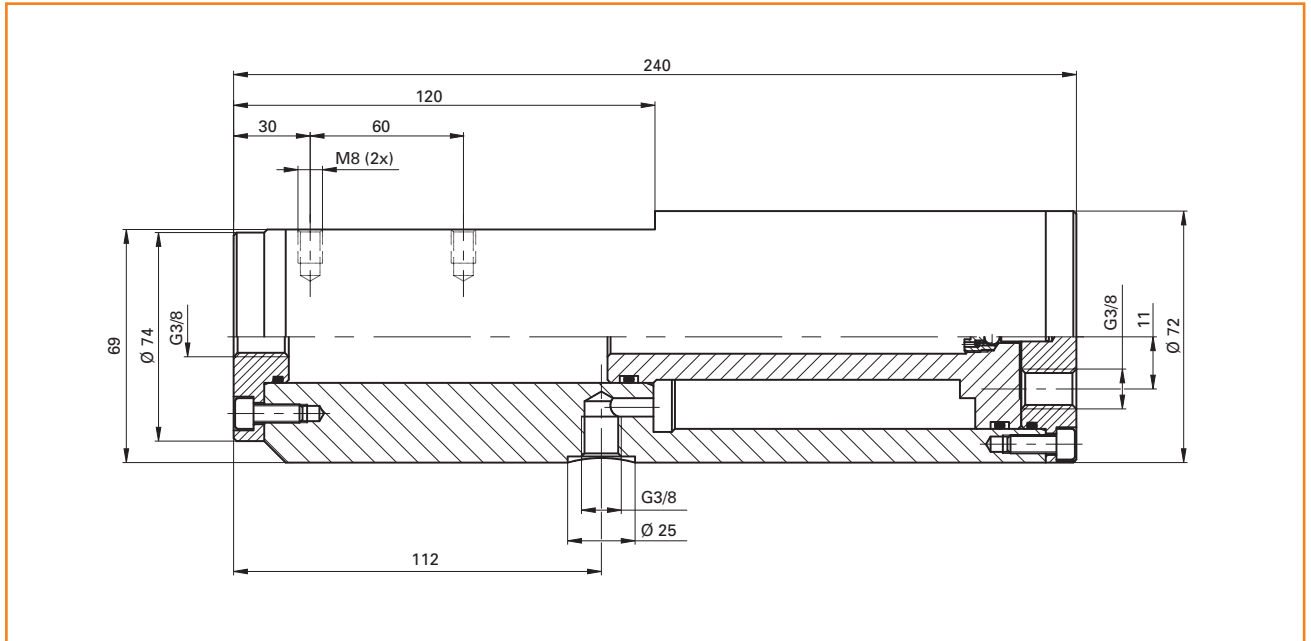




### Dimensions type 1450.16

In addition to higher displacement volume, the Oil-Oil Pressure Intensifier type 1450.16 is characterized by a lower transmission ratio. This small, maintenance-free pressure unit is quite adequate for many applications.

The type 1450.16 pressure intensifiers are also supplied as double-acting versions (without piston return spring).



### 2.2 Venting

In type 1450 pressure intensifiers, oil can flow from the low-pressure side to the high-pressure side in a controlled way, as long the high-pressure side is not closed. For venting, the highest connection in the high-pressure system should be opened while the low-pressure system is active. Once the oil emerges without bubbles, the connection should be closed, and only then should the low-pressure system be switched off.

### 2.3 Special models

In addition to the Oil-Oil Pressure Intensifiers mentioned in 2.1, further Oil-Oil Pressure Intensifier models with a variety of different dimensions and transmission ratios are available (see extract below); we are also able to provide customized designs.

Please contact KOSTYRKA® or your local sales agent.

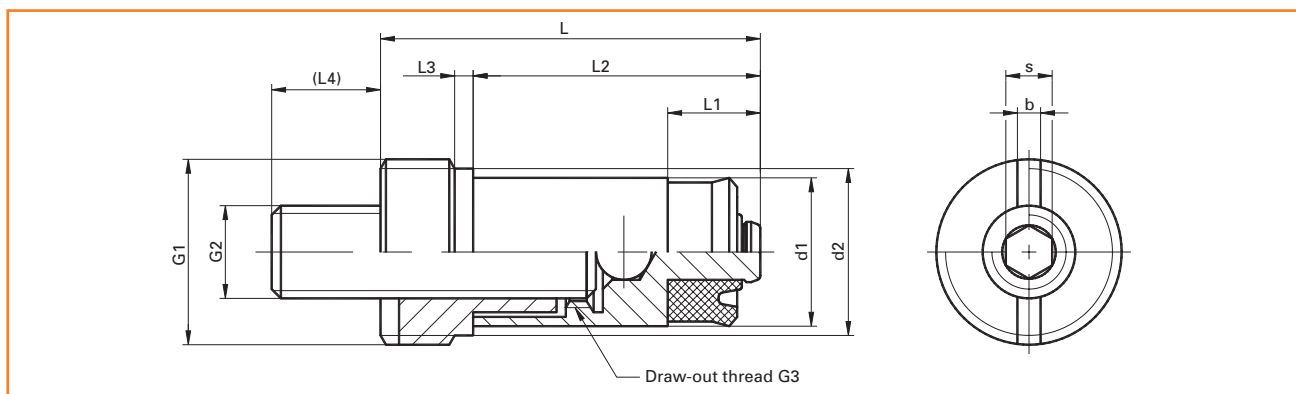
Type	Transmission ratio	Displacement volume	Working pressure	Working liquid	Mounting position
1400.27	1:2	30 ml	max. 100 bar (1,450 psi.) on the low-pressure side	Hydraulic oil with a viscosity up to 32 mm <sup>2</sup> /s (32 cSt) at 40°C	any
1400.28	1:2,5	36 ml			
1400.29	1:2	46 ml			
1400.30	1:4	14 ml			
1400.31	1:2,2	65 ml			
1400.32	1:2	18 ml			
1400.33	1:2	60 ml			

Subject to alteration

### 3 KOSTYRKA® Screw pistons 1221 series

Through simple turning via an Allan key (hexagon socket screw key), KOSTYRKA® screw pistons facilitate tensioning and clamping processes that only require a small quantity of oil. The screw pistons are supplied ready-to-fit. They should preferably be mounted directly in prepared holes in the device or machine body.

The long piston is hardened and ground. A set screw running in bronze serves as a pressure spindle; a hardened steel ball at the piston head ensures low-friction power transmission without jamming.



Type	G1	G2	G3	d1	d2	L	L1	L2	L3	L4	b	s	H	V
1221.16	M20 x 1,0	M10 x 35	M12	16	18	41	10	31	2	12	2,5	5	15	3
1221.25	M30 x 1,5	M12 x 50	M16	25	-	52	12	40	-	15	3	6	25	12

Dimensions in mm. Subject to alteration

G2 = set screw DIN 913 (the piston stroke H can be extended by installing a longer set screw; in this case, the depth 47(65) of the location hole has to be adjusted accordingly)

H = usable piston stroke [mm]

V = oil displacement [ml] at piston stroke H

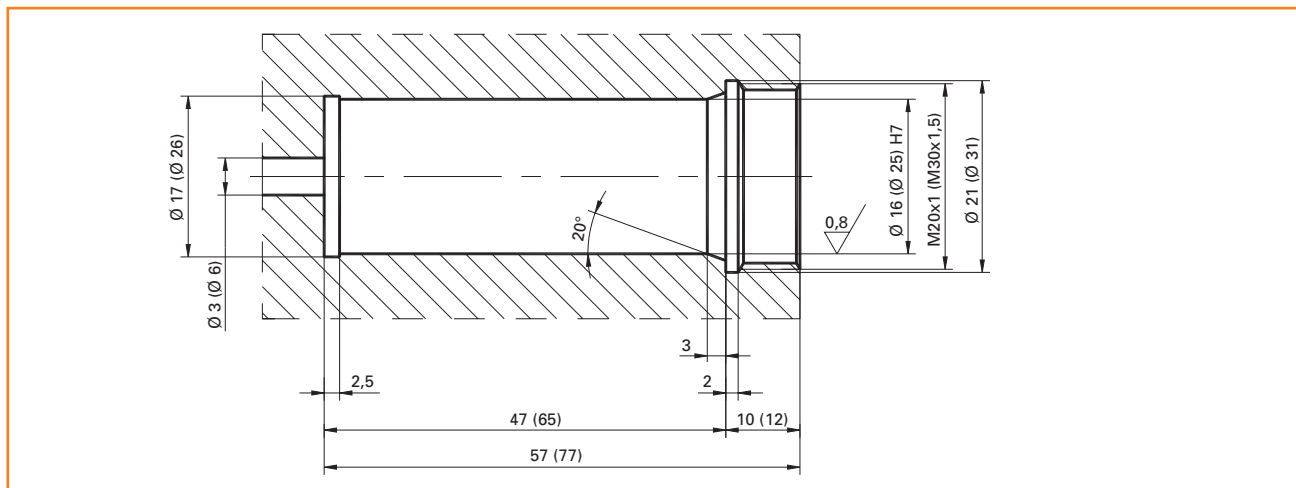
#### 3.1 Location holes for screw piston types 1221.16 and 1221.25

The location holes for the above mentioned screw pistons should be machined as follows; the measurements in brackets refer to type 1221.25.

In order to prevent damage to the sealing lips during installation, an

adequately dimensioned, rounded 20° glide chamfer should be provided at the start of the hole.

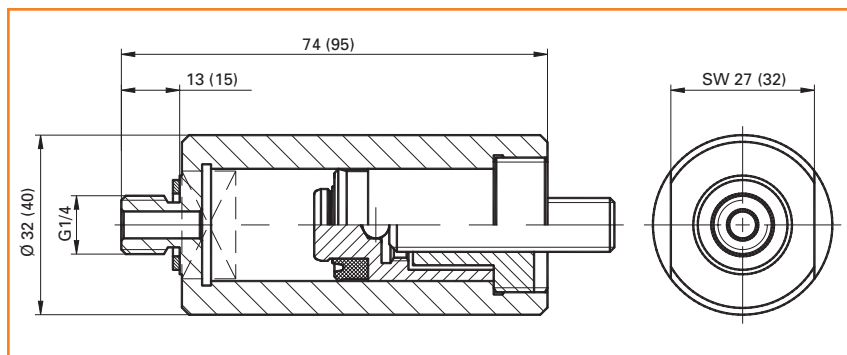
The displacement volume V can be increased by adjusting the depth of bore 47(65) and using extended threaded pins G2.



## 4 KOSTYRKA® Screw pumps 1222 series

The screw pistons 1221.16 and 1221.25 are also available as complete screw pumps. To this end, the screw pistons are mounted in

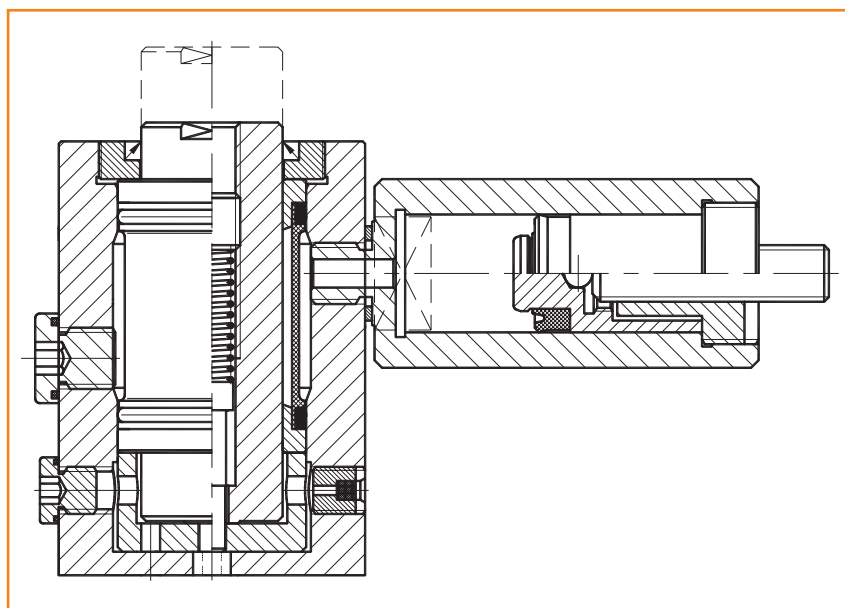
suitable housings, which can be installed directly into G1/4 connection holes.



Screw piston 1221.16 (1221.25) with housing 1222.16 (1222.25)

### Application example

A screw pump operates the KOSTYRKA® work support 5310.30. No pressure pipes or external pump that would otherwise be required are needed.



### 4.1 Pressure diagram

For grease lubrication of the set screw of the KOSTYRKA® screw piston, the diagram opposite shows the approximate relationship between operating moment and generated hydraulic pressure. The efficiency can be improved further by using MoS<sub>2</sub>-based lubricants.

