

# Hand pumps type H, HE and HD

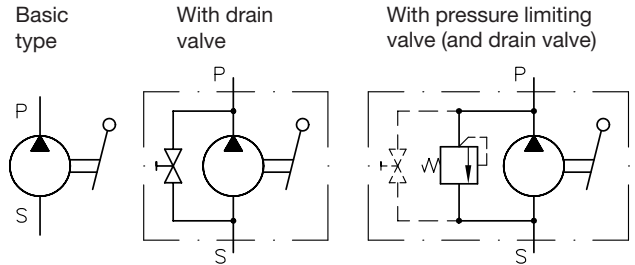
single- and double acting version  
with open or shielded actuation

Geom. displacement  $V_{stroke\ max} = 30\ cm^3 / stroke$   
Pressure  $p_{max} = 800\ bar$

## 1. General

The pumps feature suction and pressure valves with zero leakage. The suction pipes should be kept as short as possible and the oil tanks should for functional reasons be on the same level or higher than suction connections, thus avoiding that the suction pipe drains off in idle position.

The single-acting version sucks the oil up when the lever is moved in one direction and delivers it into the pressure pipe when moved in the other direction. The double-acting version delivers the same amount of oil into the pressure pipe for each forward and back movement of the hand lever.



The actuation (lever mechanism) is differing between open and shielded version:

- With the shielded version, the drive is inside the case (inlet chamber) and is lubricated with oil so that maintenance is not required.
- With the open version, it is outside, and occasional maintenance (cleaning and lubrication) is recommended.

## 2. Types available

For hand pump with directly mounted miniature tank, see appendix sect. 4

### 2.1 Type coding and characteristic data

Order example:	<b>H 25</b>	Standard version	<b>HD 30 A</b>	Version with drain valve
	<b>HD 301</b>	With pressure resistant suction port	<b>HD 13 S - 400</b>	With pressure limiting valve, set at 400 bar
			<b>HD 20 AS - 200</b>	With drain and pressure limiting valve, set at 200 bar
				Desired pressure setting (only necessary with version S)

Basic coding		Pressure $p_{max}$ (bar)	Geom. displ. $V_{swept}^2)$ (cm <sup>3</sup> )	Actuation torque at $p_{max}$ approx. (Nm)	Mass (weight) approx. (kg)	Optional fittings <sup>4)</sup>			Design	Pump function	Ports <sup>3)</sup>	
Standard version	Suct. connect. up to 150 bar <sup>1)</sup>					Drain valve	Pressure limiting valve	Manifold mounting			Press. port P (BSPP)	Suction port S (BSPP)
H 16	X	350	6	270	3.1	X	X	X	open <sup>1)</sup>	single-acting	G 1/4	G 1/4 Suction pipe Ø10x1
H 20		220	9.4									
H 25		150	14.7									
HE 3 <sup>5)</sup>		800	3									
HE 4	HE 41	600	4	250	4.8	A	S <sup>6)</sup>	P	shielded	double-acting	G 3/8	G 3/8 Suction pipe Ø12x1
HD 13	HD 131	350	13									
HD 20	HD 201	220	20									
HD 30	HD 301	150	30									

1) Suction connector S which can be loaded with up to max. 150 bar. See notes on suction port S in Sect. 2.2

2) Full stroke = Hand lever from one end position to the other and back again

3) Conforming ISO 228/1 (BSPP), suited for male stud pipe fitting shape B, DIN 3852 page 2

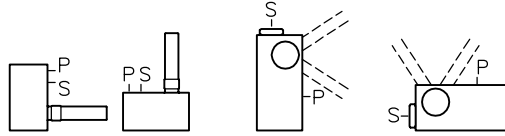
4) Mainly for HE 3 to HD 30. Take note of the following for versions HE 41 to HE 301: The pressure at the suction connection is added to the pressure set at the works in the case of version ...S and ...AS!

5) Type HE 3 only available as version HE 3 S or HE 3 AS

6) Pressure limiting valve fixed setting only, adjustment not higher as  $p_{max}$  of the pump

## 2.2 Other characteristic data

Ports	<p>P = Pressure port S = Suction port</p> <p>The suction port of type HE 41...HE 301 is pressure resistant up to approx. 150 bar. It is therefore permissible to connect the suction pipe to a return pipe where pressure peaks may occur.</p> <p><b>Caution:</b> Any pressure apparent at S will act via the pump right through to the connected consumer or to a directional control valve. The hand lever will be moved into an end position.</p>
Installation position	<p>H 16, H 20, H 25      HE 4 to HD 30                                  HE 41 to HD 301</p>
Surface treatment	<p>H 16 to H 25 and HE 3.. to HD 30.. : Pump housing nitrous hardened, making the outside surfaces very corrosion and wear resistant. Good paint bonding surface. Polished-ground piston bore is very resistant to wear. Pump piston hardened and ground.</p>
Pressure fluid	<p>Hydraulic oil conforming DIN 51514 part 1 to 3: ISO VG 10 to 68 conform. DIN 51519. Viscosity range: min. approx. 4; max. approx. 1500 mm<sup>2</sup>/s opt. service: approx. 10 ... 500 mm<sup>2</sup>/s Also suitable are biologically degradable pressure fluids (Standards of VDMA 24568 and VDMA 24569) type HEES (Synth. Ester) at service temperatures up to approx. +70°C.</p>
Temperature	<p>Ambient: approx. -40 ... +80°C Fluid: -25 ... +80°C; Note the viscosity range! Permissible temperature during start: -40°C (observe start-viscosity!), as long as the service temperature is at least 20K higher for the following operation. Biologically degradable pressure fluids: Observe manufacturer's specifications, but not higher than +70°C because of seal material compatibility.</p>

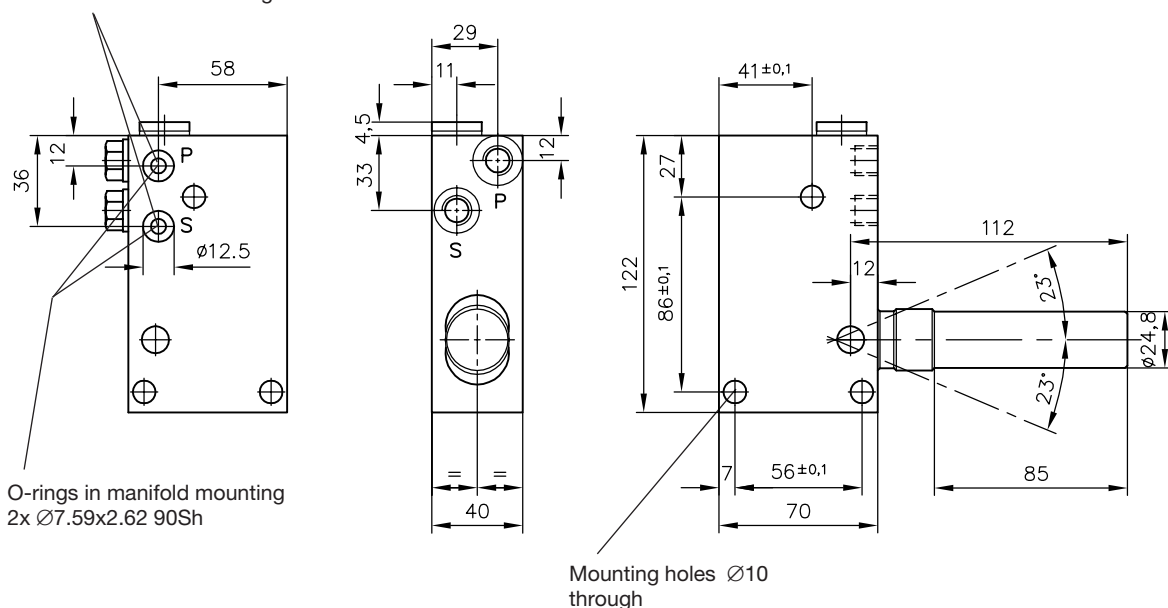


## 3. Unit dimensions

All dimensions are in mm, subject to change without notice!

### 3.1 Type H 16, H 20 and H 25

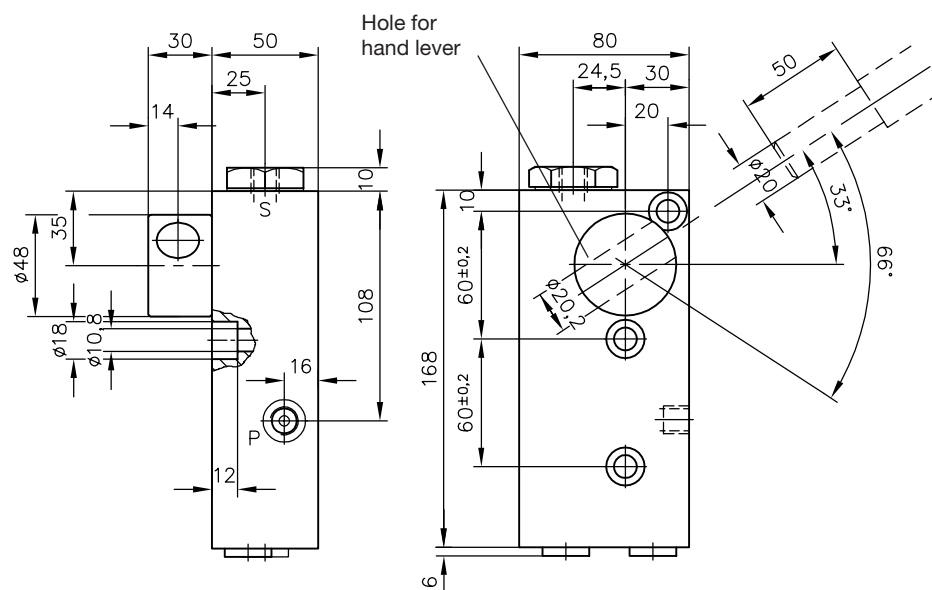
Ports for manifold mounting



Ports ISO 228/1 (BSPP):  
P and S = G 1/4  
(plugged at versions for bei manifold mounting)

3.2 Type HE 3 to HD 301

**Attention:**  
Hand lever is not  
scope of delivery!



Ports conf. ISO 228/1 (BSPP):

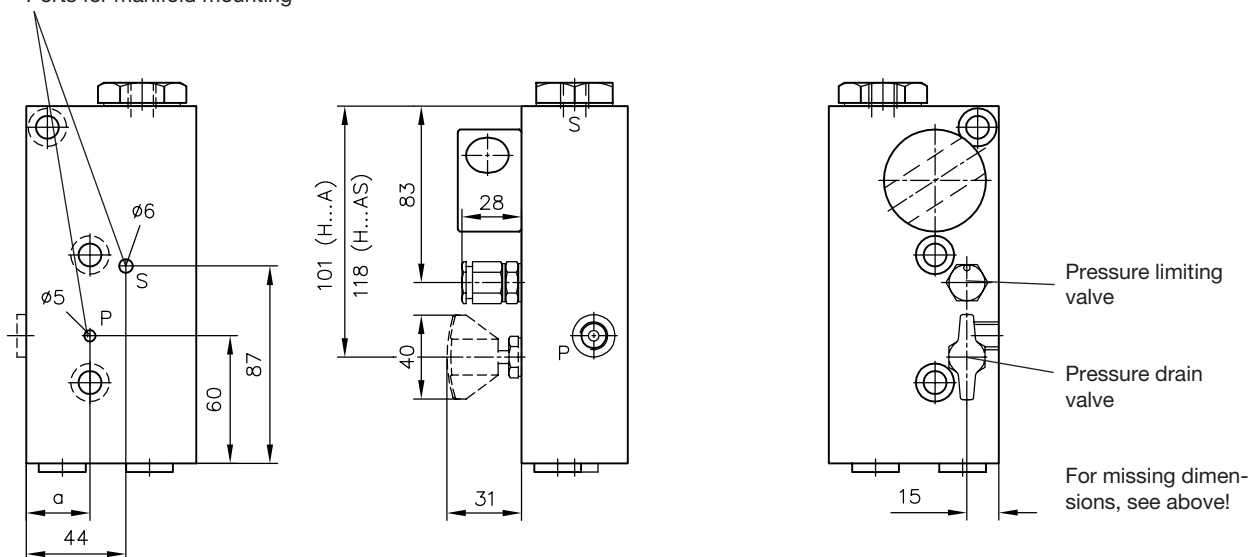
P = G 1/4

S = G 1/4 at HE 3 to HD 201

S = G 3/8 at HD 30 and HD 301

Type HE 4 A (S, AS) to HD 301 A (S, AS)

Ports for manifold mounting



Type	a
HE 4.	14.5
HD ...	30

Ports P and S plugged at versions for manifold mounting

## 4. Appendix

Hand pumps type HE and HD with directly mounted tank.

Ready to use equipment for supply of pressure oil to small hydraulic systems, ready for connection.

Order coding: At the type designation of the standard version, the coding of the oil tank -... is added as in section 2.1, including any optional fittings with release and/or pressure limiting valves.

Coding example:

**HD 20 S - K 0,35 - 250**



Hand pump as in Sect. 2.1

Oil tank

Standard version	Optional fittings	Coding	Capacity (l)	Mass (weight) approx. (g) <sup>2)</sup>	Tank material
HE 3, HE 4 HD 13, HD 20, HD 30	A <sup>1)</sup> , S and AS <sup>1)</sup>	<b>K 0,35</b>	0.35	200	Plastic
		<b>K 0,5</b>	0.5	490	Acrylic glass

1) Version with drain valve can be added:  
For tank K..., reducing connector 7090 063 must be ordered also

2) Including fittings

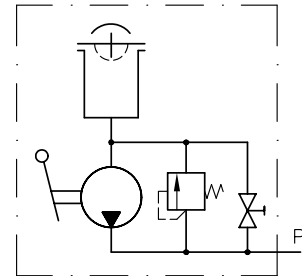
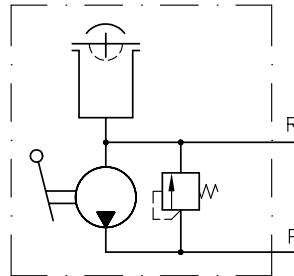
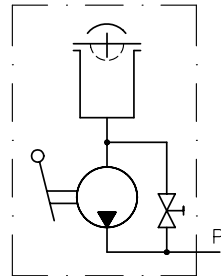
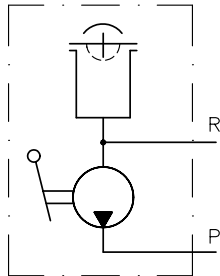
### Symbol

HE 4 - K...  
HD 13 (...30) - K...

HE 3 A - K...  
HE 4 A - K...  
HD 13 (...30) A - K...

HE 3 S - K...  
HE 4 S - K...  
HD 13 (...30) S - K...

HE 3 AS - K...  
HE 4 AS - K...  
HD 13 (...30) AS - K...

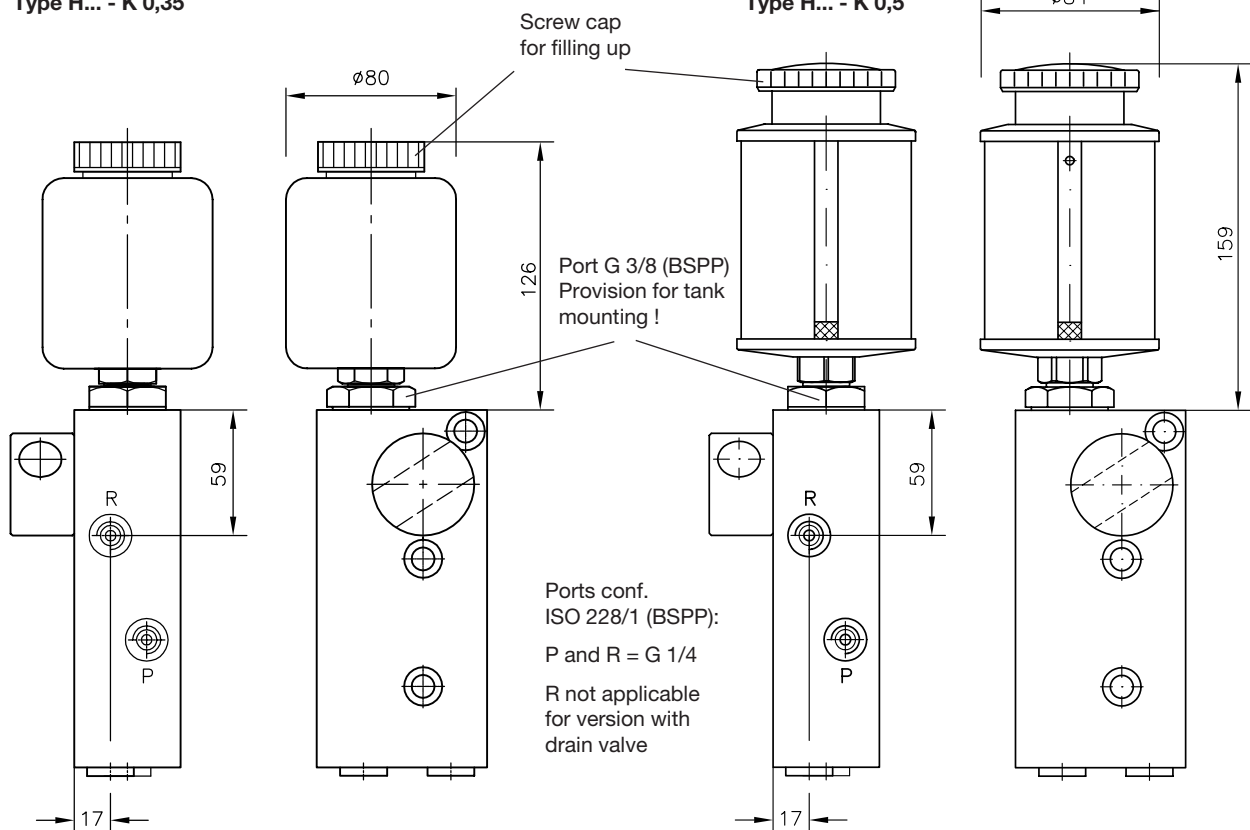


To be installed vertically as shown, with tank at the top

See standard version for dimensions and other technical data not illustrated.

### Type H... - K 0,35

### Type H... - K 0,5



All dimensions in mm, subject to change without notice!