

Manual pump type H, HD and HE

Product documentation



Operating pressure p_{\max} : 800 bar
Displacement volume $V_{\max. \text{ stroke}}$: 30 cm³/stroke



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1 Overview of hand pumps type H, HD, HE

Hand pumps are a type of hydraulic pump. They generate a flow rate manually. The hand pumps types H, HE and HD are available for the pipe connection, the manifold mounting and optionally integrated in a tank. The hand pumps type H and HE are single-acting. They draw in oil in one direction and pump it in the opposite direction. The hand pump type HD is double-acting. It pumps and draws in the same quantity of oil in the pressure line during the forward and backward movement of the hand lever.

Features and benefits:

- Sturdy design
- Corrosion resistance
- Zero-leakage pressure connection

Intended applications:

- Shipbuilding
- Mining machinery
- fixture design
- Test facilities and laboratory facilities
- Emergency pump



Hand pumps type H, HD, HE

2 Available versions, main data

2.1 Single pump

Order coding examples:

H 25				
HD 30 P	S	- 400	- PYD	
HE 4				-EX

ATEX ["Table 4"](#)

Sealing specification ["Table 3"](#)

Pressure specification (bar) for version with pressure-limiting valve ["Table 2"](#)

Additional function ["Table 2"](#)

Basic type and size ["Table 1"](#)

Table 1 Basic type and size

Basic type and size	Pressure p_{\max} (bar) in P	Displacement volume V_{stroke} (cm ³)	Actuation torque	Function, design
Pipe connection				
H 16	350	6	270 Nm	single-acting, open, suction port loadable (≤ 150 bar)
H 20	220	9.4		
H 25	150	14.7		
HE 3	800	3	250 Nm	single-acting, closed
HE 4	600	4		
HD 13	350	13	250 Nm	double-acting, closed
HD 20	220	20		
HD 30	150	30		
HD 301	150	30		
Manifold mounting				
H 16 P	350	6	270 Nm	single-acting, open
H 20 P	220	9.4		
HE 4 P	600	4	250 Nm	single-acting, closed
HD 13 P	350	13	250 Nm	double-acting, closed
HD 20 P	220	20		
HD 30 P	150	30		

Note

- Possible combinations with additional function, see table 2
- Pressure at S acts through the pump via P to the connected consumer or the directional valve connected between. The hand lever is pushed into an end position.

Table 2 Additional function

Basic type and size	Additional function				Circuit symbol
	None	Drain valve	Pressure-limiting valve	Drain valve and pressure-limiting valve	
	--	A	S	AS	
Pipe connection					
H 16	●	--	--	--	None
H 20	●	--	--	--	
H 25	●	--	--	--	
HE 3	●	--	●	--	A
HE 4	●	●	●	●	
HD 13	●	●	●	●	S
HD 20	●	●	●	●	
HD 30	●	●	●	●	
HD 301	--	--	●	--	
Manifold mounting					
H 16 P	●	--	--	--	AS
H 20 P	●	--	--	--	
HE 4 P	●	--	●	--	AS
HD 13 P	●	--	--	●	
HD 20 P	●	--	--	--	
HD 30 P	●	--	--	--	AS

Note

For version HD 301 please note:

- For versions ...S and AS, the pressure at the suction port is added to the factory-set pressure. Pressure-limiting valve type S only available fixed. Check valves are installed in ports P and S.

Table 3 Sealing specification, for sealing with medium contact

Coding	Comment
No designation	Series, seals from NBR or AU, e.g. for mineral oil and HEES (synthetic ester)
PYD	Seals from FKM

Note

For the seal specification coding -PYD, the maximum operating pressure is limited to 250 bar.

Table 4 Explosion-proof version (ATEX)

Order coding	Certified according to	Classification / marking	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-EX	ATEX EU	Group II, category 2, 3:  II 2 G Ex h IIC T4 Gb  II 2 D Ex h IIIC T135°C Gb	On request	B ATEX	-20°C...+40°C

ATEX classification as per:

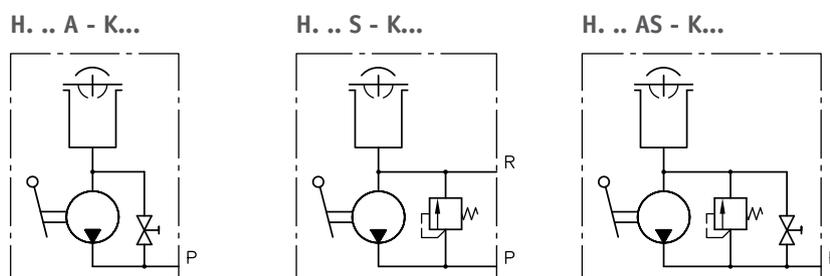
- DIN EN ISO 80079-36:2016-12
- DIN EN ISO 80079-37:2016-12

2.2 Version with mounted oil tank

Ready-for-connection devices for supplying hydraulic oil to small hydraulic systems.

Containers are available for type HE and HD.

Circuit symbol



Order coding examples:

HE 4 A	-K 0,5	
HD 13 S	-K 0,35	- 250

Pressure specification (bar) for version with pressure-limiting valve

Oil tank Table 4

Available combinations:

HE 4 A
 HE 4 AS
 HD 13 AS
 HD 13 S
 HD 30 A
 HD 30 AS

Table 4 Oil tank

Coding	Content (l)	Container material
K 0,35	0.35	Plastic
K 0,5	0.5	Plexiglas

General data

Designation	Hand pump		
Design	Piston pump		
Model	Pipe connection, manifold mounting		
Material	Pump housing gas nitrided Steel; nitrided valve housing, hardened and ground functional inner parts		
Installation position	Single pump: arbitrary Version with mounted oil tank: vertical		
Ports	P = Pressure connection S = Suction port		
Hydraulic fluid	Hydraulic oil: according to part 1 to 3; ISO VG 10 to 68 according to DIN ISO 3448 Viscosity limits: min. approx. 4, max. approx. 1500 mm ² /s opt. operation approx. 10... 500 mm ² /s. Also suitable for biologically degradable hydraulic fluids type HEPG (polyalkylene glycol) and HEES (synthetic ester) at operating temperatures up to approx. +70°C.		
Cleanliness level	ISO 4406 20/17/14...18/15/12	NAS 1638 11 ... 6	SAE T 490 5 ... 3
Temperatures	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. By consideration of the compatibility with seal material not over +70°C. Please note restriction with ATEX-compliant version! Surrounding area: -20+40°C		

Weight

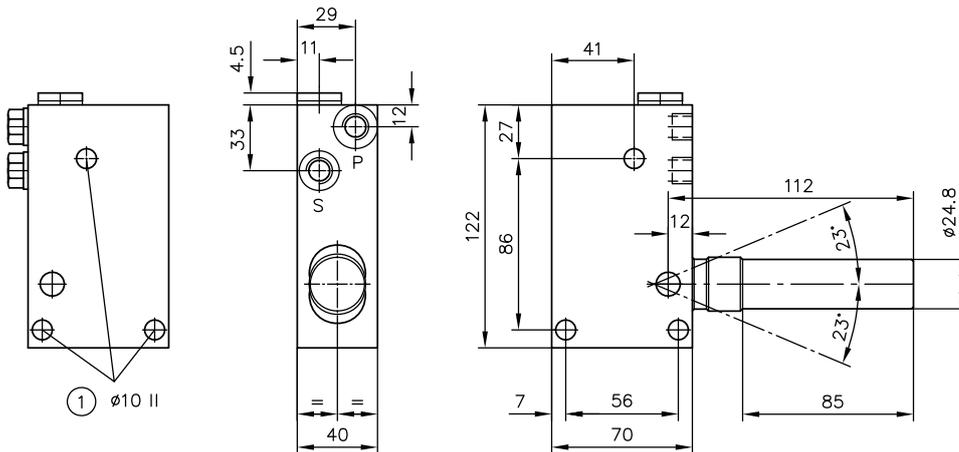
	Type	
	H	= 3.1 kg
	HD	= 4.8 kg
	HE	
	Tank	
	K 0.35	= + 0.2 kg
K 0.5	= + 0.49 kg	

4 Dimensions

All dimensions in mm, subject to change.

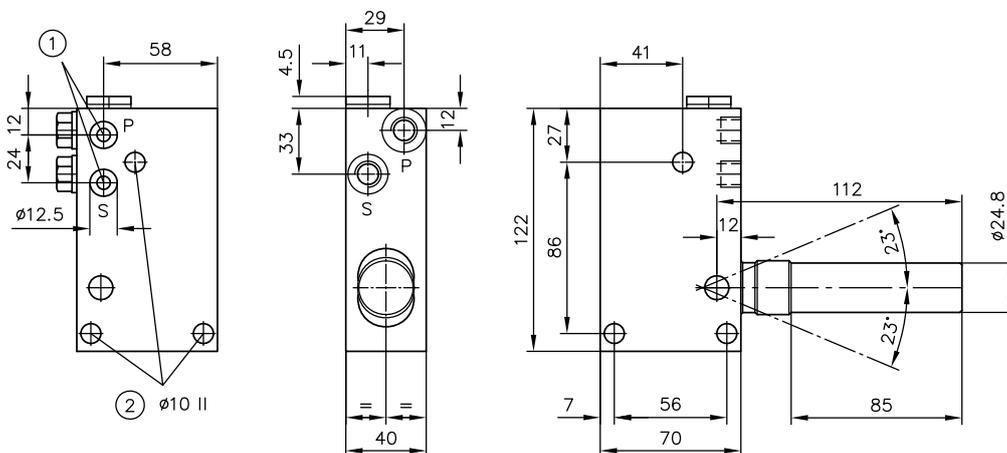
4.1 Single pump

Type H, pipe connection



1 Fixing holes

Type H, manifold mounting



1 O-ring 2x $\varnothing 7.59 \times 2.62$ 90Sh

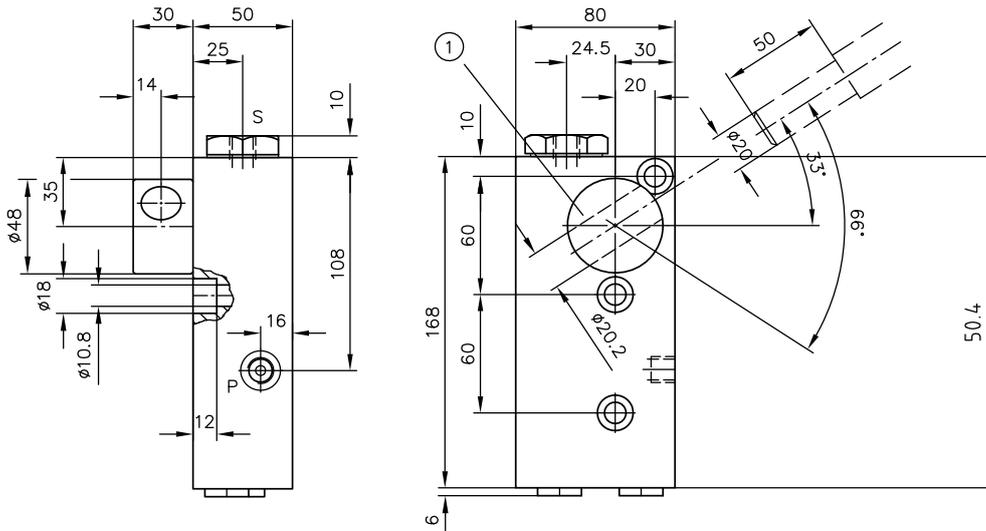
2 Fixing holes

Port (ISO 228-1) (BSPP)

P, S

G 1/4

Type HE, HD, pipe connection



1 Hole for hand lever

Connections (ISO 228-1) (BSPP)

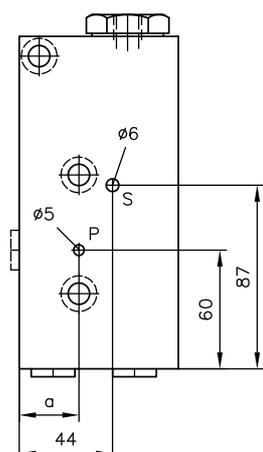
	P	S
HE 3 ...	G 1/4	G 1/4
HD 13		
HD 20		
HD 30	G 1/4	G 3/8



Note

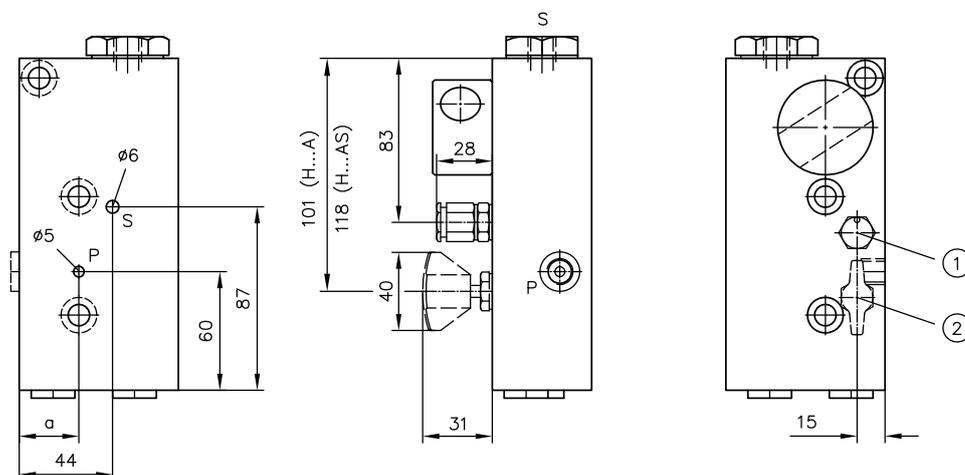
The hand lever is not included in the scope of delivery.

Type HE, HD, manifold mounting



Type	a
HE	14.5
HD	30

Type HE, HD, with additional function (A, S, AS)



- 1 Pressure-limiting valve
- 2 Drain valve

Ports P and S are sealed for the manifold mounting versions.

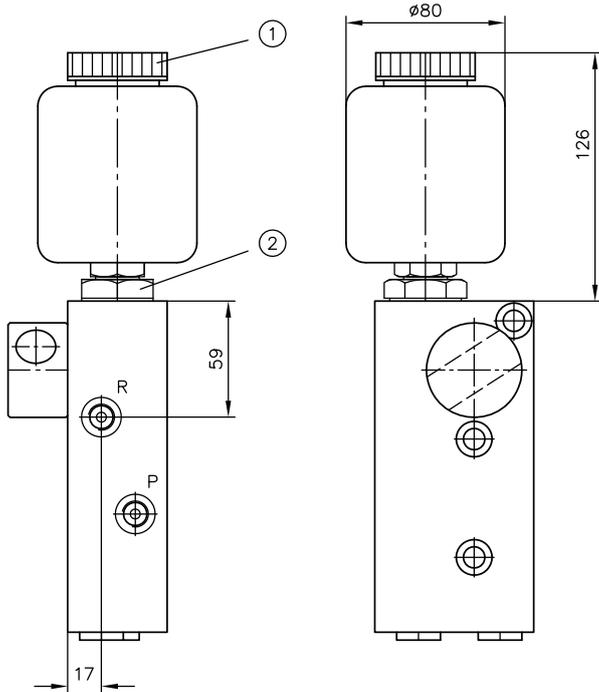
4.2 Version with mounted oil tank

Ready-for-connection devices for supplying hydraulic oil to small hydraulic systems.

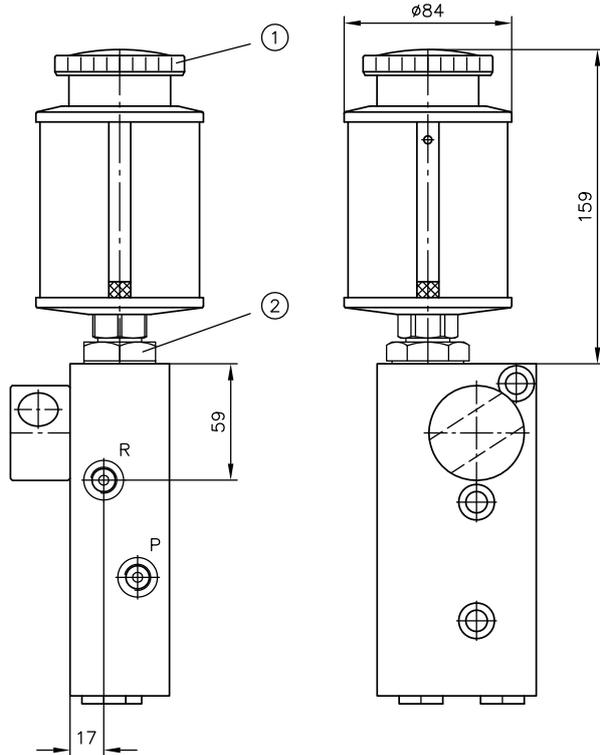
Containers are available for type HE and HD.

For missing dimensions, see "[Chapter 4.1](#)"

H ... - K 0.35



H ... - K 0.5



- 1 Screw-in cover for filling
- 2 Connection for oil tank uniformly G 3/8!

Port (ISO 228-1) (BSPP)

P, R	G 1/4
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Connection R not for version with drain valve

5 Assembly, operation and maintenance recommendations

5.1 Intended use

This product is intended exclusively for hydraulic applications (fluid technology).

The user must observe the safety measures and warnings in this documentation.

Essential requirements for the product to function correctly and safely:

- All information in this documentation must be observed. This applies in particular to all safety measures and warnings.
- The product must only be assembled and put into operation by qualified personnel.
- The product must only be operated within the specified technical parameters. The technical parameters are described in detail in this documentation.
- The operating and maintenance manual of the components, assemblies and the specific complete system must also always be observed.

If the product can no longer be operated safely:

1. Remove the product from operation and mark it accordingly.
- ✓ It is then not permitted to continue using or operating the product.

5.2 Assembly information

The hydraulic power pack must only be installed in the complete system with standard and compliant connection components (fittings, hoses, pipes, fixtures, etc.).



Danger

Risk to life caused by sudden movement of the hydraulic drives when dismantled incorrectly!

Risk of serious injury or death.

- Depressurise the hydraulic system.
- Perform safety measures in preparation for maintenance.

5.3 Operating instructions

Product configuration and setting the pressure and flow rate

The statements and technical parameters in this documentation must be strictly observed.
The instructions for the complete technical system must also always be followed.

Note

- Read the documentation carefully before usage.
- The documentation must be accessible to the operating and maintenance staff at all times.
- Keep documentation up to date after every addition or update.

Purity and filtering of the hydraulic fluid

Fine contamination can significantly impair the function of the hydraulic component. Contamination can cause irreparable damage.

Examples of fine contamination include:

- Metal chips
- Rubber particles from hoses and seals
- Dirt due to assembly and maintenance
- Mechanical debris
- Chemical ageing of the hydraulic fluid

Note

Fresh hydraulic fluid from the drum does not always have the highest degree of purity. Under some circumstances the fresh hydraulic fluid must be filtered before use.

Pay attention to the cleanliness level of the hydraulic fluid to maintain faultless operation.
(Also see cleanliness level in [Chapter 3, "Parameters"](#)).

Additionally applicable document: [D 5488/1](#) Oil recommendations

5.4 Maintenance information

This product is largely maintenance-free.

Conduct a visual inspection at regular intervals, but at least once per year, to check if the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

In relation to the drive (lever mechanism), there is a difference between a closed design and an open design.

In the closed design, it is inside the housing (suction chamber) and is lubricated by the oil without requiring maintenance.

In open version it is outside; occasional maintenance (cleaning and greasing) is recommended.

Clean the device surface of dust deposits and dirt at regular intervals, but at least once per year.

6 Other information

6.1 Functional safety

The MTTFd values as described in [B 5488 ISO](#) apply.

6.2 Planning information

Setting up:

1. Keep suction line short.
 2. Set up oil tank at the same level or higher than the suction ports.
- ✓ Suction lines do not run empty when idle.

Further information

Additional versions

- Hand pump type CH: D 7147 CH