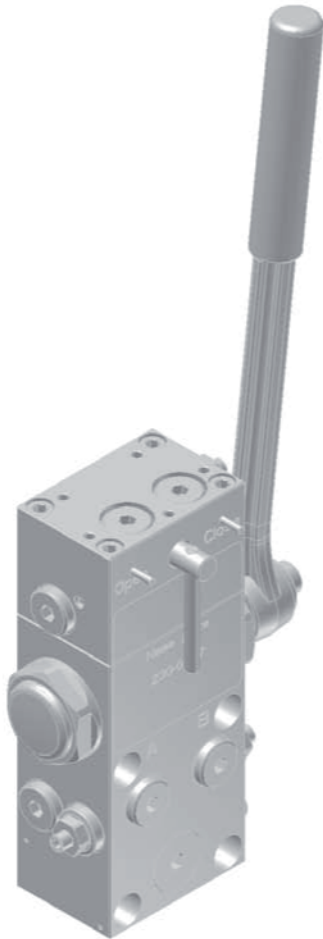


# Bettis Hand Pump – General for BHH, BHHF BL and BLF Actuators



## Description:

The Bettis hand pump can be used together with all standard actuators such as BHH, BHHF, BL and BLF. Overall there exists a hand pump for single line actuators and for double line actuators. Depending on actuator size, control type and valve location these two hand pump types can be applied in different variants for emergency operation and standalone operation without other remote facilities. Further information can be found in the data sheet for the direct mounted hand pump and the remote mounted hand pump.

## Hand pump program:

**Hand pump:**  
HP: Hand pump

**Actuator type:**  
S: For single line actuator  
D: For double line actuator

**Application:**  
-: Direct mounted  
B: Bulkhead mounted

**Bulkhead type:**  
B-VPI: Remote mounted with VPI-V

**Tank size:**  
- : No tank  
50: 50 ml closed tank  
1: 1 L open tank  
4: 4 L open tank

## Examples:

### Submerged valves - HP-S-B-VPI-V-4

- Hand pump
- For single line actuator
- Bulkhead mounted with VPI-V
- 4 L open tank

### Shipside valves - HP-D-1

- Hand pump
- For double line actuator
- Direct mounted
- 1 L open tank

## Main data:

Other additional:	Quick connection
Mounting:	Prepared for actuator and remote mount block interface
A and B connection:	1/4" BSPP
Maximum operation pressure:	135 bar (1958 PSi)
Test pressure:	210 bar (3045 PSi)
Maximum hand pump pressure:	135 bar (1958 PSi)
Weight without oil:	0 L tank: 5.3 kg, 50 ml tank: 6 kg 1 L tank: 9 kg and 4 L tank: 15 kg
Oil displacement per double stroke:	6 cm <sup>3</sup> (.37 in <sup>3</sup> )
Oil viscosity range:	From 15 to 200 cSt
Temperature range:	From -25°C to 80°C (-13°F to 176°F)
Recommended oil filtration:	ISO Solid Contaminant Code 18/15 or NAS 160/10

## Data sheet

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HPG01

### Material:

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Housing / Cover:	Brass
Spindle / Piston:	Aluminum bronze
Valves:	Brass
Screws / Sign plate / Rivet:	Stainless steel
Sealings:	NBR (Acrylonitrile butadiene)

### General installation requirements:

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General installation requirements:

- To gain maximum hand pump performance it is of significant importance that the pipes between hand pump and actuator are well de-aired.
- Distance between hand pump and actuator must not exceed 50 m. (164 ft.)

In case of solenoid valve is needed for remote indirect indication:

- 4/3 ways SC solenoid throttle valve for double line actuators.
- 4/2 ways SR (FC / FO) solenoid valve on/off for single line actuators.

Specific rules related to hand pump applications can be found in the direct mounted and remote mounted handpump datasheet.

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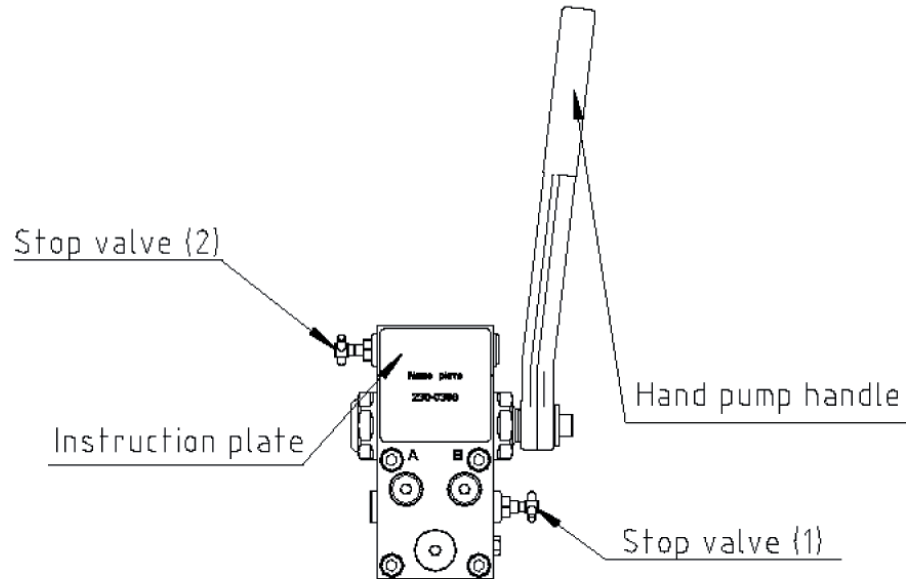
  
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## Data sheet

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Date: October 2010

# HPG01

### Emergency operation for single line actuator:



Description of the hand pump emergency operation can be found on the instruction plate mounted on the hand pump. The emergency description for the single actuators is as follows:

#### Emergency opening:

- Close stop valve (1).
- Operate hand pump to open actuator.

#### Emergency closing:

- Open stop valve (2).
- When actuator is closed,
  - Close stop valve (2)
  - Open stop valve (1)

#### Notice:

Remote operation will not reset opening; if emergency opened the actuator has to be emergency closed again.

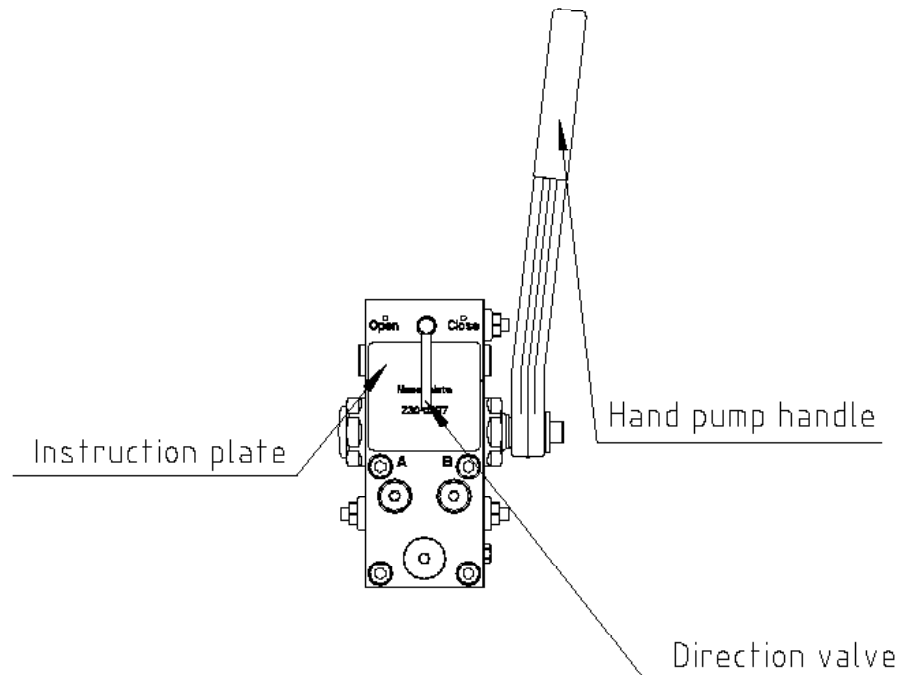
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**Emergency operation for double line actuator:**



Description of the hand pump emergency operation can be found on the instruction plate mounted on the hand pump. The emergency description for the double line actuators is as follows:

**Emergency opening:**

- Turn directional valve to "OPEN".
- Operate hand pump.

The valve will now stay in position until operated with hand pump again or by remote control.

**Emergency closing:**

- Turn directional valve to "CLOSE".
- Operate hand pump.

The valve will now stay in position until operated with hand pump again or by remote control.

## Data sheet

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# HPG01

### Enclosure rating:

When mounted in block, cavity seals are designed to fulfill demands of enclosure rating IP 68. Note: In case of installation where a larger enclosure rating than IP 67 is required, the connection house should be filled with silicone after wire mounting and test of function. With each actuator comes a yoke, fit to transfer the mechanical signal from the actuator to the DPI.

### Potentiometer:

The potentiometer incorporated in the DPI-C is a high quality potentiometer that is extremely reliable as long as the following ratings are observed:

Max. continuous load:		0.12 W (VA)
Max. peak load:		1 W(VA)
The normal output range is at	1 k $\Omega$ :	0-500 $\Omega$ for 0-90° rotation*
	2 k $\Omega$ :	300-1400 $\Omega$ for 0-90° rotation*
	10 k $\Omega$ :	1500-7000 $\Omega$ for 0-90° rotation*

\*Approx. adjustment for open (1400/7000) and close (300/1500) set point.

### Analogue signal processing:

LPU is equipped with signal conditioning, with a 2-wire 4 - 20 mA signal output. When DPI-C is block mounted we recommend the Bettis isolation amplifier 2204 for transforming the resistance signal into a standard 4-20 mA signal. The output can be displayed visually by means of the Bettis meter PQ 48 measuring 48 x 48 mm and scaled: "closed, 1/4, 1/2, 3/4, open".

### Materials:

Housing:	Brass, MS 58 (CuZn39Pb3)
Screws:	AISI 304 (Stainless)
Seals:	NBR ~ Acrylonitrile Butadiene
Fixture:	PPS

### Cable gland data:

Cable outer diameter:	$\varnothing$ 6-10.5 or $\varnothing$ 8-15 mm (.24-.39 or .31 - .59 in)
Ingress protection:	IP 68
Thread:	M 16 or M 20
Material:	Nickel plated brass
Seal material:	Perbunan and NBR (Rubber)

### Cable quality/connection:

Wiring to the terminal: Cross sections 0.5-1.5 mm<sup>2</sup> (AWG 22 - 16).

Observe that water intrusion into the terminal housing can take place through the cable - even through each individual wire. The IP tightness is based on correct and careful mounting.

Note: Not Certified dimensional drawings. Such drawings are available on request. Contact factory with correct model designation and serial number.

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