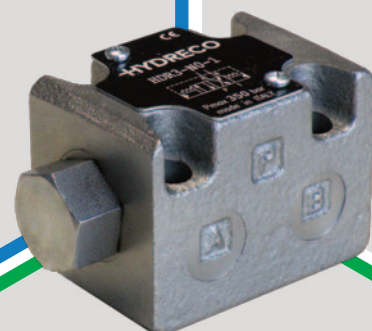


# HDR

## SELF-REVERSING VALVE

HDR3	350 bar	50 l/min
HDR5	320 bar	60 l/min



**INTRODUCTION**

The HDR valves are directional control valves hydraulic actuated, with self-reversing spool with porting pattern compliant to ISO 4401-03 and ISO 4401-05.

These valves reverse the flow direction when the flowrate stops in A or B line (f.e., when a cylinder reaches the end stroke). The reversing process is independent of the working lines pressure.

These valves are supplied with a zinc-nickel plating making them the perfect choice for mobile and environmental applications that require better protection.

Salt spray resistance up to 600 h (test according to UNI EN ISO 9227 and UNI EN ISO 10289 tests and standards).

**FLUIDS**

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code V). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 80 °C (180 °F) causes the accelerated degradation of seals as well as the fluid physical and chemical properties.

From a safety standpoint, temperatures above 55 °C (130 °F) are not recommended.

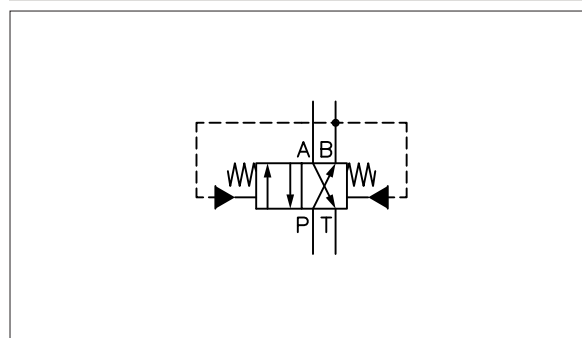
**OPERATING PARAMETERS**

<b>MAXIMUM OPERATING PRESSURE</b>	HDR3	350 bar	5000 psi
	HDR5	320 bar	4600 psi
<b>FLOW RATE</b>	HDR3	50 l/min	13.2 gpm
	HDR5	60 l/min	15.9 gpm
<b>MOUNTING SURFACE</b>	HDR3	ISO 4401-03-02-0-05 NFPA D03	
	HDR5	ISO 4401-05-04-0-05 NFPA D05	

<b>WEIGHT</b>	HDR3	0.9 kg	2.0 lbs
	HDR5	2.8 kg	6.2 lbs

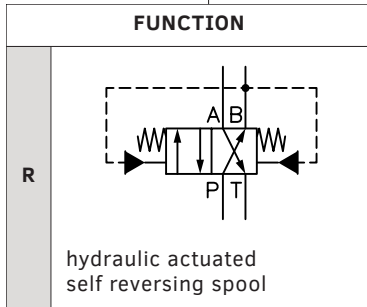
<b>RANGE TEMPERATURES</b>	ambient	-20 to +54 °C	-4 to +130 °F
	fluid	-20 to +82 °C	-4 to +180 °F
<b>FLUID VISCOSITY</b>	range	10 - 400 cSt	60 - 1900 SUS
	recommended	25 cSt	120 SUS
<b>FLUID CONTAMINATION</b>	ISO 4406:1999 class 20/18/15		

**HYDRAULIC SYMBOLS (TYPICAL)**



# HDR - - 2

design mark



**VALVE SIZE**

3	ISO 4401-03-02-0-05
5	ISO 4401-05-04-0-05

**SEAL**

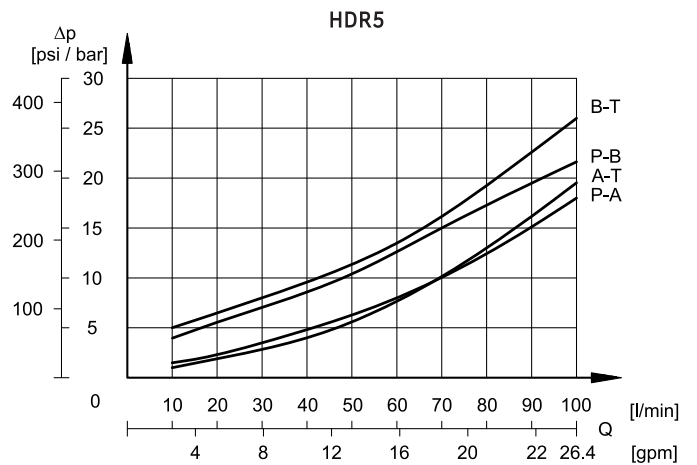
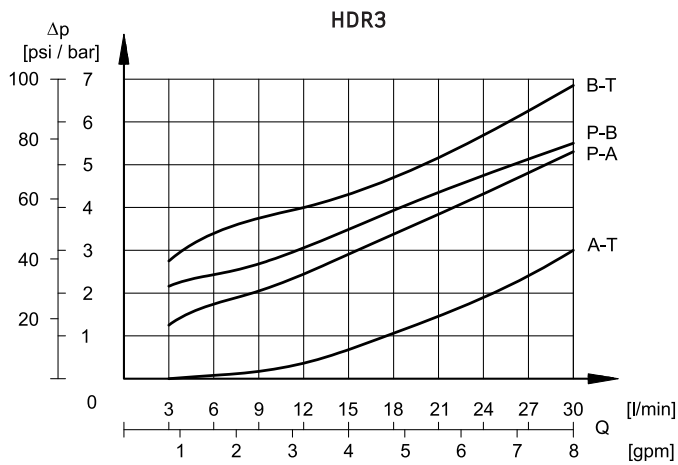
N	NBR (standard)
V	Viton

**MANUAL OVERRIDE**

0	no manual override
K	knob, turning

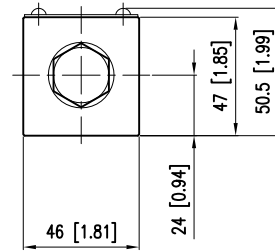
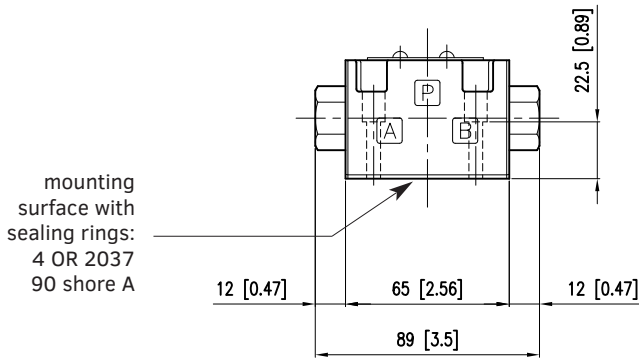
## CHARACTERISTIC CURVES - PRESSURE DROPS

Flow characteristic curves obtained with mineral oil with viscosity of 36 cSt (170 sus) at 50 °C (122 °F) and 24V DC valve.

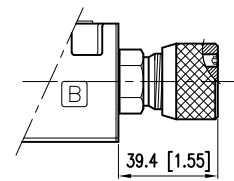
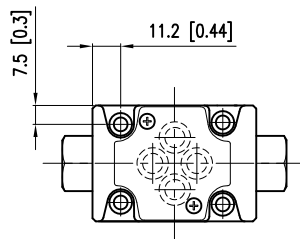


**HDR3**

dimensions in mm [in]



**KNOB, TURNING (Code K)**



Allen key for set screw: 2,5 mm

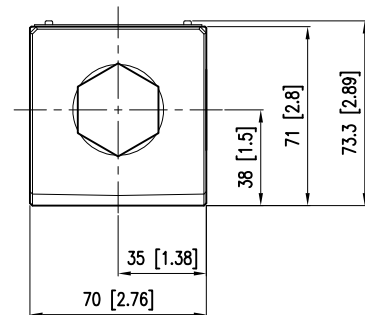
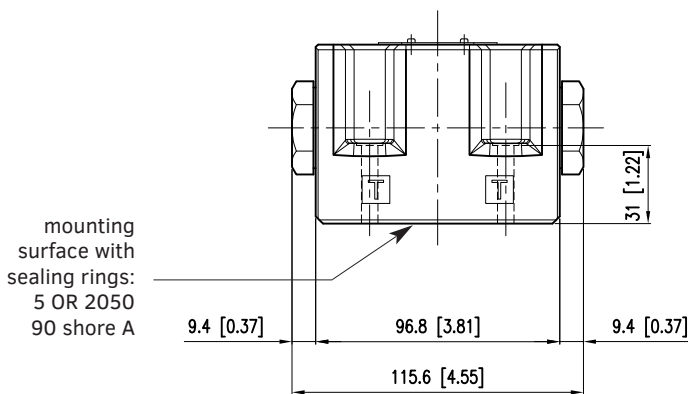
**Fastening bolts:**

4 SHCS M5x30 - ISO 4762 - torque 5 Nm (A 8.8)

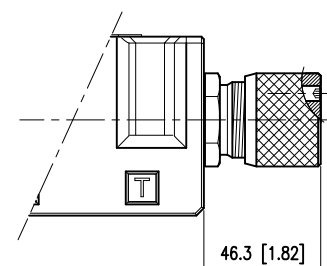
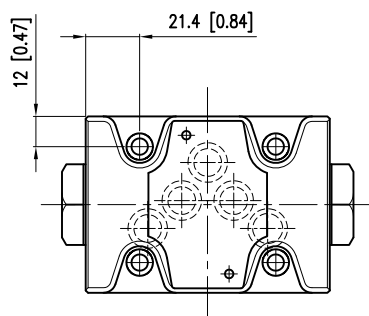
**Threads of mounting holes:** M5x10

**HDR5**

dimensions in mm [in]



**KNOB, TURNING (Code K)**



Allen key for set screw: 3 mm

**Fastening bolts:**

4 SHCS M6x40 - ISO 4762 - torque 8 Nm (A 8.8)

**Threads of mounting holes:** M6x10

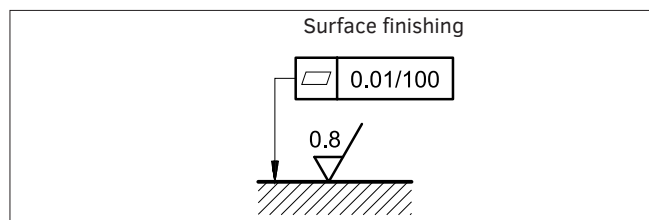
These valves can be installed in any position without impairing correct operation.

Ensure that there is no air in the hydraulic circuit.

Valves are fixed by means of screws or tie rods on a flat surface with planarity and roughness equal to or better than those indicated in the relative symbols. If minimum values are not observed, fluid can easily leak between the valve and support surface.

We recommend installing in the circuit as shown in the two examples, connecting port A to the rear chamber of the cylinder. In this way, the valve automatically positions itself so that the rod retracts when the pump starts.

In order for the valve to operate correctly, the ratio between the cylinder areas must be between 1:1.25 and 1:2.

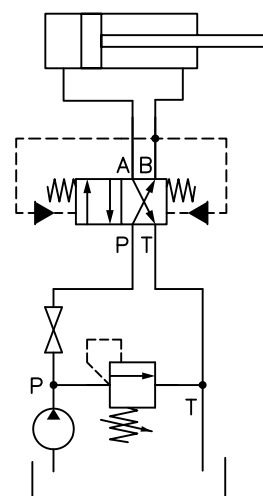


### CIRCUITS WITH SHUT-OFF VALVE

Use a HDR valve without the turning knob override.

The self-reversing function must be inactive when setting the system pressure relief valve.

To do so, close the shut-off valve, start the pump, set the pressure relief valve and stop the pump. Then, open the shut-off valve and restart the pump.



### CIRCUITS WITHOUT SHUT-OFF VALVE

Use a HDR valve with the turning knob override (code K) .

The turning knob override allows you to set the pressure value of the relief valve also in circuits with no shut-off valves.

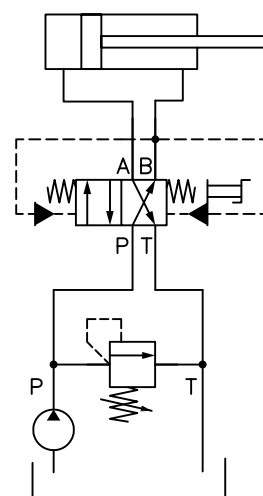
The self-reversing function must be inactive when setting the system pressure relief valve.

To do so, unscrew the set screw in the knob completely, then tighten the knob up to the mechanical stop. The spool is now clamped in P → B / A → T position.

Start the pump, set the relief valve and stop the pump.

Restore the initial working conditions of the valve by unscrewing the knob almost completely. Screw the knob set screw until its head is flush with the knob itself.

The valve is in initial working condition when the set screw head is flush with the knob itself and the knob is completely tightened.



### WARNING:

Do not use the manual override during operation: if you need to stop the flow, switch off the pump.

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