

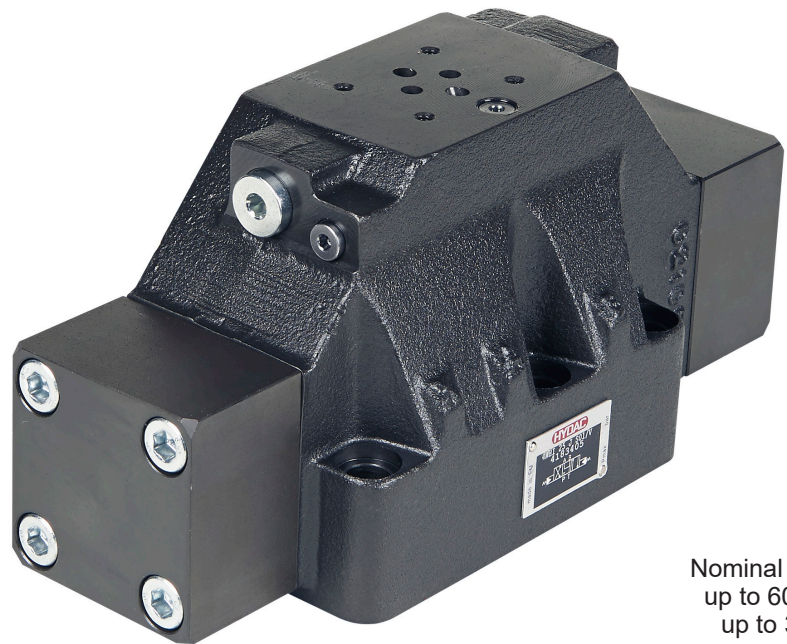
## 4/2- and 4/3-directional spool valve Hydraulically operated 4WH 25

### DESCRIPTION

The 4WH valves in nominal size 25 are directional spool valves with hydraulic operation. They are used to control the start, stop and direction of a volume flow. A wide variety of spool types and options for opening control are available in this valve series.

### FEATURES

- Hydraulically operated directional spool valve
- Electro-hydraulic operation via pilot valve NG 6 or hydraulic operation via interconnecting plate
- Flow rates up to 600 l/min
- The pilot supply and/or drain can be internal or external and can be achieved by changing the plug
- Interface according to ISO 4401-08



Nominal size 25  
up to 600 l/min  
up to 350 bar

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# MODEL CODE

4WH E 25 G S01 /V /U

## Type

4/2- or 4/3-directional spool valve, hydraulically operated

## Control type

- E = external pilot drain and supply
- EI = external pilot supply, internal pilot drain
- I = internal pilot drain and supply (symbols G and H only with option G)
- IE = internal pilot supply, external pilot drain (symbols G and H only with option G)

## Nominal size

25

## Spool symbol <sup>1)</sup>

See page 2

## Series

S01 = CETOP 4.2-4 P05-320 (Standard)

## Sealing material

- N = NBR
- V = FKM (standard)

## Options

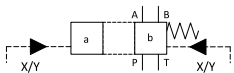
Not specified = without interconnecting plate (standard)

- G = with check valve (5 bar)
- UPA = with interconnecting plate P-A; B-T
- UPB = with interconnecting plate P-B; A-T

<sup>1)</sup> Other models on request

## SPOOL TYPES / SYMBOLS

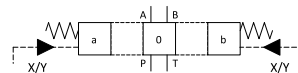
### 4/2-DIRECTIONAL SPOOL VALVES



Type	Basic symbol	With intermediate position
C		
D		
Y		

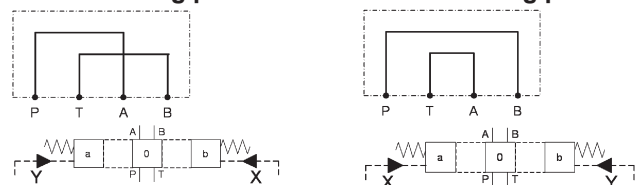
For valves with electrical operation see brochure 5.227.10 "4WEH 4/2 and 4/3 way spool valves in nominal size 10 to 32".

### 4/3-DIRECTIONAL SPOOL VALVES



Type	Basic symbol	With intermediate position
E		
J		
G		
H		

### Interconnecting plate PATB Interconnecting plate PBTA



Spool position depends on interconnecting plate.

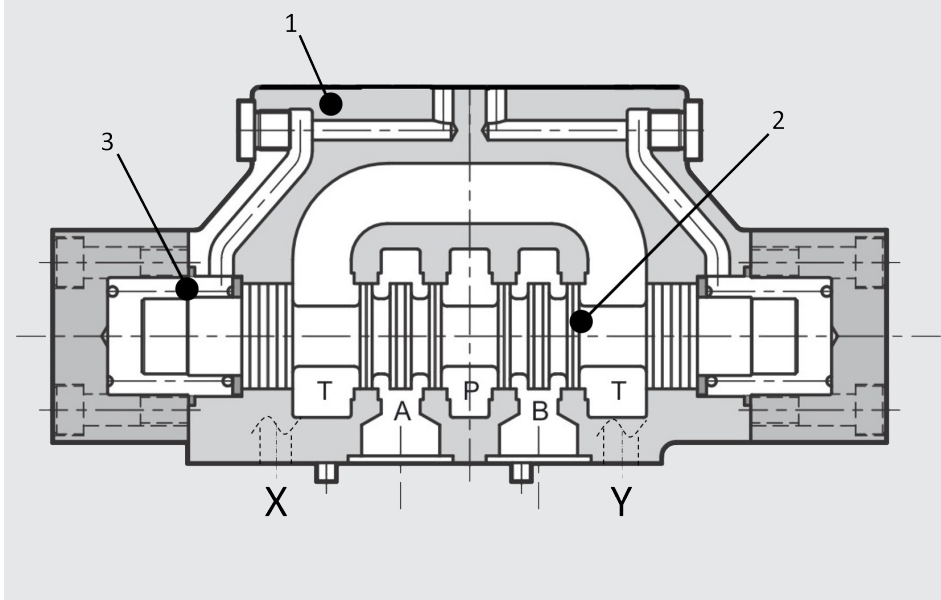
## FUNCTION

The valves of the 4WH 25 series are directional spool valves with hydraulic operation which can control the start, stop and direction of a volume flow. They consist of the valve casing (1), the main control spool (2) and the return springs (3).

The fluid power supply of the valve is provided centrally via the standard porting pattern.

Without pilot oil, the main control spool is centred in its middle position by the springs. The actuation of the main control spool (2) is caused by pressurisation. The required pilot oil is provided by port X and Y or is controlled by an additional pilot valve that is adopted to the main valve. The pilot pressure depends on rate of flow. The minimal pilot pressure of 5 bar is sufficient only for low flow rates. Pilot pressure has to be increased up to 12 bar by increasing rates of volume flow. Pressure loading on one of the two front sides of the main control spool (2) with pilot pressure causes desired switching position, whereby the required ports will be linked. The spring, which is across from the pressurised control piston surface, causes the resetting of the piston into zero or initial position by relieving of pressure.

## SECTION VIEW



### Control types – Pilot supply and pilot drain

If the valve is used as a hydraulically actuated valve, the pilot supply and pilot drain will occur external via port X and Y.

If the valve is used as the main stage in a pilot-operated valve, there are four possible control types for each basic valve. This can be seen in the model code.

The valve will be delivered correspondingly configured. Modification is possible afterwards. The glued threaded plugs will make disassembly more difficult.

- **Version "E"** – Pilot supply is external from a separate fluid power supply via port X. The pilot drain is also external via port Y.
- **Version "EI"** – Pilot supply is external from a separate fluid power supply via port X. The pilot drain is internal via port T.
- **Version "IE"** – Pilot supply is internal via port P. The pilot drain is external via port Y. Hint: Symbols G and H only with option G.
- **Version "I"** – Pilot supply is internal via port P. The pilot drain is external via port T. Hint: Symbols G and H only with option G.

# TECHNICAL DATA <sup>1</sup>

General specifications	
MTTF <sub>d</sub> :	150 - 1200 years, according to DIN EN ISO 13849-1:2016; Table C.1, Confirmation from ISO 13849-2:2013; Tables C.1 and C.2
Ambient temperature range: [°C]	-20 to +50
Installation position:	No orientation restrictions
Weight: [kg]	15
Material:	Valve casing: Cast iron Name plate: Aluminium
Surface coating:	Valve casing: Phosphate plated

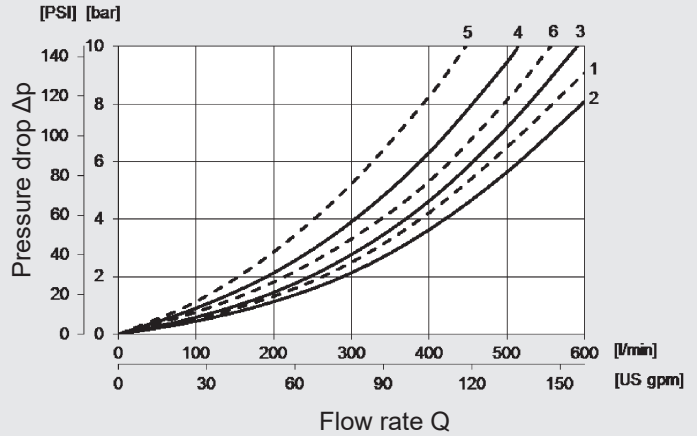
Hydraulic specifications	
Operating pressure: [bar]	350
Pilot pressure min: [bar]	5 to 12 <sup>2</sup>
Pilot pressure max: [bar]	210
Nominal flow: [l/min]	600
Operating fluid:	Hydraulic oil to DIN 51524 Part 1, 2 and 3
Media operating temperature range: [°C]	-20 to +80
Viscosity range: [mm <sup>2</sup> /s]	10 to 400
Permitted contamination level of operating fluid:	Class 20/18/15 according to ISO 4406
Sealing material:	FKM (standard), NBR

<sup>1</sup> see "Conditions and Instructions for Valves" in brochure 53.000  
<sup>2</sup> Pilot pressure depends on rate of delivery flow. The minimal pilot pressure is sufficient only for low rates of delivery flow. As the rate of delivery flow increases, it is necessary to increase the pilot pressure up to the specified maximum value.

## PERFORMANCE

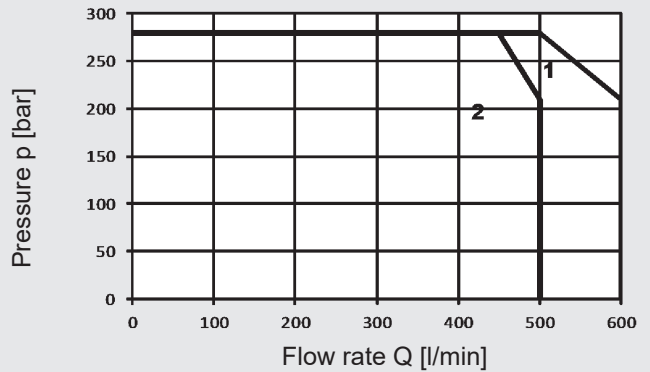
### Pressure drop

measured at  $v = 36 \text{ mm}^2/\text{s}$ ,  $T = 50 \text{ °C}$



### Performance limits

measured at  $v = 36 \text{ mm}^2/\text{s}$ ,  $T = 50 \text{ °C}$



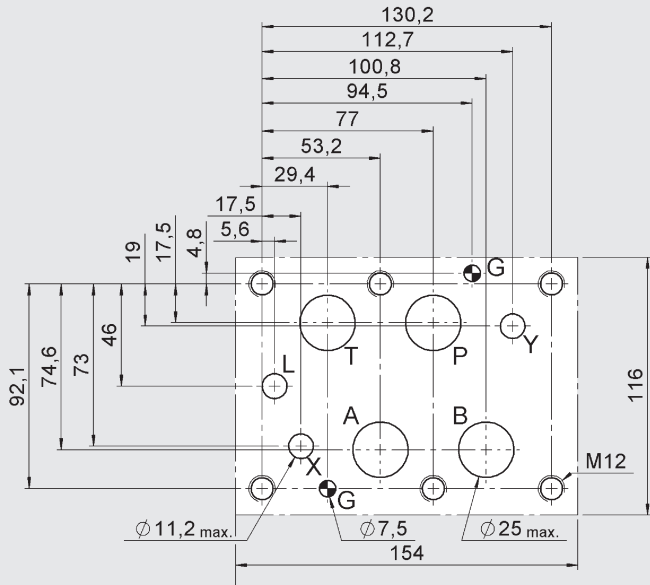
### Performance assignment to the associated spools:

Spool	Switching position	Pressure drop					Performance limits
		P→A	P→B	A→T	B→T	P→T	
D	Not operated	1			3		1
	Operated		1	2			
E	Not operated						1
	Operated	1	1	2	3		
J	Not operated			4●	4○		1
	Operated	1	1	1	2		
H	Not operated					6**	1
	Operated	2	2	1	2		
G	Not operated					5	2
	Operated	6	6	3	4		

\*\* A-B blocked ● B blocked ○ A blocked

# DIMENSIONS

Interface according to ISO 4401-08-08-0-05 (CETOP 4.2-4-08-320)

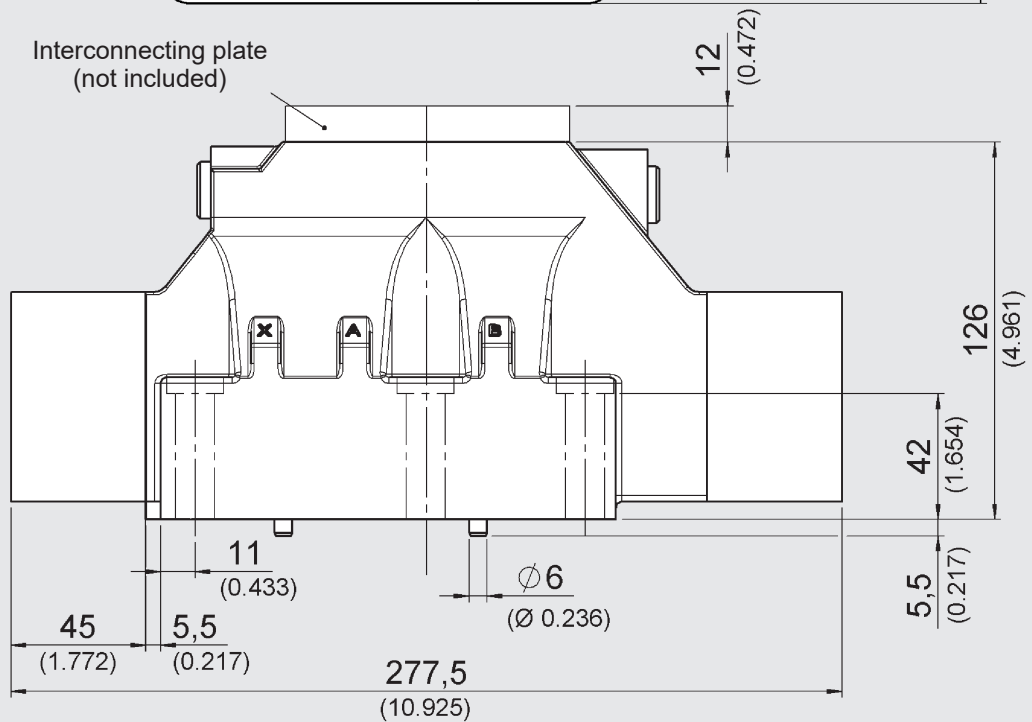
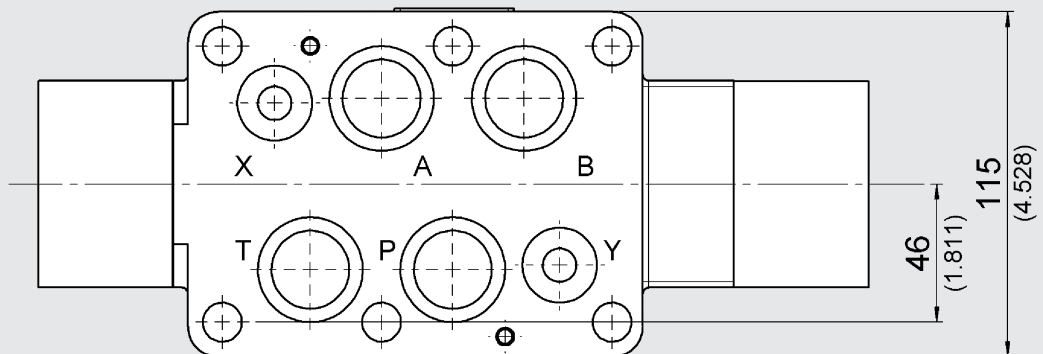


## Mounting screws:

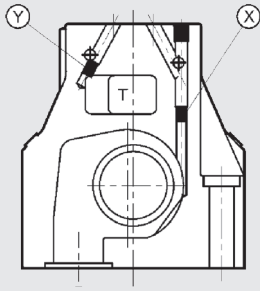
(not included in delivery)

6 Screws M12x60 ISO 4762

Tightening torque: 115 Nm (screws A 10.9)



## Plug

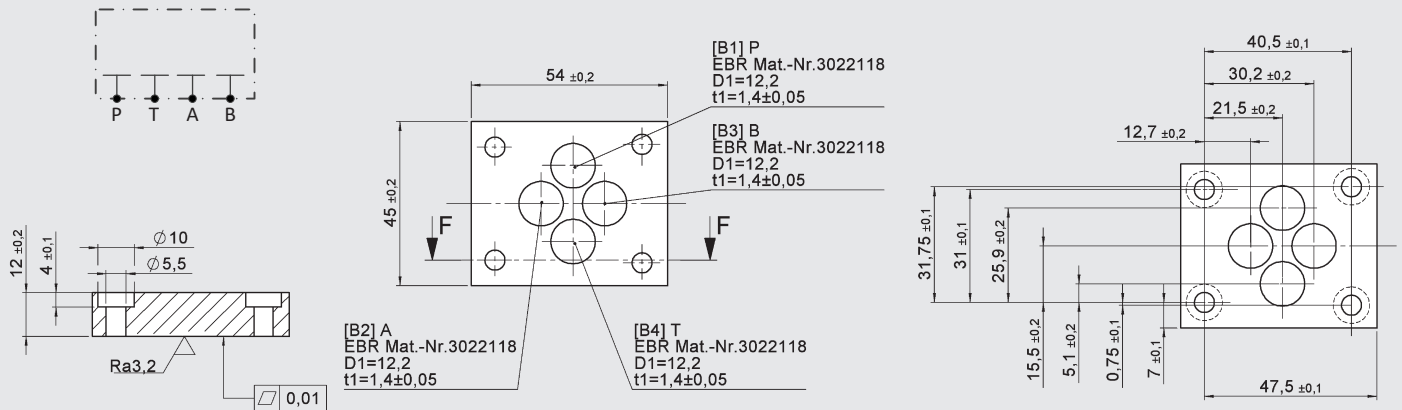


X: M6x8  
for external pilot supply  
Y: M6x8  
for external pilot drain

Control type		Installation		Control
		X	Y	
E	external pilot drain and supply	•	•	hydraulically or pilot operated
EI	external pilot supply, internal pilot drain	•	–	pilot operated
I	internal pilot drain and supply	–	–	pilot operated
IE	internal pilot supply, external pilot drain	–	•	pilot operated

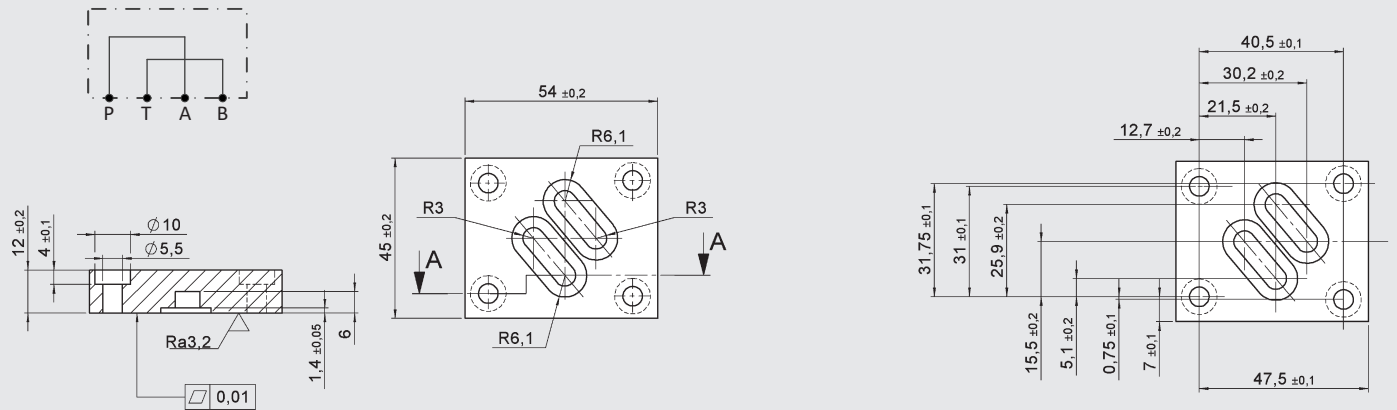
## Plates

### Check plate

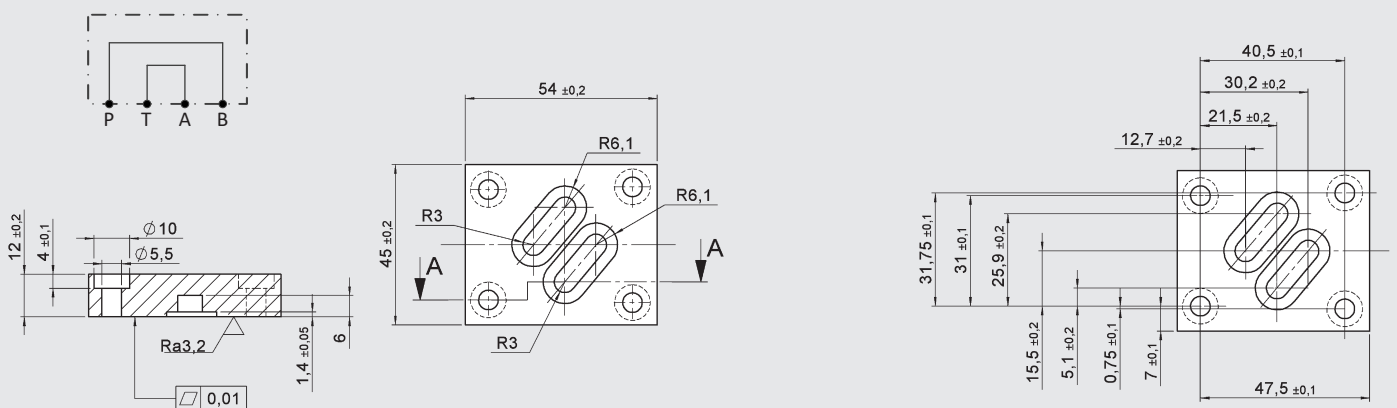


### Interconnecting plates

#### PATB



#### PBTA



## ACCESSORIES

	Designation	Part no.
Seal kits (6-part set)	29.82 x 2.62 -NBR -90 Sh (4 pieces)	3524659
	20.24 x 2.62 -NBR -90 Sh (2 pieces)	
	29.82 x 2.62 -FKM -90 Sh (4 pieces)	3524660
	20.24 x 2.62 -FKM -90 Sh (2 pieces)	
Mounting screws (6 pcs)	DIN EN ISO 4762-M12x60-10.9	3524698
Plug	M6x8 -45H	3524750
Plates	Check plate -NBR	3611576
	Check plate -FKM	3611580
	Interconnecting plate PATB -NBR	3581660
	Interconnecting plate PATB -FKM	3581661
	Interconnecting plate PBTA -NBR	3581662
	Interconnecting plate PBTA -FKM	3581663

## Note

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.

Technical modifications are reserved.

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