

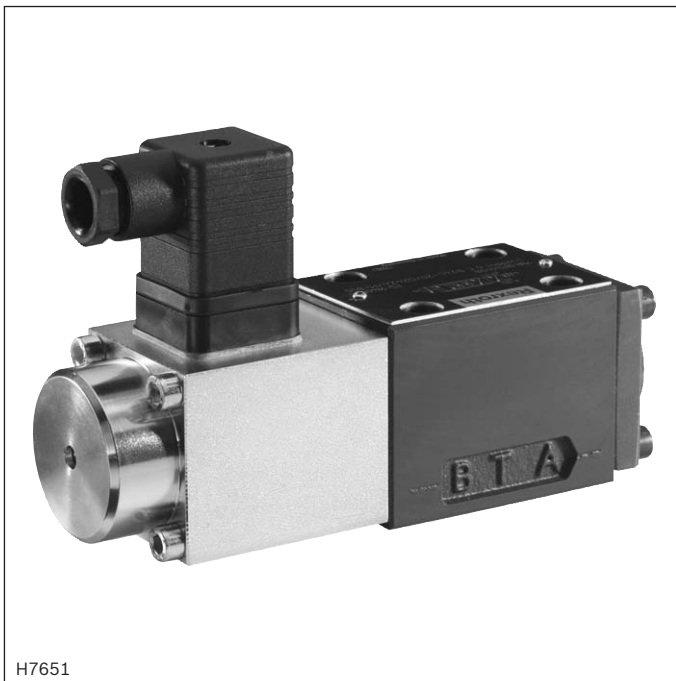
Directional control valves, direct operated, without electrical position feedback

Type 4WRPH

RE 29027

Edition: 2016-01

Replaces: 09.08



H7651

- ▶ Size 6
- ▶ Component series 2X
- ▶ Maximum operating pressure 350 bar
- ▶ Rated flow 24 and 40 l/min ($\Delta p = 70$ bar)

Features

- ▶ Subplate mounting
- ▶ Porting pattern according to ISO 4401-03-02-0-05
- ▶ Pilot control valve for axial piston variable displacement pump, type A4VS with HS5 adjustment
- ▶ Control spool and sleeve in servo quality
- ▶ Actuated on one side, preferred position when switched off or if not released
- ▶ Control solenoid without position feedback
- ▶ Use for electro-hydraulic controls in production and test systems
- ▶ External control electronics via amplifier card or amplifier module

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Ordering codes

01	02	03	04	05	06	07	08	09	10	11	12	13	14				
4	WRP		H	6	C			L	-	2X	/	G24	Z4	/		-	855

01	4 main ports	4
02	Directional control valve, direct operated	WRP
03	For external control electronics	no code
04	Sleeve	H
05	Size 6	6

Symbol

06	see page 3	C
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Installation side control solenoid

07	Valve side A	A ¹⁾
	Valve side B	B

Rated flow at 70 bar valve pressure differential (35 bar/control edge)

08	24 l/min	24
	40 l/min	40

Flow characteristic

09	Linear	L
10	Component series 20 ... 29 (20 ... 29: unchanged installation and connection dimensions)	2X
11	Supply voltage of the control electronics 24 V	G24

Electrical connection

12	Individual connection	
	With mating connector; connector DIN EN 175301-803 (see data sheet 08006)	Z4

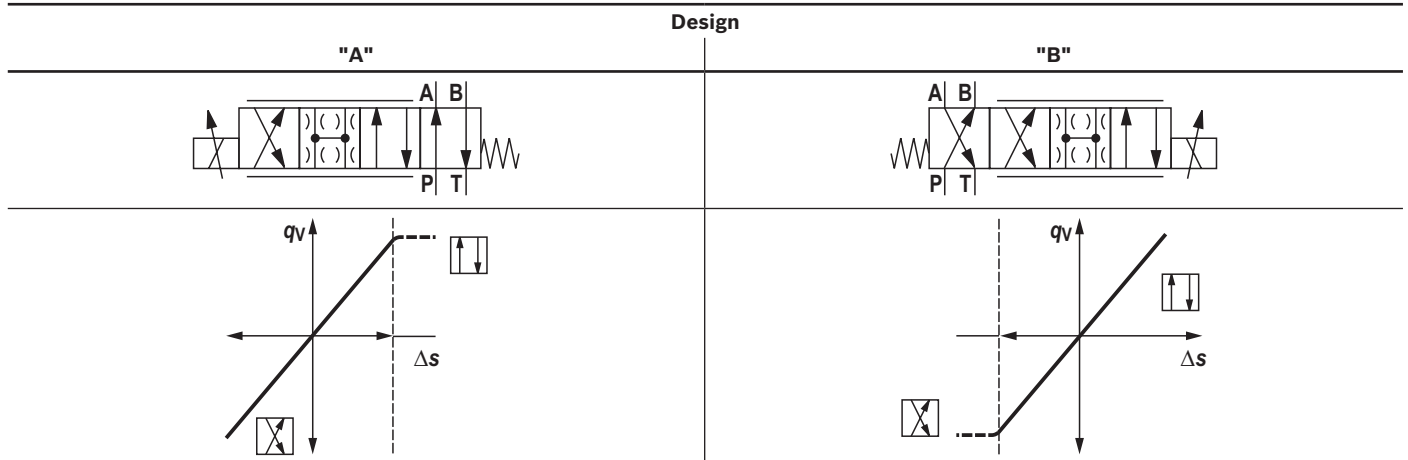
Seal material

13	NBR seals	M
	FKM seals	V
	Observe compatibility of seals with hydraulic fluid used.	
14	Control solenoid without position control; control spool without overcompensation of flow forces	855

¹⁾ When using as pilot control valve for axial piston variable displacement pump, type A4VS with HS5 adjustment

Symbols

Flow characteristic



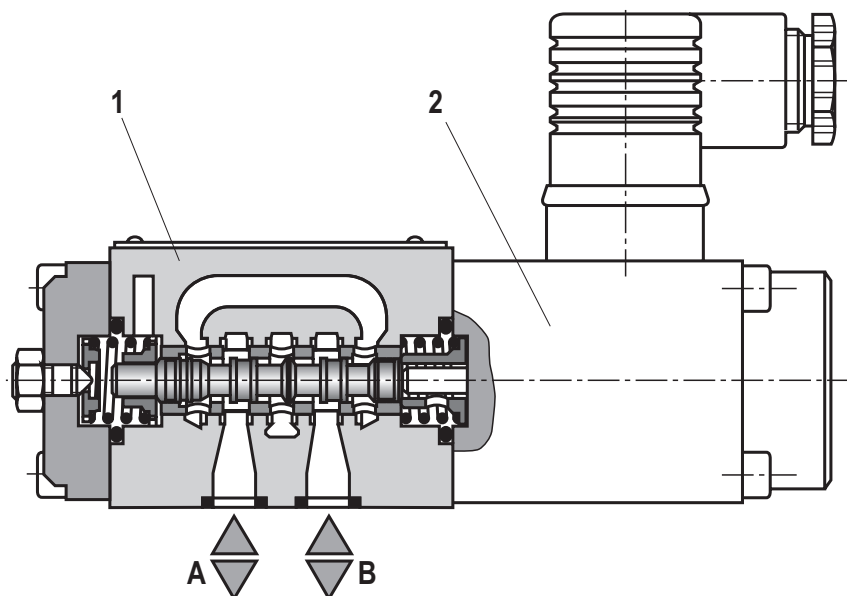
Function, section

The valve type 4WRPH is a direct operated directional control valve without electrical position feedback.

Set-up

The valve basically consists of 2 main assemblies:

- ▶ Valve housing with control spool and sleeve in servo quality (1)
- ▶ Control solenoid with position transducer (2)



Technical data

(For application outside these parameters, please consult us!)

general		
Weight	kg	2.1
Installation position		Any
Ambient temperature range	°C	-20 ... +70
Maximum storage time	Years	1 (if the storage conditions are observed; refer to the operating instructions 07600-B)
Maximum vibration resistance (test condition: room vibration test in all directions 24 h)	g	25
Maximum relative humidity (no condensation)	%	95

hydraulic			
Maximum operating pressure	▶ Port A, B, P	bar	350
	▶ Port T	bar	250
Rated flow ¹⁾		l/min	24 40
Limitations of use (pressure drop Δp on valve $q_{Vnom} > q_N$)		bar	315 160
Leakage oil (at 100 bar)		cm ³ /min	< 500 < 900
Hydraulic fluid			See table below
Viscosity range	▶ recommended	mm ² /s	20 ... 100
	▶ maximum admissible	mm ² /s	10 ... 800
Hydraulic fluid temperature range (flown-through)		°C	-20 ... +80
Maximum admissible degree of contamination of the hydraulic fluid; Cleanliness class according to ISO 4406 (c)			Class 18/16/13 ²⁾

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HL, HLP, HLPD, HVLP, HVLPD	NBR, FKM	DIN 51524	90220
Bio-degradable	▶ insoluble in water	HETG	ISO 15380	90221
		HEES		
	▶ soluble in water	HEPG	ISO 15380	
Flame-resistant	▶ water-free	HFDU, HFDR	ISO 12922	90222
	▶ containing water	HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620)	ISO 12922	90223

**Important information on hydraulic fluids:**

- ▶ For more information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us!
- ▶ There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- ▶ The flash point of the hydraulic fluid used must be 40 K higher than the maximum solenoid surface temperature.

▶ Flame-resistant – containing water:

- Maximum pressure differential per control edge 175 bar
- Pressure pre-loading at the tank port > 20 % of the pressure differential, otherwise increased cavitation
- Life cycle as compared to operation with mineral oil HL, HLP 50 to 100 %

¹⁾ Rated flow at 70 bar valve pressure differential (35 bar/control edge).

For deviating valve pressure differential (Δp):

$$q_x = q_{Vnom} \times \sqrt{\frac{\Delta p_x}{35}}$$

²⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.

Available filters can be found at www.boschrexroth.com/filter.

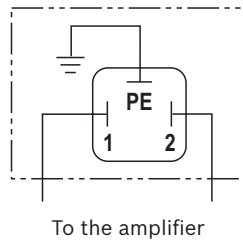
Technical data

(For application outside these parameters, please consult us!)

static / dynamic		
Hysteresis	%	< 7
Response sensitivity	%	< 1
Actuating time for signal step	► 0 ... 100 %	ms < 30
electric		
Relative duty cycle	%	100 (continuous operation)
Protection class according to EN 60529		IP 65 (with mating connector mounted and locked)
Supply voltage	VDC	24 (external electric amplifier or module)
Maximum solenoid current	A	2.7
Coil resistance R_{20}	Ω	2.5
Maximum power consumption	VA	40 (at 100 % load and operating temperature)
Control electronics		Valve amplifiers type VT-MSRA1-1; see data sheet 30227

Electrical connection

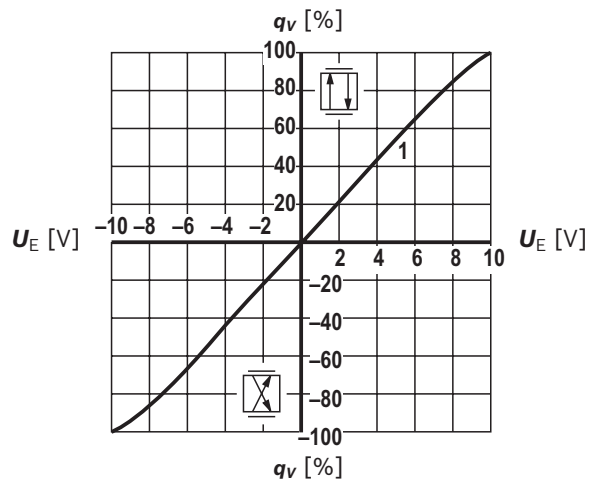
Connection at mating connector



Characteristic curves

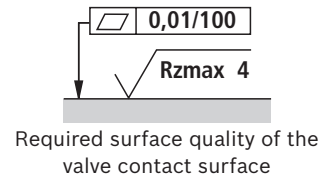
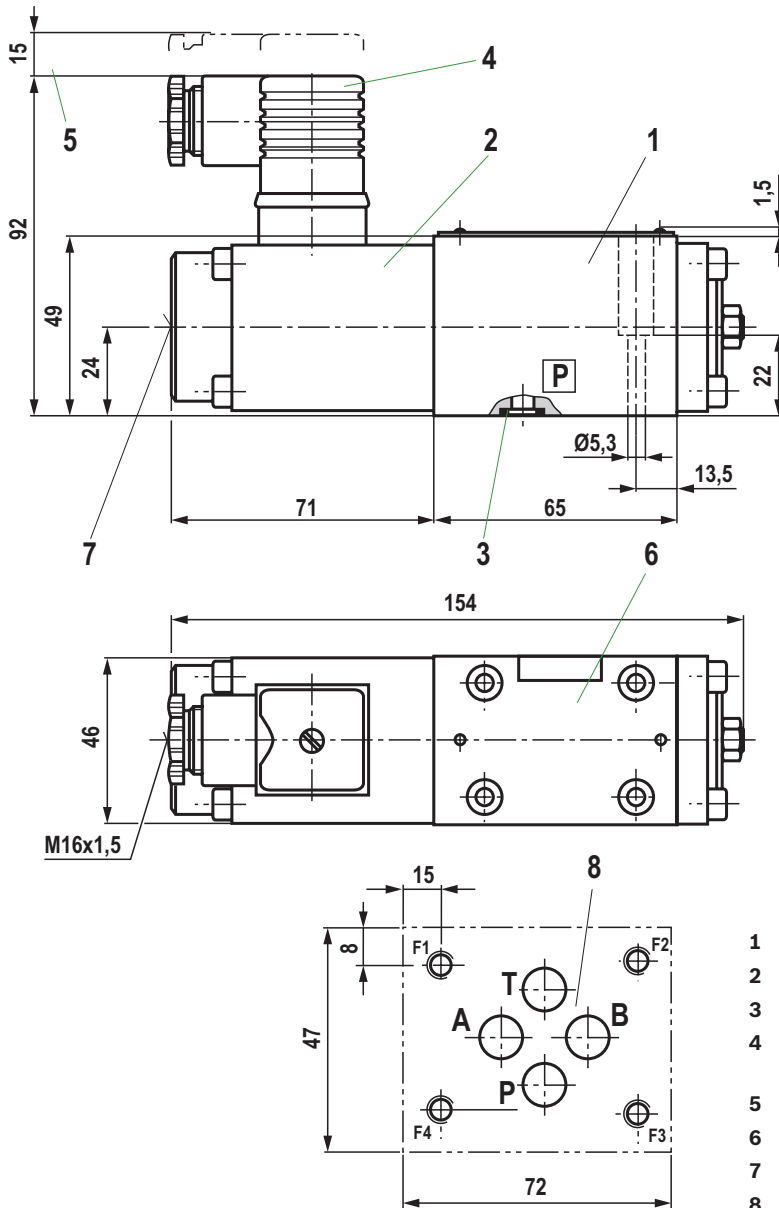
(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ }^\circ\text{C}$)

Flow/signal function



1 $q_{VA} : q_{VB} (1:1)$

Dimensions: Version "A"
(dimensions in mm)



- 1 Valve housing
- 2 Control solenoid
- 3 Identical seal rings for ports P, A, B, T
- 4 Mating connectors, included within the scope of delivery, see data sheet 08006.
- 5 Space required to remove the mating connector
- 6 Name plate
- 7 Manual override
- 8 Machined valve contact surface, porting pattern according to ISO 4401-03-02-0-05
Minimum screw-in depth: 1.5 x \varnothing

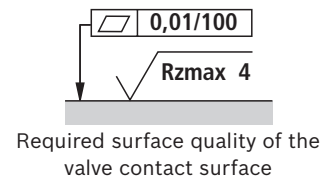
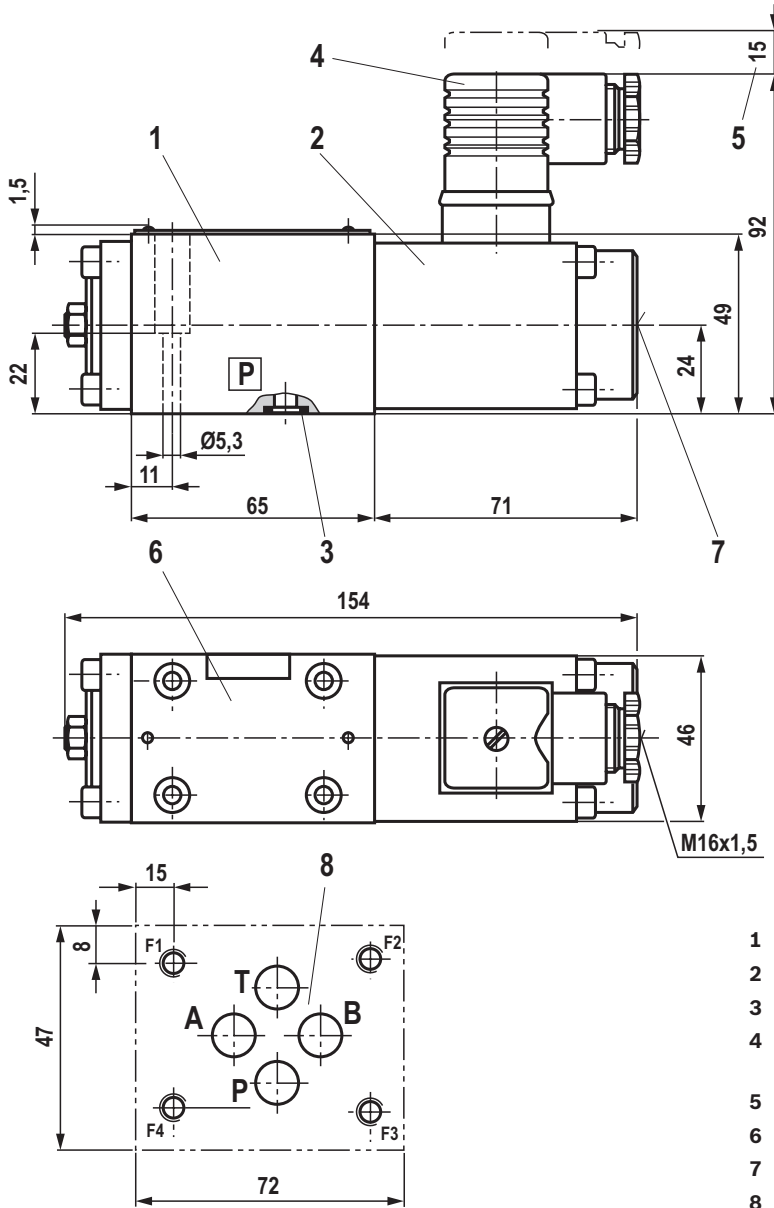
Notices:
The dimensions are nominal dimensions which are subject to tolerances.

Valve mounting screws (separate order)

Quantity	Hexagon socket head cap screws	Material number
4	ISO 4762 - M5 x 30 - 10.9-f1Zn-240h-L Tightening torque $M_A = 7 \text{ Nm} \pm 10 \%$	R913000316
or		
4	ISO 4762 - M5 x 30 - 10.9 Tightening torque $M_A = 8.9 \text{ Nm} \pm 10 \%$	Not included in the Rexroth delivery range

Subplates according to data sheet 45052 (separate order)

Dimensions: Version "B"
(dimensions in mm)



- 1 Valve housing
- 2 Control solenoid
- 3 Identical seal rings for ports P, A, B, T
- 4 Mating connectors, included within the scope of delivery, see data sheet 08006.
- 5 Space required to remove the mating connector
- 6 Name plate
- 7 Manual override
- 8 Machined valve contact surface, porting pattern according to ISO 4401-03-02-0-05
Minimum screw-in depth: Ferrous metal: 1.5 x Ø



Notices:

The dimensions are nominal dimensions which are subject to tolerances.

Valve mounting screws (separate order)

Quantity	Hexagon socket head cap screws	Material number
4	ISO 4762 - M5 x 30 - 10.9-fIZn-240h-L Tightening torque $M_A = 7 \text{ Nm} \pm 10 \%$	R913000316
or		
4	ISO 4762 - M5 x 30 - 10.9 Tightening torque $M_A = 8.9 \text{ Nm} \pm 10 \%$	Not included in the Rexroth delivery range

Subplates according to data sheet 45052 (separate order)

Additional information

- | | |
|--|--|
| ▶ Subplates | Data sheet 45052 |
| ▶ Axial piston variable displacement pumps | Data sheet 92076 |
| ▶ Valve amplifier for proportional valves type type VT-MSRA1-1 | Data sheet 30227 |
| ▶ Hydraulic fluids on mineral oil basis | Data sheet 90220 |
| ▶ Environmentally compatible hydraulic fluids | Data sheet 90221 |
| ▶ Flame-resistant, water-free hydraulic fluids | Data sheet 90222 |
| ▶ Flame-resistant hydraulic fluids - containing water (HFAE, HFAS, HFB, HFC) | Data sheet 90223 |
| ▶ Reliability characteristics according to EN ISO 13849 | Data sheet 08012 |
| ▶ Hydraulic valves for industrial applications | Operating instructions 07600-B |
| ▶ General product information on hydraulic products | Data sheet 07008 |
| ▶ Assembly, commissioning and maintenance of industrial valves | Data sheet 07300 |
| ▶ Selection of filters | www.boschrexroth.com/filter |
| ▶ Information on available spare parts | www.boschrexroth.com/spc |

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