

2-way flow control valve

Type 2FRM, 2FRH, 2FRW



- ▶ Sizes 10 and 16
- ▶ Component series 3X
- ▶ Maximum operating pressure 315 bar
- ▶ Maximum flow 160 l/min

Features

- ▶ For subplate mounting
- ▶ Porting pattern according to DIN 24340 form G and ISO 6263
- ▶ Mechanical actuation (type 2FRM)
- ▶ Hydraulic actuation (type 2FRH)
- ▶ Electro-hydraulic actuation (type 2FRW)
- ▶ Pressure compensator stroke limitation, optional
- ▶ Start-up jump reduction
- ▶ Stroke limitation of the geared piston drive adjustable on both sides (type 2FRH and 2FRW)
- ▶ Flow control in both directions by means of rectifier sandwich plate

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Ordering code: 2-way flow control valve

01	02	03	04	05	06	07	08	09	10	11	12	13	14
2FR			- 3X	/									*

01	2-way flow control valve	2FR
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Type of actuation

02	Mechanical	M
	Hydraulic	H
	Electro-hydraulic	W

03	Size 10	10
	Size 16	16

04	Component series 30 ... 39 (30 ... 39: Unchanged installation and connection dimension)	3X
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Flow range A to B

05	- Size 10, linear	
	Up to 10 l/min	10L
	Up to 16 l/min	16L
	Up to 25 l/min	25L
	Up to 50 l/min	50L
	- Size 16, linear	
	Up to 60 l/min	60L
	Up to 100 l/min	100L
	Up to 160 l/min	160L

06	Without pressure compensator stroke limitation	no code
	With pressure compensator stroke limitation	B

07	Without actual value potentiometer	no code
	With actual value potentiometer (only types 2FRH and 2FRW)	P

08	Directional spool valve size 6 (data sheet 23178)	6E¹⁾
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Symbols

09		J¹⁾
		Y¹⁾

10	Direct voltage 24 V	G24¹⁾
	AC voltage 230 V 50/60 Hz	W230¹⁾
	For more voltages and frequencies, please refer to data sheet 23178)	

- 1) Ordering code **only** required for type 2FRW!
- 2) Mating connectors, separate order, see page 15 and data sheet 08006.

Notice! Preferred types and standard units are contained in the EPS (standard price list).

Ordering code: 2-way flow control valve

01	02	03	04	05	06	07	08	09	10	11	12	13	14
2FR			-	3X	/								*

11	With concealed manual override (standard)	N9 ¹⁾
	With manual override	N ¹⁾
	Without manual override	no code

Electrical connection

12	Individual connection	
	Without mating connector; connector DIN EN 175301-803	K4 ^{1; 2)}

Seal material

13	NBR seals	no code
	FKM seals	V
	Attention: Observe compatibility of seals with hydraulic fluid used! (Other seals upon request)	

14	Further details in the plain text	
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Ordering code: Rectifier sandwich plate

01	02	03	04	05
Z4S		-	/	*

01	Rectifier sandwich plate	Z4S
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02	Size 10	10
	Size 16	16

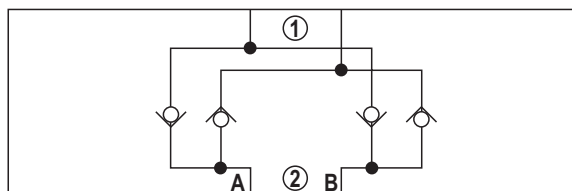
03	Component series 30 ... 39 (30 ... 39: Unchanged installation and connection dimension) - size 10	3X
	Component series 20 ... 29 (20 ... 29: Unchanged installation and connection dimension) - size 16	2X

Seal material

04	NBR seals	no code
	FKM seals	V
	Attention: Observe compatibility of seals with hydraulic fluid used! (Other seals upon request)	

05	Further details in the plain text	
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Symbols: Rectifier sandwich plate (① = component side, ② = plate side)



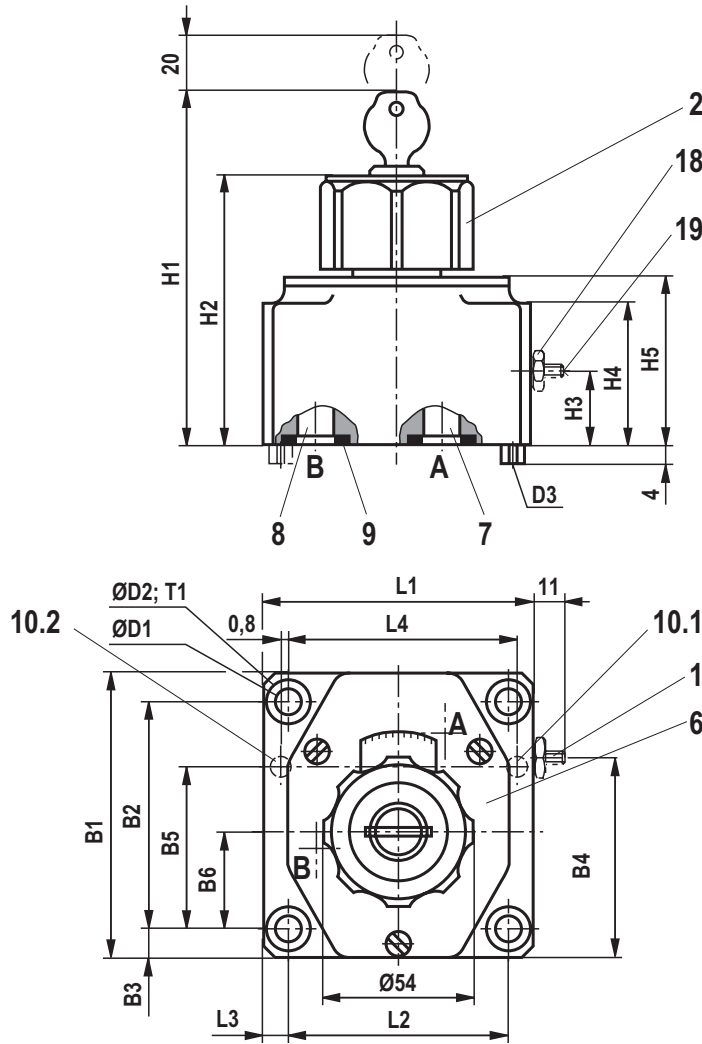
Symbols: 2-way flow control valve

	Simplified	Detailed
Type 2FRM		
Type 2FRM		
Type 2FRH		
		Symbol J¹⁾
Type 2FRW		
		Symbol Y²⁾
Type 2FRW...P		

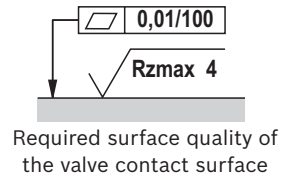
1) **Symbol J:**
 Solenoid "a" switched → flow controller $q_{V \min}$
 Solenoid "b" switched → flow controller $q_{V \max}$

2) **Symbol Y:**
 Solenoid "b" not switched → flow controller $q_{V \min}$
 Solenoid "b" switched → flow controller $q_{V \max}$

Dimensions: 2-way flow control valve type 2FRM
(dimensions in mm)

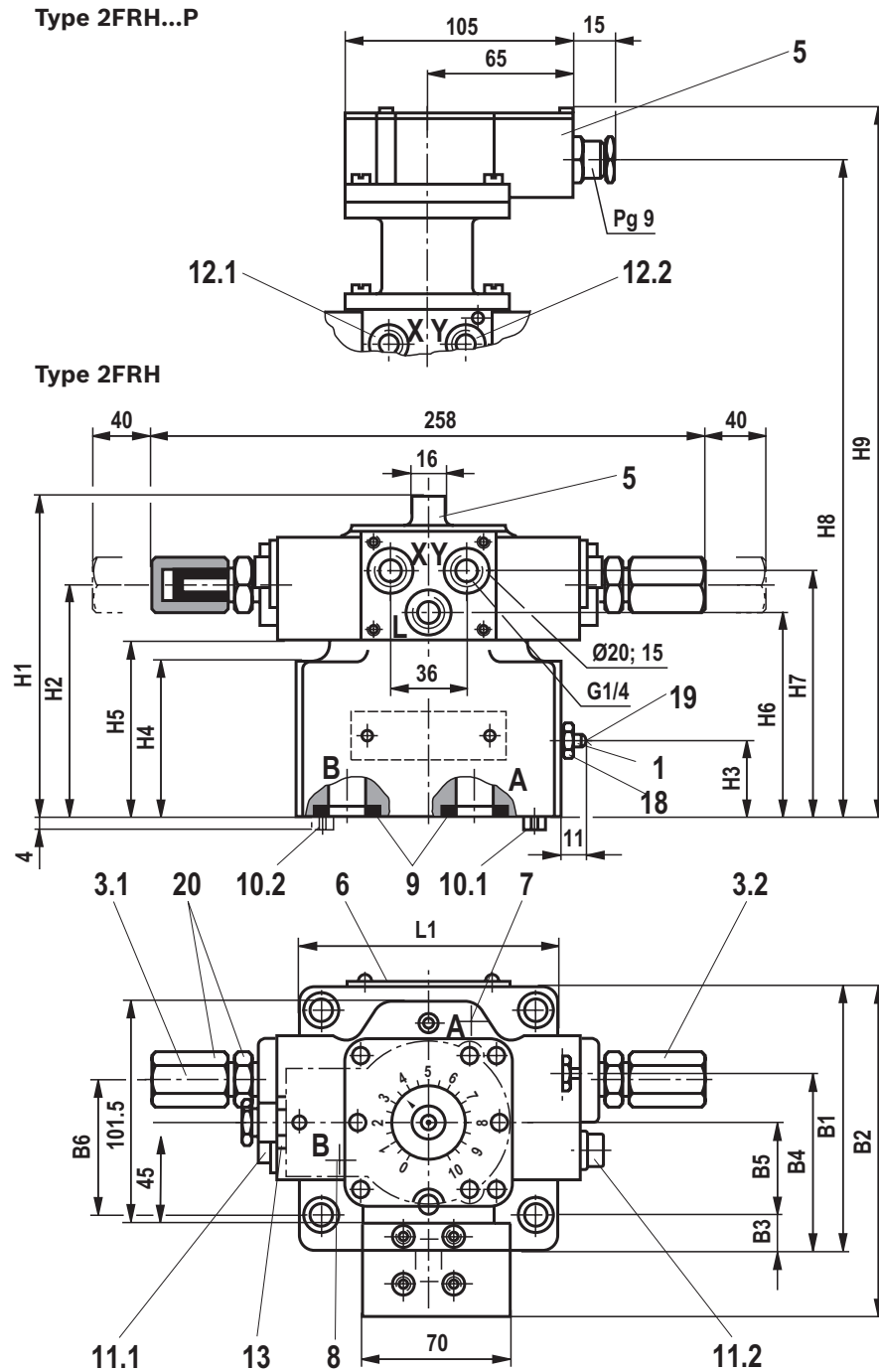


- 1 Pressure compensator stroke limitation, optional
- 2 Adjustment element, rotary knob security lock (all positions can be locked), rotation range 300 ° = 10 scale sections, $M_d \approx 0.7 \text{ Nm}$
- 6 Name plate
- 7 Input A
- 8 Output B
- 9 Seal ring
- 10.1 Locating pin (sizes 10 and 16)
- 10.2 Locating pin (size 16)
- 18 Hexagon SW10
- 19 Internal hexagon SW3



Size	B1	B2	B3	B4	B5	B6	ØD1	ØD2	D3	H1	H2	H3	H4	H5	L1	L2	L3	L4	T1
10	101.5	82.5	9.5	68	58.7	35.5	9	15	6	125	95	26	51	60	95	76	9.5	79.4	13
16	123.5	101.5	11	81.5	72.9	41.5	11	18	6	147	117	34	72	82	123.5	101.5	11	102.4	12

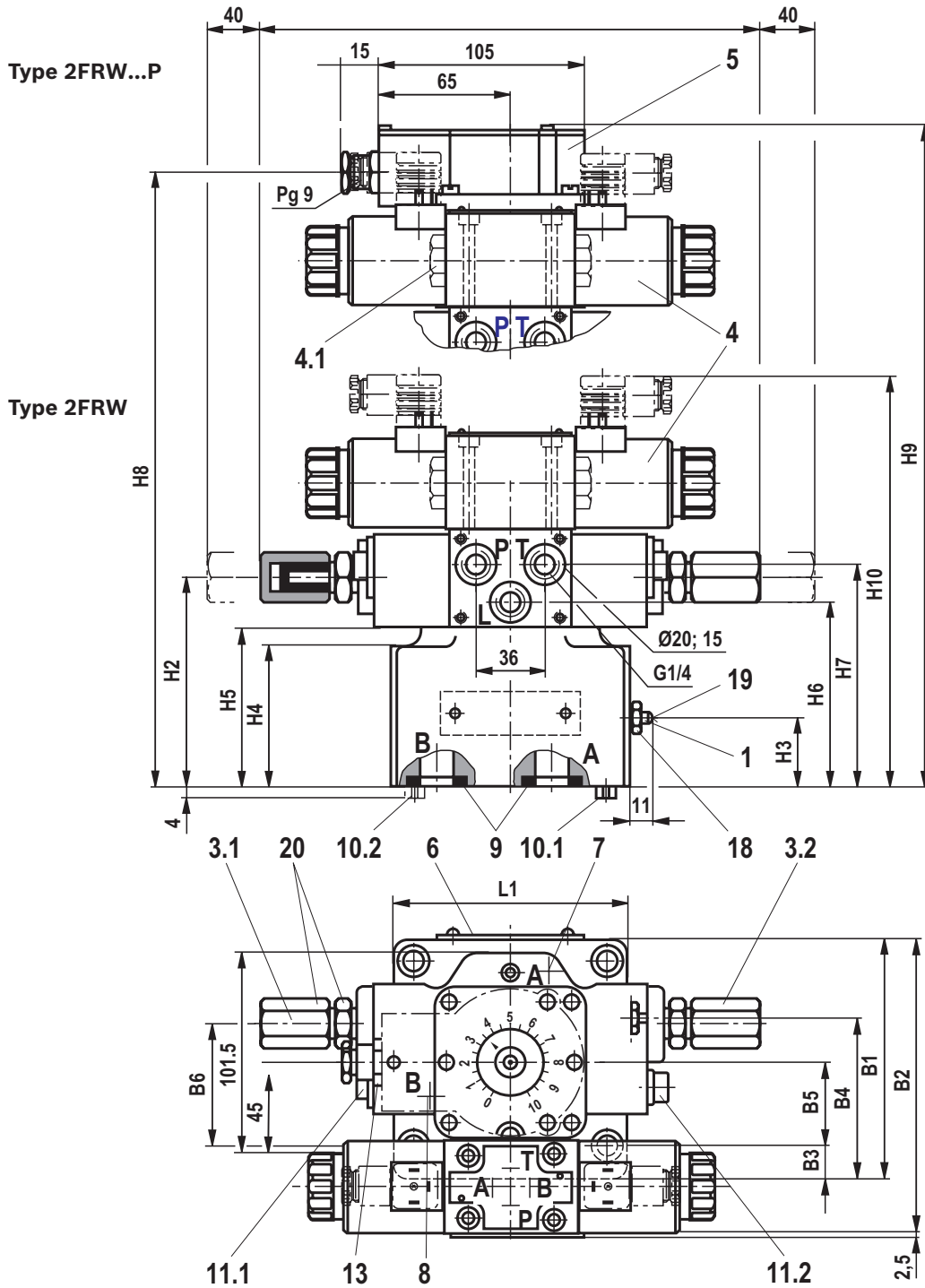
Dimensions: 2-way flow control valve type 2FRH
(dimensions in mm)



0,01/100
 Rzmax 4
 Required surface quality of the valve contact surface

Size	B1	B2	B3	B4	B5	B6	H1	H2	H3	H4	H5	H6	H7	H8	H9	L1
10	101.5	148.5	9.5	68	35.5	54.5	125.5	84	26	51	58	70	89	179	203	95
16	123.5	163	11	81.5	41.5	60.5	147.5	106	34	72	80	92	111	201	225	123.5

Dimensions: 2-way flow control valve type 2FRW
(dimensions in mm)

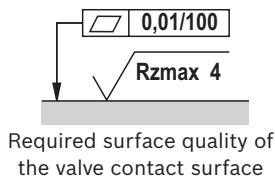
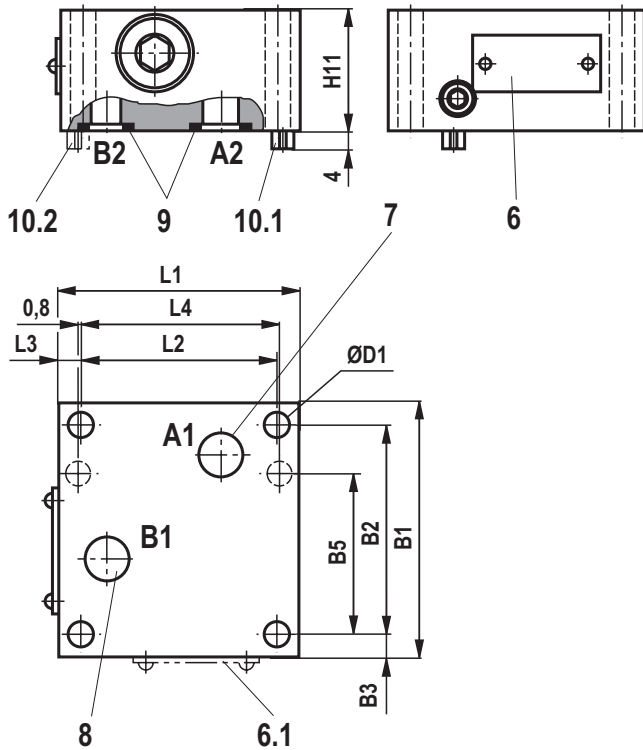


- 1) Dimensions for valve with mating connector **without** circuitry for connector "K4" (separate order, see page 15 and data sheet 08006)
- 2) Dimensions for valve with mating connector **with** circuitry for connector "K4" (separate order, see page 15 and data sheet 08006)

0,01/100
Rzmax 4
Required surface quality of the valve contact surface

Size	B1	B2	B3	B4	B5	B6	H2	H3	H4	H5	H6	H7	H8	H9	H10 ¹⁾	H10 ²⁾	L1
10	101.5	146	9.5	68	35.5	54.5	84	26	51	58	70	87	179	203	201	206	95
16	123.5	160.5	11	81.5	41.5	60.5	106	34	72	80	92	109	201	225	223	228	123.5

Dimensions: Rectifier sandwich plate
(dimensions in mm)



Required surface quality of the valve contact surface

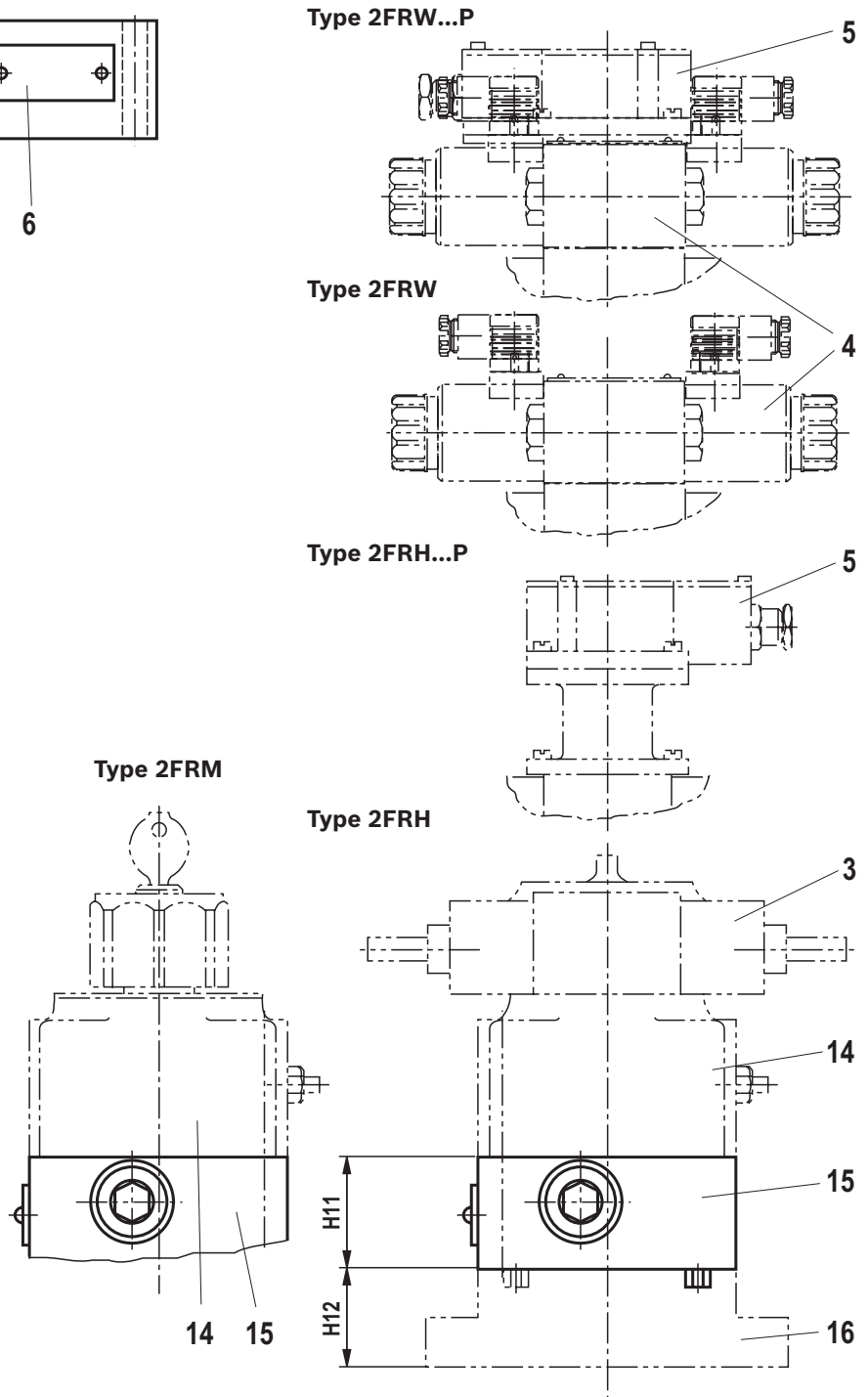
Valve mounting screws for the installation of a rectifier sandwich plate between subplate and flow control valve (separate order)

► Size 10:

4 hexagon socket head cap screws
ISO 4762 - M8 x 100 - 10.9-fIZn-240h-L
 (friction coefficient $\mu_{total} = 0.09$ to 0.14);
 tightening torque $M_A = 30\text{ Nm} \pm 10\%$,
 material no. **R913000379**

► Size 16:

4 hexagon socket head cap screws
ISO 4762 - M10 x 160 - 10.9-fIZn-240h-L
 (friction coefficient $\mu_{total} = 0.09$ to 0.14);
 tightening torque $M_A = 64\text{ Nm} \pm 10\%$,
 material no. **R913000072**



Size	B1	B2	B3	B5	Ø D1	H11	H12	L1	L2	L3	L4
10	101.5	82.5	9.5	58.7	9	50	30	95	76	9.5	79.4
16	123.5	101.5	11	72.9	11	85	40	123.5	101.5	11	102.4

Dimensions

- 1 Pressure compensator stroke limitation, optional
- 2 Flow display, rotation range 300 ° = 10 scale sections
- 3 Geared piston drive
- 3.1 Geared piston drive stroke limitation for minimum flow;
1 rotation = approx. 12 ° (of 300 °)
- 3.2 Geared piston drive stroke limitation for maximum flow;
1 rotation = approx. 12 ° (of 300 °)
- 4 Directional spool valve size 6, symbol J or Y
(Y de-energized = $q_{v \min}$) (see data sheet 23178)
- 4.1 Cover for symbol Y
- 5 Actual value potentiometer
- 6 Name plate
- 6.1 Name plate (size 16)
- 7 Input A
- 8 Output B
- 9 Seal ring
- 10.1 Locating pin (sizes 10 and 16)
- 10.2 Locating pin (size 16)
- 11.1 Regulating speed throttle in the direction of the minimum
flow ($v_0 \dots v_{\max.} = 5$ rotations); internal hexagon SW6
- 11.2 Regulating speed throttle in the direction of the maximum
flow ($v_0 \dots v_{\max.} = 5$ rotations); internal hexagon SW6
- 12.1 Pressure loading at X = opening the orifice
- 12.2 Pressure loading at Y = closing the orifice
- 13 Scale disc
- 14 2-way flow control valve
- 15 Rectifier sandwich plate
- 16 Subplate (see right)
- 18 Hexagon SW10
- 19 Internal hexagon SW3
- 20 Hexagon SW13

Subplates according to data sheet 45066 (separate order)

Size 10:	G 279/01 (G 1/2)
	G 280/01 (G 3/4)
Size 16:	G 281/01 (G 1)
	G 282/01 (G 1 1/4)

Valve mounting screws (separate order)

► Size 10:

**4 hexagon socket head cap screws
ISO 4762 - M8 x 50 - 10.9-fIZn-240h-L**
(friction coefficient $\mu_{\text{total}} = 0.09$ to 0.14);
tightening torque $M_A = 30 \text{ Nm} \pm 10\%$,
material no. **R913000543**

► Size 16:

**4 hexagon socket head cap screws
ISO 4762 - M10 x 80 - 10.9-fIZn-240h-L**
(friction coefficient $\mu_{\text{total}} = 0.09$ to 0.14);
tightening torque $M_A = 64 \text{ Nm} \pm 10\%$,
material no. **R913000496**