

# Throttle and throttle check valve

RE 27226/11.11    1/8  
Replaces: 03.09

Types FG and FK

Size 16 to 32  
Component series 2X  
Maximum operating pressure 315 bar  
Maximum flow 400 l/min



H7471

## Table of contents

Contents	Page
Features	1
Ordering code	2
Function, symbols, sections	3
Technical data	4
Characteristic curves	5
Unit dimensions	6 to 8

## Features

- For block installation (cartridge valve, screw-in cartridge valve)
- 3 adjustment types, optionally:
  - Rotary knob
  - Lockable rotary knob with scale
  - Rotary knob with scale
- Different cracking pressures (type FK)

					<b>-2X/</b>	<b>*</b>	
Throttle valve	<b>= FG</b>						Further details in the plain text
Throttle check valve	<b>= FK</b>						<b>Seal material</b>
Size 16	<b>= 16</b>				<b>no code =</b>		NBR seals
Size 25	<b>= 25</b>				<b>V =</b>		FKM seals
Size 32	<b>= 32</b>						(other seals upon request)
<b>Type of connection</b>							Attention!
Cartridge valve	<b>= K</b>						Observe compatibility of the seals with the
Screw-in cartridge valve	<b>= C</b>						hydraulic fluid used!
<b>Adjustment type</b>					<b>2X =</b>		Component series 20 to 29
Rotary knob	<b>= 1</b>						(20 to 29: Unchanged installation and connection dimensions)
Lockable rotary knob with scale	<b>= 3</b>						
Rotary knob with scale	<b>= 7</b>						<b>Cracking pressure</b> (throttle check valve)
					<b>0</b> <sup>1)</sup> =		Without spring
					<b>2</b> <sup>2)</sup> =		Cracking pressure 1.5 bar (standard)
					<b>3</b> <sup>2)</sup> =		Cracking pressure 3 bar

1) Only with type FG

2) Only with type FK

## Function, symbols, sections

### Type FG . K... and FK . K... (cartridge valve)

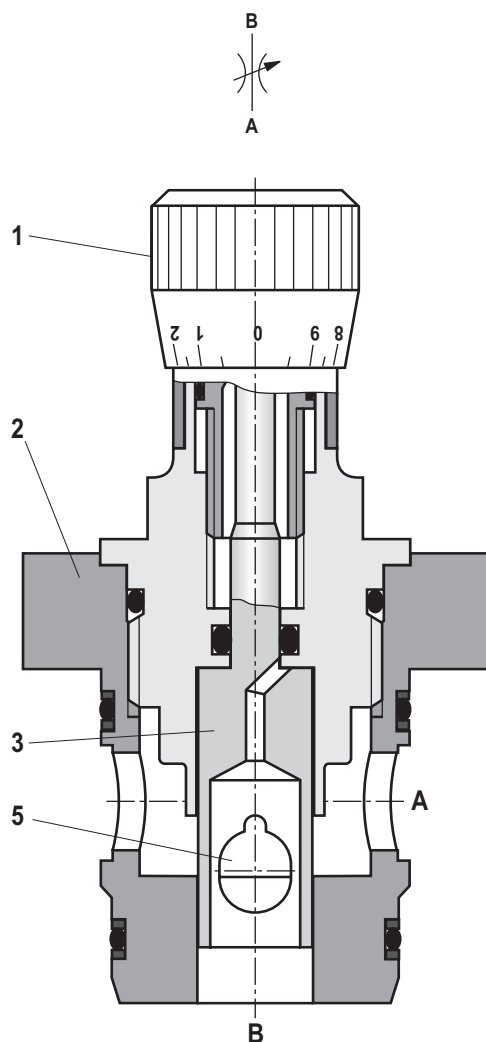
The valves of the types FG and FK are throttle and throttle check valves. The flow depends on the pressure differential between A and B and on the viscosity of the hydraulic fluid.

The valves mainly consist of adjustment type (1), housing (2), throttling pin (3) and check valve (4) with valve type FK.

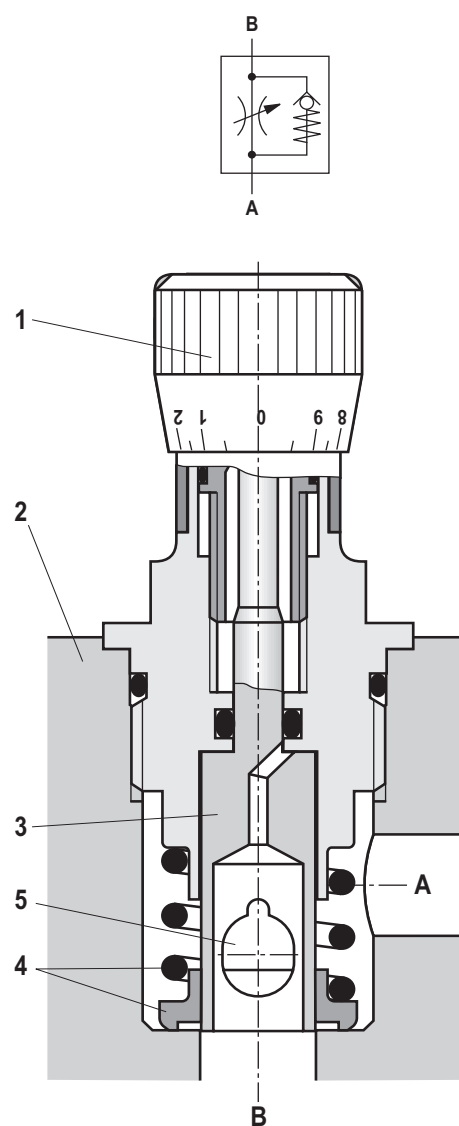
The flow is throttled from A to B. The throttle cross-section (5) is adjusted by displacing the throttling pin (3) in axial direction. For free flow back from B to A, a check valve (4) is installed with valve type FK.

### Type FG . C... and FK . C... (screw-in cartridge valve)

In principle, the function of these valves corresponds to the function of version "K". However, they are delivered without housing (2) and thus can be screwed into the block directly.



Type FG . K1...



Type FK . C1...


## Technical data (For applications outside these parameters, please consult us!)

### general

Size		Size	16	25	32
Weight	– Cartridge valve "K"	kg	0.8	1.7	4.0
	– Screw-in cartridge valve "C"	kg	0.4	0.7	1.7
Installation position			Any		
Ambient temperature range		°C	–30 to +80 (NBR seals) –20 to +80 (FKM seals)		

### hydraulic

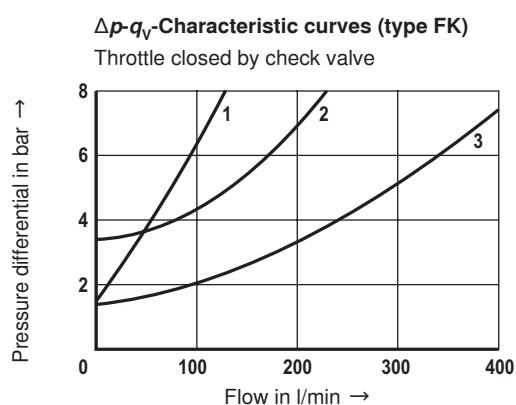
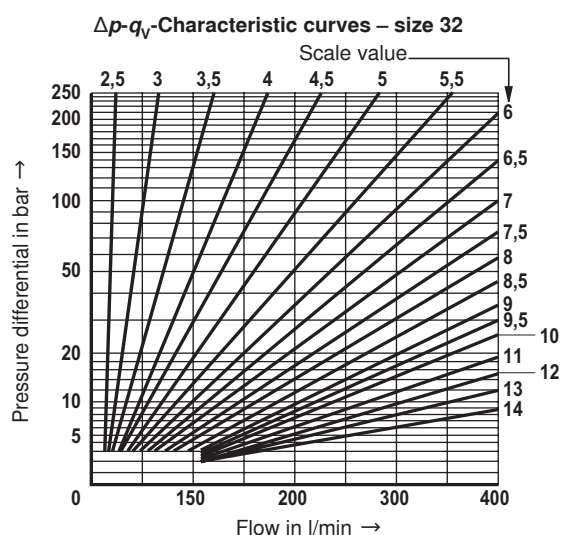
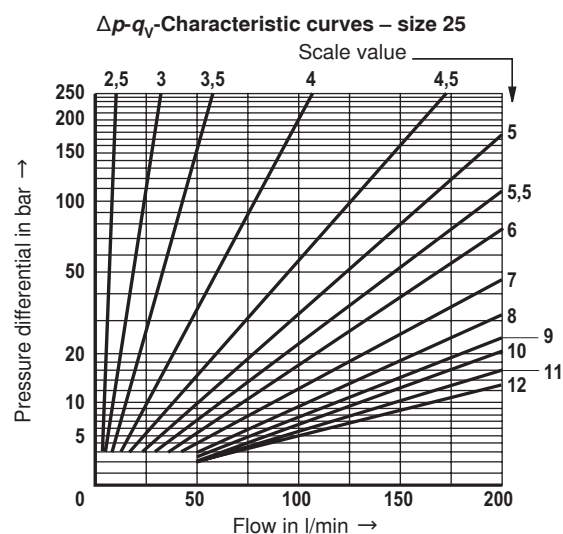
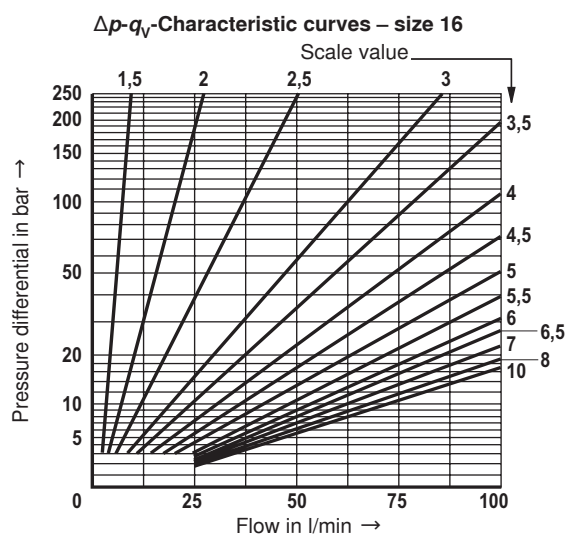
Maximum operating pressure	bar	315		
Maximum flow (standard valves)	l/min	100	200	400
Hydraulic fluid		See table below		
Hydraulic fluid temperature range	°C	-30 to +80 (NBR seals) -20 to +80 (FKM seals)		
Viscosity range	mm²/s	10 to 800		
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)		Class 20/18/15 <sup>1)</sup>		
Actuating torque (adjustment type)	Nm	Approx. 5		

Hydraulic fluid	Classification	Suitable sealing materials	Standards	
Mineral oils and related hydrocarbons	HL, HLP, HLPD, HVLP, HVLPD	NBR, FKM	DIN 51524	
Environmentally compatible	– Insoluble in water	HETG	ISO 15380	
		HEES		
	– Soluble in water	HEPG	FKM	ISO 15380
Flame-resistant	– Water-free	HFDU, HFDR	FKM	ISO 12922
 <b>Important information on hydraulic fluids!</b> – For more information and data on the use of other hydraulic fluids refer to data sheet 90220 or contact us! – There may be limitations regarding the technical valve data (temperature, pressure range, service life, maintenance intervals, etc.)!				

<sup>1)</sup> The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the service life of the components.

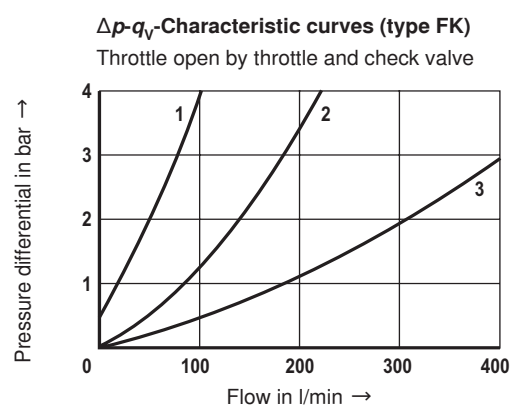
For the selection of the filters see  
[www.boschrexroth.com/filter](http://www.boschrexroth.com/filter).

## Characteristic curves (measured with HLP46, $\vartheta_{\text{Oil}} = 40 \pm 5 \text{ }^{\circ}\text{C}$ )



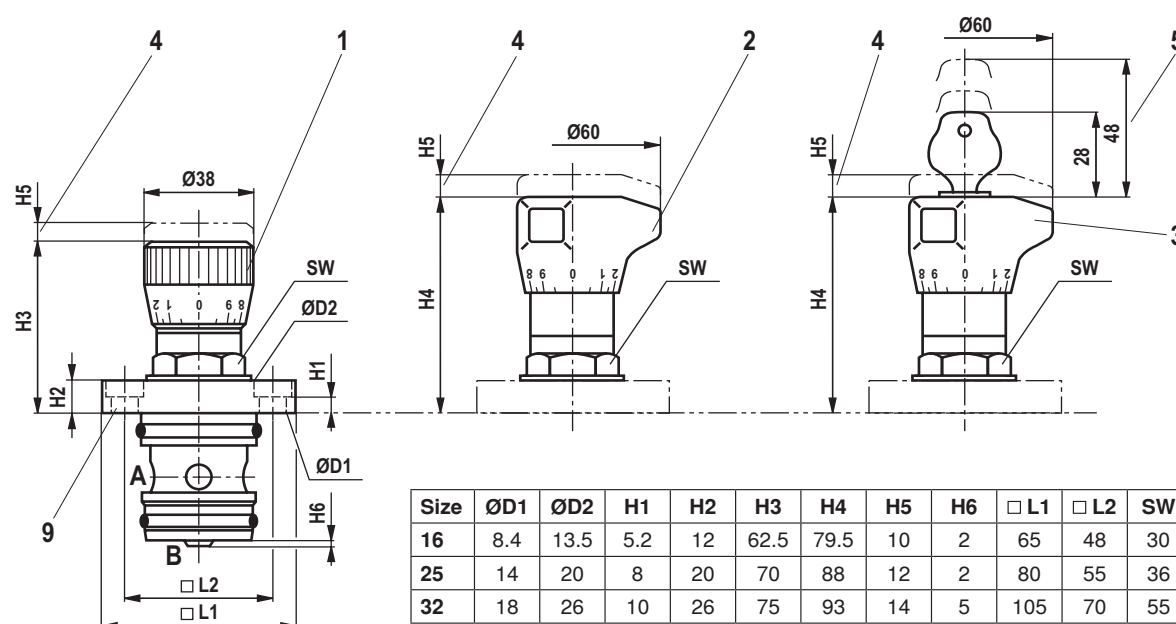
1 Size 16

2 Size 25

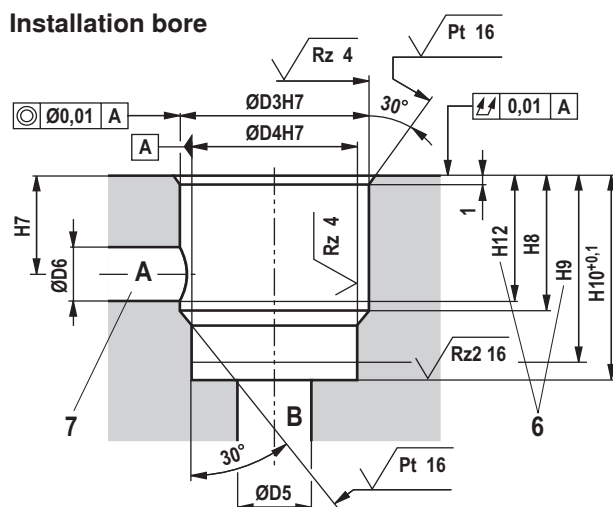


3 Size 32

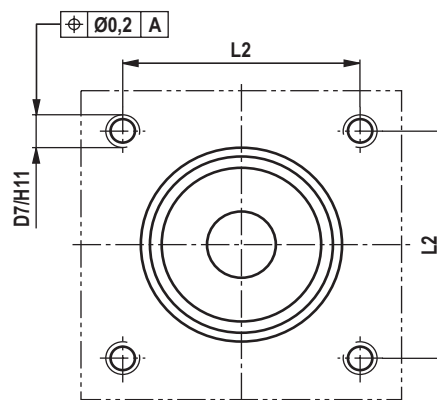
## Unit dimensions: Cartridge valve "K" (dimensions in mm)



## Installation bore

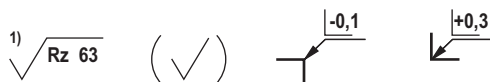


## Contact surface



General tolerances ISO 2768-mK

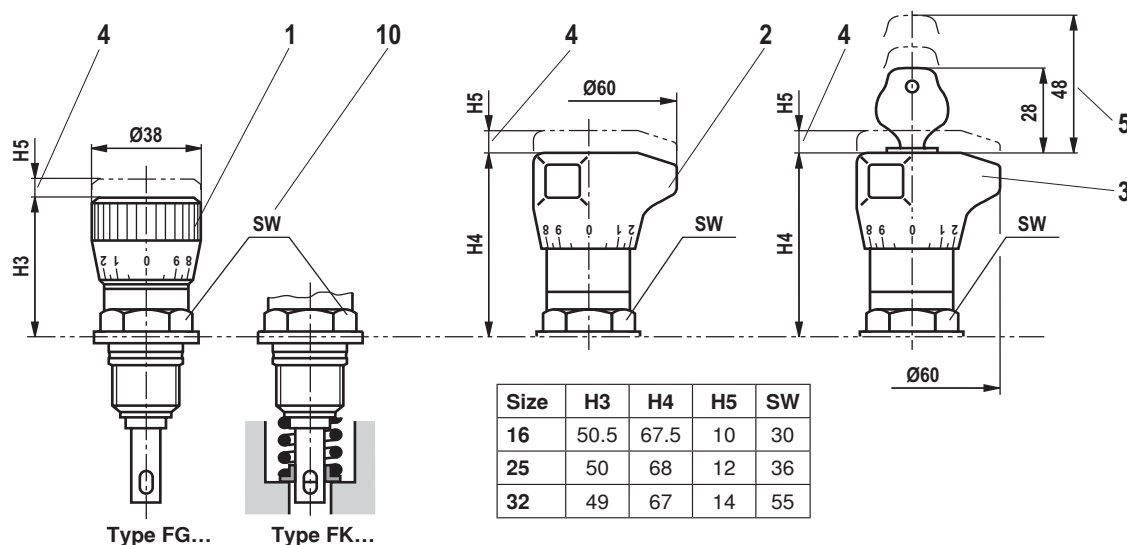
Item explanations see page 8



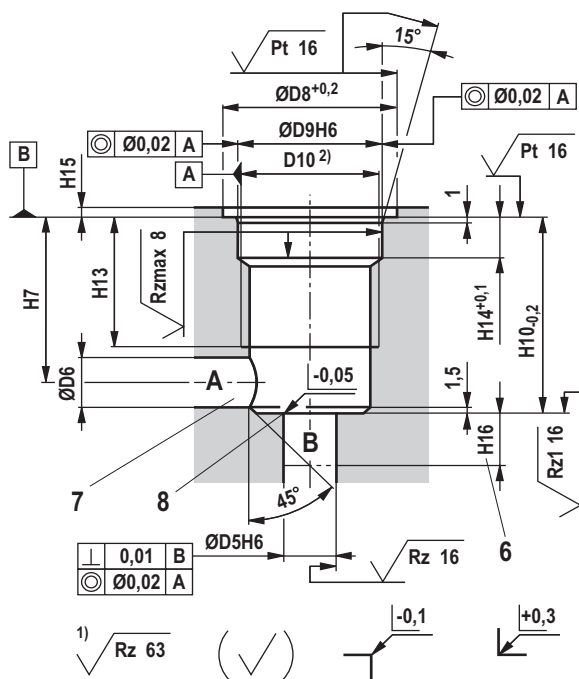
1) Visual inspection

Size	ØD3H7	ØD4H7	ØD5	ØD6	D7	H7	H8	H9	H10 <sup>+0.1</sup>	H11	H12	L2
16	38	36	15	15	M8	20.5	34	44	47	16	33	48
25	52	50	25	20	M12	24	40.5	55	60.5	19	39.5	55
32	72	70	35	30	M16	35	58	75	80.5	26	57.5	70

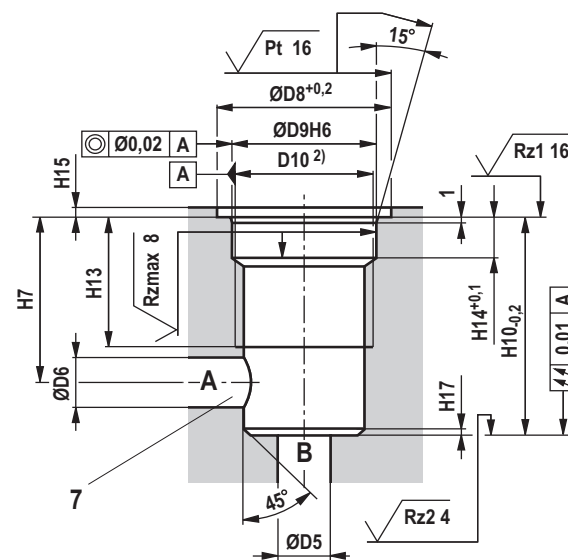
**Unit dimensions:** Screw-in cartridge valve "C" (dimensions in mm)



### Mounting cavity type FG...



### Mounting cavity type FK...



General tolerances ISO 2768-mK

1) Visual inspection

2) Pipe thread according to ISO 228/1

Item explanations see page 8

Size	Valve type		ØD6	ØD8+0.2	ØD9H6	D10 2)	H7	Valve type		H13	H14+0.1	H15	H16	H17
	FG	FK						FG	FK					
	ØD5H6	ØD5						H10-0.2						
16	10	14	10	34.1	28	G3/4	33	39.5	48	26	8.2	2	22	1.5
25	18	25	20	51.1	44	G1 1/4	41.5	55	67.5	27	9.4	2.5	27	2
32	28	35	30	70.1	60	G2	56	73.5	93.5	29	8.5	2.5	36	3

## Unit dimensions

- 1 Adjustment type "1"
- 2 Adjustment type "7"
- 3 Adjustment type "3"
- 4 Setting range
- 5 Space required to remove the key
- 6 Depth of fit
- 7 Port A can be positioned around the central axis of port B. (**Attention!** Observe the position of the mounting bores!)
- 8 Control edge
- 9 Valve mounting screws (cartridge valve "K") see to the right
- 10 Tightening torques (screw-in cartridge valve "C"):
  - Size 16  
 $M_A = 170 \text{ Nm} \pm 10 \%$ , moisten thread with hydraulic fluid
  - Size 25  
 $M_A = 305 \text{ Nm} \pm 10 \%$ , moisten thread with hydraulic fluid
  - Size 32  
 $M_A = 600 \text{ Nm} \pm 10 \%$ , moisten thread with hydraulic fluid

### Notice!

The tightening torques refer to a housing tensile strength of at least 300 N/mm<sup>2</sup> (corresponds to GG30)

**Valve mounting screws** Screw-in valve "K" (separate order)

#### – Size 16

**4 hexagon socket**

**Head cap screws ISO 4762 - M8 x 20 - 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. **R901021242**

#### – Size 25

**4 hexagon socket**

**Head cap screws ISO 4762 - M12 x 25 - 10.9-fIZn-240h-L**

Friction coefficient  $\mu_{\text{total}} = 0.09$  to  $0.14$ ,

Tightening torque  $M_A = 102 \text{ Nm} \pm 10 \%$ ,

Material no. **R913000128**

#### – Size 32

**4 hexagon socket**

**Head cap screws ISO 4762 - M16 x 35 - 10.9-fIZn-240h-L**

Friction coefficient  $\mu_{\text{total}} = 0.09$  to  $0.14$ ,

Tightening torque  $M_A = 250 \text{ Nm} \pm 10 \%$ ,

Material no. **R913000509**

### Notice!

- The tightening torques refer to the maximum admissible operating pressure. Friction coefficients, tightening torques, and preload forces interact with each other. Thus, we recommend checking the mounting characteristics with genuine parts and boundary conditions.
- Tightening torques depend on the strength of the installation housing!