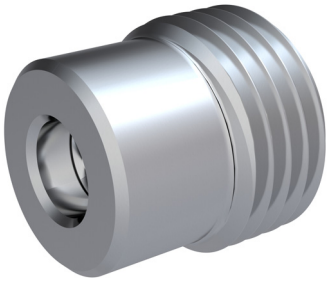
Check Valve, Size 04 … 10

Spherical poppet-type, screw-in design, unhardened
Series RKVE …-VD22 80 l/min, 220 bar



- unhardened and cost-optimized version
- for the same pressure differential, $Q_{max.}$ is around 50% higher than with standard RKVE valves
- no soft seal, therefore not temperature dependent
- same cavity as the RKVG and RVE series
- very low leakage
- with enclosed spring

1 Description

Series RKVE ...-VD22 screw-in cartridge check valves are furnished with G ⅛" … G ½" threads, depending on their nominal size. Requests for other mounting threads will be subject to negotiation with the factory.

The valves prevent flow in the screw-in direction (B -> A) and open in the opposite direction. Opening pressures of 0.2, 0.5 and 1 bar can be supplied. For higher opening pressures, our RVVE preload valves with extended overall length are available (see data sheet 170-P-051010-E).

The cavity used is the REG-02 (118°), which can be manufactured by simple recessed thread tapping. Our RKVG and RVE series valves can also be used in this cavity. Installing the valves needs special fitting tools, which we can supply.

A metal cutting lip on the valve engages with the 118° bevel in the cavity, providing a metal-to-metal seal. By eliminating the soft seal, the valves can be applied without regard to temperature.

The units are spring-closed spherical-poppet valves. The body and seat are press-fitted together, with a guided poppet and an enclosed spring fitted between them. The valve seat, poppet and body are unhardened. The properties of the sealing faces have been enhanced by precision mechanical processing.

The RKVE-04…10-VD22 valve series is an extension of the proven RKVE-04…10-VD model and is designed for use in the low pressure range. Compared with the standard valve, it offers 50% higher flow rates for the same pressure differential.

The valves can be used for pressure relief in the opening direction, but only to a limited extent (please contact Bucher Hydraulics for such applications).

2 Symbol

BUCHER
hydraulics

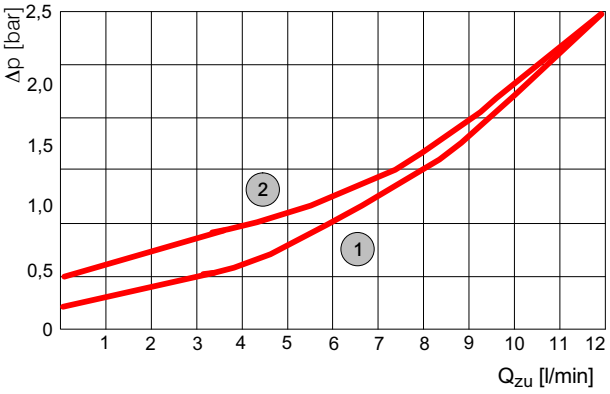
3 Technical data

General characteristics	Unit	Description, value
Type		check valve
Design		spherical poppet-type
Mounting method		screw-in cartridge
Size		nominal 04…10 mm (see table section 5 Dimensions)
Dimensions	mm	see table section 5: Dimensions
Mounting attitude		unrestricted
No-flow direction		B -> A (symbol see section 2)
Operating pressure	bar	220 bar (for higher pressures please contact Bucher Hydraulics)
Opening pressure	bar	0,2 / 0,5 / 1
Flow rate $Q_{max.}$	l/min	80
Fluid		HL and HLP hydraulic oils to DIN 51524, for other fluids please contact Bucher Hydraulics
Temperature range	°C	-30 … + 120
Viscosity range	mm^2/s [cSt]	10 … 500
Minimum fluid cleanliness		ISO 4406 code 20/18/15 (see section 11)

4 Performance graphs

4.1 RKVE-G-04-..-VD22

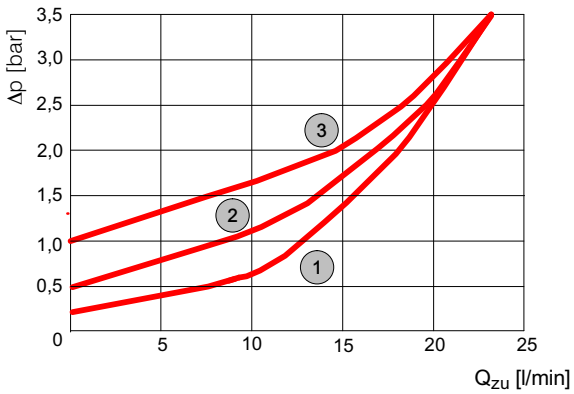
Measured with oil viscosity 33 mm^2/s (cSt)



1	RKVE-G-04-02-VD22
2	RKVE-G-04-05-VD22

4.2 RKVE-G-06-..-VD22

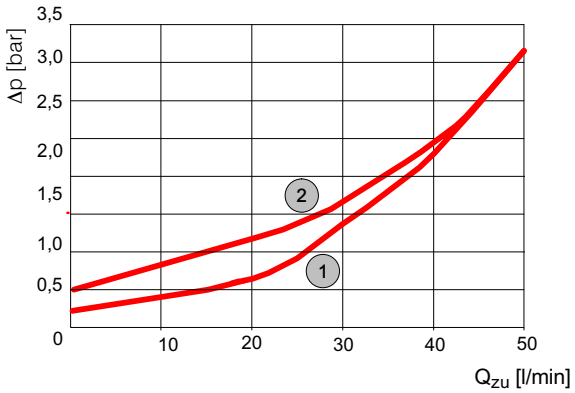
Measured with oil viscosity 33 mm^2/s (cSt)



1	RKVE-G-06-02-VD22
2	RKVE-G-06-05-VD22
3	RKVE-G-06-1-VD22

4.3 RKVE-G-08-..-VD22

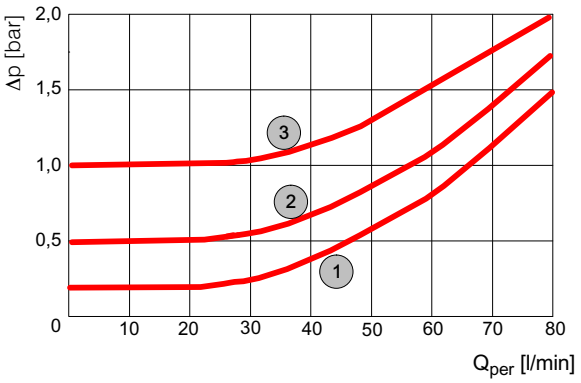
Measured with oil viscosity 33 mm²/s (cSt)



1	RKVE-G-08-02-VD22
2	RKVE-G-08-05-VD22

4.4 RKVE-G-10-..-VD22

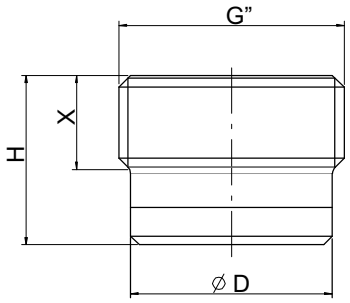
Measured with oil viscosity 33 mm²/s (cSt)



1	RKVE-G-10-02-VD22
2	RKVE-G-10-05-VD22
3	RKVE-G-10-1-VD22

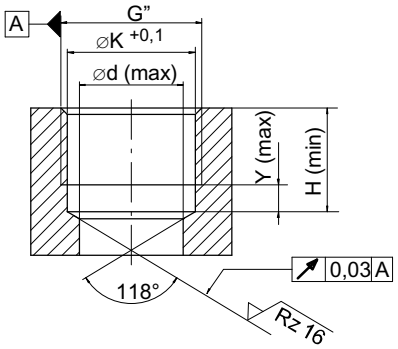
5 Dimensions

5.1 Dimensions - valve



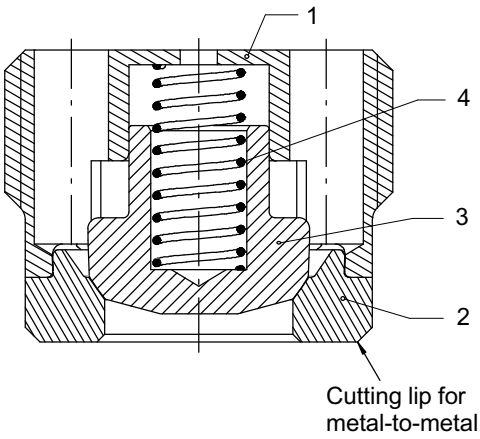
Type	$Q_{Nom}=Q_{max}$ [l/min]	G [mm]	⌀D [mm]	H [mm]	X [mm]	Tightening torque [Nm]	Fitting tool type
RKVE-04-…-VD22	12	G1/8“	8,5	10,0	5,0	8	M-04
RKVE06-…-VD22	25	G1/4“	11,5	11,3	5,5	20	M-06
RKVE-08-…-VD22	50	G3/8“	14,9	13,3	7,0	25	M-08
RKVE-10-…-VD22	80	G1/2“	18,8	15,9	9,0	50	M-10

5.2 Dimensions - cavity type REG-02



Type	G	⌀ K [mm]	⌀ d [mm]	Y [mm]	H [mm]
RKVE-04-…	G1/8“	8,7	6,0	2,5	10,0
RKVE-06-…	G1/4“	11,75	8,0	4,0	11,3
RKVE-08-…	G3/8“	15,25	11,5	4,0	13,3
RKVE-10-…	G1/2“	19,0	15,5	4,5	15,9

6 Schematic section



Item	Qty.	Description
1	1	Valve body
2	1	Valve seat
3	1	Valve poppet
4	1	Spring

7 Design and installation notes

IMPORTANT:

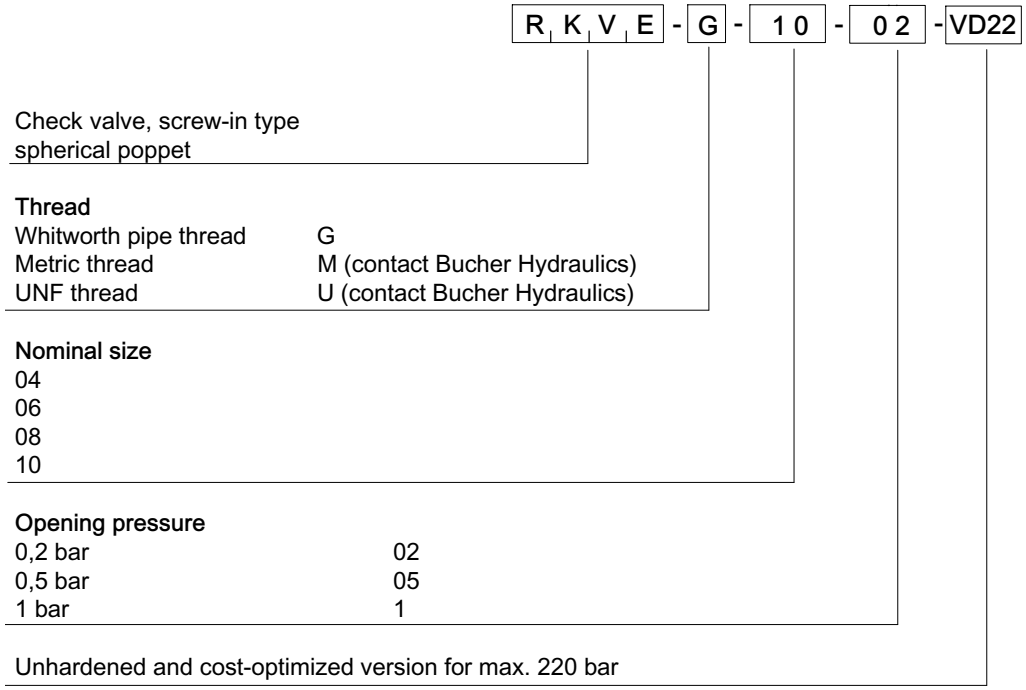
- Be sure to keep to the installation dimensions and tolerances
- Use the specified tightening torque when fitting the valve
- Do not situate nozzles and orifices directly before the check valve (referring to the free-flow direction) (see data sheet 170-P-059000-E)

When fitting the valve, take particular care to ensure that:

- The valve is seated on the sealing surface
- Valve components are not deformed by the use of excessive force

Special fitting tools can be supplied.

8 Ordering code



9 Application notes

The maximum operating pressure must not be exceeded and any pressure peaks must be taken into consideration. The specified nominal flow rate must not be exceeded.

In applications such as accumulator circuits, where sudden pressure can be applied to the valve in the free-flow direction, ensure that the specified flow ratings are not exceeded.

Buyers bear the sole responsibility for ensuring that the selected products are suitable for their applications. Buyers normally establish this by undertaking qualification programs on the test stands or by evaluating the performance of prototype machines or systems.

10 Fluid

The oil for check valves RKVE must have a minimum cleanliness level of 20/18/15 to ISO 4406.

We recommend the use of fluids that contain anti-wear additives for operation with boundary lubrication. Fluids without appropriate additives reduce the service life of check valves. The user is responsible for maintaining, and regularly checking, the fluid quality.

11 Fluid cleanliness

Cleanliness class (RK) onto ISO 4406.

Code ISO 4406	Dirt particle number / 100 ml		
	≥ 4 µm	≥ 6 µm	≥ 14 µm
23/21/18	8000000	2000000	250000
22/20/18	4000000	1000000	250000
22/20/17	4000000	1000000	130000
22/20/16	4000000	1000000	64000
21/19/16	2000000	500000	64000
20/18/15	1000000	250000	32000
19/17/14	500000	130000	16000
18/16/13	250000	64000	8000
17/15/12	130000	32000	4000
16/14/12	64000	16000	4000
16/14/11	64000	16000	2000
15/13/10	32000	8000	1000
14/12/9	16000	4000	500
13/11/8	8000	2000	250

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