

# High-pressure check valve With redundant sealing or metal seat Model HPCV

WIKA data sheet AC 09.35

## Applications

- For liquid media (e.g. water, hydraulic oil) in high-pressure applications
- Test benches (e.g. for hydraulic components)
- High-pressure panels
- Wellhead control panels (WHCPs) and hydraulic power units (HPUs)

## Special features

- High repeatability and improved sealing through self-centring piston
- Redundant sealing:
  - With O-ring and metal cone
  - Leak-tested tightness in accordance with BS6755 / ISO 5208 leakage rate A
- Metal seat:
  - No soft sealing material
  - Long service life
  - High temperature resistance



**Fig. left: Model HPCV with NPT thread**

**Fig. right: Model HPCV with cone/thread (C&T)**

## Description

The model HPCV high-pressure check valves have been developed for high-pressure applications of 15,000 to 60,000 psi [1,034 to 4,136 bar]. The wetted parts are suited specifically for applications with natural gas and aggressive media, but also for water and hydraulic oil. The simple and robust design enables model HPCV check valves a wide spectrum of use. The valve design and the high-quality sealing materials ensure high durability and leak tightness.

### Redundant sealing

The sealing element (piston) has a double sealing system from an elastic O-ring and a metal cone.

With any back pressure, the soft O-ring and then the sealing face of the metal cone prevent the reverse flow of the medium. The sealing concept is designed for demanding applications in the chemical, petrochemical and the oil and gas industries where high performance and reliable leak tightness is required.

### Metal seat

This design is preferably used with corrosive or abrasive media like water and oil in very high temperature applications. The absence of soft sealing material is key for the long endurance of the metal seat.

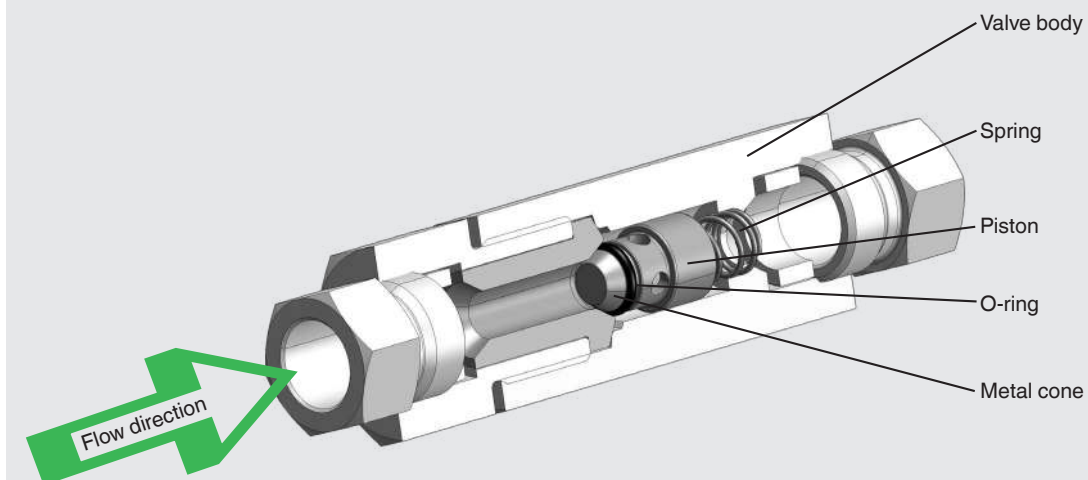
## Specifications

Model HPCV	
<b>Design</b>	<ul style="list-style-type: none"> <li>■ Redundant sealing with O-ring and metal cone</li> <li>■ Metal seat</li> </ul>
<b>Standards used</b>	
Design	Industry standard
Tests	<ul style="list-style-type: none"> <li>■ ISO 5208, pressure testing of metallic valves with leakage rate A (only with redundant sealing)</li> <li>■ MSS SP-61, pressure testing of valves</li> <li>■ DIN EN 12266-1, pressure tests, test procedures and acceptance criteria for industrial valves</li> </ul>
Marking	MSS SP-25, markings on valves
<b>Nominal pressure</b>	<ul style="list-style-type: none"> <li>■ 15,000 psi [1,034 bar]</li> <li>■ 20,000 psi [1,379 bar]</li> <li>■ 60,000 psi [4,136 bar]</li> </ul>
<b>Connection type</b>	<ul style="list-style-type: none"> <li>■ Thread per ANSI / ASME B1.20.1, code NPT</li> <li>■ Cone/thread (C&amp;T) <sup>1)</sup></li> </ul>
<b>Connection size</b>	
15,000 psi [1,034 bar]	<ul style="list-style-type: none"> <li>■ ¼ NPT</li> <li>■ ⅜ NPT</li> <li>■ ½ NPT</li> </ul>
20,000 psi [1,379 bar]	<ul style="list-style-type: none"> <li>■ ¼" cone/thread (C&amp;T)</li> <li>■ ⅜" cone/thread (C&amp;T)</li> <li>■ ½" cone/thread (C&amp;T)</li> </ul>
60,000 psi [4,136 bar]	<ul style="list-style-type: none"> <li>■ ¼" cone/thread (C&amp;T)</li> <li>■ ⅜" cone/thread (C&amp;T)</li> <li>■ ½" cone/thread (C&amp;T)</li> </ul>
<b>Pressure-temperature limits (for diagram, see page 4)</b>	The limits for operating pressure and temperature depend on the nominal pressure and the valve seat.
<b>Cracking pressure</b>	20 psi [1.38 bar] ± 30 %
<b>Features</b>	<ul style="list-style-type: none"> <li>■ Improved sealing through self-centring piston</li> <li>■ Flow direction marked on valve body</li> <li>■ Hydrostatically tested</li> <li>■ 100 % material traceability for wetted parts</li> <li>■ Tight tolerances and the guided spring prevent the piston from jamming or seizing</li> <li>■ Resistance against explosive decompression (AED sealing available on request)</li> <li>■ Other specification for cracking pressure (option)</li> </ul>

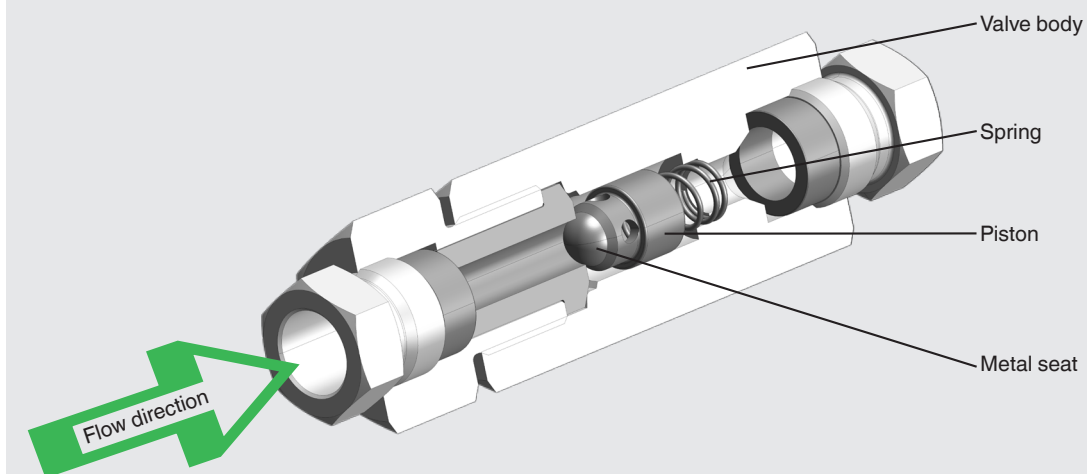
1) Adapters with cone/thread (C&T) connections are not supplied with gland collars and glands. These can be supplied assembled in the female connection on request.

Material of wetted parts	
<b>Valve body and fittings, piston</b>	Stainless steel 316L (1.4404)
	Other materials available on request
<b>Spring</b>	AISI 302 (1.4310)
	Other materials available on request
<b>Sealing</b>	
Redundant sealing	O-ring NBR and metal cone, temperature range: -15 ... +120 °C [5 ... 248 °F]
Metal seat	Metal seat, temperature range: -46 ... +315 °C [-51 ... +599 °F]

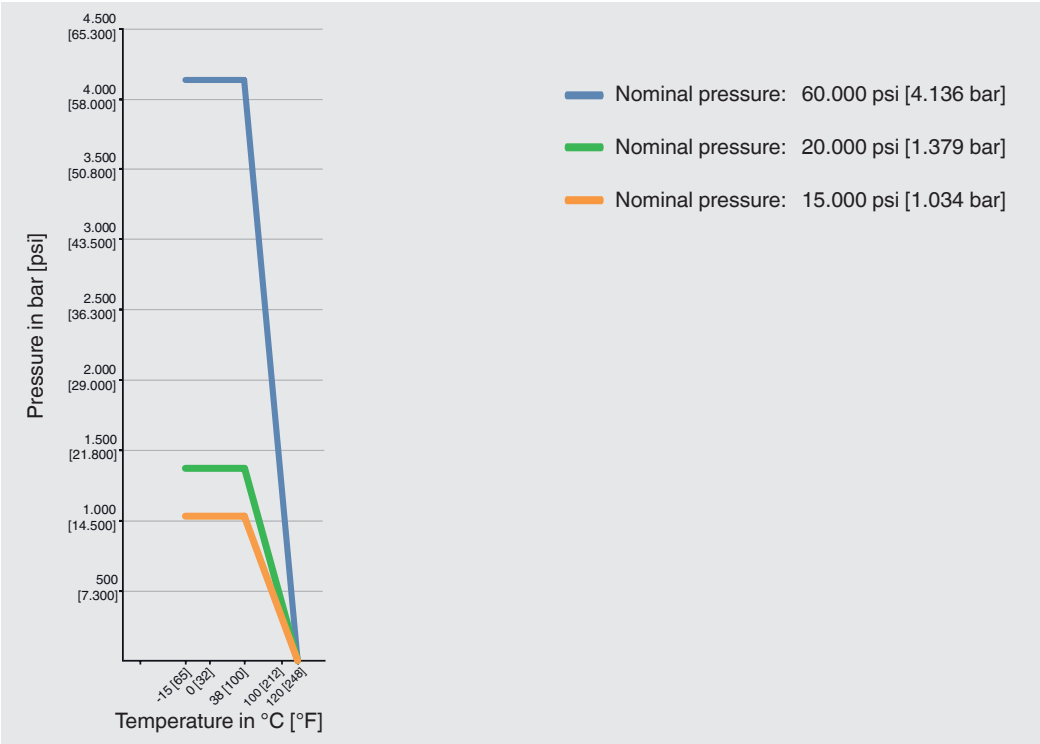
### Redundant sealing



### Metal seat



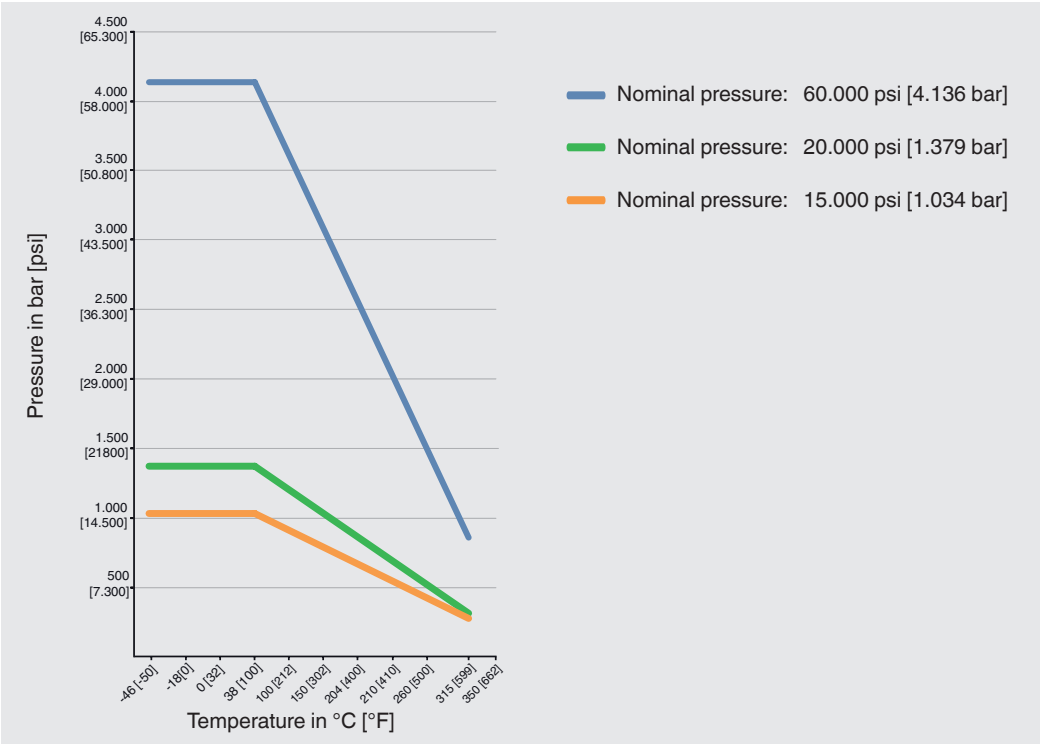
Pressure-temperature diagram  
Model HPCV, redundant sealing (O-ring NBR and metal cone)



Nominal pressure	Max. permissible operating pressure in bar at temperature in °C	Max. permissible operating pressure in psi at temperature in °F
15,000 psi [1,034 bar]	1,034 bar at 38 °C	15,000 psi at 100 °F
20,000 psi [1,379 bar]	1,379 bar at 38 °C	20,000 psi at 100 °F
60,000 psi [4,136 bar]	4,136 bar at 38 °C	60,000 psi at 100 °F

For permanently low operating temperatures of ≤ -55 °C [≤ -67 °F] a special design is required.

Pressure-temperature diagram  
Model HPCV, metal seat



Nominal pressure	Max. permissible operating pressure in bar at temperature in °C	Max. permissible operating pressure in psi at temperature in °F
15,000 psi [1,034 bar]	1,034 bar at 38 °C	15,000 psi at 100 °F
20,000 psi [1,379 bar]	1,379 bar at 38 °C	20,000 psi at 100 °F
60,000 psi [4,136 bar]	4,136 bar at 38 °C	60,000 psi at 100 °F

For permanently low operating temperatures of  $\leq -55\text{ °C}$  [ $\leq -67\text{ °F}$ ] a special design is required.

Manufacturer’s information and certificates

Logo	Description
-	PMI <sup>1)</sup> test certificate (option) All wetted parts

1) Positive material identification

Certificates (option)

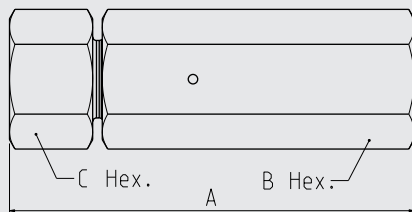
- 3.1 inspection certificate per EN 10204
  - Material proof for all wetted parts
  - 100 % tested per WIKA factory standard <sup>2)</sup>

2) Shell test: 15 s test duration with 1.1 times the permissible working air pressure

## Dimensions in mm [in]

Thread per ANSI / ASME B1.20.1, code NPT

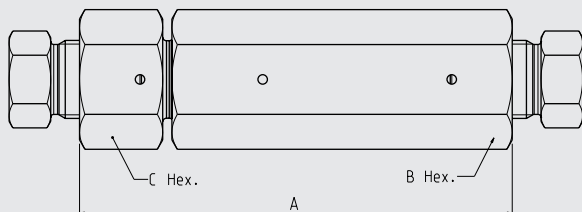
Nominal pressure: 15,000 psi [1,034 bar]



Thread	Dimensions in mm [in]				Cv in USG/min	Kv in m³/h	Weight in kg [lb]
	A	B	C	Orifice			
¼ NPT	79 [3.11]	22.2 [0.87]	22.2 [0.87]	3.2 [0.13]	0.34	0.29	0.23 [0.5]
⅜ NPT	89.2 [3.51]	25.4 [1]	25.4 [1]	5.6 [0.22]	1.07	0.92	0.33 [0.73]
½ NPT	107 [4.21]	32 [1.26]	32 [1.26]	8 [0.31]	2.15	1.86	0.63 [1.39]

## Cone/thread (C&T)

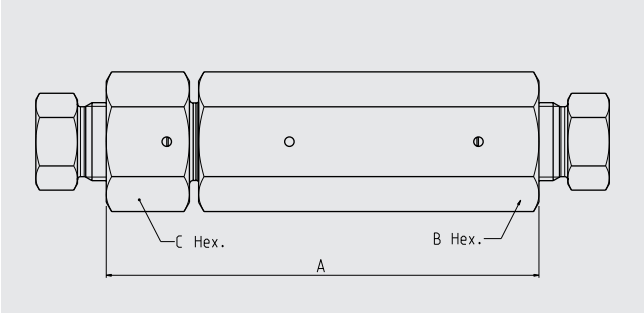
Nominal pressure: 20,000 psi [1,379 bar]



For outer Ø	Dimensions in mm [in]				Cv in USG/min	Kv in m³/h	Weight in kg [lb]
	A	B	C	Orifice			
¼"	73 [2.87]	22.2 [0.87]	22.2 [0.87]	2.8 [0.11]	0.26	0.22	0.24 [0.53]
⅜"	84.2 [3.31]	25.4 [1]	25.4 [1]	5.2 [0.20]	0.91	0.79	0.36 [0.79]
½"	114.4 [4.5]	32 [1.26]	32 [1.26]	8 [0.31]	2.15	1.86	0.77 [1.7]

Cone/thread (C&T)

Nominal pressure: 60,000 psi [4,136 bar]



For outer Ø	Dimensions in mm [in]				Cv in USG/min	Kv in m³/h	Weight in kg [lb]
	A	B	C	Orifice			
¼"	85.5 [3.37]	30.2 [1.19]	20.6 [0.81]	2.4 [0.09]	0.19	0.16	0.48 [1.05]
⅜"	95.4 [3.76]	30.2 [1.19]	25.4 [1]	3.2 [0.13]	0.34	0.29	0.58 [1.28]
½"	117.7 [4.63]	38.1 [1.5]	34.9 [1.37]	4.8 [0.19]	0.77	0.67	1.25 [2.75]

Ordering information

Model / Design / Nominal pressure / Connection size

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