



## Check Valves, Filters and Relief Valves

Catalog 4135-CV

April 2019

aerospace  
climate control  
electromechanical  
filtration  
**fluid & gas handling**  
hydraulics  
pneumatics  
**process control**  
sealing & shielding



ENGINEERING YOUR SUCCESS.

## Introduction

Parker CO Series Check Valves are designed for uni-directional flow control of fluids and gases in industries such as chemical processing, oil and gas production and transmission, pharmaceutical, pulp and paper, power and utilities. The CO Series Check Valve is particularly suitable for applications requiring high integrity leak rates and re-sealing capabilities.

## CO

## Features

- ▶ Seal integrity across the seat and to atmosphere is tested to  $4 \times 10^{-9}$  std atm-cc/sec ( $4 \times 10^{-10}$  kPa – L/sec) for the CO4L with fluorocarbon rubber seals. All other sizes and seal materials are tested to  $1 \times 10^{-5}$  std atm-cc/sec ( $1 \times 10^{-6}$  kPa – L/sec).
- ▶ Special seat seal design provides a repeatable high integrity seal and accurate cracking pressures
- ▶ 100% factory tested. Cracking pressures include: 1/3, 1, 5, 10, and 25 psi.
- ▶ Valves are available with male and female NPT, CPI™, A-LOK®, and VacuSeal
- ▶ Heat code traceability
- ▶ Color coded identification labels indicate seal material

## Specifications

**Pressure Rating:** .....6000 psig (414 bar) CWP

### Temperature Rating:

Fluorocarbon Rubber..... -15°F to 400°F (-26°C to 204°C)

Nitrile Rubber..... -30°F to 250°F (-34°C to 121°C)

Ethylene Propylene Rubber

..... -70°F to 275°F (-57°C to 135°C)

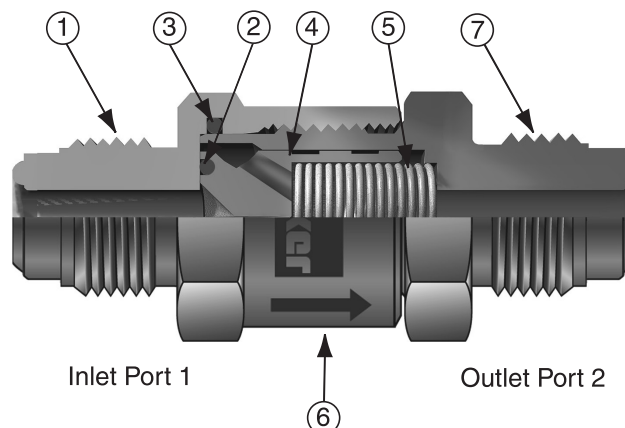
Highly Fluorinated Fluorocarbon Rubber

..... -15°F to 200°F (-26°C to 93°C)

**Orifice:** ..... .156" to .406" (4.0mm to 10.3mm)

**C<sub>v</sub>:** ..... .43 to 2.65

## Materials of Construction



**Model Shown: 4V-CO4L-5-V-SS**

Item #	Part	Stainless Valve
1	Cap	ASTM A276, Type 316
2	Seat Seal	Fluorocarbon Rubber*
3	Body Seal	Fluorocarbon Rubber*
4	Poppet	ASTM A479, Type 316
5	Spring	316 Stainless Steel
6	Label	Aluminum
7	Body	ASTM A276, Type 316

\*Optional seal materials are available.  
Lubrication: Perfluorinated Polyether

## Flow Calculations with 1000 psig (69 bar) Inlet Pressure

Valve Series	Maximum C <sub>v</sub>	Pressure Drop ΔP		Water @ 60-1/2°F (16-1/2°C)		Air @ 60-1/2°F (16-1/2°C)	
		psig	bar	gpm	m³/hr	SCFM	m³/hr
C04	0.62	10	0.7	2.0	0.4	61.8	104.5
		50	3.4	4.4	1.0	135.7	227.7
		100	6.9	6.2	1.4	187.5	316.7
C06	1.85	10	0.7	5.9	1.3	184.4	311.6
		50	3.4	13.1	3.0	404.4	678.5
		100	6.9	18.5	4.2	557.9	942.3
C08	2.65	10	0.7	8.4	1.9	264.2	446.5
		50	3.4	18.7	4.2	580.3	973.8
		100	6.9	26.5	6.0	802.3	1355.3

## Crack and Re-Seal Performance

Check Valve Rated Crack Pressure		Minimum Acceptable Crack Pressure		Maximum Acceptable Crack Pressure		Maximum Re-seal Back Pressure	
psig	bar	psig	bar	psig	bar	psig	bar
1/3	0.02	0	0.00	1	0.07	4	0.28
1	0.07	0	0.00	3	0.21	4	0.28
5	0.34	3	0.21	8	0.55	3 BCP	0.21 BCP
10	0.69	7	0.48	13	0.90	3 BCP	0.21 BCP
25	1.72	20	1.38	30	2.07	4 BCP	0.28 BCP

BCP means "Below Cracking Pressure."

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Cracking pressure is defined as the upstream pressure at which a detectable flow is measured.

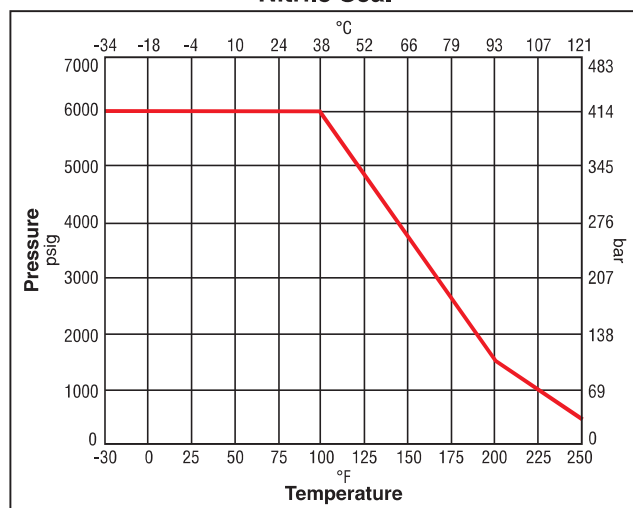
Re-seal pressure is defined as the downstream pressure at which the check valve closes bubble-tight.

**Example:** For a valve with a spring having a rated cracking pressure of 25 psig (1.72 bar), the actual cracking pressure ranges between 20 and 30 psig (1.38 and 2.07 bar). The re-seal pressure range would be 16 to 20 psig (1.10 to 1.38 bar). Check valves having springs with rated crack pressures of 3 psig (0.21 bar) or less may require up to 4 psig (0.28 bar) back pressure to re-seal bubble-tight.

**Note:** Check valves which are not actuated for a period of time may initially crack at higher than the above crack pressure ranges.

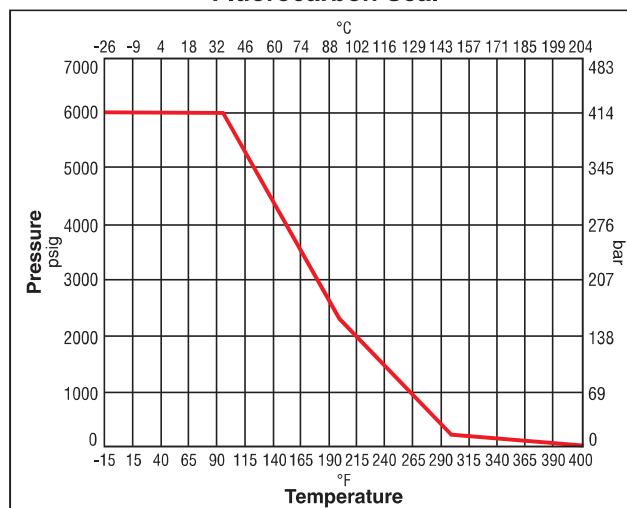
## Pressure vs. Temperature

Nitrile Seal

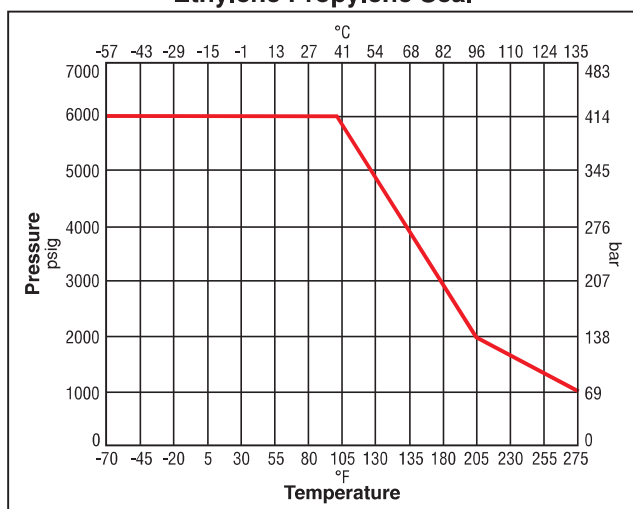


Note: To determine MPa, multiply bar by 0.1

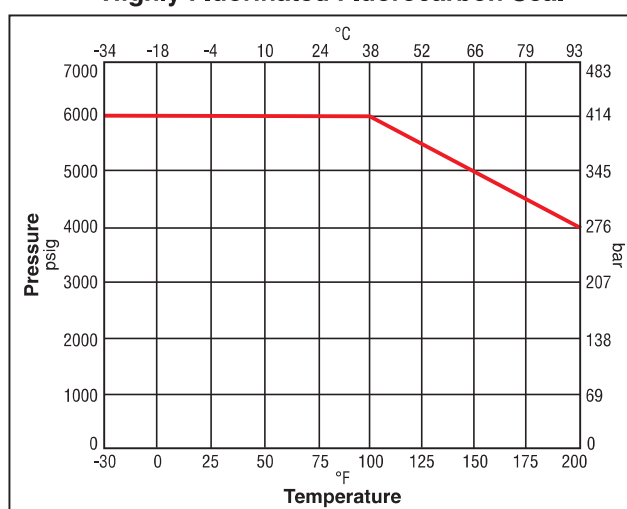
Fluorocarbon Seal



Ethylene Propylene Seal



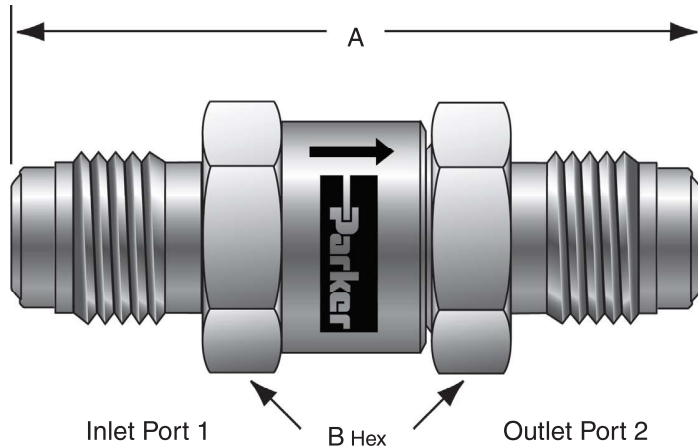
Highly Fluorinated Fluorocarbon Seal



# CO Series Check Valves

Catalog 4135-CV

## Dimensions and Flow Data



CO

C = Hex of nuts where applicable

**Model Shown: 4V-CO4L-5-KZ-SS**

## Label Color Cross Reference

Label Color	Seal Material
Brown	Fluorocarbon Rubber
Black	Nitrile Rubber
Purple	Ethylene Propylene Rubber
Green	All others

**Testing:** All valves are 100% tested for crack, re-seal, and helium leakage.

Dimensions in inches (millimeters) are for reference only, subject to change.

Basic Part Number	End Connections Inlet Port 1	Flow Data			Dimensions						Optional	
		Orifice		C <sub>v</sub>	A†		B		C		Crack Pressure	Seat/Seal Material
		Inch	mm		Inch	mm	Inch	mm	Inch	mm		
4A-CO4L-1-V-SS	1/4" A-LOK® Compression	.187	4.7	.62	2.38	60.7	.750	19.1	.563	14.3	1/3 psi 5 psi 10 psi 25 ps	BN Nitrile Rubber
4F-CO4L-1-V-SS	1/4" Female NPT	.187	4.7	.62	2.38	60.5	.750	19.1	-	-		
4M-CO4L-1-V-SS	1/4" Male NPT	.187	4.7	.62	2.09	53.1	.750	19.1	-	-		EPR Ethylene Propylene Rubber
4V-CO4L-1-V-SS	1/4" VacuSeal	.187	4.7	.62	2.22	56.4	.750	19.1	-	-		
4Z-CO4L-1-V-SS	1/4" CPI™ Compression	.187	4.7	.62	2.39	60.7	.750	19.1	.563	14.3		KZ Highly Fluorinated Fluoro-carbon Rubber
M6A-CO4L-1-V-SS	6mm A-LOK® Compression	.187	4.7	.62	2.41	61.2	.750	19.1	.551	14.0		
M6Z-CO4L-1-V-SS	6mm CPI™ Compression	.187	4.7	.62	2.41	61.2	.750	19.1	.551	14.0		
6A-CO6L-1-V-SS	3/8" A-LOK® Compression	.281	7.1	1.70	3.17	80.5	1.00	25.4	.688	17.5		
6F-CO6L-1-V-SS	3/8" Female NPT	.328	8.3	1.85	3.03	77.0	1.00	25.4	-	-		
6M-CO6L-1-V-SS	3/8" Male NPT	.328	8.3	1.85	2.78	70.6	1.00	25.4	-	-		
6Z-CO6L-1-V-SS	3/8" CPI™ Compression	.281	7.1	1.70	3.17	80.5	1.00	25.4	.688	17.5		
6V-CO6L-1-V-SS	3/8" VacuSeal	.328	8.3	1.85	3.57	90.7	1.00	25.4	-	-		
M8A-CO6L-1-V-SS	8mm A-LOK® Compression	.250	6.4	1.60	3.15	80.0	1.00	25.4	.630	16.0		
M8Z-CO6L-1-V-SS	8mm CPI™ Compression	.250	6.4	1.60	3.15	80.0	1.00	25.4	.630	16.0		
8A-CO8L-1-V-SS	1/2" A-LOK® Compression	.406	10.3	2.65	3.37	85.6	1.25	31.8	.875	22.2		
8F-CO8L-1-V-SS	1/2" Female NPT	.406	10.3	2.65	3.60	91.4	1.25	31.8	-	-		
8M-CO8L-1-V-SS	1/2" Male NPT	.406	10.3	2.65	3.16	80.3	1.25	31.8	-	-		
8V-CO8L-1-V-SS	1/2" VacuSeal	.406	10.3	2.65	3.56	90.4	1.25	31.8	-	-		
8Z-CO8L-1-V-SS	1/2" CPI™ Compression	.406	10.3	2.65	3.37	85.6	1.25	31.8	.875	22.2		
M12A-CO8L-1-V-SS	12mm A-LOK® Compression	.375	9.5	2.55	3.44	87.4	1.25	31.8	.866	22.0		
M12Z-CO8L-1-V-SS	12mm CPI™ Compression	.375	9.5	2.55	3.44	87.4	1.25	31.8	.866	22.0		

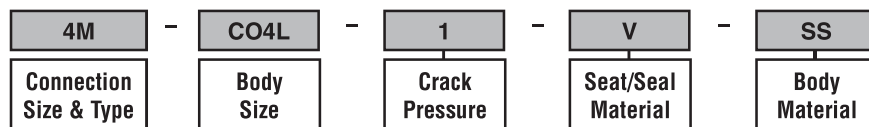
† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.



## How to Order

The part number sequence identifies product characteristics as shown in the example below.

**Example: 4M-CO4L-1-V-SS** Describes a CO Series Check Valve with 1/4" male NPT inlet and outlet on a 1/4" in line body, 1 psig cracking pressure, fluorocarbon rubber seals, and stainless steel body construction.



CO

**Oxygen Cleaning** – Add the suffix **-C3** to the end of the part number to receive valves cleaned in accordance with ASTM G93 level C, class 500. This ASTM details cleaning methods and cleanliness levels for materials and equipment used in oxygen-enriched environments. **Example: 4M-CO4L-1-V-SS-C3**

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