



## 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 C 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.

## Features

- ▶ Resilient, custom molded, blow-out resistant seat design
- ▶ Back stopped poppet minimizes spring stress
- ▶ 100% factory tested for both crack and reseal
- ▶ Cracking pressures include: 1/3, 1, 10, 25 psi.
- ▶ Port connections include male and female NPT, CPI™, A-LOK®, VacuSeal, BSP, SAE and Seal-Lok®
- ▶ Heat code traceability

## Specifications

### Pressure Rating:\*\*

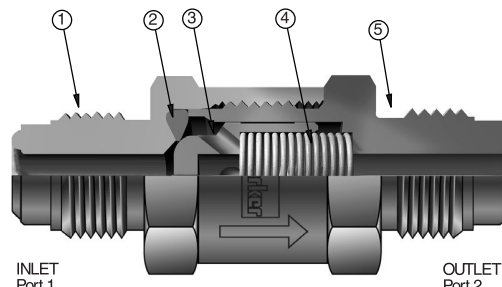
316 SS – 1/8" to 3/4": .....6000 psig (414 bar) CWP  
 1": .....5000 psig (345 bar) CWP  
 PTFE Seats, all sizes: .....4000 psig (276 bar) CWP  
 Brass – 1/8" to 1": .....3000 psig (207 bar) CWP

### Temperature Rating:

Fluorocarbon Rubber..... -15°F to +400°F (-26°C to +204°C)  
 Nitrile ..... -30°F to +275°F (-34°C to +135°C)  
 Ethylene Propylene Rubber.. -70°F to +275°F (-57°C to +135°C)  
 Neoprene Rubber ..... -45°F to +250°F (-43°C to +121°C)  
 PTFE ..... -65°F to +400°F (-54°C to +204°C)  
 Highly Fluorinated Fluorocarbon Rubber  
 ..... -15°F to +200°F (-26°C to +93°C)

**Orifice:** .....0.078" to .656" (2.0 mm to 16.7 mm)

**C<sub>v</sub>:** ..... .18 to 6.56



Model Shown: 4V-C4L-1-SS

## Materials of Construction

Item #	Part Description	Stainless Steel	Brass
1	Cap	ASTM A 276, Type 316	ASTM B 16, Alloy C36000
2	Seat*	Fluorocarbon Rubber*	
3	Poppet	ASTM A 479, Type 316	ASTM B 16, Alloy C36000
4	Spring	316 Stainless Steel	
5	Body	ASTM A 276, Type 316	ASTM B 16, Alloy C36000

\* Optional seat materials are available. See How to Order section.  
 Lubrication: Perfluorinated Polyether.

**Note:** PTFE seated valves employ an additional PTFE coated 316 SS gasket between the seat and the body and are distinguishable from elastomeric seated valves by the gap designed between the body and cap.

\*\*See Pressure Rating note on page 4.

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

Valve Series	Maximum C <sub>v</sub>	Pressure Drop ΔP		Water @ 60°F (16°C)		Air @ 60°F (16°C)	
		psig	bar	gpm	m3/hr	SCFM	m3/hr
C2	0.31	10	0.7	1.0	0.2	30.8	52.1
		50	3.4	2.2	0.5	67.2	112.8
		100	6.9	3.1	0.7	92.0	155.3
C4	0.75	10	0.7	2.4	0.5	74.6	126.1
		50	3.4	5.3	1.2	162.7	273.0
		100	6.9	7.5	1.7	222.8	376.2
C6	2.26	10	0.7	7.1	1.6	225.3	380.9
		50	3.4	16.0	3.6	495.2	831.0
		100	6.9	22.6	5.1	685.1	1157.2
C8	3.53	10	0.7	11.2	2.5	352.0	595.0
		50	3.4	25.0	5.6	774.3	1299.4
		100	6.9	35.3	8.0	1072.4	1811.6
C12	6.01	10	0.7	19.0	4.3	596.6	1008.3
		50	3.4	42.5	9.6	1287.5	2160.4
		100	6.9	60.1	13.7	1738.5	2934.5
C16	6.56	10	0.7	20.7	4.7	648.9	1096.6
		50	3.4	46.4	10.5	1379.4	2314.7
		100	6.9	65.6	14.9	1824.4	3077.6

## 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
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."

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.

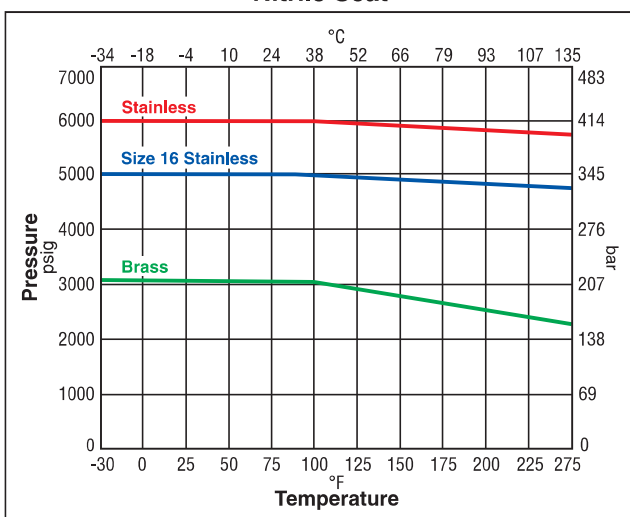
**Example:** For a valve with a spring having a rated cracking pressure of 25 psig (1.72 bar), the actual cracking pressure ranges between 20 and 30 psig (1.38 and 2.07 bar). The re-seal pressure range would be 16 to 20 psig (1.10 to 1.38 bar). Check valves having springs with rated crack pressures of 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.

PTFE seated valves require a minimum back pressure of 100 psig (6.9 bar) to insure a leak-tight re-seal.

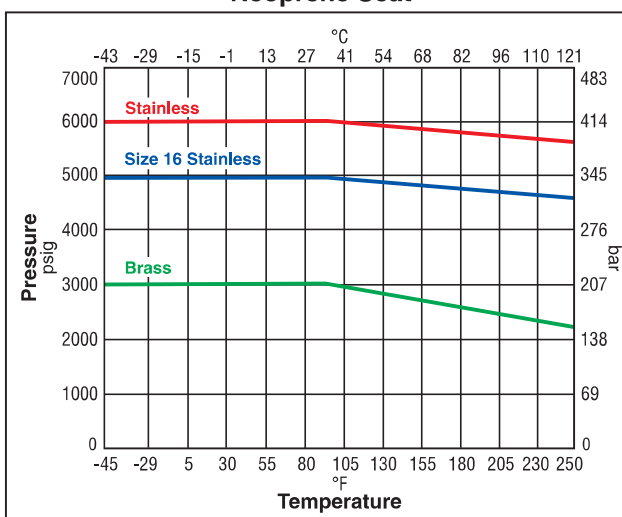
## Pressure vs. Temperature

## Nitrile Seat

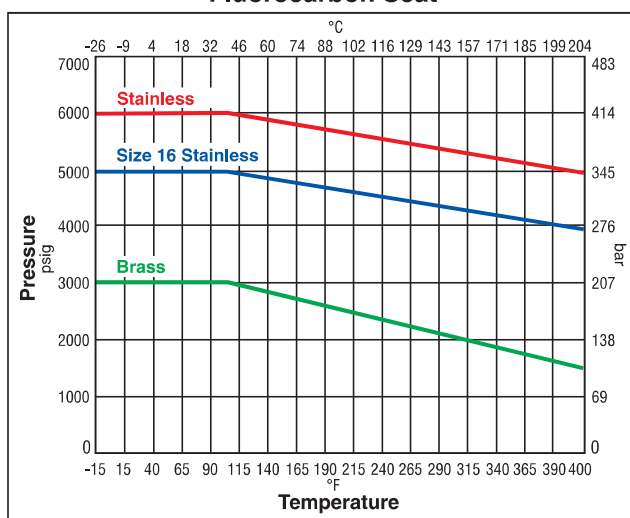


**Note:** To determine MPa, multiply bar by 0.1

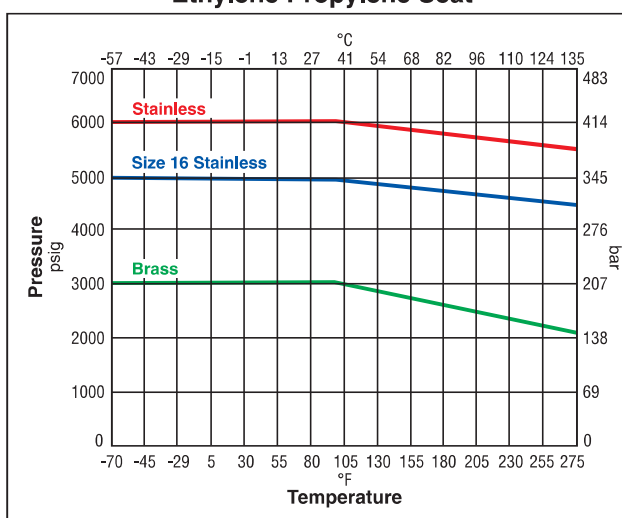
## Neoprene Seat



## Fluorocarbon Seat



## Ethylene Propylene Seat



# C Series Check Valves

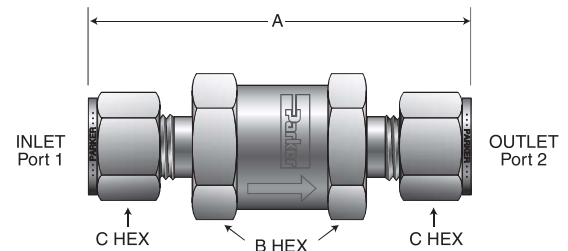
Catalog 4135-CV

## How to Order

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

**Example:** Describes a C Series Check Valve with 3/4" CPI™ compression inlet and outlet ports on a 3/4" in line body, a 25 psi cracking pressure, nitrile seat and brass body construction.

<b>12Z</b>	-	<b>C12L</b>	-	<b>25</b>	-	<b>BN</b>	-	<b>B</b>
<b>Connection Size &amp; Type</b>		<b>Body Size</b>		<b>Crack Pressure</b>		<b>Seat Material</b>		<b>Body Material</b>



### Model Shown: 4Z-C4L-1-SS

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

## Flow Data/Dimensions

Basic Part Number	End Connections  Inlet & Outlet Port 1 & Port 2	Flow Data			Dimensions				Optional		
		Orifice		C <sub>v</sub>	A†		B	C	Crack Pressure	Seat Material	Body Material
		Inch	mm		Inch	mm	Inch	Inch			
2A-C2L-1-SS	1/8" A-LOK® Compression	.093	2.4	.22	2.29	58.2	.625	.438	1/3 psi  10 psi  25 psi	BN Nitrile  EPR Ethylene Propylene Rubber  NE Neoprene Rubber  **T PTFE  ***KZ Highly Fluorinated Fluorocarbon Rubber	B Brass
2F-C2L-1-SS	1/8" Female NPT	.125	3.2	.31	1.86	47.2	.625	—			
2KF-C2L-1-SS	1/8" Female BSP/ISO Tapered	.125	3.2	.31	1.86	47.2	.625	—			
2KM-C2L-1-SS	1/8" Male BSP/ISO Tapered	.125	3.2	.31	1.77	45.0	.625	—			
2M-C2L-1-SS	1/8" Male NPT	.125	3.2	.31	1.77	45.0	.625	—			
2Z-C2L-1-SS	1/8" CPI™ Compression	.093	2.4	.22	2.29	58.2	.625	.438			
4A-C4L-1-SS	1/4" A-LOK® Compression	.187	4.7	.75	2.42	61.5	.750	.563			
4F-C4L-1-SS	1/4" Female NPT	.187	4.7	.75	2.40	61.0	.750	—			
4F5-C4L-1-SS	1/4" Male SAE	.172	4.4	.66	2.02	51.3	.750	—			
4G5-C4L-1-SS	1/4" Female SAE	.172	4.4	.66	2.20	55.9	.750	—			
4KF-C4L-1-SS	1/4" Female BSP/ISO Tapered	.187	4.7	.75	2.40	61.0	.750	—			
4KM-C4L-1-SS	1/4" Male BSP/ISO Tapered	.281	4.7	.75	2.18	55.4	.750	—			
4M-C4L-1-SS	1/4" Male NPT	.187	4.7	.75	2.18	55.4	.750	—			
4V-C4L-1-SS	1/4" VacuSeal	.187	4.7	.75	2.22	56.4	.750	—			
4Z-C4L-1-SS	1/4" CPI™ Compression	.187	4.7	.75	2.42	61.5	.750	.563			
M6A-C4L-1-SS	6mm A-LOK® Compression	.187	4.7	.75	2.43	61.7	.750	.551			
M6Z-C4L-1-SS	6mm CPI™ Compression	.187	4.7	.75	2.43	61.7	.750	.551			
4M4A-C4L-1-SS	1/4" Male NPT X 1/4" A-LOK® Compres- sion	.187	4.7	.75	2.29	58.2	.750	.563			
4M4F-C4L-1-SS	1/4" Male NPT X 1/4" Female NPT	.187	4.7	.75	2.29	58.2	.750	—			
4M4Z-C4L-1-SS	1/4" Male NPT X 1/4" CPI™ Compression	.187	4.7	.75	2.29	58.2	.750	.563			
6A-C6L-1-SS	3/8" A-LOK® Compression	.281	7.1	2.09	3.27	83.1	1.000	.688			
6F-C6L-1-SS	3/8" Female NPT	.359	9.1	2.26	3.03	77.0	1.000	—			
6G5-C6L-1-SS	3/8" Female SAE	.264	6.7	2.05	2.96	75.2	1.000	—			
6M-C6L-1-SS	3/8" Male NPT	.359	9.1	2.26	2.96	75.2	1.000	—			
6Z-C6L-1-SS	3/8" CPI™ Compression	.281	7.1	2.09	3.27	83.1	1.000	.688			
M8A-C6L-1-SS	8mm A-LOK® Compression	.250	6.4	2.02	3.33	84.6	1.000	.630			
M8Z-C6L-1-SS	8mm CPI™ Compression	.250	6.4	2.02	3.33	84.6	1.000	.630			
M10A-C6L-1-SS	10mm A-LOK® Compression	.312	7.9	2.16	3.35	85.1	1.000	.748			
M10Z-C6L-1-SS	10mm CPI™ Compression	.312	7.9	2.16	3.35	85.1	1.000	.748			

\*\* Only available with stainless steel valves.

\*\*\* Not available on C2 Series



## Flow Data/Dimensions (Continued)

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

Basic Part Number	End Connections Inlet & Outlet Port 1 & Port 2	Flow Data			Dimensions				Optional		
		Orifice		C <sub>v</sub>	A†		B	C	Crack Pressure	Seat Material	Body Material
		Inch	mm		Inch	mm	Inch	Inch			
8A-C8L-1-SS	1/2" A-LOK® Compression	.423	10.7	3.30	4.08	103.6	1.250	.875	1/3 psi  10 psi  25 psi	BN Nitrile  EPR Ethylene Propylene Rubber  NE Neoprene Rubber  **T PTFE  ***KZ Highly Fluorinated Fluorocarbon Rubber	B Brass
8F-C8L-1-SS	1/2" Female NPT	.453	11.5	3.53	3.56	90.4	1.250	—			
8KF-C8L-1-SS	1/2" Female BSP/ISO Tapered	.453	11.5	3.53	3.56	90.4	1.250	—			
8KM-C8L-1-SS	1/2" Male BSP/ISO Tapered	.453	11.5	3.53	3.56	90.4	1.250	—			
8M-C8L-1-SS	1/2" Male NPT	.453	11.5	3.53	3.56	90.4	1.250	—			
8V-C8L-1-SS	1/2" VacuSeal	.406	10.3	3.17	3.56	90.4	1.250	—			
8Z-C8L-1-SS	1/2" CPI™ Compression	.423	10.7	3.30	4.08	103.6	1.250	.875			
M12A-C8L-1-SS	12mm A-LOK® Compression	.375	9.5	2.93	4.06	103.1	1.250	.866			
M12Z-C8L-1-SS	12mm CPI™ Compression	.375	9.5	2.93	4.06	103.1	1.250	.866			
12A-C12L-1-SS	3/4" A-LOK® Compression	.594	15.1	6.01	4.34	110.2	1.375	1.125			
12F-C12L-1-SS	3/4" Female NPT	.594	15.1	6.01	4.09	103.9	1.375	—			
12M-C12L-1-SS	3/4" Male NPT	.594	15.1	6.01	4.09	103.9	1.375	—			
12Z-C12L-1-SS	3/4" CPI™ Compression	.594	15.1	6.01	4.34	110.2	1.375	1.125			
M22A-C12L-1-SS	22mm A-LOK® Compression	.594	15.1	6.01	4.30	109.2	1.375	1.260			
M22Z-C12L-1-SS	22mm CPI™ Compression	.594	15.1	6.01	4.30	109.2	1.375	1.260			
16A-C16L-1-SS	1" A-LOK® Compression	.656	16.7	6.56	4.63	117.6	1.625	1.500			
16F-C16L-1-SS	1" Female NPT	.656	16.7	6.56	4.84	122.9	1.625	—			
16F5-C16L-1-SS	1" Male SAE	.656	16.7	6.56	4.10	104.1	1.625	—			
16G5-C16L-1-SS	1" Female SAE	.656	16.7	6.56	4.84	122.9	1.625	—			
16M-C16L-1-SS	1" Male NPT	.656	16.7	6.56	4.52	114.8	1.625	—			
16Z-C16L-1-SS	1" CPI™ Compression	.656	16.7	6.56	4.63	117.6	1.625	1.500			
M25A-C16L-1-SS	25mm A-LOK® Compression	.656	16.7	6.56	4.74	120.4	1.625	1.496			
M25Z-C16L-1-SS	25mm CPI™ Compression	.656	16.7	6.56	4.74	120.4	1.625	1.496			

Pressure Rating and Tubing Selection: For working pressures of A-LOK® and CPI™ tube connections, please see the Instrument Tubing Selection Guide (Bulletin 4200-TS), found in the Technical Section of the Parker Instrumentation Process Control Binder, or the Parker Instrument Tube Fitting Installation Manual (Bulletin 4200-B4).

For working pressures of valves with external or internal pipe threads, please see Catalog 4260, Instrumentation Pipe Fittings.

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

## Options

**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: 4A-C4L-1-BN-SS-C3**

## Kit Information

To order repair kits for the C Series Check Valves simply fill in the designators from the chart below.

Size	Crack Pressure	Seat Material
C2	1/3 psi	V Fluorocarbon Rubber
C4	1 psi	BN Nitrile
C8	10 psi	EPR Ethylene Propylene Rubber
C12	25 psi	NE Neoprene Rubber
C16		*T PTFE
		KZ Highly Fluorinated Fluorocarbon

\*PTFE kits can only be used to replace factory installed PTFE seats. It cannot be interchanged with seats of any other material.

**Examples:** KIT-C8-10-V, KIT-C16-25-BN



**Check Valve Kits Contain:**

Seat  
Spring  
Instructions



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