



## Check Valves, Filters and Relief Valves

Catalog 4135-CV

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aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
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## Introduction

Parker RH4 Relief Valves are designed such that when the upstream pressure exceeds the closing force exerted by the spring, the lower stem opens, permitting flow through the valve. Flow through the valve increases proportionately to the increase in upstream pressure.

## Features

- ▶ Pressure settings are externally adjustable while the valve is in operation. Eight different spring ranges provide greater system sensitivity and enhanced performance.
- ▶ Captured molded seat design is blow-out and chip resistant.
- ▶ Manual Override option with positive stem retraction is available for pressures up to 1500 psig (103 bar). This option permits the user to relieve upstream pressure while maintaining the predetermined cracking pressure.
- ▶ Color coded springs and labels indicate spring cracking range.
- ▶ Lock wire feature secures a given pressure setting.

## Specifications

### Working Pressure:

Up to 6000 psig (414 bar) CWP.

Up to 8000 psig (552 bar) during relief with no internal seal damage.

### Cracking Pressure:

Eight springs, from 50 psig to 6000 psig in the following ranges:

50-350 psig (3.4-24.1 bar)	350-750 psig (24.1-51.7 bar)	750-1500 psig (51.7-103.4 bar)
1500-2250 psig (103.4-155.1 bar)	2250-3000 psig (155.1-206.8 bar)	3000-4000 psig (206.8-275.8 bar)
4000-5000 psig (275.8-344.7 bar)	5000-6000 psig (344.7-413.7 bar)	

### Temperature Rating:

Nitrile Rubber.....-30°F to +225°F (-34°C to +107°C)

Highly Fluorinated Fluorocarbon Rubber  
.....-20°F to +200°F (-29°C to +93°C)

Ethylene Propylene Rubber  
.....-70°F to +275°F (-57°C to +135°C)

Fluorocarbon Rubber ..-10°F to +400°F (-23°C to +204°C)

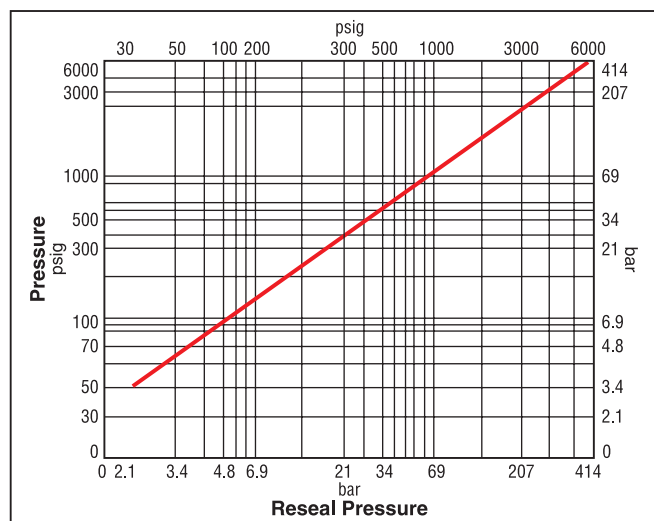
Neoprene Rubber.....-45°F to +250°F (-43°C to +121°C)

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## Flow Calculations

Inlet Pressure		Pressure Drop ΔP		Water @ 60°F (16°C)		Air @ 60°F (16°C)	
psig	bar	psig	bar	gpm	m <sup>3</sup> /hr	SCFM	m <sup>3</sup> /hr
100	7	1	0.1	0.4	0.1	4.3	7.0
		10	0.7	1.3	0.3	13.2	21.0
		50	3.5	2.9	0.7	24.2	37.3
1000	69	10	0.7	1.3	0.3	40.9	69.0
		100	6.9	4.1	0.9	123.5	208.4
		500	34.5	9.2	2.1	219.1	368.6
3000	207	100	6.9	4.1	0.9	220.1	373.5
		1000	69.0	13.0	2.9	590.8	1002.4
		1500	103.4	15.9	3.6	652.1	1105.7
6000	413	1000	69.0	13.0	2.9	916.8	1556.2
		2000	137.9	18.3	4.2	1179.7	2001.3
		3000	206.8	22.5	5.1	1301.6	2207.0

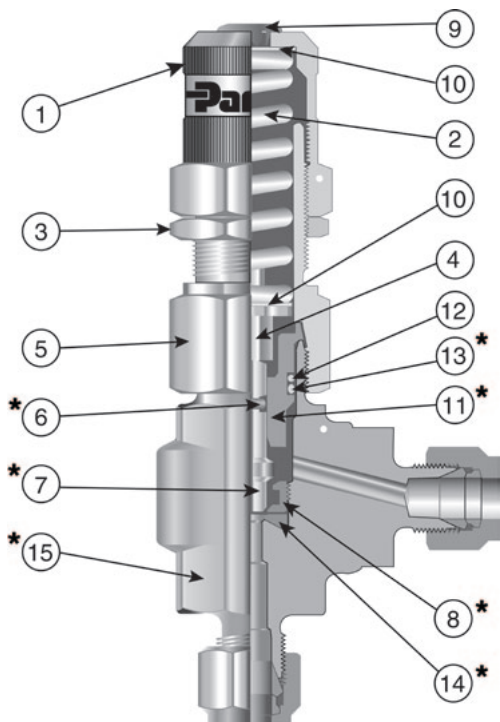
## Crack Pressure vs. Reseal Pressure



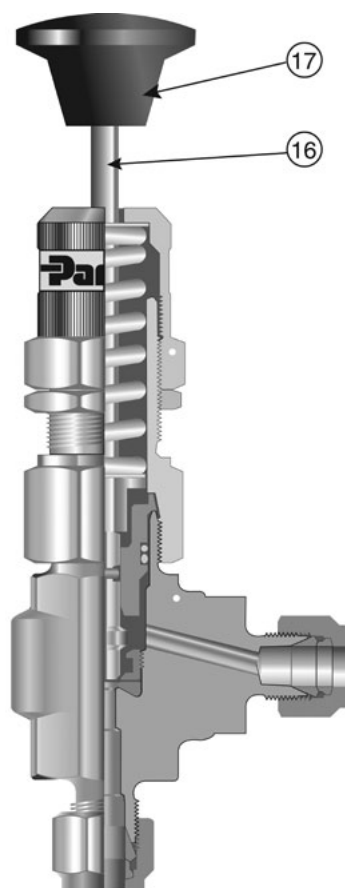
**Note:** Valves which are not actuated for a period of time may initially crack at higher than set crack pressures.

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

## Materials of Construction



Model Shown: 4A-RH4A-BNT-SS-K1



Model Shown: 4A-RH4A-VT-SS-MN-K2

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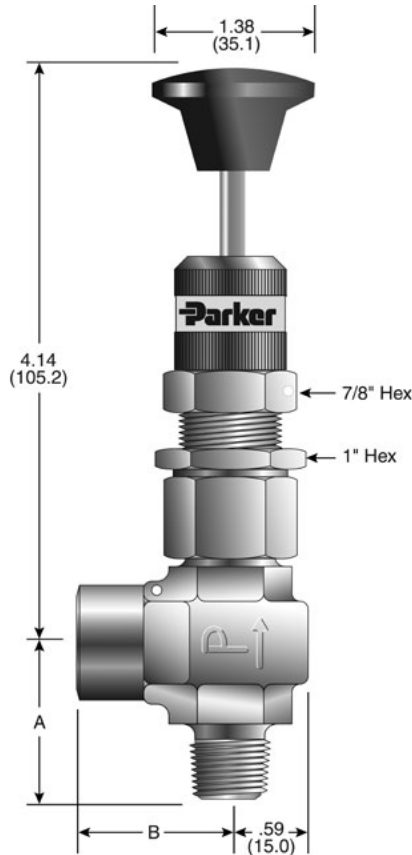
Item #	Part	Material
1	Cap	ASTM A 479, Type 316
2	Spring	17-7 Stainless Steel
3	Locknut	316 Stainless Steel
4	Upper Stem	ASTM A 479, Type 316
5	Bonnet	ASTM A 479, Type 316
*6	Stem Seal	**Fluorocarbon Rubber
*7	Lower Stem	ASTM A 479, Type 316
*8	Seat Retainer	ASTM A 479, Type 316
9	Plug	Zinc Plated Steel
10	Washer	PTFE
*11	Stem Guide	ASTM A 479, Type 316
12	Back-up Ring	PTFE
*13	Body Seal	**Fluorocarbon Rubber
*14	Seat	**Fluorocarbon Rubber
*15	Valve Body	ASTM A 182, Type F316
16	Handle Stem	ASTM A 479, Type 316
17	Handle	Phenolic

\* Wetted Parts

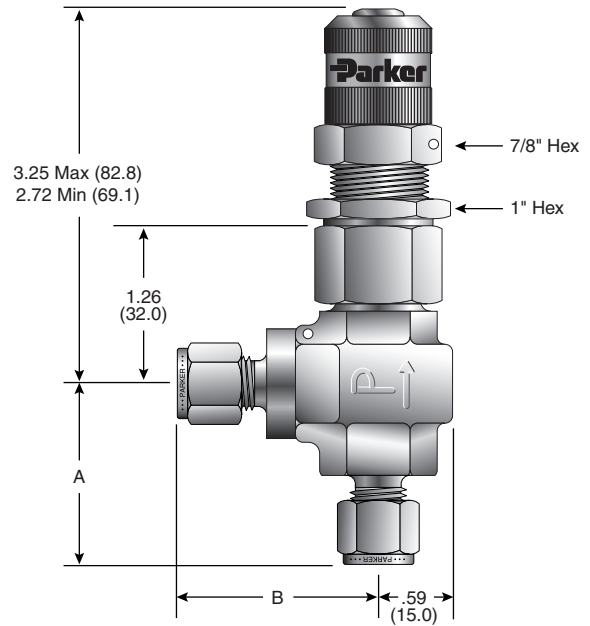
\*\* Optional seat and seal materials are located in How to Order section.

Lubrication: Perfluorinated polyether.

## Dimensions / Flow Data



**Model Shown:**  
**4M4F-RH4A-VT-SS-MN-K2**



**Model Shown:**  
**4A-RH4A-BNT-SS-K1**

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

Basic Part Number	End Connections		Flow Data				Dimensions †			
	(Inlet) Port 1	(Outlet) Port 2	Orifice		$C_v$	$X_T^*$	A		B	
			Inch	mm			inch	mm	inch	mm
4A-RH4A	1/4" A-LOK® Compression	1/4" A-LOK® Compression	0.14	3.6	0.41	0.67	1.44	36.6	1.60	40.6
4Z-RH4A	1/4" CPI™ Compression	1/4" CPI™ Compression					1.44	36.6	1.60	40.6
4M4A-RH4A	1/4" Male NPT	1/4" A-LOK® Compression					1.19	30.2	1.60	40.6
4M4Z-RH4A	1/4" Male NPT	1/4" CPI™ Compression					1.19	30.2	1.60	40.6
4M4F-RH4A	1/4" Male NPT	1/4" Female NPT					1.19	30.2	1.17	29.7
4KF-RH4A	1/4" Female BSP/ISO Tapered	1/4" Female BSP/ISO Tapered					1.19	30.2	1.17	29.7
4KM-RH4A	1/4" Male BSP/ISO Tapered	1/4" Male BSP/ISO Tapered					1.19	30.2	1.17	29.7
M6A-RH4A	6mm A-LOK® Compression	6mm A-LOK® Compression					1.44	36.6	1.60	40.6
M6Z-RH4A	6mm CPI™ Compression	6mm CPI™ Compression					1.44	36.6	1.60	40.6
M8A-RH4A	8mm A-LOK® Compression	8mm A-LOK® Compression					1.44	36.6	1.60	40.6
M8Z-RH4A	8mm CPI™ Compression	8mm CPI™ Compression					1.44	36.6	1.60	40.6

\* Tested in accordance with ISA S75.02. Gas flow will be choked when  $P_1 - P_2 / P_1 = x_T$ .

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

## How to Order

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

The correct part number is easily derived from the following example and ordering chart. The eight product characteristics required are coded as shown in the chart.

**Example 1** below describes an RH4A Series externally adjustable relief valve equipped with 1/4" CPI™ compression inlet and outlet ports, Nitrile seals, PTFE back-up ring, stainless steel construction, and a 3000 to 4000 psig (206.8 to 275.8 bar) spring kit.

**Example 2** below describes an RH4A Series externally adjustable relief valve equipped with 1/4" male NPT inlet port, 1/4" female NPT outlet port, ethylene propylene seals, PTFE back-up ring, stainless steel construction, manual override option, and a 50 to 350 psig (3.4 to 24.1 bar) spring kit.

**Example 1:** 4Z-RH4A-BNT-SS-K6 (shown in the part number blocks below)

**Example 2:** 4M4F-4H4A-EPRT-SS-MN-K1

4Z		-	RH4A		-	BN T		-	SS		-	K6			
Inlet Port*		Outlet Port*		Valve Series		Seal Material		Back-Up Rings**		Body Material		Actuation		Spring Kit***	
Inlet Port*	Outlet Port*	Valve Series	Seal Material	Back-Up Rings**	Body Material	Actuation	Spring Kit*** (psig)								
4M	Male NPT	RH4A	V	Fluorocarbon	T	PTFE	SS	316 Stainless Steel	Blank	Standard	K1	50 - 350			
4F	Female NPT		BN	Rubber							EPR	Ethylene Propylene Rubber	K2	350 - 750	
4A	A-LOK® Compression		EPR	Nitrile Rubber	NE	Highly Fluorinated							K3	750 - 1500	
4Z	CPI™ Compression		NE	Ethylene Propylene Rubber					KZ	Fluorocarbon Rubber	K4	1500 - 2250			
4KF	Female BSP/ISO		KZ	Highly Fluorinated	Fluorocarbon Rubber	K5					2250 - 3000				
4KM	Male BSP/ISO					K6			3000 - 4000						
M6A	A-LOK® Compression		K7	4000 - 5000											
M6Z	CPI™ Compression		K8	5000 - 6000											
M8A	A-LOK® Compression														
M8Z	CPI™ Compression														

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\* If the inlet and outlet ports are the same, eliminate the outlet port designator.

\*\* To order valve with an elastomer back-up ring, eliminate Back-Up Rings code.

\*\*\* To order only the valve without a spring kit, eliminate Spring Kit code.

## Spring Kits

Kit Part Number	Cracking Pressure Range (psig)	Cracking Pressure Range (bar)	Color Code
KIT-RH4SP-50-350	50-350	3.4-24.1	Gray
KIT-RH4SP-350-750	350-750	24.1-51.7	Red
KIT-RH4SP-750-1500	750-1500	51.7-103.4	Orange
KIT-RH4SP-1500-2250	1500-2250	103.4-155.1	Yellow
KIT-RH4SP-2250-3000	2250-3000	155.1-206.8	Light Green
KIT-RH4SP-3000-4000	3000-4000	206.8-275.8	Light Blue
KIT-RH4SP-4000-5000	4000-5000	275.8-344.7	Violet
KIT-RH4SP-5000-6000	5000-6000	344.7-413.7	Lemon Yellow



### Spring Kit Contains:

- Spring
- Coded label
- PTFE washers
- Locking wire / lead seal
- Installation Instructions

## Seal Kits

Kit Part Number	Seat/Seal Material
KIT-RH4-VT	Fluorocarbon Rubber
KIT-RH4-BNT	Nitrile Rubber
KIT-RH4-EPRT	Ethylene Propylene Rubber
KIT-RH4-NET	Neoprene Rubber
KIT-RH4-KZT	Highly Fluorinated Fluorocarbon Rubber

### Seal Kit Contains:

- Stem Seal
- Bonnet Seal
- PTFE Back-Up Ring
- Lower Stem Assembly
- Maintenance Instructions

