

# Relief Valves

## Medium Pressure, High Pressure, and NPT Inlet Options to 75,000 psi

RVP/PRVP and RVS/PRVS Series



### Principle of Operation:

Parker Autoclave Engineers relief valves are designed to open proportionally to increasing pressure. Therefore, they are not recommended for applications requiring immediate full valve flow at set pressure and should not be considered a "Safety Valve". Full flow of relief valve is defined as 110% of set pressure.

### RVP Metal Seat Relief Valve:

Series RVP relief valves provide reliable venting of gases or liquids for set pressures from 3,000 psi (205 bar) minimum to 75,000 psi (5170 bar). The standard temperature range for all models is -423° to 400°F (-252° to 204°C). A high temperature option to 750°F (399°C) is also available.

These precision valves are designed for pressure gas systems, cryogenic systems, petrochemical applications and other special systems. Capable of handling air, gases, steam, vapor and liquids, they are however, not recommended for steam boiler applications nor are they ASME code stampable (K-Factors are not available).

### RVS Soft Seat Relief Valve:

Series RVS relief valves utilize a PEEK soft seat design for reliable venting of gases at set pressures from 1,500 psi (103 bar) to 20,000 psi (1380 bar). The operating temperature range is -50° to 400°F (-46° to 204°C).

The soft seat design provides bubble tight sealing, repeatable pop-off, and reseal. Additionally, soft seat valves provide a higher cycle life than metal seat relief valves.

These precision valves are designed for gases and liquid systems where zero leakage is critical. They are not recommended for liquefied gases which produce gas at cryogenic temperatures below -50°F upon relief.



ENGINEERING YOUR SUCCESS.

# Relief Valves: Pressures to 75,000 psi (5170 bar)

## Features and Benefits:

### Material:

Standard models of Relief Valves are constructed of UNS S31600, 316 cold worked stainless steel with selected components made of anti-galling stainless steel material for optimum economy and ruggedness.

### Connections:

#### Cone and Thread versions (RVP & RVS Series):

Models 5, 10, and 20RVS Series = SF562C 9/16" Medium Pressure Cone & Thread Connection

Models 5, 10, 15, and 20RVP = SF562C 9/16" Medium Pressure Cone & Thread Connection

Models 30, 45, and 60 RVP = F375C 3/8" High Pressure Cone & Thread Connection

Model 75RVP = F312C150 5/16" Ultra-High Pressure Cone & Thread Connection

#### NPT Inlet Versions (PRVP & PRVS Series):

Models 5, 10 and 15 PRVS and PRVP Series = 1/2" NPT

The outlet connection on all models is a female 3/4" NPT. While adapters to other sizes and connection types are available, they must be sized for specific flow requirements. Outlet pressure cannot exceed 500 psi (35 bar) in all pressure ranges.

### Orifice Sizes:

Orifice diameters range from .062 (1.57mm) to .312" (7.92mm). (See chart on page 5 for list of valve orifice options)

### Full Lift for Full Flow:

These relief valves are designed to open as a function of increasing system pressure. Proper spring selection assures repeatability of opening, full lift and flow, and reseal pressures.

### Reliability and Long Service Life:

Materials engineering and stringent quality control procedures combine to assure the highest quality, reliability and service life. Each valve is preset and factory sealed to ensure proper valve operation. Note: Mount as far from Pump Outlet as possible to avoid premature relief and extend valve life.

### Setpoint Accuracy:

Setpoint Accuracy is  $\pm 3\%$ .

Re-Seat Pressure: 85% of set pressure

### High Set Pressure Capability:

Unique seat construction plus over-the-nozzle guiding and proper selection of materials permits standard set pressures to 75,000 psi. (5170 bar).

### Dependable Shut-Off:

Series RVP/PRVP relief valves are designed to provide shut-off of liquids and gases under pressure to commercial tightness standards. Series RVS/PRVS relief valves are designed to provide bubble tight shut off of gases and liquids.

### Fewer Parts, Ease of Maintenance:

Engineered to perform with fewer basic components, both RVP/PRVP and RVS/PRVS valves facilitate minimum stocking of spare parts and ease of maintenance. The combined angle seat in the RVP/PRVP series eliminates the need for lapping in rework.

### Special Requirements:

Most models available with CE Mark/PED Approval (PRVP and PRVS are exception) to Category IV. SOG (NACE MR0175) option available upon request.

# Relief Valves: Pressures to 75,000 psi (5170 bar)

## Options:

Parker Autoclave Engineers can supply various options on special order. A high temperature option is also available for temperatures to 750°F (399°C) for RVP or PRVP models. To specify high temperature option: Add suffix “HT” for 750°F (399°C) high temperature option.

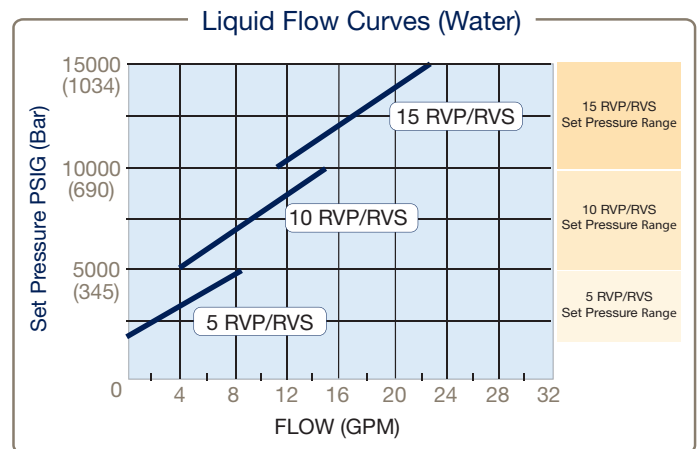
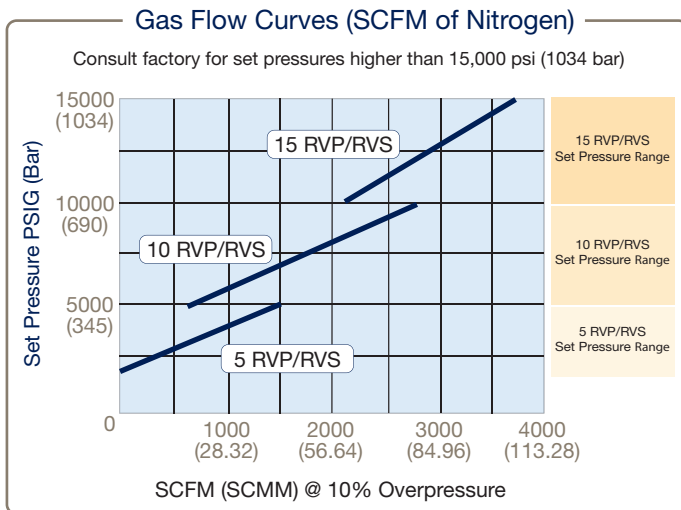
Note: Pressure rating for elevated temperature based on derating curves. (See Technical Brochure).

## Caution:

1. AE relief valves are preset and factory sealed. Warranty is voided if seal is broken by customer.
2. Maximum system operating pressure should not exceed 90% of relief valve set pressure. **Operating pressures in excess may cause weepage resulting in damage to the plug and seat.**
3. Relief Valves are not to be used as Pressure regulators, RVP has limited actuation life dependent on pressure.

## Ordering Instructions:

To permit prompt and correct responses to your order, we will require the following information: quantity, valve catalog number, service requirements (liquid, gas & vapor), set pressure (PSIG - bar), and service temperature range.



All models are designed primarily for thermal expansion or low volume relief applications at high pressures where flow is not critical.

Note: Curves on this page are based on capacities of valves only and do not take tubing into account.

Caution should be exercised in proper selection of medium pressure tubing based on actual operating conditions. Two series available: 15,000 (1035 bar) and 20,000 (1380 bar).

# Relief Valves: Pressures to 75,000 psi (5170 bar)

## Relief Valve Dimensions and Details:

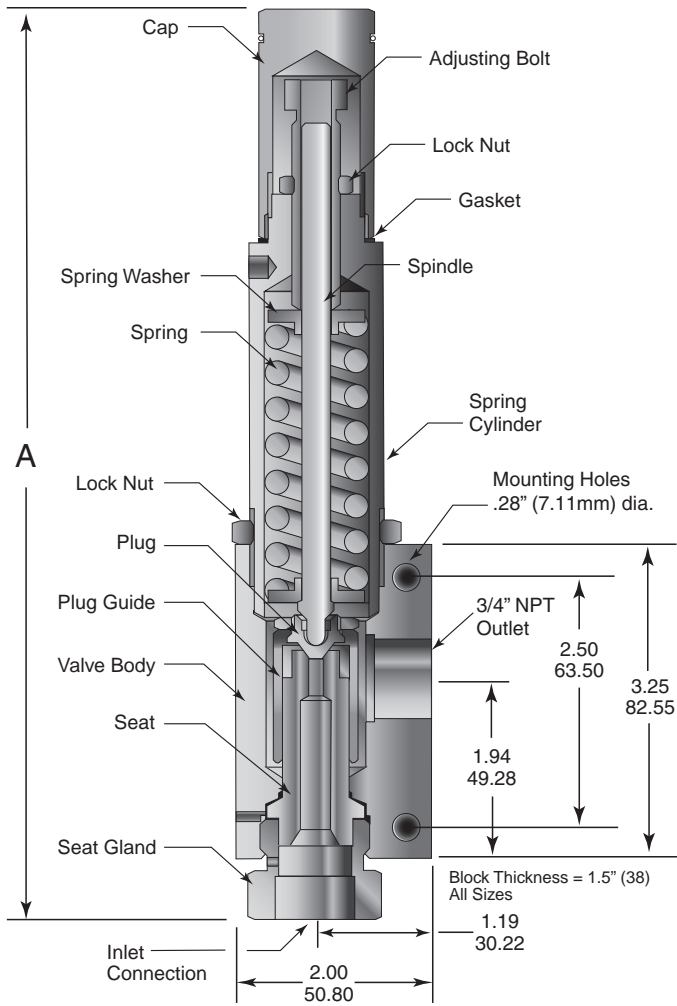


Figure 1  
RVP/PRVP Series (Metal Seat)

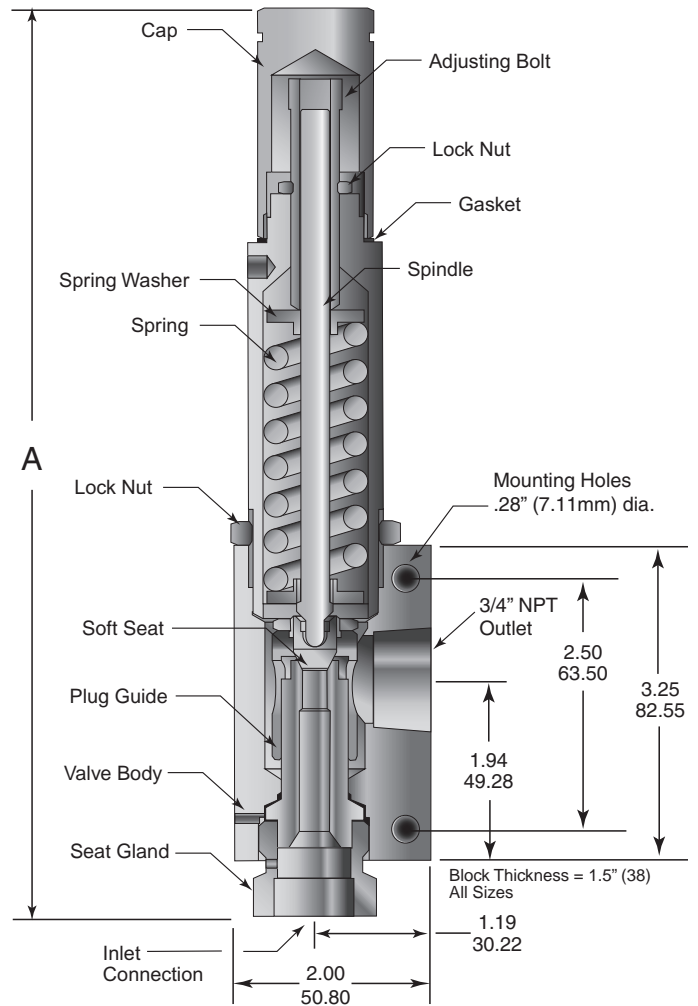


Figure 2  
RVS/PRVS Series (Soft Seat)

Note: For "A" dimension please reference the "Ordering and Specifications" table on Page 5.

# Relief Valves: Pressures to 75,000 psi (5170 bar)

## Ordering and Specifications:

**FIGURE 1: RVP & PRVP Metal Seat Series Relief Valve (PRVP is NPT Inlet version)**

Catalog Number*	Connection Size and Type		Orifice Diameter Inches (mm)	Pressure Rating psi (bar) @ 100°F (38°C)			Dimension Inches (mm)	Repair Kit <sup>1</sup>
	Inlet Connection	Outlet Connection		Minimum Setting	Maximum Setting	Maximum Back Pressure	"A"	
5PRVP8072	1/2" FNPT	3/4 FNPT	0.312 (7.92)	3,000 (210)	5,000 (345)	500 (35)	10.47 (266)	R5PRVP
10PRVP8072	1/2" FNPT	3/4 FNPT	0.250 (6.35)	5,000 (345)	10,000 (690)	500 (35)	10.47 (266)	R10PRVP
15PRVP8072	1/2" FNPT	3/4 FNPT	0.188 (4.78)	10,000 (690)	15,000 (1035)	500 (35)	10.47 (266)	R15RVP
5RVP9072	SF562CX (9/16" MP)	3/4 FNPT	0.312 (7.92)	3,000 (210)	5,000 (345)	500 (35)	9.40 (238)	R5RVP
10RVP9072	SF562CX (9/16" MP)	3/4 FNPT	0.250 (6.35)	5,000 (345)	10,000 (690)	500 (35)	9.40 (238)	R10RVP
15RVP9072	SF562CX (9/16" MP)	3/4 FNPT	0.188 (4.78)	10,000 (690)	15,000 (1035)	500 (35)	9.40 (238)	R15RVP
20RVP9072	SF562CX (9/16" MP)	3/4 FNPT	0.156 (3.96)	15,000 (1035)	20,000 (1380)	500 (35)	9.40 (238)	R20RVP
30RVP6072	F375C (3/8" HP)	3/4 FNPT	0.125 (3.18)	15,000 (1035)	30,000 (2070)	500 (35)	9.52 (241)	R30RVP
45RVP9072	F562C (9/16" HP)	3/4 FNPT	0.093 (2.36)	25,000 (1725)	45,000 (3100)	500 (35)	9.52 (241)	R45RVP
60RVP6072	F375C (3/8" HP)	3/4 FNPT	0.078 (1.98)	30,000 (2070)	60,000 (4140)	500 (35)	9.52 (241)	R60RVP
75RVP5072	F312C150 (5/16" UHP)	3/4 FNPT	0.062 (1.57)	37,000 (2550)	75,000 (5170)	500 (35)	9.83 (249)	R75RVP

**FIGURE 2: RVS & PRVS Soft Seat Series Relief Valve (PRVS is NPT Inlet version)**

Catalog Number*	Connection Size and Type		Orifice Diameter Inches (mm)	Pressure Rating psi (bar) @ 100°F (38°C)			Dimension Inches (mm)	Repair Kit <sup>1</sup>
	Inlet Connection	Outlet Connection		Minimum Setting	Maximum Setting	Maximum Back Pressure	"A"	
5PRVS8072	1/2" FNPT	3/4 FNPT	0.312 (7.92)	1,500 (103)	5,000 (345)	500 (35)	10.47 (266)	R5PRVS
10PRVS8072	1/2" FNPT	3/4 FNPT	0.250 (6.35)	5,000 (345)	10,000 (690)	500 (35)	10.47 (266)	R10PRVS
15PRVS8072	1/2" FNPT	3/4 FNPT	0.188 (4.78)	10,000 (690)	15,000 (1035)	500 (35)	10.47 (266)	R15PRVS
5RVS9072	SF562CX (9/16" MP)	3/4 FNPT	0.312 (7.92)	1,500 (105)	5,000 (345)	500 (35)	9.40 (238.76)	R5RVS
10RVS9072	SF562CX (9/16" MP)	3/4 FNPT	0.250 (6.35)	5,000 (345)	10,000 (690)	500 (35)	9.40 (238.76)	R10RVS
20RVS9072	SF562CX (9/16" MP)	3/4 FNPT	0.156 (3.96)	10,000 (690)	20,000 (1378)	500 (35)	9.40 (238.76)	R20RVS

\* Maximum pressure rating based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower. Note: For pressure rating see selection chart.

<sup>1</sup> Include suffix from original valve for correct options

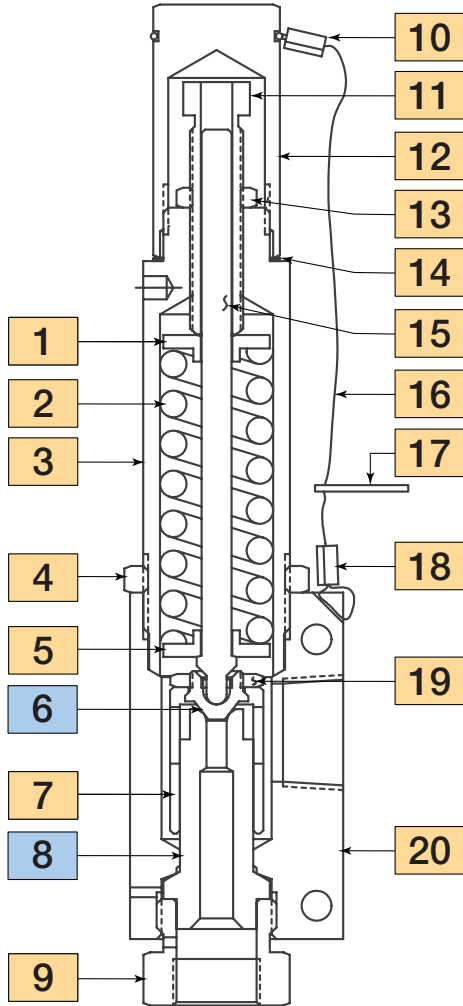
Suffix	Relief Valve Options (add as suffix to Catalog number listed above)
HT	High Temperature Spring to 750°F (399°C) (RVP or PRVP Series only)
K	Antivibration Gland Fitting (Cone & Thread Connections)
HYG	Modified for use with Hydrogen/Helium
CE	CE Mark/PED Category IV (not available with PRVP or PRVS models)
SOG	Materials used are NACE Capable & Hardness verified (Maximum pressure reduction possible)
2507	UNS S32750 2507 Super Duplex Wetted Materials
HC	UNS N10276 Hastelloy C-276 Wetted Materials
IN625	UNS N06625 Inconel 625 Wetted Materials

(See "Technical Brochure" for Pressure/Temperature effect on temperatures above ambient.)

**Note:** use of optional material only changes "wetted parts" to selected material. Items like collars and glands remain CW 316/316L SS. Use **-SOG** (Includes hardness check for NACE) or **-AP** suffix

# Relief Valves: Pressures to 75,000 psi (5170 bar)

## Cone and Thread Version: RVP Series



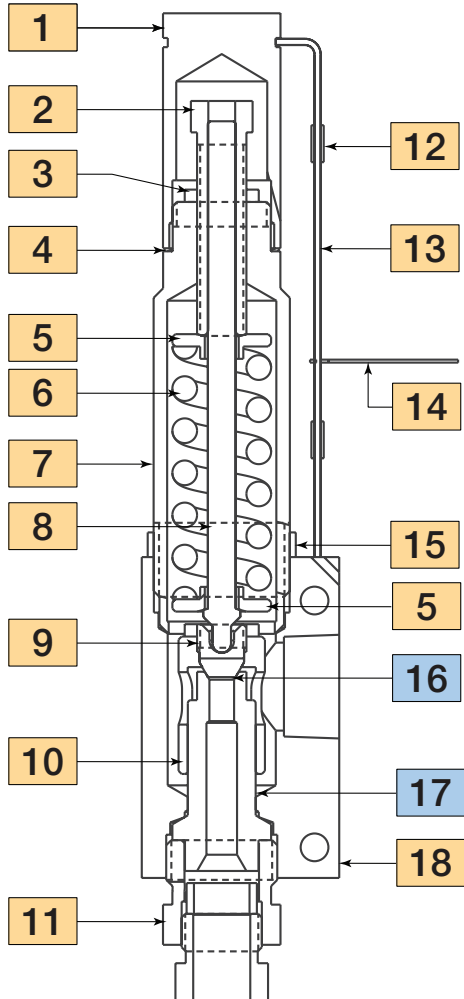
### Material of Construction:

Item #	Description	Material
1	Spring Washer	316 SS
2	Spring	316 SS
3	Spring Cylinder	316 SS
4	Lock Nut	316 SS
5	Spring Washer	316 SS
6	Plug	316 SS
7	Plug Guide	Nitronic 60
8	Seat	316 SS
9	Seat Gland	316 SS
10	Splicing Sleeve	-
11	Adjusting Bolt	Nitronic 60
12	Cap	316 SS
13	Lock Nut	316 SS
14	Gasket	302/304 Annealed
15	Spindle	316 SS
16	Cable, 1/16" Dia.	300 Series SS
17	Nameplate	300 Series SS
18	Splicing Sleeve	-
19	Lock Nut	316 SS
20	Valve Body	316 SS

Typical spare parts found in Repair Kits listed on page 5

# Relief Valves: Pressures to 75,000 psi (5170 bar)

## Cone and Thread Version: RVS Series



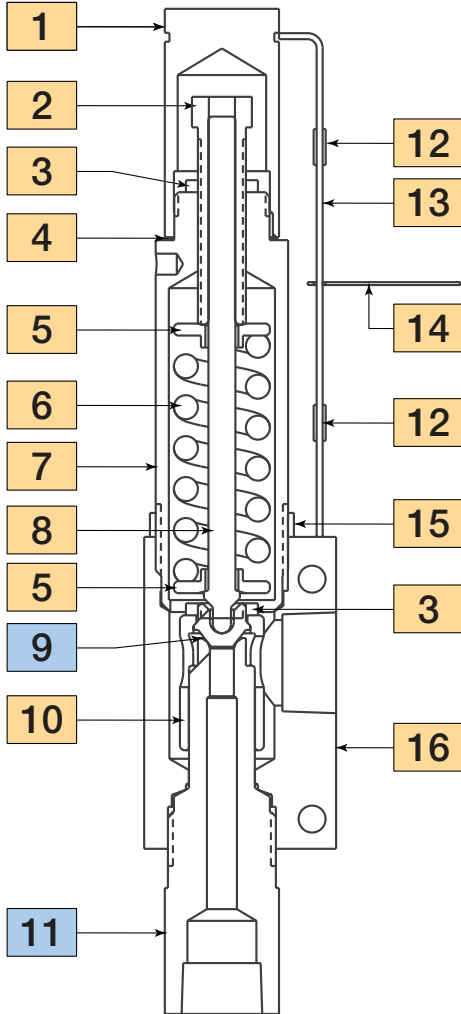
### Material of Construction:

Item #	Description	Material
1	Cap	300 Series SS
2	Adjusting Bolt	Nitronic 60
3	Lock Nut	316 SS
4	Gasket	304 SS Annealed
5	Spring Washer	316 SS
6	Spring	316 SS
7	Spring Cylinder	316 SS
8	Spindle	316 SS
9	Plug Gland	316 SS
10	Plug Guide	Nitronic 60
11	Seat Gland	316 SS
12	Splicing Sleeve	316 SS
13	Cable	316 SS
14	Nameplate	304 SS
15	Lock Nut	316 SS
16	Soft Seal	Arlon 1260
17	Seat	316 SS
18	Body	304 SS

Typical spare parts found in Repair Kits listed on page 5

# Relief Valves: Pressures to 75,000 psi (5170 bar)

## NPT Version: PRVP Series



## Material of Construction:

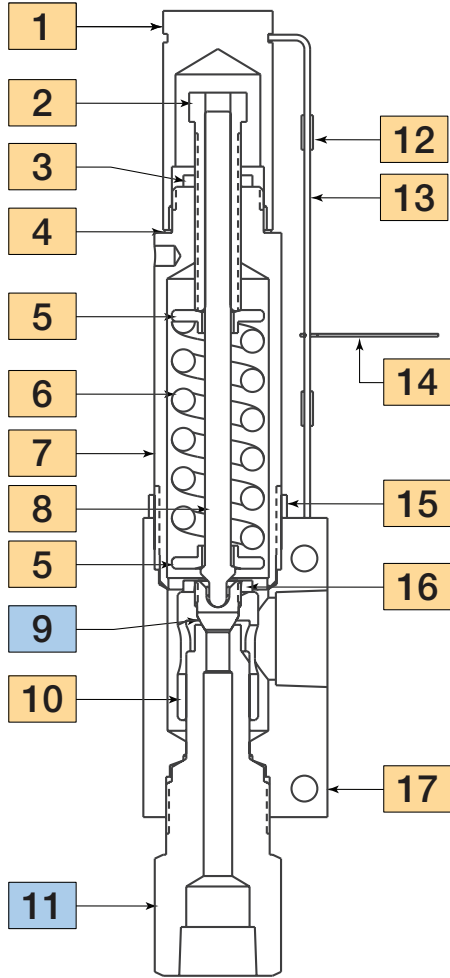
Item #	Description	Material
1	Cap	316 SS
2	Adjusting Bolt	Nitronic 60
3	Lock Nut	316 SS
4	Gasket	304 SS Annealed
5	Spring Washer	316 SS
6	Spring	316 SS
7	Spring Cylinder	316 SS
8	Spindle	316 SS
9	Plug	316 SS
10	Plug Guide	Nitronic 60
11	Seat Gland	316 SS
12	Splicing Sleeve	316 SS
13	Cable	316 SS
14	Nameplate	304 SS
15	Lock Nut	316 SS
16	Valve Body	316 SS

Typical spare parts found in Repair Kits listed on page 5.



# Relief Valves: Pressures to 75,000 psi (5170 bar)

## NPT Version: PRVS Series



## Material of Construction:

Item #	Description	Material
1	Cap	316 SS
2	Adjusting Bolt	Nitronic 60
3	Lock Nut	316 SS
4	Gasket	304 SS Annealed
5	Spring Washer	316 SS
6	Spring	316 SS
7	Spring Cylinder	316 SS
8	Spindle	316 SS
9	Soft Seat	Arlon 1263
10	Plug Guide	Nitronic 60
11	Seat	316 SS
12	Splicing Sleeve	316 SS
13	Cable	316 SS
14	Nameplate	304 SS
15	Lock Nut	316 SS
16	Lock Nut	316 SS
17	Body	316 SS

Typical spare parts found in Repair Kits listed on page 5.



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 <b>FLUID and GAS HANDLING</b>	Aerospace Agriculture Bulk Chemical Handling Construction Machinery Food & Beverage Fuel & Gas Delivery	Industrial Machinery Mobile Oil & Gas Transportation Welding	Brass Fittings & Valves Diagnostic Equipment Fluid Conveyance Systems Industrial Hose	PTFE & PFA Hose, Tubing & Plastic Fittings Rubber & Thermoplastic Hose & Couplings Tube Fittings & Adapters Quick Disconnects
 <b>HYDRAULICS</b>	Aerospace Aerial lift Agriculture Construction Machinery Forestry	Industrial Machinery Mining Oil & Gas Power Generation & Energy Truck Hydraulics	Diagnostic Equipment Hydraulic Cylinders & Accumulators Hydraulic Motors & Pumps Hydraulic Systems Hydraulic Valves & Controls	Power Take-Offs Rubber & Thermoplastic Hose & Couplings Tube Fittings & Adapters Quick Disconnects
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### ! CAUTION !

Do not mix or interchange component parts or tubing with those of other manufacturers. Doing so is unsafe and will void warranty.

Parker Autoclave Engineers Valves, Fittings, and Tools are not designed to interface with common commercial instrument tubing and are designed to only connect with tubing manufactured to Parker Autoclave Engineers AES specifications. Failure to do so is unsafe and will void warranty.

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