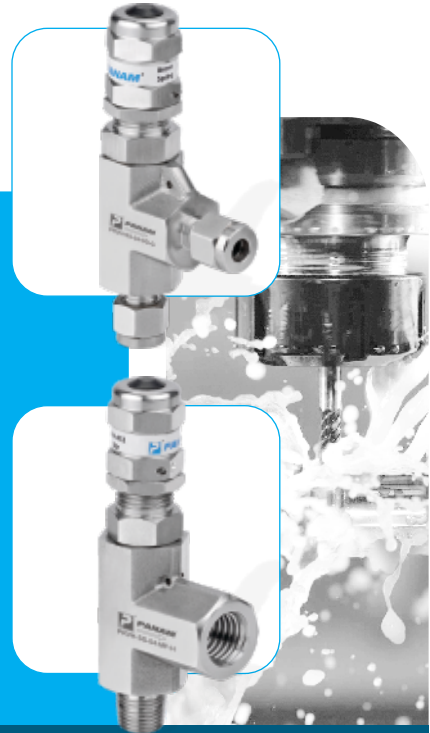




**PANAM**  
ENGINEERING  
BEYOND  
LIMITS

# Relief Valves

Maximum Working Pressure upto  
15000 psi (1034 bar)



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Rev/04/2023

## Introduction

**PANAM**<sup>®</sup> has emerged as renowned name in global market for 'Instrumentation Fittings & Valves'. Since its inception in 1998 to present day, **PANAM**<sup>®</sup> has added new product every year and has broadened its product portfolio and its clientele base by supplying to potential customers worldwide. Key core values like Timely Delivery, Quality Consistency, Product Improvisation and After Sales Service has been instrumental in the phase wise evolution of company. Continuous improvement is the key to success, Customer feedback are taken with positive attitude and product are constantly groomed to a new quality and performance level to cope up with the competition. Our products are known for providing high-quality, high-reliability, low-cost options for the oil and gas industry. Over the year, the company has evolved from a product based company to a complete system solution provider. Over the coming years the entity of the company will attain state of the art operational efficiency for maintaining a competitive edge, with the advent increase in the utilization of its products in oil, gas and power sector.

**PANAM**<sup>®</sup> is having state of the art manufacturing facility span over an area of 65,000 sqft with a fleet of CNC Machines, VMC Machines, Semi-Automatic Lathe Machines, High Pressure Test Bench with SCADA Control, Configuration Centre for Transmitters and dedicated R&D Team.

**PANAM**<sup>®</sup> offers a large variety of Relief Valves from different materials like Stainless Steel & Brass, and as per the customer's requirements.

**PANAM**<sup>®</sup> offers Relief Valves with a variety of end connections including NPT Tapered, ISO Tapered (BSPT), ISO Parallel (BSPP), Metric Thread / **PANAM**<sup>®</sup> Tube Fittings.

**PANAM**<sup>®</sup> Relief Valve is subject to the required factory testing, meeting the requirements of NACE MR0175 with heat code traceability. Maximum working pressure of relief valves up to 15000 psi (1034 bar).

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## Description

Relief valves are designed for use in corrosive and hazardous environments up to 15000 psi (1034 bar). Valves are used in process equipment, instrumentation equipment for controlling the flow. The production process includes high-precision machining. The valves have high wear resistance, high efficiency during operation, high quality and they are affordable for use in control systems in liquid and gaseous media.

The quality of the relief valves meets the high requirements for pipeline instrumentation. Relief valves are made of high quality stainless steel & brass, Relief valves can be delivered meeting the requirements of NACE MR0175 (for sour gas service).

## Characteristics

- Standard body material – stainless steel SS 316
- Maximum working pressure 15000 psi (1034 bar)
- Stem packing - FKM / NBR / EPDM / Kalrez
- Working temperature from -23°C to +148°C (from -10°F to +298°F) with NBR seat
- Working temperature from -23 °C to +148°C (from -10°F to +400°F) with FKM seat
- Working temperature from -58 °C to +150°C (from -10°F to +302°F) with EPDM seat
- Working temperature from -23°C to +315°C (from -10°F to 600°F) with KALREZ seat
- End connections from 1/4 " to 1/2" (from 6 mm to 12mm)
- Variety of end connections includes **PANAM**<sup>®</sup> tube fittings from both sides for imperial or metric tube, female thread, male thread, male thread / female thread.
- Thread types: NPT tapered threads, ISO tapered threads (BSPT), ISO parallel threads (BSPP), metric threads
- Cracking pressure adjustable externally
- Lock wire feature secures a given pressure setting

## Testing

Every **PANAM**<sup>®</sup> valve is factory tested for set and reseal performance.

## Cleaning and Packaging

All **PANAM**<sup>®</sup> Relief Valves are cleaned in accordance with Standard Procedure of **PANAM ENGINEERS LTD.** Standard cleaning and packaging Procedure PWI/5.7/21.

## Features of Relief Valves - RVL, RVH, RVH-10K Series & RVH-15K Series

### RVL Series

- Working pressure up to 300 psi (21 bar)
- Forged-body construction
- Orifice size: 4.8mm (0.19")
- One spring for full set pressure range
- Set pressure range :- 10 to 225 psi (0.7 to 15.5 bar)

Spring Code	Spring Colour	Set Pressure Range	
		Psig	Bar
L	Purple	10 to 225	0.7 to 15.5

### RVH Series

- Working pressure up to 6000 psi (414 bar)
- Forged-body construction
- Orifice size: 3.6mm (0.14")
- Multiple spring for selection of set pressure range
- Set pressure range :- 50 to 6000 psi (3.4 to 414 bar)

Spring Code	Spring Colour	Set Pressure Range	
		Psig	Bar
A	White	50 to 350	3.4 to 24.1
B	Blue	350 to 750	24.1 to 51.7
C	Gold	750 to 1500	51.7 to 103
D	Black	1500 to 2250	103 to 155
E	Green	2250 to 3000	155 to 207
F	Yellow	3000 to 4000	207 to 276
G	Brown	4000 to 5000	276 to 345
H	Orange	5000 to 6000	345 to 414

### PRVH-10K Series

- Working pressure up to 10000 psi (689 bar)
- Bar stock body construction
- Orifice size: 1.5mm (0.06")
- One spring for full set pressure range
- Set pressure range :- 5000 to 10000 psi (345 to 689 bar)

Spring Code	Spring Colour	Set Pressure Range	
		Psig	Bar
I	Pink	5000 to 10000	345 to 689

### PRVH-15K Series

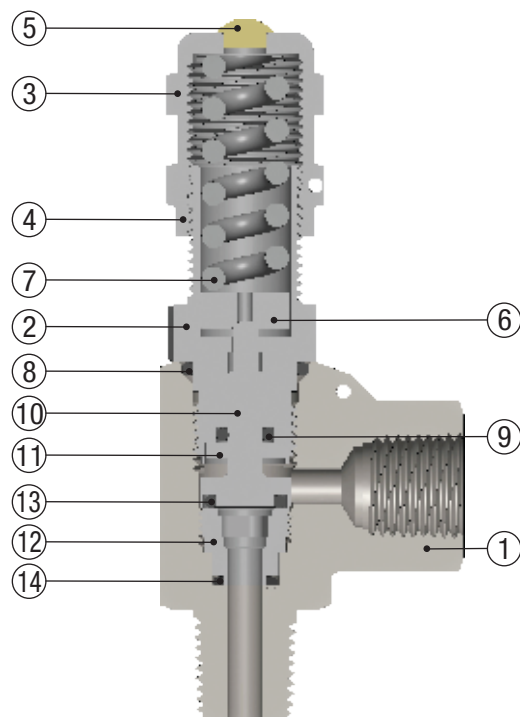
- Working pressure up to 15000 psi (1034 bar)
- Bar stock body construction
- Orifice size: 1.5mm (0.06")
- One spring for full set pressure range
- Set pressure range :- 7500 to 15000 psi (517 to 1034 bar)

Spring Code	Spring Colour	Set Pressure Range	
		Psig	Bar
J	Red	7500 to 15000	517 to 1034

## Set Pressure and Resealing Pressure

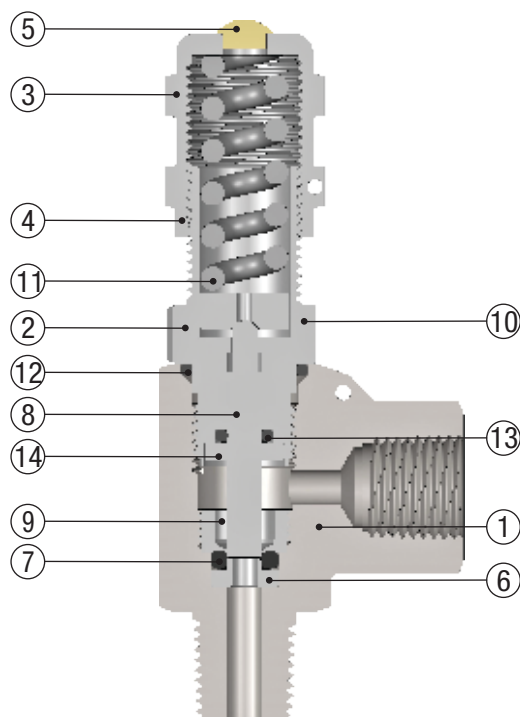
- Set pressure is the upstream pressure at which the first indication of flow occurs
- Set pressure of each valve after initial relief is repeatable within 5% at room temperature
- Resealing pressure is the upstream pressure at which there is no indication of flow
- Resealing pressure is always lower than set pressure.

Material of Construction - RVL Series



No	Part	Qty.	Material
1	Body	1	ASTM A182 F316
2	Gland Body	1	ASTM A479 SS316
3	Adjustable Nut	1	ASTM A479 SS316
4	Lock Nut	1	ASTM A479 SS316
5	Cap	1	DELTRIN (POM)
6	Spring Guide	1	ASTM A479 SS316
7	Spring	1	17.7 Ph
8	Oring	1	Fluorocarbon FKM
9	Oring	1	Fluorocarbon FKM
10	Poppet	1	ASTM A479 SS316
11	Washer	1	ASTM A479 SS316
12	Retainer	1	ASTM A479 SS316
13	Oring	1	Fluorocarbon FKM
14	Oring	1	Fluorocarbon FKM

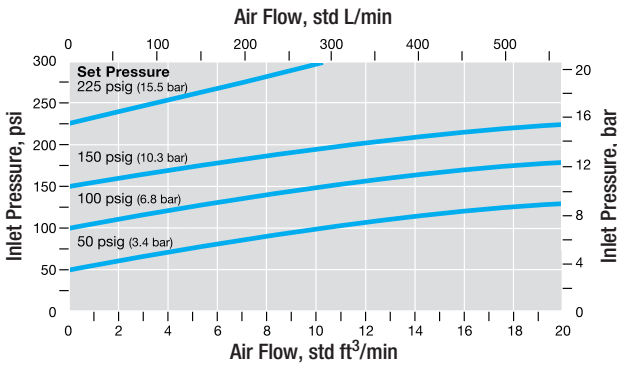
Material of Construction - RVH Series



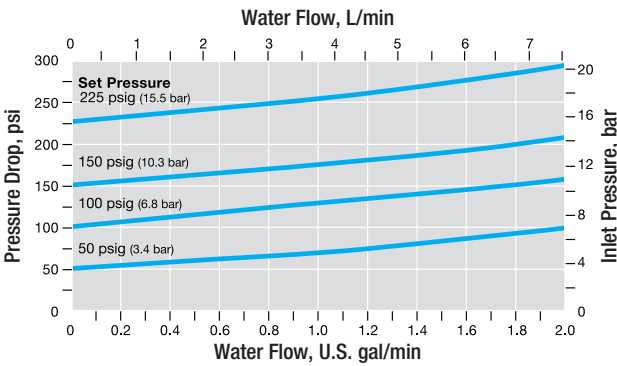
No	Part	Qty.	Material
1	Body	1	ASTM A182 F316
2	Gland Body	1	ASTM A479 SS316
3	Adjustable Nut	1	ASTM A479 SS316
4	Lock Nut	1	ASTM A479 SS316
5	Cap	1	DELTRIN (POM)
6	Insert	1	ASTM A479 SS316
7	Oring	1	Fluorocarbon FKM
8	Stem	1	ASTM A479 SS316
9	Retainer	1	ASTM A479 SS316
10	Spring Guide	1	ASTM A479 SS316
11	Spring	1	17.7 Ph
12	Oring	1	Fluorocarbon FKM
13	Oring	1	Fluorocarbon FKM
14	Washer	1	ASTM A479 SS316

Flow Rates at 20° C (70° F)

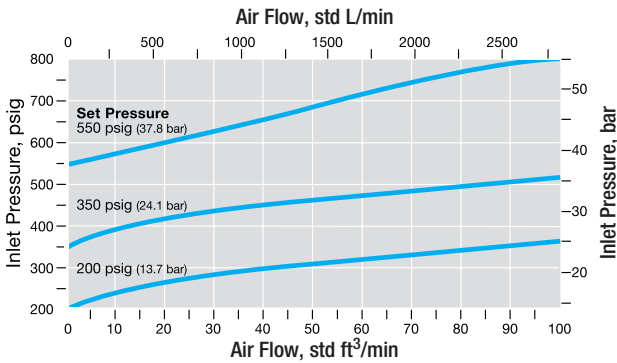
Air  
RVL Series



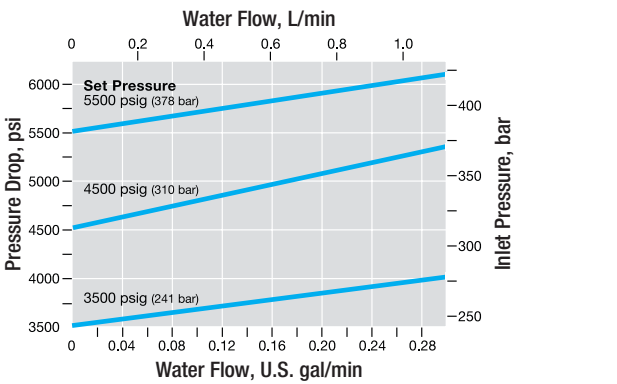
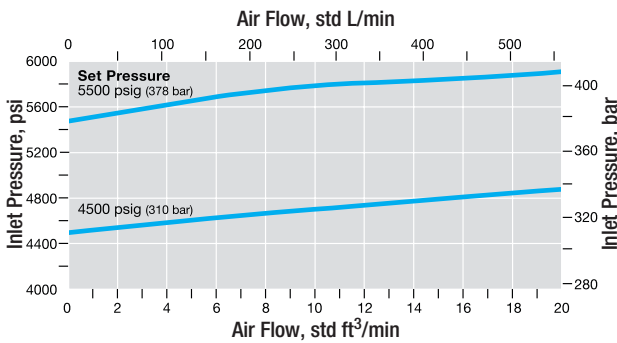
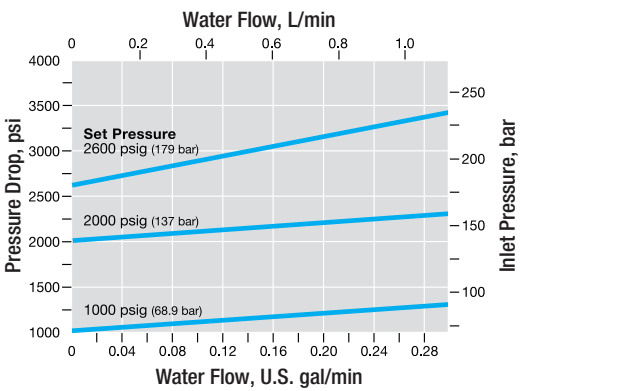
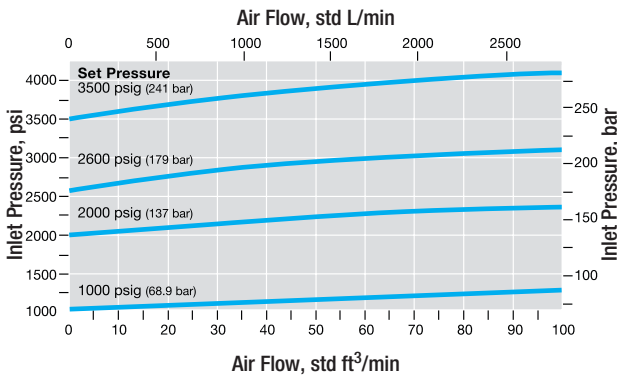
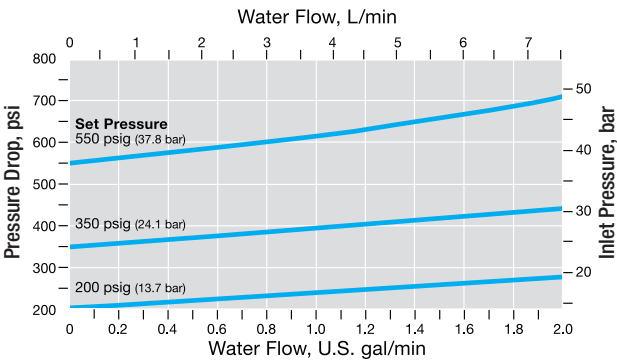
Water  
RVL Series



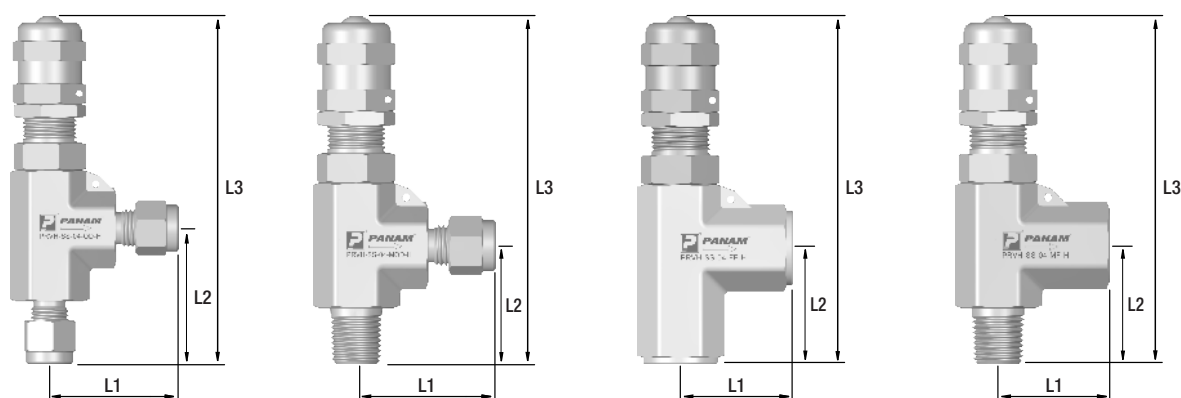
RVH Series



RVH Series



## Dimensions - RVL & RVH Series



Valve Code				Orifice	End Connections		Sizes		
					Inlet	Outlet	L1	L2	L3
PRVL and PRVH	SS	04	OD	RVL 4.8mm (0.19")  and  RVH 3.6mm (0.14")	1/4" OD	1/4" OD	40.2	38.8	107.5
		06			3/8" OD	3/8" OD	46.4	46.4	113.5
		08			1/2" OD	1/2" OD	50.5	50.7	140.0
		M06			6mm OD	6mm OD	40.2	38.8	107.5
		M08			8mm OD	8mm OD	40.2	38.8	107.5
		M10			10mm OD	10mm OD	46.4	46.4	113.5
		M12			12mm OD	12mm OD	50.5	50.7	140.0
		04	MF		1/4" NPTM	1/4" NPTF	31.5	33.5	102.0
		06			3/8" NPTM	3/8" NPTF	33.0	34.5	104.0
		08			1/2" NPTM	1/2" NPTF	42.5	50.7	132.0
		04	FF		1/4" NPTF	1/4" NPTF	31.5	33.5	102.0
		06			3/8" NPTF	3/8" NPTF	36.5	34.2	104.0
		08			1/2" NPTF	1/2" NPTF	31.5	33.5	102.0
		04	MOD		1/4" NPTM	1/4" OD	33.0	34.5	104.0
		06			3/8" NPTM	3/8" OD	40.2	38.8	107.5
		08			1/2" NPTM	1/2" OD	50.5	50.7	132.0
		04R	MF		1/4" BSPTM	1/4" BSPTF	31.5	33.5	102.0
		06R			3/8" BSPTM	3/8" BSPTF	33.0	34.5	104.0
		08R			1/2" BSPTM	1/2" BSPTF	42.5	50.7	132.0
		04R	FF		1/4" BSPTF	1/4" BSPTF	31.5	33.5	102.0
		06R			3/8" BSPTF	3/8" BSPTF	36.5	34.2	104.0
		08R			1/2" BSPTF	1/2" BSPTF	31.5	33.5	102.0
		04R	MOD		1/4" BSPTM	1/4" OD	33.0	34.5	104.0
		06R			3/8"BSPTM	3/8" OD	40.2	38.8	107.5
		08R			1/2" BSPTM	1/2" OD	50.5	50.7	132.0
		04G	MF		1/4" BSPPM	1/4" BSPPF	31.5	33.5	102.0
		06G			3/8" BSPPM	3/8" BSPPF	33.0	34.5	104.0
		08G			1/2" BSPPM	1/2" BSPPF	42.5	50.7	132.0
		04G	FF		1/4" BSPPF	1/4" BSPPF	31.5	33.5	102.0
		06G			3/8" BSPPF	3/8" BSPPF	36.5	34.2	104.0
		08G			1/2" BSPPF	1/2" BSPPF	31.5	33.5	102.0
		04G	MOD		1/4" BSPPM	1/4" OD	33.0	34.5	104.0
		06G			3/8" BSPPM	3/8" OD	40.2	38.8	107.5
		08G			1/2" BSPPM	1/2" OD	50.5	50.7	132.0
		20M	MF		M20x1.5M	M20x1.5F	42.5	50.7	132.0
		20M	FF		M20x1.5F	M20x1.5F	31.5	33.5	102.0



## Ordering Information - RVL Series & RVH Series

**PRVH-SS-06-OD-F-KZ-SG**

**PANAM®**

### Relief Valves Series

**RVL** - Low Pressure Relief Valve

**RVH** - High Pressure Relief Valve

### Body Material

**SS** - SS 316

**SSL** - SS 316L

**B** - Brass

### Connection Size

**04** - 1/4"

**20M** - M20x1.5

**M10** - 10mm

**06** - 3/8"

**M06** - 6mm

**M12** - 12mm

**08** - 1/2"

**M08** - 8mm

### Thread Type

**-** - NPT

**R** - BSPT

**G** - BSPP

### Connection Type

**OD** - PANAM Tube Fitting

**MM** - Male x Male

**MOD** - Male x OD

**FF** - Female x Female

**MF** - Male x Female

### Spring

**L** - Purple 10 to 225 Psi (For RVL Only)

**A** - White 50 to 350 Psi (For RVH Only)

**B** - Blue 350 to 750 Psi (For RVH Only)

**C** - Gold 750 to 1500 Psi (For RVH Only)

**D** - Black 1500 to 2250 Psi (For RVH Only)

**E** - Green 2250 to 3000 Psi (For RVH Only)

**F** - Yellow 3000 to 4000 Psi (For RVH Only)

**G** - Brown 4000 to 5000 Psi (For RVH Only)

**H** - Orange 5000 to 6000 Psi (For RVH Only)

### Seal & Seat Material

**-** - Fluorocarbon - FKM (Standard)

**EPDM** - Ethylene Propylene - EPDM

**NB** - Buna-N - NBR

**KZ** - Kalrez - FFKM

### Options

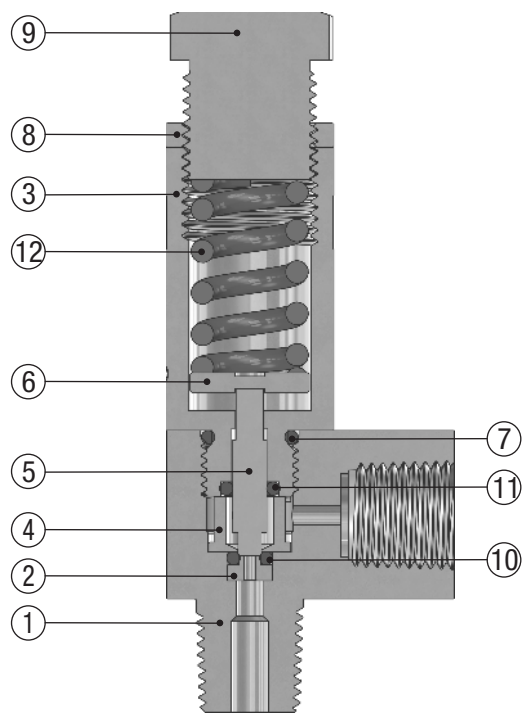
**SG** - Nace MR0175

**MO** - Manual Override (For Spring - L, A, B, C)

**OXY** - Oxygen Cleaning

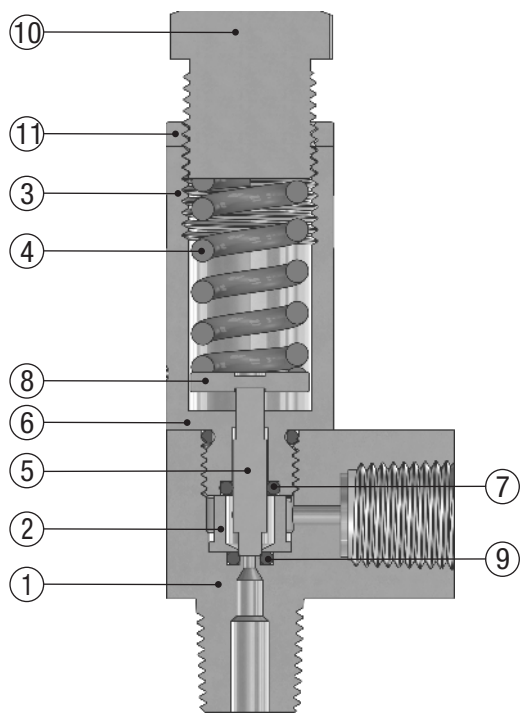
\* Other type, Size and material are available upon request

**Material of Construction - PRVH-10K Series**



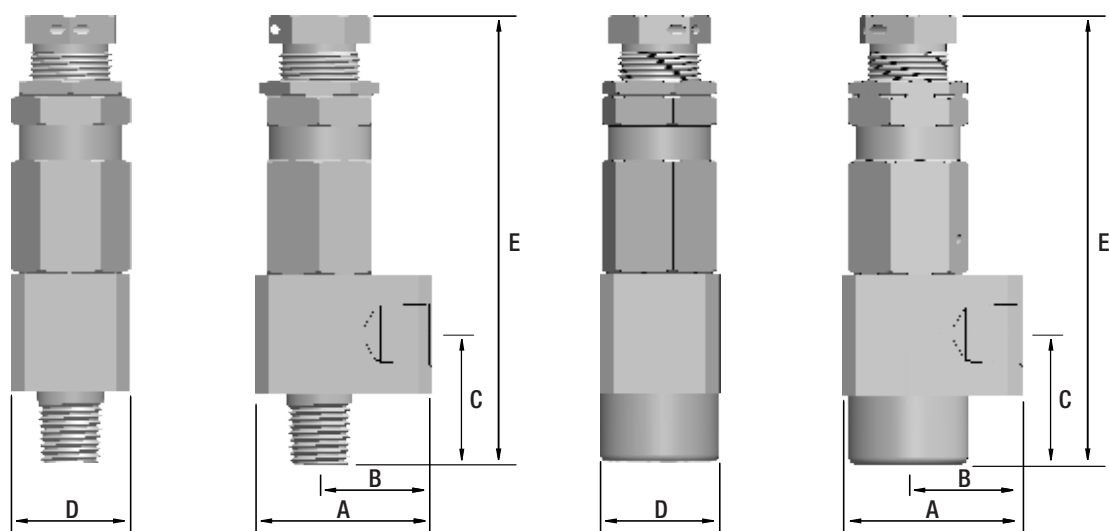
No	Part	Qty.	Material
1	Body	1	ASTM A479 SS316
2	Bottom Guide	1	ASTM A479 SS316
3	Gland Body	1	ASTM A479 SS316
4	Gland	1	ASTM A479 SS316
5	Stem	1	ASTM A564 SS174
6	Spring Guide	1	ASTM A479 SS316
7	Oring	1	Fluorocarbon FKM
8	Check Nut	1	ASTM A479 SS316
9	Adjusting Nut	1	ASTM A479 SS316
10	Oring	1	Fluorocarbon FKM
11	Oring	1	Fluorocarbon FKM
12	Spring	1	Spring Steel

**Material of Construction - PRVH-15K Series**



No	Part	Qty.	Material
1	Body	1	ASTM A479 SS316
2	Gland	1	ASTM A479 SS316
3	Gland Body	1	ASTM A479 SS316
4	Spring	1	Spring Steel
5	Stem	1	ASTM A564 SS174
6	Oring	1	Fluorocarbon FKM
7	Oring	1	Fluorocarbon FKM
8	Spring Guide	1	ASTM A479 SS316
9	Oring	1	Fluorocarbon FKM
10	Adjusting Nut	1	ASTM A479 SS316
11	Check Nut	1	ASTM A479 SS316

## Dimensions - RVH-10K Series & RVH-15K Series



Valve Code				Orifice	End Connections		Sizes				
					Inlet	Outlet	A	B	C	D	E
PRVH	SS	04	MF	RVH-10K 1.5mm (0.06")	1/4" NPTM	1/4" NPTF	38.0	26.0	27.0	25.4	93.0
		06			3/8" NPTM	3/8" NPTF	40.0	25.0	28.5	30.0	96.0
		08			1/2" NPTM	1/2" NPTF	50.0	32.5	36.0	35.0	107.0
		20M			M20x1.5M	M20x1.5F	50.0	32.5	36.0	35.0	107.0
		04	FF		1/4" NPTF	1/4" NPTF	38.0	26.0	27.0	25.4	93.0
		06			3/8" NPTF	3/8" NPTF	40.0	25.0	28.5	30.0	96.0
		08			1/2" NPTF	1/2" NPTF	50.0	32.5	36.0	35.0	107.0
		20M			M20x1.5F	M20x1.5F	50.0	32.5	36.0	35.0	107.0
PRVH	SS	04	MF	RVH-15K 1.5mm (0.06")	1/4" NPTM	1/4" NPTF	38.0	24.0	27.5	25.4	95.0
		06			3/8" NPTM	3/8" NPTF	40.0	25.0	28.0	30.0	97.0
		08			1/2" NPTM	1/2" NPTF	50.0	32.5	36.0	35.0	107.0
		20M			M20x1.5M	M20x1.5F	50.0	32.5	36.0	35.0	107.0
		04	FF		1/4" NPTF	1/4" NPTF	38.0	24.0	27.5	25.4	95.0
		06			3/8" NPTF	3/8" NPTF	40.0	25.0	28.0	30.0	97.0
		08			1/2" NPTF	1/2" NPTF	50.0	32.5	36.0	35.0	107.0
		20M			M20x1.5F	M20x1.5F	50.0	32.5	36.0	35.0	107.0

## Ordering Information - RVH-10K Series & RVH-15K Series

**PRVH-SS-04-MF-10K-KZ-SG**

**PANAM®**

### Relief Valve Series

**RVH** - High Pressure Relief Valve

### Body Material

**SS** - SS 316

**SSL** - SS 316L

### Connection Size

**04** - 1/4"

**08** - 1/2"

**06** - 3/8"

**20M** - M20x1.5

### Thread Type

**-** - NPT

**R** - BSPT

**G** - BSPP

### Connection Type

**MF** - Male x Female

**FF** - Female x Female

### Spring

**10K** - Pink 5000 to 10000 psi (Spring - I)

**15K** - Red 7500 to 15000 psi (Spring - J)

### Seal & Seat Material

**-** - Fluorocarbon - FKM (Standard)

**EPDM** - Ethylene Propylene - EPDM

**NB** - Buna-N - NBR

**KZ** - Kalrez - FFKM

### Options

**SG** - Nace MR0175

**OXY** - Oxygen Cleaning

\* Other type, Size and material are available upon request

## Safety

For safe operation of **PANAM®** Relief Vales shall be adequately selected. When choosing materials operating conditions, compatibility of materials, purpose and product specifications shall be considered. Installation and maintenance of products shall be carried out by qualified personnel.

Wrong selection, poor installation or incorrect operation and maintenance may result in accident, cause personal injury and result in material damage. **PANAM ENGINEERS LTD.** provides a guarantee for all manufactured and supplied products, however, is not responsible for the wrong selection, installation, operation and technical service of delivered products.

## Ordering Information for Spare Spring Kits

**PRV-SPK-E**

**PANAM**® Relief Valve

Spring Kit

**SPK** - Spring Kit

Spring

- L** - Purple 10 to 225 psi (For RVL Only)
- A** - White 50 to 350 psi (For RVH Only)
- B** - Blue 350 to 750 psi (For RVH Only)
- C** - Gold 750 to 1500 psi (For RVH Only)
- D** - Black 1500 to 2250 psi (For RVH Only)
- E** - Green 2250 to 3000 psi (For RVH Only)
- F** - Yellow 3000 to 4000 psi (For RVH Only)
- G** - Brown 4000 to 5000 psi (For RVH Only)
- H** - Orange 5000 to 6000 psi (For RVH Only)
- I** - Pink 5000 to 10000 psi (For RVH-10K Only)
- J** - Red 7500 to 15000 psi (For RVH-15K Only)

Spring kit for **PANAM**® Relief Valves consists of a spring for the specified pressure range, a tag and a cable for locking and sealing.

## Ordering Information for Spare Kits

**PRVH-SK-KZ**

**PANAM**®

Relief Valve Series

- RVL** - Maximum Working Pressure - 300 psi
- RVH** - Maximum Working Pressure - 6000 psi
- RVH-10K** - Maximum Working Pressure - 10000 psi
- RVH-15K** - Maximum Working Pressure - 15000 psi

Seal Kits

**SK** - Seal Kit

Sealing O Ring Material

- FKM** - Fluorocarbon - FKM (Standard)
- NB** - Buna-N - NBR
- EPDM** - Ethylene Propylene - EPDM
- KZ** - Kalrez - FFKM

**PANAM**® Relief Valves Seal kit consist of valve stem O-Ring. When ordering a seal kit for oxygen cleaned Relief Valve, please use FKM O-ring.

Notes

## Other Products



2-3-5 VALVE MANIFOLDS



BELLOW SEAL VALVES



GAUGE ROOT VALVES



NEEDLE VALVES



HP NEEDLE VALVES



BALL VALVES



HP BALL VALVES



DOUBLE BLOCK & BLEED VALVES



MONO FLANGE VALVES



CHECK VALVES



RELIEF VALVES



FILTERS



TUBE FITTINGS



PIPE FITTINGS



HP PIPE FITTINGS



SWIVEL FITTINGS



JIC FITTINGS



WELD FITTINGS



HIGH PRESSURE FITTINGS



GAUGE SAVERS



PRESSURE GAUGES



TEMPERATURE GAUGES



PRESSURE TRANSMITTERS



TEMPERATURE TRANSMITTERS



PRESSURE REGULATORS



CONDENSATE POTS



AIR HEADERS



GRAB SAMPLING SYSTEM



PRE-FABRICATED HOOK UPS



FLANGE ADAPTERS



SWIVEL GAUGE ADAPTERS



THERMOWELLS



BLEED PLUGS



DIE-ELECTRIC FITTINGS



TUBING



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