EC Declaration of Conformity

Issued in accordance with the Pressure Equipment Directive

Name and Address of Manufacturer within the European Community: - (2014/68/EU)

Parker Hannifin Manufacturing Ltd. Instrumentation Products Division Europe
Riverside Road, Pottington Business Park, Barnstaple EX31 1NP England
Tel: +44 (0)1271 313131 Fax: +44 (0)1271 373636

Description of Pressure Equipment:-

H-series Proportional Pressure Relief Valve (HPRV) in all specified materials. These products are manufactured in accordance with Parker Hannifin Instrumentation Products Division's ISO 9001:2008 Quality Management System.

Conformity Assessment Procedure Followed:- Module B + D

Name and Address of Notified Body monitoring the manufacture's quality assurance system:-

Zurich Engineering
126 Hagley Road
Edgbaston
Birmingham
B16 9PF

EC Design Examination Certificate:- CEN – 044020/B

References of Harmonised Standards Used: - N/A

References of other Technical Standards and Specifications used: -

ISO 15156 /
NACE MR0175
ASME VIII
ISO 4126/1
ISO 4126/7
AMS5678
ASTM A479-316

References of Other European Directives Used: - Machinery Directive 2006/42/EC

Authorised Person for the Manufacturer within the European Community

Signed: K Ballard

Name: Mr K. Ballard
Title: Division Engineering Manager
Date: 12/2/2018

Statement of Safe Operating Limits
For H-series Proportional Pressure Relief Valves.

Issued in accordance with the Pressure Equipment Directive (2014/68/EU)

Parker Hannifin Manufacturing Ltd. Instrumentation Products Division Europe
Riverside Road, Pottington Business Park, Barnstaple EX31 1NP England
Tel: +44 (0)1271 313131 Fax: +44 (0)1271 373636

The pressure equipment directive 2014/68/EU (PED) requires Parker Instrumentation Division Europe (IPDE), as a supplier, to confirm that valves are suitable and safe for the intended usage. This document is intended to provide guidance on the safe operating limits of the valve type, shown below. Should the actual application not fall within these limits or if there is any uncertainty the details should be referred back to Parker for confirmation of suitability of the product for the specific duty.

Basic valve model code:- HPRV

Inlet Pressure:- Minimum Setting:- 150 psi (10.3 bar)
Maximum Setting:- 6000 psi (413.7 bar)

Back Pressure:- Maximum:- 2000 psi (137.9 bar)

Temperature:- Dependent on seal material – see figure 1.

Designator	Material	Shore Hardness	Temperature Range
V	Fluorocarbon Rubber	90	-23°C to +204°C (-10°F to +400°F)
EPR	Ethylene Propylene Rubber	90	-57°C to +135°C (-70°F to +135°F)
BN	Nitrile Rubber (Buna-N)	90	-34°C to +107°C (-30°F to +225°F)
KZ	Highly Florinated Fluorocarbon Rubber	90	-29°C to +93°C (-20°F to +200°F)
NE	Neoprene Rubber	70	-43°C to +121°C (-45°F to +250°F)

Figure 1: Operating temperature range

Please note at elevated temperatures the maximum working pressure of this product will be reduced – please see product literature for pressure vs. temperature curves.

Operating Media:-

It is the user's responsibility to ensure that the fluid (gas or liquid) is compatible with the materials as detailed by the bill of materials (BOM) – see figure 2.

Maximum Relieving Flow:-

Water 1.686 l/min @ 150 psi with zero back pressure
Nitrogen 313 l/min @ 150 psi with zero back pressure
At ambient temperature

Gas flow will be choked when P_1-P_2 / P_1 = X_T X_T = 0.67

Figure 3 denotes the capacity correction calculations for fluids other than Nitrogen and water.

Note:- For a 'safe' system the relieving flow capacity should exceed the maximum input flow. In this respect it should be noted that some standards permit the use of multiple relief valves to achieve required capacity.
The maximum discharge capacity is not a given design specification for this valve, therefore the maximum discharge capacity quoted within the instructions is for informative purposes only. Should this guideline value not be sufficient to protect the equipment or systems from exceeding maximum pressure, another type of relief or safety valve should be used.

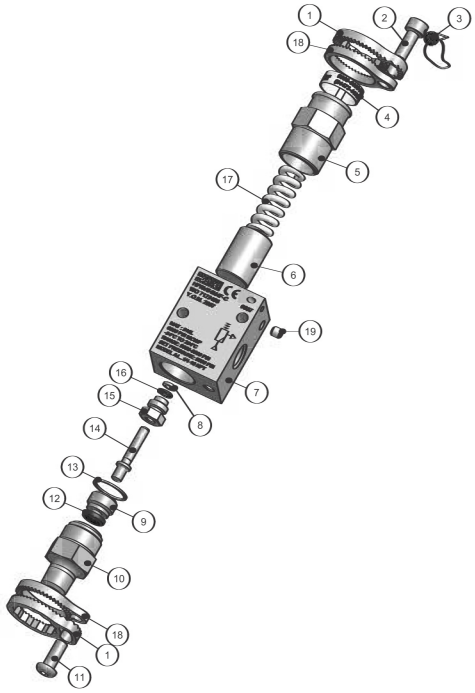


Figure 2: Bill of Materials

Item	Description	Material
1	Tru-loc™	316 Stainless Steel
2	Socket cap screw (lockable)	316 Stainless Steel
3	Locking wire – with lead seal	316 Stainless Steel
4	Spring identity label	Vinyl
5	Adjuster nut	ASTM A 479 type 316
6	Stem upper	PEEK
7	Body	ASTM A 479 type 316
8	Back up ring	PTFE
9	Seat retainer	ASTM A 479 type 316
10	End connector	ASTM A 479 type 316
11	Socket cap screw	316 Stainless Steel
12	Seat	♦ Flurocarbon rubber
13	Joint seal	ASTM A 479 type 316
14	Stem	ASTM A 479 type 316
15	O-Ring retainer	PEEK
16	O-Ring	♦ Flurocarbon rubber
17	Spring	17.7 Stainless steel (colour coded)
18	Tru-loc™ lower plate	316 Stainless Steel
19	Grub screw	316 Stainless Steel

♦ Wetted parts
♦ Optional seat & seal materials are located in the How to Order section

Liquids other than water.

$$\text{Flow (Actual Liquid)} = \frac{\text{Flow (Water)}}{\sqrt{\text{SG (Actual Liquid)}}}$$

Where:
SG = Specific Gravity.
Actual Density of Water = 1000 kg/m^3 @ 25°C.

Temperature effects are usually negligible, however this should be considered.

Gases other than Nitrogen (N_2) and temperatures other than 25°C.

$$\text{Flow (Actual Gas)} = \frac{\text{Flow } (N_2) * \sqrt{298}}{\sqrt{\text{SG (Actual Gas)}} * \sqrt{(273 + T)}}$$

Where:
SG = Specific Gravity relative to N_2.
Actual Density of N_2 = 1.251 kg/m^3 @ 25°C and 100 kPa.

Figure 3: Capacity Correction

Installation:-

This valve has been set to a predetermined cracking pressure. Such pressure is clearly stated on the valve body. No attempt should be made to use this valve in an application where the stated pressure is inappropriate. A tamper-proof Tru-Loc system has been fitted, wire sealed, to the adjuster nut of the valve. Should the wire and seal show signs of tampering, please do not use this valve.

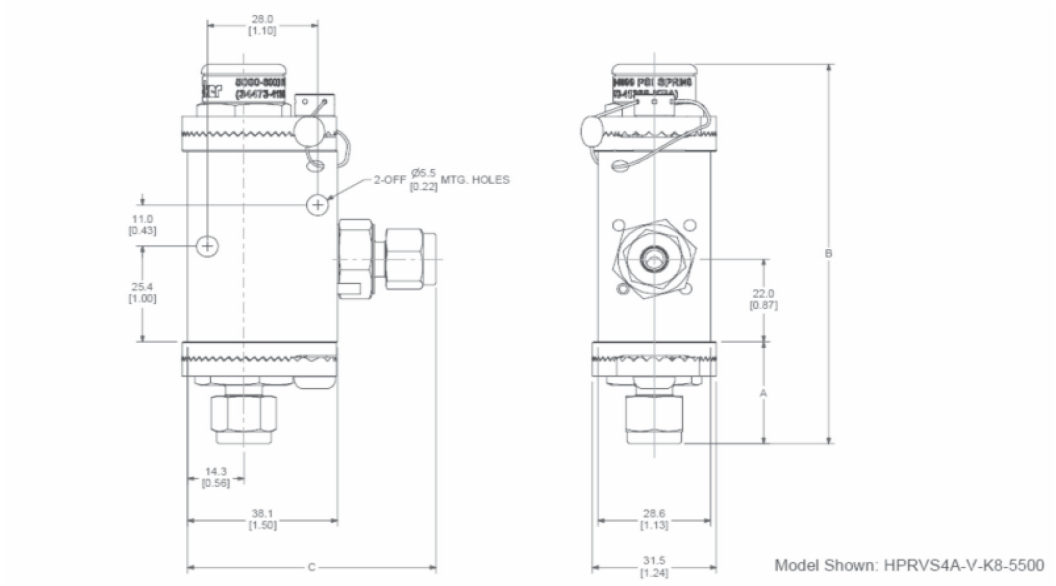
Capable of operating in all orientations, the valve can be mounted as required. The valve is supplied with a single inlet port and a single outlet port. It is the user's responsibility to establish if a return line is required and to install one as appropriate.

A-Lok and CPI tube end connections should be assembled in compliance to the supplied installation instructions (PKLFIT). NPT connections should be assembled in accordance with the assembly instructions of the chosen thread sealant / sealing tape. Adequate protection should be applied to all male threads to eliminate the risk of thread galling.

The valve is supplied complete with mounting holes – see figure 4.

Maintenance:-

It is not intended for these valves to be serviced at any point. Disassembly / adjustment of the relief valve should only be undertaken by PED approved facilities.



Basic Part Number	End Connections		Flow Data				Dimensions					
	Inlet	Outlet	Orifice		CV	XT	A		B		C	
			mm	inch			mm	inch	mm	inch	mm	inch
HPRV_4A	1/4" O.D. A-LOK	1/4" O.D. A-LOK	3.6	0.14	TBC	TBC	27.2	1.07	105.8	4.17	63.5	2.50
HPRV_4Z	1/4" O.D. CPI	1/4" O.D. CPI					27.2	1.07	105.8	4.17	63.5	2.50
HPRV_M6A	6mm O.D. A-LOK	6mm O.D. A-LOK					27.2	1.07	105.8	4.17	63.5	2.50
HPRV_M6Z	6mm O.D. CPI	6mm O.D. CPI					27.2	1.07	105.8	4.17	63.5	2.50
HPRV_4M4F	1/4-18 NPT (Male)	1/4-18 NPT (Female)					26.9	1.06	105	4.13	N/A	

For A-LOK and CPI, dimensions are measured with nuts in the finger tight position.
Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$

Figure 4: General Dimensions