Global Presence for Peace of Mind

Bifold® Marshalsea

OEM by : BRISCO ENGINEERING LTD.

Relief Valves
Gaseous and Liquid Service Ranges

- 316L Stainless Steel
- Arctic Service Options Down to -60°C
- Up to 1300 bar Working Pressure Hydraulic Range
- Pneumatic Relief Valves That Maintain Safety Function in High Flow Applications
- Captive Exhaust Pneumatic Valves
- Hydraulic Relief Valves with Low Dead Bands
- Integrated Check Valve / Thermal Relief Valve for Hydraulic Applications

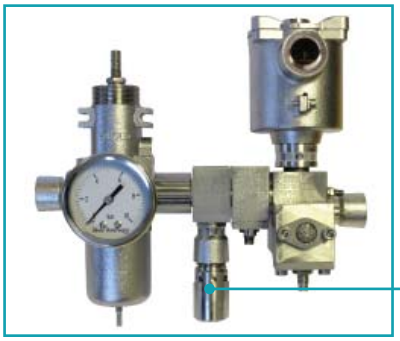
Innovative and Reliable Valve and Pump Solutions

www.bifold.co.uk

Features & Benefits

Bifold® Marshalsea

Relief Valves



Pneumatic Relief Valves (Vent to Atmosphere)

- Very high flow and low dead band. The Bifold pneumatic relief valves are a safety device designed to match Bifold's high flow filter regulators. The device will limit the over pressure to less than 110% of the set point in the event of a filter regulator mis-operation. Some competitor relief valves have insufficient flow to be used as a safety device in this application.

Pneumatic Relief Valve (Tubed Exhaust)

- Pneumatically balanced pressure relief valve maintains safety function with the same exhaust pressure.

Hydraulic Thermal Relief Valve

- The special, removable lock down screw facility can be applied to override the relief valve during system pressure test without affecting the pre-set, set point.

Thermal Check Relief Valve

- Sometimes referred to as a "yield valve", its principal feature is the ability to return over pressurised fluid caused by thermal expansion downstream, internally through the valve itself and back to the supply point, negating the need for separate exhaust piping to the tank.

Hydraulic Precision Relief Valve

- Precision relief valves have very high sealing forces along with accurate and narrow dead bands. Precision relief valves should be used in preference to sprung relief valves where there is risk of vibration induced leakage or where low dead bands are important to system safety performance. Sprung relief valves typically will have a narrow dead band when tested on a static dead weight tester but will have a much wider dead band under flowing conditions that will require a significant drop in system pressure to enable the valve to reseat.

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Leading Technology

Product Innovation

The Bifold Group of companies have provided peace of mind to contractors, installers and end users for over a century. Our innovative range of products, specifically designed with the customer in mind, have gained worldwide approval and credibility for the onerous conditions as found in hazardous (classified) locations, hostile and subsea environments.
The customer requirements for sustained safety and reliability under extreme operating conditions are Bifold Marshalsea's primary objectives.

Our state of the art production facilities based in the UK, allows our superior and innovative designs to be manufactured to rigorous manufacturing and quality standards.
The policy and overall business objective of Bifold Marshalsea, is to provide system packages of the highest quality and in compliance with customer requirements. We guarantee ease of installation and low lifetime cost of ownership - due to superior design, long-life materials, precision manufacturing and testing facilities.

Worldwide Service and Support

Located in Taunton, UK, Bifold Marshalsea has subsidiary locations in Houston, USA, Singapore and Manchester, UK. The Bifold Group of Companies are supported worldwide with our engineers and a global network of agents and distributors.

The Group have invested in state of the art machining centres ensuring accuracy of close tolerances, and a rapid turn around capability together with state of the art assembly and testing facilities.

The customer can be confident that Bifold Marshalsea has the product portfolio and the technical and production capability to provide the correct solution for their system requirements, and provide support during and after installation.

Bifold Marshalsea Product Range

Bifold Marshalsea provides pumps for use with fluids which include a variety of water-based, fire resistant and other media types. The properties of these fluids include a combination of high or low viscosity with either high or low lubricity.

Various pump models are available for use with water glycol and other calibration fluids.

Bifold Marshalsea provide Relief Valves for both gaseous and liquid service.

Bifold Marshalsea also provide surface and subsea Pressure Intensifiers for pressure boosting of water based or synthetic oil-based fluids.

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Overview

Bifold Marshalsea

Advantages of Precision Relief Valves over Sprung Relief Valves

Relief valve selection can be complex and the impact of selecting the wrong product are, for example, as follows, If a relief valve is required to reseat while upstream is still pumping, a simple "sprung relief" may cause significant system overpressure, leakage and premature failure. System designers may overcome this fault by designing their system at higher pressures, but this may incur unnecessary extra costs.

If you are not sure what to select, it may be prudent to select a "precision relief" valve instead of a "sprung relief".

Dead Weight Test – Results may be Misleading

Relief valve manufacturers usually quote the pressure to relieve and the pressure to reseat based on a test rig that has no flow. This test may indicate a very low dead band. This type of performance is not always as it appears. It may be satisfactory if the system is designed to shut down fully after a valve has relieved and where vibration cannot induce a leak to start.

Flowing Test Results

Sprung relief:

- The pressure immediately after the relief valve increases with the flow rate through the valve.
- The valve might not reseat until the flow has stopped and pressure has reduced to 35% below the relief set pressure.

Precision Relief:

- The pressure after the relief is stable at any flow rate up the maximum specified.
- The valve reseats within 10% of the relief set pressure.

Summary

Precision relief valves are safe and leak free under almost all applications. Knowledge of relief valve performance is required when using simple sprung reliefs.

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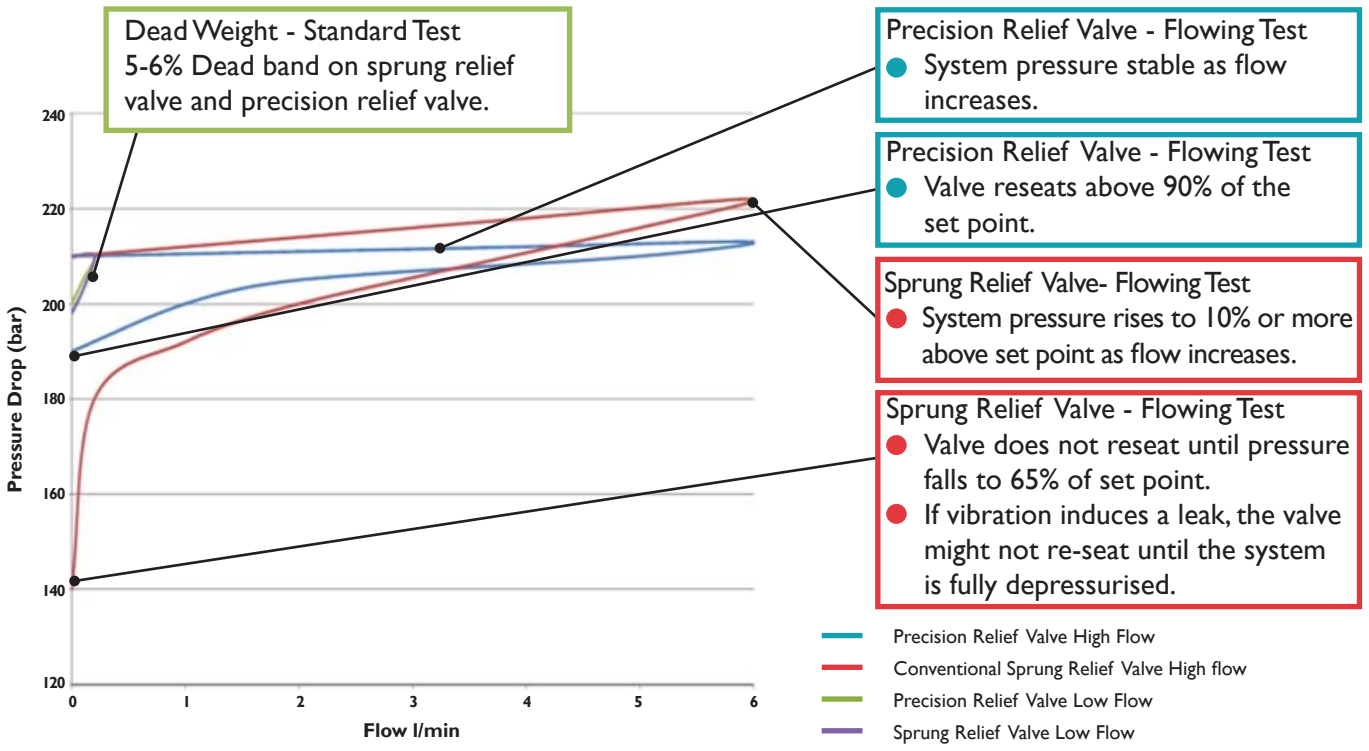
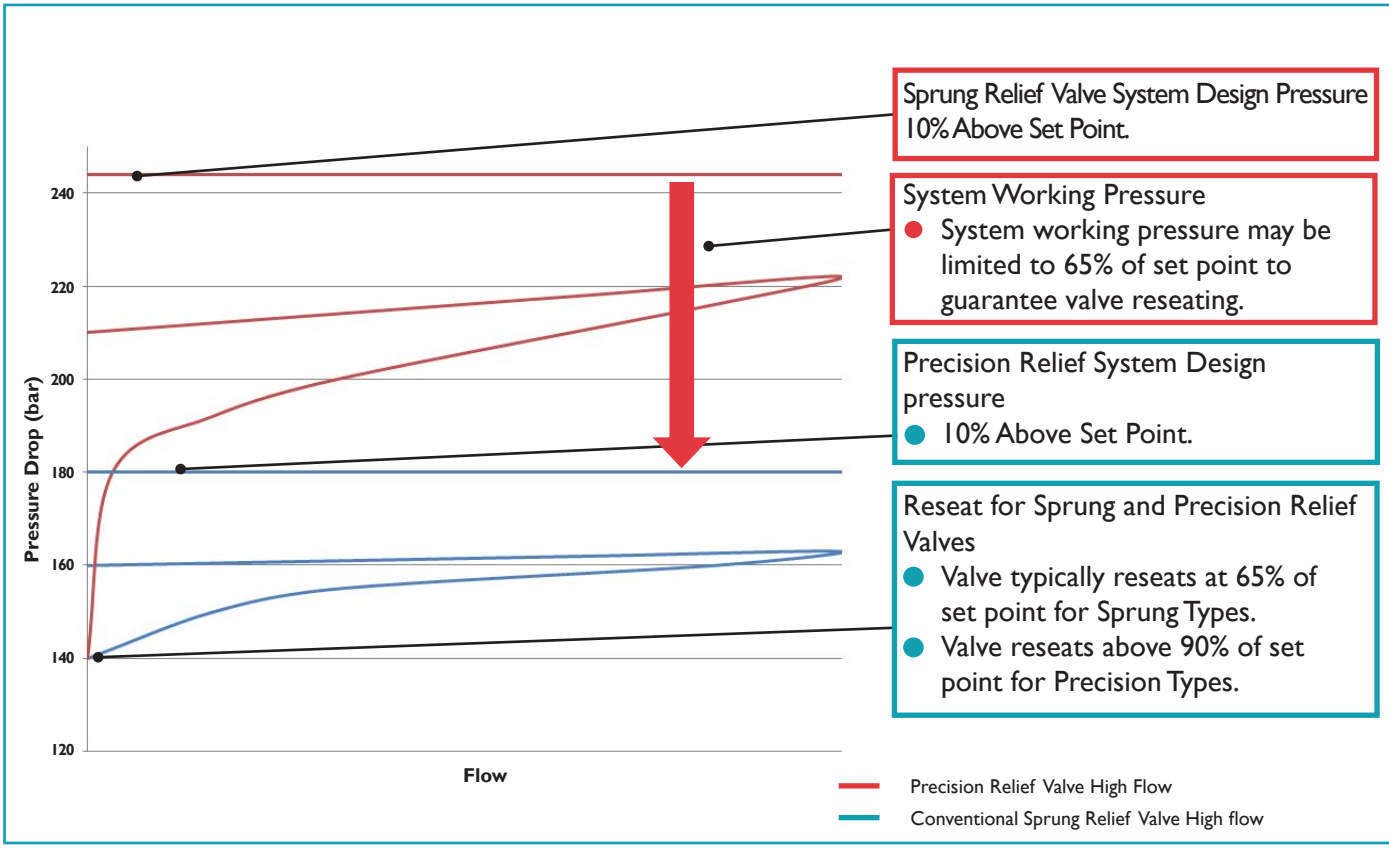
Performance

Dead Weight Test and Flowing test



System Design Pressure Benefits



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Selection Table

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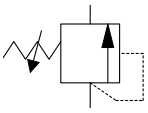
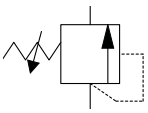
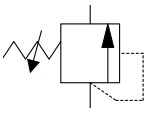
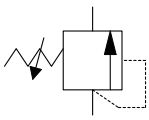
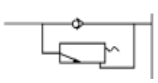
PNEUMATIC RELIEF VALVES

Product	Schematic Representation	Page Number	Flow Rates and Pressures	Certification
 Pressure Relief Valve		8 / 9	0.8 - 12 bar Ø 9 mm Orifice Ø 10.5 mm Orifice Ø 11.4 mm Orifice	This valve conforms to the Pressure Equipment Directive 97/23/EC. All valves are supplied with a test certificate plus a declaration of conformity.
 Pressure Relief Valve Type CPR		10 / 11	0.8 - 8 bar Ø 12.8 mm Orifice Ø 27.0 mm Orifice	This valve has been designed to conform to ISO 4126-1:2004 part 1 and Pressure Equipment Directive 97/23/EC. All valves are supplied with a test certificate.

HYDRAULIC RELIEF VALVES

Product	Schematic Representation	Page Number	Flow Rates and Pressures	Certification
 Thermal Relief Valve Type 14480		12 / 13	7 - 50 bar 35 - 345 bar 50 - 200 bar 200 - 600 bar 345 - 690 bar 600 - 800 bar 600 - 1300 bar Ø 4 mm Orifice	Ex CE Ex II 2 G T4 This relief valve conforms to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant. This valve also conforms to the Pressure Equipment Directive 97/23/EC. All valves are CE marked and supplied with a test certificate plus a declaration of conformity.
 Semi-Capsule Relief Valves Types 14540 & 14640		14 / 15	35 - 345 bar 100 - 400 bar 345 - 800 bar 400 - 700 bar Ø 4 mm Orifice	Ex CE Ex II 2 G T4 This relief valve conforms to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant. This valve also conforms to the Pressure Equipment Directive 97/23/EC. All valves are CE marked and supplied with a test certificate plus a declaration of conformity.
 Integrated Check / Thermal Relief Valve Types 14460 & 14470		16 / 17	35 - 345 bar 345 - 700 bar	Ex CE Ex II 2 G T4 This relief valve conforms to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant. This valve also conforms to the Pressure Equipment Directive 97/23/EC. All valves are CE marked and supplied with a test certificate plus a declaration of conformity.

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Selection Table

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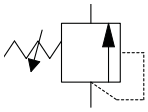
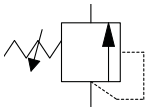
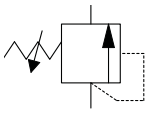
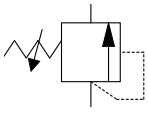
HYDRAULIC RELIEF VALVES				
Product	**Schematic Representation**	**Page Number**	**Flow Rates and Pressure**	**Certification**
 **Low Pressure Relief Valve Type 14340**		**18 / 19**	5 - 50 bar 50 - 100 bar Up to 112 l / m	II 2 G T4 This relief valve conforms to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant. This valve also conforms to the Pressure Equipment Directive 97/23/EC. All valves are marked and supplied with a test certificate plus a declaration of conformity.
 **Relief Valve Types 7608, 7668, 7708, 7768, 24100 & 24400**		**20 / 21**	Ø 3⁄16" Orifice 69 - 414 bar Ø 5⁄32" Orifice 90 - 620 bar Ø 1⁄8" Orifice 90 - 932 bar	II 2 G T4 This relief valve conforms to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant. This valve also conforms to the Pressure Equipment Directive 97/23/EC. All valves are marked and supplied with a test certificate plus a declaration of conformity.
 **Precision Relief Valve Type 14450**		**22 / 23**	103 - 240 bar 207 - 414 bar 345 - 700 bar Up to 45 l / m	II 2 G T4 This relief valve conforms to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant. This valve also conforms to the Pressure Equipment Directive 97/23/EC. All valves are marked and supplied with a test certificate plus a declaration of conformity.
 **Precision Relief Valve Types 14520, 14530, 14580 & 14570**		**24 / 25**	100 - 240 bar 207 - 414 bar 345 - 700 bar 600 - 1200 bar Up to 25 l / m	II 2 G T4 This relief valve conforms to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant. This valve also conforms to the Pressure Equipment Directive 97/23/EC. All valves are CE marked and supplied with a test certificate plus a declaration of conformity.

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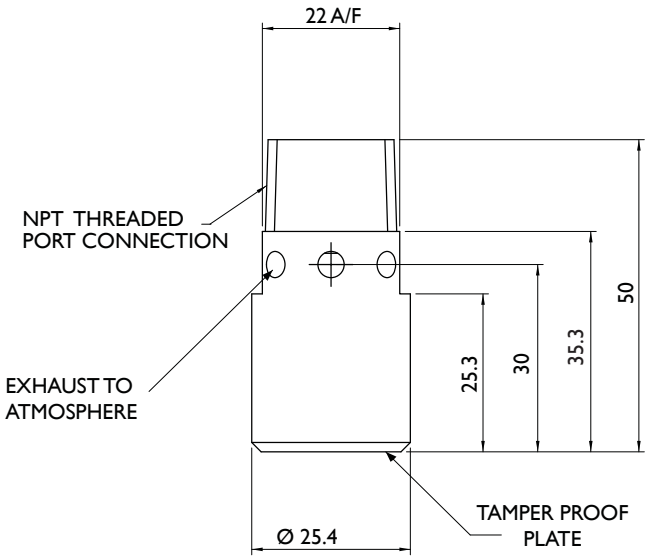
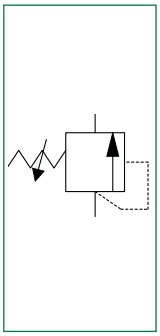
Pneumatic Service

Pressure Relief Valves up to 12.0 bar Set Point



Dimensions Show ½" NPT Connection

SCHEMATIC



Features and Benefits

- Set Point Repeatability ±0.15 bar (up to 5.0 bar) or ±3% (above 5.0 bar).
- Set Point Range - user specified up to 12.0 bar.
- Sealing Re-Seat Pressure - re-sealing characteristics > 90% of set point.
- Orifice Size: Ø 9 mm (¼" NPT), Ø 10.5 mm (3/8" NPT) & Ø 11.5 mm (½" NPT).
- Operating Media - filtered lubricated or unlubricated air, inert gas, sweet (natural), and sour gas options.

Materials

Body	- 316L stainless steel
Spring	- 302S26 stainless steel
Seal Material	- Viton (standard), Flourosilicone (option)
	- Silicone

Working Temperature

Temperature Range:

Viton -	(S)	-20°C to +180°C
Flourosilicone -	(AS)	-60°C to +60°C
Silicone -		-60°C to +60°C

Approvals Details

This valve conforms to the Pressure Equipment Directive 97/23/EC. All valves are supplied with a test certificate plus a declaration of conformity.

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Pneumatic Service

Product Description

The pressure relief valves vent to atmosphere, are direct acting and suitable for low pressure applications.

Rated up to 12 bar, the set point pressure is factory set according to user specification. It is not intended to be field adjustable. The valve seat incorporates a silicone face seal affording excellent resealing characteristics.

The relief valve weight is:- 0.13 Kg.

Selection Chart - Ordering Example

S **AS**	Pressure Relief Valve Pressure Relief Valve low temperature service	Model Code
06 **09** **12**	¼" NPT ⅜" NPT ½" NPT	Port Size
PRX.X	Pressure relief setting (user specified 0.8 - 12 bar; 0.1 bar increments)	Configuration
K10	Overide button	Option
K6	BSPP option	Option
S - 06 - PR4.5 - K10 - K6		Ordering Example

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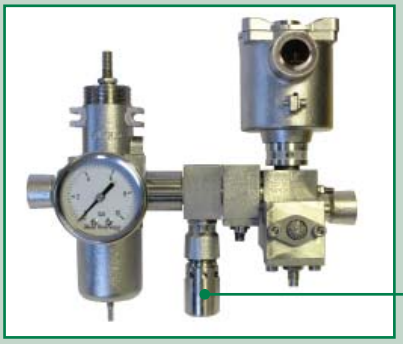

Very high flow and low dead band. The Bifold pneumatic relief valves are a safety device designed to match Bifold's high flow filter regulators. The device will limit the over pressure to less than 110% of the set point in the event of a filter regulator mis-operation. Some competitor relief valves have insufficient flow to be used as a safety device in this application.

Image showing a Bifold pneumatic valve actuator control manifold. (See separate catalogue).

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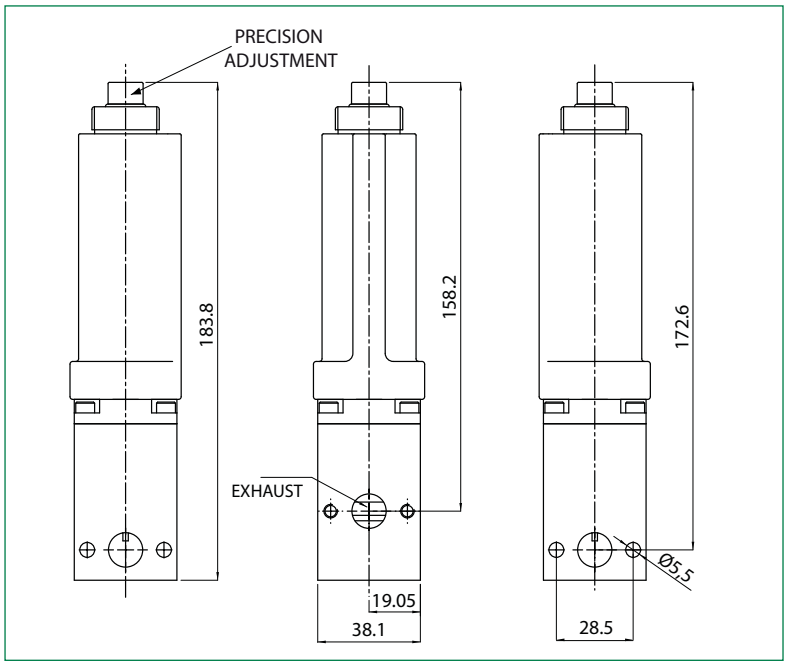
Pneumatic Service

Captive Pressure Relief Valves up to 8.0 bar Set Point



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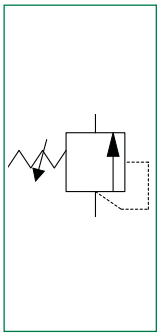

Features and Benefits

- Set Point Repeatability ±3% (> 5.0 bar) or ±0.15 bar (< 5.0 bar).
- Set Point Range - user specified up to 8.0 bar.
- Sealing Re-Seat Pressure - re-sealing characteristics > 90% of set point.
- Orifice Size: Ø12.8 mm (¼" & ½" NPT) & Ø 27 mm (1" NPT).
- Back Pressure - set point is affected by vent port back pressure and will DECREASE accordingly.
- Operating Media - filtered lubricated or unlubricated air, inert gas, sweet (natural), and sour gas options.
- Precision adjustment with low friction to improve setting reliability.

Materials

Body	- 316L stainless steel
Spring	- 316S42 and 302S26 stainless steel
Seal Material	- Viton (standard), Flourosilicone
	- MFQ & MVQ Silicone (option -60°C)

Working Temperature

Temperature Range:

Viton -	(V)	-20°C to +180°C
Silicone -	(AG)	-60°C to +60°C

Approvals Details

This valve has been designed to conform to ISO 4126-1: 2004 part 1 and Pressure Equipment Directive 97/23/EC. All valves are supplied with a test certificate.

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Pneumatic Service

Product Description

The CPR captive vent pressure relief valves are direct acting, externally adjustable, for low pressure applications.

Rated up to 8 bar, the set point pressure is factory set according to user specification. The set point is field adjustable. The valve seat incorporates a silicone face seal affording excellent resealing characteristics.

The captive pressure relief valve weight is:- 1.20 Kg.

Selection Chart - Ordering Example

CPR	Captive Pressure Relief Valve	Model Code
04	¼" NPT	Port Size
08	½" NPT	
12	¾" NPT	
16	1" NPT	
V	Viton	Seat Material
AG	Flourosilicone - Low temperature service	
PRX.X	Pressure relief setting (user specified 0.8 - 8 bar; 0.1 bar increments)	Configuration
K6	BSPP option	Option
CPR - 08 - V - PR5.0 - K6		Ordering Example

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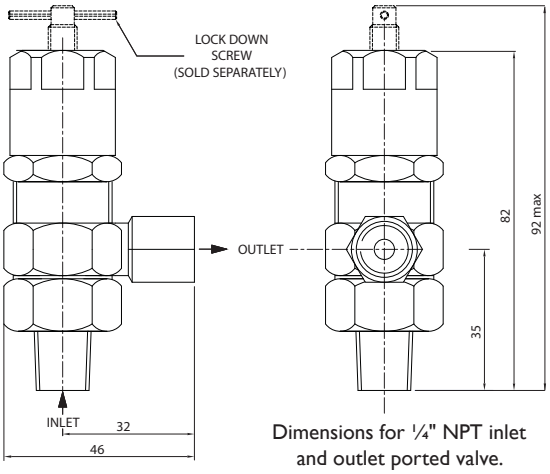
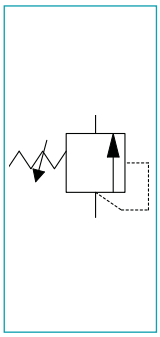
Bifold Marshalsea

Thermal Relief Valves



Dimensions for ¼" NPT inlet and outlet ported valve.

SCHEMATIC



Features and Benefits

- No need to remove from the system for proof testing.
- Unique lock down screw facility.
- Set Point Repeatability ±2%.
- Set Point Range - user specified up to 1300 bar.
- Sealing Re-Seat Pressure - Virtually zero leakage re-seat pressure ≥ 90% of cracking pressure.
- Proof Test - proof test pressure: 1000 bar. proof test pressure: 1700 bar.
- Orifice Size: Ø 4mm.
- Back Pressure - set point is not affected by vent back pressure. Maximum permissible back pressure 100 bar.
- Operating Media - mineral oils, water glycol fluids and some chemicals. Consult Bifold Marshalsea for specific chemicals and synthetic oils compatibility.
- Long Life and Repeatable Performance - are ensured through the use of hardened elements.

Materials

Body		- 316L stainless steel	
Spring		- 316S42 and 302S26 stainless steel	
Seal Material	- Nitrile	- standard	
	- Viton	- add suffix M089	eg. 14480 - 08 - M089
	- Silicone	- add suffix M065	eg. 14480 - 08 - M065
	- Low Temp Nitrile	- add suffix M106	eg. 14480 - 08 - M106
Seat Material	- PEEK, Stainless Steel, Polyurethane		

Approvals Details

Ex II 2 G T4

These relief valves conform to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant.
These valves also conform to the Pressure Equipment Directive 97/23/EC. All valves are CE marked and supplied with a test certificate plus a declaration of conformity.

Product Description

The Type 14480 thermal relief valve has been designed primarily to provide over pressure protection in systems subject to fluid thermal expansion, but it can also be reliably used as the primary relief valve in systems with low volume pump flow rates.

A unique feature of this valve is the lock down facility that eliminates the need to remove or disconnect the valve during proof testing of the system. Provision is made in the cap for a special lock down screw to be inserted to disable the valve and hold it closed against the increasing pressures applied during testing of the system pipe work and components. This eliminates the need to remove or disconnect the valve during test procedures. When the lock down screw is removed, the valve reverts to its as set condition without further adjustment or re-calibration.

The thread in the cap is a non-preferred size, thereby preventing unauthorised insertion of other types of screw. Lock down screws are not provided with each valve to prevent unauthorised use; they are available on request.

The relief valve weight is :- 0.24 Kg.

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Selection Chart - Ordering Example

THERMAL RELIEF VALVE 14480 SPECIFICATIONS				
Part Number	**Pressure Range (bar)**	**Inlet Connection**	**Outlet Connection**	**Repair Kit**
14480 - 24	7 - 50	¼" NPT Female	¼" NPT Female	RS 14480 - 24
14480 - 25	50 - 200	¼" NPT Female	¼" NPT Female	RS 14480 - 25
14480 - 26	200 - 600	¼" NPT Female	¼" NPT Female	RS 14480 - 26
14480 - 27	600 - 800	¼" NPT Female	¼" NPT Female	RS 14480 - 27
14480 - 20	7 - 50	¼" NPT Female	¼" NPT Female	RS 14480 - 20
14480 - 03	35 - 345	¼" NPT Female	¼" NPT Female	RS 14480 - 03
14480 - 21	50 - 200	¼" NPT Female	¼" NPT Female	RS 14480 - 21
14480 - 22	200 - 600	¼" NPT Female	¼" NPT Female	RS 14480 - 22
14480 - 04	345 - 690	¼" NPT Female	¼" NPT Female	RS 14480 - 04
14480 - 23	600 - 800	¼" NPT Female	¼" NPT Female	RS 14480 -23
14480 - 30	7 - 50	¼" BSP Female	¼" BSP Female	RS 14480 - 30
14480 - 31	50 - 200	¼" BSP Female	¼" BSP Female	RS 14480 - 31
14480 - 32	200 - 600	¼" BSP Female	¼" BSP Female	RS 14480 - 32
14480 - 33	600 - 800	¼" BSP Female	¼" BSP Female	RS 14480 - 33
14480 - 49	7 - 50	¼" MP	¼" NPT	RS 14480 - 49
14480 - 50	35 - 345	¼" MP	¼" NPT	RS 14480 - 50
14480 - 51	50 - 200	¼" MP	¼" NPT	RS 14480 - 51
14480 - 52	200 - 600	¼" MP	¼" NPT	RS 14480 - 52
14480 - 53	345 - 690	¼" MP	¼" NPT	RS 14480 - 53
14480 - 54	600 - 800	¼" MP	¼" NPT	RS 14480 - 54
14480 - 55	600 - 1300	¼" MP	¼" NPT	RS 14480 - 55
14480 - 44	7 - 50	⅜" MP Female	¼" MP Female	RS 14480 - 44
14480 - 46	200 - 600	⅜" MP Female	¼" MP Female	RS 14480 - 46
14480 - 47	600 - 1300	⅜" MP Female	¼" MP Female	RS 14480 - 47
14480 - 56	7 - 50	⅜" NPT Female	¼" NPT Female	RS 14480 - 56
14480 - 57	35 - 345	⅜" NPT Female	¼" NPT Female	RS 14480 - 57
14480 - 58	50 - 200	⅜" NPT Female	¼" NPT Female	RS 14480 - 58
14480 - 59	200 - 600	⅜" NPT Female	¼" NPT Female	RS 14480 - 59
14480 - 60	345 - 690	⅜" NPT Female	¼" NPT Female	RS 14480 - 60
14480 - 61	600 - 800	⅜" NPT Female	¼" NPT Female	RS 14480 - 61
14480 - 62	600 - 1300	⅜" NPT Female	¼" NPT Female	RS 14480 - 62
14480 - 63	7 - 50	⅜" NPT	⅜" NPT	RS 14480 - 63
14480 - 64	35 - 345	⅜" NPT	⅜" NPT	RS 14480 - 64
14480 - 65	50 - 200	⅜" NPT	⅜" NPT	RS 14480 - 65
14480 - 66	200 - 600	⅜" NPT	⅜" NPT	RS 14480 - 66
14480 - 67	345 - 690	⅜" NPT	⅜" NPT	RS 14480 - 67
14480 - 68	600 - 800	⅜" NPT	⅜" NPT	RS 14480 - 68
14480 - 69	600 - 1300	⅜" NPT	⅜" NPT	RS 14480 - 69
14480 - 70	7 - 50	⅜" BSP	⅜" BSP	RS 14480 - 70
14480 - 71	35 - 345	⅜" BSP	⅜" BSP	RS 14480 - 71
14480 - 72	50 - 200	⅜" BSP	⅜" BSP	RS 14480 - 72
14480 - 73	200 - 600	⅜" BSP	⅜" BSP	RS 14480 - 73
14480 - 74	345 - 690	⅜" BSP	⅜" BSP	RS 14480 - 74
14480 - 75	600 - 800	⅜" BSP	⅜" BSP	RS 14480 - 75
14480 - 76	600 - 1300	⅜" BSP	⅜" BSP	RS 14480 - 76
14480 - 77	7 - 50	⅜" MP Female	⅜" NPT Female	RS 14480 - 77
14480 - 78	35 - 345	⅜" MP Female	⅜" NPT Female	RS 14480 - 78
14480 - 79	50 - 200	⅜" MP Female	⅜" NPT Female	RS 14480 - 79
14480 - 80	200 - 600	⅜" MP Female	⅜" NPT Female	RS 14480 - 80
14480 - 81	345 - 690	⅜" MP Female	⅜" NPT Female	RS 14480 - 81
14480 - 82	600 - 800	⅜" MP Female	⅜" NPT Female	RS 14480 - 82
14480 - 83	600 - 1300	⅜" MP Female	⅜" NPT Female	RS 14480 - 83
14480 - 84	7 - 50	9⁄16" MP	¼" NPT	RS 14480 - 84
14480 - 85	35 - 345	9⁄16" MP	¼" NPT	RS 14480 - 85
14480 - 86	50 - 200	9⁄16" MP	¼" NPT	RS 14480 - 86
14480 - 87	200 - 600	9⁄16" MP	¼" NPT	RS 14480 - 87
14480 - 88	345 - 690	9⁄16" MP	¼" NPT	RS 14480 - 88
14480 - 89	600 - 800	9⁄16" MP	¼" NPT	RS 14480 - 89
14480 - 90	600 - 1300	9⁄16" MP	¼" NPT	RS 14480 - 90
14480 - 91	7 - 50	9⁄16" MP	⅜" NPT	RS 14480 - 91
14480 - 92	35 - 345	9⁄16" MP	⅜" NPT	RS 14480 - 92
14480 - 93	50 - 200	9⁄16" MP	⅜" NPT	RS 14480 - 93
14480 - 94	200 - 600	9⁄16" MP	⅜" NPT	RS 14480 - 94
14480 - 95	345 - 690	9⁄16" MP	⅜" NPT	RS 14480 - 95
14480 - 96	600 - 800	9⁄16" MP	⅜" NPT	RS 14480 - 96
14480 - 97	600 - 1300	9⁄16" MP	⅜" NPT	RS 14480 - 97

Lock Down Screw Part Number: 14489 - 01

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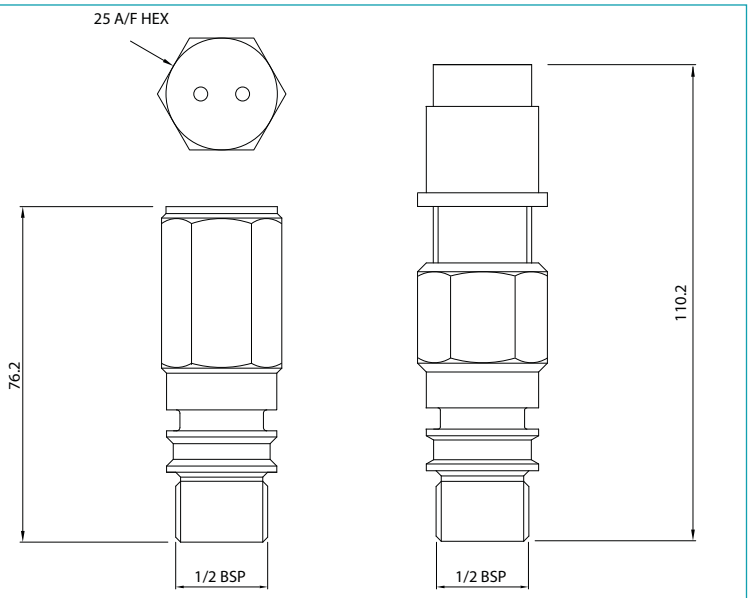
Semi-Capsule Relief Valves



TYPE 14540 TYPE 14640

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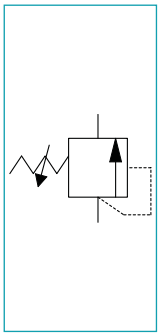

TYPE 14540 TYPE 14640

Features and Benefits

- Set Point Repeatability ±2%.
- Set Point Range - user specified up to 800 bar.
- Sealing Re-Seat Pressure - Virtually zero leakage re-seat pressure ≥ 90% of cracking pressure.
- Orifice Size: Ø 4mm.
- Back Pressure - set point is not affected by vent back pressure. Maximum permissible back pressure 100 bar.
- Operating Media - mineral oils, water glycol fluids and some chemicals. Consult Bifold Marshalsea for specific chemicals and synthetic oils compatibility.
- Long Life and Repeatable Performance - are ensured through the use of hardened elements.

Materials

External & Wetted Parts	- 316L stainless steel		
Seal Material	- Nitrile	- standard	
	- Viton	- add suffix M089	eg. 14540 - 08 - M089
	- Silicone	- add suffix M065	eg. 14540 - 08 - M065
	- Low Temp Nitrile	- add suffix M106	eg. 14540 - 08 - M106

Approvals Details

Ⓔx II 2 G T4

These relief valves conform to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant.
These valves also conform to the Pressure Equipment Directive 97/23/EC. All valves are CE marked and supplied with a test certificate plus a declaration of conformity.

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Product Description

The Type 14540 and 14640 relief valves have been designed primarily to provide pressure control in systems with low flow requirements such as those subject to thermal expansion.

The valve is designed for cartridge fitment into a suitable manifold block or the valve can be face mounted to relieve to atmosphere such as in a tank or sump application.

The relief valve 14540 weight is 0.23 Kg.

The relief valve 14640 weight is 0.31 Kg.

Selection Chart - Ordering Example

SEMI-CAPSULE RELIEF VALVE 14540 AND 14640 SPECIFICATIONS

Part Number	Pressure Range (bar)	Outlet Connection	Seat Material	Repair Kit
14540 - 02	35 - 345	Cartridge	Nitrile	RS 14540 - 02
14540 - 04	35 - 345	Cartridge	Viton	RS 14540 - 04
14540 - 03	345 - 800	Cartridge	Viton	RS 14540 - 03
14540 - 06	345 - 800	Cartridge	Nitrile	RS 14540 - 06
14640 - 01	100 - 400	Cartridge	Viton	RS 14640 - 01
14640 - 02	400 - 700	Cartridge	Viton	RS 14640 - 02

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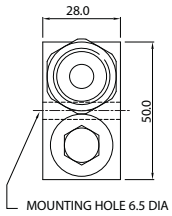
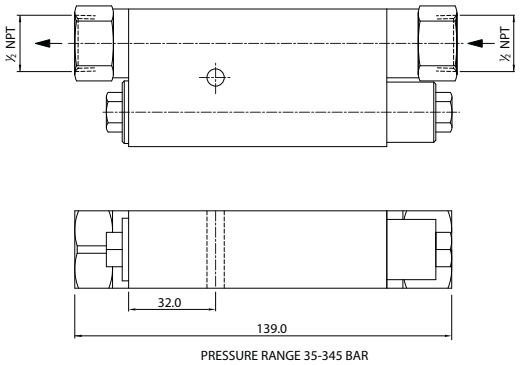
Integrated Check / Thermal Relief Valves





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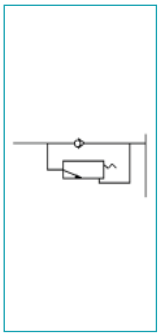

Features and Benefits

- No Exhaust Line Connection required - exhaust line piping is eliminated.
- Set Point Repeatability ±2%.
- Set Point Range - user specified up to 700 bar.
- Sealing Re-Seat Pressure - Virtually zero leakage re-seat pressure ≥ 90% of cracking pressure.
- Orifice Size: Ø 4mm.
- Back Pressure - set point is not affected by vent back pressure. Maximum permissible back pressure 100 bar.
- Operating Media - mineral oils, water glycol fluids and some chemicals. Consult Bifold Marshalsea for specific chemicals and synthetic oils compatibility.
- Single Integrated Unit - single integrated unit eliminates inter-valve piping.
- Valve Proof Testing - removal or disconnection of the valve during proof testing is not required.

Materials

External & Wetted Parts	- 316L stainless steel
Seat Material: Check Valve	- Acetal
Relief Valve	- Polyurethane

Approvals Details

Ex II 2 G T4

These relief valves conform to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant.
These valves also conform to the Pressure Equipment Directive 97/23/EC. All valves are CE marked and supplied with a test certificate plus a declaration of conformity.

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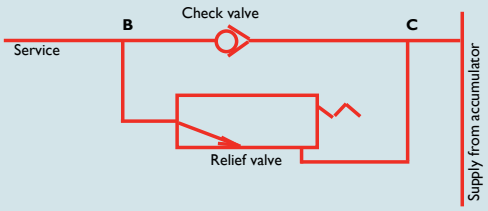
Product Description

The Type 14460 and 14470 check / thermal relief valves have been developed to directly replace a single unit separate check and thermal relief valves used, for example, in wellhead control systems.

The principal feature of this valve is its ability to return over pressurised fluid caused by thermal expansion downstream internally back to the supply point - thereby eliminating separate exhaust piping.

The check / thermal relief valve weight is 1.04 Kg.



The pressure differential between **B** and **C** caused by thermal expansion downstream of **B** is exhausted through the relief valve back into the supply at point **C.** The design of the relief valve is such that variations in pressure at point **C** caused by the operation of adjacent valves or by leakage have no effect on the setting of the relief valve. Even in the event of the supply pressure falling to zero, the set point and sealing integrity of the relief valve will be retained.

Selection Chart - Ordering Example

CHECK / THERMAL RELIEF VALVE 14460 AND 14470 SPECIFICATIONS

Part Number	Pressure Range (bar)	Port Size	Dimension A	Check Valve Flow Rate Cv	Proof Test Pressure (bar)	Cracking Pressure (bar)	Thermal Expansion Max Flow (litres / min)	Repair Kit
*14460 - 01	35 - 345	Manifold	132	0.56	1000	0.3	2	RS 14460 - 01
*14460 - 02	345 - 700	Manifold	132	0.56	1000	0.3	2	RS 14460 - 02
14470 - 01	35 - 345	¼" NPT	132	0.56	1000	0.3	2	RS 14470 - 01
14470 - 02	345 - 700	¼" NPT	132	0.56	1000	0.3	2	RS 14470 - 02
14470 - 03	35 - 345	⅜" NPT	132	0.56	1000	0.3	2	RS 14470 - 03
14470 - 04	345 - 700	⅜" NPT	132	0.56	1000	0.3	2	RS 14470 - 04
14470 - 07	35 - 345	½" NPT	139	1.60	400	0.4	6	RS 14470 - 07
14470 - 08	345 - 700	½" NPT	132	0.56	1000	0.3	2	RS 14470 - 08
14470 - 10	345 - 700	9/16" MP Butech	139	1.60	400	0.4	6	RS 14470 - 10

* Models 14460 are manifold mounted.

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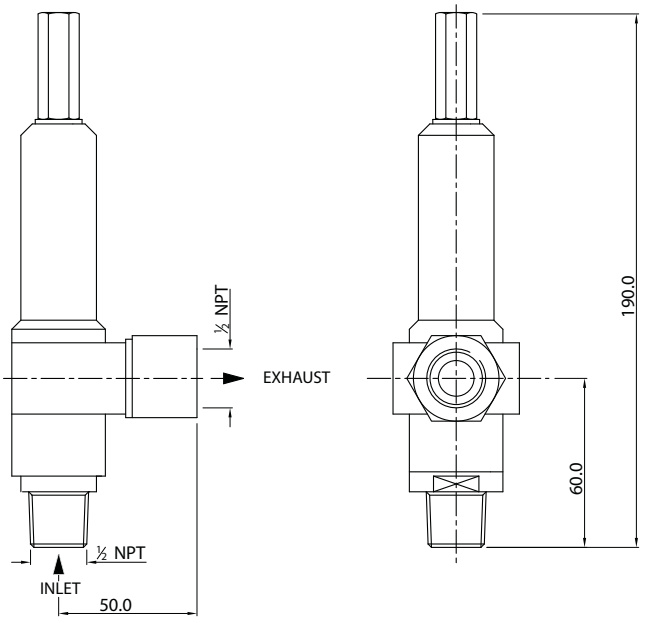
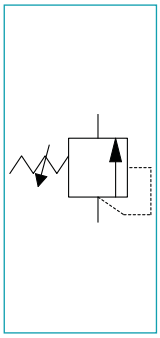
Low Pressure Relief Valves for Accurate System Over Pressure Protection



Dimensions for ½" NPT male inlet connection.

SCHEMATIC



Features and Benefits

- Suitable for chemical applications
- Valve Construction - the valve uses chemical resistant polymer materials in the seat to provide good low pressure seating with zero leakage.
- Sealing Re-Seat Pressure - Virtually zero leakage re-seat pressure ≥ 90% of cracking pressure.
- Flow Capacity - Flow rates up to 112l / min. at 10% over pressure.
- Long Life and Repeatable Performance - are ensured through a large area seat.

Materials

Body		- 316L stainless steel	
Spring		- 316S42 and 302S26 stainless steel	
Seal Material	- Nitrile	- standard	
	- Viton	- add suffix M089	eg. 14340 - 08 - M089
	- Silicone	- add suffix M065	eg. 14340 - 08 - M065
	- Low Temp Nitrile	- add suffix M106	eg. 14340 - 08 - M106
Seat Material	- Acetal	- standard	
	- PEEK	- add suffix M100	eg. 14340 - 08 - M100

Approvals Details

CE

Ex II 2 GT4

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Product Description

The Type 14340 low pressure relief valve has been designed to provide accurate pressure control in systems operating at pressures up to 100 bar, such as chemical injection applications.

Flow Capacity - Flow rates up to 1121 / min at 10% over pressure.

The low pressure relief valve weight is 0.89 Kg.

Selection Chart - Ordering Example

LOW PRESSURE RELIEF VALVE 14340 SPECIFICATIONS

Part Number	Pressure Range (bar)	Inlet Connection	Outlet Connection	Repair Kit
14340 - 08	5 - 50	¼" NPT Female	¼" NPT Female	RS 14340 - 08
14340 - 12	5 - 100	¼" NPT Female	¼" NPT Female	RS 14340 - 12
14340 - 13	5 - 50	¼" BSP	¼" BSP	RS 14340 - 13
14340 - 14	5 - 100	¼" BSP	¼" BSP	RS 14340 - 14
14340 - 11	5 - 50	⅜" NPT	⅜" NPT	RS 14340 - 11
14340 - 15	5 - 100	⅜" NPT	⅜" NPT	RS 14340 - 15
14340 - 03	5 - 50	½" NPT Male	½" NPT Female	RS 14340 - 03
14340 - 04	5 - 100	½" NPT Male	½" NPT Female	RS 14340 - 04
14340 - 06	5 - 50	½" BSP Male	½" BSP Female	RS 14340 - 06
14340 - 02	5 - 50	¾" NPT Female	½" NPT Female	RS 14340 - 02
14340 - 07	5 - 50	¾" NPT Female	¾" NPT Female	RS 14340 - 07
14340 - 16	5 - 50	¾" BSP	¾" BSP	RS 14340 - 16
14340 - 17	5 - 100	¾" BSP	¾" BSP	RS 14340 - 17
14340 - 09	5 - 50	1" BSP Female	1" BSP Female	RS 14340 - 09
14340 - 05	5 - 50	1" NPT Male	1" NPT Female	RS 14340 - 05

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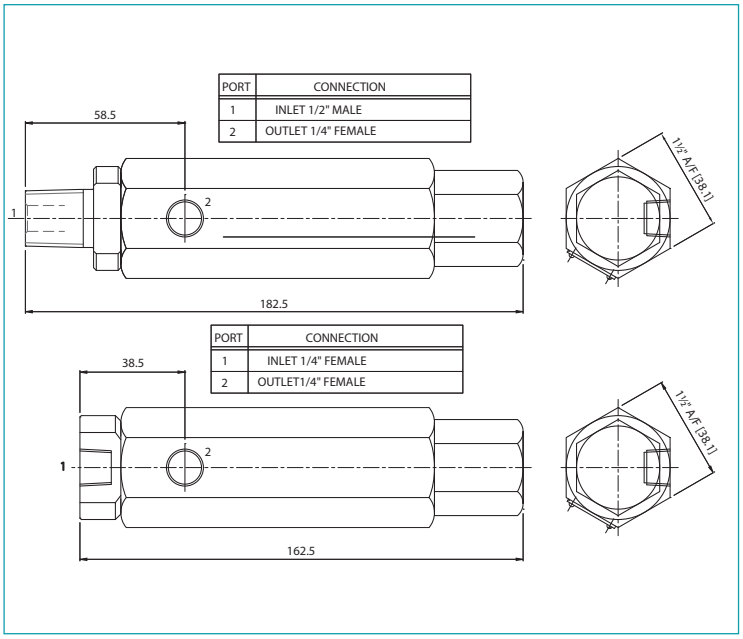
Relief Valves Direct Acting

OEM By : BRISCO ENGINEERING LTD.



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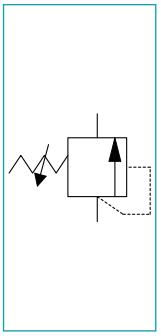

Features and Benefits

- Set Point Repeatability ±3%.
- Set Point Range - user specified up to 932 bar.
- Sealing Re-Seat Pressure - Virtually zero leakage re-seat pressure ≥ 90% of cracking pressure.
- Proof Test - proof test pressure: 1000 bar.
- Orifice Sizes: Ø 1/8", Ø 5/32" and Ø 3/16".
- Back Pressure - set point is affected by vent back pressure. Maximum permissible back pressure 100 bar.
- Operating Media - Mineral oils, water-glycol mixtures with corrosion inhibitor.
- Prevention of Fluid Leakage - the possibility of fluid leakage via the threads of the spring adjusting screw is prevented by a sealing / locking cap fitted over the protruding end of the screw.

Materials

External & Wetted Parts	- 316L stainless steel
Seat Material	- 316L stainless steel

Approvals Details

II 2 G T4

These relief valves conform to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant.
These valves also conform to the Pressure Equipment Directive 97/23/EC. All valves are CE marked and supplied with a test certificate plus a declaration of conformity.

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Product Description

The type 7608, 7668, 7708 and 7768 relief valves offer a choice of three orifice sizes, each with either ¼" NPT female, or ½" NPT male, inlet connections. The valve is of the direct acting type, comprising a hexagonal section body in which a piston is spring loaded against a seat formed on the inner end of an inlet orifice.

The loading spring is immersed in the valve operating fluid, the spring chamber being connected to the valve outlet port through a fluid way in the piston.

Special manufacturing materials ensure that the valve complies with NACE Standard MR-01-75 when requested and is thus suitable for use in most fluid systems. It should be noted, however, that the valve is designed to function as a safety device and should not be used as an overspill valve to off load excess pump flow and control fluid pressure within a system.

Recommended filtration is 10 micron.
The relief valve weight is 1.27 Kg.

Selection Chart - Ordering Example

RELIEF VALVE 7608, 7668, 7708 and 7768 SPECIFICATIONS

Part Number	Pressure Range (bar)	Inlet Connection	Outlet Connection	Repair Kit
7648	69 - 414	¼" NPT Female	¼" NPT Female	RS 7648
7608	90 - 620	¼" NPT Female	¼" NPT Female	RS 7608
7618	90 - 932	¼" NPT Female	¼" NPT Female	RS 7618
7748	69 - 414	¼" BSP Female	¼" BSP Female	RS 7748
7708	90 - 620	¼" BSP Female	¼" BSP Female	RS 7708
7718	90 - 932	¼" BSP Female	¼" BSP Female	RS 7718
24100-01	69 - 414	⅜" MP	¼" NPT	RS 24100-01
24100-02	90 - 620	⅜" MP	¼" NPT	RS 24100-02
24100-03	90 - 932	⅜" MP	¼" NPT	RS 24100-03
24200-01	69 - 414	⅜" NPT	⅜" NPT	RS 24200-01
24200-02	90 - 620	⅜" NPT	⅜" NPT	RS 24200-02
24200-03	90 - 932	⅜" NPT	⅜" NPT	RS 24200-03
24100-04	69 - 414	⅜" MP	⅜" NPT	RS 24100-04
24100-05	90 - 620	⅜" MP	⅜" NPT	RS 24100-05
24100-06	90 - 932	⅜" MP	⅜" NPT	RS 24100-06
24100-07	69 - 414	⅜" MP	⅜" BSP	RS 24100-07
24100-08	90 - 620	⅜" MP	⅜" BSP	RS 24100-08
24100-09	90 - 932	⅜" MP	⅜" BSP	RS 24100-09
24300-01	69 - 414	⅜" BSP	⅜" BSP	RS 24300-01
24300-02	90 - 620	⅜" BSP	⅜" BSP	RS 24300-02
24300-03	90 - 932	⅜" BSP	⅜" BSP	RS 24300-03
7668	69 - 414	½" NPT Male	¼" MP Female	RS 7668
7638	90 - 620	½" NPT Male	¼" MP Female	RS 7638
7768	69 - 414	½" BSP Male	¼" BSP Female	RS 7768
7728	90 - 620	½" BSP Male	¼" BSP Female	RS 7728
7738	90 - 932	½" BSP Male	¼" BSP Female	RS 7738
7628	90 - 620	½" NPT Male	½" NPT Male	RS 7628
24400-01	69 - 414	9/16" MP	9/16" NPT	RS 24400-01
24400-02	90 - 620	9/16" MP	9/16" NPT	RS 24400-02
24400-03	90 - 932	9/16" MP	9/16" NPT	RS 24400-03
24400-04	69 - 414	9/16" MP	⅜" NPT	RS 24400-04
24400-05	90 - 620	9/16" MP	⅜" NPT	RS 24400-05
24400-06	90 - 932	9/16" MP	⅜" NPT	RS 24400-06
24400-07	69 - 414	9/16" MP	⅜" BSP	RS 24400-07
24400-08	90 - 620	9/16" MP	⅜" BSP	RS 24400-08
24400-09	90 - 932	9/16" MP	⅜" BSP	RS 24400-09

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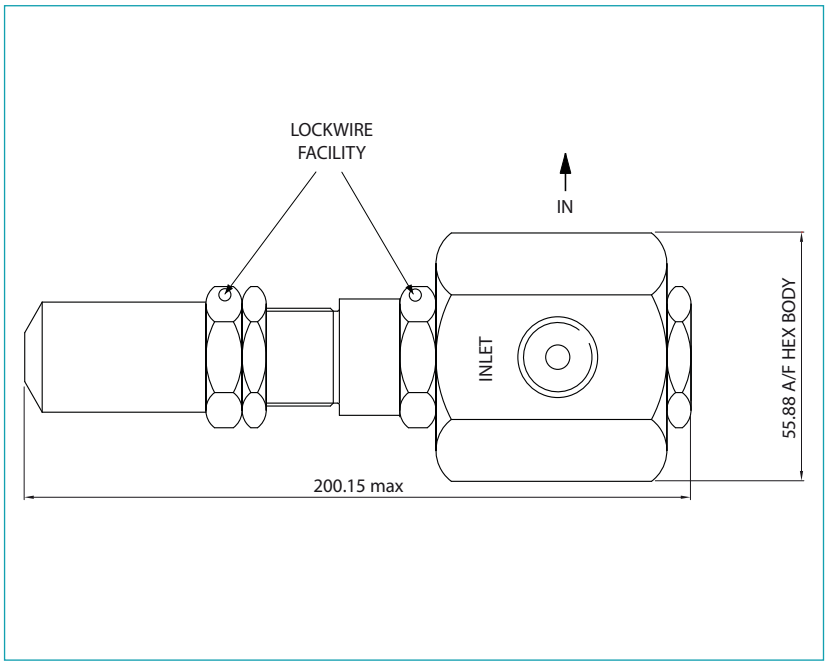
Bifold Marshalsea

Relief Valves for Accurate Pressure Control



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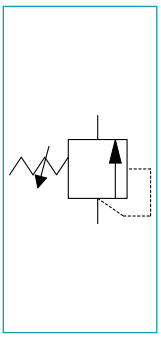

Features and Benefits

- Up to 700 bar, 45 l / m
- Set Point Repeatability ±2%.
- Sealing Re-Seat Pressure - Virtually zero leakage re-seat pressure ≥ 90% of cracking pressure.
- Proof Test - proof test pressure: 1000 bar.
- Flow Capacity - at 10% overpressure: 45 l / m.
- Orifice Size: Ø 3/16".
- Important - Set point is affected by vent port back pressure and will DECREASE accordingly.
- The Main Spring Load - is not transmitted to the seat, thus reducing distortion and wear.

Materials

External & Wetted Parts	- 316L stainless steel - M390		
Seal Material	- Nitrile	- standard	
	- Viton	- add suffix M089	eg. 14450 - 08 - M089
	- Silicone	- add suffix M065	eg. 14450 - 08 - M065
	- Low Temp Nitrile	- add suffix M106	eg. 14450 - 08 - M106
Seat Material	- M340		

Approvals Details

Ex II 2 G T4

These relief valves conform to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant.
These valves also conform to the Pressure Equipment Directive 97/23/EC. All valves are CE marked and supplied with a test certificate plus a declaration of conformity.

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Product Description

The Type 14450 precision relief valve has been designed to provide accurate over pressure protection in systems operating at pressures of up to 700 bar and flows of up to 45 l / m.

Precision relief valves have very high sealing forces along with accurate and narrow dead bands. Precision relief valves should be used in preference to sprung relief valves where there is risk of vibration induced leakage or where dead bands are important to system safety performance. Sprung relief valves typically will have a narrow dead band when tested on a static dead weight tester but will have a much wider dead band under flowing conditions that will require a significant drop in system pressure to enable the valve to reseat.

The floating poppet design enhanced by the use of linear bearings produces characteristics which are non flow dependent and ensures long life with repeatable performance.

Installation and removal of system pipe work is simplified by the right angled porting configuration.

The relief valve weight is 1.38 Kg.

Selection Chart - Ordering Example

RELIEF VALVE 14450 SPECIFICATIONS

Part Number	Pressure Range (bar)	Outlet Connection	Inlet Connection	Repair Kit
14450 - 01	103 - 240	½" NPT Female	½" NPT Female	RS 14450 - 01
14450 - 02	207 - 414	½" NPT Female	½" NPT Female	RS 14450 - 02
14450 - 03	345 - 700	½" NPT Female	½" NPT Female	RS 14450 - 03
14450 - 04	103 - 240	½" BSP Female	½" BSP Female	RS 14450 - 04
14450 - 05	207 - 414	½" BSP Female	½" BSP Female	RS 14450 - 05
14450 - 06	345 - 700	½" BSP Female	½" BSP Female	RS 14450 - 06
14450 - 07	103 - 240	¾" NPT Female	¾" NPT Female	RS 14450 - 07
14450 - 08	207 - 414	¾" NPT Female	¾" NPT Female	RS 14450 - 08
14450 - 09	345 - 700	¾" NPT Female	¾" NPT Female	RS 14450 - 09
14450 - 10	103 - 240	¾" MP Female	¾" MP Female	RS 14450 - 10
14450 - 11	207 - 414	¾" MP Female	¾" MP Female	RS 14450 - 11
14450 - 12	345 - 700	¾" MP Female	¾" MP Female	RS 14450 - 12

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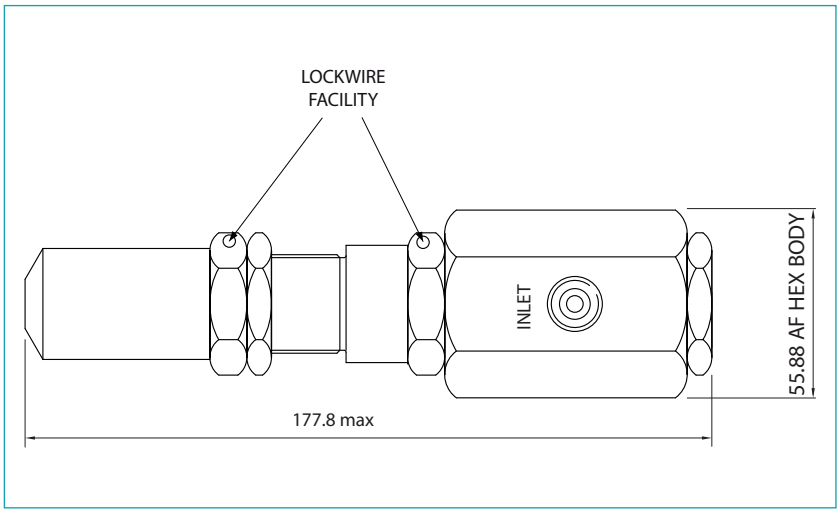

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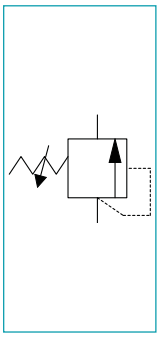

Features and Benefits

- Up to 1200 bar, 25 l / m
- Set Point Repeatability ±2%.
- Sealing Re-Seat Pressure - Virtually zero leakage re-seat pressure ≥ 90% of cracking pressure.
- Proof Test - proof test pressure: 1000 bar.
  * proof test pressure: 1350 bar.
- Flow Capacity - at up to 10% overpressure: 25 l / m.
- Orifice Size: Ø 1/8".
- Important - Set point is affected by vent port back pressure and will DECREASE accordingly.
- The Main Spring Load - is not transmitted to the seat, thus reducing distortion and wear.

Materials

External & Wetted Parts		- 316L stainless steel - M390	
Seal Material	- Nitrile	- standard	
	- Viton	- add suffix M089	eg. 14520 - 08 - M089
	- Silicone	- add suffix M065	eg. 14520 - 08 - M065
	- Low Temp Nitrile	- add suffix M106	eg. 14520 - 08 - M106
Seat Material	- M340		

Working Temperature

Temperature Range:	
Viton	-20°C to +180°C
Nitrile	-20°C to +80°C
Flourosilicone	-60°C to +60°C
Acetal	-60°C to +60°C

Approvals Details

Ex II 2 G T4

These relief valves conform to European Directive 94/9/EC relating to equipment intended for use in potentially explosive atmospheres and are ATEX compliant.
These valves also conform to the Pressure Equipment Directive 97/23/EC. All valves are marked and supplied with a test certificate plus a declaration of conformity.

Product Description

The Type 14520, 14530, 14580 and 14570 precision relief valve has been designed to provide accurate over pressure protection in systems operating at pressures of up to 1200 bar and flows of up to 25 l / m.

Precision relief valves have very high sealing forces along with accurate and narrow dead bands. Precision relief valves should be used in preference to sprung relief valves where there is risk of vibration induced leakage or where dead bands are important to system safety performance. Sprung relief valves typically will have a narrow dead band when tested on a static dead weight tester but will have a much wider dead band under flowing conditions and will require a significant drop in system pressure to enable the valve to reseat. The floating poppet design enhanced by the use of linear bearings produces characteristics which are non flow dependent and ensures long life with repeatable performance.

Installation and removal of system pipe work is simplified by the right angled porting configuration.

The relief valve weight is 0.97 Kg.

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Selection Chart - Ordering Example

RELIEF VALVE 14520, 14530 AND 14580 SPECIFICATIONS				
Part Number	**Pressure Range (bar)**	**Inlet Connection**	**Outlet Connection**	**Repair Kit**
14530 - 01	100 - 240	¼" NPT	¼" NPT	RS 14530 - 01
14530 - 02	207 - 414	¼" NPT	¼" NPT	RS 14530 - 02
14530 - 03	345 - 700	¼" NPT	¼" NPT	RS 14530 - 03
14530 - 04	100 - 240	¼" BSP	¼" BSP	RS 14530 - 04
14530 - 05	207 - 414	¼" BSP	¼" BSP	RS 14530 - 05
14530 - 06	345 - 700	¼" BSP	¼" BSP	RS 14530 - 06
14580 - 13	100 - 240	⅜" MP	¼" NPT	RS 14580 - 13
14580 - 14	207 - 414	⅜" MP	¼" NPT	RS 14580 - 14
14580 - 15	345 - 700	⅜" MP	¼" NPT	RS 14580 - 15
14580 - 16	600 - 1200	⅜" MP	¼" NPT	RS 14580 - 16
14520 - 01	100 - 240	⅜" NPT	⅜" NPT	RS 14520 - 01
14520 - 02	207 - 414	⅜" NPT	⅜" NPT	RS 14520 - 02
14520 - 03	345 - 700	⅜" NPT	⅜" NPT	RS 14520 - 03
14520 - 04	100 - 240	⅜" BSP	⅜" BSP	RS 14520 - 04
14520 - 05	207 - 414	⅜" BSP	⅜" BSP	RS 14520 - 05
14520 - 06	345 - 700	⅜" BSP	⅜" BSP	RS 14520 - 06
14580 - 01	100 - 240	⅜" MP	⅜" NPT	RS 14580 - 01
14580 - 02	207 - 414	⅜" MP	⅜" NPT	RS 14580 - 02
14580 - 03	345 - 700	⅜" MP	⅜" NPT	RS 14580 - 03
14580 - 04	600 - 1200	⅜" MP	⅜" NPT	RS 14580 - 04
14580 - 07	100 - 240	⅜" MP	⅜" BSP	RS 14580 - 07
14580 - 08	207 - 414	⅜" MP	⅜" BSP	RS 14580 - 08
14580 - 09	345 - 700	⅜" MP	⅜" BSP	RS 14580 - 09
14580 - 04	600 - 1200	⅜" MP	⅜" BSP	RS 14580 - 04
14580 - 11	600 - 1200	⅜" MP	⅜" MP	RS 14580 - 11
14580 - 17	100 - 240	⅜" MP	½" NPT	RS 14580 - 17
14580 - 18	207 - 414	⅜" MP	½" NPT	RS 14580 - 18
14580 - 19	345 - 700	⅜" MP	½" NPT	RS 14580 - 19
14580 - 20	600 - 1200	⅜" MP	½" NPT	RS 14580 - 20
23600 - 01	100 - 240	½" NPT	½" NPT	RS 23600 - 01
23600 - 02	207 - 414	½" NPT	½" NPT	RS 23600 - 02
23600 - 03	345 - 700	½" NPT	½" NPT	RS 23600 - 03
23600 - 04	600 - 1200	½" NPT	½" NPT	RS 23600 - 04
14570 - 01	100 - 240	9/16" MP	⅜" NPT	RS 14570 - 01
14570 - 02	207 - 414	9/16" MP	⅜" NPT	RS 14570 - 02
14570 - 03	345 - 700	9/16" MP	⅜" NPT	RS 14570 - 03
14570 - 10	600 - 1200	9/16" MP	⅜" NPT	RS 14570 - 10
14570 - 07	100 - 240	9/16" MP	⅜" BSP	RS 14570 - 07
14570 - 08	207 - 414	9/16" MP	⅜" BSP	RS 14570 - 08
14570 - 09	345 - 700	9/16" MP	⅜" BSP	RS 14570 - 09
14570 - 04	600 - 1200	9/16" MP	⅜" BSP	RS 14570 - 04
14570 - 11	600 - 1200	9/16" MP	9/16" MP	RS 14570 - 11
14570 - 12	100 - 240	9/16" MP	½" NPT	RS 14570 - 12
14570 - 13	207 - 414	9/16" MP	½" NPT	RS 14570 - 13
14570 - 14	345 - 700	9/16" MP	½" NPT	RS 14570 - 14
14570 - 15	600 - 1200	9/16" MP	½" NPT	RS 14573 - 15
23700 - 01	100 - 240	¾" NPT	¾" NPT	RS 23700 - 01
23700 - 02	207 - 414	¾" NPT	¾" NPT	RS 23700 - 02
23700 - 03	345 - 700	¾" NPT	¾" NPT	RS 23700 - 03
23700 - 04	600 - 1200	¾" NPT	¾" NPT	RS 23700 - 04
23800 - 01	100 - 240	¾" MP	¾" MP	RS 23800 - 01
23800 - 02	207 - 414	¾" MP	¾" MP	RS 23800 - 02
23800 - 03	345 - 700	¾" MP	¾" MP	RS 23800 - 03
23800 - 04	600 - 1200	¾" MP	¾" MP	RS 28700 - 04

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Pneumatic and Instrumentation Valves

Hydraulic Valves

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Hydraulic Pumps, Intensifiers and Valves

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BFD81 December '12

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