Solenoid Valves

Available in 2/2 Normally Open (NO), 2/2 Normally Closed (NC) and 3/2 Universal configurations. Our valves are opened and closed via a highly efficient solenoid coil. Coils are offered in numerous configurations including a range of voltages, powers, conduit connections and also in Automatic, Manual reset and Manual override versions. 2/2 and 3/2 valves can be offered with both balanced poppets or pressure biased versions.

Solenoids Valves

The Wells range of high-pressure solenoid valves control pressure up to 415 bar (6,000 psi), and orifices from 1.6mm to 12.7mm diameter (1/16" to 1/2"). 2/2 NO, 2/2 NC and 3/2 arrangements are included in the range.

For the smallest orifice (E20 to E29) a porous bronze filter disk is fitted as standard into the valve port.

For all larger sizes of valve, it is recommended that a Wells high-pressure filter is fitted upstream of the solenoid valve.

The largest orifice range (E50 to E57) incorporates a pilot valve to operate the main valve due to the need to overcome the spring loads and friction on the main valve steam, a minimum pressure of 10 bar (150 psi) is needed to operate the valve.

In the case of solenoid valves E26 E27 and E50 to E57 the vent is not ported. These valves can only be used for gas applications.

E20 Valve with ATEX and IECEx certified Ex db Hazardous area solenoid.

Solenoid Coils

Our industry leading solenoid coils have been designed and optimised to give the highest force with minimal power consumption. We offer a range of voltages, reset options, conduit and certification types to suit a wide range of applications.

- Ingress protection: IP68
- ATEX and IECEx certification for used in hazardous areas
- Ambient temperatures from -60°C to +90°C allowing arctic service through to remote desert conditions

Solenoid Coils

Certification	Conduit	Voltage	Reset	Power
Ex db	M20	12 DC	Automatic	2 ~ 12 Watts Depending on valve Requirements
Ex mb	½ NPT	24 DC	Manual	
None	Hirschmann *(Not Ex)*	48 DC	Override	
Consult BiS Wells for correct coil selection and configuration for your application. Please note, not all configurations are possible.		110 ~ 115 DC *(Not Ex mb)*		
		24 AC *(Not Ex mb)*		
		48 AC *(Not Ex mb)*		
		110 ~ 115 AC *(Not Ex mb)*		
		230 AC *(Not Ex mb)*		

2 port 2 position Solenoid Valves

Valve Type	Orifice mm (ins)	Ports (standard)	Pressure bar (psi) Max Inlet	Outlet Range	Gas or Liquid
E20	1.6 (1/16)	1/4" BSP	415 (6,000)	2 way - Energise to open	Both
E21	1.6 (1/16)	1/4" BSP	415 (6,000)	2 way - Energise to close	Both
E30	3.2 (1/8)	1/4" BSP	138 (2,000)	2 way - Energise to open	Both
E31	3.2 (1/8)	1/4" BSP	138 (2,000)	2 way - Energise to close	Both
E40	6.4 (1/4)	3/8" BSP	276 (4,000)	2 way - Energise to open	Both
E41	6.4 (1/4)	3/8" BSP	276 (4,000)	2 way - Energise to close	Both
E50	12.7 (1/2)	3/4" BSP	415 (6,000)	2 way - Energise to open	Gas
E51	12.7 (1/2)	3/4" BSP	415 (6,000)	2 way - Energise to close	Gas

3 port 2 position Solenoid Valves

Valve Type	Orifice mm (ins)	Ports (standard)	Pressure bar (psi) Max Inlet	Outlet Range	Gas or Liquid
E26	1.6 (1/16)	1/4" BSP	415 (6,000)	3 way - Energise inlet to line	Gas
E27	1.6 (1/16)	1/4" BSP	415 (6,000)	3 way - Energise line to vent	Gas
E28	1.6 (1/16)	1/4" BSP	415 (6,000)	3 way - Energise inlet to line	Both
E29	1.6 (1/16)	1/4" BSP	415 (6,000)	3 way - Energise line to vent	Both
E36	3.2 (1/8)	1/4" BSP	138 (2,000)	3 way - Energise inlet to line	Both
E37	3.2 (1/8)	1/4" BSP	138 (2,000)	3 way - Energise line to vent	Both
E56	12.7 (1/2)	3/4" BSP	415 (6,000)	3 way - Energise inlet to line	Gas
E57	12.7 (1/2)	3/4" BSP	415 (6,000)	3 way - Energise line to vent	Gas

Back Pressure Maintaining Valves (BPMV)

The Back Pressure Maintaining Valve is designed to ensure the system does not go below a set pressure on the inlet side.

Back Pressure Maintaining Methods

Spring loaded – These valves offer robust and consistent regulating and are suitable for orifice sizes up to 5.8mm (0.220") a spring loaded seat design is used covering pressure up to 700 bar (10,000 psi).

Dome Loaded – Internally and Externally loaded - Pressurised gas is stored in a dome on one side of a diaphragm or piston to balance upstream fluid pressure on the other side. For maintaining large flows at medium and high pressures, spring sizes become too large and the high spring forces difficult to contain. A more compact and convenient solution is to use a dome loaded valve. In the case of pneumatic systems, the dome gas is obtained by bleeding a small flow from the supply side of the system until the desired dome pressure is obtained. For hydraulic systems, a separate gas pressure supply (e.g. gas bottle) is needed for the initial charging of the dome.

H210HP Dome loaded BPMV and H15 sprung loaded BPMV

Spring Loaded Back Pressure Maintaining Valves

Valve	Orifice	Ports	Pressure bar (psi)		Gas or
Type	mm (ins)	(standard)	Min	Max	Liquid
H10	3.2 (0.125)	3/8" BSP	35 (500)	544 (8,000)	Both
H11	4.8 (0.188)	3/8" BSP	18 (250)	306 (4,500)	Both
H12	4.8 (0.188)	3/8" BSP	0.34 (5)	68 (1,000)	Both
H15	5.8 (0.220)	3/8" BSP	10 (150)	500 (7,250)	Both
H18	4.7 (0.185)	13/16” MP	400 (5,800)	700 (10,000)	Both

Internal Dome Loaded Back Pressure Maintaining Valves

Valve	Orifice	Ports	Pressure bar (psi)		Gas or
Type	mm (ins)	(standard)	Min	Max	Liquid
H100	11.1 (0.44)	1/2" BSP	0.05 (0.75)	70 (1,000)	Gas
H120	25.4 (1.00)	1 1/2" BSP	0.05 (0.75)	70 (1,000)	Gas
H130	50.8 (2.00)	3" BSP	0.05 (0.75)	70 (1,000)	Gas
H200	6.3 (0.25)	3/8" BSP	2.0 (30)	415 (6,000)	Gas
H210HP	12.7 (0.50)	3/4" BSP	3.0 (44)	415 (6,000)	Gas

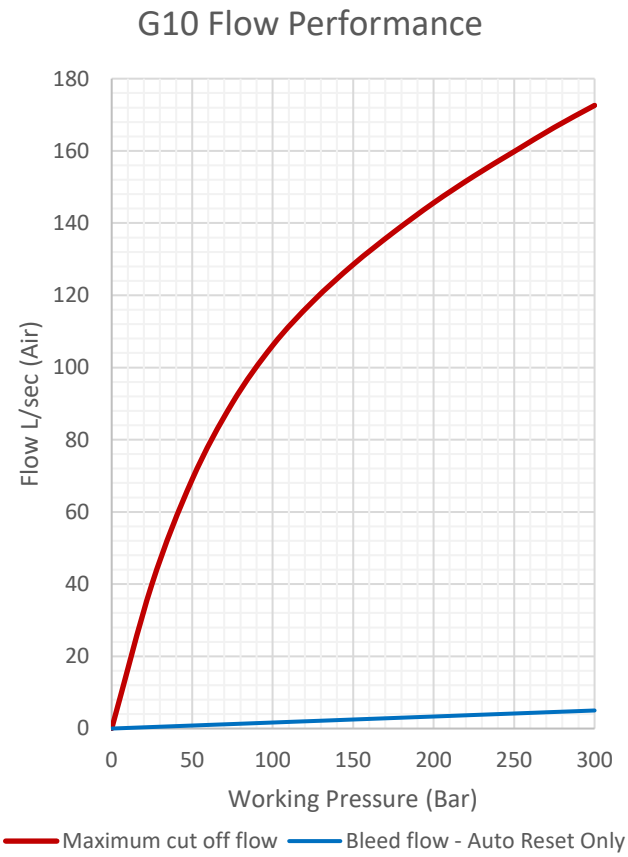
External Dome Loaded Back Pressure Maintaining Valves

Valve	Orifice	Ports	Pressure bar (psi)		Gas or
Type	mm (ins)	(standard)	Min	Max	Liquid
H101	11.1 (0.44)	1/2" BSP	0.05 (0.75)	70 (1,000)	Both
H121	25.4 (1.00)	1 1/2" BSP	0.05 (0.75)	70 (1,000)	Both
H131	50.8 (2.00)	3" BSP	0.05 (0.75)	70 (1,000)	Both
H201	6.3 (0.25)	3/8" BSP	2.0 (30)	415 (6,000)	Both
H211HP	12.7 (0.50)	3/4" BSP	3.0 (44)	415 (6,000)	Both

Burst Protection Valves

The burst protection valve, or flow limiting valve, was developed for safety reasons. The valve is designed to prevent a dangerous, uncontrolled discharge of high-pressure gas or liquid in the event of pipeline or component failure. A sudden drop in pressure across the valve, resulting from a downstream line failure, automatically causes a spring biased spool to move across and shut off the flow. The flow rate at which this shut off occurs is set by means of a lockable metering spindle which determines the area of control orifice.

Our burst protection valves can be manufactured from a wide range of materials including Aluminium Alloy, Stainless Steel, Brass and Aluminium Bronze. Valves are offered in both automatic and manual reset versions.



G10 Burst protection valve manufactured from Aluminium Alloy

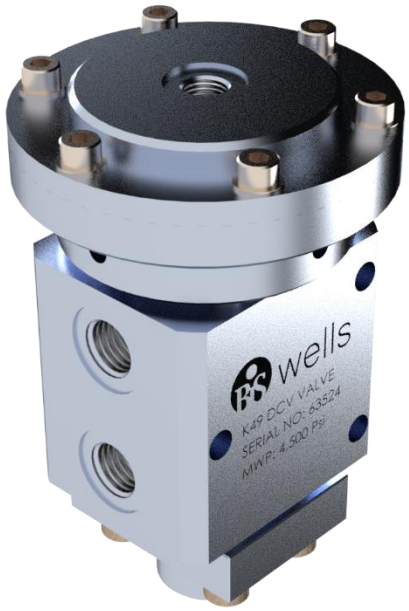
Valve Type	Ports (standard)	Max Working Pressure bar (psi)	Orifice Area mm²	Gas or Liquid
G10	3/8" BSP	310 (4,500)	44.0	Both

Directional Control Valves. Pilot Operated.

A range of valves designed to provide a means of operating high-pressure fluid systems using a normal 'factory / shop' air supply. (Approximately 5 ~ 8 bar). The low-pressure service operates on a large diaphragm and is completely isolated from the high-pressure system.

2 Ported Valves – These pilot operated valves actuate between 4.2 ~ 8 bar (60 ~ 120 psi). The pilot is used to operate a valve capable of controlling both gas and liquid to pressures up to 450 bar (6,500 psi). These valves range from 6.35mm (1/4") orifice diameter to 12.7mm (1/2") orifice diameter. These valves are offered in both balanced poppet and pressure biased designs. As well as normally closed and normally open versions.

3 Ported Valves – These pilot operated valves actuate between 4.2 ~ 8 bar (60 ~ 120 psi). The pilot is used to operate a valve capable of controlling both gas and liquid to pressures up to 414 bar (6,000 psi). These valves range from 1.6mm (0.062") orifice diameter to 12.7mm (1/2") orifice diameter. 3 ported valves are offered in both balanced poppet and pressure biased designs. As well as normally closed and normally open versions. Balanced valves can be used in any 'universal' configuration.



K49 3 ported valve with balanced poppet

2 Ported Valves

Valve	Orifice	Ports	Pressure bar (psi)		Gas or Liquid
Type	mm (ins)	(standard)	Pilot Pressure	Inlet Pressure	
K38	6.35 (0.250)	3/8" BSP	4.2~8.3 (60~120)	450 (6500)	Both
K39	9.5 (0.375)	3/4" BSP	5.5~8.3 (80~120)	450 (6500)	Both
K39S	12.7 (0.500)	3/4" BSP	4.2~8.3 (60~120)	450 (6500)	Both
K55	9.5 (0.375)	1/2" BSP	5.5~8.3 (80~120)	450 (6500)	Both
K55S	12.7 (0.500)	1/2" BSP	4.2~8.3 (60~120)	450 (6500)	Both

3 Ported Valves

Valve	Orifice	Ports	Pressure bar (psi)		Gas or Liquid
Type	mm (ins)	(standard)	Pilot Pressure	Inlet Pressure	
K47	1.6 (0.062)	1/4" BSP	4.2~8.3 (60~120)	415 (6000)	Both
K48	3.2 (0.125)	1/4" BSP	4.2~8.3 (60~120)	415 (6000)	Both
K49	12.7 (0.500)	3/8" BSP	4.2~8.3 (60~120)	310 (4500)	Both

Filters

Our standard range of high-pressure filters can handle inlet pressures of up to 6,000 Psi and range from ¼" ports up to 1-1/2" ports. We can supply in various materials such as Aluminium Alloy, Stainless Steel, Aluminium Bronze and Brass. Filters are fitted with sintered Bronze or Stainless-Steel elements graded as 5µm, 10µm, 25µm and 37.5µm to ensure your system is clean and the life of valves and other instrumentation is prolonged. BiS Wells offer three different types of filter and they can be classified as follows:

- Disc filter – These filters fit directly into an entry port of a valve. Ideal for ultra-compact low flow applications
- Inline filter - Ports located either end of the filter housing. Best suited for compact, high flow applications
- T-branch filter - Ports located either side of filter housing. Ideal for high flow applications and where filters need to be frequently serviced

Our Filters are suitable for both pneumatic and hydraulic applications, and as standard valves are offered with Nitrile or Viton seals however please contact us for medium compatibility as other elastomeric materials can be offered.

All our Filters can be manufactured specially for Oxygen use, please contact us for more information.

F24 'T' filter manufactured from Aluminum Alloy.

Valve	Filter Elements			Ports	Max working pressure Bar (Psi)	Filter Type	Gas or Liquid
Type	5µm	25µm	37.5µm	**(standard)**			
F1	X	Yes	X	3/8" BSP	415 (6,000)	Disc	Both
F2	X	Yes	X	1/2" BSP	415 (6,000)	Disc	Both
F12	Yes	Yes	Yes	3/8" BSP	415 (6,000)	Inline	Both
F14	Yes	Yes	Yes	3/4" BSP	415 (6,000)	Inline	Both
F16	Yes	Yes	Yes	1 1/2" BSP	310 (4,500)	Inline	Both
F22	Yes	Yes	Yes	3/8" BSP	415 (6,000)	T-branch	Both
F24	Yes	Yes	Yes	3/4" BSP	415 (6,000)	T-branch	Both

Non-Return Valves

These valves only allow flow in one direction. Critical in some applications and vital for protecting delicate system components.

Non-return valves

We offer a standard range of non-return valves in various materials and port sizing. These valves feature a 'soft seat' rubber ring which is bonded into the cone end of the spool. This combination provides a leak-proof seal at both high and low differential pressure. The valves are provided with parallel pipe threads as standard and the female threaded bodies are given a recessed face to suit a bonded seal face ring.

D14 Non-Return Valve in Brass. Specially cleaned for Oxygen Service.

Non-return valves

Valve Type	Orifice mm (ins)	Ports (standard)	Gas or Liquid
D9	1/4" BSP	450 (6500)	Both
D11	3/8" BSP	415 (6000)	Both
D12	1/2" BSP	310 (4500)	Both
D12HP	1/2" BSP	450 (6500)	Both
D13	3/4" BSP	415 (6000)	Both
D14	1" BSP	415 (6000)	Both
D15	1 1/2" BSP	310 (4500)	Both

Pressure Reducing Valves

The Pressure Reducing Valve is designed to provide a reduced outlet pressure from any given inlet pressure.

Pressure reducing methods

Spring loaded - A force is created from an adjustable spring to act upon a diaphragm or piston to balance a pressure on the downstream side of the valve.

Internally Dome Loaded - Pressurised gas is stored in a dome on one side of a diaphragm or piston to balance downstream fluid pressure on the other side. In this case the dome is loaded by means controlled by the operation of needle valves provided for this purpose.

Externally Dome Loaded - Pressurised gas is stored in a dome on one side of a diaphragm or piston to balance downstream fluid pressure on the other side. A tapped thread connection is provided into the dome, which may be loaded from any suitable gas source. A convenient feature of this method is that a spring-loaded reducing valve may be used as a pilot valve to control dome pressure for ease of adjustment or to provide remote control.

A210 Dome loaded regulator and sprung loaded regulator with hand wheel

Spring Loaded Pressure Reducing Valves

Valve	Orifice	Ports	Pressure bar (psi)		Gas or Liquid
Type	mm (ins)	(standard)	Max Inlet	Outlet Range	
A10	3.2 (0.125)	3/8" BSP	415 (6,000)	0.35~70 (5~1,000)	Both
A11	3.2 (0.125)	3/8" BSP	415 (6,000)	70~275 (1000~4,000)	Both
A12	3.2 (0.125)	3/8" BSP	415 (6,000)	35~415 (500~6,000)	Both
A16	7.6 (0.300)	3/8" BSP	310 (4,500)	1.5~70 (20~1,000)	Both
A20	11.1 (0.437)	1/2" BSP	70 (1,000)	0.35~7 (5~100)	Both
A30	19.1 (0.750)	1" BSP	70 (1,000)	0.35~7 (5~100)	Both

Internal Dome Loaded Pressure Reducing Valves

Valve Type	Orifice mm (ins)	Ports (standard)	Pressure bar (psi)		Gas or Liquid
			Max Inlet	Outlet Range	
A100	11.1 (0.437)	1/2" BSP	70 (1000)	0.05~62 (0.75~900)	Gas only
A120	25.4 (1.000)	1 1/2" BSP	70 (1000)	0.05~62 (0.75~900)	Gas only
A130	50.8 (2.000)	3" BSP	70 (1000)	0.05~62 (0.75~900)	Gas only
A200	6.4 (0.250)	3/8" BSP	415 (6000)	2~240 (30~3500)	Gas only
A210	12.7 (0.500)	3/4" BSP	415 (6000)	3~240 (44~3500)	Gas only
A220	25.4 (1.000)	1 1/2" BSP	310 (4500)	5~240 (73~3500)	Gas only

External Dome Loaded Pressure Reducing Valves

Valve Type	Orifice mm (ins)	Ports (standard)	Pressure bar (psi)		Gas or Liquid
			Max Inlet	Outlet Range	
A101	11.1 (0.437)	1/2" BSP	70 (1000)	0.05~62 (0.75~900)	Both
A121	25.4 (1.000)	1 1/2" BSP	70 (1000)	0.05~62 (0.75~900)	Both
A131	50.8 (2.000)	3" BSP	70 (1000)	0.05~62 (0.75~900)	Both
A201	6.4 (0.250)	3/8" BSP	415 (6000)	2~240 (30~3500)	Both
A211	12.7 (0.500)	3/4" BSP	415 (6000)	3~240 (44~3500)	Both
A221	25.4 (1.000)	1 1/2" BSP	310 (4500)	5~240 (73~3500)	Both

Pressure Relief Valves

The Pressure Relief Valve is designed to ensure the system does not exceed set pressure.
When installing a relief valve, consideration must be given to the downstream venting arrangements. For non-toxic gases a simple vent via holes in the spring casing is possible (C2 & C15), otherwise a piped vent to the low-pressure side of the system is needed.

Types of Pressure Relief Valves

Spring Loaded – Sprung loaded Pressure Relief Valves are the most common due to their highly robust, simple and effective design. These valves have orifice sizes up to 11.1mm (0.437") and are used to relieve pressure up to 1,020 bar (15,000 psi). For more accurate control, a combination of balance piston and cone seat is used, the pressure acting on the differential area between the piston and the seat is used to open the valve in a controlled manner. Valves such as the C11 can be used as 'safety relief valves' and can be supplied CE marked and Pressure Equipment Directive (PED) approved.

Dome Loaded – Typically known as Dome Loaded Back Pressure Maintaining Valves. These designs used pressurised gas is stored in a dome on one side of a diaphragm or piston to balance downstream fluid pressure on the other side. For relieving large flows at medium and high pressures, spring sizes become too large and the high spring forces difficult to contain. A more compact and convenient solution is to use a dome loaded valve. In the case of pneumatic systems, the dome gas is obtained be bleeding a small flow from the supply side of the system until the desired dome pressure is obtained. For hydraulic systems, a separate gas pressure supply (e.g. gas bottle) is needed for the initial charging of the dome. Unlike Spring Loaded Pressure Relief Valves these valves cannot be used as CE marked 'safety relief valves.'

C11 Pressure Relief Valve.

Pressure Relief Valves

Spring Loaded

Valve	Orifice	Ports	Pressure bar (psi)		Gas or Liquid
Type	mm (ins)	(standard)	Min	Max	
C10	9.5 (0.375)	1/2" BSP	20 (300)	240 (3,500)	Both
C11	6.4 (0.250)	1/2" BSP	35 (500)	450 (6,500)	Both
C12	3.2 (0.125)	3/8" BSP	20 (300)	275 (4,000)	Both

Dome Loaded

For details of Dome Loaded Pressure Relief Valves please refer our Dome Loaded Back Pressure Maintaining Valve datasheets; such as the H200.

Solenoid Valves

Available in 2/2 Normally Open (NO), 2/2 Normally Closed (NC) and 3/2 Universal configurations. Our valves are opened and closed via a highly efficient solenoid coil. Coils are offered in numerous configurations including a range of voltages, powers, conduit connections and also in Automatic, Manual reset and Manual override versions. 2/2 and 3/2 valves can be offered with both balanced poppets or pressure biased versions.

Solenoids Valves

The Wells range of high-pressure solenoid valves control pressure up to 415 bar (6,000 psi), and orifices from 1.6mm to 12.7mm diameter (1/16" to 1/2"). 2/2 NO, 2/2 NC and 3/2 arrangements are included in the range.

For the smallest orifice (E20 to E29) a porous bronze filter disk is fitted as standard into the valve port.

For all larger sizes of valve, it is recommended that a Wells high-pressure filter is fitted upstream of the solenoid valve.

The largest orifice range (E50 to E57) incorporates a pilot valve to operate the main valve due to the need to overcome the spring loads and friction on the main valve steam, a minimum pressure of 10 bar (150 psi) is needed to operate the valve.

In the case of solenoid valves E26 E27 and E50 to E57 the vent is not ported. These valves can only be used for gas applications.

E20 Valve with ATEX and IECEx certified Ex db Hazardous area solenoid.

Solenoid Coils

Our industry leading solenoid coils have been designed and optimised to give the highest force with minimal power consumption. We offer a range of voltages, reset options, conduit and certification types to suit a wide range of applications.

- Ingress protection: IP68
- ATEX and IECEx certification for used in hazardous areas
- Ambient temperatures from -60°C to +90°C allowing arctic service through to remote desert conditions

Solenoid Coils

Certification	Conduit	Voltage	Reset	Power
Ex db	M20	12 DC	Automatic	2 ~ 12 Watts Depending on valve Requirements
Ex mb	½ NPT	24 DC	Manual	
None	Hirschmann *(Not Ex)*	48 DC	Override	
Consult BiS Wells for correct coil selection and configuration for your application. Please note, not all configurations are possible.		110 ~ 115 DC *(Not Ex mb)*		
		24 AC *(Not Ex mb)*		
		48 AC *(Not Ex mb)*		
		110 ~ 115 AC *(Not Ex mb)*		
		230 AC *(Not Ex mb)*		

2 port 2 position Solenoid Valves

Valve Type	Orifice mm (ins)	Ports (standard)	Pressure bar (psi) Max Inlet	Outlet Range	Gas or Liquid
E20	1.6 (1/16)	1/4" BSP	415 (6,000)	2 way - Energise to open	Both
E21	1.6 (1/16)	1/4" BSP	415 (6,000)	2 way - Energise to close	Both
E30	3.2 (1/8)	1/4" BSP	138 (2,000)	2 way - Energise to open	Both
E31	3.2 (1/8)	1/4" BSP	138 (2,000)	2 way - Energise to close	Both
E40	6.4 (1/4)	3/8" BSP	276 (4,000)	2 way - Energise to open	Both
E41	6.4 (1/4)	3/8" BSP	276 (4,000)	2 way - Energise to close	Both
E50	12.7 (1/2)	3/4" BSP	415 (6,000)	2 way - Energise to open	Gas
E51	12.7 (1/2)	3/4" BSP	415 (6,000)	2 way - Energise to close	Gas

3 port 2 position Solenoid Valves

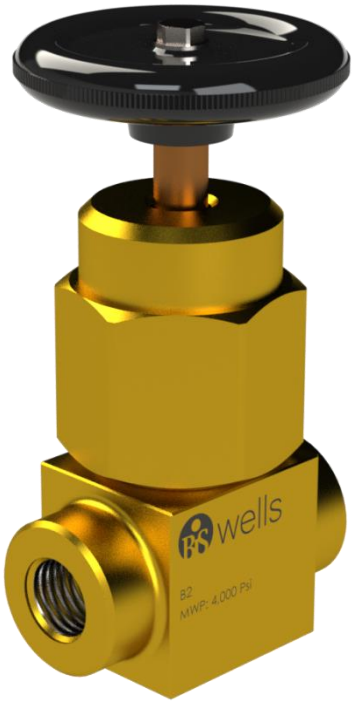
Valve Type	Orifice mm (ins)	Ports (standard)	Pressure bar (psi) Max Inlet	Outlet Range	Gas or Liquid
E26	1.6 (1/16)	1/4" BSP	415 (6,000)	3 way - Energise inlet to line	Gas
E27	1.6 (1/16)	1/4" BSP	415 (6,000)	3 way - Energise line to vent	Gas
E28	1.6 (1/16)	1/4" BSP	415 (6,000)	3 way - Energise inlet to line	Both
E29	1.6 (1/16)	1/4" BSP	415 (6,000)	3 way - Energise line to vent	Both
E36	3.2 (1/8)	1/4" BSP	138 (2,000)	3 way - Energise inlet to line	Both
E37	3.2 (1/8)	1/4" BSP	138 (2,000)	3 way - Energise line to vent	Both
E56	12.7 (1/2)	3/4" BSP	415 (6,000)	3 way - Energise inlet to line	Gas
E57	12.7 (1/2)	3/4" BSP	415 (6,000)	3 way - Energise line to vent	Gas

Stop Valves

The High Pressure Stop Valves are designed to seal the flow between the inlet and the outlet side of the valve.

Our range of hand operated stop valves have been designed for the fine control and shut off for high pressure gases and liquids covering sizes from 6.35mm to 38.1mm (1/4" to 1.5") orifice diameters.

For the small orifice sizes a simple screw-down unbalanced design is used. But for applications where the combination of size and pressure would give unacceptable spindle loads a partially balanced, or fully balanced seat is employed. Many of our stop valves are fitted with a non-rising stem, this allows for full adjustment without compromising surrounding space.



B2 Stop Valve in brass with non-rising stem

Stop Valves

Valve Type	Orifice mm (ins)	Ports (standard)	Pressure bar (psi) Max Inlet	Gas or Liquid
B1	6.4 (0.250)	1/4" BSP	275 (4000)	Both
B2	12.7 (0.500)	1/2" BSP	275 (4000)	Both
B10	25.4 (1.000)	1 1/4" BSP	275 (4000)	Both
B12	25.4 (1.000)	1 3/4" BSP	275 (4000)	Both
B23	38.1 (1.500)	2" BSP	70 (1000)	Both
B100	6.4 (0.250)	3/8" BSP	448 (6500)	Both
B102	12.7 (0.500)	3/4" BSP	448 (6500)	Both

Stop Valves

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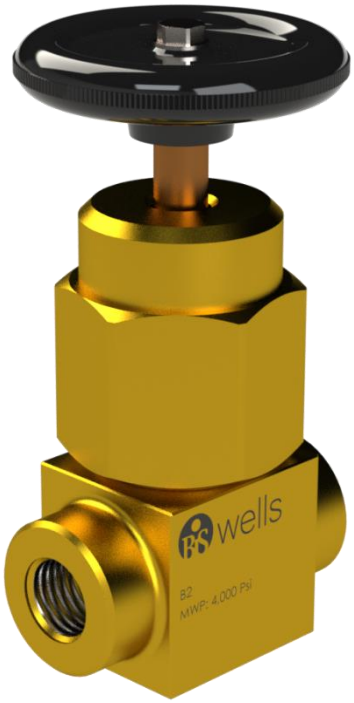
Our range of hand operated stop valves have been designed for the fine control and shut off for high pressure gases and liquids covering sizes from 6.35mm to 38.1mm (1/4" to 1.5") orifice diameters.

For the small orifice sizes a simple screw-down unbalanced design is used. But for applications where the combination of size and pressure would give unacceptable spindle loads a partially balanced, or fully balanced seat is employed. Many of our stop valves are fitted with a non-rising stem, this allows for full adjustment without compromising surrounding space.



B2 Stop Valve in brass with non-rising stem

Stop Valves

Valve Type	Orifice mm (ins)	Ports (standard)	Pressure bar (psi) Max Inlet	Gas or Liquid
B1	6.4 (0.250)	1/4" BSP	275 (4000)	Both
B2	12.7 (0.500)	1/2" BSP	275 (4000)	Both
B10	25.4 (1.000)	1 1/4" BSP	275 (4000)	Both
B12	25.4 (1.000)	1 3/4" BSP	275 (4000)	Both
B23	38.1 (1.500)	2" BSP	70 (1000)	Both
B100	6.4 (0.250)	3/8" BSP	448 (6500)	Both
B102	12.7 (0.500)	3/4" BSP	448 (6500)	Both

Installation Operation and Maintenance Manual

GENERAL INSTRUCTIONS
RELIEF VALVES

THIS DOCUMENT is applicable to all Sprung Loaded Relief Valves. For service and valve setting instructions specific to your product, please refer to the product specific manual and datasheet.

DESCRIPTION.

The Sprung Loaded Relief Valve is designed to relieve system pressure in an emergency. When the system pressure exceeds the Relief Valves set pressure the valve will open. The valve will then re-seat and close once the system pressure has dropped below the valve's set pressure.

A pre-set spring force keeps the valve in the closed position. Pressure at the inlet port acts against the spring. As the inlet pressure rises the spring force will eventually be overcome and the valve will open.

Relief Valves are not designed to regulate pressure within a system. For this application, a Back Pressure Maintaining Valve should be used. Please contact us, or visit our website for more information.

Sprung Loaded Relief Valves are suitable for pneumatic and hydraulic applications.

The standard inlet and outlet ports are stated in the installation drawing, alternative thread sizes and forms can be supplied.

For Maximum Working Pressure and other information, please refer to the product specific datasheet.

PRESSURE EQUIPMENT DIRECTIVE (PED).

Our C10 and C11 Relief valves are designed and manufactured in accordance with the Pressure Equipment Directive (2014/68/EU). Relief Valves are CE marked and conform to category IV of the PED. Please contact us for Relief Valve suitability.

CE

PERFORMANCE DATA.

The maximum flow rate, and flow performance under given criteria through the Sprung Loaded Relief Valve can be supplied by BiS Wells Ltd. See valve datasheet / installation drawing for capacity factor (Cv) or orifice diameter.

CONSTRUCTION.

The standard valve is constructed using stainless steel, brass and a high-performance soft seat is manufactured from an engineering plastic. Alternative materials such as bronze and aluminium alloy are available.

INSTALLATION, OPERATION AND MAINTENANCE

IMPORTANT

1. Products must not be modified in any way.
2. Do not use a valve if you suspect it leaks or if its performance is hindered in some way. The valve must be removed from the line and serviced accordingly.
3. Ensure that these instructions are made available to the operator or end user.

INSTALLATION.

Please ensure these instructions are read and understood before installing your product.

1. Only trained and experienced personnel should install this product.
2. Poor installation of the product can cause death or serious injury.
3. Consult the product specific datasheet for flow direction, mounting points and other information such as the location of the dome loading needle valves (if applicable).
4. Always check that the system medium is compatible with the wetted valve materials.
5. Always check that the external valve materials are suitable for the ambient conditions.
6. Relief Valves can be installed in any orientation. However to prolong valve life, ensure optimum performance, and allow for access to the ports it is recommended that valves are mounted vertically.
7. Thread lubricants and/or sealants must be used on tapered threads.
8. Gas or Fluid cleanliness is vital to ensure optimum performance and prolonged valve life.
9. Pressure supplied to the valve must be isolated before installation, and when installing gauges and similar components.
10. Ensure vent outlets are not blocked.
11. All parallel female threads are designed to accept a bonded seal.
12. A 25-micron filter is recommended on the inlet supply to avoid damage to the valve seat from debris and other potential contamination. This is most advisable on new installations.

MAINTENANCE

Please ensure these instructions are read and understood before maintaining your product.

1. Only trained and experienced personnel should service this product.
2. Poor service of the product can cause death or serious injury.
3. Before maintenance work is undertaken, it is vital that any pressure stored within the valve is vented. This is applicable to Relief Valves that are currently installed in a line and to ones that have already been removed.
4. Valves can be returned to BiS Wells Ltd for maintenance and service.
5. Spares kits are available for purchase. When ordering spares kits please state model and serial numbers of the valve and, if possible, the gas or fluid in the system.
6. It is advisable to hold a Spares Kit for planned maintenance.
7. All maintenance work undertaken should be carried out in clean conditions.
8. Service intervals are the responsibility of the user.
9. A preventative maintenance plan should be put in place to ensure safe and continuous operation
10. If a filter has been fitted upstream of the valve it should be regularly cleaned or replaced.
11. Only lubricants compatible with the valves materials of construction and the system medium.

OPERATION

Please ensure these instructions are read and understood before using your product.

1. During use ensure the maximum working pressure (MWP) is not exceeded. MWP is marked on the valve / tag and, also on the product specific datasheet. If unsure, please contact BiS Wells Ltd.
2. Misuse of the product can cause death or serious injury.
3. Regularly inspect the product for signs of damage before use.
4. Apply pressure in a controlled manner. Pressure spikes and/or shocks must be avoided.
5. Gas or Fluid cleanliness is vital to ensure optimum performance and prolonged valve life.
6. Remove excess moisture from the gas. Excess moisture can cause icing.
7. Ensure that vented fluids and gasses are done so in a safe and controlled manner. Some gasses can cause suffocation.

Installation Operation and Maintenance Manual

GENERAL INSTRUCTIONS
SOLENOID OPERATED VALVES

Issue: 1

www.biswells.com

THIS DOCUMENT is applicable to all Solenoid Operated Valves (SOV's). For service instructions specific to your product, please refer to the product specific manual and datasheet.

DESCRIPTION.

SOV's control the direction of flow and can be used to isolate the flow of gasses and liquids

We offer both two ported two position (2/2), and three ported two position (3/2) SOV's. Two and Three ported SOV's are offered in both balanced poppet and pressure biased configurations. As well as normally closed (NC) and normally open (NO) versions. Three ported balanced poppet SOV's can be used in any 'universal' configuration.

A direct acting SOV is typically used for low flow applications. For high flow applications an indirect acting SOV is used. Indirect SOV's can be internally or externally piloted.

Depending on pressure, flow, solenoid power requirements and your application will determine which SOV is best suited.

The standard inlet and outlet ports are stated in the installation drawing, alternative thread sizes and forms can be supplied.

For Maximum Working Pressure and other information, please refer to the product specific datasheet.

PERFORMANCE DATA.

The maximum flow rate, and flow performance under given criteria through the SOV can be supplied by BiS Wells Ltd. See valve datasheet / installation drawing for capacity factor (Cv) or orifice size,

CONSTRUCTION.

The standard valve is constructed using a stainless steel Solenoid housing and an aluminium alloy valve body. A high-performance soft seat is manufactured from an engineering plastic. Alternative materials such as brass, bronze and stainless steel are available.

EXPLOSIVE ATMOSPHERES

Only Solenoids approved for use in Explosive Atmospheres should be used in areas where explosive gasses and dusts are present. These solenoids are both ATEX and IECEx approved. Refer to the product specific datasheet to determine whether your solenoid is suitable.

Please consult BiS Wells Ltd if you are unsure about your products suitability.

The Solenoid is a non-serviceable item. Solenoids should be returned to BiS Wells Ltd for service .

INSTALLATION, OPERATION AND MAINTENANCE

IMPORTANT

1. Products must not be modified in any way.
2. Do not use a valve if you suspect it leaks or if its performance is hindered in some way. The valve must be removed from the line and serviced accordingly.
3. Ensure that these instructions are made available to the operator or end user.
4. The Solenoid is a non-serviceable item. Solenoids should be returned to BiS Wells Ltd for service.

INSTALLATION.

Please ensure these instructions are read and understood before installing your product.

1. Only trained and experienced personnel should install this product.
2. Poor installation of the product can cause death or serious injury.
3. Consult the product specific datasheet for flow direction, mounting points and other information such as the location of the electrical conduit connection.
4. Refer to the product specific datasheet for conduit thread type, supply voltage, positive and negative electrical connections.
5. Refer to the product specific datasheet for internal and external earthing location.
6. Always check that the system medium is compatible with the wetted valve materials.
7. Always check that the external valve materials are suitable for the ambient conditions.
8. SOV's can be installed in any orientation. However, to prolong valve life and ensure optimum performance, it is recommended that valves are mounted vertically.
9. Thread lubricants and/or sealants must be used on tapered threads.
10. Gas or Fluid cleanliness is vital to ensure optimum performance and prolonged valve life.
11. Pressure supplied to the valve must be isolated before installation, and when installing gauges and similar components.
12. It is recommended that a safety relief valve is positioned upstream of the SOV.
13. Ensure vent outlets are not blocked.
14. All parallel female threads are designed to accept a bonded seal.
15. A 25-micron filter is recommended on the inlet supply to avoid damage to the valve seat from debris and other potential contamination. This is most advisable on new installations.
16. SOV's are supplied as standard with mounting holes. See product specific installation drawing.
17. For Solenoids approved for use in Explosive Atmospheres, the Zone, Ambient Temperature, Gas and Dust groups must be assessed for suitability.

MAINTENANCE

Please ensure these instructions are read and understood before maintaining your product.

1. Only trained and experienced personnel should service this product.
2. Poor service of the product can cause death or serious injury.
3. Before maintenance work is undertaken, it is vital that any pressure stored within the valve is vented. This is applicable to SOV's that are currently installed in a line and to ones that have already been removed.
4. Ensure the electric supply to the solenoid is switched off before removal.
5. Valves can be returned to BiS Wells Ltd for maintenance and service.
6. Spares kits are available for purchase. When ordering spares kits please state model and serial numbers of the valve and, if possible, the gas or fluid in the system.
7. It is advisable to hold a Spares Kit for planned maintenance.
8. All maintenance work undertaken should be carried out in clean conditions.
9. Service intervals are the responsibility of the user.
10. A preventative maintenance plan should be put in place to ensure safe and continuous operation
11. If a filter has been fitted upstream of the valve it should be regularly cleaned or replaced.
12. Only lubricants compatible with the valves materials of construction and the system medium.
13. The Solenoid is a non-serviceable item. Solenoids should be returned to BiS Wells Ltd for service.

OPERATION

Please ensure these instructions are read and understood before using your product.

1. During use ensure the maximum working pressure (MWP) is not exceeded. MWP is marked on the valve / tag and, also on the product specific datasheet. If unsure, please contact BiS Wells Ltd.
2. Misuse of the product can cause death or serious injury.
3. Regularly inspect the product for signs of damage before use.
4. Apply pressure in a controlled manner. Pressure spikes and/or shocks must be avoided.
5. Gas or Fluid cleanliness is vital to ensure optimum performance and prolonged valve life.
6. Remove excess moisture from the gas. Excess moisture can cause icing.
7. Ensure that vented fluids and gasses are done so in a safe and controlled manner. Some gasses can cause suffocation.