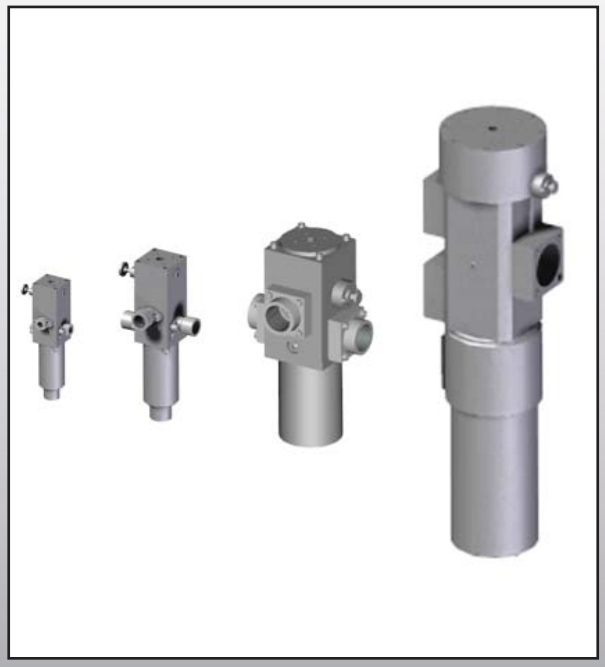
Global Presence for Peace of Mind

Bifold®

Volume Booster & Filter Booster Range Model VBP



Superior Performance Throughout the Full Operational Range

- SIL 3 Third Party Certified
- High Flow
- Full Flow 'Captive' Exhaust
- Additionally Functions as a Pressure Relief Valve
- Arctic Service Options
- Sensing Pilot / Valve Seat Assembly: Patented
- Compact Modular Design
- 316L Stainless Steel
- Auto-Drain & Manual-Drain Filter Bowl Assembly Option

Innovative and Reliable Valve Solutions

bifold.co.uk

Contents

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Features & Benefits

¼" Volume Booster

Approximate Weight:1.2kg

¼" Volume Booster with Filter

Approximate Weight:1.5kg

½" Volume Booster

Approximate Weight:2.75kg

½" Volume Booster with Filter

Approximate Weight:2.9kg

1" Volume Booster

Approximate Weight:7.8kg

1" Volume Booster with Filter

Approximate Weight:8.7kg

2" Volume Booster

Approximate Weight:20kg

2" Volume Booster with Filter

Approximate Weight:32kg

Standard Valve Equipment Design & Build

- This patented unique product offers equal internal operating forces to function the valve element to the open and vent positions.
- The EQUAL force allows identical inlet and vent orifice diameters: controlled actuators exhaust the air quickly resulting in reduced closing times.
- The performance of the Volume Booster eliminates the need for additional quick exhaust valves enabling reduced costs and installation time.
- Extremely compact modular design.
- Sensing pilot / valve seat assembly : Patent Pending.
- SIL 3 third party certified to IEC 61508 Parts 1 & 2. consult Bifold.
- Additionally functions as a pressure relief valve.
- Soft seat design.
- Finely balanced design to minimise the impact of both downstream and upstream pressure variations.
- Block before bleed function.
- Captive Venting.
- This product can be incorporated within our 'AXIS' ® valve actuator manifold systems.
- Bypass needle adjustment is fitted as standard across the range to eliminate system hunting.
- Service (without pressure applied) can be carried out without removal from the large diameter piping.
- Available with a filter booster combination.

Product Ranges

¼" Volume Booster

½" Volume Booster

1" Volume Booster

2" Volume Booster

¼" Volume Booster with Filter

½" Volume Booster with Filter

1" Volume Booster with Filter

2" Volume Booster with Filter

¼" HIPEX Valve

½" HIPEX Valve

1" HIPEX Valve

2" HIPEX Valve

Widest range of boosters, filter boosters and HIPEX products on the market.

500% HIGHER FLOW = 1 TUBE SIZE DOWN

- Direct mounted to actuator
- Compact modular design
- Faster response times
- Inlet and venting speed control
- Block before bleed function
- Patented design

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Accuracy of information
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When selecting a product, the applicable operating system design must be considered to ensure safe use. The products function, material compatibility, adequate ratings, correct installation, operation and maintenance are the responsibilities of the system designer and user.

Quality Assurance
All Bifold products are manufactured to a most stringent QA programme to ensure that every product will give optimum performance and reliability. We are third party certified to EN ISO 9001:2000. Functional test certificate, letter of conformity and copies of original mill certificates, providing total traceability are available on request, to BSEN 10204.3.1.B where available. We reserve the right to make changes to the specifications and design etc., without prior notice.

Product Range

NEW!! Under development
High sensitivity version of our standard volume booster is specifically designed for increased accuracy on low pressure actuators.

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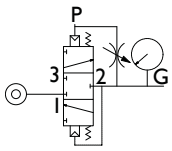
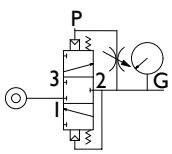
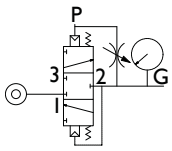
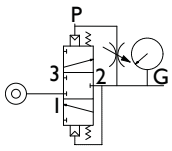
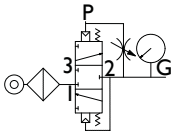
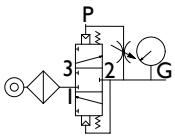
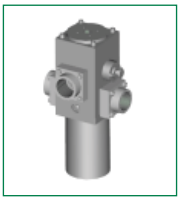
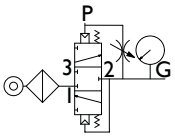
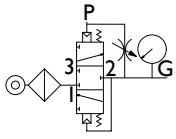
Preferred Range

VOLUME BOOSTER - PREFERRED RANGE				
Product	**Schematic Representation**	**Page Number**	**Product Code**	**Product Description**
 **VBP** ¼" Volume Booster	SCHEMATIC 	9	**VBP-04-04-11-V-L115**	¼" NPT Ports SIL 3 third party certified to IEC 61508 Parts 1 & 2
 **VBP** ½" Volume Booster	SCHEMATIC 	9	**VBP-08-08-11-V-L115**	½" NPT Ports SIL 3 third party certified to IEC 61508 Parts 1 & 2
 **VBP** 1" Volume Booster	SCHEMATIC 	9	**VBP-16-16-11-V-L115**	1" NPT Ports SIL 3 third party certified to IEC 61508 Parts 1 & 2
 **VBP** 2" Volume Booster	SCHEMATIC 	9	**VBP-32-32-11-V-L115**	2" NPT Ports SIL 3 third party certified to IEC 61508 Parts 1 & 2

Preferred Range

FILTER BOOSTER - PREFERRED RANGE				
Product	**Schematic Representation**	**Page Number**	**Product Code**	**Product Description**
 **VBP** ¼" Filter Booster	SCHEMATIC 	9	**VBP-04-04-11-V-AD-X4-L115** **VBP-04-04-11-V-MD-X4-L115**	¼" NPT Ports SIL 3 third party certified to IEC 61508 Parts 1 & 2
 **VBP** ½" Filter Booster	SCHEMATIC 	9	**VBP-08-08-11-V-AD-X4-L115** **VBP-08-08-11-V-MD-X4-L115**	½" NPT Ports SIL 3 third party certified to IEC 61508 Parts 1 & 2
 **VBP** 1" Filter Booster	SCHEMATIC 	9	**VBP-16-16-11-V-AD-X4-L115** **VBP-16-16-11-V-MD-X4-L115**	1" NPT Ports SIL 3 third party certified to IEC 61508 Parts 1 & 2
 **VBP** 2" Filter Booster	SCHEMATIC 	9	**VBP-32-32-11-V-AD-X4-L115** **VBP-32-32-11-V-MD-X4-L115**	2" NPT Ports SIL 3 third party certified to IEC 61508 Parts 1 & 2

Overview

Product Description

The Bifold Volume Booster converts a low volume pressure signal into a 1:1 ratio high volume output. It is specifically designed for both modulating and "on - off" pilot pressure signals.

Operating Principles

When a low volume pilot pressure signal of 2 to 10 bar g is applied to the sensing port Ⓟ, the main valve assembly opens to allow high volume flow from the main inlet port ① to the outlet port ②. When the sensing assembly detects that the outlet pressure is equal to the pilot pressure, the main valve moves to the 'all ports blocked' rest position and will remain in this position until there is a change in the pilot pressure or outlet pressure.
If the sensing head detects that the outlet is higher than the pilot pressure, the high flow exhaust opens to vent the excess pressure. If the sensing head detects that the outlet pressure is too low, the main valve opens to recharge the system to the correct 1:1 ratio pressure.

Technical Data

Material grades - stainless steel 316L body as standard.
The springs are manufactured to BS2056, from 302S26 stainless steel as standard or Inconel X-750 (sour gas service).
The pilot port is ¼" NPT.
Main ports are available as ¼", ⅜" & ½" NPT sizes (½" Volume Booster) and ¾" & 1" NPT sizes (1" Volume Booster) and 1½" & 2" NPT sizes (2" Volume Booster).
Main valve seals are supplied in Viton as standard. Low temperature nitrile and silicone/fluorosilicone seals are available for arctic service.
Sensing head seals are supplied in PTFE encapsulated silicone as standard.
Fasteners are 18/10 grade stainless steel; equivalent to 316 grade steels.
Mounting brackets are supplied as standard.
Two gauge ports are ⅛" NPT. One port is plugged as standard.
Accuracy is within 5% (valve to pilot pressure).
Operating medias are air, natural gas, inert gases and sweet and sour gases.
Maximum valve inlet pressure is 15 bar g.
Operating temperature range -20°C to +180°C with viton seals as standard.
Operating temperature range -50°C to +40°C with low temperature nitrile/silicone seals.
Pilot pressure and outlet pressure range from 2 to 10 bar g.

Flow Capacity Cv Table

VOLUME BOOSTER Cv's					
Booster Size	Port Size	Conventional Schematic Cv		Filter Booster Cv	
		Output	Exhaust	Output (5 bar, effective Cv)	Exhaust
VBP-04 ¼"	04 ¼"	1	1	3	1
	06 ⅜"	2	2	6.1	2
	08 ½"	2	2	6.1	2
VBP-08 ½"	08 ½"	3.5	3.5	10.5	3.5
	12 ¾"	6	6	18.3	6
	16 1"	6	6	18.3	6
VBP-16 1"	12 ¾"	9	9	27	9
	16 1"	11	11	33	11
VBP-32 2"	24 1½"	31	31	93	31
	32 2"	50	50	151	50

Please see opening and closing time tables on page 9.
Note: On smaller boosters CV is limited by tube or connection bore size.

Product Options Available

Available with both manual and auto-drain filter bowl assemblies to combine a Filter Regulator and Volume Booster as one unit.
A wide range of accessories are available, these include Check Valves and Flow Control Valves etc.
Pilot solenoid valve operated options available. Pilot port available as BSPP and BSPT options.
Main ports available as BSPP & BSPT options. Two gauge ports available as ¼" NPT option or BSPP & BSPT.

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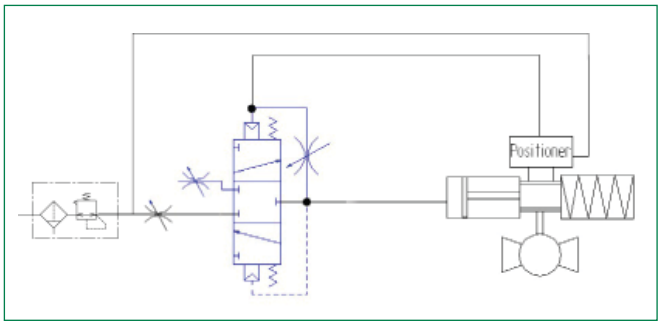
VBP

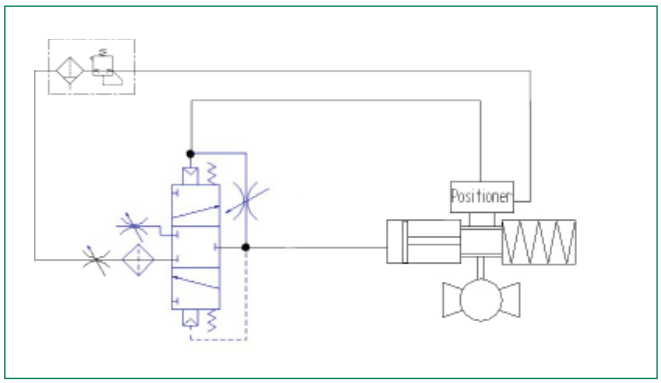
½" & 1" Volume Booster Opening and Closing Times

Example:
50 litre actuator - where stroke completes at between 1.9 bar and 2.3 bar. Set pressure 5 bar. Upstream pressure greater than 10 bar.



CONVENTIONAL SCHEMATIC (Filter Regulator and Booster on the flow line)

Booster Size	Pressure (Bar)	ESD Open Time (secs)	ESD Closing Time (secs)
½"	5	8.9	8.8
1"	5	2.8	2.5



FILTER BOOSTER (Filter Regulator off the flowline)

Booster Size	Pressure (Bar)	ESD Open Time (secs)	ESD Closing Time (secs)
½"	4	4.0	7.9
½"	5	3.1	8.8
½"	6	2.3	9.3
1"	4	1.1	1.9
1"	5	1.2	2.5
1"	6	0.8	3.1

VBP Selection Chart - Ordering Example

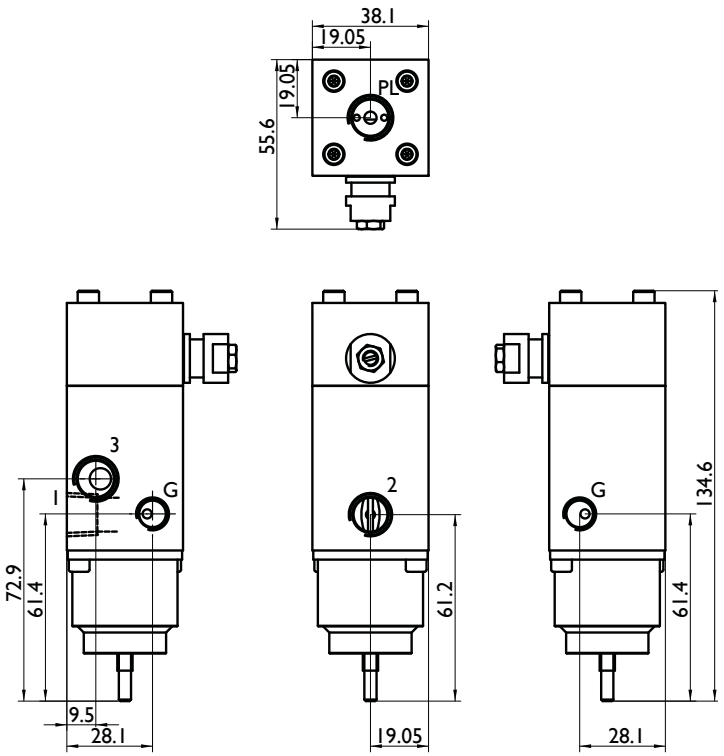
VBP-04 ¼" Volume Booster (Piston Type) (316L stainless steel) (Port Size 04=¼", 06=⅜", 08=½") **VBP-08** ½" Volume Booster (Piston Type) (316L stainless steel) (Port Size 08=½", 12=¾", 16=1") **VBP-16** 1" Volume Booster (Piston Type) (316L stainless steel) (Port Size 12=¾", 16=1") **VBP-32** 2" Volume Booster (Piston Type) (316L stainless steel) (Port Size 24=1½", 32=2")	Model Code
04 ¼" NPT **06** ⅜" NPT **08** ½" NPT **12** ¾" NPT **16** 1" NPT **24** 1½" NPT **32** 2" NPT	Port Sizes
11 Ratio pilot pressure to valve pressure (1:1)	Ratio
V Viton (standard) **AL** Fluorosilicone (arctic service)	Seal Materials
AD Auto-drain* **MD** Manual-drain* (Filter Booster only)	Options
X4 40-50 Micron element* (Filter Booster only)	Option
L115 No brackets	Option
L116 Knurled drain screw	Option
VBP-04-04 -11 - V - MD - X4-L115-L116	Ordering Example

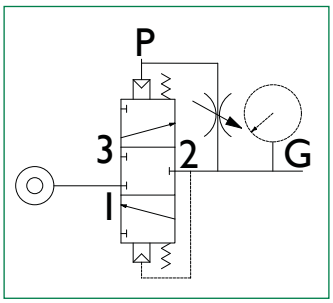
*Filter booster only. For alternative filter micron ratings please contact our office for details.

Dimensional Drawings

¼" Volume Booster & Filter Booster

Shown with filter bowl assembly





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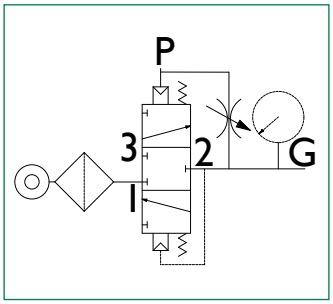
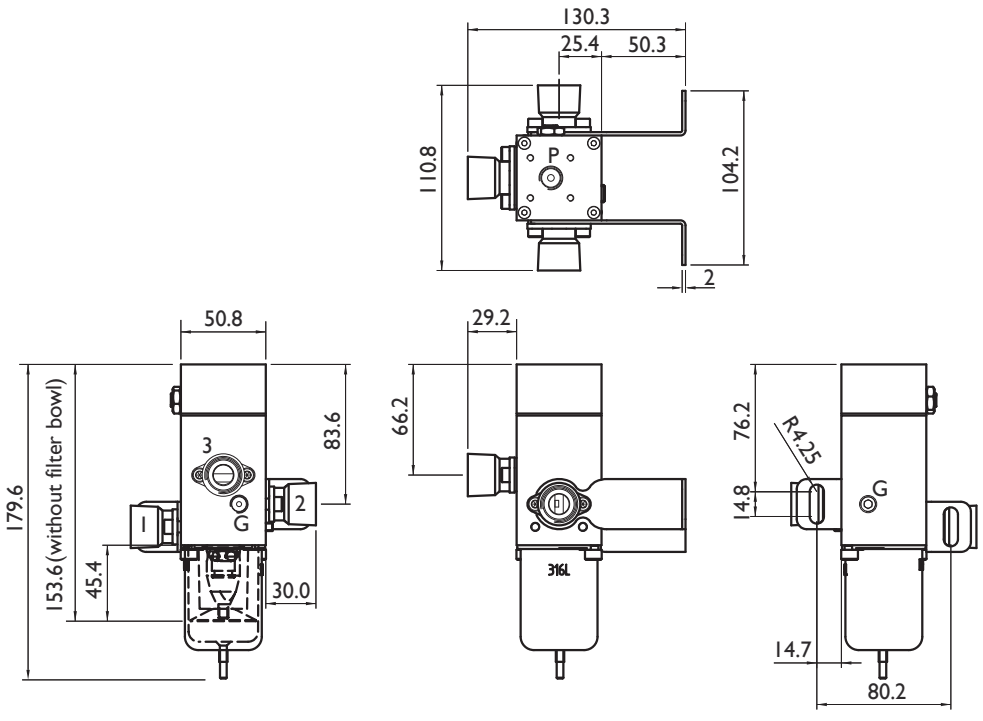
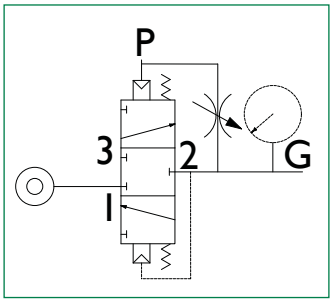


Shown with filter bowl assembly

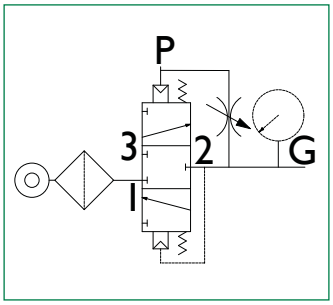
½" Volume Booster & Filter Booster

Shown with filter bowl assembly





Shown without filter bowl assembly



Shown with filter bowl assembly

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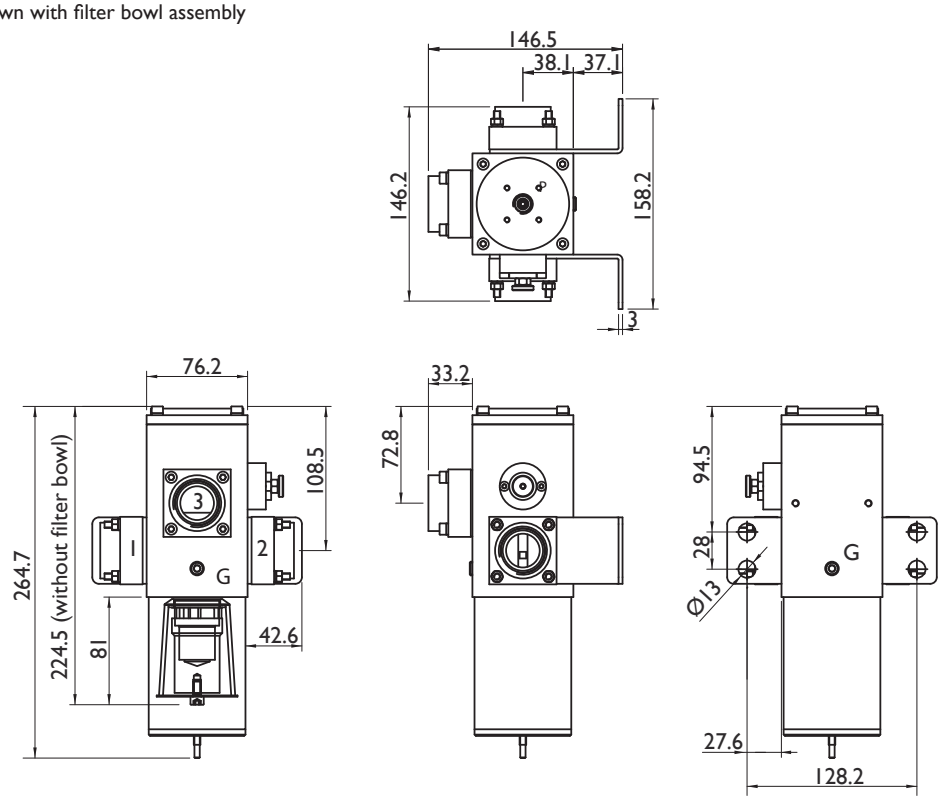
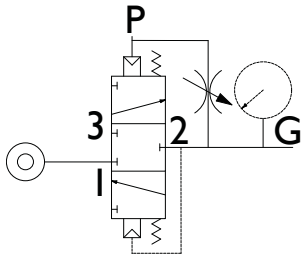
Bifold is a member of the Bifold Group of companies

Dimensional Drawings

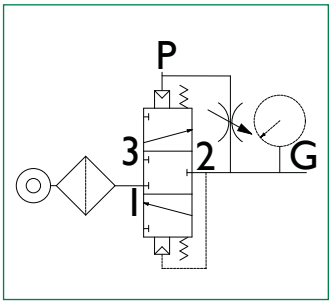
1" Volume Booster & Filter Booster

Shown with filter bowl assembly





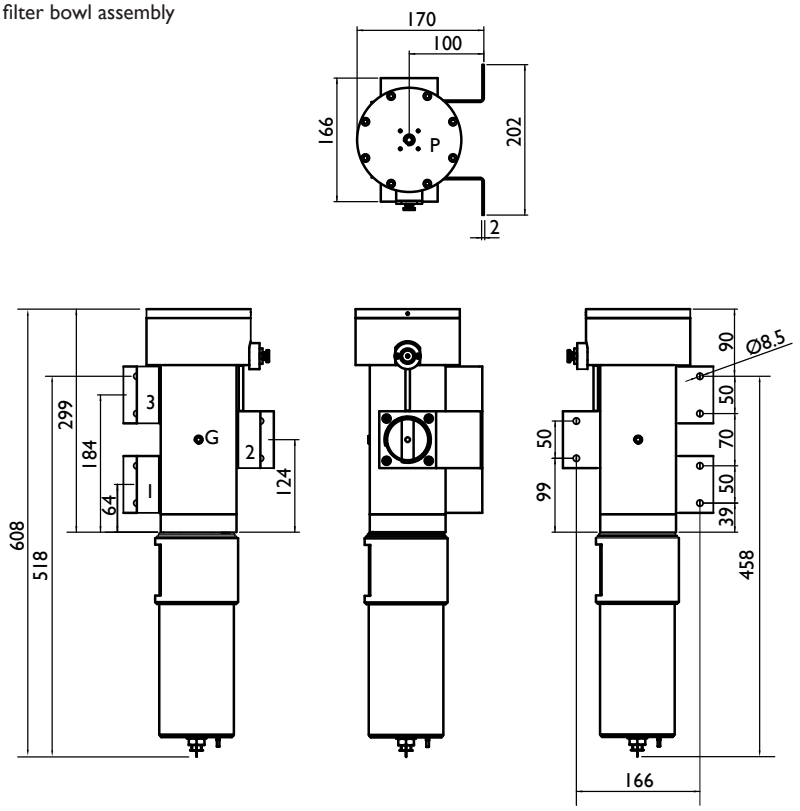
Shown without filter bowl assembly

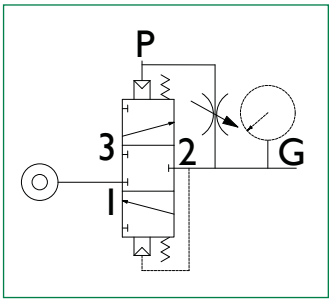


Shown with filter bowl assembly

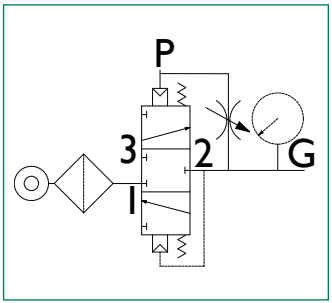
2" Volume Booster & Filter Booster

Shown with filter bowl assembly





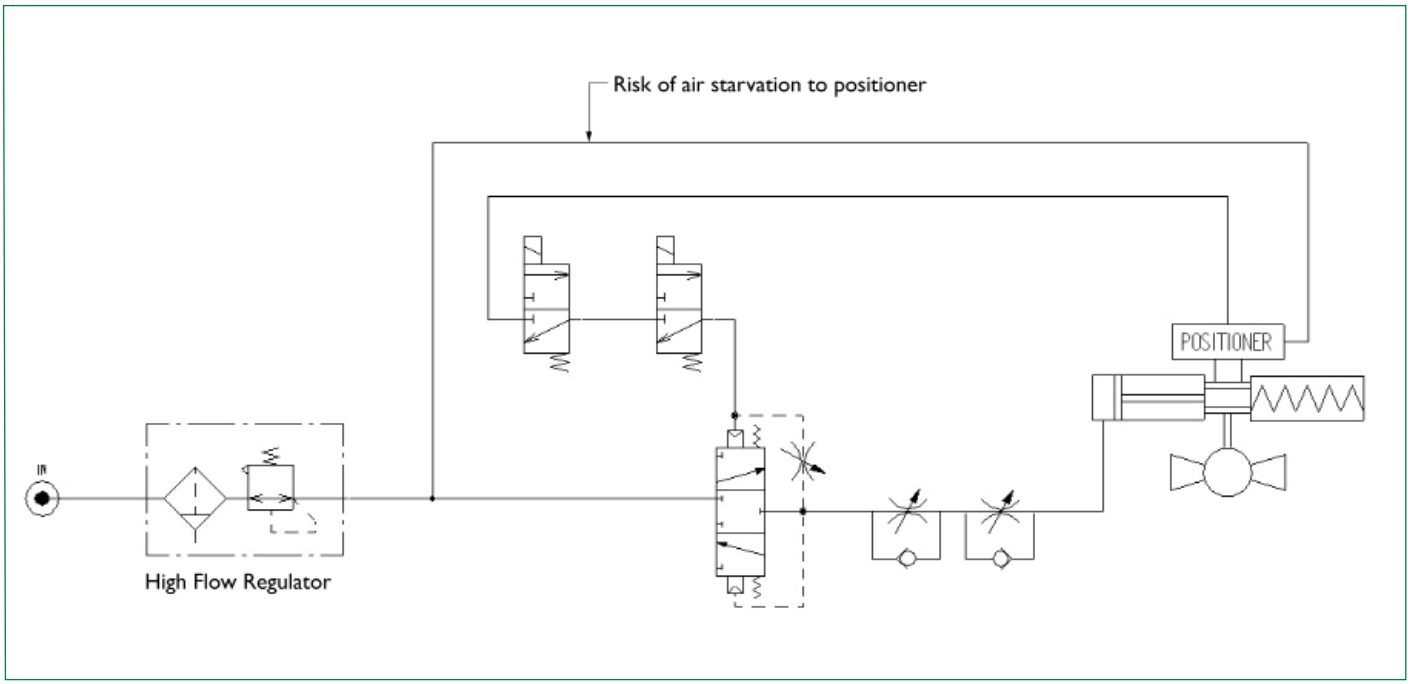
Shown without filter bowl assembly



Shown with filter bowl assembly

Simplified System

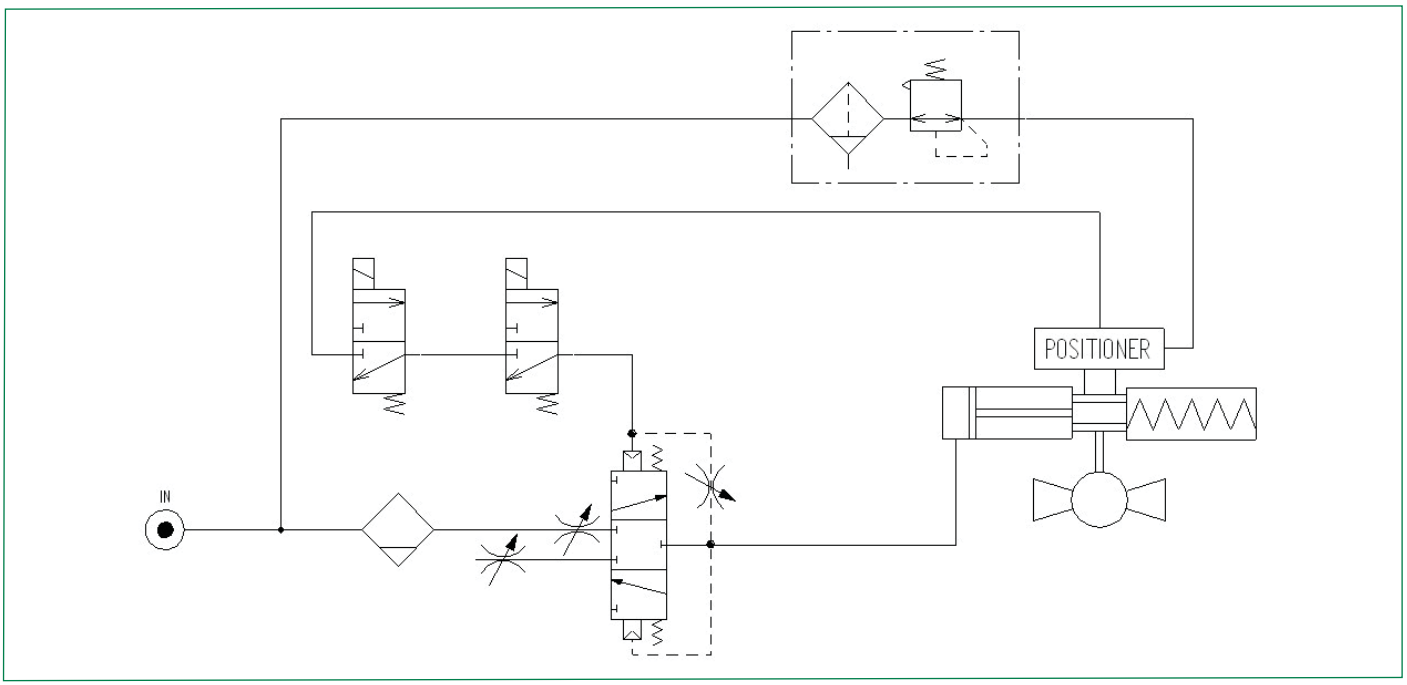
Conventional Setup



Bifold Simplified System Offers:-

- Up to 8 x faster opening.
- Up to 16 x faster closing.
- No risk of Positioner trip.
- Simple set up.
- Logic of circuit is identical for all actuator sizes. Only change required is to the size of the Filter Booster!

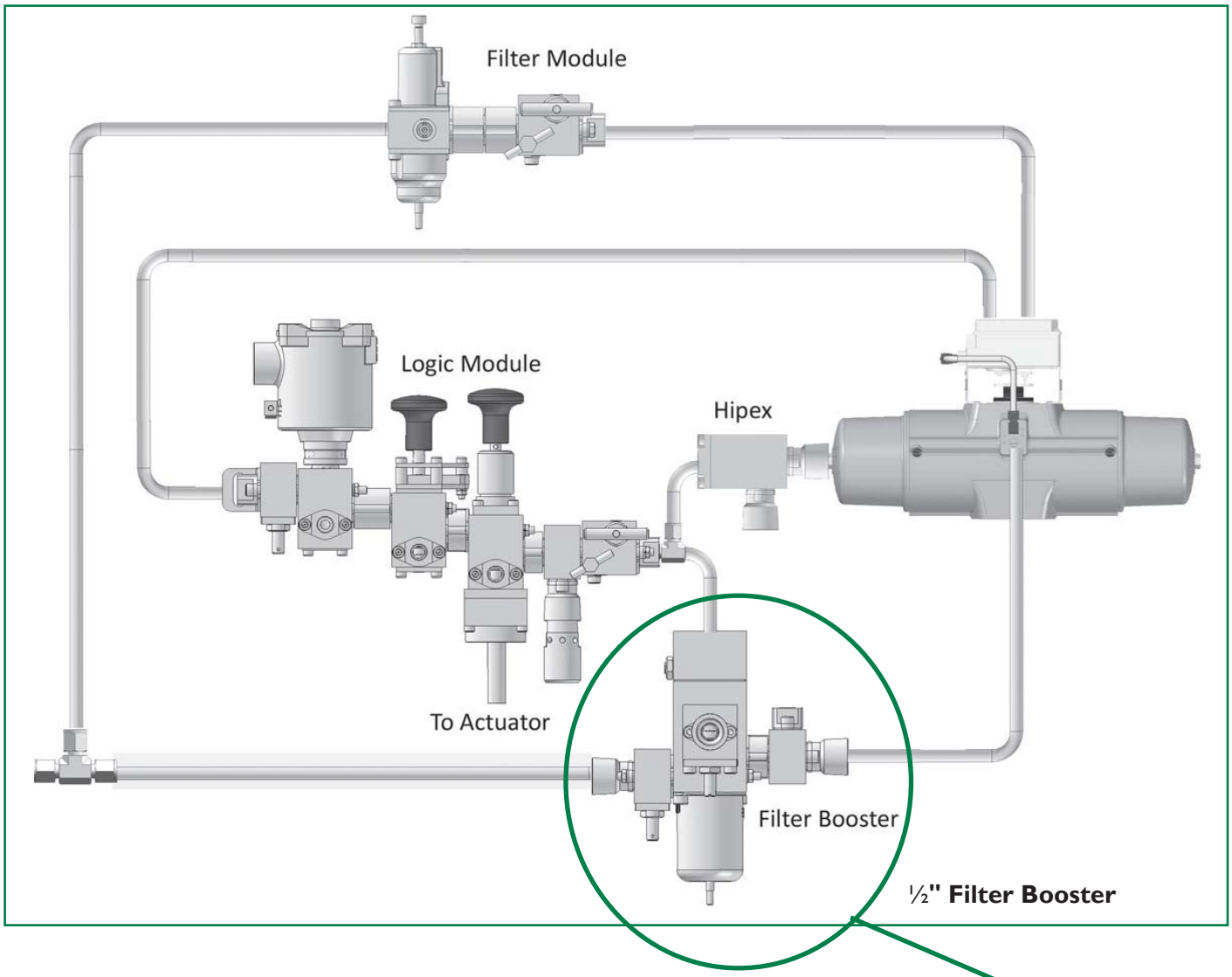
See Catalogue 03:- AXIS® Manifold System.
See Catalogue 13b:- Model HIPEX Series.



Simplified Circuits

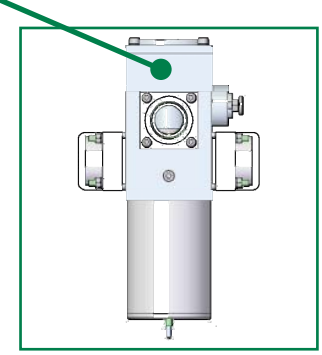
Positioner Circuits Simplified

The circuit below shows a ¼" Filter Module and a ¼" Logic Module, within a standard circuit, along with a ½" HIPEX valve and ½" Filter Booster. For larger circuits, simply select a larger Filter Booster. If required, change the HIPEX valve where applicable.



½" Filter Booster

For larger circuits, simply select a larger Filter Booster.



1" Filter Booster

Traditional System

Coventional Tubed System

Conventional Volume Boosters have a much reduced venting Cv compared to inlet Cv; consequently multiple units are often required to achieve fast actuator closing times.

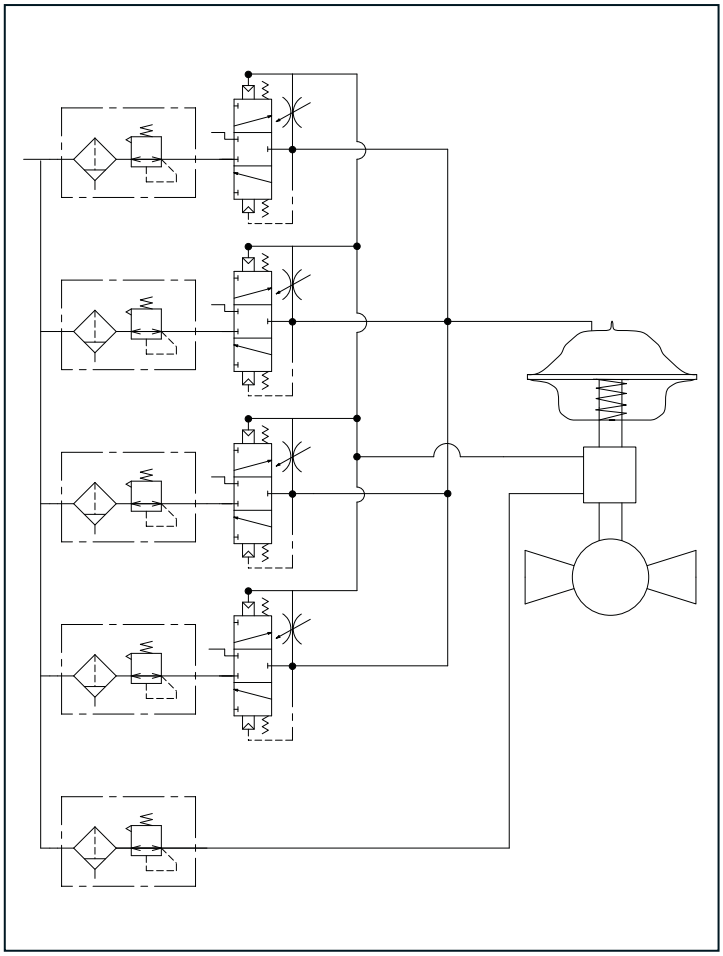
The picture below shows a traditionally tubed system with multiple Filter Regulators and Multiple Volume Boosters.

Disadvantages with this system are:-

This system = Slower Response Times Requires Balancing of Filter Regulators

- No speed control.
- Untidy and complex tubing/extra fittings.
- Complicated installation.
- More leakage points.
- Requirement to balance Filter Regulators.
- Increase in overall system cost.

Improve System Design - Use Bifold Volume Boosters with a high venting Cv



Conventional complicated circuit to follow

More components = HIGHEST COST SOLUTION

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Booster System

Bifold Filter Booster System

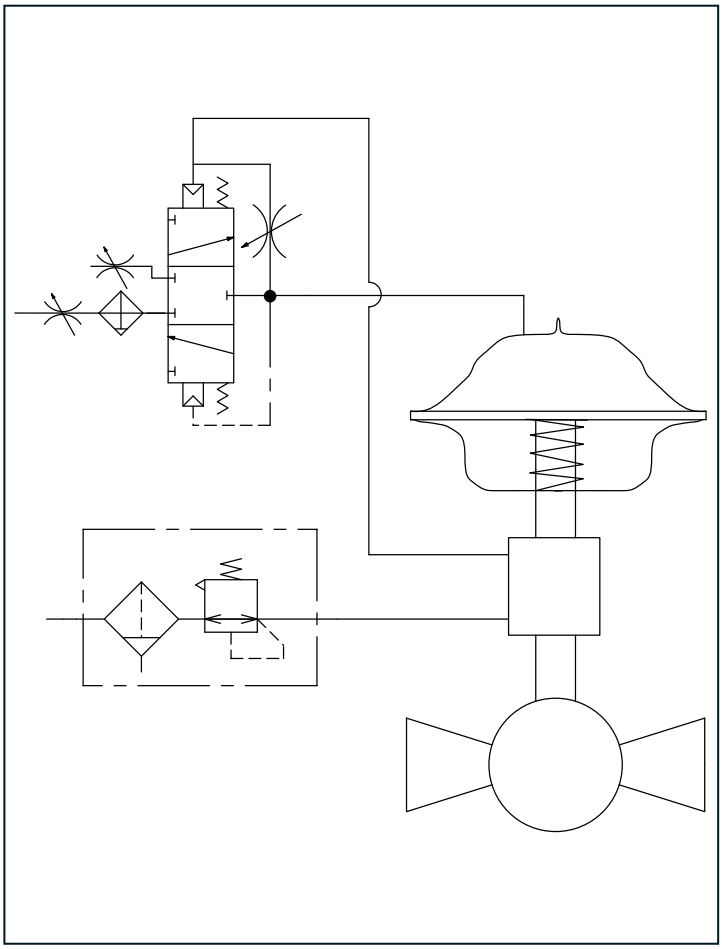
The picture below shows a simple tubed system with ONE Bifold Filter Regulator and ONE Bifold Volume Booster.

Advantages with this system are:-

This system = Faster Response Times and is simple to Install

- Optional inlet and venting speed control.
- Tidy and simple tubing/reduced fittings.
- Simple to install.
- Faster acting than 4 Filter regulators & 4 Boosters.
- Sizes available up to 2".
- Lowest overall system cost.

LOWEST COST SOLUTION



Simple circuit to follow

Fewer components = LOWEST COST SOLUTION

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HIPEX

The Volume Booster range can be used in conjunction with the NEW Model HIPEX Series high flow, 2/2 exhaust valve range. See Catalogue 13b:- Model HIPEX Series.

¼" HIPEX Valve

½" HIPEX Valve

1" HIPEX Valve

2" HIPEX Valve

Standard Valve Equipment Design & Build

- Very high controlled exhaust flow, up to twice the equivalent Quick Exhaust Valve.
- Exhaust flow is proportional to the differential between inlet and pilot pressures.
- The valve is automatic in operation and requires no adjustment.
- The valve operates on a 1:1 pilot pressure to valve pressure ratio at pressures between 2 - 10 bar.
- Specifically designed for high flow valve actuator exhausting when accurate partial close testing is required.
- For very fast valve actuator closing, multiple HIPEX units can be fitted to the system.
- Extremely compact modular design.
- Sensing pilot / valve seat assembly : Patent Pending.
- Soft seat design.
- Finely balanced design to minimise the impact of both downstream and upstream pressure variations.

Benefits

The Bifold HIPEX Valve is a 2-way, normally closed directional control valve with a venting flow rate proportional to the differential pressure between the inlet and the pilot signal pressures. It is specifically designed for both modulating and "on-off" pilot pressure signals.

When the pilot pressure signal is equal to or above the main valve inlet pressure, the valve exhaust port remains closed.

Partial Close Testing Function

When the pilot pressure falls below the main valve inlet pressure, the valve quickly exhausts the excess pressure until both the valve and pilot pressures are again equal, then the exhaust port closes.

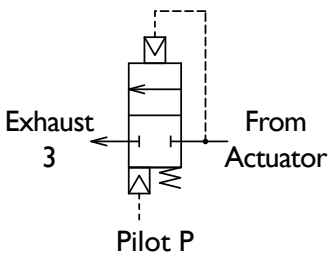
Pressure Relief Function

If the main valve inlet pressure increases above the pilot pressure, the valve automatically exhausts the excess valve actuator pressure.

Optional

The HIPEX valve can be supplied with two exhaust ports. This provides an additional advantage that one exhaust port can be connected to the valve actuator for "closed loop" systems that reduce the need for additional valves, fittings and labour time. The HIPEX can also be supplied with exhaust speed controls fitted as a complete solution. Ideal for operation in conjunction with the " Bifold Volume Booster" and 'AXIS'® valve actuator manifold ranges.

Schematic



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Notes

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Accuracy of information
We take care to ensure that product information in this catalogue is reasonably accurate and up-to-date. However, our products are continually developed and updated so to ensure accurate and up-to-date information please refer to the product catalogue issue list on our web site or contact a member of our sales team.

When selecting a product, the applicable operating system design must be considered to ensure safe use. The products function, material compatibility, adequate ratings, correct installation, operation and maintenance are the responsibilities of the system designer and user.

Quality Assurance
All Bifold products are manufactured to a most stringent QA programme to ensure that every product will give optimum performance and reliability. We are third party certified to EN ISO 9001:2000. Functional test certificate, letter of conformity and copies of original mill certificates, providing total traceability are available on request, to BSEN 10204.3.1.B where available. We reserve the right to make changes to the specifications and design etc., without prior notice.

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Instrument, Process, Directional Control Valves, Pumps and Actuator Electronic Control and Positioning

Bifold® Group

Pneumatic and Instrumentation Valves

Hydraulic Valves

Subsea Valves

Hydraulic Pumps, Intensifiers and Valves

Actuator Electronic Control and Positioning

Bifold®

Bifold FluidPower®

Bifold® Subsea

Bifold® Marshalsea

Bifold Orange®

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Registered No. 1787729 in England.
Registered Office:
Rotork House,
Brassmill Lane,
Bath, BA1 3JQ.

Bifold Fluidpower Ltd
Bifold Group
Broadgate, Oldham Broadway
Business Park, Chadderton,
Greater Manchester, OL9 9XA. UK.

Tel: +44 (0) 161 345 4777
Email: marketing@bifold.co.uk
Web: bifold.co.uk

Bifold Orange
Unit 7, Cosford Business Park
Central Park, Lutterworth
Leicestershire
LE17 4QU, UK.

Tel: +44 (0) 161 345 4777
Email: marketing@bifold.co.uk
Web: bifold.co.uk

Marshalsea Hydraulics Limited
Marshalsea House, Venture Way
Priorswood Industrial Estate
Taunton, Somerset,
TA2 8DE. UK.
Tel: +44 (0) 1823 331081
Fax: +44 (0) 1823 323382
Email: info@marshalsea.co.uk
Web: bifold.co.uk

USA Office

Please see the Bifold website, contact us page for the full address.
Tel: +1 (713) 304 4012
Fax: +1 (713) 783 0067
Email: marketing@bifold.co.uk
Web: bifold.co.uk

Singapore Office

Please see the Bifold website, contact us page for the full address.

Mobile: +65 98245580
Email: marketing@bifold.co.uk
Web: bifold.co.uk

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