Electro Hydraulic/ Low Pressure Logic
Arctic Service Range -50°C

World leading supplier of control valves for low temperature

Superior performance throughout the full operational range

Features:
- Worldwide solenoid approvals ATEX, CSA, SAA, INMETRO & GOST
- Providing one of the wide range of low temperature valves and manifolds
- 316L Stainless steel
- World-wide product and system support
- Extensive applications reference list of proven products for arctic service
- State of the art testing facilities to -70°C for qualification and performance optimisation of control valves and systems
Introduction

Bifold Fluidpower was established over a century ago as a manufacturer of valves for hazardous environments and is currently a leading manufacturer of electro-hydraulic and pneumatic directional control valves for the oil and gas industry. Through a commitment to innovation and value engineering, Bifold Fluidpower offers leading technical solutions whilst providing excellent service and technical support to customers around the world.

Bifold Fluidpower design, develop and manufacture arctic service products for the former Soviet Union, the Caspian region, Canada and Alaska.

Wide Range of Low Temperature Valves and Manifolds

See individual product brochures for details. A summary is shown below:

<table>
<thead>
<tr>
<th>Product Series</th>
<th>Pressure :-</th>
<th>Size Range:-</th>
<th>Solenoid Power/Type:-</th>
<th>Explosion Protection:-</th>
<th>Primary Applications:-</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXIS Manifold</td>
<td>0 - 10 bar</td>
<td>1/4” to 1”</td>
<td>1.5 to 6.5W</td>
<td>EExd, EExemb, EExia</td>
<td>Wellhead, Process and ESD valve actuator control</td>
</tr>
<tr>
<td>Junior ASJJ 06 Series</td>
<td>0 - 8 bar</td>
<td>1/4”</td>
<td></td>
<td></td>
<td>Wellhead and process valve control system logic valves</td>
</tr>
<tr>
<td>ASPR Series sealed spool</td>
<td>0 - 10 bar</td>
<td>1/4” to 1”</td>
<td>3.5 to 6.5W / indirect acting</td>
<td>EExd, EExemb, EExia</td>
<td>High flow actuator control valves</td>
</tr>
<tr>
<td>FP06PA, FP10PA, FP12PA</td>
<td>0 - 16 bar</td>
<td>1/4” to 1/2”</td>
<td>1.5 to 6.5W / direct acting</td>
<td>EExd</td>
<td>Wellhead, Process and ESD valve actuator control</td>
</tr>
<tr>
<td>SVP8x08</td>
<td>0 - 250 bar</td>
<td>8 litres per minute nominal</td>
<td>5.7W / direct acting</td>
<td>EExd</td>
<td>Process, ESD and choke valve actuator control</td>
</tr>
</tbody>
</table>

* pending summer 2007
**Product Series:**
- FP01 (-36°C minimum)
- FP50, FP100 & FP200
- 40 litres per minute nominal
- 1 litre per minute nominal

**Pressure:**
- 0 - 690 bar

**Size Range:**
- 0.9 to 3.7W / direct acting

**Solenoid Power/Type:**
- EEExd, EEExemb, EEExia

**Explosion Protection:**
- SSSV, Process, ESD, Choke Valve and Ballast System actuator controls

**Primary Applications:**
- Turret and Mooring System actuator controls.

**Product Series:**
- FP15
- 0 - 690 bar (pilot stage); 0 - 1035 bar (main stage)
- 15 litres per minute nominal

**Pressure:**
- 0.9 to 5.7W / indirect acting

**Size Range:**
- EEExd (-50°C), EEExemb (-36°C), EEExia (-36°C)

**Explosion Protection:**
- Wellhead, Process, ESD, Choke, Ballast,
- Turret and Mooring System actuator controls.

**Primary Applications:**
- System actuator controls

**Product Series:**
- FP50, FP100 & FP200
- 0 - 345 bar (FP50)
- 0 - 250 bar (FP100, FP200)

**Pressure:**
- 0.9 to 5.7W / indirect acting

**Size Range:**
- 50, 100, 200 litres per minute nominal

**Explosion Protection:**
- EExd (-50°C), EEExemb (-36°C), EEExia (-36°C)

**Primary Applications:**
- Special applications for high pressure, high temperature and contaminated control fluids

**Product Series:**
- Quick Exhaust Valves - Hydraulic / Pneumatic
- 0 - 345 bar Hydraulic;
- 0 - 12 bar Pneumatic

**Pressure:**
- 1/4” - 1/2” Hydraulic;
- 1/4” - 1” Pneumatic

**Size Range:**
- 40 litres per minute nominal

**Explosion Protection:**
- EExd, EEExemb, EEExia

**Primary Applications:**
- Wellhead, Process, ESD, Choke, Ballast,
- Turret and Mooring System actuator controls.

**Product Series:**
- Thermal Relief Valves
- 0 - 1380 bar

**Pressure:**
- 1/4” to 1/2”

**Size Range:**
- 0.9 to 5.7W / indirect acting

**Explosion Protection:**
- EExd (-50°C), EEExemb (-36°C), EEExia (-36°C)

**Primary Applications:**
- Process valve actuator control systems, Wellhead control logic valves

**Product Series:**
- Pressure Relief Valves
- 0 - 12 bar

**Pressure:**
- 0.9 to 5.7W / direct acting

**Size Range:**
- 1/4” to 1/2”

**Explosion Protection:**
- EExd, EEExemb, EEExia

**Primary Applications:**
- ASH Series Air Preparation

**Product Series:**
- 0 - 40 bar

**Pressure:**
- 1/4” to 1”

**Size Range:**
- 0 - 1035 bar [subject to product type]

**Primary Applications:**
- Ancillary Valves (Flow Control, Check Valves, Port Flow Regulators)

**Product Series:**
- PSV5A - Flowline Pilot Range
- 0 - 690 bar sensing; 0-16 bar control

**Pressure:**
- 5 litres per minute nominal

**Size Range:**
- 1/4” to 1”

**Primary Applications:**
- Process valve actuator control systems, Wellhead control logic valves
Solenoid Approvals

Bifold Fluidpower present valves certified by a wide range of international approved bodies

International Approvals

- GOST (Russian hazardous area approval), GGTN (export licence to Russia), Expert Analysis report supporting the GGTN permit.
- CSA (Canadian and United States of America hazardous area approval).
- ATEX (European hazardous area approval)
- INMETRO (Brazilian hazardous area approval).
- SAA (Australian hazardous area approval).

Approval Testing

In obtaining the range of approvals Bifold Fluidpower has subjected valves to an onerous range of tests accredited by external bodies.

- Endurance testing to 600,000 cycles at the extremes of the operating temperature envelope.
- Environmental testing from –55°C to +90°C
- Full function testing, leak rate monitoring, proof testing 1.5 to 5 times operating pressure (dependent on approval body)
- Maximum and minimum pull-in voltage testing
- Response time testing
- Dielectric strength and insulation strength testing

State of the Art Testing and Qualification Facilities

- State of the art climatic test facilities (-70°C to +180°C).
- Single valve or complete control system testing capability including the process valve actuator – avoid discovering a problem in the field.
- Full data logging and analysis of temperature, pressure, and response time.
Valve Performance Testing

Bifold Fluidpower offer full qualification testing facilities open for external and customer witness testing free of charge when significant valve package orders are placed. Bifold Fluidpower has invested in state of the art climatic testing facilities. Valves are tested to the extremes of the environment required. Testing from simple valve operation to variations in actuator opening times, and pressure surges due to fluid thermal expansion as a result of a rapid temperature rise.

Sakhalin Island and the Caspian region (40° latitude)
- -35°C to -55°C for 1-2 days in winter to +40°C in summer.
- Rapid temperature rises from -40°C to -20°C.
- Products and systems must be tested at both temperature extremes and tested to simulate rapid night to day temperature changes.

Prudoe Bay (70° latitude)
- Long periods below -40°C.
- Exposed parts freeze up.
- Products must be held at -40°C for at least 10 days (dependent on the thermal hysteresis of the valve mass and materials).

World-wide Support and Service

With over 95% of production for export, Bifold Fluidpower provides product and technical support for over 4000 valve products world-wide from the offices in the UK, Houston and Singapore. Bifold Fluidpower has invested in state of the art machining centres ensuring close tolerances, all thread milled ports and a rapid turnaround capability.

The end user can be sure that Bifold Fluidpower has the product portfolio and the technical and production capability to provide the right solution for your pneumatic and hydraulic system requirements.

Project References

- Sakhalin Island –Shell/Sakhalin Energy. Over 1500 electro-pneumatic and hydraulic control valves, air-preparation and accessory valves and manifold systems supplied on most of the packages.
- Baku to Ceyhan Pipeline –BP. All electro-hydraulic directional control valve packages.
- Shnoevhit –Statoil. Electro-hydraulic directional control valves for well control.
- Shah Deniz –BP. Electro-hydraulic solenoid and accessory valves for HIPPS, wellhead controls and actuated valve packages.
- Terra Nova –Petro Canada. Pneumatic and hydraulic control valves.
- Hibernia – Petro Canada. Pneumatic and hydraulic control valves
- Many other minor projects.
UK Office
Greenside Way, Middleton, Manchester, M24 1SW
Tel:- +44 (0)161 345 4777
Fax:- +44 (0)161 345 4780
EMail:- sales@bifold-fluidpower.co.uk
Web:- www.bifold-fluidpower.co.uk

USA Office
11490 Westheimer, Suite 900, Houston, Texas, 77077
Tel:- +1 713 783 4253
Fax:- +1 713 783 0067
Email:- sales@bifold-fluidpower.com
Web:- www.bifold-fluidpower.com

Asia Pacific Office
424 Balestier Road #02-08, Giffard Mansion, Singapore 329810
Tel:- +65 6735 1323
Fax:- +65 6735 1367
EMail:- bifold@singnet.com.sg
Web:- www.bifold-fluidpower.co.uk

Quality Assurance
All Bifold Fluidpower products are manufactured to a most stringent QA programme. Every care is taken at all stages of manufacture to ensure that every product will give optimum performance and reliability. We are recognised 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. The manufacturer reserves the right to make changes to the specifications and design etc., without prior notice.

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