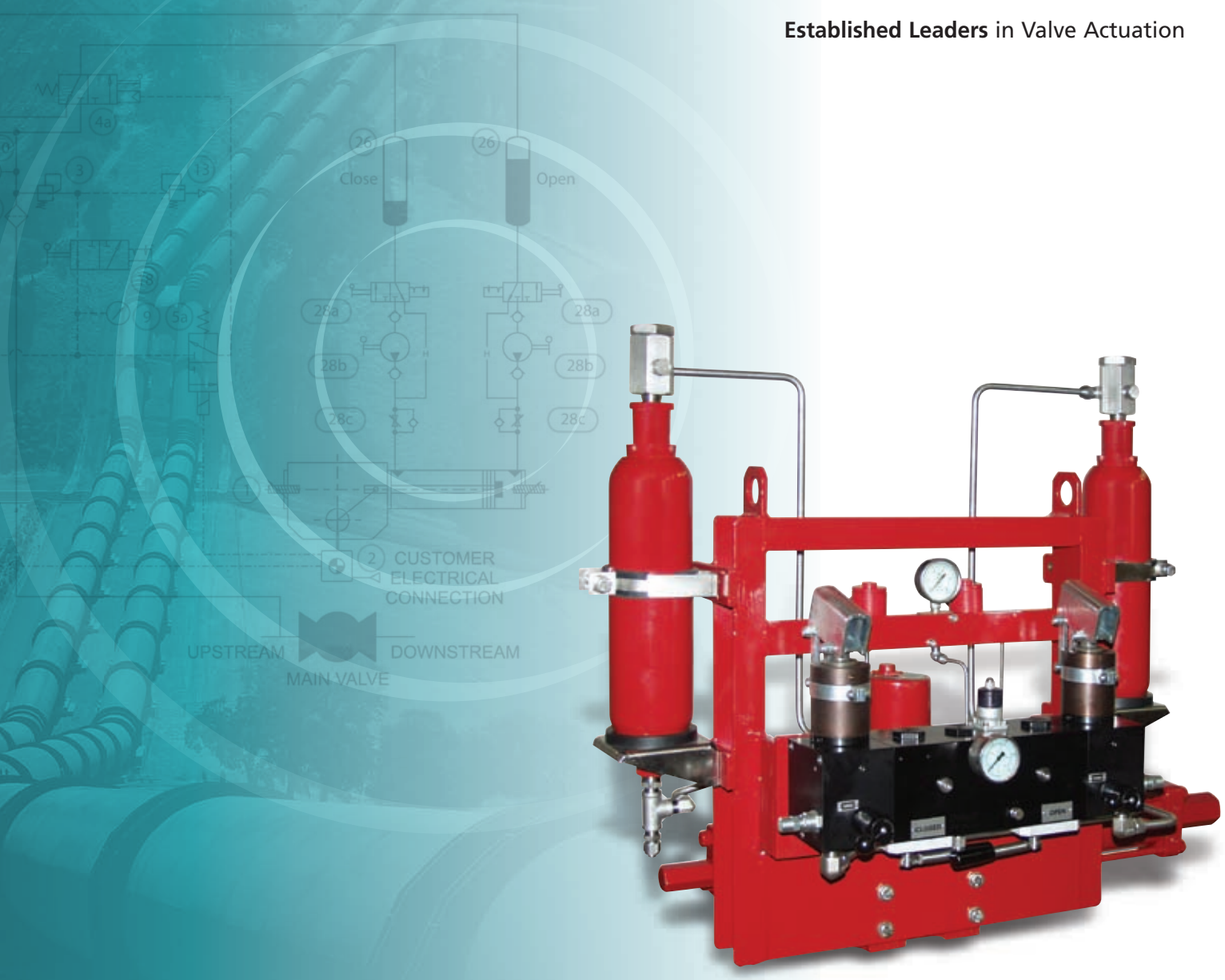
Fluid Power Actuators and Control Systems

rotork®
Fluid Systems

Established Leaders in Valve Actuation



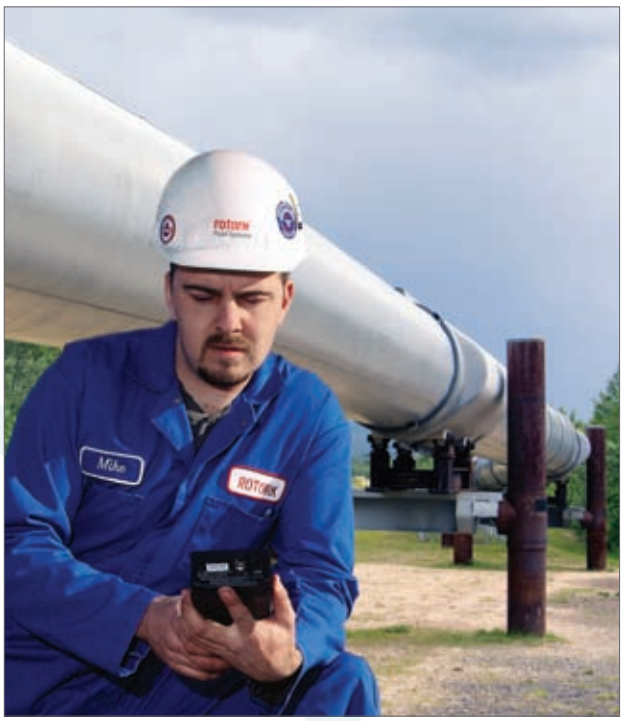
GO Range

Gas-Over-Oil Actuators

Publication F301E Issue 11/05

Rotork Actuators – Quality Controlled

In the 50 years since the company was founded, Rotork has become the standard for excellence in the field of valve and damper automation for the oil, gas, power, water and waste treatment industries around the world.



As established leaders in actuation technology, we owe our success to a commitment to quality at every stage, and at every level, of Rotork's operations.

At the heart of the company is an exceptional workforce – the highly trained, forward thinking engineers, technicians, and sales support staff who each play a crucial role in maintaining Rotork's unrivaled reputation for innovation, reliability and first class after sale support.

With several fluid power manufacturing facilities in Europe and the United States, and additional *Centres of Excellence* strategically located around the globe, we are able to offer solutions and design systems for virtually any application — from subsea hydraulics to the most sophisticated yet simple control system.

Contact Rotork for your operational or safety application requirements. We will work with you from conception, to design, to manufacture, to installation, and finally to maintenance and service support.

GO Range – Gas-Over-Oil Actuators

Reliability by design

Every Rotork Fluid Systems actuator is built to provide long and efficient service with a minimum of maintenance. The design, engineering and materials used in the construction ensure optimum performance even in the harshest of environments. Our modular construction design facilitates stocking by allowing a minimal amount of components to meet a wide range of valve torque requirements.

Our GO Range of pipeline actuators are designed to use pipeline gas as the motive power source. Using our industry recognised and proven hydraulic scotch yoke quarter-turn actuator as the valve prime mover, we have experience designing and supplying direct gas actuators to many end user specifications including: NIGC, BOTAS, NIOC, GSPL, KOC, PEMEX and BP. These gas control systems are complemented with a variety of Rotork Fluid Systems designed and manufactured high-pressure gas controls. The gas control manifold employs poppet style control valves – a reliable design trusted throughout the industry. They are pilot operated for remote control. Operation is simple and intuitive.

GO Range – Quarter-turn & Linear Actuators

Linear Actuators

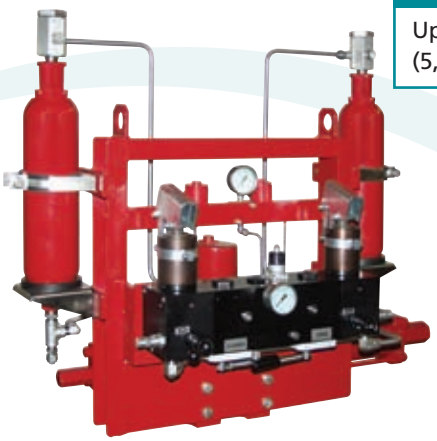
Thrust Output

Up to 5,000,000 N
(1,100,000 lbs)

Quarter-turn Actuators

Torque Output

Up to 600,000 Nm
(5,300,000 lbf-in)



Temperature Range:

Standard:	-20°C to 80°C	(-4°F to 140°F)
Low:	-46°C to 65°C	(-50°F to 149°F)
Super Low:	-60°C	(-76°F)

* Higher torque or thrust output available upon request.

Design Features

Standard Features:

- Scotch yoke quarter-turn actuators with either symmetric or canted yoke designs for optimum sizing of actuator to valve.
- Actuators are IP66M/67M third party certified and approved for environmental protection.
- Actuators are CE and ATEX 94/9/CE third party certified and approved.
- Chromium plated piston rod and electroless nickel-plated cylinder to provide enhanced durability of critical sealing surfaces.
- Working pressure up to 105 barg (1,500 psig) – higher on application.
- Manual hand pump for emergency or local operation.
- Options with either low-pressure or high-pressure control logic design.
- Multi-function control manifold integrating gas and hydraulic control in a modular and compact design.
- Local control via lever operated poppet valves on the multi-function manifold.
- Remote control via low-pressure or high-pressure solenoids. Cylinder is vented at the end of stroke.

Optional Features:

- PED or ASME approved gas-over-oil tanks – other approvals on application.
- PED or ASME approved power gas storage tanks – other approvals on application.
- Remote shutdown capabilities.
- Pressure sensing valves with optional manual reset to monitor pipeline pressure.
- Pressure differential valves with optional manual reset to monitor the differential across the valve.
- Linebreak detection safety systems sensing pipeline pressure drop over time.
- ESD (emergency shut down) control configurations to suit specific customer shutdown logic requirements.
- Actuator torque limiting devices for the protection of the valve or drive train.
- Custom Gas filtration.

Gas-Over-Oil Control Systems

A comprehensive range of control systems and schematics have been developed to meet the requirements of end user gas-over-oil applications.

The Rotork standard gas-over-oil schematics are listed below. Please contact our international sales departments for further options.

Gas-over-Oil Control Schematics

Schematic	Double Acting Qtr. Turn	Double Acting Linear	Hydraulic Manual Override	Local Manual Control	Low Pressure Close	Linebreak	2-Way Electric Remote
GO100-001	X	-	X	X	-	-	-
GO101-001	X	-	X	X	X	-	-
GO102-001	X	-	X	X	-	X	-
GO200-001	X	-	X	X	-	-	X
GO201-001	X	-	X	X	X	-	X
GO202-001	X	-	X	X	-	X	X
GOL101-001	-	X	X	X	X	-	-
GOL200-001	-	X	X	X	-	-	X
GOL202-001	-	X	X	X	-	X	X

See these typical schematics on our website www.rotork.com

Parts List for GO 200-001 & 500-001 Schematics

ITEM	DESCRIPTION	QTY.
1	Rotork Double Acting Actuator	1
2	End of Travel Limit Switch Housing (See Note)	1
3	Pilot Gas Regulator	1
4a	3-Way Manual Valve (Close)	1
4b	3-Way Manual Valve (Open)	1
5a	Solenoid 3/2 NC Valve (Close)	1
5b	Solenoid 3/2 NC Valve (Open)	1
6	Gas Vent	1
7	Quick Connection	1
9	Gas Pressure Gauge (Pilot Line)	1
10	Gas Pressure Gauge (Supply Line)	1
11	3/2 Hand Operated Valve	1
12	3/2 Pneumatic Pressure Switch (Torque Limit Device)	2
13	Pressure Relief Valve	1
14	Inline Gas Filter With Drain (40 micron)	3
15a	Filter Dehydrator	1
15c	Drain Valve	1
16	Isolation Valve	2
17	Shuttle Valve	1
18	Local/Remote Valve	1
19	Filter	1
20a	Gas Storage Tank	2
20b	Pressure Relief Valve	1
20c	Check Valve	1
20d	Drain Valve	1
26	Gas/Oil Tank	2
28	Hydraulic Manual Override Block Including:	
28a	3/2 Hand Operated Valve	2
28b	Hand Pump	2
28c	Unidirectional Flow Regulator	2

Manual Operation

Isolate the remote control pilot by moving valve (18) to the 'Manual Operation' position, then depress hand lever (4a) to close or (4b) to open the valve actuator.

Remote Operation

Open valve (18) to allow control pilot gas to the solenoids, then energise solenoid (5a) to close or (5b) to open the valve actuator.

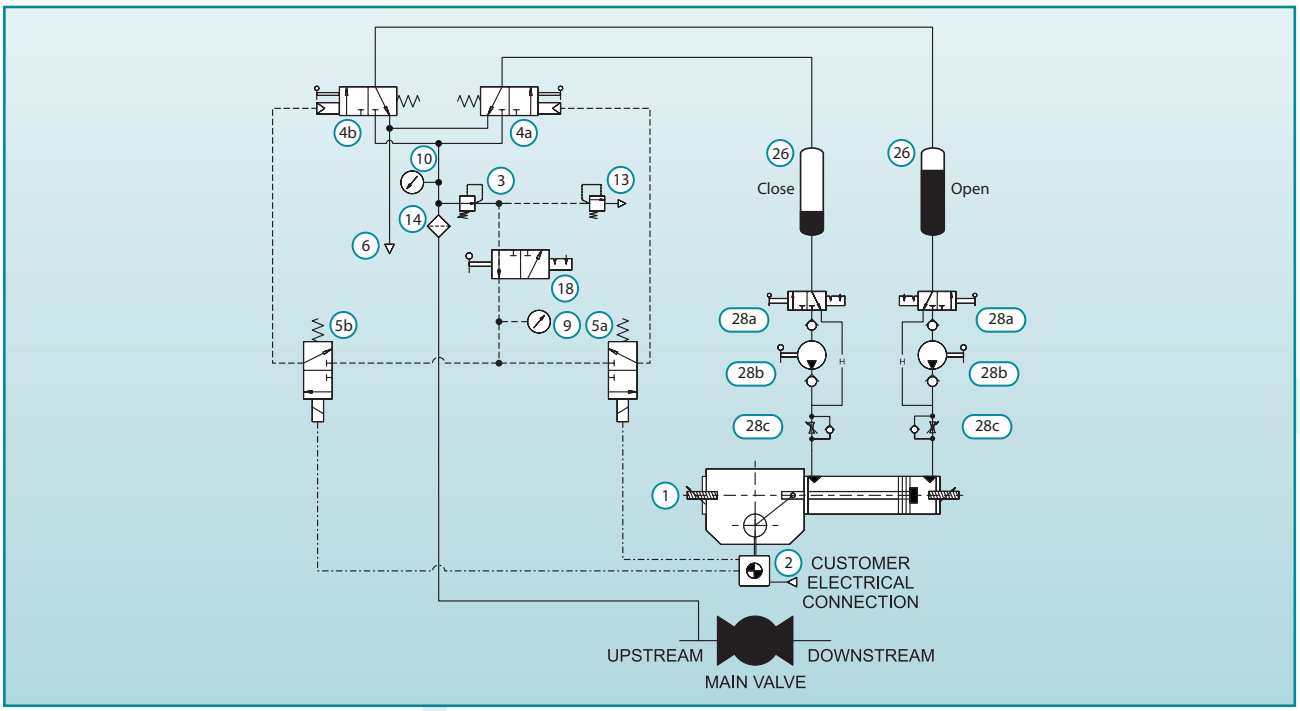
Note: 2-off travel limit switches are used to de-energise the solenoid when the actuator reaches end of travel.

Valves are shown de-energised and in the fail position with valve (18) in the 'Remote Operation' position (conventionally close position).

LEGEND	
Solenoid Connection	
High Pressure Gas Line	
Low Pressure Gas Line	
Hydraulic Fluid Line	H

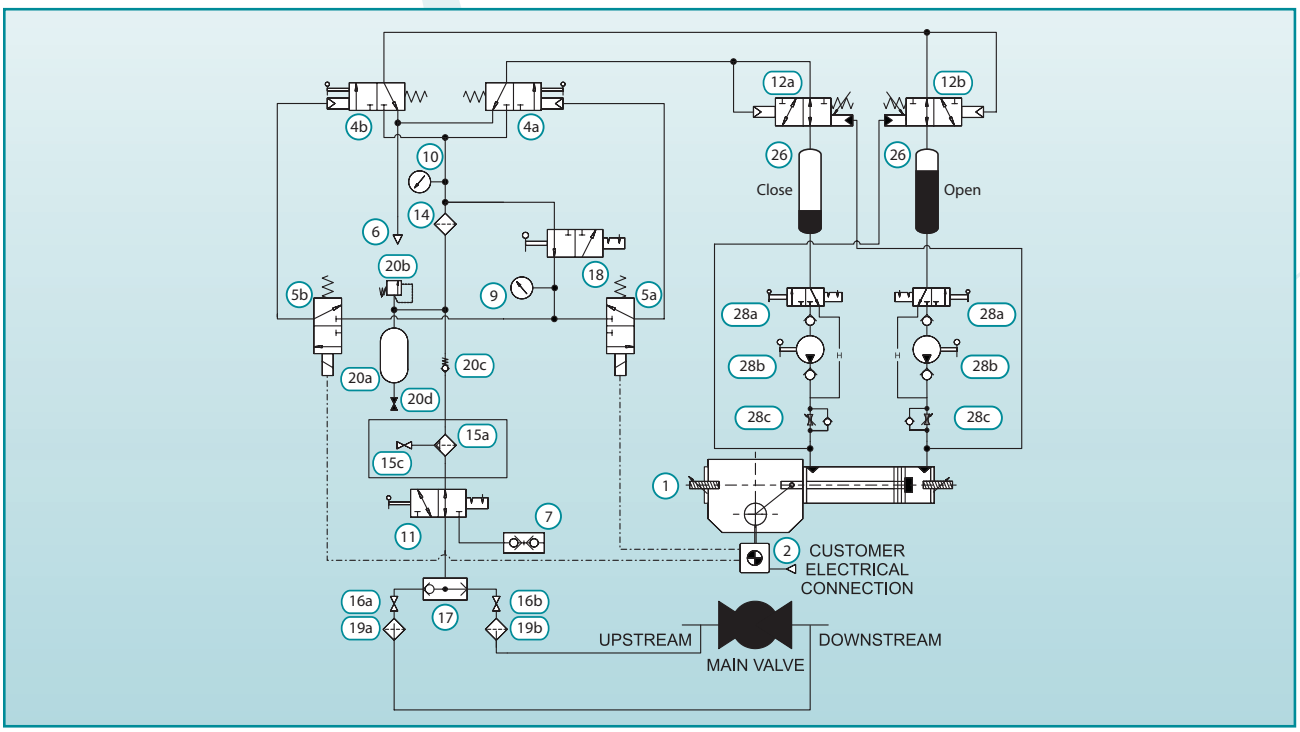
GO 200-001

2-way Electric Remote Operation & local manual control – regulated control logic



GO 500-001

2-way Electric Remote Operation – high-pressure control logic



Key Control Components

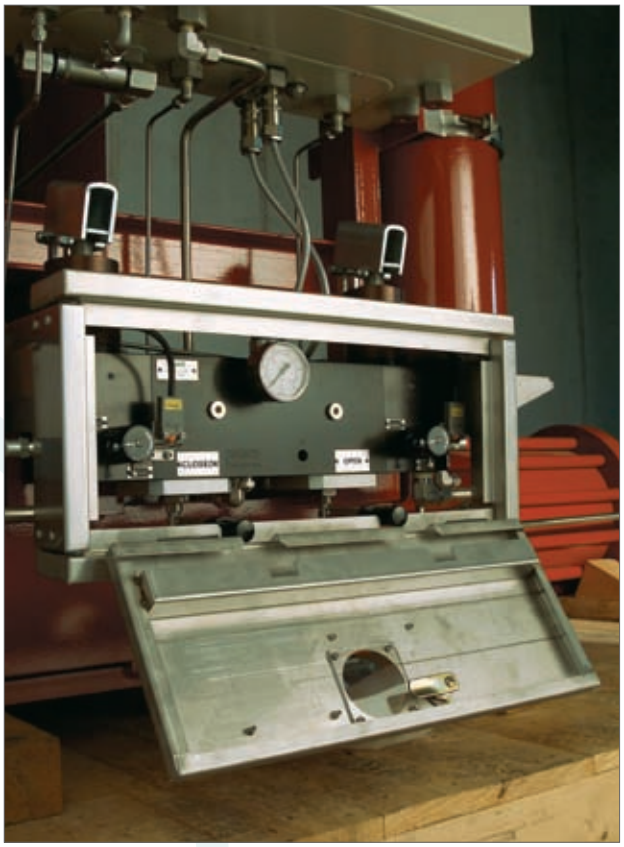
Complimenting the modular design of our over gas-over-oil systems are the Rotork designed and manufactured control options ranging from simple local/remote pilot operated valves to pressure sensing and linebreak controls.

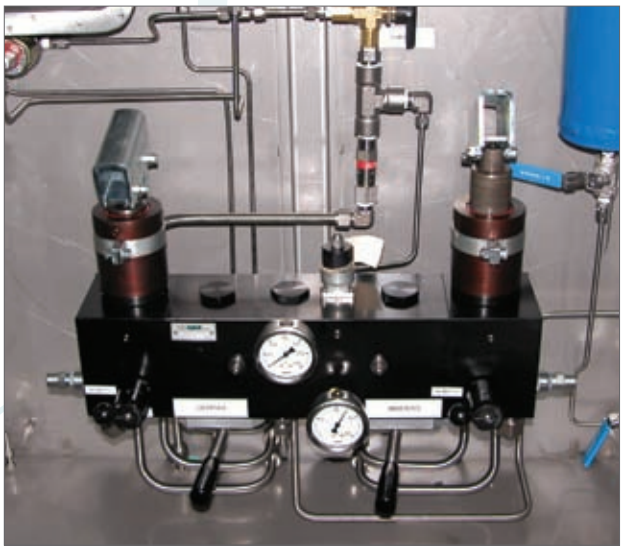
At the centre of our gas-over-oil systems is our multi-function manifold block. Integrating both gas and hydraulic control functions. The high-pressure, high-flow manifold system allows us to configure a wide variety of control options.

Multi-Function Manifold Block

- Volume and effort required selected to suit actuator and valve.
- Reverse flow pump protection valves.
- Integral flow control valves for both directions.
- Integral gas filter.
- Leak free high flow poppet valve design.
- Anodised aluminium construction.
- Tamper-proof cover (optional).

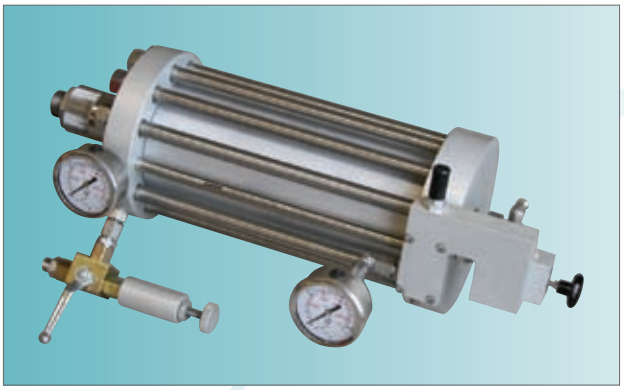
We utilise a dedicated pump for each direction to prevent leakage or contamination between the gas-over-oil tanks. The manifold has the facility for a high-flow hand pump, pressure relief and a locking handle for safe commissioning. Both high and low-pressure control logic designs are available.





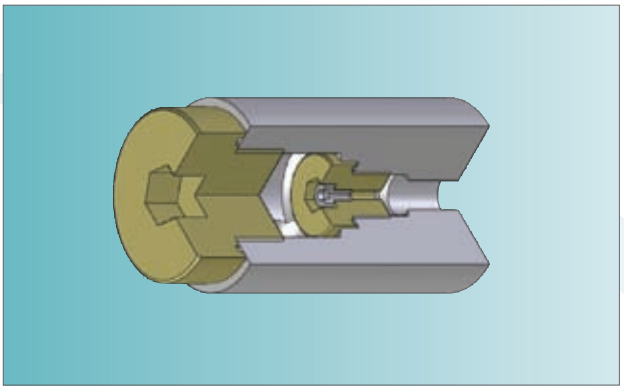
Linebreak Safety System

Pipeline pressure monitoring device that will signal the actuator if a set rate of pressure drop is detected.



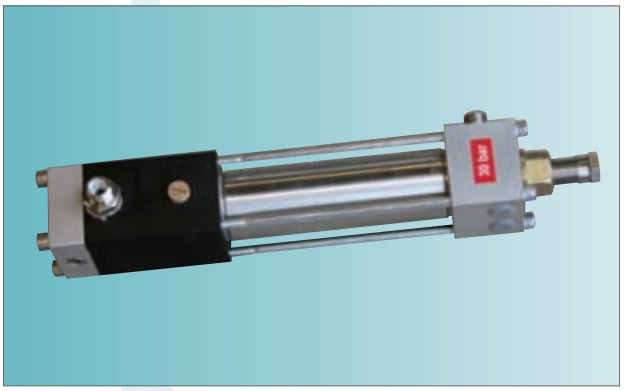
Calibrated Orifice

Designed for use with the Rotork Linebreak Safety System and allows in-house or on-site calibration.



Torque limiting Device

Protects the valve from excessive torque loads.
User definable settings.

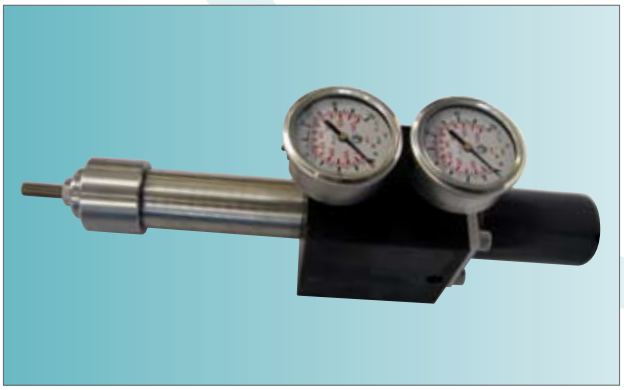


Shuttle Valve

Used as a high-pressure selector valve.

Differential Pilot Valve

Used to prevent opening the actuator when a preset differential pressure is exceeded across the pipeline valve.



Dehydrator Filter

For gas conditioning with the filter element selected to meet operating conditions.

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