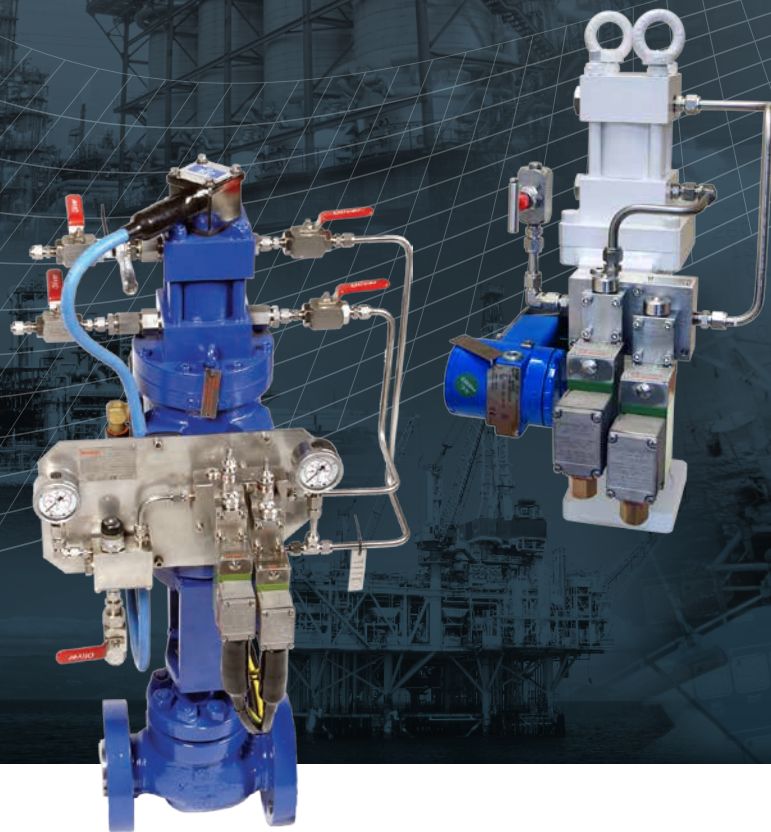




## Midland-ACS Electro-Hydraulic Stepping Actuators



Redefining Flow Control

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Rotork is the global market leader in valve automation and flow control. Our products and services are helping organisations around the world to improve efficiency, assure safety and protect the environment.

We strive always for technical excellence, innovation and the highest quality standards in everything we do. As a result, our people and products remain at the forefront of flow control technology.

Uncompromising reliability is a feature of our entire product range, from our flagship electric actuator range through to our pneumatic, hydraulic and electro-hydraulic actuators, as well as instruments, gearboxes and valve accessories.

Rotork is committed to providing first class support to each client throughout the whole life of their plant, from initial site surveys to installation, maintenance, audits and repair. From our network of national and international offices, our engineers work around the clock to maintain our position of trust.

**Rotork. Redefining flow control.**

## Introduction

As specialist manufacturers of electro-hydraulic actuation and control equipment we offer comprehensive, purpose designed, engineered and manufactured solutions for the operation of choke and control valves for onshore and offshore installations.



The electro-hydraulic stepping actuator provides a cost effective alternative solution to the mechanical ratchet style mechanism occasionally used for the positioning control of choke valves.

The assembly incorporates a hydraulic control system that is activated by an integral position controller in conjunction with a 4-20 mA command signal. The hydraulic control system is connected to a ring main pressure and return hydraulic header, or may incorporate a self-contained electro-hydraulic power supply within the actuator assembly.

### Standard Design

The hydraulic control system comprises manifold mounted solenoid valves and speed control valves with hydraulic supply pressure filter and pressure gauge. Components are manufactured in 316 stainless steel and may be housed within a stainless steel control cabinet to provide additional environmental protection and security. The actuator assembly is designed with an interface to suit the standard valve top works.

### Operation

With the control system connected to the hydraulic supply, a change in command signal will cause the valve to operate by energisation of the respective solenoid operated control valves in a series of pulses until the selected position is reached.

### Features and Benefits

- Extended opening and closing operating speeds with all optional features associated with the double-acting, single-acting and quarter-turn options
- Remote switching to activate / deactivate stepping function
- Reliable operation reduces cost of ownership
- Compact design reduces installation cost
- Lower cost of maintenance

### Certification Options Available





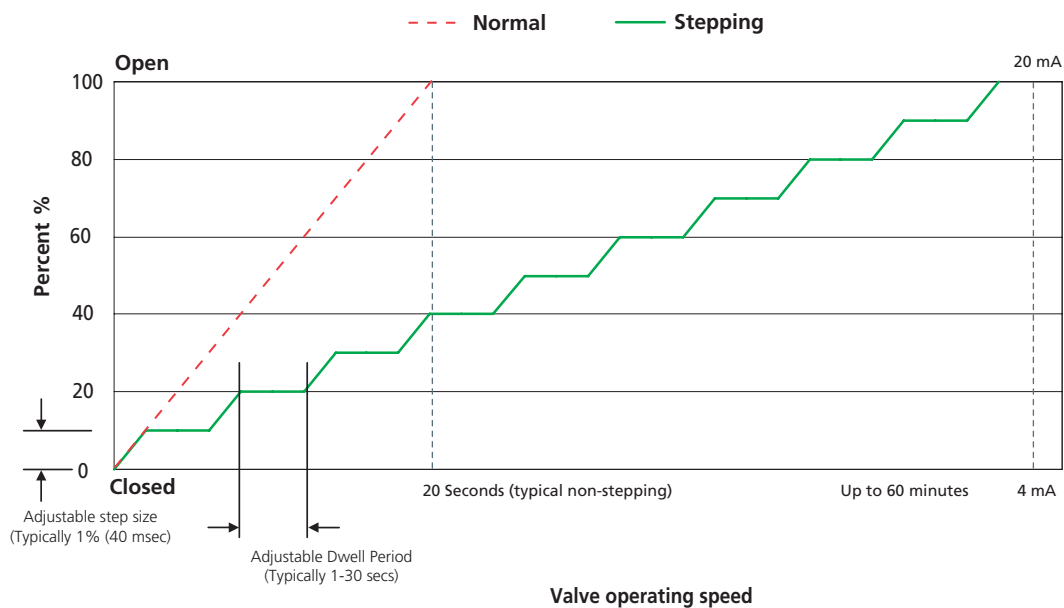
# Stepping Positional Control

## Control Options Available

- Double-acting actuator control action to provide 'Fail Fix' in position on loss of hydraulic supply, loss of electrical supply or loss of command signal
- Spring-return actuator control action to provide fail-to-open or fail-to-close valve position on loss of hydraulic supply, loss of electrical supply or loss of command signal

## Hydraulic Actuators

- **Type** – Double-acting and single-acting
- **Construction** – Bolted or tie rod
- **Materials** – End caps and tubes - carbon steel or stainless steel with options of protective plated or painted finish
- **Piston Rod** – Stainless steel with hard chrome plate
- **External Protective Finish** – 2-pack epoxy paint system for severe offshore environment in accordance with project specification



## Certification Options Available



# Electro-Hydraulic Stepping Actuation

## Hydraulic Power Supply Options

1. **Hydraulic ring main system** - Centralised hydraulic header. Actuator and control components selected for compatibility with system hydraulic fluids - mineral oil, water glycol or synthetic types.

2. **Self contained hydraulic system** - Integral hydraulic power unit.

## Positioner Controller - (located on valve / actuator assembly)

**ACS604EX** 24 VDC mounted within EExd enclosure. Controlled by 4-20 mA command signal and providing a 4-20 mA re-transmitted signal.

**ACS603IR** EX 24 VDC mounted within EExd enclosure with window for use with infrared handheld keypad to facilitate calibration and manual operation without access inside the enclosure.

Controlled by 4-20 mA command signal and providing a 4-20 mA re-transmitted feedback signal.



## ACS604EExia

Intrinsically safe version of ACS604EX mounted within an IP66 stainless steel enclosure.

Controlled by 4-20mA command signal and providing a 4-20 mA re-transmitted feedback signal.

## ACS604EX HART®

24 VDC mounted within EExd enclosure. Controlled by 4-20 mA command signal and providing HART® protocol communication.

## Direct Pulse Action from DCS

24 VDC power signal to operate respective solenoid valve to drive the actuator in the desired direction to the respective position.

## Enclosure Materials

Carbon steel / cast iron, stainless steel or aluminium (low copper content marine grade). All available with special protective finish – 2-pack epoxy paint system for severe offshore environment.

## Other Options Available

Alternative options are available to meet with specific project requirements.

## Mechanical Stepping Actuators available from Rotork

The Twin Power range is a series of pneumatic and hydraulic actuators for multi-turn applications. It is a robust actuator with a recognised reputation in the oil & gas and other process industries that has been proven in installations ranging from the challenging cold of the North Sea to the heat and humidity of Indonesia.



## Certification Options Available



See PUB025-002 for further details.

# Fluid Power Actuators and Control Systems

## rotork® Fluid Systems

Rotork Fluid Systems manufactures a comprehensive range of high quality fluid power actuators and control systems. We are dedicated to providing superior performance actuators for use on general purpose (on / off), protective service and special valve applications.

Our manufacturing facilities are located in Germany, Italy, Sweden, UK and USA, providing the capacity to produce a high volume of products, ensuring that you deliver your projects on time.

Rotork Fluid Systems delivers the following product ranges:

- Pneumatic rotary and linear valve actuators
- Hydraulic rotary and linear valve actuators
- Electro-hydraulic valve actuators
- Subsea valve actuators
- Vane-type pneumatic valve actuators
- Smart valve monitoring systems (SVM)
- Control systems

A full listing of our worldwide sales and service network is available on our website at [www.rotork.com](http://www.rotork.com)

### **Centres of Excellence – Knowledge and Experience**

In addition to these facilities, we maintain a network of *Centres of Excellence* strategically located around the world. These centres hold stock, provide application engineering and packaging of control components as well as providing sales, service, installation and commissioning support.

### **Test Facilities – Quality and Safety**

Rotork Fluid Systems' test facilities include bespoke specialist testing systems that ensure reliable operation and lifetime functionality of our products.

In keeping with Rotork's philosophy of continuous development, Rotork Fluid Systems has dedicated research and development facilities around the world.

Our test systems incorporate the following features:

- Static continuous and dynamic analysis on a full range of torques throughout the complete stroke of the actuator
- Cyclic and repetitive tests, with variable parameters such as load, cycle times and temperature
- Automatic or manual setting and recording of pressure, position and temperature parameters
- Hydraulic filtration and flushing capabilities
- Torque testing up to 600,000 Nm (5,000,000 lbf.in)
- Thrust testing up to 10,000 kg (22,046 lbf)
- Pneumatic pressures up to 120 bar (1,740 psi)
- Hydraulic pressures up to 360 bar (5,220 psi)





## Service and Support

# rotork® Site Services

In each of our divisions, Site Services staff are dedicated to providing customer service and support, carrying out new installations and delivering retrofit projects. These teams are based out of service centres around the world and are complemented by factory-trained agents.

Our expert technicians support Rotork customers, allowing us to deliver on our promise of global solutions backed by local service.

**Visit [www.rotork.com](http://www.rotork.com) to identify your nearest Rotork location.**



### Client Support Programme

Rotork offers a premium level of product reliability and availability through the flexible Client Support Programme (CSP). Designed to facilitate the highest production demands while providing a tiered approach to maintenance, the CSP is committed to reducing maintenance downtime and costs.

Through consultation, the CSP is tuned to deliver the optimum level of maintenance through predictive maintenance algorithms.

#### Features of the CSP are:

- Fixed term prices for Rotork products and services
- Customisable cover based on equipment criticality to production
- Equipment performance related targets for reliability and availability
- Priority support with customisable response times
- Fully parts and labour inclusive, no additional costs or discounted labour and parts
- Fix or replace options
- Periodic equipment performance and status reports
- Built-in regular health checks on all equipment

#### Benefits of the CSP include but are not limited to:

- Year-on-year reduced maintenance costs
- Easy budget management
- Maximised production resulting in reduced downtime
- Year-on-year improved reliability and availability
- Optimised resource usage to accelerate in-house projects
- Reduced lifecycle costs





Redefining Flow Control

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[www.rotork.com](http://www.rotork.com)

A full listing of our worldwide sales and service network is available on our website.

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Scan with your smart phone  
for more information on  
this product range



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As part of a process of on-going product development, Rotork reserves the right to amend and change specifications without prior notice. Published data may be subject to change. For the very latest version release, visit our website at [www.rotork.com](http://www.rotork.com)

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