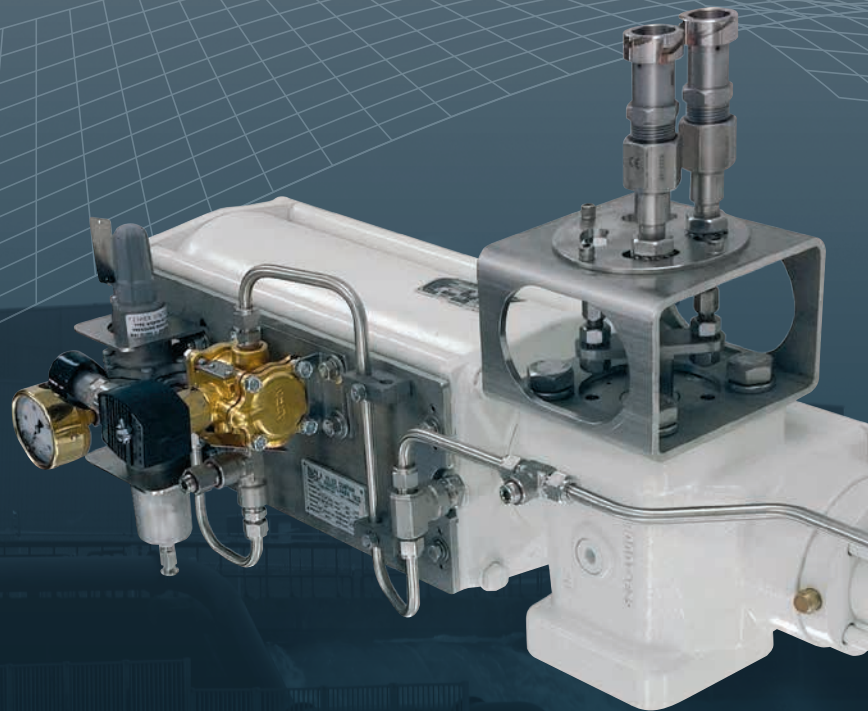


**rotork<sup>®</sup>**  
**Fluid Systems**

## **Nuclear** Fluid Power Actuators

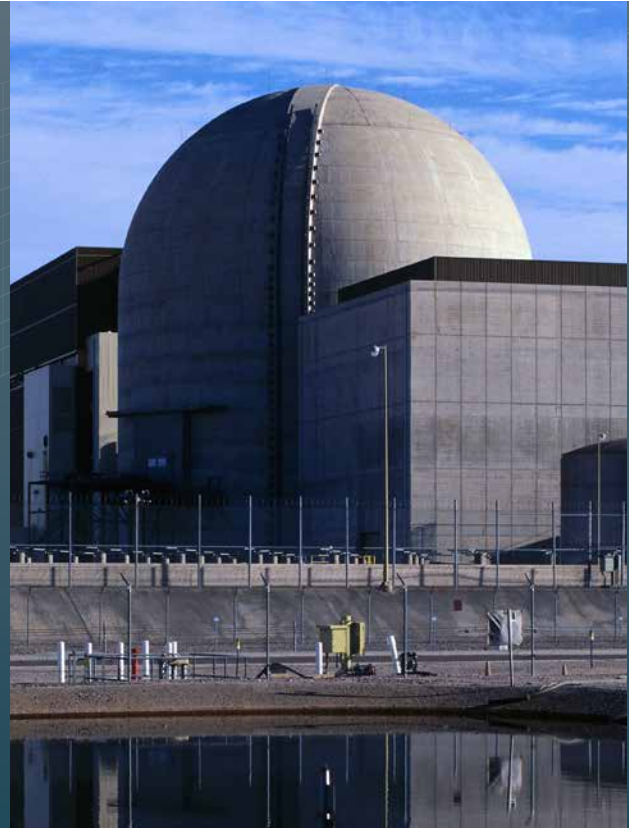


**Actuation Solutions for  
Nuclear Powerplants**

**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, gear boxes 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.**

# History & Overview

## Introduction

Rotork Hiller is a well-established global supplier of fluid-power valve actuators for the nuclear power industry. We have products for all pneumatic, hydraulic, and electro-hydraulic actuation requirements including linear and rotary applications. We have an extensive installed base in safety and non-safety related applications in plants utilising either pressurised-water or boiling-water type reactors.

## Company Timeline

- 1950: Hiller established in Pittsburgh, Pennsylvania USA as a distributor for various fluid-power products
- 1962: Designs its first valve actuation products
- 1966: Begins supplying actuators for use in commercial nuclear power plants
- 1992: Moved to new 3,700 m<sup>2</sup> (40,000 ft<sup>2</sup>) facility in Export, PA USA.

## Typical Applications

- Main steam isolation valves (MSIVs)
- Main feedwater isolation valves (MFIVs)
- Hardened containment vent valve (HCVV)
- Heating, ventilation, and air conditioning (HVAC)
- Balance of plant – non-safety related applications

## Quality Assurance Programme

To ANSI N45.2, 10CFR50 Appendix B, ASME NQA-1.

- Auditing services
- Inspection services
- Accepts 10CFR21
- Regularly audited by both NUPIC and NIAC

## Engineering

- Design engineering
- Installed design base review
- Finite element analysis
- Dedication of commercial items
- Failure analysis
- Maintenance life extension analysis
- Obsolete actuator support



Rotork's 3,700 metres<sup>2</sup> (40,000 feet<sup>2</sup>) manufacturing plant in Export, PA, USA.



# Valve Actuators

Rotork Hiller designs custom/bespoke solutions to meet customer supplied specifications. Designs are typically based on previously qualified product. This evolutionary, as opposed to revolutionary, design approach facilitates a tried-and-true, cost-effective solution.

All Rotork Hiller valve actuators include the following list of features. Features that are unique to each range are included with the individual product listings.

### All Rotork Hiller Actuators

Qualified in accordance with IEEE 323/344/382 as well as recent plant-specific requirements for the latest generation of reactors.

- Suitable for safety related or non-safety related or active or passive duty applications
- Design life of up to 60 years
- Isolating or modulating duty (on-off or positioning)
- Mounting specifically to the valve
- Custom control solutions tailored to suit each application
- CE marking/compliance to European directives (optional)
- Adjustable travel stops
- Manual override options

### Linear Pneumatic Actuators



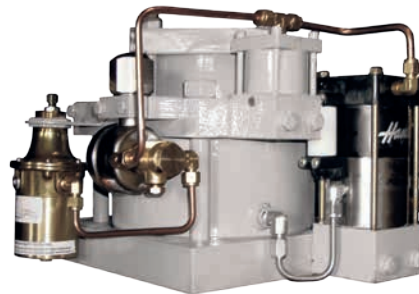
- Single- or double-acting options available
- Dual piston design available to reduce cylinder bore diameter for installation where space is limited
- Failsafe via internal spring or accumulator available
- Low, medium, and high-pressure designs
- Maintenance life up to 12 years
- Suitable for gate and globe valve and dampers

### Tandem Linear Pneumatic Actuators



These actuators include all the features of our linear pneumatic actuators with the addition of a hydraulic cylinder to facilitate precise and repeatable speed control.

### Linear Hydraulic Actuators



These actuators include all the features of our linear pneumatic actuators but can provide greater thrust output. They can be designed to accept power supply pressures up to 35 bar (5,000 psig). Hydraulics also have the benefit of providing precise speed control.

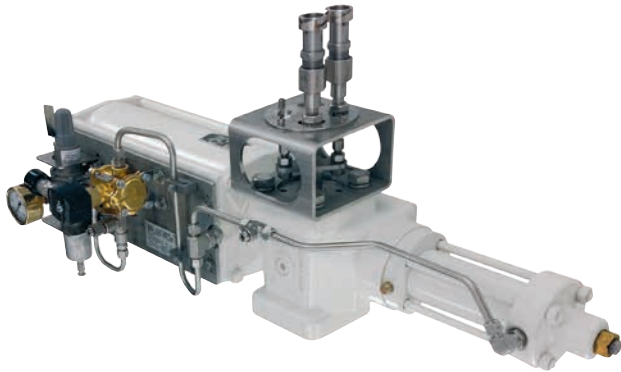
### Gas Charged Linear Hydraulic Actuator



These are self-contained hydraulic actuators with integral nitrogen storage to provide a fast failsafe stroke. They are typically used for MSIV and MFIV applications.

# Valve Actuators

## Rotary Pneumatic Actuators



- Rugged yet compact quarter-turn (90° +/- 5°) scotch-yoke designs in single- and double-acting configurations
- Maintenance life of up to 12 years
- Failsafe via internal spring or accumulator available
- Suitable for ball, plug, butterfly valves and dampers

## Electro-Hydraulic Actuators



- Linear or rotary output motion designs
- Hydraulic power packs (pump, motor, reservoir, etc.) locally or remote mounted
- Can be adapted to suit any electrical power supply (DC, single-phase AC, or three-phase AC)
- Can be mounted in any orientation (fixed by design, determination to be provided by customer)
- Compact and light yet rugged design
- Balance of plant – non-safety related applications

## Qualified Actuation Accessories

These items can be locally mounted to the actuator, remotely mounted, or supplied separately for use with previously installed actuators.

### Control

- Solenoid operated valves
- Pilot-operated valve
- Speed Control
- Positioners
- Accumulators

### Indication

- Limit switches
- Proximity switches
- Pressure switches
- Local position

### Protection

- Filtration
- Pressure regulation
- Pressure relief

*This is a partial listing. Additional accessories available.*



# After Sales and Technical Support

## Rebuild Programme

- Fully equipped workshop which allows us to rebuild all Rotork Hiller actuator models in-house
- System upgrade and modification
- Failure analysis and repair
- Calibration, testing and certification
- Long-term storage with periodic functional testing
- Customised actuator shipping/storage containers
- Decontamination of “hot” actuator
- Painting / coatings up to Level 1 requirements

## Spares

- \$1.5 million USD in spare parts inventory
- All suppliers are regularly audited and approved
- OEM actuator repair kits and actuator components
- Certified genuine OEM spares
- Fast-Track delivery options

## Technical Support

Our specialist team of engineers and qualified technicians are available to provide assistance and support through all phases of your project, either on-site or at our facility.

### In-house

- Basic training on all Rotork Hiller products
- Preventative maintenance training
- Spares parts inventory management
- Actuator drawing and manual updates
- Actuator design and modification
- Engineering evaluation of obsolete parts for replacement

### On-site

- Facility walk-down
- Pre-outage inspection
- Start-up commissioning support
- Plant upgrade feasibility studies
- Failure analysis support
- Installation and maintenance support
- Product training

## Storage and Maintenance Programme

- Store and maintain actuator(s) in a segregated facility area
- Register and document each unit from receipt to return
- Maintain storage condition requirements in accordance with the actuator maintenance manual
- Periodic cycling per customer specification and Rotork Hiller engineering procedure
- Provide actuator certification and test data
- Release actuators back to plant on short notice
- Ensure actuator maintenance life is not diminished
- Ensure operational readiness

It is our recommendation that all actuators are stored in IP-1 rated containers, which we can supply, custom-built to your specific actuator model. These actuator containers are made to safely store and protect the unit from dirt, fumes, moisture and particle contamination. Containers are available for storage in either horizontal (safe ship) position or vertical (upright to minimize seal set) position. These containers can also be used to ship contaminated (“hot”) units to a decontamination facility.

### Our storage plan includes the following components:

- All equipment required to complete maintenance testing
- Bolted and sealed blanking plates for all actuator openings
- Desiccant breather system to remove moisture contaminates from the air system
- Replacement desiccant for the duration of storage
- Exposed surface protection for the piston rod and other critical surfaces
- Air control circuit port plugs

# Quote Request and Ordering Information

## Introduction

The following information must be provided for us to bid or process an order for a nuclear actuator.

## General

- Project details: plant, utility, NSSS supplier, contractor
- General specification
- Reactor type
- Supply pressure
- Environmental conditions
- Required delivery date
- Documentation requirements
- Required safety factor for sizing calculations

## For Each Actuator

- Valve type
- Valve stroke
- Valve stem details
- Valve yoke details
- Valve torque/thrust requirement
- Valve datasheet
- Valve location in plant
- Is the actuator safety related?
- Is the actuator active or passive?
- Seismic requirements
- Control requirements

## For Spares

- Part number
- Part description
- Quantity
- Are items for a commercial or a safety application?
- Certification requirements
- Actuator model number
- End user





Redefining Flow Control

A dark blue background featuring a stylized world map with a white grid overlay, representing global connectivity.

[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

