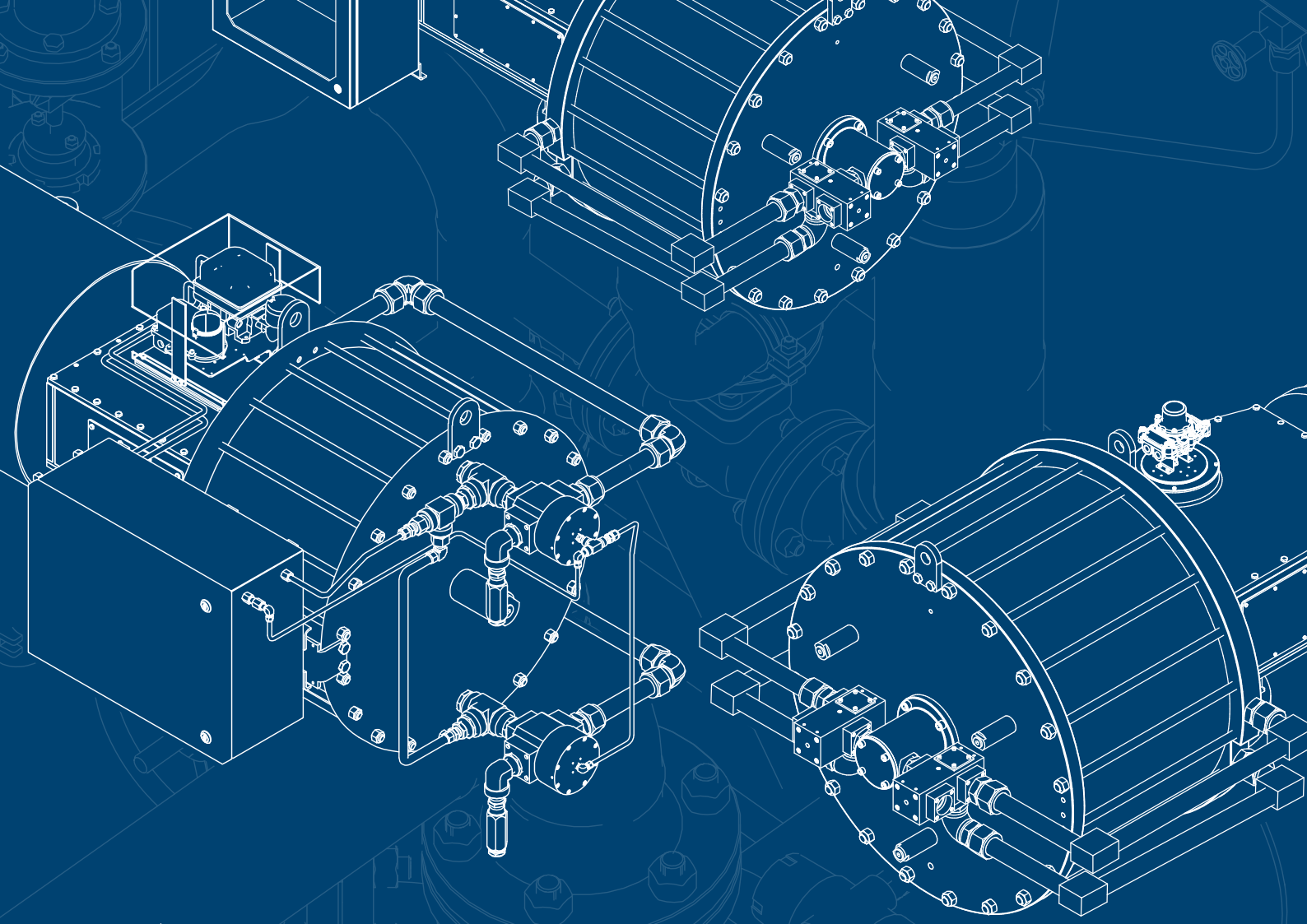
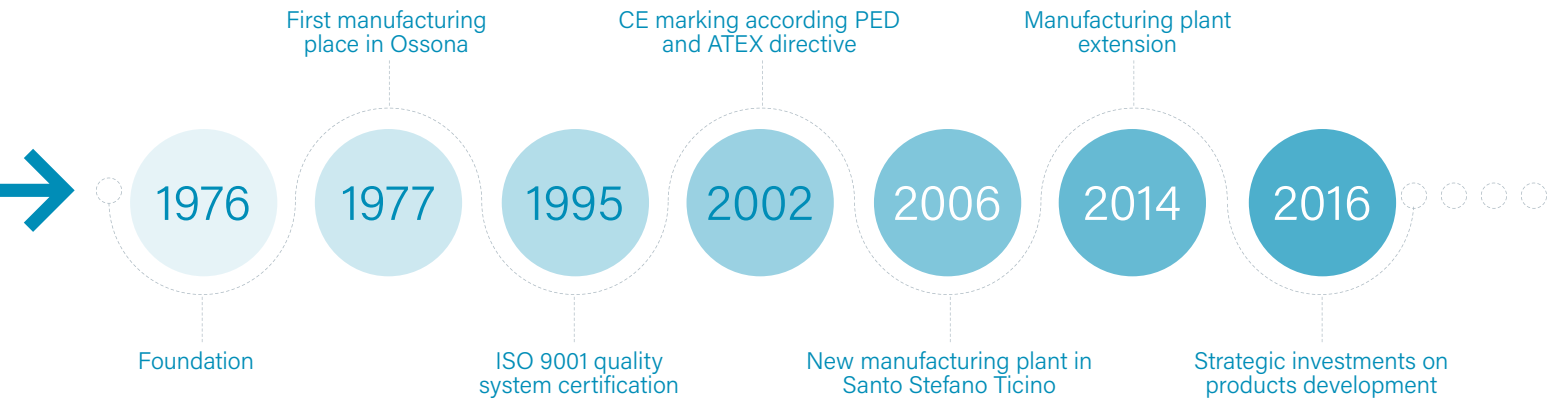




servovalve
Actuators and Controls

Servovalve is an Italian independent company highly specialized in manufacturing valve automation solutions.



Our customers can rely on a long history, experience, high flexibility and skilled personnel to meet every challenge. Since our foundation, in 1976, **Servovalve** has built his reputation offering a first class supports to the customers, developing innovative products and solutions. **Servovalve** designed and produced heavy duty pneumatic and hydraulic actuators for the most critical and complex industrial applications, becoming through the years one of the market leader. Client loyalty is our best testimony to our excellent work.

Following the large experience on valve actuating systems and the deep knowledge of the most stringent international quality standards, production has been designed for the most arduous working conditions, providing actuators suitable to be installed in hostile and corrosive environmental and to withstand presence of high vibrations and severe service, saline atmosphere, high or low ambient temperatures and cryogenic service. Quality control is continually monitored to ensure that the final products could reach the customers as requested.

CERTIFICATIONS AND STANDARDS

In **Servovalve** quality control is constantly monitored to ensure that the final products leave the factory as expected to be by customers. All actuators and control systems are tested according to our internal test procedure. Every aspect of our activities complies with:

Company certifications:

ISO 9001:2015
ISO 45001:2018
ISO 14001:2015

Servovalve production range holds the following accreditations:

SIL according to IEC 61508
ATEX and European directive PED
TR-CU

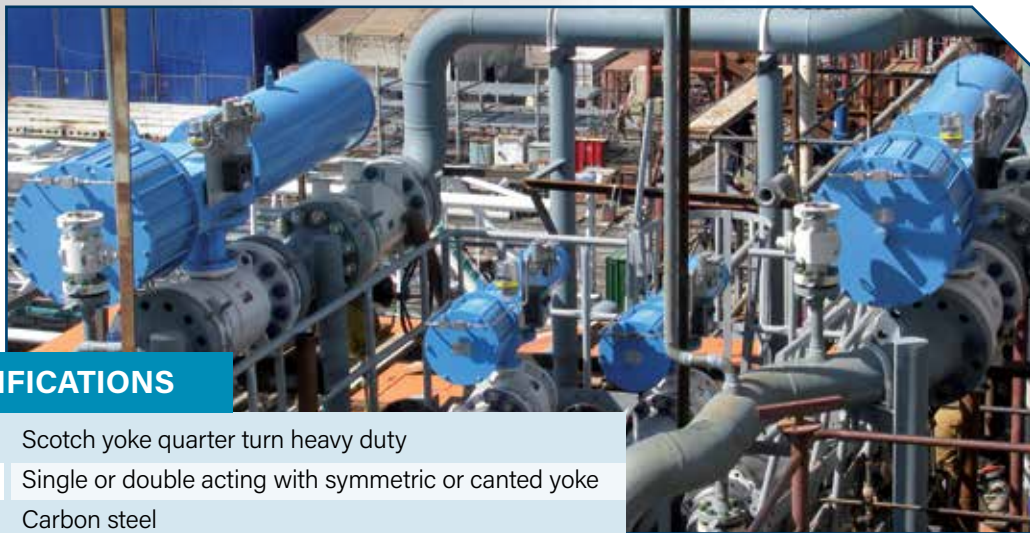
The design of our actuators is in accordance to EN 15714, API 6DX and ISO 12490.

Pressure retaining parts are design in accordance to the following international standards:

EN 12516-2
EN 13445-3
ADME VII div.1



Pneumatic Actuators / RSP(M)/RCP(M) series



TECHNICAL SPECIFICATIONS

Type of actuator:	Scotch yoke quarter turn heavy duty
Available configuration:	Single or double acting with symmetric or canted yoke
Construction material:	Carbon steel
Cylinder material:	Chromium plated carbon steel
Piston material:	Nickel plated carbon steel
Sliding block:	Bronze/Aluminium
Bushing material:	Synthesized PTFE
Supply pressure:	12 barg design (*)
Actuator output:	Up to 1500000 Nm
Standard operating temperature:	-20 °C to 85 °C
Low temperature execution:	up to -60 °C
Ingress protection:	IP66/67M
Design in accordance to:	EN 15714-2 API 6DX ISO 12490

(*) different value available at request

Pneumatic Actuators - Compact / RTP(M)/RKP(M) series



For single acting models the cylinder assembly also contains the spring bringing the advantage of a compact solution.



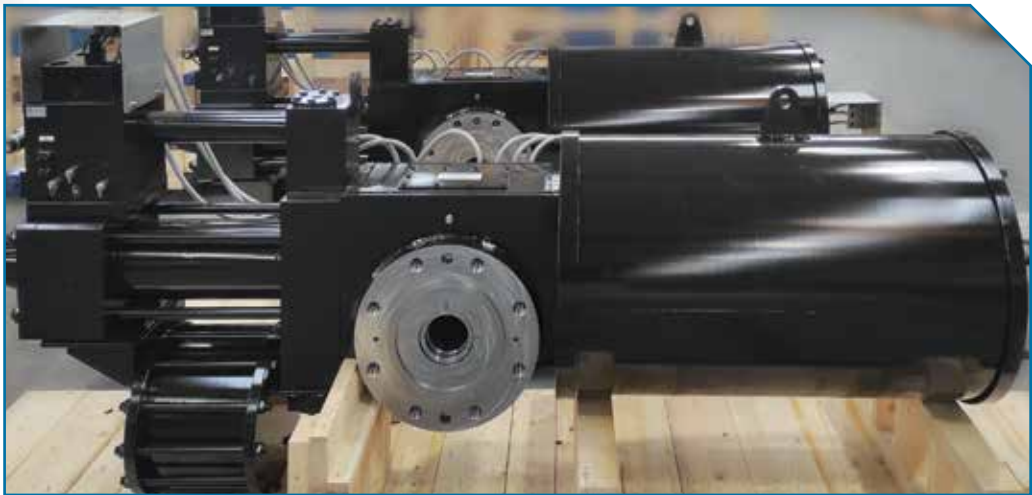
TECHNICAL SPECIFICATIONS

Type of actuator:	Scotch yoke quarter turn heavy duty
Available configuration:	Single or double acting with symmetric or canted yoke
Construction material:	Carbon steel
Cylinder material:	Chromium plated carbon steel
Piston material:	Nickel plated carbon steel
Sliding block:	Bronze/Aluminium
Bushing material:	Synthesized PTFE
Supply pressure:	12 barg design (*)
Actuator output:	Up to 10000 Nm
Standard operating temperature:	-20 °C to 85 °C
Low temperature execution:	up to -60 °C
Ingress protection:	IP66/67M
Design in accordance to:	EN 15714-2 API 6DX ISO 12490

(*) different value available at request

Hydraulic Actuators

RTO(M)/RKO(M) series
RSO(M)/RCO(M) series



TECHNICAL SPECIFICATIONS

Type of actuator:	Scotch yoke quarter turn heavy duty
Available configuration:	Single or double acting with symmetric or canted yoke
Construction material:	Carbon steel
Cylinder material:	Chromium plated carbon steel
Piston material:	Nickel plated carbon steel
Sliding block:	Bronze/Aluminium
Bushing material:	Synthesized PTFE
Supply pressure:	207 or 400 barg design (*)
Actuator output:	Up to 1500000 Nm
Standard operating temperature:	-20 °C to 85 °C
Low temperature execution:	up to -60 °C
Ingress protection:	IP66/67M
Design in accordance to:	EN 15714-4 API 6DX ISO 12490



(*) different value available at request

Pneumatic Actuators

P series



TECHNICAL SPECIFICATIONS

Type of actuator:	Linear heavy duty
Available configuration:	Single or double acting
Construction material:	Carbon steel
Cylinder material:	Chromium plated carbon steel
Piston material:	Nickel plated carbon steel
Piston rod material:	Chromium plated carbon steel
Supply pressure:	12 barg design (*)
Actuator output:	Up to 3000000 N
Standard operating temperature:	-20 °C to 85 °C
Special low temperature:	up to -60 °C
Ingress protection:	IP66/67M
Design in accordance to:	EN 15714-5

(*) different value available at request



Hydraulic Actuators

H series



TECHNICAL SPECIFICATIONS

Type of actuator:	Linear heavy duty
Available configuration:	Single or double acting
Construction material:	Carbon steel
Cylinder material:	Chromium plated carbon steel
Piston material:	Nickel plated carbon steel
Piston rod material:	Chromium plated carbon steel
Supply pressure:	207 or 400 barg design (*)
Actuator output:	Up to 3000000 N
Standard operating temperature:	-20 °C to 85 °C
Low temperature execution:	up to -60 °C
Ingress protection:	IP66/67M
Design in accordance to:	EN 15714-6

(*) different value available at request



COMPACT SOLUTION

For hydraulic spring return actuator is available also a special **compact solution** with direct coupling with the valve and with the hydraulic cylinder enclosed inside the spring or encircled by the them.

The main advantages of this design are:

- high reduction;
- sealed design for corrosion resistance;
- additional coupling between valve and actuator not required;
- protection of the valve stem

Compact Actuators

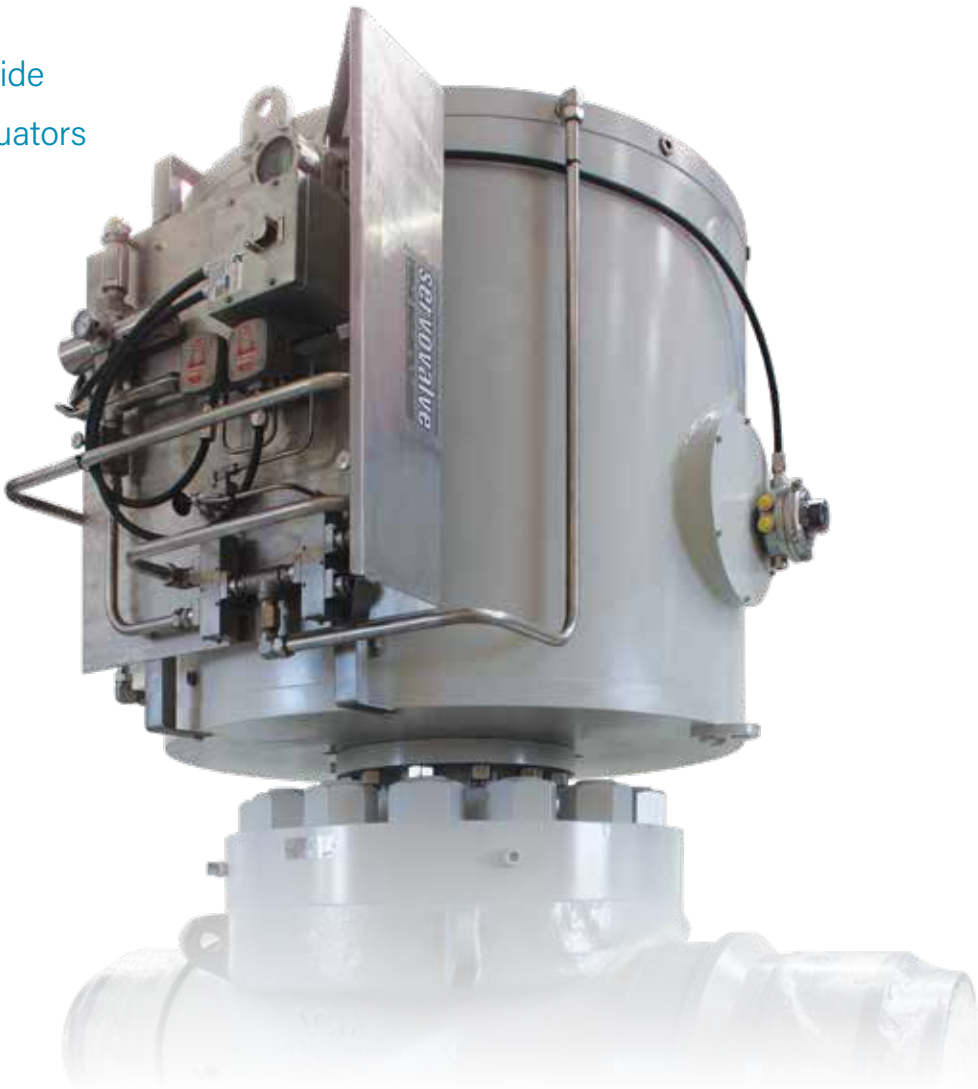
UCR series

UCR series has been designed to provide same performances of scotch yoke actuators but, due to his innovative design, with a completely different result in overall dimensions, as showed in the below comparative figure.

This series consist of hydraulic or pneumatic single or double acting actuator designed to operate quarter turn valves as ball, butterfly or plug valves.

The totally enclosed design guarantees a weatherproof design.
Design allows a 90° actuator rotation.

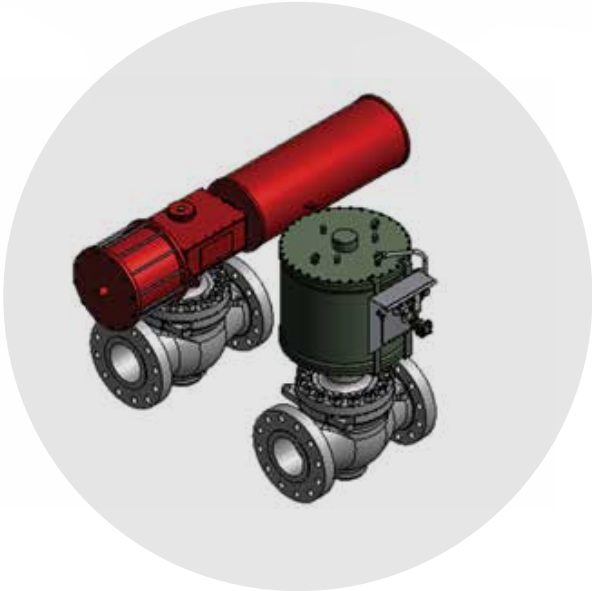
Integral manual override facilities available.
Alloy steel end travel stops for an accurate angular stroke asjustament.



TECHNICAL SPECIFICATIONS

Type of actuator:	Helical slot quarter turn
Available configuration:	Single or double acting
Construction material:	Carbon steel
Cylinder material:	Chromium plated carbon steel
Piston material:	Nickel plated carbon steel
Supply pressure (pneumatic):	12 barg design (*)
Supply pressure (hydraulic):	207 or 400 barg design (*)
Actuator output:	Up to 1500000 Nm
Standard operating temperature:	-20 °C to 85 °C
Low temperature execution:	up to -60 °C
Ingress protection:	IP66/67M

(*) different value available at request



Main features and benefits of UCR construction:



Extremely reduced dimensions.



High efficiency and low friction ensuring a long life without maintenance.



Perfect weights balance due to the symmetry respect valve spin axis, that means greater facility of assembly/disassembly with valve at site without special equipment to balance the eccentric load.



Totally enclosed design for corrosion protection of internals and optimum resistance to dust and water.



Simple construction with reduction of parts and consequent reduction in weight.



Reduction of hydraulic/pneumatic supply consumption.



UCR actuator also allow to reduce the fluid displacement improving operating time, and reducing hydraulic power unit components size.

Flexible customized design according to installation site limitations.



Gas Over Oil Actuators

GOORSO/GOORCO series
GOOHD series

GOO Actuators are supplied as standard with two gas/hydraulic tanks and an **AISI 316** closed cabinet with control system inside and a hydraulic handpump for emergency control.

Available for different type of control due to **highly flexible gas manifold design**, it can be equipped with pneumatic or electronic line-break for emergency closure in case of pipeline pressure drop. The gas manifold is protected inside stainless steel cabinet and it is available an emergency manual override with hydraulic local handpump. Alloy steel end travel stops for an accurate angular stroke adjustment.



TECHNICAL SPECIFICATIONS

Type of actuator:	Scotch yoke quarter turn or linear heavy duty
Available configuration:	Single or double acting
Construction material:	Carbon steel
Cylinder material:	Chromium plated carbon steel
Piston material:	Nickel plated carbon steel
Sliding block (where applicable):	Bronze/Aluminium
Bushing material (where applicable):	Synthesized PTFE
Supply pressure:	105 barg design (*)
Actuator output:	Up to 1500000 Nm/3000000 N
Standard operating temperature:	-20 °C to 85 °C
Low temperature execution:	up to -60 °C
Ingress protection:	IP66/67M
Design in accordance to:	EN 15714 API 6DX ISO 12490

(*) different value available at request



Direct Gas Actuators

RSO/RCO series
HD series

Direct Gas Actuators are supplied as standard with an **AISI 316** closed cabinet with control system inside and a hydraulic handpump for emergency control.

Available for different type of control due to **highly flexible gas manifold design**, it can be equipped with pneumatic or electronic line-break for emergency closure in case of pipeline pressure drop. The gas manifold is protected inside stainless steel cabinet and it is available an emergency manual override with hydraulic local handpump. Alloy steel end travel stops for an accurate angular stroke adjustment.



The control system is custom made and the most common applications are as follow:

- ON-OFF** Local & Remote operation
- ESD** Local & Remote operation with ESD system for fail safe stroke
- LBV** Local & Remote operation with electronic linebrak detection system
Local & Remote operation with pneumatic or hydraulic linebreak detection system
Local & Remote operation with High/Low pressure detection system

Electro-Hydraulic Actuators

Single and double acting
RSO(M)/RCO(M) and H series

Electro Hydraulic Actuators are the best solution to reduce plant installation costs, where compressed air is not available or it is not a practical solution, and to allow operation in remote or unmanned locations.

Available for different type of control due to **highly flexible gas manifold design**, it can be equipped with pneumatic or electronic line-break for emergency closure in case of pipeline pressure drop. The gas manifold is protected inside stainless steel cabinet and it is available an emergency manual override with hydraulic local handpump. Alloy steel end travel stops for an accurate angular stroke adjustment

Main features and benefits of EH actuators:

- Design of electrohydraulic system is extremely flexible and can be adapted to suit many different application or plant requirement, providing a highly customized product in various configuration.
- Reduction of cost for installation and maintenance providing a simple and reliable system.
- Increased safety with automatic fail safe position in case of electric power failure.
- High level of reliability due to continuous monitoring of working status.
- Compact execution with reduction of dimensions and weight due to the availability of high pressure hydraulic medium for actuator operation, with possibility of providing a totally sealed system with corrosion protection of internal components for installation in harsh environmental or application of fireproof protections.
- Hydraulic energy stored in high pressure compact accumulators, available at any time under all circumstances.
- No discharge of gas in the atmosphere



TECHNICAL SPECIFICATIONS

Type of actuator:	Scotch yoke quarter turn or linear heavy duty
Available configuration:	Single or double acting
Construction material:	Carbon steel
Cylinder material:	Chromium plated carbon steel
Piston material:	Nickel plated carbon steel
Sliding block (where applicable):	Bronze/Aluminium
Bushing material (where applicable):	Synthesized PTFE
Supply pressure:	According to project requirements
Actuator output:	Up to 1500000 Nm/3000000 N
Standard operating temperature:	-20 °C to 85 °C
Low temperature execution:	up to -60 °C
Ingress protection:	IP66/67M
Design in accordance to:	EN 15714 - API 6DX - ISO 12490

(*) different value available at request



Self Contained Unit

Single and double acting
RSO(M)/RCO(M) and H series

Self Contained Unit system provides a dependable zero emission solution when external supply is not available or simply not reliable. The main part consists of a standard hydraulic actuator, refer to RSO or H series.



Main features and benefits of self contained unit:

- This unit is supplied with a control manifold that provides a one-way local control by means of a local hand pump
- Use of external tubing is reduced minimizing the potential leakage
- Filtered hydraulic system, the unit is equipped with a suction filter on the handpump to prevent any oil contamination
- Integrated pressure pilot to reduce the need of external tubing connection
- Local manual override for a quick shutdown
- Different ways to trip the valve - typically pressure switch that detect pressure fluctuation inside the piping

Actuators for Antisurge Valves

Single and double acting

Centrifugal compressors need control and protection systems to prevent surge during operation. Surge can have destructive behaviour and it occurs when the compressor operating point reaches the surge limit line.

The usual method of preventing this condition is to include in the discharge line a control valve, along with appropriate instrumentation, to recycle the gas to the compressor suction line.

This valve ensures there is always an adequate minimum flow through the compressor, by venting gas from the discharge line in those instances when there is very little demand from the downstream process, to maintain operation above the surge point. The valve opens automatically when the compressed air pressure in the pneumatic system exceeds the allowable level and it is responsible for the safe use of the compressor and its correct functioning.

The load changes can happen very quickly so the anti-surge instrumentation and valves must have a fast response. Time to travel from the fully closed to the fully open position will vary with the valve rated travel but, typically it could be required to open in less than 2 seconds or even less, like 0.2 seconds. Just as important as the valve's fast opening is the capability of the valve and its associated instrumentation to react rapidly to small transient fluctuations in flow and pressure.

For this reason, the actuators that drive these valves have to be very fast and very precise the control, without overshoots and errors.

Main features of Servovalve Antisurge actuators:

Servovalve actuators provides a fast, accurate response to the compressor control command, offering you an optimal control over your entire compressor system. Our actuator responds quickly and accurately to ensure that when you need it, there is perfect flow through the valve. Thanks to our special piston design, actuator grants smooth and precise valve operation with little or no need for maintenance throughout its operating life. With the ability to manage high dynamic forces, the actuator is ideal for tough jobs like turbine bypass, desuperheaters, compressors and more.

The fast stroking time and precise control are achievable thanks to Servovalve accessories specially developed to ensure high CV and a fast response (refer to the previous section related to special accessories).

- Fast emergency stroking time
- Very precise and fast control operations
- Demanding test
- Special high flow devices



Special Accessories

Over the years **Servovalve** has specifically developed special accessories to be able to meet the increasingly demanding requests of the market. These include fast acting and precise controls.

The accessories needed to achieve these tasks were not available on the market and therefore the need to develop new accessories by ourselves was born.



VOLUME BOOSTER

Servovalve volume boosters are designed to guarantee a very high flow rate keeping a very fast response to the positioner input.

The main features are:

- SIL certification
- Aluminium or total AISI 316 construction
- Available size: 1" or 2"
- Special mounting connection that allows the booster and the pilot valve to be packed together and mounted on the actuator without using tubes or fittings.



3/2 PILOT VALVE

Servovalve pilot valves are designed to guarantee a huge flow rate allowing the cylinder to be very fast.

The main features are:

- SIL certification
- Aluminium or total AISI 316 construction
- Available with 1" or 2" size
- Special mounting connection that allows the booster and the pilot valve to be packed together and mounted on the actuator without using tubes or fittings



INTEGRATED QUICK EXHAUST VALVE

Totally made in AISI 316, these huge quick exhaust valve allows a flow rate that normal QEV or pilot valves cannot guarantee. It can be fitted both on linear or quarter turn pneumatic actuators.

The main features are:

- Integrated system that allows to regulate the stroking time
- Pneumatic damper included in order to not overstress the valve stem, seats and seals
- SIL 3 certified



SERVOLOCK

Servovalve designed a declutchable mechanical blocking device that allows, once engaged, a partial stroke test of the valve and actuator.

This mechanical system is located between the valve and the actuator and consists of a steel self-contained unit. This means that it does not stress the valve stem nor the actuator components.

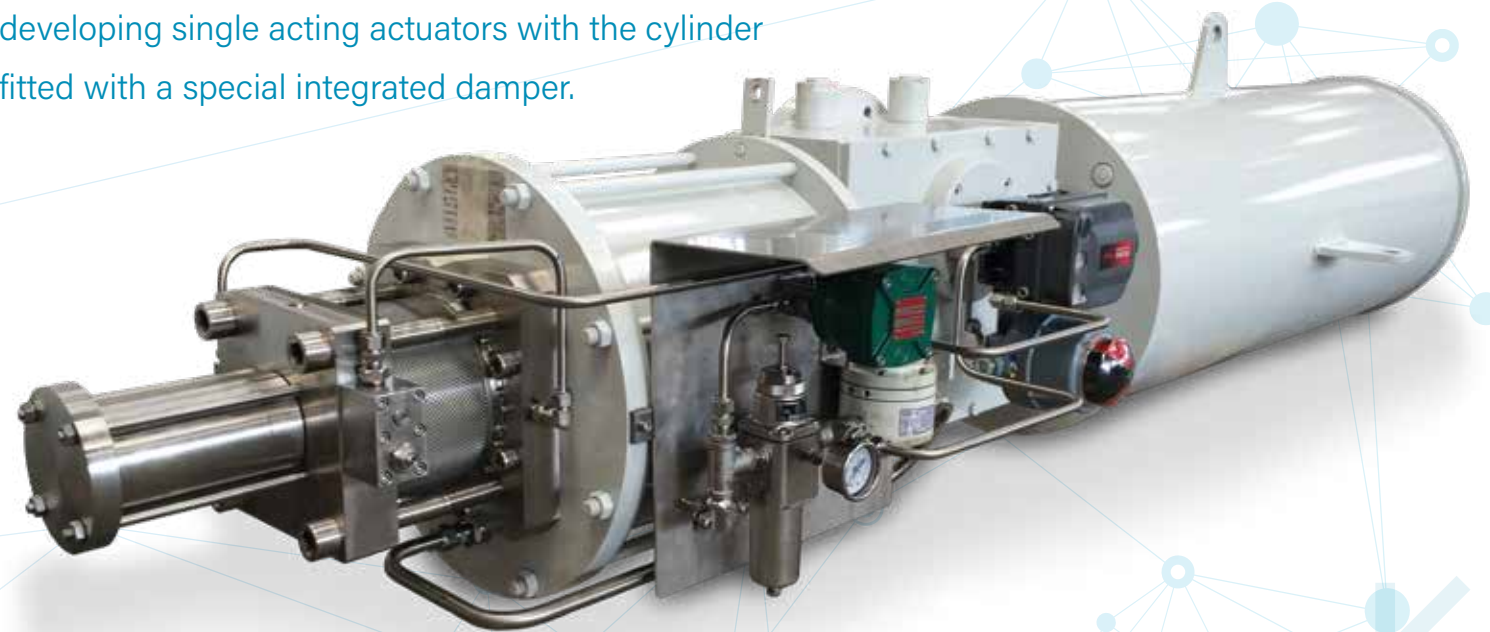
During the normal operation the device is passive and not engaged allowing the valve to be closed on demand. When engaged the partial stroke test can be performed and the valve will only travel to the specific percentage of stroke. It is padlockable, to avoid any tampering, and it can be fitted with a limit switch to signal that the system is engaged and ready to block the valve.

It is available, as standard, in painted carbon steel but can be designed in AISI 316 as option.

Ultra Fast Actuators

Single acting

Servovalve designed an ultra fast application developing single acting actuators with the cylinder fitted with a special integrated damper.



This consists in a **2-way 2-position pilot valve** (for the pneumatic case refer to the special accessories page) with a very high flow rate, complete with an integral damper acting on the end of the actuator stroke, in order to preserve valve shaft and seating elements.

This discharge valve typically starts damping at 80% of the stroke (this value can be changed according to customer needs) and its effect can be regulated in order to adjust the stroking speed.

In the hydraulic case, it is possible to fit the actuator with a local oil tank to collect the oil discharged very fast and allow its slow return in the HPU tank with smaller tubes.



AISI 316

Self Contained Unit system provides a dependable zero emission solution when external supply is not available or simply not reliable. The main part consists of a standard hydraulic actuator, refer to RSO or H series.



Main features:

Corrosion is one of the most common factors that contributes to equipment failure and it is a threat to plant operation, profitability and safety. Servovalve is a manufacturer highly specialized in custom executions and always available to meet different customer requirements in terms of application, material and performances.

For this reason, we included in our production range actuators in AISI 316 stainless steel, which perfectly suit challenging applications in aggressive conditions. This is currently the best available response to highly corrosive environments.

Different solutions are already available:

- AISI 316 mountings
- AISI 316 cylinder or tie rods
- AISI 316 construction, applicable to every Servovalve actuators



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