

# Pneumatic Actuators

Crafted without compromise, to make your life easier



The Leader in Actuator Technology



## Q Series

### Rack & Gear®

actuators to 21,000 in-lb (2,373 Nm)

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## F Series

### Flat Yoke®

actuators to 500,000 in-lb (56,500 Nm)

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## L Series

actuators to 46,000 lbf (204,618 N)

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## Accessories

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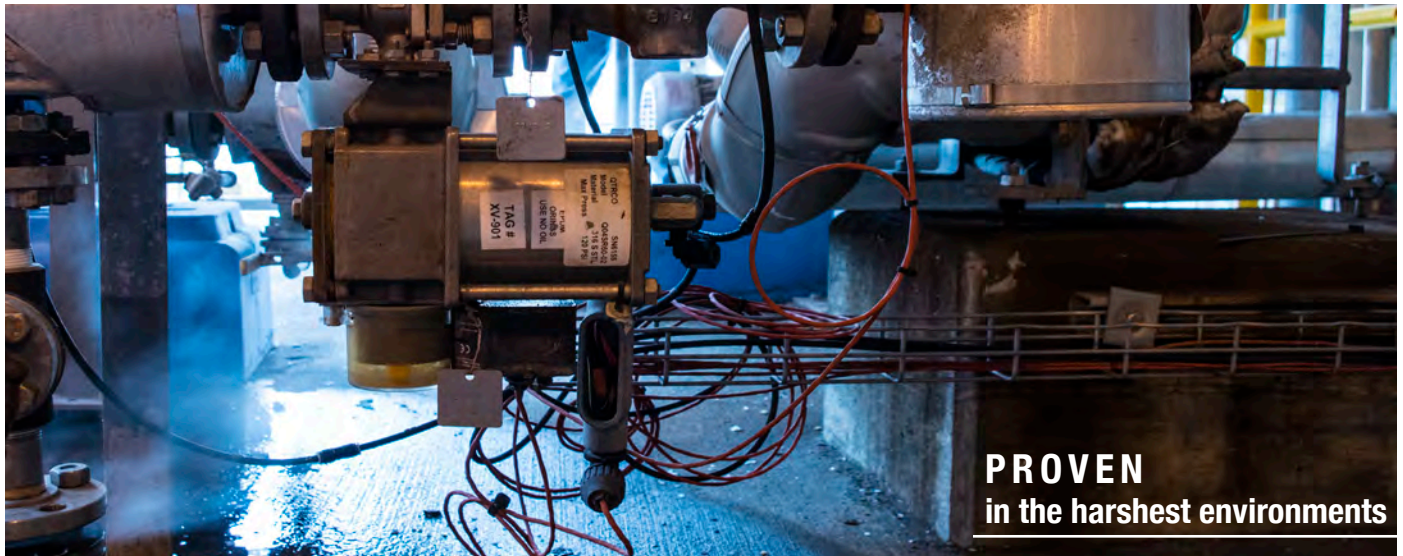


## Performance Warranty:

QTRCO will during the period of 3 years from the date of original invoice, repair or replace (at QTRCO's sole option) any QTRCO actuator that fails in service regardless of the number of cycles, provided always that the actuator was installed correctly, properly maintained/serviced and applied as per the original user application specifications. The actuator must be returned to QTRCO within the 3 year warranty period at the sender's cost. The warranty does not apply to any freight or other charges.







**PROVEN**  
in the harshest environments

## 1. Materials of Construction

QTRCO actuators are offered in all stainless steel and in ductile iron housings with appropriate ductile, steel or stainless internal components.

## 2. An Engineered Difference

QTRCO designs lead the industry with regard to technology. We did not set out to mimic others or to design the cheapest possible actuator, rather our intent from day one was to provide solutions to everyday problems such as basic actuator performance or handling extreme service applications.

- Cylinders are offset to eliminate life shortening cantilever forces and friction.
- Low friction, roller supported rack and gears hold racks in place while extending life and enabling extreme operating speeds.
- Identical Top and bottom mounting geometries enable action reversal by simply turning the actuator topside down.

## 3. Inherent Safety Features

Partial stroke testing, valve safety margin monitoring, built-in lock outs, manual jack screw or hydraulic overrides, captured springs, safe in-situ replacement of contaminant damaged seals.

Please refer to our website for further details: [www.qtrco.com](http://www.qtrco.com)



*We have approximately 1,000 actuators installed on seven vessels with the earliest put into service in 2001. It is still true that there has never been a reported failure.*

*I have asked our maintenance and field personnel on each vessel about the actuators and have never received a negative comment.*

—  
**Scott Lambert,**  
Group Leader  
Stimulation Mechanical Engineering  
**BAKER HUGHES**

*"This actuator and over sixty other QTRCO actuators in the Baytown facility have served with zero failures during the 10 year time period they have been in use"*

—  
**Shane Miller,**  
Group Leader  
Stimulation Mechanical Engineering  
**PURE SALT BAYTOWN, LLC**

# Q Series

## RACK & GEAR®

### TEMPERATURES

from -76°F to +450°F  
(-60°C to +232°C)

### 90° ROTATION

(±5° at each end of travel)

### DOUBLE ACTING & SPRING RETURN

Torques to 21,000 in-lb (2,373 Nm)

### OPERATING PRESSURE

Pressure to 175 psig (12 bar)

### CONSTRUCTION:

Stainless Steel or Ductile Iron



### PATENTED RACK & GEAR® MECHANISM

Offset cylinders align the piston axis with the pinion gear pitch circle diameter, eliminating the cantilever forces inherent in rack and pinion type actuators. Low friction rollers maintain correct engagement of the stainless steel gearing for absolutely exceptional cycle life.

The reduced friction enables outstanding throttling control as demonstrated in numerous 'typical diaphragm actuator' applications where corrosion or high vibration dictated a better solution.

### BI-DIRECTIONAL TRAVEL STOPS

Q Series actuators feature bi-directional travel stops which allow a minimum of 5 degrees of over travel in each direction. The stops act on the piston motion and impart no side loading on the shaft.

### NON-PRESSURIZED SHAFT SEALS CANNOT FAIL

Q Series spring return actuators apply no pressure to the shaft seals, eliminating a common cause of rack & pinion actuator failure.

### An excellent substitute for diaphragm actuators

- Vibration & Corrosion Proof
- Proven Throttling Capabilities
- Compact Size
- Zero Side Loading of Valve Stem
- Low Fill Volume



# F Series

## FLAT YOKE®

### TEMPERATURES

from -76°F to +450°F  
(-60°C to +232°C)

### 90° ROTATION

(±5° at each end of travel)

### DOUBLE ACTING & SPRING RETURN

Torques to 500,000 in-lb (56,492 Nm)

### OPERATING PRESSURE

Pressure to 150 psig (10.3 bar)

### CONSTRUCTION:

Stainless Steel or Ductile Iron



### **PATENTED** FLAT YOKE® MECHANISM WITH QUAD BODY SLOTS

A unique slotted body concept absorbs 100% of the yoke mechanism's side loading forces leaving the piston rod completely free of bending stresses while allowing termination of the rod at the yoke, and the addition of a weight and force balancing second force module diagonally offset from the first. The balanced weight makes lifting and handling of the actuators safer and easier, while reducing valve neck stress caused by unbalanced scotch yoke actuators. Internally, the balanced forces assure less friction loss and less wear as there is no net force applied to the shaft bushings.

### HIGHER TORQUES

By incorporating the patented Flat Yoke® actuator mechanism, higher torque outputs are offered in a weight and force balanced design.

### INHERENTLY CANTED YOKE

The longer yoke arms of the Flat Yoke® actuator design allow the advantageous canted yoke torque curve simply by choosing a different travel stop setting. This provides substantially more spring end torque without having to purchase a special actuator. As standard, Flat Yoke® actuator travel stops are set to provide a 5 degree canted effect.

### A proven upgrade to the ordinary scotch yoke actuator

- Balanced Weight Distribution
- Captured Springs
- Convenient Action Reversal





# L Series

## LINEAR®

### TEMPERATURES

from -76°F to 500°F  
(-60°C to 260°C)

### STROKE

up to 4" (102 mm)  
Extended travel lengths available

### DOUBLE ACTING & SPRING RETURN

Thrust to 46,000 lbf (204,618 N)

### OPERATING PRESSURE

Pressure to 150 psig (10.3 bar)

### CONSTRUCTION:

Stainless Steel or Ductile Iron

## True Spring Return

### LINEAR ACTUATION

QTRCO linear actuators provide a safe, long lasting, alternative for diaphragm actuators in a smaller package.

As much as **50%**  
smaller than spring &  
Diaphragm actuators



### SUPERIOR CONTROL CAPABILITY

- Minimal friction by design
- Exceptional linearity
- Excellent frequency response
- Meets Entech Control Valve Dynamic Specification

### PLATFORM FLEXIBILITY

Easily adapts to globe, gate, diaphragm or any other type of linear valve. Readily accepts actuator mounted accessories such as positioners, volume boosters, switches, etc.

### LONG SERVICE LIFE

- Robust design
- Premium materials of construction
- Non-Proprietary Seals

### SAFETY & EASE OF MAINTENANCE

Never Compromising Safety - Captured springs safely provide access for on-the-valve replacement of contaminant damaged piston seals.

SPOOL BRACKET,  
CAST YOKE, OR BARE STEM



## Accessories that complete the assembly...

### JACKSCREW MANUAL OVERRIDE

The jackscrew is a simple low cost manual override.

### NAMUR ACCESSORY MOUNTING

Full NAMUR accessory mounting capability is retained as shown here with the QTRCO produced NAMUR cast bracket.

### TMLO LOCK OUT - TAG OUT (Q SERIES)

Whether double acting or spring return, the Q series actuators can be locked in the open or closed position, as specified using this simple but effective top mounted lock out (TMLO). Incorporating a simple lock out - tag out device for multiple padlocks enables confirmation that all workers have completed their tasks and are out of harms way before the actuator is once again able to cause valve motion. Padlocks may be used to secure the slide in the engaged or disengaged position to prevent unauthorized use.



UNIVERSAL  
MOUNTING PLATES



NAMUR  
BRACKETS



LOCK OUTS

## Safety Margin Monitoring

*Finally, an effective replacement for partial stroke testing*

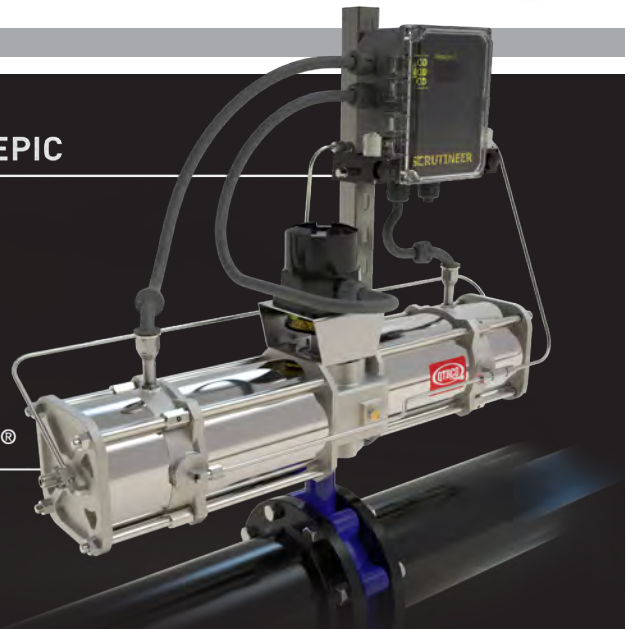
- The next generation of plant safety enhancement
- Zero spurious trips, zero false positives
- Meaningful, easily understood diagnostics, including the ability to observe the Safety Margin trend over multiple tests
- Applicable for 'Break to Close' or full cycle testing
- Assures emergency shutdown valve closure should an event occur during testing

## QTRCO + Westlock Technology

have achieved all of the features and benefits that Partial Stroke Testing was intended to provide, but without the disappointing realities.

Digital EPIC

XRCISER®



**SCRUTINEER**  
Safety Margin Monitor





## AMAZINGLY RELIABLE

Based on patented low friction designs, our actuators were introduced to the market in 1998. Since then hundreds of users have found them to outperform and outlast competitors actuators.

One user has over 1,000 double acting Rack & Gear® actuators installed as long as eighteen years in a challenging offshore application with no failures to date. Another with over 300 installed spring return actuators—many from 1999—jokes that, “we’ll get one to fail someday;” and still another chose our Rack & Gear® actuators to replace corroding rack & pinion actuators back in the year 2000. All three continue to specify QTRCO Rack & Gear® actuators for their applications based on the actuator performance record as well as the exceptional response of our organization.



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