UniTorq
Actuators & Controls

# UniTorq Scotch Yoke

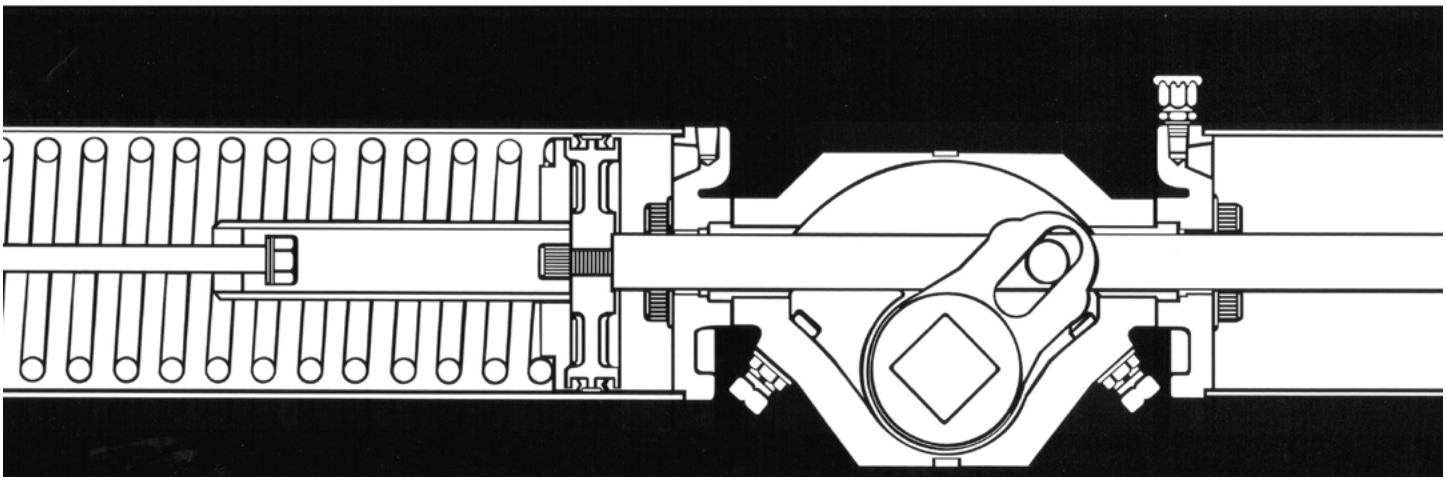
UniTorq Scotch Yoke actuators are rugged, versatile units which provide a reliable method of opening and closing rotary valves. These actuators utilize the efficient scotch yoke mechanism to transform linear movement of the piston into a 90 degree rotating movement for optimum break and run torque. Configurations are available for installation on 1/4 turn valves and are designed for use over a wide range of pressures and temperatures.

Double acting actuators require pressure to rotate the valve in either direction. Spring return actuators require pressure to rotate the valve in one direction only and can be easily installed to open or close the valve on loss of air pressure. Both double acting and spring return actuators are available with either one cylinder or with two cylinders for higher torque.

Scotch Yoke actuator packages are available with a full line of accessories and options including position indicating switches, solenoids, supply pressure regulators, and positioners.

### *Features*

- **Rugged Construction:** The two-piece cast housings provide protection and stability. High-grade alloy materials are used in all motion transfer components for precise and smooth operation at the full rated torque output. The actuators will with stand vibrations of most plant environments.
- **Longer Service Life:** The rugged, self-enclosed construction, output shaft bearings, Amalgon® cylinders or Xylan™ coated steel cylinder bore to help provide longer life.
- **Seismic Qualification:** Actuators have been seismically qualified for nuclear applications.
- **Ease of Installation:** The Scotch Yoke actuator package minimizes on-site and in-shop engineering and installation operations. No special mounting or assembly techniques are required.



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# Specifications

**Material Temperature Capabilities:**
Standard: -20° to +200° F (-29° to +93° C)
Optional: 0° to +350° F (-18° to +177 C)

**Maximum Valve Shaft Rotation**
100 degree maximum actuator rotation can be limited with independent, externally adjustable travel stops. Travel stops are of sufficient size to absorb maximum torque output

**Standard Construction Materials**

| | |
|---|---|
| **Body:** | Ductile iron |
| **Cylinder:** | Carbon Steel |
| | Stainless Steel |
| | Amalgon |
| **Piston:** | Ductile iron |
| **Seals:** | |
| *Standard:* | Nitrile |
| *High Temp:* | Fluorocarbon |
| *Nuclear:* | EPA (ethylene propylene rubber) |

**Manual Override Options:**
Hydraulic and Jackscrew available upon request.

**Stroking Time:**
Dependent on actuator size, rotation, and position if used. If stroking time is critical, consult your UniTorq sales representative.

**Accessories:**

**Limit Switches:**
Mechanical proximity SPDT and DPDT position indicators.

**Solenoid Valves:**
Pneumatic solenoid and pilot valves are available for standard and fail-safe configurations of double acting and spring return actuators.

**Positioners:**
Pneumatic, Electro-Pneumatic and Smart Digital positioners offer consistent, reliable performance.

**Manual Gear Overrides:**
Available to provide manual control of the valve when air supply or power to a pneumatic actuator is lost.

**Rack and Pinion/Electric Actuators and Accessories:**
Pneumatic actuators, quarter-turn and multi-turn electric actuators are available to meet a wide range of torque requirements.

## Scotch Yoke Legend

| Actuator Size | Pressure Cylinder Quantity | Spring Rating | Seal Material | Special Requirements |
|---|---|---|---|---|
| • 37<br>• 44<br>• 56<br>• 71<br>• 91 | • 1<br>• 2 | • 000=NONE<br>• 040=40 PSIG<br>• 060=60 PSIG<br>• 080=80 PSIG<br>• 100=100 PSIG<br>• 125=125 PSIG<br>• 150=150 PSIG<br>• 200=200 PSIG | • 1=NITRILE<br>• 2=VITON<br>• 3=EPR<br>• 4=LOW TEMP NITRILE | • 00=NONE<br>• 01=SPECIAL PRESSURE PORTS 1/2" NPT<br>• 02=SPECIAL PRESSURE PORTS 3/4" NPT<br>• 03=SPECIAL PRESSURE PORTS 1" NPT<br>• 04=REFER TO SERIAL # |

| 37 | 05 | 1 | SR | 000 | O | 1 | 0 | 00 | C |
|---|---|---|---|---|---|---|---|---|---|

| Pressure Cylinder Diameter (Inches) | Actuator Opening | Failure Mode | Override Type | Cylinder Material |
|---|---|---|---|---|
| • 05<br>• 06<br>• 07<br>• 08<br>• 10<br>• 12<br>• 17<br>• 20 | • SR=SPRING RETURN<br>• DA=DOUBLE ACTING | • O=SPRING RETURN FAIL OPEN<br>• C=SPRING RETURN FAIL CLOSED<br>• D=DOUBLE ACTING FAIL LAST | • 0=NONE<br>• 2=20" HANDWHEEL<br>• 3=30"HANDWHEEL<br>• H=HYDRAULIC<br>• J=JACKSCREW | • C=CARBON STEEL WITH XYLAN<br>• S=STAINLESS STEEL<br>• A=AMALGON<br>• E=CARBON STEEL E.N.P |

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