

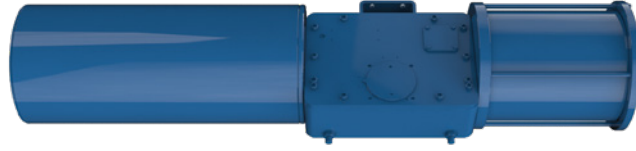
GS Series LEDEEN Actuators

Pneumatic and hydraulic actuators

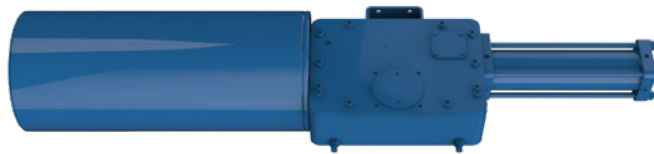
GS Series Pneumatic and Hydraulic LEDEEN Actuators

Typical application

For on-off or modulating control of any quarter-turn operated valve



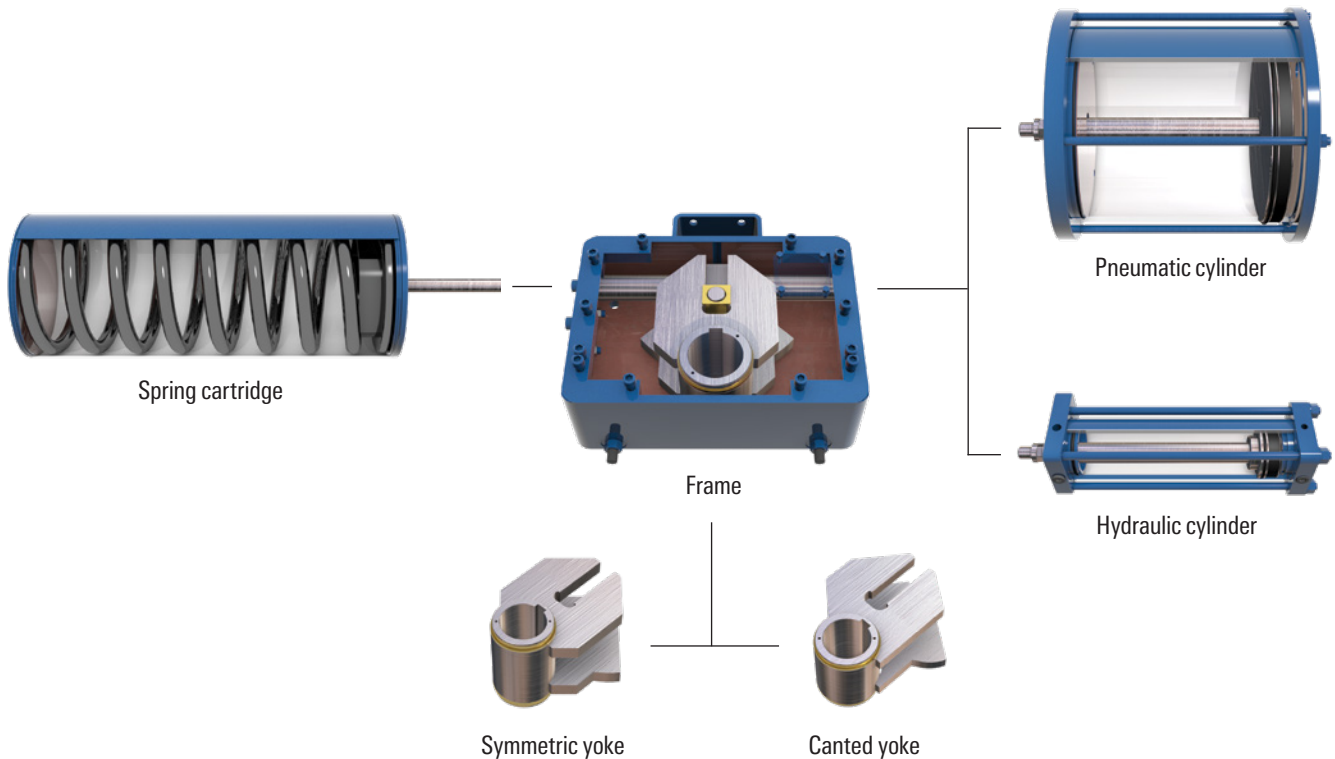
Pneumatic quarter-turn actuator.



Hydraulic quarter-turn actuator.

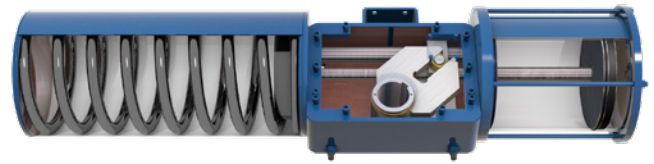
Modular assembly

GS series LEDEEN* actuators provide increased flexibility through consistent engineering design and efficient modularity. Double-acting, single cylinder, or dual cylinder are combinations readily available to meet specific pipeline application requirements.

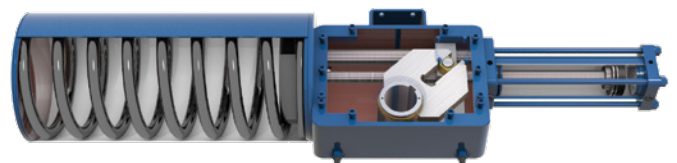


Standard Features

- Availability as double-acting or spring-return
- Torque outputs to 57,360 lbf.in [6,480 N.m]
- Open and close travel stops that provide $\pm 3^\circ$ minimum
- Scotch yoke mechanism that generates powerful opening and closing torque outputs
- Steel-fabricated frame that provides rugged foundation of modular assemblies
- Chrome-plated side-load bar with guide block for effective elimination of piston rod deflection
- Bronze bushing interfaces that provide low-friction support of sliding and rotating components
- Aluminum bronze sliding blocks for a low-friction, low-stress pin connection
- Steel cylinder assembly that provides robust pressure containment for all conditions
- Plated cylinder ID to ensure sealing surface with excellent corrosion resistance
- Nitrile rubber piston seal configurations designed specifically for pneumatic and hydraulic applications
- Composite guide band on piston to provide low-friction guidance and support
- Steel spring cartridge fully enclosed from environmental conditions
- Seal-welded design construction that provides maximum personnel safety
- Epoxy-coated prestressed springs that provide consistent performance with corrosion protection



Pneumatic spring-return actuator.



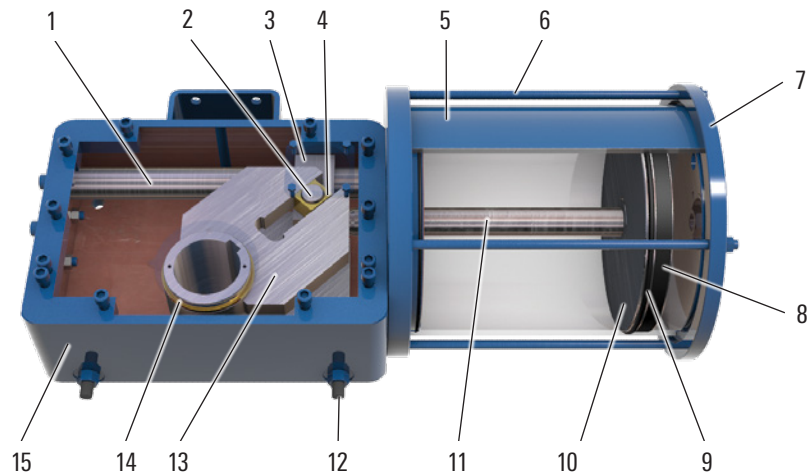
Hydraulic spring-return actuator.

Standard Product Characteristics

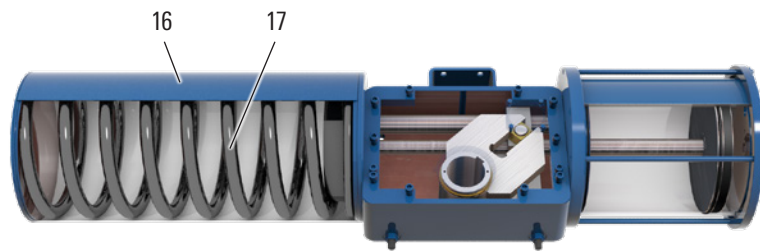
| Actuator Type | Temperature Range, degF [degC] | Gauge Pressure Range, psi [bar] |
|---------------|-------------------------------------|---------------------------------|
| Pneumatic | -20 to 176 [-29 to 80] [†] | 40 to 175 [3 to 12] |
| Hydraulic | | 145 to 3,000 [10 to 202] |

[†]Lower-temperature material available upon request

Pneumatic Actuator Standard Construction



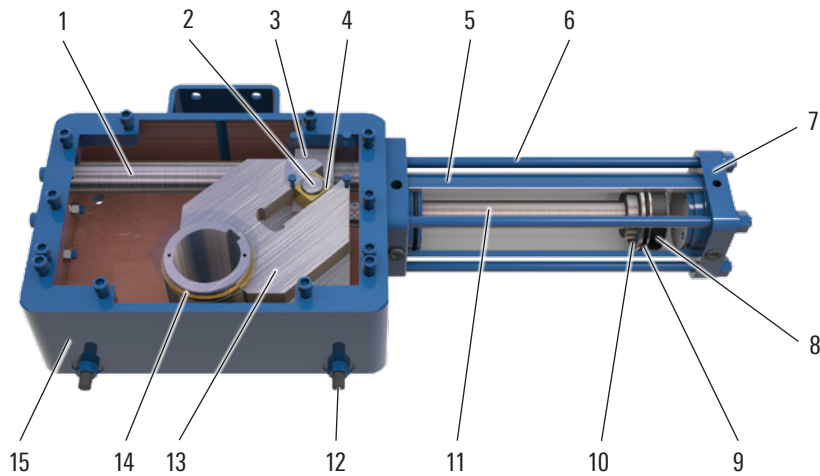
Pneumatic double-acting actuator.



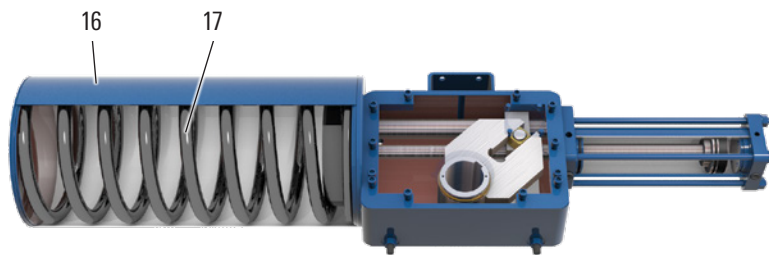
Pneumatic spring-return actuator.

| Item | Description | Material |
|------|------------------|-------------------------------|
| 1 | Guide bar | Alloy steel and chrome plated |
| 2 | Pin | Alloy steel |
| 3 | Guide block | Carbon steel |
| 4 | Sliding block | Aluminum bronze |
| 5 | Cylinder | Carbon steel |
| 6 | Tie rod | Alloy steel |
| 7 | Flange | Carbon steel |
| 8 | Guide band | Teflon® and graphite |
| 9 | Seal | Nitrile rubber O-ring |
| 10 | Piston | Carbon steel |
| 11 | Piston rod | Alloy steel |
| 12 | Travel stop | Alloy steel |
| 13 | Scotch yoke | Alloy steel |
| 14 | Bushing | Bronze |
| 15 | Frame | Carbon steel |
| 16 | Spring cartridge | Carbon steel |
| 17 | Spring | Alloy steel |

Hydraulic Actuator Standard Construction



Hydraulic double-acting actuator.

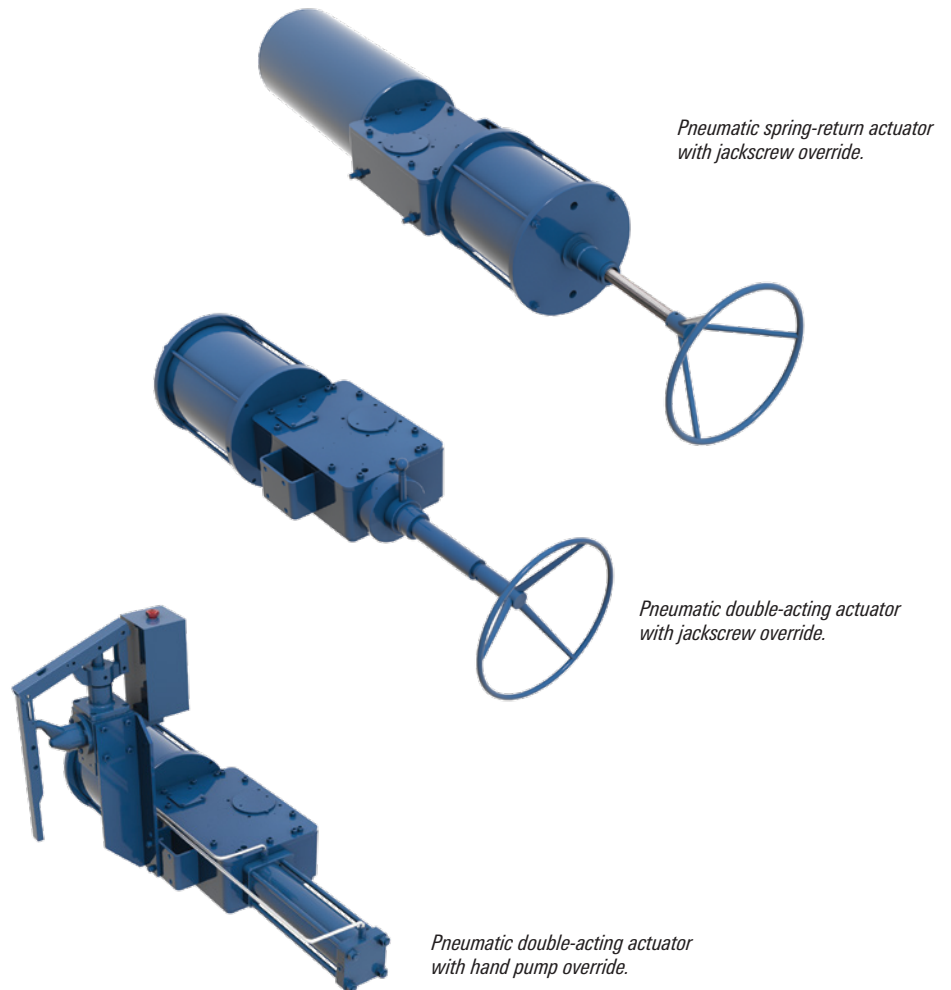


Hydraulic spring-return actuator.

| Item | Description | Material |
|------|------------------|-------------------------------|
| 1 | Guide bar | Alloy steel and chrome plated |
| 2 | Pin | Alloy steel |
| 3 | Guide block | Carbon steel |
| 4 | Sliding block | Aluminum bronze |
| 5 | Cylinder | Carbon steel |
| 6 | Tie rod | Alloy steel |
| 7 | Flange | Carbon steel |
| 8 | Guide band | Teflon and graphite |
| 9 | Seal | Nitrile rubber quad ring |
| 10 | Piston | Carbon steel |
| 11 | Piston rod | Alloy steel |
| 12 | Travel stop | Alloy steel |
| 13 | Scotch yoke | Alloy steel |
| 14 | Bushing | Bronze |
| 15 | Frame | Carbon steel |
| 16 | Spring cartridge | Carbon steel |
| 17 | Spring | Alloy steel |

Standard Options

- Jackscrew override
- Hand pump override
- Special seals for low-temperature applications to -76 degF [-60 degC] and for high-temperature applications to 392 degF [200 degC]



Certifications

Cameron GS series LEDEEN actuators comply with many industry standards.

- ISO 9001:2000
- PED 97/23/EC
- SI 825
- IEC 61508:2000 (TÜV SIL 3)
- Technical Regulations Customs Union (TR CU)



ISO 9001:2008

ISO 9001:2008 quality management system.



PED 97/23/EC

European PED—Pressure Equipment Directive.



IEC 61508-7:2010

SIL 3 capability.

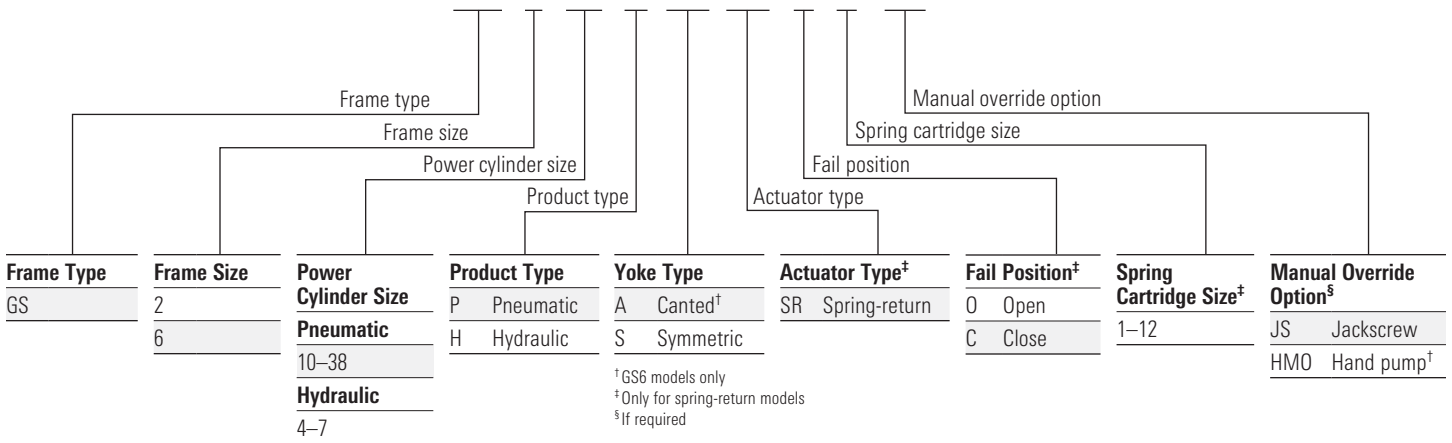
Model Number Designation

Cameron offers customizable actuators from the frame type to the override options. A sample of the actuator selection process is shown below. Starting with frame type, the actuator components needed to fit the customer's requirements are built. An example model number is shown below, which specifically identifies each variable for selection.

GS623P-A-SRC6-JS

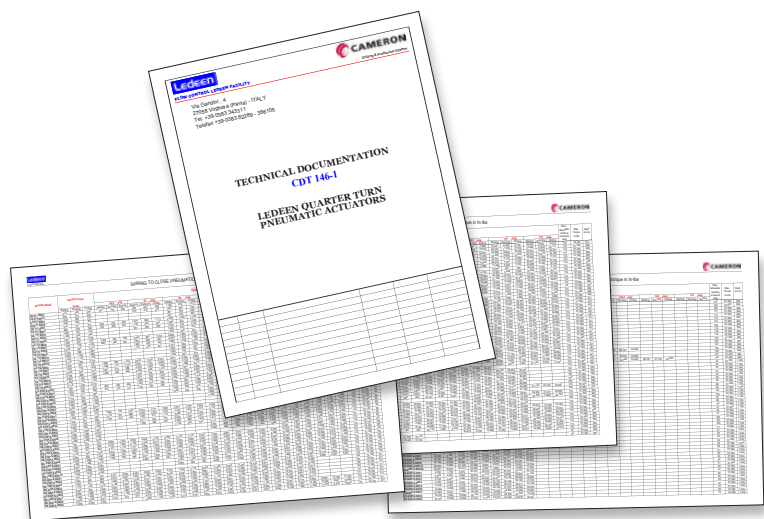
Example

GS 6 23 P - A - SR C 6 - JS

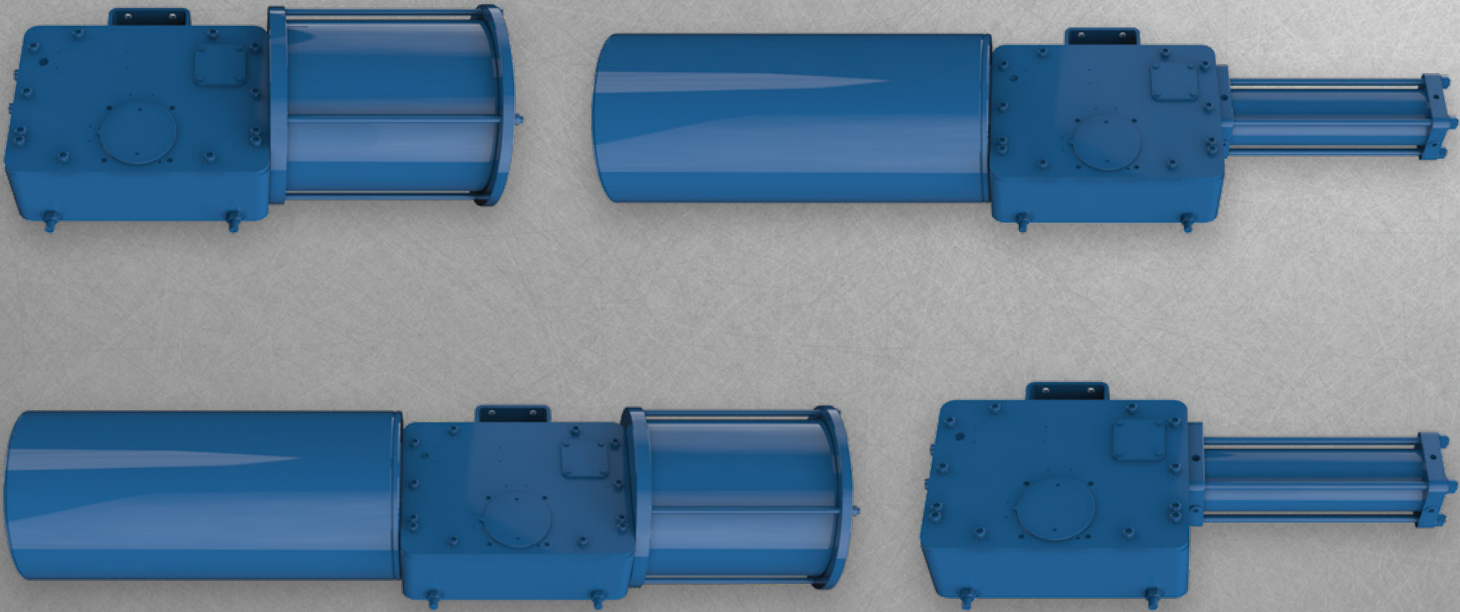


Technical data

For additional technical data such as torque charts or dimensional drawings, refer to the GS series LEDEEN actuators technical data packages or contact Schlumberger.



GS Series LEDEEN Actuators



slb.com/valves

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