

# G-Series Pneumatic and Hydraulic Actuators

## The Latest Generation in Valve Automation Solutions



**BETTIS™**

  
**EMERSON™**  
Process Management



Bettis G-Series  
with Wireless Transmitter

Emerson Process Management – Valve Automation sets the standards for innovation and quality in pneumatic and hydraulic valve automation.

Bettis G-Series actuators are lightweight, efficient and reliable - all in a compact, modular package.

G-Series are available with either symmetric or canted yokes to suit your operating requirements.



Bettis G-Series  
with Topworx Positioner

## Design and Construction

Emerson Process Management- Valve Automation has been the pioneer in valve actuation innovation for more than 55 years. The broad product offering, high quality standards and a proven performance track record, make us the perfect choice for reliable valve automation. A wide range of industries, including the oil and gas, chemical, refining, pulp & paper, water & wastewater, power generation, nuclear and other industries all rely on Emerson's Bettis brand.

G-Series pneumatic and hydraulic actuators provide global customers with the latest in valve actuation design. It is a highly unique and reliable means of operating ball, butterfly or plug valves along with louvers, dampers and other 90 degree rotating mechanisms. G-Series actuators are back by a five-year materials and workmanship warranty, the best in the industry.

### G-SERIES SERIES APPLICATION AND FEATURES

- The actuators are PED 97/23/EC compliant to meet the stringent requirements of pressure mounting vessels.
- G-Series actuators meet both IP66 and IP67M specifications for submergence and high pressure water deluge test. This offers superior water ingress and corrosion protection.
- The actuator has suitability for use within the demanding applications of a SIL environment.
- G-Series is available in both spring-return or double-acting configurations and can operate with either a symmetric or canted yoke.
- G-Series offers multiple configurations, with a modular design that enables safe field maintenance and reduced inventory costs.
- The actuator optimizes the center of gravity location to be lighter and more compact than other actuators of equal torque output – 1/3 lighter and 1/2 smaller.
- G-Series has interchangeable power and spring modules for quick reversal of the fail-safe mode.
- 5-Year Warranty.



## Operating Ranges

G-Series has guaranteed torque outputs for spring-return models in excess of 3,000,000 lb-in (339,000 Nm) and double-acting 12,581 – 6,000,000 lb-in (1420 – 678,000 Nm) .

Operating pressures are:

Pneumatic – 40-220 psig (3-14 Bar)

Hydraulic – to 5,000 psig (345 Bar)

Operating temperatures standard and high cycle (-33 trim) are -20° F to +200° F (-29° C to +93° C).

Optional trims include:

High Temperature (-10 trim) 0° F to +350° F (-18° C to +177° C)

Low Temperature (-11 trim) -40° F to +150° F (-40° C to +66° C)

Non-PED low temperature

Pneumatic: -50° F to +180° F (-46° C to +82° C)

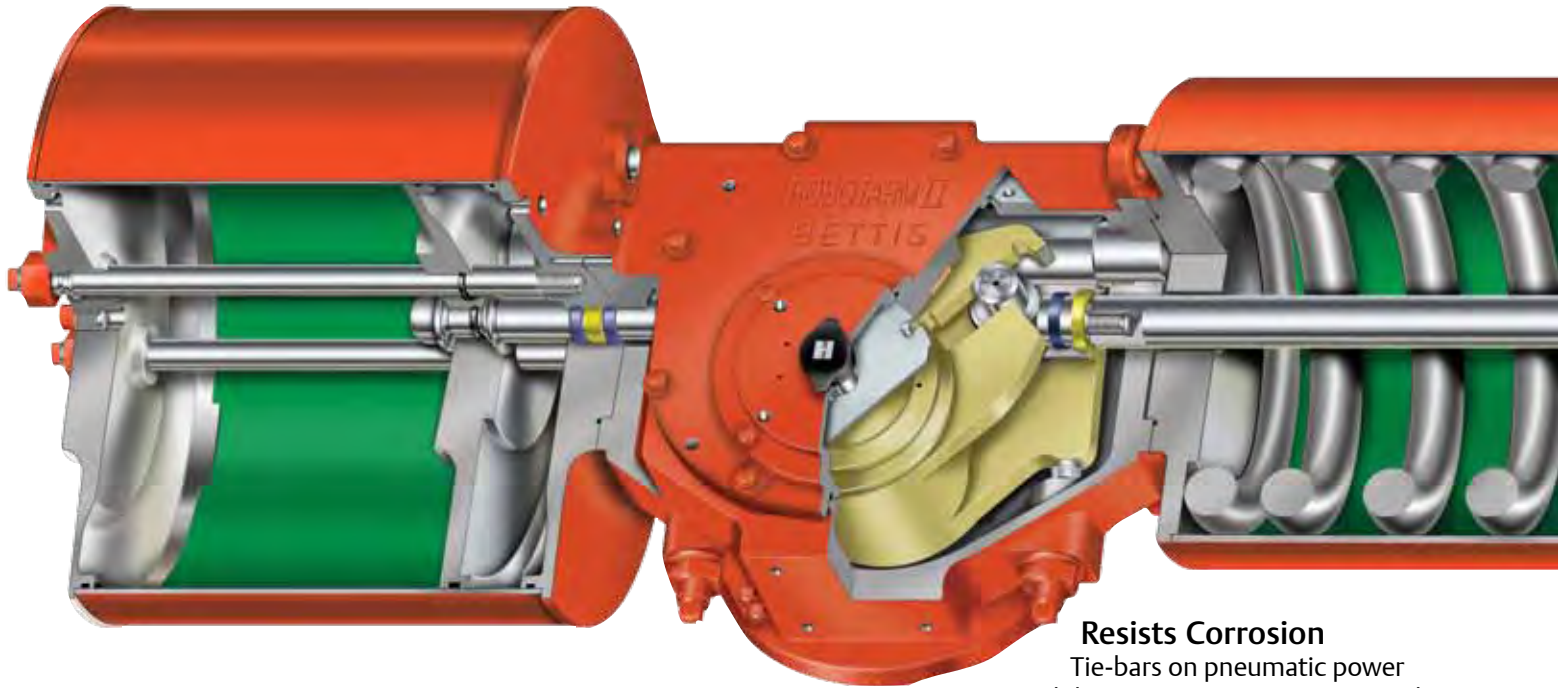
Hydraulic : -50° F to +200° F (-46° C to +93° C)

## Reduces Wear

The Power-Swivel™ piston rod and guide block connection compensates for side load deflection and reduces wear. Seal-lubricating bearings protect sliding and rotating components.

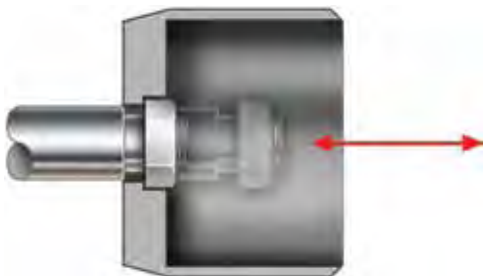


Power-Swivel™



## Promotes Safety

The patented Tension-Lok™ device positively locks the spring module to allow its safe removal and installation, eliminating accidental release of the spring force.



Tension-Lok™

## Resists Corrosion

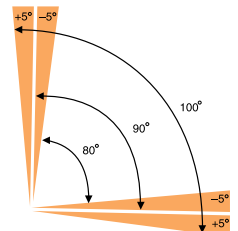
Tie-bars on pneumatic power modules are corrosion resistant, and internal and external surfaces are coated to protect in harsh environments.

## Seals Positively

With dual drive module vent checks, breather seals, total O-ring sealing and no gaskets, the G-Series prevents water ingress and seals out the environment.

## Bi-Directional Travel Stops

Integral bi-directional travel stops, adjustable from 80° to 100° of total valve travel, assist the G-Series in prolonging valve seat integrity.



## Other G-Series Solutions

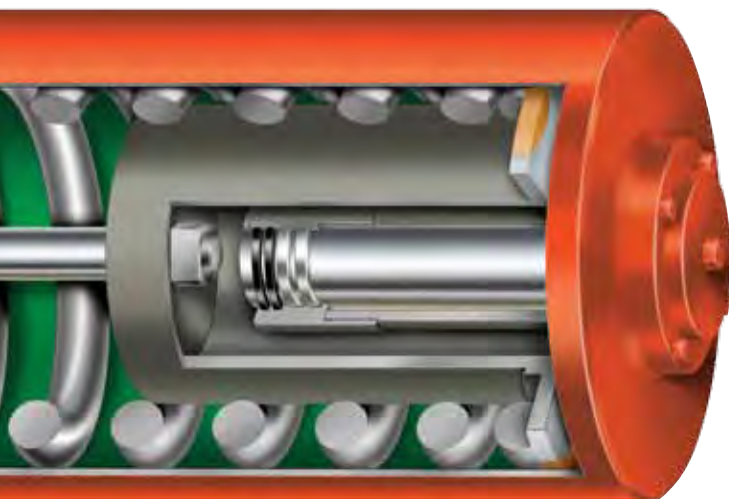
### GS-Series

Bettis actuators have long been a preferred brand for use in marine environments. The GS-Series actuators are well suited for splash zone, riser and other offshore fail-safe applications. They are available with diver or ROV intervention systems.



### NG-Series

Bettis actuators were perhaps the first ever qualified for nuclear service, meeting IEEE 382 standards more than 40 years ago. NG-Series actuators have been independently tested to include LOCA (Loss of Cooling Accident), seismic, and various aging processes required to meet current nuclear qualification criteria.



### GH-Series

The GH-Series actuators provide specialized higher maximum operating pressures (MOP) where required. Available in either canted (model GHC) or symmetric (GH) yoke configurations for spring-return, fail-safe projects. An optional SRO spring is available for higher spring start and end torques.

### Safety Integrity Level (SIL)

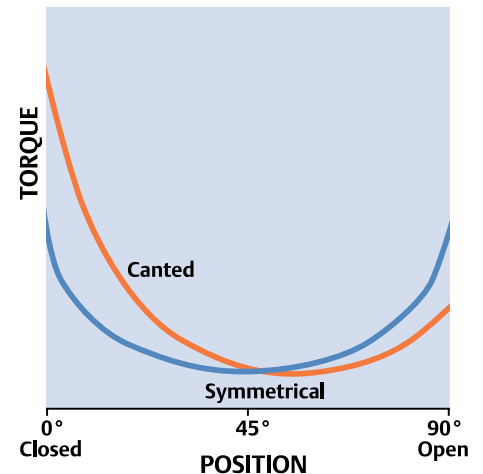
Bettis G-Series actuators are used within demanding SIL applications. They have a Failure Modes and Effects Diagnosis Analysis (FMEDA) report performed by Exica.com for SIL suitability. With the addition of Fisher's TÜV-certified FIELDVUE™ controller, the G-Series can be partial stroke tested and continuously monitored to verify its proper working condition, making it suitable for controlling final control elements in SIL 1,2 or 3 applications.

### Jackscrew is available for the G1, G2, and G3

Bettis offers a variety of mechanical and manual overrides for G-Series models. The M11 hydraulic override can be used with either spring-return pneumatic or hydraulic models. The M3 jackscrew manual override for G1, G2, and G3 models is available with or without handwheel.

### Symmetric or Canted Yokes

Bettis G-Series actuators are available with either symmetric or canted yokes. The traditional symmetric yokes provide efficient operation at both the break and end positions. Canted (or inclined) yokes have a torque advantage in applications where higher break torque is needed to unseat the valve, with less critical needs at the run or full open positions.



Symmetric Yoke



Canted Yoke

### Emerson brands for most common control accessories:

<b>Digital Valve Controllers:</b>	Fisher®
<b>Positioners:</b>	Fisher®
<b>Regulators:</b>	Fisher®
<b>Switch boxes:</b>	TopWorx
<b>Wireless position monitor:</b>	TopWorx
<b>Solenoid valves:</b>	ASCO Numatics™

For more detailed technical information see our online documentation under [www.Bettis.com/technical-data](http://www.Bettis.com/technical-data)

# Options

## Overrides

Bettis offers a variety of mechanical and manual overrides for G-Series models. The M11 hydraulic override can be used with either spring-return pneumatic or hydraulic models. The M3 jackscrew manual override for G1, G2 and G3 models is available with or without handwheel. The G-Ride (shown) is an economical external non-declutchable mechanical override for G4 and G5 spring-return models available with standard hex nut or handwheel.



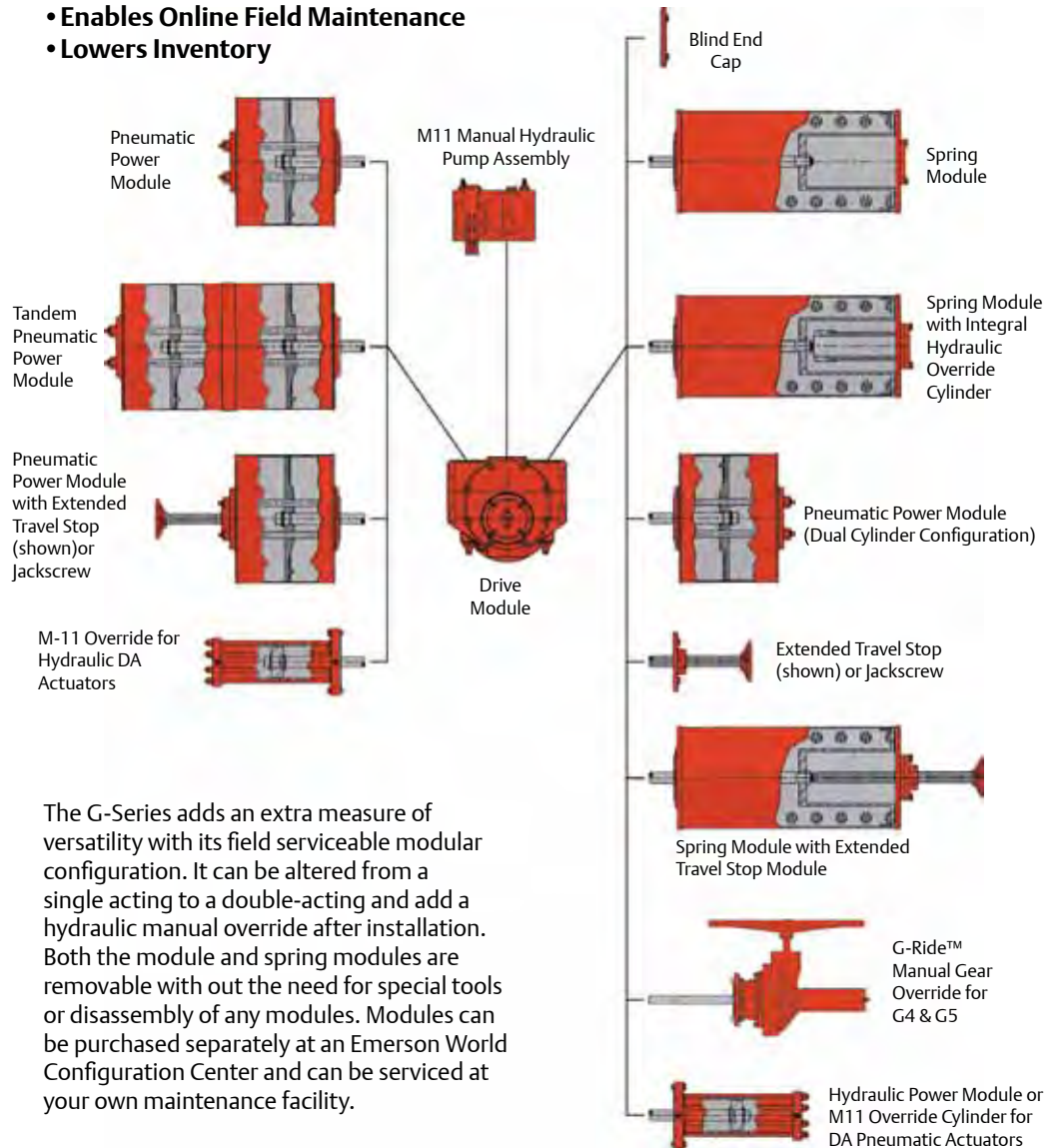
## Automated Packages

Bettis offers complete valve operating systems for final valve control. At our World Area Configuration Centers (WACC), we combine the G-Series actuator, controls and a valve in a single system. We can integrate a complete controls offering including world-class PlantWeb® digital plant architecture. We also supply BettiSystems™, pre-engineered and documented controls packages, available at our WACC for reducing lead times, simplifying purchasing and easing installation.



# Modular Versatility

- Enables Online Field Maintenance
- Lowers Inventory



The G-Series adds an extra measure of versatility with its field serviceable modular configuration. It can be altered from a single acting to a double-acting and add a hydraulic manual override after installation. Both the module and spring modules are removable with out the need for special tools or disassembly of any modules. Modules can be purchased separately at an Emerson World Configuration Center and can be serviced at your own maintenance facility.

**Note:** The above graphic does not necessarily depict all modular orientations. Consult Factory for certified dimensional drawings.

## STANDARDS AND CERTIFICATIONS

Bettis G-Series actuators are manufactured to meet the following worldwide quality and safety standards:



PED/97/23/EC –  
Pressure  
Equipment  
Directive

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