

# CBA-300 Series Pneumatic Actuators

Improved design - compact, lightweight to suit all applications and environment



**BETTIS™**

  
**EMERSON™**  
Process Management



Bettis is the global leader in valve automation, providing reliable solutions for the most demanding service in the process industry.

The CBA-300 actuators combine the strength of scotch-yoke actuation with design innovations for cost efficiency and performance effectiveness.

The CBA-300 protects against water ingress, adding to the life of the actuator by retarding corrosion.

A variety of options helps make the CBA-300 suitable for failsafe service.

## Design and Construction

Emerson Process Management- Valve Automation has been a pioneer and leader in the valve automation and control industry for more than 55 years. During that time, we have developed numerous innovations that have become today's standards. We continue to focus on ingenuity, quality and product safety in our entire product offering. We are considered to be the global standard for automating valves in the oil & gas, power generation, pulp and paper, petrochemical and chemical and numerous other process industries. Performance has been the differentiator. We are recognized for effectiveness and reliability in some of the world's most difficult operating environments.

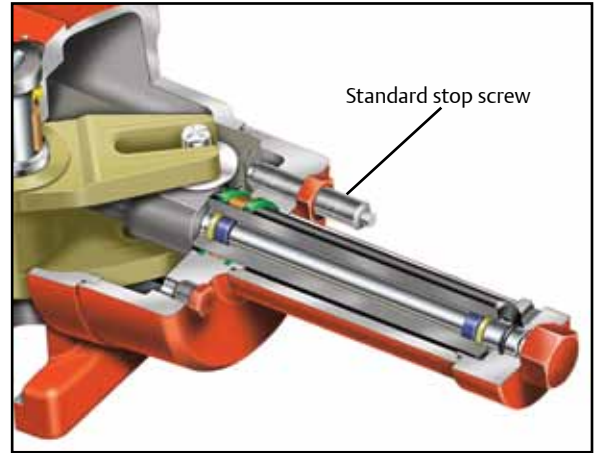
The Bettis™ CBA-300 Series pneumatic actuators incorporate the most advanced features from a long history of developments in the scotch-yoke design, assuring operating efficiency and cost-effectiveness. They are lightweight and compact, making them ideally suited for automating virtually any quarter turn (90 degree) rotating mechanism, including ball, butterfly, and plug valves. They are economical and require little maintenance. They come with a variety of options to meet your demanding valve automation needs.

### CBA-300 SERIES APPLICATION AND FEATURES

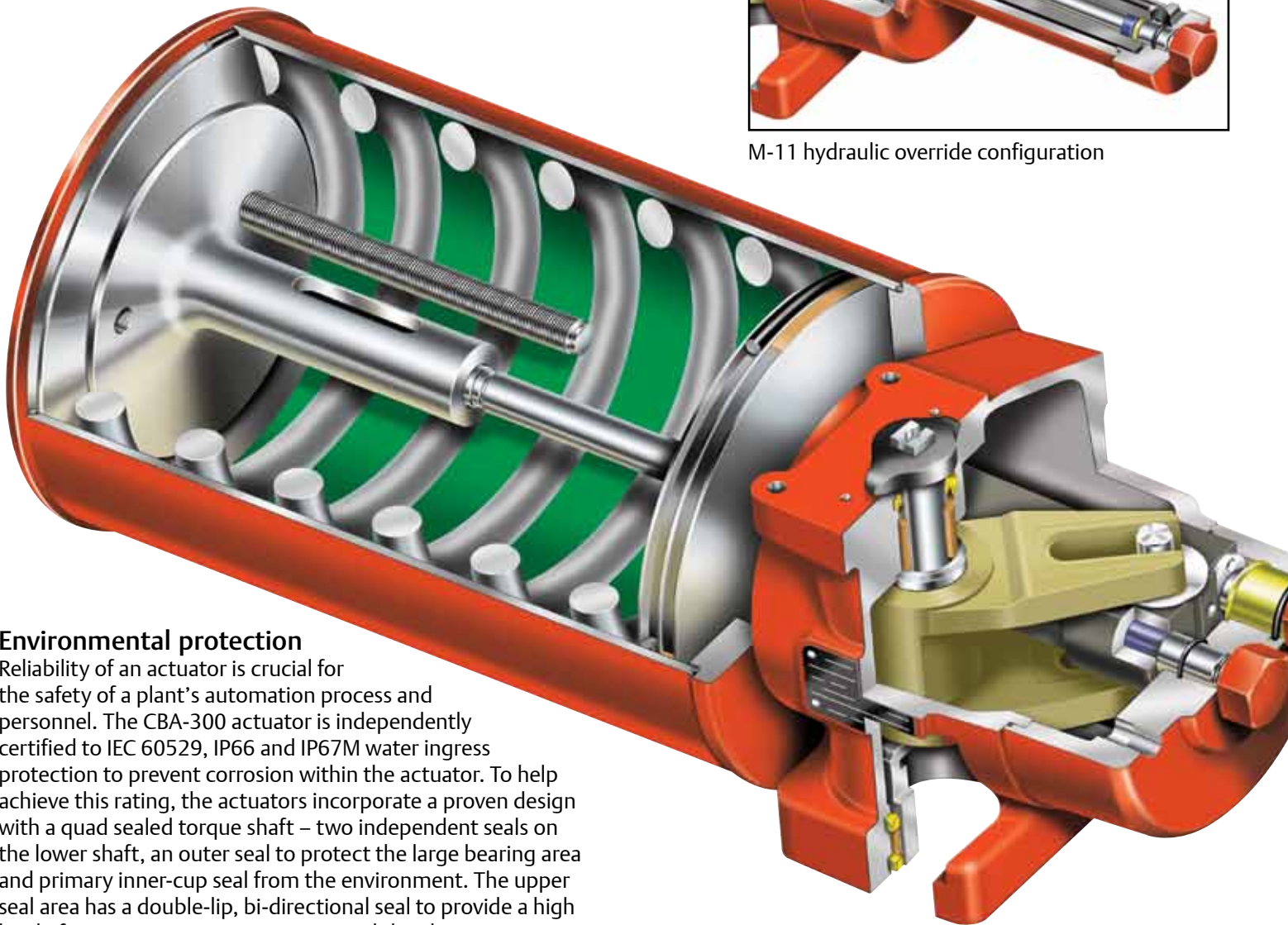
- The actuators are PED 97/23/EC compliant to meet the stringent requirements of pressure mounting vessels.
- The 300-Series actuators meet both IP66 and IP67M specifications for submergence and severe high pressure water deluge test. This offers superior water ingress and corrosion protection. The actuator has no gaskets and is totally O-ring sealed.
- Its NAMUR topworks mounting configuration allows the CBA-300 to be internationally accepted and promotes the ability to utilize standardized accessories that can be close coupled or direct mounted to the valve.
- The CBA-300 Series provides models in both spring-return and double-acting configurations. They have guaranteed minimum torque outputs ranging from 7,388 lb-in to 20,337 lb-in (835 to 2,333 Nm) in double-acting models. Spring-return models, requiring pressure from only one travel direction, are available for fail clockwise or counterclockwise applications. The spring ending torques range from 2,532 lb-in to 10,457 lb-in (286 to 1,182 Nm).
- The scotch-yoke design provides optimum torque curves for quarter-turn operation.
- Its light weight assists in easy installation while its compactness allows use in tight piping configurations
- Increased actuator efficiency and corrosion resistance are possible with a Xylan fluoropolymer coating on the interior of the power cylinder. This permanently-bonded coating is highly resistant to abrasion, thermal shock and provides excellent lubricity and low friction properties.
- Ductile iron housing and piston provide more strength per pound, increased durability and corrosion resistance. The pressure vessel quality housing is approved for use by ASME and the Pressure Equipment Directive (PED 97/23/EC).
- Five-Year Warranty.

## Operating principle

Both the double-acting and single-acting (spring-return) versions of the CBA-300 pneumatic actuators are designed in such a way that there are no moving parts on the outside (with the exception of the position indicator). This makes them safe, easy to install and virtually maintenance free.



M-11 hydraulic override configuration



## Environmental protection

Reliability of an actuator is crucial for the safety of a plant's automation process and personnel. The CBA-300 actuator is independently certified to IEC 60529, IP66 and IP67M water ingress protection to prevent corrosion within the actuator. To help achieve this rating, the actuators incorporate a proven design with a quad sealed torque shaft – two independent seals on the lower shaft, an outer seal to protect the large bearing area and primary inner-cup seal from the environment. The upper seal area has a double-lip, bi-directional seal to provide a high level of protection against corrosion and the elements.

Temperature extremes require different solutions to maintain actuator operational integrity and reliability. Each CBA-300 actuator is available in three different temperature trims. The standard trim is suitable for -20°F to +200°F (-29°C to +93°C). Optional high temperature trim allows operation from 0°F to +350°F (-18°C to +177°C) and special non-PED low temperature trims 40°F to +150°F (-40°C to +66°C) can be supplied on factory built actuators or upgraded at the distributor or end user level. Pneumatic operating pressures for the CBA-300 range from 40 to 150 psig (3 to 10 Bar).

## High Performance Springs

The CBA-300 actuators have high strength, high-performance alloy carbon steel springs, protected by Tactyl 50, a pliable self-healing coating. The spring cycle life of the springs is further extended with the shot peening of the springs during manufacture, and additional step that further differentiates its quality from others.

## Override Options

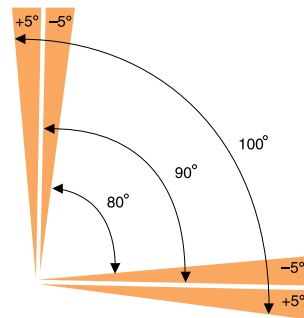
Override modules, used to reposition a valve and provide full rated torque in the event of a power loss can be supplied with a jackscrew and hex nut adaptor or a jackscrew with handwheel. The CBA-300 actuators come with a blowout-proof jackscrew that absorbs impact loads at maximum recommended actuator speeds. Double-acting models can be supplied with one or two jackscrews. The M-11 hydraulic override is also available for the CBA-300.

## Long Life Span

The rugged and dependable construction of the CBA-300 actuator is backed by Bettis' industry leading five-year warranty on materials and workmanship. With the use of superior design and materials throughout the construction, CBA-300 spring-return and double-acting actuators will have a long cycle life when properly maintained and sized.

## Travel Stops

Instrumentation for valve automation requires repeatable positioning and position indication. Bettis CBA-300 actuators include bi-directional travel stops as an integral part of the actuator. These travel stops are adjustable from 80° to 100° of total valve travel. This feature, with its unmatched travel range, assists in prolonging valve seat integrity.



**Jackscrew option**  
(See insert for standard stop screw configuration)

Applications requiring greater adjustment of valve travel can be supplied with the optional extended travel stops for full valve stroke travel adjustment and use as a lockout device. Consult the factory for this option.

## Safety Integrity Level (SIL)

Bettis CBA-300 Series actuators are suitable for use within the demanding applications of a SIL environment. The actuators have a Failure Modes and Effects Diagnostics Analysis (FMEDA) report performed by Exida.com™ for SIL suitability. They can be combined with other SIL-rated components such as solenoid valves, switches, and regulators. When Fisher's TÜV-certified FIELDVUE® controller is added to the CBA-300, it is capable of partial stroke testing and of providing continuous monitoring of supply pressure, valve position and pressure values to the actuator to verify its proper working condition. The CBA-300 then becomes an integral component in controlling the final control element in SIL1, 2 or 3 applications.

## Efficient Bearing Design

Bearings assist in enhancing the cycle life of the actuators by providing smooth and consistent torque output. The CBA-300 Series actuator pistons have three field-replaceable bearings. In addition, the actuator features PTFE-coated upper and lower torque shaft bearings for wear resistance, also replaceable in the field.



Emerson WACC can provide actuators for specialty applications such as fire-retardant coatings and treatments

For more detailed technical information see our online documentation under [www.Bettis.com/technical-data](http://www.Bettis.com/technical-data)  
Document number [DOC.DSB.CBA300.US]

# Actuator / Accessory interfaces

## STANDARDS AND CERTIFICATIONS

Bettis CBA-300 pneumatic actuators are manufactured to meet the following worldwide quality and safety standards:



CE



ISO-9001



ABS

PED/97/23/EC –  
Pressure  
Equipment  
Directive



Bettis CBA-300  
with Topworx Positioner



Bettis CBA-300  
with Wireless Transmitter

## Bettis Automated Packages

Bettis offers complete valve operating system as a solution for final valve control. Bettis has the capability to combine the CBA-300 actuator and controls with the selected valve into a single system at various international Valve Automation World Automation Configuration Centers (WACC) – perfect for large international projects.

Through the use of Valve Automation World Automation Configuration Centers, Bettis can integrate its products with a complete offering of control options, including world-class PlantWeb® digital plant architecture and the entire range of Emerson automation solutions.



## BettiSystems™

To assist with valve automation solutions, Bettis has pre-engineered and documented a series of commonly required control systems. These approved systems utilize standard components, reduce lead times, and simplify purchasing, installation and start-up.



Please consult the factory for additional information.

## 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™



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