

BETTIS

CBA-Series Scotch-Yoke Pneumatic Actuators

PED 93/27/EC Compliant
Xylan™ Coated Cylinder
Water Ingress Protected –
IP66 and IP67M
Low Maintenance



Economical
Jackscrew Option
Five-Year Warranty
Dual Mounting Interface
Suitable for SIL 2 or SIL 3
Bi-directional Travel Adjustment

CBA-SERIES PNEUMATIC DESIGN AND CONSTRUCTION

Mechanical Components

The Bettis CBA-Series pneumatic actuators are compact, lightweight and ideally suited for automating ball, butterfly and non-lubricated plug valves, or any quarter-turn (90 degree) rotating mechanism. These economical, low maintenance actuators provide a reliable means of automating your valve. Available with optional features and controls to meet your most demanding automation needs. The CBA-Series, available in double-acting and spring-return models, are independently certified to BS 5490: 1977 - IP66 and IP67M for water ingress protection.

Operating Ranges

Double-acting CBA-Series actuators are available with guaranteed minimum torque outputs to 12,245 lb-in (1,384 Nm).

The CBA-Series spring-return models require pressure in only one direction of travel and are suitable for fail clockwise or counterclockwise applications without modification. These models produce guaranteed spring ending torques to 4,971 lb-in (562 Nm).

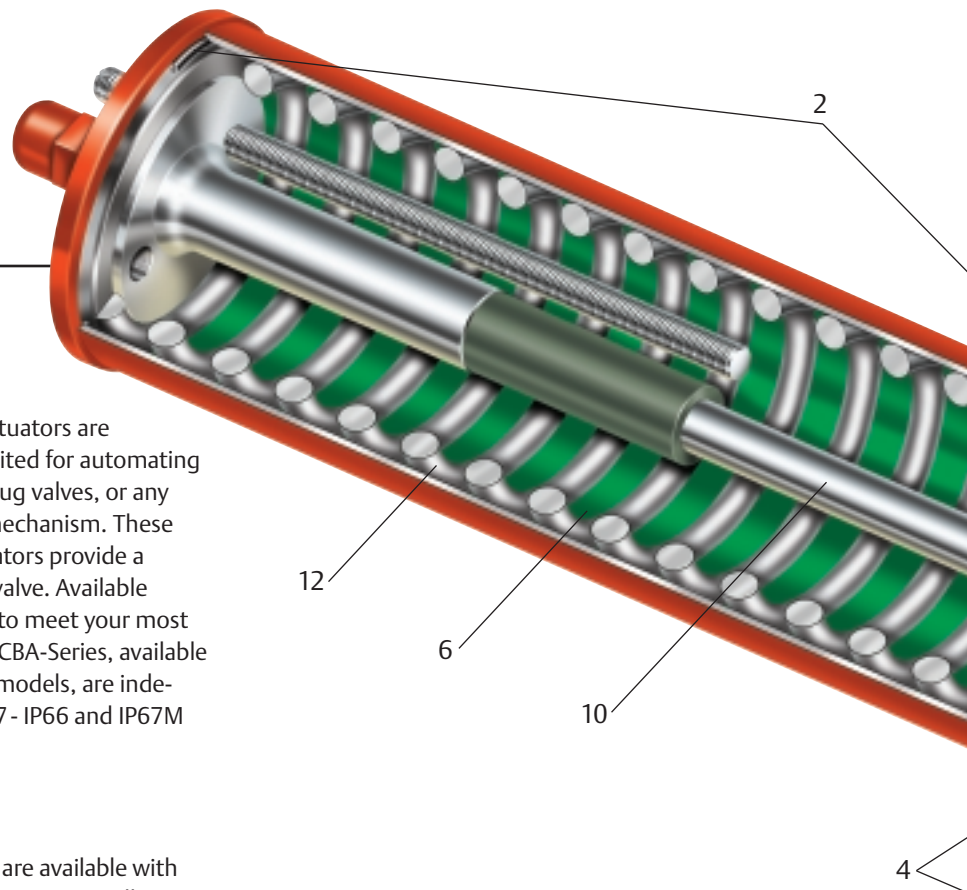
Standard construction CBA-Series actuators are designed for operating temperatures of -20°F to +200°F (-30°C to +95°C). High temperature trim allows continuous operation from 0°F to +350°F (-18°C to +177°C). Additionally, special non-PED low temperature trim allows operation to -40°F (-40°C). Consult factory when temperature requirements exceed these limits. Operating pressures for the CBA-Series range from 40 to 150 PSIG (3 to 10 BAR).

New Features for Demanding Applications

The new generation Bettis® CBA-Series actuators were specifically designed for those applications where water ingress protection and enhanced corrosion protection were paramount.

Design Features

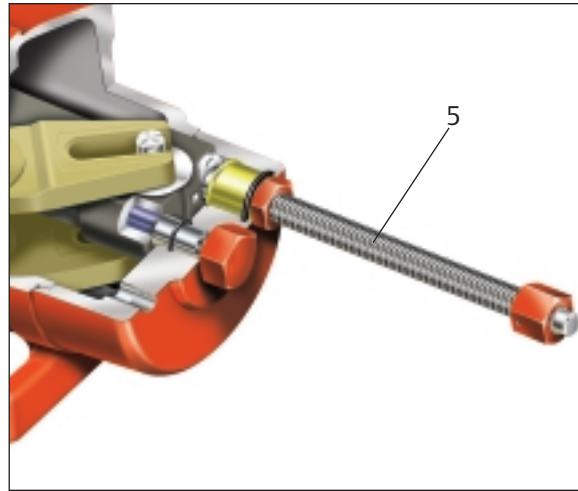
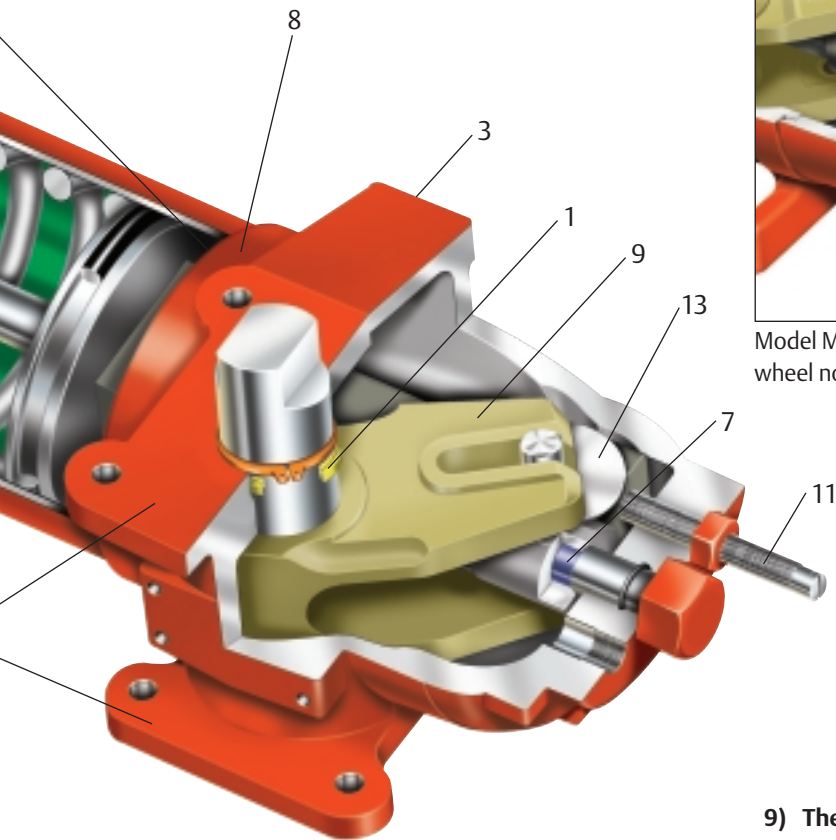
Water Ingress Protection – The CBAs meet both IP66 and IP67M specifications for submergence and severe high pressure water deluge test, offering superior water ingress protection and corrosion resistance. The actuator has no gaskets and is totally o-ring sealed.



- 1) **New, Outer Lip-Type Torque Shaft Seals** restrict external contaminants, providing a high level of corrosion and water-resistance.
- 2) **New O-Ring Sealed Cylinders** essentially eliminate the possibility of any cylinder leakage throughout the full range of operating and climatic conditions.
- 3) **Standard Accessory Mounting Pad** – The new accessory mounting pad is standard and identical on all CBA and CBA-300 Series models, allowing the panel mounting of controls.
- 4) **Dual Valve Mounting Interface** allows the flexibility to change the actuator fail mode, without disassembly, by simply inverting the actuator. They may be installed in any position; parallel or at right angles to the flow line, in the vertical or the horizontal plane.
- 5) **Jackscrew Option** – A blowout-proof economical jackscrew manual override is available as an option to the CBA models (see inset above). The jackscrew also acts as a stop adjustment screw.

This feature has several advantages:

- Produces full rated torque output in the event of air supply loss.
- During normal power operation, the manual override has no effect on actuator torque output or operating speed.
- Double-acting actuator models are available with one or two jackscrews.

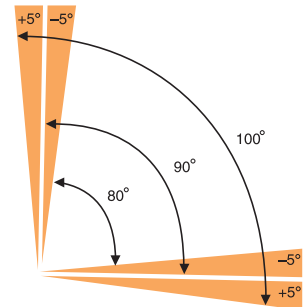


Model M3 Jackscrew shown (M3HW with optional hand-wheel not pictured).

- 6) **Xylan™ Cylinder Coating**, the standard internal coating on all CBA-Series actuators. This fluoropolymer coating is highly resistant to abrasion, thermal shock and provides excellent lubricity and low friction properties. Corrosive salts and other chemicals normally found in the atmosphere or instrument air supply system will not adversely affect its performance. Xylan™ bonds to the chemically prepared surface of the steel cylinder so effectively that, unlike other coatings, cracking and flaking are virtually eliminated.
- 7) **New Piston Heel and Yoke Pin Bearings** – The CBA features PTFE/bronze bearings on the actuator's piston heel and yoke pin. These bearings help to assure smooth and consistent torque output, while enhancing total cycle life.
- 8) **Ductile Iron Housing** – CBA actuator housings are made of pressure vessel quality ductile iron which is approved for use by ASME and the Pressure Equipment Directive (PED 97/23/EC). All housings have been optimized by finite element analysis and are designed for light weight while retaining maximum strength, ductility and corrosion resistance.

- 9) **The Scotch-Yoke Mechanism** transforms linear movement of the piston into a 90 degree rotation, providing optimum torque curves, ideal for most quarter-turn valve applications.
- 10) **Center Bar**, made of improved high strength alloy steel, guides the piston throughout its full stroke, preventing metal to metal contact with the cylinder bore.

- 11) **Bi-directional Travel Stops** are an integral part of the actuator allowing 80° to 100° total travel adjustment. Extended travel stops are optional. This feature provides an unmatched travel range to assist in prolonging valve seat integrity.

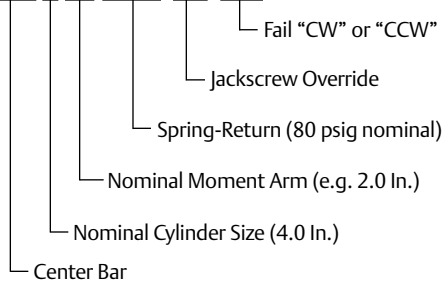


- 12) **Springs** – High-strength, high-performance alloy carbon steel springs are protected by Tactyl 50, a pliable self-healing coating. Bettis takes an additional step and shot peens the springs, helping to extend the actuator's spring cycle life.
- 13) **Yoke Arm Bearing Washer** – Acetal bearings positively prevent metal-to-metal contact, helping to assure smooth and consistent torque output.

ORDERING / MODEL DESIGNATION

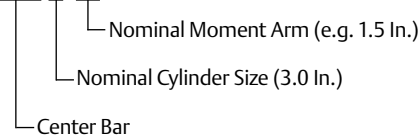
Spring-Return Example

“CBA 4 20 SR80-M3-CW”



Double-Acting Example

“CBA 3 15”



OPTIONAL FEATURES

Fail-Safe Operation

Each Bettis CBA actuator is capable of fail-safe operation using either stored compressed gas (air) or a mechanical spring.

Trims

Trim options for CBA-Series actuators include seals for high and low temperature applications and no copper or yellow metals. The N-Series actuator is designed to resist affects of environmental conditions and seismic loading design criteria imposed by the Nuclear Power Industry. Consult Bettis for more information on these and other specific trims.

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OPTIONAL ACCESSORIES

BettiSwitch II™

The BettiSwitch II actuator position monitor eliminates added junction boxes and is integrated with the actuator. It has a visible indicator and is available for NAMUR and VDI/VDE mounting. Meets UL and CENELEC requirements.

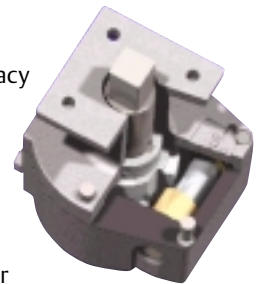


Pneumatic Positioners

Pneumatic or electric, low air consumption, high accuracy positioners for single or double-acting applications.

Partial Stroke Test Device

This rugged device allows for a simple, mechanical means of periodic testing for the proper operation of your automation system without upsetting flow processes. Bettis can provide PSTD for testing in either clockwise or counter-clockwise direction with 15–20 degrees of field adjustable rotation and other ranges available. Consult factory with your requirements.



A digital positioner and partial stroke test device provides diagnostics for Emergency Shut Down (ESD) applications.



Important: Due to Emerson's continuing commitment to engineered product advancement, data presented herein is subject to change.

BETTIS BULLETIN # 20.00-4 REV: 9/02

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