



BETTIS[®]

TorqPlus[™]
Electric Valve
Actuators
and Controls


EMERSON
Process Management

EMERSON. CONSIDER IT SOLVED.™

THE ENGINEERED SOLUTION



Introduction

For more than 40 years, Bettis Corporation has been recognized worldwide for providing industry with high performance pneumatic and hydraulic valve actuators. The addition of the Bettis line of TorqPlus electric actuators carries on the tradition of product quality, innovation and service reliability.

Bettis TorqPlus actuators are specifically designed for quarter-turn operating applications — ball, butterfly and plug valves; dampers; vents and similar uses. TorqPlus actuators are available in a wide range of output torques and operating speeds to fit your specific requirements.

The Bettis Engineered Solution

Most electric actuators in use today are designed to meet a range of torque and speed requirements for use in industrial applications. Controls and optional accessories are often available, added at the factory while being assembled. Heretofore, not much attention has been given to field upgrades, inventory modifications or parts replacement during servicing.

The Bettis TorqPlus actuators, instead, provide its users with a unique modular approach. The actuators are manufactured with pre-tapped holes in the base plate to accommodate a myriad of control and accessory components, available in more than 200 easy-to-install kits to fit virtually every requirement imaginable. Kits are available, depending on the actuator model, to add:

- Heaters and thermostats
- Potentiometers
- Servo controls
- Motor brakes
- Positioners and transmitters
- Control stations
- Multi-turn operation
- PLC interface

All of the components can be added inside the CSA type 4/4x weatherproof housing or the CSA type 4/4x, 7 and 9 weatherproof/explosion proof housings.

Advantages

The Bettis TorqPlus, and the modular concept, offers its users significant advantages:

- **Compact Design** – The actuators provide maximum torque output relative to its small design housing.
- **Custom Control Standards** – By offering an almost endless number of control and accessory combinations, Bettis electric actuators can effectively be designed to virtually any end use.
- **Modular Construction** – The modular design allows the actuators to be easily field modified and serviced. Accessory kits can be stored for future use without consuming a large amount of storage space.
- **High Strength Gearing** – We precision-machine our gears from hardened alloy steel, and run in needle bearings. The result is efficiency, smooth energy transfer, quiet operation and, best of all, long service life.
- **Low Maintenance** – Permanent lubrication reduces the need for scheduled maintenance. The actuators are supplied with low temperature lubricant, allowing the units to perform in temperatures to -40°F (-40°C). All operational parts are fully enclosed in the housing eliminating all contact with the environment.
- **Guaranteed Minimum Torques** – As with other Bettis actuators, we guarantee that our published output torque values are minimum values. If any Bettis TorqPlus actuator fails to meet its specified torque output under normal use, we will replace it.
- **Duty Cycle** – All Bettis actuators are rated for a duty cycle of at least 30% (one motor-on period followed by two motor-off periods). Higher duty cycles (up to 100%), which can allow for up to 1200 starts per hour, at normal ambient temperatures are available.

TYPICAL SPECIFICATIONS

The following information may be used as a guide to compose specifications for Bettis TorqPlus Electric Actuators. Bettis supplies Electric Actuators that meet or exceed all of the specifications stated below except the Model EM-100 (which is not equipped with a manual override feature or dual conduit entrances).

1. General

The actuator shall consist of a sand cast CSA* Certified enclosure complete with an internal high-torque reversible electric motor, terminal block, heat-treated alloy steel gearing, a minimum of two (2) 1/2" NPT conduit connections and a two (2) year original manufacturer's warranty.

2. Actuator Sizing

All actuator torques must be published and must be guaranteed, by the original manufacturer, as minimum values.

The actuator shall be sized to produce a torque equal to or greater than the maximum valve torque, including safety factor, as stated by the valve manufacturer for the service, operating conditions and ambient temperature intended.

3. Ambient Temperature Range

The actuator shall be suitable for normal operation in ambient temperatures ranging from -40 to +140 °F (-40 to +60°C). For temperatures below 32°F (0°C), high-humidity environments or all outdoor applications the actuator shall be supplied with an electric heater and thermostat.

4. Electric Motors

The actuator motor shall be of the reversible, high-torque, open frame ventilated design with built-in automatic resetting thermal overload protection, a minimum 30% duty cycle rating and be UL* and CSA* Certified Motors of 1/4 hp or less with not more than 7 amps of locked rotor current draw. When single phase motors are selected, they shall be supplied as a permanent split capacitor type operating from a 1Ph/60Hz/ 115VAC or 220VAC supply.

5. Reduction Gearing

The actuator shall use exclusively cut alloy gearing. All power gearing shall be grease lubricated for long life.

6. Limit Switches

All limit switches shall be independently operated by adjustable cams in each direction of operation. Provisions shall be made for up to six (6) additional cam operated switches, each being capable of operation at any point of travel.

7. Torque Limit Switches

All actuators of 2,000 lb-in (226 Nm) output torque or greater, shall be supplied with two (2) mechanical torque limiting switches which shall be responsive to maximum torque encountered in both directions of travel.

8. Manual Override

Transfer to manual operation from motor operation shall not require the use of hand levers, solenoid shifters or handwheel depression and the transfer shall be positive and reliable.

Actuators of less than 1700 lb-in, except for the model 100, shall be supplied with a disengageable manual override mechanism. Disengagement of the motor drive shall permit the use of a wrench on the output shaft flats and shall by-pass the power gear drive and motor for manual operation.

Actuators of 2,000 lb-in (226 Nm) or greater output torque shall be supplied with a handwheel which will not rotate during motor operation, but must be operational at all times without danger of injury to operator. The handwheel shall not require more than 50 lbs. of rim force to operate under the most adverse conditions and be capable of assisting or opposing the motor without any form of declutching.

9. Enclosure

The actuator enclosure shall be a high-strength sand casting and must be certified by CSA*, or equal third party tester, as acceptable for use in the following locations:

- 9.1 Non-hazardous indoor or outdoor location to protect against wind-blown dust and rain, splashing water and hose-directed water (i.e. CSA Enclosure 4 – Weatherproof, conforms to IP-65).
- 9.2 Hazardous locations classified as Class I and II, Groups C, D, E, F and G as defined in the National Electrical Code **plus** non-hazardous locations to protect against wind-blown dust and rain, splashing water and hose-directed water (i.e. CSA Enclosure 4 and 7 – Explosion-proof and Weatherproof).

*CSA is Canadian Standards Associations, Rexdale Ontario, Canada M9W 1R3

*UL is Underwriters Laboratories, Inc., Northbrook, IL 60062

*NEMA is National Electrical Manufacturers Association, Washington, D.C. 20037

Bettis Electric

2500 Park Avenue West
Mansfield, OH 44906 U.S.A.
T 419-529-4296
F 419-529-4484
Website: www.EmersonProcess.com/Bettis
E-Mail: Info.Bettis.Electric@EmersonProcess.com

Bettis USA

P.O. Box 508
Waller, TX 77484 U.S.A.
T 281-463-5100
F 281-463-5103
Website: www.EmersonProcess.com/Bettis
E-mail: Info.Bettis@EmersonProcess.com

Bettis UK Ltd.

3 Furze Court
114 Wickham Rd.
Fareham, Hampshire PO 16 7SH
T 44-1329-848-900
F 44-1329-848-901

Bettis Canada Ltd.

4112-91 A Street
Edmonton, Alberta T6E 5V2
Canada
T 780-450-3600
F 780-450-1400

Bettis France:

30/36 Allee du Plateau
93250 Villemomble
France
T 331-48-122610
F 331-48-122619

Bettis Int'l Sales Office:

Calgary, Canada
Rheinberg, Germany
New Bombay, India
Singapore

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

Certified dimensional drawings and wiring diagrams are available on request. Consult factory with model designation and serial number.

Bettis Bulletin # 10.10 Rev: 02/02

© 2002 Emerson. All rights reserved. 5M/02/02

BETTIS®


EMERSON™
Process Management