



Excellence in Actuation

ALPHA I ACTUATOR

Self-contained Electric Operation

Wide ranging voltage inputs

Spring Failure

At full rated output

Energy Efficient

Motor only operates to move the output shaft

Superior Controlability

Precise positioning
Highly resistive to dynamic forces
Immediate response
Modulating duty cycle

Ease of Installation

Simple adaptation to valves
Insensitive to orientation
Wires connect directly to unit (isolated junction box)
Not affected by vibration

Flexible Control

Analog: 4–20 mA
Contact positioning: up and down contacts
Two positions: single contact
Emergency shutdown: power on - open; power off - spring closed



The **ALPHA I** is a technologically advanced hydraulic actuator for routine process control. Muscle for the unit is supplied by our proprietary **PUSH-PUMP™** which provides a self-contained, energy efficient and reservoirless source of high pressure hydraulic energy. By adding a main cylinder, return spring, rugged electronic controller and feedback to the **PUSH-PUMP™**, the **ALPHA I** actuator imparts the advantages of hydraulic positioning, but at a price comparable to a pneumatic operator.

The **PUSH-PUMP™** acts as a hydraulic gearbox by converting oil flow in the pump to increased thrust or torque in the output piston. Although a powerful concept, this hydraulic circuit is simple and effective. It is inherently lubricated; there are no metal-to-

metal wear surfaces; there are no fine passages to trap contaminants; there is not a definable reservoir; the unit is insensitive to position; no heater is required and the oil volume is small.

The **ALPHA I** is single acting; that is, the fluid moves the cylinder in one direction. Return motion and fail-safe position are provided by a spring. Bi-directional rotation of the motor controls the travel in both directions. The movement is constant and precise without pressure pulsations, target overshoot or direction reversals. Once position is reached as set by the control signal and active feedback, the motor is stopped and motor power is not required to maintain position.



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ALPHA I

SPECIFICATIONS

LINEAR MOTION

Thrust: 250 lbs, 500 lbs, 1000 lbs
Stroke: Any, up to 2 inches

ROTARY MOTION

Torque: 25 lb-ft, 50 lb-ft, 100 lb-ft
Rotation: Any, up to 90° rotation

PERFORMANCE

RESOLUTION

0.1%, Selectable between 0.1% and 2.0% of signal span.

POSITIONING ACCURACY (corrected by electronic stroke characterization)

Linearity (BSL): <1.0% of full stroke

Repeatability: <0.1% of full stroke

STROKING SPEED (maximum - may be extended during setup)

Linear: 20 seconds per inch (250 lb, 500 lb); 15 seconds per inch (1000 lb)

Rotary: 40 seconds for 90° (25 lb-ft, 50 lb-ft); 30 seconds for 90° (100 lb-ft)

CONTROL SIGNALS

ANALOG: 4-20 mA

CONTACT POSITIONING: up and down contacts (24 to 120 volts, AC or DC)

TWO POSITIONS: single contact (24 to 120 volts, AC or DC)

EMERGENCY SHUTDOWN: power open/spring closed (main power provides signal)

POWER SUPPLY

VOLTAGE

Standard: 110 vac, 220 vac

Optional: 12 vdc, 24 vdc, 48 vdc

CONSUMPTION (when moving)

50 watts - 250 lb, 500 lb, 25 lb-ft, 50 lb-ft

100 watts - 1000 lb, 100 lb-ft

CONSUMPTION (stationary)

20 watts

ENVIRONMENTAL

RATINGS

CSA Class I, Division 2, Groups B, C & D (pending), NEMA 4

AMBIENT TEMPERATURE

-20°F – 150°F (direct solar heat load must be avoided)

FEATURES

SPRING FAILURE (upon loss of electric power)

POSITION TRANSMITTER: 4-20 mA (passive)

HANDWHEEL: independent & mechanical (optional)

FAIL IN PLACE (upon loss of electric power) (optional)

Specification subject to change without notice.



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