

Models 561020E, 561055E, 561085E, 561520, 561555, 561585, 561604C

**READ INSTRUCTIONS CAREFULLY BEFORE INSTALLING OR CONNECTING POWER TO THE ACTUATOR. THE ACTUATOR MUST BE INSTALLED, COMMISSIONED, OPERATED AND REPAIRED BY QUALIFIED PERSONNEL. COMPLY WITH ALL APPLICABLE CODES, STANDARDS AND SAFETY REGULATIONS.**

#### STORAGE

Actuators should be stored in a clean, dry environment at all times. Do not install the actuator outdoors or in humid environments without immediately supplying power to activate the internal heater. The thermostatically controlled heater will help prevent possible damage caused by condensation build up inside the actuator.

#### INTRODUCTION

This document provides installation, operation and maintenance instructions for Valworx 5610/5615/5616 series electric actuators with DPS - Digital Positioner System. These actuators are typically used to control quarter-turn valves. Every actuator has been fully tested prior to shipment to ensure trouble free operation.

#### MOUNTING

The actuator can be mounted in any orientation. Valve mounting flange conforms to international ISO5211 standards.



#### TEMPERATURE RATING

Operating temperature range of the actuator is -4 to 158°F (-20 to 70 °C).

#### ENCLOSURE RATING

Actuator is rated IP67 weatherproof. The housing is anti-corrosion polyamide. Do not use these actuators in explosion proof or hazardous applications.

#### DUTY CYCLE AND MOTOR PROTECTION

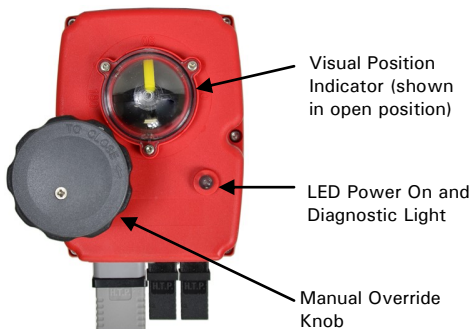
The 5610/5615/5616 series actuators have built in electronic over torque protection against valve jams. These actuators are rated 75% duty cycle.

#### ANTI-CONDENSATION PROTECTION

The electric actuator has an internal thermostatically controlled anti-condensation heater. The 4 watt heater is automatically activated when power is supplied to the actuator. It is strongly recommended that power remain 'On' at all times to protect the actuator from damaging effects of condensation. The heater does not require a separate power supply or additional wiring.

#### VISUAL VALVE POSITION INDICATOR

Actuators are supplied with a local highly visual valve position indicator. The dome style indicator is black with a large yellow pointer and located on top of the red cover. There are 0 and 90° marks molded into the red cover to indicate the valve position. The 0 mark indicates closed and 90 the open position. The yellow pointer should rotate within the 90° quadrant.



#### MANUAL OVERRIDE

Valworx 5610/5615/5616 series electric actuators have a declutchable manual override for use during setup or loss of power situations. To operate the manual override, first move the manual override selector lever located on the side of the actuator to the 'MAN' position. Then rotate the manual override knob on top of the actuator to the desired position anywhere between 0 (closed) and 90 (open) degrees. These markings are located on top of the red cover. When finished, make sure the yellow pointer is within the 0 to 90 working quadrant. Then move the manual override selector lever back to the 'AUTO' position. You can now resume operation by deactivating power which resets actuator.



#### LED POWER ON AND DIAGNOSTIC LIGHT

The external LED status light provides visual communication between the actuator and the user. The following chart will show the basic LED functions.

LED Status	Actuator Operational Status
Stop: Blue	Power On
Opening: Blue/Green Closing: Blue/Red	Actuator moving
From Open to Closed: Red/Off From Closed to Open: Green/Off	Over-torque condition or possible problem with motor/control board or optional BSR system working
Orange/Off	Actuator in MANUAL mode (after 90 seconds) or battery needs charging

#### MAINTENANCE

There are no field serviceable parts inside the actuator (except battery for models with BSR option) and no parts that require regular maintenance. The gear drive is pre-lubricated for life. The actuator should be cycled at least once per month. The housing may be cleaned with warm soapy water to keep it clean (no solvents). DO NOT PRESSURE WASH.



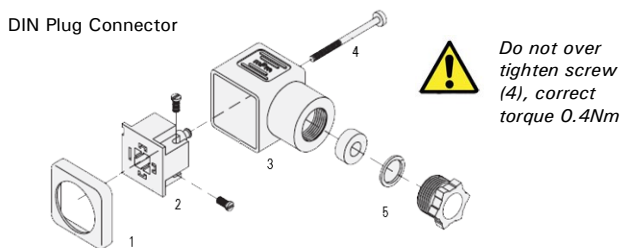
**Do NOT operate the manual override without first selecting 'MAN'. Failure to do so may cause irreparable damage to the actuator.**

## ELECTRICAL WIRING

Actuators are multi-voltage capable with automatic voltage sensing. Actuator circuit should be isolated from other actuators and equipment with its own independent fused protected system. All connections are made using the supplied DIN plug connectors. Larger connectors accept 8 to 10.5mm diameter round cable and the smaller connectors accept 5 to 6mm diameter round cable. Nominal impedance 100 ohms (4-20mA) and 13K ohms (0-10vdc)

### DIN PLUG CONNECTORS

Disassemble DIN connector as shown in diagram below, wires are connected to screw terminals marked 1, 2, 3 and ground. To access screw terminal block (2), remove the retainer screw (4) and use a small screw driver to pry terminal block from housing (3). To ensure water-tightness use correct cable diameter, ensure connector gasket (1) is installed and tighten retainer screw (4) securely. Failure to do so could allow water ingress and cause major damage to the actuator.



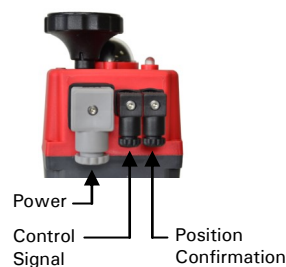
## OPERATION: ACTUATOR WITH DPS POSITIONER

The DPS positioner system provides an accurate valve positioning function whereby the movement of the actuator is controlled by either a 4-20mA or 0-10vdc control signal. Any change in the control input signal results in a corresponding and proportional change in the position of the actuator (valve). Standard operation with 4mA or 0v input, actuator closed; 20mA or 10v, actuator open (can be setup reverse acting upon request). Actuator closes with loss of control signal (external power maintained). Actuator stays in last known position with loss of external power.

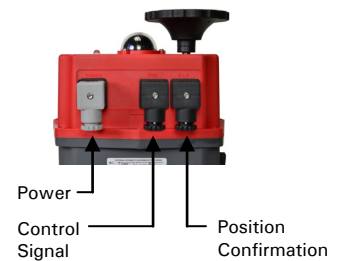
### OPERATION: ACTUATOR WITH DPS and BSR OPTION

Wiring is the same as standard actuator with DPS. The function with BSR - Battery Spring Return option is the same as DPS w/positioner above, except actuator will move to failsafe position via battery power with loss of external power. BSR can be ordered as either fail closed or fail open as required. Actuator returns to pre-failure position upon power resumption.

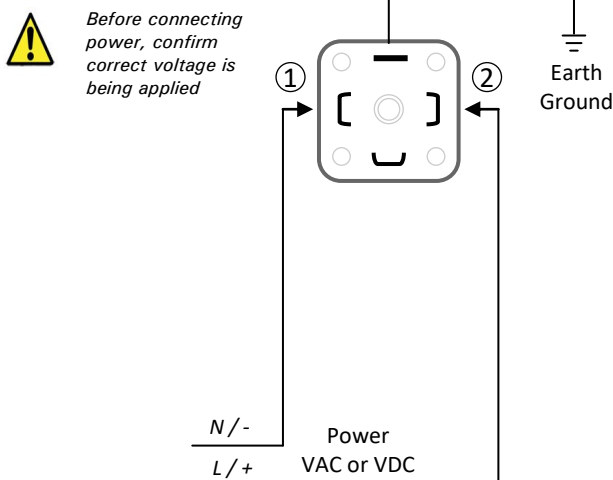
5610/5615 Series



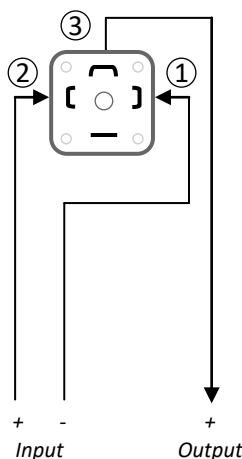
5616 Series



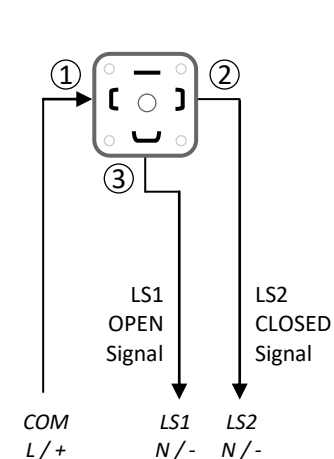
### Power Connection



### DPS Positioner Control Signals 4-20mA/0-10v



### Position Confirmation Limit Switches



### Wiring: Main Power Connection

Power is connected to the actuator via the large gray DIN plug connector. Wires are connected to screw terminals located inside the connector.

**Power:** connect to PIN 1 and PIN 2

**Ground:** connect the flat pin on DIN connector to earth ground

*Note: The Neutral (AC voltages) or Negative (DC voltages) must be connected to PIN 1. Power should be maintained to activate the internal heater. This heater will help prevent condensation build up inside the actuator. ACTUATOR SHOULD HAVE ITS OWN FUSED AND ISOLATED CIRCUIT. Do not connect actuators in parallel.*

### Wiring: Analog Control Signal

**Signal Input:**

Connect Negative (-) input to PIN 1

Connect Positive (+) input to PIN 2

**Signal Output (position monitoring signal):**

Connect to PIN 3

*Note: The signal output (use of output is optional) will be in the same format as the input. ex: 4-20mA input, 4-20mA output or 0-10v input, 0-10v output. Nominal impedance 100 ohms (4-20mA), 13K ohms (0-10v). Do not connect ground PIN on control signal plug.*

### Wiring: Position Confirmation Limit Switches

Two auxiliary dry contact limit switches are provided to confirm the valve open and closed position. Use of these switches is optional. Limit Switch Rating 3A@125/250 VAC, 30VDC resistive load

PIN 1: Common

PIN 2: Signal to confirm Closed Position

PIN 3: Signal to confirm Open Position

Wire Identification for Optional Prewired DIN Cables	
PIN 1 - Brown	PIN 3 - Black
PIN 2 - Blue	GROUND - Green/Yellow