

VALVCON™ ESR-SERIES

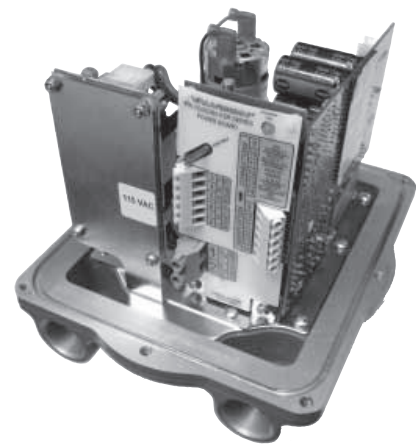
ELECTRONIC SPRING RETURN ELECTRIC ACTUATOR

Neles is a leading designer and provider of Valvcon™ compact, reliable, electronically controlled electric actuators for valves and dampers. We offer a complete line of electric actuators for accurate positioning of dampers and valves in the aerospace, automotive, consumer services, discrete manufacturing, energy, environmental, oil/pipeline, petrochemical, power/utilities, process, recreation, transportation, and water/wastewater industries.

We have developed and introduced the industry's most innovative Neles Valvcon™ electric actuator products, including simple "set and go" calibration, intelligent processor-based digital electronics, "Plug-in" accessory boards, Back-Up Power actuators, as well as electric actuators designed for remote control, solar-powered applications and two-wire network applications.

FEATURES AND BENEFITS

The quarter-turn electric actuator is designed to meet NEMA standards for use in weather-tight or weathertight and hazardous locations. The actuator is a single, complete unit composed of a compact cast aluminum housing, motor, gearing, limit switches controlled by metal cams for end of travel control, mechanical position indicator, and an internal back-up power source to drive to a pre-set position in the event of an external power loss. Actuator mounting flanges comply with ISO 5211 standards incorporating a female drive for direct output coupling. The actuator shall be capable of operating in ambient environments of -40° F to 130° F; optional internal heaters are available for temperatures below 32° F.



Isolation and Electrical

Internal electronic control boards have clearly marked and different size connection terminals for Power and Option Connections to prevent incorrect wiring. The actuator control electronics are electrically isolated to allow multiple actuators to be wired in parallel. Electronic control boards include an easy to follow insulating overlay that contains wiring information. All internal connections, (motor leads, limit switch leads, option connectors, etc.) are coded, using different style connectors for each function, to prevent incorrect wiring. All connections plug-in to simplify field repairs and upgrades. A highly reliable switching power supply provides power conversion to drive the internal DC motor; no maintenance is required.

Motor

The internal electric motor is a brushed DC type, capable of 80% duty cycle at full torque, at ambient temperature at or below 104° F.

Lubrication

All rotating power train components are coated with a multi-purpose grease. Lubricants will be suitable for ambient conditions of -40° F to 130° F. For operation in temperatures between 32° F and -40° F an optional heater and thermostat assembly may be added.

Gearing

The powertrain is comprised of hardened steel, machine cut spur gears. Non-metallic, aluminum, cast or stamped gearing is not used.

Limit Switches

Actuators have two standard end-of-travel switches, single pole double throw, rated at 11 amps at 250 VAC. The limit switches are activated by metal cams mounted on the actuator drive shaft. Up to two additional limit switches, adjustable to operate at any position as required by the process application, may be added to the actuator for end-of-travel indication.

On/Off (Open/Close) Operation

While power is applied to the actuator, the internal storage modules will recharge in less than 300 seconds. Once fully charged, the actuator drives to the Power (non-fail) position. Upon loss of power the actuator will drive to the Fail position. During a loss of power condition, there will be a two-second delay before actuation to ensure protection against brown-out conditions. The Fail position may be either the full CW or full CCW and is determined by the position of the “direction select” jumper on the main storage module.

Internal Storage Module

The internal storage module consists of a bank of super capacitors that are rated for a minimum of 100,000 cycles. The main storage module includes two connectors to increase storage capacity for greater torque requirements.

Breakaway Torque

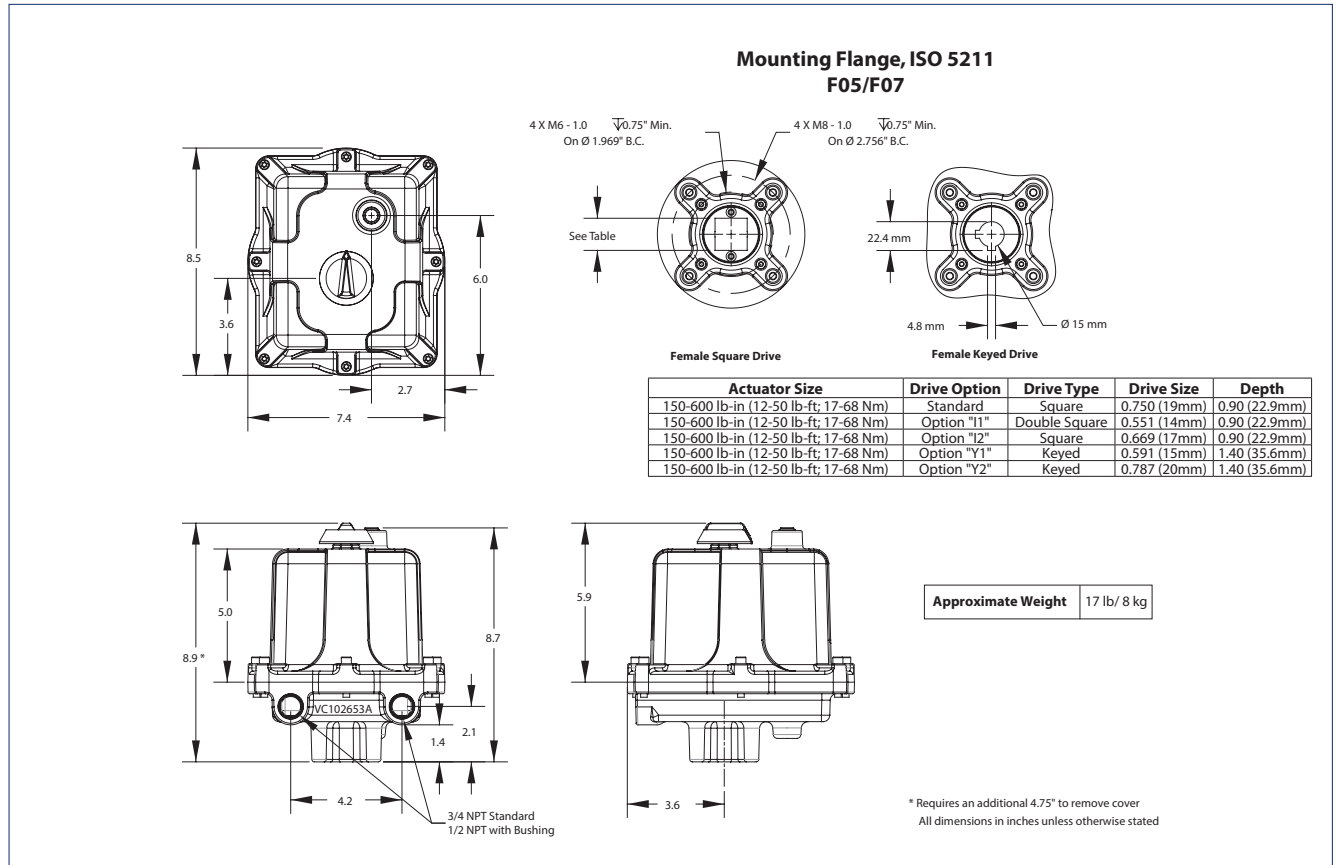
Designed for efficiency and reliability, all Neles Valvcon™ actuators deliver the power you need when and where it is needed. With efficient gear trains and motors these actuators are rated at breakaway torque. Immediately upon power up, the actuator supplies the rated torque — when it is needed to break the valve away from its seat. Other manufacturer’s actuators may be rated at running torque, but actually deliver significantly less breakaway torque.

FEATURES AT A GLANCE!

ESR-Series

- Internal energy storage provides power to “safe” position during power-outages.
- Field-settable for “fail clockwise” or “fail counter-clockwise.”
- True “two-wire” control.
- Patented technology provides back-up capabilities within the standard size actuator enclosures!
- Dual conduit openings make wiring easier, and keep power and control wiring separate.
- Two year warranty.

ESR-SERIES ENCLOSURE



ALL DIMENSIONS IN INCHES

ESR SPECIFICATIONS

Internal Back-up Power

Neles Valvcon™ ESR-Series electric actuators, equipped with internal back-up power, allow you to shut down your system in the event of an external power loss.

The electronic back-up powered feature incorporates a rechargeable storage module on a plug-in, modular PC board under the actuator cover. Upon power loss, the storage module is automatically activated as the main power supply to drive the actuator to the "fail" position. No hardwiring or other complex operations are required.

ESR-SERIES DATA

Torque	Normal Operating Speed (per 90° rotation in seconds)	Power Loss Speed (90° rotation)	Maximum Charge Monitor Delay (before actuation begins)	Normal Operating Current Draw (in amps)		Duty Cycle
				115VAC	230VAC	
150 lb-in; 12 lb-ft; 17 Nm	5	10 seconds	3 minutes	.2	.1	80%
300 lb-in; 25 lb-ft; 34 Nm	10	15 seconds	4 minutes	.2	.1	80%
600 lb-in; 50 lb-ft; 68 Nm	15	25 seconds	5 minutes	.2	.1	80%

ELECTRONIC SPRING RETURN ELECTRIC ACTUATORS OPTIONS

Tropical Heater/Thermostat

(Order Code H)

Recommended in all high humidity applications where condensation may accumulate inside the actuator. For 115VAC applications the heater consumes 15 watts, for 230VAC applications the heater consumes 40 watts.

ISO 5211 Output

(Order Codes I1, I2, I3, and I4) ISO 5211 Metric Output

The actuator is equipped with an ISO 5211 compliant mounting configuration. The standard drive output for 150-600 lb-in models is a 3/4" female square. We offer several female metric drive output options, consult the "How to Order" section for available sizes for a given actuator model.

(Order Code K)

Brake Option; prevents back-driving. Recommended on butterfly valves, dampers and resilient-seated ball valves.

Additional Limit Switches

(Order Code S2)

Up to two additional limit switches may be added for position indication or as dry contacts to operate other devices. Single pole, double throw switches rated for 1/2 HP, 11 amps at 250VAC, CSA certified.

Heater/Thermostat

(Order Code T)

Recommended in all applications where the temperature may drop below 32°F. For 115VAC applications the heater consumes 15 watts, for 230VAC applications the heater consumes 40 watts.

Keyed Output

(Order Codes Y1, Y2, and Y3) Keyed Output

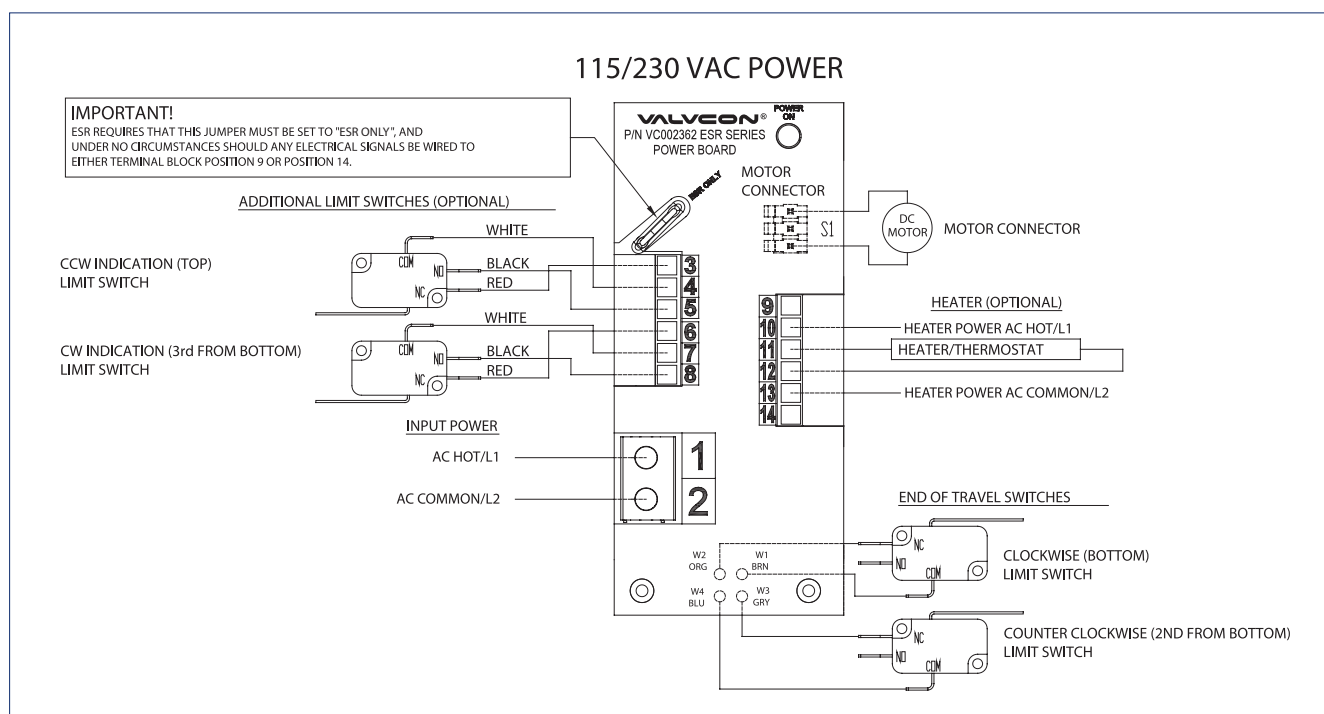
The actuator is equipped with an ISO 5211 compliant mounting configuration. The standard drive output for 150-600 lb-in models is a 3/4" female square. We offer several female keyed drive output options, consult the "How to Order" section for available sizes for a given actuator model.

Hazardous Location Enclosures

(ESRWX)

The standard enclosure (W) is rated for NEMA 4/4X (weather tight and corrosion resistant). The Hazardous Location enclosure (WX) is designed to meet NEMA 4/4X/7 & 9, Class I, Div 1, Groups C&D; Class II, Div. 1, Groups E, F, & G; Class III.

ESR-SERIES WIRING FOR 115 AND 230 VAC



HOW TO ORDER – ESR-SERIES ELECTRIC ACTUATORS (150-600 LB-IN)

Example:

Sample model code: ESRWX600IKS2TS115AC

1	2	3	4	5
ESR	WX	600	I1, K, S2, T	S115AC

1	Series
ESR	ESR

2	Enclosure
W	Weathertight (NEMA 4/4X)
WX	Weathertight & Explosion proof (NEMA 4/4X/7&9)

3	Torque
150	150 lb-in (12 lb-ft; 17 Nm)
300	300 lb-in (25 lb-ft; 34 Nm)
600	600 lb-in (50 lb-ft; 68 Nm)

4	Other Options
-	No entry if standard
H⁽²⁾	Tropical Heater/Thermostat
I1⁽³⁾	14mm Female Square Output
I2⁽³⁾	17mm Female Square Output
K	Brake
S2	Two Auxiliary Limit Switches
T⁽⁴⁾	Heater/Thermostat
Y1⁽³⁾	15mm Female Keyed Output
Y2⁽³⁾	20mm Female Keyed Output

5	Operating Voltage
S115AC	115AC
S230AC	230AC

Notes:

1. This heater option activates at or below 90°F and deactivates at 110°F; it is recommended in high-humidity applications.
2. The standard drive output for 150 - 600 lb-in actuators is a 3/4" female square.
3. This heater option activates at or below 40°F and deactivates at 60°F; it is recommended in applications where the temperature may drop below 32°F.

Committed to Customer Service

Neles worldwide web site: www.neles.com/products/actuators/electric-actuators/, provides 24 hour a day access to all technical support material - from sales brochures to instruction manuals to installation and troubleshooting tips. For local support, our network of trained stocking distributors/representatives are industry leading experts in valve automation. Visit the Neles, Valvcon™ product web site to locate the nearest stocking distributor/representative.

Timely Technical Support

Neles Product Support is on call to answer your engineering or application questions, and to quickly repair or upgrade your actuators. These highly trained support engineers offer a broad range of expertise, with the combined experience to assist specifying engineers and contractors with information on feasibility and special applications.

A Tradition of Quality

Neles is dedicated to producing superior-quality products that are second to none. Our development laboratory and manufacturing facilities exemplify our total commitment to producing quality products.

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Neles

Vanha Porvoontie 229, 01380 Vantaa, Finland.
Tel. +358 10 417 5000.

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reliability