

# NELES

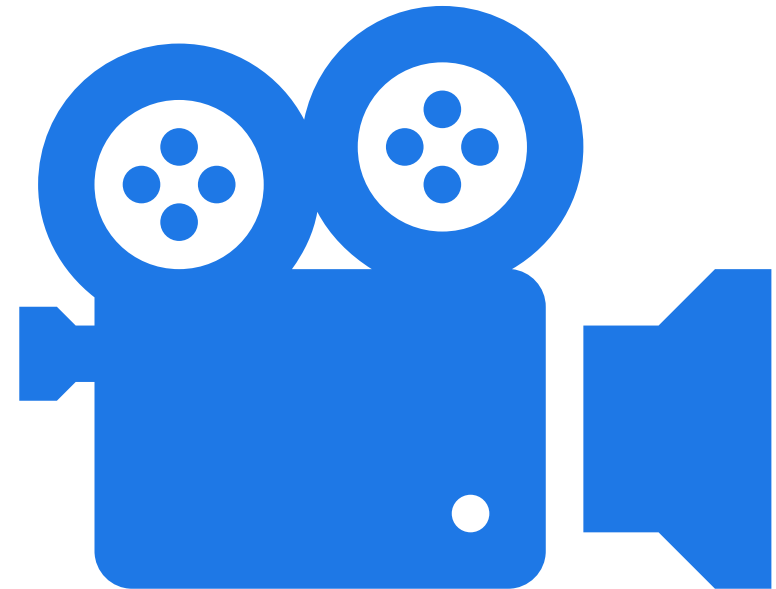
## Product school

Electric Actuators

# Data privacy

## Practicalities

This event will be audio and video. When attending this event, you agree on the collection and on the processing of your personal data, i.e. your name and email address, and on the publication of the audio and video recording afterwards. If you do not agree with your personal data being recorded, you can of course leave the event, but we hope you stay online with us. You can read our Data Privacy Policy on our website [neles.com/privacy](https://neles.com/privacy).



# In session features

The screenshot displays a GoToWebinar session window. The main content area shows a 'Webinar Housekeeping' page with the following details:

- Organizer:** Liz Davis | **Presenter:** Liz Davis
- Audio:** Use your microphone and speakers (VoIP) or call in using your telephone.
- United States: +1 (951) 384-3421
- Access Code: 400-696-084
- Audio PIN: 19
- [List Additional Conference Call Numbers](#)

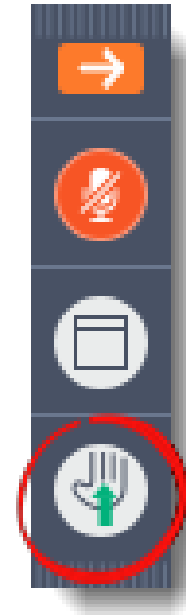
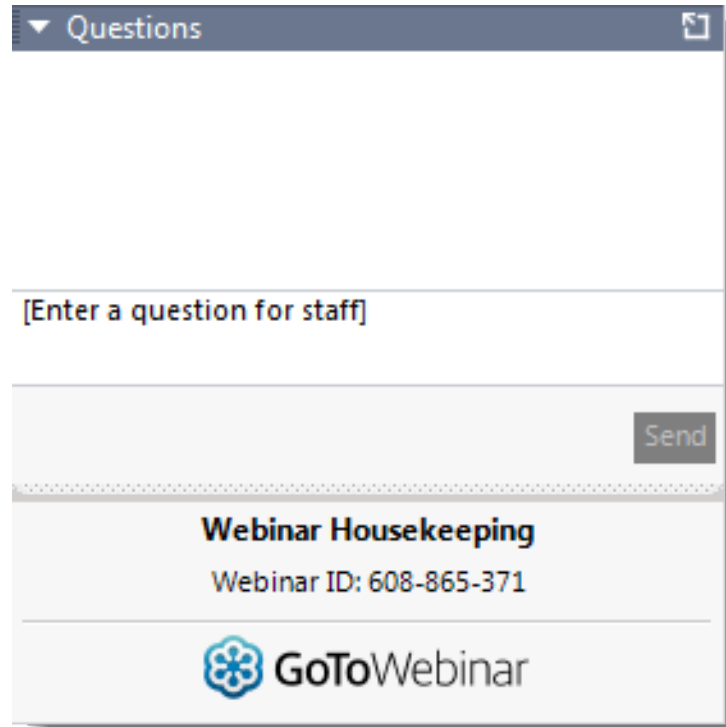
The right sidebar contains several sections:

- Audio:** Includes a 'Sound Check' button, radio buttons for 'Computer audio' (selected) and 'Phone call', a 'MUTED' status, and dropdown menus for 'Transmit (Plantronics Savi 7xx-M)' and 'Receive (Plantronics Savi 7xx-M)'. A blue arrow points to the 'Sound Check' button.
- Talking:** Liz Davis
- Questions:** A section with a text input field containing '[Enter a question for staff]' and a 'Send' button. A blue arrow points to the 'Send' button.
- Webinar Housekeeping:** A summary box showing 'Webinar ID: 608-865-371' and the 'GoToWebinar' logo.

At the top of the sidebar, a vertical toolbar contains icons for screen sharing, chat, and help. A blue circle highlights the screen sharing icon, and a blue arrow points to it from the left.

The Windows taskbar at the bottom shows icons for Internet Explorer, File Explorer, Google Chrome, and the GoToWebinar application.

# In session features



# In session features

## Practicalities

The screenshot shows a 'Questions' panel with a vertical toolbar on the left and a list of questions on the right. The toolbar contains icons for a question mark, a microphone, a speech bubble, a document, a red circle, and a send button. Two blue arrows point to the question mark and microphone icons. A blue arrow points to the red circle icon with the text 'Ask the staff a question'. A blue arrow points to the send button with the text 'Send'. The main panel shows two questions and answers from 'Webinar staff'.

Questions

Webinar staff to everyone

Q: Hi, will this session be recorded and sent over afterwards?

A: yes absolutely! 12:03 PM

Webinar staff to everyone

Q: When you reply to all, do all people then see the question too?

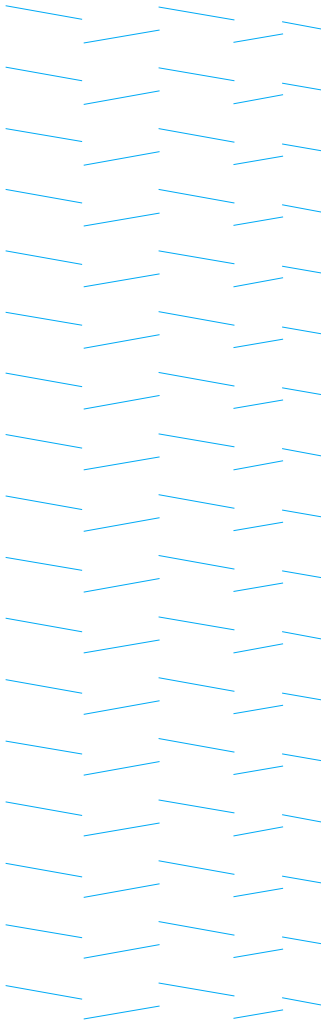
A: yes they do! 12:06 PM

Ask the staff a question

Send

# Presenter

- Dean Lawrence
- Senior Product Manager responsible for the electric actuator product line; working with the products for 27 years
- I will be presenting information on the electric actuators with a focus on the ADC and V series, including some competitive information, the recent product offering changes, and some additional resources for your use



# NELES

## Electric Actuators

# VALVCON™ Electric Actuators

NELES



**ADC-Series**

Continuous duty, universal power, optional battery back-up power



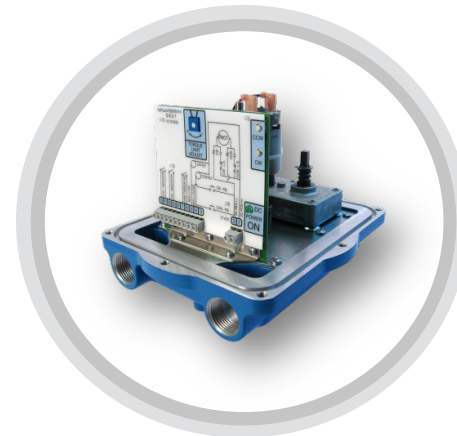
**V-Series**

On/off, or automatic cycling,  
115VAC & 230VAC



**LC-Series**

Economical, reversing or unidirectional



**Q6-Series**

12VDC remote, solar applications



# NELES

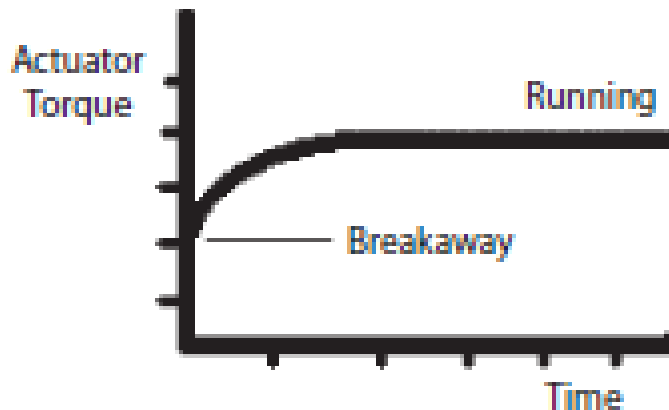
## Electric Actuators

The Basics

## A couple of things to note

- **Torque:**

- **Breakaway torque** is the amount of torque that an actuator can generate immediately when power is supplied – the torque generated from a standing start.
- **Stall/running torque** is the maximum amount of torque an actuator can generate – measured as the torque required to stall the momentum of a running actuator.



- **Duty cycle:**

- Duty cycle is the relationship between the time that an actuator may run and the time it must rest (cool). If an electric actuator is run beyond its rated duty cycle, the actuator may “trip” the integral thermal overload in the motor (at best) or “burn up” the motor (at worst).
- Example: a 25% duty cycle means that the actuator can only run 25% of the time and needs to rest 75% of the time.
  - If an actuator with a 25% duty cycle has a 90-degree cycle time of 10 seconds; the rest time will be 30 seconds
  - Using our V-Series, 600 lb-in unit as an example, the duty cycle is 75% and the 90-degree cycle time is 30 seconds; the rest time will be 10 seconds

# Electric Actuators

NELES

## The Basics

- **Breakaway torque range:**  
150 – 3,000 lb-in (12 – 250 lb-ft; 17 – 339 Nm); 8 sizes
- **Available voltages:**  
115VAC 50/60Hz (1PH), 230VAC 50/60Hz (1PH),  
24VAC 50/60Hz (1PH), 12VDC & 24VDC
- **Available enclosures:**  
W – Weathertight  
WX – Weathertight, & explosionproof
- **Designed for quarter-turn applications (90°);** 180°, & 270° rotations are also available
- **Temperature range:** -40°F to 150°F / -40°C to 66°C (max 130°F / 55°C for ADC with SLA battery)



V-Series Speed Control/Timer



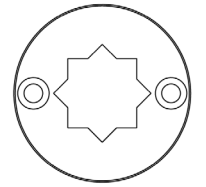
ADC-Series

- **Available configurations include:**  
On/off, positioning, automatic cycling, & optional battery back-up
- **Features/Options include:**  
Auxiliary limit switches, heater/thermostat, motor brake, feedback potentiometer, ISO compliant metric outputs, keyed outputs, & handwheel override

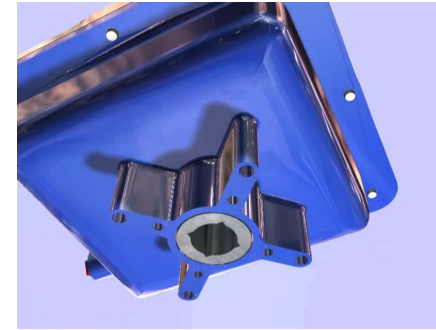
# Electric Actuators

## ISO 5211 Compliant Mounting

NELES

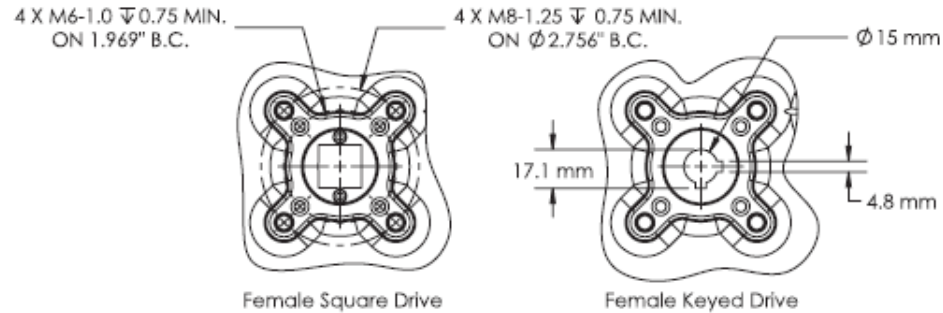


Double square



Actuator output

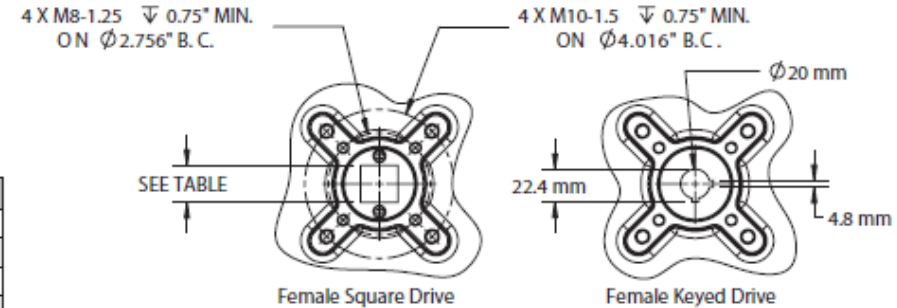
Mounting Flange, ISO 5211 F05 / F07



Actuator Size	Drive Option	Drive Type	Drive Size	Depth
150-600 lb-in (12-50 lb-ft, 17-68 Nm)	Standard	Square	0.750 (19mm)	0.90 (22.9mm)
150-600 lb-in (12-50 lb-ft, 17-68 Nm)	Option "I1"	Double Square	0.551 (14mm)	0.90 (22.9mm)
150-600 lb-in (12-50 lb-ft, 17-68 Nm)	Option "I2"	Square	0.669 (17mm)	0.90 (22.9mm)
150-600 lb-in (12-50 lb-ft, 17-68 Nm)	Option "Y1"	Keyed	0.591 (15mm)	1.40 (35.6mm)
150-600 lb-in (12-50 lb-ft, 17-68 Nm)	Option "Y2"	Keyed	0.787 (20mm)	1.40 (35.6mm)

Small enclosure (ADC, V, Q6; 150 – 600 lb-in)

Mounting Flange, ISO 5211 F07 / F10



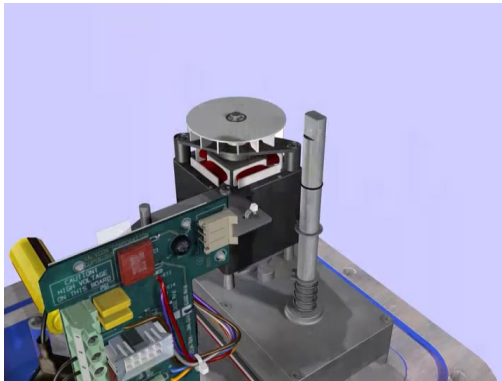
Actuator Size	Drive Option	Drive Type	Drive Size	Depth
1000-3000 lb-in (83-250 lb-ft, 113-339 Nm)	Standard	Square	1.000 (25mm)	1.20 (30.5mm)
1000-3000 lb-in (83-250 lb-ft, 113-339 Nm)	Option "I2"	Double Square	0.669 (17mm)	1.20 (30.5mm)
1000-3000 lb-in (83-250 lb-ft, 113-339 Nm)	Option "I3"	Double Square	0.748 (19mm)	1.20 (30.5mm)
1000-3000 lb-in (83-250 lb-ft, 113-339 Nm)	Option "I4"	Double Square	0.866 (22mm)	1.20 (30.5mm)
1000-3000 lb-in (83-250 lb-ft, 113-339 Nm)	Option "Y2"	Keyed	0.787 (20mm)	1.50 (38.1mm)
1000-3000 lb-in (83-250 lb-ft, 113-339 Nm)	Option "Y3"	Keyed	0.984 (25mm)	1.50 (38.1mm)

Large enclosure (LADC and LV; 1000 – 3000 lb-in)

# Electric Actuators

## Manual Override (intended for use when power is not available)

- A wrench-operated manual override is standard (all products but LCU)
- A handwheel override is optional
- We can also plug the override bore to remove the ability to override the unit



Wrench-operated override



Optional handwheel override



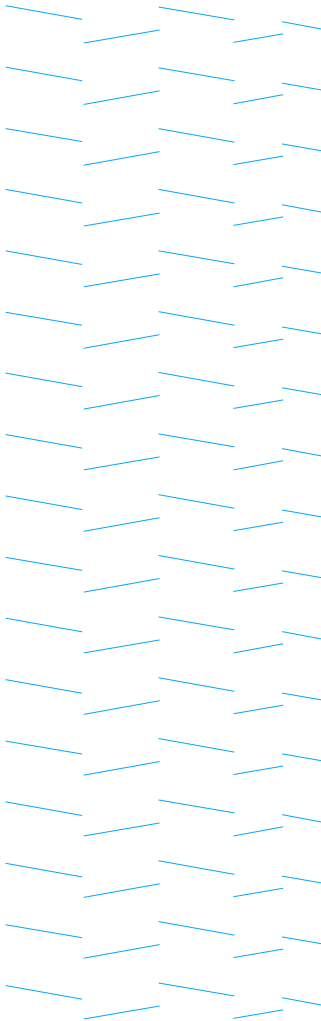
Plugged override

# Electric Actuators

## Typical Customer Challenges

- Reliable performance
- Ease of use
- Installation / maintenance
- Single vendor accountability

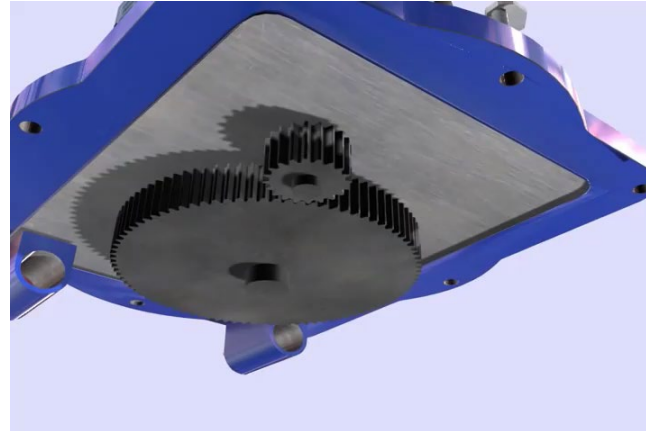
NELES



# Designed for Reliable Performance

## Electric Actuators

- All hardened steel spur gearing
- Die cast aluminum enclosure
  - Super durable, baked-on polyester powder coat finish
  - Ultra corrosion-resistant, captive cover screws
- Permanent lubrication
- 100% testing prior to shipment
- Certified manufacturing facility
  - ISO 9001:2015 Quality Management
  - ISO 14001:2015 Environmental Management
  - ISO 45001:2018 Occupational Health & Safety



**Challenge**  
Product reliability

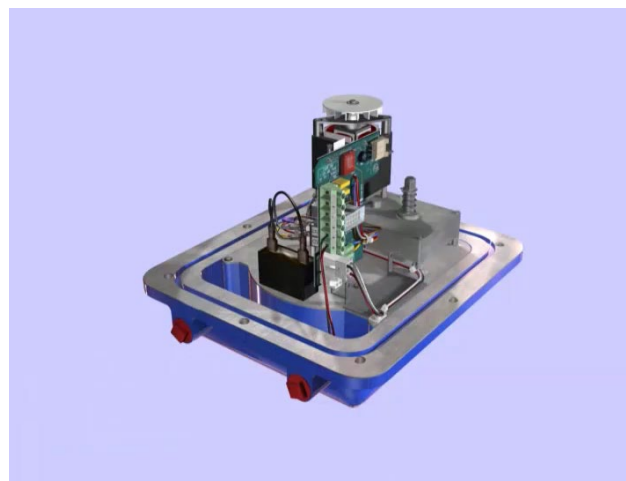
**Solution**  
Rugged reliability is built right in

# Designed for Easy Adjustment & Addition of Options

## Electric Actuators

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- Gain access to adjustments with ease
- Use standard tools to adjust travel limit settings
- Spare parts are easily replaced using standard tools
- Can be mounted in any position



## Challenge

Difficult adjustment  
Special tools required  
Limits to mounting orientation

## Solution

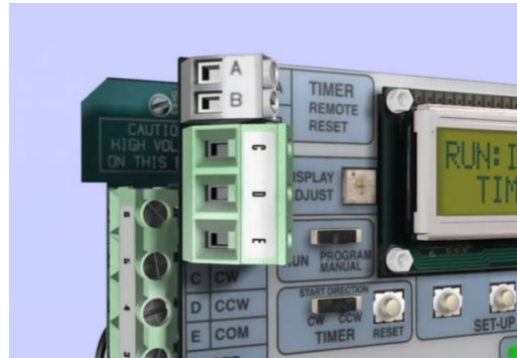
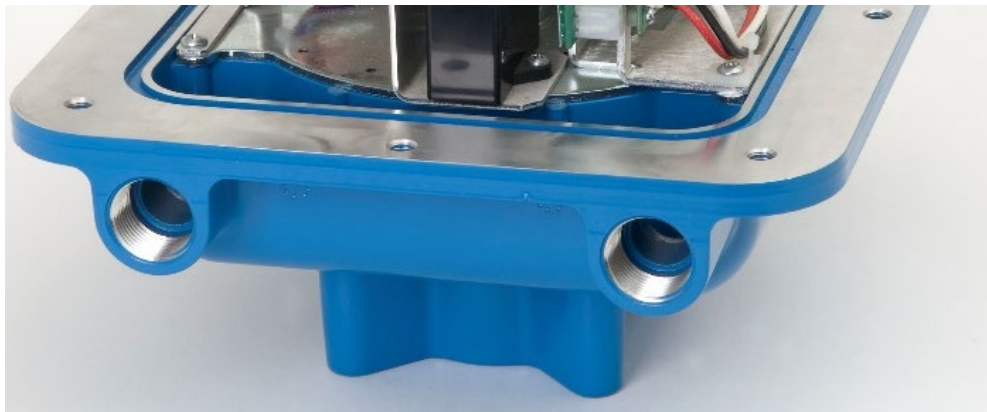
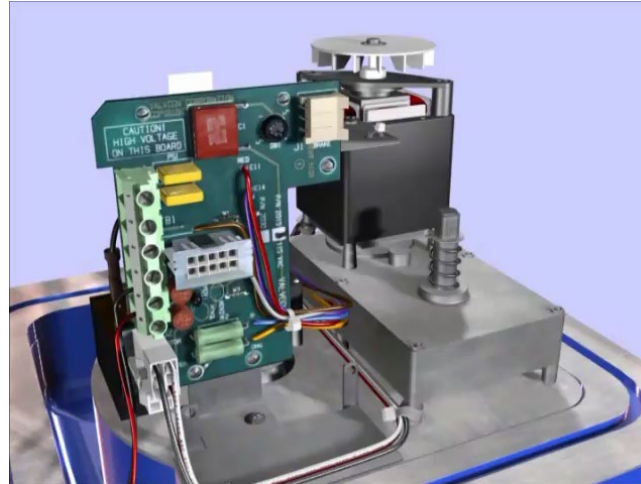
Easy access to internals  
Mount in any orientation



# Designed for Easy Installation and Wiring

## Electric Actuators

- Large terminal blocks for high voltages
- Smaller terminal blocks for low voltages and control signals
- Dual conduit entries to separate power from control wiring



## Challenge

Complicated wiring  
Single conduit entry

## Solution

Clearly labeled terminals  
Dual conduits

# Designed for Automated Assembly Performance

## Electric Actuators

NELES

- Standard ISO 5211 mounting
- Mount to Jamesbury™ valves
  - Metric square drives
  - Using standard linkage kits
- Mount to Neles™ valves
  - Keyed drives
  - Using standard mounting kits
- Single vendor accountability



## Challenge

Determining responsibility when multiple suppliers are involved

## Solution

Complete Neles assembly

# Electric Actuators

## Features That Address Customer Challenges

- Rugged reliability
- Simple user interface
- Easy access
- The complete Neles package



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QUESTIONS?

# NELES

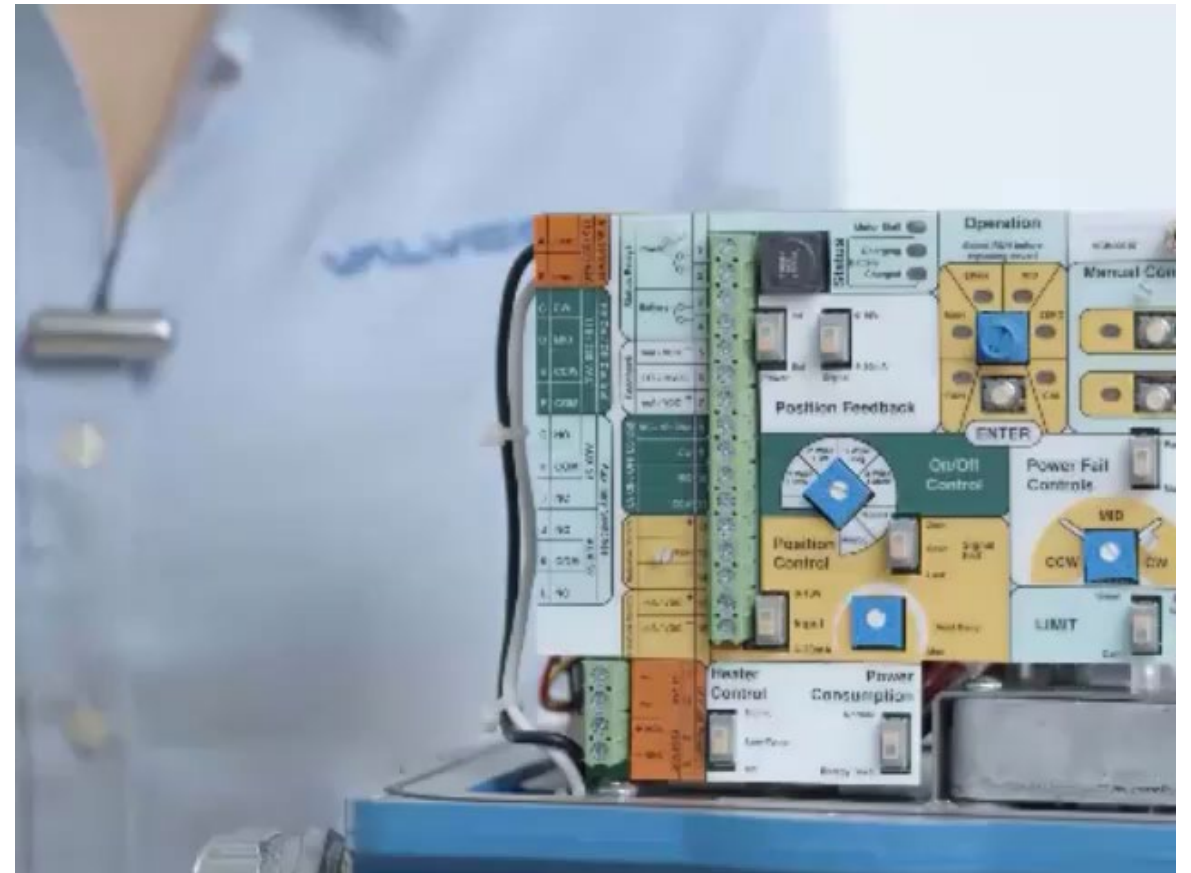
## Electric Actuators

ADC-Series

# Electric Actuators

## ADC-Series

- Extremely versatile:
  - Universal power, and control
  - On/off, or positioning
    - Standard position feedback
  - 3 Rotation options
- Optional battery back-up power
  - Drives to a fail position upon loss of external power
  - Two battery options; Li Ion or SLA
  - Can continue to respond to control signal in multi-cycle mode
- MODBUS® communication option

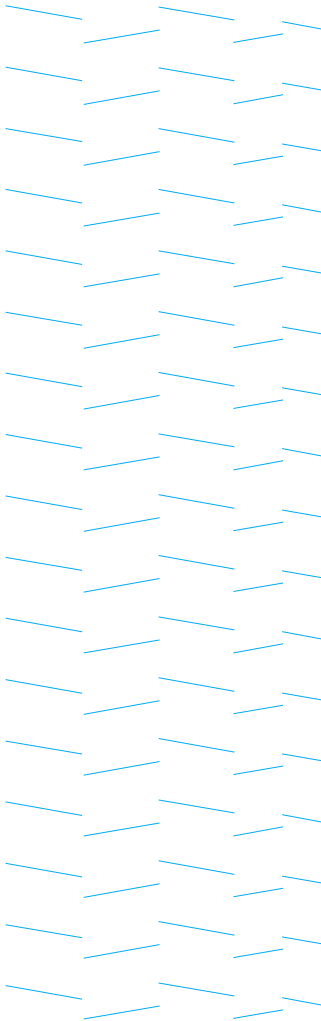


# Electric Actuators

## Typical Customer Challenges

- Easy installation and commissioning
- Versatility
- Utility
- Power-loss functionality

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# Designed for Simple Set-Up and Calibration

## ADC-Series

- Clearly labeled overlay includes wiring info, as well as instructive text
- Easy to use slide switches, selection potentiometers, and pushbuttons make set-up a snap!



## Challenge

Complicated commissioning  
Special tools or equipment  
required for set-up

## Solution

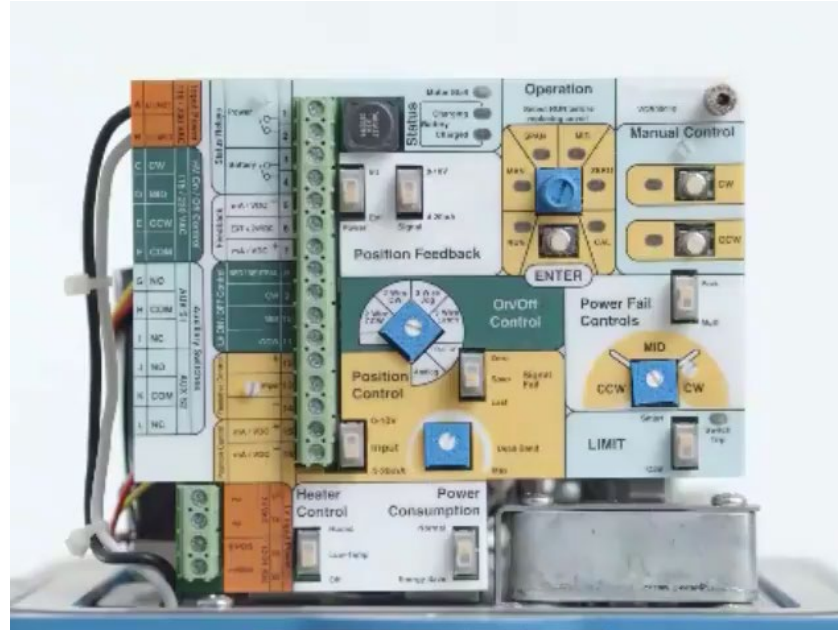
Simple “set and go” user  
interface



# Designed for Versatility

## ADC-Series

- Unit accepts 5 voltages for power, and for on/off control
- Unit can also be configured for positioning control
  - Control with mA or VDC
  - Control with resistive signal



## Challenge

Not having the right actuator for the application

Processes could change/evolve over time

## Solution

ADC universal power and control

# Designed for Use

## ADC-Series

- Brushless DC motor
  - No brushes to wear
  - Rated for 120 starts/minute
- Duty cycle is reduced to 75% at the maximum temperature rating (150°F; 66°C)



## Challenge

Process demands continuous operation

High-temp environment with frequent cycle requirement

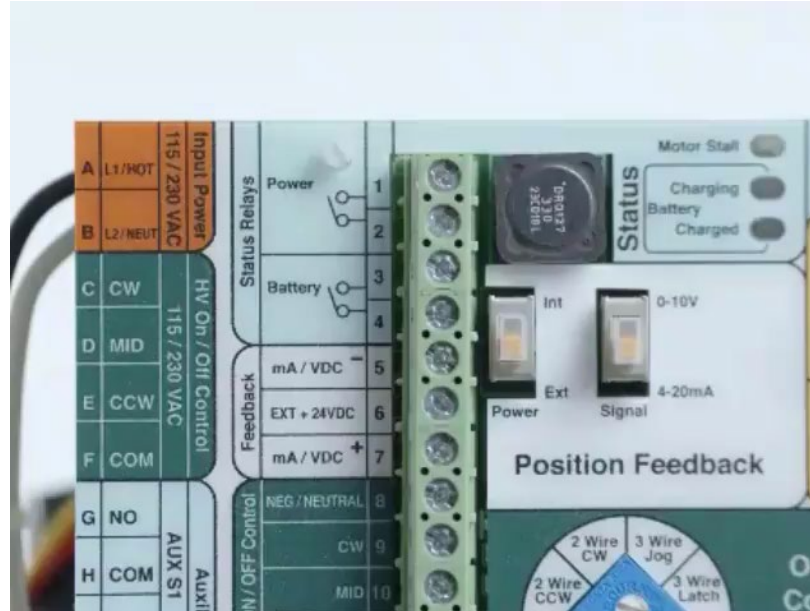
## Solution

ADC 100% duty cycle

# Designed for Safety

## ADC-Series

- Two battery chemistry options
  - Lithium Ion
  - SLA (sealed lead acid)
- Battery status output
  - System runs weekly load test to provide “state of health” to user
  - Also available via optional *MODBUS* board



## Challenge

Process requires driving to a “safe” position in the event of external power loss

Expensive spring-return actuation

## Solution

Reliable battery back-up power

# Electric Actuators

## ADC-Series General Specifications

- **Universal input power:**  
115VAC 50/60Hz (1PH), 230VAC 50/60Hz (1PH), 24VAC 50/60Hz (1PH), 12VDC & 24VDC
- **Torque range:**  
150 – 3,000 lb-in (12 – 250 lb-ft; 17 – 339 Nm)
- **Output:**  
Female square:  $\frac{3}{4}$ " for 150 – 600 lb-in (17 – 68 Nm) models; 1" for 1000 – 3000 lb-in (113 – 339 Nm) models
- **Duty cycle:**  
100%
- **Approximate weight:**  
17 lbs. / 8 kg (150 – 600 lb-in); 31 lbs. / 14 kg (1000 – 3000 lb-in)
- **Temperature range:**  
-40°F to 150°F / -40°C to 66°C (\*130°F / 55°C with SLA battery)



# Electric Actuators

## ADC-Series Standard Features, and Option Information

### Universal control board options:

- Universal on/off and modulating control board for 90°, 180°, and 270° rotations
- Optional battery back-up
  - Li Ion (lithium ion) chemistry
  - SLA (sealed lead acid)

### Available Options:

- ISO 5211 compliant metric output (use with Jamesbury™ valves)
- Keyed output - metric; female (use with Neles™ valves)
- Handwheel override
- *MODBUS* communication



### Standard features

- Visual position indicator
- Holding brake
- Heater/thermostat
- Two auxiliary limit switches
- Manual override

# Electric Actuators

## ADC-Series Standard Features – in Detail

### On/off operation (control signal can be 115/230AC, 24AC, or 12/24DC):

- **2 Wire CCW** (defaults CW until CCW signal is applied)
- **2 Wire CW** (defaults CCW until CW signal is applied)
- **3 Wire** (drive CW or CCW with separate signals; stops when signal is removed)
  - Two modes: jogging or latching
  - Can be configured for three-position operation in 3 wire mode

### Positioning/modulating operation:

- **Analog control:** accepts 4-20mA or 0-10VDC (split range capable)
- **Resistive control:** accepts from 0-100Ω to 0-10,000Ω
- Fail to zero, span, or “last” position upon loss of control signal



### Standard features:

- **Position feedback:** mA or VDC; internally or externally powered
- **Two auxiliary limit switches:** use for indication, sequencing, etc.
- **Brake:** prevents back-driving
- **Heater:** enable on-board for low-temp or humidity-control

# Electric Actuators

## ADC-Series Features Optional and Standard

### Optional battery back-up:

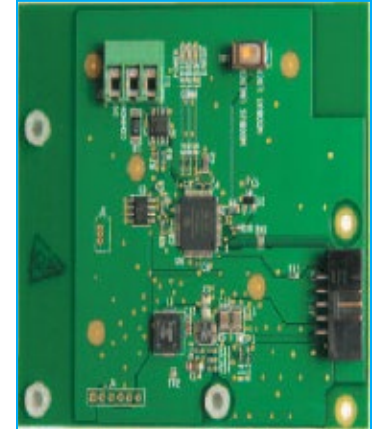
- Built-in charger
- Battery status output
  - Automatically conducts battery load-test and makes state-of-health assessment
- Drive to CW, CCW, or MID upon loss of external power
  - Will continue to respond to control signal, if present, in multi-cycle mode

### Additional standard features:

- Power status output (lets user know if board power drops out; also alternates if motor is stalled)
- Motor stall (removes power to the motor if stall condition occurs)
- Energy save (allows unit to “doze” until next command signal change is received)

### Optional *MODBUS* communications board:

- Control actuator with *MODBUS* commands (RS-485, two wire)
- Poll actuator for diagnostic information



*MODBUS* board

# Electric Actuators

## ADC-Series Applications – On/Off

- Basic On/Off (Open/Close) Applications
- Municipal Water Supply (smaller butterfly valves; up to 10” or 12”)
- Wastewater
- Foul air in treatment facilities
- OEM skids for pumps, compressors, paint booths
- Pharmaceutical manufacture
- Food and beverage
- Aquariums
- Wastewater collection
- Tank/pump isolation
- On/Off applications requiring isolation for wiring in parallel
- On/Off where control comes from a DCS in the form of 12VDC



# Electric Actuators

## ADC-Series Applications – Modulating

### **General:**

- Multiple closed-loop control systems
- Food processing; batch processes; beverage processing
- HVAC systems – water, steam, gas
- Mixing valves; paint and other chemical production
- Loading racks at tank farms
- Water circulation for cooling in die-cast molding applications
- Wastewater neutralization in semiconductor production
- Boiler feed water/glycol; boiler gas valve control in power generation

# Electric Actuators

## ADC-Series Applications – Modulating

### **Oil and Gas (upstream):**

- Plunger lift and gas lift at the wellhead
- Back-pressure relief
- Separator valves
- Flares
- Steam injection; helps older wells produce more easily
- Landfill gas applications

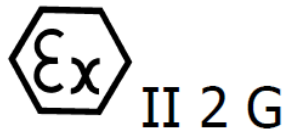
### **Other applications:**

- Furnace burner control
- HVAC applications requiring a 0-135 $\Omega$  control signal (typically a “slide wire” controller, often used in hospitals and universities)
- Water reclamation
- Diesel generator skids (power generation)

# Electric Actuators

## ADC-Series Product Scope

<b>Sizes</b>	8 sizes; from 150...3000 lb-in, (12...250 lb-ft; 17...339 Nm) of breakaway torque
<b>Temperature</b>	-40...+150°F (-40...+66°C)
<b>Enclosure types</b>	W...Weathertight; WX...Weathertight and explosionproof/dust-ignition proof
<b>Ratings</b>	For W models...NEMA 4/4X; IP66; CE For WX models...NEMA 4/4X, as well as NEMA 7 Class I, Div. 1, Gr. C, & D; NEMA 9 Class II, Div. 1, Gr. E, F, & G; NEMA Class III; *ATEX Directive 2014/34/EU: Ex db IIB T6 Gb; *IECEX CSA 14.0057X; IP66; CE
<b>Voltages</b>	Universal power; all models accept 115, 230, 24VAC (50/60Hz 1-PH), and 12, 24VDC
<b>Duty cycle</b>	100% (at or below 104°F; 40°C); 75% maximum duty cycle at 150°F; 66°C



\*not available with SLA battery

# Electric Actuators

## ADC-Series Features That Address Customer Challenges

- Simplified set-up
- Universal power/control
- Continuous duty cycle
- Fail "safe" functionality



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QUESTIONS?

# NELES

## Electric Actuators - Competition

ADC-Series vs Common Competitors

# Electric Actuators Competition

## Emerson / Bettis TorqPlus

NELES

	ADC-Series	EM-300	EM-500	EM-800
Size	150...3000 lb-in	150...600 lb-in	350...1600 lb-in	2000...20000 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40*...+140°F (-40*...+60°C) (*with heater activated)	-40*...+140°F (-40*...+60°C) (*with heater activated)	-40*...+140°F (-40*...+60°C) (*with heater activated)
Available voltages	Universal power	115VAC, 230VAC, 24VAC, 12VDC, 24VDC	115VAC, 220VAC, 24VAC, 12VDC, 24VDC	115VAC, 220VAC (1PH), 220VAC (3PH)
Duty cycle	100% at/below 104°F; 40°C	AC models 30%; DC models 100% at/below 75°F	AC models 30%; AC and DC models 100% at/below 75°F	100% at/below 75°F
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	CSA	CSA	CSA



Bettis TorqPlus

[EM-300](#)  
[EM-500](#)  
[EM-800](#)

# Electric Actuators Competition

NELES

Emerson / Bettis SCE300 / Keystone EPI 2 / Biffi F02

	ADC-Series	SCE300 / EPI 2 / F02
Size	150...3000 lb-in (17...339 Nm)	35...2000 Nm
Temp range	-40...+150°F (-40...+66°C)	-25...+70°C (std) -40...+70°C (low-temp)
Available voltages	Universal power: 12/24V DC, 24, 115/230 V AC 50/60 Hz	24 to 48 V DC or AC 50/60 Hz; 100 to 240 V DC or AC 50/60 Hz; 208 to 240 V AC (3PH); 380 to 480 V AC (3PH); 500 to 575 V AC (3PH)
Duty cycle	100% at/below 104°F; 40°C	ON-OFF S3-100%; MODULATING S4-50% 1200s/h
Certifications	cCSA <sub>US</sub> ; ATEX; IECEX	cCSA <sub>US</sub> ; ATEX; IECEX; FM; INMETRO



Bettis  
[SCE300](#)

Keystone  
[EPI 2](#)



Biffi  
[F02](#)

\*Tyco  
[PremiTork](#)



# Electric Actuators Competition

Emerson / Fisher™ easy-Drive™ (honorable mention)

	ADC-Series	Fisher™ easy-Drive™ 200L (linear)
Size	150...3000 lb-in	750 lb (max. thrust)
Temp range	-40...+150°F (-40...+66°C)	-4...+158°F -20...+70°C
Available voltages	Universal power	12VDC, 24VDC
Duty cycle	100% at/below 104°F; 40°C	50% (maximum)
Certifications	cCSA <sub>US</sub> ; ATEX; IECEX	CSA, ATEX, IECEX



Fisher™ easy-Drive™  
[easy-Drive™ Flyer](#)  
[easy-Drive™ 200L](#)

# Electric Actuators Competition

GE/Baker Hughes/Dresser / RCS

NELES

	ADC-Series	MAR 10, 50, 90	MAR 100, 250
Size	150...3000 lb-in	120...1000 lb-in	1500...10000 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40*...+150°F (-40*...+65°C) (*with heater installed)	-40*...+150°F (-40*...+66°C) (*with heater installed)
Available voltages	Universal power	115VAC, 230VAC, 24VAC	115VAC, 220VAC, 24VAC, 220VAC (3PH), 440VAC (3PH)
Duty cycle	100% at/below 104°F; 40°C	115AC models 25% to 75%; 230AC models 25% to 50%; 24VAC models 25%	Range from 25% to 100% depending on voltage, and torque output
Certifications	cCSA <sub>US</sub> ; ATEX; IECE <sub>x</sub>	CSA	CSA



RCS MAR Series  
[MAR 10, 50, 90](#)  
[MAR 100, 250](#)

# Competition


## Read the Fine Print...

This is an excerpt from the RCS MAR Series data sheet:

### Duty Cycle

The percentage of time the electric motor is energized vs. the time it is at rest, in reversing duty and with the actuator running at its rated load - maximum published torque.

### Standard Modulating Duty Rating

- 
- 12 motor starts (corrections) per minute.
  - At the rated duty cycle for that model.
  - With the speed of operation a minimum of 15 seconds for 90° or slower.

# Electric Actuators Competition

GE/Baker Hughes/Dresser / RCS

NELES

	ADC-Series	Sure 65	Sure 100
Size	150...3000 lb-in	780 lb-in	1200 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40...+150°F (-40...+65°C)	-40...+150°F (-40...+65°C)
Available voltages	Universal power	115VAC, 230VAC	115VAC, 230VAC
Duty cycle	100% at/below 104°F; 40°C	45% for 3-sec model; 75% for 7-sec model	50%
Certifications	cCSA <sub>US</sub> ; ATEX; IECEX	CSA	CSA



RCS Sure Series

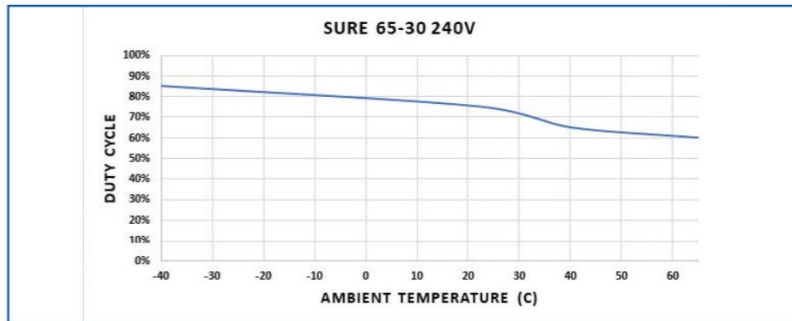
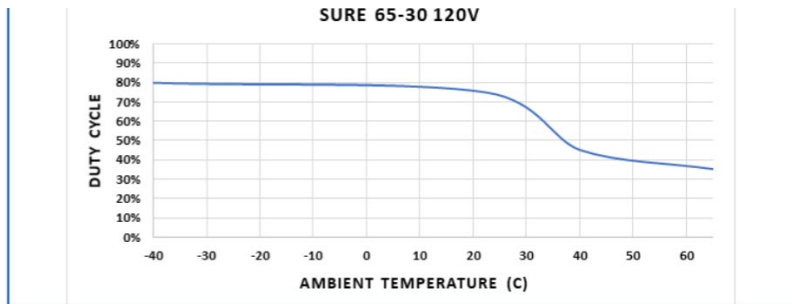
[Sure 65](#)

[Sure 100](#)

# Competition

## Read the Fine Print...

This is an excerpt from the RCS Sure 65 data sheet:



\*\* 120VAC Actuators Certified Duty Cycle Rating is -40°C To +40°C is 25% and +40°C to +65°C is 20% per UL429, 7th Ed., Clause 27

\*\* 240VAC Actuators Certified Duty Cycle Rating is -40°C To +40°C is 30% and +40°C to +65°C is 20% per UL429, 7th Ed., Clause 27

And here's a familiar caveat from the Sure 100 data sheet:

### Duty Cycle

The percentage of time the electric motor is energized vs. the time it is at rest, in reversing duty and with the actuator running at its rated load - maximum published torque.

### Standard Modulating Duty Rating

- 12 motor starts (corrections) per minute.
- At the rated duty cycle for that model.
- With the speed of operation a minimum of 15 seconds for 90° or slower.
- With positioning accuracy of (+/-) 1% of total span.



# Electric Actuators Competition

## Flowserve / Worcester

	ADC-Series	Series 75
Size	150...3000 lb-in	150...3000 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40*...+150°F (-40*...+66°C) (*with heater installed)
Available voltages	Universal power	115VAC, 230VAC, 12VDC, 24VDC
Duty cycle	100% at/below 104°F; 40°C	Range from 10% to 100% depending on voltage, and torque output
Certifications	cCSA <sub>US</sub> ; ATEX; IECEX	CSA



Worcester Series 75  
[Series 75](#)

# Competition

## Read the Fine Print...

This is an excerpt from the Worcester Series 75 Brochure:

### Specifications

**Sizes:**

Small: 10, 12, 15, 20, 22, 23  
Large: 25, 30

**Torque:**

150-3000 in.-lbs.

**Enclosures:**

TYPE 1 General Purpose  
TYPE 4 Watertight  
TYPE 7, Class I, Division 1, 2, Group C, D  
TYPE 9, Class II, Division 1, 2, Group E, F, G Hazardous Locations  
TYPE 4, 4X, 7, & 9 Combined Locations

**Enclosure Coatings:** Corrosion resistant baked polyester finish standard. Consult Flowserve for special applications.

**Voltages:**

120 V and 240 VAC, 12 V and 24 VDC

**Connection:**

Male output shaft (female shaft available on request)

**Gearing:**

Small: Sealed, permanently lubricated spur gear module driving a final dual-torque bull gear  
Large: Two-stage planetary gear, permanently lubricated self lock

Actuator Model	Stall Torque in.-lbs.	Start-up Torque in.-lbs.	Voltages		Duty Cycles	90° Time seconds	Current at rated stall torque – amps				Approx. Weight Lbs. (kg.)
			AC	DC			120 VAC	240 VAC	12 VDC	24 VDC	
1075	150	120	120, 240	—	10%	2.5	1.5	.60	—	—	8.20 (3.70)
			120, 240	12, 24	25%	5	.70	.40	1.40	.70	
			120, 240	12, 24	75%	17, 15	.30	.15	.50	.25	
			120	—	100%	17	.25	—	—	—	
1275	225	180	120, 240	—	10%	4	1.5	.60	—	—	8.20 (3.70)
			120, 240	12, 24	25%	8	.70	.40	1.20	.60	
			120, 240	12, 24	75%	27, 25	.30	.15	.50	.25	
			120	—	100%	27	.25	—	—	—	
1575	325	260	120	—	20%	5	.70	—	—	8.50 (3.83)	
2075	600	480	120, 240	—	10%	2.5	2.90	1.30	—	—	9.50 (4.31)
			120, 240	12, 24	25%	5	1.50	.90	5	2.50	
			120, 240	12, 24	75%	17, 15	.70	.30	1.60	.80	
			120	—	100%	27	.50	—	—	—	
2275*	900	720	120, 240	—	10%	4	2.90	1.30	—	—	9.50 (4.31)
			120, 240	12, 24	25%	8	1.50	.90	4.20	2.10	
			120	12, 24	75%	27, 25	.70	.30	1.50	.75	
2375	1200	950	120, 240	12, 24	75%	25	.70	.30	2	1	17.70 (8.04)
2575	1800	1440	120, 240	—	25%	10	2.70	1.30	—	—	48 (21.80)
			120, 240	—	75%	15	2.20	1.20	—	—	
3075	3000	2400	120, 240	—	25%	15	3.50	1.40	—	—	48 (21.80)
			120, 240	—	75%	23	2.20	1.20	—	—	

**Options:**

All sizes, all enclosures. Cycle Length Control (CLC), dual- or single-feedback potentiometer, 4-20 mA position indicator, heater/thermostat, condensation drain plug (V-53), 180° center-off (three-position), additional limit switches, mechanical brake, I-75 computer interface unit, various duty cycles, posi-

### Actuator Sizing

There are a few terms associated with electric actuators that require definition. **Actuator Start-up Torque** is the amount of torque initially produced by an actuator when starting from rest. Use start-up torque when sizing an electric actuator for a ball valve that is used for either on/off or throttling service. **Actuator Stall Torque** is the amount of torque produced by the actuator just prior to the point where the motor stalls. Do not use stall torque for sizing.

# Electric Actuators Competition

Flowserve / Worcester

NELES

	ADC-Series	Series 72
Size	150...3000 lb-in	Up to *900 lb-in (*based on data sheet)
Temp range	-40...+150°F (-40...+66°C)	0...+150°F (-18...+66°C) (heat tracing required below 0°F and recommended below 32°F)
Available voltages	Universal power	120VAC, 240VAC, 24VDC
Duty cycle	100% at/below 104°F; 40°C	Not listed
Certifications	cCSA <sub>US</sub> ; ATEX; IECEX	*CSA, *FM (*notes to consult Flowserve)



Worcester Series 72  
[Series 72](#)



# Electric Actuators Competition

## Flowsolve / Limitorque LTQ (Intrusive Quarter-Turn)

	ADC-Series	LTQ
Size	150...3000 lb-in (17...339 Nm)	35...2300 Nm
Temp range	-40...+150°F (-40...+66°C)	-22...+158°F (-30...+70°C)
Available voltages	Universal power: 12/24V DC, 24, 115/230 V AC 50/60 Hz	12, 24 V AC/DC, 120, 230 V AC (1PH); 220, 380, 480, 575 (3PH) for some models
Duty cycle	100% at/below 104°F; 40°C	25% (S2-15 min) and 75% (S4-75%)
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	cCSA <sub>US</sub> ; some models can optionally be XP rated



Limitorque LTQ  
[LTQ Bulletin](#)

# Electric Actuators Competition

ASAHI/AMERICA®

	ADC-Series	Series 92
Size	150...3000 lb-in	400...2000 lb-in
Temp range	-40...+150°F (-40...+66°C)	Maximum: 150°F
Available voltages	Universal power	115VAC, 230VAC, 24VAC, 12VDC, 24VDC
Duty cycle	100% at/below 104°F; 40°C	Ranging from 25% to 100% depending on voltage
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	UL; ATEX (optional?)



*Asahi/America*  
Series 92 Quarter Master Chief  
Optional Protek Battery Pack

# Competition

You get the idea...

Some excerpts from the Asahi Series 92 data sheets:

Calling an inductive AC motor “brushless” is deceiving

## Series 92 120 VAC & 220 VAC Explosion Proof Electric Actuator

### Standard Features

- UL1203 Certified (CLI, DIV. 1&2)
- Motor: Reversing, brushless, capacitor run 120 VAC 50/60 Hz, single phase
- Overload protection: Integral thermal overload



### Engineering Data

Valve Size	Model	Torque	Duty Cycle	Cycle Time (Sec)	Amp Draw					
					120 VAC	220 VAC	12 VDC	24 VDC	12 VAC	24 VAC
1/2"	S92	400	25%	195	0.5	0.4	2.0	4.0	2.0	3.0
3/4"	S92	400	25%	195	0.5	0.4	2.0	4.0	2.0	3.0
1"	S92	400	25%	195	0.5	0.4	2.0	4.0	2.0	3.0
1 1/2"	S92	400	25%	255	0.5	0.4	2.0	4.0	2.0	3.0
2"	S92	400	25%	315	0.5	0.4	2.0	4.0	2.0	3.0
2 1/2"	S92	400	25%	375	0.5	0.4	2.0	4.0	2.0	3.0
3"	A92	700	25%	375	0.8	0.6	2.0	4.0	2.0	3.0
4"	A92	700	25%	375	0.8	0.6	2.0	4.0	2.0	3.0

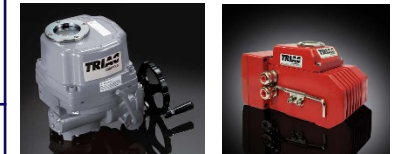
\*Cycle times approximate. Duty cycle shown for ambient temp. (73° F)

# Electric Actuators Competition

## A-T Controls TRIAC®

NELES

	ADC-Series	WE_XE_SE	XC	KE
Size/torque (lb-in)	150...3000	690...25900	690...25900	440...3500
Temp range	-40...+150°F (-40...+66°C)	-4...+158°F (-20...+70°C) (XP -4...+140°F)	-4...+158°F (-20...+70°C) (XP -4...+140°F)	-4...+140°F (-20...+60°C)
Available voltages	Universal power	110VAC, 220VAC, 24VAC, 12VDC, 24VDC; 380VAC, 440VAC (3PH)	110VAC, 220VAC, 24VAC, 12VDC, 24VDC	110VAC, 220VAC, 12VDC, 24VDC
Duty cycle	100% at/below 104°F; 40°C	50...70%	30...70%	50% max at 77°F
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	CSA, ATEX, IECEx (depending on series)	cCSA <sub>US</sub>	none listed



A-T Controls  
[WE](#) [XE](#) [XC](#) [KE](#)  
[SRX](#)  
[FSE](#) [BSF](#)

# Electric Actuators Competition

What's the story here?

It sure looks like A-T Controls is a group of private-labeled products from various manufacturers; most of whom are overseas:



[A-T Controls KE](#)



[Koei \(Japan\)](#)



[A-T Controls SRX](#)



[Sure 100](#)

# Electric Actuators Competition

But wait, there's more...

A-T Controls continued:



A-T Controls WE\_XE\_SE\_XC



[Nutork \(China\)](#)



I think Nutork may actually be made by Sun Yeh in Taiwan

[A-T Controls E Series](#)

[Sun Yeh](#)

# Electric Actuators Competition

NELES

Indelac

	ADC-Series	M Series	L Series
Size	150...3000 lb-in	400...1500 lb-in	700...3840 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40*...+150°F (-40*...+65.6°C) (*with heater installed)	-40*...+150°F (-40*...+65.6°C) (*with heater installed)
Available voltages	Universal power	115VAC, 230VAC, 24VAC, 12VDC, 24VDC	115VAC, 230VAC, 24VAC, 12VDC, 24VDC, 230VAC (3PH), 460VAC (3PH)
Duty cycle	100% at/below 104°F; 40°C	25% for 115AC and 230AC models; 75% for 24AC, 12DC and 24DC models	100% for 12DC, 24DC, 24AC, and 115AC models; 230AC, 230AC (3PH), 460AC (3PH), 30-min continuous run
Certifications	cCSA <sub>US</sub> ; ATEX; IECE <sub>x</sub>	CSA	CSA



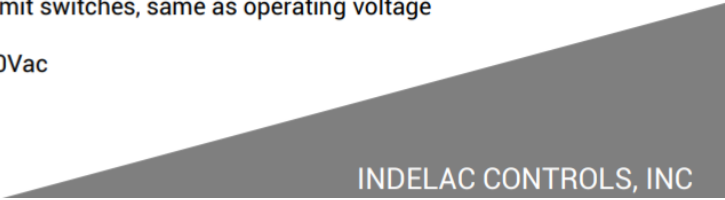
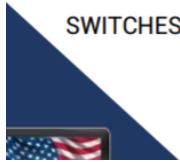
Indelac  
[M Series NEMA 4](#)  
[M Series NEMA 7](#)  
[L Series](#)

# Competition

## Again, Read the Fine Print...

This is an excerpt from the Indelac M Series NEMA 4 data sheet:

APPROVED VOLTAGES	115Vac	
APPROVED ENCLOSURES	Enclosure Type 4, 4X, 7 & 4-7	
APPROVED TEMP.	-4F (-20C) to 104F (40C)	
APPROVED OPTIONS	One or Two, Declutching Manual Override with Hand Wheel, Motor Brake for 115Vac, Visual Position Indicator, Special Mounting Pad Configurations and Mechanical Stop (For complete list of options, see option grid in catalog page 33)	
COATING	Thermally bonded polyester powder	
POSITION INDICATOR	Visual	Dome Indicator
	Electric	Feedback from limit switches, same as operating voltage
SWITCHES	Snap action	SPDT, 15A @ 250Vac



### NEMA 7 ENCLOSURE, GENERAL:

In general, operation and maintenance of a NEMA 7 electric actuator is no different than that of a NEMA 4 electric actuator. However, there are some precautions that must be followed.

1. **DO NOT** install in ambient temperatures that exceed **140 degrees F.**

Indelac manuals all include this warning yet the product is "rated" to 150°F



# Electric Actuators Competition

NELES

Indelac

	ADC-Series	SN Series (Internal Battery Back-Up)
Size	150...3000 lb-in	400...2800 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40*...+150°F (-40*...+65.6°C) (*with heater installed)
Available voltages	Universal power	115VAC, 230VAC, 24VAC, 12VDC, 24VDC
Duty cycle	100% at/below 104°F; 40°C	100%
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	none



Indelac  
[SN6](#)  
[SN28](#)

# Electric Actuators Competition

## Bray Series 70 / 70-HAZ

	ADC-Series	Series 70	Series 70-HAZ
Size	150...3000 lb-in (17...339 Nm)	34...2034 Nm	90...226 Nm
Temp range	-40...+150°F (-40...+66°C)	-29...+65°C	-29...+65°C
Available voltages	Universal power: 12/24V DC, 24, 115/230 V AC 50/60 Hz	120/230VAC; 24V AC/DC	120/220VAC
Duty cycle	100% at/below 104°F; 40°C	25%; Continuous (depending on cycle time)	25%; Continuous (depending on cycle time)
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	UL, CSA, and CE (most models)	UL (120V only)



[Bray Series 70 Brochure](#)

[Bray Series 70 Technical Manual](#)

# Electric Actuators Competition

## Rotork IQT (Part-Turn)

	ADC-Series	IQT
Size	150...3000 lb-in (17...339 Nm)	50...3000 Nm
Temp range	-40...+150°F (-40...+66°C)	-30...+70°C
Available voltages	Universal power: 12/24V DC, 24, 115/230 V AC 50/60 Hz	24 VDC (up to 2000 Nm); 100 - 240V AC (1PH); 200 – 690 V AC (3PH)
Duty cycle	100% at/below 104°F; 40°C	60 starts/hour On/Off & Inching; 1800 starts/hour Modulating
Certifications	cCSA <sub>US</sub> ; ATEX; IECEX	ATEX; IECEX; FM; CSA



Rotork IQT  
[IQT Flyer](#)

# Electric Actuators Competition

## AUMA ED/EQ Part-Turn Actuators

	ADC-Series	ED	EQ
Size	150...3000 lb-in (17...339 Nm)	25 & 50 Nm	40...600 Nm
Temp range	-40...+150°F (-40...+66°C)	-20...+70°C -40°C optional	-20...+70°C -40°C optional
Available voltages	Universal power: 12/24V DC, 24, 115/230 V AC 50/60 Hz	24 VDC; 24, 115, 230 VAC (1PH); 400 – 440 V AC (3PH)	24 VDC; 24, 115, 230 VAC (1PH); 400 – 440 V AC (3PH)
Duty cycle	100% at/below 104°F; 40°C	25% (S2-15 min) and S3% (S3-50%); optional for some models S4-100%	25% (S2-15 min) and S3% (S3-50%); optional for some models S4-100%
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	Ex II 3D IP65 T 150°C Dc optional	Ex II 3D IP65 T 150°C Dc optional



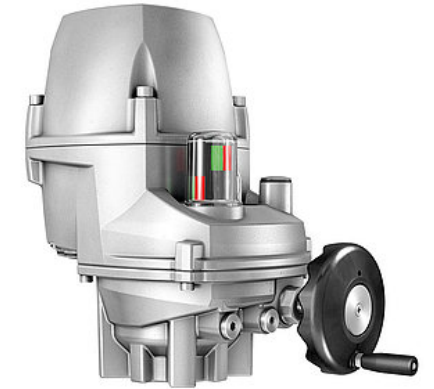
AUMA  
[AUMA Electric Actuators](#)

# Electric Actuators Competition

## AUMA PROFOX PF-Q Part-Turn Actuators

NELES

	ADC-Series	PF-Q
Size	150...3000 lb-in (17...339 Nm)	32...600 Nm
Temp range	-40...+150°F (-40...+66°C)	-30...+70°C
Available voltages	Universal power: 12/24V DC, 24, 115/230 V AC 50/60 Hz	100 – 240 VAC (1PH) 50/60 Hz
Duty cycle	100% at/below 104°F; 40°C	Open/Close Duty S2-15 min.; Modulating S4-50% (torque is half of rated)
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	IP67/68



AUMA  
PROFOX  
Actuators

# Electric Actuators Competition

## Valbia Serie 85 / 86

NELES

	ADC-Series	Serie 85	Serie 86
Size	150...3000 lb-in (17...339 Nm)	15...350 Nm	30...350 Nm
Temp range	-40...+150°F (-40...+66°C)	-20...+55°C	-20...+55°C
Available voltages	Universal power: 12/24V DC, 24, 115/230 V AC 50/60 Hz	12V AC/DC, 24V AC/DC, 100-240V AC	12V AC/DC, 24V AC/DC, 100-240V AC
Duty cycle	100% at/below 104°F; 40°C	50% (12V AC/DC); 75% (24V AC/DC; 100-240V AC)	50% (12V AC/DC); 75% (24V AC/DC; 100-240V AC)
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	UL, CSA (not XP)	UL, CSA (not XP)



Valbia  
Serie 85



Valbia  
Serie 86

# Electric Actuators Competition

## PS Automation

NELES

	ADC-Series	PS-AMS PSQ	PSQ
Size	150...3000 lb-in (17...339 Nm)	130...1500 Nm	130...1500 Nm
Temp range	-40...+150°F (-40...+66°C)	-20...+60°C	-20°C to +80°C (S2) / -20°C to +60°C (S4)
Available voltages	Universal power: 12/24V DC, 24, 115/230 V AC 50/60 Hz	24 VDC; 24, 115, 230 VAC (1PH); 360 - 460VAC (3PH)	24 VDC; 24, 115, 230 VAC (1PH); 400VAC (3PH)
Duty cycle	100% at/below 104°F; 40°C	Varies - S2-30 min.; S4-50% ED @ 25°C	Varies - S2-30 min.; S4-50% ED @ 25°C
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	IP67; IP68 (opt)	IP67; IP68 (opt)



PS Automation  
[PS-AMS PSQ](#)  
[PSQ](#)

# The Most Interesting Actuator Guy in the World

NELES



I DON'T ALWAYS SPEC ELECTRICS, BUT  
WHEN I DO, I PREFER ADCs.

STAY SPARKY MY FRIENDS!

PLEASE ACTUATE RESPONSIBLY.

Jonathan Goldsmith. Digital image. ABC News. 08 September 2016, <https://abcnews.go.com/GMA/video/dos-equis-reveals-interesting-man-world-41943274>



# QUESTIONS?

# NELES

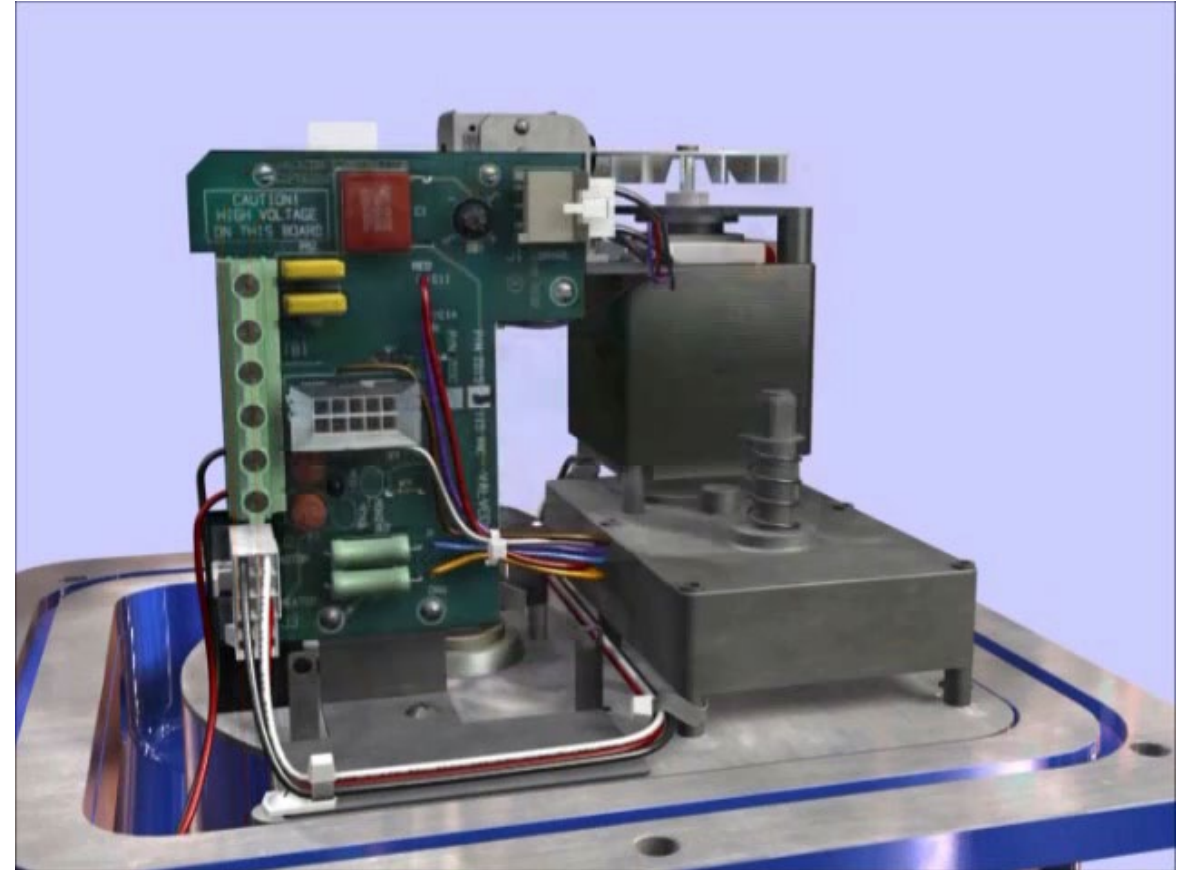
## Electric Actuators

V-Series

# Electric Actuators

## V-Series

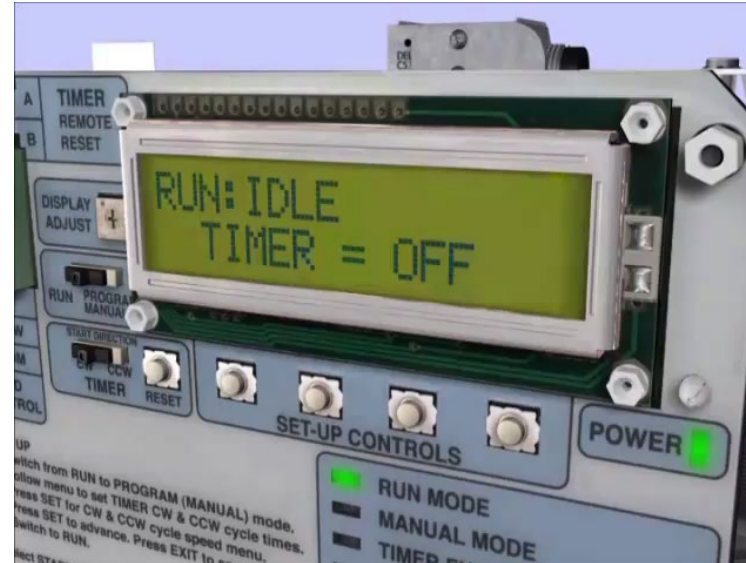
Modular design available as a basic on/off unit, or with the optional Speed Control/Timer board for automatic cycling or cycle rate regulation



# Designed for Simple Set-Up and Commissioning

## V-Series

- Clearly labeled overlays include wiring info, as well as instructive text
- Easy to use selection potentiometers, slide switches, and pushbuttons make set-up a snap!



## Challenge

Complicated commissioning  
Special tools or equipment  
required for set-up

## Solution

Simple “set and go” user  
interface

# Electric Actuators

## V-Series Features and Options

- Standard features:

- Visual position indicator
- Wrench-operated manual override
- Tropical heater/thermostat
- Motor brake
- Two auxiliary limit switches

- Board option:

- Speed Control / Timer

- Available options:

- “I1”, “I2”, “I3”, or “I4” - ISO 5211 compliant metric output (use with Jamesbury™ valves)
- “Y1”, “Y2”, or “Y3” - Keyed output - metric; female (use with Neles™ valves)
- “Z” - Handwheel override

- Female square output  $\frac{3}{4}$ ” for 150 – 600 lb-in models;  
1” for 1000 – 3000 lb-in models

**Approximate weight:** 17 lbs. / 8 kg (150 – 600 lb-in);  
31 lbs. / 14 kg (1000 – 3000 lb-in)



# Electric Actuators

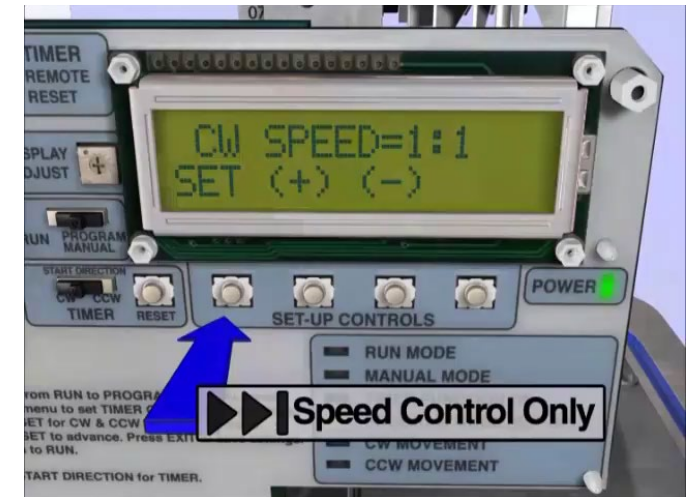
## V-Series Applications – On/Off

- Basic On/Off (Open/Close) Applications
- Municipal Water Supply (smaller butterfly valves; up to 10” or 12”)
- Wastewater
- Foul air in treatment facilities
- OEM skids for pumps, compressors, paint booths
- Pharmaceutical manufacture
- Food and beverage
- Aquariums
- Wastewater collection
- Tank/pump isolation

# Electric Actuators

## V-Series with Speed Control / Timer Board

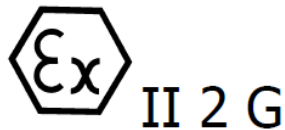
- Automatic cycling operation; adjustable from 1 min. - 24 hrs.
  - “One-shot” timer applications; car wash, “hose down” applications
  - Boiler blow-down
  - Sprinkler; dust suppression
  - Fountain
  - Irrigation
  - Filter backwash/backflush
- Cycle rate regulation; up to 200x normal cycle time
  - Prevent water “hammer”
  - Open slowly in steam applications
- Functions can be used together or independently



# Electric Actuators

## V-Series Product Scope

<b>Sizes</b>	8 sizes; from 150...3000 lb-in, (12...250 lb-ft; 17...339 Nm) of breakaway torque
<b>Temperature</b>	-40...+150°F (-40...+66°C)
<b>Enclosure types</b>	W...Weathertight; WX...Weathertight and explosionproof/dust-ignition proof
<b>Ratings</b>	For W models...NEMA 4/4X; IP66; CE For WX models...NEMA 4/4X, as well as NEMA 7 Class I, Div. 1, Gr. C, & D; NEMA 9 Class II, Div. 1, Gr. E, F, & G; NEMA Class III; ATEX Directive 2014/34/EU: Ex db IIB T6 Gb; IECEx CSA 14.0057X; IP66; CE
<b>Voltages</b>	115VAC 50/60Hz (1PH), or 230VAC 50/60Hz (1PH)
<b>Duty cycle</b>	75% (55% for 3000 lb-in models); 50% maximum duty cycle at 150°F; 66°C (35% for 2500 lb-in models; 25% for 3000 lb-in models)





# NELES

## Electric Actuators - Competition

V-Series vs Common Competitors

# Electric Actuators Competition

## Emerson / Bettis TorqPlus

NELES

	V-Series	EM-300	EM-500	EM-800
Size	150...3000 lb-in	150...600 lb-in	350...1600 lb-in	2000...20000 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40*...+140°F (-40*...+60°C) (*with heater activated)	-40*...+140°F (-40*...+60°C) (*with heater activated)	-40*...+140°F (-40*...+60°C) (*with heater activated)
Available voltages	115VAC, 230VAC	115VAC, 230VAC, 24VAC, 12VDC, 24VDC	115VAC, 220VAC, 24VAC, 12VDC, 24VDC	115VAC, 220VAC (1PH), 220VAC (3PH)
Duty cycle	75% at/below 104°F; 40°C (55% for 3000 lb-in models)	AC models 30%; DC models 100% at/below 75°F	AC models 30%; AC and DC models 100% at/below 75°F	100% at/below 75°F
Certifications	cCSA <sub>US</sub> ; ATEX; IECEx	CSA	CSA	CSA



Bettis TorqPlus

[EM-300](#)  
[EM-500](#)  
[EM-800](#)

# Electric Actuators Competition

GE/Baker Hughes/Dresser / RCS

NELES

	V-Series	MAR 10, 50, 90	MAR 100, 250
Size	150...3000 lb-in	120...1000 lb-in	1500...10000 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40*...+150°F (-40*...+65°C) (*with heater installed)	-40*...+150°F (-40*...+65°C) (*with heater installed)
Available voltages	115VAC, 230VAC	115VAC, 230VAC, 24VAC	115VAC, 220VAC, 24VAC, 220VAC (3PH), 440VAC (3PH)
Duty cycle	75% at/below 104°F; 40°C (55% for 3000 lb-in models)	115AC models 25% to 75%; 230AC models 25% to 50%; 24VAC models 25%	Range from 25% to 100% depending on voltage, and torque output
Certifications	cCSA <sub>US</sub> ; ATEX; IECE <sub>x</sub>	CSA	CSA



RCS MAR Series  
[MAR 10, 50, 90](#)  
[MAR 100, 250](#)

# Electric Actuators Competition

## Flowserve / Worcester

	V-Series	Series 75
Size	150...3000 lb-in	150...3000 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40*...+150°F (-40*...+66°C) (*with heater installed)
Available voltages	115VAC, 230VAC (60Hz)	115VAC, 230VAC, 12VDC, 24VDC
Duty cycle	75% at/below 104°F; 40°C (55% for 3000 lb-in models)	Range from 10% to 100% depending on voltage, and torque output
Certifications	cCSA <sub>US</sub> ; ATEX; IECEX	CSA



Worcester Series 75  
[Series 75](#)

# Electric Actuators Competition

NELES

Indelac

	V-Series	M Series	L Series
Size	150...3000 lb-in	400...1500 lb-in	700...3840 lb-in
Temp range	-40...+150°F (-40...+66°C)	-40*...+150°F (-40*...+65.6°C) (*with heater installed)	-40*...+150°F (-40*...+65.6°C) (*with heater installed)
Available voltages	115VAC, 230VAC	115VAC, 230VAC, 24VAC, 12VDC, 24VDC	115VAC, 230VAC, 24VAC, 12VDC, 24VDC, 230VAC (3PH), 460VAC (3PH)
Duty cycle	75% at/below 104°F; 40°C (55% for 3000 lb-in models)	25% for 115AC and 230AC models; 75% for 24AC, 12DC and 24DC models	100% for 12DC, 24DC, 24AC, and 115AC models; 230AC, 230AC (3PH), 460AC (3PH), 30-min continuous run
Certifications	cCSA <sub>US</sub> ; ATEX; IECEX	CSA	CSA



Indelac  
[M Series NEMA 4](#)  
[M Series NEMA 7](#)  
[L Series](#)

QUESTIONS?

# NELES

## Electric Actuators

Other Product Series

# LC Series



# Electric Actuators

## LCU-Series Economical Unidirectional Actuators

- **Available voltages:**  
115VAC, 230VAC, 24VAC, 12VDC & 24VDC
  - **Torque range:**  
150 – 600 lb-in (12 - 50 lb-ft; 17 – 68 Nm)
  - **Enclosure:**  
Die-cast zinc base with PVC cover; meets NEMA 4/4X
  - **Output:**  
Male (standard) or female (“L” option)
  - **Duty cycle:**  
25% (AC models); 80% (DC models)
  - **Approximate weight:**  
7 lbs. / 3 kg
  - **Temperature range:**  
32°F to 150°F / 0°C to 66°C; (-40°F to 150°F / -40°C to 66°C with optional heater/thermostat)
- **Available options:**
    - Tropical heater/thermostat
    - 14mm female output
    - Auxiliary limit switch
    - Heater/thermostat (low temp)



# Electric Actuators

## LCR-Series Economical Reversing Actuators

- **Available voltages:**  
115VAC, 230VAC, 24VAC, 12VDC & 24VDC
  - **Torque range:**  
150 – 600 lb-in (12 - 50 lb-ft; 17 – 68 Nm)
  - **Enclosure:**  
Die-cast zinc base with PVC cover; meets NEMA 4/4X
  - **Output:**  
Male (standard) or female (“L” option)
  - **Manual override with position indicator**
  - **Duty cycle:**  
25% (AC models); 80% (DC models)
  - **Approximate weight:**  
7 lbs. / 3 kg
  - **Temperature range:**  
32°F to 150°F / 0°C to 66°C; (-40°F to 150°F / -40°C to 66°C with optional heater/thermostat)
- **Available options:**
    - Tropical heater/thermostat
    - 14mm female output
    - 2 Auxiliary limit switches
    - Heater/thermostat (low-temp)

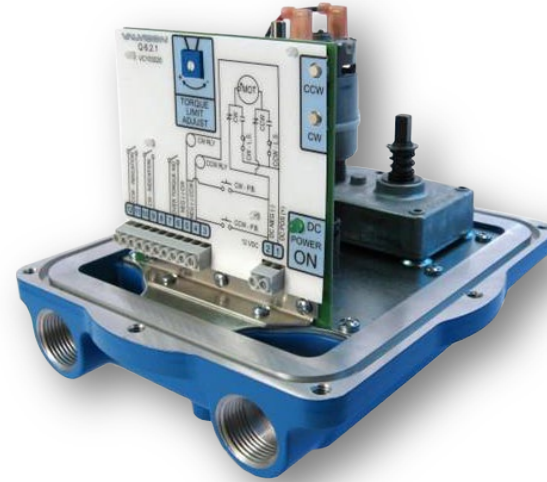


# Q6-Series

# Electric Actuators

## Q6-Series 12VDC for Remote Locations Utilizing Solar

- **Input voltage:**  
12VDC
  - **Torque:**  
600 lb-in (50 lb-ft; 68 Nm)
  - **Enclosure:**  
Powder-coated, die-cast aluminum;  
NEMA 4/4X/7&9; cCSA<sub>US</sub> certified
  - **Output:**  
Female
  - **Duty cycle:**  
80%
  - **Running current:**  
1.4A at 600 lb-in
  - **Idle current:**  
3mA
  - **Approximate weight:**  
17 lbs. / 8 kg
  - **Temperature range:**  
-40°F to 150°F / -40°C to 66°C
- Optional features:
  - Visual position indication (not on Q6.2.4)
  - Wrench-operated manual override (not on Q6.2.3, Q6.2.4 or Q6.2.4F)



QUESTIONS?

# NELES

## Electric Actuators

More Information and Resources

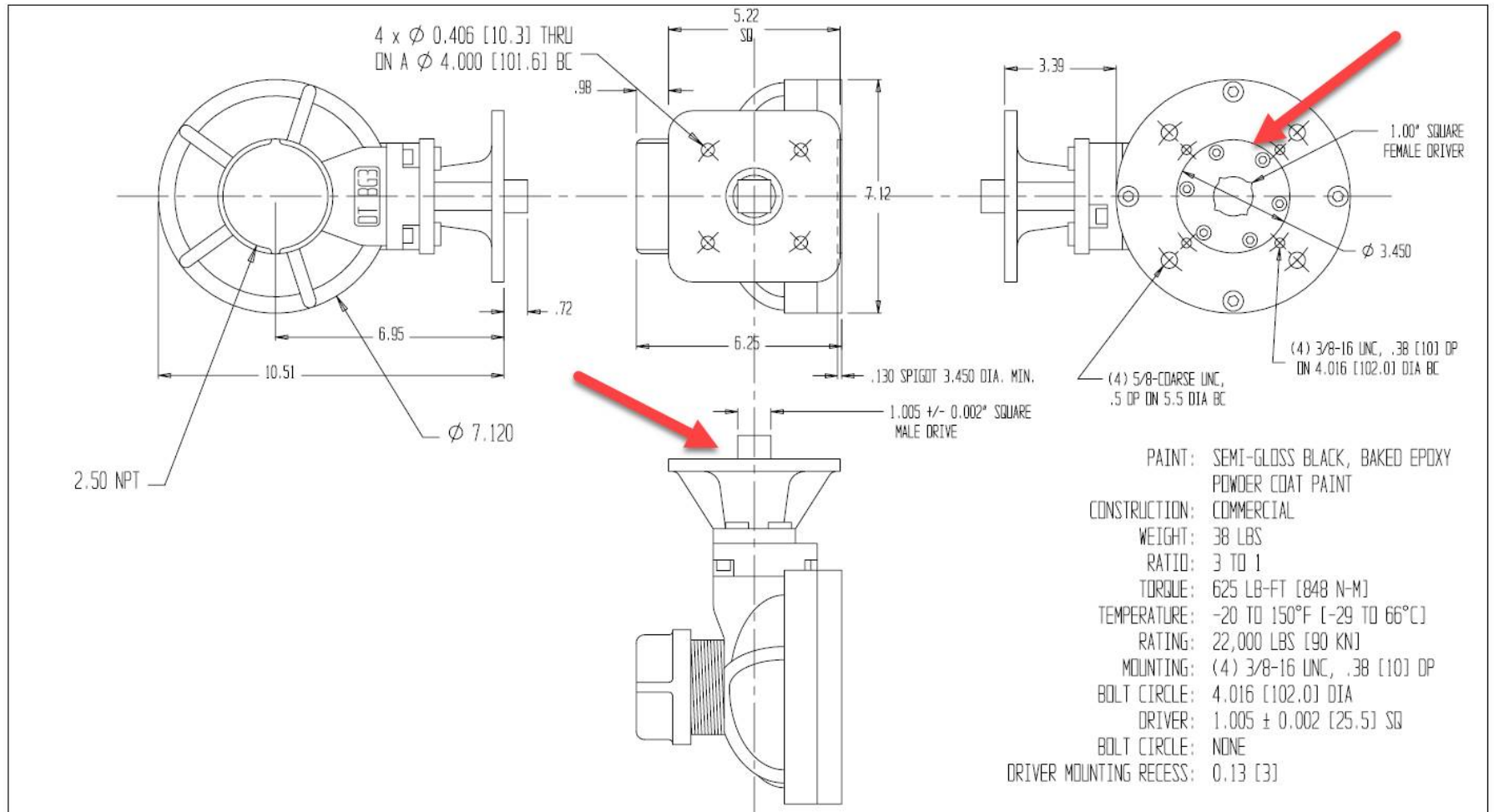
# Electric Actuators Selection Guidelines

	ADC-Series	V-Series	LC series	Q6-Series
Application type: on/off	General on/off	General on/off	General on/off	General on/off
Application type: control	General control	n/a	n/a	n/a
Fail safe	Battery back-up (optional)	n/a	n/a	n/a
Valve action	Rotary	Rotary	Rotary	Rotary
Torque	150 - 3000 lb-in	150 - 3000 lb-in	150 - 600 lb-in	0 - 600 lb-in
Actuator rotation	90, 180, 270 degrees	90, 180, 270 degrees	90 degrees / unidirectional	90 degrees
Available Voltage(s)	Universal power	115, and 230VAC	115, 230, 24VAC, 12, 24VDC	12VDC
Fail action	Fail "safe" (optional)	Fail-in-place	Fail-in-place	Fail-in-place
Temperature rating	-40 to 130°F (SLA Battery) -40 to 150°F (Li-Ion battery)	-40 to 150°F	-40 to 150°F (optional heater required below 32°F)	-40 to 150°F
Housing construction	Powder coated A380 aluminum	Powder coated A380 aluminum	Zinc cast base; poly cover	Powder coated A380 aluminum
Certification	cCSA <sub>US</sub> ; ATEX; IECEx	cCSA <sub>US</sub> ; ATEX; IECEx	n/a	cCSA <sub>US</sub>
Valve shaft connection	Small casting = 3/4" female square or 14, 17 mm female square; 15mm, or 20mm female key large casting 1" female square or 17, 19, or 22 mm female square; 20mm, or 25mm female key	Small casting = 3/4" female square or 14, 17 mm female square; 15mm, or 20mm female key large casting 1" female square or 17, 19, or 22 mm female square; 20mm, or 25mm female key	14mm female square or 14mm male square	3/4" female square or 14mm, 17mm female square; 15mm, or 20mm female key
Valve mounting standard	ISO 5211	ISO 5211	ISO 5211	ISO 5211
Manual override	Yes; declutable override	Yes; declutable override	Yes; declutable override (LCR-Series only)	Yes; declutable override
Field reversable fail position	Yes	No	No	No

# How Can We Produce More Torque?

## The BG3-Valvcon from Dynatorque/Cameron/Schlumberger

- The BG3 provides a 2.55 x increase in torque output
- The caveat is the actuator is set-up for 270-degree operation, so the (90-deg) cycle time is tripled
- The 3000 lb-in model, on a BG3, will produce 7650 lb-in





# More Information

## Electric Actuators

Click on the underlined links below to access the information

More information	<u>Web site</u>	<u>Technical bulletin</u>	<u>IMO</u>	<u>Commercial brochure</u>	Videos (if available)
ADC-Series	<u>✓</u>	<u>✓</u> , <u>✓</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>
V-Series	<u>✓</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>	<u>✓</u>
LCU-Series	<u>✓</u>	<u>✓</u>	<u>✓</u>		
LCR-Series	<u>✓</u>	<u>✓</u>	<u>✓</u>		
Q6-Series	<u>✓</u>	<u>✓</u>	<u>✓</u>		

# Actuator Selection Tool

## NELES Valvcon™ Sizing Tool v1.05

Series: ADC, LADC, V, & LV

= type in data here  
 = select from the dropdown list

Units  
SI

Customer Reference			Valve Requirement Data							Actuator Sizing															
#	Item	Tag	Required Valve Torque (Nm)							Applicable Actuators		Available Actuator Torque (Nm)						Safety Factor					MAST Check		
			BTO	RTO	ETO	ETC	RTC	BTC	MAST	Safety Factor	Count	Actuator Models	BTO	RTO	ETO	ETC	RTC	BTC	BTO	RTO	ETO	ETC		RTC	BTC
1			75	108	68	49	75	46		1.20	8	LADC1500	169	169	169	169	169	169	2.3	1.6	2.5	3.5	2.3	3.7	-
2			22	30	27	48	40	18		1.20	12	ADC600	68	68	68	68	68	68	3.1	2.3	2.5	1.4	1.7	3.8	-
3										1.20	-		-	-	-	-	-	-	-	-	-	-	-	-	-
4										1.20	-		-	-	-	-	-	-	-	-	-	-	-	-	-

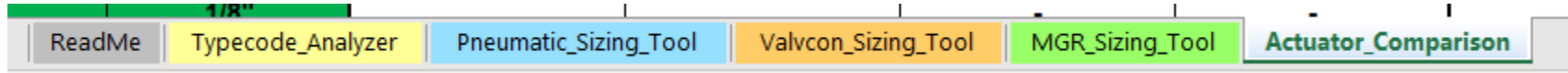
Actuator Typecode											
1.	3.	2.	4.	5a.	5b.	5c.	5d.	5e.	5f.	6.	Actuator Typecode
Series	Enclosure	Torque	Board Options	Other (Output Shaft)	Other (Heater / Comm.)	Other (Hand wheel)	Other (Brake)	Other (Pot.)	Other (Switch)	Operating Voltage	
LADC	WX	1500	UB5	I4	MB					-UP	LADCWX1500UB5I4MB-UP
ADC	W	600	I1			Z					ADCW600I1Z
			U								
			UB								
			U1								
			UB1								
			U3								
			UB3								
			UL2								
			UL4								

Actuator Typecode							
4.	5a.	5b.	5c.	5d.	5e.	5f.	6.
Board Options	ADC:						
	- U = On/off / Positioner board						
	- UB = On/off / Positioner board with Li Ion Battery Back-up						
	- U1 = On/off / Positioner board 180-deg						
	- UB1 = On/off / Positioner board 180 deg with Li Ion Battery Back-up						
	- U3 = On/off / Positioner board 270-deg						
	- UB3 = On/off / Positioner board 270 deg with Li Ion Battery Back-up						
	- UL2 = Universal Board with SLA Battery Back-up						
	- UL4 = Universal Board 180-deg w/ SLA Battery back-up						
	- UL6 = Universal Board 270-deg w/ SLA Battery back-up						
	LADC:						
	- U5 = On/off / Positioner board						
	- UB5 = On/off / Positioner board with Li Ion Battery Back-up						
	- U7 = On/off / Positioner board 180-deg						
	- UB7 = On/off / Positioner board 180 deg with Li Ion Battery Back-up						
	- U9 = On/off / Positioner board 270-deg						
	- UB9 = On/off / Positioner board 270 deg with Li Ion Battery Back-up						
	- UL3 = Universal Board with SLA Battery Back-up						
	- UL5 = Universal Board 180-deg w/ SLA Battery back-up						
	- UL7 = Universal Board 270-deg w/ SLA Battery back-up						
	V / LV:						
	- C = Control Board						
	- J = Speed Control/Timer Board						
	- U = Iso/Readback Board						

Actuator Typecode											
1.	3.	2.	4.	5a.	5b.	5c.	5d.	5e.	5f.	6.	Actuator Typecode
Series	Enclosure	Torque	Board Options	Other (Output Shaft)	Other (Heater / Comm.)	Other (Hand wheel)	Other (Brake)	Other (Pot.)	Other (Switch)	Operating Voltage	
LADC	WX	1500	UB5	I4	MB					-UP	LADCWX1500UB5I4MB-UP
ADC	W	600	UL2	I1		Z				-UP	ADCW600UL2I1Z-UP

# Actuator Selection Tool

## Comparison Tab



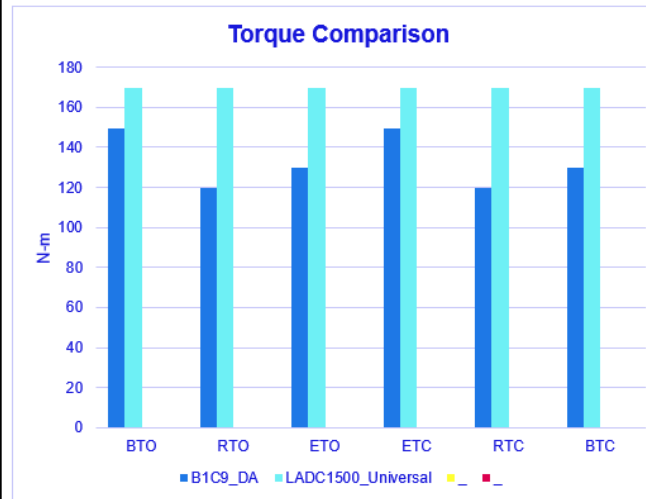
### Actuator Comparison Tool v1.05

Series: B1, N1, RNP, VPVL, QPX, MGR, & Valvcon™

Obsolete Series: EC, EJ

= select from the dropdown list

Units		SI			
		Main	Comp 1	Comp 2	Comp 3
Actuator	Series	B1C	LADC		
	Size	9	1500		
	Spring / Voltage	DA	Universal		
	First Size Match	-	LADC1500_Universal	-	-
	Type	Piston	Electric	-	-
Fail Safe Action		Fail In Place	Based on model	-	-
Torque values (N-m)	Supply Bar	4.0	-	-	-
	BTO	150	169	-	-
	RTO	120	169	-	-
	ETO	130	169	-	-
	ETC	150	169	-	-
	RTC	120	169	-	-
	BTC	130	169	-	-
	Open Min	120	169	-	-
Close Min	120	169	-	-	
Max Supply Pressure	Bar	9	-	-	-
Shaft Bore	mm	35	22 / 25	-	-
	Type	keyed	square / keyed	-	-
ISO 5211 Mounting	F03			-	-
	F05			-	-
	F07	x	x	-	-
	F10		x	-	-
	F12			-	-
	F14			-	-



# Electric Actuators

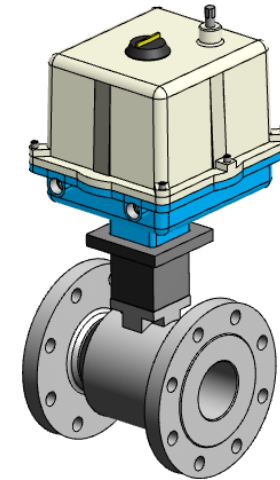
## Additional Resources

- Business Center
- Linkage Wizard
- RapidDraw3D™

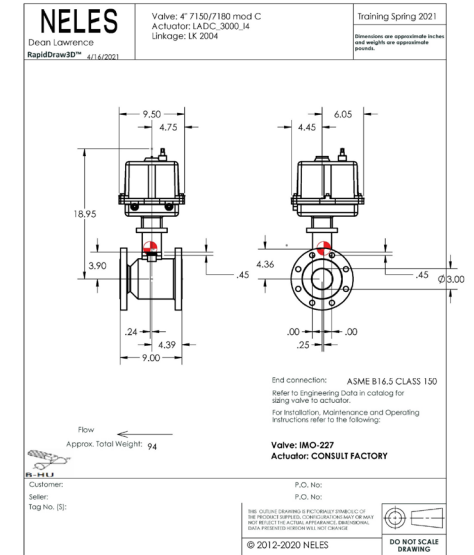
Select Valve Brand, Size and Model	
Brand:	Jamesbury
Size:	4
Model:	7150 Model C ... Series 7000
Select Actuator Brand and Model	
Brand:	Jamesbury
Model:	LADC 3000 14
Linkage Kit:	LK 2004

Linkages that appear on separate lines are options: Select only one!  
 When two linkages appear on the same line separated by a comma: Both linkages required!

Please consult the factory for linkages to Neles cryo valve  
**Result from Linkage Wizard**



3D PDF from RapidDraw3D™



Assembly drawing from RapidDraw3D™

- Applications Engineering
  - They have you covered 20 hours out of 24!
- Nelprof™ – not yet, but we are working on adding the electric actuators
- Actuator Selection Tool (contact your ASM for the Excel file)

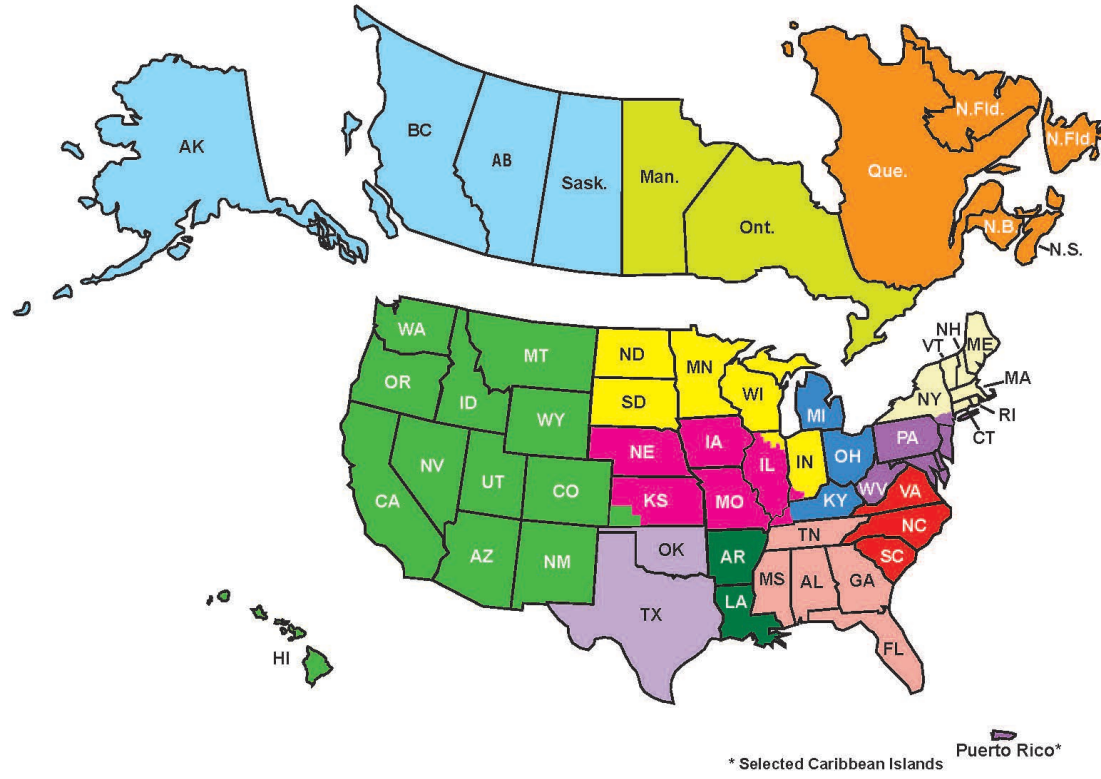
# Contact us

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NELES



# Regional and Area Sales Manager Map



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QUESTIONS?

# Reinventing reliability

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