



AEL8 Series Electric Linear Actuator

Description

The AEL8 Series linear electric actuators are a cost effective range of linear electric process actuators, with diagnostics, only suitable for the modulation of Spirax Sarco Group valves. The AEL8 Series actuators must not be used for any other purpose. Full nomenclature details can be found on page 7 of this document.

Simple to select and commission, the AEL8 series is especially suited to process point of use applications within the steam ecosystem where robustness and reliability are key requirements. The AEL8 Series is compatible with the complete Spira-trol™ 2-port and 3-port ranges.

The AEL8 Series linear electric actuators utilise a fully electronic set up and operation of the actuator with no mechanical switches or manual intervention required. The direct measurement of valve position, stroke and force guarantee optimised process control, and all actuators have internal anti-rotation for improved actuator rigidity.

Diagnostics

The AEL8 series actuator provides actuator diagnostics through 3 functions:

- Non-intrusive health check hand wheel
- Self-diagnostic LED
- Fault relay

Typical applications

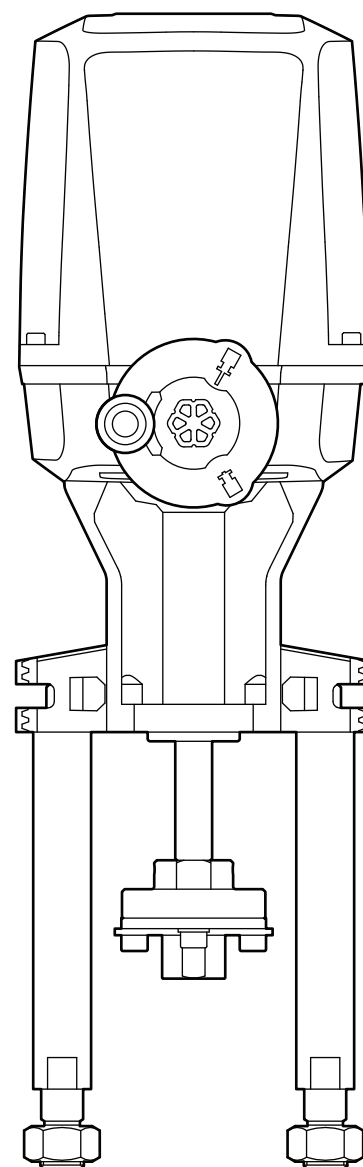
The AEL8 series actuators are used for the modulation of Spirax-Sarco group valves in closed-loop and open-loop control systems.

Typical applications for the AEL8 Series actuator include:

- Temperature control
- Pressure control
- Flow control

It is not recommended that the AEL8 series actuator is used on boiler feed water applications.

For boiler feed water applications please refer to the AEL7 (TI-P713-02)



Available types

The AEL8 electric linear actuators are simple to select with only 2 different power supply variants:

- 90...264 Vac wide range input
- 24 Vac/24 Vdc Dual voltage


The standard version is configurable for modulated input signal (4-20mA or 0(2)-10V). The actuator has a position override function. A 24V input can be used to drive the actuator to either end stop (e.g. as a result of independent high-limit)

All actuators offer 0(2) - 10 V or 4 - 20 mA position feedback. Also available are auxiliary limit switches and anti-condensation heater.

These actuators can be used with the following valves, in conjunction with an appropriate valve adaptor and mounting flange.

| | | |
|-----------------|--------------|--|
| 2 - Port | DN15 - DN100 | Spira-trol™ L, K series control valves |
| 3 - Port | DN15 - DN200 | Spira-trol™ QL series control valves |

Standards and approvals

This equipment is  /  marked and conforms to the following:

| | |
|--|---|
| Electrical safety 2014/35/EU (Low Voltage Directive) | 2006/42/EC (Machinery Directive) |
| | The Supply of Machinery (Safety) Regulations 2008 |
| | 2014/35/EU (Low Voltage Directive) |
| | The Electrical Equipment (Safety) Regulations 2016 |
| | 2014/30/EU (Electromagnetic compatibility Directive) |
| Operational safety | The Electromagnetic Compatibility Regulations 2016 |
| | EN 61010-1:2010+A1:2019 |
| | EN IEC 61010-2-202:2021 |
| Operational requirements | EN ISO 12100:2010 |
| | EN15714-2 (Electric actuators for industrial valves - Basic requirements) |
| | Modulating actuator Class C acc. to DIN EN ISO 22153 |
| Electromagnetic compatibility | EN 61800-3:2004/A1:2012 |

Please visit the Spirax Sarco product compliance web pages for up to date information on any substances of concern that may be contained within this product. Where no additional information is provided on the Spirax Sarco product compliance web page, this product may be safely recycled and/or disposed providing due care is taken. Always check your local recycling and disposal regulations.

Visit - <https://www.spiraxsarco.com/product-compliance>

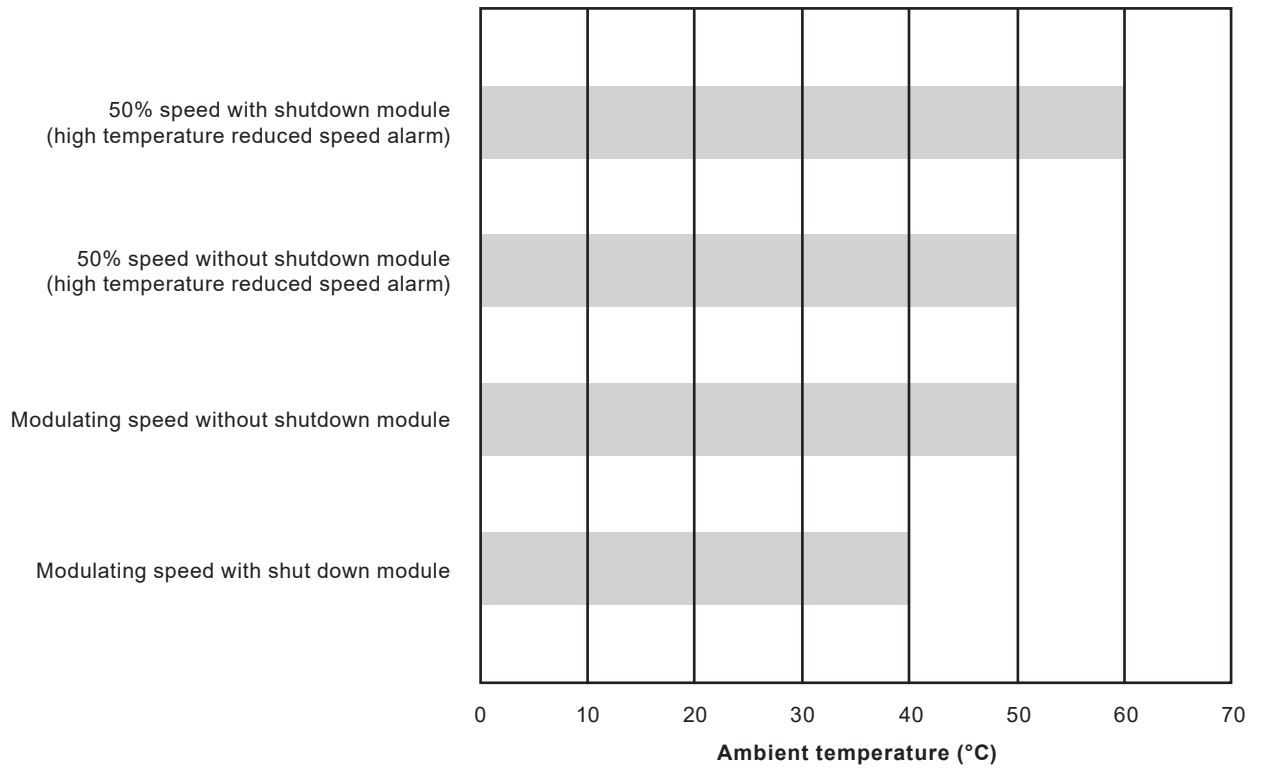
AEL8 Technical specification

| Actuator model | AEL82 | AEL83 | AEL84 | AEL85 | AEL86 | AEL87 |
|-------------------|-------------------------------|-------|-------|-------|-------|-------|
| Thrust (kN) | 2 | 4.5 | 6 | 8 | 12 | 15 |
| | Speed mm/s @ 30% load | | | | | |
| Medium | 1.6 | 1.6 | 1.2 | 1.0 | 1.4 | 0.9 |
| High | - | 4.5 | 3.6 | 3.0 | 3.0 | 2.0 |
| | Full load speed (mm/s) | | | | | |
| Medium | 1.3 | 1.3 | 1.0 | 0.7 | 1.0 | 1.0 |
| High | - | 3.6 | 2.8 | 2.0 | 2.0 | 1.4 |
| Maximum Stroke mm | 60 | | | 80 | | |
| Actuator model | AEL82 | AEL83 | AEL84 | AEL85 | AEL86 | AEL87 |

AEL8 Technical specification (continued)

| | | |
|---|--|-----|
| | 90...264 Vac, 47...63 Hz or 24 Vac/dc | |
| Mains Voltage/frequency | Permissible fluctuation of mains voltage –10 %/+10 % Permissible fluctuation of mains frequency $\pm 5\%$ (further voltages on request) 24 Vdc and Shutdown module: permissible fluctuation of mains voltage –6 %/+10 % | |
| Operating mode according to IEC 34-1 | S2 – 15 min, S4 – 30 % ED 1200 c/h, S1 – 100 % | |
| Motor Protection | Electronic shutdown in case of over temperature | |
| Electrical connection Cross section | Power supply: Spring terminal max 2.5 mm ² (12 AWG), Signal: Spring terminal max. 2.5 mm ² (12 AWG) | |
| End position switch-off | Electronically selectable torque or travel for both directions | |
| Control input | Analog: 0/2 – 10 V: input impedance >100 kOhm, 0/4 – 20 mA: input impedance 50 Ohm Control inputs 24 Vdc: galvanically isolated Ri = 3300 Ohm (I < 10 mA) OPEN, CLOSE | |
| Position feedback | Analog 0 – 10 V, 0/4 – 20 mA, load max. 500 Ohm Position measurement via non-contact displacement sensor | |
| Message signals | Collective fault 24 Vdc, I max. 50 mA, galvanically isolated Option: I/O module with 4x 24 Vdc, I max 50 mA, galvanically isolated from mains supply, OPEN, CLOSE, intermediate positions, UNI-OUT (collective fault) | |
| Configuration | Setting via remote input Initialization/Reset zero point Setting via DIP switch Input signal/Output signal Rising signal/Falling signal Operating mode Programming keys Speed, thrust Shutdown mode, operating parameters | |
| Positioning accuracy | < 0,5 % of total stroke | |
| Mounting position | Any orientation except vertically below the pipe | |
| Installation height | ≤ 2000 m above sea level | |
| Lubricant | Gear grease: Klüber Microlube GL261 | |
| Humidity | Up to 95 % relative humidity (Anti-condensation heater required) | |
| Lifetime | Spirax-Sarco linear actuators meet or exceed the lifetime requirements of EN 15714-2 (C). | |
| Ambient temperature | See graph on next page | |
| Media temperature | -20 °C ... +300 °C | |
| Enclosure rating | IP 65 | |
| Enclosure Matl. | Thermoplastic | |
| Manual override | Hand Wheel | |
| Conduit entries | 3 x blanking plugs (M20x1.5) | |
| Thread Adaptor | M8 | M12 |
| AEL8 Actuator options | | |
| I/O Module | 4 x 24V-230Vac/dc outout relays @ 0.5A Max. | |
| Heater | 90-264Vac/24Vac/dc | |
| Shutdown Module | Super capacitor (Factory fit only) | |

Maximum ambient temperature of installation

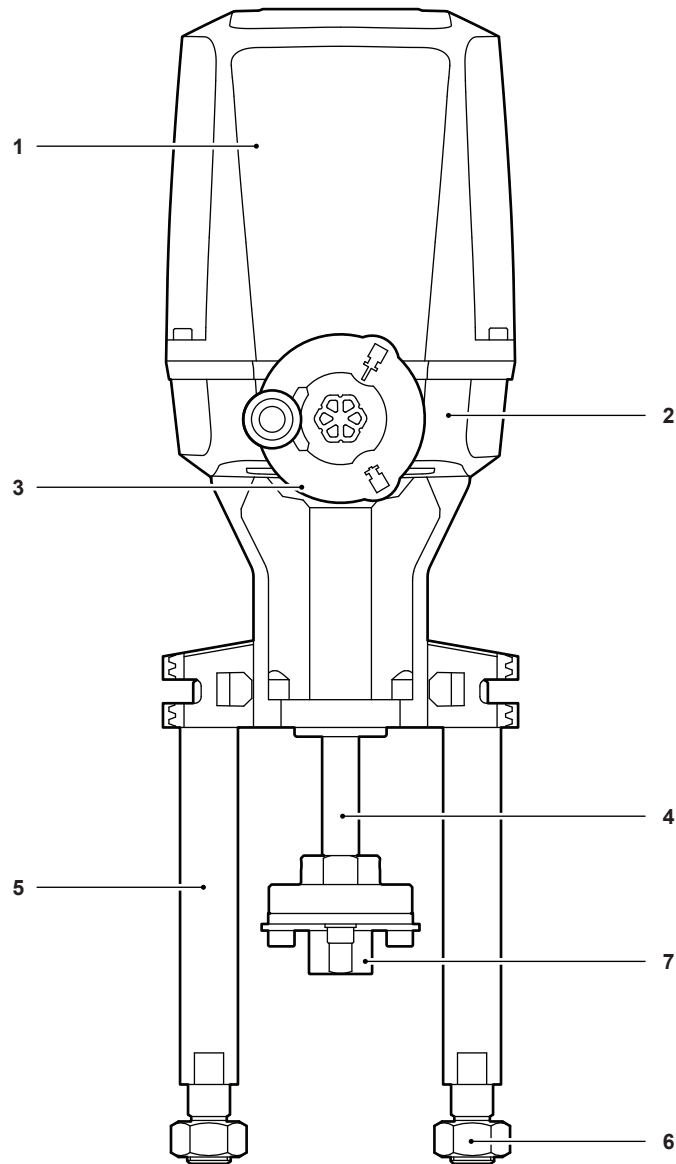


Note:

Actuator without shutdown module: Ambient temperatures between 50 °C -65 °C will cause the actuator to operate at 50% specified speed (yellow hand wheel light will be shown) to help prolong the life of the actuator.

Actuator with shutdown module: Maximum ambient temperature must not exceed 50 °C.

Materials



| No. | Part | Materials | Surface Finish |
|-----|-------------------------|---------------------------------------|----------------------|
| 1 | Cover | Polycarbonate | None |
| 2 | Housing | AlSi7Mg0.3 (LM25), seawater resistant | Anodised |
| 3 | Hand wheel ¹ | Aluminium | None |
| | | Polycarbonate | None |
| 4 | Actuator spindle | Carbon steel | None |
| 5 | Actuator pillar | Stainless steel | None |
| 6 | Pillar nut | Carbon steel | Galvanic zinc plated |
| 7 | Thread adaptor | Carbon steel | None |

¹ Clear polycarbonate for Health check LED.

AEL8 valve adapter and mounting flange selection - Spira-trol™ K & L

| Actuator | Thrust | DN15-50 | | | DN65-100 | | |
|----------|---------|---------|--------|------------------------|----------|--------|----------|
| | | Flange | Thread | Adapter | Flange | Thread | Adaptor |
| AEL82 | 2.0 kN | EL5970 | M8 | AEL8 x M8 ¹ | EL5971 | M12 | Integral |
| AEL83 | 4.5 kN | | | | | | |
| AEL84 | 6.0 kN | | | | | | |
| AEL85 | 8.0 kN | | | | | | |
| AEL86 | 12.0 kN | | | | | | |
| AEL87 | 15.0 kN | | | | | | |

¹ Included in the standard scope of supply AEL82 to AEL85

AEL8 valve adapter and mounting flange selection - Spira-trol™ QL

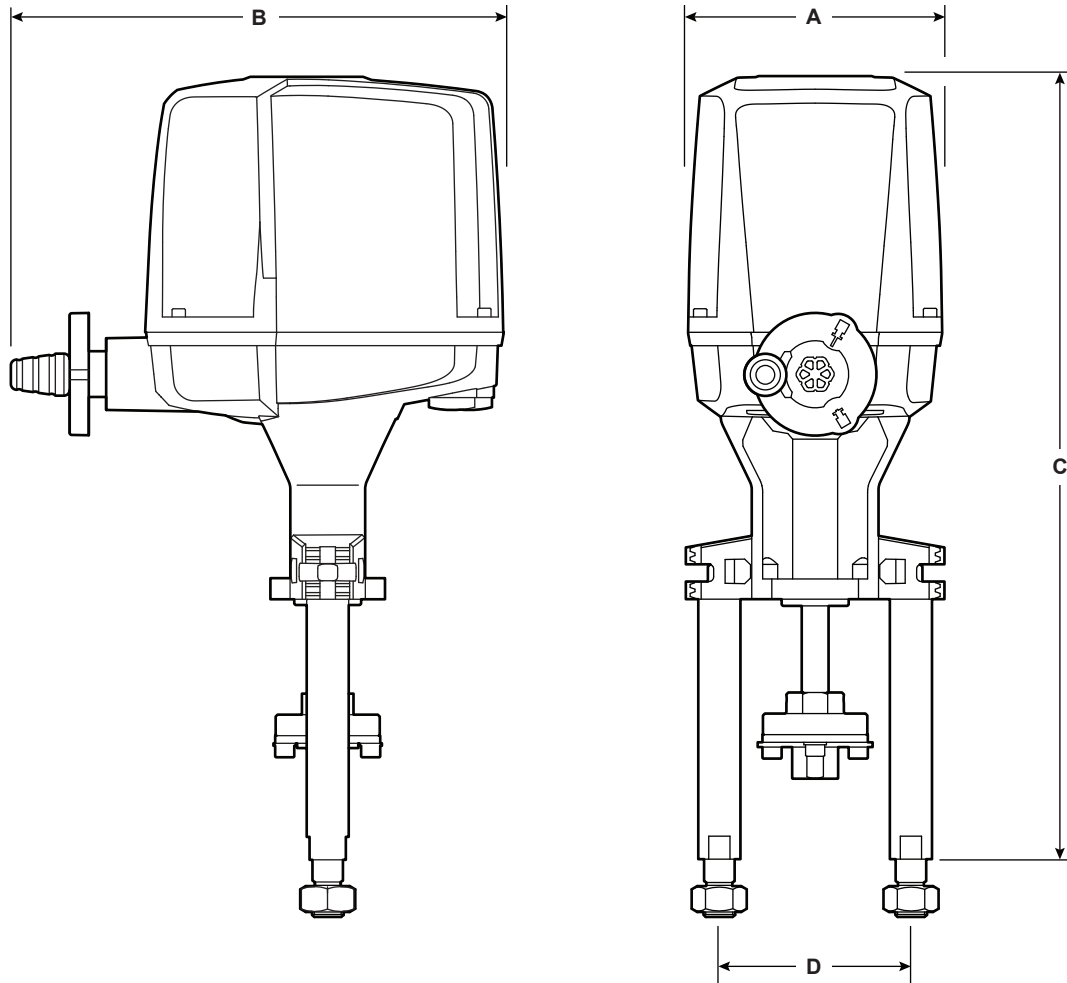
| Actuator | Thrust | DN15-50 | | | DN65-100 | | | DN125-200 | | |
|----------|---------|---------|--------|------------------------|----------|--------|----------|-----------|-----------|---------------------------|
| | | Flange | Thread | Adapter | Flange | Thread | Adaptor | Flange | Thread | Adaptor |
| AEL82 | 2.0 kN | EL5970 | M8 | AEL8 x M8 ¹ | EL5971 | M12 | Integral | | | |
| AEL83 | 4.5 kN | | | | | | | | | |
| AEL84 | 6.0 kN | | | | | | | | | |
| AEL85 | 8.0 kN | | | | | | | | | |
| AEL86 | 12.0 kN | | | | | | | EL5974 | M18 x 1.5 | AEL8XQ18 + AEL8Q125 |
| AEL87 | 15.0 kN | | | | | | | | | |

¹ Included in the standard scope of supply AEL82 to AEL85

AEL8 accessories

| Actuator Type | Thrust | Voltage | I/O Module | Positioner | Heater | |
|---------------|----------|---------|------------|------------|---------|---------|
| AEL8 | 2 - 6 kN | 230Vac | AEL8981 | AEL8961 | AEL8954 | |
| | | 110Vac | | | | |
| | | 24Vac | | | AEL8596 | |
| | | 24Vdc | | | | |
| | 8-15 kN | 230Vac | | | | AEL8954 |
| | | 110Vac | | | | |
| | | 24Vac | | | | |
| | | 24Vdc | | | | AEL8965 |

Dimensions/Weights (approximate in mm and kg)



| Actuator | Thrust | Dimensions (mm) | | | | | Weight (kg) |
|----------|---------|-----------------|-----|-----|--------------------|--------------------------|-------------|
| | | A | B | C | D Pillar Centre | E Cover removal space | |
| AEL82 | 2.0 kN | 133 | 259 | 410 | 100 | 140 | 6.0 |
| AEL83 | 4.5 kN | | | | | | |
| AEL84 | 6.0 kN | | | | | | |
| AEL85 | 8.0 kN | 161 | 345 | 523 | 100 | 205 | 11.0 |
| AEL86 | 12.0 kN | | | | | | |
| AEL87 | 15.0 kN | | | | | | |

Safety information, installation and maintenance

Full details for the safe installation, commissioning and removal of the AEL8 Series actuator can be found in IM-P714-02 for AEL8 versions

Installation and wiring note

The valve should be installed in the horizontal line. The position of the actuator will depend on the type of valve to which it is fitted and the temperature of the media. However, it is not recommended that the actuators be fitted directly below the valve or in a wet environment.

Disposal

This product is recyclable. No ecological hazard is anticipated with the disposal of this product, providing due care is taken.

AEL8 Series nomenclature

| | | | | |
|-----------------------|--------------------|----------------------------------|---------------------------------|----------|
| Product Name | A | = Actuator | | A |
| | E | = Electric | | E |
| | L | = Linear | | L |
| | 8 | = Model | | 8 |
| Thrust (kN) | 2 | = 2.0 kN | | 2 |
| | 3 | = 4.5 kN | | |
| | 4 | = 6.0 kN | | |
| | 5 | = 8.0 kN | | |
| | 6 | = 12.0 kN | | |
| | 7 | = 15.0 kN | | |
| | Stroke (mm) | 2 | = 60mm | |
| 3 | | = 80mm | | |
| Speed @ 30% | 2 | = Medium | 0.8-1.9 mm/s | 2 |
| | 3 | = High | 2.0+ mm/s | |
| Supply Voltage | 1 | = 90....264 Vac wide range input | | 3 |
| | 3 | = 24 Vac/24Vdc | | |
| Control signal | P | = Modulating | (0)4-20mA / 0(2)-10V Positioner | P |
| Failure Mode | X | = None | | S |
| | S | = Super-Capacitor | Non-retrofit option | |
| Options | X | = None | | X |
| | O | = I/O Module | | |
| | E | = EasiHeat M12 | | |

Ordering example



Selection example

| | |
|--|-----------------------|
| Control Valve | DN20 KE43 HTSUSS Kv10 |
| Kvs | 6.3 |
| Connection | PN40 |
| Operating ΔP | 30 bar |
| Electrical Supply | 24Vdc |
| Control Input Signal | 4-20mA |
| Position Feedback | 4-20mA |
| End-position Feedback | VFC |

Information source

| | | |
|--------------------------------------|---------------------|--|
| Minimum Thrust required | 2 kN | Differential Pressure Tables (Class IV) Metal Seated (T & S) |
| Maximum ΔP | 64.6 bar g | |
| Mounting Flange | EL5970 | AEL8 Valve Adapter and Mounting Flange Selection - Spira-trol™ K & L |
| Stem Adapter | AEL8XM8 | |
| Positioner | Integral | AEL8 Technical Specification |
| Position Feedback | Positioner function | AEL8 Technical Specification |
| End-position Feedback | I/O module | AEL8 Accessories (Positioner) |