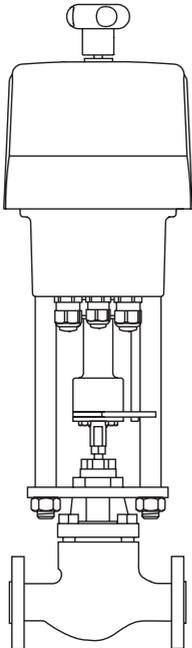


AEL6 Series
Smart Electric Linear Actuators for
DN15 to DN100 Control Valves
Installation and Maintenance Instructions



1. Safety information
2. Global information
3. Installation
4. Commissioning
5. Maintenance and spare parts

1. Safety information

Safe operation of this product can only be guaranteed if it is properly installed, commissioned, used and maintained by qualified personnel (see Section 1.13) in compliance with the operating instructions. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.

See separate Installation and Maintenance Instructions for the control valve.



If the actuator is handled improperly or not used as specified, the resultant may:

- cause danger of the life and limb of the third party,
- damage the actuator and other assets belonging to the owner,
- hinder the performance of the actuator.

1.1 Wiring notes

Every effort has been made during the design of the actuator to ensure the safety of the user, but the following precautions must be followed:

- Maintenance personnel must be suitably qualified in working with equipment containing hazardous live voltages.
- Ensure correct installation. Safety may be compromised if the installation of the product is not carried out as specified in this manual.
- Isolate the actuator from the mains supply before opening the unit.
- The actuator is designed as an installation category II product, and is reliant on the building installation for overcurrent protection and primary isolation.
- Wiring should be carried out in accordance with IEC 60364 or equivalent.
- Fuses should not be fitted in the protective earth conductor. The integrity of the installation protective earth system must not be compromised by the disconnection or removal of other equipment.
- A disconnecting device (switch or circuit breaker) must be included in the building installation. This must be in close proximity to the equipment and within easy reach of the operator.
 - There must be a 3 mm contact separation in all poles.
 - It must be marked as the disconnecting device for the actuator.
 - It must not interrupt the protective earth conductor.
 - It must not be incorporated into a mains supply cord.
 - The requirements for the disconnecting device are specified in IEC 60947-1 and IEC 60947-3 or equivalent.
- The actuator must not be located in such a way that the disconnecting device is made difficult to operate.

1.2 Safety requirements and electromagnetic compatibility

This product is CE marked. It complies with the requirements of 73/23/EEC as amended by 93/68/EEC on the harmonisation of the law of Member States relating to electrical equipment designed for use within certain voltage limits (LVD), by meeting the standard for safety of electrical equipment for measurement control and laboratory use.

This product complies with the requirement of 89/336/EEC as amended by 92/31/EEC and 93/68/EEC on the approximation of laws of the Member States relating to Electromagnetic Compatibility, by meeting the generic standard of emissions for an industrial environment and the generic standard of immunity for an industrial environment.

The product may be exposed to interference above the limits of industrial immunity if:

- The product or its wiring is located near to a radio transmitter.
- Excessive electrical noise occurs on the mains supply.
- Cellular telephones and mobile radios may cause interference if used within approximately one metre of the product or its wiring. The actual separation necessary will vary according to the power of the transmitter.
- Power line protectors (ac) should be installed if mains supply noise is likely.
- Protectors can combine filtering, suppression, surge and spike arrestors.

For a copy of the declaration of conformity contact Spirax Sarco.

1.3 Intended use

Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended use/application.

- i) Check material suitability, pressure and temperature and their maximum and minimum values. If the maximum operating limits of the product are lower than those of the system in which it is being fitted, or if malfunction of the product could result in a dangerous overpressure or overtemperature occurrence, ensure a safety device is included in the system to prevent such over-limit situations.
- ii) Determine the correct installation situation.
- iii) Spirax Sarco products are not intended to withstand external stresses that may be induced by any system to which they are fitted. It is the responsibility of the installer to consider these stresses and take adequate precautions to minimise them.

1.4 Access

Ensure safe access and if necessary a safe working platform (suitably guarded) before attempting to work on the product. Arrange suitable lifting gear if required.

1.5 Lighting

Ensure adequate lighting, particularly where detailed or intricate work is required.

1.6 Hazardous liquids or gases in the pipeline

Consider what is in the pipeline or what may have been in the pipeline at some previous time. Consider: flammable materials, substances hazardous to health, extremes of temperature.

1.7 Hazardous environment around the product

Consider: explosion risk areas, lack of oxygen (e.g. tanks, pits), dangerous gases, extremes of temperature, hot surfaces, fire hazard (e.g. during welding), excessive noise, moving machinery.

1.8 The system

Consider the effect on the complete system of the work proposed. Will any proposed action (e.g. closing isolation valves, electrical isolation) put any other part of the system or any personnel at risk?

Dangers might include isolation of vents or protective devices or the rendering ineffective of controls or alarms. Ensure isolation valves are turned on and off in a gradual way to avoid system shocks.

1.9 Pressure systems

Ensure that any pressure is isolated and safely vented to atmospheric pressure. Consider double isolation (double block and bleed) and the locking or labelling of closed valves. Do not assume that the system has depressurised even when the pressure gauge indicates zero.

1.10 Temperature

Allow time for temperature to normalise after isolation to avoid danger of burns.

1.11 Tools and consumables

Before starting work ensure that you have suitable tools and/or consumables available. Use only genuine Spirax Sarco replacement parts.

1.12 Protective clothing

Consider whether you and/or others in the vicinity require any protective clothing to protect against the hazards of, for example, chemicals, high/low temperature, radiation, noise, falling objects, and dangers to eyes and face.

1.13 Permits to work

All work must be carried out or be supervised by a suitably competent person. Installation and operating personnel should be trained in the correct use of the product according to the Installation and Maintenance Instructions.

Where a formal 'permit to work' system is in force it must be complied with. Where there is no such system, it is recommended that a responsible person should know what work is going on and, where necessary, arrange to have an assistant whose primary responsibility is safety.

Post 'warning notices' if necessary.

1.14 Handling

Manual handling of large and/or heavy products may present a risk of injury. Lifting, pushing, pulling, carrying or supporting a load by bodily force can cause injury particularly to the back. You are advised to assess the risks taking into account the task, the individual, the load and the working environment and use the appropriate handling method depending on the circumstances of the work being done.

1.15 Residual hazards

In normal use the external surface of the product may be very hot. If used at the maximum permitted operating conditions the surface temperature of some products may reach temperatures of 90°C (194°F).

Many products are not self-draining. Take due care when dismantling or removing the product from an installation (refer to 'Maintenance instructions').

1.16 Freezing

Provision must be made to protect products which are not self-draining against frost damage in environments where they may be exposed to temperatures below freezing point.

1.17 Disposal

Unless otherwise stated in the Installation and Maintenance Instructions, this product is recyclable and no ecological hazard is anticipated with its disposal providing due care is taken.

1.18 Returning products

Customers and stockists are reminded that under EC Health, Safety and Environment Law, when returning products to Spirax Sarco they must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety or environmental risk. This information must be provided in writing including Health and Safety data sheets relating to any substances identified as hazardous or potentially hazardous.

2. General information

2.1 Use

AEL6 series electric linear actuators are for use with LE and KE two-port control valves, QL three-port valves and all bellows sealed options. Actuators will normally be supplied fitted to the control valve. When supplied separately, ensure the actuator selected is capable of giving the force necessary to close the two-port or three-port control valve against the expected differential pressure. See the appropriate product specific Technical Information Sheet for full details of the control valve.

AEL6 series actuators are available for VMD (Valve motor drive) input, 4 - 20 mA or 2 - 10 Vdc inputs (when an electronic positioner is fitted). 230 Vac, 115 Vac, and 24 Vac options are available. Full details of the actuator types, and reference numbers, are given in Table 1.

Table 1 Series in the range AEL6000

Product	A = Actuator	A
Type	E = Electric	E
Movement	L = Linear	L
Series	6	6
Thrust (kN)	2 = 2.3	2
	3 = 4.5	
	4 = 8	
	5 = 14	
	6 = 25	
Stroke (mm)	2 = 50	2
	3 = 60 - 70 (AEL65_ and AEL66_ series only)	
Maximum speed (mm/s)	1 = 0 - 1.0 (AEL62_, AEL63_, AEL64 and AEL66_ series only)	1
	2 = 1.1 - 2.0 (AEL64_ and AEL65_ series only)	
	3 = 2.1 - 4.5 (AEL63_ series only)	
Supply voltage	1 = 230 Vac	1
	2 = 115 Vac	
	3 = 24 Vac and 24 Vdc	
Control signal	F = 24 V VMD, 0/2-10 Vdc and 0/4-20 mA (supply voltage 3 only)	J
	G = 115 V VMD, 0/2-10 Vdc and 0/4-20 mA (supply voltage 2 only)	
	H = 24 V VMD, 0/2-10 Vdc and 0/4-20 mA (supply voltage 2 only)	
	J = 230 V VMD, 0/2-10 Vdc and 0/4-20 mA (supply voltage 1 only)	
	K = 24 V VMD, 0/2-10 Vdc and 0/4-20 mA (supply voltage 1 only)	
Failure mode	X = No mechanical/electrical fail safe device	S
	S = Super capacitor fail safe (non retrofittable)	

Selection example:

A	E	L	6	2	2	1	1	J	S
---	---	---	---	---	---	---	---	---	---

Selection example: A 230 Vac fail safe electric actuator to suit a 25 mm control valve with PTFE stem seals, to have class IV shut-off against 10 bar differential pressure. There is no requirement for high actuating speed, the control signal is 230 V VMD.

2.2 Operation

The motor rotation is transmitted through low wear and low backlash spur gears to provide linear movement of the actuator spindle. An anti-rotation plate is fitted to prevent rotation of the spindle during operation. Top and bottom travel switches are provided, which are activated by a switching rod that runs in parallel with the actuator spindle.

The actuator is fitted to the valve stem. In relation to the limit switch setting the disc springs are compressed at the valve closing position to give a defined closing force and valve shut-off.

2.3 Manual operation

The handwheel is used to operate the actuator if the power supply has failed or during installation work such as mounting onto a valve or setting the limit positions.

- The handwheel is permanently engaged and turns during motor operation for all the models, with the exception of the AEL6631_.
- The AEL6631_ actuator has handwheel which must be engaged for manual operation. The ball-headed button on the cover has to be depressed to engage the handwheel



Do not exceed the set stroke limits when operating manually.

Do not operate the handwheel using excessive force.

Do not try to block the handwheel when the actuator is operating.

Failure to observe this warning may result in damage to the actuator.

3. Installation

Note: Please read Section 1, 'Safety information' before proceeding with installation.

3.1 Location

The actuator should be mounted above the valve with sufficient space to remove the cover and general ease of access. When selecting the location, make sure that the actuator is not exposed to an ambient temperature exceeding the range -20°C to $+60^{\circ}\text{C}$. If necessary, provide insulation to prevent overheating.

The actuator is rated at IP65, but only when the lid is correctly fitted (see Section 3.3). It is recommended that adequate shelter is provided for outdoor installations.

If condensation is present a heating resistor should be installed. Refer to technical information Sheets for details.

The operating modes for these electric actuators are for S2 – short and S4 – intermittent service as stated in IEC 6034-1, 8.

3.2 Connecting the actuator to the valve

Normally the AEL6 actuator will be supplied already fitted to the valve. However, should it be necessary to fit an actuator, the following procedure should be adopted:



When mounting an actuator on a valve, never drive the actuator electrically, instead use the handwheel.

Note: When mounting the actuator to the valve it is advised that the polystyrene packaging remains on the head of the actuator. The actuator can become damaged if it dropped or if it topples down onto a hard surface without the packaging.

3.2.1 AEL62_ and AEL63_ and AEL64_ and AEL65 actuator

1. If the diameter of the valve is smaller than DN65 the AEL6911 adaptor must be used for the SPIRA-TROL K valve or the AEL6911 J adaptor for the SPIRA-TROL J valve. The mounting flange is:
EL5970 for the DN15 - DN50 SPIRA-TROL K valve or
EL5971 for the DN65 - DN100 SPIRA-TROL K valve or
AEL5971J for the DN15 - DN100 SPIRA-TROL J valve.
2. Remove the actuator retaining nut (8) from the valve and place the mounting flange over the valve bonnet thread.
3. Refit the actuator retaining nut (8) and tighten as follows:
50 Nm for the M34 or 100 Nm for the M50.
4. Remove the actuator pillar nuts (3) using the handwheel to retract the actuator spindle.
5. Untighten the four screws (2) until the nut comes free (about 2 turns for each screw).
6. Screw the valve stem lock-nut (5) 2 x valve stem diameters onto the valve stem.
7. Put the actuator onto the mounting flange.
8. Refit and tighten the pillar nuts (3) to a torque of 100 Nm.
9. Using the handwheel lower the actuator stem until it touches the valve stem connection.
10. Lift the valve stem up into the actuator stem until it comes to a stop.
It is important that this operation is not carried out with the valve plug on it's seat after tightening the retaining nut by hand. One marking ring should be exposed 1 mm below the bottom of the retaining nut, as shown in Figure 2.
11. Screw the 4 items (2), the lock-nut (5).



Before the pillar nuts are tightened, make sure that the pillar ends are completely inserted into the bores of the valve mounting flange. If necessary, correct the position of the actuator using the handwheel.

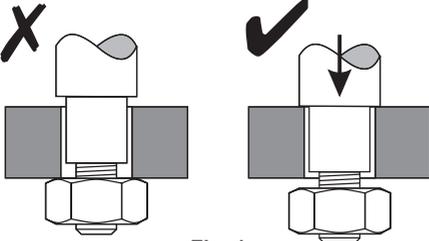


Fig. 1

It is important that this operation is not carried out with the valve plug on its seat after tightening the retaining nut by hand.

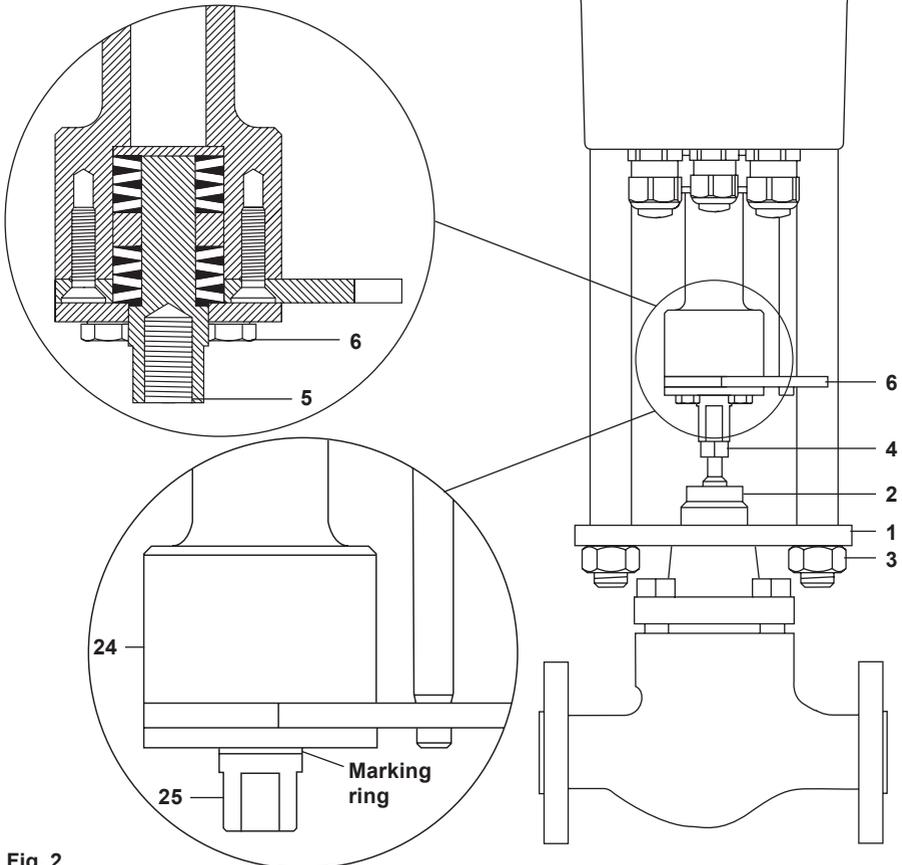


Fig. 2

3.2.2 AEL66_ actuator connection to valve



Important: Disc springs must be assembled correctly.

There are 2 sets of 3 disc springs, which must be assembled in the correct order. The convex side of a spring must be assembled to the convex side of the next spring. Conversely, the concave side of the spring must be assembled to the concave side of the next spring. Insert the first set of springs (9, see Figure 5) inside the actuator adaptor mounting. Next push the valve adaptor (10) inside the actuator mounting so that the springs are pushed up to the top. Push the second set of disc springs (9) over the adaptor nut (11) into the actuator by hand. The nut should be screwed in until the adaptor is held firmly inside the actuator, but not too tight such that the adaptor cannot be rotated.

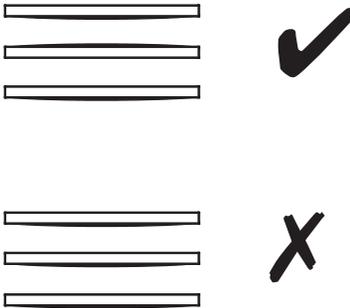


Fig. 3 Assembling the disc springs

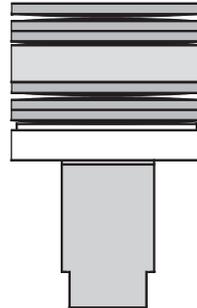


Fig. 4 Correct assembly of the valve adaptor for the EL565_ actuator



When mounting an actuator on a valve, never drive the actuator electrically, instead use the handwheel.

1. When coupling the actuator to the valve a mounting flange (12) type EL5972 or type EL5973 is required.
2. Remove the actuator retaining nut (15) from the valve and place the mounting flange over the valve bonnet thread.
3. Refit the actuator retaining nut (13) and tighten.
4. Remove the actuator pillar nuts (13). Using the handwheel retract the actuator spindle.
5. Screw the valve stem lock-nut (14) 2 x valve stem diameters onto the valve stem.
6. Lower the actuator onto the valve so that the pillar shoulders sit squarely against the mounting flange.
7. Refit and tighten the pillar nuts (13).

8. Lift the valve stem up into the actuator connecting piece (10), until it stops.
9. Screw the actuator connecting piece (10) onto the valve stem until it meets the lock-nut or comes to a stop (whichever is first).
10. Screw the retaining nut (11) into the actuator spindle until the returning unit is level with the housing. This will preload the disc springs. Lock the valve stem lock-nut (14).

Use the peg spanner (found tied to the pillar) to tighten the retaining nut (11).



It is important that when the retaining nut is screwed hand tight, the valve plug must not be on its seat. Ensure that one marking ring is exposed 1 mm below the bottom of the retaining nut, as shown in Figure 2.

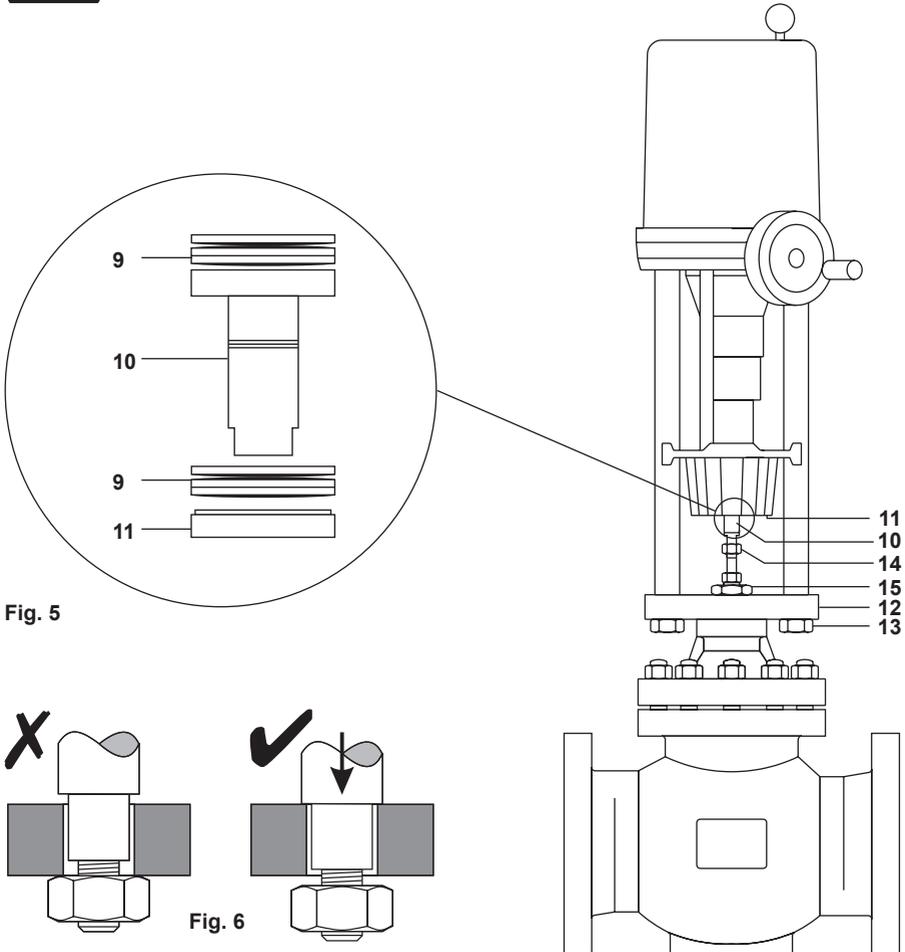


Fig. 5

Fig. 6



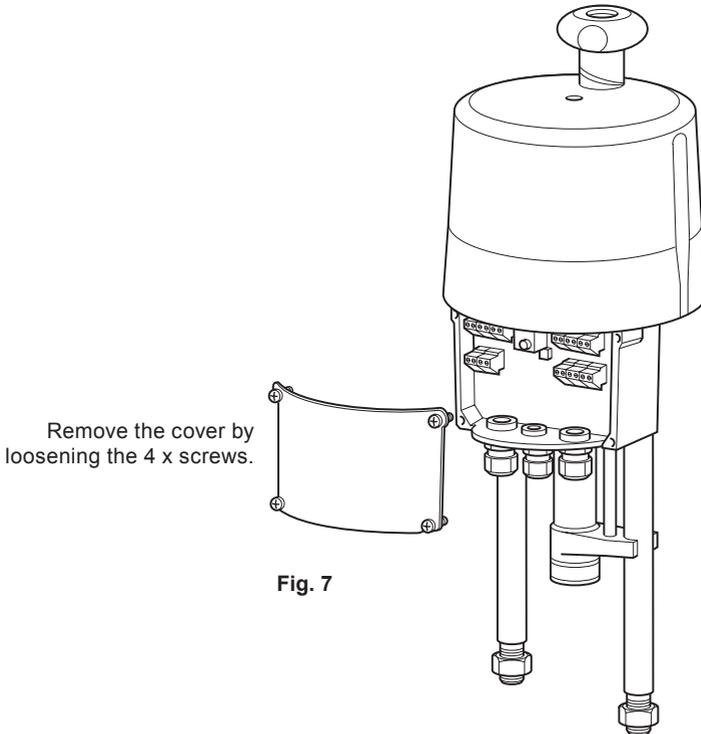
Before the pillar nuts are tightened, make sure that the pillar ends are completely inserted into the bores of the mounting flange. If necessary, correct the position of the actuator using the handwheel.

3.3 Removing and fitting the actuator cover

3.3.1 AEL62_, AEL63_, AEL 64_ and AEL65_ actuators

Remove the handwheel by loosening the socket headed grub screw (3 mm A/F allen key). Hold both of the actuator pillars at the top. Using your thumbs gently ease the lid off.

Note: When replacing the cover ensure that the two longest locating guides on the interior of the cover are aligned with the two recesses on the actuator housing. Firmly press down the actuator housing ensuring the 'o' ring on the actuator is completely concealed.



3.3.2 AEL66_ actuators

For the AEL66_ actuator remove the handwheel first by loosening the grub screw. Unscrew the 3 fixing screws around the bottom edge of the lid, then gently lift the lid off.

To fit the lid ensure that it is orientated correctly. Push the cover over the handwheel shift on the AEL66_.

Align the 3 fixing screws over the tapped holes in the gearbox housing. Tighten the fixing screws with a suitable screwdriver.



AEL66_ actuator.

After the lid is fitted ensure the handwheel button can be pushed down to engage the handwheel.

3.4 Fitting the additional limit switches

Should it be necessary to fit any accessories, the following procedure should be adopted.

	EL5951	Auxiliary switches
Options	EL5954	Anti-condense heater (110 - 250 V)
		Anti-condense heater (12 - 36 V)

3.4.1 Fitting the additional limit switches

All actuators can be provided with additional limit switches (Figure 11, page 14). Mounting locations are on the limit switch, angle bracket either side of the standard limit switches. AEL62_, AEL63_, AEL64_ and AEL65_ : Remove the handwheel by loosening the socket headed grub screw (3 mm A/F Allen key).

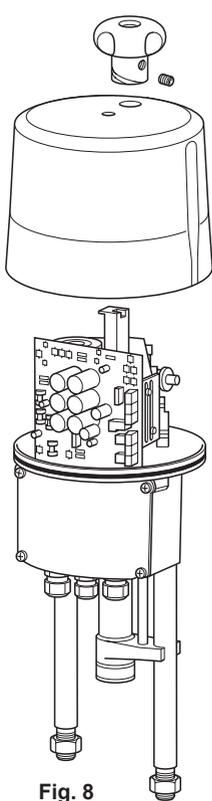


Fig. 8

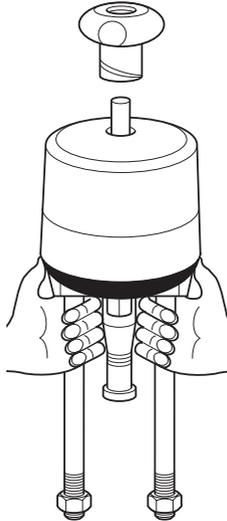


Fig. 9
Hold both of the actuator pillars at the top. Using your thumbs gently ease the lid off.

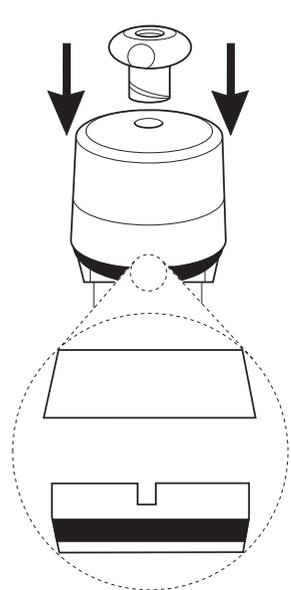


Fig. 10

Note: When replacing the cover ensure that the two longest locating guides on the interior of the cover are aligned with the two recesses on the actuator housing. Firmly press down the actuator housing ensuring the 'O' ring on the actuator is completely concealed. For the AEL66_ actuator remove the handwheel first by loosening the grub screw. Unscrew the 3 fixing screws around the bottom edge of the lid, then gently lift the lid off.

To fit the lid ensure that it is orientated correctly. Push the cover over the handwheel shift on the AEL66_.

Align the 3 fixing screws over the tapped holes in the gearbox housing. Tighten the fixing screws with a suitable screwdriver.

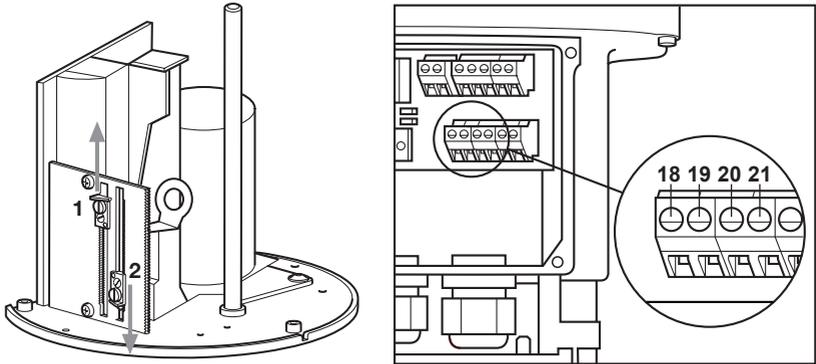


AEL66_ actuator.

After the lid is fitted ensure the handwheel button can be pushed down to engage the hanwheel

To fit limit switches remove the screws holding the switching plate and carefully remove. The cams are fitted to the switching plate, with infinitely variable adjustment. The direction of travel of the cam is from the lever pivot point towards the roller.

Fig. 11



Section 3.5.6 shows how the switches are wired to the terminals. Fit the extend switch and the retract switch position (1) and (2) respectively in Figure 11.

Insert auxiliary limit switches adjacent to the existing switch by a simple snap-in connection. Refit the switching plate and tighten the screws.

Note: When removing the auxiliary limit switches carefully lever the limit switch housing using a screwdriver and remove the switch.

Refer to Section 3.5.4 in order to fit the additional terminal blocks for the auxiliary limit switches.

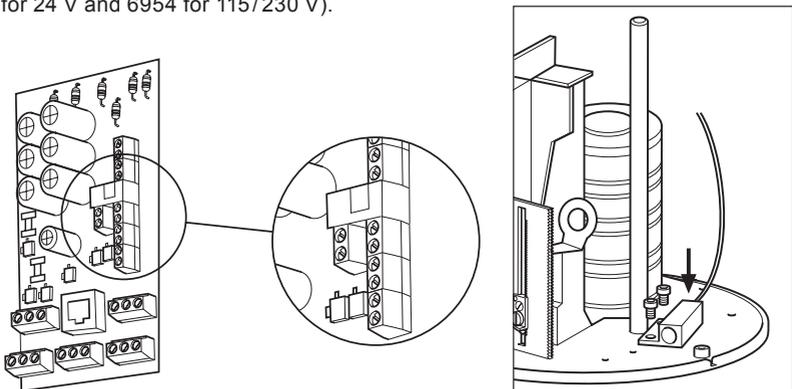
3.4.3 Fitting the anti-condense heater

Fitted in accordance with wiring diagram in Section 3.5.7, Figure 21.

Location of the fixing holes as shown in Figure 12.

Refer to Section 3.5.4 in order to fit the additional blocks for the anti condense heater (ref. 6953 for 24 V and 6954 for 115/230 V).

Fig. 12



3.5 Wiring details



Connection to the mains supply.

Important

1. Read Section 1 'Safety information', before attempting to wire the supply to the actuator.
2. Slow blow fuses (rated as shown in Table 2) should be fitted in all phases, but not in the protective earth conductor.
3. The protective earth internal must be connected to the installation protective earth system. The integrity of the installation protective earth system must not be compromised by the disconnection or removal of other equipment.
4. For supply connections, use 1.5 mm² wire, double insulated as stated in IEC 60364 (or equivalent), if wires are exposed to touch.

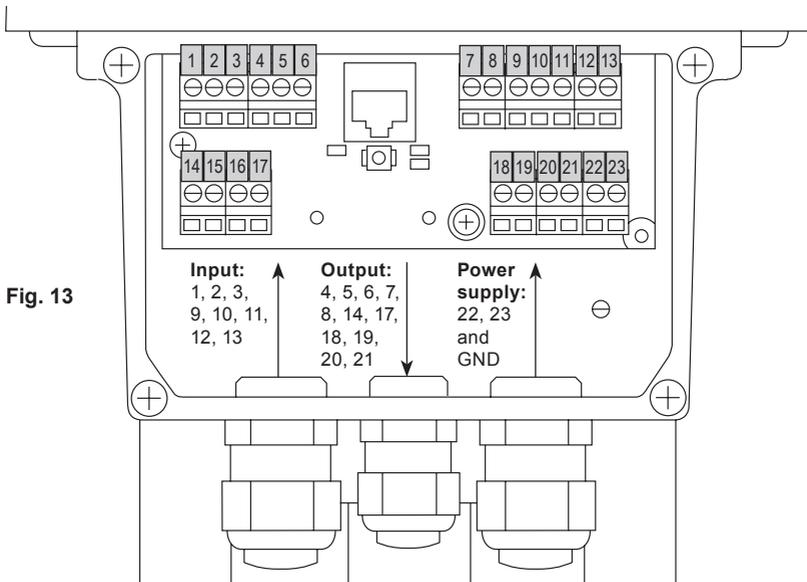
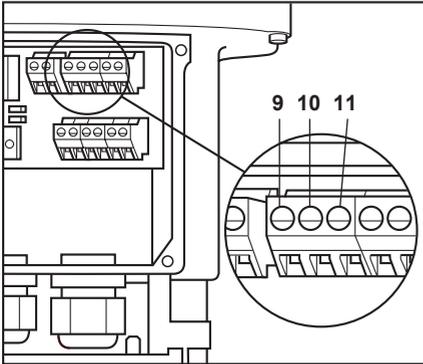


Fig. 13

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	RJ45	
+0(2) - 10 V	+0(4) - 20 mA	GND	+0(2) - 10 V	+0(4) - 20 mA	GND	24 Vdc	Maximum load	L / + open	N -	L / + close	L / + (24 Vac / Vdc)	N / - (24 Vac / Vdc)	24 Vdc / 100 mA	+0(2) - 10 V	+0(4) - 20 mA	GND						L / + : power supply, see name plate	N / - power supply, see name plate for value	
Set value input	Active position feed back		Monitor relay potential free	Binary input signals	Fail safe signal	supply	Actual value (process sensor)		Position switches (potential free contact)		Power supply	communication	PC											

3.5.1 Valve motor drive models

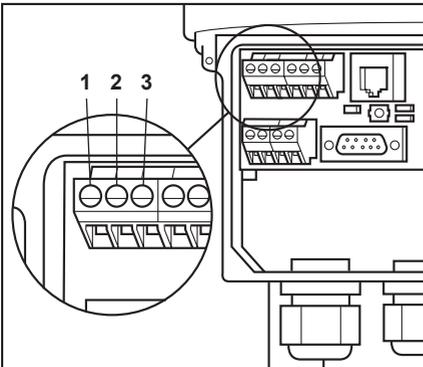


Standard voltage for this input is 24 V. 115/230 V are optional. This option (ref. 6972) is not retrofittable and should be addressed with the order.

The actuator is driven in 3 point service:

- 9 = Opening (extend spindle).
- 10 = Neutral.
- 11 = Closing (retract spindle).

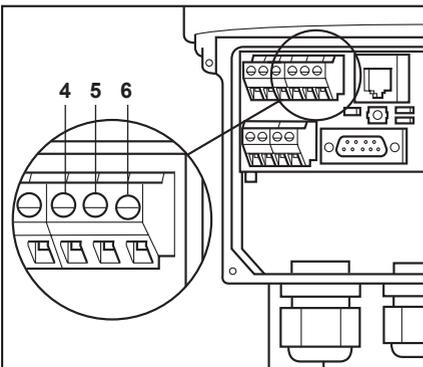
3.5.2 Set value



To drive the actuator with a 0 to 10 V or a 4 - 20 mA input signal, the plugging is:

- 1 = 0 - 10 V
- 2 = 0/4 - 20 mA
- 3 = GND

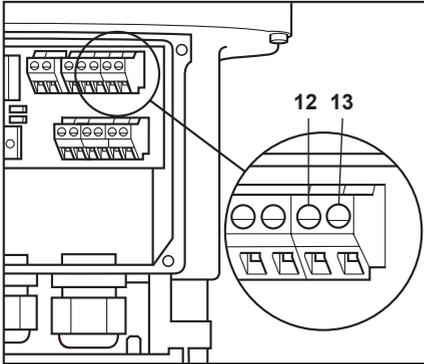
3.5.3 Active position feedback



The AEL6 actuator could send as output an active position feedback, especially if a cut-off by position is requested.

- 4 = 0 - 10 V
- 5 = 0/4 - 20 mA
- 6 = GND

3.5.4 Fail safe (option)



The AEL6 actuator could be fitted with a power safe fail package (ref . 6974 or 6975) which will power the actuator with a 24 V signal to ensure a safety position.

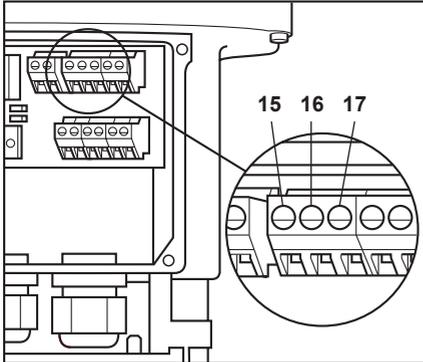
- 12 = L/+
- 13 = N/-

This option is not retrofittable and should be addressed with the order.



Fig. 14

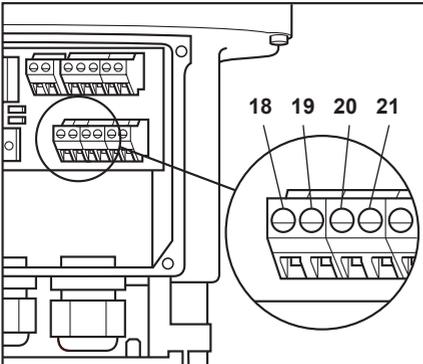
3.5.5 Sensor feedback (option)



The AEL6 actuator could receive as an input an active process sensor feedback to the process controller.

- 15 = 0 - 10 V
- 16 = 0/4 - 20 mA
- 17 = GND

3.5.6 Additional position switches (option)



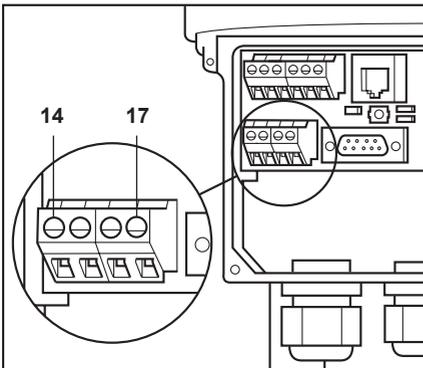
The activation points of the optionally available position switches are freely adjustable via cams. Plugging 18/19 and 20/21 provide potential free opening or closing contacts. The standard switches are rated to 230 Vac/5 A.

If ordering switches it is necessary to specify either:

- Normally closed AEL6951 or
- Normally open AEL6952.

Special switches with gold plated contacts are available for low power (up to 100 mA and 30 V).

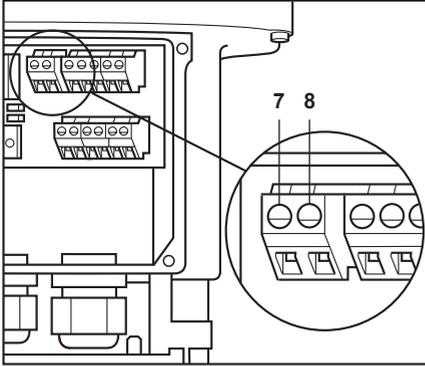
3.5.7 Voltage supply to process sensor (option)



The AEL6 actuator could provide a 24 Vdc at maximum at 100 mA unregulated output voltage to an external process sensor.

- 14 = 24 Vdc / 100 mA
- 17 = GND

3.5.8 Fault indicating relay (option)



As an option, plugins 7 and 8 allows to display parameterisable fault indication to a control room. It is based on normally open contact relay. This option (ref. 6973) is linked with the communication software.
Load 100 mA maximum at 24 Vdc.
This option is not retrofittable and should be addressed with the order.

3.5.9 Fitting additional terminal blocks for the following:



- Auxiliary limit switches
- Anti-condense heater

Ensure the mains power to the positioner or the VMD control signal is isolated

Prior to removing the termination PCB ensure the positioner card is removed. To remove the termination PCB place a screwdriver as shown in Figure 18 and lever out from the back plate. 'Snap fit' terminal blocks in the relevant housing location as shown in Figure 19; ensure cables are taken through the back plates as shown. Replace the termination PCB by locating the card in the lower housing and 'snap fitting' into the upper housing.

3.5.10 The switches are shown in the normally closed condition i.e when the switches are not engaged with the cams.

Example: If the retract switch is engaged, terminals 1 and 2 will be shorted together.

4. Commissioning

Actuators supplied already fitted to control valves would be supplied already commissioned. However, should it be necessary to commission an actuator, the following procedure should be adopted.

After installation or maintenance, ensure that the system is fully operational. Make a test alarms or protective devices.

4.1 Preliminary checks - All actuators

1. Check that the actuator voltage corresponds to that required.
2. Ensure the wiring corresponds to that outlined in Section 3.5.

Ensure the assembly of the valve and actuator has been carried out according to the instructions in Section 3.2.

4.2 Automatic commissioning: 2-port and 3-port valves

1. It is possible to do the commissioning in an automatic way. Cut-offs have to be set 'by force/torque' for the linear valves or 'by position automatically' for the butterfly valves see the 'Software Installation Instructions' IM-P358-27 that have been supplied with the product. During automatic commissioning the actuator goes through the full programmed valve stroke automatically. Parameters specific to the valve are being measured and values are calculated and stored permanently in the actuator. Set value and position feedback range are scaled.
2. When the actuator is fitted on the valve and the wiring connections are completed, switch the power on. Press the button for 3 seconds.

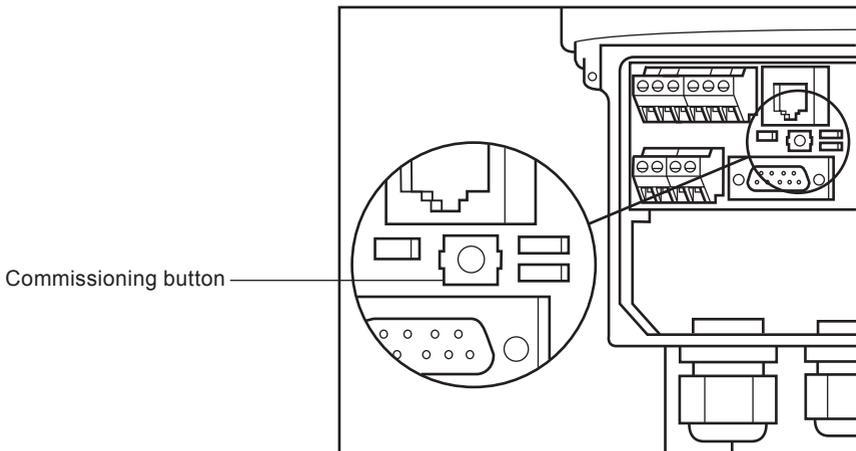


Fig. 15

3. The actuator will move through the whole valve stroke. The green led is flashing quickly during this commissioning run.

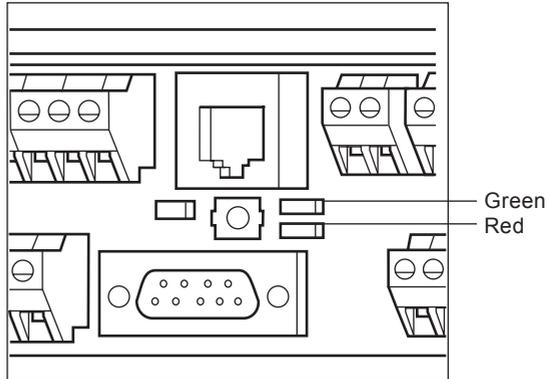


Fig. 16

4. When the commissioning is finished, the green led is glowing permanently.

4.3 Manual commissioning: 2-port and 3-port valves

1. The manual commissioning is made through the communication software or a control box - see the 'Software Installation Instructions' IM-P358-27 that have been supplied with the product.

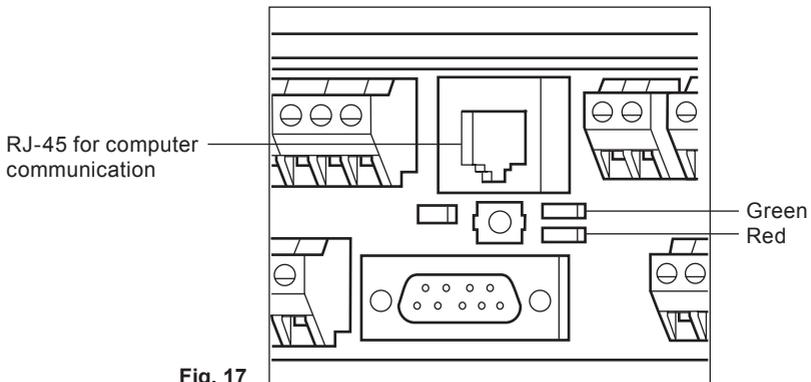


Fig. 17

2. When the actuator is fitted on the valve and the wiring connections are completed, switch the power on. Permanently apply the set value for the closed position or the input signal 'close'.
3. The valve stroke has to be set off using the communication software or the control box
4. Drive the actuator to the closed position of the valve using the communication software or the control box. Be careful of having the full compression of the disc spring. The open position of the valve will be calculated in accordance with the programmed valve stroke.
5. After manually commissioning, the actuator is ready for use. The green led will be glowing permanently.

— 5. Maintenance and spare parts —

Note: Before actioning any maintenance read the 'Safety information' in Section 1.



Always make sure that the electrical supply is switched off when carrying out any maintenance on the actuator or valve.

The AEL6 series actuators have a design life of approximately 200 000 full strokes or alternatively 1.5 million starts (1 start is 1 movement of the spindle). The maintenance required for the AEL6 series range of actuators is to inspect the condition inside of the spindle nut and to lubricate it. If that actuator has been operating beyond its design limits the spindle nut may require replacing.

Do not use any coarse or abrasive materials or cleaning agent to clean the actuator. **Only use a dry soft cloth.**

Spare parts

Maintenance spare kits are available for the range of AEL6 series actuators. The kits contain replacement spindle nuts, 'O' rings, the correct lubricating grease, plus full instructions to carry out the inspection, lubrication / spindle nut replacement. For more information contact your local Spirax Sarco branch or distributor.