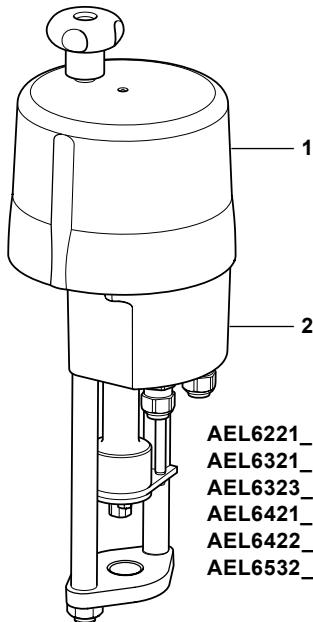




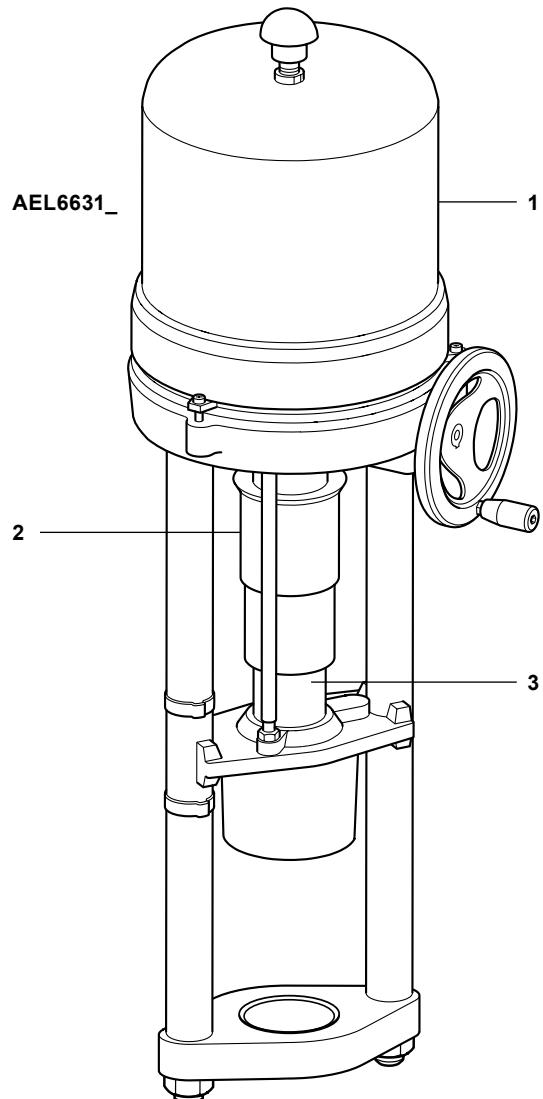
AEL6 Series Smart Electric Actuators for DN15 to DN100 Control Valves



AEL6221_
AEL6321_
AEL6323_
AEL6421_
AEL6422_
AEL6532_

Materials

No.	Part	Material
1	Case	Polycarbonate
2	Housing	Die-cast aluminium
3	Guidance	Red brass



Description

The AEL6 series electric actuators are reversible having linear output.

Available types

The actuators are available with 4 supply variants: **230 Vac**, **115 Vac**, **24 Vac** and **24 Vdc**. The standard version is available for VMD (Valve Motor Drive), 0/4-20 mA or 0/2-10 Vdc input control signals. **These actuators can be used with the following valves**, in conjunction with an appropriate valve adaptor and mounting flange:

Control valves	2-port SPIRA-TROL
	3-port QL43 and QL73 mixing and diverting valves

Note: A mounting flange and valve adaptor is required to mount the actuator to a valve. See the associated tables below:

Mounting flange selection

Valve type and size	Actuator		
	AEL62_, AEL63_, AEL64_, AEL65_	AEL66_	
KE and KEA LE and LEA QL	DN15 to DN50	EL5970	
LE and LEA	DN65 to DN100	EL5971	
KE and KEA QL	DN65 to DN100	EL5971	EL5972
JE and JEA	DN15 to DN100	EL5971J	EL5972

Valve adaptor selection

Valve type and size	Valve stem	AEL62_	AEL63_	AEL64_	AEL65_	AEL66_
KE and KEA LE and LEA QL	DN15 to DN50	M8 thread	AEL6911	AEL6911	AEL6911	AEL6911
	DN65 to DN100	M12 thread	Integrated	Integrated	Integrated	Integrated
JE and JEA	DN 15 to DN50	M8 thread	AEL6911J	AEL6911J	AEL6911J	AEL6911J
	DN 65 to DN100	M12 thread	Integrated	Integrated	Integrated	Integrated

Technical data

Actuator type	AEL6221_	AEL6321_	AEL6323_	AEL6421_	AEL6422_	AEL6532_	AEL6631_
Supply voltage	230 Vac, 115 Vac, 24 Vac, 24 Vdc						
Supply frequency	50 Hz / 60 Hz / continuous						
Maximal power consumption VA Note: power consumption is relative to 50/60 Hz/continuous respectively	30	30	93	30	93	93	135
Stroke mm	50	50	50	50	50	65	60*
Actuator speed mm/s Note: Speed is relative to 50/60 Hz/continuous respectively	0.9	0.9	4.5	0.7	1.7	1.3	0.4
Enclosure rating	IP65 (for outdoor installations adequate shelter)						
Actuator trust kN	2.3	4.5	4.5	8	8	14	25
Ambient limits	-20°C to 60°C						
Analog position set valve input	Adjustable: 0/4 - 20 mA or 0/2 - 10 Vdc						
Positioner function	Dead-band adjustable between 0.5 - 5% of set value range, maximum resolution 0.1 mA or 0.05 V at 50 mm stroke						
Active valve position feedback	Adjustable: 0/4 - 20 mA or 0/2 - 10 Vdc						
Automatic commissioning	Drives to torque dependant stop(s) and moves through the whole valve travel. Autoscale of set value and feedback in accordance to valve travel						
Characteristic curve correction	Up to 16 interpolation points, input inaccuracy 1%						
Torque increase	Adjustable up to 150% torque for up to 2.5s to break away a valve in the end position						
Status indication	2 LEDs under actuator cover						
Internal fault monitoring	Torque, current useful, position set value, active value, position, temperature of electronic board						
Diagnostics function	Stores cumulated operation data (motor and total running time, number of motor starts) and data sets of current values (set value, feedback value, torque, temperature)						

*Notes:

1. 115 Vac and 230 Vac models of the AEL6631_ have a stroke limited to 60 mm.
2. 24 Vac and 24 Vdc models of the AEL6631_ are capable of up to 100 mm stroke.

Optional extras:

- Additional position switches - AEL6951 (NC) and AEL6952 (NO)
- Local control - (non retrofittable for the AEL66_) - AEL6955 (2.3 to 14 kN) and AEL6956 (25 kN)
- 3 way isolation (non retrofittable) - AEL6980
- Fault indicator relay - AEL6973
- Communication software including data cable - AEL6957
- Space heater - AEL6953 (24 Vac) and AEL6954 (115 Vac and 230 Vac)

Approvals

This equipment is CE marked and conforms to the following:

- EEC regulation 89/336-EEC for Electromagnetic compatibility and 72/23-EEC for low voltage directive.
- EN 61000-2-2/2001 and EN 61000-6-4 for EMC, and 61010-1/1995 for safety.

How to use the sizing data:

The following tables supply guidance as to the sizing of the AEL6 series actuator when it is used on the SPIRA-TROL K and L series valves.

Three conditions are illustrated in tabular form:

KE, LE, KEA - 2-port valve: Class IV shut-off - Providing shut-off of the valve to the requirements of BS 5793-4 (IEC 60534-4) class IV.

KE, LE, KEA - 2-port valve: Class VI shut-off - Providing shut-off of the valve to the requirements of BS 5793-4 (IEC 60534-4) class VI.

QL - 3-port valve: Class IV shut-off - Providing shut-off of the valve to the requirements of BS 5793-4 (IEC 60534-4) class IV.

To select a suitable actuator:

- Identify the column containing the valve size and gland material selected.
- Identify the maximum operating pressure condition, including any transient pressures likely to occur, within the selected column.
- Read back to the left hand side of the table to identify the suitable actuator for the application.

For conditions outside of those illustrated please contact Spirax Sarco.

Maximum differential pressures for modulating duties only –

KE, LE, KEA and LEA 2-port valves.

For pure control applications providing control across the full valve operating range, but not guaranteeing shut-off to a greater level than the minimum flowrate based on the valve 50:1 turndown.

with PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
Kv	4.0	6.3	10	16	25	36	63	100	160
Valve travel	20 mm						30 mm		
Actuator	Maximum differential pressure bar								
	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
AEL6221-	40.0	40.0	40.0	40.0	40.0	38.5	19.2	16.6	13.7
AEL6321- *					40.0	40.0	40.0	38.6	36.0
AEL6323- *					40.0	40.0	40.0	38.6	36.0
AEL6421- *						40.0	40.0	40.0	40.0
AEL6422- *						40.0	40.0	40.0	40.0
AEL6532-						40.0	40.0	40.0	40.0
AEL6631-							40.0	40.0	40.0

* Please note that although the AEL6321- and the AEL6323- have the same maximum differential pressure values, they have different operating speeds. The same applies to the AEL6421- and the AEL6422-. Please refer to the technical data table on page 1 for full details.

with Bellows and PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
Kv	4.0	6.3	10	16	25	36	63	100	160
Valve travel	20 mm						30 mm		
Actuator	Maximum differential pressure bar								
	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
AEL6221-	34.4	19.5	27.2	15.4	18.1	10.2	14.0	7.9	6.0
AEL6321- *	40.0	40.0	40.0	40.0	40.0	40.0	40.0	25.4	22.8
AEL6323- *	40.0	40.0	40.0	40.0	40.0	40.0	40.0	25.4	22.8
AEL6421- *						40.0	40.0	40.0	40.0
AEL6422- *						40.0	40.0	40.0	40.0
AEL6532-							40.0	40.0	40.0
AEL6631-								40.0	40.0

* Please note that although the AEL6321- and the AEL6323- have the same maximum differential pressure values, they have different operating speeds. The same applies to the AEL6421- and the AEL6422-. Please refer to the technical data table on page 1 for full details.

**Maximum differential pressures for Class IV shut-off –
KE, LE, KEA and LEA 2-port valves**

with PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
Kv	4.0	6.3	10	16	25	36	63	100	160
Valve travel	20 mm						30 mm		
Actuator	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
AEL6221-	40.0	40.0	40.0	40.0	40.0	39.1	36.8	30.7	14.1
AEL6321- *			40.0	40.0	40.0	40.0	40.0	33.5	30.9
AEL6323- *			40.0	40.0	40.0	40.0	40.0	33.5	30.9
AEL6421- *						40.0	40.0	40.0	40.0
AEL6422- *						40.0	40.0	40.0	40.0
AEL6532-							40.0	40.0	40.0
AEL6631-								40.0	40.0

* Please note that although the AEL6321- and the AEL6323- have the same maximum differential pressure values, they have different operating speeds. The same applies to the AEL6421- and the AEL6422-. Please refer to the technical data table on page 1 for full details.

with Bellows and PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
Kv	4.0	6.3	10	16	25	36	63	100	160
Valve travel	20 mm						30 mm		
Actuator	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
AEL6221-	19.8	4.9	14.2	2.4	7.5	6.3	0.9		
AEL6321- *	40.0	40.0	40.0	40.0	40.0	40.0	20.3	17.7	13.8
AEL6323- *	40.0	40.0	40.0	40.0	40.0	40.0	20.3	17.7	13.8
AEL6421- *						40.0	40.0	40.0	35.8
AEL6422- *						40.0	40.0	40.0	35.8
AEL6532-							40.0	40.0	40.0
AEL6631-								40.0	40.0

* Please note that although the AEL6321- and the AEL6323- have the same maximum differential pressure values, they have different operating speeds. The same applies to the AEL6421- and the AEL6422-. Please refer to the technical data table on page 1 for full details.

**Maximum differential pressures for Class VI shut-off (soft-seal) –
KE, LE, KEA and LEA 2-port valves**

with PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
Kv	4.0	6.3	10	16	25	36	63	100	160
Valve travel	20 mm						30 mm		
Actuator	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
	AEL6221-	40.0	40.0	40.0	40.0	40.0	38.5	19.2	16.6
AEL6321- *					40.0	40.0	40.0	38.6	36.0
AEL6323- *					40.0	40.0	40.0	38.6	36.0
AEL6421- *						40.0	40.0	40.0	40.0
AEL6422- *						40.0	40.0	40.0	40.0
AEL6532-						40.0	40.0	40.0	40.0
AEL6631-							40.0	40.0	40.0

* Please note that although the AEL6321- and the AEL6323- have the same maximum differential pressure values, they have different operating speeds. The same applies to the AEL6421- and the AEL6422-. Please refer to the technical data table on page 1 for full details.

with Bellows and PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
Kv	4.0	6.3	10	16	25	36	63	100	160
Valve travel	20 mm						30 mm		
Actuator	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
	AEL6221-	34.4	19.5	27.2	15.4	18.1	10.2	14.0	7.9
AEL6321- *	40.0	40.0	40.0	40.0	40.0	40.0	40.0	25.4	22.8
AEL6323- *	40.0	40.0	40.0	40.0	40.0	40.0	40.0	25.4	22.8
AEL6421- *						40.0	40.0	40.0	40.0
AEL6422- *						40.0	40.0	40.0	40.0
AEL6532-							40.0	40.0	40.0
AEL6631-								40.0	40.0

* Please note that although the AEL6321- and the AEL6323- have the same maximum differential pressure values, they have different operating speeds. The same applies to the AEL6421- and the AEL6422-. Please refer to the technical data table on page 1 for full details.

**Maximum differential pressures for modulating duties only
JE and JEA 2-port valves**

PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	
Kv	4.0	6.3	10	16	25	36	63	100	160	
Valve travel	20 mm						30 mm			
Actuator	Maximum differential pressure bar									
	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	
AEL6221-	100.0	94.0	86.0	74.0	58.0	50.0	45.0	38.5	19.2	
AEL6321-					100.0	100.0	89.0	83.0	38.6	
AEL6323-					100.0	100.0	89.0	83.0	38.6	
AEL6421-						100.0	100.0	69.0	67.0	
AEL6422-						100.0	100.0	69.0	67.0	
AEL6532-						100.0	100.0	100.0	87.0	
AEL6631-								100.0	100.0	
								88.0	86.0	
								56.0	55.0	
								35.0	34.3	

**Maximum differential pressures for Class IV shut-off
JE and JEA 2-port valves**

PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	
Kv	4.0	6.3	10	16	25	36	63	100	160	
Valve travel	20 mm						30 mm			
Actuator	Maximum differential pressure bar									
	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	
AEL6221-	94.0	79.0	73.0	61.0	47.0	39.1	36.8	30.7	14.1	
AEL6321-			100.0	100.0	100.0	97.0	82.0	76.0	33.5	
AEL6323-			100.0	100.0	100.0	97.0	82.0	76.0	33.5	
AEL6421-						100.0	100.0	64.0	62.0	
AEL6422-						100.0	100.0	64.0	62.0	
AEL6532-							100.0	100.0	83.0	
AEL6631-								81.0	46.0	
								44.0	28.7	
								54.0	27.5	
								52.0	17.4	
								33.0	16.7	
									32.2	

**Maximum differential pressures for Class VI shut-off
JE and JEA 2-port valves**

PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	
Kv	4.0	6.3	10	16	25	36	63	100	160	
Valve travel	20 mm						30 mm			
Actuator	Maximum differential pressure bar									
	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	
AEL6221-	100.0	94.0	86.0	74.0	58.0	50.0	45.0	38.5	19.2	
AEL6321-					100.0	100.0	89.0	83.0	38.6	
AEL6323-					100.0	100.0	89.0	83.0	38.6	
AEL6421-						100.0	100.0	69.0	67.0	
AEL6422-						100.0	100.0	69.0	67.0	
AEL6532-						100.0	100.0	100.0	87.0	
AEL6631-							100.0	100.0	88.0	

**Maximum differential pressures for Class IV shut-off –
QL 3-port valves**

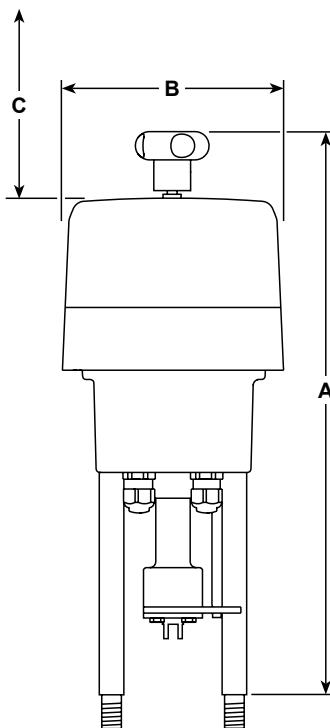
with PTFE or Graphite stem seal

Valve size	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100									
Kv	4.0	6.3	10	16	25	36	63	100	160									
Valve travel	20 mm						30 mm											
Actuator	Maximum differential pressure bar																	
	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE									
AEL6221-	40.0	39.6	40.0	39.6	32.1	23.2	19.5	14.0	12.3	8.8	7.4	5.2	3.7	2.3	2.3	1.3	1.1	0.6
AEL6321- *	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	29.2	25.7	17.9	15.7	10.3	8.9	7.0	6.0	3.7	3.2
AEL6323- *	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	29.2	25.7	17.9	15.7	10.3	8.9	7.0	6.0	3.7	3.2
AEL6421- *									40.0	40.0	32.6	30.3	19.6	18.2	13.5	12.5	7.4	6.9
AEL6422- *									40.0	40.0	32.6	30.3	19.6	18.2	13.5	12.5	7.4	6.9
AEL6532-										40.0	40.0	30.2	28.8	20.9	20.0	11.6	11.1	
AEL6631-										40.0	40.0	40.0	40.0	25.3	24.7			

* Please note that although the AEL6321- and the AEL6323- have the same maximum differential pressure values, they have different operating speeds. The same applies to the AEL6421- and the AEL6422-. Please refer to the technical data table on page 1 for full details.

Dimensions / weights (approximately) in mm and kg

Model	A	B	C	Weight
AEL6221-	459	177	150	7
AEL6231-	459	177	150	7
AEL6323-	459	177	150	7
AEL6421-	490	177	150	10
AEL6422-	490	177	150	10
AEL6532-	557	180	172	12
AEL6631-	760	226	277	20



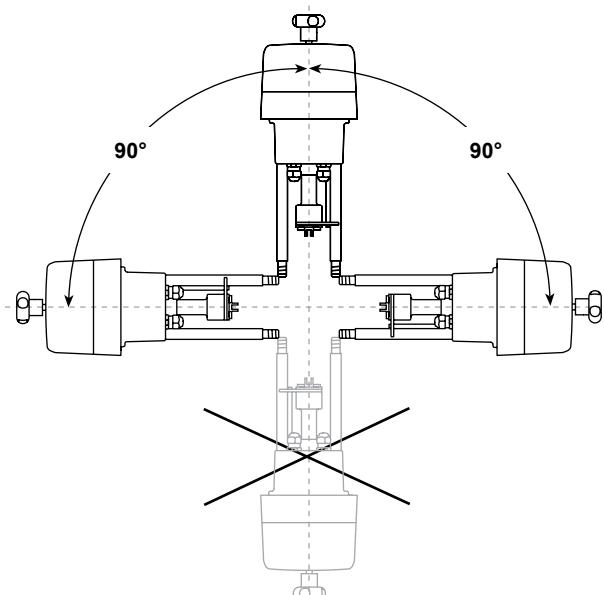
Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions that are supplied with the product.

Installation and wiring note:

The valve should be installed in a horizontal pipeline. 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 at more than 90° from the vertical position or in a wet environment.

Mounting position



AEL6 series actuators - Product nomenclature and selection example:

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

How to order / selection example:

Example : A 230 Vac fail safe electric actuator to suit a DN25 control valve with PTFE stem seals, to have class IV shut-off against a 10 bar differential pressure. There is no requirement for high actuating speed, the control signal is 230 V VMD.

Selection:

1 off Spirax Sarco AEL62211JS electric actuator.