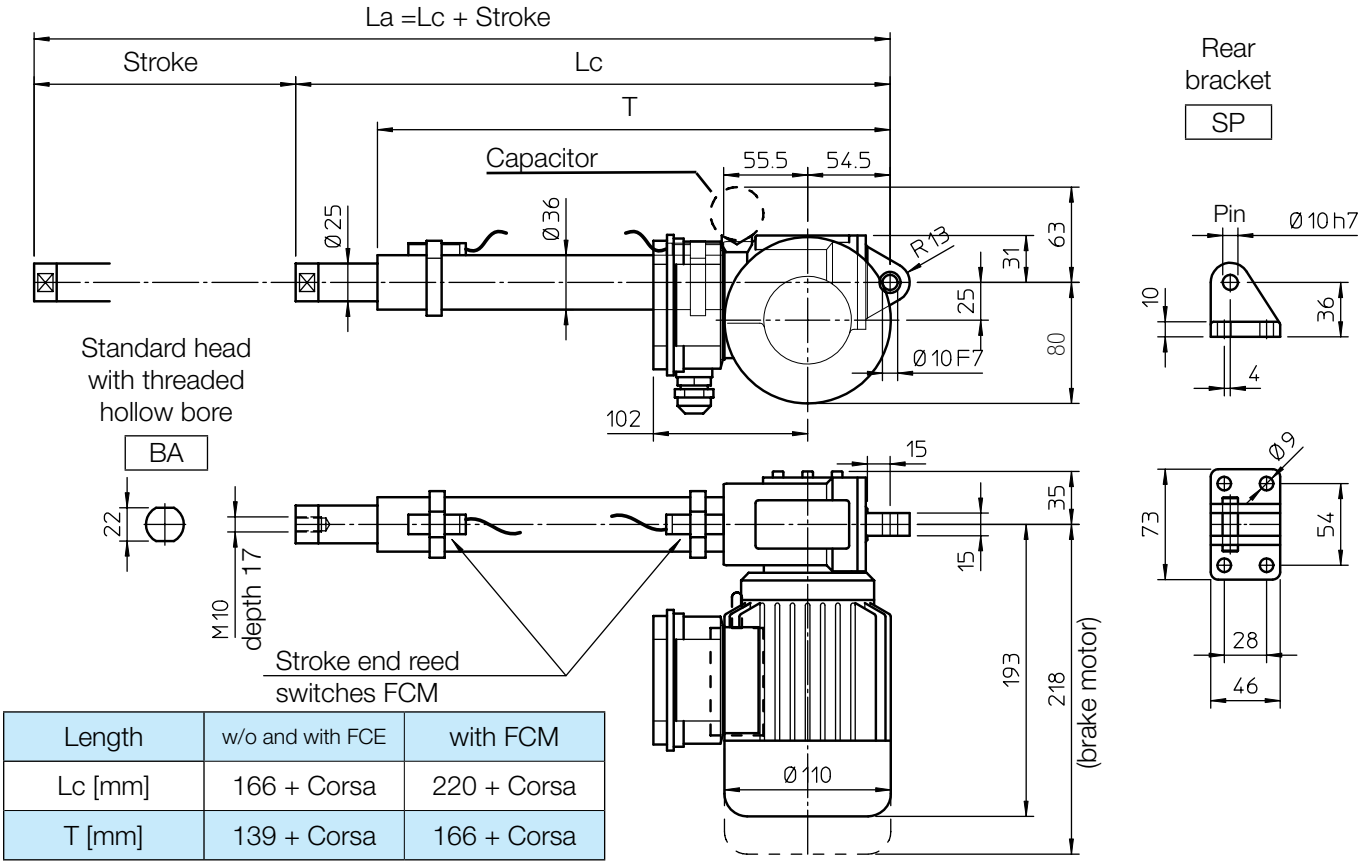
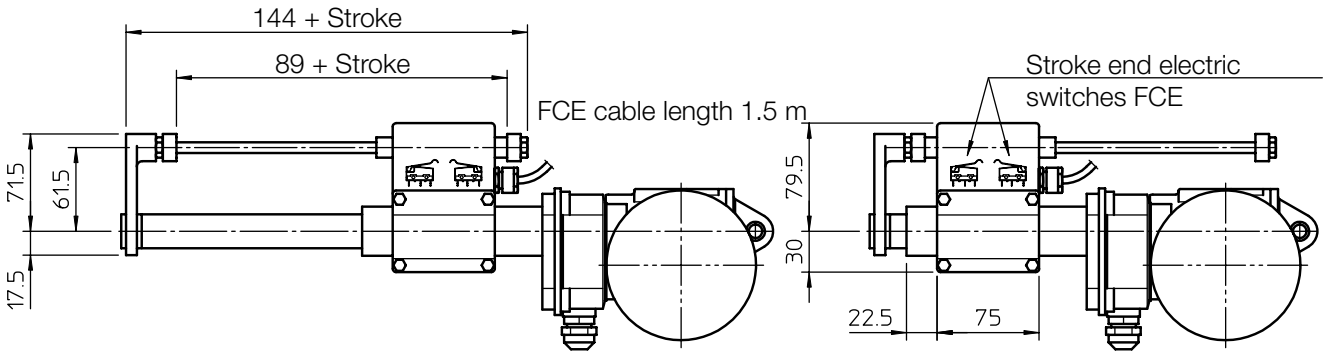
OVERALL DIMENSIONS



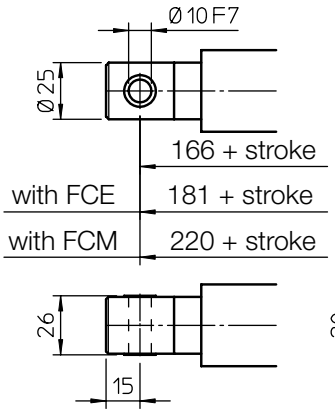
Length	w/o and with FCE	with FCM
Lc [mm]	166 + Corsa	220 + Corsa
T [mm]	139 + Corsa	166 + Corsa

STROKE CODE	C100	C150	C200	C300	C400	C500
Working stroke length w/o and with FCE [mm]	100	150	200	300	400	500
Working stroke length with FCM [mm]	73	123	173	273	373	473

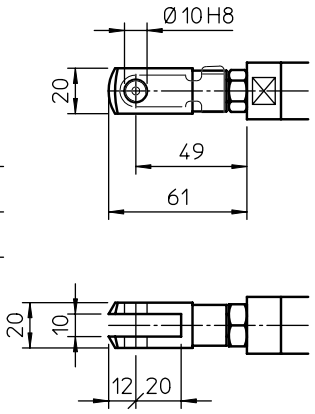


FRONT ATTACHMENT

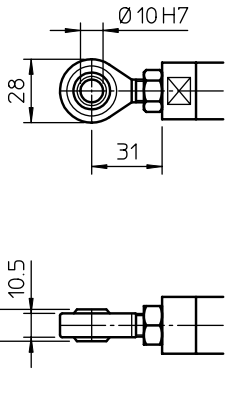
ROD END — ROE



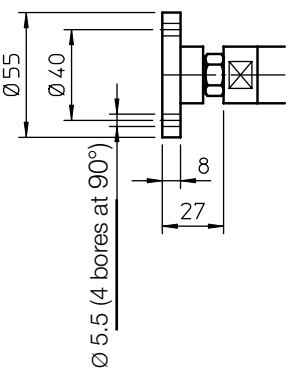
CLEVIS END — FO



BALL JOINT — TS



FLANGE END — FL



ACME SCREW LINEAR ACTUATOR ATL 10 AC motor

PERFORMANCES AND FEATURES

- Push load up to 5 000 N
- Pull load up to 4 000 N
- Linear speed up to 140 mm/s
- Standard stroke lengths: 100, 150, 200, 300, 400, 500 mm (for different / longer stroke lengths please contact us)
- Aluminium alloy housing and rear attachment, with bronze bush
- Anodized aluminium outer tube
- Chrome-plated steel push rod – tolerance f7
- Standard head BA or rod end ROE in stainless steel AISI 303 with bronze bush
- AC 3-phase or 1-phase motor (motor features details on page 70)
- Duty cycle with max load: 30% over 10 min at (-10...+40) °C
- Standard protection IP55 (IP54 with brake)
- Standard motor mounting position as per sketch (right-hand, code RH)
- Long-life lubrication, maintenance free

ACCESSORIES

- Different front attachments
- Stainless steel push rod (code SS)
- Rear bracket (code SP)
- Mechanical overload protection, safety clutch (code FS)
- Brake motor
- Two adjustable stroke end reed switches (code FCM)
- Extra switches for intermediate positions
- Electromechanical stroke end switch for linear speed up to 30 mm/s (code FCE) (technical data on page 72)

OPTIONS

- Motor mounting position on opposite side (left-hand, code LH)
- Fixing attachment turned at 90° (code RPT 90)

PERFORMANCES with AC 3-phase 50 Hz 230/400 V or 1-phase 50 Hz 230 V motor

1-start acme screw Tr 14×4				
RATIO	**0.09 kW - 4 pole motor**		**0.12 kW - 2 pole motor**	
	LOAD [N]	**SPEED** [mm/s]	**LOAD** [N]	**SPEED** [mm/s]
RH1	1750	23	1250	47
RV1	2620	15	1860	30
RN1	4490	7.5	3230	15
RL1	5000	3.5	5000	7.5
RXL1	5000	2	5000	3.5

2-starts acme screw Tr 14×8 (P4)				
RATIO	**0.09 kW - 4 pole motor**		**0.12 kW - 2 pole motor**	
	LOAD [N]	**SPEED** [mm/s]	**LOAD** [N]	**SPEED** [mm/s]
RH2	1070	47	790	93
RV2	1620	30	1180	60
RN2	2880	15	2080	30
RL2	4800	7.5	3520	15

3-starts acme screw Tr 14×12 (P4)				
RATIO	**0.09 kW - 4 pole motor**		**0.12 kW - 2 pole motor**	
	LOAD [N]	**SPEED** [mm/s]	**LOAD** [N]	**SPEED** [mm/s]
RH3	800	70	560	140
RV3	1210	45	860	90
RN3	2190	22	1540	45
RL3	3680	11	2680	22

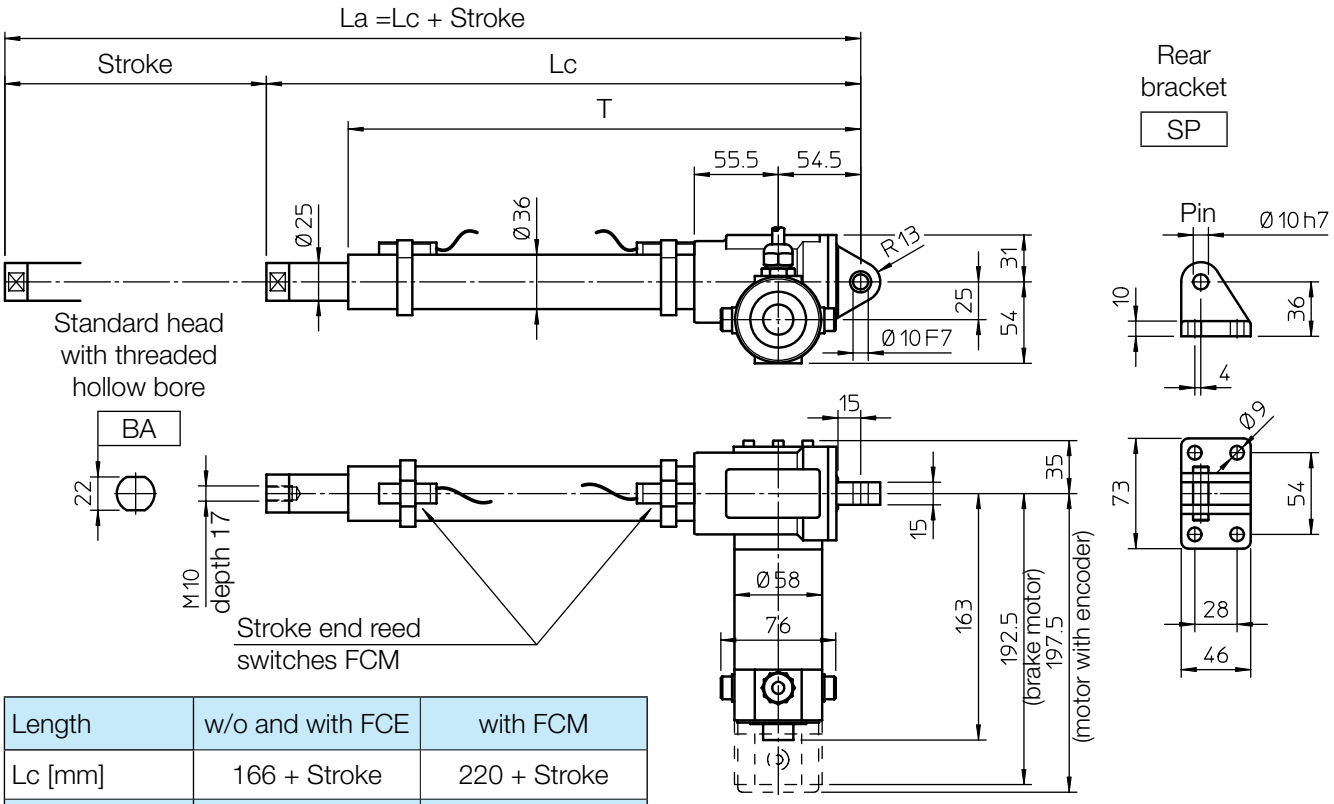
Self-locking conditions

Information about statically self-locking conditions with pull or push load on page 68.

ORDERING CODE EXAMPLE

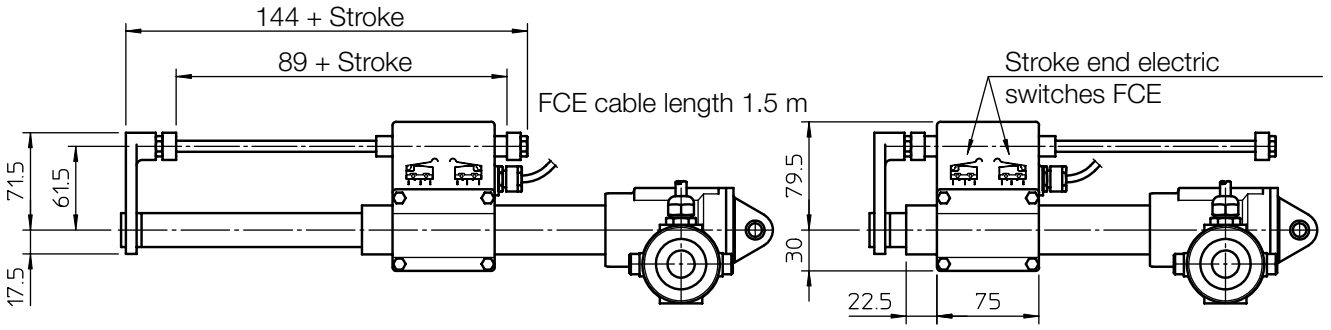
ATL 10	RL1	C200	CA 230/400 V	FCM					
Actuator	Selected ratio	Required stroke	Motor	Stroke end switches	Accessories			Options	

OVERALL DIMENSIONS



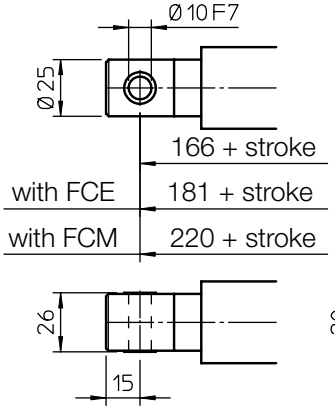
Length	w/o and with FCE	with FCM
Lc [mm]	166 + Stroke	220 + Stroke
T [mm]	139 + Stroke	166 + Stroke

STROKE CODE	C100	C150	C200	C300	C400	C500
Working stroke length w/o and with FCE [mm]	100	150	200	300	400	500
Working stroke length with FCM [mm]	73	123	173	273	373	473

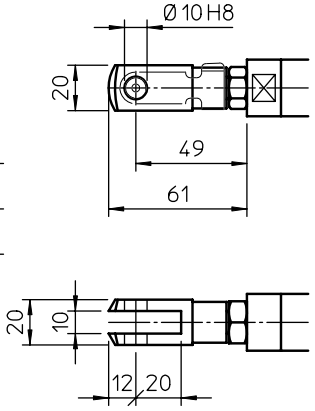


FRONT ATTACHMENT

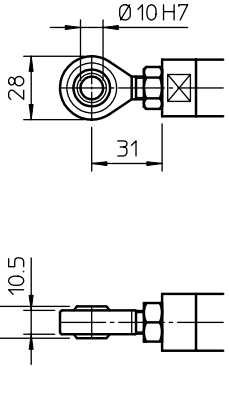
ROD END
ROE



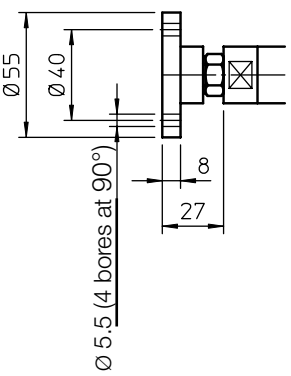
CLEVIS END
FO



BALL JOINT
TS



FLANGE END
FL



ACME SCREW LINEAR ACTUATOR ATL 10 DC motor

PERFORMANCES AND FEATURES

- Pull-Push load up to 4 000 N
- Linear speed up to 150 mm/s
- Standard stroke lengths: 100, 150, 200, 300, 400, 500 mm (for different / longer stroke lengths please contact us)
- Aluminium alloy housing and rear attachment, with bronze bush
- Anodized aluminium outer tube
- Chrome-plated steel push rod – tolerance f7
- Standard head BA or rod end ROE in stainless steel AISI 303 with bronze bush
- DC 12 or 24 V motor (motor features details on page 69)
- Duty cycle with max load: 30% over 10 min at (-10 ... +40) °C
- Standard protection IP54
- Standard motor mounting position as per sketch (right-hand, code RH)
- Long-life lubrication, maintenance free

ACCESSORIES

- Different front attachments
- Stainless steel push rod (code SS)
- Rear bracket (code SP)
- Mechanical overload protection: safety clutch (code FS)
- Brakemotor
- Bi-directional incremental encoder, 100 ppr with zero set pulse, Push-Pull, 8÷24 Vdc (code EH38)
- Two adjustable stroke end reed switches (code FCM)
- Extra switches for intermediate positions
- Electromechanical stroke end switch for linear speed up to 30 mm/s (code FCE) (technical data on page 72)

OPTIONS

- Motor mounting position on opposite side (left-hand, code LH)
- Fixing attachment turned at 90° (code RPT 90)

PERFORMANCES with 24 V DC motor

(Performances with 12 V DC motor: same load, linear speed 10 % less, electrical consumption 2 times more)

1-start acme screw Tr 14×4			
RATIO	**LOAD** [N]	**SPEED** [mm/s]	**CURRENT** [A]
RH1	680	50	4
RV1	1020	32	4
RN1	1770	16	4
RL1	2960	8	4
RXL1	4000	4	4

2-starts acme screw Tr 14×8 (P4)			
RATIO	**LOAD** [N]	**SPEED** [mm/s]	**CURRENT** [A]
RH2	430	100	4
RV2	650	64	4
RN2	1160	32	4
RL2	1970	16	4

3-starts acme screw Tr 14×12 (P4)			
RATIO	**LOAD** [N]	**SPEED** [mm/s]	**CURRENT** [A]
RH3	310	150	4
RV3	470	96	4
RN3	840	48	4
RL3	1430	24	4

Self-locking conditions

Information about statically self-locking conditions with pull or push load on page 68.

ORDERING CODE EXAMPLE

ATL 10	RL1	C200	CC 24 V	FCM					
Actuator	Selected ratio	Required stroke	Motor	Stroke end switches	Accessories			Options	

12.3 DC MOTORS

Motors with interchangeable brushes (actuators ATL 10, UAL 0, BSA 10, BSA 11, UBA 0, CLB 25, CLB 27)

Permanent magnet DC motors, without fan, available with or without brake.
Long-life brushes, easy to replace.

Bipolar power supply cable 2 x 1 mm2, 1.5 m length. Motor weight: 1.3 kg.

Output power	70 W	
Rated current	3.7 A (24 V)	8.4 A (12 V)
Peak current	18 A (24 V)	30 A (12 V)
Resistance	0.85 Ohm (24 V)	0.23 Ohm (12 V)
Protection class	IP 54	

Rated speed	3000 rpm	
Rated torque	0.22 Nm	
Peak torque	1.1 Nm	
Inductance	1.34 mH (24 V)	0.36 mH (12 V)
Insulation class	F	

MOTOR BRAKE: Normally closed holding brake activated by DC electromagnet available on request.

Brake separately wired with bipolar cable 2 x 1 mm2, 1 m length.

Motor with brake total weight: 1.8 kg.

Power supply: 0.4 A a 24 V; 0.85 A a 12 V	Braking torque: 0.5 Nm

WARNING! The motor brake is normally closed; to open it, a constant rated voltage power supply is required. With lower voltage, the brake does not open.

Motors with non-interchangeable brushes (linear actuators LMR, ATL, CLA, LMP, LMI Series)

Permanent magnet DC motors, without fan.

The brake is not available; the brushes are not interchangeable.

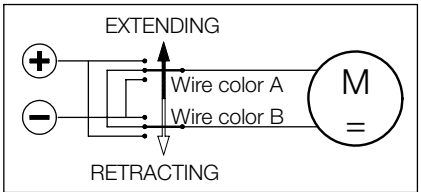
Standard motors winding has insulation class B.

These motors have open enclosures: the actuator is fitted with proper motor outer protections which allow to reach motor Protection Class IP 65.

The performance diagrams concerning actuators with DC motor stated in this catalogue, show the input power variation depending on the load variation.

This allows to select power supply / drivers properly.

Motor wires connection – Actuator push rod travelling direction



Actuator with DC motor, RIGHT-HAND mounting	LMR 01	LMR 03	ATL 02	ATL 05	ATL 08	ATL 12	CLA 20	CLA 25
Wire color A	red	red	brown	brown	brown	red	brown	brown
Wire color B	black	black	blue	blue	blue	blue	blue	blue

Actuator with DC motor, LEFT-HAND mounting	LMR 01	LMR 03	ATL 02	ATL 05	ATL 08	ATL 12	CLA 20	CLA 25
Wire color A	red	red	blue	blue	blue	blue	blue	blue
Wire color B	black	brown	brown	brown	brown	red	brown	brown

12.4 AC MOTOR

Actuator	Motor	Power kW	N° of poles	Input voltage Vca	Frequency Hz	Rated current A	Capacitor uF
ATL 02	AC 3-phase	0.06	2	230/400	50	0,7-0,4	-
	AC 1-phase	0.06		230		0.68	5
ATL 10	AC 3-phase	0.12	2	230/400	50	0,81-0,46	-
		0.09	4			0,8-0,45	-
	AC 1-phase	0.12	2	230		2.6	12.5
		0.09	4			1.6	12.5
ATL 12	AC 3-phase	0.25	2	230/400	50	1,3-0,75	-
		0.18	4			1,1-0,66	-
	AC 1-phase	0.25	2	230		2.1	20
		0.18	4			1.9	16
CLA 20	AC 3-phase	0.06	2	230/400	50	0,7-0,4	-
	AC 1-phase	0.06		230		0.68	5
CLA 25 CLA 25S CLA 25M	AC 3-phase	0.12	2	230/400	50	0,81-0,46	-
		0.09	4			0,8-0,45	-
	AC 1-phase	0.12	2	230		2.6	12.5
		0.09	4			1.6	12.5
CLA 28 CLA 28 T	AC 3-phase	0.06	2	230/400	50	0,7-0,4	-
	AC 1-phase	0.06		230		0.68	5
BSA 10 BSA 11	AC 3-phase	0.12	2	230/400	50	0,81-0,46	-
		0.09	4			0,8-0,45	-
	AC 1-phase	0.12	2	230		2.6	12.5
		0.09	4			1.6	12.5
BSA 12	AC 3-phase	0.25	2	230/400	50	1,3-0,75	-
		0.18	4			1,17-0,66	-
	AC 1-phase	0.25	2	230		2.1	20
		0.18	4			1.9	16
CLB 25 CLB 27	AC 3-phase	0.12	2	230/400	50	0,81-0,46	-
		0.09	4			0,8-0,45	-
	AC 1-phase	0.12	2	230		2.6	12.5
		0.09	4			1.6	12.5

12.4 AC MOTOR

Insulation class (1)	Motor protection class (1)	Fan	Brake	Brake coil power supply (2) (3)	Brake rated current A	Braking torque Nm	Brake protection class
F	IP 55	Not avaible	Not avaible	-	-	-	-
F	IP 55	Standard	On request	DC powered by rectifier	0.05	1.7	IP 44
F	IP 55	Standard	On request	DC powered by rectifier	0.09	4	IP 44
F	IP 55	Not avaible	Not avaible	-	-	-	-
F	IP 55	Standard	On request	DC powered by rectifier	0.05	1.7	IP 44
F	IP 55	Standard	Not avaible	-	-	-	-
F	IP 55	Standard	On request	DC powered by rectifier	0.05	1.7	IP 44
F	IP 55	Standard	On request	DC powered by rectifier	0.09	4	IP 44
F	IP 55	Standard	On request	DC powered by rectifier	0.05	1.7	IP 44

(1) Higher insulation and protection classes available on request.

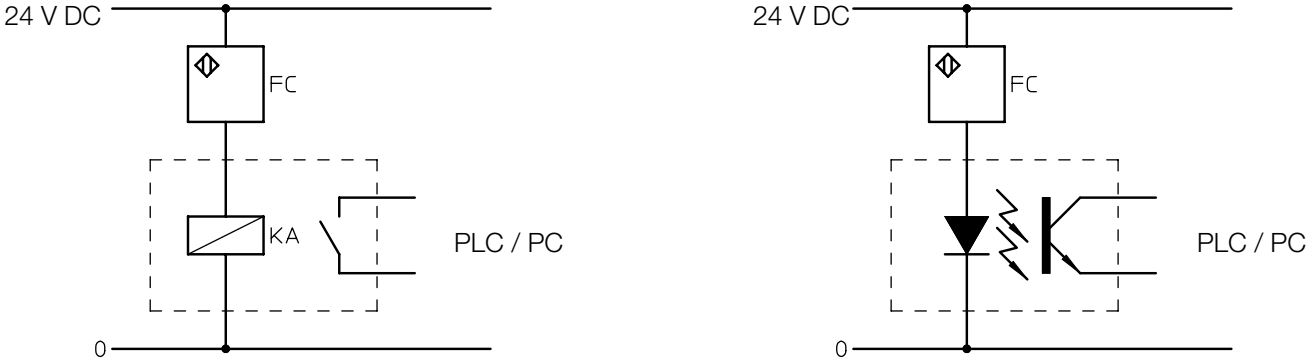
(2) Normally closed activated by DC electromagnet.
The electromagnet is powered by a 1-phase rectifier fitted in the terminal box.

(3) Motors with separately powered brake available on request.
This solution shall be used for applications with frequency inverter.

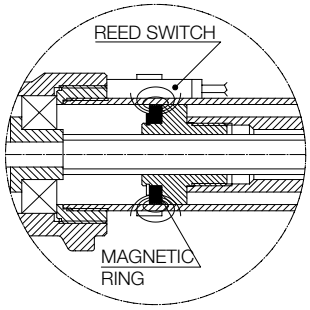
13. STROKE END SWITCHES AND POSITIONING CONTROL

GENERAL NOTE

In case the linear actuator is used in an application where the stroke end switches must be connected to PLC or PC, we suggest to make the connection with a galvanic separation circuit.



13.1 Magnetic stroke end switches (reed) FCM (linear actuators ATL, BSA, UAL, UBA Series, LMI 02 and LMP 03)

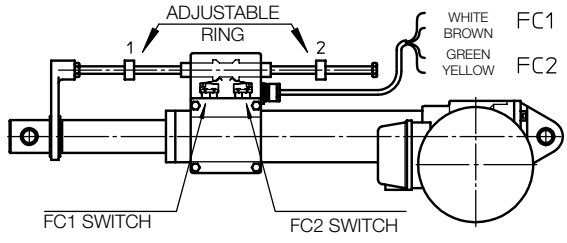


The magnetic field of the ring fixed on the nut activates the reed contact of the switch locked on the protective tube with a clamp.
The position of the switches along the tube is easily adjustable.
The switches used to determine any intermediate position (between Lc and La) will switch over in two different positions, depending on the push rod motion direction (extending or retracting).
WARNING! The magnetic reed-switches can work only if connected to a wiring control circuit in order to activate the electric relay. Do not connect them in series between the power supply and the electric motor!

REED CONTACT RATED VALUE		
	DC	AC
Rated voltage	(3 ... 130) V	(3 ... 130) V
Max. commutable power	20 W	20 VA
Max. commutable current	300 mA (resistive load)	
Max. inductive load	3 W	

Standard: NC switch (normally closed contact) equipped with signalling LEDS and protective varistor against voltage peaks.
Standard cable length 2 m; wires 2 × 0.75 mm²
Different configurations available on request:
NO (normally open); CS (exchanging contact).
For more information please contact our Technical Dpt.

13.2 Electric stroke end switches FCE (actuators ATL 10, ATL 12, BSA 10, BSA 12)



Two electric switches, installed inside a sealed plastic box, are activated by two adjustable rings through a shaft collar.
Standard switches are wired on the NC contact, cable length 1.5 m; wires 4 × 0.75 mm²
On request, they can be wired on the NO contact or on the switch-over contact CS (for available configurations please contact our Technical Dpt).
Min retracted length Lc is adjusted by ring 1. FC1 switch is connected with the WHITE and the BROWN cables.
Max extended length La is adjusted by ring 2. FC2 switch is connected with the YELLOW and the GREEN cables.
The position of the brass rings along the stainless steel supporting rod is easily adjustable.

CONTACT RATED VALUE		
Voltage	Max current	
	Resistive load	Inductive load
250 Vac	5 A	3 A
30 Vdc	5 A	0.1 A
125 Vdc	1.4 A	-

WARNING! The electric reed switches can work only if connected to a wiring control circuit in order to activate the electric relay. Do not connect them in series between the power supply and the electric motor!

13.5 Encoder GI (linear actuators LMR 01, LMR02, LMR 03 and LMP03)

Hall effect, bi-directional, incremental encoder

Output configuration: PUSH-PULL

Code GI 21: 2 output channels, 1 pulse per revolution

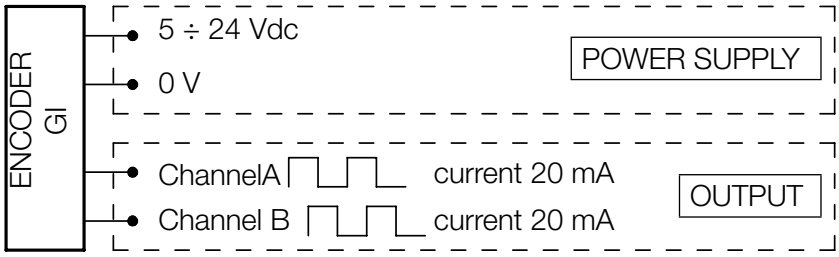
Code GI 24: 2 output channels, 4 pulses per revolution

Cable length: as motor cable

Protected against polarity inversion

Protected against any incorrect output connection

NOTE: For conductive cables colour, please refer to the wiring diagram in the “Installation Instructions” supplied with the product.



13.6 Encoder EH38 (linear actuators ATL 10, UAL 0, BSA 10, UBA 0)

Bi-directional, incremental, optical encoder

Output configuration: PUSH-PULL

Code EH38: 2 output channels, 100 pulses per revolution, with zero set pulse

Cable length: 1.3 m

Protected against short circuit

Protected against polarity inversion

Protected against any incorrect output connection

Input voltage: 8÷24 Vcc

No load power consumption:100 mA

Max. commutable current: 50 mA per channel

NOTE: Safety clutch FS cannot be used with rotative encoder
(the position reference would be lost due to its slipping).