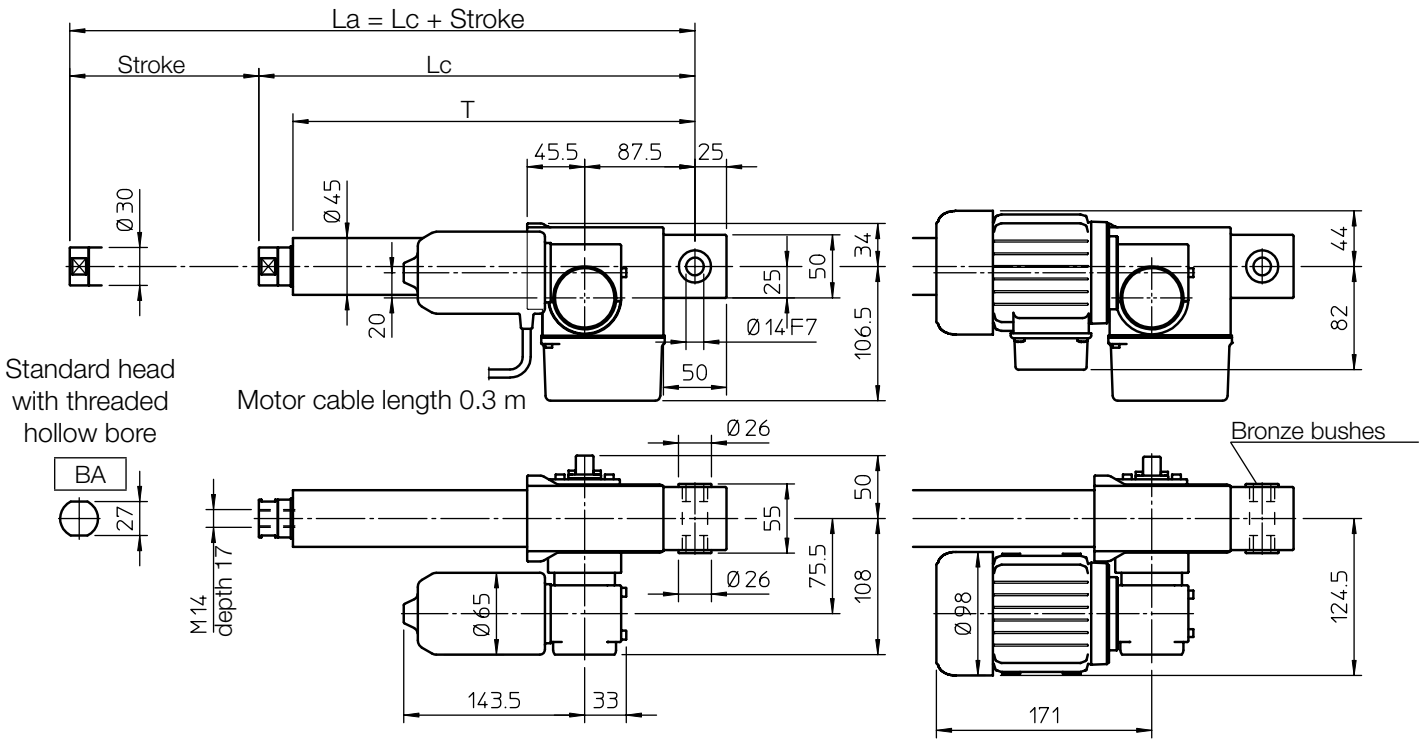
OVERALL DIMENSIONS



Length [mm]	
Lc [mm]	230 + Stroke
T [mm]	191 + Stroke

PERFORMANCES AND FEATURES

- Pull-Push load up to 10 000 N
- Linear speed up to 8 mm/s (DC motor)
- Linear speed up 3,7 mm/s (AC motor)
- Standard stroke lengths:
  200, 300, 400, 500, 600, 700, 800 mm
  (for different / longer stroke lengths please contact us)
- Cast iron housing with integral rear attachment and bronze bush
- Anodized aluminium outer tube
- Chrome-plated steel push rod – tolerance f7
- Stainless steel AISI 303 front attachment BA
- Motors:
  - 12, 24 or 36 V DC motor
  with electromagnetic noise suppressor
  - AC 3-phase or 1-phase motor
  (motor features details on pages 69 and 70)
- Duty cycle with max load:
  DC motor max 15% over 10 min at (-10 ... +40) °C
  AC motor max 30% over 10 min at (-10 ... +40) °C
- Standard protection:
  with DC motor IP65
  - Test IP6X according to EN 60529 §12 §13.4-13.6
  - Test IPX5 according to EN 60529 §14.2.5
  (tests made with not running actuator)
  with AC motor without brake IP55
  with AC brake-motor IP54
- Standard motor and first stage gearbox unit mounting position as per sketch (right-hand, code RH)
- Long-life lubrication, maintenance free

ACCESSORIES

- Different front attachments
- Stainless steel push rod (code SS)
- Mechanical overload protection: safety clutch (code FS)
- Anti-turn device (code AR)
- Adjustable electric stroke end switches (code FC2)
- Adjustable electric stroke end switches, switching off the motor
  (not available with AC 3-phase motor)
  (code FC2X)
- Extra switch for intermediate position (code FC)
- Rotative potentiometer 5kOhm for positioning control (code POR5K)

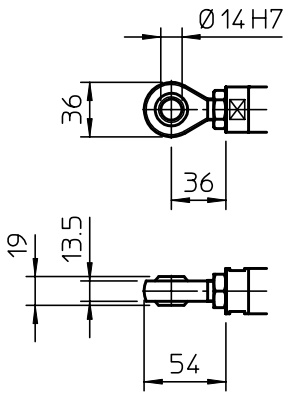
NOTE: Extra limit switch and rotative potentiometer cannot be selected together

OPTIONS

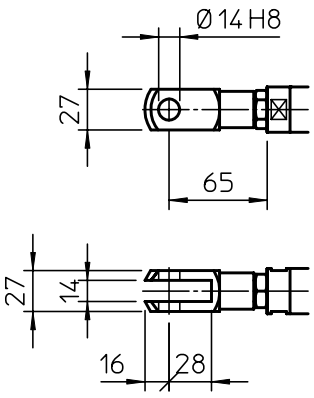
- Motor and first stage gearbox unit mounting position on opposite side
  (left-hand, code LH)

FRONT ATTACHMENT

BALL JOINT
TS



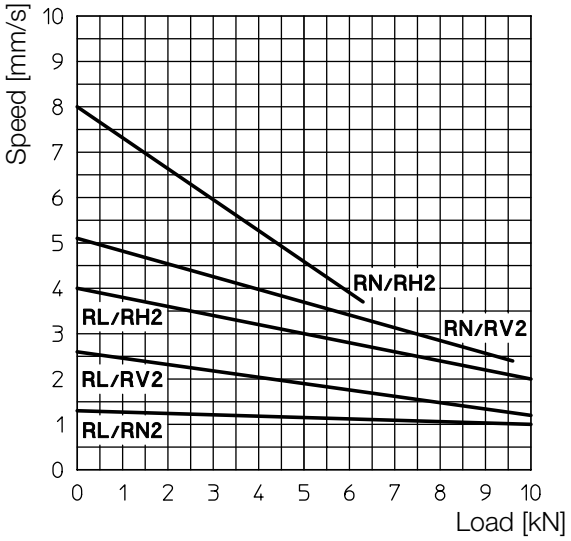
CLEVIS END
FO

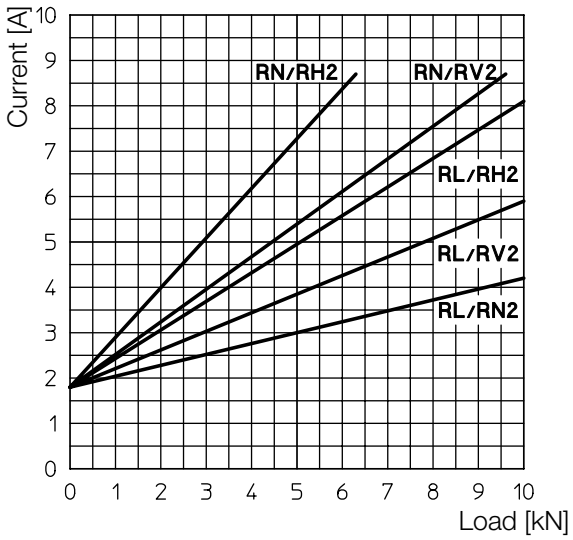


PERFORMANCES with 24 V DC motor

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

2-starts acme screw Tr 18×8 (P4)





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

2-starts acme screw Tr 18×8 (P4)		
RATIO	**0.06 kW - 2 pole motor**	
	LOAD [N]	**SPEED** [mm/s]
RL/RH2	3600	3.7
RL/RV2	5500	2.4
RL/RN2	9600	1.2

Self-locking conditions

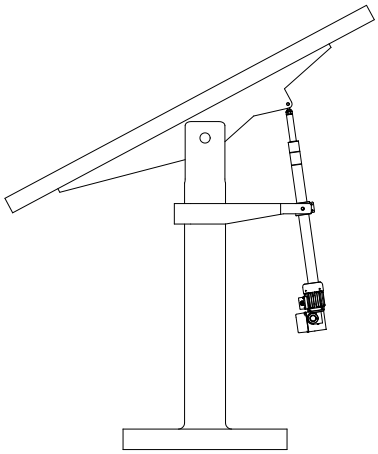
Information about statically self-locking conditions with pull or push load on page 68.

ORDERING CODE EXAMPLE

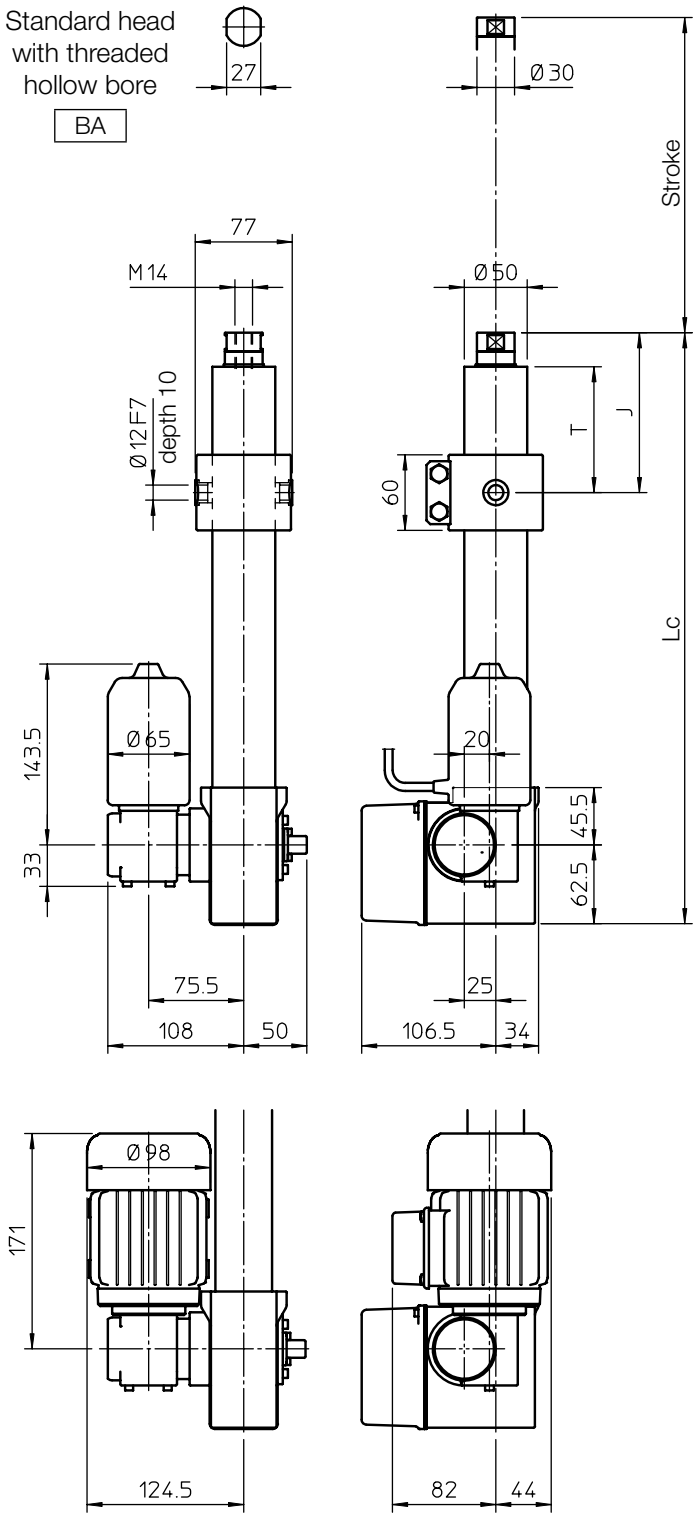
CLA 28	RL1	C800	CC 24 V	FC2	POR 5K				
Actuator	Selected ratio	Required stroke	Motor	Stroke end switches	Accessories			Options	

CLA 28 T linear actuator differs from CLA 28 on the protective tube execution, which is made of zinc-plated steel, ext. Ø 50 mm, allowing the fitting of a bracket with self-lubricating bushes on protective tube itself.
The actuator can be hinged on these bushes, reducing by this way the attachments centre distance and improving the total resistance against push load buckling.

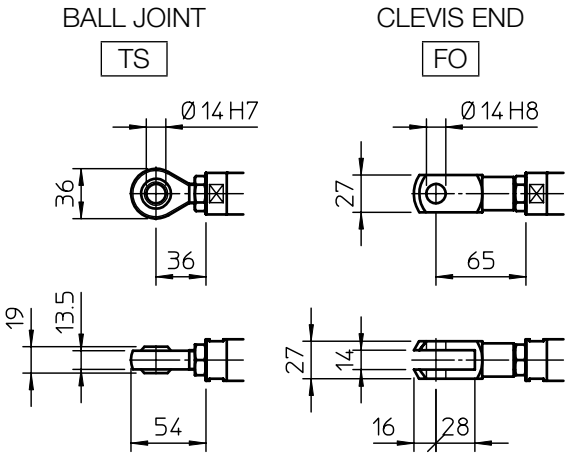
A typical application is lifting motion on solar trackers.



OVERALL DIMENSIONS



FRONT ATTACHMENT



Length [mm]	
Lc	178 + Stroke
J	on customer's demand

T dimension is on customer's demand according to the following formula:

$$120 \leq T \leq \frac{\text{Stroke}}{2}$$

PERFORMANCES AND FEATURES

- Pull-Push load up to 10 000 N
- Linear speed up to 8 mm/s (DC motor)
- Linear speed up to 3,7 mm/s (AC motor)
- Standard stroke lengths:
  400, 500, 600, 700, 800, 900, 1 000 mm
  (for different / longer stroke lengths please contact us)
- Cast iron housing with integral rear attachment
- Zinc-plated steel hinge on outer tube
  with self-lubricating bushes
- Zinc-plated steel outer tube with increased thickness
- Chrome-plated steel push rod – tolerance f7
- Stainless steel AISI 303 front attachment
- Motors:
  - 12, 24 or 36 V DC motor
  with electromagnetic noise suppressor
  - AC 3-phase or 1-phase motor
  (motor features details on pages 69, 70)
- Duty cycle with max load:
  DC motor max 15% over 10 min at (-10 ... +40) °C
  AC motor max 30% over 10 min at (-10 ... +40) °C
- Standard protection:
  with DC motor IP65
  - Test IP6X according to EN 60529 §12 §13.4-13.6
  - Test IPX5 according to EN 60529 §14.2.5
  (tests made with not running actuator)
  with AC motor without brake IP55
  with AC brake-motor IP54
- Standard motor and first stage gearbox unit mounting position as per sketch (right-hand, code RH)
- Long-life lubrication, maintenance free

ACCESSORIES

- Different front attachments
- Stainless steel push rod (code SS)
- Anti-turn device (code AR)
- Adjustable electric stroke end switches (code FC2)
- Adjustable electric stroke end switches, switching off the motor (code FC2X)
  (not available with AC 3-phase motor)
- Extra switch for intermediate position (code FC)
- Rotative potentiometer 5kOhm for positioning control (code POR5K)

NOTE: Extra limit switch and rotative potentiometer cannot be selected together

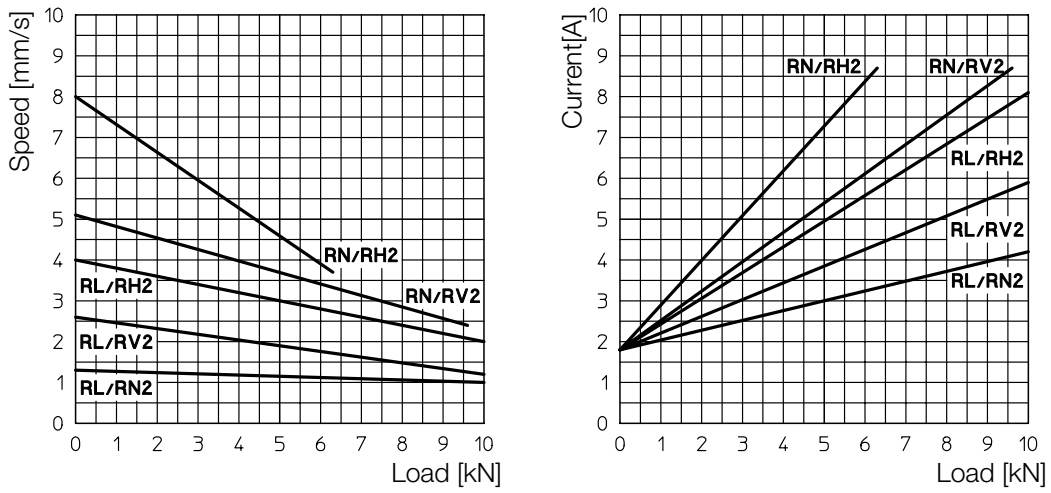
OPTIONS

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

Self-locking conditions

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

PERFORMANCES with 24 V DC motor 2-starts acme screw Tr 18×8 (P4)



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

2-starts acme screw Tr 18×8 (P4)		
0.06 kW - 2 pole motor		
RATIO	**LOAD** [N]	**SPEED** [mm/s]
RL/RH2	3600	3.7
RL/RV2	5500	2.4
RL/RN2	9600	1.2

ORDERING CODE EXAMPLE

CLA 28 T	RL1	C800	CC 24 V	FC2	POR 5K				
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.

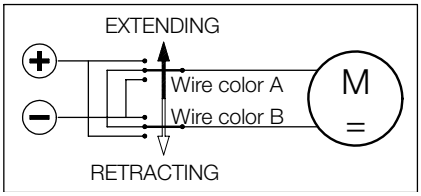
Standard motors winding has insulation class B.

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.

13.4 Electric cam-operated stroke end switches (linear actuators CLA and CLB Series)

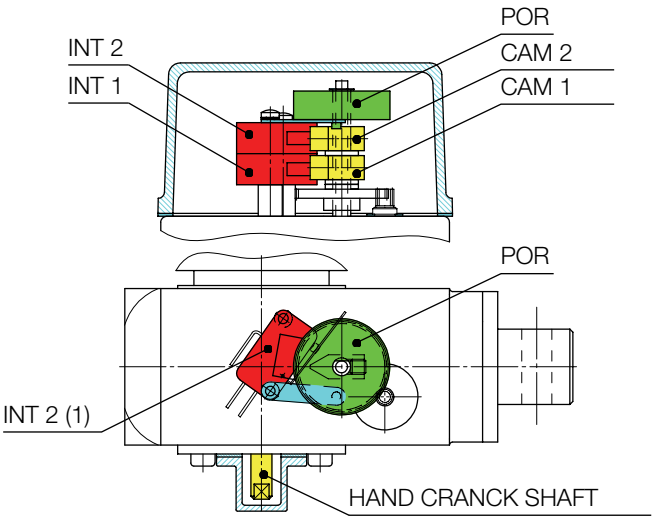
Code **FC2**: two electric cam-operated switches, wired on contact NC (to be connected into the external control circuit). On request, the switches can be wired on the contact NO or on the switch-over contact CS. (For available configurations please contact our Technical Dpt).

Code **FC2X**: two electric cam-operated switches, internally wired between power supply and electric motor, in order to switch off the power supply directly, without relays. Available for actuators with Dc or AC 1-phase motor.

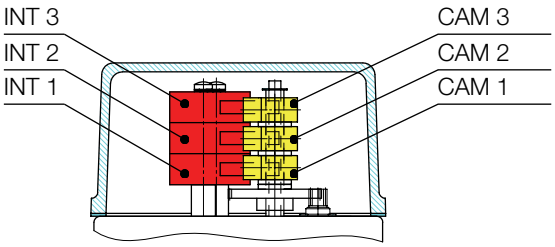
Code **FC2 + FC** or **FC2X + FC**: Stroke end switches FC2 or FC2X with a third switch for any intermediate position. The third switch can be wired on contact NC or NO on request. (For different configurations please contact our Technical Dpt).

SWITCH RATED VALUES		
Voltage	Max current	
	Resistive load	Inductive load
250 Vac	21 A	12 A
30 Vdc	14 A	12 A
125 Vdc	0.8 A	0.6 A

FC2 + POR 5k
FC2X + POR 5k



FC2 + FC
FC2X + FC



INT 1 - **Lc** position switch
INT 2 - **La** position switch
INT 3 - intermediate position switch
CAM 1 - **Lc** position cam
CAM 2 - **La** position cam
CAM 3 - intermediate position cam
POR - rotative potentiometer

Lc = actuator retracted length, **La = Lc + Stroke** – actuator extended length

13.4 Rotative potentiometer for positioning control (linear actuators CLA and CLB Series)

Code **POR 5k**: rotative potentiometer, single turn (340°), 5 kOhm ± 20 %, linearity ± 2 %

The rotative potentiometer is an absolute transducer, whose output signal is proportional to the current position of the actuator push rod. Analogic output signal.

Standard cable: 4 x 0.25 mm2 + shield, 1.5 m length (for different configurations please contact us).

POR 5k standard wiring diagram: