

Motor choice guideline

MOTOR TYPE

Version: DC = direct current
AC = alternate current
PD = Special motorflange (provide drawing)

Voltage: DC = V12 / V24
AC = Standard voltage table
MT = Multivoltage

Type: (only for AC) T = 3-phase
M = 1-phase
AT = 3-phase with brake
AM = 1-phase with brake

Size: AC: IEC 50/56/63/71/80/90/100/112/132

Pole: AC: 2 / 4 / 6

Standard voltage table		
[V] [Hz] Rated Voltage:		[V] [Hz] Usable voltages
230/400/50	277/480/60	240/415/50 - 220/380/50 - 265/460/60 - 255/440/60
190/330/50	220/380/60	200/346/60 - 208/360/60 - 230/400/60
208/360/50	254/440/60	200/346/50 - 240/415/60
400/690/50	480/830/60	380/660/50 - 415/717/50

AC MOTOR OPTIONS

Motorflange type: IEC56B14 / IEC63B14 / IEC71B14 / IEC80 B14 / IEC90 B14 / IEC100/112 B14

Service rate: S3 30%

Insulation class: F = standard (leave blank)
Advise only if different than "F"

Protection Degree: IP54 (leave blank)
IP65
TP = tropicalization
OTHER = advise
NONE = leave blank

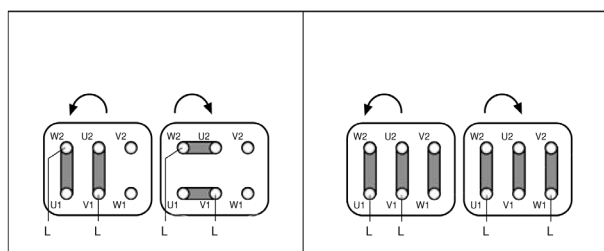
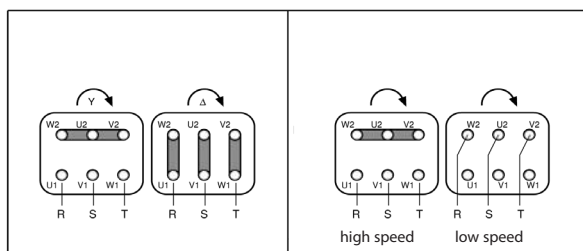
Motor connections

3-phase motor

3-phase motor 2 speed

1-phase motor

1-phase motor balanced winding



ACCESSORIES AND OPTIONS

Brake:

FECC DC brake negative action (standard)

Power Supply

230V±10% 50/60Hz AC side inside the brake. The brake is powered directly from the power supply of the motor (standard)

Motors with separated brake power supply and tensions in the range (24-205 Vdc) can be available on request.

In this case the brake needs a separated power supply from the motor and its code becomes FECC-AS-24 Vdc

FECA= AC brake

Power Supply

230/400V±10% 50/60Hz. The brake is powered directly from the power supply of the motor.

Motors with separated brake power supply and tensions in the range (24-690 Vac - 50/60 Hz) can be available on request.

In this case the brake needs a separated power supply from the motor and its code becomes FECA-AS-230 Vac 50 HZ

Separate brake power supply:

Achieved by means of an auxiliary terminal board, with fixed brake coil terminals, located inside the motor terminal box

Nb: On all motors equipped with inverters the brake must always have a separate power supply.

NO BRAKE = leave blank

Options:

LS = hand release lever (leave blank)

NOTE: not available for motor IEC 50 IEC 56





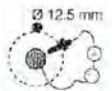







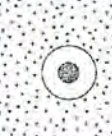

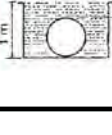
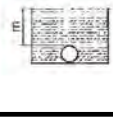
AB = 2'shaft

OTHER = advise

NONE = leave blank

HOUSING PROTECTION LEVEL (IPCode)

Example: IP65

First digit Protection against solid objects			Second digit Protection against liquids		
0		Not protected	0		Not protected
1		Protected against solid foreign objects of 50 mm diameter and greater	1		Protected against vertically falling water drips
2		Protected against solid foreign objects of 12,5 mm diameter and greater	2		Protected against vertical water drips with casing inclined up to 15°
3		Protected against solid foreign objects of 2,5 mm diameter and greater	3		Protected against spraying water
4		Protected against solid foreign objects of 1,0 mm diameter and greater	4		Protected against splashing water
5		Protected against dust	5		Protected against jets of water
6		Totally protected against dust	6		Protected against powerful jets of water jets
			7		Protected against the effects of temporary immersion in water
			8		Protected against the effects of continuous immersion in water


The tables shown in this page are from IEC EN 60529 (CEI 70-1) standards

MecVel standard products are equipped with IP54 or IP65

ACCESSORIES AND OPTIONS

Electric / Electronic Stroke Control Devices

Actuators can host different stroke control systems: simple micro-switches (mechanical or magnetic) able to provide a signal to handle motor supply (ON-OFF operation), or electronic devices for servo-mechanisms.

 All wiring operations of actuator (motor and stroke control devices) must be done with power switched off. If not, both operator and actuator are at risk.

LIMIT SWITCHES INTEGRATED IN TO COVERTUBE (ONLY FOR ALI1 AND ALI1-P MODEL)

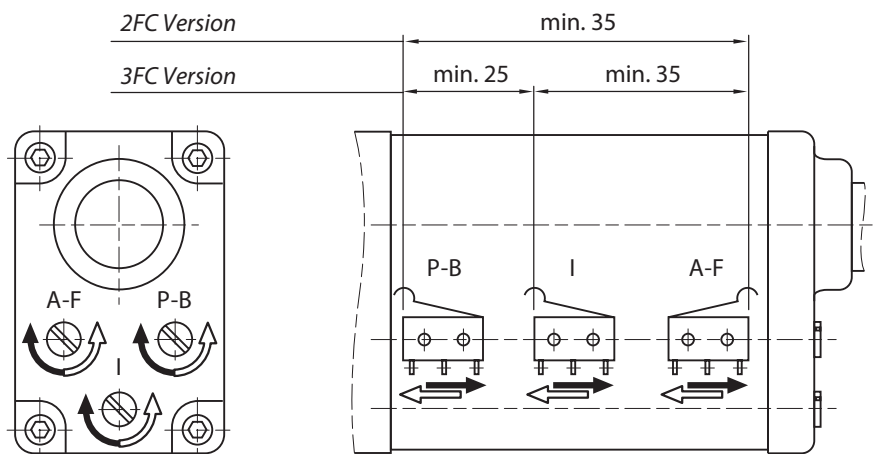
This model is equipped with two limit switches (featuring one contact each). A version with a third limit switch, central positioning, is available.

Intermediate position changes according to push-rod moving direction. Tuning is adjusted by turning screws on actuator header. Each clock wise turn of the screw allows the micro switch to go 0.7 mm. forth, towards the header itself.

Look at the drawing to see how it works; letters have following meaning:

A-F = Front I = Intermediate P-B = Back

Minimum stroke setting

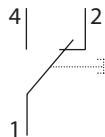


Vac Max. El. Ratings		
Voltage Vac	Resistive load A	Inductive load A
125	5	2
250	5	2

Vdc Max. El. Ratings		
Voltage Vdc (up to)	Resistive load A	Inductive load A
30	5	3
50	1	1

Limit Switches Features

- Housing: Glass fibre reinforce PA66
- Mechanism: Snap-action coil spring mechanism with stainless steel spring. Change over, normally-closed / normally-open



- Mechanical life: 5×10^6 cycle minimum (impact free actuation)

INTEGRATED MECHANICAL LIMIT SWITCHES

Changeover single-contact, cam-actuated micro-switches integrated onto actuator gearbox, getting movement by a small gearing connected to lead screw.

System is thus protected and compact but its limit lies in long strokes: since the stroke is directly related to cams angle of rotation, with long strokes this device is not able to perform.

Furthermore its stopping precision and repeatability are negatively affected by actuator non-self locking condition.

A potentiometer is also available for some of the gearbox ratios (hence speeds) and limited lengths of the stroke to be controlled.



In case integrated mechanical limit switches are delivered already adjusted, manual rotation of push-rod will cause adjustment loss!

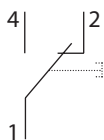


Running against mechanical stop causes serious damages to actuator's mechanical stroke limit device!

Limit switches		
Performance	XCF Type	XGG Type (on request)
Voltage	250 Vac	230 Vac / 30 Vdc
Resistive load	10 A	16 A
Motor load	2 A	6 A

Limit Switches technical features

- Housing: Phenolic-melamine thermosetting
- Mechanism: Snap-action coil spring mechanism with beryllium / bronze spring.
Changeover contact, normally-closed / normally-open.



- Contacts: fine silver
- Terminals: gold flashed
- Mechanical life: 3×10^5 (XGG) cycles minimum (impact free actuation).

ORDERING KEY REFERENCES

Mechanical limit switches:

2FC1 = 2 Microswitches XCF (standard version)

3FC1 = 3 Microswitches XCF (standard version)

2FC2 = 2 Micro XGG

3FC2 = 3 Micro XGG

2FCD1 = 2 XCF Microswitches diode-wired

3FCD1 = 3 XCF Microswitches, 2 of them diode-wired

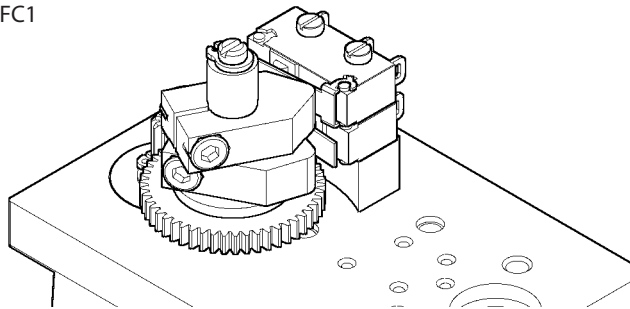
2FCD2 = 2 XGG Microswitches diode-wired

3FCD2 = 3 XGG Microswitches, 2 of them diode-wired

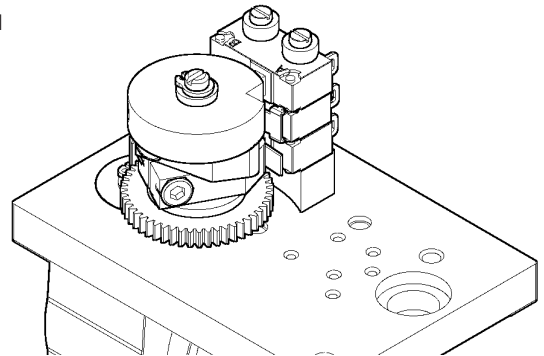
(for DC motor only and for loads up to 10A)

ACCESSORIES AND OPTIONS

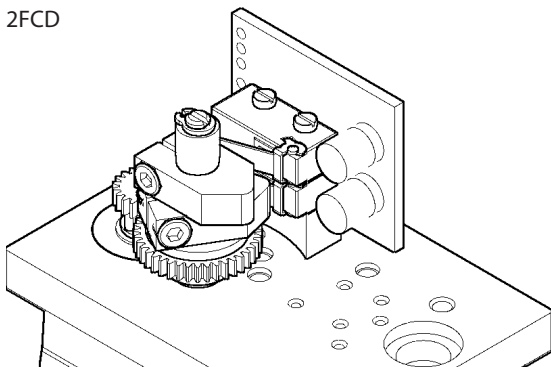
2FC1



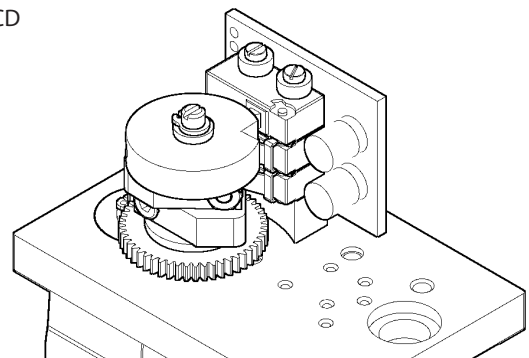
3FC1



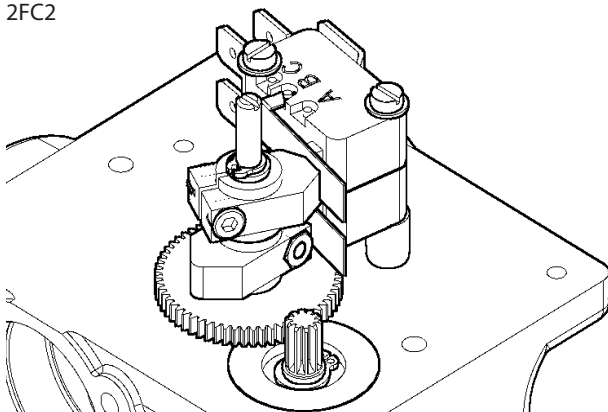
2FCD



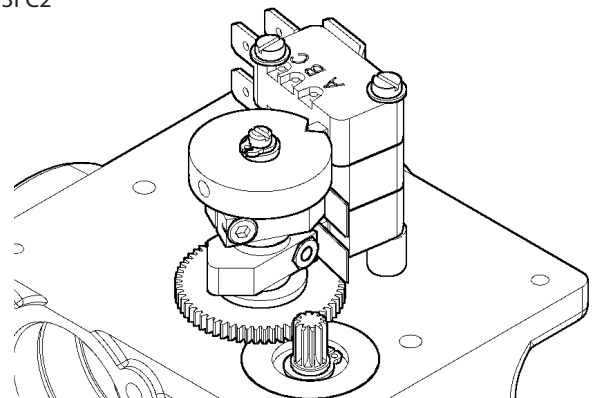
3FCD



2FC2



3FC2

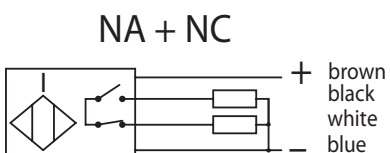
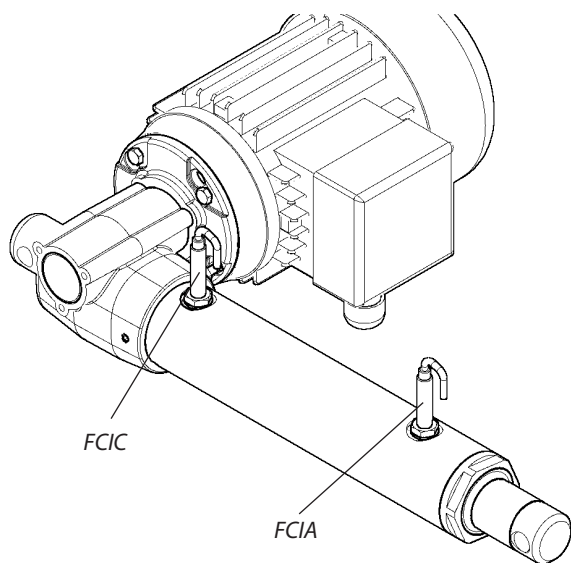


2FC1/ 3FC1 Available on ALI2 ALI2-P ALI3 ALI3-P

2FCD/ 3 FCD Available on ALI2 ALI2-P ALI3 ALI3-P ALI4, with 10A max consumption.

2FC2/ 3FC2 Available on ALI4 e ALI5; standard on AV3 ECV9092 EC

Inductive sensors FCI



FCIC = All-closed inductive switch

FCIA = All-opened inductive switch

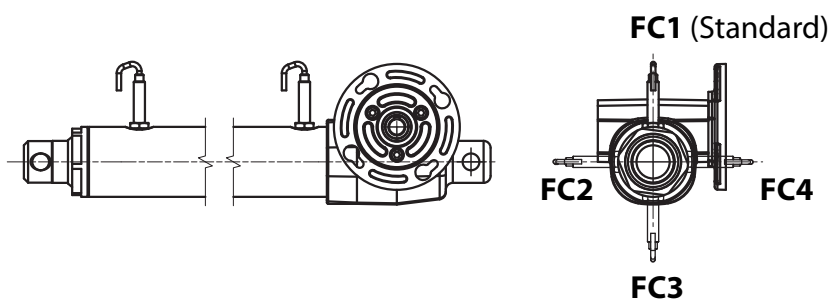
FCI Inductive Limit switches	
DC voltage	5 ÷ 40 Vdc
Temperature range	25° ÷ 75°
Protection Level	IP67
Switch status indicator	YELLOW LED

ORDERING KEY REFERENCES

Inductive sensors:

2FCI = 2 Sensors NO + NC

FCI POSITION




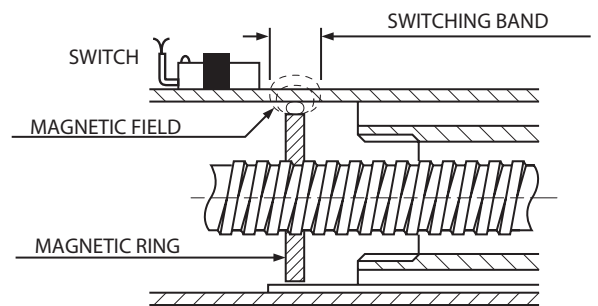
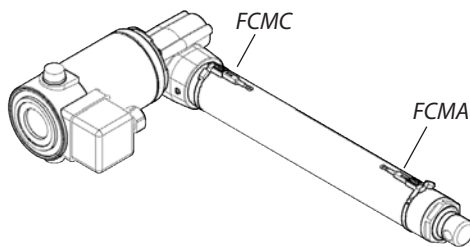
ACCESSORIES AND OPTIONS

Magnetic limit switches FCM

Magnetic sensors are activated by a magnetic field generated by a magnetic ring fixed to the nut. These reads are mounted on outer tube with brackets; outer tube shall therefore be built with non-magnetic materials.

The magnetic switches are fixed as shown in the figure, the customer can rotate at will by adjusting the bracket.

 Due to the size of the magnetic switches and to the so called switching band generated by the internal magnet the maximum working stroke is reduced by a few millimetres. This switching band width differs according to actuators size.



FCMC = All-closed magnetic switch

FCMA = All-opened magnetic switch

Supplied on ALI2 ALI2-P ALI3 ALI3-P ALI4 e ALI5

FCM magnetic Limit switches			
Performance	Type	Type	PNP
	Reed NC	Reed NO	
DC voltage	3 / 110 V	3 / 30 V	6 / 30 V
AC voltage	3 / 110 V	3 / 30 V	/
25°C Current	0,5 A	0,1 A	0,20 A
Power	20 VA	6 VA	4 W
Supply cable	PVC 2 x 0,14 mm	PVC 2 x 0,14 mm	PVC 3 x 0,14 mm
Cablelength		2500 mm	
Protection		IP67	

Circuit Reed NC

Circuit with normally closed Reed switch protected by a varistor against overvoltages caused when switching off, with LED indicator.

Circuit PNP

Circuit with Hall-effect switch and PNP outlet.

Protected against overvoltage spikes and reverse of polarity.

With LED indicator.

Circuit Reed NO

Circuit with normally open Reed switch protected by a varistor against overvoltages caused when switching off, with LED indicator.

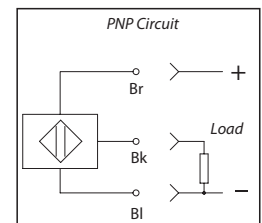
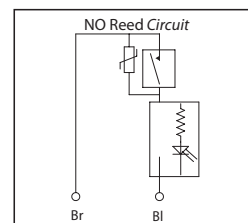
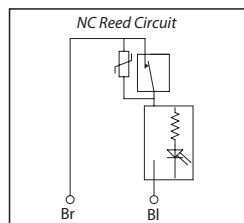
ORDERING KEY REFERENCES

Magnetic limit switches:

2FCM0 = 2 Sensors circuit Reed NC
(standard version without prior information)

2FCM1 = 2 Sensors circuit Reed NO

2FCM2 = 2 Sensors PNP



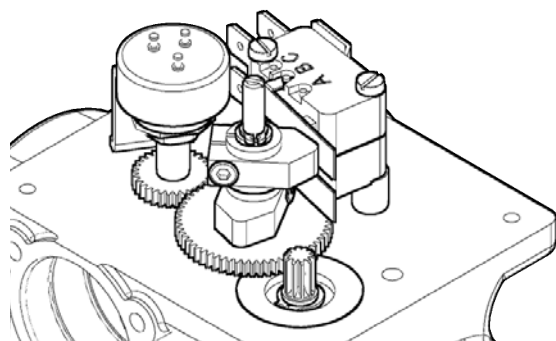
INTEGRATED LIMIT SWITCHES AND POTENTIOMETER

Stroke Control devices Assembly

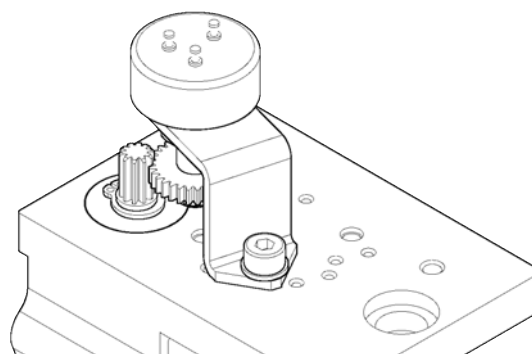
Potentiometer

Absolute feedback for actuator position monitoring: it can be installed alone or together with limit switches, so to achieve end positions control also. Potentiometer movement comes from the same gearing of the integrated limit switches therefore it has the same limit: long strokes cannot be controlled. Please refer to each actuator performance table to know max achievable length. Furthermore potentiometer electric angle cannot always be achieved.

Version with Limitswitches and Poteniometer



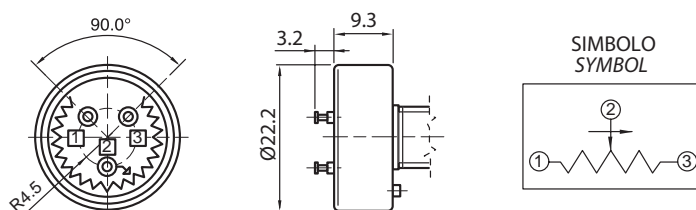
Version with Poteniometer only



Not Supplied on ALI1 e ALI1-P L02 L03.

Spinning potentiometer

Performances	Type (A)
Max. angle	$340^\circ \pm 3^\circ$
Resistance	1K / 5K / 10K (standard)
Voltage	MAX 10 V
Independent linearity	$\pm 2\%$
Tolerance	$\pm 20\%$
Temperature coefficient of resistance	600 ppm / °C



ORDERING KEY REFERENCES

Potentiometers:

POT01A = 1 k Ohm

POT05A = 5 k Ohm

POT10A = 10 k Ohm

(to be adjusted by end-user)

ACCESSORIES AND OPTIONS

ENCODER

Incremental Encoder

An incremental rotative transducer converts spinning movement into digital pulses. It can be installed on actuator, by using a longer worm-screw extension (rotating at the same speed of the motor) and coming out from the gearbox on opposite side of motor, or directly on AC or DC motors.

Its digital output allows for a relative (not absolute) feedback on actuator position, hence, every time machinery is resetted, encoder shall be given the zero position.

Encoder mounted on DC motors(see table below)

Model	Encoder features	Wiring Diagram	Type Encoder
ALI1 ALI1-P	<ul style="list-style-type: none"> Power supply 5 V....24Vdc PUSH-PULL 2 channel - 4 ppr square wave Max output current: 20 mA 		See Wiring Diagram Ali1
ALI2 ALI2-P ALI3 ALI3-P	<ul style="list-style-type: none"> Power supply 5 V....24Vdc NPN open collector 2 channel - 1 ppr square wave Max output current: 100 mA 		E01
L02	<ul style="list-style-type: none"> Power supply 3,8 V....24Vdc NPN + pull-up resistor 3,9 KΩ 1 channel 4 ppr square wave Max output current: 100 mA 		E10
L03	<ul style="list-style-type: none"> Power supply 3,8 V....24Vdc NPN + pull-up resistor 1,9 KΩ 2 channel 4 ppr square wave Max output current: 100 mA 		E50

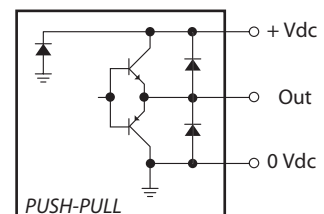
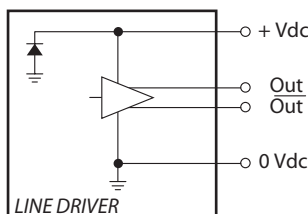
Encoder mounted on AC motors

Bidirectional incremental encoder, with (standard) or without zero-pulse, protection IP54.

Available ppr: 50 / 100 / 200 / 400 / 500 / 512 / 1000 / **1024 (standard)**

Available output circuits: Line Drive 5 Vdc (standard) Push Pull 24 Vdc / Open Collector NPN 10 -30 Vdc / OpenCollector PNP 10 -30 Vdc.

Rosso / Red	÷Vdc
Nero / Black	0 Vdc
Ver de / Green	A
Giallo / Yellow	B
Blu / Blue	Z
Marrone / Brown	-A
Arancione / Orange	-B
Bianco / White	-Z



ORDERING KEY REFERENCES

Encoder:

only on DC motor)

E01 = NPN 2 channel 1 ppr

(only on AC motor)

E05 = Push Pull 1024 ppr

E06 = Line Drive 1024 ppr (standard)

E07 = Open Collector NPN

E08 = Open Collector PNP

(only on actuator housing)

E00 = Push Pull 2 channels 4 ppr

E09 = Push Pull 1024 ppr

E10 = Line Drive 1024 ppr

E11 = Open Collector NPN

E12 = Open Collector PNP

E13 = Encoder not considered above

(according to customer request)

Only for L02:

E10= NPN 1 channel 4 ppr

Only for L03:

E50= NPN 2 channels 4 ppr

	E00	E01	E05	E06	E07	E08	E09	E10	E11	E12	E50
AL12-DC		○									
AL12-AC			○	○	○	○					
AL12-P		○									
AL13-DC		○									
AL13-AC			○	○	○	○					
AL13-P		○									
AL14	○		○	○	○	○	○	○	○	○	
AL15	○		○	○	○	○	○	○	○	○	
AL15-P			○	○	○	○					
AV3			○	○	○	○					
ECV9092			○	○	○	○					
L02								○			
L03											○
EC			○	○	○	○					

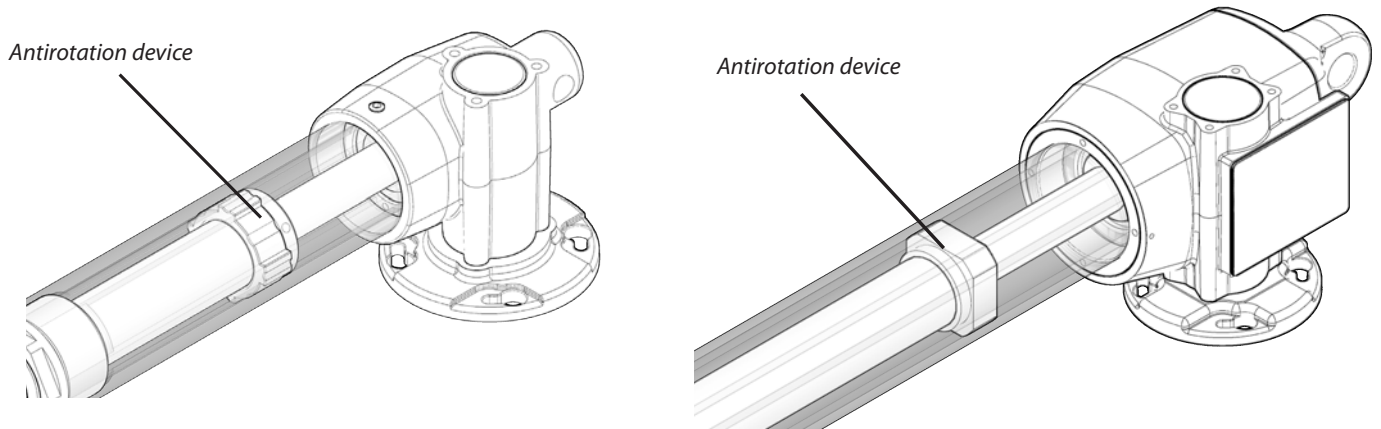
○ ON REQUEST

ACCESSORIES AND OPTIONS

Antirotation device

Option "L"

The Anti-rotation device avoids push rod spinning around its own axis when travelling: it is essential in case of not guided load. When the anti-rotation device is selected, the front-end is oriented to the rear-end in the assembly phase. The anti-rotation device is made in different ways depending on actuators model.

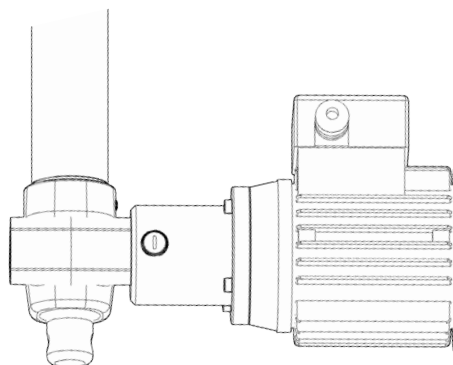


Torque limiter

Option "S"

It is assembled between motor and gearbox to prevent occasional overload. Available for DC and AC motors with IEC flange. As to dimensions contact Technical Department.

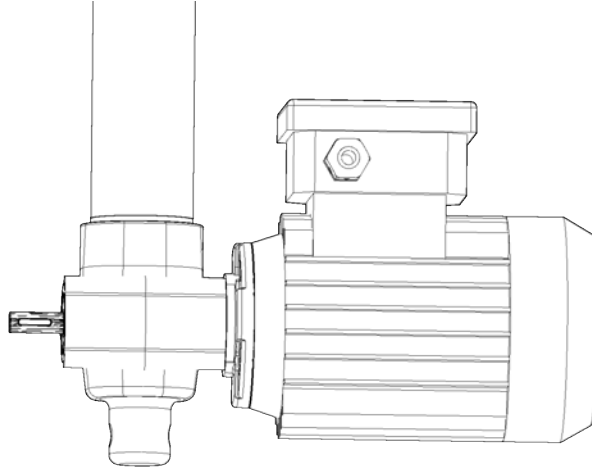
Note: Torque limiter reacts at 150-160% of nominal load.



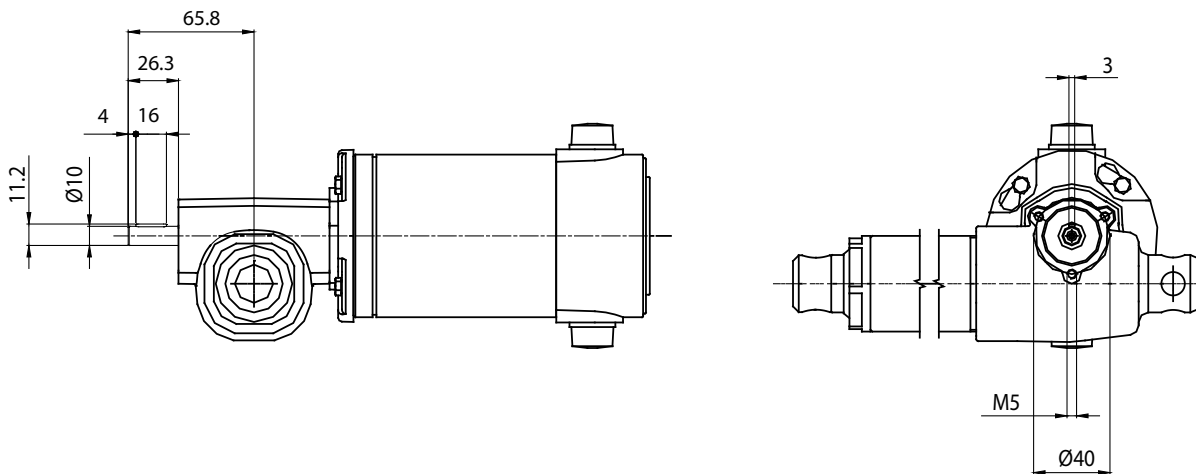
Torque limiter cannot be used as stroke control device with actuator getting to mechanical end-stops. In this way you will lose the torque limiter setting and get it useless

Shaft on motor opposite side Option "T"

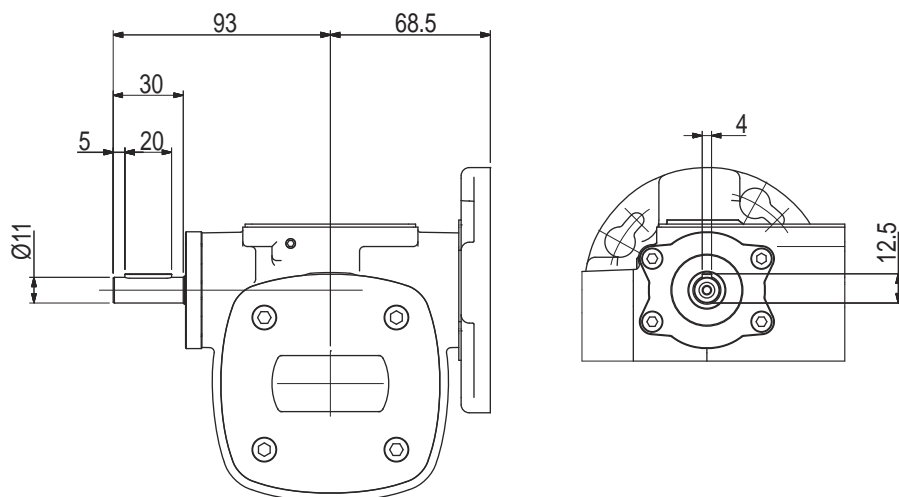
Available for models ALI4 and ALI5
As to dimensions contact Technical Department.



Shaft on motor opposite side available only on ALI4 and ALI4-F



Shaft on motor opposite side available for ALI5



ACCESSORIES AND OPTIONS

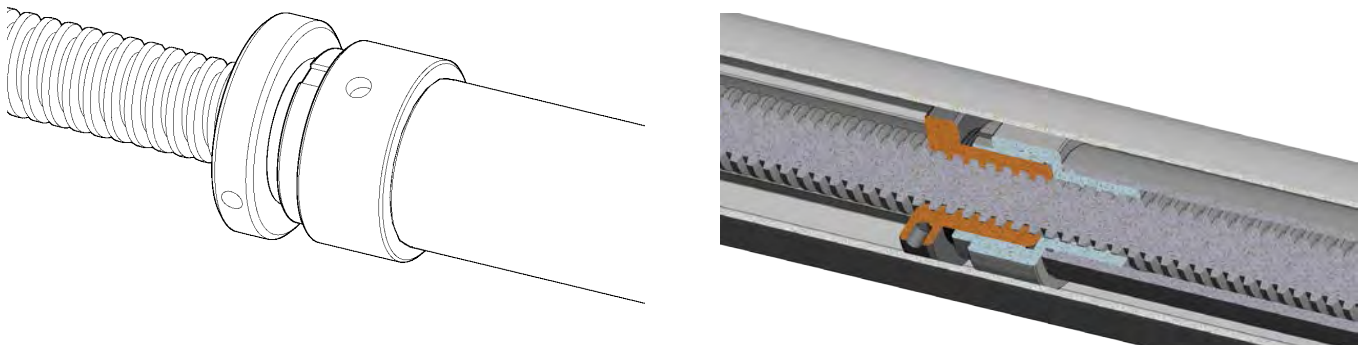
Safety nut

Option "G"

The safety nut has been designed to start working only in case of main nut maximum wear. This safety nut is connected to the main bronze nut and travels with it along the stroke.

When the bronze nut is completely worn out, the steel nut starts working on acme screw until it comes to a complete grip to acme screw.

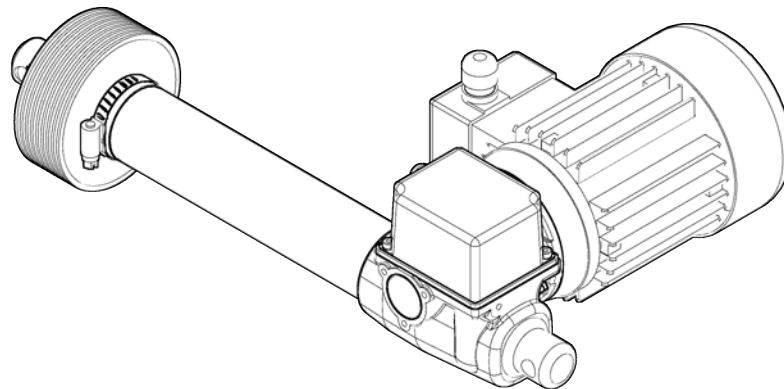
This kind of nut can work in both directions and that is integral with the load in both compression or traction (pushing / pulling)



Bellows boot

Option "B"

Bellows boot protects push rods: pharmaceutical and food industries or aggressive environments are typical examples of applications where this option can be required.



Handwheel and safety-switch unit

Manual driving

Option allowing actuator driving back in case power supply fails or some other inconvenience occurs. Second shafts on the back of the motors or extended worm-screws coming out from gearbox (see Encoder paragraph) can be manually turned with hand wheels, so to let actuator move without power supply for load disengagement. Gearing ratio and screw pitch determine number of revolutions to be done to run whole actuator's stroke: be aware that this number can be quite high.

Option "P" e "N"

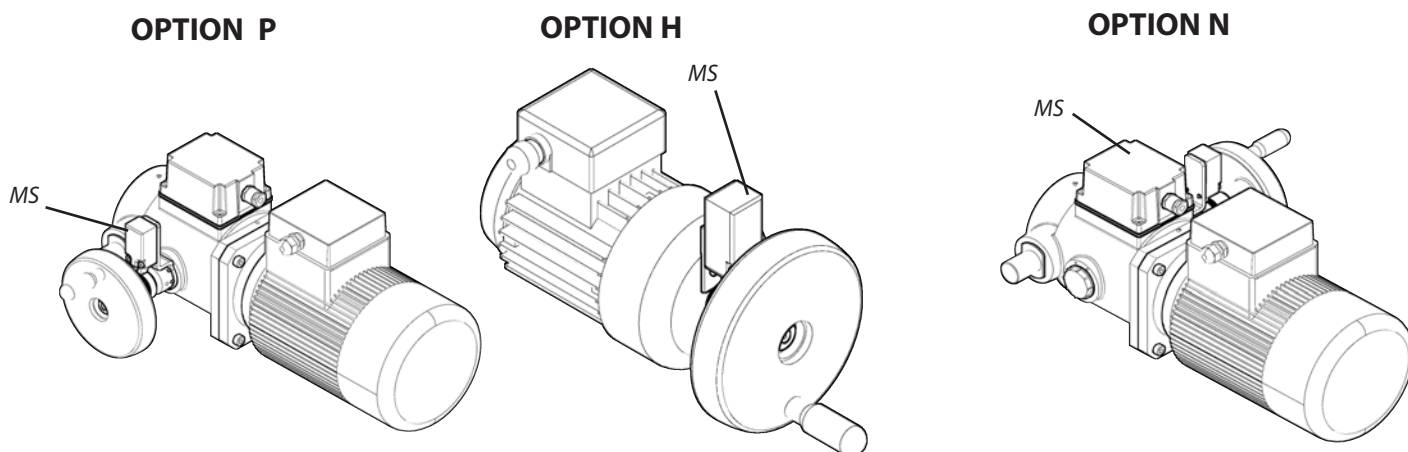
Only for model EC

With safety limit switch MS

Option "H"

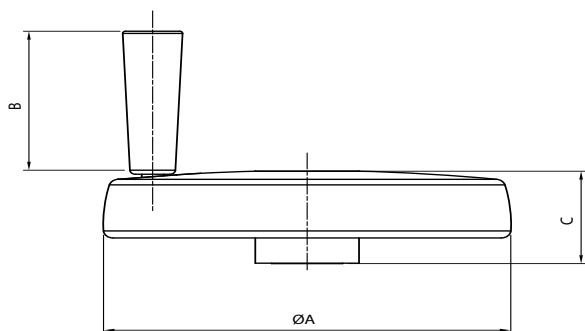
For all model in A.C.

Only for EC model with safety limit switch MS



Warning!

"Before connecting motor to power supply, you must connect power to safety microswitch positioned on hand wheel : so you can disconnect motor from power supply pressing safety switch and be able to work in safe conditions"

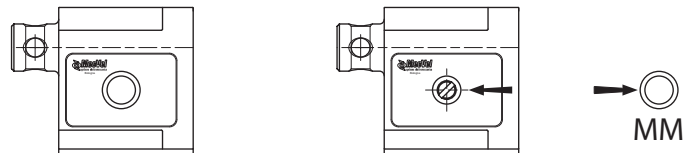


Dimensions			
Model	A	B	C
AL12 AL13 AL14 AL15 EC1 EC2 EC3 EC4	φ150	65	44
AV3 ECV9092 EC5	φ250	90	66

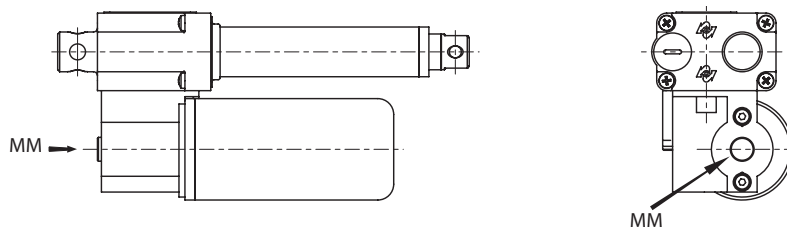
ACCESSORIES AND OPTIONS

A manual driving system is available, for emergency situations.
By removing the cap support, movement can be controlled using a screwdriver.

Option "MM" Mod. ALI1



Option "MM" Mod. ALI1-P



Viton seals

Option "E"

Viton seals are available as a replacement to those of NBR, except models ALI1 and ALI1-P.
For actuators with Option AA (Steel industry version) Viton seals are included.

Inox version

Option "A"

The stainless steel version includes front rear and push rod in stainless steel (X5CrNi18-10)
For AV3, ECV9092 and EC models the push rod is in double chromed .steel.

Tmax NBR = 110°C

Tmax Viton = 200°C

Low noise Version

Option "Z"

It's a version with special solutions for noise reduction.

Protective Painting

Option "FX"

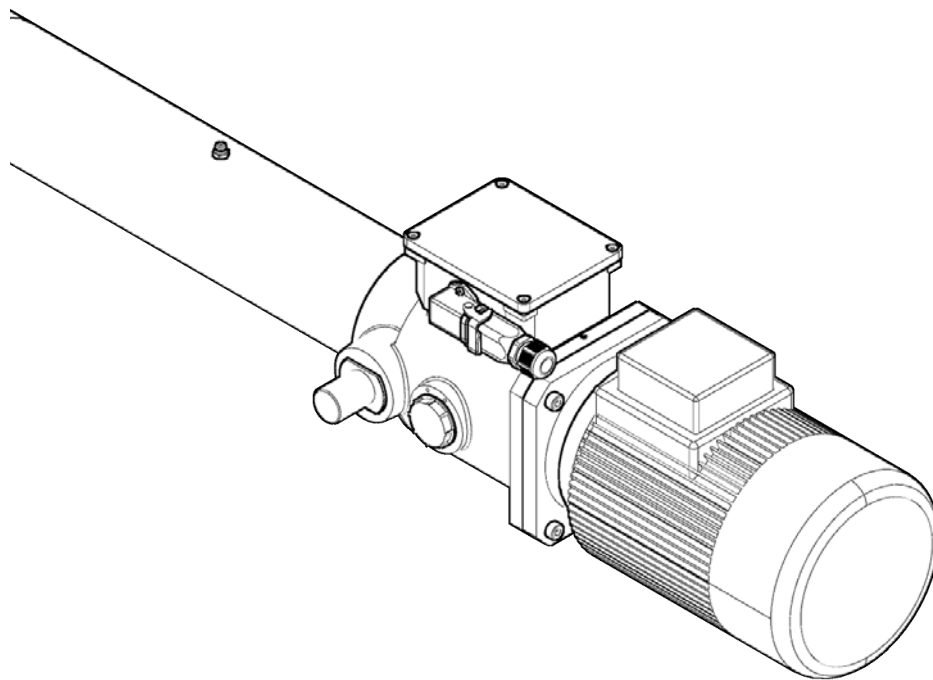
ANTI-CORROSION coating used on all metals and many other materials also against aggressive agents such extreme sea water, industrial fumes, acid rain, etc. .. It also has excellent resistance to impact and abrasion.

Option "FXC"

CATAPHORESIS is a electro deposition of paint in immersion with current continuous electricalworker. The deposited film confers to the pieces ones elevated characteristic anticorrosive, extending in the time the conservation also of all the parts that are not available with a traditional system to spray.

Steel industry version

Option "AA"







Steel works includes:
Larger limit switches box.
Brass gears and cams.
Metal connectors.
Viton seals.
Mechanical limiter with warning sensor.
Handwheel for manual driving (standard pos.N; optional P and H).
Front end with shock absorber.


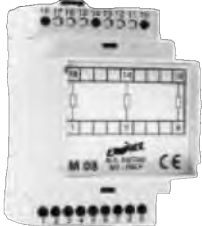

For further information contact our technical dept.

ACCESSORIES AND OPTIONS




Electronic Devices

Electronic control cards







Code	Data	Application	Picture
PF.0014	<p>Driver for 1 actuator with 24 Vdc motor Power supply: 230 V - max 4A (for 24 Vdc motors) Amperage limitation Sound or light signal of movement</p>	All Ø61,5 and Ø40 motors may work with amperage limitation	
PF.0015	Infrared remote control - 2 buttons for PF0014	Accessory for PF0014	
PF.0050	<p>Driver for 2 actuators with 12 Vdc motor Power supply: 12 Vdc +/- 10% 4-28A (for 12 Vdc motors) Stroke limits control normally closed Amperage limitation Radio remote control - 4 buttons</p>	<p>I MAX = 28A Tutti i motori in</p> <p>All 12V motors Ø61,5 and Ø40 motors</p>	
PF.0100	<p>Driver for 1-2 actuators with 12-24 Vdc motor 15A Power supply 10..48 Vdc Stop by limit switches or programmable current threshold Acceleration and deceleration ramp (PWM) Parameters can be set by external interface, the interface is provided only in the first delivery</p> <p>Optional: CAN BUS Synchronization 2 actuators Radio Control</p>	<p>Dim. 86X72X50</p> <p>I MAX = 15A</p> <p>All 24V Ø61,5 and Ø40 motors 12-24V</p>	

Code	Data	Use	Picture
<p>CC021.0104 Wattmetric relay</p>	<p>Connection = Motor Full scale = 2,5 / 5,0 / 10,0 A Power supply = 230 Vac Motor power supply = 230 / 400VAC</p>	<p>The electric motor is the most common load to be controlled by an active power relay. The active power supplied to the motor gives the direct information of the instant load of the motor itself. Such information is more accurate than the one given by the current value. As a matter of fact the $\cos\phi$ variations may change the power value without affecting the current value.</p>	
<p>CC021.0105 3 phase drop resistance M08-8</p>	<p>Option for wattmetric relay Motor power = 440 Vac</p>	<p>The device has 3 resistances built-in when they are connected in series to 3 voltage pins they make a voltage drop. In this way it is possible to apply a voltage higher than the voltage accepted by the voltage pins</p>	
<p>CC021.0002 Transducer of position or signal E 261B-A1-CD (0-10V / 4-20 mA 24 Vdc)</p>	<p>Connection = Potentiometer 1-10 KHom Device power supply = 24Vdc</p>	<p>The device supplies a potentiometer and measures the voltage on the wiper. The voltage and current outputs are proportional to the position of the wiper of potentiometer</p>	




ACCESSORIES AND OPTIONS

Code	Data	Use	Picture
<p>CC021.0022</p> <p>Transducer of position or signal</p> <p>E 261 B- A1-GMA</p> <p>(0-10 V / 4-20 mA / 115-230Vac)</p>	<p>Connection = Potentiometer 1-10 KΩ</p> <p>Device power supply = 115-230Vac</p>	<p>The device supplies a potentiometer and measures the voltage on the wiper.</p> <p>The voltage and current outputs are proportional to the position of the wiper of potentiometer.</p>	
<p>CC021.0107</p> <p>Low voltage current transformer</p>	<p>Option for wattmetric relay</p> <p>Full scale = 2,5 / 5,0 / 10,0 A</p>	<p>If the motor current (or of the application) is over 10A, it is necessary to use a TA.../5 together with Mod.A or TA...1 together with Mod.B and the range will be set at 5A or 1A.</p>	
<p>CC021.010</p> <p>Current relay</p>	<p>Connection = Motor</p> <p>Full scale = 2,5 / 5,0 / 10,0 A</p> <p>Driver power supply = 230 Vac</p> <p>Motor power supply = single / 3 phase</p>	<p>This unit is designed to monitor the current of a load with a max or min set point (built-in CT).</p> <p>It is used to monitor a single or three-phase load (typically a motor) for performing a protection with one alarm.</p> <p>Max set point (or min) divided in 10 parts to be set by means of a small screwdriver on the front.</p>	





Wiring and connector (on request)

Code	Data	Use	Picture
Male Connector Molex from 2 to 12 pins IP 00 (Es. CC010.0010 12 pins)	max 0.75 mm ² max 6 A on the section 0.75 mm ²	Encoder, microswitch and motor wiring	
Female Connector Molex from 2 to 12 pins IP 00 (Es. CC010.0011 4 pins)	max 0.75 mm ² max 6 A on the section 0.75 mm ²	Encoder, microswitch and motor wiring	
Female Connector Deutsch from 2 to 12 pins IP 65 (Es. CC010.0043 4 pins)	from 0.5 mm ² to 1 mm ² max 7.5 A sulla sezione da 1 mm ²	Encoder, microswitch and motor wiring	
Female Connector Deutsch from 2 to 12 pins IP 65 (Es. CC010.0324 6 pins)	from 0.5 mm ² to 1 mm ² Max 7.5 A sulla sezione da 1 mm ²	Encoder, microswitch and motor wiring	
Connector Amphenol 90° 3 or 6 pins (with cor- rugated sheath) IP 65 (Es. CC010.0022 3 pins)	from 0.5 mm ² to 1 mm ² Max 16 A for 3 pin, Max 13A for 6 pin on the section 1.5 mm ²	Motor wiring	
Male connector Amphenol 3 or 6 pins IP65 (Es. CC010.0298 6 pins)	from 0.14 mm ² to 1.5 mm ² Max 16 A for 3 pin, Max 13A for 6 pin on the section 1.5 mm ²	Motor wiring	

ACCESSORIES AND OPTIONS

Code	Data	Use	Picture
Housings bulkead mounting right angle from 3 pin + ground to 16 pin + ground IP 66 (Es. CC010.0304 4pins)	From 0.5mm ² to 2.5 mm ² Max 10 A on the section 2.5 mm ²	Encoder, microswitch and motor wiring	
CC010.0309 Metal Housing, orizzontal input for 10 pins+ ground IP 66	From 0.5mm ² to 2.5 mm ² Max 10 A on the section 2.5 mm ²	Encoder, microswitch and motor wiring.	
CC010.0316 Female Connector Molex 4 pin round PG9	0,16 mmq Max 4A	Encoder wiring	

Transformers

Code	Data	Dimension	Picture
PF.0033	<i>Transformers ET 80PW (80 VA - 230 / 12V Vac)</i>	136 x 60	
PF.0034	<i>Transformers ET 150PW (150 VA - 230 / 12 Vac)</i>	136 x 60	
PF.0036	<i>Transformers ET 80PW (80 VA - 230 / 24Vac)</i>	136 x 60	
PF.0037	<i>Transformers ET 150PW (150 VA - 230 / 24 Vac)</i>	136 x 60	

Swivelling shafts holder.

SP---

To mount actuators series EC, four sizes of shaft holders

Code	Description	Dimensions
SP0014	Kit of 2 shaft holders for EC1	
SP0020	Kit of 2 shaft holders for EC2	

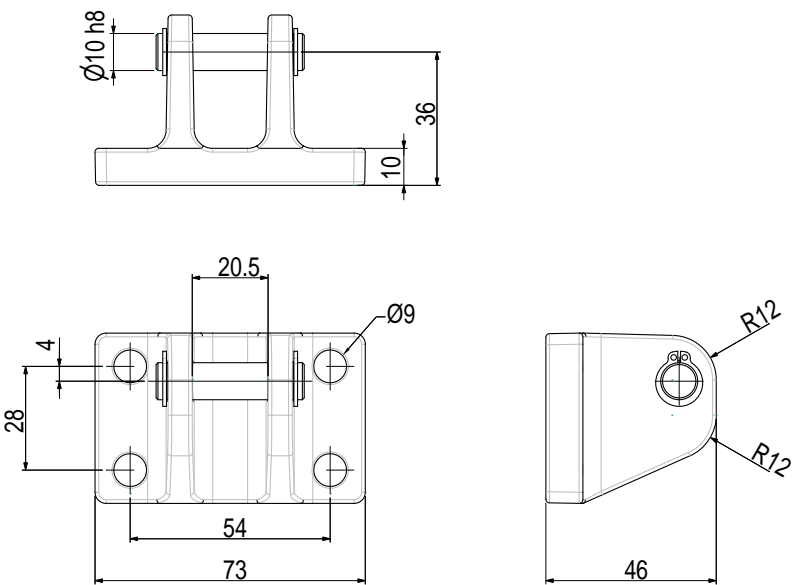
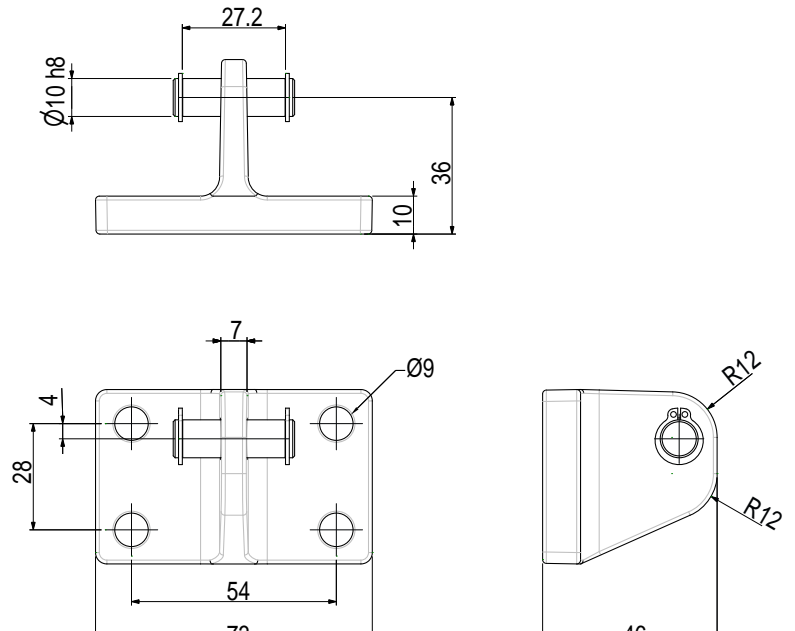
ACCESSORIES AND OPTIONS

Code	Description	Dimensions
<p>SP0030</p>	<p>Kit of 2 shaft holders for EC3</p>	
<p>SP0040</p>	<p>Kit of 2 shaft holders for EC4 / EC5</p>	

Bracket for front and rear ends

SAA---

To mount actuators having rear connection P1 / P2 and front head A1 and A4 the brackets are available for 3 series (ALI2 / ALI3 / ALI4 / ALI5)

Code	Description	Dimensions
SAA0002	Asymmetric bracket for front and rear ends ALI2	 <p>Technical drawing of the SAA0002 asymmetric bracket. It includes three views: a side view, a front view, and a side profile view. The side view shows a base with a height of 10 mm and a total height of 36 mm. The front view shows a rectangular base with a width of 73 mm and a height of 28 mm. It features four mounting holes with a diameter of $\varnothing 9$ and a central slot with a width of 20.5 mm. The distance from the top edge to the center of the holes is 4 mm. The side profile view shows a base width of 46 mm and rounded corners with a radius of R12.</p>
SAA0003	Asymmetric bracket for front and rear ends ALI3	 <p>Technical drawing of the SAA0003 asymmetric bracket. It includes three views: a side view, a front view, and a side profile view. The side view shows a base with a height of 10 mm and a total height of 36 mm. The front view shows a rectangular base with a width of 73 mm and a height of 28 mm. It features four mounting holes with a diameter of $\varnothing 9$ and a central slot with a width of 7 mm. The distance from the top edge to the center of the holes is 4 mm. The side profile view shows a base width of 46 mm and rounded corners with a radius of R12.</p>

ACCESSORIES AND OPTIONS

Code	Description	Dimensions
SAA0004	Asymmetric bracket for front and rear ends ALI4	<p>Technical drawing of the SAA0004 asymmetric bracket. It includes three views: a front view, a side view, and a perspective view. The front view shows a base with a height of 15 and a total height of 66. A central vertical post has a diameter of $\text{Ø}12$ and a height of h_{11}. A horizontal dimension of 30 is indicated. The side view shows a base width of 110, with a central section of 85 and a side section of 12.5. The total height is 81, with a section of 55 and a bottom section of 13. It features four mounting holes (N°4 fori $\text{Ø}11$) and a side hole with a diameter of 13. The perspective view shows a base width of 80.5 and a height of 99.5.</p>
SAA0005	Asymmetric bracket for front and rear ends ALI5	<p>Technical drawing of the SAA0005 asymmetric bracket. It includes three views: a front view, a side view, and a perspective view. The front view shows a base with a height of 15 and a total height of 58. A central vertical post has a diameter of $\text{Ø}20$ and a height of h_{11}. A horizontal dimension of 26.1 is indicated. The side view shows a base width of 110, with a central section of 85 and a side section of 12.5. The total height is 81, with a section of 55 and a bottom section of 13. It features four mounting holes (N°4 fori $\text{Ø}11$) and a side hole with a diameter of 5. The perspective view shows a base width of 80.5 and a height of 95.5.</p>