

# Actuator MK7L



MK7L is an actuator equipped with brushless DC motor(BLDC) to output higher load as well as higher speed at max. load than ID10 series. A driver board is included, so the user can control the actuator to extend and retract simply by connecting a switch (dry contact). This actuator provides a thrust up to 10,000N at a speed of 25mm/sec, and its IP67, IP69K protection capability is suitable for use in harsh environments such as tractors, agricultural machines, lawn mowers, etc.

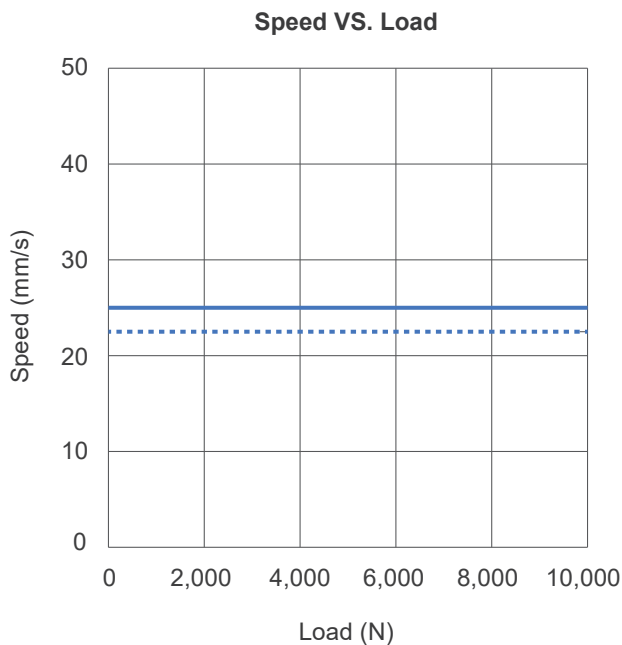
## Features and Options

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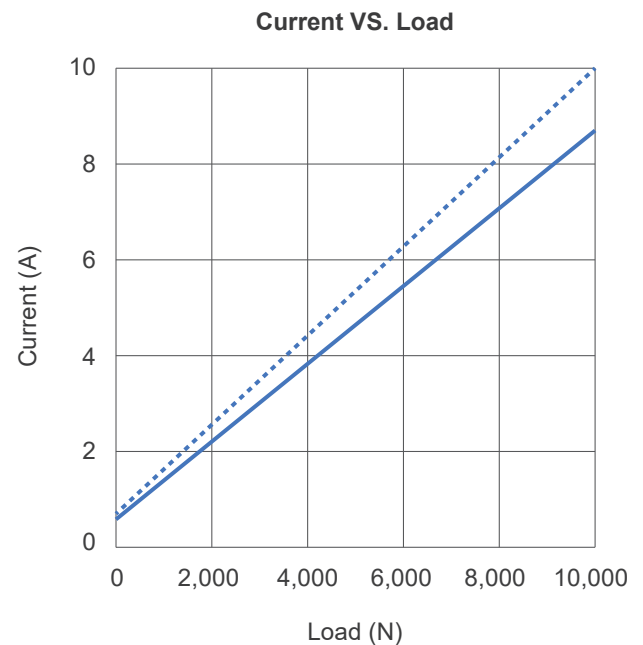
- Main applications: Industry, Agriculture, Construction
- Motor type : 48V BLDC motor
- Max. rated load: 10,000N (Push/Pull)
- Max. static load: 18,000N
- Speed: 25mm/sec (Typical value)
- Spindle type: Ball screw
- Stroke: 203 (8") / 254 (10") / 305 (12") mm
- IP level: IP66/IP67, IPX9K
- Salt spray test: 250 hours
- Preset limit switches
- Built-in brushless motor drive and electronic protection circuit board
- Extension tube material: Stainless steel
- Color: Black
- Power cord length: 500mm (with bare wires)
- Duty cycle: Max. 15% (60 sec. continuous operation in 400 sec.  
and is valid for operation within an ambient temperature of +5°C~+40°C)
- Operating ambient temperature: -25°C~+85°C (Full performance +5°C~+40°C)
- Storage ambient temperature: -40°C~+100°C
- Certified: CE Marking. EMC Directive 2014/30/EU.

## Performance Data

Input voltage (V DC)	Gear ratio	Push / Pull Max. (N)	Typical speed (mm/s) <sup>(1)</sup>		Typical current (A) <sup>(2)</sup>	
			No load	Full load	No load	Full load
48	30:1	10,000	25	25	0.6	8.7



— Typical speed    ..... Min. speed



— Typical current    ..... Max. current

### Remarks:

- <sup>(1)</sup> The typical speed is the instantaneous speed of the driver board output, rather than measuring the total start-stop travel distance divided directly by the total operating time.
- <sup>(2)</sup> The typical current means the average value neither upper limit nor lower limit, which measured under room temperature and stable power. The performance curves are made with typical values.

## Drive Control Board Functions

- The polarity of the actuator input power supply cannot be interchanged. The actuator's movement and direction are controlled by signals.
- Built-in soft start/stop functions, each about 0.6 seconds (not adjustable).
- The actuator completes stroke learning and memory before shipment. During use, it will decelerate before reaching the limit switch position to prevent impact.
- Over load protection: When the load reaches about 12,000N, the actuator will be stopped automatically.
- Voltage range protection: When the voltage is lower than 40V or higher than 68V, the actuator will be stopped automatically.
- Temperature protection: Temperature detection inside the driver board. When the temperature is detected higher than +85°C or below -40°C, actuator will be stopped automatically. It will resume operation until the high temperature is down to +80°C or the low temperature is raised to -35°C.
- Low temp. response: When the temperature inside the actuator is detected below 0°C, the overload protection setting value will be automatically increased by 30%, which will reduce the over current protection caused by low temperature.

## Dimensions

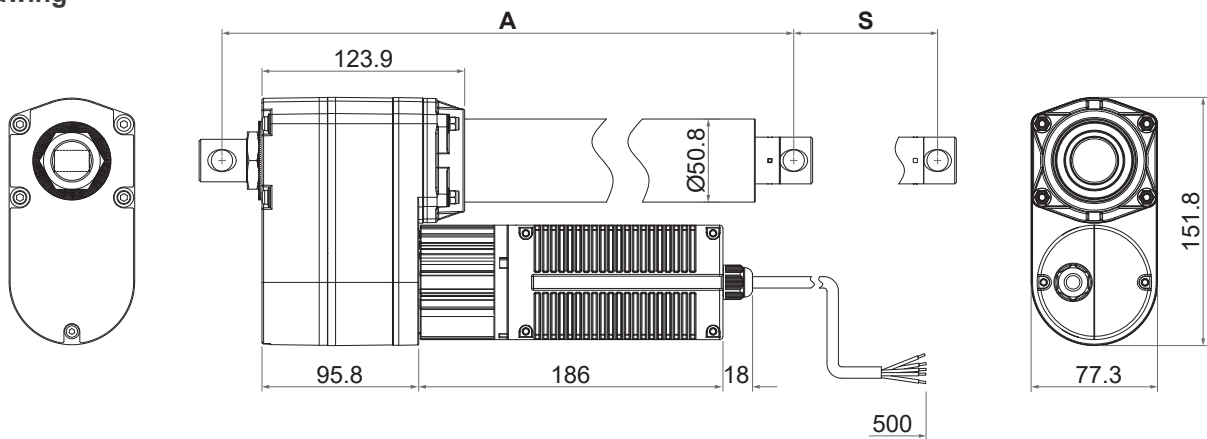
### 1. Installation dimension

- Installation dimension = Retracted length (A) + Stroke (S)

Stroke (S)	203 (8")	254 (10")	305 (12")
Retracted length (A)	501	552	603

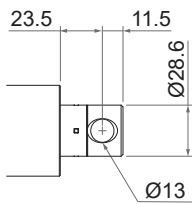
(Tolerance:  $\pm 5\text{mm}$ )

### 2. Drawing

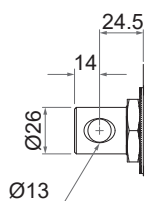


Unit: mm

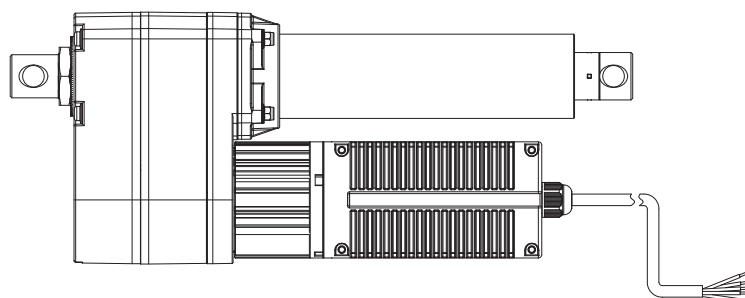
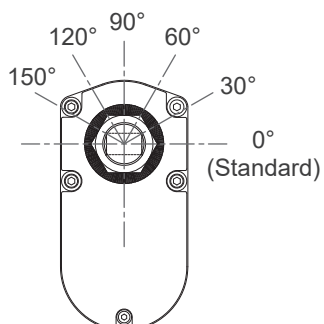
### 3. Front connector type



### 4. Rear connector type



### 5. Pivot orientation of rear connector



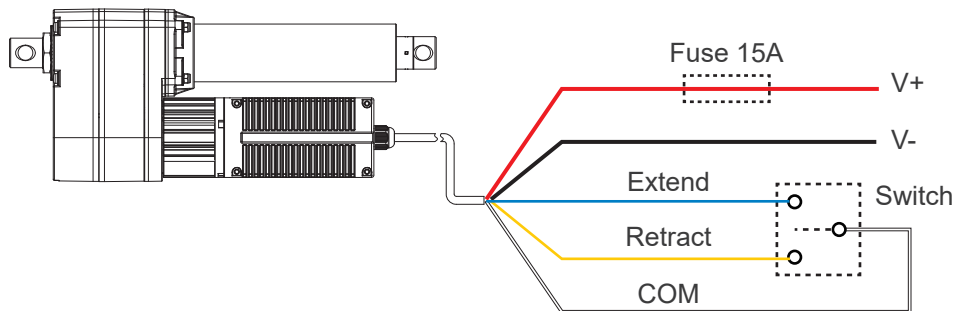
**Note:** As an example in 0° orientation.

## Cable with Flying Leads

### • Wire definitions

	Wire color	Definition	Description
Power cable	Red	V+	Connect Red to positive. Connect Black to negative. Do not swap the polarity. Input voltage: 48V±10% Wire gauge: 12AWG
	Black	V-	
Signal cable	Blue	Actuator extends	Blue and white wires are shorted circuit: Actuator extends Yellow and white wires are shorted circuit: Actuator retracts Open circuit: Actuator stops Wire gauge: 18AWG
	Yellow	Actuator retracts	
	White	COM	

### • Wiring



**Remarks:** Dashed lines are connected by the customer.

## Certifications

MK7L actuator is compliant with the following regulations, in terms of the essential conformity requirements of EMC Directive of 2014/30/EU.

Emission	Immunity
EN IEC 61000-6-3:2021 BS EN IEC 61000-6-3:2021	EN IEC 61000-6-1:2019 BS EN IEC 61000-6-1:2019

## Ordering Key

	MK7L- 48 - M5B - 30 - 254 - 0 0 0 0 L 9 1
<b>Input voltage</b>	48: 48V DC
<b>Motor and spindle type</b>	M5B: 12,000rpm / 5mm pitch / Ball screw
<b>Gear ratio</b>	30: 30:1
<b>Stroke</b>	203: 203mm (8") 254: 254mm (10") 305: 305mm (12")
<b>Front connector type</b>	0: Standard
<b>Rear connector type</b>	0: Standard
<b>Pivot orientation of rear connector</b> (Refer to Page 4)	0: 0° (Standard) 3: 30° 6: 60° 9: 90° C: 120° F: 150°
<b>Reserved</b>	0
<b>Limit switches</b>	L: Limit switches
<b>IP level</b>	9: IP66/IP67, IPX9K
<b>Cable length</b>	1: 500mm straight

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