

Actuator MK52



The MK52 linear actuator has a maximum thrust of 3,500 N and meets IP65/IP66, IP69K, or IPX8M protection ratings. The IPX8M version can be submerged in water up to 1.2 meters deep for short periods and can operate underwater. It is suitable for industrial, outdoor, and automated applications requiring high IP ratings.

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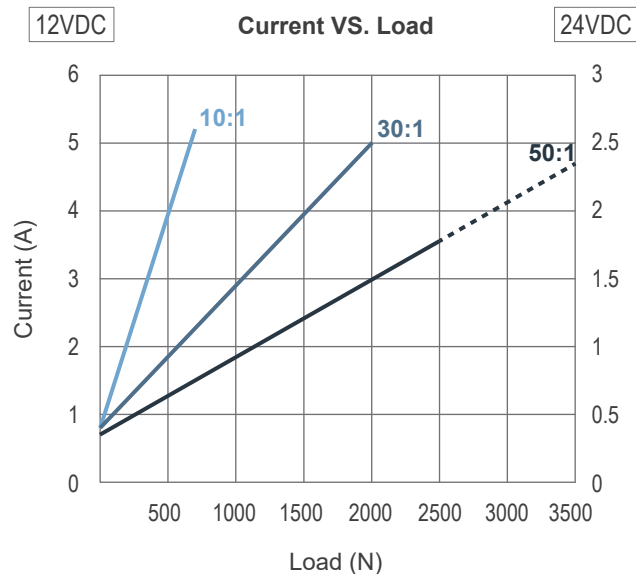
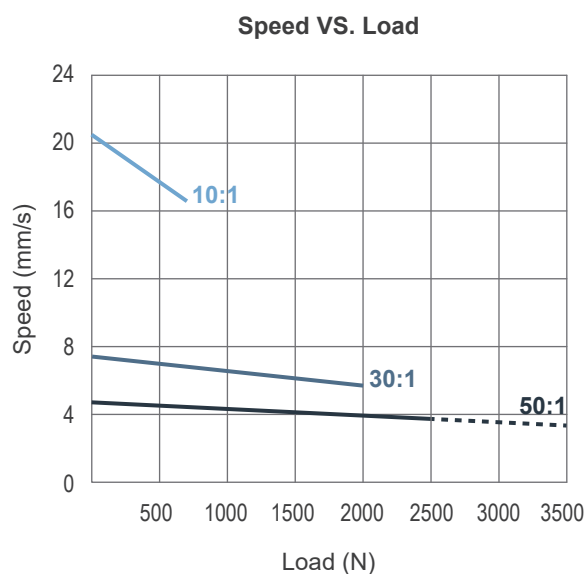
Features and Options

- Main application: Industry
- Input voltage: 12 / 24V DC
- Max. load: 3500N (Push) / 2500N (Pull)
- Max. static load: 4500N (Push / Pull)
- Max. speed at no load: 20.5mm/sec (Gear ratio 10:1, refer to performance data)
- Speed at full load: 3.35mm/sec (Gear ratio 50:1 @3500N loaded, refer to performance data)
- Stroke: 100~500mm, one step every 50mm (Max. $\leq$ 500mm)
- Positioning:
 - Optional digital positioning feedback with dual Hall effect sensors
 - Optional analog positioning feedback with Potentiometer (POT)
- Preset limit switches
- Aluminum grey
- Salt spray tested for 120 hours
- IP level:
 - IP65/IP66, IP69K (static)
 - IPX8M (Underwater at 1.2 meters for 30 minutes)
- Noise level: $\leq$ 70dB
- Duty cycle: 25%, max. 2 min. continuous operation in 8 min.
- Operating ambient temperature: -25°C~+65°C
- Storage ambient temperature: -25°C~+65°C
- Cable length: 300, 900 mm



Performance Data

Model No.	Gear ratio	Max. push load (N)	Max. pull load (N)	Typical speed (mm/s) ⁽¹⁾		Typical current (A) ⁽¹⁾			
				No load	Full load	No load		Full load	
						12V	24V	12V	24V
MK52-XX-G3-10-XXX	10:1	700	700	20.5	16.6	0.8	0.4	5.2	2.6
MK52-XX-G3-30-XXX	30:1	2000	2000	7.4	5.7	0.8	0.4	5.0	2.5
MK52-XX-G3-50-XXX	50:1	3500	2500	4.7	3.35	0.7	0.35	4.8	2.4



Push / Pull load — Push load - - -

Note:

⁽¹⁾ The typical speed or 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.

● Inrush current

- When the actuator starts to operate, an inrush current of about 0.2 seconds will be generated. The starting inrush current of MK52 can reach about 3 times of the typical current under the actuator maximum load.
- If a circuit board power supply is used, the specifications must be sufficient to handle the inrush current. If batteries are used as the power source, inrush current will not be a problem.
- MOTECK controllers are designed to take into account the inrush current when the actuator starts. If the user provides his or her own controller, this feature must be considered in the specifications and protection mechanisms. Besides, the connectors, switches and relays selected by users must also be able to withstand the starting currents.



Dimensions

1. Installation dimension

- Available stroke (S) range = 100~500mm, one step every 50mm (Max. ≤ 500 mm)
- Retracted length (A)

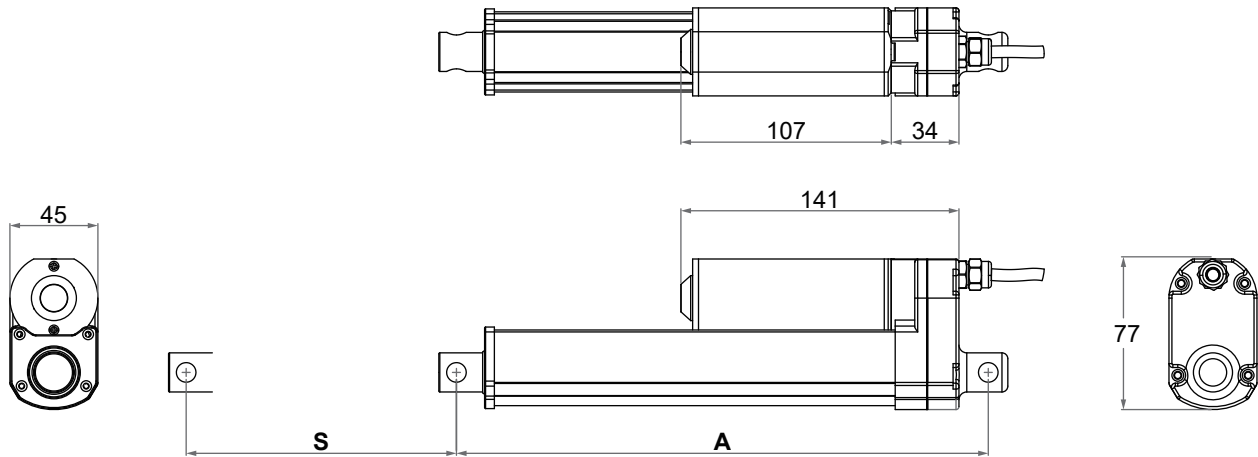
(tolerances: ± 3 mm)

Retracted length (A)	Option	IP level	Stroke (S)		
			100~300 mm	350~400 mm	450~500 mm
	Basic or with Hall sensor	IP65/IP66, IP69K	$A \geq S+105$ mm	$A \geq S+135$ mm	$A \geq S+155$ mm
		IPX8M	$A \geq S+145$ mm	$A \geq S+175$ mm	$A \geq S+195$ mm
	With POT	IP65/IP66, IP69K	$A \geq S+142$ mm	$A \geq S+172$ mm	$A \geq S+192$ mm
		IPX8M	$A \geq S+182$ mm	$A \geq S+212$ mm	$A \geq S+232$ mm

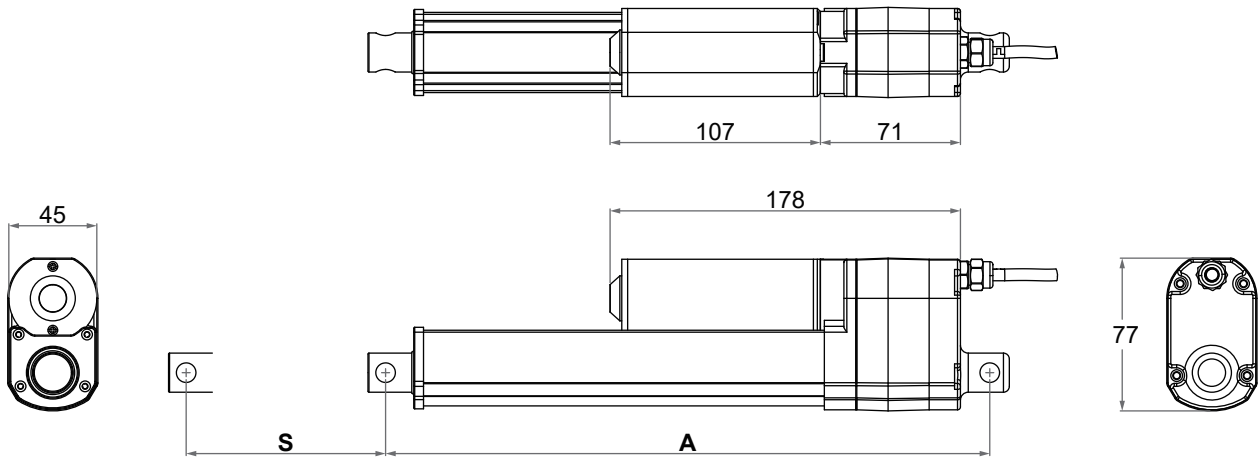
- Extended length (B) = Retracted length (A) + Stroke (S)

2. Drawing

- Basic / With Hall effect sensor positioning feedback



- With Potentiometer (POT) absolute positioning feedback

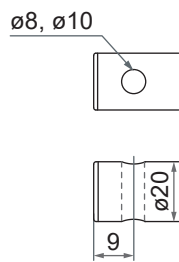


Unit: mm



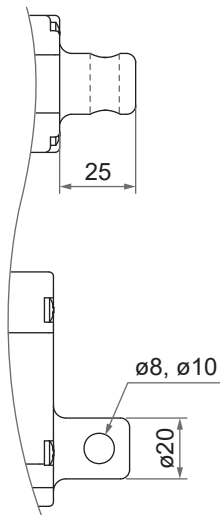
3. Front connector type

- 1: Drilled hole, $\varnothing 10\text{mm}$
 8: Drilled hole, $\varnothing 8\text{mm}$



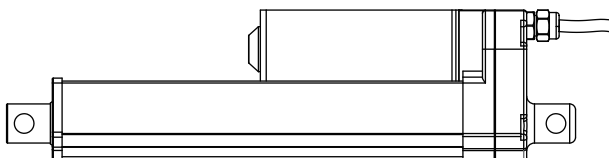
4. Rear connector type

- 1: Aluminum alloy clevis, $\varnothing 10\text{mm}$
 8: Aluminum alloy clevis, $\varnothing 8\text{mm}$



Unit: mm

5. Connector orientation



Note: Front and rear connectors shown in standard 0°

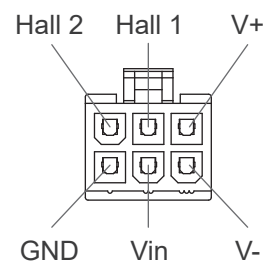


Compatibility

Product	Model	MK52 spec
Controller	CI72	• All standard positioning feedback option • Cable with flying leads
	CI73	• All standard positioning feedback option • Cable with flying leads
	CI74	• With dual Hall effect sensors for positioning • With minifit 6-pin plug
	CI76	• All standard positioning feedback option • Cable with flying leads
Accessory	MB22 mounting bracket 	Standard, mounting hole ø8mm or ø10mm

Cable Plug

• Positioning feedback with Hall effect sensor



With minifit 6-pin plug

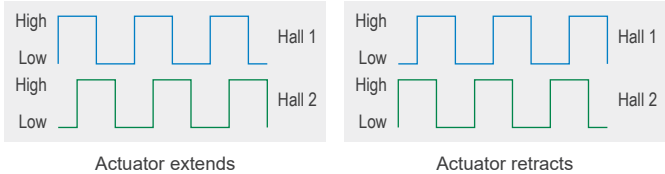


Cable with Flying Leads

1. Basic, without positioning feedback.

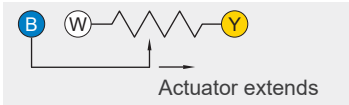
	Wire color	Definition	Descriptions
Power wires	Red	DC power	Connect red wire to "Vdc +" & black wire to "Vdc -" of 12 or 24V DC power to extend the actuator. Switch the polarity of DC input to retract it.
	Black		

2. With 60V dual Hall effect sensors positioning feedback

	Wire color	Definition	Descriptions								
Power wires	Red	DC power	Connect red wire to “Vdc +” & black wire to “Vdc -” of 12 or 24V DC power to extend the actuator. Switch the polarity of DC input to retract it.								
	Black										
Signal wires	Yellow	Vin	Voltage input range: 5~60V  If this voltage input must share the motor's power supply, be sure to use a separate power cord to draw power from the source, not tapping it from the control board's power input. Otherwise, the motor's inrush current will cause the Hall IC circuit to malfunction.								
	Blue	Hall 1 output	High= Input - 1.2V (±0.6V) Low= GND Hall signal data: 								
	Green	Hall 2 output	Hall effect sensor resolution: <table><thead><tr><th>Gear type</th><th>Resolution (pulses/mm)</th></tr></thead><tbody><tr><td>10</td><td>3.15</td></tr><tr><td>30</td><td>9.45</td></tr><tr><td>50</td><td>15.75</td></tr></tbody></table>	Gear type	Resolution (pulses/mm)	10	3.15	30	9.45	50	15.75
	Gear type	Resolution (pulses/mm)									
10	3.15										
30	9.45										
50	15.75										
White	GND										



3. With Potentiometer (POT) absolute positioning feedback

	Wire color	Definition	Descriptions																				
Power wires	Red	DC power	Connect red wire to “Vdc +” & black wire to “Vdc -“ of 12 or 24V DC power to extend the actuator. Switch the polarity of DC input to retract it.																				
	Black																						
Signal wires	Yellow	Vin	Input voltage 70V max.																				
	Blue	POT output	1. Potentiometer specification: - 10K ohm, 10 turns. - Total resistance tolerance $\pm 5\%$ - Independent linearity $\pm 0.25\%$ 2. Output voltage: The voltage (resistance) between Blue and White increases linearly from about 0 when the actuator extends, and decreases when it retracts.  3. There are different resolutions according to the stroke length (as table below) <table><thead><tr><th>Stroke</th><th>Resistance (tolerance: $\pm 0.3K\Omega$)</th></tr></thead><tbody><tr><td>100mm</td><td>0.3 ~ 9.2 K</td></tr><tr><td>150mm</td><td>0.3 ~ 8.2 K</td></tr><tr><td>200mm</td><td>0.3 ~ 9.1 K</td></tr><tr><td>250mm</td><td>0.3 ~ 8.7 K</td></tr><tr><td>300mm</td><td>0.3 ~ 8.7 K</td></tr><tr><td>350mm</td><td>0.3 ~ 8.2 K</td></tr><tr><td>400mm</td><td>0.3 ~ 8.9 K</td></tr><tr><td>450mm</td><td>0.3 ~ 8.0 K</td></tr><tr><td>500mm</td><td>0.3 ~ 8.3 K</td></tr></tbody></table>	Stroke	Resistance (tolerance: $\pm 0.3K\Omega$)	100mm	0.3 ~ 9.2 K	150mm	0.3 ~ 8.2 K	200mm	0.3 ~ 9.1 K	250mm	0.3 ~ 8.7 K	300mm	0.3 ~ 8.7 K	350mm	0.3 ~ 8.2 K	400mm	0.3 ~ 8.9 K	450mm	0.3 ~ 8.0 K	500mm	0.3 ~ 8.3 K
	Stroke	Resistance (tolerance: $\pm 0.3K\Omega$)																					
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400mm	0.3 ~ 8.9 K																						
450mm	0.3 ~ 8.0 K																						
500mm	0.3 ~ 8.3 K																						
	White	GND																					



Ordering Key

		MK52- 24 - G3 - 50 - 100 - 1 1 0 H 0 9 3											
Input voltage	12: 12V DC 24: 24V DC												
Motor and Spindle type	G3: 4000rpm / Spindle pitch 3.175mm												
Gear ratio	10: 10:1 30: 30:1 50: 50:1												
Stroke	100: 100mm 350: 350mm 150: 150mm 400: 400mm 200: 200mm 450: 450mm 250: 250mm 500: 500mm 300: 300mm												
Front connector (Refer to Page 6)	1: Drilled hole, Ø10mm 8: Drilled hole, Ø8mm												
Rear connector (Refer to Page 6)	1: Aluminum alloy clevis, Ø10mm 8: Aluminum alloy clevis, Ø8mm												
Connector orientation (Refer to Page 6)	0: 0° (Standard) 9: 90°												
Positioning feedback	0: None P: Potentiometer (POT) H: 60V dual Hall effect sensors												
Reserved	0												
IP level	8: IPX8M 9: IP65/IP66, IP69K												
Cable length	3: 300mm straight 9: 900mm straight												

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