

Actuator MK60



MK60 features a similar appearance and load characteristics as FD60 with maximum push force of 6,000N. It adopts a more compact motor and operates quietly, making it a good value actuator. For care bed applications, MK60 is a competitive and good choice.

Features and Options

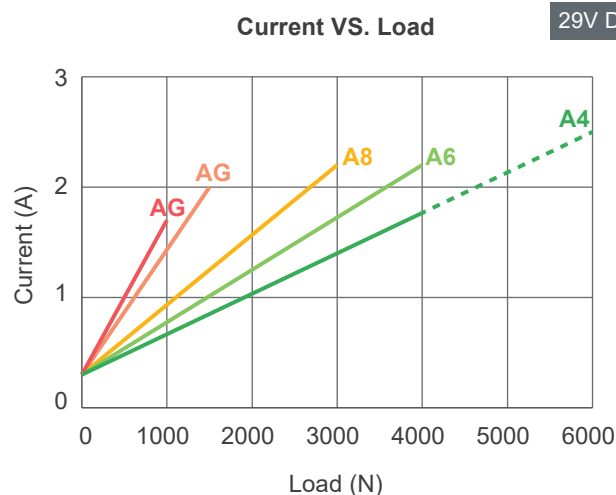
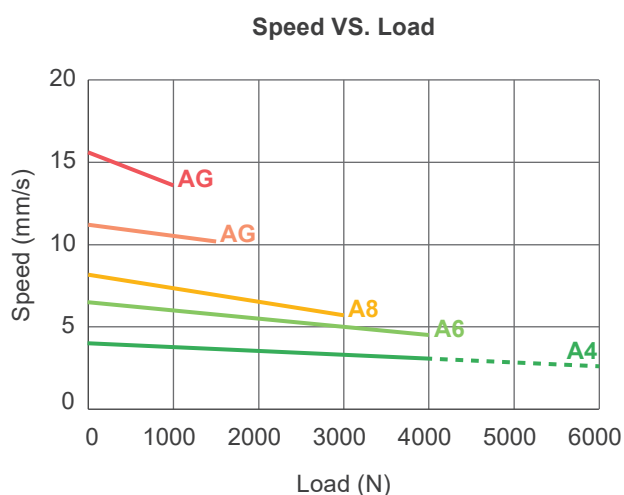
- Main application: Home care
- 24V Permanent-Magnet Brushed DC Motor
- Max. load: 6,000N (Push) / 4,000N (Pull)
- Max. speed at no load: 15.6mm/sec (16mm pitch)
- Speed at full load: 2.6mm/sec (4mm pitch @6,000N loaded)
- Stroke: 50~300mm
- Noise level: ≤ 50 dB
- IP level: IP42 (static; non-action)
- Preset limit switches: When the actuator is stopped at either end of the limit switch position, the self-locking ability by motor short-circuit is not supported. However, when stopped at any other position in the middle, the motor short-circuit could be supported for self-locking (depending on control).
- Positioning: Optional digital positioning feedback with dual Hall effect sensors
- Optional mechanical push only extension tube
- Optional mechanical brake (can brake to the maximum push-pull force of the selected motor type)

Usages

- Duty cycle: 20%, max. 2 min. continuous operation in 10 min.
- Operating ambient temperature: $+5^{\circ}\text{C} \sim +40^{\circ}\text{C}$
- Storage ambient temperature: $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$
- Relative humidity: Full performance from 20%~80% - non-condensing
- Atmospheric pressure: 71 kPa~101.3 kPa
- Height above mean sea level: Max. 3,000 meters

Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Self-locking ability (N) ⁽¹⁾	Typical speed (mm/s) @29V DC ⁽²⁾		Typical current (A) @29V DC ⁽²⁾	
				No load	Full load	No load	Full load
MK60-24 A4 -XXX.XXX...	6000	4000	6000	4.0	2.6	0.3	2.5
MK60-24 A6 -XXX.XXX...	4000	4000	4000	6.5	4.5	0.3	2.2
MK60-24 A8 -XXX.XXX...	3000	3000	3000	8.2	5.7	0.3	2.2
MK60-24 AC -XXX.XXX...	1500	1500	1500	11.2	10.2	0.3	2.0
MK60-24 AG -XXX.XXX...	1000	1000	1000	15.6	13.6	0.3	1.7



Push / Pull load — Push load - - -

Notes:

⁽¹⁾ The self-locking ability is performed by short circuit the motor terminals when the actuator is powered off. All MOTECK compatible control boxes are designed with this feature. Mechanical brake in push direction is available upon request, to further enhance the self-locking ability to maximum load.

⁽²⁾ 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 MK60 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

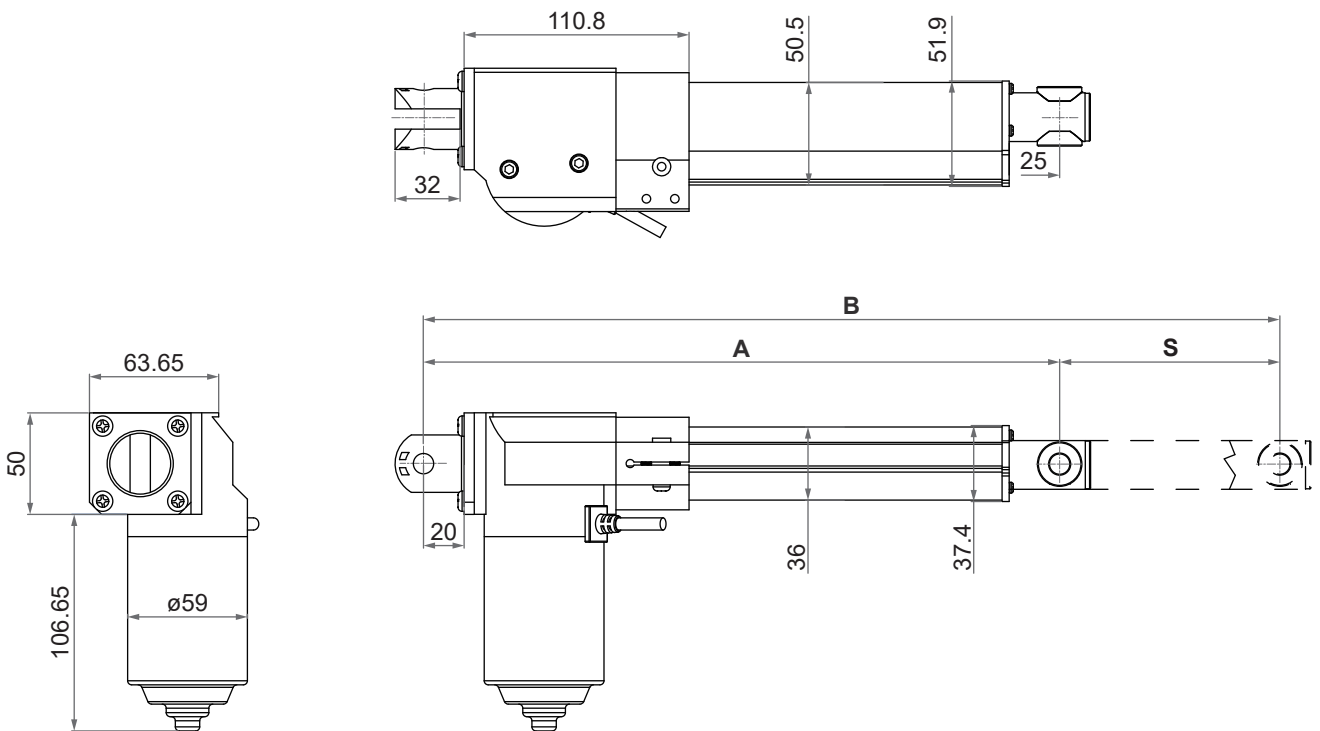
1. Installation dimension

- Available stroke (S) range = 50~300mm (±3mm)
- Retracted length (A)

Front connector code Rear connector code	1, 5, 8	2, 3, 7
1, 2	$A \geq S + 188\text{mm} (\pm 3\text{mm})$	$A \geq S + 160\text{mm} (\pm 3\text{mm})$
5 (with crank function)	$A \geq S + 198\text{mm} (\pm 3\text{mm})$	$A \geq S + 170\text{mm} (\pm 3\text{mm})$

- $S \geq 301\text{mm}$, please consult MOTECK sales representative for feasibility and the available.
- Extended length (B) = Retracted length (A) + Stroke (S)

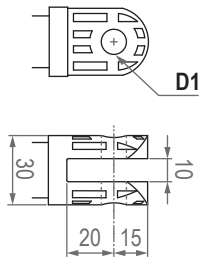
2. Drawing



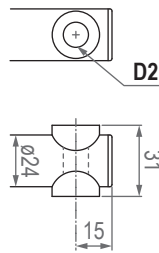
Unit: mm

3. Front connector type

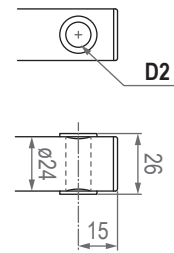
1=Plastic



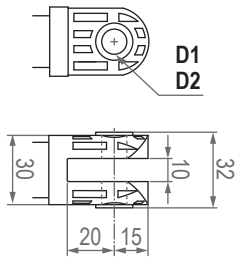
2=Brass bushing



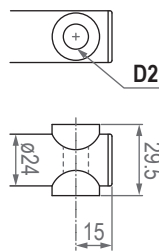
3=Drilled hole



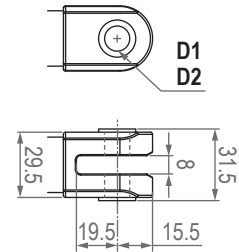
5=Metal



7=Plastic bushing



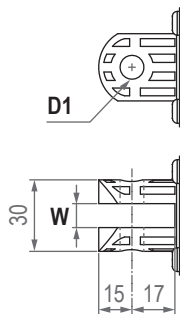
8=Enhanced metal



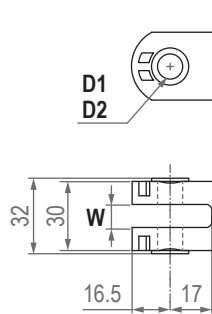
Front connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)
1	ø8, ø10, ø12	N/A
2	N/A	ø10
3	N/A	ø8, ø10
5	ø8, ø10, ø12	ø8, ø10
7	N/A	ø10
8	ø10, ø12	ø8, ø10

4. Rear connector type

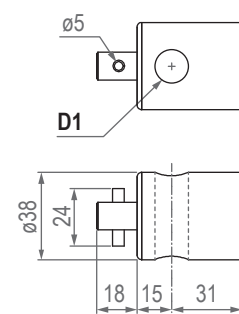
1=Plastic



2=Metal



5=Metal (with crank function)

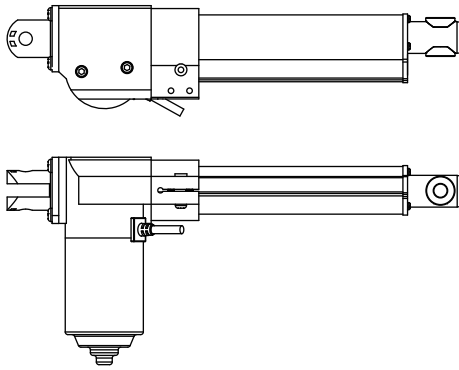


Rear connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)	Slot width (W)
1	ø8, ø10, ø12	N/A	6, 10
2	ø8, ø10, ø12	ø8, ø10	6, 10
5	ø14.5	N/A	N/A

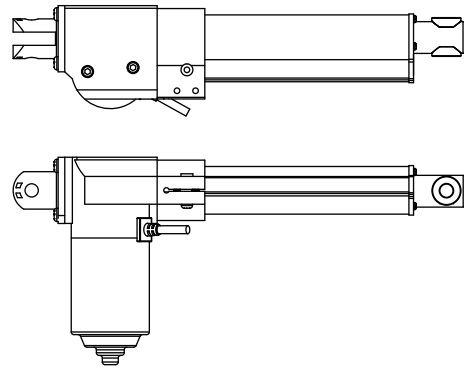
Unit: mm

5. Pivot orientation of rear connectors

0=0° (standard)



9=90°



Compatibility

Product	Model	Application condition ⁽¹⁾	MK60 spec
Control box	T-control, CS1, CS2, CB3T, CBT2	• 29V DC output • Max. 3A current per channel	• Without positioning sensor • With Moteck F-type DIN plug
	CB3T-SY	• 29V DC output • Max. $\leq 5A$ current 2 channels	• With dual Hall effect sensors for positioning • With Moteck F-type DIN plug
Hand control	Depend on control box		• Powered by control box
	HS15, H2B, H2G		• With Moteck S-type DIN 41529 male plug ⁽¹⁾

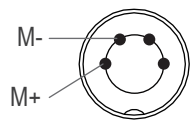
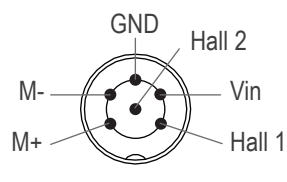
Notes:

⁽¹⁾ If the current limit of the selected control box is lower than the typical current of the actuator model under full load, the actuator could not be operated in full performance.

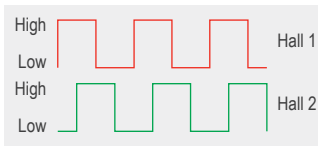
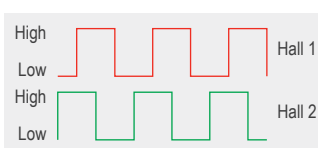
⁽²⁾ The S-type DIN 41529 plug of the actuator is connected to the hand control directly, no control box.

Cable Plug

• Connecting control devices that provide power

	Without positioning feedback	Positioning feedback with dual Hall effect sensors
 Moteck F-type DIN male plug	 4p2c	 6p6c
 Moteck S-type DIN 41529 male plug	 2p2c	N/A

Note: Pin definition

	Definition	Descriptions												
Power	M+	Connect M+ to “Vdc +” & M- to “Vdc -” of DC power to extend the actuator. Switch the polarity of DC input to retract it.												
	M-													
Signal	Vin	Voltage input range: 5~20V												
	Hall 1 output	High= Input - 1.2V (±0.6V) Low= GND Hall signal data: Actuator extends  Actuator retracts 												
	Hall 2 output	Hall effect sensor resolution: <table><tr><th>Model No.</th><th>Resolution (Pulses/mm)</th></tr><tr><td>MK60-24A4-XXX.XXX-XXXHXXXX</td><td>10.0</td></tr><tr><td>MK60-24A6-XXX.XXX-XXXHXXXX</td><td>6.67</td></tr><tr><td>MK60-24A8-XXX.XXX-XXXHXXXX</td><td>5.0</td></tr><tr><td>MK60-24AC-XXX.XXX-XXXHXXXX</td><td>3.33</td></tr><tr><td>MK60-24AG-XXX.XXX-XXXHXXXX</td><td>2.5</td></tr></table>	Model No.	Resolution (Pulses/mm)	MK60-24A4-XXX.XXX-XXXHXXXX	10.0	MK60-24A6-XXX.XXX-XXXHXXXX	6.67	MK60-24A8-XXX.XXX-XXXHXXXX	5.0	MK60-24AC-XXX.XXX-XXXHXXXX	3.33	MK60-24AG-XXX.XXX-XXXHXXXX	2.5
	Model No.	Resolution (Pulses/mm)												
MK60-24A4-XXX.XXX-XXXHXXXX	10.0													
MK60-24A6-XXX.XXX-XXXHXXXX	6.67													
MK60-24A8-XXX.XXX-XXXHXXXX	5.0													
MK60-24AC-XXX.XXX-XXXHXXXX	3.33													
MK60-24AG-XXX.XXX-XXXHXXXX	2.5													
GND														

Ordering Key

		MK60-24 A8-190-240-110H0001											
Voltage	24: 24V DC												
Motor and Spindle type	A4: 2500rpm / 4mm pitch A6: 2500rpm / 6mm pitch A8: 2500rpm / 8mm pitch AC: 2500rpm / 12mm pitch AG: 2500rpm / 16mm pitch												
Retracted length (Refer to page 4)	XXX												
Extended length (Refer to page 4)	XXX												
Front connector type (Refer to page 5)	1: Plastic 2: Brass bushing 3: Drilled hole 5: Metal 7: Plastic bushing 8: Enhanced metal												
Rear connector type (Refer to page 5)	1: Plastic 2: Metal 5: Metal (with crank function)												
Pivot orientation of rear connectors (Refer to page 6)	0: 0° (Standard) 9: 90°												
Positioning feedback	0: None H: Hall effect sensor x2												
Reserved	0												
Option	0: None 1: Mechanical push only extension tube												
Mechanical brake	0: None 1: Mechanical brake												
Cable length	0: 300mm straight 1: 1000mm straight A: 450mm with 300mm coiled												

Terms of Use

The user is responsible for application suitability of Moteck products. As ongoing improvement process continues, products listed on the Moteck website are subject to change without prior notice. Moteck reserves the right to terminate the sales or remove any product displayed on the website, or listed in its catalogues.