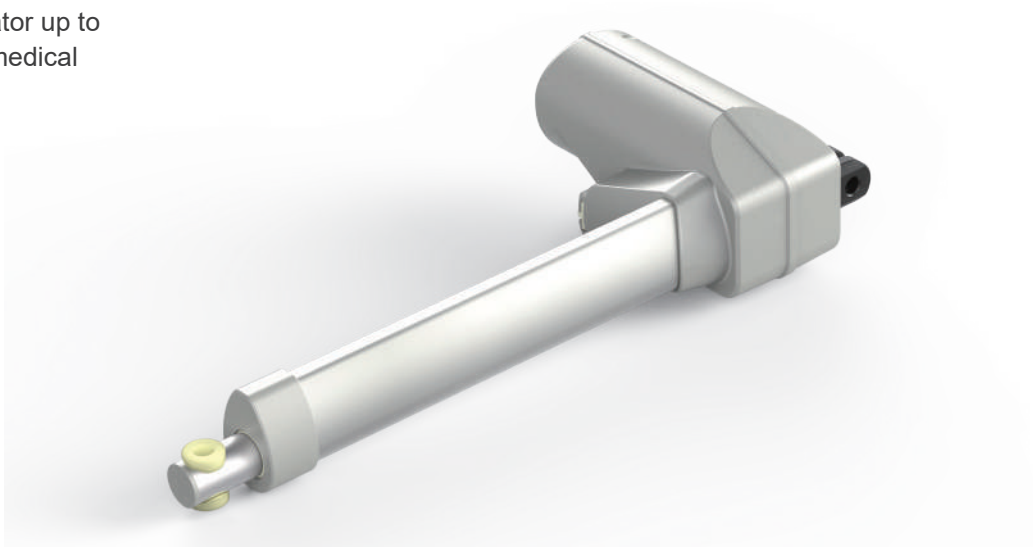


Actuator

MK31

MK31 is a quiet and powerful actuator up to 6000N thrust, designed for use in medical bed application.



Features and Options

Main applications: Medical, home care

Standard features:

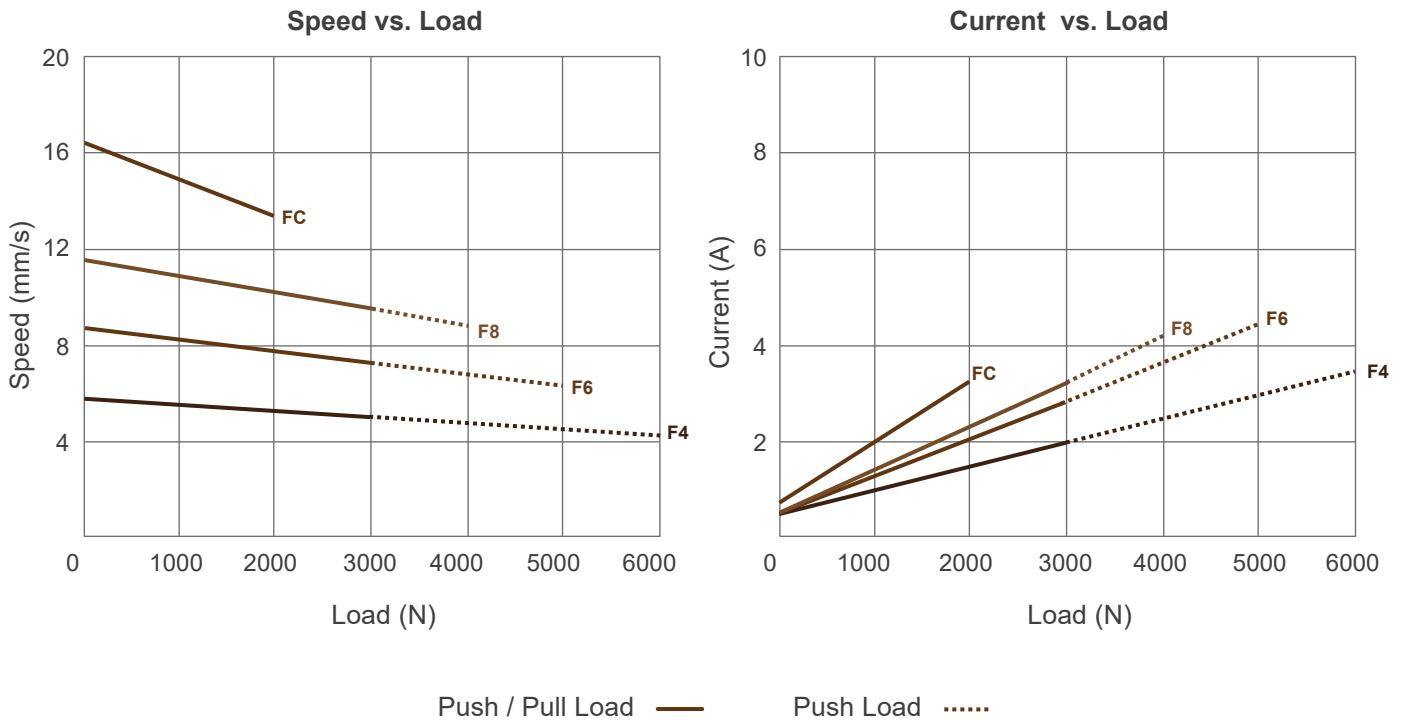
- Input voltage: 24V DC
- Max. load: 6000N (Push) / 3000N (Pull)
- Self-locking ability: 6000N
- Typical speed at no load: 5.8mm/sec
- Typical speed at full load: 4.4mm/sec (6000N load)
- Stroke: 50 ~ 400mm
- Noise level: ≤ 50 dB
- IP level: IPX6 (static, non-action)
- Preset limit switches
- Aluminum outer tube
- Detachable cable plug (Refer to p.7)
- Color: Light gray RAL 7035
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature: +5°C ~ +40°C
- Storage ambient temperature: -25°C ~ +65°C
- Certified: CE Marking, EN 60601-1, EN 60601-1-2, BS EN 60601-1-2, IEC 60601-1-2

Options:

- Positioning signal feedback with Hall effect sensor x 2
- Safety nut (in push direction)
- Mechanical push only extension tube

Performance Data

Model No.	Push Max.(N)	Pull Max.(N)	*Self-locking ability (N)	**Typical Speed (mm/s)		**Typical Current (A)	
				No load	Full load	No load	Full load
MK31-24F4...	6000	3000	6000	5.8	4.4	0.5	3.4
MK31-24F6...	5000	3000	5000	8.8	6.2	0.5	4.4
MK31-24F8...	4000	3000	4000	11.7	8.9	0.5	4.2
MK31-24FC...	2000	2000	2000	16.4	13.3	0.7	3.2



Remarks:

* The self-locking ability is performed by short circuit the motor terminals when the actuator is stopped. All MOTECK compatible control boxes are designed with this feature.

** The typical speed or typical current means the average value neither upper limit nor lower limit. 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 MK31 can reach about 3 times of the typical current under the actuator 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.

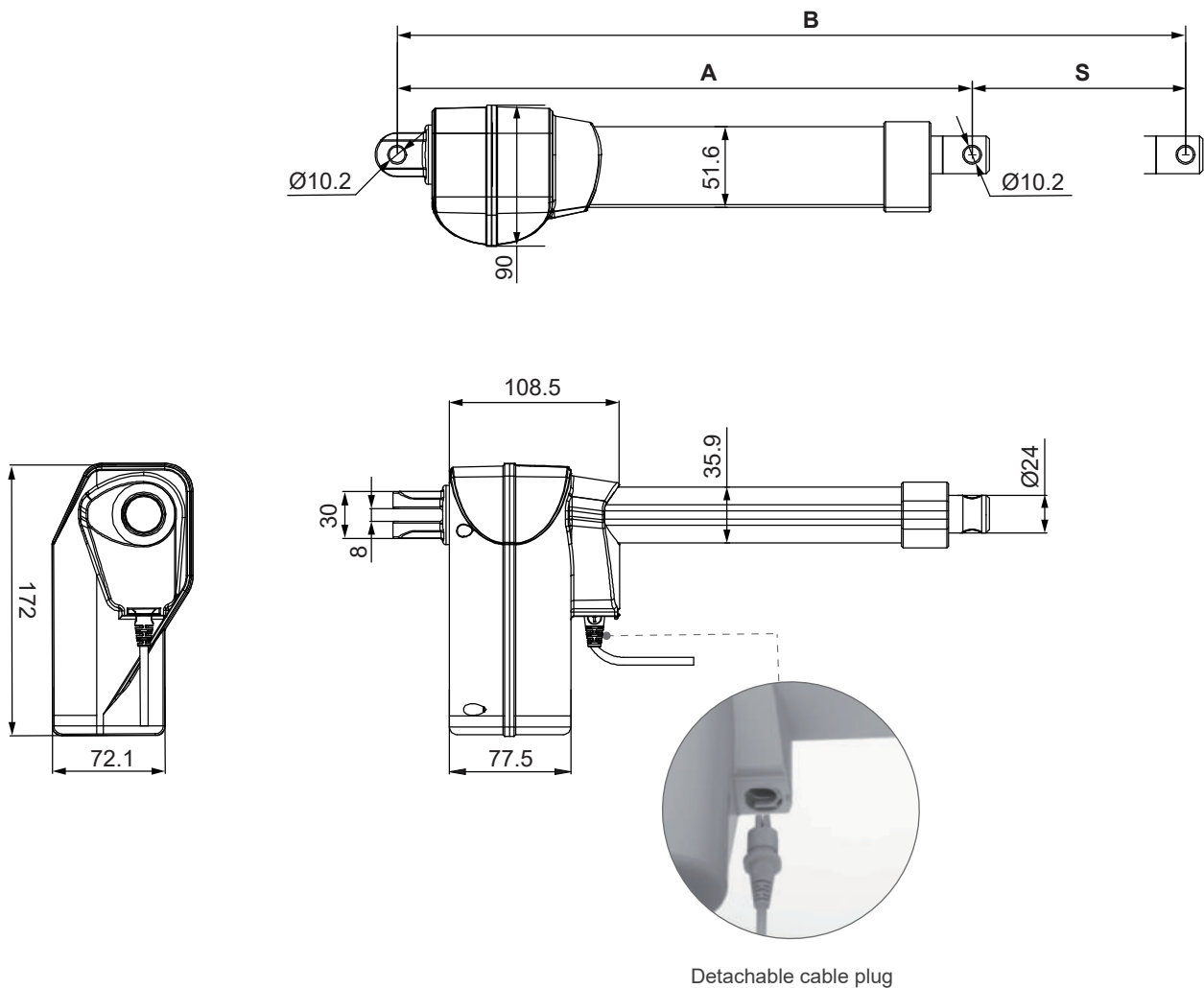
Dimensions

- Available stroke (S) range = 50 ~ 400mm
- Retracted length (A) $\geq 170+S+L+D$ (mm)

Unit: mm

Stroke	L
$50 \leq S \leq 300$	0
$301 \leq S \leq 350$	20
$351 \leq S \leq 400$	35
Safety option	D
0, P	0
S, A	8

- $S \geq 401$ mm, Please consult MOTECK sales representative for feasibility and the available retracted length.
- Extended length (B) = Retracted length (A) + Stroke (S)



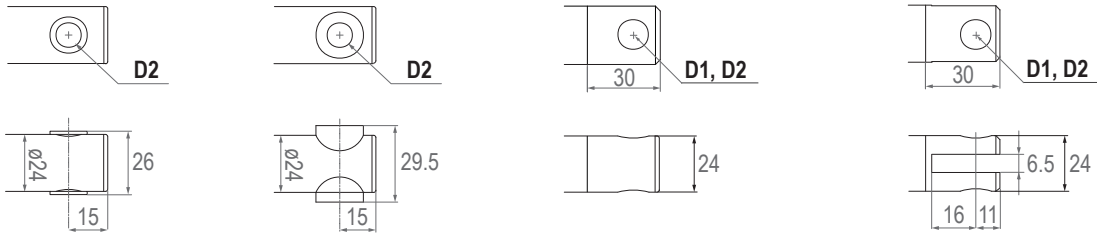
● **Front connector**

3 : Drilled hole

7 : Plastic bushing

C : Metal solid

D : Metal slot



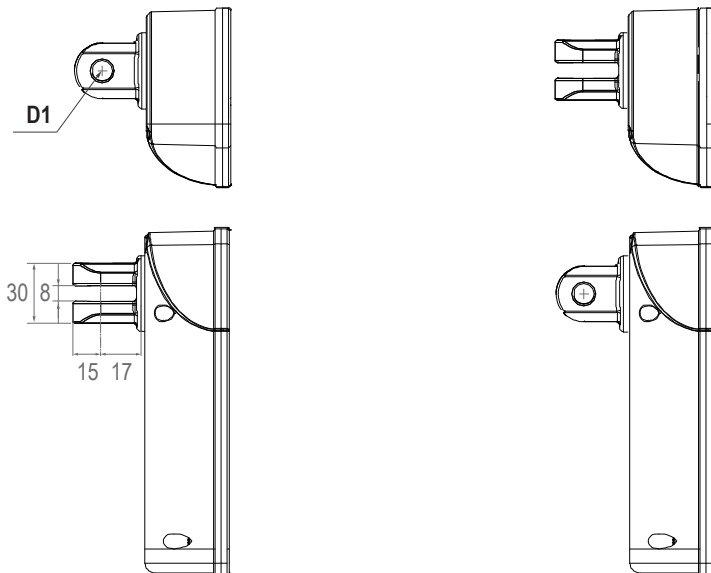
Front connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)
3	N/A	ø8, ø10
7	N/A	ø10
C	ø12	ø10
D	ø12	ø10

● **Rear connector**

1 : Plastic

0 : 0° (standard)

9 : 90°



Rear connector code	Diameter of pivot without bushing (D1)	Diameter of pivot with bushing (D2)
1	ø10	N/A

Compatibility

Product	Model	MK31 spec
Control box	MD6C-M	<ul style="list-style-type: none">• With dual Hall effect sensors for positioning• MOTECK H-type or V-type DIN plug
	CM45	<ul style="list-style-type: none">• MOTECK H-type DIN plug
	CM41-M*, CB5P-M	<ul style="list-style-type: none">• With dual Hall effect sensors for positioning• MOTECK LR-type minifit plug

Remarks:

* CM41-M control box can be attached to MK31 actuator.

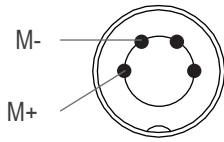


Cable Plug (Detachable)

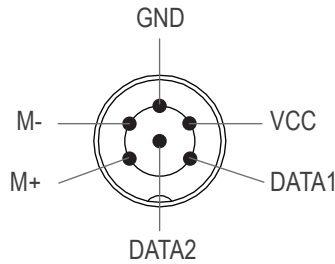
- **MOTECK H-type or V-type plug**

- Without positioning feedback

- With dual Hall effect sensors for positioning

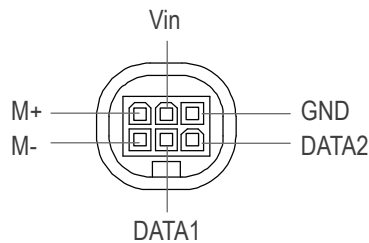


4-pin DIN plug

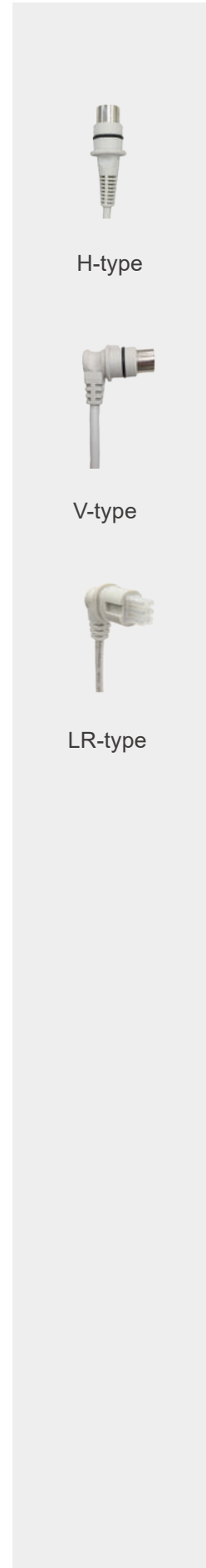


6-pin DIN plug

- **MOTECK LR-type plug**



6-pin minifit plug



- **Note:**

	Definition	Comments										
Power	M+	Connect blue wire to "Vdc +" & Brown wire to "Vdc -" of DC power to extend the actuator. Switch the polarity of DC input to retract it.										
	M-											
Signal	Vin	Voltage input range (Vin): 5 ~ 20V										
	Hall 1 output	High= Input - 1.2V (±0.6V) Low= GND Hall signal data: <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Actuator extends</p> </div> <div style="text-align: center;"> <p>Actuator retracts</p> </div> </div>										
	Hall 2 output	Hall effect sensor resolution: 10 pulses/mm <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Model No.</th> <th>Resolution (pulses/mm)</th> </tr> </thead> <tbody> <tr> <td>MK31-24F4-XXX.XXX-XXXXXXXX</td> <td>10.00</td> </tr> <tr> <td>MK31-24F6-XXX.XXX-XXXXXXXX</td> <td>3.33</td> </tr> <tr> <td>MK31-24F8-XXX.XXX-XXXXXXXX</td> <td>2.50</td> </tr> <tr> <td>MK31-24FC-XXX.XXX-XXXXXXXX</td> <td>0.83</td> </tr> </tbody> </table>	Model No.	Resolution (pulses/mm)	MK31-24F4-XXX.XXX-XXXXXXXX	10.00	MK31-24F6-XXX.XXX-XXXXXXXX	3.33	MK31-24F8-XXX.XXX-XXXXXXXX	2.50	MK31-24FC-XXX.XXX-XXXXXXXX	0.83
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MK31-24FC-XXX.XXX-XXXXXXXX	0.83											
GND												

Ordering Key

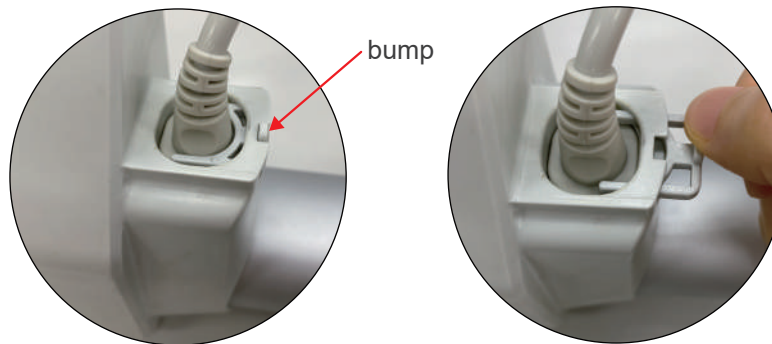
MK31-24 F4-220-270-3 1 0 0 0 0 0

Input voltage	24: 24V DC
Motor and Spindle type	F4: 3300rpm / 4mm pitch F6: 3300rpm / 6mm pitch F8: 3300rpm / 8mm pitch FC: 3300rpm / 12mm pitch
Retracted length	XXX <i>(refer to page 3)</i>
Extended length	XXX <i>(refer to page 3)</i>
Front connector	3: Drilled hole 7: Plastic bushing C: Metal solid D: Metal slot <i>(refer to page 4)</i>
Rear connector	1: Plastic <i>(refer to page 4)</i>
Pivot orientation of rear connector	0: 0° (standard) 9: 90°
Positioning feedback	0: None H: Hall effect sensor x 2
Safety option	0: None S: Safety nut P: Push only extension tube A: Safety nut + Push only
Reserved	0
Cable	0: 300mm straight 3: 1000mm straight A: 450mm with 300mm coiled

Install/Remove Cable Plug

- **Remove**

- Push the bump of the anti-pull clip outward to remove it

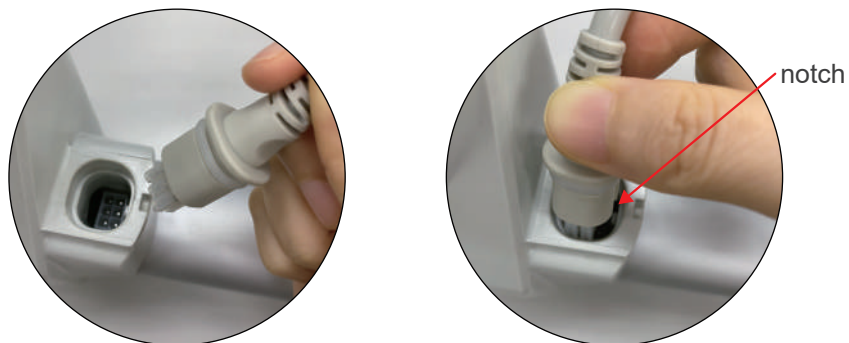


- Hold the motor and remove the cable plug



- **Install**

- Align the notch of the socket and insert the plug



- Put the anti-pull clip back to lock the plug

