

# ATTUATORI LINEARI

## LINEAR ACTUATORS



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**COMPONENTI CONTROLLI SISTEMI DI MOTO**

# INDUSTRIAL

**LD3**

**LD10**

**LD20**

**ID10**

**ID10S**

**ID11**

**ID12**

**ID13**

**ID18**

**IA05**

# Actuator LD3 /LD3Q



## Features

- ◆ LD3 features its compact design, which is suitable for various applications that require limited installation space, such as window opener and adjustable car driver seat. Quiet version, LD3Q, is available for applications that require compact size and quiet operation.
- ◆ Main applications : Industrial, homecare, furniture
- ◆ Input voltage : 24V DC / 12V DC
- ◆ Max. load : 1200N (push/pull)
- ◆ Max. current : 3.5 A @ 12V DC
- ◆ Max. speed : 44 mm/sec @ no load
- ◆ Stroke : 50~300 mm (other strokes are available)
- ◆ Duty cycle : 25% or 1 min continuous operation in 4 min.
- ◆ IP protection level : IP54
- ◆ Color : Aluminum grey
- ◆ Certified : EN 55014-1  
EN55014-2
- ◆ Noise level :  $\leq 70\text{dB}$  (Normal version) /  $\leq 55\text{dB}$  (Quiet version)
- ◆ Preset limit switches



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## Options

- ◆ IP65
- ◆ Single / dual Hall sensor
- ◆ Potentiometer

## Compatibility

### 1. Control Box

T-Control, CS1, CB3T, CB4M

### 2. Handset

HA, HC, HD, HF, HI, HJ, HK, HM, H3NT, TXH3+TXA4

### 3. Accessory

Clamp

Mounting bracket



Clamp

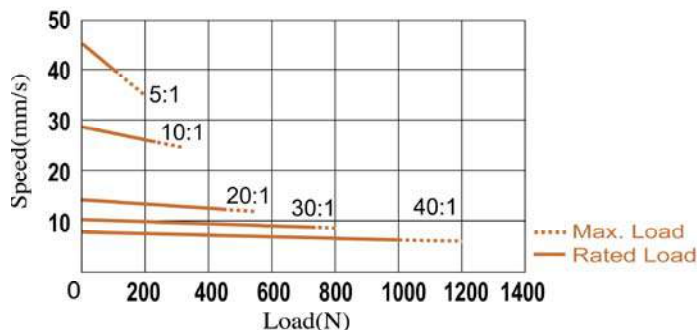


Mounting Bracket

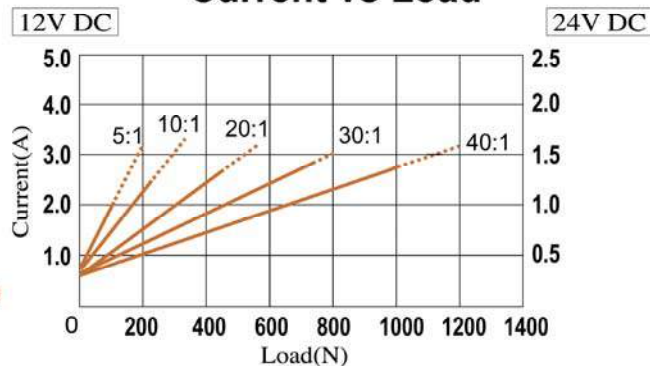
# Performance Data

## ◆ LD3

**Speed vs Load**



**Current vs Load**



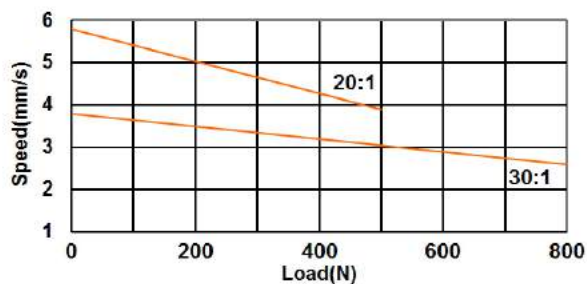
Model No.	Push/Pull Max. (N)	Speed (mm/s)		Current (A)			
		No load	Full load	No load		Full load	
				12V	24V	12V	24V
LD3-XX-05-(E6/K3)-XXX	150	43.9	40.0	0.8	0.4	2.0	1.0
LD3-XX-10-(E6/K3)-XXX	250	27.6	26.0	0.8	0.4	2.4	1.2
LD3-XX-20-(E6/K3)-XXX	500	14.6	13.5	0.8	0.4	2.6	1.3
LD3-XX-30-(E6/K3)-XXX	800	9.5	9.1	0.8	0.4	2.9	1.5
LD3-XX-40-(E6/K3)-XXX	1000	7.0	6.5	0.8	0.4	2.8	1.4

E6: 3000 RPM motor with 6mm dual threaded spindle

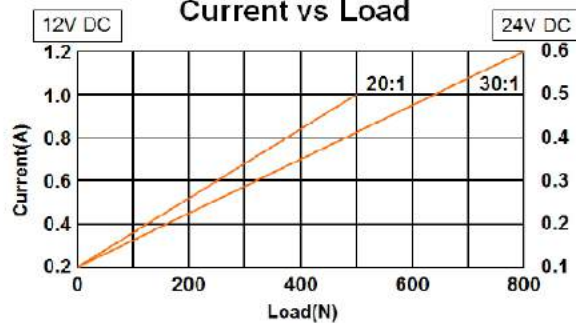
K3: 6000 RPM motor with 3mm single threaded spindle

## ◆ LD3Q

**Speed vs Load**



**Current vs Load**






Model No.	Push/Pull Max. (N)	Speed (mm/s)		Current (A)			
		No load	Full load	No load		Full load	
				12V	24V	12V	24V
LD3Q-XX-20-D3-XXX	500	5.8	3.9	0.2	0.1	1.0	0.5
LD3Q-XX-30-D3-XXX	800	3.8	2.6	0.2	0.1	1.2	0.6

D3: 2400 RPM motor with 3mm single threaded spindle

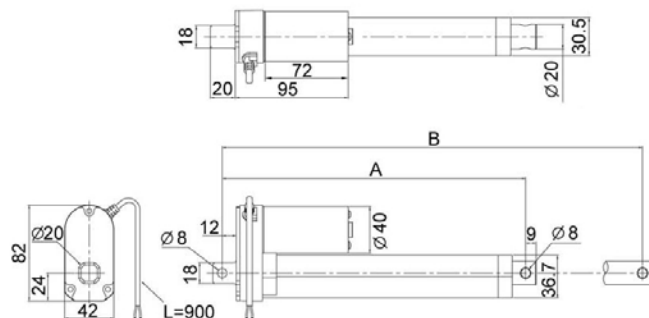
# Dimensions

## ◆ Standard type



	Stroke	50	100	150	200	250	300
 <b>C1x</b> Hole $\varnothing 8$	<b>A</b>	158	209	260	311	362	413
	<b>B</b>	208	309	410	511	612	713
 <b>C2x</b> Plastic Connector	<b>A</b>	199	250	301	352	403	454
	<b>B</b>	249	350	451	552	653	754

Unit : mm

A: Retracted Length  
B: Extended Length  
Stroke = B - A

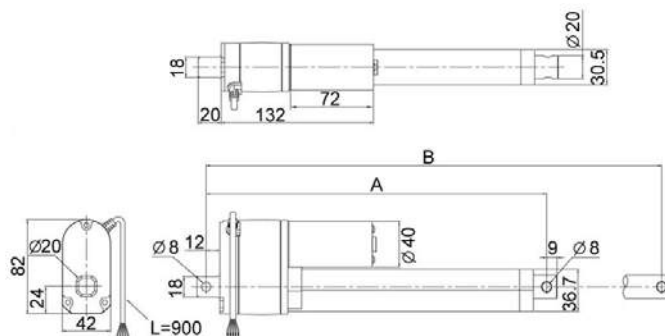


## ◆ POT type





	Stroke	50	100	150	200	250	300
 <b>C1x</b> Hole $\varnothing 8$	A	195	246	297	348	399	450
	B	245	346	447	548	649	750
 <b>C2x</b> Plastic Connector	A	236	287	338	389	440	491
	B	286	387	488	589	690	791

Unit : mm

A: Retracted Length  
B: Extended Length  
Stroke = B - A

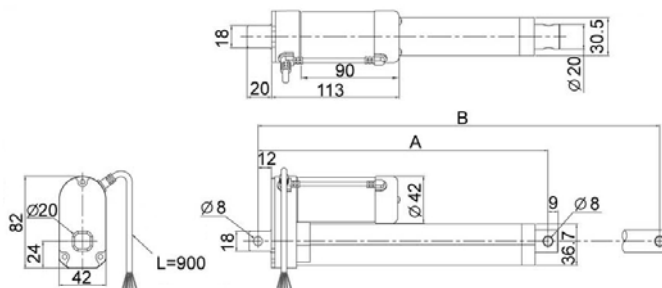


## ◆ Hall sensor type

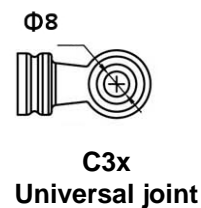
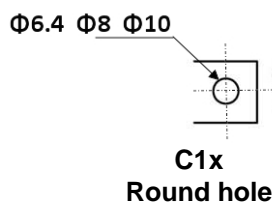
	Stroke	50	100	150	200	250	300
 C1x Hole $\varnothing 8$  C2x Plastic Connector	A	158	209	260	311	362	413
	B	208	309	410	511	612	713
 C3x Universal Joint	A	199	250	301	352	403	454
	B	249	350	451	552	653	754

Unit : mm

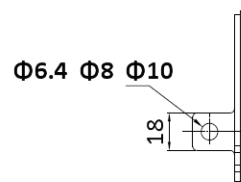
A: Retracted Length  
B: Extended Length  
Stroke = B - A



## ◆ Front connector

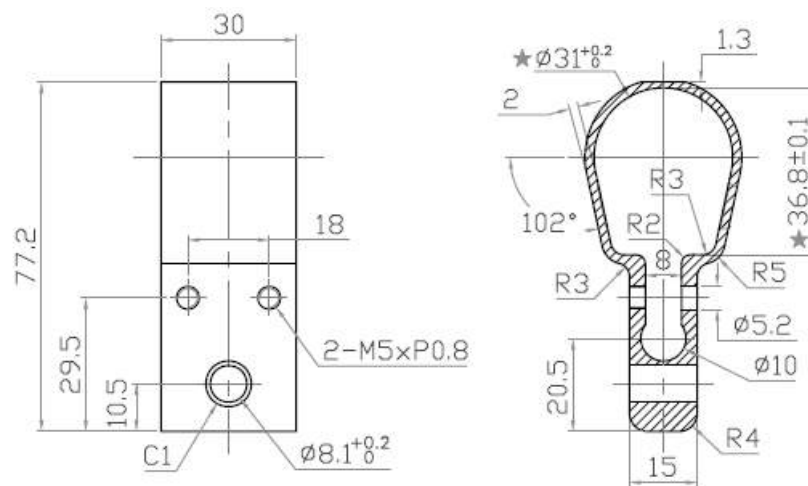


◆ Rear connector

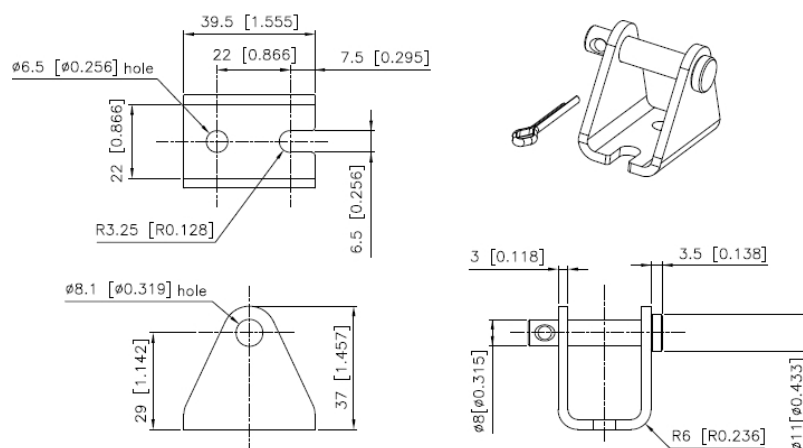


**Cx1**  
Round hole

◆ Clamp



◆ Mounting bracket



# Ordering Key

LD3 — ☐ ☐ — ☐ ☐ — ☐ ☐ — ☐ ☐ ☐ — c ☐ ☐ — ☐ ☐ ☐ ☐ ☐ ☐

LD3Q

## Type

Q : quiet

## Input Voltage

12 : 12V DC

24 : 24V DC

## Gear Ratio

05 : 5:1

10 : 10:1

20 : 20:1 (including LD3Q)

30 : 30:1 (including LD3Q)

40 : 40:1

## Motor and Spindle Type

G3 : 4500rpm, pitch=3mm, single thread

E6 : 3000rpm, pitch=6mm, double thread

K3 : 6000rpm, pitch=3mm, single thread

D3 : 2400rpm, pitch=3mm, single thread (only LD3Q)

## Stroke

050 : 50mm

100 : 100mm

150 : 150mm

200 : 200mm

250 : 250mm

300 : 300mm

## Front Connector

1 : Round hole

2 : Plastic

3 : Universal joint

## Rear Connector

1 : Round hole

## Option

HS1/HS2 : Single / dual Hall sensor (external type)

POT : Potentiometer

54 / 65 : IP54 / IP65

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# Actuator

## LD10



### Features

- ◆ LD10 is in-line design, compact and powerful. This linear and compact design makes LD10 is well suited for use in industrial application where installation space is limited.
- ◆ Main applications : industrial automation
- ◆ Input voltage : 24V DC / 12V DC
- ◆ Max. load : 1000N (push/pull) @ 24V DC
- ◆ Max. current : 3.8A @ 24V DC
- ◆ Max. speed : 18 mm/sec @ no load
- ◆ Stroke : 50~300 mm (other stroke available)
- ◆ Duty cycle : 10% or 2 min continuous operation in 18 min.
- ◆ IP protection level : IPX4
- ◆ Color : Black
- ◆ Noise Level :  $\leq 65$ dB
- ◆ Preset limit switches

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## Options

- ◆ Straight Cable / Spiral Cable
- ◆ Connector: F type Din plug (4pin) / Round and Flat plug (2pin)

## Compatibility

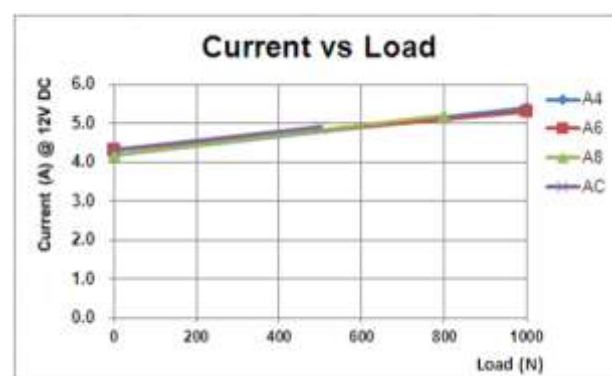
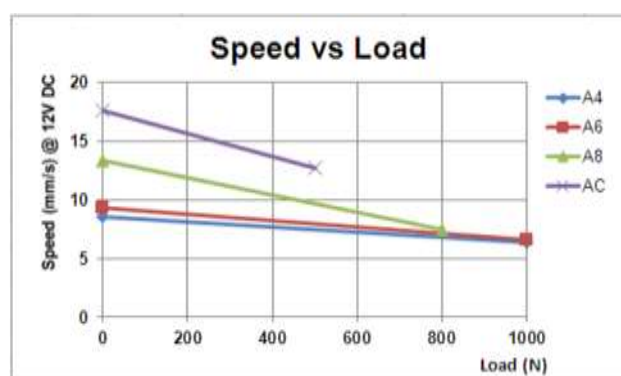
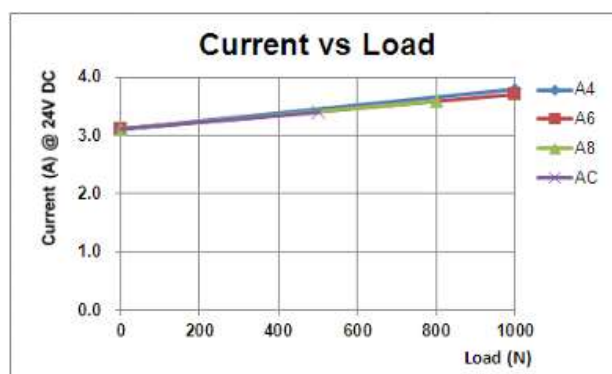
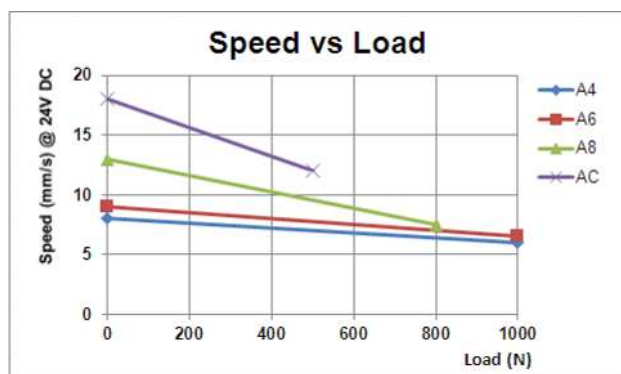
### 1. Handset

HD, HT, H2N, RF TX

### 2. Control box

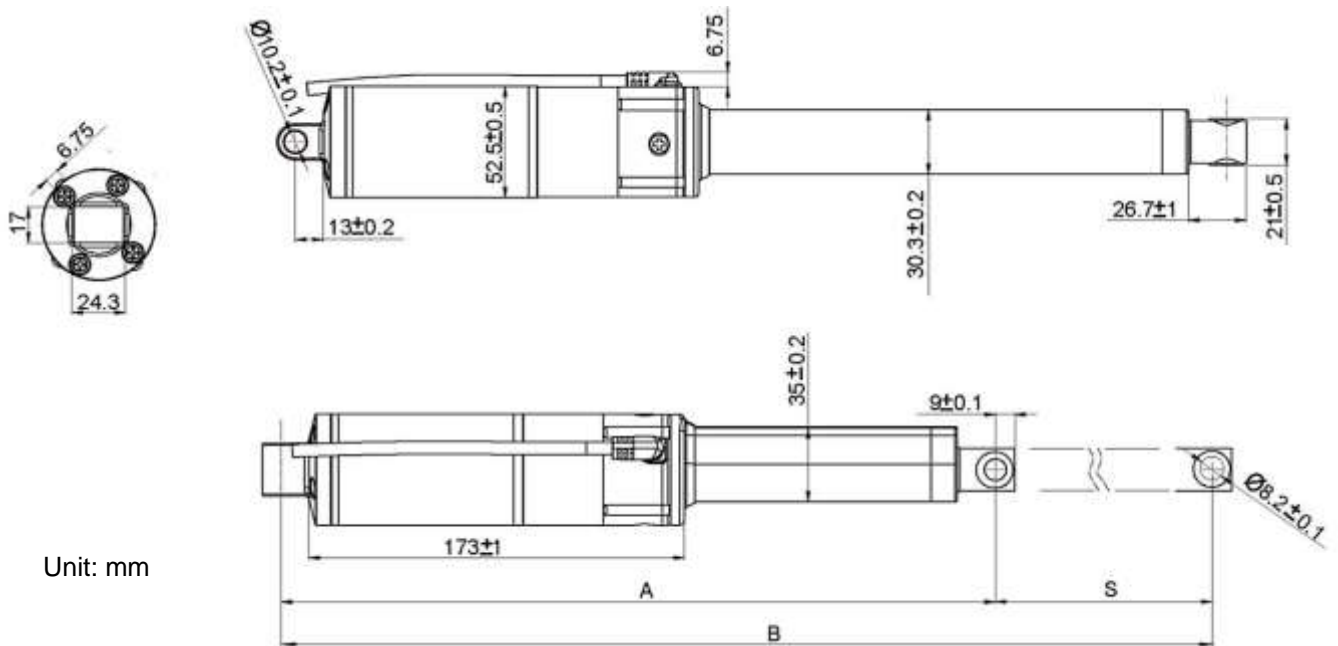
T-control box, CB3T

# Performance Data



Model No.	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A)			
			No load	Full load	No load		Full load	
					12V	24V	12V	24V
LD10-XX-A4-16-XXX.XXX-CXX	1000	1000	8	6	4.2	3.1	5.4	3.8
LD10-XX-A6-16-XXX.XXX-CXX	1000	1000	9	6.5	4.3	3.1	5.3	3.7
LD10-XX-A8-16-XXX.XXX-CXX	800	800	13	7.5	4.2	3.1	5.2	3.6
LD10-XX-AC-16-XXX.XXX-CXX	500	500	18	12	4.3	3.1	4.9	3.4

# Dimension



## ◆ Front Connector



**C1x**

Plastic



**C3x**

Round hole



**C9x**

Universal joint



**CAx**

Aluminum+  
bushing



**CBx**

Round hole+  
bushing

## ◆ Rear Connector



**Cx6**

Plastic

## ◆ Available stroke (S) range = 50~300mm

## ◆ Retracted length (A)

Front connector = C1x, C3x, CBx  $\geq$  stroke + 256mm

Front connector = C9x  $\geq$  stroke + 282mm

Front connector = CAx  $\geq$  stroke + 265mm

## ◆ Extended length (B) = S+A

# Ordering Key

LD10—□□—□□—16—□□□.□□□—C□□

**Type**

**Input Voltage**  
12 : 12V DC  
24 : 24V DC

**Motor and Spindle Type**  
A4 (Refer to Performance Data)  
A6  
A8  
AC

**Gear Ratio**

**A : Retracted Length**

**B : Extended Length**

**Front Connector**  
1 : Plastic  
3 : Round hole  
9 : Universal joint  
A : Aluminum+ bushing  
B : Round hole+ bushing

**Rear Connector**  
6 : Plastic

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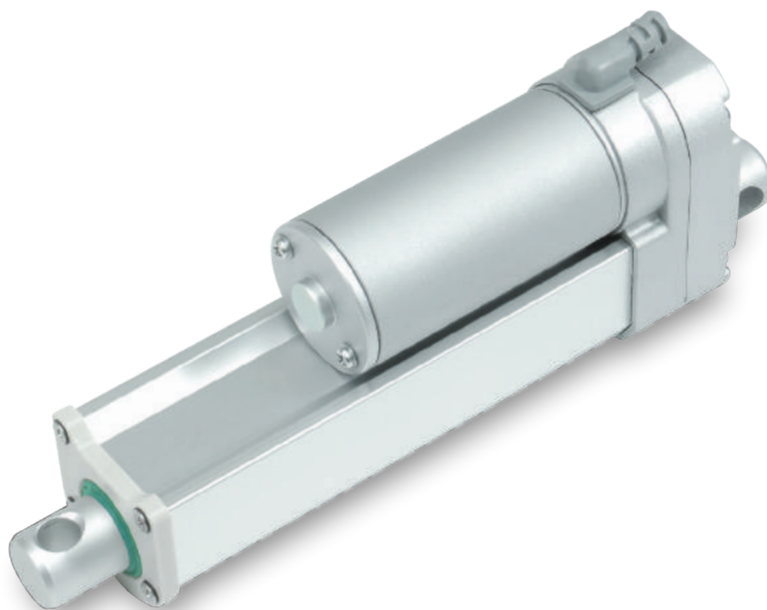
MO-IND-2-T-001-140513A



# Actuator

## LD20

LD20 is a compact actuator with high load capability which is designed for use in industrial, homecare and furniture. It's an ideal solution for the applications where installation space is limited, such as window opener or adjustable car driver seat.



### Feature

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- Main applications: Industrial, homecare, furniture
- Input voltage: 24V DC / 12V DC
- Max. load: 2500N (push / pull)
- Max. speed at no load: 27 mm/sec
- Max. speed at full load: 4.4 mm/sec @ 2500N
- Stroke: 100 ~ 300 mm (Max. 300 mm)
- Max. current: 4.6A @ 12V DC
- Noise level:  $\leq 70$ dB
- IP Protection level: IP65
- Color: Aluminum grey
- Preset limit switches
- Duty cycle: 25%, max. 1 min continuous operation in 4 min.
- Ambient operation temperature: -25°C ~ +65°C
- Certified: CE marking, EMC Directive 2014/30/EU

### Option

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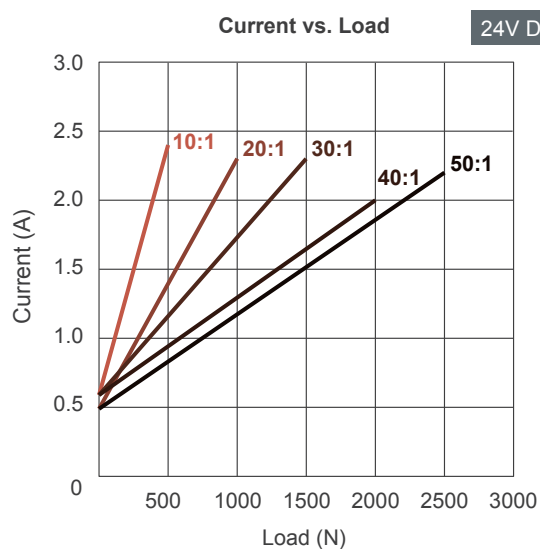
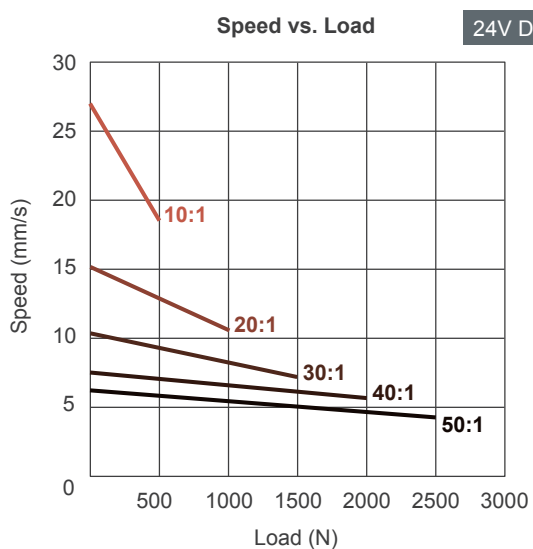
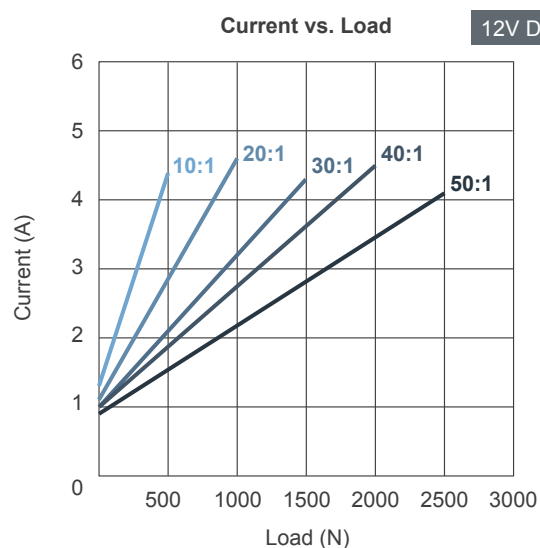
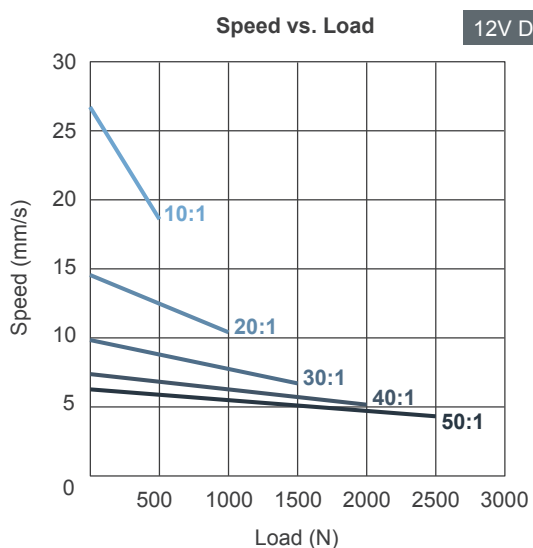
- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Analog positioning feedback with Potentiometer (POT)
- Mounting bracket

## Compatibility

Product	Model	LD20 spec
Control box	T control, CS1, CS2, CB3T, CB4M, CBT2	Without positioning sensor feedback 4-pin MOTECK F type DIN plug
	CB3T-SY, CB4M-S, CB4M-B	Positioning feedback with Hall effect sensor x 2 6-pin MOTECK F type DIN plug

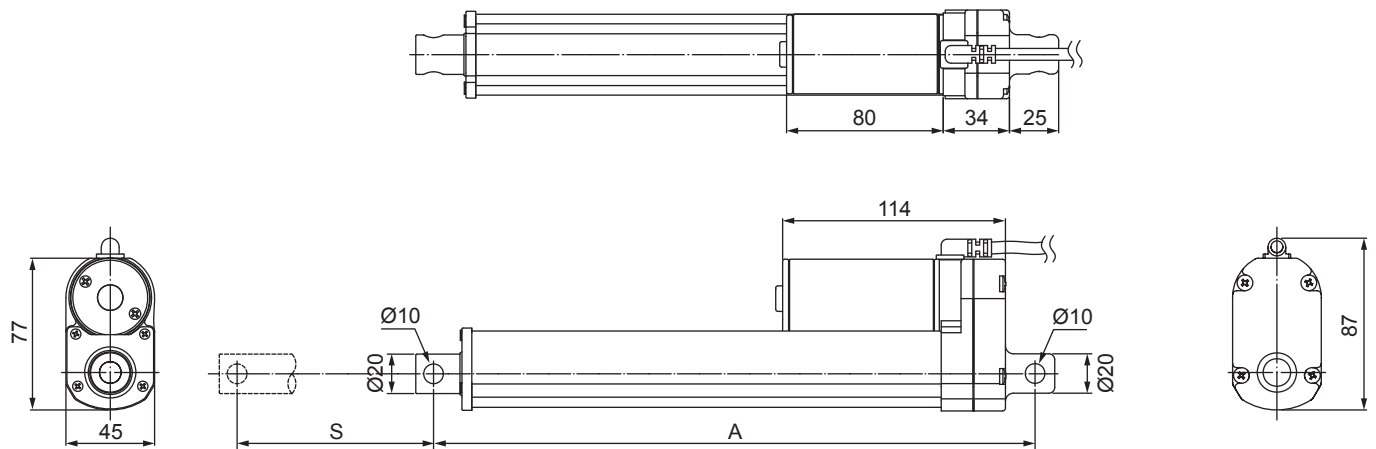
## Performance Data

Model No.	Gear Ratio	Push / Pull Max. (N)	Speed (mm/s)				Current (A)			
			No load		Full load		No load		Full load	
			12V	24V	12V	24V	12V	24V	12V	24V
LD20-XX-10-G4-X.....	10:1	500	26.8	27.0	18.6	18.7	1.3	0.6	4.4	2.4
LD20-XX-20-G4-X.....	20:1	1000	14.7	15.1	10.4	10.7	1.1	0.5	4.6	2.3
LD20-XX-30-G4-X.....	30:1	1500	9.9	10.3	6.8	7.2	1.0	0.6	4.3	2.3
LD20-XX-40-G4-X.....	40:1	2000	7.4	7.6	5.1	5.7	1.0	0.6	4.5	2.0
LD20-XX-50-G4-X.....	50:1	2500	6.2	6.1	4.4	4.4	0.9	0.5	4.1	2.2

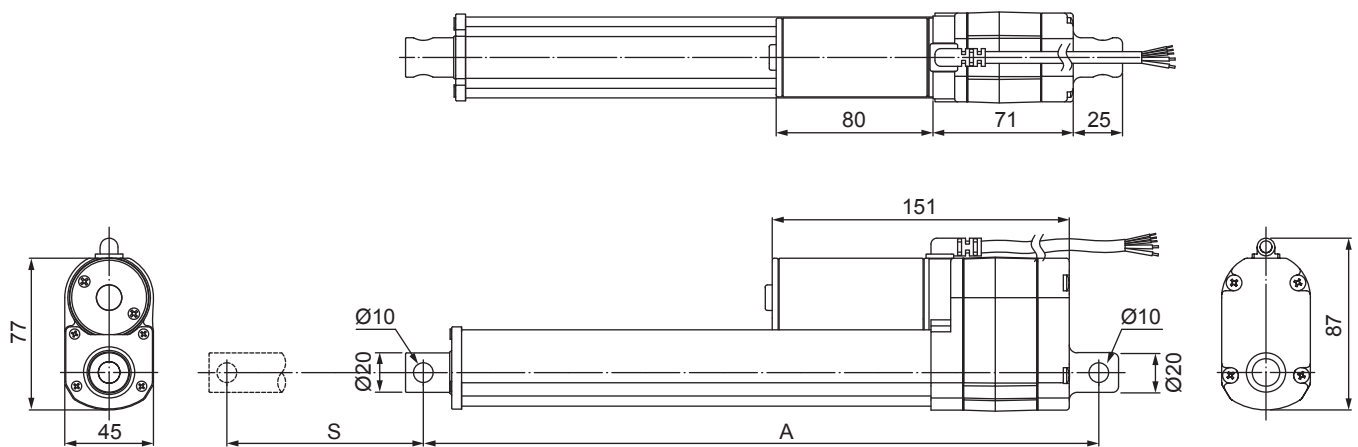


## Dimensions

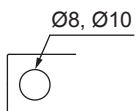
Standard					
Stroke (S)	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")
Retracted Length (A)	205	255	305	355	405



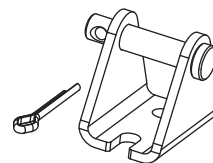
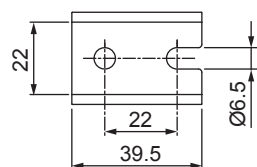
With Potentiometer (POT)					
Stroke (S)	100 (4")	150 (6")	200 (8")	250 (10")	300 (12")
Retracted Length (A)	242	292	342	392	442



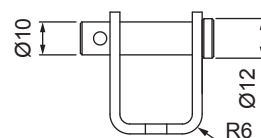
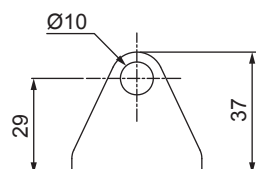
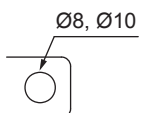
### Front connector



### Mounting bracket

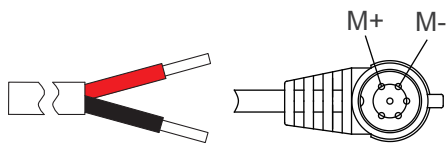


### Rear connector



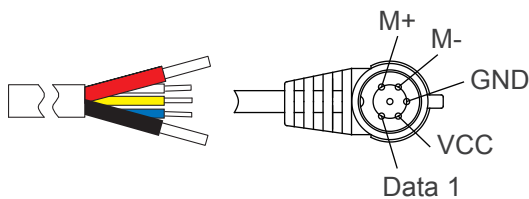
## Wiring & Cable plug

### Standard



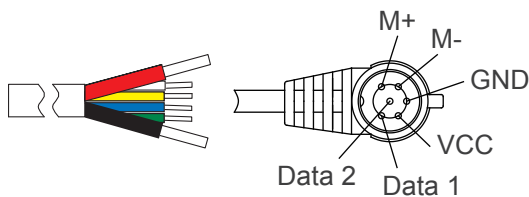
Power	
Red	Black
M+	M-

### With Hall effect sensor x 1



Power		Signal		
Red	Black	White	Yellow	Blue
M+	M-	GND	VCC	Data 1

### With Hall effect sensor x 2

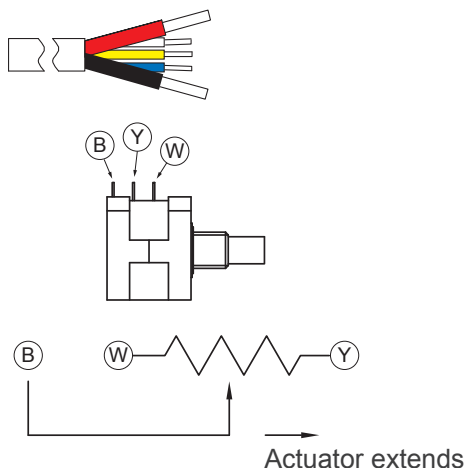


Power		Signal			
Red	Black	White	Yellow	Blue	Green
M+	M-	GND	VCC	Data 1	Data 2

Model No.	Resolution (pulses/mm)
LD20-XX-10-G4-XXX-XXXXXX	2.56
LD20-XX-20-G4-XXX-XXXXXX	4.75
LD20-XX-30-G4-XXX-XXXXXX	7.16
LD20-XX-40-G4-XXX-XXXXXX	9.66
LD20-XX-50-G4-XXX-XXXXXX	11.82

### With Potentiometer (POT)

The resistance value between blue and white wires increases when actuator extends, the resistance between blue and yellow wires decreases at the mean time.



Power		Signal		
Red	Black	White	Yellow	Blue
M+	M-	GND	VCC	Data

Stroke (mm)	Resistance (Tolerance: $\pm 0.3K\Omega$ )
100	0.3 ~ 8.8K
150	0.3 ~ 9.6K
200	0.3 ~ 8.9K
250	0.3 ~ 9.5K
300	0.3 ~ 9.5K

### \* Remarks:

Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

<b>LD20 - 24 - 20 - G4 - 100 - A A D 0 3</b>	
<b>Input voltage</b>	24: 24V DC 12: 12V DC
<b>Gear ratio</b>	10: 10:1 20: 20:1 30: 30:1 40: 40:1 50: 50:1
<b>Motor and Spindle type</b>	<b>G4</b> (Please refer to Performance Data)
<b>Stroke</b>	100: 100 mm 150: 150 mm 200: 200 mm 250: 250 mm 300: 300 mm
<b>Front connector</b>	1: Ø10 mm 8: Ø8 mm A: Mounting bracket, Ø10 mm (Refer to paragraph Dimensions)
<b>Rear connector</b>	1: Ø10 mm 8: Ø8 mm A: Mounting bracket, Ø10 mm (Refer to paragraph Dimensions)
<b>Positioning feedback</b>	0: None S: Hall effect sensor x 1 D: Hall effect sensor x 2 P: Potentiometer
<b>Reserved</b>	0: No meaning
<b>Cable length</b>	9: 900 mm 3: 300 mm

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# Actuator ID10



## Features

- ◆ ID10 features its heavy load capability and high speed design, which is suitable for various industrial applications requiring rapid movement, such as agricultural and construction machine. The adjustable limit cam is equipped for users to fine-tune the stroke based on their needs. Ball screw or ACME screw threaded spindle is available for users to choose.
- ◆ Main applications : Industrial
- ◆ Input voltage : 24V DC / 12V DC
- ◆ Max. rated load : 3,500N (ACME), 7,000N (Ball screw)
- ◆ Max. static load : 4,500N (ACME), 13,600N (Ball screw)
- ◆ Max. current : 26.4 A @ 12V DC
- ◆ Max. speed : 67.1 mm/sec @ no load
- ◆ Stroke : 102~610 mm
- ◆ Duty cycle : 25%, max 2 min continuous operation in 8 min.
- ◆ IP protection level : IP54
- ◆ Color : Black
- ◆ Certified : CE marking, EMC Directive 2014/30/EU
- ◆ Overload protection by clutch
- ◆ Power wire length : 250mm (with tinned wires)
- ◆ Operating temperature : -25°C~+65°C
- ◆ Extension tube material : Iron (ACME) or stainless steel (Ball screw)

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## Options

- ◆ Potentiometer (POT) analog positioning feedback
- ◆ IP65
- ◆ Adjustable limit switches (Not allowed to adjust if protection level is IP65)
- ◆ Manual drive connector\* (MD, can be driven by hand with a 8mm hex bit screwdriver or electric screwdriver)

\*Remarks: MD is compatible with **IP54** and Gear ratio **5:1** 、 **10:1** or **20:1**.  
Meanwhile, not compatible with **IP65**, **Limit switches** nor **POT**.

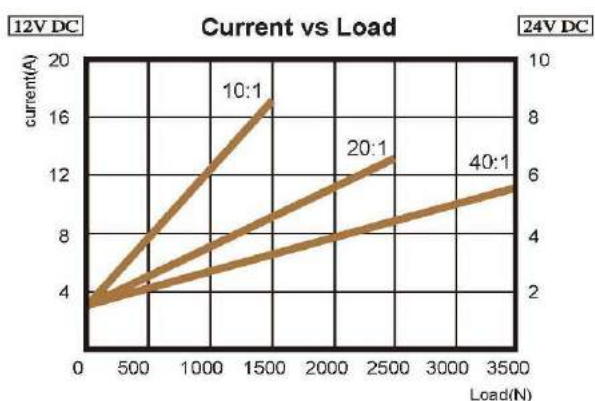
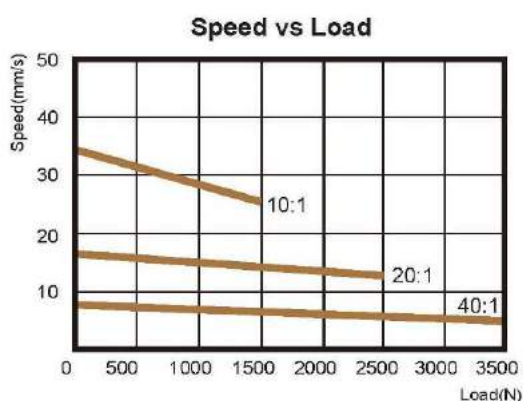
## Compatibility

Control Box	Compatible Handset	ID10 Specification Conditions
CI10	N/A	24VDC, no positioning sensor feedback
CIS3	HM	24VDC, with Potentiometer

# Performance Data

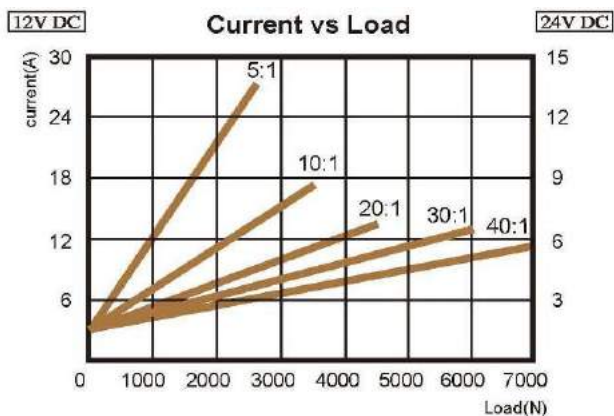
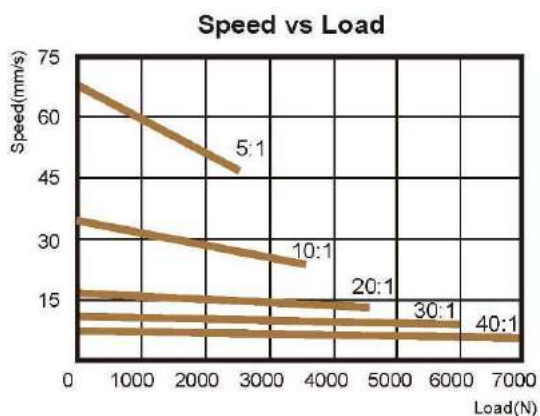
## ◆ ID10 ACME

Model No.	Push/Pull Max. (N)	Speed (mm/s)		Current (A)			
		No load	Full load	No load		Full load	
				12V	24V	12V	24V
ID10-XX-10-A-XXX	1500	33.5	26.7	3.4	2.2	17.6	8.8
ID10-XX-20-A-XXX	2500	16.8	14.3	3.4	2.2	13.2	6.6
ID10-XX-40-A-XXX	3500	8.4	7.4	3.4	2.2	11.0	5.5



## ◆ ID10 Ball Screw

Model No.	Push/Pull Max. (N)	Speed (mm/s)		Current (A)			
		No load	Full load	No load		Full load	
				12V	24V	12V	24V
ID10-XX-05-B-XXX	2500	67.1	47.2	3.4	2.2	26.4	13.2
ID10-XX-10-B-XXX	3500	33.5	26.7	3.4	2.2	17.6	8.8
ID10-XX-20-B-XXX	4500	16.8	14.3	3.4	2.2	13.2	6.6
ID10-XX-30-B-XXX	6000	11.2	9.8	3.4	2.2	12.1	6.1
ID10-XX-40-B-XXX	7000	8.4	7.4	3.4	2.2	11.0	5.5

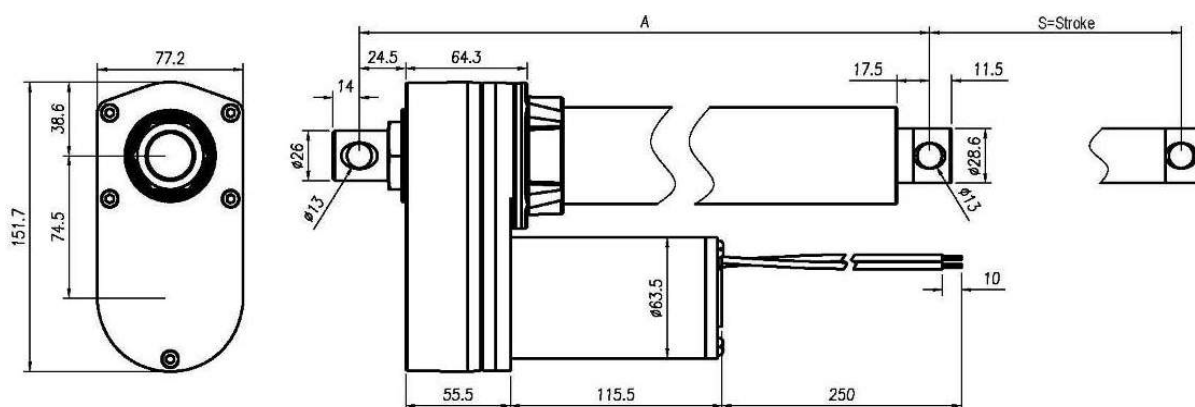


# Dimensions

## ID10 ACME

### ◆ Standard

	4"	6"	8"	10"	12"	18"	24"
Stroke ( $\pm 2.5\text{mm}$ )	102	153	203	254	305	457	610
Retracted Length ( $A \pm 3.8\text{mm}$ )	262	313	364	414	465	668	821



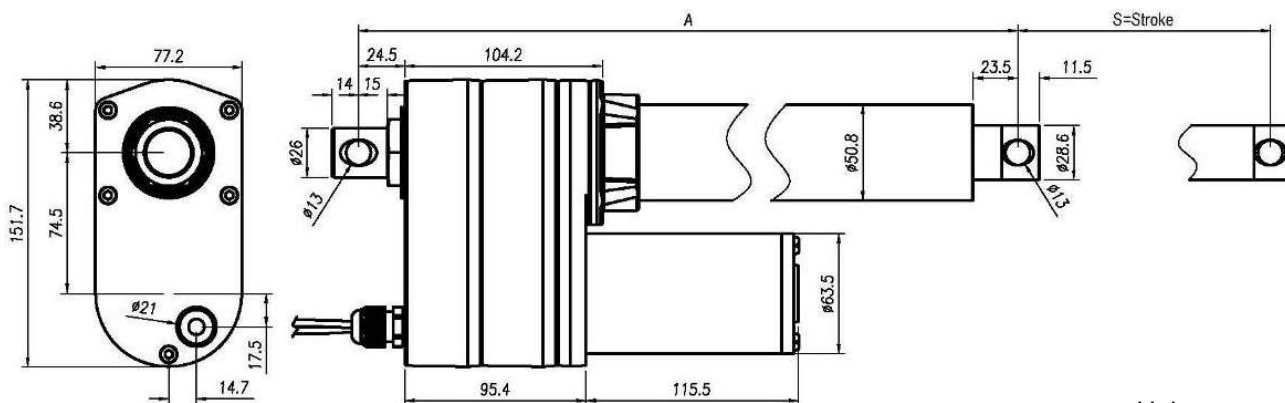
Unit: mm

### ◆ Only Potentiometer(POT)

	4"	6"	8"	10"	12"	18"	24"
Stroke ( $\pm 2.5\text{mm}$ )	102	153	203	254	305	457	610
Retracted Length ( $A \pm 3.8\text{mm}$ )	302	353	404	454	505	708	861

### ◆ Only Limit Switches or Limit Switches and POT

	4"	6"	8"	10"	12"	18"	24"
Stroke ( $\pm 2.5\text{mm}$ )	102	153	203	254	305	457	610
Retracted Length ( $A \pm 3.8\text{mm}$ )	359	410	460	511	613	765	918

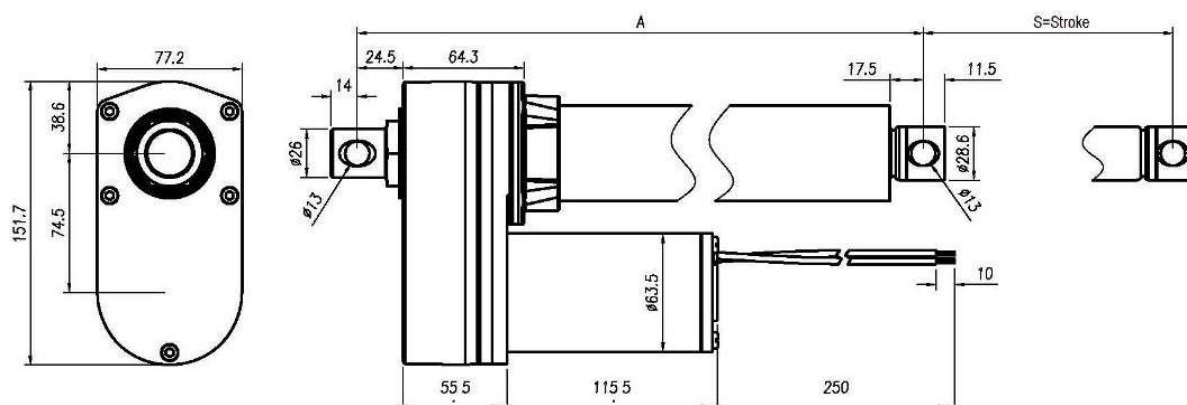


Unit: mm

## ID10 Ball Screw

### ◆ Standard

	4"	6"	8"	10"	12"	18"	24"
Stroke ( $\pm 2.5\text{mm}$ )	102	153	203	254	305	457	610
Retracted Length ( $A \pm 3.8\text{mm}$ )	302	353	404	455	506	735	888



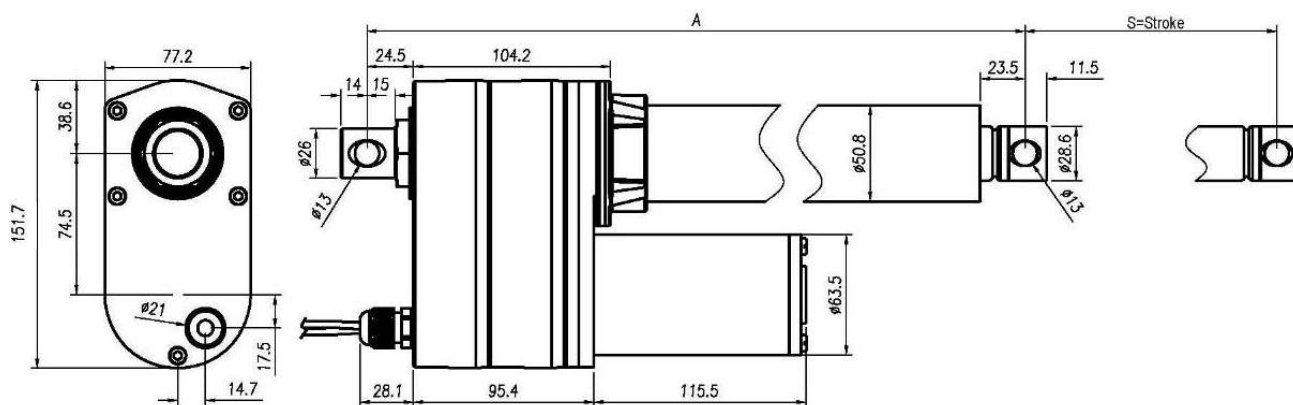
Unit: mm

### ◆ Only Potentiometer(POT)

	4"	6"	8"	10"	12"	18"	24"
Stroke ( $\pm 2.5\text{mm}$ )	102	153	203	254	305	457	610
Retracted Length ( $A \pm 3.8\text{mm}$ )	342	393	444	495	546	775	928

### ◆ Only Limit Switches or Limit Switches and POT

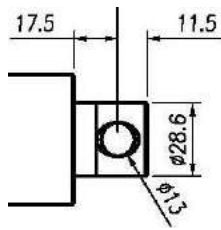
	4"	6"	8"	10"	12"	18"	24"
Stroke ( $\pm 2.5\text{mm}$ )	102	153	203	254	305	457	610
Retracted Length ( $A \pm 3.8\text{mm}$ )	399	450	501	552	680	832	985



Unit: mm

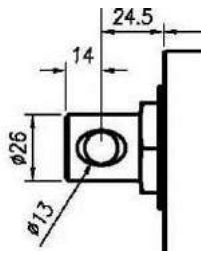


### ◆ Front connector

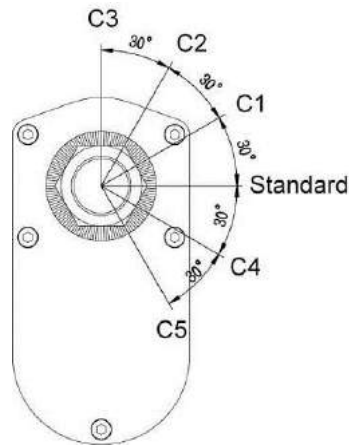


Unit: mm

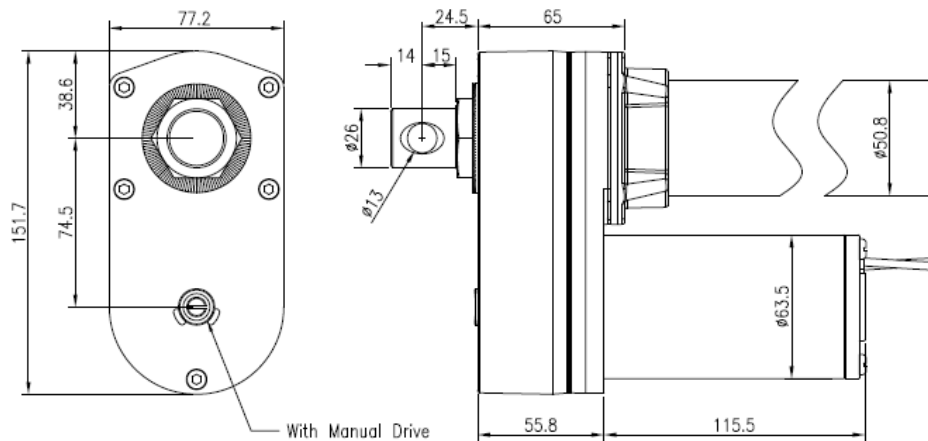
### ◆ Rear connector and the orientation of clevis



Unit: mm



### ◆ Manual drive connector (MD)



\*user needs 8mm hex bit screwdriver (or electric screwdriver) to drive the motor

## Wiring

### ◆ Please refer to ID10 User Guide.

# Ordering Key

**ID10** —   —   —  —    —            —

**Input Voltage**

12 : 12V DC  
24 : 24V DC

**Gear Ratio**

05 : 5:1 (*Ball screw only*)  
10 : 10:1  
20 : 20:1  
30 : 30:1 (*Ball screw only*)  
40 : 40:1

**Spindle Type**

A : ACME  
B : Ball Screw

**Stroke**

102 : 102mm  
153 : 153mm  
203 : 203mm  
254 : 254mm  
305 : 305mm  
457 : 457mm  
610 : 610mm

**Options**

LT : Adjustable limit switch  
POT : Potentiometer  
IP65 : IP65  
MD : Manual drive connector (*Please refer to paragraph Options for compatibility information*)

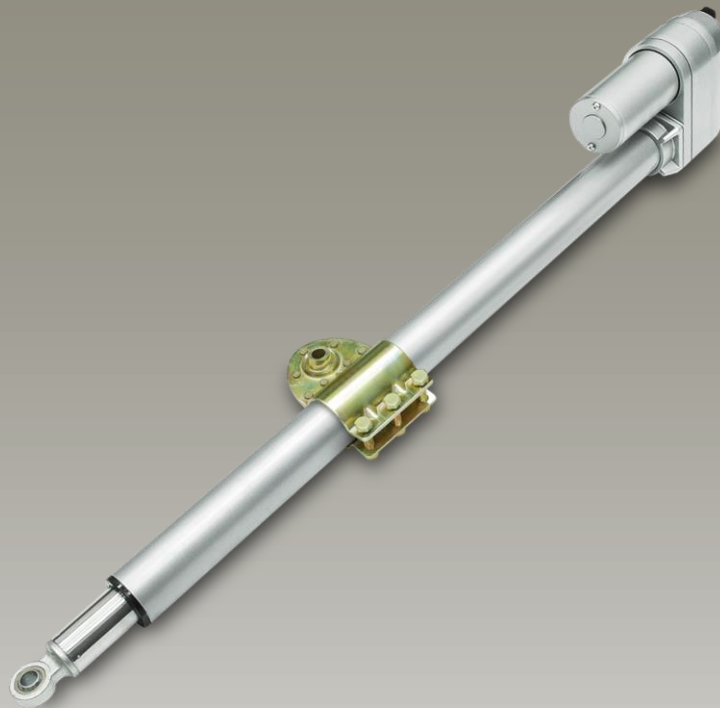
**Rear Clevis Orientation**

: 0° Standard (*keep it blank*)  
C1 : 30° CCW (*view from rear connector*)  
C2 : 60° CCW  
C3 : 90° CCW  
C4 : 30° CW  
C5 : 60° CW

## Terms of Use

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# Actuator ID10S



## Features

- ◆ ID10S is a robust and powerful actuator, designed for heavy-duty applications in harsh environments like solar tracker. It features high load capability, long lifetime and low power consumption. The adjustable limit cam is convenient for the user to fine-tune the stroke, and moreover, the optical encoder possesses high resolution of stroke feedback, which is helpful on stroke control. Ball screw or ACME screw threaded spindle is available.
- ◆ Main applications : Industrial
- ◆ Input voltage : 24V DC
- ◆ Max. dynamic load : 9000N(Ball Screw), 5500N(ACME)
- ◆ Max. static load : 17100N(Ball Screw), 13600N(ACME)
- ◆ Max. current : 3.9 A @ 24V DC
- ◆ Max. speed at no load : 5.6 mm/sec
- ◆ Max. speed at full load : 4.5 mm/sec
- ◆ Stroke : 450~900 mm
- ◆ Duty cycle : 10% or Max. 3 min continuous operation.
- ◆ IP protection level : IP65
- ◆ Color : Silver, Black
- ◆ Certified : EN61000-4, EN61000-6
- ◆ Ambient operating temperature : -25°C~+65°C
- ◆ Overload protection by clutch
- ◆ Steel extension tube

## Options

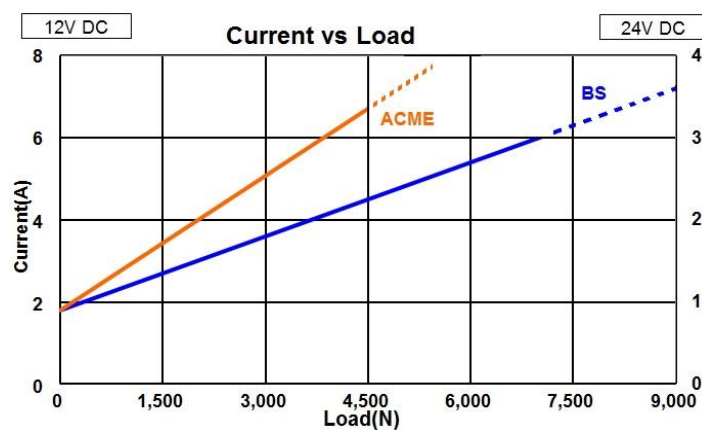
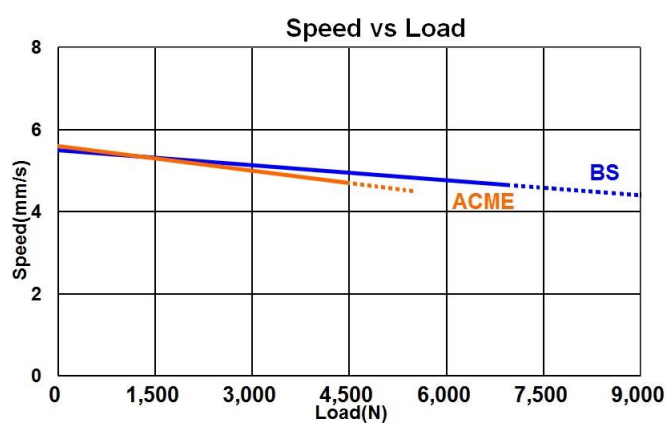
- ◆ Input voltage : 12V DC
- ◆ Digital positioning feedback : Hall Sensor, Reed Sensor, Optical Encoder
- ◆ Analog positioning feedback : Potentiometer
- ◆ Stainless extension tube

## Compatibility

Control Box : CIS1, CIS2

## Performance Data

Model No.	Max. Dynamic Load (N)	Speed (mm/s)		Current (A)			
		No load	Full load	No load		Full load	
				12V	24V	12V	24V
ID10S-xx40E5Bxxx-xxxxxxx	9000	5.5	4.4	1.8	0.9	7.2	3.6
ID10S-xx40E5Axxx-xxxxxxx	5500	5.6	4.5	1.8	0.9	7.8	3.9



## Dimensions

### ◆ ID10S Ball Screw

18"

24"

36"

Stroke (±5 mm)	450	600	900
Retracted Length (A±3 mm)	810	963	1315

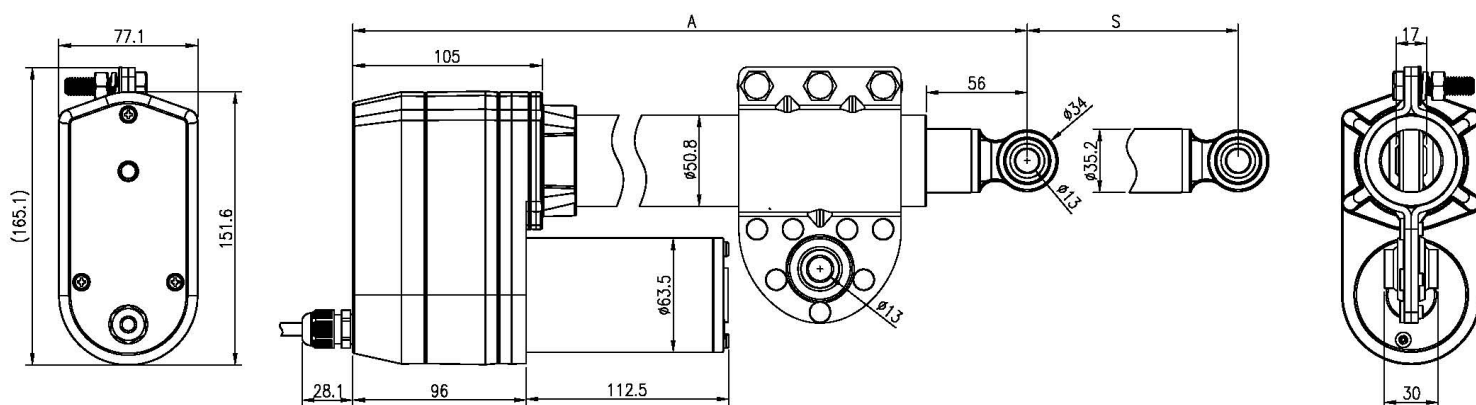
### ◆ ID10S ACME

18"

24"

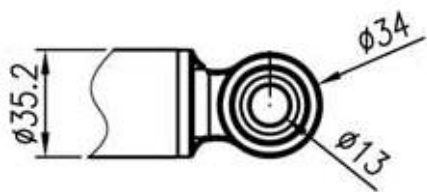
36"

Stroke (±5 mm)	450	600	900
Retracted Length (A±3 mm)	764	917	1269

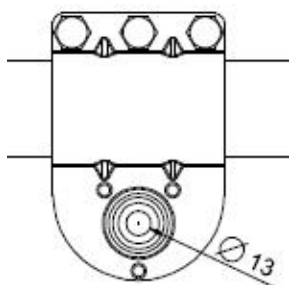


Unit : mm

### ◆ Front connector



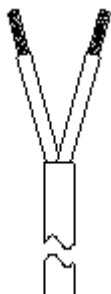
### ◆ Rear connector



# Wiring

## 1. Standard Type

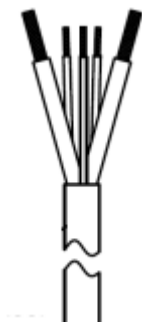
- ◆ When Red (M+) is connected to “+” and Black (M-) is connected to “-“of DC power, the actuator will extend.



Wiring	
Red	M+
Black	M-

## 2. With Hall Effect Sensor

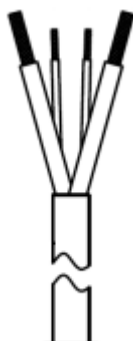
- ◆ When Red (M+) is connected to “+” and Black (M-) is connected to “-“of DC power, the actuator will extend.
- ◆ White, Yellow, Blue are positioning signal wires as shown in table.
- ◆ Signal resolution : 20PPI or 1.27mm/pulse



Wiring	
Red	M+
Black	M-
White	VCC
Blue	GND
Yellow	Data

## 3. With Reed Sensor

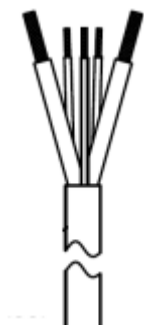
- ◆ When Red (M+) is connected to “+” and Black (M-) is connected to “-“of DC power, the actuator will extend.
- ◆ White & Yellow are positioning signal wires as shown in table.
- ◆ Signal resolution : 30PPI or 0.85mm/pulse



Wiring	
Red	M+
Black	M-
White	Data
Yellow	Data

#### 4. With Optical Encoder

- ◆ When Red (M+) is connected to “+” and Black (M-) is connected to “-” of DC power, the actuator will extend.
- ◆ White, Yellow & Blue are positioning signal wires as shown in table.
- ◆ Signal resolution : 250PPI or 0.1016mm/pulse



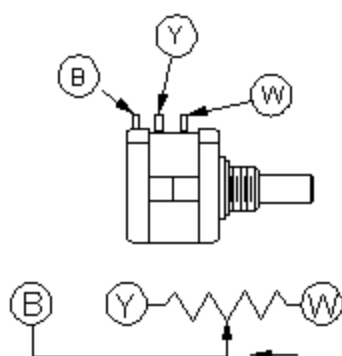
Wiring	
Red	M+
Black	M-
White	VCC
Blue	GND
Yellow	Data

#### 5. With Potentiometer

- ◆ When Red (M+) is connected to “+” and Black (M-) is connected to “-” of DC power, the actuator will extend.
- ◆ White, Yellow & Blue are positioning signal wires as shown in table.
- ◆ The resistance between blue and white wires increased when extending, and decreased when retracting



Wiring	
Red	M+
Black	M-
Yellow	VCC
White	GND
Blue	Data



Actuator extending

Value of Potentiometer	
Stroke(mm)	Resistance
450mm (18")	0.3~8.8K $\Omega$
600mm (24")	0.3~9.4K $\Omega$
900mm (36")	0.3~9.2K $\Omega$
Tolerance: $\pm 0.3K\Omega$	

## Ordering Key

ID10S—

### Input Voltage

**24 :** 24V DC

**12 :** 12V DC

### Gear Ratio

**40 :**      40:1

## Motor

**E :** Standard motor (2900rpm)

**Spindle Type**

5A : ACME / 5TPI

**5B :** Ball Screw / 5TPI

## Stroke

**450 :** 450mm

**600 :** 600mm

**900 :** 900mm

## Front Mounting

## Spherical Rod Eye

**0 :  $\Phi=13\text{mm}$    1 :  $\Phi=12\text{mm}$    2 :  $\Phi=1/2''$    3 :  $\Phi=16\text{mm}$**

## Rear Mounting

### Clamp with Spherical Rod Eye

**0 :  $\Phi=13\text{mm}$     1 :  $\Phi=12\text{mm}$     2 :  $\Phi=1/2''$     3 :  $\Phi=16\text{mm}$**

**Detector**

**H** : Hall sensor    **R** : Reed sensor    **P** : Potentiometer

**G** : Optical encoder    **0** : None

## Power wire length

1 : 250mm (with tinned wires)/Black

**Color**

**S** : Silver    **B** : Black

## Protection

**5 : IP65**

## Others

**0** : Aluminum back cover

**2 : Aluminum back cover + stainless extension tube**

## Terms of Use

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# Actuator ID11



## Features

- ◆ ID11 is a powerful actuator that ideal for various industrial applications, such as agricultural machinery and construction equipment. With the built-in adjustable limit switches on the bottom, users can fine-tune the stroke based on their needs easily after installation. Ball screw or ACME screw threaded spindle is available for users to choose.
- ◆ Main applications : industrial
- ◆ Input voltage : 24V DC / 12V DC
- ◆ Max. rated load : 3,500N (ACME), 7,000N (Ball screw)
- ◆ Max. static load : 4,500N (ACME), 13,600N (Ball screw)
- ◆ Max. current : 17.6 A @ 12V DC
- ◆ Max. speed : 33.5 mm/sec @ no load
- ◆ Stroke : 102~610 mm
- ◆ Duty cycle : 25%, max 2 min continuous operation in 8 min.
- ◆ IP protection level : IP54
- ◆ Color : Black
- ◆ Certified : CE marking, EMC Directive 2014/30/EU
- ◆ Power wire length : 250mm (with tinned wires)
- ◆ Operating temperature : -25°C~+65°C

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## Options

- ◆ IP65
- ◆ Side cable outlet
- ◆ Adjustable limit switches

## Compatibility

### 1. Control Box

CI10, CIS1, CIS2, CIS3

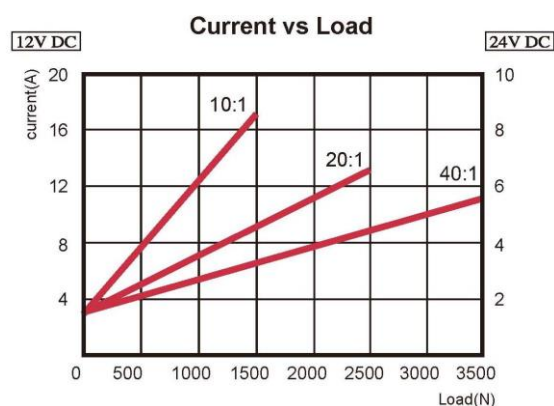
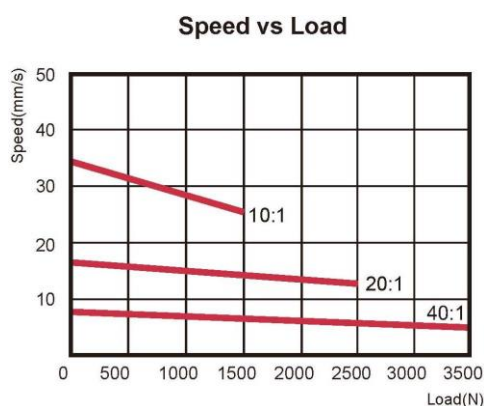
### 2. Handset

HM6R, XM4H

# Performance Data

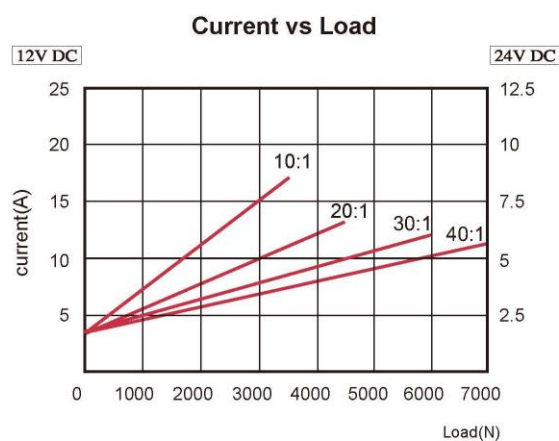
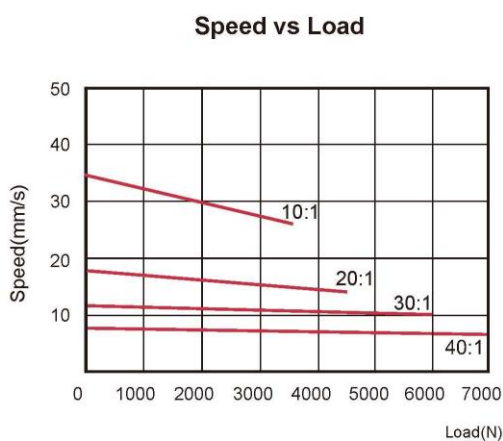
## ◆ ID11 ACME

Model No.	Push/Pull Max. (N)	Speed (mm/s)		Current (A)			
		No load	Full load	No load		Full load	
				12V	24V	12V	24V
ID11-XX-10-A-XXX	1500	33.5	26.7	3.4	2.2	17.6	8.8
ID11-XX-20-A-XXX	2500	16.8	14.3	3.4	2.2	13.2	6.6
ID11-XX-40-A-XXX	3500	8.4	7.4	3.4	2.2	11	5.5



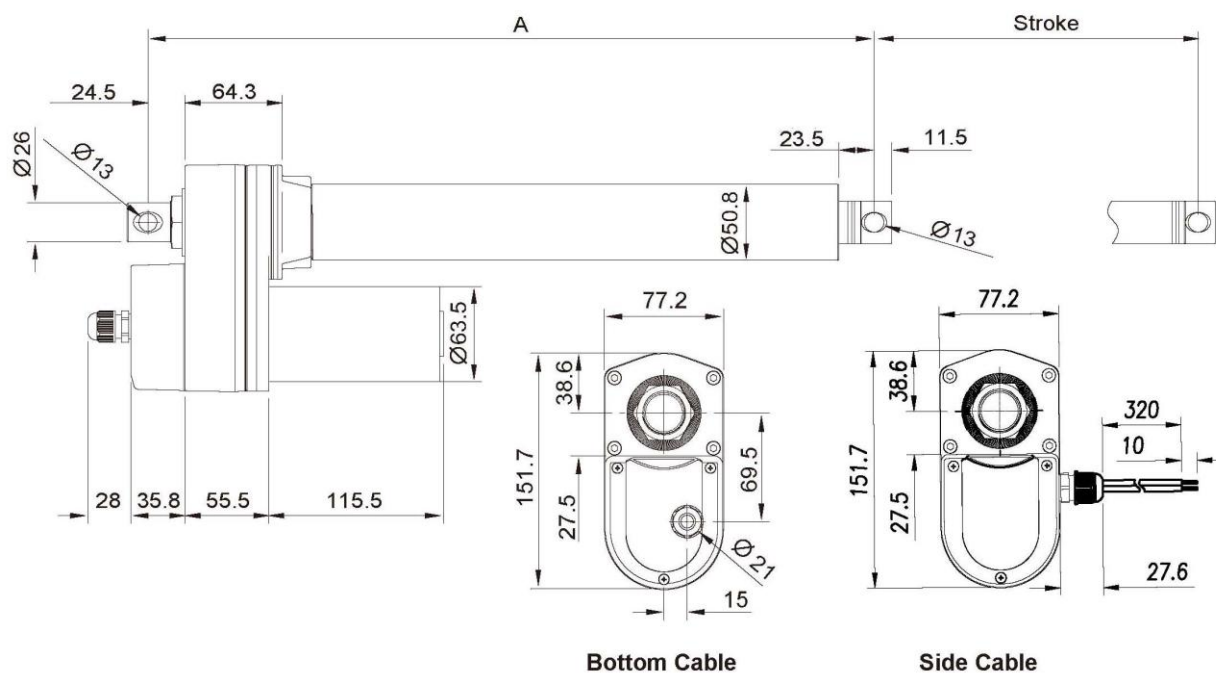
## ◆ ID11 Ball Screw

Model No.	Push/Pull Max. (N)	Speed (mm/s)		Current (A)			
		No load	Full load	No load		Full load	
				12V	24V	12V	24V
ID11-XX-10-B-XXX	3500	33.5	26.7	3.4	2.2	17.6	8.8
ID11-XX-20-B-XXX	4500	16.8	14.3	3.4	2.2	13.2	6.6
ID11-XX-30-B-XXX	6000	11.2	9.8	3.4	2.2	12.1	6.1
ID11-XX-40-B-XXX	7000	8.4	7.4	3.4	2.2	11.0	5.5

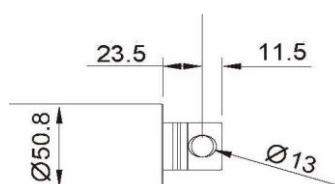


## Dimensions

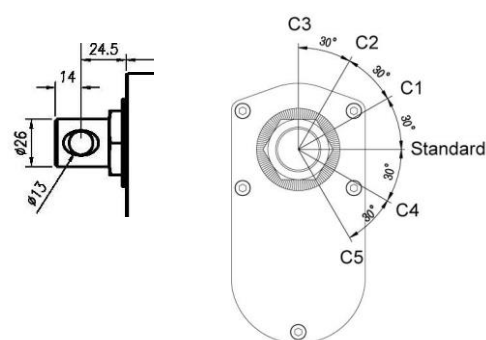
		4"	6"	8"	10"	12"	18"	24"
Stroke (±5mm)		102	153	203	254	305	457	610
Retracted Length (A±5mm)	ACME	319	370	420	471	573	725	878
	Ball Screw	359	410	461	512	640	792	945



- ◆ Front connector



◆ Rear connector and the orientation of clevis



Unit: mm

## Wiring

◆ Please refer to ID11 User Guide.

# Ordering Key

ID11 —   —   —  —    —       —

## Input Voltage

12 : 12V DC

24 : 24V DC

## Gear Ratio

10 : 10:1

20 : 20:1

30 : 30:1 (Ball Screw only)

40 : 40:1

## Spindle Type

A : ACME

B : Ball Screw

## Stroke

102 : 102mm

153 : 153mm

203 : 203mm

254 : 254mm

305 : 305mm

457 : 457mm

610 : 610mm

## Option

Blank : None

IP65 : IP65

SC : Side cable outlet

## Rear Clevis Orientation

: 0° Standard (keep it blank)

C1 : 30° CCW (view from rear connector)

C2 : 60° CCW

C3 : 90° CCW

C4 : 30° CW

C5 : 60° CW

### Terms of Use

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MO-IND-T-0003-1.0

# Actuator ID12



## Features

- ◆ ID12 features its heavy load capability and high speed design, which is suitable for various industrial applications requiring rapid movement. The tetragonal shape outer tube make ID12 can be installed easily. The optional adjustable external reed sensor is convenient for the user to provide further control of the movement. Ball screw or ACME screw threaded spindle is available for users to choose.
- ◆ Main applications : Industrial
- ◆ Input voltage : 24V DC / 12V DC
- ◆ Max. rated load : 3,500N(ACME) , 7,000N(Ball Screw)
- ◆ Max. static load : 4,500N(ACME) , 13,600N(Ball Screw)
- ◆ Max. current : 26.4 A @ 12V DC
- ◆ Max. speed : 67.1 mm/sec @ no load
- ◆ Stroke : 100~600 mm
- ◆ Duty cycle : 25%, max 2 min continuous operation in 8 min.
- ◆ IP protection level : IP66, IP69K
- ◆ Color : Black
- ◆ Certified : CE marking, EMC Directive 2014/30/EU
- ◆ Overload protection by clutch
- ◆ Power wire length : 250mm (with tinned wires)
- ◆ Operating temperature : -25°C~+65°C

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## Options

- ◆ Potentiometer, analog positioning feedback
- ◆ Internal adjustable cam limit switches (LT)
- ◆ External adjustable reed sensor. NC-type (i.e. normal close) is default. And NO-type (i.e. normal open) is also available, please indicate to sales window if required.

## Compatibility

### 1. Control Box

CI10, CIS1, CIS2, CIS3

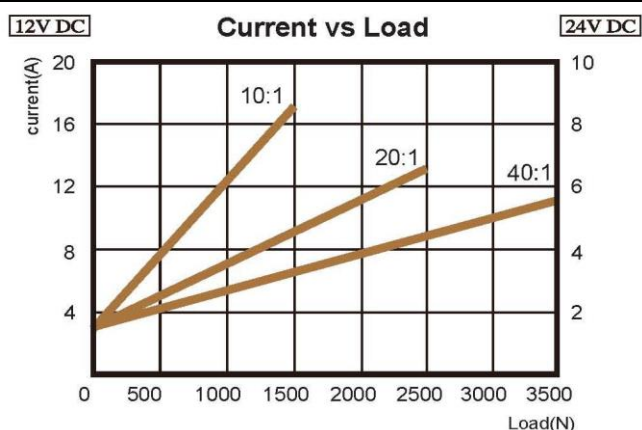
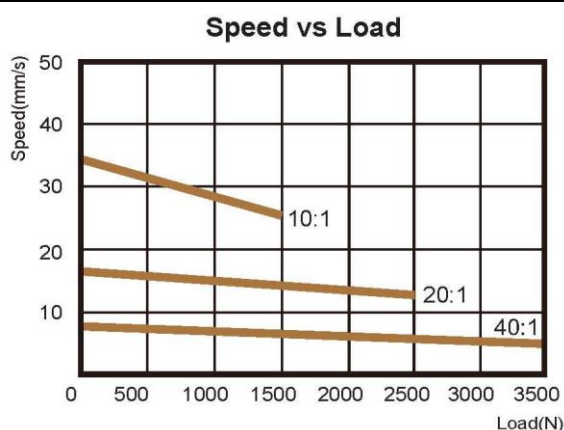
### 2. Handset

HM6R, XM4H

# Performance Data

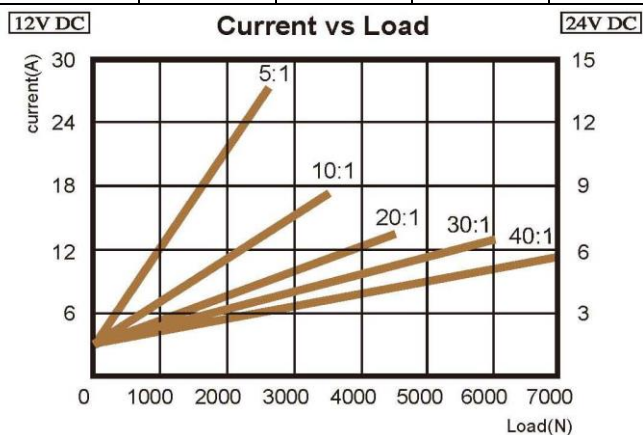
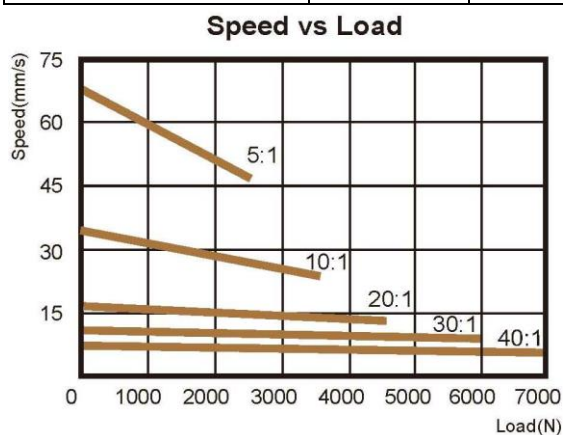
## ◆ ACME spindle

Model No.	Push/Pull Max. (N)	Speed (mm/s)		Current (A)			
		No load	Full load	No load		Full load	
				12V	24V	12V	24V
ID12-XX-10-A-XXX	1500	33.5	26.7	3.4	2.2	17.6	8.8
ID12-XX-20-A-XXX	2500	16.8	14.3	3.4	2.2	13.2	6.6
ID12-XX-40-A-XXX	3500	8.4	7.4	3.4	2.2	11.0	5.5



## ◆ Ball Screw spindle

Model No.	Push/Pull Max. (N)	Speed (mm/s)		Current (A)			
		No load	Full load	No load		Full load	
				12V	24V	12V	24V
ID12-XX-05-B-XXX	2500	67.1	47.2	3.4	2.2	26.4	13.2
ID12-XX-10-B-XXX	3500	33.5	26.7	3.4	2.2	17.6	8.8
ID12-XX-20-B-XXX	4500	16.8	14.3	3.4	2.2	13.2	6.6
ID12-XX-30-B-XXX	6000	11.2	9.8	3.4	2.2	12.1	6.1
ID12-XX-40-B-XXX	7000	8.4	7.4	3.4	2.2	11.0	5.5

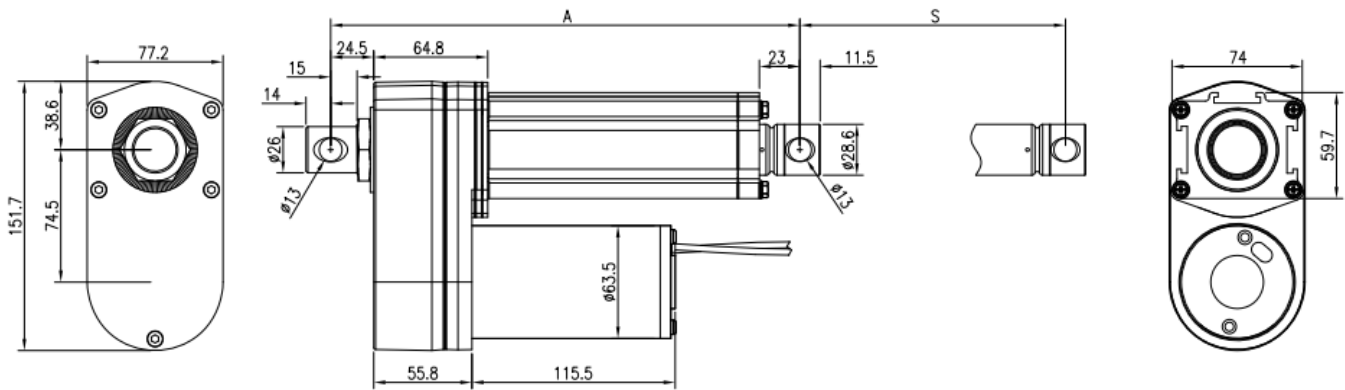




## Dimensions—ID12 ACME

### ◆ Standard

	4"	6"	8"	12"	18"	24"
Stroke ( $S \pm 2.5\text{mm}$ )	100	150	200	300	450	600
Retracted Length ( $A \pm 3.8\text{mm}$ )	266	316	366	466	666	816



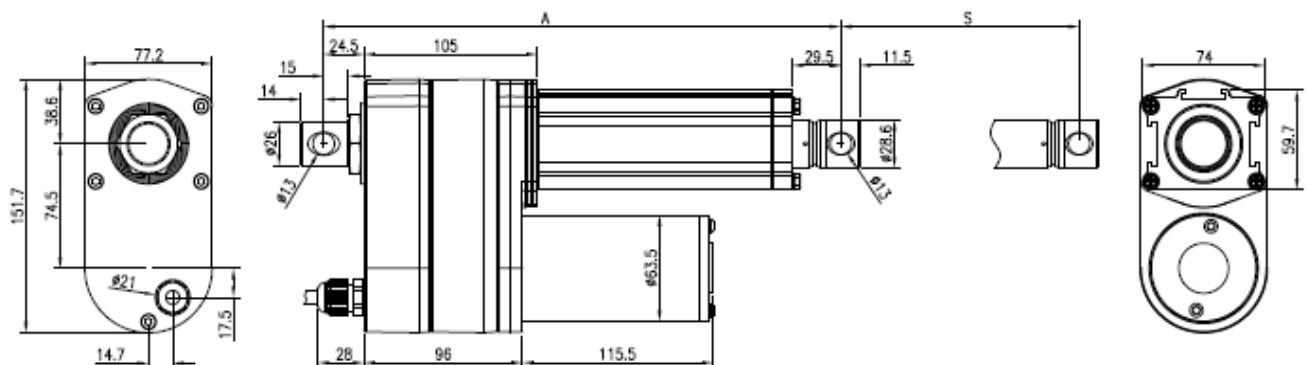
Unit : mm

### ◆ With POT

	4"	6"	8"	12"	18"	24"
Stroke ( $S \pm 2.5\text{mm}$ )	100	150	200	300	450	600
Retracted Length ( $A \pm 3.8\text{mm}$ )	306	356	406	506	706	856

### ◆ With LT

	4"	6"	8"	12"	18"	24"
Stroke ( $S \pm 5.0\text{mm}$ )	100	150	200	300	450	600
Retracted Length ( $A \pm 5.0\text{mm}$ )	362	412	462	612	762	912

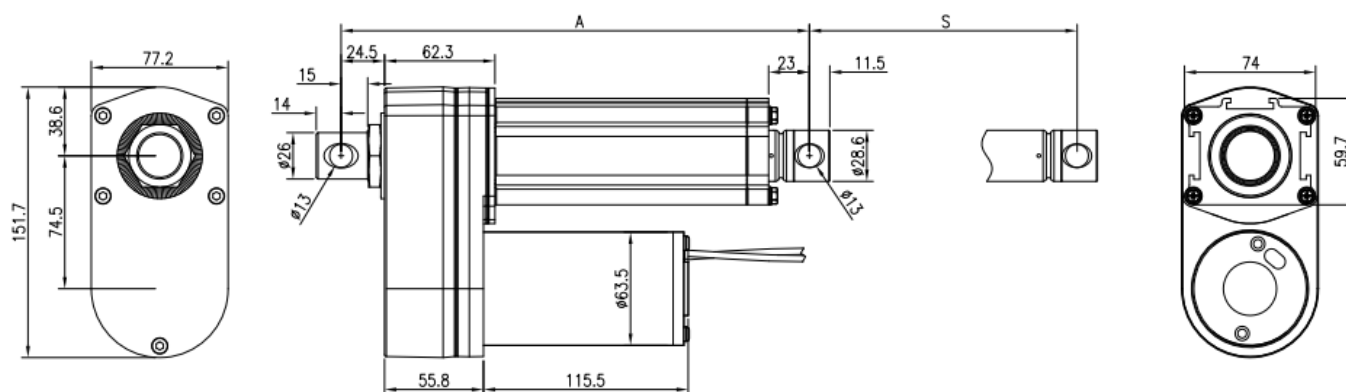


Unit : mm

## Dimensions—ID12 Ball Screw

### ◆ Standard

	4"	6"	8"	12"	18"	24"
Stroke ( $S \pm 2.5\text{mm}$ )	100	150	200	300	450	600
Retracted Length ( $A \pm 3.8\text{mm}$ )	319	369	419	519	719	869



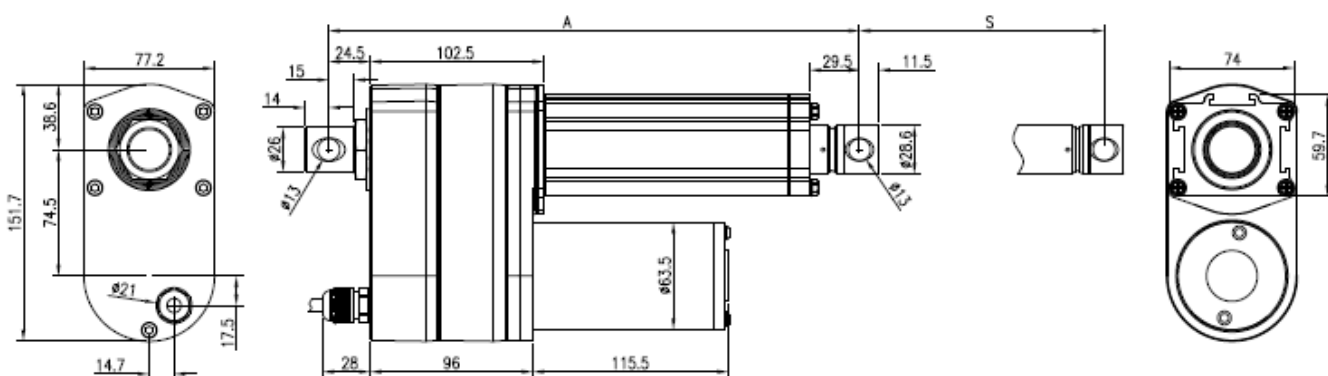
Unit : mm

### ◆ With POT

	4"	6"	8"	12"	18"	24"
Stroke ( $S \pm 2.5\text{mm}$ )	100	150	200	300	450	600
Retracted Length ( $A \pm 3.8\text{mm}$ )	359	409	459	559	759	909

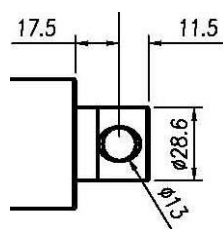
### ◆ With LT

	4"	6"	8"	12"	18"	24"
Stroke ( $S \pm 5.0\text{mm}$ )	100	150	200	300	450	600
Retracted Length ( $A \pm 5.0\text{mm}$ )	415	465	515	665	815	965



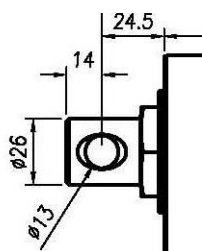
Unit : mm

## ◆ Front connector



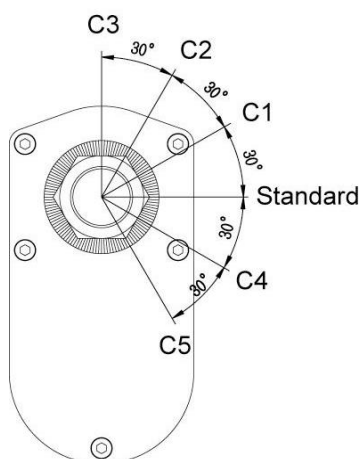
Unit : mm

## ◆ Rear connector



Unit : mm

## ◆ Orientation of front/rear connector hole



## Wiring

### ◆ Please refer to ID12 User Guide.

# Ordering Key

ID12——————

## Voltage

12 : 12V DC

24 : 24V DC

## Gear Ratio

05 : 5:1 (Ball screw only)

10 : 10:1

20 : 20:1

30 : 30:1 (Ball screw only)

40 : 40:1

## Spindle Type

A : ACME

B : Ball Screw

## Stroke

100 : 100mm

150 : 150mm

200 : 200mm

300 : 300mm

450 : 450mm

600 : 600mm

## Options

: Standard (keep it blank)

LT : Internal adjustable cam limit switch

POT : Potentiometer

ER1 : External adjustable reed sensor x 1

ER2 : External adjustable reed sensor x 2

## Rear Clevis Orientation

: 0° Standard (keep it blank)

C1 : 30° CCW (view from rear connector)

C2 : 60° CCW

C3 : 90° CCW

C4 : 30° CW

C5 : 60° CW

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# Actuator

## ID13



### Features

- ◆ ID13 is a low backlash (small end play) actuator, which is suitable for high precision application. To make it more flexible for different limited installation space, there are 2 motor directions available for customer to choose. Besides, ID13 also can be chosen with external reed switches, which work as limit switches, and make it possible for users to adjust stroke by themselves.
- ◆ Main applications : industrial
- ◆ Input voltage : 24V DC / 12V DC
- ◆ Max. dynamic load : 1200N (ACME) / 4000N (Ball Screw)
- ◆ Max. static load : 1800N (ACME) / 6000N (Ball Screw)
- ◆ Max. current : 7.0A @ 24V DC
- ◆ Max. speed : 35.0 mm/sec @no load
- ◆ Stroke : 100~350mm
- ◆ Duty cycle : 10% or 2 min continuous operation in 18min.
- ◆ IP protection level : IP54
- ◆ Color : Black
- ◆ Certified : UL E356466
- ◆ Ball screw or ACME threaded spindle is available
- ◆ Ambient operation temperature : -25°C~+65°C
- ◆ Stainless steel extension tube
- ◆ Overload protection by clutch

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## Options

- ◆ Motor mounting direction (Refer to paragraph Dimension)
- ◆ Digital positioning feedback : Hall effect sensor
- ◆ IP Protection Level : IP65
- ◆ External Limit Switches : NC-type (i.e. normal close) reed switches

## Compatibility

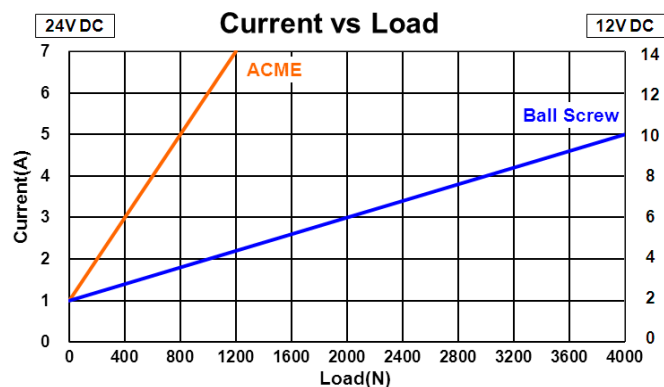
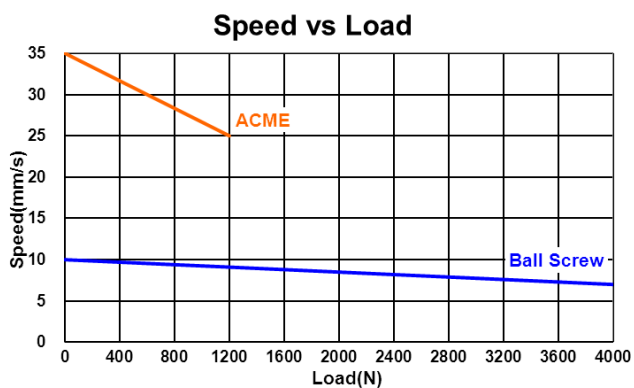
### 1. Control box

None

### 2. Accessory

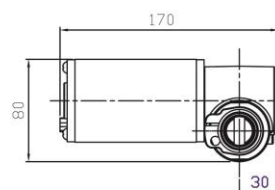
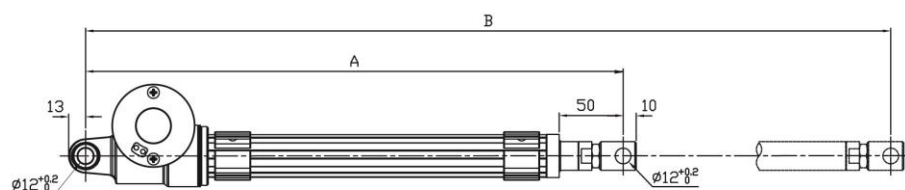
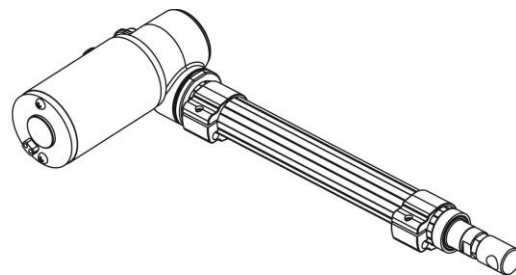
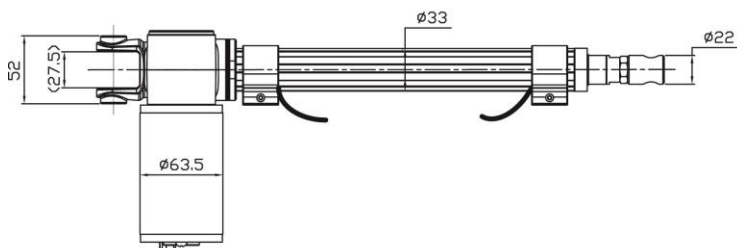
None

# Performance Data



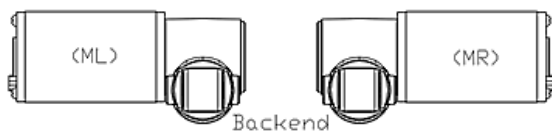
Spindle type	Model No.	Push/Pull Max. (N)	Speed (mm/s)		Current (A)			
			No load	Full load	No load		Full load	
					12V	24V	12V	24V
ACME	ID13-XXFDA-XXX.XXX	1200	35	25	2	1	14	7
Ball Screw	ID13-XXF4B-XXX.XXX	4000	10	7	2	1	10	5

# Dimensions



Unit: mm

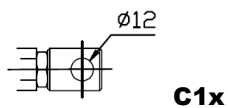
Motor mounting direction:



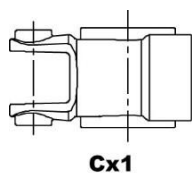
\*ML means motor is mounted on the left hand side and MR means motor is mounted on the right hand side.

Stroke (S) ( $\pm 3\text{mm}$ )	50	100	150	200	250	300	350
Retracted Length (A) ( $A \pm 3\text{mm}$ )	265	315	365	415	465	515	565
Extended Length (B) ( $A \pm 3\text{mm}$ )	315	415	515	615	715	815	915

## ◆ Front Connector



## ◆ Rear Connector

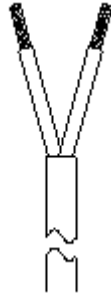




# Wiring

## 1. Standard Type

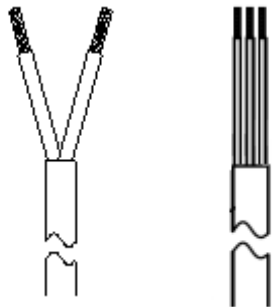
- ◆ When Red (M+) is connected to “+” and Black (M-) is connected to “-“of DC power, the actuator will extend.



Wiring	
Red	M+
Black	M-

## 2. With Hall Effect Sensor

- ◆ When Red (M+) is connected to “+” and Black (M-) is connected to “-“of DC power, the actuator will extend.
- ◆ Brown, Blue, Black (24AWG) are positioning signal wires as shown in table.
- ◆ Signal resolution : 7.69 pulses/mm (ACME) , 25 pulses/mm (Ball Screw)



Wiring	
Red	M+
Black	M-
Brown (24AWG)	VCC
Blue (24AWG)	Data
Black (24AWG)	GND

# Ordering Key

ID13—————

**Input voltage**  
 12 : 12V DC  
 24 : 24V DC

**Motor**  
 F : Standard motor (3900rpm)

**Spindle type**  
 DA : ACME  
 4B : Ball Screw

**Retracted length**  
 (Refer to paragraph Dimensions)

**Extended length**  
 (Refer to paragraph Dimensions)

**Front/Rear clevis**  
 11 : Standard  
 (Refer to paragraph Dimensions)

**Motor direction**  
 R : Motor mounted on right hand side (Standard)  
 L : Motor mounted on left hand side  
 (Refer to paragraph Dimensions)

**External limit switches**  
 0 : None  
 2 : Reed switches x 2 (NC type)

**Hall sensor**  
 0 : None  
 1 : Single Hall effect sensor

**IP level**  
 4 : IP54 (Standard)  
 5 : IP65

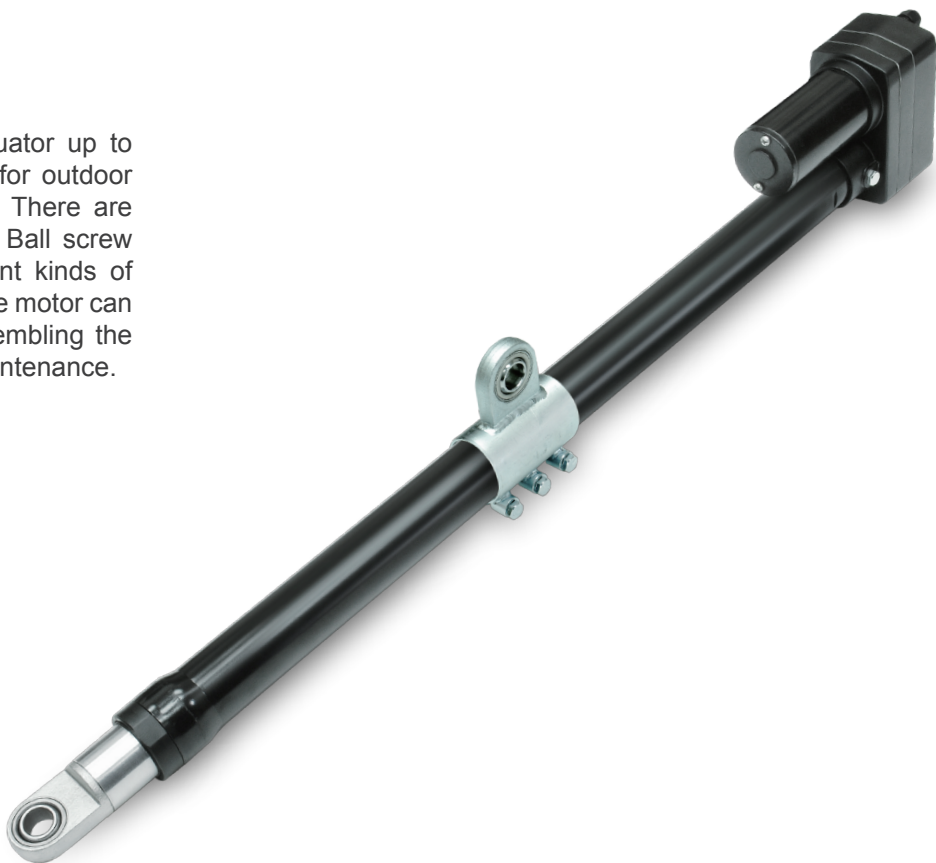
**Motor cable length**  
 2 : 250mm  
 5 : 500mm  
 A : 1000mm

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# Actuator ID18

ID18 is a robust and powerful actuator up to 18,000N thrust, which is designed for outdoor applications, such as solar tracker. There are several options available, including Ball screw spindle, ACME spindle, and different kinds of sensors for positioning feedback. The motor can be replaced directly without disassembling the actuator, which is convenient for maintenance.



## Feature

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- Main application: Solar tracker
- Input voltage: 24V DC / 36V DC
- Rated load: 12,000N (Ball screw) / 9,000N (ACME)
- Max. static load: 36,000N
- Max. dynamic load: 18,000N (Ball screw) / 12,000N (ACME) in push and pull direction
- Max. speed at no load: 3.3 mm/sec
- Max. speed at full load: 2.7 mm/sec @ 12,000N
- Stroke: 610 mm (24") / 914 mm (36") / 1219 mm (48") (other strokes are available)
- Max. current: 4.0A @ 24V DC
- IP Protection level: IP65
- Preset limit switches
- Color: Black
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -25°C ~ +65°C
- Certified: CE Marking, EMC Directive 2014/30/EU and 2004/108/EC

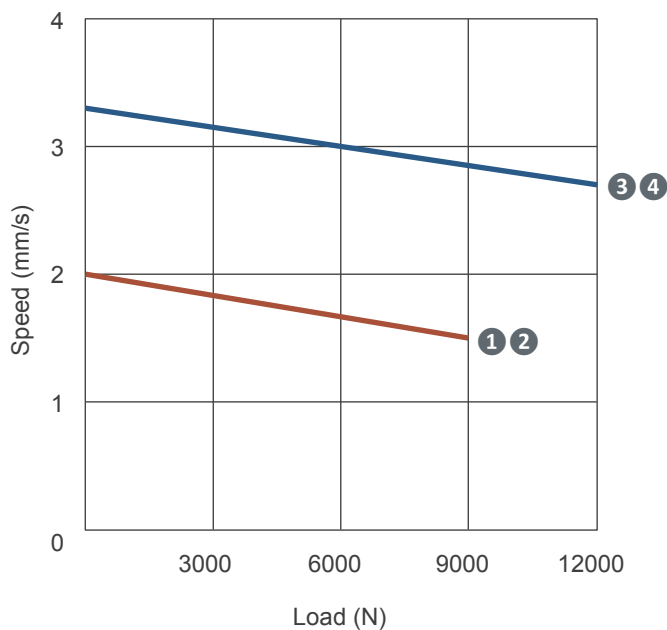
## Option

- Single Hall effect sensor for digital positioning feedback
- Reed sensor for digital positioning feedback
- Potentiometer for analog positioning feedback

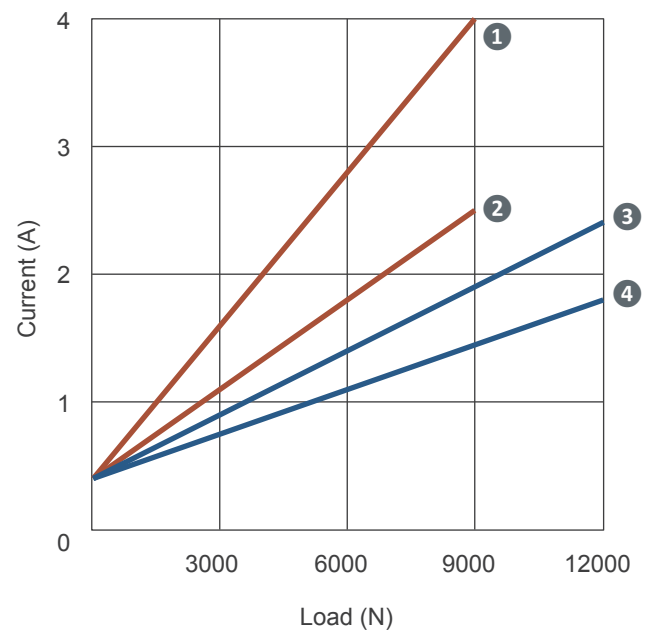
## Performance Data

No.	Model No.	Input voltage (V)	Gear ratio	Motor code	Spindle type	Max. load (N)	Speed (mm/s)		Current (A)	
							No load	Full load	No load	Full load
①	ID18-2458S3A	24	58:1	S	ACME	9000	2.0	1.5	0.4	4.0
②	ID18-3658S3A	36	58:1	S	ACME	9000	2.0	1.5	0.4	2.5
③	ID18-2458S5B	24	58:1	S	Ball screw	12000	3.3	2.7	0.4	2.4
④	ID18-3658S5B	36	58:1	S	Ball screw	12000	3.3	2.7	0.4	1.8

Speed vs. Load

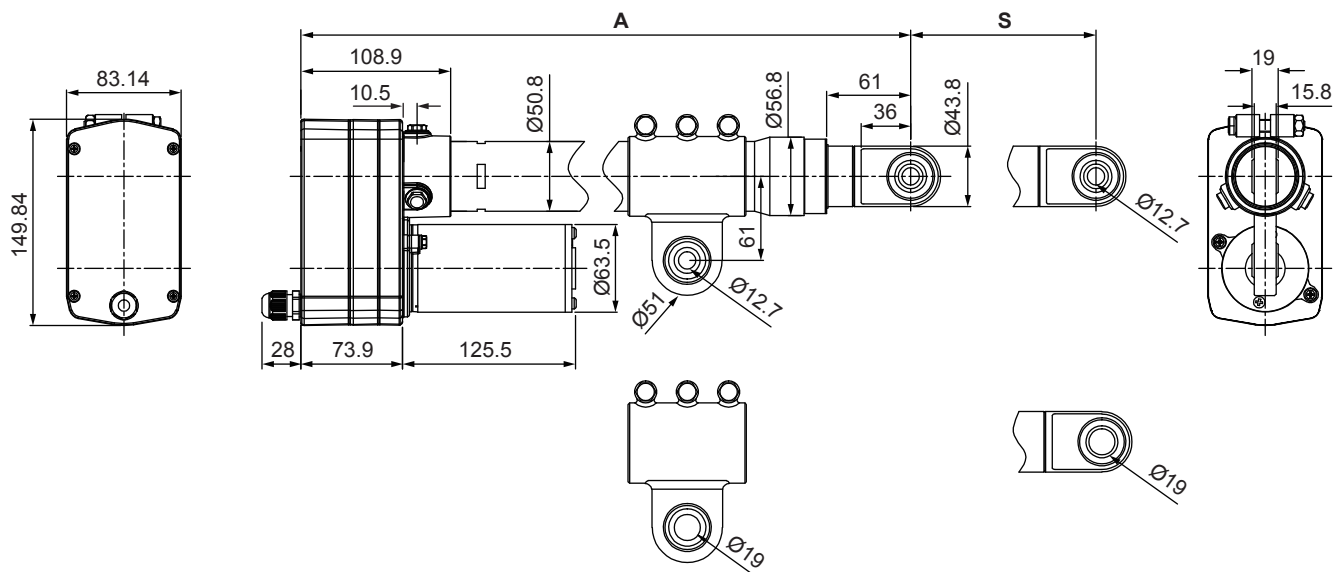


Current vs. Load

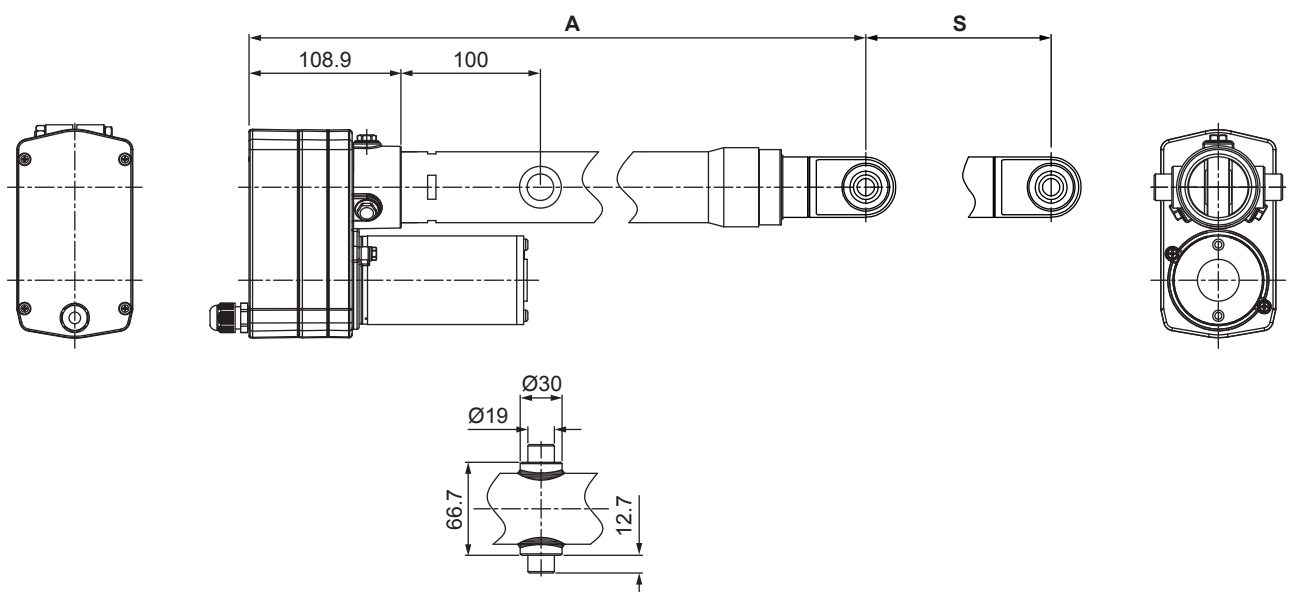


## Dimensions

### Standard



### With trunnion mount



### Installation dimension

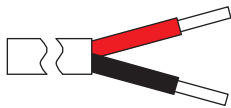
Model No.	Spindle type	Stroke (mm)	Retracted length (A)*
ID18-XXXXX <b>5B610</b> -XXXXXXX	Ball screw	610	1116
ID18-XXXXX <b>5B914</b> -XXXXXXX	Ball screw	914	1420
ID18-XXXXX <b>5BC19</b> -XXXXXXX	Ball screw	1219	1725
ID18-XXXXX <b>3A610</b> -XXXXXXX	ACME	610	1063
ID18-XXXXX <b>3A914</b> -XXXXXXX	ACME	914	1367
ID18-XXXXX <b>3AC19</b> -XXXXXXX	ACME	1219	1672

#### \*Remarks:

Retracted length as drawing "A"

## Wiring

### Standard



Power	
Red	Black
M+	M-

### With Hall effect sensor x 1

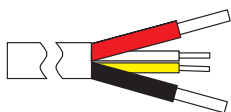
Resolution, Ball 20 PPI, ACME 32 PPI



Power		Signal		
Red	Black	White	Yellow	Blue
M+	M-	VCC	Data	GND

### With reed sensor

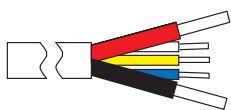
Resolution, Ball 30 PPI, ACME 48 PPI



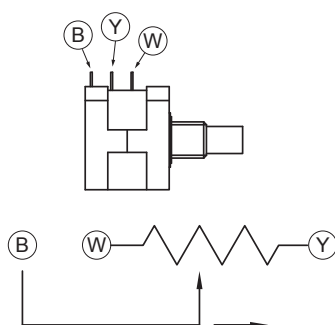
Power		Signal	
Red	Black	White	Yellow
M+	M-	GND	Data

### With potentiometer (POT)

The resistance between blue and white wires increases when the actuator extends, and decreases when it retracts.



Power		Signal		
Red	Black	White	Yellow	Blue
M+	M-	GND	VCC	Data



Actuator extends

Spindle type	Stroke (mm)	Resistance ( $\pm 0.3K\Omega$ )
Ball screw	610	0.3 ~ 8.6
Ball screw	914	0.3 ~ 7.7
Ball screw	1219	0.3 ~ 8.4
ACME	610	0.3 ~ 8.1
ACME	914	0.3 ~ 7.9
ACME	1219	0.3 ~ 8.1

### Remarks:

Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

<b>ID18 - 24 58 S 3A C19 - 1 1 H 1 B 5 1</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC <b>36:</b> 36V DC
<b>Gear ratio</b>	<b>58:</b> 58:1
<b>Motor code</b>	<b>S:</b> Standard motor
<b>Spindle type</b>	<b>3A:</b> ACME, 3.175 mm pitch <b>5B:</b> Ball screw, 5.08 mm pitch
<b>Stroke</b>	<b>610:</b> 610 mm (24") <b>914:</b> 914 mm (36") <b>C19:</b> 1219 mm (48")
<b>Front connector</b>	<b>Spherical rod eye</b> <b>1:</b> Ø19 mm (3/4") (standard) <b>0:</b> Ø12.7 mm (1/2") (Refer to Dimension)
<b>Rear connector</b>	<b>1:</b> Tube clamp with spherical bearing, Ø19 mm (3/4") (standard) <b>0:</b> Tube clamp with spherical bearing, Ø12.7 mm (1/2") <b>T:</b> With trunnion mount, Ø19 mm (3/4"), L: 12.7 mm (1/2") (Refer to Dimension)
<b>Positioning feedback</b>	<b>H:</b> Hall effect sensor x 1 (standard) <b>R:</b> Reed sensor <b>P:</b> Potentiometer <b>0:</b> None
<b>Cable</b>	<b>1:</b> Bare wires / 250 mm / Black
<b>Color</b>	<b>B:</b> Black
<b>IP Protection level</b>	<b>5:</b> IP65
<b>Others</b>	<b>1:</b> Cable outlet at body side (standard) <b>0:</b> Cable outlet at body bottom

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# Actuator IA5



- ◆ IA5 is a high speed AC powered linear actuator designed with stainless steel extension tube, which is suitable for various outdoor industrial applications, such as construction machine, air bridge, mining transportation conveyor... etc. It also features its heavy load capability and low current deviation. The adjustable limit switches are equipped for users to fine-tune the stroke based on their needs. Ball screw or ACME screw threaded spindle is available for users to choose.
- ◆ Main applications : Industrial
- ◆ Input voltage : 115 V / 60Hz ; 230 V / 50Hz
- ◆ Max. dynamic load : 3,500N (ACME), 7,000N (Ball screw)
- ◆ Max. static load : 4,500N (ACME), 13,600N (Ball screw)
- ◆ Max. current : 3.5A @ 115V AC
- ◆ Max. speed : 52.8mm/sec @ no load
- ◆ Stroke : 102~610 mm
- ◆ Duty cycle : 25% or 4 min. continuous operation in 12 min.
- ◆ Working temperature range : -26°C ~ +65°C
- ◆ IP protection level : IP54
- ◆ Color : Black
- ◆ Certified : UL E362815, RoHS, EN61000-3, EN61000-4, EN6100-6, EN60335-1
- ◆ Overload protection by clutch
- ◆ Power wire length : 600mm (with tinned wires)



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## Options

- ◆ IP65
- ◆ Potentiometer, analog positioning feedback
- ◆ Adjustable limit switches (IP65 grade is not allowed for users to adjust limits switches)
- ◆ Optional or Customized Front/Rear Mounting Bracket

## Compatibility

### 1. Control Box

None

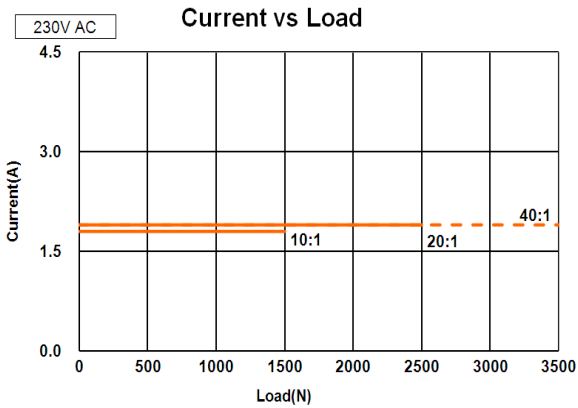
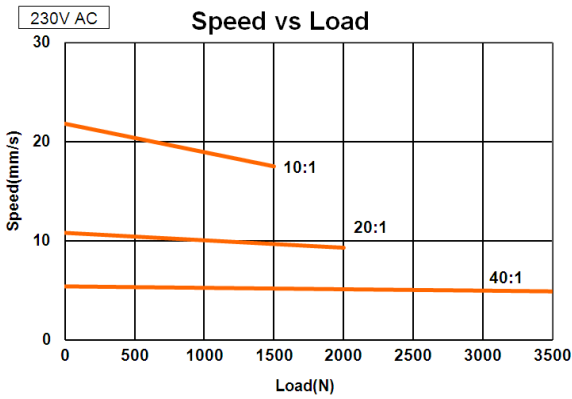
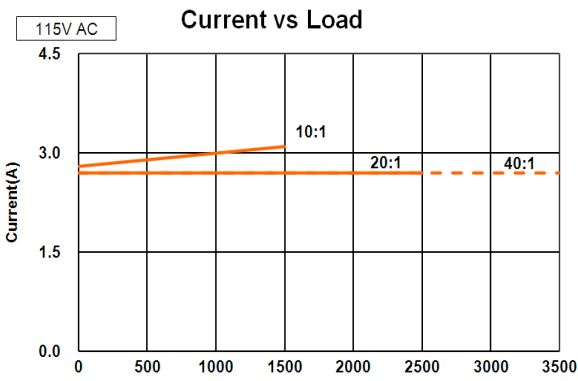
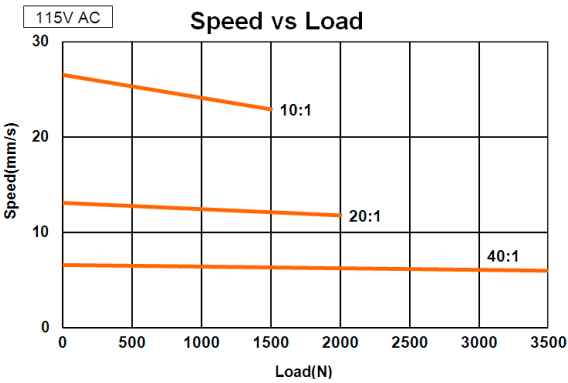
### 2. Accessory

None

# Performance Data

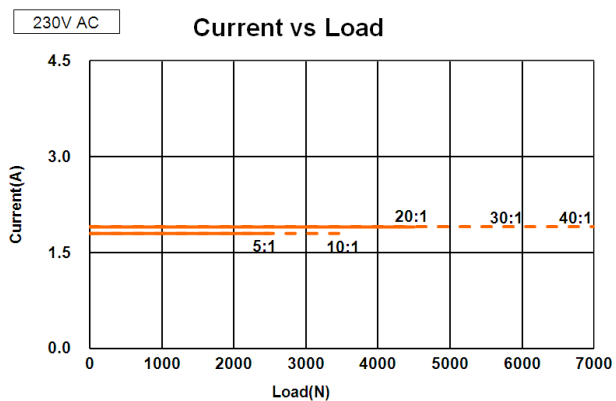
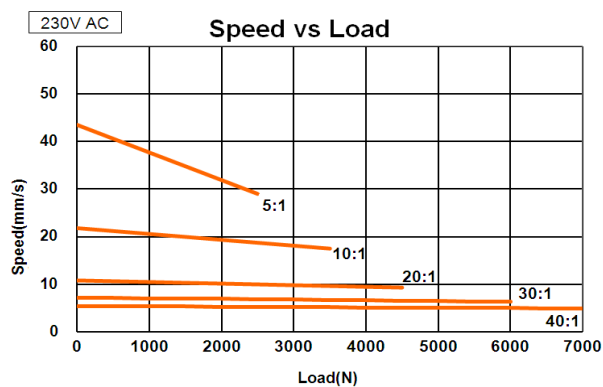
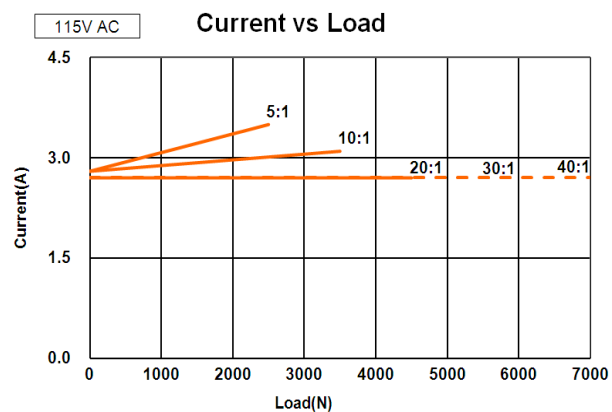
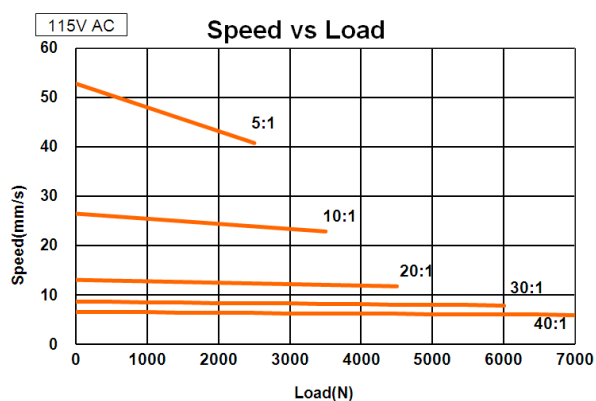
◆ IA5 ACME

Model No.	Push/Pull Max. (N)	Speed (mm/s)				Current (A)			
		115V		230V		115V		230V	
		No load	Full Load	No load	Full Load	No load	Full Load	No load	Full Load
IA5-XXX-10-A-XXX	1500	26.5	22.9	21.8	17.5	2.8	3.1	1.8	1.8
IA5-XXX-20-A-XXX	2500	13.1	11.8	10.8	9.3	2.7	2.7	1.9	1.9
IA5-XXX-40-A-XXX	3500	6.6	6.0	5.4	4.9	2.7	2.7	1.9	1.9



◆ IA5 Ball Screw

Model No.	Push/Pull Max. (N)	Speed (mm/s)				Current (A)			
		115V		230V		115V		230V	
		No load	Full Load	No load	Full Load	No load	Full Load	No load	Full Load
IA5-XXX-05-B-XXX	2500	52.8	40.8	43.5	29.0	2.8	3.5	1.8	1.8
IA5-XXX-10-B-XXX	3500	26.5	22.9	21.8	17.5	2.8	3.1	1.8	1.8
IA5-XXX-20-B-XXX	4500	13.1	11.8	10.8	9.3	2.7	2.7	1.9	1.9
IA5-XXX-30-B-XXX	6000	8.7	7.9	7.2	6.3	2.7	2.7	1.9	1.9
IA5-XXX-40-B-XXX	7000	6.6	6.0	5.4	4.9	2.7	2.7	1.9	1.9

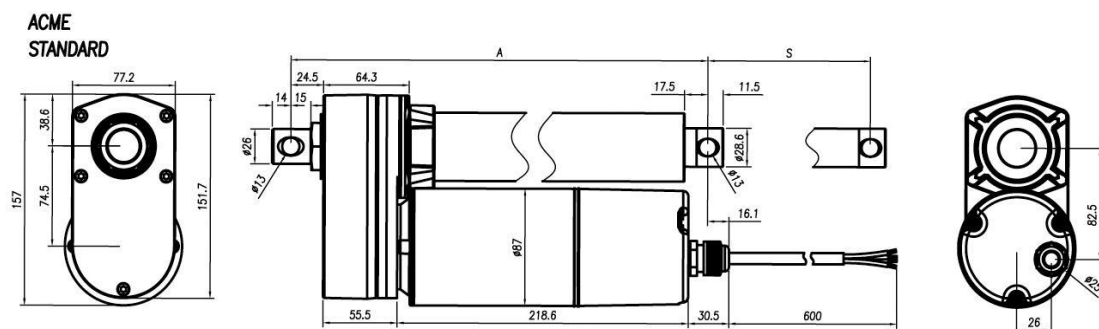


# Dimensions

## IA5 ACME types

### ◆ Standard

	4"	6"	8"	10"	12"	18"	24"
Stroke (S±2.5mm)	102	153	203	254	305	457	610
Retracted Length (A±3.8mm)	262	313	364	414	465	668	821

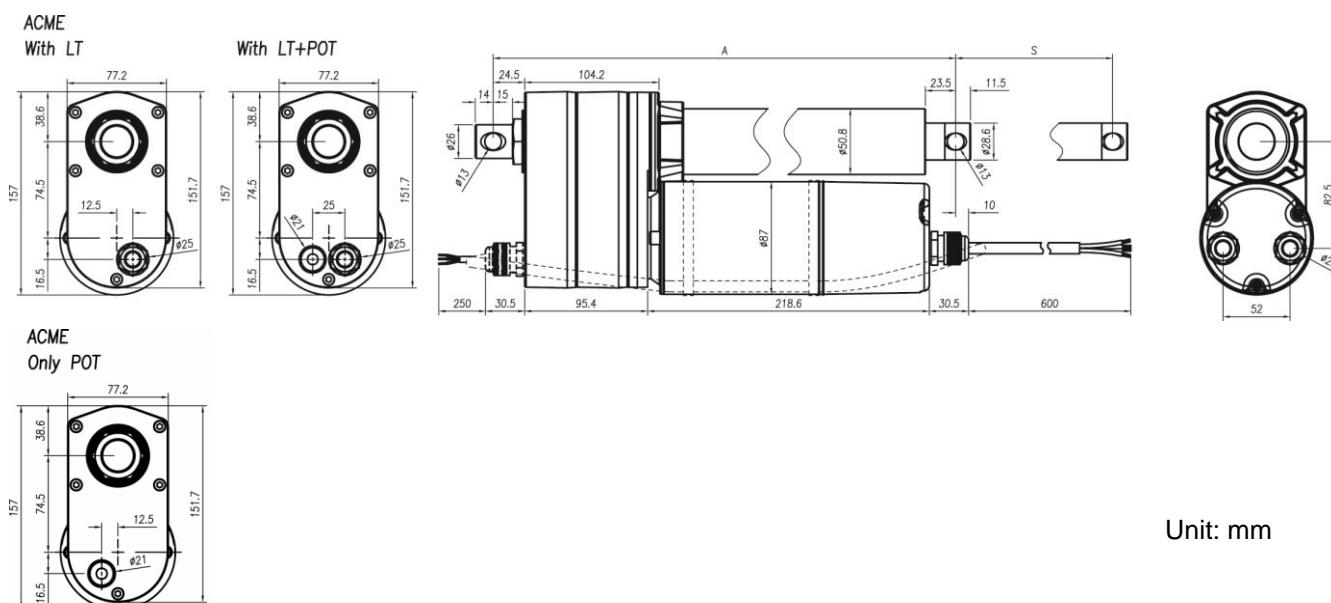


### ◆ With potentiometer (POT) only

	4"	6"	8"	10"	12"	18"	24"
Stroke (S±2.5mm)	102	153	203	254	305	457	610
Retracted Length (A±3.8mm)	302	353	404	454	505	708	861

### ◆ With limit switches or with both limit switches and POT

	4"	6"	8"	10"	12"	18"	24"
Stroke (S±5.0mm)	102	153	203	254	305	457	610
Retracted Length (A±5.0mm)	359	410	460	511	613	765	918

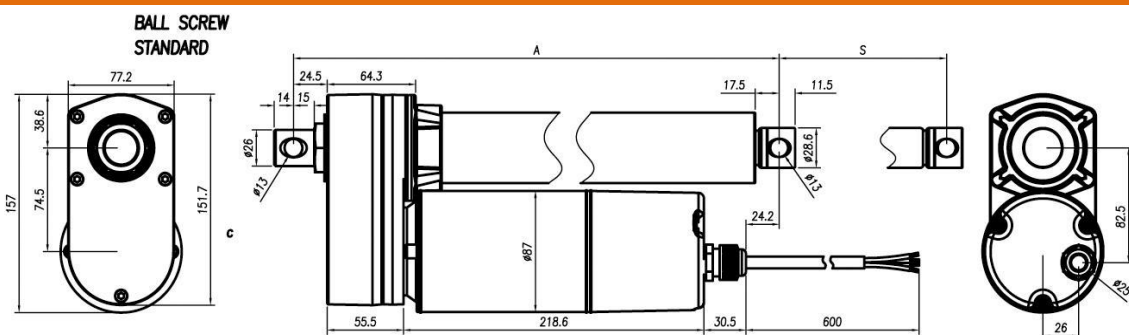


Unit: mm

## IA5 Ball Screw types

### ◆ Standard

	4"	6"	8"	10"	12"	18"	24"
Stroke ( $S \pm 2.5\text{mm}$ )	102	153	203	254	305	457	610
Retracted Length ( $A \pm 3.8\text{mm}$ )	302	353	404	455	506	735	888

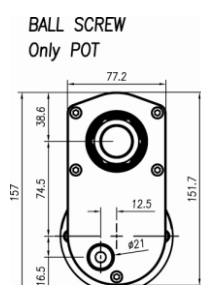
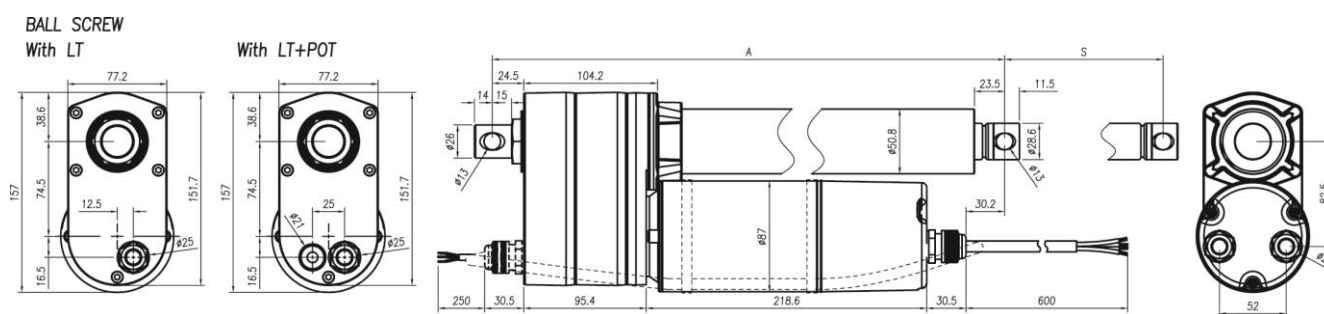


### ◆ With potentiometer (POT) only

	4"	6"	8"	10"	12"	18"	24"
Stroke ( $S \pm 2.5\text{mm}$ )	102	153	203	254	305	457	610
Retracted Length ( $A \pm 3.8\text{mm}$ )	342	393	444	495	546	775	928

### ◆ With limit switches or with both limit switches and POT

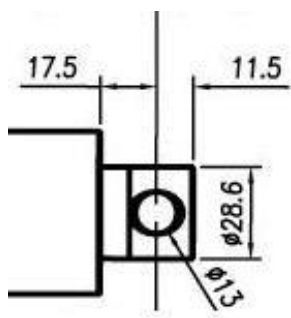
	4"	6"	8"	10"	12"	18"	24"
Stroke ( $S \pm 5.0\text{mm}$ )	102	153	203	254	305	457	610
Retracted Length ( $A \pm 5.0\text{mm}$ )	399	450	501	552	680	832	985



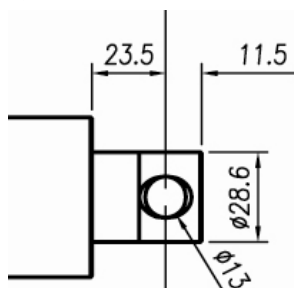
Unit: mm

## Front connector

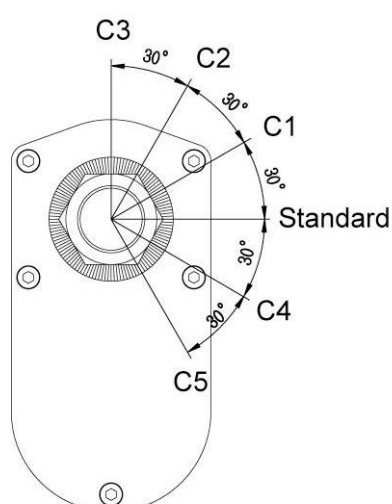
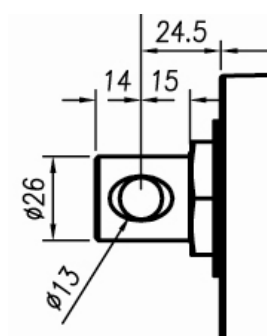
- ◆ Standard or with POT only



- ◆ With limit switches or with both limit switches and POT



## Rear connector and the orientation of clevis



Unit: mm

## Wiring

- ◆ Please refer to IA5 User Guide.

# Ordering Key

IA5——————

## Input Voltage

115 : 115V AC

230 : 230V AC

## Gear Ratio

05 : 5:1 (Ball screw only)

10 : 10:1

20 : 20:1

30 : 30:1 (Ball screw only)

40 : 40:1

## Spindle Type

A : ACME

B : Ball Screw

## Stroke

102 : 102mm

153 : 153mm

203 : 203mm

254 : 254mm

305 : 305mm

457 : 457mm

610 : 610mm

## Option

Blank : None

LT : Limit switch

POT : Potentiometer

IP65 : IP65

## Rear Clevis Orientation

Blank : 0° (Standard)

C1 : 30° CCW (view from rear connector)

C2 : 60° CCW

C3 : 90° CCW

C4 : 30° CW

C5 : 60° CW

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# MEDICAL

**MD7**

**MD21**

**MD50**

**MD51**

**MD52**

**MD53**

**MD56**

**MD57**

**MD60**

**MD66**

**MD80**

**MD80M**

**MD100**

**MD120**



# Actuator

## MD7



## Features

- ◆ MD7 is a quiet and powerful actuator designed for medical and homecare application. Our MD7C and CB2P control boxes, which are designed to be perfectly attached and integrated to MD7, are available for customers to choose.
- ◆ Main applications : Medical and homecare
- ◆ Input voltage : 24V DC / 12V DC
- ◆ Max. load : 6000N (push) / 4000N (pull)
- ◆ Max. current : 3A @ 24V DC, 6A @ 12V DC
- ◆ Max. speed at no load : 16.6mm/sec
- ◆ Max. speed at full load : 2.9mm/sec @ 6000N
- ◆ Stroke : 50 ~ 300 mm
- ◆ Duty cycle : 10% or 2 min continuous operation in 20 min.
- ◆ IP Protection level : IP54
- ◆ Color : RAL 7035
- ◆ Certified : EN60601-1-2
- ◆ Noise level :  $\leq$  50dB
- ◆ Preset limit switches

---

## Options

- ◆ Positioning signal feedback with Hall effect sensor x 1
- ◆ Positioning signal feedback with Hall effect sensor x 2
- ◆ Push only
- ◆ Safety nut
- ◆ Quick Release (must go with option Push Only and model code A8 or F8)
- ◆ Turn 90° Pivot orientation of rear connector

## Compatibility

### 1. Control box

MD6C, MD7C, CB2P, CB4P

(MD7C & CB2P can be easily fixed onto MD7 actuator)



MD7 & MD7C



MD7 & CB2P

### 2. Handset

HF, H3F, HT, FS1, FS2

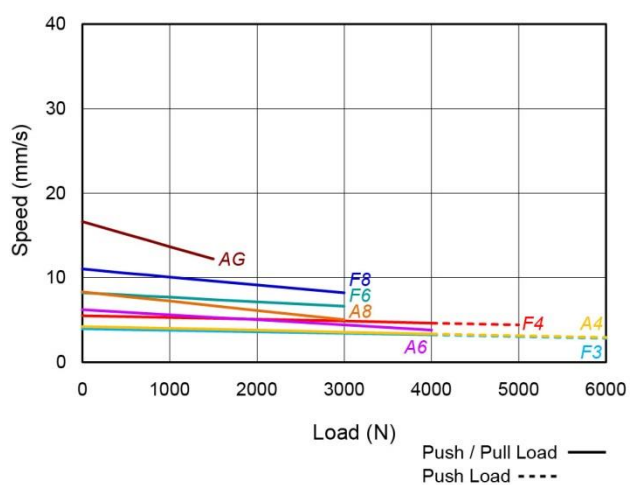
### 3. Accessory

None

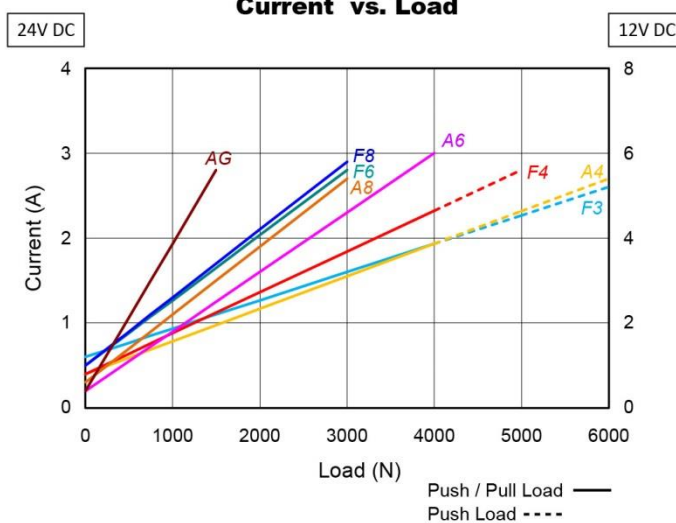
# Performance Data

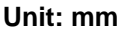
Model No.	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A)			
			No load	Full load	No load		Full load	
					12V	24V	12V	24V
MD7-XX-F3- XXX.XXX	6000	4000	4.1	2.8	1.2	0.6	5.2	2.6
MD7-XX-A4- XXX.XXX	6000	4000	4.2	2.9	0.8	0.4	5.4	2.7
MD7-XX-F4- XXX.XXX	5000	4000	5.5	4.4	0.8	0.4	5.6	2.8
MD7-XX-A6- XXX.XXX	4000	4000	6.2	3.8	0.4	0.2	6.0	3.0
MD7-XX-F6- XXX.XXX	3000	3000	8.2	6.6	1.0	0.5	5.6	2.8
MD7-XX-A8- XXX.XXX	3000	3000	8.3	5.0	0.6	0.3	5.4	2.7
MD7-XX-F8- XXX.XXX	3000	3000	11.0	8.2	1.0	0.5	5.8	2.9
MD7-XX-AG- XXX.XXX	1500	1500	16.6	12.2	0.4	0.2	5.6	2.8

**Speed vs. Load**

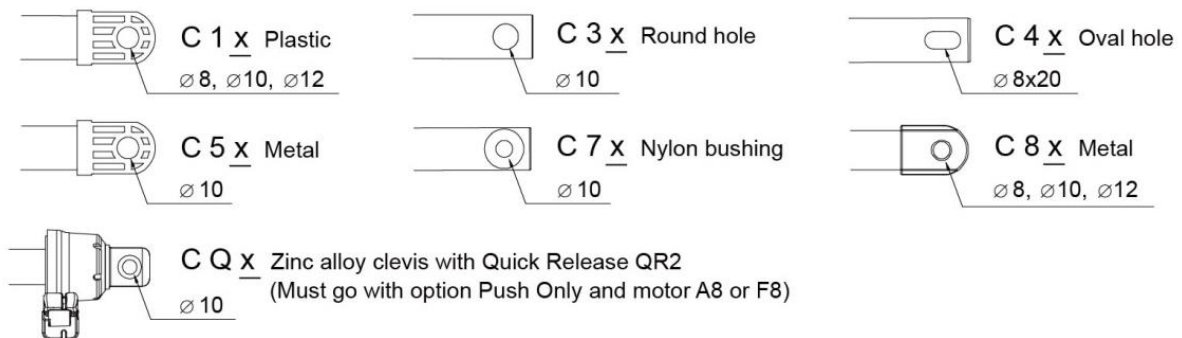


**Current vs. Load**

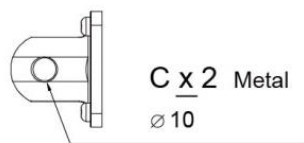


[illegible]

### ◆ Front Connector



### ◆ Rear Connector



◆ Available stroke (S) range = 50~300mm

◆ Retracted length (A)

Front connector	Standard	Description
C1x, C5x, C8x	$A \geq \text{Stroke} + 188\text{mm}$	
C3x, C4x, C7x	$A \geq \text{Stroke} + 160\text{mm}$	
CQx	$A \geq \text{Stroke} + 235 \text{ mm}$	With QR2 quick release

◆ **Extended length = S + A**

# Cable Plug

## ◆ DIN plug with Moteck V type or H type shape



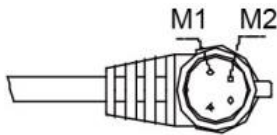
V type



H type

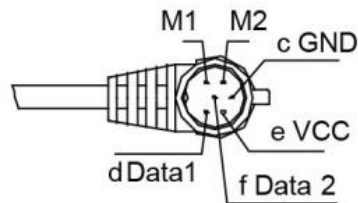
## Pin Assignment

No sensor feedback



M1(+) & M2(-): Extends

1x or 2x Hall sensors for positioning



M1(+) & M2(-): Extends

Pin 'Data2' is defined for HS4

## ◆ Phone jack (Φ6.35) with Moteck J1 type or J2 type shape



J1 type (Φ13.8)



J2 type (Φ16.7)

# Ordering Key

MD7-□□-□□-□□□.□□□-C□□-□□□□□□□□

## Input Voltage

24 : 24V DC

12 : 12V DC

## Motor and Spindle Code

F3, A4, F4, A6, F6, A8, F8, AG

(Refer to Performance Data)

## Retracted Length

(Refer to paragraph Dimensions)

## Extended Length

(Refer to paragraph Dimensions)

## Front Connector

1 : Plastic

3 : Round hole

4 : Oval hole

5 : Metal

7 : Nylon bushing

8 : Metal

Q : Zinc alloy clevis with QR2 Quick release

(Must go with option Push Only and code A8 or F8)

## Rear Connector

2 : Metal

## Options

HS1 : Hall effect sensor x 1

HS2 : Hall effect sensor x 2

PO : Push only

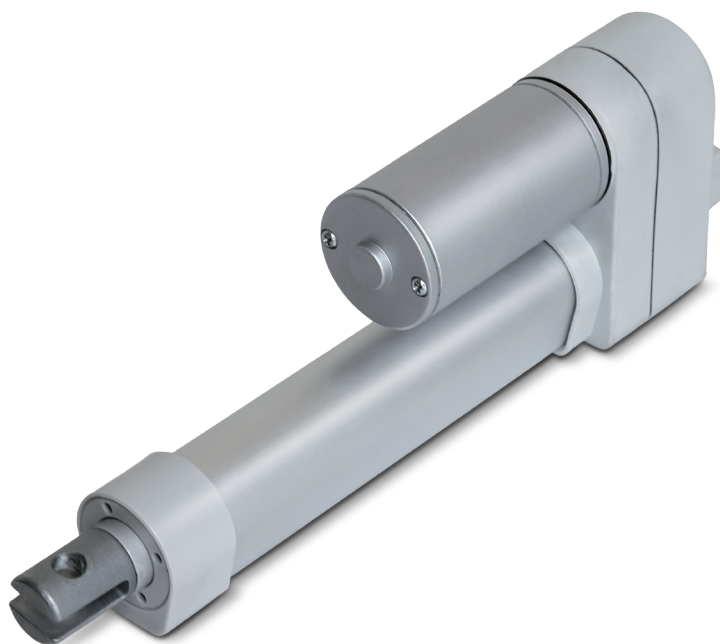
SN : Safety nut

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# Actuator MD21

MD21 is a compact and quiet actuator which is suitable for various applications with limited installation space, such as recliners, beds, and other applications.



## Feature

---

- Main applications: Industrial, furniture, medical
- Input voltage: 24V DC
- Max. load: 2000N (push / pull)
- Max. speed at no load: 18.8 mm/sec
- Max. speed at full load: 5.1 mm/sec @ 2000N
- Stroke: 100 ~ 400 mm
- Max. current: 2.5A @ 24V DC
- Noise Level:  $\leq 50$ dB
- IP Protection level: IPX5
- Color: RAL 7035
- Present limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +65°C
- Certified: CE Marking, EMC Directive 93/42/EEC and 2014/30/EU

## Option

---

- Positioning signal feedback with Hall effect sensor x 2

## Compatibility

Product	Model	MD21 spec
Control box	T control, CS1, CS2, CBT2 CB3T, CB4M, CB4P, MD6C	Without positioning sensor feedback
	CB3T-SY, CB4P-SY CB4M-S, CB4M-B	Positioning feedback with Hall effect sensor x 2

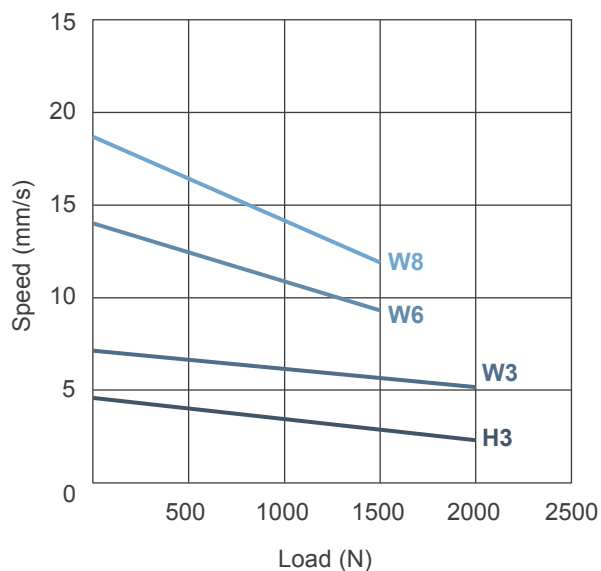
### Remarks:

Check data sheet of each control box for max. electric current supported.

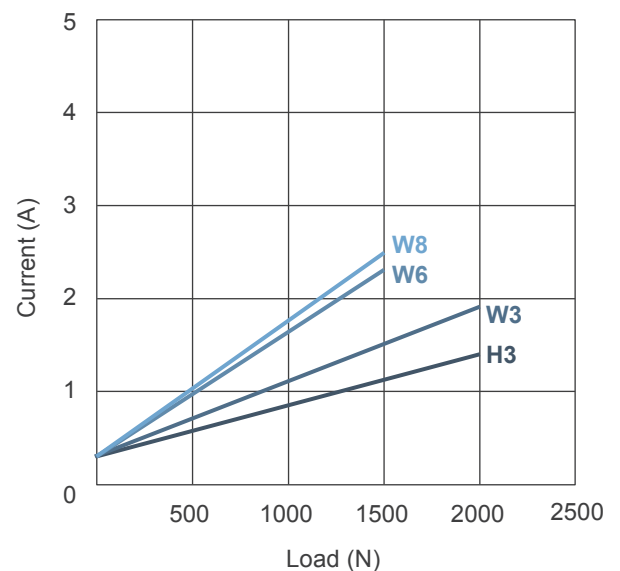
## Performance Data

Model No.	Push / Pull Max. (N)	Speed (mm/s)		Current (A) @ 24V	
		No load	Full load	No load	Full load
MD21-24 <b>H3</b> -XXX.XXX-XXX00XX	2000	4.5	2.3	0.3	1.4
MD21-24 <b>W3</b> -XXX.XXX-XXX00XX	2000	7.1	5.1	0.3	1.9
MD21-24 <b>W6</b> -XXX.XXX-XXX00XX	1500	14.0	9.3	0.3	2.3
MD21-24 <b>W8</b> -XXX.XXX-XXX00XX	1500	18.8	11.9	0.3	2.5

Speed vs. Load

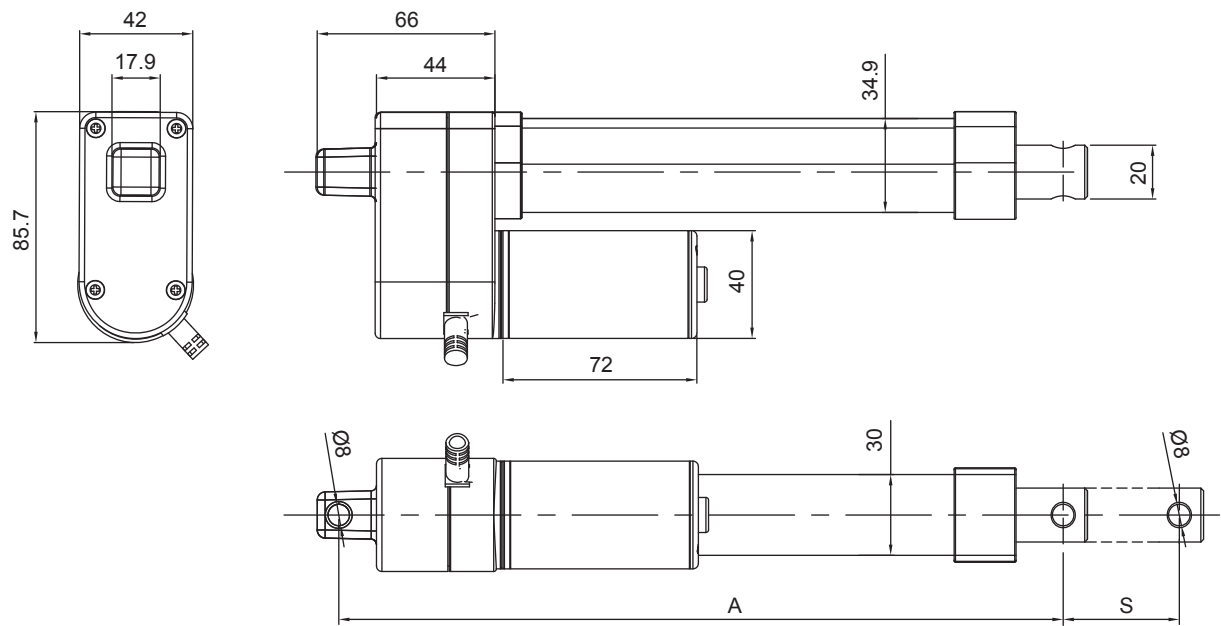


Current vs. Load





# Dimensions

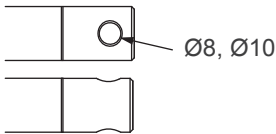


Front connector code	Retracted length (A)
1	$A \geq S + 152 \text{ mm}$
2	$A \geq S + 135 \text{ mm}$
3	$A \geq S + 145 \text{ mm}$

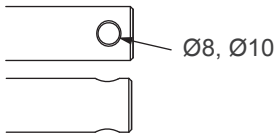
Available stroke (S) range = 100 ~ 400 mm  
Extended length = S + A

## Front Connector

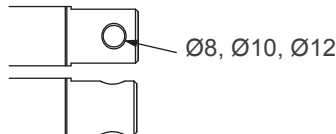
1: Plastic



2: Drilled hole

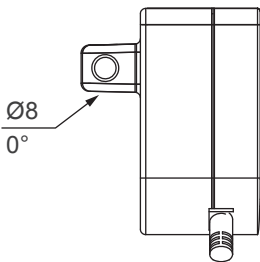


3: Metal

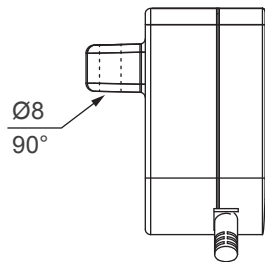


## Rear Connector

0: Plastic 0°

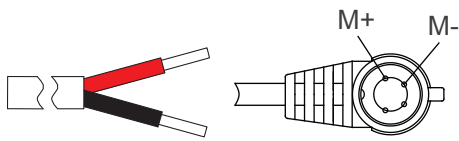


9: Plastic 90°



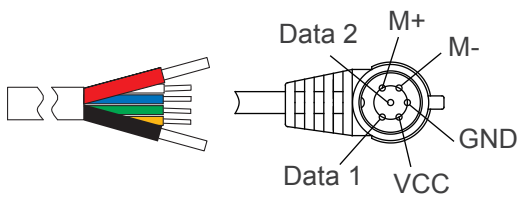
## Wiring & Cable plug

### Without positioning feedback



Power	
Red	Black
M+	M-

### With Hall sensors x 2



Power		Signal			
Red	Black	White	Blue	Green	Yellow
M+	M-	GND	Data 1	Data 2	VCC

Model No.	Resolution (pulses/mm)
MD21-24H3-XXX.XXX-XXH00XX	14
MD21-24W3-XXX.XXX-XXH00XX	14
MD21-24W6-XXX.XXX-XXH00XX	7
MD21-24W8-XXX.XXX-XXH00XX	5.2

### Remarks:

Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

MD21 - 24W3 - 412 - 612 - 3 9 0 0 0 5 0	
Motor and Spindle type	<b>24H3</b> <b>24W3</b> <b>24W6</b> <b>24W8</b> (Refer to Performance Data)
Retracted length	<b>XXX</b> (Refer to Dimensions)
Extended length	<b>XXX</b> (Refer to Dimensions)
Front connector type	<b>1:</b> Plastic <b>2:</b> Drilled hole <b>3:</b> Metal (Refer to Dimensions)
Rear connector type	<b>0:</b> Plastic 0° <b>9:</b> Plastic 90° (Refer to Dimensions)
Positioning feedback	<b>0:</b> None <b>H:</b> Hall effect sensor x 2
Reserved	<b>0:</b> No meaning
Reserved	<b>0:</b> No meaning
IP Protection level	<b>5:</b> IPX5
Cable length	<b>0:</b> 300 mm straight <b>1:</b> 1000 mm straight <b>A:</b> 450 mm with 300 mm coiled

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# Actuator MD50

MD50 is a compact and powerful actuator up to 3500N thrust, which is designed for the use in furniture and homecare application. It's an ideal solution for applications that require limited installation space.



## Feature

---

- Main applications: Furniture, homecare
- Input voltage: 24V DC
- Max. load: 3500N (push) / 2000N (pull)
- Max. speed at no load: 11.4 mm/sec
- Max. speed at full load: 3.8 mm/sec @ 3500N
- Stroke: 50 ~ 600 mm
- Max. current: 3.8A @ 24V DC
- Noise Level:  $\leq 65$ dB
- Color: Black
- Present limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +60°C
- Certified: CE Marking, Medical Device Directive (MDD) 93/42/EEC

## Option

---

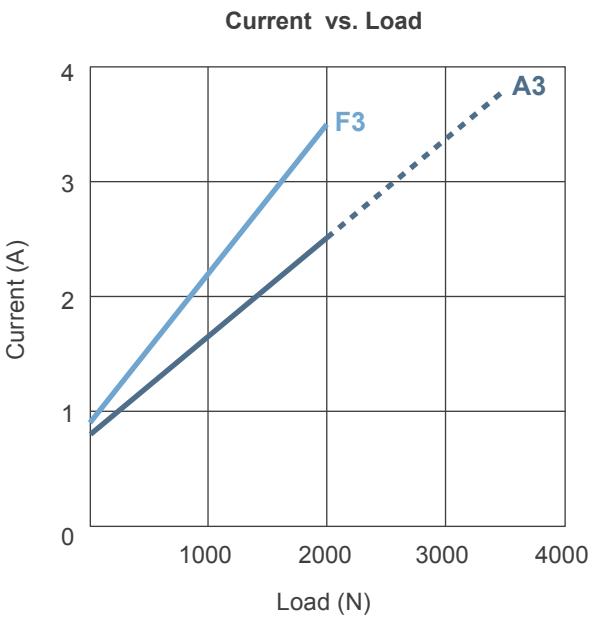
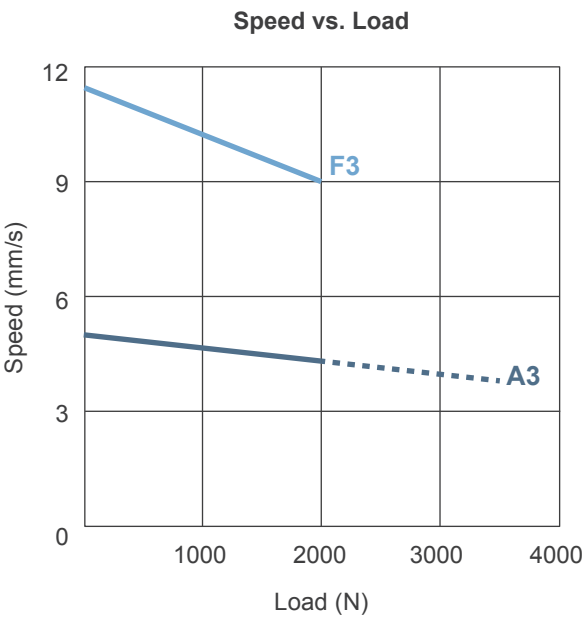
- Mechanical push only extension tube

## Compatibility

Product		Model	MD50 spec
Control box	CB3T		With Moteck F-type DIN plug

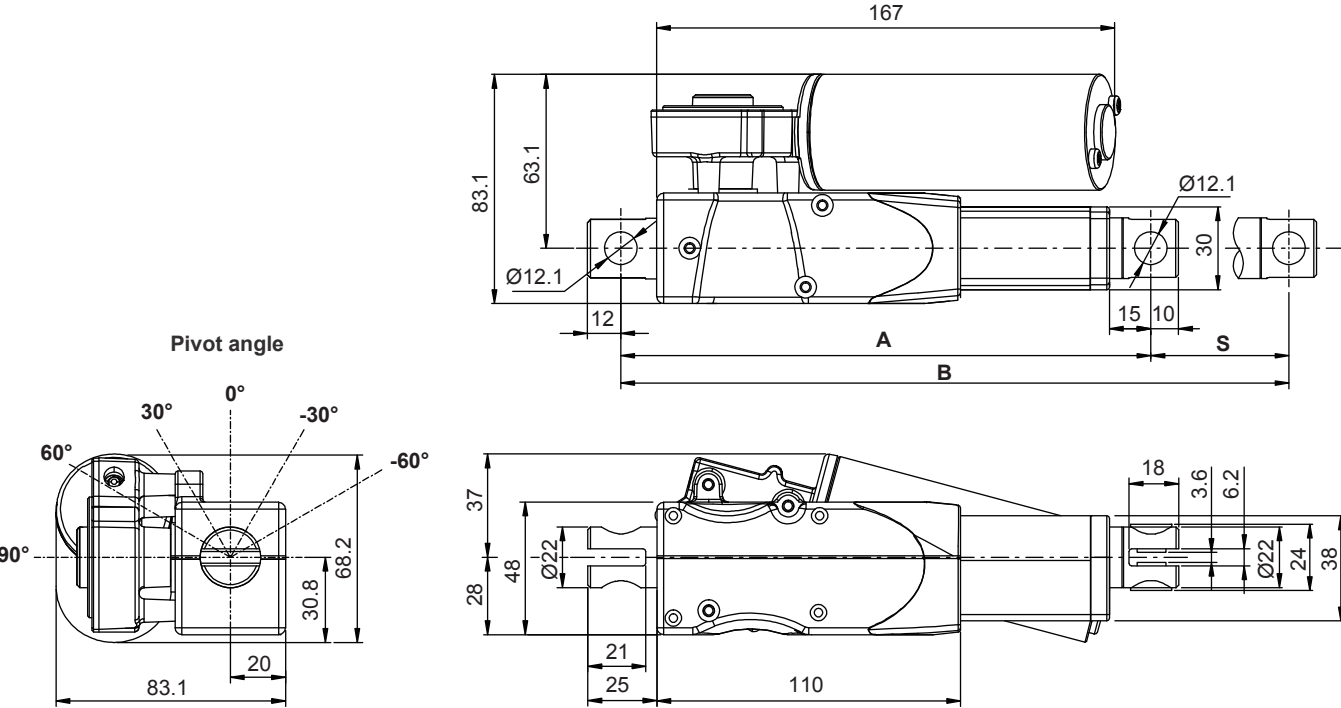
## Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A) @ 24V	
			No load	Full load	No load	Full load
MD50-24-A3-XXX.XXX-CXX-XXXX	3500	2000	5.0	3.8	0.8	3.8
MD50-24-F3-XXX.XXX-CXX-XXXX	2000	2000	11.4	9.0	0.9	3.5



Push / Pull Load — Push Load - - -

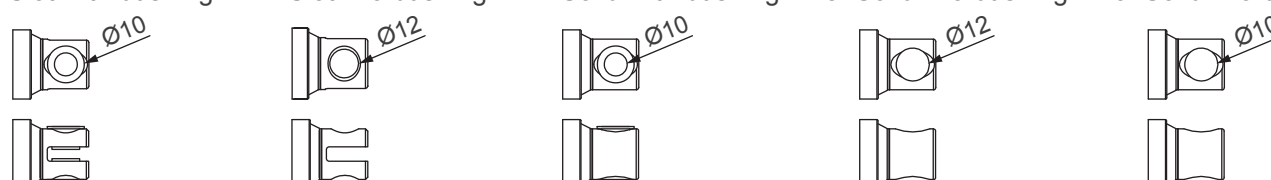
# Dimensions



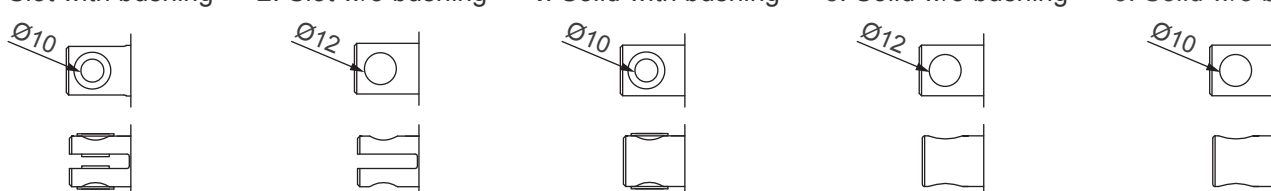
Stroke (S)	Retracted length (A)
$\leq 55$ mm	192 mm
$\leq 300$ mm	$A \geq S + 137$ mm
$> 300$ mm	$A \geq S + 156$ mm

Available stroke (S) range = 50 ~ 600 mm  
Extended length (B) = S + A

## Front Connector

- 1: Slot with bushing
2: Slot w/o bushing
4: Solid with bushing
5: Solid w/o bushing
6: Solid w/o bushing
- 
- The image shows six different front connector options, labeled 1 through 6. Each option is represented by a top and side view. Options 1 and 2 are slot connectors with and without a bushing, respectively. Options 4, 5, and 6 are solid connectors with and without a bushing, respectively. The dimensions for the bushing are  $\varnothing 10$  mm for options 1, 4, and 6, and  $\varnothing 12$  mm for options 2, 5, and 6.

## Rear Connector

- 1: Slot with bushing
2: Slot w/o bushing
4: Solid with bushing
5: Solid w/o bushing
6: Solid w/o bushing
- 
- The image shows six different rear connector options, labeled 1 through 6. Each option is represented by a top and side view. Options 1 and 2 are slot connectors with and without a bushing, respectively. Options 4, 5, and 6 are solid connectors with and without a bushing, respectively. The dimensions for the bushing are  $\varnothing 10$  mm for options 1, 4, and 6, and  $\varnothing 12$  mm for options 2, 5, and 6.

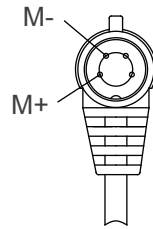
## Wiring & Cable plug

---

### 2 wires without jacket



### MOTECK F type DIN plug



No sensor feedback

### Remarks:

Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

<b>MD50 - 24 - A3 - 237 - 337 - C 1 1 - PO</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC
<b>Motor and Spindle type</b>	<b>A3:</b> Standard version <b>F3:</b> Fast version (Refer to Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Front connector type</b>	<b>1:</b> Slot with bushing, Ø10 mm <b>2:</b> Slot w/o bushing, Ø12 mm <b>4:</b> Solid with bushing, Ø10 mm <b>5:</b> Solid w/o bushing, Ø12 mm <b>6:</b> Solid w/o bushing, Ø10 mm (Refer to Dimensions)
<b>Rear connector type</b>	<b>1:</b> Slot with bushing, Ø10 mm <b>2:</b> Slot w/o bushing, Ø12 mm <b>4:</b> Solid with bushing, Ø10 mm <b>5:</b> Solid w/o bushing, Ø12 mm <b>6:</b> Solid w/o bushing, Ø10 mm (Refer to Dimensions)
<b>Option</b>	<b>Blank:</b> None <b>PO:</b> Push only

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# Actuator MD51

MD51 is a compact and powerful actuator up to 3500N thrust, which is designed for the use in furniture and homecare application. It's an ideal solution for applications that require limited installation space. There are plastic casings providing IP protection.



## Feature

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- Main applications: Furniture, homecare
- Input voltage: 24V DC
- Max. load: 3500N (push) / 2000N (pull)
- Max. speed at no load: 11.4 mm/sec
- Max. speed at full load: 3.8 mm/sec @ 3500N
- Stroke: 100 ~ 600 mm
- Max. current: 3.8A @ 24V DC
- Noise Level:  $\leq 65$ dB
- IP Protection level: IP66
- Color: Black
- Present limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +60°C
- Certified: CE Marking, Medical Device Directive (MDD) 93/42/EEC

## Option

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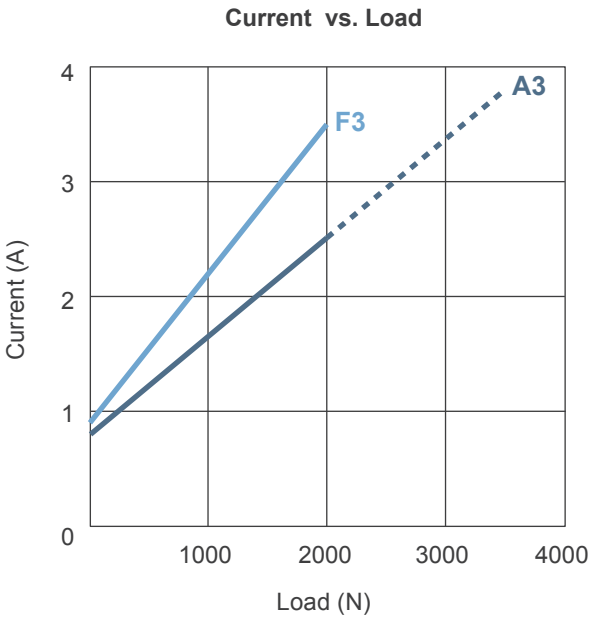
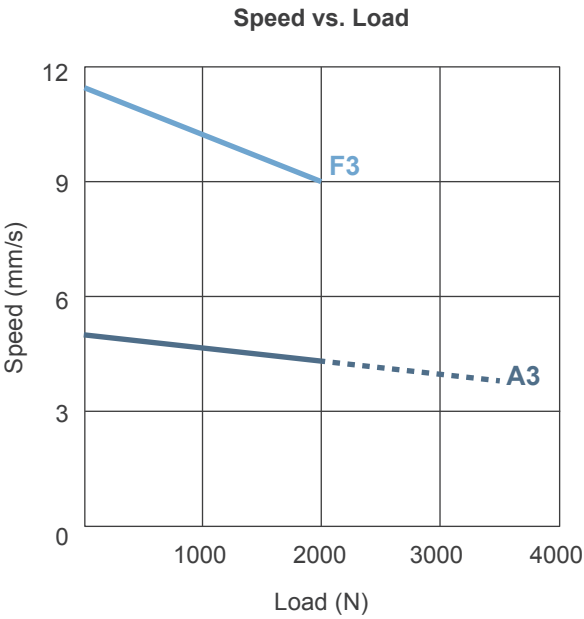
- Mechanical push only extension tube

## Compatibility

Product	Model	MD51 spec
Control box	CB3T	With Moteck F-type DIN plug

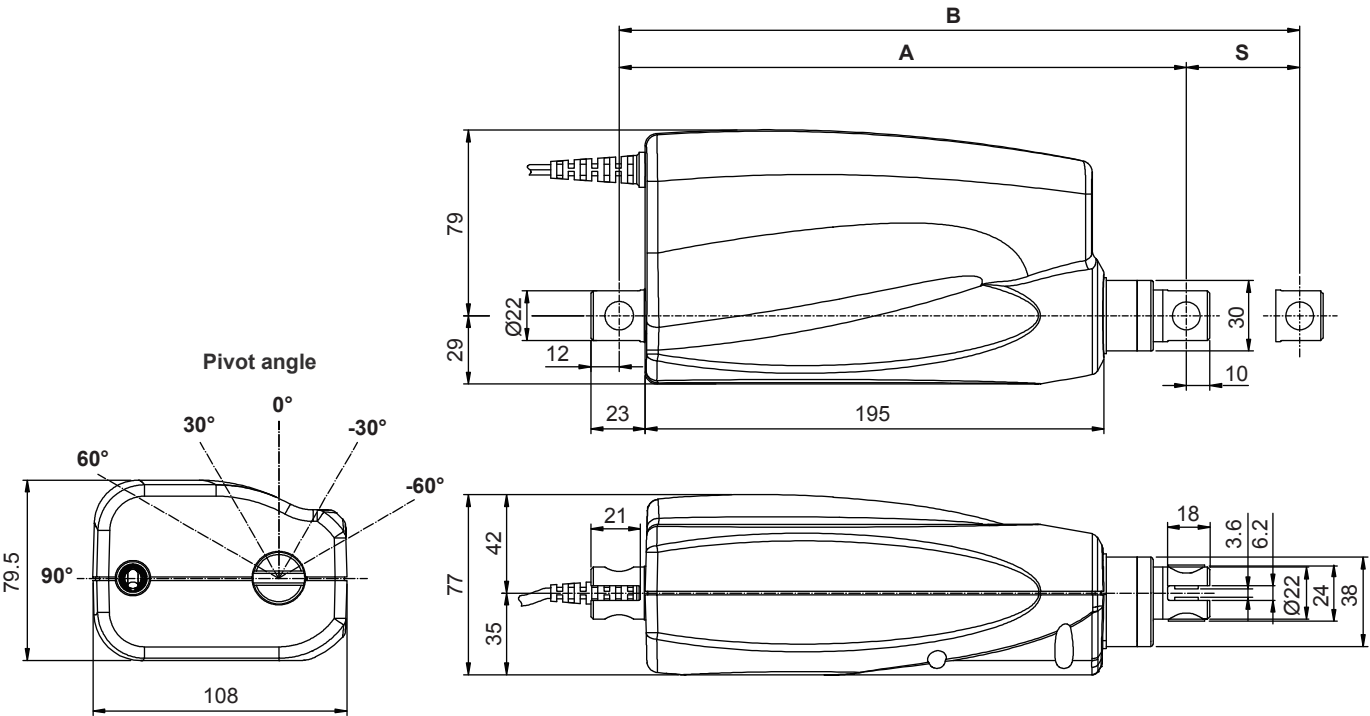
## Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A) @24V	
			No load	Full load	No load	Full load
MD51-24-A3-XXX.XXX-CXX-XXXX	3500	2000	5.0	3.8	0.8	3.8
MD51-24-F3-XXX.XXX-CXX-XXXX	2000	2000	11.4	9.0	0.9	3.5



Push / Pull Load — Push Load - - -

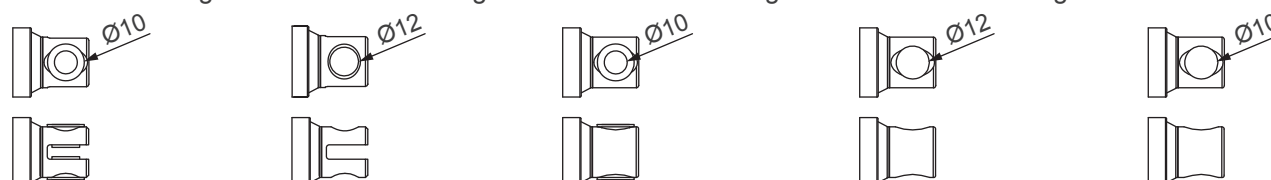
# Dimensions



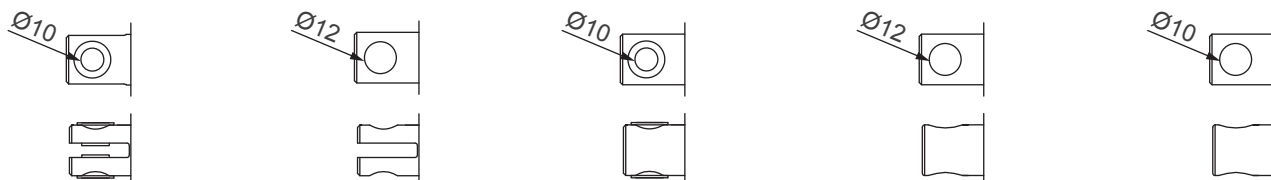
Stroke (S)	Retracted length (A)
≤ 300 mm	$A \geq S + 141 \text{ mm}$
> 300 mm	$A \geq S + 160 \text{ mm}$

Available stroke (S) range = 100 ~ 600 mm  
Extended length (B) = S + A

## Front Connector

- 1: Slot with bushing
2: Slot w/o bushing
4: Solid with bushing
5: Solid w/o bushing
6: Solid w/o bushing
- 

## Rear Connector

- 1: Slot with bushing
2: Slot w/o bushing
4: Solid with bushing
5: Solid w/o bushing
6: Solid w/o bushing
- 

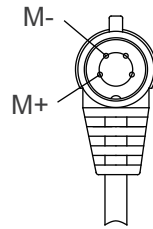
## Wiring & Cable plug

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### 2 wires without jacket



### MOTECK F type DIN plug



No sensor feedback

### Remarks:

Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

<b>MD51 - 24 - A3 - 575 - 975 - C 1 1 - PO</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC
<b>Motor and Spindle type</b>	<b>A3:</b> Standard version <b>F3:</b> Fast version (Refer to Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Front connector type</b>	<b>1:</b> Slot with bushing, Ø10 mm <b>2:</b> Slot w/o bushing, Ø12 mm <b>4:</b> Solid with bushing, Ø10 mm <b>5:</b> Solid w/o bushing, Ø12 mm <b>6:</b> Solid w/o bushing, Ø10 mm (Refer to Dimensions)
<b>Rear connector type</b>	<b>1:</b> Slot with bushing, Ø10 mm <b>2:</b> Slot w/o bushing, Ø12 mm <b>4:</b> Solid with bushing, Ø10 mm <b>5:</b> Solid w/o bushing, Ø12 mm <b>6:</b> Solid w/o bushing, Ø10 mm (Refer to Dimensions)
<b>Option</b>	<b>Blank:</b> None <b>PO:</b> Push only

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# Actuator MD52

MD52 features its stainless extension tube, suitable to work in the harsh condition against dust and rain.



## Feature

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- Main applications: Industrial equipment
- Input voltage: 24V DC
- Max. load: 1000N (push / pull)
- Max. speed at no load: 25 mm/sec
- Max. speed at full load: 18.5 mm/sec @ 1000N
- Stroke: 100 ~ 300 mm
- Max. current: 5A @ 24V DC
- Noise Level:  $\leq 70$ dB
- IP Protection level: IP66 / IP69K
- Color: Black
- Stainless steel front connector and extension tube
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +40°C
- Certified: CE Marking, EMC Directive 2014/30/EU

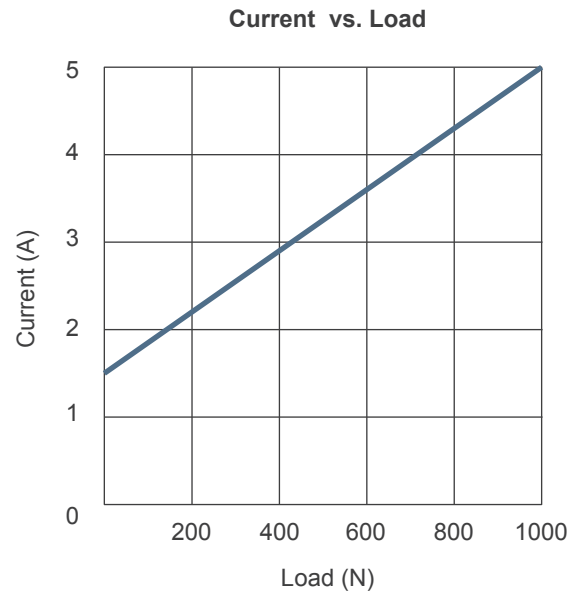
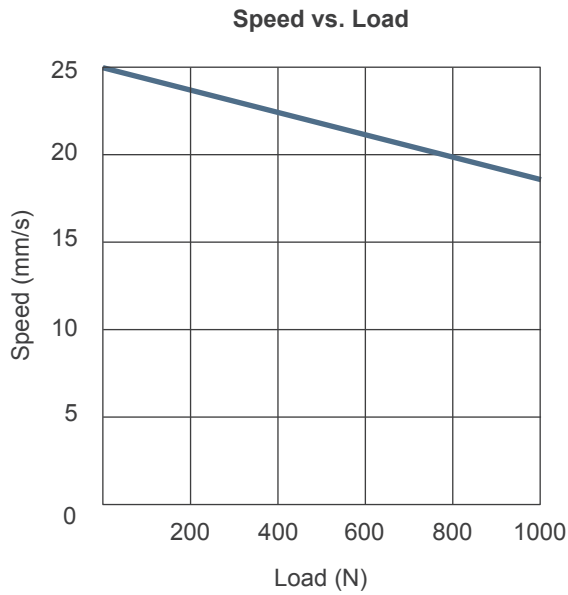
## Option

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- Bellow protection, available with 100 mm stroke only

Performance Data

Model No.	Push / Pull Max. (N)	Speed (mm/s)		Current (A) @ 24V	
		No load	Full load	No load	Full load
MD52-24-M6-XXX.XXX-XXX	1000	25.0	18.5	1.5	5.0

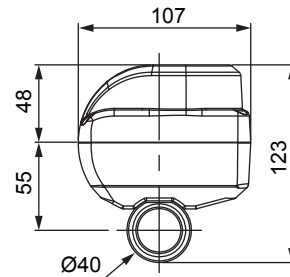
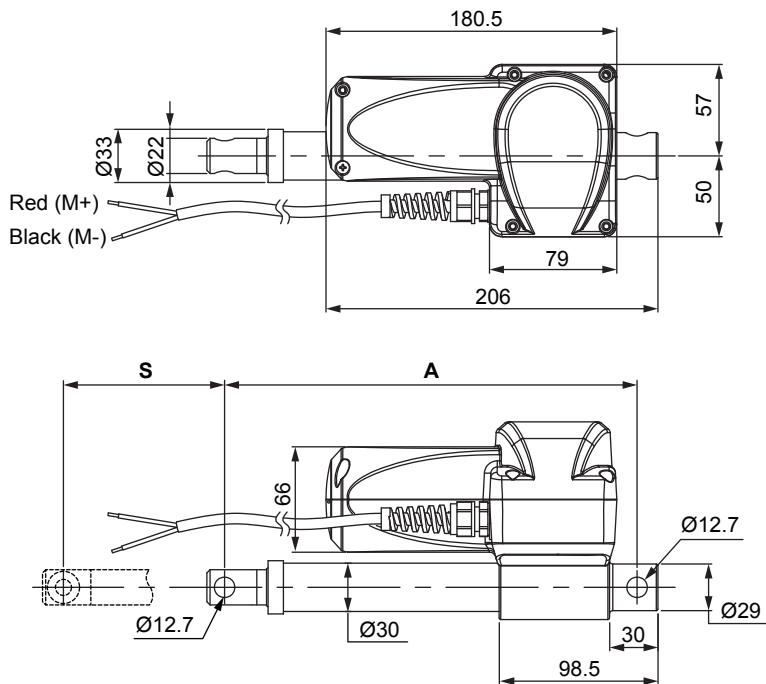


## Dimensions

### Standard

Retracted length (A)  $\geq S + 156$  mm

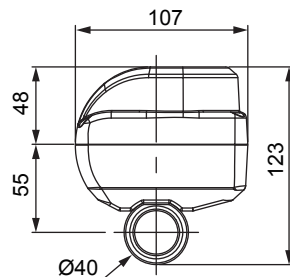
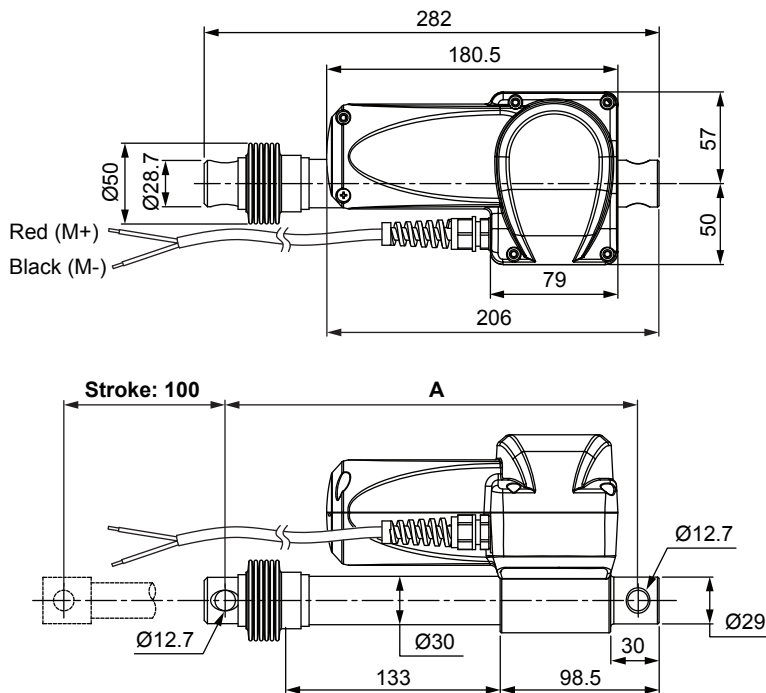
Available stroke (S) range = 100 ~ 300 mm



### With Bellow protection

Retracted length (A)  $\geq S + 156$  mm

Available stroke (S) range = 100 mm



### Remark:

Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.



## Ordering Key

		MD52 - 24 - M6 - 256 - 356 - 0 0 0						
Input voltage	24: 24V DC							
Motor and Spindle type	M6 (Refer to Performance Data)							
Retracted length	XXX (Refer to Dimensions)							
Extended length	XXX (Refer to Dimensions)							
Reserved	0: No meaning							
Reserved	0: No meaning							
Option	0: None 1: Bellow							

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# Actuator MD53

MD53 is designed to be used for fitness equipment, such as treadmills. There are preset limit switches included and POT that serves as an option to support customer control. In addition, this model is available with either 36VDC or 24VDC input voltage.



## Feature

---

- Main applications: Fitness equipment, industrial
- Input voltage: 36V DC / 24V DC
- Max. load: 3500N (push) / 2000N (pull)
- Max. speed at no load: 10.5 mm/sec
- Max. speed at full load: 8.5 mm/sec @ 3500N
- Stroke: 100 ~ 300 mm
- Max. current: 3.5A @ 36V DC
- Noise Level:  $\leq 60$ dB
- Color: Black
- Preset limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +65°C

## Option

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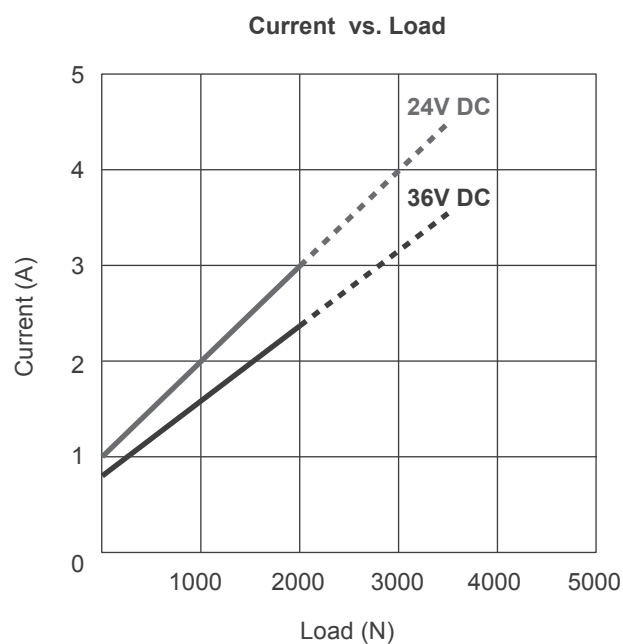
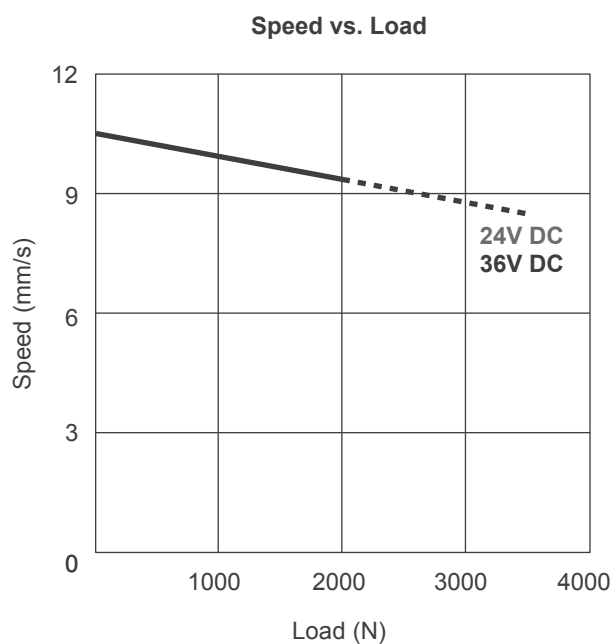
- Potentiometer

## Compatibility

Product	Model	MD53 spec
Control box	T control	Without potentiometer 24V motor
	CIS3	With potentiometer 24V motor

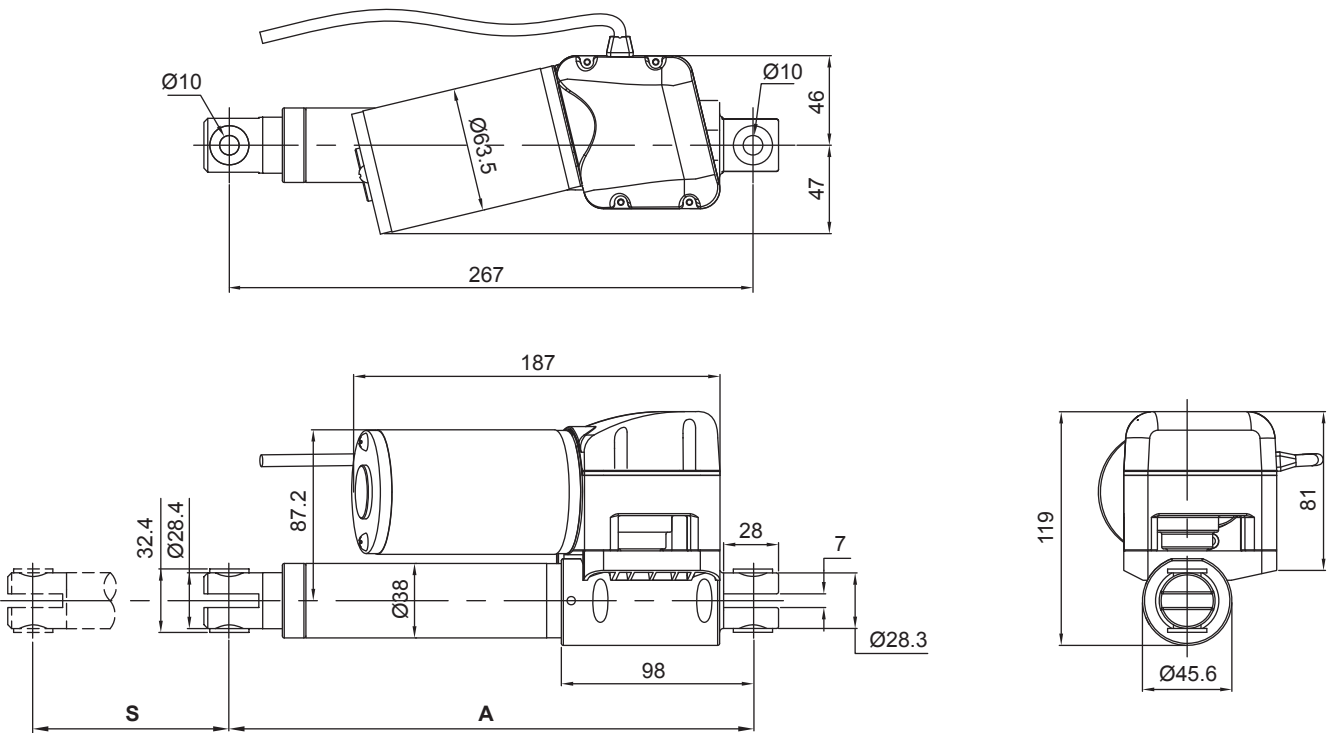
## Performance Data

Model No.	Input voltage	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A)	
				No load	Full load	No load	Full load
MD53-24-XXX.XXX-CXX	24	3500	2000	10.5	8.5	1.0	4.5
MD53-36-XXX.XXX-CXX	36	3500	2000	10.5	8.5	0.8	3.5



Push / Pull Load — Push Load - - -

# Dimensions



Stroke (S)	100	150	200	250	300
Retracted Length (A)	267	317	367	417	467

Available stroke (S) range = 100 ~ 300 mm  
Extended length = S + A

## Front Connector

- 1: Metal with plastic bushing
- 2: Metal without bushing



## Rear Connector

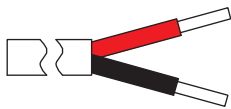
- 1: Metal with plastic bushing
- 2: Metal without bushing



# Wiring & Cable plug

## Without positioning feedback

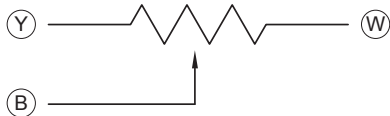
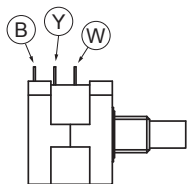
Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.



Power	
Red	Black
M+	M-

## With potentiometer (POT)

The POT resistance value between blue and white wires increases when actuator extends. Meanwhile, resistance value between blue and yellow wires decreases.



Power		Signal		
Red	Black	White	Yellow	Blue
M+	M-	GND	VCC	Data

Value of Poteniometer	
Stroke (mm)	Resistance (Unit: $\Omega$ , Tolerance: $\pm 22\Omega$ )
0	0
100	428
150	642
200	856
250	785
300	879

## Ordering Key

		<b>MD53 - 24 - 267 - 367 - C 1 1 - POT</b>					
<b>Input voltage</b>	<b>24:</b> 24V DC <b>36:</b> 36V DC						
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)						
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)						
<b>Front connector type</b>	<b>1:</b> Metal with plastic bushing <b>2:</b> Metal without bushing						
<b>Rear connector type</b>	<b>1:</b> Metal with plastic bushing <b>2:</b> Metal without bushing						
<b>Option</b>	<b>Blank:</b> None <b>POT:</b> Potentiometer						

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# Actuator MD56

MD56 is a powerful but compact actuator up to 5000N max. thrust that is suitable for wide range of applications including medical, homecare, furniture and industrial...etc. The motor orientation can be chosen in every 30 degrees of whole round, which makes it an ideal solution for applications where installation space is limited.



## Feature

---

- Main applications: Furniture, homecare, medical, industrial
- Input voltage: 24V DC
- Max. load: 5000N (push) 3500N (pull)
- Max. speed at no load: 43 mm/sec
- Max. speed at full load: 4 mm/sec @5000N
- Stroke: 50 ~ 400 mm
- Max. current: 5A @ 24V DC
- Noise Level:  $\leq 65$ dB
- Motor orientation: 360° in steps of every 30°
- IP Protection level: IPX1
- Color: Black
- Preset cam type limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -25°C ~ +65°C
- Certified: CE Marking, EMC Directive 93/42/EEC

## Option

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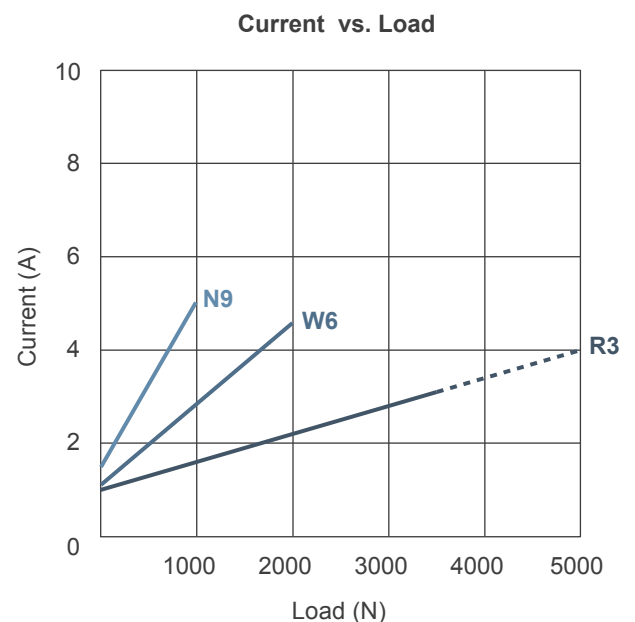
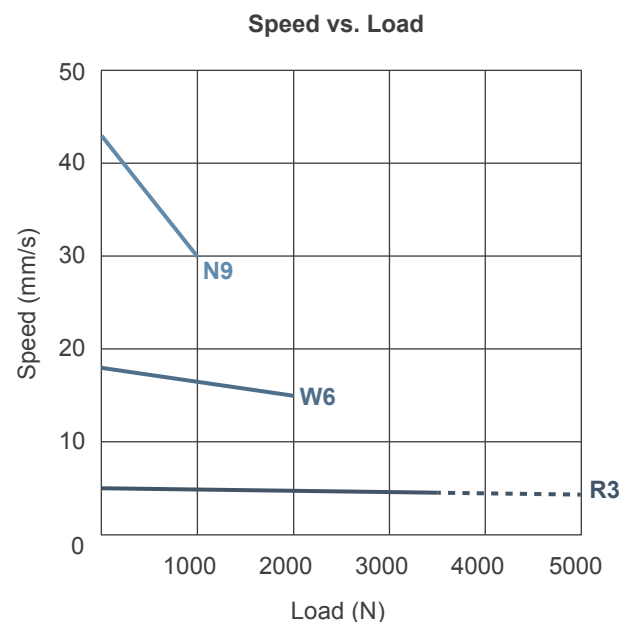
- Positioning signal feedback with Hall effect sensor x 2
- Positioning feedback with Reed sensor
- Positioning feedback with Potentiometer (POT)
- IPX6 waterproof case

## Compatibility

Product	Model	MD56 spec
Control box	CB2P, CB4P, CB4P-HP, MD6C	Without positioning sensor feedback 4-pin MOTECK H or V type DIN plug
	CB4P-SY	Positioning feedback with Hall effect sensor x 2 6-pin MOTECK H or V type DIN plug

## Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Typical speed (mm/s)		Typical current (A) @ 24V	
			No load	Full load	No load	Full load
MD56-X-24 <b>R3</b> -XXX.XXX-XXXX0XX	5000	3500	5	4	1.0	4.0
MD56-X-24 <b>W6</b> -XXX.XXX-XXXX0XX	2000	2000	18	15	1.1	4.6
MD56-X-24 <b>N9</b> -XXX.XXX-XXXX0XX	1000	1000	43	30	1.5	5.0



Push / Pull Load —

Push Load - - -

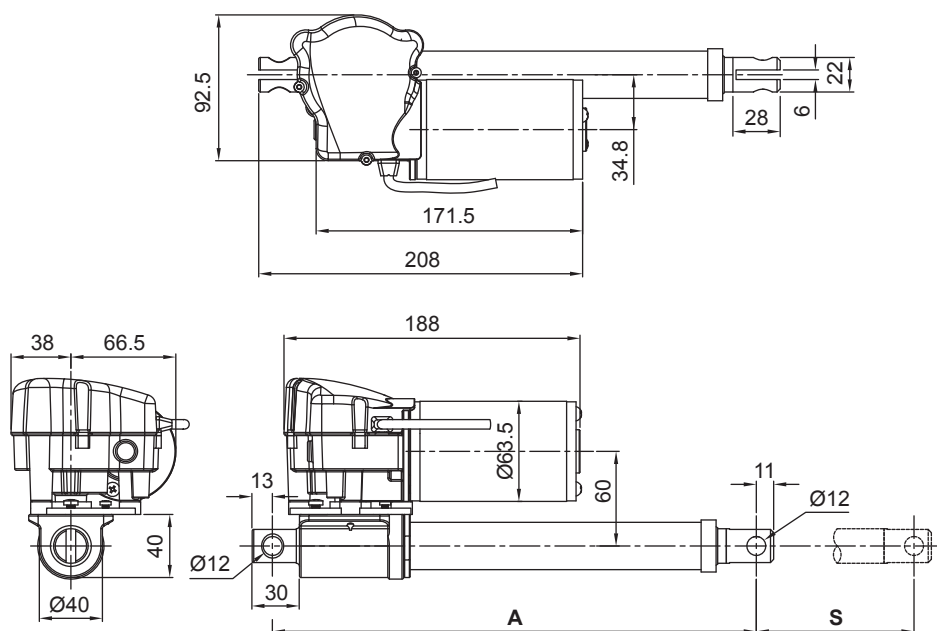


## Dimensions

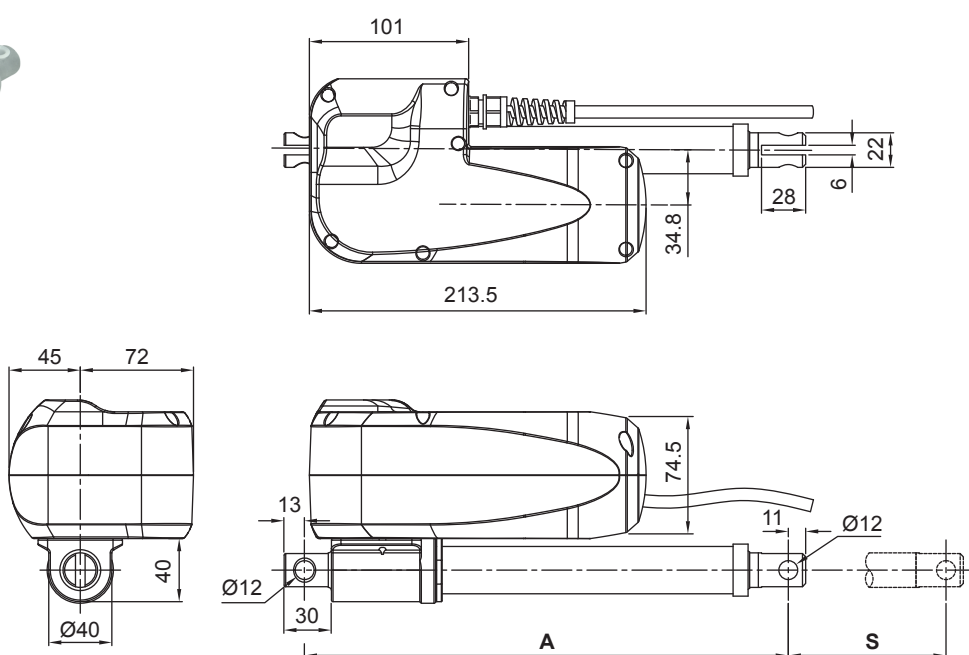
Stroke (S): 50 ~ 400 mm

Retracted Length (A):  $\geq S+156$  mm

### Standard type

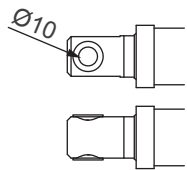


### With IPX6 waterproof case

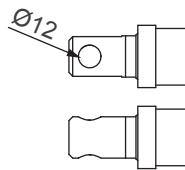


## Front Connector

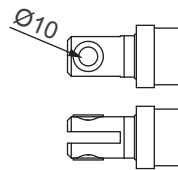
1: Solid with bushing



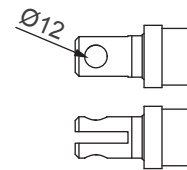
2: Solid w/o bushing



3: Slot with bushing

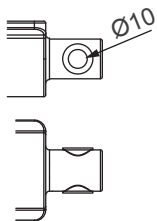


4: Slot w/o bushing

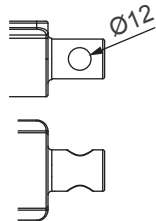


## Rear Connector

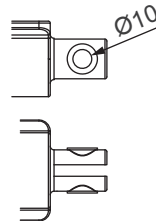
1: Solid with bushing



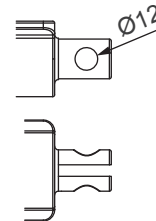
2: Solid w/o bushing



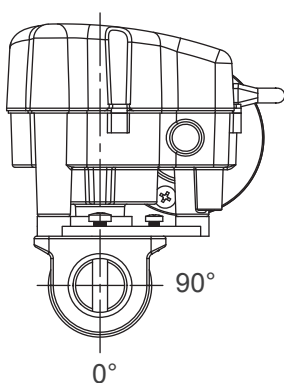
3: Slot with bushing



4: Slot w/o bushing

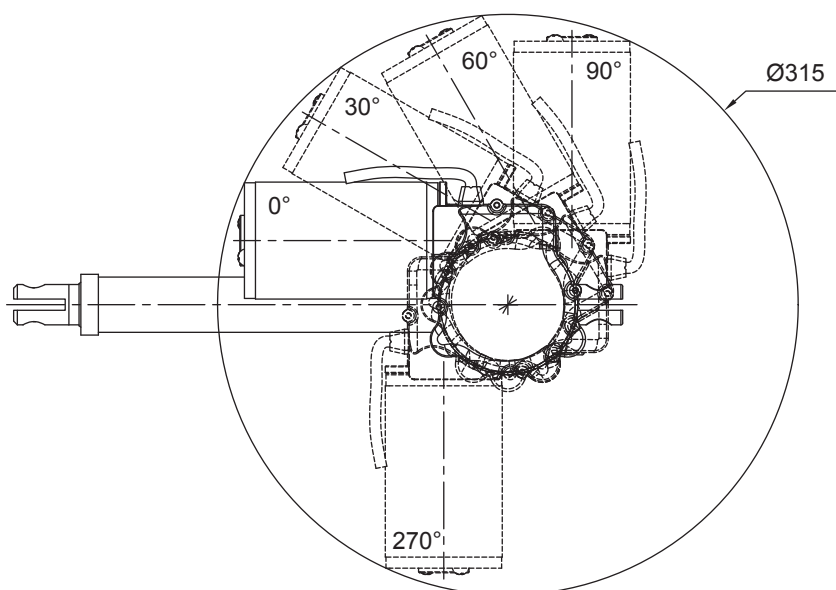


## Pivot Orientation of Rear Connectors



Note: Presented with slot type connector as an example.

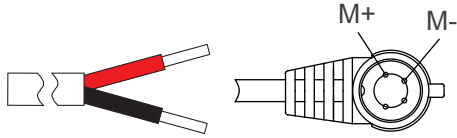
## Motor Orientation (360° in steps of every 30°)



Note: This drawing shows orientation definition with example of standard type.

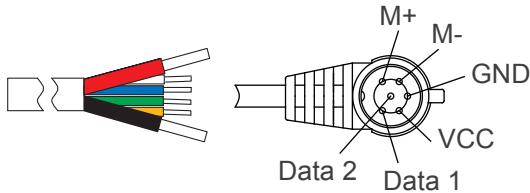
## Wiring & Cable plug

### Standard type



Power	
Red	Black
M+	M-

### With Hall effect sensor x 2 and IPX6 waterproof case



Power		Signal			
Red	Black	Green	Blue	White	Yellow
M+	M-	GND	Data 1	Data 2	VCC

Model No.	Resolution (pulses/mm)
MD56-X-24R3-XXX.XXX-XXXH0XX	9.83
MD56-X-24W6-XXX.XXX-XXXH0XX	4.92
MD56-X-24N9-XXX.XXX-XXXH0XX	2.07

### With Reed sensor

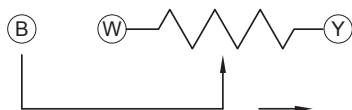
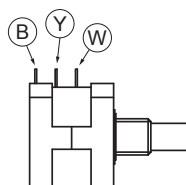
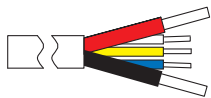


Power		Signal	
Red	Black	White	Yellow
M+	M-	COM	NC

Model No.	Resolution (pulses/mm)
MD56-X-24R3-XXX.XXX-XXXR0XX	2.67
MD56-X-24W6-XXX.XXX-XXXR0XX	1.33
MD56-X-24N9-XXX.XXX-XXXR0XX	0.89

### With Potentiometer (POT)

- The resistance value between blue and white wires increases when actuator extends, the resistance between blue and yellow wires decreases at the mean time.
- Following table shows the resistance allocation for stroke 400 mm. The max. resistance value at its full stroke will be proportional to the stroke specification if the model is less than 400 mm, i.e. the increment of resistance per unit stroke length remains unchanged.



Actuator extends

Power		Signal		
Red	Black	White	Yellow	Blue
M+	M-	GND	VCC	Data

Motor and Spindle code	Resistance value (Tolerance: $\pm 0.10$ K $\Omega$ )
R3	0.30 ~ 7.50 K $\Omega$
W6, N9	0.30 ~ 7.35 K $\Omega$

### Remarks:

Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

**MD56 - S - 24R3 - 206 - 256 - 1 1 0 H 0 0 1**

<b>Waterproof case</b>	0: None (IPX1) S: Waterproof case (IPX6)
<b>Motor and Spindle type</b>	24R3 24W6 24N9 (Refer to Performance Data)
<b>Retracted length</b>	XXX (Refer to Dimensions)
<b>Extended length</b>	XXX (Refer to Dimensions)
<b>Front connector type</b>	1: Solid with bushing, Ø10 mm 2: Solid w/o bushing, Ø12 mm 3: Slot with bushing, Ø10 mm 4: Slot w/o bushing, Ø12 mm (Refer to Dimensions)
<b>Rear connector type</b>	1: Solid with bushing, Ø10 mm 2: Solid w/o bushing, Ø12 mm 3: Slot with bushing, Ø10 mm 4: Slot w/o bushing, Ø12 mm (Refer to Dimensions)
<b>Pivot orientation of Rear connector</b>	0: 0° 9: 90° (Refer to page 4)
<b>Positioning feedback</b>	0: None H: Hall effect sensor x 2 (must go with IPX6 waterproof case) R: Reed sensor P: Potentiometer
<b>Reserved</b>	0: No meaning
<b>Motor orientation</b>	0: 0° 9: 90° 3: 30° R: 270° 6: 60° (Refer to page 4)
<b>Cable length</b>	1: 750 mm straight 2: 1500 mm straight

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# Actuator MD57

MD57 is a compact actuator that is suitable for wide range of applications including homecare, furniture, medical and industrial...etc. The motor orientation can be chosen in every 30 degrees of whole round, which makes it an ideal solution for applications where installation space is limited, such as electric wheelchairs. There are 4 kinds of housing according to different options like limit switch, positioning feedback, IPX6 protection and 12V DC high power motor.



## Feature

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- Main applications: Furniture, homecare, medical
- Input voltage: 24V DC
- Max. load: 4000N (push / pull)
- Max. speed at no load: 12.6 mm/sec
- Max. speed at full load: 3.5 mm/sec @ 4000N
- Stroke: 50 ~ 300 mm
- Max. current: 4.0A @ 24V DC
- Motor orientation: 360° in steps of every 30°
- Noise Level: ≤65dB
- IP Protection level: IP21
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +65°C
- Certified: CE Marking EMC Directive 93/42/EEC

## Option

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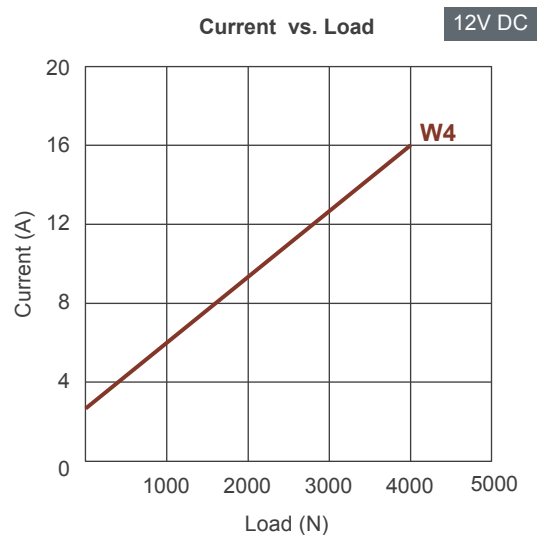
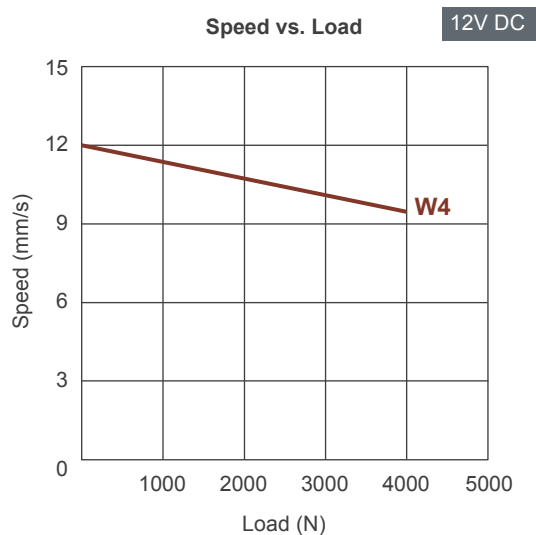
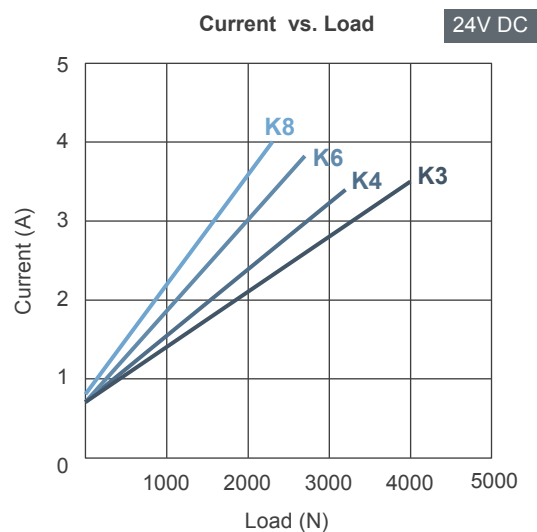
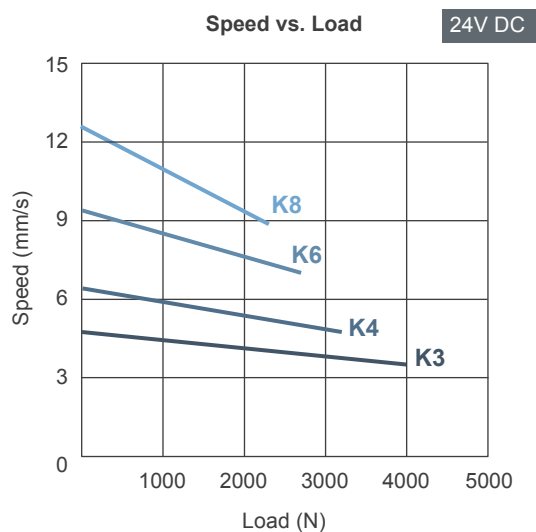
- Positioning signal feedback with Hall effect sensor x 2
- Analog positioning feedback with Potentiometer (POT)
- Preset cam type limit switches
- IPX6 waterproof case
- 12V DC high power motor

## Compatibility

Product	Model	Application condition	MD57 spec
Control box	T control, CS1, CS2, CBT2 CB3T, CB4M, CBP2	Max. current $\leq 3A$	Without positioning sensor feedback 24V motor
	CB3T-SY, CB4M-S, CB4M-B	Max. current $\leq 3A$	Positioning feedback with Hall effect sensor x 2 24V motor

## Performance Data

Model No.	Input voltage (V DC)	Push / Pull Max. (N)	Typical speed (mm/s)		Typical current (A)	
			No load	Full load	No load	Full load
MD57-X-24 <b>K3</b> -XXX.XXX-XXXXXXXX	24	4000	4.8	3.5	0.7	3.5
MD57-X-24 <b>K4</b> -XXX.XXX-XXXXXXXX	24	3200	6.4	4.8	0.7	3.4
MD57-X-24 <b>K6</b> -XXX.XXX-XXXXXXXX	24	2700	9.4	7.0	0.7	3.8
MD57-X-24 <b>K8</b> -XXX.XXX-XXXXXXXX	24	2300	12.6	8.9	0.8	4.0
MD57-X-12 <b>W4</b> -XXX.XXX-XXXXXXXX	12	4000	12.0	9.5	3.0	16.0

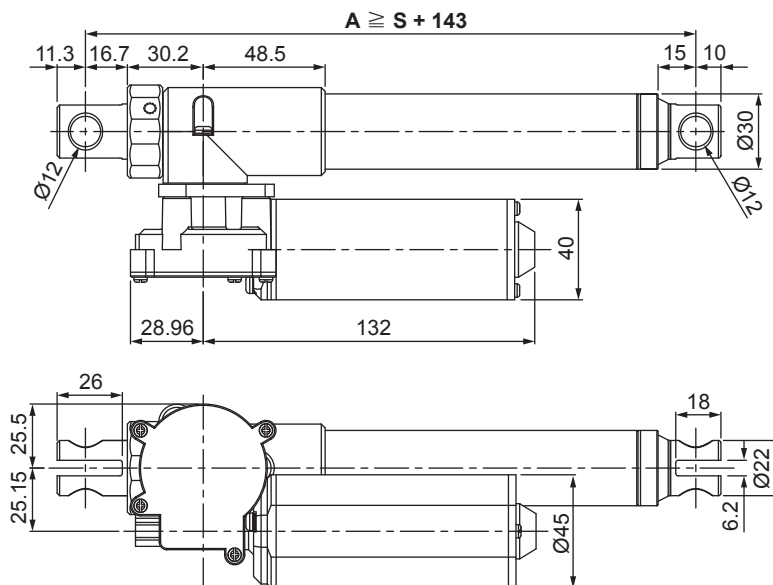
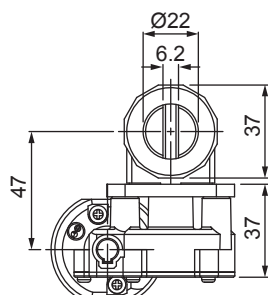


## Dimensions

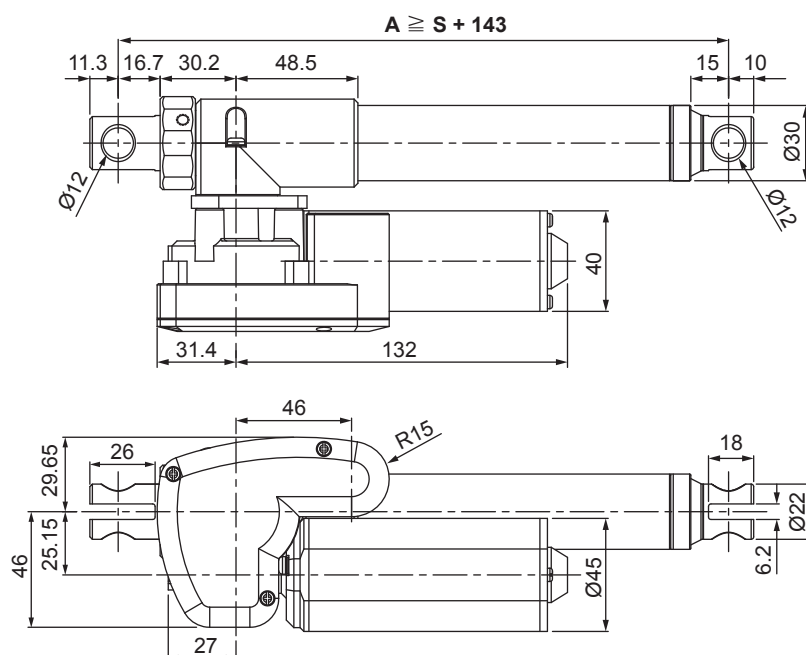
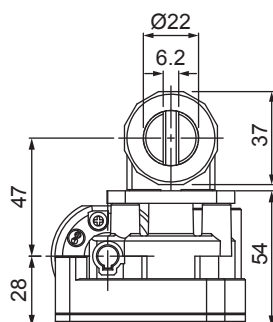
- Stroke (S): 50 ~ 300 mm
- Retracted Length (A):  $\geq S + 143$  mm

### Housings of different options

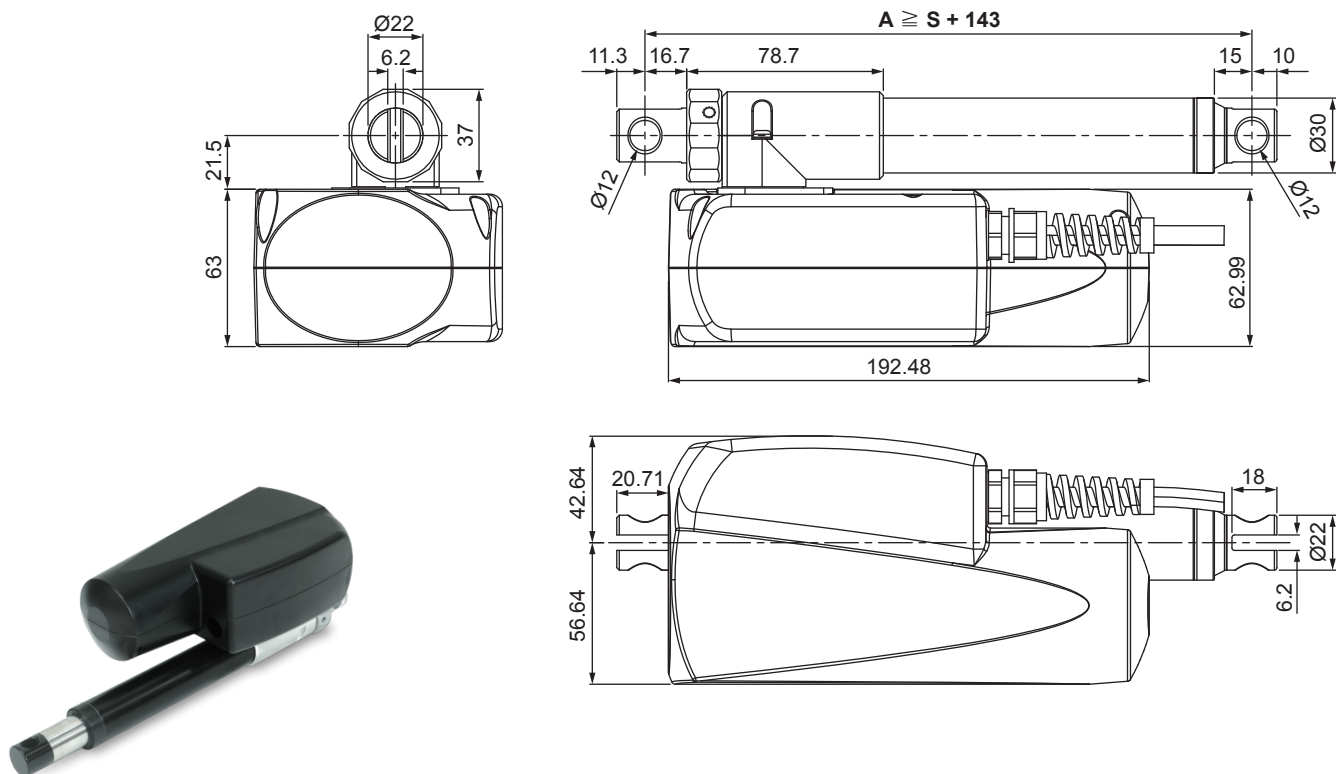
#### A Basic



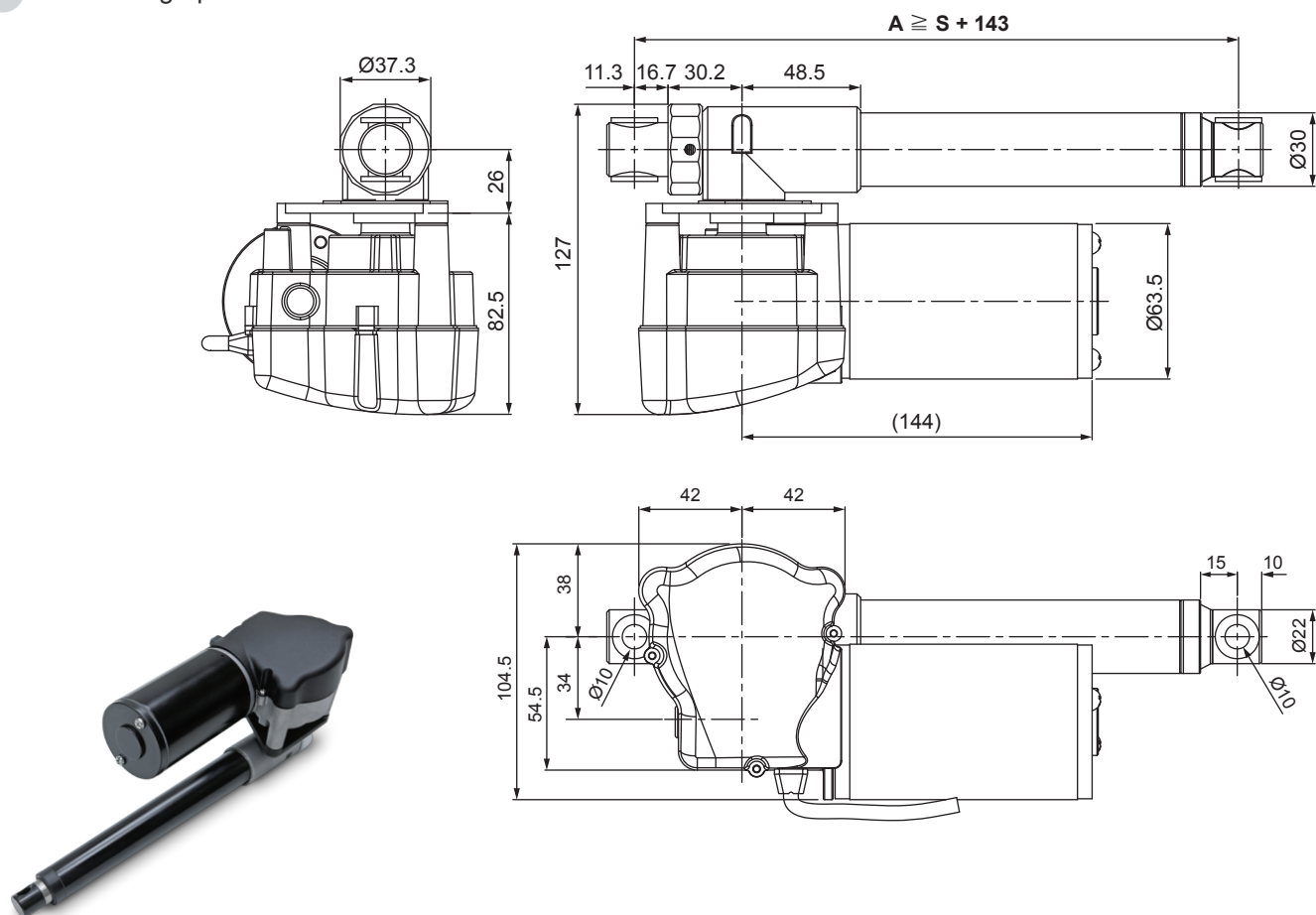
#### B With limit switch or positioning feedback



**C** With IPX6 waterproof case

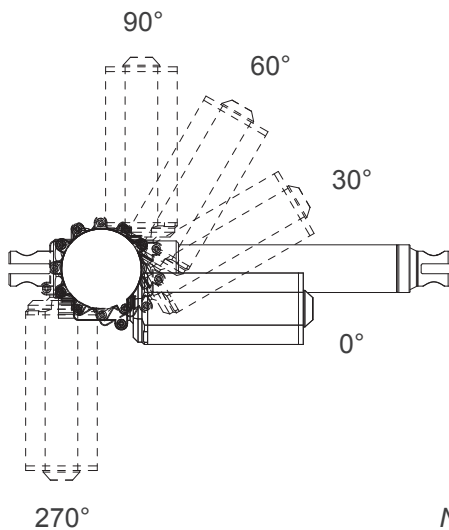


**D** 12V DC high power motor



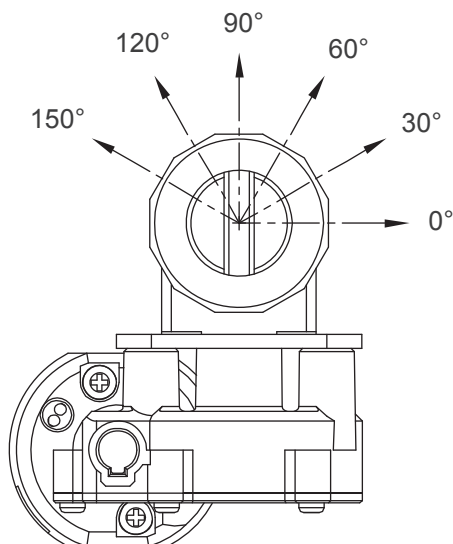


## Motor Orientation (can be chosen in every 30 degrees of whole round)



*Note: Presented with basic type as an example.*

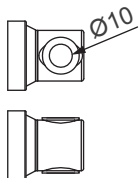
## Pivot Orientation of Rear Connectors



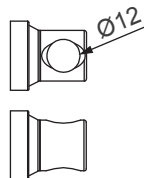
*Note: Presented with slot type connector as an example.*

## Front Connector

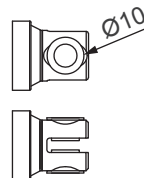
1: Solid with bushing



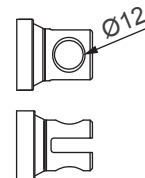
2: Solid w/o bushing



3: Slot with bushing

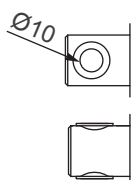


4: Slot w/o bushing

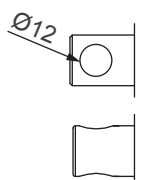


## Rear Connector

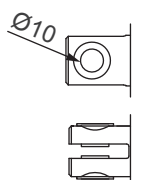
1: Solid with bushing



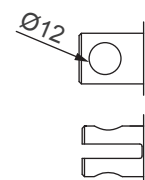
2: Solid w/o bushing



3: Slot with bushing



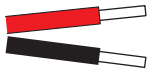
4: Slot w/o bushing



## Wiring & Cable plug

### Basic, without limit switch or positioning feedback

- 2 wires without jacket



Power	
Red	Black
M+	M-

### With limit switch, without positioning feedback

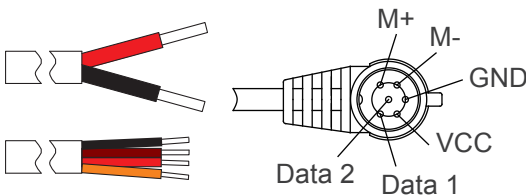
- 2 wires jacketed cable



Power	
Red	Black
M+	M-

### With Hall sensors, without waterproof case

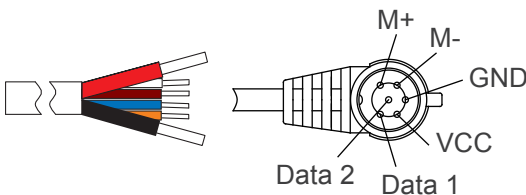
- Separated power cable and signal ribbon cable.



Power		Signal			
Red	Black	Black	Brown	Red	Orange
M+	M-	COM	Data 1	Data 2	VCC

Model No.	Resolution (pluses/mm)
MD57-X-24K3-XXX.XXX-XXXHXXX	20.67
MD57-X-24K4-XXX.XXX-XXXHXXX	15.50
MD57-X-24K6-XXX.XXX-XXXHXXX	10.33
MD57-X-24K8-XXX.XXX-XXXHXXX	7.75

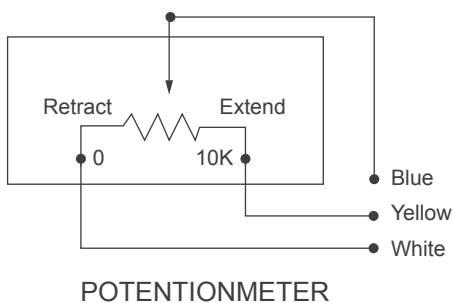
### With Hall sensors and waterproof case



Power		Signal			
Red	Black	White	Brown	Blue	Orange
M+	M-	COM	Data 1	Data 2	VCC

### With potentiometer (POT)

- The POT resistance value between blue and white wires increases when actuator extends. Meanwhile, resistance value between blue and yellow wires decreases.
- The following table shows allocation of max. POT resistance for different actuator specifications. If the model has different stroke from the listed ones, the max. POT resistance value at its full stroke will be proportional to the one which the model is close to but shorter than it.



Power		Signal		
Red	Black	White	Yellow	Blue
M+	M-	GND	VCC	Data

Stroke	Motor and Spindle Code			
	K3	K4	K6	K8
0	0.30	0.30	0.30	0.30
50	9.35	9.02	7.61	5.78
100	5.98	4.56	9.35	9.02
150	8.83	6.69	4.56	3.50
200	7.65	8.83	5.98	4.56
250	7.44	8.78	7.40	5.63
300	8.87	8.57	8.83	6.69
Unit: mm	Unit: KΩ, Tolerance: ±0.10 KΩ			

### \* Remarks:

Connect Red (M+) to '+' & Black (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

<b>MD57 - 0 - 24K4 - 350 470 - 1 1 0 H L 0 1</b>	
<b>Waterproof Case</b>	<b>0:</b> None <b>S:</b> IPX6 waterproof case
<b>Motor and Spindle type</b>	<b>24K3</b> <b>24K4</b> <b>24K6</b> <b>24K8</b> <b>12W4</b> * (Refer to Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Front connector</b>	<b>1:</b> Solid with bushing, Ø10 mm <b>2:</b> Solid w/o bushing, Ø12 mm <b>3:</b> Slot with bushing, Ø10 mm <b>4:</b> Slot w/o bushing, Ø12 mm (Refer to Dimensions)
<b>Rear connector</b>	<b>1:</b> Solid with bushing, Ø10 mm <b>2:</b> Solid w/o bushing, Ø12 mm <b>3:</b> Slot with bushing, Ø10 mm <b>4:</b> Slot w/o bushing, Ø12 mm (Refer to Dimensions)
<b>Pivot Orientation of Rear Connector</b>	<b>0:</b> 0° <b>3:</b> 30° <b>6:</b> 60° <b>9:</b> 90° <b>C:</b> 120° <b>F:</b> 150° (Refer to page 5)
<b>Positioning feedback</b>	<b>0:</b> None <b>H:</b> Hall effect sensor x 2 <b>P:</b> Potentiometer
<b>Limit Switch</b>	<b>0:</b> None <b>L:</b> Limit Switch
<b>Motor Orientation</b>	<b>0:</b> 0° <b>3:</b> 30° <b>6:</b> 60° <b>9:</b> 90° <b>R:</b> 270° (Refer to page 5)
<b>Cable Length</b>	<b>1:</b> 250 mm <b>2:</b> 750 mm

### \*Remarks:

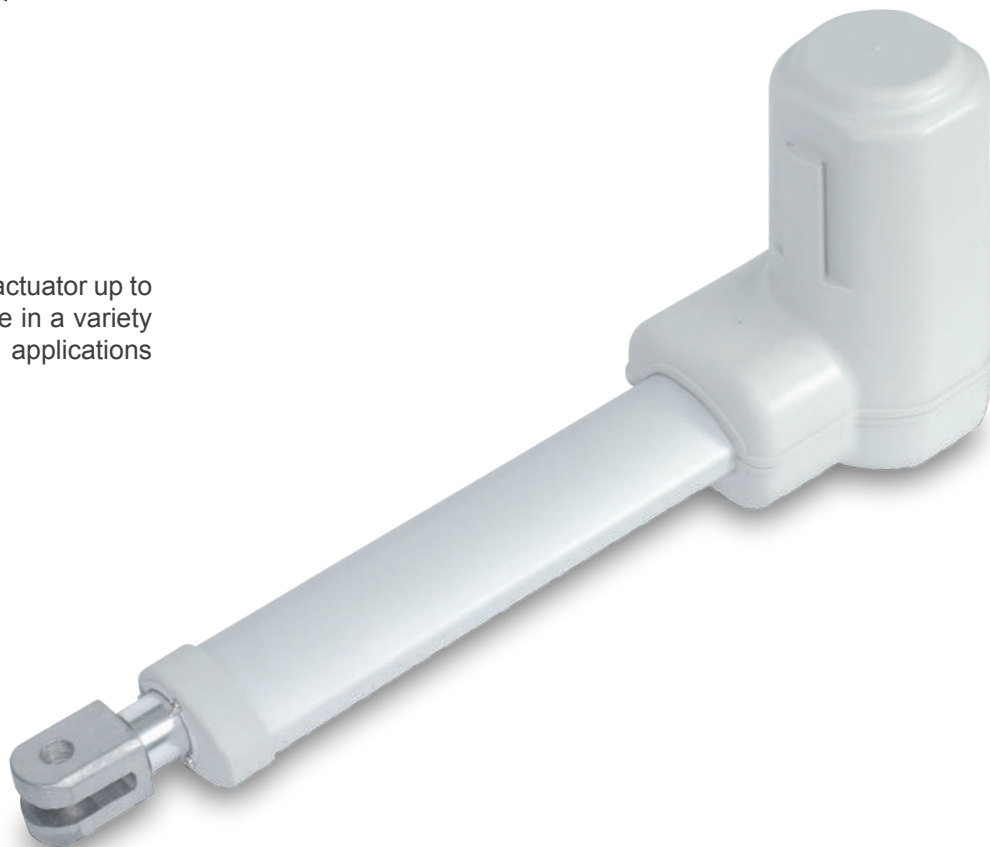
Waterproof case and positioning feedback are not available for specification with 12V DC high power motor.

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# Actuator MD60

MD60 is a quiet and powerful actuator up to 6000N thrust, designed for use in a variety of medical and home care applications such as patient hoist and bed.



## Feature

---

- Main applications: Homecare, medical
- Input voltage: 24V DC
- Max. load: 6000N (push) / 4000N (pull)
- Max. speed at no load: 23 mm/sec
- Max. speed at full load: 5.0 mm/sec @ 6000N
- Stroke: 50 ~ 400 mm
- Max. current: 4.5A @ 24V DC
- Noise level:  $\leq 53$ dB
- IP Protection level: IPX4
- Clevis type of metal connectors. Rear connector's pivot orientation can be chosen in every 30 degrees.
- Preset limit switches
- Aluminum outer tube
- Steel extension tube
- Color: Light gray RAL 7035
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: +5°C ~ +40°C
- Certified: CE Marking, EMC Directive 93/42/EEC

## Option

- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Mechanical push only extension tube
- Safety nut (in push direction)
- IPX6 Protection level
- QR1 quick release, Fig. 1

Only go with motor and spindle code A6, A8 or AC. Certain minimum load is required to push the extension tube back when QR1 is triggered. *Please finding below table.*

Motor and Spindle code	Min. load to trigger QR1
A6	$\geq 750\text{N}$
A8	$\geq 500\text{N}$
AC	$\geq 300\text{N}$

- QR2 quick release: To retract actuator quickly by pinching the QR2 grip while emergency, Fig. 2
- MR1 manual release: To retract actuator slowly and put down the patient safely by turning the MR1 knob with hand when losing power in the application of patient hoist, Fig. 3



Fig. 1

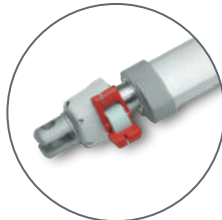


Fig. 2

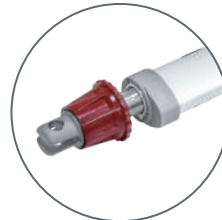


Fig. 3

## Compatibility

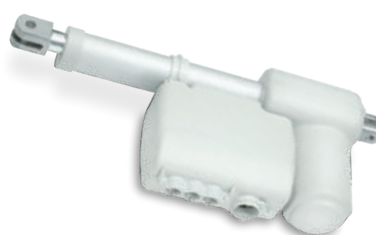
Product	Model	MD60 spec
<b>Control box</b>	CB2P, CB4P, CB4P-HP, MD6C	Without positioning sensor feedback 4-pin Moteck H-type or V-type DIN plug
	CB4P-SY	With dual Hall effect sensors 6-pin Moteck H-type or V-type DIN plug

### Remarks:

MD6C & CB2P can be attached to MD60.



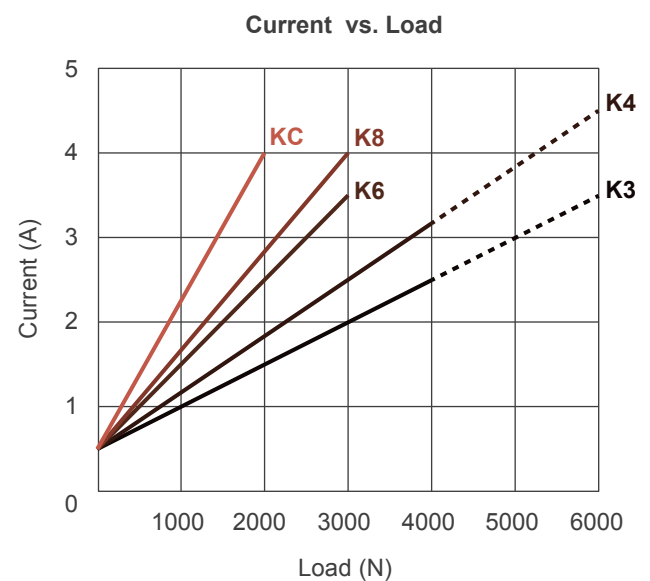
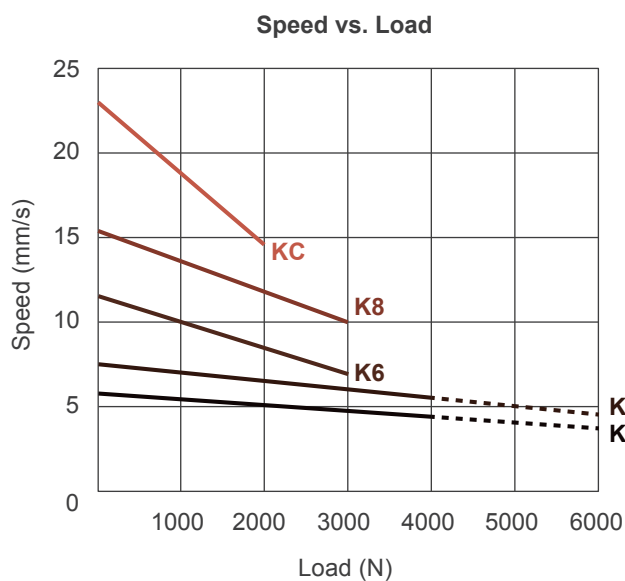
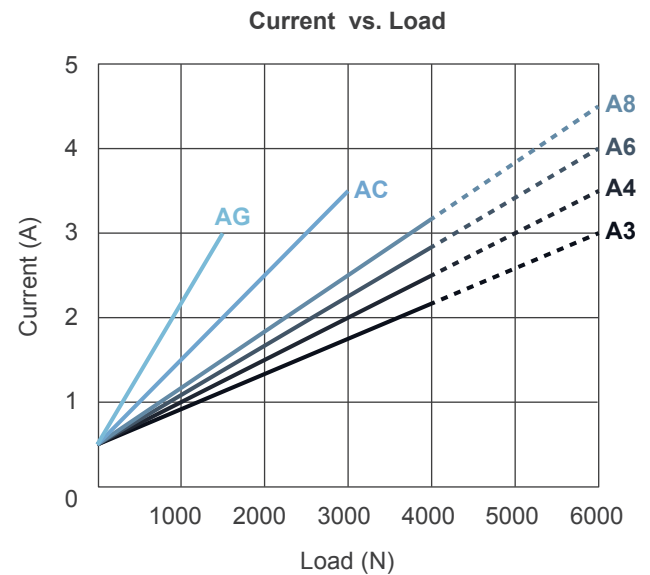
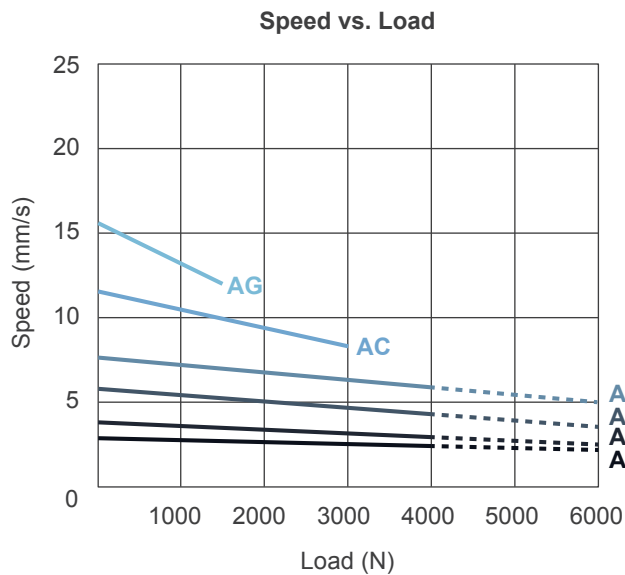
MD60+MD6C



MD60+CB2P

## Performance Data

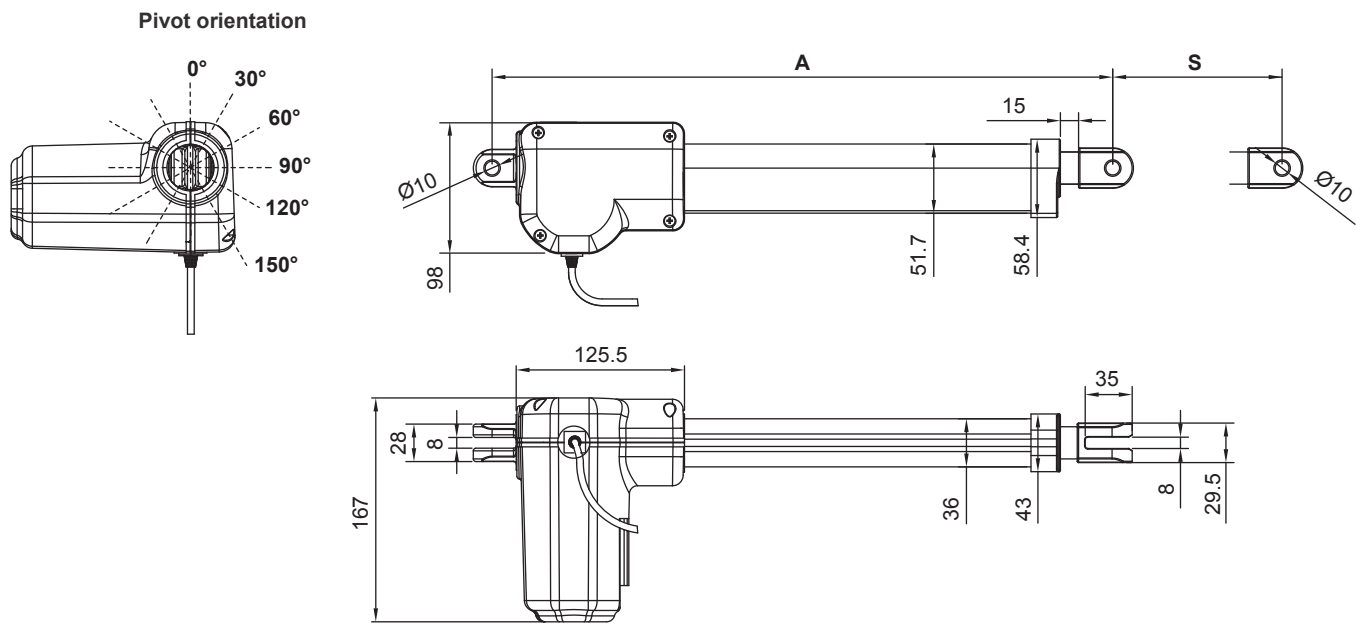
Model No.	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A) @ 24V	
			No load	Full load	No load	Full load
MD60-24- <b>A3</b> -XXX.XXX-CXX	6000	4000	2.9	2.1	0.5	3.0
MD60-24- <b>A4</b> -XXX.XXX-CXX	6000	4000	3.8	2.5	0.5	3.5
MD60-24- <b>A6</b> -XXX.XXX-CXX	6000	4000	5.8	3.6	0.5	4.0
MD60-24- <b>A8</b> -XXX.XXX-CXX	6000	4000	7.6	5.0	0.5	4.5
MD60-24- <b>AC</b> -XXX.XXX-CXX	3000	3000	11.5	8.2	0.5	3.5
MD60-24- <b>AG</b> -XXX.XXX-CXX	1500	1500	15.3	12.0	0.5	3.0
MD60-24- <b>K3</b> -XXX.XXX-CXX	6000	4000	5.8	3.8	0.5	3.5
MD60-24- <b>K4</b> -XXX.XXX-CXX	6000	4000	7.5	4.5	0.5	4.5
MD60-24- <b>K6</b> -XXX.XXX-CXX	3000	3000	11.5	6.9	0.5	3.5
MD60-24- <b>K8</b> -XXX.XXX-CXX	3000	3000	15.3	10.0	0.5	4.0
MD60-24- <b>KC</b> -XXX.XXX-CXX	2000	2000	23.0	14.7	0.5	4.0



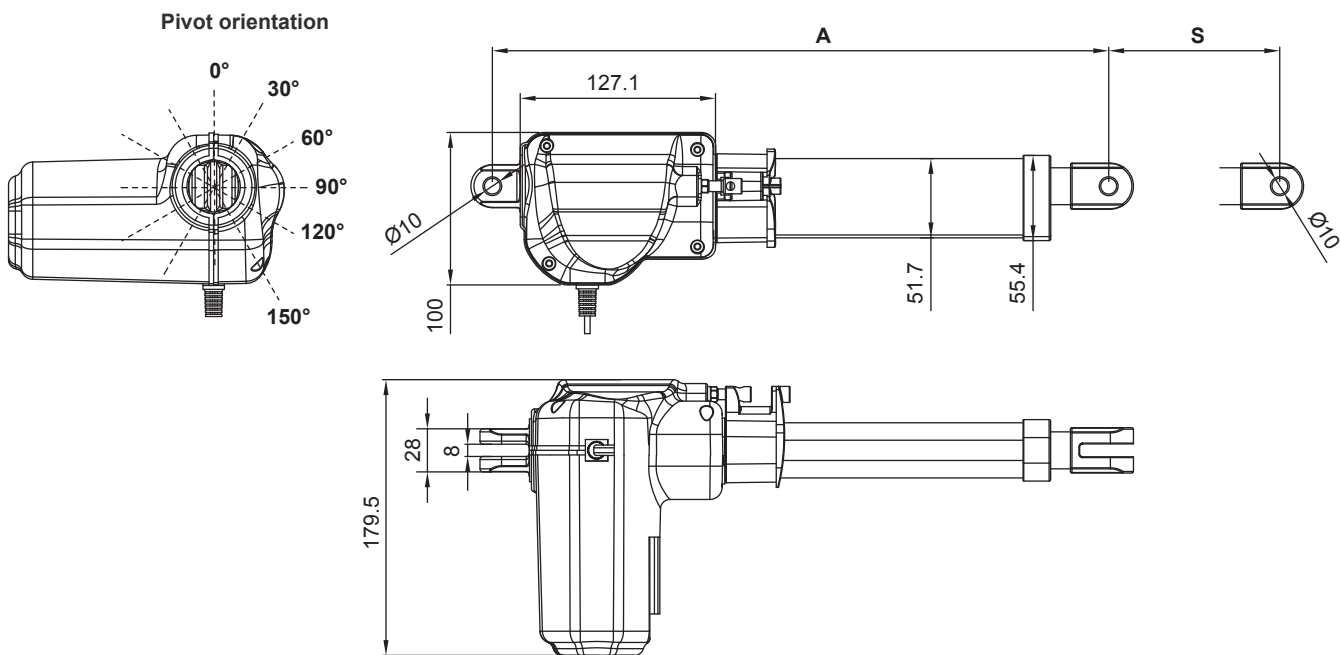
Push / Pull Load — Push Load - - -

# Dimensions

## Standard



## With QR1 Quick Release



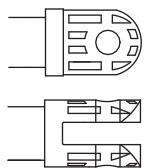
## Installation Dimension

Front connector code	Standard Retracted length (A)	With QR1 Retracted length (A)	Safety nut
3, 7	$A \geq S + 154 \text{ mm}$	$A \geq S + 165 \text{ mm}$	Add 8 mm to Retracted length (A)
1, 5, 8	$A \geq S + 179 \text{ mm}$	$A \geq S + 190 \text{ mm}$	
Q	$A \geq S + 235 \text{ mm}$	N/A	
M	$A \geq S + 250 \text{ mm}$	N/A	

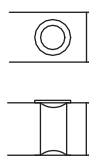
Available stroke (S) range = 50 ~ 400 mm

## Front Connector

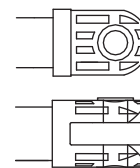
1: Plastic



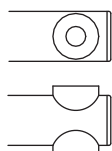
3: Drilled hole



5: Zinc alloy clevis



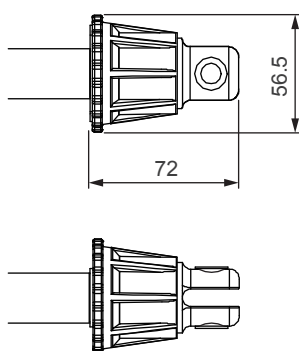
7: Drilled hole with nylon bushing



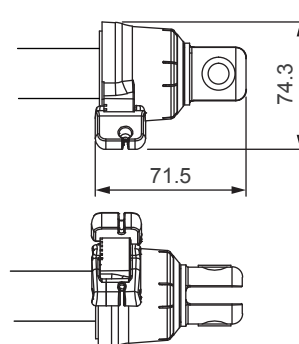
8: Aluminum alloy clevis



M: Zinc alloy clevis with MR1 manual release



Q: Zinc alloy clevis with QR2 quick release

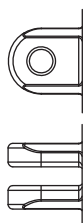


Front connector code	Diameter of pivot without bushing	Diameter of pivot with plastic bushing	Slot width
1	Ø8, Ø10, Ø12	N/A	10
3	Ø8, Ø10, Ø12, Ø14	Ø8, Ø10	N/A
5	Ø8, Ø10, Ø12	Ø8, Ø10	10
7	Ø10	N/A	N/A
8	Ø10, Ø12	Ø8, Ø10	8
M	Ø12	Ø10	8.5
Q	Ø12	Ø10	8

## Rear Connector

1: Aluminum alloy clevis

2: Zinc alloy clevis

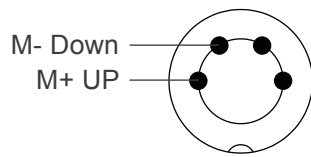


Rear connector code	Diameter of pivot without bushing	Diameter of pivot with plastic bushing	Slot width
1	Ø10, Ø12	Ø8, Ø10	8
2	Ø10, Ø12	Ø8, Ø10	8

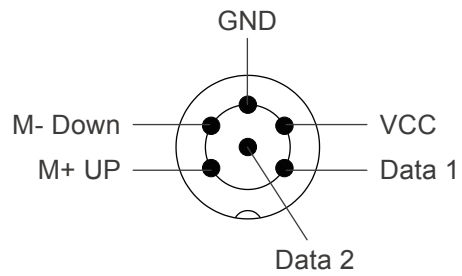


## Cable Plug

### Motack H-type or V-type DIN plug



Without positioning sensor feedback



With dual Hall effect sensors

#### Remarks:

Connect (M+) to '+' & (M-) to '-' of DC power, the actuator will extend.



V-type



H-type

## Ordering Key

		<b>MD60 - 24 - A8 - 560 . 850 - C Q 2 - SN-PO</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC		
<b>Motor and Spindle type</b>	<b>A3      A4      A6</b> <b>A8      AC      AG</b> <b>K3      K4      K6</b> <b>K8      KC</b> (Refer to Performance Data)		
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)		
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)		
<b>Front connector type</b>	<b>1:</b> Plastic <b>3:</b> Drilled hole <b>5:</b> Zinc alloy clevis <b>7:</b> Drilled hole with nylon bushing <b>8:</b> Aluminum alloy clevis <b>M:</b> Zinc alloy clevis with MR1 manual release (must with option of Push only, A8 or K8 spindle) <b>Q:</b> Zinc alloy clevis with QR2 quick release (must with option of Push only, A8 or K8 spindle) (Refer to Page 5)		
<b>Rear connector type</b>	<b>1:</b> Aluminum alloy clevis <b>2:</b> Zinc alloy clevis (Refer to Page 5)		
<b>Option</b>	<b>Blank:</b> None <b>HS1:</b> Hall effect sensor x 1 <b>HS2:</b> Hall effect sensor x 2 <b>SN:</b> Safety nut <b>PO:</b> Push only <b>QR1:</b> QR1 Quick release (must with option of Push only, A8 or K8 spindle) <b>X6:</b> IPX6 Protection level (Note: Multiple selection is available)		

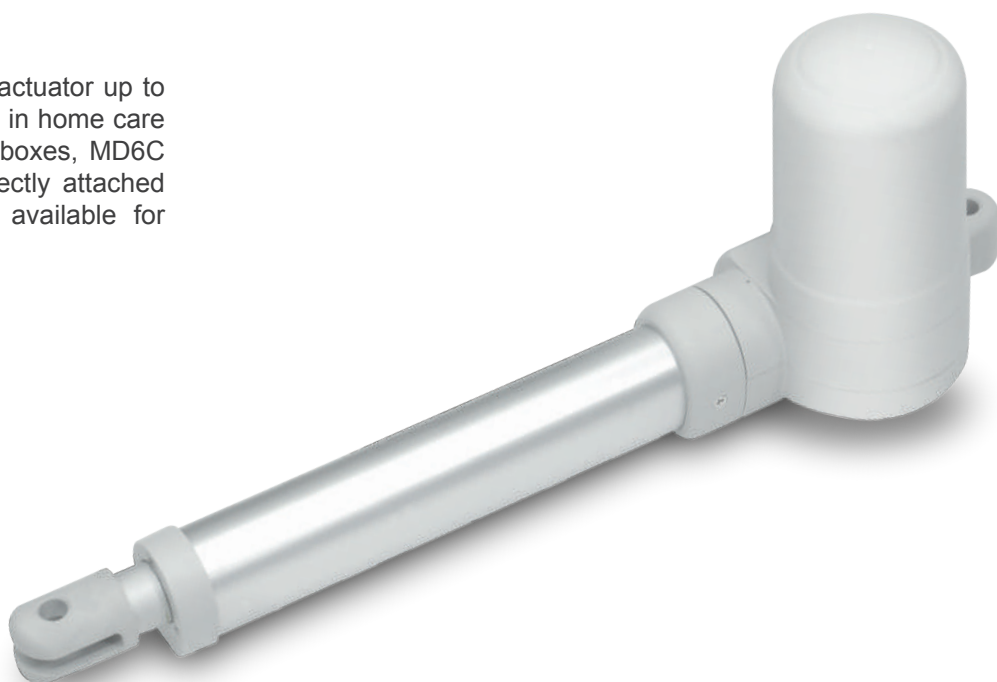
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# Actuator

## MD66

MD66 is a quiet and powerful actuator up to 6000N thrust, designed for use in home care and medical bed. The control boxes, MD6C and CB2P, which can be perfectly attached and integrated to MD66 are available for customers to choose.



### Feature

---

- Main applications: Homecare, medical
- Input voltage: 24V DC
- Max. load: 6000N (push) / 4000N (pull)
- Max. speed at no load: 16.6 mm/sec
- Max. speed at full load: 2.9 mm/sec @ 6000N
- Stroke: 50 ~ 300 mm
- Max. current: 2.8A @ 24V DC
- Noise Level:  $\leq 50$ dB
- IP Protection level: IPX5
- Clevis type of metal connectors. Rear connector's pivot orientation can be chosen in every 30 degrees.
- Preset limit switches
- Color: Light gray RAL 7035
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: +5°C ~ +40°C
- Certified: CE Marking, EMC Directive 93/42/EEC

## Option

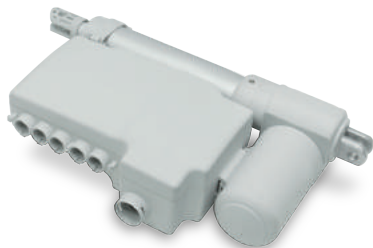
- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Mechanical push only extension tube
- Safety nut (in push direction)

## Compatibility

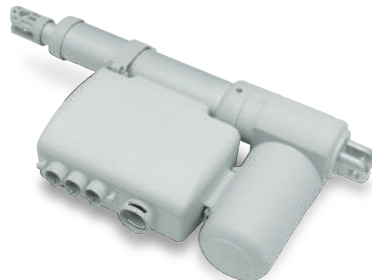
Product	Model	MD66 spec
Control box	CB2P, CB4P, CB4P-HP, MD6C, MD7C	Without positioning sensor feedback 4-pin Moteck H-type or V-type DIN plug
	CB4P-SY	With dual Hall effect sensors 6-pin Moteck H-type or V-type DIN plug

### Remarks:

MD6C & CB2P control box can be attached to MD66 actuator.



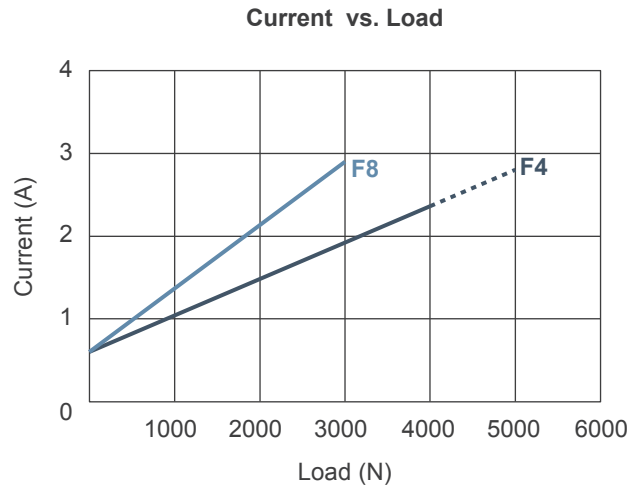
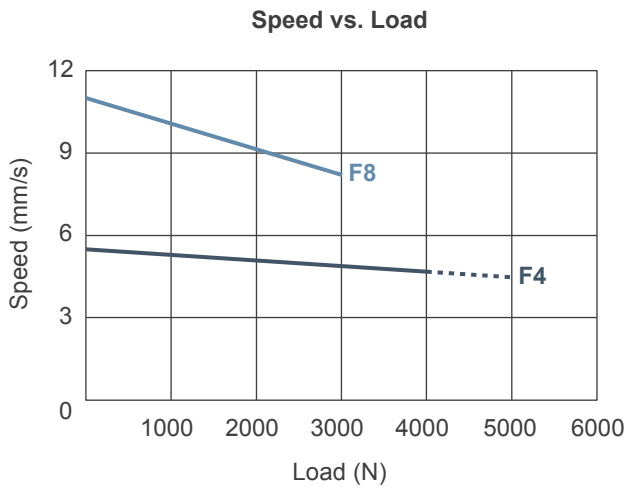
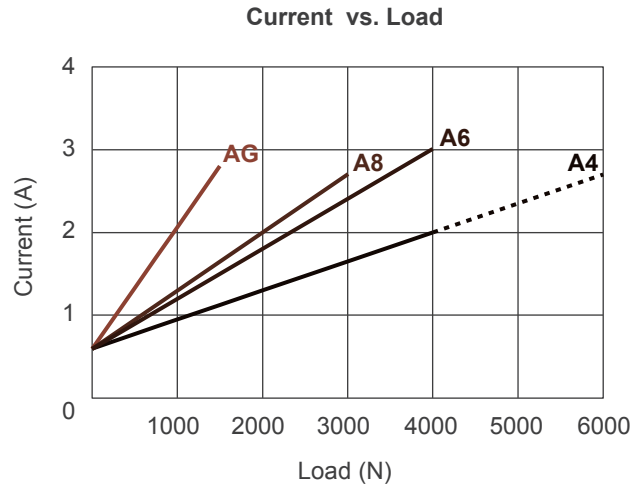
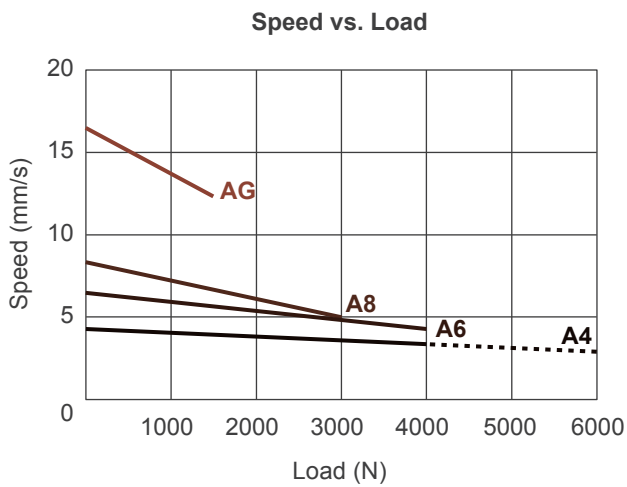
MD66+MD6C



MD66+CB2P

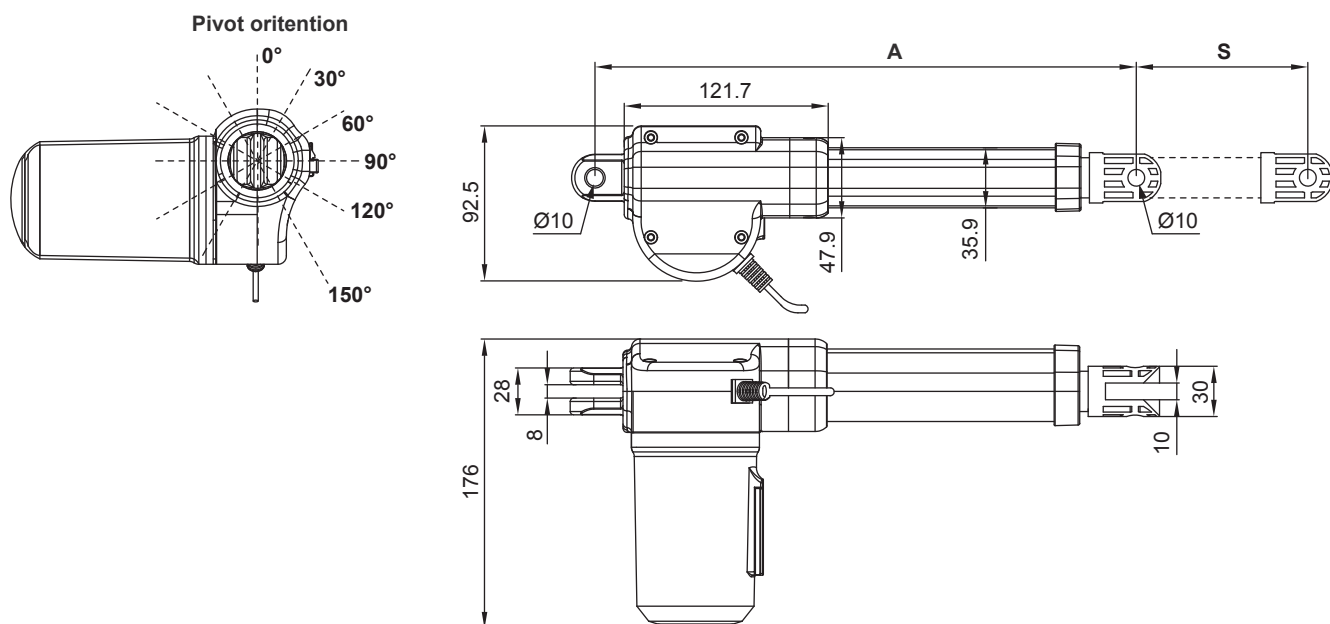
Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A) @ 24V	
			No load	Full load	No load	Full load
MD66-24-A4-XXX.XXX-CXX	6000	4000	4.2	2.9	0.6	2.7
MD66-24-A6-XXX.XXX-CXX	4000	4000	6.2	3.8	0.6	3.0
MD66-24-A8-XXX.XXX-CXX	3000	3000	8.3	5.0	0.6	2.7
MD66-24-AG-XXX.XXX-CXX	1500	1500	16.6	12.2	0.6	2.8
MD66-24-F4-XXX.XXX-CXX	5000	4000	5.5	4.4	0.6	2.8
MD66-24-F8-XXX.XXX-CXX	3000	3000	11.0	8.2	0.6	2.9



Push / Pull Load — Push Load - - -

## Dimensions



### Installation Dimension

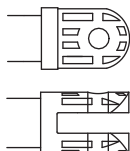
Front connector code	Retracted length (A)	Safety nut
3, 4, 7	$A \geq S + 160 \text{ mm}$	Add 8 mm to Retracted length (A)
1, 6, 8	$A \geq S + 188 \text{ mm}$	

Available stroke (S) range = 50 ~ 300 mm

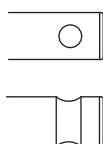
Extended length = S + A

### Front Connector

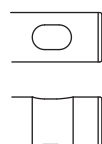
1: Plastic



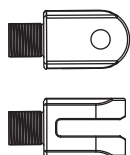
3: Drilled hole



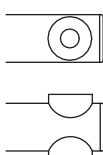
4: Oval hole



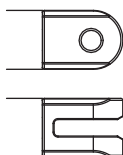
6: Enhanced plastic



7: Drilled hole with nylon bushing



8: Aluminum alloy clevis



### Rear Connector

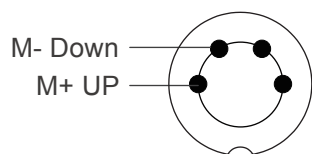
2: Aluminum alloy clevis



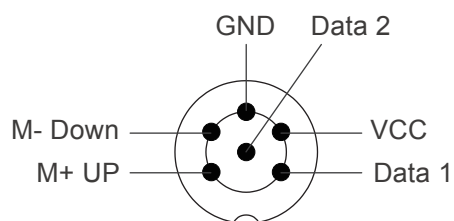
Front connector code	Diameter of pivot without bushing	Diameter of pivot with plastic bushing	Slot width
1	Ø8, Ø10, Ø12	N/A	10
3	Ø8, Ø10, Ø12, Ø14	Ø8, Ø10	N/A
4	Ø8x20, Ø8x25, Ø10x15	N/A	N/A
6	Ø10	N/A	8
7	Ø10	N/A	N/A
8	Ø10, Ø12	Ø8, Ø10	8
Rear connector code			
2	Ø10, Ø12	Ø8, Ø10	8

## Cable Plug

### Motek V-type or H-type DIN plug



Without positioning feedback sensors



With dual Hall effect sensors



V-type



H-type

#### Remarks:

Connect (M+) to '+' & (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

	<b>MD66 - 24 - A8 - 538 - 588 - C 8 2 - HS4 - PO-SN</b>
<b>Input voltage</b>	<b>24:</b> 24V DC
<b>Motor and Spindle type</b>	<b>A4   A6   A8   AG</b> <b>F4   F8</b> (Refer to Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Front connector type</b>	<b>1:</b> Plastic <b>3:</b> Drilled hole <b>4:</b> Oval hole <b>6:</b> Enhanced plastic <b>7:</b> Drilled hole with nylon bushing <b>8:</b> Aluminum alloy clevis (Refer to Dimensions)
<b>Rear connector type</b>	<b>2:</b> Aluminum alloy clevis (Refer to Dimensions)
<b>Positioning feedback</b>	<b>Blank:</b> None <b>HS3:</b> Hall effect sensor x 1 <b>HS4:</b> Hall effect sensor x 2
<b>Option</b>	<b>Blank:</b> None <b>PO:</b> Push only <b>SN:</b> Safety nut (Note: Multiple selection is available)

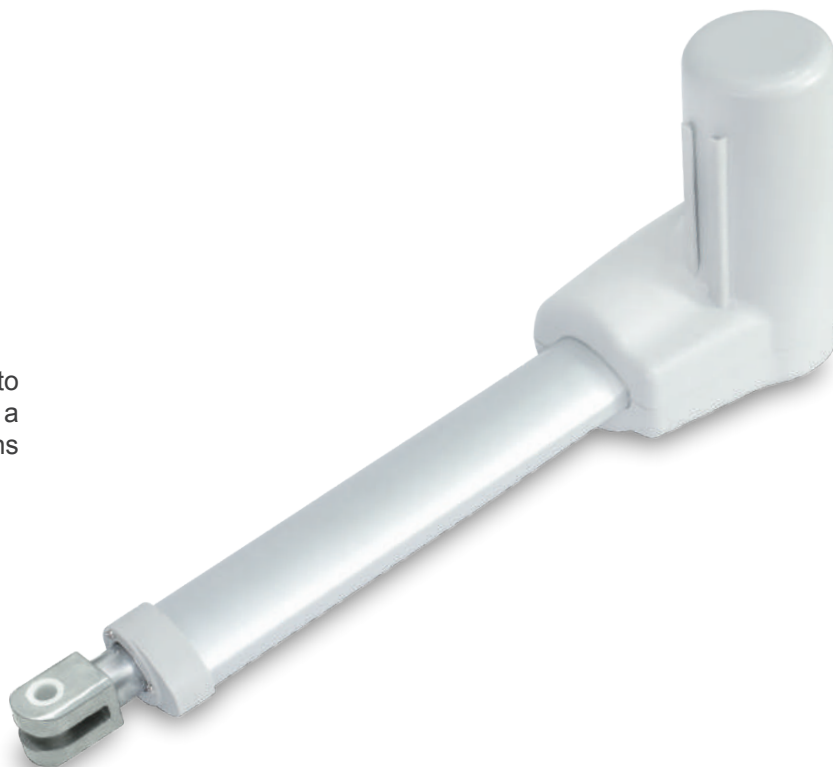
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# Actuator MD80

MD80 is a quiet and powerful actuator up to 8000N thrust, which is designed for use in a variety of medical and home care applications such as patient hoist and bed.



## Feature

---

- Main applications: Homecare, medical
- Input voltage: 24V DC
- Max. load: 8000N (push) / 6000N (pull)
- Max. speed at no load: 16.6 mm/sec
- Max. speed at full load: 11.8 mm/sec
- Stroke: 50 ~ 400 mm
- Max. current: 6.7A @ 24V DC
- Noise Level:  $\leq 53$ dB
- IP Protection level: IPX4
- Clevis type of metal connectors. Rear connector's pivot angle can be chosen in every 30 degrees.
- Preset limit switches
- Steel extension tube
- Color: RAL 7035
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: +5°C ~ +40°C
- Certified: CE Marking, EMC Directive 93/42/EEC

## Option

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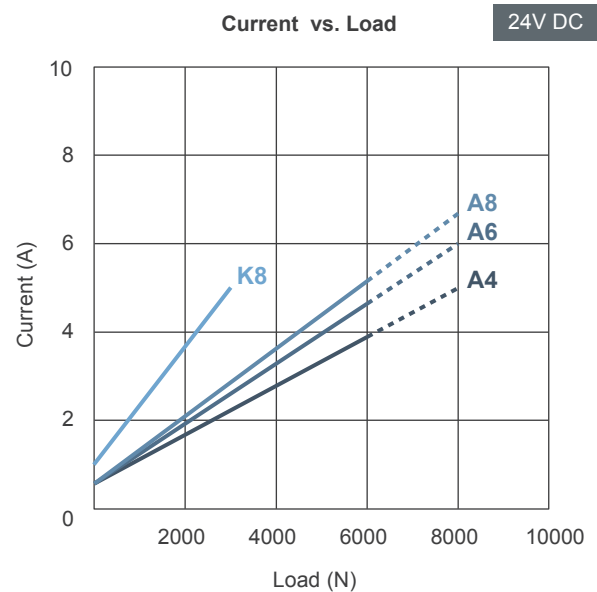
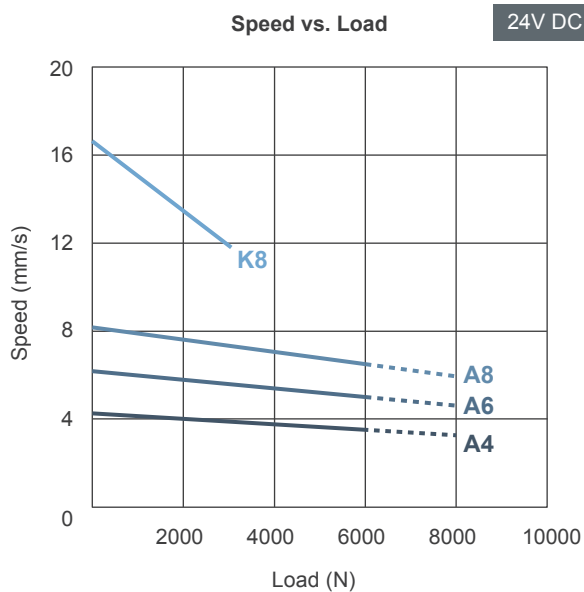
- Mechanical push only extension tube
- Safety nut (in push direction)
- IPX5 protection level
- QR2 quick release: To retract actuator quickly by pinching the QR2 grip while emergency.
- MR1 manual release: To retract actuator slowly and put down the patient safely by turning the MR1 knob with hand when losing power in the application of patient hoist.

## Compatibility

Product	Model	MD80 spec
Control box	CBP2, CBP3	Phone jack(Ø6.35 mm) with Moteck J1(Ø13.8 mm) type plug
	CB4P-HP	Phone jack(Ø6.35 mm) with Moteck J2(Ø16.7 mm) type plug
	CB5P	Minifit 6-pin MOTECK L2 type plug

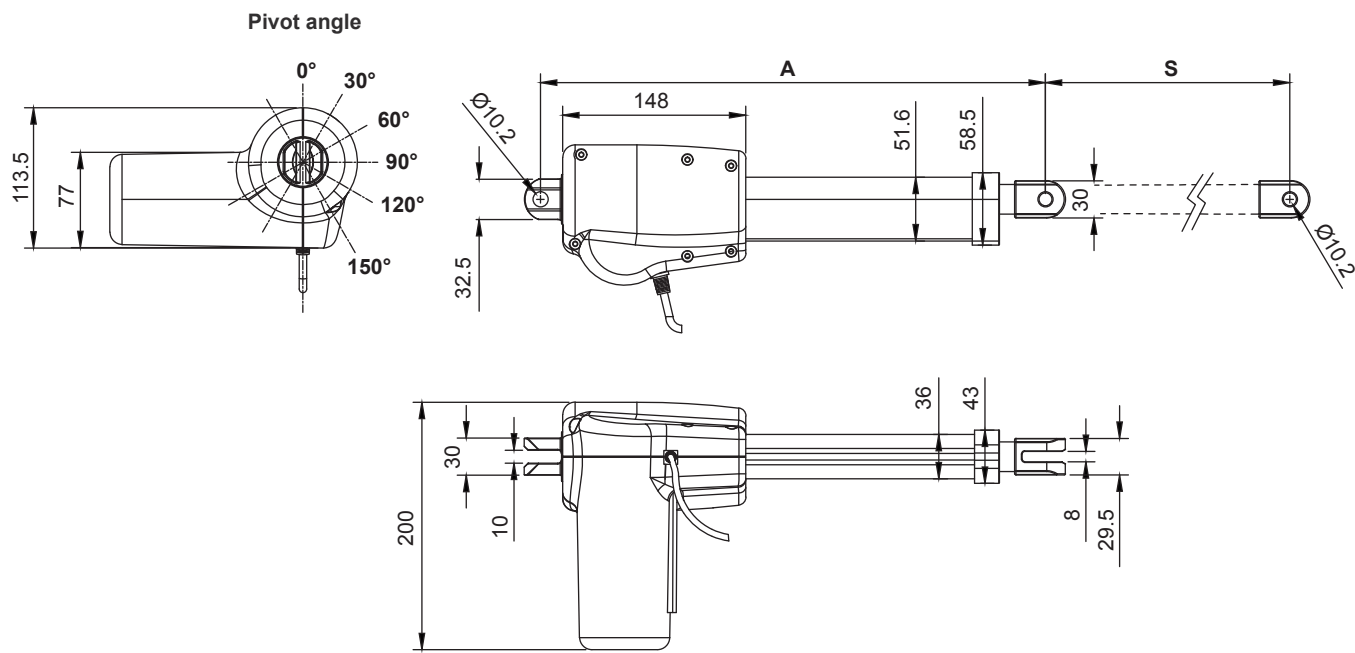
## Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Typical speed (mm/s)		Typical current (A)	
			No load	Full load	No load	Full load
MD80-24-A4-XX-XXX.XXX-CXX	8000	6000	4.2	3.3	0.6	5.0
MD80-24-A6-XX-XXX.XXX-CXX	8000	6000	6.2	4.6	0.6	6.0
MD80-24-A8-XX-XXX.XXX-CXX	8000	6000	8.1	5.9	0.6	6.7
MD80-24-K8-XX-XXX.XXX-CXX	3000	3000	16.6	11.8	1.0	5.0



Push / Pull Load — Push Load - - -

# Dimensions

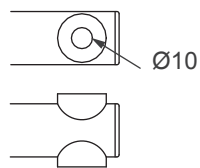


Front connector code	Retracted length (A)	MR1 / QR2	Safety nut
7	$A \geq S + 180 \text{ mm}$	N/A	Add 5 mm
8	$A \geq S + 210 \text{ mm}$	Add 50 mm	Add 5 mm

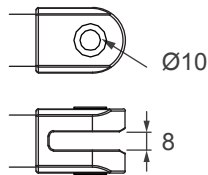
Available stroke (S) range = 50 ~ 400 mm

## Front Connector

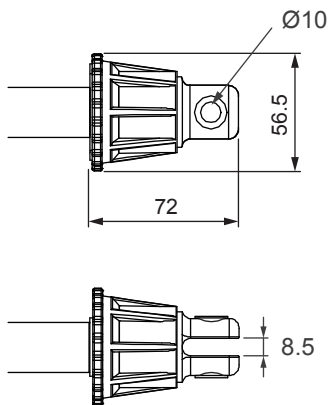
7: Drilled hole with nylon bushing



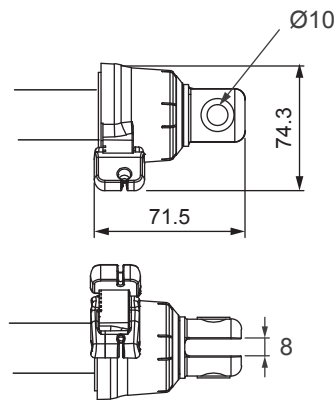
8: Zinc alloy clevis



With MR1 manual release



With QR2 quick release



## Cable plug

Phone jack(Ø6.35 mm) with MOTECK J1(Ø13.8 mm) or J2(Ø16.7 mm) type plug

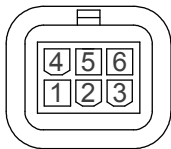


J1 type



J2 type

Minifit 6-pin MOTECK L2 type plug



Pin assignments

Pin No.	Pin definition
1	GND
2	VCC
3	M-
4	Data 2
5	Data 1
6	M+

**Remark:**  
Connected Pin 6 (M+) to “+” & Pin 3 (M-) to “-” of DC power, the actuator will extend.

## Ordering Key

<b>MD80 - 24 - A6 - 560 - 850 - C 8 1 - SN-X5-QR2</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC
<b>Motor and Spindle type</b>	<b>A4</b> <b>A6</b> <b>A8</b> <b>K8</b> (Refer to Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Front connector</b>	<b>7:</b> Drilled hole with nylon bushing <b>8:</b> Zinc alloy clevis (Refer to Dimensions)
<b>Rear connector</b>	<b>1:</b> Zinc alloy clevis (Refer to Dimensions)
<b>Option</b>	<b>Blank:</b> None <b>PO:</b> Push only <b>SN:</b> Safety nut <b>X5:</b> IPX5 <b>MR1:</b> Manual release + Push only (front connector with Zinc alloy clevis) <b>QR2:</b> Quick release + Push only (front connector with Zinc alloy clevis) (Note: Multiple selection is available. However, MR1 and QR2 could not be selected at the same time)

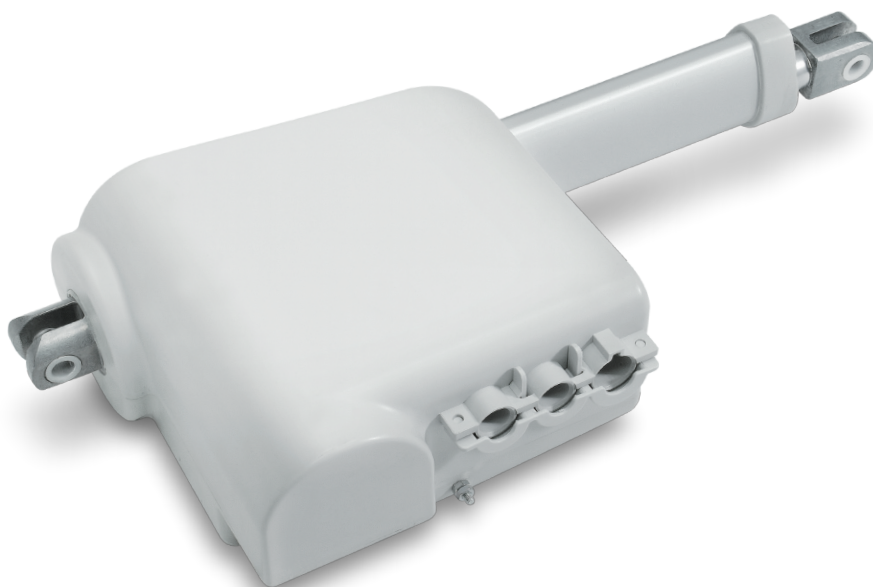
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# Actuator

## MD80M

MD80M is a powerful actuator up to 8000N thrust, integrated with control unit and power supply in the housing. In addition to its own actuator, MD80M can connect up to additional 2 actuators and become a 3-motor driving system. MD80M is quiet and water-proof which is designed for use in a variety of medical and home care applications such as patient hoist, hospital bed, nursing bed...etc.



### Feature

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- Main applications: Homecare, medical
- Max. load: 8000N (push) / 6000N (pull)
- Max. speed at no load: 16.6 mm/sec
- Max. speed at full load: 11.8 mm/sec
- Stroke: 50 ~ 400 mm
- Preset limit switches
- Steel extension tube
- Input voltage: 230V AC 50Hz / 110V AC 60Hz
- Power supply: 24V/8A Toroidal transformer
- Output voltage: 24V DC
- Max. number of controls: 1 channel
- Max. number of additional actuators: 2 channels (except for own actuator)
- Max. current: 6A per channel
- Protection class: Class I
- Power cord length: 3000 mm
- Noise level:  $\leq 53$ dB
- IP Protection level: IPX4
- Color: Light gray RAL 7035
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: +5°C ~ +40°C
- Certified: CE Marking, EMC Directive 93/42/EEC, LVD Directive 93/68/EEC

## Option

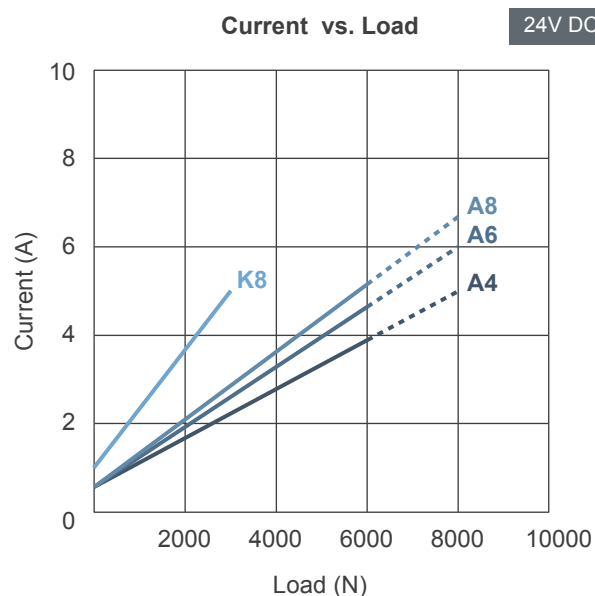
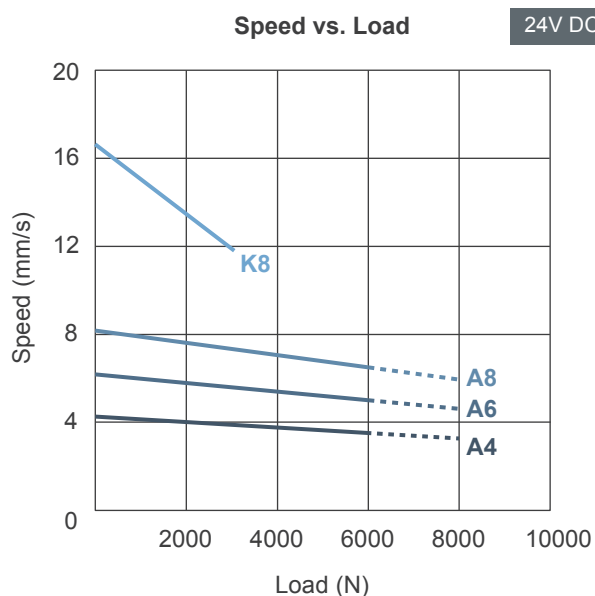
- Mechanical push only extension tube
- Safety nut (in push direction)
- IPX5 protection level

## Compatibility

Product	Model	MD80M spec
<b>Control</b>	HF, H3F, HT, H3T, FS1, FS2	Motek P1 control category With Motek H-type DIN plug
<b>Actuator</b>	MD80, MD82	Without positioning feedback sensors With Motek J1-type Ø6.35 Phone jack

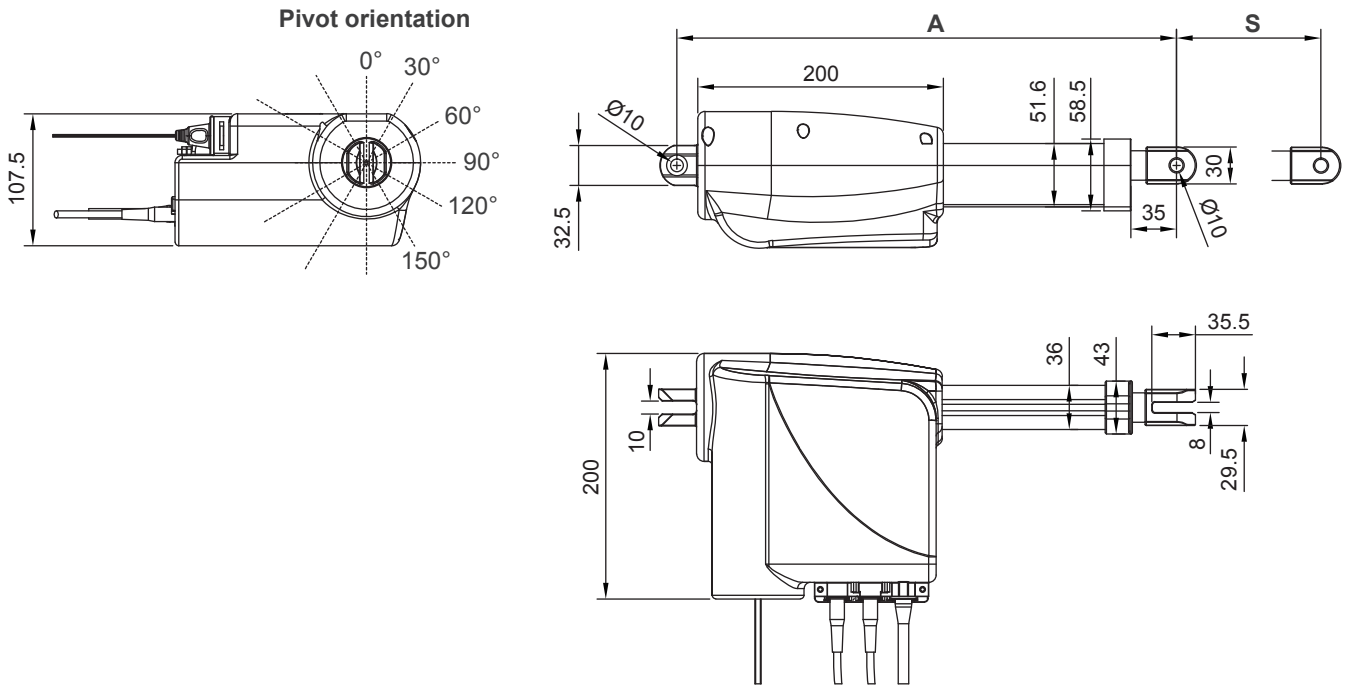
## Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Typical speed (mm/s)		Typical current (A)	
			No load	Full load	No load	Full load
MD80M-24 <b>A4</b> -XXX.XXX-XXX....	8000	6000	4.2	3.3	0.6	5.0
MD80M-24 <b>A6</b> -XXX.XXX-XXX....	8000	6000	6.2	4.6	0.6	6.0
MD80M-24 <b>A8</b> -XXX.XXX-XXX....	8000	6000	8.1	5.9	0.6	6.7
MD80M-24 <b>K8</b> -XXX.XXX-XXX....	3000	3000	16.6	11.8	1.0	5.0



Push / Pull Load — Push Load - - -

# Dimensions



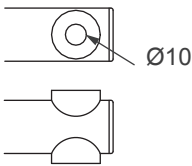
## Installation Length

Front connector code	Retracted length (A)	Safety nut
7	$A \geq S + 180 \text{ mm}$	Add 5 mm
8	$A \geq S + 210 \text{ mm}$	Add 5 mm

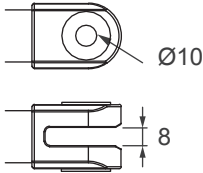
Available stroke (S) range = 50 ~ 400 mm  
Extended length = S + A

## Front Connector

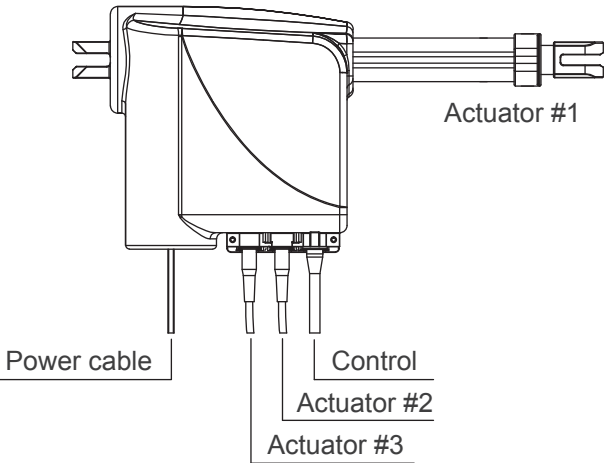
7: Drilled hole with nylon bushing



8: Zinc alloy clevis with plastic bushing







Socket

Control socket for H-type DIN plug  
- 3 drives model



- 2 drives model

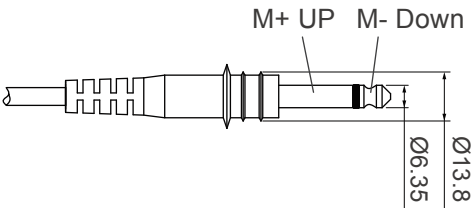


- 1 drive model



H-type

Actuator socket for J1-type Phone jack



J1-type

**Remarks:**  
Connect (M+) to '+' & (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

**MD80M - 2 2 A6 - 420 - 620 - 8 1 - A 0 G 4 1**

<b>Input voltage</b>	2: 230V AC 1: 120V AC
<b>Additional actuator port</b>	0: None 1: 1 port for MD80 actuator 2: 2 ports for MD80 actuator
<b>Motor and Spindle type</b>	A4 A6 A8 K8 (Refer to Performance Data)
<b>Retracted length</b>	XXX (Refer to Dimensions)
<b>Extended length</b>	XXX (Refer to Dimensions)
<b>Front connector type</b>	8: Zinc alloy clevis with plastic bushing (standard) 7: Drilled hole with nylon bushing (Refer to Dimensions)
<b>Pivot orientation of Rear connector</b>	Zinc alloy clevis with following orientation options 1: 0° (standard)      3: 30°      6: 60° 9: 90°      C: 120°      F: 150°
<b>Option</b>	0: None P: Push only S: Safety nut A: Push only + Safety nut
<b>Reserved</b>	0: No meaning
<b>Color</b>	G: Light gray RAL 7035
<b>IP Protection level</b>	4: IPX4 5: IPX5
<b>Power cord length</b>	3: 3000 mm straight (standard) 4: 4000 mm straight

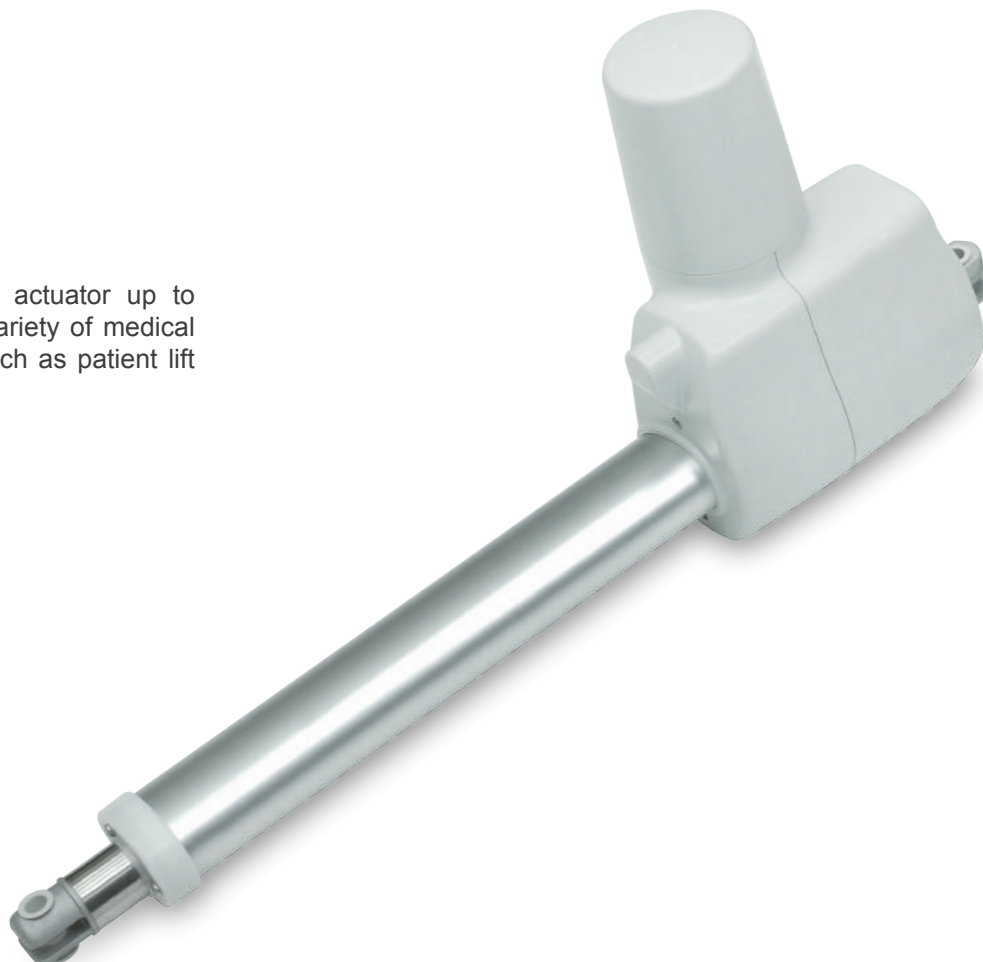
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# Actuator

## MD100

MD100 is quiet and powerful actuator up to 10,000N thrust, designed for variety of medical and home care applications such as patient lift and medical bed.



### Feature

---

- Main applications: Homecare, medical
- Input voltage: 24V DC
- Max. load: 10,000N (push) / 6,000N (pull)
- Max. speed at no load: 9 mm/sec
- Max. speed at full load: 6.7 mm/sec @ 10000N
- Stroke: 100 ~ 600 mm
- Max. current: 8.2A @ 24V DC
- Noise level:  $\leq 52$ dB
- IP Protection level: IPX4
- Preset limit switches
- Aluminum outer tube
- Stainless extension tube
- Color: Light gray RAL 7035
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: +5°C ~ +40°C
- Certified: CE Marking, EMC Directive 93/42/EEC

## Option

---

- Mechanical push only extension tube
- Safety nut (in push direction)
- QR2 quick release: To retract actuator quickly by pinching the QR2 grip while emergency.
- MR2 manual release: To retract actuator slowly and put down the patient safely by turning the MR2 knob with hand when losing power in the application of patient hoist.
- IPX6 Protection level

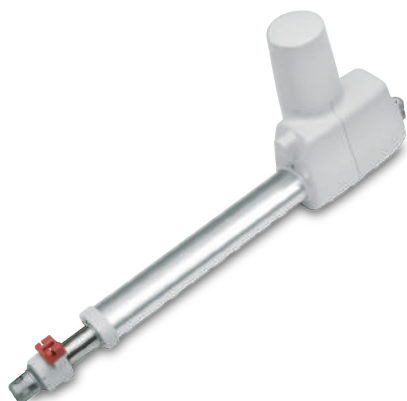


Fig. 1 QR2 quick release



Fig.2 MR2 manual release

## Compatibility

---

Product	Model	MD100 spec
Control box	CBP2, CBP3	Phone jack(Ø6.35mm) with Moteck J1 or J2 type plug
	CB4P-HP, CB4P-HP-SY	Phone jack(Ø6.35mm) with Moteck J2 type plug

## Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A) @ 24V	
			No load	Full load	No load	Full load
MD100-24 <b>DC</b> -XXX.XXX-XX	10,000 <sup>①</sup>	6,000	7.0	5.2	1.0	7.0
MD100-24 <b>FC</b> -XXX.XXX-XX	10,000 <sup>①</sup>	6,000	9.0	6.7	1.0	8.2

Note ①: Within the stroke range of 150 mm (refer to Table 1)

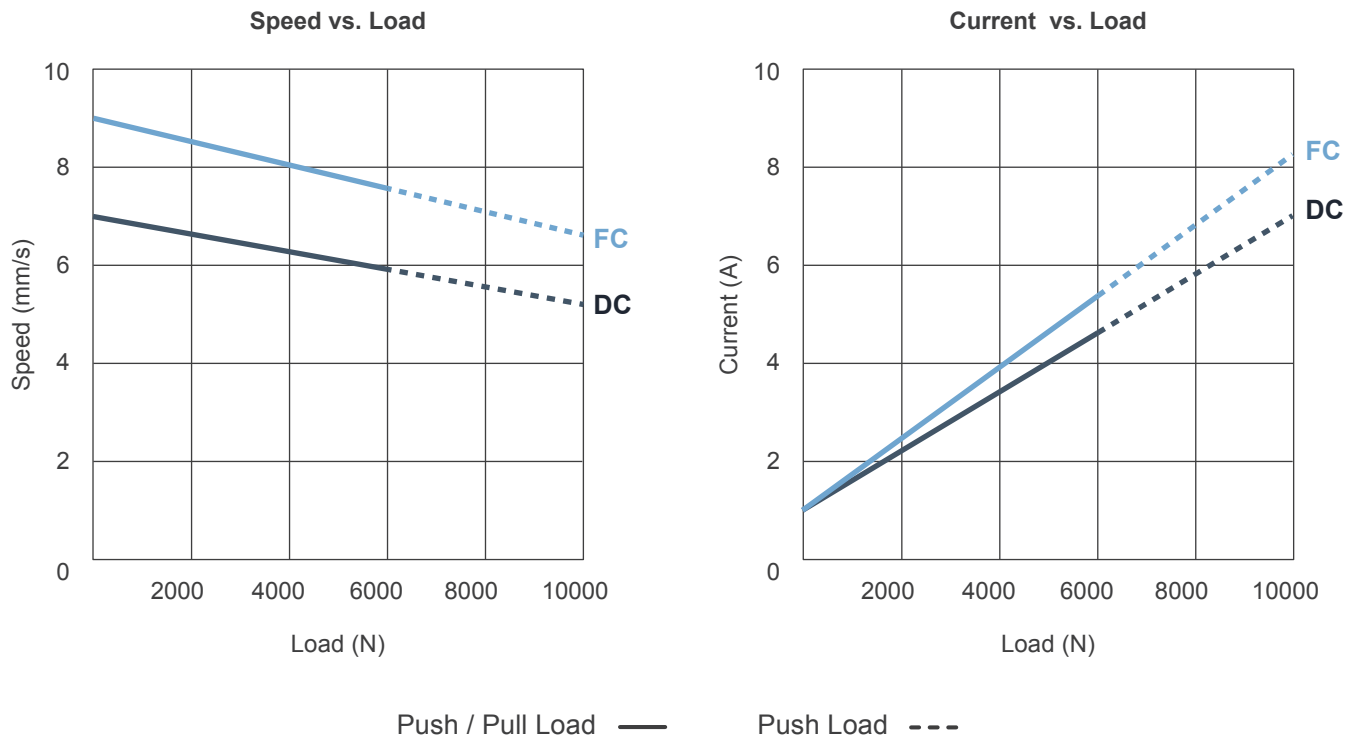
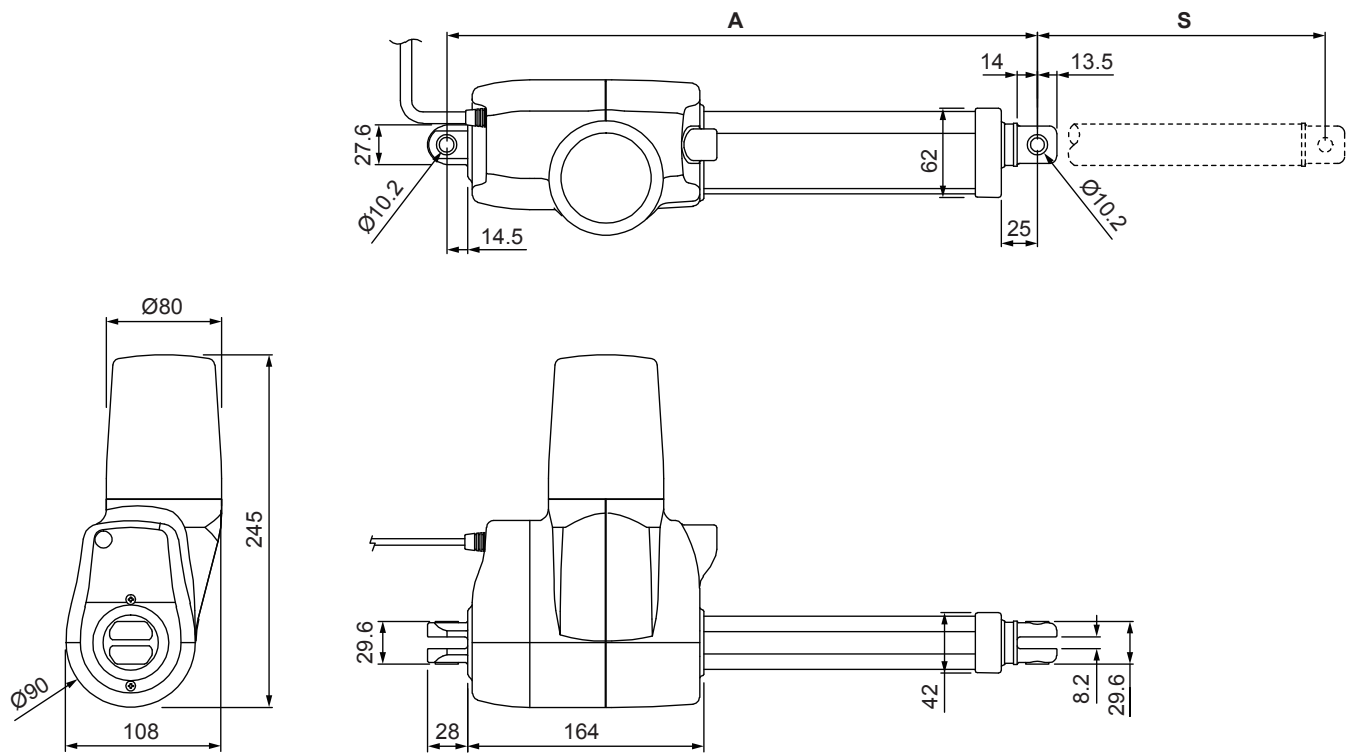


Table 1 Maximum push load VS. stroke

Spec of stroke (mm)	At actual stroke position (mm)					
	150	200	300	400	500	600
200	10,000	8,000	-	-	-	-
300	10,000	10,000	5,000	-	-	-
600	10,000	10,000	10,000	9,000	6,000	5,000

Unit: N

# Dimensions

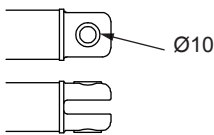


Front connector	Retracted length (A)
Standard	$A \geq S + 210 \text{ mm}$
Option (QR2 / MR2)	$A \geq S + 267 \text{ mm}$

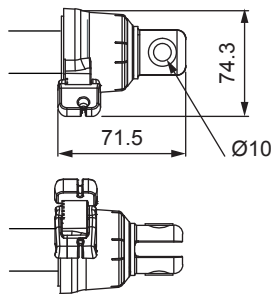
Available stroke (S) range = 100 ~ 600 mm

## Front Connector

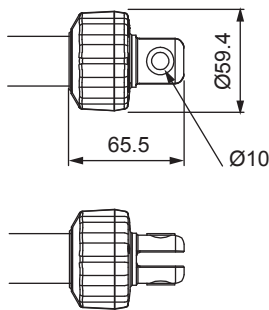
Standard  
(Zinc alloy clevis with plastic bushing)



With QR2 quick release

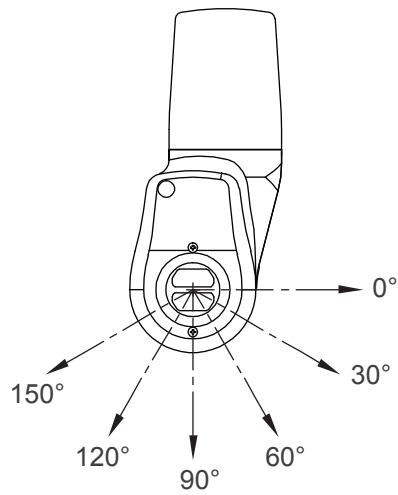


With MR2 manual release



## Rear Connector

Zinc alloy clevis with plastic bushing, with following orientation options.



## Cable Plug

MOTECK Phone jack(Ø6.35 mm) plug



**J1 type**  
(Ø13.8 mm)



**J2 type**  
(Ø16.7 mm)

## Ordering Key

<b>MD100 - 24 DC - 310 . 410 - 1 0 0 0 G 4 1</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC
<b>Motor and Spindle type</b>	<b>DC</b> <b>FC</b> (Refer to Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Front connector</b>	<b>1:</b> Zinc alloy clevis with plastic bushing (Refer to Dimensions)
<b>Pivot orientation of Rear connector</b>	Zinc alloy clevis with plastic bushing, with following orientation options <b>1:</b> 0° <b>3:</b> 30° <b>6:</b> 60° <b>9:</b> 90° <b>C:</b> 120° <b>F:</b> 150°
<b>Option</b>	<b>0:</b> None <b>S:</b> Safety nut <b>P:</b> Push only + Safety nut <b>M:</b> MR2 Manual release + Push only + Safety nut <b>Q:</b> QR2 Quick release + Push only + Safety nut (Note: Single selection is available)
<b>Reserved</b>	<b>0:</b> No meaning
<b>Color</b>	<b>G:</b> Light gray RAL 7035
<b>IP Protection level</b>	<b>4:</b> IPX4 <b>6:</b> IPX6
<b>Cable</b>	<div>Phone jack J1 type plug</div> <div> <b>1:</b> 300 mm straight  <b>2:</b> 1000 mm straight  <b>3:</b> 400 mm coiled            (Refer to page 5)         </div> <div>Phone jack J2 type plug</div> <div> <b>A:</b> 300 mm straight  <b>B:</b> 1000 mm straight  <b>C:</b> 400 mm coiled         </div>

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# Actuator

## MD120



### Features

- ◆ MD120 is a quiet and powerful actuator, which can push up to 12,000N. It's designed for use in a variety of medical and home care applications, such as patient hoist and medical bed.
- ◆ Main applications : home care, medical
- ◆ Input voltage : 24V DC
- ◆ Max. push load : 12,000 N (push) / 6,000 N (pull)
- ◆ Max. current : 7.5 A @ 24V DC
- ◆ Max. speed at no load : 6.9 mm/s
- ◆ Max. speed at full load : 5.2 mm/s @ 12,000N
- ◆ Stroke : 100 ~ 400mm
- ◆ Safety nut (in push direction)
- ◆ Preset limit switches
- ◆ Duty cycle : 10% or 2 min. continuous operation in 20 min.
- ◆ IP protection level : IPX4
- ◆ Color : RAL 7035
- ◆ Certified : EMC Directive 93/42/EEC for CE Marking
- ◆ Aluminum outer tube
- ◆ Noise level :  $\leq$  50 dB
- ◆ Working environment temperature : +5 ~ 40°C

---

## Options

- ◆ Mechanical push only extension tube
- ◆ Electrical push only function
- ◆ Positioning signal feedback with Hall effect sensors
- ◆ IPX6 protection level

## Compatibility

### 1. Control box

- (1) CBP2 (  $\varnothing$  6.35mm loud speaker plug with Moteck J1 type strain relief  $\varnothing$  13.8)
- (2) CB4P-HP (  $\varnothing$  6.35mm loud speaker plug with Moteck J2 type strain relief  $\varnothing$  16.7)



J1 type strain relief



J2 type strain relief

### 2. Accessory

None

# Performance Data

Model No.	Push Load Max. (N)	Speed (mm/s)		Current (A) @ 24V	
		No load	Full load**	No load	Full load**
MD120-24 <b>E8</b> -XXX.XXX-XXXXXXX	12,000*	6.3	4.4	0.6	6.6
MD120-24 <b>F8</b> -XXX.XXX-XXXXXXX	12,000*	6.9	5.2	0.9	7.5

Note \* : Within the stroke range of 200 mm.

Note \*\* : At 12,000N loaded.

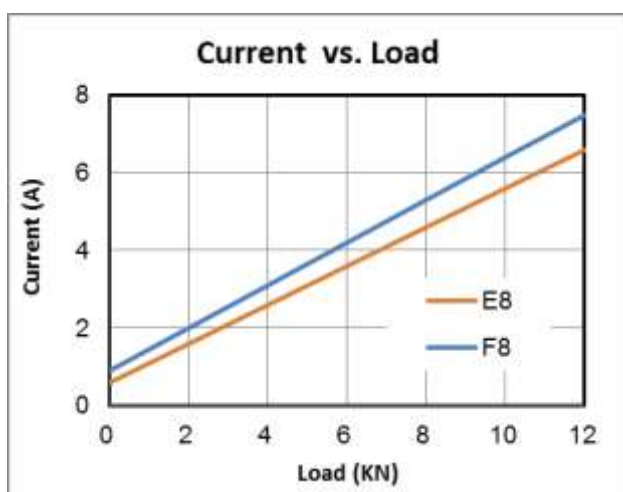
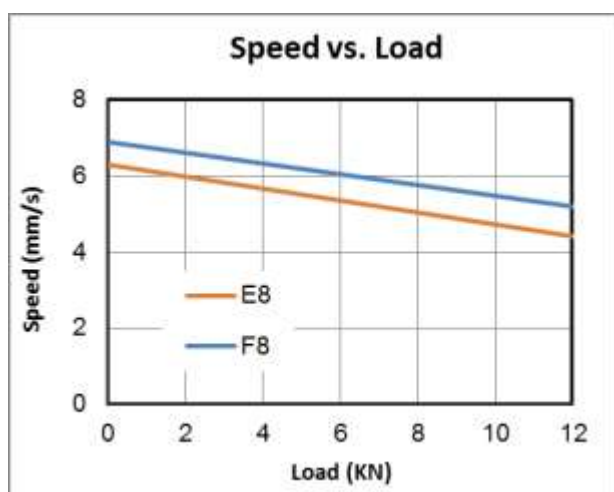
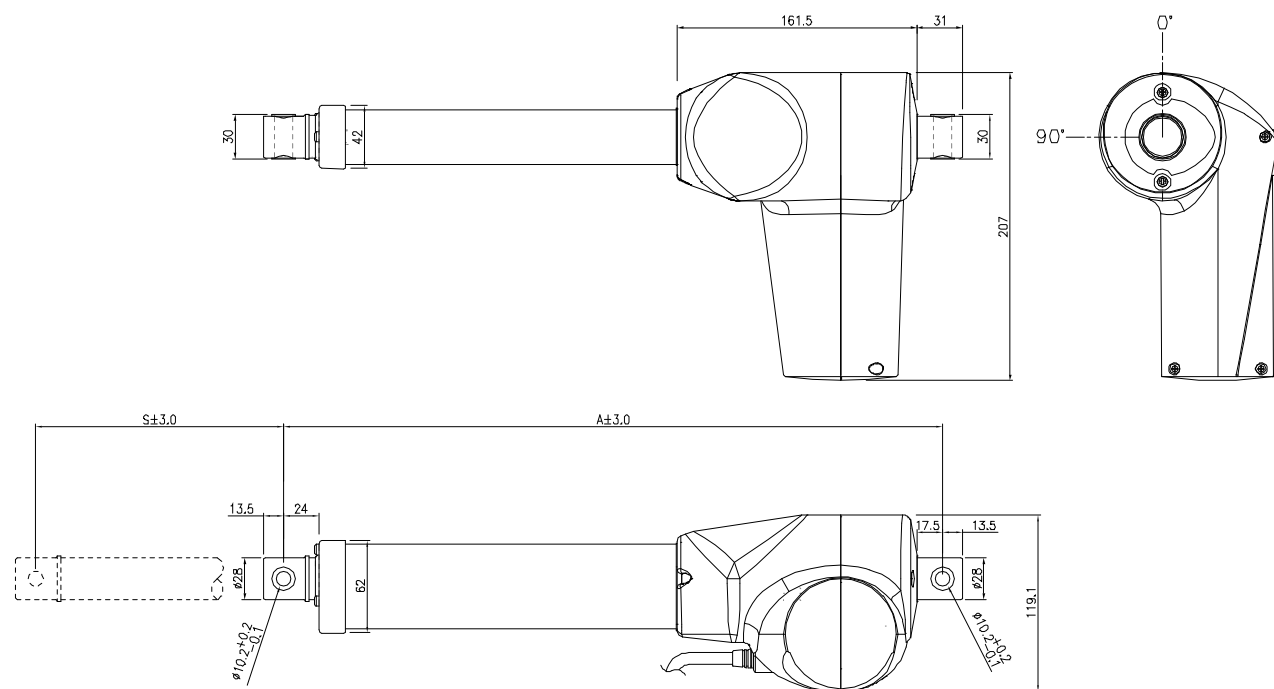


Table of max. push load

Unit : KN

Spec of stroke (mm)	At actual stroke position (mm)			
	100	200	300	400
100	12	-	-	-
200	12	12	-	-
300	12	12	8	-
400	12	12	9	6

# Dimensions

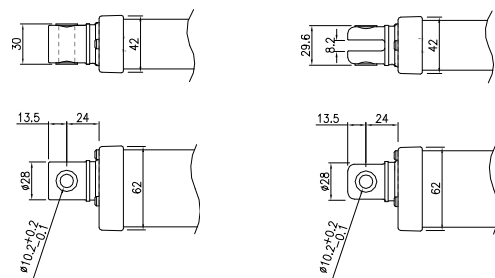


Unit : mm

## Installation Length

Stroke Range (S)	$100 \leq S \leq 300 \text{ mm}$	$300 < S \leq 400 \text{ mm}$
Min. Retracted Length (A)	$A \geq S + 230 \text{ mm}$	$A \geq S + 250 \text{ mm}$

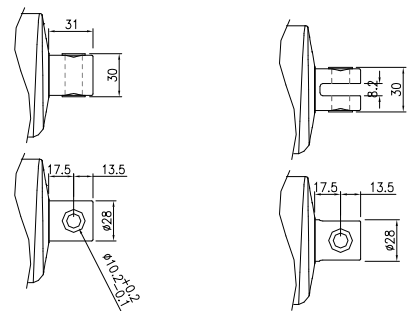
## Front Connectors



Solid type

Slot type

## Rear Connectors



Solid type

Slot type

# Ordering Key

**MD120**——.—

**Input Voltage**  
24 : 24V DC

**Motor and Spindle Code**  
E8, F8  
(Refer to paragraph Performance Data)

**Retracted Length (mm)**  
(Refer to paragraph Dimensions)

**Extended Length (mm)**  
(=Retracted length + Stroke. Refer to Dimensions drawing)

**Front Connector**  
1 : Slot with bushing,  $\phi 10.2$  mm      3 : Solid with bushing,  $\phi 10.2$  mm  
2 : Slot w/o bushing,  $\phi 12.2$  mm      4 : Solid w/o bushing,  $\phi 12.2$  mm

**Rear Connector**  
1 : Slot with bushing,  $\phi 10.2$  mm      3 : Solid with bushing,  $\phi 10.2$  mm  
2 : Slot w/o bushing,  $\phi 12.2$  mm      4 : Solid w/o bushing,  $\phi 12.2$  mm

**Safety Options**  
P : Push Only extension tube  
E : Electrical push only function  
0 : None

**Positioning Feedback**  
0 : None      H : Dual Hall Effect Sensors

**Color**  
G : RAL 7035

**IP Protection Level**  
4 : IPX4      6 : IPX6

**Cable & Pug**  
(6.35mm jack plug,  $\phi 13.8$ )      (6.35mm jack plug,  $\phi 16.7$ )  
1 : Straight cable 300mm      A : Straight cable 300mm  
2 : Straight cable 1000mm      B : Straight cable 1000mm  
3 : Coiled cable 400mm      C : Coiled cable 400mm

## Terms of Use

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# FURNITURE

**FD20**

**FD60**

**BD61**

**BDF60**

**GD70**

# Actuator FD20

FD20 is a compact and quiet actuator designed for use in furniture, homecare and fitness equipment. To meet various application needs, there are several models with different speed and load for customer to choose.



## Feature

---

- Main applications: Furniture, homecare and fitness equipment
- Input voltage: 24V DC
- Max. load: 2000N (Push / Pull)
- Max. speed at no load: 33.3 mm/sec
- Max. speed at full load: 6.2 mm/sec @ 2000N
- Stroke: 50 ~ 250 mm
- Max. current: 2.3A @ 24V DC
- Noise Level:  $\leq 53$ dB
- IP Protection level: IP42
- Color: Black
- Preset limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +65°C
- Certified: CE Marking, EMC Directive 2004/108/EC

## Option

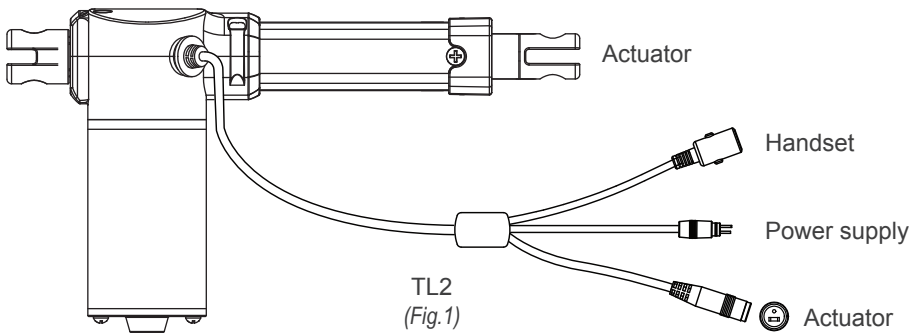
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- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Mechanical brake

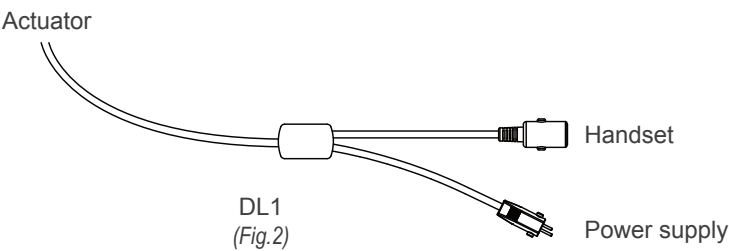
# Compatibility

Product	Model	FD20 spec
Control box	T control, CS1, TR11, TL01, CB3T, CB4M	Without positioning sensor feedback 4-pin MOTECK F type DIN plug
	CB3T-SY, CB4M-S, CB4M-B	Positioning feedback with Hall effect sensor x 2 6-pin MOTECK F type DIN plug
Handset	Depend on control box	Driven by control box
	H3B, HZ01	Special cable TL2 (Fig.1) *
	HB, H2G, HZ02, HZ03, HZ04, HZ05	Special cable DL1 (Fig.2) *
Accessory	TSW1 switching mode power supply	Special cable TL2
	TSW4 switching mode power supply	Special cable DL1
	T Connector (Extension cable of actuator and handset, to connect to power supply or transformer box)	4-pin MOTECK F type DIN plug

**\* Remark 1:**  
Special cable TL2 to connect to power supply and handset, without control box.



**\* Remark 2:**  
Special cable DL1 to connect to power supply and handset, without control box.



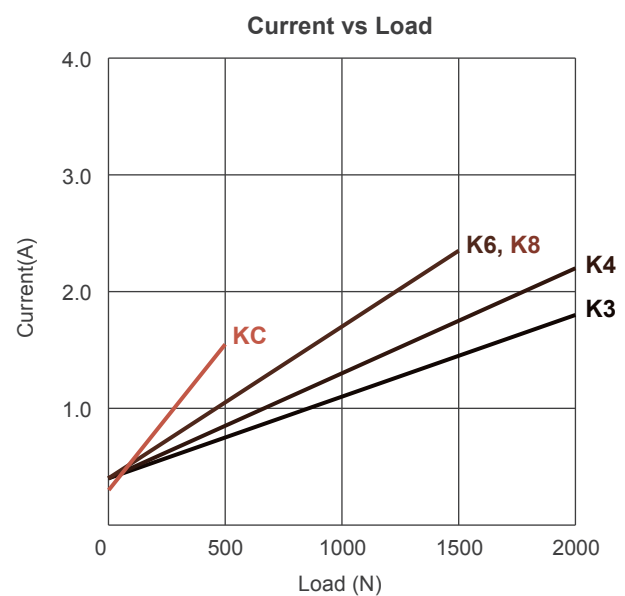
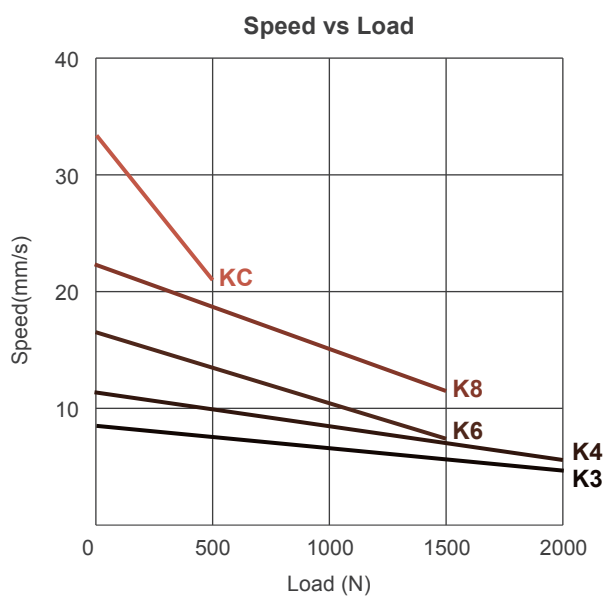
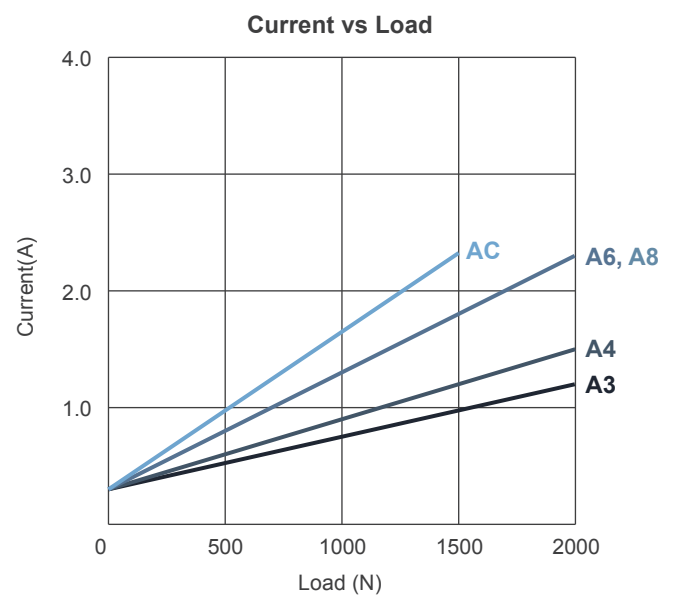
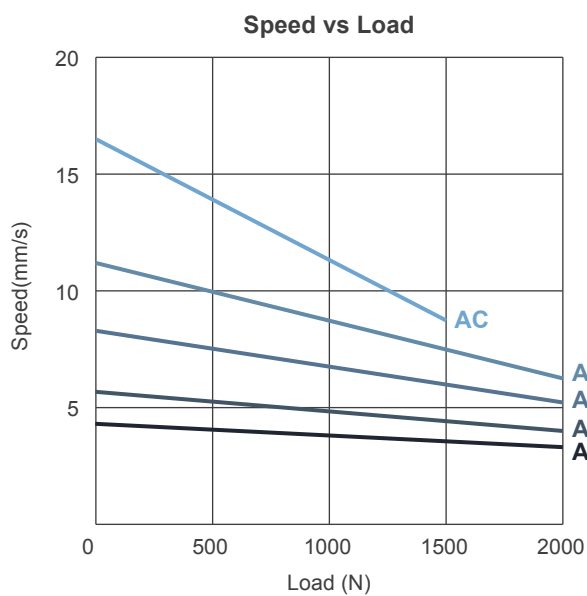


## Performance Data

Model No.	Push / Pull Max. (N)	Self-locking ability (N)	Speed (mm/s)		Current (A) @ 24V	
			No load	Full load	No load	Full load
FD20-24- <b>A3</b> -XXX.XXX-CXX-XXX	2000	2000	4.3	3.3	0.3	1.2
FD20-24- <b>A4</b> -XXX.XXX-CXX-XXX	2000	2000	5.6	4.0	0.3	1.5
FD20-24- <b>A6</b> -XXX.XXX-CXX-XXX	2000	1500	8.3	5.3	0.3	2.3
FD20-24- <b>K3</b> -XXX.XXX-CXX-XXX	2000	2000	8.3	4.7	0.4	1.8
FD20-24- <b>K4</b> -XXX.XXX-CXX-XXX	2000	1000	11.1	5.6	0.4	2.2
FD20-24- <b>A8</b> -XXX.XXX-CXX-XXX	2000	1000	11.1	6.2	0.3	2.3
FD20-24- <b>K6</b> -XXX.XXX-CXX-XXX	1500	500	16.6	7.2	0.4	2.35
FD20-24- <b>K8</b> -XXX.XXX-CXX-XXX	1500	0	22.2	11.5	0.4	2.35
FD20-24- <b>AC</b> -XXX.XXX-CXX-XXX	1500	500	16.6	8.7	0.3	2.3
FD20-24- <b>KC</b> -XXX.XXX-CXX-XXX	500	0	33.3	21	0.3	1.55

### \* Remarks:

- Mechanical brake is available upon request, to further enhance the self-locking ability performance.

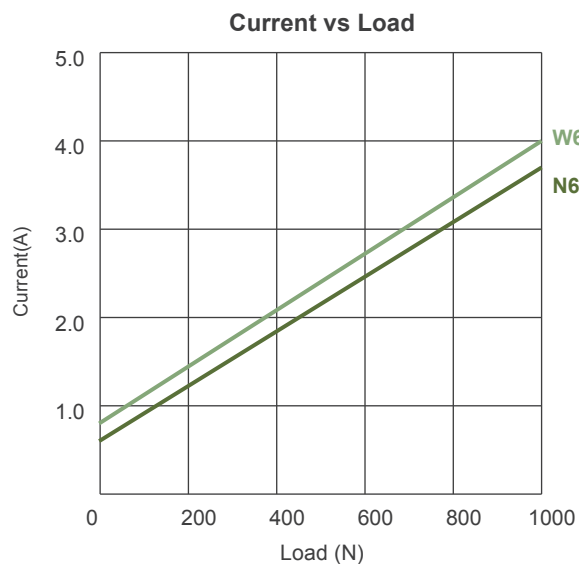
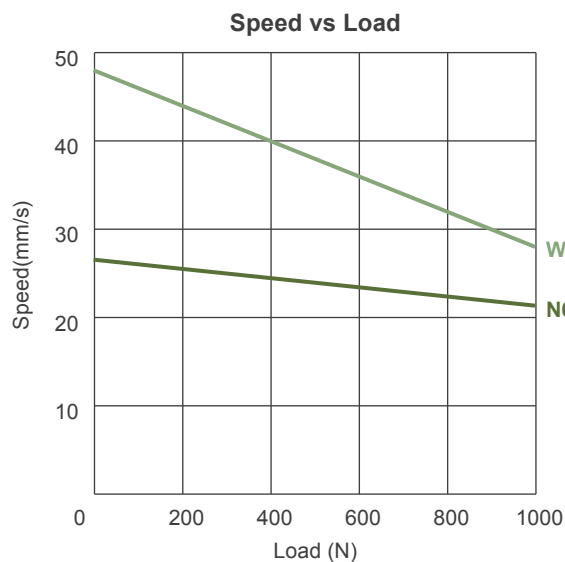


The below 2 models are suitable for recliner application, with DL1 or TL2 cable.

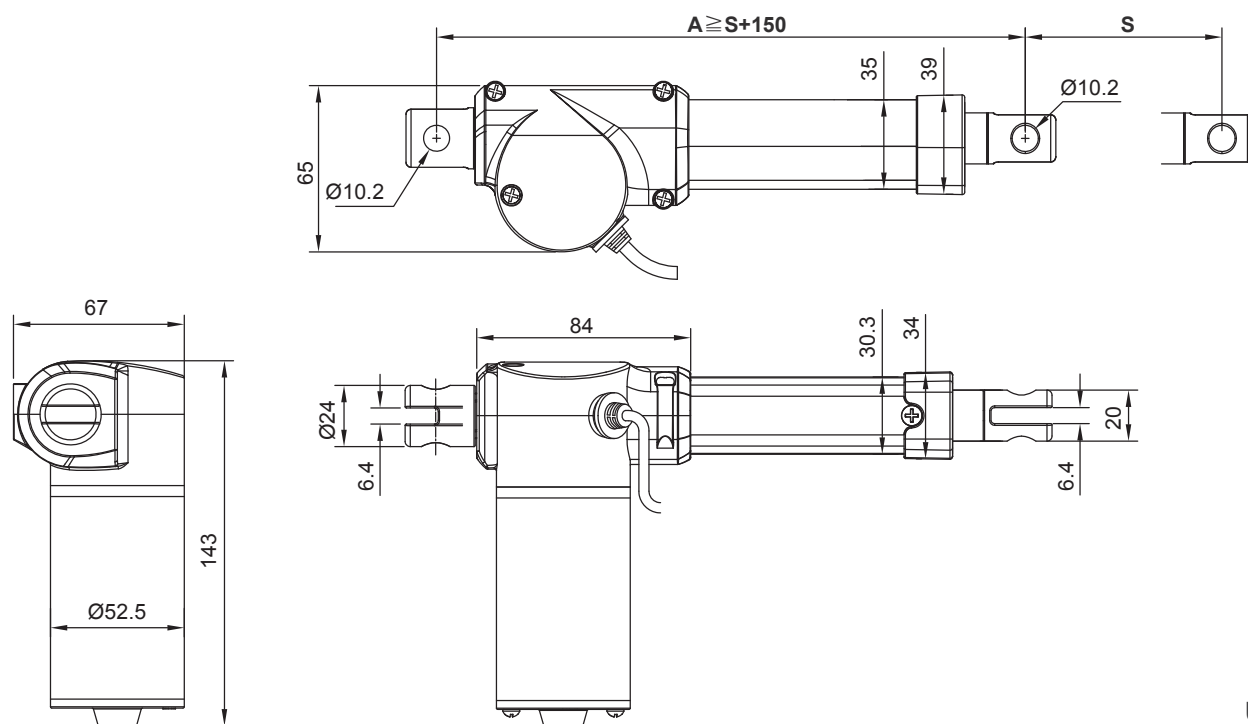
Model No.	Push / Pull Max. (N)	Self-locking ability (N)	Speed (mm/s)		Current (A) @ 29V	
			No load	Full load	No load	Full load
FD20-24- <b>N6</b> -XXX.XXX-CXX-XXX	1000	500	26.7	21.3	0.6	3.7
FD20-24- <b>W6</b> -XXX.XXX-CXX-XXX	1000	500	48	28	0.8	4.0

**\* Remarks:**

- Mechanical brake is available upon request, to further enhance the self-locking ability performance.



## Dimensions



Unit: mm

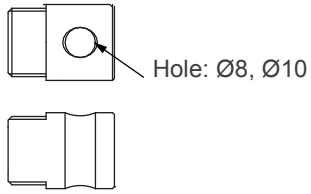
Retracted length (A)	Front connector	Rear connector
$A \geq S + 135 \text{ mm}$	1, 2	1, 2
$A \geq S + 150 \text{ mm}$	3	1, 2

Available stroke (S) range = 50 ~ 250 mm

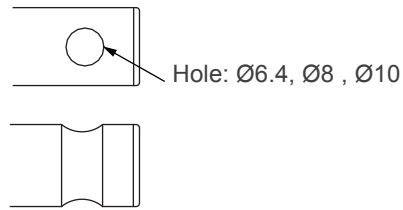
Extended length = S + A

## Front Connector

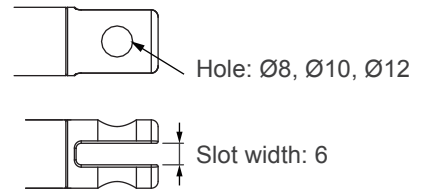
1: Plastic



2: Round hole

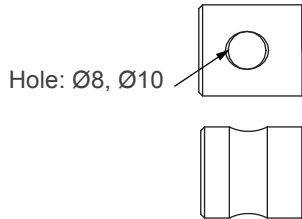


3: Metal

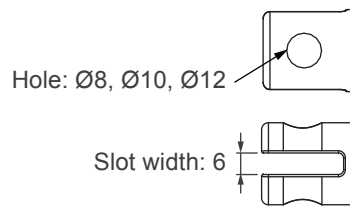


## Rear Connector

1: Plastic



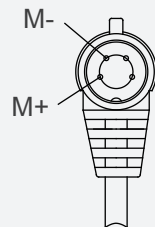
2: Metal



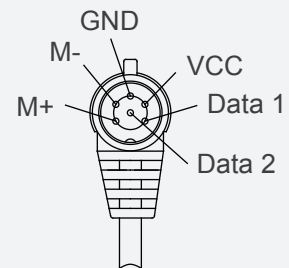
Unit: mm

## Cable plug

### MOTECK F type DIN plug

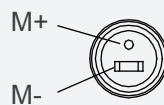


No sensor feedback



1x or 2x Hall sensors for positioning

### Plug used on the second actuator connected to TL2 cable



### Remarks:

- Connect red wire "M+" to "+" & black wire "M-" to "-" of DC power, the actuator will extend.

## Ordering Key

<b>FD20 - 24 - A4 - 230 - 330 - C 1 1 - HS2 - BK</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC
<b>Motor and spindle type</b>	<b>A3, K3, N6,</b> <b>A4, K4, W6,</b> <b>A6, K6,</b> <b>A8, K8,</b> <b>AC KC,</b> (Refer to paragraph Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to paragraph Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to paragraph Dimensions)
<b>Front connector</b>	<b>1:</b> Plastic <b>2:</b> Round hole <b>3:</b> Metal (Please refer to page 5)
<b>Rear connector</b>	<b>1:</b> Plastic <b>2:</b> Metal (Please refer to page 5)
<b>Positioning feedback</b>	<b>Blank:</b> None <b>HS1:</b> Hall effect sensor x 1 <b>HS2:</b> Hall effect sensor x 2
<b>Option</b>	<b>Blank:</b> None <b>BK:</b> Mechanical brake

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# Actuator FD60

FD60 is a quiet and powerful actuator designed for use in furniture application. Our T control box, which can be perfectly attached and integrated to FD60, is available for customers to choose.



## Feature

---

- Main applications: Furniture
- Input voltage: 24V DC / 12V DC
- Max. load: 6000N (push) / 4000N (pull)
- Max. speed at no load: 33.3 mm/sec
- Max. speed at full load: 2.9 mm/sec @ 6000N
- Stroke: 50 ~ 300 mm
- Max. current: 6A @ 12V DC, 3A @ 24V DC
- Noise Level:  $\leq 50$ dB
- IP Protection level: IP42
- Color: Black
- Preset limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +65°C
- Certified: CE Marking, EMC Directive 2014/30/EU

## Option

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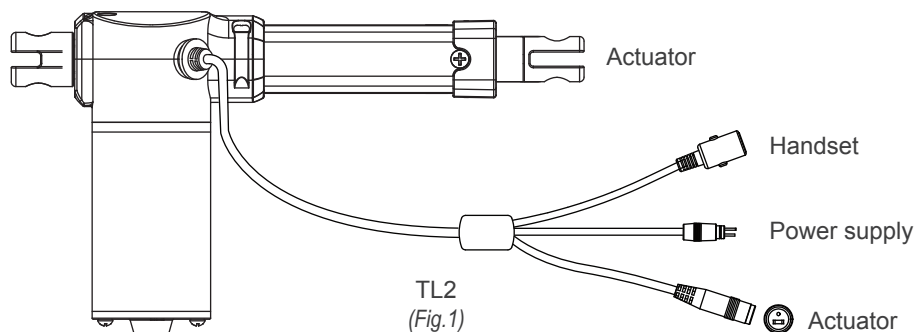
- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Mechanical push only extension tube
- Safety nut
- Turn 90° Pivot orientation of rear connector
- Mechanical brake

## Compatibility

Product	Model	FD60 spec
<b>Control box</b>	T control, CS1, CS2, TR11, TL01, CB3T, CB4M, CBT2	Without positioning sensor feedback 4-pin MOTECK F type DIN plug
	CB3T-SY, CB4M-S, CB4M-B	Positioning feedback with Hall effect sensor x 2 6-pin MOTECK F type DIN plug
<b>Handset</b>	Depend on control box	Driven by control box
	H3B, HZ01	Special cable TL2 (Fig.1) *
	HB, H2G, HZ02, HZ03, HZ04, HZ05	Special cable DL1 (Fig.2) *
<b>Accessory</b>	TSW1 switching mode power supply	Special cable TL2
	TSW4 switching mode power supply	Special cable DL1
	T Connector (Extension cable of actuator and handset, to connect to power supply or transformer box)	4-pin MOTECK F type DIN plug

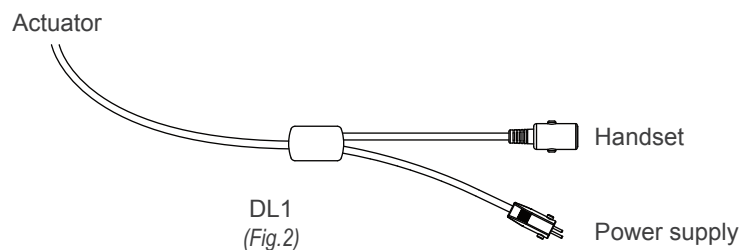
**\* Remark 1:**

Special cable TL2 to connect to power supply and handset, without control box.



**\* Remark 2:**

Special cable DL1 to connect to power supply and handset, without control box.

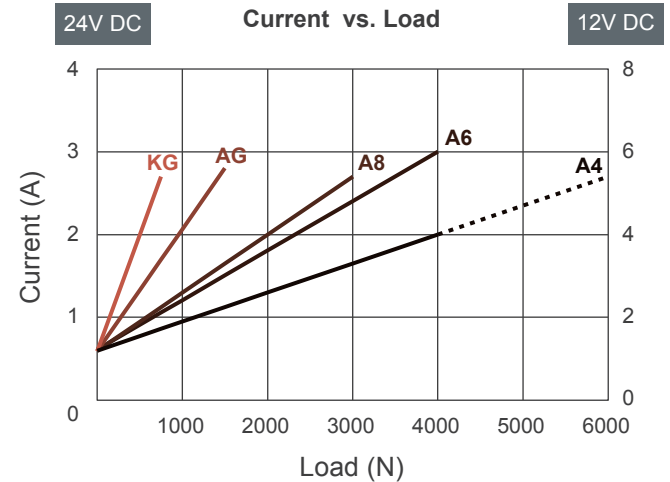
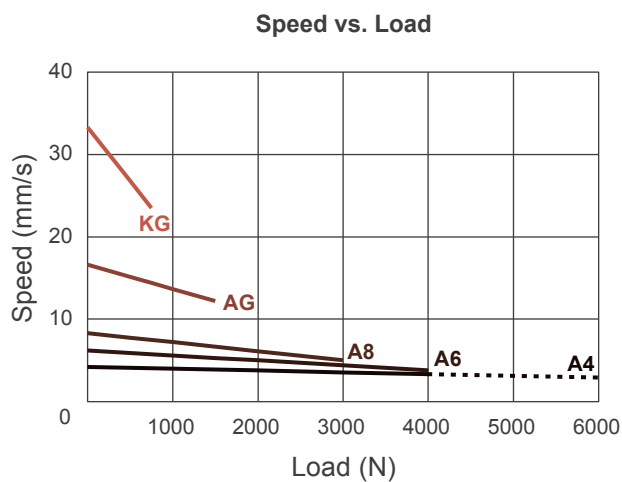
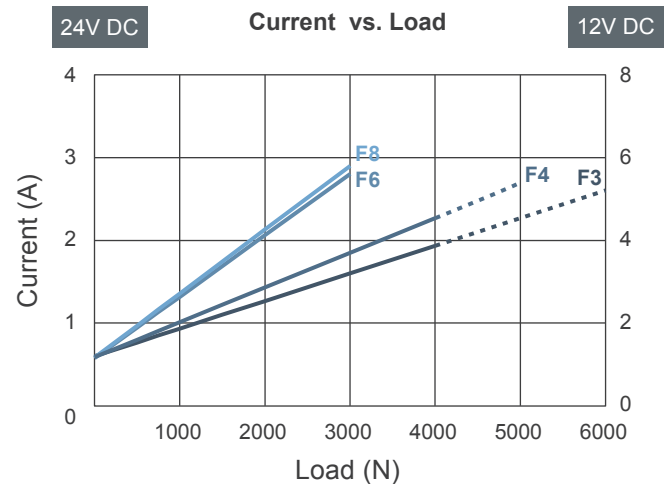
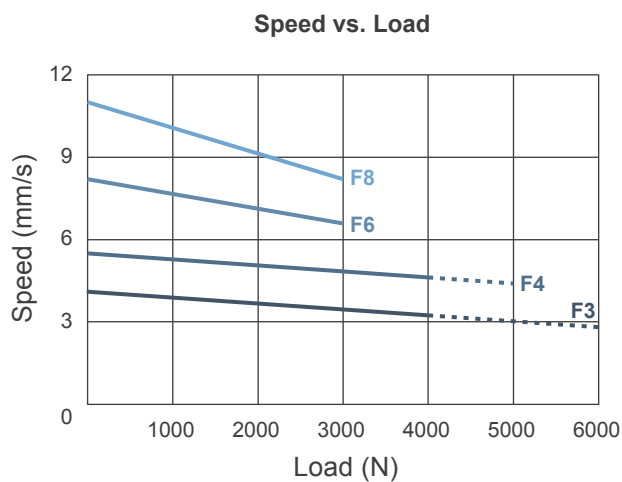


## Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Self-locking ability (N)	Speed (mm/s)		Current (A)			
				No load	Full load	No load		Full load	
						12V	24V	12V	24V
FD60-XX- <b>F3</b> -XXX.XXX...	6000	4000	6000	4.1	2.8	1.2	0.6	5.2	2.6
FD60-XX- <b>A4</b> -XXX.XXX...	6000	4000	5000	4.2	2.9	0.8	0.6	5.4	2.7
FD60-XX- <b>F4</b> -XXX.XXX...	5000	4000	5000	5.5	4.4	0.8	0.6	5.6	2.8
FD60-XX- <b>A6</b> -XXX.XXX...	4000	4000	2500	6.2	3.8	0.4	0.6	6.0	3.0
FD60-XX- <b>F6</b> -XXX.XXX...	3000	3000	2500	8.2	6.6	1.0	0.6	5.6	2.8
FD60-XX- <b>A8</b> -XXX.XXX...	3000	3000	2000	8.3	5.0	0.6	0.6	5.4	2.7
FD60-XX- <b>F8</b> -XXX.XXX...	3000	3000	2000	11.0	8.2	1.0	0.6	5.8	2.9
FD60-XX- <b>AG</b> -XXX.XXX...	1500	1500	700	16.6	12.2	0.4	0.6	5.6	2.8
FD60-XX- <b>KG</b> -XXX.XXX...	750	750	0	33.3	23.5	0.4	0.6	5.2	2.7

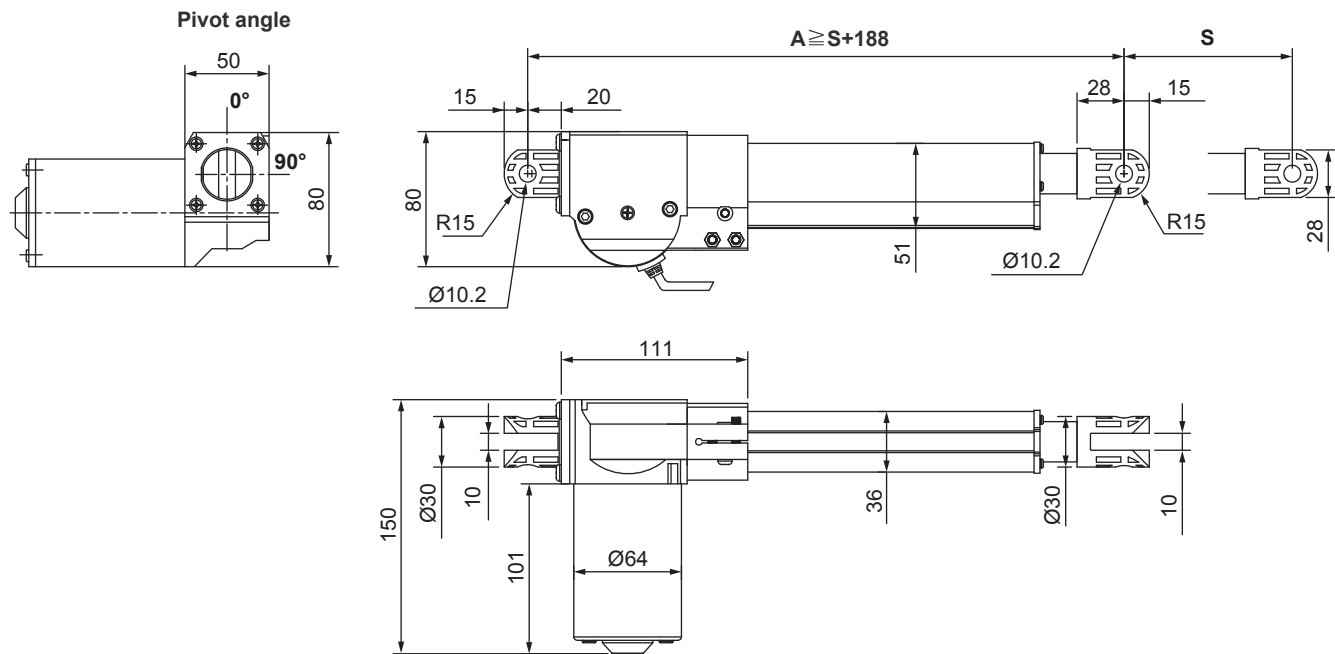
### \* Remarks:

Mechanical brake is available upon request, to further enhance the self-locking ability.



Push / Pull Load — Push Load - - -

Dimensions

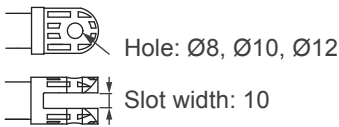


Retracted length (A)	Front connector	Rear connector
$A \geq S + 188 \text{ mm}$	1, 5, 8	1, 2, 3
$A \geq S + 160 \text{ mm}$	2, 3, 4, 7	
$A \geq S + 198 \text{ mm}$	1, 5, 8	5 (with crank function)
$A \geq S + 170 \text{ mm}$	2, 3, 4, 7	

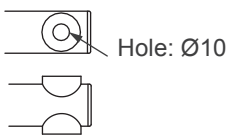
Available stroke (S) range = 50 ~ 300 mm  
Extended length = S + A

Front Connector

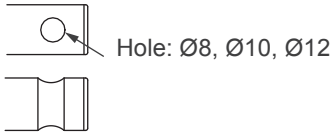
- 1: Plastic
- 5: Metal



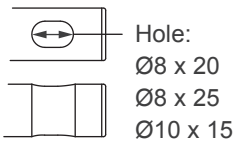
- 2: Round hole with brass bushing
- 7: Round hole with nylon bushing



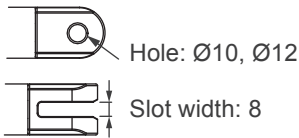
- 3: Round hole



- 4: Oval hole

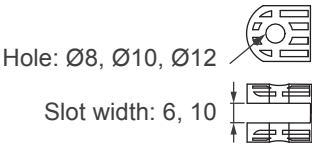


- 8: Enhanced metal

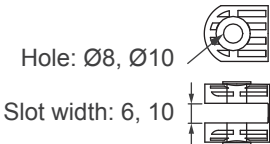


Rear Connector

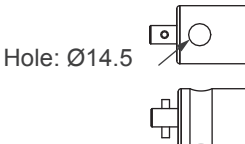
- 1: Plastic
- 2: Metal



- 3: Metal with plastic bushing



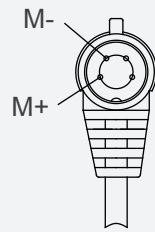
- 5: Metal (with crank function)



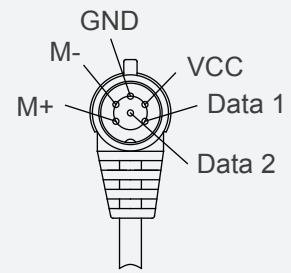


## Cable plug

### MOTECK F type DIN plug

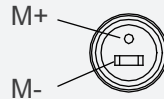


No sensor feedback



1x or 2x Hall sensors for positioning

### Plug used on the second actuator connected to TL2 cable



#### Remarks:

Connect (M+) to '+' & (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

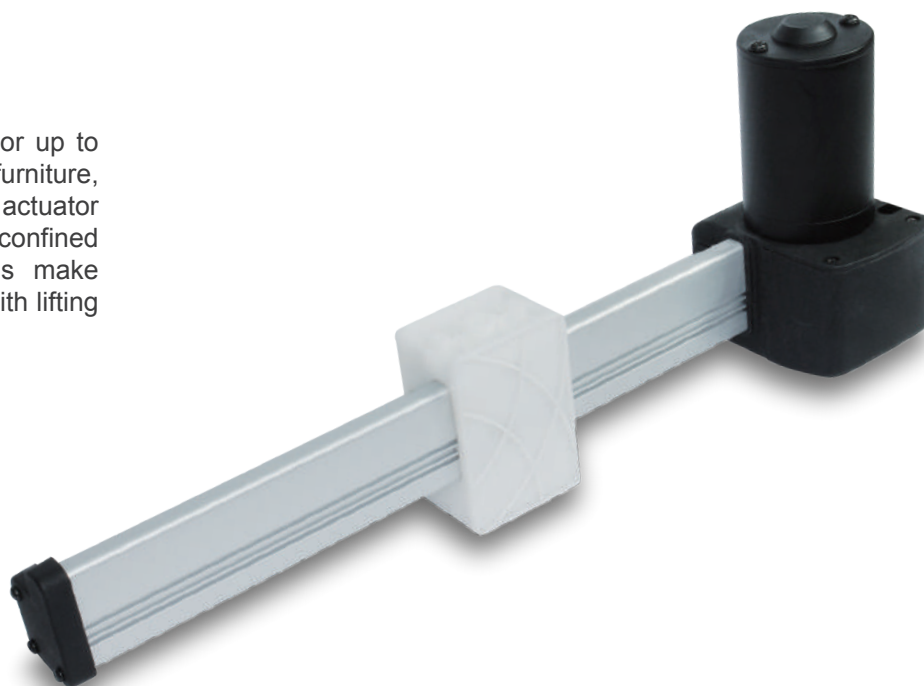
		FD60 - 24 - A4 - 350 - 470 - C 1 2 - HS3 - PO-BK									
Input voltage	12: 12V DC 24: 24V DC										
Motor and Spindle type	A4      A6      A8 AG      F3      F4 F6      F8      KG (Refer to Performance Data)										
Retracted length	XXX (Refer to Dimensions)										
Extended length	XXX (Refer to Dimensions)										
Front connector	1: Plastic 2: Round hole with brass bushing 3: Round hole 4: Oval hole 5: Metal 7: Round hole with nylon bushing 8: Enhanced metal (Refer to Dimensions)										
Rear connector	1: Plastic 2: Metal 3: Metal with plastic bushing 5: Metal (with crank function) (Refer to Dimensions)										
Positioning feedback	Blank: None HS3: Hall effect sensor x 1 HS4: Hall effect sensor x 2										
Option	Blank: None PO: Push only SN: Safety nut BK: Mechanical brake (Note: Multiple choice is allowed)										

### Terms of Use

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# Actuator BD61

BD61 is a quiet and powerful actuator up to 6000N thrust, designed for use in furniture, homecare and fitness equipment. The actuator block allows a big stroke range in confined space. The small fitting dimensions make BD61 an ideal solution for recliners with lifting assistance.



## Feature

---

- Main applications: Furniture, homecare, and fitness equipment
- Input voltage: 24V DC / 12V DC
- Max. load: 6000N (push) / 4000N (pull)
- Max. speed at no load: 33.3 mm/sec
- Max. speed at full load: 2.9 mm/sec @ 6000N
- Stroke: 100 ~ 1000 mm
- Max. current: 6A @ 12V DC, 3A @ 24V DC
- Noise Level:  $\leq 50$ dB
- Color: Black
- Adjustable limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +65°C
- Certified: CE Marking, EMC Directive 2014/30/EU

## Option

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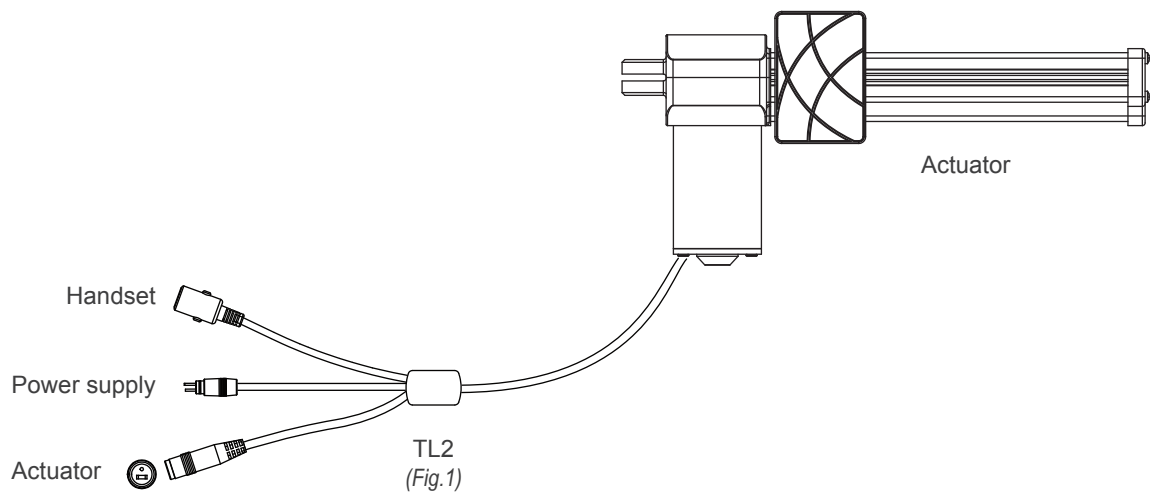
- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Mechanical brake

## Compatibility

Product	Model	BD61 spec
<b>Control box</b>	T control, CS1, CS2, TR11, TL01, CB3T, CB4M, CBT2	Without positioning sensor feedback 4-pin MOTECK F type DIN plug
	CB3T-SY, CB4M-S, CB4M-B	Positioning feedback with Hall effect sensor x 2 6-pin MOTECK F type DIN plug
<b>Handset</b>	Depend on control box	Driven by control box
	H3B, HZ01	Special cable TL2 (Fig.1) *
	HB, H2G, HZ02, HZ03, HZ04, HZ05	Special cable DL1 (Fig.2) *
<b>Accessory</b>	TSW1 switching mode power supply	Special cable TL2
	TSW4 switching mode power supply	Special cable DL1
	T Connector (Extension cable of actuator and handset, to connect to power supply or transformer box)	4-pin MOTECK F type DIN plug

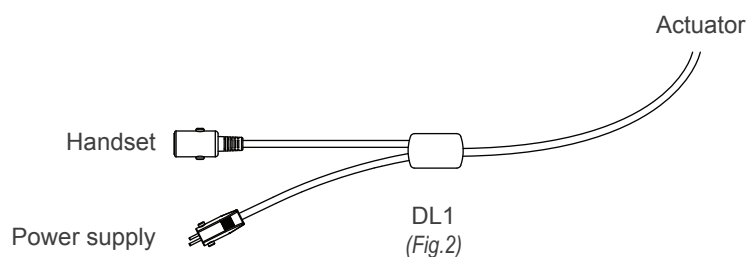
**\* Remark 1:**

Special cable TL2 to connect to power supply and handset, without control box.



**\* Remark 2:**

Special cable DL1 to connect to power supply and handset, without control box.

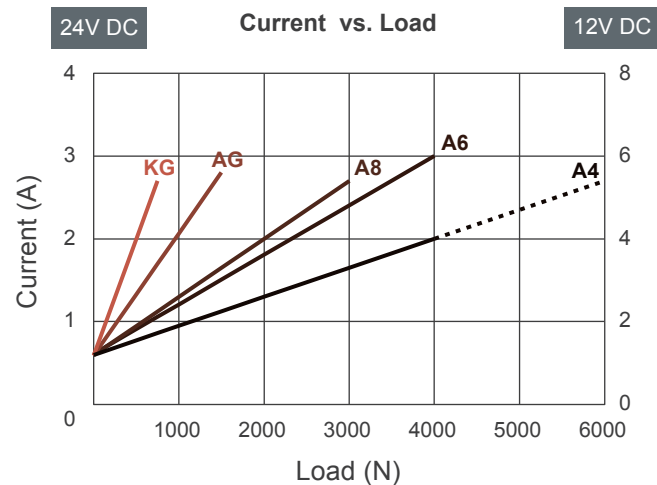
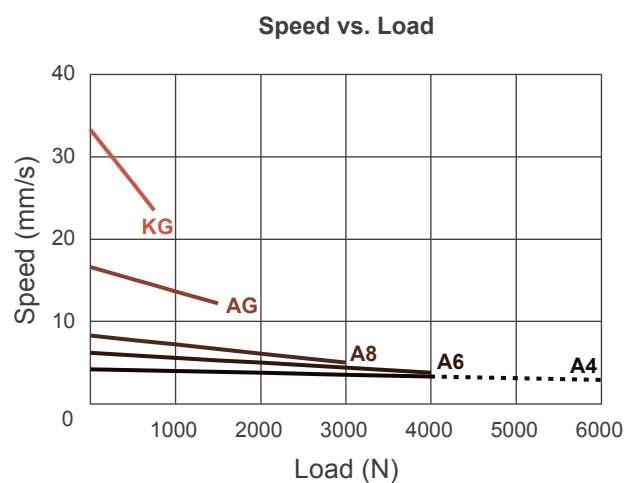
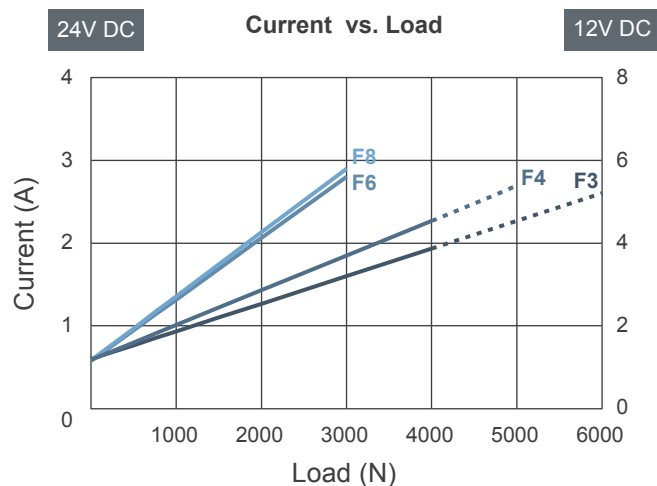
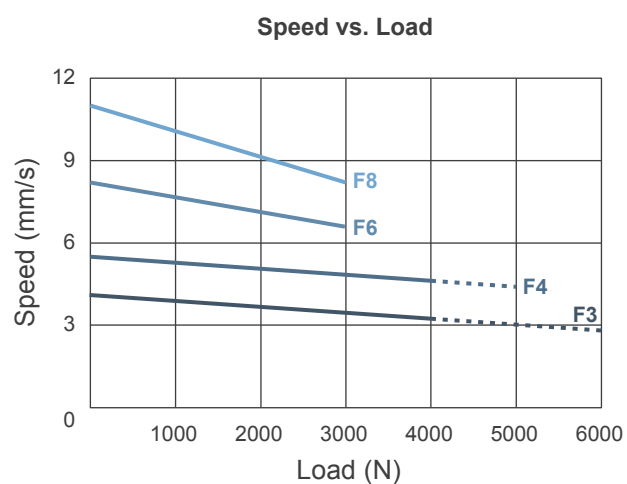


## Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Self-locking ability (N)	Speed (mm/s)		Current (A)			
				No load	Full load	No load		Full load	
						12V	24V	12V	24V
BD61-XX-F3-XXX.XXX...	6000	4000	6000	4.1	2.8	1.2	0.6	5.2	2.6
BD61-XX-A4-XXX.XXX...	6000	4000	5000	4.2	2.9	1.2	0.6	5.4	2.7
BD61-XX-F4-XXX.XXX...	5000	4000	5000	5.5	4.4	1.2	0.6	5.6	2.8
BD61-XX-A6-XXX.XXX...	4000	4000	2500	6.2	3.8	1.2	0.6	6.0	3.0
BD61-XX-F6-XXX.XXX...	3000	3000	2500	8.2	6.6	1.2	0.6	5.6	2.8
BD61-XX-A8-XXX.XXX...	3000	3000	2000	8.3	5.0	1.2	0.6	5.4	2.7
BD61-XX-F8-XXX.XXX...	3000	3000	2000	11.0	8.2	1.2	0.6	5.8	2.9
BD61-XX-AG-XXX.XXX...	1500	1500	700	16.6	12.2	1.2	0.6	5.6	2.8
BD61-XX-KG-XXX.XXX...	750	750	0	33.3	23.5	1.2	0.6	5.2	2.7

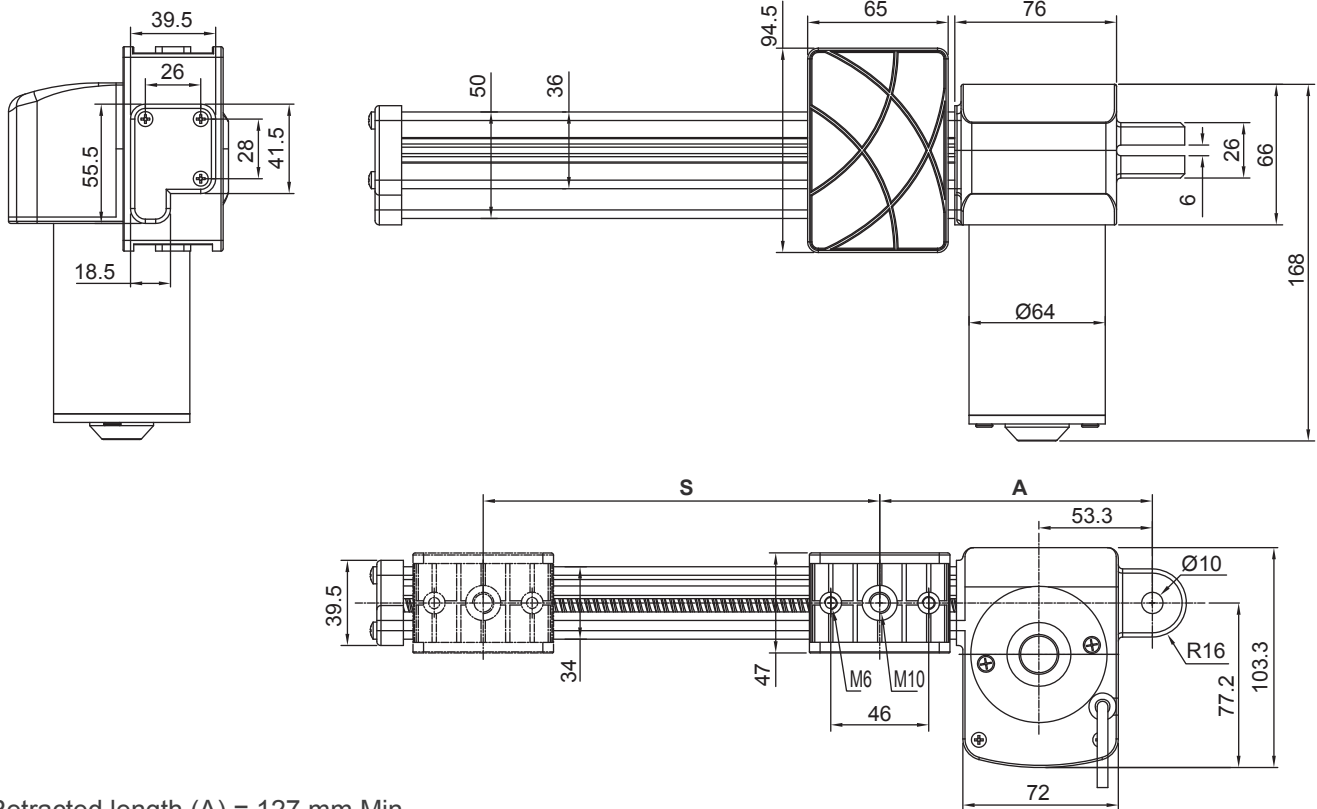
### \* Remarks:

Mechanical brake is available upon request, to further enhance the self-locking ability.



Push / Pull Load — Push Load - - -

## Dimensions



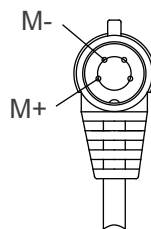
Retracted length (A) = 127 mm Min.

Available stroke (S) range = 100 ~ 1000 mm

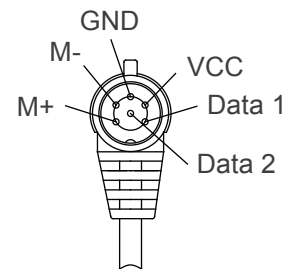
Extended length = S + A

## Cable plug

### MOTECK F type DIN plug

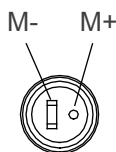


No sensor feedback



1x or 2x Hall sensors for positioning

### Plug used on the second actuator connected to TL2 cable



### Remarks:

Connect (M+) to '+' & (M-) to '-' of DC power, the actuator will extend.

## Ordering Key

		<b>BD61 - 24 - AG - 135 - 1135 - C 1 1 - HS2 - BK</b>																		
Input voltage	<b>12:</b> 12V DC <b>24:</b> 24V DC																			
Motor and Spindle type	<table><tr><td><b>A4</b></td><td><b>A6</b></td><td><b>A8</b></td></tr><tr><td><b>AG</b></td><td><b>F3</b></td><td><b>F4</b></td></tr><tr><td><b>F6</b></td><td><b>F8</b></td><td><b>KG</b></td></tr></table> (Refer to Performance Data)											<b>A4</b>	<b>A6</b>	<b>A8</b>	<b>AG</b>	<b>F3</b>	<b>F4</b>	<b>F6</b>	<b>F8</b>	<b>KG</b>
<b>A4</b>	<b>A6</b>	<b>A8</b>																		
<b>AG</b>	<b>F3</b>	<b>F4</b>																		
<b>F6</b>	<b>F8</b>	<b>KG</b>																		
Retracted length	<b>XXX</b> (Refer to Dimensions)																			
Extended length	<b>XXX</b> (Refer to Dimensions)																			
Front connector	<b>1:</b> Plastic nut (Refer to Dimensions)																			
Rear connector	<b>1:</b> Plastic (Refer to Dimensions)																			
Positioning feedback	<b>Blank:</b> None <b>HS1:</b> Hall effect sensor x 1 <b>HS2:</b> Hall effect sensor x 2																			
Option	<b>Blank:</b> None <b>BK:</b> Mechanical brake																			

### Terms of Use

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# Actuator

## BDF60



## Features

- ◆ BDF60 is a quiet and powerful actuator designed for use in furniture application. It's equipped with adjustable limit switch, so the travel range can be adjusted easily.
- ◆ Main applications : Furniture
- ◆ Input voltage : 24V DC / 12V DC
- ◆ Max. load : 6000N (push) / 4000N (pull)
- ◆ Max. current : 6A @ 12V DC, 3A @ 24V DC
- ◆ Max. speed at no load : 33.3mm/sec
- ◆ Max. speed at full load : 2.9 mm/sec @ 6000N
- ◆ Stroke : 50 ~ 300 mm
- ◆ Duty cycle : 10% or 2 min continuous operation in 20 min.
- ◆ IP Protection level : IP42
- ◆ Color : Black
- ◆ Certified : EN61000-6-3 / EN61000-6-1 / EN61000-4-2 / EN61000-4-3 / EN61000-4-8  
IEC6100-4-2 / IEC61000-4-3 / IEC61000-4-8
- ◆ Noise Level :  $\leq$  50dB
- ◆ Adjustable limit switches



## Options

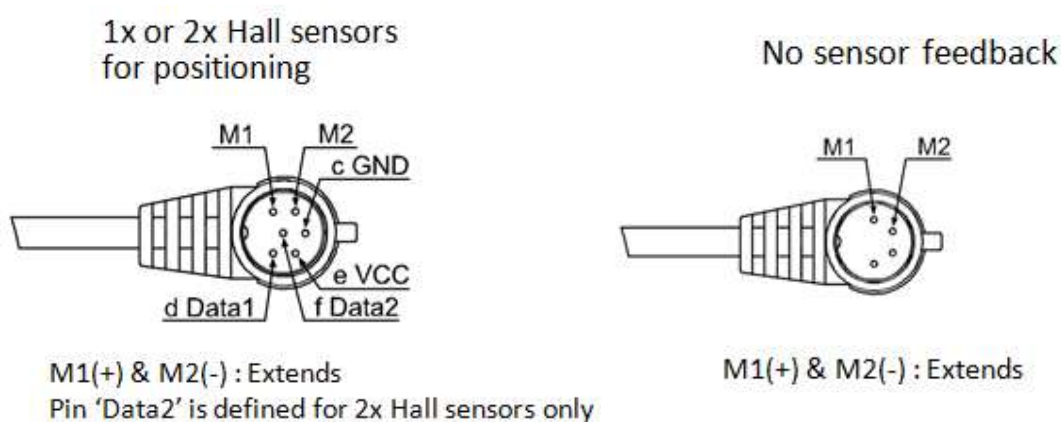
- ◆ Positioning signal feedback with Hall effect sensor x 1
- ◆ Positioning signal feedback with Hall effect sensor x 2

## Compatibility

### 1. Control box

Without sensor feedback	T control, CSI, TR11, TL01, CB3T, CB4M
Positioning signal feedback with Hall effect sensor x 1	CB4M-SY
Positioning signal feedback with Hall effect sensor x 2	CB3T-SY, CB3T-SYH, CB4M-4SY

### Pin Assignment



### 2. Handset

- (1) Depend on control box
- (2) HB, H2G, H3B (With special actuator cable option to connect to power supply and handset, without control box)

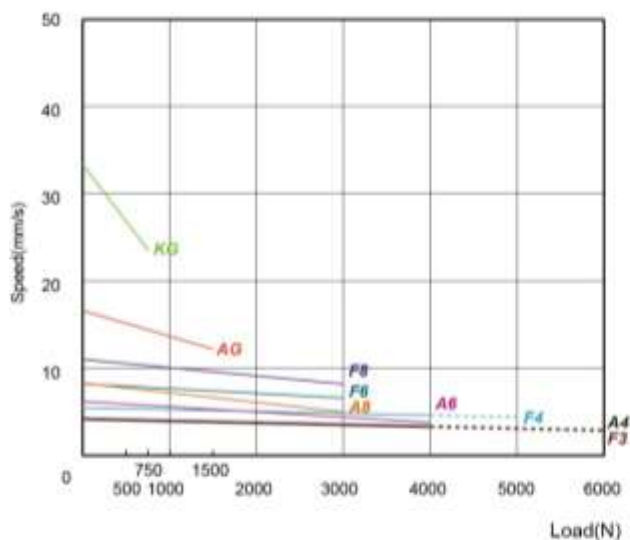
### 3. Accessory

Switch Mode Power Supply : TSW1, TSW2, TSW3, TSW4

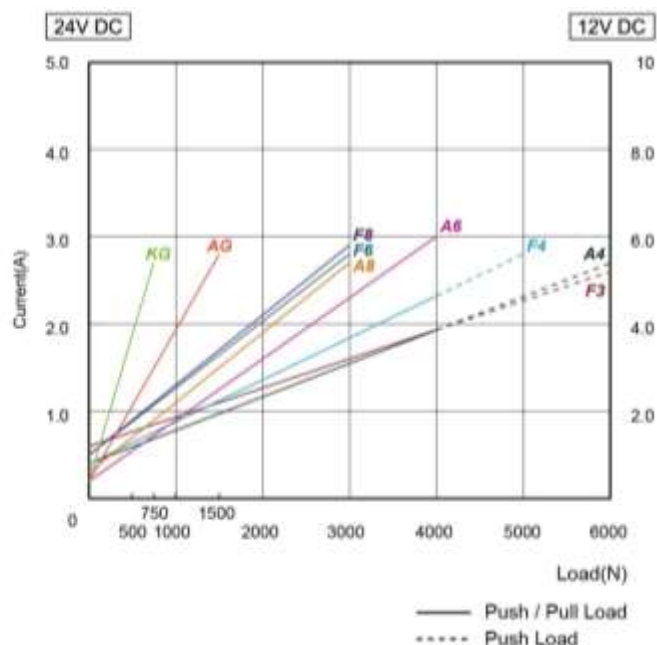
# Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A)			
			No load	Full load	No load		Full load	
					12V	24V	12V	24V
BDF60-XX- <b>F3</b> - XXX.XXX	6000	4000	4.1	2.8	1.2	0.6	5.2	2.6
BDF60-XX- <b>A4</b> - XXX.XXX	6000	4000	4.2	2.9	0.8	0.4	5.4	2.7
BDF60-XX- <b>F4</b> - XXX.XXX	5000	3500	5.5	4.4	0.8	0.4	5.6	2.8
BDF60-XX- <b>A6</b> - XXX.XXX	4000	3000	6.2	3.8	0.4	0.2	5.0	2.5
BDF60-XX- <b>F6</b> - XXX.XXX	4000	3000	8.2	6.6	1.0	0.5	5.6	2.8
BDF60-XX- <b>A8</b> - XXX.XXX	3000	2500	8.3	5.0	0.6	0.3	5.4	2.7
BDF60-XX- <b>F8</b> - XXX.XXX	3000	2500	11.0	8.2	1.0	0.5	5.8	2.9
BDF60-XX- <b>AG</b> - XXX.XXX	1500	1500	16.6	12.2	0.4	0.2	5.6	2.8
BDF60-XX- <b>KG</b> - XXX.XXX	750	750	33.3	23.5	0.4	0.2	5.4	2.7

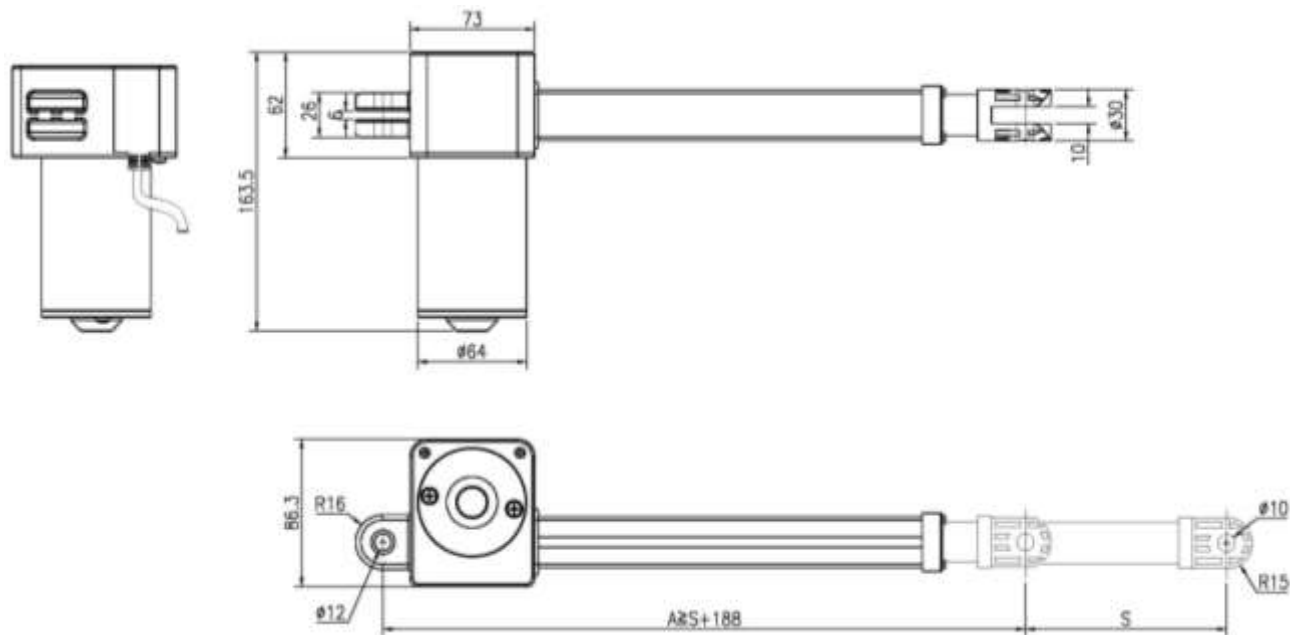
Speed vs Load



Current vs Load

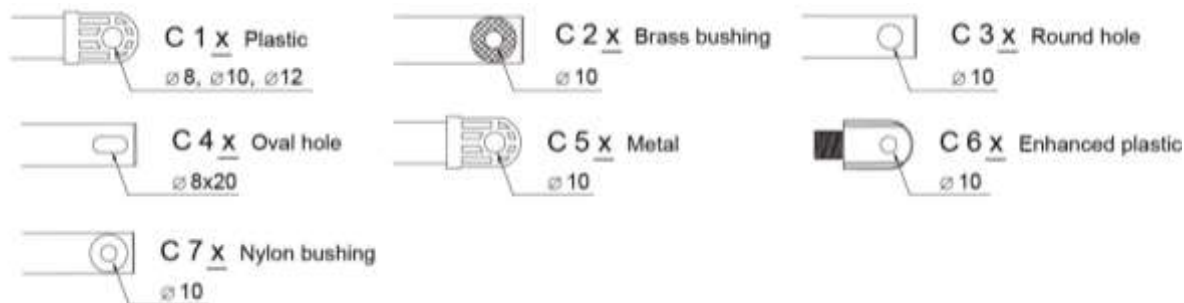


# Dimensions

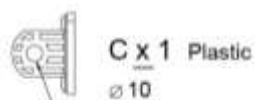


Unit: mm

## ◆ Front Connectors



## ◆ Rear Connectors



## ◆ Available stroke (S) range = 50~300mm

## ◆ Retracted length (A)

Front connector = C1x, C5x, C6x  $\geq$  stroke + 188mm

Front connector = C2x, C3x, C4x, C7x  $\geq$  stroke + 160mm

## ◆ Extended length = S+A

# Ordering Key

BDF60—□□—□□—□□□.□□□—C□□—□□□

## Input Voltage

24 : 24V DC

12 : 12V DC

## Motor and Spindle Type

F3、A4、F4、A6、F6、A8、F8、AG、KG

(Refer to Performance Data)

## Retracted Length

(Refer to paragraph Dimensions)

## Extended Length

(Refer to paragraph Dimensions)

## Front Connector

1 : Plastic

2 : Brass bushing

3 : Round hole

4 : Oval hole

5 : Metal

6 : Enhanced plastic

7 : Nylon bushing

## Rear Connector

1 : Plastic

## Options

HS1 : Hall effect sensor x 1

HS2 : Hall effect sensor x 2

### Terms of Use

The user is responsible for determining the suitability of MOTECK products for specific applications. Due to continuous development in order to improve its products, MOTECK products are subject to frequent modifications and changes without prior notice. MOTECK reserves the right to discontinue the sale of any products displayed on its website or listed in its catalogue or other written materials drawn up by MOTECK.

MO-FAM-2-T-017-1.0

# Actuator GD70

GD70 is a strong and powerful actuator designed for use in furniture, especially for application having side load on actuator, such as get-up chair or recliner. There are many types of control boxes compatible with GD70 which are available for customers to choose.



## Feature

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- Main applications: Furniture, homecare
- Input voltage: 24V DC
- Max. load: 7000N (push) / 5000N (pull)
- Max. speed at no load: 7.7 mm/sec
- Max. speed at full load: 2.9 mm/sec @ 7000N
- Stroke: 50 ~ 300 mm
- Max. current: 3.2A @ 24V DC
- Noise Level:  $\leq 50$ dB
- IP Protection level: IP43
- Color: Black
- Preset limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Ambient operation temperature: -20°C ~ +60°C

## Option

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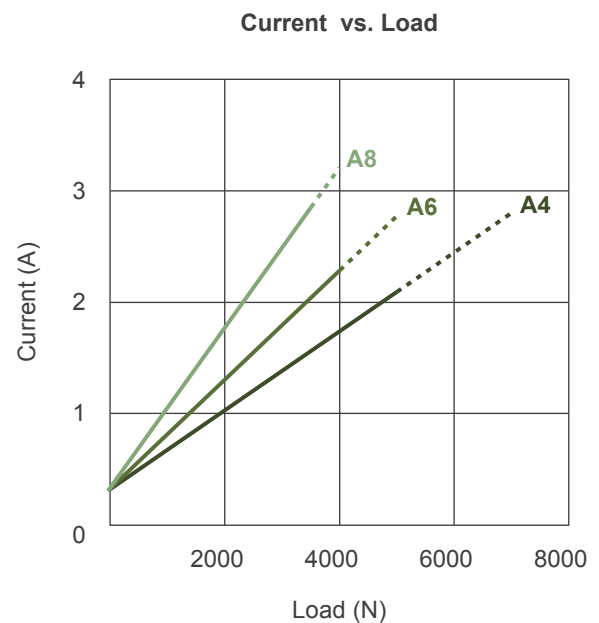
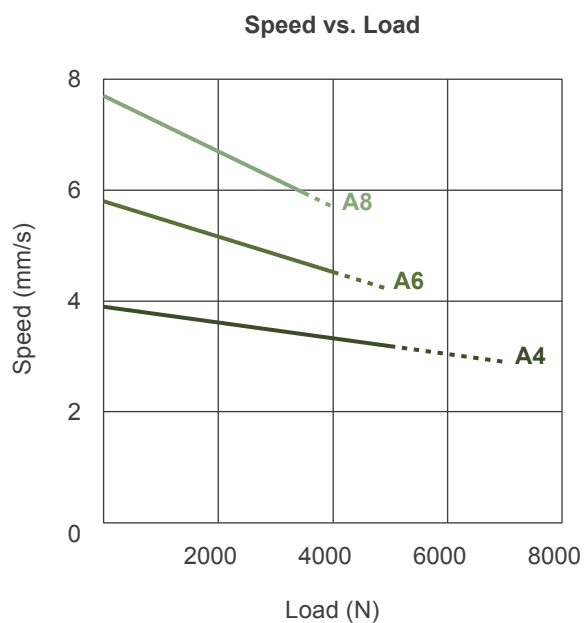
- Positioning signal feedback with Hall effect sensor x 1
- Positioning signal feedback with Hall effect sensor x 2
- Mechanical push only extension tube

## Compatibility

Product	Model	GD70 spec
Control box	T control, CS1, TR11, TL01, CB4M	Without positioning sensor feedback 4-pin MOTECK F type DIN plug
	CB4M-S, CB4M-B	Positioning feedback with Hall effect sensor x2 6-pin MOTECK F type DIN plug
Double motor	TW40/60, TW41/61	DIN 41529 loudspeaker jack

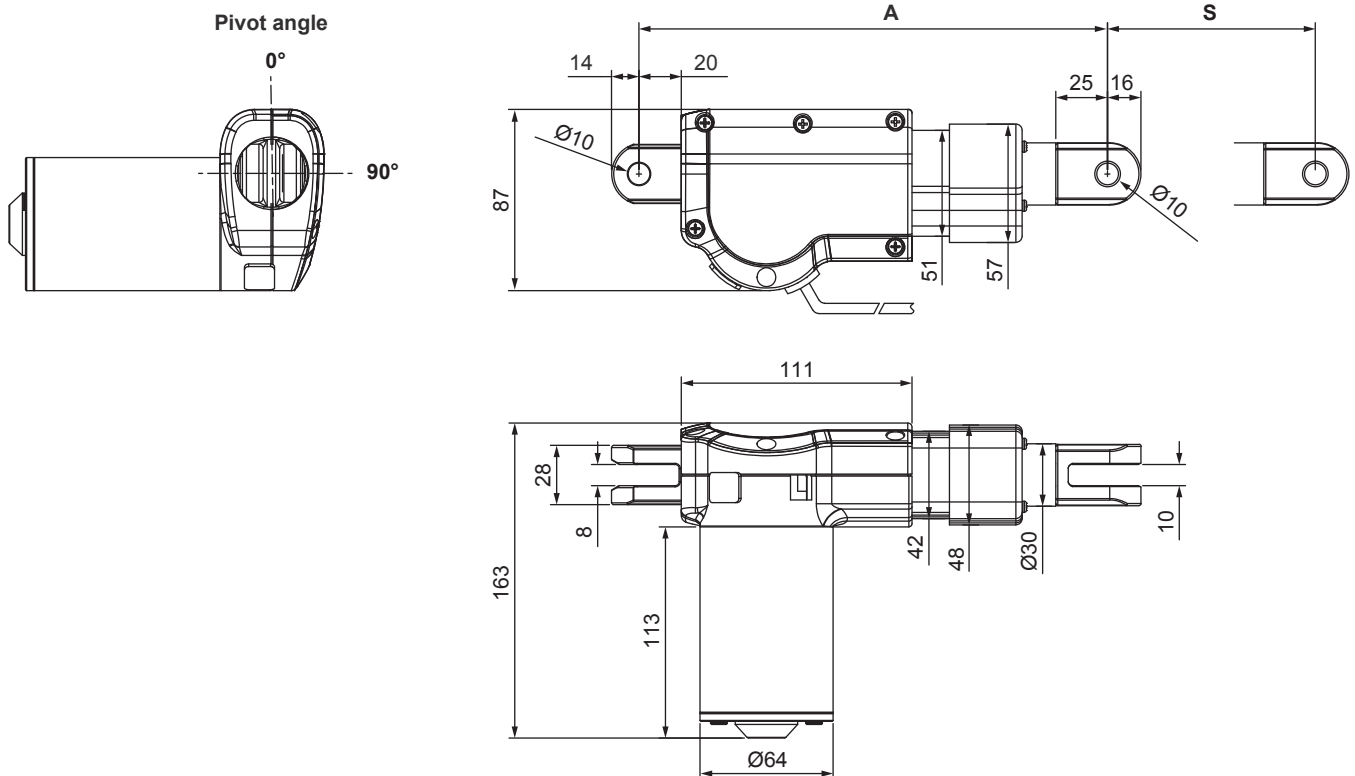
## Performance Data

Model No.	Push Max. (N)	Pull Max. (N)	Speed (mm/s)		Current (A) @ 24V	
			No load	Full load	No load	Full load
GD70-24-A4-XXX.XXX-CXX-XXX	7000	5000	3.9	2.9	0.3	2.8
GD70-24-A6-XXX.XXX-CXX-XXX	5000	4000	5.8	4.2	0.3	2.8
GD70-24-A8-XXX.XXX-CXX-XXX	4000	3500	7.7	5.7	0.3	3.2



Push / Pull Load — Push Load - - -

## Dimensions



Retracted length (A)

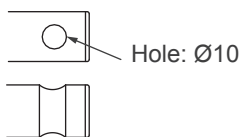
Front connector	3, 7	4	6
Standard	$A \geq S + 150 \text{ mm}$	$A \geq S + 160 \text{ mm}$	$A \geq S + 180 \text{ mm}$
Option of push only	Additional 10 mm is required		

Available stroke (S) range = 50 ~ 300 mm

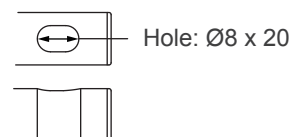
Extended length = S + A

### Front Connector

3: Round hole



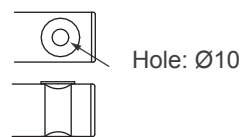
4: Oval hole



6: Enhanced plastic

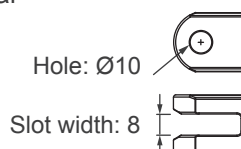


7: Round hole with plastic bushing



### Rear Connector

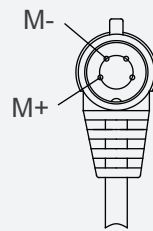
2: Metal



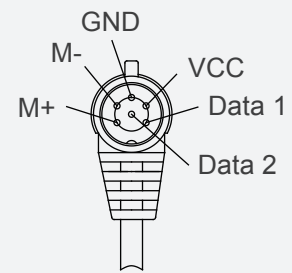
Unit: mm

## Cable plug

### MOTECK F type DIN plug

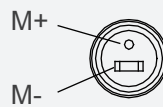


No sensor feedback



1x or 2x Hall sensors for positioning

### DIN 41529 loudspeaker plug



#### Remarks:

Connect (M+) to '+' & (M-) to '-' of DC power, the actuator will extend.



## Ordering Key

<b>GD70 - 24 - A4 - 388 - 588 - C 3 2 - HS1 - PO</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC
<b>Motor and Spindle type</b>	<b>A4</b> <b>A6</b> <b>A8</b> (Refer to paragraph Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to paragraph Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to paragraph Dimensions)
<b>Front connector</b>	<b>3:</b> Round hole <b>4:</b> Oval hole <b>6:</b> Enhanced plastic <b>7:</b> Round hole with plastic bushing (Refer to paragraph Dimensions)
<b>Rear connector</b>	<b>2:</b> Metal (Refer to paragraph Dimensions)
<b>Positioning feedback</b>	<b>Blank:</b> None <b>HS1:</b> Hall effect sensor x 1 <b>HS2:</b> Hall effect sensor x 2
<b>Option</b>	<b>Blank:</b> None <b>PO:</b> Push only

### Terms of Use

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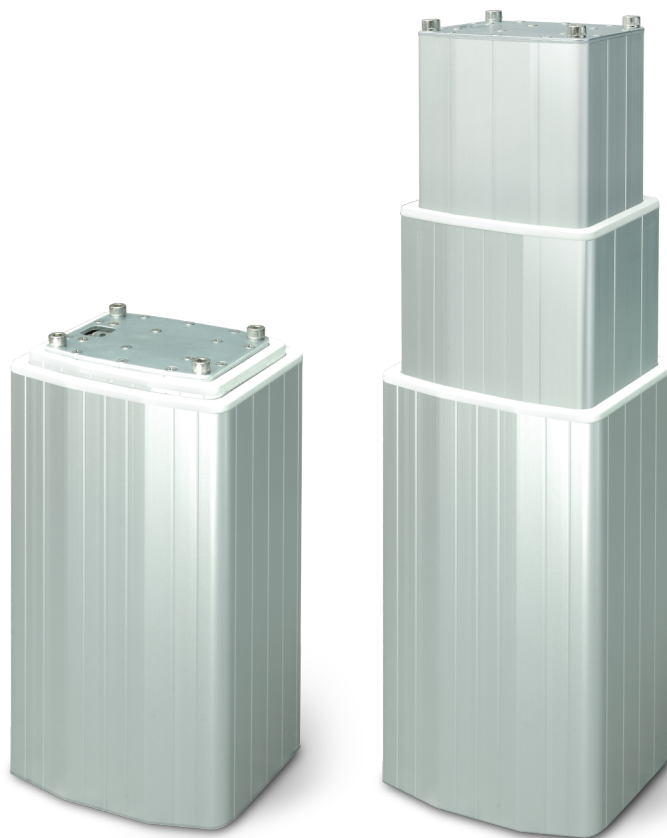
# LIFTING COLUMN

DCL1

DCL2

# Lifting Column DLC1

DLC1 is a quiet 3-part in-line lifting column with robust design, which is applicable to dental chair, hospital bed, treatment table, lifting table, workstation...etc. DLC1 can be used as a single column or combined columns as synchronization system. The special transmission mechanism makes it move smoothly and rapidly.



## Feature

---

- Main applications: Medical, homecare, furniture
- Input voltage: 24V DC
- Max. thrust: 2000N
- Max. static load: 3000N
- Structural anti-pull capability: 2000N
- Max. speed at no load: 13 mm/sec
- Max. speed at full load: 10 mm/sec
- Stroke: 50 ~ 400 mm
- Max. current: 4.0A @ 24V DC
- Bending moment: 500Nm (static) / 250Nm (dynamic)
- Life cycle: More than 10,000 cycles
- Anodized aluminum body
- Detachable DC-in power cord
- Preset limit switches
- Weight: 9.7Kg
- Dimensions: 175(W) x 140(D) x 350 ~ 750(H) mm
- Noise level:  $\leq 50$ dB
- IP Protection level: IPX4
- Duty cycle: 10%, max. 1 min. continuous operation in 10 min.
- Ambient operation temperature: 0°C ~ +45°C
- Certified: CE marking, EMC Directive 93/42/EEC

## Option

- Digital positioning feedback with Hall effect sensors x 2
- Safety nut
- IPX6 Protection level
- Cable length: 1000 / 2000 mm straight

## Compatibility

Product	Model	DLC1 spec
Control box	MD6C, CB4P	Without positioning feedback Moteck H-type, V-type DIN plug
	CB4P-SY	With dual Hall effect sensors Moteck H-type, V-type DIN plug
	MD6C-M	With or without dual Hall effect sensors Moteck H-type, V-type DIN plug
	CB5P-M	With or without dual Hall effect sensors Moteck L2-type minifit plug

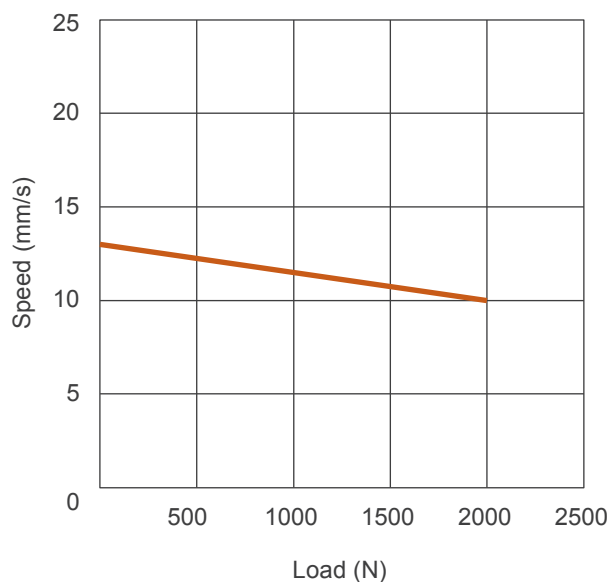
### Remarks:

\* Handset compatibility depends on chosen control box.

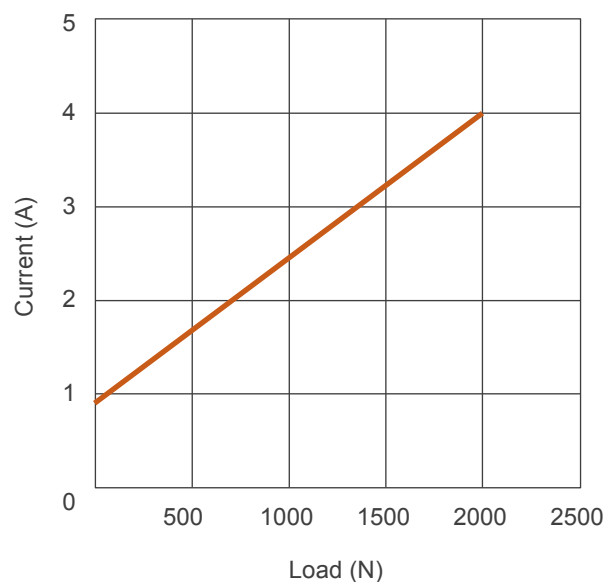
## Performance Data

Model No.	Push Max. (N)	Typical speed (mm/s)		Typical current (A) @ 24V	
		No load	Full load	No load	Full load
DLC1-24RH-350.750-XXXXX	2000	13	10	0.9	4.0

Speed vs. Load

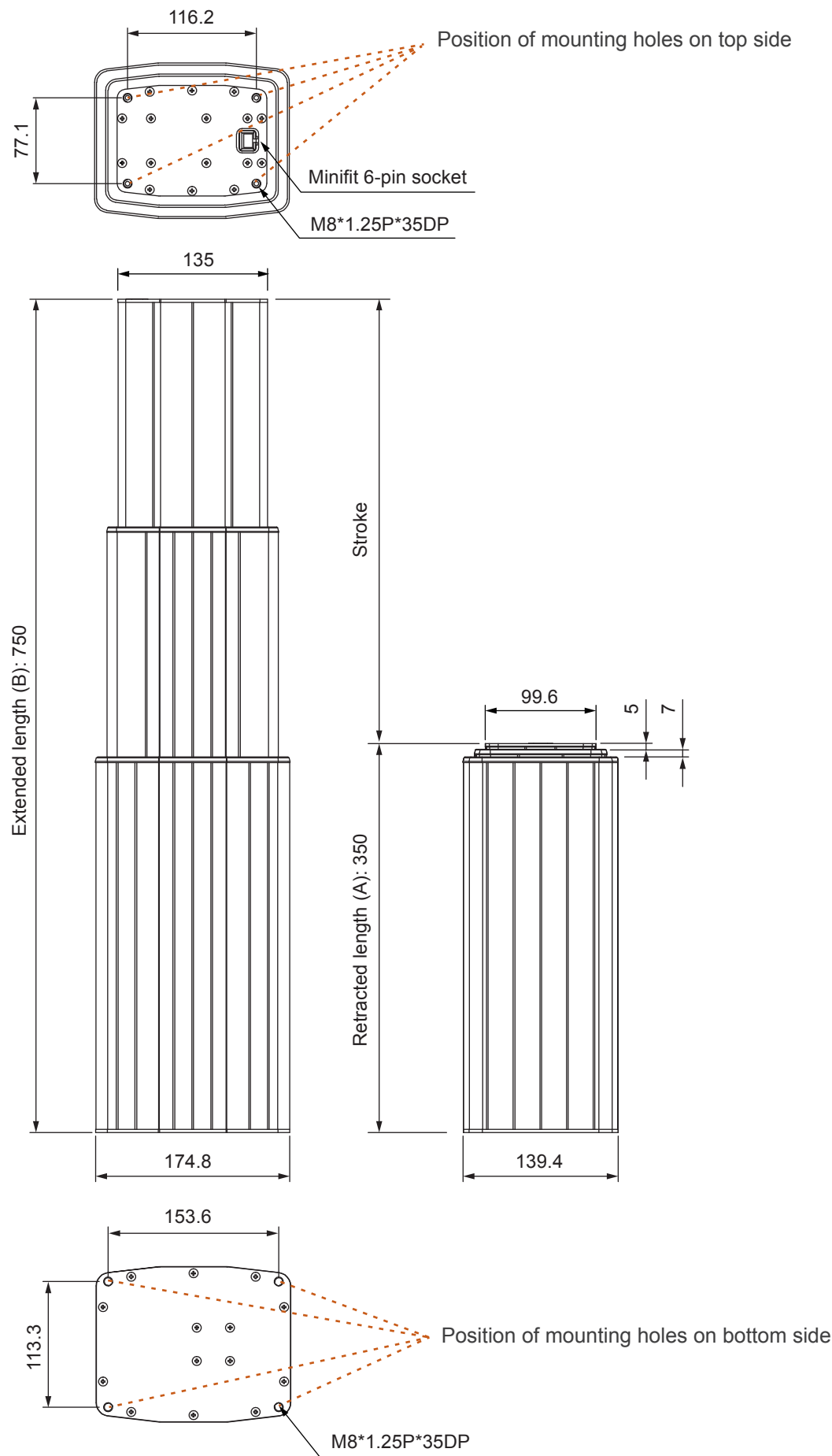


Current vs. Load



# Dimensions

Available Stroke (S): 50 ~ 400 mm  
Retracted Length (A): ≥ 350 mm  
Extended Length (B): ≤ 750 mm



## Cable Plug

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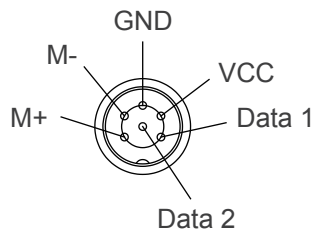
### Motek DIN plug



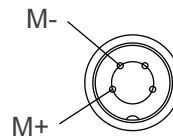
V-type



H-type



With dual Hall sensors positioning feedback

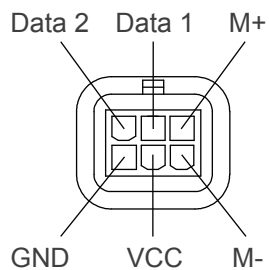


Without positioning feedback

### Motek minifit plug



L2-type



With dual Hall sensors positioning feedback

### Remarks:

Connect Pin (M+) to “+” & Pin (M-) to “-” of DC power, the actuator will extend.

## Ordering Key

<b>DLC1 - 24 RH - 350 . 750 - S H 4 0 1</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC
<b>Motor and Spindle type</b>	<b>RH</b> (Refer to Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Option</b>	<b>0:</b> None <b>S:</b> Safety nut
<b>Positioning Feedback</b>	<b>0:</b> None <b>H:</b> Hall effect sensors x 2
<b>IP Protection level</b>	<b>4:</b> IPX4 (standard) <b>6:</b> IPX6
<b>Reserved</b>	<b>0:</b> No meaning
<b>Cable length</b>	<b>1:</b> 1000 mm Straight <b>2:</b> 2000 mm Straight

### Terms of Use

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# Lifting Column DLC2

DLC2 is a 2-part in-line lifting column featuring quiet and moving speed. Attributing to robust design, DLC2 can be used as a single column or combined columns as synchronization system, which is applicable to lifting table, work bench, and work station... etc.



## Feature

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- Main applications: Homecare, furniture
- Input voltage: 24V DC
- Max. load: 2000N
- Max. speed at no load: 18 mm/sec
- Max. speed at full load: 13 mm/sec
- Stroke: 450 mm, 261 mm, 140 mm
- Max. current: 4.5A @ 29V DC
- Bending moment: 1000Nm (static) / 750Nm (dynamic)
- Anodized aluminum body
- Preset limit switches
- Noise level:  $\leq 53$ dB
- IP Protection level: IP21
- Duty cycle: 10% (max. 2 min, continuous operation)
- Ambient operation temperature: 0°C ~ +45°C
- Certified: CE marking, EMC Directive 2014/53/EU

## Option

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- Digital positioning feedback with Hall effect sensors x 2



## Compatibility

Product	Model	DLC2 spec
Control box	DKC3	With dual Hall sensors Moteck L1-type minifit plug
	CB4P-SY	With dual Hall sensors Moteck H-type, V-type DIN plug
	CB5P-M	Moteck L2-type minifit plug
	CB4M-S, CB4M-B	With dual Hall sensors Moteck F-type DIN plug Electrical current < 3 Amp (1200N max. thrust)

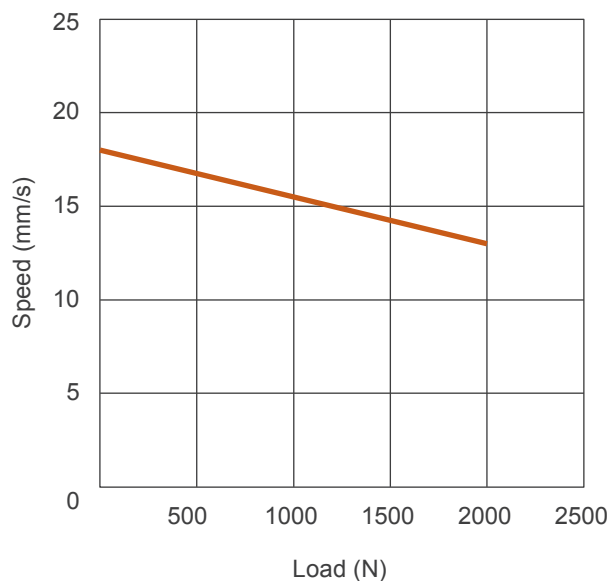
### Remarks:

\* Handset compatibility depends on chosen control box.

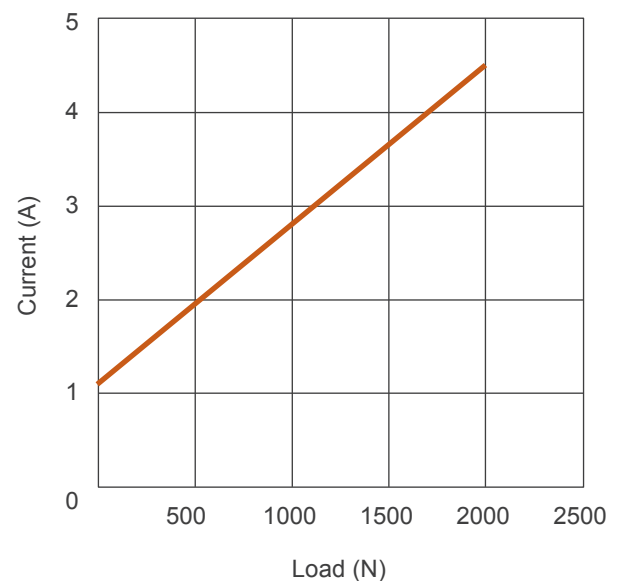
## Performance Data

Model No.	Push / Pull Max. (N)	Typical speed (mm/s)		Typical current (A) @ 29V	
		No load	Full load	No load	Full load
DLC2-24H6-XXX.XXX-0X00X	2000	18	13	1.1	4.5

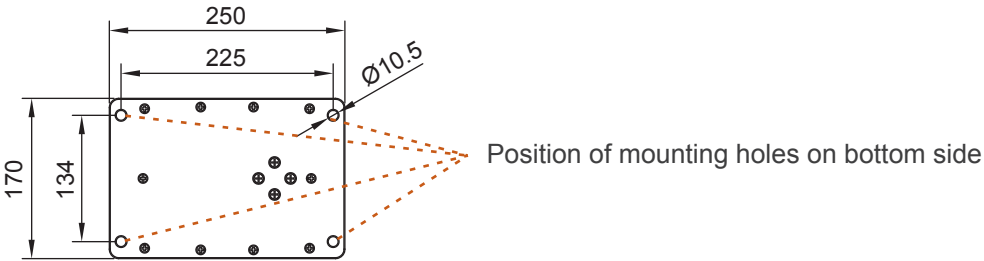
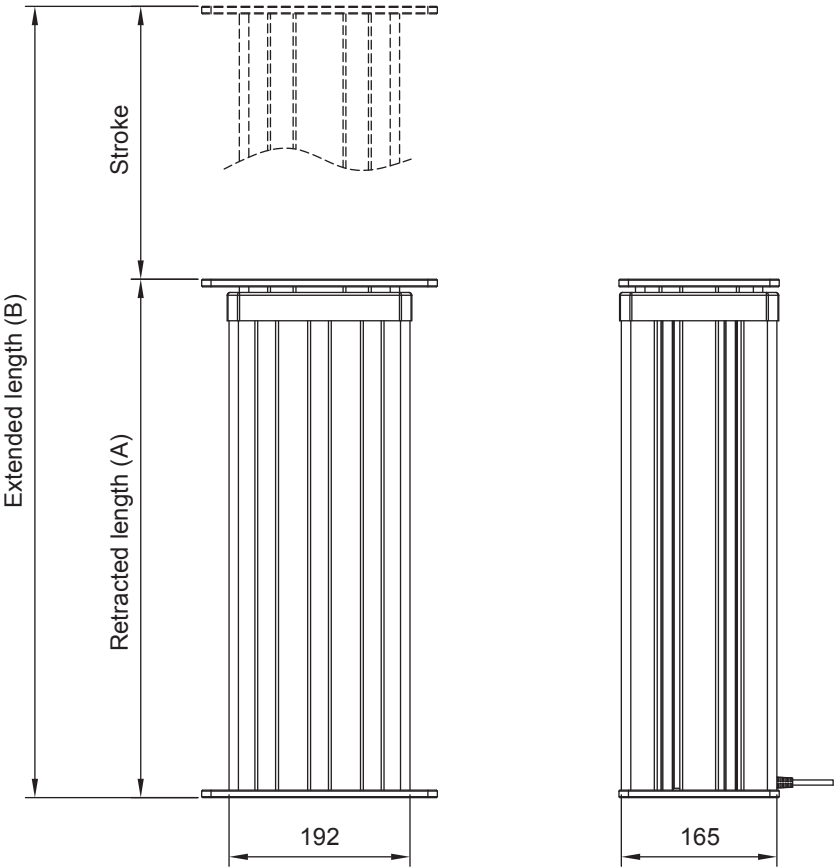
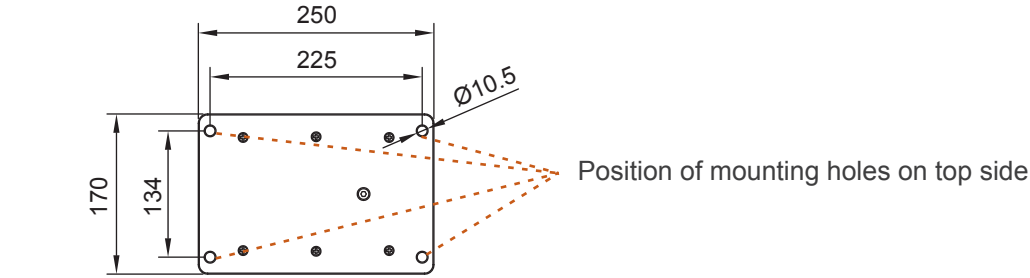
Speed vs. Load



Current vs. Load



# Dimensions



Installation Dimension

Stroke (S)	450	261	140
Retracted length (A)	660	550	330
Extended length (B)	1110	811	470

unit: mm

## Cable Plug

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### Motek DIN plug



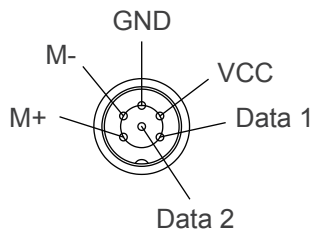
F-type



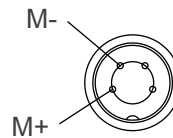
V-type



H-type



With dual Hall sensors positioning feedback



Without positioning feedback

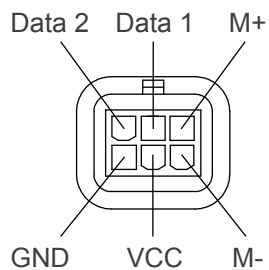
### Motek minifit plug



L1-type



L2-type



With dual Hall sensors positioning feedback

### Remarks:

Connect Pin (M+) to “+” & Pin (M-) to “-” of DC power, the actuator will extend.

## Ordering Key

<b>DLC2 - 24 H6 - 660 - 1110 - 0 H 0 0 1</b>	
<b>Input voltage</b>	<b>24:</b> 24V DC
<b>Motor and Spindle type</b>	<b>H6</b> (Refer to Performance Data)
<b>Retracted length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Extended length</b>	<b>XXX</b> (Refer to Dimensions)
<b>Reserved</b>	<b>0:</b> No meaning
<b>Positioning Feedback</b>	<b>0:</b> None <b>H:</b> Hall effect sensors x 2
<b>Reserved</b>	<b>0:</b> No meaning
<b>Reserved</b>	<b>0:</b> No meaning
<b>Cable length</b>	<b>1:</b> 1000 mm Straight <b>2:</b> 2000 mm Straight <b>3:</b> 450 mm with 300 mm coiled

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