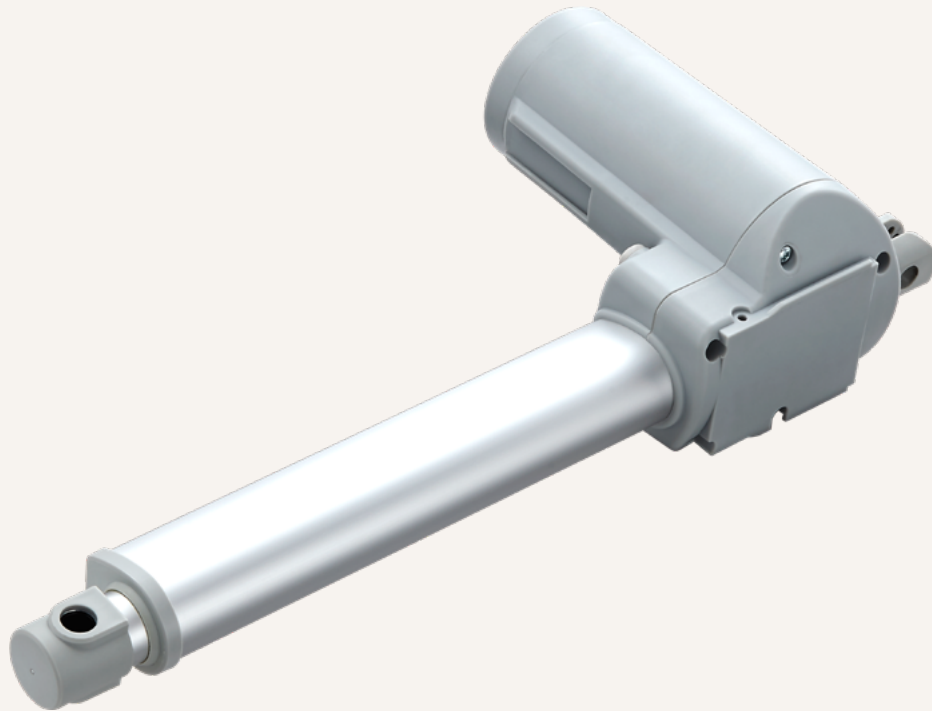


TA31

series



Product Segments

• Care Motion

The TA31 is one of our great medical grade linear actuators. It can lift up to 8000N and its IP rating is up to IP66W. The TA31 is a high quality solution for medical applications such as medical beds, medical chairs, or home care options.

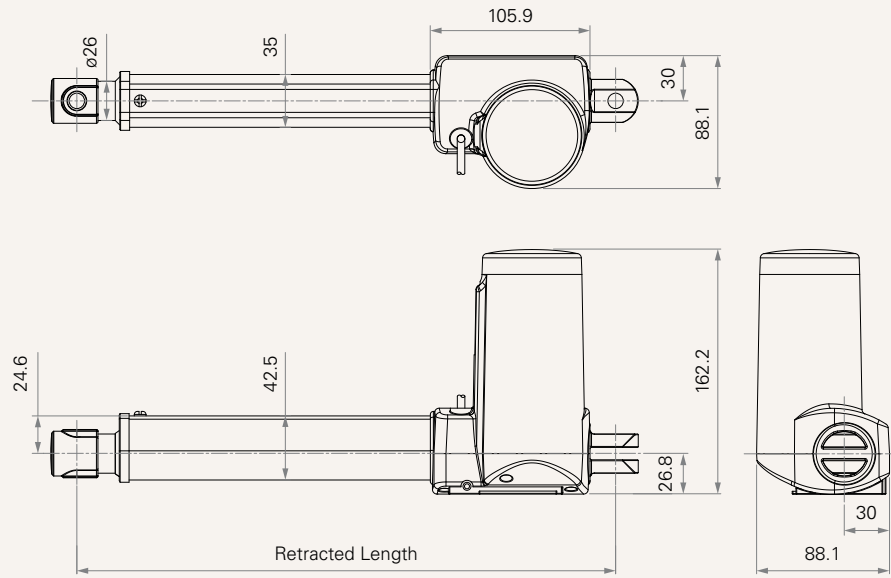
General Features

Max. load	8,000N (push) 3,000N (pull)
Max. speed at max. load	3.5mm/s
Max. speed at no load	26.6mm/s
Retracted length	≥ Stroke + 157mm
IP rating	IP66W
Certificate	IEC60601-1, ES60601-1, IEC60601-1-2
Stroke	25~450mm
Options	Safety nut, Hall sensors
Voltage	24V DC, 24V DC (PTC), 24V DC (3-brush motor)
Color	Black or grey
Operational temperature range at full performance	+5°C~+45°C

An economic solution with compact installation dimension

Drawing

Standard Dimensions
(mm)



Load and Speed

CODE	Load (N)		Self Locking Force (N)	Typical Current (A)		Typical Speed (mm/s)	
	Push	Pull		No Load 32V DC	With Load 24V DC	No Load 32V DC	With Load 24V DC
Motor Speed (3800RPM, duty cycle 10%)							
B	6000	3000	6000	0.8	3.6	6.0	3.3
C	5000	3000	5000	0.8	3.6	7.8	4.3
D	3500	3000	3500	0.8	3.6	11.7	6.6
E	2000	2000	2000	0.8	3.2	23.4	13.3
F	8000	3000	8000	0.8	4.7	6.0	3.0
G	6000	3000	6000	0.8	4.1	6.9	3.6
Motor Speed (4500RPM, duty cycle 10%)							
H	5000	3000	5000	1.0	3.7	7.7	4.7
J	3500	3000	3500	1.0	4.4	13.4	7.6
K	2000	2000	2000	1.0	3.8	26.6	16.2
L	8000	3000	8000	1.0	5.4	6.6	3.5
M	6000	3000	6000	1.0	4.5	7.6	4.3

Note

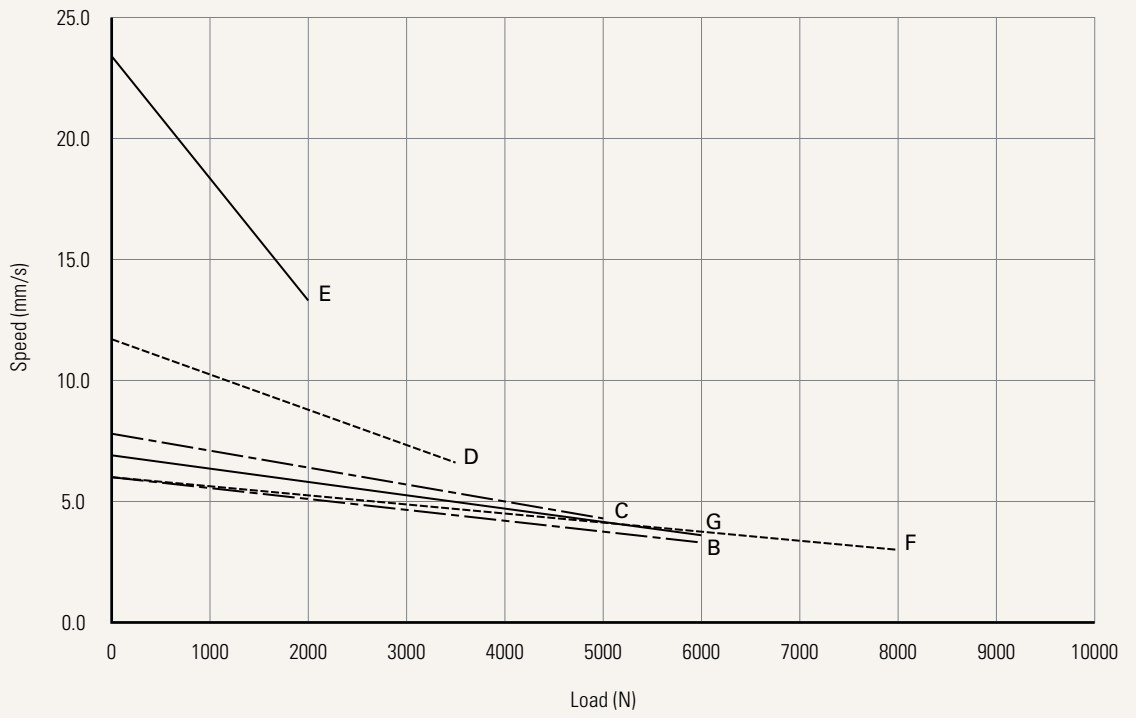
- 1 Please refer to the approved drawing for the final authentic value.
- 2 This self-locking force level is reached only when a short circuit is applied on the terminals of the motor. All the TiMOTION control boxes have this feature built-in.
- 3 The current & speed in table are tested with 24V DC motor. With a 12V DC motor, the current is approximately twice the current measured in 24V DC; speed will be similar for both voltages.
- 4 The current & speed in table are tested when the actuator is extending under push load.
- 5 The current & speed in table and diagram are tested with TiMOTION control boxes, and there will be around 10% tolerance depending on different models of the control box. (Under no load condition, the voltage is around 32V DC. At rated load, the voltage output will be around 24V DC)
- 6 Standard stroke: Min. $\geq 25\text{mm}$, Max. please refer to below table.

CODE	Load (N)	Max Stroke (mm)
C, D, E, H, J, K	< 6000	450
B, G, M	= 6000	450
L, F	= 8000	450

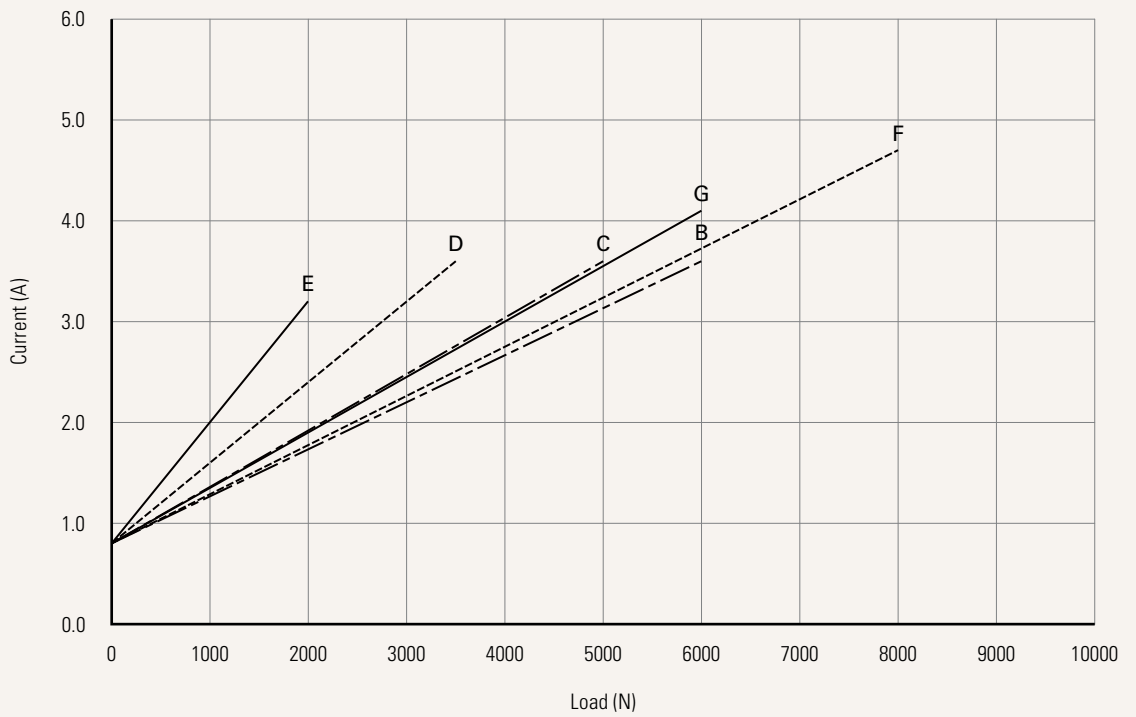
Performance Data (24V DC Motor)

Motor Speed (3800RPM, Duty Cycle 10%)

Speed vs. Load



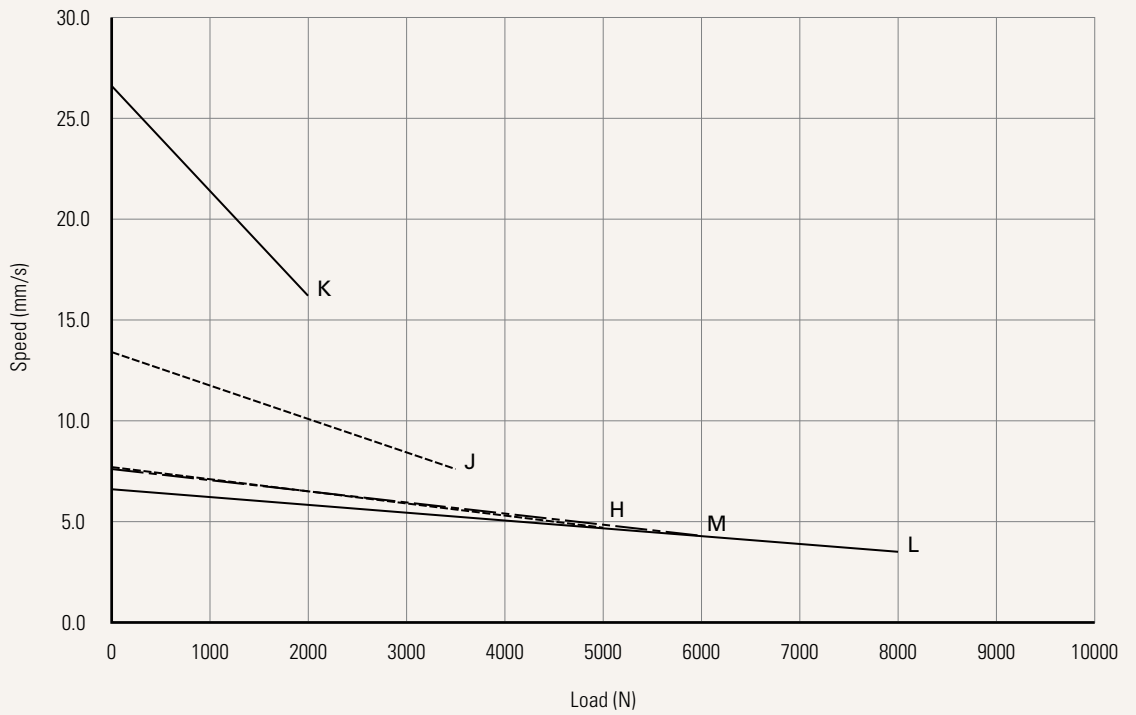
Current vs. Load



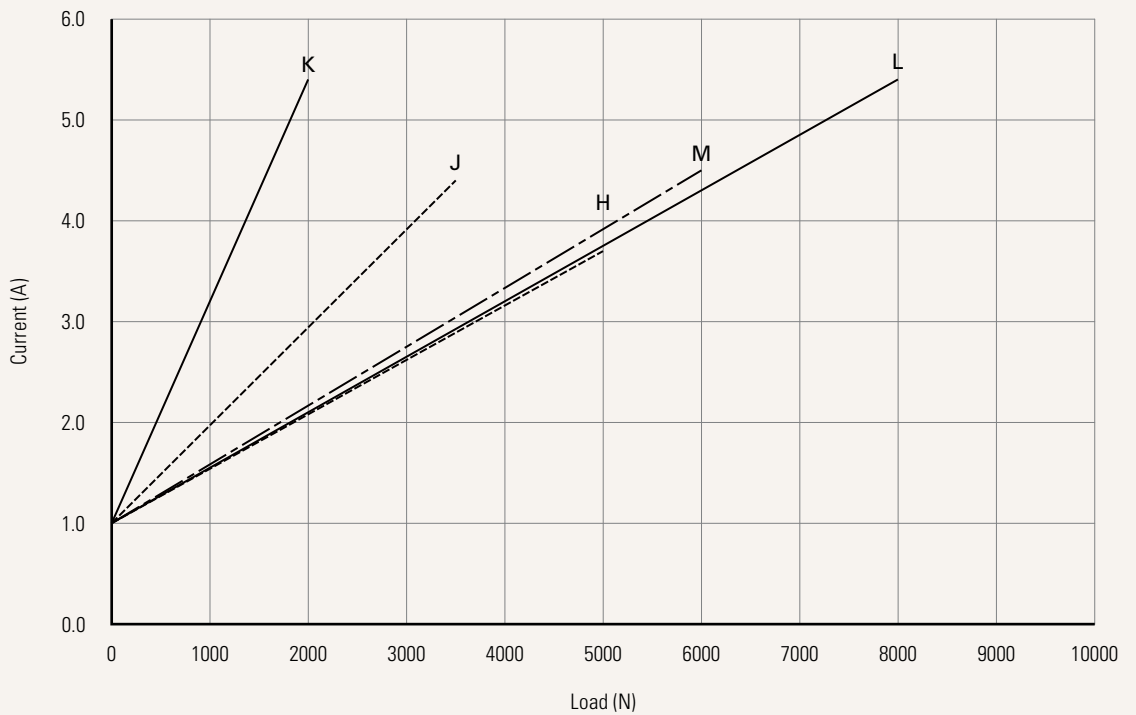
Performance Data (24V DC Motor)

Motor Speed (4500RPM, Duty cycle 10%)

Speed vs. Load



Current vs. Load



Voltage	2 = 24V DC 5 = 24V DC, PTC	C = 24V DC, 3-brush motor		
Load and Speed	See page 3			
Stroke (mm)	See page 3			
Retracted Length (mm)	See page 8			
Rear Attachment (mm) See page 9	2 = Plastic, U clevis, width 8.2, depth 17.0, hole 10.2 (for push < 4000N) 3 = Plastic, U clevis, width 8.2, depth 17.0, hole 12.2 (for push < 4000N) 4 = Aluminum casting, U clevis, width 8.2, depth 17.0, hole 10.2 (for push ≥ 4000N) 5 = Aluminum casting, U clevis, width 8.2, depth 17.0, hole 12.2 (for push ≥ 4000N)			
Front Attachment (mm) See page 9	1 = Punched hole on inner Aluminum tube + plastic cap, without slot, hole 10.2, plastic bush 2 = Punched hole on inner Aluminum tube + plastic cap, without slot, hole 12.2 3 = Plastic, U clevis, width 8.2, depth 20.0, hole 10.2 (for push < 4000N, pull < 2500N) 4 = Plastic, U clevis, width 8.2, depth 20.0, hole 12.2 (for push < 4000N, pull < 2500N) 5 = Punched hole on inner Aluminum tube, without slot, hole 10.2, plastic bush	6 = Punched hole on inner Aluminum tube, without slot, hole 12.2 7 = Aluminum casting, U clevis, width 6.2, depth 17.0, hole 10.2 8 = Aluminum casting, U clevis, width 6.2, depth 17.0, hole 12.2 9 = Aluminum casting, U clevis, width 6.2, depth 17.0, hole 10.2, T bush		
Direction of Rear Attachment (Counterclockwise) See page 10	1 = 0°	3 = 90°		
Color	1 = Black	2 = Pantone 428C		
IP Rating	1 = Without	2 = IP54	3 = IP66	5 = IP66W
Special Functions for Spindle Sub-Assembly	0 = Without (Standard) 1 = Safety nut	2 = Standard push only 3 = Standard push only + safety nut		
Functions for Limit Switches See page 10	1 = Two switches at full retracted / extended positions to cut current 2 = Two switches at full retracted / extended positions to cut current + third one in between to send signal 3 = Two switches at full retracted / extended positions to send signal 4 = Two switches at full retracted / extended positions to send signal + third one in between to send signal 5 = Two switches at full retracted / extended positions to send signal (Operate with control box: TC1, TC8, TC10, TC14; compatible with hall sensors)			
Output Signal	0 = Without	2 = Hall sensors*2		
Connector (mm) See page 11	1 = DIN 6P, 90° plug 2 = Tinned leads 4 = Big 01P, plug C = Y cable (direct cut, water proof, anti-pull) J = Extension cable, not preset on motor cover (cable length 120)	R = Extension cable, preset on motor cover (cable length 50) E = Molex 8P, plug F = DIN 6P, 180° plug G = Audio plug P = Molex 8P, 90° plug, without anti-clip		
Cable Length (mm)	0 = Straight, 100 1 = Straight, 500 2 = Straight, 750 3 = Straight, 1000 4 = Straight, 1250	5 = Straight, 1500 6 = Straight, 2000 7 = Curly, 200 8 = Curly, 400	B-H = For direct cut system, See page 11 J = Extension cable, not preset on motor cover (cable length 120), See page 11	R = Extension cable, preset on motor cover (cable length 50), See page 11

Voltage	2 = 24V DC	5 = 24V DC, PTC		
Load and Speed	L = 8000N	M = 6000N		
Stroke (mm)	See page 3			
Retracted Length (mm)	See page 8			
Rear Attachment (mm)	C = Aluminum casting, U clevis, slot 8.2, depth 17, hole 10.2, with T-bushing See page 9			
Front Attachment (mm)	F = Aluminum casting, U clevis, slot 8.2, depth 19, hole 10.2, with T-bushing, manual release See page 9			
Direction of Rear Attachment (Counterclockwise)	1 = 0° See page 10			
Color	1 = Black	2 = Pantone 428C		
IP Rating	1 = Without	2 = IP54	3 = IP66	5 = IP66W
Special Functions for Spindle Sub-Assembly	6 = Mechanical push only + safety nut			
Functions for Limit Switches	1 = Two switches at full retracted/extended positions to cut current See page 10			
Output Signal	0 = Without			
Connector	1 = DIN 6P, 90° plug		G = Audio plug	
See page 11	F = DIN 6P, 180° plug, for TEC extension cable standard option			
Cable Length (mm)	1 = Straight, 500	3 = Straight, 1000		

Retracted Length (mm)

1. Calculate $A+B+C = Y$
2. Retracted length needs to \geq Stroke + Y

A. Front Attach.

1, 2, 5, 6	+157
3, 4	+182
7, 8, 9	+172
F	- +250

B.

Stroke (mm)	Load (N)		
	< 6000	= 6000	= 8000
25~150	-	-	-
151~200	-	-	+5
201~250	-	+5	+10
251~300	-	+10	+15
301~350	+5	+15	+20
351~400	+10	+20	+25
401~450	+15	+25	+30

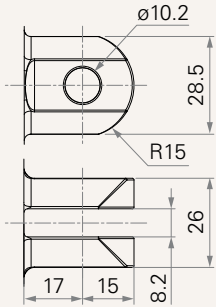
* For stroke over 450mm, please contact our engineers.

C.

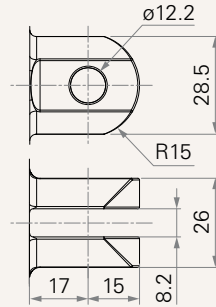
Spindle Functions	Load (N)		
	< 6000	= 6000	= 8000
0	-	-	-
1	-	-	-
2	+5	+8	+8
3	+5	+8	+8
6	+5	+8	+8

Rear Attachment (mm)

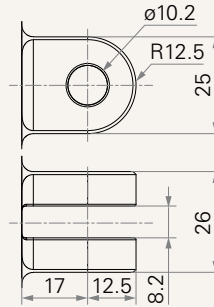
2 = Plastic, U clevis, width 8.2, depth 17.0, hole 10.2 (for push < 4000N)



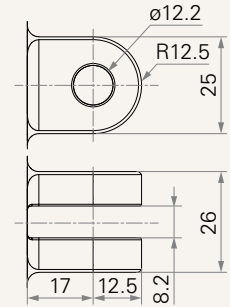
3 = Plastic, U clevis, width 8.2, depth 17.0, hole 12.2 (for push < 4000N)



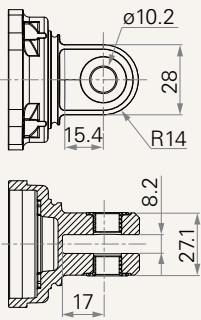
4 = Aluminum casting, U clevis, width 8.2, depth 17.0, hole 10.2 (for push ≥ 4000N)



5 = Aluminum casting, U clevis, width 8.2, depth 17.0, hole 12.2 (for push ≥ 4000N)

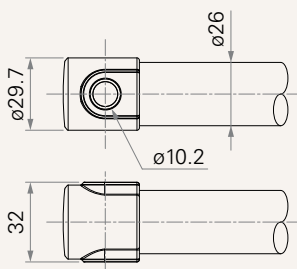


C = Aluminum casting, U clevis, slot 8.2, depth 17, hole 10.2, with T-bushing

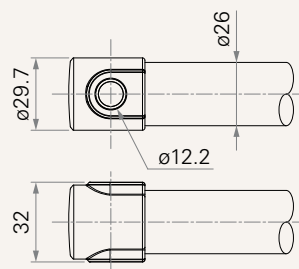


Front Attachment (mm)

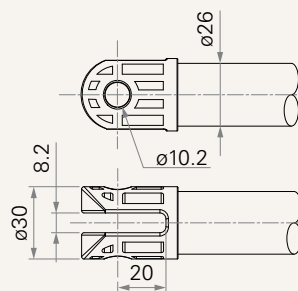
1 = Punched hole on inner Aluminum tube + plastic cap, without slot, hole 10.2, plastic bush



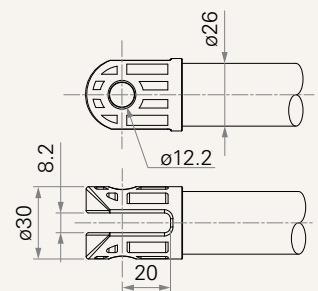
2 = Punched hole on inner Aluminum tube + plastic cap, without slot, hole 12.2



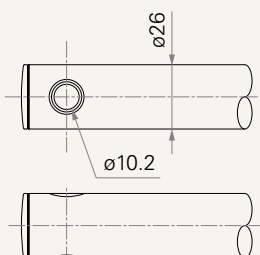
3 = Plastic, U clevis, width 8.2, depth 20.0, hole 10.2 (for push < 4000N, pull < 2500N)



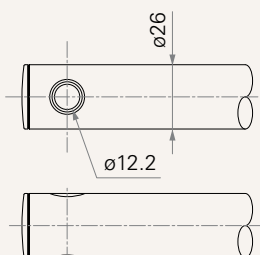
4 = Plastic, U clevis, width 8.2, depth 20.0, hole 12.2 (for push < 4000N, pull < 2500N)



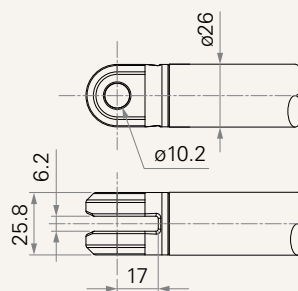
5 = Punched hole on inner Aluminum tube, without slot, hole 10.2, plastic bush



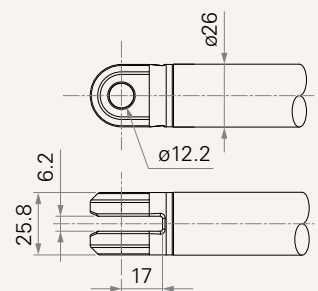
6 = Punched hole on inner Aluminum tube, without slot, hole 12.2



7 = Aluminum casting, U clevis, width 6.2, depth 17.0, hole 10.2



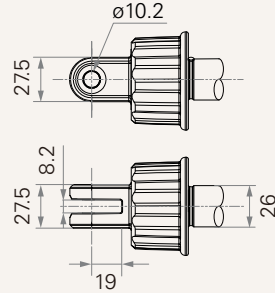
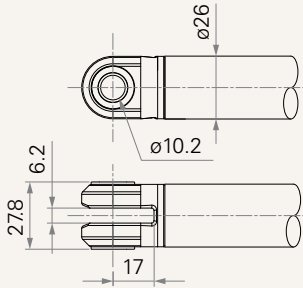
8 = Aluminum casting, U clevis, width 6.2, depth 17.0, hole 12.2



Front attachment (mm)

9 = Aluminum casting, U clevis, width 6.2, depth 17.0, hole 10.2, T bush

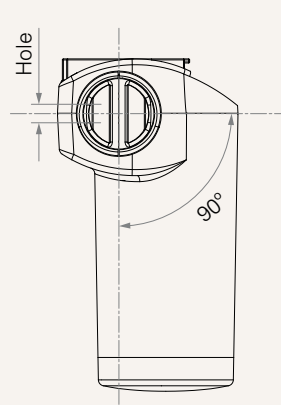
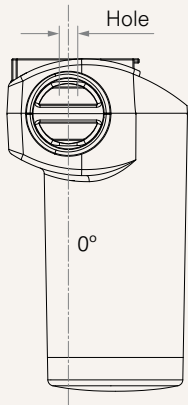
F = Aluminum casting, U clevis, slot 8.2, depth 19, hole 10.2, with T-bushing, manual release



Direction of Rear Attachment (Counterclockwise)

1 = 0°

3 = 90°



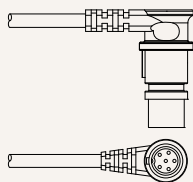
Functions for Limit Switches

Wire Definitions

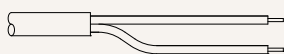
CODE	Pin					
	1 (Green)	2 (Red)	3 (White)	4 (Black)	5 (Yellow)	6 (Blue)
1	extend (VDC+)	N/A	N/A	N/A	retract (VDC+)	N/A
2	extend (VDC+)	N/A	middle switch pin B	middle switch pin A	retract (VDC+)	N/A
3	extend (VDC+)	common	upper limit switch	N/A	retract (VDC+)	lower limit switch
4	extend (VDC+)	common	upper limit switch	medium limit switch	retract (VDC+)	lower limit switch
5	extend (VDC+)	N/A	upper limit switch	common	retract (VDC+)	lower limit switch

Connector

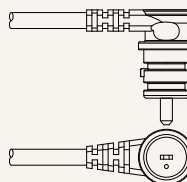
1 = DIN 6P, 90° plug



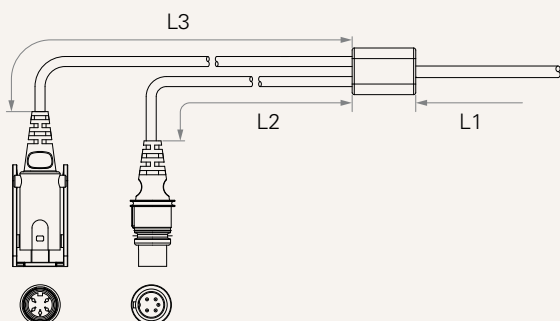
2 = Tinned leads



4 = Big 01P, 90° plug



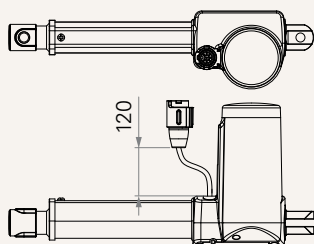
C = Y cable (direct cut, water proof, anti-pull)



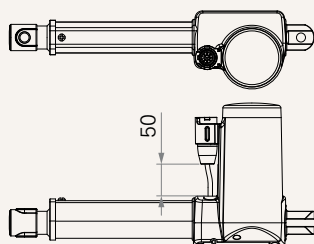
Cable length for direct cut system (mm)

CODE	L1	L2	L3
B	100	100	100
C	100	1000	400
D	100	2700	500
E	1000	100	100
F	100	600	1000
G	1500	1000	1000
H	100	100	1200

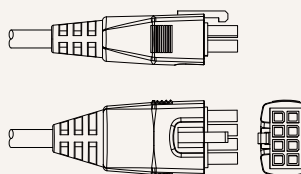
J = Extension cable, not preset on motor cover (cable length 120mm)



R = Extension cable, preset on motor cover (cable length 50mm)



E = Molex 8P, plug



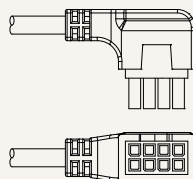
F = DIN 6P, 180° plug



G = Audio plug



P = Molex 8P, 90° plug, without anti-clip



Terms of Use

The user is responsible for determining the suitability of TiMOTION products for a specific application. TiMOTION products are subject to change without prior notice.