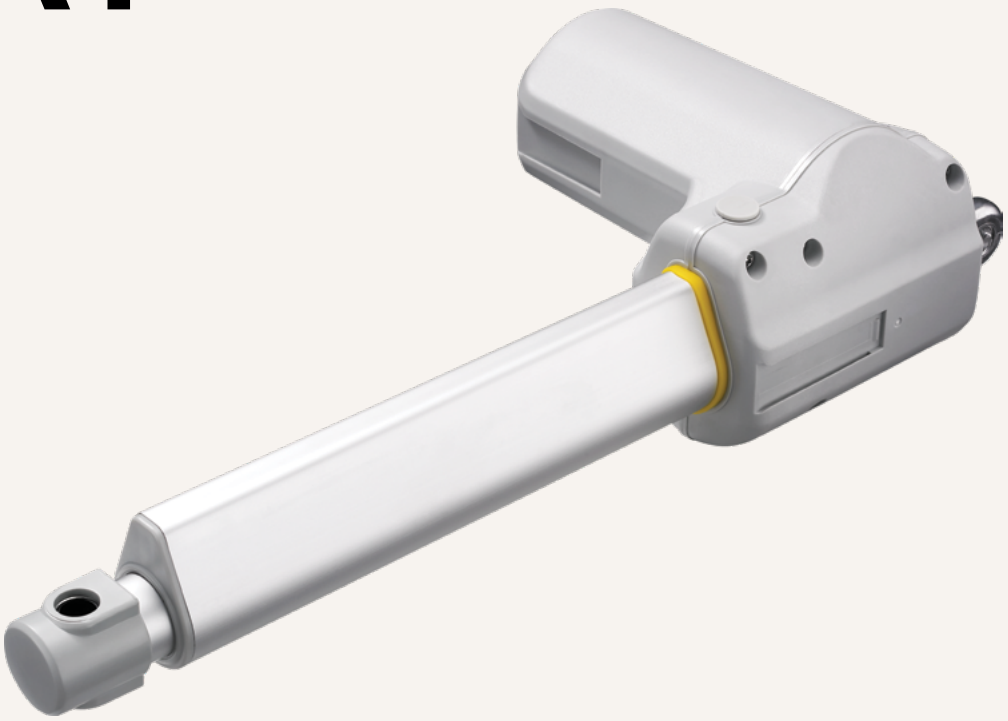
TA1
series



Product Segments

- **Care Motion**

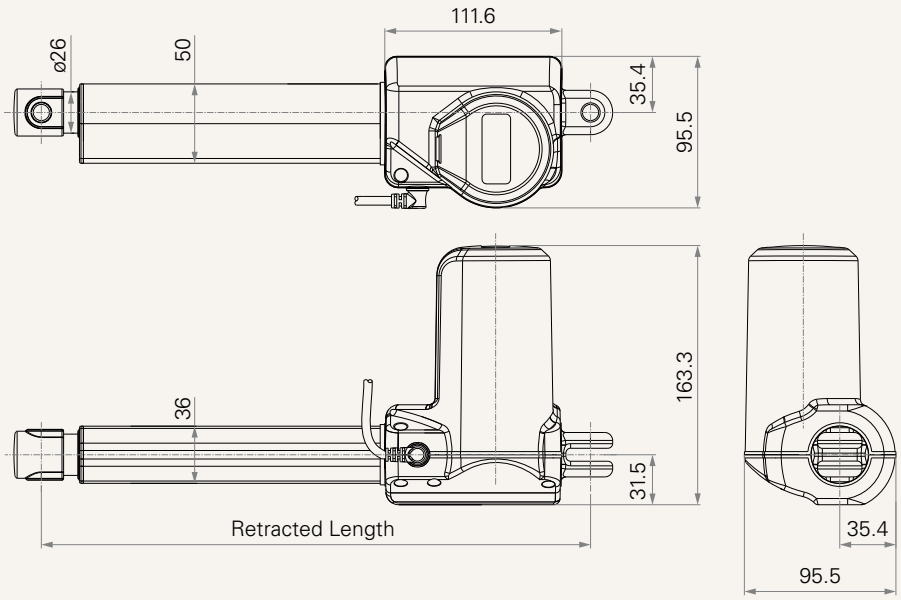
The TA1 series linear actuator is TiMOTION's flagship model suited for healthcare applications. Industry certifications for the TA1 include IEC60601-1. In addition, the TA1 linear actuator supports IP rating up to IP66W. Other options include a manual or quick release system and Hall or Reed feedback sensors.

General Features

Voltage of motor	12, 24, 36V DC or 24V DC (PTC)
Maximum load	10,000N in push
Maximum load	4,000N in pull
Maximum speed at full load	23.4mm/s (with 1,000N in a push or pull condition)
Minimum installation dimension	≥ Stroke + 163mm
Color	Black or grey
IP rating	Up to IP66W
Certificate	IEC60601-1, ES60601-1, EN60601-1-2, EN 61000-6-1, EN 61000-6-3
Operational temperature range	+5°C~+45°C
Options	Safety nut, quick release, Hall/Reed sensor(s)

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 (2600RPM, Duty Cycle 10%)							
C	5000	4000	2500	0.8	3.5	8.0	4.1
D	6000	4000	4000	0.8	3.5	6.0	3.1
F	2500	2500	1500	0.8	3.2	15.9	8.3
G	2000	2000	1000	0.8	2.8	21.4	12.1
H	1000	1000	500	0.8	2.1	32.1	19.1
J	3500	3500	2500	0.8	3.6	11.9	6.0
K	8000	4000	5000	0.8	4.0	5.4	2.7
Motor Speed (3400RPM, Duty Cycle 10%)							
L	6000	4000	4000	1.0	4.2	7.3	4.1
N	2500	2500	1500	1.0	4.1	19.4	11.1
O	2000	2000	1000	1.0	4.0	26.1	14.9
P	1000	1000	500	1.0	3.0	39.0	23.4
Q	3500	3500	2500	1.0	4.6	14.5	7.9
R	8000	4000	5000	1.0	5.0	6.6	3.5
T	5000	4000	2500	1.0	4.2	9.8	5.4
Motor Speed (3800RPM, Duty Cycle 10%)							
Y	8000	4000	5000	1.2	5.3	7.7	4.4
B	10000	4000	10000	1.2	5.3	5.7	3.2
U	5000	4000	2500	1.2	4.7	11.3	6.6
W	2500	2500	1500	1.2	4.6	23.0	13.4
Z	3500	3500	2500	1.2	5.3	16.8	9.8

Note

1 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. With a 36V DC motor, the current is approximately two-thirds the current measured in 24V DC. Speed will be similar for all the voltages.

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 when the actuator is extending under push load.

4 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)

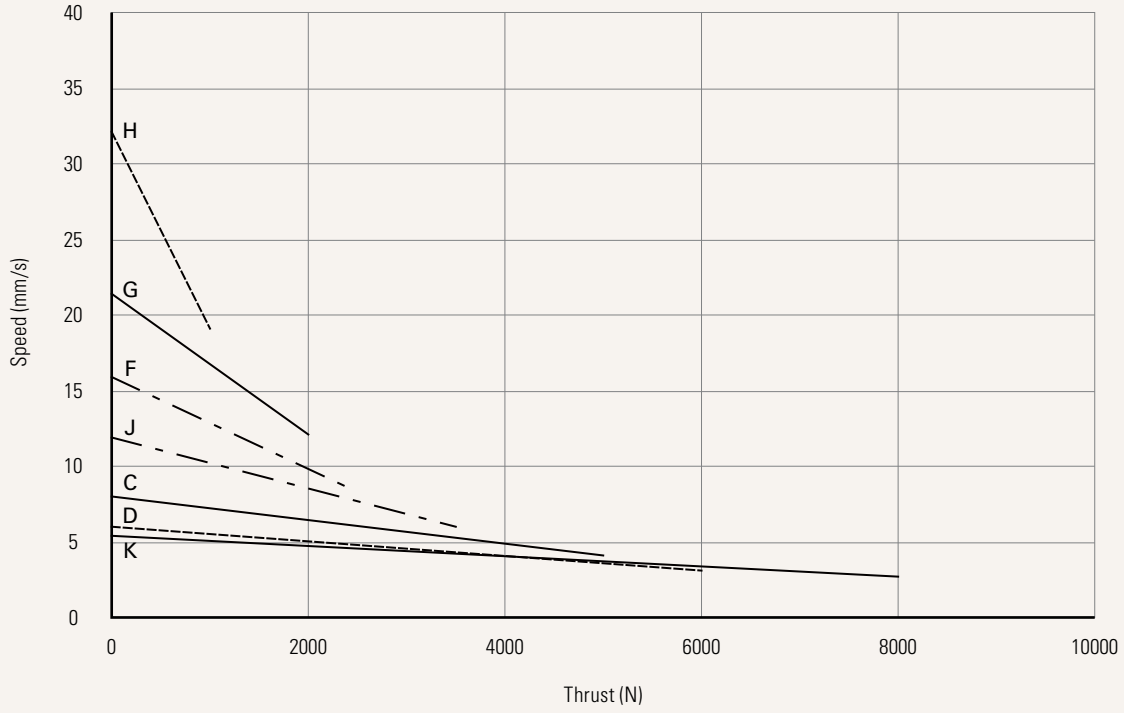
5 Standard stroke: Min. ≥ 25mm, Max. please refer to below table.

CODE	Load (N)	Max Stroke (mm)
K, R, Y, B	≥ 8000	450
D, L	= 6000	600
Others	< 6000	1000

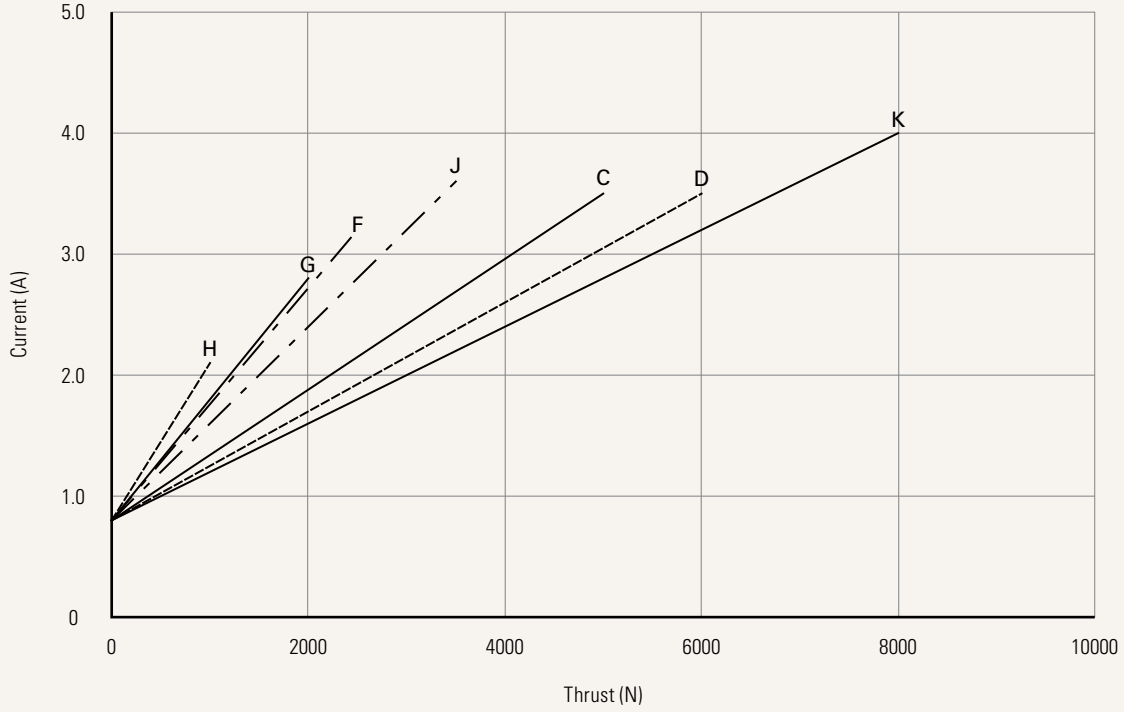
Performance Data (24V DC Motor)

Motor Speed (2600RPM, Duty Cycle 10%)

Speed vs. Thrust



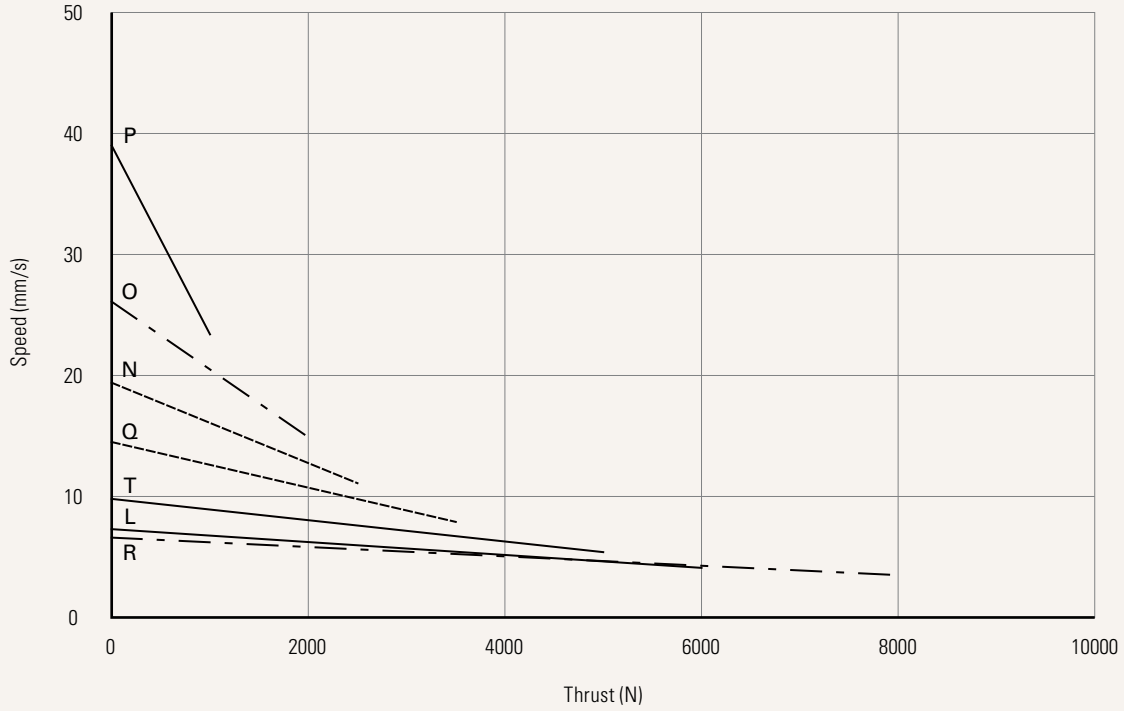
Current vs. Thrust



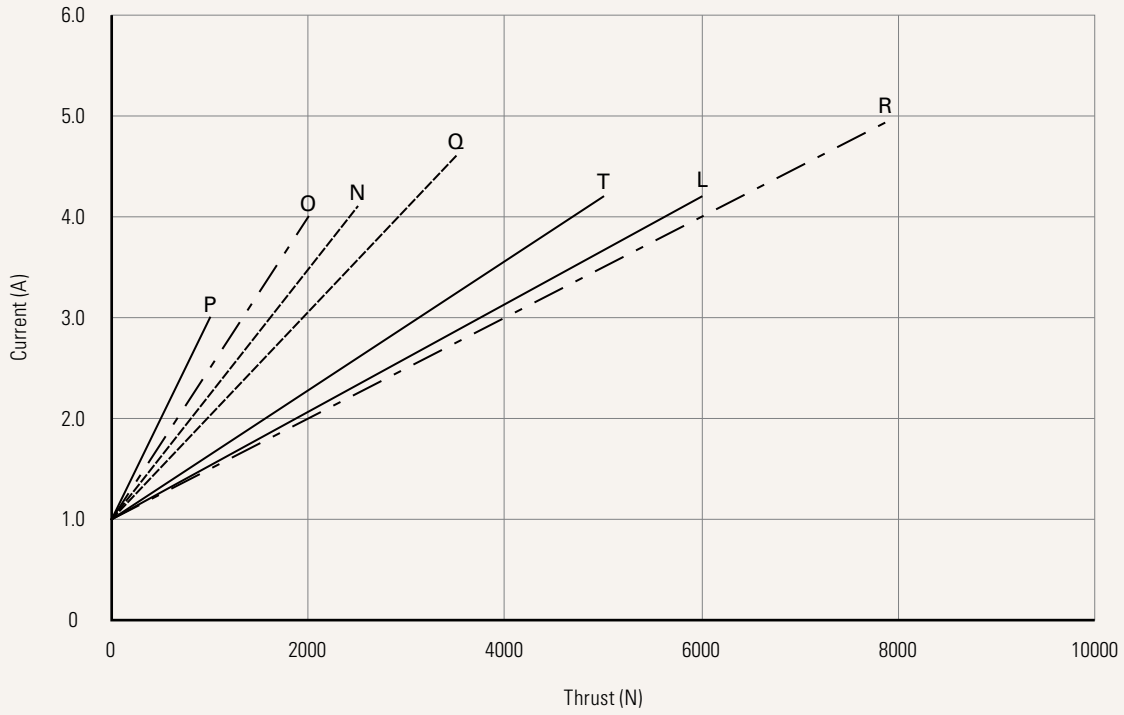
Performance Data (24V DC Motor)

Motor Speed (3400RPM, Duty Cycle 10%)

Speed vs. Thrust



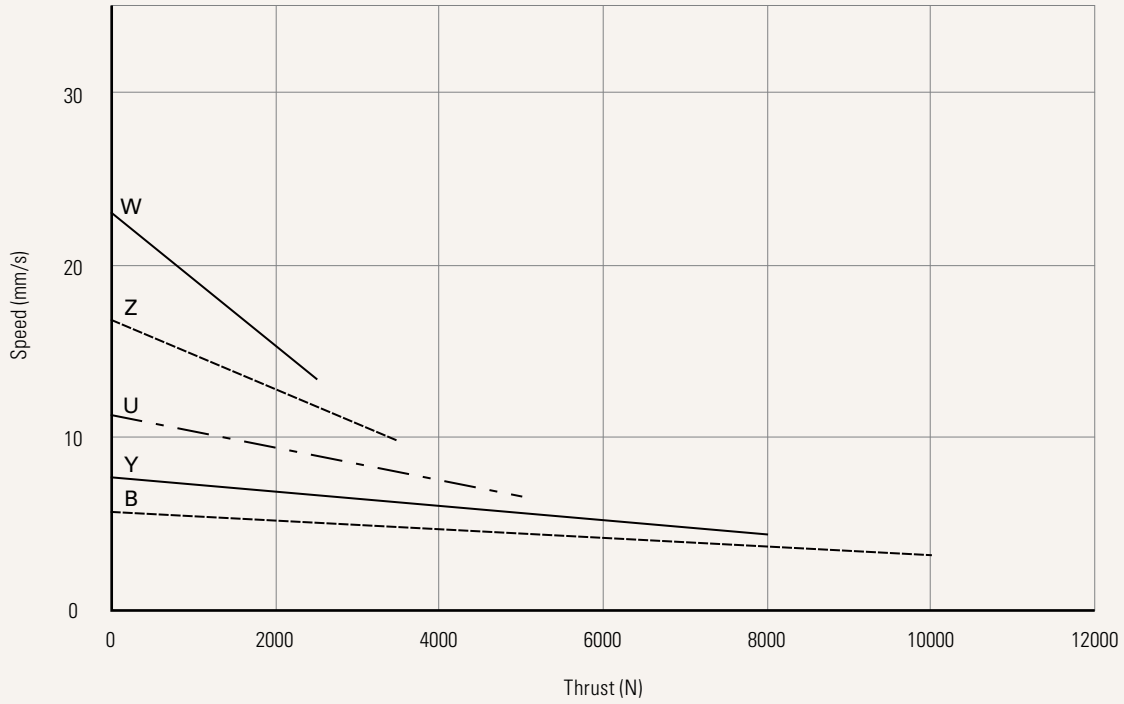
Current vs. Thrust



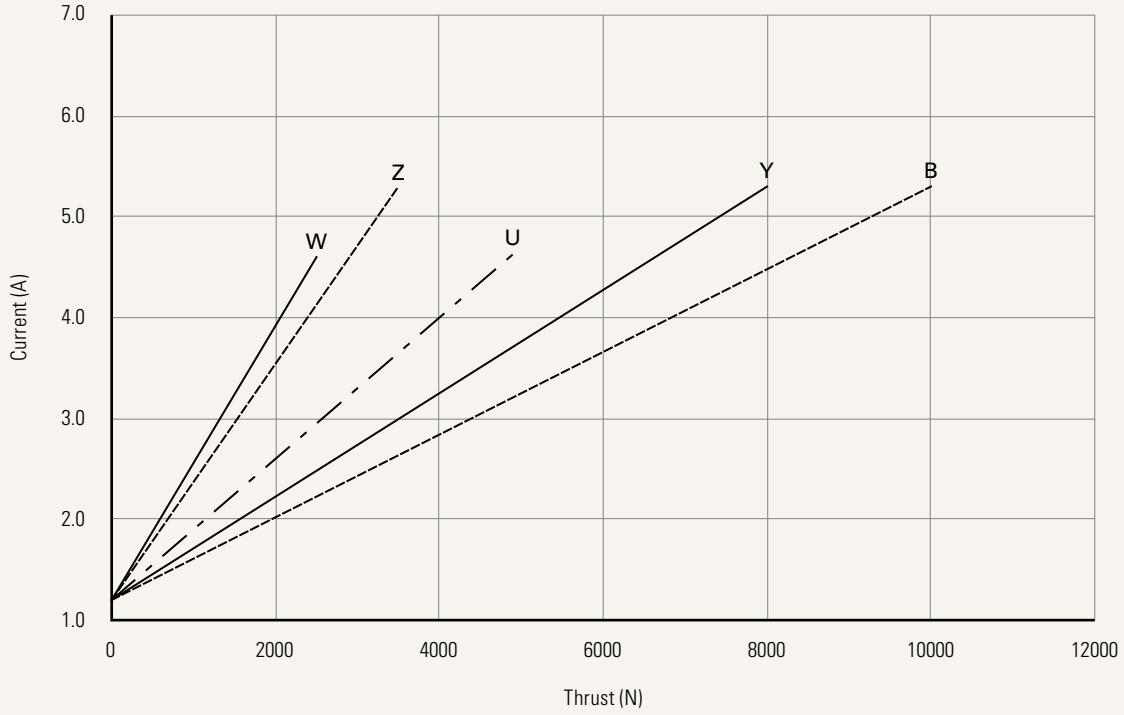
Performance Data (24V DC Motor)

Motor Speed (3800RPM, Duty Cycle 10%)

Speed vs. Thrust



Current vs. Thrust



TA1 Ordering Key

TA1

Version: 20180201-Z

Voltage	1 = 12V DC	2 = 24V DC	3 = 36V DC	5 = 24V DC, PTC
Load and Speed	See page 2			
Stroke (mm)				
Retracted Length (mm)	See page 7			
Rear Attachment (mm) See page 8	0 = Plastic, U clevis, slot 8.2, depth 15.5, hole 10.2, for load push < 4000N & pull < 2500N 1 = Plastic, U clevis, slot 8.2, depth 15.5, hole 12.2, for load push < 4000N & pull < 2500N 2 = Aluminum casting, U clevis, slot 8.2, depth 15.5, hole 10.2 3 = Aluminum casting, U clevis, slot 8.2, depth 15.5, hole 12.2		4 = Aluminum casting, U clevis, slot 10.2, depth 15.5, hole 10.2 5 = Aluminum casting, U clevis, slot 10.2, depth 15.5, hole 12.2 C = Aluminum casting, U clevis, slot 8.2, depth 15.5, hole 10.2, with plastic T-busing H = Aluminum CNC, without slot, hole 12.2, for hand crank	
Front Attachment (mm) See page 8	1 = Punched hole on inner tube + plastic cap, without slot, hole 10.2, with plastic bushing 2 = Punched hole on inner tube + plastic cap, without slot, hole 12.2 3 = Plastic, U clevis, slot 8.2, depth 20.2, hole 10.2, for load push < 4000N & pull < 2500N 4 = Plastic, U clevis, slot 8.2, depth 20.2, hole 12.2, for load push < 4000N & pull < 2500N		5 = Punched hole on inner tube, without slot, hole 10.2, with plastic bushing 6 = Punched hole on inner tube, without slot, hole 12.2 7 = Aluminum casting, U clevis, slot 6.2, depth 17.0, hole 10.2 8 = Aluminum casting, U clevis, slot 6.2, depth 17.0, hole 12.2 9 = Aluminum casting, U clevis, slot 6.2, depth 17.0, hole 10.2, with plastic T-bushing J = Aluminum casting, without slot, hole 10.2, for dental chair	
Direction of Rear Attachment (Counterclockwise) See page 9	1 = 0°	2 = 45°	3 = 90°	4 = 135°
Color	1 = Black	2 = Grey (Pantone 428C)		
IP Rating	1 = Without	2 = IP54	3 = IP66	4 = Without housings 5 = IP66W
Emergency Release Function	0 = Without 1 = Quick release- for cable (Cable excluded)		2 = Quick release- for handle	
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 9	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 (For TC1, TC8, TC10, TC14; compatible with hall sensors)	
Output Signals	0 = Without 1 = Hall sensor * 1	2 = Hall sensor * 2 3 = Reed Sensor	H = Spindle set Hall sensors * 2	
Connector See page 10	1 = DIN 6P, 90° plug 2 = Tinned leads 4 = Big 01P, plug C = Y cable (For direct cut system, water proof, anti pull)	D = Extension cable, not preset on motor cover R = Extension cable, preset on motor cover E = Molex 8P, plug	F = DIN 6P, 180° plug, for TEC extension cable standard option G = Audio plug	M = DIN 4P, plug for dental chair (40510-143, standard) N = DIN 4P, plug for dental chair (40510-040)
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 10 J = For socket attached on motor, not preset attached on motor cover, 120. See page 10 R = For socket attached on motor, preset attached on motor cover, 70. See page 10	

TA1 Ordering Key Appendix

Retracted Length (mm)

1. Calculate A+B+C+D = Y
2. Retracted length needs to ≥ Stroke+Y

A. Rear/Front Attachment

Front Attachment	Rear Attachment	
	0, 1, 2, 3, 4, 5, C	H
1	+163	+171
2	+163	+171
3	+185	+193
4	+185	+193
5	+163	+171
6	+163	+171
7	+175	+183
8	+175	+183
9	+175	+183

B. Load V.S. Stroke

Stroke (mm)	Load (N)			
	< 6000	= 6000	= 8000	= 10000
0~150	-	-	-	+6
151~200	-	-	+5	+11
201~250	-	+5	+10	+16
251~300	-	+10	+15	+21
301~350	+5	+15	+20	+26
351~400	+10	+20	+25	+31

C. Emergency Release Function

CODE	
0	-
1	+24
2	+24

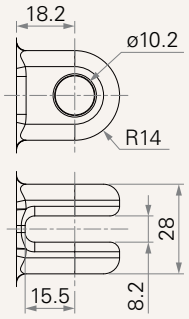
D. Special Functions for Spindle Sub-Assembly

Push Only	Load (N)
	≥ 6000
0	-
1	-
2	+3
3	+3

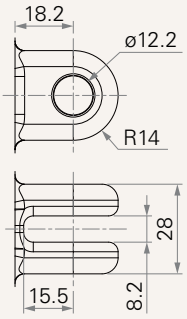
TA1 Ordering Key Appendix

Rear Attachment (mm)

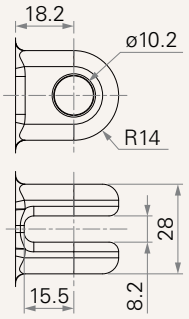
0 = Plastic, U clevis, slot 8.2, depth 15.5, hole 10.2, for load push < 4000N & pull < 2500N



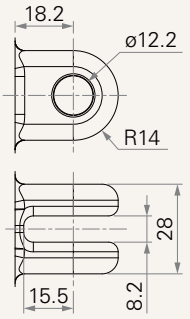
1 = Plastic, U clevis, slot 8.2, depth 15.5, hole 12.2, for load push < 4000N & pull < 2500N



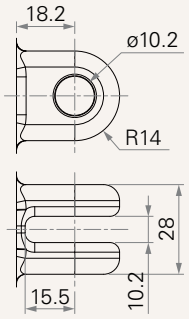
2 = Aluminum casting, U clevis, slot 8.2, depth 15.5, hole 10.2



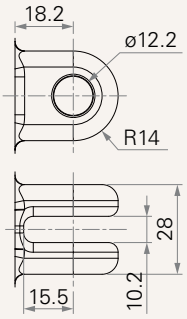
3 = Aluminum casting, U clevis, slot 8.2, depth 15.5, hole 12.2



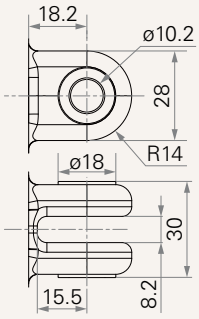
4 = Aluminum casting, U clevis, slot 10.2, depth 15.5, hole 10.2



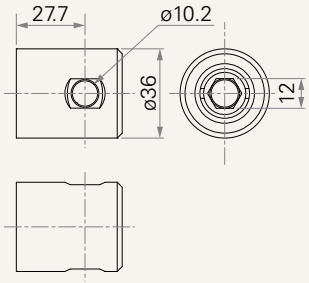
5 = Aluminum casting, U clevis, slot 10.2, depth 15.5, hole 12.2



C = Aluminum casting, U clevis, slot 8.2, depth 15.5, hole 10.2, with plastic T-busing

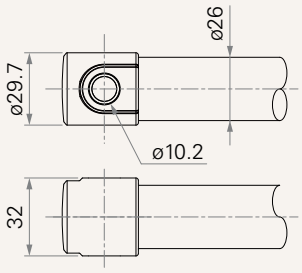


H = Aluminum CNC, without slot, hole 12.2, for hand crank

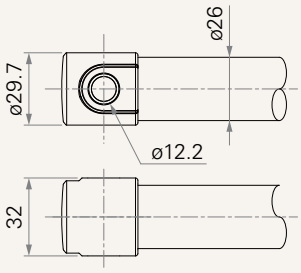


Front Attachment (mm)

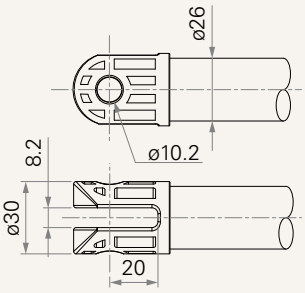
1 = Punched hole on inner tube + plastic cap, without slot, hole 10.2, with plastic bushing



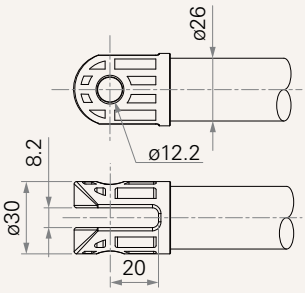
2 = Punched hole on inner tube + plastic cap, without slot, hole 12.2



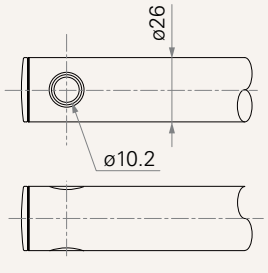
3 = Plastic, U clevis, slot 8.2, depth 20.2, hole 10.2, for load push < 4000N & pull < 2500N



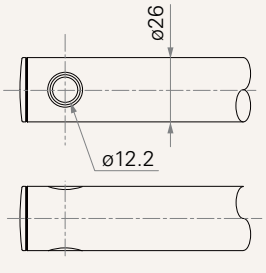
4 = Plastic, U clevis, slot 8.2, depth 20.2, hole 12.2, for load push < 4000N & pull < 2500N



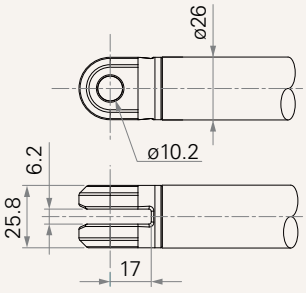
5 = Punched hole on inner tube, without slot, hole 10.2, with plastic bushing



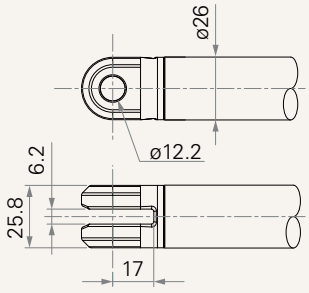
6 = Punched hole on inner tube, without slot, hole 12.2



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



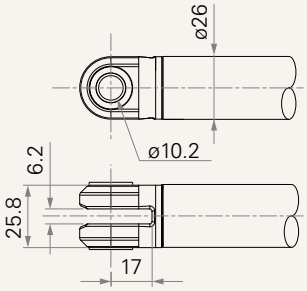
8 = Aluminum casting, U clevis, slot 6.2, depth 17.0, hole 12.2



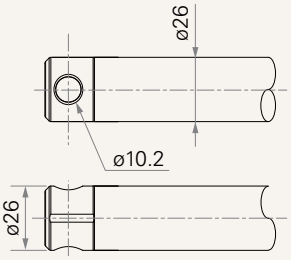
TA1 Ordering Key Appendix

Front Attachment (mm)

9 = Aluminum casting, U clevis, slot 6.2, depth 17.0, hole 10.2, with plastic T-bushing

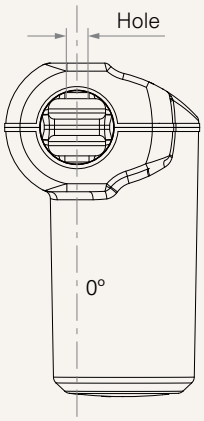


J = Aluminum casting, without slot, hole 10.2, for dental chair

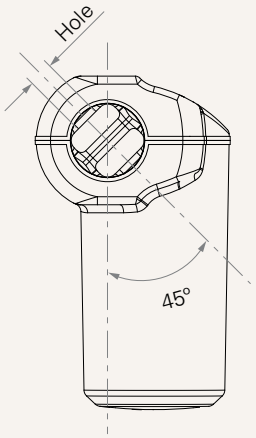


Direction of Rear Attachment (Counterclockwise)

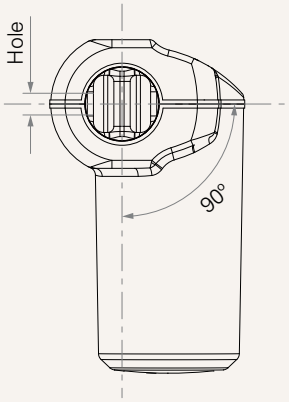
1 = 0°



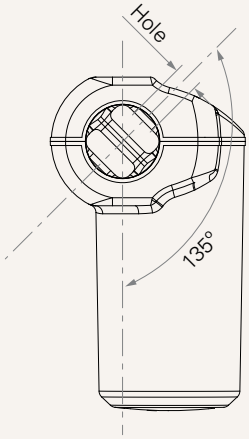
2 = 45°



3 = 90°



4 = 135°



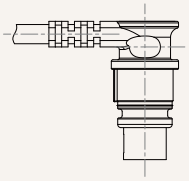
Functions for Limit Switches

Wire Definitions

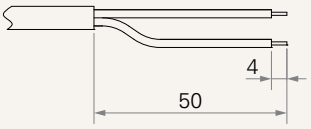
CODE	Pin					
	1 (Green)	2 (Red)	3 (White)	4 (Black)	5 (Yellow)	6 (Blue)
1	extend (VDC+)	N/A	N/A	N/A	retract (VDC+)	N/A
2	extend (VDC+)	N/A	middle switch pin B	middle switch pin A	retract (VDC+)	N/A
3	extend (VDC+)	common	upper limit switch	N/A	retract (VDC+)	lower limit switch
4	extend (VDC+)	common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

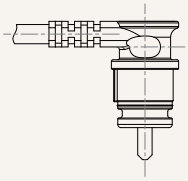
1 = DIN 6P, 90° plug



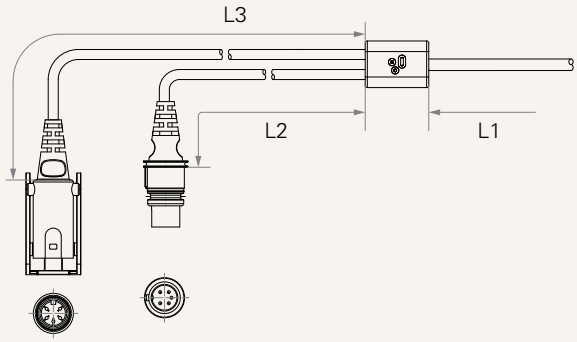
2 = Tinned leads



4 = Big 01P, plug



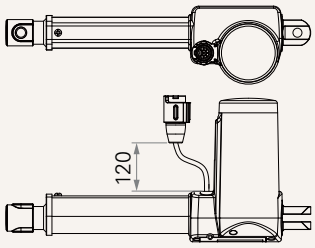
C = Y cable (For direct cut system, water proof, anti pull)



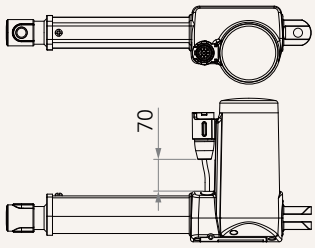
Cable length for direct cut system (mm)

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

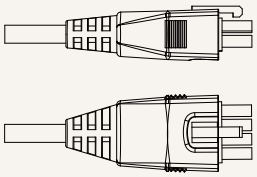
D = Extension cable, not preset on motor cover



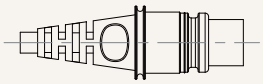
R = Extension cable, preset on motor cover



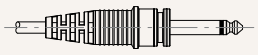
E = Molex 8P, plug



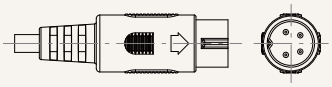
F = DIN 6P, 180° plug, for TEC extension cable standard option



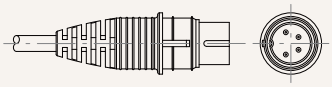
G = Audio plug



M = DIN 4P, plug for dental chair (40510-143, standard)



N = DIN 4P, plug for dental chair (40510-040)



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