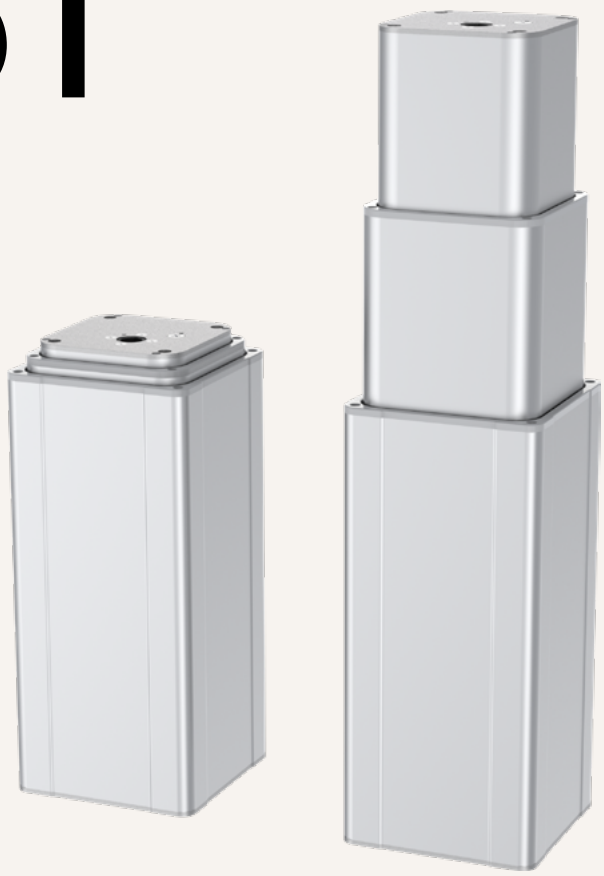
TL51

series



Product Segments

- **Care Motion**
- **Industrial Motion**

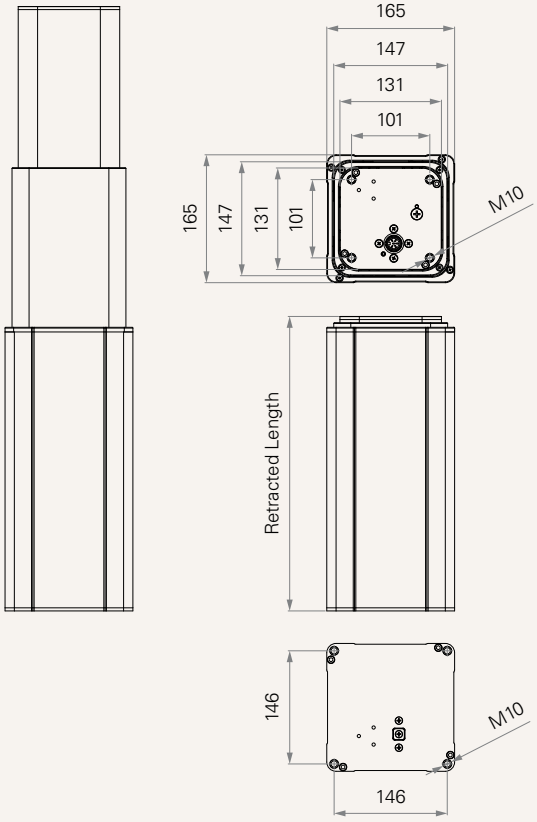
The TL51 column from TiMOTION is designed for any height-adjustable medical application, such as exam chairs, treatment/procedure tables, and applications in healthcare or industrial environments requiring the use of a high load lifting column. The TL51 provides multiple cable exit options, such as from top end socket or top/bottom sides. With its 3-stage telescopic design, the TL51 lifting column offers a high degree of stability.

General Features

Max. load	6,000N (push)
Self-locking force	6,000N
Max. dynamic bending moment	1000Nm(≥ Stroke/2 + 180mm) 1400Nm(≥ Stroke/2 + 240mm)
Max. static bending moment	2000Nm (≥ Stroke/2 + 180mm) 2800Nm (≥ Stroke/2 + 240mm)
Max. speed at max. load	8.6mm/s
Max. speed at no load	26.2mm/s
Retracted length	≥ Stroke/2 + 180mm ≥ Stroke/2 + 240mm
IP rating	IPX4 (cable exit: top end socket) IPX6 (cable exit: bottom sides)
Outer profile	165*165mm square
Stages	3-stage
Stroke	250~1000mm
Output signals	POT, Hall sensors
Voltage	24V DC, thermal switch
Color	Matte silver, black
Operational temperature range	+5°C~+45°C

Drawing

Standard Dimensions (mm)



Load and Speed

CODE	Push (N)	Self Locking Force (N)	Typical Current (A)		Typical Speed (mm/s)	
			No Load 32V DC	With Load 24V DC	No Load 32V DC	With Load 24V DC
Motor Speed (5100RPM, Duty cycle 10%)						
C	4000	4000	4.5	11.7	26.2	17.3
D	5000	5000	4.5	12.7	22.1	14.1
E	6000	6000	4.5	10.3	12.9	8.6

Note

1 Parameters above are from tested average, please refer to approval drawing for final value.

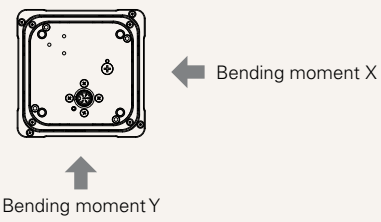
2 The current & speed in table are tested with 24V DC motor.

3 This self-locking force level is reached only when a short circuit is applied on the terminals of the motor.

4 Bending moment Y direction = X*1

5 Static bending moment = dynamic*2

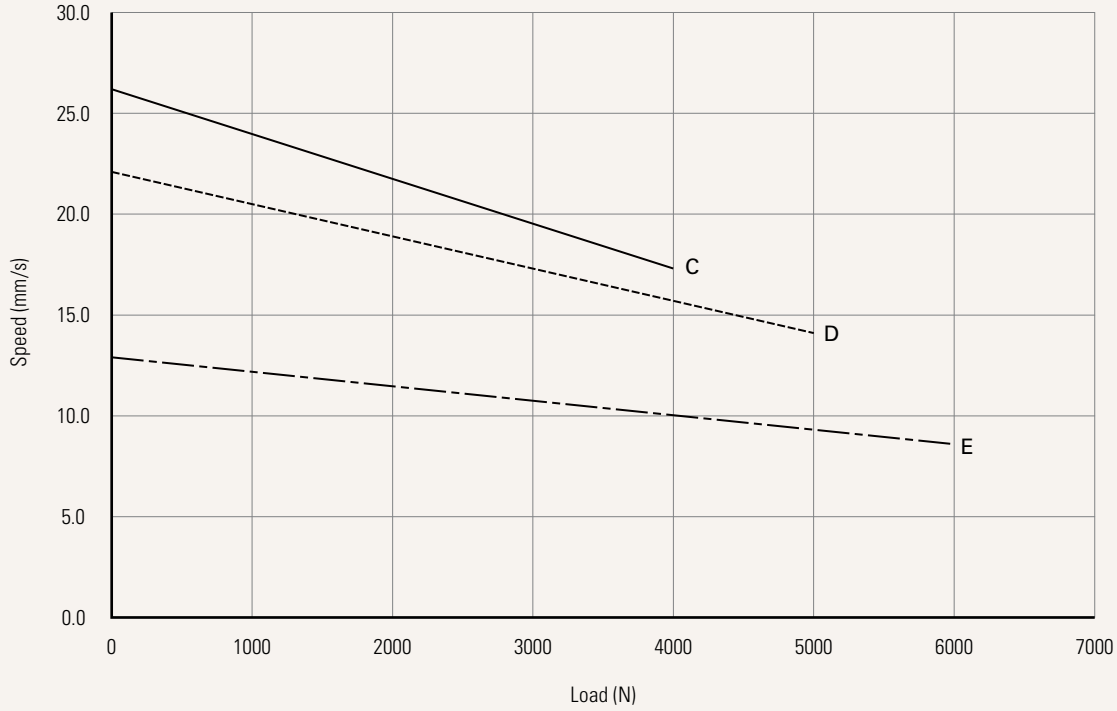
Dynamic bending moment (Nm)- X direction		
Stroke (mm)	S/2+180	S/2+240
250-1000	1000	1400



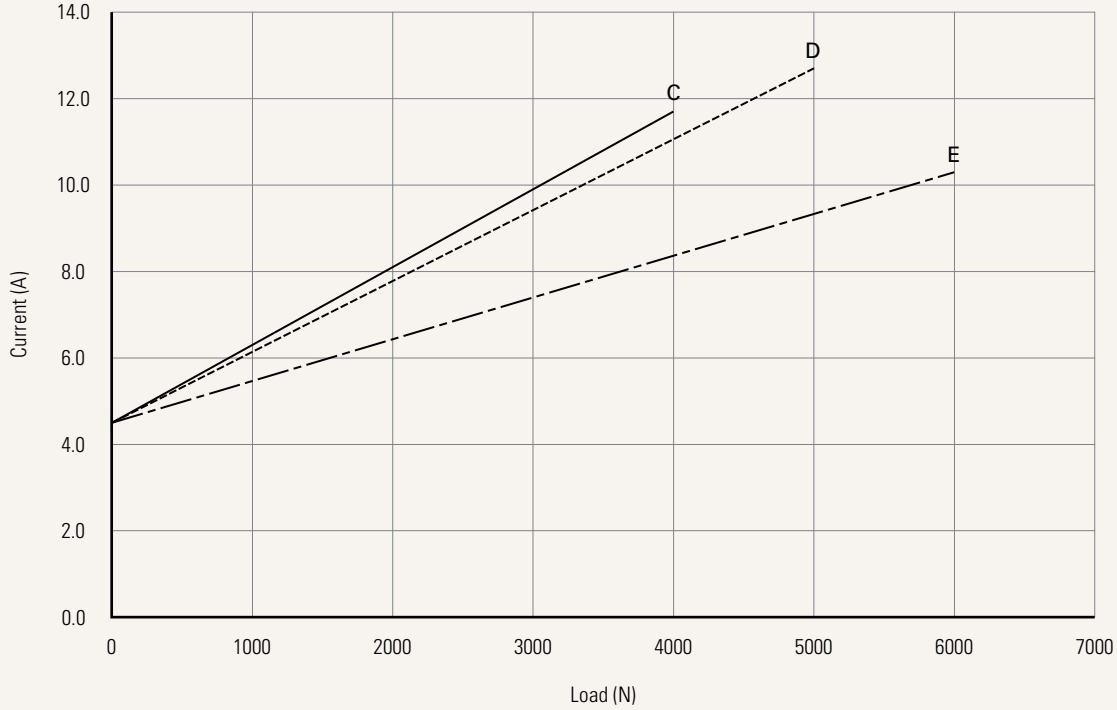
Performance Data (24V DC Motor)

Motor Speed (5100RPM, Duty cycle 10%)

Speed vs. Load



Current vs. Load



TL51 Ordering Key - Top End Socket

TL51

Version: 20250718-M

Voltage	5 = 24V DC, Thermal switch		
Load and Speed	See page 2		
Stroke (mm)	250-1000		
Retracted Length (mm)	See page 6		
Cable Exit	See page 7		
Special Functions for Spindle Sub-Assembly	0 = Without (Standard)		2 = Safety nut (bi-directional)
Functions for Limit Switches See page 8	1 = Two switches at full retracted / extended positions to cut current 3 = Two switches at full retracted / extended positions to send signal		
IP Rating	1 = Without	2 = IPX4	
Output Signals	0 = Without	2 = Hall sensor * 2	3 = POT
Connector See page 8	1 = DIN 6P, socket		2 = DIN 6P, socket, with Anti-pull buckle
Color	1 = Black	2 = Matte silver	
Tubes Direction See page 8	0 = Thinner on top		
Grounding Function	0 = Without	1 = With	

TL51 Ordering Key - Side Cable

TL51

Version: 20250718-M

Voltage	5 = 24V DC, Thermal switch			
Load and Speed	See page 2			
Stroke (mm)	250-1000			
Retracted Length (mm)	See page 6			
Cable Exit	See page 7			
Special Functions for Spindle Sub-Assembly	0 = Without (Standard)		2 = Safety nut (bi-directional)	
Functions for Limit Switches See page 8	1 = Two switches at full retracted / extended positions to cut current 3 = Two switches at full retracted / extended positions to send signal			
IP Rating	1 = Without	2 = IPX4	3 = IPX6	
Output Signals	0 = Without	2 = Hall sensor * 2	3 = POT	
Connector See page 8	1 = DIN 6P, 90° plug 2 = Tinned leads F = DIN 6P, 180° plug		G = Molex 8P 90° H = Molex 8P 180° Q = Molex 6P, 90° plug (40511-123)	
Cable Length (mm)	1 = Straight, 500 2 = Straight, 750	3 = Straight, 1000 4 = Straight, 1250	5 = Straight, 1500 6 = Straight, 1750	7 = Straight, 2000
Color	1 = Black	2 = Matte silver		
Tubes Direction See page 8	0 = Thinner on top	1 = Wider on top		
Grounding Function	0 = Without	1 = With		

Retracted Length (mm)

1. Retracted length needs to ≥ A+B+C

A.			
Load (N)	4000	5000	6000
	S/2+180 or S/2+240	S/2+180 or S/2+240	S/2+180 or S/2+240

Note

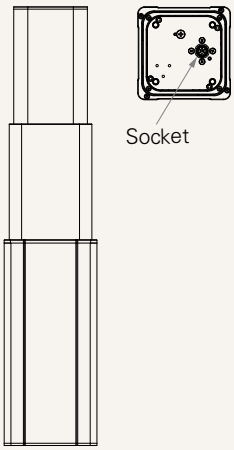
1 Different retracted length is relative to different bending moment, See page 2.

B.					
Cable Exit	1	2	3	4	5
	Top End Socket	Thinner on Top, Bottom Side Cable	Wider on Top, Top Side Cable	Wider on Top, Bottom Side Cable	Thinner on Top, Top Side Cable
B	-	-	-	+15	+15

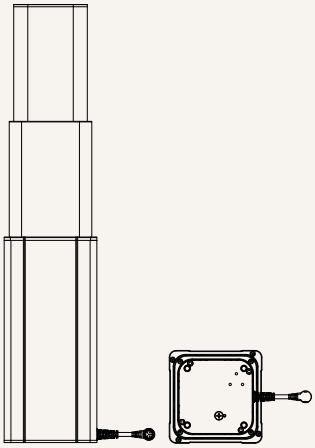
C. When with POT (When without POT, C = 0)					
Cable Exit	1	2	3	4	5
	Top End Socket	Thinner on Top, Bottom Side Cable	Wider on Top, Top Side Cable	Wider on Top, Bottom Side Cable	Thinner on Top, Top Side Cable
C	+40	+40	+40	+40	+40

Cable Exit

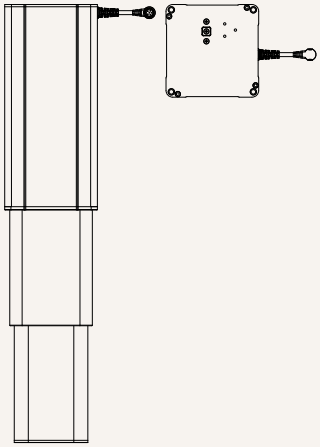
1 = Top end socket



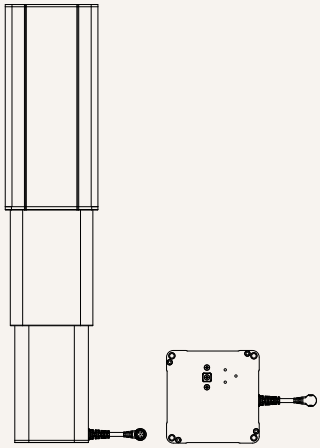
2 = Thinner on top, bottom side cable



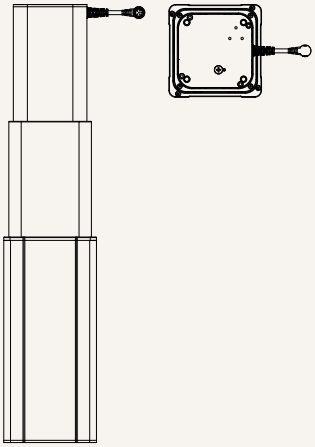
3 = Wider on top, top side cable



4 = Wider on top, bottom side cable



5 = Thinner on top, top side cable



TL51 Ordering Key Appendix

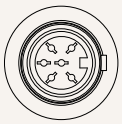
Functions for Limit Switches

Wire Definitions

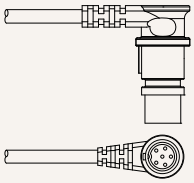
CODE	Pin					
	1 (Green)	2 (Red)	3 (White)	4 (Black)	5 (Yellow)	6 (Blue)
1	extend (VDC+)	N/A	N/A	N/A	retract (VDC+)	N/A
3	extend (VDC+)	common	upper limit switch	N/A	retract (VDC+)	lower limit switch

Connector

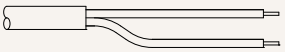
1 = DIN 6P, socket



1 = DIN 6P, 90° plug



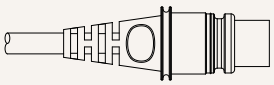
2 = Tinned leads



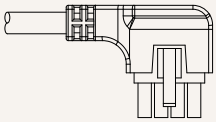
2 = DIN 6P, socket, with Anti-pull buckle



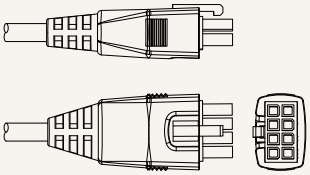
F = DIN 6P, 180° plug



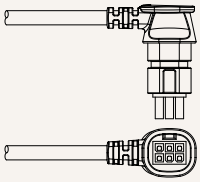
G = Molex 8P 90°



H = Molex 8P 180°

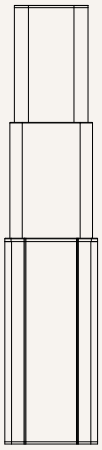


Q = Molex 6P, 90° plug (40511-123)

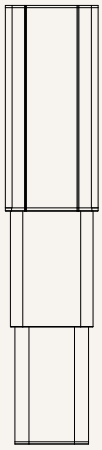


Tubes Direction

0 = Thinner on top



1 = Wider on top



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