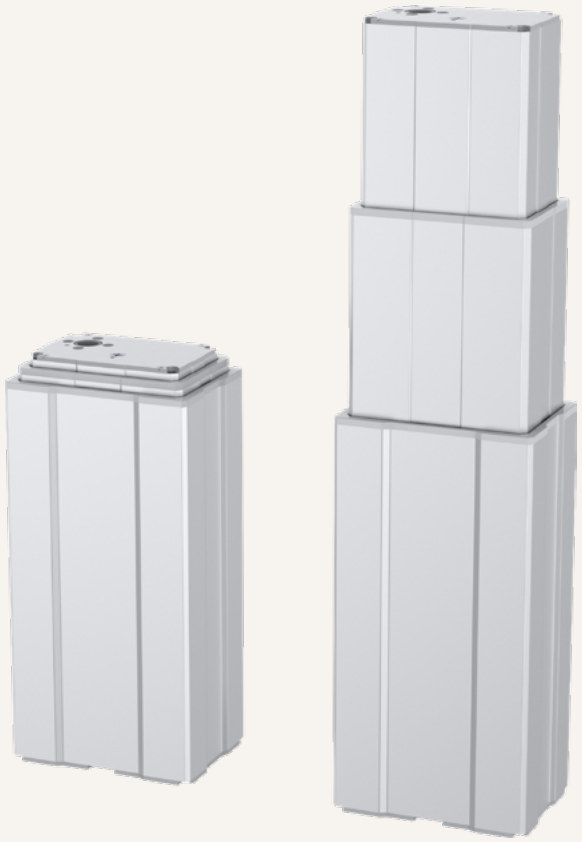
# TL54

series



Product Segments

- **Care Motion**

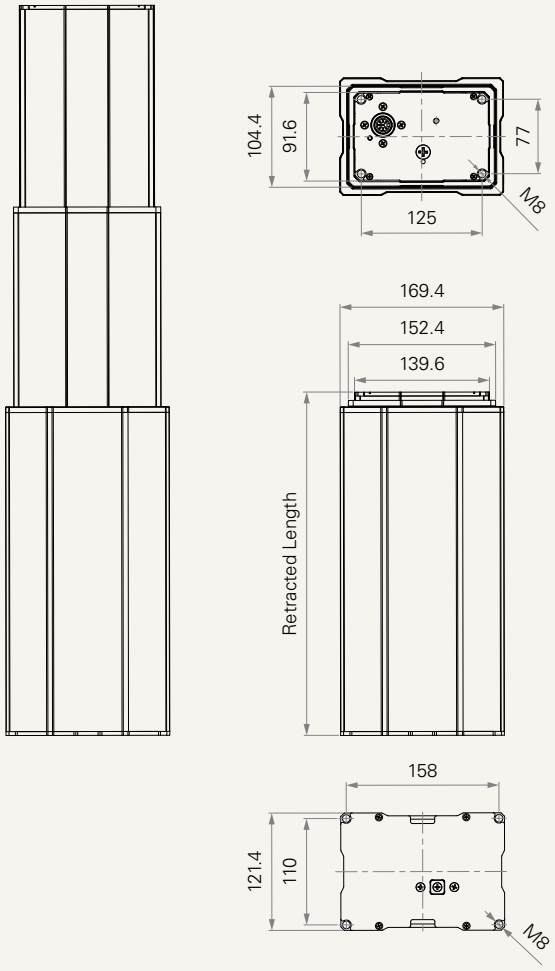
The TL54 is the latest advancement in TiMOTION's medical column series. Specifically designed and developed for tension loads, it is ideally suited for pull applications such as the suspension of medical equipment. The TL54's three-segment outer tube ensures safe and stable movement, while also offering a minimal installation dimension with a wide range of stroke options.

**General Features**

| | |
|---|---|
| Max. load | 2,000N (push/pull) |
| Self-locking force | 2,000N |
| Max. dynamic bending moment | 250Nm |
| Max. static bending moment | 500Nm |
| Max. speed at max. load | 12mm/s |
| Max. speed at no load | 21mm/s |
| Retracted length | ≥ Stroke + 150mm |
| IP rating | IPX6 |
| Dimension of outer tube | 121.4*169.4mm, rectangular |
| Stages | 3-stage |
| Stroke | 250~600mm |
| Output signals | Hall sensors |
| Voltage | 12/24V DC, PTC |
| Color | Matte silver, black |
| Operational temperature range | +5°C~+45°C |

## 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 (5100RPM, Duty cycle 10%)** | | | | | | | |
| **B** | 2000 | 2000 | 2000 | 2.7 | 5 | 21 | 12 |

## Note

1 Please refer to the approved drawing for the final authentic value.

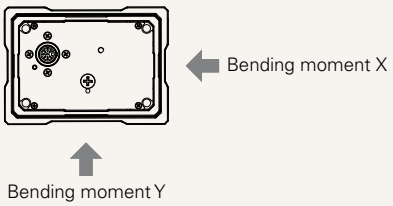
2 The current & speed in table are tested with 24V DC motor.

3 This self-locking force level is reached only when a short circuit is applied on the terminals of the motor. All the TiMOTION control boxes have this feature built-in.

4 Dynamic bending moment (Nm) - X direction

| Stroke (mm) | Retracted length (mm) | |
|---|---|---|
| | S/2+150 | S/2+155 |
| **250-600** | 250 | 250 |

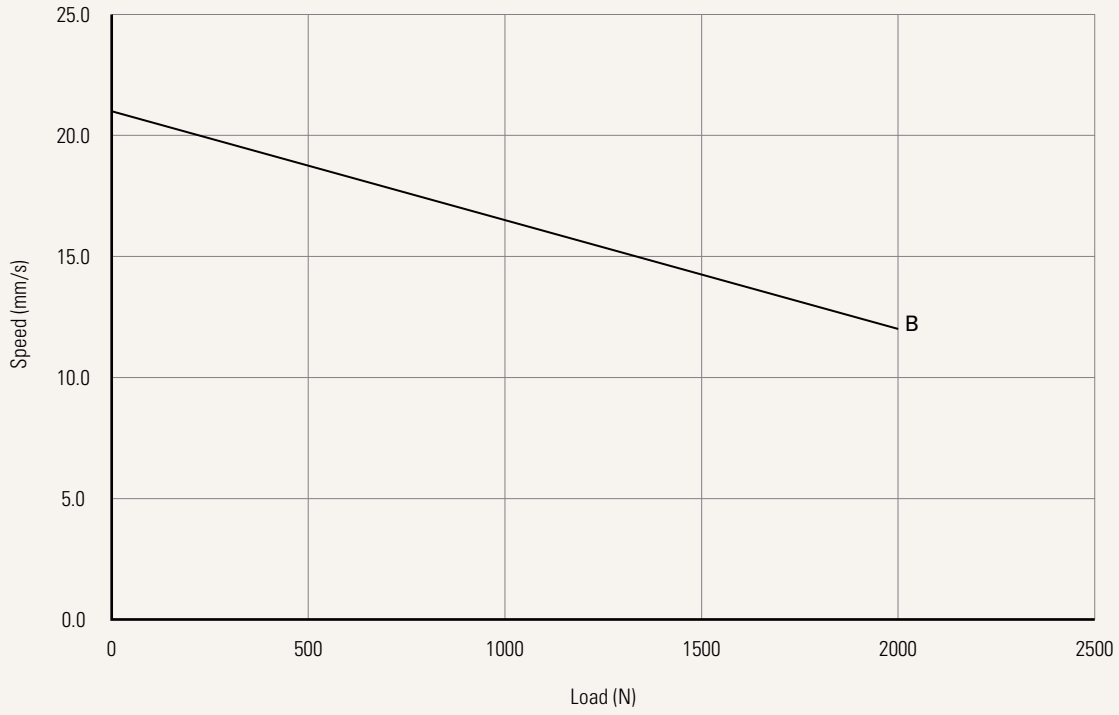
* Bending moment Y direction= X*0.8
* Static bending moment= dynamic*2



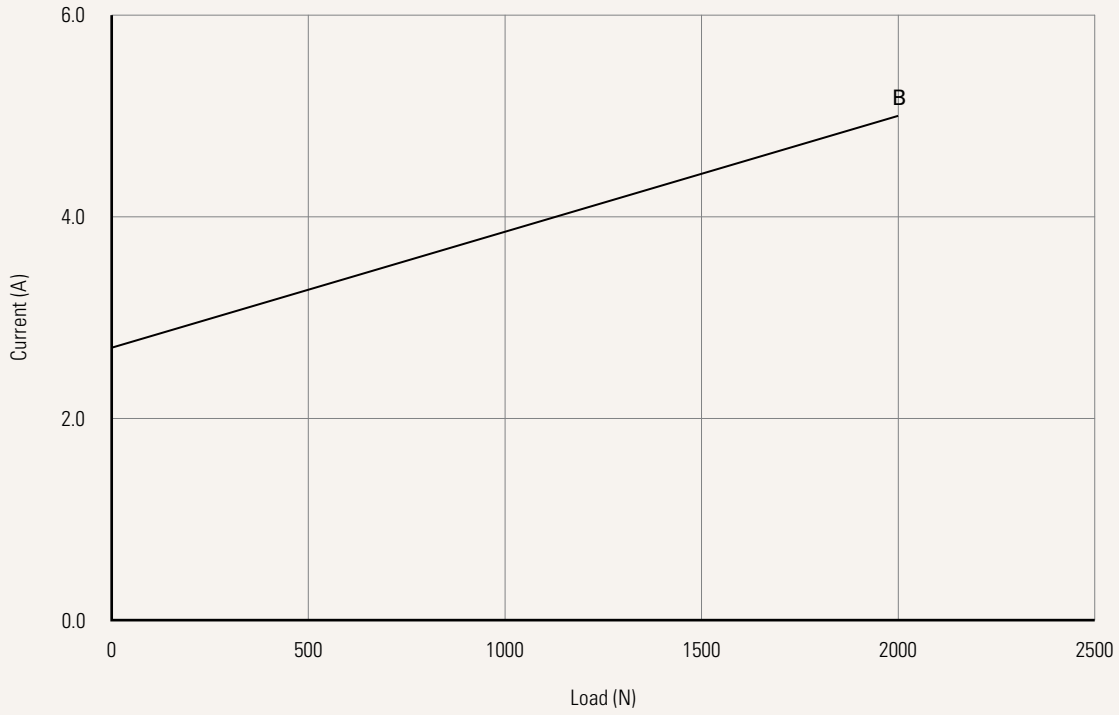
**Performance Data (24V DC Motor)**

Motor Speed (5100RPM, Duty cycle 10%)

Speed vs. Load




Current vs. Load



# **TL54** Ordering Key - Top End Socket

TL54

Version: 20240812-C

| | | | |
|---|---|---|---|
| **Voltage** | 1 = 12V DC, PTC | 5 = 24V DC, PTC | |
| **Load and Speed** | See page 2 | | |
| **Stroke (mm)** | 250-600 | | |
| **Retracted Length (mm)** | See page 6 | | |
| **Cable Exit** | 1~5 = See page 7 | | |
| **Special Functions for Spindle Sub-Assembly** | 0 = Without (Standard)<br>1 = Safety nut | | 2 = Safety nut (bi-directional) |
| **Functions for Limit Switches** | 1 = Two switches at full retracted/extended positions to cut current<br>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 | |
| **Connector** | 1 = DIN 6P, socket | | 2 = DIN 6P, socket, with Anti-pull buckle |
| **Cable Length** | 0 = Without | | |
| **Color** | 1 = Black | 2 = Matte silver | |
| **Tubes Direction** | 0 = Thinner on top | | |
| **Grounding Function** | 0 = Without | 1 = With | |

# **TL54** Ordering Key - Side Cable

TL54

Version: 20240812-C

| | | | | |
|---|---|---|---|---|
| **Voltage** | 1 = 12V DC, PTC | 5 = 24V DC, PTC | | |
| **Load and Speed** | See page 2 | | | |
| **Stroke (mm)** | 250-600 | | | |
| **Retracted Length (mm)** | See page 6 | | | |
| **Cable Exit** | See page 7 | | | |
| **Special Functions for Spindle Sub-Assembly** | 0 = Without (Standard)<br>1 = Safety nut | | 2 = Safety nut (bi-directional) | |
| **Functions for Limit Switches** | 1 = Two switches at full retracted/extended positions to cut current<br>3 = Two switches at full retracted/extended positions to send signal<br>4 = Two switches at full retracted/extended positions to send signal + third one in between to send signal | | | |
| **IP Rating** | 1 = Without | 2 = IPX4 | 3 = IPX6 | |
| **Output Signals** | 0 = Without | 2 = Hall sensor * 2 | | |
| **Connector** | 1 = DIN 6P, 90° plug<br>2 = Tinned leads | F = DIN 6P, 180° plug<br>G = Molex 8P, 90° plug | H = Molex 8P, 180° plug<br>I = Molex 6P, 90° plug | |
| **Cable Length (mm)** | 1 = Straight, 500<br>2 = Straight, 750 | 3 = Straight, 1000<br>4 = Straight, 1250 | 5 = Straight, 1500<br>6 = Straight, 1750 | 7 = Straight, 2000 |
| **Color** | 1 = Black (Black cable set)<br>2 = Matte silver (428C color cable set) | | 3 = Matte silver (Black cable set) | |
| **Tubes Direction** | 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) | | |
|---|---|---|
| | Push 2000 | Pull 2000 |
| | S/2+150 | S/2+155 |

### Note

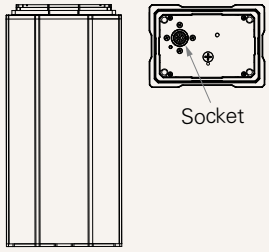
1 Different retracted length is relative to different bending moment, See page 2.

| B. Cable Exit | | | | | |
|---|---|---|---|---|---|
| CODE | 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 |
| | - | +20 | +20 | +15 | +15 |

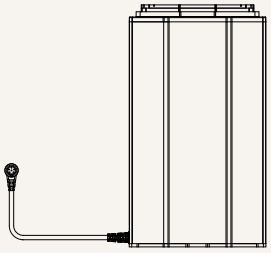
# **TL54** Ordering Key Appendix

## Cable Exit

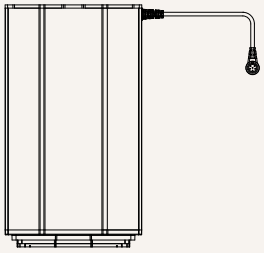
1 = Top end socket



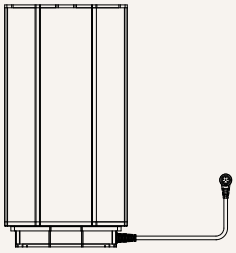

2 = Thinner on top, bottom side cable



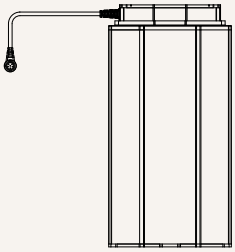
3 = Wider on top, top side cable



4 = Wider on top, bottom side cable

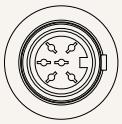


5 = Thinner on top, top side cable

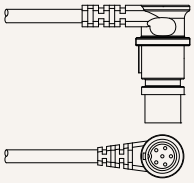


## Connector

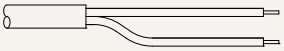
1 = DIN 6P, socket



1 = DIN 6P, 90° plug

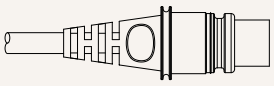


2 = Tinned leads

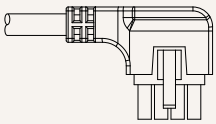


2 = DIN 6P, socket, with Anti-pull buckle

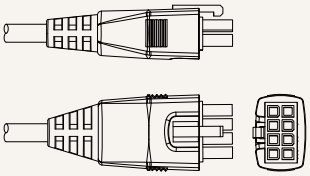
F = DIN 6P, 180° plug



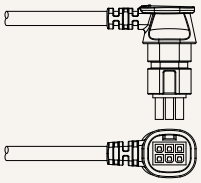
G = Molex 8P, 90° plug



H = Molex 8P, 180° plug



I = Molex 6P, 90° plug



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