

# TL3

series



## Product Segments

- **Care Motion**
- **Comfort Motion**
- **Ergo Motion**
- **Industrial Motion**

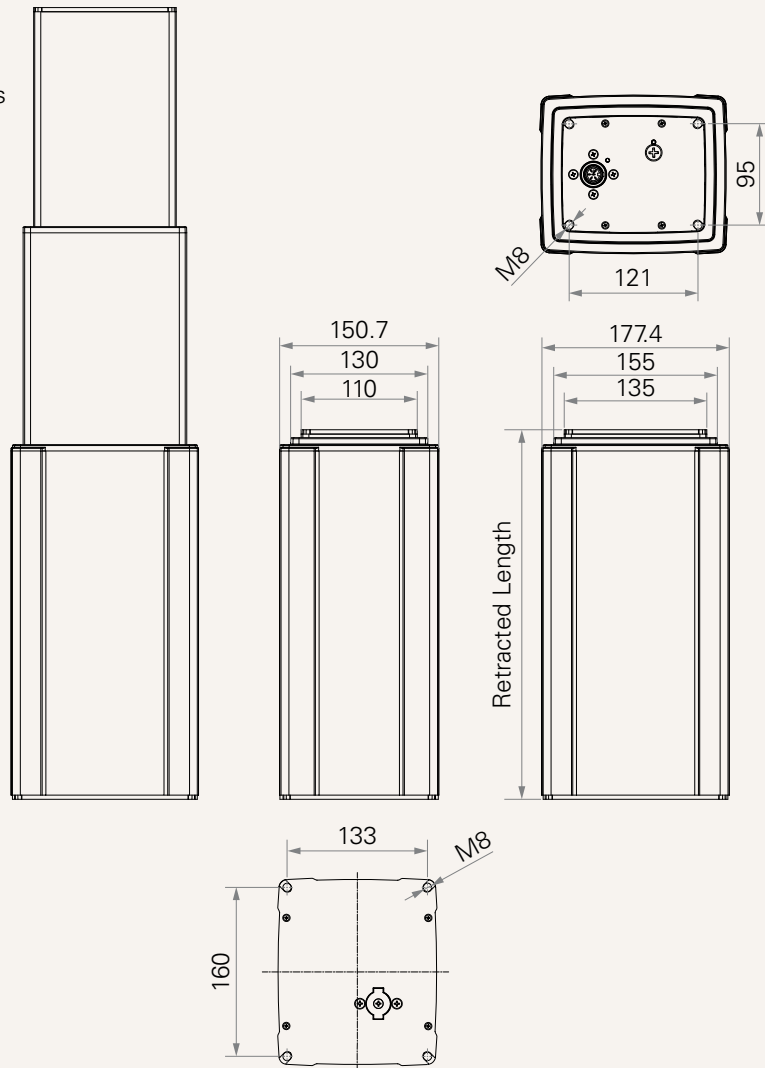
The TL3 columns from TiMOTION are made up of three extruded aluminum tubes of rectangular shape that give the system great stability and a high stroke with reduced retracted length. This electric lifting column allows for an easy integration into many height adjustable applications.

### General Features

Maximum load	4,000N
Maximum dynamic bending moment	1,000Nm
Maximum static bending moment	2,000Nm
Maximum speed at full load	24mm/s (with 1,000N in a push condition)
Minimum installation dimension	Stroke/2+150mm (if max. load=1,000/2,000N)
Dimension of cross section	177.4x150.7mm
Stroke	100~1200mm
Certificate	EN60601-1 compliant
Operational temperature range	+5°C~+45°C
Options	POT, Hall sensors

**Drawing**

Standard Dimensions  
(mm)



### Load and Speed

CODE	Load (N)	Self Lock (N)	Typical Current (A)		Typical Speed (mm/s)	
	Push		No Load 32V DC	With Load 24V DC	No Load 32V DC	With Load 24V DC
<b>Motor Speed (2200RPM, Duty cycle 10%)</b>						
<b>B</b>	4000	4000	2.5	6.3	14.5	7.6
<b>C</b>	2000	2000	2.5	4.3	22.0	13.0
<b>D</b>	1000	1000	2.5	3.8	39.0	24.0
<b>Motor Speed (2800RPM, Duty cycle 10%)</b>						
<b>E</b>	4000	4000	3.5	7.5	18.5	9.4
<b>F</b>	2000	2000	3.5	6.3	35.0	20.0
<b>Motor Speed (3400RPM, Duty cycle 10%)</b>						
<b>G</b>	4000	4000	4.0	12.0	31.0	15.0

### Note

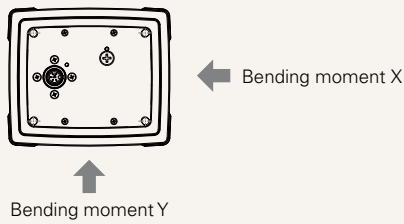
- 1 With a 12V motor, the current is approximately twice the current measured in 24V; speed will be similar for both voltages.

### Dynamic bending moment (Nm)- X direction

Stroke (mm)	Retracted length S/2+150 (mm)	Retracted length S/2+220 (mm)
	Dynamic bending moment (Nm)	Dynamic bending moment (Nm)
100-300	700	1000
301-500	500	800
501-700	300	500
701-1200	200	200

### Note

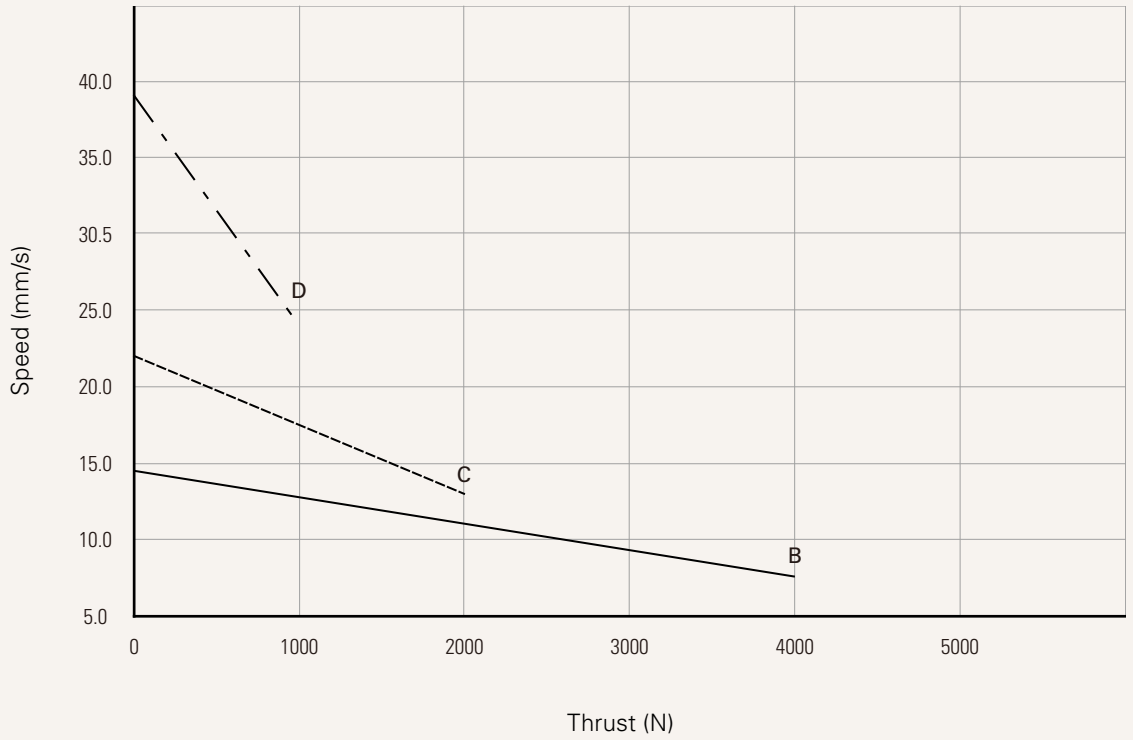
- 1 Bending moment Y direction= X\*0.8
- 2 Static bending moment= dynamic\*2



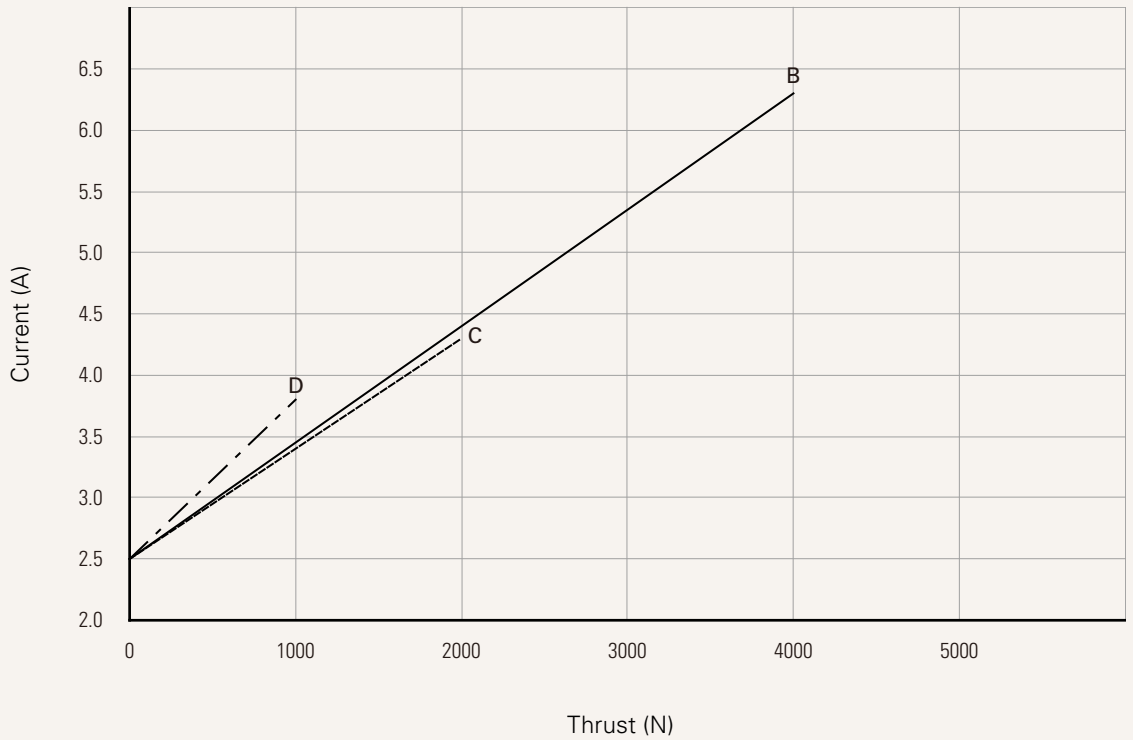
**Performance Data (24V DC Motor)**

Motor Speed (2200RPM, Duty cycle 10%)

Speed vs. Thrust



Current vs. Thrust



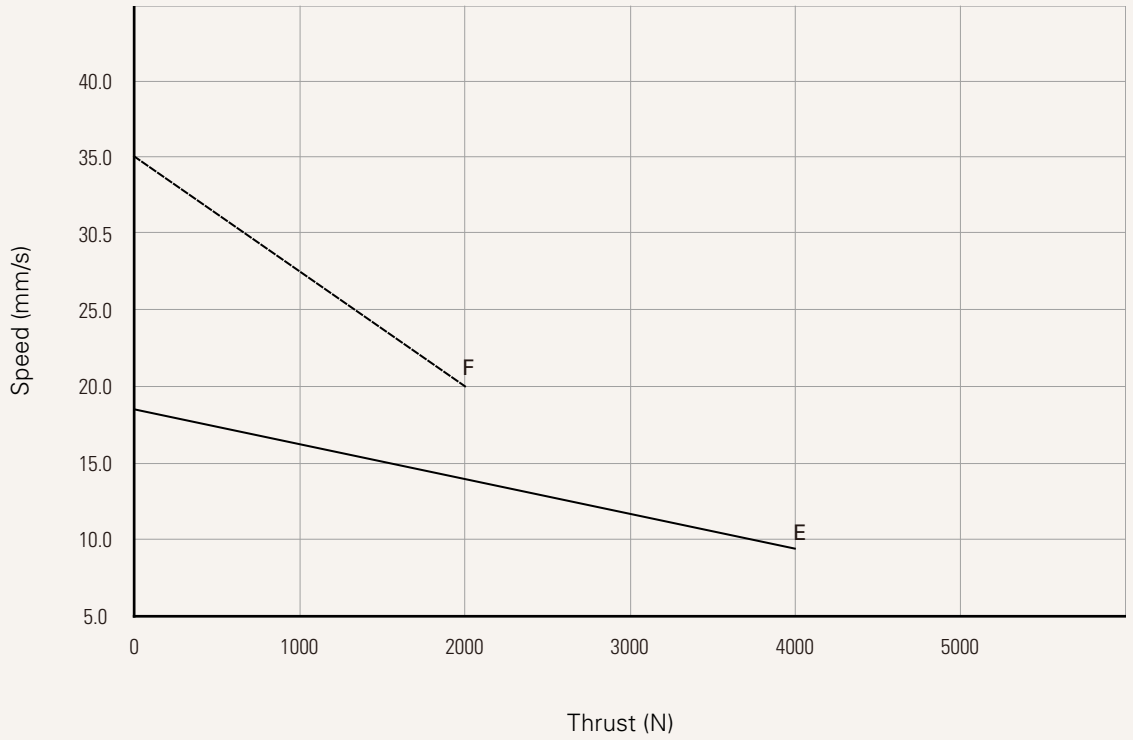
**Note**

1 The performance data in the curve charts shows theoretical value.

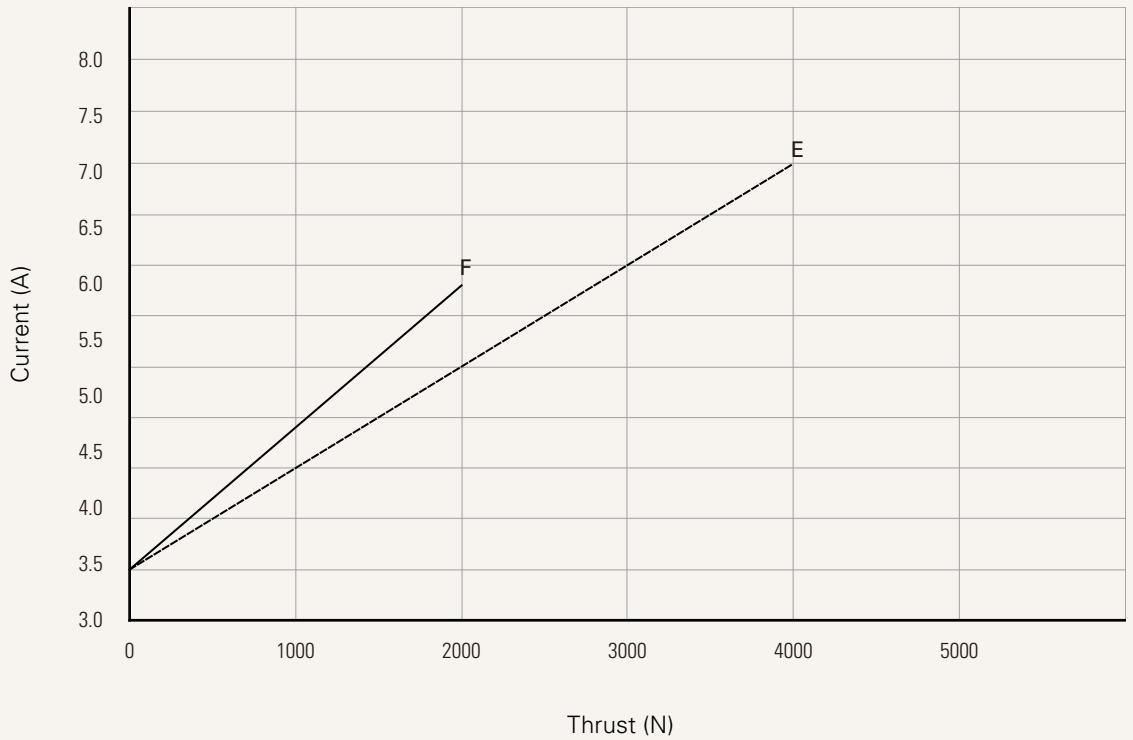
**Performance Data (24V DC Motor)**

Motor Speed (2800RPM, Duty cycle 10%)

Speed vs. Thrust



Current vs. Thrust



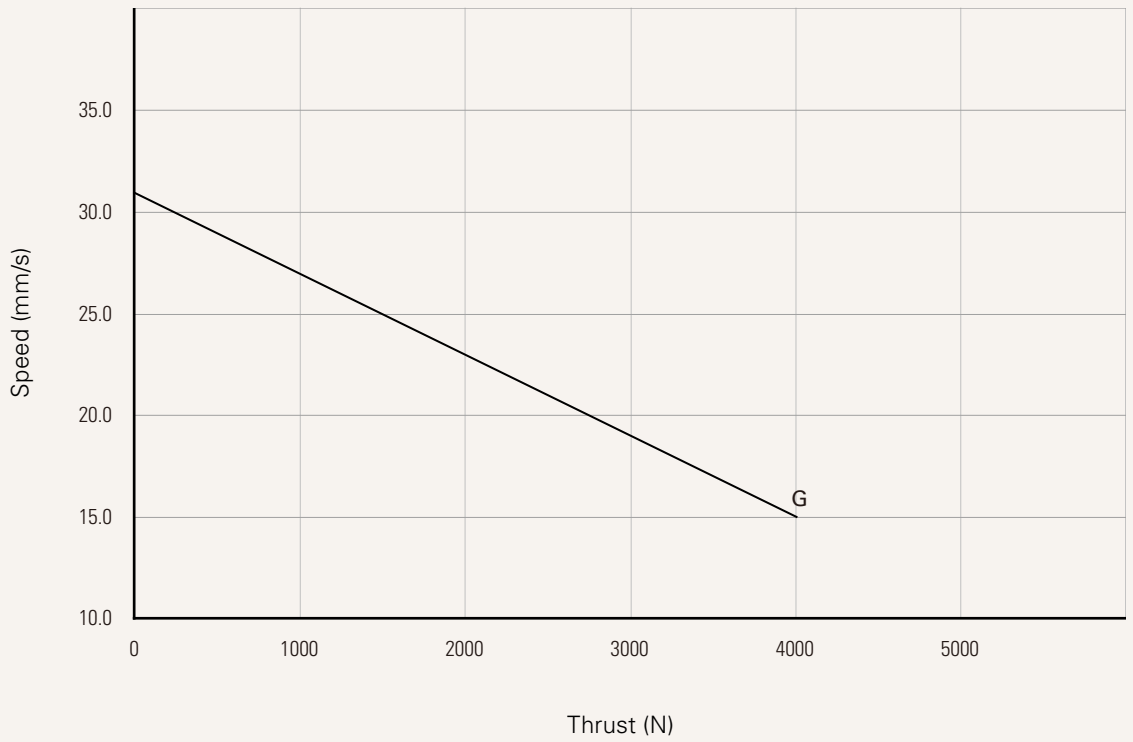
**Note**

1 The performance data in the curve charts shows theoretical value.

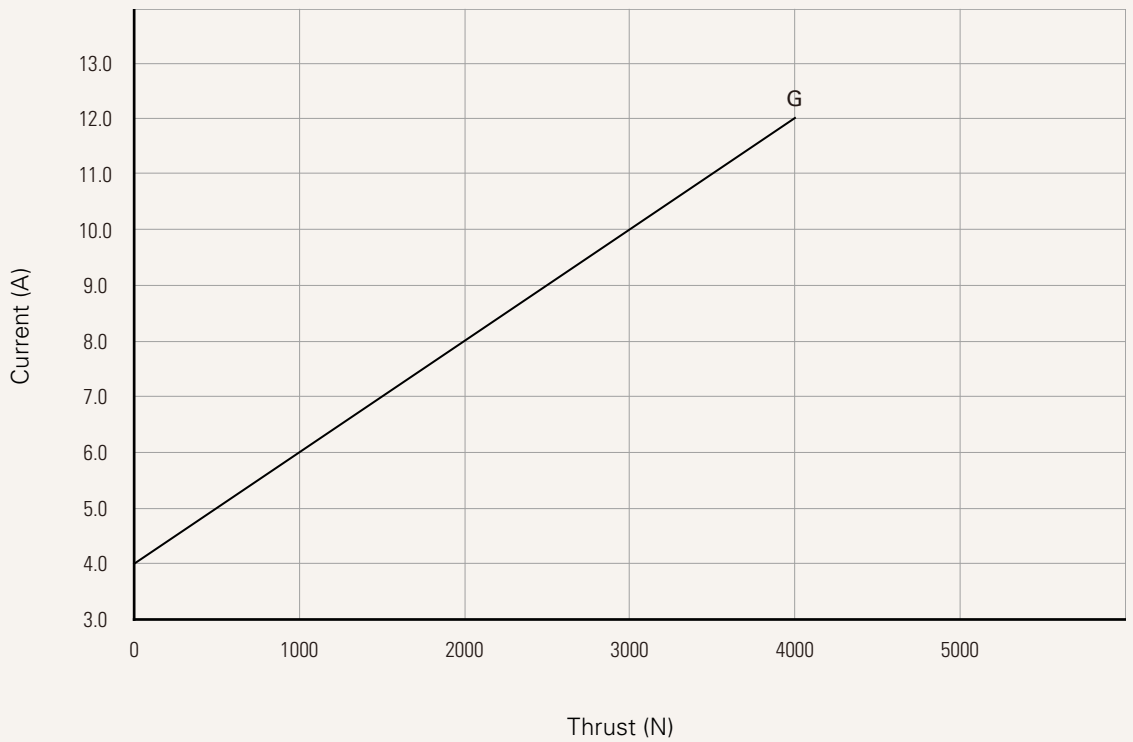
**Performance Data (24V DC Motor)**

Motor Speed (3400RPM, Duty cycle 10%)

Speed vs. Thrust



Current vs. Thrust



**Note**

1 The performance data in the curve charts shows theoretical value.

# TL3 - Top End Socket Ordering Key

TL3

Version: 20170613-J

<b>Voltage</b>	1 = 12V	5 = 24V, thermal protector
<b>Load and Speed</b>	<a href="#">See page 3</a>	
<b>Stroke (mm)</b>	100-1200	
<b>Retracted Length (mm)</b>	<a href="#">See page 10</a>	
<b>Cable Exit</b>	1 = Top end socket	
<b>Special Functions for Spindle Sub-Assembly</b>	0 = Without (standard)	
<b>Functions for Limit Switches</b>	1 = Two switches at full retracted/extended positions to cut current 3 = Two switches at full retracted/extended positions to send signal <a href="#">See page 10</a>	
<b>IP Rating</b>	1 = Without	2 = IPX4 3 = IPX6
<b>Output Signals</b>	0 = Without	2 = Two Hall sensors 3 = POT
<b>Connector</b>	1 = DIN 6P, socket <a href="#">See page 11</a>	
<b>Cable Length</b>	0 = Without (the corresponding extension cable TEC needs to be ordered seperately)	

## Note

1 TL3 is designed especially for push applications, not suitable for pull applications.

# TL3 - Side Cable Ordering Key

TL3

Version: 20170613-J

<b>Voltage</b>	1 = 12V	5 = 24V, thermal protector	
<b>Load and Speed</b>	<a href="#">See page 3</a>		
<b>Stroke (mm)</b>	100-1200		
<b>Retracted Length (mm)</b>	<a href="#">See page 10</a>		
<b>Cable Exit</b>	2 = Bottom side cable	3 = Top end socket	
<b>Special Functions for Spindle Sub-Assembly</b>	0 = Without (standard)		
<b>Functions for Limit Switches</b>	1 = Two switches at full retracted/extended positions to cut current 3 = Two switches at full retracted/extended positions to send signal <a href="#">See page 10</a>		
<b>IP Rating</b>	1 = Without	2 = IPX4	3 = IPX6
<b>Output Signals</b>	0 = Without	2 = Two Hall sensors	3 = POT
<b>Connector</b>	1 = DIN 6P, 90° plug <a href="#">See page 11</a>	2 = Tinned leads	F = DIN 6P, 180° socket
<b>Cable Length (mm)</b>	1 = Straight, 500 2 = Straight, 750	3 = Straight, 1000 4 = Straight, 1250	5 = Straight, 1500 6 = Straight, 1750

## Note

1 TL3 is designed especially for push applications, not suitable for pull applications.



# TL3 - Direct Cut Ordering Key

TL3

Version: 20170613-J

<b>Voltage</b>	5 = 24V, thermal protector		
<b>Load and Speed</b>	<a href="#">See page 3</a>		
<b>Stroke (mm)</b>	100-1200		
<b>Retracted Length (mm)</b>	<a href="#">See page 10</a>		
<b>Cable Exit</b>	B = Top side- for TH; Bottom side- for TP C = Bottom side- Y cable, for TH + TP D = Top side- for the 2nd column; Bottom side- for TH & TP; direct cut operation with 2 columns E = Top side- for the 2nd column & TH; Bottom side- for TP; direct cut operation with 2 columns		
<b>Special Functions for Spindle Sub-Assembly</b>	0 = Without (standard)		
<b>Functions for Limit Switches</b>	1 = Two switches at full retracted/extended positions to cut current		
	<a href="#">See page 10</a>		
<b>IP Rating</b>	1 = Without	2 = IPX4	3 = IPX6
<b>Output Signals</b>	0 = Without		
<b>Connector</b>	C = Direct cut, water proof, anti-pull		
	<a href="#">See page 11</a>		
<b>Cable Length (mm)</b>	B = Cable exit #B, L2=L3=100	D = Cable exit #D, L2=L3=L4=100	
	C = Cable exit #C, L1=L2=L3=100	E = Cable exit #E, L2=L3=L4=100	

## Note

1 TL3 is designed especially for push applications, not suitable for pull applications.

## Retracted Length (mm)

1. Minimum retracted length needs to  $\geq A+B+C$

**A. Retracted length (mm)**       $\text{Stroke}/2+150$  or  $\text{Stroke}/2+220$

## Note

1 Different retracted length is relative to different bending moment, [See page 3](#).

## B. Cable exit







CODE	Type		
	Top end socket	Side cable	Direct cut
1	-	-	-
2, 3	-	+20	-
B, D, E	-	-	+40
C	-	-	+20

## C. Output signal

CODE	Cable exit		
	Top end socket	Side cable	
	1	2	3
3	+40	+20	+40

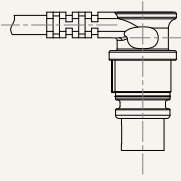
## Functions for Limit Switches

### Wire Definitions

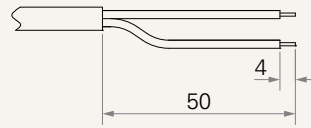
CODE	Pin					
	1	2	3	4	5	6
	 (green)	 (red)	 (white)	 (black)	 (yellow)	 (blue)
1	extend (VDC+)	N/A	N/A	N/A	retract (VDC+)	N/A
3	extend (VDC+)	common	upper limit switch	N/A	retract (VDC+)	lower limit switch

## Connector

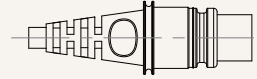
1 = DIN 6pin, 90° plug



2 = Tinned leads



F = DIN 6pin, 180° plug

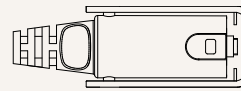
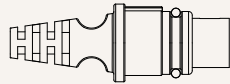
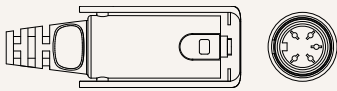


C = Direct cut, water proof, anti-pull

For TH: long DIN 5P (Pin array 240°), 180° socket (with anti-pull clip)

For TP: long DIN 5P (Pin array 240°), 180° plug (with O-ring)

For Column 2: long DIN 6P (Pin array 240°), 180° socket (with anti-pull 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.