# TA9
## series

**TiMOTION**

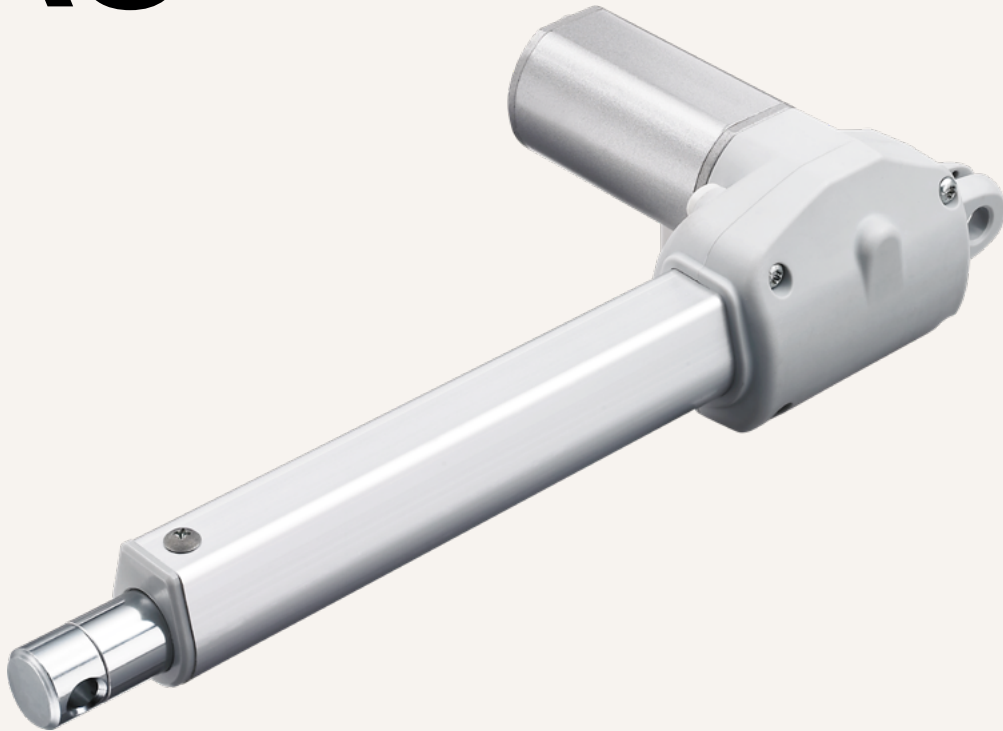## Product Segments

- **Comfort Motion**
- **Ergo Motion**

TiMOTION's TA9 series linear actuator was designed as an economical, compact solution specifically for the furniture industry where force cannot be sacrificed. This linear actuator is designed with a custom gear box, molded with a specially formulated plastic material which allows the TA9 to support load ratings up to 2500N. An EMC certification has been attained for this series, which is also available with optional IP54 or IP66 protection.

### General Features

| | |
|---|---|
| Voltage of motor | 12V DC or 24V DC |
| Maximum load | 2,500N in push |
| Maximum load | 1,000N in pull |
| Maximum speed at full load | 24.5mm/s (with 300N in a push or pull condition) |
| Minimum installation dimension | ≥ Stroke + 140mm |
| Color | Black or grey |
| IP rating | Up to IP66 |
| Certificate | IEC60601-1, ES60601-1, IEC60601-1-2, UL962, EMC |
| Operational temperature range | +5°C~+45°C |
| Options | Hall sensor(s) |

## Drawing

Standard Dimensions
(mm)



Retracted Length
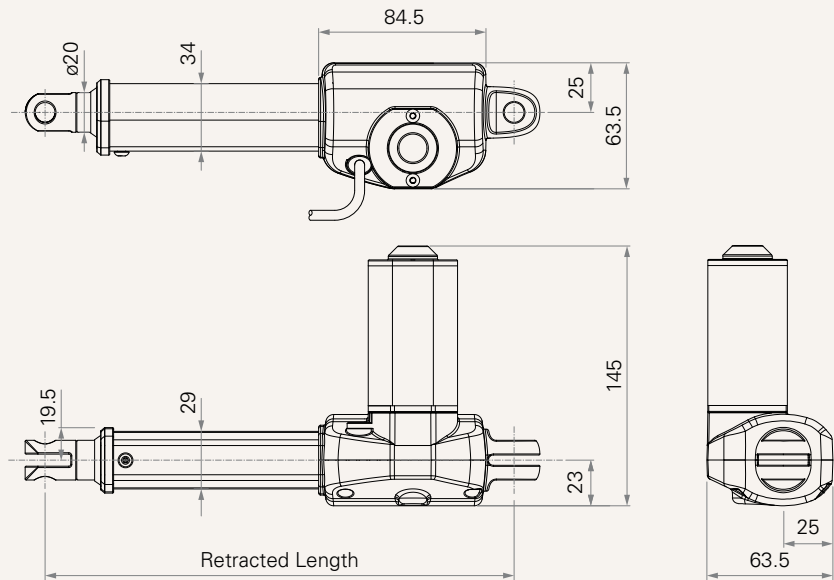
## Load and Speed

| CODE | Load (N) | | Self Locking Force (N) | Typical Current with Load (A) | Typical Speed (mm/s) | |
|------|----------|------|--------|--------|----------|----------|
| | Push | Pull | | | No Load 32V DC | With Load 24V DC |
| **Motor Speed (4100RPM)** | | | | | | |
| A | 2000 | 1000 | 2000 | 2.8 | 9.8 | 4.8 |
| B | 1500 | 1000 | 800 | 2.8 | 13.6 | 6.4 |
| C | 1000 | 1000 | 300 | 3.2 | 26.0 | 10.9 |
| D | 800 | 800 | 200 | 3.5 | 37.0 | 15.3 |
| F | 500 | 500 | 100 | 3.5 | 58.0 | 24.0 |
| **Motor Speed (3800RPM)** | | | | | | |
| G | 2500 | 1000 | 2500 | 2.8 | 9.5 | 5.0 |
| H | 2000 | 1000 | 1000 | 3.0 | 13.3 | 7.0 |
| I | 1500 | 1000 | 500 | 4.0 | 26.2 | 11.0 |
| K | 1000 | 1000 | 250 | 4.0 | 36.5 | 16.0 |
| L | 700 | 700 | 150 | 4.0 | 57.0 | 24.0 |
| **Motor Speed (3300RPM)** | | | | | | |
| M | 1500 | 1000 | 1500 | 1.8 | 8.0 | 4.0 |
| N | 1000 | 1000 | 800 | 1.8 | 11.2 | 5.9 |
| O | 500 | 500 | 300 | 1.4 | 21.6 | 11.3 |
| P | 400 | 400 | 200 | 1.4 | 30.0 | 15.7 |
| Q | 300 | 300 | 100 | 1.4 | 47.0 | 24.5 |
| **Motor Speed (2200RPM)** | | | | | | |
| V | 2000 | 1000 | 2000 | 1.5 | 5.7 | 2.6 |
| R | 1500 | 1000 | 1000 | 1.5 | 8.2 | 3.7 |
| S | 1000 | 1000 | 500 | 1.5 | 15.4 | 6.0 |
| T | 700 | 500 | 250 | 1.3 | 22.8 | 10.0 |
| U | 500 | 300 | 150 | 1.3 | 36.0 | 16.0 |

## Note

**1** The current & speed in table are tested when the actuator is extending under push load..

**2** 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.

**3** 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)
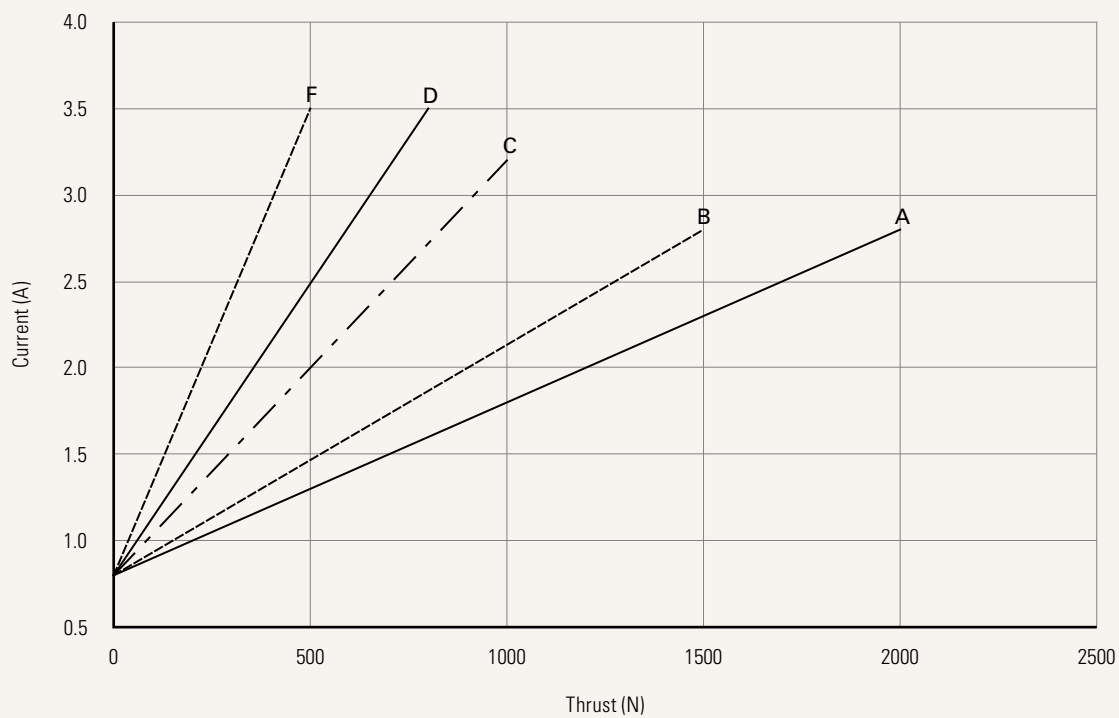
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**Performance Data (24V DC Motor)**

Motor Speed (4100RPM)
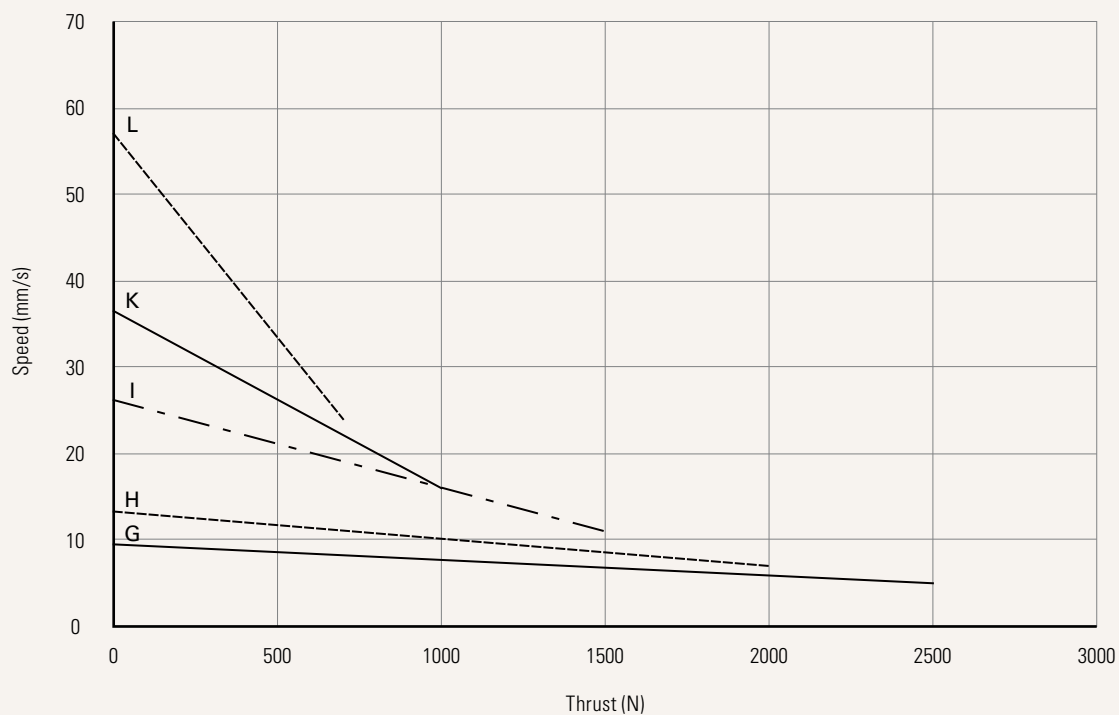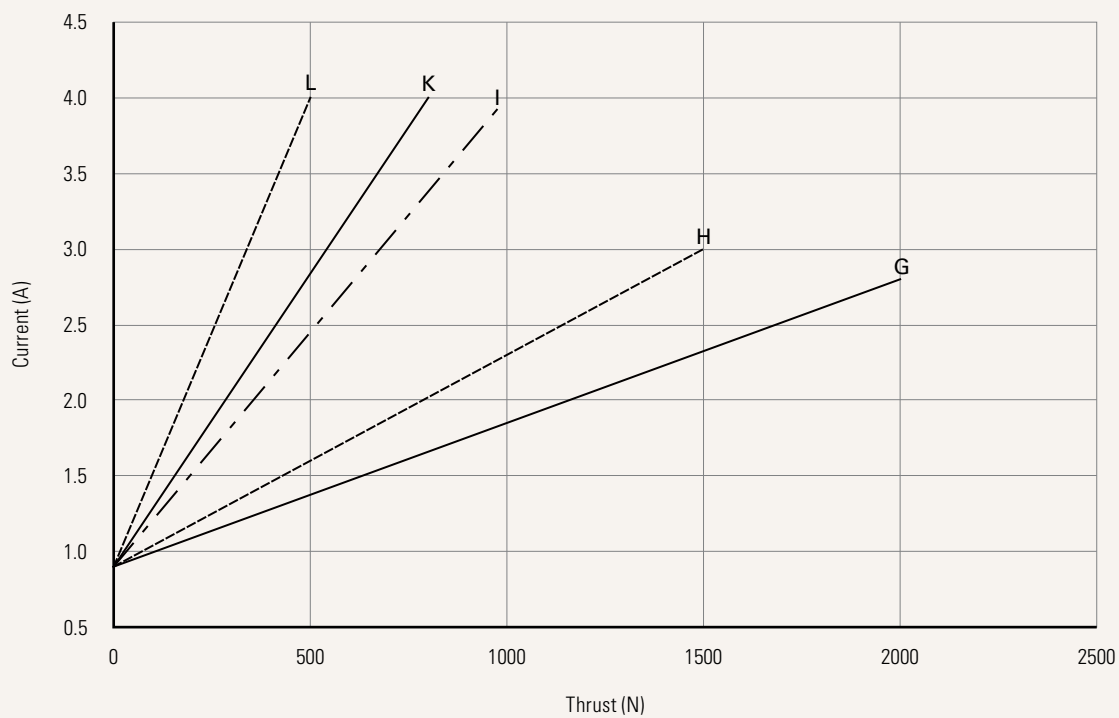
## Speed vs. Thrust
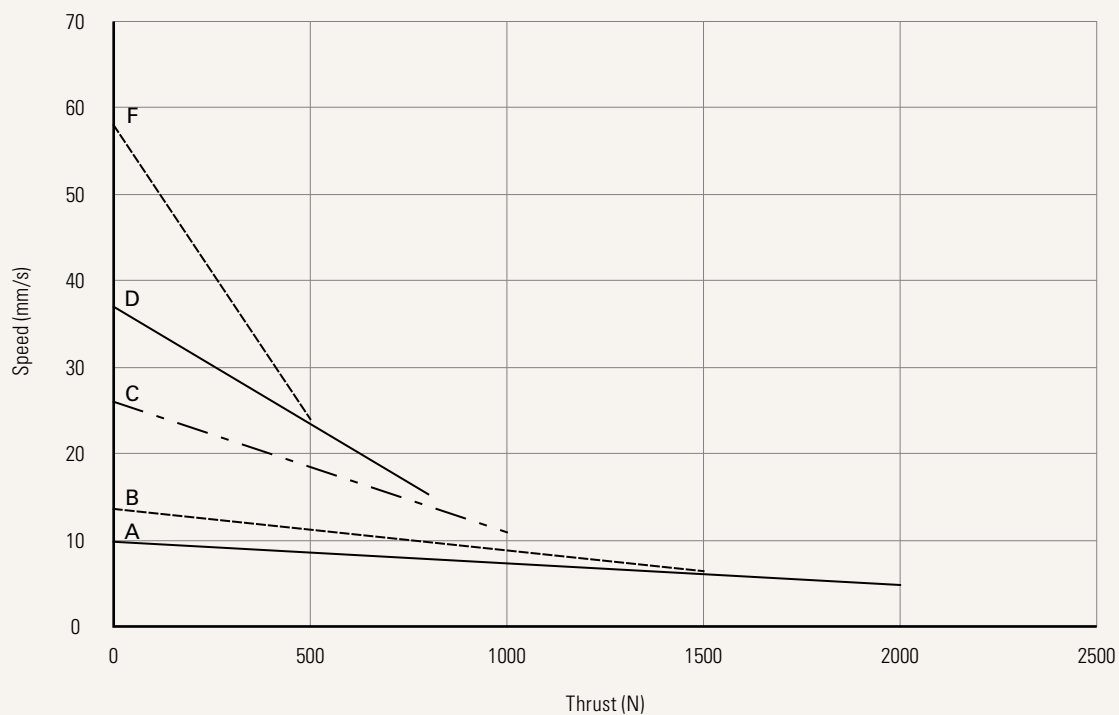


## Current vs. Thrust

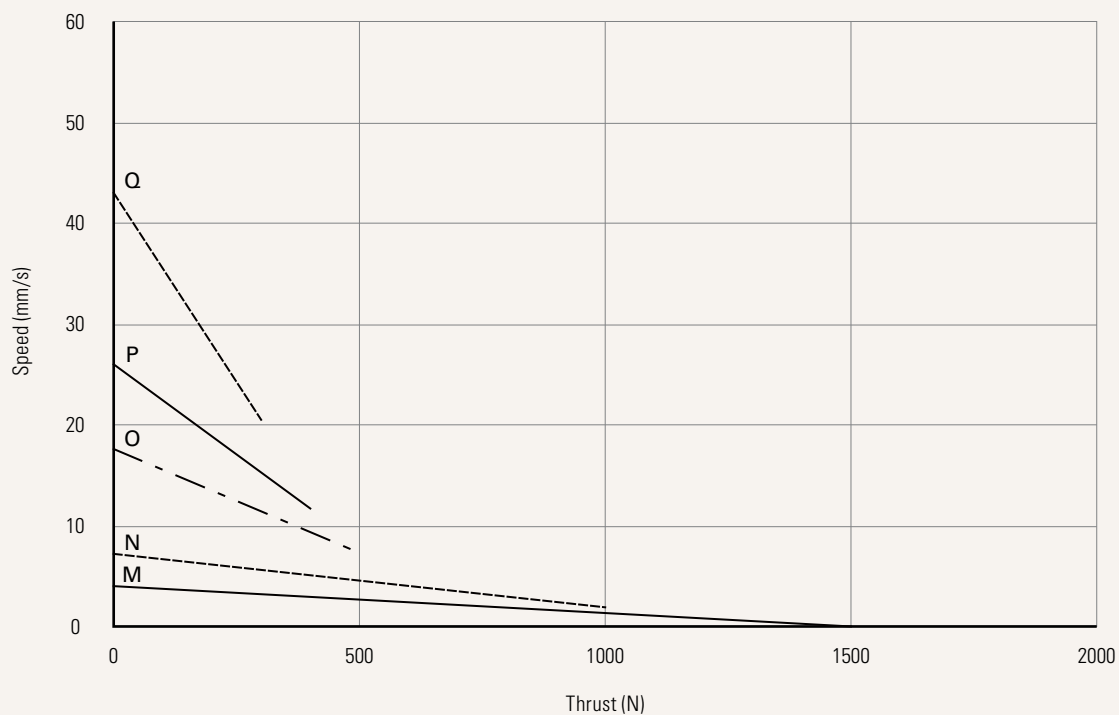**Performance Data (24V DC Motor)**

Motor Speed (3800RPM)

## Speed vs. Thrust
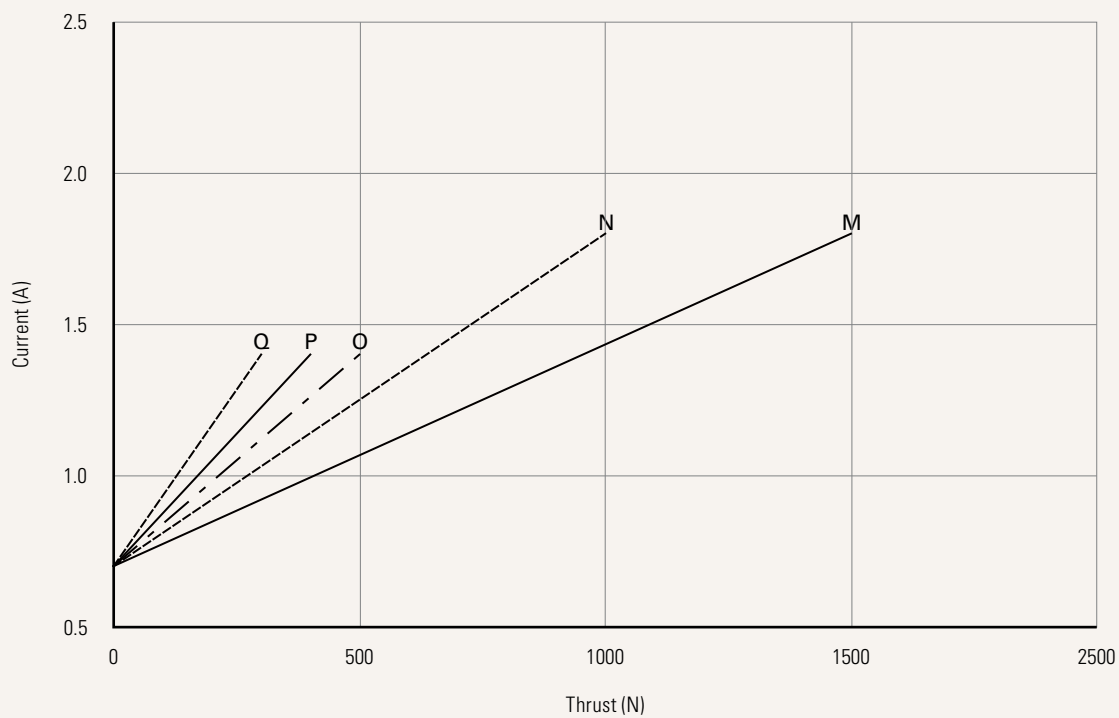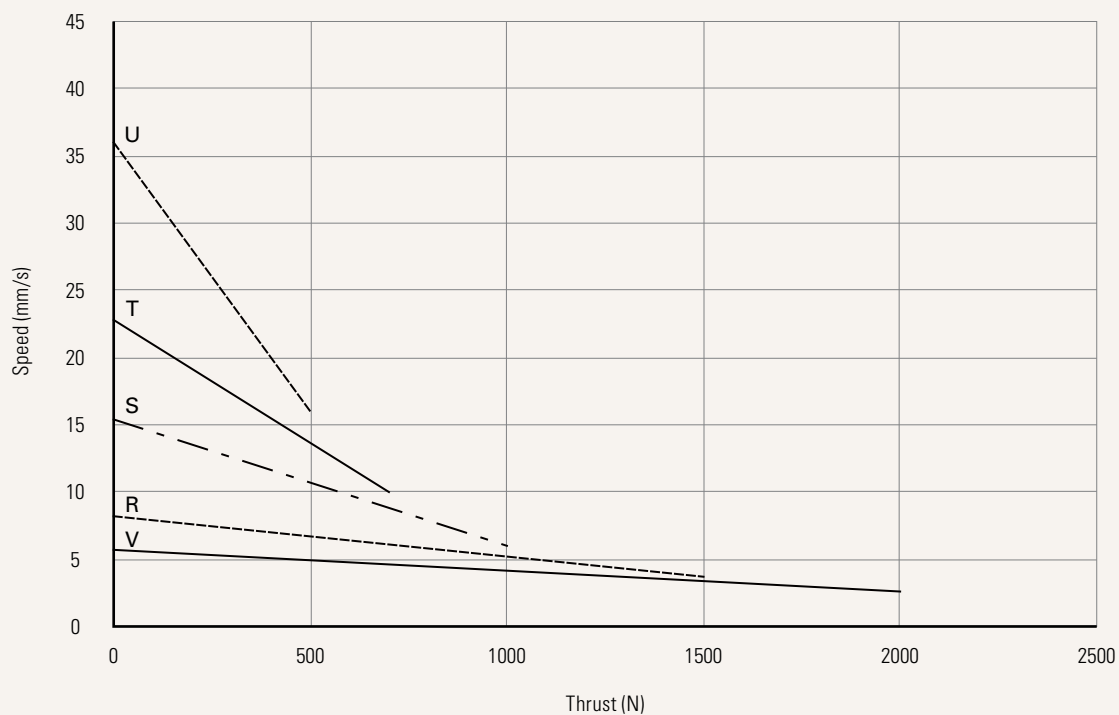


## Current vs. Thrust



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

Motor Speed (3300RPM)

## Speed vs. Thrust



## Current vs. Thrust



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

Motor Speed (2200RPM)

## Speed vs. Thrust



## Current vs. Thrust



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# **TA9** Ordering Key

## TA9

| | | | | |
|---|---|---|---|---|
| **Voltage** | 1 = 12V | 2 = 24V | | |
| **Load and Speed** | See page 2 | | | |
| **Stroke (mm)** | | | | |
| **Retracted Length (mm)** See page 8 | Stroke + 140 (For front attachment 1, 2) Note: before selecting retracted length, please refer to the additional retracted length chart | | Stroke + 153 (For front attachment 3, 4) | |
| **Rear Attachment (mm)** See page 8 | 1 = Hole 8, slot 5 | | | |
| **Front Attachment (mm)** See page 8 | 1 = Hole 8 | 3 = U clevis, slot 6, hole 8 | | |
| **Direction of Rear Attachment (Counterclockwise)** See page 9 | 1 = 0° | 2 = 90° | | |
| **Color** | 1 = Black | 2 = Grey (Pantone 428C) | | |
| **IP Rating** | 1 = Without | 2 = IP54 | 3 = IP66 | |
| **Special Functions for Spindle Sub-Assembly** | 0 = Without (standard) | 2 = Standard push only | | |
| **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 | | | |
| **Output Signals** | 0 = Without | 4 = One Hall sensor | 5 = Two Hall sensors | |
| **Connector** See page 9 | 1 = DIN 6P, 90° plug | 2 = Tinned leads | | |
| **Cable Length (mm)** | 1 = Straight, 500 2 = Straight, 750 | 3 = Straight, 1000 4 = Straight, 1250 | 5 = Straight, 1500 6 = Straight, 2000 | 7 = Coiled, 200 8 = Coiled, 400 |

# **TA9** Ordering Key Appendix

## **Retracted Length (mm)**

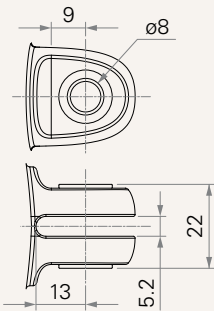| TA Series | Safety Stroke Limit | Additional Stroke | Additional Invalid Length |
|---|---|---|---|
| **TA9** | 200 | 0 < additional stroke ≤ 50 | 5 |

### **Note**

**1** Above stroke recommendation is based on safety stroke limit, for each additional 50mm stroke, it needs to add 5mm for the retracted length.

### **For example**

**1** If TA9's stroke is 201mm, the retracted length = 201mm + invalid length + 5mm.

**2** If TA9's stroke is 300mm, the retracted length = 300mm + invalid length +10mm.
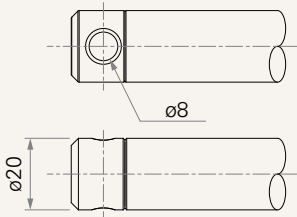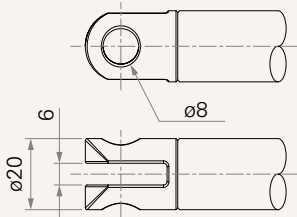
## **Rear Attachment (mm)**
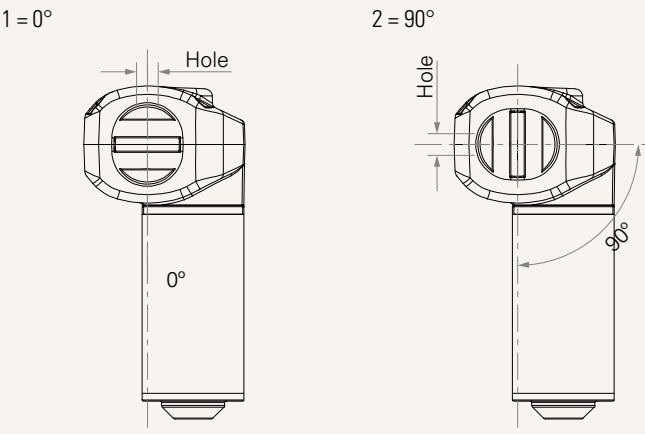
1 = Hole 8, slot 5



## **Front Attachment (mm)**

1 = Hole 8

3 = U clevis, slot 6, hole 8

# **TA9** Ordering Key Appendix

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## Direction of Rear Attachment (Counterclockwise)

1 = 0°                    2 = 90°



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## 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 |

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## Connector

1 = DIN 6P, 90° plug          2 = Tinned leads