

MA2

series



Product Segments

• Industrial Motion

TiMOTION's MA2 series linear actuator was specifically designed for applications which face harsh working environments and require ruggedness and durability. Its IP69K protection ensures it will withstand high temperature, high pressure water jets, and the ingress of dust and other solid contaminants. The MA2 also has optional Reed switches which allow users to perform on the fly stroke adjustments. For improved control and accuracy of motion, the MA2 can be customized with many different feedback options depending on your application requirements.

Example applications suitable for the MA2: Agricultural equipment such as spreaders, harvesters, grain handlers, combines and tractors.

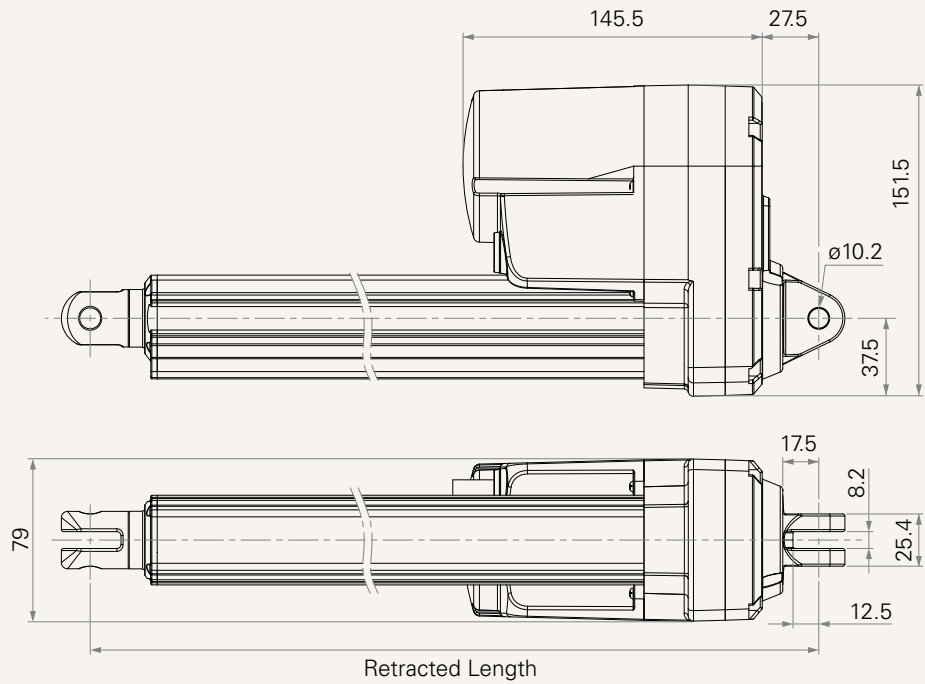
Commercial and industrial applications such as commercial lawn mowers, scrubbers and sweepers, material handling equipment and livestock ventilation systems.

General Features

Voltage of motor	12V DC, 24V DC, or 36V DC
Maximum load	6,000N in pull/push
Maximum speed at full load	45mm/s (under push/pull condition with 1000N)
Stroke	25~1000mm
Minimum installation dimension	Stroke+131mm
IP rating	Up to IP69K
Operational temperature range	-30°C~+65°C
Operational temperature range at full performance	+5°C~+45°C
Options	Hall sensor(s), POT, Reed sensor

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 24V DC	With Load 24V DC	No Load 24V DC	With Load 24V DC
Motor Speed (5200RPM, duty cycle 25%)							
F	1000	1000	1300	2.5	9.0	54.0	45.0
G	2000	2000	2600	2.2	9.0	28.5	22.0
H	4000	4000	5200	2.0	8.5	14.0	11.7
J	6000	6000	7800	2.0	7.0	7.0	6.2

Note

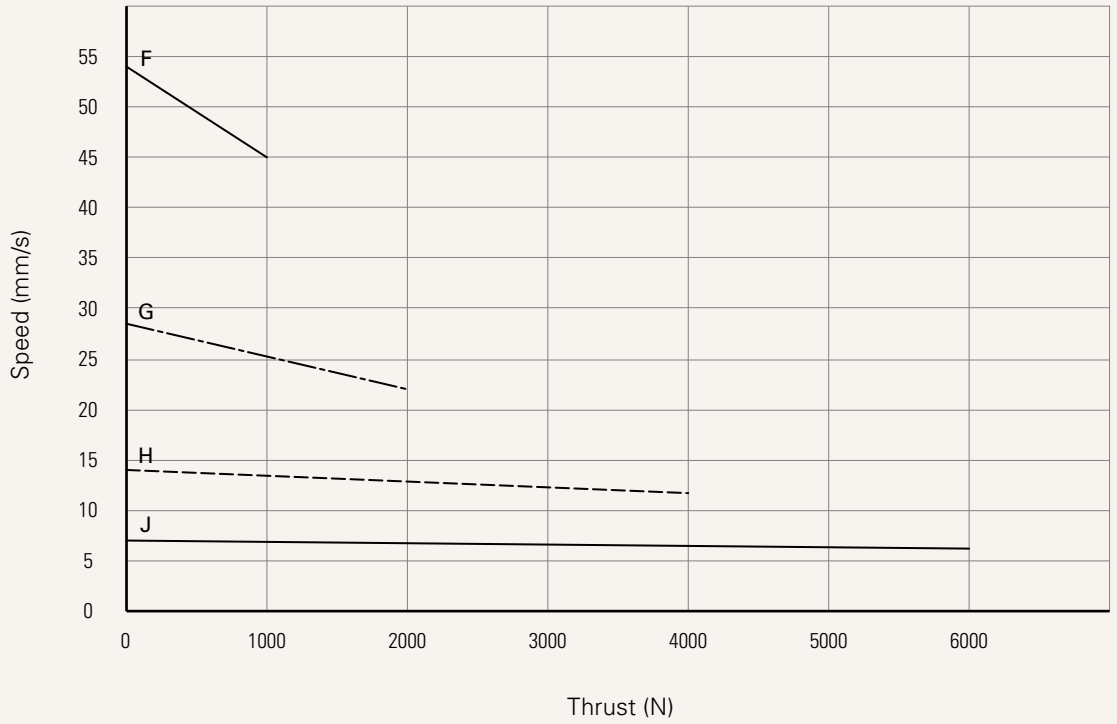
- 1 With a 12V motor, the current is approximately twice the current measured in 24V. With a 36V motor, the current is approximately two-thirds the current measured in 24V; speed will be similar for both voltages.
- 2 Self locking force: Tested average value when working with TiMOTION control system.
- 3 Standard stroke: 25~1000mm

LOAD	Operational temperature range at full performance	Operational temperature range
F, G, H, J	-30°C~+65°C	-30°C~+65°C

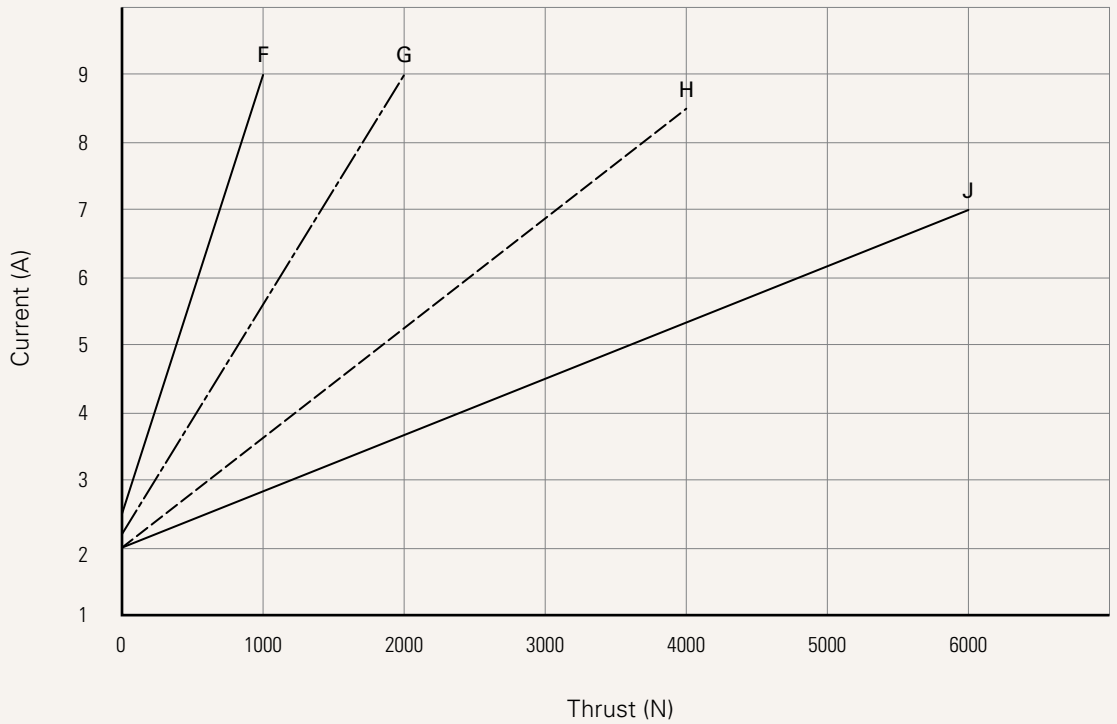
Performance Data

Motor Speed (5200RPM, duty cycle 25%)

Speed vs. Thrust



Current vs. Thrust



Note

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

Voltage	1 = 12V 2 = 24V	3 = 36V 5 = 24V, thermal control	6 = 12V, thermal control 7 = 36V, thermal control
Load and Speed	See page 2		
Stroke (mm)			
Retracted Length (mm)	See page 5		
Rear Attachment (mm)	1 = Aluminum casting, clevis U, slot 8.2, depth 12.5, hole 10.2 2 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 10.2 3 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 12.8		
Front Attachment (mm)	1 = Iron inner tube with punched hole, without slot, hole 10.2 3 = Iron inner tube with punched hole, without slot, hole 12.8 4 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 10.2 6 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 12.8 K = Rod end bearing, hole 12.8		
Direction of Rear Attachment (Counterclockwise)	1 = 90°	2 = 0°	
Functions for Limit Switches	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 1 = POT	4 = One Hall sensor 5 = Two Hall sensors	6 = One reed sensors on outer tube 7 = Two reed sensors on outer tube
Connector	2 = Tinned leads		
Cable Length	1 = Straight, 500mm 2 = Straight, 1000mm		3 = Straight, 1500mm 4 = Straight, 2000mm
IP Rating	1 = Without	2 = IP54	6 = IP66D 8 = IP69K
Manual Drive	0 = Without	1 = With	
T-Smart	0 = Without		

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.

Retracted Length (mm)

1. Calculate $A+B+C=Y$
2. Retracted length needs to \geq Stroke+Y

A. Attachment	Rear Attachment Code	
Front Attachment Code	1	2, 3
1, 3	+131	+134
4, 6	+161	+164
K	+178	+181

B. Load vs Stroke







Stroke (mm)	
0~150	-
151~200	-
201~250	+10
251~300	+20
301~350	+30
351~400	+40

For stroke over 400mm, +10 mm for each increment of 50mm stroke.

C. Output Signals

Code	
0, 4, 5, 6, 7	-
1	+20

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	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	

Note

* See ordering key - functions for limit switches