

MA2





Product Segments

Industrial Motion

TiMOTION's MA2 series electric linear actuator was specifically designed for applications that face harsh working environments and require heavy-duty and durability. Its IP69K protection ensures it will withstand high-pressure water jets and the ingress of dust and other solid contaminants. The MA2 electric cylinder actuator also has optional Reed switches along the outer tube which allow users to adjust the stroke length. 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

Max. load 8,000N (push); 4,000N (pull)

Max. speed at max. load 5.5mm/s
Max. speed at no load 52.5mm/s

Retracted length ≥ Stroke + 131mm

IP rating IP69K
Certificate UL73, EMC
Stroke 25~1000mm

Output Signals Hall sensors, POT, Reed sensor on the

outer tube

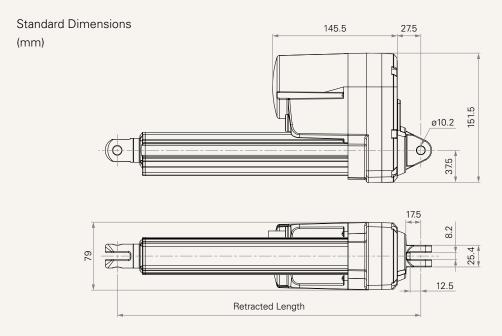
Voltage 12 / 24 / 36 / 48V DC; 12 / 24 / 36 / 48V DC

(thermal control)

Operational temperature range
Operational temperature range

at full performance Manual drive -30°C~+65°C +5°C~+45°C

Drawing



Load and Speed

CODE	DE Load (N)		Self Lock (N) Duty Cycle		Typical Current (A)		Typical Speed (mm/s)	
	Push	Pull	Motor brake	2	No Load 24V DC	With Load 24V DC	No Load 24V DC	With Load 24V DC
Motor Speed (5200RPM)								
F	1000	1000	1300	25%	2.7	6.8	52.5	44.2
G	2000	2000	2600	25%	2.4	6.7	25.5	21.8
Н	4000	4000	5200	25%	2.3	6.9	13.2	11.0
J	6000	4000	8000	25%	2.0	5.8	6.6	5.8
K	8000	4000	8000	15%	2.0	6.9	6.6	5.5

Note

- 1 Please refer to the approved drawing for the final authentic value.
- 2 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.
- 3 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. With a 36V DC motor, the current is approximately two-thirds the current measured in 24V DC. Speed will be similar for all the voltages.
- 4 The current & speed in table are tested when the actuator is extending under push load.
- 5 The current & speed in table and diagram are tested with a stable 24V DC power supply.
- 6 Standard stroke: Min. ≥ 25mm, Max. please refer to below table.

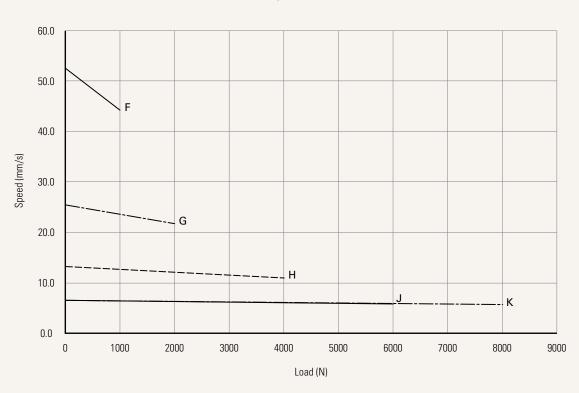
CODE	Load (N)	Max Stroke (mm)
F	≤ 1000	1000
G	≤ 2000	800
H, J	≤ 6000	600
K	≤ 8000	200



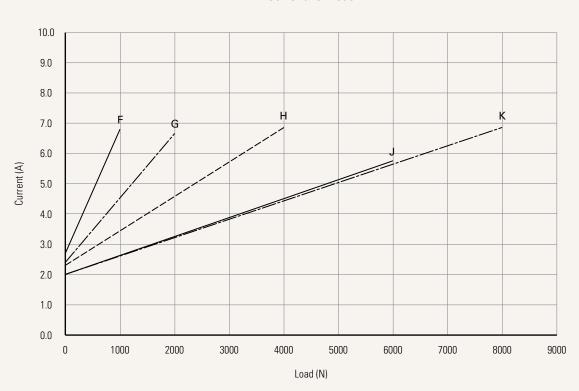
Performance Data (24V DC Motor)

Motor Speed (5200RPM)

Speed vs. Load



Current vs. Load





MA2 Ordering Key



MA2

Version: 20220415-I

				Version: 202204			
Voltage	1 = 12V DC		5 = 24VDC, thermal pro	otector			
	2 = 24V DC		6 = 12VDC, thermal pro	otector			
	3 = 36V DC		7 = 36VDC, thermal pro	otector			
	4 = 48V DC		8 = 48V DC, thermal cu	ıtoff			
Load and Speed	See page 2						
Stroke (mm)	See page 2						
Retracted Length mm)	See page 5						
Rear Attachment	1 = Aluminum casting, clevis U, slot 8.2, depth 12.5, hole 10.2						
See page 6	•	, clevis U, slot 8.2, depth 15.					
<u>see page o</u>	•	, clevis U, slot 8.2, depth 15.					
		, clevis U, slot 8.2, depth 15.					
Front Attachment (mm)		th punched hole, without slo					
See page <u>6</u>		th punched hole, without slo					
occ page o		th punched hole, without slo					
	ŭ	, clevis U, slot 8.2, depth 15.					
	_	, clevis U, slot 8.2, depth 15. , clevis U, slot 8.2, depth 15.					
	K = Rod end bearing,		0, 11016-12.0				
Direction of nstallation Counterclockwise)	1 = 90°	2 = 0°					
See page 7							
Functions for	1 = Two switches at full retracted / extended positions to cut current						
Limit Switches	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 6 = Two switches at full retracted / extended positions to cut current + send signal						
	b = Iwo switches at fi	ull retracted / extended posit	ions to cut current + send si	gnai ————————————————————————————————————			
Reed Sensor on the Outer Ttube	0 = Without	1 = Reed sensor*1	2 = Reed sensor*2				
Output Signal	0 = Without	1 = POT	5 = Hall sensor*2				
Connector	2 = Tinned leads						
See page 7							
Cable Length (mm)	1 = Straight, 500	2 = Straight, 1000	3 = Straight, 1500	4 = Straight, 2000			
P Rating	1 = Without	3 = IP66	8 = IP69K				
	2 = IP54	6 = IP66D					
Manual Drive	1 = With						
Γ-Smart	0 = Without						

4

MA2 Ordering Key Appendix



Retracted Length (mm)

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

A. Rear/ Front	Attachment					
Front Attachment	Rear Attachment					
	1	2, 3, 4				
1, 2, 3	+131	+134				
4, 5, 6	+161	+164				
К	+178	+181				
C. Output Sign	al					
0, 5	-					
1	+20					

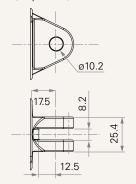
B. Stroke (mm)	
25~150	-
151~200	-
201~250	+10
251~300	+20
301~350	+30
351~400	+40
401~450	+50
451~500	+60
501~550	+70
551~600	+80
601~650	+90
651~700	+100
701~750	+110
751~800	+120
801~850	+130
851~900	+140
901~950	+155
951~1000	+160

MA2 Ordering Key Appendix

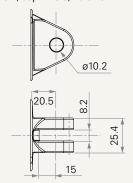
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Rear Attachment (mm)

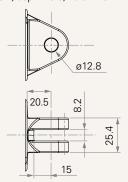
1 = Aluminum casting, clevis U, slot 8.2, depth 12.5, hole 10.2



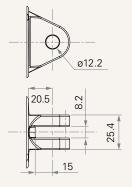
2 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 10.2



3 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 12.8

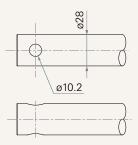


4 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 12.2

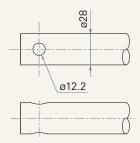


Front Attachment (mm)

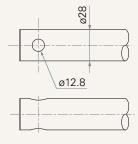
1 = Iron inner tube with punched hole, without slot, hole 10.2



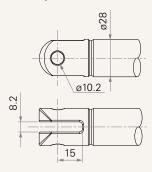
2 = Iron inner tube with punched hole, without slot, hole 12.2



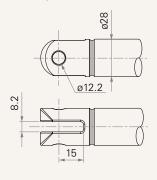
3 = Iron inner tube with punched hole, without slot, hole 12.8



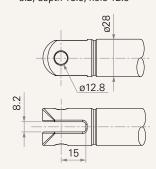
4 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 10.2



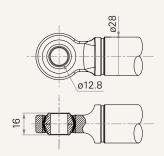
5 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 12.2



6 = Aluminum casting, clevis U, slot 8.2, depth 15.0, hole 12.8



K = Rod end bearing, hole 12.8



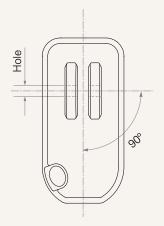
MA2 Ordering Key Appendix

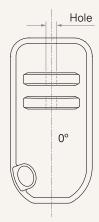


Direction of Rear Attachment (Counterclockwise)

1 = 90°

2 = 0°





Connector

2 = Tinned leads



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