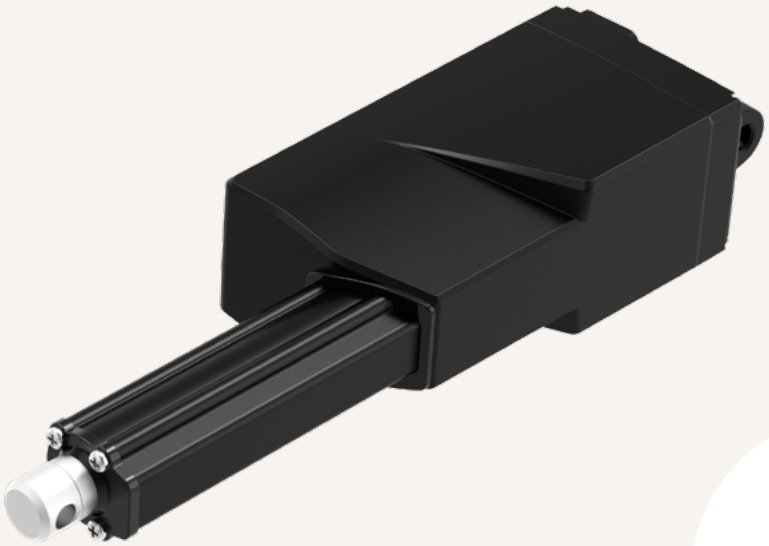
MA5

series



Product Segments

- **Industrial Motion**

TiMOTION's MA5 linear actuator is specifically designed for applications which face harsh working environments and require ruggedness and durability. Its IP69K protection can withstand high temperature, high pressure water jets, and the ingress of dust and other solid contaminants.

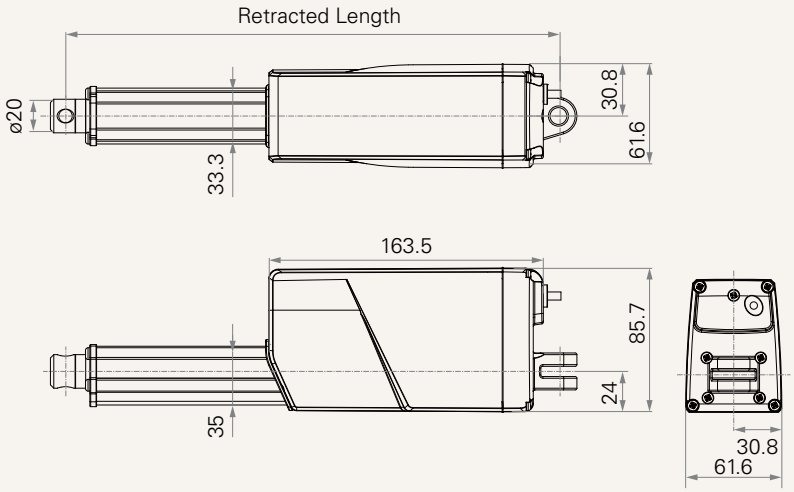
The MA5 can also be customized with various feedback options depending on the application requirements; moreover, it can be equipped with a grease nipple to increase the protection degree and life cycle. Suitable applications for MA5 include agricultural equipment, such as spreaders, harvesters, and grain handlers.

General Features

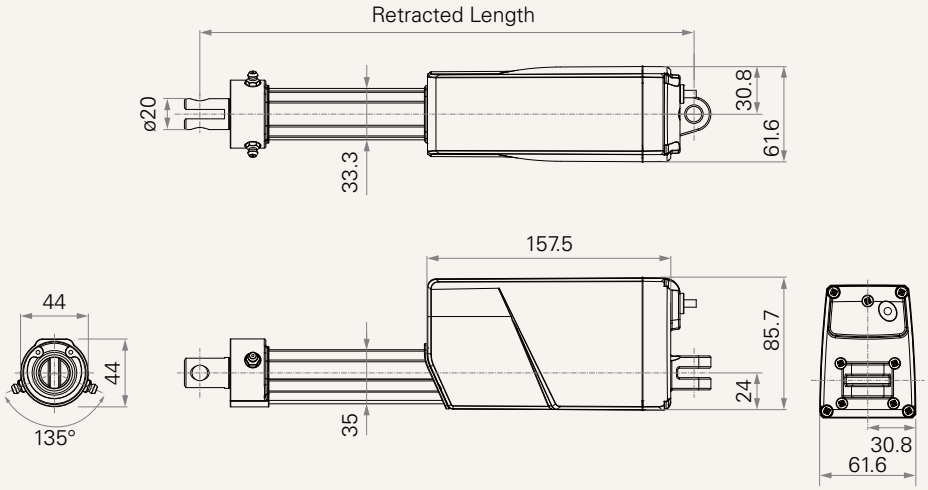
Maximum load	3,500N in push
Maximum load	2,000N in pull
Maximum speed at full load	45mm/s (with 250N in a push or pull condition)
Stroke	20~1000mm
Minimum installation dimension	≥238 or 250mm (upon the front attachment)
IP rating	Up to IP69K
Operational temperature range	-25˚C~+65˚C
Operational temperature range at full performance	+5˚C~+45˚C
Options	Hall sensor(s), POT

Drawing

Standard Dimensions (mm)



With Grease Chamber 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%)							
A	250	250	250	1.2	2.3	43.0	36.0
B	500	500	500	1.1	2.3	25.8	23.0
C	1000	1000	1000	1.1	2.3	14.0	11.8
D	1500	1500	1500	1.0	2.2	9.0	8.0
E	2000	2000	2000	1.0	2.2	7.1	6.2
W	500	500	500	1.3	5.0	54.0	35.0
Motor Speed (6600RPM, duty cycle 25%)							
F	250	250	250	1.6	2.8	56.5	45.0
G	500	500	500	1.5	2.8	32.5	28.5
H	1000	1000	1000	1.5	2.8	16.5	14.3
K	1500	1500	1500	1.3	2.8	11.1	10.0
L	2000	2000	2000	1.3	2.8	8.8	7.7
Motor Speed (3800RPM, duty cycle 25%)							
S	3500	2000	3500	0.9	2.8	3.2	2.4
Motor Speed (2200RPM, duty cycle 25%)							
T	2000	2000	2000	0.3	1.2	3.2	2.4

Note

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

2 Standard stroke: Min. ≧20mm, Max. please refer to below table.

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 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.

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

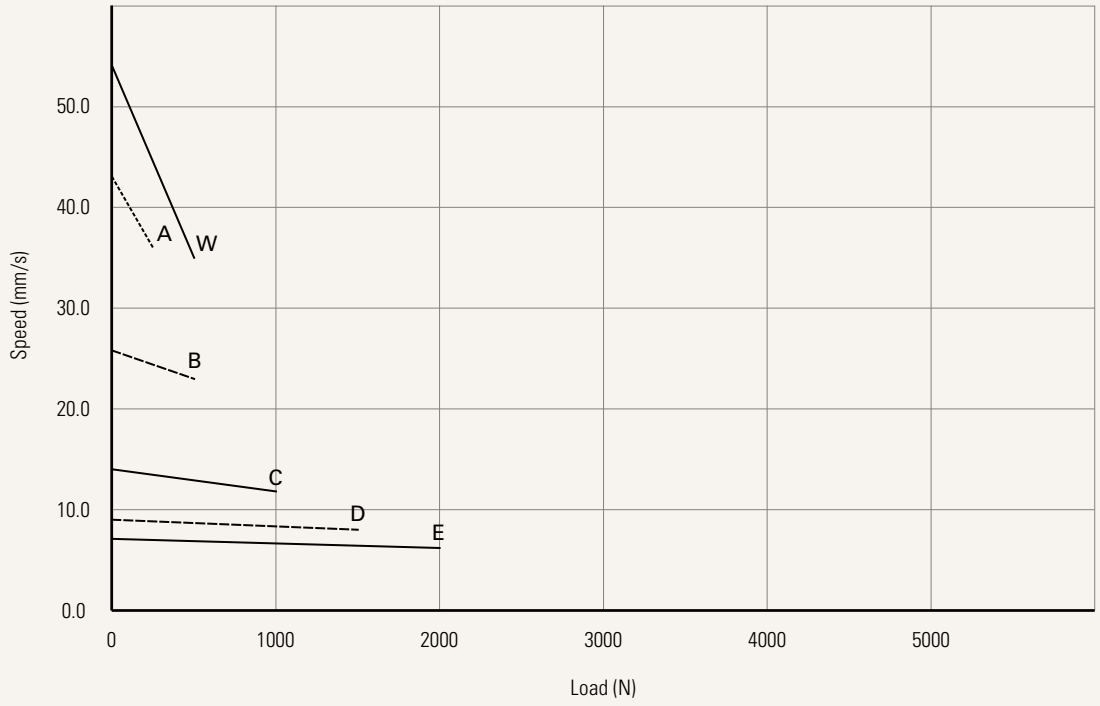
6 The current & speed in table and diagram are tested with a stable 24V DC power supply.

CODE	Load (N)	Max Stroke (mm)	CODE	Load (N)	Max Stroke (mm)
A, F	≦ 250	1000	**D, K**	≦ 1500	500
B, G, W	≦ 750	800	**E, L, T**	≦ 2000	450
C, H	≦ 1000	600	**S**	≦ 3500	300

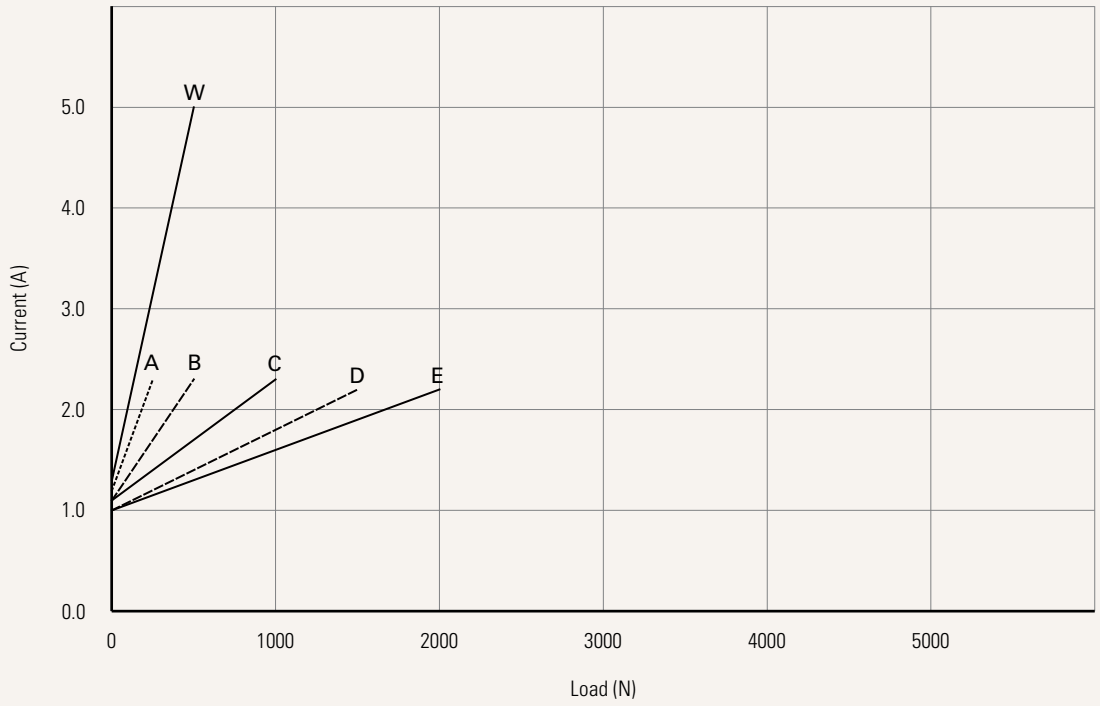
Performance Data (24V DC Motor)

Motor Speed (5200RPM)

Speed vs. Load



Current vs. Load



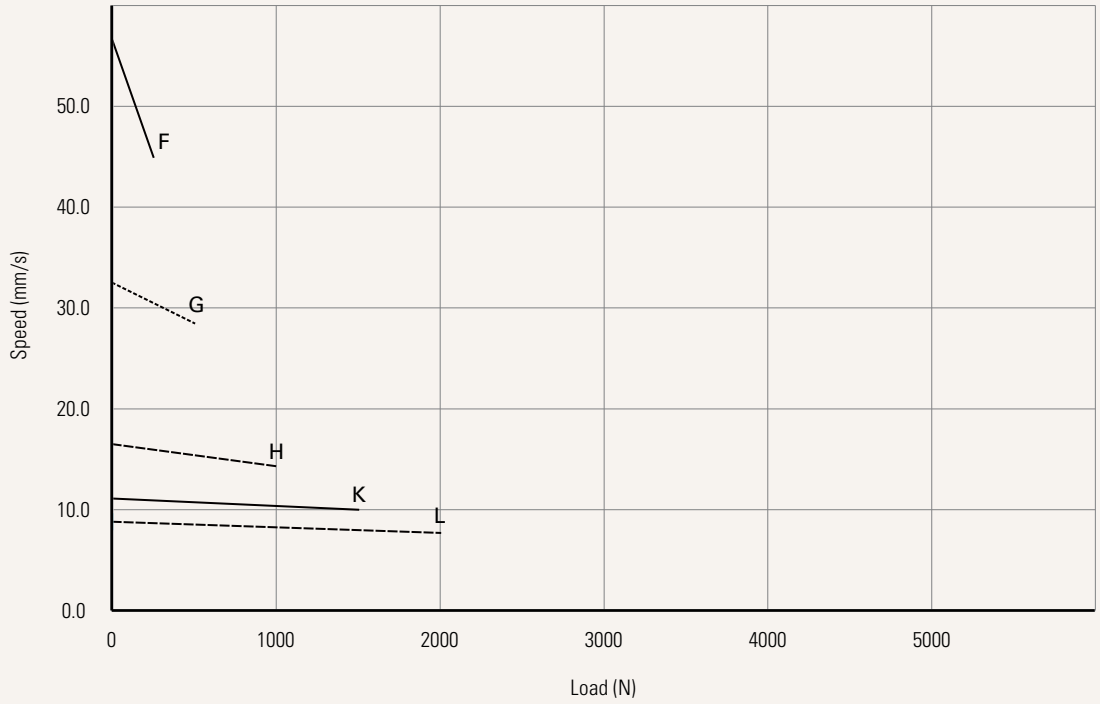
Note

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

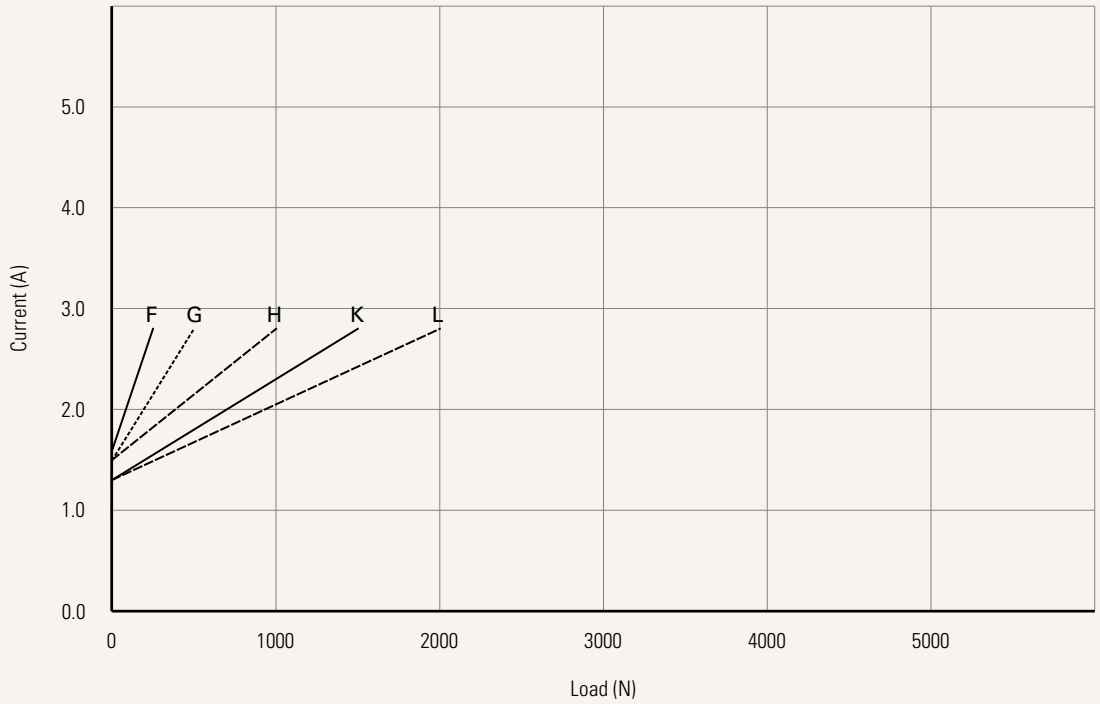
Performance Data (24V DC Motor)

Motor Speed (6600RPM)

Speed vs. Load



Current vs. Load



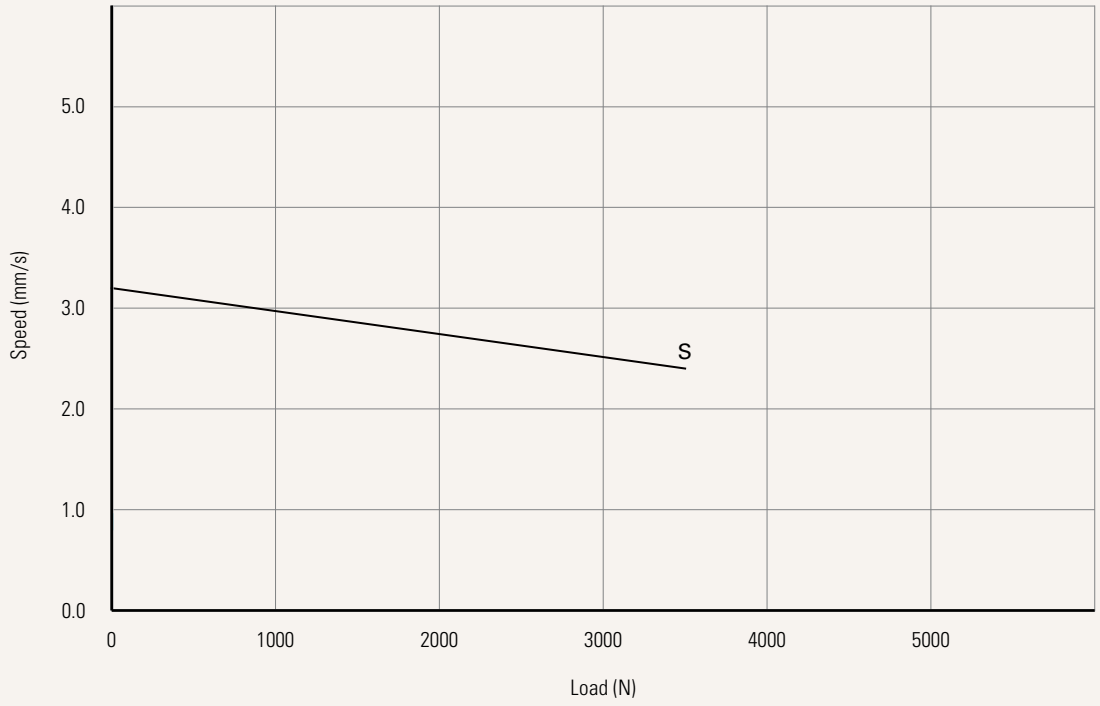
Note

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

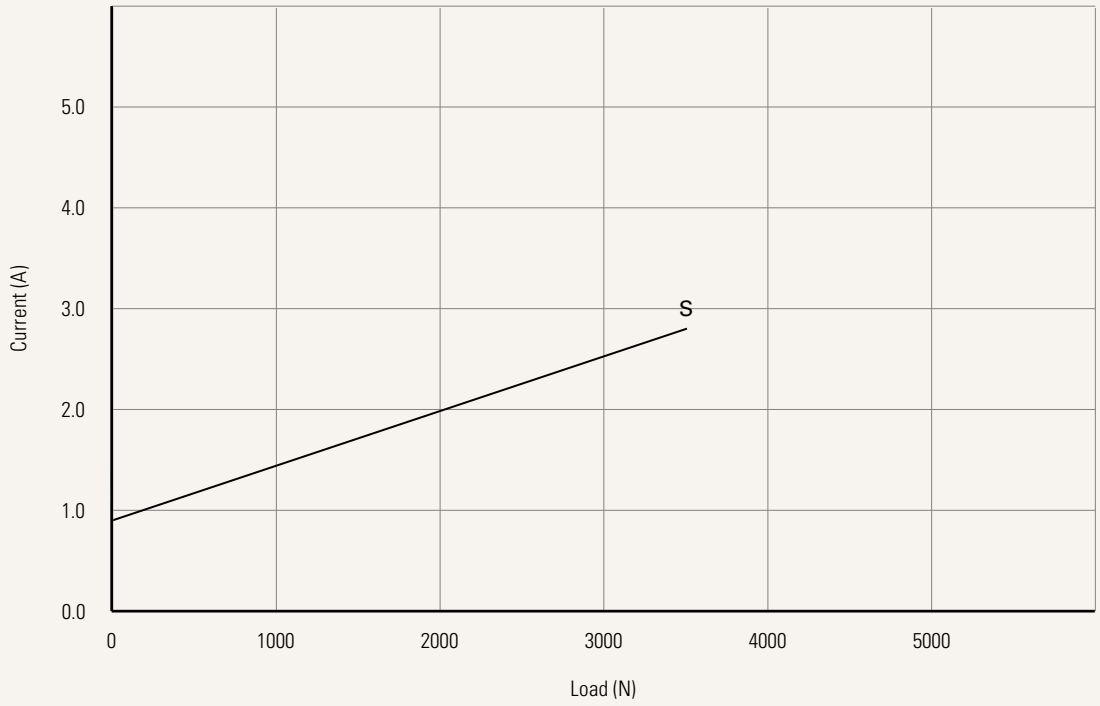
Performance Data (24V DC Motor)

Motor Speed (3800RPM)

Speed vs. Load



Current vs. Load



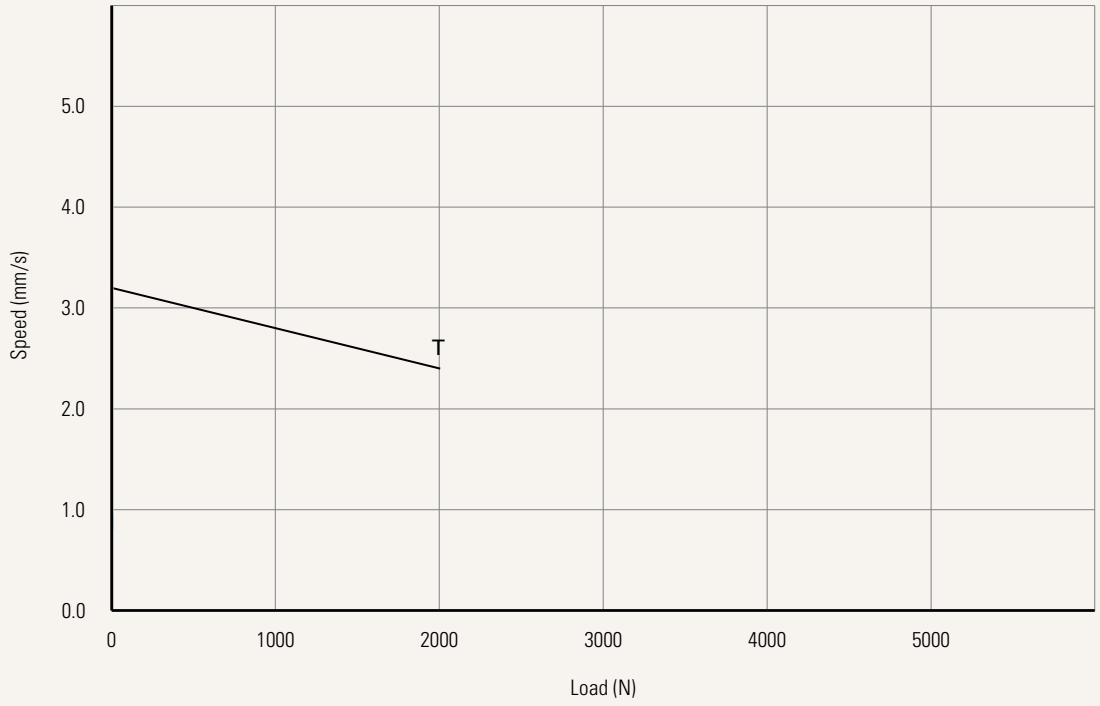
Note

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

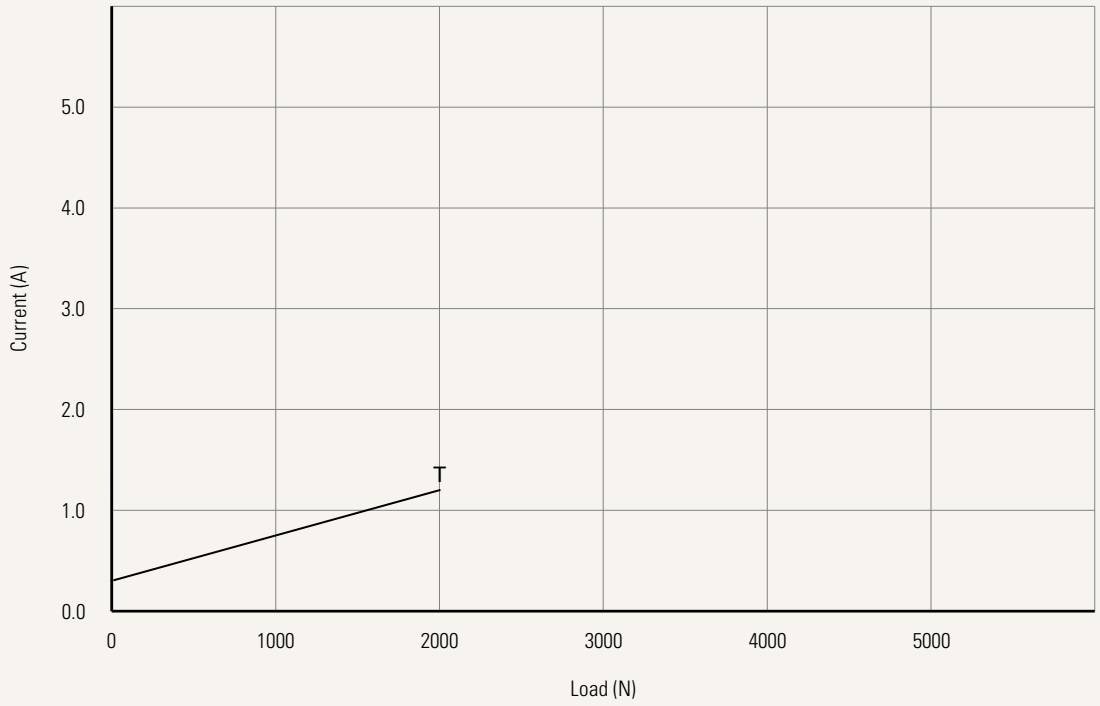
Performance Data (24V DC Motor)

Motor Speed (2200RPM)

Speed vs. Load



Current vs. Load



Note

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

MA5 Ordering Key

MA5

Version: 20181015-B

Voltage	1 = 12V DC	2 = 24V DC	5 = 24V DC, PTC	6 = 12V DC, PTC
Load and Speed	See page 3			
Stroke (mm)				
Retracted Length (mm)	See page 9			
Rear Attachment (mm) See page 10	4 = Aluminum casting, U clevis, slot 6.0, width 10.5, hole 6.4, one piece casting with gear box 5 = Aluminum casting, U clevis, slot 6.0, width 10.5, hole 8.0, one piece casting with gear box		6 = Aluminum casting, U clevis, slot 6.0, width 10.5, hole 10.1, one piece casting with gear box	
Front Attachment (mm) See page 10	1 = Aluminum casting, hole 6.4 2 = Aluminum casting, hole 8.0 3 = Aluminum CNC, U clevis, slot 6.0, depth 16.0, hole 10.0		4 = Aluminum CNC, U clevis, slot 6.0, depth 16.0, hole 6.4 5 = Aluminum CNC, U clevis, slot 6.0, depth 16.0, hole 8.0	
Direction of Rear Attachment (Counterclockwise) See page 10	2 = 0°			
Functions for Limit Switches See page 11	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 = Hall sensor*1	5 = Hall sensor*2
Connector See page 11	1 = DIN 6P, 90° plug	2 = Tinned leads		
Cable Length (mm)	1 = Straight, 300	2 = Straight, 600	3 = Straight, 1000	
IP Rating	6 = IP66D	9 = IP69K		
Grease Nipple	0 = Without	1 = Grease nipple*1	2 = Grease nipple*2	

MA5 Ordering Key Appendix

Retracted Length (mm)

1. Calculate A+B+C = Y
2. Retracted length needs to ≥ Stroke + Y
3. Front attachment #1, #2, min retracted length ≥ 238mm
   Front attachment #3, #4, #5, min retracted length ≥ 250mm

A. Front Attachment	
1, 2	+112
3, 4, 5	+124

C. Ouput Signals	
0, 4, 5	-
1	+30

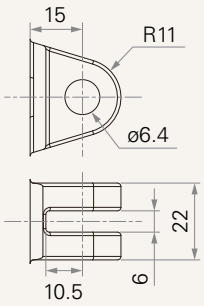
B. Load V.S. Stroke		
Stroke (mm)	Load (N)	
	< 3500	= 3500
~150	-	+5
151~200	+2	+7
201~250	+2	+7
251~300	+2	+7
301~350	+12	+17
351~400	+22	+27
401~450	+32	+37
451~500	+42	+47
501~550	+52	+57
551~600	+62	+67
601~650	+72	+77
651~700	+82	+87
701~750	+92	+97
751~800	+102	+107
801~850	+112	+117
851~900	+122	+127
901~950	+132	+137
951~1000	+142	+147

D. Grease Chamber	
0	-
1, 2	+10

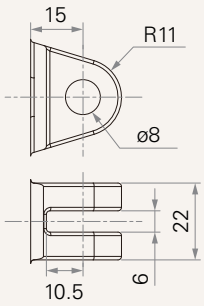
MA5 Ordering Key Appendix

Rear Attachment (mm)

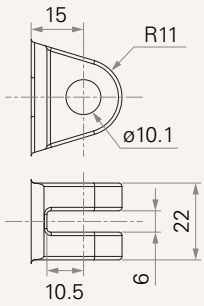
4 = Aluminum casting, U clevis, slot 6.0, width 10.5, hole 6.4, one piece casting with gear box



5 = Aluminum casting, U clevis, slot 6.0, width 10.5, hole 8.0, one piece casting with gear box

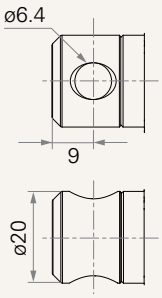


6 = Aluminum casting, U clevis, slot 6.0, width 10.5, hole 10.1, one piece casting with gear box

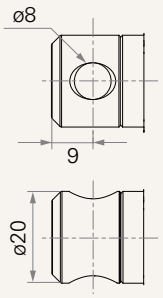


Front Attachment (mm)

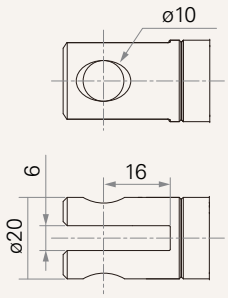
1 = Aluminum casting, hole 6.4



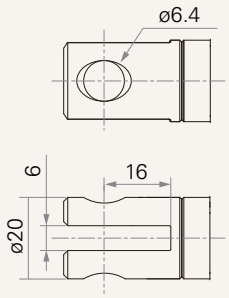
2 = Aluminum casting, hole 8.0



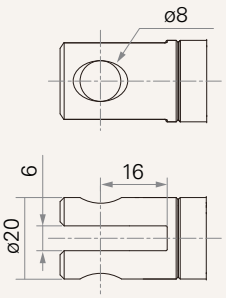
3 = Aluminum CNC, U clevis, slot 6.0, depth 16.0, hole 10.0



4 = Aluminum CNC, U clevis, slot 6.0, depth 16.0, hole 6.4

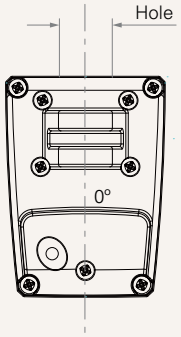


5 = Aluminum CNC, U clevis, slot 6.0, depth 16.0, hole 8.0



Direction of Rear Attachment (Counterclockwise)

2 = 0°



MA5 Ordering Key Appendix

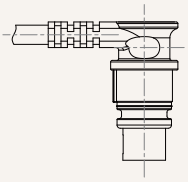
Functions for Limit Switches

Wire Definitions

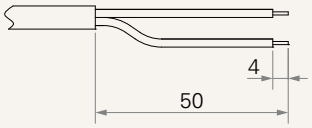
CODE	Pin					
	1 (Green)	2 (Red)	3 (White)	4 (Black)	5 (Yellow)	6 (Blue)
1	extend (VDC+)	N/A	N/A	N/A	retract (VDC+)	N/A
2	extend (VDC+)	N/A	middle switch pin B	middle switch pin A	retract (VDC+)	N/A
3	extend (VDC+)	common	upper limit switch	N/A	retract (VDC+)	lower limit switch
4	extend (VDC+)	common	upper limit switch	medium limit switch	retract (VDC+)	lower limit switch

Connector

1 = DIN 6P, 90° plug



2 = Tinned leads



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