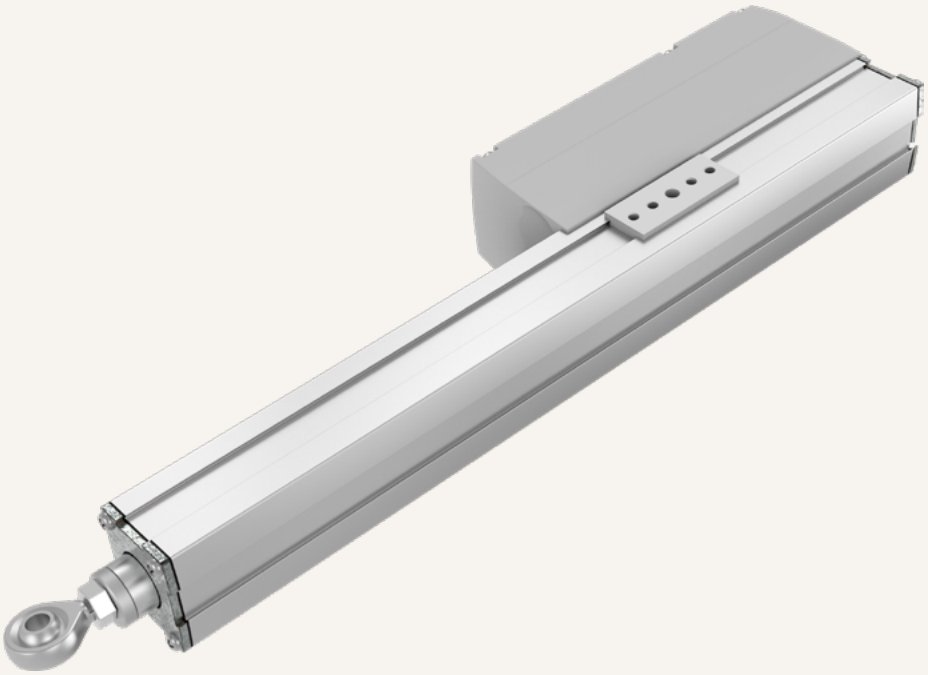
VN1

series



Product Segments

- **Industrial Motion**

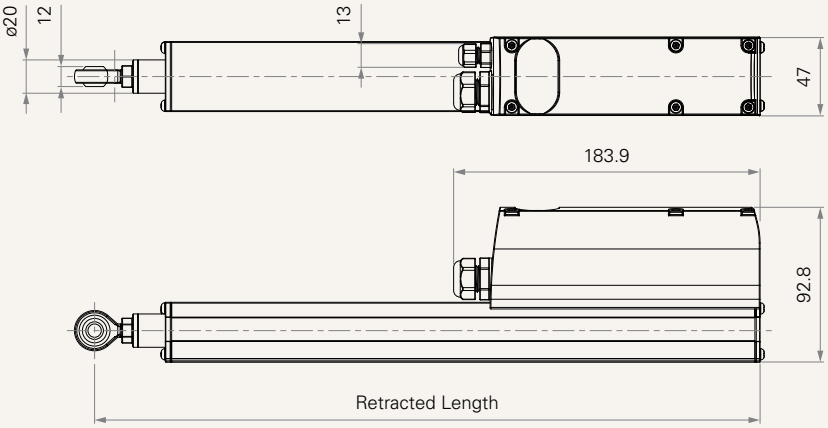
The VN1 series linear actuator was specifically designed for ventilation applications to help remove smoke, heat, and toxic gases from the building quickly in the event of a fire. It was also designed to create a minimum smoke layer in the lower parts of the room. The VN1 is made of high-quality aluminum, suitable for applications like fall-through protection systems and greenhouses. The VN1 is equipped with either a 12V or 24V DC motor. The AC version of the VN1 is equipped with a built-in SMPS which allows the supply of alternating current.

General Features

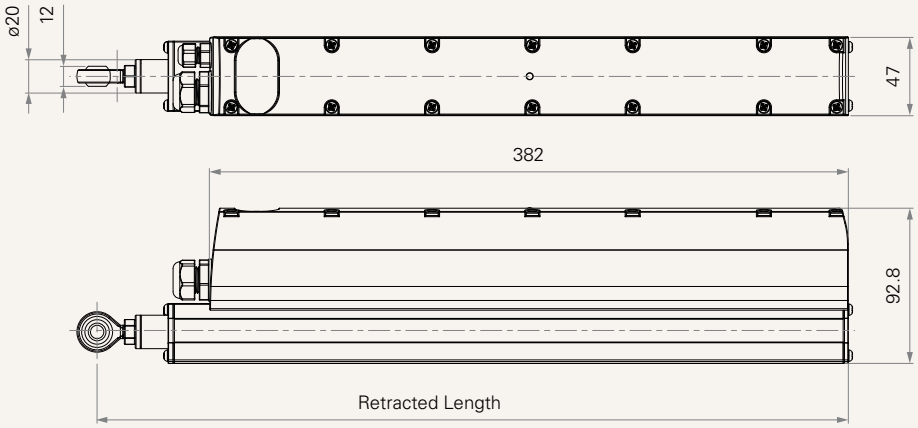
Max. load	3,500N (push / pull)
Max. speed at max. load	4.2mm/s
Max. speed at no load	10.4mm/s
Retracted length	≥ 217mm (DC version) ≥ 437mm (AC version) *upon the front attachment
IP rating	IP66
Stroke	20~500mm
Options	Hall sensors, safety nut, window seal mechanism
Voltage	12V DC, 24V DC, 100~240V AC
Color	Black, grey
Operational temperature range	-15°C~ 50°C
Operational temperature range at full performance	+5°C~+45°C

Drawing

Dimensions
with DC Voltage
(mm)



Dimensions
with AC Voltage
(mm)



Load and Speed - DC Motor

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 30%)							
B	500	500	500	1.5	1.7	10.4	8.3
C	1000	1000	1000	1.5	1.7	6.5	5.1
Motor Speed (5200RPM, Duty Cycle 10%)							
D	2000	2000	2000	1.5	2.9	10.4	7.4
E	3500	3500	3500	1.5	3.9	6.5	4.2

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; speed will be similar for both voltages. If choosing the voltage option #U, its performance is as the same as 24V DC motor.

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 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)

6 Standard stroke: Min. ≥ 20mm, Max. please refer to below table.

CODE	Load (N)	Max Stroke (mm)
E	≤ 3500	300
D	≤ 2000	450
B, C	≤ 1000	500

Load and Speed - AC Motor

CODE	Load (N)		Self Locking Force (N)	Typical Current (A)				Typical Speed (mm/s)			
	Push	Pull		No Load		With Load		No Load		With Load	
				110VAC	220VAC	110VAC	220VAC	110VAC	220VAC	110VAC	220VAC
Motor Speed (5200RPM, Duty Cycle 30%)											
B	500	500	500	0.3	0.15	0.4	0.2	10.4	10.4	8.3	8.3
C	1000	1000	1000	0.3	0.15	0.4	0.2	6.5	6.5	5.1	5.1
Motor Speed (5200RPM, Duty Cycle 10%)											
D	2000	2000	2000	0.3	0.15	0.7	0.35	10.4	10.4	7.4	7.4
E	3500	3500	3500	0.3	0.15	0.9	0.45	6.5	6.5	4.2	4.2

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 when the actuator is extending under push load.

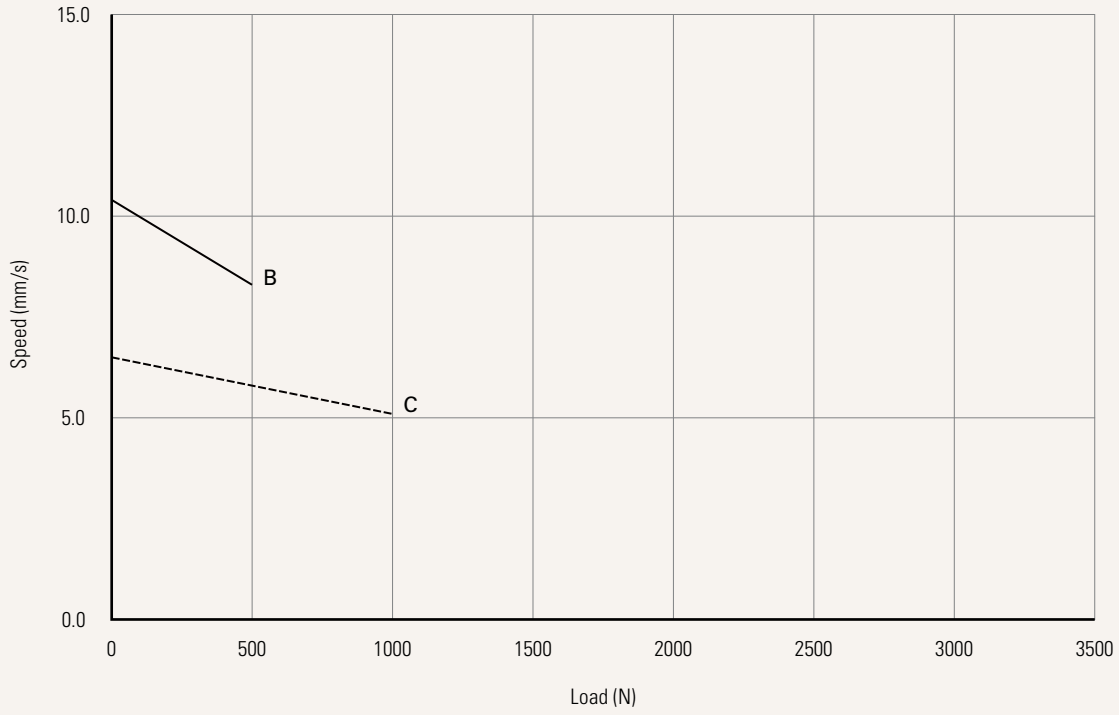
4 Standard stroke: Min. ≥ 20mm, Max. please refer to below table.

CODE	Load (N)	Max Stroke (mm)
E	≤ 3500	300
D	≤ 2000	450
B, C	≤ 1000	500

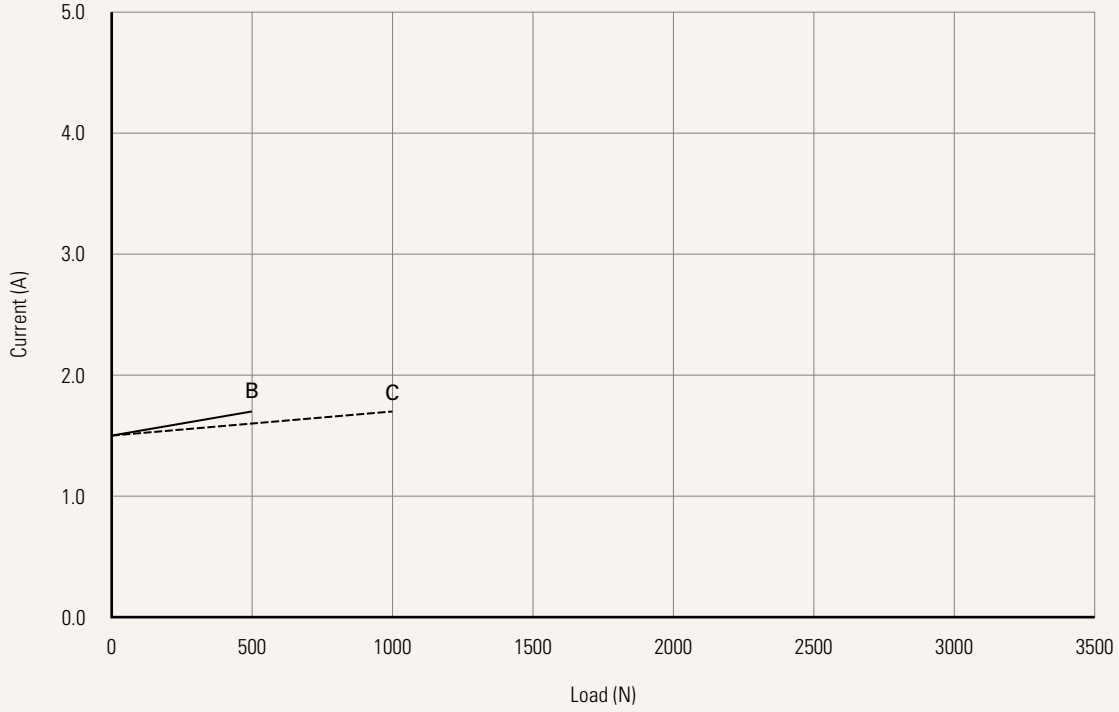
Performance Data (24V DC Motor)

Motor Speed (5200RPM, Duty Cycle 30%)

Speed vs. Load



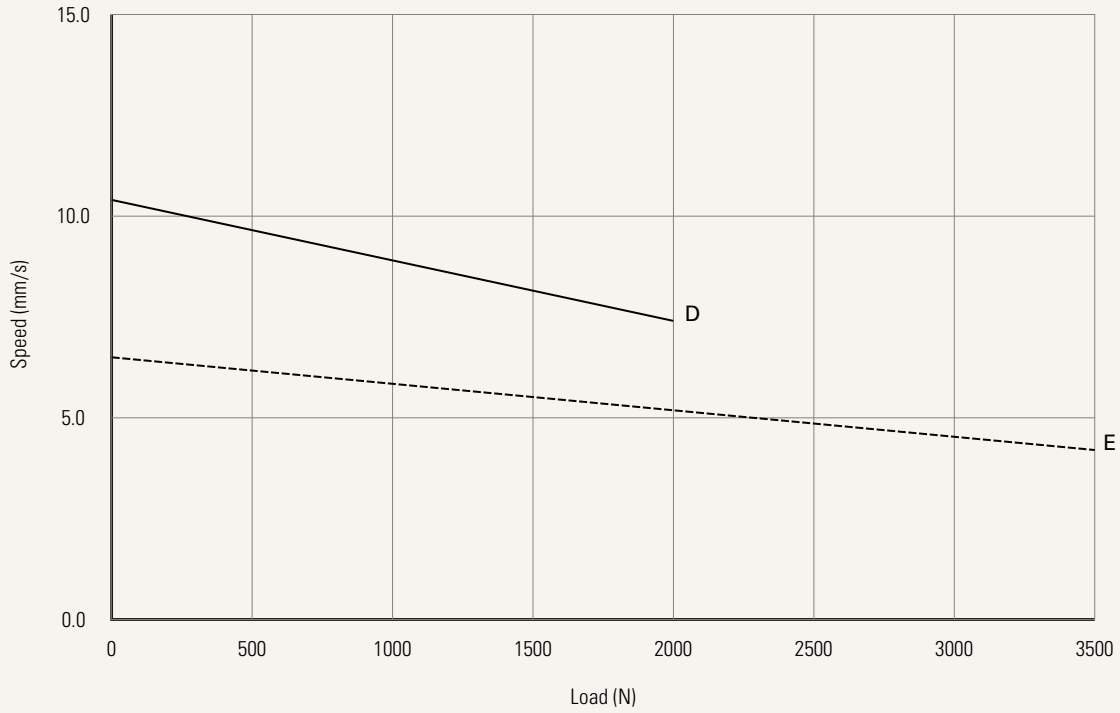
Current vs. Load



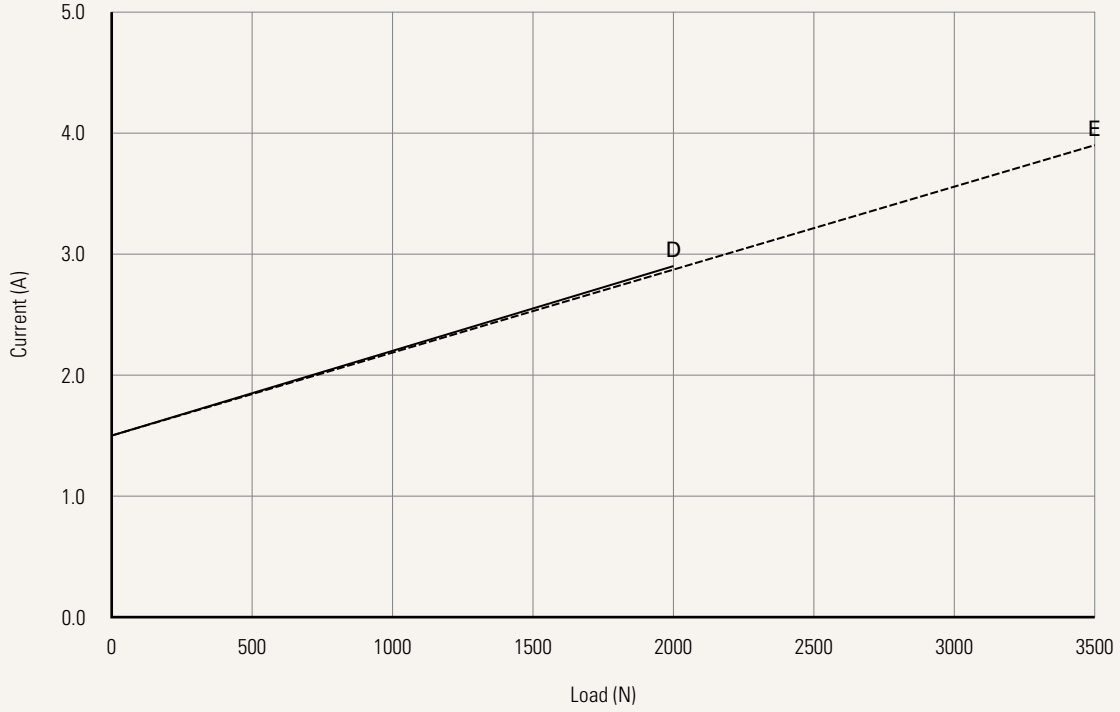
Performance Data (24V DC Motor)

Motor Speed (5200RPM, Duty Cycle 10%)

Speed vs. Load



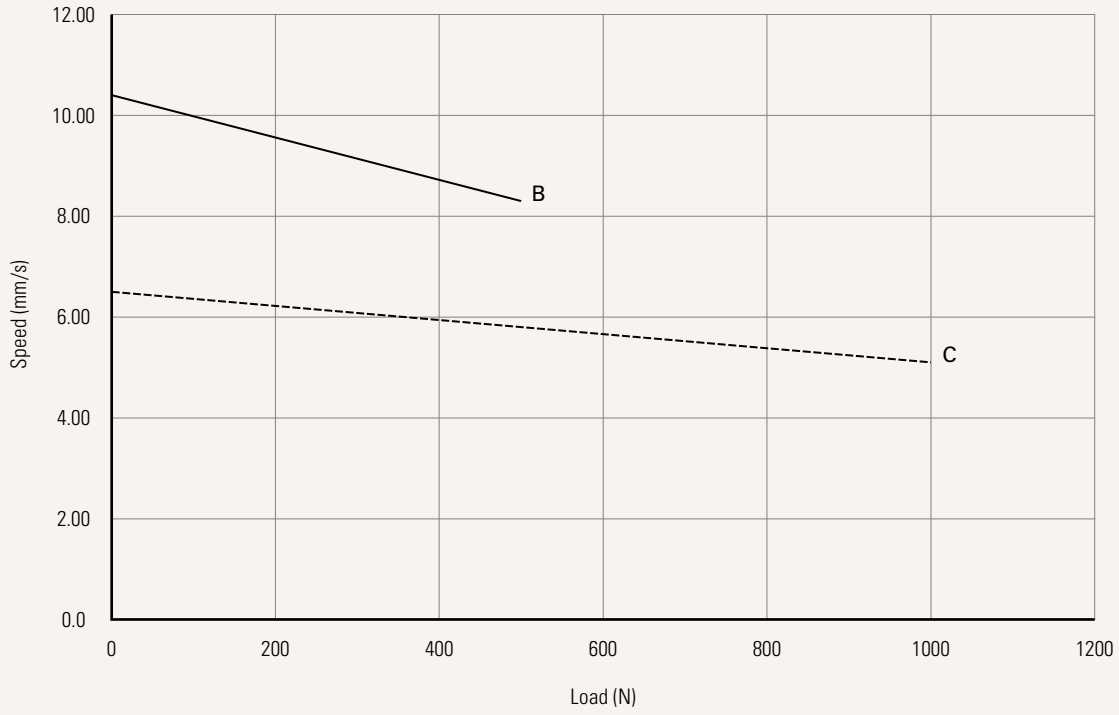
Current vs. Load



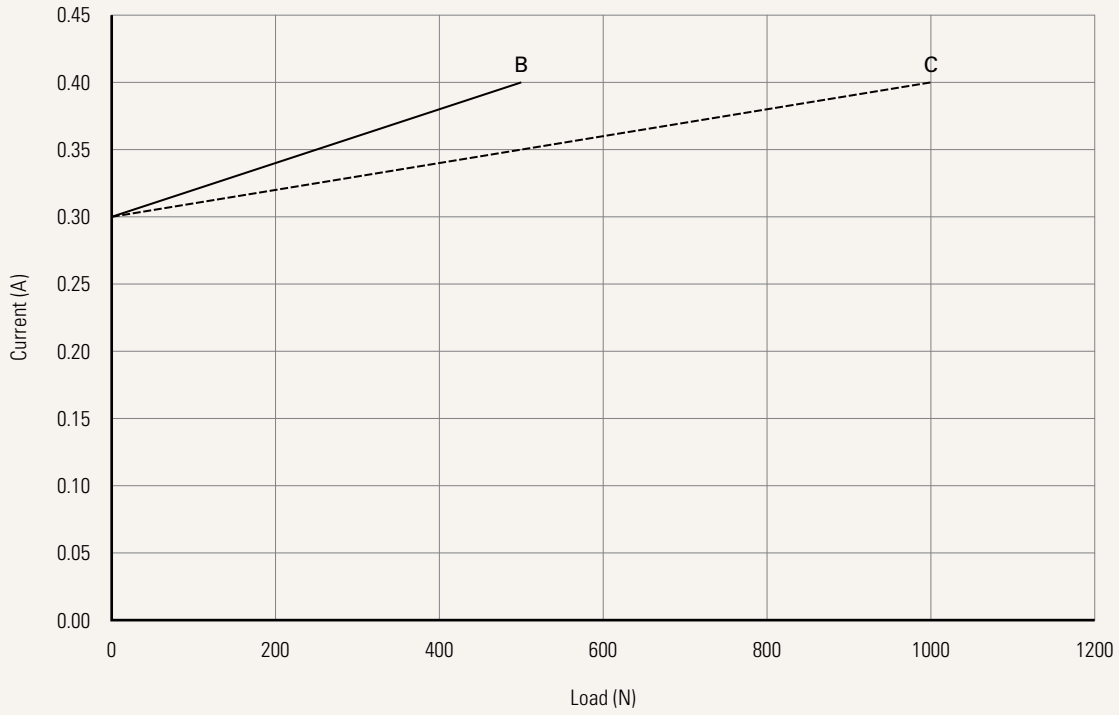
Performance Data (110V AC Motor)

Motor Speed (5200RPM, Duty Cycle 30%)

Speed vs. Load



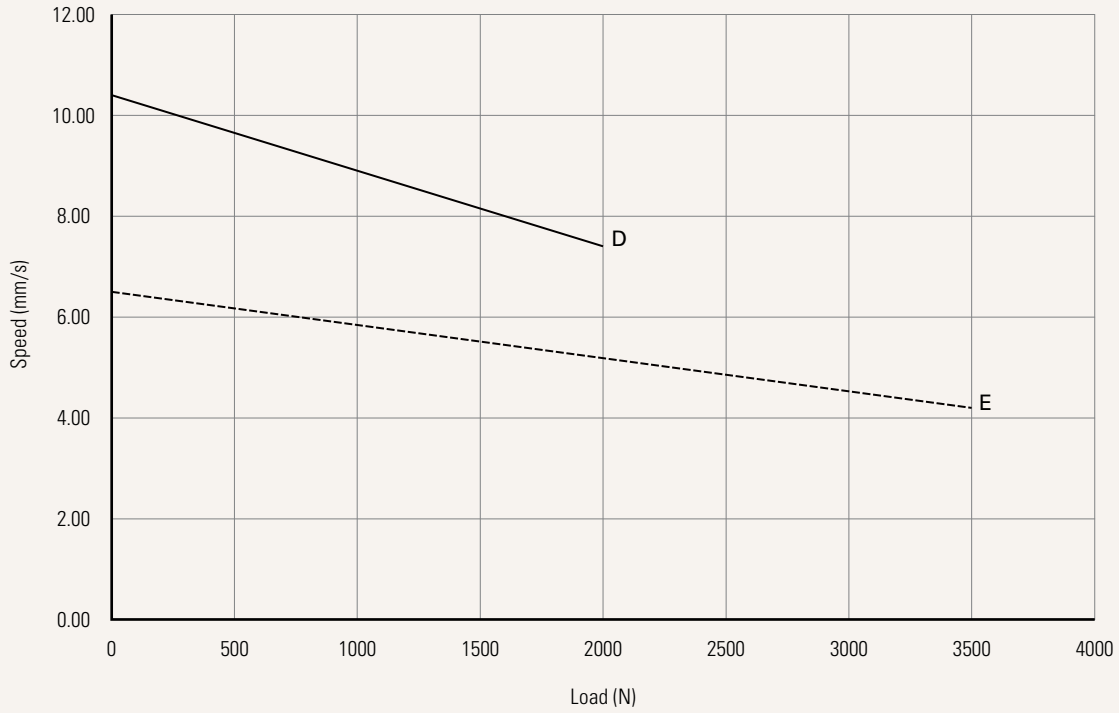
Current vs. Load



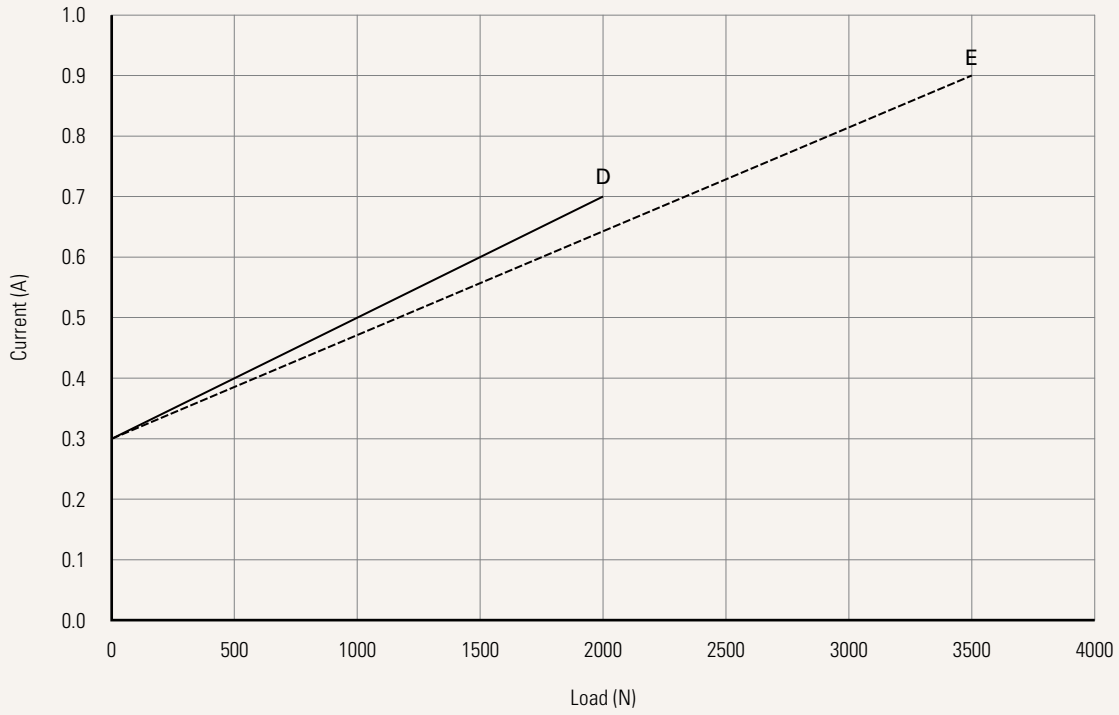
Performance Data (110V AC Motor)

Motor Speed (5200RPM, Duty Cycle 10%)

Speed vs. Load



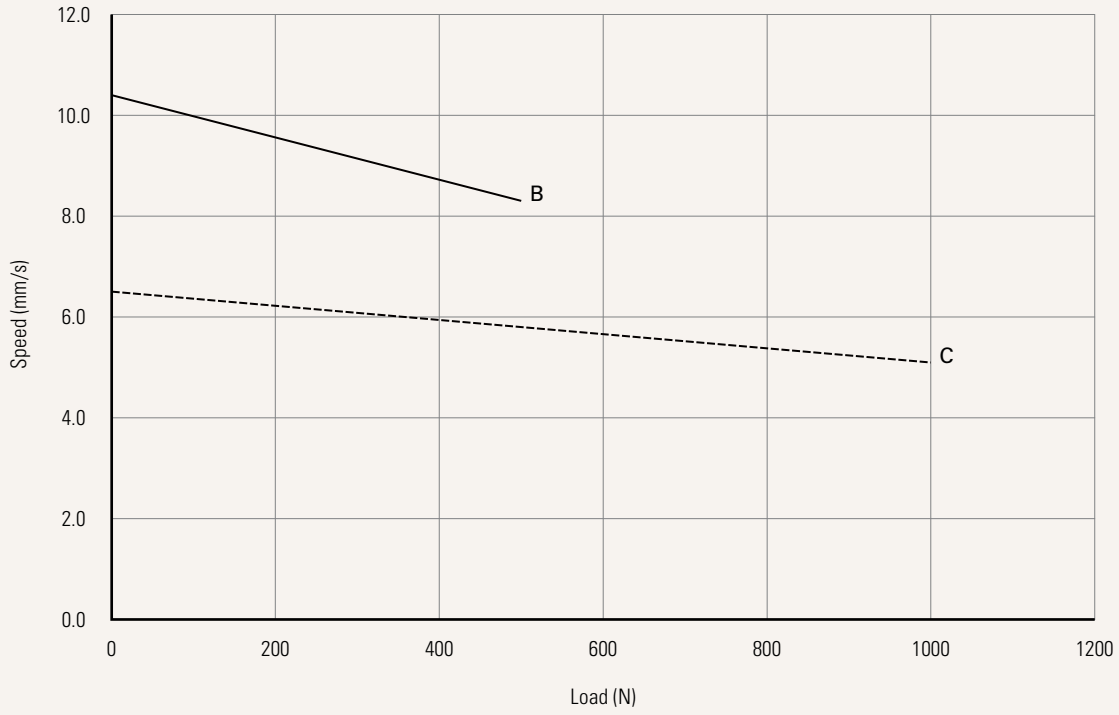
Current vs. Load



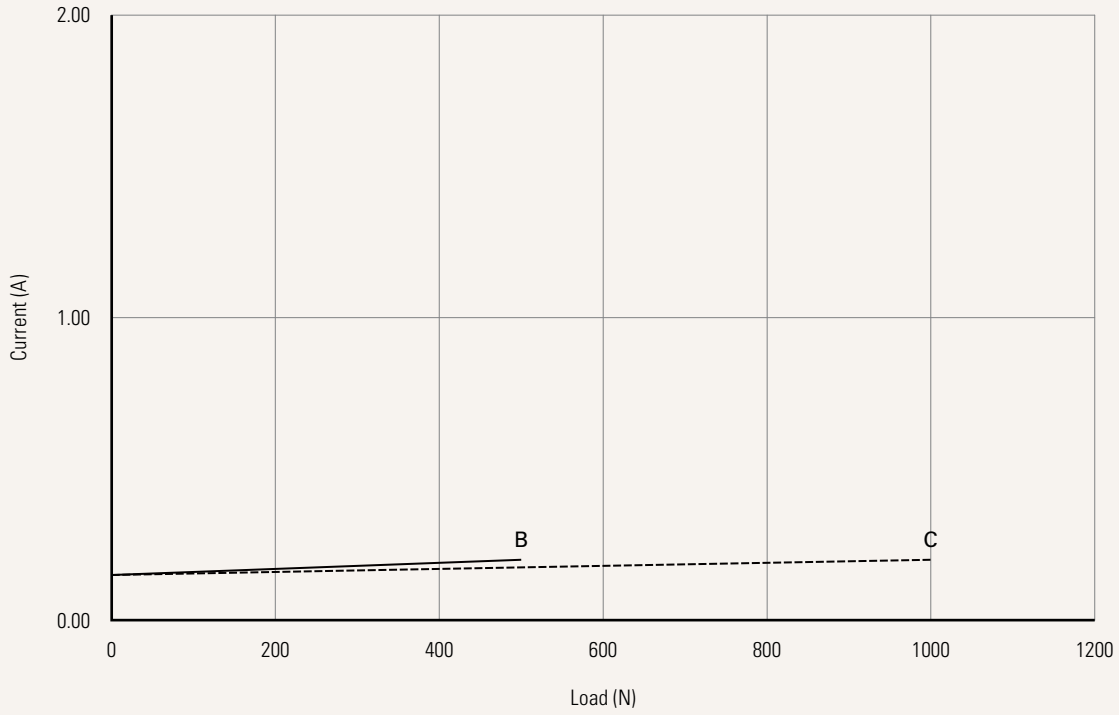
Performance Data (220V AC Motor)

Motor Speed (5200RPM, Duty Cycle 30%)

Speed vs. Load



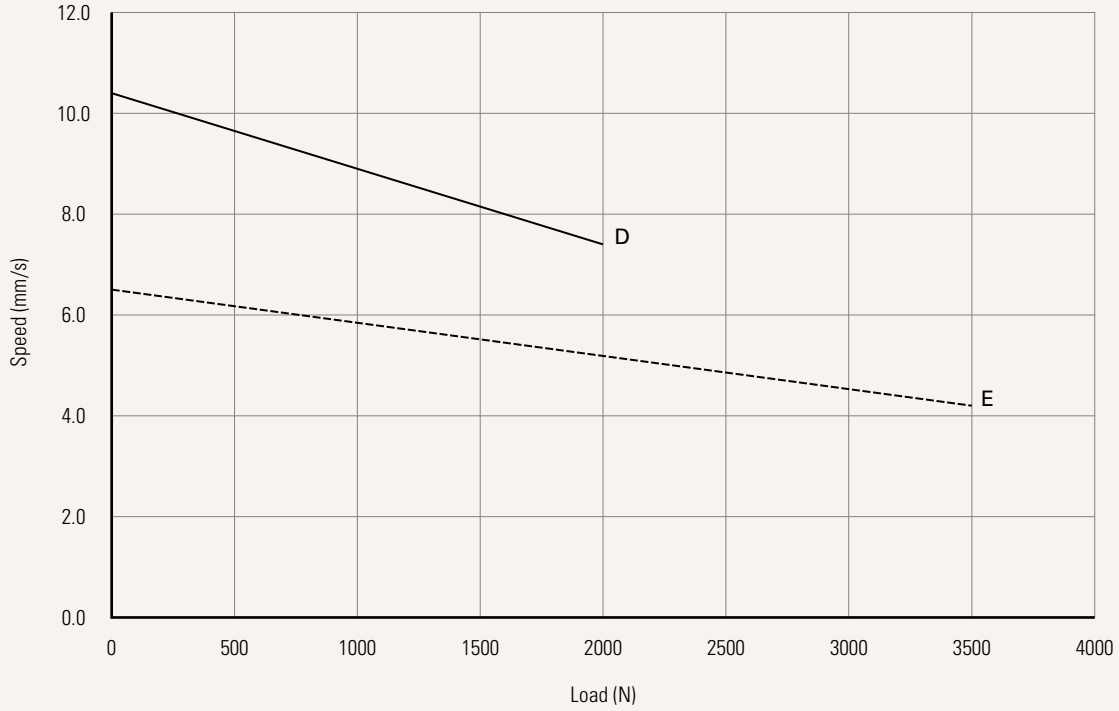
Current vs. Load



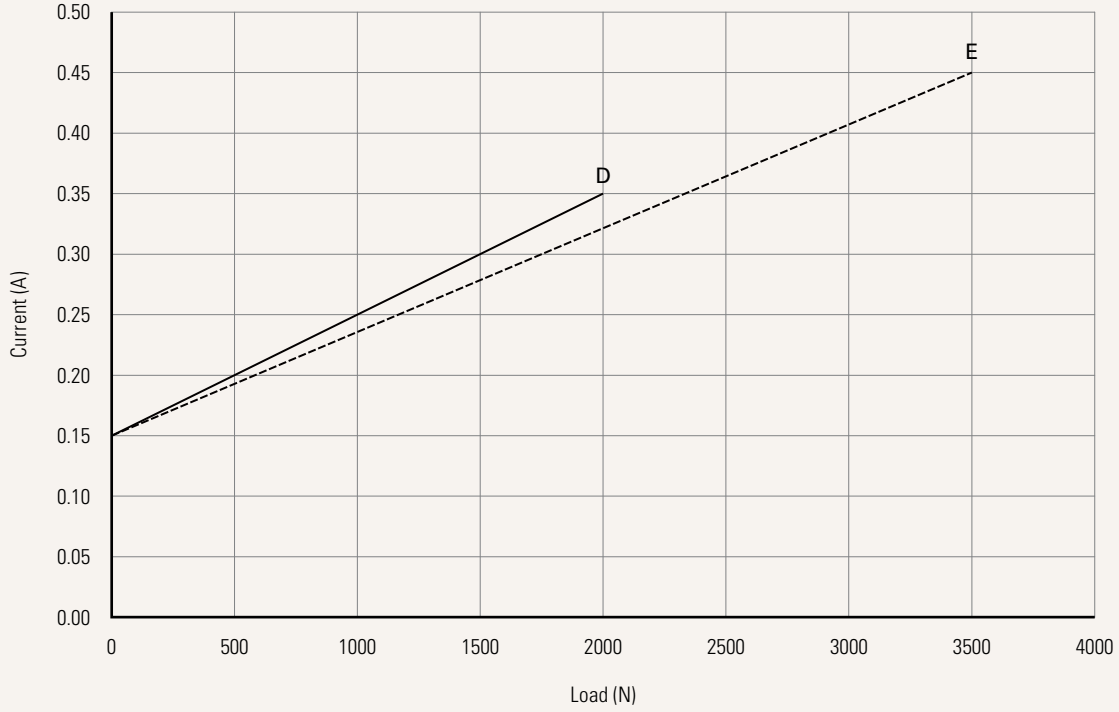
Performance Data (220V AC Motor)

Motor Speed (5200RPM, Duty Cycle 10%)

Speed vs. Load



Current vs. Load



VN1 Ordering Key

VN1

Version: 20200722-D

Voltage	1 = 12V DC	2 = 24V DC	U = 100-240V AC
Load and Speed	See page 3		
Stroke (mm)	See page 3		
Retracted Length (mm)	See page 11		
Rear Attachment (mm) See page 11	B = Outer tube slide clamp block, hole M8		C = Outer tube slide clamp block, hole ø8
Trunnion Mount Bracket	0 = Without		
Front Attachment (mm) See page 12	B = Rod end bearing, hole 8.0 C = Rod end bearing, hole 10.0 1 = Aluminum casting, no slot, hole 6.4 2 = Aluminum casting, no slot, hole 8.0		3 = Aluminum casting, no slot, hole 10.0 7 = Aluminum CNC, U clevis, slot 6.2, depth 16.0, hole 6.4 8 = Aluminum CNC, U clevis, slot 6.2, depth 16.0, hole 8.0 9 = Aluminum CNC, U clevis, slot 6.2, depth 16.0, hole 10.0
Direction of Rear Attachment (Counterclockwise) See page 12	0 = Without (When rear attachment is outer tube slide clamp block)		
Color	1 = Black	2 = Pantone 428C	
IP Rating	1 = Without	2 = IP54	3 = IP66
Special Functions for Spindle Sub-Assembly	0 = Without	1 = Safety nut	
Functions for Limit Switches	1 = Two switches at full retracted / extended positions to cut current 3 = Two switches at full retracted / extended positions to send signal 6 = Two switches at full retracted / extended positions to cut current + third one at end of stroke as window closed indicator switch 7 = Two switches at full retracted / extended positions to send signal + third one at end of stroke as window closed indicator switch		
Output Signal	0 = Without	2 = Hall sensor * 2	
Window Seal Mechanism	0 = Without	1 = With	
Cable Exit Position	B = Position B Note: please contact TiMOTION before making an order	C = Position C	
P1 Cable (mm)	0 = Without 1 = Tinned leads, 500 Note: please contact TiMOTION before making an order	2 = Tinned leads, 1000 3 = Tinned leads, 1500	4 = Tinned leads, 2000 5 = Tinned leads, 5000
P2 Cable (mm)	0 = Without 1 = Tinned leads, 500 Note: please contact TiMOTION before making an order	2 = Tinned leads, 1000 3 = Tinned leads, 1500	4 = Tinned leads, 2000 5 = Tinned leads, 5000
T-Smart Version	0 = Without		
Bus Interface Board	0 = Without		

VN1 Ordering Key Appendix

Retracted Length (mm)

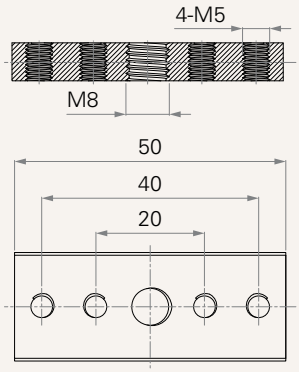
1. Calculate A+B = Y
2. When Voltage choosing #1, #2, Retracted length needs to = Stroke+Y ≥ 217mm
3. When Voltage choosing #U, Retracted length needs to = Stroke+Y ≥ 437mm

A.	
Front Attach.	Rear Attach.
	B, C
B	+199
C	+207
1,2,3	+171
7,8,9	+191

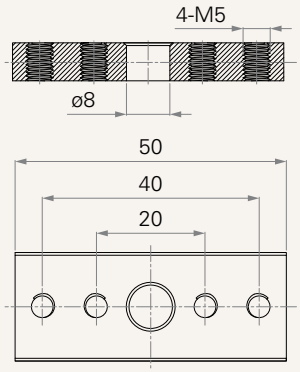
B.	
Stroke (mm)	
20~150	-
151~200	+2
201~250	+2
251~300	+2
301~350	+12
351~400	+22
401~450	+32
451~500	+42

Rear Attachment (mm)

B = Outer tube slide clamp block, hole M8



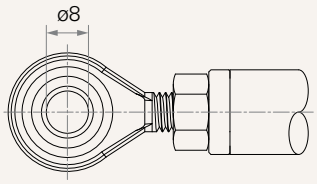
C = Outer tube slide clamp block, hole ø8



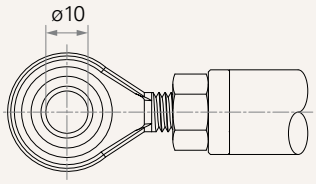
VN1 Ordering Key Appendix

Front Attachment (mm)

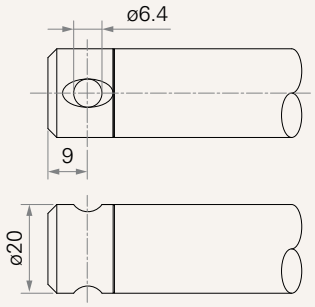
B = Rod end bearing, hole 8.0



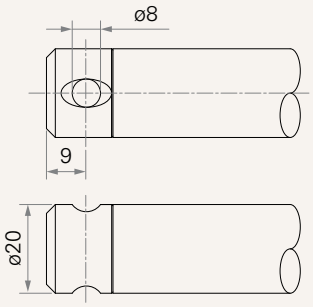
C = Rod end bearing, hole 10.0



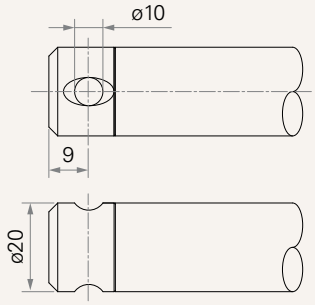
1 = Aluminum casting, no slot, hole 6.4



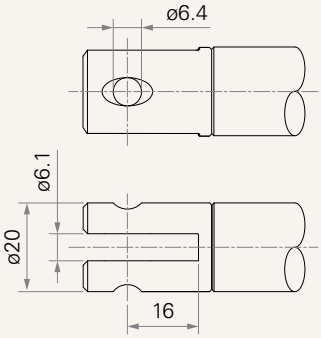
2 = Aluminum casting, no slot, hole 8.0



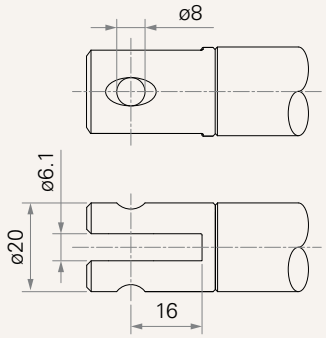
3 = Aluminum casting, no slot, hole 10.0



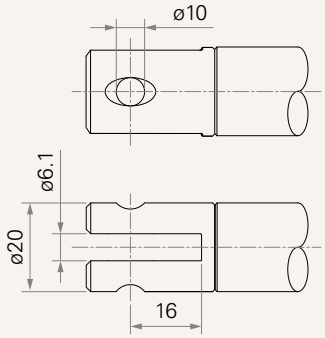
7 = Aluminum CNC, U clevis, slot 6.2, depth 16.0, hole 6.4



8 = Aluminum CNC, U clevis, slot 6.2, depth 16.0, hole 8.0

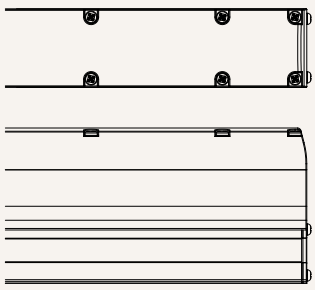


9 = Aluminum CNC, U clevis, slot 6.2, depth 16.0, hole 10.0



Direction of Rear Attachment (Counterclockwise)

0 = Without (When rear attachment is outer tube slide clamp block)



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