

SM Series

High-Performance Stepper Motors

Industry-standard NEMA frame stepper motors

Available encoder feedback and brake options

Models to run off of North American & Asian/
European line voltages

Optimized performance for use with Aerotech
stages

High-performance micro-stepping up to 50,000
steps/revolution

Vacuum and cleanroom versions available



*SM series stepper motors
are available in NEMA 17
to NEMA 34 frame sizes.*

The SM series of stepper motors brings efficiency of motion to Aerotech's line of rotary motor products. With ample torque at high velocities, the SM series is a perfect stand-in for DC brushed or brushless rotary motors in nearly any medium-accuracy motion application. With multiple offerings in frame sizes from NEMA 17 to NEMA 34, the SM series provides additional options to meet our customers' needs.

Design and Integration Flexibility

The SM series motors have been designed with optional direct encoder feedback, a holding brake, or even a viscous

damper to improve the dynamic response of the rotor. These standard options allow the SM series to adapt to many common motion applications and extend their capabilities for use in a wider array of processes than a general stepper motor.

Line Voltage Capable

The NEMA 23 and NEMA 34 frame size SM series motors are available in a high-voltage optimized design. This produces optimum performance at both North American and European/Asian line voltages without the need for a transformer, further streamlining the system solution.

SM Series SPECIFICATIONS

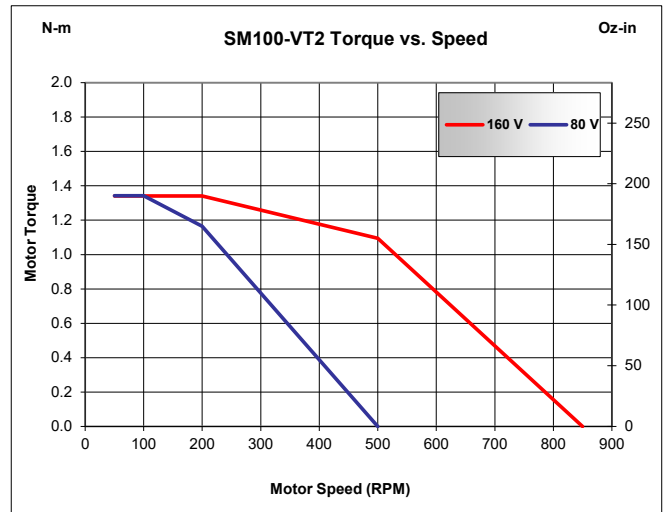
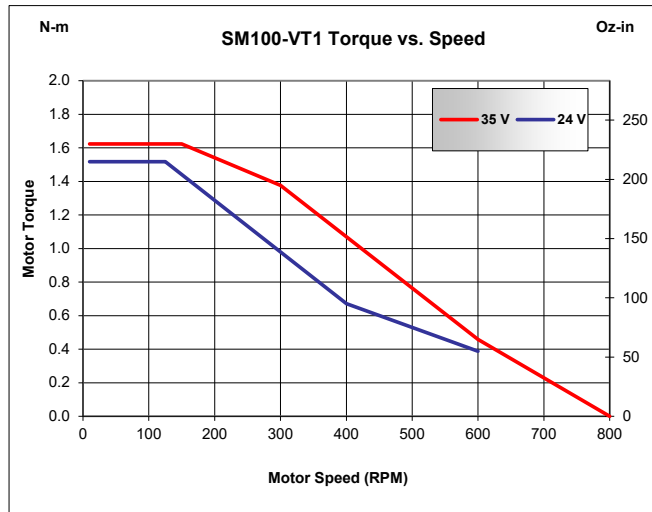
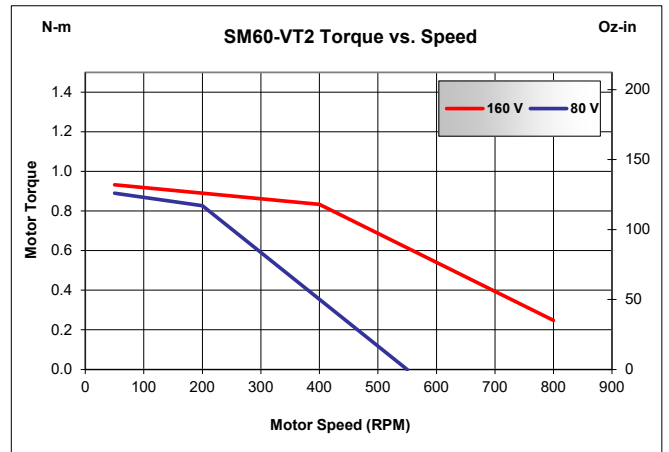
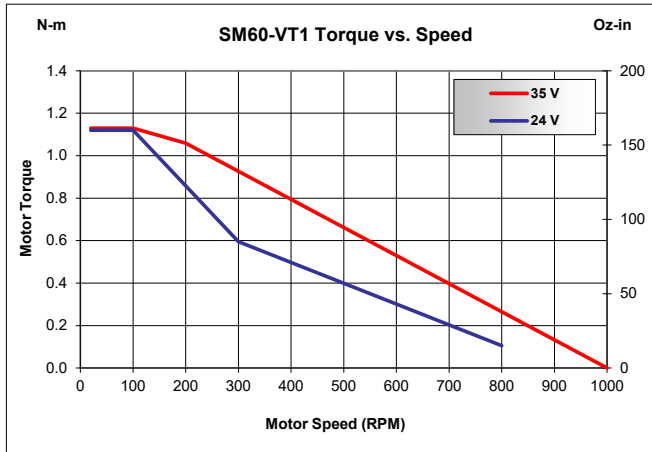
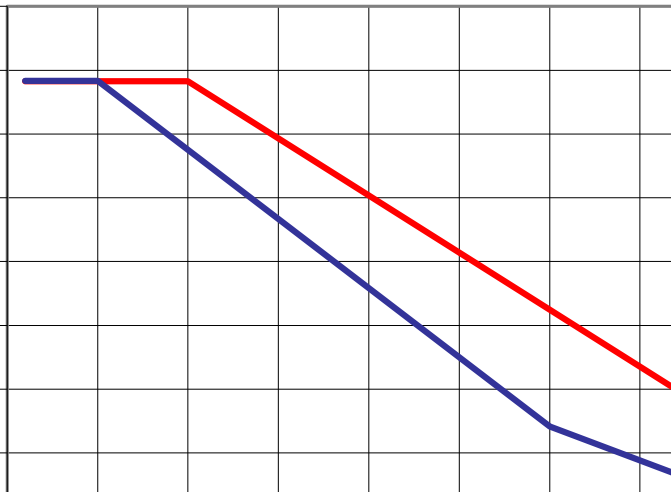
Motor Model	SM35	SM60-VT1	SM60-VT2	SM100-VT1	SM100-VT2
Frame Size	NEMA 17	NEMA 23			
Stall Torque	0.78 N·m (111 oz·in)	1.23 N·m (175 oz·in)	1.41 N·m (200 oz·in)	1.85 N·m (262 oz·in)	2.50 N·m (354 oz·in)
Rated Amps Per Phase	3.0 A	2.8 A	0.84 A	3.5 A	0.99 A
Maximum Recommended Motor Voltage ⁽¹⁾	35 V	35 V	160 V	35 V	160 V
Rotor Inertia	1.02E-05 kg·m ₂ (0.0014 oz·in·s ₂)	3.00E-05 kg·m ₂ (0.0042 oz·in·s ₂)		4.80E-05 kg·m ₂ (0.0068 oz·in·s ₂)	5.21E-05 kg·m ₂ (0.0074 oz·in·s ₂)
Full Step Angle	1.8°				
Accuracy	±0.09°				
Maximum Radial Load	2.9 kg (6.3 lb)	7.7 kg (17 lb)			
Maximum Thrust Load	1.0 kg (2.2 lb)	1.5 kg (3.4 lb)			
Weight	0.50 kg (1.1 lb)	0.70 kg (1.6 lb)		1.0 kg (2.2 lb)	1.2 kg (2.6 lb)

1. Maximum recommended motor voltage describes voltage seen by the motor coils.

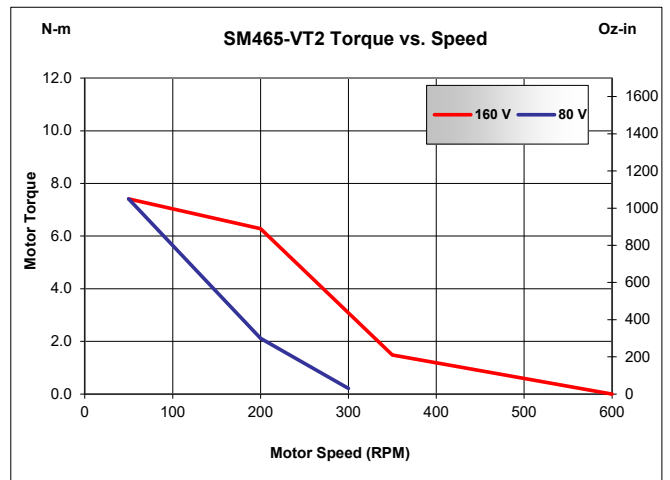
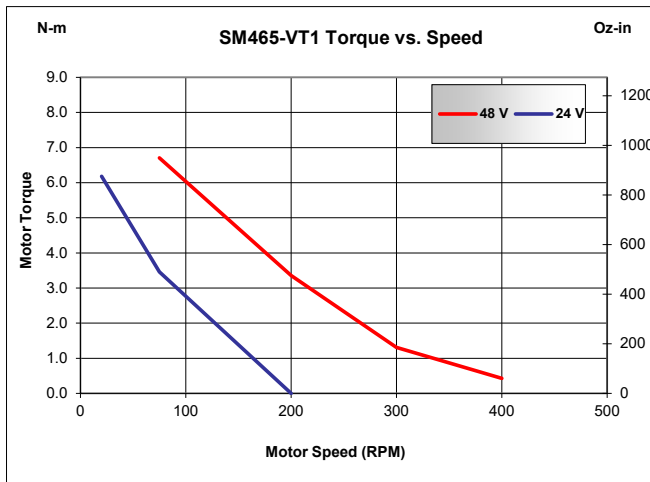
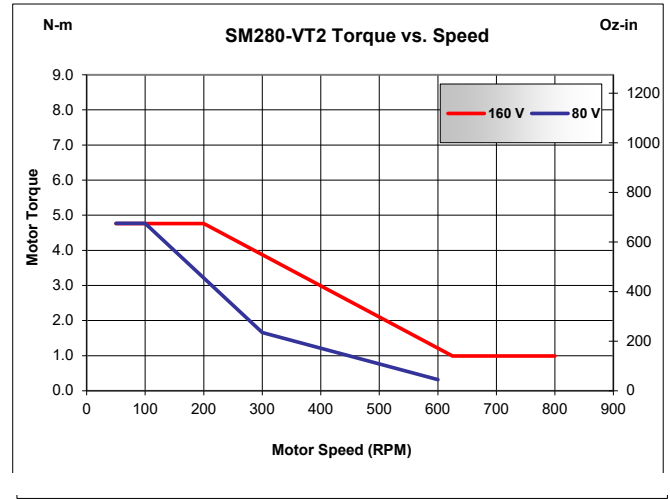
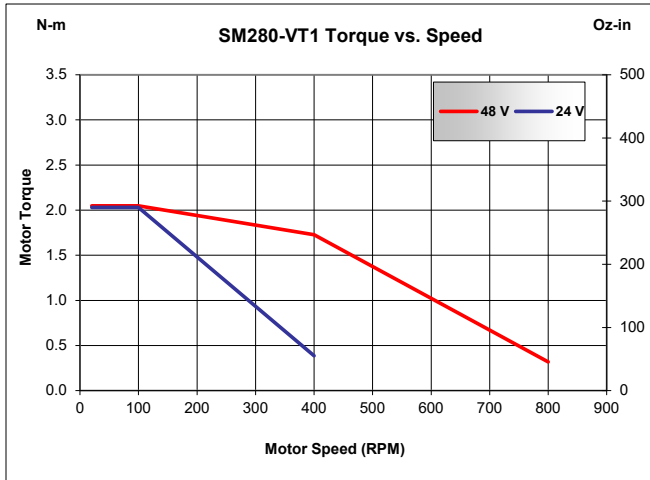
Motor Model	SM280-VT1	SM280-VT2	SM465-VT1	SM465-VT2
Frame Size	NEMA 34			
Stall Torque	4.50 N·m (637 oz·in)	8.75 N·m (1238 oz·in)	12.0 N·m (1700 oz·in)	11.5 N·m (1637 oz·in)
Rated Amps Per Phase	7.1 A	3.04 A	7.1 A	2.94 A
Maximum Recommended Motor Voltage ⁽¹⁾	48 V	160 V	48 V	160 V
Rotor Inertia	1.41E-04 kg·m ₂ (0.020 oz·in·s ₂)	2.70E-04 kg·m ₂ (0.038 oz·in·s ₂)	4.02E-04 kg·m ₂ (0.057 oz·in·s ₂)	
Full Step Angle	1.8°			
Accuracy	±0.09°			
Maximum Radial Load	22.5 kg (50 lb)			
Maximum Thrust Load	6.1 kg (14 lb)			
Weight	2.3 kg (5.1 lb)	3.8 kg (8.4 lb)	5.4 kg (12 lb)	5.3 (11.7 lb)

1. Maximum recommended motor voltage describes voltage seen by the motor coils.

SM Series MOTOR PERFORMANCE

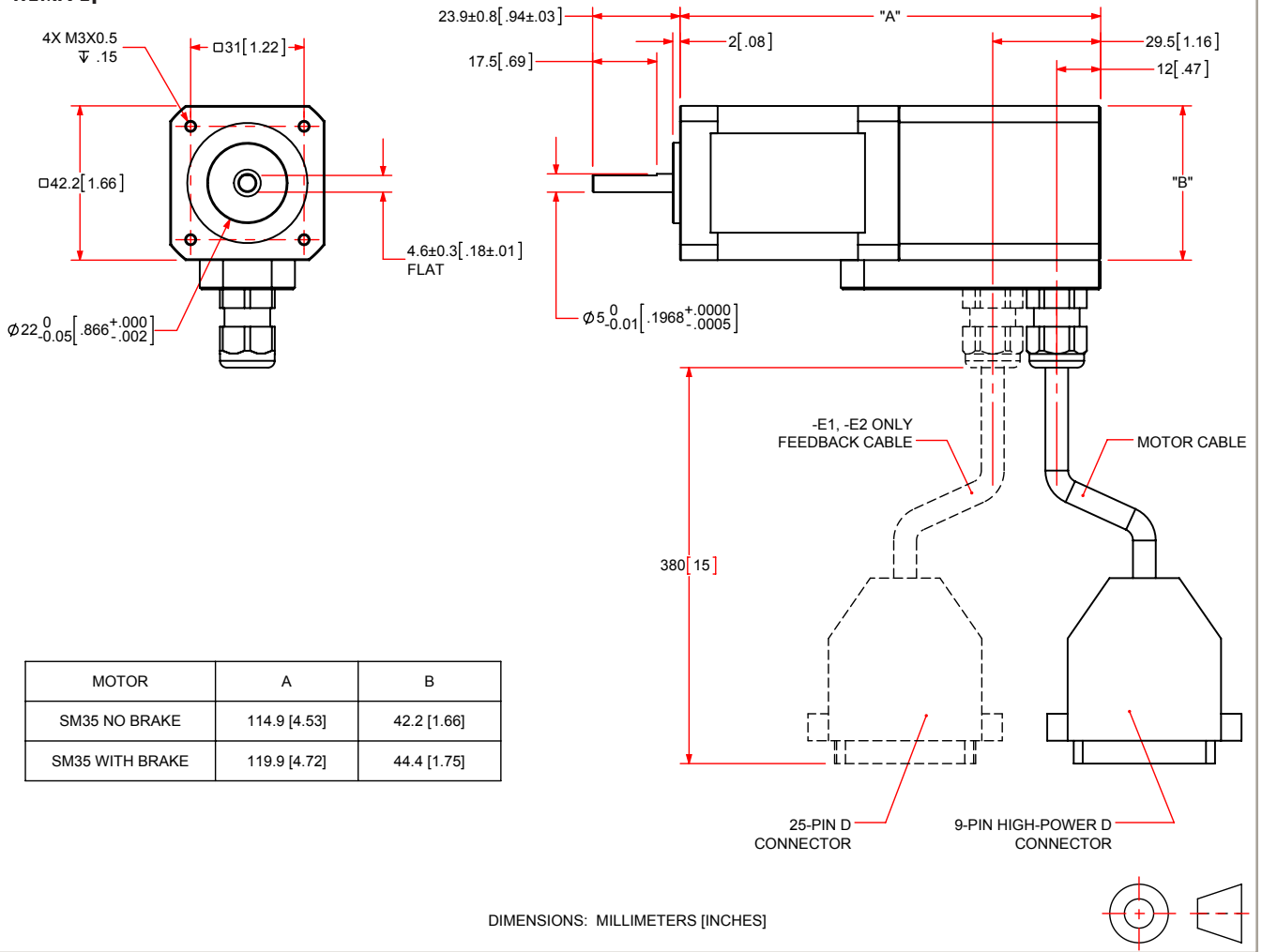


SM Series MOTOR PERFORMANCE



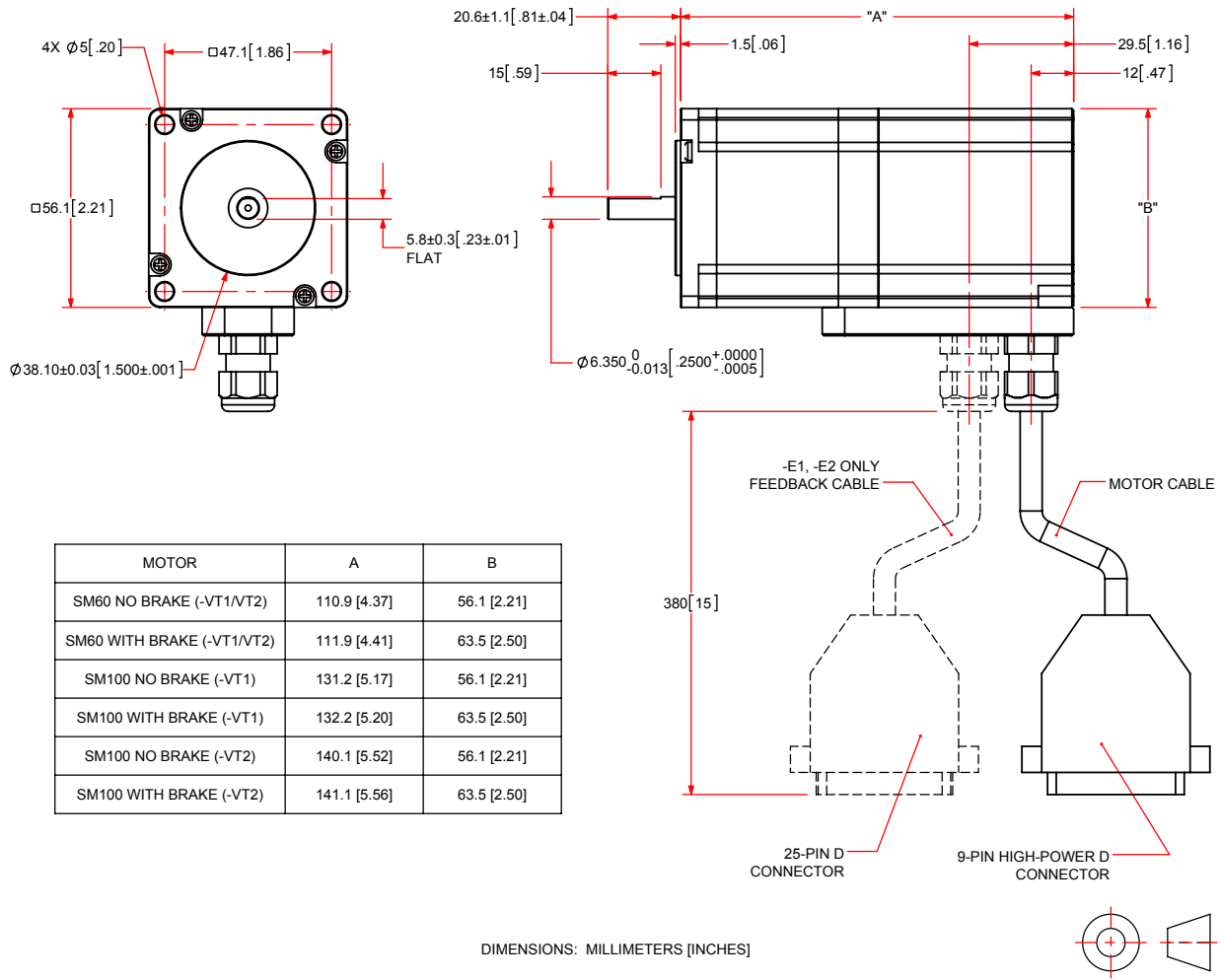
SM Series DIMENSIONS

NEMA 17



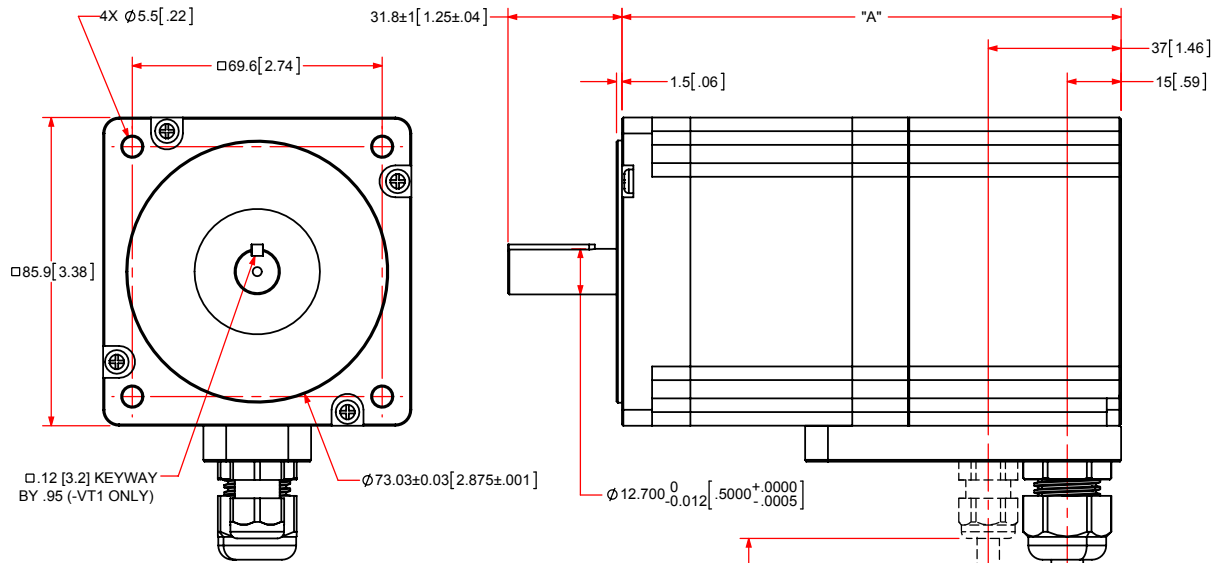
SM Series DIMENSIONS

NEMA 23

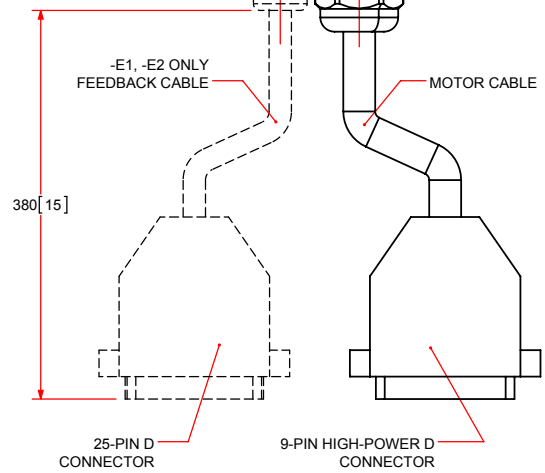


MOTOR	A	B
SM60 NO BRAKE (-VT1/VT2)	110.9 [4.37]	56.1 [2.21]
SM60 WITH BRAKE (-VT1/VT2)	111.9 [4.41]	63.5 [2.50]
SM100 NO BRAKE (-VT1)	131.2 [5.17]	56.1 [2.21]
SM100 WITH BRAKE (-VT1)	132.2 [5.20]	63.5 [2.50]
SM100 NO BRAKE (-VT2)	140.1 [5.52]	56.1 [2.21]
SM100 WITH BRAKE (-VT2)	141.1 [5.56]	63.5 [2.50]

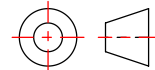
NEMA 34



MOTOR	A
SM280 NO BRAKE (-VT1)	139.0 [5.47]
SM280 WITH BRAKE (-VT1)	149.0 [5.87]
SM280 NO BRAKE (-VT2)	177.1 [6.97]
SM280 WITH BRAKE (-VT2)	187.1 [7.37]
SM465 NO BRAKE (-VT1)	215.0 [8.46]
SM465 WITH BRAKE (-VT1)	225.0 [8.86]
SM465 NO BRAKE (-VT2)	215.0 [8.46]
SM465 WITH BRAKE (-VT2)	225.0 [8.86]



DIMENSIONS: MILLIMETERS [INCHES]



SM Series ORDERING INFORMATION

Stepper Motors: Permanent Magnet, SM Series

SM35	NEMA 17 stepper motor
SM60	NEMA 23 stepper motor
SM100	NEMA 23 stepper motor, high torque
SM280	NEMA 34 stepper motor
SM465	NEMA 34 stepper motor, high torque

Add-Ons (Optional)

-CN1	Standard connectorized motor
-BK	Holding brake
-E1	1000-line incremental square-wave encoder with marker (RS-422 line-drive output)
-E2	1000-line incremental 1 Vpp amplified sine-wave encoder with marker
-D ⁽¹⁾	Viscous damper

Note:

1. Viscous Damper option only available on NEMA 17 and NEMA 23 SM motors.

Bus Voltage Selection (Optional for NEMA 23 & NEMA 34 Motors Only)

-VT1	Low voltage model
-VT2	High voltage model