

Model Numbers

SM 040 1 A E2 - K CD- N N V

Series

SM Servo Motor Medium Inertia

Frame Size


040 40 mm
060 60 mm
080 80 mm

Motor Length

1 1 Stack All Frame Sizes
2 2 Stacks All Frame Sizes
3 3 Stacks 80mm only
4 4 Stacks 80mm only

Winding (See motor rating tables for available windings)

Basic Bus Voltage
A 320 VDC (230 VAC) Lower Current
B 240 VDC
C 160 VDC (115 VAC)
D 120 VDC
E 80 VDC
F 60 VDC
G 48 VDC
H 36 VDC
J 24 VDC Higher Current



Feedback

E2 2500 ppr Optical Encoder with Separate Commutation Signals
E4 2500 ppr Optical Encoder with Shared Commutation Signals
MA Absolute Multi Turn Tamagawa Encoder - **SM060 & SM080 Motors**
MB Absolute Multi Turn Heidenhain EnDat 2.2 Encoder - **SM060 & SM080 Motors**

Shaft

K Standard Keyway

Connections (Lead Style / Connector Style)

CD 300mm (12") Shielded Cables with Non - Sealed Connectors - For Windings up to 6.5 Amps
CF 300mm (12") Shielded Cables with Non - Sealed Connectors - For Windings 6.6 to 12.5 Amps
CM 300mm (12") Shielded Cables with Sealed Metal Connectors

Brake

N No Brake
B 24 VDC Brake

Temperature Sensor

N No Sensor

Shaft Seal

V Shaft seal shipped with motor, but not placed on shaft

SM080 Series: 80mm, 300-1000 Watts



UL File Number	E465363
Insulation Class	B (130°C)
IP rating	IP65 (except shaft without seal and non-sealed connectors)
Installation location	Indoors, free from corrosive gas, inflammable gas
Ambient temperature	Operating 0 to 40°C, Storage -20 to 80°C
Ambient humidity	85%RH or lower (free from condensing)
Altitude (maximum)	Operating 1,000m
Vibration Resistance	49 m/s ²
Rotor Poles	8

Series		SM0801 - 300 Watt				SM0802 - 550 Watt		
Preferred Model & Winding Letter		^ A	^ C	^ E	G	^ A	^ C	E
Base Model Number (with 2500 PPR incremental encoder non-sealed plastic connectors, no brake)		SM0801 AE2-KCD- NNV	"SM0801 CE2-KCD- NNV"	SM0801 EE2-KCF- NNV	SM0801 GE2-KCF- NNV	SM0802 AE2-KCD- NNV	SM0802 CE2-KCD- NNV	SM0802 EE2-KCF- NNV
Typical Supply Voltages	V (rms)	208-240 VAC	120 VAC	60-90 VDC	24-60 VDC	208-240 VAC	120 VAC	60-90 VDC
Basic DC Bus Voltage	V (dc)	320	160	80	48	320	160	80
Rated Output Power	watts	300 (250)	300 (250)	300	300	550	550	550
Rated Speed	rpm	3000	3000	3000	3000	3000	3000	3000
Max. Mechanical Speed	rpm	6000	6000	6000	6000	5500	5500	5500
Rated Torque	Nm	0.95 (0.79)	0.95 (0.79)	0.95	0.95	1.8	1.8	1.8
Continuous Stall Torque	Nm	1 (0.83)	1 (0.83)	1	1	1.9	1.9	1.9
Peak Torque	Nm	2.3 (2.3)	2.3 (2.3)	2.3	2.3	4.6	4.6	4.6
Rated Current	A (rms)	1.8 (1.5)	3.6 (3.0)	7	10	3	6	10
Continuous Stall Current	A (rms)	1.9 (1.6)	3.8 (3.2)	7.4	10.6	3.2	6.4	10.7
Peak Current	A (rms)	4.5 (4.5)	9 (9.0)	18	25	8.3	17	28
Voltage Constant ±5%	V (rms) / K rpm	34.3	17.2	8.9	6.2	37.3	18.6	11.2
Torque Constant ±5%	Nm / A (rms)	0.532	0.266	0.138	0.096	0.586	0.293	0.176
Winding Resistance (Line-Line)	Ohm ±10% @25°C	5.9	1.38	0.37	0.188	2.7	0.63	0.22
Winding Inductance (Line-Line)	mH	26	6.5	1.74	0.85	13.9	3.5	1.25
Inertia (with encoder)	kg m ²	0.45 X 10 ⁻⁴				0.63 X 10 ⁻⁴		
Inertia - With Brake Option	kg m ²	0.53 X 10 ⁻⁴				0.71 X 10 ⁻⁴		
Thermal Resistance (mounted)	°C / W	1.48				1.15		
Thermal Time Constant	Minutes	14				19		
Heat Sink Size	mm	240 x 240 x 6 Aluminum				240 x 240 x 6 Aluminum		
Shaft Load - Axial	(max.)	90 N / 20 Lb				90 N / 20 Lb		
Shaft Load - Radial (End of Shaft)	(max.)	200 N / 45 Lb				240 N / 54 Lb		
Weight (with std. encoder)		1.7 kg / 3.7 lb				2.2 kg / 4.8 lb		
Weight - With Brake Option		2.5 kg / 5.4 lb				3.0 kg / 6.5 lb		

Shaft Load: (L₁₀ life, 20,000 hours, 2,000 RPM)

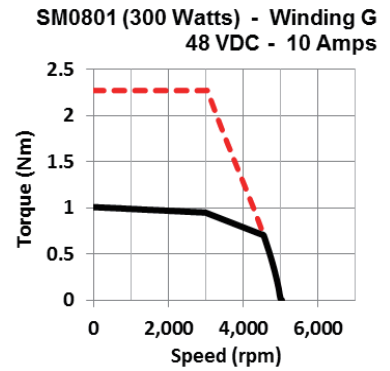
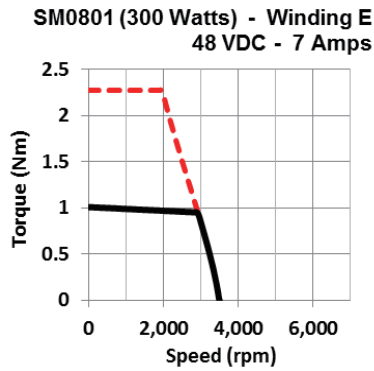
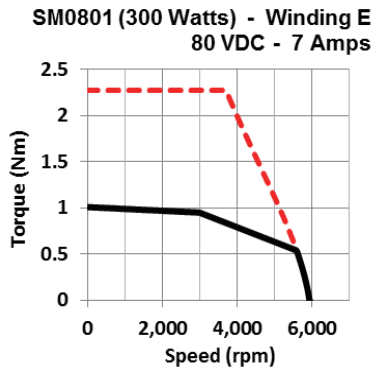
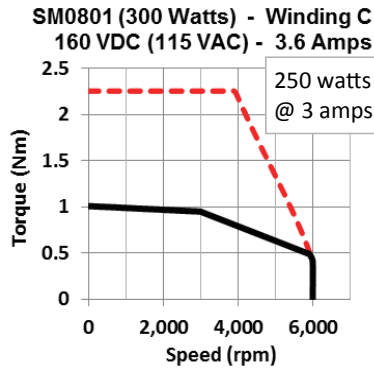
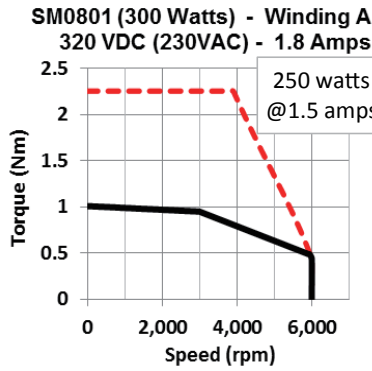
SM080 Series: 80mm, 300-1000 Watts

Due to the construction of these motors, high current windings have a maximum rating of 12.5 amps continuous. With the highest current windings, the SM0803 and SM0804 motors (750-1000 watts) can reach rated torque down to about 80 volts. This winding can be used at lower voltage (60, 48, etc.) but the maximum speed is reduced. See speed torque curves on page 17.

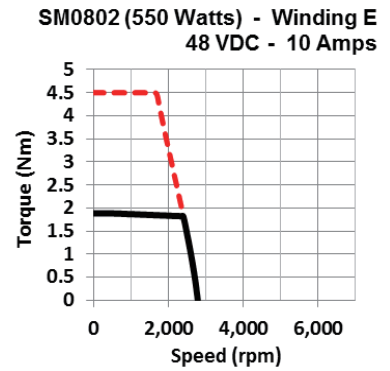
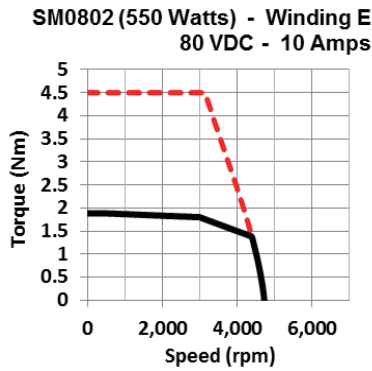
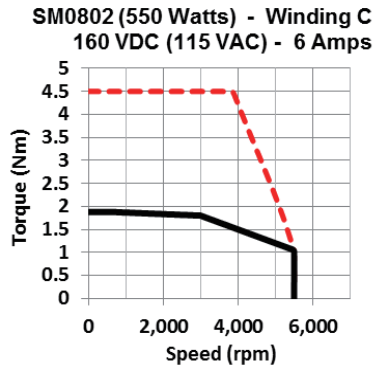
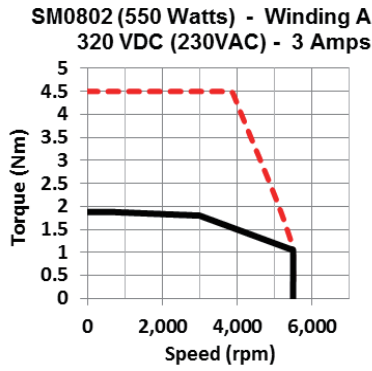


Series		SM0803 - 750 Watt				SM0804 - 1000 Watt		
Preferred Model & Winding Letter		^ A	^ B	^ C	^ D	^ A	^ C	^ D
Base Model Number (with 2500 PPR incremental encoder non-sealed plastic connectors, no brake)		SM0803 AE2-KCD- NNV	SM0803 BE2-KCD- NNV	SM0803 CE2-KCF- NNV	SM0803 DE2-KCF- NNV	SM0804 AE2-KCD- NNV	SM0804 CE2-KCF- NNV	SM0804 DE2-KCF- NNV
Typical Supply Voltages	V (rms)	208-240 VAC	120-240 VAC	120 VAC	48 VDC-120 VAC	208-240 VAC	120 VAC	48 VDC-120 VAC
Basic DC Bus Voltage	V (dc)	320	240	160	120	320	160	120
Rated Output Power	watts	750	750	750	750	1000	1000	1000
Rated Speed	rpm	3000	3000	3000	3000	3000	3000	3300
Max. Mechanical Speed	rpm	5500	5500	5500	5500	5000	5000	5000
Rated Torque	Nm	2.4	2.4	2.4	2.4	3.2	3.2	2.9
Continuous Stall Torque	Nm	2.6	2.6	2.6	2.6	3.5	3.5	2.9
Peak Torque	Nm	6.9	6.9	6.9	6.9	9.3	9.3	8.5
Rated Current	A (rms)	4.5	6	9	11.5	5.5	11	12.5
Continuous Stall Current	A (rms)	4.9	6.5	9.8	12.5	6	12.1	12.5
Peak Current	A (rms)	13.5	18	27	34.5	16.5	33	37.5
Voltage Constant ±5%	V (rms) / K rpm	36.6	27.5	18.3	14.2	39.5	19.9	15.8
Torque Constant ±5%	Nm / A (rms)	0.543	0.407	0.271	0.21	0.581	0.293	0.233
Winding Resistance (Line-Line)	Ohm ±10% @25°C	1.47	0.81	0.34	0.21	1.08	0.28	0.21
Winding Inductance (Line-Line)	mH	8.2	4.6	2	1.22	6.7	1.69	1.07
Inertia (with encoder)	kg m ²	0.89 X 10 ⁻⁴				1.17 X 10 ⁻⁴		
Inertia - With Brake Option	kg m ²	0.97 X 10 ⁻⁴				1.25 X 10 ⁻⁴		
Thermal Resistance (mounted)	°C / W	1.04				0.97		
Thermal Time Constant	Minutes	22				24		
Heat Sink Size	mm	240 x 240 x 6 Aluminum				240 x 240 x 6 Aluminum		
Shaft Load - Axial	(max.)	90 N / 20 Lb				90 N / 20 Lb		
Shaft Load - Radial (End of Shaft)	(max.)	270 N / 60 Lb				290 N / 65 Lb		
Weight (with std. encoder)		2.6 kg / 5.8 lb				3.1 kg / 6.9 lb		
Weight - With Brake Option		3.4 kg / 7.6 lb				3.9 kg / 8.6 lb		

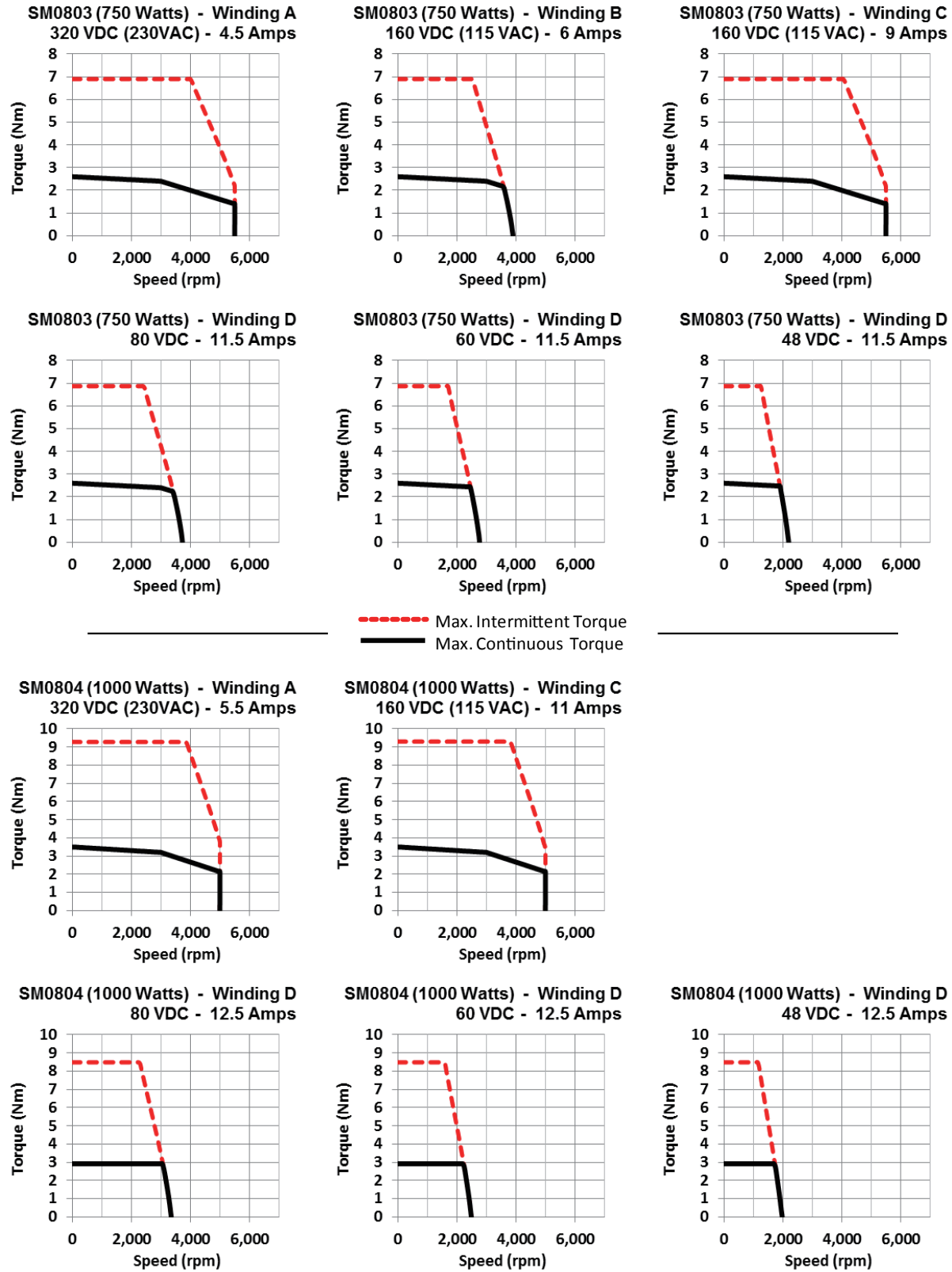
SM080 Series: 80mm, 300-1000 Watts



--- Max. Intermittent Torque
— Max. Continuous Torque

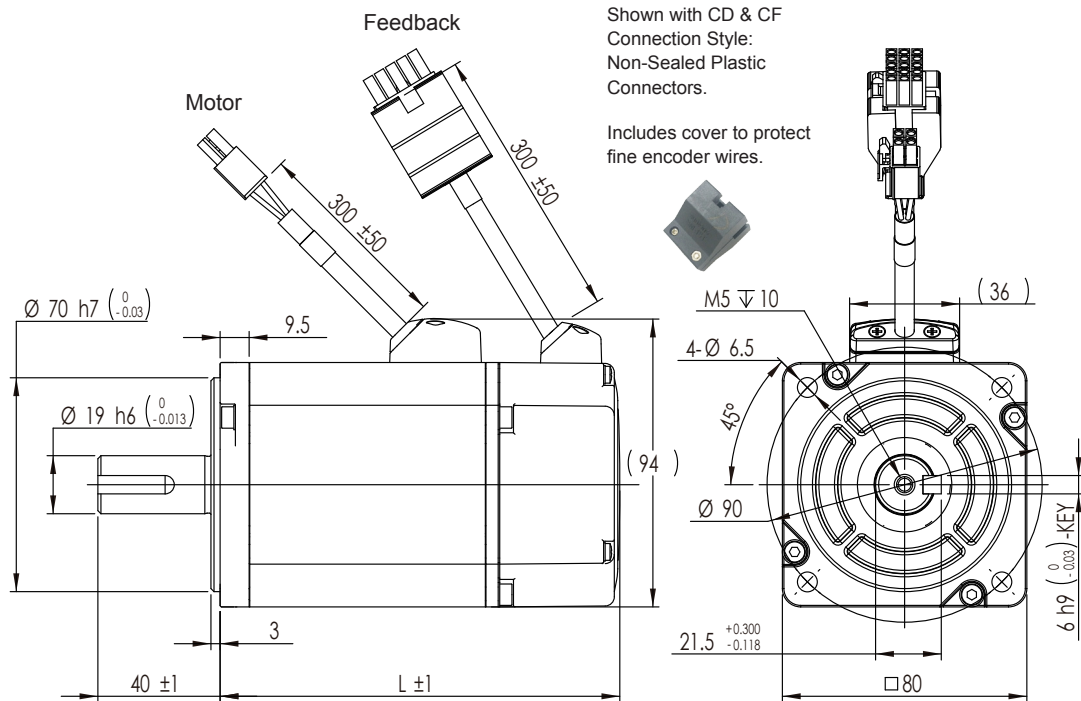


SM080 Series: 80mm, 300-1000 Watts



SM080 Series: 80mm, 300-1000 Watts

Motor Dimensions – No Brake: mm



Motor Length-Without Brake

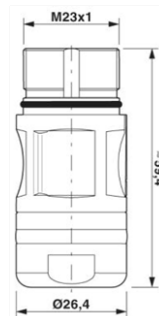
Motor Series	L (mm)
SM0801, 300 Watt	101
SM0802, 550 Watt	116
SM0803, 750 Watt	131
SM0804, 1000 Watt	146

Optional CM Connection Style: Sealed Metal Connectors

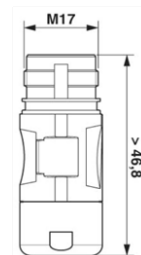
These rugged connectors provide more protection

- IP65 sealed
- Better protection from EMI / RFI noise, for use over longer distances
- Metal housings provide more mechanical protection
- Metal housings form a continuous electrical shield
- Cable shields are connected to the connector housings

Motor Connector
(Includes Optional Brake)



Feedback Connector



SM080 Series: 80mm, 300-1000 Watts

Brake Specifications:

This is a holding brake. Brake Releases when energized. Do NOT engage when motor is rotating.

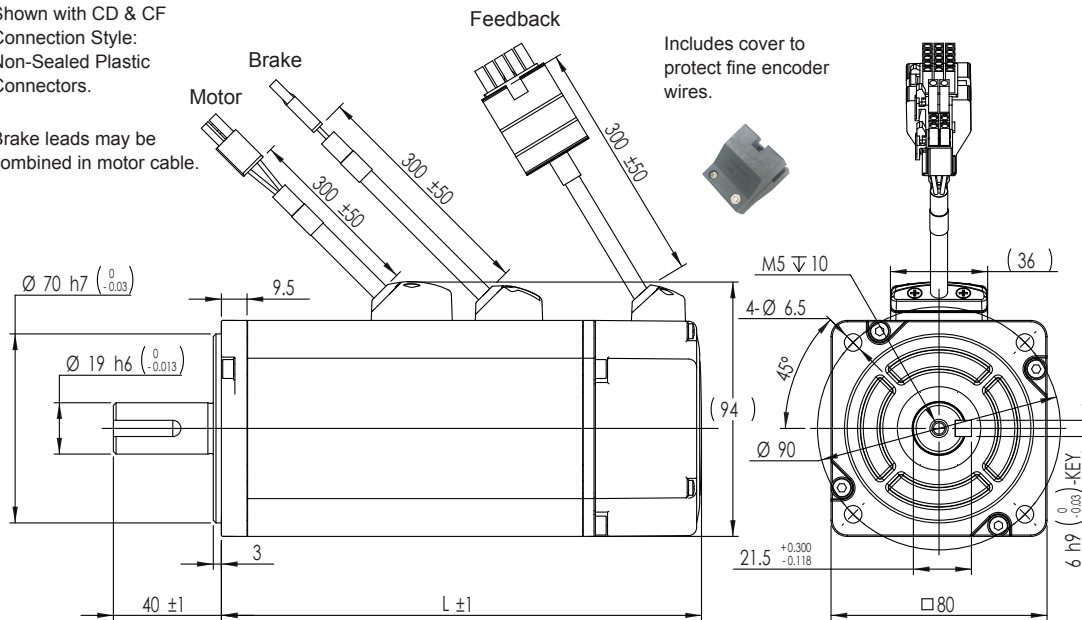
Brake power is not polarity sensitive.

Static Friction Torque	4.5 Nm
Rated Voltage	24 VDC
Rated Current	0.61 A
Engage Time	At nominal air gap @20°C - < 25ms (As brakes are out of box)
Release Time	Without diode - < 25 ms (During E-stop condition)
Release Voltage	18.5 VDC max (at 20°C)

Brake Motor Dimensions: mm

Shown with CD & CF
Connection Style:
Non-Sealed Plastic
Connectors.

Brake leads may be
combined in motor cable.



Motor Length-With Brake

Motor Series	L (mm)
SM0801, 300 Watt	148
SM0802, 550 Watt	163
SM0803, 750 Watt	178
SM0804, 1000 Watt	193