

SureStep™ STEPPING MOTORS

Bipolar Step Motors:

STP-MTR-17040(D), 17048(D), 17060(D),
23055(D), 23079(D), 34066(D)
STP-MTRH-23079(D), 34067(D), 34097(D),
34127(D)

Motor Extension Cables:

STP-EXT-020, STP-EXTH-020



Note: SureStep™ motors are all connectorized four lead bipolar step motors.

WARNING

To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area. It is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call our technical support group at 770-844-4200.

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SureStep™ Series Specifications – Connectorized Bipolar Stepping Motors											
Bipolar Stepping Motors		High Torque Motors						Higher Torque Motors			
		STP-MTR-17040(D)	STP-MTR-17048(D)	STP-MTR-17060(D)	STP-MTR-23055(D)	STP-MTR-23079(D)	STP-MTR-34066(D)	STP-MTRH-23079(D)	STP-MTRH-34066(D)	STP-MTRH-34097(D)	STP-MTRH-34127(D)
NEMA Frame Size		17	17	17	23	23	34	23	34	34	34
* Maximum Holding Torque	(lb-in)	3.81	5.19	7.19	10.37	17.25	27.12	17.87	27.12	50.00	80.50
	(oz-in)	61	83	115	166	276	434	286	434	800	1288
	(N-m)	0.43	0.59	0.81	1.17	1.95	3.06	2.02	3.06	5.65	9.12
Rotor Inertia	(oz-in ²)	0.28	0.37	0.56	1.46	2.60	7.66	2.60	7.66	14.80	21.90
	(kg-cm ²)	0.05	0.07	0.10	0.27	0.48	1.40	0.48	1.40	2.71	4.01
Rated Current (A/phase)		1.7	2.0	2.0	2.8	2.8	2.8	5.6	6.3	6.3	6.3
Resistance (Ω/phase)		1.6	1.4	2.0	0.8	1.1	1.1	0.4	0.3	0.3	0.5
Inductance (mH/phase)		3.0	2.7	3.3	2.4	3.8	6.6	1.2	1.5	2.1	4.1
Insulation Class		130°C [266°F] Class B; 300V rms						130°C [266°F] Class B; 300V rms			
Basic Step Angle		1.8°						1.8°			
Shaft Runout		0.002 in [0.051 mm]						0.002 in [0.051 mm]			
Max Shaft Radial Play @ 1-lb load	(in [mm])	0.001 in [0.025 mm]						0.001 in [0.025 mm]			
Perpendicularity		0.003 in [0.076 mm]						0.003 in [0.076 mm]			
Concentricity		0.002 in [0.051 mm]						0.002 in [0.051 mm]			
* Maximum Radial Load (lb [kg])		6.0 [2.7]			15.0 [6.8]		39.0 [17.7]	15.0 [6.8]	39.0 [17.7]		
* Maximum Thrust Load (lb [kg])		6.0 [2.7]			13.0 [5.9]		25.0 [11.3]	13.0 [5.9]	25.0 [11.3]		
Storage Temperature Range		-20°C to 100°C [-4°F to 212°F]						-20°C to 100°C [-4°F to 212°F]			
Operating Temperature Range		-20°C to 50°C [-4°F to 122°F] (motor case temperature should be kept below 100°C [212°F])						-20°C to 50°C [-4°F to 122°F] (motor case temp < 100°C [212°F])			
Operating Humidity Range		55% to 85% non-condensing						55% to 85% non-condensing			
Product Material		steel motor case; stainless steel shaft(s)						steel motor case; stainless steel shaft(s)			
Environmental Rating		IP40						IP40			
Weight (lb [kg])		0.6 [0.3]	0.7 [0.3]	0.9 [0.4]	1.5 [0.7]	2.2 [1.0]	3.9 [1.7]	2.4 [1.1]	3.9 [1.7]	5.9 [2.7]	8.4 [3.8]
Agency Approvals		CE (complies with EN55014-1 (1993) and EN60034-1.5.11), RoHS						CE (complies w EN55014-1(1993) & EN60034-1.5.11), RoHS			
Accessory Extension Cable		STP-EXT-020						STP-EXTH-020			
* For dual-shaft motors (STP-MTR-xxxxD): The sum of the front and rear Torque Loads, Radial Loads, and Thrust Loads must not exceed the applicable Torque, Radial, and Thrust load ratings of the motor.											

SureStep™ Motor / Drive Recommended Compatibility						
Motor ⁽¹⁾⁽²⁾			Recommended Drive ⁽¹⁾			
Model # (1)(2)	Rated Amps	Ext Cable ⁽²⁾	STP-DRV-4035 ⁽¹⁾ (3.5A max output)	STP-DRV-4850 ⁽¹⁾ (5.0A max output)	STP-DRV-6575 ⁽¹⁾ (7.5A max output)	STP-DRV-80100 ⁽¹⁾ (10.0A max output)
STP-MTR-17040(D)	1.7	STP-EXT-020	√	√	√	-
STP-MTR-17048(D)	2.0		√	√	√	
STP-MTR-17060(D)	2.0		√	√	√	
STP-MTR-23055(D)	2.8		√	√	√	
STP-MTR-23079(D)	2.8		√	√	√	
STP-MTR-34066(D)	2.8		√	√	√	
STP-MTRH-23079(D)	5.6	STP-EXTH-020	-	-	√	√
STP-MTRH-34066(D)	6.3				√	√
STP-MTRH-34097(D)	6.3				√	√
STP-MTRH-34127(D)	6.3				√	√
1) The combinations above will perform according to the published speed/torque curves. However, any STP motor can be used with any STP drive. Using a motor with a current rating higher than the drive's output rating will proportionally limit the motor torque.						
2) MTR motors have connectors compatible with the EXT extension cables. MTRH motors have connectors compatible with the EXTH extension cables.						

Design and Installation Tips

Allow sufficient time to accelerate the load and size the step motor with a 100% torque safety factor. DO NOT disassemble step motors because motor performance will be reduced and the warranty will be voided. DO NOT connect or disconnect the step motor during operation. Mount the motor to a surface with good thermal conductivity, such as steel or aluminum, to allow heat dissipation. Use a flexible coupling with "clamp-on" connections to both the motor shaft and the load shaft to prevent radial and thrust loading on bearings from minor misalignment.

Dimensions & Cabling – Connectorized Step Motors

SureStep™ Series Dimensions & Cabling – Connectorized Bipolar Stepping Motors										
Dimensions* (in [mm])*	High Torque Motors						Higher Torque Motors			
	STP-MTR -17040(D)	STP-MTR -17048(D)	STP-MTR -17060(D)	STP-MTR -23055(D)	STP-MTR -23079(D)	STP-MTR -34066(D)	STP-MTRH -23079(D)	STP-MTRH -34066(D)	STP-MTRH -34097(D)	STP-MTRH -34127(D)
A	1.67 [42.3]			2.25 [57.2]		3.39 [86.1]	2.25 [57.2]	3.39 [86.1]		
B	1.22 [31.0]			1.86 [47.2]		2.74 [69.6]	1.86 [47.2]	2.74 [69.6]		
C	Ø 0.87 [22.1]			Ø 1.50 [38.1]		Ø 2.88 [73.0]	Ø 1.50 [38.1]	Ø 2.88 [73.0]		
D**	Ø 0.20 [5.0]			Ø 0.25 [6.4]		Ø 0.50 [12.7]	Ø 0.25 [6.4]	Ø 0.50 [12.7]		
E	M3 x 0.5 thread 0.15 [3.8] min depth			Ø 0.20 [5.1] through		Ø 0.26 [6.6] through	Ø 0.20 [5.1] through	Ø 0.26 [6.6] through		
F	1.58 [40.1]	1.89 [48.0]	2.34 [59.5]	2.22 [56.4]	3.10 [78.7]	2.64 [67.1]	3.10 [78.7]	2.64 [67.1]	3.82 [97.0]	5.00 [127.0]
H ₁	0.94 [24.0]			0.81 [20.6]		1.46 [37.1]	0.81 [20.6]	1.46 [37.1]		
H ₂ **	0.39 [9.9]			0.63 [16.0]		1.13 [28.7]	0.63 [16.0]	1.13 [28.7]		
J**	n/a			0.59 [15.0]		0.98 [25.0]	0.59 [15.0]	0.98 [25.0]		
K**	n/a			0.23 [5.8]		0.45 [11.4]	0.23 [5.8]	0.45 [11.4]		
L	12 [305]						12 [305]			
Conductor	(4) #20 AWG						(4) #18 AWG			
Connector	Molex # 43025-0400						Molex # 39-01-3042			
Pin	Molex # 43030-0007						Molex # 39-00-0039			
* mm dimensions are for reference purposes only.										
** Dimension H ₂ applies only to dual-shaft STP-xxxxD motors.										
Dimension D (shaft diameter) is the same for both front and rear shafts of dual-shaft motors.										
Dimensions J & K do NOT apply to rear shafts of dual-shaft motors (all rear shafts are round style).										

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Connecting the Motor

WARNING: When connecting a step motor to a drive or indexer, be sure that the motor power supply is switched off. Never disconnect the motor while the drive is powered up. Never connect the motor leads to ground or directly to the power supply. (See the Typical Wiring Diagram for the step motor lead color code of AUTOMATIONDIRECT supplied motors.)

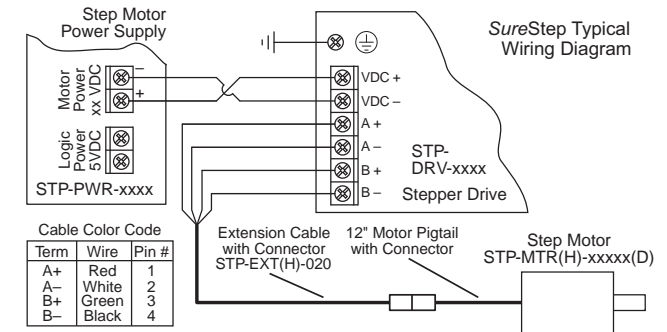
Mounting the Motor

We recommend mounting the motor to a metallic surface to help dissipate heat generated by the motor. The motor can be mounted in any orientation (horizontal or vertical).

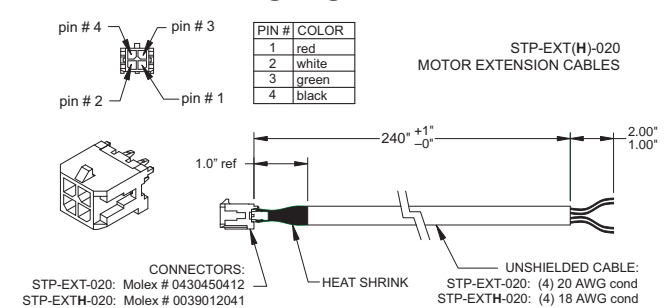
Torque vs Speed Curves

The torque vs speed curves are published in the SureStep User Manual, which is available for free download from our website. (www.automationdirect.com)

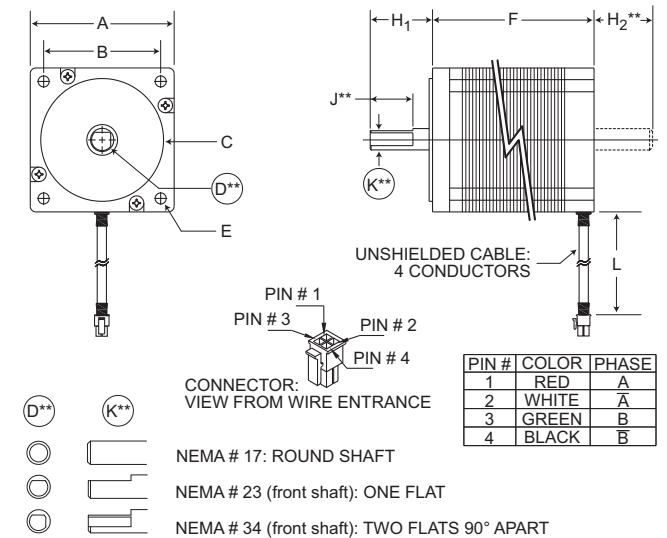
Typical Motor Wiring Diagram



Extension Cable Wiring Diagram



STP-MTR-xxxx(D) Typical Dimension Diagram



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