

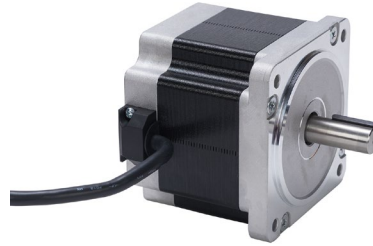
SureStep™ STEPPING MOTORS

Bipolar Step Motors:

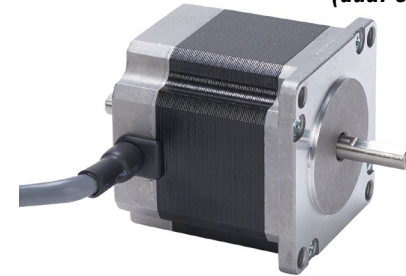
STP-MTRAC-23044(x), 23055(x), 23078(x), 34075(x), 34115(x), 34156(x)

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

STP-MTRAC-xxxxx
(single-shaft)



STP-MTRAC-xxxxxD
(dual-shaft)



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 Bus Voltage Motors					
		STP-MTRAC-23044(x)	STP-MTRAC-23055(x)	STP-MTRAC-23078(x)	STP-MTRAC-34075(x)	STP-MTRAC-34115(x)	STP-MTRAC-34156(x)
NEMA Frame Size		23	23	23	34	34	34
* Maximum Holding Torque	(lb-in)	4.69	9.31	14.19	51.31	69.38	115.06
	(oz-in)	75	149	227	821	1110	1841
	(N·m)	0.53	1.05	1.6	5.8	7.84	13
Rotor Inertia	(oz-in ²)	0.66	1.64	2.62	7.38	14.74	24.06
	(g·cm ²)	120	300	480	1350	2700	4400
Rated Current (A/phase)	Series	0.71	0.71	0.71	2.15	2.05	2.55
	Parallel	1.41	1.41	1.41	4.3	4.1	5.1
Resistance (Ω/phase)	Series	12.4	14.4	18	4	4.8	4.8
	Parallel	3.1	3.6	4.5	1.0	1.2	1.375
Inductance (mH/phase)	Series	30.4	51.2	60.8	32	43.2	44.8
	Parallel	7.6	12.8	15.2	8.0	10.8	11.2
Insulation Class		B					
Steps per Revolution		200					
Basic Step Angle		1.8°					
Shaft Runout		0.05 mm					
Max Shaft Radial Play @ 1-lb load	(in [mm])	0.02			0.025		0.02
Max End Play @ 2.2-lb Axial Load		0.08			0.075		0.08
Connectors		8 leads, 24AWG			8 leads, 22AWG		
Temperature Rise		80°C max					
Storage Temperature Range		-40°C to 70°C [-40°F to 158°F]					
Operating Temperature Range		-20°C to 50°C [-4°F to 122°F]					
Operating Humidity Range		5% to 95% non-condensing					
Product Material		Steel motor case, stainless steel shaft(s)					
Environmental Rating		IP40					
Weight (lb [kg])		1.03 [0.47]	1.54 [0.7]	2.2 [1.0]	4.2 [1.9]	8.4 [3.8]	11.464 [5.2]
Agency Approvals		None			cUR _{US}		

* For dual-shaft motors (STP-MTRAC-xxxxxD): 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.

Drive Compatibility

The STP-MTRAC-x motors are specifically designed to work with high bus voltage stepper drives (drives powered from 120VAC or 240VAC instead of 24-80 VDC drives). The STP-DRVAC-24025 AC powered stepper drive is designed for this purpose and has preconfigured custom tuning settings for each STP-MTRAC-x motor. Other third party high bus voltage drives will also work but you must consult the manufacturer's documentation for compatibility. These motors will work with lower powered DC drives but the motor performance and speed will be drastically reduced.

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)

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.

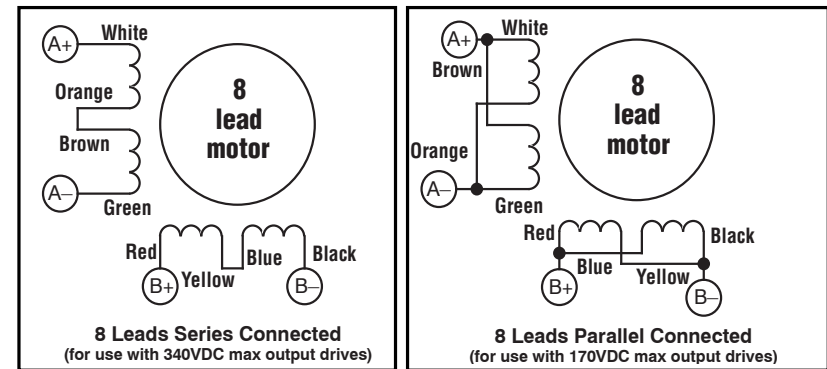
Typical Motor Wiring Diagrams

STP-MTRAC-x motors used with an STP-DRVAC-24025 drive must always be wired in the series configuration. The STP-DRVAC-24025 drive will always put out a maximum of 340VDC whether supplied by 110VAC or 220VAC due to the internal AC voltage doubler. Connecting an STP-MTRAC-x motor in parallel to the STP-DRVAC-24025 drive will likely damage the motor by overheating.

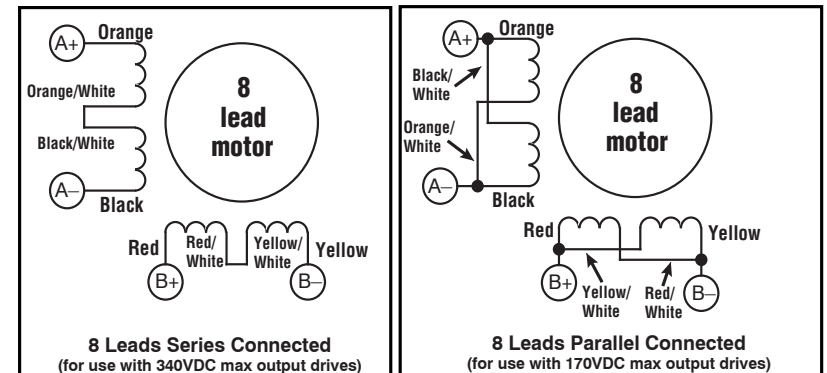
Drive	Input	Output
Standard Stepper Drive	110VAC	170VDC
	220VAC	340VDC
STP-DRVAC-24025 (or other drive with voltage doubler)	110VAC or 220 VAC	340VDC

WARNING: STP-DRVAC-24025 will ALWAYS output 340VDC!

STP-MTRAC-230xx(x), 34156(x)



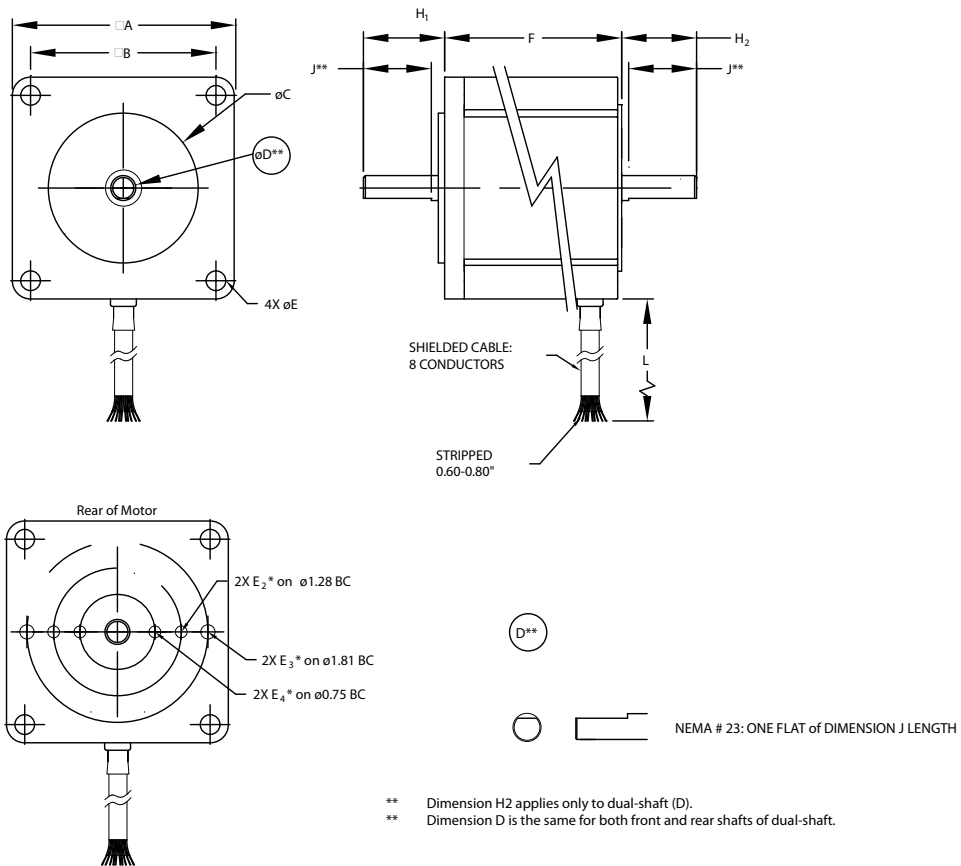
STP-MTRAC-34075(x), 34115(x)



Dimensions & Cabling – Connectorized Step Motors

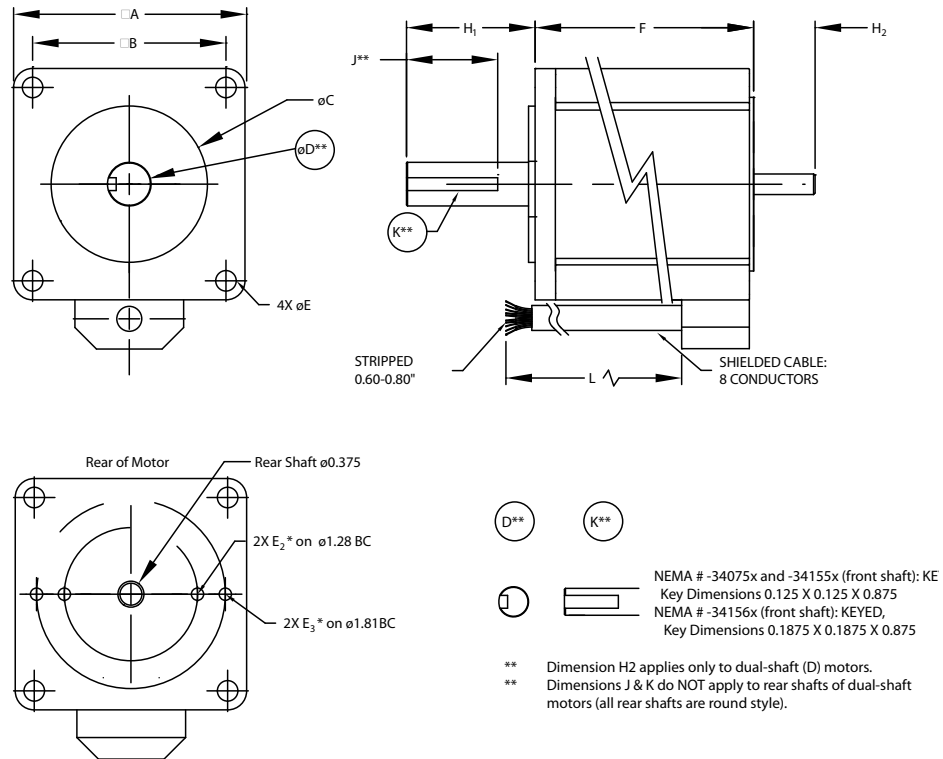
STP-MTRAC-23xxx Typical Dimension Diagram

Note: See table on next page for dimension values



STP-MTRAC-34xxx Typical Dimension Diagram

Note: See table on next page for dimension values



Note: See diagrams on previous page

SureStep™ Series Dimensions & Cabling – Connectorized Bipolar Stepping Motors						
Dimensions (in [mm]*)	High Bus Voltage Motors					
	STP-MTRAC- 23044(x)	STP-MTRAC- 23055(x)	STP-MTRAC- 23078(x)	STP-MTRAC- 34075(x)	STP-MTRAC- 34115(x)	STP-MTRAC- 34156(x)
A	2.25 [57.15]	2.25 [57.15]	2.25 [57.15]	3.39 [86.1]	3.39 [86.1]	3.39 [86.1]
B	1.86 [47.24]	1.86 [47.24]	1.86 [47.24]	2.74 [69.6]	2.74 [69.6]	2.87 [72.9]
ø C	1.50 [38.1]	1.50 [38.1]	1.50 [38.1]	2.87 [72.9]	2.87 [72.9]	2.87 [72.9]
ø D**	0.25 [6.35]	0.25 [6.35]	0.25 [6.35]	0.5 [12.7]	0.5 [12.7]	0.625 [15.9]
ø E	0.2 [5.08]	0.2 [5.08]	0.2 [5.08]	0.25 [6.35]	0.25 [6.35]	0.25 [6.35]
E₂***	2-56 thru	2-56 thru	2-56 thru	2-56 UNC Tap 0.2 Deep	2-56 UNC Tap 0.2 Deep	2-56 UNC Tap 0.2 Deep
E₃***	4-40 UNC x 0.2 Deep	4-40 UNC x 0.2 Deep	4-40 UNC x 0.2 Deep	4-40 UNC Tap 0.2 Deep	4-40 UNC Tap 0.2 Deep	4-40 UNC Tap 0.2 Deep
E₄***	2-56 UNC Tap 0.2 Deep	2-56 UNC Tap 0.2 Deep	2-56 UNC Tap 0.2 Deep	-	-	-
F	1.71 [43.43]	2.16 [54.86]	3.05 [77.47]	2.95 [74.93]	4.52 [114.81]	6.14 [155.96]
H₁	0.81 [20.57]	0.81 [20.57]	0.81 [20.57]	1.25 [31.75]	1.25 [31.75]	1.25 [31.75]
H₂***	0.63 [16.0]	0.63 [16.0]	0.63 [16.0]	1.12 [28.45]	1.12 [28.45]	1.12 [28.45]
J	0.60 [15.24]	0.60 [15.24]	0.60 [15.24]	0.87 [22.1]	0.87 [22.1]	0.87 [22.1]
L	120 [3048]	120 [3048]	120 [3048]	120 [3048]	120 [3048]	120 [3048]
<p>* mm dimensions are for reference purposes only.</p> <p>** Dimension øD (shaft diameter) is the same for both front and rear shafts of NEMA 23 dual-shaft motors. See diagrams for NEMA 34.</p> <p>*** Dimension applies only to dual-shaft (D) motors.</p>						