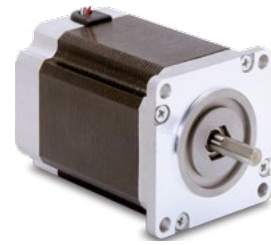


TPE23 & TPE23M : ElectroCraft TorquePower™ Enhanced | Stepper Motor

Size	Holding Torque oz-in (Ncm)	Speeds up to RPS
Nema 23	294 (208)	50



Compact. Powerful.

The ElectroCraft Torque Power™ Enhanced Nema 23 is a high performance stepper motor incorporating creative design and manufacturing techniques to offer improved holding torque. Motors are available in both bipolar and unipolar windings with a variety of shaft configurations and encoder options to meet the needs of any application.

To build your own motor, choose the:

1 - Frame Size
(Metric or Imperial)

a. **T P E 2 3**
Product Name Frame Size

b. **T P E 2 3 M**
Product Name Frame Size Optional Metric

2 - Torque
(Stack Length)

— **2 9 4**
Holding Torque (oz-in) Bipolar

— **2 0 8**
Holding Torque (Ncm) Bipolar

3 - Winding

A 1 0
Bipolar Current (Amps x 10)

V 2 0
Unipolar Voltage (Volts x 10)

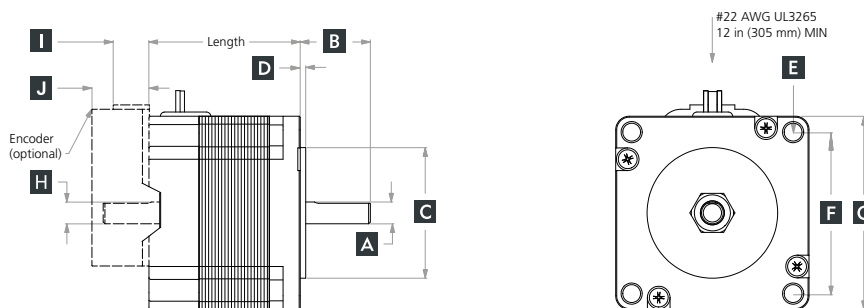
4 - Features
(see page 39)

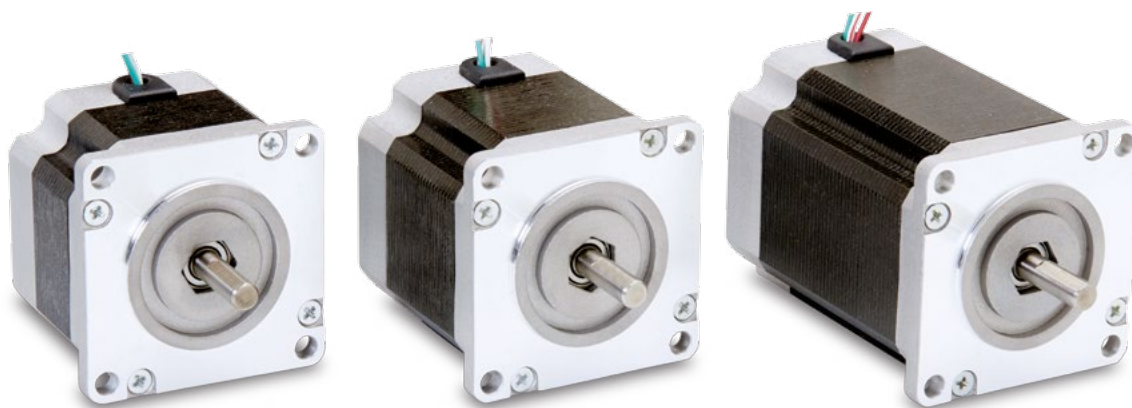
— **1 1 1 1** — **X**
Step Angle Front Shaft Rear Shaft Termination Encoder

Step 1:

TPE23 & TPE23M Frame Size Drawing Key

Bipolar Model	Unipolar Model	MAX Length	A	B	C	D	E	F	G	H	I	J
			Front Shaft Diameter	Front Shaft Length	Pilot Diameter	Pilot Length (Ref)	Mount Hole Callout (Ref)	Mount Hole Spacing (Ref)	Flange External Dimension (Ref)	Rear Shaft Diameter	Rear Shaft Length	Encoder Length (max)
TPE23-100	TPE23-77	1.75 in ± 0.03										
TPE23-166	TPE23-126	2.21 in ± 0.03	0.2500 in 0.2495 in	0.81 in ± 0.03	1.500 in ± 0.002	0.06 in	[4] 0.205 in ± 0.01 Through	1.854 in	2.22 in	0.2500 in 0.2495 in	0.53 in ± 0.04	0.66 in
TPE23-294	TPE23-226	3.08 in ± 0.03										
TPE23M-71	TPE23M-54	44.5 mm ± 0.8										
TPE23M-117	TPE23M-89	56.0 mm ± 0.8	7.998 mm 7.976 mm	20.5 mm ± 0.8	38.1 mm ± 0.05	1.5 mm	[4] 5.2 mm ± 0.25 Through	47.1 mm	56.4 mm	4.998 mm 4.986 mm	13.5 mm ± 1.0	16.8 mm
TPE23M-208	TPE23M-160	78.5 mm ± 0.8										





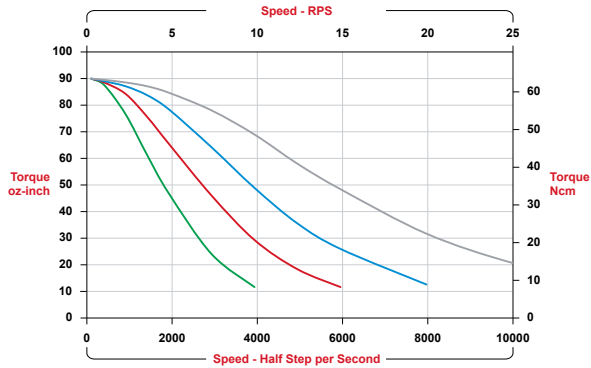
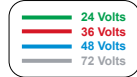
Step 2: TPE23 & TPE23M Torque and Mechanical Data						
Stack Size Models	Bipolar			Unipolar		
Imperial	100A	166A	294A	77V	126V	226V
Metric	71A	117A	208A	54V	89V	160V
Holding Torque oz-in (Ncm)	100 (71)	166 (117)	294 (208)	77 (54)	126 (89)	226 (160)
Step Angle °/step	1.8°	1.8°	1.8°	1.8°	1.8°	1.8°
Rotor Inertia oz-in-sec ² (kg-cm ²)	0.0020 (0.141)	0.0035 (0.247)	0.0061 (0.431)	0.0020 (0.141)	0.0035 (0.247)	0.0061 (0.431)
Weight oz (g)	17 (482)	24 (680)	37 (1049)	17 (482)	24 (680)	37 (1049)

Step 3: Available Windings									
Bipolar									
Imperial	100A10	100A20	100A30	166A10	166A20	166A30	294A10	294A20	294A30
Metric	71A10	71A20	71A30	117A10	117A20	117A30	208A10	208A20	208A30
Current Bipolar (A/Phase)	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00
Phase Resistance (ohm)	5.90	1.50	0.70	7.80	1.90	0.92	10.60	2.70	1.20
Phase Inductance (mH)	19.20	4.80	2.10	37.00	9.20	4.10	57.00	14.20	6.40
Unipolar									
Imperial	77V21	77V30	77V59	126V28	126V38	126V78	226V36	226V54	226V106
Metric	54V21	54V30	54V59	89V28	89V38	89V78	160V36	160V54	160V106
Unipolar (V/Phase)	2.10	3.00	5.90	2.80	3.80	7.80	3.60	5.40	10.60
Unipolar (A/Phase)	3.00	2.00	1.00	3.00	2.00	1.00	3.00	2.00	1.00
Phase Resistance (ohm)	0.70	1.50	5.90	0.92	1.90	7.80	1.20	2.70	10.60
Phase Inductance (mH)	1.10	2.40	9.60	2.10	4.60	18.40	3.20	7.10	28.50
Bipolar (A/Phase)	2.12	1.41	0.71	2.12	1.41	0.71	2.12	1.41	0.71

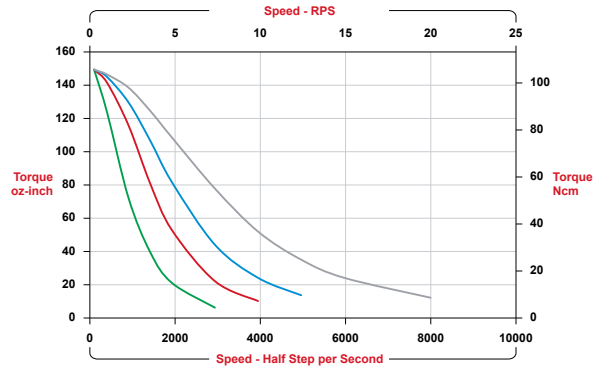
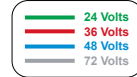
TPE23 & TPE23M Speed - Torque Curves

Bipolar

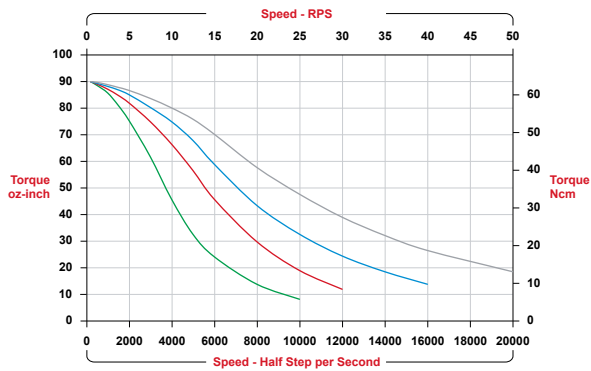
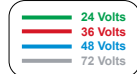
TPE23-100A10
TPE23M-71A10
1 Amp/phase (RMS)



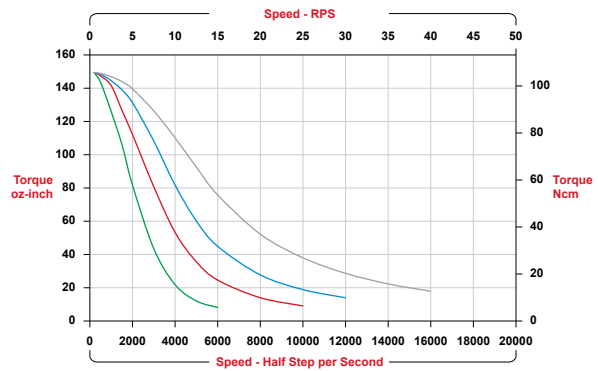
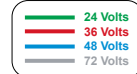
TPE23-166A10
TPE23M-117A10
1 Amp/phase (RMS)



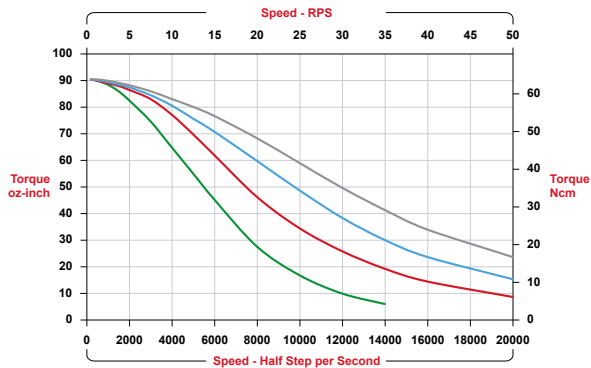
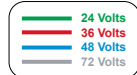
TPE23-100A20
TPE23M-71A20
2 Amp/phase (RMS)



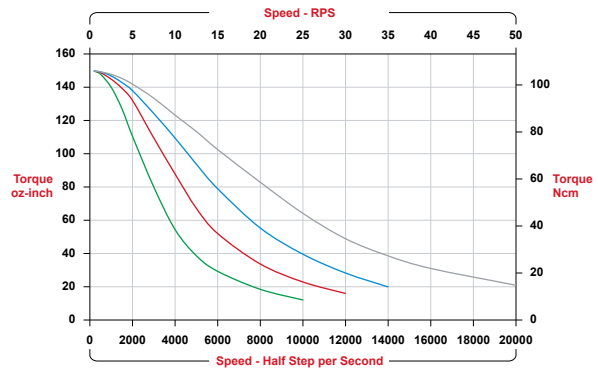
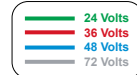
TPE23-166A20
TPE23M-117A20
2 Amp/phase (RMS)



TPE23-100A30
TPE23M-71A30
3 Amp/phase (RMS)



TPE23-166A30
TPE23M-117A30
3 Amp/phase (RMS)



TPE23 & TPE23M Speed - Torque Curves

Bipolar

Unipolar

