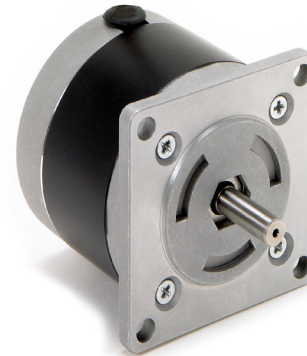


**Great performance at an affordable price.**

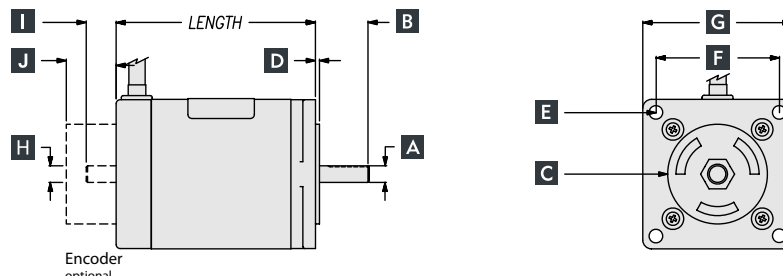
The ElectroCraft RapidPower™ RP23 is a compact, high-performance and high-speed brushless motor with ball-bearing construction, dynamically balanced rotors, and low audible and magnetic noise. It is compatible with three-phase brushless DC motor drives.



**RP23 RapidPower™ BLDC Motor**

<b>Size:</b>	NEMA 23
<b>Peak Torque:</b>	to 190 oz-in or 134 Ncm

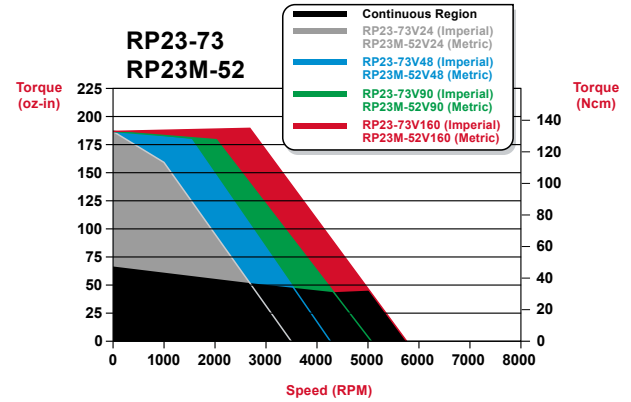
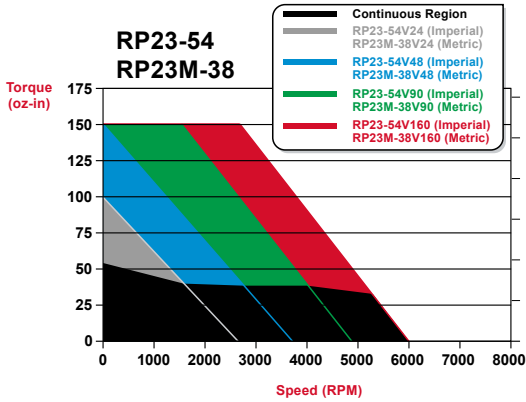
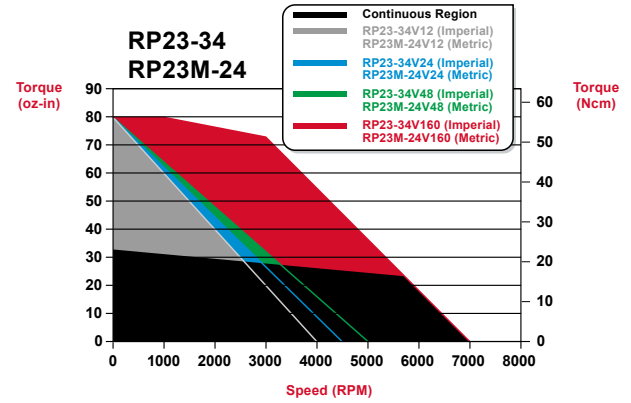
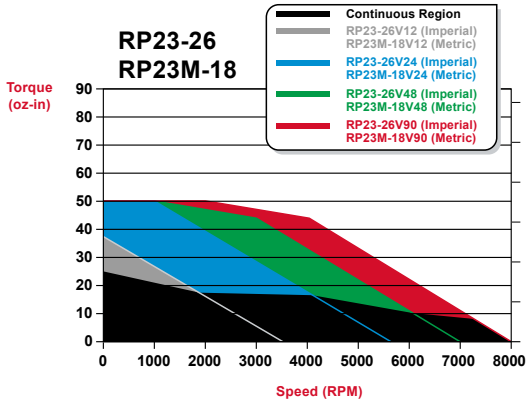
Model	MAX Length	A	B	C	D	E	F	G	H	I	J
		Front Shaft Diameter	Front Shaft Length	Pilot Diameter	Pilot Length	Mount Hole Pattern	Mount Hole Spacing	Flange External Dimension	Rear Shaft Diameter	Rear Shaft Length	Differential Encoder Length
RP23-26	1.6 in	0.25 in	0.81 in	1.5 in	0.06 in	0.205 in thru holes	1.86 in	2.25 in	0.25 in	0.45 in	0.55 in
RP23-34	2.0 in										
RP23-54	3.0 in										
RP23-73	4.0 in										
RP23M-18	41 mm	8.0 mm	25 mm	36 mm	1.5 mm	4.5 mm thru holes	46 mm	57 mm	6.35 mm	12.3 mm	14 mm
RP23M-24	51 mm										
RP23M-38	76 mm										
RP23M-52	102 mm										



**RP Model Number**

<b>R</b>	<b>P</b>	<b>2</b>	<b>3</b>	-	<b>7</b>	<b>3</b>	V	<b>2</b>	<b>4</b>	-	<b>1</b>	<b>0</b>	<b>0</b>	-	<b>X</b>
Product Type	Frame Size NEMA 23	Continuous Torque (oz-in) 26 34 54 73			Voltage (VDC) 12 24 48 90 160			Rear Shaft 0 - no 1 - yes	Front Shaft 0 - round 1 - flat	Lead Option 0 - flying leads	Encoder X - None C - 500-line differential D - 1000-line differential E - 2000-line differential J - 500-line single ended K - 1000-line single ended L - 2000-line single ended				
<b>R</b>	<b>P</b>	<b>2</b>	<b>3</b>	<b>M</b>	-	<b>5</b>	<b>2</b>								
Product Type	Frame Size 57 mm	Optional Metric	Continuous Torque (Ncm) 18 24 38 52												

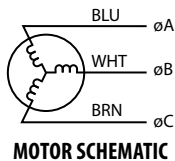
### RP23 Speed Torque Performance



### RP23 Connection

Sensor Output			Driver Output		
S1	S2	S3	ØA	ØB	ØC
0	0	1	X	HI	LOW
0	1	1	HI	X	LOW
0	1	0	HI	LOW	X
1	1	0	X	LOW	HI
1	0	0	LOW	X	HI
1	0	1	LOW	HI	X

Rotation: CCW Facing Lead End



Hall Pinouts	
Color	Function
ORANGE	+4.5-24 VDC
BLACK	GROUND
YELLOW	S1
GREY	S2
GREEN	S3

Low Profile Encoder	
Character	Lines
J	500 CPR
K	1000 CPR
L	2000 CPR

Encoder Pinouts	
Color	Function
BLACK	GROUND
ORANGE	CHANNEL Z
YELLOW	CHANNEL A
RED	+5 VDC
BLUE	CHANNEL B
GREEN	S1
BROWN	S2
WHITE	S3
BRN	S2

Differential Encoder	
Character	Lines
C	500 CPR
D	1000 CPR
E	2000 CPR
Encoder Pinouts	
Color	Function
YELLOW	CH A
YEL/WHT	CH A COMP
BLUE	CH B
BLU/WHT	CH B COMP
ORANGE	CH Z
ORG/WHT	CH Z COMP
GREEN	S1
GRN/WHT	NOT USED
BROWN	S2
BRN/WHT	NOT USED
WHITE	S3
GREY/WHT	NOT USED
RED	VCC
BLACK	GROUND
GREY	NOT USED



**RP23 Mechanical / Winding Data**

	Stack Size and Winding Models															
Specifications	RP23-26V12	RP23-26V24	RP23-26V48	RP23-26V90	RP23-34V12	RP23-34V24	RP23-34V48	RP23-34V160	RP23-54V12	RP23-54V24	RP23-54V48	RP23-54V160	RP23-73V24	RP23-73V48	RP23-73V90	RP23-73V160
	RP23M-18V12	RP23M-18V24	RP23M-18V48	RP23M-18V90	RP23M-24V12	RP23M-24V24	RP23M-24V48	RP23M-24V160	RP23M-38V12	RP23M-38V24	RP23M-38V48	RP23M-38V160	RP23M-52V24	RP23M-52V48	RP23M-52V90	RP23M-52V160
Design Voltage (VDC)	12	24	48	90	12	24	48	160	12	24	48	160	24	48	90	160
No load speed (RPM)	3,500	5,700	7,000	8,000	4,000	4,350	5,000	7,000	2,500	3,700	4,950	6,000	3,800	4,300	5,000	5,700
Peak Torque (oz-in)	40	50	50	50	60	80	80	80	100	150	150	150	190	190	190	190
Peak Torque (Ncm)	28	35	35	35	42	57	57	57	71	106	106	106	134	134	134	134
Peak Current (Amps)	11.0	8.8	6.5	3.5	14.5	10.0	6.2	2.6	15.2	18.5	12.4	4.5	22.3	12.6	8.5	5.0
Continuous Stall Torque (oz-in)	26				34				54				73			
Continuous Stall Torque (Ncm)	18				24				38				52			
Continuous Stall Current (Amps)	5.3	4.6	2.6	1.6	8.6	4.6	2.5	1.1	8.7	5.7	4.2	1.6	8.3	4.7	3.1	1.9
Continuous Rated Torque (oz-in)	18.0	16.0	12.0	8.0	24.0	27.0	28.0	22.0	40.0	38.0	38.0	32.0	51.0	48.0	51.0	41.0
Continuous Rated Torque (Ncm)	12.7	11.3	8.5	5.7	16.9	19.1	19.8	15.5	28.2	26.8	26.8	22.6	36.0	33.9	36.0	29.0
Continuous Rated Current (Amps)	3.9	2.8	1.3	0.5	5.9	3.6	2.2	0.8	6.1	4.3	3.0	0.9	6.5	3.2	2.2	1.1
Continuous Rated Speed (RPM)	1,800	3,700	5,900	7,300	2,300	2,800	3,450	5,500	1,500	2,700	4,150	5,100	2,800	3,600	4,200	4,900
Voltage Constant (V / kRPM)	3.4	4.2	6.7	11.3	3.0	5.5	9.6	22.9	4.9	6.5	9.8	26.7	6.3	11.2	18.0	28.1
Torque Constant (oz-in / Amp)	4.6	5.7	9.1	15.2	4.1	7.5	13.0	30.9	6.6	8.8	13.3	36.1	8.5	15.1	24.6	38.0
Torque Constant (Ncm / Amp)	3.3	4.0	6.4	10.7	2.9	5.3	9.2	21.8	4.7	6.2	9.4	25.5	6.0	10.7	17.4	26.8
Resistance (Ohms)	0.9	1.5	3.6	9.2	0.4	1.3	3.8	21.0	0.4	0.9	1.5	12.5	0.4	1.3	3.3	7.9
Inductance (mH)	1.1	1.8	4.6	11.3	0.5	1.8	4.5	25.0	0.6	1.1	2.5	18.0	0.7	2.0	6.1	14.5
Motor Constant (oz-in / √ Watt)	4.5				7.2	6.6	7.2	6.8	7.2	9.2	10.6	10.5	13.5	13.5	12.7	12.7
Motor Constant (Ncm / √ Watt)	3.2				5.1	4.7	5.1	4.8	5.1	6.5	7.5	7.4	9.5	9.5	8.9	8.9
Electrical Constant (msec)	1.2				1.3				1.5				1.6			
Mechanical Constant (msec)	9.1				9.2				6.2				5.4			
Rotor Inertia (oz-in-sec <sup>2</sup> )	0.0015				0.0029				0.0047				0.0071			
Rotor Inertia (g-cm <sup>2</sup> )	107.3				202.0				331.9				504.9			
Thermal Resistance (C / Watt)	3.2				3.0				2.8				2.7			
Weight (oz)	13.5				21.0				31.0				47.0			
Weight (Kg)	0.4				0.6				0.9				1.3			
Length (inch)	1.6				2.0				3.0				4.0			
Length (mm)	40.6				50.8				76.2				101.6			
Number of Poles	4				4				4				4			

