



RP23 : RapidPower™ BLDC Motor

Size: Nema 23

Peak Torque: to 190 oz-in or 134 Ncm

High-Performance. Good Price.

Our ElectroCraft RapidPower™ Nema 23 is a high-performance, high-speed brushless motor with ball-bearing construction, dynamically balanced rotors, and low audible and magnetic noise. It does not include brushes or a commutator. It is compatible with all three-phase brushless DC motor amplifiers.

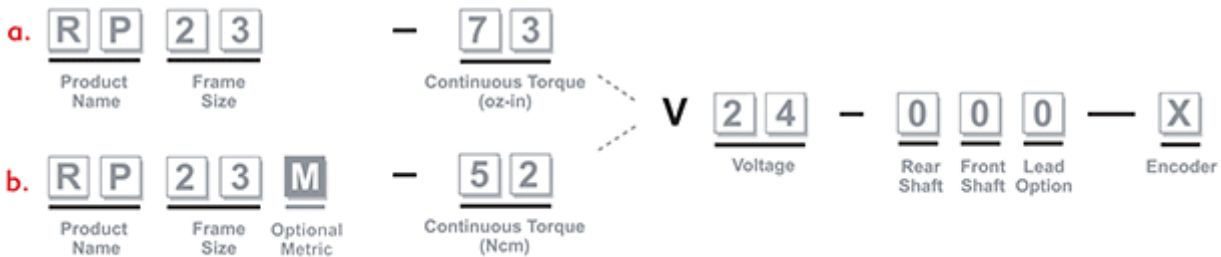
BLDC Model Number (example)

1 - Frame Size
(Imperial or Metric)

2 - Torque

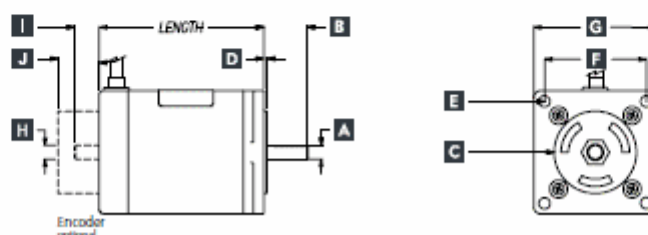
3 - Winding

4 - Features

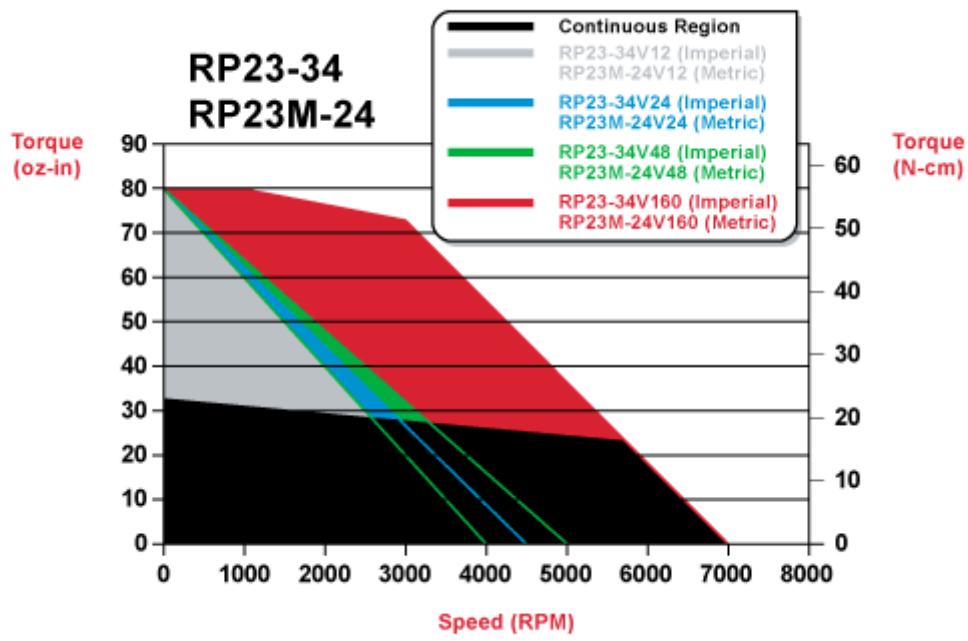
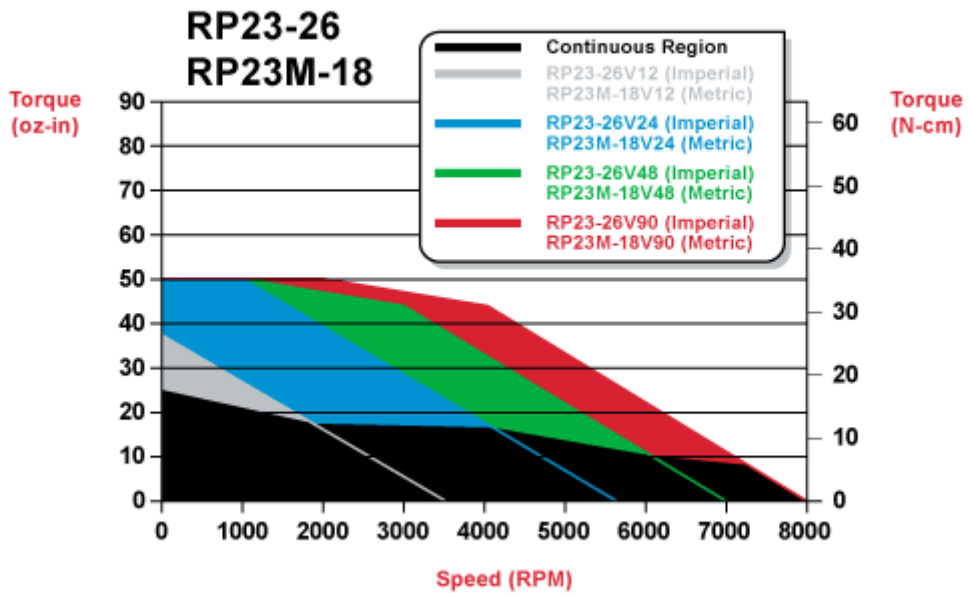


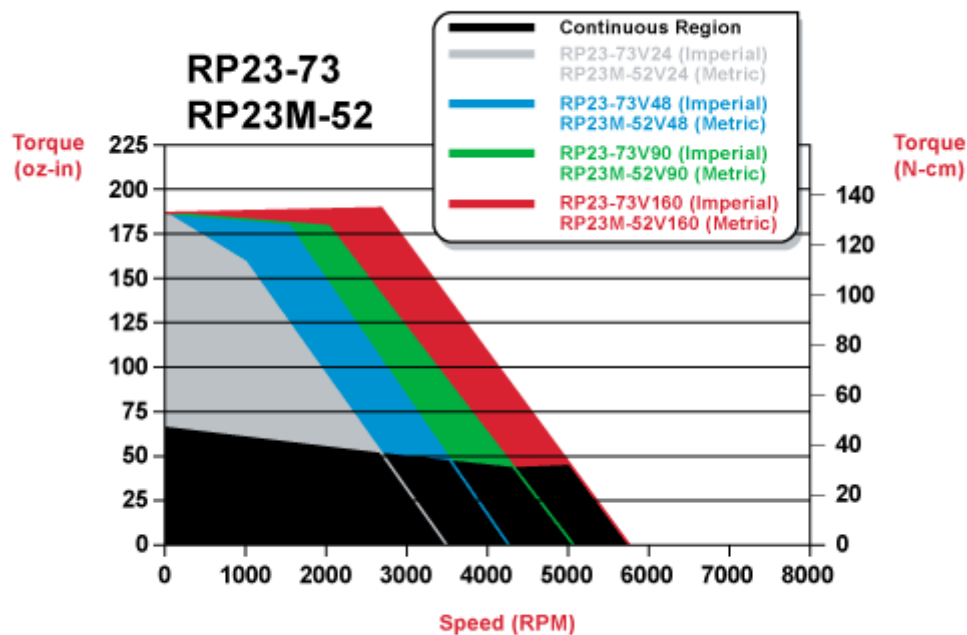
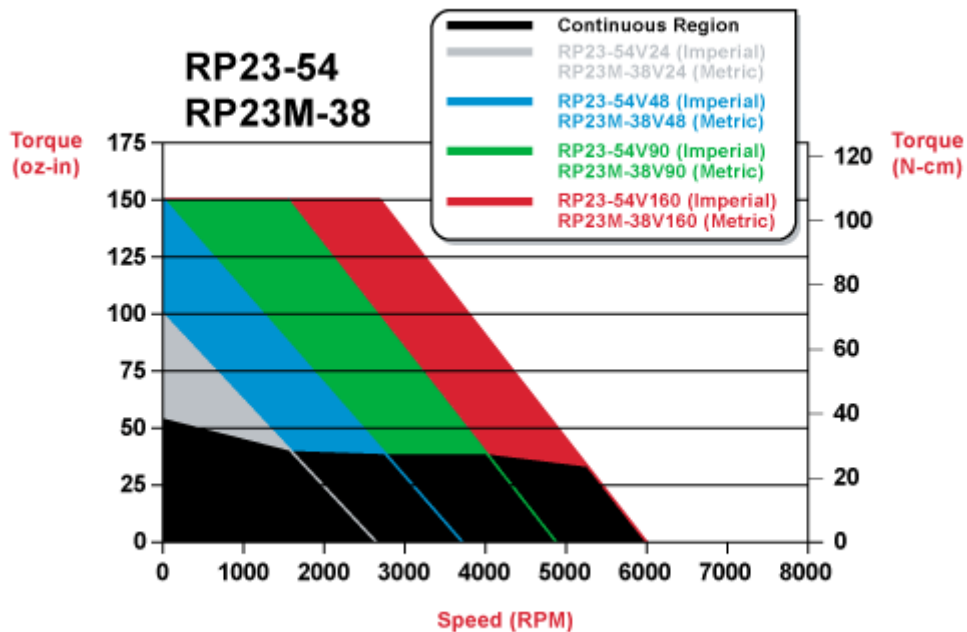
RP23 Outline Drawing

Model	MAX Length	A Front Shaft Diameter	B Front Shaft Length	C Pilot Diameter	D Pilot Length (Ref)	E Mount Hole Pattern (Ref)	F Mount Hole Spacing (Ref)	G Flange External Dimension (Ref)	H Rear Shaft Diameter	I Rear Shaft Length	J Encoder Length (Ref) Single Ended Differential
RP23-26	1.60 in										
RP23-34	2.00 in	0.2500 in	0.81 in ±0.03	1.500 in	0.06 in	[4] 0.205 in ± 0.010 on 2.625 in D.B.C.	1.86 in	2.25 in	0.2500 in	0.47 in ±0.030	0.35 in / 0.55 in
RP23-54	3.00 in	0.2495 in		1.498 in					0.2495 in		
RP23-73	4.00 in										
RP23M-18	41 mm										
RP23M-24	51 mm	8.000 mm	25 mm ±0.8	36 mm ±0.05	1.5 mm	[4] 4.5 mm ± 0.25 on 65 mm D.B.C.	46 mm	57 mm	6.350 mm	11.4 mm ±0.7	8.9 mm / 14.0 mm
RP23M-38	77 mm	7.987 mm							6.337 mm		
RP23M-52	102 mm										



RP23 Speed / Torque Curves





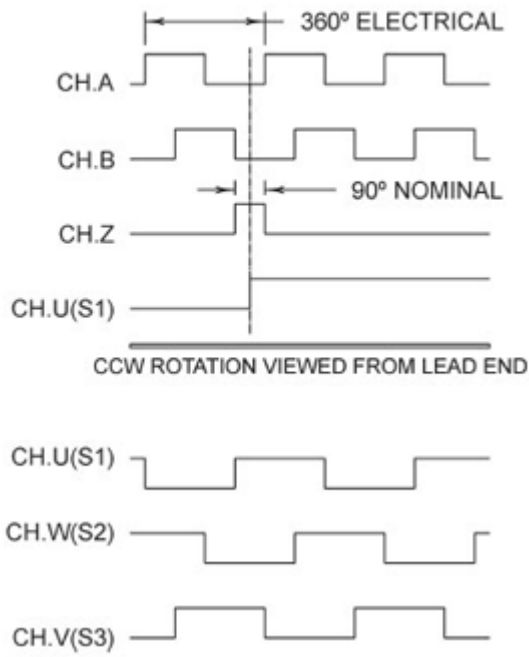
RP23 Mechanical / Winding Data

Stack Size Models	RP23- 26	RP23- 34	RP23- 54	RP23- 73
Continuous Stall Torque (oz-in)	26	34	54	73
Continuous Stall Torque (Ncm)	18	24	38	52
Peak Torque (oz-in)	50	80	150	190
Peak Torque (Ncm)	35	56	106	134
Motor Constant (oz-in / √ Watt)	4.50	6.60	9.20	15.00
Motor Constant (Nm / √ Watt)	3.18	4.66	6.50	10.59
Electrical Constant (msec)	1.24	1.30	1.54	1.62
Mechanical Constant (msec)	9.06	9.21	6.24	5.41
Rotor Inertia (oz-in ²)	0.0015	0.0029	0.0047	0.0072
Rotor Inertia (gm-cm ²)	105.9	204.8	331.9	508.5

Thermal Resistance (C / Watts)	3.2	3.0	2.8	2.7
Weight (oz)	15.0	21.0	31.0	47.0
Weight (Kg)	0.4	0.6	0.9	1.3
Length (inches)	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

Winding Models	26V12	26V24	26V48	26V90	34V12	34V24	34V48	34V160	54V12	54V24	54V48	54V160	73V24	73V48	73V90	73V160
	18V12	18V24	18V48	18V90	24V12	24V24	24V48	24V160	38V12	38V24	38V48	38V160	52V24	52V48	52V90	52V160
Design Voltage (VDC)	12	24	48	90	12	24	48	160	12	24	48	160	24	48	90	160
Continuous Current (Amps)	5.3	4.6	2.6	1.6	8.6	4.5	2.5	1.1	8.7	5.7	4.2	1.5	8.3	4.7	3.1	1.9
Peak Current (Amps)	11.0	9.0	6.5	3.5	17.5	10.0	7.0	2.6	15.9	18.5	11.1	4.2	25.3	14.4	8.5	5.4
Voltage Constant ±10% (VDC/kRPM)	3.4	4.2	6.7	11.3	3.0	5.5	9.6	22.9	4.9	6.5	10.0	26.7	6.7	11.2	18.0	28.1
Torque Constant ±10% (oz-in / Amp)	4.6	5.7	9.1	15.2	4.1	7.5	13.0	30.9	6.6	8.8	13.5	36.1	9.0	15.1	24.3	38.0
Torque Constant ±10% (Ncm / Amp)	3.248	4.025	6.426	10.734	2.895	5.296	9.180	21.820	4.661	6.214	9.533	25.492	6.355	10.663	17.160	26.834
Resistance ±10% (Ohms)	0.1	1.5	3.5	9.2	0.4	1.3	4.0	21.0	0.4	0.9	1.6	12.5	0.4	1.3	3.0	7.9
Inductance ±10% (mH)	1.1	1.8	4.6	11.3	0.5	1.8	4.5	25.0	0.6	1.3	2.4	18.0	0.7	2.0	4.3	14.5

RP23 Connection

Output Configuration:

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