



RP34 : RapidPower™ BLDC Motor

Size: Nema 34

Peak Torque: to 1096 oz-in or 774 Ncm

Good-Performance. Good Price.

Our ElectroCraft RapidPower™ Nema 34 is a compact, high-performance brushless motor incorporating ball bearing construction, a low cogging electro-magnetic design with both low audible and magnetic noise. It is available with a hall-effect commutation encoder or a variety of optical encoders for higher precision applications.

BLDC Model Number (example)

1 - Frame Size
(Imperial or Metric)

2 - Torque

3 - Winding

4 - Features

a. **RP34**
Product Name Frame Size

— **313**
Continuous Torque (oz-in)

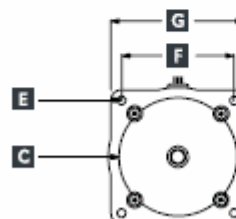
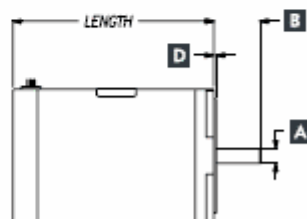
V 24 - 000 - X
Voltage Rear Shaft Front Shaft Lead Option Encoder

b. **RP34M**
Product Name Frame Size Optional Metric

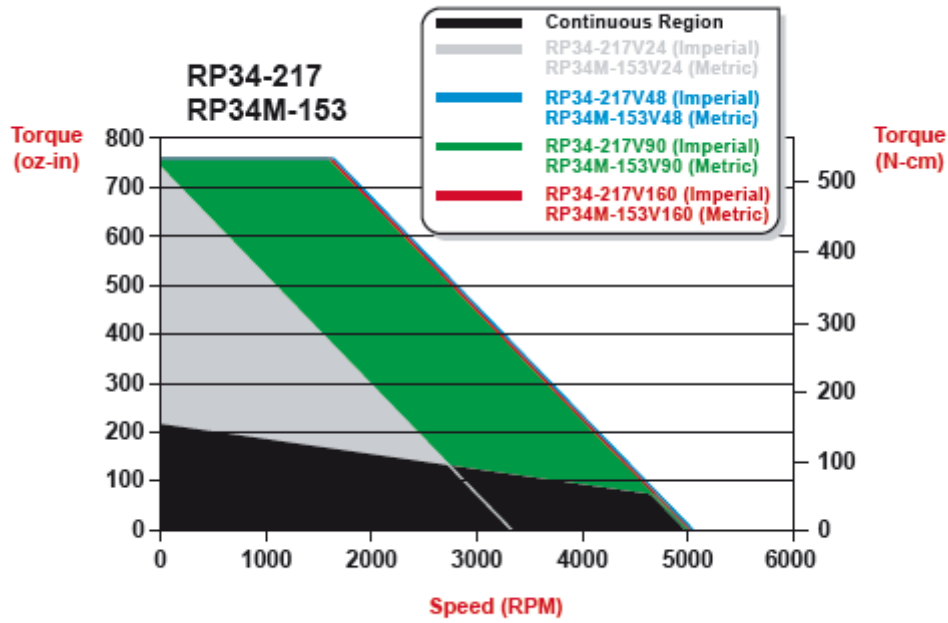
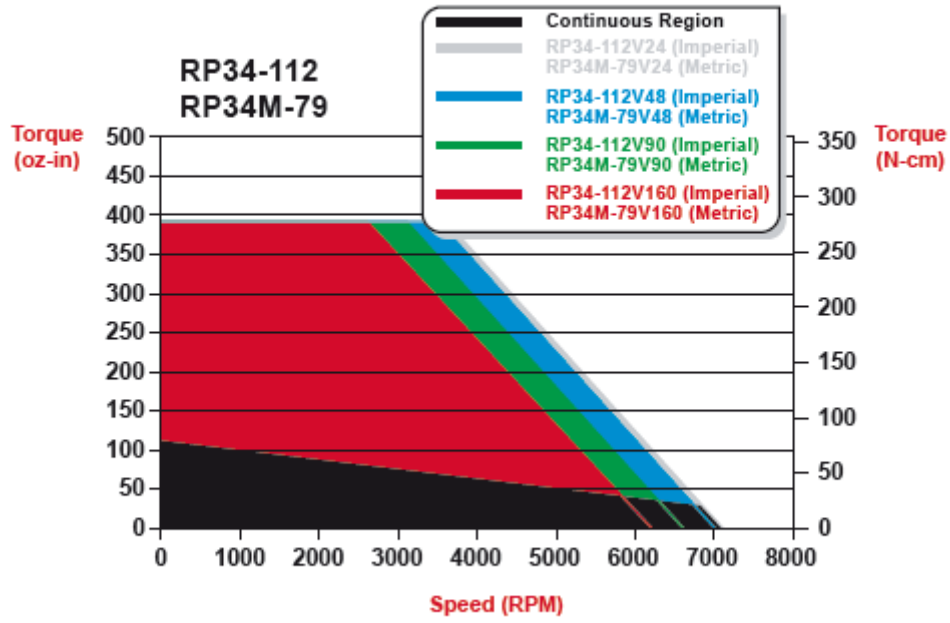
— **221**
Continuous Torque (Ncm)

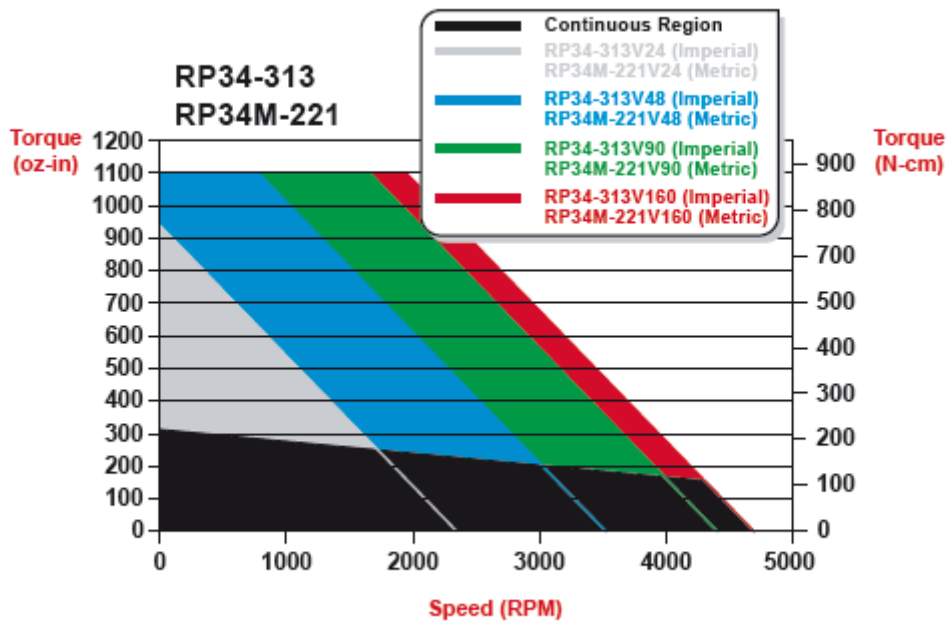
RP34 Outline Drawing

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
RP34-112	2.84 in	0.3750 in	1.25 in	2.875 in	0.06 in	[4] 0.220 in ± 0.010 on 3.875 in D.B.C.	2.74 in	3.38 in	0.2500 in	0.500 in	0.35 in
RP34-217	4.15 in	0.3745 in	±0.03	2.873 in	0.06 in				0.2495 in	±0.040	0.55 in
RP34-313	5.47 in										
RP34M-79	72 mm	14.000 mm	30 mm	80.012 mm	1.5 mm	[4] 7 mm +0.36/-0.00 on 100 mm D.B.C.	71.71 mm	85.85 mm	6.3424 mm	11.4 mm	8.9 mm
RP34M-153	105 mm	13.989 mm	±0.8	79.993 mm	1.5 mm				6.3297 mm	±0.7	14.0 mm
RP34M-221	139 mm										



RP34 Speed / Torque Curves



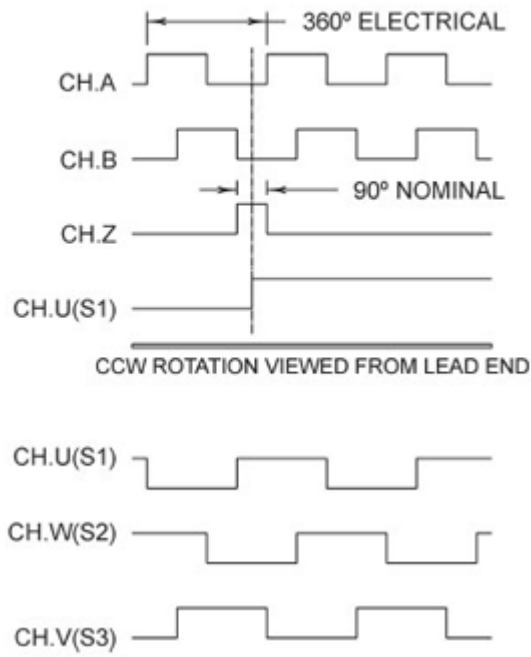


RP34 Mechanical / Winding Data

Stack Size Models	RP34- 112	RP34- 217	RP34- 313
Continuous Stall Torque (oz-in)	112	217	313
Continuous Stall Torque (Ncm)	79	153	221
Peak Torque (oz-in)	392	759	1095
Peak Torque (Ncm)	277	536	773
Motor Constant (oz-in / √ Watt)	18.10	29.10	35.50
Motor Constant (Nm / √ Watt)	12.78	20.55	25.07
Electrical Constant (msec)	4.80	5.50	6.00
Mechanical Constant (msec)	6.70	4.30	4.40
Rotor Inertia (oz-in ²)	0.0149	0.0258	0.0385
Rotor Inertia (gm-cm ²)	1052.2	1822.0	2718.9
Thermal Resistance (C / Watts)	2.0	1.5	1.0
Weight (oz)	64.0	100.0	143.0
Weight (Kg)	1.8	2.8	4.1
Length (inches)	2.8	4.2	5.5
Length (mm)	71.1	106.7	139.7
Number of Poles	4	4	4

Winding Models	112V24	112V48	112V90	112V160	217V24	217V48	217V90	217V160	313V24	313V48	313V90	313V160
	79V24	79V48	79V90	79V160	153V24	153V48	153V90	153V160	221V24	221V48	221V90	221V160
Design Voltage (VDC)	24	48	90	160	24	48	90	160	24	48	90	160
Continuous Current (Amps)	24.4	12.1	6.1	3.2	22.3	16.9	8.9	5.0	22.7	17.0	11.3	6.8
Peak Current (Amps)	85.5	42.4	21.2	11.2	78.0	59.1	31.1	17.6	79.3	59.6	39.7	16.5
Voltage Constant $\pm 10\%$ (VDC/kRPM)	3.4	6.8	13.7	25.9	7.2	9.5	18.1	31.8	10.2	13.6	20.4	34.0
Torque Constant $\pm 10\%$ (oz-in / Amp)	4.6	9.2	18.5	35.0	9.7	12.8	24.4	43.0	13.8	18.4	27.6	46.0
Torque Constant $\pm 10\%$ (Ncm / Amp)	3.248	6.497	13.064	24.715	6.850	9.039	17.230	30.365	9.745	12.993	19.490	32.483
Resistance $\pm 10\%$ (Ohms)	0.1	0.2	0.8	4.0	0.1	0.2	0.7	2.2	0.2	0.3	0.5	1.6
Inductance $\pm 10\%$ (mH)	0.3	1.2	4.8	20.3	0.6	1.1	3.9	12.0	1.0	1.7	3.9	11.0

RP34 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