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*Engineered for life*

**Cleveland Motion Controls**

**BRUSH MOTOR  
Product Guide**



**Guiding you towards the right solution.**



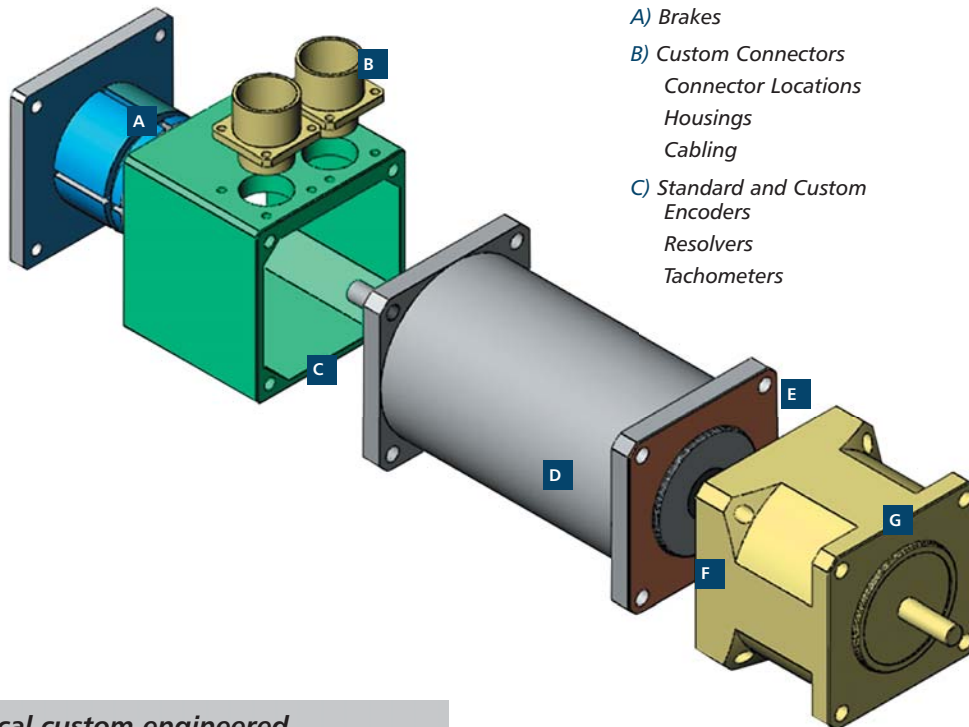


## We can offer you more because we have more behind us.

With Cleveland Motion Controls, you have many choices. Because instead of stacking our shelf with motors and hardware, we have one packed with engineered solutions. In fact, our shelf contains virtually any type of solution you could need, from the simplest integration components like brakes, encoders and tachometers, to the most complex white paper designs.

To complement our array of Brush Servomotors, we offer you an array of standard integration and custom engineered options to complete your solution.

### Our typical standard integration options include:



A) Brakes

B) Custom Connectors  
Connector Locations  
Housings  
Cabling

C) Standard and Custom  
Encoders  
Resolvers  
Tachometers

D) Multiple Standard  
Winding Configurations  
Matched Windings  
Thermostats

E) Standard Flange  
Mounting  
NEMA Mounting  
IEC Mounting  
Custom Mechanical  
Interfaces

F) Standard & Custom  
Shaft Configurations

G) Multiple Gearhead  
Options

### Our typical custom engineered options include:

Extended Ambient Temperature Ratings  
Custom Winding Configurations  
Special Electromagnetic Design Platforms  
Specialized Military Coatings  
Corrosion Resistant Materials  
Food Grade Materials  
Custom Bearings  
Witness Testing  
IP65 Sealing

When you come to us for your Brush DC Servomotor solutions you also get the experience and knowledge of our highly trained sales force to guide you through the selection process. They will work side-by-side with you to fully understand your application, so they can give you an accurate appraisal of how the best solution can be created. Next, our application development engineers will step in and work directly with you to ensure you receive a reliable, high-quality working solution.

Plus, with Cleveland Motion Controls, as a design engineer, you even have the opportunity to size motors and select many standard integration options using our convenient web site servomotor platform configuration feature. Just visit [www.cmcccontrols.com](http://www.cmcccontrols.com) to begin the process.



# Brush Servomotor Platforms

**Key:** ■ Continuous Duty ■ Intermittent Duty ■ Commutation

## STANDARD DESIGN FEATURES:

CE/UL and ROHS Compliant  
 Multiple Winding Availability  
 Sealed Bearings  
 Chip Resistant Painted Steel Housings  
 Superior Low Speed Performance

## RIGID APPLICATION DEVELOPMENT PROCESS:

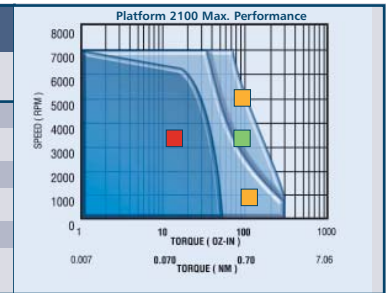
Application Review  
 Motion Profile Analysis  
 Magnetic FEA Computer Simulation  
 Prototype Design  
 Performance Verification

### Platform 2100

8 standard available windings



Platform Number	Rated Power W	Cont. Stall Torque oz-in	Torque NM	Peak Torque oz-in	Torque NM	Rotor Inertia oz-in-sec <sup>2</sup>	Kg(10 <sup>-4</sup> )-m <sup>2</sup>
2105	15	12	0.085	50	0.353	0.0018	0.1271
2110	30	18	0.127	100	0.706	0.0031	0.2189
2115	60	30	0.212	150	1.059	0.0044	0.3107
2120	75	38	0.268	200	1.412	0.0057	0.4025
2130	115	53	0.374	300	2.119	0.0083	0.5862

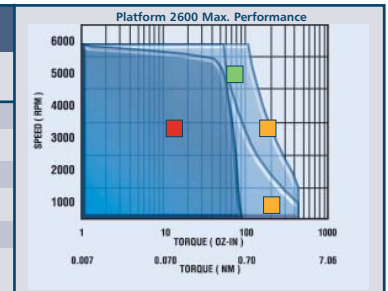


### Platform 2600

8 standard available windings



Platform Number	Rated Power W	Cont. Stall Torque lb-in	Torque NM	Peak Torque lb-in	Torque NM	Rotor Inertia lb-in-sec <sup>2</sup>	Kg(10 <sup>-4</sup> )-m <sup>2</sup>
2605	30	17	0.12	75.00	0.53	0.0018	0.1271
2610	45	29	0.20	150.00	1.06	0.0031	0.2189
2615	75	42	0.30	200.00	1.41	0.0044	0.3107
2620	90	52	0.37	300.00	2.12	0.0057	0.4025
2630	135	70	0.49	350.00	2.47	0.0083	0.5862
2640	200	90	0.64	450.00	3.18	0.0115	0.8121

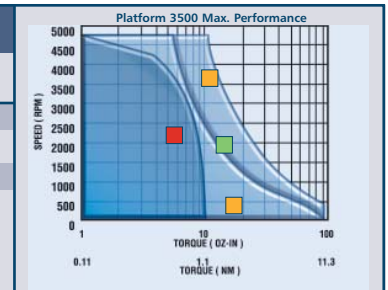


### Platform 3500

8 standard available windings



Platform Number	Rated Power W	Cont. Stall Torque lb-in	Torque NM	Peak Torque lb-in	Torque NM	Rotor Inertia lb-in-sec <sup>2</sup>	Kg(10 <sup>-4</sup> )-m <sup>2</sup>
3505	75	2.63	0.30	21.90	2.47	0.0004	0.4519
3509	100	4.25	0.48	37.50	4.24	0.0006	0.6779
3515	135	6.44	0.73	56.30	6.36	0.0008	0.9039
3528	220	10.60	1.20	93.80	10.60	0.0015	1.6948

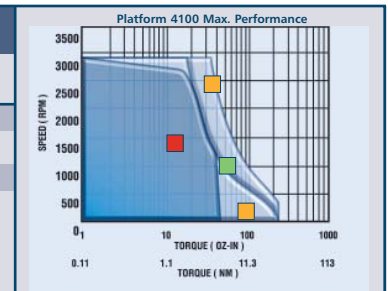


### Platform 4100

7 standard available windings



Platform Number	Rated Power W	Cont. Stall Torque lb-in	Torque NM	Peak Torque lb-in	Torque NM	Rotor Inertia lb-in-sec <sup>2</sup>	Kg(10 <sup>-4</sup> )-m <sup>2</sup>
4101	175	12.00	1.36	60.00	6.78	0.0078	8.8128
4102	410	24.00	2.71	120.00	13.56	0.0110	12.428
4104	475	36.00	4.07	180.00	20.34	0.0180	20.337
4106	580	48.00	5.42	240.00	27.12	0.0240	27.116

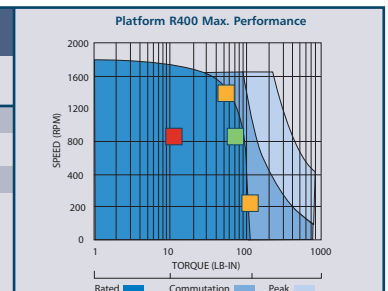


### Platform R400

8 standard available windings

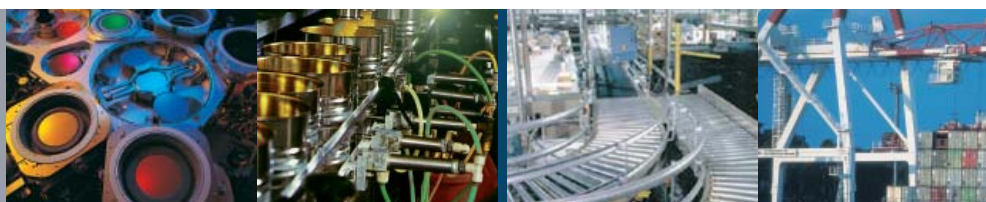


Platform Number	Rated Power W	Cont. Stall Torque lb-in	Torque NM	Peak Torque lb-in	Torque NM	Rotor Inertia lb-in-sec <sup>2</sup>	Kg(10 <sup>-4</sup> )-m <sup>2</sup>
R401	708	34	3.83	300	33.87	0.015	16.9
R402	1268	62	6.99	500	56.45	0.025	28.8
R403	1988	92	10.38	710	80.15	0.036	40.6
R404	2037	125	14.11	920	103.86	0.046	51.9

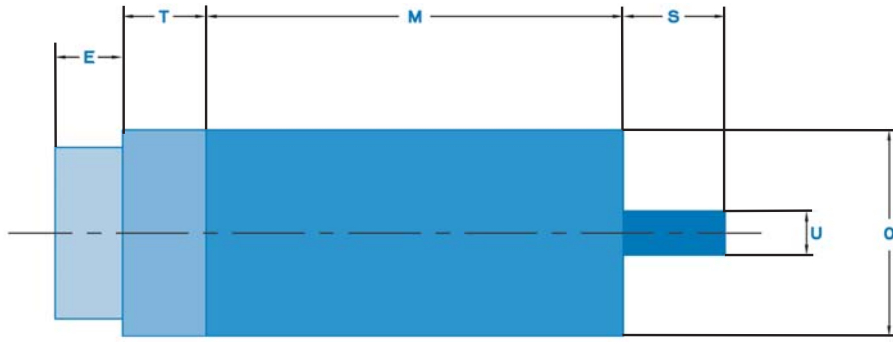


Custom design motors up to 7.25 in. (185 mm) diameter and 300 lb.-in. (34 NM) continuous torque also available.

**Simply put:** Cleveland Motion Controls will design a product to fit your application — rather than altering your application to fit our product.



# Nominal Motor Dimensions



Platform	Frame Length M -in. (mm)	Frame Diameter O -in. (mm)	Tach Addition, max T -in. (mm)	Encoder Addition, max E -in. (mm)	Shaft Extension S -in. (mm)	Shaft Diameter U -in. (mm)		
<b>2100</b>	2105	3.13 (79.50)	2.25 (57.2)	1.5 (38.1)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
	2110	3.63 (92.20)	2.25 (57.2)	1.5 (38.1)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
	2115	4.13 (104.9)	2.25 (57.2)	1.5 (38.1)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
	2120	4.63 (117.9)	2.25 (57.2)	1.5 (38.1)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
	2130	5.63 (143.0)	2.25 (57.2)	1.5 (38.1)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
<b>2600</b>	2605	3.13 (79.50)	2.625 (66.7)	1.6 (40.6)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
	2610	3.63 (92.20)	2.625 (66.7)	1.6 (40.6)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
	2615	4.13 (104.9)	2.625 (66.7)	1.6 (40.6)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
	2620	4.63 (117.9)	2.625 (66.7)	1.6 (40.6)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
	2630	5.63 (143.0)	2.625 (66.7)	1.6 (40.6)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
	2640	6.63 (168.4)	2.625 (66.7)	1.6 (40.6)	0.85 (21.6)	1 (25.4)	0.375 (9.5)	
<b>3500</b>	3505	2.50 (63.50)	3.38 (85.9)	1.5 (38.1)	0.85 (21.6)	1 (25.4)	0.5 (12.7)	
	3509	3.25 (82.55)	3.38 (85.9)	1.5 (38.1)	0.85 (21.6)	1 (25.4)	0.5 (12.7)	
	3515	4.00 (101.6)	3.38 (85.9)	1.5 (38.1)	0.85 (21.6)	1 (25.4)	0.5 (12.7)	
	3528	5.24 (133.1)	3.38 (85.9)	1.5 (38.1)	0.85 (21.6)	1 (25.4)	0.5 (12.7)	
<b>4100</b>	4101	7.19 (182.6)	4.00 (102)	0	0	1 (25.4)	2 (43.2)	0.625 (15.9)
	4102	8.19 (208.0)	4.00 (102)	0	0	1 (25.4)	2 (50.8)	0.625 (15.9)
	4104	10.2 (258.8)	4.00 (102)	0	0	1 (25.4)	2 (50.8)	0.625 (15.9)
	4106	12.2 (309.9)	4.00 (102)	0	0	1 (25.4)	2 (50.8)	0.625 (15.9)
<b>R400</b>	401	8.78 (223.01)	4.00 (102)	8.78 (223.01)	12.41 (315.2)	2 (50.8)	0.750 (19.0)	
	402	10.53 (267.46)	4.00 (102)	10.53 (267.46)	14.16 (359.66)	2 (50.8)	0.750 (19.0)	
	403	12.28 (311.91)	4.00 (102)	12.28 (311.91)	15.91 (404.11)	2 (50.8)	0.750 (19.0)	
	404	14.03 (356.36)	4.00 (102)	14.03 (356.36)	17.66 (448.56)	2 (50.8)	0.750 (19.0)	

**Notes:**

Additional including brakes, resolvers, rear shaft extensions, sealed motors will increase overall length

Shaft Extension includes motor face pilot height

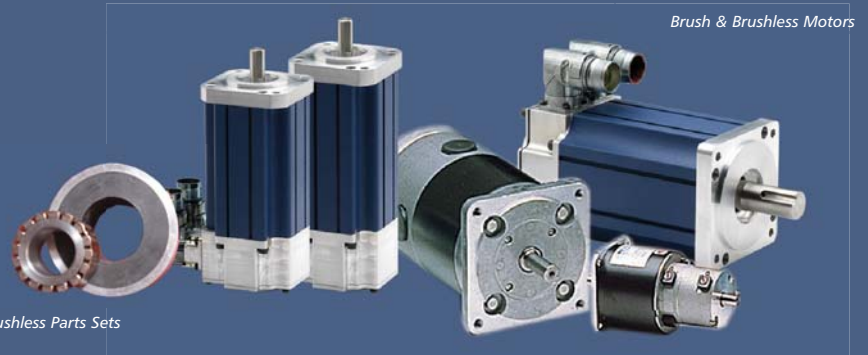
Connectors, connector housings, brush housings and mounting flanges may increase overall diameter

Nema and IEC mounting standards available

Motor Dimensions Subject to Change

## Ask about our other motion controls solutions & capabilities:

- Brushless Servo Motors
- Brushless Parts Sets
- Linear Actuators
- Shaft Mounted DataTorque™ Encoders
- Expert application development engineering
- Complete repair and refurbishing services



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