TORQUE SYSTEMS

Unique Solutions for Unique Customers.

Brushless Servomotor Product Guide

Guiding you towards the right solution.

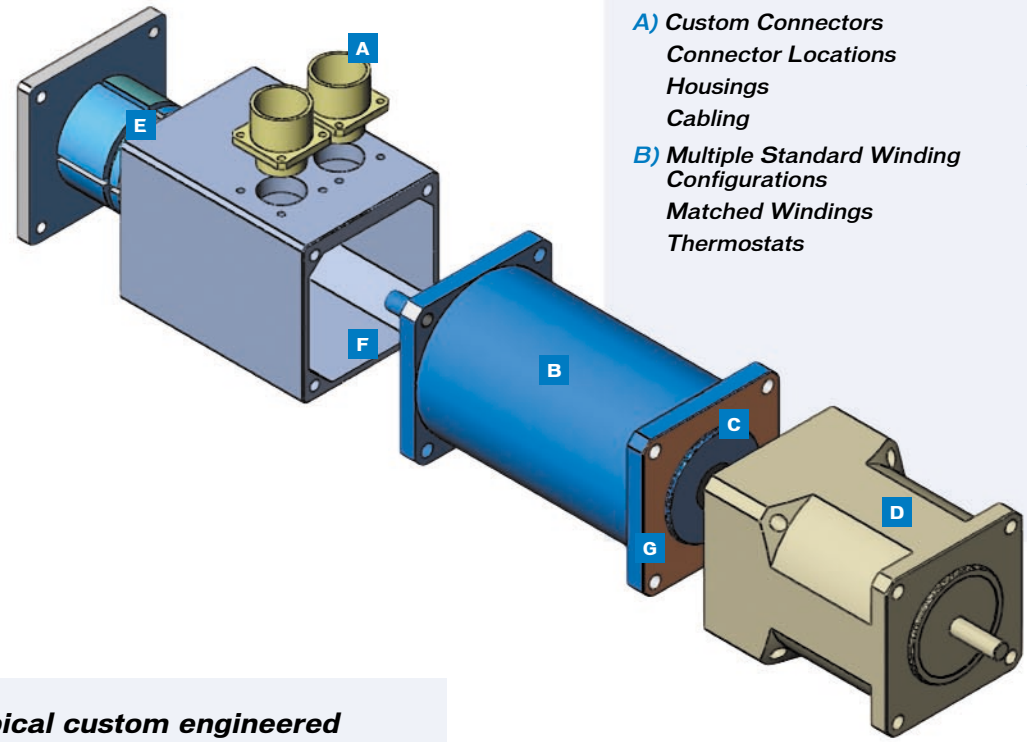
A division of Cleveland Motion Controls
An IMC Company

CMC Cleveland Motion Controls
An IMC Company

More solutions from us equals more success for you.

At Torque Systems, we have always believed in giving you more choices. After all, your application is unique, so the Brushless Servomotor you choose for it should be unique, too. While the competeition stacks their shelves with motors and hardware, we pack ours with engineered solutions. The truth is, our shelf contains just about any type of solution you could require, from simple integration components such as brakes, encoders and tachometers, to elaborate breakthrough designs.

In addition to our wide selection of clean operating, low maintenance brushless servomotors, we also provide you with a range of standard integration and custom engineered options to round out your solution.



Our typical standard integration options include:

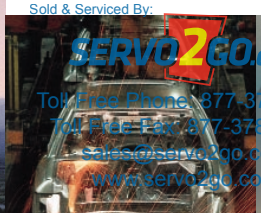
- ***A) Custom Connectors***
  - *Connector Locations*
  - *Housings*
  - *Cabling*
- ***B) Multiple Standard Winding Configurations***
  - *Matched Windings*
  - *Thermostats*
- ***C) Standard & Custom Shaft Configurations***
- ***D) Multiple Gearhead Options***
- ***E) Brakes***
- ***F) Hall Sensors***
  - *Standard and Custom Encoders*
  - *Resolvers*
  - *Tachometers*
- ***G) Standard Flange Mounting***
  - *NEMA Mounting*
  - *IEC Mounting*
  - *Multiple Standard Winding Configurations*

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
P 65 and IP 67 Sealing

Being able to choose from an array of Brushless AC Servomotor solutions is only the beginning. You will also be guided through the entire selection process by members of our highly trained sales force. They will work closely with you so they can gain a thorough understanding of your particular application. This enables them to determine how to create the best solution for you. Once that judgment has been made, our application development engineers step in to ensure that at the end of the process you receive a reliable, high-quality working solution. All this is possible because *Torque Systems will design a product to fit your application* – rather than altering your application to fit our product.

To make the entire process as smooth as possible, we give you the opportunity to size motors and select many standard integration options using our convenient web site servomotor platform configuration feature. **To begin the process, simply visit www.torquesystems.com.**



Brushless Servomotor Platforms

Key: Continuous Duty | Intermittent Duty

Standard Design Features:

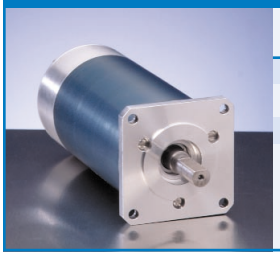
High Energy Neodymium Magnets
CE/UL Compliant
Multiple Winding Availability
Sealed Bearings
Clean Operating, Low Maintenance Brushless Design

Rigid Application Development Process:

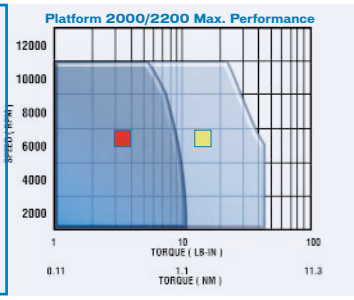
Application Review
Motion Profile Analysis
Magnetic FEA 3D Modeling & Computer Simulation
Prototype Design
Performance Verification

Platform BMR 2000/2200

12 standard available windings



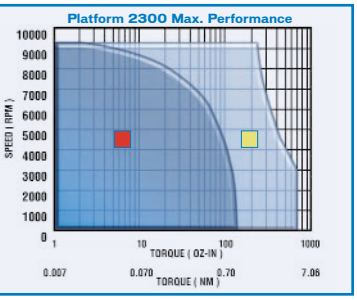
Platform Number	Rated Power W	Cont. Stall Torque lb-in	Cont. Stall Torque NM	Peak Torque lb-in	Peak Torque NM	Rotor Inertia lb-in-sec²	Rotor Inertia Kg(10⁻⁴)-m²
2005	215	5	0.56	23	2.60	0.0004	0.4519
2010	350	10	1.13	45	5.08	0.0009	1.0169
2205	215	5	0.56	23	2.60	0.0004	0.4519
2210	350	10	1.13	45	5.08	0.0009	1.0169



Platform BNL 2300

12 Standard Windings Available

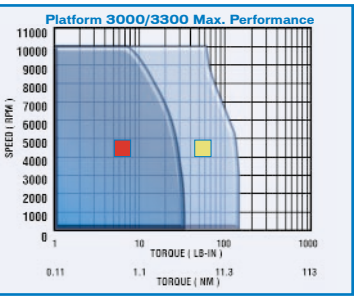
Platform Number	Rated Power W	Cont. Stall Torque oz-in	Cont. Stall Torque NM	Peak Torque oz-in	Peak Torque NM	Rotor Inertia oz-in-sec²	Rotor Inertia Kg(10⁻⁴)-m²
2305	145	50	0.35	250	1.77	0.00159	0.1120
2310	260	100	0.71	500	3.53	0.00281	0.1981
2315	320	120	0.85	600	4.24	0.00380	0.2684
2320	330	140	0.99	700	4.94	0.00480	0.3388



Platform BNR 3000/3300

12 Standard Windings Available

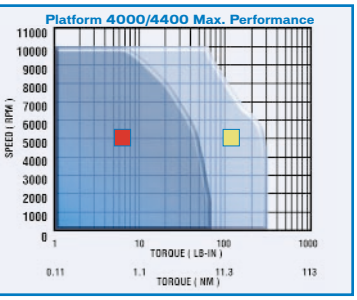
Platform Number	Rated Power W	Cont. Stall Torque lb-in	Cont. Stall Torque NM	Peak Torque lb-in	Peak Torque NM	Rotor Inertia lb-in-sec²	Rotor Inertia Kg(10⁻⁴)-m²
3012	670	12	1.36	60	6.78	0.00080	0.9039
3024	1430	24	2.71	110	12.43	0.00150	0.1695
3034	1700	34	3.84	150	16.95	0.00196	0.2215
3312	670	12	1.36	60	6.78	0.00080	0.9039
3324	1430	24	2.71	110	12.43	0.00150	0.1695
3334	1700	34	3.84	150	16.95	0.00196	0.2215



Platform BMR 4000/4400

12 Standard Windings Available

Platform Number	Rated Power W	Cont. Stall Torque lb-in	Cont. Stall Torque NM	Peak Torque lb-in	Peak Torque NM	Rotor Inertia lb-in-sec²	Rotor Inertia Kg(10⁻⁴)-m²
4027	1560	27	3.1	115	13.0	0.00260	2.9376
4045	2440	45	5.1	200	22.6	0.00420	4.7454
4067	2930	67	7.6	300	33.9	0.00720	8.1349
4427	1560	27	3.1	115	13.0	0.00260	2.9376
4445	2440	45	5.1	200	22.6	0.00420	4.7454
4467	2930	67	7.6	300	33.9	0.00720	8.1349



BPS Direct Drive Sets

*17 Total Platforms, 12 Windings Each**

Max. Performance	Rated Power Kw	Cont. Stall Torque oz-in	Cont. Stall Torque NM	Peak Torque oz-in	Peak Torque NM	Rotor Inertia oz-in-sec²	Rotor Inertia Kg(10⁻⁴)-m²
2320	0.5	160	1.130	700	4.944	0.00539	0.3807

Max. Performance	Rated Power Kw	Cont. Stall Torque lb-in	Cont. Stall Torque NM	Peak Torque lb-in	Peak Torque NM	Rotor Inertia lb-in-sec²	Rotor Inertia Kg(10⁻⁴)-m²
3030	1.7	34	3.84	170	19.21	0.001609	1.8179
4030	2.0	55	6.2	315	35.59	0.003558	4.0200
5050	6.2	200	22.6	900	101.7	0.016600	18.756

Key Benefits:

Easy integration into customer hardware

No belts, gears or backlash

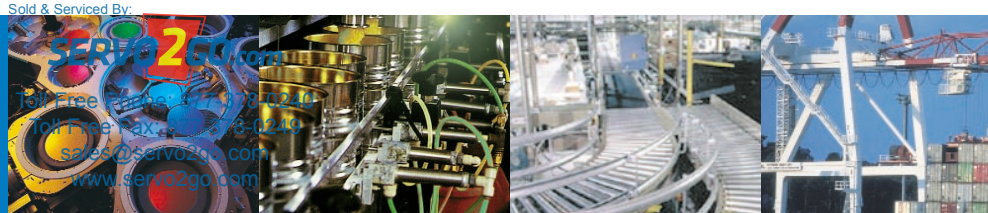
Minimize size & weight, maximize rate & position accuracy

Low electrical time constant for fast response

High pole count for smooth, low cogging operation

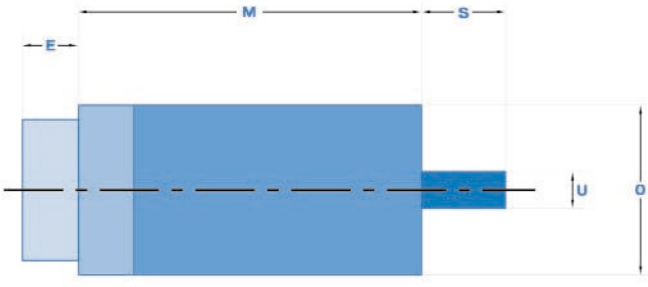
Custom motors available up to 7.5 in. (190 mm) diameter and 450 lb.- in. (41 NM)
*For a complete list of available platforms, please consult the BPS data sheet

Simply put: *Torque Systems will design a product to fit your application – rather than altering your application to fit our product.*

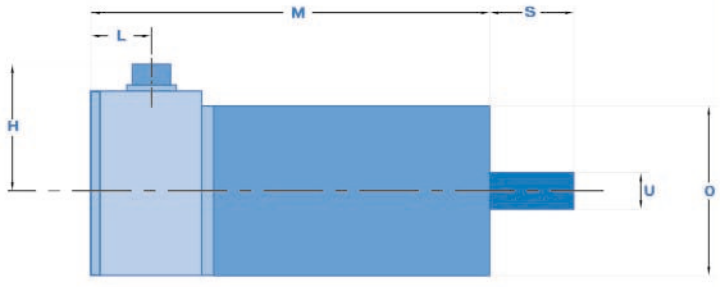


Nominal Motor Dimensions

Platforms 2200, 3300 & 4400



Platforms 2000, 3000 & 4000



Platform		Frame Length Round or D End Bell M -in.	(mm)	Frame Diameter		Encoder Addition E -in.	(mm)	D End Bell Connector C/L to Motor End L -in.	(mm)	D End Bell Connector Height to Motor C/L H -in.	(mm)	Shaft Extension S -in.	(mm)	Shaft Diameter U -in.	(mm)
BMR 2000	2005	5.72	(145.3)	2.28	(57.9)	0	0	0.85	(21.6)	2.54	(2.54)	0.77	(19.6)	0.355	(9.02)
	2010	7.22	(183.4)	2.28	(57.9)	0	0	0.85	(21.6)	2.54	(2.54)	0.77	(19.6)	0.355	(9.02)
BMR 2200	2205	4.99	(126.7)	2.28	(57.9)	0.85	(21.6)	N/A	N/A	N/A	N/A	0.77	(19.6)	0.355	(9.02)
	2210	6.49	(164.8)	2.28	(57.9)	0.85	(21.6)	N/A	N/A	N/A	N/A	0.77	(19.6)	0.355	(9.02)
BNL 2300	2305	2.47	(62.4)	2.25	(57.2)	0.85	(21.6)	N/A	N/A	N/A	N/A	0.81	(20.6)	0.25	(6.35)
	2310	2.97	(75.4)	2.25	(57.2)	0.85	(21.6)	N/A	N/A	N/A	N/A	0.81	(20.6)	0.25	(6.35)
	2315	3.47	(88.1)	2.25	(57.2)	0.85	(21.6)	N/A	N/A	N/A	N/A	0.81	(20.6)	0.25	(6.35)
	2320	3.97	(100.8)	2.25	(57.2)	0.85	(21.6)	N/A	N/A	N/A	N/A	0.81	(20.6)	0.25	(6.35)
BNR 3000	3012	6.40	(162.6)	3.38	(85.9)	0	0	1.37	(34.8)	3.35	(3.35)	1	(25.4)	0.5	(12.7)
	3024	7.40	(188.0)	3.38	(85.9)	0	0	1.37	(34.8)	3.35	(3.35)	1	(25.4)	0.5	(12.7)
	3034	8.40	(213.4)	3.38	(85.9)	0	0	1.37	(34.8)	3.35	(3.35)	1	(25.4)	0.5	(12.7)
BNR 3300	3312	3.91	(99.3)	3.38	(85.9)	0.85	(21.6)	N/A	N/A	N/A	N/A	1	(25.4)	0.5	(12.7)
	3324	4.91	(124.7)	3.38	(85.9)	0.85	(21.6)	N/A	N/A	N/A	N/A	1	(25.4)	0.5	(12.7)
	3334	5.98	(158.9)	3.38	(85.9)	0.85	(21.6)	N/A	N/A	N/A	N/A	1	(25.4)	0.5	(12.7)
BMR 4000	4027	8.5	(215.9)	4.21	(106.9)	0	0	1.82	(1.82)	3.35	(46.2)	2.04	(51.8)	0.625	(15.9)
	4045	9.75	(247.7)	4.21	(106.9)	0	0	1.82	(1.82)	3.35	(46.2)	2.04	(51.8)	0.625	(15.9)
	4067	11.75	(298.5)	4.21	(106.9)	0	0	1.82	(1.82)	3.35	(46.2)	2.04	(51.8)	0.75	(19.1)
BMR 4400	4427	6.00	(152.4)	4.21	(106.9)	0.85	(21.6)	N/A	N/A	N/A	N/A	2.04	(51.8)	0.625	(15.9)
	4445	7.25	(184.2)	4.21	(106.9)	0.85	(21.6)	N/A	N/A	N/A	N/A	2.04	(51.8)	0.625	(15.9)
	4467	9.25	(234.0)	4.21	(106.9)	0.85	(21.6)	N/A	N/A	N/A	N/A	2.04	(51.8)	0.75	(19.1)

Notes:

Additions including brakes, resolvers, rear shaft extensions, and seals will increase overall length

Shaft extension includes motor face pilot

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

Nema and IEC mounting standards available

Motor dimesions subject to change

Ask about our other motion controls solutions & capabilities:

DC Brush Servomotors

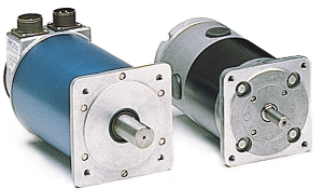
Linear Actuators

Shaft Mounted DataTorque™ Encoders

Expert application development engineering

Complete repair and refurbishing services

Encoders



Brush & Brushless Motors

Linear Actuators