

MDM-5000 Product Guide



High torque in a compact, rugged package.

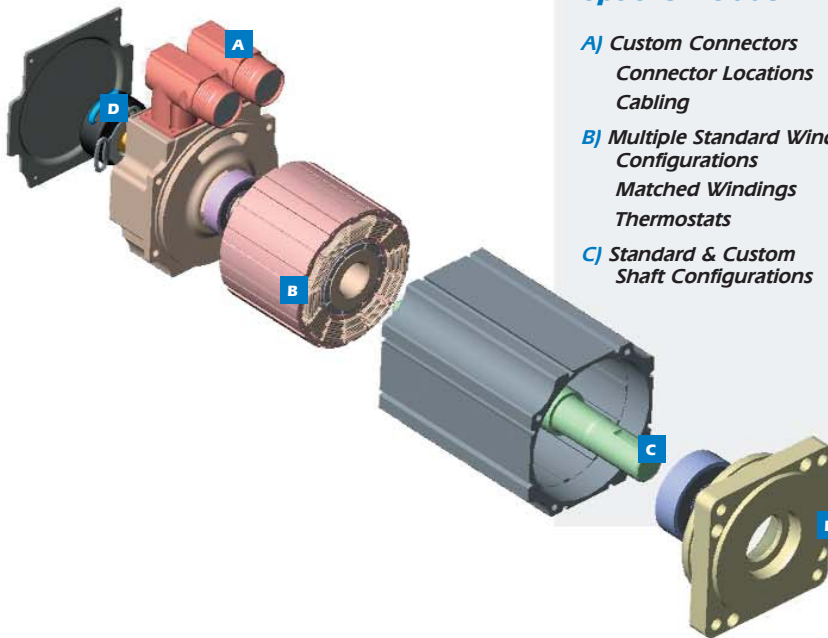




More solutions from us equals more success for you.

At Torque Systems, we have always believed in giving you more choices. After all, your application is unique, so the servomotor you choose for it should be unique, too. While the competition 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 high power density selection of clean operating, low maintenance 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
Cabling
- B) Multiple Standard Winding Configurations**
Matched Windings
Thermostats
- C) Standard & Custom Shaft Configurations**
- D) Hall Sensors**
Standard and Custom Encoders
Resolvers
Tachometers
Brakes
- E) Standard Flange Mounting**
NEMA Mounting
IEC Mounting
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
- IP 67 Sealing

We engineered the MDM-5000 high-energy brushless servomotor with advanced design features to deliver the industry's highest available torque density in a compact and versatile platform. MDM-5000 servomotors are available in models that produce stall torque up to 35 to 40% higher than conventional designs. The high output is made possible by cut-core, segmented stator lamination technology contained in a high efficiency heat transfer capsule, high slot-fill windings, and a high flux neodymium magnet array.

Standard models are available in either NEMA or IEC mounting configurations with assemble to order availability as standard. Three sizes – 60mm, 85mm and 110mm are available with a continuous stall torque range .5Nm (4.5 lb-in.) to 14.1Nm (125 lb-in.).

Torque Systems can quickly customize the MDM-5000 to fit the most challenging applications and requirements. A wide range of windings is available for fine-tuning to specific power supply specifications. We also offer a broad array of brake and gearbox options and custom termination, connectorization, and cabling configurations to facilitate your assembly requirements. Off-the-shelf feedback options include encoders stocked with multiple line counts, Hall sensors, and resolvers.



High-Energy Brushless Servomotor Platforms

Key: ■ Continuous Duty ■ Intermittent Duty

Standard Design Features:

- High Energy Neodymium Magnets
- CE/UL Compliant
- Multiple Winding Availability
- IP 65 Construction
- Clean Operating, Low Maintenance Brushless Design

Rigid Application Development Process:

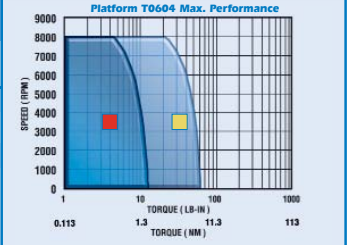
- Application Review
- Motion Profile Analysis
- Magnetic FEA 3D Modeling & Computer Simulation
- Prototype Design
- Performance Verification

Platform T060

Multiple Standard and Custom Windings Available



| Platform Number | Rated Power W | Cont. Stall Torque lb-in | Torque NM | Peak Torque lb-in | Peak Torque NM | Rotor Inertia** | |
|-----------------|---------------|--------------------------|-----------|-------------------|----------------|------------------------|--------------------|
| | | | | | | lb-in-sec ² | Kg-cm ² |
| T0601 | 247 | 4.4 | 0.50 | 22 | 2.50 | 0.000135 | 0.15255 |
| T0602 | 410 | 7.7 | 0.87 | 39 | 4.40 | 0.00017 | 0.1921 |
| T0603 | 478 | 10.5 | 1.18 | 52 | 5.90 | 0.00024 | 0.2712 |
| T0604 | 504 | 12.4 | 1.40 | 62 | 7.00 | 0.00031 | 0.3503 |

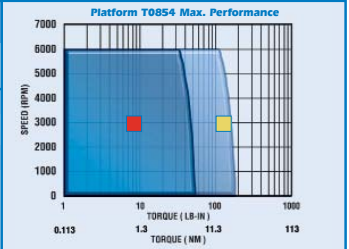


Platform T085

Multiple Standard and Custom Windings Available



| Platform Number | Rated Power W | Cont. Stall Torque lb-in | Torque NM | Peak Torque lb-in | Peak Torque NM | Rotor Inertia** | |
|-----------------|---------------|--------------------------|-----------|-------------------|----------------|------------------------|--------------------|
| | | | | | | lb-in-sec ² | Kg-cm ² |
| T0851 | 967 | 17.7 | 2.00 | 57 | 6.40 | 0.000825 | 0.93225 |
| T0852 | 1536 | 31 | 3.50 | 103 | 11.60 | 0.00147 | 1.6611 |
| T0853 | 1941 | 43.4 | 4.90 | 144 | 16.30 | 0.00182 | 2.0566 |
| T0854 | 2059 | 53.1 | 6.00 | 180 | 20.40 | 0.0024 | 2.712 |

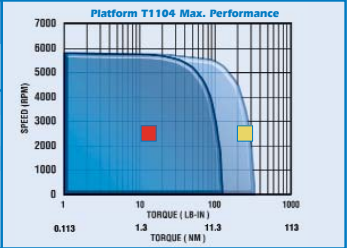


Platform T110

Multiple Standard and Custom Windings Available



| Platform Number | Rated Power W | Cont. Stall Torque lb-in | Torque NM | Peak Torque lb-in | Peak Torque NM | Rotor Inertia** | |
|-----------------|---------------|--------------------------|-----------|-------------------|----------------|------------------------|--------------------|
| | | | | | | lb-in-sec ² | Kg-cm ² |
| T1101 | 1543 | 43.3 | 4.90 | 106 | 12.00 | 0.0021 | 2.373 |
| T1102 | 2628 | 75.2 | 8.50 | 194 | 21.90 | 0.0038 | 4.294 |
| T1103 | 3175 | 99.1 | 11.20 | 264 | 29.80 | 0.0059 | 6.667 |
| T1104 | 3722 | 125 | 14.1 | 333 | 37.60 | 0.008 | 9.04 |

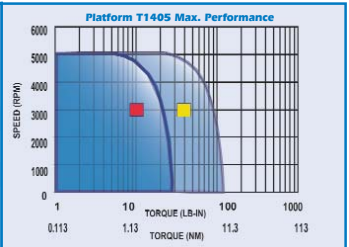


Platform T140

Multiple Standard and Custom Windings Available



| Platform Number | Rated Power W | Cont. Stall Torque lb-in | Torque NM | Peak Torque lb-in | Peak Torque NM | Rotor Inertia** | |
|-----------------|---------------|--------------------------|-----------|-------------------|----------------|------------------------|--------------------|
| | | | | | | lb-in-sec ² | Kg-cm ² |
| T1402 | 5500 | 122.00 | 13.80 | 420 | 47.50 | 0.01169 | 13.2097 |
| T1403 | 5780 | 164.00 | 18.50 | 529 | 71.00 | 0.01669 | 18.8597 |
| T1404 | 6200 | 204.00 | 22.50 | 840 | 95.00 | 0.02175 | 24.5775 |
| T1405 | 6930 | 243 | 27.5 | 1044 | 118 | 0.027 | 30.51 |



** NOTE: Add Resolver, Encoder or Brake inertia for net rotor inertia

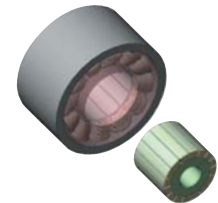
MDM-5000 Direct Drive Sets for Frameless Applications

The MDM-5000 internal component design integrates superbly into customer equipment where size and weight are important considerations. The MDM-5000's superior torque density provides for a compact design that easily fits into your equipment, reducing overall size and maximizing rate and position accuracy.

Molded in place stator construction maximizes design in flexibility - either molded into typical cylindrical housings or into unique equipment housings that demand specific dimensional requirements. Easier design-in means you don't have to compromise your design to fit our motors.

MDM-5000 Direct Drive Sets

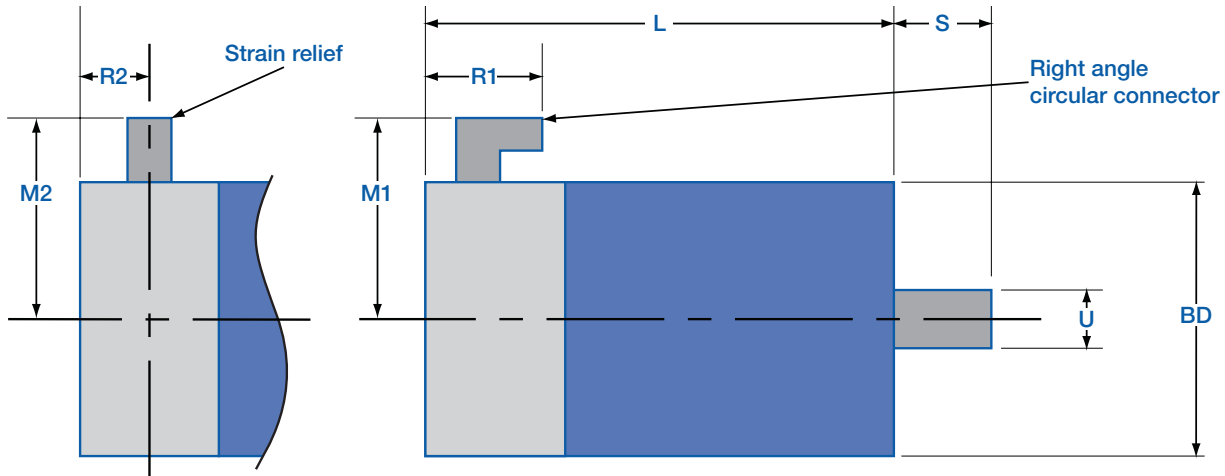
| Platform Number | Rated Power W | Cont. Stall Torque Range lb-in | Torque Range NM | Peak Torque Range lb-in | Peak Torque Range NM | Max. Speed RPM |
|-----------------|---------------|--------------------------------|-----------------|-------------------------|----------------------|----------------|
| P055 | 247-504 | 4.4-12.4 | 0.5-1.4 | 22.1-62.0 | 2.5-7.0 | 8000 |
| P065 | 300-650 | 5.4-16.8 | 0.61-1.9 | 31.9-117.7 | 3.6-13.3 | 8000 |
| P084 | 967-2059 | 17.7-53.1 | 2.0-6.0 | 56.6-180.6 | 6.4-20.4 | 6000 |
| P105 | 1543-3742 | 43.4-124.8 | 4.9-14.1 | 106.2-332.8 | 12.0-37.6 | 6000 |



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



Nominal Motor Dimensions



| Platform | Frame Length mm (L-in.) | Frame square mm (BD-in.) | Shaft extension mm (S-in.) | Shaft diameter mm (U-in.) | End Bell Connector width to motor end mm (R1-in.) | End Bell Connector height to motor end mm (M1-in.) | End Bell Connector width to motor end mm (R2-in.) | End Bell Connector height to motor end mm (M2-in.) |
|----------|----------------------------|-----------------------------|-------------------------------|------------------------------|---------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------|
| T0601 | 112 (4.41) | 58 (2.28) | 30 (1.18) | 14 (0.55) | 36.5 (1.44) | 67 (2.7) | 18 (0.7) | 51 (2.0) |
| T0602 | 131 (5.16) | 58 (2.28) | 30 (1.18) | 14 (0.55) | 36.5 (1.44) | 67 (2.7) | 18 (0.7) | 51 (2.0) |
| T0603 | 150 (5.9) | 58 (2.28) | 30 (1.18) | 14 (0.55) | 36.5 (1.44) | 67 (2.7) | 18 (0.7) | 51 (2.0) |
| T0604 | 169 (6.65) | 58 (2.28) | 30 (1.18) | 14 (0.55) | 36.5 (1.44) | 67 (2.7) | 18 (0.7) | 51 (2.0) |
| T0851 | 130 (5.12) | 85 (3.34) | 40 (1.57) | 19 (0.748) | 46 (1.82) | 82 (3.2) | 18 (0.7) | 63 (2.5) |
| T0852 | 159 (6.26) | 85 (3.34) | 40 (1.57) | 19 (0.748) | 46 (1.82) | 82 (3.2) | 18 (0.7) | 63 (2.5) |
| T0853 | 188 (7.4) | 85 (3.34) | 40 (1.57) | 19 (0.748) | 46 (1.82) | 82 (3.2) | 18 (0.7) | 63 (2.5) |
| T0854 | 217 (8.54) | 85 (3.34) | 40 (1.57) | 19 (0.748) | 46 (1.82) | 82 (3.2) | 18 (0.7) | 63 (2.5) |
| T1101 | 142 (5.59) | 110 (4.33) | 50 (1.97) | 24 (0.945) | 48 (1.89) | 94 (3.7) | 20 (0.79) | 75 (2.95) |
| T1102 | 173 (6.81) | 110 (4.33) | 50 (1.97) | 24 (0.945) | 48 (1.89) | 94 (3.7) | 20 (0.79) | 75 (2.95) |
| T1103 | 204 (8.03) | 110 (4.33) | 50 (1.97) | 24 (0.945) | 48 (1.89) | 94 (3.7) | 20 (0.79) | 75 (2.95) |
| T1104 | 235 (9.25) | 110 (4.33) | 50 (1.97) | 24 (0.945) | 48 (1.89) | 94 (3.7) | 20 (0.79) | 75 (2.95) |

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 envelope dimensions
 Nema and IEC mounting standards available
 Motor dimensions subject to change

Ask about our other motion controls solutions & capabilities:

- DC Brush Servomotors
- Direct Drive Servomotor Part Sets
- Linear Actuators
- Shaft Mounted DataTorque™ Encoders
- Expert application development engineering
- Complete repair and refurbishing services



High-Energy Brushless Motors



Direct Drive Servomotor Part Sets



Brush Motors



Encoders



Linear Actuators



Unique Solutions for Unique Customers.

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 An IMC Company



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