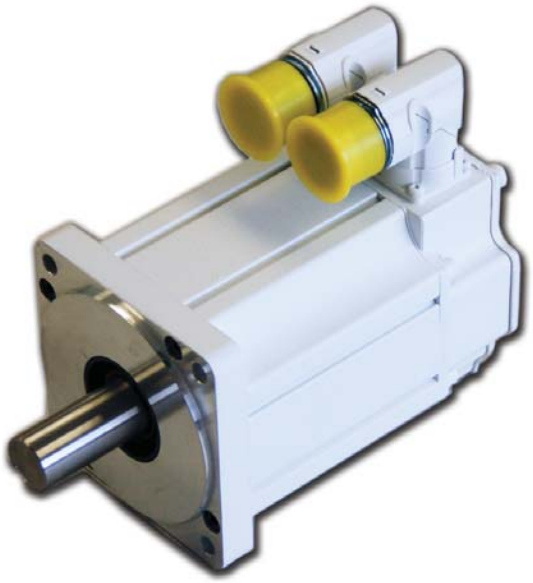
ITT

Cleveland Motion Controls

Flexible, simple, economical



MDM Food Grade Series Product Guide

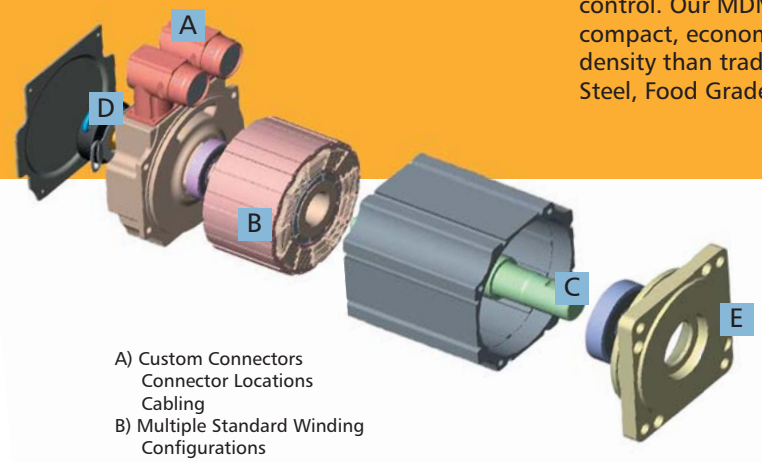
FEATURES	BENEFITS
Available for use in close proximity to food	Specialized machinery designs can install or retrofit servomotor with little or no restrictions.
Standard Metric, NEMA and special mounting/shaft configurations.	Multiple configurations accommodate flexible design considerations.
Full IP 67 Compliance with seals.	Withstands low pressure washdown in food environments.
External hardware is 300 series Stainless Steel, including casing and spring on shaft seal.	Non-corrosive external hardware standard feature required for many applications.
Complete conformance to UL/ CUL and CE Standards across the entire product line.	Required industry defined standards conformance in North America.
Food Grade RTV at the joints.	Typical food grade option is standard.
Food Grade epoxy based paint, painted as complete motor.	Conforms to food Handling requirements.
Optional encoder line counts up to 5,000 ppr available for all configurations.	Performance enhancement and feature convenience that allows CMC motors to be incorporated into a broader range of applications.

This MDM-F Food Grade product line is based upon CMC's industry leading MDM technology, which provides energy efficient servo motors in popular industry standard frame sizes and configurations. This new motor offering is ideal for use in food, beverage, and dairy manufacturing and equipment applications.

CMC engineers designed the MDM Food Grade Series to meet the needs of users and customers in need of cost effective sterile and hygienic "food grade" applications.

An expert source in providing custom engineered solutions for over 15 years to the packaging industry.

Food Processing, Pharmaceutical and other Packaging Equipment Manufacturers rely on Cleveland Motion Controls high torque density servomotors for precision motion control. Our MDM 5000 motor technology provides maximum power output in a compact, economical package. In fact, MDM 5000 motors offer 35+% more torque density than traditional technology. Our broad product selections include: Stainless Steel, Food Grade Washdown and other MDM 5000 platform technology



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

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. Four sizes – 60mm, 85mm, 110mm and 140mm are available with a continuous stall torque range .5Nm (4.5 lb–in.) to 27.5Nm (243 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 available with multiple line counts, Hall sensors, and resolvers.

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

High Energy Brushless Servomotor Platforms

Key Continuous Duty | Intermittent Duty

Standard Design Features:

High Energy Neodymium Magnets
CE/UL Compliant
Multiple Winding Availability
IP 67 Construction
Clean Operating, Low Maintenance Brushless Design

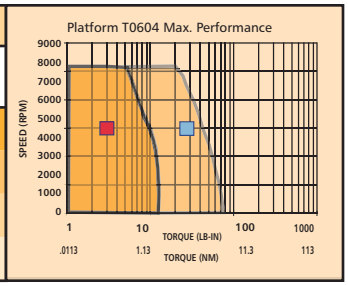
Rigid Application Development Process:

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

Platform F060

Multiple Standard and Custom Windings Available

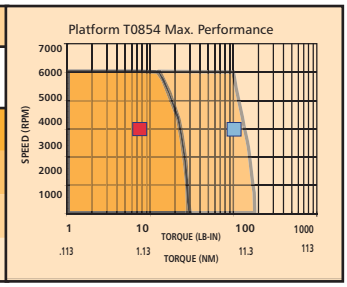
Platform Number	Rated Power W	Cont. Stall Torque lb-in	Cont. Stall Torque NM	Peak Torque lb-in	Peak Torque NM	Rotor Inertia** lb-in-sec2	Rotor Inertia** Kg-cm2
F0601	247	4.4	0.50	22	2.50	0.000135	0.15255
F0602	410	7.7	0.87	39	4.40	0.00017	0.1921
F0603	478	10.5	1.18	52	5.90	0.00024	0.2712
F0604	504	12.4	1.40	62	7.00	0.00031	0.3503



Platform F085

Multiple Standard and Custom Windings Available

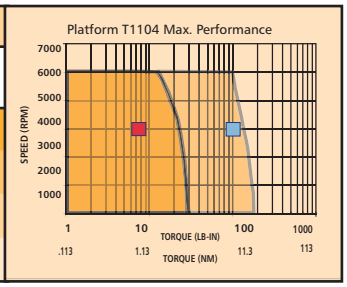
Platform Number	Rated Power W	Cont. Stall Torque lb-in	Cont. Stall Torque NM	Peak Torque lb-in	Peak Torque NM	Rotor Inertia** lb-in-sec2	Rotor Inertia** Kg-cm2
F0851	967	17.7	2.00	57	6.40	0.000825	0.93225
F0852	1536	31	3.50	103	11.60	0.00147	1.6611
F0853	1941	43.4	4.90	144	16.30	0.00182	2.0566
F0854	2059	53.1	6.00	180	20.40	0.0024	2.712



Platform F110

Multiple Standard and Custom Windings Available

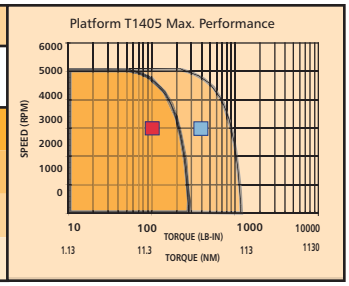
Platform Number	Rated Power W	Cont. Stall Torque lb-in	Cont. Stall Torque NM	Peak Torque lb-in	Peak Torque NM	Rotor Inertia** lb-in-sec2	Rotor Inertia** Kg-cm2
F1101	1543	43.3	4.90	106	12.00	0.0021	2.373
F1102	2628	75.2	8.50	194	21.90	0.0038	4.294
F1103	3175	99.1	11.20	264	29.80	0.0059	6.667
F1104	3722	125	14.1	333	37.60	0.008	9.04

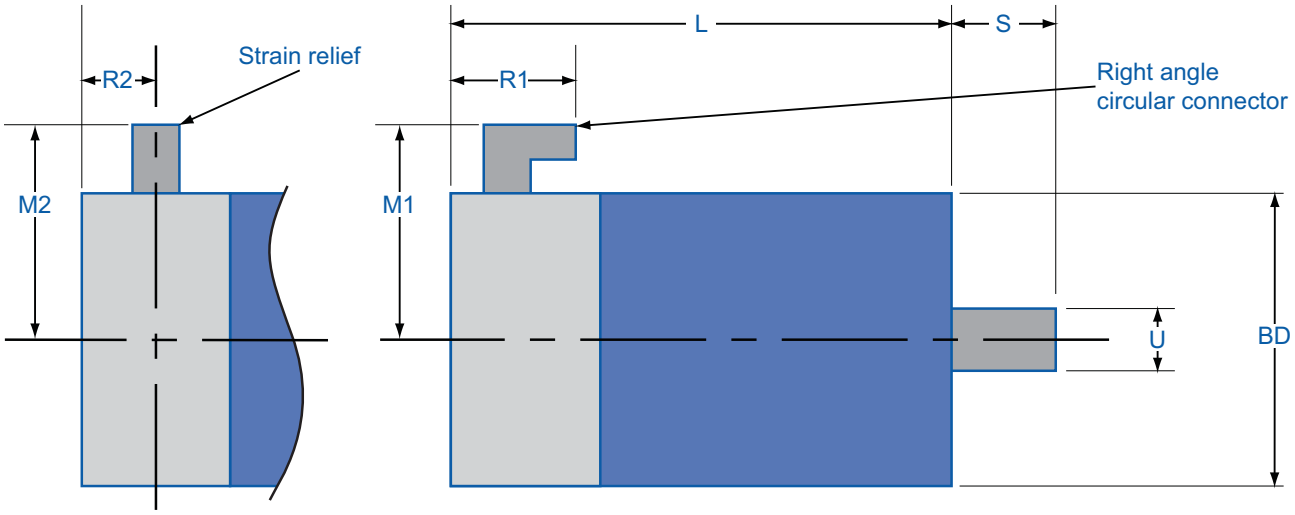


Platform F140

Multiple Standard and Custom 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-cm2
F1402	5500	122.00	13.80	420	47.50	0.01169	13.2097
F1403	5780	164.00	18.50	529	71.00	0.01669	18.8597
F1404	6200	204.00	22.50	840	95.00	0.02175	24.5775
F1405	6930	243	27.5	1044	118	0.027	30.51





Platform	Frame Length mm (L -in.)		Frame square mm (BD -in.)		Shaft extension mm (BD -in.)		Shaft diameter mm (S -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.)	
F0601	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)
F0602	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)
F0603	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)
F0604	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)
F0851	130	(5.12)	85	(3.34)	40	(1.57)	19	(0.748)	46	(1.82)	82	(3.2)	18	(0.7)	63	(2.5)
F0852	159	(6.26)	85	(3.34)	40	(1.57)	19	(0.748)	46	(1.82)	82	(3.2)	18	(0.7)	63	(2.5)
F0853	188	(7.4)	85	(3.34)	40	(1.57)	19	(0.748)	46	(1.82)	82	(3.2)	18	(0.7)	63	(2.5)
F0854	217	(8.54)	85	(3.34)	40	(1.57)	19	(0.748)	46	(1.82)	82	(3.2)	18	(0.7)	63	(2.5)
F1101	142	(5.59)	110	(4.33)	50	(1.97)	24	(0.945)	48	(1.89)	94	(3.7)	20	(0.79)	75	(2.95)
F1102	173	(6.81)	110	(4.33)	50	(1.97)	24	(0.945)	48	(1.89)	94	(3.7)	20	(0.79)	75	(2.95)
F1103	204	(8.03)	110	(4.33)	50	(1.97)	24	(0.945)	48	(1.89)	94	(3.7)	20	(0.79)	75	(2.95)
F1104	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:

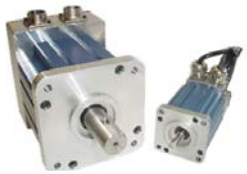
Additions including brakes, resolvers, rear shaft extensions, and seals will increase overall length

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



MDM N-Series

MDM H-Series

MDM 5000 Series

MDM S-Series
Stainless Steel