Allied Motion
An Allient Company

Frameless Motors

ELECTROFLUX SERIES

EF0050, 50 mm Outer Diameter

The Electroflux Series frameless motors offer high-performance in a compact package to meet the rigorous demands of advanced robotic applications.

Whether you are developing surgical robotic systems, collaborative robots (cobots), or cutting-edge defense technology, the Electroflux Series delivers torque density in a low-profile form-factor for optimized integration and performance in demanding applications. This highly customizable motor series offers flexibility for all.

KEY FEATURES & BENEFITS

High Torque Density:
High torque density, enabling more compact and lightweight designs without compromising performance. The high motor constant design enables more torque while minimizing power loss. This is essential for temperature-sensitive applications.

Compact Solution:
Achieve even smaller machine footprint with the Electroflux Series of small diameter frameless motors.

Customizable:
Partner with our engineers to design a frameless motor that works for your unique application. Whether the application calls for reduced cogging torque, modified dimensions, or special materials suited for harsh environments, we will tailor the motor design to fit the requirements.

APPLICATIONS

Surgical Robotics:
Ensure the highest standards of performance and reliability in robotic-assisted surgeries, contributing to better patient outcomes.

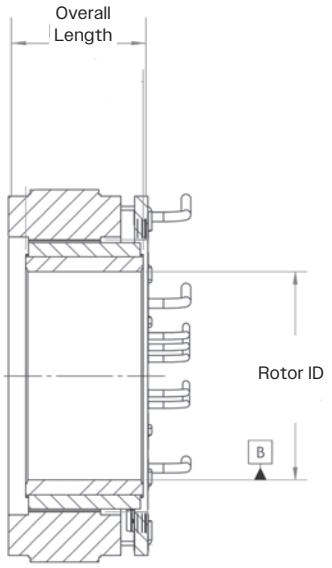
Cobots:
Enhance the safety and efficiency of your collaborative robots with the Electroflux Series that can be easily integrated into cobot end-effectors and wrist joints.

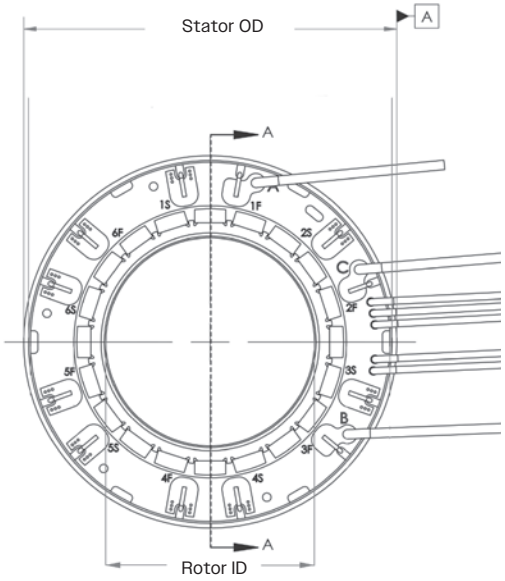
Prosthetics:
Offer users enhanced control with the small frame sizes of the Electroflux Series in prosthetic devices, improving the quality of life and aiding patient rehabilitation.

Laser Instrumentation:
Use the large through bores of Electroflux Series frameless motor kits for routing optics and cables to achieve a more compact and streamlined system design.

Defense:
Rely on the robust and rigid design of the Electroflux Series to handle high-risk environments. Utilize our engineering team's capability to achieve a customized design built to survive harsh environments.

DIMENSIONS





Model	Stator OD	Rotor ID	Overall Length
EF0050009-A00	50.0	28.0	20.5
EF00500015-A00	50.0	28.0	26.6

SPECIFICATIONS	Units	EF0050009-A00	EF0050015-A00
Performance			
Continuous Stall Torque *	Nm	0.38	0.55
Peak Torque	Nm	1.05	1.58
Rated Speed	RPM	9,476	4,718
No-Load Speed	RPM	12,635	8,387
Cogging Torque	% of Cont. Torque	2%	2%
Electrical			
Winding Option	-	A	A
Winding Voltage	V_{DC}	48	48
Phase Connection	-	Wye	Wye
Continuous Current	A_{pk}	13.72	13.29
Peak Current	A_{pk}	33.95	33.65
Back-EMF Constant (K_e) @ 20°C**	V_{pk}/kRPM	3.80	5.72
Torque Constant (K_t) @ 20°C	Nm/A_{pk}	0.031	0.047
Motor Constant (K_m) @ 20°C	Nm/√(W)	0.089	0.118
Motor Constant (K_m) @ Max Winding Temp	Nm/√(W)	0.073	0.097
Resistance (phase-phase) @ 20°C ***	Ω	0.163	0.209
Resistance (phase-phase) @ Max Winding Temp ***	Ω	0.240	0.308
Inductance (phase-phase) @ 20°C ****	mH	0.086	0.138
Electrical Time Constant	msec	0.528	0.661
Mechanical			
Stator Outer Diameter	mm	50.0	50.0
Rotor Inner Diameter	mm	28.0	28.0
Overall Length	mm	20.5	26.6
Weight (stator)	kg	0.000	0.000
Weight (rotor)	kg	0.000	0.000
Weight (total)	kg	0.102	0.148
Rotor Inertia	kg·m²	1.07E-05	1.49E-05
Number of Poles	-	20	20

Please note that these specifications are preliminary and are subject to change at any given time.
(*) Assume a 20°C ambient temperature and 130°C maximum winding temperature with specified thermal resistance.
(**) ±10% tolerance on Back-Emf Constant.
(***) ±12% tolerance on Resistance.
(****) ±30% tolerance on Inductance.

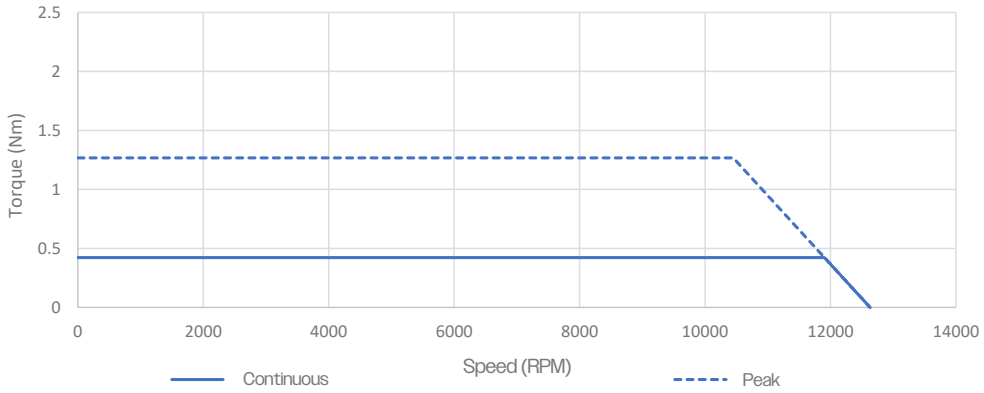
SPECIFICATIONS

	Units	EF0050009-A00	EF0050015-A00
Thermal			
Thermal Resistance	°C/W	3.33	2.75
Heat Sink Material	-	Aluminum	Aluminum
Heat Sink Dimensions	mm	254 x 254 x 6.35	255 x 254 x 6.35
Maximum Winding Temperature	°C	130	130
Storage Temperature	°C	-20 to 80	-20 to 80

Please note that these specifications are preliminary and are subject to change at any given time.

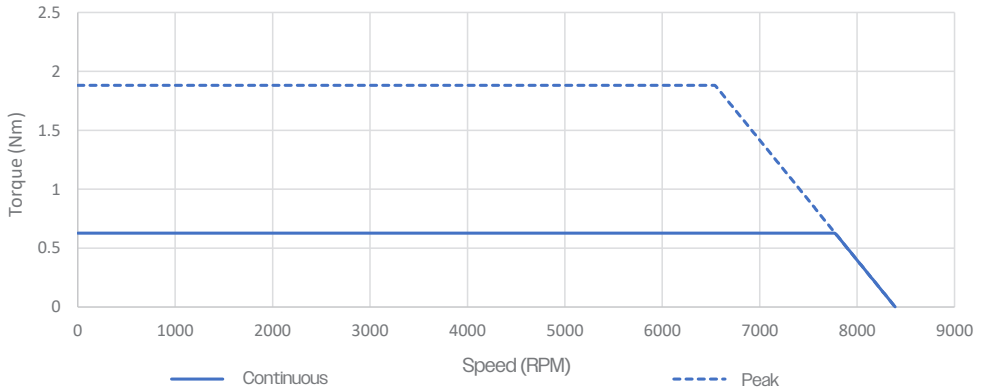
PERFORMANCE

EF0050009-A00



Winding Voltage
48 V_{DC}

EF0050015-A00



Winding Voltage
48 V_{DC}

Performance curve assumes bus voltage, temperature range, and thermal resistance as specified above.
Nominal parameters used for simulation. Actual performance can vary +/-10%.
Please consult with a Solutions Engineer for speeds exceeding 6,000 RPM.

PART NUMBERING

EF - 0050 - 009 - A - 00

Electroflux

Frame Size
0050 = 50 mm

Stack Length
009 = 9 mm
015 = 15 mm

Winding Option
A = 48 VDC

Mechanical Configurations
00 = Hall Sensors Only
XX = Custom Configuration