thin gap | TG SERIES MOTOR KIT

ZERO COGGING | OPTIMIZED FOR POWER DENSITY | LIGHT-WEIGHT AND LARGE APERTURE
HIGHLY EFFICIENT ARCHITECTURE | IRONLESS COMPOSITE STATOR | SCALABLE SIZE AND POWER

Data Sheet Model Number: TGI-46

ThinGap's TG Series includes numerous high performance brushless permanent magnet motors. The TG Series targets higher speed, high-precision applications such as where a smooth motion and weight optimized solution is desired.

ThinGap's TG Line of Brushless motors designed for high speed, high power power applications such as propulsion, reaction wheels, and precisions industrial. These motor kits are available in sizes ranging from 57mm to 190 mm

Motor Parameter Table

Continuous Parameters	Units	Value
Continuous Torque @ Max Speed	N-m	0.71
Max Continuous Speed	RPM	3300
Max Continuous Power	W	244.5
Required Motor Voltage @ Max Speed	V_{pkl-l}	77
Max Continuous Phase Current @ Max Speed	A_{RMS}	3.17
Peak Parameters@Max Speed	Units	Value
Peak Torque (1 sec)*	N-m	4.14
Peak Phase Current (1 sec)	A_{RMS}	18.50
Peak Power (1 sec)*	W	1431
Peak Torque (3 sec)*	N-m	2.46
Peak Phase Current (3 sec)	A_{RMS}	11.00
Peak Power (3 sec)*	W	850
Motor Constants	Units	Value
Voltage Constant (l-l)	V_{pkl-l}/rad/s	0.184
Voltage Constant (l-l)	V_{pkl-l}/kRPM	19.3
Torque Constant	N-m/A_{RMS}	0.226
Motor Constant	N-m/vW	0.098
Electrical Parameters	Units	Value
Motor Resistance @ 20°C	Ω	3.532
Motor Resistance @ Max Temperature	Ω	4.955
Inductance	µH	231 ± 56%
Number of Magnetic Poles	ea	8
Electrical Frequency @ Max Speed	Hz	220
Mechanical Parameters	Units	Value
Rotor Inertia	kg-m^2	6.890E-05
Outer Diameter	mm	46
Through Hole Diameter	mm	20.8
Axial Height	mm	61.9
Rotor Mass	kg	0.230
Stator Mass	kg	0.101
Part Set Mass	kg	0.332
Temperature Parameters	Units	Value
Max Stator Temperature	°C	130
Max Rotor Temperature	°C	85

Torque and Mechanical Speed

Continuous rated torque of up to 0.71 N-m and a rated speed of up to 3300 RPM.

Motor Controller Recommendation

Standard 3-Phase Controller

High Frequency PWM power input

Resources for Integration

CAD files at: www.thingap.com

Complete Mechanical drawings available upon request

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* Current value takes into account temperature losses during operation.

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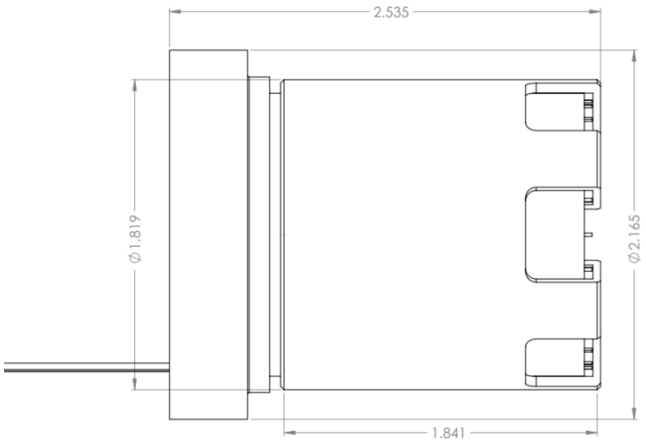
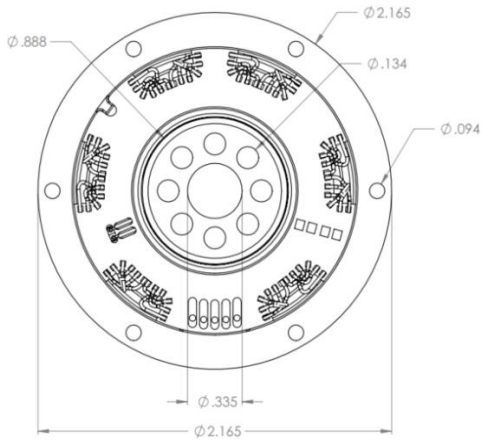
TGI-46

TGI-46 Mechanical Information



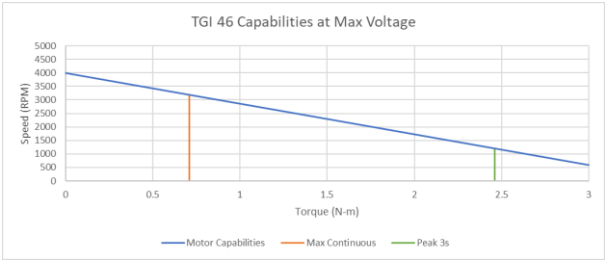


General Mechanical Specifications

All values are in inches and should be considered nominal. Please consult factory for up-to date mechanical drawing and ICD.

TG Series Options and Motor Capabilities

Basic Kit Sizes Available:				
TG Sub-Series	**Motor Model**	**OD (inch/mm)**	**Con.Torque (N-m)**	**Max Speed (RPM)**
2 Series (2" OD)	TGI 231X	2.2 / 57	0.74	6,500
	TGO 232X	2.2 / 57	0.35	16,000
	TGO 233X	2.2 / 57	0.69	16,000
	TGD 234X	2.2 / 57	1.02	6,500
	TGI 046	1.8 / 46	0.71	3,300
3 Series (3" OD)	TG 303X	2.8 / 71	0.14	30,600
	TG 304X	2.9 / 75	0.19	28,400
	TG 305X	3.0 / 76	0.21	17,900
4 Series (4" OD)	TGO 110	4.3 / 110	0.99	4,000
5 Series (5" OD)	TG 513X	5.2 / 131	1.68	18,400
	TG 514X	5.4 / 136	2.65	13,900
	TG 515X	5.5 / 138	3.57	10,300
7 Series (7" OD)	TG 713X	7.0 / 178	2.98	13,700
	TG 714X	7.2 / 182	4.26	10,800
	TG 715X	7.5 / 190	4.83	10,300
	TGO 190	7.5 / 190	9.46	6000



Example of Typical Use Speed-Torque Curve

Higher speeds possible and is dependent on the applied voltage. Top Speed may be limited mechanically. Please consult factory if higher speeds are required

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