



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:

TGO-190

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	9.46
Max Continuous Speed	RPM	6000
Max Continuous Power	W	5942.0
Required Motor Voltage @ Max Speed	V_{pk-l}	401
Max Continuous Phase Current @ Max Speed	A_{RMS}	11.90
Peak Parameters@Max Speed	Units	Value
Peak Torque (1 sec)*	N-m	40.80
Peak Phase Current (1 sec)	A_{RMS}	52.30
Peak Power (1 sec)*	W	25635
Peak Torque (3 sec)*	N-m	23.80
Peak Phase Current (3 sec)	A_{RMS}	30.00
Peak Power (3 sec)*	W	14954
Motor Constants	Units	Value
Voltage Constant (l-l)	$V_{pk-l}/rad/s$	0.669
Voltage Constant (l-l)	$V_{pk-l}/kRPM$	70.1
Torque Constant	N-m/ A_{RMS}	0.820
Motor Constant	N-m/vW	0.587
Electrical Parameters	Units	Value
Motor Resistance @ 20°C	Ω	1.300
Motor Resistance @ Max Temperature	Ω	1.877
Inductance	μH	85.7 \pm 20%
Number of Magnetic Poles	ea	32
Electrical Frequency @ Max Speed	Hz	1600
Mechanical Parameters	Units	Value
Rotor Inertia	$kg \cdot m^2$	1.000E-02
Outer Diameter	mm	190
Through Hole Diameter	mm	159.2
Axial Height	mm	46.4
Rotor Mass	kg	1.281
Stator Mass	kg	0.360
Part Set Mass	kg	1.641
Temperature Parameters	Units	Value
Max Stator Temperature	°C	130
Max Rotor Temperature	°C	85

Torque and Mechanical Speed

Continuous rated torque of up to 9.46 N-m and a rated speed of up to 6000 RPM.

Motor Controller Recommendation

Standard 3-Phase Controller
High Frequency PWM power input

Resources for Integration

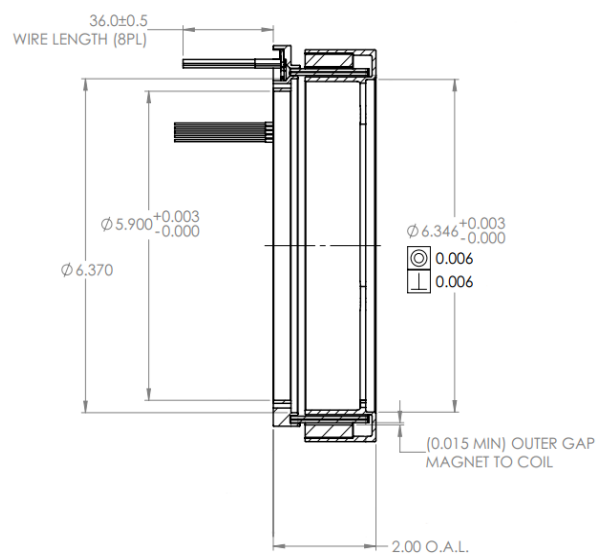
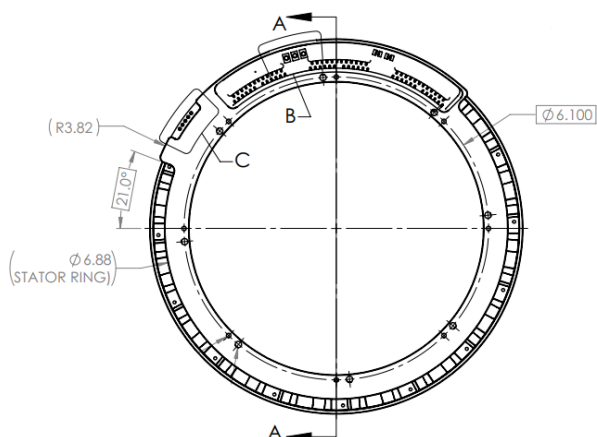
CAD files at: www.thingap.com

Complete Mechanical drawings available upon request

* Current value takes into account temperature losses during operation.



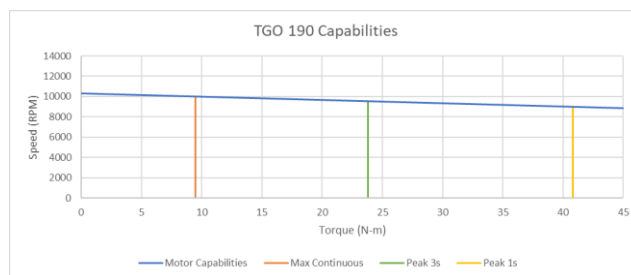
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TGO-190
TGO-190 Mechanical Information

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

