



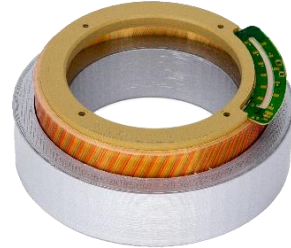
thin gap | TGR SERIES MOTOR KIT

ZERO COGGING | HIGHLY EFFICIENT ARCHITECTURE | OPTIMIZED ROTOR INERTIA
SPACE HERITAGE | LIGHTWEIGHT COMPOSITE STATOR | SCALABLE SIZE AND POWER

Data Sheet Model Number:

TGR 79-26

ThinGap's TGR Series includes numerous high performance brushless permanent magnet motors. The TGR Series targets reaction wheel applications where a high efficiency, weight optimized solution with dynamic response capabilities is desired.



Motor Parameter Table

Continuous Parameters	Units	Atmosphere	Vacuum
Continuous Torque @ Max Speed	N-m	0.664	0.114
Max Continuous Speed	RPM	16000	16000
Max Continuous Power	W	1112	192
Required Motor Voltage @ Max Speed	V_{pk-l}	74.1	70.0
Max Continuous Phase Current @ Max Speed	A_{RMS}	13.4	2.3
Peak Parameters@Max Speed	Units	Atmosphere	Vacuum
Peak Torque (1 sec)*	N-m	1.85	1.74
Peak Phase Current (1 sec)	A_{RMS}	37.5	35.1
Peak Power (1 sec)*	W	3100	2915
Peak Torque (3 sec)*	N-m	1.20	1.01
Peak Phase Current (3 sec)	A_{RMS}	24.2	20.3
Peak Power (3 sec)*	W	3100	1692
Motor Constants	Units	Common Value	
Voltage Constant (I-I)	$V_{pk-l}/rad/s$	0.041	
Voltage Constant (I-I)	$V_{pk-l}/kRPM$	4.300	
Torque Constant	$N-m/A_{RMS}$	0.050	
Motor Constant	$N-m/\sqrt{W}$	0.073	
Electrical Parameters	Units	Common Value	
Motor Resistance @ 20°C	Ω	0.321	
Motor Resistance @ Max Temperature	Ω	0.450	
Inductance	μH	12.4 \pm 20%	
Number of Magnetic Poles	ea	12	
Electrical Frequency @ Max Speed	Hz	1600	
Mechanical Parameters	Units	Common Value	
Rotor Inertia	$kg-m^2$	2.34E-04	
Outer Diameter	mm	79	
Through Hole Diameter	mm	55	
Axial Height	mm	26.3	
Rotor Mass	kg	0.204	
Stator Mass	kg	0.055	
Part Set Mass	kg	0.259	
Temperature Parameters	Units	Common Value	
Max Stator Temperature	°C	130	
Max Rotor Temperature	°C	85	

ThinGap's TGR Line of Brushless motor kits designed for use in reaction wheel applications; both in atmosphere and vacuum. These motor kits are available in sizes ranging from 29mm to 79 mm

Derated Specifications for Vacuum

Continuous torque of up to 0.114 N-m and a rated speed of up to 16000 RPM.

Motor Controller Recommendation

3-Phase Controller
High Frequency PWM power input

* Current value takes into account temperature losses during operation.