



HIGH PRESSURE HIGH TEMPERATURE BRUSHLESS DC MOTOR

Introduction

This compact, 1.5" diameter HPHT Brushless DC motor is ideal for down-hole applications, such as mud pulser valves. This rugged motor has been tested for operation up to 400°F (205°C) and pressures up to 30,000 PSI (2070 bar). We've taken a design with decades of success in the field and pushed the performance envelope into the HPHT realm, including integral Hall commutation and the proven ability to operate in high shock and vibration environments. The reliability of Samarium rare earth magnets ensure reliability and operating efficiencies even in these extreme conditions.



Features

- Samarium cobalt magnets provides high temperature stability and corrosion resistance
- Proprietary structural adhesive and insulation material increases reliability under continuous duty operation
- Stainless steel sleeve rotor ensures added protection in high shock and vibration environments
- Ruggedized and tested for HPHT environments
- Integral commutation, no external feedback device
- Shock 1000g, 0.5ms/axis
- Vibration 25g RMS 30 - 500Hz Random, 3h/axis

Applications

- Sensor Positioning
- Caliper Deployment
- Valve Actuation
- Mud Pulsers

Options

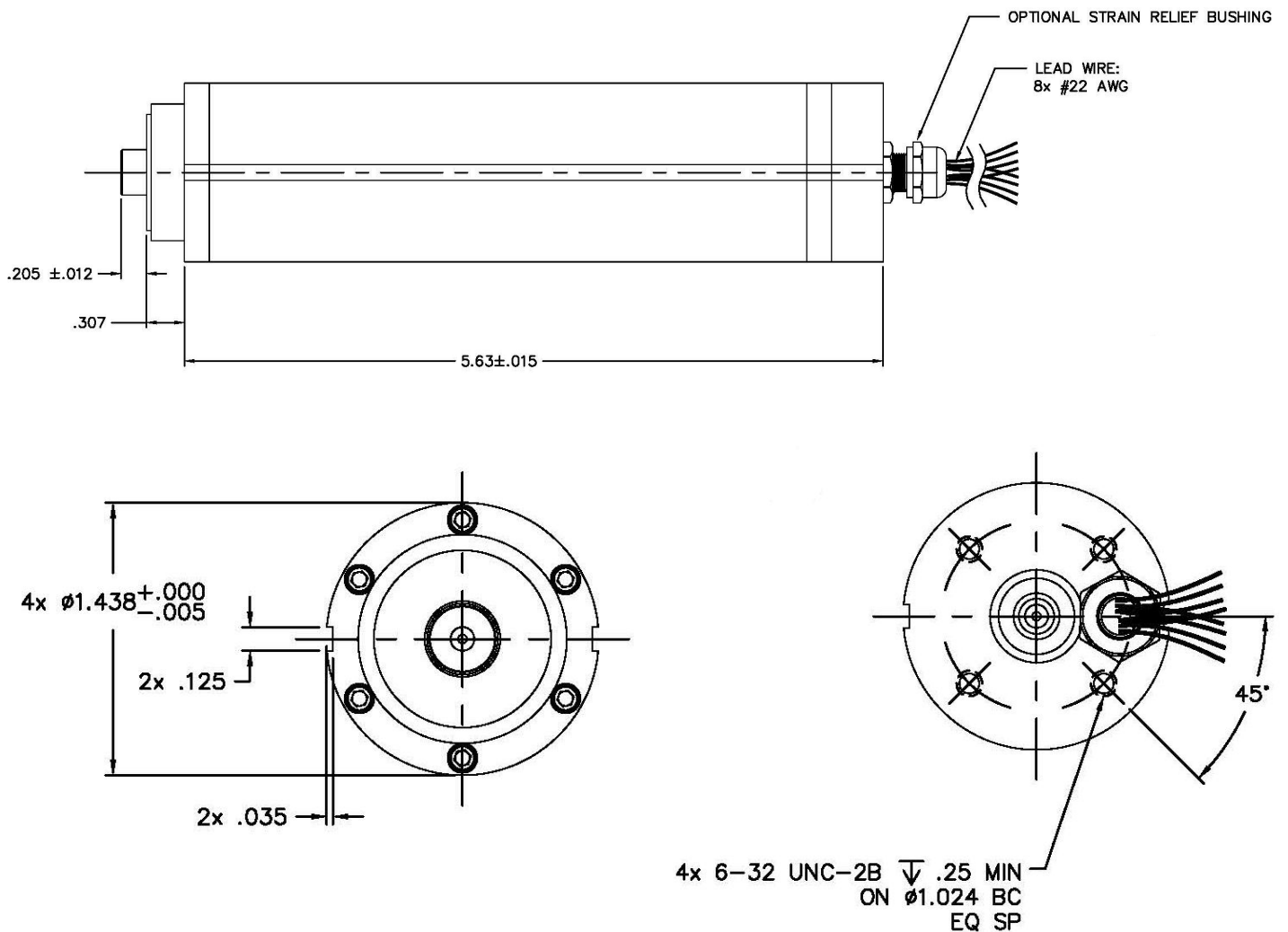
- Customizable for gearbox mounting (as shown above with pinion installed)
- Winding variations for a range of controller voltages and currents.
- Custom mountings for alternative commutation options.

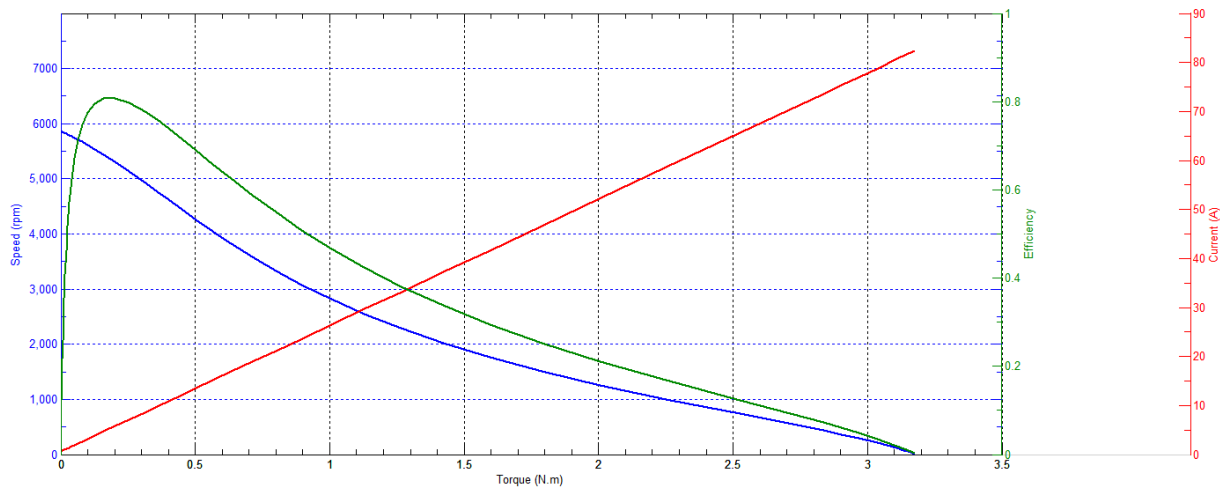
SPECIFICATIONS

Winding Constants	UNIT	TOL	SYM	WDG Z
DC Resistance	Ω	$\pm 12.5\%$	R	0.4
Voltage @ T_p	V	NOM	V_p	9.06
Current @ T_p	A	NOM	I_p	22.7
Current @ T_{cs}	A	NOM	I_{cs}	5.9
Torque Sensitivity	N.m/A Oz.in/A	$\pm 10\%$	K_t	0.037 5.3
BEMF Constant	V/(rad/s)	$\pm 10\%$	K_b	0.037
Inductance @ 1kHz	mH	$\pm 30\%$	L	0.25

Motor Parameters	UNIT	SYM	VALUE
Peak Torque	N.m Oz.in	T_p	0.818 115.91
Continuous Stall Torque	N.m Oz.in	T_{cs}	0.198 28
Motor Constant	N.m/ \sqrt{W} Oz.in/ \sqrt{W}	K_m	0.059 8.30
Rotor Inertia	kg.m ² Oz.in.s ²	J_m	7.0e06 1.02e03
Number of Phases/ Winding Type	-	-	3/Y
Number of Poles	-	-	4
Total Mass	kg Oz	Wt	0.940 33.16

DIMENSIONS





HIGH PRESSURE HIGH TEMPERATURE DOWNHOLE BRUSHLESS DC (BLDC) MOTOR CONFIGURATIONS

Part Number	Peak Torque (N-m / oz-in)	Continuous Stall Torque (N-m / oz-in)	Motor Constant (N-m/√watts)/ (oz-in/√watts)	Weight (g/ oz)	Max Temperature (°C)	Max Pressure (PSI)
DIH10-27-001A	0.11/15	0.04/6	0.016/2.3	204.1/7.2	175	20 000
DIH10-36-001A	0.11 / 15	0.06 / 8	0.00027 / 0.38	113.4 / 4	175	20 000
DII14-60-000A	0.46 / 65	0.23 / 32	0.056 / 7.98	725.7 / 25.6	175	20 000
DII15-60-201A	0.82 / 116	0.21 / 29	0.059 / 8.3	941.2 / 33.2	205	30 000
DII22-85-001A	2.82 / 400	1.21 / 172	0.25 / 35.7	1225 / 43.2	175	20 000
DII30-80-007A	5.51 / 780	2.27 / 321	0.46 / 65	5273 / 186	175	20 000

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