



N2311A011

Brushless DC Motor



Assembly Data	Symbol	Units	Value	
Reference Voltage	E	V	12	
No-Load Speed	S_{NL}	rpm (rad/s)	7,197	(754)
Continuous Torque (Max.) ¹	T_C	oz-in (N-m)	16	(1.1E-01)
Peak Torque (Stall) ^{1,2}	T_{PK}	oz-in (N-m)	32	(2.3E-01)
Weight	W_M	oz (g)	13	(354)
Motor Data				
Torque Constant	K_T	oz-in/A (N-m/A)	2.16	(1.53E-02)
Back-EMF Constant	K_E	V/krpm (V/rad/s)	1.60	(1.53E-02)
Resistance	R_T	Ω	0.26	
Inductance	L	mH	0.49	
No-Load Current	I_{NL}	A	0.10	
Peak Current (Stall) ^{1,2}	I_P	A	14.7	
Motor Constant ^{1,2}	K_M	oz-in/ \sqrt{W} (N-m/ \sqrt{W})	3.50	(2.47E-02)
Friction Torque	T_F	oz-in (N-m)	0.80	(5.6E-03)
Rotor Inertia	J_M	oz-in-s ² (kg-m ²)	1.2E-03	(8.5E-06)
Electrical Time Constant	τ_E	ms	1.85	
Mechanical Time Constant	τ_M	ms	13.5	
Viscous Damping	D	oz-in/krpm (N-m-s)	0.15	(9.8E-06)
Damping Constant	K_D	oz-in/krpm (N-m-s)	0.013	(8.8E-07)
Maximum Winding Temperature	θ_{MAX}	°F (°C)	266	(130)
Thermal Impedance	R_{TH}	°F/watt (°C/watt)	41	(4.9)
Thermal Time Constant	τ_{TH}	min	13.0	
Gearbox Data				
Encoder Data				

1 - Specified at max. winding temperature at 25°C ambient without heat sink. 2 - Theoretical values supplied for reference only.

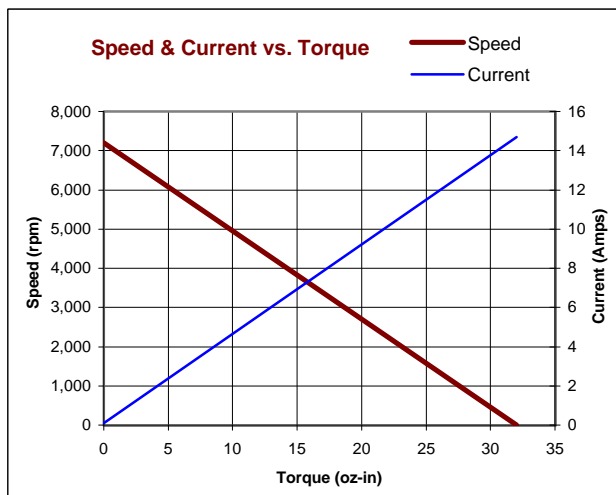
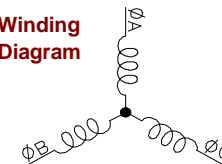
Included Features

4-Pole Rotor
Neodymium Magnets
3-Phase Slotted Stator
6-Slot Laminations
Stainless Steel Shaft
NEMA 23 Mounting
Ball Bearings
Hall Sensors

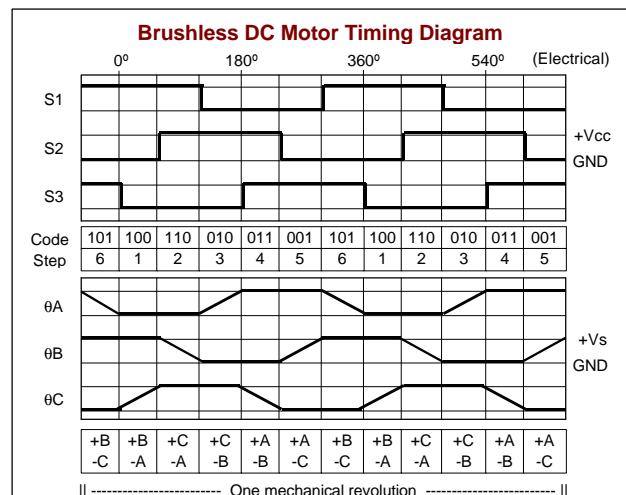
Customization Options

Alternate Winding
Modified Output Shaft
Custom Cable Assembly
Spur or Planetary Gearbox
Optional Encoder
Fail-Safe Brake
Integral Electronics

Winding Diagram



All values are nominal. Specifications subject to change without notice.
Graphs are shown for reference only at maximum winding temperature.

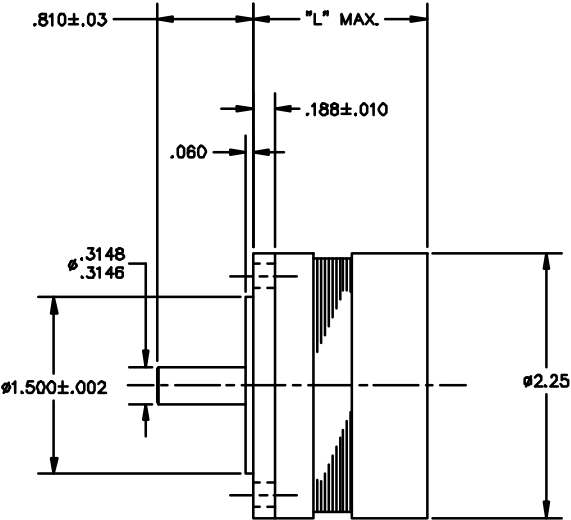
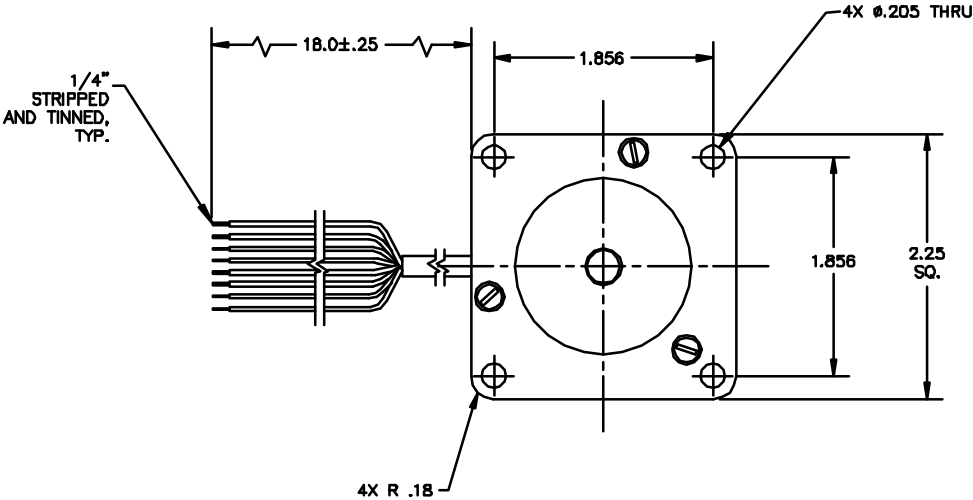


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WIRING SEQUENCE

BROWN	MOTOR	ØA
RED	MOTOR	ØB
ORANGE	MOTOR	ØC
GREY	SENSOR	Ø1
BLUE	SENSOR	Ø2
WHITE	SENSOR	Ø3
VIOLET	SENSOR	Vcc
BLACK	SENSOR	GND
COLOR	FUNCTION	



3.982	N2316
3.482	N2315
2.982	N2314
2.482	N2313
1.982	N2312
1.532	N2311
"L"	MOTOR

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTION DECIMAL ANGLES ±1/64 .005 ±15° BYPASS ±.015 HOLE ±.010 BYPASS ±.005 BREAK ALL SHARP EDGES		FILE: 150/626	PITTMAN A Division of Penn Engineering & Manufacturing Corp. 3000 Rockledge Blvd., Rockledge, FL 32955	
MATERIAL:	DRAFTED BY	TJK	DATE	8/25/99
	ENGINEERED BY	TJK	8/25/99	
	APPROVED BY	KPW	8/27/99	
	NEXT ASSY:			
FINISH:	USED ON:		DWG. NO.	REV.
			B- 150-626	F
SCALE:		SHEET 1 OF 1		