

Silencer® Series Brushless DC Motor

TYPICAL APPLICATIONS

- Robotics
- Commercial and military aircraft actuation systems
- Oil exploration equipment
- Medical pumps and compressors
- Packaging equipment

FEATURES

- 6 pole inside rotor for quick acceleration
- High torque / volume ratio
- High energy sintered neodymium magnets
- High stator slot fill for high Km
- Skewed rotor for minimum detent torque

BENEFITS

- Operation at any single speed - not limited to AC frequency
- Motor life is not limited to brush or commutator life
- An essentially linear speed / torque curve
- Efficient operation without losses associated with brushes and commutation or armature induction
- Precise, variable speed control
- Extremely quiet operation
- Long-life operation
- High performance in a compact package

BS12 High Performance



The BS12 is a very high energy size 12 BLDC motor. Utilizing rare earth sintered magnets and hand inserted stator windings, the motor has a very high torque / volume ratio. Ideal for applications requiring a high energy, high efficiency BLDC motor where space is limited.

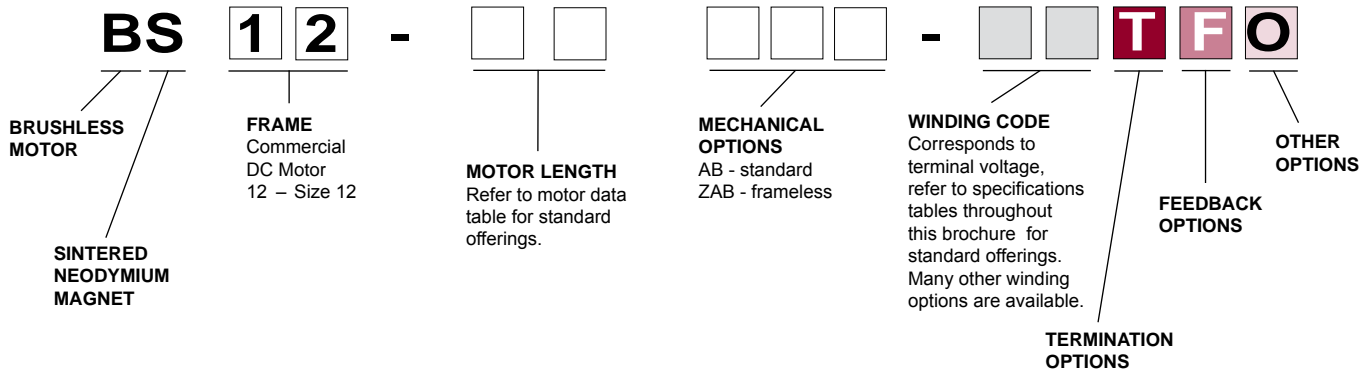
Hall-effect feedback is standard with sensorless or resolver feedback optional. Other options include gearheads and ballscrews. Custom solutions available.

For more information about how this product can be tailored to fit your specific application, contact our applications engineers.

Brushless Motors

SPECIFICATION AND NUMBERING SYSTEM

Part Numbering System Guide



BS12 SPECIFICATIONS -

Continuous Stall Torque 12 - 14 oz-in (.085 - .099 Nm)
Peak Torque 35 oz-in (0.25 Nm)

Part Number*		BS12-20AB-[] [] [] [] [] []			BS12-20ZAB-[] [] [] [] [] []		
Winding Code**		01	02	03	01	02	03
L = Length	inches	2			1.485		
	millimeters	50.8			37.7		
Terminal Voltage	volts DC	12	24	24	12	24	24
Peak Torque	oz-in	35	35	35	35	35	35
	Nm	0.25	0.25	0.25	0.25	0.25	0.25
Continuous Stall Torque	oz-in	14	13	12	14	13	12
	Nm	.099	.092	.085	.099	.092	.085
Rated Speed	rpm	4750	5250	15000	4750	5250	15000
	rad/sec	497	550	1571	497	550	1571
Rated Torque	oz-in	12	11.6	10	12	11.6	10
	Nm	0.0847	0.0819	0.0706	0.0847	0.0819	0.0706
Rated Current	Amps	6.30	2.90	8	6.30	2.90	8
Rated Power	watts	42.2	45	110	42.2	45	110
Torque Sensitivity	oz-in/amp	1.99	4.28	1.42	1.99	4.28	1.42
	Nm/amp	0.0141	0.0302	0.0100	0.0141	0.0302	0.0100
Back EMF	volts/KRPM	1.47	3.16	1.05	1.47	3.16	1.05
	volts/rad/sec	0.0141	0.0302	0.0100	0.0141	0.0302	0.0100
Terminal Resistance	ohms	0.32	1.43	0.22	0.32	1.43	0.22
Terminal Inductance	mH	0.22	0.95	0.11	0.22	0.95	0.11
Motor Constant	oz-in/sq.rt.watts	3.52	3.58	3.03	3.52	3.58	3.03
	Nm/sq.rt.watts	0.02484	0.02527	0.02138	0.02484	0.02527	0.02138
Rotor Inertia	oz-in-sec ² x10 ⁻³	0.048	0.048	0.048	0.037	0.037	0.037
	g-cm ²	3.4	3.4	3.4	2.6	2.6	2.6
Weight	oz	5.3	5.3	5.3	4.4	4.4	4.4
	g	150.5	150.5	150.5	125.0	125.0	125.0
# of Poles		6	6	6	6	6	6
Timing		120°	120°	120°	120	120°	120°
Mech. Time Constant	ms	0.5	0.5	0.7	0.4	0.4	0.6
Electrical Time Constant	ms	0.69	0.66	0.50	0.69	0.66	0.50
Thermal Resistivity	deg. C/watt	3.5	3.5	3.5	3.5	3.5	3.5
Speed/Torque Gradient	rpm/oz-in	109.3	105.6	147.6	109.3	105.6	147.6
No Load Speed	rpm	7480	7255	21900	7480	7255	21900
	rad/sec	783	760	2293	783	760	2293

Notes:

- Motor mounted to a 4" x 4" x 1/4" aluminum plate, still air.
- Maximum winding temperature of 155°C.
- Typical electrical specifications at 25°C.
- Motor Terminal Voltages are representative only; motors may be operated at voltages other than those listed in the table. For assistance please contact our applications engineer.
- Calculated (theoretical) speed/torque gradient.

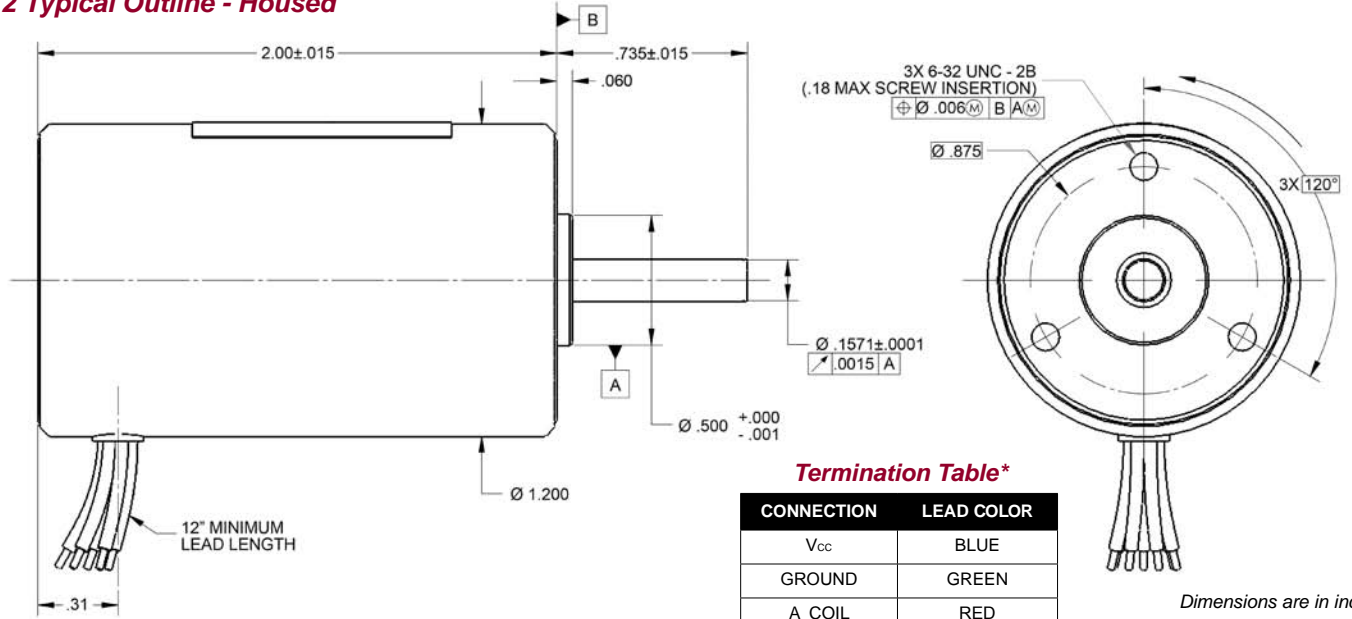
*Many other custom mechanical options are available – consult factory.

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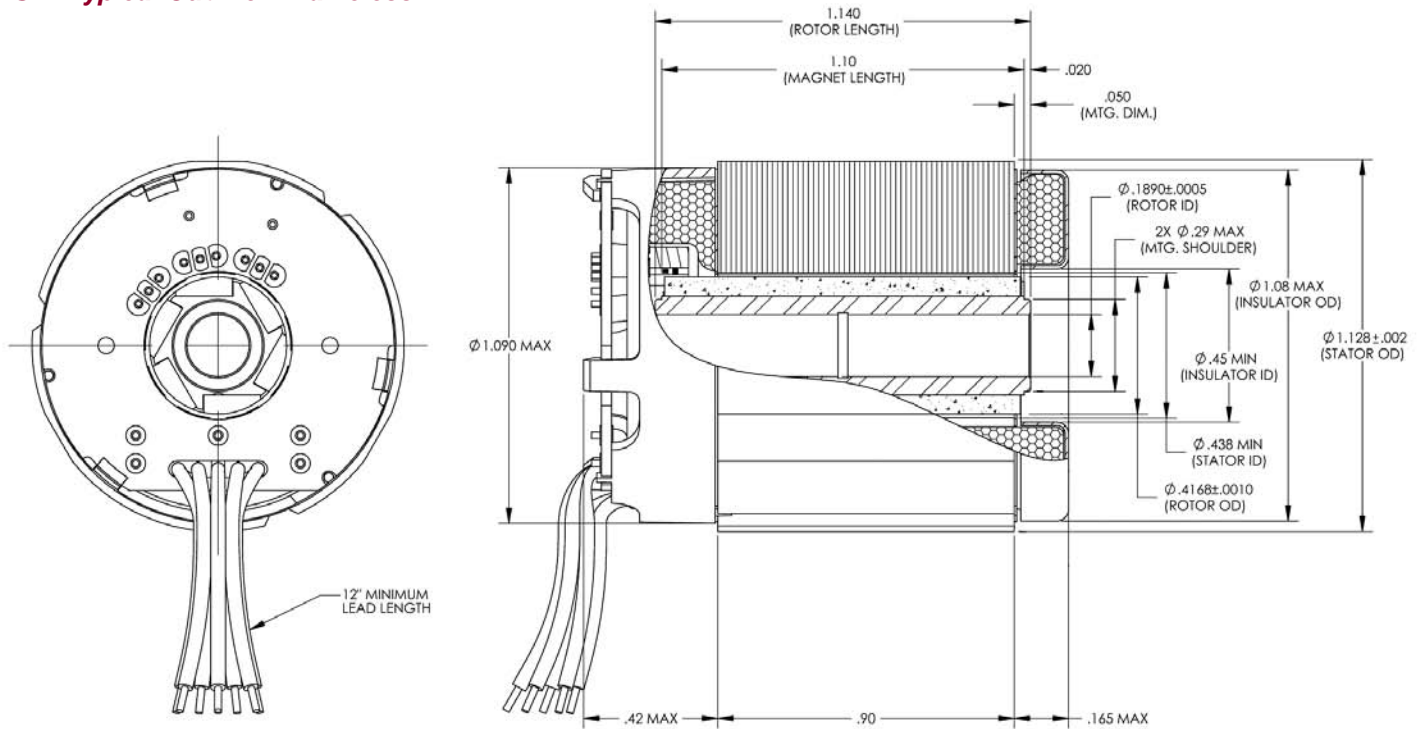
Select your options below and place their code in its corresponding block as shown above.

- | | | |
|----------------------|---------------------------|------------------------|
| T TERMINATION | F FEEDBACK OPTIONS | O OTHER OPTIONS |
| L – Leads (std) | H – Hall Effect (std) | D – Drive |
| C – Connector | R – Resolver | G – Gearhead |
| M – MS connector | S – Sensorless | E – Encoder |

BS12 Typical Outline - Housed



BS12 Typical Outline - Frameless



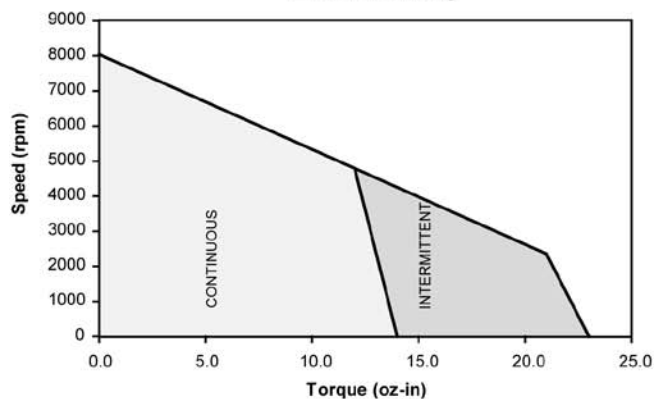
Note: For electrical performance see page 58.

Dimensions are in inches

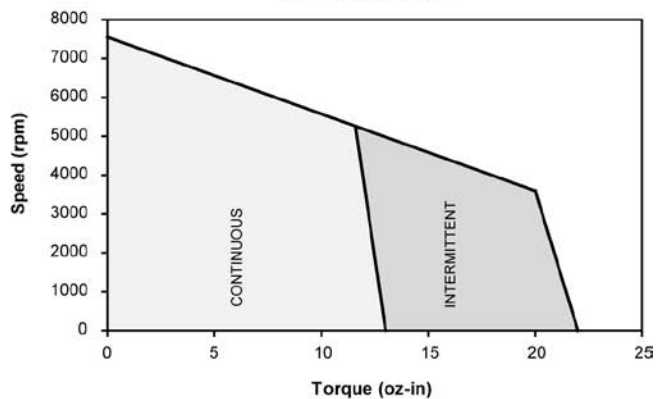
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BS12 Performance Curves

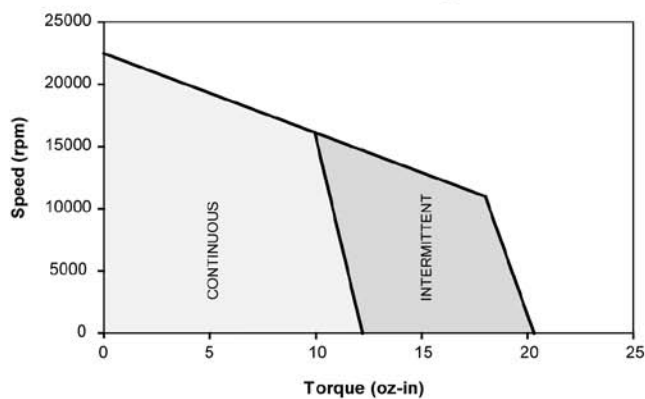
**BS12 -01: Continuous & Intermittent
12-Volt Winding**



**BS12 -02: Continuous & Intermittent
24-Volt Winding**



**BS12 -03: Continuous & Intermittent
24-Volt Winding**



Note: Intermittent operation is based on a 20% duty cycle of one minute on, four minutes off.
Please contact the factory regarding the duty cycle of your application.