

Silencer® Series Brushless DC Motors with Integral Drive

TYPICAL APPLICATIONS

- Medical equipment - small pumps and blowers
- Semiconductor handling and insertion machines
- Robotic tape storage and retrieval
- Industrial automation equipment
- Office automation equipment
- Actuators

FEATURES

- Integral two quadrant speed controllers for electronically commutating three-phase brushless motors
- Uses built-in Hall effect sensors for rotor position feedback
- All motor, drive and feedback connections are pre-wired internally to the package
- Maximum current limit has been pre-set to protect motor and drive
- Compact size – lengths from 1.8 to 2.3 inches
- Torque ratings from 4.5 oz-in to 5.5 oz-in
- Operating temperature range -20 to +45° C
- Optional cover can for electronics available

BENEFITS

- Compact packaging minimizes space required
- Integrated electronics simplifies installation and wiring
- Complete system testing insures high reliability
- High performance, low cost speed controller
- Motor life not limited to brush and commutator life
- Extremely quiet operation
- Low emitted EMI
- Efficient operation
- Long life

BN23 Low Cost



Low Cost Brushless Motors

Silencer™ brushless DC motors with integral electronics provide smooth, quiet and efficient operation over a wide speed range. Moog Components Group has already performed motor / drive system integration, mechanically, electrically and thermally and offers off-the-shelf models for a wide variety of applications.

Very simple, low cost integral driver allows the end user to replace existing brush motors with highly reliable brushless motors.

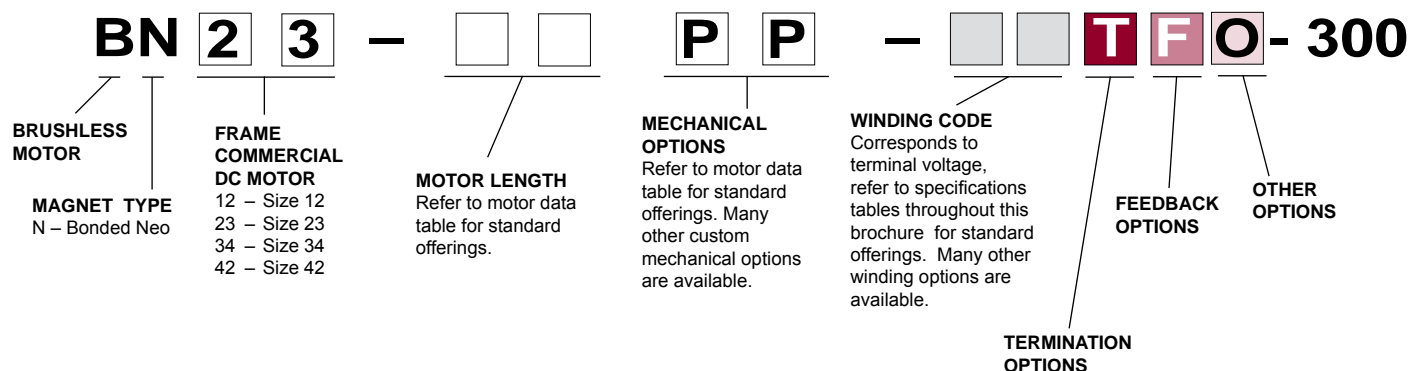
Utilizing bonded neo magnets and Surface Mount Technology (SMT), the low cost BN series motors provide excellent value with their low cost and ease of installation. The compact BN motors are well suited for applications demanding low audible noise, long life and ease of installation.

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



BN23 SPECIFICATIONS - Typical Electrical Specifications (25°C)

Part Number*		BN23-13PP-[] [] T F O -300	BN23-18PP-[] [] T F O -300
Winding Code**		03	03
L = Length (Motor + Driver)	inches	1.85	2.35
	millimeters	46.7	59.4
No-Load Speed @ 12 VDC	RPM	2272.0	1947.0
	rad/sec	238	204
Rated Speed @ 12 VDC @ 1.0 Amp	RPM	1660	1740
	rad/sec	174	182
Rated Torque @ 12 VDC @ 1.0 Amp	oz-in (max)	4.5	5.5
	Nm (max)	0.0318	0.0388
No-Load Speed @ 24 VDC	RPM	5363	4566
	rad/sec	562	478
Rated Speed @ 24 VDC @ 1.0 Amp	RPM	4750	4370
	rad/sec	497	458
Rated Torque @ 24 VDC @ 1.0 Amp	oz-in (max)	4.5	5.0
	Nm (max)	0.0318	0.0353
Torque Sensitivity (Kt)	oz-in/amp +/- 10%	5.26	6.18
	Nm/amp +/- 10%	0.0371	0.0436
Rotor Inertia	oz-in-sec ² x 10 ⁻³	0.51	0.99
	g-cm ²	36.0	69.0
Weight	oz	14.0	19.0
	gm	397.6	539.6
Number of Poles		8.0	8.0
Mech. Time Constant	ms	4.9	2.9
Electrical Time Constant	ms	0.81	1.04
Speed/Torque Gradient	RPM/oz-in	140.0	45.0

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.
- For MS (military style) connector, please specify connector housing and terminal.
- Data for informational purposes only. Should not be considered a binding performance agreement. For specific applications, please contact the factory.

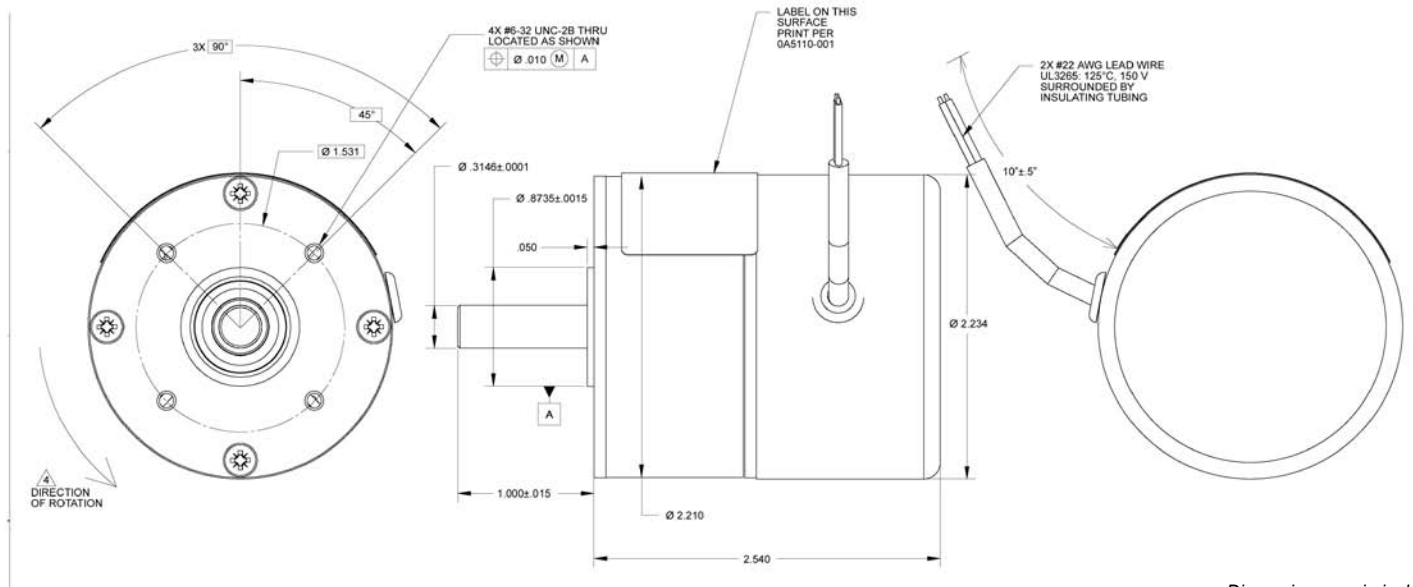
*Many other custom mechanical options are available – consult factory.

**Many other winding options are available – consult factory.

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

- | | | |
|------------------------------|---------------------------|------------------------|
| T TERMINATION OPTIONS | F FEEDBACK OPTIONS | O OTHER OPTIONS |
| L – Leads (std) | H – Hall Effect (std) | D – Drive |
| C – Connector | | G – Gearhead |

Typical Outline Drawing - BN23



Dimensions are in inches

Connection Diagram

DESIGNATOR	WIRE COLOR
+ VDC	RED
GND	BLACK

UNIT TYPE	"L"
BN23-13PP - [] []	2.54
BN23-18PP - [] []	3.04

Notes:

1. Observe proper polarity in connecting + input and GND to power supply. Reverse polarity will damage or destroy drive circuitry and will void warranty.
2. Voltage range 12 to 24 VDC.
3. **This is an open loop controller.**