

BN42 IP65 Specifications

Inside Rotor
Brushless Motors

BN42 IP65 SPECIFICATIONS - Continuous Stall Torque 144 - 519 oz-in (1.02 - 3.67 Nm) Peak Torque 609 - 2560 oz-in (4.30 - 18.1 Nm)

| Part Number* | | BN42-23IP - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN42-33IP - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN42-43IP - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN42-53IP - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | |
|--------------------------|--|---|---------|---------|---|---------|---------|---|---------|---------|---|---------|---------|
| Winding Code** | | 01 | 02 | 03 | 01 | 02 | 03 | 01 | 02 | 03 | 01 | 02 | 03 |
| L = Length | inches | 2.30 | | | 3.30 | | | 4.30 | | | 5.30 | | |
| | millimeters | 58.4 | | | 83.8 | | | 109.2 | | | 134.6 | | |
| Terminal Voltage | volts DC | 24.0 | 50.0 | 100.0 | 24.0 | 50.0 | 100.0 | 24.0 | 50.0 | 100.0 | 24.0 | 50.0 | 100.0 |
| Peak Torque | oz-in | 609.0 | 609.0 | 609.0 | 1248.0 | 1248.0 | 1248.0 | 1906.0 | 1906.0 | 1906.0 | 2560.0 | 2560.0 | 2560.0 |
| | Nm | 4.3005 | 4.3005 | 4.3005 | 8.8128 | 8.8128 | 8.8128 | 13.4592 | 13.4592 | 13.4592 | 18.0774 | 18.0774 | 18.0774 |
| Continuous Stall Torque | oz-in | 144.0 | 156.0 | 155.0 | 266.0 | 281.0 | 287.0 | 387.0 | 398.0 | 407.0 | 496.0 | 510.0 | 519.0 |
| | Nm | 1.0169 | 1.1016 | 1.0945 | 1.8784 | 1.9843 | 2.0267 | 2.7328 | 2.8105 | 2.8740 | 3.5025 | 3.6014 | 3.6649 |
| Rated Speed | RPM | 6050.0 | 5950.0 | 6140.0 | 3710.0 | 4710.0 | 4710.0 | 2380.0 | 3840.0 | 3840.0 | 1740.0 | 2820.0 | 2820.0 |
| | rad/sec | 634 | 623 | 643 | 389 | 493 | 493 | 249 | 402 | 402 | 182 | 295 | 295 |
| Rated Torque | oz-in | 102.0 | 113.0 | 110.0 | 213.0 | 198.0 | 200.0 | 340.0 | 290.0 | 296.0 | 451.0 | 413.0 | 419.0 |
| | Nm | 0.7203 | 0.7979 | 0.7768 | 1.5041 | 1.3982 | 1.4123 | 2.4009 | 2.0478 | 2.0902 | 3.1847 | 2.9164 | 2.9588 |
| Rated Current | Amps | 22.60 | 11.70 | 5.90 | 28.90 | 16.20 | 8.20 | 29.70 | 19.20 | 9.80 | 29.20 | 20.20 | 10.20 |
| Rated Power | watts | 456.0 | 497.0 | 499.0 | 584.0 | 690.0 | 697.0 | 598.0 | 824.0 | 841.0 | 580.0 | 861.0 | 874.0 |
| Torque Sensitivity | oz-in/amp | 5.20 | 11.00 | 21.40 | 8.41 | 14.00 | 28.00 | 12.90 | 17.20 | 34.30 | 17.40 | 23.10 | 46.30 |
| | Nm/amp | 0.0367 | 0.0777 | 0.1511 | 0.0594 | 0.0989 | 0.1977 | 0.0911 | 0.1215 | 0.2422 | 0.1229 | 0.1631 | 0.3269 |
| Back EMF | volts/KRPM | 3.80 | 8.20 | 15.80 | 6.22 | 10.40 | 20.70 | 9.52 | 12.70 | 25.40 | 12.80 | 17.10 | 34.20 |
| | volts/rad/sec | 0.0367 | 0.0777 | 0.1511 | 0.0594 | 0.0989 | 0.1977 | 0.0911 | 0.1215 | 0.2422 | 0.1229 | 0.1631 | 0.3269 |
| Terminal Resistance | ohms | 0.040 | 0.154 | 0.584 | 0.039 | 0.095 | 0.364 | 0.052 | 0.084 | 0.320 | 0.065 | 0.106 | 0.408 |
| Terminal Inductance | mH | 0.090 | 0.408 | 1.540 | 0.115 | 0.318 | 1.270 | 0.178 | 0.316 | 1.260 | 0.241 | 0.428 | 1.710 |
| Motor Constant | oz-in/sq.rt.watt | 26.00 | 28.03 | 28.00 | 42.59 | 45.42 | 46.41 | 56.57 | 59.35 | 60.63 | 68.25 | 70.95 | 72.49 |
| | Nm/sq.rt.watt | 0.18360 | 0.19794 | 0.19775 | 0.30072 | 0.32075 | 0.32772 | 0.39947 | 0.41907 | 0.42817 | 0.48194 | 0.50102 | 0.51186 |
| Rotor Inertia | oz-in-sec ² x10 ⁻³ | 18.00 | 18.00 | 18.00 | 35.00 | 35.00 | 35.00 | 52.00 | 52.00 | 52.00 | 70.00 | 70.00 | 70.00 |
| | g-cm ² | 1270.3 | 1270.3 | 1270.3 | 2470.0 | 2470.0 | 2470.0 | 3669.6 | 3669.6 | 3669.6 | 4939.9 | 4939.9 | 4939.9 |
| Weight | oz | 65.0 | 65.0 | 65.0 | 104.0 | 104.0 | 104.0 | 143.0 | 143.0 | 143.0 | 182.0 | 182.0 | 182.0 |
| | g | 1846.0 | 1846.0 | 1846.0 | 2953.6 | 2953.6 | 2953.6 | 4061.2 | 4061.2 | 4061.2 | 5168.8 | 5168.8 | 5168.8 |
| # of Poles | | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| Timing | | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° | 120° |
| Mech. Time Constant | ms | 3.8 | 3.2 | 3.2 | 2.7 | 2.4 | 2.3 | 2.3 | 2.1 | 2.0 | 2.1 | 2.0 | 1.9 |
| Electrical Time Constant | ms | 2.25 | 2.65 | 2.64 | 2.95 | 3.35 | 3.49 | 3.42 | 3.76 | 3.94 | 3.71 | 4.04 | 4.19 |
| Thermal Resistivity | deg. C/watt | 1.2 | 1.2 | 1.2 | 1.0 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.9 | 0.7 | 0.7 |
| Speed/Torque Gradient | rpm/oz-in | 2.0 | 1.7 | 1.7 | 0.7 | 0.7 | 0.6 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 |

Notes:

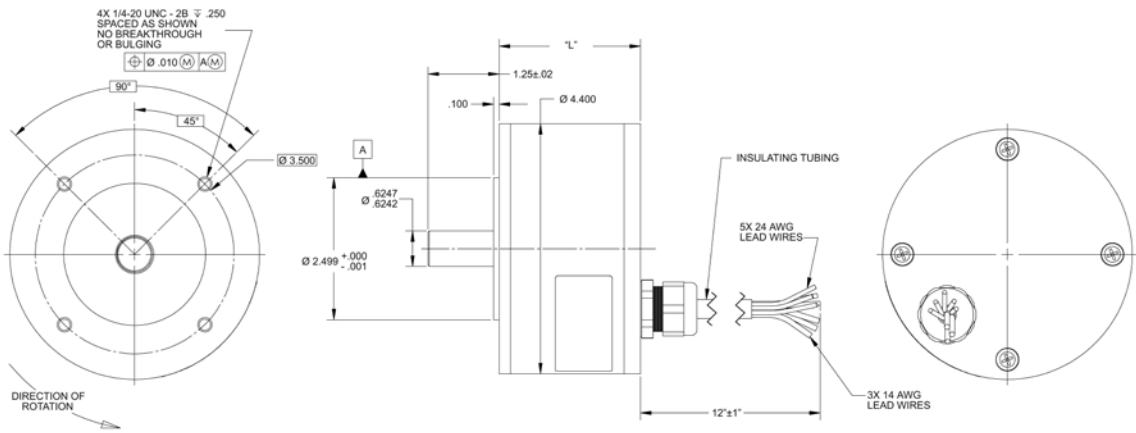
- Motor mounted to a 10 x 10 x 1/4 inches aluminum plate, still air.
- Maximum winding temperature of 155°C.
- Typical electrical specifications at 25°C.
- Motor Terminal Voltages are representative only; motors may be operated at voltages other than those listed in the table. For assistance please contact our applications engineer.
- Calculated (theoretical) speed/torque gradient.
- 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 on page 5.

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> TERMINATION | <input type="checkbox"/> FEEDBACK OPTIONS | <input type="checkbox"/> OTHER OPTIONS |
| L – Leads (std) | H – Hall Effect (std) | D – Drive |
| C – Connector | R – Resolver | E – Encoder |
| M – MS connector | S – Sensorless | G – Gearhead |

BN42 IP65 Typical Outline



Termination Table

| PIN COLOR | CONNECTION |
|-----------|-----------------|
| YELLOW | V _{CC} |
| GRAY | GROUND |
| RED | A COIL |
| BLACK | B COIL |
| GREEN | C COIL |
| BLUE | S2 OUT |
| BROWN | S1 OUT |
| ORANGE | S3 OUT |

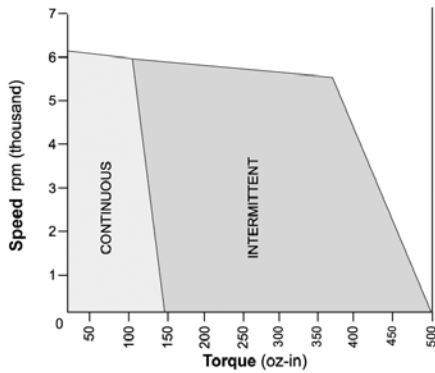
Dimensions are in inches

Note: An optional 4.15 (105.4) square front end cap is available.

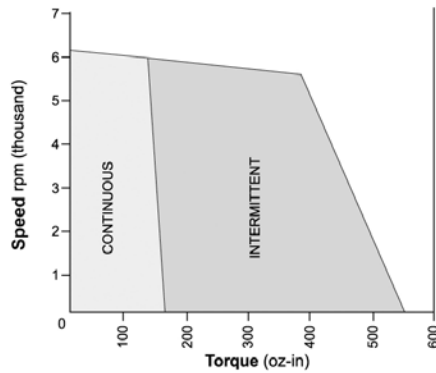
BN42 IP65 Performance Curves

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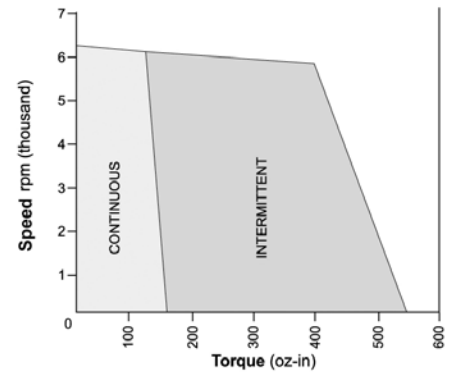
BN42-23IP-01: Continuous & Intermittent Operation at 24 Volt DC



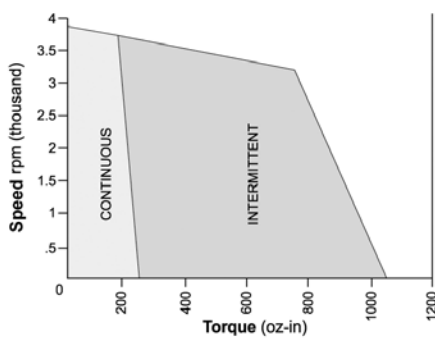
BN42-23IP-02: Continuous & Intermittent Operation at 50 Volt DC



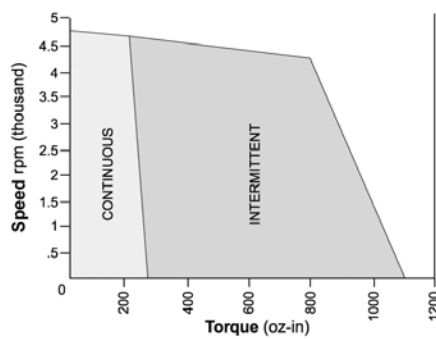
BN42-23IP-03: Continuous & Intermittent Operation at 100 Volt DC



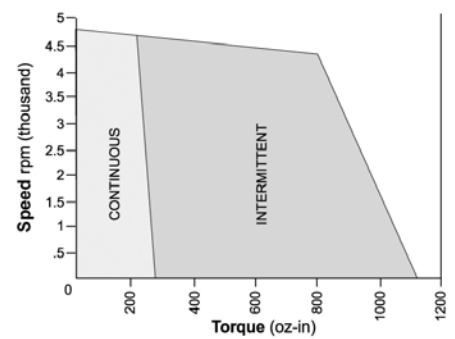
BN42-33IP-01: Continuous & Intermittent Operation at 24 Volt DC



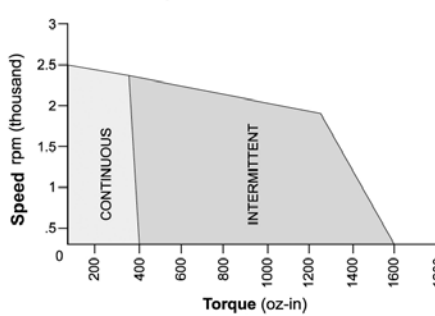
BN42-33IP-02: Continuous & Intermittent Operation at 50 Volt DC



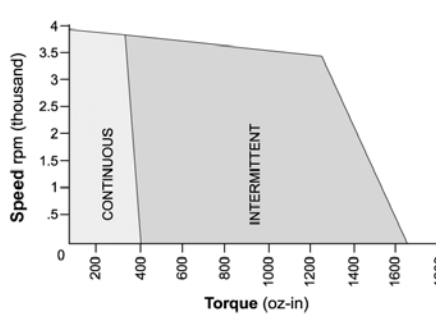
BN42-33IP-03: Continuous & Intermittent Operation at 100 Volt DC



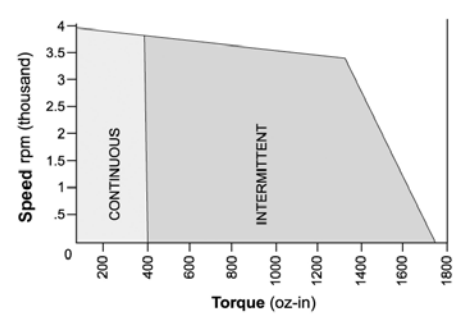
BN42-43IP-01: Continuous & Intermittent Operation at 24 Volt DC



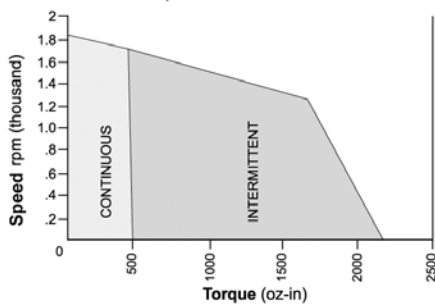
BN42-43IP-02: Continuous & Intermittent Operation at 50 Volt DC



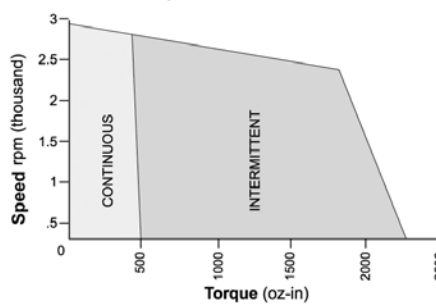
BN42-43IP-03: Continuous & Intermittent Operation at 100 Volt DC



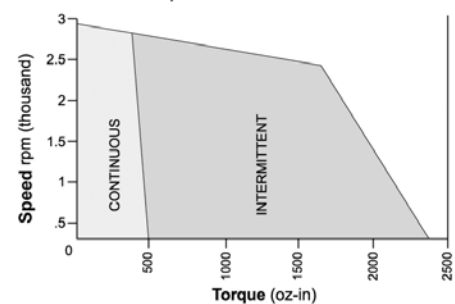
BN42-53IP-01: Continuous & Intermittent Operation at 24 Volt DC



BN42-53IP-02: Continuous & Intermittent Operation at 50 Volt DC



BN42-53IP-03: Continuous & Intermittent Operation at 100 Volt DC



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.