

BN23 Specifications

Inside Rotor
Brushless Motors

BN23 SPECIFICATIONS - *Continuous Stall Torque 14.6 - 54.3 oz-in (0.103 - 0.384 Nm) Peak Torque 35 - 186 oz-in (0.2472 - 1.3134 Nm)*

| Part Number* | | BN23-13MG- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN23-18MG- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN23-23MG- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN23-28MG- <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 | 1.40 | | | 1.90 | | | 2.40 | | | 2.90 | | |
| | millimeters | 35.6 | | | 48.3 | | | 60.9 | | | 73.7 | | |
| Terminal Voltage | volts DC | 24 | 36 | 48 | 24 | 36 | 48 | 24 | 36 | 48 | 24 | 36 | 48 |
| Peak Torque | oz-in | 35 | 35 | 35 | 88 | 88 | 88 | 143 | 143 | 143 | 186 | 186 | 186 |
| | Nm | 0.2472 | 0.2472 | 0.2472 | 0.6214 | 0.6214 | 0.6214 | 1.0098 | 1.0098 | 1.0098 | 1.3134 | 1.3134 | 1.3134 |
| Continuous Stall Torque | oz-in | 14.6 | 17.7 | 14.2 | 30.7 | 31.4 | 35.2 | 42.8 | 44.7 | 42.9 | 50.4 | 54.3 | 53.2 |
| | Nm | 0.103 | 0.125 | 0.100 | 0.217 | 0.221 | 0.248 | 0.303 | 0.315 | 0.303 | 0.356 | 0.384 | 0.376 |
| No-Load Speed | | 12,200 | 12,500 | 12,300 | 9,100 | 9,700 | 10,200 | 8,100 | 8,800 | 8,200 | 7,300 | 7,500 | 8,100 |
| Rated Speed | RPM | 8650 | 9060 | 9190 | 6460 | 7000 | 7130 | 6060 | 6700 | 6250 | 5340 | 5590 | 6140 |
| | rad/sec | 906 | 949 | 962 | 676 | 733 | 747 | 635 | 702 | 655 | 559 | 585 | 643 |
| Rated Torque | oz-in | 14.2 | 16.1 | 12.1 | 29.7 | 29.8 | 32.9 | 40.3 | 42.3 | 41.8 | 49.1 | 51.9 | 48.8 |
| | Nm | 0.100 | 0.114 | 0.085 | 0.210 | 0.210 | 0.232 | 0.285 | 0.299 | 0.295 | 0.347 | 0.366 | 0.345 |
| Rated Current | Amps | 5.80 | 4.30 | 2.38 | 7.75 | 5.43 | 4.88 | 9.47 | 7.44 | 5.00 | 10.45 | 7.66 | 5.85 |
| Rated Power | watts | 91 | 108 | 82 | 142 | 154 | 174 | 181 | 210 | 193 | 194 | 215 | 222 |
| Torque Sensitivity | oz-in/amp | 2.55 | 3.78 | 5.18 | 3.40 | 4.90 | 6.25 | 3.85 | 5.35 | 7.79 | 4.26 | 6.30 | 7.80 |
| | Nm/amp | 0.018 | 0.027 | 0.037 | 0.024 | 0.035 | 0.044 | 0.027 | 0.038 | 0.055 | 0.030 | 0.044 | 0.055 |
| Back EMF | volts/KRPM | 1.89 | 2.80 | 3.83 | 2.51 | 3.62 | 4.62 | 2.85 | 3.96 | 5.76 | 3.15 | 4.66 | 5.77 |
| | volts/rad/sec | 0.018 | 0.027 | 0.037 | 0.024 | 0.035 | 0.044 | 0.027 | 0.038 | 0.055 | 0.030 | 0.044 | 0.055 |
| Terminal Resistance | ohms | 0.465 | 0.939 | 1.890 | 0.246 | 0.507 | 0.800 | 0.178 | 0.347 | 0.715 | 0.181 | 0.366 | 0.576 |
| Terminal Inductance | mH | 0.350 | 0.758 | 1.53 | 0.275 | 0.580 | 0.930 | 0.220 | 0.420 | 0.900 | 0.230 | 0.490 | 0.770 |
| Motor Constant | oz-in/sq.rt.watt | 3.74 | 3.90 | 3.77 | 6.86 | 6.88 | 6.99 | 9.13 | 9.08 | 9.21 | 10.01 | 10.41 | 10.28 |
| | Nm/sq.rt.watt | 0.026 | 0.028 | 0.027 | 0.048 | 0.049 | 0.049 | 0.064 | 0.064 | 0.065 | 0.071 | 0.074 | 0.073 |
| Rotor Inertia | oz-in-sec ² x10 ⁻³ | 0.51 | 0.51 | 0.51 | 0.99 | 0.99 | 0.99 | 1.5 | 1.5 | 1.5 | 1.9 | 1.9 | 1.9 |
| | g-cm ² | 36 | 36 | 36 | 70 | 70 | 70 | 106 | 106 | 106 | 134 | 134 | 134 |
| Weight | oz | 8.3 | 8.4 | 8.3 | 13.6 | 13.7 | 13.8 | 19.1 | 19.1 | 19.1 | 24.4 | 24.7 | 24.5 |
| | g | 234.0 | 238.0 | 234.0 | 386.0 | 389.0 | 391.0 | 542.0 | 542.0 | 542.0 | 693.0 | 699.0 | 694.0 |
| # 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 | 5.20 | 4.7 | 5.1 | 3.0 | 3.0 | 2.9 | 2.5 | 2.6 | 2.5 | 2.7 | 2.5 | 2.5 |
| Electrical Time Constant | ms | 0.75 | 0.81 | 0.81 | 1.12 | 1.14 | 1.16 | 1.24 | 1.21 | 1.26 | 1.27 | 1.34 | 1.34 |
| Thermal Resistivity | deg. C/watt | 2.28 | 2.34 | 3.44 | 2.49 | 2.67 | 1.81 | 2.36 | 1.89 | 2.35 | 1.93 | 1.80 | 1.86 |
| Speed/Torque Gradient | rpm/oz-in | 250.0 | 213.7 | 257.0 | 88.9 | 90.6 | 93.3 | 50.6 | 49.6 | 46.7 | 39.9 | 36.8 | 40.2 |

Notes:

- Motor mounted to a 6 x 6 x 1/4 inches aluminum plate, still air.
- Maximum winding temperature of 155°C.
- Typical electrical specifications at 25°C.
- Data shown for 8 pole motors. Please consult factory for 4 pole specifications.
- 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.

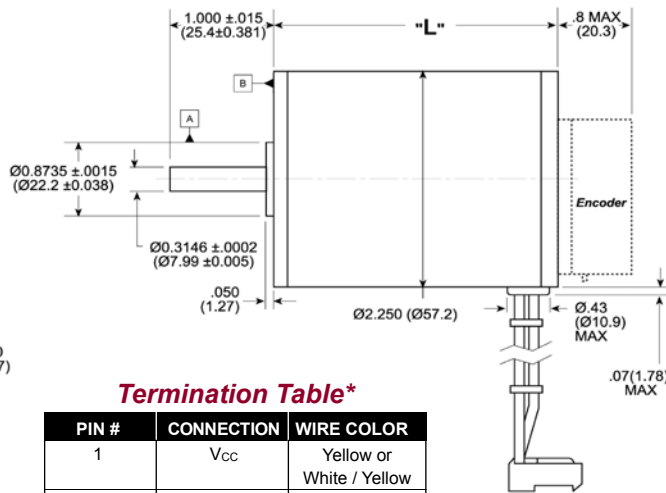
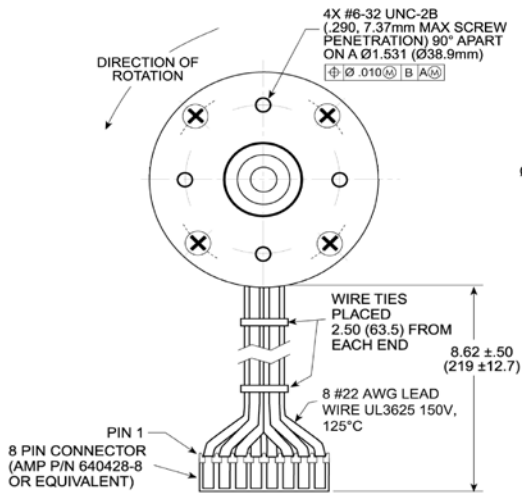
Select your options below and place their code in its corresponding block as shown on page 5.

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

BN23 Housed / Frameless

Inside Rotor
Brushless Motors

BN23 Typical Outline - Housed



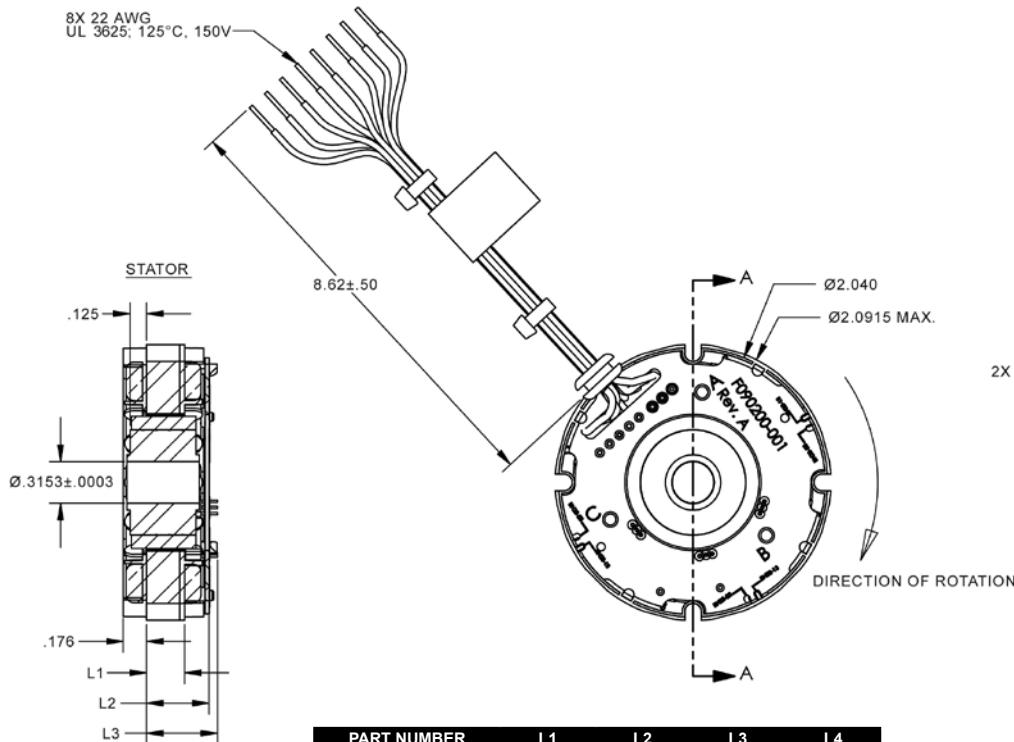
Termination Table*

| PIN # | CONNECTION | WIRE COLOR |
|-------|-----------------|--------------------------|
| 1 | V _{cc} | Yellow or White / Yellow |
| 2 | GROUND | White / Gray |
| 3 | A COIL | White / Violet |
| 4 | B COIL | White / Black |
| 5 | C COIL | Green |
| 6 | S2 OUT | White / Blue |
| 7 | S1 OUT | White / Brown |
| 8 | S3 OUT | White |

Dimensions are in inches (millimeters)

*We reserve the right to use solid color wires or white wires with color trace.

BN23 Typical Outline - Frameless



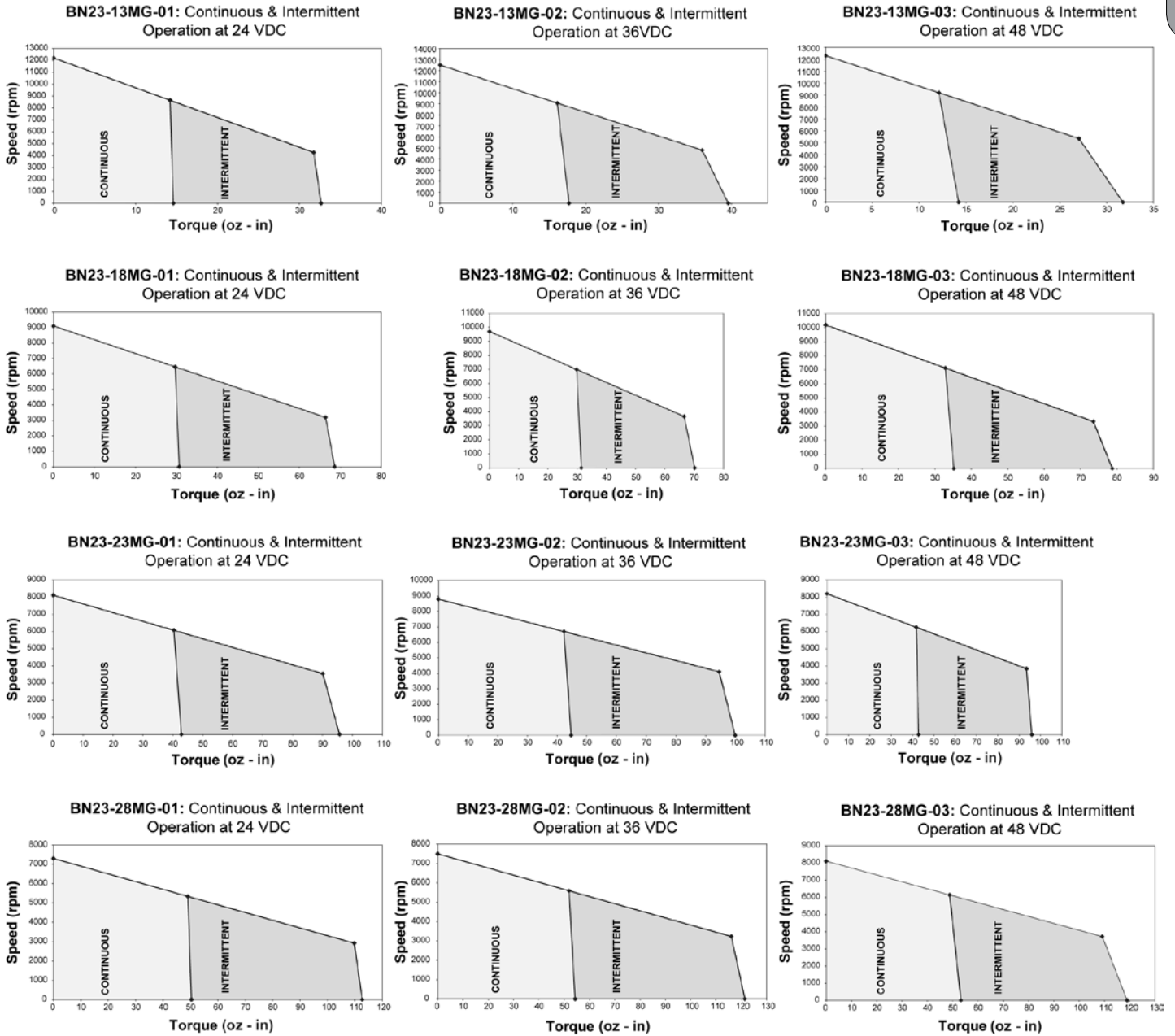
| PART NUMBER | L1 | L2 | L3 | L4 |
|-----------------|-------|-------|-------|-------|
| BN23-13ZMG-XXLH | 0.288 | 0.474 | 0.550 | 0.550 |
| BN23-18ZMG-XXLH | 0.788 | 0.974 | 1.050 | 1.050 |
| BN23-23ZMG-XXLH | 1.288 | 1.470 | 1.550 | 1.550 |
| BN23-28ZMG-XXLH | 1.788 | 1.970 | 2.050 | 2.050 |

Note: For electrical performance see page 17.

Dimensions are in inches

BN23 Performance Curves

BN23 Performance Curves



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.

BN23 EU Specifications

BN23 EU SPECIFICATIONS -

Continuous Stall Torque 14.6 - 54.3 oz-in (0.103 - 0.384 Nm)
Peak Torque 35 - 186 oz-in (0.2472 - 1.3134 Nm)

| Part Number* | | BN23-13EU- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN23-18EU- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN23-23EU- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN23-28EU- <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 | 1.40 | | | 1.90 | | | 2.40 | | | 2.90 | | |
| | millimeters | 35.6 | | | 48.3 | | | 60.9 | | | 73.7 | | |
| Terminal Voltage | volts DC | 24 | 36 | 48 | 24 | 36 | 48 | 24 | 36 | 48 | 24 | 36 | 48 |
| Peak Torque | oz-in | 35 | 35 | 35 | 88 | 88 | 88 | 143 | 143 | 143 | 186 | 186 | 186 |
| | Nm | 0.2472 | 0.2472 | 0.2472 | 0.6214 | 0.6214 | 0.6214 | 1.0098 | 1.0098 | 1.0098 | 1.3134 | 1.3134 | 1.3134 |
| Continuous Stall Torque | oz-in | 14.6 | 17.7 | 14.2 | 30.7 | 31.4 | 35.2 | 42.8 | 44.7 | 42.9 | 50.4 | 54.3 | 53.2 |
| | Nm | 0.103 | 0.125 | 0.100 | 0.217 | 0.221 | 0.248 | 0.303 | 0.315 | 0.303 | 0.356 | 0.384 | 0.376 |
| No-Load Speed | | 12,200 | 12,500 | 12,300 | 9,100 | 9,700 | 10,200 | 8,100 | 8,800 | 8,200 | 7,300 | 7,500 | 8,100 |
| Rated Speed | RPM | 8650 | 9060 | 9190 | 6460 | 7000 | 7130 | 6060 | 6700 | 6250 | 5340 | 5590 | 6140 |
| | rad/sec | 906 | 949 | 962 | 676 | 733 | 747 | 635 | 702 | 655 | 559 | 585 | 643 |
| Rated Torque | oz-in | 14.2 | 16.1 | 12.1 | 29.7 | 29.8 | 32.9 | 40.3 | 42.3 | 41.8 | 49.1 | 51.9 | 48.8 |
| | Nm | 0.100 | 0.114 | 0.085 | 0.210 | 0.210 | 0.232 | 0.285 | 0.299 | 0.295 | 0.347 | 0.366 | 0.345 |
| Rated Current | Amps | 5.80 | 4.30 | 2.38 | 7.75 | 5.43 | 4.88 | 9.47 | 7.44 | 5.00 | 10.45 | 7.66 | 5.85 |
| Rated Power | watts | 91 | 108 | 82 | 142 | 154 | 174 | 181 | 210 | 193 | 194 | 215 | 222 |
| Torque Sensitivity | oz-in/amp | 2.55 | 3.78 | 5.18 | 3.40 | 4.90 | 6.25 | 3.85 | 5.35 | 7.79 | 4.26 | 6.30 | 7.80 |
| | Nm/amp | 0.018 | 0.027 | 0.037 | 0.024 | 0.035 | 0.044 | 0.027 | 0.038 | 0.055 | 0.030 | 0.044 | 0.055 |
| Back EMF | volts/KRPM | 1.89 | 2.80 | 3.83 | 2.51 | 3.62 | 4.62 | 2.85 | 3.96 | 5.76 | 3.15 | 4.66 | 5.77 |
| | volts/rad/sec | 0.018 | 0.027 | 0.037 | 0.024 | 0.035 | 0.044 | 0.027 | 0.038 | 0.055 | 0.030 | 0.044 | 0.055 |
| Terminal Resistance | ohms | 0.465 | 0.939 | 1.890 | 0.246 | 0.507 | 0.800 | 0.178 | 0.347 | 0.715 | 0.181 | 0.366 | 0.576 |
| Terminal Inductance | mH | 0.350 | 0.758 | 1.53 | 0.275 | 0.580 | 0.930 | 0.220 | 0.420 | 0.900 | 0.230 | 0.490 | 0.770 |
| Motor Constant | oz-in/sq.rt.watt | 3.74 | 3.90 | 3.77 | 6.86 | 6.88 | 6.99 | 9.13 | 9.08 | 9.21 | 10.01 | 10.41 | 10.28 |
| | Nm/sq.rt.watt | 0.026 | 0.028 | 0.027 | 0.048 | 0.049 | 0.049 | 0.064 | 0.064 | 0.065 | 0.071 | 0.074 | 0.073 |
| Rotor Inertia | oz-in-sec ² x10 ⁻³ | 0.51 | 0.51 | 0.51 | 0.99 | 0.99 | 0.99 | 1.5 | 1.5 | 1.5 | 1.9 | 1.9 | 1.9 |
| | g-cm ² | 36 | 36 | 36 | 70 | 70 | 70 | 106 | 106 | 106 | 134 | 134 | 134 |
| Weight | oz | 8.3 | 8.4 | 8.3 | 13.6 | 13.7 | 13.8 | 19.1 | 19.1 | 19.1 | 24.4 | 24.7 | 24.5 |
| | g | 234.0 | 238.0 | 234.0 | 386.0 | 389.0 | 391.0 | 542.0 | 542.0 | 542.0 | 693.0 | 699.0 | 694.0 |
| # 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 | 5.20 | 4.7 | 5.1 | 3.0 | 3.0 | 2.9 | 2.5 | 2.6 | 2.5 | 2.7 | 2.5 | 2.5 |
| Electrical Time Constant | ms | 0.75 | 0.81 | 0.81 | 1.12 | 1.14 | 1.16 | 1.24 | 1.21 | 1.26 | 1.27 | 1.34 | 1.34 |
| Thermal Resistivity | deg. C/watt | 2.28 | 2.34 | 3.44 | 2.49 | 2.67 | 1.81 | 2.36 | 1.89 | 2.35 | 1.93 | 1.80 | 1.86 |
| Speed/Torque Gradient | rpm/oz-in | 250.0 | 213.7 | 257.0 | 88.9 | 90.6 | 93.3 | 50.6 | 49.6 | 46.7 | 39.9 | 36.8 | 40.2 |

Notes:

- Motor mounted to a 6" x 6" x 1/4" aluminum plate, still air.
- Maximum winding temperature of 155°C.
- Typical electrical specifications at 25°C.
- Data shown for 8 pole motors. Please consult factory for 4 pole specifications.
- 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 on page 5.

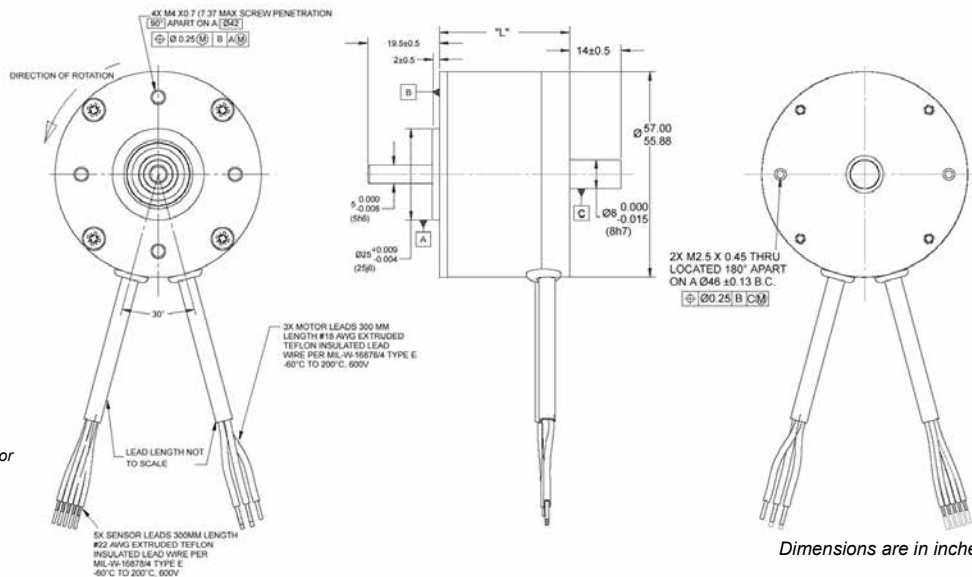
- | | | |
|---|--|---|
| <input type="checkbox"/> TERMINATION | <input type="checkbox"/> FEEDBACK OPTIONS | <input type="checkbox"/> OTHER OPTIONS |
| L – Leads (std) | H – Hall Effect (std) | E – Encoder |
| C – Connector | R – Resolver | G – Gearhead |
| M – MS connector | S – Sensorless | |

BN23 EU Typical Outline

Termination Table*

| COLOR | CONNECTION |
|--------|----------------------|
| VIOLET | A COIL |
| GREEN | C COIL |
| BLACK | B COIL |
| GRAY | HALL GND |
| YELLOW | HALL V _{CC} |
| WHITE | HALL S3 |
| BLUE | HALL S2 |
| BROWN | HALL S1 |

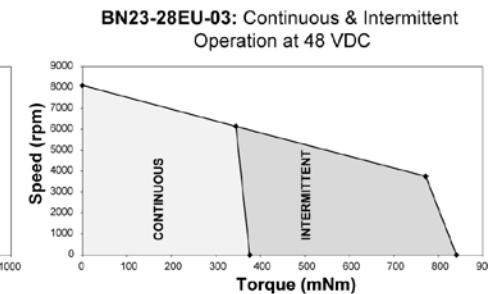
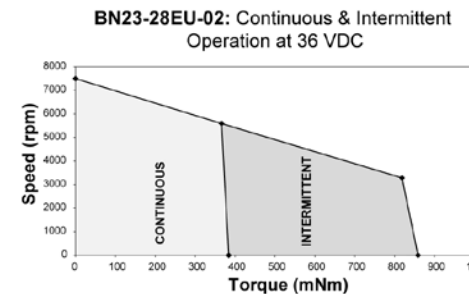
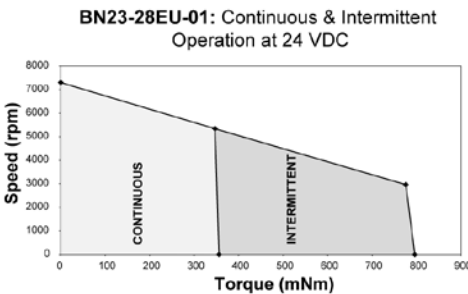
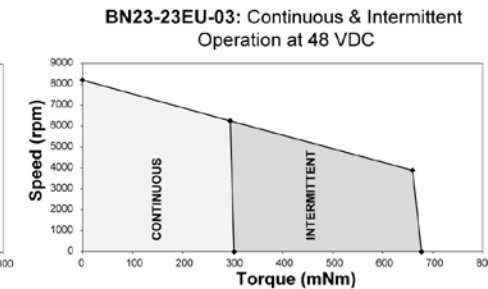
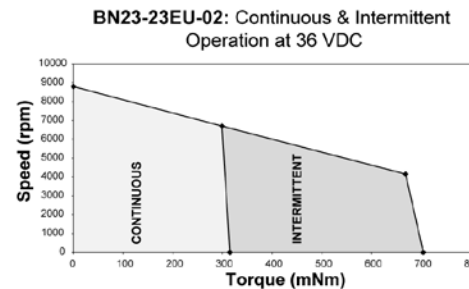
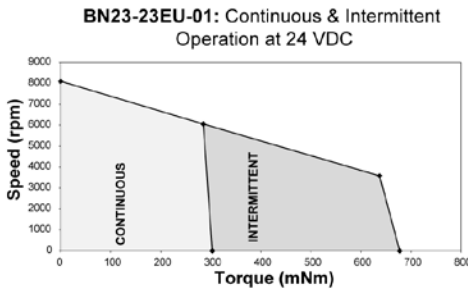
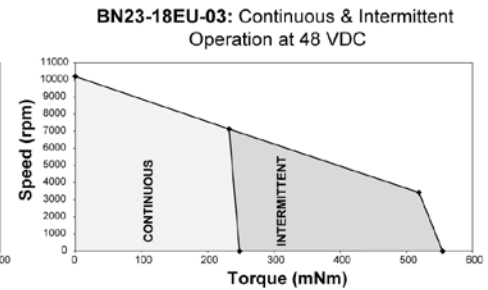
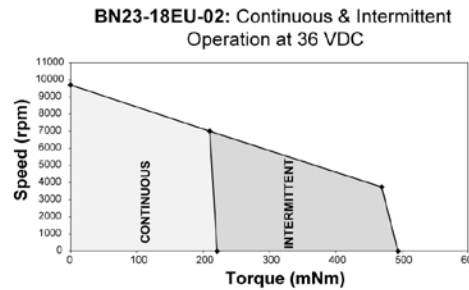
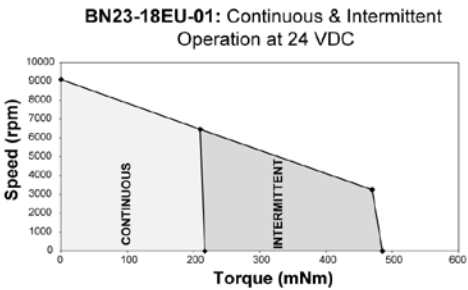
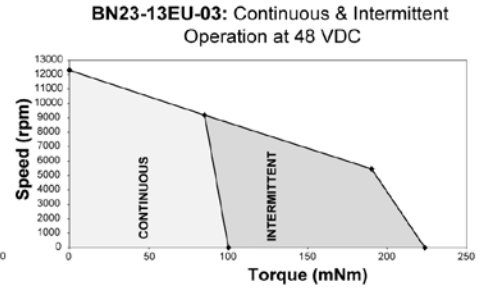
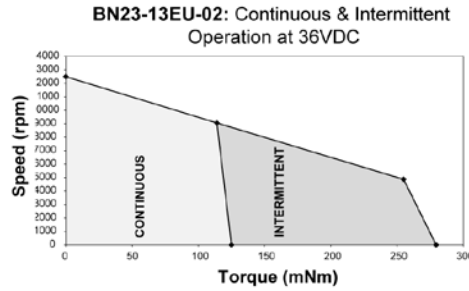
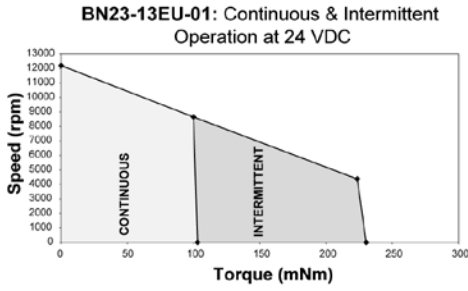
*We reserve the right to use solid color wires or white wires with color trace.



Dimensions are in inches (millimeters)

BN23 EU Performance Curves

BN23 EU Performance Curves



S/T Gradient = 35.4 rpm/mNm

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.

BN23 IP65 Specifications

BN23 IP65 SPECIFICATIONS - Continuous Stall Torque 12.6 - 41 oz-in (0.0890 - 0.290 Nm)
Peak Torque 35 - 186 oz-in (0.248 - 1.32 Nm)

| Part Number* | | BN23-13IP- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN23-18IP- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN23-23IP- <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | | BN23-28IP- <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 | 2.43 | | | 2.93 | | | 3.43 | | | 3.93 | | |
| | millimeters | 61.72 | | | 74.42 | | | 87.12 | | | 99.82 | | |
| Terminal Voltage | volts DC | 24 | 36 | 48 | 24 | 36 | 48 | 24 | 36 | 48 | 24 | 36 | 48 |
| Peak Torque | oz-in | 35 | 35 | 35 | 88 | 88 | 88 | 143 | 143 | 143 | 186 | 186 | 186 |
| | Nm | 0.2472 | 0.2472 | 0.2472 | 0.6214 | 0.6214 | 0.6214 | 1.0098 | 1.0098 | 1.0098 | 1.3134 | 1.3134 | 1.3134 |
| Continuous Stall Torque | oz-in | 14.6 | 17.7 | 14.2 | 30.7 | 31.4 | 35.2 | 42.8 | 44.7 | 42.9 | 50.4 | 54.3 | 53.2 |
| | Nm | 0.103 | 0.125 | 0.100 | 0.217 | 0.221 | 0.248 | 0.303 | 0.315 | 0.303 | 0.356 | 0.384 | 0.376 |
| No-Load Speed | | 12,200 | 12,500 | 12,300 | 9,100 | 9,700 | 10,200 | 8,100 | 8,800 | 8,200 | 7,300 | 7,500 | 8,100 |
| Rated Speed | RPM | 8650 | 9060 | 9190 | 6460 | 7000 | 7130 | 6060 | 6700 | 6250 | 5340 | 5590 | 6140 |
| | rad/sec | 906 | 949 | 962 | 676 | 733 | 747 | 635 | 702 | 655 | 559 | 585 | 643 |
| Rated Torque | oz-in | 14.2 | 16.1 | 12.1 | 29.7 | 29.8 | 32.9 | 40.3 | 42.3 | 41.8 | 49.1 | 51.9 | 48.8 |
| | Nm | 0.100 | 0.114 | 0.085 | 0.210 | 0.210 | 0.232 | 0.285 | 0.299 | 0.295 | 0.347 | 0.366 | 0.345 |
| Rated Current | Amps | 5.80 | 4.30 | 2.38 | 7.75 | 5.43 | 4.88 | 9.47 | 7.44 | 5.00 | 10.45 | 7.66 | 5.85 |
| Rated Power | watts | 91 | 108 | 82 | 142 | 154 | 174 | 181 | 210 | 193 | 194 | 215 | 222 |
| Torque Sensitivity | oz-in/amp | 2.55 | 3.78 | 5.18 | 3.40 | 4.90 | 6.25 | 3.85 | 5.35 | 7.79 | 4.26 | 6.30 | 7.80 |
| | Nm/amp | 0.018 | 0.027 | 0.037 | 0.024 | 0.035 | 0.044 | 0.027 | 0.038 | 0.055 | 0.030 | 0.044 | 0.055 |
| Back EMF | volts/KRPM | 1.89 | 2.80 | 3.83 | 2.51 | 3.62 | 4.62 | 2.85 | 3.96 | 5.76 | 3.15 | 4.66 | 5.77 |
| | volts/rad/sec | 0.018 | 0.027 | 0.037 | 0.024 | 0.035 | 0.044 | 0.027 | 0.038 | 0.055 | 0.030 | 0.044 | 0.055 |
| Terminal Resistance | ohms | 0.465 | 0.939 | 1.890 | 0.246 | 0.507 | 0.800 | 0.178 | 0.347 | 0.715 | 0.181 | 0.366 | 0.576 |
| Terminal Inductance | mH | 0.350 | 0.758 | 1.53 | 0.275 | 0.580 | 0.930 | 0.220 | 0.420 | 0.900 | 0.230 | 0.490 | 0.770 |
| Motor Constant | oz-in/sq.rt.watt | 3.74 | 3.90 | 3.77 | 6.86 | 6.88 | 6.99 | 9.13 | 9.08 | 9.21 | 10.01 | 10.41 | 10.28 |
| | Nm/sq.rt.watt | 0.026 | 0.028 | 0.027 | 0.048 | 0.049 | 0.049 | 0.064 | 0.064 | 0.065 | 0.071 | 0.074 | 0.073 |
| Rotor Inertia | oz-in-sec ² x10 ⁻³ | 0.51 | 0.51 | 0.51 | 0.99 | 0.99 | 0.99 | 1.5 | 1.5 | 1.5 | 1.9 | 1.9 | 1.9 |
| | g-cm ² | 36 | 36 | 36 | 70 | 70 | 70 | 106 | 106 | 106 | 134 | 134 | 134 |
| Weight | oz | 8.3 | 8.4 | 8.3 | 13.6 | 13.7 | 13.8 | 19.1 | 19.1 | 19.1 | 24.4 | 24.7 | 24.5 |
| | g | 234.0 | 238.0 | 234.0 | 386.0 | 389.0 | 391.0 | 542.0 | 542.0 | 542.0 | 693.0 | 699.0 | 694.0 |
| # 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 | 5.20 | 4.7 | 5.1 | 3.0 | 3.0 | 2.9 | 2.5 | 2.6 | 2.5 | 2.7 | 2.5 | 2.5 |
| Electrical Time Constant | ms | 0.75 | 0.81 | 0.81 | 1.12 | 1.14 | 1.16 | 1.24 | 1.21 | 1.26 | 1.27 | 1.34 | 1.34 |
| Thermal Resistivity | deg. C/watt | 2.28 | 2.34 | 3.44 | 2.49 | 2.67 | 1.81 | 2.36 | 1.89 | 2.35 | 1.93 | 1.80 | 1.86 |
| Speed/Torque Gradient | rpm/oz-in | 250.0 | 213.7 | 257.0 | 88.9 | 90.6 | 93.3 | 50.6 | 49.6 | 46.7 | 39.9 | 36.8 | 40.2 |

Notes:

- Motor mounted to a 6" x 6" 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.
- 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.

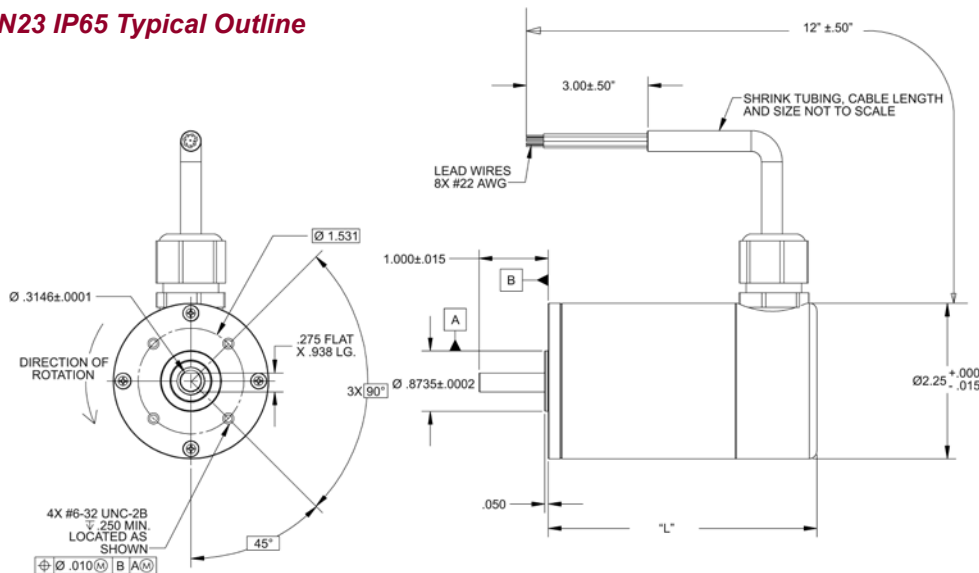
*Many other custom mechanical options are available – consult factory.

**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 type="checkbox"/> TERMINATION | <input type="checkbox"/> FEEDBACK OPTIONS | <input type="checkbox"/> OTHER OPTIONS |
| L – Leads (std) | H – Hall Effect (std) | G – Gearhead |
| C – Connector | | |
| M – MS connector | | |

BN23 IP65 Typical Outline



Termination Table*

| COLOR | CONNECTION |
|--------|----------------------|
| VIOLET | A COIL |
| GREEN | C COIL |
| BLACK | B COIL |
| GRAY | HALL GND |
| YELLOW | HALL V _{CC} |
| WHITE | HALL S3 |
| BLUE | HALL S2 |
| BROWN | HALL S1 |

*We reserve the right to use solid color wires or white wires with color trace.

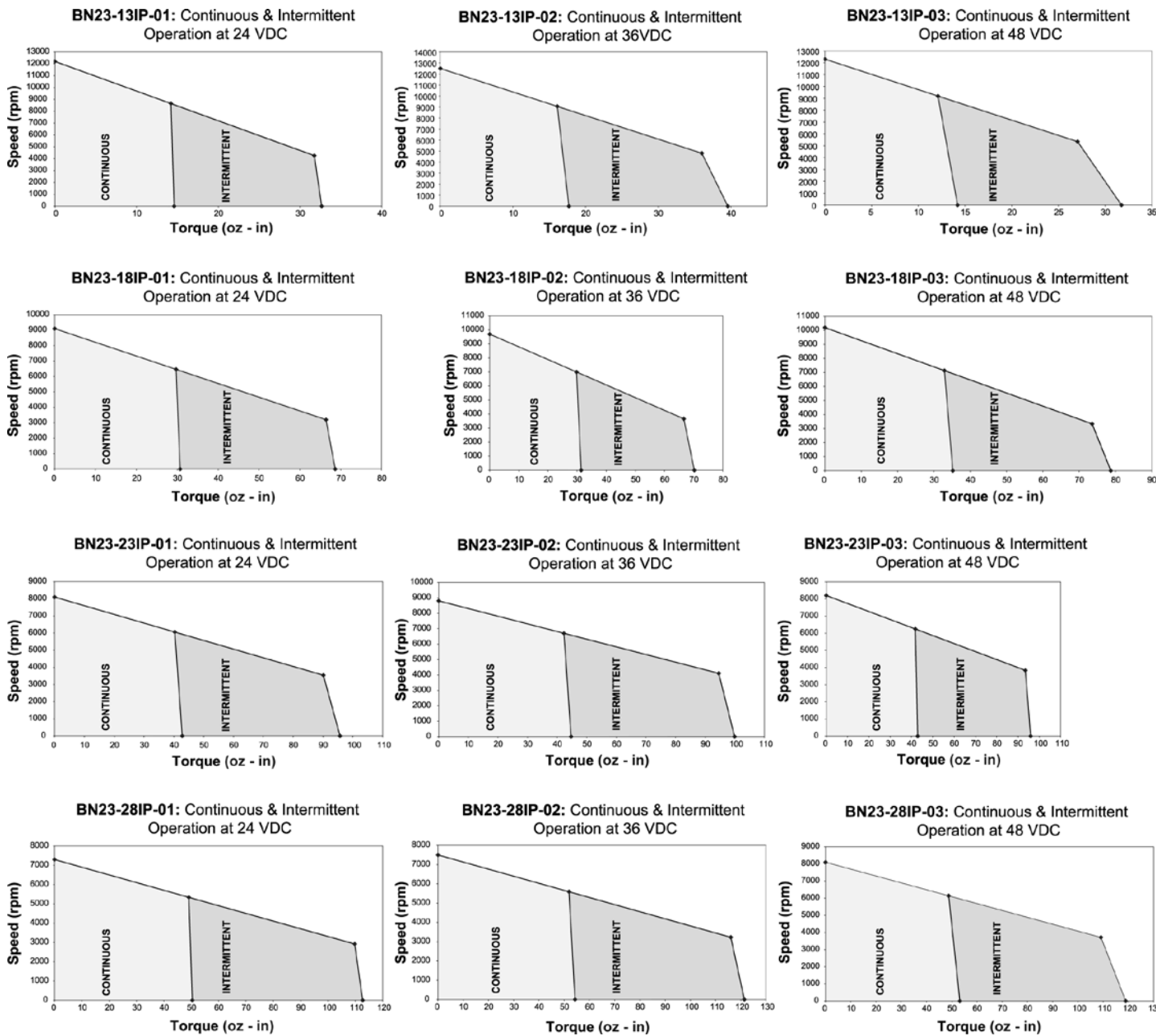
Dimensions are in inches

REVISED 05/19

Inside Rotor
Brushless Motors

BN23 IP65 Performance Curves

BN23 IP65 Performance Curves



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.