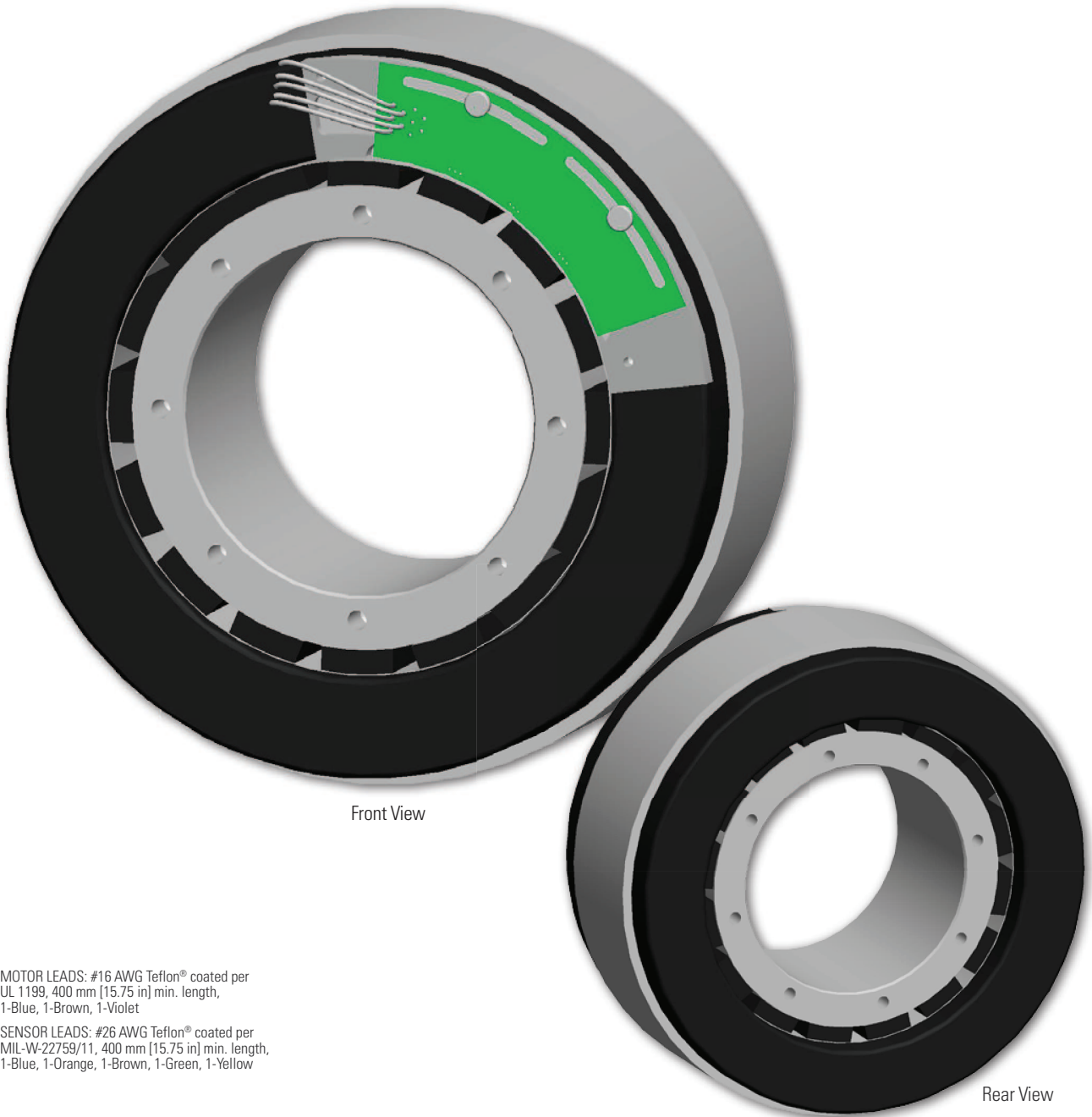


# KBM 43 Frameless Motors

K B M 4 3

The KBM(S)-43 series provides a classic torque motor footprint - large diameter with a short axial length. With a skewed stator, low cogging, and low harmonic distortion these motors produce extremely smooth rotation. In addition, the high pole count and excellent torque / volume ratio makes the KBM(S)-43 an ideal fit for direct drive applications requiring high torque at low to moderate speeds.

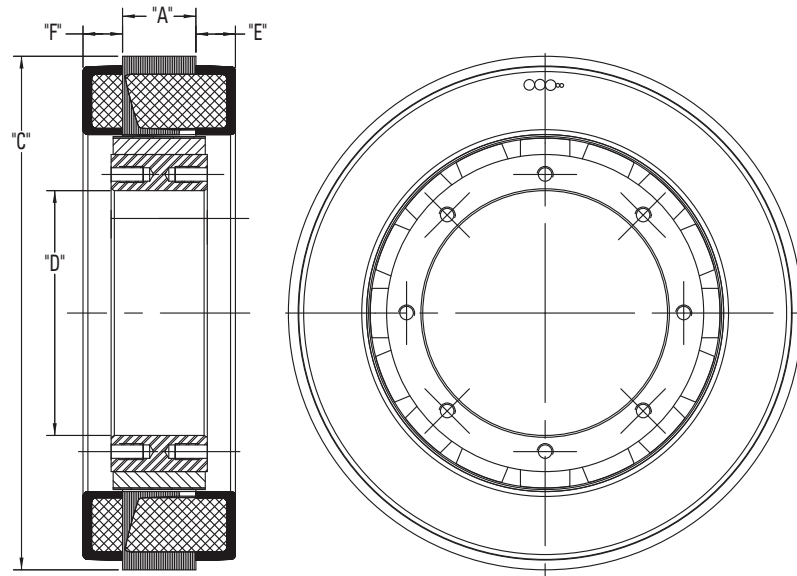


MOTOR LEADS: #16 AWG Teflon® coated per  
UL 1199, 400 mm [15.75 in] min. length,  
1-Blue, 1-Brown, 1-Violet

SENSOR LEADS: #26 AWG Teflon® coated per  
MIL-W-22759/11, 400 mm [15.75 in] min. length,  
1-Blue, 1-Orange, 1-Brown, 1-Green, 1-Yellow

# KBM 43 Outline Drawings

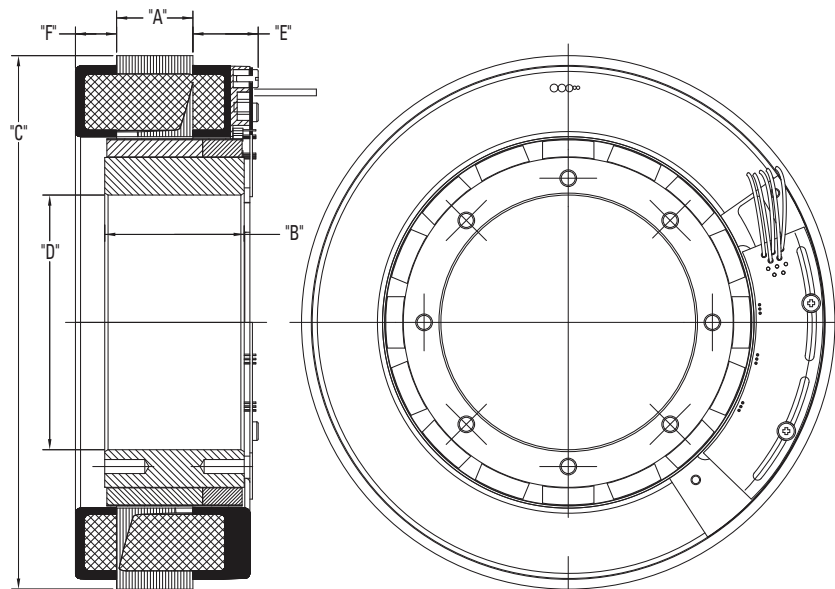
## KBM 43



| Model Number | "A" mm[inch]  | "B" mm[inch]  | Ø "C" mm[inch] | Ø "D" mm[inch] | "E" MAX mm[inch] | "F" MAX mm[inch] |
|--------------|---------------|---------------|----------------|----------------|------------------|------------------|
| KBM-43X01    | 11.43 [.450]  | 18.54 [.730]  | 159.78 [6.290] | 76.28 [3.003]  | 12.32 [.485]     | 12.32 [.485]     |
| KBM-43X02    | 22.86 [.900]  | 29.97 [1.180] | 159.78 [6.290] | 76.28 [3.003]  | 12.32 [.485]     | 12.32 [.485]     |
| KBM-43X03    | 45.72 [1.800] | 52.83 [2.080] | 159.78 [6.290] | 76.28 [3.003]  | 12.32 [.485]     | 12.32 [.485]     |

All dimensions are nominal. For more detailed and interactive 3D models with 2D product views, visit [www.kollmorgen.com/kbm](http://www.kollmorgen.com/kbm)

## KBMS 43

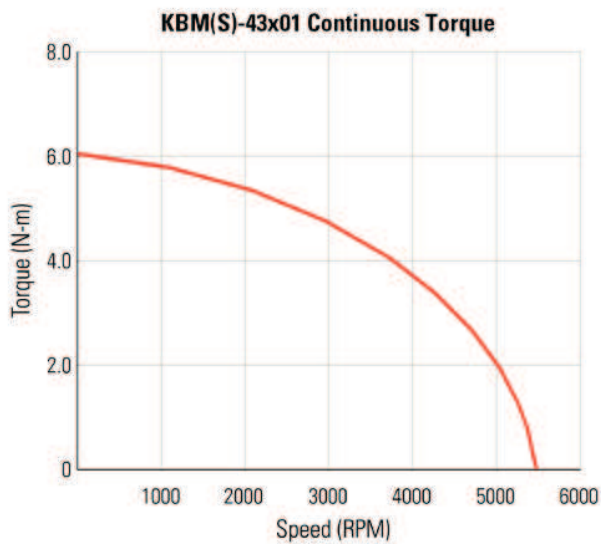


| Model Number | "A" mm[inch]  | "B" mm[inch]  | Ø "C" mm[inch] | Ø "D" mm[inch] | "E" MAX mm[inch] | "F" MAX mm[inch] |
|--------------|---------------|---------------|----------------|----------------|------------------|------------------|
| KBMS-43X01   | 11.43 [.450]  | 30.35 [1.195] | 159.78 [6.290] | 76.28 [3.003]  | 20.32 [.800]     | 12.32 [.485]     |
| KBMS-43X02   | 22.86 [.900]  | 41.78 [1.645] | 159.78 [6.290] | 76.28 [3.003]  | 20.32 [.800]     | 12.32 [.485]     |
| KBMS-43X03   | 45.72 [1.800] | 64.64 [2.545] | 159.78 [6.290] | 76.28 [3.003]  | 20.32 [.800]     | 12.32 [.485]     |

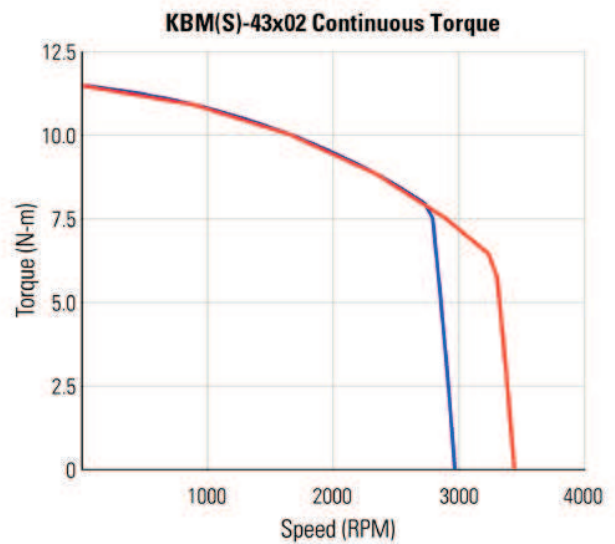
All dimensions are nominal. For more detailed and interactive 3D models with 2D product views, visit [www.kollmorgen.com/kbm](http://www.kollmorgen.com/kbm)

# KBM 43 Performance Curves

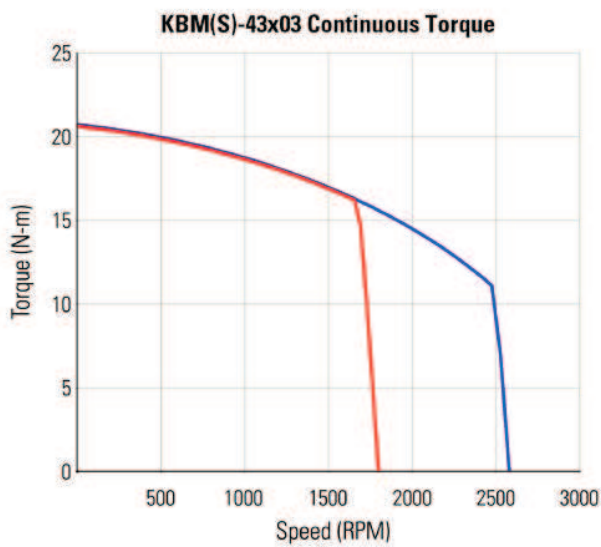
Continuous duty capability for 130°C rise in a 25°C ambient using recommended AKD servo drive and sinusoidal commutation.



— A Winding, 400 V / B Winding, 240 V / C Winding, 120 V



— A Winding, 480 V / C Winding, 400 V — B Winding, 120 V



— A Winding, 480 V / C Winding, 400 V — B Winding, 240 V

# KBM 43 Performance Data

## KBM(S) Frameless Motor Series

| KBM(S)-43XXX PERFORMANCE DATA & MOTOR PARAMETERS   |           |                           |                |       |       |                |       |       |       |                |       |       |       |
|--|-----------|---------------------------|----------------|-------|-------|----------------|-------|-------|-------|----------------|-------|-------|-------|
| Motor Parameter                                    | Symbol    | Units                     | KBM(S)-43X01-X |       |       | KBM(S)-43X02-X |       |       |       | KBM(S)-43X03-X |       |       |       |
|  |           |                           | A              | B     | C     | A              | B     | C     | D     | A              | B     | C     | D     |
| Continuous Stall Torque at 25°C Amb. (1)           | Tc        | N-m                       | 6.11           | 6.24  | 6.11  | 11.6           | 11.6  | 11.9  | 11.9  | 21.0           | 20.7  | 20.9  | 20.9  |
|  |           | lb-ft                     | 4.51           | 4.60  | 4.51  | 8.57           | 8.53  | 8.57  | 8.57  | 15.5           | 15.3  | 15.4  | 15.4  |
| Continuous Current                                 | Ic        | Arms                      | 5.10           | 8.60  | 18.4  | 5.10           | 18.3  | 6.10  | 10.2  | 4.78           | 13.8  | 5.73  | 19.2  |
| Peak Stall Torque (25°C winding temp)              | Tp        | N-m                       | 18.0           | 18.0  | 18.0  | 34.6           | 34.6  | 34.6  | 34.6  | 64.5           | 64.5  | 64.5  | 64.5  |
|  |           | lb-ft                     | 13.3           | 13.3  | 13.3  | 25.5           | 25.5  | 25.5  | 25.5  | 47.6           | 47.6  | 47.6  | 47.6  |
| Peak Current                                       | Ip        | Arms                      | 18.0           | 32.2  | 64.6  | 18.0           | 64.6  | 22.8  | 36.2  | 18.0           | 51.2  | 22.8  | 72.5  |
| Rated Continuous Output Power at 25°C Amb. (1)     | P Rated   | Watts                     | 1230           | 1230  | 1230  | 2160           | 2160  | 2160  | 2160  | 2520           | 2875  | 2520  | 2520  |
|  | HP Rated  | HP                        | 1.65           | 1.65  | 1.65  | 2.90           | 2.90  | 2.90  | 2.90  | 3.38           | 3.85  | 3.38  | 3.38  |
| Speed at Rated Power                               | N Rated   | RPM                       | 4750           | 4750  | 4750  | 3000           | 2650  | 3000  | 3000  | 1500           | 2275  | 1500  | 1500  |
| Torque Sensitivity (2)                             | Kt        | N-m / Arms                | 1.21           | 0.721 | 0.335 | 2.31           | 0.641 | 1.92  | 1.15  | 4.43           | 1.54  | 3.69  | 1.11  |
|  |           | lb-ft / Arms              | 0.890          | 0.531 | 0.247 | 1.70           | 0.473 | 1.42  | 0.851 | 3.27           | 1.14  | 2.73  | 0.818 |
| Back EMF Constant (3)                              | Kb        | Vpk / kRPM                | 103            | 61.6  | 28.7  | 197            | 54.8  | 164   | 98.7  | 379            | 132   | 316   | 94.8  |
| Motor Constant                                     | Km        | N-m/√watt                 | 0.580          | 0.596 | 0.580 | 1.00           | 1.00  | 1.00  | 1.00  | 1.65           | 1.63  | 1.69  | 1.65  |
|  |           | lb-ft/√watt               | 0.427          | 0.440 | 0.425 | 0.737          | 0.737 | 0.737 | 0.737 | 1.21           | 1.20  | 1.24  | 1.21  |
| Resistance (line to line)                          | Rm        | Ohms                      | 2.90           | 0.976 | 0.226 | 3.55           | 0.277 | 2.35  | 0.886 | 4.83           | 0.595 | 3.20  | 0.301 |
| Inductance   | Lm        | mH                        | 6.8            | 2.4   | 0.52  | 12             | 0.93  | 8.3   | 3.0   | 19             | 2.2   | 13.0  | 1.2   |
| Inertia (KBM)                                      | Jm        | Kg-m <sup>2</sup>         | 1.94E-3        |       |       | 2.85E-3        |       |       |       | 4.75E-3        |       |       |       |
|  |           | lb-ft-s <sup>2</sup>      | 1.43E-3        |       |       | 2.10E-3        |       |       |       | 3.50E-3        |       |       |       |
| Weight (KBM)                                       | Wt        | Kg                        | 2.26           |       |       | 3.49           |       |       |       | 5.96           |       |       |       |
|  |           | lb                        | 4.98           |       |       | 7.70           |       |       |       | 13.1           |       |       |       |
| Inertia (KBMS)                                     | Jm        | Kg-m <sup>2</sup>         | 2.85E-3        |       |       | 3.73E-3        |       |       |       | 5.69E-3        |       |       |       |
|  |           | lb-ft-s <sup>2</sup>      | 2.10E-3        |       |       | 2.75E-3        |       |       |       | 4.20E-3        |       |       |       |
| Weight (KBMS)                                      | Wt        | Kg                        | 2.66           |       |       | 3.89           |       |       |       | 6.35           |       |       |       |
|  |           | lb                        | 5.86           |       |       | 8.57           |       |       |       | 14.0           |       |       |       |
| Max Static Friction                                | Tf        | N-m                       | 0.058          |       |       | 0.108          |       |       |       | 0.203          |       |       |       |
|  |           | lb-ft                     | 0.043          |       |       | 0.080          |       |       |       | 0.150          |       |       |       |
| Cogging Friction (peak-to-peak)                    | Tcog      | N-m                       | 0.027          |       |       | 0.054          |       |       |       | 0.102          |       |       |       |
|  |           | lb-ft                     | 0.020          |       |       | 0.040          |       |       |       | 0.075          |       |       |       |
| Viscous Damping                                    | Fi        | N-m/ kRPM                 | 0.388          |       |       | 0.561          |       |       |       | 0.860          |       |       |       |
|  |           | lb-ft / kRPM              | 0.286          |       |       | 0.414          |       |       |       | 1.17           |       |       |       |
| Thermal Resistance (4)                             | TPR       | °C / watt                 | 0.763          |       |       | 0.629          |       |       |       | 0.525          |       |       |       |
| Number of Poles                                    | P         | -                         | 16             |       |       | 16             |       |       |       | 16             |       |       |       |
| Recommended Drive                                  | AKD       | AKD- <input type="text"/> | 00607          | 01206 | 02406 | 00607          | 02406 | 01207 | 01206 | 00607          | 02406 | 00607 | 02406 |
| Voltage Req'd at Rated Output                      | Vac Input | VAC                       | 400            | 240   | 120   | 480            | 120   | 400   | 240   | 480            | 240   | 400   | 120   |
| Peak Stall Torque (5) (Motor with AKD servo drive) | Tp Drive  | N-m                       | 18.0           | 16.9  | 14.5  | 34.6           | 28.5  | 34.6  | 29.0  | 64.5           | 60.5  | 53.0  | 50    |
|  |           | lb-ft                     | 13.3           | 12.5  | 10.7  | 25.5           | 21.0  | 25.5  | 21.4  | 47.6           | 44.6  | 39.1  | 36.9  |

\* Notes 1) Winding temperature = 155°C at continuous stall, at rated output, and for performance curves.  
 2) To calculate no-load Kt and Kb at 25°C, multiply by 1.064.  
 3) Back EMF is peak (not RMS).  
 4) TPR assumes motor is housed and mounted to a 12" x 12" x 3/4" heat sink or equivalent.  
 5) Peak torque may be limited by AKD servo drive current, see page 11 for drive ratings or visit [www.kollmorgen.com](http://www.kollmorgen.com).