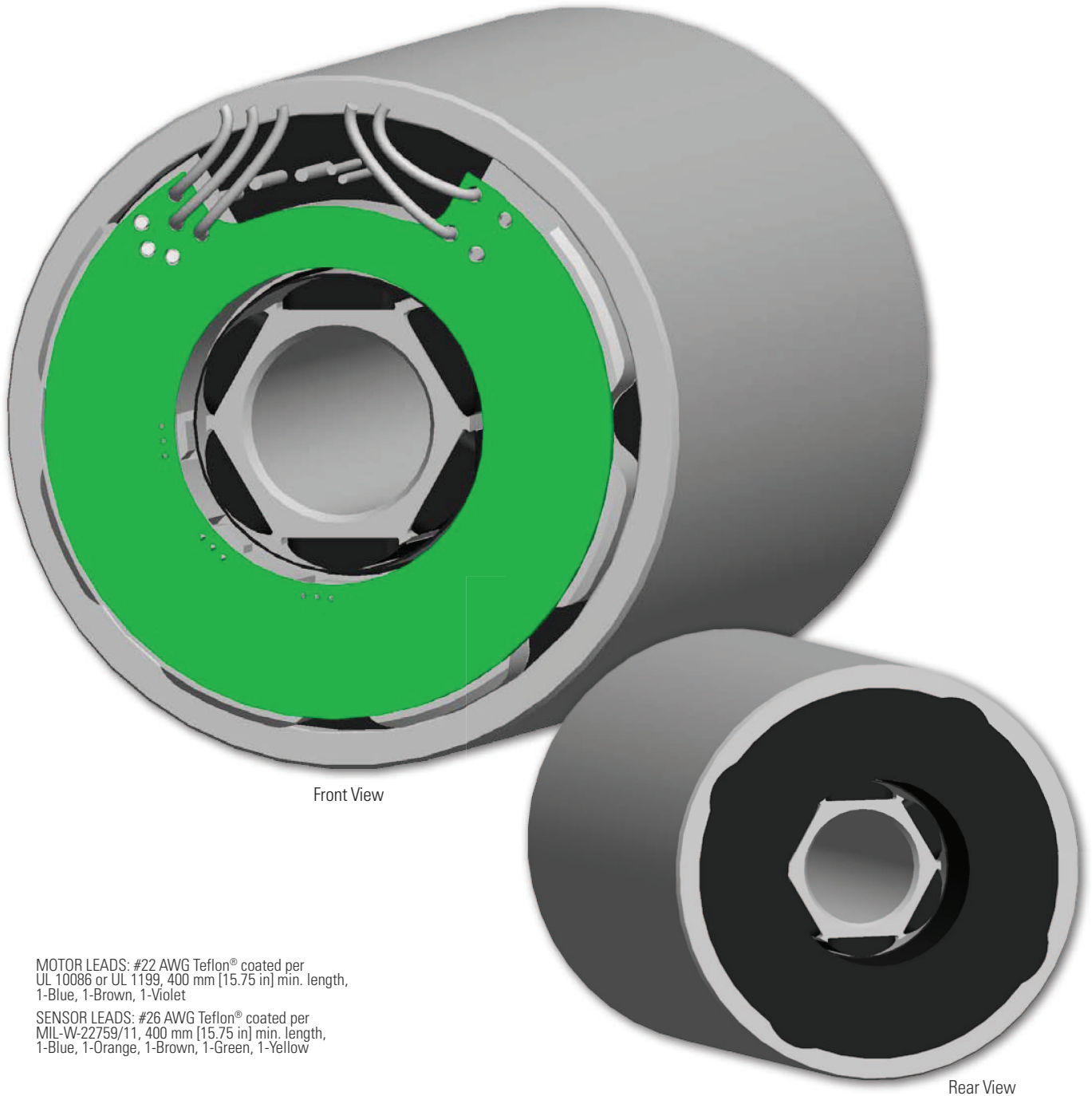


# KBM 10 Frameless Motors

K B M 1 0

The KBM(S)-10 series is designed to operate over a broad speed range with high acceleration. Designed for maximum torque density with minimal cogging by using a variable air gap, the KBM(S)-10 is an ideal choice to meet or exceed your compact frameless motor application needs.



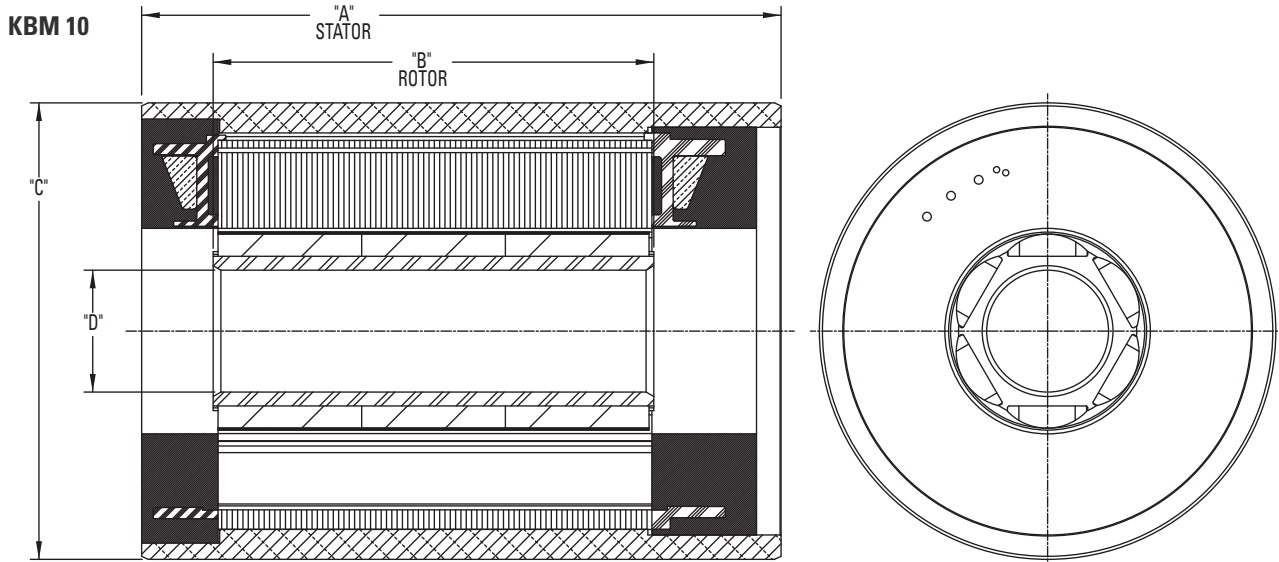
Front View

Rear View

MOTOR LEADS: #22 AWG Teflon® coated per UL 10086 or UL 1199, 400 mm [15.75 in] min. length, 1-Blue, 1-Brown, 1-Violet

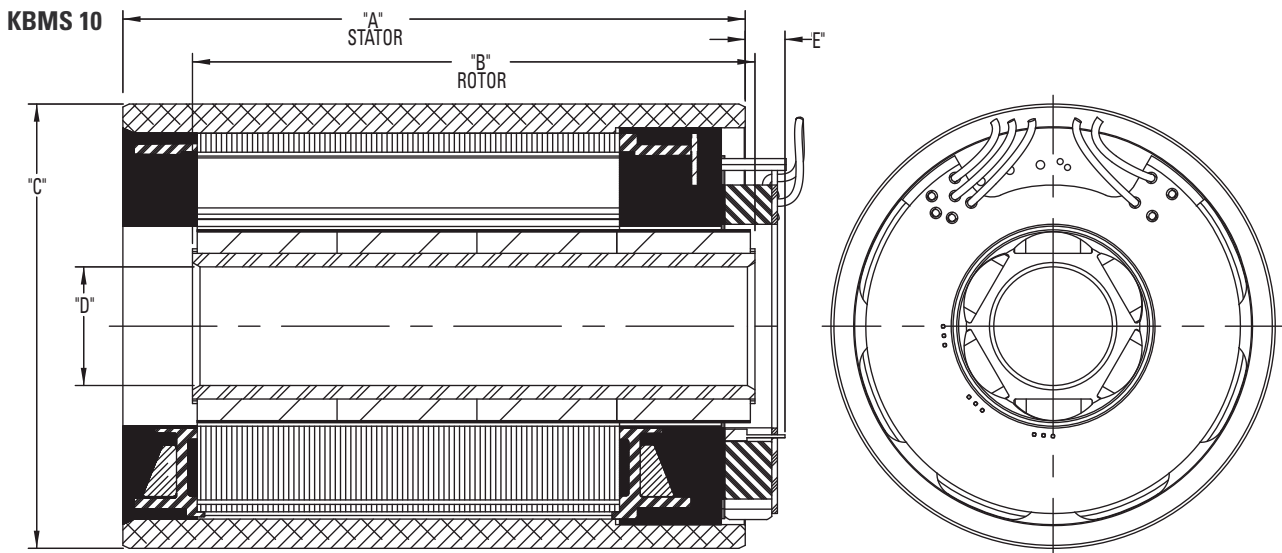
SENSOR LEADS: #26 AWG Teflon® coated per MIL-W-22759/11, 400 mm [15.75 in] min. length, 1-Blue, 1-Orange, 1-Brown, 1-Green, 1-Yellow

# KBM 10 Outline Drawings



Model Number	"A" mm[inch]	"B" mm[inch]	Ø "C" mm[inch]	Ø "D" mm[inch]
KBM-10X01	46.00 [1.811]	20.14 [.793]	59.963 [2.3607]	16.009 [.6303]
KBM-10X02	65.00 [2.559]	39.02 [1.536]	59.963 [2.3607]	16.009 [.6303]
KBM-10X03	84.00 [3.307]	57.89 [2.279]	59.963 [2.3607]	16.009 [.6303]
KBM-10X04	103.00 [4.055]	76.77 [3.022]	59.963 [2.3607]	16.009 [.6303]

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)

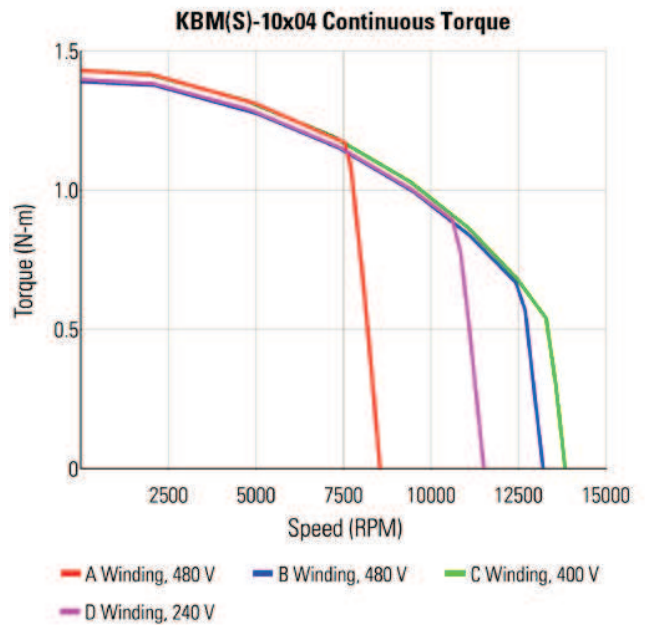
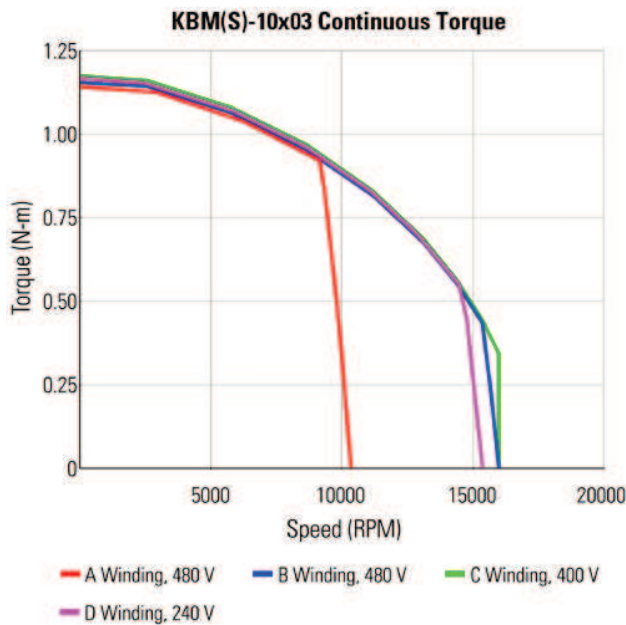
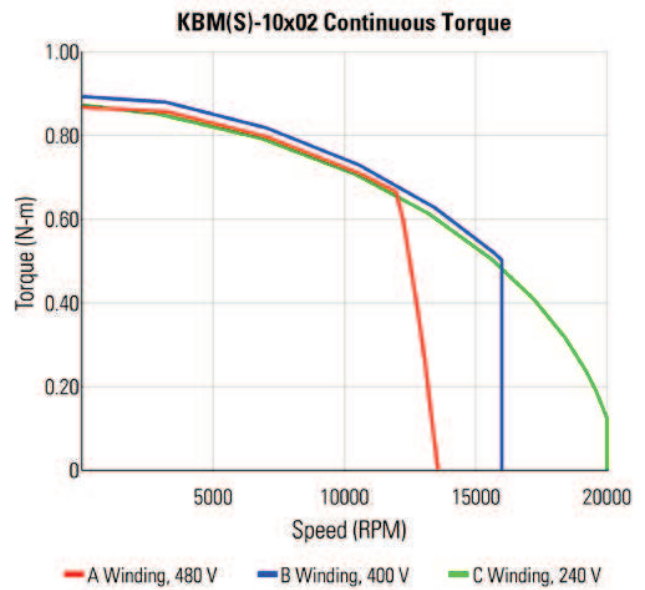
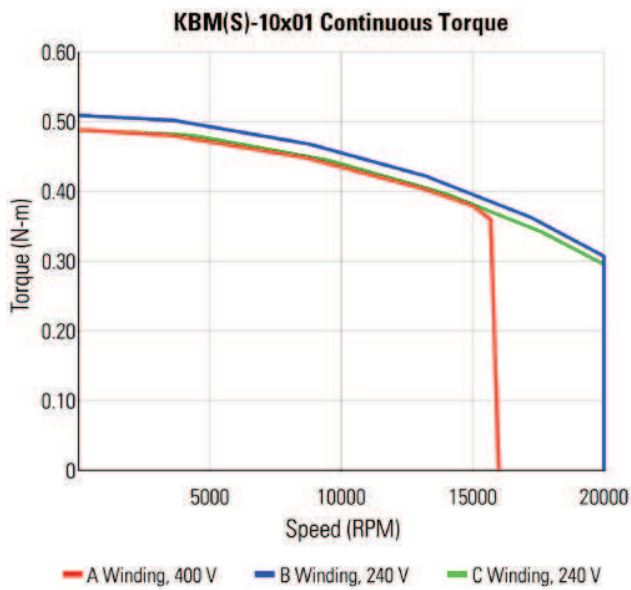


Model Number	"A" mm[inch]	"B" mm[inch]	Ø "C" mm[inch]	Ø "D" mm[inch]	"E" MAX mm[inch]
KBMS-10X01	46.00 [1.811]	38.17 [1.503]	59.963 [2.3607]	16.009 [.6303]	5.75 [.226]
KBMS-10X02	65.00 [2.559]	57.05 [2.246]	59.963 [2.3607]	16.009 [.6303]	5.75 [.226]
KBMS-10X03	84.00 [3.307]	75.92 [2.989]	59.963 [2.3607]	16.009 [.6303]	5.75 [.226]
KBMS-10X04	103.00 [4.055]	94.80 [3.732]	59.963 [2.3607]	16.009 [.6303]	5.75 [.226]

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 10 Performance Curves

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



# KBM 10 Performance Data

## KBM(S) Frameless Motor Series

KBM(S)-10XXX PERFORMANCE DATA & MOTOR PARAMETERS																
Motor Parameter	Symbol	Units	KBM(S)-10X01-X			KBM(S)-10X02-X			KBM(S)-10X03-X				KBM(S)-10X04-X			
			A	B	C	A	B	C	A	B	C	D	A	B	C	D
Continuous Stall Torque at 25°C Amb. (1)	Tc	N-m	0.487	0.509	0.492	0.876	0.899	0.868	1.16	1.16	1.19	1.18	1.45	1.41	1.44	1.41
		lb-ft	0.359	0.376	0.363	0.646	0.663	0.640	0.854	0.859	0.880	0.870	1.07	1.04	1.06	1.04
Continuous Current	Ic	Arms	1.73	3.37	5.21	1.53	3.00	5.14	1.54	2.40	3.10	4.66	1.60	2.40	3.10	4.21
Peak Stall Torque (25°C winding temp)	Tp	N-m	1.17	1.19	1.23	2.33	2.48	2.24	3.46	3.53	3.58	3.69	4.66	4.75	4.80	4.91
		lb-ft	0.860	0.880	0.910	1.72	1.83	1.65	2.55	2.60	2.64	2.72	3.44	3.50	3.54	3.62
Peak Current	Ip	Arms	4.33	8.70	13.8	4.33	8.65	15.5	4.86	7.73	9.72	15.5	5.46	8.70	10.9	15.5
Rated Continuous Output Power at 25°C Amb. (1)	P Rated	Watts	550	600	575	740	785	710	780	740	725	850	820	860	835	910
	HP Rated	HP	0.737	0.804	0.771	0.992	1.05	0.952	1.05	0.992	0.972	1.14	1.10	1.15	1.12	1.22
Speed at Rated Power	N Rated	RPM	15200	18500	18600	11000	15200	17000	8500	14300	14500	13000	7050	11500	12000	9500
Torque Sensitivity (2)	Kt	N-m / Arms	0.287	0.154	0.097	0.585	0.307	0.173	0.767	0.498	0.399	0.259	0.930	0.603	0.480	0.345
		lb-ft / Arms	0.212	0.114	0.071	0.431	0.227	0.127	0.566	0.367	0.294	0.191	0.686	0.445	0.354	0.255
Back EMF Constant (3)	Kb	Vpk / kRPM	24.6	13.2	8.25	50.0	26.3	14.8	65.6	42.6	34.1	22.1	79.5	51.5	41.0	29.5
Motor Constant	Km	N-m/√watt	0.065	0.068	0.066	0.107	0.110	0.106	0.136	0.137	0.140	0.138	0.168	0.164	0.168	0.164
		lb-ft/√watt	0.048	0.050	0.048	0.079	0.081	0.078	0.100	0.101	0.103	0.102	0.124	0.121	0.124	0.121
Resistance (line to line)	Rm	Ohms	13.0	3.42	1.44	20.0	5.22	1.77	21.2	8.77	5.44	2.34	20.4	9.02	5.44	2.94
Inductance	Lm	mH	19	5.2	2.2	36	9.7	3.2	41	17	11	4.7	44	19	12	6.2
Inertia (KBM)	Jm	Kg-m <sup>2</sup>	4.92E-6			1.03E-5			1.55E-5				2.01E-5			
		lb-ft-s <sup>2</sup>	3.63E-6			7.60E-6			1.14E-5				1.48E-5			
Weight (KBM)	Wt	Kg	0.379			0.658			0.943				1.22			
		lb	0.835			1.45			2.08				2.68			
Inertia (KBMS)	Jm	Kg-m <sup>2</sup>	1.03E-5			1.49E-5			2.02E-5				2.55E-5			
		lb-ft-s <sup>2</sup>	7.56E-6			1.10E-5			1.49E-5				1.88E-5			
Weight (KBMS)	Wt	Kg	0.425			0.703			0.990				1.26			
		lb	0.936			1.55			2.18				2.78			
Max Static Friction	Tf	N-m	8.70E-3			1.63E-2			2.22E-2				3.44E-2			
		lb-ft	6.42E-3			1.20E-2			1.64E-2				2.54E-2			
Cogging Friction (peak-to-peak)	Tcog	N-m	7.20E-3			1.63E-2			1.69E-2				2.44E-2			
		lb-ft	5.31E-3			1.20E-2			1.25E-2				1.80E-2			
Viscous Damping	Fi	N-m / kRPM	4.31E-3			5.17E-3			6.10E-3				6.96E-3			
		lb-ft / kRPM	3.18E-3			3.81E-3			4.50E-3				5.13E-3			
Thermal Resistance (4)	TPR	°C / watt	1.43			1.19			1.10				1.07			
Number of Poles	P	-	6			6			6				6			
Recommended Drive	AKD-█		00307	00606	00606	00307	00307	00606	00307	00307	00607	00606	00307	00307	00607	00606
Voltage Req'd at Rated Output	Vac Input	VAC	400	240	240	480	400	240	480	480	400	240	480	480	400	240
Peak Stall Torque (5) (Motor with AKD servo drive)	Tp Drive	N-m	1.17	1.19	1.23	2.33	2.48	2.24	3.46	3.53	3.58	3.69	4.66	4.75	4.80	4.91
		lb-ft	0.860	0.880	0.910	1.72	1.83	1.65	2.55	2.60	2.64	2.72	3.44	3.50	3.54	3.62

- \*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 10" x 10" x 1/4" 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).