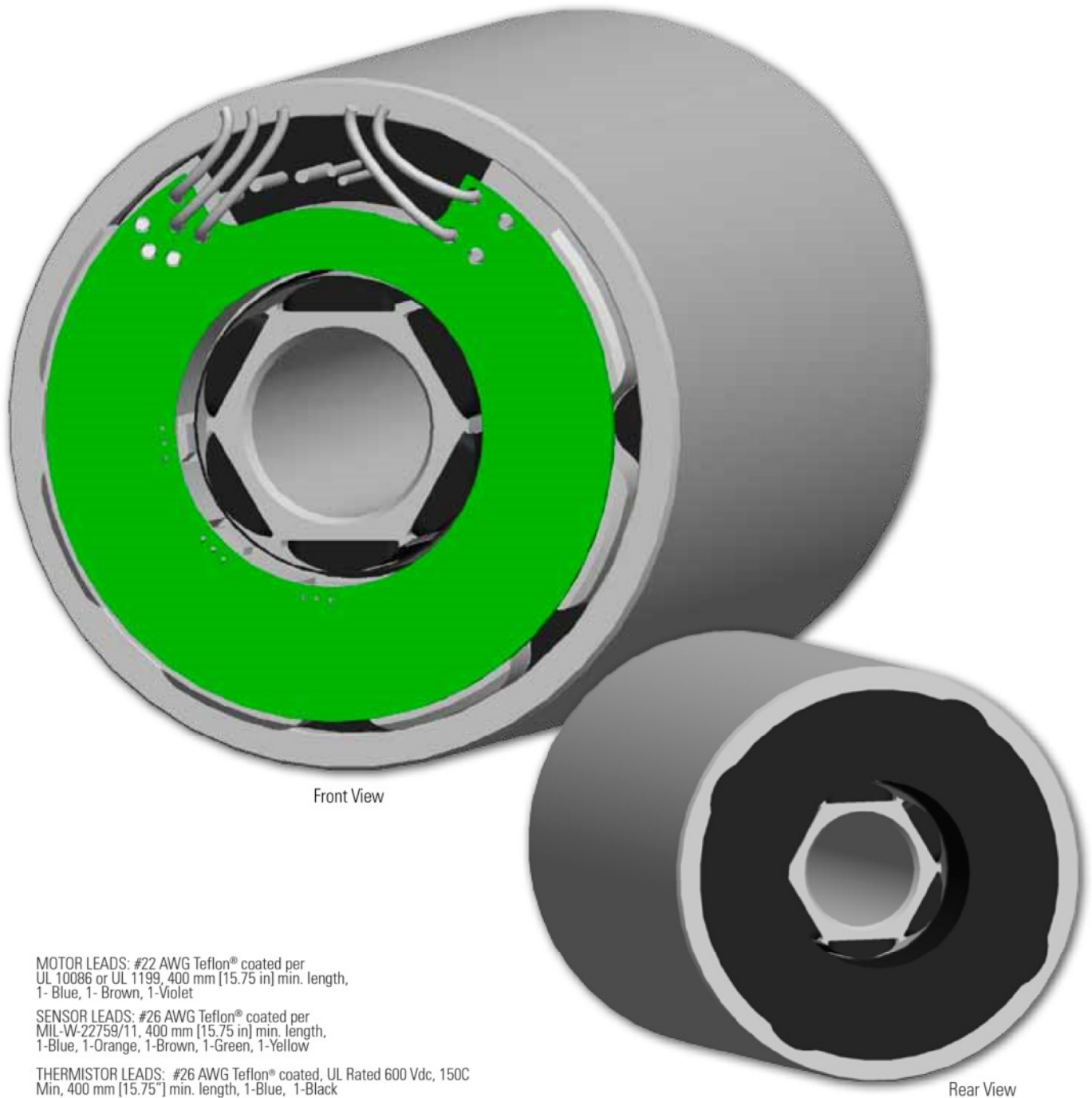


# KBM 10 Frameless Motors

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

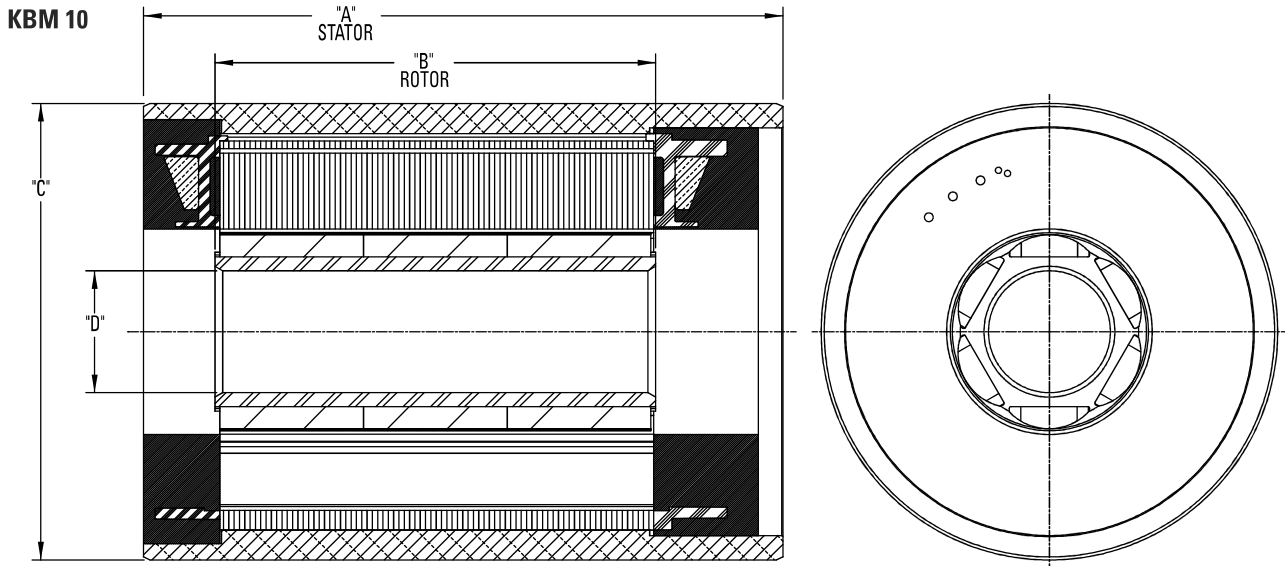
Rear View

**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

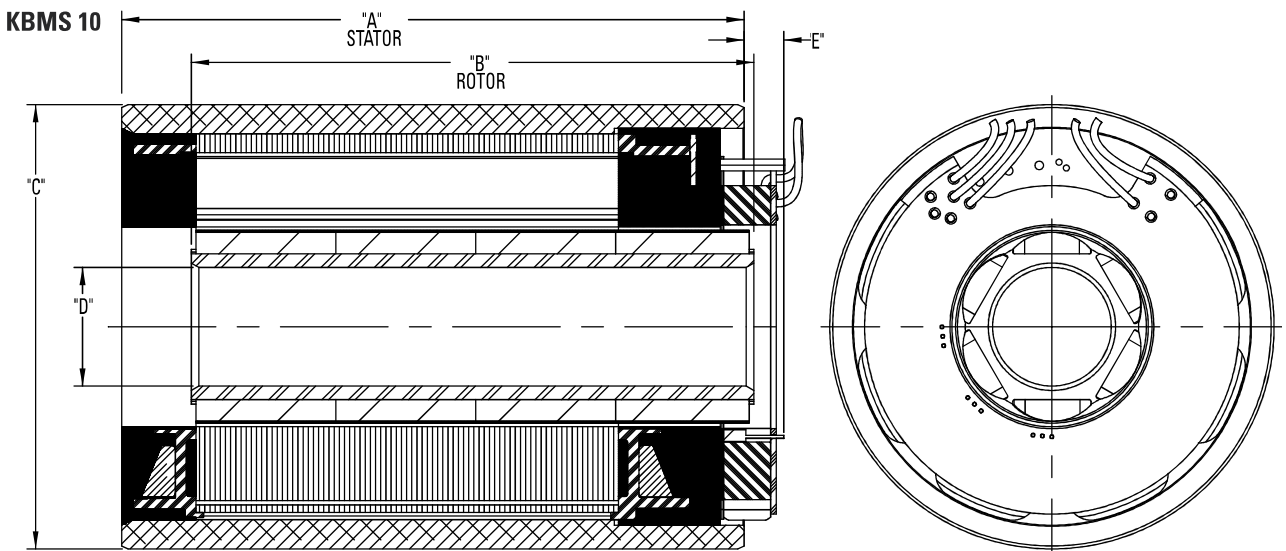
**THERMISTOR LEADS:** #26 AWG Teflon® coated, UL Rated 600 Vdc, 150C Min, 400 mm [15.75"] min. length, 1-Blue, 1-Black

# 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]		
KBM-10X03	84.00 [3.307]	57.89 [2.279]		
KBM-10X04	103.00 [4.055]	76.77 [3.022]		

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]			
KBMS-10X03	84.00 [3.307]	75.92 [2.989]			
KBMS-10X04	103.00 [4.055]	94.80 [3.732]			

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 Data

KBM(S)-10XXX Performance Data & Motor Parameters									
Motor Parameter	Symbol	Units	TOL	KBM(S)-10X01-X			KBM(S)-10X02-X		
				A	B	C	A	B	C
Continuous Stall Torque at 25°C Amb. (1)	Tc	Nm	NOM	0.487	0.509	0.492	0.876	0.899	0.868
		lb-ft		0.359	0.376	0.363	0.646	0.663	0.640
Continuous Current	Ic	Arms	NOM	1.73	3.37	5.21	1.53	3.00	5.14
Peak Stall Torque (25°C winding temp)	Tp	Nm	NOM	1.17	1.19	1.23	2.33	2.48	2.24
		lb-ft		0.860	0.880	0.910	1.72	1.83	1.65
Peak Current	Ip	Arms	NOM	4.33	8.70	13.8	4.33	8.65	15.5
Rated Continuous Output Power at 25°C Amb. (1)	P Rated	Watts		550	600	575	740	785	710
	HP Rated	HP		0.737	0.804	0.771	0.992	1.05	0.952
Speed at Rated Power	N Rated	RPM		15200	18500	18600	11000	15200	17000
Torque Sensitivity (2)	Kt	Nm / Arms	±10%	0.287	0.154	0.097	0.585	0.307	0.173
		lb-ft / Arms		0.212	0.114	0.071	0.431	0.227	0.127
Back EMF Constant	Kb	Vrms / kRPM	±10%	17.4	9.32	5.83	35.3	18.6	10.4
Motor Constant	Km	Nm/√watt	±10%	0.065	0.068	0.066	0.107	0.110	0.106
		lb-ft/√watt		0.048	0.050	0.048	0.079	0.081	0.078
Resistance (line to line)	Rm	Ohms	±10%	13.0	3.42	1.44	20.0	5.22	1.77
Inductance	Lm	mH		19	5.2	2.2	36	9.7	3.2
Inertia (KBM)	Jm	Kg-m <sup>2</sup>		4.92E-6			1.03E-5		
		lb-ft-s <sup>2</sup>		3.63E-6			7.60E-6		
Weight (KBM)	Wt	Kg		0.379			0.658		
		lb		0.835			1.45		
Inertia (KBMS)	Jm	Kg-m <sup>2</sup>		1.03E-5			1.49E-5		
		lb-ft-s <sup>2</sup>		7.56E-6			1.10E-5		
Weight (KBMS)	Wt	Kg		0.425			0.703		
		lb		0.936			1.55		
Max Static Friction	Tf	Nm		8.70E-3			1.63E-2		
		lb-ft		6.42E-3			1.20E-2		
Cogging Friction (peak-to-peak)	Tcog	Nm		7.20E-3			1.63E-2		
		lb-ft		5.31E-3			1.20E-2		
Viscous Damping	Fi	Nm/ kRPM		4.31E-3			5.17E-3		
		lb-ft / kRPM		3.18E-3			3.81E-3		
Thermal Resistance (3)	TPR	°C / watt		1.43			1.19		
Number of Poles	P	-		6			6		
Recommended Kollmorgen AKD Drive				00307	00606	00606	00307	00307	00606
Voltage Req'd at Rated Output	Vac Input	Vac		400	240	240	480	400	240
Peak Stall Torque (4) (Motor with Drive)	Tp Drive	Nm	±10%	1.17	1.19	1.23	2.33	2.48	2.24
		lb-ft		0.860	0.880	0.910	1.72	1.83	1.65
Cont. Stall Torque(4) (Motor with Drive)	Tc Drive	Nm	±10%	.487	.509	.492	.876	.899	.868
		lb-ft		.359	.376	.363	.646	.663	.640

- 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) TPR assumes motor is housed and mounted to a 10" x 10" x 1/4" heat sink or equivalent.  
 4) Peak & Continuous Torques may be limited by drive current, see [www.kollmorgen.com](http://www.kollmorgen.com) for complete drive ratings.

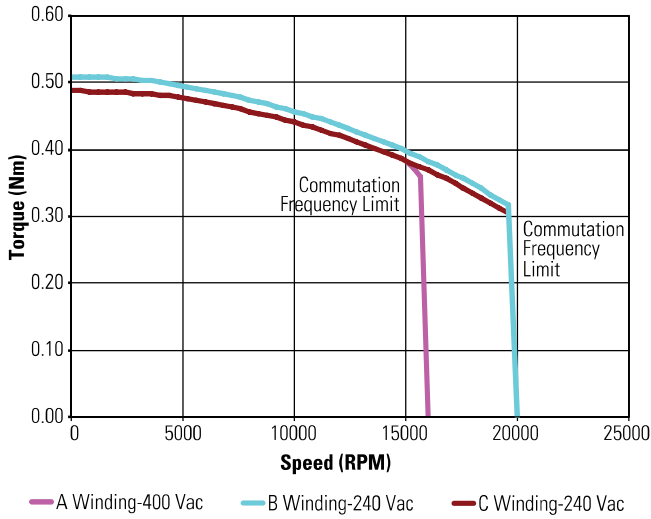
KBM(S)-10XXX Performance Data & Motor Parameters											
Motor Parameter	Symbol	Units	TOL	KBM(S)-10X03-X				KBM(S)-10X04-X			
				A	B	C	D	A	B	C	D
Continuous Stall Torque at 25°C Amb. (1)	Tc	Nm	NOM	1.16	1.16	1.19	1.18	1.45	1.41	1.44	1.41
		lb-ft		0.854	0.859	0.880	0.870	1.07	1.04	1.06	1.04
Continuous Current	Ic	Arms	NOM	1.54	2.40	3.10	4.66	1.60	2.40	3.10	4.21
Peak Stall Torque (25°C winding temp)	Tp	Nm	NOM	3.46	3.53	3.58	3.69	4.66	4.75	4.80	4.91
		lb-ft		2.55	2.60	2.64	2.72	3.44	3.50	3.54	3.62
Peak Current	Ip	Arms	NOM	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		780	740	725	850	820	860	835	910
	HP Rated	HP		1.05	0.992	0.972	1.14	1.10	1.15	1.12	1.22
Speed at Rated Power	N Rated	RPM		8500	14300	14500	13000	7050	11500	12000	9500
Torque Sensitivity (2)	Kt	Nm / Arms	±10%	0.767	0.498	0.399	0.259	0.930	0.603	0.480	0.345
		lb-ft / Arms		0.566	0.367	0.294	0.191	0.686	0.445	0.354	0.255
Back EMF Constant	Kb	Vrms / kRPM	±10%	46.4	30.1	24.1	15.7	56.2	36.4	29.0	20.9
Motor Constant	Km	Nm/√watt	±10%	0.136	0.137	0.140	0.138	0.168	0.164	0.168	0.164
		lb-ft /√watt		0.100	0.101	0.103	0.102	0.124	0.121	0.124	0.121
Resistance (line to line)	Rm	Ohms	±10%	21.2	8.77	5.44	2.34	20.4	9.02	5.44	2.94
Inductance	Lm	mH		41	17	11	4.7	44	19	12	6.2
Inertia (KBM)	Jm	Kg-m <sup>2</sup>		1.55E-5				2.01E-5			
		lb-ft-s <sup>2</sup>		1.14E-5				1.48E-5			
Weight (KBM)	Wt	Kg		0.943				1.22			
		lb		2.08				2.68			
Inertia (KBMS)	Jm	Kg-m <sup>2</sup>		2.02E-5				2.55E-5			
		lb-ft-s <sup>2</sup>		1.49E-5				1.88E-5			
Weight (KBMS)	Wt	Kg		0.990				1.26			
		lb		2.18				2.78			
Max Static Friction	Tf	Nm		2.22E-2				3.44E-2			
		lb-ft		1.64E-2				2.54E-2			
Cogging Friction (peak-to-peak)	Tcog	Nm		1.69E-2				2.44E-2			
		lb-ft		1.25E-2				1.80E-2			
Viscous Damping	Fi	Nm/ kRPM		6.10E-3				6.96E-3			
		lb-ft / kRPM		4.50E-3				5.13E-3			
Thermal Resistance (3)	TPR	°C / watt		1.10				1.07			
Number of Poles	P	-		6				6			
Recommended Kollmorgen AKD Drive				00307	00307	00607	00606	00307	00307	00607	00606
Voltage Req'd at Rated Output	Vac Input	Vac		480	480	400	240	480	480	400	240
Peak Stall Torque (5) (Motor with Drive)	Tp Drive	Nm	±10%	3.46	3.53	3.58	3.69	4.66	4.75	4.80	4.91
		lb-ft		2.55	2.60	2.64	2.72	3.44	3.50	3.54	3.62
Cont. Stall Torque (4) (Motor with Drive)	Tc Drive	Nm	±10%	1.16	1.16	1.19	1.18	1.45	1.41	1.44	1.41
		lb-ft		.854	.859	.880	.870	1.07	1.04	1.06	1.04

- 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) TPR assumes motor is housed and mounted to a 10" x 10" x 1/4" heat sink or equivalent.  
4) Peak & Continuous Torques may be limited by drive current, see [www.kollmorgen.com](http://www.kollmorgen.com) for complete drive ratings.

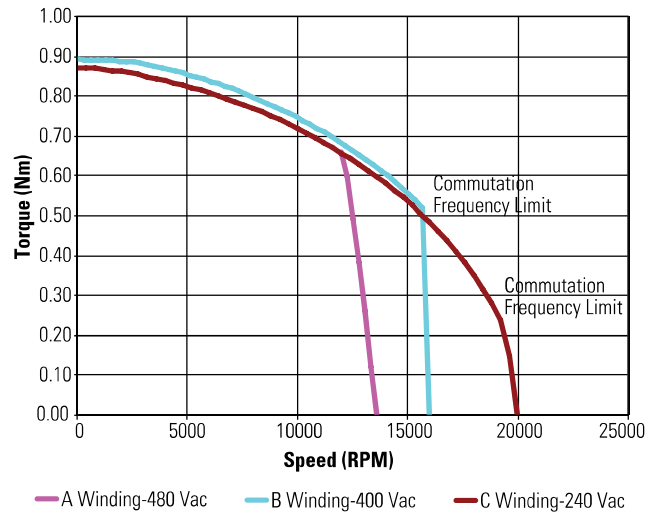
# KBM 10 Performance Curves

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

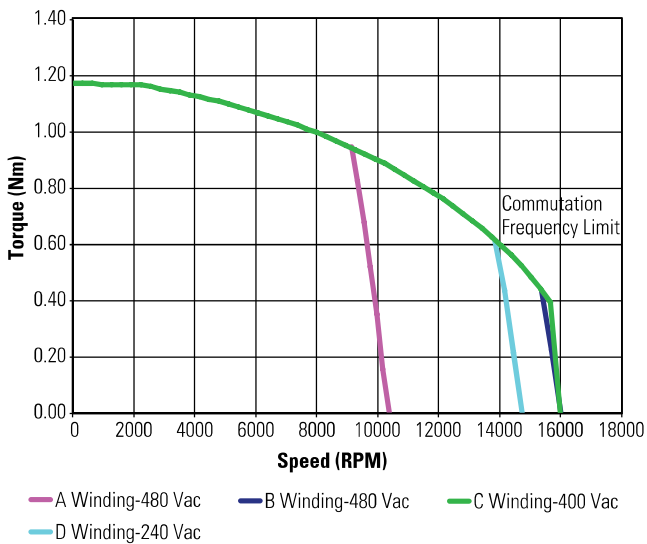
**KBM(S)-10X01  
Continuous Torque**



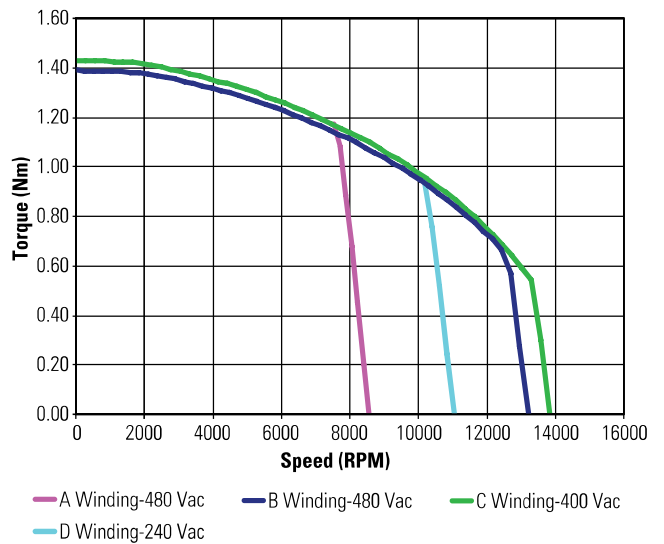
**KBM(S)-10X02  
Continuous Torque**



**KBM(S)-10X03  
Continuous Torque**



**KBM(S)-10X04  
Continuous Torque**



Low Voltage optimized windings available.