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High Torque Design, Low Cost Package

Compumotor's BE Series brushless servo motors produce high continuous stall torque in a cost-reduced package.

The increased torque of the BE Series motors is the result of an increased number of magnetic poles on the rotor. Traditional motors in these frame sizes have four magnetic poles on the rotor, while the BE Series motors have eight poles.

The cost reduction of the BE Series motors is achieved from their open lamination design. Unlike traditional servo motors, the BE Series motors do not have a metal housing. Instead, the laminations of the motor stator are shaped into the body of the motor. This design reduces both material costs and time required assembling the motor.

The BE Series motors are created using Compumotor's proven bridged stator design. This two-piece lamination design simplifies the manufacturing process, creating further cost savings. The bridged stator construction also results in less audible noise being generated by the motor.

The BE Series servo motors are available with integrated planetary gearheads in ratios up to 100:1. Our unique package integrates the gearhead pinion into the motor shaft, reducing the overall package length by up to 2 inches.

Features

- Size 23 and 34
- 2 to 46 lb-in continuous torque
- Brushless construction
- High torque density packaging
- Bridged stator design - quiet operation
- High performance neodymium magnets
- Thermoswitch protection
- 2000 line encoder standard
- Resolver feedback option
- Connectorization choices
- 10-day deliveries
- Two year warranty
- CAD (.dxf) drawings available
- CE Compliant

Part Numbering System

BE	342	H	J-	N	MS	N
BE Series	*Frame, Magnet Length* 230 341 231 342 232 343 233 344	*Winding* Identifying character F, J, K, etc.	*Feedback* J - 2000 ppr encoder R - Resolver	*Shafting* N - Normal F - Flat K - Keyway	*Connection* FO[1] - Flying leads w/ plastic encoder cover FL[1] - Flying leads w/ connector housing 10[1] - 10' cable MS[2] - Military style TQ[1,2] - Military style	*Options* N - None B - Brake GXX - Gearhead[3]

1 *Encoder feedback motors only*
2 *Refer to "Wiring and Cable Specifications" section for connector wiring*
3 *Specify "K" shaft option with gearheads*

Custom Designed Servo Motors For Your Specific Application. Call 1-800-358-9070 Today.

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Rohnert Park, California

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SERVO MOTORS

Size 23, Encoder Feedback, Specifications

Parameter	Symbol	Units	BE230D	BE230F	BE231D	BE231F	BE232D	BE232F	BE233D	BE233F
Stall Torque Continous[1]	T_{cs}	lb-in	3.4	3.3	6.0	5.9	9.9	9.7	13.0	13.3
		oz-in	54	53	96	94	159	155	207	213
		Nm	0.38	0.37	0.67	0.66	1.11	1.08	1.45	1.49
Stall Current Continuous[1,4,8]	I_{cs}(sine)	Amps Peak	3.1	6.1	2.8	5.3	2.8	5.4	2.5	4.9
Stall Current Continuous[1,7]	I_{cs}(trap)	Amps DC	2.7	5.3	2.4	4.6	2.4	4.7	2.2	4.2
Peak Torque[6]	T_{pk}	lb-in	10.1	10.0	18.0	17.7	29.7	29.0	38.9	40.0
		oz-in	161	160	289	283	476	464	622	640
		Nm	1.13	1.12	2.02	1.98	3.33	3.25	4.35	4.48
Peak Current[4,6,8]	I_{pk}(sine)	Amps Peak	9.4	18.2	8.2	15.9	8.4	16.3	7.4	14.6
Peak Current[6,7]	I_{pk}(trap)	Amps DC	8.1	15.8	7.1	13.8	7.3	14.1	6.5	12.7
Rated Speed[2]	ω_r	rpm	5000	5000	5000	5000	5000	5000	3750	5000
Current @ Rated Speed	I_r(sine)	Amps	2.9	5.6	2.5	4.7	2.4	4.7	2.2	4.0
Current @ Rated Speed	I_r(trap)	Amps	2.5	4.8	2.1	4.1	2.1	4.1	1.9	3.5
Torque @ Rated Speed	T_r	lb-in	2.9	2.9	5.2	5.1	8.2	8.0	11.3	10.7
		oz-in	47	47	83	81	131	128	180	171
		Nm	0.33	0.33	0.58	0.57	0.92	0.90	1.26	1.20
Shaft Power @ Rated Speed	P_o	watts	174	174	307	300	484	473	499	632
Voltage Constant[3,4]	K_b	Volts/rad/s	0.140	0.072	0.286	0.145	0.461	0.232	0.681	0.357
Voltage Constant[3,4]	K_e	Volts/Krpm	14.66	7.53	29.90	15.18	48.28	24.29	71.30	37.41
Torque Constant[9]	K_t(sine)	oz-in/Amp Peak	17.17	8.82	35.01	17.78	56.53	28.45	83.50	43.80
		Nm/Amp Peak	0.120	0.062	0.245	0.124	0.396	0.199	0.584	0.307
Torque Constant[3,4]	K_t(trap)	oz-in/Amp DC	19.82	10.18	40.43	20.53	65.28	32.85	96.42	50.58
		Nm/Amp DC	0.139	0.071	0.283	0.144	0.457	0.230	0.675	0.354
Resistance[3]	R	Ohms	4.57	1.22	6.97	1.86	7.72	2.05	10.98	2.85
Inductance[5]	L	mH	15.43	4.10	32.30	8.65	42.66	11.12	61.39	16.28
Maxumum Bus Voltage	V_m	Volts DC	340	340	340	340	340	340	340	340
Thermal Res Wind-Amb	R_{th} w-a	°C/watt	2.14	2.14	1.82	1.82	1.58	1.58	1.41	1.41
Motor Constant	K_m	oz-in/√watt	9.27	9.22	15.31	15.05	23.49	22.94	29.10	29.96
		Nm/√watt	0.065	0.065	0.107	0.105	0.164	0.161	0.204	0.210
Viscous Damping	B	oz-in/Krpm	0.3	0.3	0.4	0.4	0.5	0.5	0.7	0.7
		Nm/Krpm	1.8E-03	1.8E-03	2.5E-03	2.5E-03	3.5E-03	3.5E-03	4.9E-03	4.9E-03
Static Friction	T_f	oz-in	0.8	0.8	1.3	1.3	2.0	2.0	2.5	2.5
		Nm	5.3E-03	5.3E-03	8.8E-03	8.8E-03	1.4E-02	1.4E-02	1.8E-02	1.8E-02
Motor Thermal Time Constant	τ_{th}	minutes	11.6	11.6	13.3	13.3	15.0	15.0	20.0	20.0
Electrical Time Constant	τ_{elec}	millisecs	3.38	3.36	4.63	4.65	5.53	5.42	5.59	5.71
Mechanical Time Const.	τ_{mch}	millisecs	1.2	1.2	0.8	0.8	0.6	0.6	0.6	0.5
Intermittent Torque Duration[10]	T_{2x}	seconds	37	37	47	47	58	58	62	62
Peak Torque Duration[11]	T_{3x}	seconds	15	15	18	18	22	22	23	23
Rotor Inertia	J	lb-in-sec^2	4.6E-05	4.6E-05	8.0E-05	8.0E-05	1.5E-04	1.5E-04	2.1E-04	2.1E-04
		kg-m^2	5.2E-06	5.2E-06	9.0E-06	9.0E-06	1.7E-05	1.7E-05	2.4E-05	2.4E-05
Number of Poles	Np		8	8	8	8	8	8	8	8
Motor Weight	#	lbs	1.5	1.5	2.0	2.0	3.1	3.1	4.2	4.2
		kg	0.7	0.7	0.9	0.9	1.4	1.4	1.9	1.9
Winding Class			H	H	H	H	H	H	H	H

1 *@ 25°C ambient, 125°C winding temperature, motor connected to a 10"x10"x1/4" aluminum mounting plate. @40°C ambient derate phase currents and torques by 12%.*
2 *Operation with 340 VDC bus. Maximum speed is 5000 RPM. For higher speed operation please call the factory.*
3 *Measured Line to Line, +/- 10%.*
4 *Value is measured peak of sine wave.*
5 *+/-30%, Line-to-Line, inductance bridge measurement @1Khz.*
6 *Initial winding temperature must be 60°C or less before Peak Current is Applied.*
7 *DC current through a pair of motor phases of a trapaziodally (six state) commutated motor.*
8 *Peak of the sinusiodal current in any phase for a sinusiodally comutated motor.*
9 *Total motor torque per peak of the sinusiodal amps measured in any phase, +/-10%.*
10 *Maximum Time duration with 2 times rated current applied with initial winding temp at 60°C.*
11 *Maximum Time duration with 3 times rated current applied with initial winding temp at 60°C.*

Note: These specifications are based on theoretical motor performance and are not specific to any amplifier.

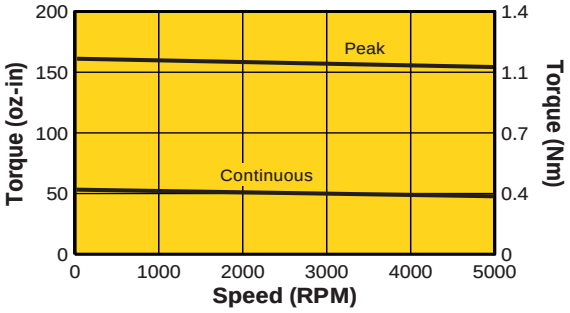
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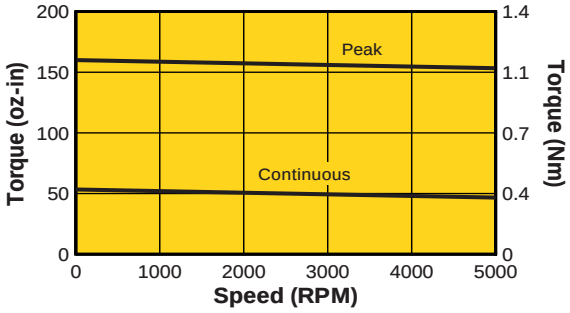
Size 23, Encoder Feedback, Performance Curves

170 VDC
340 VDC

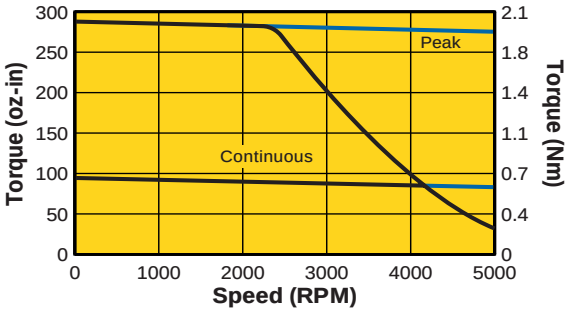
BE230DJ
Ics (sine)=3.1 amps, Ipk(sine)=9.4 amps



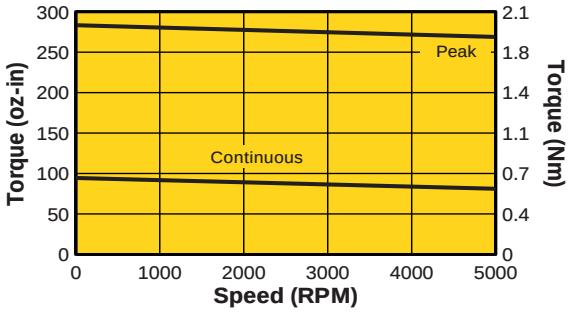
BE230FJ
Ics (sine)=6.1 amps, Ipk(sine)=18.2 amps



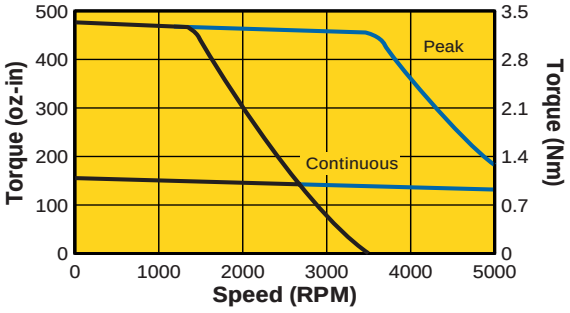
BE231DJ
Ics (sine)=2.8 amps, Ipk(sine)=8.2 amps



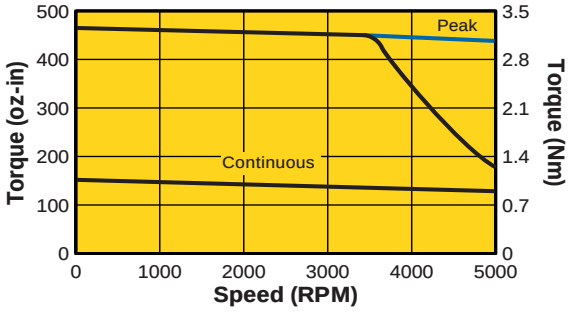
BE231FJ
Ics (sine)=5.3 amps, Ipk(sine)=15.9 amps



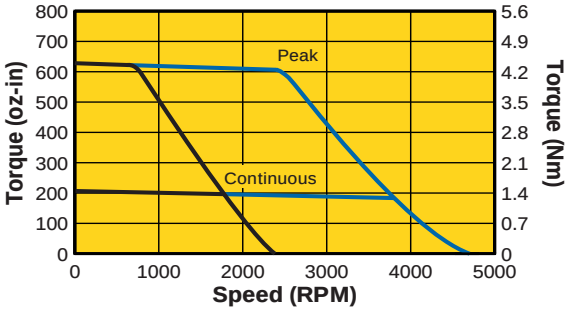
BE232DJ
Ics (sine)=2.8 amps, Ipk(sine)=8.4 amps



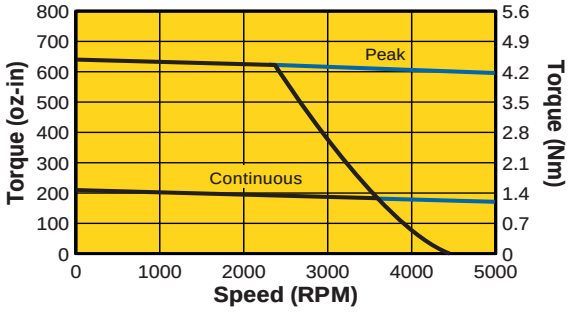
BE232FJ
Ics (sine)=5.4 amps, Ipk(sine)=16.3 amps



BE233DJ
Ics (sine)=2.5 amps, Ipk(sine)=7.5 amps



BE233FJ
Ics (sine)=4.9 amps, Ipk(sine)=14.6 amps



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Size 23, Resolver Feedback, Specifications

Parameter	Symbol	Units	BE230D	BE230F	BE231D	BE231F	BE232D	BE232F	BE233D	BE233F
Stall Torque Continous[1]	T_{cs}	lb-in	3.6	3.6	6.5	6.4	10.7	10.5	14.0	14.4
		oz-in	58	58	104	102	171	167	225	231
		Nm	0.41	0.40	0.73	0.71	1.20	1.17	1.57	1.61
Stall Current Continuous[1,4,8]	I_{cs}(sine)	Amps Peak	3.4	6.6	3.0	5.7	3.0	5.9	2.7	5.3
Peak Torque[6]	T_{pk}	lb-in	10.9	10.8	19.5	19.1	32.1	31.4	42.1	43.2
		oz-in	174	173	312	306	513	502	674	692
		Nm	1.22	1.21	2.18	2.14	3.59	3.51	4.72	4.84
Peak Current[4,6,8]	I_{pk}(sine)	Amps Peak	10.1	19.7	8.9	17.2	9.1	17.6	8.1	15.8
Rated Speed[2]	ω_r	rpm	5000	5000	5000	5000	5000	5000	3625	5000
Current @ Rated Speed	I_r(sine)	Amps	3.2	6.1	2.7	5.3	2.7	5.2	2.5	4.6
Torque @ Rated Speed	T_r	lb-in	3.3	3.3	5.8	5.6	9.3	9.0	12.6	12.1
		oz-in	52	52	92	90	148	144	201	194
		Nm	0.36	0.36	0.64	0.63	1.04	1.01	1.41	1.36
Shaft Power @ Rated Speed	P_o	watts	192	192	340	333	547	533	539	717
Voltage Constant[3,4]	K_b	Volts/rad/s	0.140	0.072	0.286	0.145	0.461	0.232	0.681	0.357
Voltage Constant[3,4]	K_e	Volts/Krpm	14.66	7.53	29.90	15.18	48.28	24.29	71.30	37.41
Torque Constant[9]	K_t(sine)	oz-in/Amp Peak	17.17	8.82	35.01	17.78	56.53	28.45	83.50	43.80
		Nm/Amp Peak	0.120	0.062	0.245	0.124	0.396	0.199	0.584	0.307
Resistance[3]	R	Ohms	4.57	1.22	6.97	1.86	7.72	2.05	10.98	2.85
Inductance[5]	L	mH	15.43	4.10	32.30	8.65	42.66	11.12	61.39	16.28
Maxumum Bus Voltage	V_m	Volts DC	340	340	340	340	340	340	340	340
Thermal Res Wind-Amb	R_{th} w-a	°C/watt	2.14	2.14	1.82	1.82	1.58	1.58	1.41	1.41
Motor Constant	K_m	oz-in/√watt	9.27	9.22	15.31	15.05	23.49	22.94	29.10	29.96
		Nm/√watt	0.065	0.065	0.107	0.105	0.164	0.161	0.204	0.210
Viscous Damping	B	oz-in/Krpm	0.3	0.3	0.4	0.4	0.5	0.5	0.7	0.7
		Nm/Krpm	1.8E-03	1.8E-03	2.5E-03	2.5E-03	3.5E-03	3.5E-03	4.9E-03	4.9E-03
Static Friction	T_f	oz-in	0.8	0.8	1.3	1.3	2.0	2.0	2.5	2.5
		Nm	5.3E-03	5.3E-03	8.8E-03	8.8E-03	1.4E-02	1.4E-02	1.8E-02	1.8E-02
Motor Thermal Time Constant	τ_{th}	minutes	11.6	11.6	13.3	13.3	15.0	15.0	20.0	20.0
Electrical Time Constant	τ_{elec}	millisecs	3.38	3.36	4.63	4.65	5.53	5.42	5.59	5.71
Mechanical Time Const.	τ_{mch}	millisecs	1.2	1.2	0.8	0.8	0.6	0.6	0.6	0.5
Intermittent Torque Duration[10]	T_{2x}	seconds	37	37	47	47	58	58	62	62
Peak Torque Duration[11]	T_{3x}	seconds	15	15	18	18	22	22	23	23
Rotor Inertia	J	lb-in-sec^2	4.6E-05	4.6E-05	8.0E-05	8.0E-05	1.5E-04	1.5E-04	2.1E-04	2.1E-04
		kg-m^2	5.2E-06	5.2E-06	9.0E-06	9.0E-06	1.7E-05	1.7E-05	2.4E-05	2.4E-05
Number of Poles	Np		8	8	8	8	8	8	8	8
Motor Weight	#	lbs	1.5	1.5	2.0	2.0	3.1	3.1	4.2	4.2
		kg	0.7	0.7	0.9	0.9	1.4	1.4	1.9	1.9
Winding Class			H	H	H	H	H	H	H	H

1 *@ 25°C ambient, 150°C winding temperature, motor connected to a 10"x10"x1/4" aluminum mounting plate. @40°C ambient derate phase currents and torques by 12%.*
2 *Operation with 340 VDC bus. Maximum speed is 5000 RPM. For higher speed operation please call the factory.*
3 *Measured Line to Line, +/- 10%.*
4 *Value is measured peak of sine wave.*
5 *+/-30%, Line-to-Line, inductance bridge measurement @1Khz.*
6 *Initial winding temperature must be 60°C or less before Peak Current is Applied.*
7 *Peak of the sinusiodal current in any phase for a sinusiodally comutated motor.*
8 *Total motor torque per peak of the sinusiodal amps measured in any phase, +/-10%.*
9 *Maximum Time duration with 2 times rated current applied with initial winding temp at 60°C.*
10 *Maximum Time duration with 3 times rated current applied with initial winding temp at 60°C.*

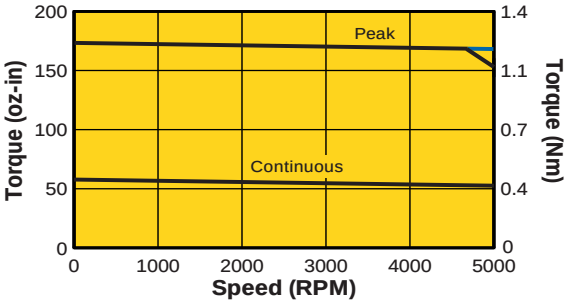
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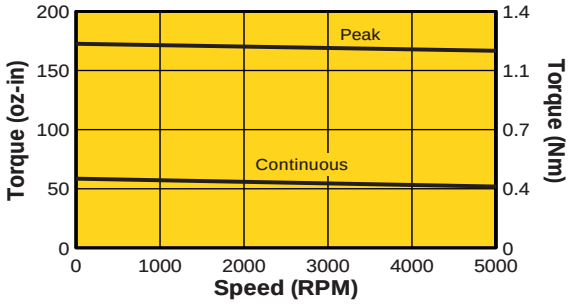
Size 23, Resolver Feedback, Performance Curves

170 VDC
340 VDC

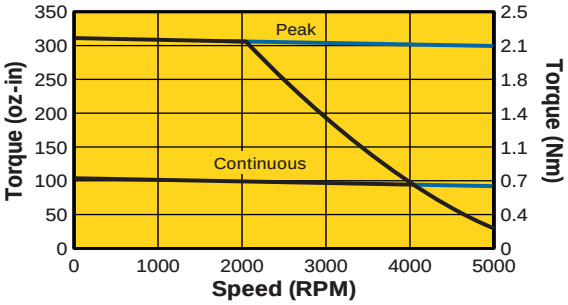
BE230DR
Ics (sine)=3.4 amps, Ipk(sine)=10.1 amps



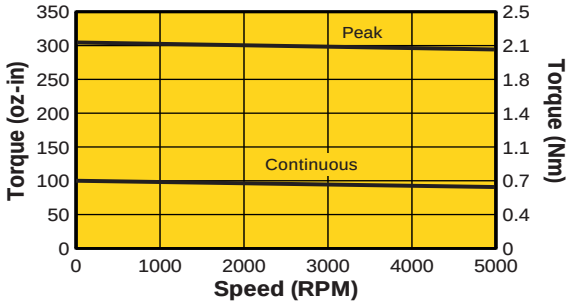
BE230FR
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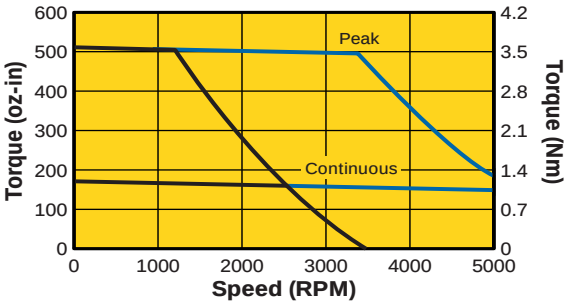
BE231DR
Ics (sine)=3.0 amps, Ipk(sine)=8.9 amps



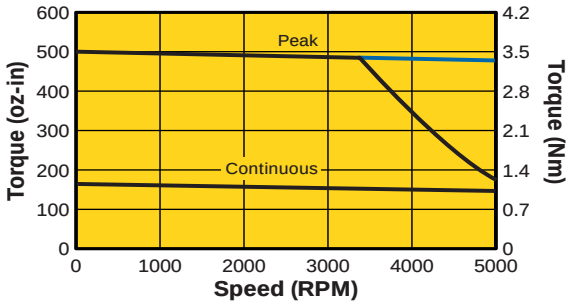
BE231FR
Ics (sine)=5.7 amps, Ipk(sine)=17.2 amps



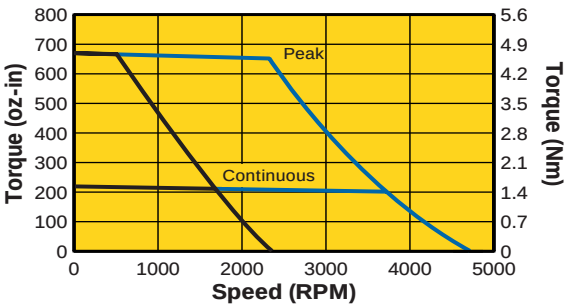
BE232DR
Ics (sine)=3.0 amps, Ipk(sine)=9.1 amps



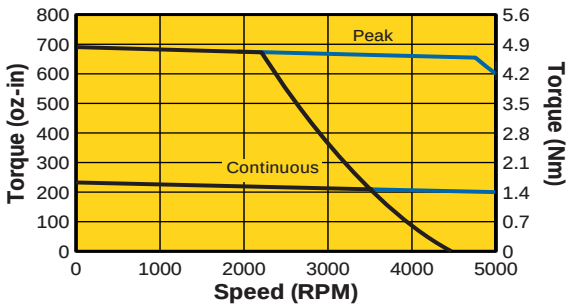
BE232FR
Ics (sine)=5.9 amps, Ipk(sine)=17.6 amps



BE233DR
Ics (sine)=2.7 amps, Ipk(sine)=8.1 amps



BE233FR
Ics (sine)=5.3 amps, Ipk(sine)=15.8 amps



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Size 34, Encoder Feedback, Specifications

Parameter	Symbol	Units	BE341F	BE341J	BE342H	BE342K	BE343J	BE343L	BE344J	BE344L
Stall Torque Continous[1]	T_{cs}	lb-in	15.0	14.9	25.3	25.7	35.6	35.4	43.3	42.9
		oz-in	241	239	406	411	570	566	693	686
		Nm	1.68	1.67	2.84	2.88	3.99	3.96	4.85	4.80
Stall Current Continuous[1,4,8]	I_{cs}(sine)	Amps Peak	5.1	10.4	6.9	13.5	9.9	15.8	9.1	14.3
Stall Current Continuous[1,7]	I_{cs}(trap)	Amps DC	4.5	9.0	5.9	11.7	8.6	13.7	7.8	12.4
Peak Torque[6]	T_{pk}	lb-in	45.1	44.8	76.0	77.1	106.9	106.1	129.9	128.6
		oz-in	722	717	1217	1233	1710	1697	2078	2058
		Nm	5.05	5.02	8.52	8.63	11.97	11.88	14.55	14.40
Peak Current[4,6,8]	I_{pk}(sine)	Amps Peak	15.4	31.3	20.6	40.4	29.8	47.4	27.2	43.0
Peak Current[6,7]	I_{pk}(trap)	Amps DC	13.4	27.1	17.8	35.0	25.8	41.0	23.5	37.3
Rated Speed[2]	ω_r	rpm	4625	5000	4500	5000	4375	5000	3500	5000
Current @ Rated Speed	I_r(sine)	Amps	4.2	8.3	5.5	10.3	7.8	11.5	7.6	9.9
Current @ Rated Speed	I_r(trap)	Amps	3.7	7.2	4.8	8.9	6.8	9.9	6.6	8.5
Torque @ Rated Speed	T_r	lb-in	11.9	11.4	20.3	19.1	27.7	24.8	35.6	28.5
		oz-in	191	182	325	305	443	397	569	456
		Nm	1.34	1.27	2.28	2.14	3.10	2.78	3.98	3.19
Shaft Power @ Rated Speed	P_o	watts	653	673	1082	1128	1434	1468	1473	1686
Voltage Constant[3,4]	K_b	Volts/rad/s	0.382	0.187	0.483	0.249	0.468	0.292	0.624	0.390
Voltage Constant[3,4]	K_e	Volts/Krpm	40.00	19.58	50.58	26.08	49.01	30.58	65.35	40.84
Torque Constant[9]	K_t(sine)	oz-in/Amp Peak	46.84	22.93	59.23	30.53	57.39	35.81	76.52	47.83
		Nm/Amp Peak	0.328	0.161	0.415	0.214	0.402	0.251	0.536	0.335
Torque Constant[3,4]	K_t(trap)	oz-in/Amp DC	54.09	26.48	68.39	35.26	66.27	41.35	88.36	55.22
		Nm/Amp DC	0.379	0.185	0.479	0.247	0.464	0.289	0.619	0.387
Resistance[3]	R	Ohms	2.59	0.63	1.70	0.44	0.96	0.38	1.23	0.49
Inductance[5]	L	mH	35.40	7.07	21.50	5.84	15.09	6.86	20.17	7.32
Maxumum Bus Voltage	V_m	Volts DC	340	340	340	340	340	340	340	340
Thermal Res Wind-Amb	R_{th} w-a	°C/watt	1.40	1.40	1.20	1.20	1.01	1.01	0.95	0.95
Motor Constant	K_m	oz-in/√watt	33.61	33.36	52.45	53.15	67.64	67.07	79.67	78.89
		Nm/√watt	0.235	0.234	0.367	0.372	0.473	0.470	0.558	0.552
Viscous Damping	B	oz-in/Krpm	1.1	1.1	1.3	1.3	1.7	1.7	2.0	2.0
		Nm/Krpm	7.6E-03	7.6E-03	9.3E-03	9.3E-03	1.2E-02	1.2E-02	1.4E-02	1.4E-02
Static Friction	T_f	oz-in	1.7	1.7	2.7	2.7	4.2	4.2	5.0	5.0
		Nm	1.2E-02	1.2E-02	1.9E-02	1.9E-02	2.9E-02	2.9E-02	3.5E-02	3.5E-02
Motor Thermal Time Constant	τ_{th}	minutes	21.6	21.6	25.0	25.0	28.3	28.3	33.3	33.3
Electrical Time Constant	τ_{elec}	millisecs	13.67	11.22	12.65	13.27	15.72	18.05	16.40	14.94
Mechanical Time Const.	τ_{mch}	millisecs	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3
Intermittent Torque Duration[10]	T_{2x}	seconds	65	65	78	78	116	116	127	127
Peak Torque Duration[11]	T_{3x}	seconds	24	24	27	27	37	37	38	38
Rotor Inertia	J	lb-in-sec^2	2.7E-04	2.7E-04	4.4E-04	4.4E-04	6.1E-04	6.1E-04	7.2E-04	7.2E-04
		kg-m^2	3.1E-05	3.1E-05	5.0E-05	5.0E-05	6.9E-05	6.9E-05	8.1E-05	8.1E-05
Number of Poles	Np		8	8	8	8	8	8	8	8
Motor Weight	#	lbs	4.8	4.8	7.1	7.1	9.4	9.4	11.7	11.7
		kg	2.2	2.2	3.2	3.2	4.3	4.3	5.3	5.3
Winding Class			H	H	H	H	H	H	H	H

1 *@ 25°C ambient, 125°C winding temperature, motor connected to a 10"x10"x1/4" aluminum mounting plate. @40°C ambient derate phase currents and torques by 12%.*
2 *Operation with 340 VDC bus. Maximum speed is 5000 RPM. For higher speed operation please call the factory.*
3 *Measured Line to Line, +/- 10%.*
4 *Value is measured peak of sine wave.*
5 *+/-30%, Line-to-Line, inductance bridge measurement @1Khz.*
6 *Initial winding temperature must be 60°C or less before Peak Current is Applied.*
7 *DC current through a pair of motor phases of a trapaziodally (six state) commutated motor.*
8 *Peak of the sinusiodal current in any phase for a sinusiodally comutated motor.*
9 *Total motor torque per peak of the sinusiodal amps measured in any phase, +/-10%.*
10 *Maximum Time duration with 2 times rated current applied with initial winding temp at 60°C.*
11 *Maximum Time duration with 3 times rated current applied with initial winding temp at 60°C.*

Note: These specifications are based on theoretical motor performance and are not specific to any amplifier.

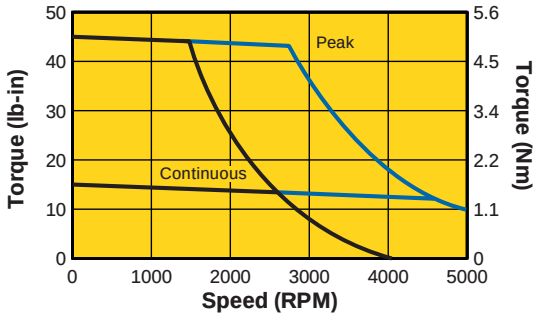
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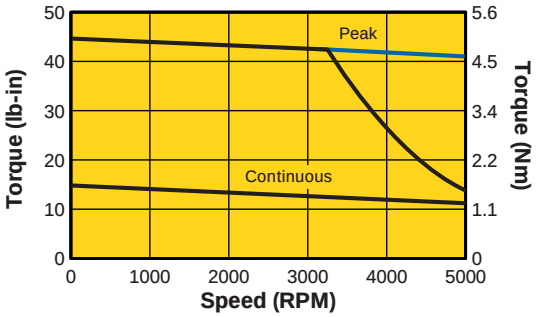
Size 34, Encoder Feedback, Performance Curves

170 VDC
340 VDC

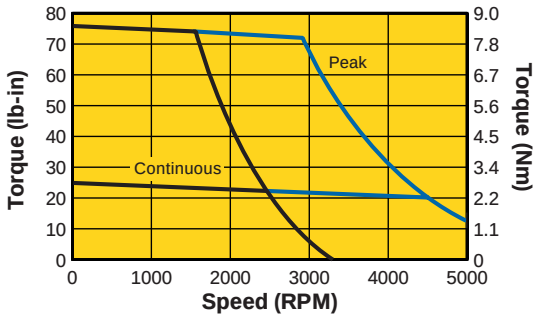
BE341FJ
Ics (sine)=5.1 amps, Ipk(sine)=15.4 amps



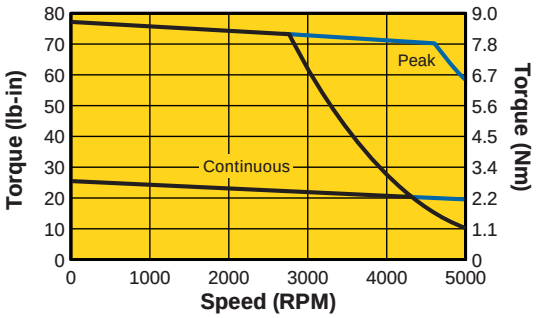
BE341JJ
Ics (sine)=10.4 amps, Ipk(sine)=31.3 amps



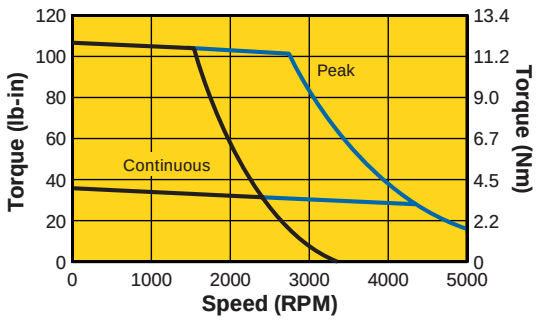
BE342HJ
Ics (sine)=6.9 amps, Ipk(sine)=20.6 amps



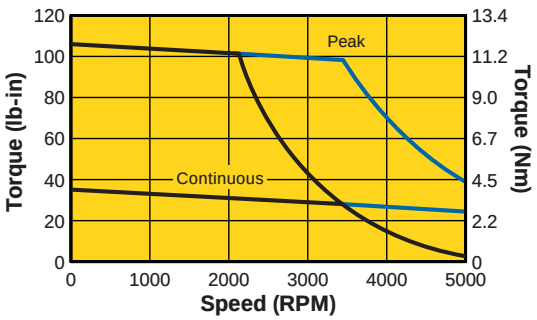
BE342KJ
Ics (sine)=13.5 amps, Ipk(sine)=40.4 amps



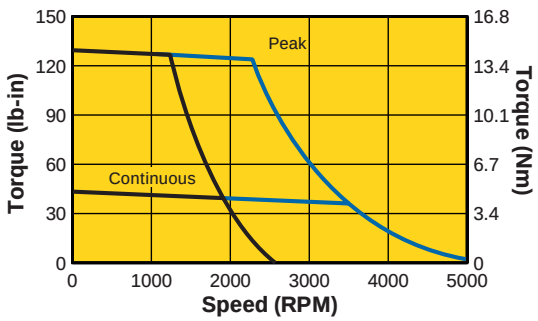
BE343JJ
Ics (sine)=9.9 amps, Ipk(sine)=29.8 amps



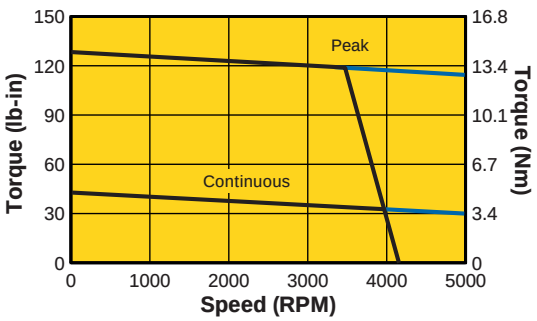
BE343LJ
Ics (sine)=15.8 amps, Ipk(sine)=47.4 amps



BE344JJ
Ics (sine)=9.1 amps, Ipk(sine)=27.2 amps



BE344L
Ics (sine)=14.3 amps, Ipk(sine)=43.0 amps



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Size 34, Resolver Feedback, Specifications

Parameter	Symbol	Units	BE341F	BE341J	BE342H	BE342K	BE343J	BE343L	BE344J	BE344L
Stall Torque Continous[1]	T_{cs}	lb-in	16.3	16.1	27.4	27.8	38.5	38.2	46.8	46.3
		oz-in	260	258	438	444	616	611	748	741
		Nm	1.82	1.81	3.07	3.11	4.31	4.28	5.24	5.19
Stall Current Continuous[1,4,8]	I_{cs}(sine)	Amps Peak	5.6	11.3	7.4	14.6	10.7	17.1	9.8	15.5
Peak Torque[6]	T_{pk}	lb-in	48.8	48.4	82.2	83.3	115.6	114.6	140.3	139.0
		oz-in	781	775	1315	1333	1849	1833	2245	2223
		Nm	5.46	5.42	9.21	9.33	12.94	12.83	15.72	15.56
Peak Current[4,6,8]	I_{pk}(sine)	Amps Peak	16.7	33.8	22.2	43.6	32.2	51.2	29.3	46.5
Rated Speed[2]	ω_r	rpm	4625	5000	4500	5000	4375	5000	3500	5000
Current @ Rated Speed	I_r(sine)	Amps	4.8	9.5	6.3	11.9	9.0	13.4	8.5	11.8
Torque @ Rated Speed	T_r	lb-in	13.8	10.0	23.8	22.1	32.7	29.3	35.6	27.3
		oz-in	220	160	381	354	523	469	570	436
		Nm	1.54	1.12	2.67	2.48	3.66	3.28	3.99	3.05
Shaft Power @ Rated Speed	P_o	watts	753	592	1268	1309	1692	1734	1476	1612
Voltage Constant[3,4]	K_b	Volts/rad/s	0.382	0.187	0.483	0.249	0.468	0.292	0.624	0.390
Voltage Constant[3,4]	K_e	Volts/Krpm	40.00	19.58	50.58	26.08	49.01	30.58	65.35	40.84
Torque Constant[9]	K_t(sine)	oz-in/Amp Peak	46.84	22.93	59.23	30.53	57.39	35.81	76.52	47.83
		Nm/Amp Peak	0.328	0.161	0.415	0.214	0.402	0.251	0.536	0.335
Resistance[3]	R	Ohms	2.59	0.63	1.70	0.44	0.96	0.38	1.23	0.49
Inductance[5]	L	mH	35.40	7.07	21.50	5.84	15.09	6.86	20.17	7.30
Maxumum Bus Voltage	V_m	Volts DC	340	340	340	340	340	340	340	340
Thermal Res Wind-Amb	R_{th} w-a	°C/watt	1.40	1.40	1.20	1.20	1.01	1.01	0.95	0.95
Motor Constant	K_m	oz-in/√watt	33.61	33.36	52.45	53.15	67.64	67.07	79.67	78.89
		Nm/√watt	0.235	0.234	0.367	0.372	0.473	0.470	0.558	0.552
Viscous Damping	B	oz-in/Krpm	1.1	1.1	1.3	1.3	1.7	1.7	2.0	2.0
		Nm/Krpm	7.6E-03	7.6E-03	9.3E-03	9.3E-03	1.2E-02	1.2E-02	1.4E-02	1.4E-02
Static Friction	T_f	oz-in	1.7	1.7	2.7	2.7	4.2	4.2	5.0	5.0
		Nm	1.2E-02	1.2E-02	1.9E-02	1.9E-02	2.9E-02	2.9E-02	3.5E-02	3.5E-02
Motor Thermal Time Constant	τ_{th}	minutes	21.6	21.6	25.0	25.0	28.3	28.3	33.3	33.3
Electrical Time Constant	τ_{elec}	millisecs	13.67	11.22	12.65	13.27	15.72	18.05	16.40	14.94
Mechanical Time Const.	τ_{mch}	millisecs	0.6	0.6	0.4	0.4	0.3	0.3	0.3	0.3
Intermittent Torque Duration[10]	T_{2x}	seconds	65	65	78	78	116	116	127	127
Peak Torque Duration[11]	T_{3x}	seconds	24	24	27	27	37	37	38	38
Rotor Inertia	J	lb-in-sec^2	2.9E-04	2.9E-04	4.6E-04	4.6E-04	6.3E-04	6.3E-04	8.0E-04	8.0E-04
		kg-m^2	3.3E-05	3.3E-05	5.2E-05	5.2E-05	7.1E-05	7.1E-05	9.0E-05	9.0E-05
Number of Poles	Np		8	8	8	8	8	8	8	8
Motor Weight	#	lbs	4.8	4.8	7.1	7.1	9.4	9.4	11.7	11.7
		kg	2.2	2.2	3.2	3.2	4.3	4.3	5.3	5.3
Winding Class			H	H	H	H	H	H	H	H

1 *@ 25°C ambient, 150°C winding temperature, motor connected to a 10"x10"x1/4" aluminum mounting plate. @40C ambient derate phase currents and torques by 12%.*
2 *Operation with 340 VDC bus. Maximum speed is 5000 RPM. For higher speed operation please call the factory.*
3 *Measured Line to Line, +/- 10%.*
4 *Value is measured peak of sine wave.*
5 *+/-30%, Line-to-Line, inductance bridge measurement @1Khz.*
6 *Initial winding temperature must be 60°C or less before Peak Current is Applied.*
7 *Peak of the sinusiodal current in any phase for a sinusiodally comutated motor.*
8 *Total motor torque per peak of the sinusiodal amps measured in any phase, +/-10%.*
9 *Maximum Time duration with 2 times rated current applied with initial winding temp at 60°C.*
10 *Maximum Time duration with 3 times rated current applied with initial winding temp at 60°C.*

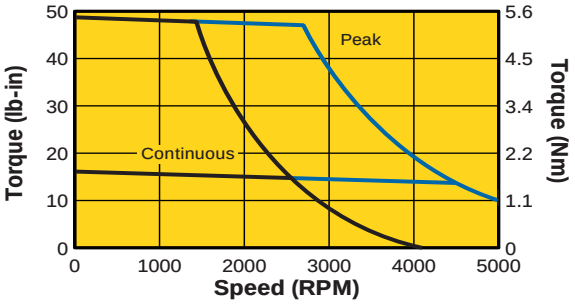
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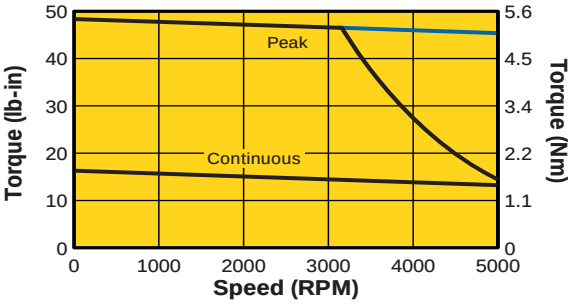
Size 34, Resolver Feedback, Performance Curves

170 VDC
340 VDC

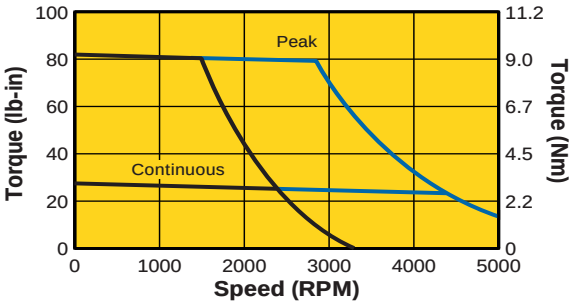
BE341FR
Ics (sine)=5.6 amps, Ipk(sine)=16.7 amps



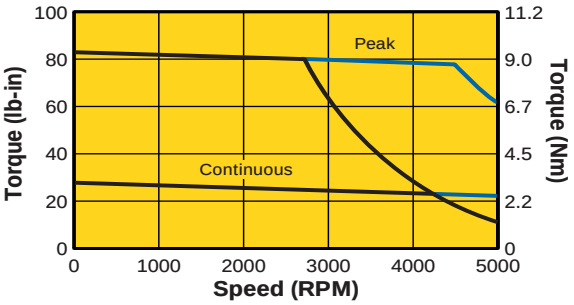
BE341JR
Ics (sine)=11.3 amps, Ipk(sine)=33.8 amps



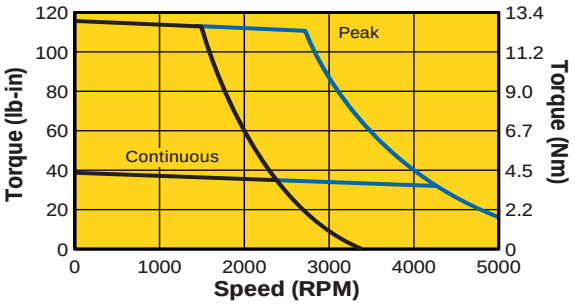
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Ics (sine)=7.4 amps, Ipk(sine)=22.2 amps



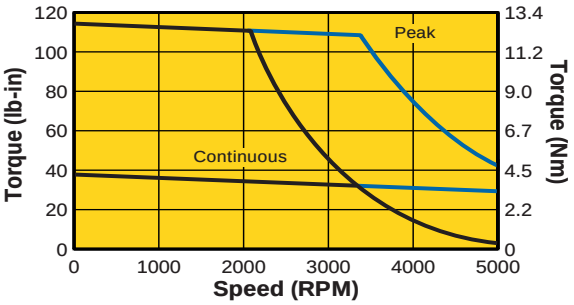
BE342KR
Ics (sine)=14.6 amps, Ipk(sine)=43.6 amps



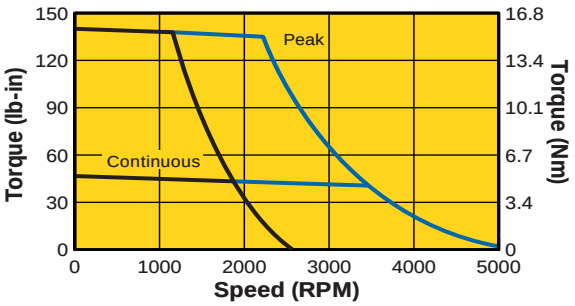
BE343JR
Ics (sine)=10.7 amps, Ipk(sine)=32.2 amps



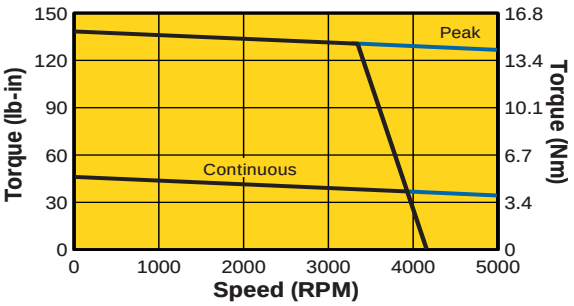
BE343LR
Ics (sine)=17.1 amps, Ipk(sine)=51.2 amps



BE344JR
Ics (sine)=9.8 amps, Ipk(sine)=29.3 amps



BE344LR
Ics (sine)=15.5 amps, Ipk(sine)=46.5 amps



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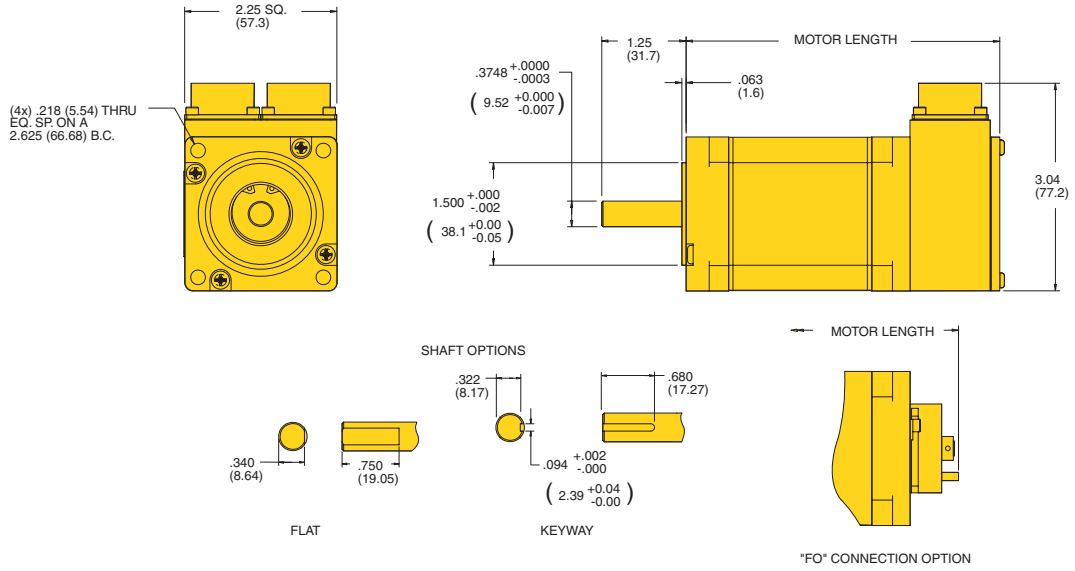
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BE Series Dimensional Drawings

Size 23 Dimensional Drawing

Dimensions in inches (mm)

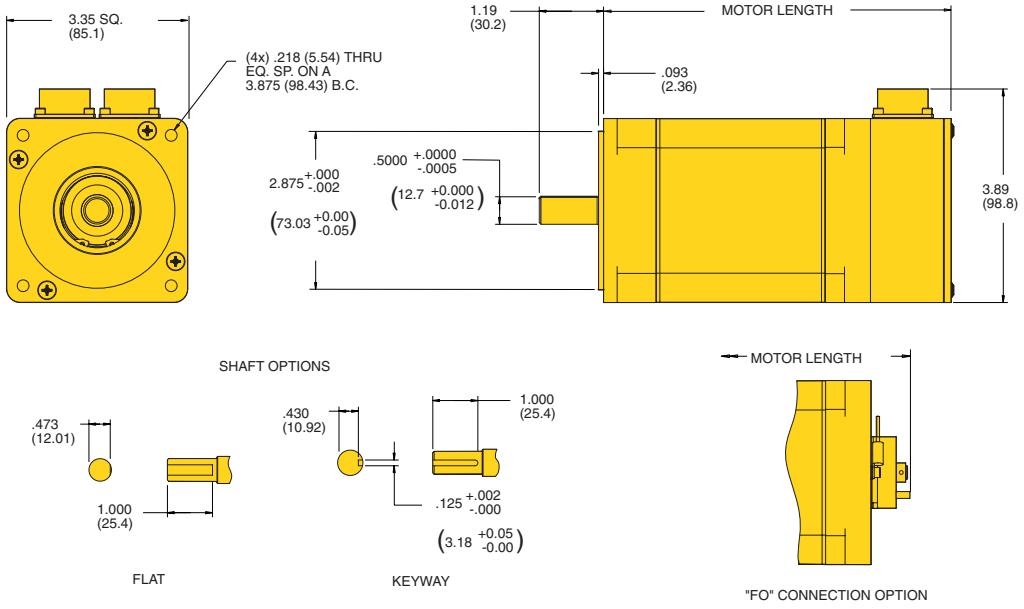
Motor Length			
Model	Standard	FO Option	Brake
BE230	3.15 (80)	2.50 (93)	4.51 (115)
BE231	3.65 (93)	3.00 (77)	5.01 (127)
BE232	4.65 (118)	4.00 (102)	6.01 (153)
BE233	5.65 (143)	5.00 (128)	7.01 (178)



Size 34 Dimensional Drawing

Dimensions in inches (mm)

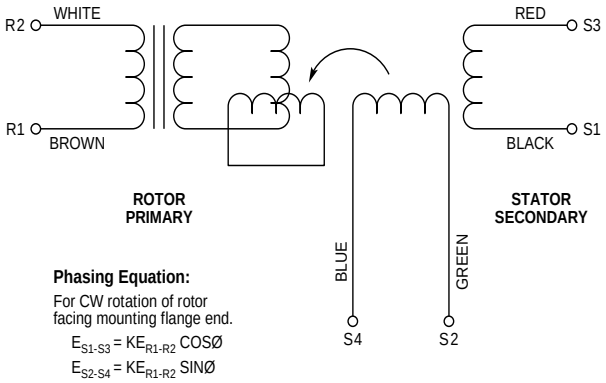
Motor Length			
Model	Standard	FO Option	Brake
BE341	4.42 (112)	3.65 (93)	5.65 (144)
BE342	5.42 (138)	4.65 (118)	6.65 (169)
BE343	6.42 (163)	5.65 (144)	7.65 (194)
BE344	7.42 (188)	6.65 (169)	8.65 (220)



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BE Series, Feedback Specifications

Resolver Schematic Diagram



Phasing Equation:
For CW rotation of rotor facing mounting flange end.

$E_{S1-S3} = KE_{R1-R2} \cos\emptyset$

$E_{S2-S4} = KE_{R1-R2} \sin\emptyset$

Resolver Specifications

Parameter	Value
Input voltage @ 7 kHz	4.25 volts
Input current, max	55 mA
Input power, nominal	0.12 watts
Impedance ZSO (@ 90°)	58+j145 ohms
Impedance ZRO	53+j72 ohms
Impedance ZRS	42+j55 ohms
Transformation ratio	0.470 ±5%
Output voltage	2.0 ±5% volts
DC rotor resistance	23 ±10% ohms
DC stator resistance	19 ±10% ohms
Sensitivity	35 mV/degree
Max error from EZ	±10 minutes
Phase shift, open circuit	5° leading, ±3"
Null voltage, total	20 mV rms
Impedance ZSS	50+j128 ohms
Inertia	Incl. with motor spec.

Encoder Specifications

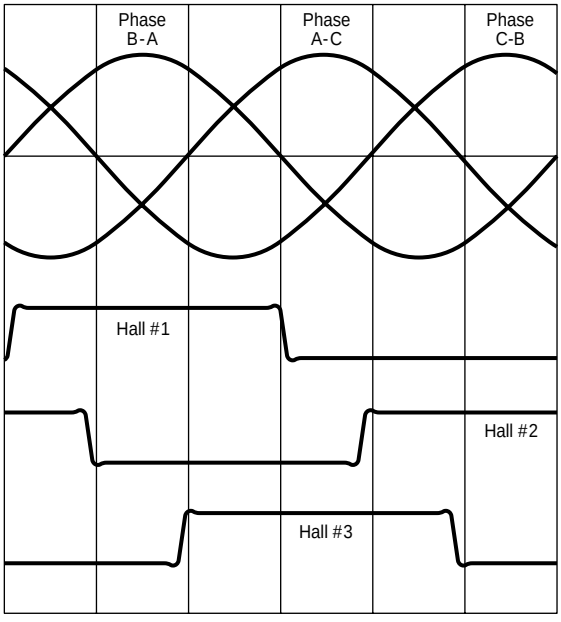
Mechanical		
	Accuracy	±2 min of arc
Electrical		
	Input power	5 VDC ±5%, 135 mA
	Operating frequency	250 kHz max
	Output device	26LS31
	Sink/Source, nominal	20 mA
	Suggested user interface	26LS32

Hall-Effect Specifications

Electrical		
	Input power	5 VDC ±5%, 80 mA
	Output device open collector	LM339
	Maximum pull up	12 VDC
	Sink	16 mA

Commutation Chart

Clockwise rotation as viewed from front shaft.



Electrically Released Brakes

Brakes	Size 23	Size 34
Static rated torque	10 in-lb	40 in-lb
Coil voltage	24 VDC	24 VDC
Coil current	0.38 amps	0.7 amps
Weight	0.7 lbs	1.2 lbs
Inertia	1.87 E-05 lb-in-sec^2	1.14E-04 lb-in-sec^2

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Wiring and Cable Specifications

Flying Leads, Cabled and "MS" Connection Options

The **"FO" connection** option for the BE Series motors features 18" leads extending from the motor body. This option features a plastic encoder cover and no connector housing. Wire color codes are the same as listed below for "MS" wired BE Series motors. The "FO" option is only available on motors with encoder feedback.

The **"FL" connection** option for the BE Series motors features 18" leads extending from the motor body. This option features an extruded aluminum housing. Wire color codes are the same as listed below for "MS" wired BE Series motors. The "FL" option is only available on motors with encoder feedback.

The **"10" connection** option for the BE Series motors consists of 10 feet of hard-wired cable extending from the motor body. These cables terminate in flying leads. Wire color codes are the same as listed below for the "MS" connection option. The "10" option is only available on motors with encoder feedback.

The **"MS" connection** option for the BE Series motors provides quick disconnect, bayonet style connectors attached to the motor body. Mating cables are specified and ordered separately. With the "MS" connection option, the motor phase wires are in one connector, and the hall, encoder, temperature switch, and brake wires are in the other connector. This option works well when using an amplifier with a built-in controller, or when all cables enter into a cabinet or enclosure and then are wired into a terminal strip. When specifying the "R" (resolver) feedback option, the motor phase wires reside in one connector, the resolver signal, temperature switch, and brake wires in the other.

Motor Connection

Designation	Pin Number MS14-12[1]	Wire Color "MS"/"RS" Cables	Wire Color "GS/GB" Cables
Phase A	J	Red/Yellow	Black 1
Phase B	K	White/Yelow	Black 2
Phase C	L	Black/Yellow	Black 3
Ground	M	Green/Yellow	Green/Yellow
Shield	N.C.	Clear	N.C.

Encoder/Hall Feedback Connection

Designation	Pin Number MS14-18	Wire Color
Encoder +5	H	Red
Encoder Ground	G	Black
CH A +	A	White
CH A -	B	Yellow
CH B +	C	Green
CH B -	D	Blue
Index +	E	Orange
Index -	F	Brown
Hall Ground	K	White/Green
Hall +5	M	White/Blue
Hall 1	T	White/Brown
Hall 2	U	White/Orange
Hall 3	P	White/Violet
Brake[1]	R	Red/Blue
Brake[1]	S	Red/Blue
Temp	L	Orange/Yellow
Temp	N	Orange/Yellow
Shield	N.C.	Clear

1 Brake will operate regardless of polarity of connection

Resolver Feedback Connection

Designation	Pin Number MS14-18	Wire Color
S1, COS +	E	Black
S2, SIN +	L	Green
S3, COS -	J	Red
S4, SIN -	G	Blue
R1, EXC +	C	Brown
R2, EXC -	U	White
Temp	R	Orange/Yellow or Yellow
Temp	N	Orange/Yellow or Yellow
Brake[2]	S	Red/Blue
Brake[2]	T	Red/Blue
Shield	N.C.	Clear

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Wiring and Cable Specifications (Continued)

The following cable sets are available for BE Series motors with the "MS" connection option. The cable sets include one motor power cable and one feedback cable. These cables have mating motor connectors at one end, flying leads at the other.

BE-MS CABLE-XX
One set of cables for BE Series motors with encoder feedback and "MS" connection option. *"-XX" is cable length. "BE-MS CABLE" sets available in lengths of 10, 25 and 35 feet.*

BE-RS CABLE-XX
One set of cables for BE Series motors with resolver feedback and "MS" connection option. *"-XX" is cable length. "BE-RS CABLE" sets available in lengths of 10, 25, 35, and 50 feet.*

The following hi-flex cables are also available for BE Series motors with the "MS" connection option. Motor power cable and feedback cable must be ordered separately. These cables have mating motor connectors at one end, flying leads at the other. Wire colors in hi-flex cables do not match the standard wiring diagram. Contact Compumotor for wiring diagram.

71-016529-XX
BE "MS" motor cable, hi-flex *"-XX" is cable length. Cable available in lengths of 10, 25, 35 and 50 feet.*

71-016022-XX
Encoder feedback cable, hi-flex *"-XX" is cable length. Cable available in lengths of 10, 25, and 35 feet.*

71-016374-XX
Resolver feedback cable, hi-flex *"-XX" is cable length. Cable available in lengths of 10, 25, 35 and 50 feet.*

The following cable sets are available for BE Series motors for use with the Gemini family of amplifiers. The "MS" connection option should be specified for the BE Series motors when using these cable sets. These cable sets consist of one motor power cable and one feedback cable. These cables have mating motor connectors at one end, and connectors for wiring to a Gemini amplifier at the other. These cables have a braided shield and are CE(EMC) compliant. The "GB" cable sets have leads for wiring NeoMetric or J Series motors with internal brakes, the "GS" cable sets do not.

BE-GS CABLE-XX
One set of cables for BE Series motors with encoder feedback and "MS" connection option. Cables include connectors for wiring to Gemini amplifier. **No connection for internal brake.** *"-XX" is cable length. "BE-GS CABLE" sets available in lengths of 10, 25, and 35 feet.*

BE-GB CABLE-XX
One set of cables for BE Series motors with encoder feedback and "MS" connection option. Cables include connectors for wiring to Gemini amplifier. **Includes connection for internal brake.** *"-XX" is cable length. "BE-GB CABLE" sets available in lengths of 10, 25, and 35 feet.*

BE-GR CABLE-XX
One set of cables for BE Series motors with resolver feedback and "MS" connection option. Cables include connectors for wiring to Gemini amplifier. *"-XX" is cable length. "BE-GR CABLE" sets available in lengths of 10, 25, 35, and 50 feet.*

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Wiring and Cable Specifications (continued)

"TQ" Connection Option

The **"TQ" Connection** option for the BE series motors provides quick disconnect, bayonet style connectors attached to the motor body. Mating cables are specified and ordered separately. The "TQ" connection option joins the motor phase wires, temperature switch, and hall effect signals in one connector. The second connector has encoder signal and brake wires. This connection option applies well in applications where the hall and motor phase wires connect directly to an amplifier, while the encoder signals connect directly to a controller.

Motor/Hall Connection

Designation	Pin Number MS14-12	Wire Color
Phase A	J	Red/Yellow
Phase B	K	White/Yellow
Phase C	L	Black/Yellow
Ground	M	Green/Yellow
Temp	G	Orange/Yellow or Yellow
Temp	H	Orange/Yellow or Yellow
Shield	N.C.	Clear
Hall Ground	F	White/Green
Hall +5	B	White/Blue
Hall 1	C	White/Brown
Hall 2	D	White/Orange
Hall 3	E	White/Violet

Encoder Feedback Connection

Designation	Pin Number MS14-18	Wire Color
Encoder +5	H	Red
Encoder Ground	G	Black
CH A +	A	White
CH A -	B	Yellow
CH B +	C	Green
CH B -	D	Blue
Index +	E	Orange
Index -	F	Brown
Brake[1]	R	Red/Blue
Brake[1]	S	Red/Blue

[1] Brake will operate regardless of polarity of connection

The following cable sets are available for BE Series motors with the "TQ" connection option. The cable sets consist of one motor power cable and one feedback cable. These cable sets have mating motor connectors at one end, flying leads at the other.

BE-TQ CABLE-XX
One set of cables for BE Series motors with encoder feedback and "TQ" connector option. *"-XX" is cable length. "BE-TQ CABLE" sets available in lengths of 10, 25 and 35 feet.*

The following hi-flex cables are available for BE Series motors with the "TQ" connection option. Motor power cable and feedback cable must be ordered separately. These cables have mating motor connectors at one end, flying leads at the other. Wire colors in hi-flex cables do not match the standard wiring diagram. Contact Compumotor for wiring diagram.

71-017677-XX
TQ motor cable, hi-flex "-XX" is cable length. Cable available in lengths of 10, 25, and 35 feet.

71-016022-XX
Encoder feedback cable, hi-flex *"-XX" is cable length. Cable available in lengths of 10, 25, and 35 feet.*

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