

Brushless Servo Motors

Quantum QB23 Series Housed Brushless Servo Motors

NEMA Size 23 High Power Density, Sinusoidal BEMF

Allied Motion's **Quantum (QB) housed brushless servo motors** are designed for use in precision servo applications that require a standard NEMA size 17, 23, 34 or 56 frame motor.

The QB023 series are six-pole motors with 3-phase delta-wound stators that conform to NEMA size 23 mounting standards. Rated torques range from 0.22 up to 1.25 Nm, and rated power extends from 157 up to 460 W. Winding voltage choices are 24, 40 and 130 V.

The QB series are electromechanically optimized for high output power, high torque density, and low cogging torque. Their high power density ratio allows a smaller size motor to be used in many applications, saving space and weight.

Quantum motors are also available as frameless versions for direct machine integration.

Features & Benefits

- NEMA 23 frame size with four stack lengths
- Rated torque from 0.22 up to 1.25 Nm; rated power from 157 up to 460 W
- Three standard windings, 3-phase delta wound, rated 24, 40, and 130 V
- Rare-earth NdFeB magnets maximize torque production
- Integrated Hall commutation sensors
- Computer optimized design for maximum power and torque density ensures the most compact and efficient design possible

Options

- Encoder or resolver feedback compatible with Allied Motion and other servo drives and motion controllers
- Sealed versions up to IP65 for operation in harsh environments
- Custom winding voltages and other customizations to meet specific application requirements

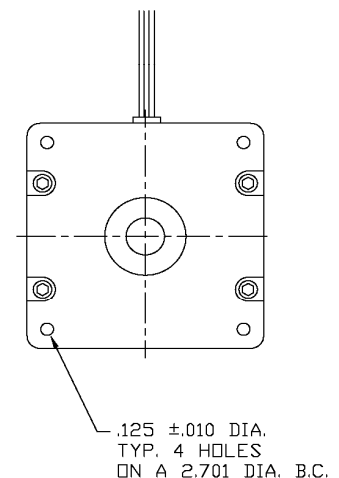
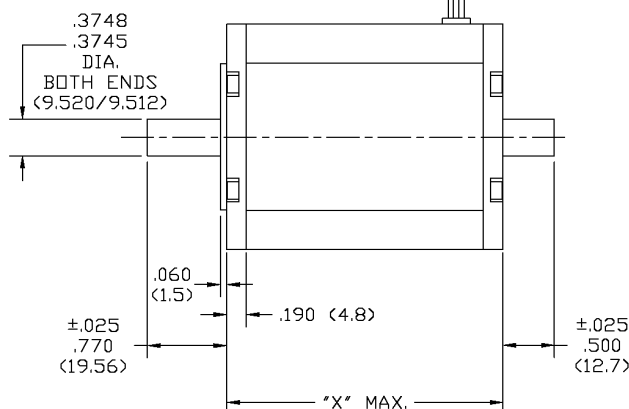
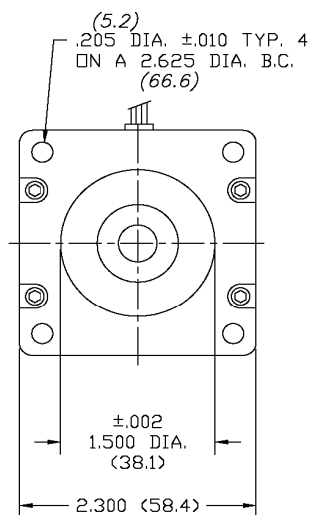


- NEMA size 23 high performance brushless servo motor
- Rated power from 157 up to 460 W and rated torque of from 0.22 up to 1.25 Nm
- Standard winding voltages of 24, 40, and 130 V

DIMENSIONS

MODEL NO.	"X"
QB02300	2.800 (71.12)
QB02301	3.550 (90.17)
QB02302	4.300 (109.22)
QB02303	5.050 (128.27)

LEADWIRE - TEFLON COATED
TYPE "E" PER MIL-W-16878/4
12" MINIMUM LENGTH (304)
A) MOTOR: 20 AWG. RED(A), WHT(B), BLK(C)
B) SENSOR: 28 AWG. BLU(+), BRN(A), ORG(B)
YEL(C), GRN(GRD)



in (mm)

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SPECIFICATIONS

Model No.		QB02300			QB02301		
Winding Voltage	V	24	40	130	24	40	130
Stall Torque (continuous) ⁽¹⁾	oz-in	49	49	49	94	96	96
	Nm	0.35	0.35	0.35	0.66	0.68	0.68
Rated Power ⁽¹⁾	W	157	179	185	154	210	294
Rated Torque ⁽¹⁾	oz-in	40	34	32	86	84	67
	Nm	0.28	0.24	0.22	0.61	0.59	0.47
Rated Speed	RPM	5300	7200	7900	2400	3400	5950
Peak Torque	oz-in	403	403	395	644	787	787
	Nm	2.84	2.84	2.79	4.55	5.56	5.56
Rated Phase Current	A	10.8	7.0	2.3	11.1	8.9	3.5
Peak Current	A	77	61	24	61	59	30
Torque Constant (±10%)	oz-in/A	5.2	6.6	16.6	10.5	13.3	26.6
	Nm/A	0.037	0.047	0.117	0.074	0.094	0.188
Voltage Constant (±10%)	V/kRPM	3.85	4.88	12.27	7.77	9.85	19.70
	V/rad/s	0.037	0.047	0.117	0.074	0.094	0.188
Cogging Torque (max.)	oz-in	2.5			4.1		
	Nm	0.0018			0.029		
Rotor Inertia	oz-in-s ²	1.09E-03			2.14E-03		
	kg-m ²	7.7E-06			1.5E-05		
Motor Constant	oz-in/√W	10.5	10.5	10.4	16.8	17.3	17.3
	Nm/√W	0.074	0.074	0.074	0.119	0.122	0.122
Elect. Time Constant	ms	0.98	1.11	0.88	1.06	1.27	1.27
Mech. Time Constant	ms	1.33	1.33	1.34	1.00	0.94	0.94
Thermal Resistance ⁽¹⁾	°C/W	2.79			2		
Terminal Resistance (±12%)	Ohm	0.25	0.40	2.53	0.39	0.60	2.38
Terminal Inductance (±30%)	mH	0.24	0.44	2.23	0.42	0.75	3.01
Motor Weight (±8%)	lb	1.6	1.6	1.5	2.1	2.1	2.1
	kg	0.72	0.72	0.69	0.97	0.97	0.97

Model No.		QB02302			QB02303		
Winding Voltage	V	24	40	130	24	40	130
Stall Torque (continuous) ⁽¹⁾	oz-in	133	140	125	187	188	172
	Nm	0.94	0.99	0.88	1.32	1.33	1.22
Rated Power ⁽¹⁾	W	214	309	333	221	307	460
Rated Torque ⁽¹⁾	oz-in	120	118	81	177	171	121
	Nm	0.85	0.84	0.57	1.25	1.21	0.85
Rated Speed	RPM	2400	3550	5550	1700	2400	5150
Peak Torque	oz-in	1024	1174	1205	1215	1562	1562
	Nm	7.23	8.29	8.51	8.58	11.03	11.03
Rated Phase Current	A	13.7	12.1	3.6	14.9	11.6	5.0
Peak Current	A	98	90	43	87	89	51
Torque Constant (±10%)	oz-in/A	10.5	13.1	28.0	14.0	17.5	30.7
	Nm/A	0.074	0.093	0.198	0.099	0.123	0.217
Voltage Constant (±10%)	V/kRPM	7.76	9.70	20.70	10.33	12.92	22.74
	V/rad/s	0.074	0.093	0.198	0.099	0.123	0.217
Cogging Torque (max.)	oz-in	5.1			6.2		
	Nm	0.036			0.044		
Rotor Inertia	oz-in-s ²	3.19E-03			4.23E-03		
	kg-m ²	2.2E-05			3.0E-05		
Motor Constant	oz-in/√W	21.2	22.3	19.8	26.6	26.7	24.4
	Nm/√W	0.149	0.157	0.140	0.188	0.189	0.173
Elect. Time Constant	ms	1.11	1.31	0.92	1.38	1.39	1.10
Mech. Time Constant	ms	0.93	0.84	1.066	0.79	0.78	0.93
Thermal Resistance ⁽¹⁾	°C/W	1.59			1.26		
Terminal Resistance (±12%)	Ohm	0.25	0.35	1.99	0.28	0.43	1.58
Terminal Inductance (±30%)	mH	0.27	0.45	1.84	0.38	0.60	1.74
Motor Weight (±8%)	lb	2.7	2.7	2.6	3.3	3.3	3.2
	kg	1.22	1.23	1.19	1.5	1.5	1.47

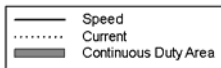
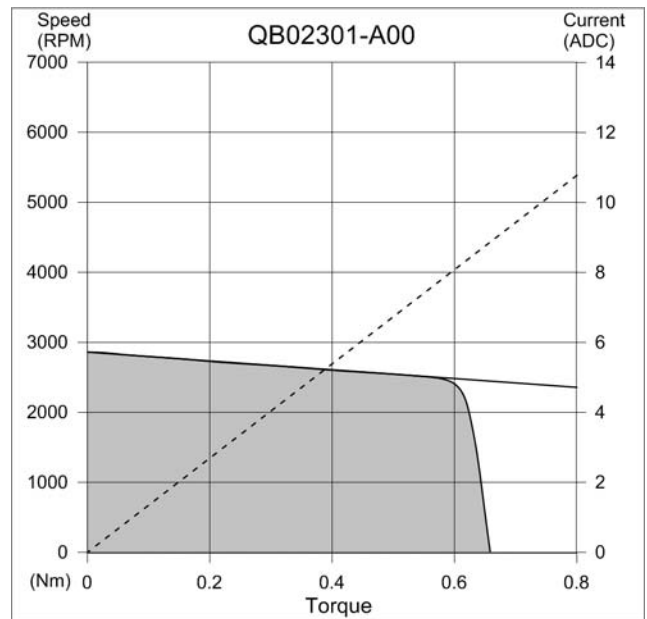
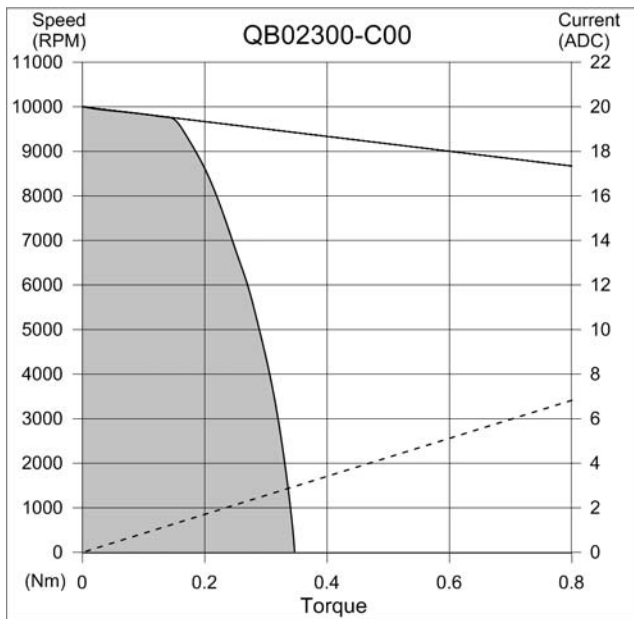
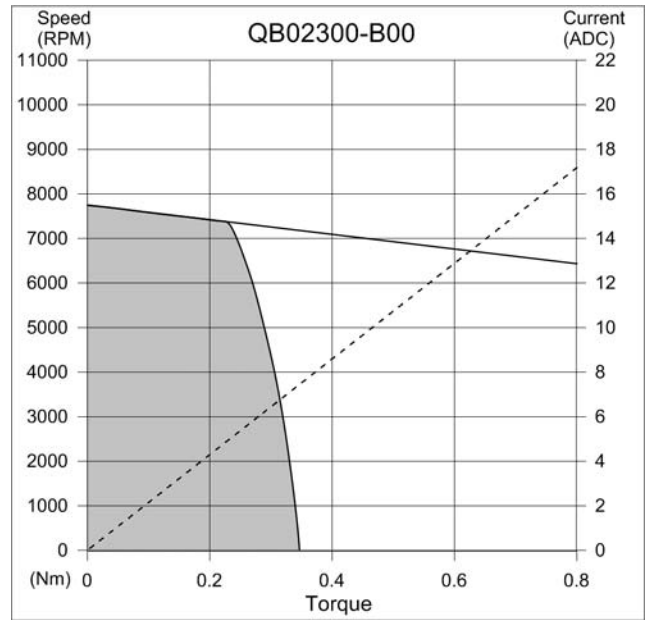
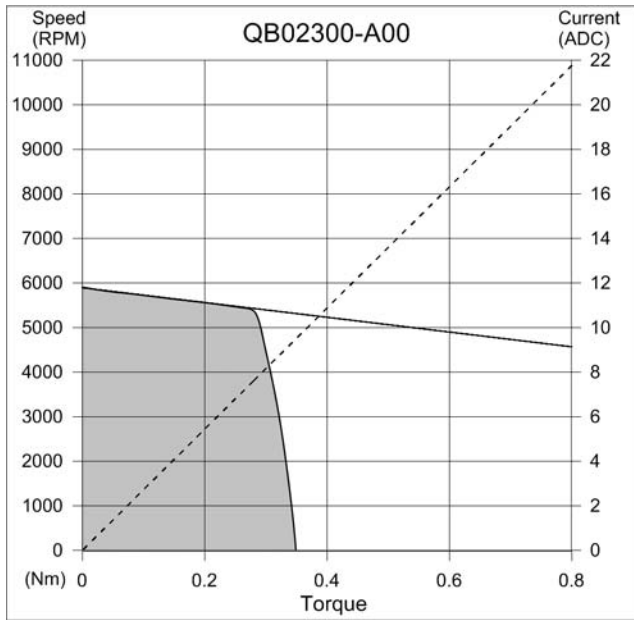
(1) Motor mounted to 152 mm sq. x 6.35 mm (6 in. sq x 0.25 in.) aluminum plate in still air; maximum operating temperature (ambient + rise) is 130 °C.

(2) Storage temperature range is -55 to 150 °C.

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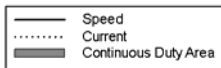
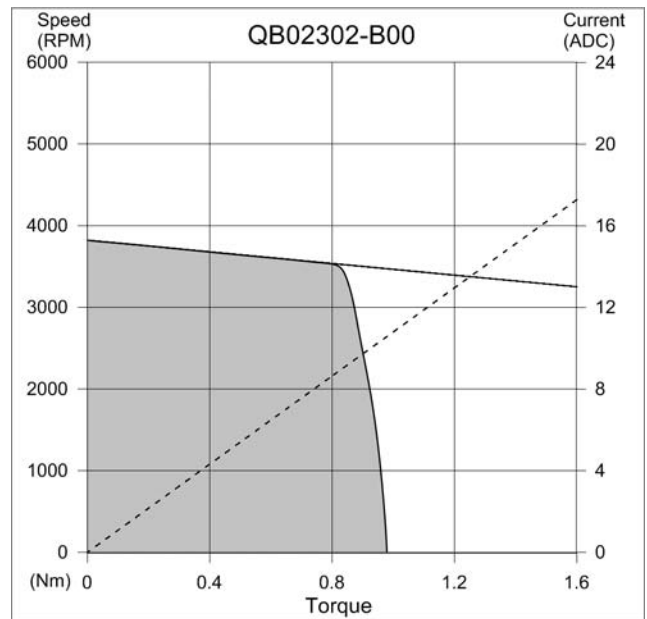
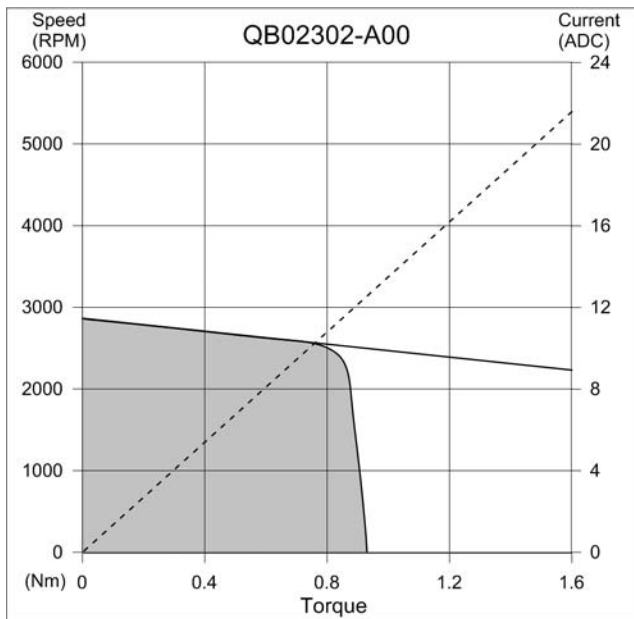
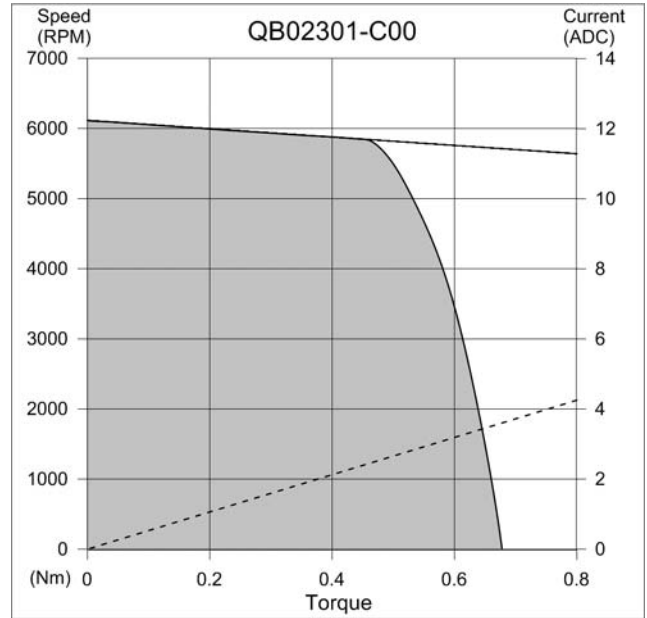
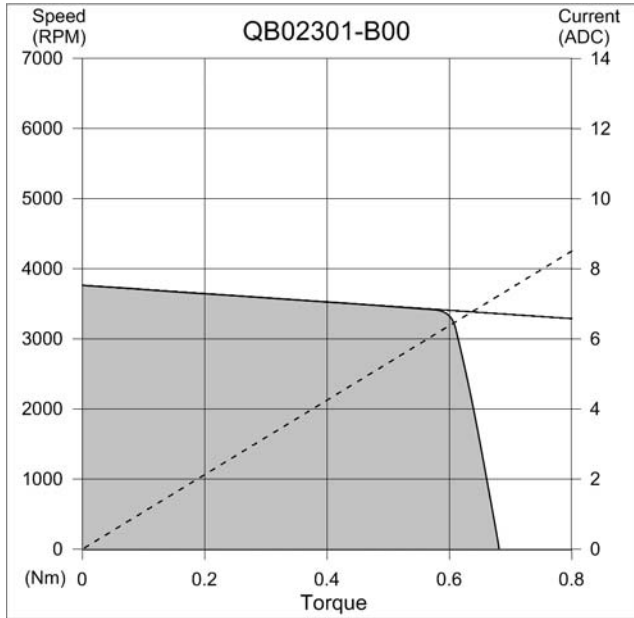
PERFORMANCE



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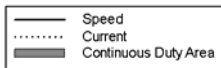
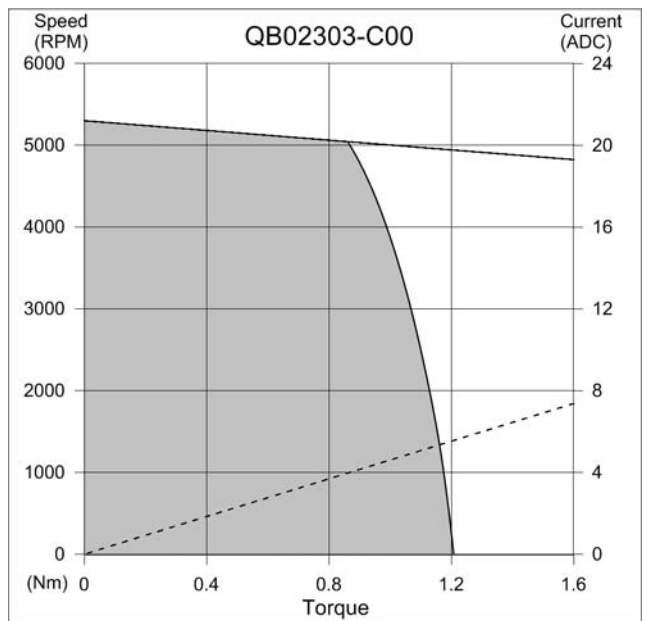
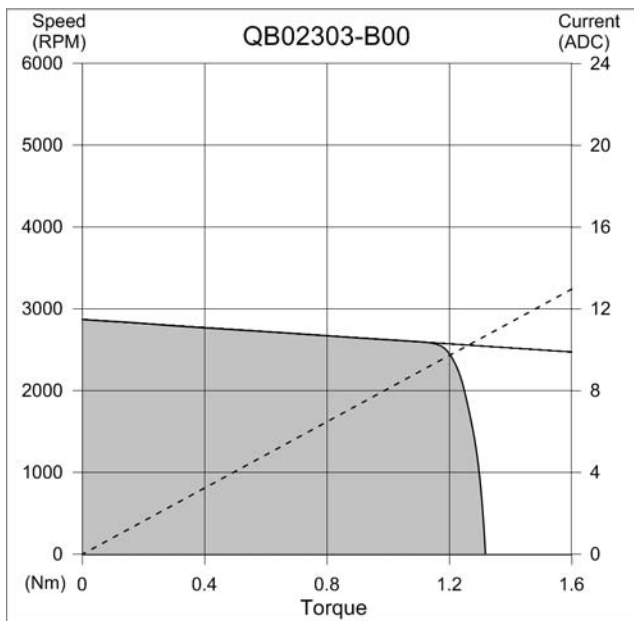
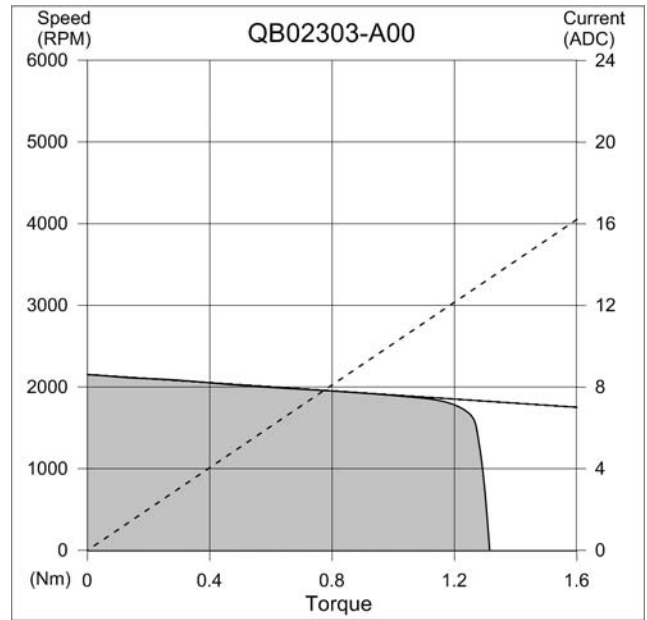
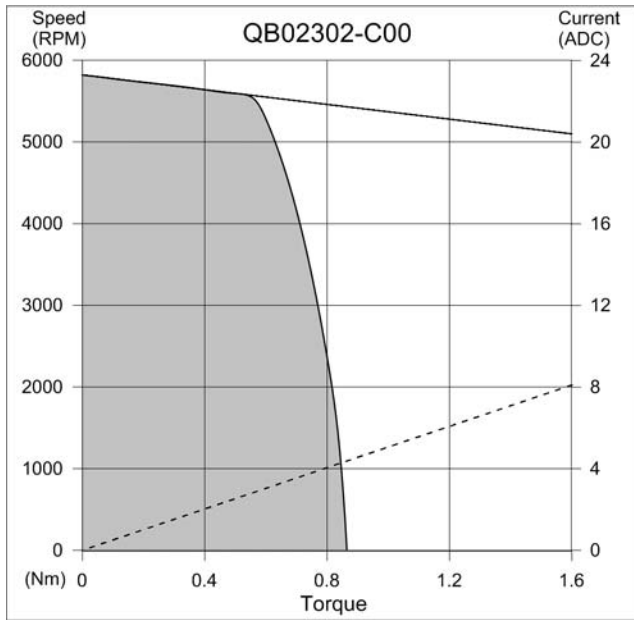
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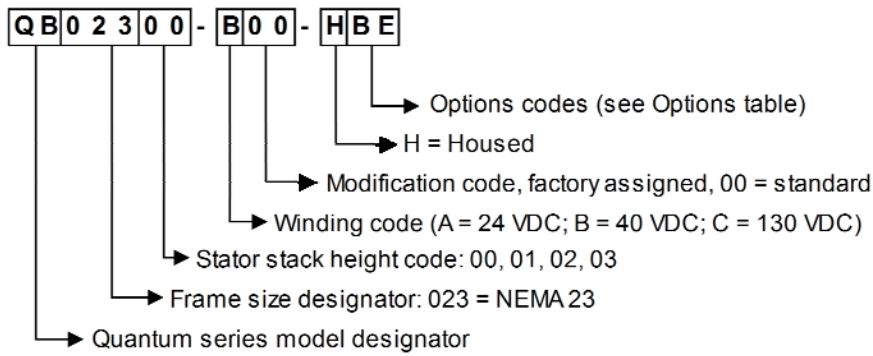
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MODEL NUMBERING



Options
E = Encoder
B = Holding brake
C = Motor connector
G = Gearbox
I = IP65 rating (IP44 std.)
P = Ruggedized housing
R = Resolver