

Brushless Servo Motors

Quantum QB17 Series Housed Brushless Servo Motors

NEMA Size 17 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 QB017 series are six-pole motors with 3-phase delta-wound stators that conform to NEMA size 17 mounting standards. Rated torques range from 0.05 up to 0.28 Nm, and rated power extends from 68 up to 213 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 17 frame size with four stack lengths
- Rated torque from 0.05 up to 0.28 Nm; rated power from 68 up to 213 W
- Three standard windings, 3-phase delta wound, rated 24, 40, and 130 V
- 6-pole rare-earth NdFeB magnets maximize torque production
- Integrated Hall commutation sensors
- Computer optimized design maximizes power and torque density



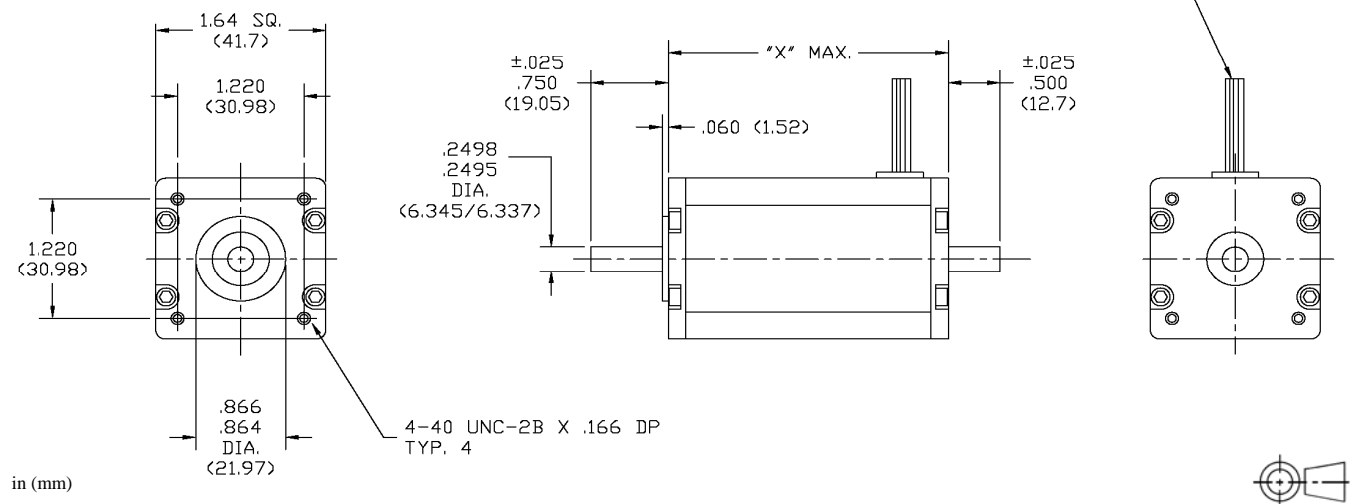
Options

- 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 17 high performance brushless servo motor
- Rated power from 68 up to 213 W and rated torque from 0.05 up to 0.28 Nm
- Standard winding voltage choices of 24, 40, and 130 V

DIMENSIONS

MODEL	LENGTH "X"
QB01700	2.125 (54.0)
QB01701	2.625 (66.7)
QB01702	3.125 (79.4)
QB01703	3.625 (92.1)



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SPECIFICATIONS

Model No.		QB01700			QB01701		
Winding Voltage	V	24	40	130	24	40	130
Stall Torque (continuous) ⁽¹⁾	oz-in	10.8	10.2	9.7	23.0	21.3	18.4
	Nm	0.08	0.07	0.07	0.16	0.15	0.13
Rated Power ⁽¹⁾	W	72	77	68	98	111	102
Rated Torque ⁽¹⁾	oz-in	8	7	7	20	17	12
	Nm	0.06	0.05	0.05	0.14	0.12	0.09
Rated Speed	RPM	11700	13200	13800	6700	9100	11200
Peak Torque	oz-in	55	55	65	84	84	84
	Nm	0.39	0.39	0.46	0.59	0.59	0.59
Rated Phase Current	A	5.3	3.2	1.5	6.8	4.6	1.4
Peak Current	A	24	16	12	22	17	8
Torque Constant (±10%)	oz-in/A	2.3	3.5	5.4	3.8	5.0	10.8
	Nm/A	0.016	0.025	0.038	0.027	0.036	0.076
Voltage Constant (±10%)	V/kRPM	1.70	2.57	3.97	2.85	3.73	7.95
	V/rad/s	0.016	0.025	0.038	0.027	0.036	0.076
Cogging Torque (max.)	oz-in	0.99			1.50		
	Nm	0.007			0.011		
Rotor Inertia	oz-in-s ²	1.45E-04			2.85E-04		
	kg-m ²	1.0E-06			2.0E-06		
Motor Constant	oz-in/√W	2.99	2.84	2.80	5.34	4.94	4.28
	Nm/√W	0.021	0.020	0.020	0.038	0.035	0.030
Elect. Time Constant	ms	0.43	0.39	0.39	0.55	0.47	0.35
Mech. Time Constant	ms	2.10	2.33	2.54	1.33	1.55	2.07
Thermal Resistance ⁽¹⁾	°C/W	4.7			3.29		
Terminal Resistance (±12%)	Ohm	0.59	1.49	3.69	0.52	1.04	6.32
Terminal Inductance (±30%)	mH	0.25	0.58	1.42	0.29	0.49	2.24
Motor Weight (±8%)	lb	0.5	0.5	0.5	0.8	0.8	0.8
	kg	0.24	0.23	0.23	0.36	0.35	0.34
Model No.		QB01702			QB01703		
Winding Voltage	V	24	40	130	24	40	130
Stall Torque (continuous) ⁽¹⁾	oz-in	33.9	31.8	32.5	43.0	45.4	43.6
	Nm	0.24	0.22	0.23	0.30	0.32	0.31
Rated Power ⁽¹⁾	W	108	137	164	112	177	213
Rated Torque ⁽¹⁾	oz-in	31	27	24	40	39	32
	Nm	0.22	0.19	0.17	0.28	0.28	0.22
Rated Speed	RPM	4700	6850	9200	3850	6100	9100
Peak Torque	oz-in	230	238	238	249	262	262
	Nm	1.62	1.68	1.68	1.76	1.85	1.85
Rated Phase Current	A	7.5	5.4	1.9	8.5	7.0	2.8
Peak Current	A	45	38	15	40	45	18
Torque Constant (±10%)	oz-in/A	5.1	6.3	15.9	6.3	7.0	17.2
	Nm/A	0.036	0.044	0.112	0.044	0.050	0.121
Voltage Constant (±10%)	V/kRPM	3.76	4.63	11.72	4.62	5.20	12.72
	V/rad/s	0.036	0.044	0.112	0.044	0.050	0.121
Cogging Torque (max.)	oz-in	1.84			2.27		
	Nm	0.013			0.016		
Rotor Inertia	oz-in-s ²	4.25E-04			5.65E-04		
	kg-m ²	3.0E-06			4.0E-06		
Motor Constant	oz-in/√W	6.98	6.56	6.70	8.06	8.51	8.18
	Nm/√W	0.049	0.046	0.047	0.057	0.060	0.058
Elect. Time Constant	ms	0.63	0.56	0.58	0.63	0.70	0.65
Mech. Time Constant	ms	1.16	1.31	1.26	1.15	1.04	1.12
Thermal Resistance ⁽¹⁾	°C/W	2.58			2.14		
Terminal Resistance (±12%)	Ohm	0.53	0.91	5.60	0.60	0.68	4.42
Terminal Inductance (±30%)	mH	0.34	0.51	3.27	0.38	0.48	2.85
Motor Weight (±8%)	lb	1.1	1.1	1.1	1.3	1.3	1.3
	kg	0.48	0.48	0.48	0.60	0.61	0.60

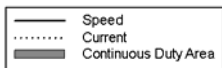
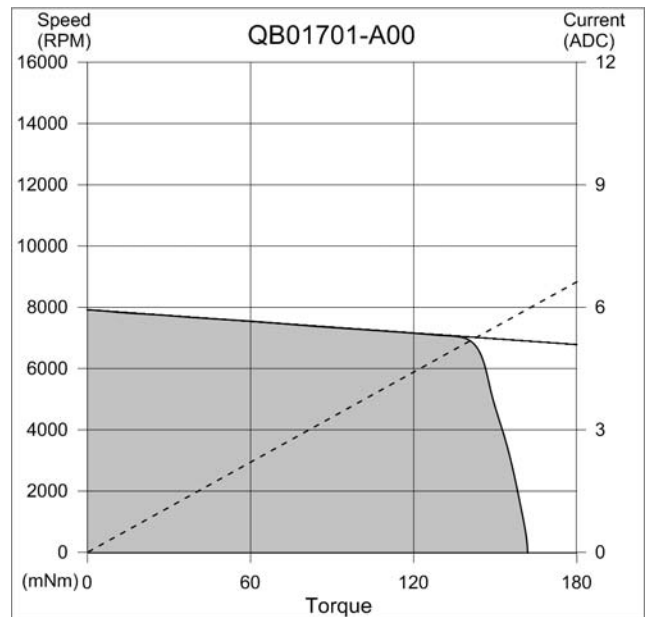
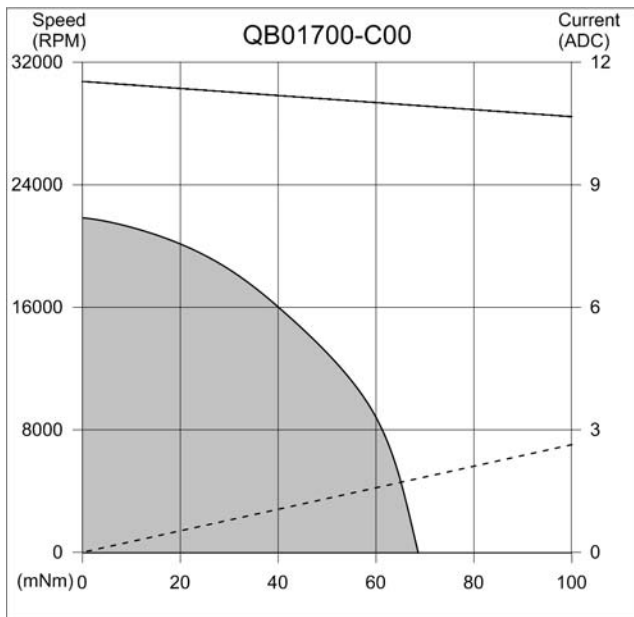
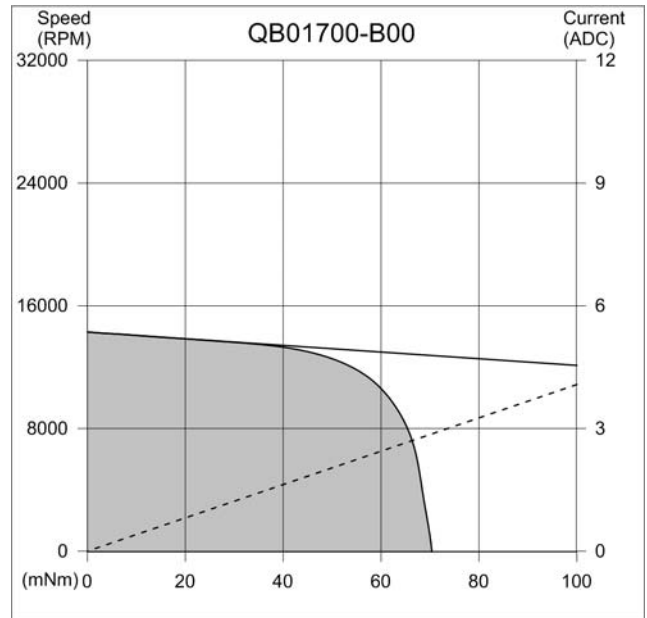
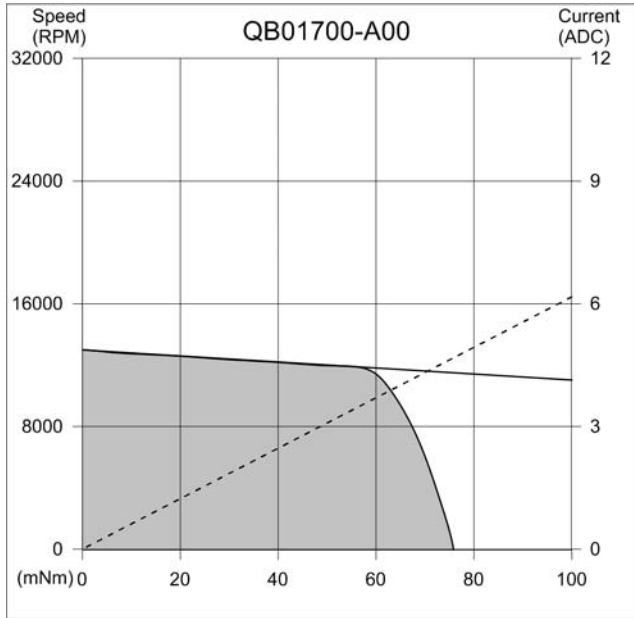
(1) Motor mounted to 152 mm sq. x 6.35 mm (6 in. sq x 0.25 in.) aluminum plate in still air; maximum operating temperature (ambient + rise) is 130 °C.

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

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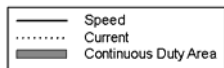
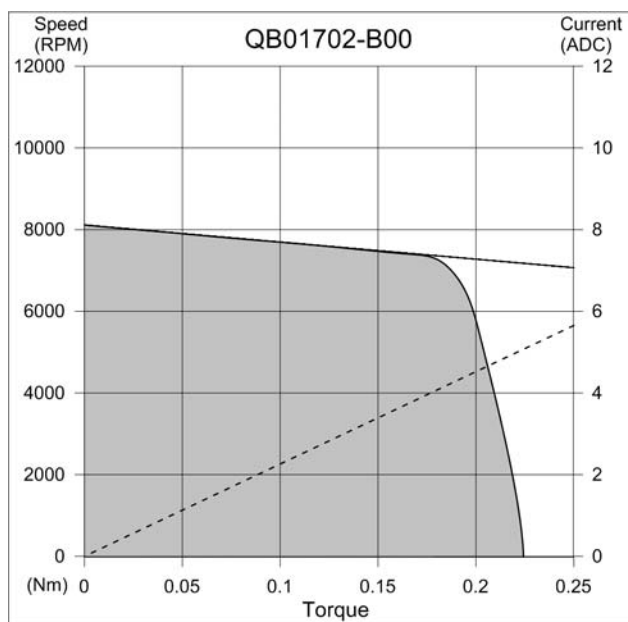
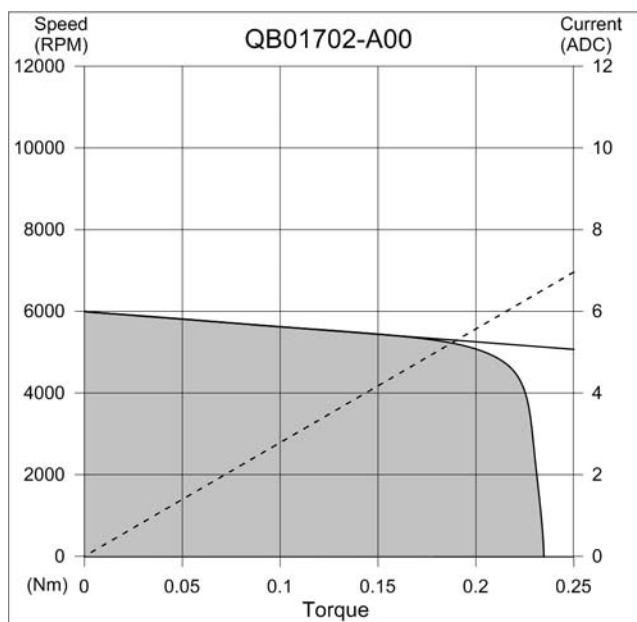
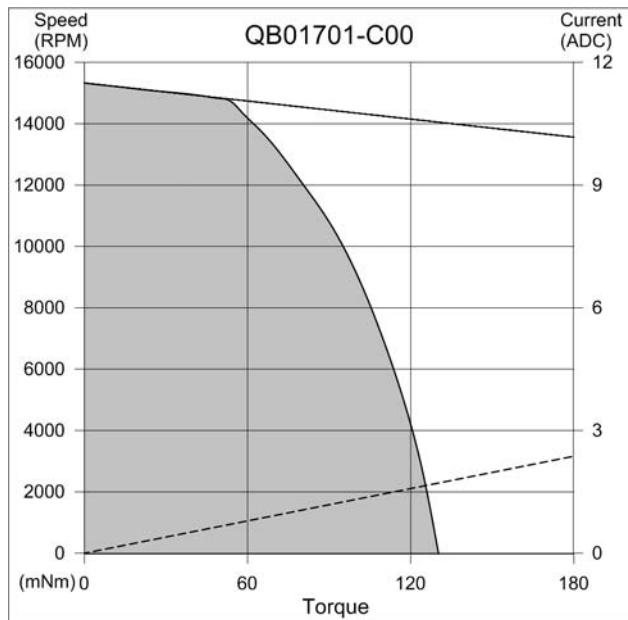
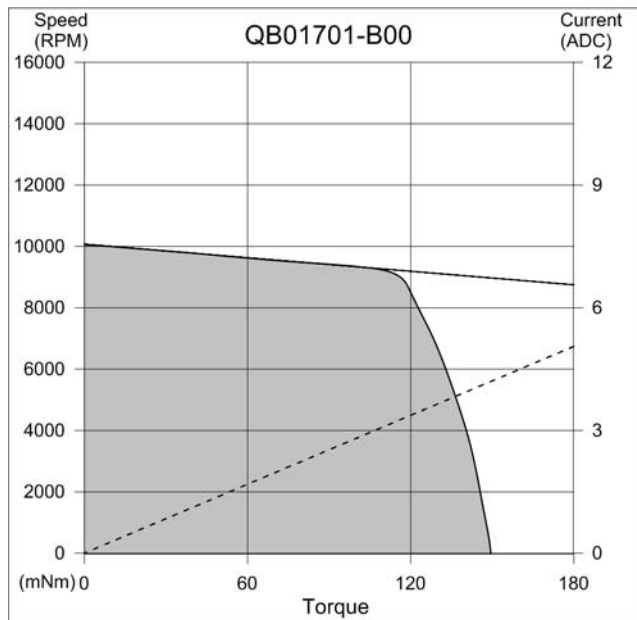
PERFORMANCE



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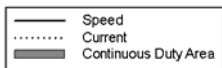
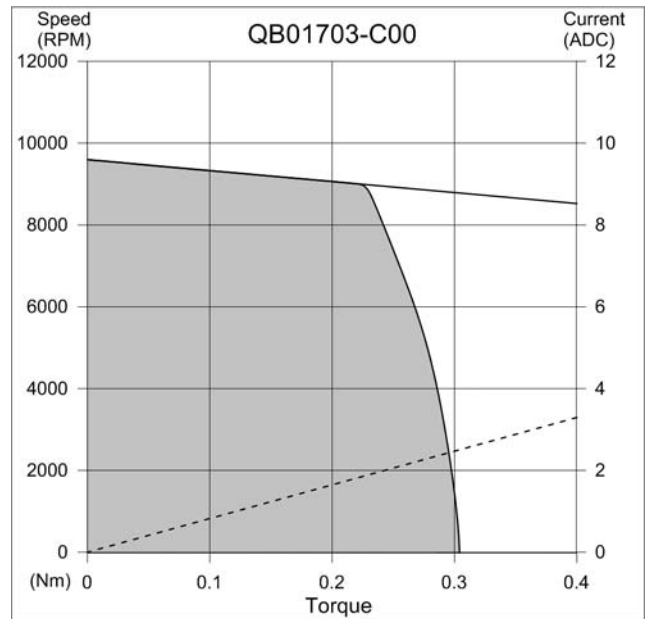
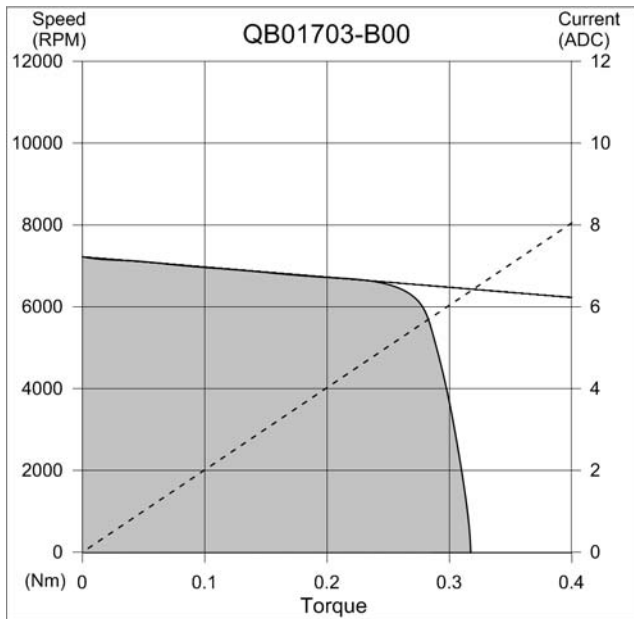
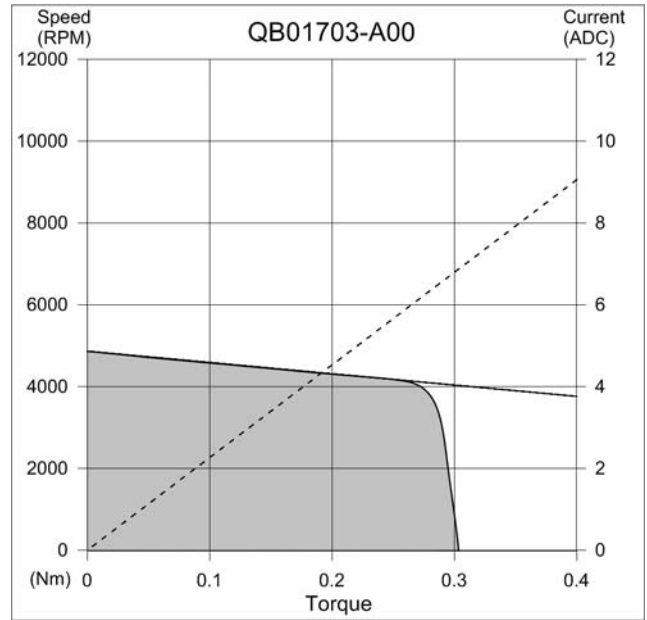
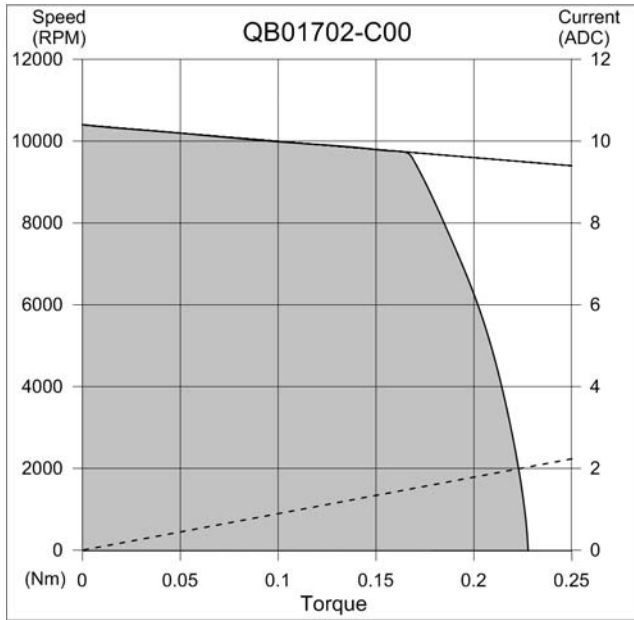
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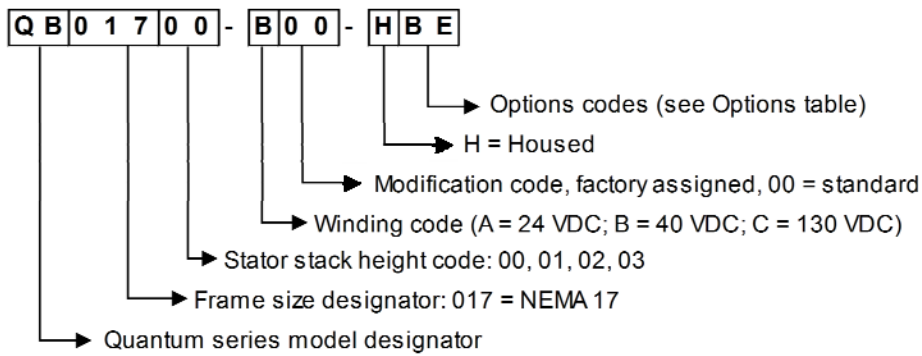
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MODEL NUMBERING



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