

# Torque Motors

## HT0380x Series High Torque Brushless Torque Motors

*High Torque Density, Sinusoidal BEMF, Frameless*

Allied Motion's **HT (High Torque) series of frameless brushless torque motors** are available in nine diameters from 19.3 mm (0.76 in) up to 127 mm (5 in). The HT0380x series is featured in this datasheet.

Each frame size is available in up to six stack lengths, enabling designers to choose from a number of performance levels in each frame size.

Continuous stall torque ratings range from 0.007 Nm (1.0 oz-in) up to 9 Nm (1277 oz-in). Winding voltage is 24 V and 100 V for the largest two frame sizes. Integral Hall effect commutation sensors are provided as standard, and require no setup on the part of the user.

The standard HT series motors are especially well suited for direct integration into applications that demand high power density motors with minimum size, weight, and inertia. Non-standard models of the HT series are also available in stator diameters up to 239 mm (9.42 in).

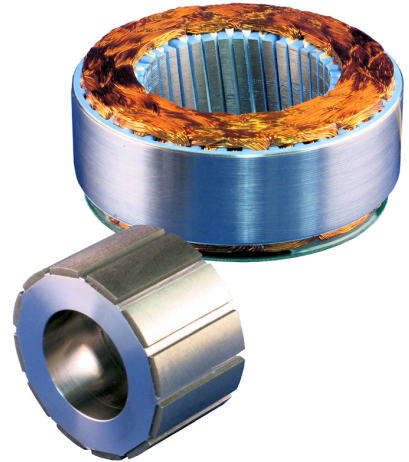
Typical applications for the HT series are semiconductor manufacturing equipment, medical systems, including life support, robotic systems, laser sighting and control, and cryogenic cooling pumps, to name a few.

### Features & Benefits

- Frameless high torque-to-inertia motors with continuous stall torque rating up to 9 Nm (1277 oz-in)
- Frame diameters from 19.3 mm (0.76 in) to 127mm (5 in)
- Continuous power ratings from 7 W up to 665 W
- Class F (155 °C) winding insulation temperature rating
- Rare-earth neodymium iron boron magnets as standard
- Integral hall-effect commutation sensors as standard

### Options

- Samarium Cobalt magnets for very high temperature environments.
- Available non-standard designs with stator diameter up to 239 mm (9.42 in)
- Alternate winding voltages
- Housed versions with feedback (encoder or resolver)
- Custom design versions



- High torque density frameless brushless motors
- Continuous stall torque from 0.007 Nm (1.0 oz-in) through 9 Nm (1277 oz-in)
- Continuous power ratings from 7 W through 665 W.

## SPECIFICATIONS SUMMARY

Model	Units	HT0080x	HT0100x	HT0150x	HT0200x	HT0230x	HT0250x	HT0300x	HT0380x	HT0500x
Rated Power	W	7 - 13	11 - 26	31 - 71	48 - 97	56 - 129	59 - 167	89 - 291	170 - 383	271 - 665
Stall Torque (continuous)	oz-in	1.1 - 3.0	3.4 - 12.7	7.5 - 36.2	17.9 - 93.2	35.9 - 175.8	30.6 - 174.8	57.3 - 317.9	111.8 - 653.8	226 - 1277
	Nm	0.008 - 0.021	0.024 - 0.09	0.053 - 0.256	0.127 - 0.658	0.254 - 1.242	0.216 - 1.235	0.405 - 2.245	0.789 - 4.617	1.60 - 9.02
No-load Speed	RPM	10891 - 18298	4796 - 8510	2713 - 6897	1429 - 3948	618 - 1904	847 - 1954	797 - 1857	545 - 1568	419 - 1424
Winding Voltage	VDC	24							100	

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## HT380x Series High Torque Frameless Brushless Torque Motors

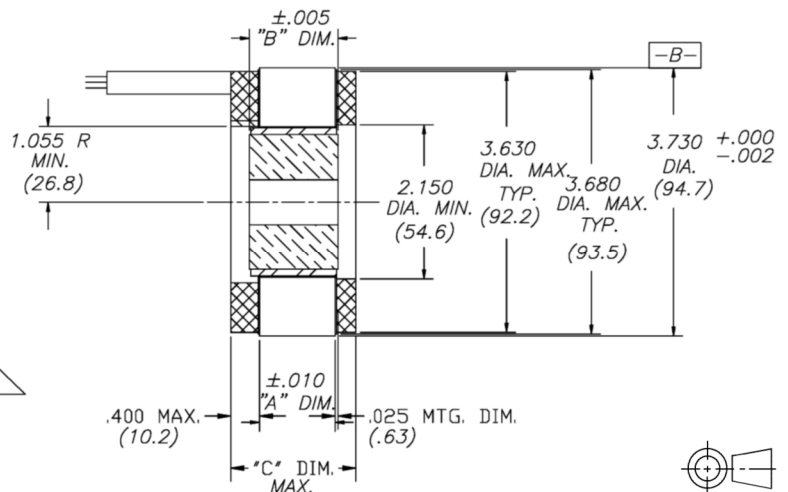
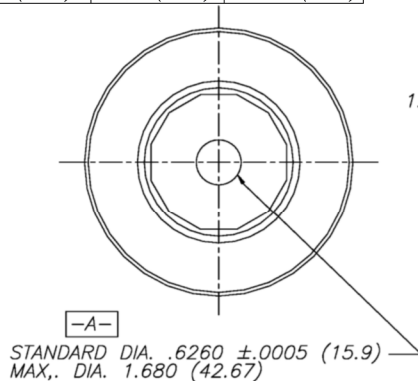
### SPECIFICATIONS

Model No.		HT03800-A00	HT03801-A00	HT03802-A00	HT03803-A00	HT03804-A00	HT03805-A00
Stall Torque (continuous) <sup>(1)</sup>	oz-in	111.8	223.2	329.5	378	532.8	653.8
	Nm	0.789	1.576	2.327	2.67	3.762	4.617
Demag Torque (±25%)	oz-in	674	1681	2392	3477	4279	5132
	Nm	4.7	11.8	16.9	24.5	30.2	36.2
Rated Power <sup>(1)</sup>	W	170	241	276	312	349	383
Motor Constant	oz-in/√W	17.84	34.33	49.06	62.31	74.46	87.59
	Nm/√W	0.126	0.242	0.346	0.440	0.526	0.619
Elect. Time Constant	ms	1.0	1.9	2.4	2.9	3.4	3.8
Mech. Time Constant	ms	3.4	1.8	1.3	1.1	1.0	0.8
Thermal Resistance	°C/W	1.8	1.6	1.5	1.4	1.3	1.2
Cogging Torque (max.)	oz-in	2.90	6.10	8.10	10.90	13.90	16.50
	Nm	0.020	0.043	0.057	0.077	0.098	0.117
Rotor Inertia	oz-in-s <sup>2</sup>	8.0E-3	1.6E-2	2.4E-2	3.2E-2	4.0E-2	4.7E-2
	kg-m <sup>2</sup>	5.6E-5	1.1E-4	1.7E-4	2.2E-4	2.8E-4	3.3E-4
Weight	oz	17.4	31.2	44.6	56.2	73.3	89.9
	kg	0.49	0.88	1.27	1.59	2.08	2.55
Poles	-	12					
Winding Code	-	A					
Winding Voltage	V	100					
Peak Torque	oz-in	156	434	941	1554	1683	1827
	Nm	1.10	3.07	6.64	11.0	11.9	12.9
Peak Current	A	1.9	3.5	5.5	8.1	7.6	7.7
Torque Constant (±10%)	oz-in/A	82	125	172	191	221	237
	Nm/A	0.58	0.88	1.21	1.35	1.56	1.67
No-Load Speed	RPM	1568	1031	752	674	583	545
	rad/s	162	104	79	73	61	58
BEMF Constant (±10%)	V/kRPM	60.56	92.33	126.9	141.5	163.6	175.0
	V/rad/s	0.58	0.88	1.21	1.35	1.56	1.67
Terminal Resistance (±12%)	Ohms	21.08	13.23	12.24	9.44	8.83	7.30
Terminal Inductance (±30%)	mH	21.03	25.30	29.39	26.99	29.96	27.40

(1) Motor mounted to a 178 mm sq. x 6.35 mm (7.0 in. sq x 0.25 in.) thick aluminum plate and ambient temperature of 20 °C

### DIMENSIONS

MODEL	"A" DIM.	"B" DIM.	"C" DIM.
HT03800	.250(6.4)	.430(10.9)	1.013 (25.7)
HT03801	.650(16.6)	.830(21.1)	1.413 (35.9)
HT03802	1.050(26.7)	1.230(31.3)	1.813 (46.1)
HT03803	1.450(36.9)	1.630(41.4)	2.213 (56.2)
HT03804	1.850(47.0)	2.030(51.6)	2.613 (66.4)
HT03805	2.250(57.2)	2.430(61.8)	3.013 (76.5)

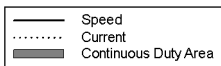
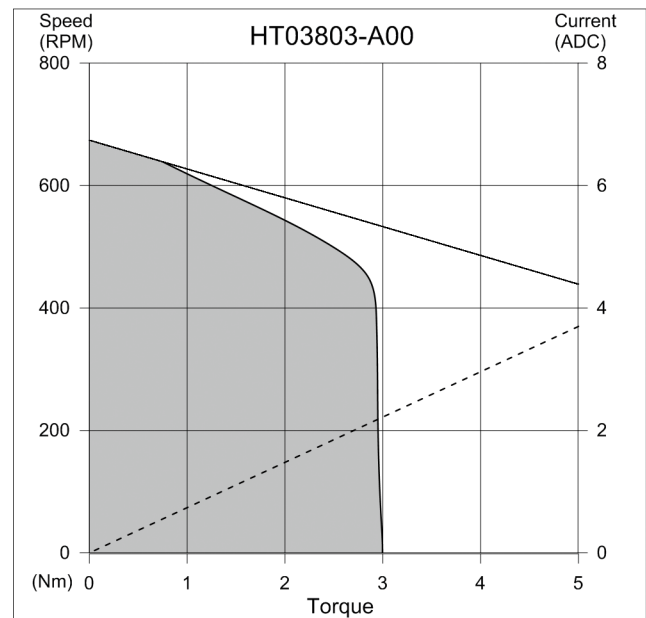
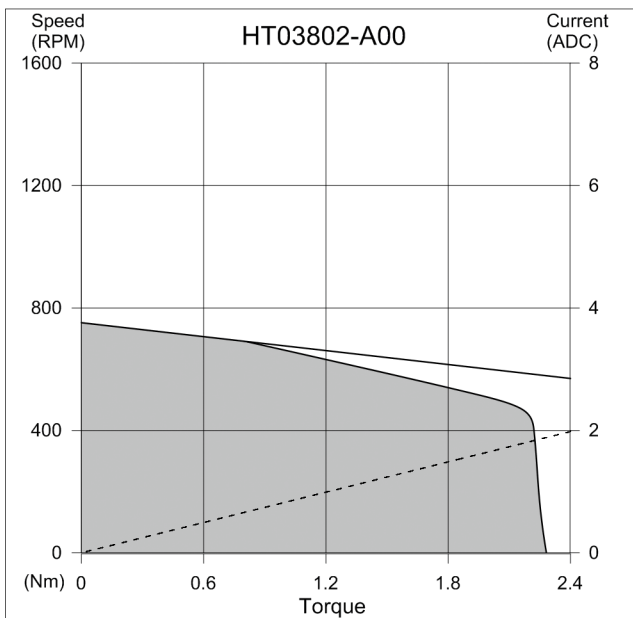
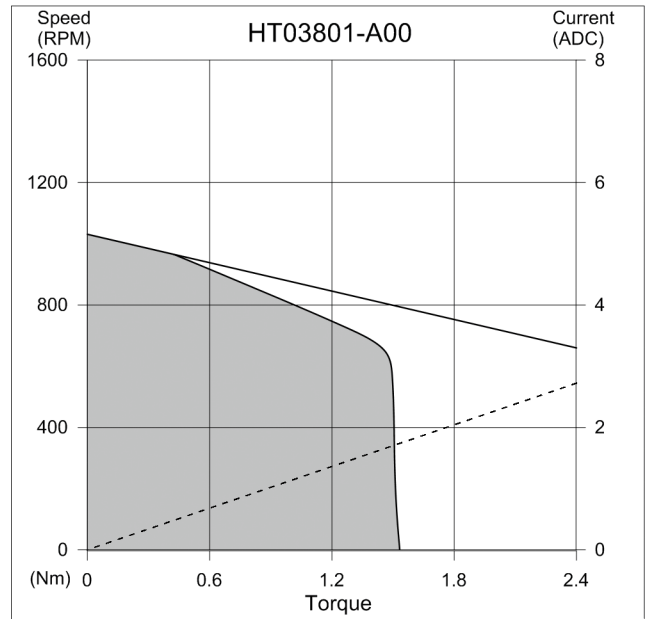
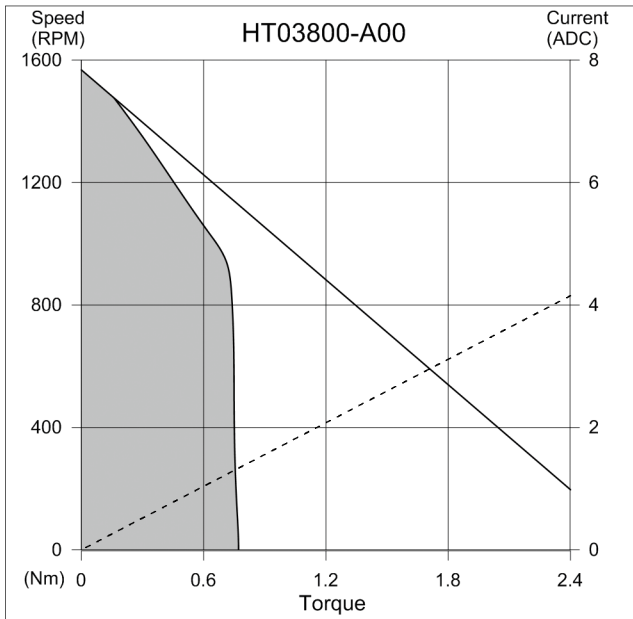


in (mm)

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## HT0380x Series High Torque Frameless Brushless Torque Motors

### PERFORMANCE



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### PERFORMANCE

