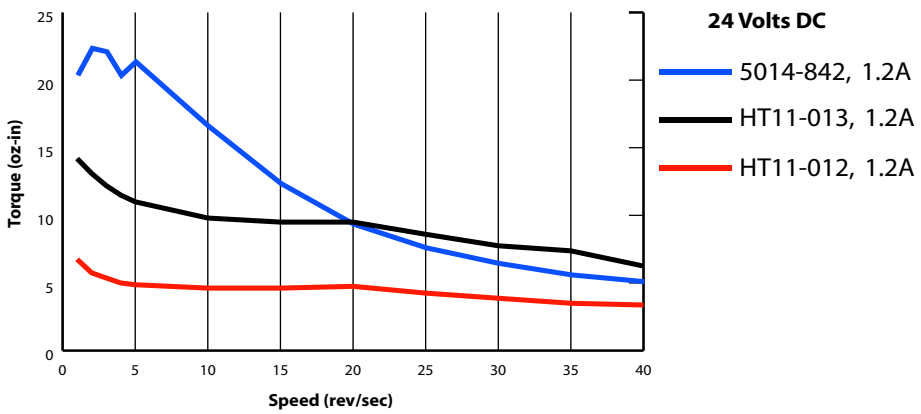
Recommended Motors

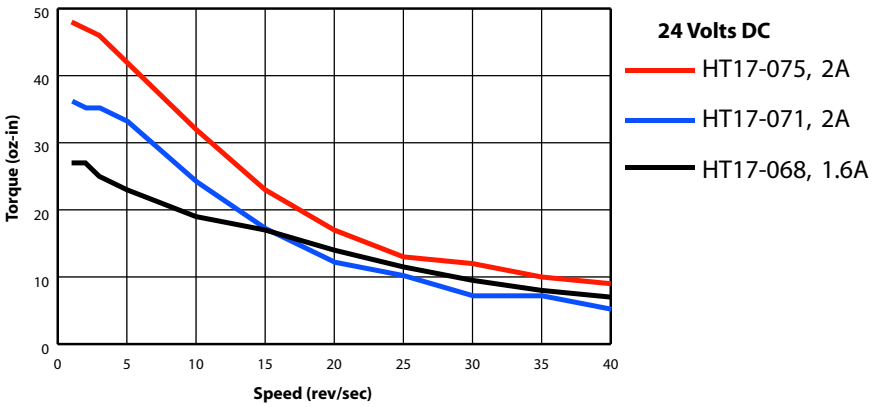
Part Number	Holding Torque oz-in	Holding Torque kg-cm	Drive Current Setting amps	Resistance ohms	Inductance mH	Rotor Inertia g-cm^2
HT11-012	7.0	0.50	1.2	1.4	1.4	8
HT11-013	15.0	1.08	1.2	2.0	2.6	18
5014-842	26.0	1.87	1.2	4.3	5.5	20
HT17-068	31.4	2.26	1.6	2.1	2.8	35
HT17-071	51.0	3.67	2.0	1.7	3.6	54
HT17-075	62.8	4.52	2.0	1.7	3.0	68
HT23-394	76.6	5.52	3.4	0.7	1.4	120
HT23-398	177	12.7	5.0	0.4	1.2	300
HT23-401	264	19.0	5.0	0.5	1.6	480
HT34-485	650	46.8	10.0	0.19	1.3	1400
HT34-486	1200	86.4	9.7	0.27	2.2	2680
HT34-487	1845	133	10.0	0.27	2.4	4000

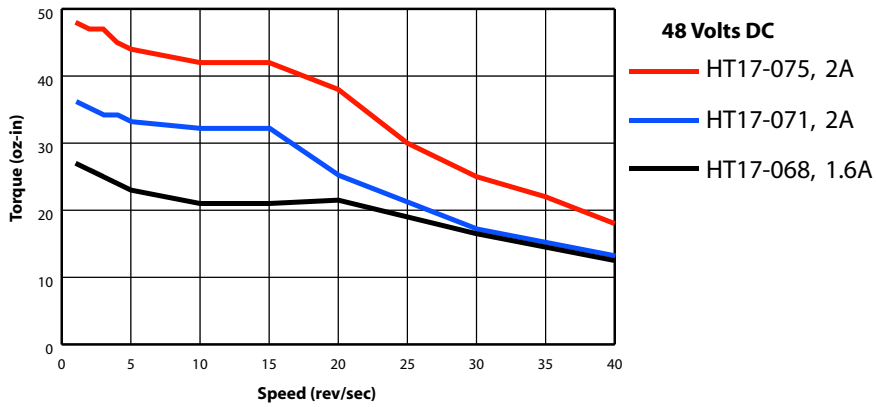
Note: The "Drive Current Setting" shown here differs from the rated current of each motor because the rated current is RMS and the drive current setting is peak sine. If you are using a motor not listed here, for best results set the drive current at the motor's rated current x 1.2.

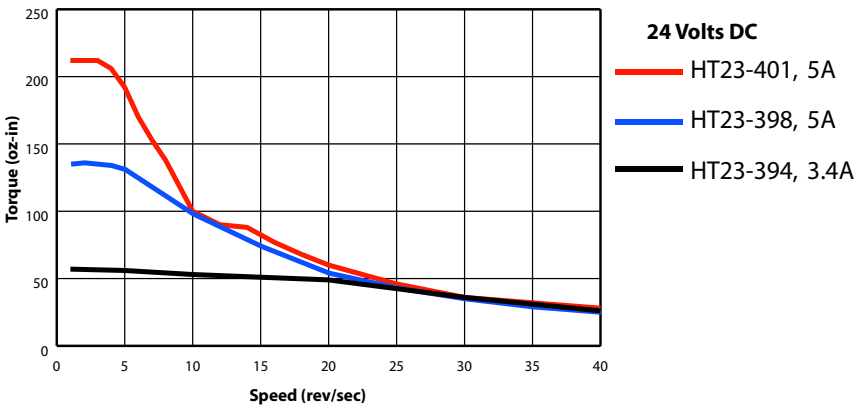
Torque-Speed Curves

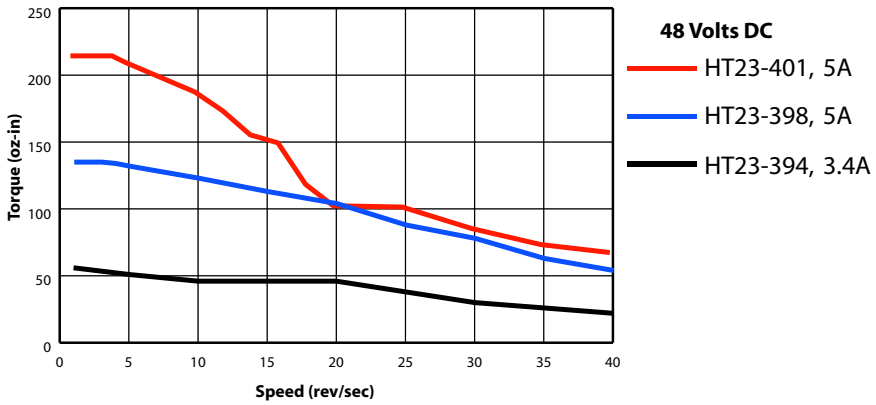
Note: all torque curves were measured at 20,000 steps/rev.

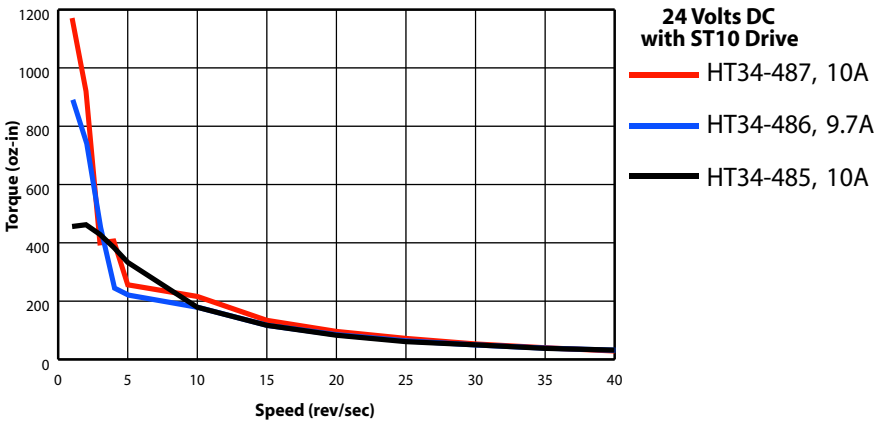


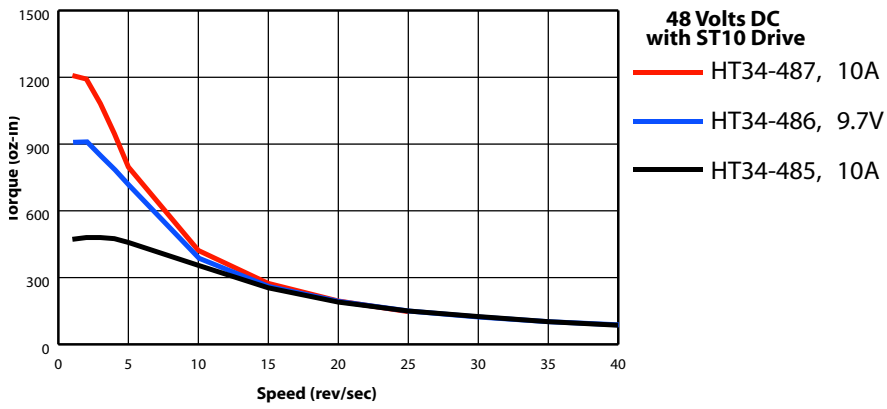

Torque (oz-in)
Speed (rev/sec)
0
10
20
30
40
50
0
5
10
15
20
25
30
35
40
24 Volts DC
HT17-075, 2A
HT17-071, 2A
HT17-068, 1.6A

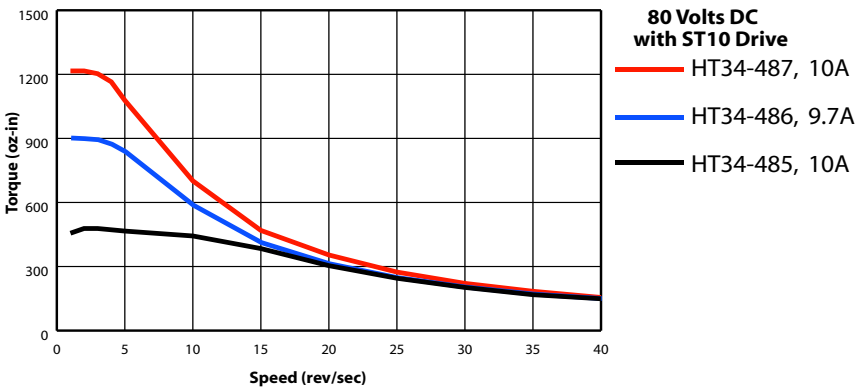

Torque (oz-in)
Speed (rev/sec)
0
10
20
30
40
50
0
5
10
15
20
25
30
35
40
48 Volts DC
HT17-075, 2A
HT17-071, 2A
HT17-068, 1.6A


Torque (oz-in)
Speed (rev/sec)
0
50
100
150
200
250
0
5
10
15
20
25
30
35
40
24 Volts DC
HT23-401, 5A
HT23-398, 5A
HT23-394, 3.4A


Torque (oz-in)
250
200
150
100
50
0
0
5
10
15
20
25
30
35
40
Speed (rev/sec)
48 Volts DC
HT23-401, 5A
HT23-398, 5A
HT23-394, 3.4A


Torque (oz-in)
1200
1000
800
600
400
200
0
0
5
10
15
20
25
30
35
40
Speed (rev/sec)
24 Volts DC
with ST10 Drive
HT34-487, 10A
HT34-486, 9.7A
HT34-485, 10A


Torque (oz-in)
1500
1200
900
600
300
0
0
5
10
15
20
25
30
35
40
Speed (rev/sec)
48 Volts DC
with ST10 Drive
HT34-487, 10A
HT34-486, 9.7V
HT34-485, 10A



Motor Heating

Step motors convert electrical power from the driver into mechanical power to move a load. Because step motors are not perfectly efficient, some of the electrical power turns into heat on its way through the motor. This heating is not so much dependent on the load being driven but rather the motor speed and power supply voltage. There are certain combinations of speed and voltage at which a motor cannot be continuously operated without damage.

We have characterized the recommended motors in our lab and provided curves showing the maximum duty cycle versus speed for each motor at commonly used power supply voltages. Please refer to these curves when planning your application.

Please also keep in mind that a step motor typically reaches maximum temperature after 30 to 45 minutes of operation. If you run the motor for one minute then let it sit idle for one minute, that is a 50% duty cycle. Five minutes on and five minutes off is also 50% duty. However, one hour on and one hour off has the effect of 100% duty because during the first hour the motor will reach full (and possibly excessive) temperature.

The actual temperature of the motor depends on how much heat is conducted, convected or radiated out of it. Our measurements were made in a 40°C (104°F) environment with the motor mounted to an aluminum plate sized to provide a surface area consistent with the motor power dissipation. Your results may vary.