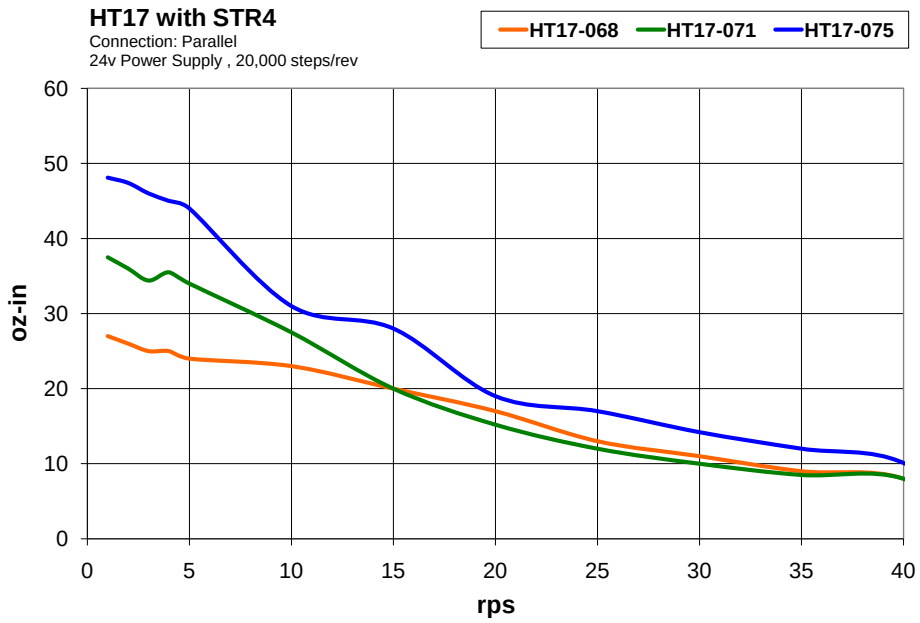
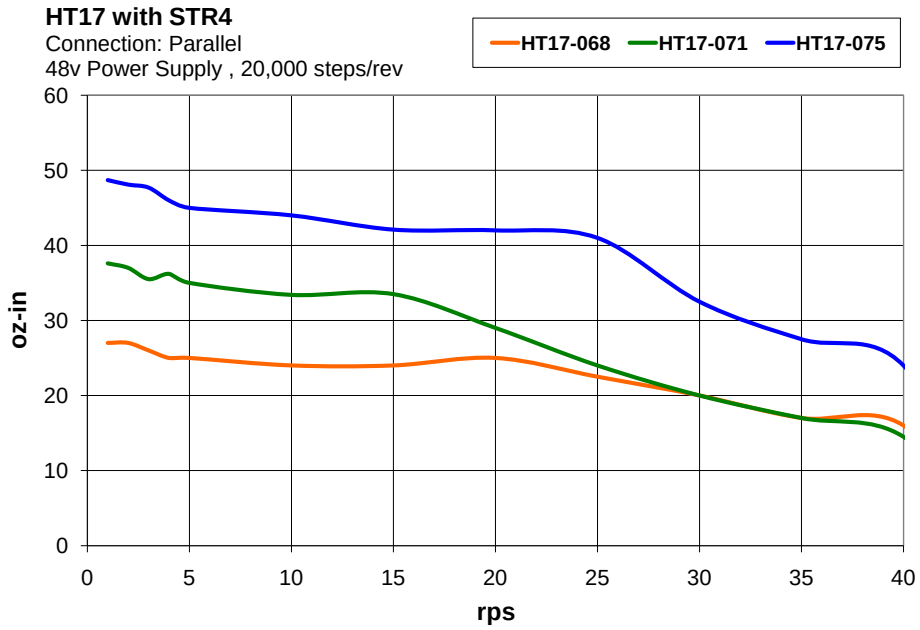
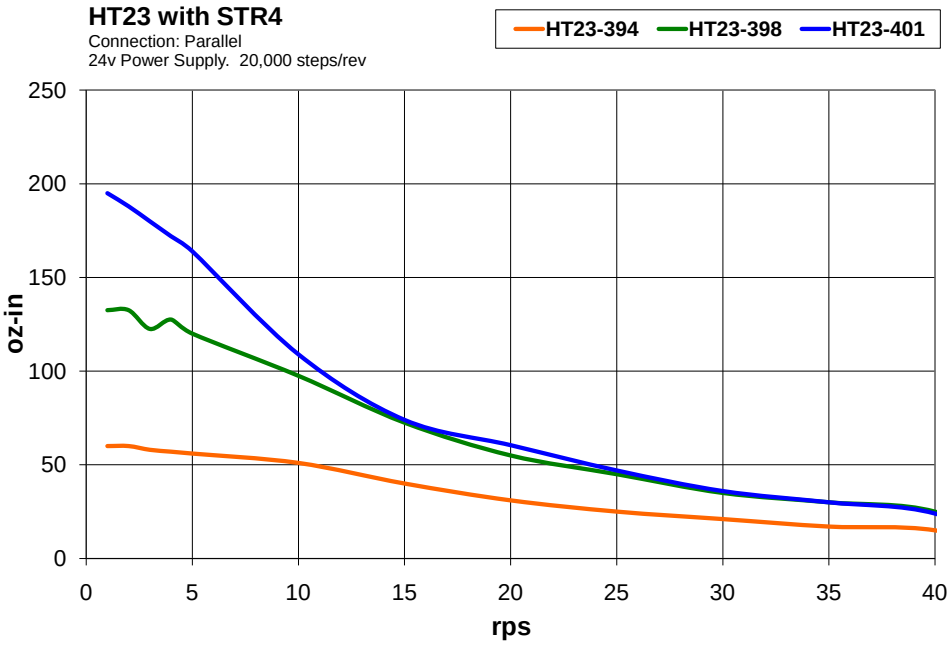
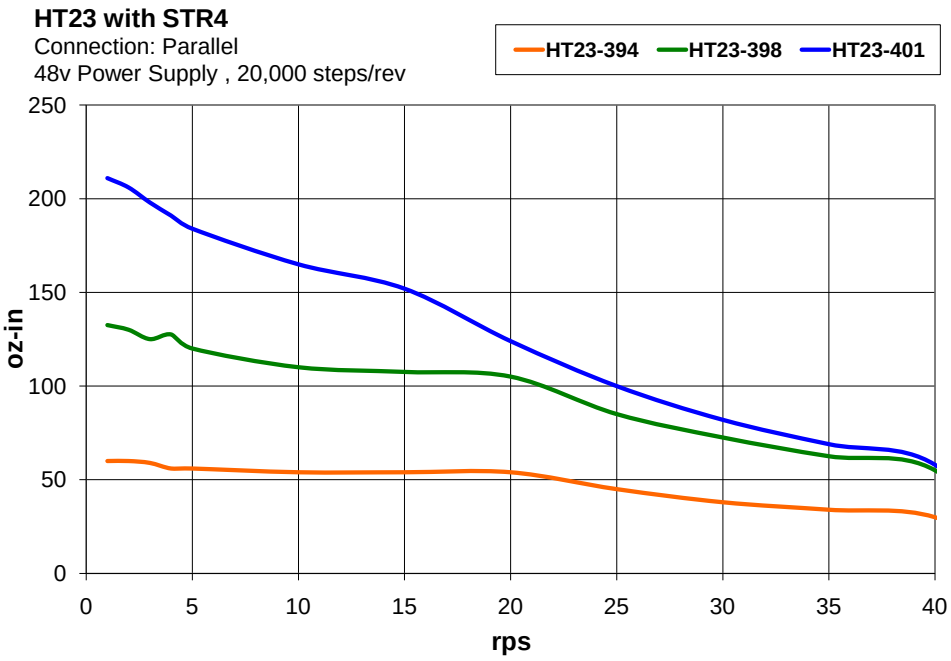
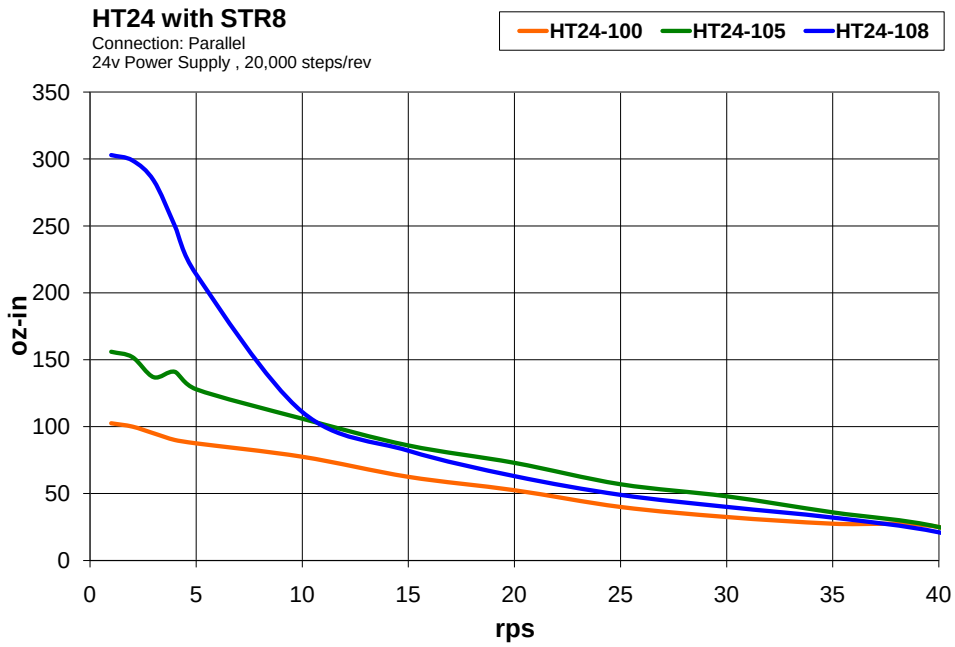
Torque-Speed Curves

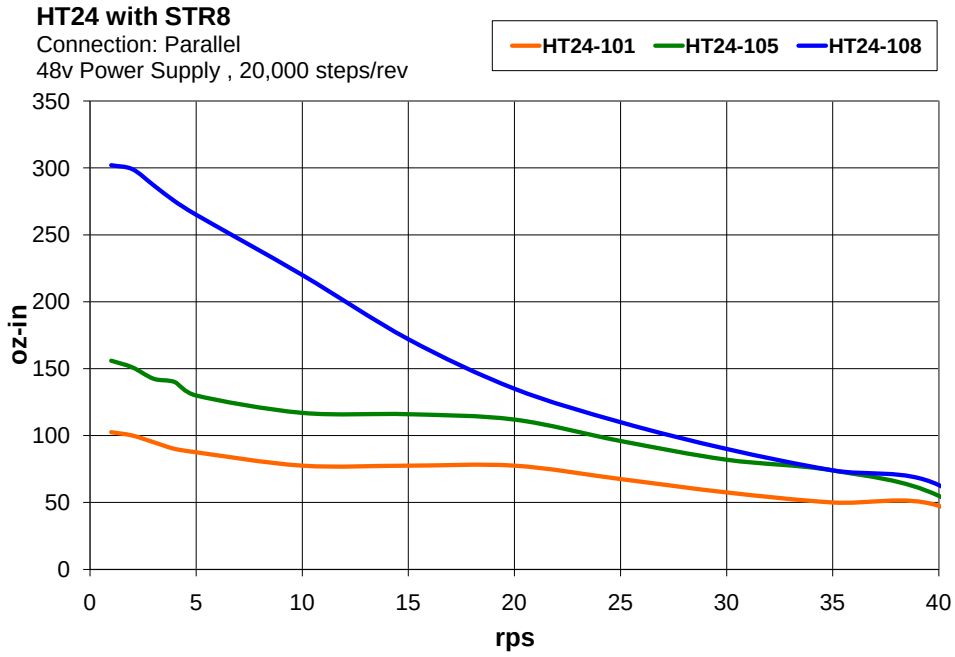


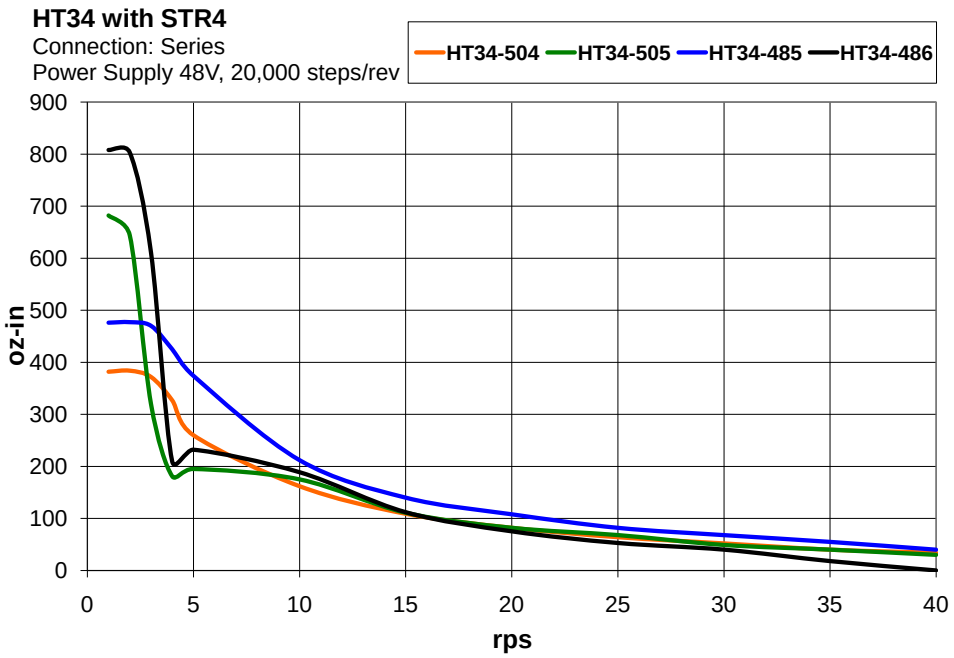


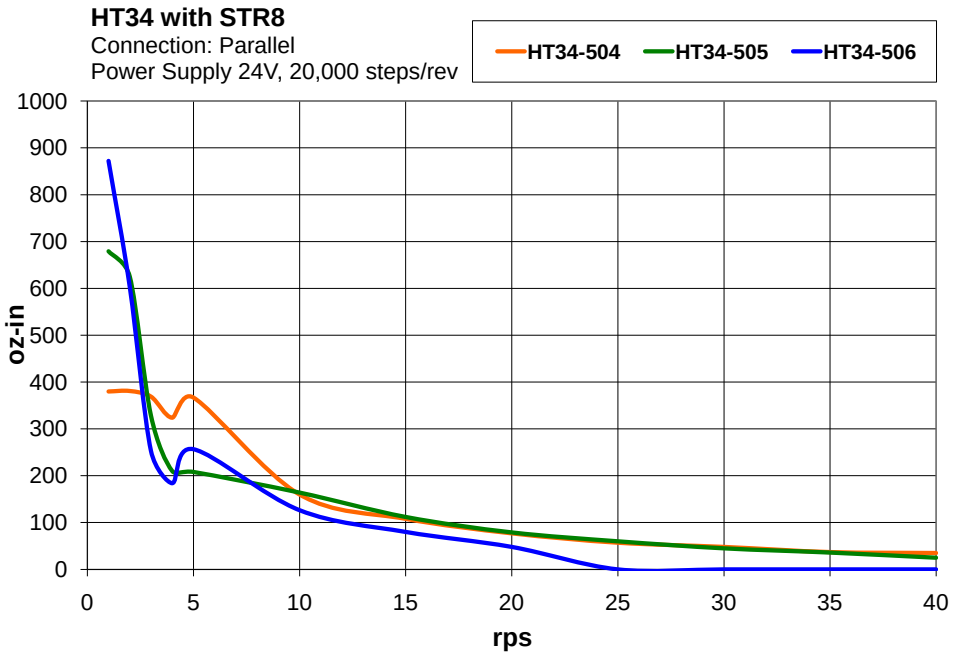

HT23 with STR4
Connection: Parallel
24v Power Supply. 20,000 steps/rev
HT23-394
HT23-398
HT23-401
oz-in
250
200
150
100
50
0
0
5
10
15
20
25
30
35
40
rps

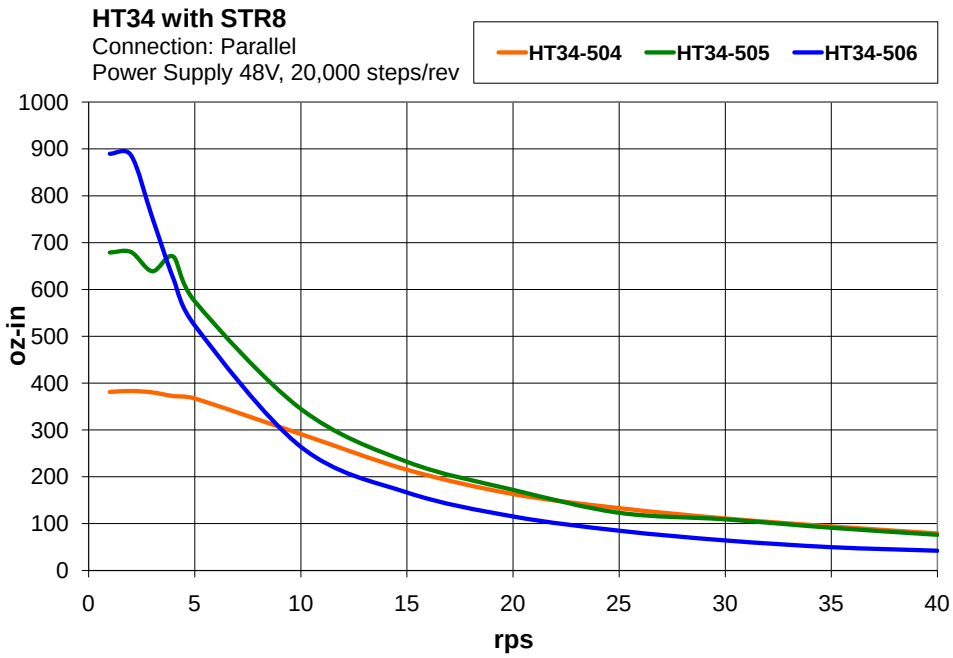

HT23 with STR4
Connection: Parallel
48v Power Supply , 20,000 steps/rev
HT23-394
HT23-398
HT23-401
oz-in
250
200
150
100
50
0
0
5
10
15
20
25
30
35
40
rps

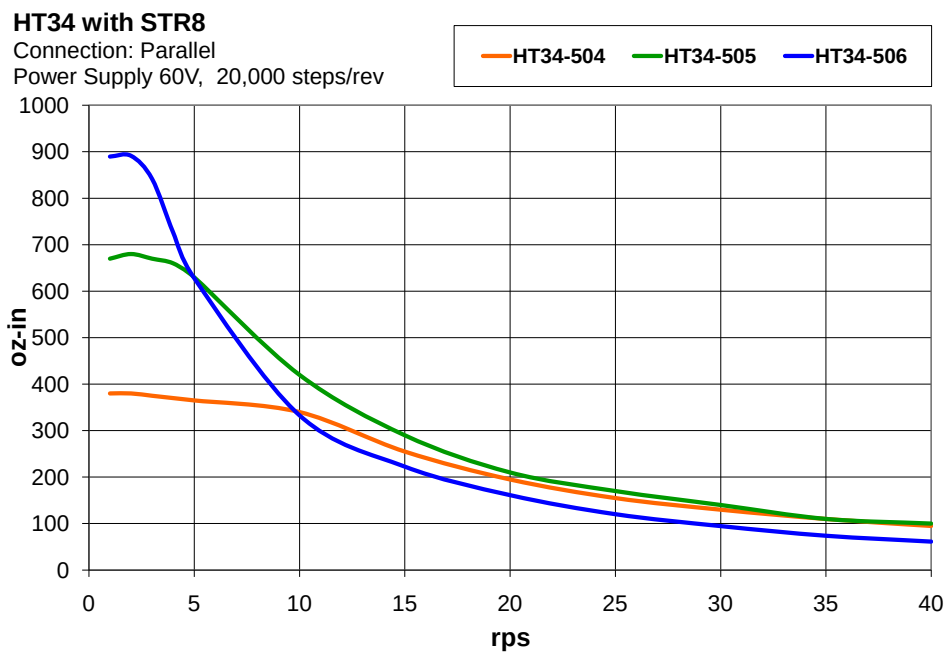

HT24 with STR8
Connection: Parallel
24v Power Supply , 20,000 steps/rev
HT24-100
HT24-105
HT24-108
oz-in
rps
0
50
100
150
200
250
300
350
0
5
10
15
20
25
30
35
40

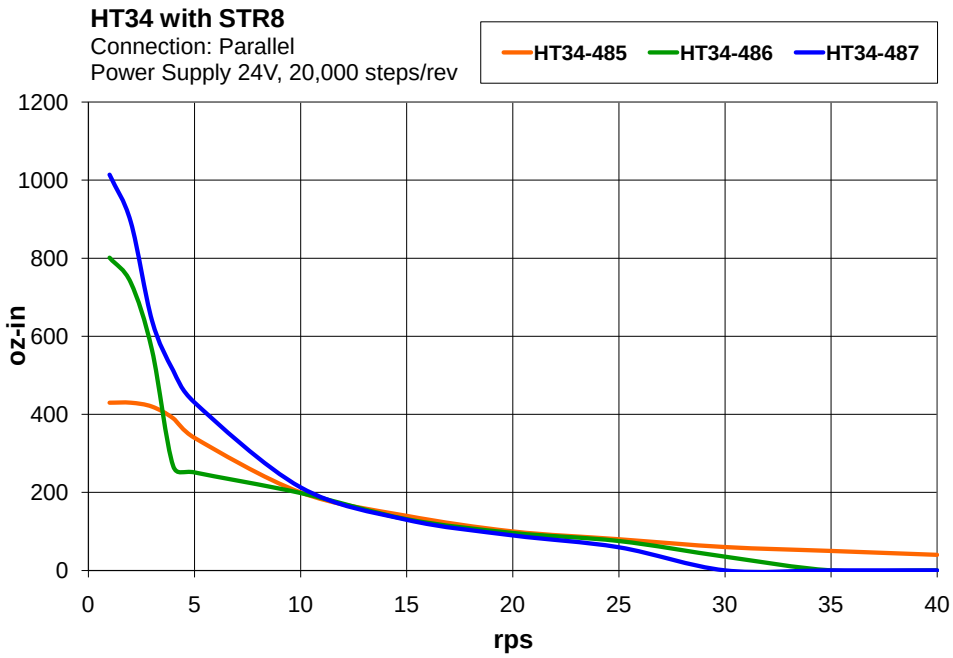

HT24 with STR8
Connection: Parallel
48v Power Supply , 20,000 steps/rev
HT24-101
HT24-105
HT24-108
oz-in
rps
0
50
100
150
200
250
300
350
0
5
10
15
20
25
30
35
40

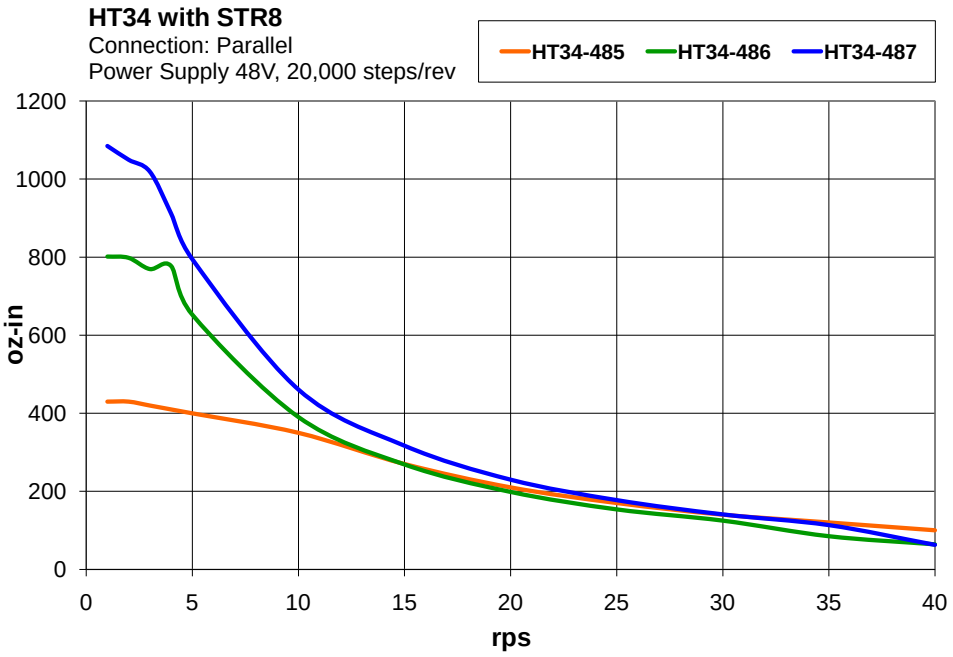

HT34 with STR4
Connection: Series
Power Supply 48V, 20,000 steps/rev
HT34-504
HT34-505
HT34-485
HT34-486
oz-in
900
800
700
600
500
400
300
200
100
0
0
5
10
15
20
25
30
35
40
rps

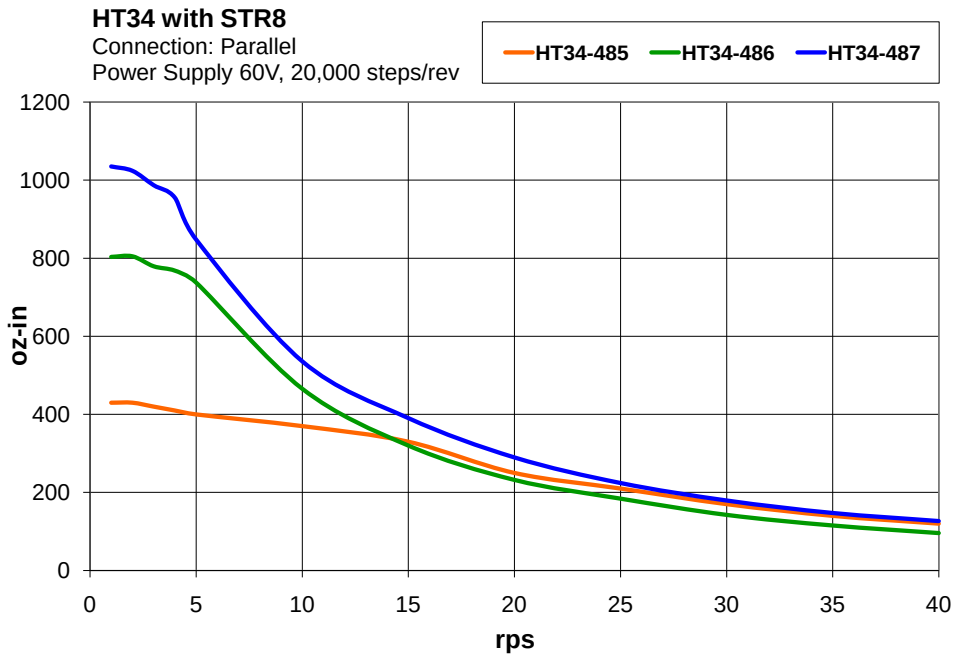

HT34 with STR8
Connection: Parallel
Power Supply 24V, 20,000 steps/rev
HT34-504
HT34-505
HT34-506
oz-in
1000
900
800
700
600
500
400
300
200
100
0
0
5
10
15
20
25
30
35
40
rps


HT34 with STR8
Connection: Parallel
Power Supply 48V, 20,000 steps/rev
HT34-504
HT34-505
HT34-506
oz-in
rps
0
100
200
300
400
500
600
700
800
900
1000
0
5
10
15
20
25
30
35
40


HT34 with STR8
Connection: Parallel
Power Supply 60V, 20,000 steps/rev
HT34-504
HT34-505
HT34-506
oz-in
rps
0
100
200
300
400
500
600
700
800
900
1000
0
5
10
15
20
25
30
35
40


HT34 with STR8
Connection: Parallel
Power Supply 24V, 20,000 steps/rev
HT34-485
HT34-486
HT34-487
oz-in
rps
0
200
400
600
800
1000
1200
0
5
10
15
20
25
30
35
40


HT34 with STR8
Connection: Parallel
Power Supply 48V, 20,000 steps/rev
HT34-485
HT34-486
HT34-487
oz-in
rps
0
200
400
600
800
1000
1200
0
5
10
15
20
25
30
35
40



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.