Customer Service Bulletin
Commercial Business Group

All Riding Products

Date: May 9, 2002

Model/Serial Range:	Model Numbers:	Serial Numbers:
	00000-99999	00000-220009999

Subject: Calculating traction speed on Turf Equipment.

Evaluating whether a unit has a slow traction operating speed can be time consuming and difficult to determine, especially when it is intermittent or occurs only after several hours of operation.

The easiest method of confirming traction operating speed is to compare the actual speed of the unit to factory specifications before initiating more in-depth testing. The attached chart can be used in combination with a straight 100-foot (or 30 meter) long course and a stopwatch to measure the length of time to complete the course (see examples below). The oil in hydraulically operated machines should be at operating temperature to perform an accurate test. If needed, assistance is available through the local Toro distributor in your area.

Example for Miles per hour testing:

The Greensmaster 3100 Model 04356 has a mowing speed of 3.8 mph.

Looking on the chart, this unit should be able to complete the 100-ft. course within 18 seconds (17.94 actual) if it is operating properly. If it takes longer to complete the course than 18 seconds, further product system checks would be required to determine why the speed specification cannot be met. Some of these would include verifying the engine rpm is at full operating speed (2800 rpm), the traction linkage is free moving and unobstructed, and that the #5 valve spool is fully applied. You may find the problem is as simple as a traction pedal that bottoms out against the frame before the spool can be fully stroked. Hydraulic testing information is available in the Service and Overhaul Manual if the testing must progress to that point.

Example for Kilometers per hour testing:

The Greensmaster 3100 Model 04356 has a mowing speed of 6.1 kph.

Looking on the chart, this unit should be able to complete the 30-Meter course within 17 seconds (approximately) if it is operating properly. If it takes longer to complete the course than 17 seconds, further product system checks would be required to determine why the speed specification cannot be met. Some of these would include verifying the engine rpm is at full operating speed (2800 rpm), the traction linkage is free moving and unobstructed, and that the #5 valve spool is fully applied. You may find the problem is as simple as a traction pedal that bottoms out against the frame before the spool can be fully stroked. Hydraulic testing information is available in the Service and Overhaul Manual if the testing must progress to that point.

Determining Unit Speed

Miles/hr

Sec/100'	MPH
68.18	1.0
56.82	1.2
48.70	1.4
42.61	1.6
37.88	1.8
34.09	2.0
30.99	2.2
28.41	2.4
26.22	2.6
24.35	2.8
22.73	3.0
21.31	3.2
20.05	3.4
18.94	3.6
17.94	3.8
17.05	4.0
16.23	4.2
15.50	4.4
14.82	4.6
14.20	4.8
13.64	5.0
13.11	5.2
12.63	5.4
12.18	5.6
11.76	5.8
11.36	6.0
11.00	6.2
10.65	6.4
10.33	6.6
10.03	6.8
9.74	7.0
9.47	7.2
9.21	7.4
8.97	7.6
8.74	7.8
8.52	8.0
8.31	8.2
8.12	8.4
7.93	8.6
7.75	8.8
7.58	9.0
7.41	9.2
7.25	9.4
7.10	9.6
6.96	9.8
6.82	10.0
6.68	10.2
6.56	10.4
6.43	10.6
6.31	10.8
6.20	11.0

Miles/hr (cont'd)

Sec/100'	MPH
6.09	11.2
5.98	11.4
5.88	11.6
5.78	11.8
5.68	12.0
5.59	12.2
5.50	12.4
5.41	12.6
5.33	12.8
5.24	13.0
5.17	13.2
5.09	13.4
5.01	13.6
4.94	13.8
4.87	14.0
4.80	14.2
4.73	14.4
4.67	14.6
4.61	14.8
4.55	15.0

Kilometers/hr

Sec/30M	KPH
108.0	1.00
86.4	1.25
72.0	1.50
61.7	1.75
54.0	2.00
48.0	2.25
43.2	2.50
39.3	2.75
36.0	3.00
33.2	3.25
30.9	3.50
28.8	3.75
27.0	4.00
25.4	4.25
24.0	4.50
22.7	4.75
21.6	5.00
20.6	5.25
19.6	5.50
18.8	5.75
18.0	6.00
17.3	6.25
16.6	6.50
16.0	6.75
15.4	7.00
14.9	7.25
14.4	7.50
13.9	7.75
13.5	8.00
13.1	8.25
12.7	8.50
12.3	8.75
12.0	9.00
11.7	9.25
11.4	9.50
11.1	9.75
10.8	10.00
10.5	10.25
10.3	10.50
10.0	10.75
9.8	11.00
9.6	11.25
9.4	11.50
9.2	11.75
9.0	12.00
8.8	12.25
8.6	12.50
8.5	12.75
8.3	13.00
8.2	13.25
8.0	13.50

Kilometers/hr (cont'd)

Sec/30M	KPH
7.9	13.75
7.7	14.00
7.6	14.25
7.4	14.50
7.3	14.75
7.2	15.00
7.1	15.25
7.0	15.50
6.9	15.75
6.8	16.00
6.6	16.25
6.5	16.50
6.4	16.75
6.4	17.00
6.3	17.25
6.2	17.50
6.1	17.75
6.0	18.00
5.9	18.25
5.8	18.50
5.8	18.75
5.7	19.00
5.6	19.25
5.5	19.50
5.5	19.75
5.4	20.00
5.3	20.25
5.3	20.50
5.2	20.75
5.1	21.00
5.1	21.25
5.0	21.50
5.0	21.75
4.9	22.00
4.9	22.25
4.8	22.50
4.7	22.75
4.7	23.00