UNIVERSITY OF NEBRASKA—AGRICULTURAL ENGINEERING DEPARTMENT
AGRICULTURAL COLLEGE, LINCOLN

Record of Official Tractor Brake Test No. 339 Date April 12 & 13, 1940

Name and model of tractor Ford Ferguson-System 9N

Manufacturer Ferguson-Sherman Manufacturing Corporation, Dearborn, Michigan

Serial No. engine 9N12840 Serial No. chassis 9N12840 Chassis type Standard

Tractor equipment Schebler carburetor; own starter, generator, and distributor

Tractor operated by Jack Schnitter Brake operated by Carlton L. Zink

Brake used General Electric Brake arm, inches 21 Brake constant 1/3000

Description belt used 4-ply Endless Rubber

Size engine belt pulley (circumference at crown), feet 2.362

Size brake belt pulley (circumference at crown), feet 3.722

Kind of fuel used Gasoline Octane value 71 Weight per gallon, pounds 6.03

Kind of oil used in engine Mobiloil S. A. E. viscosity No 20

Kind of oil used in transmission Transmission Lubricant S. A. E. viscosity No

Carburetor adjustment: Percent of maximum 98.7 Turns open: Slow speed needle 1 5/8

High speed needle: 100% setting 56 notches Operating setting 48 notches

Fuel pump setting

TEST	FUEL			WATER, GALS. PER HR.	TEMPERATURE, DEG., F.		BAROMETER, IN.
	GALS. PER HR.	H.P. HRS. PER GAL.	LBS. PER H.P. HR.		RAD.	AIR	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
B	2.434	9.68	0.623	0.000	185	55	29.390
C	2.368	9.74	0.619	0.000	179	51	29.410
D	2.310	8.76	0.688	0.000	171	51	29.390
E	1.800	7.04	0.857	0.000	154	49	29.385

We, the undersigned, certify that this sheet and the log sheets attached hereto give a true and correct record of official tractor brake test No. 339.

Jack Schnitter — Operator

Operator

Carlton L. Zink — Calculator

Calculator

Carlton L. Zink — Observer

Observer

Harold Mizner — Calculator

Calculator

Engineer-in-charge

UNIVERSITY OF NEBRASKA—AGRICULTURAL ENGINEERING DEPARTMENT
AGRICULTURAL COLLEGE, LINCOLN

Observers Jack & C.L.Z.
Calculated C.L.Z. & H. M.

Ford 9N

Log of Official Tractor Brake Horsepower Test No. 339b

Date April 11, 1940

Reading No.	Time of day	Crankshaft R. P. M. Ratio to pulley — 1.4732	Engine Belt Pulley Speed Eff. circum. = 2.433 Counter reading	Engine R. P. M.	Surface speeds, ft. per min.	Brake Belt Pulley Speed Eff. circum. = 3.793 Counter reading	Brake R. P. M.	Surface speeds, ft. per min.	Belt slippage, %	Net brake load, pounds	Brake Horsepower	Fuel: Scale reading, pounds	Fuel: Amount used, pounds	Water used, pounds	Temperature: Radiator, Deg. F.	Temperature: Atmosphere, Deg. F.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1	4:40		5446	1361		0683	866			82.1		188.71			183	54
2	:50		6799	1353		1543	860			82.2		186.24	2.47		184	54
3	5:00		8159	1360		2410	867			81.9		183.82	2.42		186	56
4	:10		9513	1354		3272	862			82.1		181.36	2.46		185	55
5	:20		0857	1344		4127	855			82.6		178.93	2.43		185	55
6	:30		2212	1355		4988	861			81.9		176.52	2.41		185	54
7	:40		3571	1359		5853	865			81.7		174.07	2.45		188	58
8	:50		4954	1383		6731	878			81.0		171.66	2.41		183	56
9	6:00		6312	1358		7594	863			82.0		169.21	2.45		180	55
10	:10		7667	1355		8455	861			81.6		166.76	2.45		180	56
11	:20		9018	1351		9316	861			81.7		164.28	2.48		181	54
12	:30		0377	1359		0180	864			81.5		161.82	2.46		180	52
13	:40		1735	1358		1043	863			81.6		159.36	2.46		178	52
Total				17650			11226			1063.9			29.35	0.00	2378	711
Average		2000		1357.7	3303		863.5	3275	0.85	81.84	23.56				183	55

FUEL	
Lbs. per gal.	6.03
Lbs. per hr.	14.675
Gals. per test	4.867
Gals. per hr.	2.434
H. p. hrs. per gal.	9.68
Lbs. per h. p. hr.	0.623

CARB. ADJ., Turns Open	
H. s. 56	l. s. 1 5/8

notches

WATER	
Gals. per test	0.000
Gals. per hr	0.000

BAROMETER	
29.370 "Hg at 5:10P.M.	CLZ
29.390 "Hg at 6:00P.M.	CLZ
29.405 "Hg at 6:40P.M.	CLZ
Use 29.390 C.L.Z.	

Remarks: $\frac{29.920}{29.390} = 1.0180$ $\frac{515}{520} = 0.99038$

$\sqrt{1.99038} = 0.99518$ 23.56 x 1.013 = 23.87

0.99518 x 1.0180 = 1.013

23.87 x 0.85 = 20.29 Rated H.P.

UNIVERSITY OF NEBRASKA—AGRICULTURAL ENGINEERING DEPARTMENT
AGRICULTURAL COLLEGE, LINCOLN

Observers Jack, & C.L.Z.
Calculated C.L.Z. & H.M.

Ford 9N

Log of Official Tractor Brake Horsepower Test No. 339c

Date April 11, 1940

Reading No.	Time of day	Crankshaft R. P. M. Ratio to pulley — 1.4732	Engine Belt Pulley Speed Eff. circum. = 2.433 Counter reading	Engine Belt Pulley Speed R. P. M.	Engine Belt Pulley Speed Surface speeds, ft. per min.	Brake Belt Pulley Speed Eff. circum. = 3.793 Counter reading	Brake Belt Pulley Speed R. P. M.	Brake Belt Pulley Speed Surface speeds, ft. per min.	Belt slippage, %	Net brake load, pounds	Brake Horsepower	Fuel Scale reading, pounds	Fuel Amount used, pounds	Water used, pounds	Temperature Radiator, Deg. F.	Temperature Atmosphere, Deg. F.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1	10:10		9463	1363		2319	868			80.3		197.88			179	51
2	:20		0816	1353		3179	860			80.5		194.89	2.39		180	50
3	:30		2167	1351		4040	861			80.4		192.52	2.37		179	51
4	:40		3519	1352		4899	859			80.2		190.14	2.38		180	52
5	:50		4871	1352		5759	860			80.3		187.75	2.39		179	51
6	11:00		6239	1368		6630	871			79.4		185.39	2.36		179	50
7	:10		7609	1370		7500	870			79.7		183.00	2.39		179	51
8																
9																
10																
11																
12																
13																
Total				9509			6049			560.8			14.28	0.00	1255	356
Average		2001		1358.4	3305		864.1	3278	0.82	80.11	23.07				179	51

FUEL	
Lbs. per gal.	6.03
Lbs. per hr.	14.28
Gals. per test	2.368
Gals. per hr.	2.368
H. p. hrs. per gal.	9.74
Lbs. per h. p. hr.	0.619

CARB. ADJ., Turns Open	
H. s.	48 l. s. 1 5/8 notches

WATER	
Gals. per test	0.000
Gals. per hr.	0.000

BAROMETER
"Hg at
"Hg at
"Hg at
Use 29.410 C.L.Z.

Remarks:

UNIVERSITY OF NEBRASKA—AGRICULTURAL ENGINEERING DEPARTMENT
AGRICULTURAL COLLEGE, LINCOLN

Observers Jack & CLZ
Calculated CLZ & HM

Ford 9N — Log of Official Tractor Brake Horsepower Test No. 339 d — Date April 12, 1940

Reading No.	Time of day	Crankshaft R. P. M. Ratio to pulley — 1.4732	Engine Belt Pulley Speed Eff. circum. = 2.433 Counter reading	Engine R. P. M.	Engine Surface speeds, ft. per min.	Brake Belt Pulley Speed Eff. circum. = 3.793 Counter reading	Brake R. P. M.	Brake Surface speeds, ft. per min.	Belt slippage, %	Net brake load, pounds	Brake Horsepower	Fuel: Scale reading, pounds	Fuel: Amount used, pounds	Water used, pounds	Temperature: Radiator, Deg. F.	Temperature: Atmosphere, Deg. F.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1	12:00		8972	1363		8369	869			70.6		171.00			171	50
2	:10		0330	1358		9236	867			70.4		168.65	2.35		173	54
3	:20		1691	1361		0101	865			69.5		166.35	2.30		171	51
4	:30		3045	1354		0964	863			70.4		164.02	2.33		171	52
5	:40		4397	1352		1825	861			70.8		161.70	2.32		170	49
6	:50		5743	1346		2680	855			70.7		159.40	2.30		171	50
7	1:00		7092	1349		3539	859			70.3		157.07	2.33		170	50
8																
9																
10																
11																
12																
13																
Total				9493			6039			492.7			13.93	0.00	1197	356
Average		1996		1354.7	3296		862.7	3272	0.73	70.39	20.24				171	51

FUEL	
Lbs. per gal.	6.03
Lbs. per hr.	13.93
Gals. per test	2.310
Gals. per hr.	2.310
H. p. hrs. per gal.	8.76
Lbs. per h. p. hr.	0.668

CARB. ADJ., Turns Open	
H. s. 48	l. s. 1 5/8

WATER	
Gals. per test	0.000
Gals. per hr.	0.000

BAROMETER	
29.400 "Hg at 12:00PM	
"Hg at	
"Hg at	
Use 29.390	

Remarks:

UNIVERSITY OF NEBRASKA—AGRICULTURAL ENGINEERING DEPARTMENT
AGRICULTURAL COLLEGE, LINCOLN Page 1.

Observers Jack & C.L.Z.
Calculated C.L.Z. & H.M.

Ford 9N — Log of Official Tractor Brake Horsepower Test No. 339. e — Date April 12, 1940

Reading No.	A.M. Time of day	Crankshaft R. P. M. Ratio to pulley — 1.4732	Engine Belt Pulley Speed Eff. circum. = 2.433 Counter reading	Engine R. P. M.	Engine Surface speeds, ft. per min.	Brake Belt Pulley Speed Eff. circum. = 3.793 Counter reading	Brake R. P. M.	Brake Surface speeds, ft. per min.	Belt slippage, %	Net brake load, pounds	Brake Horsepower	Fuel: Scale reading, pounds 161.70	Fuel: Amount used, pounds	Water used lbs./hr. Gals/hr. Hphr/Gal lbs/Hphr.	Temperature: Radiator Deg. F.	Temperature: Atmosphere, Deg. F.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1 Rated	12:50			1346		2690	855			70.7		159.40	2.30	13.89	171	50
2 Load	1:00		7092	1349		3539	859			70.3		157.07	2.33	2.301	170	50
3 Total													4.63	8.75		
4 Avg.		1985		1347.5	3278		857	3251	0.83	70.5	20.14			0.690	171	50
5	1:10		8573	1491		4496	947			6.7		155.89	1.18	7.23	140	50
6 No Load	:20		0041	1468		5425	939			6.7		154.66	1.23	1.199	130	50
7													2.41	1.76		
8		2172		1474.5	2025		943	3577	0.00	6.7	2.11			3.427	135	50
9	:30		1470	1429		6334	909			35.0		152.98	1.68	10.14	143	48
10 1/2 Load	:40		2999	1429		7245	911			35.0		151.28	1.70	1.662	149	48
11 Total													3.38	6.31		
12 Avg.		2105		1429	3477		910	3452	0.72	35.0	10.62		1.69	0.955	146	48
13																
Total																
Average																

FUEL	
Lbs. per gal.	6.03
Lbs. per hr.	
Gals. per test	
Gals. per hr.	
H. p. hrs. per gal.	
Lbs. per h. p. hr.	

CARB. ADJ., Turns Open	
H. s.	l. s.

WATER	
Gals. per test	
Gals. per hr.	

BAROMETER
"Hg at
"Hg at
"Hg at
Use

Remarks:

UNIVERSITY OF NEBRASKA—AGRICULTURAL ENGINEERING DEPARTMENT
AGRICULTURAL COLLEGE, LINCOLN

Observers Jack & C. L. Z.
Calculated C. L. Z. & H. M.

Ford 9N

Log of Official Tractor Brake Horsepower Test No. 339 e

Date April 12, 1940

Reading No.	Time of day	Crankshaft R. P. M. Ratio to pulley — 1.4732	Engine Belt Pulley Speed Eff. circum. = 2.433 Counter reading	Engine R. P. M.	Surface speeds, ft. per min.	Brake Belt Pulley Speed Eff. circum. = 3.793 Counter reading 7245	Brake R. P. M.	Surface speeds, ft. per min.	Belt slippage, %	Net brake load, pounds	Brake Horsepower	Fuel: Scale reading, pounds	Fuel: Amount used, pounds	Water used, pounds lbs./hr. Gal./hr. HPhr/Gal lbs./HPhr	Temperature: Radiator, Deg. F.	Temperature: Atmosphere, Deg. F.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1 Gov. Max.	1:50		4172	1273		8053	808			82.2		149.00	2.28	13.65	177	51
Total	2:00		5440	1268		8861	808			82.2		146.73	2.27	2.264	179	50
3													4.55	9.78		
Ave.		1872		1270.5	3091		808	3065	0.85	82.2	22.14			0.617	178	51
5	:10		6893	1453		9787	926			17.6		145.36	1.37	8.22	135	48
1/4 Load	:20		8339	1446		0709	922			17.8		143.99	1.37	1.363	138	46
Total													2.74	4.00		
Ave.		2135		1449.5	3526		924	3505	0.60	17.7	5.45		1.37	1.508	137	48
9	:30		9735	1396		1600	891			52.6		141.99	2.00	12.00	156	48
3/4 Load	:40		1140	1405		2494	894			52.0		139.99	2.00	1.990	158	48
Total													4.00	7.82		
Ave.		2063		1400.5	3407		892.5	3385	0.65	52.3	15.56			0.771	157	48
13																
Total				16743.0			10669.0				76.02		21.71		1848	590
Average		2056		1395.3	3395		889.1	3372	0.68		12.67				154	49

FUEL	
Lbs. per gal.	6.03
Lbs. per hr.	10.855
Gals. per test	3.600
Gals. per hr.	1.800
H. p. hrs. per gal.	7.04
Lbs. per h. p. hr.	0.857

CARB. ADJ., Turns Open	
H. s. 48	l. s. 1 5/8

WATER	
Gals. per test	0.000
Gals. per hr.	0.000

BAROMETER	
29.400 "Hg at 12:00Pm CLZ	
29.375 "Hg at 2:30A.M. CLZ	
"Hg at	
Use 29.385 C.L.Z.	

Remarks: Friction - 32.0 lbs. at 868 R.P.M. = 9.26 H.P.