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January 1971

Test 1067: Case 1070 and 1090 Manual Diesel

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1067 – CASE 1070 MANUAL DIESEL (ALSO CASE 1090 MANUAL)

POWER TAKE-OFF PERFORMANCE

Hp	Crank- shaft speed rpm	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temperature Cooling medium	Degrees F Air wet bulb	Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1123 rpm)								
107.36	2100	7.110	0.456	15.10	192	61	75	28.967
Standard Power Take-off Speed (1000 rpm)—One Hour								
103.91	1870	6.598	0.437	15.75	192	61	76	28.940
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
94.26	2171	6.281	0.458	15.01	184	61	75	.....
0.00	2278	2.190	....	....	184	61	75	.....
48.29	2229	4.048	0.577	11.93	188	61	77	.....
107.35	2100	7.171	0.459	14.97	188	61	76	.....
24.34	2248	3.110	0.879	7.83	184	61	76	.....
71.71	2199	5.060	0.485	14.17	187	61	76	.....
Av 57.66	2204	4.643	0.554	12.42	186	61	75	28.900

DRAWBAR PERFORMANCE

Hp	Draw- bar pull lbs	Speed miles per hr	Crank- shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temp Cool- ing med	Degrees F Air wet bulb	Air dry bulb	Barometer inches of Mercury
VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST											
Maximum Available Power—Two Hours—4th Gear (4 Lo)											
90.77	6158	5.53	2100	5.19	6.956	0.531	13.05	182	61	78	28.785
75% of Pull at Maximum Power—Ten Hours—4th Gear (4 Lo)											
72.35	4669	5.81	2180	3.91	5.734	0.549	12.62	188	66	78	28.484
50% of Pull at Maximum Power—Two Hours—4th Gear (4 Lo)											
50.89	3186	5.99	2213	2.32	4.487	0.611	11.34	178	61	83	28.760
50% of Pull at Reduced Engine Speed—Two Hours 5th Gear (1 Hi)											
50.49	3157	6.00	1707	2.37	3.802	0.522	13.28	179	61	82	28.720

MAXIMUM POWER WITH BALLAST

75.26	13116	2.15	2177	14.75	1st Gear (1 Lo)	184	59	81	28.720
90.29	11072	3.06	2105	11.07	2nd Gear (2 Lo)	180	50	63	28.910
93.70	7808	4.50	2103	6.83	3rd Gear (3 Lo)	180	51	65	28.910
91.45	6210	5.52	2099	5.11	4th Gear (4 Lo)	179	50	64	28.910
91.49	4703	7.29	2106	3.74	5th Gear (1 Hi)	178	48	59	28.910
88.36	3201	10.35	2098	2.41	6th Gear (2 Hi)	176	50	59	28.910

MAXIMUM PULL WITHOUT BALLAST

75.32	9212	3.07	2191	14.76	2nd Gear (2 Lo)	179	54	63	28.740
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VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST 4th Gear (4 Lo)

Pounds Pull	6210	6855	7325	7469	7553	7445
Horsepower	91.45	90.32	84.73	75.55	65.46	54.60
Crankshaft Speed rpm	2099	1893	1669	1463	1255	1062
Miles Per Hour	5.52	4.94	4.34	3.79	3.25	2.75
Slip of Drivers %	5.11	5.98	6.29	6.44	6.60	6.60

TRACTOR SOUND LEVEL

	dB(A)
Maximum Available Power 2 Hours	88.5
75% of Pull at Max. Power 10 Hours	89.00
50% of Pull at Max. Power 2 Hours	90.5
50% of Pull at Reduced Engine Speed 2 Hours	89.00
Bystander (8th gear)	90.0

TIRES, BALLAST and WEIGHT

	With Ballast	Without Ballast
Rear Tires	Two 20.8-38; 10; 20	Two 20.8-38; 10; 16
Ballast	1380 lb each	None
	1380 lb each	None
Front tires	Two 11.00-16; 6; 28	Two 11.00-16; 6; 28
Ballast	None	None
	295 lb each	None
Height of drawbar	22½ inches	23 inches
Static weight with operator—rear	13760 lb	8240 lb
front	3760 lb	3170 lb
total	17520 lb	11410 lb

Department of Agricultural Engineering

Dates of Test: May 6 to May 21, 1971

Manufacturer: J. I. CASE COMPANY, RACINE, WISCONSIN

FUEL, OIL and TIME Fuel No. 2 Diesel Cetane No 53.5 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8261 **Weight per gallon** 6.878 lb **Oil SAE 30 API service classification** MS, DS **To motor** 2.944 gal **Drained from motor** 2.398 gal. **Transmission and final drive lubricant** SAE Case TCH oil **Total time engine was operated** 54 hours.

ENGINE Make Case Diesel **Type** 6 cylinder vertical **Serial No** 2323297 **Crankshaft Mount-**ed lengthwise **Rated rpm** 2100 **Bore and stroke** 4¾" x 5" **Compression ratio** 16.5 to 1 **Displacement** 451 cu in **Cranking system** 12 volt electric (two 12 volt batteries) **Lubrication pressure** Air **Cleaner** dry type with replaceable pleated paper element **Oil filter** full flow replaceable cartridge **Oil cooler** radiator for transmission and hydraulic oil **Fuel filter** replaceable primary and secondary filter cartridges **Muffler** was used **Cooling medium temperature control** Thermostat .

CHASSIS **Type** standard **Serial No** 8678604 **Tread width rear** 62" to 88" **front** 62" to 90" **Wheel base** 108" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) **Horizontal distance forward from centerline of rear wheels** 30.2" **Vertical distance above roadway** 40.8" **Horizontal distance from center of rear wheel tread 0" to the right/left** **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 2.0 second 2.9 third 4.1 fourth 5.0 fifth 6.3 sixth 8.9 seventh 12.6 eighth 15.8 reverse 2.69, 8.33 **Clutch** single plate dry disc operated by foot pedal **Brakes** dry double disc hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied right 157" left 157" (on concrete surface with brake) right 184" left 184" **Turning space diameter** (on concrete surface with brake applied) right 327" left 327" (on concrete surface with brake applied) right 380" left 380" **Belt pulley** 1104 rpm at 1900 engine rpm diam 10.5" face 7.25" **Belt speed** 3036 fpm **Power take-off** 1016 rpm at 1900 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustmenst.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Seventh and eighth gears were not run as test procedure permits a maximum of six travel speeds.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1067.

L. F. LARSEN

Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

D. E. LANE

Board of Tractor Test Engineers

The University of Nebraska Agricultural Experiment Station
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