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Test 1066: Case 1070 and 1090 Power Shift Diesel

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1066 – CASE 1070 POWER SHIFT DIESEL (ALSO CASE 1090 POWER SHIFT)

POWER TAKE-OFF PERFORMANCE

Hp	Crank- shaft speed rpm	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Air wet bulb	Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1123 rpm)								
108.10	2100	7.246	0.465	14.92	193	60	75	29.033
Standard Power Take-off Speed (1000 rpm)—One Hour								
99.92	1871	6.472	0.449	15.44	199	60	75	29.050
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
95.13	2172	6.375	0.465	14.92	194	60	75	.....
0.00	2267	2.236	.....	.....	187	59	74	.....
48.67	2222	4.061	0.579	11.98	191	59	75	.....
110.96	2100	7.418	0.464	14.96	199	59	76	.....
24.49	2237	3.049	0.864	8.03	187	58	75	.....
72.36	2203	5.151	0.494	14.05	192	59	75	.....
Av 58.60	2200	4.715	0.558	12.43	192	59	75	29.043

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 Degrees F Cool- ing med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
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VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST

Maximum Available Power—Two Hours—5th Gear (2nd Inter.)											
90.99	7652	4.46	2101	6.57	7.208	0.549	12.62	192	60	80	28.820
75% of Pull at Maximum Power—Ten Hours—5th Gear (2nd Inter.)											
76.17	6063	4.71	2177	4.66	6.005	0.546	12.68	186	59	75	28.782
50% of Pull at Maximum Power—Two Hours—5th Gear (2nd Inter.)											
52.54	4038	4.88	2218	3.12	4.757	0.628	11.04	183	61	85	28.780
50% of Pull at Reduced Engine Speed—Two Hours—7th Gear (2nd High)											
53.09	4061	4.90	1780	2.96	4.054	0.529	13.09	185	61	85	28.780

MAXIMUM POWER WITH BALLAST

71.41	13780	1.94	2201	14.57	1st Gear (1st Low)			185	56	70	28.715
86.38	13039	2.48	2097	14.06	2nd Gear (1st Inter.)			183	58	73	28.820
95.37	8054	4.44	2098	6.83	5th Gear (2nd Inter.)			189	60	78	28.820
94.44	6999	5.06	2097	5.75	6th Gear (3rd Low)			190	59	77	28.820
94.23	6250	5.65	2098	5.04	7th Gear (2nd High)			191	60	80	28.820
94.11	4056	8.70	2107	3.25	9th Gear (3rd High)			191	60	80	28.820

MAXIMUM PULL WITHOUT BALLAST

82.39	9635	3.21	2174	14.94	4th Gear (1st High)			189	60	74	28.880
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VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST 5th Gear (2nd Inter.)

Pounds Pull	8054	8182	8901	8842	8631	8251
Horsepower	95.37	86.46	83.21	72.64	60.81	48.41
Crankshaft Speed rpm	2098	1886	1674	1472	1258	1045
Miles Per Hour	4.44	3.96	3.51	3.08	2.64	2.20
Slip of Drivers %	6.83	7.60	7.90	7.75	7.44	6.99

TRACTOR SOUND LEVEL

	dB(A)
Maximum Available Power 2 Hours	90.5
75% of Pull at Max. Power 10 Hours	92.5
50% of Pull at Max. Power 2 Hours	91.0
50% of Pull at Reduced Engine Speed 2 Hours	88.0
Bystander (12th gear)	89.8

TIRES, BALLAST and WEIGHT

	With Ballast	Without Ballast
Rear tires	—No, size, ply & psi	Two 20.8-38; 10; 20
Ballast	—Liquid	1423 lb each
	Cast iron	1380 lb each
Front tires	—No, size, ply & psi	Two 11.00-16; 6; 28
Ballast	—Liquid	None
	Cast iron	280 lb each
Height of drawbar	23 inches	23½ inches
Static weight with operator—rear	13915 lb.	8310 lb
front	3760 lb	3200 lb
total	17675 lb	11510 lb

Department of Agricultural Engineering

Dates of Test: May 7 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° 0.8330 Weight per gallon 6.936 lb Oil SAE 30 API service classification MS-DS To motor 2.917 gal Drained from motor 2.481 gal Transmission and final drive lubricant Case TCH oil Total time engine was operated 47 hours.

ENGINE Make Case Diesel Type 6 cylinder vertical Serial No 2323992 Crankshaft Mounted lengthwise Rated rpm 2100 Bore and stroke 4.375" x 5.00" 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. 8678577 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 30.3" Vertical distance above roadway 41.4" Horizontal distance from center of rear wheel tread 0" to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial range operator controlled power shifting Advertised speeds mph first 1.8 second 2.5 third 3.0 fourth 3.1 fifth 4.0 sixth 4.6 seventh 5.0 eighth 6.2 ninth 7.7 tenth 10.2 eleventh 13.7 twelfth 17.0 reverse 3.1, 5.0, 7.7, and 17.0 Clutch multiple disc wet clutches within transmission actuated hydraulically Brakes dry double disc actuated hydraulically 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 without brake) right 184" and left 184" Turning space diameter (on concrete surface with brake applied) right 327" and left 327" (on concrete surface without brake) 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 1000 rpm at 1871 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Third, eighth, tenth, eleventh, and twelfth 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 1066.

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
E. F. Frolik, Dean; H. W. Ottoson, Director; Lincoln, Nebraska