January 1971

Test 1076: Case 870 Power Shift Diesel

Tractor Museum
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NEBRASKA TRACTOR TEST 1076 – CASE 870 POWER SHIFT DIESEL

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption 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 (1070 rpm)								
77.92	2000	5.528	0.495	14.10	194	64	75	28.940
Standard Power Take-off Speed (1000 rpm)—One Hour								
77.11	1870	5.347	0.484	14.42	197	64	75	28.960
VARYING POWER AND FUEL CONSUMPTION—TWO HOURS								
68.81	2079	4.756	0.483	14.47	190	64	74	.....
0.00	2176	1.542	.....	.....	182	64	74	.....
35.13	2123	2.951	0.587	11.90	186	65	76	.....
78.21	2000	5.538	0.494	14.12	196	66	76	.....
17.74	2144	2.213	0.871	8.02	183	64	75	.....
52.26	2105	3.746	0.501	13.95	187	63	74	.....
Av. 42.03	**2104**	**3.458**	**0.574**	**12.15**	**187**	**64**	**75**	**28.993**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST											
Maximum Available Power—Two Hours—6th Gear (3 Lo)											
66.89	5919	4.24	1999	6.61	5.513	0.575	12.13	192	56	72	29.050
75% of Pull at Maximum Power—Ten Hours—6th Gear (3 Lo)											
54.53	4508	4.54	2096	4.67	4.392	0.562	12.41	181	49	55	29.103
50% of Pull at Maximum Power—Two Hours—6th Gear (3Lo)											
37.94	3054	4.66	2122	3.25	3.419	0.629	11.10	184	54	58	29.060
50% of Pull at Reduced Engine Speed—Two Hours—8th Gear (3 Int)											
37.93	3052	4.66	1587	3.03	2.971	0.546	12.77	185	45	52	29.290
MAXIMUM POWER WITH BALLAST											
57.95	10075	2.16	2078	14.96	2nd Gear (1 Int)....			185	54	74	29.260
66.30	6679	3.72	2000	7.49	5th Gear (2 Int) ...			190	61	75	29.070
67.47	5982	4.23	1988	6.68	6th Gear (3 Lo) ...			190	59	74	29.070
66.04	5215	4.75	2000	5.72	7th Gear (2 Hi) ...			195	58	74	29.080
66.87	4327	5.79	2004	4.44	8th Gear (3 Int) ...			195	58	73	29.080
65.06	2492	9.79	1997	2.47	10th Gear (4 Lo) ...			195	58	73	29.080
MAXIMUM PULL WITHOUT BALLAST											
56.40	7722	2.74	2081	14.60	4th Gear (1 Hi)....			190	51	63	29.190

VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST
6th Gear (3 Lo)

Pounds Pull	5982	6395	6851	7005	6984	7096	7011
Horsepower	67.47	64.55	61.10	54.99	46.57	39.31	31.41
Crankshaft Speed rpm	1988	1796	1597	1411	1199	998	806
Miles Per Hour	4.23	3.79	3.34	2.94	2.50	2.08	1.68
Slip of Drivers %	6.68	7.16	7.69	8.09	8.09	8.36	8.09

TRACTOR SOUND LEVEL (with cab)	**dB(A)**
Maximum Axailable Power 2 Hours	88.0
75% of Pull at Max. Power 10 Hours	88.5
50% of Pull at Max. Power 2 Hours	89.5
50% of Pull at Reduced Engine Speed 2 Hours	87.5
Bystander—12th gear (4 Hi)	86.5

TIRES, BALLAST and WEIGHT		**With Ballast**	**Without Ballast**
Rear tires	—No, size, ply & psi	Two 18.4-34; 8; 18	Two 18.4-34; 8; 16
Ballast	—Liquid	1055 lb each	None
	Cast iron	560 lb each	None
Front tires	—No, size, ply & psi	Two 10.00-16; 6; 28	Two 10.00-16; 6; 28
Ballast	—Liquid	None	None
	Cast iron	45 lb each	None
Height of drawbar		16 inches	16½ inches
Static weight with operator—rear		10570 lb	7340 lb
	front	2980 lb	2890 lb
	total	13550 lb	10230 lb

Department of Agricultural Engineering
Dates of Test: September 13 to September 24, 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°** 0.8387 **Weight per gallon** 6.983 lb **Oil SAE** 30 **API service classification** MS, DG, DM, DS **To motor** 2.437 gal **Drained from motor** 2.253 gal **Transmission and final drive lubricant** Case TCH oil **Total time engine was operated** 55 hours.

ENGINE Make Case Diesel **Type** 4 cylinder vertical **Serial No** 2326174 **Crankshaft Mounted** lengthwise **Rated rpm** 2000 **Bore and stroke** 4⅝" x 5" **Compression ratio** 16.5 to 1 **Displacement** 336 cu in **Cranking system** 12 volt electric (two 12 volt batteries) **Lubrication** pressure **Air cleaner** dry type with replaceable pleated paper element and precleaner **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** 8680874 **Tread width** rear 62" to 88" front 62" to 90" **Wheel base** 101" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 29.4" Vertical distance above roadway 38.2" 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 hydraulically power actuated by two foot pedals that can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 149" left 149" (on concrete surface without brake) right 173" left 173" **Turning space diameter** (on concrete surface with brake applied) right 309" left 309" (on concrete surface without brake) right 357" left 357" **Belt pulley** 1104 rpm at 1900 engine rpm diam 10½" face 7¼" **Belt speed** 3035 fpm **Power take-off** 1016 rpm at 1900 engine rpm or 538 rpm at 1900 engine rpm.

REPAIRS and ADJUSTMENTS: The threads on the fuel adjusting screw in the Diesel fuel pump were damaged, making it necessary to replace this part.

REMARKS: All test results were detremined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. First gear was not run as it was necessary to limit the pull in second gear to avoid excessive wheel slippage. Third, ninth, 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 1076.

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