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Test 1058: Case 770 Power Shift Diesel

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1058 – CASE 770 POWER SHIFT DIESEL

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Cooling medium	Temperature Degrees F Air wet bulb	Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—538 rpm)								
56.77	1900	3.765	0.457	15.08	202	57	75	28.727
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
49.78	1958	3.332	0.461	14.94	200	56	74	.....
0.00	2102	1.180	.....	.....	190	55	73	.....
25.75	2027	2.195	0.587	11.73	197	55	73	.....
57.31	1900	3.777	0.454	15.17	204	56	75	.....
13.04	2053	1.651	0.872	7.90	192	56	74	.....
37.94	1992	2.753	0.500	13.78	200	56	75	.....
Av 30.64	2005	2.481	0.558	12.35	197	56	74	28.760

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—2nd Range High											
50.36	4388	4.30	1901	6.31	3.661	0.501	13.76	171	36	44	28.970
75% of Pull at Maximum Power—Ten Hours—2nd Range High											
41.30	3421	4.53	1964	4.51	3.284	0.548	12.58	174	37	41	29.018
50% of Pull at Maximum Power—Two Hours—2nd Range High											
28.38	2285	4.66	1993	3.24	2.581	0.626	11.00	165	40	48	29.180

MAXIMUM POWER WITH BALLAST

40.05	7627	1.97	1970	14.70	1st Range Intermed			169	40	47	28.910
47.95	7482	2.40	1901	13.76	1st Range High			175	40	50	28.920
50.39	5614	3.37	1903	8.35	2nd Range Intermed			175	40	50	28.920
51.07	4995	3.83	1899	7.26	3rd Range Low			175	41	50	28.920
52.05	4543	4.30	1901	6.41	2nd Range High			179	40	50	28.920
51.30	3674	5.24	1901	5.07	3rd Range Intermed			180	40	50	28.920
51.13	2897	6.62	1901	4.11	3rd Range High			178	40	50	28.920
49.53	2089	8.89	1900	3.06	4th Range Low			179	40	50	28.920

MAXIMUM PULL WITHOUT BALLAST

44.58	6843	2.44	1942	14.87	1st Range High			176	46	53	28.940
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VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST 2nd Range High

Pounds Pull	4543	4884	5007	5060	4985	4762
Horsepower	52.05	49.96	45.50	40.39	33.88	27.03
Crankshaft Speed rpm	1901	1709	1523	1338	1140	947
Miles Per Hour	4.30	3.84	3.41	2.99	2.55	2.13
Slip of Drivers %	6.41	7.06	7.32	7.32	7.45	6.93

TIRES, BALLAST and WEIGHT

	With Ballast	Without Ballast
Rear tires	Two 16.9-34; 8; 16	Two 16.9-34; 8; 16
Ballast	840 lb each	None
	Cast iron	None
Front tires	Two 7.5L-15; 6; 36	Two 7.5L-15; 6; 36
Ballast	None	None
	Cast iron	25 lb each
Height of drawbar	15½ inches	16 inches
Static weight with operator—Rear	8270 lb	6590 lb
	Front	2680 lb
	Total	10950 lb
		9220 lb

Department of Agricultural Engineering

Dates of Test: October 28 to November 7, 1970

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°** 0.8271 **Weight per gallon** 6.887 lb **Oil SAE 30 API service classification** MS, DS **To motor** 2.641 gal **Drained from motor** 1.809 gal **Transmission and final-drive lubricant** Case TCH oil **Total time engine was operated** 44 hours.

ENGINE Make Case Diesel **Type** 4 cylinder vertical **Serial No** 2315266 **Crankshaft mounted lengthwise** **Rated rpm** 1900 **Bore and stroke** 4½" x 5" **Compression ratio** 16.5 to 1 **Displacement** 267 cu in **Cranking system** 12 volt electric **Lubrication pressure** Air cleaner dry type with replaceable pleated paper element with pre-cleaner **Oil filter** full flow replaceable cartridge **Fuel filter** replaceable primary and secondary filter cartridges **Muffler** was used **Cooling medium temperature control** thermostat.

CHASSIS **Type** standard **Serial No** 8664765 **Tread width rear** 60" 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** 29.2" **Vertical distance above roadway** 35.3" **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 **Advised 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, 17.0 **Clutch** multiple disc wet clutches within transmission hydraulically actuated **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 147" left 147" (on concrete surface without brake) right 173" left 173" **Turning space diameter** (on concrete surface with brake applied) right 305" left 305" (on concrete surface without brake) right 355" left 355" **Belt pulley** 1108 rpm at 1900 engine rpm diam 10½" face 7¼" **Belt speed** 3045 fpm **Power take-off** 538 rpm at 1900 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with the SAE and ASAE test code.

First range low was not run as it was necessary to limit the pull in first range intermediate to avoid excessive wheel slippage. Second range low, fourth range intermediate and fourth range high gears were not run as test procedure requires only eight gears.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1058.

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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