January 1970

Test 1059: Case 870 Power Shift Gasoline

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1059 – CASE 870 POWER SHIFT GASOLINE

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 (PTO Speed—538 rpm)									
	70.65	1900	6.283	0.546	11.24	205	56	75	29.120
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
	62.61	1980	6.068	0.595	10.32	202	57	74	.....
	0.00	2098	2.678	.....	.....	199	57	73	.....
	31.92	2021	4.427	0.852	7.21	203	61	81	.....
	70.15	1901	6.156	0.539	11.40	206	58	75	.....
	16.28	2060	3.547	1.338	4.59	200	56	73	.....
	47.42	1999	5.272	0.683	8.99	202	56	77	.....
Av	**38.06**	**2010**	**4.691**	**0.757**	**8.11**	**202**	**57**	**75**	**29.143**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Fuel Consumption Slip of drivers %	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
VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST											
Maximum Available Power—Two Hours—2nd Range High											
58.03	4801	4.53	1897	5.42	6.126	0.648	9.47	197	47	58	28.915
75% of Pull at Maximum Power—Ten Hours—2nd Range High											
47.61	3697	4.83	1983	3.68	5.958	0.768	7.99	190	49	62	28.724
50% of Pull at Maximum Power—Two Hours—2nd Range High											
33.26	2498	4.99	2016	2.17	4.705	0.869	7.07	195	50	64	28.785
MAXIMUM POWER WITH BALLAST											
48.25	8793	2.06	1969	14.90	1st Range Intermed			196	45	59	29.010
55.71	8131	2.57	1898	11.76	1st Range High			193	46	60	28.990
59.06	6247	3.55	1901	7.85	2nd Range Intermed			196	46	60	28.980
60.22	5587	4.04	1900	6.70	3rd Range Low			196	47	61	28.970
59.36	4919	4.53	1900	5.87	2nd Range High			195	47	61	28.970
59.65	4055	5.52	1901	4.45	3rd Range Intermed			198	47	63	28.930
58.52	3148	6.97	1902	3.51	3rd Range High			198	47	64	28.930
56.73	2269	9.38	1906	2.47	4th Range Low			199	47	63	28.930
MAXIMUM PULL WITHOUT BALLAST											
48.19	6960	2.60	1973	14.95	1st Range High			197	38	46	28.730

VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST
2nd Range High

Pounds Pull	4919	5412	5693	5770	5343	5001
Horsepower	59.36	58.22	54.26	48.14	38.52	30.04
Crankshaft Speed rpm	1900	1706	1518	1330	1143	948
Miles Per Hour	4.53	4.04	3.57	3.13	2.70	2.25
Slip of Drivers %	5.87	6.42	6.97	6.97	6.42	5.87

TIRES, BALLAST and WEIGHT		**With Ballast**	**Without Ballast**
Rear tires	—No, size, ply & psi	Two 18.4-34; 8; 16	Two 18.4-34; 8; 16
Ballast	—Liquid	1090 lb each	None
	Cast iron	280 lb each	None
Front tires	—No, size, ply & psi	Two 7.50-16; 6; 36	Two 7.50-16; 6; 36
Ballast	—Liquid	None	None
	Cast iron	25 lb each	None
Height of drawbar		16½ inches	17 inches
Static weight with operator—Rear		9280 lb	6540 lb
Front		2630 lb	2580 lb
Total		11910 lb	9120 lb

Department of Agricultural Engineering

Dates of Test: October 28 to November 17, 1970

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

FUEL, OIL and TIME Fuel regular gasoline **Octane No** Motor 85.4 Research 92 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.7376 **Weight per gallon** 6.140 lb **Oil** SAE 20-20W **API service classification** MS, DM **To motor** 2.008 gal **Drained from motor** 1.935 gal **Transmission and final-drive lubricant** Case TCH Oil **Total time engine was operated** 49½ hours.

ENGINE Make Case gasoline **Type** 4 cylinder vertical **Serial No** 2318529 **Crankshaft mounted** lengthwise **Rated rpm** 1900 **Bore and stroke** 4⅜" x 5" **Compression ratio** 7.5 to 1 **Displacement** 301 cu in **Carburetor size** 1¼" **Ignition system** battery **Cranking system** 12 volt electric **Lubrication** pressure **Air cleaner** dry type with replaceable pleated paper element with precleaner **Oil filter** full flow replaceable cartridge **Fuel filter** sediment bowl and screen **Muffler** was used **Cooling medium temperature control** thermostat.

CHASSIS Type standard **Serial No** 8668025 **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 centerline of rear wheels 29.3" Vertical distance above raodway 37.0" 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, 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 power **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 10.5" face 7.25" **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 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 1059.

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Engineer-in-Charge

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