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Test 1241: Case 2870 Diesel

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

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NEBRASKA TRACTOR TEST 1241 — CASE 2870 DIESEL

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption		Temperature °F (°C)				Barometer inch Hg (kPa)	
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	Air wet bulb	Air dry bulb		
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—1009 rpm)									
252.10 (187.99)	2200	16.322 (61.784)	0.449 (0.273)	15.45 (3.043)	184 (84.4)	66 (18.8)	77 (24.7)	28.670 (96.814)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
225.76 (168.35)	2320	15.582 (58.984)	0.479 (0.291)	14.49 (2.854)	180 (81.9)	68 (19.7)	78 (25.8)	..... .....
0.00 (0.00)	2468	5.576 (21.108)	..... .....	..... .....	178 (81.1)	66 (19.2)	78 (25.6)	..... .....
117.02 (87.26)	2404	10.421 (39.448)	0.618 (0.376)	11.23 (2.212)	178 (81.1)	67 (19.4)	78 (25.6)	..... .....
251.16 (187.29)	2200	16.335 (61.833)	0.451 (0.274)	15.38 (3.029)	184 (84.2)	68 (20.0)	80 (26.7)	..... .....
59.18 (44.13)	2432	8.012 (30.327)	0.939 (0.571)	7.39 (1.455)	178 (80.8)	67 (19.4)	79 (26.1)	..... .....
172.82 (128.88)	2366	12.822 (48.536)	0.515 (0.313)	13.48 (2.655)	179 (81.7)	68 (19.7)	80 (26.4)	..... .....
Av Av	137.66 (102.65)	2365	11.458 (43.373)	0.577 (0.351)	12.01 (2.367)	179 (81.8)	67 (19.6)	79 (26.0)	28.703 (96.927)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel gal/hr (l/h)	Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Temp. °F (°C) Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (3-I) Gear											
210.64 (157.08)	13784 (61.31)	5.73 (9.22)	2200	5.12	16.222 (61.407)	0.534 (0.325)	12.98 (2.558)	180 (82.2)	64 (17.8)	76 (24.2)	28.965 (97.810)
75% of Pull at Maximum Power—Ten Hours 8th (3-I) Gear											
174.98 (130.48)	10552 (46.94)	6.22 (10.01)	2356	3.76	14.142 (53.533)	0.561 (0.341)	12.37 (2.437)	178 (81.1)	58 (14.5)	64 (17.9)	28.936 (97.713)
50% of Pull at Maximum Power—Two Hours 8th (3-I) Gear											
120.97 (90.21)	7070 (31.45)	6.42 (10.33)	2399	2.39	11.626 (44.008)	0.666 (0.405)	10.40 (2.050)	178 (80.8)	69 (20.6)	77 (25.0)	28.940 (97.726)
50% of Pull at Reduced Engine Speed—Two Hours 10th (4-L) Gear											
120.22 (89.65)	7026 (31.26)	6.42 (10.33)	1740	2.43	8.940 (33.842)	0.516 (0.314)	13.45 (2.649)	176 (79.7)	65 (18.3)	78 (25.6)	28.940 (97.726)
MAXIMUM POWER IN SELECTED GEARS											
180.38 (134.51)	26386 (117.37)	2.56 (4.13)	2345	14.81	2nd (1-I) Gear			179 (81.7)	53 (11.7)	58 (14.4)	28.940 (97.726)
209.36 (156.12)	20251 (90.08)	3.88 (6.24)	2199	8.29	5th (2-I) Gear			180 (81.9)	61 (16.1)	69 (20.6)	28.970 (97.827)
214.89 (160.24)	19280 (85.76)	4.18 (6.73)	2199	7.52	6th (3-L) Gear			179 (81.4)	60 (15.6)	66 (18.9)	28.970 (97.827)
213.17 (158.96)	16060 (71.44)	4.98 (8.01)	2199	5.81	7th (2-H) Gear			180 (81.9)	59 (15.0)	64 (17.8)	28.970 (97.827)
219.61 (163.76)	14403 (64.07)	5.72 (9.20)	2199	5.16	8th (3-I) Gear			179 (81.7)	58 (14.4)	66 (18.9)	28.960 (97.794)
216.90 (161.74)	10134 (45.08)	8.03 (12.92)	2201	3.58	10th (4-L) Gear			180 (82.2)	62 (16.7)	72 (22.2)	28.970 (97.827)
LUGGING ABILITY IN RATED GEAR 8th (3-I)											
Crankshaft Speed rpm				2199	1975	1759	1540	1314	1100		
Pull—lbs (kN)				14403 (64.07)	15636 (69.55)	17029 (75.75)	17910 (79.67)	18345 (81.60)	18089 (80.47)		
Increase in Pull %				0	9	18	24	27	26		
Power—Hp (kW)				219.61 (163.76)	213.08 (158.89)	205.18 (153.00)	188.07 (140.24)	163.77 (122.12)	135.16 (100.79)		
Speed—Mph (km/h)				5.72 (9.20)	5.11 (8.22)	4.52 (7.27)	3.94 (6.34)	3.35 (5.39)	2.80 (4.51)		
Slip %				5.16	5.45	6.32	6.89	7.03	6.89		

Department of Agricultural Engineering

Dates of Test: May 3 to 12, 1977

Manufacturer: J. I. Case Company, 700 State Street, Racine, Wisconsin 53404

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 51.8 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8329 **Fuel weight** 6.935 lbs/gal (0.833 kg/l) **Oil** SAE 30 **API service classification** CB CD SC SD SE **To motor** 6.799 gal (25.737 l) **Drained from motor** 5.659 gal (21.422 l) **Transmission and hydraulic oil** Case TFD fluid **Total time engine was operated** 52.5 hours

ENGINE Make SAAB-Scania Diesel **Type** 6 cylinder vertical with turbocharger **Serial No.** 959089 **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 5.00" × 5.71" (127.0 mm × 145.0 mm) **Compression ratio** 14.7 to 1 **Displacement** 673 cu in (11045 ml) **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** paper primary and safety elements, centrifugal precleaner and aspirator **Oil filter** full flow centrifugal, separate cartridge for turbocharger oil supply **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for transmission and hydraulic oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats

CHASSIS: **Type** 4 wheel drive with duals **Serial No.** 8825801 **Tread width** rear 76" (1930 mm) to 94" (2388 mm) front 76" (1930 mm) to 94" (2388 mm) **Wheel base** 110" (2794 mm) **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 61.2" (1554 mm) Vertical distance above roadway 42.9" (1090 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3 range) operator controlled power shift **Advertised speeds mph (km/h)** first 2.0 (3.2) second 2.7 (4.3) third 3.1 (5.0) fourth 3.4 (5.5) fifth 4.2 (6.8) sixth 4.4 (7.1) seventh 5.2 (8.4) eighth 5.9 (9.5) ninth 7.4 (11.9) tenth 8.1 (13.0) eleventh 10.8 (17.4) twelfth 14.9 (24.0) reverse 3.4 (5.5), 5.2 (8.4), 7.4 (11.9) and 14.9 (24.0) **Clutch** multiple wet disc hydraulically actuated and operated by foot pedal **Brakes** multiple dry disc hydraulically actuated and operated by foot pedal **Steering** hydrostatic, front wheels and rear wheels can be steered independently or together **Turning radius** (on concrete surface with front wheel steering) right 323" (8.20 m) left 323" (8.20 m) (on concrete surface with four wheel steering) right 191" (4.85 m) left 191" (4.85 m) **Turning space diameter** (on concrete surface with front wheel steering) right 673" (17.09 m) left 673" (17.09 m) (on concrete surface with four wheel steering) right 415" (10.54 m) left 415" (10.54 m) **Power take-off** 1009 rpm at 2200 engine rpm.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	82.0
75% of Pull at Maximum Power—Ten Hours	81.5
50% of Pull at Maximum Power—Two Hours	82.0
50% of Pull at Reduced Engine Speed—Two Hours	79.0
Bystander in 12th (4-H) gear	92.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 20.8-34; 8; 12 (80)	Four 20.8-34; 8; 12 (80)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each inner)	80 lb (36 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Four 20.8-34; 8; 12 (80)	Four 20.8-34; 8; 12 (80)
Ballast	—Liquid (each inner)	1385 lb (628 kg)	None
	—Cast Iron (each inner)	60 lb (28 kg)	None
Height of drawbar		16.5 in (420 mm)	16.5 in (420 mm)
Static weight with operator—rear		11820 lb (5361 kg)	11660 lb (5289 kg)
	front	16330 lb (7407 kg)	13440 lb (6096 kg)
	total	28150 lb (12769 kg)	25100 lb (11385 kg)

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. Temperature at injection pump return was 164°F (73.1°C). Six gears were chosen between 15% slip and 15 mph (24.1 km/h). Five exhaust valve stems showed scratching & abrasion of the chrome plating.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1241**.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers



Case 2870 Diesel