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Test 1297: Case 2290 Powershift Diesel

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1297 — CASE 2290 POWERSHIFT 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—998 rpm)								
129.08 (96.25)	2100	8.890 (33.652)	0.476 (0.290)	14.52 (2.860)	203 (94.8)	55 (12.7)	75 (23.9)	29.267 (98.829)

VARYING POWER AND FUEL CONSUMPTION—Two Hours

113.58 (84.69)	2174	8.257 (31.255)	0.503 (0.306)	13.76 (2.710)	198 (91.9)	56 (13.3)	76 (24.2)	..... .....
0.00 (0.00)	2326	2.797 (10.588)	..... .....	..... .....	182 (83.3)	54 (12.2)	74 (23.6)	..... .....
59.04 (44.03)	2260	5.390 (20.404)	0.632 (0.384)	10.95 (2.158)	190 (87.5)	56 (13.3)	76 (24.7)	..... .....
129.20 (96.34)	2100	8.942 (33.849)	0.479 (0.291)	14.45 (2.846)	203 (95.0)	58 (14.2)	77 (25.0)	..... .....
29.80 (22.22)	2292	4.072 (15.414)	0.945 (0.575)	7.32 (1.442)	184 (84.4)	56 (13.1)	74 (23.6)	..... .....
86.83 (64.75)	2220	6.834 (25.871)	0.545 (0.331)	12.70 (2.503)	193 (89.4)	57 (13.9)	77 (25.0)	..... .....
Av 69.74 (52.01)	2228	6.049 (22.897)	0.600 (0.365)	11.53 (2.271)	192 (88.6)	56 (13.3)	76 (24.4)	29.227 (98.694)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb

Maximum Available Power—Two Hours 8th (3I) Gear

109.21 (81.44)	6556 (29.16)	6.25 (10.05)	2100	4.46	8.637 (32.694)	0.547 (0.333)	12.65 (2.491)	192 (88.6)	35 (1.7)	44 (6.7)	28.675 (96.831)
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75% of Pull at Maximum Power—Ten Hours 8th (3I) Gear

87.98 (65.61)	4951 (22.02)	6.66 (10.72)	2219	3.51	7.737 (29.288)	0.608 (0.370)	11.37 (2.240)	187 (85.8)	33 (0.4)	34 (0.9)	29.056 (98.118)
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50% of Pull at Maximum Power—Two Hours 8th (3I) Gear

59.86 (44.64)	3273 (14.56)	6.86 (11.04)	2252	2.17	6.125 (23.187)	0.708 (0.431)	9.77 (1.925)	186 (85.6)	32 (0.0)	36 (2.2)	29.185 (98.553)
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50% of Pull at Reduced Engine Speed—Two Hours 10th (4L) Gear

60.21 (44.90)	3299 (14.68)	6.84 (11.01)	1473	2.25	4.644 (17.578)	0.534 (0.325)	12.97 (2.554)	185 (85.0)	32 (0.0)	36 (2.2)	29.165 (98.486)
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MAXIMUM POWER IN SELECTED GEARS

97.25 (72.52)	12749 (56.71)	2.86 (4.60)	2152	14.69			4th (2L) Gear	191 (88.3)	36 (2.2)	42 (5.6)	28.660 (98.781)
110.81 (82.63)	10346 (46.02)	4.02 (6.46)	2098	7.69			5th (2I) Gear	192 (88.9)	36 (2.2)	44 (6.7)	28.660 (96.781)
111.65 (83.26)	9132 (40.62)	4.58 (7.38)	2098	6.54			6th (3L) Gear	192 (88.9)	37 (2.8)	45 (7.2)	28.670 (96.814)
110.89 (82.69)	8075 (35.92)	5.15 (8.29)	2099	5.44			7th (2H) Gear	192 (88.9)	37 (2.8)	45 (7.2)	28.670 (96.814)
111.68 (83.28)	6702 (29.81)	6.25 (10.06)	2099	4.24			8th (3I) Gear	192 (88.9)	36 (2.2)	45 (7.2)	28.670 (96.814)
111.54 (83.17)	5297 (23.56)	7.90 (12.71)	2100	3.31			9th (3H) Gear	192 (88.9)	37 (2.8)	45 (7.2)	28.660 (96.781)
108.36 (80.81)	4182 (18.60)	9.72 (15.64)	2100	2.61			10th (4L) Gear	192 (88.9)	37 (2.8)	45 (7.2)	28.660 (96.781)

LUGGING ABILITY IN RATED GEAR 8th (3I)

Crankshaft Speed rpm	2099	1886	1682	1473	1259	1039
Pull—lbs (kN)	6702 (29.81)	7353 (32.71)	8059 (35.85)	8349 (37.14)	8279 (36.83)	7797 (34.68)
Increase in Pull %	0	10	20	25	24	16
Power—Hp (kW)	111.68 (83.28)	109.55 (81.69)	106.48 (79.40)	96.30 (71.81)	81.63 (60.87)	63.68 (47.48)
Speed—Mph (km/h)	6.25 (10.06)	5.59 (8.99)	4.95 (7.97)	4.33 (6.96)	3.70 (5.95)	3.06 (4.93)
Slip %	4.24	4.69	5.44	5.74	5.44	5.29

Department of Agricultural Engineering

Dates of Test: November 9, 1978 to January 4, 1979

Manufacturer: J. I. CASE COMPANY, 700 State Street Racine, Wisconsin 53404.

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 50.4 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8309 **Fuel weight** 6.918 lbs/gal (0.831 kg/l) **Oil SAE 30 API service classification** SE-CD **To motor** 4.281 gal (16.204 l) **Drained from motor** 4.000 gal (15.140 l) **Transmission and final drive lubricant** Case TFD fluid **Total time engine was operated** 46.0 hours

ENGINE Make Case Diesel **Type** 6 cylinder vertical with turbocharger **Serial No.** 10159921 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" × 5.0" (117.5 mm × 127 mm) **Compression ratio** 15.75 to 1 **Displacement** 504 cu in (8259 ml) **Cranking system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats

CHASSIS: Type standard with duals **Serial No.** 8835688 **Tread width** rear 60" (1524 mm) to 124" (3150 mm) front 60" (1524 mm) to 88" (2235 mm) **Wheel base** 104" (2642 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 29.4" (747 mm) Vertical distance above roadway 40.6" (1031 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 powershift **Advertised speeds mph (km/h)** first 1.9 (3.1) second 2.5 (4.0) third 3.2 (5.2) fourth 3.2 (5.2) fifth 4.3 (6.9) sixth 4.9 (7.9) seventh 5.4 (8.7) eighth 6.5 (10.5) ninth 8.1 (13.0) tenth 9.9 (15.9) eleventh 13.2 (21.2) twelfth 18.1 (29.1) reverse 3.2 (5.2), 5.4 (8.7), 8.1 (13.0) **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 145" (3.68 m) left 145" (3.68 m) (on concrete surface without brake) right 163" (4.14 m) left 163" (4.14 m) **Turning space diameter** (on concrete surface with brake applied) right 300" (7.62 m) left 300" (7.62 m) (on concrete surface without brake) right 341" (8.66 m) left 341" (8.66 m) **Power take-off** 998 rpm at 2100 engine rpm and 534 rpm at 2100 engine rpm.

REPAIRS and ADJUSTMENTS: Before sound tests, it was necessary to replace a hydraulic hose beneath tractor cab.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	78.0
75% of Pull at Maximum Power—Ten Hours	76.5
50% of Pull at Maximum Power—Two Hours	76.0
50% of Pull at Reduced Engine Speed—Two Hours	74.0
Bystander in 12th (4H) gear	89.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-38; 8; 12 (85)	Four 18.4-38; 8; 12 (85)
	Ballast	965 lb (438 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 11.00-16; 8; 40 (275)	Two 11.00-16; 8; 40 (275)
	Ballast	None	None
	—Cast Iron (each)	105 lb (48 kg)	None
Height of Drawbar		19 in (485 mm)	19 in (485 mm)
Static Weight with Operator—Rear		12250 lb (5557 kg)	10320 lb (4681 kg)
Front		3590 lb (1628 kg)	3380 lb (1533 kg)
Total		15840 lb (7185 kg)	13700 lb (6214 kg)

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 194°F (90.1°C). Seven gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1297**.

LOUIS I. LEVITICUS

Engineer-in Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



Case 2290 Powershift Diesel