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Test 1295: Case 2090 Powershift Diesel

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1295 — CASE 2090 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)									
108.29 (80.75)	2100	7.247 (27.433)	0.463 (0.282)	14.94 (2.944)	204 (95.3)	57 (13.7)	75 (23.9)	28.987 (97.884)	
*	VARYING POWER AND FUEL CONSUMPTION—Two Hours								
95.28 (71.05)	2178	6.618 (25.050)	0.481 (0.292)	14.40 (2.836)	195 (90.6)	57 (13.9)	76 (24.2)	..... .....
0.00 (0.00)	2317	2.520 (9.537)	..... .....	..... .....	179 (81.7)	56 (13.3)	72 (22.2)	..... .....
49.52 (36.92)	2257	4.467 (16.908)	0.624 (0.380)	11.09 (2.184)	186 (85.3)	56 (13.1)	73 (22.8)	..... .....
109.90 (81.95)	2100	7.411 (28.054)	0.467 (0.284)	14.83 (2.921)	203 (95.0)	58 (14.2)	76 (24.4)	..... .....
25.05 (18.68)	2283	3.448 (13.050)	0.952 (0.579)	7.27 (1.431)	181 (82.8)	56 (13.3)	72 (22.5)	..... .....
73.13 (54.53)	2224	5.507 (20.848)	0.521 (0.317)	13.28 (2.616)	189 (87.2)	58 (14.7)	76 (24.2)	..... .....
Av Av	58.81 (43.86)	2226	4.995 (18.908)	0.588 (0.357)	11.77 (2.319)	189 (87.1)	57 (13.8)	74 (23.4)	28.980 (97.861)

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											
89.40 (66.67)	5106 (22.71)	6.57 (10.57)	2101	4.89	7.155 (27.086)	0.554 (0.337)	12.49 (2.461)	198 (91.9)	53 (11.7)	68 (19.7)	28.690 (96.882)
75% of Pull at Maximum Power—Ten Hours 8th (3I) Gear											
74.71 (55.71)	4024 (17.90)	6.96 (11.20)	2199	3.70	6.245 (23.638)	0.578 (0.352)	11.96 (2.357)	190 (87.5)	54 (12.1)	62 (16.6)	28.536 (96.362)
50% of Pull at Maximum Power—Two Hours 8th (3I) Gear											
51.67 (38.53)	2678 (11.91)	7.24 (11.64)	2257	2.36	5.095 (19.288)	0.682 (0.415)	10.14 (1.998)	184 (84.4)	44 (6.4)	49 (9.2)	28.695 (96.899)
50% of Pull at Reduced Engine Speed—Two Hours 10th (4L) Gear											
52.10 (38.85)	2696 (11.99)	7.25 (11.66)	1481	2.41	3.957 (14.979)	0.525 (0.320)	13.17 (2.594)	185 (85.0)	47 (8.3)	54 (12.2)	28.720 (96.983)
MAXIMUM POWER IN SELECTED GEARS											
87.94 (65.58)	11211 (49.87)	2.94 (4.73)	2103	14.84	4th (2L) Gear			194 (90.0)	59 (15.0)	65 (18.3)	28.520 (96.308)
92.05 (68.64)	8191 (36.44)	4.21 (6.78)	2100	8.55	5th (2I) Gear			200 (93.3)	57 (13.9)	71 (21.7)	28.640 (96.713)
93.60 (69.80)	7302 (32.48)	4.81 (7.74)	2099	7.21	6th (3L) Gear			200 (93.1)	56 (13.3)	70 (21.1)	28.640 (96.713)
90.36 (67.38)	6262 (27.86)	5.41 (8.71)	2100	5.99	7th (2H) Gear			201 (93.9)	56 (13.3)	70 (21.1)	28.640 (96.713)
93.95 (70.06)	5369 (23.88)	6.56 (10.56)	2101	4.97	8th (3I) Gear			200 (93.6)	55 (12.8)	70 (21.1)	28.650 (96.747)
91.70 (68.38)	4138 (18.41)	8.31 (13.37)	2101	3.77	9th (3H) Gear			199 (92.8)	56 (13.3)	70 (21.1)	28.640 (96.713)
LUGGING ABILITY IN RATED GEAR 8th (3I)											
Crankshaft Speed rpm				2101	1893	1681	1474	1256	1042		
Pull—lbs (kN)				5369 (23.88)	5914 (26.31)	6259 (27.84)	6275 (27.91)	6040 (26.87)	5766 (25.65)		
Increase in Pull %				0	10	17	17	12	7		
Power—Hp (kW)				93.95 (70.06)	92.76 (69.17)	86.83 (64.75)	76.25 (56.86)	62.61 (46.69)	49.62 (37.00)		
Speed—Mph (km/h)				6.56 (10.56)	5.88 (9.47)	5.20 (8.37)	4.56 (7.33)	3.89 (6.26)	3.23 (5.19)		
Slip %				4.97	5.68	5.68	5.99	5.83	5.68		

Department of Agricultural Engineering

Dates of Test: November 6-13, 1978

Manufacturer: J. I. CASE CO., 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** 4.088 gal (15.473 l) **Drained from motor** 3.882 gal (14.693 l) **Transmission and final drive lubricant** Case TFD fluid **Total time engine was operated** 36.5 hours.

ENGINE: Make Case Diesel Type 6 cylinder vertical Serial No. 10159810 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.625" x 5.00" (117.5 mm x 127 mm) **Compression ratio** 16.0 to 1 **Displacement** 504 cu in (8259 ml) **Cranking System** 12 volt **Lubrication pressure** **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil Cooler** radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** 2 thermostats.

CHASSIS: Type standard Serial No. 8835687 **Tread width** rear 64" (1626 mm) to 88" (2235 mm) front 60" (1525 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 29.0" (737 mm) Vertical distance above roadway 40.7" (1034 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 2.6 (4.2) third 3.3 (5.3) fourth 3.4 (5.5) fifth 4.5 (7.2) sixth 5.0 (8.0) seventh 5.6 (9.0) eighth 6.7 (10.8) ninth 8.4 (13.5) tenth 10.2 (16.4) eleventh 13.6 (21.9) twelfth 18.8 (30.3) reverse 3.3 (5.3), 5.6 (9.0), 8.4 (13.5) **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 142" (3.61 m) left 142" (3.61 m) (on concrete surface without brake) right 167" (4.24 m) left 167" (4.24 m) **Turning space diameter** (on concrete surface with brake applied) right 296" (7.52 m) left 296" (7.52 m) (on concrete surface without brake) right 347" (8.81 m) left 347" (8.81 m) **Power take-off** 998 rpm at 2100 engine rpm and 534 rpm at 2100 engine rpm.

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

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	78.0
75% of Pull at Maximum Power—Ten Hours	77.5
50% of Pull at Maximum Power—Two Hours	78.0
50% of Pull at Reduced Engine Speed—Two Hours	73.0
Bystander in 12th (4H) gear	88.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 20.8-38; 8; 18 (125)	Two 20.8-38; 8; 18 (125)
Ballast	—Liquid (each)	1465 lb (665 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	—Liquid (each)	None	None
	—Cast Iron (each)	115 lb (52 kg)	None
Height of Drawbar		21 in (535 mm)	21 in (535 mm)
Static Weight with Operator—Rear		11640 lb (5280 kg)	8710 lb (3951 kg)
	—Front	3550 lb (1610 kg)	3320 lb (1506 kg)
	—Total	15190 lb (6890 kg)	12030 lb (5457 kg)

procedure. Temperature at injection pump return was 191°F (88.2°C). Six 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 1295.

L. I. LEVITICUS
Engineer-in-Charge

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



Case 2090 Powershift Diesel

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