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## Test 1328: Case 4490 Diesel 12-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1328—CASE 4490 DIESEL ALSO CASE 4494 POWERSHIFT DIESEL ALSO CASE INTERNATIONAL 4494 POWERSHIFT DIESEL 12 SPEED

## 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—1000 rpm)									
175.20 (130.65)	2200	11.471 (43.424)	0.460 (0.280)	15.27 (3.009)	196 (91.2)	63 (17.3)	75 (23.9)	28.920 (97.659)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
154.24 (115.02)	2281	10.552 (39.943)	0.481 (0.293)	14.62 (2.880)	192 (88.6)	62 (16.7)	74 (23.6)	..... .....	
0.00 (0.00)	2397	3.354 (12.695)	..... .....	..... .....	179 (81.7)	62 (16.7)	75 (23.9)	..... .....	
79.74 (59.46)	2355	6.857 (25.956)	0.605 (0.368)	11.63 (2.291)	186 (85.8)	62 (16.7)	75 (23.9)	..... .....	
176.55 (131.65)	2200	11.516 (43.593)	0.459 (0.279)	15.33 (3.020)	196 (90.8)	62 (16.7)	76 (24.2)	..... .....	
40.00 (29.83)	2370	5.069 (19.188)	0.891 (0.542)	7.89 (1.555)	181 (82.8)	60 (15.6)	75 (23.9)	..... .....	
117.75 (87.81)	2320	8.640 (32.707)	0.516 (0.314)	13.63 (2.685)	190 (87.5)	60 (15.3)	74 (23.6)	..... .....	
Av Av	94.71 (70.63)	2321 (29.014)	7.665 (29.014)	0.569 (0.346)	12.36 (2.434)	187 (86.2)	61 (16.3)	75 (23.8)	28.967 (97.816)

## DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel 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 (3I) Gear											
150.14 (111.96)	9977 (44.38)	5.64 (9.08)	2199	4.07	11.289 (42.735)	0.529 (0.322)	13.30 (2.620)	195 (90.3)	57 (13.6)	71 (21.7)	28.980 (97.861)
75% of Pull at Maximum Power—Ten Hours 8th (3I) Gear											
121.71 (90.76)	7639 (33.98)	5.97 (9.62)	2298	2.78	9.721 (36.799)	0.562 (0.342)	12.52 (2.466)	190 (87.8)	61 (16.1)	66 (18.8)	28.747 (97.074)
50% of Pull at Maximum Power—Two Hours 8th (3I) Gear											
83.52 (62.28)	5096 (22.67)	6.15 (9.89)	2341	1.82	7.680 (29.073)	0.647 (0.393)	10.87 (2.142)	184 (84.4)	54 (11.9)	57 (13.6)	28.580 (96.510)
50% of Pull at Reduced Engine Speed—Two Hours 9th (3H) Gear											
83.44 (62.22)	5091 (22.65)	6.15 (9.89)	1871	1.74	6.507 (24.631)	0.548 (0.334)	12.82 (2.526)	185 (85.0)	60 (15.6)	65 (18.1)	28.500 (96.240)
MAXIMUM POWER IN SELECTED GEARS											
136.59 (101.85)	21400 (95.19)	2.39 (3.85)	2260	14.83	2nd (1I) Gear			189 (87.2)	48 (8.9)	49 (9.4)	28.600 (96.578)
142.15 (106.00)	19195 (85.38)	2.78 (4.47)	2200	11.34	3rd (2L) Gear			191 (88.1)	56 (13.3)	70 (21.1)	28.990 (97.895)
144.01 (107.39)	17396 (77.38)	3.10 (5.00)	2199	9.21	4th (1H) Gear			192 (88.9)	56 (13.3)	70 (21.1)	28.990 (97.895)
151.05 (112.64)	14548 (64.71)	3.89 (6.27)	2198	6.71	5th (2I) Gear			194 (90.0)	55 (12.8)	67 (19.4)	29.010 (97.962)
151.31 (112.83)	13700 (60.94)	4.14 (6.67)	2200	6.16	6th (3L) Gear			194 (89.7)	55 (12.8)	66 (18.9)	29.020 (97.996)
151.19 (112.74)	11387 (50.65)	4.98 (8.01)	2201	4.66	7th (2H) Gear			193 (89.4)	54 (12.2)	65 (18.3)	29.030 (98.030)
153.30 (114.32)	10180 (45.28)	5.65 (9.09)	2202	4.00	8th (3I) Gear			193 (89.4)	52 (11.1)	62 (16.7)	29.050 (98.097)
152.80 (113.94)	8029 (35.72)	7.14 (11.48)	2200	2.96	9th (3H) Gear			194 (90.0)	55 (12.8)	68 (20.0)	29.000 (97.929)
150.03 (111.88)	5872 (26.12)	9.58 (15.42)	2201	2.05	10th (4L) Gear			194 (89.7)	56 (13.3)	69 (20.6)	29.000 (97.929)

Department of Agricultural Engineering

Dates of Test: October 15-20, 1979

Manufacturer: J. I. CASE COMPANY, 700

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 49.0 (rating taken from oil company's inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.8444 Fuel weight 7.031 lbs/gal (0.843 kg/l) Oil SAE 30 API service classification SE-CD To motor 5.781 gal (21.881 l) Drained from motor 5.422 gal (20.522 l) Transmission and hydraulic lubricant Case TFD fluid Final drive lubricant Case FDL fluid Total time engine was operated 35 hours.

**ENGINE:** Make Case Diesel Type six cylinder vertical with turbocharger Serial No. 10175566 Crankshaft lengthwise Rated rpm 2200 Bore and stroke 4.625" × 5.0" (117.5 mm × 127 mm) Compression ratio 15.8 to 1 Displacement 504 cu in (8259 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements with aspirator Oil filter two paper 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 four wheel drive with duals Serial No. 8854458 Tread width rear 74" (1880 mm) to 123" (3124 mm) front 74" (1880 mm) to 123" (3124 mm) Wheel base 102" (2591 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 55.0" (1397 mm) Vertical distance above roadway 41.2" (1046 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 2.0 (3.2) second 2.7 (4.4) third 3.0 (4.8) fourth 3.3 (5.3) fifth 4.1 (6.6) sixth 4.3 (6.9) seventh 5.1 (8.2) eighth 5.7 (9.2) ninth 7.2 (11.6) tenth 9.5 (15.3) eleventh 12.7 (20.5) twelfth 17.5 (28.2) reverse 3.3 (5.3), 5.1 (8.2), 7.2 (11.6), 17.5 (28.2) Clutch multiple wet disc hydraulically operated by foot pedal Brakes multiple dry disc hydraulically operated by foot pedal Steering hydrostatic for front wheels, electro hydraulic for rear wheels, front and rear wheels may be steered independently or together Turning radius (on concrete surface with front-wheel steering) with duals, right 308" (7.82 m) left 308" (7.82 m) with singles, right 284" (7.21 m) left 284" (7.21 m) (on concrete surface with four-wheel steering) with duals, right 202" (5.13 m) left 202" (5.13 m) with singles, right 174" (4.42 m) left 174" (4.42 m) Turning space diameter (on concrete surface with front-wheel steering) with duals, right 640" (16.26 m) left 640" (16.26 m) with singles, right 597" (15.16 m) left 597" (15.16 m) (on concrete surface with four-wheel steering) with duals, right 430" (10.92

# LUGGING ABILITY IN 8th (3I) GEAR

Crankshaft Speed rpm	2202	1976	1765	1544	1310	1101
Pull—lbs (kN)	10180 (45.28)	10978 (48.83)	11312 (50.32)	11222 (49.92)	10570 (47.02)	9554 (42.50)
Increase in Pull %	0	8	11	10	4	-6
Power—Hp (kW)	153.30 (114.32)	147.70 (110.14)	135.63 (101.14)	117.74 (87.80)	94.43 (70.42)	72.13 (53.79)
Speed—Mph (km/h)	5.65 (9.09)	5.05 (8.12)	4.50 (7.24)	3.93 (6.33)	3.35 (5.39)	2.83 (4.56)
Slip %	4.00	4.51	4.80	4.66	4.36	3.92

# TRACTOR SOUND LEVEL WITH CAB                      dB(A)

Maximum Available Power—Two Hours	77.5
75% of Pull at Maximum Power—Ten Hours	77.5
50% of Pull at Maximum Power—Two Hours	77.5
50% of Pull at Reduced Engine Speed—Two Hours	77.5
Bystander in 12th (4H) gear	84.0

# TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b>		
—No., size, ply & psi (kPa)	Four 18.4-34; 6; 16 (110)	Four 18.4-34; 6; 16 (110)
Ballast	None	None
—Effect of front ballast (each)	-108 lb (-49 kg)	None
<b>Front Tires</b>		
—No., size, ply & psi (kPa)	Four 18.4-34; 6; 16 (110)	Four 18.4-34; 6; 16; (110)
Ballast	355 lb (161 kg)	None
—Liquid (each inner)	332 lb (151 kg)	None
—Effect of front ballast (each)		
<b>Height of drawbar</b>	16.5 in (420 mm)	16.5 in (420 mm)
<b>Static Weight with Operator—Rear</b>	9260 lb (4200 kg)	9690 lb (4395 kg)
—Front	13190 lb (5983 kg)	11150 lb (5058 kg)
—Total	22450 lb (10183 kg)	20840 lb (9453 kg)

m) left 430" (10.92 m) with singles, right 382" (9.70 m) left 382" (9.70 m) **Power take-off** 1000 rpm at 2200 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 procedure. Temperature at injection pump return was 187°F (85.9°C). Nine 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 No. **1328**.

Report reissued. Supplemental permit for Case 4494 granted March 30, 1984.

Report reissued. Supplemental sales permit for Case International 4494 Powershift Diesel June 18, 1985.

LOUIS I. LEVITICUS  
Engineer-in-Charge

K. VON BARGEN  
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T. L. THOMPSON

Board of Tractor Test Engineers



Case 4490 Diesel