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Test 1474: John Deere 4050 Quadrange Diesl 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1474

JOHN DEERE 4050 QUADRANGE DIESEL

16 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—1002 rpm)								
101.49 (75.68)	2200	6.714 (25.414)	0.464 (0.282)	15.12 (2.978)	192 (89.2)	68 (20.1)	74 (23.6)	29.000 (97.929)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
88.79 (66.21)	2267	6.147 (23.269)	0.485 (0.295)	14.44 (2.845)	188 (86.7)	70 (21.1)	77 (25.0)	..... .....
0.00 (0.00)	2374	2.496 (9.448)	..... .....	..... .....	175 (79.4)	70 (21.1)	76 (24.4)	..... .....
45.57 (33.98)	2321	4.191 (15.865)	0.644 (0.392)	10.87 (2.142)	182 (83.3)	68 (20.3)	74 (23.6)	..... .....
101.75 (75.87)	2200	6.657 (25.199)	0.458 (0.279)	15.29 (3.011)	194 (90.0)	70 (21.1)	76 (24.4)	..... .....
23.06 (17.20)	2348	3.352 (12.689)	1.019 (0.620)	6.88 (1.356)	177 (80.6)	68 (20.0)	74 (23.1)	..... .....
67.40 (50.26)	2292	5.026 (19.025)	0.523 (0.318)	13.41 (2.642)	187 (86.1)	70 (21.1)	76 (24.4)	..... .....
Av 54.43 Av (40.59)	2300	4.645 (17.583)	0.598 (0.364)	11.72 (2.308)	184 (84.3)	69 (20.8)	76 (24.2)	28.993 (97.903)

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 7th (B2) Gear											
90.38 (67.40)	6254 (27.82)	5.42 (8.72)	2199	5.31	6.724 (25.455)	0.521 (0.317)	13.44 (2.648)	193 (89.4)	42 (5.6)	50 (9.7)	29.070 (98.165)
75% of Pull at Maximum Power—Ten Hours 7th (B2) Gear											
71.96 (53.66)	4725 (21.02)	5.71 (9.19)	2274	3.66	5.736 (21.714)	0.559 (0.340)	12.54 (2.471)	187 (86.2)	38 (3.4)	47 (8.1)	29.021 (98.000)
50% of Pull at Maximum Power—Two Hours 7th (B2) Gear											
49.14 (36.64)	3150 (14.01)	5.85 (9.41)	2304	2.60	4.620 (17.488)	0.659 (0.401)	10.64 (2.095)	182 (83.1)	32 (-0.3)	35 (1.7)	28.860 (97.456)
50% of Pull at Reduced Engine Speed—Two Hours 12th (B4) Gear											
49.16 (36.66)	3150 (14.01)	5.85 (9.42)	1396	2.60	3.585 (13.571)	0.511 (0.311)	13.71 (2.701)	180 (81.9)	34 (0.8)	39 (3.9)	28.860 (97.456)
MAXIMUM POWER IN SELECTED GEARS											
77.22 (57.58)	10331 (45.95)	2.80 (4.51)	2227	14.66	3rd (A3) Gear			187 (85.8)	37 (2.8)	40 (4.4)	29.050 (98.097)
88.84 (66.25)	8850 (39.36)	3.76 (6.06)	2199	8.52	4th (A4) Gear			193 (89.2)	40 (4.4)	48 (8.9)	29.080 (98.199)
90.07 (67.17)	8078 (35.93)	4.18 (6.73)	2199	7.30	5th (B1) Gear			192 (88.9)	40 (4.4)	47 (8.3)	29.070 (98.165)
90.48 (67.47)	6733 (29.95)	5.04 (8.11)	2200	5.84	6th (C1) Gear			192 (88.9)	40 (4.4)	47 (8.3)	29.070 (98.165)
91.86 (68.50)	6353 (28.26)	5.42 (8.73)	2202	5.42	7th (B2) Gear			191 (88.1)	38 (3.3)	45 (7.2)	29.070 (98.165)
92.05 (68.64)	5320 (23.66)	6.49 (10.44)	2200	4.48	8th (C2) Gear			191 (88.3)	40 (4.4)	48 (8.9)	29.080 (98.199)
90.97 (67.84)	4769 (21.21)	7.15 (11.51)	2198	4.05	9th (B3) Gear			193 (89.4)	40 (4.4)	48 (8.9)	29.080 (98.199)
89.48 (66.73)	4239 (18.85)	7.92 (12.74)	2200	3.53	10th (D1) Gear			192 (88.9)	41 (5.0)	49 (9.4)	29.080 (98.199)
89.27 (66.57)	3920 (17.43)	8.54 (13.75)	2199	3.38	11th (C3) Gear			192 (88.9)	42 (5.6)	49 (9.4)	29.080 (98.199)

Department of Agricultural Engineering

Dates of Test: April 1-19, 1983

Manufacturer: JOHN DEERE TRACTOR WORKS, P.O. Box 270, Waterloo, Iowa 50702

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 47.0 (rating taken from oil company's inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.8417 Fuel weight 7.008 lbs/gal (0.840 kg/l) Oil SAE 15W-40 API service classification CD, CC, SD To motor 3.916 gal (14.824 l) Drained from motor 3.519 gal (13.321 l) Transmission and final drive lubricant John Deere Hy-Gard transmission and hydraulic fluid Total time engine was operated 39.0 hours

ENGINE: Make John Deere Diesel Type six cylinder vertical Serial No. *RG6466D241920* Crankshaft lengthwise Rated rpm 2000 to 2200 Bore and stroke 4.57" x 4.75" (116.0 mm x 120.6 mm) Compression ratio 17.0 to 1 Displacement 466 cu in (7636 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements Oil filter one full flow paper cartridge Oil cooler engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil Fuel filter one paper cartridge and prestrainer Muffler vertical Cooling medium temperature control two thermostats and variable speed fan.

CHASSIS: Type standard with duals Serial No. *RW4050H001942* Tread width rear 60.0" (1524 mm) to 114" (2890 mm) front 56" (1420 mm) to 82.6" (2099 mm) Wheel base 106.7" (2710 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 31.5" (800 mm) Vertical distance above roadway 43" (1092 mm) Horizontal distance from center of rear wheel tread 0.4" (10 mm) to the left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial (2) range operator controlled powershift Advertised speeds mph (km/h) first 1.9 (3.1) second 2.5 (4.0) third 3.2 (5.1) fourth 4.1 (6.5) fifth 4.4 (7.2) sixth 5.3 (8.5) seventh 5.6 (9.1) eighth 6.7 (10.8) ninth 7.4 (11.8) tenth 8.1 (13.0) eleventh 8.7 (14.0) twelfth 9.4 (15.1) thirteenth 10.3 (16.6) fourteenth 11.1 (17.8) fifteenth 13.4 (21.6) sixteenth 17.0 (27.4) reverse 3.1 (5.0), 3.9 (6.3), 7.1 (11.5), 8.4 (13.6), 9.1 (14.6), 10.7 (17.3) Clutch wet multiple disc hydraulically power actuated and operated by foot pedal Brakes wet disc hydraulically power actuated and operated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 146" (3.7 m) left 146" (3.7 m) (on concrete surface without brake) right 157" (4.0 m) left 157" (4.0 m) Turning space diameter (on concrete surface with brake applied) right 295.8" (7.51 m) left 295.8" (7.51 m) (on concrete surface without brake) right 326.9" (8.30 m) left 326.9" (8.30 m) Power take-off 540 rpm at 2201 engine rpm and 1002 rpm at 2200 engine rpm.

LUGGING ABILITY IN 7th (B2) GEAR

Crankshaft Speed rpm	2202	1982	1762	1540	1319	1105	891
Pull—lbs (kN)	6353 (28.26)	6890 (30.65)	7256 (32.28)	7688 (34.20)	8037 (35.75)	8126 (36.15)	7837 (34.86)
Increase in Pull %	0	8	14	21	27	28	23
Power—Hp (kW)	91.86 (68.50)	89.32 (66.60)	83.16 (62.01)	76.51 (57.05)	68.24 (50.89)	57.65 (42.99)	45.05 (33.59)
Speed—Mph (km/h)	5.42 (8.73)	4.86 (7.82)	4.30 (6.92)	3.73 (6.01)	3.18 (5.12)	2.66 (4.28)	2.16 (3.47)
Slip %	5.42	5.77	6.33	6.89	7.30	7.57	7.16

TRACTOR SOUND LEVEL WITH CAB	2000 RPM dB(A)	2200 RPM dB(A)
Maximum Available Power—Two Hours	75.0	74.0
75% of Pull at Maximum Power—Ten Hours		74.0
50% of Pull at Maximum Power—Two Hours		73.5
50% of Pull at Reduced Engine Speed—Two Hours		71.5
Bystander in 16th (D4) gear		89.0

SUPPLEMENTARY TESTS POWER AND FUEL CONSUMPTION AT 2000 RPM 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—One Hour (PTO Speed—912 rpm)								
99.95 (74.53)	2001	6.317 (23.913)	0.443 (0.269)	15.82 (3.117)	191 (88.4)	69 (20.3)	75 (23.8)	29.000 (97.929)

DRAWBAR PERFORMANCE AT 2000 RPM

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 7th (B2) Gear											
89.18 (66.50)	6820 (30.33)	4.90 (7.89)	2001	5.84	6.457 (24.442)	0.507 (0.309)	13.81 (2.721)	191 (88.3)	43 (5.8)	51 (10.3)	29.040 (98.064)
MAXIMUM POWER IN SELECTED GEAR											
89.86 (67.01)	6876 (30.58)	4.90 (7.89)	2000	5.84	7th (B2) Gear			191 (88.3)	43 (6.1)	51 (10.6)	29.040 (98.064)

TIRES, BALLAST AND WEIGHT

Rear Tires		With Ballast		Without Ballast	
Ballast	—No., size, ply & psi (kPa) —Liquid (each inner) —Cast Iron (each)	Four 18.4-34; 6; 12 (85) 362 lb (164 kg) None		Four 18.4-34; 6; 12 (85) None None	
Front Tires	—No., size, ply & psi (kPa) —Liquid (each) —Cast Iron (each)	Two 10.00-16; 6; 32 (220) None 55 lb (25 kg)		Two 10.00-16; 6; 32 (220) None None	
Height of Drawbar		22.5 in (570 mm)		22.5 in (570 mm)	
Static Weight with Operator—Rear		9370 lb (4250 kg)		8645 lb (3921 kg)	
—Front		3635 lb (1649 kg)		3525 lb (1599 kg)	
—Total		13005 lb (5899 kg)		12170 lb (5520 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 codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 136°F (57.8°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 1474.

LOUIS I. LEVITICUS

Engineer-in-Charge

K. VON BARGEN

W. E. SPLINTER

L. L. BASHFORD

Board of Tractor Test Engineers



John Deere 4050 Quadrange Diesel