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## Test 1112: John Deere 4230 Quad-Range Diesel

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1112 - JOHN DEERE 4230 QUAD-RANGE DIESEL

Department of Agricultural Engineering  
 Date of Test: October 13th to October 24th, 1972  
 Manufacturer: John Deere Waterloo Tractor Works, Waterloo, Iowa

## POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption		Hp-hr per gal	Temperature Degrees F			Barometer inches of Mercury
		Gal per hr	Lb per hp-hr		Cooling medium	Air wet bulb	Air dry bulb	
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>								
Rated Engine Speed—Two Hours (PTO Speed—1002 rpm)								
100.32	2200	7.113	0.493	14.10	184	61	76	28.870
<b>VARYING POWER AND FUEL CONSUMPTION—Two Hours</b>								
88.49	2286	6.241	0.490	14.18	183	61	74	.....
0.00	2396	2.289	.....	.....	170	60	73	.....
45.56	2347	4.112	0.627	11.08	175	60	72	.....
100.97	2200	7.148	0.492	14.13	185	62	76	.....
22.91	2373	3.149	0.955	7.28	170	60	72	.....
67.32	2315	5.088	0.525	13.23	180	62	77	.....
<b>Av 54.21</b>	<b>2319</b>	<b>4.671</b>	<b>0.599</b>	<b>11.61</b>	<b>177</b>	<b>61</b>	<b>74</b>	<b>28.910</b>

## DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption		Hp-hr per gal	Temp Degrees F			Barometer inches of Mercury
					Gal per hr	Lb per hp-hr		Cooling med	Air wet bulb	Air dry bulb	

### VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST

Maximum Available Power—Two Hours—7th Gear (B2)											
83.95	5664	5.56	2200	5.75	6.982	0.577	12.02	183	70	74	28.780
75% of Pull at Maximum Power—Ten Hours—7th Gear (B2)											
69.02	4362	5.93	2311	4.19	5.791	0.582	11.92	180	43	46	29.047
50% of Pull at Maximum Power—Two Hours—7th Gear (B2)											
47.06	2895	6.10	2340	2.74	4.660	0.687	10.10	175	36	37	29.350
50% of Pull at Reduced Engine Speed—Two Hours—8th Gear (C2)											
47.09	2900	6.09	1973	2.86	4.085	0.602	11.53	175	39	40	29.360

### MAXIMUM POWER WITH BALLAST

67.53	11116	2.28	2296	14.91	2nd Gear (A2)	.....	180	40	42	29.370
83.30	7301	4.28	2197	7.68	5th Gear (B1)	.....	186	62	68	28.780
83.93	6104	5.16	2200	6.33	6th Gear (C1)	.....	184	63	70	28.780
85.92	5807	5.55	2200	5.97	7th Gear (B2)	.....	186	63	70	28.780
86.36	4870	6.65	2198	4.80	8th Gear (C2)	.....	185	66	74	28.780
85.66	4370	7.35	2201	4.27	9th Gear (B3)	.....	185	67	74	28.780

### VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST 7th Gear (B2)

Pounds Pull	5807	6132	6464	6628	6681	6715	6385
Horsepower	85.92	81.00	75.45	67.86	58.62	49.13	37.95
Crankshaft Speed rpm	2200	1973	1750	1543	1320	1102	889
Miles Per Hour	5.55	4.95	4.38	3.84	3.29	2.74	2.23
Slip of Drivers %	5.97	6.19	6.77	6.91	7.19	7.19	6.77

### TRACTOR SOUND LEVEL (with Sound-Gard cab) dB(A)

Maximum Available Power 2 Hours	83.0
75% of Pull at Max. Power 10 Hours	82.5
50% of Pull at Max. Power 2 Hours	81.5
50% of Pull at Reduced Engine Speed 2 Hours	81.0
Bystander—16th gear (C4)	91.0

### TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
<b>Rear tires</b>	—No., size, ply & psi	Two 20.8-34; 8; 16	Two 20.8-34; 8; 16
<b>Ballast</b>	—Liquid	1145 lb each	None
	—Cast Iron	450 lb each	None
<b>Front tires</b>	—No., size, ply & psi	Two 9.5L-15; 6; 32	Two 9.5L-15; 6; 32
<b>Ballast</b>	—Liquid	None	None
	—Cast Iron	30 lb each	None
<b>Height of drawbar</b>		20 inches	21 inches
<b>Static weight with operator</b>	—rear	10970 lb	7780 lb
	—front	3180 lb	3120 lb
	—total	14150 lb	10900 lb

**FUEL, OIL AND TIME** Fuel No 2 Diesel Cetane No 54.5 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° 0.8342 Weight per gallon 6.946 lb Oil SAE 30 API service classification John Deere Torq-Gard or CD-SD To motor 3.984 gal Drained from motor 3.420 gal Transmission and final drive lubricant John Deere Special 303 oil Total time engine was operated 42½ hours

**ENGINE** Make John Deere Diesel Type 6 cylinder vertical Serial No 6404DR-11 340923R Crankshaft Mounted lengthwise Rated rpm 2200 Bore and stroke 4.25" x 4.75" Compression ratio 16.2 to 1 Displacement 404 cu. in. Cranking system 12 volt electrical (two 6 volt batteries) Lubrication pressure Air cleaner precleaner and two dry type in series with replaceable treated paper elements Oil filter full flow with replaceable paper cartridge Oil Cooler engine coolant heat exchanger for crankcase oil and radiator for transmission and hydraulic system Fuel filter replaceable paper primary and secondary filter elements Muffler was used Cooling medium temperature control thermostat

**CHASSIS** Type standard Serial No 4230H 002148R Tread width rear 60.0" to 90.1" front 52.0" to 76.0" Wheel base 104" 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 28.3" Vertical distance above roadway 39.0" Horizontal distance from center of rear wheel tread 0" to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial range synco-mesh and power shift Advertised speeds mph first 1.9 second 2.4 third 3.1 fourth 4.0 fifth 4.4 sixth 5.2 seventh 5.6 eighth 6.6 ninth 7.2 tenth 8.0 eleventh 8.6 twelfth 9.2 thirteenth 10.1 fourteenth 10.9 fifteenth 13.1 sixteenth 16.7 reverse 3.0, 3.9, 7.0, 8.3, 8.9, and 10.5 Clutch wet multiple disc operated hydraulically by foot pedal Brakes wet disc hydraulically power actuated by two foot pedals that can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 132" left 132" (on concrete surface without brake) right 156" left 156" Turning space diameter (on concrete surface with brake applied) right 264" left 264" (on concrete surface without brake) right 312" left 312" Power take-off 540 or 1002 rpm at 2200 engine rpm.

**REPAIRS AND ADJUSTMENTS** Following the Maximum Available Power run the left hand impeller for the pressurizer blower failed and the blower was replaced.

**REMARKS** All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. First gear was not run as it was necessary to limit the pull in second gear because of excessive slippage. Third, fourth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth and sixteenth gears were not run as test procedure requires only six travel speeds.

We, the undersigned, certify that this is true and correct report of official Tractor Test 1112.

L. F. LARSEN

Engineer-In-Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

D. E. LANE

Board of Tractor Test Engineers

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