

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

January 1998

Nebraska Summary 288: John Deere 6310 Syncroplus Diesel 12-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

Nebraska Tractor Test Lab, "Nebraska Summary 288: John Deere 6310 Syncroplus Diesel 12-Speed" (1998). *Nebraska Tractor Tests*. 2232.

<https://digitalcommons.unl.edu/tractormuseumlit/2232>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

SUMMARY OF OECD TEST 1838—NEBRASKA SUMMARY 288

JOHN DEERE 6310 SYNCROPLUS DIESEL

12 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed (PTO speed-1042 rpm)					
81.5 (60.8)	2300	5.08 (19.22)	0.431 (0.262)	16.06 (3.16)	
Standard Power Take-off Speed (1000 rpm)					
83.7 (62.4)	2208	5.02 (19.02)	0.416 (0.253)	16.67 (3.28)	
Maximum Power (2 hours)					
87.3 (65.1)	1800	4.76 (18.01)	0.378 (0.230)	18.35 (3.61)	

VARYING POWER AND FUEL CONSUMPTION

81.5 (60.8)	2300	5.08 (19.22)	0.431 (0.262)	16.06 (3.16)	Air temperature
72.0 (53.7)	2391	4.77 (18.06)	0.459 (0.279)	15.09 (2.97)	68°F (20°C)
54.4 (40.6)	2413	4.02 (15.20)	0.511 (0.311)	13.55 (2.67)	Relative humidity
36.7 (27.4)	2433	3.28 (12.40)	0.617 (0.376)	11.22 (2.21)	33%
18.4 (13.7)	2434	2.43 (9.19)	0.916 (0.557)	7.56 (1.49)	Barometer
--	2455	1.60 (6.06)	--	--	29.8" Hg (100.8 kPa)

Maximum Torque - 273 lb.-ft. (370 Nm) at 1296 rpm
 Maximum Torque Rise - 46.8%
 Torque rise at 1800 engine rpm - 36%

DRAWBAR PERFORMANCE

(Unballasted Front Drive Engaged)

FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power 6th (1C) Gear									
66.1 (49.3)	5505 (24.49)	4.50 (7.24)	2295	6.2	0.535 (0.325)	13.07 (2.57)	187 (86)	41 (5)	29.5 (101.0)
75% of Pull at Maximum Power 6th (1C) Gear									
52.5 (39.1)	4120 (18.32)	4.78 (7.69)	2402	4.8	0.597 (0.363)	11.70 (2.30)	180 (82)	43 (6)	29.5 (101.0)
50% of Pull at Maximum Power 6th (1C) Gear									
35.9 (26.8)	2730 (12.15)	4.93 (7.93)	2427	2.9	0.712 (0.433)	9.81 (1.93)	181 (83)	41 (5)	29.5 (101.0)
75% of Pull at Reduced Engine Speed 7th (3B) Gear									
52.5 (39.1)	4100 (18.23)	4.80 (7.72)	2139	4.6	0.546 (0.332)	12.79 (2.52)	183 (84)	41 (5)	29.5 (101.0)
50% of Pull at Reduced Engine Speed 7th (3B) Gear									
35.5 (26.5)	2705 (12.04)	4.92 (7.92)	2158	3.2	0.640 (0.389)	10.91 (2.15)	183 (84)	41 (5)	29.5 (101.0)

Location of Test: DLG Testing Station for Agricultural Machinery Max - Eyth - Weg 1, D-64823, Gros-Umstadt, Germany

Dates of Test: November 1998 to March 1999

Manufacturer: Deere & Company, Moline, Illinois, USA

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60° F (15°/15°C)** 0.832 **Fuel weight** 6.93 lbs/gal (0.830 kg/l) **Oil SAE** 0W-40 **API service classification** CF-4 **Transmission and hydraulic lubricant** John Deere Hy-Gard J 20 C fluid **Front axle lubricant** John Deere J 20 C fluid.

ENGINE: Make John Deere Diesel **Type** four cylinder vertical with turbocharger **Serial No.** 532652 **Crankshaft** lengthwise **Rated engine speed** 2300 **Bore and stroke** 4.19" x 5.00" (106.5 mm x 1 **Compression ratio** to 1 **Displacement** (4525 ml) **system** 12 volt **pressure Air cleaner** **Oil filter** one full flow **Oil cooler** engine coolant heat

and transmission oil **Fuel filter** element **Muffler** **Exhaust** vertical

thermostat and variable speed fan

CHASSIS: Type **Serial No.** 227340 **Tread width** rear 63.0" to 78.9" front 59.7" (1516 mm) (2136 mm) 94.5" (2400 mm) **Hydraulic control system** **Transmission** selective gear fixed ratio **mph (km/h)** (2.35) second 2.05 third 2.70 (4.34) (4.72) fifth 4.11 sixth 4.80 (7.73) (8.69) eighth (10.81) ninth 8.84 tenth 10.29 (16.56) (23.17) twelfth 18.95 reverse 1.79 , 3.59 (5.77) (9.44), 12.58

Clutch multiple wet disc hydraulically operated **Brakes** wet disc hydraulically

together **Steering** **Power take-off** 540 rpm at 2143 engine rpm or 1000 rpm at **Unladen tractor** 9600 lb

REPAIRS AND ADJUSTMENTS: No repairs

DRAWBAR PERFORMANCE
(Unballasted Front Drive Engaged)
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F cool- ing med	Temp. °C Air dry bulb	Barom. inch Hg (kPa)
4th (1B) Gear									
64.4 (48.0)	10090 (44.88)	2.39 (3.85)	2198	14.8	0.543 (0.330)	12.86 (2.53)	185 (85)	57 (14)	29.5 (100.2)
5th (2B) Gear									
66.1 (49.3)	8760 (38.97)	2.83 (4.56)	1803	12.4	0.495 (0.301)	14.11 (2.78)	183 (84)	57 (14)	29.5 (100.2)
6th (1C) Gear									
67.2 (50.1)	7385 (32.85)	3.41 (5.49)	1805	9.6	0.490 (0.298)	14.26 (2.81)	180 (82)	54 (12)	29.5 (100.2)
7th (3B) Gear									
69.1 (51.5)	6625 (29.46)	3.91 (6.29)	1799	8.0	0.475 (0.289)	14.71 (2.90)	183 (84)	59 (15)	29.5 (100.2)
8th (2C) Gear									
67.0 (49.9)	5075 (22.59)	4.95 (7.96)	1798	6.1	0.488 (0.297)	14.31 (2.82)	183 (84)	55 (13)	29.5 (100.2)
9th (3C) Gear									
66.6 (49.7)	3750 (16.68)	6.66 (10.72)	1807	4.7	0.490 (0.298)	14.26 (2.81)	181 (83)	57 (14)	29.5 (100.2)
10th (1D) Gear									
65.9 (49.1)	3155 (14.03)	7.83 (12.60)	1811	3.3	0.500 (0.304)	13.96 (2.75)	181 (83)	59 (15)	29.5 (100.2)

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's original claim of 47.1% torque rise. The performance results on this summary were taken from OECD tests conducted under the Code II Test Code procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **1838**, Nebraska Summary 288, December 1, 1999.

LEONARD L. BASHFORD
 Director

M.F. KOCHER
 R.D. GRISSO JR.
 G.J. HOFFMAN
 Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
Sound level in 6th(1C) gear	73.0	72.5
Maximum Sound Level	74.0	73.5
Bystander		

TIRES AND WEIGHT

Rear Tires No., size, ply & psi (kPa)
Front Tires No., size, ply & psi (kPa)
Height of Drawbar
Static Weight with operator Rear
 Front
 Total

Tested Without Ballast

Two 18.4-38; 8; 12 (80)
 Two 13.6-28; 8; 12 (80)
 20.5 in (520 mm)
 6130 lb (2780 kg)
 3635 lb (1650 kg)
 9765 lb (4430 kg)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

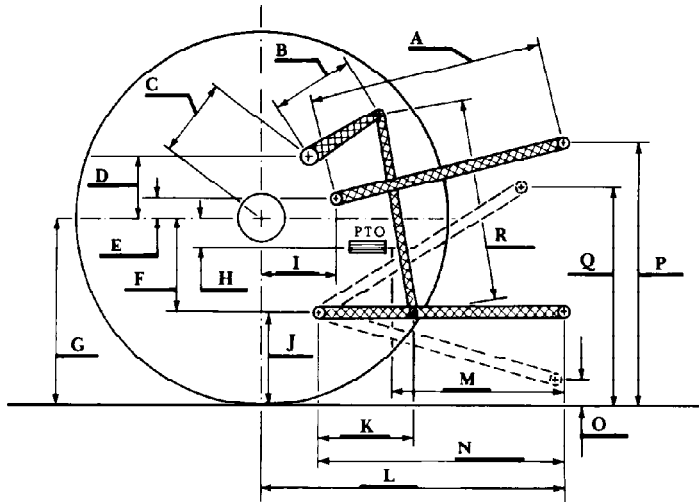
CATEGORY: II

Quick Attach: none

Maximum Force Exerted Through Whole Range: 4755 lbs (21.15 kN) (at the frame)
 5305 lbs (23.60 kN) (at the hitch points)

- i) Opening pressure of relief valve: NA
- Sustained pressure of the open relief valve: 2800 psi (193 bar)
- ii) Pump delivery rate at minimum pressure: 29.3 GPM (111.0 l/min)
- iii) Pump delivery rate at maximum
 - hydraulic power: 27.0 GPM (102.1 l/min)
 - Delivery pressure: 2175 psi (150 bar)
 - Power: 34.2 HP (25.5 kW)

HITCH DIMENSIONS AS TESTED NO LOAD



	inch	mm
A	25.6	650
B	12.0	305
C	19.9	505
D	18.7	475
E	7.4	188
F	8.9	225
G	32.3	820
H	2.8	70
I	18.1	460
J	23.4	595
K	19.8	503
L	42.5	1080
M	21.7	550
N	37.2	945
O	7.9	200
P	47.4	1205
Q	33.9	860
R	32.1	815