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2009

## Test 1952: John Deere 7330 Diesel

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 1952–SUMMARY 634

## JOHN DEERE 7330 POWRQUAD-PLUS DIESEL

### 16 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1045 rpm)</b>					
129.48 (96.55)	2100	7.94 (30.06)	0.433 (0.263)	16.31 (3.21)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
136.71 (101.95)	2010	8.08 (30.57)	0.417 (0.253)	16.93 (3.34)	
<b>Maximum Power (1 hour)</b>					
140.69 (104.91)	1750	8.17 (30.94)	0.410 (0.249)	17.21 (3.39)	

#### VARYING POWER AND FUEL CONSUMPTION

129.48 (96.55)	2100	7.94 (30.06)	0.433 (0.263)	16.31 (3.21)	Air temperature
113.93 (84.96)	2176	7.44 (28.17)	0.461 (0.280)	15.31 (3.02)	78°F (26°C)
86.82 (64.74)	2210	6.41 (24.27)	0.521 (0.317)	13.54 (2.67)	Relative humidity
58.95 (43.96)	2249	5.11 (19.36)	0.612 (0.372)	11.53 (2.27)	16%
29.54 (22.03)	2263	3.54 (13.38)	0.844 (0.513)	8.36 (1.65)	Barometer
2.96 (2.21)	2263	2.23 (8.44)	5.310 (3.230)	1.33 (0.26)	28.9" Hg (98.10 kPa)

Maximum torque - 463 lb.-ft. (628 Nm) at 1499 rpm  
 Maximum torque rise - 43.1%  
 Torque rise at 1700 engine rpm - 33%  
 Power increase at 1750 engine rpm - 8%

#### 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)
<b>Maximum Power—7th (B3) Gear</b>									
115.35 (86.01)	9026 (40.15)	4.79 (7.71)	2103	3.6	0.488 (0.297)	14.46 (2.85)	174 (79)	60 (16)	28.87 (97.77)
<b>75% of Pull at Maximum Power—7th (B3) Gear</b>									
91.31 (68.09)	6801 (30.25)	5.03 (8.10)	2184	2.6	0.557 (0.339)	12.65 (2.49)	174 (79)	63 (17)	28.85 (97.70)
<b>50% of Pull at Maximum Power—7th (B3) Gear</b>									
62.48 (46.59)	4531 (20.15)	5.17 (8.32)	2221	1.7	0.672 (0.409)	10.49 (2.07)	172 (78)	64 (18)	28.85 (97.70)
<b>75% of Pull at Reduced Engine Speed—10th (C2) Gear</b>									
91.87 (68.51)	6809 (30.29)	5.06 (8.14)	1650	2.5	0.496 (0.302)	14.22 (2.80)	171 (77)	64 (18)	28.84 (97.66)
<b>50% of Pull at Reduced Engine Speed—10th (C2) Gear</b>									
62.52 (46.62)	4530 (20.15)	5.18 (8.33)	1673	1.7	0.566 (0.344)	12.46 (2.45)	168 (76)	64 (18)	28.84 (97.66)

**Location of tests:** Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

**Dates of tests:** March 26-April 21, 2009

**Manufacturer:** John Deere Tractor Works, 3500 East Donald Street, P.O. Box 270, Waterloo Ia, 50704-0270

**FUEL, OIL and TIME:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8470 Fuel weight 7.052 lbs/gal (0.845 kg/l) Oil SAE 15W-40 API service classification CJ-4 Transmission and hydraulic lubricant John Deere Hy-Gard fluid Front axle lubricant John Deere Hy-Gard fluid Total time engine was operated: 27.0 hours

**ENGINE: Make** John Deere Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No. \*** PE6068L070716\* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.19 x 5.00" (106.5 mm x 127.0 mm) **Compression ratio** 17.0 to 1 **Displacement** 414 cu in (6788 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element and prestrainer **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 54.5 - 58.9 lb/h (24.7 - 26.7 kg/h) **High idle:** 2225 - 2275 rpm **Turbo boost:** nominal 13.8-16.7 psi (95-115 kPa) as measured 15.1 psi (104 kPa)

**CHASSIS: Type** front wheel assist **Serial No. \*** RW7330H010314\* **Tread width** rear 63.0" (1601 mm) to 93.8" (2382 mm) front 59.4" (1510 mm) to 88.0" (2235 mm) **Wheelbase** 104.3" (2650 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled power shift **Nominal travel speeds mph (km/h)** first 1.62 (2.60) second 1.94 (3.13) third 2.33 (3.75) fourth 2.85 (4.59) fifth 3.42 (5.51) sixth 4.12 (6.63) seventh 4.93 (7.94) eighth 5.44 (8.76) ninth 6.05 (9.73) tenth 6.56 (10.55) eleventh 7.85 (12.64) twelfth 9.62 (15.48) thirteenth 11.29 (18.17) fourteenth 13.60 (21.88) fifteenth 16.28 (26.20) sixteenth 19.95 (32.10) reverse 1.68 (2.71), 2.03 (3.26), 2.43 (3.91), 2.98 (4.79), 3.57 (5.75), 4.30 (6.92), 5.15 (8.29), 5.68 (9.14), 5.65 (10.15), 6.33 (11.01), 7.59 (13.19), 9.30 (16.15), 10.83 (18.96), 13.04 (22.83), 15.62 (27.34), 19.13 (33.50)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED - 2100 RPM**  
**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)	Temp. °F (°C) cool- ing med	Barom. inch Hg (kPa)		
4th(A4) Gear									
89.16 (66.49)	12569 (55.91)	2.66 (4.28)	2178	13.2	0.581 (0.353)	12.14 (2.39)	175 (79)	57 (14)	28.94 (98.00)
5th(B1) Gear									
102.16 (76.18)	12047 (53.59)	3.18 (5.12)	2162	11.1	0.547 (0.333)	12.88 (2.54)	175 (80)	60 (16)	28.95 (98.04)
6th(B2) Gear									
112.12 (83.61)	10674 (47.48)	3.94 (6.34)	2102	5.7	0.504 (0.306)	14.01 (2.76)	175 (79)	61 (16)	28.86 (97.73)
7th(B3) Gear									
115.35 (86.01)	9026 (40.15)	4.79 (7.71)	2103	3.6	0.488 (0.297)	14.46 (2.85)	174 (79)	60 (16)	28.87 (97.77)
8th(C1) Gear									
113.15 (84.38)	7974 (35.47)	5.32 (8.56)	2102	3.0	0.500 (0.304)	14.11 (2.78)	173 (78)	59 (15)	28.87 (97.77)
9th(B4) Gear									
111.86 (83.42)	7074 (31.47)	5.93 (9.54)	2099	2.4	0.505 (0.307)	13.96 (2.75)	173 (78)	58 (14)	28.87 (97.77)
10th(C2) Gear									
111.06 (82.81)	6442 (28.66)	6.46 (10.40)	2102	2.1	0.508 (0.309)	13.88 (2.73)	174 (79)	61 (16)	28.86 (97.73)
11th(C3) Gear									
111.54 (83.17)	5402 (24.03)	7.74 (12.46)	2098	1.9	0.501 (0.305)	14.06 (2.77)	174 (79)	62 (17)	28.86 (97.73)
12th(C4) Gear									
105.40 (78.60)	4132 (18.38)	9.57 (15.40)	2098	1.6	0.533 (0.324)	13.24 (2.61)	173 (78)	63 (17)	28.86 (97.73)

**Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1987 engine rpm or 1000 rpm at 1995 engine rpm **Unladen tractor mass** 13360 lb (6060 kg)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests the fuel temperature at the injection pump inlet was maintained at 122°F (50°C). This tractor did not meet the manufacturer's 3 point lift claims of 8800 lb (3992 kg), with 80 mm cylinders, and 9950 lb (4413 kg), with 85 mm cylinders, when tested in the category IIN configuration. The performance figures on this summary were taken from a test conducted under the OECD Code II test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1952**, Nebraska Summary 634, July 30, 2009.

Roger M. Hoy  
 Director

M.F. Kocher  
 V.I. Adamchuk  
 J.A. Smith  
 Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 6th (B2) gear	68.5	68.6
Transport speed - no load - 16th (D4) gear		71.1
Bystander in 16th (D4) gear		83.7

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
<b>Rear Tires</b> - No., size, ply & psi(kPa)	Two 480/80R42;***;16(110)	Two 480/80R42;***;12(85)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	2500 lb (1134 kg)	None
<b>Front Tires</b> - No., size, ply & psi(kPa)	Two 380/85R30;***;16(110)	Two 380/85R30;***;10(70)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	1600 lb (726 kg)	None
<b>Height of Drawbar</b>	22.0 in (560 mm)	21.5 in (545 mm)
<b>Static Weight with operator</b> - Rear	10660 lb (4835 kg)	8650 lb (3923 kg)
- Front	6975 lb (3164 kg)	4885 lb (2216 kg)
- Total	17635 lb (7999 kg)	13535 lb (6139 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED - 1750 RPM**  
**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(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th(A4) Gear									
89.67 (66.87)	12643 (56.24)	2.66 (4.28)	2177	13.2	0.581 (0.354)	12.13 (2.39)	175 (79)	57 (14)	28.94 (98.00)
5th(B1) Gear									
101.81 (75.92)	12032 (53.52)	3.17 (5.11)	2162	11.3	0.550 (0.335)	12.82 (2.52)	175 (79)	60 (16)	28.95 (98.04)
6th(B2) Gear									
113.43 (84.58)	11861 (52.76)	3.59 (5.77)	2002	9.8	0.506 (0.308)	13.93 (2.74)	176 (80)	62 (17)	28.95 (98.04)
7th(B3) Gear									
121.53 (90.63)	11749 (52.26)	3.88 (6.24)	1769	7.1	0.478 (0.291)	14.76 (2.91)	175 (80)	60 (16)	28.87 (97.77)
8th(C1) Gear									
122.84 (91.60)	10583 (47.08)	4.35 (7.00)	1753	4.6	0.472 (0.287)	14.94 (2.94)	175 (79)	60 (16)	28.87 (97.77)
9th(B4) Gear									
122.42 (91.29)	9409 (41.85)	4.88 (7.85)	1752	3.8	0.474 (0.288)	14.89 (2.93)	174 (79)	55 (13)	28.87 (97.77)
10th(C2) Gear									
122.03 (91.00)	8597 (38.24)	5.32 (8.57)	1754	3.3	0.476 (0.289)	14.83 (2.92)	175 (79)	62 (17)	28.86 (97.73)
11th(C3) Gear									
122.87 (91.62)	7179 (31.93)	6.42 (10.33)	1750	2.6	0.471 (0.287)	14.96 (2.95)	175 (80)	62 (17)	28.86 (97.73)
12th(C4) Gear									
120.11 (89.57)	5606 (24.94)	8.04 (12.93)	1753	1.7	0.482 (0.293)	14.64 (2.88)	176 (80)	63 (17)	28.85 (97.70)

**DRAWBAR PERFORMANCE**  
**BALLASTED - FRONT DRIVE ENGAGED - 1750 RPM**  
**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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd(A3) Gear									
89.16 (66.49)	15703 (69.85)	2.13 (3.43)	2179	13.9	0.577 (0.351)	12.21 (2.41)	175 (80)	54 (12)	29.07 (98.44)
4th(A4) Gear									
106.10 (79.12)	14956 (66.53)	2.66 (4.28)	2131	9.0	0.535 (0.325)	13.18 (2.60)	175 (79)	55 (13)	29.06 (98.41)
5th(B1) Gear									
116.30 (86.73)	14637 (65.11)	2.98 (4.80)	1988	8.8	0.495 (0.301)	14.24 (2.81)	175 (80)	57 (14)	29.06 (98.41)
6th(B2) Gear									
119.87 (89.39)	14002 (62.28)	3.21 (5.17)	1752	7.6	0.486 (0.295)	14.52 (2.86)	177 (80)	60 (16)	29.06 (98.41)
7th(B3) Gear									
124.49 (92.84)	11796 (52.47)	3.96 (6.37)	1753	4.5	0.469 (0.285)	15.04 (2.96)	175 (79)	62 (17)	29.05 (98.37)
8th(C1) Gear									
122.56 (91.39)	10458 (46.52)	4.39 (7.07)	1749	3.8	0.476 (0.289)	14.82 (2.92)	177 (80)	64 (18)	29.04 (98.34)
9th(B4) Gear									
122.07 (91.03)	9263 (41.21)	4.94 (7.95)	1752	3.4	0.475 (0.289)	14.84 (2.92)	177 (81)	63 (17)	29.05 (98.37)
10th(C2) Gear									
121.51 (90.61)	8505 (37.83)	5.36 (8.62)	1752	3.1	0.479 (0.291)	14.72 (2.90)	179 (82)	66 (19)	29.04 (98.34)
11th(C3) Gear									
121.34 (90.48)	7036 (31.30)	6.47 (10.41)	1750	2.4	0.479 (0.292)	14.71 (2.90)	178 (81)	67 (19)	29.03 (98.31)
12th(C4) Gear									
117.50 (87.62)	5519 (24.55)	7.98 (12.85)	1751	1.8	0.493 (0.300)	14.32 (2.82)	179 (82)	68 (20)	29.03 (98.31)

**DRAWBAR PERFORMANCE**  
**BALLASTED - FRONT DRIVE DISENGAGED**  
**FUEL CONSUMPTION CHARACTERISTICS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F cool- ing med	Air dry bulb (°C)	Barom. inch Hg (kPa)
<b>Maximum Power—7th (B3) Gear</b>									
112.91 (84.20)	9002 (40.04)	4.70 (7.57)	2098	6.0	0.503 (0.306)	14.02 (2.76)	175 (79)	62 (17)	29.05 (98.37)
<b>75% of Pull at Maximum Power—7th (B3) Gear</b>									
90.01 (67.12)	6752 (30.03)	5.00 (8.05)	2183	4.0	0.574 (0.349)	12.29 (2.42)	173 (78)	68 (20)	29.02 (98.27)
<b>50% of Pull at Maximum Power—7th (B3) Gear</b>									
61.75 (46.05)	4510 (20.06)	5.13 (8.26)	2220	2.9	0.685 (0.417)	10.30 (2.03)	172 (78)	69 (21)	29.01 (98.24)
<b>75% of Pull at Reduced Engine Speed—10th (C2) Gear</b>									
90.14 (67.22)	6766 (30.10)	5.00 (8.04)	1637	4.0	0.512 (0.311)	13.79 (2.72)	174 (79)	69 (21)	29.01 (98.24)
<b>50% of Pull at Reduced Engine Speed—10th (C2) Gear</b>									
61.47 (45.84)	4504 (20.04)	5.12 (8.24)	1668	2.6	0.575 (0.350)	12.26 (2.41)	168 (76)	69 (21)	29.01 (98.24)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
5th (B1) Gear									
95.07 (70.90)	11236 (49.98)	3.17 (5.11)	2172	11.5	0.562 (0.342)	12.54 (2.47)	174 (79)	56 (13)	29.06 (98.41)
6th (B2) Gear									
108.05 (80.58)	10599 (47.15)	3.82 (6.15)	2103	7.9	0.525 (0.320)	13.42 (2.64)	175 (79)	58 (14)	29.06 (98.41)
7th (B3) Gear									
112.91 (84.20)	9002 (40.04)	4.70 (7.57)	2098	6.0	0.503 (0.306)	14.02 (2.76)	175 (79)	62 (17)	29.05 (98.37)
8th (C1) Gear									
110.20 (82.18)	7870 (35.01)	5.25 (8.45)	2100	5.0	0.514 (0.313)	13.71 (2.70)	175 (79)	64 (18)	29.04 (98.34)
9th (B4) Gear									
108.85 (81.17)	6946 (30.90)	5.88 (9.46)	2103	3.8	0.521 (0.317)	13.53 (2.66)	174 (79)	63 (17)	29.05 (98.37)
10th (C2) Gear									
108.86 (81.18)	6369 (28.33)	6.41 (10.31)	2102	3.0	0.519 (0.316)	13.59 (2.68)	175 (79)	65 (18)	29.04 (98.34)
11th (C3) Gear									
109.47 (81.63)	5312 (23.63)	7.73 (12.44)	2103	2.6	0.516 (0.314)	13.68 (2.69)	174 (79)	66 (19)	29.03 (98.31)
12th (C4) Gear									
102.61 (76.52)	4034 (17.94)	9.54 (15.35)	2103	1.7	0.552 (0.336)	12.78 (2.52)	175 (80)	67 (19)	29.03 (98.31)

## HYDRAULIC PERFORMANCE

CATEGORY: II, IIIN

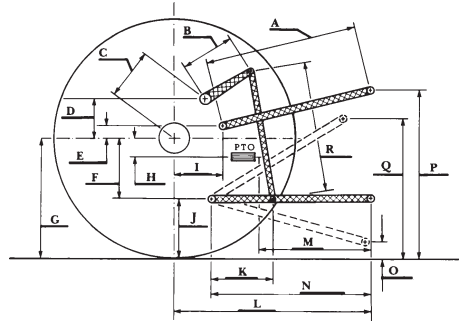
Quick Attach: No

OECD Statictest

Cylinder size:

Maximum force exerted through whole range: Category II 80 mm 85 mm  
 8872 lbs (39.5 kN) 10089 lbs (44.9 kN)  
 Category IIIN 8297 lbs (36.9 kN) 9435 lbs (42.0 kN)

	<b>17.5 GPM pump</b>	<b>29 GPM pump</b>
i) Sustained pressure at compensator cutoff:	2930 psi (202 bar)	2976 psi (205 bar)
	<b>two outlet sets combined</b>	
ii) Pump delivery rate at minimum pressure and rated engine speed:	18.4 GPM (69.6 l/min)	30.6 GPM (115.8 l/min)
iii) Pump delivery rate at maximum hydraulic power:	18.3 GPM (69.1 l/min)	28.2 GPM (106.7 l/min)
Delivery pressure:	2731 psi (188 bar)	2662 psi (184 bar)
Power:	29.1 HP (21.7 kW)	43.8 HP (32.7 kW)
	<b>single outlet set</b>	
ii) Pump delivery rate at minimum pressure and rated engine speed:	18.1 GPM (68.6 l/min)	30.2 GPM (114.3 l/min)
iii) Pump delivery rate at maximum hydraulic power:	18.0 GPM (68.2 l/min)	29.9 GPM (113.2 l/min)
Delivery pressure:	2518 psi (174 bar)	2124 psi (146 bar)
Power:	26.5 HP (19.7 kW)	37.1 HP (27.6 kW)



**HITCH DIMENSIONS AS TESTED—NO LOAD**  
**Category II**

	OECD test		SAE test	
	inch	mm	inch	mm
A	27.0	685	26.2	665
B	15.7	400	15.7	400
C	22.1	562	22.1	562
D	20.9	531	20.9	531
E	7.6	194	7.6	194
F	9.9	250	9.9	250
G	34.3	870	34.3	870
H	3.1	80	3.1	80
I	18.3	465	18.3	465
J	24.4	620	24.4	620
K	21.3	542	21.3	542
L	44.9	1140	44.9	1140
M	22.0	560	22.0	560
N	38.6	980	38.6	980
O	7.9	200	7.9	200
P	48.4	1230	43.4	1103
Q	34.4	875	34.4	875
R	36.2	920	36.2	920

### THREE POINT HITCH PERFORMANCE (SAE static test)

Observed maximum pressure psi. (bar)	2990 (206)				
Location:	lift cylinders				
Hydraulic oil temperature: °F (°C)	149 (65)				
Location:	hydraulic sump				
Category:	II, IIIN				
Quick attach:	No				
System pressure 2545 psi (176 Bar)					
Category II with lift cylinders 2 x 80 mm					
Hitch point distance to ground level in. (mm)	8.0 (204)	15.4 (391)	22.4 (569)	29.1 (739)	36.0 (915)
Lift force on frame lb	15623	12654	11490	10597	9461
" " " " " " (kN)	(69.5)	(56.3)	(51.1)	(47.1)	(42.1)
Category II with lift cylinders 2 x 85 mm					
Hitch point distance to ground level in. (mm)	8.0 (204)	15.0 (381)	21.9 (556)	28.9 (734)	36.1 (916)
Lift force on frame lb	17586	14329	13007	11851	10685
" " " " " " (kN)	(78.2)	(63.7)	(57.9)	(52.7)	(47.5)
Category IIIN with lift cylinders 2 x 80 mm					
Hitch point distance to ground level in. (mm)	7.9 (201)	16.2 (411)	24.0 (610)	32.0 (813)	40.0 (1015)
Lift force on frame lb	11943	10896	10184	9180	8197
" " " " " " (kN)	(53.1)	(48.5)	(45.3)	(40.8)	(36.5)
Category IIIN with lift cylinders 2 x 85 mm					
Hitch point distance to ground level in. (mm)	8.0 (202)	16.1 (409)	24.0 (610)	32.0 (813)	40.0 (1016)
Lift force on frame lb	13573	12383	11518	10615	9239
" " " " " " (kN)	(60.4)	(55.1)	(51.2)	(47.2)	(41.1)



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