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10-24-1985

## Test 1583: Case International 3394 Powershift Diesel 12 and 24-Speeds

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# NEBRASKA TRACTOR TEST 1583

## CASE INTERNATIONAL 3394 POWERSHIFT DIESEL

### 24 SPEED ALSO 12 SPEED

Department of Agricultural Engineering

Dates of Test: October 15 to 24, 1985

Manufacturer: J.I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

#### 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)								
162.86 (121.45)	2100	10.585 (40.067)	0.456 (0.277)	15.39 (3.031)	189 (86.9)	63 (17.3)	75 (23.9)	28.93 (97.69)

#### VARYING POWER AND FUEL CONSUMPTION — Two Hours

141.73 (105.69)	2150	9.544 (36.127)	0.472 (0.287)	14.85 (2.925)	185 (85.0)	64 (17.5)	74 (23.3)	.....	.....
0.00 (0.00)	2294	3.106 (11.756)	.....	.....	174 (78.9)	64 (17.8)	73 (22.8)	.....	.....
73.42 (54.75)	2229	6.070 (22.978)	0.580 (0.353)	12.10 (2.383)	180 (82.2)	64 (17.8)	74 (23.3)	.....	.....
163.54 (121.95)	2100	10.485 (39.689)	0.450 (0.273)	15.60 (3.073)	189 (87.2)	65 (18.3)	77 (24.7)	.....	.....
37.33 (27.84)	2263	4.658 (17.634)	0.875 (0.532)	8.01 (1.579)	176 (80.0)	65 (18.1)	76 (24.4)	.....	.....
108.35 (80.80)	2191	7.807 (29.552)	0.505 (0.307)	13.88 (2.734)	183 (83.6)	65 (18.3)	75 (23.9)	.....	.....
<b>Av 87.40</b> <b>Av (65.18)</b>	<b>2204</b>	<b>6.945</b> <b>(26.290)</b>	<b>0.557</b> <b>(0.339)</b>	<b>12.59</b> <b>(2.479)</b>	<b>181</b> <b>(82.8)</b>	<b>64</b> <b>(18.0)</b>	<b>75</b> <b>(23.8)</b>	<b>28.96</b> <b>(97.79)</b>	

#### 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 16th (3-4) Gear											
141.17 (105.27)	7692 (34.22)	6.88 (11.08)	2100	2.83	10.452 (39.565)	0.519 (0.316)	13.51 (2.661)	189 (86.9)	59 (14.7)	64 (17.8)	28.98 (97.84)
75% of Pull at Maximum Power — Ten Hours 16th (3-4) Gear											
112.49 (83.88)	5900 (26.24)	7.15 (11.51)	2165	2.05	9.010 (34.108)	0.562 (0.342)	12.48 (2.459)	187 (86.1)	54 (12.2)	66 (19.1)	28.73 (97.00)
50% of Pull at Maximum Power — Two Hours 16th (3-4) Gear											
76.66 (57.16)	3915 (17.41)	7.34 (11.82)	2211	1.52	7.265 (27.501)	0.665 (0.404)	10.55 (2.079)	182 (83.3)	56 (13.3)	57 (13.6)	28.98 (97.84)
50% of Pull at Reduced Engine Speed — Two Hours 18th (3-6) Gear											
76.61 (57.13)	3914 (17.41)	7.34 (11.81)	1766	1.39	6.181 (23.399)	0.566 (0.344)	12.39 (2.442)	183 (83.6)	55 (12.5)	56 (13.1)	28.96 (97.79)

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 46.9 (rating taken from oil company's inspection data) Specific gravity converted to 60/60°F (15/15°C) 0.8423 Fuel weight 7.013 lbs/gal (0.840 kg/l) Oil Case Enginegard SAE 30 API service classification CD/SF To motor 5.280 gal (19.988 l) Drained from motor 4.819 gal (18.240 l) Transmission and hydraulic lubricant Case Powergard PTF transmission fluid Front axle lubricant Case Loadgard-GL5 85W140EP gear lubricant Total time engine was operated 39.0 hours.

**ENGINE:** Make Case Diesel Type six cylinder vertical with turbocharger Serial No. \*10365824\* Crankshaft lengthwise Rated rpm 2100 Bore and stroke 4.625" × 5.00" (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 and aspirator Oil filter two full flow cartridges Oil cooler engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil Fuel filter two paper cartridges and prestrainer Muffler vertical Cooling medium temperature control two thermostats.

**CHASSIS:** Type all wheel drive with constant mesh front axle Serial No. \*9938917\* Tread width rear 64" (1626 mm) to 110" (2794 mm) front 60" (1524 mm) to 88" (2235 mm) Wheel base 116" (2946 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 38.4" (976 mm) Vertical distance above roadway 38.0" (965 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 (6) range operator controlled powershift Advertised speeds mph (km/h) first 1.9 (3.0) second 2.1 (3.4) third 2.5 (4.0) fourth 2.9 (4.6) fifth 3.1 (5.0) sixth 3.2 (5.2) seventh 3.6 (5.8) eighth 3.7 (6.0) ninth 4.3 (6.9) tenth 4.4 (7.0) eleventh 4.9 (7.9) twelfth 5.0 (8.1) thirteenth 5.4 (8.6) fourteenth 5.8 (9.4) fifteenth 6.2 (9.9) sixteenth 6.7 (10.8) seventeenth 7.3 (11.7) eighteenth 8.4 (13.5) nineteenth 10.4 (16.7) twentieth 11.9 (19.1) twenty-first 13.8 (22.2) twenty-second 15.9 (25.5) twenty-third 17.2 (27.7) twenty-fourth 20.8 (33.5) reverse 3.1 (5.0), 5.4 (8.6), 7.3 (11.7) Clutch wet multiple disc hydraulically power actuated by foot pedal Brakes wet multiple disc

# MAXIMUM POWER IN SELECTED GEARS

122.11 (91.05)	17421 (77.49)	2.63 (4.23)	2139	14.64	4th (1-4) Gear	184 (84.4)	54 (12.2)	55 (12.8)	29.01 (97.96)
130.20 (97.09)	17303 (76.97)	2.82 (4.54)	2102	13.97	5th (1-5) Gear	185 (84.7)	54 (12.2)	55 (12.8)	29.01 (97.96)
135.66 (101.16)	16914 (75.24)	3.01 (4.84)	2101	11.47	6th (2-1) Gear	185 (85.0)	54 (12.2)	55 (12.8)	29.02 (98.00)
140.95 (105.11)	15191 (67.57)	3.48 (5.60)	2100	7.97	7th (1-6) Gear	185 (85.0)	55 (12.8)	56 (13.3)	29.02 (98.00)
142.38 (106.18)	14727 (65.51)	3.63 (5.84)	2100	7.35	8th (2-2) Gear	185 (85.0)	55 (12.8)	58 (14.4)	29.03 (98.03)
142.53 (106.28)	12493 (55.57)	4.28 (6.89)	2100	5.51	9th (2-3) Gear	186 (85.6)	55 (12.8)	58 (14.4)	29.03 (98.03)
143.27 (106.83)	12325 (54.82)	4.36 (7.02)	2100	5.43	10th (3-1) Gear	186 (85.3)	55 (12.8)	58 (14.4)	29.03 (98.03)
144.39 (107.67)	10852 (48.27)	4.99 (8.03)	2100	4.44	11th (2-4) Gear	186 (85.6)	55 (12.8)	58 (14.4)	29.03 (98.03)
144.82 (107.99)	10687 (47.54)	5.08 (8.18)	2100	4.27	12th (3-2) Gear	186 (85.3)	56 (13.3)	59 (15.0)	29.03 (98.03)
143.83 (107.25)	9921 (44.13)	5.44 (8.75)	2099	3.94	13th (2-5) Gear	187 (85.8)	56 (13.3)	59 (15.0)	29.03 (98.03)
143.08 (106.70)	9052 (40.27)	5.93 (9.54)	2101	3.43	14th (3-3) Gear	187 (86.1)	56 (13.3)	59 (15.0)	29.03 (98.03)
143.14 (106.74)	8498 (37.80)	6.32 (10.17)	2100	3.09	15th (2-6) Gear	187 (85.8)	56 (13.3)	60 (15.6)	29.03 (98.03)
144.29 (107.60)	7866 (34.99)	6.88 (11.07)	2099	2.74	16th (3-4) Gear	189 (87.2)	58 (14.4)	64 (17.8)	28.96 (97.79)
141.08 (105.20)	7079 (31.49)	7.47 (12.03)	2100	2.57	17th (3-5) Gear	187 (86.1)	57 (13.9)	61 (16.1)	29.02 (98.00)
139.69 (104.17)	6056 (26.94)	8.65 (13.92)	2098	2.13	18th (3-6) Gear	187 (86.1)	56 (13.3)	61 (16.1)	29.03 (98.03)

# LUGGING ABILITY IN 16th (3-4) GEAR

Crankshaft Speed rpm	2099	1889	1680	1475	1267	1052
Pull—lbs (kN)	7866 (34.99)	8587 (38.20)	9068 (40.34)	9353 (41.60)	9267 (41.22)	8599 (38.25)
Increase in Pull %	0	9	15	19	18	9
Power—Hp (kW)	144.29 (107.60)	140.99 (105.13)	132.28 (98.64)	119.55 (89.15)	101.75 (75.87)	78.57 (58.59)
Speed—Mph (km/h)	6.88 (11.07)	6.16 (9.91)	5.47 (8.80)	4.79 (7.71)	4.12 (6.63)	3.43 (5.51)
Slip %	2.74	3.26	3.26	3.43	3.43	3.26

# TRACTOR SOUND LEVEL WITH CAB

Maximum Available Power—Two Hours	75.0
75% of Pull at Maximum Power—Ten Hours	74.0
50% of Pull at Maximum Power—Two Hours	75.5
50% of Pull at Reduced Engine Speed—Two Hours	75.0
Bystander in 23rd (4-5) gear	88.0

# TIRES, BALLAST AND WEIGHT

<b>Rear Tires</b>	—No., size, ply & psi (kPa)	<b>With Ballast</b>	<b>Without Ballast</b>
Ballast	—Liquid (each)	Two 20.8R38; 8; 18 (125)	Two 20.8R38; 8; 18 (125)
	—Cast Iron (each)	225 lb (102 kg)	None
		None	None
<b>Front Tires</b>	—No., size, ply & psi (kPa)	Two 16.9-28; 10; 28 (195)	Two 16.9-28; 10; 28 (195)
Ballast	—Liquid (each)	685 lb (311 kg)	None
	—Cast Iron (each)	495 lb (224 kg)	None
<b>Height of Drawbar</b>		22.5 in (570 mm)	22.5 in (570 mm)
<b>Static Weight with Operator</b> —Rear		11150 lb (5057 kg)	10700 lb (4854 kg)
—Front		7460 lb (3384 kg)	5100 lb (2313 kg)
—Total		18610 lb (8441 kg)	15800 lb (7167 kg)

hydraulically power actuated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 173" (4.39 m) left 173" (4.39 m)(on concrete surface without brake) right 233" (5.92 m) left 233" (5.92 m) **Turning space diameter** (on concrete surface with brake applied) right 364" (9.25 m) left 364" (9.25 m)(on concrete surface without brake) right 486" (12.34 m) left 486" (12.34 m) **Power take-off** 1002 rpm at 2100 engine rpm **Unladen tractor mass** 15620 lb (7085 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 and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 156°F (68.9°C). Fifteen 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. **1583**, December 3, 1985.

LOUIS I. LEVITICUS

Engineer-in-Charge

K. VON BARGEN

W. E. SPLINTER

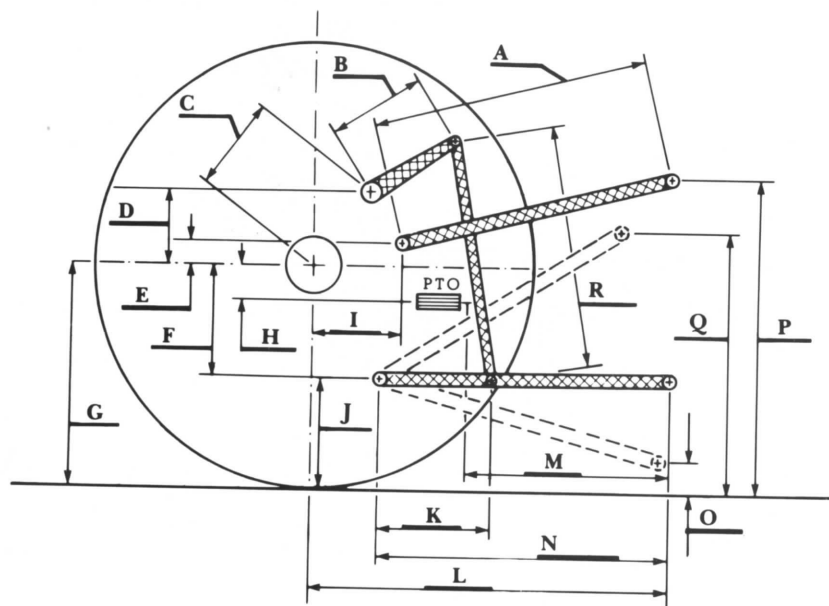
L. L. BASHFORD

Board of Tractor Test Engineers

## THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	2300 (15860)	
Location	remote outlet	
Hydraulic oil temperature °F (°C)	154 (68)	
Location	transmission drain plug	
	<b>Maximum Lift Capacity</b>	<b>Lift Capacity for Transport</b>
QUICK ATTACH	yes	
CATEGORY	III	*not measured
LOAD lbs (kg)	7752 (3516)	
TIME sec	2.05	
HITCH POINT MOVEMENT in (mm)		
Lowest position	9.7 (246)	
Top of timed range	35.7 (906)	
Highest position	40.0 (1015)	
LOAD CG MOVEMENT in (mm)		
Lowest position	9.4 (239)	
Top of timed range	38.9 (988)	
Highest position	45.9 (1166)	

\*Implement load capacity for transport purposes not specified by manufacturer.



Hitch Dimensions as Tested — No Load

	inch	mm
A	23.3	591
B	11.4	289
C	11.5	293
D	1.9	48
E	7.7	196
F	12.7	322
G	32.8	833
H	6.0	152
I	21.9	557
J	20.1	511
K	17.4	441
L	45.8	1163
L'	49.8	1265
M	21.1	536
N	35.4	899
O	7.9	200
P	42.2	1073
Q	40.4	1026
R	20.8	527
L' to end of quick attach		



Case International 3394 Diesel

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Irvin T. Omtvedt, Dean and Director