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Test 1303: Case 2590 Powershift Diesel 12-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1303 — CASE 2590 POWERSHIFT DIESEL

12 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—1003 rpm)								
180.38 (134.51)	2100	11.611 (43.954)	0.448 (0.273)	15.53 (3.060)	203 (95.2)	57 (13.7)	75 (23.9)	28.697 (96.904)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
158.51 (118.20)	2174	10.478 (39.665)	0.460 (0.280)	15.13 (2.980)	196 (91.1)	56 (13.6)	75 (23.9)	..... .....
0.00 (0.00)	2314	2.957 (11.193)	..... .....	..... .....	176 (80.0)	56 (13.3)	74 (23.3)	..... .....
82.28 (61.35)	2256	6.659 (25.209)	0.563 (0.343)	12.35 (2.434)	187 (86.1)	56 (13.6)	74 (23.6)	..... .....
181.14 (135.07)	2101	11.707 (44.315)	0.450 (0.274)	15.47 (3.048)	203 (95.0)	57 (13.9)	76 (24.7)	..... .....
41.94 (31.27)	2291	4.793 (18.144)	0.795 (0.484)	8.75 (1.724)	182 (83.1)	56 (13.6)	74 (23.6)	..... .....
121.42 (90.54)	2214	8.517 (32.241)	0.488 (0.297)	14.26 (2.808)	191 (88.3)	56 (13.3)	76 (24.2)	..... .....
Av 97.55 <i>Av (72.74)</i>	2225	7.519 <i>(28.461)</i>	0.536 <i>(0.326)</i>	12.97 <i>(2.556)</i>	189 <i>(87.3)</i>	56 <i>(13.6)</i>	75 <i>(23.9)</i>	28.675 <i>(96.831)</i>

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 6th (2I) Gear											
153.24 (114.27)	11111 (49.42)	5.17 (8.32)	2100	6.62	11.422 (43.239)	0.519 (0.316)	13.42 (2.643)	201 (93.6)	58 (14.2)	70 (21.1)	28.945 (97.743)
75% of Pull at Maximum Power—Ten Hours 6th (2I) Gear											
125.09 (93.28)	8495 (37.79)	5.52 (8.89)	2194	4.57	9.601 (36.345)	0.534 (0.325)	13.03 (2.567)	194 (89.8)	60 (15.6)	71 (21.4)	28.954 (97.773)
50% of Pull at Maximum Power—Two Hours 6th (2I) Gear											
87.18 (65.01)	5687 (25.30)	5.75 (9.25)	2250	3.12	7.471 (28.282)	0.596 (0.363)	11.67 (2.299)	189 (86.9)	60 (15.3)	72 (22.2)	28.920 (97.659)
50% of Pull at Reduced Engine Speed—Two Hours 9th (3H) Gear											
86.70 (64.65)	5657 (25.16)	5.75 (9.25)	1559	3.12	6.178 (23.387)	0.496 (0.302)	14.03 (2.765)	188 (86.4)	58 (14.4)	69 (20.3)	28.960 (97.794)

MAXIMUM POWER IN SELECTED GEARS

142.11 (105.97)	17865 (79.47)	2.98 (4.80)	2155	14.83	3rd(1H) Gear			192 (88.9)	54 (12.2)	60 (15.6)	28.950 (97.760)
152.59 (113.79)	15381 (68.42)	3.72 (5.99)	2100	10.48	4th (2L) Gear			197 (91.7)	55 (12.8)	66 (18.9)	28.960 (97.794)
156.38 (116.61)	13328 (59.29)	4.40 (7.08)	2099	8.08	5th (3L) Gear			199 (92.8)	55 (12.8)	66 (18.9)	28.960 (97.794)
156.10 (116.40)	11318 (50.34)	5.17 (8.32)	2098	6.58	6th (2I) Gear			199 (92.5)	53 (11.7)	63 (17.2)	28.950 (97.760)
158.73 (118.36)	9874 (43.92)	6.03 (9.70)	2100	5.65	7th (3I) Gear			199 (92.8)	55 (12.8)	67 (19.4)	28.960 (97.794)
159.01 (118.57)	9073 (40.36)	6.57 (10.58)	2101	5.10	8th (2H) Gear			199 (92.8)	56 (13.3)	68 (20.0)	28.960 (97.794)
157.83 (117.69)	7752 (34.48)	7.64 (12.29)	2099	4.22	9th (3H) Gear			199 (92.8)	57 (13.9)	69 (20.6)	28.950 (97.760)

LUGGING ABILITY IN 6th (2I) GEAR

Crankshaft Speed rpm		2098	1887	1681	1465	1251	1046
Pull—lbs (kN)		11318 (50.34)	11988 (53.33)	12194 (54.24)	11873 (52.81)	11269 (50.13)	10037 (44.65)
Increase in Pull %		0	6	8	5	0	-11
Power—Hp (kW)		156.10 (116.40)	147.93 (110.31)	133.81 (99.78)	113.82 (84.88)	92.58 (69.04)	69.50 (51.83)
Speed—Mph (km/h)		5.17 (8.32)	4.63 (7.45)	4.12 (6.62)	3.59 (5.79)	3.08 (4.96)	2.60 (4.18)
Slip %		6.58	7.04	7.34	7.04	6.73	5.96

Department of Agricultural Engineering

Dates of Test: April 9-19, 1979

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

FUEL, OIL AND TIME: Fuel No. 2 Diesel
Cetane No. 49.0 (rating taken from oil company's
typical inspection data) **Specific gravity converted**
to 60°/60° (15°/15°) 0.8359 **Fuel weight** 6.960 lbs/
gal (0.834 kg/l) **Oil SAE 30 API service classifica-**
tion SE-CD To motor 6.167 gal (23.342 l)
Drained from motor 6.027 gal (22.812 l) **Trans-**
mission and final drive lubricant Case TFD
Fluid Total time engine was operated 40.5 hours

ENGINE Make Case Diesel **Type** Six cylinder
vertical with turbocharger **Serial No.** 10170382
Crankshaft lengthwise **Rated rpm** 2100 **Bore**
and stroke 4.625" × 5.0" (117.5 mm × 127 mm)
Compression ratio 15.8 to 1 **Displacement** 504 cu
in (8259 ml) **Cranking system** 12 volt **Lubrica-**
tion pressure Air cleaner two paper elements
with aspirator **Oil filter** two full flow cartridges
Oil cooler engine coolant heat exchanger for
crankcase oil, radiator for hydraulic and transmis-
sion oil **Fuel filter** two paper cartridges **Muffler**
vertical **Cooling medium temperature control**
two thermostats.

CHASSIS: Type standard with duals **Serial**
No. 8840761 **Tread width** rear 64" (1626 mm) to
134" (3404 mm) front 64" (1626 mm) to 92" (2337
mm) **Wheel base** 104" (2642 mm) **Center of grav-**
ity (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 30.9" (785 mm) Vertical
distance above roadway 39.8" (1011 mm) **Horiz-**
ontal 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 (3) range operator con-
trolled powershift **Advertised speeds mph (km/h)**
first 2.0 (3.2) second 2.7 (4.4) third 3.3 (5.3) fourth
4.1 (6.6) fifth 4.7 (7.6) sixth 5.5 (8.9) seventh 6.2
(10.0) eighth 6.9 (11.1) ninth 7.8 (12.6) tenth 10.9
(17.5) eleventh 14.7 (23.7) twelfth 20.1 (32.4) re-
verse 3.3 (5.3), 6.9 (11.1), 7.8 (12.6) **Clutch** multi-
ple wet disc hydraulically operated by foot pedal
Brakes multiple wet disc hydraulically operated by
two foot pedals which can be locked together
Steering hydrostatic **Turning radius** (on concrete
surface with brake applied) right 152" (3.86 m) left
152" (3.86 m) (on concrete surface without brake)
right 169" (4.29 m) left 169" (4.29 m) **Turning**
space diameter (on concrete surface with brake
applied) right 317" (8.05 m) left 317" (8.05 m) (on
concrete surface without brake) right 356" (9.04 m)
left 356" (9.04 m) **Power take-off** 1003 rpm at
2100 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or
adjustments.

REMARKS: All test results were determined
from observed data obtained in accordance with
SAE and ASAE test code or official Nebraska test
procedure. Temperature at injection pump re-

dB(A)

Maximum Available Power—Two Hours	77.0
75% of Pull at Maximum Power—Ten Hours	77.0
50% of Pull at Maximum Power—Two Hours	76.5
50% of Pull at Reduced Engine Speed—Two Hours	75.0
Bystander in 12th (4H) gear	87.5

TIRES, BALLAST AND WEIGHT

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (<i>kPa</i>)	Four 20.8-38; 8; 14 (95)	Four 20.8-38; 8; 14 (95)
Ballast	—Liquid (each)	1008 lb (457 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (<i>kPa</i>)	Two 16.5L-16.1; 10; 36 (250)	Two 16.5L-16.1; 10; 36 (250)
* Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	365 lb (166 kg)	None
Height of drawbar		22 in (560 mm)	22 in (560 mm)
Static weight with operator —rear		15670 lb (7108 kg)	11640 lb (5280 kg)
front		4830 lb (2191 kg)	4100 lb (1860 kg)
Total		20500 lb (9299 kg)	15740 lb (7140 kg)

turn was 187°F (85.9°C). Seven 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. **1303.**

LOUIS I. LEVITICUS

Engineer-in Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



Case 2590 Powershift Diesel