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Test 1325: Ford 1700 Diesel 12-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1325 — FORD 1700 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—551 rpm)									
23.26 (17.35)	2500	1.780 (6.739)	0.537 (0.327)	13.07 (2.574)	216 (102.0)	61 (16.2)	75 (23.8)	29.167 (98.491)	
Standard Power Take-off Speed (540 rpm)—One Hour									
23.02 (17.17)	2452	1.768 (6.693)	0.539 (0.328)	13.02 (2.565)	217 (102.7)	61 (16.3)	75 (23.9)	29.180 (98.536)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
20.36 (15.18)	2576	1.475 (5.582)	0.508 (0.309)	13.80 (2.719)	202 (94.7)	62 (16.9)	75 (23.9)	..... .....
0.00 (0.00)	2698	0.521 (1.974)	..... .....	..... .....	170 (76.4)	63 (17.2)	75 (23.9)	..... .....
10.46 (7.80)	2642	0.966 (3.657)	0.648 (0.394)	10.83 (2.132)	176 (79.7)	63 (17.2)	75 (23.9)	..... .....
23.00 (17.15)	2500	1.791 (6.779)	0.546 (0.332)	12.84 (2.530)	212 (99.7)	63 (17.2)	75 (23.9)	..... .....
5.27 (3.93)	2668	0.731 (2.767)	0.974 (0.592)	7.21 (1.420)	174 (78.6)	64 (17.5)	76 (24.2)	..... .....
15.49 (11.55)	2610	1.171 (4.433)	0.531 (0.323)	13.22 (2.605)	184 (84.7)	64 (17.8)	78 (25.6)	..... .....
Av Av	12.43 (9.27)	2616	1.109 (4.199)	0.626 (0.381)	11.21 (2.207)	186 (85.6)	63 (17.3)	76 (24.2)	29.187 (98.559)

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 8th (3-2) Gear											
18.82 (14.03)	1646 (7.32)	4.29 (6.90)	2499	8.19	1.727 (6.539)	0.644 (0.392)	10.89 (2.146)	213 (100.3)	61 (15.8)	80 (26.7)	29.035 (98.047)
75% of Pull at Maximum Power—Ten Hours 8th (3-2) Gear											
15.62 (11.64)	1296 (5.77)	4.52 (7.27)	2578	6.22	1.361 (5.150)	0.612 (0.372)	11.48 (2.261)	193 (89.6)	65 (18.3)	81 (27.0)	28.758 (97.111)
50% of Pull at Maximum Power—Two Hours 8th (3-2) Gear											
10.76 (8.02)	862 (3.83)	4.68 (7.53)	2619	4.37	1.033 (3.910)	0.674 (0.410)	10.41 (2.051)	181 (82.8)	64 (17.8)	85 (29.2)	28.970 (97.827)
50% of Pull at Reduced Engine Speed—Two Hours 10th (4-1) Gear											
10.80 (8.05)	865 (3.85)	4.68 (7.54)	1714	4.15	0.855 (3.236)	0.556 (0.338)	12.63 (2.488)	191 (88.1)	66 (18.9)	85 (29.4)	28.910 (97.625)
MAXIMUM POWER IN SELECTED GEARS											
17.52 (13.06)	2801 (12.46)	2.35 (3.77)	2558	14.89	6th (2-3) Gear			177 (80.3)	54 (12.2)	56 (13.3)	28.810 (97.287)
19.21 (14.33)	2317 (10.31)	3.11 (5.00)	2501	11.83	7th (3-1) Gear			208 (97.8)	56 (13.3)	72 (22.2)	29.060 (98.131)
19.72 (14.71)	1726 (7.68)	4.29 (6.90)	2498	8.26	8th (3-2) Gear			199 (92.5)	54 (12.2)	65 (18.3)	29.060 (98.131)
20.21 (15.07)	1368 (6.09)	5.54 (8.92)	2501	6.43	9th (3-3) Gear			207 (97.2)	56 (13.3)	73 (22.8)	29.050 (98.097)
20.10 (14.99)	1118 (4.97)	6.74 (10.85)	2499	5.31	10th (4-1) Gear			206 (96.7)	56 (13.3)	75 (23.9)	29.050 (98.097)
19.30 (14.39)	797 (3.55)	9.08 (14.61)	2497	3.81	11th (4-2) Gear			203 (95.0)	58 (14.4)	76 (24.4)	29.050 (98.097)

Department of Agricultural Engineering

Dates of Test: September 24 – 28, 1979

Manufacturer: ISHIKAWAJIMA-SHIBAURA
MACHINERY CO. Ltd., Tokyo, Japan

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°)** 0.8430 **Fuel weight** 7.019 lbs/gal (0.841 kg/l) **Oil SAE 30 API service classification** SB/SE-CA/CD **To motor** 1.179 gal (4.462 l) **Drained from motor** 1.028 gal (3.891 l) **Transmission and final drive lubricant** Ford M2C 134A fluid **Total time engine was operated** 33.5 hours.

ENGINE: Make Shibaura Diesel **Type** Two cylinder vertical **Serial No.** LE 892-36329 **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.54" × 3.94" (90 mm × 100 mm) **Compression ratio** 21 to 1 **Displacement** 77.6 cu in (1272 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** oil bath steel wool **Oil filter** one paper cartridge **Fuel filter** one paper cartridge **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** U-701696 **Tread width** rear 43.3" (1100 mm) to 58.7" (1492 mm) front 43.5" (1105 mm) to 57.5" (1460 mm) **Wheel base** 60.2" (1530 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 23.4" (594 mm) Vertical distance above roadway 28.9" (734 mm) Horizontal distance from center of rear wheel tread 0.1" (2 mm) to the right **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 0.7 (1.2) second 0.9 (1.5) third 1.2 (1.9) fourth 1.6 (2.6) fifth 2.2 (3.5) sixth 2.8 (4.5) seventh 3.6 (5.8) eighth 4.8 (7.7) ninth 6.1 (9.8) tenth 7.3 (11.8) eleventh 9.7 (15.6) twelfth 12.3 (19.8) reverse 0.8 (1.4), 1.9 (3.1), 4.2 (6.8), 8.6 (13.8) **Clutch** single dry disc operated by foot pedal **Brakes** expanding shoe operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 90.6" (2.3 m) left 90.6" (2.3 m) (on concrete surface without brake) right 98.4" (2.5 m) left 98.4" (2.5 m) **Turning space diameter** (on concrete surface with brake applied) right 189" (4.8 m) left 189" (4.8 m) (on concrete surface without brake) right 204.8" (5.2 m) left 204.8" (5.2 m) **Power take-off** 540 rpm at 2452 engine rpm.

LUGGING ABILITY IN 8th (3-2) GEAR

Crankshaft Speed rpm	2498	2254	1997	1750	1494	1251
Pull—lbs (kN)	1726 (7.68)	1791 (7.97)	1872 (8.33)	1830 (8.14)	1794 (7.98)	1722 (7.66)
Increase in Pull %	0	4	8	6	4	0
Power—Hp (kW)	19.72 (14.71)	18.39 (13.72)	16.96 (12.65)	14.57 (10.87)	12.21 (9.11)	9.86 (7.35)
Speed—Mph (km/h)	4.29 (6.90)	3.85 (6.20)	3.40 (5.47)	2.99 (4.81)	2.55 (4.11)	2.15 (3.46)
Slip %	8.26	8.62	8.97	8.70	8.53	8.17

TRACTOR SOUND LEVEL WITHOUT CAB

	dB(A)
Maximum Available Power—Two Hours	95.5
75% of Pull at Maximum Power—Ten Hours	93.5
50% of Pull at Maximum Power—Two Hours	93.0
50% of Pull at Reduced Engine Speed—Two Hours	87.5
Bystander in 12th (4-3) gear	81.5

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires		
—No., size, ply & psi (kPa)	Two 11.2-24; 4; 14 (95)	Two 11.2-24; 4; 14 (95)
Ballast	265 lb (120 kg)	None
—Liquid (each)	130 lb (59 kg)	None
—Cast Iron (each)		None
Front Tires		
—No., size, ply & psi (kPa)	Two 5.00-15; 4; 40 (275)	Two 5.00-15; 4; 40 (275)
Ballast	None	None
—Liquid (each)	160 lb (73 kg)	None
—Cast Iron (each)		None
Height of Drawbar	15.5 in (395 mm)	15.5 in (395 mm)
Static Weight with Operator—Rear	2495 lb (1132 kg)	1705 lb (773 kg)
Front	1230 lb (558 kg)	910 lb (413 kg)
Total	3725 lb (1690 kg)	2615 lb (1186 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 code or official Nebraska test procedure. Temperature at injection pump was 165°F (73.8°C). Six gears were chosen between 15% and 10 mph (16.1 km/h). During the final inspection both cylinder walls were found to be scratched.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1325.**

L. I. LEVITICUS
Engineer-in-Charge

G. W. STEINBRUEGGE
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers



Ford 1700 Diesel