

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

---

1-1-1977

## Test 1244: Ford 6700 Diesel 16-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto: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, "Test 1244: Ford 6700 Diesel 16-Speed" (1977). *Nebraska Tractor Tests*. 1564. <https://digitalcommons.unl.edu/tractormuseumlit/1564>

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.

# NEBRASKA TRACTOR TEST 1244 — FORD 6700 DIESEL, 16-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—1020 rpm)									
68.94 (51.41)	2101	5.081 (19.234)	0.514 (0.313)	13.57 (2.673)	203 (94.9)	69 (20.6)	75 (23.9)	28.833 (97.366)	
Standard Power Take-off Speed (1000 rpm)—One Hour									
68.62 (51.17)	2059	4.985 (18.870)	0.507 (0.308)	13.77 (2.712)	202 (94.5)	69 (20.6)	75 (23.8)	28.845 (97.404)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
62.69 (46.75)	2249	4.274 (16.179)	0.476 (0.289)	14.67 (2.889)	189 (87.2)	69 (20.6)	74 (23.6)	..... .....	
0.00 (0.00)	2356	1.286 (4.867)	..... .....	..... .....	168 (75.6)	68 (20.3)	74 (23.3)	..... .....	
32.34 (24.12)	2311	2.679 (10.140)	0.578 (0.352)	12.07 (2.378)	173 (78.3)	69 (20.6)	74 (23.3)	..... .....	
68.76 (51.28)	2100	5.061 (19.158)	0.514 (0.312)	13.59 (2.677)	201 (93.9)	69 (20.6)	75 (23.9)	..... .....	
16.15 (12.04)	2328	1.952 (7.390)	0.843 (0.513)	8.27 (1.630)	169 (76.1)	69 (20.6)	75 (23.9)	..... .....	
47.81 (35.66)	2284	3.371 (12.761)	0.492 (0.299)	14.18 (2.794)	177 (80.6)	69 (20.6)	75 (23.9)	..... .....	
Av Av	37.96 (28.31)	2272 (11.749)	3.104 (0.347)	0.570 (0.347)	12.23 (2.409)	180 (81.9)	69 (20.5)	75 (23.7)	28.857 (97.445)

## 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 (5-PD) Gear											
56.17 (41.89)	4692 (20.87)	4.49 (7.22)	2101	9.57	4.999 (18.922)	0.621 (0.378)	11.24 (2.214)	206 (96.4)	73 (22.5)	82 (27.5)	28.835 (97.371)
75% of Pull at Maximum Power—Ten Hours 8th (5-PD) Gear											
47.67 (35.55)	3598 (16.00)	4.97 (8.00)	2258	6.87	3.852 (14.581)	0.564 (0.343)	12.38 (2.438)	182 (83.1)	73 (22.8)	81 (27.3)	28.862 (97.463)
50% of Pull at Maximum Power—Two Hours 8th (5-PD) Gear											
33.18 (24.75)	2391 (10.64)	5.20 (8.38)	2309	4.57	2.974 (11.258)	0.625 (0.380)	11.16 (2.198)	173 (78.1)	72 (22.2)	75 (23.9)	28.900 (97.591)
50% of Pull at Reduced Engine Speed—Two Hours 12th (6-DD) Gear											
33.22 (24.77)	2400 (10.68)	5.19 (8.35)	1433	4.50	2.490 (9.427)	0.523 (0.318)	13.34 (2.628)	189 (87.2)	76 (24.2)	84 (28.6)	28.910 (97.625)

## MAXIMUM POWER IN SELECTED GEARS

50.42 (37.60)	6787 (30.19)	2.79 (4.48)	2264	14.94	5th (3-PD) Gear			177 (80.6)	72 (22.2)	74 (23.3)	28.890 (97.557)
55.07 (41.07)	5693 (25.32)	3.63 (5.84)	2101	12.40	7th (4-PD) Gear			203 (94.7)	72 (22.2)	81 (27.2)	28.860 (97.456)
57.29 (42.72)	4791 (21.31)	4.48 (7.22)	2100	9.57	8th (5-PD) Gear			204 (95.6)	71 (21.7)	79 (26.1)	28.860 (97.456)
57.95 (43.22)	3780 (16.82)	5.75 (9.25)	2102	7.19	10th (6-PD) Gear			206 (96.4)	72 (22.2)	81 (27.2)	28.860 (97.456)
58.06 (43.30)	2886 (12.84)	7.55 (12.14)	2100	5.34	12th (6-DD) Gear			205 (96.1)	72 (22.2)	82 (27.8)	28.860 (97.456)
53.63 (39.99)	1478 (6.57)	13.61 (21.90)	2099	2.65	14th (7-DD) Gear			196 (91.1)	72 (22.2)	82 (27.8)	28.850 (97.422)

## LUGGING ABILITY IN RATED GEAR 8th (5-PD)

Crankshaft Speed rpm		2100	1891	1678	1475	1258	1056
Pull—lbs (kN)		4791 (21.31)	5091 (22.65)	5309 (23.61)	5211 (23.18)	4930 (21.93)	4739 (21.08)
Increase in Pull %		0	6	11	9	3	-1
Power—Hp (kW)		57.29 (42.72)	54.32 (40.51)	49.89 (37.20)	43.15 (32.18)	35.10 (26.18)	28.47 (21.23)
Speed—Mph (km/h)		4.48 (7.22)	4.00 (6.44)	3.52 (5.67)	3.10 (5.00)	2.67 (4.30)	2.25 (3.63)
Slip %		9.57	10.49	11.01	10.88	10.10	9.71

Department of Agricultural Engineering

Dates of Test: June 20 to 24, 1977

Manufacturer: FORD MOTOR COMPANY,  
Tractor Operations, 2500 East Maple Rd., Troy,  
Michigan 48084

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel  
Cetane No. 51.8 (rating taken from oil company's  
typical inspection data) **Specific gravity converted**  
**to 60°/60° (15°/15°)** 0.8379 **Fuel weight** 6.977 lbs/  
gal (0.838 kg/l) **Oil SAE 30 API service classifi-**  
**cation** SB/SE-CA/CD **To motor** 1.945 gal  
(7.363 l) **Drained from motor** 1.704 gal (6.450 l)  
**Transmission and final drive lubricant** Ford  
M2C53A **Total time engine was operated** 40  
hours

**ENGINE** Make Ford Diesel **Type** 4 cylinder  
vertical **Serial No.** \*E130918\* **Crankshaft**  
lengthwise **Rated rpm** 2100 **Bore and stroke** 4.4"  
× 4.2" (111.8 mm × 106.7 mm) **Compression ratio**  
16.3 to 1 **Displacement** 255 cu in (4186 ml)  
**Cranking system** 12 volt **Lubrication** pressure  
**Air cleaner** primary and safety paper elements  
with centrifugal precleaner **Oil filter** full flow  
screw-on paper cartridge **Oil cooler** radiator for  
transmission and hydraulic oil **Fuel filter** nylon  
gauze in bottom of tank and paper element **Muf-**  
**fler** vertical **Cooling medium temperature con-**  
**trol** thermostat

**CHASSIS:** **Type** standard **Serial No.** C525429  
**Tread width** rear 56" (1422 mm) to 80" (2032 mm)  
front 56" (1422 mm) to 88" (2235 mm) **Wheel base**  
101.6" (2581 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 31.6" (804 mm) Vertical distance above  
roadway 39.5" (1002 mm) Horizontal distance  
from center of rear wheel tread 0.3" (8 mm) to the  
left **Hydraulic control system** direct engine  
drive **Transmission** selective gear fixed ratio with  
partial (2 range) operator controlled power shift  
**Advertised speeds mph (km/h)** first 1.3 (2.1) sec-  
ond 1.6 (2.5) third 1.7 (2.7) fourth 2.1 (3.4) fifth  
2.9 (4.6) sixth 3.7 (6.0) seventh 3.9 (6.3) eighth 4.7  
(7.6) ninth 5.0 (8.1) tenth 5.8 (9.4) eleventh 6.0  
(9.7) twelfth 7.5 (12.1) thirteenth 10.3 (16.5) four-  
teenth 13.2 (21.2) fifteenth 13.9 (22.4) sixteenth  
17.8 (28.7) reverse 1.9 (3.0), 2.4 (3.9), 6.7 (10.8),  
8.7 (13.9) **Clutch** single dry disc operated by foot  
pedal **Brakes** multiple wet disc operated by two  
foot pedals which can be locked together **Steering**  
hydrostatic **Turning radius** (on concrete surface  
with brake applied) right 147" (3.73 m) left 146"  
(3.71 m) (on concrete surface without brake) right  
168.5" (4.28 m) left 166.5" (4.23 m) **Turning space**  
**diameter** (on concrete surface with brake applied)  
right 305" (7.75 m) left 303" (7.70 m) (on concrete  
surface without brake) right 348" (8.84 m) left 344"  
(8.74 m) **Belt pulley** 1073 rpm at 2050 engine  
rpm diameter 11" (280 mm) face 6.5" (165 mm)  
**Belt speed** 3089 fpm (15.7 m/s) **Power take-off**  
540 rpm at 1900 engine rpm and 1000 rpm at  
2059 engine rpm.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	82.0
75% of Pull at Maximum Power—Ten Hours	83.0
50% of Pull at Maximum Power—Two Hours	83.0
50% of Pull at Reduced Engine Speed—Two Hours	82.0
Bystander in 15th (8-PD) gear	87.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
<b>Rear Tires</b>	—No., size, ply & psi (kPa)	Two 16.9-38; 6; 16 (110)	Two 16.9-38; 6; 16 (110)
Ballast	—Liquid (each)	525 lb (238 kg)	None
	—Cast Iron (each)	None	None
<b>Front Tires</b>	—No., size, ply & psi (kPa)	Two 7.50-16; 6; 32 (220)	Two 7.50-16; 6; 32 (220)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	65 lb (29 kg)	None
<b>Height of Drawbar</b>		26.5 in (670 mm)	26.5 in (670 mm)
<b>Static weight with operator</b> —rear		7050 lb (3198 kg)	6000 lb (2722 kg)
front		2640 lb (1197 kg)	2510 lb (1139 kg)
total		9690 lb (4395 kg)	8510 lb (3860 kg)

**REPAIRS and ADJUSTMENTS:** Fuel injection pump and PTO gears were replaced prior to the start of the PTO tests.

**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 return was 163°F (72.6°C). Six gears were chosen between 15% slip and 15 mph (24.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1244.

LOUIS I. LEVITICUS

Engineer-in Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



Ford 6700 Diesel, 16-Speed