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## Test: 1245: Ford 8700 Diesel 16-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1245 — FORD 8700 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—1189 rpm)								
110.58 (82.46)	2300	7.736 (29.285)	0.484 (0.295)	14.29 (2.816)	188 (86.8)	64 (17.9)	75 (23.8)	28.867 (97.478)
Standard Power Take-off Speed (1000 rpm)—One Hour								
99.56 (74.24)	1935	6.627 (25.085)	0.461 (0.280)	15.02 (2.960)	189 (87.0)	63 (17.2)	75 (23.7)	28.890 (97.557)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
102.01 (76.07)	2494	7.203 (27.267)	0.489 (0.297)	14.16 (2.790)	181 (82.8)	64 (17.8)	76 (24.2)	..... .....
0.00 (0.00)	2551	2.332 (8.826)	..... .....	..... .....	170 (76.7)	64 (18.1)	75 (23.9)	..... .....
51.46 (38.37)	2519	4.434 (16.783)	0.596 (0.363)	11.61 (2.286)	172 (78.1)	64 (18.1)	75 (23.9)	..... .....
110.97 (82.75)	2300	7.767 (29.400)	0.484 (0.295)	14.29 (2.815)	191 (88.3)	66 (18.9)	78 (25.3)	..... .....
25.89 (19.30)	2534	3.376 (12.780)	0.903 (0.549)	7.67 (1.511)	171 (77.2)	65 (18.3)	75 (23.9)	..... .....
76.80 (57.27)	2506	5.712 (21.623)	0.515 (0.313)	13.45 (2.649)	176 (79.7)	66 (18.9)	76 (24.4)	..... .....
Av Av	61.19 (45.63)	2484 (19.447)	5.137 (0.353)	0.581 (2.346)	11.91 (80.5)	177 (18.3)	65 (24.3)	76 (97.490)

## DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)		lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C)	Cool- ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (5PD) Gear													
96.05 (71.62)	7485 (33.30)	4.81 (7.74)	2300	6.15	7.765 (29.394)	0.560 (0.340)	12.37 (2.437)	187 (86.1)	66 (18.6)		76 (24.4)	28.850 (97.422)	
75% of Pull at Maximum Power—Ten Hours 8th (5PD) Gear													
81.46 (60.75)	5734 (25.51)	5.33 (8.57)	2497	4.38	6.631 (25.101)	0.563 (0.343)	12.28 (2.420)	176 (79.9)	66 (18.8)		77 (25.2)	28.918 (97.652)	
50% of Pull at Maximum Power—Two Hours 8th (5PD) Gear													
55.25 (41.20)	3813 (16.96)	5.43 (8.74)	2511	3.01	5.056 (19.140)	0.633 (0.385)	10.93 (2.153)	173 (78.3)	68 (19.7)		78 (25.6)	28.775 (97.169)	
50% of Pull at Reduced Engine Speed—Two Hours 11th (6PD) Gear													
55.72 (41.55)	3831 (17.04)	5.45 (8.78)	1782	2.82	4.352 (16.474)	0.541 (0.329)	12.80 (2.522)	170 (76.7)	68 (19.7)		73 (22.5)	28.955 (97.777)	
MAXIMUM POWER IN SELECTED GEARS													
80.66 (60.15)	11581 (51.51)	2.61 (4.20)	2496	14.92	4th (2PD) Gear			174 (78.9)	63 (17.2)		68 (20.0)	28.860 (97.456)	
95.64 (71.32)	8788 (39.09)	4.08 (6.57)	2298	7.72	7th (4PD) Gear			183 (83.9)	64 (17.8)		72 (22.2)	28.860 (97.456)	
97.96 (73.05)	7644 (34.00)	4.81 (7.73)	2301	6.34	8th (5PD) Gear			182 (83.3)	64 (17.8)		71 (21.7)	28.860 (97.456)	
97.55 (72.74)	5813 (25.86)	6.29 (10.13)	2299	4.61	10th (5DD) Gear			183 (83.9)	65 (18.3)		73 (22.8)	28.860 (97.456)	
100.12 (74.66)	5413 (24.08)	6.94 (11.16)	2300	4.07	11th (6PD) Gear			183 (83.6)	65 (18.3)		73 (22.8)	28.860 (97.456)	
96.79 (72.18)	3421 (15.22)	10.61 (17.08)	2300	2.58	13th (7PD) Gear			184 (84.2)	66 (18.9)		74 (23.3)	28.850 (97.422)	
LUGGING ABILITY IN RATED GEAR 8th (5PD)													
Crankshaft Speed rpm				2301	2066	1838	1608	1377	1144				
Pull—lbs (kN)				7644 (34.00)	8041 (35.77)	8364 (37.20)	8358 (37.18)	8240 (36.65)	8090 (35.99)				
Increase in Pull %				0	5	9	9	8	6				
Power—Hp (kW)				97.96 (73.05)	92.01 (68.61)	85.06 (63.43)	74.03 (55.20)	62.79 (46.82)	51.12 (38.12)				
Speed—Mph (km/h)				4.81 (7.73)	4.29 (6.91)	3.81 (6.14)	3.32 (5.35)	2.86 (4.60)	2.37 (3.81)				
Slip %				6.34	7.00	7.00	7.43	7.00	7.14				

Department of Agricultural Engineering

Dates of Test: May 16 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°)** 0.8313 **Fuel weight** 6.922 lbs/  
gal (0.831 kg/l) **Oil SAE 30 API service classifi-**  
**cation** SB/SE-CA/CD **To motor** 2.903 gal  
(10.989 l) **Drained from motor** 2.633 gal  
(9.967 l) **Transmission and final drive lubricant**  
Ford M2C53-A **Total time engine was operated**  
45.0 hours

**ENGINE:** Make Ford Diesel **Type** 6 cylinder  
vertical **Serial No.** G160532 **Crankshaft**  
lengthwise **Rated rpm** 2300 **Bore and stroke** 4.4"  
× 4.4" (111.8 mm × 111.8 mm) **Compression ratio**  
16.3 to 1 **Displacement** 401 cu in (6578 ml) **Crank-**  
**ing system** 12 volt **Lubrication** pressure **Air**  
**cleaner** primary and safety paper elements and  
centrifugal precleaner **Oil filter** full flow paper  
element **Oil cooler** engine coolant heat exchanger  
for crankcase oil, radiator for transmission and  
hydraulic oil **Fuel filter** two parallel paper ele-  
ments **Muffler** vertical **Cooling medium temper-**  
**ature control** thermostat

**CHASSIS:** **Type** standard with duals **Serial**  
**No.** C525431 **Tread width** rear 60" (1524 mm) to  
88" (2235 mm) front 56" (1422 mm) to 84" (2134  
mm) **Wheel base** 109.7" (2786 mm) **Center of**  
**gravity** (without operator or ballast, with  
minimum tread, with fuel tank filled and tractor  
serviced for operation) Horizontal distance for-  
ward from center-line of rear wheels 31.8" (808  
mm) Vertical distance above roadway 42.8" (1087  
mm) Horizontal distance from center of rear wheel  
tread 0.23" (6 mm) to the left **Hydraulic control**  
**system** direct engine drive **Transmission** selec-  
tive gear fixed ratio with partial (2 range) operator  
controlled power shift **Advertised speeds mph**  
**(km/h)** first 1.6 (2.5) second 2.0 (3.2) third 2.2 (3.6)  
fourth 2.8 (4.6) fifth 3.3 (5.3) sixth 4.3 (6.9)  
seventh 4.4 (7.1) eighth 5.2 (8.3) ninth 5.7 (9.2)  
tenth 6.6 (10.6) eleventh 7.3 (11.7) twelfth 9.3  
(19.0) thirteenth 10.9 (17.6) fourteenth 14.0 (22.6)  
fifteenth 14.6 (23.5) sixteenth 18.6 (30.0) reverse  
2.0 (3.1), 2.5 (4.0), 6.2 (10.0) and 8.0 (12.8) **Clutch**  
single dry disc 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 158" (4.01 m) left 160"  
(4.06 m) (on concrete surface without brake) right  
178" (4.52 m) left 180" (4.57 m) **Turning space**  
**diameter** (on concrete surface with brake applied)  
right 330" (8.38 m) left 334" (8.48 m) (on concrete  
surface without brake) right 370" (9.40 m) left 374"  
(9.50 m) **Power take-off** 540 rpm at 1900 engine  
rpm and 1000 rpm at 1935 engine rpm.

TRACTOR SOUND LEVEL WITH CAB		dB(A)
Maximum Available Power—Two Hours		81.0
75% of Pull at Maximum Power—Ten Hours		82.5
50% of Pull at Maximum Power—Two Hours		82.0
50% of Pull at Reduced Engine Speed—Two Hours		79.5
Bystander in 15th (7PD) gear		89.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-38; 8; inner 16 (110), outer 14 (100)	Four 18.4-38; 8; inner 16 (110), outer 14 (100)
Ballast	—Liquid (each inner)	625 lb (283 kg)	None
	—Cast Iron (each side)	560 lb (254 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 10.00-16; 6; 32 (220)	Two 10.00-16; 6; 32 (220)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	60 lb (27 kg)	None
Height of drawbar		22 in (560 mm)	22 in (560 mm)
Static weight with operator—rear		11420 lb (5180 kg)	9050 lb (4105 kg)
front		3340 lb (1515 kg)	3220 lb (1461 kg)
total		14760 lb (6695 kg)	12270 lb (5566 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 return was 166°F (74.4°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 **1245**.

LOUIS I. LEVITICUS  
Engineer-in Charge

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



**Ford 8700 Diesel, 16-Speed**