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Test 1433: Ford 7710 and 7610 (16x8) Diesel 8 and 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1433 — FORD 7710 (16 X 8) DIESEL ALSO FORD 7610 (16 X 8) DIESEL 16 SPEED ALSO 8 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—1026 rpm)									
86.62 (64.59)	2100	5.521 (20.899)	0.440 (0.267)	15.69 (3.091)	194 (90.3)	57 (13.8)	75 (23.7)	28.833 (97.366)	
Standard Power Take-off Speed (1000 rpm)—One Hour									
86.55 (64.54)	2048	5.452 (20.638)	0.434 (0.264)	15.87 (3.127)	194 (89.8)	57 (14.1)	75 (23.8)	28.825 (97.338)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
76.40 (56.97)	2180	5.086 (19.253)	0.459 (0.279)	15.02 (2.959)	188 (86.9)	58 (14.4)	74 (23.6)	..... .....
0.00 (0.00)	2242	1.601 (6.060)	..... .....	..... .....	169 (76.1)	58 (14.4)	75 (23.9)	..... .....
38.68 (28.84)	2208	3.298 (12.484)	0.588 (0.358)	11.73 (2.310)	172 (77.8)	58 (14.2)	75 (23.9)	..... .....
86.78 (64.71)	2100	5.564 (21.062)	0.442 (0.269)	15.60 (3.072)	191 (88.3)	58 (14.4)	76 (24.2)	..... .....
19.57 (14.59)	2233	2.441 (9.240)	0.860 (0.523)	8.02 (1.579)	173 (78.3)	57 (13.9)	74 (23.6)	..... .....
57.49 (42.87)	2186	4.142 (15.679)	0.497 (0.302)	13.88 (2.734)	174 (78.6)	57 (13.9)	74 (23.3)	..... .....
Av Av	46.49 (34.67)	2192	3.688 (13.961)	0.547 (0.333)	12.60 (2.483)	178 (81.0)	58 (14.2)	75 (23.8)	28.810 (97.287)

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

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 11th (6L) Gear											
72.33 (53.94)	4219 (18.77)	6.43 (10.35)	2101	5.18	5.292 (20.033)	0.505 (0.307)	13.67 (2.692)	174 (78.6)	47 (8.3)	62 (16.4)	29.350 (99.111)
75% of Pull at Maximum Power—Ten Hours 11th (6L) Gear											
58.67 (43.75)	3227 (14.35)	6.82 (10.97)	2202	4.18	4.785 (18.115)	0.563 (0.342)	12.26 (2.415)	172 (77.9)	42 (5.7)	54 (12.2)	29.288 (98.901)
50% of Pull at Maximum Power—Two Hours 11th (6L) Gear											
40.15 (29.94)	2151 (9.57)	7.00 (11.27)	2223	2.53	3.879 (14.684)	0.666 (0.405)	10.35 (2.039)	170 (76.7)	42 (5.3)	47 (8.1)	29.435 (99.398)
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
40.13 (29.93)	2150 (9.56)	7.00 (11.26)	1520	2.49	3.118 (11.802)	0.536 (0.326)	12.87 (2.536)	169 (75.8)	44 (6.7)	53 (11.7)	29.450 (99.448)
MAXIMUM POWER IN SELECTED GEARS											
57.50 (42.88)	8638 (38.42)	2.50 (4.02)	2196	14.89	5th (3L) Gear			172 (77.8)	42 (5.6)	51 (10.6)	29.230 (98.705)
65.04 (48.50)	7820 (34.78)	3.12 (5.02)	2101	13.64	6th (3H) Gear			174 (78.6)	48 (8.9)	61 (16.1)	29.380 (99.212)
68.40 (51.01)	6998 (31.13)	3.67 (5.90)	2102	10.28	7th (4L) Gear			174 (78.9)	48 (8.9)	61 (16.1)	29.380 (99.212)
70.42 (52.51)	6193 (27.55)	4.26 (6.86)	2098	8.50	8th (5L) Gear			174 (78.9)	48 (8.9)	61 (16.1)	29.380 (99.212)
68.50 (51.08)	5250 (23.35)	4.89 (7.88)	2101	6.72	9th (4H) Gear			174 (78.9)	48 (8.9)	61 (16.1)	29.380 (99.212)
69.95 (52.16)	4660 (20.73)	5.63 (9.06)	2097	5.90	10th (5H) Gear			174 (78.9)	48 (8.9)	61 (16.1)	29.380 (99.212)
73.24 (54.61)	4276 (19.02)	6.42 (10.34)	2101	5.35	11th (6L) Gear			173 (78.3)	47 (8.3)	59 (15.0)	29.390 (99.246)
70.59 (52.64)	3154 (14.03)	8.39 (13.51)	2098	3.73	12th (6H) Gear			174 (78.9)	48 (8.9)	60 (15.6)	29.380 (99.212)

Department of Agricultural Engineering

Dates of Test: April 2 to May 3, 1982

Manufacturer: FORD MOTOR COMPANY,
Ford Tractor Operations, 2500 East Maple
Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel
Cetane No. 46.5 (rating taken from oil company's
inspection data) Specific gravity converted to 60°/
60° (15°/15°) 0.8282 Fuel weight 6.896 lbs/gal
(0.826 kg/l) Oil SAE 30 API service classifica-
tion SE/SF-CC/CD To motor 1.883 gal (7.129 l)
Drained from motor 1.465 gal (5.547 l) Trans-
mission and hydraulic lubricant Ford 134 fluid
Total time engine was operated 61.5 hours.

ENGINE: Make Ford Diesel Type four cylin-
der vertical with turbocharger Serial No.
F635268 Crankshaft lengthwise Rated rpm
2100 Bore and stroke 4.4" × 4.4" (112 mm × 112
mm) Compression ratio 15.6 to 1 Displacement
268 cu in (4392 ml) Starting system 12 volt Lub-
rication pressure Air cleaner two paper elements
with centrifugal precleaner Oil filter one full
flow paper cartridge Oil cooler engine coolant
heat exchanger for crankcase oil, radiator for hy-
draulic and transmission oil Fuel filter one paper
element Muffler vertical Cooling medium
temperature control one thermostat.

CHASSIS: Type standard Serial No.
C681212 Tread width rear 60" (1525 mm) to 90"
(2285 mm) front 56" (1422 mm) to 84" (2134 mm)
Wheel base 101.6" (2580 mm) Center of gravity
(without operator or ballast, with minimum tread,
with fuel tank filled and tractor serviced for op-
eration) Horizontal distance forward from center-
line of rear wheels 31.6" (804 mm) Vertical dis-
tance above roadway 43.5" (1105 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 (2) range operator controlled
powershift Advertised speeds mph (km/h) first
1.3 (2.2) second 1.7 (2.8) third 2.0 (3.1) fourth 2.5
(4.0) fifth 2.9 (4.6) sixth 3.7 (5.9) seventh 4.2 (6.7)
eighth 4.8 (7.7) ninth 5.4 (8.7) tenth 6.1 (9.9)
eleventh 6.9 (11.2) twelfth 8.9 (14.4) thirteenth
10.2 (16.3) fourteenth 13.1 (21.0) fifteenth 14.8
(23.7) sixteenth 19.0 (30.6) reverse 1.7 (2.8), 2.2
(3.6), 2.5 (4.1), 3.3 (5.3), 3.7 (6.0), 4.8 (7.7), 5.4
(8.7), 6.9 (11.2) Clutch single plate dry disc oper-
ated by foot pedal Brakes wet multiple disc oper-
ated 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 147" (3.73 m) (on concrete sur-
face without brake) right 169" (4.29 m) left 169"
(4.29 m) Turning space diameter (on concrete
surface with brake applied) right 302" (7.67 m) left
302" (7.67 m) (on concrete surface without brake)
right 346" (8.79 m) left 346" (8.79 m) Power take-
off 1000 rpm at 2048 engine rpm and 540 rpm at
1900 engine rpm.

LUGGING ABILITY IN 11th (6L) GEAR

Crankshaft Speed rpm	2101	1898	1690	1481	1246	1070
Pull—lbs (kN)	4276 (19.02)	4587 (20.40)	4836 (21.51)	4922 (21.89)	4358 (19.39)	4078 (18.14)
Increase in Pull %	0	7	13	15	2	-5
Power—Hp (kW)	73.24 (54.61)	70.58 (52.63)	66.01 (49.23)	58.65 (43.73)	44.12 (32.90)	35.55 (26.51)
Speed—Mph (km/h)	6.42 (10.34)	5.77 (9.29)	5.12 (8.24)	4.47 (7.19)	3.80 (6.11)	3.27 (5.26)
Slip %	5.35	5.83	6.24	6.38	5.56	5.28

TRACTOR SOUND LEVEL WITH CAB	Radials dB(A)	Bias dB(A)
Maximum Available Power—Two Hours	83.0	82.5
75% of Pull at Maximum Power—Ten Hours		84.0
50% of Pull at Maximum Power—Two Hours		84.5
50% of Pull at Reduced Engine Speed—Two Hours		79.5
Bystander in 16th (8H) gear		88.0

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

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/hl)	Temp. °F (°C) Cool- ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th (6L) Gear											
74.03 (55.20)	4027 (17.91)	6.89 (11.10)	2099	2.37	5.347 (20.242)	0.498 (0.303)	13.84 (2.727)	173 (78.3)	44 (6.7)	53 (11.4)	29.215 (98.655)

MAXIMUM POWER IN SELECTED GEARS

65.25 (48.66)	9615 (42.77)	2.55 (4.10)	2132	14.42	5th (3L) Gear	174 (78.6)	49 (9.4)	53 (11.7)	29.010 (97.962)
71.11 (53.02)	7468 (33.22)	3.57 (5.75)	2102	5.21	6th (3H) Gear	173 (78.3)	49 (9.4)	53 (11.7)	29.010 (97.962)
72.66 (54.18)	6685 (29.73)	4.08 (6.56)	2099	4.11	7th (4L) Gear	174 (78.9)	49 (9.4)	53 (11.7)	29.010 (97.962)
73.78 (55.02)	5896 (26.22)	4.69 (7.55)	2102	3.44	8th (5L) Gear	174 (78.9)	49 (9.4)	53 (11.7)	29.010 (97.962)
71.11 (53.02)	5017 (22.31)	5.32 (8.55)	2100	2.98	9th (4H) Gear	174 (78.9)	48 (8.9)	52 (11.1)	29.010 (97.962)
71.86 (53.58)	4424 (19.68)	6.09 (9.80)	2101	2.60	10th (5H) Gear	174 (78.9)	48 (8.9)	52 (11.1)	29.010 (97.962)
74.84 (55.80)	4071 (18.11)	6.89 (11.10)	2098	2.45	11th (6L) Gear	173 (78.3)	48 (8.9)	52 (11.1)	29.010 (97.962)
71.82 (53.55)	3017 (13.42)	8.93 (14.37)	2100	1.75	12th (6H) Gear	173 (78.3)	48 (8.9)	52 (11.1)	29.010 (97.962)

LUGGING ABILITY IN 11th (6L) GEAR

Crankshaft Speed rpm	2098	1897	1673	1479	1258	1056
Pull—lbs (kN)	4071 (18.11)	4409 (19.61)	4601 (20.47)	4626 (20.58)	4215 (18.75)	3925 (17.46)
Increase in Pull %	0	8	13	14	4	-4
Power—Hp (kW)	74.84 (55.80)	73.16 (54.56)	67.26 (50.16)	59.75 (44.55)	46.40 (34.60)	36.33 (27.09)
Speed—Mph (km/h)	6.89 (11.10)	6.22 (10.01)	5.48 (8.82)	4.84 (7.79)	4.13 (6.64)	3.47 (5.59)
Slip %	2.45	2.60	2.60	2.60	2.45	2.30

Bias Ply Tires

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-34; 6; 16 (110)	Two 18.4-34; 6; 16 (110)
Ballast	—Liquid (each)	890 lb (404 kg)	None
	—Cast Iron (each)	120 lb (54 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 7.50-18; 6; 40 (275)	Two 7.50-18; 6; 40 (275)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	65 lb (29 kg)	None
Height of Drawbar		20.5 in (520 mm)	20.5 in (520 mm)
Static Weight with Operator—Rear		8030 lb (3643 kg)	6010 lb (2726 kg)
—Front		2770 lb (1256 kg)	2640 lb (1198 kg)
—Total		10800 lb (4899 kg)	8650 lb (3924 kg)

Radial Ply Tires

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4R34; 6; 16 (110)	Two 18.4R34; 6; 16 (110)
Ballast	—Liquid (each)	948 lb (430 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 7.50-18; 6; 40 (275)	Two 7.50-18; 6; 40 (275)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	65 lb (29 kg)	None
Height of Drawbar		20.5 in (520 mm)	20.5 in (520 mm)
Static Weight with Operator—Rear		8030 lb (3643 kg)	6135 lb (2783 kg)
—Front		2770 lb (1256 kg)	2640 lb (1197 kg)
—Total		10800 lb (4899 kg)	8775 lb (3980 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 or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection was maintained at 140°F (60.0°C). Eight gears were chosen between 15% slip and 10 mph (16.1 km/h). This tractor did not attain the estimated 15.90 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1433**.

LOUIS I. LEVITICUS

Engineer-in-Charge

K. VON BARGEN

W. E. SPLINTER

L. L. BASHFORD

Board of Tractor Test Engineers



Ford 7710 (16 X 8) Diesel