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Test 1432: Ford 7610 and 7710 (16x4) Diesel 8 and 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1432 — FORD 7610 (16 X 4) DIESEL ALSO FORD 7710 (16 X 4) 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—1025 rpm)							
86.95 (64.84)	2100	5.595 (21.179)	0.444 (0.270)	15.54 (3.062)	196 (91.2)	55 (12.6)	75 (24.0)	29.170 (98.503)
	Standard Power Take-off Speed (1000 rpm)—One Hour							
86.79 (64.72)	2048	5.510 (20.858)	0.438 (0.266)	15.75 (3.103)	197 (91.9)	55 (12.7)	75 (24.1)	29.110 (98.300)

VARYING POWER AND FUEL CONSUMPTION—Two Hours

78.26 (58.36)	2224	5.307 (20.089)	0.468 (0.285)	14.75 (2.905)	190 (87.8)	55 (12.8)	75 (23.9)	.....
0.00 (0.00)	2282	1.636 (6.193)	.....	.....	169 (76.1)	54 (12.5)	74 (23.6)	.....
39.60 (29.53)	2251	3.428 (12.976)	0.597 (0.363)	11.55 (2.276)	172 (78.1)	54 (12.2)	75 (23.9)	.....
87.81 (65.48)	2099	5.660 (21.425)	0.444 (0.270)	15.51 (3.056)	194 (89.7)	54 (12.2)	75 (23.9)	.....
20.00 (14.91)	2271	2.528 (9.570)	0.872 (0.530)	7.91 (1.558)	171 (77.2)	55 (12.8)	76 (24.2)	.....
59.04 (44.03)	2236	4.329 (16.387)	0.506 (0.308)	13.64 (2.687)	177 (80.6)	55 (12.8)	76 (24.4)	.....
Av 47.45 Av. (35.38)	2227	3.815 (14.441)	0.554 (0.337)	12.44 (2.450)	179 (81.6)	55 (12.6)	75 (24.0)	29.080 (98.199)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

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 10th (6L) Gear											
74.08 (55.24)	5027 (22.36)	5.53 (8.89)	2100	6.78	5.547 (20.997)	0.516 (0.314)	13.36 (2.631)	187 (85.8)	57 (13.6)	71 (21.7)	28.775 (97.169)
75% of Pull at Maximum Power—Ten Hours 10th (6L) Gear											
58.94 (43.95)	3675 (16.35)	6.01 (9.68)	2244	5.08	4.796 (18.156)	0.561 (0.341)	12.29 (2.421)	172 (78.0)	47 (8.2)	51 (10.5)	28.863 (97.466)
50% of Pull at Maximum Power—Two Hours 10th (6L) Gear											
40.16 (29.95)	2450 (10.90)	6.15 (9.89)	2263	3.82	3.879 (14.684)	0.666 (0.405)	10.35 (2.039)	171 (77.2)	47 (8.3)	49 (9.2)	28.845 (97.405)
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
40.25 (30.02)	2450 (10.90)	6.16 (9.92)	1298	3.68	3.063 (11.596)	0.525 (0.319)	13.14 (2.588)	169 (76.1)	47 (8.3)	49 (9.4)	28.840 (97.388)

MAXIMUM POWER IN SELECTED GEARS

60.91 (45.42)	8804 (39.16)	2.59 (4.18)	2221	14.85	5th (3L) Gear			173 (78.3)	44 (6.7)	46 (7.8)	28.810 (97.287)
68.16 (50.83)	7820 (34.79)	3.27 (5.26)	2101	11.76	6th (3H) Gear			175 (79.2)	46 (7.8)	50 (10.0)	28.800 (97.253)
70.55 (52.61)	7564 (33.65)	3.50 (5.63)	2100	11.70	7th (4L) Gear			186 (85.6)	56 (13.3)	68 (20.0)	28.780 (97.186)
73.44 (54.77)	6361 (28.30)	4.33 (6.97)	2101	8.82	8th (5L) Gear			184 (84.4)	55 (12.8)	67 (19.4)	28.780 (97.186)
72.03 (53.71)	5743 (25.54)	4.70 (7.57)	2101	7.78	9th (4H) Gear			183 (83.6)	55 (12.8)	66 (18.9)	28.780 (97.186)
74.22 (55.35)	5034 (22.39)	5.53 (8.90)	2101	6.71	10th (6L) Gear			178 (80.8)	51 (10.6)	58 (14.4)	28.790 (97.220)
73.84 (55.07)	4851 (21.58)	5.71 (9.19)	2098	6.44	11th (5H) Gear			180 (81.9)	53 (11.7)	62 (16.7)	28.790 (97.220)
74.16 (55.30)	3839 (17.07)	7.25 (11.66)	2101	4.92	12th (6H) Gear			179 (81.7)	54 (12.2)	64 (17.8)	28.790 (97.220)
71.61 (53.40)	2690 (11.96)	9.98 (16.07)	2098	3.57	13th (7L) Gear			180 (81.9)	54 (12.2)	65 (18.3)	28.780 (97.186)

Department of Agricultural Engineering

Dates of Test: April 14 to May 10, 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 1.680 gal (6.359 l)
Drained from motor 1.573 gal (5.954 l) **Trans-**
mission and hydraulic lubricant Ford 134 fluid
Front axle lubricant Ford EOAZ-19580 fluid
Total time engine was operated 50.5 hours.

ENGINE: Make Ford Diesel **Type** four cylin-
der vertical with turbocharger **Serial No.**
F635687 **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 hyd-
raulic and transmission oil, radiator for power
steering fluid **Fuel filter** one paper element **Muf-**
fler vertical **Cooling medium temperature con-**
trol one thermostat.

CHASSIS: **Type** front wheel assist **Serial No.**
C681345 **Tread width** rear 60" (1525 mm) to
90" (2286 mm) front 60" (1525 mm) to 80" (2032
mm) **Wheel base** 88.8" (2255 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 cen-
ter-line of rear wheels 31.4" (798 mm) Vertical dis-
tance above roadway 39.9" (1013 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 (2.7) third 1.7 (2.8) fourth 2.2
(3.5) fifth 2.9 (4.7) sixth 3.8 (6.1) seventh 4.0 (6.5)
eighth 4.8 (7.8) ninth 5.2 (8.4) tenth 6.0 (9.7)
eleventh 6.2 (10.0) twelfth 7.8 (12.5) thirteenth
10.6 (17.0) fourteenth 13.6 (21.8) fifteenth 14.5
(23.4) sixteenth 18.6 (30.0) reverse 1.9 (3.1), 2.5
(4.0), 7.0 (11.2), 8.9 (14.4) **Clutch** single plate dry
disc operated by foot pedal **Brakes** wet multiple
disc operated by two foot pedals which can be
locked together **Steering** power assist **Turning**
radius (on concrete surface with brake applied)
right 194" (4.93 m) left 194" (4.93 m) (on concrete
surface without brake) right 209" (5.30 m) left 209"
(5.30 m) **Turning space diameter** (on concrete
surface with brake applied) right 395" (10.03 m)
left 395" (10.03 m) (on concrete surface without
brake) right 425" (10.79 m) left 425" (10.79 m)
Power take-off 540 rpm at 1900 engine rpm and
1000 rpm at 2048 engine rpm.

LUGGING ABILITY IN 10th (6L) GEAR

Crankshaft Speed rpm	2101	1898	1679	1484	1266	1056
Pull—lbs (kN)	5034 (22.39)	5457 (24.27)	5740 (25.53)	5849 (26.02)	5360 (23.84)	4838 (21.52)
Increase in Pull %	0	8	14	16	6	-4
Power—Hp (kW)	74.22 (55.35)	72.20 (53.84)	66.85 (49.85)	60.10 (44.82)	47.33 (35.29)	36.09 (26.91)
Speed—Mph (km/h)	5.53 (8.90)	4.96 (7.98)	4.37 (7.03)	3.85 (6.20)	3.31 (5.33)	2.80 (4.50)
Slip %	6.71	7.45	7.71	7.98	7.18	6.10

TRACTOR SOUND LEVEL WITH CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	84.5	83.5
75% of Pull at Maximum Power—Ten Hours		85.0
50% of Pull at Maximum Power—Two Hours		83.5
50% of Pull at Reduced Engine Speed—Two Hours		80.0
Bystander in 16th (8H) gear		85.5

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

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 10th (6L) Gear											
74.91 (55.86)	4987 (22.18)	5.63 (9.06)	2099	5.78	5.547 (20.997)	0.511 (0.311)	13.50 (2.660)	190 (87.5)	58 (14.2)	74 (23.1)	28.755 (97.101)

MAXIMUM POWER IN SELECTED GEARS

65.39 (48.76)	9560 (42.52)	2.56 (4.13)	2178	14.94	5th (3L) Gear	174 (78.6)	45 (7.2)	48 (8.9)	28.810 (97.287)
74.49 (55.55)	6321 (28.12)	4.42 (7.11)	2100	7.75	8th (5L) Gear	186 (85.3)	55 (12.8)	67 (19.4)	28.780 (97.186)
75.54 (56.33)	5026 (22.36)	5.64 (9.07)	2100	5.78	10th (6L) Gear	189 (87.2)	57 (13.9)	73 (22.8)	28.750 (97.084)

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)	898 lb (407 kg)	None
	—Cast Iron (each)	150 lb (68 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 13.6-24; 8; 22 (150)	Two 13.6-24; 8; 22 (150)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	62 lb (28 kg)	None
Height of Drawbar		20 in (510 mm)	20 in (510 mm)
Static Weight with Operator—Rear		7700 lb (3493 kg)	5605 lb (2542 kg)
	—Front	3100 lb (1406 kg)	2975 lb (1350 kg)
	—Total	10800 lb (4899 kg)	8580 lb (3892 kg)



Ford 7610 (16 X 4) Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
Robert W. Kleis, Acting Dean and Director

REPAIRS and ADJUSTMENTS: During preliminary PTO tests, all fuel injectors and both air filter elements were replaced.

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 pump was maintained at 145°F (62.8°C). Nine gears were chosen between 15% slip and 10 mph (16.1 km/h). The radiator temperature indicator did not function during test. This tractor did not attain the estimated 15.90 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer. During inspection the exhaust valve stem of the No. 1 cylinder was found scored over a distance of about 3/4 inch (20 mm).

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1432.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers