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Test 1431: Ford 6610 and 6710 (16x8) Diesel 8 and 16-Speed

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NEBRASKA TRACTOR TEST 1431 — FORD 6610 (16 X 8) DIESEL ALSO FORD 6710 (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—596 rpm) | | | | | | | | |
| 72.30 (53.91) | 2099 | 4.773 (18.068) | 0.455 (0.277) | 15.15 (2.984) | 207 (97.2) | 56 (13.2) | 75 (23.8) | 28.857 (97.445) |
| Standard Power Take-off Speed (540 rpm)—One Hour | | | | | | | | |
| 69.20 (51.60) | 1900 | 4.485 (16.978) | 0.447 (0.272) | 15.43 (3.039) | 211 (99.7) | 55 (12.9) | 75 (23.9) | 28.860 (97.456) |
| VARYING POWER AND FUEL CONSUMPTION—Two Hours | | | | | | | | |
| 63.88 (47.64) | 2182 | 4.145 (15.691) | 0.448 (0.272) | 15.41 (3.036) | 194 (90.3) | 55 (12.8) | 76 (24.2) | |
| 0.00 (0.00) | 2268 | 1.288 (4.876) | | | 152 (66.4) | 54 (12.5) | 75 (23.9) | |
| 32.78 (24.44) | 2240 | 2.653 (10.043) | 0.558 (0.340) | 12.35 (2.434) | 164 (73.3) | 54 (11.9) | 74 (23.6) | |
| 73.44 (54.76) | 2100 | 4.854 (18.374) | 0.456 (0.277) | 15.13 (2.980) | 202 (94.2) | 53 (11.7) | 75 (23.9) | |
| 16.52 (12.32) | 2255 | 1.931 (7.310) | 0.806 (0.491) | 8.55 (1.685) | 158 (70.3) | 53 (11.7) | 74 (23.1) | |
| 48.48 (36.15) | 2209 | 3.341 (12.647) | 0.475 (0.289) | 14.51 (2.858) | 176 (80.0) | 53 (11.7) | 76 (24.2) | |
| Av 39.18 Av (29.22) | 2209 | 3.035 (11.489) | 0.534 (0.325) | 12.91 (2.543) | 174 (79.1) | 54 (12.2) | 75 (23.9) | 28.845 (97.405) |

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 | | | | | | | | | | | |
| 61.37 (45.77) | 3544 (15.76) | 6.49 (10.45) | 2098 | 5.06 | 4.658 (17.632) | 0.523 (0.318) | 13.18 (2.596) | 196 (90.8) | 53 (11.7) | 70 (21.1) | 29.000 (97.929) |
| 75% of Pull at Maximum Power—Ten Hours 11th (6L) Gear | | | | | | | | | | | |
| 50.13 (37.39) | 2715 (12.08) | 6.92 (11.14) | 2203 | 3.60 | 3.904 (14.778) | 0.537 (0.327) | 12.84 (2.530) | 175 (79.7) | 53 (11.7) | 66 (18.9) | 28.788 (97.213) |
| 50% of Pull at Maximum Power—Two Hours 11th (6L) Gear | | | | | | | | | | | |
| 34.08 (25.42) | 1811 (8.05) | 7.06 (11.36) | 2224 | 2.65 | 3.135 (11.869) | 0.634 (0.386) | 10.87 (2.141) | 149 (64.7) | 44 (6.7) | 50 (9.7) | 29.065 (98.148) |
| 50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear | | | | | | | | | | | |
| 34.19 (25.49) | 1811 (8.05) | 7.08 (11.40) | 1524 | 2.57 | 2.610 (9.879) | 0.527 (0.320) | 13.10 (2.580) | 168 (75.3) | 47 (8.1) | 57 (13.6) | 29.075 (98.182) |
| MAXIMUM POWER IN SELECTED GEARS | | | | | | | | | | | |
| 52.61 (39.23) | 7948 (35.35) | 2.48 (3.99) | 2161 | 14.87 | 5th (3L) Gear | | | 163 (72.8) | 41 (5.0) | 45 (7.2) | 28.990 (97.895) |
| 56.89 (42.42) | 6608 (29.39) | 3.23 (5.20) | 2100 | 11.40 | 6th (3H) Gear | | | 193 (89.4) | 53 (11.7) | 70 (21.1) | 29.040 (98.064) |
| 59.19 (44.13) | 5937 (26.41) | 3.74 (6.02) | 2100 | 9.33 | 7th (4L) Gear | | | 196 (91.1) | 53 (11.7) | 70 (21.1) | 29.050 (98.097) |
| 60.42 (45.06) | 5223 (23.23) | 4.34 (6.98) | 2098 | 7.76 | 8th (5L) Gear | | | 197 (91.4) | 53 (11.7) | 70 (21.1) | 29.060 (98.131) |
| 58.41 (43.56) | 4410 (19.61) | 4.97 (7.99) | 2100 | 6.35 | 9th (4H) Gear | | | 195 (90.6) | 52 (11.1) | 70 (21.1) | 29.170 (98.165) |
| 60.12 (44.83) | 3952 (17.58) | 5.70 (9.18) | 2099 | 5.73 | 10th (5H) Gear | | | 195 (90.3) | 50 (10.0) | 66 (18.9) | 29.140 (98.401) |
| 62.64 (46.71) | 3620 (16.10) | 6.49 (10.44) | 2097 | 5.10 | 11th (6L) Gear | | | 193 (89.2) | 52 (11.1) | 69 (20.6) | 29.100 (98.266) |
| 59.97 (44.72) | 2650 (11.79) | 8.49 (13.66) | 2100 | 3.60 | 12th (6H) Gear | | | 194 (89.7) | 52 (11.1) | 70 (21.1) | 29.080 (98.199) |

Department of Agricultural Engineering

Dates of Test: April 13 to May 4, 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°) 0.8283 Fuel weight 6.897 lbs/gal
(0.827 kg/l) Oil SAE 30 API service classifica-
tion SE/SF-CC/CD To motor 1.851 gal (7.005 l)
Drained from motor 1.599 gal (6.055 l) Trans-
mission and final drive lubricant Ford 134 fluid
Total time engine was operated 58.5 hours.

ENGINE: Make Ford Diesel Type four cylin-
der vertical Serial No. *E644056* Crankshaft
lengthwise Rated rpm 2100 Bore and stroke 4.4"
× 4.4" (112 mm × 112 mm) Compression ratio
16.3 to 1 Displacement 268 cu in (4392 ml) Start-
ing system 12 volt Lubrication pressure Air
cleaner two paper elements Oil filter one full
flow paper cartridge Oil cooler engine coolant
heat exchanger for crankcase oil, radiator for
transmission and hydraulic oil, radiator for power
steering fluid Fuel filter one paper element Muf-
fler vertical Cooling medium temperature con-
trol one thermostat.

CHASSIS: Type standard Serial No.
C680989 Tread width rear 60" (1525 mm) to 90"
(2285 mm) front 52" (1320 mm) to 80" (2032 mm)
Wheel base 87.5" (2223 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 28.2" (716 mm) Vertical dis-
tance above roadway 32.9" (837 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 power assist Turning radius
(on concrete surface with brake applied) right
120" (3.05 m) left 120" (3.05 m) (on concrete sur-
face without brake) right 138" (3.51 m) left 138"
(3.51 m) Turning space diameter (on concrete
surface with brake applied) right 249" (6.32 m) left
249" (6.32 m) (on concrete surface without brake)
right 294" (7.47 m) left 294" (7.47 m) Power take-
off 540 rpm at 1900 engine rpm.

LUGGING ABILITY IN 11th (6L) GEAR

| | | | | | | |
|----------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Crankshaft Speed rpm | 2097 | 1891 | 1680 | 1474 | 1268 | 1054 |
| Pull—lbs (kN) | 3620 (16.10) | 3811 (16.95) | 3990 (17.75) | 4069 (18.10) | 3949 (17.57) | 3754 (16.70) |
| Increase in Pull % | 0 | 5 | 10 | 12 | 9 | 4 |
| Power—Hp (kW) | 62.64 (46.71) | 59.27 (44.20) | 54.95 (40.98) | 49.08 (36.60) | 41.06 (30.62) | 32.48 (24.22) |
| Speed—Mph (km/h) | 6.49 (10.44) | 5.83 (9.39) | 5.16 (8.31) | 4.52 (7.28) | 3.90 (6.28) | 3.24 (5.22) |
| Slip % | 5.10 | 5.38 | 5.66 | 5.80 | 5.66 | 5.52 |

| TRACTOR SOUND LEVEL WITHOUT CAB | Radial dB(A) | Bias dB(A) |
|---|-----------------|---------------|
| Maximum Available Power—Two Hours | 95.5 | 96.0 |
| 75% of Pull at Maximum Power—Ten Hours | | 95.5 |
| 50% of Pull at Maximum Power—Two Hours | | 96.0 |
| 50% of Pull at Reduced Engine Speed—Two Hours | | 93.0 |
| Bystander in 15th (8L) gear | | 88.5 |

DRAWBAR PERFORMANCE WITH RADIAL 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 | | | | | | | | | | | |
| 63.07 (47.04) | 3446 (15.33) | 6.86 (11.05) | 2098 | 2.55 | 4.640 (17.563) | 0.507 (0.309) | 13.59 (2.678) | 182 (83.3) | 52 (11.1) | 57 (13.6) | 29.140 (98.401) |

MAXIMUM POWER IN SELECTED GEARS

| Power Hp (kW) | Drawbar pull lbs (kN) | Speed mph (km/h) | Crank- shaft speed rpm | Slip % | Gear | Cool- ing med | Air wet bulb | Air dry bulb | Barom. inch Hg (kPa) |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|----------------|---------------------|--------------------|--------------------|----------------------------|
| 60.07 (44.80) | 8162 (36.30) | 2.76 (4.44) | 2164 | 8.16 | 5th (3L) Gear | 182 (83.1) | 54 (12.2) | 61 (16.1) | 29.130 (98.368) |
| 61.14 (45.59) | 6431 (28.61) | 3.57 (5.74) | 2101 | 5.01 | 6th (3H) Gear | 187 (86.1) | 54 (12.2) | 61 (16.1) | 29.130 (98.368) |
| 62.49 (46.60) | 5769 (25.66) | 4.06 (6.54) | 2100 | 4.35 | 7th (4L) Gear | 185 (84.7) | 54 (12.2) | 60 (15.6) | 29.130 (98.368) |
| 63.27 (47.18) | 5086 (22.62) | 4.66 (7.51) | 2100 | 3.76 | 8th (5L) Gear | 187 (86.1) | 54 (12.2) | 60 (15.6) | 29.130 (98.368) |
| 60.80 (45.34) | 4310 (19.17) | 5.29 (8.51) | 2100 | 3.08 | 9th (4H) Gear | 185 (85.0) | 54 (12.2) | 59 (15.0) | 29.140 (98.401) |
| 61.58 (45.92) | 3805 (16.92) | 6.07 (9.77) | 2103 | 2.78 | 10th (5H) Gear | 184 (84.4) | 54 (12.2) | 59 (15.0) | 29.140 (98.401) |
| 63.67 (47.48) | 3475 (15.46) | 6.87 (11.06) | 2100 | 2.55 | 11th (6L) Gear | 184 (84.4) | 53 (11.7) | 58 (14.4) | 29.140 (98.401) |
| 60.65 (45.23) | 2563 (11.40) | 8.87 (14.28) | 2097 | 2.02 | 12th (6H) Gear | 183 (83.9) | 54 (12.2) | 59 (15.0) | 29.140 (98.401) |

LUGGING ABILITY IN 11th (6L) GEAR

| | | | | | | |
|----------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Crankshaft Speed rpm | 2100 | 1902 | 1683 | 1478 | 1260 | 1057 |
| Pull—lbs (kN) | 3475 (15.46) | 3731 (16.60) | 3903 (17.36) | 3981 (17.71) | 3889 (17.30) | 3714 (16.52) |
| Increase in Pull % | 0 | 7 | 12 | 15 | 12 | 7 |
| Power—Hp (kW) | 63.67 (47.48) | 61.83 (46.11) | 57.16 (42.63) | 51.16 (38.15) | 42.60 (31.77) | 34.18 (25.49) |
| Speed—Mph (km/h) | 6.87 (11.06) | 6.21 (10.00) | 5.49 (8.84) | 4.82 (7.75) | 4.11 (6.61) | 3.45 (5.55) |
| Slip % | 2.55 | 2.63 | 2.78 | 2.93 | 2.78 | 2.78 |

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) | 950 lb (431 kg) | None |
| | —Cast Iron (each) | 340 lb (154 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) | 135 lb (61 kg) | None |
| Height of Drawbar | | 21 in (535 mm) | 21 in (535 mm) |
| Static Weight with Operator—Rear | | 7250 lb (3289 kg) | 4670 lb (2118 kg) |
| —Front | | 2450 lb (1111 kg) | 2180 lb (989 kg) |
| —Total | | 9700 lb (4400 kg) | 6850 lb (3107 kg) |

RADIAL PLY TIRES

| With Ballast | Without Ballast |
|--------------------------|--------------------------|
| Two 18.4R34; 6; 16 (110) | Two 18.4R34; 6; 16 (110) |
| 950 lb (431 kg) | None |
| 278 lb (126 kg) | None |
| Two 7.50-18; 6; 40 (275) | Two 7.50-18; 6; 40 (275) |
| None | None |
| 135 lb (61 kg) | None |
| 21 in (535 mm) | 21 in (535 mm) |
| 7250 lb (3289 kg) | 4795 lb (2175 kg) |
| 2450 lb (1111 kg) | 2180 lb (989 kg) |
| 9700 lb (4400 kg) | 6975 lb (3164 kg) |

REPAIRS and ADJUSTMENTS: During the lugging test the throttle linkage clip became disconnected. Test continued after the clip was reconnected.

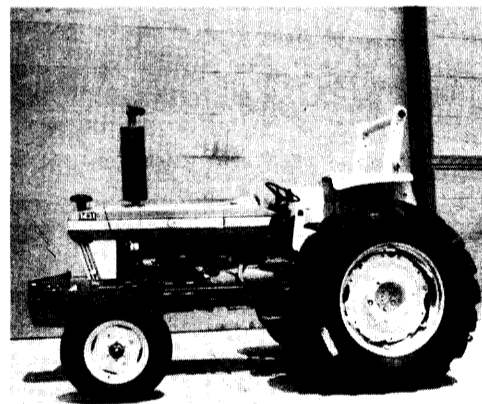
REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 162°F (72.2°C). Eight gears were chosen between 15% slip (bias ply tires), stability limit with radial ply tires and 10 mph (16.1 km/h). This tractor did not attain the estimated 15.54 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 1431.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD

Board of Tractor Test Engineers



Ford 6610 (16 X 8) Diesel