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Test 1291: Ford FW-20 Diesel

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1291 — FORD FW 20 DIESEL

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 10th (3LO) Gear											
150.51 (112.24)	9157 (40.73)	6.16 (9.92)	2850	2.35	12.417 (47.004)	0.573 (0.349)	12.12 (2.388)	181 (82.8)	56 (13.3)	75 (23.6)	28.815 (97.304)
75% of Pull at Maximum Power—Ten Hours 10th (3LO) Gear											
125.47 (93.56)	7131 (31.72)	6.60 (10.62)	3032	1.80	10.729 (40.614)	0.594 (0.361)	11.69 (2.304)	177 (80.6)	54 (12.0)	65 (18.3)	28.823 (97.331)
50% of Pull at Maximum Power—Two Hours 10th (3LO) Gear											
85.81 (63.99)	4780 (21.26)	6.73 (10.83)	3072	1.24	8.458 (32.017)	0.685 (0.416)	10.15 (1.999)	175 (79.4)	57 (13.9)	70 (21.1)	28.620 (96.645)
50% of Pull at Reduced Engine Speed—Two Hours 15th (4HS) Gear											
85.39 (63.67)	4758 (21.17)	6.73 (10.83)	1644	1.12	6.335 (23.979)	0.515 (0.313)	13.48 (2.655)	177 (80.6)	60 (15.3)	77 (24.7)	28.605 (96.595)

MAXIMUM POWER IN SELECTED GEARS

135.26 (100.86)	27155 (120.79)	1.87 (3.01)	2946	14.78	1st (1LS) Gear		178 (81.1)	56 (13.3)	66 (18.9)	28.600 (96.578)
140.38 (104.68)	25319 (112.63)	2.08 (3.35)	2850	12.88	2nd (1LO) Gear		179 (81.7)	55 (12.8)	70 (21.1)	28.830 (97.355)
144.71 (107.91)	22054 (98.10)	2.46 (3.96)	2853	8.89	3rd (1HS) Gear		179 (81.7)	55 (12.8)	72 (22.2)	28.820 (97.321)
148.38 (110.65)	19717 (87.71)	2.82 (4.54)	2849	7.00	4th (1HO) Gear		179 (81.4)	56 (13.3)	73 (22.8)	28.820 (97.321)
152.58 (113.78)	17451 (77.63)	3.28 (5.28)	2850	5.77	5th (2LS) Gear		178 (81.1)	57 (13.9)	74 (23.3)	28.820 (97.321)
153.75 (114.65)	15456 (68.75)	3.73 (6.00)	2849	4.95	6th (2LO) Gear		179 (81.7)	58 (14.4)	75 (23.9)	28.820 (97.321)
154.49 (115.21)	13637 (60.66)	4.25 (6.84)	2850	3.98	7th (2HS) Gear		181 (82.5)	57 (13.9)	76 (24.4)	28.820 (97.321)
155.33 (115.83)	12096 (53.81)	4.82 (7.75)	2850	3.44	8th (2HO) Gear		181 (82.5)	56 (13.3)	76 (24.4)	28.820 (97.321)
156.85 (116.96)	10798 (48.03)	5.45 (8.77)	2850	2.90	9th (3LS) Gear		181 (82.8)	56 (13.3)	76 (24.4)	28.820 (97.321)
155.95 (116.29)	9495 (42.24)	6.16 (9.91)	2848	2.35	10th (3LO) Gear		181 (82.8)	56 (13.3)	76 (24.4)	28.820 (97.321)
155.60 (116.03)	8345 (37.12)	6.99 (11.25)	2851	1.96	11th (3HS) Gear		180 (82.2)	58 (14.4)	75 (23.9)	28.820 (97.321)
154.29 (115.05)	7323 (32.57)	7.90 (12.72)	2850	1.72	12th (3HO) Gear		181 (82.8)	58 (14.4)	75 (23.9)	28.820 (97.321)
150.79 (112.44)	6173 (27.46)	9.16 (14.74)	2851	1.32	13th (4LS) Gear		180 (81.9)	58 (14.4)	75 (23.9)	28.820 (97.321)

LUGGING ABILITY IN RATED GEAR 10th (3LO)

Crankshaft Speed rpm	2848	2568	2282	1996	1732	1418
Pull—lbs (kN)	9495 (42.24)	10133 (45.07)	10775 (47.93)	11245 (50.02)	11254 (50.06)	11193 (49.79)
Increase in Pull %	0	7	13	18	19	18
Power—Hp (kW)	155.95 (116.29)	149.71 (111.64)	141.09 (105.21)	128.63 (95.92)	111.60 (83.22)	90.90 (67.78)
Speed—Mph (km/h)	6.16 (9.91)	5.54 (8.92)	4.91 (7.90)	4.29 (6.90)	3.72 (5.98)	3.05 (4.90)
Slip %	2.35	2.74	2.90	3.21	3.05	3.21

TRACTOR SOUND LEVEL WITH CAB

Maximum Available Power—Two Hours	76.0
75% of Pull at Maximum Power—Ten Hours	77.5
50% of Pull at Maximum Power—Two Hours	77.0
50% of Pull at Reduced Engine Speed—Two Hours	74.0
Bystander in 17th (5LO) gear	92.5

Department of Agricultural Engineering

Dates of Test: October 5-12, 1978

Manufacturer: STEIGER TRACTOR, INC., 3101
First Avenue North, Fargo North Dakota 58102.

FUEL, OIL AND TIME: Fuel No. 2 Diesel
Cetane No. 50.4 (rating taken from oil company's
typical inspection data) **Specific gravity converted
to 60°/60° (15°/15°)** 0.8342 **Fuel weight** 6.946 lbs/
gal (0.834 kg/l) **Oil SAE 30 API service classifi-
cation SB/SE-CA/CD To motor** 4.830 gal (18.281
l) **Drained from motor** 4.149 gal (15.704 l)
Transmission and drop box lubricant Ford
M2C48-A or equivalent **Total time engine was
operated** 30.0 hours.

ENGINE: Make Cummins Diesel **Type** 8 cylin-
der vee **Serial No.** 20178130 **Crankshaft**
lengthwise **Rated rpm** 2850 **Bore and stroke**
4.625" x 4.125" (117 mm x 105 mm) **Compression
ratio** 17.0 to 1 **Displacement** 555 cu in (9096 ml)
Cranking System 12 volt **Lubrication** pressure
Air cleaner primary and secondary paper elements
with aspirator **Oil filter** one full flow paper car-
tridge and one bypass element **Oil cooler** engine
coolant heat exchanger for crankcase oil, radiator
for transmission and dropbox oil **Fuel filter** two
paper cartridges **Muffler** vertical **Cooling
medium temperature control** 2 thermostats.

CHASSIS: **Type** Four wheel drive with duals
Serial No. X100087 **Tread width** rear 79.0" (2006
mm) to 136.4" (3465 mm) front 79.0" (2006 mm) to
136.4" (3465 mm) **Wheel base** 132.5" (3365 mm)
Center of gravity (without operator or ballast, with
minimum tread, with fuel tank filled and tractor
serviced for operation) Horizontal distance from
forward from center-line of rear wheels 75.2" (1910
mm) Vertical distance above roadway 47.2" (1199
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 **Advertised speeds mph (km/h)**
first 2.0 (3.3) second 2.3 (3.7) third 2.6 (4.2) fourth
2.9 (4.7) fifth 3.3 (5.4) sixth 3.8 (6.0) seventh 4.2
(6.8) eighth 4.8 (7.7) ninth 5.3 (8.6) tenth 6.1 (9.8)
eleventh 6.8 (11.0) twelfth 7.7 (12.4) thirteenth 8.9
(14.3) fourteenth 10.0 (16.1) fifteenth 11.3 (18.2)
sixteenth 12.8 (20.5) seventeenth 14.2 (22.8)
eighteenth 16.0 (25.7) nineteenth 18.0 (29.0)
twentieth 20.3 (32.7) reverse 2.0 (3.3), 2.3 (3.7), 2.6
(4.2), 2.9 (4.7) **Clutch** two dry plates hydraulically
operated by foot pedal **Brakes** multiple dry disc
hydraulically operated by foot pedal **Steering** hydro-
static and articulated **Turning radius** (on con-
crete surface without brake applied) right 257"
(6.53 m) left 261" (6.63 m) **Turning space diameter**
(on concrete surface without brake applied) right
537" (13.64 m) left 546" (13.87 m) **Power take-off**
none.

REPAIRS and ADJUSTMENTS: No repairs or
adjustments.

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 23.1-30; 8; inner 16 (110); outer 14 (95)	Four 23.1-30; 8; inner 16 (110); outer 14 (95)
	Ballast	None	None
Front Tires	—No., size, ply & psi (kPa)	Four 23.1-30; 8; inner 16 (110); outer 14 (95)	Four 23.1-30; 8; inner 16 (110); outer 14 (95)
	Ballast	None	None
Height of Drawbar		16.5 in (420 mm)	16.5 in (420 mm)
Static Weight with Operator—Rear		13435 lb (6094 kg)	13435 lb (6094 kg)
Front		17565 lb (7967 kg)	16180 lb (7339 kg)
Total		31000 lb (14061 kg)	29615 lb (13433 kg)

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 was 141°F (60.6°C). Thirteen gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1291**.

L. I. LEVITICUS
Engineer-in-Charge

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



Ford FW 20 Diesel