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Test 1503: Ford 1710 (12x4) Synchro Diesel 12-Speed

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NEBRASKA TRACTOR TEST 1503—FORD 1710 (12X4) SYNCHRO DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—592 rpm)								
23.79	2701	1.882	0.553	12.64	215	67	75	29.065
(17.74)		(7.124)	(0.337)	(2.490)	(101.4)	(19.6)	(24.1)	(98.148)
Standard Power Take-off Speed (540 rpm)—One Hour								
22.34	2466	1.695	0.531	13.18	210	67	75	29.090
(16.66)		(6.416)	(0.323)	(2.597)	(98.9)	(19.4)	(23.9)	(98.233)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
20.76	2777	1.664	0.561	12.48	203	67	74	.....
(15.48)		(6.299)	(0.341)	(2.458)	(95.0)	(19.4)	(23.6)	.....
0.00	2873	0.682	.....	.....	168	67	74	.....
(0.00)		(2.582)	.....	.....	(75.3)	(19.4)	(23.6)	.....
10.59	2832	1.140	0.753	9.29	177	67	74	.....
(7.90)		(4.315)	(0.458)	(1.831)	(80.6)	(19.4)	(23.6)	.....
23.90	2700	1.912	0.560	12.50	209	66	74	.....
(17.82)		(7.238)	(0.341)	(2.462)	(98.3)	(19.2)	(23.6)	.....
5.32	2850	0.905	1.189	5.88	173	67	75	.....
(3.97)		(3.426)	(0.724)	(1.159)	(78.3)	(19.4)	(23.9)	.....
15.73	2802	1.385	0.616	11.36	188	67	75	.....
(11.73)		(5.243)	(0.375)	(2.237)	(86.4)	(19.4)	(23.9)	.....
Av	**12.72**	**2806**	**1.281**	**0.705**	**9.92**	**186**	**67**	**75**	**29.110**
Av	***(9.49)***		***(4.849)***	***(0.429)***	***(1.957)***	***(85.7)***	***(19.4)***	***(23.7)***	***(98.300)***

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 9th (3-3) Gear											
20.48	1351	5.69	2700	6.20	1.855	0.634	11.04	195	52	62	29.045
(15.27)	(6.01)	(9.15)			(7.022)	(0.386)	(2.174)	(90.6)	(10.8)	(16.7)	(98.081)
75% of Pull at Maximum Power—Ten Hours 9th (3-3) Gear											
16.64	1052	5.93	2775	4.84	1.575	0.662	10.56	175	42	47	29.038
(12.41)	(4.68)	(9.54)			(5.962)	(0.403)	(2.081)	(79.3)	(5.4)	(8.5)	(98.057)
50% of Pull at Maximum Power—Two Hours 9th (3-3) Gear											
11.37	701	6.08	2803	3.37	1.291	0.794	8.81	176	52	65	29.080
(8.48)	(3.12)	(9.79)			(4.888)	(0.483)	(1.735)	(80.0)	(11.1)	(18.1)	(98.199)
50% of Pull at Reduced Engine Speed—Two Hours 11th (4-2) Gear											
11.38	702	6.08	1799	3.22	0.985	0.606	11.55	177	51	63	29.135
(8.49)	(3.12)	(9.79)			(3.730)	(0.368)	(2.275)	(80.3)	(10.3)	(16.9)	(98.385)
MAXIMUM POWER IN SELECTED GEARS											
17.21	2680	2.41	2769	14.93		6th (2-3) Gear		177	52	55	28.900
(12.84)	(11.92)	(3.88)						(80.6)	(11.1)	(12.8)	(97.591)
19.71	2326	3.18	2699	11.50		7th (3-1) Gear		185	52	55	28.930
(14.69)	(10.34)	(5.11)						(84.7)	(11.1)	(12.8)	(97.692)
20.57	1803	4.28	2700	8.37		8th (3-2) Gear		183	52	56	28.960
(15.34)	(8.02)	(6.89)						(83.9)	(11.1)	(13.3)	(97.794)
21.23	1402	5.68	2700	6.32		9th (3-3) Gear		189	51	58	28.990
(15.83)	(6.23)	(9.14)						(87.2)	(10.6)	(14.4)	(97.895)
21.08	1149	6.88	2700	5.14		10th (4-1) Gear		182	52	56	28.970
(15.72)	(5.11)	(11.08)						(83.3)	(11.1)	(13.3)	(97.827)
20.60	851	9.08	2701	3.89		11th (4-2) Gear		182	51	57	28.980
(15.36)	(3.79)	(14.61)						(83.3)	(10.6)	(13.9)	(97.861)

Department of Agricultural Engineering

Dates of Test: October 17-31, 1983

Manufacturer: ISHIKAWAJIMA-SHIBAURA MACHINERY COMPANY LTD. Tokyo, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 47.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8404 **Fuel weight** 6.997 lbs/gal *(0.839 kg/l)* **Oil SAE** 15W-40 **API service classification** SE-SF, CC-CD **To motor** 1.065 gal *(4.030 l)* **Drained from motor** 0.877 gal *(3.322 l)* **Transmission and final drive lubricant** Ford M2C-134-B fluid **Total time engine was operated** 35.5 hours.

ENGINE: Make Shibaura Diesel **Type** three cylinder vertical **Serial No.** *H843-19358* **Crankshaft** lengthwise **Rated rpm** 2700 **Bore and stroke** 3.31" × 3.31" *(84 mm × 84 mm)* **Compression ratio** 23 to 1 **Displacement** 85.2 cu in *(1396 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** *1710*UL00919* **Tread width** rear 43.3" *(1100 mm)* to 58.7" *(1490 mm)* front 43.5" *(1105 mm)* to 57.5" *(1460 mm)* **Wheel base** 63" *(1600 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 23.8" *(605 mm)* Vertical distance above roadway 30.7" *(780 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 0.7 *(1.2)* second 1.0 *(1.5)* third 1.3 *(2.0)* fourth 1.6 *(2.6)* fifth 2.2 *(3.5)* sixth 2.8 *(4.5)* seventh 3.7 *(5.9)* eighth 4.8 *(7.7)* ninth 6.2 *(10.0)* tenth 7.4 *(11.9)* eleventh 9.6 *(15.5)* twelfth 12.5 *(20.1)* reverse 1.0 *(1.6)*, 2.2 *(3.5)*, 5.1 *(8.2)*, 10.3 *(16.6)* **Clutch** single dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 92.5" *(2.35 m)* left 92.5" *(2.35 m)* (on concrete surface without brake) right 100.4" *(2.55 m)* left 100.4" *(2.55 m)* **Turning space diameter** (on concrete surface with brake applied) right 193" *(4.90 m)* left 193" *(4.90 m)* (on concrete surface without brake) right 209" *(5.30 m)* left 209" *(5.30 m)* **Power take-off** 540 rpm at 2466 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 9th (3-3) GEAR

Crankshaft Speed rpm	2700	2432	2157	1887	1614	1344
Pull—lbs *(kN)*	1402 *(6.23)*	1425 *(6.34)*	1455 *(6.47)*	1553 *(6.91)*	1660 *(7.38)*	1651 *(7.34)*
Increase in Pull %	0	2	4	11	18	18
Power—Hp *(kW)*	21.23 *(15.83)*	19.42 *(14.48)*	17.55 *(13.09)*	16.31 *(12.17)*	14.84 *(11.07)*	12.30 *(9.17)*
Speed—Mph *(km/h)*	5.68 *(9.14)*	5.11 *(8.23)*	4.52 *(7.28)*	3.94 *(6.34)*	3.35 *(5.40)*	2.79 *(4.49)*
Slip %	6.32	6.32	6.60	7.06	7.51	7.42

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	91.0
75% of Pull at Maximum Power—Ten Hours	91.0
50% of Pull at Maximum Power—Two Hours	90.0
50% of Pull at Reduced Engine Speed—Two Hours	86.5
Bystander in 12th (4-3) gear	80.0

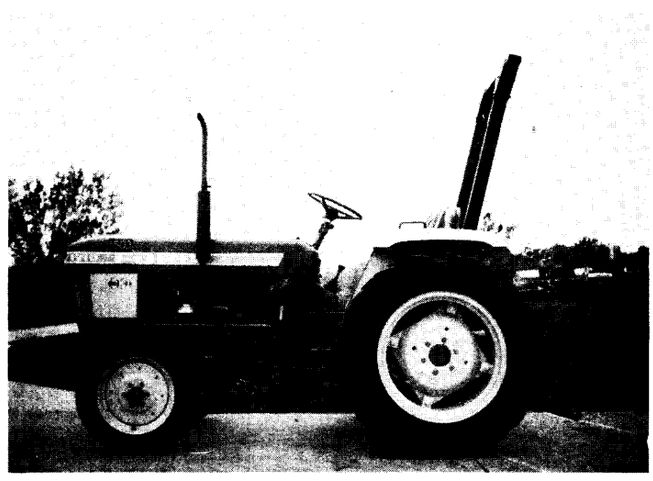
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 11.2-24; 6; 14 *(95)*	Two 11.2-24; 6; 14 *(95)*
Ballast	—Liquid (each)	255 lb *(116 kg)*	None
	—Cast Iron (each)	215 lb *(97 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 5.00-15; 4; 32 *(220)*	Two 5.00-15; 4; 32 *(220)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	60 lb *(27 kg)*	None
Height of Drawbar		13.5 in *(345 mm)*	13.5 in *(345 mm)*
Static Weight with Operator	—Rear	2510 lb *(1138 kg)*	1570 lb *(712 kg)*
	—Front	1020 lb *(463 kg)*	900 lb *(408 kg)*
	—Total	3530 lb *(1601 kg)*	2470 lb *(1120 kg)*

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 150°F *(65.7°C)*. Six 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 No. **1503.**

LOUIS I. LEVITICUS
Engineer-in-Charge

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



Ford 1710 (12x4) Synchro Diesel

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