1-1-1981

Test 1395: White-Iseki 2-45 Diesel 20-Speed

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1395 — WHITE-ISEKI 2-45 DIESEL
ALSO WHITE FARM EQUIPMENT-ISEKI 2-45 DIESEL
20 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—670 rpm)								
43.73 (32.61)	2250	3.361 (12.723)	0.539 (0.328)	13.01 (2.563)	195 (90.6)	68 (20.2)	75 (23.8)	28.520 (96.308)
Standard Power take-off Speed (540 rpm)—One Hour								
36.62 (27.31)	1812	2.882 (10.910)	0.552 (0.336)	12.70 (2.503)	204 (95.4)	68 (19.8)	75 (23.9)	28.503 (96.251)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
39.00 (29.08)	2360	2.872 (10.872)	0.516 (0.314)	13.58 (2.675)	185 (85.0)	68 (20.0)	76 (24.4)	....
0.00 (0.00)	2440	0.993 (3.759)	....	....	178 (81.1)	68 (20.0)	76 (24.4)	....
19.75 (14.73)	2390	1.772 (6.708)	0.629 (0.383)	11.14 (2.196)	181 (82.8)	69 (20.6)	78 (25.6)	....
44.05 (32.85)	2250	3.403 (12.882)	0.541 (0.329)	12.94 (2.550)	192 (88.9)	69 (20.6)	78 (25.6)	....
9.95 (7.42)	2408	1.340 (5.072)	0.944 (0.574)	7.43 (1.463)	179 (81.4)	70 (21.1)	81 (26.9)	....
29.43 (21.95)	2376	2.256 (8.540)	0.537 (0.327)	13.05 (2.570)	182 (83.3)	70 (21.1)	82 (27.8)	....
Av 23.70	**2371**	**2.106**	**0.623**	**11.25**	**183**	**69**	**78**	**28.510**
Av (17.67)		***(7.972)***	***(0.379)***	***(2.217)***	***(83.8)***	***(20.6)***	***(25.8)***	***(96.274)***

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

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 18th (3HH) Gear											
36.16 (26.96)	2360 (10.50)	5.75 (9.25)	2249	6.03	3.300 (12.491)	0.640 (0.389)	10.96 (2.159)	191 (88.3)	65 (18.3)	76 (24.2)	28.805 (97.270)
75% of Pull at Maximum Power—Ten Hours 18th (3HH) Gear											
29.89 (22.29)	1821 (8.10)	6.16 (9.91)	2364	4.22	2.718 (10.290)	0.637 (0.388)	11.00 (2.166)	187 (86.0)	74 (23.3)	83 (28.3)	28.728 (97.010)
50% of Pull at Maximum Power—Two Hours 18th (3HH) Gear											
20.34 (15.17)	1219 (5.42)	6.26 (10.07)	2379	3.38	2.105 (7.967)	0.725 (0.441)	9.66 (1.903)	184 (84.2)	73 (22.5)	82 (27.5)	28.530 (96.342)
50% of Pull at Reduced Engine Speed—Two Hours 19th (4HH) Gear											
20.42 (15.22)	1224 (5.44)	6.26 (10.07)	1534	3.23	1.891 (7.157)	0.649 (0.395)	10.80 (2.127)	189 (87.2)	75 (23.6)	87 (30.6)	28.510 (96.274)
MAXIMUM POWER IN SELECTED GEARS											
30.23 (22.55)	4455 (19.82)	2.54 (4.10)	2354	14.92	14th (5LH) Gear			185 (84.7)	71 (21.7)	75 (23.9)	28.560 (96.443)
34.26 (25.55)	4114 (18.30)	3.12 (5.03)	2251	12.56	15th (5HL) Gear			191 (88.3)	72 (22.2)	77 (25.0)	28.550 (96.409)
34.62 (25.82)	3813 (16.96)	3.40 (5.48)	2250	11.01	16th (1HH) Gear			194 (90.0)	72 (22.2)	79 (26.1)	28.550 (96.409)
37.32 (27.83)	3529 (15.70)	3.97 (6.38)	2250	9.74	17th (2HH) Gear			186 (85.6)	63 (17.2)	72 (22.2)	28.840 (97.388)
37.17 (27.72)	2420 (10.77)	5.76 (9.27)	2252	5.97	18th (3HH) Gear			187 (86.1)	61 (16.1)	68 (20.0)	28.820 (97.321)
35.88 (26.75)	1471 (6.54)	9.15 (14.72)	2251	3.63	19th (4HH) Gear			188 (86.7)	63 (17.2)	72 (22.2)	28.850 (97.422)

Department of Agricultural Engineering

Dates of Test: June 2-15, 1981

Manufacturer: ISEKI AND CO., LTD., Tokyo, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8417 **Fuel weight** 7.008 lbs/gal *(0.840 kg/l)* **Oil** White Farm Equipment Turbo Diesel Oil **SAE** 30 **API service classification** SD-SE/CC-CD **To motor** 2.093 gal *(7.923 l)* **Drained from motor** 1.975 gal *(7.476 l)* **Transmission and final drive lubricant** White Farm Equipment Co. Universal tractor hydraulic transmission oil **Total time engine was operated** 37.5 hours

ENGINE: Make ISUZU Diesel **Model** 4BA1 **Type** four cylinder vertical **Serial No.** 604300 **Crankshaft** lengthwise **Rated rpm** 2250 **Bore and stroke** 3.858″ × 3.62″ *(98 mm × 92 mm)* **Compression ratio** 19 to 1 **Displacement** 169.3 cu in *(2775 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one paper element **Fuel filter** two paper elements with sediment bowl and screen **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** 00198 K **Tread width** rear 55.5″ *(1410 mm)* to 79.1″ *(2010 mm)* front 59″ *(1500 mm)* **Wheel base** 79.9″ *(2030 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 33.9″ *(861 mm)* Vertical distance above roadway 30.9″ *(785 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 0.2 *(0.3)* second 0.2 *(0.3)* third 0.3 *(0.4)* fourth 0.4 *(0.7)* fifth 0.7 *(1.1)* sixth 0.7 *(1.1)* seventh 0.8 *(1.3)* eighth 0.9 *(1.4)* ninth 1.0 *(1.6)* tenth 1.1 *(1.8)* eleventh 1.4 *(2.3)* twelfth 1.7 *(2.7)* thirteenth 2.2 *(3.5)* fourteenth 2.8 *(4.5)* fifteenth 3.5 *(5.6)* sixteenth 3.7 *(6.0)* seventeenth 4.3 *(6.9)* eighteenth 5.9 *(9.5)* nineteenth 9.2 *(14.8)* twentieth 14.7 *(23.6)* reverse 0.3 *(0.5)*, 1.2 *(1.9)*, 1.5 *(2.4)*, 6.4 *(10.3)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc operated by two foot pedals which can be locked together and hand lever **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 118″ *(3.00 m)* left 118″ *(3.00 m)* (on concrete surface without brake) right 137.8″ *(3.50 m)* left 137.8″ *(3.50 m)* **Turning space diameter** (on concrete surface with brake applied) right 240″ *(6.10 m)* left 240″ *(6.10 m)* (on concrete surface without brake) right 279.6″ *(7.10 m)* left 279.6″ *(7.10 m)* **Power take-off** 540 rpm at 1812 engine rpm.

LUGGING ABILITY IN 18th (3HH) GEAR

Crankshaft Speed rpm	2252	2029	1798	1577	1349	1125
Pull—lbs *(kN)*	2420 *(10.77)*	2470 *(10.99)*	2596 *(11.55)*	2671 *(11.88)*	2629 *(11.70)*	2544 *(11.32)*
Increase in Pull %	0	2	7	10	9	5
Power—Hp *(kW)*	37.17 *(27.72)*	34.13 *(25.45)*	31.67 *(23.61)*	28.50 *(21.26)*	24.01 *(17.90)*	19.42 *(14.48)*
Speed—Mph *(km/h)*	5.76 *(9.27)*	5.18 *(8.34)*	4.57 *(7.36)*	4.00 *(6.44)*	3.42 *(5.51)*	2.86 *(4.61)*
Slip %	5.97	6.09	6.43	6.67	6.67	6.32

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	90.0	90.0
75% of Pull at Maximum Power—Ten Hours		90.5
50% of Pull at Maximum Power—Two Hours		89.5
50% of Pull at Reduced Engine Speed—Two Hours		88.5
Bystander in 20th (5HH) gear		80.5

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption 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 18th (3HH) Gear											
35.50 *(26.47)*	2255 *(10.03)*	5.90 *(9.50)*	2249	4.05	3.300 *(12.491)*	0.651 *(0.396)*	10.76 *(2.119)*	194 *(89.7)*	69 *(20.6)*	81 *(27.2)*	28.765 *(97.135)*
MAXIMUM POWER IN SELECTED GEARS											
31.21 *(23.28)*	5834 *(25.95)*	2.01 *(3.23)*	2356	14.95	13th (4HL) Gear			186 *(85.3)*	70 *(21.1)*	73 *(22.8)*	28.570 *(96.477)*
37.78 *(28.18)*	3422 *(15.22)*	4.14 *(6.66)*	2251	6.30	17th (2HH) Gear			188 *(86.7)*	63 *(17.2)*	71 *(21.7)*	28.840 *(97.388)*
37.03 *(27.62)*	2355 *(10.47)*	5.90 *(9.49)*	2248	4.14	18th (3HH) Gear			187 *(86.1)*	62 *(16.7)*	70 *(21.1)*	28.830 *(97.355)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 14.9-28; 6; 16 *(110)*	Two 14.9-28; 6; 16 *(110)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	270 lb *(122 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 8.3-24; 8; 22 *(150)*	Two 8.3-24; 8; 22 *(150)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	60 lb *(27 kg)*	None
Height of drawbar		17.5 in *(445 mm)*	17.5 in *(445 mm)*
Static Weight with Operator—Rear		4055 lb *(1839 kg)*	3515 lb *(1594 kg)*
Front		2575 lb *(1168 kg)*	2455 lb *(1114 kg)*
Total		6630 lb *(3007 kg)*	5970 lb *(2708 kg)*

White-Iseki 2-45 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

REPAIRS and ADJUSTMENTS: After a short circuit during the run-in period, the wiring harness and starting switch were replaced.

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 161°F *(71.9°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. **1395.**

LOUIS I. LEVITICUS
Engineer-in-Charge

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