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Test 1315: International 784 Row Crop Diesel 8-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1315 — INTERNATIONAL 784 ROWCROP DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE—540 RPM

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—605 rpm)									
65.47 (48.82)	2400	4.267 (16.151)	0.456 (0.277)	15.34 (3.023)	190 (87.5)	59 (15.0)	75 (24.0)	29.050 (98.097)	
Standard Power Take-off Speed (540 rpm)—One Hour									
61.28 (45.69)	2140	3.907 (14.790)	0.446 (0.271)	15.68 (3.090)	190 (87.9)	59 (15.0)	75 (23.8)	29.045 (98.081)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
57.64 (42.98)	2484	3.830 (14.498)	0.465 (0.283)	15.05 (2.965)	186 (85.6)	59 (15.0)	75 (23.9)	..... .....
0.00 (0.00)	2623	1.321 (5.000)	..... .....	..... .....	178 (81.4)	60 (15.3)	75 (23.9)	..... .....
29.74 (22.18)	2562	2.548 (9.643)	0.599 (0.364)	11.67 (2.300)	182 (83.6)	59 (15.0)	74 (23.3)	..... .....
65.64 (48.95)	2400	4.327 (16.381)	0.461 (0.281)	15.17 (2.988)	190 (88.1)	60 (15.3)	75 (23.9)	..... .....
14.99 (11.17)	2587	1.947 (7.371)	0.909 (0.553)	7.70 (1.516)	179 (81.7)	59 (15.0)	75 (23.9)	..... .....
43.98 (32.80)	2530	3.139 (11.884)	0.499 (0.304)	14.01 (2.760)	184 (84.7)	59 (15.0)	74 (23.1)	..... .....
Av Av	35.33 (26.35)	2531 (10.796)	2.852 (10.796)	0.565 (0.343)	12.39 (2.440)	184 (84.2)	59 (15.1)	75 (23.7)	29.047 (98.086)

OPTIONAL POWER TAKE-OFF—1000 RPM

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—1096 rpm)								
67.48 (50.32)	2400	4.272 (16.170)	0.443 (0.269)	15.80 (3.112)	189 (87.5)	60 (15.5)	75 (23.8)	29.060 (98.131)
Standard Power Take-off Speed (1000 rpm)—One Hour								
64.09 (47.79)	2190	3.990 (15.104)	0.435 (0.265)	16.06 (3.164)	191 (88.1)	60 (15.6)	75 (23.9)	29.045 (98.081)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
59.40 (44.29)	2486	3.830 (14.498)	0.451 (0.274)	15.51 (3.055)	186 (85.8)	60 (15.6)	75 (23.9)	..... .....
0.00 (0.00)	2622	1.330 (5.033)	..... .....	..... .....	179 (81.7)	61 (16.1)	76 (24.7)	..... .....
30.64 (22.85)	2564	2.548 (9.643)	0.582 (0.354)	12.03 (2.369)	184 (84.2)	60 (15.8)	76 (24.2)	..... .....
66.94 (49.91)	2400	4.280 (16.202)	0.447 (0.272)	15.64 (3.081)	190 (88.1)	61 (16.1)	77 (25.0)	..... .....
15.51 (11.57)	2592	1.939 (7.338)	0.874 (0.532)	8.00 (1.576)	180 (82.2)	61 (16.1)	77 (25.0)	..... .....
45.39 (33.85)	2532	3.169 (11.998)	0.488 (0.297)	14.32 (2.821)	186 (85.8)	62 (16.7)	78 (25.6)	..... .....
Av Av	36.31 (27.08)	2533 (10.785)	2.849 (0.334)	0.549 (2.511)	12.75 (84.6)	184 (16.1)	61 (24.7)	76 (97.985)

Department of Agricultural Engineering

Dates of Tests: May 24 to June 2, 1979

Manufacturer: INTERNATIONAL HARVESTER CO., 401 North Michigan Ave., Chicago, Ill. 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 49.0 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.8401 Fuel weight 6.995 lbs/gal (0.838 kg/l) Oil SAE 30 API service classification SC-SE/CA-CD To motor 2.034 gal (7.699 l) Drained from motor 1.734 gal (6.563 l) Transmission and final drive lubricant I. H. Hy-tran fluid Total time engine was operated 44.0 hours

ENGINE: Make International Diesel Type Four cylinder vertical Serial No. 246D12D114055* Crankshaft lengthwise Rated rpm 2400 Bore and stroke 3.937" × 5.062" (100 mm × 128.6 mm) Compression ratio 15.5 to 1 Displacement 246 cu in (4031 ml) Cranking system 12 volt Lubrication pressure Air cleaner two paper elements Oil filter one paper cartridge Oil cooler radiator for hydraulic and transmission oil Fuel filter two paper elements Muffler vertical Cooling medium temperature control one thermostat

CHASSIS: Type standard Serial No. B530004B001238-X- Tread width rear 52" (1321 mm) to 76" (1930 mm) front 54" (1372 mm) to 74" (1880 mm) Wheel base 88" (2235 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 28.1" (714 mm) Vertical distance above roadway 31.6" (803 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 1.7 (2.7) second 2.1 (3.4) third 3.5 (5.6) fourth 4.7 (7.6) fifth 5.5 (8.8) sixth 7.1 (11.4) seventh 11.6 (18.6) eighth 15.6 (25.2) reverse 2.5 (4.0), 3.2 (5.2), 5.2 (8.4), 7.1 (11.3) Clutch single dry disc operated by foot pedal Brakes single wet disc hydraulically operated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 129" (3.28 m) left 129" (3.28 m) (on concrete surface without brake) right 153" (3.90 m) left 153" (3.90 m) Turning space diameter (on concrete surface with brake applied) right 268" (6.81 m) left 268" (6.81 m) (on concrete surface without brake) right 317" (8.06 m) left 317" (8.06 m) Power take-off 540 rpm at 2140 engine rpm and 1000 rpm at 2190 engine rpm.

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 5th (1H) Gear											
56.83 (42.83)	4115 (18.30)	5.18 (8.33)	2399	5.96	4.289 (16.235)	0.528 (0.321)	13.25 (2.610)	191 (88.1)	58 (14.4)	63 (16.9)	28.790 (97.220)
75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear											
46.19 (34.45)	3182 (14.15)	5.44 (8.76)	2484	4.55	3.617 (13.691)	0.548 (0.333)	12.77 (2.516)	187 (86.3)	52 (11.1)	63 (17.4)	28.999 (97.925)
50% of Pull at Maximum Power—Two Hours 5th (1H) Gear											
32.23 (24.03)	2144 (9.54)	5.64 (9.07)	2534	3.12	2.913 (11.026)	0.632 (0.385)	11.07 (2.180)	185 (84.7)	57 (13.9)	61 (15.8)	28.805 (97.270)
50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear											
32.00 (23.86)	2125 (9.45)	5.65 (9.08)	1955	3.08	2.538 (9.606)	0.555 (0.337)	12.61 (2.484)	185 (85.0)	57 (13.6)	63 (16.9)	28.815 (97.304)

MAXIMUM POWER IN SELECTED GEARS

41.52 (30.96)	8105 (36.05)	1.92 (3.09)	2487	13.75	2nd (2L) Gear			186 (85.6)	49 (9.4)	56 (13.3)	29.130 (98.368)
55.45 (41.35)	6630 (29.49)	3.14 (5.05)	2400	10.23	3rd (3L) Gear			192 (88.6)	59 (15.0)	63 (17.2)	28.780 (97.186)
56.60 (42.21)	4834 (21.50)	4.39 (7.07)	2400	6.79	4th (4L) Gear			192 (88.6)	60 (15.6)	64 (17.8)	28.750 (97.084)
58.65 (43.74)	4244 (18.88)	5.18 (8.34)	2402	6.09	5th (1H) Gear			190 (87.8)	58 (14.4)	62 (16.7)	28.790 (97.220)
58.36 (43.52)	3202 (14.24)	6.83 (11.00)	2402	4.44	6th (2H) Gear			192 (88.9)	58 (14.4)	63 (17.2)	28.790 (97.220)

LUGGING ABILITY IN 5th (1H) GEAR

Crankshaft Speed rpm	2402	2157	1924	1694	1432	1196
Pull—lbs (kN)	4244 (18.88)	4390 (19.53)	4514 (20.08)	4664 (20.75)	4811 (21.40)	4633 (20.61)
Increase in Pull %	0	3	6	10	13	9
Power—Hp (kW)	58.65 (43.74)	54.40 (40.57)	46.69 (37.05)	45.11 (33.64)	39.23 (29.25)	31.64 (23.59)
Speed—Mph (km/h)	5.18 (8.34)	4.65 (7.48)	4.13 (6.64)	3.63 (5.84)	3.06 (4.92)	2.56 (4.12)
Slip %	6.09	6.15	6.54	6.79	6.92	6.67

TRACTOR SOUND LEVEL WITHOUT CAB

Maximum Available Power—Two Hours	97.5
75% of Pull at Maximum Power—Ten Hours	97.5
50% of Pull at Maximum Power—Two Hours	97.5
50% of Pull at Reduced Engine Speed—Two Hours	94.5
Bystander in 8th (4H) gear	87.0

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-30; 6; 16 (110)	Two 18.4-30; 6; 16 (110)
	—Liquid (each)	1160 lb (526 kg)	None
	—Cast Iron (each)	740 lb (336 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 9.5L-15; 6; 36 (250)	Two 9.5L-15; 6; 36 (250)
	—Liquid (each)	None	None
	—Cast Iron (each)	15 lb (7 kg)	None
Height of Drawbar		15.5 in (395 mm)	15.5 in (395 mm)
Static Weight with Operator—Rear		7970 lb (3615 kg)	4170 lb (1891 kg)
	Front	1950 lb (885 kg)	1920 lb (871 kg)
	Total	9920 lb (4500 kg)	6090 lb (2762 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

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 return was 148°F (64.4°C). Five gears were chosen between tire tangential pull limit and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1315.

LOUIS I. LEVITICUS
Engineer-in-Charge

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



International 784 Rowcrop Diesel