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Test 1314: International 684 Utility / Row Crop Diesel 8-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1314 — INTERNATIONAL 684 UTILITY DIESEL ALSO INTERNATIONAL 684 ROWCROP DIESEL 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—606 rpm)								
62.52 (46.62)	2400	4.204 (15.913)	0.470 (0.286)	14.87 (2.930)	191 (88.5)	65 (18.1)	75 (23.9)	28.790 (97.220)
Standard Power Take-off Speed (540 rpm)—One Hour								
58.75 (43.81)	2140	3.778 (14.303)	0.450 (0.274)	15.55 (3.063)	192 (89.0)	64 (17.9)	75 (23.7)	28.815 (97.304)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
54.64 (40.74)	2468	3.706 (14.027)	0.474 (0.289)	14.74 (2.905)	188 (86.4)	64 (17.8)	75 (23.9)	..... .....
0.00 (0.00)	2640	1.274 (4.822)	..... .....	..... .....	178 (81.1)	64 (17.8)	74 (23.6)	..... .....
28.18 (21.02)	2545	2.423 (9.173)	0.601 (0.366)	11.63 (2.291)	182 (83.6)	64 (18.1)	75 (23.9)	..... .....
62.70 (46.76)	2400	4.207 (15.926)	0.469 (0.286)	14.90 (2.936)	192 (88.9)	65 (18.3)	75 (23.9)	..... .....
14.28 (10.65)	2578	1.866 (7.062)	0.914 (0.556)	7.65 (1.508)	179 (81.7)	64 (17.8)	75 (23.9)	..... .....
41.66 (31.07)	2512	3.028 (11.462)	0.508 (0.309)	13.76 (2.711)	186 (85.3)	64 (17.8)	74 (23.6)	..... .....
Av Av	33.58 2524	2.751 (10.412)	0.573 (0.349)	12.21 (2.405)	184 (84.5)	64 (17.9)	75 (23.8)	28.810 (97.287)

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											
54.56 (40.68)	3861 (17.17)	5.30 (8.53)	2400	5.84	4.110 (15.558)	0.527 (0.321)	13.27 (2.615)	193 (89.4)	58 (14.2)	76 (24.2)	29.115 (98.317)
75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear											
43.84 (32.69)	2979 (13.25)	5.52 (8.88)	2454	4.08	3.367 (12.744)	0.537 (0.327)	13.02 (2.565)	189 (87.2)	58 (14.3)	77 (24.9)	29.017 (97.986)
50% of Pull at Maximum Power—Two Hours 5th (1H) Gear											
30.44 (22.70)	1989 (8.85)	5.74 (9.24)	2516	2.70	2.698 (10.214)	0.620 (0.377)	11.28 (2.222)	185 (85.0)	60 (15.6)	79 (26.1)	29.080 (98.199)
50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear											
30.61 (22.82)	1993 (8.86)	5.76 (9.27)	1836	2.60	2.287 (8.659)	0.523 (0.318)	13.38 (2.636)	186 (85.3)	59 (14.7)	78 (25.3)	29.045 (98.081)
MAXIMUM POWER IN SELECTED GEARS											
33.94 (25.31)	6858 (30.51)	1.86 (2.99)	2497	11.50	2nd (2L) Gear			186 (85.6)	55 (12.8)	66 (18.9)	29.140 (98.401)
54.45 (40.61)	5765 (25.64)	3.54 (5.70)	2398	9.37	3rd (3L) Gear			194 (90.0)	58 (14.4)	72 (22.2)	29.140 (98.401)
54.13 (40.36)	4324 (19.23)	4.69 (7.55)	2398	6.58	4th (4L) Gear			193 (89.4)	57 (13.9)	71 (21.7)	29.140 (98.401)
55.92 (41.70)	3967 (17.64)	5.29 (8.51)	2398	5.97	5th (1H) Gear			192 (88.6)	55 (12.8)	66 (18.9)	29.140 (98.401)
55.78 (41.60)	2824 (12.56)	7.41 (11.92)	2400	4.07	6th (2H) Gear			192 (88.9)	58 (14.4)	73 (22.8)	29.130 (98.368)
LUGGING ABILITY IN 5th (1H) GEAR											
Crankshaft Speed rpm				2398	2159	1923	1683	1435	1202		
Pull—lbs (kN)				3967 (17.64)	4177 (18.58)	4219 (18.77)	4422 (19.67)	4399 (19.57)	4345 (19.33)		
Increase in Pull %				0	5	6	11	11	10		
Power—Hp (kW)				55.92 (41.70)	52.78 (39.36)	47.43 (35.37)	43.31 (32.30)	36.77 (27.42)	30.44 (22.70)		
Speed—Mph (km/h)				5.29 (8.51)	4.74 (7.63)	4.22 (6.79)	3.67 (5.91)	3.13 (5.05)	2.63 (4.23)		
Slip %				5.97	6.58	6.58	6.82	6.82	6.82		

Department of Agricultural Engineering

Dates of Test: May 24 to June 4, 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 2.063 gal (7.808 l) Drained from motor 2.031 gal (7.687 l) Transmission and final drive lubricant I. H. Hytran fluid Total time engine was operated 33.0 hours

ENGINE: Make International Diesel Type Four cylinder vertical Serial No. DT2D472004* Crankshaft lengthwise Rated rpm 2400 Bore and stroke 3.875" × 5.06" (98.4 mm × 128.5 mm) Compression ratio 15.0 to 1 Displacement 239 cu in (3911 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. B510005B001149-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 29.1" (739 mm) Vertical distance above roadway 30.3" (770 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 1.5 (2.4) second 2.0 (3.2) third 3.9 (6.3) fourth 5.0 (8.0) fifth 5.6 (9.0) sixth 7.7 (12.4) seventh 14.9 (24.0) eighth 19.2 (30.8) reverse 1.8 (2.9), 2.4 (3.9), 4.7 (7.6), 6.0 (9.7) 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 133" (3.38 m) left 133" (3.38 m) (on concrete surface without brake) right 153" (3.89 m) left 153" (3.89 m) Turning space diameter (on concrete surface with brake applied) right 278" (7.07 m) left 278" (7.07 m) (on concrete surface without brake) right 318" (8.00 m) left 318" (8.00 m) Power take-off 540 rpm at 2140 engine rpm.

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 re-

TRACTOR SOUND LEVEL WITHOUT CAB		dB(A)	
Maximum Available Power—Two Hours		97.0	
75% of Pull at Maximum Power—Ten Hours		97.5	
50% of Pull at Maximum Power—Two Hours		97.0	
50% of Pull at Reduced Engine Speed—Two Hours		93.5	
Bystander in 8th (4H) gear		86.0	
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 16.9-30; 6: 16 (110)	Two 16.9-30; 6: 16 (110)
Ballast	—Liquid (each)	935 lb (424 kg)	None
	—Cast Iron (each)	953 lb (432 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 9.5L-15; 6: 36 (250)	Two 9.5L-15; 6: 36 (250)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	25 lb (11 kg)	None
Height of Drawbar		14.5 in (370 mm)	14.5 in (370 mm)
Static Weight with Operator—Rear		7710 lb (3497 kg)	3935 lb (1785 kg)
	Front	1950 lb (885 kg)	1900 lb (862 kg)
	Total	9660 lb (4382 kg)	5835 lb (2647 kg)

turn was 144°F (62.5°C). Five gears were chosen between tire tangential pull limit and 10 mph (16.1 km/h). During final inspection, slight pitting of the engine exhaust valve faces was noted.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1314.

LOUIS I. LEVITICUS

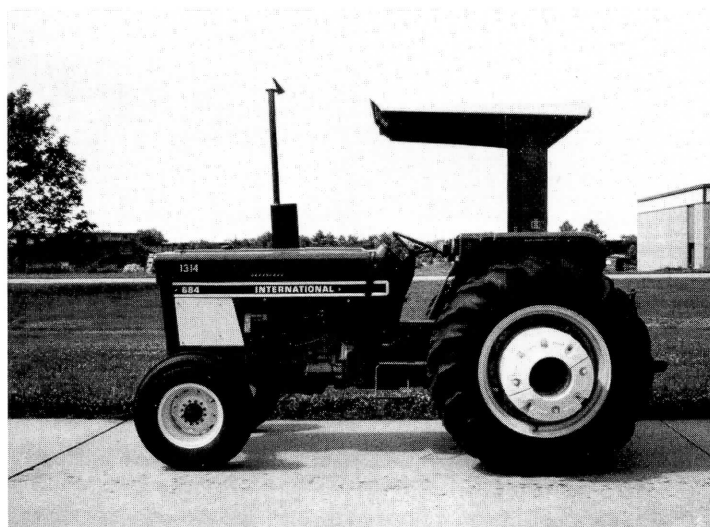
Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



International 684 Utility Diesel