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Test 1388: International 786 Diesel 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1388 — INTERNATIONAL 786 DIESEL 16 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—1158 rpm)									
80.20 (59.81)	2400	5.373 (20.339)	0.469 (0.285)	14.93 (2.941)	176 (80.2)	58 (14.4)	75 (23.8)	28.983 (97.872)	
Standard Power take-off Speed (1000 rpm)—One Hour									
77.41 (57.72)	2072	4.923 (18.636)	0.445 (0.271)	15.72 (3.097)	177 (80.6)	58 (14.7)	75 (23.9)	28.960 (97.794)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
71.92 (53.63)	2534	5.077 (19.219)	0.494 (0.301)	14.17 (2.790)	174 (78.9)	59 (14.7)	75 (23.9)	..... .....
0.00 (0.00)	2652	2.099 (7.946)	..... .....	..... .....	169 (76.1)	59 (14.7)	74 (23.3)	..... .....
36.80 (27.44)	2582	3.445 (13.041)	0.655 (0.399)	10.68 (2.104)	171 (77.2)	59 (15.0)	75 (23.9)	..... .....
80.27 (59.86)	2401	5.386 (20.388)	0.470 (0.286)	14.90 (2.936)	176 (79.7)	59 (15.0)	75 (23.9)	..... .....
18.64 (13.90)	2617	2.755 (10.429)	1.035 (0.629)	6.77 (1.333)	169 (76.1)	59 (15.0)	75 (23.6)	..... .....
54.51 (40.65)	2564	4.237 (16.039)	0.544 (0.331)	12.86 (2.534)	172 (77.8)	59 (15.0)	75 (23.9)	..... .....
Av Av	43.69 (32.58)	2558	3.833 (14.509)	0.614 (0.374)	11.40 (2.246)	172 (77.7)	59 (14.9)	75 (23.8)	28.925 (97.675)

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 8th (1st Hi TA) Gear											
69.04 (51.49)	5463 (24.30)	4.74 (7.63)	2399	4.82	5.428 (20.546)	0.550 (0.335)	12.72 (2.506)	183 (83.6)	57 (13.9)	67 (19.2)	29.050 (98.100)
75% of Pull at Maximum Power—Ten Hours 8th (1st Hi TA) Gear											
56.15 (41.87)	4169 (18.54)	5.05 (8.13)	2523	3.58	4.728 (17.897)	0.590 (0.359)	11.88 (2.340)	181 (82.7)	56 (13.4)	60 (15.6)	28.770 (97.150)
50% of Pull at Maximum Power—Two Hours 8th (1st Hi TA) Gear											
38.22 (28.50)	2787 (12.40)	5.14 (8.28)	2540	2.50	3.821 (14.464)	0.700 (0.426)	10.00 (1.970)	179 (81.7)	50 (9.7)	54 (11.9)	29.120 (98.330)
50% of Pull at Reduced Engine Speed—Two Hours 12th (2nd Hi DD) Gear											
38.29 (28.56)	2788 (12.40)	5.15 (8.29)	1491	2.42	2.946 (11.152)	0.539 (0.328)	13.00 (2.561)	179 (81.7)	54 (11.9)	62 (16.7)	29.095 (98.250)
MAXIMUM POWER IN SELECTED GEARS											
57.78 (43.08)	9968 (44.34)	2.17 (3.50)	2514	14.59	4th (2nd Lo DD) Gear			181 (82.5)	54 (12.2)	62 (16.7)	29.080 (98.200)
67.44 (50.29)	8406 (37.39)	3.01 (4.84)	2401	8.64	5th (3rd Lo TA) Gear			182 (83.1)	54 (12.2)	69 (20.6)	28.990 (97.890)
68.40 (51.00)	6452 (28.70)	3.98 (6.40)	2400	5.85	6th (3rd Lo DD) Gear			182 (83.3)	54 (12.2)	69 (20.6)	28.990 (97.890)
68.60 (51.15)	6202 (27.59)	4.15 (6.67)	2400	5.64	7th (4th Lo TA) Gear			182 (83.3)	54 (12.2)	69 (20.6)	28.990 (97.890)
70.25 (52.39)	5556 (24.72)	4.74 (7.63)	2401	4.85	8th (1st Hi TA) Gear			183 (83.9)	53 (11.7)	68 (20.0)	29.010 (97.960)
68.93 (51.40)	4788 (21.30)	5.40 (8.69)	2400	4.06	9th (4th Lo DD) Gear			182 (83.3)	55 (12.8)	70 (21.1)	28.980 (97.860)
69.93 (52.15)	4259 (18.95)	6.16 (9.91)	2399	3.54	10th (1st Hi DD) Gear			182 (83.3)	55 (12.8)	70 (21.1)	28.980 (97.860)
70.15 (52.31)	4116 (18.31)	6.39 (10.29)	2398	3.47	11th (2nd Hi TA) Gear			183 (83.6)	55 (12.8)	70 (21.1)	28.980 (97.860)
68.66 (51.20)	3112 (13.84)	8.27 (13.31)	2399	2.57	12th (2nd Hi DD) Gear			183 (83.9)	55 (12.8)	70 (21.1)	28.970 (97.830)

Department of Agricultural Engineering

Dates of Test: April 30 to May 11, 1981

Manufacturer: INTERNATIONAL HARVESTER CO., 401 North Michigan Avenue, Chicago, Illinois 60611

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°) 0.8408 Fuel weight 7.001 lbs/gal (0.839 kg/l) Oil SAE 30 API service classification CA/CD-SC/SE To motor 2.727 gal (10.323 l) Drained from motor 2.608 gal (9.872 l) Transmission and final drive lubricant I. H. Hytran fluid Total time engine was operated 41.5 hours

ENGINE Make International Diesel **Type** six cylinder vertical **Serial No.** 358DT2D095334* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.875" × 5.0625" (98.4 mm × 128.6 mm) **Compression ratio** 14.8 to 1 **Displacement** 358 cu in (5868 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard with duals **Serial No.** 2470001U009083* **Tread width** rear 66" (1676 mm) to 113.5" (2883 mm) front 60" (1520 mm) to 84" (2130 mm) **Wheel base** 104.8" (2662 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 29.8" (757 mm) Vertical distance above roadway 37.7" (958 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 with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.4 (2.2) second 1.8 (2.8) third 1.8 (3.0) fourth 2.4 (3.8) fifth 3.2 (5.1) sixth 4.1 (6.6) seventh 4.2 (6.8) eighth 4.8 (7.8) ninth 5.4 (8.8) tenth 6.2 (10.0) eleventh 6.4 (10.3) twelfth 8.2 (13.2) thirteenth 11.1 (17.9) fourteenth 14.3 (23.0) fifteenth 14.9 (23.9) sixteenth 19.1 (30.7) reverse 2.4 (3.8), 3.0 (4.9), 3.2 (5.1), 4.0 (6.5), 5.5 (8.8), 7.0 (11.3), 7.3 (11.7), 9.4 (15.1) **Clutch** single dry disc operated by foot pedal with hydraulic power assist **Brakes** multiple wet disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 142.8" (3.63 m) left 142.8" (3.63 m) (on concrete surface without brake) right 174.6" (4.43 m) left 174.6" (4.43 m) **Turning space diameter** (on concrete surface with brake applied) right 301.4" (7.66 m) left 301.4" (7.66 m) (on concrete surface without brake) right 365.2" (9.28 m)

LUGGING ABILITY IN 8th (1st Hi TA) GEAR

Crankshaft Speed rpm	2401	2163	1918	1677	1433	1202	965
Pull—lbs (kN)	5556 (24.72)	6150 (27.36)	6482 (28.83)	6767 (30.10)	7005 (31.16)	7072 (31.46)	6978 (31.04)
Increase in Pull %	0	11	17	22	26	27	26
Power—Hp (kW)	70.25 (52.39)	69.61 (51.91)	64.77 (48.30)	58.93 (43.94)	51.91 (38.71)	43.93 (32.76)	34.79 (25.94)
Speed—Mph (km/h)	4.74 (7.63)	4.24 (6.83)	3.75 (6.03)	3.27 (5.26)	2.78 (4.47)	2.33 (3.75)	1.87 (3.01)
Slip %	4.85	5.35	5.78	6.20	6.48	6.61	6.75

TRACTOR SOUND LEVEL WITHOUT CAB

	dB(A)
Maximum Available Power—Two Hours	91.5
75% of Pull at Maximum Power—Ten Hours	92.5
50% of Pull at Maximum Power—Two Hours	93.0
50% of Pull at Reduced Engine Speed—Two Hours	91.0
Bystander in 15th (4 HiTA) gear	89.5

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-34; 6; 12 (85)	Four 18.4-34; 6; 12 (85)
	Ballast	None	None
	—Liquid (each)	61 lb (28 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 11L-15; 6; 32 (220)	Two 11L-15; 6; 32 (220)
	Ballast	None	None
	—Liquid (each)	48 lb (22 kg)	None
Height of Drawbar		19.5 in (495 mm)	19.5 in (495 mm)
Static Weight with Operator—Rear		8610 lb (3905 kg)	8365 lb (3794 kg)
Front		3320 lb (1506 kg)	3225 lb (1463 kg)
Total		11930 lb (5411 kg)	11590 lb (5257 kg)

left 365.2" (9.28 m) **Power take-off** 1000 rpm at 2072 engine rpm and 540 rpm at 2106 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 was 132°F (55.6°C). Nine 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. **1388.**

LOUIS I. LEVITICUS

Engineer-in Charge

K. VON BARGEN

W. E. SPLINTER

L. L. BASHFORD

Board of Tractor Test Engineers



International 786 Diesel