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Test 1377: International 3788 and 6788 Diesel 12-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1377—INTERNATIONAL 3788 DIESEL ALSO INTERNATIONAL 6788 DIESEL 12 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—1207 rpm)								
170.57 (127.19)	2500	10.928 (41.367)	0.447 (0.272)	15.61 (3.075)	191 (88.4)	55 (12.7)	75 (23.9)	29.157 (98.458)
Standard Power Take-off Speed (1000 rpm)—One Hour								
166.39 (124.08)	2071	9.718 (36.787)	0.408 (0.248)	17.12 (3.373)	193 (89.4)	55 (12.8)	75 (23.9)	29.125 (98.351)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
149.46 (111.45)	2575	10.037 (37.994)	0.469 (0.285)	14.89 (2.933)	189 (87.2)	55 (12.8)	75 (23.9)	..... .....
0.00 (0.00)	2752	3.667 (13.881)	..... .....	..... .....	182 (83.3)	55 (12.8)	75 (23.9)	..... .....
77.37 (57.69)	2672	6.788 (25.695)	0.612 (0.372)	11.40 (2.245)	184 (84.4)	56 (13.1)	76 (24.2)	..... .....
170.70 (127.29)	2500	10.961 (41.492)	0.448 (0.273)	15.57 (3.068)	192 (88.9)	55 (12.8)	75 (23.6)	..... .....
39.39 (29.37)	2720	5.244 (19.851)	0.929 (0.565)	7.51 (1.480)	183 (83.6)	55 (12.8)	75 (23.9)	..... .....
114.17 (85.14)	2628	8.391 (31.763)	0.513 (0.312)	13.61 (2.680)	187 (85.8)	55 (12.5)	75 (23.6)	..... .....
Av 91.85 (68.49)	2641	7.515 (28.447)	0.571 (0.347)	12.22 (2.408)	186 (85.6)	55 (12.8)	75 (23.8)	29.097 (98.255)

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/kjw.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 6th (3LoDD) Gear											
142.05 (105.93)	8635 (38.41)	6.17 (9.93)	2499	1.49	10.729 (40.612)	0.527 (0.321)	13.24 (2.608)	186 (85.6)	48 (8.6)	56 (13.1)	29.035 (98.047)
75% of Pull at Maximum Power—Ten Hours 6th (3LoDD) Gear											
114.49 (85.37)	6653 (29.59)	6.45 (10.39)	2603	1.14	9.349 (35.392)	0.570 (0.347)	12.25 (2.412)	186 (85.7)	57 (13.7)	66 (18.9)	28.825 (97.338)
50% of Pull at Maximum Power—Two Hours 6th (3LoDD) Gear											
78.01 (58.18)	4430 (19.71)	6.60 (10.63)	2663	1.14	7.755 (29.357)	0.694 (0.422)	10.06 (1.982)	182 (83.3)	39 (3.6)	39 (3.9)	28.965 (97.810)
50% of Pull at Reduced Engine Speed—Two Hours 8th (1HiDD) Gear											
77.45 (57.75)	4412 (19.63)	6.58 (10.59)	1874	1.05	5.928 (22.442)	0.534 (0.325)	13.06 (2.573)	181 (82.8)	37 (2.8)	38 (3.1)	29.020 (97.996)
MAXIMUM POWER IN SELECTED GEARS											
138.35 (103.16)	19069 (84.83)	2.72 (4.38)	2536	6.91	2nd (1LoDD) Gear			184 (84.2)	31 (-0.5)	34 (1.1)	29.170 (98.503)
143.22 (106.80)	14047 (62.48)	3.82 (6.15)	2500	2.92	3rd (2LoTA) Gear			186 (85.3)	46 (7.8)	53 (11.7)	29.060 (98.131)
144.40 (107.68)	12020 (53.47)	4.51 (7.25)	2500	2.14	4th (2LoDD) Gear			186 (85.6)	46 (7.8)	53 (11.7)	29.060 (98.131)
145.52 (108.51)	10386 (46.20)	5.25 (8.46)	2498	1.80	5th (3LoTA) Gear			186 (85.3)	45 (7.2)	52 (11.1)	29.080 (98.199)
145.66 (108.62)	8860 (39.41)	6.17 (9.92)	2497	1.54	6th (3LoDD) Gear			186 (85.3)	44 (6.7)	51 (10.6)	29.100 (98.266)
146.43 (109.19)	7331 (32.61)	7.49 (12.05)	2498	1.27	7th (1HiTA) Gear			186 (85.6)	47 (8.3)	54 (12.2)	29.050 (98.097)
145.24 (108.31)	6199 (27.58)	8.79 (14.14)	2500	1.10	8th (1HiDD) Gear			186 (85.6)	47 (8.3)	54 (12.2)	29.050 (98.097)

Department of Agricultural Engineering

Dates of Tests: November 5-17, 1980

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

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 47.9 (rating taken from oil company's inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.8382 Fuel weight 6.979 lbs/gal (0.836 kg/l) Oil SAE 30 API service classification CA/CD-SC/SE To motor 3.852 gal (14.580 l) Drained from motor 3.430 gal (12.984 l) Transmission and final drive lubricant I.H. Hytran fluid Total time engine was operated 38.0 hours

ENGINE: Make International Diesel Type six cylinder vertical with turbocharger Serial No. 467TT2U123651* Crankshaft lengthwise Rated rpm 2500 Bore and stroke 4.300" × 5.350" (109.2 mm × 135.9 mm) Compression ratio 16.3 to 1 Displacement 466 cu in (7639 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements with aspirator Oil filter two paper cartridges Oil cooler engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil Fuel filter three paper cartridges Muffler underhood Exhaust vertical Cooling medium temperature control one thermostat

CHASSIS: Type four wheel drive Serial No. 290000IU 9347* Tread width rear 62.4" (1585 mm) to 115" (2921 mm) front 62.4" (1585 mm) to 115" (2921 mm) Wheel base 110" (2794 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 58.6" (1488 mm) Vertical distance above roadway 42.2" (1072 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 2.5 (4.0) second 2.9 (4.7) third 4.0 (6.4) fourth 4.7 (7.5) fifth 5.4 (8.7) sixth 6.3 (10.2) seventh 7.7 (12.4) eighth 9.0 (14.5) ninth 12.3 (19.8) tenth 14.4 (23.2) eleventh 16.8 (27.0) twelfth 19.6 (31.5) reverse 4.3 (6.9), 5.0 (8.1), 6.9 (11.0), 8.0 (12.9), 9.3 (15.0), 10.9 (17.6) Clutch dry single disc hydraulically power actuated and operated by foot pedal Brakes wet multiple disc hydraulically power actuated and operated by foot pedal Steering hydrostatic and articulated Turning radius (on concrete surface without brake) right 222" (5.64 m) left 222" (5.64 m) Turning space diameter (on concrete surface without brake) right 477" (12.12 m) left 477" (12.12 m) Power take-off 1000 rpm at 2071 engine rpm.

LUGGING ABILITY IN 6th (3LoDD) GEAR

Crankshaft Speed rpm	2497	2248	2000	1753	1497	1249
Pull—lbs (kN)	8860 (39.41)	10159 (45.19)	10767 (47.90)	11360 (50.53)	10698 (47.59)	9984 (44.41)
Increase in Pull %	0	15	22	28	21	13
Power—Hp (kW)	145.66 (108.62)	150.02 (111.87)	141.16 (105.26)	130.31 (97.17)	105.01 (78.30)	81.86 (61.04)
Speed—Mph (km/h)	6.17 (9.92)	5.54 (8.91)	4.92 (7.91)	4.30 (6.92)	3.68 (5.92)	3.07 (4.95)
Slip %	1.54	1.71	1.88	2.06	1.88	1.88

TRACTOR SOUND LEVEL WITH CAB dB(A)

Maximum Available Power—Two Hours	80.5
75% of Pull at Maximum Power—Ten Hours	80.5
50% of Pull at Maximum Power—Two Hours	80.5
50% of Pull at Reduced Engine Speed—Two Hours	78.5
Bystander in 11th (3HiTA) gear	88.5

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires		
—No., size, ply & psi (kPa)	Two 20.8R38; 8; 16 (110)	Two 20.8R38; 8; 16 (110)
Ballast	1065 lb (483 kg)	None
—Liquid (each)	None	None
—Cast Iron (each)	None	None
Front Tires		
—No., size, ply & psi (kPa)	Two 20.8R38; 8; 16 (110)	Two 20.8R38; 8; 16 (110)
*Ballast	None	None
—Liquid (each)	35 lb (16 kg)	None
—Test Equip. (each)	15 in (380 mm)	15 in (380 mm)
Height of Drawbar		
Static Weight with Operator—Rear	10880 lb (4935 kg)	8750 lb (3969 kg)
Front	9940 lb (4509 kg)	9870 lb (4477 kg)
Total	20820 lb (9444 kg)	18620 lb (8446 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 codes or official Nebraska test procedure. Temperature at injection pump return was 159°F (70.4°C). Seven gears were chosen between 15% slip and 10 mph (16.1 km/h). The pull in 2nd (1LoDD) gear was limited to avoid tractor bouncing.

NOTE: Supplemental permit for International 6788 granted January, 1984.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1377.

LOUIS I. LEVITICUS

Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



International 3788 Diesel