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Test 1257: International Hydro 186 Diesel Hydrostatic

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1257 — INTERNATIONAL HYDRO 186 DIESEL

HYDROSTATIC

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—1159 rpm)								
105.02 (78.31)	2400	8.131 (30.781)	0.538 (0.327)	12.92 (2.544)	191 (88.4)	60 (15.8)	75 (24.0)	28.727 (97.006)
Standard Power Take-off Speed (1000 rpm)—One Hour								
100.31 (74.80)	2071	7.330 (27.747)	0.507 (0.309)	13.68 (2.696)	192 (88.9)	61 (16.3)	75 (23.9)	28.750 (97.084)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
93.65 (69.84)	2514	7.409 (28.047)	0.549 (0.334)	12.64 (2.490)	187 (86.1)	60 (15.8)	76 (24.7)	..... .....
0.00 (0.00)	2640	3.236 (12.249)	..... .....	..... .....	181 (82.8)	60 (15.8)	76 (24.2)	..... .....
48.08 (35.85)	2583	5.063 (19.167)	0.731 (0.445)	9.50 (1.871)	184 (84.4)	62 (16.4)	76 (24.7)	..... .....
105.28 (78.50)	2400	8.096 (30.647)	0.534 (0.325)	13.00 (2.562)	191 (88.3)	61 (16.1)	76 (24.7)	..... .....
24.37 (18.17)	2617	4.139 (15.667)	1.179 (0.717)	5.89 (1.160)	182 (83.6)	62 (16.4)	76 (24.7)	..... .....
71.28 (53.15)	2552	6.118 (23.157)	0.596 (0.363)	11.65 (2.295)	186 (85.6)	62 (16.4)	78 (25.3)	..... .....
Av 42.59	2551	5.677 (21.489)	0.690 (0.420)	10.06 (1.982)	185 (85.1)	61 (16.2)	76 (24.7)	28.750 (97.084)

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, Speed Setting — 5.95 MPH Hi Range											
79.83 (59.53)	5032 (22.38)	5.95 (9.58)	2400	3.42	8.119 (30.732)	0.706 (0.430)	9.83 (1.937)	188 (86.4)	59 (14.7)	71 (21.4)	28.880 (97.523)
75% of Pull at Maximum Power—Ten Hours, Speed Setting—5.95 MPH Hi Range											
68.26 (50.91)	3871 (17.22)	6.61 (10.63)	2529	2.41	6.945 (26.289)	0.706 (0.430)	9.83 (1.937)	183 (83.9)	65 (18.4)	72 (21.9)	28.747 (97.074)
50% of Pull at Maximum Power—Two Hours, Speed Setting—5.95 MPH Hi Range											
49.16 (36.66)	2567 (11.42)	7.18 (11.56)	2565	1.75	5.814 (22.010)	0.821 (0.500)	8.46 (1.666)	181 (82.8)	59 (15.0)	69 (20.6)	28.840 (97.388)
50% of Pull at Reduced Engine Speed—Two Hours, Speed Setting—12.3 MPH Hi Range at 2400 Engine RPM											
49.04 (36.57)	2563 (11.40)	7.18 (11.55)	1463	2.00	4.572 (17.308)	0.647 (0.394)	10.73 (2.113)	187 (85.8)	64 (17.8)	65 (18.1)	28.565 (96.460)
MAXIMUM POWER AT SELECTED SPEEDS											
72.84 (54.32)	11312 (50.32)	2.42 (3.89)	2401	14.85	The infinitely		Lo R.	186 (85.6)	63 (17.2)	65 (18.3)	28.590 (96.544)
80.25 (59.85)	7477 (33.26)	4.02 (6.48)	2400	5.41	variable drive		Lo R.	188 (86.7)	57 (13.9)	70 (21.1)	28.910 (97.625)
79.52 (59.30)	6560 (29.18)	4.55 (7.32)	2400	4.58	control was		Lo R.	187 (86.1)	57 (13.9)	70 (21.1)	28.910 (97.625)
81.59 (60.84)	5152 (22.92)	5.94 (9.56)	2398	3.42	set to give		Hi R.	187 (86.1)	57 (13.9)	70 (21.1)	28.910 (97.625)
82.77 (61.72)	4731 (21.05)	6.56 (10.56)	2400	3.03	the travel		Hi R.	187 (86.1)	57 (13.9)	70 (21.1)	28.910 (97.625)
82.63 (61.62)	3837 (17.07)	8.08 (13.00)	2400	2.48	speeds shown		Hi R.	187 (85.8)	57 (13.9)	70 (21.1)	28.900 (97.591)

Department of Agricultural Engineering

Dates of Test: September 22 to October 3, 1977

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

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 50.8 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.8340 Fuel weight 6.944 lbs/gal (0.832 kg/l) Oil SAE 30 API service classification CA/CD-SC/SE To motor 3.658 gal (13.847 l) Drained from motor 2.151 gal (8.142 l) Transmission and final drive lubricant I.H. Hy-Tran Fluid Total time engine was operated 45.5 hours

ENGINE: Make International Diesel Type 6 cylinder vertical Serial No. 436DT2U049474* Crankshaft lengthwise Rated rpm 2400 Bore and stroke 4.30" × 5.00" (109.2 mm × 127.0 mm) Compression ratio 15.8 to 1 Displacement 436 cu in (7139 ml) Cranking system 12 volt Lubrication pressure Air cleaner primary and safety paper elements with dust unloader Oil filter two full flow paper cartridges Oil cooler engine coolant heat exchanger for crankcase oil, radiator for transmission and hydraulic fluid Fuel filter primary and final paper spin-on cartridges Muffler underhood Exhaust vertical Cooling medium temperature control thermostat

CHASSIS: Type standard with duals Serial No. 2690012U009077* Tread width rear 62" (1575 mm) to 118" (2997 mm) front 60" (1524 mm) to 84" (2134 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 28.5" (724 mm) Vertical distance above roadway 41.2" (1046 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left Hydraulic control system direct engine drive Transmission infinitely variable hydrostatic using variable displacement pump and motor. A range transmission provides Hi and Lo range Advertised speeds mph (km/h) Lo Range—0 to 8.0 (12.8); Hi Range—0 to 17.8 (28.7); reverse Lo Range—0 to 3.3 (5.3), Hi Range—0 to 7.4 (11.9) Clutch none-hydrostatic drive can be controlled by foot pedal Brakes multiple wet disc hydraulically power actuated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 141" (3.58 m) left 141" (3.58 m) (on concrete surface without brake) right 172" (4.37 m) left 172" (4.37 m) Turning space diameter (on concrete surface with brake applied) right 291" (7.39 m) left 291" (7.39 m) (on concrete surface without brake) right 354" (8.99 m) left 354" (8.99 m) Power take-off 1000 rpm at 2071 engine rpm and 540 rpm at 2106 engine rpm.

LUGGING ABILITY FROM SPEED SETTING—5.95 MPH Hi Range

Crankshaft Speed rpm	2398	2159	1920	1687	1438	1202
Pull—lbs (kN)	5152 (22.92)	5646 (25.11)	5989 (26.64)	6340 (28.20)	6464 (28.75)	6424 (28.58)
Increase in Pull %	0	10	16	23	26	25
Power—Hp (kW)	81.59 (60.84)	78.76 (58.73)	72.78 (54.27)	65.38 (48.75)	55.39 (41.31)	44.72 (33.35)
Speed—Mph (km/h)	5.94 (9.56)	5.23 (8.42)	4.56 (7.33)	3.87 (6.22)	3.21 (5.17)	2.61 (4.20)
Slip %	3.42	3.66	3.97	4.58	4.73	4.58

TRACTOR SOUND LEVEL WITH CAB dB(A)

Maximum Available Power—Two Hours	82.5
75% of Pull at Maximum Power—Ten Hours	83.0
50% of Pull at Maximum Power—Two Hours	82.5
50% of Pull at Reduced Engine Speed—Two Hours	80.5
Bystander in Hi Range	92.5

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-38; 6; 12 (80)	Four 18.4-38; 6; 12 (80)
	Ballast	None	None
	—Test Equip. (each)	55 lb (25 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 10.00-16; 6; 32 (250)	Two 10.00-16; 6; 32 (250)
	Ballast	None	None
	—Test Equip. (each)	38 lb (17 kg)	None
Height of drawbar		21 in (530 mm)	21 in (530 mm)
Static weight with Operator—rear		9790 lb (4411 kg)	9570 lb (4341 kg)
	—front	3640 lb (1651 kg)	3565 lb (1617 kg)
	—total	13430 lb (6092 kg)	13135 lb (5958 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 161°F (71.5°C). Six travel speeds were chosen between 15% slip and 15 mph (24.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1257**.

LOUIS I. LEVITICUS

Engineer-in Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



International 186 Diesel