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Test 1336: International 686 Diesel 10-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1336 — INTERNATIONAL 686 DIESEL 10 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—543 rpm)								
66.36 (49.49)	2000	4.131 (15.636)	0.440 (0.267)	16.07 (3.165)	193 (89.7)	58 (14.5)	75 (23.9)	28.733 (97.028)

VARYING POWER AND FUEL CONSUMPTION—Two Hours

59.91 (44.68)	2124	3.806 (14.408)	0.449 (0.273)	15.74 (3.101)	190 (87.8)	58 (14.2)	74 (23.6)	.....	.....
0.00 (0.00)	2198	1.236 (4.680)	.....	.....	180 (82.5)	58 (14.4)	75 (23.9)	.....	.....
30.62 (22.83)	2171	2.447 (9.263)	0.564 (0.343)	12.51 (2.465)	186 (85.3)	58 (14.4)	75 (23.9)	.....	.....
66.49 (49.58)	2000	4.142 (15.679)	0.440 (0.268)	16.05 (3.162)	194 (90.0)	58 (14.4)	75 (23.9)	.....	.....
15.46 (11.53)	2191	1.827 (6.915)	0.834 (0.507)	8.47 (1.668)	182 (83.3)	58 (14.4)	75 (23.9)	.....	.....
45.47 (33.91)	2150	3.101 (11.739)	0.482 (0.293)	14.66 (2.889)	187 (86.1)	58 (14.4)	75 (23.9)	.....	.....
Av 36.33 (27.09)	2139	2.760 (10.447)	0.537 (0.326)	13.16 (2.593)	186 (85.8)	58 (14.4)	75 (23.8)	28.737 (97.039)	

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel gal/hr (l/h)	Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Temp. °F (°C) Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (3 DD) Gear											
57.71 (43.03)	4266 (18.97)	5.07 (8.16)	2000	5.85	4.142 (15.679)	0.507 (0.308)	13.93 (2.745)	185 (85.0)	44 (6.7)	54 (11.9)	29.050 (98.097)
75% of Pull at Maximum Power—Ten Hours 7th (3 DD) Gear											
47.60 (35.50)	3255 (14.48)	5.48 (8.83)	2124	4.20	3.586 (13.575)	0.532 (0.324)	13.27 (2.615)	185 (84.9)	48 (9.1)	62 (16.8)	28.555 (96.426)
50% of Pull at Maximum Power—Two Hours 7th (3 DD) Gear											
32.66 (24.36)	2180 (9.70)	5.62 (9.04)	2148	2.99	2.832 (10.721)	0.612 (0.372)	11.53 (2.272)	182 (83.1)	46 (7.5)	57 (13.6)	29.020 (97.996)
50% of Pull at Reduced Engine Speed—Two Hours 8th (4 DD) Gear											
32.41 (24.17)	2160 (9.61)	5.63 (9.05)	1519	2.77	2.478 (9.380)	0.540 (0.328)	13.08 (2.576)	183 (83.6)	39 (3.9)	44 (6.4)	28.775 (97.169)

MAXIMUM POWER IN SELECTED GEARS

52.18 (38.91)	8043 (35.78)	2.43 (3.92)	2119	14.87	2nd (1 DD) Gear			186 (85.6)	49 (9.4)	65 (18.3)	28.580 (96.510)
53.08 (39.58)	7667 (34.11)	2.60 (4.18)	2000	12.66	3rd (2 TA) Gear			187 (86.1)	49 (9.4)	65 (18.3)	28.580 (96.510)
55.78 (41.60)	6362 (28.30)	3.29 (5.29)	1999	9.58	4th (3 TA) Gear			187 (85.8)	43 (6.1)	51 (10.6)	29.070 (98.165)
58.19 (43.39)	5352 (23.81)	4.08 (6.56)	2001	7.55	5th (2 DD) Gear			186 (85.3)	42 (5.6)	49 (9.4)	29.080 (98.199)
57.21 (42.66)	4430 (19.70)	4.84 (7.79)	2001	5.85	6th (4 TA) Gear			186 (85.6)	42 (5.6)	48 (8.9)	29.080 (98.199)
58.81 (43.85)	4339 (19.30)	5.08 (8.18)	2000	5.71	7th (3 DD) Gear			185 (85.0)	42 (5.6)	47 (8.3)	29.070 (98.165)
58.44 (43.58)	2994 (13.32)	7.32 (11.78)	2000	3.94	8th (4 DD) Gear			187 (85.8)	43 (6.1)	52 (11.1)	29.070 (98.165)

LUGGING ABILITY IN 7th (3 DD) GEAR

Crankshaft Speed rpm		2000	1799	1598	1399	1203	996
Pull—lbs (kN)		4339 (19.30)	4605 (20.48)	4845 (21.55)	4982 (22.16)	4628 (20.59)	4608 (20.50)
Increase in Pull %		0	6	12	15	7	6
Power—Hp (kW)		58.81 (43.85)	55.81 (41.61)	51.98 (38.76)	46.68 (34.81)	37.50 (27.97)	30.78 (22.95)
Speed—Mph (km/h)		5.08 (8.18)	4.54 (7.31)	4.02 (6.47)	3.51 (5.65)	3.04 (4.89)	2.50 (4.03)
Slip %		5.71	6.26	6.53	6.81	6.26	6.26

Department of Agricultural Engineering

Dates of Test: March 26 to April 16, 1980

Manufacturer: INTERNATIONAL HARVESTER CO., 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°)** 0.8482 **Fuel weight** 7.062 lbs/gal (0.846 kg/l) **Oil SAE 30 API service classification** CA/CD-SC/SE **To motor** 2.844 gal (10.765 l) **Drained from motor** 2.650 gal (10.030 l) **Transmission and final drive lubricant** I.H. Hy-Tran Fluid **Total time engine was operated** 37.5 hours.

ENGINE Make International Diesel **Type** 6 cylinder vertical **Serial No.** 310DT2D080258* **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 3.875" × 4.375" (98.4 mm × 111.1 mm) **Compression ratio** 15.1 to 1 **Displacement** 310 cu in (5080 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** one paper element **Oil filter** one full flow 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.** 2450176U011253* **Tread width** rear 50" (1270 mm) to 96" (2438 mm) front 56" (1422 mm) to 82" (2082 mm) **Wheel base** 103" (2616 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 32.0" (813 mm) Vertical distance above roadway 35.2" (895 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 1.8 (2.3) second 2.7 (4.3) third 2.9 (4.7) fourth 3.6 (5.8) fifth 4.3 (6.9) sixth 5.1 (8.2) seventh 5.3 (8.5) eighth 7.5 (12.1) ninth 11.4 (18.3) tenth 16.9 (27.2) reverse 2.0 (3.2), 3.0 (4.8) **Clutch** single dry disc operated by foot pedal **Brakes** double dry disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 144" (3.66 m) left 144" (3.66 m) (on concrete surface without brake) right 165" (4.19 m) left 165" (4.19 m) **Turning space diameter** (on concrete surface with brake applied) right 298" (7.57 m) left 298" (7.57 m) (on concrete surface without brake) right 339" (8.61 m) left 339" (8.61 m) **Power take-off** 543 rpm at 2000 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 return was 142°F (61.2°C). Seven gears were chosen between 15% slip and 10 mph (16.1 km/h).

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	96.0
75% of Pull at Maximum Power—Ten Hours	96.5
50% of Pull at Maximum Power—Two Hours	95.5
50% of Pull at Reduced Engine Speed—Two Hours	94.0
Bystander in 10th (5DD) Gear	92.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-34; 6; 16 (110)	Two 18.4-34; 6; 16 (110)
Ballast	—Liquid (each)	1180 lb (535 kg)	None
	—Cast Iron (each)	None	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)	None	None
Height of drawbar		18 in (460 mm)	18 in (460 mm)
Static weight with operator—Rear		7910 lb (3588 kg)	5550 lb (2518 kg)
Front		2430 lb (1102 kg)	2430 lb (1102 kg)
Total		10340 lb (4690 kg)	7980 lb (3620 kg)

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1336**.

LOUIS I. LEVITICUS
Engineer-in Charge

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



International 686 Diesel

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