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1-1-1977

## Test 1255: International 986 Diesel

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1255 — INTERNATIONAL 986 DIESEL

## 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)								
105.68 (78.80)	2400	7.169 (27.139)	0.471 (0.287)	14.74 (2.904)	191 (88.5)	60 (15.5)	75 (23.8)	28.880 (97.523)

Standard Power Take-off Speed (1000 rpm)—One Hour								
104.18 (77.69)	2071	6.695 (25.343)	0.446 (0.271)	15.56 (3.065)	193 (89.7)	60 (15.6)	75 (23.9)	28.865 (97.473)

### VARYING POWER AND FUEL CONSUMPTION—Two Hours

94.54 (70.50)	2523	6.688 (25.316)	0.491 (0.299)	14.14 (2.785)	190 (87.8)	60 (15.8)	76 (24.2)	..... .....
0.00 (0.00)	2656	2.743 (10.385)	..... .....	..... .....	183 (83.9)	60 (15.8)	75 (23.9)	..... .....
48.65 (36.28)	2597	4.597 (17.401)	0.656 (0.399)	10.58 (2.085)	185 (85.0)	61 (16.1)	76 (24.2)	..... .....
105.78 (78.88)	2399	7.163 (27.115)	0.470 (0.286)	14.77 (2.909)	191 (88.3)	60 (15.6)	74 (23.3)	..... .....
24.51 (18.28)	2632	3.690 (13.966)	1.045 (0.636)	6.64 (1.309)	183 (83.9)	61 (16.1)	75 (23.9)	..... .....
71.86 (53.59)	2564	5.586 (21.146)	0.540 (0.328)	12.86 (2.534)	186 (85.6)	62 (16.4)	76 (24.2)	..... .....
<b>Av 57.56</b> <b>Av (42.92)</b>	<b>2562</b>	<b>5.078</b> <b>(19.221)</b>	<b>0.613</b> <b>(0.373)</b>	<b>11.34</b> <b>(2.233)</b>	<b>186</b> <b>(85.7)</b>	<b>61</b> <b>(16.0)</b>	<b>75</b> <b>(23.9)</b>	<b>28.870</b> <b>(97.490)</b>

## 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 9th (4LoDD) Gear

90.15 (67.23)	5938 (26.42)	5.69 (9.16)	2401	4.05	7.128 (26.984)	0.549 (0.334)	12.65 (2.491)	188 (86.4)	61 (15.8)	74 (23.1)	28.740 (97.051)
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### 75% of Pull at Maximum Power—Ten Hours 9th (4LoDD) Gear

74.42 (55.50)	4587 (20.40)	6.08 (9.79)	2538	3.01	6.347 (24.027)	0.592 (0.360)	11.72 (2.310)	183 (83.8)	56 (13.1)	66 (19.0)	28.942 (97.733)
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### 50% of Pull at Maximum Power—Two Hours 9th (4LoDD) Gear

50.68 (37.79)	3040 (13.52)	6.25 (10.06)	2577	1.93	5.058 (19.148)	0.693 (0.422)	10.02 (1.974)	181 (82.8)	63 (16.9)	78 (25.6)	28.675 (96.831)
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### 50% of Pull at Reduced Engine Speed—Two Hours 12th (2 HiDD) Gear

50.87 (37.94)	3049 (13.56)	6.26 (10.07)	1710	1.89	3.798 (14.378)	0.518 (0.315)	13.39 (2.639)	182 (83.3)	63 (16.9)	78 (25.6)	28.670 (96.814)
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### MAXIMUM POWER IN SELECTED GEARS

74.56 (55.60)	12176 (54.16)	2.30 (3.70)	2530	14.95	4th (2LoDD) Gear			183 (83.6)	52 (11.1)	58 (14.4)	28.920 (97.659)
90.99 (67.85)	8154 (36.27)	4.18 (6.73)	2400	5.86	6th (3LoDD) Gear			185 (85.0)	56 (13.3)	65 (18.3)	28.740 (97.051)
94.60 (70.54)	7119 (31.67)	4.98 (8.02)	2399	4.96	8th (1HiTA) Gear			185 (85.0)	54 (12.2)	59 (15.0)	28.710 (96.949)
92.63 (69.07)	6111 (27.18)	5.68 (9.15)	2401	4.20	9th (4LoDD) Gear			185 (85.0)	56 (13.3)	64 (17.8)	28.730 (97.017)
94.05 (70.13)	5444 (24.22)	6.48 (10.43)	2398	3.66	10th (1HiDD) Gear			186 (85.6)	57 (13.9)	66 (18.9)	28.750 (97.084)
94.05 (70.13)	5238 (23.30)	6.73 (10.84)	2400	3.51	11th (2HiTA) Gear			186 (85.6)	58 (14.4)	67 (19.4)	28.750 (97.084)

Department of Agricultural Engineering

Dates of Test: September 15 to 29, 1977

Manufacturer: INTERNATIONAL HARVESTER COMPANY, 401 North Michigan Avenue, Chicago, IL 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 (0.834 kg/l) **Oil** SAE 30 **API service classification** CA/CD-SC/SE **To motor** 3.696 gal (13.991 l) **Drained from motor** 2.319 gal (8.778 l) **Transmission and final drive lubricant** I.H. Hy-Tran Fluid **Total time engine was operated** 41.5 hours

**ENGINE Make** International Diesel **Type** 6 cylinder vertical **Serial No.** 436DT2U049601\* **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 spin on 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 **Cooling medium temperature control** thermostat

**CHASSIS:** Type standard with duals **Serial No.** 2510189U012539\* **Tread width** rear 62" (1574 mm) to 104" (2642 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 41.5" (1054 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 power shift **Advertised speeds mph (km/h)** first 1.5 (2.4) second 1.9 (3.1) third 2.0 (3.2) fourth 2.5 (4.1) fifth 3.4 (5.5) sixth 4.4 (7.1) seventh 4.6 (7.4) eighth 5.2 (8.4) ninth 5.9 (9.4) tenth 6.7 (10.7) eleventh 6.9 (11.1) twelfth 8.8 (14.2) thirteenth 12.0 (19.3) fourteenth 15.4 (24.7) fifteenth 15.9 (25.7) sixteenth 20.5 (33.0) reverse 2.6 (4.1), 3.3 (5.3), 3.4 (5.5), 4.4 (7.0), 5.9 (9.5), 7.6 (12.1), 7.8 (12.6), 10.1 (16.2) **Clutch** single dry disc power actuated and operated by foot pedal **Brakes** multiple wet disc power actuated and operated by 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

# LUGGING ABILITY IN RATED GEAR 9th (4LoDD)

Crankshaft Speed rpm	2401	2159	1919	1680	1445	1198
Pull—lbs ( <i>kN</i> )	6111 (27.18)	6796 (30.23)	7421 (33.01)	7916 (35.21)	7937 (35.31)	7742 (34.44)
Increase in Pull %	0	11	21	30	30	27
Power—Hp ( <i>kW</i> )	92.63 (69.07)	92.15 (68.71)	88.96 (66.34)	82.70 (61.67)	71.28 (53.15)	57.70 (43.03)
Speed—Mph ( <i>km/h</i> )	5.68 (9.15)	5.08 (8.18)	4.50 (7.23)	3.92 (6.31)	3.37 (5.42)	2.79 (4.50)
Slip %	4.20	4.66	5.26	5.56	5.71	5.56

# TRACTOR SOUND LEVEL WITH CAB dB(A)

Maximum Available Power—Two Hours	80.0
75% of Pull at Maximum Power—Ten Hours	81.0
50% of Pull at Maximum Power—Two Hours	81.5
50% of Pull at Reduced Engine Speed—Two Hours	81.0
Bystander in 16th (4HiDD) gear	89.5

# TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi ( <i>kPa</i> )	Four 18.4-38; 6; 12 (80)	Four 18.4-38; 6; 12 (80)
Ballast	—Liquid (each inner)	430 lb (195 kg)	None
	—Cast Iron (each)	15 lb (7 kg)	None
Front Tires	—No., size, ply & psi ( <i>kPa</i> )	Two 10.00-16; 6; 32 (220)	Two 10.00-16; 6; 32 (220)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	25 lb (11 kg)	None
Height of drawbar		20.5 in (520 mm)	20.5 in (520 mm)
Static weight with operator—rear		10420 lb (4726 kg)	9505 lb (4311 kg)
front		3580 lb (1624 kg)	3525 lb (1599 kg)
total		14000 lb (6350 kg)	13030 lb (5910 kg)

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.

**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 155°F (68.3°C). Six gears were chosen between 15% slip and 15 mph (24.1 km/h) During final inspection slight pitting of the engine intake and exhaust valve faces was noted.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1255**.

LOUIS I. LEVITICUS  
Engineer-in Charge

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



International 986 Diesel