

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

1-1-1978

Test 1277: International Harvester 284 Gasoline

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

Nebraska Tractor Test Lab, "Test 1277: International Harvester 284 Gasoline" (1978). *Nebraska Tractor Tests*. 1596.

<https://digitalcommons.unl.edu/tractormuseumlit/1596>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

NEBRASKA TRACTOR TEST 1277 — INTERNATIONAL HARVESTER 284 GAS

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—650 rpm)									
25.75 (19.20)	2600	2.170 (8.215)	0.521 (0.317)	11.86 (2.337)	187 (85.9)	68 (20.0)	75 (23.6)	28.990 (97.895)	
Standard Power Take-Off Speed (1000 rpm)—One Hour									
24.33 (18.14)	2408	2.093 (7.925)	0.532 (0.324)	11.62 (2.289)	187 (86.3)	68 (20.1)	75 (24.1)	29.000 (97.929)	
Standard Power Take-Off Speed (540 rpm)—One Hour									
21.89 (16.32)	2160	1.909 (7.227)	0.540 (0.328)	11.46 (2.258)	186 (85.6)	68 (20.2)	75 (24.0)	29.000 (97.929)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours—									
23.36 (17.42)	2774	1.998 (7.563)	0.529 (0.322)	11.69 (2.304)	187 (86.1)	68 (20.3)	76 (24.7)	..... .....
0.00 (0.00)	2962	0.766 (2.901)	..... .....	..... .....	181 (82.8)	68 (20.0)	76 (24.7)	..... .....
12.05 (8.99)	2862	1.329 (5.030)	0.682 (0.415)	9.07 (1.787)	184 (84.4)	68 (20.0)	76 (24.7)	..... .....
25.50 (19.02)	2601	2.139 (8.096)	0.519 (0.316)	11.92 (2.349)	188 (86.7)	68 (20.3)	76 (24.4)	..... .....
6.20 (4.63)	2952	1.018 (3.855)	1.016 (0.618)	6.09 (1.200)	182 (83.3)	69 (20.6)	78 (25.6)	..... .....
17.85 (13.31)	2830	1.654 (6.260)	0.573 (0.349)	10.80 (2.127)	185 (85.0)	69 (20.6)	79 (26.1)	..... .....
Av Av	14.16 (10.56)	2830	1.484 (5.618)	0.648 (0.394)	9.54 (1.880)	184 (84.7)	68 (20.2)	77 (25.0)	28.967 (97.816)

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 7th (H-3) Gear												
20.14 (15.02)	1313 (5.84)	5.75 (9.26)	2600	6.77	2.061 (7.802)	0.633 (0.385)	9.77 (1.925)	187 (85.8)	62 (16.4)	64 (17.8)	28.820 (97.321)	
75% of Pull at Maximum Power—Ten Hours 7th (H-3) Gear												
16.85 (12.57)	1003 (4.46)	6.30 (10.14)	2785	4.73	1.879 (7.114)	0.690 (0.420)	8.97 (1.767)	185 (85.1)	66 (18.8)	71 (21.8)	28.755 (97.101)	
50% of Pull at Maximum Power—Two Hours 7th (H-3) Gear												
11.54 (8.61)	669 (2.98)	6.47 (10.41)	2827	3.55	1.536 (5.813)	0.823 (0.501)	7.52 (1.481)	185 (84.7)	63 (16.9)	65 (18.1)	28.785 (97.203)	
50% of Pull at Reduced Engine Speed—Two Hours 8th (H-4) Gear												
11.50 (8.57)	666 (2.96)	6.47 (10.42)	1899	3.13	1.394 (5.278)	0.750 (0.456)	8.25 (1.624)	185 (85.0)	71 (21.7)	75 (23.6)	28.740 (97.051)	
MAXIMUM POWER IN SELECTED GEARS												
16.34 (12.18)	2561 (11.39)	2.39 (3.85)	2841	14.96	4th (L-4) Gear			185 (85.0)	59 (15.0)	63 (17.2)	28.850 (97.422)	
19.86 (14.81)	2530 (11.25)	2.94 (4.74)	2600	14.27	5th (H-1) Gear			187 (86.1)	61 (16.1)	65 (18.3)	28.840 (97.388)	
20.64 (15.39)	1926 (8.57)	4.02 (6.47)	2599	9.50	6th (H-2) Gear			187 (86.1)	61 (16.1)	65 (18.3)	28.840 (97.388)	
20.51 (15.30)	1331 (5.92)	5.78 (9.30)	2598	6.33	7th (H-3) Gear			187 (86.1)	59 (15.0)	63 (17.2)	28.850 (97.422)	
18.90 (14.10)	804 (3.57)	8.82 (14.20)	2600	3.87	8th (H-4) Gear			187 (86.1)	60 (15.6)	64 (17.8)	28.850 (97.422)	

Department of Agricultural Engineering

Date of Test: May 18 to May 24, 1978

MANUFACTURER: International Harvester Co.,
401 North Michigan Ave., Chicago, Illinois
60611

FUEL, OIL AND TIME Fuel unleaded gasoline Octane No. Motor 88.6 Research 92.9 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° (15°/15°) 0.7431 Fuel weight 6.186 lbs/gal (0.743 kg/l) Oil SAE 30 API service classification SE To motor 0.690 gal (2.612 l) Drained from motor 0.672 gal (2.544 l) Transmission and final drive lubricant I.H. Hytran Fluid Total time engine was operated 33.0 hours

ENGINE: Make Mazda Gasoline Type 4 cylinder vertical Serial No. S39117 Crankshaft lengthwise Rated rpm 2600 Bore and stroke 2.756" x 2.992" (70 mm x 76 mm) Compression ratio 8.6 to 1 Displacement 71.3 cu in (1169 ml) Carburetor size 1" (28 mm) Ignition system 12 volt battery Cranking system 12 volt Lubrication pressure Air Cleaner one paper element Oil filter one full flow paper cartridge Fuel filter one paper element Muffler vertical Cooling medium temperature control thermostat

CHASSIS: Type standard Serial No. 2020001J010307* Tread width rear 41.5" (1054 mm) to 57.8" (1468 mm) front 39.4" (1000 mm) to 61.8" (1570 mm) Wheel base 63.0" (1600 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 20.3" (516 mm) Vertical distance above roadway 26.9" (683 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 Advertised speeds mph (km/h) first 1.0 (1.6) second 1.3 (2.0) third 1.8 (2.8) fourth 2.6 (4.2) fifth 3.5 (5.6) sixth 4.5 (7.2) seventh 6.2 (10.0) eighth 9.3 (14.9) reverse 1.8 (2.8), 6.2 (10.0) Clutch single dry disc operated by foot pedal Brakes single wet disc hydraulically operated by two foot pedals which can be locked together Steering mechanical Turning radius (on concrete surface with brake applied) right 92.4" (2.35 m) left 92.4" (2.35 m) (on concrete surface without brake applied) right 104.1" (2.64 m) left 104.1" (2.64 m) Turning space diameter (on concrete surface with brake applied) right 189.9" (4.82 m) left 189.9" (4.82 m) (on concrete surface without brake) right 213.4" (5.42 m) left 213.4" (5.42 m) Power take-off 540 rpm at 2160 engine rpm and 1000 rpm at 2408 engine rpm

REPAIRS and ADJUSTMENTS: No repairs or adjustments

LUGGING ABILITY IN RATED GEAR (7th H-3)

Crankshaft Speed rpm	2598	2343	2078	1827	1566	1301
Pull—lbs (kN)	1331 (5.92)	1371 (6.10)	1377 (6.13)	1328 (5.91)	1288 (5.73)	1237 (5.50)
Increase in Pull %	0	3	3	0	-3	-7
Power—Hp (kW)	20.51 (15.30)	19.00 (14.17)	16.90 (12.60)	14.34 (10.69)	11.94 (8.91)	9.55 (7.12)
Speed—Mph (km/h)	5.78 (9.30)	5.20 (8.36)	4.60 (7.41)	4.05 (6.52)	3.48 (5.60)	2.89 (4.66)
Slip %	6.33	6.61	6.70	6.42	6.24	5.96

TRACTOR SOUND LEVEL WITHOUT CAB dB(A)

Maximum Available Power—Two Hours	94.0
75% of Pull at Maximum Power—Ten Hours	93.5
50% of Pull at Maximum Power—Two Hours	90.0
50% of Pull at Reduced Engine Speed—Two Hours	90.5
Bystander in 8th (H-4) gear	79.5

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 11.2/10-24, 4, 14 (95)	Two 11.2/10-24, 4, 14 (95)
	—Liquid (each)	295 lb (134 kg)	None
	—Cast Iron (each)	189 lb (86 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 5.00-15, 4, 44 (300)	Two 5.00-15, 4, 44 (300)
	—Liquid (each)	None	None
	—Cast Iron (each)	99 lb (45 kg)	None
Height of Drawbar		15.5 in (395 mm)	15.5 in (395 mm)
Static Weight with Operator	—Rear	2668 lb (1210 kg)	1700 lb (771 kg)
	—Front	928 lb (421 kg)	730 lb (331 kg)
	—Total	3596 lb (1631 kg)	2430 lb (1102 kg)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Five 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 **1277**.

LOUIS I. LEVITICUS

Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



International Harvester 284 Gas