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January 1972

Test 1097: International 454 Diesel

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1097 – INTERNATIONAL 454 DIESEL

POWER TAKE-OFF PERFORMANCE

Hp	Crank- shaft speed rpm	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Air wet bulb	Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1004 rpm)								
40.47	2200	2.757	0.471	14.68	184	60	75	28.937
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
36.29	2320	2.522	0.486	14.22	181	60	75	.....
0.00	2430	0.964	.....	.....	175	59	73	.....
18.61	2381	1.745	0.648	10.66	177	60	76	.....
40.19	2200	2.760	0.475	14.56	182	61	76	.....
9.44	2414	1.337	0.979	7.06	176	61	76	.....
27.50	2345	2.148	0.540	12.80	179	60	75	.....
Av 22.01	2348	1.918	0.602	11.48	178	60	75	28.913

DRAWBAR PERFORMANCE

Hp	Draw- bar pull lbs	Speed miles per hr	Crank- shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool- ing med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST											
Maximum Available Power—Two Hours—3rd Gear (3 Lo)											
35.35	3235	4.10	2194	6.10	2.748	0.537	12.87	177	53	59	28.940
75% of Pull at Maximum Power—Ten Hours—3rd Gear (3 Lo)											
28.79	2478	4.36	2300	4.79	2.430	0.583	11.85	177	51	52	29.100
50% of Pull at Maximum Power—Two Hours—3rd Gear (3 Lo)											
20.02	1659	4.53	2346	2.93	1.989	0.686	10.07	172	48	52	28.920
50% of Pull at Reduced Engine Speed—Two Hours—4th Gear (4 Lo)											
20.43	1695	4.52	1824	3.34	1.808	0.611	11.30	169	58	63	29.020
MAXIMUM POWER WITH BALLAST											
26.76	5583	1.80	2327	14.81	1st Gear (1 Lo).....		175	49	54	28.830	
34.59	4398	2.95	2203	9.13	2nd Gear (2 Lo).....		172	49	53	28.830	
35.83	3276	4.10	2198	6.21	3rd Gear (3 Lo).....		172	49	53	28.830	
34.51	2410	5.37	2200	4.63	4th Gear (4 Lo).....		174	51	57	28.840	
34.99	1854	7.08	2199	3.40	5th Gear (1 Hi).....		173	51	57	28.840	
32.40	1036	11.73	2201	1.53	6th Gear (2 Hi).....		172	51	57	28.840	
VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST											
3rd Gear (3 Lo)											
Pounds Pull			3276		3359	3607	3787	3816	3658		
Horsepower			35.83		32.80	31.37	28.63	24.75	20.06		
Crankshaft Speed rpm			2198		1967	1761	1537	1321	1112		
Miles Per Hour			4.10		3.66	3.26	2.84	2.43	2.06		
Slip of Drivers %			6.21		6.43	6.87	7.31	7.53	7.09		

TRACTOR SOUND LEVEL

	dB(A)
Maximum Available Power 2 Hours	94.5
75% of Pull at Max. Power 10 Hours	94.5
50% of Pull at Max. Power 10 Hours	93.5
50% of Pull at Reduced Engine Speed 2 Hours	92.0
Bystander	8th gear (4 High) 84.5

TIRES, BALLAST and WEIGHT

	With Ballast	Without Ballast
Rear tires	—No., size, ply & psi Two 14.9-28; 6; 16	Two 14.9-28; 6; 16
Ballast	—Liquid 710 lb each	None
	Cast Iron 650 lb each	None
Front tires	—No., size, ply & psi Two 6.50-16; 4; 24	Two 6.50-16; 4; 24
Ballast	—Liquid None	None
	Cast Iron None	None
Height of drawbar	12½ inches	13½ inches
Static weight with operator—rear	5640 lb	2920 lb
front	1830 lb	1800 lb
total	7470 lb	4720 lb

The University of Nebraska Agricultural Experiment Station
E. F. Frolik, Dean; H. W. Ottoson, Director; Lincoln, Nebraska

Department of Agricultural Engineering

Date of Test: April 22 to May 12, 1972

Manufacturer: International Harvester Company, Chicago, Illinois

FUEL, OIL AND TIME Fuel No. 2 Diesel Cetane No. 50.1 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° 0.8302 Weight per gallon 6.912 lb Oil SAE 30 API service classification I.H. No. 1 Oil for Diesel Engines (CD CC CB CA SE SD SC—or DS DM DG MS) To motor 1.706 gal Drained from motor 1.397 gal Transmission and final drive lubricant I.H. Hy-Tran Fluid Total time engine was operated 44½ hours.

ENGINE Make International Diesel Type 3 cylinder vertical Serial No. 179DT2D0136 Crankshaft Mounted lengthwise Rated rpm 2200 Bore and stroke 3.875" x 5.06" Compression ratio 16 to 1 Displacement 179 cu. in. Cranking system 12 volt electric Lubrication pressure Air cleaner Two stage dry type with replaceable pleated paper element with automatic dust unloader Oil filter full flow treated paper replaceable screw-on cartridge Oil cooler radiator for transmission and hydraulic oil Fuel filter one primary and one final using replaceable screw-on paper cartridges Muffler was used Cooling medium temperature control thermostat.

CHASSIS Type standard Serial No. 2210117-U005259* Tread width rear 52" to 76" front 48" to 80" Wheel base 75.2" 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 28.9" Vertical distance above roadway 27.5" Horizontal distance from center of rear wheel tread 0" to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio Advertised speeds mph first 2 second 3¼ third 4¼ fourth 5½ fifth 7¼ sixth 11½ seventh 16 eighth 20¼ reverse 2½, 4, 5½, 7 Clutch single plate dry disc operated by foot pedal Brakes wet single disc hydraulically power actuated by two foot pedals that can be locked together with automatic equalizing Steering hydrostatic Turning radius (on concrete surface with brake applied) right 110" left 110" (on concrete surface without brake) right 124" left 124" Turning space diameter (on concrete surface with brake applied) right 231" left 231" (on concrete surface without brake) right 259" left 259" Power take-off 1004 or 555 rpm at 2200 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. Seventh and eighth gears were not run as test procedure requires only six gears.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1097.

L. F. LARSEN

Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

D. E. LANE

Board of Tractor Test Engineers