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January 1948

Test 405 Oliver Standard 77

Nebraska Tractor Test Lab

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Department of Agricultural Engineering

Dates of test: October 21 to November 6, 1948
 Manufacturer: THE OLIVER CORPORATION, CHARLES CITY, IOWA
 Manufacturer's rating: Not Rated

The Experiment Station
 University of Nebraska College of Agriculture
 W. V. Lambert, Director, Lincoln, Nebraska

NEBRASKA TRACTOR TEST NO. 405

OLIVER STANDARD 77 HC

BELT HORSE POWER TESTS

BEST HORSE POWER TESTS								
H. P.	Crank shaft speed R.P.M.	Fuel Consumption			Water used Gal. per hour	Temp. Deg. F.		Barometer Inches of Mercury
		Gal. per hour	H. P. hr. per gal.	Lb. per H.P. hour		Cooling med.	Air	
TEST B—100% MAXIMUM LOAD—TWO HOURS								
33.56	1601	2.893	11.60	0.526	0.00	187	81	29.025
TEST C—OPERATING MAXIMUM LOAD—ONE HOUR								
32.61	1598	2.815	11.58	0.527	0.00	182	80	28.990
*TEST D—ONE HOUR								
30.03	1598	2.670	11.25	0.542	0.00	177	79	28.985
TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)								
30.12	1602	2.704	11.14	0.548	- -	176	78	-- ---
1.84	1729	1.175	1.57	3.897	- -	156	77	-- ---
15.80	1676	1.898	8.32	0.733	- -	162	76	-- ---
31.83	1555	2.802	11.36	0.537	- -	176	76	-- ---
8.08	1709	1.485	5.44	1.121	- -	158	76	-- ---
23.27	1650	2.311	10.07	0.606	- -	166	75	-- ---
18.49	1653	2.062	8.97	0.681	0.00	166	76	28.980

DRAWBAR HORSE POWER TESTS

DRAWBAR HORSE POWER TESTS											
H. P.	Draw bar pull Lbs.	Speed miles per hr.	Crank shaft speed R.P.M.	Slip of drive wheels %	Fuel Consumption			Water used Gal. per hr.	Temp. Deg. F.		Barometer Inches of Mercury
					Gal. per hour	Hp.-hr. per Gal.	Lb. per Hp.-hr.		Cooling med.	Air	
TEST F—100% MAXIMUM LOAD— 3rd GEAR											
28.48	2247	4.75	1599	3.80	Not Recorded			170	69	28.855	
TEST G—OPERATING MAXIMUM LOAD											
26.48	3802	2.61	1598	7.93	Not Recorded			165	67	28.845	
27.52	2922	3.53	1598	5.28	" "			169	69	28.855	
27.52	2166	4.76	1602	3.69	" "			169	69	28.855	
26.73	1581	6.34	1601	2.46	" "			168	69	28.854	
26.14	1308	7.50	1604	1.81	" "			168	70	28.840	
23.45	665	13.22	1600	0.28	" "			165	73	28.845	
*TEST H—TEN HOURS— 3rd GEAR											
22.64	1766	4.81	1600	2.74	2.503	9.05	0.675	0.00	157	52	28.785
TEST J—OPERATING MAXIMUM LOAD - 3rd GEAR											
22.41	1950	4.31	1595	14.42	Not Recorded			163	64	28.550	
TEST K—OPERATING MAXIMUM LOAD - 3rd GEAR											
*Wheels of lightest weight and smallest tires suggested by the manufacturer.											
17.55	1699	3.87	1598	15.81	Not Recorded			161	65	28.550	

TIRES, WHEELS and WEIGHT

		Tests F, G & H		Test J	Test K
Rear Wheel: (each)	Type and Weight	Pressed Steel		Pressed Steel	Pressed Steel
	Liquid Ballast	585 lb		None	None
	Added Cast Iron	1106 lb		None	None
Rear Tires:	No., Size and Ply	2 13-26 6 ply		2 13-26 6 ply	2 11-26 4 ply
	Type of Tread	Farm Tractor		Farm Tractor	Champion Ground Grip
	Make	U. S. Royal		U. S. Royal	Firestone
	Air Pressure	16 lb		14 lb	12 lb
	Front Wheel: (each)	Cast Disc		Cast Disc	Cast Disc
Front Wheel: (each)	Liquid Ballast	None		None	None
	Added Cast Iron	None		None	None
	Front Tires:	2 5.50-16 4 ply		2 5.50-16 4 ply	2 5.50-16 4 ply
Front Tires:	Type of Tread	Multi-Ring		Multi-Ring	Multi-Ring
	Make	B. F. Goodrich		B. F. Goodrich	B. F. Goodrich
	Air Pressure	28 lb		28 lb	28 lb
	Height of Drawbar	14 inches		17 inches	14 inches
Static Weight:	Rear End	5636 lb		2254 lb	2072 lb
	Front End	1602 lb		1602 lb	1598 lb
Total Weight as Tested (With operator)		7418 lb		4036 lb	3850 lb

* Formerly called RATED LOAD, see horsepower summary.

FUEL, OIL and TIME Fuel: Gasoline, octane 74 (octane rating taken from oil company's typical inspection data); weight per gallon 6.102 lb. Oil: SAE 10-10W; to motor 1.411 gal; drained from motor 1.275 gal. Total time motor was operated 45 hours.

SPECIFICATIONS Type standard; Serial No. 269012; Drive enclosed gear. Tread Width: Rear 52 1/2"; Front 47 1/8" or 52 1/4". Advertised speeds, mph: First 2 5/8; Second 3 1/2; Third 4 5/8; Fourth 6; Fifth 7 1/8; Sixth 12 3/8; Reverse 2 3/4 and 4 7/8. Belt Pulley: Diam 12"; Face 7 1/4"; RPM 992; Belt Speed 3116 fpm. Clutch: Make Borg & Beck; Type single plate; Operated by foot pedal. Seat upholstered type with back rest. Brakes: Make own; Location mounted on bull gear pinions; Gear Reduction (brake drum to rear wheel) 4.692:1; Operated by two foot pedals; Locked by latches; Equalization yes, equalizer bar serves as master brake pedal.

ENGINE Make own; Serial No. 721399; Type 6 cylinder vertical; Head I; Mounting crankshaft lengthwise; Lubrication pressure; Bore and Stroke 3 5/16" x 3 3/4"; Rated RPM 1600. Port Diameter Valves: Inlet 1 3/16"; Exhaust 1". Governor: Make own; Type centrifugal, variable speed. Carburetor: Make Marvel-Schebler; Model TSX-363; Size 7/8". Starter Delco-Remy. Generator Delco-Remy. Distributor and Coil Delco-Remy. Battery Delco. Air Cleaner: Make Donaldson; Type oil washed wire screen. Oil Filter: Make Michiana; Type replaceable, waste-packed element. Cooling medium temperature control: Thermostat.

REPAIRS AND ADJUSTMENTS No repairs or adjustments.

REMARKS All test results were determined from observed data and without allowances, additions or deductions. Tests B and F were made with carburetor set for 100% maximum belt horsepower and data from these tests were used in determining the horsepower to be developed in tests D and H, respectively. Tests C, D, E, G, H, J and K were made with an operating setting of the carburetor (selected by the manufacturer) of 96.9% of maximum belt horsepower.

HORSEPOWER SUMMARY

	Draw-bar	Belt
1. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	29.78	35.28
2. Observed maximum horsepower (tests F & B)	28.48	33.56
3. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly ASAE and SAE ratings)	22.34	29.99

We, the undersigned, certify that this is a true and correct report of official tractor test No. 405.

L. F. Larsen
 Engineer in Charge

C. W. Smith
 F. D. Yung
 L. W. Hurlbut
 Board of Tractor
 Test Engineers

