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January 1966

Test 945: David Brown 770 Selectamatic (Diesel)

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 945 – DAVID BROWN 770 SELECTAMATIC DIESEL

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption		Temperature Degrees F					Barometer inches of Mercury
		Gal per hr	Lb per hp-hr	Hp-hr per gal	Cooling medium	Air wet bulb	Air dry bulb		
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours									
32.12	2000	2.041	0.443	15.74	185	64	75	29.027	
Standard Power Take-off Speed (540 rpm)—One Hour									
26.60	1620	1.590	0.416	16.73	186	65	75	28.980	
VARYING POWER AND FUEL CONSUMPTION—TWO HOURS									
28.31	2074	1.736	0.427	16.31	177	65	75	.....
0.00	2151	0.495	.....	.....	172	64	75	.....
14.61	2141	1.060	0.505	13.78	175	64	74	.....
32.36	2002	2.025	0.436	15.98	183	64	74	.....
7.37	2161	0.793	0.749	9.29	173	64	73	.....
21.43	2094	1.361	0.442	15.75	174	64	74	.....
Av 17.35	2104	1.245	0.500	13.94	176	64	74	28.960	

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Fuel Consumption			Temp Degrees F				Barom-eter inches of Mercury
				Slip of drivers %	Gal per hr	Lb per hp-hr	Hp-hr per gal	Cool-ing med	Air wet bulb	Air dry bulb	
VARYING DRAWBAR POWER AND FUEL CONSUMPTION—WITH BALLAST											
Maximum Available Power—Two Hours—8th Gear											
27.88	2136	4.89	1999	5.69	1.966	0.491	14.18	186	62	68	29.035
75% of Pull at Maximum Power—Ten Hours—8th Gear											
22.78	1667	5.12	2078	5.04	1.617	0.494	14.09	178	55	57	28.939
50% of Pull at Maximum Power—Two Hours—8th Gear											
15.37	1076	5.36	2129	3.14	1.203	0.545	12.78	173	56	59	29.020
MAXIMUM POWER WITH BALLAST											
26.09	4014	2.44	2050	14.99	5th Gear			179	61	66	29.050
26.77	3260	3.08	2002	10.06	6th Gear			178	55	58	28.950
27.88	2954	3.54	2000	8.24	7th Gear			179	55	58	28.950
28.37	2170	4.90	2002	5.74	8th Gear			173	55	58	28.950
27.67	1744	5.95	2002	5.03	9th Gear			178	55	58	28.860
28.06	1564	6.73	2000	4.36	10th Gear			177	55	58	28.860
27.87	1259	8.30	1999	3.57	11th Gear			177	55	58	28.860
MAXIMUM POWER WITHOUT BALLAST											
27.88	2214	4.72	2001	8.39	8th Gear			180	66	76	29.020
VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST—8th Gear											
Pounds pull				2170	2208	2217	2176	2172	2090		
Horsepower				28.37	26.07	23.16	19.87	17.00	13.59		
Crankshaft speed, rpm				2002	1810	1603	1399	1200	995		
Miles per hour				4.90	4.43	3.92	3.43	2.94	2.44		
Slip of drivers, %				5.74	5.80	5.91	5.80	5.80	5.58		

TIRES, BALLAST and WEIGHT

		With Ballast	Without Ballast
Rear tires	—No, size, ply & psi	Two 12.4-28; 4; 14	Two 12.4-28; 4; 12
Ballast	—Liquid	425 lb each	None
	Cast iron	420 lb each	None
Front tires	—No, size, ply & psi	Two 6.00-16; 4; 24	Two 6.00-16; 4; 24
Ballast	—Liquid	None	None
	Cast iron	145 lb each	None
Height of drawbar		17½ inches	18 inches
Static weight with operator—Rear		4140 lb	2450 lb
	Front	1620 lb	1330 lb
	Total	5760 lb	3780 lb

Department of Agricultural Engineering

Dates of Test: SEPTEMBER 13 to SEPTEMBER 23, 1966

Manufacturer: DAVID BROWN TRACTORS LTD., MELTHAM, HUDDERSFIELD, YORKSHIRE, ENGLAND

FUEL, OIL and TIME Fuel No 2 diesel Cetane No 57.0 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° 0.8363 Weight per gallon 6.964 lb Oil SAE 20-20W API service classification MS, DG, DM To Motor 1.699 gal Drained from motor 1.591 gal Transmission lubricant SAE 50 Final Drive Lubricant SAE 140 Total time engine was operated 501½ hours.

ENGINE Make David Brown diesel Type 3 cylinder vertical Serial No AD349A2549 Crankshaft mounted lengthwise Rated rpm 2000 Bore and stroke 3.939" x 4.000" Compression ratio 17 to 1 Displacement 146.1 cu in Cranking system 12 volt electric Lubrication pressure Air cleaner oil washed wire wool with centrifugal pre-cleaner Oil filter replaceable paper element Fuel filter primary and secondary filters with replaceable paper elements and sediment bowl Muffler was used Cooling medium temperature control thermostat.

CHASSIS Type standard Serial No 770A584-077S Tread width rear 48" to 76" front 48" to 72" Wheel base 75" 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" Vertical distance above roadway 27" Horizontal distance from center of rear wheel tread 0" to the right/left Hydraulic control system constant running except when pto foot clutch is disengaged Transmission selective gear fixed ratio Advertised speeds mph first 0.90 second 1.49 third 2.00 fourth 2.26 fifth 2.73 sixth 3.30 seventh 3.75 eighth 5.05 ninth 6.09 tenth 6.85 eleventh 8.38 twelfth 15.40 reverse first 14.8 second 3.30 third 3.73 fourth 8.33 Clutch single plate dry disc in combination with PTO clutch operated by single foot pedal Brakes internal expanding shoe operated by hand lever or independently by two foot pedals which may be locked together Steering no power assist Turning radius (on concrete surface with brake applied) right 121" left 121" (on concrete surface without brake) right 129" left 129" Turning space diameter (on concrete surface with brake applied) right 240" left 240" (on concrete surface without brake) right 268" left 268" Belt pulley 1380 rpm at 2000 engine rpm diam 8.5" face 5.187" Belt speed 3100 fpm Power take-off 533 rpm at 1600 engine rpm.

REPAIRS and ADJUSTMENTS It was necessary to replace the fan belt during the maximum drawbar runs.

REMARKS All test results were determined from observed data obtained in accordance with the SAE and ASAE test code.

First, second, third, and fourth gears were not run as it was necessary to limit the pull in fifth gear to avoid excessive wheel slippage. Twelfth gear was not run as it exceeded 15 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 945.

L. F. LARSEN

Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman

J. J. SULEK

D. E. LANE

Board of Tractor Test Engineers

The University of Nebraska Agricultural Experiment Station

E. F. Frolik, Dean; H. H. Kramer, Director, Lincoln, Nebraska