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## Test 1144: David Brown 990 Diesel (Also Case 990 Diesel) 12-Speed

Tractor Museum

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# NEBRASKA TRACTOR TEST 1144 – DAVID BROWN 990 DIESEL ALSO CASE 990 DIESEL 12 SPEED

## POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption		Hp-hr per gal	Temperature Degrees F			Barometer inches of Mercury
		Gal per hr	Lb per hp-hr		Cooling medium	Air wet bulb	Air dry bulb	
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>								
<b>Rated Engine Speed—Two Hours (PTO Speed—1100 rpm)</b>								
53.77	2200	3.469	0.446	15.50	194	63	75	29.003
<b>Standard Power Take-off Speed (1000 rpm)—One Hour</b>								
50.48	2000	3.251	0.446	15.53	198	63	75	29.023
<b>Standard Power Take-off Speed (540 rpm)—One Hour</b>								
46.75	1827	3.055	0.452	15.30	201	62	75	29.035
<b>VARYING POWER AND FUEL CONSUMPTION—Two Hours</b>								
47.76	2300	3.053	0.442	15.64	184	63	80	.....
0.00	2335	0.867	.....	.....	155	63	78	.....
24.04	2315	1.882	0.542	12.77	175	62	79	.....
53.33	2199	3.478	0.451	15.33	199	62	80	.....
12.14	2333	1.353	0.771	8.97	165	62	80	.....
36.04	2313	2.463	0.473	14.63	179	62	81	.....
<b>Av</b>	<b>28.89</b>	<b>2.299</b>	<b>2.183</b>	<b>13.23</b>	<b>176</b>	<b>62</b>	<b>80</b>	<b>29.030</b>

## DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption		Hp-hr per gal	Temp Degrees F			Barometer inches of Mercury
					Gal per hr	Lb per hp-hr		Cooling med	Air wet bulb	Air dry bulb	
<b>VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST</b>											
<b>Maximum Available Power—Two Hours—8th Gear (H-1)</b>											
45.68	3088	5.55	2201	4.64	3.415	0.517	13.37	185	66	70	28.780
<b>75% of Pull at Maximum Power—Ten Hours—8th Gear (H-1)</b>											
37.15	2377	5.86	2297	3.47	2.877	0.536	12.91	178	63	66	28.780
<b>50% of Pull at Maximum Power—Two Hours—8th Gear (H-1)</b>											
25.58	1605	5.98	2320	2.60	2.295	0.621	11.14	175	66	70	28.560
<b>50% of Pull at Reduced Engine Speed—Two Hours—10th Gear (L-3)</b>											
25.35	1593	5.97	1612	2.46	1.771	0.483	14.31	177	66	69	28.550
<b>MAXIMUM POWER WITH BALLAST</b>											
39.73	7335	2.03	2274	14.28	3rd Gear (HS-1)		179	57	60	29.100	
43.41	6304	2.58	2201	11.53	4th Gear (L-1)		180	59	61	29.100	
45.87	3775	4.56	2200	5.79	7th Gear (L-2)		186	67	72	28.800	
46.34	3136	5.54	2201	4.71	8th Gear (H-1)		186	67	72	28.800	
43.84	2613	6.29	2202	4.06	9th Gear (HS-3)		185	67	72	28.800	
43.69	1747	9.38	2201	2.73	11th Gear (H-2)		184	67	72	28.800	

## VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST 8th Gear (H-1)

Pounds Pull	3136	3269	3366	3398	3473	3134
Horsepower	46.34	43.26	39.50	35.07	30.64	23.12
Crankshaft Speed rpm	2201	1976	1755	1545	1322	1099
Miles Per Hour	5.54	4.96	4.40	3.87	3.31	2.77
Slip of Drivers %	4.71	5.09	5.22	5.22	5.35	4.83

## TRACTOR SOUND LEVEL (Without Cab)

	dB(A)
Maximum Available Power 2 Hours	97.0
75% of Pull at Max. Power 10 Hours	96.0
50% of Pull at Max. Power 2 Hours	95.0
50% of Pull at Reduced Engine Speed 2 Hours	93.0
Bystander 12th Gear (H-3)	88.5

## TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b>	Two 16.9-30;6;18	Two 16.9-30;6;18
Ballast	958 lb each	None
Cast Iron	1030 lb each	None
<b>Front Tires</b>	Two 7.50-16;6;32	Two 7.50-16;6;32
Ballast	None	None
Cast Iron	358 lb each	None
<b>Height of drawbar</b>	18½ inches	19 inches
<b>Static weight with operator—rear</b>	6925 lb	2950 lb
front	2425 lb	1710 lb
total	9350 lb	4660 lb

## Department of Agricultural Engineering

Dates of Test: September 17 to October 1, 1973

Manufacturer: DAVID BROWN TRACTORS LTD., Meltham, Huddersfield, Yorkshire, England

**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° 0.8308 **Weight per gallon** 6.917 lb **Oil** SAE 20-20W **API service classification** (Case HDM Oil) **To motor** 1.703 gal **Drained from motor** 1.501 gal **Transmission and final drive lubricant** SAE 20W-40 **Total time engine was operated** 62½ hours.

**ENGINE** Make David Brown Dsl Type 4 cylinder vertical **Serial No** 449001/34248 **Crankshaft Mounted** lengthwise **Rated rpm** 2200 **Bore and stroke** 3.939" x 4.00" **Compression ratio** 17 to 1 **Displacement** 194.9 cu in **Cranking system** 12 volt electric **Lubrication pressure** **Air cleaner** oil washed wire mesh with pleated paper precleaner **Oil filter** full flow with replaceable pleated paper element **Fuel filter** primary and secondary with replaceable pleated paper elements **Muffler** vertical **Cooling medium** temperature control thermostat.

**CHASSIS** Type Standard **Serial No** 990/1/856190 **Tread width** rear 56" to 76" front 52" to 72" **Wheel base** 79" **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 27.5" Vertical distance above roadway 32" 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 1.1 second 1.8 third 2.2 fourth 2.8 fifth 3.2 sixth 3.7 seventh 4.7 eighth 5.6 ninth 6.3 tenth 8.1 eleventh 9.3 twelfth 16.1 reverse 1.8, 3.6, 4.7 and 9.3 **Clutch** single plate dry disc in combination with PTO clutch operated by foot pedal **Brakes** internal expanding shoe operated by hand lever or independently by two foot pedals **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 123" left 123" (on concrete surface without brake) right 138" left 138" **Turning space diameter** (on concrete surface with brake applied) right 254" left 254" (on concrete surface without brake) right 280" left 280" **Power take-off** 540 rpm at 1827 engine rpm or 1000 at 2000 engine rpm.

**REPAIRS AND ADJUSTMENTS:** New injectors were installed during preliminary PTO run.

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

First and second gears were not run as it was necessary to limit the pull in third gear because of the tire tangential pull limitation.

Fifth, sixth, tenth and twelfth gears were not run as test procedure requires only six travel speeds.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1144.

L. F. LARSEN

Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

D. E. LANE

Board of Tractor Test Engineers

The University of Nebraska Agricultural Experiment Station  
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