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January 1971

## Test 1088: Case 770 Manual Diesel 8-Speed (Chassis SN 8675001 and up)

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1088 – CASE 770 MANUAL DIESEL

## 8 SPEED

### (CHASSIS SN 8675001 AND UP)

#### POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Cooling medium	Temperature Degrees F Air wet bulb	Air dry bulb	Barometer inches of Mercury
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>								
<b>Rated Engine Speed—Two Hours (PTO Speed—566 rpm)</b>								
63.90	2000	4.266	0.459	14.98	189	61	75	28.690
<b>Standard Power Take-off Speed (540 rpm)—One Hour</b>								
62.85	1906	4.145	0.454	15.16	190	60	76	28.685
<b>VARYING POWER AND FUEL CONSUMPTION—Two Hours</b>								
56.05	2064	3.724	0.457	15.05	187	60	76	.....
0.00	2191	1.247	.....	.....	176	60	75	.....
28.69	2116	2.390	0.573	12.00	183	59	75	.....
63.44	2000	4.291	0.465	14.78	190	59	76	.....
14.52	2140	1.823	0.864	7.97	176	58	74	.....
42.69	2095	3.052	0.492	13.99	185	59	75	.....
Av 34.23	2101	2.754	0.554	12.43	183	59	75	28.700

#### 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 Cooling med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
<b>VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST</b>											
<b>Maximum Available Power—Two Hours—4th Gear (4 Lo)</b>											
56.85	4200	5.08	1999	4.64	4.305	0.521	13.20	192	47	54	28.825
<b>75% of Pull at Maximum Power—Ten Hours—4th Gear (4 Lo)</b>											
45.43	3194	5.33	2074	3.38	3.586	0.543	12.67	179	37	46	28.813
<b>50% of Pull at Maximum Power—Two Hours—4th Gear (4 Lo)</b>											
30.93	2130	5.44	2095	2.33	2.906	0.646	10.64	173	35	40	28.950
<b>50% of Pull at Reduced Engine Speed—Two Hours—5th Gear (1 Hi)</b>											
31.09	2142	5.44	1738	2.41	2.579	0.570	12.05	175	35	43	28.950
<b>MAXIMUM POWER WITH BALLAST</b>											
43.06	8853	1.82	2071	14.79	1st Gear (1 Lo)		181	48	58		28.820
54.17	7805	2.60	1999	10.65	2nd Gear (2 Lo)		186	49	58		28.820
56.39	5520	3.83	1997	6.30	3rd Gear (3 Lo)		185	48	58		28.800
57.12	4224	5.07	1999	4.75	4th Gear (4 Lo)		187	48	58		28.810
55.48	3367	6.18	2001	3.81	5th Gear (1 Hi)		189	48	58		28.800
53.40	2273	8.81	2000	2.41	6th Gear (2 Hi)		188	48	58		28.810
<b>MAXIMUM PULL WITHOUT BALLAST</b>											
51.11	7509	2.55	2046	14.81	2nd Gear (2 Lo)		180	32	35		28.960
<b>VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST 4th Gear (4 Lo)</b>											
Pounds Pull		4224	4606		4696		4779	4838		4826	
Horsepower		57.12	55.65		50.49		44.92	39.03		32.18	
Crankshaft Speed rpm		1999	1797		1599		1401	1202		994	
Miles Per Hour		5.07	4.53		4.03		3.52	3.03		2.50	
Slip of Drivers %		4.75	5.18		5.32		5.46	5.60		5.60	

#### TRACTOR SOUND LEVEL WITH CAB dB(A)

Maximum Available Power 2 Hours	86.5
75% of Pull at Max. Power 10 Hours	88.5
50% of Pull at Max. Power 2 Hours	88.5
50% of Pull at Reduced Engine Speed 2 Hours	87.5
Bystander in 8th gear (4 Hi)	87.0

#### TIRES BALLAST and WEIGHT

		With Ballast	Without Ballast
Rear tires	—No, size, ply & psi	Two 18.4-34; 8; 16	Two 18.4-34; 8; 16
Ballast	—Liquid	1075 lb each	None
	Cast iron	None	None
Front tires	—No, size, ply & psi	Two 10.00-16; 6; 28	Two 10.00-16; 6; 28
Ballast	—Liquid	None	None
	Cast iron	40 lb each	None
Height of drawbar		18 inches	18½ inches
Static weight with operator—rear		9390 lb	7240 lb
front		2910 lb	2830 lb
total		12300 lb	10070 lb

Department of Agricultural Engineering

Dates of Test: November 13 to November 23, 1971

Manufacturer: J. I. CASE COMPANY, Racine, Wisconsin

**FUEL, OIL and TIME** Fuel No. 2 Diesel Cetane No. 53.5 (rating taken from oil company's typical inspection data) Specific gravity converted to 60°/60° 0.8263 Weight per gallon 6.880 lb. Oil SAE 30 API service classification MS DG DM DS To motor 2.410 gal Drained from motor 1.969 gal Transmission and final drive lubricant Case TCH oil Total time engine was operated 51 hours.

**ENGINE Make** Case Diesel Type 4 cylinder vertical Serial No. 2327474 Crankshaft Mounted lengthwise Rated rpm 2000 Bore and stroke 4½" x 5" Compression ratio 16.5 to 1 Displacement 267 cu. in. Cranking system 12 volt electric Lubrication pressure Air cleaner two paper elements with centrifugal pre-cleaner Oil filter full flow replaceable cartridge Fuel filter replaceable primary and secondary filter cartridges Muffler was used Cooling medium temperature control thermostat

**CHASSIS Type** standard Serial No 8683414 Tread width rear 60" to 88" front 62" to 90" Wheel base 101" Center of gravity (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 28.9" Vertical distance above roadway 41.5" 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 2.0 second 2.9 third 4.1 fourth 5.0 fifth 6.3 sixth 8.9 seventh 12.6 eighth 15.9 reverse 2.6 and 7.9 Clutch single plate dry disc operated by a foot pedal Brakes dry double disc hydraulically power actuated by two foot pedals that can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 149" left 149" (on concrete surface without brake) right 173" left 173" Turning space diameter (on concrete surface with brake applied) right 309" left 309" (on concrete surface without brake) right 357" left 357" Belt pulley. 1108 rpm at 1900 engine rpm diam 10½" face 7¼" Belt speed 3045 fpm Power take-off 540 rpm at 1906 engine rpm and 1000 rpm at 1870 engine rpm.

**REPAIRS and ADJUSTMENTS:** No repairs or adjustment.

**REMARKS:** All test results were determined from observed data obtained in accordance with SAE and ASAE test code or Nebraska test procedure. Seventh and eighth gears were not run as test procedure permits a maximum of six travel speeds.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1088.

L. F. LARSEN

Engineer-in-charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

D. E. LANE

Board of Tractor Test Engineers

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