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January 1971

Test 1089: Case 770 Power Shift Diesel 12-Speed (Chassis S/N 8675001 and up)

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NEBRASKA TRACTOR TEST 1089 — CASE 770 POWER SHIFT DIESEL 12 SPEED

CHASSIS S/N 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	Temperature Degrees F			Barometer inches of Mercury	
					Cooling medium	Air wet bulb	Air dry bulb		
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—566 rpm)									
64.56	2000	4.449	0.474	14.51	191	55	75	28.960	
Standard Power Take-off Speed (540 rpm)—One Hour									
61.93	1906	4.208	0.467	14.72	190	55	75	28.975	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
56.62	2064	3.863	0.469	14.66	183	55	75	.....
0.00	2200	1.317	.....	.....	176	55	75	.....
29.30	2135	2.494	0.586	11.74	185	55	75	.....
64.95	2000	4.483	0.475	14.49	190	55	76	.....
14.86	2161	1.858	0.860	8.00	178	54	74	.....
43.38	2109	3.096	0.491	14.01	181	55	75	.....
Av	34.85	2112	2.852	0.563	12.22	183	55	75	29.013

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		Cool- ing med	Air wet bulb	Air dry bulb	

VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST

Maximum Available Power—Two Hours—6th Gear (3 Lo)											
55.95	4895	4.29	1997	5.74	4.433	0.545	12.62	185	50	60	28.740
75% of Pull at Maximum Power—Ten Hours—6th Gear (3 Lo)											
45.96	3794	4.54	2084	4.38	3.692	0.553	12.45	176	30	33	29.008
50% of Pull at Maximum Power—Two Hours—6th Gear (3 Lo)											
31.35	2516	4.67	2111	2.86	2.980	0.654	10.52	175	40	47	28.655
50% of Pull at Reduced Engine Speed—Two Hours—8th Gear (3 Int.)											
31.37	2511	4.69	1593	3.23	2.471	0.542	12.70	175	35	37	28.985

MAXIMUM POWER WITH BALLAST

51.07	8927	2.15	2053	14.84	2nd Gear (1 Int.)		185	44	52	28.690
57.51	5735	3.76	1996	6.85	5th Gear (2 Int.)		185	48	58	28.720
57.57	5046	4.28	1999	6.02	6th Gear (3 Lo)		185	49	59	28.720
55.22	4311	4.80	2000	4.90	7th Gear (2 Hi)		185	49	60	28.720
56.59	3641	5.83	2001	4.04	8th Gear (3 Int.)		188	50	60	28.730
52.61	2010	9.81	1996	2.56	10th Gear (4 Lo)		188	50	61	28.730

MAXIMUM PULL WITHOUT BALLAST

54.24	7560	2.69	2050	14.82	4th Gear (1 Hi)		175	36	40	29.080
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VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST 6th Gear (3 Lo)

Pounds Pull	5046	5460	5627	5796	5848	5765
Horsepower	57.57	55.55	51.05	46.14	39.84	32.21
Crankshaft Speed rpm	1999	1789	1600	1406	1205	987
Miles Per Hour	4.28	3.82	3.40	2.99	2.55	2.10
Slip of Drivers %	6.02	6.30	6.71	6.85	6.99	6.85

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
Maximum Available Power 2 Hours	86.5
75% of Pull at Max. Power 10 Hours	88.0
50% of Pull at Max. Power 2 Hours	87.5
50% of Pull at Reduced Engine Speed 2 Hours	85.0
Bystander 12th Gear (4 Hi)	85.5

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	1070 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	38 lb each	None
Height of drawbar		18 inches	18½ inches
Static weight with operator—rear		9440 lb	7300 lb
	—front	2935 lb	2860 lb
	—total	12375 lb	10160 lb

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

Department of Agricultural Engineering

Dates of Test: November 15 to 24, 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 1.923 gal Drained from motor 1.850 gal Transmission and final drive lubricant Case TCH oil Total time engine was operated 47½ hours.

ENGINE: Make Case Diesel Type 4 cylinder vertical Serial No 2327415 Crankshaft mounted lengthwise Rated rpm 2000 Bore and stroke 4¼" × 5" Compression ratio 16.5 to 1 Displacement 267 cu in Cranking system 12 volt electric Lubrication pressure Air cleaner dry type with replaceable paper element and centrifugal pre-cleaner Oil filter full flow replaceable cartridge Fuel filter two paper cartridges Muffler was used Cooling medium temperature control thermostat.

CHASSIS: Type standard Serial No. 8682348 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 29.1" Vertical distance above roadway 41.2" Horizontal distance from center of rear wheel tread 0" to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial (3) range operator controlled power shifting Advertised speeds mph first 1.9 second 2.6 third 3.2 fourth 3.3 fifth 4.2 sixth 4.8 seventh 5.3 eighth 6.5 ninth 8.0 tenth 10.7 eleventh 14.4 twelfth 17.9 reverse 3.3, 5.3, 8.0 and 17.9 Clutch multiple disc wet clutches within transmission actuated hydraulically by 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" Power take-off 540 rpm at 1906 engine rpm and 1000 rpm at 1870 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. Six gears were chosen between 15% slip and 15 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1089.

L. F. LARSEN

Engineer-In-Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

D. E. LANE

Board of Tractor Test Engineers