University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

1987

Nebraska Summary: S046 Massey Ferguson 3650

Nebraska Tractor Test Lab
University of Nebraska-Lincoln, tractortestlab@unl.edu

Follow this and additional works at: https://digitalcommons.unl.edu/tractormuseumlit

 Part of the Energy Systems Commons, History of Science, Technology, and Medicine Commons, Other Mechanical Engineering Commons, Physical Sciences and Mathematics Commons, Science and Mathematics Education Commons, and the United States History Commons

Nebraska Tractor Test Lab, "Nebraska Summary: S046 Massey Ferguson 3650" (1987). *Nebraska Tractor Tests*. 2687.
https://digitalcommons.unl.edu/tractormuseumlit/2687

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

SUMMARY OF OECD TEST 1092—NEBRASKA SUMMARY 046
MASSEY FERGUSON 3650 DIESEL (4WD)
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Fuel Consumption Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1149 rpm)					
131.3 *(97.9)*	2401	8.23 *(31.15)*	0.437 *(0.266)*	15.94 *(3.14)*	
Standard Power Take-off Speed (1001 rpm)					
121.5 *(90.6)*	2092	7.33 *(27.76)*	0.421 *(0.256)*	16.60 *(3.27)*	Air temperature
VARYING POWER AND FUEL CONSUMPTION					73°F *(23°C)*
131.3 *(97.9)*	2401	8.23 *(31.15)*	0.437 *(0.266)*	15.94 *(3.14)*	
113.5 *(84.6)*	2427	7.41 *(28.04)*	0.455 *(0.277)*	15.33 *(3.02)*	Relative humidity
86.4 *(64.4)*	2456	6.08 *(23.00)*	0.492 *(0.299)*	14.21 *(2.80)*	52%
57.9 *(43.2)*	2474	4.76 *(18.02)*	0.574 *(0.349)*	12.18 *(2.40)*	Barometer
28.3 *(21.1)*	2481	3.42 *(12.94)*	0.845 *(0.514)*	8.27 *(1.63)*	29.9″ Hg *(101.3 kPa)*
....	2510	2.18 *(8.24)*	....	....	

Maximum Torque 331.3 lb. ft *(449.2 Nm)* at 1470 RPM
Maximum Torque Rise 15.3%

DRAWBAR PERFORMANCE
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—11th (2R) Gear									
115.2 *(85.9)*	5890 *(26.2)*	7.33 *(11.80)*	2372	3	0.500 *(0.304)*	13.96 *(2.75)*	187 *(86)*	77 *(25)*	30.0 *(101.5)*
75% of Pull at Maximum Power—11th (2R) Gear									
91.6 *(68.3)*	4475 *(19.9)*	7.67 *(12.35)*	2443	2	0.528 *(0.321)*	13.20 *(2.60)*	187 *(86)*	77 *(25)*	30.0 *(101.5)*
50% of Pull at Maximum Power—11th (2R) Gear									
62.8 *(46.8)*	3000 *(13.3)*	7.85 *(12.64)*	2466	1	0.615 *(0.374)*	11.32 *(2.23)*	183 *(84)*	77 *(25)*	30.0 *(101.5)*
75% of Pull at Reduced Engine Speed—12th (2R + MP) Gear									
89.7 *(66.9)*	4385 *(19.5)*	7.67 *(12.35)*	1831	1	0.487 *(0.296)*	14.37 *(2.83)*	183 *(84)*	77 *(25)*	30.0 *(101.5)*
50% of Pull at Reduced Engine Speed—12th (2R + MP) Gear									
62.6 *(46.7)*	2985 *(13.3)*	7.86 *(12.65)*	1848	1	0.529 *(0.322)*	13.15 *(2.59)*	180 *(82)*	77 *(25)*	30.0 *(101.5)*

Location of Test: Cemagref Division TSAN BP 121-92164 Antony, France

Dates of Test: August, 1987

Manufacturer: MASSEY FERGUSON S.A. Avenue Blaise Pascal 60026, Beauvais, France

FUEL AND OIL: Fuel No. 2 Diesel **Cetane No.** NA **Specific gravity converted to 60°/60°F** *(15°/15°C)* 0.836 **Fuel weight** 6.96 lbs/gal *(0.834 kg/l)* **Oil SAE** 10W30 **Oil consumption for 10 hours** NA **Transmission and hydraulic lubricant** BP Agrotrans **Front Axle lubricant** BP Agrotrans

ENGINE: Make Perkins Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** U 758 572 N **Crankshaft** lengthwise **Rated engine speed** 2400 **Bore and stroke** 3.878″ × 5.0″ *(98.5 mm × 127.0 mm)* **Compression ratio** 15.5 to 1 **Displacement** 354 cu in *(5806 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: Type front wheel assist **Serial No.** U 204 201 **Tread width** rear 62.5″ *(1588 mm)* to 85.8″ *(2180 mm)* front 66.4″ *(1686 mm)* to 85.5″ *(2171 mm)* **Wheel base** 108.8″ *(2763 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Nominal travel speeds mph *(km/h)*** first 1.36 *(2.19)* second 1.82 *(2.92)* third 2.14 *(3.45)* fourth 2.86 *(4.60)* fifth 2.92 *(4.70)* sixth 3.90 *(6.27)* seventh 4.06 *(6.54)* eighth 4.72 *(7.59)* ninth 5.41 *(8.71)* tenth 6.29 *(10.12)* eleventh 7.42 *(11.93)* twelfth 9.89 *(15.91)* thirteenth 10.12 *(16.29)* fourteenth 13.50 *(21.72)* fifteenth 14.06 *(22.63)* sixteenth 18.75 *(30.17)* reverse 1.49 *(2.40)*, 1.99 *(3.20)*, 2.35 *(3.78)*, 3.13 *(5.03)*, 3.21 *(5.16)*, 4.27 *(6.87)*, 4.45 *(7.17)*, 5.17 *(8.32)*, 5.93 *(9.54)*, 6.89 *(11.08)*, 8.13 *(13.09)*, 10.83 *(17.42)*, 11.10 *(17.86)*, 14.78 *(23.78)*, 15.42 *(24.81)*, 20.53 *(33.03)* **Clutch** single dry disc operated by foot pedal **Brakes** single wet disc hydraulically actuated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1992 engine rpm and 1000 rpm at 2090 engine rpm **Unladen tractor mass** 12765 lb *(5790 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

MAXIMUM POWER IN SELECTED GEARS

				7th (4T) Gear					
100.8	10655	3.55	2411	15	0.580	12.03	187	77	30.0
(75.2)	*(47.4)*	*(5.71)*			*(0.353)*	*(2.37)*	*(86)*	*(25)*	*(101.5)*
				8th (1R) Gear					
110.1	9330	4.42	2403	9	0.528	13.25	183	77	30.0
(82.1)	*(41.5)*	*(7.12)*			*(0.321)*	*(2.61)*	*(84)*	*(25)*	*(101.5)*
				9th (4T + MP) Gear					
110.5	7935	5.22	2382	7	0.524	13.30	183	77	30.0
(82.4)	*(35.3)*	*(8.40)*			*(0.319)*	*(2.62)*	*(84)*	*(25)*	*(101.5)*
				10th (1R + MP) Gear					
112.8	6855	6.17	2384	5	0.513	13.60	187	77	30.0
(84.1)	*(30.5)*	*(9.93)*			*(0.312)*	*(2.68)*	*(86)*	*(25)*	*(101.5)*
				11th (2R) Gear					
115.2	5890	7.33	2372	3	0.500	13.96	187	77	30.0
(85.9)	*(26.2)*	*(11.80)*			*(0.304)*	*(2.75)*	*(86)*	*(25)*	*(101.5)*
				12th (2R + MP) Gear					
111.6	4270	9.79	2347	2	0.515	13.55	187	77	30.0
(83.2)	*(19.0)*	*(15.76)*			*(0.313)*	*(2.67)*	*(86)*	*(25)*	*(101.5)*

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum sound level in 9th (4T + MP) gear	79.0
Bystander in 16th (4R + MP) gear	86.0

TIRES AND WEIGHT

		Tested Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 20.8-38; 8; 18 *(130)*
Front Tires	—No., size, ply & psi *(kPa)*	Two 14.9-28; 8; 23 *(160)*
Height of Drawbar		21 in *(530 mm)*
Static Weight	—Rear	7970 lb *(3615 kg)*
	—Front	4795 lb *(2175 kg)*
	—Total	12765 lb *(5790 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. The performance figures on this summary are taken from a test conducted under the OECD restricted standard test code procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **1092,** Nebraska Summary 046, August 14, 1992.

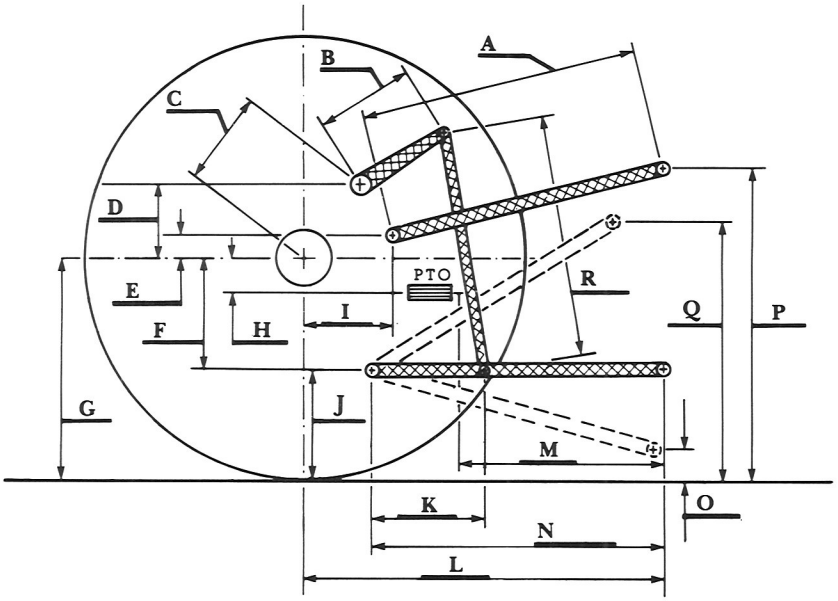
LOUIS I. LEVITICUS
Engineer-in-Charge

L. L. BASHFORD
R. D. GRISSO
K. VON BARGEN
Board of Tractor Test Engineers

THREE POINT HITCH PERFORMANCE (OECD STATIC TEST)

CATEGORY: II
Quick Attach: No

Maximum Force Exerted Through Whole Range:	12320 lbs	*(54.8 kN)*
i) Opening pressure of relief valve:	NA	
Sustained pressure of the open relief valve:	2685 psi	*(185 bar)*
ii) Pump delivery rate at minimum pressure:	15.4 GPM	*(58.3 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	13.6 GPM	*(51.3 l/min)*
Delivery pressure:	2305 psi	*(159 bar)*
Power:	18.35 Hp	*(13.68 kW)*



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	28.7	*730*
B	14.3	*362*
C	18.5	*470*
D	17.0	*432*
E	7.0	*179*
F	11.8	*300*
G	33.7	*855*
H	3.0	*76*
I	16.9	*428*
J	21.9	*555*
K	20.2	*514*
L	47.2	*1200*
M	27.6	*702*
N	38.4	*975*
O	10.3	*261*
P	41.9	*1065*
Q	36.7	*931*
R	31.4	*797*

Agricultural Research Division
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Darrell Nelson, Dean and Director