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

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

2015

Nebraska Summary: S990 Massey Ferguson 8730

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: S990 Massey Ferguson 8730" (2015). *Nebraska Tractor Tests*. 3306.
https://digitalcommons.unl.edu/tractormuseumlit/3306

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 2907–NEBRASKA SUMMARY 990
MASSEY FERGUSON 8730 DIESEL
DYNA VT TRANSMISSION

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Diesel Consumption Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	D.E.F. Consumption Hp.hr/gal *(kW.h/l)*	D.E.F. Consumption Gal/hr *(l/h)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1064 rpm)						
233.5 *(174.1)*	2099	13.38 *(50.64)*	0.399 *(0.243)*	17.46 *(3.44)*	0.87 *(3.31)*	
Standard Power Take-off Speed (999 rpm)						
258.7 *(192.9)*	1970	14.28 *(54.07)*	0.385 *(0.234)*	18.12 *(3.57)*	0.91 *(3.44)*	
Maximum Power (1 hour)						
261.5 *(195.0)*	1948	14.30 *(54.11)*	0.381 *(0.232)*	18.27 *(3.60)*	0.77 *(2.91)*	
VARYING POWER AND FUEL CONSUMPTION						
233.5 *(174.1)*	2099	13.38 *(50.64)*	0.399 *(0.243)*	17.46 *(3.44)*	0.87 *(3.31)*	Air temperature
200.6 *(149.6)*	2116	11.94 *(45.19)*	0.415 *(0.253)*	16.80 *(3.31)*	0.56 *(2.11)*	73°F *(23°C)*
150.8 *(112.4)*	2129	9.62 *(36.42)*	0.445 *(0.271)*	15.68 *(3.09)*	0.40 *(1.52)*	Relative humidity
100.8 *(75.2)*	2134	7.39 *(27.98)*	0.511 *(0.311)*	13.65 *(2.69)*	0.32 *(1.22)*	44%
50.6 *(37.8)*	2143	4.90 *(18.56)*	0.676 *(0.411)*	10.32 *(2.03)*	0.13 *(0.48)*	Barometer
---- ----	2156	2.95 *(11.18)*	---- ----	---- ----	---- ----	30.1" Hg *(102.0 kPa)*

Maximum torque - 891 lb.-ft. *(1208 Nm)* at 1284 rpm
Maximum torque rise - 52.5%
Torque rise at 1700 engine rpm - 37%
Power increase at 1948 engine rpm - 12.0%

DRAWBAR PERFORMANCE
(Unballasted - Front Drive Engaged)
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—Turtle 8									
197.9 *(147.5)*	15265 *(67.9)*	4.86 *(7.82)*	2100	5.8	0.473 *(0.288)*	14.62 *(2.88)*	187 *(86)*	45 *(7)*	30.3 *(102.6)*
75% of Pull at Maximum Power—Turtle 8									
153.1 *(114.2)*	11445 *(50.9)*	5.02 *(8.08)*	2120	5.0	0.546 *(0.332)*	12.66 *(2.50)*	190 *(88)*	45 *(7)*	30.3 *(102.6)*
50% of Pull at Maximum Power—Turtle 8									
103.4 *(77.1)*	7645 *(34.0)*	5.07 *(8.16)*	2132	3.2	0.587 *(0.357)*	11.78 *(2.32)*	189 *(87)*	45 *(7)*	30.3 *(102.6)*
75% of Pull at Reduced Engine Speed—Turtle 11									
153.5 *(114.5)*	11400 *(50.7)*	5.05 *(8.13)*	1649	4.8	0.454 *(0.276)*	15.23 *(3.00)*	189 *(87)*	45 *(7)*	30.3 *(102.6)*
50% of Pull at Reduced Engine Speed—Turtle 11									
103.8 *(77.4)*	7665 *(34.1)*	5.08 *(8.17)*	1651	2.8	0.496 *(0.302)*	13.91 *(2.74)*	187 *(86)*	45 *(7)*	30.3 *(102.6)*

Location of tests: IRSTEA, Centre d'Antony, 1 rue Pierre-Gilles de Gennes CS 10030 Antony, 92163, Cedex, France

Dates of tests: January to April, 2015.

Manufacturer: AGCO S.A.S, 41 Avenue Blaise Pascal, 60000 Beauvais, France

CONSUMABLE FLUIDS: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.837 **Fuel weight** 6.98 lbs/gal *(0.836 kg/l)* **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.08 lbs/gal *(1.091 kg/l)* **Oil SAE** 15W40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** Terrac Trantan 9 10W/40 **Front axle lubricant** SAE 85W90 API GL4

ENGINE: Make AGCO Power Diesel **Type** six cylinder vertical with two turbochargers, air to air intercooler and D.E.F(diesel exhaust fluid) technology **Serial No.** 84AWF 1019 T06951 **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.370" x 5.709" *(111.0 mm x 145.0 mm)* **Compression ratio** 16.7 to 1 **Displacement** 513 cu in *(8419 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: Type front wheel assist **Serial No.** D035901 **Tread width** rear 76.0" *(1930 mm)* to 89.1" *(2262 mm)* front 61.5" *(1560 mm)* to 89.4" *(2268 mm)* **Wheelbase** 121.8" *(3093 mm)* **Hydraulic control system** direct engine drive **Transmission** CVT. A combination of mechanical and hydrostatic sections allow an infinite speed adjustment within the ranges noted. The transmission has two mechanical ranges. **Nominal travel speeds mph *(km/h)*** forward: Low range 0-20 *(0-32)*, high range 0-25 *(0-40)* reverse: Low range 0-12 *(0-20)*, high range 0-18 *(0-30)* **Clutch** a foot pedal controls the hydrostatic oil flow **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 1000 rpm at 1970 engine rpm **Unladen tractor mass** 24670 lb *(11190 kg)*

DRAWBAR PERFORMANCE

(Unballasted - Front Drive Engaged)
MAXIMUM POWER AT SELECTED SPEEDS

Power Hp *(kW)*	Drawbar pull lbs *(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)*
					Turtle 3				
93.6 *(69.8)*	22595 *(100.5)*	1.55 *(2.50)*	2131	14.8	0.649 *(0.395)*	10.63 *(2.09)*	169 *(76)*	43 *(6)*	30.3 *(102.6)*
					Turtle 5				
160.3 *(119.5)*	22255 *(99.0)*	2.70 *(4.34)*	2121	12.4	0.538 *(0.327)*	12.84 *(2.53)*	185 *(85)*	43 *(6)*	30.3 *(102.6)*
					Turtle 6.5				
204.8 *(152.7)*	20955 *(93.2)*	3.67 *(5.90)*	2010	9.4	0.488 *(0.297)*	14.16 *(2.79)*	189 *(87)*	43 *(6)*	30.3 *(102.6)*
					Turtle 8				
210.4 *(156.9)*	16815 *(74.8)*	4.69 *(7.55)*	2033	8.0	0.483 *(0.294)*	14.31 *(2.82)*	191 *(88)*	45 *(7)*	30.3 *(102.6)*
					Turtle 11				
210.5 *(157.0)*	12565 *(55.9)*	6.28 *(10.11)*	1954	3.1	0.483 *(0.294)*	14.31 *(2.82)*	192 *(89)*	45 *(7)*	30.3 *(102.6)*
					Turtle 14				
217.2 *(162.0)*	9485 *(42.2)*	8.59 *(13.82)*	1964	2.5	0.459 *(0.279)*	15.04 *(2.96)*	198 *(92)*	45 *(7)*	30.3 *(102.6)*
					*Turtle 16				
216.3 *(161.3)*	8610 *(38.3)*	9.42 *(15.16)*	1943	2.3	0.502 *(0.305)*	13.77 *(2.71)*	201 *(94)*	45 *(7)*	30.3 *(102.6)*
					*Turtle 18				
216.7 *(161.6)*	7285 *(32.4)*	11.16 *(17.96)*	1942	2.1	0.524 *(0.318)*	13.20 *(2.60)*	198 *(92)*	45 *(7)*	30.3 *(102.6)*
					Rabbit 8.5				
206.1 *(153.7)*	16300 *(72.5)*	4.74 *(7.63)*	1926	5.6	0.479 *(0.292)*	14.42 *(2.84)*	189 *(87)*	45 *(7)*	30.3 *(102.6)*
					Rabbit 11				
210.7 *(157.1)*	13085 *(58.2)*	6.04 *(9.72)*	1960	5.0	0.469 *(0.286)*	14.72 *(2.90)*	194 *(90)*	45 *(7)*	30.3 *(102.6)*
					Rabbit 14				
215.6 *(160.8)*	9330 *(41.5)*	8.67 *(13.95)*	1956	2.6	0.469 *(0.285)*	14.72 *(2.90)*	196 *(91)*	45 *(7)*	30.3 *(102.6)*
					*Rabbit 16				
214.6 *(160.0)*	8115 *(36.1)*	9.92 *(15.96)*	1935	2.4	0.518 *(0.315)*	13.35 *(2.63)*	198 *(92)*	45 *(7)*	30.3 *(102.6)*
					*Rabbit 18				
213.5 *(159.2)*	7170 *(31.9)*	11.17 *(17.97)*	1949	2.1	0.518 *(0.315)*	13.35 *(2.63)*	199 *(93)*	46 *(8)*	30.3 *(102.6)*
					*Rabbit 21				
213.8 *(159.4)*	6305 *(28.0)*	12.72 *(20.47)*	1948	1.7	0.516 *(0.314)*	13.40 *(2.64)*	203 *(95)*	46 *(8)*	30.3 *(102.6)*

*Boosted mode

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in Turtle - 4.9 mph *(7.9 km/h)* - no load	71.0
Bystander	---

TIRES AND WEIGHT	Tested Without Ballast
Rear Tires - No., size, ply & psi*(kPa)*	Two 710/75R42;***;12*(80)*
Front Tires -No., size, ply & psi*(kPa)*	Two 600/65R34;**;19*(130)*
Height of Drawbar	21.7 in *(550 mm)*
Static Weight with operator - Rear	13615 lb *(6175 kg)*
- Front	11220 lb *(5090 kg)*
- Total	24835 lb*(11265 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: This tractor has an engine control feature that allows the engine to run in a "boosted" mode, increased power level, at travel speeds above 8.7 mph *(14.0 km/h)*.

NOTE 2: The performance figures on this report are the result of replacing the electronic engine control module of the Massey Ferguson 8727 with the Massey Ferguson 8730 module.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's claim of 54 GPM *(205 l/min)* remote flow. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **2907,** Nebraska Summary 990, November 15, 2015.

Roger M. Hoy
Director

M.F. Kocher
J.D. Luck
P.J. Jasa
Board of Tractor Test Engineers

HYDRAULIC PERFORMANCE

CATEGORY: III
Quick Attach: Yes
OECD Static test

Maximum force exerted through whole range:	20390 lbs *(90.7 kN)* (at 24" *(610 mm)* behind QA ends)
	22460 lbs *(99.9 kN)* (at QA ends)
i) Sustained pressure at compensator cutoff:	2885 psi *(199 bar)*
	two outlet sets combined
ii) Pump delivery rate at minimum pressure:	53.1 GPM *(201.1 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	47.3 GPM *(179.2 l/min)*
Delivery pressure:	2435 psi *(168 bar)*
Power:	67.3 HP *(50.2 kW)*
	single outlet set
ii) Pump delivery rate at minimum pressure:	35.8 GPM *(135.5 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	33.8 GPM *(127.9 l/min)*
Delivery pressure:	2265 psi *(156 bar)*
Power:	44.6 HP *(33.2 kW)*

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	31.9	*810*
B	14.6	*370*
C	19.1	*484*
D	15.9	*405*
E	8.9	*225*
F	13.0	*330*
G	40.4	*1025*
H	2.4	*60*
I	18.8	*478*
J	27.4	*695*
K	24.7	*628*
L	49.2	*1250*
*L'	53.9	*1370*
M	26.8	*680*
N	39.9	*1014*
O	10.2	*260*
P	50.4	*1280*
Q	38.5	*977*
R	37.4	*950*

*L' to Quick Attach ends

