

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

---

2012

## Nebraska Summary: S871 Massey Ferguson 8690

Nebraska Tractor Test Laboratory

University of Nebraska-Lincoln, tractortestlab@unl.edu

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



Part of the Bioresource and Agricultural Engineering Commons, 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

---

Laboratory, Nebraska Tractor Test, "Nebraska Summary: S871 Massey Ferguson 8690" (2012). *Nebraska Tractor Tests*. 3051.

<https://digitalcommons.unl.edu/tractormuseumlit/3051>

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 2722-NEBRASKA SUMMARY 871

## MASSEY FERGUSON 8690 DIESEL

### DYNA VT TRANSMISSION

#### chassis S/N V187001 and higher

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption		Mean Atmospheric Conditions
		Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)	
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>						
<b>Rated Engine Speed—(PTO speed—1067 rpm)</b>						
305.4 (227.7)	2100	16.79 (63.55)	0.386 (0.234)	18.18 (3.58)	1.12 (4.23)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
331.0 (246.8)	1967	17.62 (66.69)	0.373 (0.227)	18.78 (3.70)	1.18 (4.46)	
<b>Maximum Power (1 hour)</b>						
333.2 (248.5)	1950	17.65 (66.82)	0.372 (0.226)	18.88 (3.72)	1.21 (4.59)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>						
305.4 (227.7)	2100	16.79 (63.55)	0.386 (0.234)	18.18 (3.58)	1.12 (4.23)	Air temperature
261.8 (195.2)	2118	14.64 (55.41)	0.392 (0.238)	17.89 (3.52)	0.85 (3.22)	70°F (21°C)
197.2 (147.0)	2127	11.39 (43.10)	0.405 (0.246)	17.31 (3.41)	0.63 (2.37)	Relative humidity
132.0 (98.4)	2136	8.31 (31.47)	0.441 (0.268)	15.88 (3.13)	0.41 (1.54)	35%
66.2 (49.4)	2145	5.37 (20.33)	0.568 (0.345)	12.33 (2.43)	0.23 (0.88)	Barometer
----	2153	2.70 (10.23)	----	----	0.06 (0.22)	30.2" Hg (102.4 kPa)
Maximum torque - 1042 lb.-ft. (1413 Nm) at 1500 rpm						
Maximum torque rise - 36.5%						
Torque rise at 1700 engine rpm - 30%						
Power increase at 1950 engine rpm - 9.1%						

#### 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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—Turtle 9</b>									
245.7 (183.2)	16630 (73.98)	5.54 (8.92)	2101	3.9	0.465 (0.282)	14.90 (2.93)	158 (70)	73 (23)	29.0 (98.1)
<b>75% of Pull at Maximum Power—Turtle 9</b>									
188.1 (140.3)	12300 (54.72)	5.74 (9.23)	2123	2.6	0.476 (0.289)	14.50 (2.85)	165 (74)	73 (23)	29.3 (99.3)
<b>50% of Pull at Maximum Power—Turtle 9</b>									
128.2 (95.6)	8205 (36.49)	5.86 (9.44)	2134	1.7	0.514 (0.312)	13.47 (2.65)	156 (69)	73 (23)	29.3 (99.3)
<b>75% of Pull at Reduced Engine Speed—Turtle 11</b>									
187.9 (140.1)	12310 (54.75)	5.72 (9.21)	1762	2.7	0.443 (0.269)	15.60 (3.07)	163 (73)	72 (22)	29.3 (99.3)
<b>50% of Pull at Reduced Engine Speed—Turtle 11</b>									
129.3 (96.4)	8250 (36.69)	5.88 (9.46)	1771	1.8	0.461 (0.280)	14.99 (2.95)	156 (69)	73 (23)	29.3 (99.3)

**Location of tests:** DLG - Test Centre, Technology and Farm inputs, Max-Eyth-Weg 1, D-64823 Gross-Umstadt, Germany

**Dates of tests:** January - July, 2012.

**Manufacturer:** AGCO S.A. ZA, n2, BP 60307, Avenue Blaise Pascal, 60026 Beauvais, Cedex, France

**CONSUMABLE FLUIDS:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.841 Fuel weight 6.99 lbs/gal (0.840 kg/l) Diesel Exhaust Fluid (DEF) 32% aqueous urea solution DEF weight 9.10 lbs/gal (1.093 kg/l) Oil SAE 10W40 API service classification CI4 Transmission and hydraulic lubricant BP STOU 10W/40 Front axle lubricant SAE 85W90 API GL5

**ENGINE:** Make Sisu Diesel Type six cylinder vertical with turbocharger, air to air intercooler and D.E.F (diesel exhaust fluid) technology Serial No. W423 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. V319022 Tread width rear 72.8" (1850 mm) to 74.8" (1900 mm) front 70.9" (1800 mm) to 76.8" (1950 mm) Wheelbase 122.2" (3105 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 0-18 (0-30), high range 0-25 (0-40) reverse: Low range 0-12 (0-19), high range 0-12 (0-39) 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 25200 lb (11430 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 lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. <sup>o</sup> F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Turtle 6									
219.5 (163.7)	25170 (111.97)	3.27 (5.26)	2084	15.0	0.523 (0.318)	13.22 (2.60)	165 (74)	73 (23)	29.6 (100.3)
Turtle 7.5									
262.9 (196.1)	22845 (101.63)	4.32 (6.94)	1947	7.0	0.455 (0.276)	15.20 (2.99)	158 (70)	73 (23)	29.6 (100.4)
Turtle 9									
266.5 (198.7)	19200 (85.41)	5.21 (8.38)	1952	4.9	0.448 (0.272)	15.45 (3.04)	162 (72)	70 (21)	29.6 (100.3)
Turtle 11									
268.7 (200.4)	15905 (70.76)	6.34 (10.20)	1954	3.5	0.447 (0.272)	15.48 (3.05)	154 (68)	68 (20)	29.6 (100.3)
Turtle 13									
264.9 (197.5)	13640 (60.68)	7.28 (11.72)	1950	2.9	0.453 (0.276)	15.28 (3.01)	156 (69)	68 (20)	29.6 (100.3)
Turtle 15									
260.2 (194.0)	11395 (50.70)	8.56 (13.78)	1953	2.4	0.461 (0.281)	15.00 (2.96)	163 (73)	68 (20)	29.6 (100.3)
Turtle 17									
256.9 (191.6)	9800 (43.60)	9.83 (15.82)	1961	2.0	0.466 (0.284)	14.85 (2.93)	163 (73)	68 (20)	29.6 (100.3)
Rabbit 9									
244.1 (182.0)	17800 (79.18)	5.14 (8.27)	1950	4.4	0.481 (0.292)	14.39 (2.83)	156 (69)	70 (21)	29.6 (100.3)
Rabbit 11									
256.4 (191.2)	15360 (68.32)	6.26 (10.08)	1951	3.4	0.465 (0.283)	14.87 (2.93)	158 (70)	70 (21)	29.6 (100.3)
Rabbit 13									
264.9 (197.5)	13635 (60.66)	7.28 (11.72)	1953	2.9	0.450 (0.273)	15.38 (3.03)	163 (73)	68 (20)	29.6 (100.3)
Rabbit 15									
263.9 (196.8)	11475 (51.04)	8.62 (13.88)	1954	2.4	0.448 (0.273)	15.43 (3.04)	163 (73)	68 (20)	29.6 (100.3)
Rabbit 17									
266.2 (198.5)	10070 (44.80)	9.91 (15.95)	1956	2.1	0.450 (0.274)	15.38 (3.03)	163 (73)	66 (19)	29.6 (100.3)
Rabbit 19									
263.8 (196.7)	9205 (40.94)	10.75 (17.30)	1962	1.8	0.451 (0.275)	15.33 (3.02)	158 (70)	66 (19)	29.6 (100.3)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**NOTE 1:** The performance figures on this report apply to tractors with chassis serial numbers V187001 and higher.

**NOTE 2:** The performance figures on this report are the result of replacing the electronic engine control module of the Massey Ferguson 8650 with the Massey Ferguson 8690 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 claims of 54% torque rise, 15% power bulge, nor 3 point lift capacity of 22760 lbs (10323 kg). 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. **2722**, Nebraska Summary 871, January 30, 2013.

Roger M. Hoy  
Director

M.R. Riley  
P.J. Jasa  
J.D. Luck  
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in Turtle - 4.6 mph (7.5 km/h) - no load	70.0
Bystander	---

**TIRES AND WEIGHT**

**Rear Tires** - No., size, ply & psi (kPa)  
**Front Tires** - No., size, ply & psi (kPa)  
**Height of Drawbar**  
**Static Weight with operator** - Rear  
- Front  
- Total

**Tested Without Ballast**

Two 710/75R42;\*\*\*;12(80)  
Two 600/65R34;\*\*\*;12(80)  
22.2 in (565 mm)  
14100 lb (6395 kg)  
11265 lb (5110 kg)  
25365 lb (11505 kg)

## HYDRAULIC PERFORMANCE

CATEGORY: III

Quick Attach: No, Yes

OECD Static test

Maximum force exerted through whole range: 17850 lbs (79.4 kN) (claw type lower links)

20345 lbs (90.5 kN) (Quick hitch)

i) Sustained pressure at compensator cutoff: 2755 psi (190 bar)

**two outlet sets combined**

ii) Pump delivery rate at minimum pressure: 46.2 GPM (174.9 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 37.9 GPM (143.6 l/min)

Delivery pressure: 2380 psi (164 bar)

Power: 52.6 HP (39.3 kW)

**single outlet set**

ii) Pump delivery rate at minimum pressure: 28.9 GPM (109.3 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 26.1 GPM (103.2 l/min)

Delivery pressure: 2290 psi (158 bar)

Power: 34.9 HP (27.2 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD

	Claw lower links		Quick Hitch	
	inch	mm	inch	mm
A	31.9	810	31.9	810
B	14.6	370	14.6	370
C	19.1	484	19.1	484
D	15.9	405	15.9	405
E	12.4	315	12.4	315
F	13.0	330	13.0	330
G	40.4	1025	40.4	1025
H	2.0	50	2.0	50
I	17.7	450	17.7	450
J	27.4	695	27.4	695
K	24.8	630	24.8	630
L	52.4	1330	52.4	1330
*L'	--	--	56.3	1430
M	29.8	757	33.7	857
N	42.9	1090	42.9	1090
O	9.1	230	9.8	250
P	54.3	1380	50.4	1280
Q	41.5	1055	41.2	1046
R	37.0	940	37.0	940

\*L' to Quick Attach ends

