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2008

Nebraska Summary: S648 Massey Ferguson 8650

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SUMMARY OF OECD TEST 2496–NEBRASKA SUMMARY 648
MASSEY FERGUSON 8650 DIESEL
DYNA VT TRANSMISSION
E3 SCR ENGINE TECHNOLOGY

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	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—1081 rpm)					
212.7 *(158.6)*	2200	11.57 *(43.80)*	0.380 *(0.231)*	18.38 *(3.62)*	
Standard Power Take-off Speed(1000 rpm)					
232.9 *(173.7)*	2035	12.15 *(45.99)*	0.363 *(0.221)*	19.17 *(3.78)*	
Maximum Power (1 hour)					
242.3 *(180.7)*	1850	12.15 *(45.99)*	0.350 *(0.213)*	19.95 *(3.93)*	
VARYING POWER AND FUEL CONSUMPTION					
212.7 *(158.6)*	2200	11.57 *(43.80)*	0.380 *(0.231)*	18.38 *(3.62)*	Air temperature
182.5 *(136.1)*	2222	10.18 *(38.55)*	0.389 *(0.237)*	17.92 *(3.53)*	70°F *(21°C)*
137.6 *(102.6)*	2234	8.23 *(31.15)*	0.418 *(0.254)*	16.72 *(3.29)*	Relative humidity
92.1 *(68.7)*	2242	6.30 *(23.84)*	0.477 *(0.290)*	14.62 *(2.88)*	52%
46.1 *(34.4)*	2250	4.42 *(16.74)*	0.667 *(0.406)*	10.46 *(2.06)*	Barometer
-- --	2260	2.62 *(9.91)*	-- --	-- --	29.8" Hg *(101.0 kPa)*

Maximum Torque - 811 lb.-ft. *(1100 Nm)* at 1400 rpm
Maximum Torque Rise - 59.9%
Torque rise at 1800 engine rpm - 38%
Power increase at 1850 engine rpm - 13.9%

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)*
Maximum Power—Turtle 7.5									
180.1 *(134.3)*	14275 *(63.50)*	4.73 *(7.61)*	2200	1.9	0.449 *(0.273)*	15.53 *(3.06)*	178 *(81)*	54 *(12)*	29.2 *(98.8)*
75% of Pull at Maximum Power—Turtle 7.5									
137.7 *(102.7)*	10700 *(47.60)*	4.83 *(7.76)*	2225	1.1	0.473 *(0.288)*	14.72 *(2.90)*	180 *(82)*	54 *(12)*	29.2 *(98.8)*
50% of Pull at Maximum Power—Turtle 7.5									
92.5 *(69.0)*	7100 *(31.58)*	4.89 *(7.87)*	2233	0.7	0.547 *(0.333)*	12.74 *(2.51)*	169 *(76)*	52 *(11)*	29.2 *(98.8)*
75% of Pull at Reduced Engine Speed—Turtle 9									
138.4 *(103.2)*	10705 *(47.62)*	4.85 *(7.80)*	1950	1.1	0.445 *(0.271)*	15.68 *(3.09)*	165 *(74)*	54 *(12)*	29.2 *(98.8)*
50% of Pull at Reduced Engine Speed—Turtle 9									
92.7 *(69.1)*	7130 *(31.72)*	4.87 *(7.84)*	1934	0.7	0.496 *(0.302)*	14.06 *(2.77)*	163 *(73)*	54 *(12)*	29.2 *(98.8)*

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

Dates of tests: October 2008 - February 2009.

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

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.838 **Fuel weight** 6.97 lbs/gal *(0.8359 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 SCR technology **Serial No.** T00767 **Crankshaft** lengthwise **Rated engine speed** 2200 **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 with duals **Serial No.** T007901 **Tread width** rear 60.0" *(1525 mm)* to 101.8" *(2585 mm)* front 60.8" *(1545 mm)* to 89.2" *(2265 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 0-17 *(0-28)*, high range 0-25 *(0-40)* reverse: Low range 0-10 *(0-16)*, high range 0-24*(0-38)* **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** 540 rpm at 2038 engine rpm or 1000 rpm at 2033 engine rpm **Unladen tractor mass** 25795 lb *(11700 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 5				
173.0 *(129.0)*	26505 *(117.90)*	2.45 *(3.94)*	2029	14.7	0.492 *(0.299)*	14.17 *(2.79)*	153 *(67)*	52 *(11)*	29.7 *(100.5)*
					Turtle 6				
188.1 *(140.3)*	26045 *(115.85)*	2.71 *(4.36)*	1849	10.7	0.450 *(0.274)*	15.48 *(3.05)*	172 *(78)*	52 *(11)*	29.7 *(100.5)*
					Turtle 7.5				
204.2 *(152.3)*	19235 *(85.57)*	3.98 *(6.41)*	1850	3.8	0.418 *(0.254)*	16.70 *(3.29)*	179 *(82)*	63 *(17)*	29.7 *(100.7)*
					Turtle 9				
205.2 *(153.0)*	17665 *(78.59)*	4.36 *(7.01)*	1851	2.8	0.414 *(0.252)*	16.85 *(3.32)*	174 *(79)*	63 *(17)*	29.8 *(100.8)*
					Turtle 11				
203.3 *(151.6)*	12915 *(57.46)*	5.90 *(9.50)*	1851	1.7	0.418 *(0.254)*	16.70 *(3.29)*	172 *(78)*	61 *(16)*	29.8 *(100.8)*
					Turtle 13				
199.7 *(148.9)*	11020 *(49.02)*	6.79 *(10.93)*	1850	1.7	0.425 *(0.259)*	16.40 *(3.23)*	160 *(71)*	52 *(11)*	29.9 *(101.1)*
					Turtle 15				
199.2 *(148.5)*	9605 *(42.72)*	7.78 *(12.52)*	1852	1.0	0.427 *(0.260)*	16.34 *(3.22)*	176 *(80)*	54 *(12)*	29.8 *(100.9)*
					Turtle 17				
196.8 *(146.8)*	8310 *(36.97)*	8.88 *(14.29)*	1852	1.0	0.432 *(0.263)*	16.14 *(3.18)*	178 *(81)*	52 *(11)*	29.8 *(100.9)*
					Rabbit 7.5				
194.0 *(144.7)*	18560 *(82.56)*	3.92 *(6.31)*	1851	3.1	0.439 *(0.267)*	15.89 *(3.13)*	158 *(70)*	48 *(9)*	29.2 *(98.8)*
					Rabbit 9				
197.9 *(147.6)*	16560 *(73.66)*	4.48 *(7.21)*	1850	2.5	0.431 *(0.262)*	16.19 *(3.19)*	172 *(78)*	48 *(9)*	29.2 *(98.8)*
					Rabbit 11				
202.7 *(151.1)*	13510 *(60.09)*	5.63 *(9.06)*	1852	1.8	0.420 *(0.255)*	16.61 *(3.27)*	176 *(80)*	48 *(9)*	29.2 *(98.8)*
					Rabbit 13				
203.4 *(151.7)*	11395 *(50.68)*	6.69 *(10.77)*	1852	1.4	0.419 *(0.255)*	16.65 *(3.28)*	174 *(79)*	48 *(9)*	29.2 *(98.8)*
					Rabbit 15				
203.1 *(151.4)*	9805 *(43.62)*	7.77 *(12.50)*	1851	1.2	0.419 *(0.255)*	16.65 *(3.28)*	180 *(82)*	48 *(9)*	29.2 *(98.8)*
					Rabbit 17				
202.2 *(150.8)*	8625 *(38.37)*	8.79 *(14.15)*	1855	1.0	0.422 *(0.256)*	16.55 *(3.26)*	180 *(82)*	48 *(9)*	29.2 *(98.8)*

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in Turtle - 4.6 mph *(7.5 km/h)* - no load	71.0
Bystander	---

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi*(kPa)*	Four 480/80R46;***;10*(70)*	Four 480/80R46;***;9*(65)*
Ballast - Fluid (total)	None	None
- Cast Iron (total)	None	None
Front Tires - No., size, ply & psi*(kPa)*	Four 420/90R30;**;10*(70)*	Two 420/90R30;**;9*(60)*
Ballast - Duals (total)	1170 lb *(530 kg)*	None
- Cast Iron (total)	None	None
Height of Drawbar	19.5 in *(500 mm)*	19.5 in *(500 mm)*
Static Weight with operator - Rear	15280 lb *(6930 kg)*	15280 lb *(6930 kg)*
- Front	11850 lb *(5375 kg)*	10680 lb *(4845 kg)*
- Total	27130 lb*(12305 kg)*	25960 lb*(11775 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: This tractor injects D.E.F. (Diesel exhaust fluid/Urea) into the exhaust system. This rate was measured at a maximum of 3% of the diesel fuel consumption.

NOTE 2: The performance figures on this report are the result of replacing the electronic engine control module of the Massey Ferguson 8660 with the Massey Ferguson 8650 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 15% power bulge. The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **2496,** Nebraska Summary 648, December 8, 2009.

Roger M. Hoy
Director

M.F. Kocher
V.I. Adamchuk
J.A. Smith
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE

(Ballasted - 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)*
Maximum Power—Turtle 7.5									
175.9 *(131.2)*	13705 *(60.95)*	4.81 *(7.75)*	2200	2.6	0.458 *(0.279)*	15.23 *(3.00)*	167 *(75)*	43 *(6)*	29.0 *(98.1)*
75% of Pull at Maximum Power—Turtle 7.5									
135.0 *(100.7)*	10270 *(45.69)*	4.93 *(7.93)*	2221	2.2	0.490 *(0.298)*	14.24 *(2.81)*	163 *(73)*	43 *(6)*	29.0 *(98.1)*
50% of Pull at Maximum Power—Turtle 7.5									
91.2 *(68.0)*	6830 *(30.38)*	5.01 *(8.06)*	2231	1.6	0.566 *(0.344)*	12.33 *(2.43)*	154 *(68)*	43 *(6)*	29.0 *(98.1)*
75% of Pull at Reduced Engine Speed—Turtle 9									
134.8 *(100.5)*	10270 *(45.68)*	4.92 *(7.92)*	1872	2.0	0.449 *(0.273)*	15.53 *(3.06)*	151 *(66)*	43 *(6)*	29.0 *(98.1)*
50% of Pull at Reduced Engine Speed—Turtle 9									
91.0 *(67.8)*	6825 *(30.36)*	5.00 *(8.04)*	1880	1.5	0.503 *(0.306)*	13.86 *(2.73)*	153 *(67)*	45 *(7)*	29.0 *(98.1)*

MAXIMUM POWER AT SELECTED SPEEDS

Turtle 5									
179.4 *(133.8)*	27890 *(124.06)*	2.41 *(3.88)*	1882	15.1	0.475 *(0.289)*	14.67 *(2.89)*	160 *(71)*	43 *(6)*	29.0 *(98.1)*
Turtle 6									
198.1 *(147.7)*	24615 *(109.49)*	3.02 *(4.86)*	1851	7.4	0.429 *(0.261)*	16.24 *(3.20)*	165 *(74)*	43 *(6)*	29.0 *(98.1)*
Turtle 7.5									
204.5 *(152.5)*	19835 *(88.23)*	3.87 *(6.22)*	1851	4.3	0.416 *(0.253)*	16.75 *(3.30)*	167 *(75)*	43 *(6)*	29.0 *(98.1)*
Turtle 9									
204.9 *(152.8)*	16130 *(71.75)*	4.76 *(7.67)*	1851	2.9	0.415 *(0.253)*	16.80 *(3.31)*	163 *(73)*	43 *(6)*	29.0 *(98.1)*
Turtle 11									
202.1 *(150.7)*	13035 *(57.99)*	5.81 *(9.35)*	1851	2.4	0.422 *(0.256)*	16.55 *(3.26)*	162 *(72)*	43 *(6)*	29.0 *(98.2)*
Turtle 13									
199.3 *(148.6)*	10850 *(48.27)*	6.89 *(11.08)*	1852	2.0	0.426 *(0.259)*	16.35 *(3.22)*	162 *(72)*	43 *(6)*	29.0 *(98.2)*
Turtle 15									
195.2 *(145.6)*	9260 *(41.18)*	7.90 *(12.72)*	1854	1.7	0.436 *(0.265)*	15.99 *(3.15)*	167 *(75)*	43 *(6)*	29.0 *(98.2)*
Turtle 17									
192.7 *(143.7)*	8125 *(36.15)*	8.89 *(14.31)*	1855	1.6	0.442 *(0.269)*	15.79 *(3.11)*	167 *(75)*	43 *(6)*	29.0 *(98.1)*
Rabbit 7.5									
187.1 *(139.5)*	19390 *(86.26)*	3.62 *(5.82)*	1850	4.4	0.454 *(0.276)*	15.35 *(3.02)*	162 *(72)*	37 *(3)*	29.0 *(98.1)*
Rabbit 9									
197.4 *(147.2)*	15915 *(70.78)*	4.65 *(7.49)*	1851	3.2	0.431 *(0.262)*	16.19 *(3.19)*	162 *(72)*	37 *(3)*	29.0 *(98.1)*
Rabbit 11									
200.1 *(149.2)*	13240 *(58.89)*	5.67 *(9.12)*	1851	2.5	0.426 *(0.259)*	16.35 *(3.22)*	163 *(73)*	39 *(4)*	29.0 *(98.1)*
Rabbit 13									
200.4 *(149.4)*	11080 *(49.28)*	6.79 *(10.92)*	1852	2.1	0.425 *(0.259)*	16.40 *(3.23)*	167 *(75)*	39 *(4)*	29.0 *(98.1)*
Rabbit 15									
199.0 *(148.4)*	9370 *(41.69)*	7.96 *(12.82)*	1851	2.0	0.428 *(0.260)*	16.29 *(3.21)*	162 *(72)*	39 *(4)*	29.0 *(98.1)*
Rabbit 17									
195.7 *(145.9)*	8215 *(36.55)*	8.93 *(14.37)*	1853	1.8	0.435 *(0.265)*	16.04 *(3.16)*	163 *(73)*	39 *(4)*	29.0 *(98.1)*

HYDRAULIC PERFORMANCE

CATEGORY: IVN	
Quick Attach: No	
OECD Static test	
Maximum force exerted through whole range:	24590 lbs *(109.4 kN)*
i) Sustained pressure at compensator cutoff:	3190 psi *(220 bar)*
three outlet sets combined	
ii) Pump delivery rate at minimum pressure and rated engine speed:	51.0 GPM *(193.2 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	46.8 GPM *(177.1 l/min)*
Delivery pressure:	2770 psi *(191 bar)*
Power:	75.6 HP *(56.4 kW)*
single outlet set	
ii) Pump delivery rate at minimum pressure and rated engine speed:	27.9 GPM *(105.5 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	26.1 GPM *(98.9 l/min)*
Delivery pressure:	2655 psi *(183 bar)*
Power:	40.5 HP *(30.2 kW)*

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	35.8	*910*
B	14.6	*370*
C	19.1	*484*
D	15.9	*405*
E	15.6	*395*
F	13.0	*330*
G	36.4	*925*
H	2.0	*50*
I	16.5	*420*
J	23.4	*595*
K	28.7	*730*
L	52.4	*1330*
M	29.8	*757*
N	42.9	*1090*
O	9.1	*230*
P	50.4	*1280*
Q	38.7	*983*
R	37.0	*940*

