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2015

Nebraska Summary: S994 Challenger MT645E

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SUMMARY OF OECD TEST 2906–NEBRASKA SUMMARY 994
CHALLENGER MT645E DIESEL
TECHSTAR 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—1065 rpm)						
217.8 *(162.4)*	2098	12.88 *(48.76)*	0.413 *(0.251)*	16.91 *(3.33)*	0.74 *(2.80)*	
Standard Power Take-off Speed (999 rpm)						
241.4 *(180.0)*	1968	13.51 *(51.16)*	0.391 *(0.238)*	17.87 *(3.52)*	0.75 *(2.84)*	
Maximum Power (1 hour)						
242.6 *(180.9)*	1950	13.52 *(51.16)*	0.388 *(0.236)*	17.95 *(3.54)*	0.75 *(2.84)*	
VARYING POWER AND FUEL CONSUMPTION						
217.8 *(162.4)*	2098	12.88 *(48.76)*	0.413 *(0.251)*	16.91 *(3.33)*	0.74 *(2.80)*	Air temperature
186.8 *(139.3)*	2120	11.42 *(43.22)*	0.426 *(0.259)*	16.36 *(3.22)*	0.50 *(1.89)*	72°F *(22°C)*
140.5 *(104.8)*	2130	9.18 *(34.75)*	0.455 *(0.277)*	15.31 *(3.02)*	0.36 *(1.35)*	Relative humidity
94.4 *(70.4)*	2139	7.09 *(26.82)*	0.524 *(0.319)*	13.32 *(2.62)*	0.31 *(1.19)*	43%
47.3 *(35.3)*	2143	4.76 *(18.03)*	0.702 *(0.427)*	9.94 *(1.96)*	0.10 *(0.39)*	Barometer
---- ----	2151	2.91 *(11.00)*	---- ----	---- ----	---- ----	30.1" Hg *(101.8 kPa)*

Maximum torque - 790 lb.-ft. *(1071 Nm)* at 1200 rpm
Maximum torque rise - 44.8%
Torque rise at 1700 engine rpm - 35%
Power increase at 1950 engine rpm - 11.4%

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									
184.7 *(137.7)*	14075 *(62.6)*	4.92 *(7.92)*	2098	5.9	0.480 *(0.292)*	14.39 *(2.84)*	194 *(90)*	46 *(8)*	30.3 *(102.6)*
75% of Pull at Maximum Power—Turtle 8									
139.7 *(104.2)*	10545 *(46.9)*	4.97 *(8.00)*	2120	4.5	0.531 *(0.323)*	12.99 *(2.56)*	183 *(84)*	46 *(8)*	30.3 *(102.6)*
50% of Pull at Maximum Power—Turtle 8									
95.2 *(71.0)*	7035 *(31.3)*	5.08 *(8.17)*	2129	3.2	0.584 *(0.355)*	11.83 *(2.33)*	181 *(83)*	46 *(8)*	30.3 *(102.6)*
75% of Pull at Reduced Engine Speed—Turtle 11									
140.5 *(104.8)*	10590 *(47.1)*	4.98 *(8.01)*	1642	4.6	0.461 *(0.280)*	14.97 *(2.95)*	185 *(85)*	46 *(8)*	30.3 *(102.6)*
50% of Pull at Reduced Engine Speed—Turtle 11									
94.7 *(70.6)*	7035 *(31.3)*	5.05 *(8.12)*	1650	2.8	0.520 *(0.317)*	13.27 *(2.62)*	183 *(84)*	46 *(8)*	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 1018 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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Temp.°F*(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
					Turtle 3				
92.4 *(68.9)*	22750 *(101.2)*	1.52 *(2.45)*	2129	15.6	0.664 *(0.404)*	10.40 *(2.05)*	187 *(86)*	45 *(7)*	30.3 *(102.6)*
					Turtle 5				
161.3 *(120.3)*	22325 *(99.3)*	2.71 *(4.36)*	2121	12.4	0.512 *(0.312)*	13.48 *(2.66)*	187 *(86)*	45 *(7)*	30.3 *(102.6)*
					Turtle 6.5				
197.1 *(147.0)*	20300 *(90.3)*	3.64 *(5.86)*	1972	8.2	0.469 *(0.286)*	14.70 *(2.90)*	189 *(87)*	46 *(8)*	30.3 *(102.6)*
					Turtle 8				
205.0 *(152.9)*	16365 *(72.8)*	4.70 *(7.56)*	1968	5.0	0.458 *(0.279)*	15.08 *(2.97)*	192 *(89)*	46 *(8)*	30.3 *(102.6)*
					Turtle 11				
206.2 *(153.8)*	12095 *(53.8)*	6.39 *(10.29)*	1954	3.1	0.458 *(0.279)*	15.08 *(2.97)*	187 *(86)*	46 *(8)*	30.3 *(102.6)*
					Turtle 14				
209.1 *(155.9)*	9125 *(40.6)*	8.59 *(13.82)*	1955	2.5	0.450 *(0.274)*	15.33 *(3.02)*	187 *(86)*	48 *(9)*	30.3 *(102.6)*
					*Turtle 16				
207.5 *(154.7)*	8275 *(36.8)*	9.40 *(15.13)*	1978	2.2	0.486 *(0.295)*	14.21 *(2.80)*	190 *(88)*	50 *(10)*	30.3 *(102.6)*
					*Turtle 18				
205.7 *(153.4)*	7015 *(31.2)*	11.00 *(17.70)*	1958	1.9	0.489 *(0.297)*	14.11 *(2.78)*	189 *(90)*	50 *(10)*	30.3 *(102.6)*
					Rabbit 8.5				
198.6 *(148.1)*	15420 *(68.6)*	4.83 *(7.77)*	1912	6.4	0.472 *(0.287)*	14.62 *(2.88)*	189 *(87)*	57 *(14)*	30.7 *(103.8)*
					Rabbit 11				
203.0 *(151.4)*	12790 *(56.9)*	5.95 *(9.58)*	1949	5.1	0.461 *(0.280)*	14.97 *(2.95)*	185 *(85)*	57 *(14)*	30.7 *(103.8)*
					Rabbit 14				
204.5 *(152.5)*	8945 *(39.8)*	8.57 *(13.79)*	1950	2.3	0.458 *(0.279)*	15.08 *(2.97)*	194 *(90)*	59 *(15)*	30.7 *(103.8)*
					*Rabbit 16				
205.7 *(153.4)*	7825 *(34.8)*	9.86 *(15.87)*	1963	2.1	0.495 *(0.301)*	13.96 *(2.75)*	194 *(90)*	59 *(15)*	30.7 *(103.8)*
					*Rabbit 18				
206.1 *(153.7)*	7060 *(31.4)*	10.95 *(17.62)*	1958	2.0	0.505 *(0.308)*	13.65 *(2.69)*	192 *(89)*	61 *(16)*	30.7 *(103.8)*
					*Rabbit 19				
202.5 *(151.0)*	5845 *(26.0)*	12.99 *(20.91)*	1950	1.8	0.519 *(0.316)*	13.30 *(2.62)*	198 *(92)*	61 *(16)*	30.7 *(103.8)*

* 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 data on this summary was obtained from OECD report 2906 conducted on the Massey Ferguson 8727 Diesel.

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. **2906,** Nebraska Summary 994, November 23, 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

