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2016

Test 2167: Challenger MT855E

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 2167 - SUMMARY 1048

CHALLENGER MT855E DIESEL

16 SPEED

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)	
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1061 rpm)					
409.08 (305.05)	2100	25.53 (96.63)	0.437 (0.266)	16.03 (3.16)	0.80 (3.04)
Standard Power Take-off Speed (1000 rpm)					
444.47 (331.44)	1979	25.87 (97.94)	0.408 (0.248)	17.18 (3.38)	0.67 (2.54)
Maximum Power (1 hour)					
453.59 (338.24)	1599	23.96 (90.71)	0.370 (0.225)	18.93 (3.73)	0.67 (2.52)

VARYING POWER AND FUEL CONSUMPTION

409.08 (305.05)	2100	25.53 (96.63)	0.437 (0.266)	16.03 (3.16)	0.80 (3.04)	Air temperature
353.53 (263.62)	2134	23.33 (88.32)	0.462 (0.281)	15.15 (2.98)	0.55 (2.08)	78°F (26°C)
268.56 (200.27)	2161	19.76 (74.79)	0.515 (0.313)	13.59 (2.68)	0.39 (1.48)	Relative humidity
179.55 (133.89)	2169	15.96 (60.42)	0.622 (0.379)	11.25 (2.22)	0.29 (1.10)	54%
90.10 (67.19)	2177	12.05 (45.60)	0.936 (0.569)	7.48 (1.47)	0.20 (0.74)	Barometer
1.92 (1.43)	2181	8.12 (30.73)	29.561 (17.981)	0.24 (0.05)	0.12 (0.44)	28.63" Hg (96.96 kPa)

Maximum torque - 1564 lb.-ft. (2121 Nm) at 1251 rpm

Maximum torque rise - 52.9%

Torque rise at 1682 engine rpm - 35%

Power increase at 1599 engine rpm - 10.9%

DRAWBAR PERFORMANCE (UNBALLASTED)

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)	D.E.F Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
Power at Rated Engine Speed—6th Gear										
360.27 (268.65)	30305 (134.80)	4.46 (7.18)	2100	2.5	0.496 (0.302)	14.11 (2.78)	0.020 (0.012)	174 (79)	58 (15)	28.55 (96.68)
75% of Pull at Rated Engine Speed—6th Gear										
280.76 (209.36)	22681 (100.89)	4.64 (7.47)	2157	1.3	0.550 (0.335)	12.73 (2.51)	0.013 (0.008)	174 (79)	63 (17)	28.50 (96.51)
50% of Pull at Rated Engine Speed—6th Gear										
189.89 (141.60)	15155 (67.41)	4.70 (7.56)	2166	0.6	0.653 (0.397)	10.72 (2.11)	0.017 (0.010)	171 (77)	64 (18)	28.49 (96.48)
75% of Pull at Reduced Engine Speed—10th Gear										
280.85 (209.43)	22716 (101.05)	4.64 (7.47)	1341	1.3	0.417 (0.253)	16.80 (3.31)	0.022 (0.013)	176 (80)	63 (17)	28.49 (96.48)
50% of Pull at Reduced Engine Speed—10th Gear										
189.87 (141.58)	15167 (67.46)	4.70 (7.56)	1347	0.5	0.461 (0.281)	15.18 (2.99)	0.018 (0.011)	174 (79)	65 (18)	28.48 (96.44)

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of tests: October 28 to November 7, 2016

Manufacturer: AGCO Corporation, 4205 River Green Parkway, Duluth Ga 30096

CONSUMABLE Fluids, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8408 **Fuel weight** 7.001 lbs/gal (0.839 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil** SAE 10W-40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** AGCO Permatran 821 XL fluid **Total time engine was operated:** 18.0 hours

ENGINE: Make AGCO **Power Diesel Type** twelve cylinder vee with 4 turbochargers, two stage air to water aftercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *C54849* **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** 1026 cu in (16838 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements and water separator **Fuel cooler** radiator for returned fuel **Exhaust** DOC (diesel oxidation catalyst) and SCR (selective catalyst reduction) integrated within a vertical muffler **Cooling medium temperature control** 2 thermostats

ENGINE OPERATING PARAMETERS: Fuel rate: 166.9- 180.6 lb/h (75.7-81.9 kg/h) **High idle:** 2160-2200 rpm **Turbo boost:** nominal 26.1-28.3 psi (180-195 kPa) as measured 27.2 psi (188 kPa)

CHASSIS: Type tracklayer-rubber tracked **Serial No.** *AGCO855KGNJG1017* **Track width** 100.0" (2540 mm) to 120.0" (3048 mm) **Length of track on ground** 124.3" (3157 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled power shift **Nominal travel speeds mph (km/h)** first 1.67 (2.69) second 2.13 (3.43) third 2.68 (4.31) fourth 3.41 (5.48) fifth 4.06 (6.54) sixth 4.58 (7.37) seventh 5.16 (8.31) eighth 5.80 (9.34) ninth 6.53 (10.51) tenth 7.34 (11.82) eleventh 8.29 (13.34) twelfth 9.33 (15.02) thirteenth 11.10 (17.87) fourteenth 14.11 (22.71) fifteenth 17.86 (28.75) sixteenth 24.86 (40.00) at 2270 rpm, reverse 1.34 (2.16), 3.24 (5.22), 3.66 (5.89), 8.89 (14.30)

DRAWBAR PERFORMANCE **UNBALLASTED AT 2100 ENGINE RPM** **MAXIMUM POWER IN SELECTED GEARS**

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)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
285.43 (212.85)	45157 (200.87)	2.38 (3.82)	2126	13.0	3rd Gear 0.589 (0.359)	11.88 (2.34)	0.020 (0.012)	174 (79)	61 (16)	28.53 (96.61)
336.80 (251.15)	39272 (174.69)	3.22 (5.17)	2099	5.9	4th Gear 0.531 (0.323)	13.19 (2.60)	0.020 (0.012)	174 (79)	59 (15)	28.54 (96.65)
355.57 (265.15)	34048 (151.45)	3.92 (6.30)	2099	3.8	5th Gear 0.504 (0.306)	13.90 (2.74)	0.019 (0.011)	174 (79)	60 (15)	28.54 (96.65)
360.27 (268.65)	30305 (134.80)	4.46 (7.18)	2100	2.5	6th Gear 0.496 (0.302)	14.11 (2.78)	0.020 (0.012)	174 (79)	58 (15)	28.55 (96.68)
356.13 (265.56)	26341 (117.17)	5.07 (8.16)	2100	1.9	7th Gear 0.502 (0.305)	13.95 (2.75)	0.021 (0.013)	174 (79)	58 (14)	28.56 (96.72)
359.06 (267.75)	23454 (104.33)	5.74 (9.24)	2100	1.4	8th Gear 0.500 (0.304)	14.01 (2.76)	0.020 (0.012)	174 (79)	58 (14)	28.55 (96.68)
354.28 (264.18)	20524 (91.29)	6.47 (10.41)	2101	1.0	9th Gear 0.505 (0.307)	13.86 (2.73)	0.021 (0.013)	174 (79)	59 (15)	28.55 (96.68)
353.55 (263.64)	18154 (80.75)	7.30 (11.75)	2101	0.8	10th Gear 0.505 (0.307)	13.87 (2.73)	0.020 (0.012)	174 (79)	59 (15)	28.56 (96.72)
341.04 (254.31)	15507 (68.98)	8.25 (13.28)	2099	0.6	11th Gear 0.522 (0.317)	13.42 (2.64)	0.020 (0.012)	174 (79)	59 (15)	28.57 (96.75)

Clutch wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated by foot pedal **Steering** electro-hydraulic differential steering controlled by steering wheel **Power take-off** 1000 rpm at 1980 engine rpm **Unladen tractor mass** 43840 lb (19872 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. 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 and correct report of official Tractor Test No. **2167**, Nebraska Summary 1048, January 9, 2017.

Roger M. Hoy
Director

M.F. Kocher
P.J. Jasa
S.K. Pitla
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
At no load in 6th gear	73.3
Bystander in 15th gear	90.0

TRACKS AND WEIGHT

Track width
Height of Drawbar
Static Weight with operator

Tested Without Ballast

36.0 in (915 mm)
21.0 in (535 mm)
43985 lb(19951 kg)

DRAWBAR PERFORMANCE **UNBALLASTED AT 1600 ENGINE RPM** **MAXIMUM POWER IN SELECTED GEARS**

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)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear										
289.83 (216.12)	45144 (200.81)	2.41 (3.88)	2126	11.7	0.580 (0.353)	12.08 (2.38)	0.018 (0.011)	174 (79)	60 (16)	28.55 (96.68)
4th Gear										
341.38 (254.57)	42942 (191.01)	2.99 (4.80)	2030	9.8	0.528 (0.321)	13.25 (2.61)	0.017 (0.011)	175 (79)	61 (16)	28.53 (96.61)
5th Gear										
373.28 (278.35)	41275 (183.60)	3.40 (5.46)	1903	8.0	0.478 (0.291)	14.63 (2.88)	0.015 (0.009)	176 (80)	62 (17)	28.53 (96.61)
6th Gear										
380.15 (283.48)	40030 (178.06)	3.57 (5.74)	1747	6.4	0.450 (0.274)	15.55 (3.06)	0.015 (0.009)	175 (79)	58 (14)	28.65 (97.02)
7th Gear										
386.31 (288.07)	39178 (174.27)	3.70 (5.95)	1601	6.1	0.434 (0.264)	16.14 (3.18)	0.017 (0.010)	176 (80)	59 (15)	28.66 (97.05)
8th Gear										
399.61 (297.99)	35294 (157.00)	4.25 (6.83)	1600	4.3	0.423 (0.258)	16.54 (3.26)	0.016 (0.010)	175 (79)	55 (13)	28.66 (97.05)
9th Gear										
399.11 (297.61)	30955 (137.69)	4.84 (7.78)	1600	2.9	0.423 (0.257)	16.57 (3.26)	0.017 (0.010)	176 (80)	56 (13)	28.64 (96.99)
10th Gear										
403.06 (300.56)	27559 (122.59)	5.49 (8.83)	1599	2.3	0.418 (0.254)	16.75 (3.30)	0.016 (0.010)	175 (79)	56 (14)	28.64 (96.99)
11th Gear										
396.14 (295.40)	23878 (106.21)	6.22 (10.01)	1600	1.7	0.424 (0.258)	16.51 (3.25)	0.018 (0.011)	177 (80)	64 (18)	28.64 (96.99)
12th Gear										
399.29 (297.75)	21285 (94.68)	7.04 (11.32)	1600	1.3	0.419 (0.255)	16.70 (3.29)	0.018 (0.011)	177 (80)	65 (18)	28.66 (97.05)
13th Gear										
398.20 (296.94)	17753 (78.97)	8.41 (13.53)	1600	0.8	0.420 (0.255)	16.68 (3.29)	0.019 (0.011)	177 (80)	66 (19)	28.64 (96.99)

HYDRAULIC PERFORMANCE

CATEGORY: IVN

Quick Attach: yes

OECD Static test

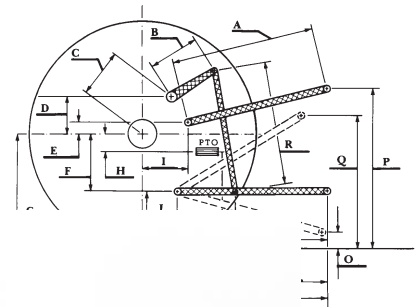
Maximum force exerted through whole range: 20936 lbs (93.1 kN)

	Standard pump <u>3 inlets - 3 outlets</u>	High flow pump <u>3 inlets - 3 outlets</u>
i) Sustained pressure at compensator cutoff:	2870 psi (198 bar)	2888 psi (199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	58.3 GPM (220.6 l/min)	86.6 GPM (327.7 l/min)
iii) Pump delivery rate at maximum hydraulic power:	55.2 GPM (208.9 l/min)	82.8 GPM (313.6 l/min)
Delivery pressure:	2808 psi (194 bar)	2769 psi (191 bar)
Power:	90.4 HP (67.4 kW)	133.8 HP (99.8 kW)
	<u>1 inlet - 1 outlet</u>	<u>1 inlet - 1 outlet</u>
i) Sustained pressure at compensator cutoff:	2875 psi (198 bar)	2896 psi (200 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	40.0 GPM (151.3 l/min)	40.0 GPM (151.4 l/min)
iii) Pump delivery rate at maximum hydraulic power:	37.6 GPM (142.4 l/min)	37.2 GPM (140.9 l/min)
Delivery pressure:	2374 psi (164 bar)	2404 psi (166 bar)
Power:	52.1 HP (38.9 kW)	52.2 HP (38.9 kW)

HITCH DIMENSIONS AS TESTED - NO LOAD

	inch	mm
A	30.2	768
B	21.7	550
C	41.4	1051
D	39.4	1000
E	12.4	315
F	11.8	300
G	35.0	890
H	0.4	10
I	23.0	585
J	23.2	590
K	29.0	737
L	53.9	1369
*L'	60.4	1534
M	26.6	676
N	36.6	929
O	9.0	230
P	50.2	1275
Q	46.5	1181
R	55.9	1421

*L' to Quick Attach ends



Challenger MT855E Diesel

Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln