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2013

## Test 2061: Challenger MT755D

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# NEBRASKA OECD TRACTOR TEST 2061—SUMMARY 881

## CHALLENGER MT755D DIESEL

### 16 SPEED

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel	D.E.F.			Mean Atmospheric Conditions
		Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Consumption Gal/hr (l/h)	
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1061 rpm)						
281.41 (209.85)	2101	15.48 (58.58)	0.385 (0.234)	18.18 (3.58)	0.93 (3.53)	
Standard Power Take-off Speed (999 rpm)						
308.55 (230.09)	1980	16.50 (62.47)	0.375 (0.228)	18.70 (3.68)	1.00 (3.78)	
Maximum Power (1 hour)						
317.51 (236.77)	1800	16.36 (61.94)	0.361 (0.220)	19.40 (3.82)	1.08 (4.10)	

#### VARYING POWER AND FUEL CONSUMPTION

281.41 (209.85)	2101	15.48 (58.58)	0.385 (0.234)	18.18 (3.58)	0.93 (3.53)	Air temperature
243.34 (181.46)	2139	13.96 (52.83)	0.402 (0.244)	17.44 (3.43)	0.70 (2.64)	73°F (23°C)
184.72 (137.74)	2164	10.98 (41.55)	0.416 (0.253)	16.83 (3.32)	0.53 (2.01)	Relative humidity
123.89 (92.38)	2175	8.47 (32.06)	0.479 (0.291)	14.63 (2.88)	0.38 (1.42)	40%
62.17 (46.36)	2185	5.77 (21.85)	0.651 (0.396)	10.77 (2.12)	0.24 (0.91)	Barometer
3.63 (2.71)	2193	3.44 (13.01)	6.637 (4.037)	1.06 (0.21)	0.11 (0.41)	28.48" Hg (96.44 kPa)

Maximum torque - 1039 lb.-ft. (1409 Nm) at 1501 rpm

Maximum torque rise - 47.6%

Torque rise at 1680 engine rpm - 38%

Power increase at 1800 engine rpm - 12.8%

#### DRAWBAR PERFORMANCE (Unballasted)

##### FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)		Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	cool- ing med	Air dry bulb	
<b>Maximum Power—8th Gear</b>									
251.60 (187.61)	16776 (74.62)	5.62 (9.04)	2100	2.3	0.431 (0.262)	16.28 (3.21)	187 (86)	58 (15)	28.91 (97.90)
<b>75% of Pull at Maximum Power—8th Gear</b>									
196.02 (146.17)	12606 (56.07)	5.83 (9.38)	2157	1.4	0.457 (0.278)	15.33 (3.02)	186 (86)	63 (17)	28.99 (98.17)
<b>50% of Pull at Maximum Power—8th Gear</b>									
132.11 (98.51)	8403 (37.38)	5.90 (9.50)	2168	0.8	0.522 (0.317)	13.43 (2.65)	185 (85)	64 (18)	28.99 (98.17)
<b>75% of Pull at Reduced Engine Speed—11th Gear</b>									
196.07 (146.21)	12674 (56.38)	5.80 (9.33)	1504	1.4	0.412 (0.251)	17.01 (3.35)	183 (84)	64 (18)	29.00 (98.21)
<b>50% of Pull at Reduced Engine Speed—11th Gear</b>									
132.18 (98.56)	8411 (37.41)	5.90 (9.50)	1518	0.8	0.445 (0.271)	15.75 (3.10)	181 (83)	65 (18)	28.99 (98.17)

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

**Dates of tests:** May 21 - 30, 2013

**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)** 0.8416 **Fuel weight** 7.007 lbs/gal (0.840 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil SAE 15W-40 API service classification** CJ-4 **Transmission and hydraulic lubricant** AGCO Permatran 821 XL fluid **Total time engine was operated:** 25.0 hours

**ENGINE: Make** AGCO Power Diesel **Type** six cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) technology **Serial No.** \*Y22796\* **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 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** one paper element and water separator **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS:** **Fuel rate:** 104.6 - 113.2 lb/h (47.4 - 51.3 kg/h) **High idle:** 2150 - 2200 rpm **Turbo boost:** nominal 21.0 - 23.9 psi (145 - 165 kPa) as measured 22.1 psi (153 kPa)

**CHASSIS: Type** Tracklayer-rubber tracked **Serial No.** \*AGCC0755KDNBD1072\* **Track width** 88.0" (2235 mm) to 119.5" (3035 mm) **Length of track on ground** 102.4" (2600 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 1.66 (2.67) second 2.11 (3.40) third 2.66 (4.28) fourth 3.38 (5.44) fifth 4.03 (6.49) sixth 4.54 (7.31) seventh 5.12 (8.24) eighth 5.76 (9.27) ninth 6.48 (10.43) tenth 7.29 (11.73) eleventh 8.22 (13.23) twelfth 9.26 (14.90) thirteenth 11.02 (17.73) fourteenth 14.00 (22.53) fifteenth 17.72 (28.52) sixteenth 24.64 (39.65) at 2300 rpm, reverse 1.33 (2.14), 3.22 (5.18), 3.63 (5.84), 8.82 (14.19) **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated foot pedal **Steering** electro-hydraulic differential steering controlled by steering wheel **Power take-off** 1000 rpm at 1980 engine rpm **Unladen tractor mass** 31345 lb (14218 kg)

**DRAWBAR PERFORMANCE**

**Unballasted at 2100 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)	Temp. °F (°C) cool- ing med	Barom. inch Hg (kPa)		
3rd Gear									
192.48 (143.53)	31017 (137.97)	2.33 (3.75)	2098	12.6	0.503 (0.306)	13.93 (2.74)	186 (86)	58 (14)	29.00 (98.21)
4th Gear									
224.08 (167.09)	27575 (122.66)	3.05 (4.90)	2101	9.9	0.483 (0.294)	14.50 (2.86)	187 (86)	54 (12)	28.90 (97.87)
5th Gear									
242.70 (180.98)	23943 (106.50)	3.81 (6.12)	2100	6.0	0.447 (0.272)	15.67 (3.09)	187 (86)	55 (13)	28.92 (97.93)
6th Gear									
248.20 (185.08)	21384 (95.12)	4.36 (7.01)	2100	4.2	0.437 (0.266)	16.04 (3.16)	187 (86)	56 (14)	28.94 (98.00)
7th Gear									
248.27 (185.13)	18764 (83.47)	4.97 (7.99)	2100	3.0	0.437 (0.266)	16.03 (3.16)	187 (86)	57 (14)	28.92 (97.93)
8th Gear									
251.60 (187.61)	16776 (74.62)	5.62 (9.04)	2100	2.3	0.431 (0.262)	16.28 (3.21)	187 (86)	58 (15)	28.91 (97.90)
9th Gear									
248.88 (185.59)	14674 (65.27)	6.36 (10.24)	2100	1.7	0.435 (0.264)	16.12 (3.18)	187 (86)	59 (15)	28.92 (97.93)
10th Gear									
249.67 (186.18)	13040 (58.00)	7.18 (11.56)	2099	1.4	0.435 (0.264)	16.12 (3.18)	186 (86)	60 (16)	28.91 (97.90)
11th Gear									
241.74 (180.26)	11157 (49.63)	8.13 (13.08)	2100	1.1	0.446 (0.271)	15.71 (3.09)	187 (86)	63 (17)	28.92 (97.93)

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

**NOTE:** This tractor has a driveline protection system that limits the maximum engine torque in gears 1 through 4.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests the fuel temperature at the injection pump inlet was maintained at 115°F (46°C). 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. **2061**, Nebraska Summary 881, June 28, 2013.

Roger M. Hoy  
Director

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

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in 6th gear	66.7
Bystander in 16th gear	82.3

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Track width	25.0 in (635 mm)	25.0 in (635 mm)
Ballast - Cast iron(front end)	4480 lb (2032 kg)	None
- Cast iron(front idlers)	None	None
Height of Drawbar	20.5 in (520 mm)	20.0 in (510 mm)
Static Weight with operator	36000 lb(16329 kg)	31520 lb(14297 kg)

**DRAWBAR PERFORMANCE**  
**(Unballasted at 1800 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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
193.11 (144.00)	31009 (137.93)	2.34 (3.76)	2104	12.5	0.502 (0.306)	13.95 (2.75)	186 (86)	58 (14)	29.00 (98.21)
4th Gear									
233.07 (173.80)	28678 (127.57)	3.05 (4.91)	2077	9.0	0.471 (0.287)	14.86 (2.93)	187 (86)	59 (15)	29.00 (98.21)
5th Gear									
254.91 (190.08)	26615 (118.39)	3.60 (5.79)	2023	7.7	0.451 (0.275)	15.53 (3.06)	187 (86)	56 (13)	28.92 (97.93)
6th Gear									
268.67 (200.35)	25465 (113.27)	3.96 (6.37)	1953	6.5	0.430 (0.261)	16.30 (3.21)	187 (86)	57 (14)	28.94 (98.00)
7th Gear									
273.01 (203.58)	24750 (110.09)	4.14 (6.65)	1800	5.9	0.420 (0.255)	16.70 (3.29)	190 (88)	58 (14)	28.91 (97.90)
8th Gear									
279.60 (208.49)	22175 (98.64)	4.73 (7.61)	1800	4.2	0.412 (0.251)	17.00 (3.35)	188 (87)	59 (15)	28.91 (97.90)
9th Gear									
280.04 (208.82)	19538 (86.91)	5.38 (8.65)	1800	3.1	0.413 (0.251)	16.96 (3.34)	190 (88)	59 (15)	28.91 (97.90)
10th Gear									
283.45 (211.36)	17448 (77.61)	6.09 (9.80)	1800	2.5	0.405 (0.246)	17.32 (3.41)	192 (89)	61 (16)	28.91 (97.90)
11th Gear									
279.00 (208.05)	15134 (67.32)	6.92 (11.13)	1801	1.9	0.411 (0.250)	17.06 (3.36)	190 (88)	63 (17)	28.92 (97.93)
12th Gear									
281.34 (209.80)	13513 (60.11)	7.81 (12.57)	1800	1.5	0.409 (0.249)	17.12 (3.37)	189 (87)	63 (17)	28.92 (97.93)
13th Gear									
282.26 (201.48)	11332 (50.41)	9.34 (15.03)	1801	1.1	0.406 (0.247)	17.25 (3.40)	190 (88)	64 (18)	28.92 (97.93)

**DRAWBAR PERFORMANCE**  
**(Ballasted at 1800 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
202.92 (151.31)	35754 (159.04)	2.13 (3.43)	1940	13.6	0.481 (0.293)	14.55 (2.87)	185 (85)	65 (19)	28.44 (96.31)
4th Gear									
250.40 (186.72)	34317 (152.65)	2.74 (4.41)	1901	10.8	0.461 (0.280)	15.21 (3.00)	189 (87)	67 (19)	28.43 (96.28)
5th Gear									
266.16 (198.47)	31376 (139.57)	3.19 (5.13)	1800	8.0	0.431 (0.262)	16.26 (3.20)	189 (87)	68 (20)	28.42 (96.24)
6th Gear									
275.56 (205.49)	28217 (125.52)	3.67 (5.90)	1800	6.3	0.417 (0.254)	16.80 (3.31)	189 (87)	71 (21)	28.42 (96.24)
7th Gear									
278.55 (207.71)	24828 (110.44)	4.21 (6.78)	1800	4.5	0.413 (0.251)	16.96 (3.34)	195 (91)	71 (22)	28.43 (96.28)
8th Gear									
282.78 (210.87)	22151 (98.53)	4.79 (7.71)	1801	3.1	0.407 (0.247)	17.23 (3.39)	194 (90)	72 (22)	28.43 (96.28)
9th Gear									
282.80 (210.88)	19559 (87.00)	5.42 (8.72)	1800	2.3	0.406 (0.247)	17.27 (3.40)	194 (90)	73 (23)	28.43 (96.28)
10th Gear									
285.32 (212.76)	17432 (77.54)	6.14 (9.88)	1800	1.8	0.402 (0.244)	17.43 (3.43)	192 (89)	73 (23)	28.44 (96.31)
11th Gear									
279.91 (208.73)	15097 (67.15)	6.96 (11.19)	1800	1.4	0.410 (0.249)	17.10 (3.37)	196 (91)	74 (23)	28.44 (96.31)
12th Gear									
280.58 (209.23)	13405 (59.63)	7.85 (12.63)	1801	1.1	0.408 (0.248)	17.17 (3.38)	193 (89)	74 (23)	28.45 (96.34)
13th Gear									
279.89 (208.71)	11200 (49.82)	9.37 (15.08)	1801	0.9	0.409 (0.249)	17.13 (3.37)	196 (91)	75 (24)	28.44 (96.31)

## HYDRAULIC PERFORMANCE

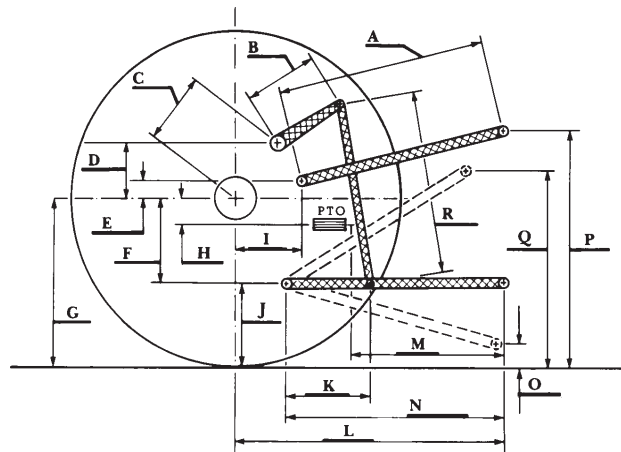
CATEGORY: III

Quick Attach: yes

OECD Static test

Maximum force exerted through whole range:	17263 lbs (76.8 kN)	
	<b>Standard pump</b>	<b>High flow pump</b>
	<u>3 outlet sets combined</u>	
i) Sustained pressure at compensator cutoff:	2934 psi (202 bar)	3012 psi (207 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	44.9 GPM (169.8 l/min)	59.6 GPM (225.8 l/min)
iii) Pump delivery rate at maximum hydraulic power:	42.7 GPM (161.7 l/min)	57.2 GPM (216.6 l/min)
Delivery pressure:	2867 psi (198 bar)	2964 psi (204 bar)
Power:	71.5 HP (53.3 kW)	99.0 HP (73.8 kW)
	<u>single outlet set</u>	
i) Sustained pressure at compensator cutoff:	2918 psi (201 bar)	2900 psi (200 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	39.1 GPM (147.9 l/min)	38.6 GPM (146.1 l/min)
iii) Pump delivery rate at maximum hydraulic power:	39.6 GPM (149.8 l/min)	37.1 GPM (140.6 l/min)
Delivery pressure:	2313 psi (159 bar)	2692 psi (186 bar)
Power:	53.4 HP (39.8 kW)	58.3 HP (43.5 kW)

## HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	27.6	702
B	21.7	550
C	23.5	596
D	23.0	583
E	11.4	290
F	11.8	300
G	33.4	849
H	1.3	34
I	16.7	425
J	21.6	549
K	27.1	688
L	48.4	1230
*L'	52.2	1325
M	27.9	709
N	39.6	1005
O	9.0	230
P	48.6	1234
Q	40.2	1022
R	42.5	1079

\*L' to Quick Attach ends



**CHALLENGER MT755D DIESEL**

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln