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2008

## Test 1929: Challenger MT955B Diesel

Nebraska Tractor Test Lab

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

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# NEBRASKA OECD TRACTOR TEST 1929 – SUMMARY 601

## CHALLENGER MT955B DIESEL

### 16 SPEED

#### 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1049 rpm)</b>					
404.69 (301.78)	2100	24.92 (94.35)	0.432 (0.263)	16.24 (3.20)	
<b>Standard Power Take-off Speed - (PTO speed - 1000 rpm)</b>					
434.63 (324.11)	2000	25.94 (98.20)	0.418 (0.255)	16.75 (3.30)	
<b>Maximum Power (1 hour)</b>					
451.08 (336.37)	1800	25.96 (98.26)	0.403 (0.245)	17.38 (3.42)	

#### VARYING POWER AND FUEL CONSUMPTION

404.69 (301.78)	2100	24.92 (94.35)	0.432 (0.263)	16.24 (3.20)	Air temperature
360.75 (269.02)	2199	24.24 (91.75)	0.471 (0.286)	14.88 (2.93)	76°F (25°C)
270.19 (201.48)	2199	20.74 (78.52)	0.538 (0.327)	13.03 (2.57)	Relative humidity
180.01 (134.23)	2199	17.35 (65.66)	0.676 (0.411)	10.38 (2.04)	38%
90.40 (67.41)	2199	11.71 (44.33)	0.908 (0.552)	7.72 (1.52)	Barometer
2.14 (1.60)	2199	7.08 (26.78)	23.126 (14.067)	0.30 (0.06)	28.80" Hg (97.53 kPa)

Maximum Torque - 1533 lb.-ft. (2079 Nm) at 1450 rpm  
Maximum Torque Rise - 51.4%  
Torque rise at 1700 engine rpm - 38%  
Power increase at 1800 engine rpm - 11.1%

#### 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)	Hp.hr/gal (kW.h/l)	Temp. °F cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—6th Gear</b>									
363.92 (271.38)	32004 (142.36)	4.26 (6.86)	2090	3.37	0.483 (0.294)	14.50 (2.86)	192 (89)	68 (20)	28.60 (96.85)
<b>75% of Pull at Maximum Power—6th Gear</b>									
289.39 (215.80)	23926 (106.43)	4.54 (7.30)	2199	2.33	0.567 (0.345)	12.36 (2.44)	191 (89)	71 (22)	28.56 (96.72)
<b>50% of Pull at Maximum Power—6th Gear</b>									
194.88 (145.32)	15950 (70.95)	4.58 (7.37)	2201	1.39	0.699 (0.425)	10.02 (1.97)	191 (88)	71 (22)	28.55 (96.68)
<b>75% of Pull at Reduced Engine Speed—9th Gear</b>									
288.73 (215.31)	23755 (105.67)	4.56 (7.34)	1548	2.33	0.482 (0.293)	14.54 (2.86)	192 (89)	71 (22)	28.55 (96.68)
<b>50% of Pull at Reduced Engine Speed—9th Gear</b>									
194.52 (145.05)	16025 (71.28)	4.55 (7.33)	1532	1.44	0.532 (0.324)	13.18 (2.60)	191 (88)	72 (22)	28.54 (96.65)

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

**Dates of tests:** May 20 - June 2, 2008

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

**FUEL, OIL and TIME:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8419 **Fuel weight** 7.010 lbs/gal (0.840 kg/l) **Oil** SAE 10W-30 **API service classification** CI-4 **Transmission and hydraulic lubricant** AGCO Trandraulic 821 XL fluid **Total time engine was operated:** 31.0 hours

**ENGINE:** Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** \*JAS00728\* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.402" x 6.748" (137.2 mm x 171.4 mm) **Compression ratio** 18.0 to 1 **Displacement** 928 cu in (15213 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 oil, radiator for transmission and front and rear axle oil **Fuel filter** two paper elements and water separator **Muffler** vertical **Cooling medium temperature control** 2 thermostats

**ENGINE OPERATING PARAMETERS:** Fuel rate: 167.8 - 177.9 lb/h (76.1 - 80.7 kg/h) **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 18.9 - 21.8 psi (130 - 150 kPa) as measured 20.5 psi (141 kPa)

**CHASSIS:** **Type** four wheel drive with triples **Serial No.** \*AGCCO955ENTSG1031\* **Tread width** rear 77.0" (1955 mm) to 183.0" (4650 mm) front 77.0" (1955 mm) to 183.0" (4650 mm) **Wheelbase** 155.5" (3950 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 1.65 (2.65) second 2.09 (3.36) third 2.65 (4.26) fourth 3.36 (5.41) fifth 4.00 (6.44) sixth 4.50 (7.25) seventh 5.08 (8.17) eighth 5.72 (9.20) ninth 6.43 (10.34) tenth 7.24 (11.65) eleventh 8.16 (13.14) twelfth 9.19 (14.79) thirteenth 10.94 (17.61) fourteenth 13.89 (22.36) fifteenth 17.59 (28.30) sixteenth 24.46 (39.36) at 2300 rpm, reverse 1.32 (2.12), 3.20 (5.15), 3.60 (5.80), 8.76 (14.09) **Clutch** wet multiple disch hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated foot pedal **Steering** hydrostatic **Power take-off** 1000 rpm at 2000 engine rpm **Unladen tractor mass** 50385 lb (22854 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	Air dry bulb	Barom. inch Hg (kPa)	
3rd Gear									
307.34 (229.18)	51175 (227.64)	2.25 (3.62)	2134	14.87	0.568 (0.345)	12.35 (2.43)	191 (88)	59 (15)	28.57 (96.74)
4th Gear									
349.66 (260.74)	41988 (186.77)	3.12 (5.03)	2096	5.37	0.503 (0.306)	13.93 (2.74)	192 (89)	60 (16)	28.56 (96.72)
5th Gear									
361.81 (269.80)	36050 (160.36)	3.76 (6.06)	2092	4.06	0.487 (0.296)	14.40 (2.84)	192 (89)	68 (20)	28.60 (96.85)
6th Gear									
363.92 (271.38)	32004 (142.36)	4.26 (6.86)	2090	3.37	0.483 (0.294)	14.50 (2.86)	192 (89)	68 (20)	28.60 (96.85)
7th Gear									
359.04 (267.73)	27778 (122.56)	4.85 (7.80)	2094	2.77	0.490 (0.298)	14.31 (2.82)	192 (89)	66 (19)	28.61 (96.88)
8th Gear									
358.15 (267.07)	24508 (109.02)	5.48 (8.82)	2095	2.47	0.491 (0.299)	14.27 (2.81)	192 (89)	65 (18)	28.62 (96.92)
9th Gear									
352.25 (262.67)	21438 (95.36)	6.16 (9.92)	2090	2.14	0.500 (0.304)	14.02 (2.76)	192 (89)	64 (18)	28.63 (96.95)
10th Gear									
353.82 (263.84)	19093 (84.93)	6.95 (11.18)	2087	1.85	0.497 (0.303)	14.10 (2.78)	192 (89)	68 (20)	28.59 (96.82)
11th Gear									
344.51 (256.90)	16389 (72.90)	7.88 (12.69)	2092	1.51	0.512 (0.311)	13.70 (2.70)	192 (89)	68 (20)	28.58 (96.78)
12th Gear									
342.46 (255.37)	14455 (64.30)	8.88 (14.30)	2092	1.37	0.515 (0.313)	13.60 (2.68)	192 (89)	69 (21)	28.57 (96.75)

**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. For the maximum power tests the fuel temperature at the primary fuel filter was maintained at 114°F(45°C). 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 and correct report of official Tractor Test No. **1929**, Nebraska Summary 601, December 15, 2008.

Roger M. Hoy  
Director

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

#### TRACTOR SOUND LEVEL WITH CAB

**dB(A)**

At no load in 6th gear	76.7
Bystander	--

#### TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b> - No., size, ply & psi(kPa)	Six 520/85R46;***;7(50)	Six 520/85R46;***;8(55)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	None	None
<b>Front Tires</b> - No., size, ply & psi(kPa)	Six 520/85R46;***;16(110)	Six 520/85R46;***;12(85)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron -front end (total)	3330 lb (1510 kg)	None
<b>Height of Drawbar</b>	21.5 in (545 mm)	21.5 in (545 mm)
<b>Static Weight with operator</b> - Rear	20155 lb (9142 kg)	22030 lb (9993 kg)
- Front	33735 lb(15302 kg)	28530 lb(12941 kg)
- Total	53890 lb(24444 kg)	50560 lb(22934 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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
3rd Gear									
315.35 (235.16)	50828 (226.10)	2.33 (3.74)	2137	12.23	0.554 (0.337)	12.65 (2.49)	190 (88)	59 (15)	28.57 (96.75)
4th Gear									
360.80 (269.05)	48803 (217.09)	2.77 (4.46)	1957	10.04	0.505 (0.307)	13.88 (2.73)	192 (89)	61 (16)	28.55 (96.68)
5th Gear									
394.46 (294.15)	45292 (201.47)	3.27 (5.26)	1868	6.73	0.469 (0.285)	14.95 (2.95)	192 (89)	61 (16)	28.55 (96.68)
6th Gear									
397.44 (296.37)	40782 (181.41)	3.65 (5.88)	1827	5.25	0.456 (0.277)	15.37 (3.03)	191 (88)	68 (20)	28.60 (96.85)
7th Gear									
397.29 (296.26)	36327 (161.59)	4.10 (6.60)	1796	4.06	0.457 (0.278)	15.32 (3.02)	192 (89)	67 (19)	28.60 (96.85)
8th Gear									
399.53 (297.93)	32194 (143.21)	4.65 (7.49)	1798	3.41	0.452 (0.275)	15.50 (3.05)	192 (89)	66 (19)	28.62 (96.92)
9th Gear									
395.88 (295.21)	28189 (125.39)	5.27 (8.48)	1799	2.83	0.458 (0.279)	15.30 (3.01)	192 (89)	65 (18)	28.63 (96.95)
10th Gear									
397.78 (296.62)	25119 (111.74)	5.94 (9.56)	1793	2.41	0.460 (0.280)	15.23 (3.00)	192 (89)	68 (20)	28.59 (96.82)
11th Gear									
390.77 (291.39)	21850 (97.20)	6.71 (10.79)	1789	2.07	0.464 (0.282)	15.10 (2.97)	192 (89)	69 (21)	28.57 (96.75)
12th Gear									
391.03 (291.59)	19342 (86.04)	7.58 (12.20)	1791	1.80	0.464 (0.282)	15.09 (2.97)	192 (89)	70 (21)	28.57 (96.75)
13th Gear									
388.00 (289.33)	16121 (71.71)	9.03 (14.53)	1786	1.44	0.474 (0.288)	14.80 (2.91)	192 (89)	70 (21)	28.56 (96.72)

**DRAWBAR PERFORMANCE**  
**(Ballasted 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
2nd Gear									
266.78 (198.94)	53606 (238.45)	1.87 (3.00)	2199	13.11	0.626 (0.381)	11.20 (2.21)	191 (89)	58 (14)	28.87 (97.77)
3rd Gear									
330.78 (246.66)	51828 (230.54)	2.39 (3.85)	2128	9.01	0.530 (0.322)	13.24 (2.61)	192 (89)	58 (14)	28.88 (97.80)
4th Gear									
375.06 (279.68)	50832 (226.11)	2.77 (4.45)	1916	7.99	0.491 (0.298)	14.29 (2.81)	192 (89)	58 (14)	28.89 (97.83)
5th Gear									
394.85 (294.44)	46622 (207.39)	3.18 (5.11)	1806	5.92	0.461 (0.281)	15.19 (2.99)	192 (89)	57 (14)	28.90 (97.87)
6th Gear									
401.71 (299.55)	41693 (185.46)	3.61 (5.81)	1802	4.71	0.451 (0.274)	15.54 (3.06)	192 (89)	61 (16)	29.09 (98.51)
7th Gear									
402.17 (299.90)	36597 (162.79)	4.12 (6.63)	1802	3.64	0.449 (0.273)	15.60 (3.07)	192 (89)	61 (16)	29.09 (98.51)
8th Gear									
404.53 (301.66)	32511 (144.61)	4.67 (7.51)	1800	3.01	0.451 (0.274)	15.55 (3.06)	192 (89)	62 (17)	29.08 (98.48)
9th Gear									
398.67 (297.29)	28341 (126.07)	5.28 (8.49)	1800	2.45	0.454 (0.276)	15.43 (3.04)	192 (89)	55 (13)	28.99 (98.17)
10th Gear									
399.54 (297.94)	25158 (111.91)	5.96 (9.58)	1798	2.09	0.455 (0.277)	15.40 (3.03)	192 (89)	56 (13)	28.96 (98.07)
11th Gear									
390.47 (291.17)	21744 (96.72)	6.73 (10.84)	1799	1.86	0.468 (0.285)	14.98 (2.95)	192 (89)	61 (16)	29.10 (98.54)
12th Gear									
389.07 (290.13)	19079 (84.87)	7.65 (12.31)	1806	1.37	0.468 (0.285)	14.97 (2.95)	192 (89)	57 (14)	28.94 (98.00)
13th Gear									
385.77 (287.67)	15922 (70.82)	9.09 (14.62)	1796	1.04	0.475 (0.289)	14.75 (2.91)	192 (89)	56 (13)	28.95 (98.04)

## HYDRAULIC PERFORMANCE

CATEGORY: NA

Quick Attach: NA

Maximum force exerted through whole range:

NA

i) Sustained pressure at compensator cutoff:

3067 psi (211 bar)

2917 psi (201 bar)

**Standard pump**

**High flow pump**

ii) Pump delivery rate at minimum pressure  
and rated engine speed:

43.7 GPM (165.4 l/min)

59.4 GPM (224.9 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

41.2 GPM (156.0 l/min)

54.5 GPM (206.4 l/min)

Delivery pressure:

2761 psi (190 bar)

2652 psi (183 bar)

Power:

66.4 Hp (49.5 kW)

84.4 Hp (62.9 kW)



## CHALLENGER MT955B DIESEL

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln