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2014

## Test 2104A: Challenger MT575D AP6

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 2104A—SUMMARY 969A

## CHALLENGER MT575D AP6 DIESEL

### 24 SPEED

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

**Dates of tests:** November 18 to December 3, 2014

**Manufacturer:** AGCO S.A. BP 307, Avenue Blaise Pascal, 60026 Beauvais, France

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	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—1051 rpm)						
185.13 (138.05)	2100	11.15 (42.22)	0.424 (0.258)	16.60 (3.27)	0.59 (2.24)	
Standard Power Take-off Speed (1000 rpm)						
196.82 (146.77)	2000	11.24 (42.54)	0.402 (0.244)	17.52 (3.45)	0.66 (2.51)	
Maximum Power (1 hour)						
202.14 (150.74)	1950	11.28 (42.71)	0.393 (0.239)	17.92 (3.53)	0.71 (2.69)	

#### VARYING POWER AND FUEL CONSUMPTION

185.13 (138.05)	2100	11.15 (42.22)	0.424 (0.258)	16.60 (3.27)	0.59 (2.24)	Air temperature
159.01 (118.57)	2123	9.69 (36.69)	0.429 (0.261)	16.41 (3.23)	0.54 (2.06)	73°F (23°C)
119.76 (89.31)	2131	7.69 (29.10)	0.452 (0.275)	15.58 (3.07)	0.49 (1.84)	Relative humidity
80.07 (59.71)	2139	5.87 (22.24)	0.516 (0.314)	13.63 (2.69)	0.39 (1.46)	9%
40.21 (29.98)	2148	3.95 (14.95)	0.691 (0.421)	10.18 (2.00)	0.33 (1.23)	Barometer
2.66 (1.98)	2155	2.32 (8.77)	6.133 (3.730)	1.15 (0.23)	0.24 (0.91)	28.80" Hg (97.53 kPa)

Maximum torque - 644 lb.-ft. (873 Nm) at 1500 rpm

Maximum torque rise - 39.6%

Torque rise at 1681 engine rpm - 32%

Power increase at 1950 engine rpm - 9.2%

#### 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)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—11th(3A) Gear										
168.77 (125.85)	12963 (57.66)	4.88 (7.85)	2100	5.3	0.463 (0.281)	15.21 (3.00)	0.027 (0.016)	193 (89)	46 (8)	28.69 (97.16)
75% of Pull at Maximum Power—11th(3A) Gear										
130.95 (97.65)	9722 (43.25)	5.05 (8.13)	2127	3.3	0.474 (0.288)	14.84 (2.92)	0.028 (0.017)	187 (86)	42 (6)	28.73 (97.29)
50% of Pull at Maximum Power—11th(3A) Gear										
89.41 (66.67)	6495 (28.89)	5.16 (8.30)	2136	1.6	0.526 (0.320)	13.39 (2.64)	0.026 (0.016)	184 (84)	41 (5)	28.74 (97.33)
75% of Pull at Reduced Engine Speed—15th(3C) Gear										
130.63 (97.41)	9678 (43.05)	5.06 (8.14)	1506	3.1	0.404 (0.245)	17.44 (3.43)	0.036 (0.022)	188 (87)	40 (4)	28.75 (97.36)
50% of Pull at Reduced Engine Speed—15th(3C) Gear										
89.44 (66.70)	6495 (28.89)	5.16 (8.30)	1513	1.6	0.429 (0.261)	16.39 (3.23)	0.033 (0.020)	185 (85)	41 (5)	28.74 (97.33)

**CONSUMABLE Fluids, OIL and TIME: Fuel** No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8450 **Fuel weight** 7.036 lbs/gal (0.843 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DE F weight** 9.071 lbs/gal (1.087 kg/l) **Oil SAE** 10W-30 **API service classification** CJ-4 **Transmission and hydraulic lubricant** BP Terrac Tractan 9 15W/40 **Front axle lubricant** BP Terrac Tractan 9 15W/40 **Total time engine was operated:** 20.5 hours

**ENGINE: Make** Sisu **AGCO Power Diesel Type** six cylinder vertical with turbocharger and air to air intercooler and SCR (selective catalyst reduction) exhaust treatment **Serial No.** 74AW1Z26237 **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.252" x 5.276" (108.0 mm x 134.0 mm) **Compression ratio** 17.8 to 1 **Displacement** 449 cu in (7365 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** three paper cartridges **Fuel cooler** radiator for pump return fuel **Exhaust** DOC (diesel oxidation catalyst) and SCR (selective catalyst reduction) with a vertical muffler **Cooling medium temperature control** thermostat and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 77.9 - 83.9 lb/h (35.3 - 38.1 kg/h) **High idle:** 2135 - 2185 rpm **Turbo boost:** nominal 20.3 - 22.5 psi (140 - 155 kPa) as measured 21.3 psi (147 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** D260051 **Tread width** rear 55.2" (1401 mm) to 119.0" (3022 mm) front 60.9" (1548 mm) to 88.8" (2256 mm) **Wheelbase** 117.8" (2993 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.01 (1.62) second 1.21 (1.94) third 1.42 (2.29) fourth 1.72 (2.76) fifth 2.01 (3.24) sixth 2.42 (3.90) seventh 2.73 (4.39) eighth 3.27 (5.27) ninth 3.85 (6.19) tenth 4.63 (7.45) eleventh 5.22 (8.40) twelfth 5.44 (8.76) thirteenth 6.28 (10.10) fourteenth 6.55 (10.54) fifteenth 7.36 (11.85) sixteenth 8.87 (14.27) seventeenth 10.43 (16.78) eighteenth 11.85 (19.07) nineteenth 12.55 (20.19) twentieth 14.25 (22.93) twenty-first 16.73 (26.92) twenty-second 20.13 (32.39) twenty-third 23.67 (38.09) twenty-fourth 26.72 (43.00) electronically limited

## DRAWBAR PERFORMANCE AT 2100 RPM

(Unballasted - Front Drive Engaged)

### DRAWBAR 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)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
8th(2B) Gear										
127.63 (95.17)	16822 (74.83)	2.85 (4.58)	2121	14.4	0.517 (0.315)	13.60 (2.68)	0.029 (0.018)	188 (87)	46 (8)	28.72 (97.26)
9th(2C) Gear										
148.05 (110.40)	16105 (71.64)	3.45 (5.55)	2114	10.0	0.488 (0.297)	14.43 (2.84)	0.029 (0.017)	190 (88)	45 (7)	28.72 (97.26)
10th(2D) Gear										
157.49 (117.44)	13819 (61.47)	4.27 (6.87)	2099	6.6	0.464 (0.282)	15.17 (2.99)	0.028 (0.017)	190 (88)	43 (6)	28.73 (97.29)
11th(3A) Gear										
168.77 (125.85)	12963 (57.66)	4.88 (7.85)	2100	5.3	0.463 (0.281)	15.21 (3.00)	0.027 (0.016)	193 (89)	46 (8)	28.69 (97.16)
12th(2E) Gear										
167.30 (124.76)	12235 (54.42)	5.13 (8.26)	2100	4.6	0.468 (0.284)	15.05 (2.96)	0.027 (0.017)	194 (90)	46 (8)	28.69 (97.16)
13th(3B) Gear										
170.52 (127.15)	10681 (47.51)	5.99 (9.64)	2100	3.7	0.459 (0.279)	15.34 (3.02)	0.027 (0.017)	194 (90)	47 (9)	28.70 (97.19)
14th(2F) Gear										
169.97 (126.75)	10201 (45.38)	6.25 (10.06)	2100	3.5	0.458 (0.279)	15.35 (3.02)	0.027 (0.017)	195 (90)	47 (8)	28.70 (97.19)
15th(3C) Gear										
172.43 (128.58)	9139 (40.65)	7.08 (11.39)	2100	2.7	0.453 (0.275)	15.54 (3.06)	0.026 (0.016)	193 (89)	47 (8)	28.71 (97.22)
16th(3D) Gear										
172.76 (128.83)	7543 (33.55)	8.59 (13.82)	2100	1.8	0.450 (0.274)	15.62 (3.08)	0.027 (0.016)	193 (89)	47 (8)	28.71 (97.22)

TRACTOR SOUND LEVEL WITH CAB	Front wheel drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 10th (2D) gear	68.3	68.0
Bystander in 23rd (4E) gear		83.3

### TIRES AND WEIGHT

Rear Tires - No., size, ply & psi(kPa)

Front Tires - No., size, ply & psi(kPa)

Height of Drawbar

Static Weight with operator - Rear  
- Front  
- Total

### Tested without ballast

Two 520/85R42;\*\*,14(100)

Two 16.9R30;\*\*,18(125)

19.5 in (495 mm)

11280 lb (5116 kg)

7420 lb (3366 kg)

18700 lb (8482 kg)

reverse 1.01 (1.62), 1.21 (1.94), 1.42 (2.29), 1.72 (2.76), 2.01 (3.24), 2.42 (3.90), 2.73 (4.39), 3.27 (5.27), 3.85 (6.19), 4.63 (7.45), 5.22 (8.40), 5.44 (8.76), 6.28 (10.10), 6.55 (10.54), 7.36 (11.85), 8.87 (14.27) 10.43 (16.78), 11.85 (19.07), 12.55 (20.19), 14.25 (22.93), 16.73 (26.92), 20.13 (32.39), 23.67 (38.09), 26.72 (43.00) electronically limited  
**Clutch** multiple wet disc operated by foot pedal  
**Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together  
**Steering** hydrostatic **Power take-off** 540 rpm at 1520 or 1890 engine rpm and 1000 rpm at 2000 engine rpm **Unladen tractor mass** 18525 lb (8403 kg)

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

**NOTE 1:** The performance results on this report were obtained from tests carried out on the Massey Ferguson 7622 Dyna 6 Diesel.

**NOTE 2:** This tractor has a driveline protection system that limits the maximum engine torque in gear notations 2A, 2B, 2C and 2D.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor did not meet the manufacturer's claims of 15% power bulge, 54% torque rise, nor remote hydraulic flow claim of 39.6 gpm (150 lpm) with optional pump. The manufacturer's remote hydraulic flow claim of 29 GPM (110 lpm) with standard pump was not verified. For the maximum power tests the fuel temperature at the primary fuel filter was maintained at 127°F (53°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. **2104A**, Nebraska Summary 969A, January 8, 2015.

Roger M. Hoy  
Director

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

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED -1950 RPM**  
**MAXIMUM POWER IN SELECTED GEARS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		D.E.F. Consumption	Temp.°F (°C)		Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	lb/hp.hr (kg/kW.h)	cool- ing med	Air dry bulb	
8th(2B) Gear										
128.03 (95.47)	16792 (74.69)	2.86 (4.60)	2121	14.3	0.515 (0.313)	13.66 (2.69)	0.030 (0.018)	189 (87)	46 (8)	28.72 (97.26)
9th(2C) Gear										
148.27 (110.56)	16106 (71.64)	3.46 (5.56)	2114	9.9	0.487 (0.296)	14.46 (2.85)	0.029 (0.017)	190 (88)	46 (8)	28.73 (97.29)
10th(2D) Gear										
163.40 (121.85)	15521 (69.04)	3.95 (6.36)	1987	8.8	0.451 (0.274)	15.60 (3.07)	0.032 (0.020)	191 (88)	44 (7)	28.73 (97.29)
11th(3A) Gear										
178.50 (133.10)	15167 (67.46)	4.42 (7.11)	1950	7.8	0.443 (0.270)	15.87 (3.13)	0.033 (0.020)	194 (90)	46 (8)	28.69 (97.16)
12th(2E) Gear										
178.69 (133.25)	14379 (63.96)	4.66 (7.50)	1950	6.7	0.443 (0.270)	15.87 (3.13)	0.033 (0.020)	194 (90)	46 (8)	28.68 (97.12)
13th(3B) Gear										
182.76 (136.28)	12489 (55.55)	5.49 (8.84)	1950	4.8	0.434 (0.264)	16.20 (3.19)	0.033 (0.020)	195 (91)	47 (8)	28.69 (97.16)
14th(2F) Gear										
182.90 (136.39)	11969 (53.24)	5.73 (9.22)	1950	4.6	0.431 (0.262)	16.32 (3.21)	0.033 (0.020)	196 (91)	47 (8)	28.70 (97.19)
15th(3C) Gear										
186.67 (139.20)	10762 (47.87)	6.51 (10.47)	1950	3.8	0.423 (0.257)	16.65 (3.28)	0.032 (0.019)	195 (90)	47 (8)	28.70 (97.19)
16th(3D) Gear										
188.27 (140.39)	8916 (39.66)	7.92 (12.75)	1950	2.5	0.419 (0.255)	16.80 (3.31)	0.032 (0.019)	196 (91)	47 (8)	28.71 (97.22)
17th(3E) Gear										
186.38 (138.98)	7450 (33.14)	9.39 (15.10)	1950	1.8	0.424 (0.258)	16.58 (3.27)	0.032 (0.020)	196 (91)	47 (8)	28.71 (97.22)

Shiftable PTO Performance  
540 rpm shaft limited to 80 hp(60 kW)  
Economy mode  
541 PTO rpm @ 1526 engine rpm

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)
79.92 (59.59)	1526	4.61 (17.45)	0.406 (0.247)	17.34 (3.42)	0.40 (1.51)
60.13 (44.84)	1530	3.71 (14.05)	0.434 (0.264)	16.20 (3.19)	0.36 (1.36)
40.13 (29.93)	1533	2.87 (10.86)	0.503 (0.306)	13.99 (2.76)	0.33 (1.25)
20.13 (15.01)	1535	2.02 (7.65)	0.707 (0.430)	9.96 (1.96)	0.29 (1.10)
1.22 (0.91)	1538	1.32 (5.01)	7.606 (4.627)	0.93 (0.18)	0.24 (0.91)

Normal mode  
542 PTO rpm @ 1894 engine rpm

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)
80.05 (59.69)	1894	5.14 (19.47)	0.452 (0.275)	15.57 (3.07)	0.41 (1.55)
60.24 (44.92)	1897	4.26 (16.13)	0.498 (0.303)	14.14 (2.79)	0.38 (1.44)
40.15 (29.94)	1901	3.43 (12.98)	0.601 (0.366)	11.71 (2.31)	0.35 (1.32)
20.11 (14.99)	1905	2.51 (9.51)	0.879 (0.535)	8.01 (1.58)	0.27 (1.02)
1.21 (0.90)	1907	1.73 (6.54)	10.079 (6.131)	0.70 (0.14)	0.24 (0.91)

## HYDRAULIC PERFORMANCE

CATEGORY: III

Quick Attach: None

OECD Static test

Maximum force exerted through whole range: 13670 lbs (60.8 kN)

i) Sustained pressure of the open relief valve: 3002 psi (207 bar)

### Optional pump

three outlet sets combined

ii) Pump delivery rate at minimum pressure: 38.8 GPM (146.8 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 36.6 GPM (138.4 l/min)

Delivery pressure: 2676 psi (184 bar)

Power: 57.1 HP (42.6 kW)

### single outlet set

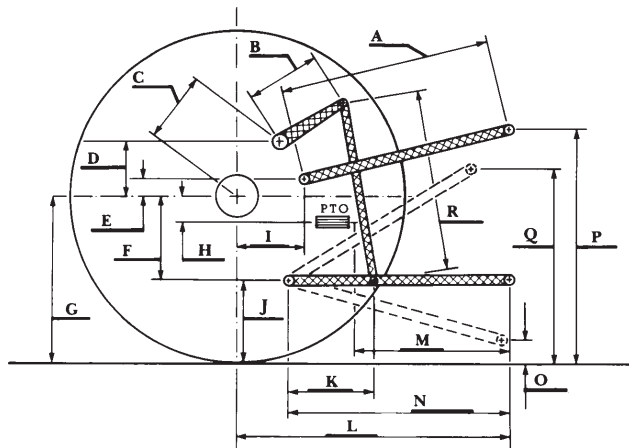
ii) Pump delivery rate at minimum pressure: 26.7 GPM (101.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 26.1 GPM (98.9 l/min)

Delivery pressure: 2425 psi (167 bar)

Power: 37.0 HP (27.6 kW)



### HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	30.3	770
B	15.7	400
C	20.7	525
D	19.1	485
E	8.3	210
F	12.2	310
G	36.4	925
H	2.0	50
I	17.7	450
J	24.2	615
K	21.8	554
L	47.2	1200
M	22.0	560
N	37.1	942
O	11.1	283
P	51.2	1300
Q	41.6	1057
R	36.3	923



**Challenger MT575D Diesel**

Institute of Agriculture and Natural Resources  
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