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January 2000

## Test 1950: Challenger MT 445 Diesel

Nebraska Tractor Test Lab

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

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# SUMMARY OF OECD TEST 1950-NEBRASKA SUMMARY 360A

## CHALLENGER MT 445 DIESEL

### 12 SPEED

#### POWER TAKE-OFF PERFORMANCE (540 RPM Shaft)

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—625 rpm)</b>					
68.4 (51.0)	2201	4.27 (16.18)	0.436 (0.265)	16.02 (3.16)	
<b>Standard Power Take-off Speed (540 rpm)</b>					
64.8 (48.3)	1903	3.83 (14.50)	0.413 (0.251)	16.90 (3.33)	

#### VARYING POWER AND FUEL CONSUMPTION

68.4 (51.0)	2201	4.27 (16.18)	0.436 (0.265)	16.02 (3.16)	Air temperature
59.5 (44.4)	2251	3.78 (14.31)	0.444 (0.270)	15.74 (3.10)	73°F (23°C)
45.2 (33.7)	2275	3.07 (11.61)	0.475 (0.289)	14.73 (2.90)	Relative humidity
30.4 (22.7)	2295	2.41 (9.13)	0.555 (0.337)	12.59 (2.48)	42%
15.3 (11.4)	2310	1.77 (6.70)	0.809 (0.492)	8.63 (1.70)	Barometer
--	2325	1.19 (4.50)	--	--	29.4" Hg (99.5 kPa)
--			--	--	

Maximum Torque -191.7 lb.-ft. (259.9 Nm) at 1103 rpm

Maximum Torque Rise -17.3%

Torque rise at 1800 engine rpm -13%

#### POWER TAKE-OFF PERFORMANCE (1000 RPM Shaft)

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—1100 rpm)</b>					
69.7 (52.0)	2200	4.26 (16.14)	0.427 (0.260)	16.34 (3.22)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
68.0 (50.7)	2000	3.99 (15.11)	0.409 (0.249)	17.06 (3.36)	

#### VARYING POWER AND FUEL CONSUMPTION

69.7 (52.0)	2200	4.26 (16.14)	0.427 (0.260)	16.34 (3.22)	Air temperature
60.6 (45.2)	2254	3.76 (14.24)	0.434 (0.264)	16.09 (3.17)	73°F (23°C)
46.0 (34.3)	2277	3.06 (11.57)	0.464 (0.282)	15.06 (2.97)	Relative humidity
30.8 (23.0)	2296	2.40 (9.08)	0.543 (0.330)	12.86 (2.53)	38%
15.6 (11.6)	2311	1.76 (6.67)	0.791 (0.481)	8.83 (1.74)	Barometer
--	2326	1.22 (4.63)	--	--	29.5" Hg (99.9 kPa)
--			--	--	

Maximum Torque -197.5 lb.-ft. (267.8 Nm) at 1401 rpm

Maximum Torque Rise -19.7%

Torque rise at 1800 engine rpm -9%

**Location of Test:** Silsoe Research Institute, Wreth Park, Silsoe, Bedford, England MK45 4HS

**Dates of Test:** October to December, 2000

**Manufacturer:** AGCO Limited, P.O. Box 62, Banner Lane, Coventry, West Midlands, England CV4 9GF

**FUEL and OIL:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.839 **Fuel weight** 6.98 lbs/gal (0.837 kg/l) **Oil** SAE 15W-30 **API service classification** CD **Transmission and hydraulic lubricant** SAE 15W-30 **Front axle lubricant** SAE 15W-30

**ENGINE:** Make Perkins Diesel **Type** four cylinder vertical **Serial No.** U060437F **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.055" x 5.00" (103.0 mm x 127.0 mm) **Compression ratio** 17.3 to 1 **Displacement** 258 cu in (4233 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat

**CHASSIS:** **Type** front wheel assist **Serial No.** ABBD24JHXAJ01334 **Tread width** rear 60.4" (1535 mm) to 83.9" (2130 mm) front 63.4" (1610 mm) to 75.4" (1915 mm) **Wheelbase** 92.5" (2350 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph (km/h)** first 1.45 (2.33) second 1.89 (3.05) third 2.49 (4.00) fourth 3.26 (5.24) fifth 4.09 (6.58) sixth 5.34 (8.60) seventh 7.02 (11.29) eighth 9.18 (14.78) ninth 11.04 (17.77) tenth 14.43 (23.22) eleventh 18.94 (30.48) twelfth 24.80 (39.91) reverse 1.64 (2.64), 2.14 (3.45), 2.81 (4.52), 3.68 (5.93), 4.62 (7.44), 6.04 (9.72), 7.93 (12.76), 10.38 (16.71), 12.48 (20.09), 16.31 (26.25), 21.41 (34.45), 28.04 (45.12) **Clutch** single dry 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** single speed - 540 rpm at 1789 engine rpm, dual speed - 540 rpm at 1903 engine rpm or 1000 rpm at 2000 engine rpm **Unladen tractor mass** 6935 lb (3145 kg)

**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)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—7th (3M) Gear</b>									
60.2 (44.9)	3400 (15.1)	6.64 (10.69)	2198	4.0	0.504 (0.306)	13.87 (2.73)	183 (84)	45 (7)	29.2 (98.8)
<b>75% of Pull at Maximum Power—7th (3M) Gear</b>									
46.8 (34.9)	2550 (11.3)	6.88 (11.06)	2252	3.2	0.533 (0.324)	13.09 (2.58)	183 (84)	43 (6)	29.2 (98.8)
<b>50% of Pull at Maximum Power—7th (3M) Gear</b>									
31.5 (23.5)	1685 (7.5)	7.01 (11.28)	2278	2.3	0.620 (0.377)	11.27 (2.22)	183 (84)	43 (6)	29.2 (98.8)
<b>75% of Pull at Reduced Engine Speed—8th (4M) Gear</b>									
46.5 (34.7)	2540 (11.3)	6.87 (11.06)	1719	3.1	0.468 (0.285)	14.92 (2.94)	179 (82)	43 (6)	29.2 (98.8)
<b>50% of Pull at Reduced Engine Speed—8th (4M) Gear</b>									
31.4 (23.4)	1675 (7.5)	7.03 (11.31)	1743	2.2	0.508 (0.309)	13.76 (2.71)	181 (83)	43 (6)	29.2 (98.8)

**MAXIMUM POWER IN SELECTED GEARS**

<b>2nd(2L) Gear</b>									
30.4 (22.7)	6970 (31.0)	1.64 (2.64)	2275	15.0	0.649 (0.395)	10.76 (2.12)	184 (84)	45 (7)	29.2 (98.8)
<b>3rd(3L) Gear</b>									
39.4 (29.4)	6870 (30.6)	2.15 (3.47)	2259	14.7	0.601 (0.366)	11.62 (2.29)	183 (84)	45 (7)	29.2 (98.8)
<b>4th(4L) Gear</b>									
50.8 (37.9)	6720 (29.9)	2.83 (4.56)	2235	13.4	0.557 (0.339)	12.54 (2.47)	183 (84)	45 (7)	29.2 (98.8)
<b>5th(1M) Gear</b>									
58.1 (43.3)	5890 (26.2)	3.70 (5.96)	2206	8.6	0.526 (0.320)	13.29 (2.62)	183 (84)	43 (6)	29.2 (98.8)
<b>6th(2M) Gear</b>									
59.7 (44.5)	4485 (20.0)	4.99 (8.03)	2199	5.6	0.508 (0.309)	13.76 (2.71)	183 (84)	45 (7)	29.2 (98.8)
<b>7th(3M) Gear</b>									
60.2 (44.9)	3400 (15.1)	6.64 (10.69)	2198	4.0	0.503 (0.306)	13.87 (2.73)	183 (84)	45 (7)	29.2 (98.8)
<b>8th(4M) Gear</b>									
58.8 (43.8)	2510 (11.2)	8.79 (14.15)	2200	3.1	0.519 (0.316)	13.45 (2.65)	183 (84)	45 (7)	29.2 (98.8)
<b>9th(1H) Gear</b>									
59.3 (44.2)	2100 (9.4)	10.58 (17.03)	2192	2.8	0.508 (0.309)	13.76 (2.71)	183 (84)	43 (6)	29.2 (98.8)

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

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. The performance results on this summary were taken from OECD tests conducted under the Code 2 Test Code Procedure.

**NOTE:** The data on this summary was obtained from OECD report 1950 conducted on the Massey Ferguson 4233 Diesel

**Report reissued:** Supplemental sales permit for Massey Ferguson 4335 Diesel, April 2002.

**Report reissued:** Supplemental sales permit for Challenger MT 445 Diesel, July, 2003.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **1950**, Nebraska Summary 360A , July 2, 2003.

Leonard L. Bashford  
Director

M.F. Kocher  
V.I. Adamchuk  
W.P. Campbell  
Board of Tractor Test Engineers

**TIRES AND WEIGHT**

**Rear Tires**—No., size, ply & psi (kPa)  
**Front Tires**—No., size, ply & psi (kPa)

**Tested Without Ballast**

Two 13.6R38;\*\*,12(83)  
Two 12.4R24;\*\*,13(90)

**Height of Drawbar**

**Static Weight with operator** —Rear  
—Front  
—Total

18.3 in (466 mm)  
4210 lb (1910 kg)  
2890 lb (1310 kg)  
7100 lb (3220 kg)

**DRAWBAR PERFORMANCE**  
**(Unballasted - Front Drive Disengaged)**  
**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	Temp.°F (°C) Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—7th (3M) Gear</b>									
57.5 (42.9)	3290 (14.6)	6.56 (10.55)	2199	4.3	0.526 (0.320)	13.29 (2.62)	185 (85)	57 (14)	29.7 (100.5)
<b>75% of Pull at Maximum Power—7th (3M) Gear</b>									
45.1 (33.6)	2485 (11.0)	6.80 (10.94)	2253	3.3	0.544 (0.331)	12.84 (2.53)	183 (84)	57 (14)	29.7 (100.5)
<b>50% of Pull at Maximum Power—7th (3M) Gear</b>									
30.2 (22.5)	1635 (7.3)	6.93 (11.15)	2275	2.3	0.637 (0.388)	10.96 (2.16)	183 (84)	57 (14)	29.7 (100.5)
<b>75% of Pull at Reduced Engine Speed—8th (4M) Gear</b>									
45.1 (33.6)	2485 (11.0)	6.80 (10.94)	1722	3.4	0.468 (0.285)	14.92 (2.94)	181 (83)	57 (14)	29.7 (100.5)
<b>50% of Pull at Reduced Engine Speed—8th (4M) Gear</b>									
30.1 (22.4)	1630 (7.3)	6.92 (11.13)	1736	2.4	0.521 (0.317)	13.40 (2.64)	181 (83)	57 (14)	29.7 (100.5)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
1st (1L) Gear									
17.9 (13.4)	5315 (23.6)	1.26 (2.03)	2292	14.5	0.821 (0.500)	8.50 (1.68)	183 (84)	57 (14)	29.7 (100.5)
2nd (2L) Gear									
23.6 (17.6)	5240 (23.3)	1.69 (2.72)	2285	12.4	0.721 (0.439)	9.67 (1.91)	183 (84)	57 (14)	29.7 (100.5)
3rd (3L) Gear									
30.8 (23.0)	5170 (23.0)	2.23 (3.59)	2275	11.3	0.635 (0.386)	11.01 (2.17)	183 (84)	57 (14)	29.7 (100.5)
4th (4L) Gear									
39.4 (29.4)	5035 (22.4)	2.94 (4.73)	2262	10.2	0.580 (0.353)	12.03 (2.37)	183 (84)	57 (14)	29.7 (100.5)
5th (1M) Gear									
49.5 (36.9)	4970 (22.1)	3.73 (6.01)	2242	8.5	0.536 (0.326)	13.01 (2.56)	183 (84)	57 (14)	29.7 (100.5)
6th (2M) Gear									
57.3 (42.7)	4390 (19.5)	4.89 (7.87)	2201	6.5	0.525 (0.319)	13.30 (2.62)	185 (85)	57 (14)	29.7 (100.5)
7th (3M) Gear									
57.5 (42.9)	3290 (14.6)	6.56 (10.55)	2199	4.3	0.526 (0.320)	13.29 (2.62)	185 (85)	57 (14)	29.7 (100.5)
8th (4M) Gear									
55.9 (41.7)	2415 (10.8)	8.68 (13.97)	2198	3.3	0.538 (0.327)	12.99 (2.56)	185 (85)	57 (14)	29.7 (100.5)
9th (1H) Gear									
57.0 (42.5)	2045 (9.1)	10.45 (16.81)	2189	2.8	0.526 (0.320)	13.29 (2.62)	183 (84)	57 (14)	29.7 (100.5)

<b>TRACTOR SOUND LEVEL WITHOUT CAB</b>	<b>Front Wheel Drive</b>	
	<b>Disengaged dB(A)</b>	<b>Engaged dB(A)</b>
Maximum sound level in 6th(2M) gear	95.0	95.0
Bystander in 12th(4H) gear	—	—

### THREE POINT HITCH PERFORMANCE (OECD Static Test)

#### CATEGORY: II

Quick Attach: None

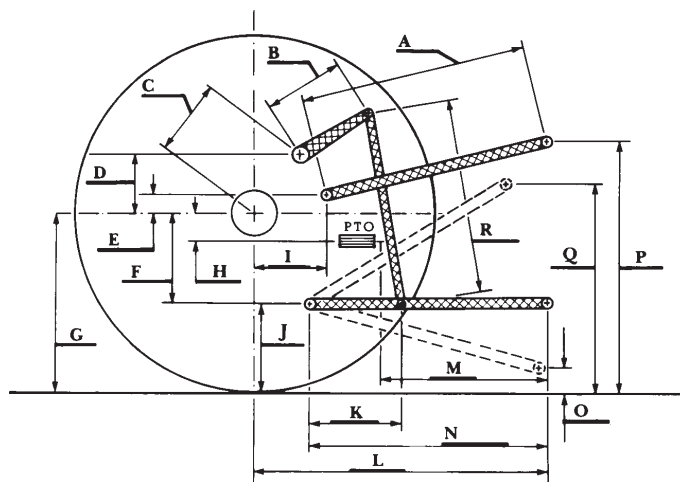
Maximum Force Exerted Through Whole Range: 3665 lbs (16.3 kN)

i) Opening pressure of relief valve: NA  
Sustained pressure of the open relief valve: 3250 psi (224 bar)

ii) Pump delivery rate at minimum pressure: 11.3 GPM (42.8 l/min)

iii) Pump delivery rate at maximum  
hydraulic power: 9.9 GPM (37.3 l/min)  
Delivery pressure: 2830 psi (195 bar)  
Power: 16.3 HP (12.1 kW)

#### HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	32.0	815
B	12.2	310
C	12.0	304
D	9.2	233
E	8.1	205
F	8.3	212
G	28.3	720
H	5.4	136
I	7.3	186
J	20.0	508
K	26.6	675
L	38.1	968
M	25.0	635
N	39.4	1000
O	7.8	197
P	44.0	1118
Q	33.3	845
R	30.7	780