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January 2000

Test 1782C: Challenger MT 645 Diesel

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1782C

CHALLENGER MT 645 DIESEL

18 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
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1052 rpm)					
181.26 (135.16)	2200	11.29 (42.73)	0.438 (0.266)	16.06 (3.16)	
Standard Power Take-off Speed (1000 rpm)					
183.87 (137.11)	2091	10.95 (41.44)	0.418 (0.255)	16.80 (3.31)	
Maximum Power (2 Hours)					
184.49 (137.57)	2000	10.60 (40.14)	0.404 (0.246)	17.40 (3.43)	

VARYING POWER AND FUEL CONSUMPTION

181.26 (135.16)	2200	11.29 (42.73)	0.438 (0.266)	16.06 (3.16)	Air temperature
158.24 (118.00)	2258	10.20 (38.62)	0.453 (0.276)	15.51 (3.06)	76°F (25°C)
119.33 (88.99)	2280	8.41 (31.83)	0.495 (0.301)	14.19 (2.80)	Relative humidity
80.06 (59.70)	2300	6.53 (24.72)	0.573 (0.349)	12.26 (2.41)	55%
40.54 (30.23)	2319	4.78 (18.10)	0.829 (0.504)	8.48 (1.67)	Barometer
1.07 (0.80)	2346	3.07 (11.63)	20.222 (12.301)	0.35 (0.07)	28.60" Hg (96.85 kPa)

Maximum Torque - 589 lb.-ft. (799 Nm) at 1300 rpm
Maximum Torque Rise - 36.1%
Torque rise at 1801 engine rpm - 21%

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 9th gear	73.0	72.7
Bystander	--	--

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 18.4R42; **, 22 (150)
Two 14.9R30; **, 24 (165)
16.0 in (405 mm)
12220 lb (5543 kg)
6800 lb (3084 kg)
19020 lb (8627 kg)

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

Dates of Test: September 19-26, 2000

Manufacturer: AGCO Corporation, 4205 River Green Parkway, Duluth, Ga. 30096-2568, USA.

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8441 **Fuel weight** 7.028 lbs/gal (0.842 kg/l) **Oil SAE 15W40 API service classification** CE/CF-4 **Transmission and hydraulic lubricant** AGCO Power fluid 821 XL **Front axle lubricant** AGCO Power Lube 715 **Total time engine was operated** 8.0 hours

ENGINE: Make Sisu/Valmet **Diesel Type** six cylinder vertical with turbocharger and intercooler **Serial No.** H8276 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.251" x 5.278" (108.0 mm x 134.0 mm) **Compression ratio** 16.5 to 1 **Displacement** 449 cu in (7365 ml) **Starting system** 12volt **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 **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS:

Fuel rate: 78.9 - 87.1 lb/h (35.8 - 39.5 kg/h) **High idle:** 2304 - 2404 rpm **Turbo boost:** nominal 19.0 - 26.0 psi (131 - 179 kPa) as measured 25.2 psi (174 kPa)

CHASSIS: Type front wheel assist **Serial No.** *CG198001* **Tread width** rear 61.5" (1562 mm) to 126.0" (3200 mm) front 59.9" (1522 mm) to 87.9" (2233 mm) **Wheelbase** 121.1" (3075 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.36 (2.19) second 1.76 (2.83) third 2.27 (3.65) fourth 2.59 (4.17) fifth 2.92 (4.70) sixth 3.33 (5.36) seventh 3.78 (6.09) eighth 4.31 (6.94) ninth 4.88 (7.85) tenth 5.56 (8.95) eleventh 6.31 (10.16) twelfth 7.20 (11.58) thirteenth 8.13 (13.09) fourteenth 9.26 (14.91) fifteenth 10.53 (16.94) sixteenth 13.56 (21.82) seventeenth 17.54 (28.23) eighteenth 22.60 (36.37) reverse 1.36 (2.19), 2.27 (3.65), 2.59 (4.17), 3.78 (6.09), 4.31 (6.94), 6.31 (10.16) **Clutch** multiple wet disc electro-hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 1000 rpm at 2091 engine rpm **Unladen tractor mass** 18845 lb (8555 kg)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: None

Maximum Force Exerted

Through Whole Range: 19710 lbs (87.7 kN)

i) Opening pressure of relief valve:	NA	<u>High flow option</u> NA
Sustained pressure of the open relief valve:	2900 psi (200 bar)	2850 psi (196 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	29.5 GPM (111.7 l/min)	39.3 GPM (148.8 l/min)
iii) Pump delivery rate at maximum hydraulic power:	25.4 GPM (96.1 l/min)	35.9 GPM (135.9 l/min)
Delivery pressure:	2690 psi (185 bar)	2490 psi (172 bar)
Power:	39.9 HP (29.7 kW)	52.2 Hp (38.9 kW)

THREE POINT HITCH PERFORMANCE

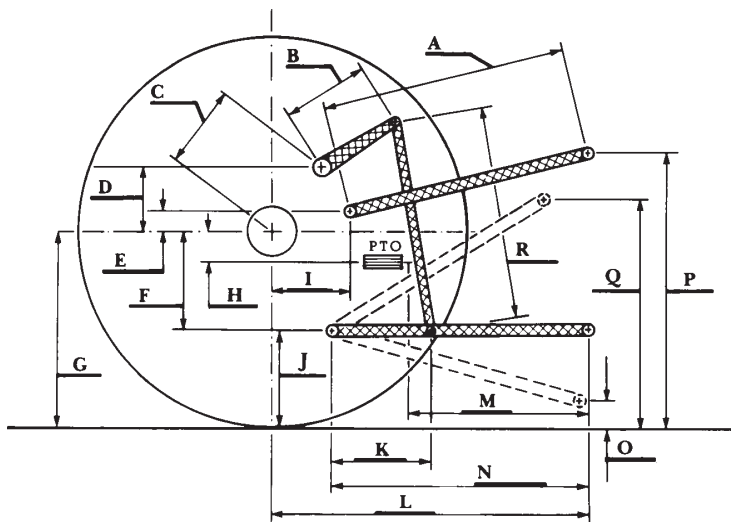
Observed Maximum Pressure psi. (bar)	3020 (208)
Location:	lift cylinder
Hydraulic oil temperature: °F (°C)	149 (65)
Location:	hydraulic sump
Category:	III
Quick attach:	none

SAE Static Test—System pressure 2720 psi (187 Bar)

Hitch point distance to ground level in. (mm)	11.7 (297)	16.0 (406)	24.0 (610)	32.0 (813)	40.0 (1016)
Lift force on frame lb	22635	23229	22302	22860	21726
" " " " " (kN)	(107.7)	(103.3)	(99.2)	(101.7)	(96.6)

	SAE TEST		OECD TEST	
	inch	mm	inch	mm
A	28.8	732	29.8	756
B	15.0	380	15.0	380
C	19.4	492	19.4	492
D	17.6	447	17.6	447
E	11.0	280	11.0	280
F	13.0	330	13.0	330
G	36.3	920	34.3	870
H	3.9	100	3.9	100
I	17.6	447	17.6	447
J	23.3	590	21.3	540
K	21.3	540	23.2	590
L	48.2	1225	48.2	1225
M	23.1	588	23.1	588
N	38.4	975	38.4	975
O	11.6	295	9.3	235
P	45.3	1150	48.2	1225
Q	41.5	1054	36.9	937
R	34.0	864	36.0	914

HITCH DIMENSIONS AS TESTED—NO LOAD



Agricultural Research Division
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
Darrell Nelson, Dean and Director

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 injection pump inlet was maintained at 112°F(44°C).

NOTE: The data on this report was obtained from Nebraska test 1782B conducted on the Massey Ferguson 8260 Diesel.

Report reissued: Supplemental sales permit for Challenger MT645 Diesel, July 2003.

We, the undersigned, certify that this is a true and correct report of Official Tractor Test No. **1782C**, June 26, 2003.

Leonard L. Bashford
Director

M.F. Kocher
W.P. Campbell
G.J. Hoffman
Board of Tractor Test Engineers