

# SUMMARY OF OECD TEST 2515–NEBRASKA SUMMARY 711 CHALLENGER MT 445B DIESEL 16 SPEED

Tractor chassis S/N T177054 and higher

## POWER TAKE-OFF PERFORMANCE

| Power<br>HP<br>(kW)                            | Crank<br>shaft<br>speed<br>rpm | Gal/hr<br>(l/h) | lb/hp.hr<br>(kg/kW.h) | Hp.hr/gal<br>(kW.h/l) | Mean Atmospheric<br>Conditions |
|--|--------------------------------|-----------------|-----------------------|-----------------------|--------------------------------|
| <b>MAXIMUM POWER AND FUEL CONSUMPTION</b>      |                                |                 |                       |                       |                                |
| <b>Rated Engine Speed—(PTO speed—1099 rpm)</b> |                                |                 |                       |                       |                                |
| 78.9<br>(58.8)                                 | 2199                           | 5.12<br>(19.41) | 0.461<br>(0.280)      | 15.40<br>(3.03)       |                                |
| <b>Standard Power Take-off Speed(1000 rpm)</b> |                                |                 |                       |                       |                                |
| 90.8<br>(67.7)                                 | 2000                           | 5.49<br>(20.77) | 0.429<br>(0.261)      | 16.54<br>(3.26)       |                                |
| <b>Maximum Power (1 hour)</b>                  |                                |                 |                       |                       |                                |
| 90.8<br>(67.7)                                 | 2000                           | 5.49<br>(20.77) | 0.429<br>(0.261)      | 16.54<br>(3.26)       |                                |

## VARYING POWER AND FUEL CONSUMPTION

|                |      |                 |                  |                 |                     |
|----------------|------|-----------------|------------------|-----------------|---------------------|
| 78.9<br>(58.8) | 2199 | 5.12<br>(19.41) | 0.461<br>(0.280) | 15.40<br>(3.03) | Air temperature     |
| 67.3<br>(50.2) | 2206 | 4.57<br>(17.31) | 0.482<br>(0.293) | 14.72<br>(2.90) | 68°F (20°C)         |
| 50.6<br>(37.7) | 2218 | 3.81<br>(14.41) | 0.535<br>(0.325) | 13.28<br>(2.62) | Relative humidity   |
| 34.1<br>(25.4) | 2233 | 2.80<br>(10.61) | 0.585<br>(0.356) | 12.15<br>(2.39) | 38%                 |
| 17.0<br>(12.7) | 2241 | 2.00<br>(7.56)  | 0.835<br>(0.508) | 8.50<br>(1.67)  | Barometer           |
| --             | 2248 | 1.39<br>(5.25)  | --               | --              | 29.7" Hg(100.5 kPa) |

Maximum torque - 300.2 lb.-ft.(407.0 Nm) at 1250 rpm

Maximum torque rise - 59.4%

Torque rise at 1750 engine rpm - 43%

## DRAWBAR PERFORMANCE

(Unballasted - Front Drive Engaged)

### FUEL CONSUMPTION CHARACTERISTICS

| Power<br>Hp<br>(kW)                                     | Drawbar<br>pull<br>lbs<br>(kN) | Speed<br>mph<br>(km/h) | Crank-<br>shaft<br>speed<br>rpm | Slip<br>% | Fuel<br>Consumption<br>lb/hp.hr<br>(kg/kW.h) | Temp. °F (°C)<br>cool-<br>ing<br>med | Barom.<br>inch<br>Hg<br>(kPa) |
|---|--------------------------------|------------------------|---------------------------------|-----------|--|--------------------------------------|-------------------------------|
| <b>Maximum Power—7th(2C) Gear</b>                       |                                |                        |                                 |           |  |                                      |                               |
| 56.6<br>(42.2)  | 4550<br>(20.2)                 | 4.66<br>(7.50)         | 2199                            | 3.3       | 0.585<br>(0.356)                             | 12.13<br>(2.39)                      | 180<br>(82)                   |
| <b>75% of Pull at Maximum Power—7th(2C) Gear</b>        |                                |                        |                                 |           |  |                                      |                               |
| 43.4<br>(32.4)  | 3435<br>(15.3)                 | 4.74<br>(7.63)         | 2208                            | 2.1       | 0.653<br>(0.397)                             | 10.87<br>(2.14)                      | 178<br>(81)                   |
| <b>50% of Pull at Maximum Power—7th(2C) Gear</b>        |                                |                        |                                 |           |  |                                      |                               |
| 29.0<br>(21.6)  | 2275<br>(10.1)                 | 4.78<br>(7.69)         | 2214                            | 1.6       | 0.760<br>(0.463)                             | 9.34<br>(1.84)                       | 176<br>(80)                   |
| <b>75% of Pull at Reduced Engine Speed—8th(2D) Gear</b> |                                |                        |                                 |           |  |                                      |                               |
| 43.3<br>(32.3)  | 3415<br>(15.2)                 | 4.76<br>(7.66)         | 1805                            | 2.8       | 0.578<br>(0.351)                             | 12.29<br>(2.42)                      | 178<br>(81)                   |
| <b>50% of Pull at Reduced Engine Speed—8th(2D) Gear</b> |                                |                        |                                 |           |  |                                      |                               |
| 29.2<br>(21.8)  | 2295<br>(10.2)                 | 4.77<br>(7.67)         | 1800                            | 2.0       | 0.640<br>(0.389)                             | 11.09<br>(2.18)                      | 174<br>(79)                   |

**Location of tests:** Groupement d'Antony, Parc de Touvoie, BP 44 Antony, Cedex, France 92163

**Dates of tests:** December 2008 to March, 2009

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

**FUEL and OIL:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.853 **Fuel weight** 7.10 lbs/gal (0.851 kg/l) **Oil SAE** 15W40 **API service classification** CH4 **Transmission and hydraulic lubricant** BP Terrac Tractan 9 fluid **Front axle lubricant** API GL5 - SAE 85W140

**ENGINE:** Make Perkins Diesel **Type** four cylinder vertical with turbocharger and air to air intercooler **Serial No.** U021737S **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.134" x 5.000" (105.0 mm x 127.0 mm) **Compression ratio** 16.2 to 1 **Displacement** 268 cu in (4400 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **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 **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

**CHASSIS:** **Type** front wheel assist **Serial No.** T239091 **Tread width** rear 59.8" (1518 mm) to 67.0" (1703 mm) front 55.7" (1415 mm) to 64.8" (1646 mm) **Wheelbase** 97.0" (2464 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.32 (2.12) second 1.62 (2.60) third 1.97 (3.17) fourth 2.43 (3.91) fifth 3.11 (5.01) sixth 3.83 (6.17) seventh 4.68 (7.53) eighth 5.75 (9.26) ninth 6.33 (10.19) tenth 7.79 (12.53) eleventh 9.50 (15.29) twelfth 11.68 (18.80) thirteenth 13.54 (21.79) fourteenth 16.65 (26.80) fifteenth 20.31 (32.69) sixteenth 24.99 (40.21) reverse 1.32 (2.12), 1.62 (2.60), 1.97 (3.17), 2.43 (3.91), 3.11 (5.01), 3.83 (6.17), 4.68 (7.53), 5.75 (9.26), 6.33 (10.19), 7.79 (12.53), 9.50 (15.29), 11.68 (18.80), 13.54 (21.79), 16.65 (26.80), 20.31 (32.69), 24.99 (40.21) **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 1980 engine rpm or 1000 rpm at 2000 engine rpm **Unladen tractor mass** 9720 lb (4410 kg)

**DRAWBAR PERFORMANCE**  
**(Unballasted - Front Drive Engaged)**  
**MAXIMUM POWER IN SELECTED GEARS**

| Power<br>Hp<br>(kW) | Drawbar<br>pull<br>lbs<br>(kN) | Speed<br>mph<br>(km/h) | Crank-<br>shaft<br>speed<br>rpm | Slip<br>% | Fuel Consumption<br>lb/hp.hr<br>(kg/kW.h) | Consumption<br>Hp.hr/gal<br>(kW.h/l) | Temp. °F(°C)<br>cool-<br>ing<br>med | Air<br>dry<br>bulb | Barom.<br>inch<br>Hg<br>(kPa) |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|---|--------------------------------------|-------------------------------------|--------------------|-------------------------------|
| 4th(1D)Gear         |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 48.9<br>(36.5)      | 8700<br>(38.7)                 | 2.11<br>(3.39)         | 2192                            | 15.2      | 0.683<br>(0.416)                          | 10.40<br>(2.05)                      | 178<br>(81)                         | 43<br>(6)          | 30.2<br>(102.4)               |
| 5th(2A)Gear         |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 60.5<br>(45.1)      | 8475<br>(37.7)                 | 2.68<br>(4.31)         | 2050                            | 10.6      | 0.564<br>(0.343)                          | 12.59<br>(2.48)                      | 172<br>(78)                         | 43<br>(6)          | 30.2<br>(102.4)               |
| 6th(2B)Gear         |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 64.6<br>(48.2)      | 7195<br>(32.0)                 | 3.37<br>(5.42)         | 2002                            | 6.8       | 0.542<br>(0.330)                          | 13.10<br>(2.58)                      | 178<br>(81)                         | 43<br>(6)          | 30.2<br>(102.4)               |
| 7th(2C)Gear         |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 65.7<br>(49.0)      | 5855<br>(26.1)                 | 4.21<br>(6.77)         | 1997                            | 4.4       | 0.524<br>(0.318)                          | 13.56<br>(2.67)                      | 176<br>(80)                         | 45<br>(7)          | 30.2<br>(102.4)               |
| 8th(2D)Gear         |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 65.2<br>(48.6)      | 4685<br>(20.8)                 | 5.22<br>(8.39)         | 1999                            | 3.3       | 0.530<br>(0.322)                          | 13.40<br>(2.64)                      | 178<br>(81)                         | 45<br>(7)          | 30.2<br>(102.4)               |
| 9th(3A)Gear         |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 76.3<br>(56.9)      | 5005<br>(22.3)                 | 5.72<br>(9.20)         | 2006                            | 4.2       | 0.509<br>(0.309)                          | 13.96<br>(2.75)                      | 178<br>(81)                         | 45<br>(7)          | 30.2<br>(102.4)               |
| 10th(3B)Gear        |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 75.8<br>(56.5)      | 4005<br>(17.8)                 | 7.09<br>(11.41)        | 1999                            | 3.4       | 0.522<br>(0.317)                          | 13.61<br>(2.68)                      | 180<br>(82)                         | 45<br>(7)          | 30.2<br>(102.4)               |
| *11th(3C)Gear       |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 74.8<br>(55.8)      | 3245<br>(14.4)                 | 8.64<br>(13.90)        | 2000                            | 3.4       | 0.532<br>(0.323)                          | 13.36<br>(2.63)                      | 189<br>(87)                         | 45<br>(7)          | 30.2<br>(102.4)               |

\*Front Drive Disengaged

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

**NOTE 1:** The engine on this tractor is electronically controlled to give 2 power levels. A "boosted" level is available when the PTO is engaged, tractor stationary, and when the tractor is operated in ranges 3 and 4.

**NOTE 2:** The data on this summary was obtained from OECD report 2515 conducted on the Massey Ferguson 5445 Diesel.

**NOTE 3:** The performance figures on this report apply to tractors with chassis S/N T177054 and higher.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's claim of 26 GPM (100 lpm) hydraulic flow at the remote outlets. 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 summary of data from OECD Reports No. **2515**, Nebraska Summary 711, September 8, 2010.

Roger M. Hoy  
 Director

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 D.R. Keshwani  
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 Board of Tractor Test Engineers

| TRACTOR SOUND LEVEL WITH CAB | Front Wheel Drive   |                  |
|------------------------------|---------------------|------------------|
|                              | Disengaged<br>dB(A) | Engaged<br>dB(A) |
| At no load in 7th (2C) gear  | 75.0                | 74.0             |
| Bystander                    | --                  | --               |

| TRACTOR SOUND LEVEL WITHOUT CAB | Front Wheel Drive   |                  |
|---------------------------------|---------------------|------------------|
|                                 | Disengaged<br>dB(A) | Engaged<br>dB(A) |
| At no load in 7th (2C) gear     | 85.0                | 85.0             |
| 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 18.4R38; \*\*,15(100)  
 Two 14.9R28; \*\*,15(100)  
 19.7 in (500 mm)  
 6065 lb (2750 kg)  
 3845 lb (1745 kg)  
 9910 lb (4495 kg)

**DRAWBAR PERFORMANCE**  
**(Unballasted - Front Drive Disengaged)**  
**MAXIMUM POWER IN SELECTED GEARS**

| Power<br>Hp<br>(kW) | Drawbar<br>pull<br>lbs<br>(kN) | Speed<br>mph<br>(km/h) | Crank-<br>shaft<br>speed<br>rpm | Slip<br>% | Fuel Consumption<br>lb/hp.hr<br>(kg/kW.h) | Consumption<br>Hp.hr/gal<br>(kW.h/l) | Temp.°F (°C)<br>cool-<br>ing<br>med | Air<br>dry<br>bulb | Barom.<br>inch<br>Hg<br>(kPa) |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|---|--------------------------------------|-------------------------------------|--------------------|-------------------------------|
| 5th(2A) Gear        |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 51.8<br>(38.6)      | 7095<br>(31.5)                 | 2.74<br>(4.40)         | 2197                            | 15.2      | 0.627<br>(0.381)                          | 11.33<br>(2.23)                      | 180<br>(82)                         | 50<br>(10)         | 30.2<br>(102.3)               |
| 6th(2B) Gear        |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 59.9<br>(44.7)      | 6985<br>(31.1)                 | 3.22<br>(5.18)         | 2036                            | 12.3      | 0.579<br>(0.352)                          | 12.24<br>(2.41)                      | 172<br>(78)                         | 50<br>(10)         | 30.2<br>(102.3)               |
| 7th(2C) Gear        |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 64.4<br>(48.0)      | 5980<br>(26.6)                 | 4.04<br>(6.50)         | 1996                            | 8.2       | 0.540<br>(0.328)                          | 13.16<br>(2.59)                      | 174<br>(79)                         | 50<br>(10)         | 30.2<br>(102.3)               |
| 8th(2D) Gear        |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 64.4<br>(48.0)      | 4745<br>(21.1)                 | 5.09<br>(8.19)         | 2001                            | 6.0       | 0.553<br>(0.336)                          | 12.84<br>(2.53)                      | 176<br>(80)                         | 50<br>(10)         | 30.2<br>(102.3)               |
| 9th(3A) Gear        |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 74.8<br>(55.8)      | 5050<br>(22.5)                 | 5.56<br>(8.94)         | 2001                            | 6.2       | 0.531<br>(0.323)                          | 13.37<br>(2.63)                      | 176<br>(80)                         | 50<br>(10)         | 30.2<br>(102.3)               |
| 10th(3B) Gear       |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 74.6<br>(55.6)      | 4025<br>(17.9)                 | 6.95<br>(11.19)        | 2000                            | 5.2       | 0.532<br>(0.323)                          | 13.36<br>(2.63)                      | 178<br>(81)                         | 50<br>(10)         | 30.2<br>(102.3)               |
| 11th(3C) Gear       |                                |                        |                                 |           |   |                                      |                                     |                    |                               |
| 74.0<br>(55.2)      | 3270<br>(14.5)                 | 8.49<br>(13.67)        | 2000                            | 5.0       | 0.540<br>(0.328)                          | 13.16<br>(2.59)                      | 178<br>(81)                         | 50<br>(10)         | 30.2<br>(102.3)               |

**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 18.4R38; \*\*,15(100)

Two 14.9R28; \*\*,15(100)

31.5 in (800 mm)

6065 lb (2750 kg)

3845 lb (1745 kg)

9910 lb (4495 kg)

## HYDRAULIC PERFORMANCE

CATEGORY: II

Quick Attach: None

OECD Static test

Maximum force exerted through whole range: 7817 lbs (34.8 kN) (66 mm lift cylinders)

9189 lbs (40.9 kN) (75 mm lift cylinders)

### Open center system

100 l/min pump      57 l/min pump

### Closed center system

110 l/min pump

i) Sustained pressure of the open relief valve: 3136 psi (216 bar) 2785 psi (192 bar) 2848 psi (196 bar)

ii) Pump delivery rate at minimum pressure: 24.1 GPM(91.2 l/min) 16.1 GPM(61.0 l/min) 29.8 GPM (112.7 l/min)

iii) Pump delivery rate at maximum

hydraulic power:                      22.4 GPM(84.8 l/min) 14.7 GPM(55.5 l/min) 24.2 GPM(91.6 l/min)

Delivery pressure:                    2338 psi (161 bar) 2580 psi (178 bar) 2708 psi (187 bar)

Power:                                    30.6 HP (22.8 kW) 22.1 Hp (16.5 kW) 38.2 hp (28.5 kW)

## THREE POINT HITCH PERFORMANCE

|                                     |                 |
|-------------------------------------|-----------------|
| Observed Maximum Pressure psi.(bar) | 2770(191)       |
| Location:                           | lift cylinder   |
| Hydraulic oil temperature: °F(°C)   | 152(67)         |
| Location:                           | hydraulic valve |
| Category:                           | II              |
| Quick attach:                       | none            |

### 66 mm cylinders

**SAE Static Test**—System pressure 2490 psi (172 Bar)

|  |          |           |           |           |           |
|--|----------|-----------|-----------|-----------|-----------|
| Hitch point distance to ground level in.(mm) | 9.9(251) | 15.0(381) | 22.0(559) | 29.0(737) | 36.0(914) |
| Lift force on frame lb                       | 15561    | 12897     | 11745     | 10314     | 9126      |
| " " " " " " (kN)                             | (69.2)   | (57.4)    | (51.0)    | (45.9)    | (40.6)    |

### 75 mm cylinders

**SAE Static Test**—System pressure 2490 psi (172 Bar)

|  |           |           |           |           |           |
|--|-----------|-----------|-----------|-----------|-----------|
| Hitch point distance to ground level in.(mm) | 10.2(259) | 15.0(381) | 22.0(559) | 29.0(737) | 36.0(914) |
| Lift force on frame lb                       | 18747     | 15849     | 14310     | 12789     | 11421     |
| " " " " " " (kN)                             | (83.4)    | (70.5)    | (63.7)    | (56.9)    | (50.8)    |

## HITCH DIMENSIONS AS TESTED—NO LOAD

|   | SAE test |      | OECD test |      |
|---|----------|------|-----------|------|
|   | inch     | mm   | inch      | mm   |
| A | 24.8     | 629  | 24.8      | 629  |
| B | 11.6     | 295  | 11.6      | 295  |
| C | 13.9     | 353  | 13.9      | 353  |
| D | 13.0     | 330  | 13.0      | 330  |
| E | 7.9      | 200  | 7.9       | 200  |
| F | 10.2     | 260  | 10.2      | 260  |
| G | 30.3     | 770  | 30.3      | 770  |
| H | 1.4      | 35   | 1.4       | 35   |
| I | 16.2     | 413  | 16.2      | 413  |
| J | 20.1     | 510  | 20.1      | 510  |
| K | 24.2     | 615  | 24.2      | 615  |
| L | 41.2     | 1046 | 41.2      | 1046 |
| M | 23.5     | 596  | 23.5      | 596  |
| N | 37.2     | 946  | 37.2      | 946  |
| O | 8.0      | 203  | 8.0       | 203  |
| P | 40.2     | 1020 | 44.1      | 1120 |
| Q | 33.5     | 850  | 33.5      | 850  |
| R | 29.0     | 737  | 29.0      | 737  |

