# SUMMARY OF OECD TEST 2989–NEBRASKA SUMMARY 1070
# CHALLENGER MT535E TECHSTAR DIESEL
## CONTINOUSLY VARIABLE TRANSMISSION

### POWER TAKE-OFF PERFORMANCE

| Power HP *(kW)* | Crank shaft speed rpm | Diesel Consumption Gal/hr *(l/h)* | lb/hp.hr *(kg/kW.h)* | D.E.F. Consumption Hp.hr/gal *(kW.h/l)* | Gal/hr *(l/h)* | Mean Atmospheric Conditions |
|---|---|---|---|---|---|---|
| **MAXIMUM POWER AND FUEL CONSUMPTION** | | | | | | |
| **Rated Engine Speed—(PTO speed—1102 rpm)** | | | | | | |
| 147.5 *(110.0)* | 2099 | 8.64 *(32.70)* | 0.409 *(0.249)* | 17.08 *(3.36)* | 0.56 *(2.12)* | |
| **Maximum Power (1 hour)** | | | | | | |
| 154.9 *(115.5)* | 2001 | 8.80 *(33.32)* | 0.397 *(0.241)* | 17.59 *(3.46)* | 0.57 *(2.17)* | |
| **Standard Power Take-off Speed (1001 rpm)** | | | | | | |
| 152.2 *(113.5)* | 1905 | 8.49 *(32.15)* | 0.390 *(0.237)* | 17.92 *(3.53)* | 0.57 *(2.17)* | |
| **VARYING POWER AND FUEL CONSUMPTION** | | | | | | |
| 147.5 *(110.0)* | 2099 | 8.64 *(32.70)* | 0.409 *(0.249)* | 17.08 *(3.36)* | 0.56 *(2.12)* | Air temperature |
| 126.6 *(94.4)* | 2122 | 7.68 *(29.07)* | 0.423 *(0.257)* | 16.48 *(3.25)* | 0.50 *(1.88)* | 70°F *(21°C)* |
| 95.3 *(71.1)* | 2127 | 6.15 *(23.29)* | 0.451 *(0.274)* | 15.49 *(3.05)* | 0.46 *(1.76)* | Relative humidity |
| 63.8 *(47.6)* | 2137 | 4.74 *(17.96)* | 0.519 *(0.316)* | 13.45 *(2.65)* | 0.34 *(1.30)* | 73% |
| 31.9 *(23.8)* | 2143 | 3.33 *(12.59)* | 0.728 *(0.443)* | 9.59 *(1.89)* | 0.25 *(0.95)* | Barometer |
| --- --- | 2152 | 2.18 *(8.24)* | --- --- | --- --- | 0.03 *(0.13)* | 30.2" Hg *(102.3 kPa)* |

Maximum torque - 483 lb.-ft. *(655 Nm)* at 1400 rpm
Maximum torque rise - 30.9%
Torque rise at 1700 engine rpm - 24%
Power increase at 2001 engine rpm - 5%

### 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)* |
|---|---|---|---|---|---|---|---|---|---|
| **Power at Rated Engine Speed—Turtle 8** | | | | | | | | | |
| 113.9 *(84.9)* | 8745 *(38.9)* | 4.88 *(7.86)* | 2098 | 3.1 | 0.551 *(0.335)* | 12.69 *(2.50)* | 189 *(87)* | 79 *(26)* | 30.1 *(101.8)* |
| **75% of Pull at Rated Engine Speed—Turtle 8** | | | | | | | | | |
| 87.7 *(65.4)* | 6565 *(29.2)* | 5.01 *(8.06)* | 2122 | 2.6 | 0.580 *(0.353)* | 12.07 *(2.38)* | 190 *(88)* | 79 *(26)* | 30.1 *(101.8)* |
| **50% of Pull at Rated Engine Speed—Turtle 8** | | | | | | | | | |
| 58.1 *(43.3)* | 4315 *(19.2)* | 5.05 *(8.12)* | 2129 | 2.1 | 0.690 *(0.420)* | 10.14 *(2.00)* | 190 *(88)* | 79 *(26)* | 30.1 *(101.8)* |
| **75% of Pull at Reduced Engine Speed—Turtle 10** | | | | | | | | | |
| 87.0 *(64.9)* | 6540 *(29.1)* | 4.99 *(8.03)* | 1404 | 2.5 | 0.507 *(0.309)* | 13.80 *(2.72)* | 194 *(90)* | 79 *(26)* | 30.1 *(101.8)* |
| **50% of Pull at Reduced Engine Speed—Turtle 10** | | | | | | | | | |
| 59.0 *(44.0)* | 4360 *(19.4)* | 5.07 *(8.16)* | 1417 | 1.9 | 0.534 *(0.325)* | 13.10 *(2.58)* | 194 *(90)* | 82 *(28)* | 30.1 *(101.8)* |

**Location of tests:** IRSTEA, Centre d'Antony, 1 rue Pierre-Giles de Gennes, CS 10030 92761 Antony, Cedex France

**Dates of tests:** July to August, 2016

**Manufacturer:** AGCO S.A. ZA, n2, BP 60307, Avenue Blaise Pascal, 60026 Beauvais, Cedex, France

**CONSUMABLE FLUIDS: 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)* **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.08 lbs/gal *(1.091 kg/l)* **Oil SAE** 15W40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** BP Terrac Tractan 9 10W/40 **Front axle lubricant** SAE 85W140 API GL-5

**ENGINE: Make** AGCO Power Diesel **Type** six cylinder vertical with turbocharger, air to air intercooler and SCR (selective catalyst reduction) technology **Serial No.** Z 0018 **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.252" x 4.724" *(108.0 mm x 120.0 mm)* **Compression ratio** 17.4 to 1 **Displacement** 402 cu in *(6596 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.** F 049 023 **Tread width** rear 52.8" *(1340 mm)* to 87.8" *(2230 mm)* front 52.8" *(1340 mm)* to 87.8" *(2230 mm)* **Wheelbase** 113.2" *(2875 mm)* **Hydraulic control system** direct engine drive **Transmission** CVT. A combination of mechanical and hydrostatic sections allow an infinite speed adjustment within the ranges noted. The transmission has two mechanical ranges. **Nominal travel speeds mph *(km/h)*** forward: Low range 0-17 *(0-28)*, high range 0-25 *(0-40)* reverse: Low range 0-10 *(0-16)*, high range 0-23 *(0-38)* **Clutch** a foot pedal controls the hydrostatic oil flow **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1868 engine rpm or 1000 rpm at 1903 engine rpm **Unladen tractor mass** 17295 lb *(7845 kg)*

## DRAWBAR PERFORMANCE AT 2000 ENGINE RPM

### (Unballasted - Front Drive Engaged)

### MAXIMUM POWER AT SELECTED TRAVEL SPEEDS

| 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)* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Turtle 4.5 | | | | |
| 106.1 *(79.1)* | 15465 *(68.8)* | 2.57 *(4.14)* | 2112 | 14.3 | 0.540 *(0.328)* | 12.95 *(2.55)* | 183 *(84)* | 77 *(25)* | 30.1 *(101.8)* |
| | | | | | Turtle 6.5 | | | | |
| 120.2 *(89.6)* | 11580 *(51.5)* | 3.89 *(6.26)* | 2006 | 7.8 | 0.515 *(0.313)* | 13.60 *(2.68)* | 185 *(85)* | 77 *(25)* | 30.1 *(101.8)* |
| | | | | | Turtle 8 | | | | |
| 121.8 *(90.8)* | 9350 *(41.6)* | 4.88 *(7.86)* | 1993 | 6.1 | 0.513 *(0.312)* | 13.65 *(2.69)* | 189 *(87)* | 77 *(25)* | 30.1 *(101.8)* |
| | | | | | Turtle 10 | | | | |
| 121.9 *(90.9)* | 7285 *(32.4)* | 6.28 *(10.10)* | 2005 | 4.3 | 0.509 *(0.309)* | 13.76 *(2.71)* | 192 *(89)* | 79 *(26)* | 30.1 *(101.8)* |
| | | | | | Turtle 13 | | | | |
| 117.1 *(87.3)* | 5350 *(23.8)* | 8.21 *(13.21)* | 2006 | 2.2 | 0.524 *(0.318)* | 13.37 *(2.63)* | 196 *(91)* | 84 *(29)* | 30.1 *(101.8)* |
| | | | | | Turtle 15 | | | | |
| 113.7 *(84.8)* | 4540 *(20.2)* | 9.39 *(15.11)* | 2000 | 1.6 | 0.540 *(0.328)* | 12.96 *(2.55)* | 197 *(92)* | 84 *(29)* | 30.1 *(101.8)* |
| | | | | | Rabbit 9 | | | | |
| 117.6 *(87.7)* | 7905 *(35.2)* | 5.58 *(8.98)* | 1998 | 4.7 | 0.534 *(0.325)* | 13.10 *(2.58)* | 197 *(92)* | 86 *(30)* | 30.1 *(101.8)* |
| | | | | | Rabbit 12 | | | | |
| 115.6 *(86.2)* | 5910 *(26.3)* | 7.33 *(11.80)* | 2018 | 2.6 | 0.538 *(0.327)* | 12.99 *(2.56)* | 199 *(93)* | 86 *(30)* | 30.1 *(101.8)* |
| | | | | | Rabbit 15 | | | | |
| 115.1 *(85.8)* | 4610 *(20.5)* | 9.36 *(15.06)* | 2026 | 1.7 | 0.540 *(0.328)* | 12.96 *(2.55)* | 205 *(96)* | 86 *(30)* | 30.0 *(101.7)* |
| | | | | | Rabbit 17 | | | | |
| 110.8 *(82.6)* | 3910 *(17.4)* | 10.62 *(17.09)* | 2009 | 1.1 | 0.563 *(0.343)* | 12.43 *(2.45)* | 197 *(92)* | 90 *(32)* | 30.0 *(101.7)* |

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

**NOTE:** The data on this summary was obtained from OECD report 2989 conducted on the Massey Ferguson 7716 Dyna VT Diesel.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. 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 Report No. **2989,** Nebraska Summary 1070, January 9, 2017.

Roger M. Hoy
Director

M.F. Kocher
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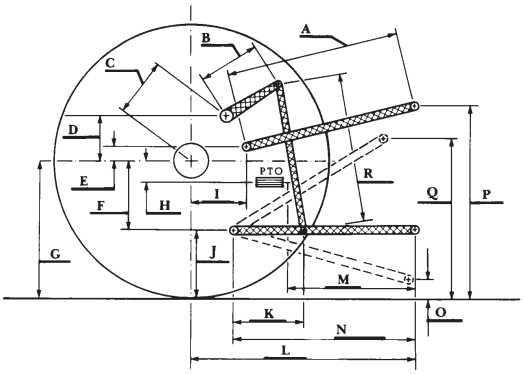
Board of Tractor Test Engineers

| TRACTOR SOUND LEVEL WITH CAB | Front wheel drive Engaged dB(A) | Front wheel drive Disengaged dB(A) |
|---|---|---|
| At no load in Turtle 8 | 68.0 | 68.0 |
| Bystander | | -- |

| TIRES, BALLAST AND WEIGHT | Tested without ballast |
|---|---|
| **Rear Tires** - No., size, ply & psi*(kPa)* | Two 650/65R38;**;13*(90)* |
| **Front Tires** - No., size, ply & psi*(kPa)* | Two 540/65R28;**;15*(100)* |
| **Height of Drawbar** | 19.7 in *(500 mm)* |
| **Static Weight with operator** - Rear | 10220 lb *(4635 kg)* |
| - Front | 7240 lb *(3285 kg)* |
| - Total | 17460 lb *(7920 kg)* |

## HYDRAULIC PERFORMANCE

| | | |
|---|---|---|
| CATEGORY: 2, NAO lower links | | |
| Quick Attach: None | | |
| OECD Static test | | |
| Maximum force exerted through whole range: | 16750 lbs *(74.5 kN)* | |
| i) Sustained pressure of the open relief valve: | 2915 psi *(201 bar)* | |
| | Standard Pump | Optional pump |
| | 29 GPM *(110 l/min)* | 50 GPM *(190 l/min)* |
| | two outlet sets combined | two outlet sets combined |
| ii) Pump delivery rate at minimum pressure: | 29.6 GPM *(112.1 l/min)* | 51.9 GPM *(196.5 l/min)* |
| iii) Pump delivery rate at maximum hydraulic power: | 27.0 GPM *(102.3 l/min)* | 48.2 GPM *(182.5 l/min)* |
| Delivery pressure: | 2725 psi *(188 bar)* | 2395 psi *(165 bar)* |
| Power: | 42.9 HP *(32.0 kW)* | 67.3 HP *(50.2 kW)* |
| | single outlet set | single outlet set |
| ii) Pump delivery rate at minimum pressure: | 30.2 GPM *(114.2 l/min)* | 32.9 GPM *(124.6 l/min)* |
| iii) Pump delivery rate at maximum hydraulic power: | 27.5 GPM *(104.0 l/min)* | 27.5 GPM *(104.0 l/min)* |
| Delivery pressure: | 2470 psi *(170 bar)* | 2410 psi *(166 bar)* |
| Power: | 39.6 HP *(29.5 kW)* | 38.6 HP *(28.8 kW)* |

**HITCH DIMENSIONS AS TESTED—NO LOAD**

| | inch | *mm* |
|---|---|---|
| A | 30.4 | *773* |
| B | 14.8 | *375* |
| C | 16.5 | *419* |
| D | 14.0 | *355* |
| E | 10.8 | *275* |
| F | 10.9 | *276* |
| G | 34.5 | *875* |
| H | 2.4 | *60* |
| I | 17.8 | *452* |
| J | 23.6 | *599* |
| K | 27.0 | *687* |
| L | 47.8 | *1213* |
| M | 24.4 | *621* |
| N | 40.3 | *1024* |
| O | 9.3 | *235* |
| P | 47.6 | *1209* |
| Q | 38.0 | *964* |
| R | 30.7 | *780* |