

# SUMMARY OF OECD TEST 3100 - NEBRASKA SUMMARY 1147

## CHALLENGER 1038 DIESEL

### CONTINUOUSLY VARIABLE TRANSMISSION

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption		Mean Atmospheric Conditions
		Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)	
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>						
<b>Rated Engine Speed—(PTO speed—1053 rpm)</b>						
365.3 (272.4)	1700	18.12 (68.60)	0.344 (0.209)	20.16 (3.97)	0.75 (2.82)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
367.3 (273.9)	1614	17.91 (67.80)	0.338 (0.206)	20.51 (4.04)	0.74 (2.79)	
<b>Maximum Power (1 hour)</b>						
368.6 (274.9)	1500	17.67 (66.90)	0.332 (0.202)	20.86 (4.11)	0.93 (3.53)	

#### VARYING POWER AND FUEL CONSUMPTION

365.3 (272.4)	1700	18.12 (68.60)	0.344 (0.209)	20.16 (3.97)	0.75 (2.82)	Air temperature
319.6 (238.3)	1749	16.27 (61.60)	0.352 (0.215)	19.64 (3.87)	0.62 (2.34)	75°F (24°C)
241.4 (180.0)	1762	13.10 (49.60)	0.376 (0.229)	18.42 (3.63)	0.48 (1.82)	Relative humidity
162.4 (121.1)	1777	9.93 (37.60)	0.424 (0.258)	16.34 (3.22)	0.34 (1.29)	45%
81.9 (61.1)	1793	6.80 (25.75)	0.576 (0.350)	12.04 (2.37)	0.21 (0.80)	Barometer
--	1806	4.17 (15.80)	--	--	0.11 (0.40)	29.8" Hg (101.0 kPa)

Maximum torque - 1336 lb.-ft. (1813 Nm) at 1400 rpm

Maximum torque rise - 18.5%

Torque rise at 1400 engine rpm - 18%

Power increase at 1500 engine rpm - 1.0%

#### 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)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med bulb	Barom. inch Hg (kPa)
<b>Power at Rated Engine Speed—Speed setting 9</b>								
316.1 (235.7)	21000 (93.42)	5.64 (9.08)	1702	2.7	0.399 (0.242)	17.11 (3.37)	0.025 (0.015)	199 (93)
<b>75% of Pull at Rated Engine Speed—Speed setting 9</b>								
247.7 (184.7)	15735 (70.00)	5.90 (9.50)	1755	2.0	0.417 (0.254)	16.34 (3.22)	0.023 (0.014)	199 (93)
<b>50% of Pull at Rated Engine Speed—Speed setting 9</b>								
168.3 (125.5)	10470 (46.57)	6.03 (9.70)	1770	1.2	0.466 (0.284)	14.62 (2.88)	0.020 (0.012)	199 (93)
<b>75% of Pull at Reduced Engine Speed—Speed setting - 11</b>								
247.7 (184.7)	15710 (69.88)	5.91 (9.52)	1463	1.8	0.388 (0.236)	17.56 (3.46)	0.033 (0.020)	199 (93)
<b>50% of Pull at Reduced Engine Speed—Speed setting - 11</b>								
167.8 (125.1)	10475 (46.60)	6.01 (9.66)	1476	1.2	0.425 (0.258)	16.05 (3.16)	0.008 (0.005)	199 (93)

**Location of tests:** DLG e.V. Test Centre, Technology and Farm inputs, Max-Eyth-Weg 1, D-64823 Gross-Umstadt, Germany

**Dates of tests:** July to August, 2017

**Manufacturer:** AGCO GmbH Johann Georg Fendt Str 4 D 87616 Marktobberdorf Germany

**CONSUMABLE Fluids:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8314 Fuel weight 6.93 lbs/gal (0.830 kg/l) Diesel Exhaust Fluid (DEF) 32% aqueous urea solution DEF weight 9.071 lbs/gal (1.087 kg/l) Oil SAE 5W-30 API service classification CJ-4 Transmission and hydraulic lubricant MAN M3277 fluid Front axle lubricant MAN M3277 fluid

**ENGINE:** Make MAN Diesel Type six cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment Serial No. 52246840514658 Crankshaft lengthwise Rated engine speed 1700 Bore and stroke 4.960 x 6.535" (126.0 mm x 166.0 mm) Compression ratio 17.0 to 1 Displacement 758 cu in (12419 ml) Starting system 24 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 one paper element and prestrainer Fuel cooler radiator for pump return fuel Exhaust DOC (diesel oxidation catalyst)/DPF (diesel particulate filter) System and SCR (selective catalyst reduction) with a vertical muffler Cooling medium temperature control thermostat and variable speed fan

**CHASSIS:** Type front wheel assist with independent drive to each axle Serial No. 53023119 Tread width rear 74.8" (1900 mm) to 88.6" (2250 mm) front 79.9" (2030 mm) to 88.6" (2250 mm) Wheelbase 129.9" (3300 mm) Hydraulic control system direct engine drive Transmission CVT. A combination of mechanical and hydrostatic sections allow an infinite speed adjustment. Nominal travel speeds mph (km/h) forward: 0-37 (0-60), reverse: 0-21 (0-33) Clutch a foot pedal controls the hydrostatic oil flow Brakes wet multiple disc hydraulically operated by foot pedal Steering hydrostatic Power take-off 1000 rpm at 1614 engine rpm Unladen tractor mass 31615 lb (14340 kg)

## DRAWBAR PERFORMANCE

### UNBALLASTED - FRONT DRIVE ENGAGED - 1500 ENGINE RPM MAXIMUM POWER AT SELECTED TRAVEL SPEEDS

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.l/l)	lb/hp.hr (kg/kW.h)	cool- ing med	Air dry bulb	
Speed setting 6										
288.9 (215.4)	33205 (147.70)	3.26 (5.25)	1551	9.5	0.428 (0.260)	16.09 (3.17)	0.025 (0.015)	203 (95)	82 (28)	29.6 (100.3)
Speed setting 7.5										
312.5 (233.0)	28480 (126.69)	4.11 (6.62)	1499	4.5	0.393 (0.239)	17.51 (3.45)	0.030 (0.018)	201 (94)	72 (22)	29.6 (100.4)
Speed setting 9										
319.7 (238.4)	24375 (108.42)	4.92 (7.92)	1501	3.1	0.384 (0.233)	17.93 (3.53)	0.030 (0.018)	201 (94)	75 (24)	29.6 (100.4)
Speed setting 11										
317.7 (236.9)	19715 (87.70)	6.04 (9.72)	1500	2.7	0.381 (0.232)	18.07 (3.56)	0.025 (0.015)	201 (94)	70 (21)	29.6 (100.4)
Speed setting 13										
318.9 (237.8)	17035 (75.78)	7.02 (11.30)	1501	2.5	0.379 (0.231)	18.16 (3.58)	0.026 (0.016)	201 (94)	73 (23)	29.6 (100.4)
Speed setting 15										
317.7 (236.9)	14475 (64.38)	8.23 (13.25)	1500	1.8	0.381 (0.232)	18.07 (3.56)	0.025 (0.015)	201 (94)	72 (22)	29.6 (100.4)
Speed setting 17										
315.0 (234.9)	12750 (56.73)	9.26 (14.90)	1503	1.6	0.384 (0.234)	17.92 (3.53)	0.025 (0.015)	201 (94)	73 (23)	29.6 (100.4)
Speed setting 19										
317.2 (236.5)	11555 (51.40)	10.29 (16.57)	1504	1.4	0.382 (0.233)	18.00 (3.55)	0.025 (0.015)	201 (94)	75 (24)	29.6 (100.4)

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

**NOTE:** The data on this summary was obtained from OECD report 3100 conducted on the Fendt 1038 S4 Vario Diesel.

**NOTE 2:** The performance figures on this report are the result of replacing the electronic engine control module of the Fendt 1050 S4 Vario with the Fendt 1038 S4 Vario module.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor fell 1.0% short of meeting the manufacturer's 3 point lift capacity claim of 18631 lb (8450 kg) at ball ends. The manufacturer's hydraulic pump flow claim of 113.5 GPM (430 l/min) with 2 pumps was not verified. 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. **3100**, Nebraska Summary 1147, July 23, 2018.

Roger M. Hoy  
Director

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

### TRACTOR SOUND LEVEL WITH CAB

**dB(A)**

At no load at speed setting 4.7 mph (7.5 km/h)	66.5
Transport at speed setting 37 mph (60 km/h)	71.8
Bystander	--

Horizontal distances of drawbar hitch point behind rear wheel axis - 41.5 in (1053 mm), 47.4 in (1203 mm), 53.3 in (1353 mm)

### 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 900/65R46;\*\*\*;12(80)

Two 710/60R38;\*\*\*;12(80)

25.6 in (650 mm)

17915 lb (8125 kg)

13700 lb (6215 kg)

31615 lb (14340 kg)

## HYDRAULIC PERFORMANCE

CATEGORY: 3

Quick Attach: No, Walterscheid quick couplers

Maximum force exerted through whole range: 17085 lbs (76.0 kN) (at 24" (610 mm) behind hitch points)  
18455 lbs (82.1 kN) at ball ends

i) Sustained pressure at compensator cutoff: 2850 psi (197 bar)  
**three outlet sets combined**

ii) Pump delivery rate at minimum pressure: 61.3 GPM (232.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 58.3 GPM (220.7 l/min)

Delivery pressure: 2540 psi (175 bar)

Power: 86.3 HP (64.3 kW)

**single outlet set**

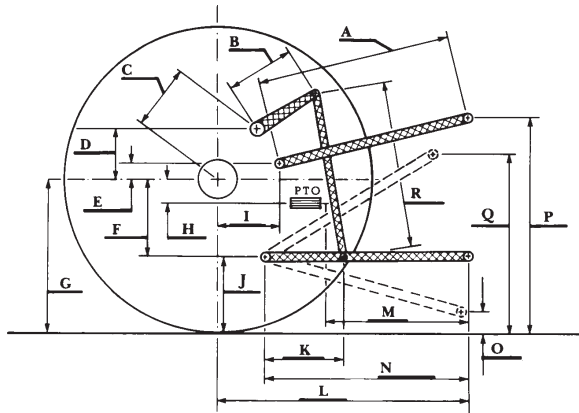
ii) Pump delivery rate at minimum pressure: 44.3 GPM (167.6 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 43.0 GPM (162.9 l/min)

Delivery pressure: 2320 psi (160 bar)

Power: 58.2 HP (43.5 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	35.0	890
B	15.5	393
C	18.6	473
D	15.7	398
E	3.5	90
F	16.9	430
G	44.3	1125
H	5.4	136
I	24.0	610
J	27.4	695
K	25.3	642
L	58.7	1490
M	30.8	782
N	43.3	1100
O	9.1	230
P	54.3	1380
Q	44.4	1127
R	41.4	1045

## RECOMMENDED CITATION FORMAT:

NTTL.(2018). OECD tractor test 3100 for Challenger 1038 Diesel.

Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from <http://tractortestlab.unl.edu>