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2017

Nebraska Summary: S1147 Challenger 1038

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SUMMARY OF OECD TEST 3100 - NEBRASKA SUMMARY 1147
CHALLENGER 1038 DIESEL
CONTINIOUSLY 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)*	D.E.F. Consumption Gal/hr *(l/h)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1053 rpm)						
365.3 *(272.4)*	1700	18.12 *(68.60)*	0.344 *(0.209)*	20.16 *(3.97)*	0.75 *(2.82)*	
Standard Power Take-off Speed (1000 rpm)						
367.3 *(273.9)*	1614	17.91 *(67.80)*	0.338 *(0.206)*	20.51 *(4.04)*	0.74 *(2.79)*	
Maximum Power (1 hour)						
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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	D.E.F. Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Temp.°F*(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Power at Rated Engine Speed—Speed setting 9										
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)*	82 *(28)*	29.4 *(99.7)*
75% of Pull at Rated Engine Speed—Speed setting 9										
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)*	81 *(27)*	29.4 *(99.7)*
50% of Pull at Rated Engine Speed— Speed setting 9										
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)*	81 *(27)*	29.4 *(99.7)*
75% of Pull at Reduced Engine Speed—Speed setting - 11										
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)*	81 *(27)*	29.4 *(99.7)*
50% of Pull at Reduced Engine Speed—Speed setting - 11										
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)*	81 *(27)*	29.4 *(99.7)*

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

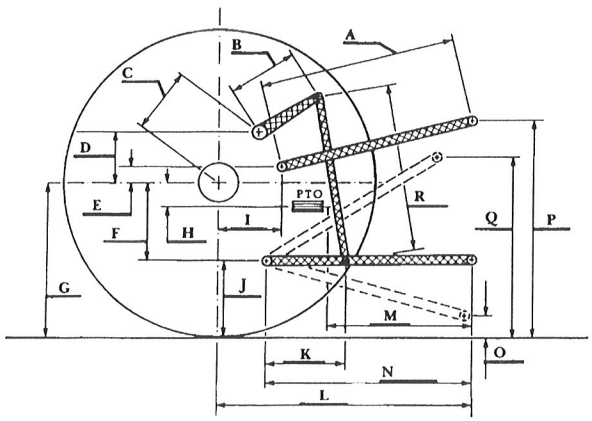
TRACTOR SOUND LEVEL WITH CAB	**dB(A)**
At no load at speed setting 4.7 mph *(7.5 km/h)*	66.5
Transport at speed setting 37 mph *(60 km/h)*	71.8
Bystander	--

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	**Tested Without Ballast**
Rear Tires - No., size, ply & psi*(kPa)*	Two 900/65R46;***;12*(80)*
Front Tires - No., size, ply & psi*(kPa)*	Two 710/60R38;***;12*(80)*
Height of Drawbar	25.6 in *(650 mm)*
Static Weight with operator - Rear	17915 lb *(8125 kg)*
- Front	13700 lb *(6215 kg)*
- Total	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