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Nebraska Summary 1242S: Fendt 514 Vario Gen3 Diesel

Nebraska Tractor Test Lab

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SUMMARY OF OECD TEST 3346 - NEBRASKA SUMMARY 1242

FENDT 514 VARIO GEN3 DIESEL

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	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—1084 rpm)						
130.1 (97.0)	2100	7.95 (30.11)	0.424 (0.258)	16.34 (3.22)	0.28 (1.05)	
Standard Power Take-off Speed (1000 rpm)						
137.7 (102.7)	1938	8.08 (30.60)	0.408 (0.248)	17.00 (3.35)	0.26 (0.99)	
Maximum Power (1 hour)						
138.8 (103.5)	1900	8.10 (30.68)	0.404 (0.246)	17.12 (3.37)	0.18 (0.70)	

VARYING POWER AND FUEL CONSUMPTION

130.1 (97.0)	2100	7.95 (30.11)	0.424 (0.258)	16.34 (3.22)	0.28 (1.05)	Air temperature
111.8 (83.4)	2123	7.08 (26.80)	0.439 (0.267)	15.79 (3.11)	0.15 (0.55)	70°F (21°C)
84.8 (63.2)	2145	5.65 (21.40)	0.464 (0.282)	14.97 (2.95)	0.05 (0.21)	Relative humidity
57.0 (42.5)	2164	4.31 (16.30)	0.524 (0.319)	13.22 (2.61)	0.04 (0.14)	34%
28.7 (21.4)	2181	3.06 (11.60)	0.741 (0.451)	9.34 (1.84)	0.04 (0.14)	Barometer
--	2204	1.80 (6.80)	--	--	0.02 (0.07)	29.5" Hg (99.5 kPa)

Maximum torque - 442 lb.-ft. (599 Nm) at 1500 rpm

Maximum torque rise - 35.7%

Torque rise at 1700 engine rpm - 27%

Power increase at 1900 engine rpm - 6.7%

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)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Power at Rated Engine Speed—Speed setting Low range 7.5										
109.3 (81.5)	8770 (39.00)	4.67 (7.53)	2101	4.0	0.496 (0.302)	13.91 (2.74)	0.020 (0.012)	172 (78)	48 (9)	29.6 (99.9)
75% of Pull at Rated Engine Speed—Speed setting Low range 7.5										
84.5 (63.0)	6550 (29.14)	4.84 (7.79)	2132	3.0	0.518 (0.315)	13.32 (2.62)	0.010 (0.006)	171 (77)	48 (9)	29.6 (99.9)
50% of Pull at Rated Engine Speed—Speed setting Low range 7.5										
57.7 (43.0)	4335 (19.29)	4.98 (8.01)	2150	1.8	0.602 (0.366)	11.47 (2.26)	0.010 (0.006)	158 (70)	48 (9)	29.6 (99.9)
75% of Pull at Reduced Engine Speed—Speed setting Low range 9										
84.6 (63.1)	6550 (29.13)	4.84 (7.79)	1817	2.9	0.475 (0.289)	14.52 (2.86)	0.012 (0.007)	172 (78)	50 (10)	29.6 (99.9)
50% of Pull at Reduced Engine Speed—Speed setting Low range 9										
57.7 (43.0)	4330 (19.27)	4.99 (8.04)	1834	1.8	0.524 (0.319)	13.15 (2.59)	0.015 (0.009)	158 (70)	50 (10)	29.6 (99.9)

Location of tests: DLG TestService, GmbH, Max-Eyth-Weg 1, D-64823 Gross-Umstadt, Germany

Dates of tests: October 2022 to January, 2023

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) 0.8312 Fuel weight 6.94 lbs/gal (0.831 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 Extra Trans/STOU fluid Front axle lubricant Extra Trans/STOU fluid

ENGINE: Make Deutz AG Diesel Type four cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment Serial No. 12855650 Crankshaft lengthwise Rated engine speed 2100 Bore and stroke 3.976" x 4.961" (101.0 mm x 126.0 mm) Compression ratio 17.5 to 1 Displacement 246 cu in (4038 ml) Starting system 12 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 Serial No. WAM44221P00F01652 Tread width rear 64.4" (1636 mm) to 78.7" (2000 mm) front 65.0" (1650 mm) to 78.7" (2000 mm) Wheelbase 100.8" (2560 mm) Hydraulic control system direct engine drive Transmission Fendt Vario. 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 0-31 (0-50) reverse: Low range 0-11 (0-17), high range 0-20 (0-33) Clutch a foot pedal controls the hydrostatic oil flow Brakes wet multiple disc hydraulically operated by two foot pedals that can be locked together Steering hydrostatic Power take-off 1000 rpm at 1938 engine rpm Unladen tractor mass 14145 lb (6415 kg)

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED - 1900 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 Low range 5.3										
101.9 (76.0)	13515 (60.11)	2.83 (4.55)	2052	15.0	0.526 (0.320)	13.10 (2.58)	0.020 (0.012)	169 (76)	46 (8)	29.7 (100.4)
Speed setting Low range 6.0										
113.0 (84.3)	12990 (57.79)	3.26 (5.25)	1900	7.7	0.485 (0.295)	14.21 (2.80)	0.018 (0.011)	169 (76)	46 (8)	29.8 (100.5)
Speed setting Low range 7.5										
115.3 (86.0)	10465 (46.55)	4.13 (6.65)	1900	3.9	0.473 (0.288)	14.59 (2.88)	0.016 (0.010)	171 (77)	45 (7)	29.8 (100.6)
Speed setting Low range 9										
115.6 (86.2)	8705 (38.72)	4.98 (8.02)	1901	3.7	0.473 (0.288)	14.59 (2.88)	0.016 (0.010)	169 (76)	45 (7)	29.8 (100.6)
Speed setting Low range 11										
115.3 (86.0)	7095 (31.56)	6.09 (9.81)	1900	2.9	0.473 (0.288)	14.59 (2.88)	0.016 (0.010)	169 (76)	45 (7)	29.8 (100.6)
Speed setting Low range 13										
114.1 (85.1)	5910 (26.29)	7.25 (11.66)	1900	2.4	0.480 (0.292)	14.39 (2.84)	0.020 (0.012)	169 (76)	45 (7)	29.8 (100.6)
Speed setting Low range 15										
112.8 (84.1)	5135 (22.85)	8.24 (13.25)	1900	2.2	0.485 (0.295)	14.21 (2.80)	0.018 (0.011)	169 (76)	45 (7)	29.8 (100.6)
Speed setting Low range 17										
111.7 (83.3)	4490 (19.97)	9.33 (15.02)	1898	1.8	0.483 (0.294)	14.26 (2.81)	0.015 (0.009)	169 (76)	43 (6)	29.8 (100.6)
Speed setting Low range 19										
110.4 (82.3)	3910 (17.40)	10.58 (17.02)	1901	1.6	0.498 (0.303)	13.86 (2.73)	0.021 (0.013)	169 (76)	45 (7)	29.8 (100.5)
Speed setting High range 9										
109.7 (81.8)	8215 (36.54)	5.01 (8.05)	1900	3.6	0.500 (0.304)	13.81 (2.72)	0.018 (0.011)	169 (76)	46 (8)	29.7 (100.4)
Speed setting High range 11										
115.5 (86.1)	7080 (31.50)	6.12 (9.84)	1900	2.9	0.475 (0.289)	14.52 (2.86)	0.015 (0.009)	171 (77)	46 (8)	29.8 (100.5)
Speed setting High range 13										
115.6 (86.2)	6005 (26.71)	7.22 (11.62)	1900	2.4	0.473 (0.288)	14.57 (2.87)	0.013 (0.008)	169 (76)	46 (8)	29.8 (100.5)
Speed setting High range 15										
116.0 (86.5)	5225 (23.24)	8.33 (13.40)	1899	2.2	0.473 (0.288)	14.57 (2.87)	0.015 (0.009)	169 (76)	45 (7)	29.8 (100.5)
Speed setting High range 17										
114.7 (85.5)	4545 (20.22)	9.46 (15.22)	1900	1.9	0.480 (0.292)	14.37 (2.83)	0.018 (0.011)	171 (77)	45 (7)	29.8 (100.5)
Speed setting High range 19										
113.3 (84.5)	4055 (18.03)	10.48 (16.87)	1899	1.8	0.490 (0.298)	14.07 (2.77)	0.018 (0.011)	171 (77)	45 (7)	29.8 (100.5)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load at speed setting 4.7 mph (7.5 km/h)	64.0	64.1
Transport speed - at speed setting 31 mph (50 km/h)		67.5
Bystander		--

Horizontal distances of drawbar hitch point behind rear wheel axis - 29.9 in (759 mm), 33.8 in (859 mm)
35.8 in (909 mm), 39.7 in (1009 mm), 41.7 in (1059 mm), 45.6 in (1159 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 650/65R38;***;12(80)
Two 540/65R28;***;12(80)
23.8 in (605 mm)
8640 lb (3920 kg)
5665 lb (2570 kg)
14305 lb (6490 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The performance figures on this report are the result of replacing the electronic engine control module of the Fendt 516 Vario Gen 3 with the Fendt 514 Vario Gen 3 module.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor fell 2.3% short of meeting the manufacturer's torque rise claim of 38%. This tractor fell 1.7% short of meeting the manufacturer's remote hydraulic flow claim of 29 GPM (110 l/min) with the standard pump. The manufacturer's remote hydraulic flow claim of 42 GPM (158 l/min) with the optional pump 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. **3346**, Nebraska Summary 1242, February 8, 2024.

Roger M. Hoy
Director

P.J. Jasa
J.D. Luck
Y. Shi
Board of Tractor Test Engineers

HYDRAULIC PERFORMANCE

CATEGORY: 3

Quick Attach: No

Lift cylinders: 2 x 90 mm

Maximum force exerted through whole range:

on the frame: 11285 lbs (50.2 kN)

at hitch points: 15085 lbs (67.1 kN)

i) Sustained pressure at compensator cutoff: 2875 psi (198 bar)

two outlet sets combined

ii) Pump delivery rate at minimum pressure: 28.6 GPM (108.1 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 27.1 GPM (102.7 l/min)

Delivery pressure: 2685 psi (185 bar)

Power: 42.5 HP (31.7 kW)

single outlet set

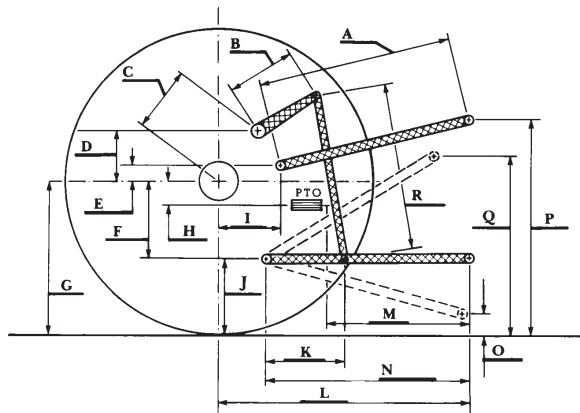
ii) Pump delivery rate at minimum pressure: 26.7 GPM (101.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 26.3 GPM (99.7 l/min)

Delivery pressure: 2450 psi (169 bar)

Power: 37.6 HP (28.0 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	31.5	800
B	13.8	350
C	15.7	398
D	13.8	350
E	9.3	235
F	8.8	223
G	34.5	875
H	1.4	35
I	14.4	366
J	25.7	652
K	24.6	625
L	44.2	1123
M	24.1	613
N	38.9	988
O	9.1	230
P	52.6	1337
Q	39.0	990
R	29.2	740

RECOMMENDED CITATION FORMAT:

NTTL.(2024). OECD tractor test 3346 for Fendt 514 Vario Gen3 Diesel.

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