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2017

## Test 2183: CLAAS Axion 880

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# NEBRASKA OECD TRACTOR TEST 2183—SUMMARY 1107

## CLAAS AXION 880 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—1114 rpm)</b>						
228.46 (170.36)	2150	12.84 (48.60)	0.393 (0.239)	17.79 (3.51)	0.77 (2.91)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
249.34 (185.94)	1930	13.39 (50.68)	0.376 (0.228)	18.62 (3.67)	0.81 (3.06)	
<b>Maximum Power (1 hour)</b>						
253.72 (189.20)	1801	13.41 (50.77)	0.370 (0.225)	18.92 (3.73)	0.82 (3.11)	

#### VARYING POWER AND FUEL CONSUMPTION

228.46 (170.36)	2150	12.84 (48.60)	0.393 (0.239)	17.79 (3.51)	0.77 (2.91)	Air temperature
196.88 (146.82)	2181	11.37 (43.04)	0.404 (0.246)	17.32 (3.41)	0.69 (2.59)	76°F (25°C)
148.07 (110.41)	2185	8.84 (33.45)	0.417 (0.254)	16.75 (3.30)	0.53 (2.02)	Relative humidity
98.91 (73.76)	2188	6.53 (24.71)	0.462 (0.281)	15.15 (2.99)	0.43 (1.61)	66%
49.63 (37.01)	2192	4.40 (16.67)	0.621 (0.377)	11.27 (2.22)	0.28 (1.06)	Barometer
1.81 (1.35)	2196	2.47 (9.34)	9.548 (5.808)	0.73 (0.14)	0.12 (0.47)	28.53" Hg (96.60 kPa)

Maximum torque - 837 lb.-ft. (1135 Nm) at 1400 rpm

Maximum torque rise - 50.0%

Torque rise at 1719 engine rpm - 39%

Power increase at 1801 engine rpm - 11.1%

#### 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—5.6 mph (9.0 km/h)-Manual mode</b>								
192.96 (143.89)	13376 (59.50)	5.41 (8.71)	2150	3.2	0.470 (0.286)	14.88 (2.93)	0.037 (0.023)	187 (86)
<b>75% of Pull at Rated Engine Speed—5.6 mph (9.0 km/h)-Manual mode</b>								
145.27 (108.32)	9961 (44.31)	5.47 (8.80)	2169	2.4	0.467 (0.284)	14.97 (2.95)	0.041 (0.025)	198 (92)
<b>50% of Pull at Rated Engine Speed—5.6 mph (9.0 km/h)-Manual mode</b>								
98.09 (73.15)	6645 (29.56)	5.54 (8.91)	2177	1.6	0.502 (0.305)	13.93 (2.74)	0.044 (0.027)	208 (98)
<b>75% of Pull at Reduced Engine Speed—Auto mode</b>								
145.81 (108.73)	9942 (44.22)	5.50 (8.85)	1293	2.4	0.411 (0.250)	17.03 (3.35)	0.041 (0.025)	212 (100)
<b>50% of Pull at Reduced Engine Speed—Auto mode</b>								
98.02 (73.09)	6546 (29.12)	5.62 (9.04)	1295	1.5	0.443 (0.269)	15.79 (3.11)	0.043 (0.026)	210 (99)

**Location of tests:** Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

**Dates of tests:** September 19 to 29, 2017

**Manufacturer:** Claas Tractor SAS, 7, rue Dewoitine - BP 92, 78141 Velizy-Villacoublay, Cedex, France

**CONSUMABLE Fluids, OIL and TIME: Fuel** No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8400 **Fuel weight** 6.994 lbs/gal (0.838 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil SAE 10W40 API service classification** CJ-4 **Transmission lubricant** Claas Agrishift GA12 fluid **Hydraulic lubricant** Claas Agrishift GA12 fluid **Front axle lubricant** Claas Agrishift BLS 90 API GL-5 **Total time engine was operated:** 23.0 hours

**ENGINE: Make** F.P.T. Diesel **Type** six cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment. **Serial No.** \*001486287\* **Crankshaft** lengthwise **Rated engine speed** 2150 **Bore and stroke** 4.094" x 5.197" (104.0 mm x 132.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 410 cu in (6728 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** two paper elements **Fuel cooler** radiator for pump return fuel **Exhaust** DOC (diesel oxidation catalyst) and SCR (selective catalyst reduction) integrated within a vertical muffler **Cooling medium temperature control** thermostat and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 89.6 - 94.2 lb/h (40.6 - 42.7 kg/h) **High idle:** 2180 - 2220 rpm **Turbo boost:** nominal 18.9 - 21.8 psi (130 - 150 kPa) as measured 19.7 psi (136 kPa)

**CHASSIS: Type** front wheel assist with duals **Serial No.** \*A4102767\* **Tread width** rear 61.4" (1560 mm) to 124.0" (3150 mm) front 61.0" (1550 mm) to 88.6" (2250 mm) **Wheelbase** 117.3" (2980 mm) **Hydraulic control system** direct engine drive **Transmission** Infinitely variable with four mechanical ranges and automatic shifting between ranges. **Nominal travel speeds mph (km/h)** forward - 0 - 30.0 mph (0 - 50 km/h), reverse - 0 - 30.0 mph (0 - 50 km/h) **Clutch** multiple wet disc electrohydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1890 engine rpm or 1000 rpm at 1930 or 1594 engine rpm **Unladen tractor mass** 24055 lb (10911 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED**

**MANUAL MODE - 2150 ENGINE RPM**  
**DRAWBAR POWER AT SELECTED TRAVEL SPEED SETTINGS**

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)
2.5 mph (4.0 km/h)										
133.48 (99.54)	23316 (103.71)	2.15 (3.46)	2168	14.2	0.555 (0.338)	12.60 (2.48)	0.049 (0.030)	196 (91)	54 (12)	28.87 (97.77)
3.1 mph (5.0 km/h)										
169.44 (126.33)	22163 (98.58)	2.87 (4.62)	2163	8.2	0.510 (0.310)	13.71 (2.70)	0.046 (0.028)	192 (89)	54 (12)	28.87 (97.77)
3.7 mph (6.0 km/h)										
183.40 (136.76)	19430 (86.43)	3.54 (5.70)	2150	5.3	0.479 (0.291)	14.61 (2.88)	0.042 (0.026)	191 (88)	56 (13)	28.88 (97.80)
4.2 mph (6.8 km/h)										
190.39 (141.97)	17794 (79.15)	4.01 (6.45)	2150	4.5	0.478 (0.291)	14.64 (2.88)	0.043 (0.026)	193 (89)	55 (13)	28.89 (97.83)
4.7 mph (7.5 km/h)										
185.81 (138.55)	15686 (69.77)	4.44 (7.15)	2150	4.0	0.489 (0.298)	14.30 (2.82)	0.038 (0.023)	188 (86)	66 (19)	28.59 (96.82)
5.1 mph (8.2 km/h)										
188.76 (140.76)	13959 (62.09)	5.07 (8.16)	2150	3.4	0.483 (0.294)	14.49 (2.85)	0.038 (0.023)	187 (86)	70 (21)	28.59 (96.82)
5.6 mph (9.0 km/h)										
192.96 (143.89)	13376 (59.50)	5.41 (8.71)	2150	3.2	0.470 (0.286)	14.88 (2.93)	0.037 (0.023)	187 (86)	70 (21)	28.59 (96.82)
6.2 mph (10.0 km/h)										
195.31 (145.64)	12135 (53.98)	6.04 (9.71)	2150	2.9	0.465 (0.283)	15.03 (2.96)	0.036 (0.022)	187 (86)	70 (21)	28.59 (96.82)
6.8 mph (11.0 km/h)										
197.80 (147.50)	11106 (49.40)	6.68 (10.75)	2150	2.7	0.459 (0.279)	15.22 (3.00)	0.036 (0.022)	187 (86)	72 (22)	28.59 (96.82)
7.5 mph (12.0 km/h)										
196.62 (146.62)	10146 (45.13)	7.27 (11.70)	2150	2.5	0.460 (0.280)	15.20 (2.99)	0.036 (0.022)	186 (86)	74 (23)	28.59 (96.82)
*8.2 mph (13.2 km/h)										
200.30 (149.36)	9291 (41.33)	8.09 (13.01)	2150	2.2	0.465 (0.283)	15.05 (2.96)	0.036 (0.022)	191 (88)	74 (23)	28.59 (96.82)

\*boosted power mode

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

**NOTE 1:** This engine on this model derates at travel speeds below 4.0 mph (6.4 km/h).

**NOTE 2:** The engine on this tractor operates in a boosted power mode (increased fuel rate) at various combinations of travel speeds and PTO loads.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. The manufacturer's hydraulic pump flow claim of 40 GPM was not verified. The manufacturer's claim of 261 PTO Hp, in boosted mode, was not verified. The performance results 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 and correct report of official Tractor Test No. **2183**, Nebraska Summary 1107, December 11, 2017.

Roger M. Hoy  
Director

M.F. Kocher  
S.K. Pitla  
J.D. Luck  
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load at 4.6 mph (7.5 km/h) engine speed - 2190 rpm	70.3	70.1
At no load at 4.6 mph (7.5 km/h) engine speed - 1260 rpm	62.4	61.8
Bystander		83.3

Horizontal distance of drawbar hitch point behind rear wheel axis - 38.5" (978 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**

Four 480/80R46;\*\*\*;12(85)

Two 380/85R34;\*\*\*;23(160)

20.5 in (520 mm)

14655 lb (6647 kg)

9575 lb (4343 kg)

24230 lb (10990 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED**

**AUTOMATIC MODE(Loads based on 2150 engine rpm manual mode performance runs)**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		D.E.F. Consumption	Temp. <sup>o</sup> F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	lb/hp.hr (kg/kW.h)			
3.7 mph (6.0 km/h)										
182.05 (135.75)	19766 (87.92)	3.46 (5.57)	1574	5.6	0.455 (0.277)	15.36 (3.03)	0.042 (0.025)	199 (93)	58 (14)	28.90 (97.87)
4.2 mph (6.8 km/h)										
190.43 (142.00)	17893 (79.59)	4.00 (6.43)	1511	4.7	0.438 (0.267)	15.95 (3.14)	0.039 (0.024)	197 (92)	58 (15)	28.90 (97.87)
4.7 mph (7.5 km/h)										
185.19 (138.09)	15679 (69.74)	4.43 (7.13)	1466	3.8	0.422 (0.257)	16.57 (3.26)	0.038 (0.023)	207 (97)	77 (25)	28.55 (96.68)
5.2 mph (8.4 km/h)										
188.13 (140.28)	14184 (63.09)	4.97 (8.00)	1470	3.4	0.423 (0.257)	16.54 (3.26)	0.037 (0.023)	208 (98)	78 (26)	28.56 (96.72)
5.7 mph (9.2 km/h)										
192.63 (143.64)	13188 (58.66)	5.48 (8.82)	1484	3.1	0.426 (0.259)	16.42 (3.23)	0.036 (0.022)	207 (97)	78 (26)	28.56 (96.72)
6.2 mph (10.0 km/h)										
195.22 (145.57)	12179 (54.17)	6.02 (9.68)	1538	2.9	0.425 (0.258)	16.47 (3.24)	0.039 (0.023)	203 (95)	78 (26)	28.56 (96.72)
6.8 mph (11.0 km/h)										
197.76 (147.47)	11158 (49.63)	6.65 (10.69)	1541	2.6	0.430 (0.261)	16.27 (3.21)	0.037 (0.022)	204 (95)	81 (27)	28.55 (96.68)
7.5 mph (12.0 km/h)										
196.24 (146.34)	10253 (45.61)	7.18 (11.56)	1583	2.4	0.438 (0.267)	15.95 (3.14)	0.036 (0.022)	206 (96)	81 (27)	28.55 (96.68)
*8.2 mph (13.2 km/h)										
200.09 (149.20)	9405 (41.84)	7.98 (12.84)	1533	2.2	0.435 (0.265)	16.08 (3.17)	0.036 (0.022)	208 (98)	82 (28)	28.55 (96.68)

\*boosted power mode

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED**

**MANUAL MODE - 1800 ENGINE RPM**  
**DRAWBAR POWER AT SELECTED TRAVEL SPEED SETTINGS**

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. <sup>o</sup> F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>2.5 mph (4.0 km/h)</b>										
133.75 (99.73)	23331 (103.78)	2.15 (3.46)	2168	14.1	0.562 (0.342)	12.46 (2.45)	0.049 (0.030)	196 (91)	54 (12)	28.87 (97.77)
<b>3.1 mph (5.0 km/h)</b>										
169.53 (126.42)	22178 (98.65)	2.87 (4.62)	2163	8.3	0.512 (0.311)	13.67 (2.69)	0.045 (0.028)	192 (89)	54 (12)	28.87 (97.77)
<b>3.7 mph (6.0 km/h)</b>										
189.53 (141.33)	20917 (93.04)	3.40 (5.47)	2086	6.3	0.483 (0.294)	14.47 (2.85)	0.042 (0.025)	194 (90)	55 (13)	28.88 (97.80)
<b>4.2 mph (6.8 km/h)</b>										
200.19 (149.28)	19869 (88.38)	3.78 (6.08)	2045	5.5	0.477 (0.290)	14.66 (2.89)	0.042 (0.025)	195 (91)	55 (13)	28.90 (97.87)
<b>4.7 mph (7.6 km/h)</b>										
201.55 (150.30)	17917 (79.70)	4.22 (6.79)	2008	4.6	0.476 (0.289)	14.70 (2.90)	0.041 (0.025)	197 (92)	56 (13)	28.90 (97.87)
<b>5.1 mph (8.2 km/h)</b>										
208.10 (155.18)	17123 (76.17)	4.56 (7.34)	1974	4.3	0.463 (0.281)	15.11 (2.98)	0.040 (0.024)	196 (91)	55 (13)	28.90 (97.87)
<b>5.6 mph (9.0 km/h)</b>										
212.85 (158.72)	16535 (73.55)	4.83 (7.77)	1926	4.1	0.450 (0.273)	15.56 (3.06)	0.041 (0.025)	196 (91)	56 (13)	28.90 (97.87)
<b>6.2 mph (10.0 km/h)</b>										
217.68 (162.32)	15379 (68.41)	5.31 (8.55)	1904	3.8	0.438 (0.266)	15.97 (3.15)	0.038 (0.023)	193 (89)	57 (14)	28.90 (97.87)
<b>6.8 mph (11.0 km/h)</b>										
223.82 (166.90)	15005 (66.75)	5.59 (9.00)	1800	3.7	0.425 (0.259)	16.44 (3.24)	0.037 (0.022)	190 (88)	59 (15)	28.90 (97.87)
<b>7.5 mph (12.0 km/h)</b>										
223.74 (166.84)	13840 (61.56)	6.06 (9.75)	1800	3.4	0.426 (0.259)	16.41 (3.23)	0.037 (0.023)	190 (88)	59 (15)	28.90 (97.87)
<b>8.2 mph (13.2 km/h)</b>										
222.43 (165.87)	12344 (54.91)	6.76 (10.88)	1800	3.1	0.428 (0.260)	16.33 (3.22)	0.037 (0.022)	190 (88)	60 (16)	28.89 (97.83)
<b>8.9 mph (14.4 km/h)</b>										
218.19 (162.70)	11107 (49.40)	7.37 (11.85)	1800	2.8	0.437 (0.266)	15.99 (3.15)	0.038 (0.023)	191 (88)	60 (16)	28.90 (97.87)
<b>*9.9 mph (16.0 km/h)</b>										
221.33 (165.04)	10129 (45.06)	8.19 (13.18)	1800	2.5	0.459 (0.279)	15.25 (3.00)	0.038 (0.023)	197 (91)	60 (16)	28.90 (97.87)

\*boosted power mode

## Shiftable PTO Performance

### Economy mode

#### 1000 PTO rpm @ 1594 engine rpm

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption	
		Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)
243.89 (181.87)	1595	12.71 (48.10)	0.364 (0.222)	19.19 (3.78)	0.85 (3.22)
182.38 (136.00)	1591	9.62 (36.41)	0.369 (0.224)	18.96 (3.74)	0.64 (2.41)
121.57 (90.66)	1591	6.72 (25.43)	0.387 (0.235)	18.09 (3.56)	0.46 (1.72)
60.86 (45.39)	1591	3.92 (14.82)	0.450 (0.274)	15.54 (3.06)	0.30 (1.14)
1.51 (1.12)	1591	1.72 (6.51)	7.983 (4.856)	0.88 (0.17)	0.11 (0.43)

### Normal mode

#### 1000 PTO rpm @ 1930 engine rpm

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption	
		Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)
244.38 (182.23)	1934	13.11 (49.64)	0.375 (0.228)	18.64 (3.67)	0.86 (3.26)
183.16 (136.58)	1934	10.10 (38.24)	0.386 (0.235)	18.13 (3.57)	0.66 (2.50)
121.93 (90.92)	1934	7.17 (27.12)	0.411 (0.250)	17.02 (3.35)	0.47 (1.80)
61.02 (45.51)	1934	4.38 (16.56)	0.502 (0.305)	13.95 (2.75)	0.32 (1.23)
1.56 (1.16)	1934	1.84 (6.97)	8.257 (5.023)	0.85 (0.17)	0.12 (0.44)

## HYDRAULIC PERFORMANCE

CATEGORY: III

Quick Attach: Yes

OECD Static test

Maximum force exerted through whole range: 17635 lbs (78.4 kN)  
three outlet sets combined

i) Sustained pressure at compensator cutoff: 2761 psi (190 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 39.1 GPM (148.0 l/min)

iii) Pump delivery rate at maximum hydraulic power: 36.6 GPM (138.4 l/min)

Delivery pressure: 2482 psi (171 bar)

Power: 53.0 HP (39.5 kW)

single outlet set

i) Sustained pressure at compensator cutoff: 2753 psi (190 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 29.8 GPM (113.0 l/min)

iii) Pump delivery rate at maximum hydraulic power: 28.2 GPM (106.7 l/min)

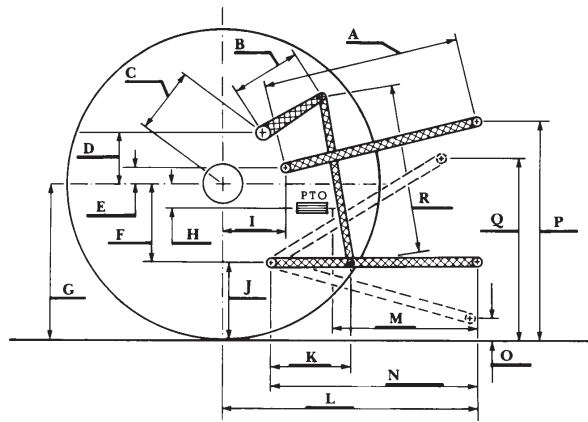
Delivery pressure: 2327 psi (160 bar)

Power: 38.3 HP (28.5 kW)

## HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	32.9	835
B	15.7	400
C	20.7	525
D	19.1	485
E	11.6	295
F	12.2	310
G	36.4	925
H	2.9	74
I	16.9	430
J	24.2	615
K	25.4	646
L	51.1	1298
*L'	56.6	1438
M	27.6	701
N	40.9	1040
O	9.1	230
P	43.1	1095
Q	39.6	1005
R	38.6	980

\*L' to Quick Attach ends



NTTL.(2017). Nebraska OECD tractor test 2183 for Claas Axion 880 Diesel.  
 Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from <http://tractortestlab.unl.edu>



**CLAAS AXION 880 DIESEL**