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Test 2243A: New Holland T8 435 Ultra Command Smartrax

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 2243A—SUMMARY 1203A NEW HOLLAND T8 435 ULTRA COMMAND SMARTRAX DIESEL 21 SPEED

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)	
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1155 rpm)						
350.49 (261.36)	1999	18.29 (69.22)	0.364 (0.222)	19.17 (3.78)	1.90 (7.17)	
Maximum Power (1 hour)						
388.38 (289.62)	1800	20.03 (75.83)	0.360 (0.219)	19.39 (3.82)	1.72 (6.53)	
Standard Power Take-off Speed (1001 rpm)						
382.58 (285.29)	1731	19.64 (74.34)	0.358 (0.218)	19.48 (3.84)	1.72 (6.52)	

VARYING POWER AND FUEL CONSUMPTION

350.49 (261.36)	1999	18.29 (69.22)	0.364 (0.222)	19.17 (3.78)	1.90 (7.17)	Air temperature
311.35 (232.17)	2090	16.75 (63.41)	0.376 (0.229)	18.59 (3.66)	1.57 (5.94)	75°F (24°C)
237.83 (177.35)	2131	13.36 (50.56)	0.392 (0.239)	17.81 (3.51)	1.18 (4.45)	Relative humidity
162.11 (120.89)	2174	10.03 (37.97)	0.432 (0.263)	16.16 (3.18)	0.79 (3.00)	56%
82.30 (61.37)	2208	6.58 (24.90)	0.558 (0.339)	12.51 (2.47)	0.42 (1.58)	Barometer
1.28 (0.95)	2226	3.06 (11.59)	16.756 (10.192)	0.42 (0.08)	0.15 (0.55)	28.89" Hg (97.85 kPa)

Maximum torque - 1283 lb.-ft. (1739 Nm) at 1350 rpm

Maximum torque rise - 39.3%

Torque rise at 1599 engine rpm - 32%

Power increase at 1800 engine rpm - 10.8%

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 Hp.hr/gal (kW.h/l)	Temp. °F(°C)	Barom. inch Hg (kPa)		
							cool- ing med	Air dry bulb		
Power at Rated Engine Speed—7th Gear										
294.07 (219.29)	24057 (107.01)	4.58 (7.37)	2000	4.5	0.434 (0.264)	16.10 (3.18)	0.058 (0.035)	214 (101)	63 (17)	28.69 (97.16)
75% of Pull at Rated Engine Speed—7th Gear										
237.26 (176.92)	18056 (80.32)	4.93 (7.93)	2110	2.7	0.451 (0.274)	15.50 (3.05)	0.051 (0.031)	216 (102)	72 (22)	28.70 (97.19)
50% of Pull at Rated Engine Speed—7th Gear										
163.26 (121.74)	12024 (53.49)	5.09 (8.19)	2151	1.3	0.494 (0.301)	14.13 (2.78)	0.051 (0.031)	212 (100)	73 (23)	28.70 (97.19)
75% of Pull at Reduced Engine Speed—10th Gear										
237.60 (177.18)	18080 (80.42)	4.93 (7.93)	1376	2.7	0.414 (0.252)	16.88 (3.32)	0.046 (0.028)	214 (101)	74 (23)	28.70 (97.19)
50% of Pull at Reduced Engine Speed—10th Gear										
163.37 (121.83)	12108 (53.86)	5.06 (8.14)	1393	1.4	0.427 (0.260)	16.35 (3.22)	0.046 (0.028)	202 (94)	75 (24)	28.70 (97.19)

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

Dates of tests: October 6 - 12, 2021

Manufacturer: CNH Industrial America LLC, 700 State Street, Racine, Wi. 53404 USA

CONSUMABLE Fluids, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8388 **Fuel weight** 6.984 lbs/gal (0.837 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** CK-4 **Transmission and hydraulic lubricant** Case IH Akcela Hy-Tran Ultratractor fluid **Front axle lubricant** SAE 85W-140 API GL-5 **Total time engine was operated:** 16.5 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.** *20H00390528* **Crankshaft** lengthwise **Rated engine speed** 2000 **Bore and stroke** 4.606" x 5.315" (117.0 mm x 135.0 mm) **Compression ratio** 15.9 to 1 **Displacement** 531 cu in (8704 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: 118.8 - 131.6 lb/h (53.9 - 59.7 kg/h) **High idle:** 2215 - 2265 rpm **Turbo boost:** nominal 26.1 - 29.0 psi (180 - 200 kPa) as measured 26.3 psi (181 kPa)

CHASSIS: Type Half track drive, front wheel assist with rear rubber tracks **Serial No.** *JJAMG400HMRK01609* **Tread width** rear 120.0" (3048 mm) front 120.0 (3048 mm) **Wheelbase** 139.8" (3550 mm) **Length of track on ground** 29.4" (748 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.55 (2.49) second 2.05 (3.30) third 2.67 (4.30) fourth 3.17 (5.10) fifth 3.60 (5.79) sixth 4.16 (6.69) seventh 4.78 (7.69) eighth 5.47 (8.80) ninth 6.34 (10.21) tenth 7.33 (11.80) eleventh 8.45 (13.60) twelfth 9.76 (15.71) thirteenth 11.18 (17.99) fourteenth 12.80 (20.60) fifteenth 14.66 (23.59) sixteenth 18.33 (29.50) seventeenth 21.00 (33.80) eighteenth 24.23 (39.00) nineteenth 24.85 (40.00) twentieth 24.85 (40.00) twenty first 24.85 (40.00) (electronically limited) reverse 2.24 (3.60), 4.54 (7.31), 5.22 (8.40), 10.56 (16.99), 12.12 (19.50)

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
MAXIMUM POWER IN SELECTED GEARS

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 dry bulb	Air dry bulb	Barom. inch Hg (kPa)	
					4th Gear					
263.24 (196.29)	34744 (154.53)	2.85 (4.58)	2026	11.3	0.465 (0.283)	15.01 (2.96)	0.066 (0.040)	216 (102)	53 (12)	28.46 (96.38)
					5th Gear					
281.41 (209.84)	32018 (142.42)	3.30 (5.30)	1999	9.1	0.453 (0.275)	15.42 (3.04)	0.066 (0.040)	216 (102)	57 (14)	28.48 (96.44)
					6th Gear					
287.58 (214.44)	27565 (122.62)	3.91 (6.29)	2000	6.4	0.442 (0.269)	15.82 (3.12)	0.064 (0.039)	214 (101)	60 (15)	28.48 (96.44)
					7th Gear					
294.07 (219.29)	24057 (107.01)	4.58 (7.37)	2000	4.5	0.434 (0.264)	16.10 (3.17)	0.058 (0.035)	214 (101)	63 (17)	28.69 (97.16)
					8th Gear					
294.14 (219.34)	20739 (92.25)	5.32 (8.56)	2000	3.4	0.434 (0.264)	16.09 (3.17)	0.057 (0.035)	214 (101)	60 (16)	28.69 (97.16)
					9th Gear					
294.50 (219.60)	17984 (79.99)	6.14 (9.88)	2000	2.8	0.431 (0.262)	16.19 (3.19)	0.058 (0.035)	214 (101)	66 (19)	28.70 (97.19)
					10th Gear					
298.07 (222.27)	15510 (68.99)	7.21 (11.60)	2000	2.2	0.426 (0.259)	16.39 (3.23)	0.056 (0.034)	213 (101)	68 (20)	28.70 (97.19)
					11th Gear					
296.34 (220.98)	13376 (59.50)	8.31 (13.37)	2000	1.7	0.429 (0.261)	16.28 (3.21)	0.057 (0.034)	215 (101)	70 (21)	28.70 (97.19)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 7th gear	67.3	65.8
Bystander in 17th gear	67.3	87.6

Horizontal distance of drawbar hitch point behind rear wheel axis - 47.0"(1195 mm)

TRACKS, TIRES AND WEIGHT	Tested Without Ballast
Rear Tracks - No. & size	2 x 24 in (610 mm)
Front Tires - No., size, ply & psi(kPa)	Two 650/60R34;***;17(115)
Height of Drawbar	21.5 in (545 mm)
Static Weight with operator - Rear	27705 lb (12567 kg)
- Front	12990 lb (5892 kg)
- Total	40695 lb (18459 kg)

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** 1000 rpm at 1731 engine rpm **Unladen tractor mass** 40520 lb (18379 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: The data on this summary was obtained from testing conducted on the Case IH Magnum 400 Rowtrax Diesel.

NOTE 2: The data on this summary apply to New Holland T8 435 Smartrax models equipped with the 21 speed Ultra Command transmission.

NOTE 3: This tractor has a driveline protection system that limits the maximum engine torque in gears 1 through 4.

NOTE 4. The New Holland T8 435 Smartrax Ultra Command T.E.C.U. (Tractor Electronic Control Unit) is compliant with ISOBUS 11783.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor fell 2.1% short of meeting the manufacturer's remote flow claim of 59 GPM (224 l/min). 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. **2243A**, Nebraska Summary 1203A, February 10, 2022.

Roger M. Hoy
 Director

P.J. Jasa
 J.D. Luck
 S. Pitla
 Board of Tractor Test Engineers

DRAWBAR PERFORMANCE AT 1800 ENGINE RPM
UNBALLASTED - FRONT DRIVE ENGAGED
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Consumption 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)
					4th Gear					
260.13 (193.98)	34707 (154.38)	2.82 (4.53)	2008	11.5	0.467 (0.284)	14.96 (2.95)	0.065 (0.040)	215 (102)	54 (12)	28.46 (96.38)
					5th Gear					
281.35 (209.80)	32951 (146.57)	3.21 (5.16)	1964	10.2	0.456 (0.277)	15.32 (3.02)	0.066 (0.040)	214 (101)	58 (14)	28.48 (96.44)
					6th Gear					
300.16 (223.83)	31556 (140.37)	3.57 (5.75)	1880	9.3	0.452 (0.275)	15.45 (3.04)	0.058 (0.035)	213 (101)	62 (17)	28.47 (96.41)
					7th Gear					
316.24 (235.82)	29591 (131.63)	4.01 (6.45)	1800	7.2	0.441 (0.269)	15.82 (3.12)	0.049 (0.030)	215 (101)	65 (18)	28.70 (97.19)
					8th Gear					
323.48 (241.22)	25809 (114.80)	4.70 (7.56)	1799	5.2	0.432 (0.263)	16.18 (3.19)	0.048 (0.029)	215 (101)	62 (17)	28.69 (97.16)
					9th Gear					
325.85 (242.98)	22391 (99.60)	5.46 (8.78)	1800	3.9	0.428 (0.260)	16.31 (3.21)	0.047 (0.029)	214 (101)	67 (19)	28.70 (97.19)
					10th Gear					
330.50 (246.45)	19287 (85.79)	6.43 (10.34)	1800	3.1	0.422 (0.257)	16.54 (3.26)	0.047 (0.028)	214 (101)	69 (21)	28.70 (97.19)
					11th Gear					
330.02 (246.10)	16666 (74.13)	7.43 (11.95)	1800	2.4	0.422 (0.257)	16.55 (3.26)	0.047 (0.028)	214 (101)	70 (21)	28.70 (97.19)
					12th Gear					
328.16 (244.71)	14292 (63.57)	8.62 (13.86)	1801	1.8	0.425 (0.259)	16.42 (3.23)	0.047 (0.029)	214 (101)	71 (22)	28.70 (97.19)

HYDRAULIC PERFORMANCE

CATEGORY: 4N

Quick Attach: Yes

OECD Static test

Maximum force exerted through whole range:	20012 lbs (89.0 kN)	
	Standard pump	High flow pump
	<u>three outlet sets combined</u>	
i) Sustained pressure at compensator cutoff:	2798 psi (193 bar)	2881 psi (199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	44.2 GPM (167.4 l/min)	58.0 GPM (219.4 l/min)
iii) Pump delivery rate at maximum hydraulic power:	44.6 GPM (169.0 l/min)	57.8 GPM (218.8 l/min)
Delivery pressure:	2587 psi (178 bar)	2326 psi (160 bar)
Power:	67.4 HP (50.3 kW)	78.4 hp (58.5 kW)
	<u>single outlet set</u>	
i) Sustained pressure at compensator cutoff:	2790 psi (192 bar)	2885 psi (199 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	42.6 GPM (161.1 l/min)	42.0 GPM (159.1 l/min)
iii) Pump delivery rate at maximum hydraulic power:	39.9 GPM (151.2 l/min)	36.9 GPM (139.9 l/min)
Delivery pressure:	2230 psi (154 bar)	2169 psi (150 bar)
Power:	52.0 HP (38.8 kW)	46.8 hp (34.9 kW)

MegaFlow system

Three outlet sets combined

	<u>Pump #1</u>	<u>Pump #2</u>
i) Sustained pressure at compensator cutoff:	2832 psi (195 bar)	2810 psi (194 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	34.1 GPM (128.9 l/min)	45.3 GPM (171.6 l/min)
Combined flow:	79.4 GPM (300.5 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	35.7 GPM (135.1 l/min)	37.4 GPM (141.5 l/min)
Delivery pressure:	2667 psi (184 bar)	2518 psi (174 bar)
Power:	55.5 HP (41.4 kW)	54.9 Hp (40.9 kW)

Single outlet set

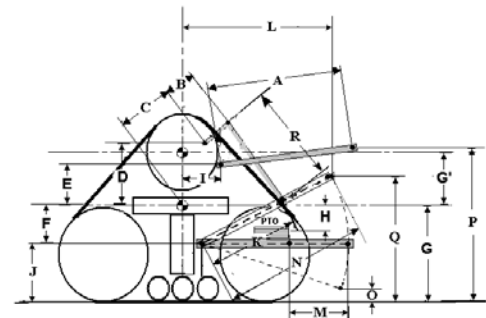
	<u>Pump #1</u>	<u>Pump #2</u>
i) Sustained pressure at compensator cutoff:	2825 psi (195 bar)	2805 psi (193 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	33.8 GPM (127.8 l/min)	40.2 GPM (152.1 l/min)
iii) Pump delivery rate at maximum hydraulic power:	34.8 GPM (131.9 l/min)	26.4 GPM (99.8 l/min)
Delivery pressure:	2348 psi (162 bar)	2324 psi (160 bar)
Power:	47.7 HP (35.6 kW)	35.7 Hp (26.7 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	29.7	755
B	20.5	520
C	22.9	581
D	23.4	595
E	13.2	336
F	11.6	295
G	33.8	860
*G'	14.6	370
H	0.8	20
I	20.9	530
J	22.2	565
K	30.2	768
L	53.1	1350
*L'	60.4	1534
M	27.2	691
N	38.2	970
O	10.4	265
P	49.8	1265
Q	42.3	1075
R	40.7	1035

*G' to undercarriage pivot point

*L' to Quick coupler ends



RECOMMENDED CITATION FORMAT:

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NEW HOLLAND T8 435 SMARTRAX DIESEL

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