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2012

Test 2053A: Case IH Farmall 110A

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 2053A—SUMMARY 866A

CASE IH FARMALL 110A DIESEL

8 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1074 rpm)					
92.05 (68.64)	2200	6.49 (24.58)	0.494 (0.301)	14.18 (2.79)	
Standard Power Take-off Speed (1000 rpm)					
94.07 (70.15)	2049	6.32 (23.91)	0.471 (0.286)	14.89 (2.93)	
Maximum Power (1 hour)					
94.17 (70.22)	1801	5.93 (22.45)	0.441 (0.268)	15.88 (3.13)	

VARYING POWER AND FUEL CONSUMPTION

92.05 (68.64)	2200	6.49 (24.58)	0.494 (0.301)	14.18 (2.79)	Air temperature
81.80 (61.00)	2293	5.99 (22.68)	0.513 (0.312)	13.66 (2.69)	73°F (23°C)
62.90 (46.90)	2353	5.18 (19.61)	0.577 (0.351)	12.14 (2.39)	Relative humidity
42.00 (31.32)	2362	4.00 (15.13)	0.667 (0.406)	10.51 (2.07)	16%
21.10 (15.73)	2368	2.83 (10.70)	0.938 (0.571)	7.47 (1.47)	Barometer
1.50 (1.12)	2401	2.01 (7.61)	9.393 (5.714)	0.75 (0.15)	28.98 Hg (98.14 kPa)

Maximum torque - 374 lb.-ft. (507 Nm) at 1051 rpm

Maximum torque rise - 70.3%

Torque rise at 1760 engine rpm - 28%

Power increase at 1800- engine rpm- 2.3%

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)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—5th (H1) Gear									
81.30 (60.63)	5205 (23.15)	5.86 (9.42)	2200	7.4	0.564 (0.343)	12.43 (2.45)	184 (84)	58 (14)	28.78 (97.46)
75% of Pull at Maximum Power—5th (H1) Gear									
66.03 (49.24)	3946 (17.55)	6.28 (10.10)	2314	5.6	0.618 (0.376)	11.34 (2.23)	184 (84)	59 (15)	28.70 (97.19)
50% of Pull at Maximum Power—5th (H1) Gear									
45.67 (34.05)	2622 (11.66)	6.53 (10.51)	2361	3.7	0.702 (0.427)	9.98 (1.97)	184 (84)	59 (15)	28.69 (97.16)
75% of Pull at Reduced Engine Speed—6th (H2) Gear									
65.93 (49.16)	3981 (17.71)	6.21 (9.99)	1485	5.5	0.464 (0.282)	15.12 (2.98)	181 (83)	58 (14)	28.69 (97.16)
50% of Pull at Reduced Engine Speed—6th (H2) Gear									
45.57 (33.98)	2604 (11.58)	6.57 (10.57)	1539	3.6	0.508 (0.309)	13.79 (2.72)	180 (82)	58 (14)	28.69 (97.16)

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

Dates of tests: December 4-6, 2012

Manufacturer: CNH De Mexico, Queretaro Mexico

FUEL, OIL and TIME: Fuel No. 2 Diesel Specific gravity converted to 60°/60° F (15°/15° C) 0.8417 Fuel weight 7.008 lbs/gal (0.840 kg/l) Oil SAE 15W40 API service classification CI-4 Transmission and hydraulic lubricant Case IH Akcela Nexlore fluid Front axle lubricant Case IH Akcela Nexlore fluid Total time engine was operated 13.5 hours

ENGINE: Make F.P.T NEF series Diesel Type four cylinder vertical with turbocharger and air to air intercooler Serial No. 990034 Crankshaft lengthwise Rated engine speed 2200 Bore and stroke 4.094" x 5.197" (104.0 mm x 132.0 mm) Compression ratio 17.5 to 1 Displacement 274 cu in (4485 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements 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 Muffler vertical Cooling medium temperature control one thermostat

ENGINE OPERATING PARAMETERS: Fuel rate: 44.1 - 46.8 lb/h (20.0 - 21.2 kg/h) High idle: 2350 - 2450 rpm Turbo boost: nominal 13.8- 16.7 psi (95 - 115 kPa) as measured 15.3 psi (105 kPa)

CHASSIS: Type front wheel assist Serial No. NH000453M Tread width rear 64.0" (1626 mm) to 80.0" (2032 mm) front 64.0" (1626 mm) to 80.0" (2032 mm) Wheelbase 99.2" (2522 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio Nominal travel speeds mph (km/h) first 1.67 (2.68) second 2.56 (4.12) third 3.48 (5.60) fourth 4.83 (7.77) fifth 6.14 (9.88) sixth 9.45 (15.21) seventh 12.83 (20.65) eighth 17.82 (28.68) reverse 1.72 (2.77), 2.65 (4.26), 3.60 (5.79), 5.00 (8.04), 6.35 (10.22), 9.77 (15.73), 13.27 (21.36), 18.43 (29.66) Clutch single dry disc operated by foot pedal Brakes single wet disc operated by two foot pedals which can be locked together Steering hydrostatic Power take-off 540 rpm at 1890 engine rpm or 1000 rpm at 2049 engine rpm Unladen tractor mass 9665 lb (4384 kg)

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)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd(L3)Gear									
64.54 (48.13)	7624 (33.91)	3.18 (5.11)	2293	14.9	0.661 (0.402)	10.60 (2.09)	184 (84)	60 (16)	28.72 (97.26)
4th(L4)Gear									
78.18 (58.30)	6618 (29.44)	4.43 (7.13)	2200	10.9	0.586 (0.356)	11.97 (2.36)	184 (84)	61 (16)	28.74 (97.33)
5th(H1)Gear									
81.30 (60.63)	5205 (23.15)	5.86 (9.42)	2200	7.4	0.564 (0.343)	12.43 (2.45)	184 (84)	58 (14)	28.78 (97.46)
6th(H2)Gear									
81.65 (60.89)	3282 (14.60)	9.33 (15.02)	2200	4.3	0.559 (0.340)	12.54 (2.47)	184 (84)	60 (16)	28.77 (97.43)

UNBALLASTED - FRONT DRIVE ENGAGED-1800 RPM

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)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd(L3)Gear									
64.56 (48.14)	7632 (33.95)	3.17 (5.10)	2292	14.9	0.658 (0.400)	10.65 (2.10)	184 (84)	61 (16)	28.72 (97.26)
4th(L4)Gear									
78.32 (58.40)	6859 (30.51)	4.28 (6.89)	2150	11.9	0.581 (0.353)	12.07 (2.38)	184 (84)	61 (16)	28.74 (97.33)
5th(H1)Gear									
82.49 (61.51)	5742 (25.54)	5.39 (8.67)	2050	8.5	0.541 (0.329)	12.96 (2.55)	183 (84)	60 (15)	28.77 (97.43)
6th(H2)Gear									
84.05 (62.67)	4193 (18.65)	7.52 (12.09)	1801	5.6	0.499 (0.303)	14.05 (2.77)	182 (83)	61 (16)	28.76 (97.39)

NOTE: The performance results on this report were obtained from tests carried out on the New Holland TS6.110 Diesel.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor did not meet the manufacturer's implement flow claim of 22 GPM (83 L/min). For the maximum power tests the fuel temperature at the fuel pump return was maintained at 153°F (67°C). The performance figures on this summary were taken from a test conducted under the OECD Code II test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2053A**, Nebraska Summary 866A, December 21, 2012.

Roger M. Hoy
Director

M.R. Riley
P.J. Jasa
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 in 4th (4L) gear	79.7	79.7
Bystander in 8th (4H) gear		89.6

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 18.4-34;8;16(110)
Two 14.9-24;8;16(110)
24.0 in (610 mm)
5830 lb (2644 kg)
4010 lb (1819 kg)
9840 lb (4463 kg)

HYDRAULIC PERFORMANCE

CATEGORY: II

Quick Attach: None

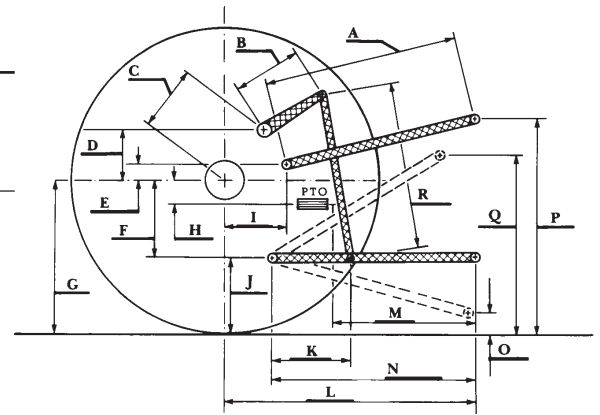
OECD Static test

Maximum force exerted through whole range: 6174 lbs (27.46 kN) (2 external lift cylinders)

	Two pump system <u>two outlet sets combined</u>
i) Sustained pressure of the open relief valve:	2413 psi (166 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	20.2 GPM (76.5 l/min)
iii) Pump delivery rate at maximum hydraulic power:	17.4 GPM (65.9 l/min)
Delivery pressure:	1725 psi (119 bar)
Power:	17.5 HP (13.1 kW)
	<u>single outlet set</u>
i) Sustained pressure of the open relief valve:	2431 psi (168 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	16.4 GPM (61.9 l/min)
iii) Pump delivery rate at maximum hydraulic power:	15.5 GPM (58.7 l/min)
Delivery pressure:	1773 psi (122 bar)
Power:	16.0 HP (12.0 kW)

THREE POINT HITCH PERFORMANCE (SAE Static test)

Observed maximum pressure psi. (bar)	2480 (171)
Location:	lift cylinder
Hydraulic oil temperature: °F (°C)	145 (63)
Location:	pump inlet
Category:	II
Quick attach:	none
Two external lift cylinders	
System pressure 2210 psi (152 Bar)	
Hitch point distance to ground level in. (mm)	8.0 (203) 15.0 (381) 22.0 (559) 29.0 (737) 36.0 (914)
Lift force on frame lb	9270 8622 8199 8361 7326
" " " " " (kN)	(41.2) (38.4) (36.5) (37.2) (32.6)



HITCH DIMENSIONS AS TESTED—NO LOAD

	SAE Test		OECD Test	
	inch	mm	inch	mm
A	27.7	705	28.5	724
B	9.8	250	9.8	250
C	14.1	357	14.1	357
D	13.5	342	13.5	342
E	8.1	205	8.1	205
F	9.0	229	9.0	229
G	30.3	770	30.3	770
H	0.4	10	0.4	10
I	12.7	323	12.7	323
J	21.3	541	21.3	541
K	18.1	460	18.1	460
L	40.8	1037	40.8	1037
M	22.9	581	22.9	581
N	36.6	930	36.6	930
O	8.0	203	8.0	203
P	40.3	1024	45.3	1151
Q	34.0	864	34.0	864
R	32.5	826	32.5	826



CASE IH FARMALL 110A DIESEL

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