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2016

## Test 2156A: Case IH Farmall 110A

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 2156A—SUMMARY 1037A

## CASE IH FARMALL 110A DIESEL

### 8 SPEED

Chassis serial numbers CT00001M and higher

#### 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—630 rpm)						
92.57 (69.03)	2201	5.90 (22.32)	0.446 (0.272)	15.70 (3.09)	0.40 (1.50)	
Standard Power Take-off Speed (539 rpm)						
94.56 (70.51)	1890	5.42 (20.50)	0.402 (0.244)	17.46 (3.44)	0.37 (1.38)	
Maximum Power (1 hour)						
94.93 (70.79)	1750	5.22 (19.76)	0.385 (0.234)	18.18 (3.58)	0.32 (1.21)	

#### VARYING POWER AND FUEL CONSUMPTION

92.57 (69.03)	2201	5.90 (22.32)	0.446 (0.272)	15.70 (3.09)	0.40 (1.50)	Air temperature
79.84 (59.53)	2238	5.36 (20.30)	0.471 (0.286)	14.89 (2.93)	0.34 (1.30)	75°F (24°C)
60.86 (45.38)	2267	4.57 (17.28)	0.526 (0.320)	13.33 (2.63)	0.27 (1.01)	Relative humidity
41.15 (30.68)	2299	3.75 (14.18)	0.638 (0.388)	10.99 (2.16)	0.21 (0.81)	78%
20.84 (15.54)	2320	3.05 (11.55)	1.026 (0.624)	6.38 (1.35)	0.12 (0.45)	Barometer
1.69 (1.26)	2344	2.25 (8.53)	9.334 (5.678)	0.75 (0.15)	0.08 (0.30)	28.94" Hg (98.00 kPa)

Maximum torque - 348 lb.-ft. (472 Nm) at 1249 rpm

Maximum torque rise - 57.7%

Torque rise at 1760 engine rpm - 29%

Power increase at 1750 engine rpm - 2.5%

#### 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—5th (H1) Gear										
80.30 (59.88)	5166 (22.98)	5.83 (9.38)	2200	5.6	0.513 (0.312)	13.68 (2.69)	NA (NA)	183 (84)	75 (24)	28.90 (97.87)
75% of Pull at Rated Engine Speed—5th (H1) Gear										
62.74 (46.78)	3873 (17.23)	6.08 (9.78)	2249	3.8	0.567 (0.345)	12.36 (2.43)	0.042 (0.026)	183 (84)	78 (26)	28.92 (97.93)
50% of Pull at Rated Engine Speed—5th (H1) Gear										
43.24 (32.24)	2587 (11.51)	6.27 (10.09)	2284	2.2	0.680 (0.414)	10.31 (2.03)	0.055 (0.034)	183 (84)	79 (26)	28.91 (97.90)
75% of Pull at Reduced Engine Speed—6th (H2) Gear										
62.81 (46.84)	3879 (17.25)	6.08 (9.78)	1458	3.7	0.439 (0.267)	15.97 (3.15)	0.044 (0.027)	180 (82)	80 (27)	28.93 (97.97)
50% of Pull at Reduced Engine Speed—6th (H2) Gear										
43.21 (32.22)	2565 (11.41)	6.32 (10.16)	1494	2.1	0.492 (0.299)	14.24 (2.81)	0.050 (0.030)	179 (82)	79 (26)	28.91 (97.90)

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

**Dates of tests:** August 30 to September 7, 2016

**Manufacturer:** CNH De Mexico, Queretaro Mexico

**CONSUMABLE Fluids, OIL and TIME: Fuel** No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8418 **Fuel weight** 7.009 lbs/gal (0.840 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil** SAE 10W30 **API service classification** CJ-4 **Transmission, hydraulic and front axle lubricant** Case IH Akcelra Nexplore fluid **Total time engine was operated** 16.5 hours

**ENGINE: Make** F.P.T NEF **Diesel Type** Four cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** 001388393 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.094" x 5.197" (104.0 mm x 132.0 mm) **Compression ratio** 17.0 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 **Exhaust** DOC (diesel oxidation catalyst) and SCR (selective catalyst reduction) integrated within a vertical muffler **Cooling medium temperature control** one thermostat

**ENGINE OPERATING PARAMETERS: Fuel rate:** 38.5 - 41.7 lb/h (17.5 - 18.9 kg/h) **High idle:** 2325 - 2375 rpm **Turbo boost:** nominal 16.7- 19.6 psi (115 - 135 kPa) as measured 18.2 psi (125 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** NT01005M **Tread width** rear 64.0" (1625 mm) to 78.0" (1981 mm) front 64.0" (1625 mm) to 66.0" (1676 mm) **Wheelbase** 99.3" (2521 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** 10245 lb (4647 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)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd (L3) Gear										
68.02 (50.72)	8485 (37.74)	3.01 (4.84)	2216	14.8	0.592 (0.360)	11.85 (2.33)	0.052 (0.032)	184 (84)	80 (27)	28.90 (97.87)
4th (L4) Gear										
77.74 (57.97)	6547 (29.12)	4.45 (7.16)	2200	8.7	0.529 (0.322)	13.24 (2.61)	NA (NA)	183 (84)	73 (23)	28.90 (97.87)
5th (H1) Gear										
80.30 (59.88)	5166 (22.98)	5.83 (9.38)	2200	5.6	0.513 (0.312)	13.68 (2.69)	NA (NA)	183 (84)	75 (24)	28.90 (97.87)
6th(H2) Gear										
79.47 (59.26)	3231 (14.37)	9.23 (14.85)	2200	3.0	0.517 (0.315)	13.55 (2.67)	NA (NA)	183 (84)	76 (25)	28.90 (97.87)

## **UNBALLASTED - FRONT DRIVE ENGAGED-1750 ENGINE 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)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd (L3) Gear										
68.08 (50.76)	8478 (37.71)	3.02 (4.85)	2215	14.6	0.592 (0.360)	11.85 (2.33)	0.043 (0.026)	184 (84)	81 (27)	28.91 (97.90)
4th (L4) Gear										
78.44 (58.49)	7005 (31.16)	4.20 (6.76)	2100	9.5	0.518 (0.315)	13.54 (2.67)	0.047 (0.029)	183 (84)	73 (23)	28.90 (97.87)
5th (H1) Gear										
81.16 (60.52)	6164 (27.42)	4.94 (7.95)	1900	7.4	0.471 (0.287)	14.88 (2.93)	0.039 (0.024)	182 (83)	76 (24)	28.91 (97.90)
6th(H2) Gear										
81.53 (60.80)	4222 (18.78)	7.24 (11.65)	1750	4.5	0.447 (0.272)	15.67 (3.09)	0.043 (0.026)	181 (83)	72 (25)	28.92 (97.93)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 4th (4L) gear	79.9	79.9
Bystander in 8th (4H) gear		86.7

## **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;6;16(110)  
21.0 in (535 mm)  
6120 lb (2776 kg)  
4300 lb (1950 kg)  
10420 lb (4726 kg)

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

**NOTE 1:** The performance results on this report were obtained from tests carried out on the New Holland TS6.110 Diesel.

**NOTE 2:** The performance figures on this report apply to Case IH Farmall 110A tractors with chassis serial numbers CT00001M and higher.

**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) with dual pump system. The manufacturer's 3 point lift claim of 7326 lb (3323 kg) (with 2 external lift cylinders) was not met when tested per OECD Code 2 standards. 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 and correct report of official Tractor Test No. **2156A**, Nebraska Summary 1037A, March 3, 2017.

Roger M. Hoy  
Director

M.F. Kocher  
P.J. Jasa  
J.D. Luck  
Board of Tractor Test Engineers

The 3 point lift performance figures listed below are from tests conducted on the New Holland TS6030 Diesel

## 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

#### two outlet sets combined

- i) Sustained pressure of the open relief valve: 2772 psi (191 bar)
- ii) Pump delivery rate at minimum pressure and rated engine speed: 19.1 GPM (72.1 l/min)
- iii) Pump delivery rate at maximum hydraulic power: 14.6 GPM (55.4 l/min)
- Delivery pressure: 2190 psi (151 bar)
- Power: 18.7 HP (13.9 kW)

### single outlet set

- i) Sustained pressure of the open relief valve: 2760 psi (190 bar)
- ii) Pump delivery rate at minimum pressure and rated engine speed: 18.1 GPM (68.4 l/min)
- iii) Pump delivery rate at maximum hydraulic power: 13.9 GPM (52.7 l/min)
- Delivery pressure: 2070 psi (143 bar)
- Power: 16.8 HP (12.5 kW)

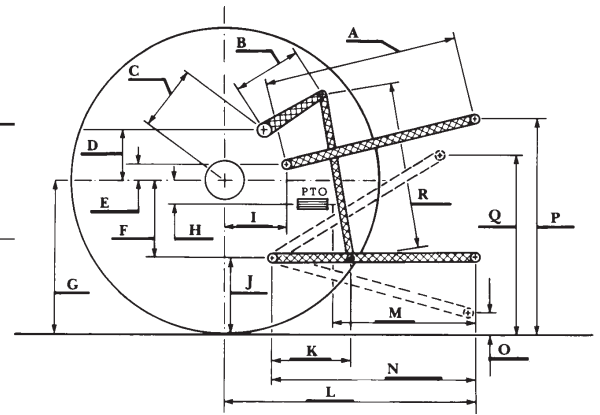
## THREE POINT HITCH PERFORMANCE(SAE Static test)

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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 University of Nebraska-Lincoln