

# SUMMARY OF OECD TEST 2653-NEBRASKA SUMMARY 811

## CASE IH PUMA 160 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—1111 rpm)</b>						
144.3 (107.6)	2100	8.28 (31.35)	0.400 (0.243)	17.42 (3.43)	0.55 (2.09)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
151.5 (113.0)	1890	8.38 (31.71)	0.385 (0.234)	18.08 (3.56)	0.58 (2.18)	
<b>Maximum Power (1 hour)</b>						
155.8 (116.2)	1800	8.38 (31.72)	0.375 (0.228)	18.59 (3.66)	0.59 (2.24)	

#### VARYING POWER AND FUEL CONSUMPTION

144.3 (107.6)	2100	8.28 (31.35)	0.400 (0.243)	17.42 (3.43)	0.55 (2.09)	Air temperature
123.4 (92.0)	2113	7.37 (27.90)	0.416 (0.253)	16.75 (3.30)	0.43 (1.62)	79°F(26°C)
93.5 (69.7)	2132	6.12 (23.17)	0.456 (0.278)	15.27 (3.01)	0.32 (1.21)	Relative humidity
62.8 (46.8)	2149	4.83 (18.28)	0.536 (0.326)	12.99 (2.56)	0.21 (0.78)	42%
31.6 (23.6)	2164	3.46 (13.10)	0.762 (0.463)	9.15 (1.80)	0.11 (0.42)	Barometer
--	2177	2.51 (9.50)	--	--	--	29.2" Hg(99.0 kPa)

Maximum torque - 530.3 lb.-ft. (719.0 Nm) at 1400 rpm  
 Maximum torque rise - 46.9%  
 Torque rise at 1700 engine rpm - 33%  
 Power increase at 1800 engine rpm - 8.0%

#### 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)
<b>Maximum Power—4.7 mph (7.5 km/h)</b>									
118.5 (88.4)	9935 (44.2)	4.47 (7.20)	2100	3.8	0.496 (0.301)	14.06 (2.77)	203 (95)	84 (29)	29.2 (99.0)
<b>75% of Pull at Maximum Power—4.7 mph (7.5 km/h)</b>									
88.8 (66.2)	7440 (33.1)	4.47 (7.20)	2133	2.7	0.514 (0.313)	13.55 (2.67)	201 (94)	84 (29)	29.2 (99.0)
<b>50% of Pull at Maximum Power—4.7 mph (7.5 km/h)</b>									
60.1 (44.8)	4970 (22.1)	4.53 (7.30)	2153	1.9	0.609 (0.370)	11.44 (2.25)	199 (93)	84 (29)	29.2 (99.0)
<b>75% of Pull at Reduced Engine Speed—5.0 mph (8.0 km/h)</b>									
89.0 (66.4)	7465 (33.2)	4.47 (7.20)	1953	2.6	0.503 (0.306)	13.86 (2.73)	194 (90)	86 (30)	29.2 (99.0)
<b>50% of Pull at Reduced Engine Speed—5.0 mph (8.0 km/h)</b>									
60.1 (44.8)	4970 (22.1)	4.53 (7.30)	1968	1.6	0.572 (0.348)	12.18 (2.40)	190 (88)	86 (30)	29.2 (99.0)

**Location of tests:** Istituto per le Macchine Agricole e Movimento Terra 73, Strada delle Cacce 10135 Torino Italy

**Dates of tests:** May to September, 2011.

**Manufacturer:** CNH UK Limited Basildon, Essex SS14 3AD United Kingdom

**CONSUMABLE Fluids and OIL:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.836 Fuel weight 6.977 lbs/gal (0.835 kg/l) Diesel Exhaust Fluid (DEF) 30% aqueous urea solution DEF weight 9.071 lbs/gal (1.087 kg/l) Oil SAE 10W30 API service classification CG-4 Transmission and hydraulic lubricant Akcela Nexplore fluid Front axle lubricant Akcela Nexplore fluid

**ENGINE:** Make F.P.T. Diesel Type six cylinder vertical with turbocharger and air to air intercooler and D.E.F (diesel exhaust fluid) exhaust treatment Serial No. 518516 Crankshaft lengthwise Rated engine speed 2100 Bore and stroke 4.094" x 5.197" (104.0 mm x 132.0 mm) Compression ratio 17.0 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 one paper element Muffler vertical Cooling medium temperature control thermostat and variable speed fan

**CHASSIS:** Type front wheel assist Serial No. ZABS09168 Tread width rear 60.2" (1530 mm) to 87.8" (2230 mm) front 61.4" (1560 mm) to 89.0" (2260 mm) Wheelbase 113.5" (2884 mm) Hydraulic control system direct engine drive Transmission Continuously variable transmission with compound planetary gears. Four mechanical ranges are electrohydraulically controlled. Nominal travel speeds mph (km/h) forward - first - 0 - 7.5 mph (0 - 12 km/h), second - 0-11 mph (0-18 km/h), third 0-23 mph (0-37 km/h), fourth- 0-31 mph (0-49.9 km/h) reverse - 0 - 9 mph (0-15 km/h), 0-20 mph (0-32 km/h) Clutch wet disc hydraulically actuated by foot pedal Brakes wet disc hydraulically actuated by two foot pedals that can be locked together Steering hydrostatic Power take-off 540 rpm at 1970 engine rpm or 1000 rpm at 1893 engine rpm Unladen tractor mass 16360 lb (7420 kg)

## DRAWBAR PERFORMANCE

(Unballasted - Front Drive Engaged)

### MAXIMUM POWER AT SELECTED SPEED SETTINGS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3.1 mph (5.0 km/h)									
99.1 (73.9)	13915 (61.9)	2.68 (4.32)	2092	14.8	0.587 (0.357)	11.88 (2.34)	189 (87)	82 (28)	29.2 (98.8)
3.7 mph (6.5 km/h)									
120.7 (90.0)	13240 (58.9)	3.42 (5.50)	1950	7.5	0.475 (0.289)	14.67 (2.89)	189 (87)	81 (27)	29.2 (98.8)
4.3 mph (7.0 km/h)									
121.0 (90.2)	13040 (58.0)	3.49 (5.61)	1800	6.6	0.480 (0.292)	14.52 (2.86)	194 (90)	81 (27)	29.2 (98.8)
5.0 mph (8.0 km/h)									
128.6 (95.9)	11935 (53.1)	4.05 (6.51)	1800	4.9	0.453 (0.275)	15.39 (3.03)	199 (93)	73 (23)	29.2 (98.8)
5.9 mph (9.5 km/h)									
130.2 (97.1)	9825 (43.7)	4.95 (7.97)	1800	2.7	0.456 (0.277)	15.28 (3.01)	189 (87)	73 (23)	29.2 (98.8)
6.8 mph (11.0 km/h)									
127.0 (94.8)	7915 (35.2)	6.02 (9.68)	1800	2.5	0.453 (0.275)	15.39 (3.03)	192 (89)	77 (25)	29.2 (98.8)
7.7 mph (12.4 km/h)									
129.9 (96.9)	7395 (32.9)	6.56 (10.56)	1800	2.3	0.440 (0.267)	15.85 (3.12)	189 (87)	77 (25)	29.2 (98.8)
9.3 mph (15.0 km/h)									
104.7 (78.1)	4900 (21.8)	8.02 (12.91)	1800	1.7	0.565 (0.343)	12.33 (2.43)	187 (86)	79 (26)	29.2 (98.8)
11.2 mph (18.0 km/h)									
112.6 (84.0)	4385 (19.5)	9.64 (15.51)	1798	1.5	0.505 (0.307)	13.81 (2.72)	192 (89)	79 (26)	29.2 (98.8)

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

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. 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. **2653**, Nebraska Summary 811, January 23, 2012.

Roger M. Hoy  
Director

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

### TRACTOR SOUND LEVEL WITH CAB

	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
At no load at 4.7 mph (7.5 km/h)	66.8	67.6
Bystander	--	--

### 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 650/65R42; \*\*,9 (60)

Two 540/65R30; \*\*,9 (60)

21.1 in (535 mm)

9690 lb (4395 kg)

6835 lb (3100 kg)

16525 lb (7495 kg)

This vehicle is equipped with an electronically controlled engine Power management system that monitors and boosts engine power output in certain circumstances. This is achieved by electronically changing the characteristics of the engine power-speed curve. The engine Power management function ("boosted" power level) becomes active in the higher transmission gears for road transport applications. The system is also activated when power transfer through the PTO and hydraulic pump exceeds a preset level (and forward speed exceeds 0.5 km/h), for mobile PTO driven implement applications. An override system is provided to enable PTO operations at the "boosted" power level while the vehicle is stationary for test purposes. The results of this PTO output test are presented below.

### 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>						
<b>Rated Engine Speed—(PTO speed—1164 rpm)</b>						
162.0 (120.8)	2200	9.30 (35.22)	0.400 (0.243)	17.41 (3.43)	0.69 (2.60)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
174.9 (130.4)	1890	9.33 (35.31)	0.372 (0.226)	18.75 (3.69)	0.68 (2.59)	
<b>Maximum Power (1 hour)</b>						
176.7 (131.8)	1800	9.38 (35.50)	0.370 (0.225)	18.83 (3.71)	0.69 (2.62)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>						
162.0 (120.8)	2200	9.30 (35.22)	0.400 (0.243)	17.41 (3.43)	0.69 (2.60)	Air temperature
139.5 (104.0)	2230	8.34 (31.58)	0.417 (0.253)	16.72 (3.29)	0.55 (2.07)	81°F (27°C)
105.7 (78.8)	2249	6.83 (25.84)	0.450 (0.274)	15.48 (3.05)	0.37 (1.40)	Relative humidity
70.9 (52.9)	2270	5.36 (20.30)	0.527 (0.320)	13.23 (2.61)	0.21 (0.80)	30%
35.8 (26.7)	2285	3.86 (14.60)	0.750 (0.456)	9.28 (1.83)	0.15 (0.57)	Barometer
--	2300	2.73 (10.32)	--	--	--	29.2" Hg (99.0 kPa)
Maximum torque - 585.8 lb.-ft. (794.2 Nm) at 1500 rpm Maximum torque rise - 51.5% Torque rise at 1800 engine rpm - 33% Power increase at 1800 engine rpm - 9.1%						

## HYDRAULIC PERFORMANCE

CATEGORY: III

Quick Attach: None

OECD Static test

Maximum force exerted through whole range: 10250 lbs (45.6 kN) Lift cylinders 2x100 mm

i) Sustained pressure of the open relief valve: 2930 psi (202 bar)  
two outlet sets combined

ii) Pump delivery rate at minimum pressure: 36.1 GPM (136.6 l/min)

iii) Pump delivery rate at maximum hydraulic power: 34.9 GPM (132.2 l/min)

Delivery pressure: 2320 psi (160 bar)

Power: 47.3 HP (35.3 kW)

single outlet set

ii) Pump delivery rate at minimum pressure: 26.6 GPM (100.9 l/min)

iii) Pump delivery rate at maximum hydraulic power: 26.0 GPM (98.4 l/min)

Delivery pressure: 2465 psi (170 bar)

Power: 37.4 HP (27.9 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	29.3	745
B	12.2	310
C	15.7	398
D	14.3	364
E	12.6	320
F	9.8	250
G	36.4	925
H	0.6	16
I	17.5	445
J	26.6	675
K	17.3	440
L	47.0	1194
M	24.6	624
N	38.3	974
O	7.9	200
P	53.5	1360
Q	39.2	995
R	33.5	850

