

# SUMMARY OF OECD TEST 2648—NEBRASKA SUMMARY 810

## CASE IH PUMA 145 DIESEL

### 18 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)	
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>						
<b>Rated Engine Speed—(PTO speed—1111 rpm)</b>						
138.1 (103.0)	2100	7.56 (28.63)	0.381 (0.232)	18.27 (3.60)	0.51 (1.94)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
145.5 (108.5)	1890	7.73 (29.25)	0.370 (0.225)	18.83 (3.71)	0.50 (1.90)	
<b>Maximum Power (1 hour)</b>						
149.8 (111.7)	1800	7.78 (29.44)	0.362 (0.220)	19.26 (3.79)	0.55 (2.08)	

#### VARYING POWER AND FUEL CONSUMPTION

138.1 (103.0)	2100	7.56 (28.63)	0.381 (0.232)	18.27 (3.60)	0.51 (1.94)	Air temperature
118.7 (88.5)	2124	6.76 (25.58)	0.397 (0.241)	17.56 (3.46)	0.39 (1.49)	68°F (20°C)
89.7 (66.9)	2141	5.51 (20.85)	0.428 (0.261)	16.27 (3.21)	0.26 (0.97)	Relative humidity
60.2 (44.9)	2156	4.23 (16.01)	0.489 (0.298)	14.24 (2.81)	0.18 (0.67)	43%
30.4 (22.7)	2170	2.91 (11.03)	0.667 (0.406)	10.45 (2.06)	0.08 (0.30)	Barometer
--	2187	1.96 (7.43)	--	--	--	29.5" Hg (99.8 kPa)

Maximum torque - 502.3 lb.-ft. (681.0 Nm) at 1400 rpm

Maximum torque rise - 45.4%

Torque rise at 1700 engine rpm - 32%

Power increase at 1800 engine rpm - 8.4%

#### 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 cool- ing med	Temp. °C Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—9th Gear</b>									
113.9 (84.9)	8815 (39.2)	4.85 (7.80)	2100	2.5	0.465 (0.283)	14.97 (2.95)	185 (85)	90 (32)	30.0 (101.7)
<b>75% of Pull at Maximum Power—9th Gear</b>									
87.6 (65.3)	6610 (29.4)	4.97 (8.00)	2132	1.5	0.496 (0.302)	14.05 (2.77)	187 (86)	90 (32)	30.0 (101.7)
<b>50% of Pull at Maximum Power—9th Gear</b>									
59.1 (44.1)	4405 (19.6)	5.03 (8.10)	2145	0.8	0.608 (0.370)	11.47 (2.26)	185 (85)	90 (32)	30.0 (101.7)
<b>75% of Pull at Reduced Engine Speed—10th Gear</b>									
87.6 (65.3)	6610 (29.4)	4.97 (8.00)	1752	1.4	0.470 (0.286)	14.82 (2.92)	183 (84)	90 (32)	30.0 (101.7)
<b>50% of Pull at Reduced Engine Speed—10th Gear</b>									
58.5 (43.6)	4410 (19.6)	4.97 (8.00)	1768	0.9	0.556 (0.338)	12.54 (2.47)	187 (86)	90 (32)	30.0 (101.7)

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

**Dates of tests:** May to June 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)** 0.837 **Fuel weight** 6.97 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 15W40 **API service classification** CH-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.** 000747579 **Crankshaft** lengthwise **Rated engine speed** 2100 **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** one paper element **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

**CHASSIS:** **Type** front wheel assist **Serial No.** ZABP50027 **Tread width** rear 56.3" (1430 mm) to 85.6" (2173 mm) front 52.2" (1325 mm) to 90.0" (2285 mm) **Wheelbase** 109.8" (2789 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.50 (2.41) second 1.80 (2.89) third 2.16 (3.48) fourth 2.60 (4.18) fifth 3.05 (4.91) sixth 3.47 (5.59) seventh 3.67 (5.91) eighth 4.18 (6.72) ninth 5.01 (8.07) tenth 6.03 (9.71) eleventh 7.09 (11.41) twelfth 8.53 (13.72) thirteenth 9.85 (15.85) fourteenth 11.84 (19.06) fifteenth 14.23 (22.90) sixteenth 17.11 (27.54) seventeenth 20.11 (32.37) eighteenth 24.18 (38.92) reverse 2.92 (4.70), 3.51 (5.65), 4.22 (6.79), 5.07 (8.16), 5.96 (9.59), 7.16 (11.53) **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 1969 engine rpm or 1000 rpm at 1893 engine rpm **Unladen tractor mass** 14350 lb (6510 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)	Temp. <sup>o</sup> F(°C) cool- ing med	Temp. <sup>o</sup> F(°C) Air dry bulb	Barom. inch Hg (kPa)
7th(6Low) Gear								
105.4 (78.6)	13535 (60.2)	2.92 (4.70)	1930	14.9	0.505 (0.307)	13.81 (2.72)	162 (72)	88 (31) 30.1 (102.0)
8th(2Med) Gear								
114.1 (85.1)	13240 (58.9)	3.23 (5.20)	1826	12.8	0.475 (0.289)	14.67 (2.89)	162 (72)	86 (30) 30.1 (102.0)
9th(3Med) Gear								
123.2 (91.9)	11265 (50.1)	4.10 (6.60)	1801	4.0	0.440 (0.268)	15.84 (3.12)	160 (71)	84 (29) 30.1 (102.0)
10th(4Med) Gear								
124.0 (92.5)	9240 (41.1)	5.03 (8.10)	1807	2.4	0.436 (0.265)	15.99 (3.15)	156 (69)	84 (29) 30.1 (102.0)
11th(5Med) Gear								
122.0 (91.0)	7755 (34.5)	5.90 (9.50)	1797	1.7	0.437 (0.266)	15.94 (3.14)	160 (71)	84 (29) 30.1 (102.0)
12th(6Med) Gear								
120.4 (89.8)	6315 (28.1)	7.15 (11.50)	1804	1.2	0.450 (0.274)	15.48 (3.05)	162 (72)	84 (29) 30.1 (102.0)
13th(1High) Gear								
128.9 (96.1)	5850 (26.0)	8.26 (13.30)	1803	1.0	0.417 (0.254)	16.70 (3.29)	158 (70)	82 (28) 30.1 (102.0)
14th(2High) Gear								
126.6 (94.4)	4745 (21.1)	10.00 (16.10)	1804	0.7	0.429 (0.261)	16.24 (3.20)	156 (69)	82 (28) 30.1 (102.0)

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

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's hydraulic flow claim of 29.0 GPM (110 l/min). 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. **2648**, Nebraska Summary 810, 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 in 9th gear	69.7	70.1
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 650/65R38; \*\*,12 (80)  
 Two 540/65R28; \*\*,12 (80)  
 18.7 in (475 mm)  
 8805 lb (3995 kg)  
 5710 lb (2590 kg)  
 14515 lb (6585 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.

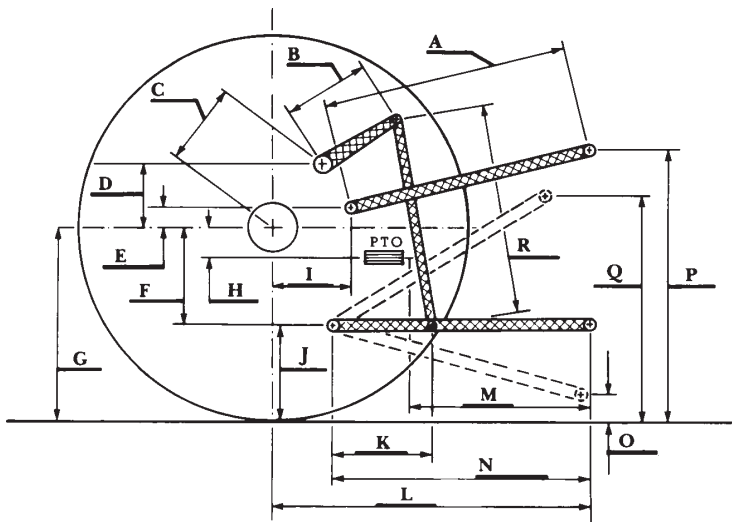
### POWER TAKE-OFF PERFORMANCE

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>						
157.6 (117.5)	2200	8.55 (32.38)	0.378 (0.230)	18.43 (3.63)	0.60 (2.28)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
168.8 (125.9)	1890	8.72 (33.02)	0.360 (0.219)	19.35 (3.81)	0.62 (2.33)	
<b>Maximum Power (1 hour)</b>						
172.9 (128.9)	1800	8.77 (33.20)	0.354 (0.215)	19.71 (3.88)	0.64 (2.42)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>						
157.6 (117.5)	2200	8.55 (32.38)	0.378 (0.230)	18.43 (3.63)	0.60 (2.28)	Air temperature
135.2 (100.8)	2221	7.67 (29.02)	0.395 (0.241)	17.63 (3.47)	0.43 (1.62)	74°F (27°C)
102.3 (76.3)	2242	6.23 (23.60)	0.425 (0.259)	16.41 (3.23)	0.28 (1.05)	Relative humidity
68.8 (51.3)	2257	4.81 (18.22)	0.488 (0.297)	14.29 (2.81)	0.17 (0.64)	34%
34.6 (25.8)	2272	3.27 (12.36)	0.658 (0.400)	10.59 (2.09)	0.11 (0.41)	Barometer
--	2291	2.21 (8.35)	--	--	--	29.4" Hg (99.6 kPa)
Maximum torque - 568.9 lb.-ft. (771.4 Nm) at 1500 rpm Maximum torque rise - 51.2% Torque rise at 1800 engine rpm - 34% Power increase at 1800 engine rpm - 9.7%						

## HYDRAULIC PERFORMANCE

CATEGORY: III  
 Quick Attach: None  
 OECD Static test

	lift cylinders
Maximum force exerted through whole range:	8070 lbs (35.9 kN) (2x90 mm)
	9285 lbs (41.3 kN) (2x100 mm)
i) Sustained pressure of the open relief valve:	2990 psi (206 bar)
ii) Pump delivery rate at minimum pressure:	27.0 GPM (102.3 l/min)
iii) Pump delivery rate at maximum	
hydraulic power:	23.4 GPM (88.5 l/min)
Delivery pressure:	2610 psi (180 bar)
Power:	35.6 HP (26.6 kW)



**HITCH DIMENSIONS AS TESTED—NO LOAD**

	inch	mm
A	29.7	755
B	12.2	310
C	15.7	398
D	14.3	364
E	8.2	208
F	9.8	250
G	34.4	875
H	0.6	16
I	17.5	445
J	24.6	625
K	17.3	440
L	47.0	1194
M	24.6	624
N	38.3	974
O	7.9	200
P	51.6	1310
Q	37.6	954
R	32.5	825