

# SUMMARY OF OECD TEST 2471-NEBRASKA SUMMARY 672

## CASE IH PUMA 155 DIESEL

### 18 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1037 rpm)</b>					
136.1 (101.5)	2197	8.56 (32.40)	0.441 (0.268)	15.90 (3.13)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
141.2 (105.3)	2119	8.61 (32.58)	0.427 (0.260)	16.40 (3.23)	
<b>Maximum Power - (1 hour)</b>					
149.7 (111.6)	1801	8.42 (31.87)	0.395 (0.240)	17.77 (3.50)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>					
136.1 (101.5)	2197	8.56 (32.40)	0.441 (0.268)	15.90 (3.13)	Air temperature
118.8 (88.6)	2244	7.86 (29.75)	0.464 (0.282)	15.12 (2.98)	81°F (27°C)
91.1 (67.9)	2272	6.60 (25.00)	0.508 (0.309)	13.81 (2.72)	Relative humidity
60.9 (45.4)	2299	5.04 (19.08)	0.580 (0.353)	12.08 (2.38)	42%
30.4 (22.7)	2320	3.49 (13.23)	0.804 (0.489)	8.72 (1.72)	Barometer
--	2344	2.16 (8.18)	--	--	29.4" Hg (99.6 kPa)
Maximum Torque - 476.8 lb.-ft. (646.5 Nm) at 1297 rpm					
Maximum Torque Rise - 46.5%					
Torque rise at 1801 engine rpm - 34%					

#### 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—9th(3Med) Gear</b>									
103.5 (77.2)	8250 (36.7)	4.71 (7.57)	2207	2.6	0.568 (0.346)	12.33 (2.43)	189 (87)	72 (22)	29.0 (98.2)
<b>75% of Pull at Maximum Power—9th(3Med) Gear</b>									
80.1 (59.7)	6205 (27.6)	4.84 (7.79)	2254	1.8	0.645 (0.393)	10.86 (2.14)	189 (87)	73 (23)	29.0 (98.2)
<b>50% of Pull at Maximum Power—9th(3Med) Gear</b>									
54.2 (40.4)	4135 (18.4)	4.91 (7.90)	2283	1.1	0.759 (0.462)	9.24 (1.82)	189 (87)	72 (22)	29.0 (98.2)
<b>75% of Pull at Reduced Engine Speed—10th(4Med) Gear</b>									
79.8 (59.5)	6180 (27.5)	4.84 (7.79)	1889	1.8	0.583 (0.355)	12.03 (2.37)	189 (87)	72 (22)	29.0 (98.2)
<b>50% of Pull at Reduced Engine Speed—10th(4Med) Gear</b>									
54.2 (40.4)	4160 (18.5)	4.89 (7.86)	1898	1.1	0.667 (0.406)	10.51 (2.07)	185 (85)	70 (21)	29.0 (98.2)

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

**Dates of tests:** July to November 2008 .

**Manufacturer:** CNH Europe Holding S.A. 13, Rue Aldringen L-1118 Luxembourg

**FUEL and OIL:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.842 Fuel weight 7.01 lbs/gal (0.840 kg/l) Oil SAE 15W40 API service classification CH-4 Transmission and hydraulic lubricant Akcela Nexplora fluid Front axle lubricant Akcela Nexplora fluid

**ENGINE:** Make CNH Diesel Type six cylinder vertical with turbocharger and air to air intercooler Serial No. 442837 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 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 underhood Exhaust vertical Cooling medium temperature control thermostat and variable speed fan

**CHASSIS:** Type front wheel assist Serial No. Z7BL52684 Tread width rear 56.3" (1430 mm) to 87.8" (2230 mm) front 52.2" (1325 mm) to 90.0" (2285 mm) Wheelbase 109.7" (2786 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 1.16 (1.87) second 1.40 (2.25) third 1.68 (2.70) fourth 2.02 (3.25) fifth 2.37 (3.82) sixth 2.85 (4.59) seventh 3.37 (5.43) eighth 4.06 (6.53) ninth 4.87 (7.84) tenth 5.86 (9.43) eleventh 6.90 (11.09) twelfth 8.28 (13.33) thirteenth 9.74 (15.68) fourteenth 11.72 (18.86) fifteenth 14.07 (22.65) sixteenth 16.93 (27.24) seventeenth 19.90 (32.02) eighteenth 23.92 (38.50) reverse 3.10 (4.99), 3.73 (6.00), 4.48 (7.21), 5.38 (8.66), 6.33 (10.18), 7.61 (12.25) 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 2120 engine rpm Unladen tractor mass 14585 lb (6615 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 lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. <sup>o</sup> F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st(1Low) Gear									
39.3 (29.3)	14120 (62.81)	1.04 (1.68)	2300	11.8	0.826 (0.502)	8.49 (1.67)	190 (88)	75 (24)	29.0 (98.2)
2nd(2Low) Gear									
47.6 (35.5)	14090 (62.68)	1.27 (2.04)	2297	11.0	0.771 (0.469)	9.09 (1.79)	190 (88)	75 (24)	29.0 (98.2)
3rd(3Low) Gear									
56.5 (42.1)	13915 (61.89)	1.52 (2.45)	2286	10.4	0.716 (0.436)	9.79 (1.93)	190 (88)	79 (26)	29.0 (98.2)
4th(4Low) Gear									
67.3 (50.2)	13725 (61.05)	1.84 (2.96)	2275	9.8	0.674 (0.410)	10.41 (2.05)	190 (88)	81 (27)	29.0 (98.2)
5th(5Low) Gear									
74.3 (55.4)	12805 (56.95)	2.18 (3.50)	2262	9.1	0.662 (0.403)	10.59 (2.09)	190 (88)	79 (26)	29.0 (98.2)
6th(6Low) Gear									
88.8 (66.2)	12945 (57.58)	2.57 (4.14)	2236	9.0	0.631 (0.384)	11.12 (2.19)	189 (87)	86 (30)	29.0 (98.2)
7th(1Med) Gear									
104.1 (77.6)	12840 (57.11)	3.04 (4.89)	2203	8.3	0.568 (0.345)	12.34 (2.43)	189 (87)	73 (23)	29.0 (98.2)
8th(2Med) Gear									
111.6 (83.2)	12650 (56.28)	3.31 (5.32)	2017	8.7	0.548 (0.334)	12.78 (2.52)	187 (86)	77 (25)	29.0 (98.2)
9th(3Med) Gear									
117.3 (87.5)	11665 (51.90)	3.77 (6.07)	1857	6.6	0.512 (0.312)	13.68 (2.70)	187 (86)	84 (29)	29.0 (98.2)
10th(4Med) Gear									
118.1 (88.1)	9830 (43.73)	4.51 (7.25)	1792	3.7	0.502 (0.305)	13.96 (2.75)	187 (86)	84 (29)	29.0 (98.2)
11th(5Med) Gear									
120.0 (89.5)	8085 (35.97)	5.57 (8.96)	1855	2.8	0.490 (0.298)	14.31 (2.82)	187 (86)	81 (27)	29.0 (98.2)
12th(6Med) Gear									
116.8 (87.1)	6475 (28.80)	6.77 (10.89)	1855	1.9	0.510 (0.310)	13.76 (2.71)	187 (86)	79 (26)	29.0 (98.2)
13th(1High) Gear									
119.8 (89.3)	5685 (25.29)	7.90 (12.71)	1846	1.6	0.495 (0.301)	14.16 (2.79)	187 (86)	84 (29)	29.0 (98.2)
14th(2High) Gear									
117.6 (87.7)	4615 (20.52)	9.56 (15.39)	1851	1.2	0.510 (0.311)	13.73 (2.71)	187 (86)	82 (28)	29.0 (98.2)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
At no load in 9th gear	71.4	70.8
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; \*\*,9 (60)  
 Two 540/65R28; \*\*,9 (60)  
 17.5 in (445 mm)  
 9060 lb (4110 kg)  
 5690 lb (2580 kg)  
 14750 lb (6690 kg)

**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 three point lift claims of 12185 lbs (5527 kg) with 90 mm lift cylinders and 15197 lbs (6893 kg) with 100 mm lift cylinders. The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **2471**, Nebraska Summary 672, December 14, 2009.

Roger M. Hoy  
 Director

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 V.I. Adamchuk  
 J.A. Smith  
 Board of Tractor Test Engineers

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 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	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1037 rpm)</b>					
145.2 (108.3)	2197	8.81 (33.36)	0.425 (0.259)	16.49 (3.25)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
148.9 (111.0)	2119	8.98 (34.00)	0.423 (0.257)	16.57 (3.26)	
<b>Maximum Power - (1 hour)</b>					
156.9 (117.0)	1801	8.81 (33.36)	0.394 (0.240)	17.80 (3.51)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>					
145.2 (108.3)	2197	8.81 (33.36)	0.425 (0.259)	16.49 (3.25)	Air temperature
126.2 (94.1)	2240	7.95 (30.08)	0.441 (0.269)	15.88 (3.13)	70°F(21°C)
96.3 (71.8)	2272	6.69 (25.33)	0.486 (0.296)	14.39 (2.84)	Relative humidity
65.4 (48.8)	2297	5.00 (18.93)	0.535 (0.326)	13.09 (2.58)	85%
33.4 (24.9)	2318	3.62 (13.71)	0.762 (0.463)	9.21 (1.81)	Barometer
--	2341	2.15 (8.15)	--	--	29.4" Hg (99.6 kPa)
Maximum Torque - 485.2 lb.-ft. (657.9 Nm) at 1396 rpm Maximum Torque Rise - 39.8% Torque rise at 1801 engine rpm - 31%					

## HYDRAULIC PERFORMANCE

CATEGORY: III  
 Quick Attach: None  
 OECD Static test

	lift cylinders
Maximum force exerted through whole range:	7915 lbs (35.2 kN) (2x90 mm) 9215 lbs (41.0 kN) (2x100 mm)
i) Sustained pressure of the open relief valve:	2990 psi (206 bar)
ii) Pump delivery rate at minimum pressure:	27.6 GPM (104.4 l/min)
iii) Pump delivery rate at maximum	
hydraulic power:	24.9 GPM (94.3 l/min)
Delivery pressure:	2610 psi (180 bar)
Power:	37.9 HP (28.3 kW)

## THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi.(bar)	3020(208)
Location:	lift cylinder
Hydraulic oil temperature: °F(°C)	150(66)
Location:	hydraulic sump
Category:	III
Quick attach:	None

### SAE Static Test—System pressure 2715 psi (187 Bar) lift cylinders - 2 x 90 mm

Hitch point distance to ground level in. (mm)	9.6(245)	15.4(390)	24.6(625)	33.1(840)	37.0(940)
Lift force on frame lb	14165	12520	11980	11665	11355
" " " " " " (kN)	(63.0)	(55.7)	(53.3)	(51.9)	(50.5)

### SAE Static Test—System pressure 2715 psi (187 Bar) lift cylinders - 2 x 100 mm

Hitch point distance to ground level in. (mm)	9.1(230)	15.2(386)	24.6(625)	31.7(805)	36.0(914)
Lift force on frame lb	18840	16590	15445	14925	13780
" " " " " " (kN)	(83.8)	(73.8)	(68.7)	(66.4)	(61.3)

## HITCH DIMENSIONS AS TESTED—NO LOAD

	OECD test		SAE test	
	inch	mm	inch	mm
A	29.5	750	30.6	778
B	12.2	310	12.2	310
C	15.7	398	15.7	398
D	14.3	364	14.3	364
E	8.2	208	10.4	263
F	9.8	250	9.8	250
G	34.4	875	34.4	875
H	0.6	16	0.6	16
I	17.5	445	16.8	427
J	24.6	625	24.6	625
K	17.3	440	19.9	505
L	47.0	1194	47.0	1194
M	24.6	624	24.6	624
N	38.3	974	38.3	974
O	7.9	200	9.6	245
P	51.6	1310	46.6	1184
Q	38.5	978	37.6	954
R	32.4	823	33.5	850

