

# SUMMARY OF OECD TEST 2609—NEBRASKA SUMMARY 799

## CASE IH PUMA 170 DIESEL

### 19 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—1162 rpm)</b>					
150.9 (112.5)	2200	8.46 (32.02)	0.391 (0.238)	17.82 (3.51)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
170.8 (127.4)	1893	8.95 (33.88)	0.365 (0.222)	19.09 (3.76)	
<b>Maximum Power (1 hour)</b>					
172.2 (128.4)	1800	8.82 (33.39)	0.357 (0.217)	19.53 (3.85)	

#### VARYING POWER AND FUEL CONSUMPTION

150.9 (112.5)	2200	8.46 (32.02)	0.391 (0.238)	17.82 (3.51)	Air temperature
130.9 (97.6)	2244	7.68 (29.05)	0.409 (0.249)	17.05 (3.36)	73°F (23°C)
98.9 (73.8)	2265	6.28 (23.76)	0.442 (0.269)	15.77 (3.11)	Relative humidity
66.5 (49.7)	2282	4.86 (18.41)	0.509 (0.310)	13.69 (2.70)	46%
33.5 (25.0)	2295	3.52 (13.34)	0.733 (0.446)	9.50 (1.87)	Barometer
--	2315	2.18 (8.26)	--	--	29.1" Hg (98.7 kPa)

Maximum Torque - 567.4 lb.-ft. (769.3 Nm) at 1400 rpm  
 Maximum Torque rise - 57.5%  
 Torque rise at 1800 engine rpm - 38%  
 Power increase at 1800 engine rpm - 14.1%

#### 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)	Temp. °F (°C) cool- ing med	Barom. inch Hg (kPa)
<b>Maximum Power—9th Gear</b>							
132.8 (99.0)	10900 (48.48)	4.57 (7.35)	2100	4.9	0.460 (0.280)	178 (81)	29.9 (101.1)
<b>75% of Pull at Maximum Power—9th Gear</b>							
102.9 (76.7)	8140 (36.20)	4.74 (7.63)	2145	3.8	0.488 (0.297)	178 (81)	29.9 (101.1)
<b>50% of Pull at Maximum Power—9th Gear</b>							
70.3 (52.4)	5450 (24.24)	4.84 (7.78)	2160	2.5	0.568 (0.346)	178 (81)	29.9 (101.1)
<b>75% of Pull at Reduced Engine Speed—10th Gear</b>							
103.8 (77.4)	8115 (36.10)	4.80 (7.72)	1830	3.9	0.462 (0.281)	174 (79)	29.9 (101.1)
<b>50% of Pull at Reduced Engine Speed—10th Gear</b>							
71.6 (53.4)	5460 (24.29)	4.92 (7.92)	1840	2.4	0.517 (0.315)	174 (79)	29.9 (101.1)

**Location of tests:** HBLFA Francisco Josephinum  
 BLT Biomass-Logistics-Technology,  
 Rottenhauser, Strasse, 1, AT, 3250, Wieselburg,  
 Austria

**Dates of tests:** January to March, 2011.

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

**FUEL 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) **Oil SAE**  
 10W30 **API service classification** CG-4  
**Transmission and hydraulic lubricant** Akcela  
 Nexlore fluid **Front axle lubricant** Akcela  
 Nexlore 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.** 721640 **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** 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** two paper canisters  
**Muffler** underhood **Exhaust** vertical **Cooling  
 medium temperature control** thermostat and  
 variable speed fan

**CHASSIS: Type** front wheel assist **Serial No.**  
 ZABZ07943 **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**  
 selective gear fixed ratio with full range operator  
 controlled powershift **Nominal travel speeds mph  
 (km/h)** first 1.17 (1.89) second 1.40 (2.25) third 1.68  
 (2.71) fourth 2.01 (3.24) fifth 2.39 (3.85) sixth 2.86  
 (4.60) seventh 3.40 (5.47) eighth 4.06 (6.54) ninth  
 4.88 (7.86) tenth 5.83 (9.39) eleventh 6.95 (11.18)  
 twelfth 8.30 (13.35) thirteenth 9.82 (15.80)  
 fourteenth 11.74 (18.89) fifteenth 14.11 (22.70)  
 sixteenth 16.86 (27.13) seventeenth 20.06 (32.29)  
 eighteenth 25.10 (40.39) nineteenth 31.01 (49.90)  
 reverse 2.59 (4.17), 3.10 (4.99), 3.73 (6.00), 4.45  
 (7.16), 5.30 (8.53), 6.33 (10.18) **Clutch** multiple wet  
 disc electro-hydraulically operated by foot pedal  
**Brakes** wet disc hydraulically operated by two foot  
 pedals that can be locked together **Steering**  
 hydrostatic **Power take-off** 540 rpm at 1950 engine  
 rpm or 1000 rpm at 1893 engine rpm **Unladen  
 tractor mass** 18740 lb (8500 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.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
8th Gear									
134.0 (99.9)	17205 (76.53)	2.92 (4.70)	1800	14.7	0.464 (0.282)	15.02 (2.96)	178 (81)	59 (15)	29.9 (101.1)
9th Gear									
144.6 (107.8)	14185 (63.11)	3.82 (6.15)	1800	7.1	0.434 (0.264)	16.04 (3.16)	172 (78)	61 (16)	29.9 (101.1)
10th Gear									
145.2 (108.3)	11730 (52.17)	4.64 (7.48)	1800	5.5	0.431 (0.262)	16.15 (3.18)	172 (78)	59 (15)	29.9 (101.1)
11th Gear									
147.0 (109.6)	9855 (43.83)	5.59 (9.00)	1800	4.6	0.425 (0.259)	16.40 (3.23)	171 (77)	57 (14)	29.9 (101.1)
12th Gear									
143.6 (107.2)	7945 (35.35)	6.78 (10.91)	1800	3.5	0.436 (0.265)	15.99 (3.15)	171 (77)	57 (14)	29.9 (101.1)
13th Gear									
147.6 (110.1)	6935 (30.85)	7.98 (12.85)	1800	3.4	0.424 (0.258)	16.45 (3.24)	171 (77)	57 (14)	29.9 (101.1)
14th Gear									
145.9 (108.8)	5695 (25.33)	9.61 (15.46)	1800	2.9	0.427 (0.260)	16.29 (3.21)	171 (77)	57 (14)	29.9 (101.1)

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

**NOTE:**The data on this summary was obtained from testing conducted on the New Holland T7.220 Diesel.

**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 implement pump flow claims of 32 GPM (121 lpm) with standard system nor 35 GPM (135 lpm) with high flow option. This tractor did not meet the manufacturer's 3 point lift claims of 10200 lbs (4626 kg) with 90 mm lift cylinders nor 13400 lbs (6078 kg) with 100 mm lift cylinders. 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. **2609** Nebraska Summary 799, January 26, 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	69.0	69.0
Bystander	--	--

**TIRES, BALLAST 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 710/70R38; \*\*; 15(100)  
 Two 600/65R28; \*\*; 16(110)  
 18.1 in (460 mm)  
 10750 lb (4875 kg)  
 8155 lb (3700 kg)  
 18905 lb (8575 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 (16th and above) and 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	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.k/l)	Mean Atmospheric Conditions
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1162 rpm)</b>					
180.1 (134.3)	2200	9.95 (37.70)	0.385 (0.234)	18.08 (3.56)	
<b>Standard Power Take-off Speed - (1000 rpm)</b>					
198.5 (148.0)	1893	10.14 (38.38)	0.356 (0.217)	19.57 (3.86)	
<b>Maximum Power (1 hour)</b>					
198.7 (148.2)	1800	10.13 (38.35)	0.356 (0.216)	19.60 (3.86)	

### VARYING POWER AND FUEL CONSUMPTION

180.1 (134.3)	2200	9.95 (37.70)	0.385 (0.234)	18.08 (3.56)	Air temperature
155.4 (115.9)	2232	8.78 (33.25)	0.393 (0.239)	17.71 (3.49)	68°F (20°C)
117.7 (87.8)	2254	7.09 (26.85)	0.420 (0.255)	16.60 (3.27)	Relative humidity
79.3 (59.1)	2274	5.46 (20.70)	0.480 (0.292)	14.52 (2.86)	47%
40.0 (29.8)	2290	3.79 (14.34)	0.661 (0.402)	10.55 (2.08)	Barometer
--	2315	2.20 (8.32)	--	--	29.1"Hg (98.7 kPa)

Maximum Torque 636.2 lb.-ft. (862.6 Nm) at 1500 rpm  
 Maximum Torque Rise - 47.9%  
 Torque rise at 1800 rpm - 34%  
 Power increase at 1800 engine rpm - 10.3%

## HYDRAULIC PERFORMANCE

CATEGORY: III

Quick Attach: No

OECD Static test

Lift cylinders:

2 x 90 mm

2 x 100 mm

Maximum force exerted through whole range: 9465 lbs (42.1 kN)      12500 lbs (55.6 kN)

	<u>Standard pump - 32 gpm</u>	<u>High flow pump - 35 gpm</u>
i) Sustained pressure at compensator cutoff:	2975 psi (205 bar)	2830 psi (195 bar)
	<b>two outlet sets combined</b>	
ii) Pump delivery rate at minimum pressure:	29.6 GPM (112.0 l/min)	33.5 GPM (127.0 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	26.2 GPM (99.1 l/min)	27.1 GPM (102.5 l/min)
Delivery pressure:	2685 psi (185 bar)	2465 psi (170 bar)
Power:	41.0 HP (30.6 kW)	38.9 HP (29.0 kW)

	<u>single outlet set</u>	
ii) Pump delivery rate at minimum pressure:	26.2 GPM (99.1 l/min)	30.3 GPM (114.7 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	24.3 GPM (91.8 l/min)	24.3 GPM (92.0 l/min)
Delivery pressure:	2465 psi (170 bar)	2320 psi (160 bar)
Power:	34.9 HP (26.0 kW)	32.9 HP (24.5 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	32.1	815
B	15.0	380
C	15.1	383
D	14.6	372
E	10.8	275
F	10.6	270
G	36.4	925
H	2.4	60
I	17.7	450
J	25.8	655
K	26.9	682
L	48.2	1224
M	23.1	587
N	38.3	974
O	9.0	230
P	52.8	1340
Q	38.4	975
R	39.8	1010

