

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

---

2011

## Nebraska Summary: S809 Case-IH Puma 130

Nebraska Tractor Test Laboratory

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

---

Laboratory, Nebraska Tractor Test, "Nebraska Summary: S809 Case-IH Puma 130" (2011). *Nebraska Tractor Tests*. 3239.

<https://digitalcommons.unl.edu/tractormuseumlit/3239>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

# SUMMARY OF OECD TEST 2644—NEBRASKA SUMMARY 809

## CASE IH PUMA 130 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)	

#### MAXIMUM POWER AND FUEL CONSUMPTION

Rated Engine Speed—(PTO speed—1111 rpm)						
124.0 (92.5)	2100	7.11 (26.91)	0.399 (0.243)	17.45 (3.44)	0.43 (1.62)	
Standard Power Take-off Speed (1000 rpm)						
132.1 (98.5)	1890	7.22 (27.33)	0.380 (0.231)	18.30 (3.61)	0.43 (1.62)	
Maximum Power (1 hour)						
134.6 (100.4)	1800	7.22 (27.33)	0.373 (0.227)	18.63 (3.67)	0.45 (1.69)	

#### VARYING POWER AND FUEL CONSUMPTION

124.0 (92.5)	2100	7.11 (26.91)	0.399 (0.243)	17.45 (3.44)	0.43 (1.62)	Air temperature
106.1 (79.1)	2115	6.39 (24.19)	0.419 (0.255)	16.60 (3.27)	0.39 (1.47)	74°F (23°C)
80.1 (59.7)	2130	5.21 (19.71)	0.454 (0.276)	15.38 (3.03)	0.28 (1.07)	Relative humidity
53.9 (40.2)	2145	4.07 (15.41)	0.528 (0.321)	13.25 (2.61)	0.23 (0.86)	40%
27.1 (20.2)	2156	2.95 (11.16)	1.080 (0.463)	9.19 (1.81)	0.13 (0.51)	Barometer
--	2174	2.06 (7.81)	--	--	--	29.1" Hg (98.6 kPa)

Maximum torque - 446.1 lb.-ft. (604.8 Nm) at 1500 rpm  
 Maximum torque rise - 43.8%  
 Torque rise at 1700 engine rpm - 31%  
 Power increase at 1800 engine rpm - 8.5%

#### 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)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—10th Gear									
98.4 (73.4)	6385 (28.4)	5.78 (9.30)	2100	1.8	0.493 (0.300)	14.15 (2.79)	196 (91)	89 (32)	30.1 (102.0)
75% of Pull at Maximum Power—10th Gear									
75.0 (55.9)	4765 (21.2)	5.90 (9.50)	2122	1.1	0.606 (0.369)	11.50 (2.26)	194 (90)	89 (32)	30.1 (102.0)
50% of Pull at Maximum Power—10th Gear									
50.4 (37.6)	3170 (14.1)	5.97 (9.60)	2133	0.4	0.684 (0.418)	10.18 (2.01)	194 (90)	89 (32)	30.1 (102.0)
75% of Pull at Reduced Engine Speed—11th Gear									
75.4 (56.2)	4790 (21.3)	5.90 (9.50)	1809	1.0	0.514 (0.313)	13.55 (2.67)	192 (89)	89 (32)	30.1 (102.0)
50% of Pull at Reduced Engine Speed—11th Gear									
50.4 (37.6)	3170 (14.1)	5.97 (9.60)	1826	0.5	0.635 (0.386)	10.97 (2.16)	192 (89)	89 (32)	30.1 (102.0)

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

**Dates of tests:** April 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. 000716435 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. ZABP08370 Tread width rear 56.3" (1430 mm) to 85.6" (2173 mm) front 52.2" (1325 mm) to 90.0" (2285 mm) Wheelbase 107.6" (2734 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 1.17 (1.89) second 1.41 (2.27) third 1.70 (2.73) fourth 2.04 (3.29) fifth 2.40 (3.86) sixth 2.88 (4.64) seventh 3.41 (5.49) eighth 4.10 (6.60) ninth 4.93 (7.93) tenth 5.93 (9.54) eleventh 6.97 (11.21) twelfth 8.38 (13.48) 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 2.60 (4.19), 3.13 (5.04), 3.76 (6.05), 5.52 (7.27), 5.31 (8.55), 6.39 (10.28) 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 13600 lb (6170 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)
8th(2Med) Gear									
101.4 (75.6)	12230 (54.4)	3.11 (5.00)	1861	15.0	0.483 (0.294)	14.22 (2.84)	196 (91)	88 (31)	30.1 (102.0)
9th(3Med) Gear									
111.0 (82.8)	10475 (46.6)	3.97 (6.40)	1809	4.7	0.440 (0.268)	15.62 (3.12)	194 (90)	88 (31)	30.1 (102.0)
10th(4Med) Gear									
112.4 (83.8)	8590 (38.2)	4.91 (7.90)	1809	3.4	0.441 (0.268)	15.57 (3.11)	192 (89)	84 (29)	30.1 (102.0)
11th(5Med) Gear									
111.6 (83.2)	7240 (32.2)	5.78 (9.30)	1796	1.7	0.447 (0.272)	15.37 (3.07)	194 (90)	82 (28)	30.1 (102.0)
12th(6Med) Gear									
110.2 (82.2)	5890 (26.2)	7.02 (11.30)	1805	1.3	0.453 (0.276)	15.17 (3.03)	190 (88)	82 (28)	30.1 (102.0)
13th(1High) Gear									
109.6 (81.8)	4900 (21.8)	8.39 (13.50)	1803	0.9	0.455 (0.276)	15.12 (3.02)	192 (89)	82 (28)	30.1 (102.0)
14th(2High) Gear									
109.8 (81.9)	4090 (18.2)	10.07 (16.20)	1810	0.6	0.456 (0.277)	15.07 (3.01)	192 (89)	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. **2644**, Nebraska Summary 809, 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	70.1	69.1
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)  
 8265 lb (3750 kg)  
 5500 lb (2495 kg)  
 13765 lb (6245 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.

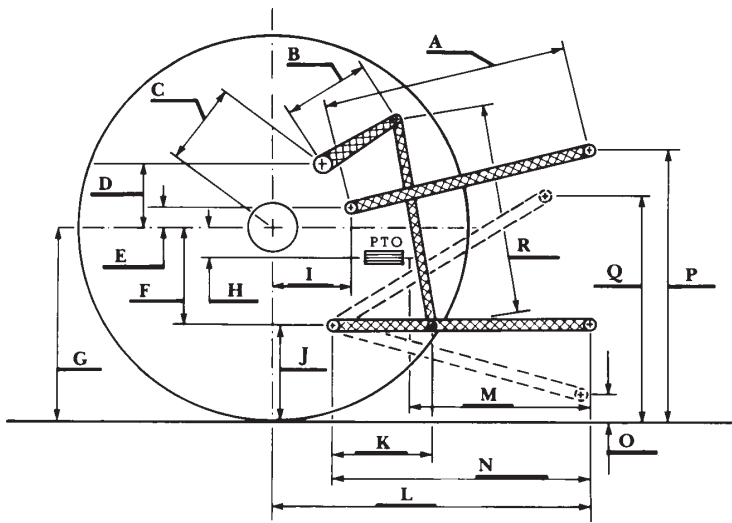
### POWER TAKE-OFF PERFORMANCE

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>						
141.7 (105.7)	2200	8.05 (30.48)	0.396 (0.241)	17.61 (3.47)	0.48 (1.82)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
155.8 (116.2)	1890	8.33 (31.54)	0.373 (0.227)	18.70 (3.68)	0.50 (1.90)	
<b>Maximum Power (1 hour)</b>						
158.9 (118.5)	1800	8.29 (31.37)	0.363 (0.221)	19.17 (3.78)	0.52 (1.98)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>						
141.7 (105.7)	2200	8.05 (30.48)	0.396 (0.241)	17.61 (3.47)	0.52 (1.82)	Air temperature
121.8 (90.8)	2225	7.30 (27.62)	0.418 (0.254)	16.69 (3.29)	0.41 (1.57)	74°F (23°C)
92.1 (68.7)	2242	6.00 (22.71)	0.454 (0.276)	15.34 (3.02)	0.31 (1.17)	Relative humidity
61.8 (46.1)	2257	4.64 (17.56)	0.523 (0.318)	13.33 (2.63)	0.22 (0.82)	49%
31.1 (23.2)	2272	3.34 (12.66)	0.751 (0.457)	9.30 (1.83)	0.16 (0.60)	Barometer
--	2287	2.35 (8.89)	--	--	--	29.0" Hg (98.3 kPa)
Maximum torque - 522.1 lb.-ft. (707.9 Nm) at 1500 rpm						
Maximum torque rise - 54.3%						
Torque rise at 1800 engine rpm - 37%						
Power increase at 1800 engine rpm - 12.1%						

## 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:	3045 psi (210 bar)
ii) Pump delivery rate at minimum pressure:	28.9 GPM (109.3 l/min)
iii) Pump delivery rate at maximum	
hydraulic power:	23.9 GPM (90.5 l/min)
Delivery pressure:	2685 psi (185 bar)
Power:	37.4 HP (27.9 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	38.4	975
R	32.7	830