**STATENS JORDBRUGSTEKNISKE FORSØG**
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# TEST REPORT: O.E.C.D. No. 1120

REPORT ON TEST IN ACCORDANCE WITH THE O.E.C.D. STANDARD CODE FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS

*URSUS 914* Tractor with Four-wheel Drive
Manufacturer: Zrzeszenie Przemyslu Ciagnikowego "URSUS" Warszaw, Poland

Date of Approval: 2nd February 1988

This Bulletin is based on engineering tests in accordance with O.E.C.D. Standard Code for Official Testing of Agricultural Tractors.
It does not contain an evaluation of the performance of the tractor on practical farm work.

This report has been approved by the O.E.C.D. Coordinating Centre (C.E.M.A.G.R.E.F., France) as being in accordance with the O.E.C.D. STANDARD CODE.

Date of Approval: 2nd February 1988 O.E.C.D. No. 1120

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| Tractor manufacturer's name and address: | Zrzeszenie Przemysłu Ciągnikowego "URSUS", Warszawa, Poland. |
| Submitted for test by: | Biuro Handlu Zagranicznego "URSUS", Warszawa, Poland. |
| Selected for test by: | Manufacturer in agreement with Testing Station. |
| Place of running-in: | Zakłady Mechaniczne "URSUS", Warszawa. |
| Duration of running-in: | Approx. 50 hours. |

## I. SPECIFICATIONS OF TRACTOR

### TRACTOR

| | |
|---|---|
| Make | URSUS |
| Model: | 914 |
| Type: | Four-wheel-driven unit construction |
| Serial No.: | 00003 |
| First serial No. | 00001 |

### ENGINE

| | |
|---|---|
| Make: | ZTS. Martin |
| Model: | Z-8401.1. |
| Type: | Water cooled, 4-stroke, direct injection diesel engine |
| Serial No.: | 00774 |

Cylinders

| | |
|---|---|
| Number/disposition: | 4/vertical in line |
| Bore/stroke: | 110/120 mm |
| Capacity: | 4562 $cm^3$ |
| Compression ratio: | 17:1 |
| Arrangement of valves: | Overhead |
| Cylinder liners: | Replaceable, wet |

## Fuel System

| | |
|---|---|
| Fuel feed system | Piston pump. |
| Make, type and model of fuel filter(s): | Two step filter, felt and paper element FD 10 RP 1-3. |
| Capacity of fuel tank: | 90 $dm^3$ |
| Make, type and model of injection pump: | Motorpal in-line. PAL PP 4 M 85 K le - 3117. |
| Serial No | 0761. |
| Manufacturer's production setting of injection pump: | 64.5 $mm^3$/stroke at 1100 rpm.and full load. |
| Injection pump timing: | 22 + $2^o$ before T.D.C. |
| Make, model of injectors | PAL, multihole VP 81 S 453 e 2575. |
| Injection pressure: | 16.8 + 0.8 MPa. |

## Governor

| | |
|---|---|
| Make: | Motorpal |
| Model: | RV3M 300/1100 |
| Type: | Mechanical |
| Governed range of engine speed: | 600-2450 rev/min |

## Rated Engine Speed

2200 rev/min

## Air Cleaner

Pre-cleaner

| | |
|---|---|
| Make: | Hodrusba-Hamre |
| Model: | PC 350 |
| Type: | Cyclonic with dust container. |
| Location of air intake: | Under bonnet forward of radiator |

| | |
|---|---|
| Main | |
| Make: | Hodrusba-Hamre |
| Model: | 9430.11 |
| Type: | Two stage oil bath |
| Oil capacity: | 2.0 l |
| Maintenance indicator: | None |

Lubrication System

| | |
|---|---|
| Type of feed pump: | Gear pump |
| Type of filter(s): | Centrifugal |
| Number: | 1 |
| Cleaning period | 400 h |

Cooling System

| | |
|---|---|
| Type of coolant: | Water or antifreeze |
| Type of pump: | Centrifugal belt driven |
| Specification of fan: | |
| Number of fan blades: | 4 |
| Fan diameter: | 460 mm |
| Coolant capacity: | 21 $dm^3$ |
| Type of temperature control: | Thermostat and thermometer |
| Superpressure system: | 0,52 kPa |

Starting System:

| | |
|---|---|
| Make: | ZELMOT |
| Model: | R 11 b/12V |
| Type: | Electrically solenoid engaged |
| Starter motor power rating: | 2.9 kW |
| Cold starting aid: | None |
| Safety device: | Gear selector to be in neutral |

Electrical System

| | |
|---|---|
| Voltage: | 12 V |
| Generator: | Alternator |
| Make: | ZELMOT |
| Model: | A 12 M/12V |
| Power: | 42 A |
| Battery (Number of accumulators): | 2 |
| Rating: | 190 ah at 20 hours |

Exhaust System

| | |
|---|---|
| Make: | Ursus |
| Model: | Oval |
| Type: | Baffle |
| Location: | Left hand side, vertical |
| Height of outlet above ground: | 2600 mm |

## TRANSMISSION TO WHEELS

Clutch

| | |
|---|---|
| Make: | ZTS MARTIN |
| Model: | Dry |
| Type: | Travel alone |
| Number of plates: | 1 |
| Diameter of plates: | 350 mm |
| Method of operation | Mechanical by pedal |

Gear Box

| | |
|---|---|
| Make: | Povazske Strojarne |
| Type: | Mechanical |
| Arrangement: | 4 forward x 2 ranges x torque multiplier<br>4 reverse x torque multiplier |
| Number of gears: | 16 forward, 8 reverse |
| Available options: | Creep gear |

Rear Axle and Final Drives:

| | |
|---|---|
| Make: | ZPC "URSUS" |
| Type: | OERLIKON with planetary wheel reduction gears. |
| Differential lock: | |
| Type: | Clow clutch, mechanical |
| Method of engagement: | Manual by pedal |
| Method of disengagement | Self disengaging |

Front Axle and Final Drives

| | |
|---|---|
| Make and model: | ZTS DETVA, Crown wheel and pinion, planetary reduction gear |
| Differential lock: | None |

## Total Ratios and Travelling Speeds

| Gear | | | Number of engine rev. for one rev. of the driving wheel. | x) Nominal travelling speed for 2200 rpm. rated engine speed. km/h |
|---|---|---|---|---|
| **Reduction Gear Engaged** | | | | |
| Forward | L | 1 | 348.35 | 1.83 |
| - | L | 2 | 221.05 | 2.89 |
| - | L | 3 | 139.10 | 4.59 |
| - | L | 4 | 97.92 | 6.52 |
| - | H | 1 | 119.42 | 5.35 |
| - | H | 2 | 75.76 | 8.43 |
| - | H | 3 | 47.68 | 13.39 |
| - | H | 4 | 33.50 | 19.07 |
| Reverse | | 1 | 254.75 | 2.51 |
| - | | 2 | 161.64 | 3.95 |
| - | | 3 | 101.72 | 6.28 |
| - | | 4 | 71.45 | 8.94 |
| **Reduction Gear Disengaged** | | | | |
| Forward | L | 1 | 260.40 | 2.45 |
| - | L | 2 | 165.22 | 3.87 |
| - | L | 3 | 103.98 | 6.14 |
| - | L | 4 | 73.03 | 8.74 |
| - | H | 1 | 89.26 | 7.16 |
| - | H | 2 | 56.63 | 11.28 |
| - | H | 3 | 35.65 | 17.91 |
| - | H | 4 | 25.04 | 25.51 |
| Reverse | | 1 | 190.43 | 3.35 |
| - | | 2 | 120.83 | 5.29 |
| - | | 3 | 76.04 | 8.40 |
| - | | 4 | 53.40 | 11.96 |

x) Tyre size: Rear 18.4-34 Radius index 770 mm (Dynamic).

## POWER TAKE OFF

### Main Power Take Off:

| | |
|---|---|
| Type: | Independent hydraulically operated. Wet multi-disc clutch. |
| Method on engagement: | By hand lever |
| Number of shafts: | 1 |
| Method of changing power take-off shaft ends and speeds | Manually by exchanging shafts |

### Power Take-off Proportional to Engine Speed.

### 540 Rev/min

| | |
|---|---|
| Location: | At rear of tractor |
| Diameter of power take-off shaft end: | 34.9 mm |
| Number of splines In conformity with ISO 500, 1979: | 6 |
| Height above ground: | 575 mm |
| Distance from the median plane of the tractor: | 0 mm |
| Distance behind rear wheel axle: | 510 mm |
| PTO speed at rated engine speed (2200 rev/min): | 629 rev/min |
| Engine speed at standard power take-off speed: | 1890 rev/min |
| Engine to pto ratio: | 3.50:1 |
| Power restriction and maximum torque: | 48 kW, 850 N.m. |
| Direction of rotation (Viewed facing driving end): | Clockwise |

### 1000 Rev/min

| | |
|---|---|
| Location: | At rear of tractor |
| Diameter of power take-off shaft end: | 34,9 mm |
| Number of splines in conformity with ISO 500, 1979: | 21 |

| | |
|---|---|
| Height above ground: | 575 mm |
| Distance from the median plane of the tractor: | 0 mm |
| Distance behind rear wheel axle: | 510 mm |
| PTO speed at rated engine speed (2200 rev/min): | 1146 rev/min |
| Engine speed at standard power take-off speed: | 1920 rev/min |
| Engine to pto ratio: | 1.92:1 |
| Direction of rotation (Viewed facing driving end): | Clockwise |

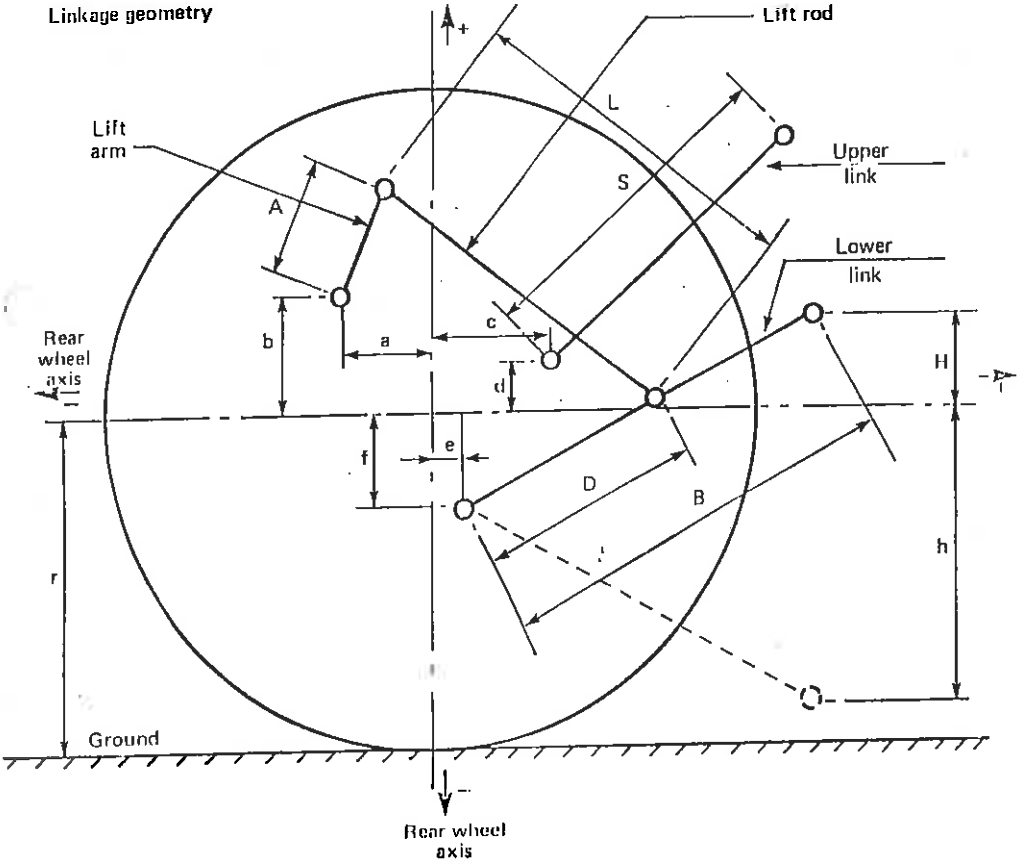
Power Take-off Proportional to Ground Speed Optional

**POWER LIFT:**

| | |
|---|---|
| Make: | Archimedes, Wroclaw |
| Type of hydraulic system: | Open centre |
| Type and number of cylinders: | One internal and one external single acting. |
| Type of linkage lock for transport: | Hydraulic |
| Relief valve pressure setting: | 16.0 MPa |
| Opening pressure of cylinder safety valve: | 18.63 + 0.98 MPa |
| Lift pump type: | Gear pump and additional piston pump. |
| Transmission between pump and engine: | Gear driven. |
| Type and number of filters: | ZPZ 2 |
| Site of oil reservoir: | Main transmission housing |
| Type and number of tapping points: | 1 double and 1 single acting at rear of tractor |
| Maximum volume of oil available to external cylinders | 15 $dm^3$ |

## THREE-POINT LINKAGE

| | |
|---|---|
| Category: | II in conformity with ISO 730/I |
| Controls: | Draft, position and pressure control and floating position. Lower links sensing |


Linkage geometry
Lift rod
Lift arm
Upper link
Lower link
Rear wheel axis
Ground
Rear wheel axis
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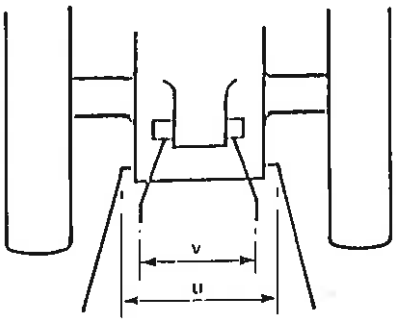
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**Dimensions of Linkage Geometry (When Connected to the Standard Frame) mm**

| | | | Dimension or range | Settings used in test |
|---|---|---|---|---|
| Rear tyres (size 18.4-34) dynamic index radius | | (r) | 770 | |
| Front tyres (size 12.4/11-24) dynamic index radius | | (r´) | 540 | |
| Lenght of lift arms | | (A) | 330 | |
| Length of lower links | | (B) | 925 | |
| Distance of lift arm pivot point from rear wheel centre line | Horizontally<br>Vertically | (a)<br>(b) | 175 behind<br>290 above | |
| Horizontal distance between the 2 lower link points | | (u) | 530 | |
| Horizontal distance between the 2 lift arm end points | | (v) | 550 | |
| Length of upper link | | (S) | from 610<br>to 865 | 655 |
| Distance of upper link point from rear wheel centre line | Horizontally<br>Vertically | (c)<br>(d) | 382<br>200, 155, 95 | 200 |
| Distance of lower link from rear wheel centre line | Horizontally<br>Vertically | (e)<br>(f) | 120<br>255 | |
| Distance of lower link pivot points to lift rod pivot points on lower links | | (D) | 435, 500 | 500 |
| Length of lift rods | | (L) | from 520<br>to 715 | 580 |

Height of lower hitch points relative to the rear wheel centre line, situated 770 mm above the ground level

| | | | | | | TEST |
|---|---|---|---|---|---|---|
| Length of lift rods, | L | 520 | 715 | 520 | 715 | 580 |
| Linkage distance of lift rods, | D | 435 | | 500 | | |
| Lowest position | h | 520 | 870 | 455 | 850 | 570 |
| Highest position | H | 210 | -170 | 240 | -145 | 105 |

| | |
|---|---|
| Height above ground of lower hitch points when locked in transport position | Any height within lift range |

## FIXED DRAWBAR

| | |
|---|---|
| Type: | Clevis type |
| Height above ground: | 350 mm |
| Type of adjustment: | Length |
| Distance of hitch point from rear wheel axis horizontally: | 860 - 910 mm |
| Distance of hitch point from power take-off shaft end | |
| vertically: | 270 mm |
| horizontally: | 350 - 400 mm |
| Diameter drawbar pin hole: | 33 mm |

## TRAILER HITCH

| | |
|---|---|
| Type: | Hook |
| Hook diameter: | 47 mm |
| Height above ground: | 400 mm |
| Distance of hitch point from rear wheel axis | |
| Horizontally: | 690 mm |
| Distance of hitch point from power take-off shaft end | |
| Vertically: | 225 mm |
| Horizontally: | 180 mm |
| Diameter hitch pin hole: | 33 mm |
| Maximum vertical permissible load: | 21 kN |

## HOLED DRAWBAR

| | |
|---|---|
| Number of holes: | 9 |
| Distance between holes: | 80 mm |
| Hole diameter: | 33 mm |
| Thickness/width of the drawbar: | 20 + 55/100 |
| Height above ground | |
| minimum: | 0 mm |
| maximum: | 985 mm |
| Horizontal distance to power take-off shaft end (rear) | 540 mm |

## STEERING

| | |
|---|---|
| Make: | Agromet-Pilmet. |
| Method of operation: | Circular ball gear steering, hydraulically assisted. |
| Working pressure: | 8 + 0,8 MPa |

## BRAKES

Service Brake

| | |
|---|---|
| Make: | CSRS |
| Type: | Dry disc, multiplate, 2 per side |
| Method of operation: | Hydraulic by pedals couple or independent |
| Trailer braking take-off: | Air brake |

Parking Brake

| | |
|---|---|
| Type: | Mechanical |
| Method of operation: | Hand lever with rachet operating mechanical linkage on service brakes |

## WHEELS

| | | |
|---|---|---|
| Number: | Front: | 2 driving/steering |
| | Rear: | 2 driving |
| Wheelbase: | | 2385 mm |

Track width adjustment method

| | Min | Max | Adjustment method |
|---|---|---|---|
| Front | 1660 | 1814 | By exchanging wheels |
| Rear | 1500 | 1875 | and rim lugs |

## PROTECTIVE STRUCTURE

| | |
|---|---|
| Make: | FMR Kunov |
| Model: | 80.361.000 OR 88.361.000 |
| Manufacturer's name and address: | AGROMET - FMR KUNOW, POLAND |
| Protective device: Tilting/not tilting: | Safety Cab Not tilting |

## DRIVER'S SEAT

| | |
|---|---|
| Make: | CSRS |
| Model: | 59115400 |
| Type of suspension: | Helical compression spring in the column |
| Type of damping: | Hydraulically |
| Range of adjustment: longitudinal: vertical: | 150 mm 60 mm |

## MISCELLANEOUS

| | |
|---|---|
| Additional seat: | 1 |
| Location: | Behind the driver |
| Number of places: | 1 |

## LIGHTING

The lighting is in accordance with the national Danish regulations for road traffic.

| | Height above ground of centre mm | Size mm | Distance from outside edge of tractor to median plan mm |
|---|---|---|---|
| Headlights | 1130 | 125 dia | 868 |
| Sidelights | 1825 | 65 x 65 | 240 |
| Rearlights | 1595 | 90 x 90 | 335 |
| Reflectors | 1255 | 75 dia | 205 |

## CONDITIONS DURING TEST

### Overall Dimensions

Tyre size front: 12.4/11-24
rear: 18.4-34

| | Length | Width | | Height at top of, exhaust silencer | Height at top of, protective structure |
|---|---|---|---|---|---|
| | mm | min. mm | max. mm | mm | mm |
| Without ballast | 4160 | 2004 | 2380 | 2600 | 2680 |
| With ballast | 4165 | 2004 | 2380 | 2658 | 2678 |

### Ground Clearance (unballasted)

Clearance: 300 mm limited by fixed drawbar

### Track Setting

Front: 1660 mm
Rear: 1510 mm

### Tractor Mass and Ballasting

Tractor mass
(Without driver, but with tanks full - with cab)

Without ballast:
- front 1695 kg
- rear 2630 kg
- total 4325 kg

Front ballast:
- 7 weights 158 kg
- 4 add. weights 90 kg

Rear ballast:
- 5 weights per wheel incl. mountings, total 330 kg
- Water in tyres 756 kg

With ballast:
- front 1985 kg
- rear 3674 kg
- total 5659 kg

## Tyres, Axle Loads and Track Specifications

| | Front wheels | Rear wheels |
|---|---|---|
| Tyres: | | |
| Dimensions | 12.4/11-24 | 18.4-34 |
| Ply rating | 6 | 8 |
| Type | radial | radial |
| Maximum load (tyre manufacturer's) (kN) | 11.76 | 25.16 |
| Maximum load (tractor manufacturer's) (kN) | 11.76 | 25.16 |
| Inflation pressure tyre manufacturer's (kPa) | 170 | 140 |
| Dynamic radius index (mm) | 540 | 770 |
| Chosen track width (mm): | 1660 | 1510 |

## Oils and Lubrication

### Capacity and Change Interval

| | Capacity ($dm^3$) | Oil change (h) | Filter change (h) |
|---|---|---|---|
| Engine | 10 | 200 | not exchangeable x) |
| Gear box and rear axle | 47 | 1600 | 800 |
| Front axle | 3.5 | 1600 | - |
| Final drive (front) | 2.5 | 1600 | - |
| Final drive (rear) | 9.0 | 1600 | - |
| Hydraulic system | in common with gearbox | | |
| Other steering | 5.5 | 800 | 800 |

x) Cleaning period 400 h.

Specifications

| | Recommended | Used during test |
|---|---|---|
| **Engine oil** | | |
| Type: | SAE 20W/40 | SAE 20W/40 |
| Viscosity: | 14.5 c st | 14.5 c st |
| Classification (API, MIL-L, ISO): | API CC-SF | API CC-SF |
| **Transmission oils** | | |
| Type: | SAE 80 EP | Hipol 6 SAE 80 EP |
| Viscosity: | 48 c st | 48 c st |
| Classification: | API GL5 | API GL5 |
| **Hydraulic fluid** | | |
| Type: | Same as transmission oils | |
| Viscosity: | - - - | - |
| Classification: | - - - | - |
| **Steering oil** | | |
| Type: | Same as transmission oils | |
| Viscosity: | - - - | - |
| Classification: | - - - | - |
| **Grease** | LT 43 | Esso MP Grease |
| Number of lubrication points: | 19 | |

Fuel

| | |
|---|---|
| Type | |
| In conformity with national standard: | Esso Diesel Fuel |
| Density at 15°C: | 0.846 g/cm$^3$ |

## TEST RESULTS

### COMPULSORY TEST RESULTS

#### 1. MAIN POWER TAKE-OFF

Date and location of tests: 1985.08.12, Bygholm, Horsens

Type of dynamometer: Schenck U2-30

| Power | Speed | | Fuel consumption | | Specific Energy |
|---|---|---|---|---|---|
| | Engine | P.T.O | Hourly | Specific | |
| kW | rev/min | | l/h | g/kWh | kWh/l |
| 1.2 MAXIMUM POWER - 2 - hour test | | | | | |
| 51.4 | 2237 | 1165 | 16.3 | 268 | 3.15 |
| 1.4 POWER AT RATED ENGINE SPEED | | | | | |
| 51.0 | 2200 | 1146 | 16.0 | 265 | 3.19 |
| 1.4 STANDARD POWER TAKE-OFF SPEED (1000 ± 25 rev/min) | | | | | |
| 46.9 | 1920 | 1000 | 14.3 | 258 | 3.28 |
| PART LOADS | | | | | |
| 1.4.1 the torque corresponding to maximum power at rated engine speed | | | | | |
| 51.4 | 2237 | 1165 | 16.3 | 268 | 3.15 |
| 1.4.2 85% of torque obtained in 1.4.1 | | | | | |
| 44.6 | 2275 | 1184 | 14.3 | 272 | 3.12 |
| 1.4.3 75% of torque defined in 1.4.2 | | | | | |
| 34.1 | 2320 | 1208 | 12.1 | 299 | 2.81 |
| 1.4.4 50% of torque defined in 1.4.2 | | | | | |
| 23.2 | 2365 | 1232 | 9.6 | 349 | 2.41 |
| 1.4.5 25% of torque defined in 1.4.2 | | | | | |
| 11.7 | 2400 | 1250 | 7.1 | 513 | 1.65 |
| 1.4.6 unloaded | | | | | |
| - | 2423 | 1262 | 6.1 | - | - |

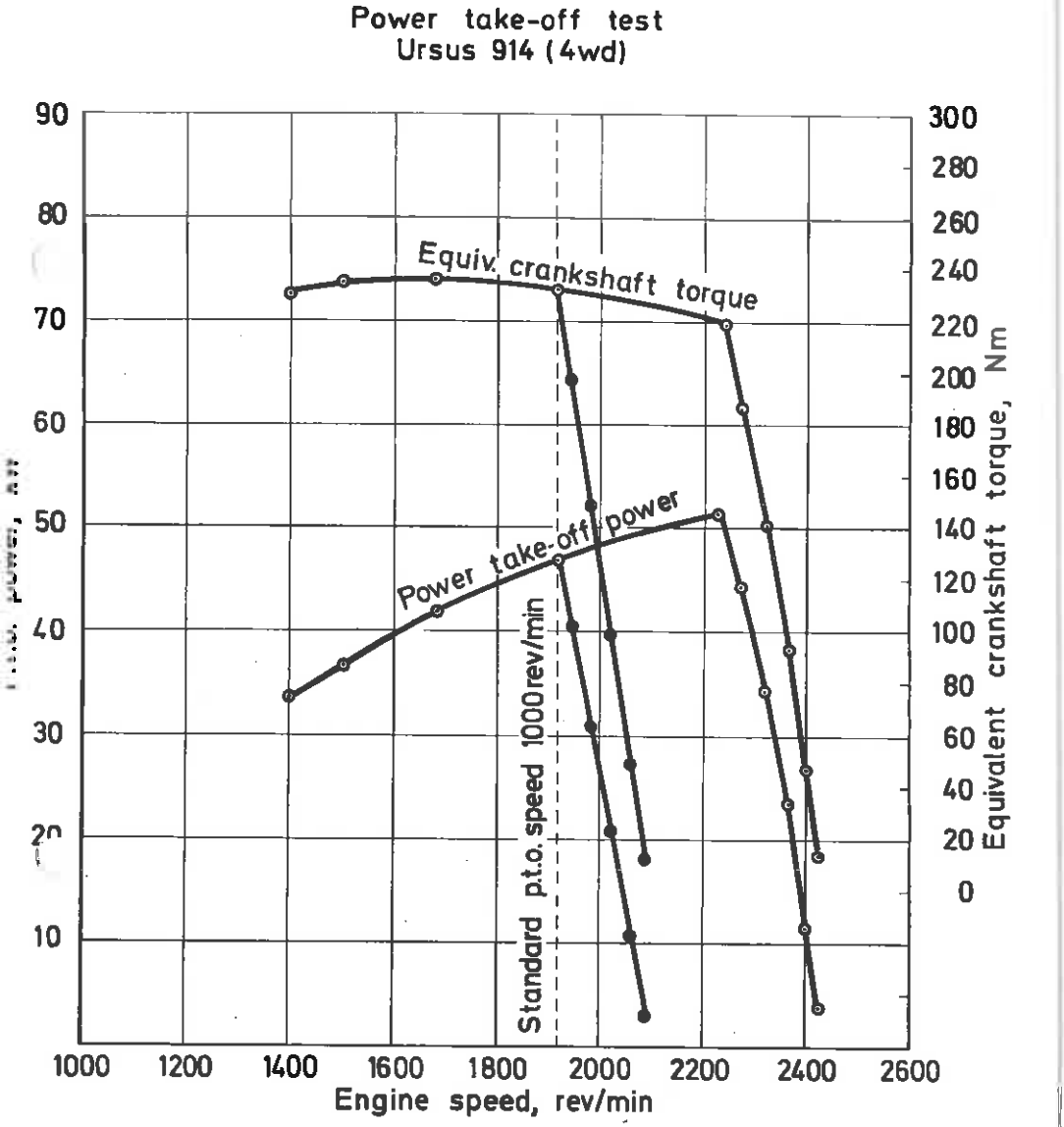
PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 rev/min)

| Power | Speed | | Fuel consumption | | Specific Energy |
|---|---|---|---|---|---|
| | Engine | P.T.O | Hourly | Specific | |
| kW | rev/min | | l/h | g/kWh | kWh/l |
| 1.4.1 The torque corresponding to maximum power | | | | | |
| 46.9 | 1920 | 1000 | 14.3 | 258 | 3.28 |
| 1.4.2 85% of torque obtained in 1.4.1 | | | | | |
| 40.2 | 1940 | 1010 | 12.4 | 260 | 3.24 |
| 1.4.3 75% of torque defined in 1.4.2 | | | | | |
| 30.7 | 1980 | 1031 | 10.2 | 280 | 3.01 |
| 1.4.4 50% of torque defined in 1.4.2 | | | | | |
| 20.9 | 2020 | 1052 | 8.3 | 336 | 2.52 |
| 1.4.5 25% of torque defined in 1.4.2 | | | | | |
| 10.7 | 2060 | 1073 | 5.9 | 467 | 1.81 |
| 1.4.6 unloaded | | | | | |
| - | 2095 | 1091 | 4.9 | - | - |

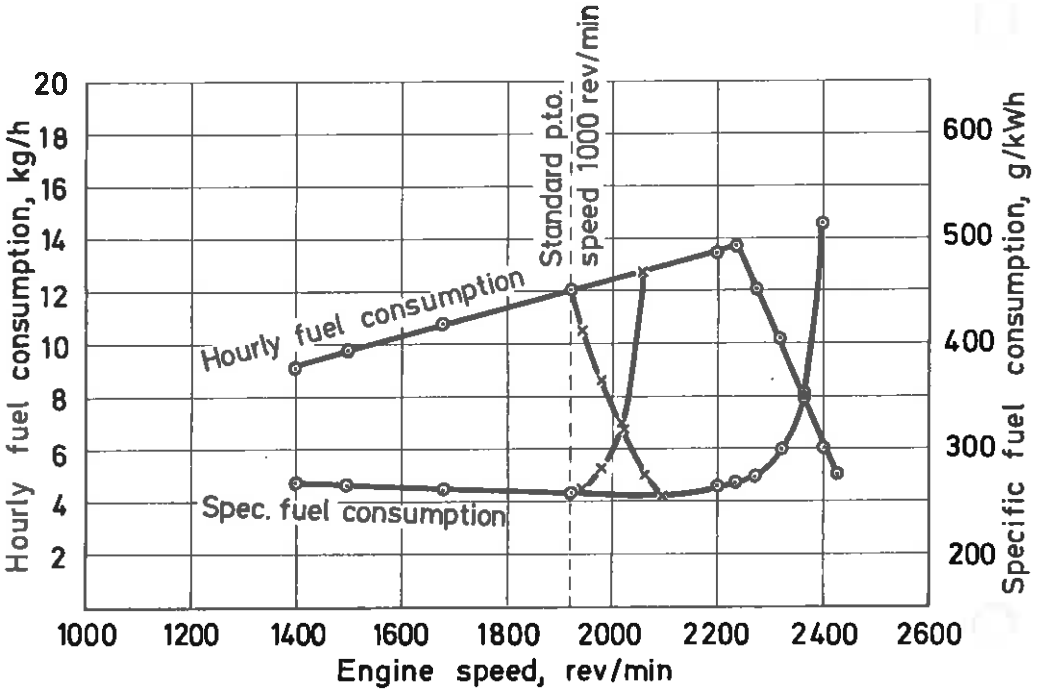
Standard specific fuel consumption, g/kWh 272/349/260/305

No load maximum engine speed: 2423 rev/min

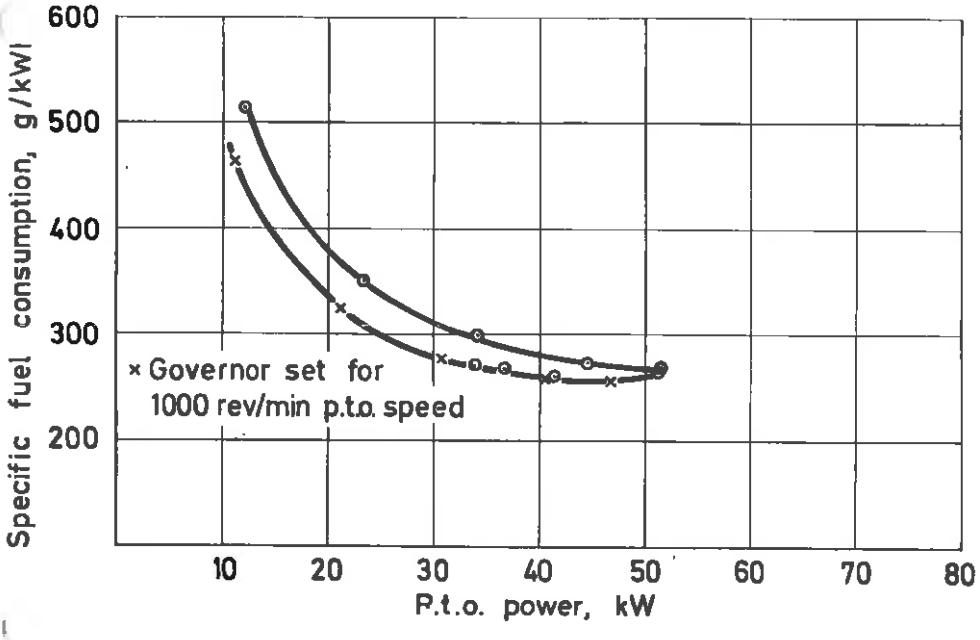
Torque (equivalent crankshaft) at maximum power: 220 Nm


Power take-off test
Ursus 914 (4wd)
Equiv. crankshaft torque
Power take-off power
Standard p.t.o. speed 1000 rev/min
Engine speed, rev/min
Equivalent crankshaft torque, Nm
90
80
70
60
50
40
30
20
10
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1000
1200
1400
1600
1800
2000
2200
2400
2600

Power take-off test
Ursus 914 (4wd)



Power take-off test
Ursus 914 (4wd)



| | |
|---|---|
| Maximum torque (equivalent crankshaft) (engine speed: rev/min. 1680): | 237 N.m |
| Mean atmospheric conditions: | |
| Temperature: | 22 °C |
| Pressure: | 1010 kPa |
| Relative humidity: | 55 % |
| Maximum temperatures: | |
| Coolant: | 83 °C |
| Engine oil: | 94 °C |
| Fuel: | 23 °C |
| Engine air intake: | 28 °C |

## 2. HYDRAULIC POWER AND LIFTING FORCE

| | |
|---|---|
| Date and location of tests: | 1986.06.24, Bygholm |
| Hydraulic power test | |
| Type of hydraulic system: | Open centre |
| Hydraulic fluid temperature at beginning of test: | 65.4 °C |

### HYDRAULIC POWER TEST

| | |
|---|---|
| Sustained pressure with relief valve open: (Pump stalled - no) | 19.6 MPa |
| Pump delivery rate at minimum pressure | 43.0 l/min |
| Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power | |
| Flow rate: | 35.0 l/min |
| Pressure | 17.6 MPa |
| Power: | 10.3 kW |
| Flow rate and hydraulic pressure corresponding to maximum hydraulic power | |
| Flow rate: | 39.5 l/min |
| Pressure: | 16.7 MPa |
| Power: | 11.0 kW |

Tapping point used for test: Auxiliary service connection

Temperature of hydraulic fluid, if different from 65°±5°C - °C

Opening pressure of the unloading valve 16.1 MPa

Closing pressure of the unloading valve 18.1 MPa

Power Lift Test

| | Height of lower hitch point above ground in down position mm | Vertical movement mm | Maximum corrected force exerted through full range kN | Corresponding pressure of hydraulic fluid MPa | Moment about rear axle kN.m | Max. tilt angle of mast from vertical Degrees |
|---|---|---|---|---|---|---|
| at hitch points | 200 | 675 | 36.8 | 16.7 | 39.7 | - |
| on the frame | 200 | 715 | 27.0 | 16.7 | 45.6 | 14.0 |

Linkage settings for test - see table and figure in specifications

Lifting heights relative to the horizontal plane including the lower link pivot points

| mm | -315 | -300 | -200 | -100 | 0 | +100 | +200 | +360 | +390 |
|---|---|---|---|---|---|---|---|---|---|

Lifting forces at hitch points

(Corresponding pressure 16.7 MPa)

| kN | 36.8 | 37.0 | 38.7 | 39.3 | 38.8 | 39.3 | 39.1 | 39.1 | - |
|---|---|---|---|---|---|---|---|---|---|

Lifting forces at test frame

(Corresponding pressure 16.7 MPa)

| kN | 35.6 | 35.5 | 35.2 | 34.1 | 33.0 | 33.4 | 29.9 | 28.4 | 27.0 |
|---|---|---|---|---|---|---|---|---|---|

## DRAWBAR PERFORMANCE

Date of tests: 1986-02-19 to 1986-04-02
Type of track: Tarmacadam
Height of drawbar above ground: 400 mm ballasted and unballasted
Tyre size: 12.4/11-24 at front, 18.4-34 at rear
Tyre inflation pressure: Unballasted 170 kPa at front, 140 kPa at rear
" " " : Ballasted 170 kPa at front, 170 kPa at rear

| Gear No. | Speed | Power | Drawbar pull | Engine speed | Slip of wheels | Specific fuel consumption | | Temperatures: Fuel | Coolant | Engine oil | Atmospheric conditions: Temperature | Relative humidity | Pressure |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | km/h | kW | kN | rev/min | % | kWh/l | g/kWh | °C | °C | °C | °C | % | kPa |
| **Maximum** power (unballasted) | | | | | | | | | | | | | |
| 1 L x) | 1.72 | 18.1 | 37.77 | 2344 | 15.0 | 1.68 | 498 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 1 L | 2.26 | 23.7 | 37.77 | 2323 | 15.0 | 1.98 | 423 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 2 L x) | 2.66 | 27.9 | 37.77 | 2298 | 15.0 | 2.08 | 402 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 2 L | 3.50 | 36.7 | 37.77 | 2242 | 15.0 | 2.28 | 367 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 3 L x) | 4.11 | 39.8 | 34.82 | 2170 | 10.8 | 2.25 | 372 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 3 L | 5.74 | 42.2 | 26.49 | 2208 | 7.0 | 2.37 | 353 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 4 L x) | 6.20 | 43.8 | 25.51 | 2150 | 6.7 | 2.39 | 350 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 4 L | 8.58 | 45.0 | 18.88 | 2250 | 4.4 | 2.43 | 344 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 1 H x) | 4.72 | 41.6 | 31.69 | 2134 | 8.8 | 2.38 | 352 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 1 H | 6.87 | 45.5 | 23.84 | 2210 | 6.0 | 2.46 | 340 | 28 | 82 | 84 | 4 | 80 | 1006 |
| 2 H x) | 8.10 | 40.8 | 18.15 | 2192 | 4.0 | 2.22 | 377 | 28 | 82 | 84 | 4 | 80 | 1006 |
| Maximum power (ballasted) | | | | | | | | | | | | | |
| 1 L x) | 1.73 | 21.4 | 44.62 | 2330 | 15.0 | 1.83 | 457 | 28 | 82 | 84 | 8 | 70 | 1006 |
| 1 L | 2.28 | 28.3 | 44.62 | 2325 | 15.0 | 2.16 | 388 | 28 | 82 | 84 | 8 | 70 | 1006 |
| 2 L x) | 2.64 | 32.8 | 44.62 | 2275 | 15.0 | 2.28 | 367 | 28 | 82 | 84 | 8 | 70 | 1006 |
| 2 L | 3.49 | 40.9 | 42.17 | 2100 | 11.2 | 2.42 | 346 | 28 | 82 | 84 | 8 | 70 | 1006 |
| 3 L x) | 3.72 | 38.6 | 37.27 | 1908 | 7.8 | 2.32 | 361 | 28 | 82 | 84 | 8 | 70 | 1006 |
| 3 L | 5.54 | 43.8 | 28.44 | 2056 | 3.7 | 2.54 | 330 | 28 | 82 | 84 | 8 | 70 | 1006 |
| 4 L x) | 6.12 | 43.3 | 25.50 | 2144 | 3.4 | 2.46 | 340 | 28 | 82 | 84 | 8 | 70 | 1006 |
| 4 L | 9.07 | 44.5 | 17.65 | 2323 | 1.8 | 2.41 | 347 | 28 | 82 | 84 | 8 | 70 | 1006 |
| 1 H x) | 5.12 | 43.4 | 30.50 | 2185 | 4.3 | 2.48 | 337 | 28 | 82 | 84 | 8 | 70 | 1006 |
| 1 H | 6.90 | 41.4 | 21.58 | 2213 | 2.6 | 2.40 | 349 | 28 | 82 | 84 | 8 | 70 | 1006 |
| Five hour test at 75% of pull at maximum power | | | | | | | | | | | | | |
| 4L | 9.19 | 33.8 | 13.24 | 2348 | 1.5 | 2.09 | 405 | 30 | 82 | 84 | 8 | 70 | 1018 |
| Five hour test corresponding to 15% wheelslip | | | | | | | | | | | | | |
| 2L x) | 2.60 | 32.2 | 44.62 | - | - | - | - | 30 | 82 | 84 | 8 | 70 | 1018 |

x) With torque amplifier gro engaged.

Total oil consumption during 10 hours of tests: 38.5 g/h.

## 4. TURNING AREA AND TURNING CIRCLE (m)

| Wheel equipment | Front 12.4/11-24 6 PR Track 1660<br>Rear 18.4-34 8 PR Track 1510 | | | |
|---|---|---|---|---|
| | With brakes | | Without brakes | |
| | Right hand | Left hand | Right hand | Left hand |
| Radius of turning area | 4.48 | 4.32 | 5.53 | 5.40 |
| Radius of turning circle | 4.31 | 4.02 | 5.33 | 5.10 |

## 5. LOCATION OF CENTRE OF GRAVITY (mm)

| | | |
|---|---|---|
| Height above ground | | 830 |
| Distance forward from the vertical plane containing the axis of the rear wheels | | 921 |
| Distance from the median plane of the tractor | left hand | 10 |

## 6. BRAKING

Date of tests: 1986.06.24

Cold Service Braking Device Test

| | | | | | |
|---|---|---|---|---|---|
| Ballasted tractor: | Front: 2400 kg<br>Rear: 5130 kg | | | | |
| Speed before application of brakes | km/h | | | 27.3 | |
| Braking device control force | N | 300 | 400 | 500 | 6( |
| Mean deceleration | $m/s^2$ | 0.9 | 1.7 | 2.5 | 3.2 |
| Unballasted tractor: | Front: 1695 kg<br>Rear: 2630 kg | | | | |
| Speed before application of brakes | km/h | | | 27.3 | |
| Braking device control force | N | 300 | 400 | 500 | 600 |
| Mean deceleration | $m/s^2$ | 1.1 | 2.1 | 3.2 | 4.1 |

Fade Test

| | | | | | |
|---|---|---|---|---|---|
| Speed before application of brakes | km/h | | | 27.3 | |
| Braking device control force | N | 300 | 400 | 500 | 600 |
| Mean deceleration | $m/s^2$ | 0.7 | 1.4 | 2.1 | 3.0 |

| | |
|---|---|
| Maximum deviation of tractor from its original course: | None |
| Abnormal vibration: | None |
| The brakes were heated by: | Towing |

Parking Braking Device Test

| | 18% slope | | 12% slope with 3 tons trailer | |
|---|---|---|---|---|
| | Up | Down | Up | Down |
| Braking device control force: kN | 268 | 265 | 314 | 284 |

## 7. MEASUREMENTS OF EXTERNAL NOISE LEVEL

| | |
|---|---|
| Date of tests: | 1986.10.14 |
| Sound level meter: | |
| Make: | Brüel & Kjær |
| Type: | 2209 |
| Type of track: | Tarmacadam |
| Gear number: | 4 H, four wheel drive engaged |
| Travelling speed before acceleration: | 21 km/h |
| Sound level: | 88.5 dB(A) |

Noise Measurements at the Driver's Ear

| | |
|---|---|
| Date of test: | 1987.02.09 |
| Type of sound level meter and octave filter: | Brüel & Kjær type 2209 and 1613 |
| Type of track: | Tarmacadam |

| Gear 4WD | Drawbar pull, at which the tractor develops the max. sound level kN | Measured travelling speed km/h | Sound level dB(A) |
|---|---|---|---|
| 1 H *) | 19.6 | 7.4 | 89.5 |
| 1 H *) | Light load | 8.2 | 89.0 |
| 4 H | Light load | 28.0 | 89.0 |

*) The 1. H gear corresponds to nominal travelling speed nearest to 7.5 km/h.

Repairs and Remarks

Safety switch in gearbox was repaired.

In this report all performance characteristics are given corresponding to the International System of Units.

The reference to the former used Technical System of Units is given by the following relations:

| | | | | |
|---|---|---|---|---|
| Forces: | 1 N | = 0.10197 kp | or 1 kp | = 9.80665 N |
| Powers: | 1 kW | = 1.35962 metric hp | or 1 metric hp | = 0.73550 kW |
| Pressures: | 1 bar | = 1.0197 kp/cm$^2$ | or 1 kp/cm$^2$ | = 0.980665 bar |
| Torques: | 1 Nm | = 0.10197 kpm | or 1 kpm | = 9.80665 Nm |