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TEST REPORT: O.E.C.D. No. 1121

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



URSUS 1014 Tractor with Four-wheel Drive

Manufacturer: Zrzeszenie Przemysłu Ciągnikowego "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.

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Tractor manufacturer's name and address:	Zrzeszenie Przemyslu Ciagnikowego "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:	Zaklady Mechaniczne "URSUS", Warszawa.
Duration of running-in:	Approx. 50 hours.

I. SPECIFICATIONS OF TRACTOR

TRACTOR

Make	URSUS
Model:	1014
Type:	Four-wheel-driven unit construction
Serial No.:	00002
First serial No.:	00001

ENGINE

Make:	ZTS. Martin
Model:	Z-8002.1.
Type:	Turbocharged water cooled, 4-stroke, direct injection diesel engine
Serial No.:	000399
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

Supercharging

Make:	CZM
Model:	K 27-2960 U/6.11
Type	Exhaust type
Supercharging pressure:	0.90 MPa

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:	130 dm^3
Make, type and model of injection pump:	Motorpal in-line, PAL PP 4 M 9 K 1e - 3119.
Serial No	014
Manufacturer's production setting of injection pump:	80 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 500
Type:	Cyclonic with dust container.
Location of air intake:	Under bonnet forward of radiator

Main	
Make:	Hodrusba-Hamre
Model:	9450.11
Type:	Two stage oil bath
Oil capacity:	2.25 L
Maintenance indicator:	None

Lubrication System

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

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:	H 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	2620 mm

TRANSMISSION TO WHEELS

Clutch

Make:	ZTS MARTIN
Type:	Dry, 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 amplifier 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	6.40
-	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 of 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 Nm
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

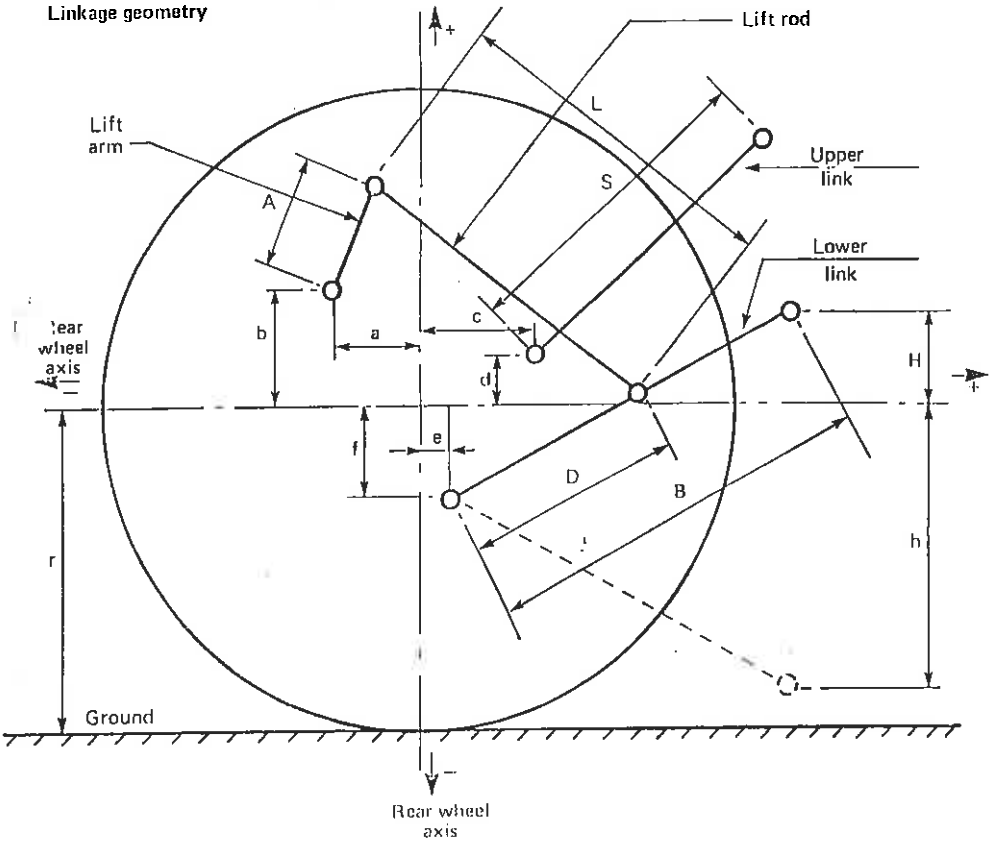
POWER LIFT:

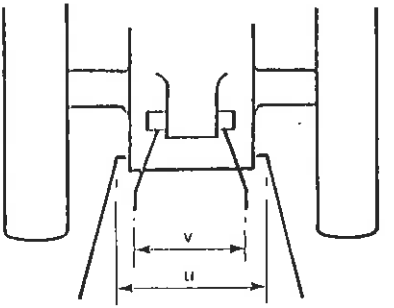
Make:	Archimedes, Wroclaw
Type of hydraulic system:	Open centre
Type and number of cylinders:	One internal and one external single acting.
Type of linkage lock for transport:	Hydraulic
Relief valve pressure setting:	16.0 MPa
Opening pressure of cylinder safety valve:	18.63 + 0.98 MPa
Lift pump type:	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
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





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 Vertically	(a) (b)	175 behind 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 to 865	655
Distance of upper link point from rear wheel centre line	Horizontally Vertically	(c) (d)	382 200, 155, 95	205
Distance of lower link from rear wheel centre line	Horizontally Vertically	(e) (f)	120 255	
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 to 715	595
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	595
Linkage distance of lift rods,	D	435		500		
Lowest position	h	505	910	435	840	570
Highest position	H	230	-155	210	-125	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:	400 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 coupled r 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:	150 mm
vertical:	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	2620	2680
With ballast	4165	2004	2380	2618	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	1825 kg
rear	2735 kg
total	4560 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	2135 kg
rear	3759 kg
total	5894 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: 1985.08.16, 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					
68.1	2177	1134	21.1	262	3.23
1.4 POWER AT RATED ENGINE SPEED					
65.0	2200	1146	20.2	263	3.22
1.4 STANDARD POWER TAKE-OFF SPEED (1000 ± 25 rev/min)					
61.8	1920	1000	18.8	257	3.29
PART LOADS					
1.4.1 the torque corresponding to maximum power at rated engine speed					
68.1	2177	1134	21.1	262	3.23
1.4.2 85% of torque obtained in 1.4.1					
59.3	2230	1161	18.9	270	3.14
1.4.3 75% of torque defined in 1.4.2					
45.5	2285	1190	15.6	290	2.92
1.4.4 50% of torque defined in 1.4.2					
31.0	2330	1214	12.3	335	2.53
1.4.5 25% of torque defined in 1.4.2					
15.7	2375	1237	8.5	455	1.86
1.4.6 unloaded					
-	2400	1250	6.9	-	-

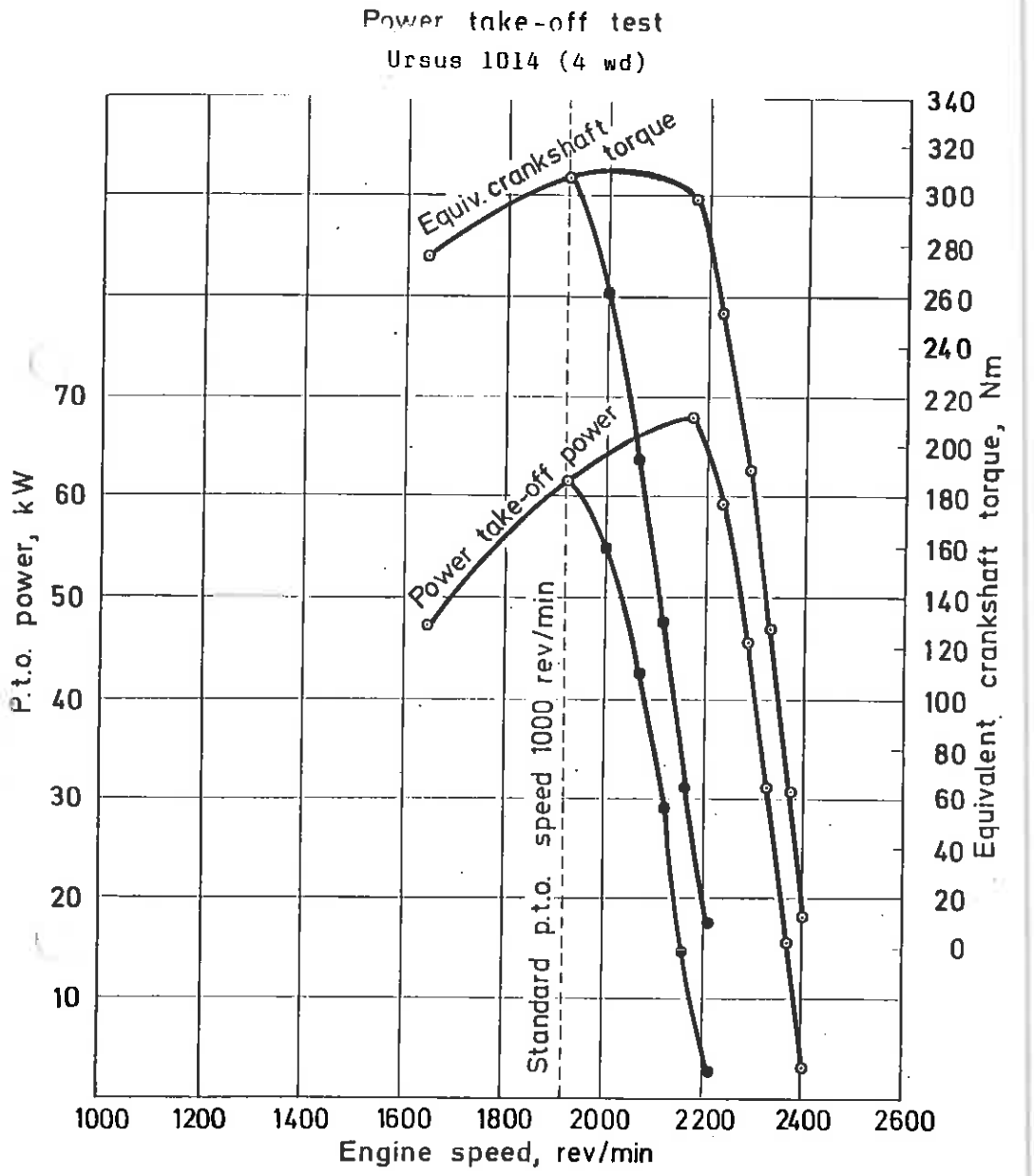
PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 rev/min)

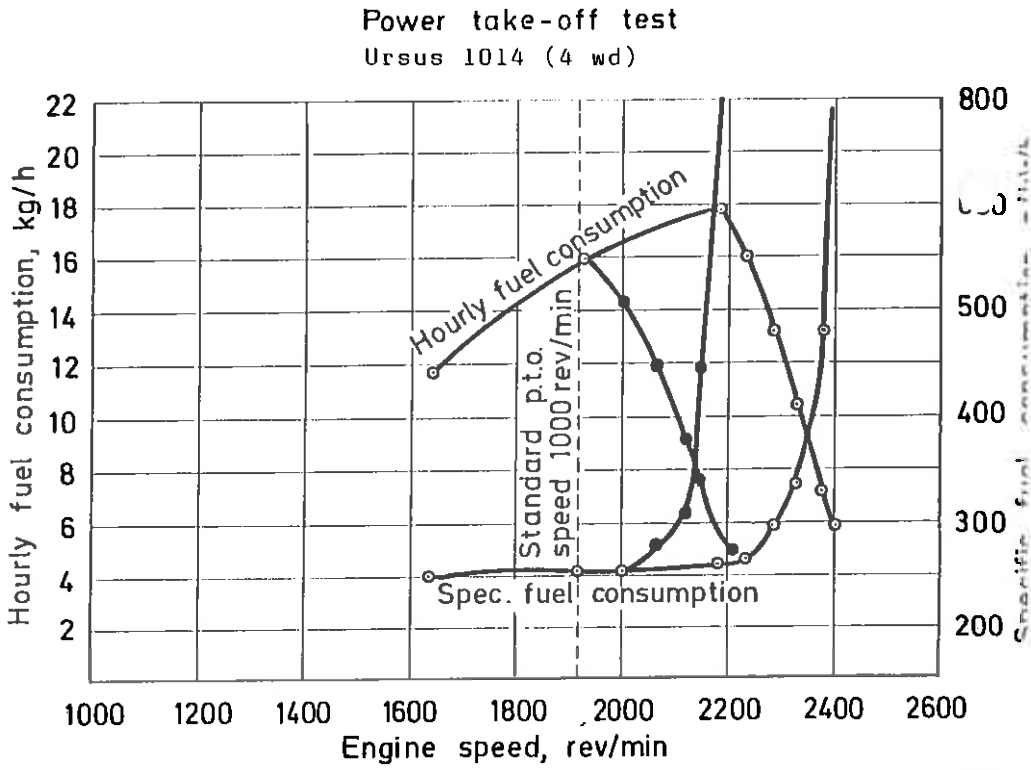
Power	Speed		Fuel consumption		Specific Energy
	Engine	P.T.O	Hourly	Specific	
kW	rev/min		l/h	g/kWh	kWh/l
1.4.1 The torque corresponding to maximum power					
61.8	1920	1000	18.8	257	3.30
1.4.2 85% of torque obtained in 1.4.1					
55.5	**2000**	**1041**	**16.9**	**257**	**3.30**
1.4.1 75% of torque defined in 1.4.2					
42.3	2065	1075	14.0	280	3.03
1.4.4 50% of torque defined in 1.4.2					
29.0	2120	1104	10.9	317	2.67
1.4.5 25% of torque defined in 1.4.2					
14.8	2160	1125	7.9	450	1.88
1.4.6 unloaded					
-	2210	1151	5.0	-	-

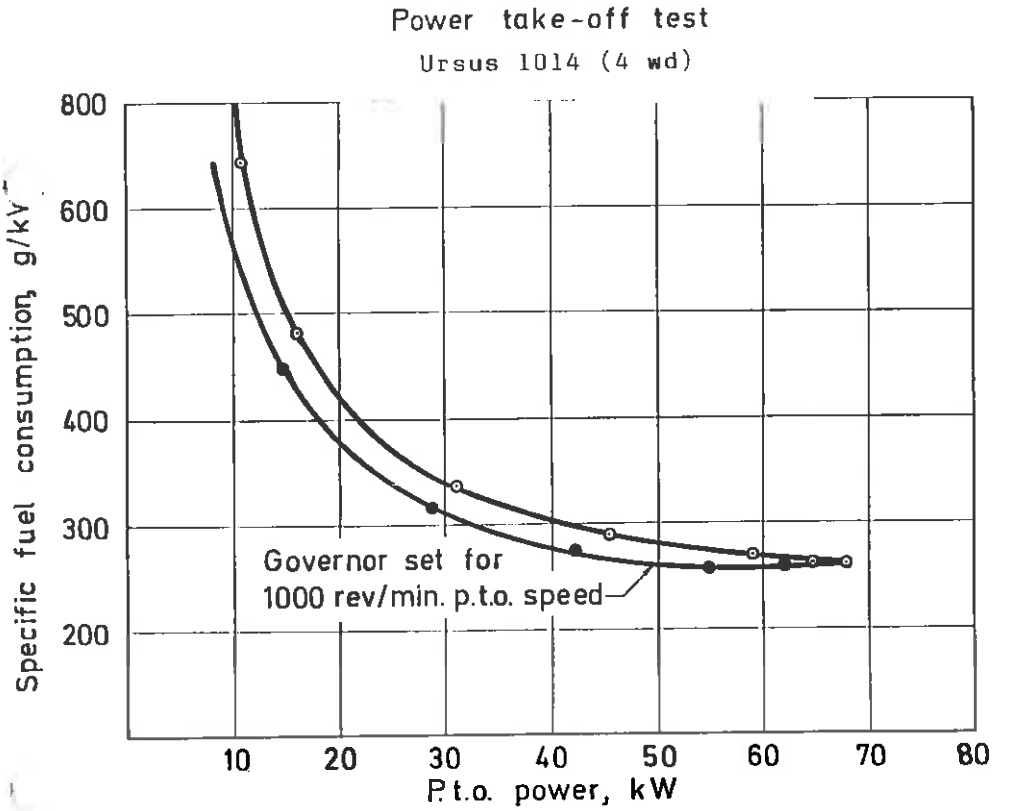
Standard specific fuel consumption, g/kWh 270/335/257/317

No load maximum engine speed:. 2400 rev/min

Torque (equivalent crankshaft) at maximum power: 298 N.m


Power take-off test
Ursus 1014 (4 wd)
Equiv. crankshaft torque
Power take-off power
Standard p.t.o. speed 1000 rev/min
P.t.o. power, kW
Equivalent crankshaft torque, Nm
Engine speed, rev/min
10
20
30
40
50
60
70
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
1000
1200
1400
1600
1800
2000
2200
2400
2600


Power take-off test
Ursus 1014 (4 wd)
Hourly fuel consumption, kg/h
22
20
18
16
14
12
10
8
6
4
2
800
500
400
300
200
Hourly fuel consumption
Standard p.t.o. speed 1000 rev/min
Spec. fuel consumption
1000
1200
1400
1600
1800
2000
2200
2400
2600
Engine speed, rev/min


Power take-off test
Ursus 1014 (4 wd)
Specific fuel consumption, g/kW
800
600
500
400
300
200
Governor set for
1000 rev/min. p.t.o. speed
10
20
30
40
50
60
70
80
P.t.o. power, kW

Maximum torque (equivalent crankshaft) (engine speed: rev/min.2000):	308 N.m
Mean atmospheric conditions:	
Temperature:	25 °C
Pressure:	1020 kPa
Relative humidity:	50 %
Maximum temperatures:	
Coolant:	92 °C
Engine oil:	114 °C
Fuel:	28 °C
Engine air intake:	30 °C

2. HYDRAULIC POWER AND LIFTING FORCE

Date and location of tests:	1987.02.02, Bygholm
Hydraulic power test	
Type of hydraulic system:	Open centre
Hydraulic fluid temperature at beginning of test:	62°C

HYDRAULIC POWER TEST

Sustained pressure with relief valve open: (Pump stalled - no)	19.1 MPa
Pump delivery rate at minimum pressure	44.5 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:	37.5 l/min
Pressure	17.2 MPa
Power:	10.8 kW
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	
Flow rate:	39.0 l/min
Pressure:	16.7 MPa
Power:	10.9 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	16.0 MPa
Closing pressure of the unloading valve	18.0 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	36.9	16.7	39.9	-
on the frame	200	720	25.8	16.7	43.6	15.0

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	-200	-100	0	+100	+200	+300	+360	+395

Lifting forces at hitch points

(Corresponding pressure 16.7 MPa)

kN	36.8	37.2	39.3	40.3	40.6	40.3	40.1	40.0	-

Lifting forces at test frame

(Corresponding pressure 16.7 MPa)

kN	36.4	35.2	33.9	32.7	31.2	29.4	27.7	27.1	25.8

DRAWBAR PERFORMANCE

Date of tests: 1986-10-29 to 1986-11-25
Type of track: Tarmacadam
Height of drawbar above ground: 375 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			Atmospheric conditions		
								Fuel	Coolant	Engine oil	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)	1.68	18.3	39.22	2300	15.0	1.71	489	28	82	93	8	80	1030
1 L	2.22	24.2	39.22	2292	15.0	1.90	441	28	82	93	8	80	1030
2 L x)	2.62	28.5	39.22	2268	15.0	2.09	400	28	82	93	8	80	1030
2 L	3.41	37.2	39.22	2227	15.0	2.29	366	28	82	93	8	80	1030
3 L x)	4.06	44.2	39.22	2218	15.0	2.41	347	28	82	93	8	80	1030
3 L	5.50	54.7	35.79	2171	11.4	2.61	320	28	82	93	8	80	1030
4 L x)	5.88	56.1	34.32	2148	10.1	2.65	316	28	82	93	8	80	1030
4 L	8.23	58.3	25.50	2158	6.2	2.73	307	28	82	93	8	80	1030
1 H x)	4.72	51.4	39.22	2183	15.0	2.59	323	28	82	93	8	80	1030
1 H	6.38	57.3	32.36	2122	9.0	2.70	310	28	82	93	8	80	1030
2 H x)	7.89	59.1	26.97	2155	6.8	2.77	301	28	82	93	8	80	1030
2 H	10.71	58.3	19.61	2163	5.2	2.72	308	28	82	93	8	80	1030
Maximum power (ballasted)													
1 L x)	1.67	20.5	44.13	2306	15.0	1.75	478	28	82	93	8	75	1020
1 L	2.21	27.1	44.13	2285	15.0	1.92	434	28	82	93	8	75	1020
2 L x)	2.51	30.8	44.13	2264	15.0	2.06	406	28	82	93	8	75	1020
2 L	3.37	41.3	44.13	2210	15.0	2.27	368	28	82	93	8	75	1020
3 L x)	3.90	47.8	44.13	2200	15.0	2.46	340	28	82	93	8	75	1020
3 L	5.61	55.8	35.79	2192	9.3	2.69	311	28	82	93	8	75	1020
4 L x)	5.88	56.9	34.81	2148	8.7	2.69	311	28	82	93	8	75	1020
4 L	8.22	58.2	25.50	2167	5.8	2.72	307	28	82	93	8	75	1020
1 H x)	4.51	51.6	41.18	2111	12.8	2.47	339	28	82	93	8	75	1020
1 H	6.25	54.5	31.38	2070	7.5	2.79	300	28	82	93	8	75	1020
Five hour test at 75% of pull at maximum power													
4 L	8.52	45.2	19.10	2205	5.0	2.16	391	28	82	93	8	75	1020
Five hour test corresponding to 15% wheelslip													
3 L x)	3.90	47.8	44.13	-	-	-	-	28	82	93	8	75	1020

x) With torque amplifier gro[illegible] engaged.

Total oil consumption during 10 hours of tests: 31.5 g/h.

4. TURNING AREA AND TURNING CIRCLE (m)

Wheel equipment	Front 12.4/11-24 6 PR Track 1660 Rear 18.4-34 8 PR Track 1510			
	With brakes		Without brakes	
	Right hand	Left hand	Right hand	Left hand
Radius of turning area	4.75	4.63	5.55	5.36
Radius of turning circle	4.55	4.43	5.35	5.11

5. LOCATION OF CENTRE OF GRAVITY (mm)

Height above ground		790
Distance forward from the vertical plane containing the axis of the rear wheels		942
Distance from the median plane of the tractor	left hand	6

6. BRAKING

Date of tests: 1986.10.28

Cold Service Braking Device Test

Ballasted tractor:	Front: 2400 kg Rear: 5130 kg				
Speed before application of brakes	km/h			27.3	
Braking device control force	N	300	400	500	600
Mean deceleration	m/s^2	0.9	1.7	2.5	3.2
Unballasted tractor:	Front: 1825 kg Rear: 2735 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	304	287	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:	88.0 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)
4 L *)	15.7	6.7	91.0
1 H **)	16.2	7.4	89.5
1 H	Light load	7.8	88.5
4 H	Light load	27.8	89.5

*) With torque amplifier group engaged.
**)The 1. H gear corresponds to nominal travelling speed nearest to 7.5 km/h.

Repairs and Remarks

Brakes were adjusted.

During the test period the entrant introduced some minor modifications to the hydraulic piston pump.

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