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TEST REPORT: O.E.C.D. No. 1124

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



URSUS 1614 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.

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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:	1614
Type:	Four-wheel-driven unit construction
Serial No.:	00002
First serial No.:	00001

ENGINE

Make:	ZTS. Martin
Model:	Z-8602.1.
Type:	Turbocharged, Water cooled, 4-stroke, direct injection diesel engine
Serial No.:	00002
Cylinders	
Number/disposition:	6/vertical in line
Bore/stroke:	110/120 mm
Capacity:	6842 cm^3
Compression ratio:	17:1
Arrangement of valves:	Overhead
Cylinder liners:	Replaceable, wet

Supercharging

Make:	CZM
Model:	K27-29-66 U/17.21
Type:	Exhaust driven
Pressure:	Up to 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, JK 443 741 429000
Capacity of fuel tank:	200 dm^3
Make, type and model of injection pump:	Motorpal in-line, PAL PP 6 M 9 K 1 e
Serial No	3120
Manufacturer's production setting of injection pump:	80 mm^3/stroke at 2200 rpm.and full load.
Injection pump timing:	24^o + 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 750
Type:	Cyclonic with dust container.
Location of air intake:	Under bonnet forward of radiator

Main	
Make:	Hodrusba-Hamre
Model:	9470.11
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 anti-freeze
Type of pump:	Centrifugal belt driven
Specification of fan:	
Number of fan blades:	8
Fan diameter:	460 mm
Coolant capacity:	27 dm^3
Type of temperature control:	Thermostat and thermometer
Superpressure system:	0,52 kPa

Starting System:

Make:	ZELMOT
Model:	R 20 e/24V
Type:	Electrically solenoid engaged
Starter motor power rating:	5.5 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:	240 ah at 20 hours

Exhaust System

Make:	Ursus
Model:	Oval
Type:	Baffle
Location:	Left hand side, vertical
Height of outlet above ground:	2740 mm

TRANSMISSION TO WHEELS

Clutch

Make:	ZTS MARTIN
Model:	Dry
Type:	Travel alone
Number of plates:	1
Diameter of plates:	380 mm
Method of operation	Mechanically by pedal

Gear Box

Make:	Povazske Strojarne
Type:	Mechanical
Arrangement:	3 forward x 2 ranges x torque multiplyer 3 reverse x torque multiplyer
Number of gears:	12 forward, 6 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 wheel 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	286.90	2.37
-	L 2	176.09	3.86
-	L 3	104.98	6.48
-	H 1	91.54	7.43
-	H 2	56.18	12.10
-	H 3	33.43	20.34
Reverse	1	244.09	2.79
-	2	149.82	4.54
-	3	89.32	7.61
Reduction Gear Disengaged			
Forward	L 1	214.46	3.17
-	L 2	131.63	5.17
-	L 3	78.47	8.67
-	H 1	68.42	9.94
-	H 2	42.00	16.19
-	H 3	25.04	27.16
Reverse	1	182.46	3.73
-	2	111.99	6.07
-	3	66.76	10.19

x) Calculated with index radius 820 mm.

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:	644 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:	644 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

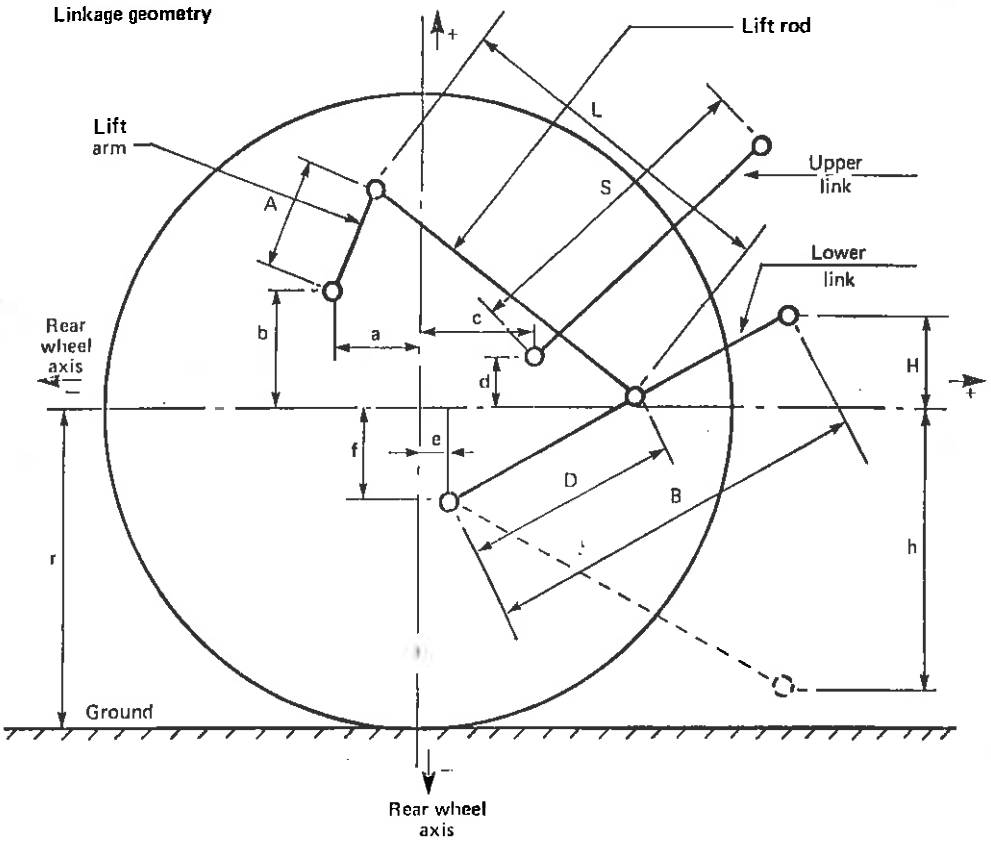
Power Take-off Proportional to Ground Speed Optional

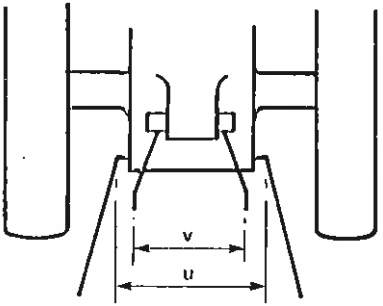
POWER LIFT:

Make:	Archimedes, Wroclaw
Type of hydraulic system:	Open centre
Type and number of cylinders:	One internal and two 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:	ZPC 2
Site of oil reservoir:	Main transmission housing
Type and number of tapping points:	2 double and 1 single
Maximum volume of oil available to external cylinders:	15 dm^3

THREE-POINT LINKAGE

Category:	III in conformity with ISO 730/I
Category adapter:	At the end of lower link to category II
Controls:	Draft, position and pressure control and floating position. Lower links sensing


Linkage geometry
Lift rod
Lift arm
L
S
A
Upper link
Lower link
Rear wheel axis
b
a
c
d
H
e
f
D
B
h
r
Ground
Rear wheel axis


v
u

Dimensions of Linkage Geometry (When Connected to the Standard Frame) mm

			Dimension or range	Settings used in test
Rear tyres (size 18.4/15-38) dynamic index radius		(r)	820	
Front tyres (size 14.9/13-24) dynamic index radius		(r´)	590	
Lenght of lift arms		(A)	330	
Length of lower links		(B)	980	
Distance of lift arm pivot point from rear wheel centre line	Horizontally Vertically	(a) (b)	175 behind 290	
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	620
Distance of upper link point from rear wheel centre line	Horizontally Vertically	(c) (d)	382 200, 155, 95	200
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)	465, 505	505
Length of lift rods		(L)	from 495 to 640	620

Height of lower hitch points relative to the rear wheel centre line, situated 820 mm above the ground level

						TEST
Length of lift rods,	L	495	640	495	640	620
Linkage distance of lift rods,	D	465			505	
Lowest position	h	410	795	350	665	620
Highest position	H	320	355	315	60	90

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:	385 mm
Type of adjustment:	Length
Distance of hitch point from rear wheel axis horizontally:	820 - 870 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:	440 mm
Distance of hitch point from rear wheel axis Horizontally:	557 mm
Distance of hitch point from power take-off shaft end	
Vertically:	225 mm
Horizontally:	47 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 + 60/100
Height above ground	
minimum:	55 mm
maximum:	1150 mm
Horizontal distance to power take-off shaft end (rear)	585 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 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:		2690 mm

Track width adjustment method

	Min	Max	Adjustment method
Front	1790	1890	By changing wheels
Rear	1500	1875	and rim lugs

PROTECTIVE STRUCTURE

Make:	FMR KUNOW
Model:	88.361.000
Manufacturer's name and address:	AGROMET - FMR KUNOW, POLAND
Protective device:	Safety cab

DRIVER'S SEAT

Make:	CSRS
Model:	59115400
Type of suspension:	Helical compression spring in the column
Type of damping:	Hydrauically
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	1200	125 dia	960
Sidelights	1860	65 x 65	345
Rearlights	1650	90 x 90	435
Reflectors	1232	75 dia	280

CONDITIONS DURING TEST

Overall Dimensions

Tyre size front: 14.9/13-24
rear: 18.4/15-38

	Length	Width		Height at top of	
		min.	max.	exhaust silencer	protective structure
	mm	mm	mm	mm	mm
Without ballast	4525	2190	2365	2740	2725
With ballast	4850	2190	2365	2738	2723

Ground Clearance (unballasted)

Clearance: 355 mm limited by fixed drawbar

Track Setting

Front: 1890 mm
Rear: 1510 mm

Tractor Mass and Ballasting

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

Without ballast:	
front	2020 kg
rear	2905 kg
total	4925 kg
Front ballast:	
4 weights	85 kg
8 add. weights	340 kg
Water in tyress	298 kg
Rear ballast:	
8 weights per wheel incl. mountings, total	565 kg
Water in tyres	756 kg
With ballast:	
front	2908 kg
rear	4061 kg
total	6969 kg

Tyres, Axle Loads and Track Specifications

	Front wheels	Rear wheels
Tyres:		
Dimensions	14.9/13-24	18.4/15-38
Ply rating	8	8
Type	Radial	Radial
Maximum load (tyre manufacturer's) (kN)	17.25	25.65
Maximum load (tractor manufacturer's) (kN)	17.25	25.65
Inflation pressure tyre manufacturer's (kPa)	180	140
Dynamic radius index (mm)	590	820
Chosen track width (mm):	1890	1510

Oils and Lubrication

Capacity and Change Interval

	Capacity (dm^3)	Oil change (h)	Filter change (h)
Engine	19	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	7	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	Hipol 6 SAE 80 EP
Viscosity:	44 c st	48 c st
Classification:	API GL5	API GL 5
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: 1985.11.12., 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					
106,5	2200	1146	32.1	255	3.32
1.4 POWER AT RATED ENGINE SPEED					
106.5	2200	1146	32.1	255	3.32
1.4 STANDARD POWER TAKE-OFF SPEED (1000 ± 25 rev/min)					
98.1	1920	1000	28.1	242	3.50
PART LOADS					
1.4.1 the torque corresponding to maximum power at rated engine speed					
106.5	2200	1146	32.1	255	3.32
1.4.2 85% of torque obtained in 1.4.1					
92.7	2252	1173	28.7	262	3.23
1.4.3 75% of torque defined in 1.4.2					
70.8	2295	1195	23.3	279	3.03
1.4.4 50% of torque defined in 1.4.2					
48.2	2340	1219	18.9	331	2.57
1.4.5 25% of torque defined in 1.4.2					
24.5	2382	1241	13.5	465	1.82
1.4.6 unloaded					
-	2421	1260	8.8	-	-

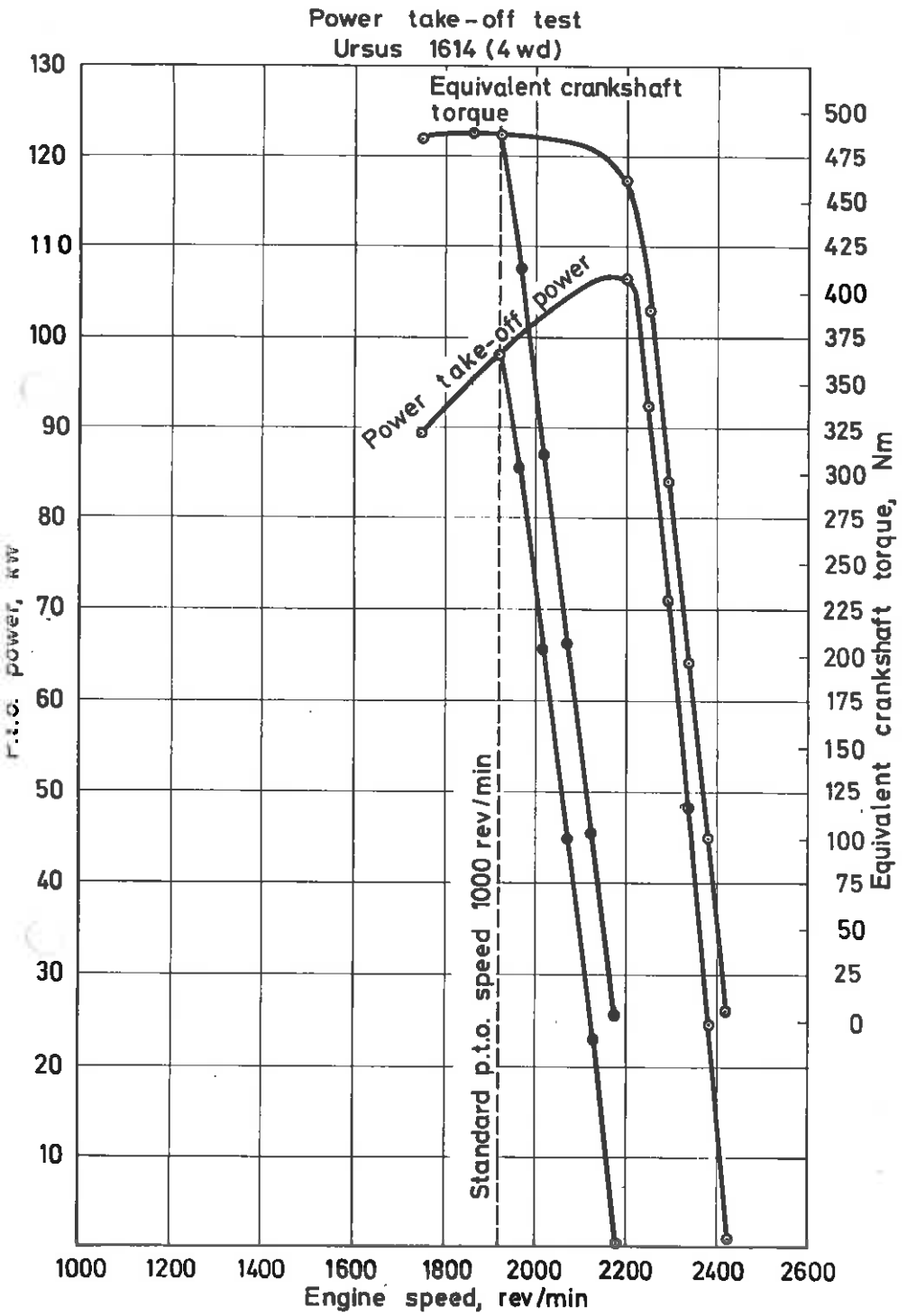
PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 rev/min)

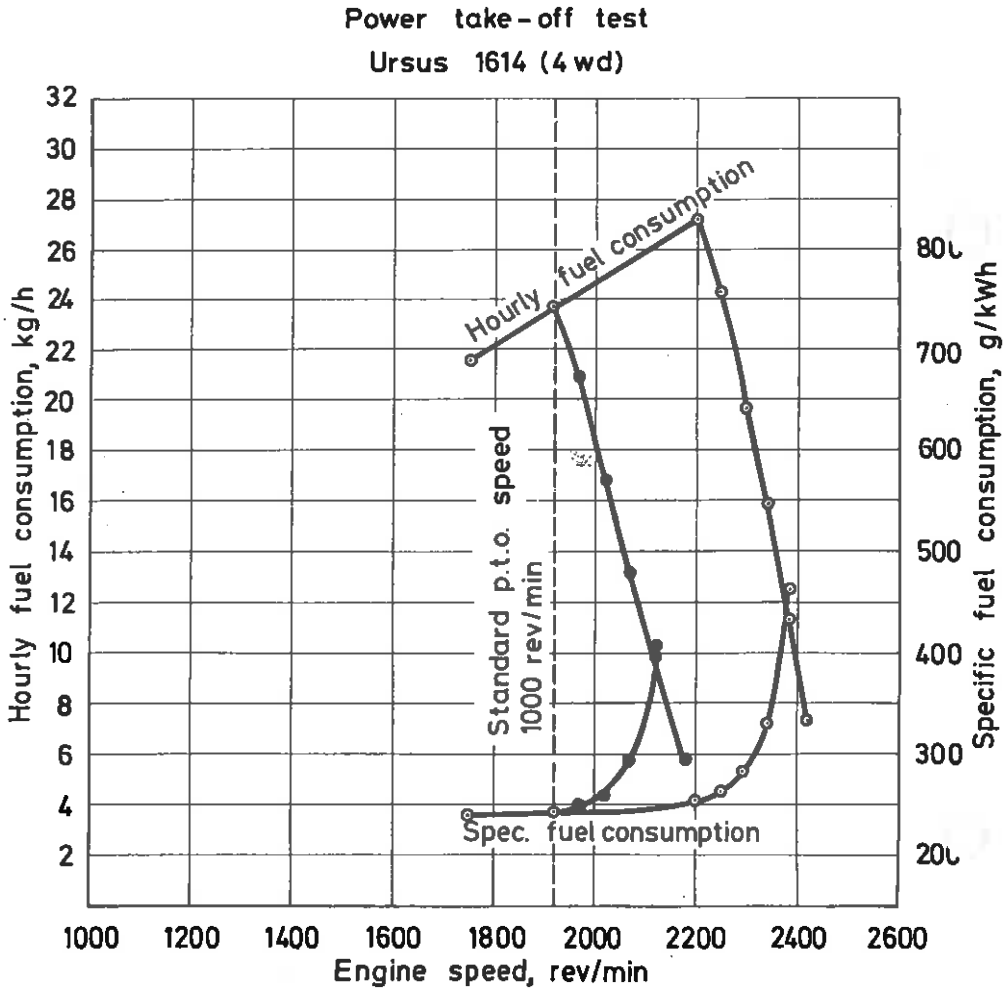
Power	Speed		Fuel consumption		Specific Energy
	Engine	P.T.O	Hourly	Specific	
kW	rev/min		l/h	g/kWh	kWh/l
1.4.1 The torque corresponding to maximum power					
98.1	1920	1000	28.1	242	3.50
1.4.2 85% of torque obtained in 1.4.1					
85.4	1970	1026	24.7	245	3.45
1.4.3 75% of torque defined in 1.4.2					
65.7	2020	1052	19.9	256	3.30
1.4.4 50% of torque defined in 1.4.2					
44.9	2070	1078	15.6	293	2.89
1.4.5 25% of torque defined in 1.4.2					
23.0	2122	1105	11.1	408	2.07
1.4.6 unloaded					
-	2180	1135	6.9	-	-

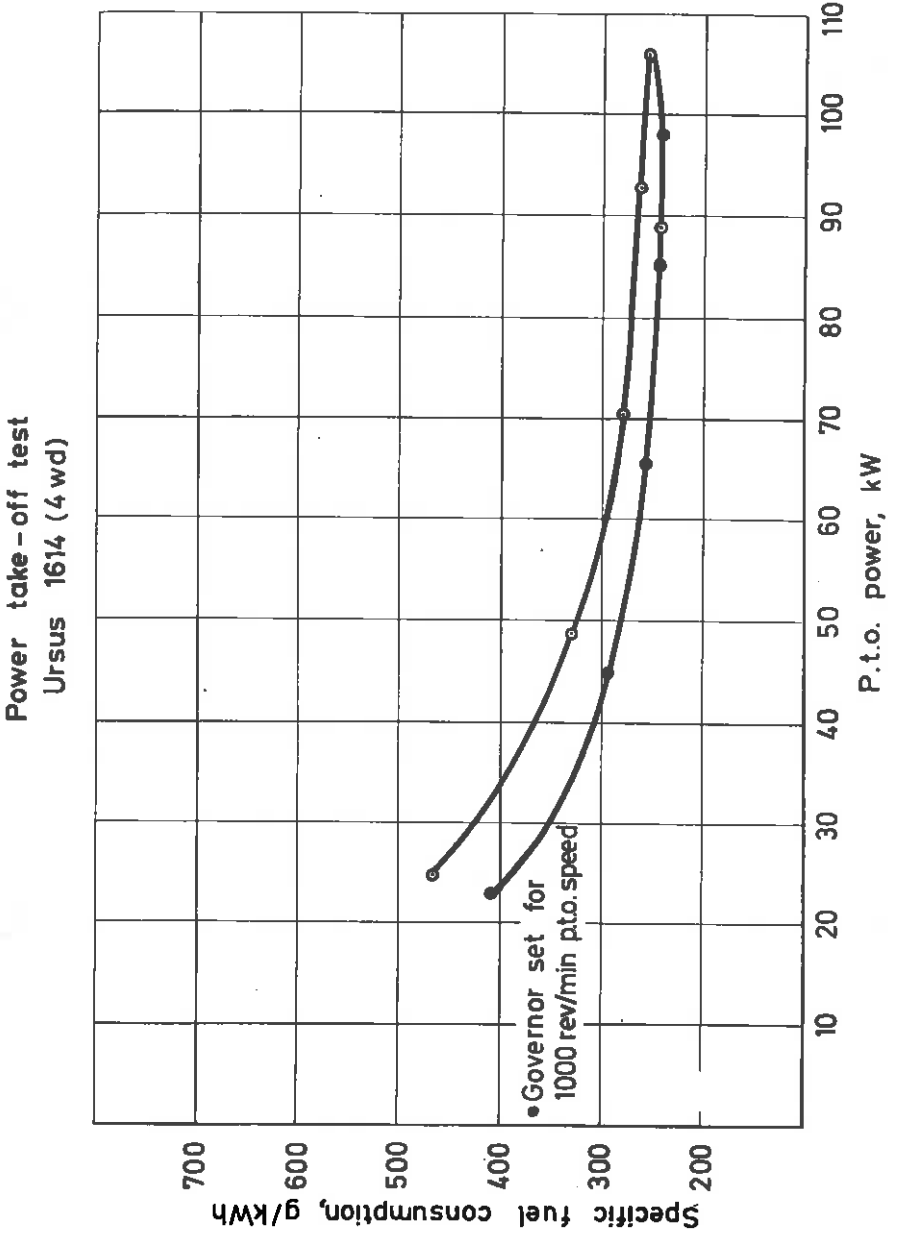
Standard specific fuel consumption, g/kWh 262/331/245/293

No load maximum engine speed: 2421 rev/min

Torque (equivalent crankshaft) at maximum power: 462 Nm


Power take-off test
Ursus 1614 (4 wd)
Equivalent 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
130
120
110
100
90
80
70
60
50
40
30
20
10
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
1000
1200
1400
1600
1800
2000
2200
2400
2600


Power take-off test
Ursus 1614 (4 wd)
Hourly fuel consumption, kg/h
Specific fuel consumption, g/kWh
Engine speed, rev/min
Hourly fuel consumption
Spec. fuel consumption
Standard p.t.o. speed
1000 rev/min
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
800
700
600
500
400
300
200
1000
1200
1400
1600
1800
2000
2200
2400
2600


Power take-off test
Ursus 1614 (4 wd)
Specific fuel consumption, g/kWh
700
600
500
400
300
200
10
20
30
40
50
60
70
80
90
100
110
P.t.o. power, kW
●Governor set for
1000 rev/min p.t.o. speed

Maximum torque (equivalent crankshaft) (engine speed: rev/min.1860):	490 N.m
Mean atmospheric conditions:	
Temperature:	16 °C
Pressure:	1003 kPa
Relative humidity:	70 %
Maximum temperatures:	
Coolant:	85 °C
Engine oil:	82 °C
Fuel:	24 °C
Engine air intake:	20 °C

2. HYDRAULIC POWER AND LIFTING FORCE

Date and location of tests:	1985.10.14.,Bygholm
Hydraulic power test	
Type of hydraulic system:	Open centre
Hydraulic fluid temperature at beginning of test:	65°C

HYDRAULIC POWER TEST

Sustained pressure with relief valve open: (Pump stalled - no)	18.9 MPa
Pump delivery rate at minimum pressure	46.0 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:	37.8 l/min
Pressure	17.0 MPa
Power:	10.7 kW
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	
Flow rate:	42.3 l/min
Pressure:	15.7 MPa
Power:	11.1 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	15.7 MPa
Closing pressure of the unloading valve	17.5 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	710	43.5	15.7	48.1	-
on the frame	230	730	32.0	15.7	54.9	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	-365	-300	-200	-100	0	+100	+200	+300	+345	+400

Lifting forces at hitch points

(Corresponding pressure 15.7 MPa)

kN	43.5	43.7	44.2	45.0	45.1	45.1	45.1	44.7	44.2	-

Lifting forces at test frame

(Corresponding pressure 15.7 MPa)

kN	43.5	43.3	41.4	39.9	38.3	36.6	35.1	33.5	32.7	32.0

3. DRAWBAR PERFORMANCE

Date of tests: 1986-05-22 to 1987-02-20
Type of track: Tarmacadam
Height of drawbar above ground: 440 mm ballasted and unballasted
Tyre size: 14.9/13-24 at front, 18.4/15-38 at rear
Tyre inflation pressure: Unballasted 180 kPa at front, 110 kPa at rear
- - - : Ballasted 180 kPa at front, 140 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)	2.27	28.4	45.1	2390	15.0	1.71	489	34	85	80	16	55	102.0
1 L	2.92	36.5	45.1	2336	15.0	1.75	478	34	85	80	16	55	102.0
2 L x)	3.56	44.6	45.1	2324	15.0	2.11	396	34	85	80	16	55	102.0
2 L	4.75	59.1	45.1	2306	15.0	2.20	380	34	85	80	16	55	102.0
3 L x)	5.87	73.5	45.1	2285	15.0	2.41	347	34	85	80	16	55	102.0
3 L	8.06	89.5	39.1	2240	10.4	2.73	310	34	85	80	16	55	102.0
1 H x)	6.52	81.2	44.9	2220	15.0	2.51	337	34	85	80	16	55	102.0
1 H	9.22	88.6	34.6	2200	10.4	2.75	308	34	85	80	16	55	102.0
2 H x)	11.52	91.5	28.6	2200	7.0	2.82	300	34	85	80	16	55	102.0
2 H	15.50	98.2	22.8	2200	5.8	3.05	277	13	68	78	0	60	102.0
3 H x)	19.84	95.9	17.4	2200	4.8	2.96	286	13	70	80	0	60	102.0
Maximum power (ballasted)													
1 L x)	2.23	31.9	51.5	2374	15.0	1.75	475	36	85	80	17	50	103.0
1 L	2.95	42.2	51.5	2344	15.0	2.00	416	36	85	80	17	50	103.0
2 L x)	3.60	51.5	51.5	2345	15.0	2.20	378	36	85	80	17	50	103.0
2 L	4.72	67.5	51.5	2296	15.0	2.36	353	36	85	80	17	50	103.0
3 L x)	5.76	81.6	51.0	2241	14.3	2.42	344	36	85	80	17	50	103.0
3 L	8.00	88.8	40.0	2200	9.8	2.78	304	36	85	80	17	50	103.0
1 H x)	6.66	84.7	45.8	2200	12.1	2.61	324	36	85	80	17	50	103.0
1 H	9.36	91.8	35.3	2198	8.1	2.84	298	36	85	80	17	50	103.0
2 H x)	11.59	92.0	28.6	2200	6.4	2.88	294	36	85	80	17	50	103.0
2 H	15.60	98.8	22.8	2200	5.5	3.04	278	36	85	80	17	50	103.0
3 H x)	19.98	91.0	16.4	2200	4.4	2.80	302	36	85	80	17	50	103.0
Five hour test at 75% pull at maximum power													
2 H	16.35	77.7	17.1	2308	4.4	2.73	310	36	35	98	16	55	102.0
Five hour test corresponding to 15% wheelslip													
2 L	4.70	67.2	51.5	-	-	-	-	36	85	98	16	55	102.0

x) With torque amplifier group engaged.

Total oil consumption du g 10 hours of tests: 31 g/h.

4. TURNING AREA AND TURNING CIRCLE (m)

Wheel equipment	Front	14.9/13-24 8 PR
	Rear	18.4-38 8 PR
Track of wheels	Front	1880 mm
	Rear	1510 mm

	With brakes		Without brakes	
	Right hand	Left hand	Right hand	Left hand
Radius of turning area	5.43	5.19	6.15	5.77
Radius of turning circle	5.62	5.39	6.35	5.98

5. LOCATION OF CENTRE OF GRAVITY (mm)

Height above ground		990
Distance forward from the vertical plane containing the axis of the rear wheels		1089
Distance from the median plane of the tractor	left hand	17

6. BRAKING

Date of tests: 1987.02.04

Cold Service Braking Device Test

Ballasted tractor:	Front: 3520 kg Rear: 5430 kg					
Four wheel drive disengaged						
Speed before application of brakes	km/h			26.4		
Braking device control force	kN	300	400	500	600	700
Mean deceleration	m/s^2	1.1	1.5	1.9	2.3	2.7
Unballasted tractor:	Front: 2020 kg Rear: 2905 kg					
Speed before application of brakes	km/h			26.4		
Braking device control force	N	300	400	500	600	
Mean deceleration	m/s^2	1.3	1.8	2.2	2.7	
Fade Test						
Speed before application of brakes	km/h			26.4		
Braking device control force	kN	300	400	500	600	700
Mean deceleration	m/s^2	0.9	1.3	1.6	2.0	2.5

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	210	200	333	325

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:	3 H
Travelling speed before acceleration:	22 km/h
Sound level:	88.5 dB(A)

Noise Measurements at the Driver's Ear

Date of test:	1986.10.14
Type of sound level meter and octave filter:	Brüel & Kjær type 2209 and 1613
Type of track:	Tarmacadam

Gear	Drawbar pull, at which the tractor develops the max. sound level kN	Measured travelling speed km/h	Sound level dB(A)
1 H x)	44.1	6.6	89.5
1 H x)	Light load	7.4	88.5
3 H	Light load	29.6	89.0

x) With torque amplifier group engaged.

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

Repairs and Remarks

The front drive distributor was changed.
The chockvalve in the hydraulic system was changed.
The safety switch in the 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

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