STATENS JORDBRUGSTEKNISKE FORSØG
Danish Agricultural Engineering Institute
Bygholm, DK-8700 Horsens, Tel.: + 45 - 5 - 62 31 99

TEST REPORT: O.E.C.D. No. 1083

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



URSUS 912 Tractor with Rear-wheel Drive
Manufacturer: Zrzeszenie Przemyslu Ciagnikowego "URSUS"
Warszaw, Poland

Date of Approval: 8th September 1987

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:	912
Type:	Rear-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 1e - 3117.
Serial No	014
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
Filter change period	200 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:	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:	2695 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 torq multiplyer 4 reverse x torque muliplyer
Number of gears:	16 forward, 8 reverse
Available options:	Creep gear

Rear Axle and Final Drives:

Make:	ZPC "URSUS"
Type:	OERLIKON With planetary whe reduction gears.

Differential lock:

Type:	Clow clutch, mechanical
Method of engagement:	Manual by pedal
Method of disengagement	Self disengaging

Front Axle:

Make:	Own make
Type:	Telescopic

Total Ratios and Travelling Speeds

Gear		Number of engine rev. for one rev. of the driving wheel.	x) Nominal travelling speed at 2200 rpm. rated engine speed. km/h
Reduction Gear Engaged			
Forward			
	L 1	348.35	1.89
	O 2	221.05	2.98
	L 3	139.10	4.74
	L 4	97.92	6.73
	H 1	119.42	5.52
	H 2	75.76	8.70
	H 3	47.68	13.83
	H 4	33.50	19.69
Revers	1	254.75	2.59
-	2	161.64	4.08
-	3	101.72	6.48
-	4	71.45	9.23
Reduction Gear Disengaged			
Forward			
	L 1	260.40	2.53
	L 2	165.22	3.99
	L 3	103.98	6.34
	L 4	73.03	9.03
	H 1	89.26	7.39
	H 2	56.63	11.64
	H 3	35.65	18.49
	H 4	25.04	26.34
Revers	1	190.43	3.46
-	2	120.83	5.46
-	3	76.04	8.67
-	4	53.40	12.35

x) Tyre size: Rear 16.9 - 38 Radius index 795 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 accordance 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 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:	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

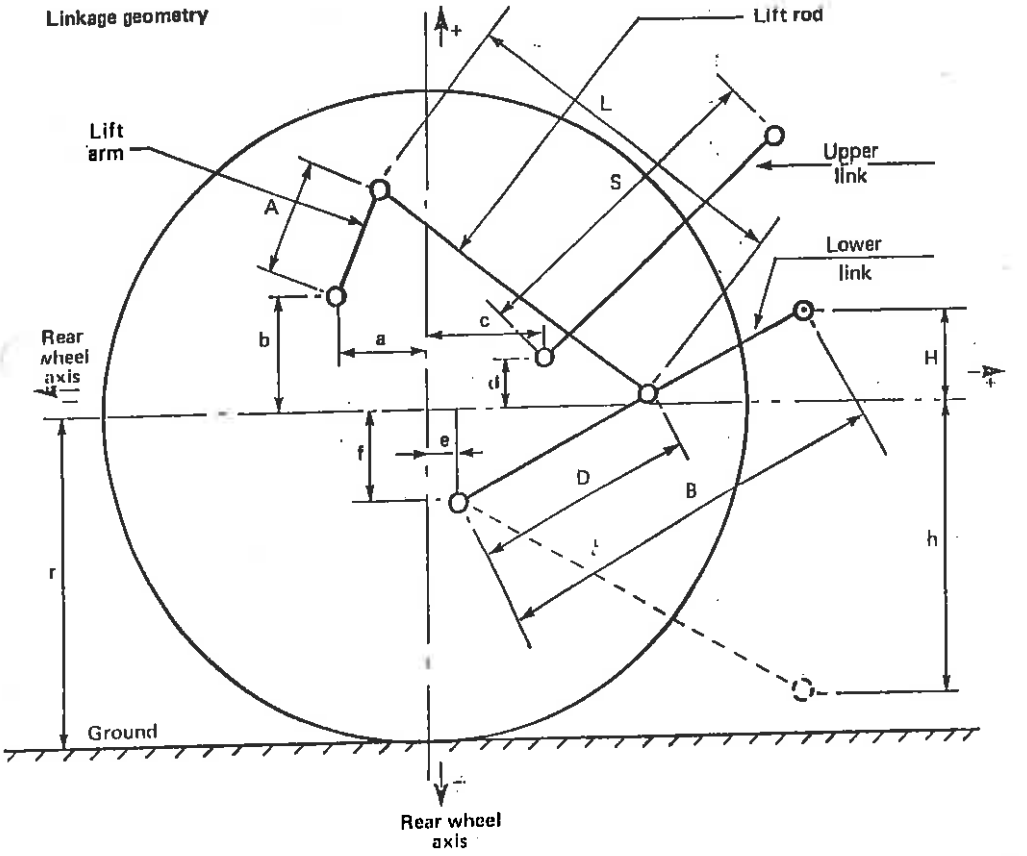
Power Take-off Proportional to Ground Speed Optional

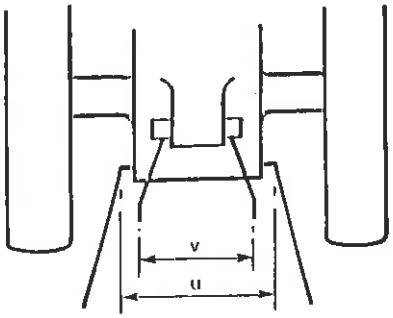
POWER LIFT:

Make:	Archimedes, Wroclaw
Type of hydraulic system:	Open centre
Type and number of cylinders:	One internal and 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
Lift rod
Lift arm
Upper link
Lower link
Rear wheel axis
Ground
Rear wheel axis
L
S
A
b
a
c
d
e
f
H
h
D
B
r


v
u

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

			Dimension or range	Settinge used in test
Rear tyres (size 16.9-38) dynamic index radius		(r)	795	
Front tyres (size 7.50-20) dynamic index radius		(r′)	425	
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 596 to 826	637
Distance of upper link point from rear wheel centre line	Horizontally Vertically	(c) (d)	382 158,133,98	158
Distance of lower link from rear wheel centre line	Horizontally Vertically	(e) (f)	125 255	
Distance of lower link pivot points to lift rod pivot points on lower links		(D)	443, 503	503
Length of lift rods		(L)	from 515 to 685	615

Height of lower hitch points relative to the rear wheel centre line, situated 795 mm above the ground level

						TEST
Length of lift rods,	L	515	685	515	685	615
Linkage distance of lift rods,	D	443		503		
Lowest position	h	610	820	415	735	595
Highest position	H	255	-85	230	35	75

Height above ground of lower hitch points when locked in transport position — Any height withi lift range

FIXED DRAWBAR

Type:	Clevis type
Height above ground:	375 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:	445 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:	1010 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 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 steering
	Rear:	2 driving
Wheelbase:		2385 mm

Track width adjustment method

	Min	Max	Adjustment method
Front	1350	1800	Telescopic front axle
Rear	1500	1875	By changing wheels and rim lugs

PROTECTIVE STRUCTURE

Make:	FMR Kunow
Model:	80.361.000 or 88.361.000
Manufacturer's name and address:	AGROMET - FMR KUNOW, POLAND
Protective device:	Safety cab
Tilting/not tilting:	Not tilting
OECD approval number:	CSD 0308/1-a(c), CSD 0534/2-a(c)

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	1110	125 dia	800
Sidelights	1830	65 x 65	180
Rearlights	1620	90 x 90	280
Reflectors	1285	75 dia	135

CONDITIONS DURING TEST

Overall Dimensions

Tyre size front: 7.50-20
rear: 16.9-38

	Length	Width		Height at top of, exhaust silencer	protective structure
		min.	max.		
	mm	mm	mm	mm	mm
Without ballast	4160	1970	2400	2640	2695
With ballast	4165	1970	2400	2638	2693

Ground Clearance (unballasted)

Clearance: 345 mm limited by fixed drawbar

Track Setting

Front: 1580 mm
Rear: 1510 mm

Tractor Mass and Ballasting

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

Without ballast:

front	1405 kg
rear	2625 kg
total	4025 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	1653 kg
rear	3711 kg
total	5364 kg

Tyres, Axle Loads and Track Specifications

	Front wheels	Rear wheels
Tyres:		
Dimensions	7.5-20	16.9-38
Ply rating	6	8
Type	radial	radial
Maximum load (tyre manufacturer's) (kN)	8.58	24.72
Maximum load (tractor manufacturer's) (kN)	8.58	24.72
Inflation pressure tyre manufacturer's (kPa)	280	170
Dynamic radius index (mm)	425	795
Chosen track width (mm):	1580	1510

Oils and Lubrication

Capacity and Change Interval

	Capacity (dm^3)	Oil change (h)	Filter change (h)
Engine	10	200	not exchange-able[x)]
Gear box and rear axle	47	1600	800
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-o	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:	11	

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					
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	-	-

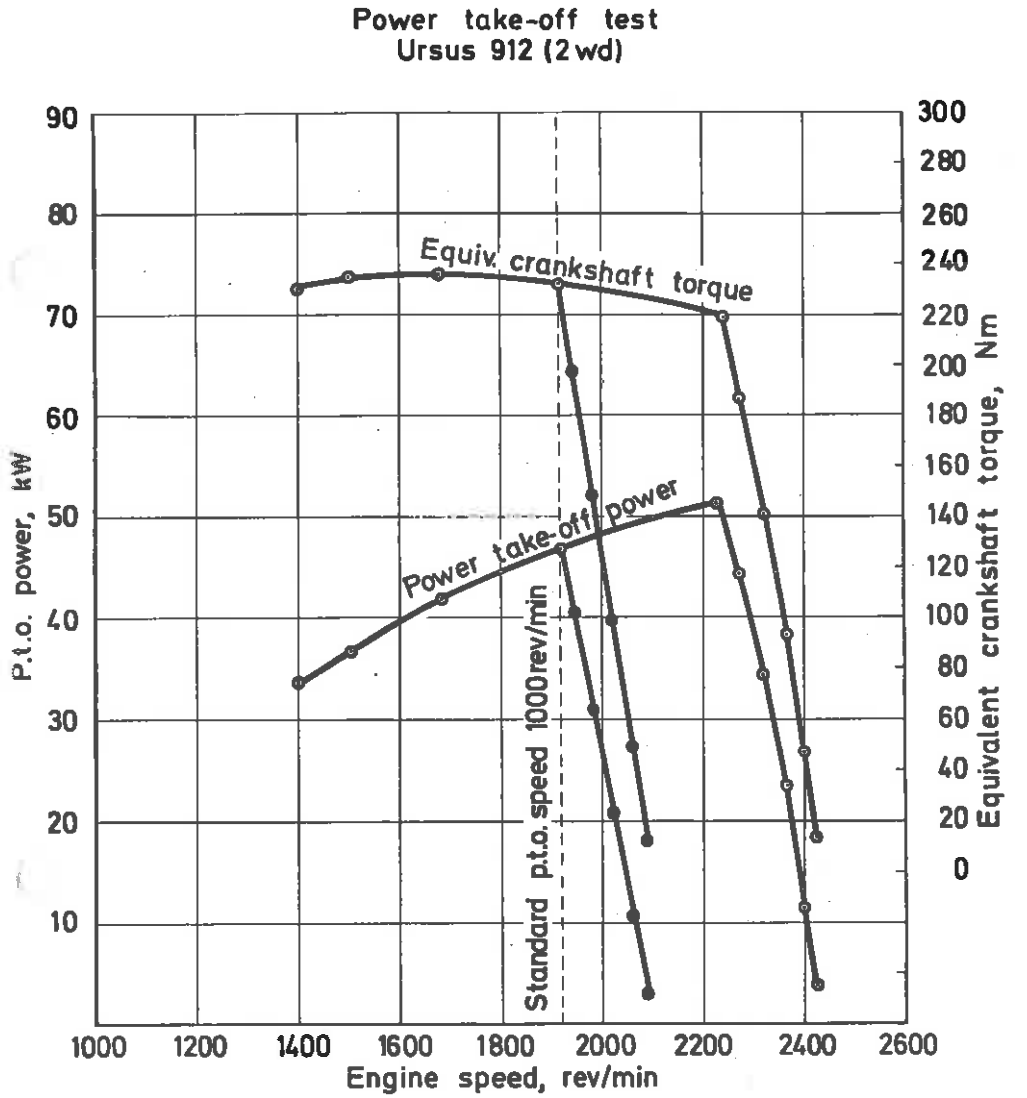
PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 rev/min)

Power	Speed		Fuel consumption		Specific energy
	Engine	P.T.O	Hourly	Specific	
kW	rev/min		1/h	g/kWh	kWh/1
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
1.4.1 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	8.0	324	2.61
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	-	-

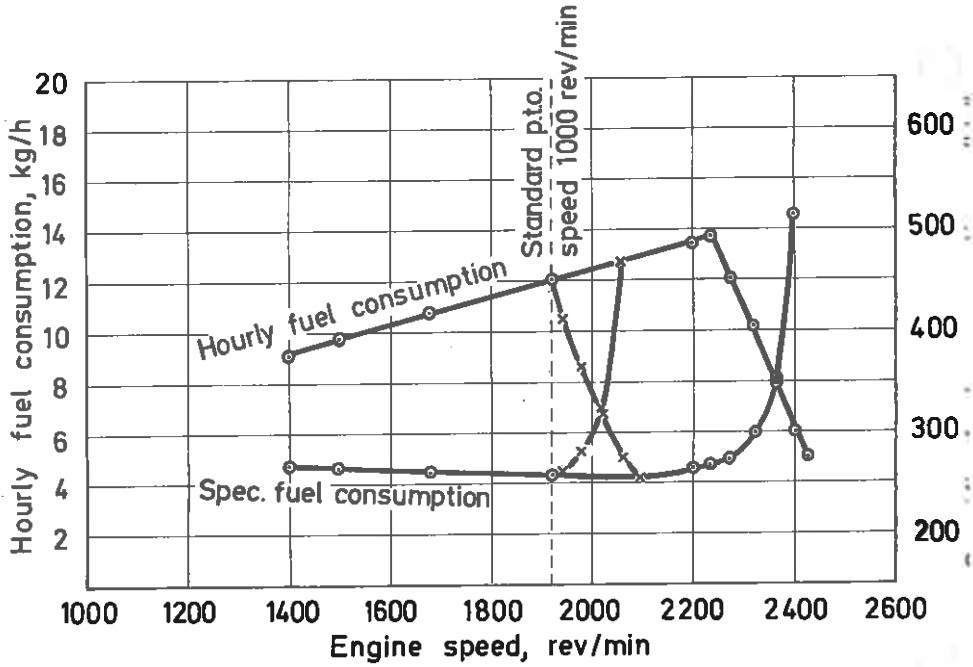
Standard specific fuel consumption, g/kWh 272/349/260/305

No load maximum engine speed: 2423 rev/min

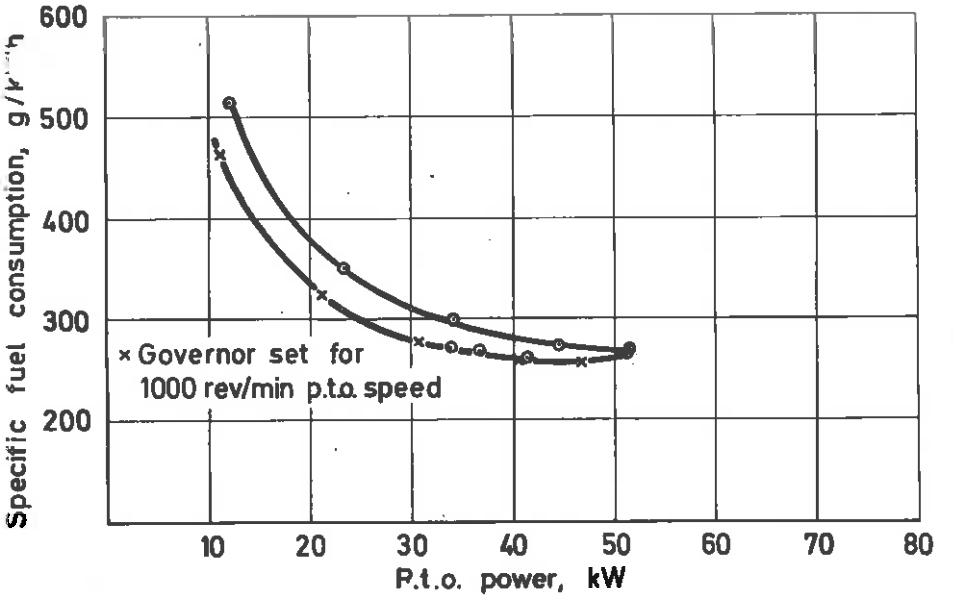
Torque (equivalent crankshaft) at maximum power: 220 N.m


Power take-off test
Ursus 912 (2wd)
Equiv. crankshaft torque
Power take-off power
Standard p.t.o. speed 1000rev/min
P.t.o. power, kW
Equivalent crankshaft torque, Nm
Engine speed, rev/min
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 912 (2 wd)



Power take-off test
Ursus 912 (2wd)



Maximum torque (equivalent crankshaft) (engine speed: rev/min. 1680):	237 N.m
Mean atmospheric conditions:	
Temperature:	22 °C
Pressure:	101 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:	1986.07.18, Bygh
Hydraulic power test	
Type of hydraulic system:	Open centre
Hydraulic fluid temperature at beginning of test:	63°C

HYDRAULIC POWER TEST

Sustained pressure with relief valve open: (Pump stalled - no)	19.6 MPa
Pump delivery rate at minimum pressure	45.0 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:	34.0 l/min
Pressure	17.6 MPa
Power:	10.0 kW
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	
Flow rate:	41.0 l/min
Pressure:	16.7 MPa
Power:	11.3 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	16.5 MPa
Closing pressure of the unloading valve	17.6 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	670	35.2	16.7	38.0	-
on the frame	200	740	24.3	16.7	41.1	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	-340	-300	-200	-100	0	+100	+200	+330	+400

Lifting forces at hitch points

(Corresponding pressure 16.7 MPa)

kN	35.2	35.8	37.4	38.2	38.3	38.3	38.4	38.4	-

Lifting forces at test frame

(Corresponding pressure 16.7 MPa)

kN	33.3	32.8	31.7	30.6	29.5	28.4	26.6	25.4	24.3

DRAWBAR PERFORMANCE

Date of tests: 1986-04-11 to 1986-06-03
Type of track: Tarmacadam
Height of drawbar above ground: 770 mm ballasted and unballasted
Tyre size: 7.50-20 at front, 16.9-38 at rear
Tyre inflation pressure: Unballasted 280 kPa at front, 140 kPa at rear
" " " : Ballasted 280 kPa at front, 170 kPa at rear

Gear	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)	1.87	17.2	33.14	2337	15.0	1.68	502	13	62	82	1	60	1011
1 L	2.41	22.2	33.14	2320	15.0	2.06	410	16	65	82	1	60	1011
2 L x)	2.63	24.2	33.14	2218	15.0	1.95	429	26	82	90	12	60	1029
2 L	3.46	31.9	33.14	2218	15.0	1.69	495	26	82	90	12	60	1029
3 L x)	3.92	36.1	33.14	2126	15.0	2.22	377	26	82	90	12	60	1029
3 L	5.65	41.6	26.48	2087	6.3	2.59	324	26	82	90	12	60	1026
4 L x)	6.19	40.5	23.53	2138	5.1	2.51	334	26	82	90	12	60	1026
4 L	8.14	43.2	19.12	2058	3.7	2.74	306	26	82	90	12	60	1026
1 H x)	4.93	41.0	29.91	2134	9.1	2.51	334	26	82	90	12	60	1026
1 H	6.84	43.8	23.04	2129	4.5	2.71	309	26	82	90	12	60	1026
2 Hx)	8.10	43.0	19.12	2128	3.6	2.64	321	26	82	90	12	60	1026
2 H	11.12	43.9	14.22	2153	3.0	2.67	314	26	82	90	12	60	1026
3 Hx)	13.10	42.8	11.77	2148	2.9	2.59	324	26	82	90	12	60	1026
Maximum power (ballasted)													
1 L x)	1.69	17.7	37.36	2296	15.0	1.78	470	28	84	90	15	60	1021
1 L	2.27	23.6	37.36	2276	15.0	2.07	404	28	84	90	15	60	1021
2 L x)	2.66	27.6	37.36	2241	15.0	2.85	394	28	84	90	15	60	1021
2 L	3.45	35.8	37.36	2208	15.0	2.34	358	28	84	90	15	60	1021
3 L x)	4.28	40.2	33.83	2190	8.7	2.51	333	28	84	90	17	70	1017
3 L	6.12	43.3	25.50	2188	4.8	2.65	316	28	84	90	17	70	1017
4 L x)	6.33	43.5	24.76	2175	4.5	2.65	318	17	70	80	1	60	1011
4 L	8.53	46.5	19.61	2164	3.7	2.76	306	17	70	81	1	60	1011
1 H x)	5.08	42.2	29.91	2170	6.8	2.57	325	28	84	90	17	70	1017
1 H	7.06	43.3	22.06	2199	4.0	2.64	317	28	84	90	17	70	1017
Five hour test at 75% of pull at maximum power													
4 L	9.15	35.6	14.0	2198	3.0	2.46	341	34	84	90	16	65	1022
Five hour test corresponding to 15% wheelslip													
2 L	3.42	35.5	37.36	-	-	-	-	36	85	90	18	65	1022

x) With torque amplifier group engaged.

Total oil consumption during 10 hours of tests and 33 g/h.

4. TURNING AREA AND TURNING CIRCLE (m)

Wheel equipment	Front 7.5-20 6 PR Rear 18.4-34 8 PR		Track 1580 Track 1510	
	With brakes		Without brakes	
	Right hand	Left hand	Right hand	Left hand
Radius of turning area	3.61	3.49	4.32	4.19
Radius of turning circle	3.44	3.31	4.11	3.97

5. LOCATION OF CENTRE OF GRAVITY (mm)

Height above ground		896
Distance forward from the vertical plane containing the axis of the rear wheels		822
Distance from the median plane of the tractor	left hand	6

6. BRAKING

Date of tests: 1986.07.18

Cold Service Braking Device Test

Ballasted tractor:	Front: 1750 kg Rear: 5040 kg				
Speed before application of brakes	km/h			27.9	
Braking device control force	N	300	400	500	60
Mean deceleration	m/s^2	1.43	2.40	3.16	3.34
Unballasted tractor:	Front: 1405 kg Rear: 2625 kg				
Speed before application of brakes	km/h			27.9	
Braking device control force	N	300	400	500	600
Mean deceleration	m/s^2	1.43	2.40	3.16	3.34

Fade Test

Speed before application of brakes	km/h			27.9	
Braking device control force	N	300	400	500	6(
Mean deceleration	m/s^2	1.11	1.72	2.31	2.86

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	240	200	210	200

7. MEASUREMENT 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
Travelling speed before acceleration:	21 km/h
Sound level:	90.0 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	Drawbar pull at which the tractor develops the max. sound level kN	Measured travelling speed km/h	Sound level dB(A)
1.L *)	18.6	2.1	90.5
1.L	20.6	2.4	90.5
2.L *)	9.8	3.1	90.0
1.H **)	9.8	7.5	89.0
1.H **)	Light load	8.0	88.5
4.H	Light load	27.9	89.0

*) With torque amplifier group engaged

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

Repairs and Adjustments during Tests

Hydraulic pressure in lifting cylinders would not always release, when lever was put in down position.

Remarks

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 kg	or 1 kg	= 9.80665 N
Powers:	1 kW	= 1.35962 metric hp	or 1 metric hp	= 0.73550 kW
Pressures:	1 bar	= 1.01972 kg/cm^2	or 1 kg/cm^2	= 0.980665 bar
Torques:	1 mN	= 0.10196 mkg	or 1 mkg	= 9.80665 mN