VAKOLA

PPA 1
SF-03400 VIHTI
FINLAND
+358 0 224 6211

VALTION MAATALOUSTEKNOLOGIAN TUTKIMUSLAITOS
STATE RESEARCH INSTITUTE OF ENGINEERING IN AGRICULTURE AND FORESTRY

TEST BULLETIN: O.E.C.D. No. 1387 FULL CODE

Report on Test in Accordance with the O.E.C.D. Standard Code
FULL CODE (CODE I) for the Official Testing of Agricultural Tractors



URSUS 932 (2WD)

Manufactured by	Zaklady Przemyslu Ciagnikowego, Warszawa, Poland
Date of approval	8th September 1992
Serial No.	1387 FULL CODE

This bulletin is based on engineering tests in accordance with the OECD Standard Code for the Official Testing of Agricultural Tractors Performance. It does not contain an evaluation of the performance of the tractor on practical farm work.

This report has been approved by the OECD Co-ordinating Centre (CEMAGREF France) as being in accordance with the OECD Standard Code for the Official Testing of Agricultural Tractors.

TABLE OF CONTENTS

I SPECIFICATION OF THE TRACTOR 2
TRACTOR 2
ENGINE 2
TRANSMISSION 4
POWER TAKE-OFF 5
POWER LIFT 6
SWINGING DRAWBAR 9
TRAILER HITCH I 10
TRAILER HITCH II 10
STEERING 10
BRAKES 10
WHEELS 11
PROTECTIVE STRUCTURE 11
DRIVER'S SEAT 11
MISCELLANEOUS 11
LIGHTNING 11
II TEST CONDITIONS 12
III TEST RESULTS 14
1. MAIN POWER TAKE-OFF 14
2. HYDRAULIC POWER AND LIFTING FORCE 15
3. DRAWBAR PERFORMANCE 16
4. TURNING AREA AND TURNING CIRCLE 19
5. LOCATION OF CENTRE OF GRAVITY 19
6. BRAKING 19
7. MEASUREMENT OF EXTERNAL NOISE LEVEL 20

Tractor manufacturer's name and address	Zaklady Przemyslu Ciagnikowego URSUS ul. Traktorzystów 10 02-495 Warszawa, Poland
Submitted for test by	The manufacturer
Selected for test by	The manufacturer
Place of running-in	ZM URSUS, Poland
Duration of running-in	50 h
Location of test	VAKOLA, Finland

I SPECIFICATIONS OF TRACTOR

TRACTOR

Make/Model/Type	Ursus/932/Rear wheel drive, unit construction
Number of driving wheels	2
Serial number	00002
First serial number	00001

ENGINE

Make/Model/Type	ZTS. Martin/Z 8401.1234/ water cooled, 4 stroke, direct injection diesel engine, naturally aspirated
Serial number	000047

Cylinders

Number	4
Disposition	Vertical, in line
Bore/Stroke	110 mm/120 mm
Capacity	4562 cm^3
Compression ratio	17:1
Arrangement of valves	Overhead
Cylinder liners	Wet
Supercharging	None

Fuel system

Fuel feed system of fuel filter	Mechanical feed pump Make/Model/Type Two stage/felt and paper element/FD 10 RP 1-3
Capacity of fuel tank	90 dm^3
Injection pump	PAL, piston type, in line

Serial number of injection pump	4M 3138K 0146
Manufacturer's production setting of injection pump	
Flow rating at rated engine speed and full load	65.6 mm^3/stroke
Timing	24 +2° before TDC
Make/Model/Type of injector	VP 81S 453 e 2583/multihole
Injection pressure	16.8 + 0.8 MPa

Governor

Make/Model/Type	PAL/RV3M/1100/mechanical
Governed range of engine speed	From 600 to 2450 rev/min
Rated engine speed	2200 rev/min

Air cleaner

Pre-cleaner

Make/Model/Type	Hodrusba-Hamre/PC350/ cyclonic with dust container
Location of air intake	Under engine hood front of the tractor

Main cleaner

Make/Model/Type	Hodrusba-Hamre/9430.11/oilbath
Maintenance indicator	None

Lubrication system

Type of pump	Gear pump
Type of filters	Centrifugal, full flow, RDP 3/A
Number	1

Cooling system

Type of coolant	Anti-freeze
Type of pump	Centrifugal
Number of fan blades	4
Fan diameter	460 mm
Coolant capacity	23 dm^3
Type of temperature control	Thermostat
Superpressure system	30 kPa

Starting system

Make/Model/Type	Elmot/R20e/solenoid engaged, 24V
Starter motor power rating	4.8 kW

Cold starting aid	None
Safety device	Only operable when the gear lever is in neutral position
Electrical system	
Voltage	12 V
Generator	
Make/Model/Type	Elmot/A133-55/alternator
Power	0.66 kW
Battery	
Number	2
Rating	135 Ah at 20 hours
Exhaust system	
Make/Model/Type	Ursus
Location	Vertical on the left hand side of the tractor
TRANSMISSION	
Clutch (travel alone)	
Make/Model/Type	URSUS/Single plate/dry
Number of plates	1
Diameter of plates	350 mm
Method of operation	Hydraulically by pedal operated
Gear box	
Make/Model/Type	Povazskie Strojarne/PZ60/30/ synchromesh
Arrangement	4 forward x 2 ranges x torque amplifier 4 reverse x torque amplifier
Number of gears	16 forward, 8 reverse
Available options	Creep gear, 25 km/h and 35 km/h
Rear axle and final drives	
Make/Model/Type	Ursus/crown wheel and pinion/Oerlicon type with planetary final drives
Differential lock	
Type	Mechanical, dog clutch
Method of engagement	Pedal
Method of disengagement	Self disengaging
Front axle and final drives	
Make/Model/Type	Ursus/telescopic with adjustment

Total ratios and travelling speeds

Gear no	Group or range	Number of engine revolutions for one revolution of the driving wheels		Nominal travelling speed (*) at rated engine speed of 2200 rev/min km/h	
		Torque amplifier		Torque amplifier	
		H	L	H	L
1	I	239.579	320.556	2.7	2.0
2		152.019	203.402	4.2	3.1
3		83.390	111.575	7.7	5.7
4		67.212	89.930	9.5	7.1
1	II	71.924	96.234	8.9	6.6
2		45.638	61.063	14.0	10.5
3		25.034	33.496	25.5	19.1
4		20.172	26.990	31.6	23.7
1	R	153.413	205.267	4.2	3.1
2		97.345	130.248	6.6	4.9
3		53.398	71.447	12.0	8.9
4		43.072	57.630	14.8	11.1

(*) Calculated with a tyre dynamic radius index of 770 mm (ISO 4251/1-1984)

POWER TAKE-OFF

Main power take-off

Type	Independent
Method of engagement	Hydraulically, multidisc clutch
Number of shafts	2
Method of changing power take-off shaft ends	By changing PTO shafts: 6 spline for 540 RPM and 21 spline shaft for 1000 RPM

Power take-off proportional to engine speed

540 rev/min

Location	At the rear of the tractor
Diameter of power take-off shaft end	35 mm
Number of splines	6, in conformity with ISO 500/1979
Height above ground	625 mm
Distance from the median plane of the tractor	0 mm
~~Distance behind rear-wheel axis~~	~~510 mm~~
PTO speed at rated engine speed (2200 rev/min)	628.6 rev/min
Engine speed at standard PTO speed	1890 rev/min

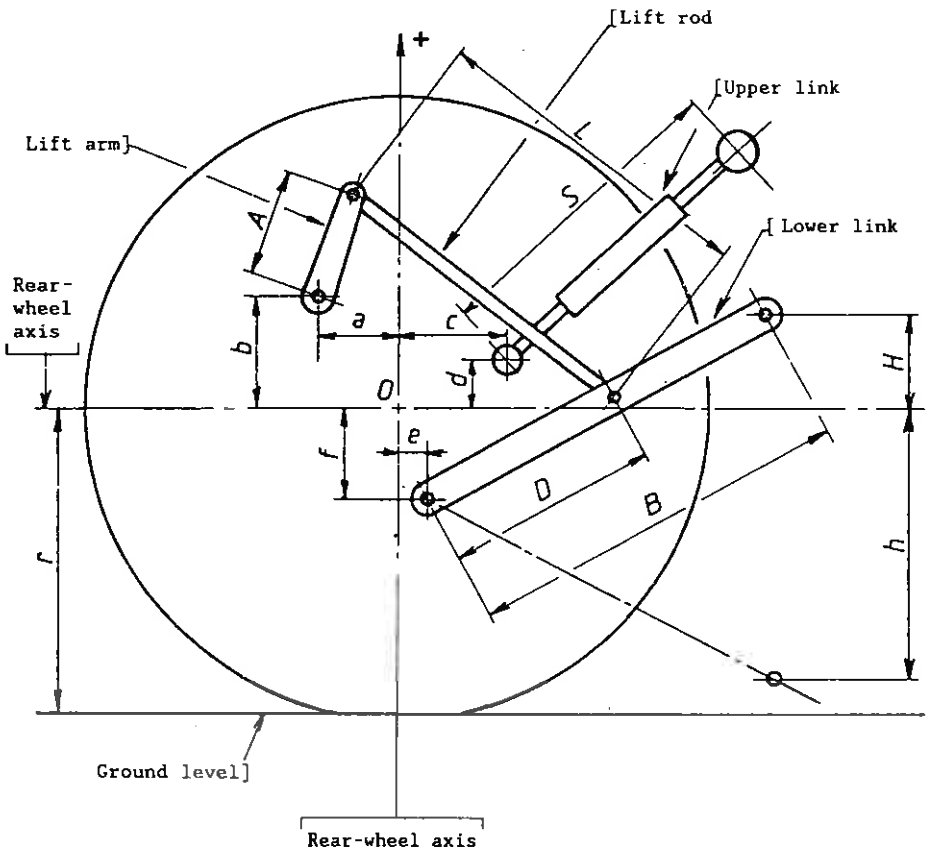
Ratio of rotation speeds (engine speed/PTO speed)	3.5
Power restriction and maximum torque	48 kW, 850 Nm
Direction of rotation (viewed from behind tractor)	Clockwise
1000 rev/min	
Location	At the rear of the tractor
Diameter of power take-off shaft end	35 mm
Number of splines	21, in conformity with ISO 500/1979
Height above ground	625 mm
Distance from the median plane of the tractor	0
Distance behind rear-wheel axis	510 mm
PTO speed at rated engine speed (2200 rev/min)	1146 rev/min
Engine speed at standard PTO speed	1920 rev/min
Ratio of rotation speeds (engine speed/PTO speed)	1.92
Direction of rotation, viewed from behind tractor	Clockwise
Power take-off proportional to ground speed	
PTO shaft	
Travelling distance for one revolution of power take-off shaft	0.176 m (540 and 1000)*)
Number of power take-off shaft revolutions for one revolution of (rear) driving wheels	27.38 (540 and 1000)*)
Direction of rotation with forward gear engaged	Clockwise
POWER LIFT	
Make/Model/Type	Archimedes Wroclaw
Type of hydraulic system	Internal cylinder with auxiliary ram cylinder, open system
Type and number of cylinders	1+1 single acting
Type of linkage lock for transport	Hydraulic

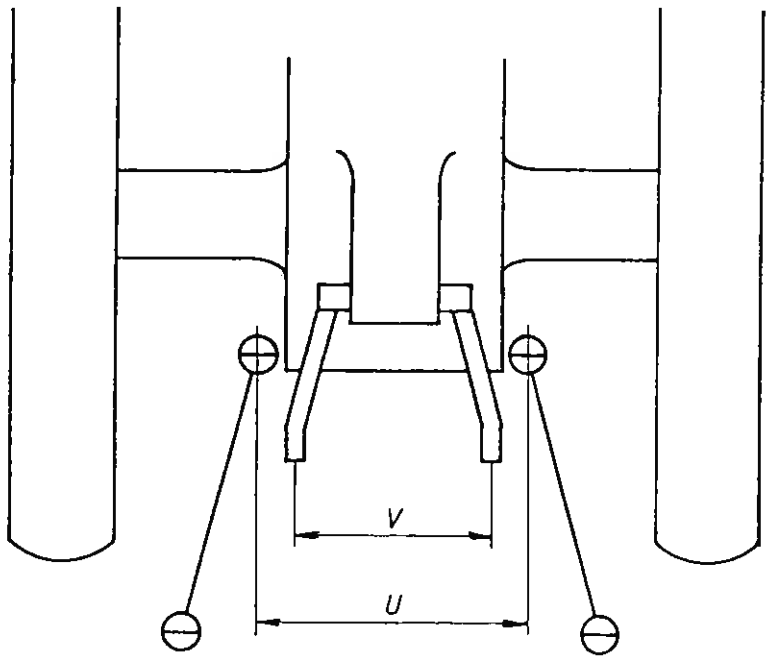
*) The proportional to ground speed power take-off is not connected to pto speeds 540 or 1000, but is independent from those, connected by use of a separate lever.

Relief valve pressure setting	17.5 ± 0.25 MPa
Opening pressure of cylinder safety valve	19 + 0.5 MPa
Lift pump type	Gear pump PZ2-18KS
Transmission between pump and engine	0.920
Type and number of filters	2-suction filter and fine filter
Site of oil reservoir	Transmission housing
Type, number and location of tapping points	Quick coupling, 4 rear of the tractor
Maximum volume of oil available to external cylinders	20 dm^3

Three point linkage

Category	2, in conformity with ISO 730/1977
Category adapter	None


[Lift rod
+
[Upper link
Lift arm]
L
S
A
[Lower link
Rear-
wheel
axis
a
c
b
d
H
O
e
f
D
B
r
h
Ground level]
Rear-wheel axis


V
U

		Dimension or range mm	Settings used in test mm
Length of lift arms	(A)	325	325
Length of lower links	(B)	930	930
Distance of lift arm pivot point from rear-wheel axis: horizontally	(a)	191	191
vertically	(b)	290	290
Horizontal distance between the 2 lower link point	(u)	520	520
Horizontal distance between the 2 lift arm end points	(v)	640	640
Length of upper link	(S)	from 612 to 786	665
Distance of upper link pivot point from rear wheel axis: horizontally	(c)	383	383
vertically	(d)	105, 165 215	
Distance of lower link pivot point from rear wheel axis: horizontally	(e)	125	125
vertically	(f)	255	255
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	520	520
Length of lift rods	(L)	from 535 to 730	600
Height of lower hitch points relative to th rear-wheel axis: in low position	(h)	from 448 to 727	570
in high position	(H)	from -131 to 205	100
Height above ground of lower hitch points when locked in transport position (*)		from 43 to 975	

(*) Assuming r = 770 mm tyre dynamic radius index of ISO 4251/1-1984.

Table 1.1 Dimensions of linkage geometry

SWINGING DRAWBAR

Type	Universal hitch
Height above ground	382 mm
Type of adjustment	Changing position of fixing bolts and holes
Distance of hitch point from rear wheel axis, horizontally	865, 912 mm
Distance of hitch point from power take-off shaft end	
- vertically	243 mm
- horizontally	355, 402 mm

Lateral adjustment	
right hand	0-165 mm
left hand	0-165 mm
Distance of pivot point from rear-wheel axis, horizontally	365 mm
Diameter drawbar pin hole	33 mm
Maximum vertical permissible load	5 kN

TRAILER HITCH I

Type	Hitch hook
Hook diameter	46 mm
Height above ground	420 mm
Distance of hitch point from rear-wheel axis, horizontally	685 mm
Distance of hitch point from power take-off shaft end:	
- vertically	205 mm
- horizontally	175 mm
Maximum vertical permissible load	21 kN

TRAILER HITCH II

Type	Clevis with rubber shock absorber
Hole diameter	33 mm
Height above ground	820 mm
Distance of hitch point from rear-wheel axis, horizontally	810 mm
Distance of hitch point from power take-off shaft end:	
- vertically	195 mm
- horizontally	300 mm
Maximum vertical permissible load	6 kN

STEERING

Make/Model/Type	Pilmet, hydrostatic
Method of operation	Steering wheel
- pump(s)	1
- ram(s)	1 double acting
Working pressure	11 MPa

BRAKES

Service brake

Make/Model/Type	Disc/selfenergizing/dry
Method of operation	Two pedals, hydraulically actuated, independent or combined operation
Trailer braking take-off	Air braking system

Parking brake

Type	Disc, dry, common with service brakes
Method of operation	Mechanically actuated by hand lever

WHEELS

Number	
- front	2 steering
- rear	2 driving
Wheelbase	2388 mm

Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1390	1840	Telescopic front axle
Rear	1510	1890	Offset lug rims and reversing wheel centres

PROTECTIVE STRUCTURE

Make/Model/Type	URSUS 87.000.113 protective cab
Manufacturer's name and address	Fabryka Maszyn Rolniczych 27-510 Kunow, Poland
Protective device	Protective cab, not tiltable
OECD approval number	CSS 0187/10

DRIVER'S SEAT

Make/Model/Type	SA50/1
Type of suspension	Springs
Type of damping	Hydraulic damper
Range of adjustment	
- longitudinal	100 mm
- vertical	70 mm

MISCELLANEOUS None

LIGHTNING

	Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Headlights	1135	ø 120	240
Sidelights	1940	65 x 65	915
Rearlights	1780	65 x 100	810
Reflector	760 1160	ø 75 ø 75	510 930

II. TEST CONDITIONS

Overall dimensions

	Length mm	Width		Height at top of	
		Minimum mm	Maximum mm	Protective structure mm	Exhaust silencer mm
Ballasted	4235	2000	2380	2940	2770
Unballasted	4130	2000	2380	2940	2770

Ground clearance 345 mm (unballasted tractor)

Clearance limiting part Hitch hook

Tractor mass
(with cab):

	Ballasted		Unballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	1810	1820	1490	1500
Rear	3670	3735	2750	2815
Total	5480	5555	4240	4315

Ballast

	Weights		
	Number	Total mass kg	Water kg
Front	10	275	-
Rear	12	325	640

Tyres and track width specifications

	Front	Rear
Tyres:		
- dimensions	7.50-20	18.4-34
- ply rating	6	8
- type	diagonal	diagonal
- maximum load (tyre manufacturer's)	8.75 kN	25.65 kN
- inflation pressure (tyre manufacturer's)	280 kPa	140 kPa
- dynamic radius index	425 mm	770 mm
Chosen track width	**1542 mm**	**1510 mm**

Oils and lubrication (Capacity and change interval)

	Capacity dm³	Oil change h	Filter change h
Engine	10	200	200 cleaning
Gear box*)	46	1600	400/100 cleaning
Final drive (rear)	2 x 4.5	1600	-
Steering	5.5	800	1600

*) Includes rear axle and hydraulic system.

	Recommended	Used during test
Engine oil - Type - Viscosity - Classification	Superol Milvus CC 15W/40	Recommended
Transmission oils - Type - Viscosity - Classification	Agrol "U" 41-50/cSt at 50 °C SAE 80 API-CL 4	Recommended
Hydraulic fluid - Type - Viscosity - Classification	R3 to PN-75/C40005 4.2 SAE 70 R3	Recommended
Steering oil - Type - Viscosity - Classification	Hydraulic oil 10 7-13 5 WW 0243-25	Recommended

Grease — Universal grease LT 43

Number of lubrication points — 9

Fuel

Type — Dieseloil, in conformity with national standards

Density at 15 °C — PTO test 846 g/dm³
drawbar power test 835 g/dm³

REPAIRS — None

REMARKS — None

III. TEST RESULTS

COMPULSORY TEST RESULTS

1. MAIN POWER TAKE-OFF

- Date and location of tests: 19.8.1991/VAKOLA
- Type of dynamometer Schenk W 400

Power	Speed		Fuel consumption			Specific energy
	Engine	P.T.O.	Hourly		Specific	
kW	rev/min		kg/h	l/h	g/kWh	kWh/l
1.1 MAXIMUM POWER - TWO HOUR TEST						
50.9	2200	1146	13.7	16.3	270	3.11
1.2 POWER AT RATED ENGINE SPEED						
50.9	2200	1146	13.7	16.3	270	3.11
1.3 STANDARD POWER TAKE-OFF SPEED (1000 ± 25 or 540 ± 10 rev/min						
47.3	1920	1000	12.4	14.7	263	3.22
1.4 PART LOADS 1.4.1 The torque corresponding to maximum power at rated engine						
50.9	2200	1146	13.7	16.3	270	3.11
1.4.2 85 % of torque obtained in 1.4.1						
44.5	2266	1180	12.2	14.4	274	3.08
1.4.3 75 % of torque defined in 1.4.2						
34.0	2312	1204	10.0	11.9	294	2.87
1.4.4 50 % of torque defined in 1.4.2						
23.0	2342	1220	8.1	9.6	351	2.41
1.4.5 25 % of torque defined in 1.4.2						
11.6	2371	1235	6.1	7.3	527	1.60
1.4.6 Unloaded						
-	2394	1247	4.2	5.0	-	-
1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 REV/MIN) 1.5.1 The torque corresponding to maximum power						
47.3	1920	1000	12.4	14.7	263	3.22
1.5.2 85 % of torque obtained in 1.5.1						
41.4	1978	1030	11.0	13.0	264	3.20
1.5.3 75 % of torque defined in 1.5.2						
31.9	2031	1058	9.0	10.6	282	3.00
1.5.4 50 % of torque defined in 1.5.2						
21.7	2072	1079	7.1	8.4	327	2.58
1.5.5 25 % of torque defined in 1.5.2						
11.0	2102	1095	5.3	6.2	477	1.77
1.5.6 Unloaded						
-	2135	1112	3.4	4.0	-	-

- No load maximum engine speed	2394 rev/min
- Torque*) at maximum power	221 Nm
- Maximum torque*)	255 Nm
at engine speed	1649 rev/min
- Mean atmospheric conditions	
- Temperature	20 °C
- Pressure	99.6 kPa
- Relative humidity	55 %
- Maximum temperatures	
- Coolant	81 °C
- Engine oil	100 °C
- Fuel	37 °C
- Engine air intake	33 °C

*) Equivalent crankshaft torque

2. HYDRAULIC POWER AND LIFTING FORCE

2.1 Hydraulic power test

Date of tests	20.8.1991
Sustained pressure with relief valve open	20.5 MPa
Pump delivery rate at minimum pressure	45.2 l/min

	Flow rate l/min	Pressure MPa	Power kW
Flow rate corresponding to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting and corresponding hydraulic power	26.2	18.5	8.1
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	43.0	16.5	11.8

Tapping point used for test: external tapping.

2.2 Power lift test

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement	610 mm	610 mm
Maximum corrected force exerted through full range	38.7 kN	27.5 kN
Corresponding pressure of hydraulic fluid	16.5 MPa	16.5 MPa
Moment about rear-wheel axis	40.8 kNm	45.8 kNm
Maximum tilt angle of mast from vertical		17 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points							
mm	-315	-200	-100	0	100	200	295
Lifting forces (the values measured are corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting or to maximum power delivered by the hydraulic system, whichever is lower)							
At the hitch points kN	38.7	39.6	40.3	40.3	40.0	39.7	40.8
Corresponding pressure: 16.5 MPa							
At the frame kN	34.9	34.1	33.5	32.4	30.8	29.0	27.5
Corresponding pressure: 16.5 MPa							

3. DRAWBAR POWER AND FUEL CONSUMPTION

Date of tests 17.-18.9. and 3.-7.10.1991

Type of track Tarmacadam

		Tyre inflation presssure	
	Height of drawbar above ground	Front	Rear
Unballasted	415 mm	200 kPa	110 kPa
Ballasted	415 mm	250 kPa	110 kPa

Gear and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels or track	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
								Fuel	Coolant	Engine Oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
I1L	12.9	24.5	1.9	2363	14.8	567	1.47	30	80	94	8	40	100.9
I1H	17.6	25.8	2.5	2294	14.9	449	1.86	29	76	92	8	40	100.9
I2L	21.1	26.2	2.9	2311	14.9	428	1.95	29	81	92	9	40	100.9
I2H	27.8	26.3	3.8	2254	14.8	373	2.24	31	81	91	9	40	100.9
I3L	37.8	26.3	5.2	2241	14.9	341	2.45	31	82	91	9	40	100.9
II1L	40.5	24.5	6.0	2188	12.8	345	2.42	34	78	91	13	40	100.9
I4L	42.0	23.6	6.4	2181	12.4	331	2.52	31	80	88	11	40	100.9
I3H	43.7	22.5	7.0	2191	11.7	317	2.63	33	79	90	10	40	100.9
II1H	42.9	18.6	8.3	2193	9.1	320	2.60	34	81	88	12	40	100.9
I4H	43.3	17.4	9.0	2192	8.6	319	2.62	32	79	89	11	40	100.9
II2L	44.2	15.9	10.0	2198	7.7	314	2.66	35	84	89	13	40	100.9
II2H	41.6	11.1	13.6	2186	5.9	335	2.50	35	81	89	13	40	100.9
II3L	41.2	7.9	18.8	2187	4.5	334	2.50	35	81	93	13	40	100.9
II4L	40.7	6.3	23.3	2171	3.6	335	2.49	35	79	95	13	40	100.9
II3H	40.1	5.7	25.4	2192	3.3	346	2.41	34	82	93	14	40	100.9
I4H	36.2	4.1	31.8	2191	2.8	383	2.18	36	81	95	13	40	100.9

Gear and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels or track	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
								Fuel	Coolant	Engine Oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)													
I1L	17.9	32.6	1.9	2353	14.8	487	1.72	30	81	94	7	40	101.5
I1L	22.4	32.7	2.5	2300	14.8	415	2.01	30	78	91	8	40	101.5
I2L	26.2	32.9	2.9	2280	14.6	388	2.15	29	80	92	7	40	101.5
I2H	33.0	30.8	3.9	2285	15.0	350	2.39	29	81	92	8	40	101.5
I3L	42.2	29.4	5.2	2200	13.2	322	2.59	30	82	91	8	40	101.5
II1L	41.9	24.9	6.0	2186	11.5	332	2.51	29	77	88	9	40	101.5
I4L	42.2	23.1	6.6	2199	11.0	330	2.53	28	81	86	9	40	101.5
I3H	44.5	22.6	7.1	2198	10.9	313	2.67	26	81	87	8	40	101.5
II1H	42.9	18.6	8.3	2186	9.0	325	2.57	30	77	88	10	40	101.5
I4H	43.2	17.4	9.0	2189	8.5	321	2.60	29	76	87	9	40	101.5
II2L	41.3	14.9	10.0	2196	7.5	338	2.47	30	81	88	10	40	101.5
II2H	42.9	11.4	13.5	2191	6.4	326	2.56	30	77	87	10	40	101.5
II3L	39.9	7.7	18.6	2182	5.0	343	2.43	30	79	91	10	40	101.5
II4L	37.6	5.8	23.3	2185	4.2	369	2.26	33	80	94	10	40	101.5
II3H	35.7	5.1	25.3	2196	4.1	385	2.17	31	81	93	10	40	101.5
3.3.1 FIVE-HOUR TEST at 75 % of pull at maximum power													
I3H	35.7	17.0	7.6	2187	8.5	329	2.53	32	81	97	8	70	100.7
3.3.2 FIVE-HOUR TEST at pull corresponding to 15 % wheelslip													
I2H	34.6	32.4	3.8	2275	-	-	-	37	82	98	14	58	101.9

Oil consumption during ten hours duration of tests 3.3.1 and 3.3.2.	42 g/h

4. TURNING AREA AND TURNING CIRCLE

	With brakes		Without brakes	
	Right-hand m	Left-hand m	Right-hand m	Left-hand m
Radius of turning area	3.58	3.96	4.08	4.51
Radius of turning circle	3.32	3.70	3.85	4.28

5. LOCATION OF CENTRE OF GRAVITY

Height above ground	1000 mm
Distance forward from the vertical plane containing the axis of the rear-wheels	786 mm
Distance from the median plane of the tractor	0 mm

6. BRAKING

Date of tests 23.8., 8.10. and 28.10.1991

6.1 Cold service braking device test

	Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2
Ballasted tractor	31.8	0.44	3.3
Unballasted tractor	34.0	0.34	3.6

6.2 Fade test

Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2
32.4	0.51	3.4

Abnormal deviation of tractor from its original course	None
Abnormal vibration	None
Brake heating method	Actuating of brake for 1 km with pedal force corresponding to 1 m/s^2

6.3 Parking braking device test

	Uphill	Downhill
Braking device control force	0.25 kN	0.25 kN

7. MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of tests	28.10.1991
Sound level meter	
Make/Model/Type	Brüel & Kjaer 2209
Type of track	Tarmacadam
Gear Number	II 4 H
Travelling speed before acceleration	25.8 km/h
Sound level	89.0 dB(A)

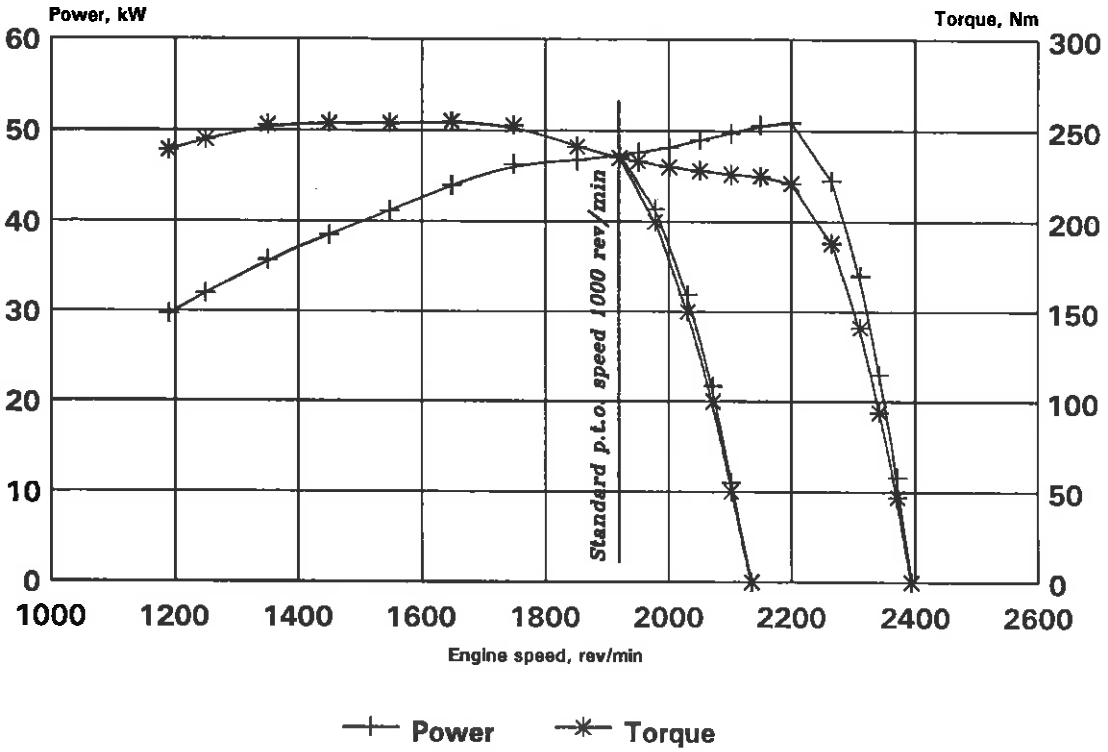
STATE RESEARCH INSTITUTE OF ENGINEERING IN AGRICULTURE AND FORESTRY

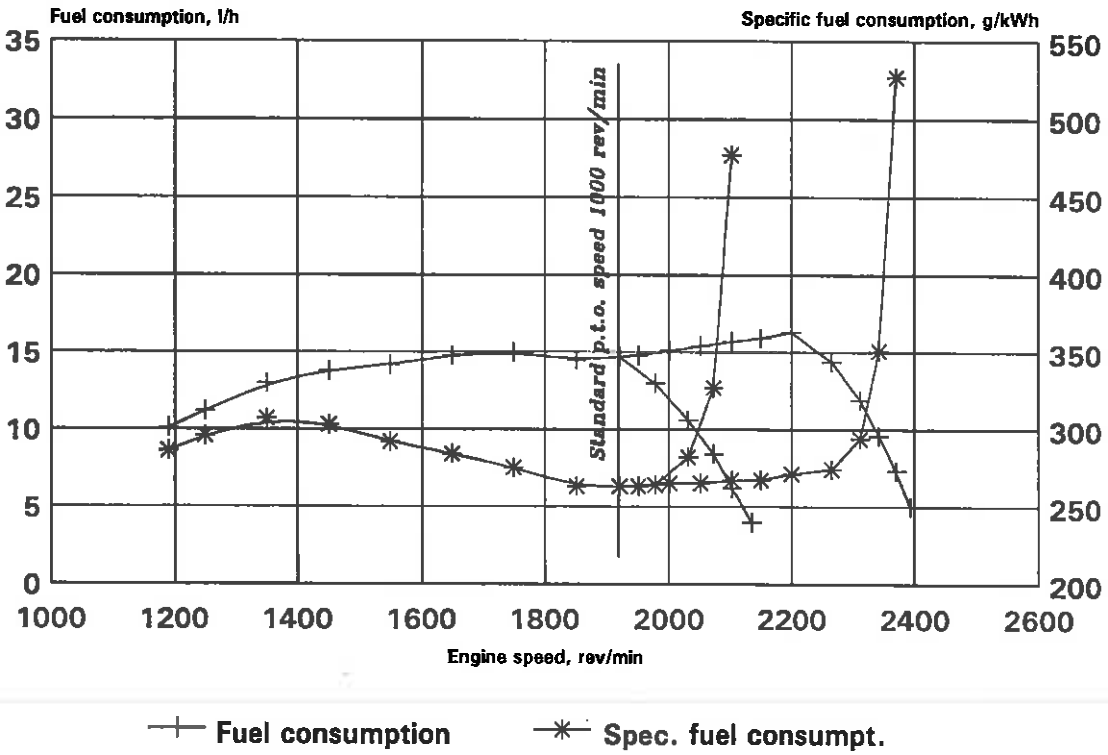
Vihti, May 14th 1992

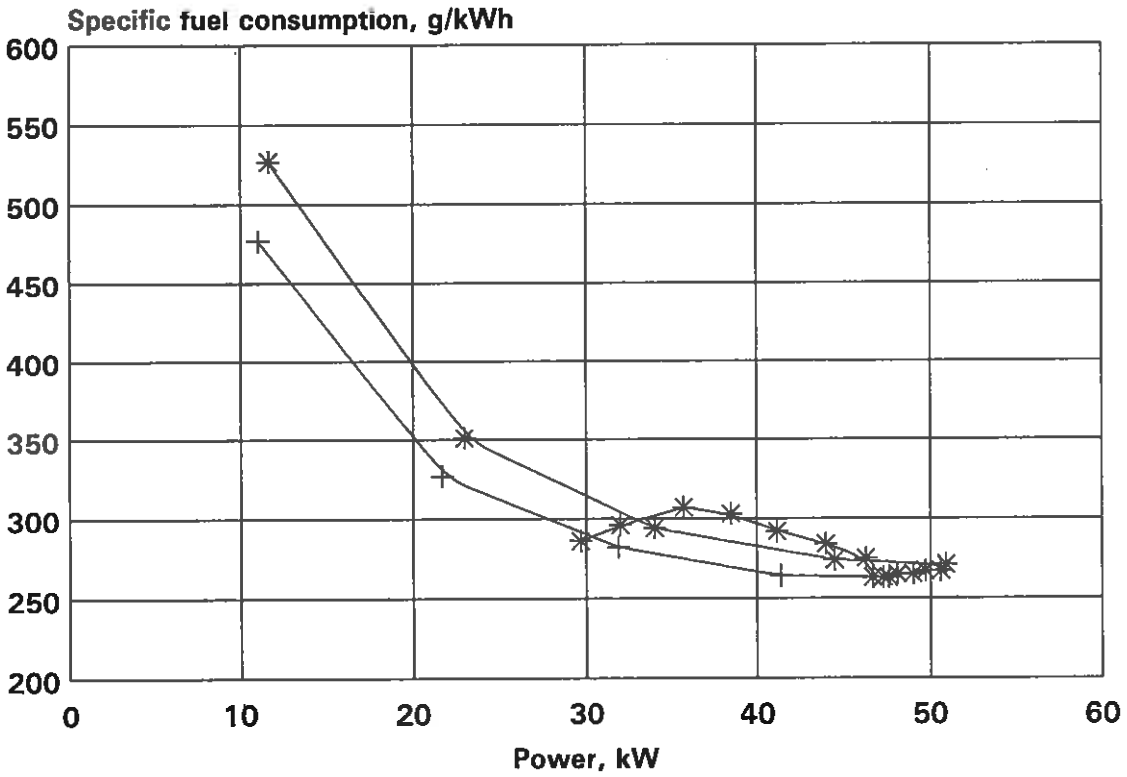
Director — Henrik Sarin

Test engineer — Ari Lemminkäinen

Valtion maatalousteknologian tutkimuslaitos


Power, kW
Torque, Nm
60
50
40
30
20
10
0
300
250
200
150
100
50
0
1000
1200
1400
1600
1800
2000
2200
2400
2600
Standard p.t.o. speed 1000 rev/min
Engine speed, rev/min
Power
Torque


Fuel consumption, l/h
Specific fuel consumption, g/kWh
35
30
25
20
15
10
5
0
550
500
450
400
350
300
250
200
1000
1200
1400
1600
1800
2000
2200
2400
2600
Standard p.t.o. speed 1000 rev/min
Engine speed, rev/min
Fuel consumption
Spec. fuel consumpt.


Specific fuel consumption, g/kWh
600
550
500
450
400
350
300
250
200
0
10
20
30
40
50
60
Power, kW

Vihdin Painoraster Oy 1993