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. 1388 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 1134 (4WD)

Manufactured by	Zaklady Przemyslu Ciagnikowego, Warszawa, Poland
Date of approval	8th September 1992
	Serial No. 1388 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 Coordinating 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 9
TRAILER HITCH II 9
HOLED DRAWBAR 10
STEERING 10
BRAKES 10
WHEELS 10
PROTECTIVE STRUCTURE 11
DRIVER'S SEAT 11
LIGHTNING 11
II TEST CONDITIONS 11
III TEST RESULTS 14
1. MAIN POWER TAKE-OFF 14
2. HYDRAULIC POWER AND LIFTING FORCE 15
3. DRAWBAR POWER AND FUEL CONSUMPTION 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
Location of tractor assembly	
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/1134/Four wheel drive, unit construction
Number of driving wheels	4
Serial number	00002
First serial number	00001

ENGINE

Make/Model/Type	ZTS. Martin/Z 8002.12/water cooled, 4 stroke, direct injection diesel engine, turbocharged
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

Make/Model/Type	K27-2960U/6, 11
Pressure	90 kPa

Fuel system

Fuel feed system	Mechanical feed pump

Make/Model/Type of fuel filters	Two stage/felt and paper element/FD 10 RP 1-3
Capacity of fuel tank	130 dm^3
Injection pump	PAL, piston type, in line
Serial number of injection pump	4M 3119B
Manufacturer's production setting of injection pump:	
Flow rating at rated engine speed and full load	79.3 mm^3/stroke
Timing	24 - 2° before TDC
Make/Model/Type of injectors	VP 81S 453 e 2575/multihole
Injection pressure	16.8 + 0.8 MPa
Governor	
Make/Model/Type	PAL/RV3M 300/1100/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/PC500/ cyclonic with dust container
Location of air intake	Under engine hood front of the tractor
Main cleaner	
Make/Model/Type	Hodrusba-Hamre/9450.11/oil bath
Maintenance indicator	None
Lubrication system	
Type of pump	Gear pump
Type of filters	Centrifugal, full flow, RDP 3A
Number	1
Cooling system	
Type of coolant	Anti-freeze
Type of pump	Centrifugal
Number of fan blades	8
Fan diameter	460 mm
Coolant capacity	23 dm^3
Type of temperature control	Thermostat
Superpressure system	30 kPa

Starting system	
Make/Model/Type	Elmot/R10u/solenoid engaged, 24 V
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 W
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/PZ 90/30
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/side drive/gleason bevel gears
Differential lock	
Type	Wet disc clutch, hydraulically operated
Method of engagement	Pedal
Method of disengagement	Self disengaging

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	111.75	7.7	5.7
4		72.244	96.736	8.8	6.6
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		21.705	29.041	29.4	22.0
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		46.298	61.947	13.8	10.3

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

Number of revolutions of front wheels one revolution of rear wheels	1.440

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	612 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	612 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)	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	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
Optional power take-off	

POWER LIFT

Make/Model/Type	Archimedes Wroclaw
Type of hydraulic system	Internal cylinder with auxiliary ram cylinder, open system

*) 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.

Type and number of cylinders	1+1 single acting
Type of linkage lock for transport	Hydraulic
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 tractor
Maximum volume of oil available to external cylinders	20 dm^3

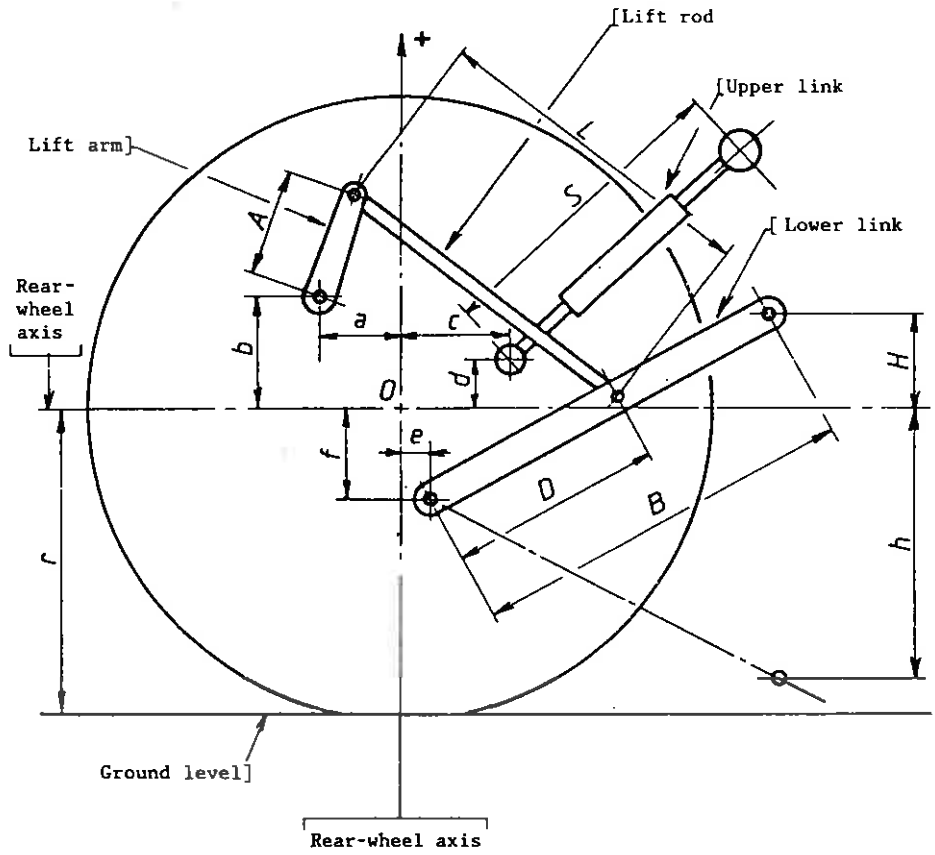
Three point linkage

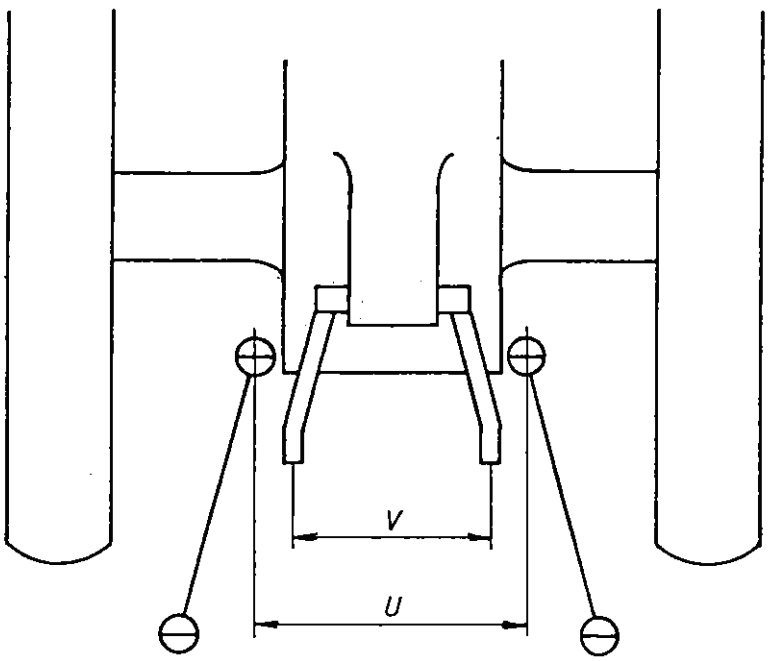
Category	2, in conformity with ISO 730/-1977
Category adapter	None

		Dimension or range mm	Settings used in test mm
Length of lift arms	(A)	330	330
Length of lower links	(B)	930	930
Distance of lift arm pivot point from rear-wheel axis: horizontally	(a)	191	191
Distance of lift arm pivot point from rear-wheel axis: vertically	(b)	280	280
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 610 to 815	
Distance of upper link pivot point from rear wheel axis: horizontally	(c)		
Distance of upper link pivot point from rear wheel axis: vertically	(d)	110, 170, 220	220
Distance of lower link pivot point from rear wheel axis: horizontally	(e)	125	125
Distance of lower link pivot point from rear wheel axis: vertically	(f)	260	260
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	500	500
Length of lift rods	(L)	from 545 to 735	585
Height of lower hitch points relative to the rear-wheel axis: in low position	(h)	from 480 to 735	570
Height of lower hitch points relative to the rear-wheel axis: in high position	(H)	from -131 to 200	130
Height above ground of lower hitch points when locked in transport position (*)		from 35 to 970	

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

Table 1.1 Dimensions of linkage geometry


[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

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

HOLED DRAWBAR

Number of holes	9
Distance between holes	80 mm
Hole diameter	32 mm
Thickness/width of the drawbar	72/100 mm
Height above ground	
- minimum	35 mm
- maximum	970 mm
Horizontal distance to power take-off shaft end (rear)	575 mm

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 driving and steering
- rear	2 driving
Wheelbase	2396 mm

Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1614	1710	Offset lug rims and reversing wheel centres
Rear	1510	1875	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 0187/5

DRIVER'S SEAT

Make/Model/Type	SA50/1
Type of suspension	Springs
Type of damping	Hydraulic damper
Range of adjustment	
- longitudinal	150 mm
- vertical	60 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	920
Rearlights	1780	65 x 100	810
Reflector	1180 760	ø 77 ø 77	930 510

II. TEST CONDITIONS

Overall dimensions

	Length mm	Width		Height at top of	
		Minimum mm	Maximum mm	Protective structure mm	Exhaust silencer mm
Ballasted	4340	2085	2360	2920	3060
Unballasted	4140	2085	2360	2920	3060

Ground clearance	330 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	2370	2385	1910	1925
Rear	3780	3840	2890	2950
Total	6150	6225	4800	4875

Ballast

	Weights		
	Number	Total mass kg	Water kg
Front	13	360	-
Rear	12	350	640

Tyres and track width specifications

	Front	Rear
Tyres:		
- dimensions	12.4-24	18.4-34
- ply rating	6	8
- type	diagonal	diagonal
- maximum load (tyre manufacturer's)	12 kN	25,65 kN
- inflation pressure (tyre manufacturer's)	170 kPa	140 kPa
- dynamic radius index	540 mm	770 mm
Chosen track width	1614 mm	1510 mm

Oils and lubrication (Capacity and change interval)

	Capacity dm^3	Oil change h	Filter change h
Engine	10	200	200 cleaning
Gear box*)	46	1600	400/100 cleaning
Front axle	3.5	1600	-
Final drive (front axle)	2 x 1.25	1600	-
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 SAE15W/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	12
Fuel	
Type	Dieseloil, in conformity with national standards
Density at 15 °C	PTO test 841 g/dm^3 drawbar power test 835 g/dm^3
REPAIRS	None
REMARKS	None

III. TEST RESULTS

COMPULSORY TEST RESULTS

1. MAIN POWER TAKE-OFF

- Date and location of tests: 18.6.1991/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						
69.0	2200	1146	17.2	20.4	249	3.38
1.2 POWER AT RATED ENGINE SPEED						
69.0	2200	1146	17.2	20.4	249	3.38
1.3 STANDARD POWER TAKE-OFF SPEED (1000 ± 25 rev/min)						
64.1	1920	1000	15.2	18.1	237	3.54
1.4 PART LOADS 1.4.1 The torque corresponding to maximum power at rated engine						
69.0	2200	1146	17.2	20.4	249	3.38
1.4.2 85 % of torque obtained in 1.4.1						
61.8	2316	1206	16.3	19.4	265	3.18
1.4.3 75 % of torque defined in 1.4.2						
47.0	2346	1222	13.5	16.1	287	2.93
1.4.4 50 % of torque defined in 1.4.2						
31.7	2373	1236	10.9	12.9	342	2.45
1.4.5 25 % of torque defined in 1.4.2						
16.2	2410	1255	8.1	9.7	501	1.68
1.4.6 Unloaded						
0	2431	1266	5.3	6.3	-	-
1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 REV/MIN) 1.5.1 The torque corresponding to maximum power						
64.1	1920	1000	15.2	18.1	237	3.54
1.5.2 85 % of torque obtained in 1.5.1						
56.5	1993	1038	14.0	16.6	247	3.41
1.5.3 75 % of torque defined in 1.5.2						
43.1	2026	1055	11.4	13.5	264	3.18
1.5.4 50 % of torque defined in 1.5.2						
29.2	2056	1071	9.1	10.8	310	2.71
1.5.5 25 % of torque defined in 1.5.2						
14.9	2100	1094	6.6	7.8	441	1.90
1.5.6 Unloaded						
0	2129	1109	4.0	4.7	-	-

- No load maximum engine speed	2431 rev/min
- Torque[1] at maximum power	300 Nm
- Maximum torque[1]	337 Nm
at engine speed	1657 rev/min
- Mean atmospheric conditions	
- Temperature	23 °C
- Pressure	101.0 kPa
- Relative humidity	45 %
- Maximum temperatures	
- Coolant	82 °C
- Engine oil	106 °C
- Fuel	44 °C
- Engine air intake	25 °C

[1] Equivalent crankshaft torque

2. HYDRAULIC POWER AND LIFTING FORCE

2.1 Hydraulic power test

Date of tests	19.6. and 2.12.1991
Sustained pressure with relief valve open	20.7 MPa
Pump delivery rate at minimum pressure	45.3 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	5.2	18.6	10.9
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	42.5	17.5	12.4

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	650 mm	650 mm
Maximum corrected force exerted through full range	50.0 kN	31.5 kN
Corresponding pressure of hydraulic fluid	15.3 MPa	15.3 MPa
Moment about rear-wheel axis	52.8 kNm	52.4 kNm
Maximum tilt angle of mast from vertical		19 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points								
mm	-310	-200	-100	0	+100	+200	+300	+340
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	50.0	52.2	52.3	52.3	52.3	51.9	52.7	52.7
Corresponding pressure: 15.3 MPa								
At the frame kN	45.8	45.5	43.0	39.7	40.3	38.0	35.3	31.5
Corresponding pressure: 15.3 MPa								

3. DRAWBAR POWER AND FUEL CONSUMPTION

Date of tests 30.7.-5.8.1991

Type of track Tarmacadam

		Tyre inflation presssure	
	Height of drawbar above ground	Front	Rear
Unballasted	430 mm	130 kPa	110 kPa
Ballasted	430 mm	130 kPa	120 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	19.0	35.3	1.9	2396	14.9	495	1.69	46	79	92	24	48	102.0
I1H	25.5	35.9	2.6	2375	14.9	441	1.89	50	81	95	25	48	102.0
I2L	30.1	36.2	3.0	2356	15.0	391	2.13	51	81	97	28	48	102.0
I2H	37.5	33.7	4.0	2344	14.8	374	2.23	52	81	97	25	48	102.0
I3L	50.4	34.8	5.3	2302	14.8	331	2.53	53	79	97	24	48	102.0
I4L	52.4	31.5	6.0	2206	13.4	326	2.57	56	82	97	26	48	102.0
II1L	53.5	32.5	5.9	2196	14.8	318	2.63	56	80	96	24	48	102.0
I3H	54.0	27.1	7.2	2204	10.8	316	2.65	54	80	96	25	48	102.0
I4H	53.2	22.8	8.4	2193	8.3	318	2.63	56	81	97	24	48	102.0
II1H	55.0	23.4	8.4	2180	9.1	310	2.69	53	82	94	25	48	102.0
II2L	56.5	20.2	10.1	2192	7.9	302	2.77	54	81	95	24	48	102.0
II2H	55.5	14.5	13.8	2193	6.0	308	2.71	54	82	94	25	48	102.0
II3L	51.7	9.8	19.0	2180	3.8	330	2.53	54	79	93	24	48	102.0

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	Tempera-ture	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	22.5	42.0	1.9	2375	14.8	454	1.84	46	79	94	25	48	101.7
I1H	30.8	43.8	2.5	2352	15.0	408	2.05	46	78	95	25	48	101.7
I2L	35.5	42.8	3.0	2351	15.0	374	2.24	47	79	97	25	48	101.7
I2H	43.7	39.6	4.0	2329	15.0	352	2.37	47	79	93	25	48	101.7
I3L	53.2	37.3	5.1	2190	14.1	319	2.62	49	78	95	26	48	101.7
I4L	53.0	31.1	6.1	2211	11.7	314	2.66	52	79	95	27	48	101.7
II1L	53.4	31.4	6.1	2205	12.3	321	2.60	54	77	93	26	48	101.7
I3H	53.5	26.6	7.2	2200	9.9	320	2.61	51	81	93	26	48	101.7
I4H	52.1	22.2	8.5	2189	7.8	317	2.64	53	79	94	28	48	101.7
II1H	54.9	23.3	8.5	2194	8.2	312	2.68	51	82	92	25	48	101.7
II2L	55.4	19.6	10.2	2198	7.4	308	2.71	51	80	92	25	48	101.7
II2H	53.0	13.8	13.8	2194	5.8	324	2.58	52	81	91	25	48	101.7
II3L	49.1	9.2	19.2	2203	3.6	348	2.40	51	84	95	25	48	101.7
3.3.1 FIVE-HOUR TEST at 75 % of pull at maximum power on gear													
I3H	43.5	20.0	7.8	2319	7.3	339	2.47	59	82	103	26	57	101.5
3.3.2 FIVE-HOUR TEST at pull corresponding to 15 % wheelslip													
I2H	46.2	42.4	3.9	2301	-	-	-	63	82	105	26	41	101.2

Oil consumption during ten hours duration of tests 3.3.1 and 3.3.2 — 84 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	4.78	4.70	5.45	5.37
Radius of turning circle	4.50	4.40	5.17	5.07

5. LOCATION OF CENTRE OF GRAVITY

Height above ground — 960 mm

Distance forward from the vertical plane containing the axis of the rear-wheels — 946 mm

Distance from the median plane of the tractor — 0 mm

6. BRAKING

Date of tests — 14.8 and 25.9.1991

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	31.1	0.41	3.2
Unballasted tractor	31.5	0.36	3.0

6.2 Fade test

Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2
31.2	0.55	3.0

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	0.32 kN	0.32 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	24.4 km/h
Sound level	87.0 dB(A)

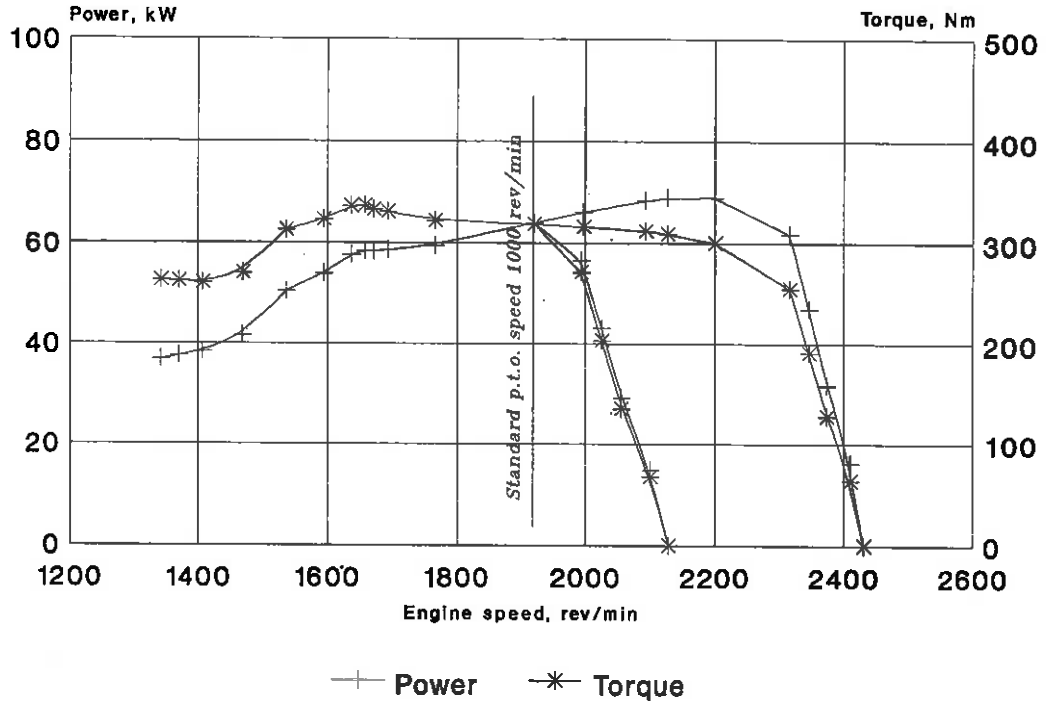
STATE RESEARCH INSTITUTE OF ENGINEERING IN AGRICULTURE AND FORESTRY

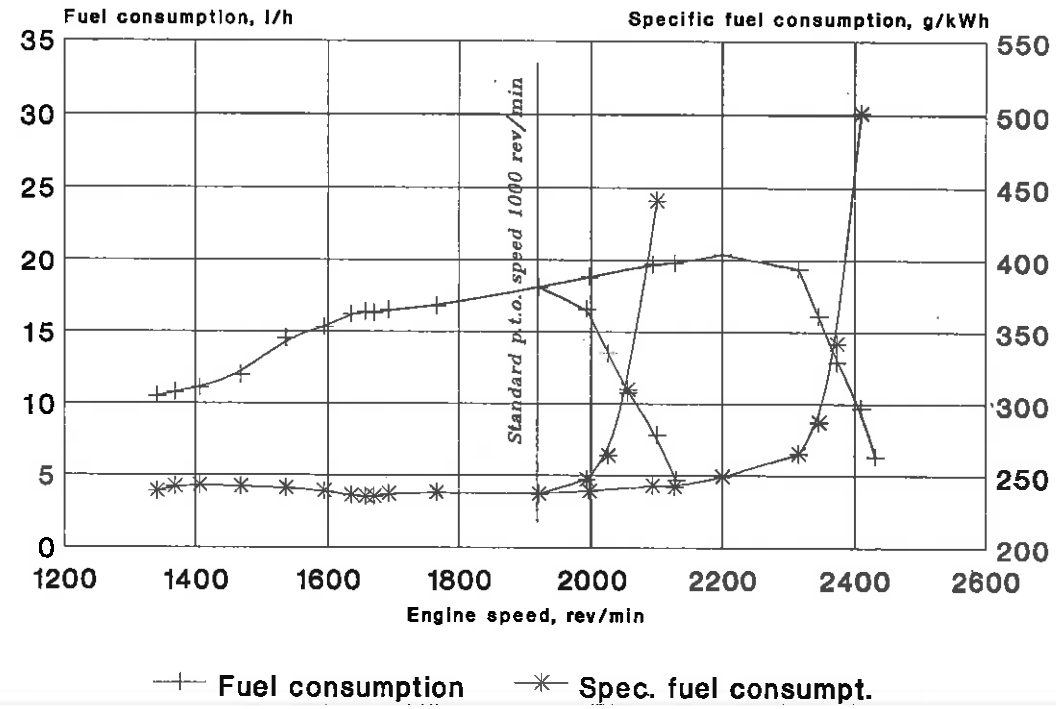
May 14th 1992

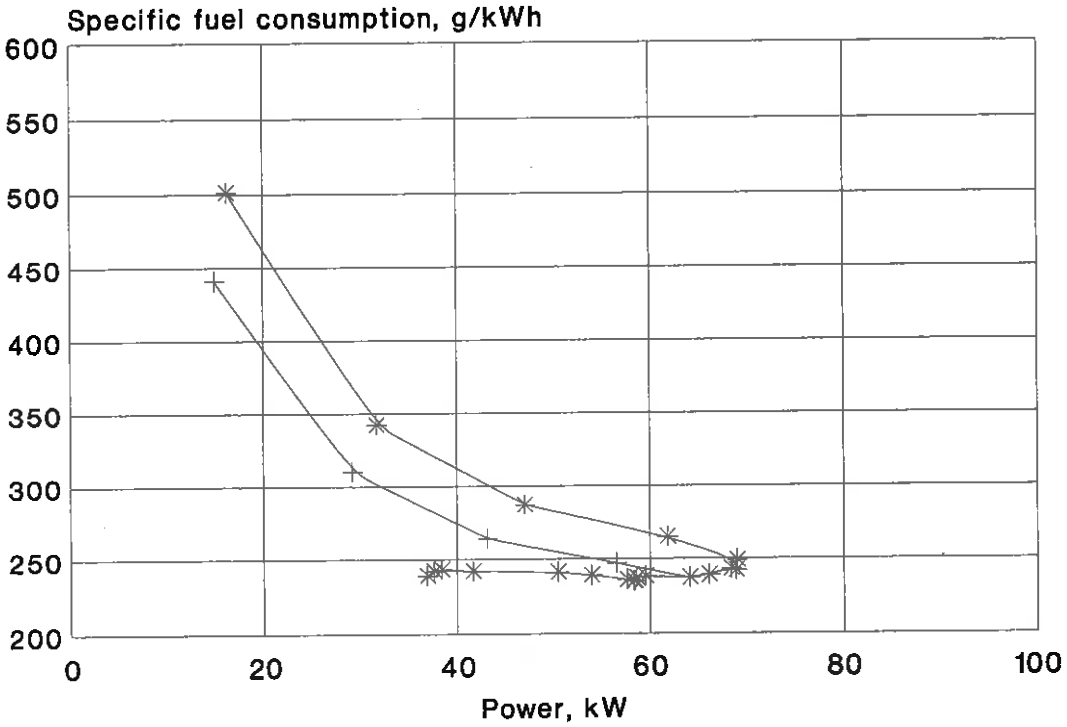
Valtion maatalousteknologian tutkimuslaitos

Director Henrik Sarin

Test engineer Ari Lemminkäinen


Power, kW
Torque, Nm
100
80
60
40
20
0
500
400
300
200
100
0
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
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
20
40
60
80
100
Power, kW

Vihdin Painorasteri Oy 1993