

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

### TEST BULLETIN: O.E.C.D. No. 1405 FULL CODE

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



### URSUS 934 (4WD)

Manufactured by

Zakłady Przemysłu Ciągnikowego,  
Warszawa, Poland

Date of approval

26th Oktober 1992

Serial No.

1405 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.

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Tractor manufacturer's name and address	Zakłady Przemysłu Ciągnikowego "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 THE TRACTOR

### TRACTOR

Make/Model/Type	URSUS/934/Four wheel drive, unit construction
Number of driving wheels	4
Serial number	00002
1st Serial number	00001

### ENGINE

Make/Model/Type	ZTS. Martin/Z8401.12/ 4-stroke, water cooled, direct injection diesel engine, naturally aspirated
Serial number	000030
Cylinders	
Number/disposition	4/vertical, in line
Bore/stroke	110 mm /120 mm
Capacity	4562 cm <sup>3</sup>
Compression ratio	17:1
Arrangement of valves	Overhead
Cylinder liners	Wet
Supercharging	None
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	90 dm <sup>3</sup>
Make/Model/Type of injection pump	PAL, piston type, in line
Serial number	4M 3138N 0177
Manufacturer's production setting of injection pump:	

Flow rating at rated engine speed and full load	65.6 mm <sup>3</sup> /stroke
Timing	24 + 2° before TDC
Make/Model/Type of injectors	VP81S453e2583, multihole
Injection pressure	16.8 + 0.8 MPa
<b>Governor</b>	
Make/Model/Type	PAL/RV3M 300/1100/ mechanical, integrated with injection pump
Governed range of engine speed	From 600 to 2450 rev/min
Rated engine speed	2200 rev/min
<b>Air cleaner</b>	
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/ oil bath
Maintenance indicator	None
<b>Lubrication system</b>	
Type of feed pump	Gear pump
Type of filter(s)	Centrifugal, full flow, RDP 3/A
Number	1
<b>Cooling system</b>	
Type of coolant	Anti-freeze
Type of pump	Centrifugal
Number of fan blades	4
Fan diameter	460 mm
Coolant capacity	21 dm <sup>3</sup>
Type of temperature control	Thermostat
Superpressure system	30 kPa
<b>Starting system</b>	
Make/Model/Type	Elmot/R10u/solenoid engaged 24 V
Starter motor power rating	4.8 kW
Cold starting aid	None
Safety device	Gear selector to be in neutral position

**Electrical system**

Voltage	12 V
Generator	
Make/Model/Type	Elmot/A133-55
Power	560 W
Battery	
Number of accumulators	2
Rating	170 Ah at 20 hours

**Exhaust system**

Make/Model/Type	URSUS
Location	Left hand side, vertical

**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 in the cab

**Gear box**

Make/Model/Type	Povazskie Stojarne/PZ 60/30
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 wheel reduction gears
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**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 operetad

Method of disengagement

Self-disengaging

**Total ratios and travelling speeds**

Gear	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	239.578	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		67.210	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		20.180	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		43.070	57.630	14.8	11.1

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

Number of revolutions of the front wheels for one revolution of the 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 and speeds By changing PTO shafts: 6 spline for 540 RPM and 21 spline shaft for 1000 RPM

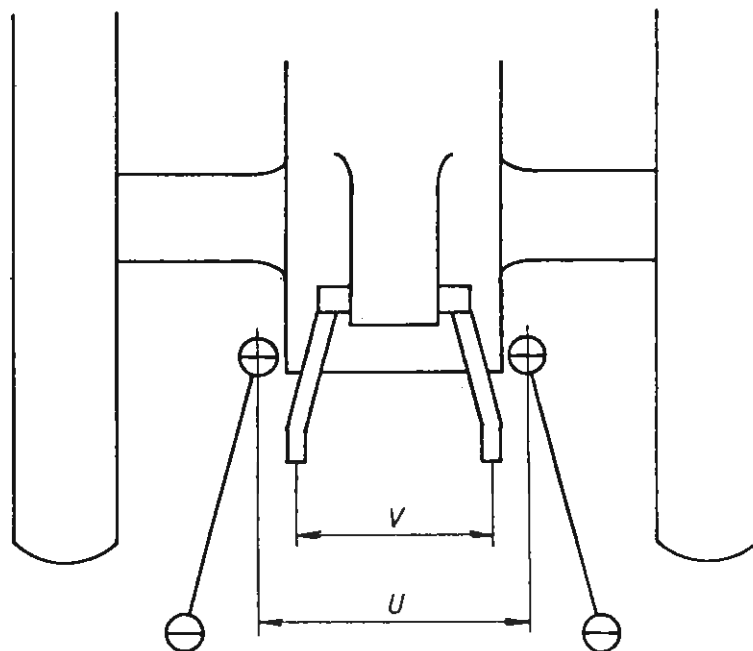
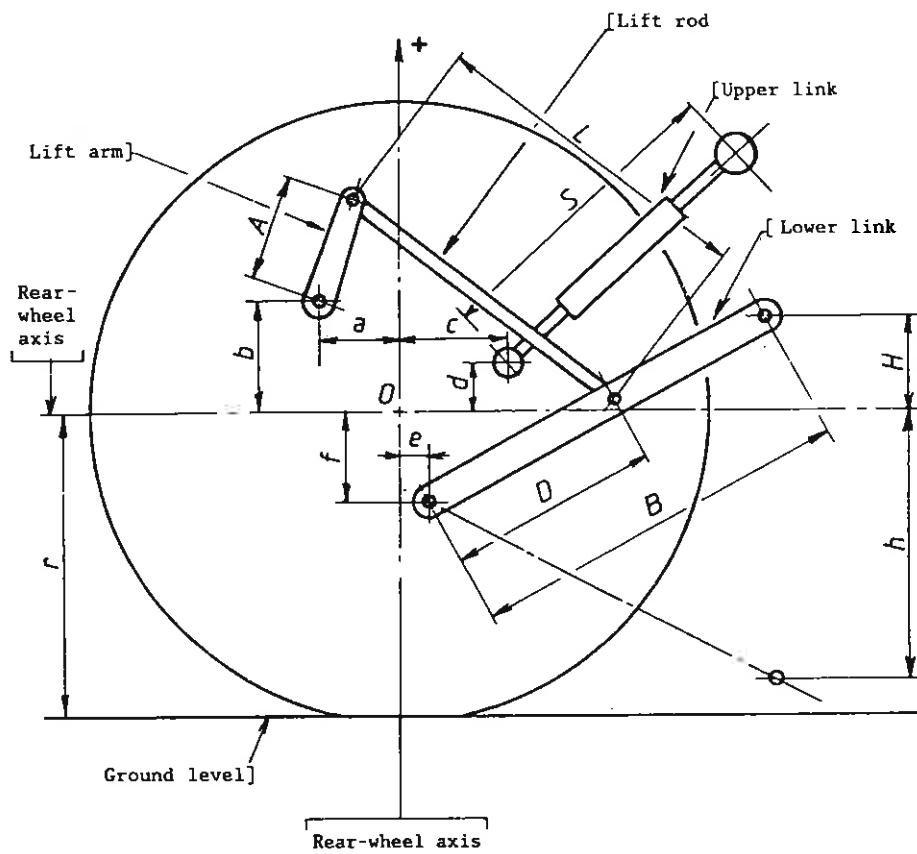
**Power take-off proportional to engine speed****540 rev/min**

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 620 mm  
 Distance from the median plane of the tractor 0 mm  
 Distance behind rear-wheel axis 506 mm

PTO speed at rated engine speed (2200 rev/min)	628.6 rev/min
Engine speed at standard power take-off speed	1890 rev/min
Ratio of rotation speeds (engine speed/p.t.o speed)	3.5
Power restriction and maximum torque	48.0 kW 850 Nm
Direction of rotation (viewed from behind tractor)	Clockwise
<b>1000 rev/min</b>	
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	620 mm
Distance from the median plane of the tractor	0 mm
Distance behind rear-wheel axis	506 mm
PTO speed at rated engine speed (2200 rev/min)	1146 rev/min
Engine speed at standard power take-off speed	1920 rev/min
Ratio of rotation speeds	1.92
Direction of rotation	Clockwise
<b>Power take-off proportional to ground speed</b>	
Travelling distance for one revolution of PTO shaft	0.176 m (540 and 1000 rev/min)
Number of PTO shaft revolutions for one revolution of (rear) driving wheels	27.38 (540 and 1000 rev/min)
Direction of rotation with forward gear engaged	Clockwise
Optional power take-off	Not available
<b>POWER LIFT</b>	
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
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 <sup>3</sup>



**Three point linkage**

Category

2, according to standard ISO 730/2-1979

Category adapter

None

			Dimension or range mm	Settings used in test mm
Length of lift arms	(A)		330	330
Length of lower links	(B)		920	920
Distance of lift arm pivot point from rear-wheel axis:	horizontally	(a)	175	175
	vertically	(b)	285	285
Horizontal distance between the 2 lower link point	(u)		525	525
Horizontal distance between the 2 lift arm end points	(v)		640	640
Length of upper link	(S)		from 618 to 815	655
Distance of upper link pivot point from rear wheel axis:	horizontally	(c)	384	384
	vertically	(d)	87, 147, 197	197
Distance of lower link pivot point from rear wheel axis:	horizontally	(e)	120	120
	vertically	(f)	260	260
Distance of lower link pivot points to lift rod pivot points on lower links	(D)		495	495
Length of lift rods	(L)		from 540 to 730	585
Height of lower hitch points relative to the rear-wheel axis:	in low position	(h)	from 480 to 730	570
	in high position	(H)	from -172 to 160	90
Height above ground of lower hitch points when locked in transport position (*)			from 40 to 930	

(\*) 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	342 mm
Type of adjustment	Changing position of fixing bolts and holes
Distance of hitch point from rear-wheel axis, horizontally	856 mm, 903 mm
Distance of hitch point from power take-off shaft end	
- vertically	278 mm
- horizontally	350 mm, 397 mm

Lateral adjustment	
- right hand	0 - 173 mm
- left hand	0 - 173 mm
Distance of pivot point from rear-wheel axis, horizontally	238 mm
Diameter drawbar pin hole	33 mm
Maximum vertical permissible load	10 kN

**TRAILER HITCH I**

Type	Hitch-hook
Hook diameter	46 mm
Height above ground	417 mm
Distance of hitch point from rear-wheel axis, horizontally	681 mm
Distance of hitch point from power take-off shaft end:	
- vertically	203 mm
- horizontally	175 mm
Maximum vertical permissible load	21 kN

**TRAILER HITCH II**

Type	Clevis with rubber shock absorber
Hole diameter	31 mm
Height above ground	804 mm
Distance of hitch point from rear-wheel axis, horizontally	809 mm
Distance of hitch point from power take-off shaft end	
- vertically	184 mm
- horizontally	303 mm
Maximum vertical permissible load	5 kN

**HOLED DRAWBAR**

Number of holes	9
Distance between holes	80 mm
Hole diameter	32 mm
Thickness/width of the drawbar	72 mm / 100 mm
Height above ground	
- minimum	40 mm
- maximum	930 mm
Horizontal distance to power take-off shaft end (rear)	520 mm

**STEERING**

Make/Model/Type (Power assisted optional)	Pilmet, hydrostatic steering
Method of operation	Steering wheel
- pump	1
- ram	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	Optional 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/steering
- rear	2 driving
Wheelbase	2398 mm

**Track width adjustment:**

	Minimum mm	Maximum mm	Adjustment method
Front	1620	1820	Offset lug rims and reversing wheel centres
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 0187/9

**DRIVER'S SEAT**

Make/Model/Type	SA50/1
Type of suspension	Springs
Type of damping	Hydraulic damper
Range of adjustment:	
- longitudinal	100 mm
- vertical	60 mm
MISCELLANEOUS	None

**LIGHTING**

	Height above ground centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Headlights	1155	ø 124	244
Sidelights	1950	65 x 65	910
Rearlights	1775	65 x 100	815
Reflector	1180 760	ø 80 ø 80	938 510

**II. TEST CONDITIONS****Overall dimensions**

	Length mm	Width		Height at top of	
		Minimum mm	Maximum mm	Protective structure mm	Exhaust silencer mm
Ballasted	4243	2076	2386	2930	2800
Unballasted	4128	2076	2386	2930	2800

Ground clearance	332 (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	2210	2220	1880	1890
Rear	3765	3830	2805	2870
Total	5975	6050	4685	4760

**Ballast**

	Weights		
	Number	Total mass kg	Water kg
Front	10	270	-
Rear	12	320	700

**Tyres and track width specifications**

	Front	Rear
Tyres:		
-dimensions	12.4-24	18.4-34
-ply rating	8	8
-type	diagonal	diagonal
-maximum load (tyre manufacturer's)	17.6 kN	25.65 kN
-inflation pressure (tyre manufacturer's)	180 kPa	140 kPa
-dynamic radius index	540 mm	770 mm
Chosen track width	1620 mm	1510 mm

**Oils and lubrication**

Capacity and change interval

	Capacity dm <sup>3</sup>	Oil change h	Filter change h
Engine	10	200	200 cleaning
Gear box <sup>*)</sup>	46	1600	400/100 cleaning
Front axle	3.5	1600	-
Final drive (rear)	2 x 4.5	1600	-
Final drive (front)	2 x 1.25	1600	-
Steering	5.5	800	1600

\*) Includes rear axle and hydraulic system

	Recommended	Used during test
Engine oil - Type - Viscosity - Classification	Superol Milvus CC SAE 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

12

Fuel

Type

Diesel oil, in conformity with national standard

Density at 15 °C

PTO test 846 g/dm<sup>3</sup>,  
drawbar power test 836 g/dm<sup>3</sup>

REPAIRS

None

REMARKS

None



**III. TEST RESULTS****COMPULSORY TEST RESULTS****1. MAIN POWER TAKE-OFF**

Date and location of tests

12.5.1992 / 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
<b>1.1 MAXIMUM POWER - TWO-HOUR TEST</b>						
50.4	2200	1146	14.1	16.7	281	3.01
<b>1.2 POWER AT RATED ENGINE SPEED</b>						
50.4	2200	1146	14.1	16.7	281	3.01
<b>1.3 STANDARD POWER TAKE-OFF SPEED (1000 rev/min)</b>						
46.8	1920	1000	12.7	15.0	271	3.12
<b>1.4 PART LOADS</b>						
<b>1.4.1 The torque corresponding to maximum power at rated engine</b>						
50.4	2200	1146	14.1	16.7	281	3.01
<b>1.4.2 85% of torque obtained in 1.4.1</b>						
44.2	2269	1182	12.7	15.0	286	2.95
<b>1.4.3 75% of torque defined in 1.4.2</b>						
33.8	2312	1204	10.4	12.3	307	2.76
<b>1.4.4 50% of torque defined in 1.4.2</b>						
22.7	2339	1218	8.3	9.8	366	2.31
<b>1.4.5 25% of torque defined in 1.4.2</b>						
11.5	2371	1235	6.3	7.5	547	1.54
<b>1.4.6 Unloaded</b>						
-	2392	1246	4.3	5.1	-	-
<b>1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 REV/MIN)</b>						
<b>1.5.1 The torque corresponding to maximum power</b>						
46.8	1920	1000	12.7	15.0	271	3.12
<b>1.5.2 85% of torque obtained in 1.5.1</b>						
40.8	1970	1026	11.1	13.1	271	3.12
<b>1.5.3 75% of torque defined in 1.5.2</b>						
31.3	2016	1050	9.1	10.7	289	2.92
<b>1.5.4 50% of torque defined in 1.5.2</b>						
21.4	2064	1075	7.2	8.6	338	2.50
<b>1.5.5 25% of torque defined in 1.5.2</b>						
10.9	2095	1091	5.4	6.3	493	1.71
<b>1.5.6 Unloaded</b>						
-	2122	1105	3.6	4.2	-	-

No load maximum engine speed	2392 rev/min
Torque <sup>1)</sup> at maximum power	219 Nm
Maximum torque <sup>1)</sup>	254 Nm
at engine speed	1649 rev/min
Mean atmospheric conditions	
Temperature	22 °C
Pressure	100.5 kPa
Relative humidity	29 %
Maximum temperatures	
Coolant	79 °C
Engine oil	100 °C
Fuel	40 °C
Engine air intake	27 °C

<sup>1)</sup>Equivalent crankshaft torque

## 2. HYDRAULIC POWER AND LIFTING FORCE

### 2.1 Hydraulic power test

Date of tests	13.5.1992
Sustained pressure with relief valve open	19.6 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	32.5	17.6	9.5
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	44.0	16.0	11.7

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	630 mm	630 mm
Maximum corrected force exerted through full range	35.8 kN	26.3 kN
Corresponding pressure of hydraulic fluid	16.0 MPa	16.0 MPa
Moment about rear-wheel axis	37.2 kNm	43.4 kNm
Maximum tilt angle of mast from vertical	-	18 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points										
mm	-310	-300	-200	-100	0	100	200	300	320	
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	35.8	36.0	37.7	39.0	39.3	39.5	39.8	40.1	40.2	
Corresponding pressure: 16.0 MPa										
At the frame kN	33.4	33.3	32.6	32.4	31.3	29.8	28.1	26.5	26.3	
Corresponding pressure: 16.0 MPa										

### 3. DRAWBAR PERFORMANCE

Date of tests

19.5 - 22.5.1992

Type of track

Tarmacadam

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
Unballasted	425 mm	130 kPa	120 kPa
Ballasted	425 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)													
1IL	16.9	32.8	1.9	2333	14.9	514	1.63	35	79	93	12	41	102.2
1IH	22.3	32.6	2.5	2324	14.9	434	1.93	35	80	92	12	41	102.2
2IL	26.5	33.1	2.9	2312	14.9	399	2.10	35	80	93	13	41	102.2
2IH	33.8	31.9	3.8	2279	14.7	367	2.28	36	81	91	13	41	102.2
3IL	41.0	28.8	5.1	2205	13.1	348	2.40	38	79	91	14	41	102.2
3IIL	41.8	24.8	6.1	2195	10.7	337	2.48	38	77	89	15	41	102.2
4IL	40.8	22.5	6.5	2185	9.8	348	2.40	39	80	88	16	41	102.2
3IH	42.3	21.2	7.2	2202	8.9	338	2.47	38	79	88	15	41	102.2
1IH	43.5	18.5	8.4	2199	7.5	325	2.57	37	76	88	15	41	102.2
4IH	41.2	16.2	9.2	2202	6.7	342	2.44	37	82	86	21	41	102.2
2IIL	42.8	15.3	10.1	2201	6.4	328	2.55	38	79	87	17	41	102.2
2IIH	41.9	11.0	13.7	2196	4.5	336	2.49	38	80	85	16	41	102.2
3IIL	39.9	7.6	19.0	2193	3.1	356	2.35	40	77	94	15	41	102.2
4IIL	36.3	5.5	23.7	2189	2.3	392	2.13	41	80	94	16	41	102.2

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)													
1IL	18.5	36.1	1.8	2329	14.9	478	1.75	39	80	91	19	28	101.5
1IH	24.7	36.4	2.5	2302	14.7	431	1.94	40	79	93	19	28	101.5
2IL	28.7	36.1	2.9	2289	14.8	396	2.11	42	80	93	18	28	101.5
2IH	36.5	34.9	3.8	2257	14.9	362	2.31	42	81	93	18	28	101.5
3IL	40.6	28.4	5.2	2193	12.3	345	2.42	43	78	92	18	28	101.5
3IH	41.0	24.2	6.1	2200	10.6	346	2.42	43	80	91	18	28	101.5
4IL	40.5	22.1	6.6	2199	9.5	349	2.39	43	77	93	18	28	101.5
4IH	41.4	20.8	7.2	2199	9.0	341	2.45	43	80	91	19	28	101.5
1HH	41.8	17.9	8.4	2202	7.9	334	2.50	43	80	91	19	28	101.5
4IH	40.3	16.0	9.1	2197	7.1	348	2.40	40	79	88	19	28	101.5
2IIL	41.1	14.9	10.0	2180	6.7	346	2.42	40	81	89	19	28	101.5
2IIH	39.5	10.4	13.7	2196	5.1	356	2.35	43	81	95	19	28	101.5
3IIL	37.5	7.1	18.9	2200	3.8	379	2.21	43	84	95	19	28	101.5
4IIL	32.8	5.0	23.3	2189	3.7	439	1.91	44	84	96	19	28	101.5
3.3.1 FIVE-HOUR TEST at 75% of pull at maximum power on gear 3IH													
3IH	32.9	15.6	7.6	2278	6.8	356	2.35	45	81	97	19	49	101.5
3.3.2 FIVE-HOUR TEST at pull corresponding to 15% wheel slip													
2IH	41.0	38.8	3.8	2214	-	-	-	43	79	98	15	53	102.2

Oil consumption during ten hours 57 g/h  
duration of tests 3.3.1 and 3.3.2

#### 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	4.69	4.60	5.54	5.39
Radius of turning circle	4.43	4.35	5.28	5.14

#### 5. LOCATION OF CENTRE OF GRAVITY

Height above ground 972 mm  
Distance forward from the vertical plane 951 mm  
containing the axis of the rear-wheels  
Distance from the median plane of 11 mm to left  
the tractor

#### 6. BRAKING

Date of tests 8 - 10.6.1992

##### 6.1 Cold service braking device test

	Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s <sup>2</sup>
Ballasted tractor	33.0	0.47	3.4
Unballasted tractor	34.0	0.31	3.0

##### 6.2 Fade test

Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s <sup>2</sup>
33.5	0.48	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<sup>2</sup>

**6.3 Parking braking device test**

	Uphill	Downhill
Braking device control force	350 N	350 N

**7. MEASUREMENT OF EXTERNAL NOISE LEVEL**

Date of tests 12.6.1992  
Sound level meter  
Make/Model/Type Brüel & Kjaer 2209  
Type of track Tarmacadam  
Gear number 4IIIH  
Travelling speed before acceleration 25.8 km/h  
Sound level 90.0 dB(A)

**8. REPAIRS** None

**9. REMARKS** None

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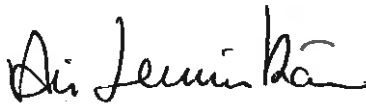
Vihti, May 14th 1992

Director

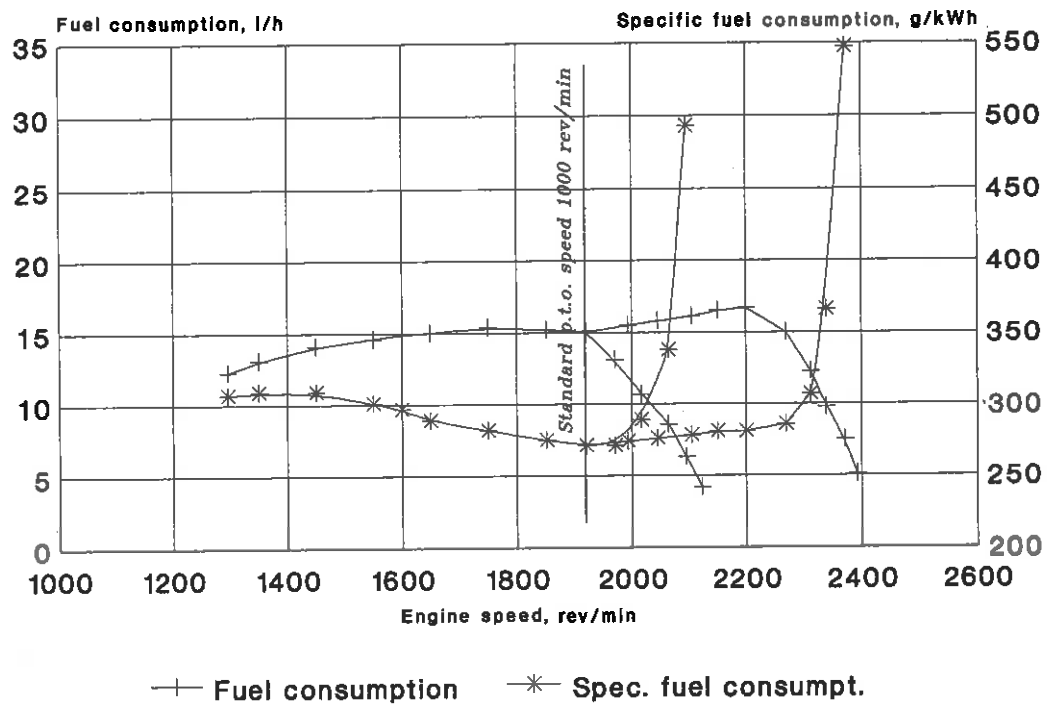
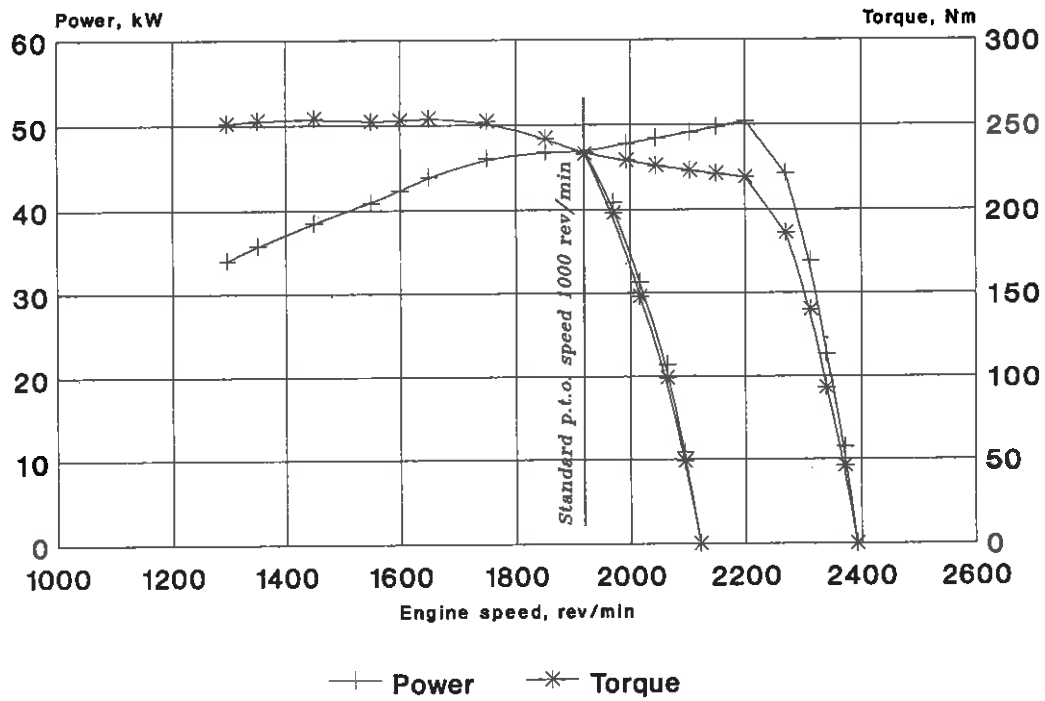


Henrik Sarin

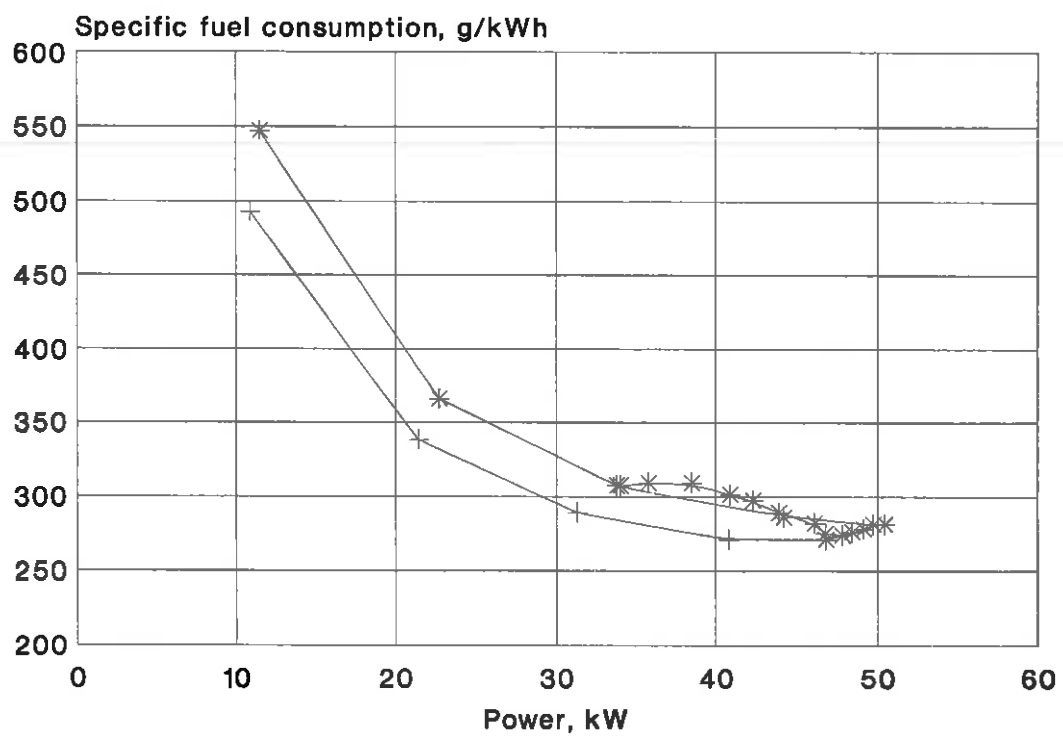
Test engineer



Ari Lemminkäinen









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