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STATE RESEARCH INSTITUTE OF ENGINEERING IN AGRICULTURE AND FORESTRY

TEST BULLETIN: O.E.C.D. No. 1406 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 1234 (4WD)

Manufactured by	Zaklady Przemyslu Ciagnikowego, Warszawa, Poland
Date of approval	26th Oktober 1992
Serial No.	1406 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	Zaklady Przemyslu Ciagnikowego "URSUS" ul. Traktorzystow 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/1234/Four wheel drive, unit construction
Number of driving wheels	4
Serial number	00002
1st Serial number	00001

ENGINE

Make/Model/Type	ZTS. Martin/Z8701.12/ 4-stroke, water cooled, direct injection diesel engine, naturally aspirated
Serial number	000631
Cylinders	
Number/disposition	6/vertical, in line
Bore/stroke	110 mm /120 mm
Capacity	6842 cm^3
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	120 dm^3
Make/Model/Type of injection pump	PAL, piston type, in line
Serial number	6M 3139R 0600
Manufacturer's production setting of injection pump:	

Flow rating at rated engine speed and full load	65.0 mm^3/stroke
Timing	24 + 2° before TDC
Make/Model/Type of injectors	VP81S453e2583, multihole
Injection pressure	16.8 + 0.8 MPa
Governor	
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
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 feed pump	Gear pump
Type of filter(s)	Centrifugal, full flow, RDP 3/A
Number	1
Cooling system	
Type of coolant	Anti-freeze
Type of pump	Centrifugal
Number of fan blades	8
Fan diameter	460 mm
Coolant capacity	26 dm^3
Type of temperature control	Thermostat
Superpressure system	30 kPa
Starting system	
Make/Model/Type	Elmot/R20e/solenoid engaged 24 V
Starter motor power rating	5.5 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	120 Ah at 20 hours
Exhaust system	
Make/Model/Type	URSUS
Location	Left hand side, vertical

TRANSMISSION

Clutch	
Make/Model/Type	URSUS/single plate, dry
Number of plates	1
Diameter of plates	380 mm
Method of operation	Hydraulically by pedal in the cab
Gear box	
Make/Model/Type	Povazskie Stojarne/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 wheel reduction gears
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 engagement	Pedal
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	2.8	2.1
2		152.019	203.402	4.5	3.3
3		83.390	111.575	8.2	6.1
4		72.299	96.736	9.4	7.0
1	II	71.924	96.234	9.5	7.1
2		45.638	61.063	14.9	11.1
3		25.034	33.496	27.2	20.3
4		21.705	29.041	31.3	23.4
1	R	153.413	205.267	4.4	3.3
2		97.345	130.248	7.0	5.2
3		53.398	71.447	12.7	9.5
4		46.298	61.947	14.7	11.0

(*) Calculated with a tyre dynamic radius index of 820 mm (ISO 4251/1-1984)

Number of revolutions of the front wheels for one revolution of the rear wheels	1.321

POWER TAKE-OFF

Main power take-off

Type	Independent
Method of engagement	Hydraulically, wet 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

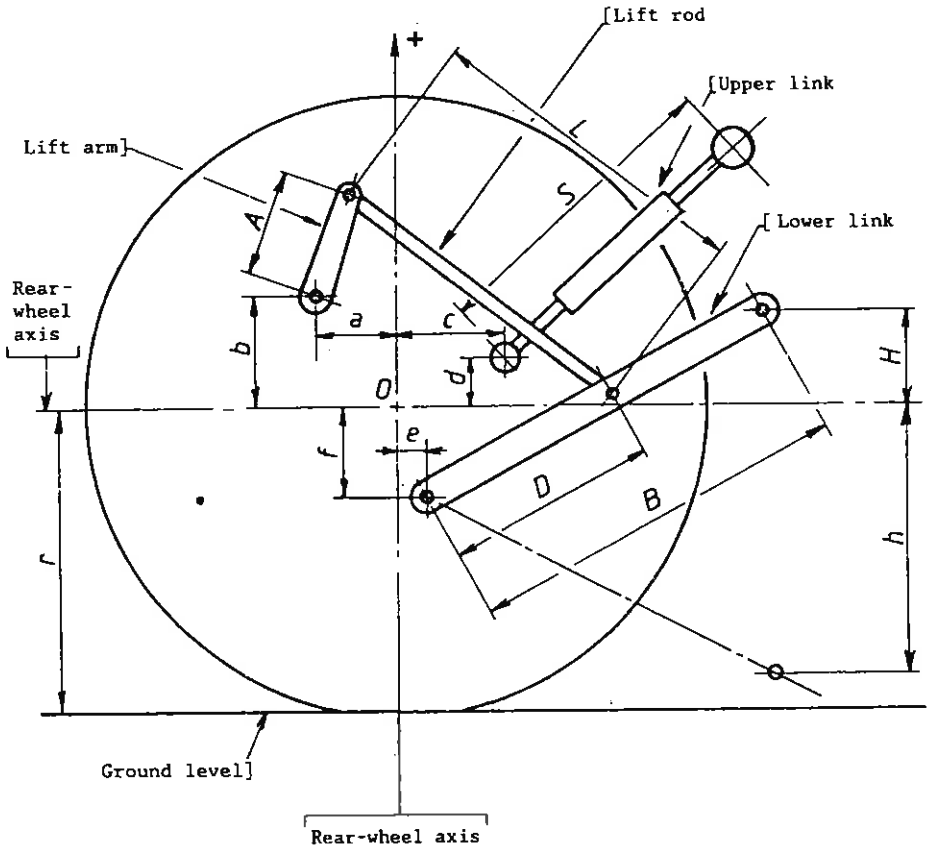
Power take-off proportional to engine speed

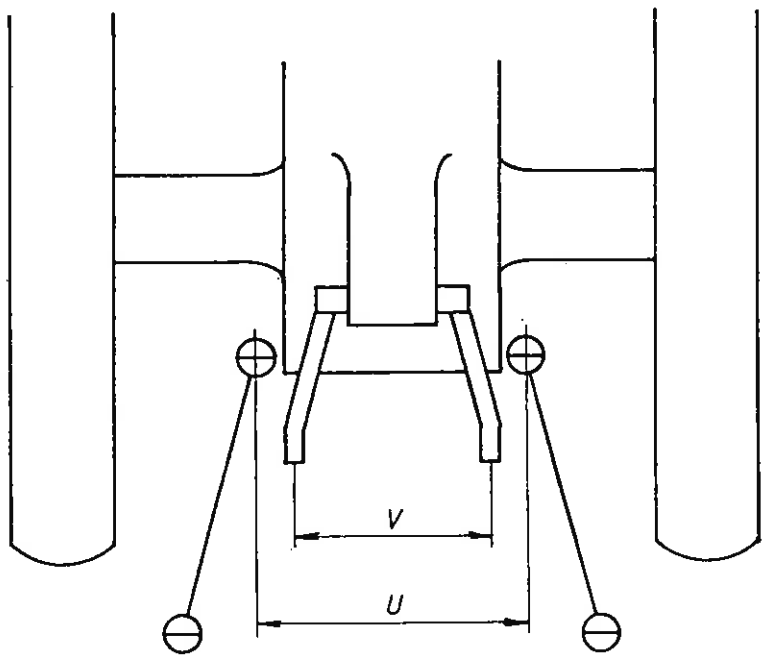
540 rev/min

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	678 mm
Distance from the median plane of the tractor	0 mm
Distance behind rear-wheel axis	507 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
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	678 mm
Distance from the median plane of the tractor	0 mm
Distance behind rear-wheel axis	507 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
Power take-off proportional to ground speed	
Travelling distance for one revolution of PTO shaft	0.195 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
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 + 2 single acting
Type of linkage lock for transport	Hydraulic
Relief valve pressure setting	17.5 $\pm$ 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	25 dm^3


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


V
U

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)	975	975
Distance of lift arm pivot point from rear-wheel axis:	horizontally	(a)	178	178
	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 605 to 825	705
Distance of upper link pivot point from rear wheel axis:	horizontally	(c)	390	390
	vertically	(d)	97, 157, 207	207
Distance of lower link pivot point from rear wheel axis:	horizontally	(e)	121	121
	vertically	(f)	260	260
Distance of lower link pivot points to lift rod pivot points on lower links		(D)	470, 505	505
Length of lift rods		(L)	from 510 to 630	610
Height of lower hitch points relative to the rear-wheel axis:	in low position	(h)	from 410 to 735	620
	in high position	(H)	from 18 to 250	80
Height above ground of lower hitch points when locked in transport position (*)			from 85 to 1070	

(*) Assuming r = 820 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	375 mm
Type of adjustment	Changing position of fixing bolts and holes
Distance of hitch point from rear-wheel axis, horizontally	904 mm, 1004 mm

Distance of hitch point from power take-off shaft end	
- vertically	303 mm
- horizontally	397 mm, 497 mm
Lateral adjustment	
- right hand	0 - 205 mm
- left hand	0 - 205 mm
Distance of pivot point from rear-wheel axis, horizontally	240 mm
Diameter drawbar pin hole	33 mm
Maximum vertical permissible load	10 kN

TRAILER HITCH I

Type	Hitch-hook
Hook diameter	47 mm
Height above ground	470 mm
Distance of hitch point from rear-wheel axis, horizontally	682 mm
Distance of hitch point from power take-off shaft end	
- vertically	208 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	859 mm
Distance of hitch point from rear-wheel axis, horizontally	808 mm
Distance of hitch point from power take-off shaft end	
- vertically	181 mm
- horizontally	301 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	35 mm
- maximum	970 mm
Horizontal distance to power take-off shaft end (rear)	570 mm

STEERING

Make/Model/Type	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	2710 mm

Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1725	1825	Offset lug rims and reversing wheel centres
Rear	1520	1880	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 0187/3

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	1205	ø 124	240
Sidelights	2000	65 x 65	908
Rearlights	1825	65 x 100	813
Reflector	1220 810	ø 80 ø 80	937 510

II. TEST CONDITIONS

Overall dimensions

	Length mm	Width		Height at top of	
		Minimum mm	Maximum mm	Protective structure mm	Exhaust silencer mm
Ballasted	4700	2280	2420	2980	3005
Unballasted	4490	2280	2420	2980	3005

Ground clearance	385 (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	2440	2450	2020	2030
Rear	4115	4180	3055	3120
Total	6555	6630	5075	5150

Ballast

	Weights		
	Number	Total mass kg	Water kg
Front	13	355	-
Rear	12	325	800

Tyres and track width specifications

	Front	Rear
Tyres:		
-dimensions	14.9-24	18.4-38
-ply rating	8	-
-load index	-	146
-type	diagonal	radial
-maximum load (tyre manufacturer's)	17.6 kN	30 kN
-inflation pressure (tyre manufacturer's)	180 kPa	140 kPa
-dynamic radius index	590 mm	820 mm
Chosen track width	1825 mm	1720 mm

Oils and lubrication

Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	19	200	200 cleaning
Gear box*)	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 - Viscocity - 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 standard
Density at 15 °C	PTO test 846 g/dm^3, drawbar power test 836 g/dm^3

III. TEST RESULTS

COMPULSORY TEST RESULTS

1. MAIN POWER TAKE-OFF

Date and location of tests 14.5.1992 / 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
1.1 MAXIMUM POWER - TWO HOUR TEST						
76.2	2200	1146	21.6	25.6	284	2.98
1.2 POWER AT RATED ENGINE SPEED						
76.2	2200	1146	21.6	25.6	284	2.98
1.3 STANDARD POWER TAKE-OFF SPEED (1000 rev/min)						
71.4	1920	1000	20.3	24.0	284	2.98
1.4 PART LOADS 1.4.1 The torque corresponding to maximum power at rated engine						
76.2	2200	1146	21.6	25.6	284	2.98
1.4.2 85% of torque obtained in 1.4.1						
66.8	2268	1181	18.9	22.3	283	2.99
1.4.3 75% of torque defined in 1.4.2						
50.9	2306	1201	15.2	17.9	298	2.84
1.4.4 50% of torque defined in 1.4.2						
34.4	2339	1218	12.0	14.3	350	2.42
1.4.5 25% of torque defined in 1.4.2						
17.5	2369	1234	9.1	10.7	519	1.63
1.4.6 Unloaded						
-	2396	1248	6.3	7.4	-	-
1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 REV/MIN) 1.5.1 The torque corresponding to maximum power						
71.4	1920	1000	20.3	24.0	284	2.98
1.5.2 85% of torque obtained in 1.5.1						
62.7	1983	1033	16.9	20.0	270	3.14
1.5.3 75% of torque defined in 1.5.2						
48.2	2033	1059	13.6	16.1	282	3.00
1.5.4 50% of torque defined in 1.5.2						
32.7	2070	1078	10.5	12.5	322	2.63
1.5.5 25% of torque defined in 1.5.2						
16.7	2106	1097	7.7	9.1	463	1.83
1.5.6 Unloaded						
-	2139	1114	5.0	6.0	-	-

No load maximum engine speed	2396 rev/min
Torque[1)] at maximum power	331 Nm
Maximum torque[1)]	376 Nm
at engine speed	1599 rev/min
Mean atmospheric conditions	
Temperature	24 °C
Pressure	102.4 kPa
Relative humidity	30 %
Maximum temperatures	
Coolant	84 °C
Engine oil	100 °C
Fuel	45 °C
Engine air intake	36 °C

[1)]Equivalent crankshaft torque

2. HYDRAULIC POWER AND LIFTING FORCE

2.1 Hydraulic power test

Date of tests	20.5.1992
Sustained pressure with relief valve open	19.6 MPa
Pump delivery rate at minimum pressure	45.7 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	35.7	17.6	10.5
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	44.1	16.5	12.1

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	47.4 kN	34.9 kN
Corresponding pressure of hydraulic fluid	16.5 MPa	16.5 MPa
Moment about rear-wheel axis	52.0 kNm	59.5 kNm
Maximum tilt angle of mast from vertical	-	15 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points										
mm	-360	-300	-200	-100	0	100	200	290		
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	47.4	48.3	49.8	49.8	50.1	49.7	49.6	49.3		
Corresponding pressure: 16.5 MPa										
At the frame kN	44.4	43.8	42.6	42.2	40.7	39.2	36.9	34.9		
Corresponding pressure: 16.5 MPa										

3. DRAWBAR PERFORMANCE

Date of tests 27.5 - 5.6.1992

Type of track Tarmacadam

		Tyre inflation presssure	
	Height of drawbar above ground	Front	Rear
Unballasted	480 mm	130 kPa	120 kPa
Ballasted	480 mm	170 kPa	140 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	21.8	39.1	2.0	2351	14.8	530	1.58	43	79	88	22		102.1
1IH	29.5	39.8	2.7	2334	14.8	439	1.90	45	80	88	24		102.1
2IL	34.5	39.7	3.1	2327	15.0	407	2.05	46	79	90	23		102.1
2IH	45.6	39.3	4.1	2309	14.9	363	2.30	47	80	90	24		102.1
3IL	57.1	37.1	5.5	2247	15.0	357	2.35	47	79	89	25		102.1
4IL	60.5	34.4	6.3	2201	13.6	330	2.54	47	78	86	23		102.1
1IIL	61.4	34.8	6.3	2194	13.5	355	2.36	50	80	86	25		102.1
3IH	62.2	29.8	7.5	2198	11.4	346	2.42	50	80	86	24		102.1
4IH	61.8	25.1	8.9	2190	9.2	350	2.39	50	80	86	24		102.1
1IIH	63.7	26.0	8.9	2179	9.4	334	2.51	49	78	88	24		102.1
2IIL	64.7	21.9	10.6	2187	7.9	333	2.51	50	81	87	25		102.1
2IIH	62.8	15.6	14.5	2181	5.3	326	2.57	53	84	94	25		102.1
3IIL	59.2	10.6	20.2	2190	3.8	351	2.38	56	82	94	26		102.1
4IIL	57.7	8.8	23.6	2204	3.4	355	2.35	55	87	94	25		102.1

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	27.0	48.6	2.0	2343	15.0	462	1.81	46	80	88	25	28	101.0
1IH	35.2	48.0	2.6	2314	14.9	405	2.06	47	80	89	25	28	101.0
2IL	40.2	46.6	3.1	2308	14.9	376	2.22	47	79	89	25	28	101.0
2IH	54.3	48.1	4.1	2264	15.0	369	2.27	49	80	88	24	28	101.0
3IL	60.7	40.2	5.4	2178	14.4	351	2.38	49	78	89	24	28	101.0
4IL	58.8	33.0	6.4	2192	11.9	369	2.27	50	79	89	23	28	101.0
1IIL	61.3	34.2	6.5	2200	12.1	353	2.37	51	79	89	24	28	101.0
3IH	61.9	29.2	7.6	2204	10.2	341	2.46	51	79	88	25	28	101.0
4IH	60.7	24.4	8.9	2194	8.6	351	2.38	51	79	88	24	28	101.0
1IIH	63.4	25.4	9.0	2211	8.9	329	2.54	50	80	87	25	28	101.0
2IIL	62.8	21.0	10.8	2206	7.3	336	2.49	52	78	87	24	28	101.0
2IIH	61.9	15.2	14.7	2202	4.9	346	2.42	52	78	87	23	28	101.0
3IIL	57.1	10.3	19.9	2184	4.7	372	2.25	52	77	86	23	28	101.0
4IIL	51.0	8.0	22.9	2192	5.5	414	2.02	51	80	90	24	28	101.0
3.3.1 FIVE-HOUR TEST at 75% of pull at maximum power on gear 3IH													
3IH	49.7	21.9	8.2	2274	7.1	342	2.42	52	80	95	23	30	102.0
3.3.2 FIVE-HOUR TEST at pull corresponding to 15% wheelslip													
2IH	56.6	50.5	4.0	2252	-	-	-	56	82	97	22	30	101.8

Oil consumption during ten hours duration of tests 3.3.1 and 3.3.2 — 51 g/h

4. TURNING AREA AND TURNING CIRCLE

Wheel equipment if several sets of tyres are tested.

	With brakes		Without brakes	
	Right-hand m	Left-hand m	Right-hand m	Left-hand m
Radius of turning area	5.38	5.24	6.09	6.01
Radius of turning circle	5.14	5.00	5.85	5.77

5. LOCATION OF CENTRE OF GRAVITY

Height above ground — 995 mm

Distance forward from the vertical plane containing the axis of the rear-wheels — 1067 mm

Distance from the median plane of the tractor — 7 mm to left

6. BRAKING

Date of tests — 11. and 12.6.1992

6.1 Cold service braking device test

	Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2
Ballasted tractor	34.0	0.40	3.3
Unballasted tractor	34.4	0.36	3.3

6.2 Fade test

Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2
34.2	0.46	3.5

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	540 N	540 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	4IIH
Travelling speed before acceleration	25.6 km/h
Sound level	91.0 dB(A)

8. REPAIRS

None

9. REMARKS

None

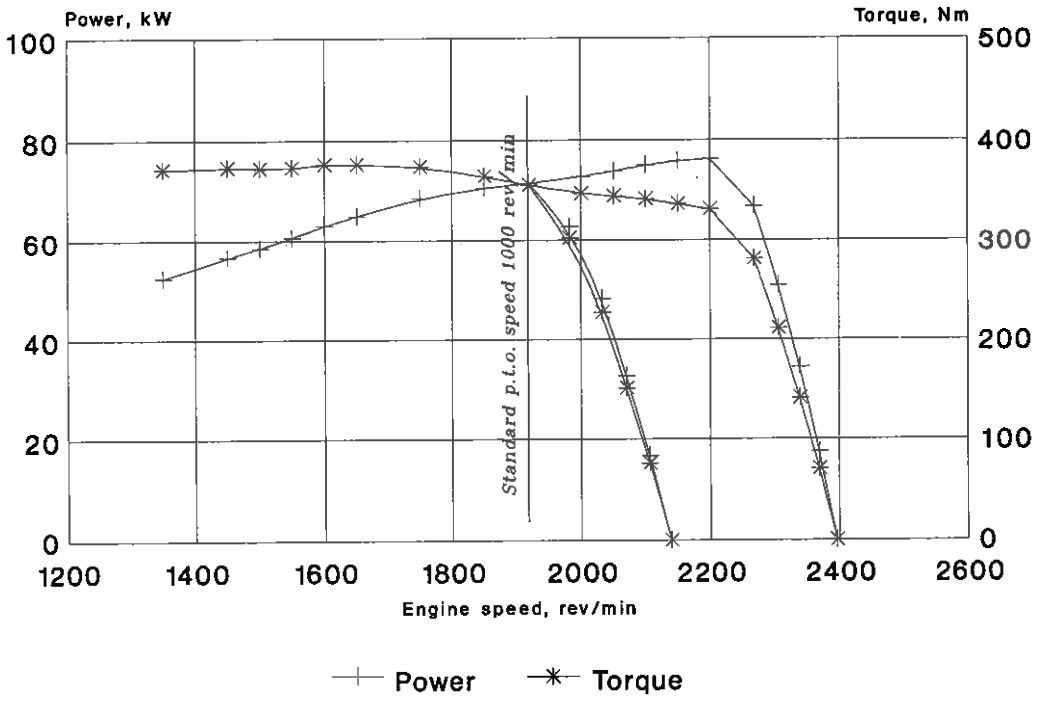
STATE RESEARCH INSTITUTE OF ENGINEERING IN AGRICULTURE AND FORESTRY

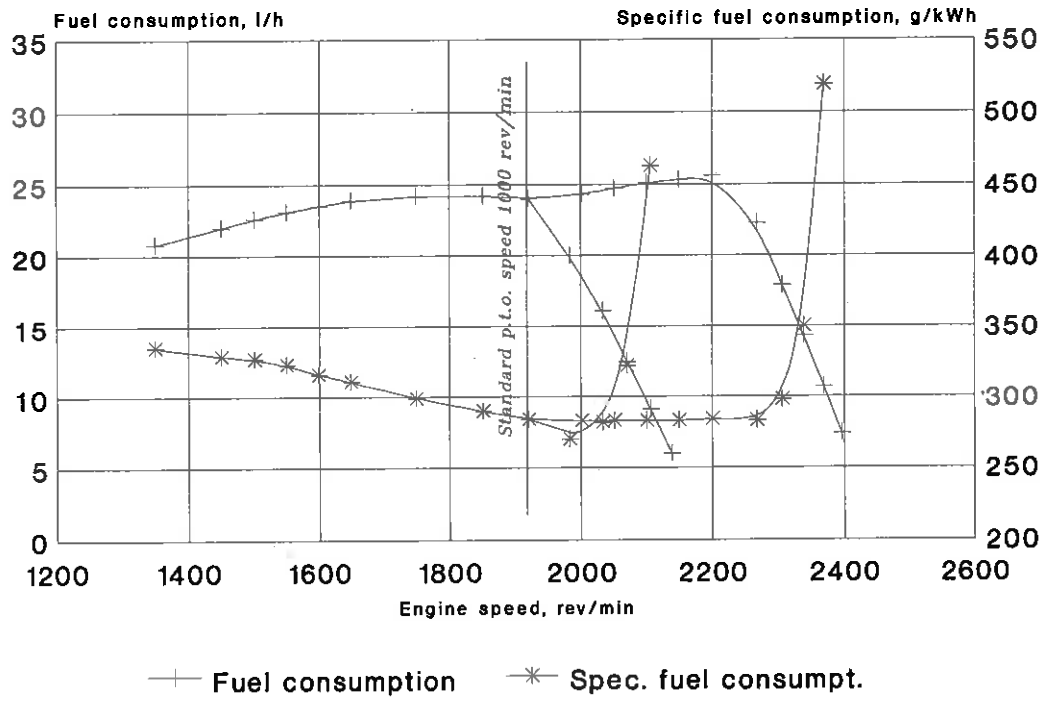
Vihti, May 14th 1992

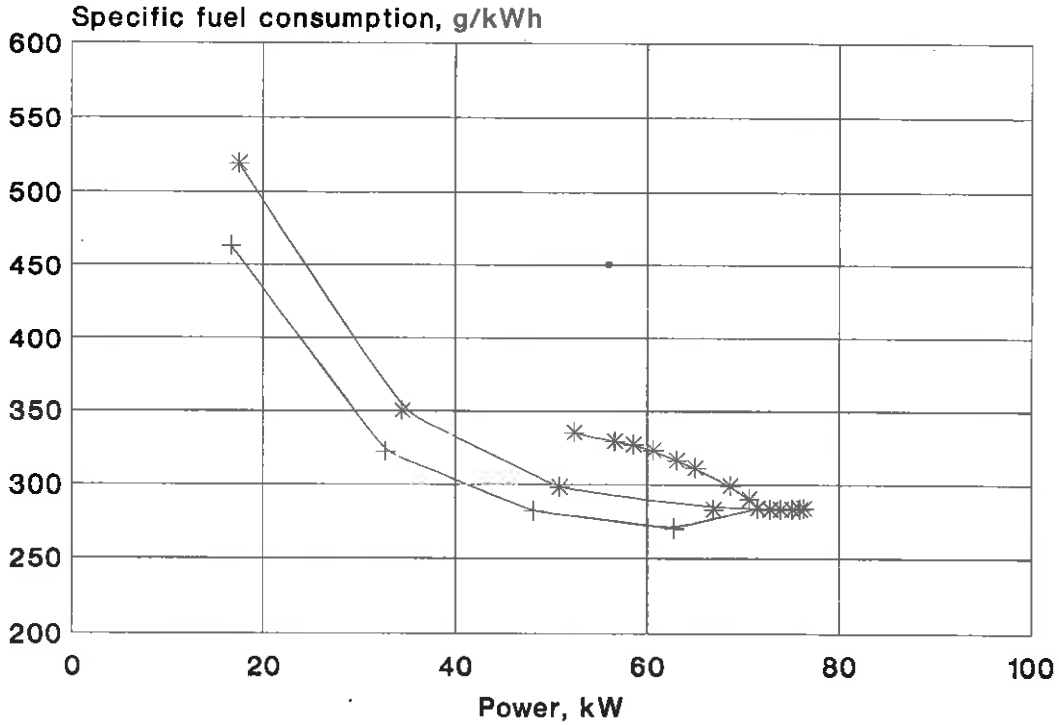
Director Henrik Sarin

Valtion maatalousteknologian tutkimuslaitos

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

Painorasteri Oy 1992