Report on test in accordance with OECD STANDARD CODE 2 for the Official Testing of Agricultural and Forestry Tractor Performance

Restricted Code

OECD No. 2/1866

Date of approval: 22 November 1999

Agricultural Tractor

URSUS 1734 (4WD)

Manufacturer

Zakłady Przemysłu Ciągnikowego
„URSUS" S. A., Warszawa, Poland

INSTYTUT BUDOWNICTWA, MECHANIZACJI I ELEKTRYFIIKACJI ROLNICTWA
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This is a report on a tractor test in accordance with OECD STANDARD CODE for the Official Testing of Agricultural and Forestry Tractor Performance, CODE 2, Paris 1999.

It does not contain an evaluation of the tractor on practical work.

Duration of tests: Juni till September 1999

This report has been approved by the OECD Co-Ordinating Centre (CEMAGREFF France) as being in accordance with the OECD STANDARD CODE.

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- Tractor manufacturer name and address:	Zakłady Przemysłu Ciągnikowego „URSUS" S. A., 02-495 Warszawa, Plac Czerwca 1976 roku nr 1
- Location of tractor assembly:	same
- Submitted for test by:	The manufacturer
- Selected for test by:	The manufacturer with agreement by IBMER
- Place of running-in:	Zakłady Przemysłu Ciągnikowego „URSUS" S. A.
- Duration of running-in:	50 hours
- Location of test:	IBMER-ZMT 05-824 Kłudzienko, Poland

1 SPECIFICATION OF TRACTOR

1.1 Identification

- Make:	URSUS
- Model:	1734
- Type:	wheeled tractor, four wheel drive
- Number of driving wheels:	4
- Serial N°:	01532
- 1st serial N°:	01532

1.2 Engine

- Make:	MARTIN DIESEL
- Model:	Z 8604.000
- Type:	water-cooled, 4-stroke Diesel, direct injection, supercharged
- Serial N°:	F03648

1.2.1 *Cylinders*

- Number:	6
- Dispositions:	in line
- Bore / Stroke:	110 / 128 mm
- Capacity:	7299 cm^3
- Compression ratio:	16,8
- Arrangement of valves:	overhead, in line
- Cylinder liners:	wet

1.2.2 *Supercharging*

- Make:	CZ. Strakonice, a. s.
- Model:	K 27 – 3060 G 13.21

	- Type:	turbocharger
	- Pressure:	100 kPa
1.2.3	*Fuel system*	
	- Fuel feed system:	lift pump piston-type, integral with fuel injection pump, type MOTORPAL AM 3550
	- Make, model, type of fuel filter(s) :	2, AUTOBRZDY Jablonec n. p. 443 741 429 000 two-stage with paper cartridge
	- Capacity of fuel tank:	170 dm^3
	- Make, model, type of injection pump:	MOTORPAL 6M 3155 in line with overpressure corrector
	- Serial N°:	TD 0021
	- Manufacturer's production setting of injection pump:	
	· Flow rate: (rated engine speed and full load)	34,05 dm^3/h
	· Timing:	$22^{o\pm1}$ before T.D.C.
	- Make, model, type of injectors:	MOTORPAL DOP 150 S 535-1417
	- Injection pressure:	20,5 MPa
1.2.4	*Governor*	
	- Make, model, type:	MOTORPAL RV 3M 300 1100 3311 mechanical, centrifugal, variable speed, incorporated into fuel injection pump
	- Governed range of engine speed:	650 ÷ 2450 rev/min
	- Rated engine speed:	2200 rev/min
1.2.5	*Air cleaner*	
	- Pre cleaner	
	· Make, model, type:	SANDRIK n.p. D.Hámre PC 750, cyclon type
	· Location of air intake:	under bonnet
	- Main cleaner	
	· Make, model, type:	SANDRIK ŠTOS a. s. 9470 oil bath
	- Maintenance indicator:	warning light on dashboard
1.2.6	*Lubrication system*	splash and pressure lubrication with oil cooler
	- Type of feed pump:	gear pump

	- Type of filter(s) :	full flow with replaceable paper element oil filter PP-8.8.2
	- Number of filters:	2
1.2.7	*Cooling system*	
	- Type of coolant:	water or water-anti freeze mixture
	- Type of pump:	centrifugal
	- Specification of fan:	2 belt driven
	· Number of fan blades:	8
	· Fan diameter:	460 mm
	- Coolant capacity:	29 dm^3
	- Type of temperature control:	thermostatic
	- Superpressure system:	70 kPa
1.2.8	*Starting system*	electrical
	- Make, model, type:	ELMOT, R20e 24V, electromagnetic engagement
	- Starter motor power rating:	6,50 kW
	- Cold starting aid:	none
	- Safety device:	only operable when the range gear (**I**, **II**, **R**) lever is in neutral position
1.2.9	*Electrical system*	
	- Voltage:	12 / 24 V negative earth
	- Generator:	alternator
	· Make, model, type:	ELMOT, A125-70 u, 14V 70 A
	· Power:	0,98 kW
	- Battery of accumulators:	12V, ZAP Piastów, 6SE172
	· Number:	2
	· Rating:	172 Ah at 10 hours
1.2.10	*Exhaust system*	
	- Make, model, type:	expansion and absorption muffler
	- Location:	at the left side of the engine, height of outlet above ground - 3080 mm
1.3	**Transmission**	
1.3.1	*Clutch*	only for travelling
	- Make:	MARTIN DIESEL
	- Model:	single action
	- Type:	dry
	- Number of plates:	1
	- Diameter of plates:	380 mm

- Method of operation: hydraulically by pedal

1.3.2 *Gear box*

- Make: Považskě Strojarne Považskă Bystrica made in Slovakia
- Model: mechanical
- Type: 88 960145
- Description:
  - gear box with 4 speeds (synchronized);
  - group **I**, **II** (forward) and **R** (reverse);
  - 2-speed hydraulically actuated planetary torque multiplier („**M+**", „**M-**")

	Forward	Reverse
Number of gears	4	4
Number of groups	2	1
Number of ranges (torque multiplier)	2	2
Total of arrangements	16	8

- Oil cooler: heat exchanger with air
- Available options:
  - gear box with 3 speeds (synchronized);
  - range gear **I**, **II** (forward) and **R** (reverse);
  - 2-speed hydraulically actuated planetary torque multiplier („**M+**", „**M-**")
- Number of gears: 12 forward, 6 reverse

1.3.3 *Rear axle and final drives*

- Make: URSUS
- Model: crown wheel and bevel pinion differential
- Type: planetary final drives
- Differential lock:
  - Type: multiplate
  - Method of engagement: electrohydraulical by switch common with front differential lock
  - Method of disengagement: electrohydraulical by switch

1.3.4 *Front axle and final drives*

- Make: URSUS
- Model: with non central shaft
- Type: crown wheel and bevel pinion differential, planetary final drives
- Differential lock:
  - Type: multiplate

- Method of engagement: electrohydraulical by switch common with rear differential lock
- Method of disengagement: electrohydraulical by switch

1.3.5 *Total ratios and travelling speeds*

Gear No	Group	Range (torque multiplier)	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed *) at rated engine speed of 2200 rev/min, km/h
forward				
1	I	M+	320,556	2,21
		M-	239,578	2,96
2		M+	203,402	3,49
		M-	152,019	4,66
3		M+	111,575	6,36
4			96,736	7,33
1	II		96,234	7,37
3	I	M-	83,390	8,50
4			72,199	9,82
1	II		71,924	9,86
2		M+	61,063	11,61
		M-	45,638	15,54
3		M+	33,496	21,17
4			29,041	24,42
3		M-	25,034	28,33
4			21,705	32,67
reverse				
1	R	M+	205,267	3,45
		M-	153,413	4,62
2		M+	130,248	5,44
		M-	97,345	7,28
3		M+	71,447	9,93
4			61,947	11,45
3		M-	53,398	13,28
4			46,298	15,32

*) Calculated with a tyre dynamic radius index of 855 mm (ISO 4251-1 1998)

- Number of revolutions of front wheels for one revolution of rear-wheels:	1,4038

1.4 Power take-off

1.4.1 *Main power take-off*

- Type:	independent
- Method of engagement:	wet hydraulic multiplate clutch, operated by hand lever, independent of main drive clutch
- Number of shafts:	1
- Method of changing power take-off shaft ends and speeds:	by changing PTO shaft

1.4.1.1 Power take-off proportional to engine speed

Power take off at 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 - 1991)
- Height above ground:	719 mm
- Distance from the median plane of the tractor:	0 mm
- Distance behind rear-wheel axis:	530 mm
- PTO speed at rated engine speed:	629 rev/min
- Engine speed at standard PTO speed:	1890 rev/min
- Ratio of rotation speeds:	3,500
- Power restriction:	48 kW;
- Maximum torque transmissible:	86,6 daNm
- Direction of rotation (viewed from behind tractor):	clockwise

Power take off at 1000 rev/min

- Location:	at the rear of the tractor
- Diameter of power take-off shaft end:	45 mm
- Number of splines:	20 (in conformity with ISO 500 – 1991)
- Height above ground:	719 mm
- Distance from the median plane of the tractor:	0 mm
- Distance behind rear-wheel axis:	535 mm

- PTO speed at rated engine speed:	1146 rev/min
- Engine speed at standard PTO speed:	1920 rev/min
- Ratio of rotation speeds:	1,920
- Power restriction:	none
- Maximum torque transmissible:	none restriction
- Direction of rotation (viewed from behind tractor):	clockwise

1.5 Hydraulic power lift

- Make:	URSUS
- Model:	BOSCH EHR, hydraulic with electronical position, draft or mixed control, lower link sensing
- Type:	lever type
- Type of hydraulic system:	open centre, with draught, position and response control
- Type and number of cylinders:	single acting, 3, - one internal and two external,
- Type of linkage lock for transport:	hydraulic
- Relief valve pressure setting:	21,0 ÷ 23,0 MPa
- Opening pressure of cylinder safety valve:	$20,0^{+1,9}$ MPa
- Lift pump type:	gear
- Transmission between pump and engine:	from PTO transmission (engaged by hand lever)
- Type and number of filters:	1 magnetic and 1 screen filter in suction side and full flow filter with replaceable paper cartridge in delivery side of pump of hydraulic and gear box
- Site of oil reservoir:	gear box
- Type, number and location of tapping points:	four pressure and one return at the rear of tractor, quick release 12,5 in conformity with ISO 5675-1992
- Maximum volume of oil available to external cylinders:	25 dm^3

1.6 Three point linkage

- Category:	3 in conformity with ISO 730/1-1994 with WALTERSCHEID quick couplers
- Category adapter:	2 by changing the ball ends

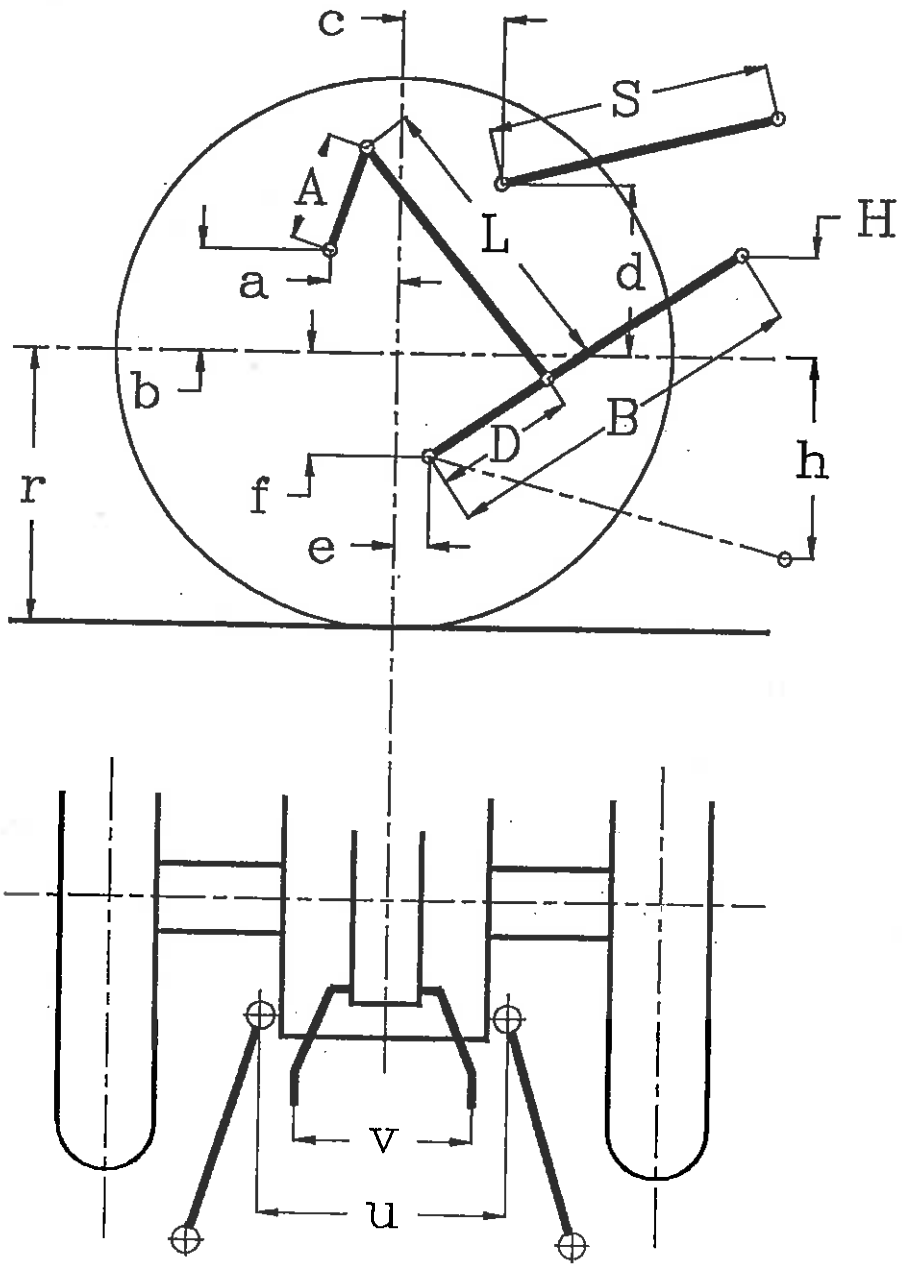


Figure 1
Lift test - Linkage geometry

		Dimension of range mm	Settings used in test mm
Length of lift arms:	(A)	330	
Length of lower links:	(B)	1018	
Distance of lift arm pivot point from rear-wheel axis: - horizontally:	(a)	-170	
- vertically:	(b)	285	
Horizontal distance between the 2 lower link points:	(u)	572	
Horizontal distance between the 2 lift arm end points:	(v)	630	
Length of upper link:	(S)	659 ÷ 880	750
Distance of upper link pivot point from rear wheel axis: - horizontally:	(c)	385	
- vertically:	(d)	A): 236; B): 296; C): 346	296
Distance of lower link pivot point from rear wheel axis: - horizontally:	(e)	130	
- vertically:	(f)	262	
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	513	
Length of lift rods:	(L)	516 ÷ 635	610
Height of lower hitch points relative to the rear-wheel axis:			
- in low position:	(h)	434 ÷ 700	642
- in high position:	(H)	285 ÷ 74	115
Height above ground of lower hitch points when locked in transport position*)		Any height within lift range	
*) Assuming r = 855 tyre dynamic radius index of ISO 4251/1-1998			

Table 2.1
Dimensions of linkage geometry when connected to the standard frame

1.7 Swinging drawbar

- Type:	clevis
- Height above ground:	463 mm
- Type of adjustment:	swinging, sliding drawbar in two distance of hitch point from power take-off shaft end – 400 mm and 500 mm
- Distance of hitch point from rear-wheel axis, horizontally:	935, 1035 mm
- Distance of hitch point from power take-off shaft end:	
· Vertically:	256 mm
· Horizontally:	400, 500 mm
- Lateral adjustment (centre of clevis):	
· Right hand:	100 and 165 mm for 400 mm; 120 and 195 mm for 500 mm
· Left hand:	100 and 165 mm for 400 mm; 120 and 195 mm for 500 mm
- Distance of pivot point from rear-wheel axis, horizontally:	365 mm
- Diameter drawbar pin hole:	33 mm
- Maximum vertical permissible load:	7 kN

1.8 Trailer hitch I

- Type:	clevis with rubber shock absorber
- Hole diameter:	33 mm
- Height above ground:	740, 790, 840, 890 mm
- Distance of hitch point from rear-wheel axis, horizontally:	815 mm
- Distance of hitch point from power take-off shaft end:	
· Vertically:	21, 71, 121, 171 mm
· Horizontally:	280 mm
- Maximum vertical permissible load:	6 kN

1.8.1 Trailer hitch II

- Type:	Hitch-hook
- Hook diameter:	47 mm in conformity with ISO 6489-1 - 1991
- Height of hitch point above ground:	489 mm

- Distance of hitch point from rear-wheel axis, horizontally:	714 mm
- Distance of hitch point from power take-off shaft end:	
· Vertically:	230 mm
· Horizontally:	179 mm
Maximum vertical permissible load:	21 kN

1.9 Holed drawbar

- Number of holes:	9
- Distance between holes:	80 mm
- Hole diameter:	32 mm
- Thickness/width of the drawbar:	2x20 / 100 mm
- Height above ground:	
· Maximum:	1140 mm
· Minimum:	155 mm
- Horizontal distance to power take-off shaft:	589 mm

1.10 Steering

- Make:	URSUS
- Model:	ORBITROL Danfoss
- Type:	OSPB 160 ON
- Method of operation:	hydrostatic
· Pump(s):	1
· Ram(s):	1
- Working pressure:	11,0 MPa

1.11 Brakes

1.11.1 *Service brake*

- Make:	URSUS
- Model:	disc brakes
- Type:	oil immersed, acting on rear wheels
- Method of operation:	two pedals, hydraulically actuated, independent, or combined operation
- Trailer braking take-off	air brakes, air compressor FOS Łódź, single pipe system

1.11.2 *Parking brake*

- Type:	mechanical, coupled to both service brakes
- Method of operation:	hand lever with ratchet

1.12 Wheels

- Number: 4
  - Front: 2, driving and steering – 14.9 – 28 8 PR
  - Rear: 2, driving - 20.8 R 38 10 PR A8
- Wheel base: 2706 mm
- Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1724	1820	offset lug rims and reversing wheel centres
Rear	1835	1835	none

1.13 Protective structure

- Make: Fabryka Maszyn Rolniczych „Agromet" Kunów, 27-222 Kunów, ul. Fabryczna 1
- Model: protective cab
- Type: 87.000.113
- Manufacturer's name and address: Fabryka Maszyn Rolniczych „Agromet" Kunów, 27-222 Kunów, ul. Fabryczna 1
- Protective device: Cab, not tiltable
- OECD approval:
  - Approval number: 4/0/550
  - Date of approval: 25.09.1998
  - Nos. of minor modification certificates, if any: none

1.14 Seat

1.14.1 *Driver's seat*

- Make: Grammer
- Model: Grammer
- Type: DS 85H/90A
- Seat and steering wheel reversible: no
- Type of suspension: spiral spring
- Type of damping: hydraulic damper
- Range of adjustment:
  - Longitudinal: 150 mm
  - Vertical: 60 mm
- Safety belt: no

1.15 Lighting

	Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Headlights	1120	∅ 124	251
Sidelights	2034	71 x 70	901
Rearlights	1840	70 x 100	808
Reflectors	1235	∅ 76	907
	845	∅ 76	518

2 TEST CONDITIONS

2.1 Overall dimensions (unballasted tractor)

Length mm	Width minimum mm	Width maximum mm	Height at top of protective structure mm	Height at top of exhaust pipe mm
4580	2365	2365	3055	3080

2.2 Ground clearance (unballasted tractor) 370 mm

- Clearance-limiting part: swinging drawbar

2.3 Tractor mass

- Mass (with cab):

	Ballasted Without driver kg	Ballasted With driver kg	Unballasted Without driver kg	Unballasted With driver kg
Front	3418	3429	2010	2021
Rear	3746	3810	3580	3644
Total	7164	7239	5590	5665

2.4 Ballast

	Weight		Water
	Number	Total mass	
		kg	kg
Front	25	1042	-
Rear	16	532	-
Optional	-	-	-

2.5 Tyres and track width specifications

	Front	Rear
Tyres:	STOMIL Olsztyn	
dimensions:	14.9 – 28	20.8 R 38
ply rating:	8 PR	10 PR A8
type:	diagonal	radial
maximum load (tyre manufacturer's)	18,80 kN	39,06 kN
maximum load (tractor manufacturer's)	18,80 kN	36,50 kN
inflation pressure (tyre manufacturer's)	180 kPa	160 kPa
dynamic radius index:	640 mm	855 mm
Chosen track width:	1820 mm	1835 mm

2.6 Fuel

- Type: DL in conformity with Polish standard PN-92/C-96051
- Density at 15° C 0,842 g/cm³

2.7 Oils and lubricants

2.7.1 *Capacity and change interval*

	Capacity dm³	Oil change h	Filter change h
Engine	19,0	200	200
Air cleaner	4,0	100	-
Gear box, rear axle, hydraulic system	53,0	1600	400
Rear final drives	11,6		-
Front axle	3,5		
Front final drives	2,5		
Steering	7,0	800	800

2.7.2 *Specifications:*

	Recommended	Used during test
Engine oil Type: Viscosity: Classification:	 FALCO SUPEROL SAE 15W/40 API-CD.	 FALCO SUPEROL SAE 15W/40 API-CD
Transmission and hydraulic system oil Type: Viscosity: Classification:	 HIPOL 6 SAE 80W API GL-4	 HIPOL 6 SAE 80W API GL-4
Steering oil Type: Viscosity: Classification:	 L-HL 15 SAE 10W/30 API GL-4	 L-HL 15 SAE 10W/30 API GL-4

2.7.3 *Grease* ŁT 42
- Number of lubrication points: 12

3 COMPULSORY TEST RESULTS

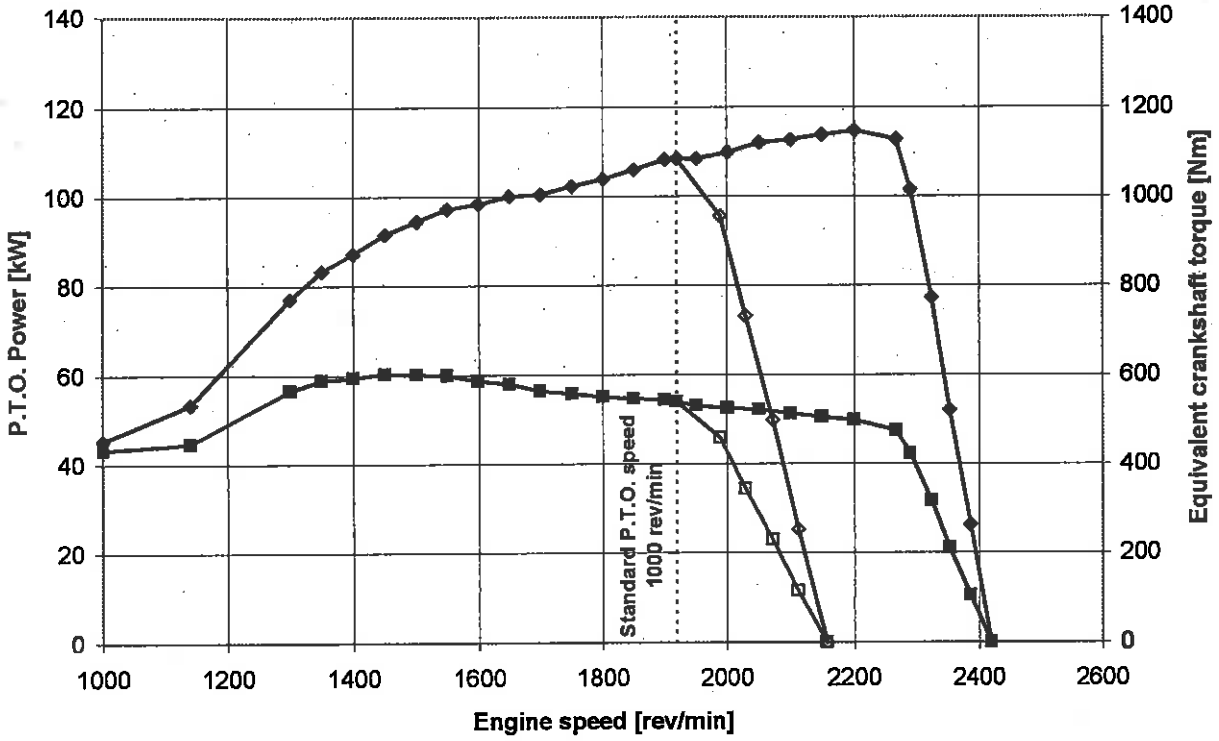
3.1 Main power take-off

- Date and location of test: 10.08.99, ZMT-IBMER Kłudzienko
- Type of dynamometer bench: Schenck W-450

Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific.	
kW	rev/min	rev/min	kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - TWO-HOUR TEST						
114,7	2200	1146	28,67	34,05	249,9	3,37
3.1.2 POWER AT RATED ENGINE SPEED						
114,7	2200	1146	28,67	34,05	249,9	3,37
3.1.3 STANDARD POWER TAKE-OFF SPEED						
108,5	1920	1000	24,70	29,33	227,7	3,70
3.1.4 PART LOADS (curve a)						
3.1.4.1 the torque corresponding to maximum power at rated engine speed						
114,7	2200	1146	28,67	34,05	249,9	3,37
3.1.4.2 85 % of torque obtained in 4.1						
101,5	2289	1192	26,79	31,82	264,0	3,19
3.1.4.3 75 % of torque obtained in 4.2						
77,3	2323	1210	21,74	25,82	281,3	2,99
3.1.4.4 50 % of torque obtained in 4.2						
52,2	2352	1225	16,45	19,54	315,1	2,67
3.1.4.5 25 % of torque obtained in 4.2						
26,4	2385	1242	12,45	14,79	471,5	1,79
3.1.4.6 unloaded						
-	2419	1260	7,32	8,69	-	-
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (curve b)						
3.1.5.1 the torque corresponding to maximum power						
108,5	1920	1000	24,70	29,33	227,7	3,70
3.1.5.2 85 % of torque obtained in 5.1						
95,6	1989	1036	22,72	26,98	237,7	3,54
3.1.5.3 75 % of torque obtained in 5.2						
73,2	2029	1057	18,26	21,69	249,6	3,37
3.1.5.4 50 % of torque obtained in 5.2						
49,8	2072	1079	14,26	16,94	286,2	2,94
3.1.5.5 25 % of torque obtained in 5.2						
25,3	2112	1100	10,25	12,17	404,5	2,08
3.1.5.6 unloaded						
-	2158	1124	6,15	7,30	-	-

- No load maximum engine speed: 2419 rev/min
- Torque (equivalent crankshaft) at maximum power: 49,79 daNm
  - at rated engine speed: 49,79 daNm
  - at standard power take-off speed: 53.96 daNm
- Maximum torque (equivalent crankshaft): 60,31 daNm
  (engine speed): 1450 rev/min

Mean atmospheric conditions:	
Temperature:	26° C
Pressure:	1000 hPa
Relative humidity:	55 %
Maximum temperatures:	
Coolant:	85° C
Engine oil:	95° C
Fuel:	40° C
Engine air intake:	27° C


P.T.O. Power [kW]
Equivalent crankshaft torque [Nm]
Standard P.T.O. speed
1000 rev/min
Engine speed [rev/min]
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20
40
60
80
100
120
140
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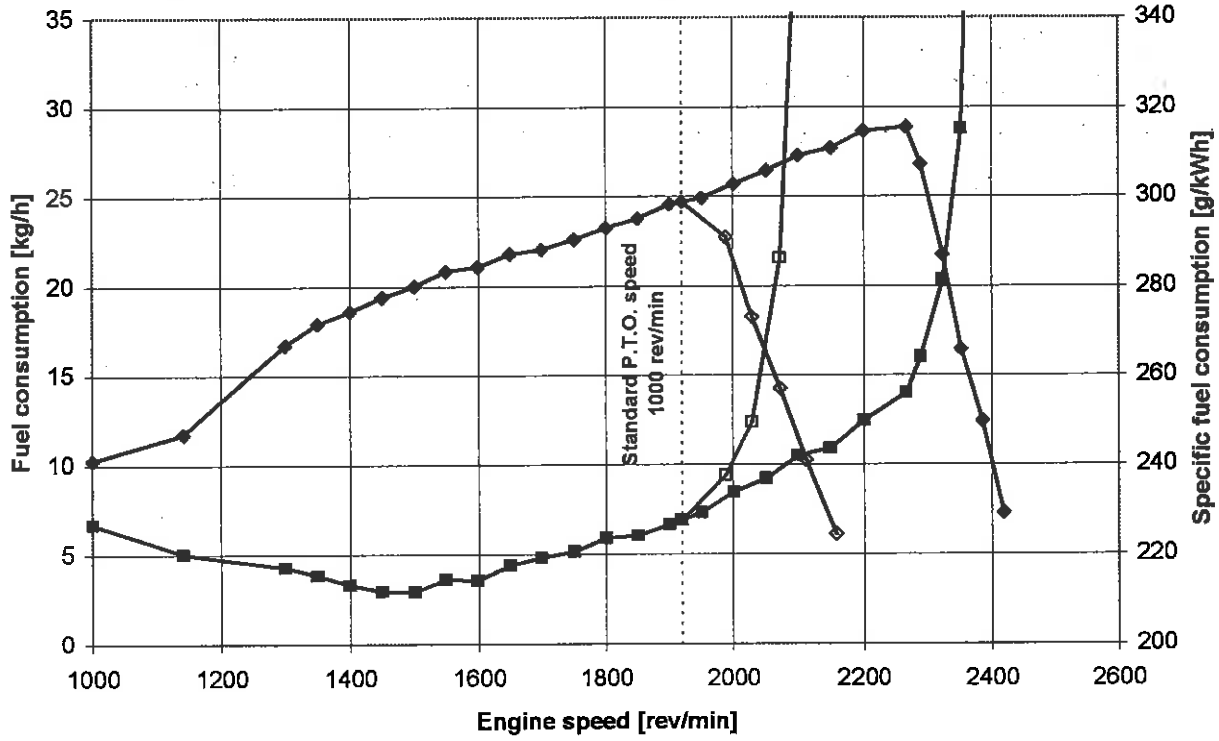
200
400
600
800
1000
1200
1400
1000
1200
1400
1600
1800
2000
2200
2400
2600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Specific fuel consumption [g/kWh]
Standard P.T.O. speed
1000 rev/min
Engine speed [rev/min]
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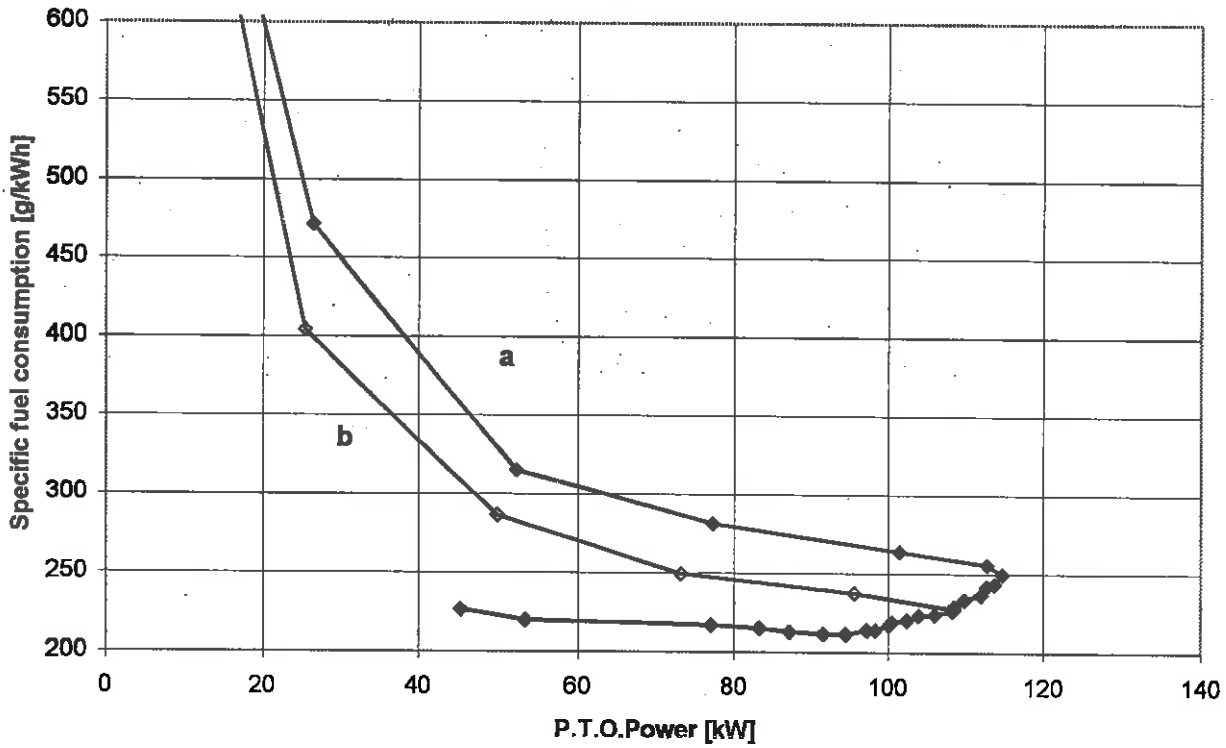
1800
2000
2200
2400
2600



3.2 Hydraulic power and lifting force

- Date of test: 29.07.99.

3.2.1 *Hydraulic power test*

- Sustained pressure with relief valve open: 20,0 MPa
- Pump stalled: yes
- Pump delivery rate at minimum pressure 58,0 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	49,3	18,0	14,79
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	51,2	17,5	14,93

- Tapping point used for test: rear
- Opening pressure of the unloading valve: 21,0 MPa
- Closing pressure of the unloading valve: 20,5 MPa

3.2.2 *Power lift test*

- Linkage settings for test - see Table 2.1 and Figure 1.

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	213 mm	178 mm
Vertical movement	757 mm	885 mm
Maximum corrected force exerted through full range	66,88 kN	45,32 kN
Corresponding pressure of hydraulic fluid	18,9 MPa	18,9 MPa
Moment about rear-wheel axis	-	78,58 kNm
Maximum tilt angle of mast from vertical	-	12 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points													
mm	-415	-400	-380	-300	-200	+100	0	+100	+200	+300	+370	+400	+470
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting of the hydraulic lift system)													
at the hitch points in kN	-	-	70,79	70,33	70,15	68,74	68,31	67,83	67,52	67,23	66,88	-	-
Corresponding pressure: 18,9 MPa													
at the frame in kN	64,91	64,62	63,17	61,97	59,81	58,06	55,55	53,66	51,98	49,98	47,96	46,80	45,32
Corresponding pressure: 18,9 MPa													

3.3 Drawbar power test (unballasted tractor)

- Date of test: 24.08.99
- Type of track: concrete

Gear and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption
	kW	kN	km/h	rev/min	%	g/kWh
3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)						
1 I M+	24,46	42,13	2,09	2381	12,7	509,0
1 I M-	32,53	42,13	2,78	2367	12,7	461,1
2 I M+	38,15	42,13	3,26	2356	12,7	422,0
2 I M-	50,56	42,13	4,32	2334	12,7	387,7
3 I M+	68,11	42,13	5,82	2308	12,7	352,4
4 I M+	77,71	42,13	6,64	2283	12,7	350,0
1 II M+	78,41	42,13	6,70	2291	12,7	338,0
3 I M-	89,53	42,13	7,65	2267	12,7	319,4
4 I M-	92,65	37,35	8,93	2170	7,8	302,2
1 II M-	96,29	38,22	9,07	2210	8,4	299,1
2 II M+	95,87	31,01	11,13	2215	4,8	300,9
2 II M-	99,94	23,89	15,06	2200	3,1	286,9
3.3.2 FUEL CONSUMPTION						
3.3.2.1 in selected gear, at maximum power at rated speed						
2 II M-	99,94	23,89	15,06	2200	3,1	286,9
3.3.2.1.1 75 % of pull at maximum power at rated speed						
2 II M-	79,05	17,92	15,88	2303	2,4	315,0
3.3.2.1.2 50 % of pull at maximum power at rated speed						
2 II M-	53,94	11,95	16,25	2338	1,6	352,2
3.3.2.1.3 next higher gear at reduced engine speed; same pull and travel -						
3 II M+	79,05	17,92	15,88	1691	2,4	256,1
3.3.2.1.4 next higher gear at reduced engine speed; same pull and travel -						
3 II M+	53,94	11,95	16,25	1716	1,6	285,1
3.3.2.2 in selected gear nearest to 7,5 km/h at rated speed						
3 I M-	89,53	42,13	7,65	2267	12,7	319,4
3.3.2.2.1 75 % of pull at maximum power at rated speed						
3 I M-	74,52	31,60	8,49	2310	4,9	318,0
3.3.2.2.2 50 % of pull at maximum power at rated speed						
3 I M-	51,62	21,07	8,82	2344	2,7	348,7
3.3.2.2.3 next higher gear at reduced engine speed; same pull and travel -						
4 I M-	74,52	31,60	8,49	2000	4,9	294,8
3.3.2.2.4 next higher gear at reduced engine speed; same pull and travel -						
4 I M-	51,62	21,07	8,82	2030	2,7	328,7

Height of drawbar above ground	Tyre inflation pressure	
	Front	Rear
600 mm	170 kPa	160 kPa

Specific energy	Temperature			Atmospheric conditions		
	Fuel	Coolant	Engine oil	Tempe-rature	Relative humidity	Pressure
kWh/l	°C	°C	°C	°C	%	kPa
1,65	32	83	93	20	40	100,2
1,83	32	83	93	20	40	100,2
2,00	32	83	93	20	40	100,2
2,17	32	83	93	20	40	100,2
2,39	32	83	93	20	40	100,2
2,41	32	84	93	20	40	100,2
2,49	32	84	93	20	40	100,2
2,64	32	84	93	20	40	100,2
2,79	32	85	93	20	40	100,2
2,82	32	85	93	20	40	100,2
2,80	32	85	93	20	40	100,2
2,94	32	85	93	20	40	100,2
2,94	32	85	93	20	40	100,2
2,67	32	84	93	20	40	100,2
2,39	32	83	93	20	40	100,2
ing speed as in 3.3.2.1.1						
3,29	32	84	93	20	40	100,2
ing speed as in 3.3.2.1.2						
2,95	32	83	93	20	40	100,2
2,64	32	84	93	20	40	100,2
2,65	32	83	93	20	40	100,2
2,41	32	83	93	20	40	100,2
ing speed as in 3.3.2.2.1						
2,86	32	83	93	20	40	100,2
ing speed as in 3.3.2.2.2						
2,56	32	83	93	20	40	100,2

4 OPTIONAL TEST RESULTS

4.1 Turning area and turning circle

Wheel equipment: front: 14.9-28
rear: 20.8 R 38

	With brakes		Without brakes	
	Right-hand	Left-hand	Right-hand	Left-hand
	m	m	m	m
Radius of turning area	5,43/4,79	5,42/4,70	6,06/6,54	6,01/6,51
Radius of turning circle	5,24/4,60	5,87/4,51	5,87/6,35	5,82/6,32

Four-wheel-drive switched: OFF/ON

4.2 Location of centre of gravity

- Height above ground: 1050 mm
- Distance forward from the vertical plane containing the axis of the rear-wheels: 965 mm
- Distance from the median plane of the tractor, left-side 10 mm

4.3 Braking

- Date of test: 26÷27.08.1999

	Tractor mass (with driver)		
	Front	Rear	Total
	kg		
Ballasted tractor	3429	3810	7239
Unballasted tractor	2021	3644	5665

4.3.1 *Cold service braking device test*

	Speed before application of brakes	Braking device control force	Mean deceleration
	km/h	daN	m/s^2
Ballasted tractor	32,0	60	3,46
Unballasted tractor	32,0	60	4,43

- Maximum deviation of tractor from his original course: none
- Abnormal vibration: none

4.3.2 *Fade test*

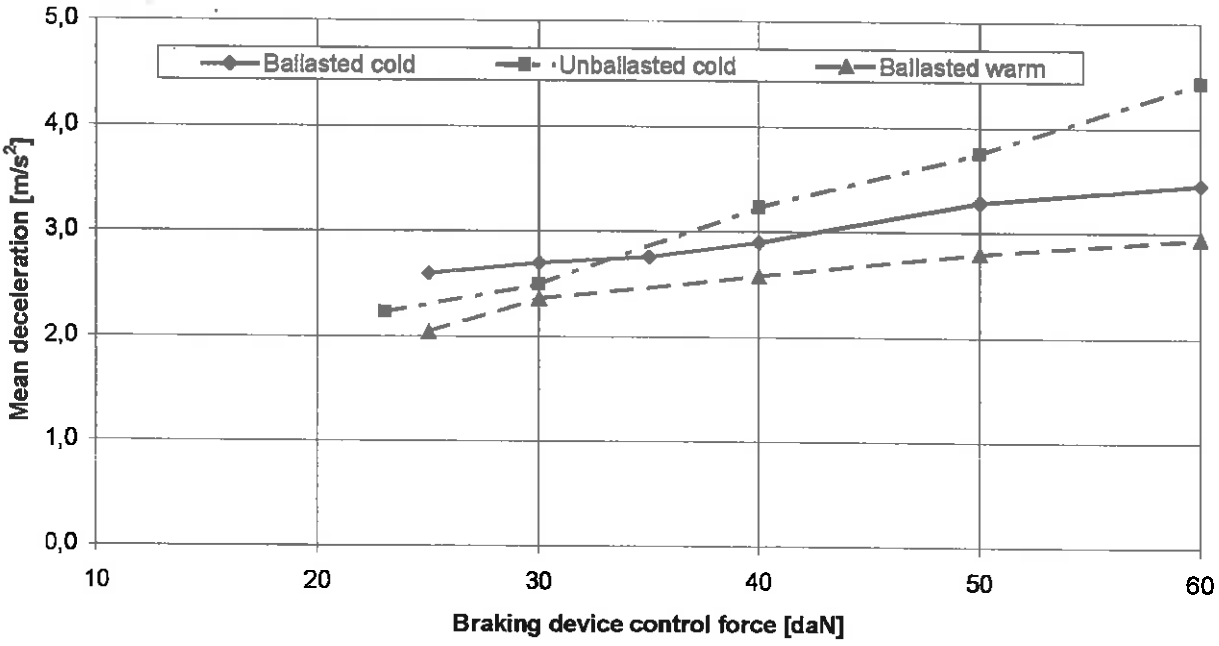
Speed before application of brakes	Braking device control force	Mean deceleration
km/h	daN	m/s^2
32,0	60	2,94

- Maximum deviation of tractor from his original course: none
- Abnormal vibration: none
- Brake heating method: driven with brakes applied for 1 km at 80% of maximum speed with a pedal force corresponding to a deceleration of $1 m/s^2$

4.3.3 *Parking braking device test*

	Uphill	Downhill
	daN	
Braking device control force	38,0	39,0

Braking test



4.4 Measurement of external noise

- Date of test:	30.08.1999.
- Sound level meter, Make/Model/Type:	Brűel & Kjaer 2230
- Type of track:	bituminous
- Gear number:	4 II M-
- Travelling speed before acceleration:	24,5 km/h
- Sound level:	88,0 dB(A)

5 REPAIRS

None

6 REMARKS

None

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