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 /1881

Date of approval: 01 february 2000



Agricultural Tractor

URSUS 5714 (4WD) - 12 speed version

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: September till November 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 of 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:	5714 – 12 speed version
- Type:	wheeled tractor, four wheel drive
- Number of driving wheels:	4
- Serial N°:	0126175
- 1st serial N°:	0126175

1.2 Engine

- Make:	URSUS
- Model:	4410 specification No 87088
- Type:	water-cooled 4-stroke Diesel, direct injection
- Serial N°:	P016644C

1.2.1 *Cylinders*

- Number:	4
- Dispositions:	in line
- Bore / Stroke:	101 / 127 mm
- Capacity:	4070 cm^3
- Compression ratio:	16
- Arrangement of valves:	overhead, in line
- Cylinder liners:	dry, replaceable

1.2.2 *Supercharging* none

1.2.3 *Fuel system*

- Fuel feed system:	diaphragm fuel feed pump type 47 PMO 4
- Make, model, type of fuel filter(s) :	1, with replaceable cartridge type FPV 5.8
- Capacity of fuel tank:	80 dm^3
- Make, model, type of injection pump:	WSK Poznań rotative DPA 3241F571
- Serial N°:	0002CPp
- Manufacturer's production setting of injection pump:	
· Flow rate:(rated engine speed and full load)	16,04 dm^3/h
· Timing:	24° before T.D.C.
- Make, model, type of injectors:	LUCAS PERKINS 5281631 multihole Lucas 5621647 EOM BDLL150S6600CF
- Injection pressure:	19,5 MPa

1.2.4 *Governor*

- Make, model, type:	WSK Poznań, mechanical, variable speed, incorporated into fuel injection pump
- Governed range of engine speed:	750 ÷ 2380 rev/min
- Rated engine speed:	2200 rev/min

1.2.5 *Air cleaner*

- Main cleaner	
· Make, model, type:	DONALDSON dry paper element filter with replaceable cartridge, two elements: P124767; XLP 18-2093
· Location of air intake:	under bonnet
- Maintenance indicator:	on dashboard

1.2.6 *Lubrication system*	splash and pressure lubrication
- Type of feed pump:	gear pump
- Type of filter(s) :	full flow oil filter PP 8.9
- Number of filters:	1

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:	411 mm
	- Coolant capacity:	16,8 dm^3
	- Type of temperature control:	thermostatic
	- Superpressure system:	70 kPa
1.2.8	*Starting system*	electrical
	- Make, model, type:	ELMOT, R11g-12V, electromagnetic engagement
	- Starter motor power rating:	3,0 kW
	- Cold starting aid:	THERMOSTART SINTEROM 357/11, 12V
	- Safety device:	only operable when the range gear (L, H) lever is in neutral position
1.2.9	*Electrical system*	
	- Voltage:	12 V
	- Generator:	alternator
	· Make, model, type:	ELMOT, A133-55, 14V 55 A
	· Power:	0,7 kW
	- Battery of accumulators:	12V, ZAP Piastów, 6SK-110
	· Number:	1
	· Rating:	110 Ah at 10 hours
1.2.10	*Exhaust system*	
	- Make, model, type:	expansion and absorption muffler
	- Location:	at the right side of the engine, height of outlet above ground - 2670 mm

1.3 Transmission

1.3.1	*Clutch*	
	- Make:	URSUS
	- Model:	dual clutch
	- Type:	dry
	- Number of plates:	2
	- Diameter of plates:	1st: 302 mm – for traveling 2nd: 251 mm – for PTO
	- Method of operation:	mechanical by pedal
1.3.2	*Gear box*	
	- Make:	URSUS
	- Model:	mechanical
	- Type:	with planetary reduction unit

- Description:
  - gear box with 3 (forward) + 1 (reverse) speeds (2 and 3 synchronized);
  - range gear (synchronized) H and L;
  - planetary reduction unit („Turtle", „Hare")

	Forward	Reverse
Number of gears	3	1
Number of groups	2	2
Number of ranges	2	2
Total of arrangements	12	4

- Oil cooler: heat exchanger with air
- Available options: none

1.3.3 *Rear axle and final drives*

- Make: URSUS
- Model: crown wheel and pinion differential
- Type: planetary final drives
- Differential lock:
  - Type: mechanical, dog clutch
  - Method of engagement: mechanical by pedal
  - Method of disengagement: self-disengaging

1.3.4 *Front axle and final drives*

- Make: URSUS
- Model: with non central shaft
- Type: crown wheel and pinion differential, planetary final drives
- Differential lock: none

1.3.5 *Total ratios and travelling speeds*

Gear No	Group	Range (reduction unit)	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	L	„Turtle"	316,16	1,95
		„Hare"	251,23	2,46
2		„Turtle"	210,78	2,93
		„Hare"	167,49	3,69
3		„Turtle"	114,98	5,37
		„Hare"	91,36	6,76
1	H	„Turtle"	77,31	7,99
		„Hare"	61,43	10,06
2		„Turtle"	51,54	11,99
		„Hare"	40,95	15,09
3		„Turtle"	28,11	21,98
		„Hare"	22,33	27,67
reverse				
R	L	„Turtle"	210,78	2,93
		„Hare"	167,49	3,69
	H	„Turtle"	51,54	11,99
		„Hare"	40,95	15,09
*) Calculated with a tyre dynamic radius index of 745 mm (ISO 4251-1 1998)				

- Number of revolutions of front wheels for one revolution of rear-wheels: 1,36

1.4 Power take-off

1.4.1 *Main power take-off*

- Type: independent
- Method of engagement: wet hydraulic multiplate clutch and/or 2nd plate main 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:	618 mm
- Distance from the median plane of the tractor:	0 mm
- Distance behind rear-wheel axis:	296 mm
- PTO speed at rated engine speed:	596 rev/min
- Engine speed at standard PTO speed:	1993 rev/min
- Ratio of rotation speeds:	3,69
- Power restriction:	48,0 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:	35 mm
- Number of splines:	21 (in conformity with ISO 500 - 1991)
- Height above ground:	618 mm
- Distance from the median plane of the tractor:	0 mm
- Distance behind rear-wheel axis:	296 mm
- PTO speed at rated engine speed:	1100 rev/min
- Engine speed at standard PTO speed:	2000 rev/min
- Ratio of rotation speeds:	2,00
- Power restriction:	none
- Maximum torque transmissible:	none restriction
- Direction of rotation (viewed from behind tractor):	clockwise

1.4.1.1	- Power take-off proportional to ground speed	none

1.5 Hydraulic power lift

- Make:	URSUS
- Model:	mechanical-hydraulic power lift; position and load control
- 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:	none
- Relief valve pressure setting:	20,7 ÷ 24,0 MPa
- Opening pressure of cylinder safety valve:	25,5 MPa
- Lift pump type:	2, 1st : 4-cylinder piston 2nd : gear
- Transmission between pump and engine:	1st: from PTO transmission (non disengaged) 2nd: from engine, engaged by hand lever
- Type and number of filters:	1, suction strainer
- Site of oil reservoir:	gear box
- Type, number and location of tapping points:	four at the rear of tractor, quick release 12,5 in conformity with ISO 5675-1992
- Maximum volume of oil available to external cylinders:	16 dm^3

1.6 Three point linkage

- Category:	2, in conformity with ISO 730/1-1994
- Category adapter:	none

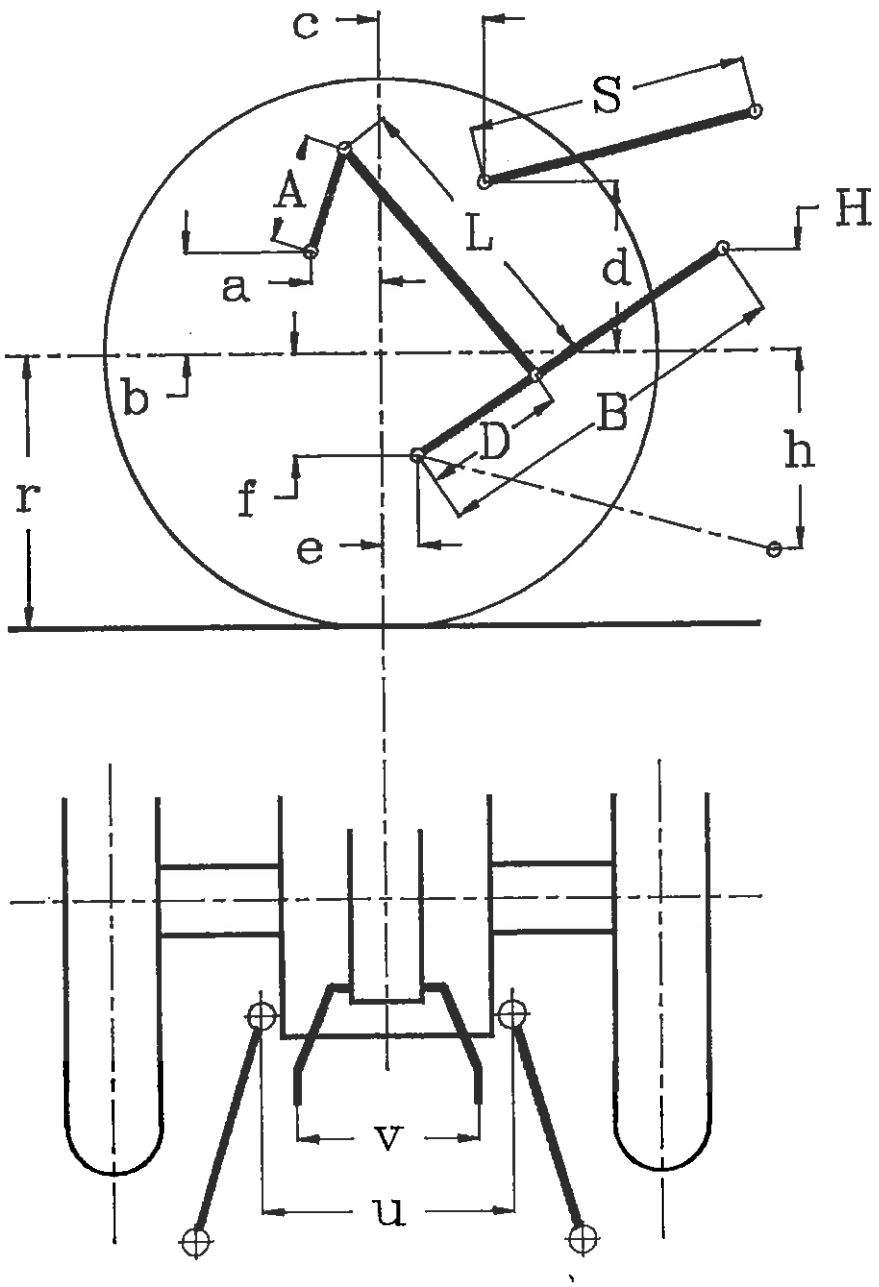


Figure 1
Lift test - Linkage geometry

		Dimension of range mm	Settings used in test mm
Length of lift arms:	(A)	266,7	
Length of lower links:	(B)	972	
Distance of lift arm pivot point from rear-wheel axis: - horizontally:	(a)	195,73	
- vertically:	(b)	232,56	
Horizontal distance between the 2 lower link points:	(u)	492	
Horizontal distance between the 2 lift arm end points:	(v)	534	
Length of upper link:	(S)	685 ÷ 885	755
Distance of upper link pivot point from rear wheel axis: - horizontally:	(c)	A): 186,44; B): 200,41; C): 216,15	200,41
- vertically:	(d)	A): 205,23; B): 170,69; C): 131,83	170,69
Distance of lower link pivot point from rear wheel axis: - horizontally:	(e)	- 31,75	
- vertically:	(f)	212,34	
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	436	436
Length of lift rods:	(L)	610 ÷ 700	655
Height of lower hitch points relative to the rear-wheel axis:			
- in low position:	(h)	333 ÷ 770	589
- in high position:	(H)	35 ÷ 285	142
Height above ground of lower hitch points when locked in transport position*)		Any height within lift range	
*) Assuming r = 745 mm 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:	fork, pulled out
- Height above ground:	399, 373, 371 mm
- Type of adjustment:	mechanical, by pin replacement
- Distance of hitch point from rear-wheel axis, horizontally:	531, 646, 696 mm
- Distance of hitch point from power take-off shaft end:	
· Vertically:	219, 245, 247 mm
· Horizontally:	235, 350, 400 mm
- Lateral adjustment (centre of clevis):	
· Right hand:	- none
· Left hand:	- none
- Diameter of drawbar pin hole:	33 mm
- Maximum vertical permissible load:	15,8 kN

1.8 Trailer hitch I

- Type:	clevis with rubber shock absorber
- Hole diameter:	33 mm
- Height above ground:	958 mm
- Distance of hitch point from rear-wheel axis, horizontally:	586 mm
- Distance of hitch point from power take-off shaft end:	
· Vertically:	340 mm
· Horizontally:	290 mm
- Maximum vertical permissible load:	8,8 kN

1.8.1 Trailer hitch II

- Type:	Hitch-hook
- Hook diameter:	47 mm in conformity with ISO 6489-1 – 1991
- Height above ground:	450, 432, 428, 428, 421 mm
- Distance of hitch point from rear-wheel axis, horizontally:	446, 561, 611, 646, 696 mm
- Distance of hitch point from power take-off shaft end:	
· Vertically:	168, 186, 190, 190, 197 mm
· Horizontally:	150, 265, 315, 350, 400 mm
Maximum vertical permissible load:	15,8 kN

1.9 Holed drawbar

- Number of holes:	6
- Distance between holes:	120, 80, 40, 80, 120 mm
- Hole diameter:	22 mm
- Thickness/width of the drawbar:	25 / 80 mm
- Height above ground:	
· Maximum:	1030 mm
· Minimum:	50 mm
- Horizontal distance to power take-off shaft:	625 mm

1.10 Steering

- Make:	URSUS
- Model:	ORBITROL
- Type:	OSPB 100
- 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, mechanically 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 - 12.4 - 24 6 PR
· Rear:	2, driving - 16.9 R 34 139 A8
- Wheel base:	2330 mm

- Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1480	1820	offset lug rims and reversing wheel centres
Rear	1520	2210	offset lug rims and reversing wheel centres

1.13 Protective structure

- Make: „SPOMASZ"
- Model: protective cab
- Type: 07S
- Manufacturer's name and address: Fabryka Urządzeń Mechanicznych „SPOMASZ", Sokółka, Poland
- Protective device: Cab, not tiltable
- OECD approval:
  - Approval number: 3/1 416/1
  - Date of approval: 13 April 1999
  - Nos. of minor modification certificates: none

1.14 Seat

1.14.1 *Driver's seat*

- Make: „AGROMET KUNÓW"
- Model: Grammer
- Type: MFP-3
- 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	∅ 125	216
Sidelights	1745	65 x 67	745
Rearlights	1570	70 x 95	732
Reflectors	1135	∅ 75	805

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
3880	1950	2700	2565	2670

2.2 **Ground clearance** (unballasted tractor) 350 mm

- Clearance-limiting part: trailer hitch-hook

2.3 **Tractor mass**

- Mass (with cab):

	Ballasted		Unballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	1940	1960	1455	1470
Rear	2305	2360	2100	2160
Total	4245	4320	3555	3630

2.4 Ballast

	Weight		Water
	Number	Total mass	
		kg	kg
Front	9	395	-
Rear	6	295	-
Optional	-	-	-

2.5 Tyres and track width specifications

	Front	Rear
Tyres:	STOMIL Olsztyn	
dimensions:	12.4-24	16.9 R 34
ply rating:	6 PR	139 A8
type:	diagonal	radial
maximum load (tyre manufacturer's)	11,8 kN	23,8 kN
maximum load (tractor manufacturer's)	11,8 kN	23,8 kN
inflation pressure (tyre manufacturer's)	170 kPa	160 kPa
dynamic radius index:	540 mm	745 mm
Chosen track width:	1480 mm	1520 mm

2.6 Fuel

- Type: DL in conformity with Polish standard PN-92/C-96051
- Density at 15° C 0,838 g/cm³ - for PTO test
  0,842 g/cm³ - for drawbar test

2.7 Oils and lubricants

2.7.1 *Capacity and change interval*

	Capacity dm³	Oil change h	Filter change h
Engine	8,3	250	250
Gear box, rear axle, hydraulic system	44,0	1000	1000 (clearing)
Rear final drives	3,4	1000	-
Front axle	5,5		
Front final drives	3,0		
Steering	2,25	500	500

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:	 AGROL SAE 80/90 API GL-4	 AGROL SAE 80/90 API GL-4
Steering oil Type: Viscosity: Classification:	 ATF 200 SAE 10W/30 API GL-4	 ATF 200 SAE 10W/30 API GL-4

2.7.3 *Grease* ŁT 42
- Number of lubrication points: 23

3 COMPULSORY TEST RESULTS

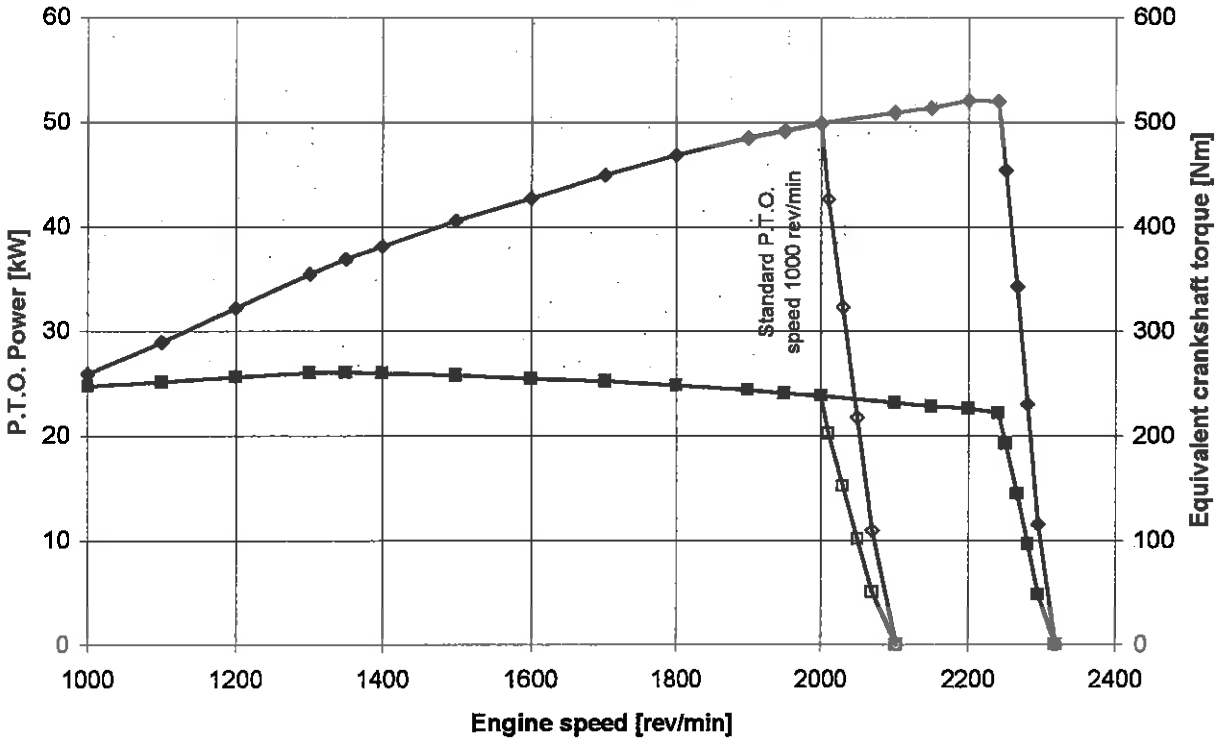
3.1 Main power take-off

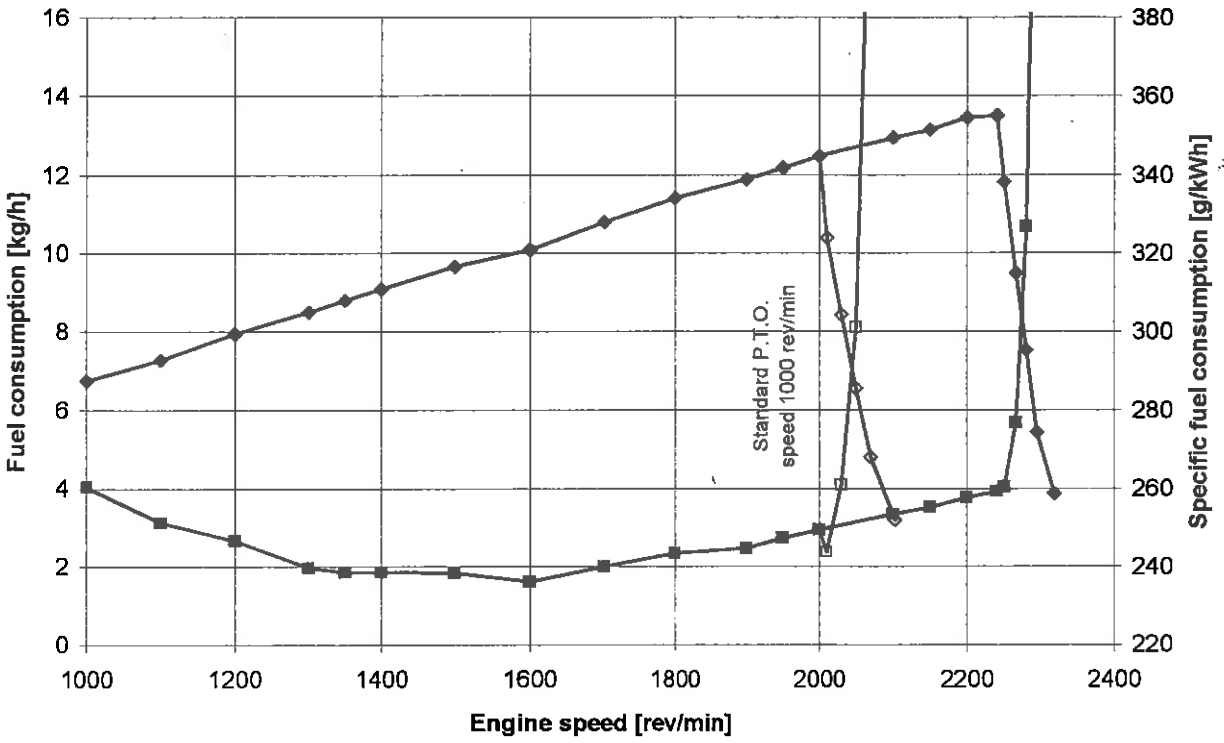
- Date and location of test: 15.09.99, ZMT-IBMER Kłudzienko
- Type of dynamometer bench: Schenck W-450

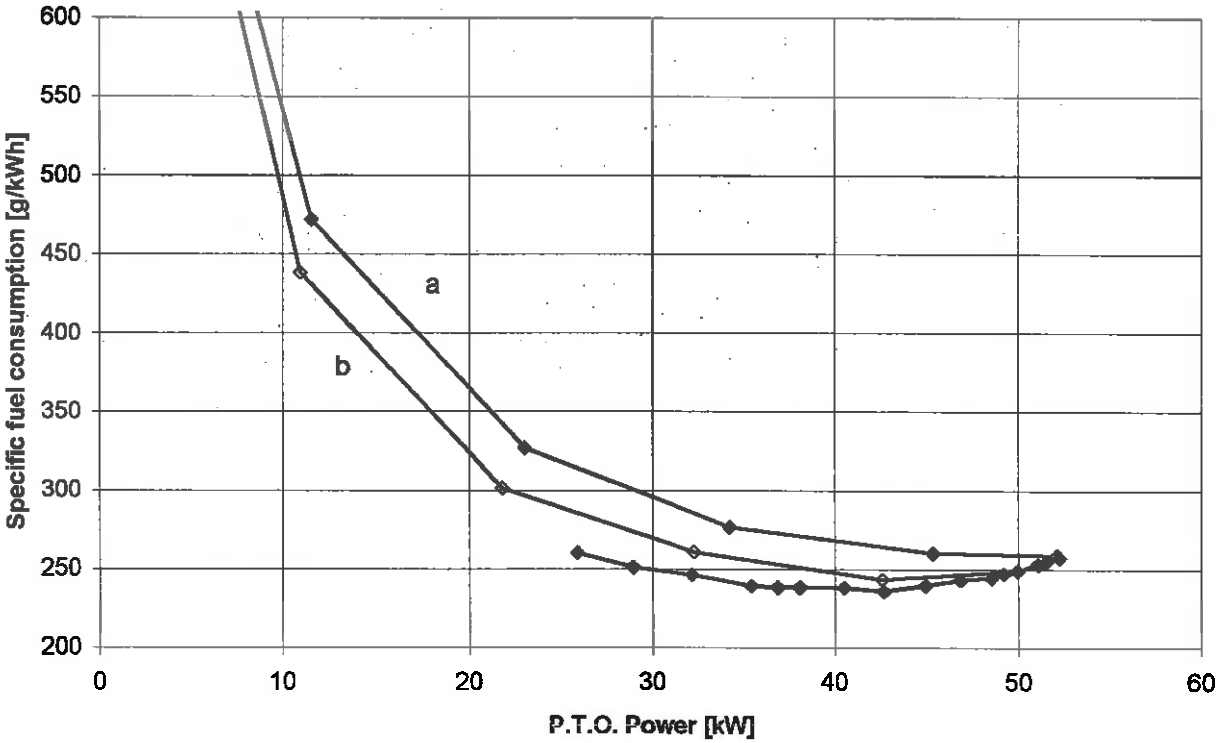
Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific.	
kW	rev/min	rev/min	kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - TWO-HOUR TEST						
52,18	2200	1100	13,44	16,04	257,6	3,25
3.1.2 POWER AT RATED ENGINE SPEED						
52,18	2200	1100	13,44	16,04	257,6	3,25
3.1.3 STANDARD POWER TAKE-OFF SPEED						
49,95	2000	1000	12,46	14,87	249,4	3,36
3.1.4 PART LOADS (curve a)						
3.1.4.1 the torque corresponding to maximum power at rated engine speed						
52,18	2200	1100	13,44	16,04	257,6	3,25
3.1.4.2 85 % of torque obtained in 4.1						
45,36	2250	1125	11,81	14,09	260,4	3,22
3.1.4.3 75 % of torque obtained in 4.2						
34,29	2266	1133	9,49	11,32	276,8	3,03
3.1.4.4 50 % of torque obtained in 4.2						
23,04	2280	1140	7,53	8,99	326,8	2,56
3.1.4.5 25 % of torque obtained in 4.2						
11,53	2294	1147	5,44	6,49	471,8	1,78
3.1.4.6 unloaded						
-	2318	1159	3,87	4,62	-	-
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (curve b)						
3.1.5.1 the torque corresponding to maximum power						
49,95	2000	1000	12,46	14,87	249,4	3,36
3.1.5.2 85 % of torque obtained in 5.1						
42,62	2010	1005	10,39	12,40	243,8	3,44
3.1.5.3 75 % of torque obtained in 5.2						
32,31	2030	1015	8,43	10,06	260,9	3,21
3.1.5.4 50 % of torque obtained in 5.2						
21,79	2050	1025	6,56	7,83	301,1	2,78
3.1.5.5 25 % of torque obtained in 5.2						
10,95	2070	1035	4,80	5,73	438,5	1,91
3.1.5.6 unloaded						
-	2102	1051	3,20	3,82	-	-

- No load maximum engine speed: 2318 rev/min
- Torque (equivalent crankshaft) at maximum power: 22,65 daNm
  - at rated engine speed: 22,65 daNm
  - at standard power take-off speed: 23,85 daNm
- Maximum torque (equivalent crankshaft): 26,10 daNm
  (engine speed): 1350 rev/min

Mean atmospheric conditions:	
Temperature:	16° C
Pressure:	1010 hPa
Relative humidity:	50 %
Maximum temperatures:	
Coolant:	75° C
Engine oil:	102° C
Fuel:	35° C
Engine air intake:	20° C


P.T.O. Power [kW]
Equivalent crankshaft torque [Nm]
Engine speed [rev/min]
Standard P.T.O. speed 1000 rev/min
60
50
40
30
20
10
0
600
500
400
300
200
100
0
1000
1200
1400
1600
1800
2000
2200
2400


Fuel consumption [kg/h]
Specific fuel consumption [g/kWh]
Engine speed [rev/min]
Standard P.T.O. speed 1000 rev/min
16
14
12
10
8
6
4
2
0
380
360
340
320
300
280
260
240
220
1000
1200
1400
1600
1800
2000
2200
2400


Specific fuel consumption [g/kWh]
600
550
500
450
400
350
300
250
200
0
10
20
30
40
50
60
P.T.O. Power [kW]
a
b

3.2 Hydraulic power and lifting force

- Date of test: 17.09.1999

3.2.1 *Hydraulic power test*

- Sustained pressure with relief valve open: 20,0 MPa
- Pump stalled: yes
- Pump delivery rate at minimum pressure 58,00 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	51,00	18,0	15,30
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	50,30	18,5	15,51

- Tapping point used for test: rear
- Temperature of hydraulic fluid: 60 ÷ 65 ^{0}C
- 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	156 mm	57 mm
Vertical movement	731 mm	987 mm
Maximum corrected force exerted through full range	19,40 kN	14,22 kN
Corresponding pressure of hydraulic fluid	19,8 MPa	19,8MPa
Moment about rear-wheel axis	-	21,77 kNm
Maximum tilt angle of mast from of vertical	-	15,0 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points														
mm	-476	-400	-377	-300	-200	-100	0	+100	+200	+300	+354	+400	+500	+511
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	-	-	19,40	20,93	21,43	21,97	22,70	23,39	23,82	24,40	24,88	-	-	-
Corresponding pressure: 18,0 MPa														
at the frame in kN	14,22	-	14,88	15,66	16,26	16,65	16,52	16,26	16,02	15,48	-	14,96	14,70	14,70
Corresponding pressure: 18,0 MPa														

3.3 Drawbar power test (unballasted tractor)

- Date of test: 28.10.1999
- 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 L Turtle	14,65	29,96	1,76	2288	13,4	424,7
1 L Hare	18,39	29,96	2,21	2283	13,4	405,1
2 L Turtle	21,80	29,96	2,62	2271	13,4	403,6
2 L Hare	27,38	29,96	3,29	2266	13,4	350,6
3 L Turtle	39,22	29,03	4,86	2240	11,1	344,2
3 L Hare	43,02	24,31	6,37	2200	5,7	312,4
1 H Turtle	41,65	19,25	7,79	2222	3,5	322,9
3.3.2 FUEL CONSUMPTION						
3.3.2.1 in selected gear, at maximum power at rated speed						
3 L Hare	43,02	24,31	6,37	2200	5,7	312,4
3.3.2.1.1 75 % of pull at maximum power at rated speed						
3 L Hare	34,03	18,23	6,72	2257	3,1	317,4
3.3.2.1.2 50 % of pull at maximum power at rated speed						
3 L Hare	23,24	12,16	6,88	2272	1,5	361,4
3.3.2.1.3 next higher gear at reduced engine speed; same pull and travel -						
1 H Turtle	34,03	18,23	6,72	1909	3,1	309,7
3.3.2.1.4 next higher gear at reduced engine speed; same pull and travel -						
1 H Turtle	23,24	12,16	6,88	1923	1,5	357,6
3.3.2.2 in selected gear nearest to 7,5 km/h at rated speed						
1 H Turtle	41,65	19,25	7,79	2222	3,5	322,9
3.3.2.2.1 75 % of pull at maximum power at rated speed						
1 H Turtle	32,25	14,44	8,04	2258	2,0	334,9
3.3.2.2.2 50 % of pull at maximum power at rated speed						
1 H Turtle	21,88	9,63	8,18	2272	0,9	393,1
3.3.2.2.3 next higher gear at reduced engine speed; same pull and travel -						
1 H Hare	32,25	14,44	8,04	1794	2,0	309,5
3.3.2.2.4 next higher gear at reduced engine speed; same pull and travel -						
1 H Hare	21,88	9,63	8,18	1805	0,9	354,7

Height of drawbar above ground	Tyre inflation pressure	
	Front	Rear
550 mm	100 kPa	140 kPa

Specific energy	Temperature			Atmospheric conditions		
	Fuel	Coolant	Engine oil	Tempe-rature	Relative humidity	Pressure
kWh/l	°C	°C	°C	°C	%	kPa
1,98	35	74	92	11	50	101,5
2.08	34	74	93	12	50	101,5
2,09	35	74	96	11	50	101,5
2,40	35	74	98	11	50	101,5
2,45	34	74	100	11	50	101,5
2,70	35	74	102	12	50	101,5
2,61	35	74	102	12	50	101,5
2,70	35	74	102	12	50	101,5
2,65	33	74	100	12	50	101,5
2,33	32	74	97	12	50	101,5
ling speed as in 3.3.2.1.1						
2,72	33	74	97	12	50	101,5
ling speed as in 3.3.2.1.2						
2,35	35	74	97	12	50	101,5
2,61	35	74	102	12	50	101,5
2,51	34	74	98	12	50	101,5
2,14	34	74	98	12	50	101,5
ling speed as in 3.3.2.2.1						
2,72	32	74	96	12	50	101,5
ling speed as in 3.3.2.2.2						
2,37	32	74	95	12	50	101,5

4 OPTIONAL TEST RESULTS

4.1 Turning area and turning circle

Wheel equipment: front: 12,4-24 6 PR
rear: 16,9 R 34 139 A8

	With brakes		Without brakes	
	Right-hand	Left-hand	Right-hand	Left-hand
	m	m	m	m
Radius of turning area	4,42 / 4,08	4,53 / 4,03	4,88 / 5,34	4,94 / 5,25
Radius of turning circle	4,26 / 3,92	4,37 / 3,87	4,72 / 5,18	4,78 / 5,09

Four-wheel-drive switched: OFF / ON

4.2 Location of centre of gravity

- Height above ground: 854 mm
- Distance forward from the vertical plane containing the axis of the rear-wheels: 944 mm
- Distance from the median plane of the tractor, right-side 9 mm

4.3 Braking

- Date of test: 02÷03.11.1999

	Tractor mass (with driver)		
	Front	Rear	Total
	kg		
Ballasted tractor	1960	2360	4320
Unballasted tractor	1470	2160	3630

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	29,0	55	4,45
Unballasted tractor	29,0	55	4,39

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

4.3.2 *Fade test*

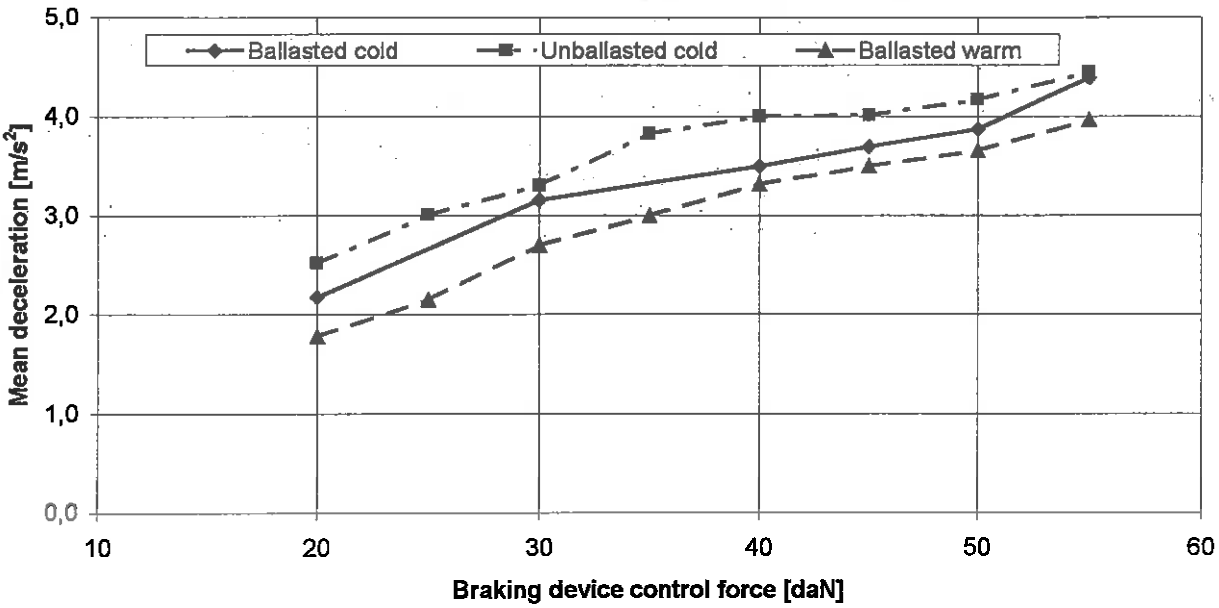
Speed before application of brakes	Braking device control force	Mean deceleration
km/h	daN	m/s^2
29,0	55	3,96

- 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	39,0	40,0

Braking test



4.4 Measurement of external noise

- Date of test:	28.10.1999
- Sound level meter, Make/Model/Type:	Brűel & Kjaer 2230
- Type of track:	bituminous
- Gear number:	3 H Hare
- Travelling speed before acceleration:	21,9 km/h
- Sound level:	86,4 dB(A)

5 REPAIRS

None

6 REMARKS

None

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