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

Restricted Code

OECD No. 2/1739

Date of approval: 09th March 1998



Agricultural Tractor

URSUS 6012 (2WD)

Manufacturer

Zakłady Przemysłu Ciągnikowego
„URSUS", Warszawa, Poland

INSTYTUT BUDOWNICTWA, MECHANIZACJI I ELEKTRYFIIKACJI ROLNICTWA
w Warszawie, Oddział Kłudzienko

IBMER, 05-824 Kłudzienko, PL

telefon: +48 22 755-50-16
telex: 81-22-31
telefax: +48 22 755-60-45

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 1998.

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

Duration of tests: January till October 1997

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", 02-495 Warszawa, Traktorzystów 10
- 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"
- 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:	6012
- Type:	wheeled tractor, two wheel drive
- Number of driving wheels:	1
- Serial N°:	PE 15265
- 1st serial N°:	PE 15265

1.2 Engine

- Make:	URSUS
- Model:	T 4390 specyfication No 87080
- Type:	water-cooled, 4-stroke Diesel, direct injection, supercharged
- Serial N°:	P010413A

1.2.1 *Cylinders*

- Number:	4
- Dispositions:	in line
- Bore / Stroke:	98,43 / 127 mm
- Capacity:	3865 cm^3
- Compression ratio:	15,25
- Arrangement of valves:	overhead, in line
- Cylinder liners:	dry, replaceable

1.2.2 *Supercharging*

- Make:	GARRET
- Model:	TA 0315

	- Type:	turbocharger
	- Pressure:	0.9 MPa
1.2.3	*Fuel system*	
	- Fuel feed system:	with water separator type FS04-00.00, diaphragm fuel feed pump type 47 PMO 4
	- Make, model, type of fuel filter(s) :	1, with replaceable cartridge type B405419141
	- Capacity of fuel tank:	80+60=120 dm^3
	- Make, model, type of injection pump:	WSK Poznań under licence LUCAS CAV, rotative DPA 3343F520
	- Serial N°:	0003KNp
	- Manufacturer's production setting of injection pump:	
	· Flow rate:(rated engine speed and full load)	17,24 dm^3/h
	· Timing:	20° before T.D.C.
	- Make, model, type of injectors:	CAV ENGLAND PERKINS LRB6701407 GL multihole Lucas CAV FLG-I 6801027
	- Injection pressure:	23.0 MPa
1.2.4	*Governor*	
	- Make, model, type:	WSK Poznań under licence LUCAS CAV, mechanical, variable speed, incorporated into fuel injection pump
	- Governed range of engine speed:	750 ÷ 2310 rev/min
	- Rated engine speed:	2200 rev/min
1.2.5	*Air cleaner*	
	- Main cleaner	
	· Make, model, type:	DONALDSON, two elements: P124767; XLP 18-2093 dry paper element filter with replaceable cartridge
	· Location of air intake:	under bonnet
	- Maintenance indicator:	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 oil filter Perkins POWERPART 2654403
	- 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-12 V, electromagnetic engagement
	- Starter motor power rating:	3,0 kW
	- Cold starting aid:	THERMOSTART SINTEROM 357/11, 12V
	- Safety device:	only operable when the reducer (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 acumulators:	12V, ZAP Piastów, 6SK-120
	· Number:	1
	· Rating:	120 Ah at 10 hours
1.2.10	*Exhaust system*	
	- Make, model, type:	vertical pipe, ∅ 53 mm
	- Location:	at the right side of the engine, height of outlet above ground - 2710 mm
1.3	**Transmission**	
1.3.1	*Clutch*	only for travelling
	- Make:	URSUS
	- Model:	single action
	- Type:	dry
	- Number of plates:	1

- Diameter of plates:	327 mm
- Method of operation:	mechanical by pedal

1.3.2 *Gear box*

- Make:	URSUS
- Model:	mechanical
- Type:	with planetary reduction unit
- Arrangement:	- gear box with 4 (forward) + 1 (reverse) speeds: - planetary reduction unit (**L**, **H**)
- Number of gears:	8 forward, 2 reverse
- Available options:	12 speed gear box - gear box with 3 (forward) + 1 (reverse) speeds (2 and 3 synchronized); - range gear (synchronized) **H** and **L**; - planetary reduction unit („**Turtle**", „**Hare**")

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:	telescopic
- Type:	steering axle with hydraulic steering cylinder

1.3.5 *Total ratios and travelling speeds*

Gear No	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	283,34	2,18
2		193,21	3,20
3		105,39	5,86
4		85,88	7,19
1	H	69,28	8,92
2		47,24	13,08
3		25,77	23,98
4		21,00	29,43
reverse			
R	L	208,08	2,97
	H	50,88	12,15

*) Calculated with a tyre dynamic radius index of 745 mm (ISO 4251-1 1992)

1.4 Power take-off

1.4.1 *Main power take-off*

- Type: independent
- Method of engagement: wet hydraulic multiplate 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:	376 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:	376 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
- Direction of rotation (viewed from behind tractor):	clockwise

1.5 Hydraulic power lift

- Make:	URSUS
- Model:	mechanical-hydraulic power lift; position and load control
- Type:	lever type
- Type of hydraulic system:	open 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, 1-st: 4-cylinder piston 2-nd: gear
- Transmission between pump and engine:	1-st: from PTO transmission (non disengaged) 2-nd: 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

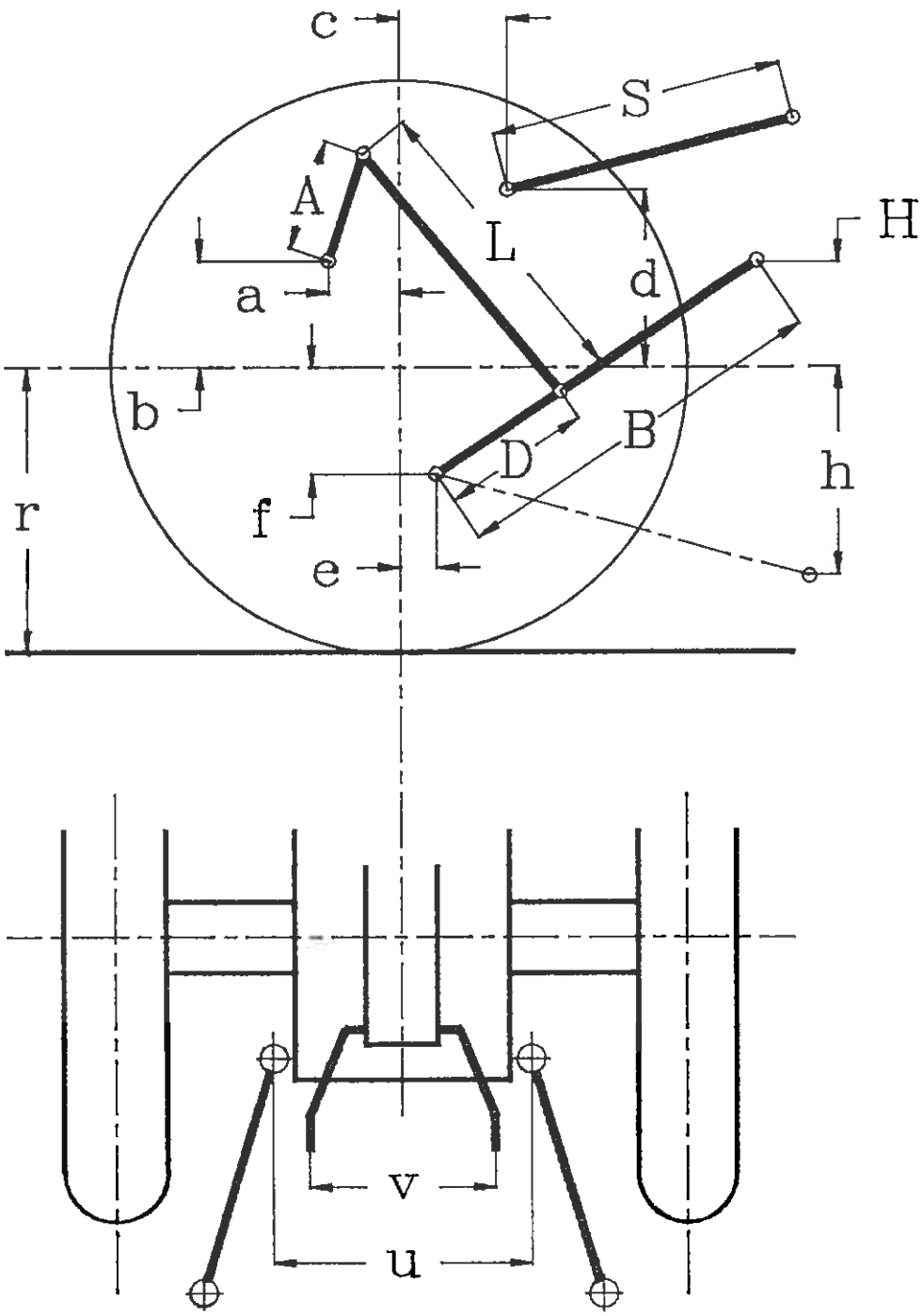


Figure 1
Lift test - Linkage geometry

		Dimension of range mm	Settings used in test mm
Length of lift arms:	(A)	266,7	
Length of lower links:	(B)	1033	
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)	740 ÷ 890	806
Distance of upper link pivot point from rear wheel axis: - horizontally:	(c)	A): 186; B): 200; C): 216	200
- vertically:	(d)	A): 205; B): 171; C): 132	171
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)	466; 600	600
Length of lift rods:	(L)	675 ÷ 745	705
Height of lower hitch points relative to the rear-wheel axis: - in low position:	(h)	360 ÷ 561	455
- in high position:	(H)	100 ÷ 173	165
Height above ground of lower hitch points when locked in transport position*)		Any height within lift range	
*) Assuming r = 745 tyre dynamic radius index of ISO 4251/1-1992			

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

1.7 Swinging drawbar

- Type:	fork, pulled out
- Height above ground:	352, 346, 343 mm
- Type of adjustment:	mechanical, by pin replacement
- Distance of hitch point from rear-wheel axis, horizontally:	611, 726, 776 mm
- Distance of hitch point from power take-off shaft end:	
· Vertically:	266, 272, 275 mm
· Horizontally:	235, 350, 400 mm
- Lateral adjustment (centre of clevis):	
· Right hand:	- none
· Left hand:	- none
- Diameter drawbar pin hole:	33,3 mm
- Maximum vertical permissible load:	15,8 kN

1.8 Trailer hitch I

- Type:	clevis with rubber shock absorber
- Hole diameter:	31,5 mm
- Height above ground:	958 mm
- Distance of hitch point from rear-wheel axis, horizontally:	636 mm
- Distance of hitch point from power take-off shaft end:	
· Vertically:	340 mm
· Horizontally:	260 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
- Height above ground:	386, 380, 377 mm
- Distance of hitch point from rear-wheel axis, horizontally:	526, 641, 691 mm
- Distance of hitch point from power take-off shaft end:	
· Vertically:	232, 238, 241 mm
· Horizontally:	150, 265, 315 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:	1055 mm
· Minimum:	85 mm
- Horizontal distance to power take-off shaft:	657 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 WABCO, 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, steering - 7,50-20 6 PR
· Rear:	2, driving - 16,9 R 34 A8
- Wheel base:	2250 mm

- Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1400	1800	telescopic front axle
Rear	1510	2220	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: CSD 1416/4
  - · Date of approval: 12 June 1997

1.14 Seat

1.14.1 *Driver's seat*

- Make: „AGROMET KUNÓW"
- Model: Grammer
- Type: MFP-3
- 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	1102	∅ 125	216
Sidelights	1720	65 x 67	745
Rearlights	1555	70 x 95	732
Reflectors	1090	∅ 75	815

2 TEST CONDITIONS

2.1 Overall dimensions

	Length mm	Width minimum mm	Width maximum mm	Height at top of protective structure mm	Height at top of exhaust pipe mm
Unballasted	3850	2010	2730	2550	2710

2.2 Ground clearance (unballasted tractor) 350 mm

- Clearance-limiting part: trailer hitch-hook

2.3 Tractor mass

- Mass (with cab):

	Unballasted Without driver kg	Unballasted With driver kg
Front	1230	1260
Rear	2110	2155
Total	3340	3415

2.5 Tyres and track width specifications

	Front	Rear
Tyres:		
dimensions:	7.50 - 20	16.9 R 34
ply rating:	6	-
type:	diagonal	radial
maximum load (tyre manufacturer's)	8,58 kN	23,3 kN
maximum load (tractor manufacturer's)	8,58 kN	23,3 kN
inflation pressure (tyre manufacturer's)	280 kPa	160 kPa
dynamic radius index:	450 mm	745 mm
Chosen track width:	1500 mm	1510 mm

2.6 Fuel

- Type: DZ/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	8,3	250	250
Gear box, rear axle, hydraulic system	42,0	1000	1000 (clearing)
Rear final drives	3,4		-
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 U 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: 19

3 COMPULSORY TEST RESULTS

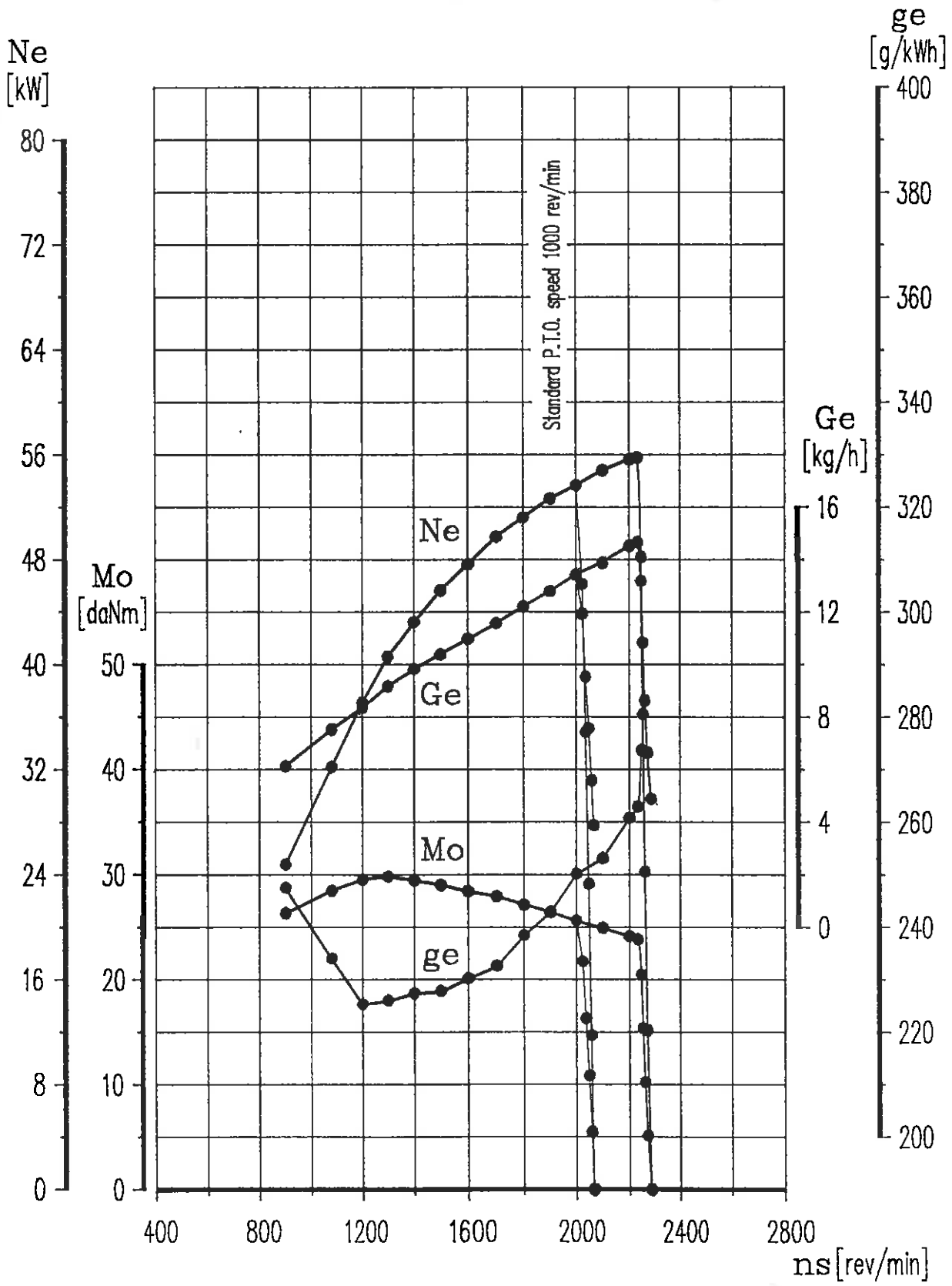
3.1 Main power take-off

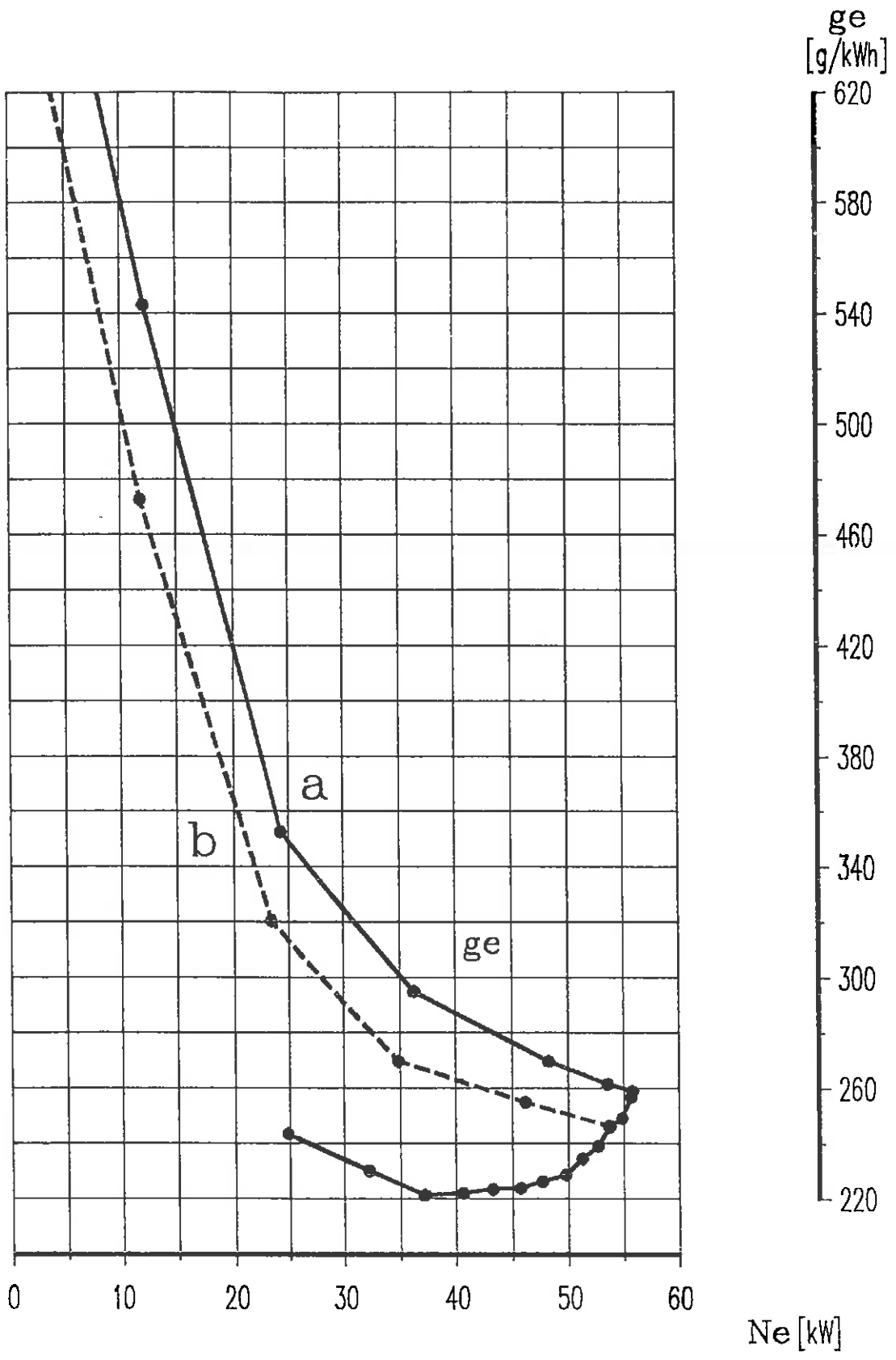
- Date and location of test: 10.06.97, ZMT-IBMER Kłudzienko
- Type of dynamometer bench: Schenck W-450

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						
55,80	2232	1116	14,67	17,42	263,0	3,20
3.1.2 POWER AT RATED ENGINE SPEED						
55,65	2200	1100	14,52	17,24	260,9	3,23
3.1.3 STANDARD POWER TAKE-OFF SPEED						
53,68	2000	1000	13,43	15,95	250,3	3,37
3.1.4 PART LOADS (curve a)						
3.1.4.1 the torque corresponding to maximum power at rated engine speed						
55,65	2200	1100	14,52	17,24	260,9	3,23
3.1.4.2 85 % of torque obtained in 4.1						
48,22	2246	1123	13,20	15,68	273,8	3,08
3.1.4.3 75 % of torque obtained in 4.2						
36,26	2252	1126	10,84	12,87	299,0	2,82
3.1.4.4 50 % of torque obtained in 4.2						
24,26	2260	1130	8,65	10,27	356,7	2,36
3.1.4.5 25 % of torque obtained in 4.2						
12,18	2270	1135	6,67	7,92	547,1	1,54
3.1.4.6 unloaded						
-	2284	1142	4,90	5,82	-	-
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (curve b)						
3.1.5.1 the torque corresponding to maximum power						
53,68	2000	1000	13,43	15,95	250,3	3,37
3.1.5.2 85 % of torque obtained in 5.1						
46,14	2024	1012	11,95	14,19	259,0	3,25
3.1.5.3 75 % of torque obtained in 5.2						
34,88	2036	1018	9,55	11,34	273,8	3,06
3.1.5.4 50 % of torque obtained in 5.2						
23,34	2048	1024	7,58	9,00	324,7	2,59
3.1.5.5 25 % of torque obtained in 5.2						
11,80	2058	1029	5,62	6,66	476,6	1,88
3.1.5.6 unloaded						
-	2066	1033	3,90	4,63	-	-

- No load maximum engine speed: 2284 rev/min
- Torque (equivalent crankshaft) at maximum power: 23,87 daNm
  - at rated engine speed: 24,15 daNm
  - at standard power take-off speed: 25,63 daNm
- Maximum torque (equivalent crankshaft): 29,84 daNm
  (engine speed): 1300 rev/min

Mean atmospheric conditions:	
Temperature:	16° C
Pressure:	1011 hPa
Relative humidity:	55 %
Maximum temperatures:	
Coolant:	96° C
Engine oil:	99° C
Fuel:	45° C
Engine air intake:	22° C


Ne
[kW]
80
72
64
56
48
40
32
24
16
8
0
Mo
[daNm]
50
40
30
20
10
0
Ge
[kg/h]
16
12
8
4
0
ge
[g/kWh]
400
380
360
340
320
300
280
260
240
220
200
Standard P.T.O. speed 1000 rev/min
Ne
Ge
Mo
ge
400
800
1200
1600
2000
2400
2800
ns [rev/min]


ge
[g/kWh]
620
580
540
500
460
420
380
340
300
260
220
a
b
ge
0
10
20
30
40
50
60
Ne [kW]

3.2 Hydraulic power and lifting force

- Date of test: 11.08.97

3.2.1 *Hydraulic power test*

- Sustained pressure with relief valve open: 18,50 MPa
- Pump stalled: yes
- Pump delivery rate at minimum pressure 61,28 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	55,71	16,65	15,46
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	53,85	18,00	16,16

- Tapping point used for test: rear

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	290 mm	250 mm
Vertical movement	620 mm	771 mm
Maximum corrected force exerted through full range	35,51 kN	24,53 kN
Corresponding pressure of hydraulic fluid	16,65 MPa	16,65MPa
Moment about rear-wheel axis	-	39,52 kNm
Maximum tilt angle of mast from vertical	-	10,5 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-283	-243	-200	-100	0	+100	+200	+300	+377	+400	+488
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	-	35,51	36,30	36,95	37,08	36,60	36,03	36,08	35,51	-	-
Corresponding pressure: 16,65 MPa											
at the frame in kN	30,34	-	30,38	30,42	28,98	27,99	26,97	25,48	-	24,53	24,53
Corresponding pressure: 16,65 MPa											

3.3 **Drawbar power test** (unballasted tractor)

- Date of test: 22.08.97
- 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)						
L1	10,10	18,94	1,92	2270	14,8	663,4
L2	14,73	18,94	2,80	2263	14,8	526,8
L3	26,88	18,94	5,11	2251	14,8	437,1
L4	32,93	18,94	6,26	2247	14,8	387,2
H1	40,72	18,94	7,74	2240	14,8	348,7
H2	45,85	13,53	12,20	2232	8,1	318,4
FUEL CONSUMPTION						
3.3.2.1 in selected gear, at maximum power at rated speed						
H2	45,85	13,53	12,20	2232	8,1	318,4
3.3.2.1.1 75 % of pull at maximum power at rated speed						
H2	35,38	10,15	12,55	2249	6,1	344,8
3.3.2.1.2 50 % of pull at maximum power at rated speed						
H2	24,20	6,77	12,87	2256	4,0	405,0
3.3.2.1.3 next higher gear at reduced engine speed; same pull and travel -						
H3	35,38	10,15	12,55	1227	6,1	308,4
3.3.2.1.4 next higher gear at reduced engine speed; same pull and travel -						
H3	24,20	6,77	12,87	1230	4,0	334,3
3.3.2.2 in selected gear nearest to 7,5 km/h at rated speed						
H1	40,72	18,94	7,74	2240	14,8	348,7
3.3.2.2.1 75 % of pull at maximum power at rated speed						
H1	31,97	14,21	8,10	2181	8,4	450,4
3.3.2.2.2 50 % of pull at maximum power at rated speed						
H1	22,10	9,47	8,40	2203	5,9	656,1
3.3.2.2.3 next higher gear at reduced engine speed; same pull and travel -						
H2	31,97	14,21	8,10	1487	8,4	285,9
3.3.2.2.4 next higher gear at reduced engine speed; same pull and travel -						
H2	22,10	9,47	8,40	1502	5,9	315,8

	Tyre inflation pressure	
Height of drawbar above ground	Front	Rear
800 mm	220 kPa	200 kPa

Specific energy	Temperature			Atmospheric conditions		
	Fuel	Coolant	Engine oil	Tempe-rature	Relative humidity	Pressure
kWh/l	°C	°C	°C	°C	%	kPa
1,27	32	83	90	20	45	100,5
1,60	34	84	92	21	45	100,5
1,93	33	85	93	21	45	100,5
2,17	30	85	92	21	45	100,5
2,41	32	85	93	21	45	100,5
2,64	32	84	93	20	45	100,5
2,64	32	84	93	20	45	100,5
2,44	30	83	92	18	45	100,3
2,08	33	82	92	18	45	100,3
ling speed as in 3.3.2.1.1						
2,73	34	80	90	18	45	100,3
ling speed as in 3.3.2.1.2						
2,52	32	82	92	18	45	100,3
2,41	30	82	93	18	45	100,3
1,87	31	83	92	18	45	100,3
1,28	30	80	93	18	45	100,3
ling speed as in 3.3.2.2.1						
2,95	33	80	92	18	45	100,3
ling speed as in 3.3.2.2.2						
2,67	32	82	92	18	45	100,3

4 OPTIONAL TEST RESULTS

4.1 Turning area and turning circle

Wheel equipment: front: 7,50 - 20
rear: 16,9 R 34

	With brakes		Without brakes	
	Right-hand	Left-hand	Right-hand	Left-hand
Radius of turning area	3,86	3,78	4,28	4,22
Radius of turning circle	3,76	3,68	4,18	4,12

4.2 Location of centre of gravity

- Height above ground: 976 mm
- Distance forward from the vertical plane containing the axis of the rear-wheels: 829 mm
- Distance from the median plane of the tractor, left-side 1,0 mm

4.3 Braking

- Date of test: 28.10.97

4.3.1 *Cold service braking device test*

	Speed before application of brakes km/h	Braking device control force daN	Mean deceleration m/s^2
Ballasted tractor	30,1	40	3,93
Unballasted tractor	30,1	40	4,50

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

4.3.2 *Fade test*

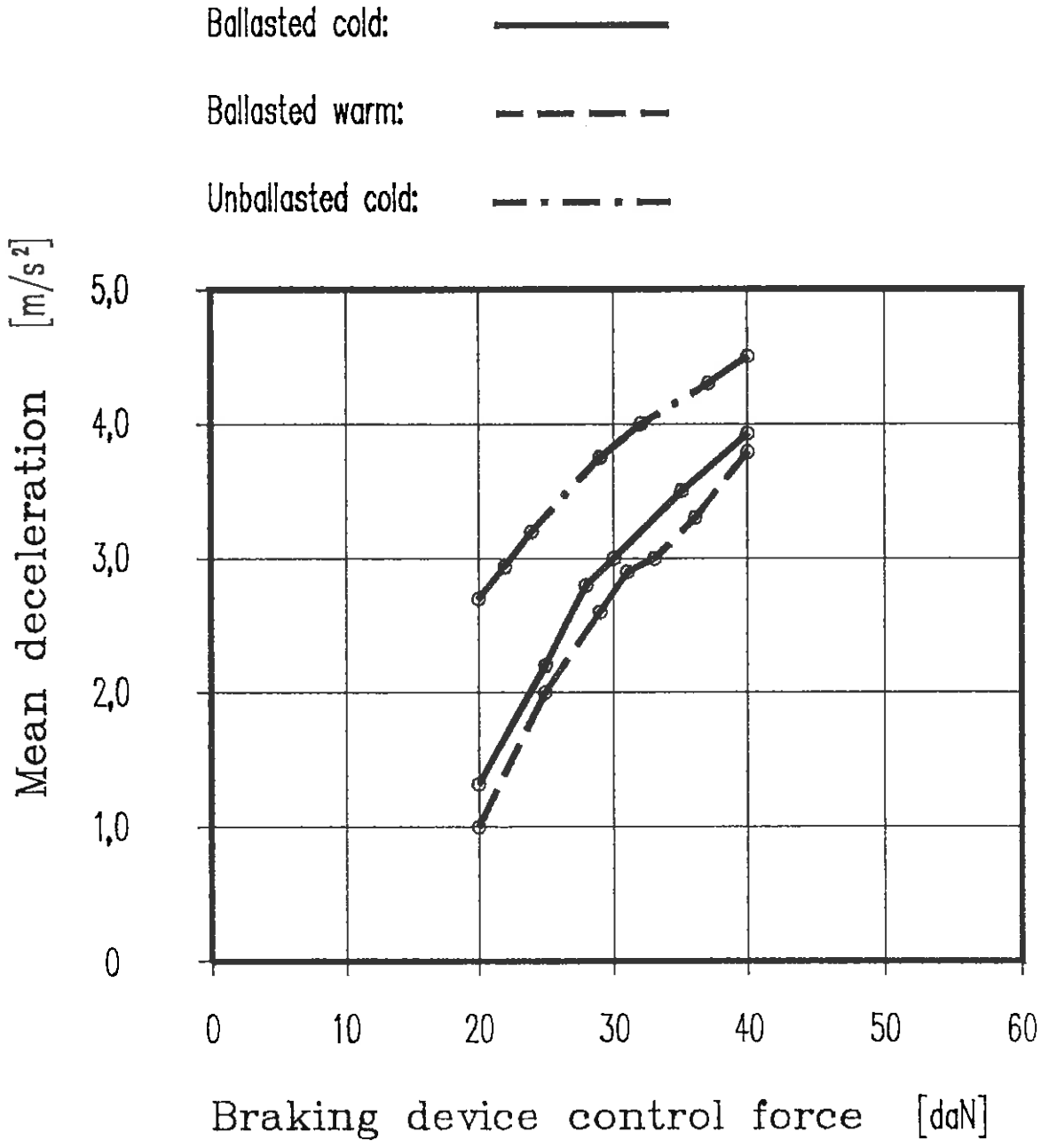
Speed before application of brakes km/h	Braking device control force daN	Mean deceleration m/s²
30,1	40	3,79

- Maximum deviation of tractor from his original course: none
- Abnormal vibration: none
- Brake heating method: by towing of the tractor for 1 km

4.3.3 *Parking braking device test*

	Uphill	Downhill
	daN	
Braking device control force	13,1	14,0

Braking test



Speed before application of brakes: 30,1 km/h

4.4 Measurement of external noise

- Date of test:	21.08.1997
- Sound level meter, Make/Model/Type:	Brűel & Kjaer 2230
- Type of track:	concrete
- Gear number:	H4
- Travelling speed before acceleration:	22,9 km/h
- Sound level:	82,0 dB(A)

5 REPAIRS

None

6 REMARKS

None

Zakład Motoryzacji i Transportu, 05-824 Kłudzienko, Instytut Budownictwa, Mechanizacji i Elektryfikacji Rolnictwa,
02-535 Warszawa, ul. Rakowiecka 32, Poland


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