O.E.C.D. Report No.: 622

BUNDESVERSUCHS - UND PRÜFUNGSANSTALT
für landwirtschaftliche Maschinen und Geräte,
Wieselburg

Dieseltractor URSUS 1204

Trade name:

URSUS 1204



Date of approval: 1979 02 21

Date of tests: 1978

This report has been approved by the O.E.C.D. Coordinating Centre (C.N.E.E.M.A., France) as being in accordance with the O.E.C.D. Test Code

TABLE OF CONTENTS

Page

SPECIFICATION OF TRACTOR 2
CONDITIONS DURING TEST 10

COMPULSORY TESTS

Main power take-off performance 12
Drawbar performance 16
Turning space and turning circle 18
Location of centre of gravity 18
Braking performance 18
Ambient noise 19
Noise at the driver's ear level 19
Power lift and hydraulic pump performance 20
Linkage geometry 21
Performance of power lift 22

ADDITIONAL TEST

Octave-analysis of noise at the driver's ear level 23

Tractor manufacturer:	Zaklady Mechaniczne "URSUS" Warszawa, Poland
Submitted for test by:	A. MOSER, A-4813 Altmünster, Austria
Selected by:	Manufacturer in agreement with BVPA-Wieselburg
Place of running in:	Zaklady Mechaniczne "URSUS"
Duration of running in:	50 hours appr.

SPECIFICATION OF TRACTOR

Tractor:

Make:	ZM URSUS
Model:	1204
Type:	Wheel tractor, four wheel driven, unit construction
Serial No.:	868

Engine:

Make:	T.S. Martin
Model:	Z 8601
Type:	4-stroke diesel engine with direct injection
Serial No.:	05261
Cylinders:	6, vertical in line Bore/stroke: 110/120 mm Capacity: 6842 cm^3 Compression ratio: 17 Wet liners
Valves:	Overhead valves
Fuel system:	Capacity of fuel tank: appr. 130 l Fuel feed by piston pump CD1 M-2237 Fuel filter: Make: Zaklady Sprzetu Motoryzacyinego, Poland Type: Two step filter, felt and paper element Model: FD 1 ORP 2.4 Injection pump: Make: MOTORPAL Type: in line fuel injection pump Model: PP 6M 85 K 1_c - 2469

Fuel system: (cont.)	Manufacturers production setting: 64 mm^3/stroke at 2200 rev/min and full load
	Injection timing: 24° before TDC
	Oil capacity: 0,37 l Recommended oil viscosities: summer SAE 30 HD winter SAE 20 HD
	Changing interval: 400 hours
	Fuel injectors: Make: MOTORPAL Type: Injector with multi hole injector nozzle insert Model: Injector: VP 81 S 453 a - 2555 Insert: DOP 150 S 525 - 1402 Injection pressure: 157 ± 3 bar
Governor:	MOTORPAL speed governor RV1M 225/1100 - 2501 Mechanically acting, incorporated in injection pump Range of speed: 450 to 2420 rev/min Rated speed: 2200 rev/min
Air cleaner:	Own make Main-cleaner: dry type, changeable element Pre-cleaner: cyclonic type, integrated in main-cleaner Model: VTC - P 500
	Optional (not on tested tractor) wet air filter
Exhaust silencer:	Own make Reflexion type, left side of the engine, mouth upwards
Lubrication system:	Forced lubrication with gear pump, strainer in sump, centrifugal oil filter RDP 3/A in full flow Oil capacity: appr. 19 l Changing interval: 200 hours Cleaning interval of oil filter: 200 hours Recommended oil viscosity: summer SAE 30 HD, MIL-L-2104A/S1 winter SAE 20 HD, MIL-L-2104A/S1
Cooling system:	Double circuit water cooling with centrifugal pump, pump and fan belt driven, 8 blade fan, tubular radiator Thermostat control, cooling water thermometer Coolant capacity: appr. 25 l Overpressure: max. 0,52 bar Joining for warm water heating
Starting system:	Electrically, solenoid engaged type Starter motor model: R 20 e, 24 V, 4,41 kW

Electrical system:	Voltage: 12 V Generator: PAL, three phase type, 14 V, 35 A, 490 W Batteries: 4; 2 + 2 in series connection, 6 V each, with totally 240 Ah at 20 hours rating; model: 3 SE - 120 Z

Transmission:

Clutches:	Main-clutch: ZBROJOVKA BRNO Single plate dry clutch,325 mm dia, pedal operated P.t.o. clutch: Own make Wet multiplate clutch, hydraulically engaged, hand lever operated Front wheel drive clutch: Own make, wet multiplate clutch, hydraulically engaged, hand switch operated
Gearbox:	Own make, mechanically acting Torque amplifier group - 4 speed change gear - group gear with 2 forward and 1 reverse group Torque amplifier group; speed reduction 1,338 switched by hydraulically engaged brake band on a planetary gear Totally: 16 forward and 8 reverse speeds
Axles and final drives:	Own make Rear axle: central driving type; Pinion and bevel gear, lockable bevel gear differential, planetary final gears Front axle: steerable driving axle; central type front wheel drive clutch, universal joint propeller shaft, pinion and bevel gear, bevel gear differential, double joints, planetary final gears in wheel hubs Front wheel drive: hydraulically engaged, hand switch operated Differential lock: mechanically engaged, pedal operated
Switching aid circuit:	Own oil circuit with gear pump, directly driven by engine, oil supply from gearbox Aid for p.t.o. clutch, torque amplifier group and front wheel drive clutch
Oil capacity:	Common oil case for gearbox, rear axle differential and hydraulic power lift: appr. 50 l Planetary reduction of rear axle final drive: 2 x 6 l Front drive axle differential: 3,5 l Planetary reduction of front axle final drive: 2 x 1,25 l Changing interval: 1600 hours Recommended oil: SAE 80 EP

Total ratios and speeds

	Gear No.	Number of engine revolutions for one revolution of driving wheel	*) Nominal travelling speed for rated speed of engine km/h
without torque amplifier group	1 I	260,40	2,452
	2 I	165,21	3,865
	3 I	103,98	6,142
	4 I	73,03	8,744
	1 II	89,26	7,154
	2 II	56,63	11,277
	3 II	35,65	17,913
	4 II	25,04	25,504
with torque amplifier group	1 I	348,35	1,833
	2 I	221,05	2,889
	3 I	139,10	4,591
	4 I	97,18	6,571
	1 II	119,42	5,347
	2 II	75,76	8,429
	3 II	47,57	13,424
	4 II	33,49	19,069
without torque amplifier group reverse	1	190,43	3,353
	2	120,82	5,285
	3	76,04	8,398
	4	53,40	11,959
with torque amplifier group reverse	1	254,75	2,506
	2	161,63	3,951
	3	101,72	6,278
	4	71,45	8,938

*) Calculated with index radius 770 mm

Power take off: At rear of tractor, in median plane, 634 mm above ground
Dimensions:
540 rev/min: ISO R 500, Type 1 (35 mm, 6 splines)
1000 rev/min: ISO R 500, Type 2 (35 mm, 21 splines)

Power take off: (cont.)

Proportional to engine speed p.t.o.:

Live p.t.o. driven by a mechanical control and a hydraulically engaged wet multiplate clutch, hand lever operated

Method of changing p.t.o. speeds: One of the two p.t.o. shaft end-pieces is located in the rear of tractor, the other one is inserted in the clutch housing. If the two end-pieces are changed from rear of tractor to the clutch housing and contrary, the speed of the p.t.o. shaft is selected (automatically selection of spur gears by the p.t.o. shaft end-pieces in the clutch housing)

Speeds: 540/628 rev/min at 1890/2200 rev/min engine speed
1000/1012 rev/min at 2174/2200 rev/min engine speed

Engine speed resp. p.t.o. speed indication by indicator-instrument

Direction of rotation: clockwise viewed from driving end

Proportional to ground speed p.t.o.:

Both end-pieces can be used

Switchable in all ratios and speeds by mechanical control and hydraulically engaged wet multiplate clutch

Travelling distance for one revolution of p.t.o. shaft: 0,177 m (calculated with index radius 770 mm)

Number of p.t.o. shaft revolutions for 1 revolution of rear wheels: 27,38

Direction of rotation: clockwise in forward gears, anti-clockwise in reverse gears (viewed from driving end)

Belt pulley: Optional, not on tested tractor

Power lift:

ARCHIMEDES-WROCLAW

Hydraulically acting, with single acting working cylinder and additional working cylinder (bore/stroke: 50/305 mm)

Draft-control, position-control, pressure-control and floating position; lower link sensing

Standard linkage for category II; 2 lift rod/lower link coupling points

Two stage oil pump system consisting of gear pump and piston pump, both pumps working in the same hydraulic circuit, open centre type hydraulic system

max. sustained pressure of gear pump: 157 bar

max. sustained pressure of piston pump: 187 bar

Gear pump directly driven by engine, incorporated in clutch housing, switchable out of gear by a hand lever

Piston pump directly driven by engine

Power lift: (cont.)

ARCHIMEDES-WROCLAW control unit
Oil capacity: common oil case with gearbox: appr. 50 l
Oil tappings: 2 with ARCHIMEDES-WROCLAW control unit for 2 single acting cylinders or 1 double acting cylinder

Optional (not on tested tractor): 3 oil tappings
Capacity of tappings: not specified

Holed drawbar:

Fitted in the clevis of the lower links of the threepoint linkage, category II
Number of holes: 7, diameter: 32 mm, distance: 80 mm thickness: appr. 72 mm, width: 90 mm

Height above ground:

lift rod/lower link coupling point giving:	Min. lift rod length 530 mm	Max. lift rod length 680 mm
Max. mech. advantage	from 280 to 1039 mm	from 40 to 750 mm
Min. mech. advantage	from 335 to 995 mm	from 0 to 750 mm

Method of changing: by power lift, lift rod and lower link
Distance to rear axle: 1040 mm (lower links horizontally)
Distance relative to p.t.o.: 530 mm

Pull attachement:

Trailer hitch:

Own make
Fork type, only for four wheel trailers
Height above ground: 2 positions; 750/850 mm (tyre index radius 770 mm)
Distance from rear axle: rearwards 730/715 mm
Position relative to p.t.o.: 116/216 mm above and 220/205 mm behind
Diameter of coupling pin: 38 mm

Swinging drawbar:

Height above ground: (index radius 770 mm) 462 mm
Distance from rear axle: (2 positions) rearw. 920/865 mm
Lateral adjustment (5 positions): sym. 0/80/160 mm totally: 10 positions
Distance relative to p.t.o.: rearwards 410/355 mm
Diameter of coupling pin: 30 mm
Distance of pivot point from rear axle: -305 mm
Max. vertical load: 5900 N

Towing hitch:

Fork type
Height above ground: 890 mm
Distance from front axle: frontwards 655 mm
Diameter of coupling pin: 38 mm

Steering: PILMET-WROCLAW
Circular ball gear steering, hydraulic power assisted
Own oil circuit, gear pump (incorporated in clutch housing) directly driven by engine
Capacity of oil case: appr. 10 l
Pump delivery rate: 20 l/min (at rated engine speed)
Working pressure: 78,5 bar
Operated by steering wheel, acting on front wheels
Changing interval: 800 hours
Recommended oil: SAE 10 W

Brakes: Own make

Service brake: Hydraulically acting dry disc brake, acting on rear wheels, pedal operated

Parking brake: Mechanically acting, same discs as foot brake, operated by hand lever with ratchet

Steering assistance brake: Operated by divided pedal of foot brake

Trailer braking system: Pressure air system, V-belt driven air compressor on left side of the engine, switchable out of gear by hand lever
Storage pressure: 5,7 - 5,9 bar
Working pressure: 5,7 - 5,9 bar
activated by foot brake or hand brake

Wheels:

Front wheels: 2 pneumatics, steering and driving function, radial carcass 14,9/13-24 (R), 6 PR; rim: W 12 x 24
Maximum permissible load on each tyre:
14815 N at 1,4 bar inflation pressure
(21100 N at 1,7 bar inflation pressure for frontloader working, with speed limit of 8 km/h)
Track width: 1710 mm

Rear wheels: 2 pneumatics, driving function, radial carcass 18,4/15-34 (R), 8 PR; rim: W 15 L x 34
Maximum permissible load on each tyre:
25 165 N at 1,4 bar inflation pressure
21 780 N at 1,1 bar inflation pressure
Track width: 1500 mm (1725 mm by reversing wheels)

Wheel base: 2695 mm

Lighting:

Unrestricted beam angle of head light in plan view: 92 mrad (5, 3°)

	*) Height above ground of centre mm	Dimension mm	Distance from outside edge of tractor to centre mm
Head lights	1170	145 dia	490
Side Lights	1750	70 x 55	190
Rear lights	1410	90 x 80	230
Reflectors	1040	75 dia	140
Backing light	1530	140 dia	230

*) Measured with tyre index radius at rear 770 mm and 590 mm at front

Number of grease points: 25

Driver seat:
Own make
Parallelogram construction with pneumatic spring element, adjustable to drivers weight (inflation pressure from 1,47 to 2,45 bar)
Hydraulically damping
Horizontal adjustment range: 100 mm

Cab:
FPS KUNOW model 88.000.1017
Rubber block mounted, with seat for driver and passenger, air ventilation and warm water heating

Optional: Acoustic damped cab

CONDITIONS DURING TEST

Tractormass:

Tractor without driver but with tanks full and cab

	Front	Rear	Total
Without ballast	1878 kg	2880 kg	4758 kg
With ballast	2805 kg	3831 kg	6636 kg

Ballastmass:

	Number of weights	Total mass (excluding water)	Water
Front	8 + 7 + 7	533 kg	300 kg
Rear	10	345 kg	700 kg
Additional	-	-	-

Track setting: 1710 mm at front
and tyre equipment: 1500 mm at rear
Front wheels: 14,9/13-24 (R), 6 PR
Rear wheels: 18,4/15-34 (R), 8 PR

Overall dimensions:

	Length	Width		Height *)
		max.	min.	
	mm	mm	mm	mm
With ballast	4590	2190	2160	2475/2550
Without ballast	4460	2190	2160	2475/2550

*) measured to top of: exhaust pipe/protective cab

Minimum ground clearance: 425 mm under front axle
445 mm under rear axle
355 mm under swinging drawbar

Fuel and lubricants used in tests:

Fuel:	ELAN Diesel fuel (according to DIN 51601) specific gravity at 15°C: 0,835 kg/l Viscosity at 50°C: 3 mm^2/s (3 cSt) Cetane no.: 46 (ÖNORM C 1104)
Engine oil:	MOBIL OIL SPECIAL SAE 10 W-30 Viscosity at 100°C: 11 mm^2/s (11 cSt)
Transmission oil:	MOBILUBE SAE 80 EP Viscosity at 50°C: 49 mm^2/s (49 cSt)
Hydraulic oil of hydraulic power assisted steering:	MOBIL D.T.E. SAE 10 Viscosity at 50°C: 12 mm^2/s (12 cSt)

COMPULSORY TESTS

1. Main power take-off performance

Date and location of tests: 1978 01 11, Wieselburg/Austria
Type of dynamometer: SCHENK, eddy current brake, W 730

Main test on: 540 rev/min p.t.o.

Power	Speed		Fuel consumption		
	engine	p.t.o.	total	specific	specific
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
MAXIMUM POWER					
Maximum power - 2 hours test					
77,24	2200	628	21,16 25,34	274	3,048
Standard p.t.o. speed					
70,31	1890	540	19,19 22,98	273	3,059
The speed recommended by the manufacturer for drawbar work					
77,24	2200	628	21,16 25,34	274	3,048
PART LOADS Governor hand lever in position giving maximum power					
(i) 85 % of torque at maximum power					
67,25	2253	643	18,09 21,66	269	3,104
(ii) unloaded					
0	2392	683	5,56 6,65	-	-
(iii) 50 % of the load defined in (i)					
34,72	2326	664	11,35 13,59	327	2,554
(iv) maximum power					
77,24	2200	628	21,16 25,34	274	3,048
(v) 25 % of the load defined in (i)					
17,63	2357	673	8,48 10,15	481	1,737
(vi) 75 % of the load defined in (i)					
51,50	2298	656	14,52 17,39	282	2,961

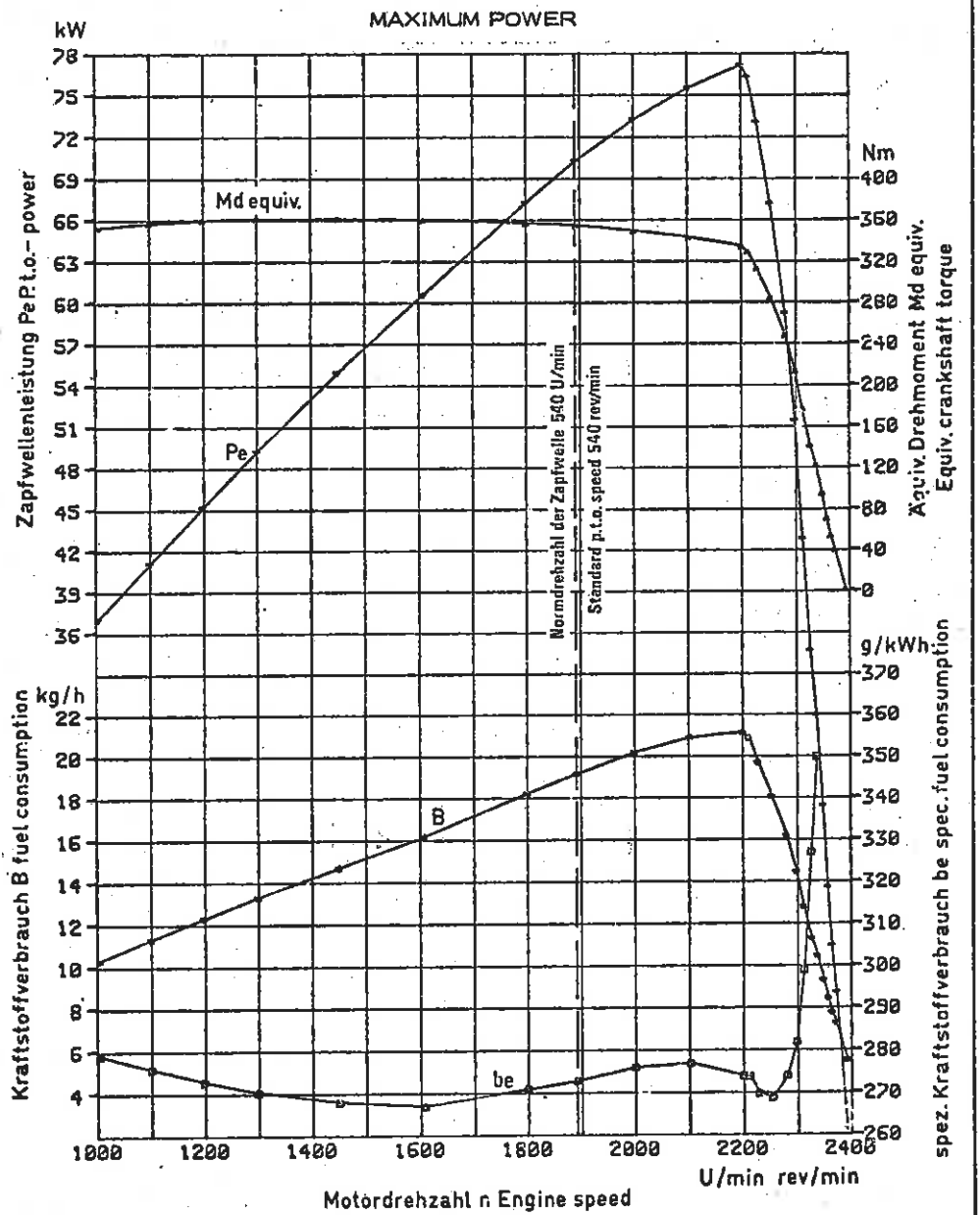
Power	Speed		Fuel consumption		
	engine	p.t.o.	total	specific	specific
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
PART LOADS Governor hand lever in position giving standard p.t.o. speed at full load					
(i) 85 % of torque at standard p.t.o. speed					
60,88	1927	550	15,89 19,03	261	3,199
(ii) unloaded					
0	2060	588	4,16 4,98	-	-
(iii) 50 % of the load defined in (i)					
31,63	2001	571	9,52 11,40	301	2,774
(iv) maximum power at standard p.t.o. speed					
70,31	1890	540	19,19 22,98	273	3,059
(v) 25 % of the load defined in (i)					
16,04	2029	579	6,75 8,08	421	1,985
(vi) 75 % of the load defined in (i)					
46,64	1969	562	12,40 14,85	266	3,140
STANDARD SPECIFIC FUEL CONSUMPTION: 269/327/261/301 g/kWh					

No load maximum engine speed: 2392 rev/min
Equivalent crankshaft torque
at maximum power: 335,3 Nm at 2200 rev/min of engine
Maximum equivalent crankshaft torque: 362,1 Nm at 1450 rev/min of engine

Mean atmospheric conditions: temperature: 18°C
pressure: 980 mbar
humidity: 70 %

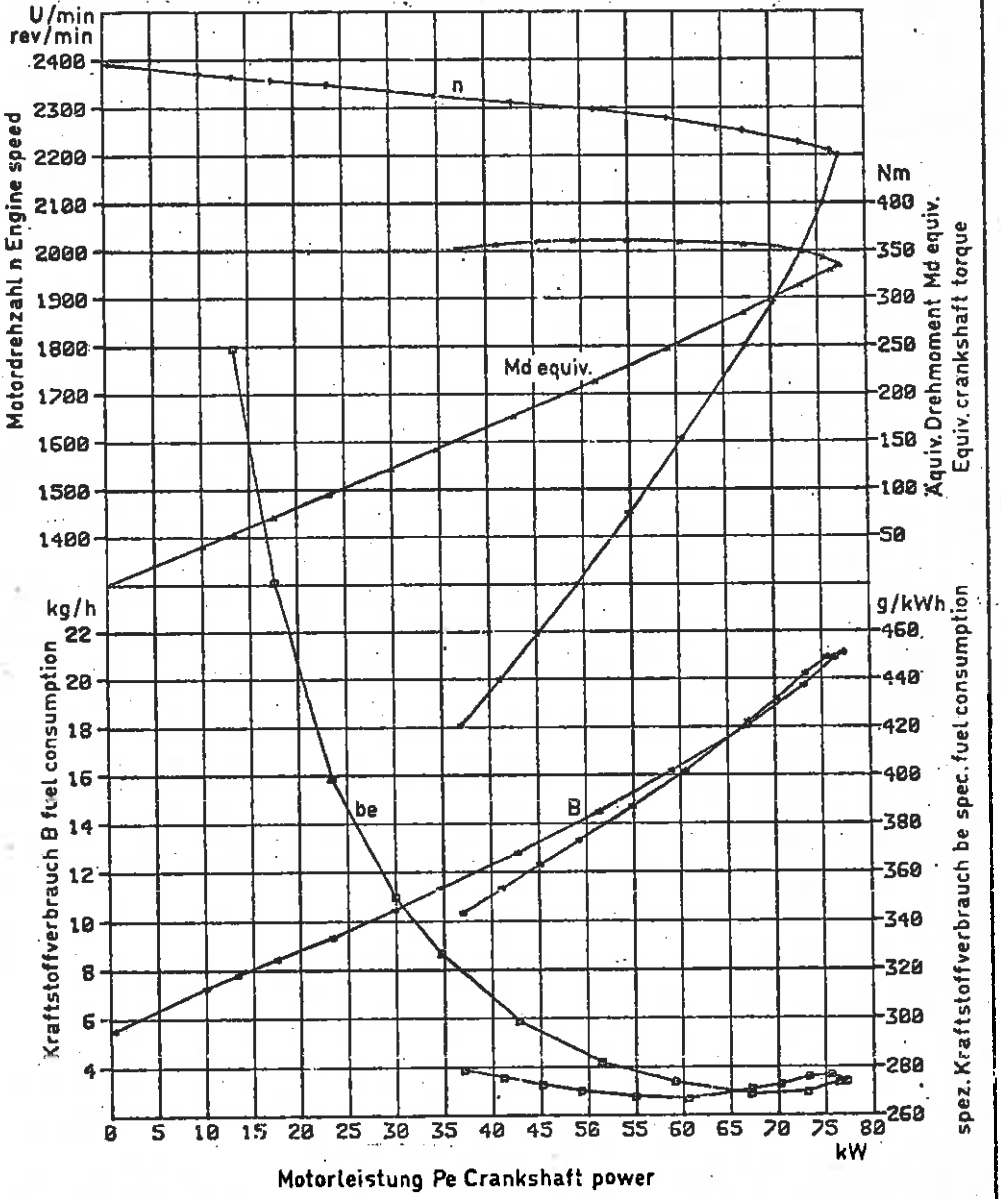
Maximum temperatures: coolant: 81°C
engine oil: 108°C
fuel: 58°C
air intake: 20°C

Bundesversuchs-u.Prüfungsanst. f. landw. Maschinen u. Geräte Wieselburg / Austria Protokoll Nr. 111/78	**Zapfwellenprüfung P.t.o.-test**	Dieseltraktor URSUS Typ 1204 Mot. Typ Z-8601



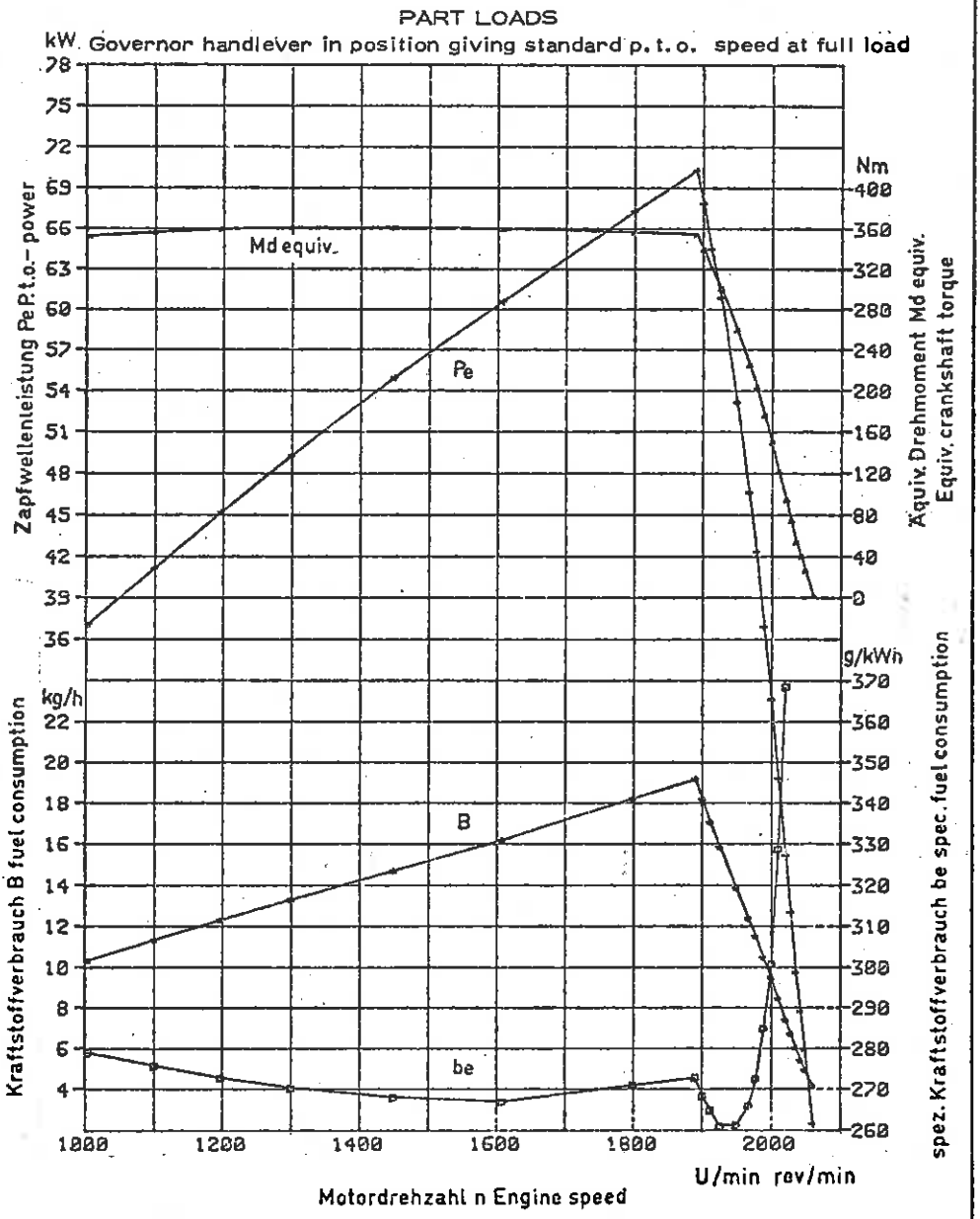
Engine ser. No. 5261	Atm. pressure: 981 mb	Coolant temp.: 81°C	D. of tests: 1978 01 11	Signature
Tractor ser. No. 868	Air temperature: 17°C	Oil temperature: 108°C	Test No. 115/Za110	A. Deitler
Fuel: 0,835/15°C	Engine oil: Mobil special	Fuel temp.: 58°C	Curves No. 1	

Bundesversuchs-u.Prüfungsanst. f.landw.Maschinen u.Geräte Wieselburg / Austria Protokoll Nr. 111/78	**Zapfwellenprüfung P.t.o.-test**	Dieseltraktor URSUS Typ 1204 Mot. Typ Z-8601



Engine ser. No. 5261	Atm. pressure: 981 mb	Coolant temp.: 81°C	D.of tests: 1978 01 11	Signature
Tractor ser.No. 868	Air temperature: 17°C	Oil temperature: 108°C	Test No. 115/Za110	A. Reither
Fuel: 0,835/15°C	Engine oil: Mobil special	Fuel temp.: 58°C	Curves No. 2	

Bundesversuchs-u.Prüfungsanst. f. landw. Maschinen u. Geräte Wieselburg / Austria Protokoll Nr. 111/78	**Zapfwellenprüfung P.t.o.–test**	Dieseltraktor URSUS Typ 1204 Mot. Typ Z-8601



Engine ser. No. 5261	Atm. pressure: 981 mb	Coolant temp.: 81°C	D. of tests: 1978 01 11	Signature
Tractor ser. No. 868	Air temperature: 17°C	Oil temperature: 108°C	Test No. 115/Za110	A. Reithner
Fuel: 0.835/15°C	Engine oil: Mobil special	Fuel temp.: 58°C	Curves No. 2a	

2. Drawbar performance

Date of tests: 1978 05 10 to 1978 05 18
Type of track: Concrete
Height of drawbar above ground: 380 mm ballasted, 400 mm unballasted

Gear No.	Speed	Power	Drawbar pull	Engine speed	Slip of wheels	Fuel consumption		Temperatures			Atmosph. conditions		
						specific	specific	Fuel	Coo-lant	Engine Oil	Tempe-rature	rel.hu-midity	Pres-sure
	km/h	kW	N	rev/min	%	kWh/l	g/kWh	°C	°C	°C	°C	%	mbar
(1) Maximum power (ballasted)													
1 I *)	1,657	30,00	65120	2331	15	-	-	46	80	98	14	62	985
1 I	2,194	39,70	65140	2307	15	-	-	46	80	98	13	62	985
2 I *)	2,564	46,44	65200	2288	15	2,508	333	45	81	98	12	61	985
2 I	3,348	60,59	65140	2232	15	2,599	321	46	80	97	13	61	985
3 I *)	4,017	67,00	60000	2200	12,8	2,642	316	45	80	97	14	62	985
1 II *)	4,811	68,49	51250	2199	10,4	2,702	309	46	81	99	15	61	985
3 I	5,622	69,42	44430	2200	9	2,737	305	46	83	94	16	62	985
4 I *)	6,035	69,74	41600	2198	8,6	2,751	303,5	47	83	94	15	62	985
1 II	6,620	70,06	38100	2201	8	2,763	302	46	80	93	14	62	985
2 II *)	7,890	69,91	31900	2200	7	2,758	303	44	79	93	15	62	985
4 I	8,190	69,73	30650	2198	6,8	2,750	303,5	43	79	90	16	61	985

*) with torque amplifier group engaged

Gear No.	Speed	Power	Drawbar pull	Engine speed	Slip of wheels	Fuel consumption		Temperatures			Atmosph. conditions		
						specific	specific	Fuel	Coo-lant	Engine Oil	Tempe-rature	rel.hu-midity	Pres-sure
	km/h	kW	N	rev/min	%	kWh/l	g/kWh	°C	°C	°C	°C	%	mbar
(ii) Five-hour-test at 75 % of pull at maximum power													
1 II	6,915	54,88	28570	2266	6,4	2,684	311	49	82	102	18	67	993
(iii) Five-hour-test at pull corresponding to 15 % wheelslip in test (i)													
2 I	3,337	60,44	65200	2229	15	2,577	324	50	83	105	16	71	990
(iv) Maximum power (unballasted)													
3 I *)	4,038	52,45	46760	2258	15	-	-	49	80	100	16	68	989
1 II *)	4,621	60,05	46780	2218	15	2,463	339	50	78	102	18	68	989
3 I	5,364	65,56	44000	2200	13,5	2,586	323	48	80	100	15	68	989
4 I *)	5,839	66,50	41000	2202	12,1	2,624	318	49	81	99	16	67	989
1 II	6,440	67,44	37700	2200	10,9	2,661	314	48	80	97	17	67	989
2 II *)	7,750	68,36	31750	2199	9,1	2,697	309,5	48	80	96	17	67	989
4 I	8,074	68,41	30500	2201	8,8	2,699	309	47	80	96	18	66	989
2 II	10,629	67,91	23000	2200	6,9	2,678	312	45	79	96	18	66	989

Total oil consumption during 10 hours duration of tests (ii) and (iii): 124 g/h

*) with torque amplifier group engaged

3. Turning space and turning circle

Wheel equipment front: 14,9/13-24 (R), 6 PR
rear: 18,4/15-34 (R), 8 PR

Track of wheels front: 1710 mm
rear: 1500 mm

Results	With brakes		Without brakes	
	right-hand	left-hand	right-hand	left-hand
	m	m	m	m
Radius of turning space	5,40 *) 5,73	5,43 *) 5,86	6,55 *) 6,86	6,08 *) 6,42
Radius of turning circle	5,04 *) 5,37	5,07 *) 5,50	6,19 *) 6,52	5,72 *) 6,06

*) four-wheel-drive switched off

4. Location of centre of gravity

	mm
Height above ground	999
Distance forward from the vertical plane containing the axis of the rear wheels	1055
Distance from the median plane, left-hand	11

5. Braking

Date of tests: 1978 05 10 to 1978 05 18
Type of track: Concrete
Type of decelerometer: Moto-Meter Nr. 03382 (Kombi-Schreiber)
Mass of ballasted tractor: 6711 kg

Cold brakes (four-wheel-drive engaged)

		Ballasted	Without ballast
Travelling speed of the tractor	km/h	25	25
(i) Deceleration	m/s^2	4,5	5,4
(ii) Stopping distance	m	3,85	3,15
(iii) Force exerted on the brake pedal	N	480	451
(iv) Force exerted on the brake pedal to achieve a deceleration of 2,5 m/s^2	N	284	255

Brake fade characteristics (hot tests)	Ballasted	Unballasted
Deceleration hot / deceleration cold x 100	115	105
Stopping distance cold / Stopping distance hot x 100	86	76
Force on pedal, cold / Force on pedal, hot x 100	70	82
Force on pedal, cold / force on pedal, hot to achieve a deceleration of 2,5 m/s^2 x 100	72	84

Efficiency of handbrake:
Pull on handbrake: 275 N (satisfactory facing up slope of 16 %)
304 N (satisfactory facing down slope of 16 %)

6. Measurement of ambient noise

Date of tests: 1978 05 29
Type of sound level meter: 2203 BRÜEL & KJAER
Type of track: Concrete

Results of tests:
Gear: 4 II, four-wheel-drive engaged
Travelling speed before acceleration: 21 km/h
Sound level: 87 dB(A)

7. Noise measurement at the driver's ear level

Date of tests: 1978 05 29
Type of sound level meter and octave filter: 2203 and 1613 BRÜEL & KJAER
Type of track: Concrete

Results of tests (tractor with cab)

Gear	Travelling speed	dBA
*) 1 II	7,52 km/h	87

*) The gear tested corresponds to a travelling speed nearest to 7,50 km/h

8. Power lift an hydraulic pump performance

Date and location of tests: 1978 08 16, Wieselburg, Austria
Hydraulic fluid:
Make and type: MOBILUBE SAE 80 EP
Viscosity at 50°C: 49 mm^2/s (49 cSt)
Typ of linkage lock for transport: hydraulically by throttle valve
Opening pressure of the cylinder overpressure relief valve
(manufacturer specification): 196 bar

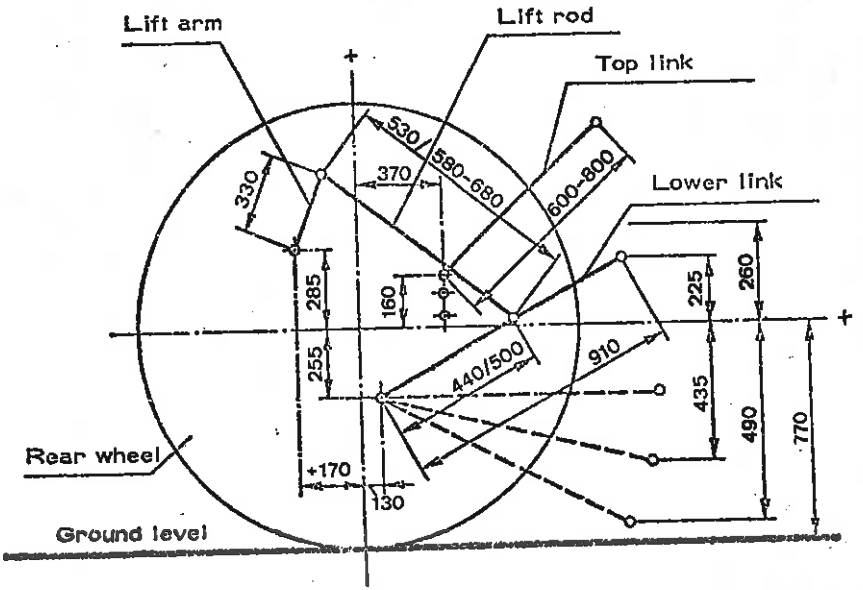
Pump characteristics:

(i) Opening pressure of the relief valve: 206 bar
sustained pressure by the open relief valve: 201 bar

(ii) Pump delivery rate at minimum pressure
and rated engine speed: gear pump: 35 l/min
piston pump: 4 l/min

(iii) Gear pump
Pump delivery rate: 32 l/min
delivery pressure: 157 bar
power: 8,37 kW

Piston pump
Pump delivery rate: 4 l/min
delivery pressure: 201 bar
power: 1,34 kW at 201 bar (1,04 kW at 157 bar)



Linkage geometry when connected to the standard frame

		Maximum mechanical advantage	Minimum mechanical advantage
Projected length in side view			
Lower links	mm	910	910
Lift arms	mm	330	330
Lift rods	mm	530	530
Top link	mm	672	672
Distance of lift rod connection point from pivot point of lower link	mm	500	440
The following dimensions are given relative to the rear wheel centre line, situated 770 mm above the ground level			
Lower link pivot point	mm	130 behind 255 below	130 behind 255 below
Top link pivot point	mm	370 behind 160 above	370 behind 160 above
Lift arm pivot point	mm	170 behind 285 above	170 behind 285 above
Maximum und minimum height of lower link hitch points	mm	225 above 435 below	260 above 490 below
Height of lower link hitch points locked in transport position	mm	225 above (max. height)	260 above (max. height)

Performance of power lift

Lifting heights in relation to a horizontal line through the lower link pivoting point mm		-240	-235	-190	-180	-90	0	+100	+200	+300	+400	+480	+515	+615	+670
Lifting force at the hitch-points kN (Values for the pressure at maximum hydraulic power, calculated from measurements made at maximum pressure)	max.mech. advantage				47,77	47,08	47,08	47,77	48,75	49,73	49,14	45,12			
	min. mech. advantage		40,22	40,22	40,27	40,51	41,05	41,93	43,06	44,24	44,68	43,21	41,39		
	Maximum force exerted throughout whole range: 45,12/40,22 kN														
	Oil pressure: 201 bar														
Lifting force at the frame kN (Values for the pressure at maximum hydraulic power, calculated from measurements made at maximum pressure)	max.mech. advantage			48,26	47,70	45,07	43,31	41,83	40,61	39,19	37,03	34,62	33,25	28,25	
	min. mech. advantage	41,69	41,59	40,56	40,36	38,84	37,76	36,78	35,85	34,67	33,10	31,34	30,41	27,07	24,72
	Maximum force exerted throughout whole range: 28,25/24,72 kN														
	Oil pressure: 201 bar														

ADDITIONAL TESTS

Out of the OECD-Code under responsibility of the Austrian Testing Station

1. OCTAVE-ANALYSIS OF NOISE AT THE DRIVERS EAR LEVEL

Made in the gear with the nominal travelling speed nearest to 7,5 km/h

Date of tests: 1978 05 29

Test track: concrete

Type of sound level meter: 2203 BRÜEL & KJAER

Type of frequence analyser: 1613 BRÜEL & KJAER

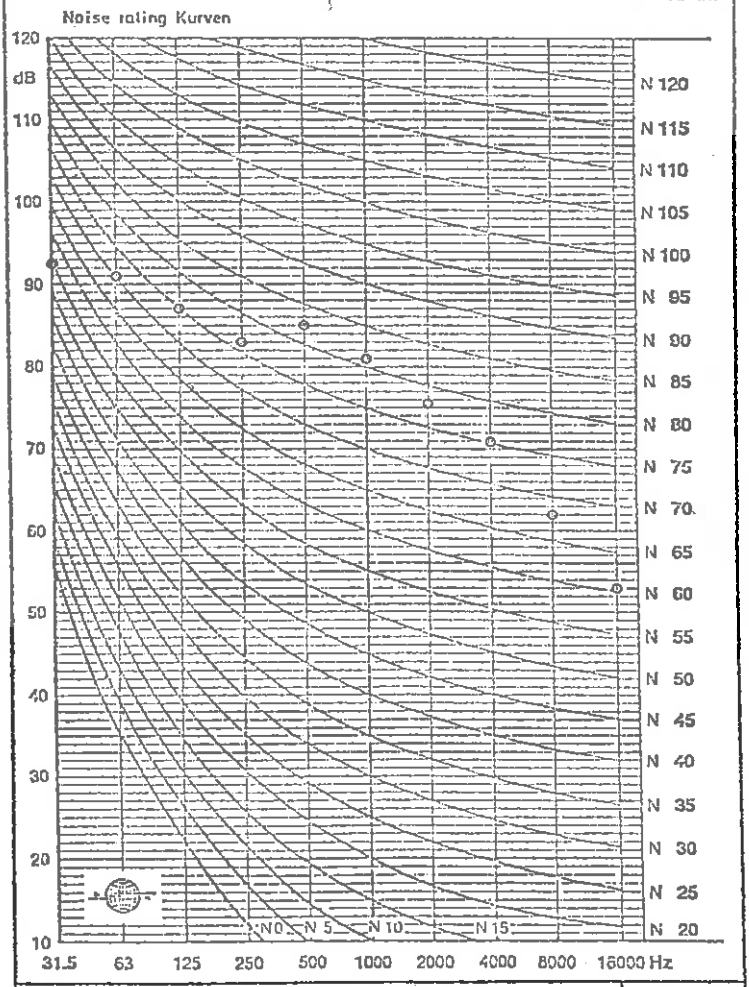
Results of tests:

Tractor with cab,

Gear	Effective travelling speed	Sound level	
		dB(A)	Noise rating
1 II *)	7,52 km/h	87	82

*) four wheel drive engaged

Bundesversuchs-u.Prüfungsanst. f.landw.Maschinen u.Geräte Wieselburg/Austria	Octave analysis of noise at the drivers ear level	Dieseltractor URSUS Typ 1204



Gear: 1 II four-wheel-drive engaged
Trav. speed: 7,52 km/h

A. Reitter