STÁTNÍ ZKUŠEBNA ZEMĚDĚLSKÝCH, POTRAVINÁŘSKÝCH A LESNICKÝCH STROJŮ

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Report on test in accordance with the OECD Standard Code for the Official Testing of Agricultural Tractor Preformance

CODE 2

Restricted Code

Date of approval: 29th May 1996

OECD No. 1619



Agricultural Tractor

ZTS 12245 Super (4WD) 25 km/h version

Manufactured by: ZTS TEES š.p., 036 57 Martin, Slovakia

Report No. 12118

Date of test: September 1995 - March 1996

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Tractor manufacturer's name and address:	ZTS TEES š.p., 036 57 Martin, Slovakia
Location of tractor assembly:	Martin, Slovakia
Submitted for test by:	The manufacturer
Selected for test by:	The manufacturer
Place of running-in:	Martin, Slovakia
Duration of running-in:	100 hours
Location of test:	SZZPLS Praha 6 - Řepy, Czech Republic

1. SPECIFICATIONS OF TRACTOR

1.1 IDENTIFICATION

Make:	ZTS
Model:	12245 Super 25 km/h version
Type:	Wheeled, unit construction, all wheels drive
Number of driving wheels:	4
Serial No.:	12245 1336
1st Serial No.:	12245 1336

1.2 ENGINE

Make:	MARTIN DIESEL
Model:	Z 8701.12
Type:	4-stroke diesel engine, direct injection, water cooled, naturally aspirated
Serial No.:	C 02288

1.2.1 Cylinders

Number/disposition:	6, in-line, vertical
Bore/stroke:	110 mm/120 mm
Capacity:	6842 cm^3
Compression ratio:	17.0:1
Arrangement of valves:	Overhead
Cylinder liners:	Wet, replaceable

1.2.2 Supercharging

None

1.2.3 Fuel system

Fuel feed system:	Lift pump piston-type, integral with fuel injection pump

Make, model and type of fuel filters:	AUTOBRZDY, 443 741 429 000, two-stage with paper cartridge
Capacity of fuel tank:	195 dm^3
Make, model and type of injection pump:	MOTORPAL, 6M 3139, in-line
Serial No.:	Uw 0120
Manufacturer's production setting of injection pump:	
Flow rate (rated engine speed and full load):	24.40+1.20 dm^3/h
Timing:	24°+2° before TDC
Make, model and type of injection:	MOTORPAL, DOP 150 S 430-1439, 4 hole
Injection pressure:	16.8+0.8 MPa

1.2.4 Governor

Make, model and type:	MOTORPAL, RV 3M 300/1100 3301, centrifugal, variable speed
Governed range of engine speed:	from 600 to 2450 rev/min
Rated engine speed:	2200 rev/min

1.2.5 Air cleaner

Pre-cleaner:	
Make, model and type:	SANDRIK, PC 750, cyclon type
Location of air intake:	Under bonnet forward of radiator
Main cleaner:	
Make, model and type:	SANDRIK, 9450.11, oil bath
Maintenance indicator:	Warning light on instrument panel

1.2.6 Lubrication system

Type of feed pump:	Gear
Type of filter:	Full flow with replaceable paper element
Number:	2
Oil cooler:	Heat exchanger with engine coolant

1.2.7 Cooling system

Type of coolant:	Water and anti-freeze
Type of pump:	Centrifugal, belt driven
Specification of fan:	Axial, belt driven
Number of blades:	8
Fan diameter:	460 mm
Coolant capacity:	25 dm^3
Type of temperature control:	Thermostat

Superpressure system:	40±10 kPa

1.2.8 Starting system

Make, model and type:	AVF, IM 597, electrical, solenoid engaged
Starter motor power rating:	5.4 kW
Cold starting aid:	None
Safety device:	Gear selector lever to be in neutral position

1.2.9 Electrical system

Voltage:	12 V, negative earth
Generator:	
Make, model and type:	MAGNETON, 443 113 516 184, alternator, belt driven
Power:	770 W
Battery (number of accumulators):	2
Rating:	100 Ah at 20 hours

1.2.10 Exhaust system

Make; model and type:	ZTS, 87.014.500, expansion and absorption muffler
Location:	Left-hand side of engine, vertical

1.3 TRANSMISSION

1.3.1 Clutch

Make, model and type:	ZTS, 87.021.500, dry for transmission only
Number of plates:	1
Diameter of plates:	380 mm
Method of operation:	Hydraulically by pedal

1.3.2 Gear box

Make, model and type:	ZVL, 87.964.000, mechanical
Arrangement:	Synchromesh gear box with 4 speeds, group gear box with two speed ranges and reverse (I, II and R) and 2-speed hydraulically actuated torque multiplier (M+ and M-)
Number of gears:	16 forward and 8 reverse
Available options:	None
Oil cooler:	Heat exchanger with air

1.3.3 Rear axle and final drives

Make, model and type:	ZTS, ZM 120, crown wheel and bevel pinion differential and planetary final drives

Differential lock:

Type:	Multiplate differential lock
Method of engagement:	Electro-hydraulically by switch
Method of disengagement:	Electro-hydraulically by switch

1.3.4 Front axle and final drives

Make, model and type:	VS, 89.000.654, crown wheel and bevel pinion differential and planetary final drives

Differential lock:

Type:	Multiplate differential lock
Method of engagement:	Electro-hydraulically by switch
Method of disengagement:	Electro-hydraulically by switch

1.3.5 Total ratios and travelling speeds

Gear	Group	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed at rated engine speed of 2200 rev/min km/h (*)
1	IM+	386.131	1.84
2		244.993	2.89
3		154.184	4.60
4		108.305	6.55
1	IM-	288.623	2.46
2		183.126	3.87
3		115.249	6.15
4		80.955	8.76
1	IIM+	132.359	5.36
2		83.979	8.44
3		52.852	13.42
4		37.125	19.10
1	IIM-	98.935	7.17
2		62.772	11.30
3		39.505	17.95
4		27.750	25.55
1	RM+	282.365	2.51
2		179.156	3.96
3		112.750	6.29
4		79.200	8.95
1	RM-	211.061	3.36
2		133.914	5.30
3		84.278	8.41
4		59.200	11.98

(*) Calculated with a tyre dynamic radius index of 855 mm (ISO 4251/1-1992)

M+: Torque multiplier engaged in position "plus", M-: Torque multiplier engaged in position "minus"

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: Hydraulic clutch operated by hand lever, independent of main drive clutch, wet multiplate

Number of shafts: 1

Method of changing power take-off speeds: Manually by shaft turning

1.4.1.1 Power take-off proportional to engine speed

Location: At rear of tractor

P.T.O.	Diameter of power take-off shaft end mm	Number of splines	In conformity with ISO 500/1991
540	34.9	6	Yes
1000	34.9	21	Yes
1000	44.4	20	Yes

Height above ground: 719 mm

Distance from the median plane of the tractor: 0 mm

Distance behind rear-wheel axis: 530 mm for 540 rev/min, 535 mm for 1000 rev/min

P.T.O.	P.T.O speed rev/min	Engine speed rev/min	Ratio of rotation speeds (engine speed/p.t.o. speed)	Power restriction and maximum torque kW/Nm
540	540	1890	3.5000	45.0/795.8
	629	2200		
1000	1000	1920	1.9200	None
	1146	2200		

Direction of rotation (viewed from behind tractor): Clockwise

1.4.1.2 Power take-off proportional to ground speed

None

1.4.2 Optional power take-off (on request available, not fitted to tested tractor)

Type: Independent

Method of engagement: Hydraulic clutch operated by hand lever, independent of main drive clutch, wet multiplate

Number of shafts: 1

Method of changing power take-off speeds: None

1.4.2.1 Power take-off proportional to engine speed

Location: At front of tractor

P.T.O.	Diameter of power take-off shaft end mm	Number of splines	In conformity with ISO 500/1991
1000	34.9	21	Yes

Height above ground: 768 mm

Distance from the median plane of the tractor: 0 mm

Distance in front front-wheel axis: 621 mm

P.T.O.	P.T.O. speed rev/min	Engine speed rev/min	Ratio of rotation speeds (engine speed/p.t.o. speed)	Power restriction and maximum torque kW/Nm
1000	1000	1947	1.9474	40.0/382.0
	1130	2200		

Direction of rotation (viewed from face tractor): Clockwise

1.4.2.2 Power take-off proportional to ground speed

None

1.5 POWER LIFT

Make, model and type: AGROMET ARCHIMEDES, 88.646.000, hydraulic with mechanical position, draft or mixed control, lower link sensing

Type of hydraulic system: Open centre

Type and number of cylinders: 1 integral single-acting and 2 external single-acting

Type of linkage lock for transport: Hydraulic

Relief valve pressure setting (tolerance): 18.0±2.0 MPa

Opening pressure of cylinder safety valve: 20.5+1.0 MPa

Lift pump type: Gear

Transmission between pump and engine: Gear driven from engine

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 pumps of hydraulic and gear box

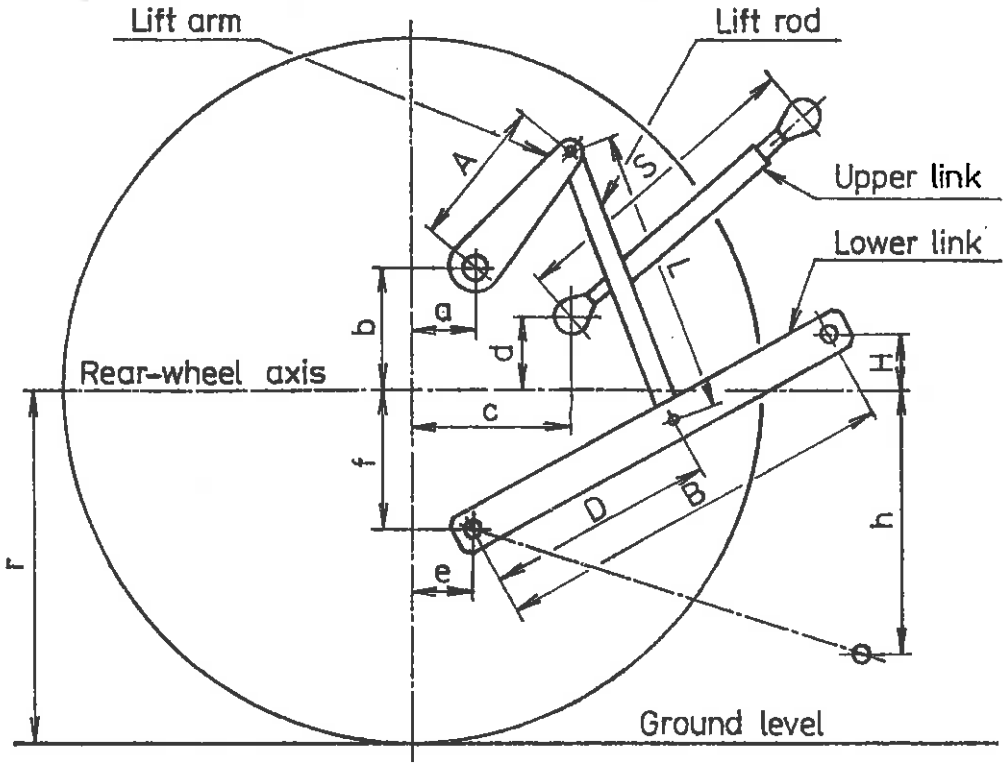
Site of oil reservoir: Transmission housing

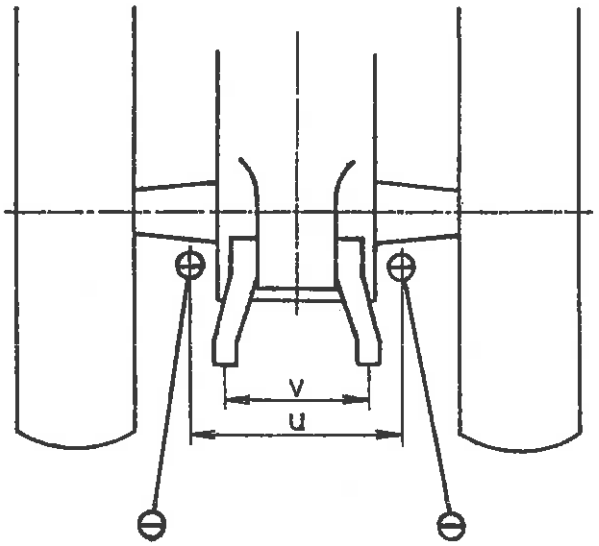
Type, number and location of tapping points: 5 pressure and 1 return, quick release at rear of tractor

Maximum volume of oil available to external cylinders: 15 dm^3

1.6 THREE-POINT LINKAGE

Category:	**3, in conformity with ISO 730/1-1990**
Category adapter:	**None**





Linkage geometry dimensions:

			Dimension or range mm	Settings used in test mm
Length of lift arms		(A)	330	330
Length of lower links		(B)	994	994
Distance of lift arm pivot point from rear-wheel axis:	horizontally vertically	(a) (b)	170 285	170 285
Horizontal distance between the 2 lower link points		(u)	542	542
Horizontal distance between the 2 lift arm end points		(v)	640	640
Length of upper link		(S)	659 to 880	745
Distance of upper link pivot point from rear-wheel axis:	horizontally vertically	(c) (d)	385 123, 170, 210	385 210
Distance of lower link pivot point from rear-wheel axis:	horizontally vertically	(e) (f)	130 255	130 255
Distance of lower link pivot points to lift rod pivot points on lower links		(D)	501	501
Length of lift rods		(L)	516 to 652	597
Height of lower hitch points relative to the rear-wheel axis: - in low position - in high position		 (h) (H)	 506 to 692 61 to 205	 625 90
Height above ground of lower hitch points when locked in transport position (*)			Any height withing lift range	
(*) Assuming the tyre dynamic radius index r=855 mm of ISO 4251/1-1992				

1.7 SWINGING DRAWBAR

Type:	Clevis
Height above ground: Maximum: Minimum:	 439 mm 439 mm
Type of adjustment:	Sliding drawbar in two distance of hitch point from power take-off shaft end - 400 and 500 mm
Distance of hitch point from rear-wheel axis, horizontally:	930 and 1030 mm
Distance of hitch point from power take-off shaft end: Vertically: Horizontally:	 280 mm 400 and 500 mm for 540 rev/min, 395 and 495 mm for 1000 rev/min

Lateral adjustment (centre of clevis):	
Right-hand:	0 mm
Left-hand:	0 mm
Distance of pivot point from rear-wheel axis, horizontally:	385 mm to rear
Diameter drawbar pin hole:	33 mm
Maximum vertical permissible load:	9 kN for 400 mm, 7 kN for 500 mm

1.8 TRAILER HITCH

Type:	Automatic clevis
Hole diameter:	42 mm
Height above ground:	758, 808, 858, 908 and 958 mm
Distance of hitch point from rear-wheel axis, horizontally:	930 mm
Distance of hitch point from power take-off shaft end:	
Vertically:	39, 89, 139, 189 and 239 mm
Horizontally:	400 mm for 540 rev/min, 395 mm for 1000 rev/min
Maximum vertical permissible load:	10 kN

1.9 HOLED DRAWBAR

Number of holes:	9
Distance between holes:	80 mm
Hole diameter:	32 mm
Thickness/width of the drawbar:	2×20 mm/100 mm
Height above ground:	
Maximum:	945 mm
Minimum:	230 mm
Horizontal distance to power take-off shaft end (rear):	594 mm for 540 rev/min, 589 mm for 1000 rev/min

1.10 SEMI-TRAILER HITCH

Type:	Towing hook
Hole diameter:	47 mm
Height above ground:	489 mm
Distance of hitch point from rear-wheel axis, horizontally:	709 mm
Distance of hitch point from power take-off shaft end:	
Vertically:	230 mm
Horizontally:	179 mm for 540 rev/min, 174 mm for 1000 rev/min

Maximum vertical permissible load: 21 kN

1.11 FRONT TOWING HITCH Not fitted

1.12 STEERING

Make, model and type: HYDRAULIK NORD, LAGB 125-1, hydrostatic

Method of operation: Independent hydraulic circuit for steering

Pump: Gear, driven from engine

Ram: Double-acting cylinder on the front axle

Working pressure: 14.0 MPa

1.13 BRAKES

1.13.1 Service brake

On the rear axle:

Make, model and type: ZTS, 63.227.000, wet disc, multiplate, 5 discs on each side

Method of operation: Hydraulically by pedals, coupled or independent

On the front axle: None

Trailer braking take-off: Air brake operated by tractor pedals

1.13.2 Parking brake

Type: Common with service brake

Method of operation: Mechanically by hand lever with ratchet

1.14 WHEELS

Number:

Front: 2, steering and driving

Rear: 2, driving

Wheelbase: 2705 mm

Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1790	1990	By changing wheel discs to either side of wheel centre
Rear	1800	1800	None

1.15 PROTECTIVE STRUCTURE

Make, model and type:	VĽAD, BK UR II M87, cab with integrated safety frame
Manufacturer's name and address:	VĽAD, 081 17 Prešov, Slovakia
Protective device:	
Cab/frame/rollguard/other:	Cab
Tiltable/not tiltable:	Not tiltable
OECD approval number:	CSS 0275/3
Date of approval:	25th April 1994
Modification certificate if any:	None

1.16 SEAT

1.16.1 Driver's seat

Make, model and type:	MARS, Zetor 5911-5400, upholstered seat
Type of suspension:	Parallelogram linkage adjustable for driver's weight
Type of damping:	Hydraulic
Range of adjustment:	
Longitudinal:	150 mm
Vertical:	60 mm

1.16.2 Optional driver's seat

Make, model and type:	GRAMMER, LS 95H1/90AR, upholstered seat with back rest
Type of suspension:	Parallelogram linkage adjustable for driver's weight
Type of damping:	Hydraulic
Range of adjustment:	
Longitudinal:	150 mm
Vertical:	60 mm

1.16.3 Passenger seat

None

1.17 LIGHTING

	Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Headlights	1250	Ø120	240
Sidelights	1885	60×65	775
Rearlights	1795	105×70	905
Reflectors	1080	Ø80	1030

2. TEST CONDITIONS

2.1 OVERALL DIMENSIONS (unballasted tractor)

Length mm	Width		Height at top of	
	minimum mm	maximum mm	protective structure mm	exhaust silencer mm
4625	2370	2485	2765	2975

2.2 GROUND CLEARANCE (unballasted tractor): 360 mm

Clearance-limiting part: Swinging drawbar

2.3 TRACTOR MASS (unballasted tractor with cab)

	Without driver kg	With driver kg
Front	2060	2075
Rear	3540	3600
Total	5600	5675

2.4 TYRES AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Tyres:		
Make	BARUM	TAURUS
Dimensions	14.9-28	20.8R38
Ply rating	8 PR	153 A8
Type	diagonal	radial
Maximum load (tyre manufacturer's)	20.11 kN	40.51 kN
Maximum load (tractor manufacturer's)	16.00 kN	30.00 kN
Inflation pressure (tyre manufacturer's)	180 kPa	160 kPa
Dynamic radius index	640 mm	855 m
Chosen track width:	1790 mm	1800 mm

2.5 OILS AND LUBRICATION

2.5.1 Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	19.0	200	200
Gear box	52.0	1200	600
Front axle	2.6	1200	-
Rear axle		Common with gear box	
Final drive (front)	2x1.3	2400	-
Final drive (rear)	2x4.0	1200	-
Hydraulic system		Common with gear box	
Steering	8.0	1200	1200
Air cleaner	2.2	100	-

2.5.2 Specifications

	Recommended	Used during test
Engine oil:		
Type	SAE 30	As recomended
Viscosity	12.0 cSt at 100 °C	
Classification	API SC/CB	
Transmission oils:		
Type	SAE 80W	As recommended
Viscosity	7.5 cSt at 100 °C	
Classification	API GL-4	
Steering oil:		
Type	OL-N22	As recommended
Viscosity	19.8 cSt at 40 °C	
Classification	ISO 6743 HH 22	

Hydraulic fluid: Same as transmission

Air cleaner filling: Same as engine

2.5.3 Grease

Number of lubrication points: 24

2.6 FUEL

Type: Diesel fuel, in conformity with national standard ČSN 65 6506

Density at 15 °C: 0.837 g/cm^3 for p.t.o. tests
0.836 g/cm^3 for drawbar tests

3. COMPULSORY TEST RESULTS

3.1 MAIN POWER TAKE-OFF

Date and location of tests: 6th September 1995, SZZPLS Praha

Type of dynamometer: FROUDE AG 400, eddy-current

Power	Speed		Fuel consumption			Specific
	Engine	P.T.O.	Hourly		Specific	energy
kW	rev/min		kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - TWO-HOUR TEST						
76.5	2200	1146	21.32	25.47	279	3.00
3.1.2 POWER AT RATED ENGINE SPEED						
76.5	2200	1146	21.32	25.47	279	3.00
3.1.3 SATNDARD POWER TAKE-OFF SPEED (1000±25 rev/min)						
70.5	1920	1000	18.95	22.64	269	3.11
3.1.4 PART LOADS 3.1.4.1 the torque corresponding to maximum power at rated engine speed						
76.5	2200	1146	21.32	25.47	279	3.00
3.1.4.2 85 % of torque obtained in 3.1.4.1						
67.0	2267	1181	18.63	22.26	278	3.01
3.1.4.3 75 % of torque defined in 3.1.4.2						
51.0	2300	1198	14.93	17.84	293	2.86
3.1.4.4 50 % of torque defined in 3.1.4.2						
34.5	2331	1214	11.73	14.01	340	2.46
3.1.4.5 25 % of torque defined in 3.1.4.2						
17.5	2363	1231	8.78	10.49	502	1.67
3.1.4.6 unloaded						
-	2388	1244	6.02	7.19	-	-

Power	Speed		Fuel consumption			Specific
	Engine	P.T.O.	Hourly		Specific	energy
kW	rev/min		kg/h	l/h	g/kWh	kWh/l
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED 1000 rev/min 3.1.5.1 the torque corresponding to maximum power						
70.5	1920	1000	18.95	22.64	269	3.11
3.1.5.2 85 % of torque obtained in 3.1.5.1						
63.4	2031	1058	16.75	20.01	264	3.17
3.1.5.3 75 % of torque defined in 3.1.5.2						
48.5	2073	1080	13.46	16.08	278	3.02
3.1.5.4 50 % of torque defined in 3.1.5.2						
33.0	2112	1100	10.51	12.56	318	2.63
3.1.5.5 25 % of torque defined in 3.1.5.2						
16.8	2146	1118	7.62	9.10	454	1.85
3.1.5.6 unloaded						
-	2169	1130	5.02	6.00	-	-

No load maximum engine speed: 2388 rev/min

Torque (equivalent crankshaft):

at maximum power: 332.1 Nm
at rated engine speed: 332.1 Nm
at standard power take-off speed: 350.6 Nm

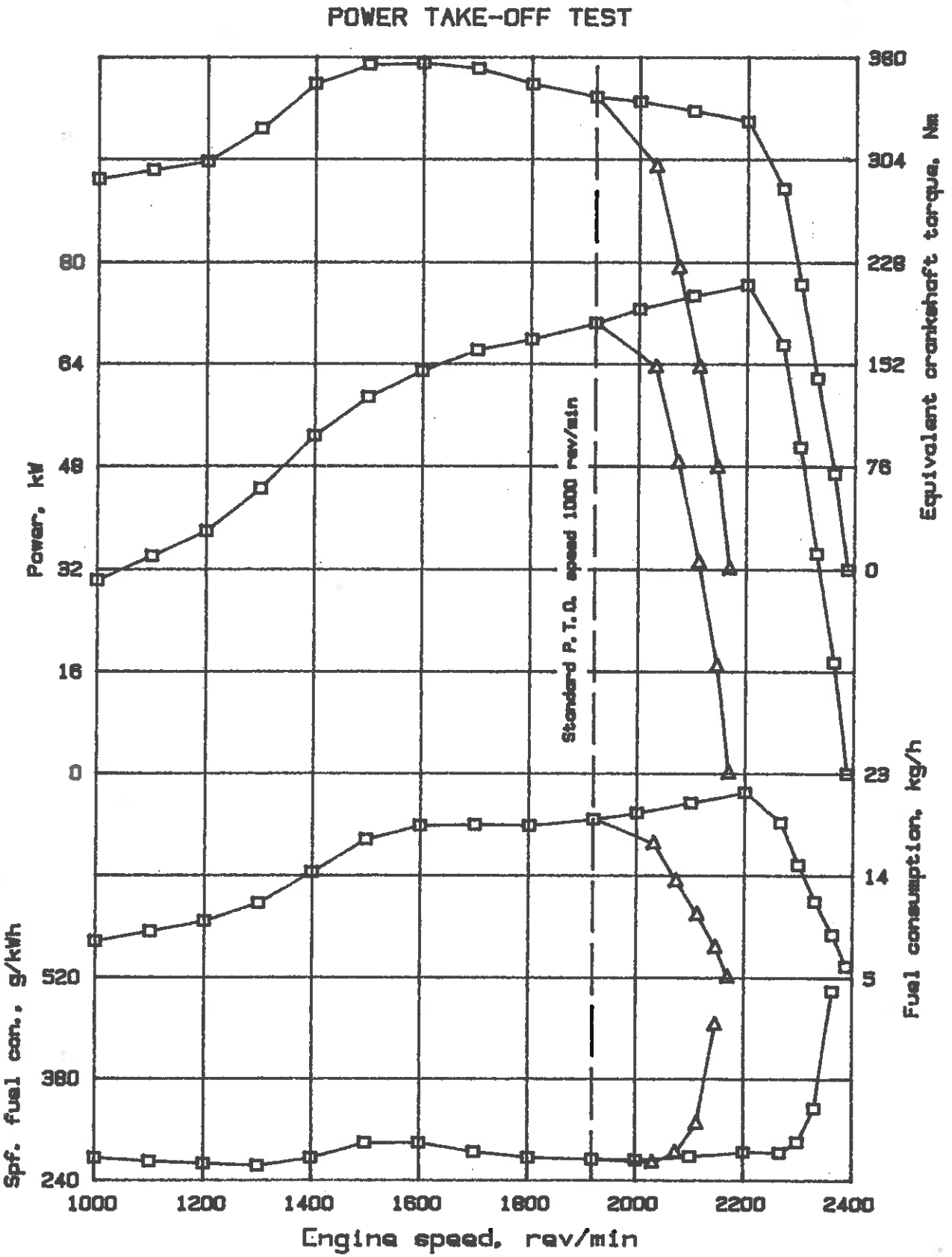
Maximum torque (equivalent crankshaft): 375.6 Nm
(engine speed: 1599 rev/min)

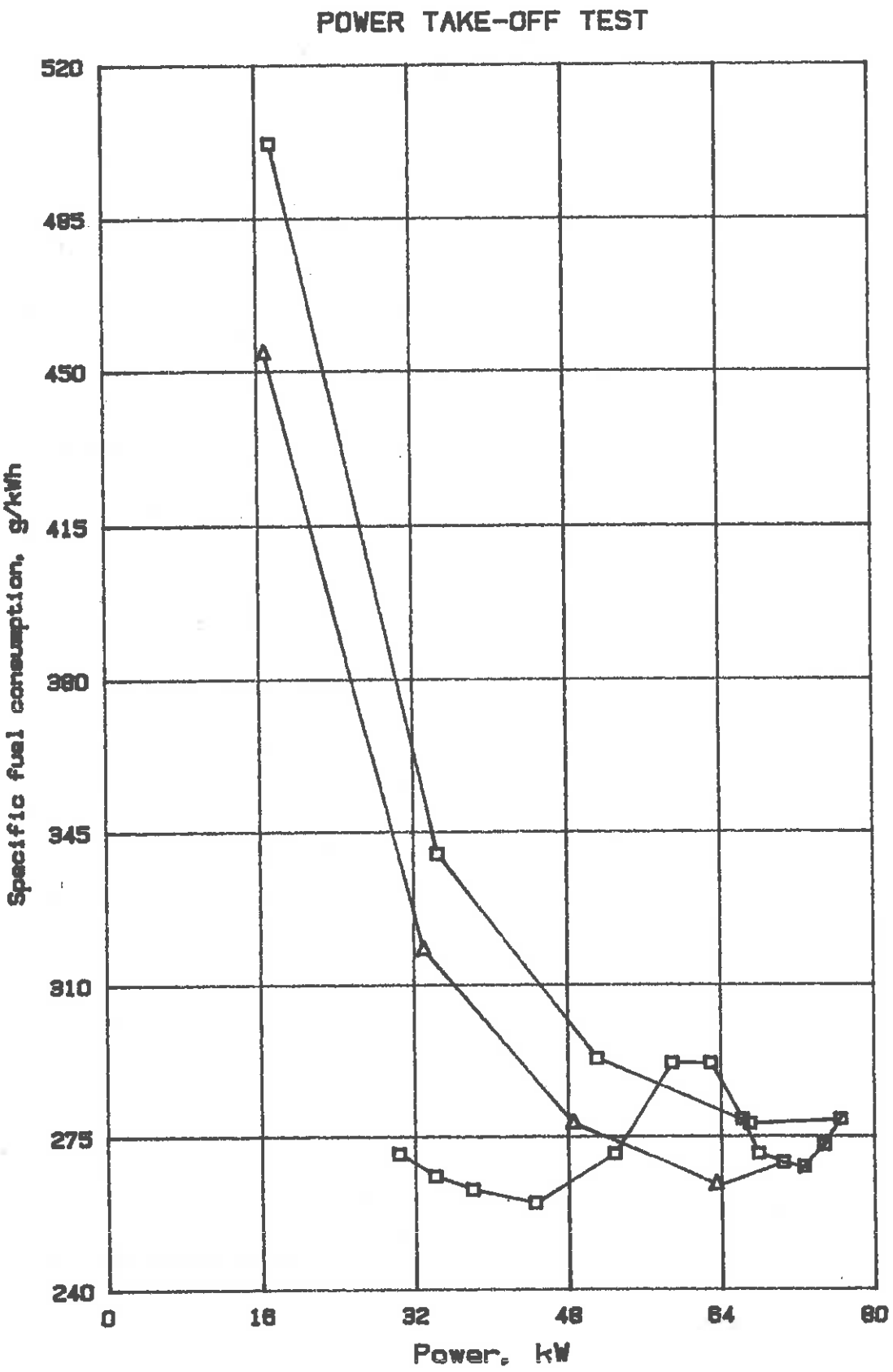
Mean atmospheric conditions:

Temperature: 15 °C
Pressure: 97.0 kPa
Relative humidity: 53 %

Maximum temperatures:

Coolant: 85 °C
Engine oil: 104°C
Fuel: 44 °C
Engine air intake: 28 °C


POWER TAKE-OFF TEST
Power, kW
80
64
48
32
16
0
Spf. fuel con., g/kWh
520
380
240
Standard P.T.O. speed 1000 rev/min
Equivalent crankshaft torque, Nm
380
304
228
152
76
0
Fuel consumption, kg/h
23
14
5
1000
1200
1400
1600
1800
2000
2200
2400
Engine speed, rev/min


POWER TAKE-OFF TEST
Specific fuel consumption, g/kWh
520
485
450
415
380
345
310
275
240
0
16
32
48
64
80
Power, kW

3.2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 2nd October 1995

3.2.1 Hydraulic power test

Sustained pressure with relief valve open: 19.0 MPa

Pump delivery rate at minimum pressure: 46.0 l/min

	Flow rate l/min	Pressure kPa	Power kW
Flow rate corresponding to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting and corresponding hydraulic power	24.0	17.1	6.8
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	44.0	13.5	9.9

Tapping point used for test: External tapping

Temperature of hydraulic fluid: 65 °C

Opening and closing pressures of the unloading valve: Not applicable

3.2.2 Power lift test

Linkage setting for test - see page 10

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	230 mm	230 mm
Vertical movement	683 mm	835 mm
Maximum corrected force exerted through full range	59.3 kN	40.9 kN
Corresponding pressure of hydraulic fluid	17.1 MPa	17.1 MPa
Moment about rear-wheel axis	66.7 kNm	70.9 kNm
Maximum tilt angle of mast from vertical	-	12 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points												
mm	-430	-400	-370	-300	-200	-100	0	+100	+200	+300	+313	+405
Lifting forces at the hitch points, corrected to 17.1 MPa												
kN	-	-	62.4	62.6	62.3	62.1	61.8	60.5	59.5	59.3	60.4	-
Lifting forces at the test frame, corrected to 17.1 MPa												
kN	53.2	54.0	-	53.5	51.7	50.9	48.9	47.1	44.8	43.0	-	40.9

3.3 DRAWBAR PERFORMANCE (unballasted tractor)

Date of tests: 21st March 1996

Type of track: Bituminous-concrete surface

Height of drawbar above ground	Tyre inflation pressure	
	Front	Rear
439 mm	120 kPa	110 kPa

Gear and group	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						
2 IM-	47.6	48.5	3.53	2283	15.2	354
3 IM+	56.3	48.5	4.18	2252	15.2	347
1 IIM+	66.7	47.3	5.08	2201	8.6	318
3 IM-	68.8	41.4	5.98	2193	5.9	311
4 IM+	67.5	37.8	6.43	2205	5.4	312
1 IIM-	69.9	35.5	7.09	2199	4.6	303
2 IIM+	68.2	29.1	8.44	2203	3.8	308
4 IM-	69.4	28.4	8.80	2204	3.2	305
2 IIM-	68.5	21.5	11.47	2203	2.2	307
3 IIM+	66.4	17.5	13.65	2205	1.7	317
3.3.2 FUEL CONSUMPTION 3.3.2.1 in selected gear, at maximum power at rated speed						
1 IIM-	69.9	35.5	7.09	2199	4.6	303
3.3.2.1.1 75 % of pull at maximum power at rated speed						
1 IIM-	55.1	26.6	7.46	2277	3.0	313
3.3.2.1.2 50 % of pull at maximum power at rated speed						
1 IIM-	37.9	17.8	7.67	2313	1.8	352
3.3.2.1.3 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1						
2 IIM+	54.9	26.5	7.46	1927	2.9	301
3.3.2.1.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2						
2 IIM+	37.9	17.8	7.67	1962	1.8	329
3.3.2.2 in selected gear nearest to 7.5 km/h at rated speed						
1 IIM-	69.9	35.5	7.09	2199	4.6	303
3.3.2.2.1 75 % of pull at maximum power at rated speed						
1 IIM-	55.1	26.6	7.46	2277	3.0	313
3.3.2.2.2 50 % of pull at maximum power at rated speed						
1 IIM-	37.9	17.8	7.67	2313	1.8	352
3.3.2.2.3 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1						
2 IIM+	54.9	26.5	7.46	1927	2.9	301
3.3.2.2.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2						
2 IIM+	37.9	17.8	7.67	1962	1.8	329

Specific energy	Temperature			Atmospheric conditions		
	Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
kWh/l	°C	°C	°C	°C	%	kPa
2.36	27	74	91	5	78	97.3
2.41	26	74	93	6	76	97.3
2.63	25	76	91	6	72	97.3
2.69	25	75	91	8	68	97.3
2.68	25	73	91	8	65	97.3
2.76	26	74	91	8	65	97.3
2.72	25	73	91	8	63	97.3
2.74	26	73	91	9	63	97.3
2.72	25	74	91	9	61	97.3
2.64	26	73	92	9	61	97.3
2.76	26	74	91	8	65	97.3
2.67	27	73	90	9	61	97.3
2.37	28	73	92	9	61	97.3
2.78	24	74	86	9	61	97.3
2.54	25	73	86	9	61	97.3
2.76	26	74	91	8	65	97.3
2.67	27	73	90	9	61	97.3
2.37	28	73	92	9	61	97.3
2.78	24	74	86	9	61	97.3
2.54	25	73	86	9	61	97.3

4. OPTIONAL TEST RESULTS

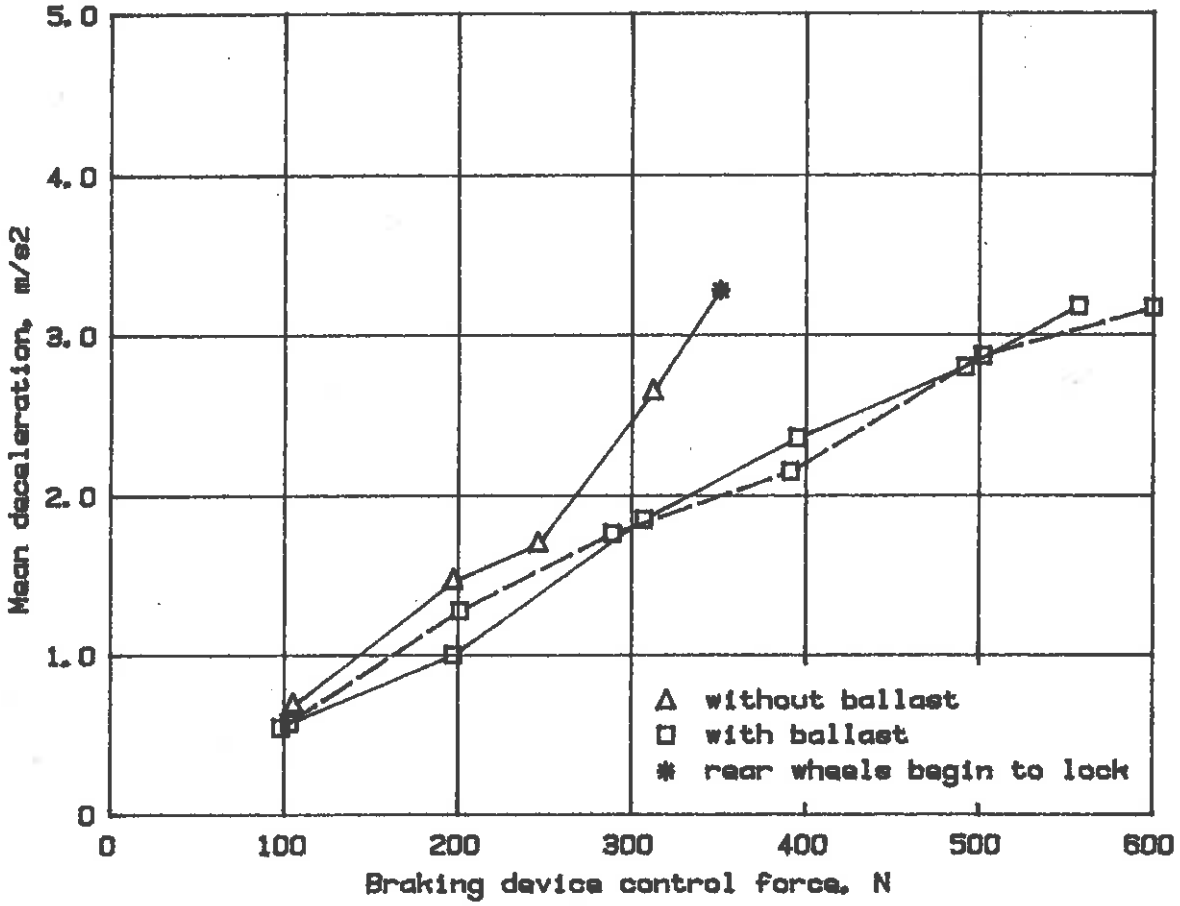
4.1 BRAKING

Date of tests: 10th and 13th October 1995

	Tractor mass (with driver)			Speed before application of brakes km/h
	Front kg	Rear kg	Total kg	
Ballasted	3200	6000	9200	27.0
Unballasted	2075	3600	5675	27.6

4.1.1 Cold service braking device test (————)

4.1.2 Fade test (— — — — —)



Maximum deviation of tractor from its original course: Not significant

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

4.1.3 Parking braking device test

	Ballasted tractor on 18 % slope	
	Uphill	Downhill
Braking device control force	320 N	360 N

4.2 MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of tests:	26th October 1995
Make and model of sound level meter:	BRÜEL & KJAER, 2231
Type of track:	Bituminous-concrete surface
Gear number:	4 IIM-
Travelling speed before acceleration:	20.7 km/h
Sound level:	87.5 dB(A)

5. REPAIRS

None

6. REMARKS

None

Test carried out by: Dipl. Ing. Peter Pernis

Head of the Tractor Laboratory

Dipl. Ing. Peter Pernis

Director

Dipl. Ing. Vladimír Hanzlík