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: 2nd June 1997

OECD No. 1671



Agricultural Tractor
ZETOR 5321 Super (2WD) 30 km/h version

Manufactured by: ZETOR a.s., 632 00 Brno,
Czech Republic

Report No. 12802
Date of test: February - March 1997

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Tractor manufacturer's name and address:	ZETOR a.s., 632 00 Brno, Czech Republic
Location of tractor assembly:	Brno, Czech Republic
Submitted for test by:	The manufacturer
Selected for test by:	The manufacturer
Place of running-in:	Brno, Czech Republic
Duration of running-in:	65 hours
Location of test:	SZZPLS Praha 6 - Řepy, Czech Republic

1. SPECIFICATIONS OF TRACTOR

1.1 IDENTIFICATION

Make:	ZETOR
Model:	5321 Super 30 km/h version
Type:	Wheeled, unit construction, rear wheels drive
Number of driving wheels:	2
Serial No.:	001 001
1st Serial No.:	001 001

1.2 ENGINE

Make:	ZETOR
Model:	7202
Type:	4-stroke diesel engine, direct injection, water cooled, naturally aspirated
Serial No.:	*001001*

1.2.1 Cylinders

Number/disposition:	4, in-line, vertical
Bore/stroke:	102 mm/120 mm
Capacity:	3922 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, 443 741 111 001, one-stage with paper cartridge
Capacity of fuel tank:	120 dm^3
Make, model and type of injection pump:	MOTORPAL, 4M 3066, in-line
Serial No.:	V 9005
Manufacturer's production setting of injection pump:	
Flow rate (rated engine speed and full load):	13.42+0.38 dm^3/h
Timing:	25°+1° before TDC
Make, model and type of injection:	MOTORPAL, DOP 160 S 430-1436, 4 hole
Injection pressure:	18.6-0.8 MPa

1.2.4 Governor

Make, model and type:	MOTORPAL, RV 3M 300/1100 3300, centrifugal, variable speed
Governed range of engine speed:	From 600 to 2440 rev/min
Rated engine speed:	2200 rev/min

1.2.5 Air cleaner

Make, model and type:	WOODGATE, WGCS 1175 or DONALDSON, FGL 08-0560, dry with paper primary and safety elements, integrated cyclon type pre-cleaner
Location of air intake:	Under bonnet forward of radiator
Maintenance indicator:	Indicator on air cleaner

1.2.6 Lubrication system

Type of feed pump:	Gear
Type of filter:	Full flow with replaceable paper element
Number:	1
Oil cooler:	None

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:	6
Fan diameter:	380 mm
Coolant capacity:	11.6 dm^3
Type of temperature control:	Thermostat
Superpressure system:	40±10 kPa

1.2.8 Starting system

Make, model and type:	MAGNETON, 443 115 144 722, electrical, solenoid engaged
Starter motor power rating:	2.9 kW
Cold starting aid:	None
Safety device:	Gear change lever in neutral position

1.2.9 Electrical system

Voltage:	12 V, negative earth
Generator:	
Make, model and type:	MAGNETON, 443 113 516 673, alternator, belt driven
Power:	980 W
Battery (number of accumulators):	1
Rating:	135 Ah at 20 hours

1.2.10 Exhaust system

Make, model and type:	ZETOR, 43.014.020, expansion and absorption muffler with additional muffler
Location:	Left-hand side of engine, vertical

1.3 TRANSMISSION

1.3.1 Clutch

Make, model and type:	ZETOR, 7901 1120, dry for travelling and p.t.o.
Number of plates:	2
Diameter of plates:	310 mm
Method of operation:	Hydraulically by pedal

1.3.2 Gear box

Make, model and type:	ZETOR, 53.122.000, mechanical
Arrangement:	Synchromesh gear box with 5 forward and 1 reverse speeds, group gear box with two speed ranges (T and R)
Number of gears:	10 forward and 2 reverse (version fitted on the tested tractor)
Available options:	Synchromesh gear box with torque multiplier with 20 forward and 4 reverse speeds or synchromesh gear box with reverser with 10 forward and 10 reverse speeds or synchromesh gear box with creeper with 20 forward and 4 reverse speeds
Oil cooler:	None

1.3.3 Rear axle and final drives

Make, model and type: ZETOR, 53.161.000, crown wheel and bevel pinion differential and spur gear final drives

Differential lock:

Type: Dog clutch, electro-pneumatically activated

Method of engagement: Rocker switch on instrument panel

Method of disengagement: Service brake pedal

1.3.4 Front axle

Make, model and type: ZETOR, 7211 3300, telescopic with adjustable track

1.3.5 Total ratios and travelling speeds (version fitted on the tested tractor)

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	T	376.448	1.64
2		268.538	2.30
3		206.489	2.99
4		128.531	4.81
5		81.013	7.63
1	R	96.301	6.42
2		68.696	8.99
3		52.823	11.70
4		32.880	18.79
5		20.724	29.82
R	T	276.675	2.23
	R	70.777	8.73
(*) Calculated with a tyre dynamic radius index of 745 mm (ISO 4251/1-1992)			

T: Turtle range, R: Rabbit range

1.3.5 Total ratios and travelling speeds (optional - gear box with torque **multiplier)**

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	TM	494.209	1.25
2		352.542	1.75
3		271.083	2.28
4		168.738	3.66
5		106.356	5.81
1	T	376.448	1.64
2		268.538	2.30
3		206.489	2.99
4		128.531	4.81
5		81.013	7.63
1	RM	126.426	4.89
2		90.185	6.85
3		69.347	8.91
4		43.166	14.31
5		27.207	22.71
1	R	96.301	6.42
2		68.696	8.99
3		52.823	11.70
4		32.880	18.79
5		20.724	29.82
R	TM	363.225	1.70
	T	276.675	2.23
	RM	92.918	6.65
	R	70.777	8.73

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

T: Turtle range, R: Rabbit range, M: Torque multiplier engaged

1.3.5 Total ratios and travelling speeds (optional - gear box with reverser)

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	Forward T	376.448	1.64
2		268.538	2.30
3		206.489	2.99
4		128.531	4.81
5		81.013	7.63
1	Forward R	96.301	6.42
2		68.696	8.99
3		52.823	11.70
4		32.880	18.79
5		20.724	29.82
1	Reverse T	342.986	1.80
2		244.668	2.53
3		188.135	3.28
4		117.106	5.28
5		73.812	8.37
1	Reverse R	87.741	7.04
2		62.589	9.87
3		48.127	12.84
4		29.957	20.63
5		18.882	32.72
(*) Calculated with a tyre dynamic radius index of 745 mm (ISO 4251/1-1992)			

T: Turtle range, R: Rabbit range

1.3.5 Total ratios and travelling speeds (optional - gear box with creeper)

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	TC	3491.431	0.18
2		2490.598	0.25
3		1915.119	0.32
4		1192.081	0.52
5		751.372	0.82
1	RC	893.157	0.69
2		637.130	0.97
3		489.914	1.26
4		304.951	2.03
5		192.212	3.21
1	T	376.448	1.64
2		268.538	2.30
3		206.489	2.99
4		128.531	4.81
5		81.013	7.63
1	R	96.301	6.42
2		68.696	8.99
3		52.823	11.70
4		32.880	18.79
5		20.724	29.82
R	TC	2566.071	0.24
	RC	656.437	0.94
	T	276.675	2.23
	R	70.777	8.73
(*) Calculated with a tyre dynamic radius index of 745 mm (ISO 4251/1-1992)			

T: Turtle range, R: Rabbit range, C: Creeper

1.4 POWER TAKE-OFF

1.4.1 Main power take-off

Type:	Independent
Method of engagement:	Mechanically operated by hand lever or hydraulically by clutch pedal, through second plate in main clutch
Number of shafts:	1 (2 replaceable shaft ends)
Method of changing power take-off speeds:	Manually by hand lever

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

Height above ground: 752 mm

Distance from the median plane of the tractor: 0 mm

Distance behind rear-wheel axis: 263 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
540	540	1994	3.6923	None
	596	2200		
1000	1000	2050	2.0500	None
	1073	2200		

Direction of rotation (viewed from behind tractor): Clockwise

1.4.1.2 Power take-off proportional to ground speed

P.T.O. and range	Travelling distance for one revolution of power take-off shaft m	Number of power take-off shaft revolutions for one revolution of (rear) driving wheels
T	0.095	49.5082
R	0.370	12.6649

T: Turtle range, R: Rabbit range

Direction of rotation with forward gear engaged (viewed from behind tractor): Clockwise

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

Type: Independent

Method of engagement: Pneumatically operated by hand lever, through dry multiplate clutch

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: 687 mm

Distance from the median plane of the tractor: 0 mm

Distance in front front-wheel axis: 537 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	1818	1.8182	30.0/286.5
	1210	2200		

Direction of rotation (viewed from face tractor): Clockwise

1.4.2.2 Power take-off proportional to ground speed

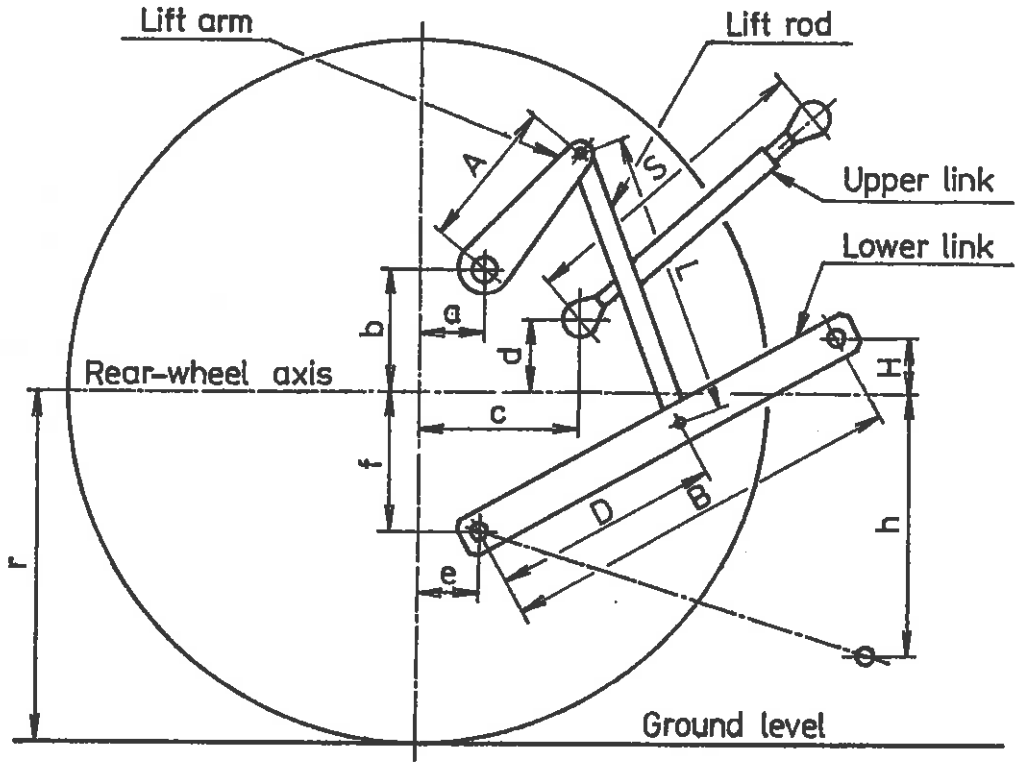
None

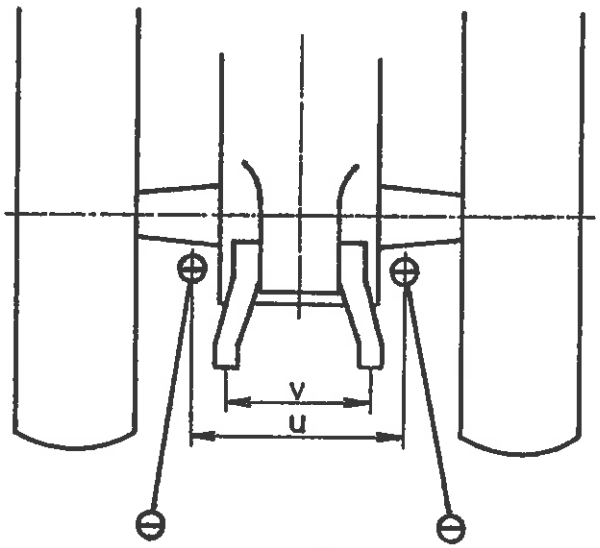
1.5 POWER LIFT

Make, model and type:	ZETOR, 53.940.039, hydraulic with mechanical position, draft or mixed control, top link sensing
Type of hydraulic system:	Open centre
Type and number of cylinders:	1 integral single-acting and 1 external single-acting
Type of linkage lock for transport:	Hydraulic
Relief valve pressure setting (tolerance):	18.0+0.2 MPa
Opening pressure of cylinder safety valve:	21.0+2.0 MPa
Lift pump type:	Gear
Transmission between pump and engine:	Gear driven from engine
Type and number of filters:	1 full flow with replaceable paper element
Site of oil reservoir:	Transmission housing
Type, number and location of tapping points:	2 pressure and 1 return, quick release at rear of tractor
Maximum volume of oil available to external cylinders:	20 dm^3

1.6 THREE-POINT LINKAGE

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





Linkage geometry dimensions:

			Dimension or range mm	Settings used in test mm
Length of lift arms		(A)	320	320
Length of lower links		(B)	861	861
Distance of lift arm pivot point from rear-wheel axis:	horizontally vertically	(a) (b)	30 363	30 363
Horizontal distance between the 2 lower link points		(u)	450	450
Horizontal distance between the 2 lift arm end points		(v)	639	639
Length of upper link		(S)	550 to 760	696
Distance of upper link pivot point from rear-wheel axis:	horizontally vertically	(c) (d)	288 182, 229, 276, 323	288 229
Distance of lower link pivot point from rear-wheel axis:	horizontally vertically	(e) (f)	83 138	83 138
Distance of lower link pivot points to lift rod pivot points on lower links		(D)	402	402
Length of lift rods		(L)	442 to 572	562
Height of lower hitch points relative to the rear-wheel axis: - in low position - in high position		 (h) (H)	 252 to 575 121 to 372	 545 150
Height above ground of lower hitch points when locked in transport position (*)			Any height withing lift range	
(*) Assuming the tyre dynamic radius index r=745 mm of ISO 4251/1-1992				

1.7 SWINGING DRAWBAR

Type:	Clevis
Height above ground: Maximum: Minimum:	 747 mm 337 mm
Type of adjustment:	Inverting drawbar and clevis and sliding drawbar in two distance of hitch point from power take-off shaft end - 355 and 405 mm.
Distance of hitch point from rear-wheel axis, horizontally:	604, 614 and 618 mm for 355 mm, 653, 664 and 668 for 405 mm

Distance of hitch point from power take-off shaft end:	
Vertically:	5, 115, 305 and 415 mm
Horizontally:	341, 351 and 355 mm for 355 mm, 390, 401 and 405 mm for 405 mm
Lateral adjustment (centre of clevis):	
Right-hand:	75 and 150 mm for 355 mm, 80 and 160 mm for 405 mm
Left-hand:	75 and 150 mm for 355 mm, 80 and 160 mm for 405 mm
Distance of pivot point from rear-wheel axis, horizontally:	185 mm to front
Diameter drawbar pin hole:	32 mm
Maximum vertical permissible load:	12 kN (6 kN)

1.8 TRAILER HITCH (on request available, not fitted to tested tractor)

Type:	Automatic clevis
Hole diameter:	35 mm
Height above ground:	752, 802, 852, 902 and 952 mm
Distance of hitch point from rear-wheel axis, horizontally:	628 mm
Distance of hitch point from power take-off shaft end:	
Vertically:	0, 50, 100, 150 and 200 mm
Horizontally:	365 mm
Maximum vertical permissible load:	10 kN

1.9 HOLED DRAWBAR (on request available, not fitted to tested tractor)

Number of holes:	7
Distance between holes:	80 mm
Hole diameter:	32 mm
Thickness/width of the drawbar:	2×20 mm/90 mm
Height above ground:	
Maximum:	895 mm
Minimum:	200 mm
Horizontal distance to power take-off shaft end (rear):	681 mm

1.10 FRONT TOWING HITCH

Height above ground:	697 mm
Diameter of pin hole:	31 mm

1.11 STEERING

Make, model and type:	EATON, 261-1312-002 or DANFOSS, OSPC 100 ON or RCD-CALZONI, GIVI ON 100 G 125 or ZF, LAGC 100-1712-2, hydrostatic
Method of operation:	Independent hydraulic circuit for steering
Pump:	Gear, driven from engine
Ram:	Double-acting cylinder on the front axle, simmetrical design
Working pressure:	12.5 MPa

1.12 BRAKES

1.12.1 Service brake

On the rear axle:	
Make, model and type:	KNOTT, 33.227.000, wet disc, multiplate, 4 discs on each side
Method of operation:	Hydraulically by pedals, coupled or independent
On the front axle:	None
Trailer braking take-off:	Combined one line and two line air braking system, operated by tractor pedals

1.12.2 Parking brake

Type:	Common with service brake
Method of operation:	Mechanically by hand lever with ratchet

1.13 WHEELS

Number:	
Front:	2, steering
Rear:	2, driving
Wheelbase:	2257 mm

Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1420	1795	By extending of front axle
Rear	1420	1795	Reversing wheels and off-set lug rims

1.14 PROTECTIVE STRUCTURE

Make, model and type:	ZETOR, UBK 7341, cab with integrated safety frame
Manufacturer's name and address:	ZETOR a.s., 632 00 Brno, Czech Republic
Protective device:	
Cab/frame/rollguard/other:	Cab
Tiltable/not tiltable:	Not tiltable
OECD approval number:	CSS 0404/21 with seat MARS Zetor 7211-5400 CSS 0404/22 with seat KAB XH2/U4 Fieldmaster CSS 0404/23 with seat KAB XH2/T6 Ploughmaster or seat GRAMMER DS 85H1/90A CSS 0404/24 with seat GRAMMER DS 85H/3A
Date of approval:	6th January 1997
Modification certificate if any:	None

1.15 SEAT

1.15.1 Driver's seat

Make, model and type:	MARS, Zetor 7211-5400, 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

1.15.2 Optional driver's seat

Make, model and type:	KAB, XH2/U4 Fieldmaster or KAB, XH2/T6 Ploughmaster or GRAMMER, DS 85H1/90A or GRAMMER, DS 85H/3A, 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

1.15.3 Passenger seat

Location:	Left-hand side of driver
Number of places:	1

1.16 LIGHTING

	Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Headlights	1275	145×80	195
Sidelights	1550	60×65	615
Rearlights	1670	140×40	800
Reflectors		Not fitted	

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
3370	1925	2250	2640	2890

2.2 GROUND CLEARANCE (unballasted tractor): 408 mm

Clearance-limiting part: Swinging drawbar

2.3 TRACTOR MASS (unballasted tractor with cab)

	Without driver kg	With driver kg
Front	1115	1135
Rear	2010	2065
Total	3125	3200

2.4 TYRES AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Tyres:		
Make	BARUM	BARUM
Dimensions	7.50-20	16.9-34
Ply rating	6 PR	8 PR
Type	diagonal	diagonal
Maximum load (tyre manufacturer's)	8.75 kN	23.80 kN
Maximum load (tractor manufacturer's)	8.65 kN	20.00 kN
Inflation pressure (tyre manufacturer's)	275 kPa	170 kPa
Dynamic radius index	420 mm	745 mm
Chosen track width:	1420 mm	1495 mm

2.5 OILS AND LUBRICATION

2.5.1 Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	12.0	200	200
Gear box	62.0	1200	600
Rear axle		Common with gear box	
Final drive (rear)	2×1.9	1200	-
Hydraulic system		Common with gear box	
Steering	3.1	1200	1200

2.5.2 Specifications

	Recommended	Used during test
Engine oil:		
Type	SAE 15W/40	As recomended
Viscosity	14.6 cSt at 100 °C	
Classification	API CF-4/SG	
Transmission oils:		
Type	SAE 80W	As recommended
Viscosity	7.5 cSt at 100 °C	
Classification	API GL-4	
Steering oil:		
Type	ARAL Vitam HF 32	As recommended
Viscosity	7.2 cSt at 100 °C	
Classification	ISO 6743 HF 32	

Hydraulic fluid: Same as transmission

2.5.3 Grease

Number of lubrication points:	20

2.6 FUEL

Type:	Diesel fuel, in conformity with national standard ČSN EN 590
Density at 15 °C:	0.842 g/cm^3 for p.t.o. tests 0.842 g/cm^3 for drawbar tests

3. COMPULSORY TEST RESULTS

3.1 MAIN POWER TAKE-OFF

Date and location of tests: 28th February 1997, 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						
44.0	2200	1073	11.65	13.84	265	3.18
3.1.2 POWER AT RATED ENGINE SPEED						
44.0	2200	1073	11.65	13.84	265	3.18
3.1.3 SATNDARD POWER TAKE-OFF SPEED (1000±25 rev/min)						
42.6	2050	1000	10.93	12.98	257	3.28
3.1.4 PART LOADS 3.1.4.1 the torque corresponding to maximum power at rated engine speed						
44.0	2200	1073	11.65	13.84	265	3.18
3.1.4.2 85 % of torque obtained in 3.1.4.1						
38.9	2290	1117	10.58	12.57	272	3.09
3.1.4.3 75 % of torque defined in 3.1.4.2						
29.6	2321	1132	8.68	10.31	293	2.87
3.1.4.4 50 % of torque defined in 3.1.4.2						
20.0	2351	1147	6.90	8.19	345	2.44
3.1.4.5 25 % of torque defined in 3.1.4.2						
10.1	2384	1163	5.20	6.18	515	1.63
3.1.4.6 unloaded						
-	2407	1174	3.70	4.39	-	-

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						
42.6	2050	1000	10.93	12.98	257	3.28
3.1.5.2 85 % of torque obtained in 3.1.5.1						
36.5	2068	1009	9.51	11.29	261	3.23
3.1.5.3 75 % of torque defined in 3.1.5.2						
27.9	2105	1027	7.73	9.18	277	3.04
3.1.5.4 50 % of torque defined in 3.1.5.2						
18.9	2136	1042	6.05	7.19	320	2.63
3.1.5.5 25 % of torque defined in 3.1.5.2						
9.6	2171	1059	4.51	5.36	470	1.79
3.1.5.6 unloaded						
-	2208	1077	3.09	3.67	-	-

No load maximum engine speed: 2407 rev/min

Torque (equivalent crankshaft):

at maximum power: 191.0 Nm
at rated engine speed: 191.0 Nm
at standard power take-off speed: 198.4 Nm

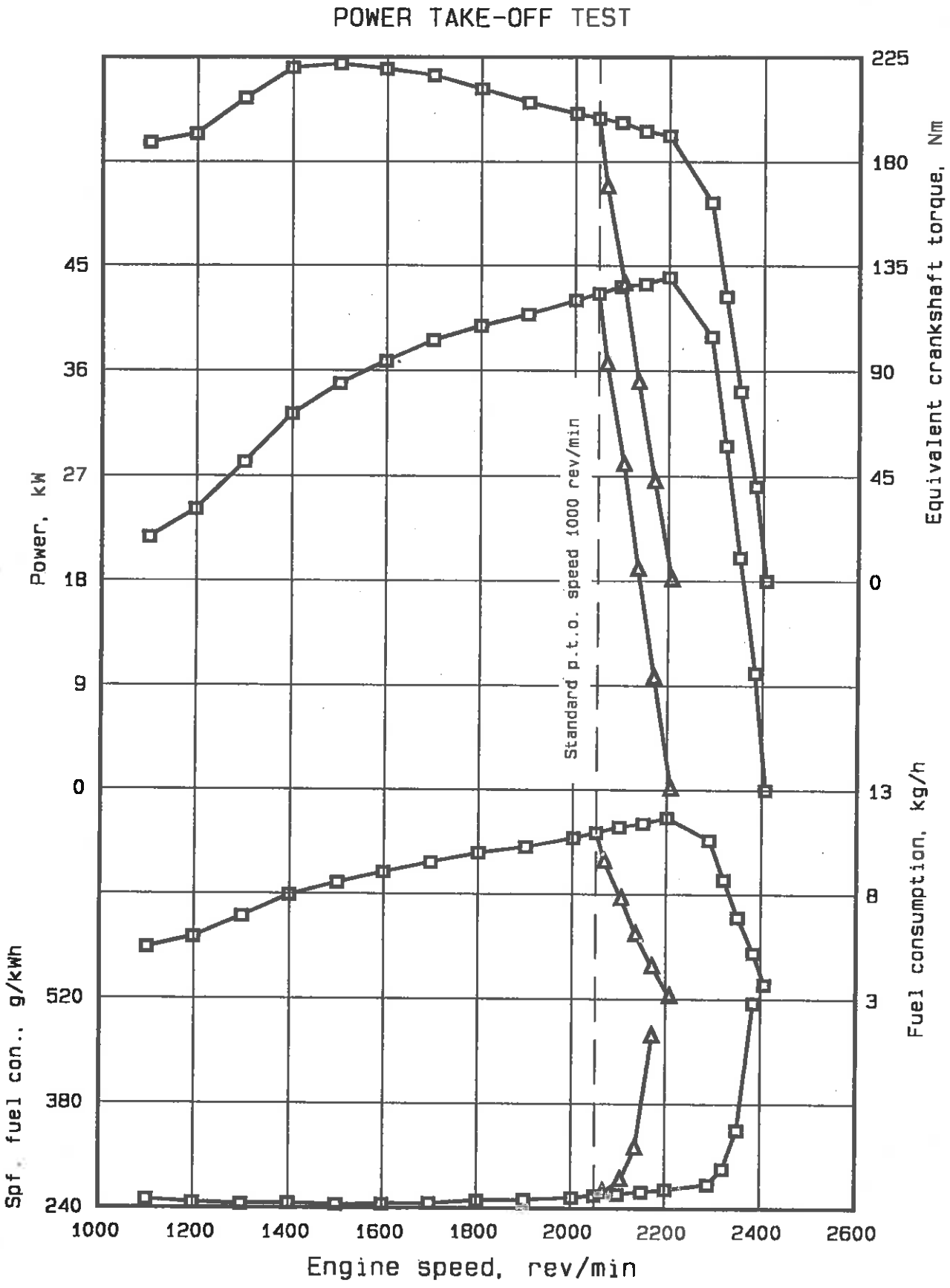
Maximum torque (equivalent crankshaft): 222.0 Nm
(engine speed: 1501 rev/min)

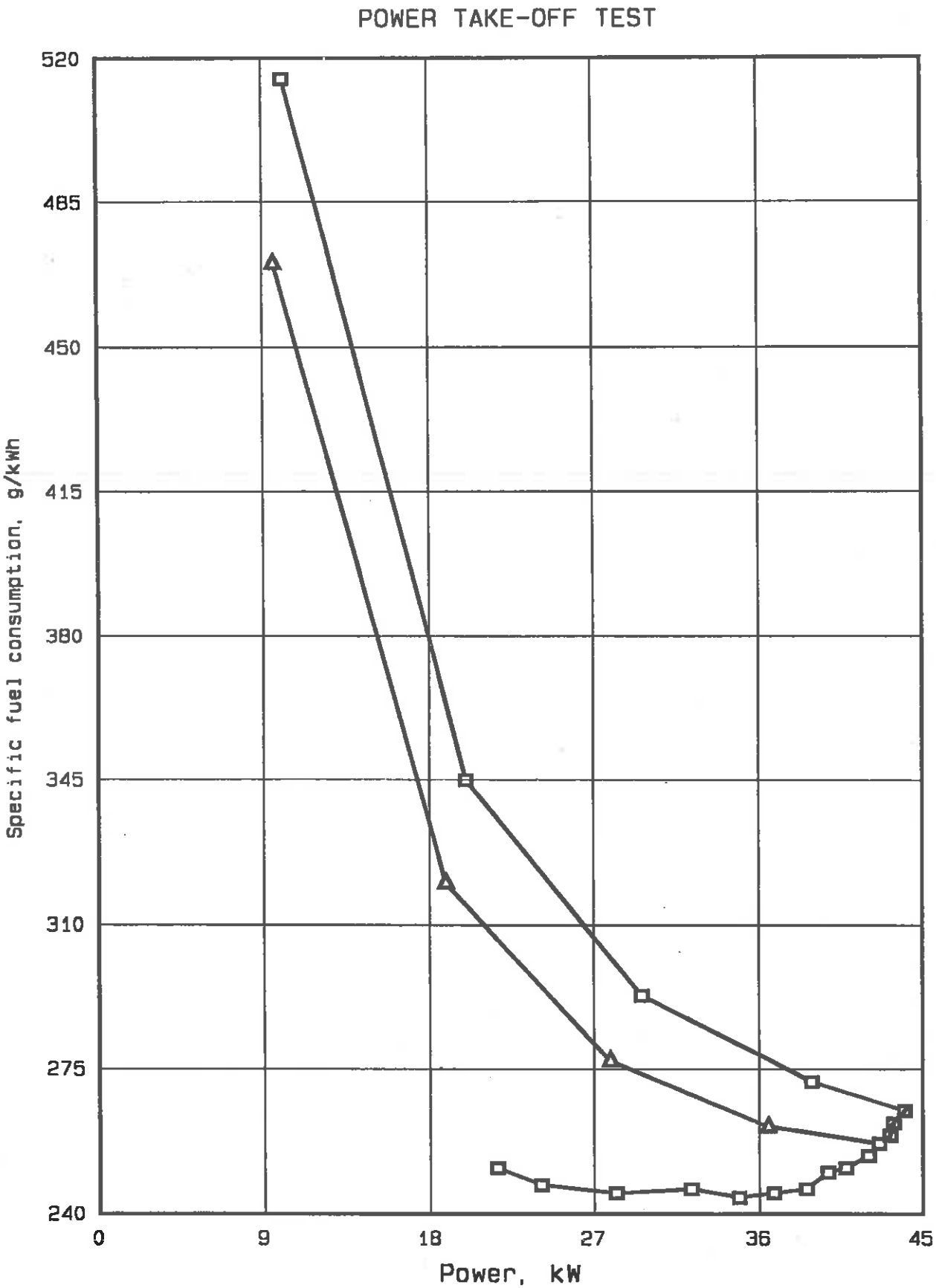
Mean atmospheric conditions:

Temperature: 27 °C
Pressure: 97.5 kPa
Relative humidity: 46 %

Maximum temperatures:

Coolant: 78 °C
Engine oil: 102 °C
Fuel: 42 °C
Engine air intake: 32 °C


POWER TAKE-OFF TEST
Power, kW
45
36
27
18
9
0
Spf. fuel con., g/kWh
520
380
240
Equivalent crankshaft torque, Nm
225
180
135
90
45
0
Fuel consumption, kg/h
13
8
3
Standard p.t.o. speed 1000 rev/min
1000
1200
1400
1600
1800
2000
2200
2400
2600
Engine speed, rev/min


POWER TAKE-OFF TEST
Specific fuel consumption, g/kWh
520
485
450
415
380
345
310
275
240
0
9
18
27
36
45
Power, kW

3.2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 13th and 14th March 1997

3.2.1 Hydraulic power test

Sustained pressure with relief valve open: 18.9 MPa

Pump delivery rate at minimum pressure: 42.0 l/min

	Flow rate l/min	Pressure MPa	Power kW
Flow rate corresponding to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting and corresponding hydraulic power	39.0	17.0	11.1
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	39.0	17.0	11.1

Tapping point used for test: External tapping

Temperature of hydraulic fluid: 68 °C

Opening and closing pressures of the unloading valve: Not applicable

3.2.2 Power lift test

Linkage setting for test - see page 13

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement	645 mm	859 mm
Maximum corrected force exerted through full range	28.8 kN	19.4 kN
Corresponding pressure of hydraulic fluid	17.0 MPa	17.0 MPa
Moment about rear-wheel axis	27.2 kNm	30.1 kNm
Maximum tilt angle of mast from vertical	-	10 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points													
mm	-521	-500	-407	-400	-300	-200	-100	0	+100	+200	+238	+300	+338
Lifting forces at the hitch points, corrected to 17.0 MPa													
kN	-	-	35.8	35.3	34.4	33.1	32.1	31.3	29.8	28.9	28.8	-	-
Lifting forces at the test frame, corrected to 17.0 MPa													
kN	29.7	29.1	-	27.6	26.8	25.6	24.4	23.1	21.8	20.8	-	19.5	19.4

3.3 DRAWBAR PERFORMANCE (unballasted tractor)

Date of tests: 4th March 1997

Type of track: Bituminous-concrete surface

Height of drawbar above ground	Tyre Inflation pressure	
	Front	Rear
447 mm	160 kPa	130 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						
3 T	15.3	20.1	2.74	2345	15.0	451
4 T	24.2	20.1	4.33	2308	15.0	373
1 R	31.8	20.1	5.70	2270	15.0	336
5 T	34.5	18.2	6.83	2201	11.6	331
2 R	36.5	16.0	8.21	2199	9.8	311
3 R	36.8	12.0	11.04	2199	6.7	309
4 R	34.3	6.7	18.45	2214	4.1	335
3.3.2 FUEL CONSUMPTION 3.3.2.1 in selected gear, at maximum power at rated speed						
3 R	36.8	12.0	11.04	2199	6.7	309
3.3.2.1.1 75 % of pull at maximum power at rated speed						
3 R	29.9	9.1	11.82	2307	4.7	329
3.3.2.1.2 50 % of pull at maximum power at rated speed						
3 R	20.3	6.0	12.18	2336	2.9	457
3.3.2.1.3 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1						
4 R	Out of measure					
3.3.2.1.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2						
4 R	20.3	6.0	12.19	1449	2.9	305
3.3.2.2 in selected gear nearest to 7.5 km/h at rated speed						
5 T	34.5	18.2	6.83	2201	11.6	331
3.3.2.2.1 75 % of pull at maximum power at rated speed						
5 T	28.5	13.7	7.49	2307	7.6	347
3.3.2.2.2 50 % of pull at maximum power at rated speed						
5 T	19.8	9.1	7.82	2338	4.7	401
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 R	28.4	13.7	7.47	1955	7.6	302
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 R	19.7	9.1	7.80	1977	4.7	331

Specific energy	Temperature			Atmospheric conditions		
	Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
kWh/l	°C	°C	°C	°C	%	kPa
1.87	29	87	84	11	57	99.0
2.26	29	87	86	10	59	99.0
2.51	33	86	90	10	63	99.0
2.55	32	90	83	6	88	98.9
2.71	30	88	85	10	63	99.0
2.73	30	89	85	8	70	98.9
2.51	32	89	85	8	76	98.9
2.73	30	89	85	8	70	98.9
2.56	30	89	84	6	98	98.9
1.84	30	88	84	6	98	98.9
2.76	29	88	78	6	99	98.9
2.55	32	90	83	6	88	98.9
2.43	29	90	83	6	88	98.9
2.10	31	90	85	6	88	98.9
2.79	30	88	82	6	95	98.9
2.54	28	89	82	6	95	98.9

4. OPTIONAL TEST RESULTS

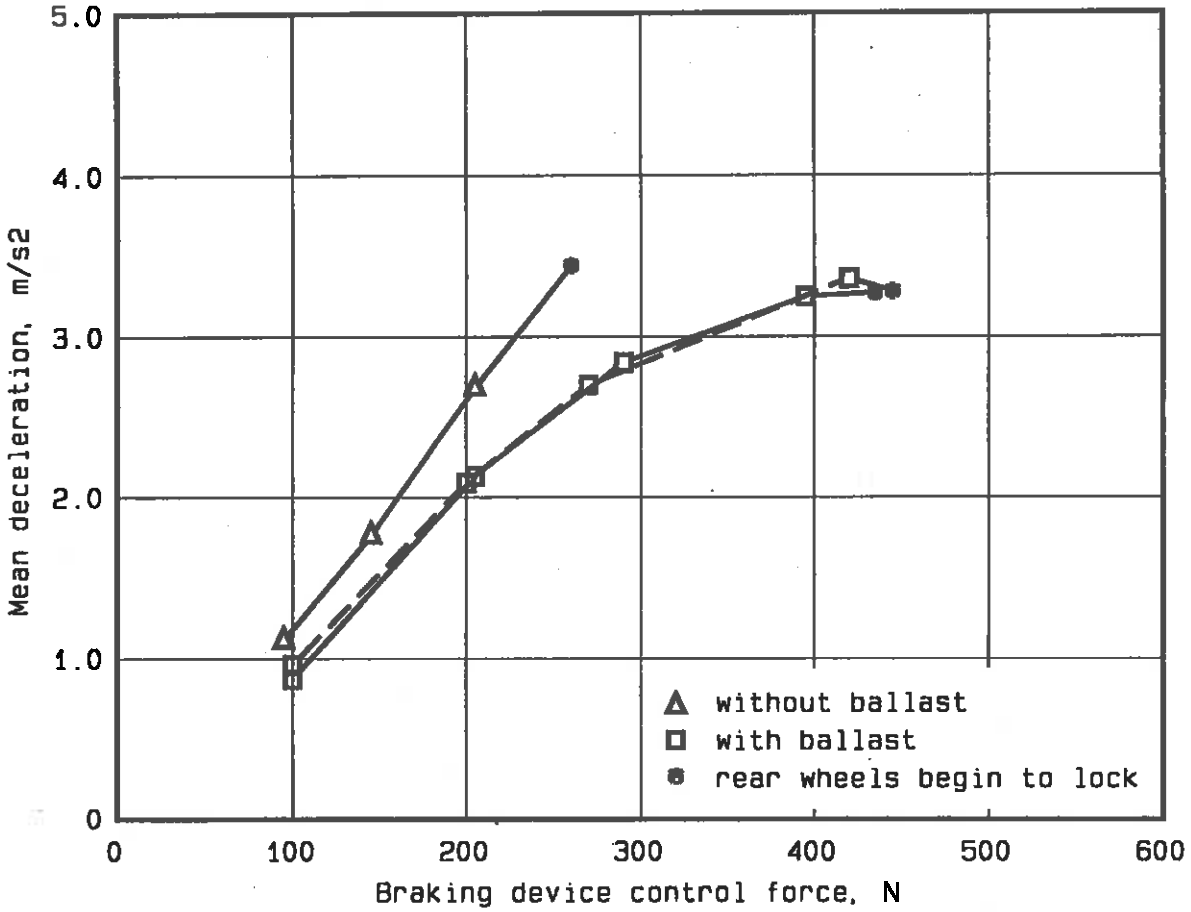
4.1 BRAKING

Date of tests: 7th and 11th March 1997

	Tractor mass (with driver)			Speed before application of brakes km/h
	Front kg	Rear kg	Total kg	
Ballasted	1730	4000	5730	31.9
Unballasted	1135	2065	3200	32.3

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	105 N	115 N

4.2 MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of tests: 6th March 1997

Make and model of sound level meter: BRÜEL & KJAER, 2231

Type of track: Bituminous-concrete surface

4.2.1 According to OECD standard code 1

Gear number: 5 R

Travelling speed before acceleration: 24.2 km/h

Sound level: 86.5 dB(A)

4.2.2 According to EEC directives 74/151/EEC (Annex VI) and 88/410/EEC

Gear number: 5 R

Travelling speed before acceleration: 24.2 km/h

Sound level: 85.5 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