STÁTNÍ ZKUŠEBNA
ZEMĚDĚLSKÝCH,
POTRAVINÁŘSKÝCH
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Report on test in accordance with the OECD Standard Code for the Official Testing of Agricultural Tractor Performance

CODE 1

Full Code

Date of approval: 15th January 1998

OECD No. 1730



Agricultural Tractor

ZETOR 7321 Super turbo (2WD) 30 km/h version

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

Report No. 13266

Date of test: August - November 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:	7321 Super turbo 30 km/h version
Type:	Wheeled, unit construction, rear wheels drive
Number of driving wheels:	2
Serial No.:	001 013
1st Serial No.:	001 001

1.2 ENGINE

Make:	ZETOR
Model:	7302
Type:	4-stroke diesel engine, direct injection, water cooled, turbocharged
Serial No.:	*005028*

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

Make, model and type:	ČZ, C14 03 or HOLSET, H1D or KKK, K24-2460 G/5.14, exhaust driven
Pressure:	179 kPa
Intercooler:	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:	ATESO, 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 3149, in-line
Serial No.:	LC 0059
Manufacturer's production setting of injection pump:	
Flow rate (rated engine speed and full load):	16.15+0.47 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 350/1100, centrifugal, variable speed
Governed range of engine speed:	From 700 to 2440 rev/min
Rated engine speed:	2200 rev/min

1.2.5 Air cleaner

Make, model and type:	DONALDSON, FGL 08-0560 or WOODGATE, WGCS 1175, 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:	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:	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, 7901 1400, expansion and absorption 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, 53.122.00, 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 and final drives

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
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	6	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	53.0/937.2
	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
(*) Independent of adjusting p.t.o. speed 540 or 1000 rev/min		

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

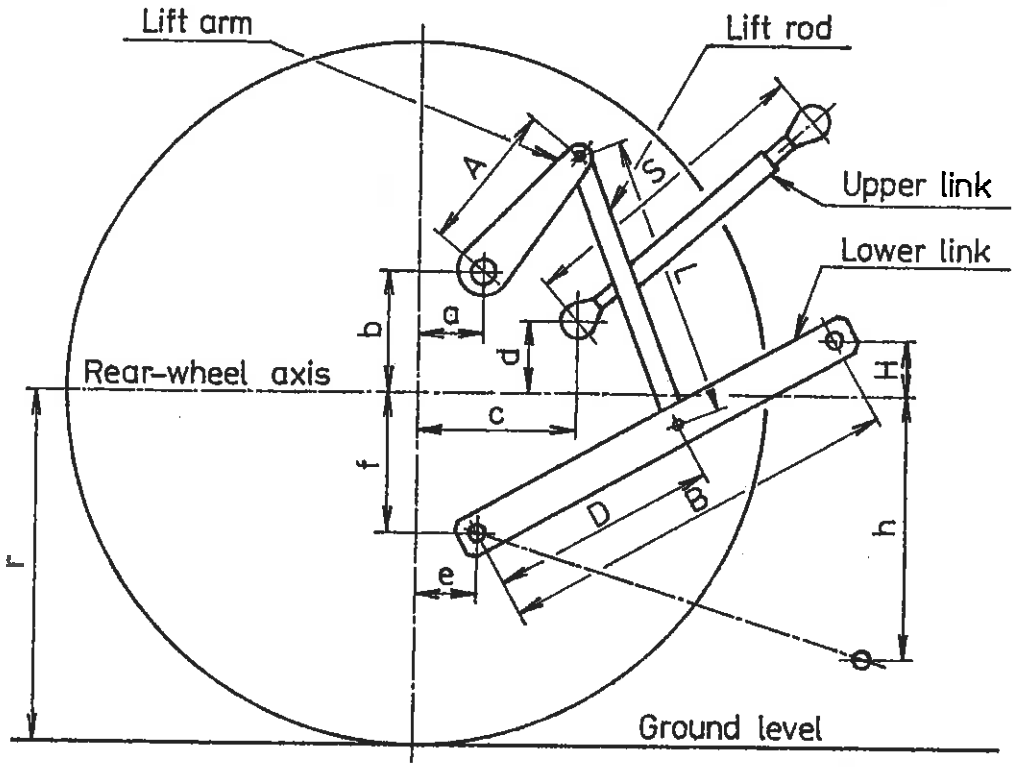
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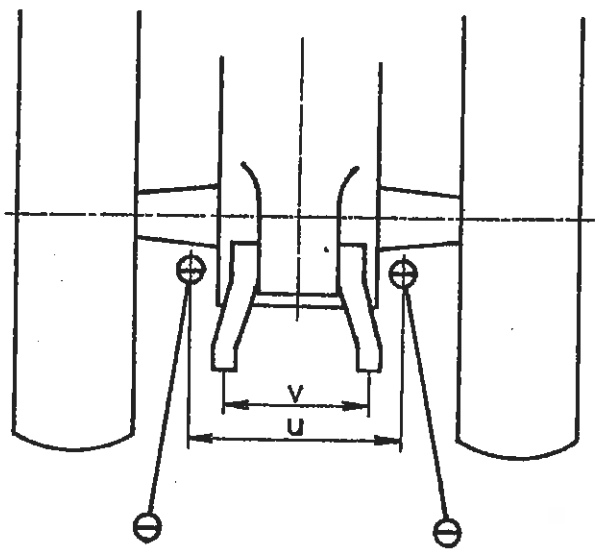
1.5 POWER LIFT

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:	6 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	682
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	561
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	 545 161
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:	487 mm
Minimum:	447 mm
Type of adjustment:	Inverting drawbar
Distance of hitch point from rear-wheel axis, horizontally:	652 and 658 mm
Distance of hitch point from power take-off shaft end:	
Vertically:	265 and 305 mm
Horizontally:	389 and 395 mm

Lateral adjustment (centre of clevis):	
Right-hand:	80 mm
Left-hand:	80 mm
Distance of pivot point from rear-wheel axis, horizontally:	93 mm to rear
Diameter drawbar pin hole:	31 mm
Maximum vertical permissible load:	12 kN

1.8 TRAILER HITCH

Type:	Clevis
Hole diameter:	31 mm
Height above ground:	752, 802, 852, 902 and 952 mm
Distance of hitch point from rear-wheel axis, horizontally:	597 mm
Distance of hitch point from power take-off shaft end:	
Vertically:	0, 50, 100, 150 and 200 mm
Horizontally:	334 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:	906 mm
Minimum:	200 mm
Horizontal distance to power take-off shaft end (rear):	681 mm

1.10 SEMI-TRAILER HITCH

Type:	Towing hook
Hole diameter:	47 mm
Height above ground:	512 mm
Distance of hitch point from rear-wheel axis, horizontally:	368 mm
Distance of hitch point from power take-off shaft end:	
Vertically:	240 mm
Horizontally:	105 mm

Maximum vertical permissible load:	17 kN

1.11 FRONT TOWING HITCH

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

1.12 STEERING

Make, model and type:	DANFOSS, OSPC 100 ON or EATON, 261-1312-002 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

1.13 BRAKES

1.13.1 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

1.13.2 Parking brake

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

1.14 WHEELS

Number:	
Front:	2, steering
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

1.15 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 0404/5 with seat MARS Zetor 7211-5400 CSS 0404/6 with seat KAB XH2/U4 Fieldmaster CSS 0404/7 with seat KAB XH2/T6 Ploughmaster or seat GRAMMER DS 85H1/90A CSS 0404/8 with seat GRAMMER DS 85H/3A
Date of approval:	6th January 1997
Modification certificate if any:	None

1.16 SEAT

1.16.1 Driver's seat

Make, model and type:	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

1.16.2 Optional driver's seat

Make, model and type:	MARS, Zetor 7211-5400 or KAB, XH2/U4 Fieldmaster or KAB, XH2/T6 Ploughmaster or GRAMMER, DS 85H1/90A, 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

Location: Left-hand side of driver

Number of places: 1

1.17 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	1570	60×65	650
Rearlights	1670	140×40	800
Reflectors	1260	Ø78	775

2. TEST CONDITIONS

2.1 OVERALL DIMENSIONS

	Length mm	Width		Height at top of	
		minimum mm	maximum mm	protective structure mm	exhaust silencer mm
Ballasted	3660	1925	2250	2640	2770
Unballasted	3370	1925	2250	2640	2770

2.2 GROUND CLEARANCE (unballasted tractor): 444 mm

Clearance-limiting part: Swinging drawbar bracket

2.3 TRACTOR MASS (tractor with cab)

	Ballasted		Unballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	1545	1565	1095	1115
Rear	2920	2975	2200	2255
Total	4465	4540	3295	3370

2.4 BALLAST

	Weights		
	Number	Total mass kg	Water kg
Front	17	365	-
Rear	10	270	535
Optional	-	-	-

2.5 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

2.6 OILS AND LUBRICATION

2.6.1 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	2.5	1200	1200

2.6.2 Specifications

	Recommended	Used during test
Engine oil:		
Type	SAE 15W/40	As recommended
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

2.6.3 Grease

Number of lubrication points: 18

2.7 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
0.838 g/cm^3 for drawbar tests

3. COMPULSORY TEST RESULTS

3.1 MAIN POWER TAKE-OFF

Date and location of tests: 3rd March 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						
54.3	2200	1073	14.04	16.67	259	3.26
3.1.2 POWER AT RATED ENGINE SPEED						
54.3	2200	1073	14.04	16.67	259	3.26
3.1.3 STANDARD POWER TAKE-OFF SPEED (1000±25 rev/min)						
54.0	2050	1000	13.28	15.77	246	3.42
3.1.4 PART LOADS 3.1.4.1 the torque corresponding to maximum power at rated engine speed						
54.3	2200	1073	14.04	16.67	259	3.26
3.1.4.2 85 % of torque obtained in 3.1.4.1						
47.1	2243	1094	12.53	14.88	266	3.17
3.1.4.3 75 % of torque defined in 3.1.4.2						
36.0	2290	1117	10.41	12.36	289	2.91
3.1.4.4 50 % of torque defined in 3.1.4.2						
24.6	2345	1144	8.57	10.18	348	2.42
3.1.4.5 25 % of torque defined in 3.1.4.2						
12.5	2388	1165	6.47	7.68	518	1.63
3.1.4.6 unloaded						
-	2425	1183	4.55	5.40	-	-

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						
54.0	2050	1000	13.28	15.77	246	3.42
3.1.5.2 85 % of torque obtained in 3.1.5.1						
48.0	2142	1045	12.42	14.75	259	3.25
3.1.5.3 75 % of torque defined in 3.1.5.2						
37.0	2202	1074	10.20	12.11	276	3.06
3.1.5.4 50 % of torque defined in 3.1.5.2						
25.3	2261	1103	8.33	9.89	329	2.56
3.1.5.5 25 % of torque defined in 3.1.5.2						
13.0	2317	1130	6.20	7.36	477	1.77
3.1.5.6 unloaded						
-	2358	1150	4.28	5.08	-	-

No load maximum engine speed: 2425 rev/min

Torque (equivalent crankshaft):

at maximum power: 235.7 Nm
at rated engine speed: 235.7 Nm
at standard power take-off speed: 251.5 Nm

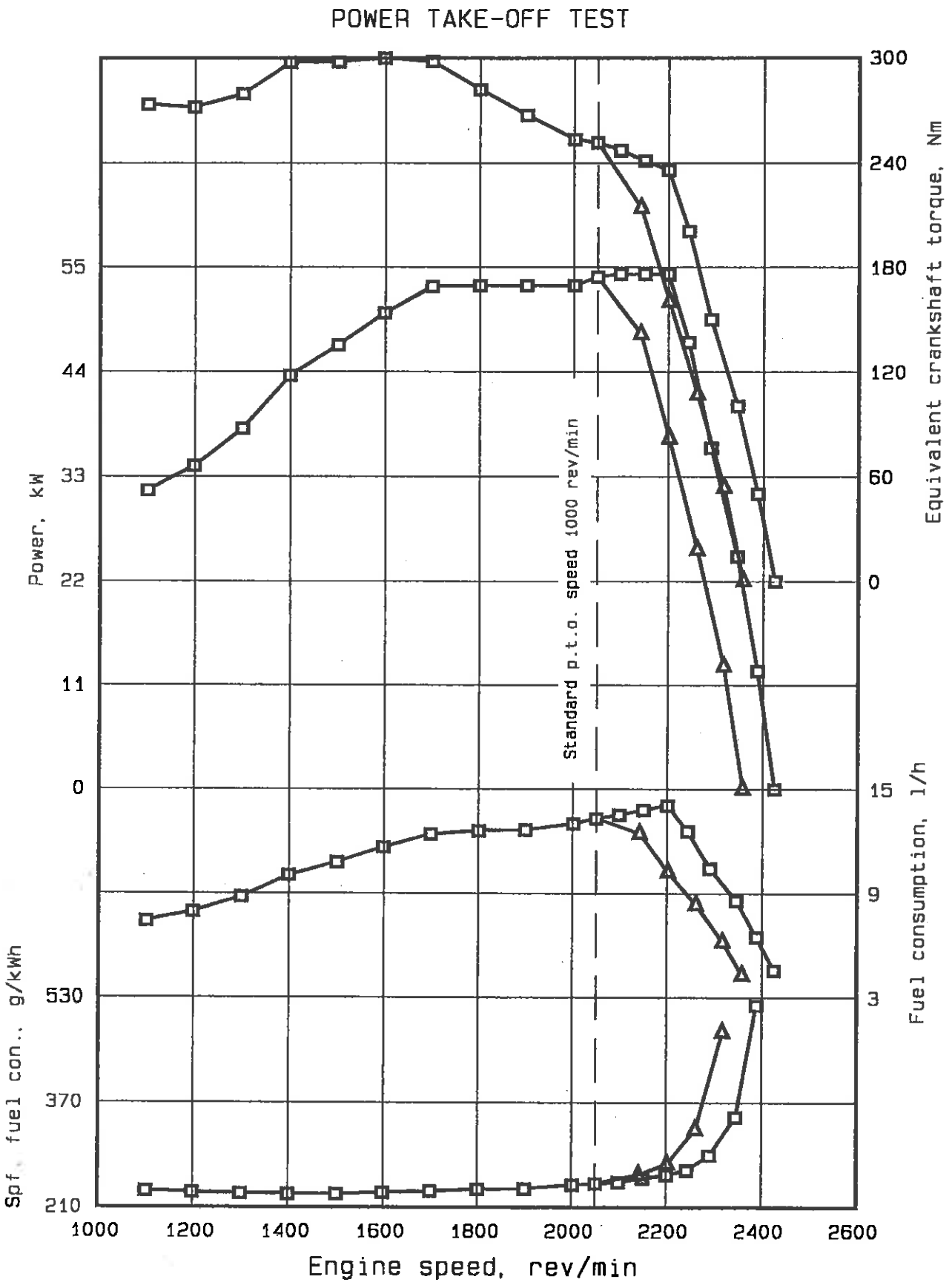
Maximum torque (equivalent crankshaft): 299.8 Nm
(engine speed: 1599 rev/min)

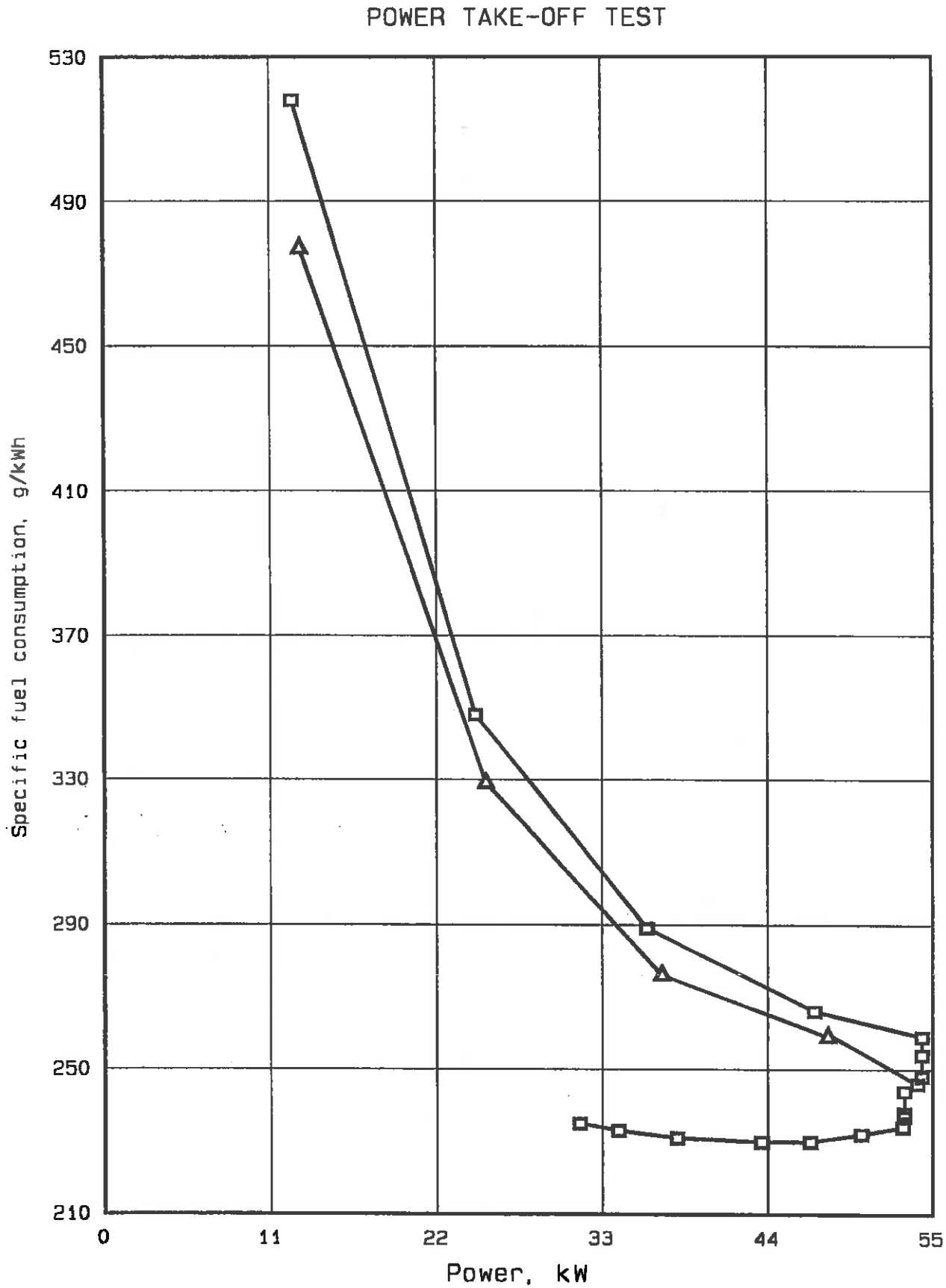
Mean atmospheric conditions:

Temperature: 23 °C
Pressure: 98.6 kPa
Relative humidity: 31 %

Maximum temperatures:

Coolant: 77 °C
Engine oil: 113 °C
Fuel: 46 °C
Engine air intake: 34 °C


POWER TAKE-OFF TEST
Power, kW
55
44
33
22
11
0
Spf. fuel con., g/kWh
530
370
210
Standard p.t.o. speed 1000 rev/min
Equivalent crankshaft torque, Nm
300
240
180
120
60
0
Fuel consumption, l/h
15
9
3
1000
1200
1400
1600
1800
2000
2200
2400
2600
Engine speed, rev/min


POWER TAKE-OFF TEST
Specific fuel consumption, g/kWh
530
490
450
410
370
330
290
250
210
0
11
22
33
44
55
Power, kW

3.2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 5th November 1997

3.2.1 Hydraulic power test

Sustained pressure with relief valve open: 18.0 MPa

Pump delivery rate at minimum pressure: 43.2 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	16.2	10.5
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	39.0	16.2	10.5

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 13

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement	630 mm	883 mm
Maximum corrected force exerted through full range	27.5 kN	17.6 kN
Corresponding pressure of hydraulic fluid	16.2 MPa	16.2 MPa
Moment about rear-wheel axis	26.0 kNm	27.4 kNm
Maximum tilt angle of mast from vertical	-	11 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points													
mm	-504	-500	-407	-400	-300	-200	-100	0	+100	+200	+223	+300	+379
Lifting forces at the hitch points, corrected to 16.2 MPa													
kN	-	-	33.5	33.3	32.4	31.6	30.6	29.2	28.5	27.9	27.5	-	-
Lifting forces at the test frame, corrected to 16.2 MPa													
kN	27.8	28.0	-	27.2	25.7	24.7	23.4	22.1	21.5	20.0	-	19.0	17.6

3.3 DRAWBAR PERFORMANCE

Date of tests: 4th and 16th September and 20th October 1997

Type of track: Bituminous-concrete surface

	Height of drawbar above ground mm	Tyre inflation pressure	
		Front kPa	Rear kPa
Unballasted	487	160	130
Ballasted	487	180	110

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 (unballasted tractor)						
3 T	14.7	18.9	2.80	2351	14,7	496
4 T	23.4	19.1	4.41	2305	15.0	396
1 R	30.7	19.1	5.78	2267	15.0	346
5 T	36.1	19.2	6.77	2238	15.2	348
2 R	40.8	18.3	8.02	2203	13.4	315
3 R	42.0	13.8	10.96	2197	8.8	305
4 R	40.1	7.9	18.28	2182	4.7	319
3.3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)						
1 T	10.2	24.4	1.50	2360	15.0	615
2 T	14.1	24.3	2.09	2345	14.9	506
3 T	18.3	24.4	2.70	2326	14.9	439
4 T	28.7	24.4	4.23	2268	15.0	360
1 R	37.7	24.4	5.56	2240	15.1	329
5 T	39.0	21.0	6.69	2199	12.4	328
2 R	41.5	18.4	8.11	2201	10.1	308
3 R	41.8	13.8	10.91	2198	6.9	305
4 R	39.1	7.8	18.03	2201	4.3	326
3.3.3 FIVE-HOUR TESTS 3.3.3.1 five-hour test at 75 % of the pull corresponding to maximum power at rated speed						
5 T	31.6	15.8	7.19	2261	8.4	341
3.3.3.2 five-hour test at pull corresponding to 15 % wheelslip, with additional ballast: None						
1 R	38.0	24.4	5.61	2245	-	-

Specific energy	Temperature			Atmospheric conditions		
	Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
kWh/l	°C	°C	°C	°C	%	kPa
1.69	38	67	91	25	61	97.7
2.11	36	67	92	25	62	97.7
2.42	37	70	96	26	65	97.7
2.41	37	69	95	26	60	97.7
2.66	37	71	95	26	62	97.7
2.75	37	71	95	25	64	97.7
2.63	36	71	97	20	62	97.7
1.36	36	83	89	19	52	98.6
1.66	33	84	90	19	52	98.6
1.91	34	84	91	19	52	98.6
2.33	32	84	93	19	51	98.6
2.55	34	84	92	19	51	98.6
2.56	34	85	95	20	51	98.6
2.72	35	85	95	19	50	98.6
2.75	35	84	95	20	49	98.6
2.57	35	85	95	20	47	98.6
2.46	28	84	95	9	76	97.3
-	25	86	96	2	63	97.5

Oil consumption during ten hours duration of tests 3.3.3.1 and 3.3.3.2: 34 g/h

3.4 TURNING AREA AND TURNING CIRCLE

	With brakes		Without brakes	
	Right-hand m	Left-hand m	Right-hand m	Left-hand m
Radius of turning area	3.66	3.69	4.20	4.20
Radius of turning circle	3.35	3.40	3.89	3.90

3.5 LOCATION OF CENTRE OF GRAVITY

Height above ground: 997 mm

Distance forward from the vertical plane containing the axis of the rear-wheels: 747 mm

Distance from the median plane of the tractor: 13 mm to right

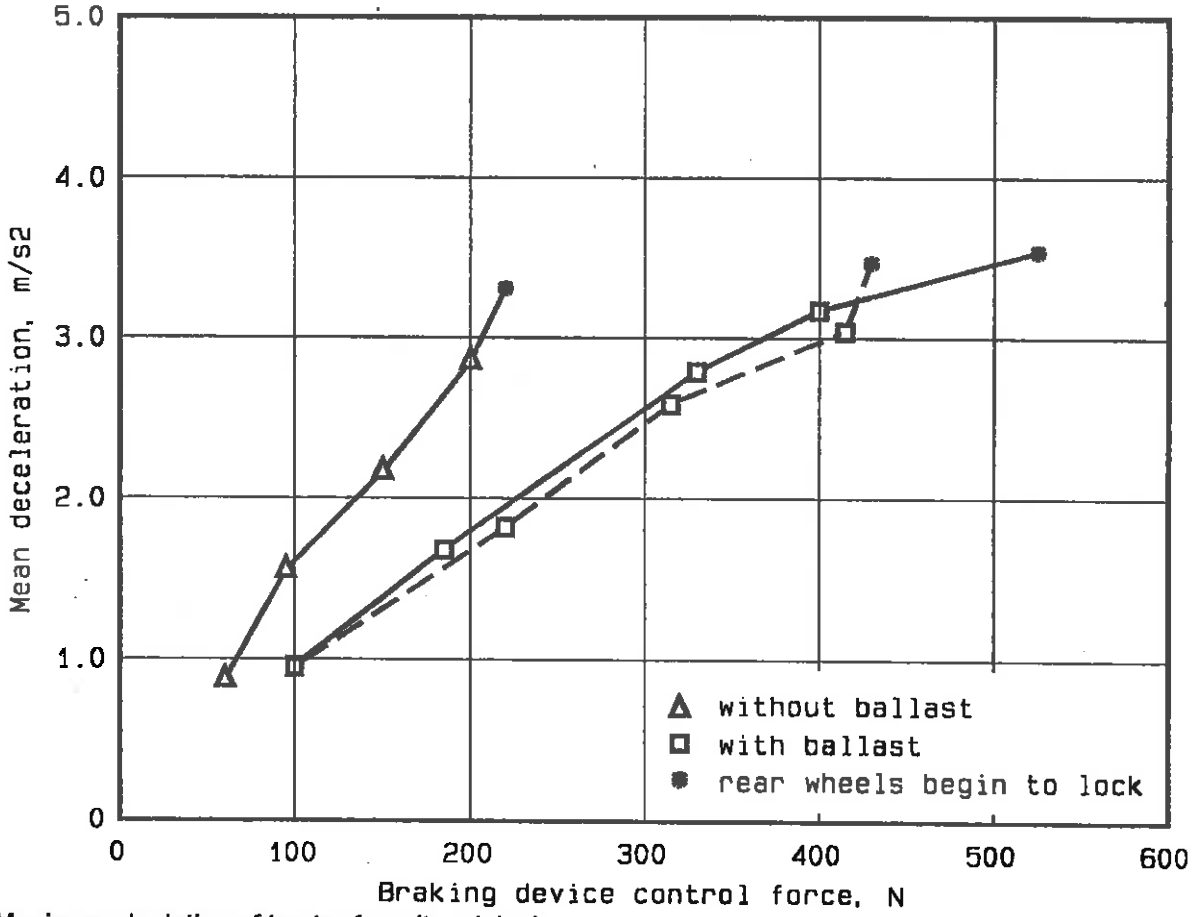
3.6 BRAKING

Date of tests: 25th and 28th August 1997

	Tractor mass (with driver)			Speed before application of brakes km/h
	Front kg	Rear kg	Total kg	
Ballasted	1730	4000	5730	31.8
Unballasted	1115	2255	3750	32.5

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

3.6.2 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

3.6.3 Parking braking device test

	Ballasted tractor on 18 % slope	
	Uphill	Downhill
Braking device control force	190 N	170 N

3.7 MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of tests:	11th August 1997
Make and model of sound level meter:	BRÜEL & KJAER, 2231
Type of track:	Bituminous-concrete surface

3.7.1 According to OECD standard code

Gear number:	5 R
Travelling speed before acceleration:	24.4 km/h
Sound level:	84.0 dB(A)

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

Gear number:	5 R
Travelling speed before acceleration:	24.4 km/h
Sound level:	83.0 dB(A)

4. REPAIRS

None

5. REMARKS

None

Test carried out by: Dipl. Ing. Peter Pernis

Head of the Tractor Laboratory

Dipl. Ing. Peter Pernis

Director

Dipl. Ing. Vladimír Hanzlík