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: 23rd August 1996

OECD No. 1625/1



Agricultural Tractor

JOHN DEERE 2900 (4WD) 30 km/h version, 18 speeds

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

Report No. 12352/1

Date of test: April-May 1996

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GENERAL NOTE

Make:	JOHN DEERE	ZETOR
Model:	2900 (30 km/h version)	10540 (30 km/h version)
Type:	4WD	4WD

The JOHN DEERE 2900 (4WD) 30 km/h version, 18 speeds and ZETOR 10540 (4WD) 30 km/h version, 18 speeds tractors being mechanically similar, the tests have not been repeated and the approval number is valid for the both tractor models.

All tests were carried out on the ZETOR 10540 (4WD) 30 km/h version, 18 speeds.

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:	JOHN DEERE PRODUCT ENGINEERING CENTER, P.O.Box 8000 Waterloo, Iowa 50704-8000, U.S.A.
Selected for test by:	The manufacturer
Place of running-in:	Brno, Czech Republic
Duration of running-in:	60 hours
Location of test:	SZZPLS Praha 6 - Řepy, Czech Republic

1. SPECIFICATIONS OF TRACTOR

1.1 IDENTIFICATION

Make:	JOHN DEERE
Model:	2900 30 km/h version, 18 speeds
Type:	Wheeled, unit construction, all wheels drive
Number of driving wheels:	4
Serial No.:	001 317
1st Serial No.:	001 000

1.2 ENGINE

Make:	ZETOR
Model:	1301
Type:	4-stroke diesel engine, direct injection, water cooled, turbocharged with intercooler
Serial No.:	1301-000505*31

1.2.1 Cylinders

Number/disposition:	4, in-line, vertical
Bore/stroke:	105 mm/120 mm
Capacity:	4156 cm^3
Compression ratio:	17.0:1
Arrangement of valves:	Overhead
Cylinder liners:	Wet, replaceable

1.2.2 Supercharging

Make, model and type:	ČZ, K27 3060 G 614, exhaust driven with intecooler

Pressure:	195 kPa
Intercooler:	Charge air heat exchanger with engine coolant

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, 443 741 111 000, one-stage with paper cartridge
Capacity of fuel tank:	160 dm^3
Make, model and type of injection pump:	MOTORPAL, 4M 3195, in-line
Serial No.:	RA 0037
Manufacturer's production setting of injection pump:	
Flow rate (rated engine speed and full load):	20.25+0.47 dm^3/h
Timing:	23°+1° before TDC
Make, model and type of injection:	MOTORPAL, DOP 150 S 428-4104, 4 hole
Injection pressure:	22.0-0.8 MPa

1.2.4 Governor

Make, model and type:	MOTORPAL, RV 3M 350/1100 3341, centrifugal, variable speed with overpressure corrector
Governed range of engine speed:	from 700 to 2460 rev/min
Rated engine speed:	2200 rev/min

1.2.5 Air cleaner

Make, model and type:	SANDRIK, 91 050, dry with paper main and secondary elements, integrated cyclon type pre-cleaner
Location of air intake:	Under bonnet forward of radiator
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:	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:	8

Fan diameter:	480 mm
Coolant capacity:	23 dm^3
Type of temperature control:	Thermostat
Superpressure system:	40±10 kPa

1.2.8 Starting system

Make, model and type:	MAGNETON, 443 115 144 763, electrical, solenoid engaged
Starter motor power rating:	3.5 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, 443 113 516 653, alternator, belt driven
Power:	770 W
Battery (number of accumulators):	1
Rating:	135 Ah at 20 hours

1.2.10 Exhaust system

Make, model and type:	ZETOR, 10.014.040, expansion and absorption muffler
Location:	Left-hand side of engine, vertical

1.3 TRANSMISSION

1.3.1 Clutch

Make, model and type:	ZETOR, 78.021.000, dry for transmission only
Number of plates:	1
Diameter of plates:	325 mm
Method of operation:	Hydraulically by pedal

1.3.2 Gear box

Make, model and type:	ZETOR, 13.191.000, mechanical
Arrangement:	Synchromesh gear box with 3 forward and 1 reverse speeds, group gear box with two speed ranges (L and H) and 3-speed hydraulically actuated torque multiplier (M1, M2 and M3)
Number of gears:	18 forward and 6 reverse
Available options:	None
Oil cooler:	Heat exchanger with air

1.3.3 Rear axle and final drives

Make, model and type:	ZETOR, 78.153.000, crown wheel and bevel pinion differential and planetary final drives
Differential lock:	
Type:	Mechanical
Method of engagement:	Pneumatically by pedal
Method of disengagement:	Self-disengaging

1.3.4 Front axle and final drives

Make, model and type:	VS, UR III, crown wheel and bevel pinion differential and planetary final drives
Differential lock:	
Type:	Mechanical
Method of engagement:	Automatic
Method of disengagement:	Automatic

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	LM1	432.231	1.57
2		246.532	2.76
3		139.022	4.89
1	LM2	367.944	1.85
2		209.864	3.24
3		118.345	5.75
1	LM3	312.995	2.17
2		178.523	3.81
3		100.671	6.76
1	HM1	94.325	7.21
2		53.800	12.64
3		30.338	22.42
1	HM2	80.296	8.47
2		45.798	14.85
3		25.826	26.33
1	HM3	68.304	9.96
2		38.959	17.46
3		21.969	30.96
R	LM1	457.844	1.49
	LM2	389.748	1.74
	LM3	331.542	2.05
	HM1	99.915	6.81
	HM2	85.054	8.00
	HM3	72.352	9.40
(*) Calculated with a tyre dynamic radius index of 820 mm (ISO 4251/1-1992)			

L: Low range; H: High range; M1, M2 and M3: Torque multiplier engaged in position 1, 2 and 3

Number of revolutions of front wheels for one revolution of rear-wheels: 1.4211

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

Height above ground: 701 mm

Distance from the median plane of the tractor: 0 mm

Distance behind rear-wheel axis: 480 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	1913	3.5431	38.0/672.0
	621	2200		
1000	1000	1950	1.9500	None
	1128	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 vheels
540 L	0.197	26.1611
540 H	0.810	6.3638
1000 L	0.097	52.9846
1000 H	0.446	11.5628

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: 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: 719 mm

Distance from the median plane of the tractor: 0 mm

Distance in front front-wheel axis: 664 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	1952	1.9524	33.0/315.1
	1127	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, 10.940.404, 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): 16.0+2.0 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 magnetic and 1 screen filter in suction side and 1 full flow filter with replaceable paper cartridge in delivery side of pump of gear box

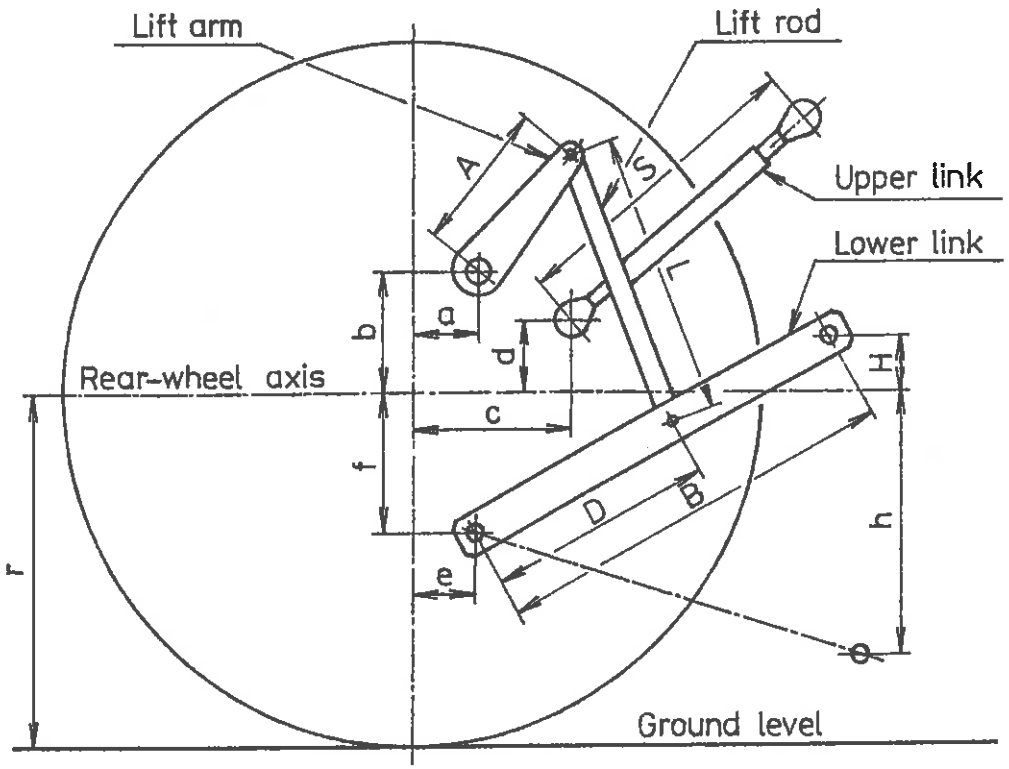
Site of oil reservoir: Transmission housing

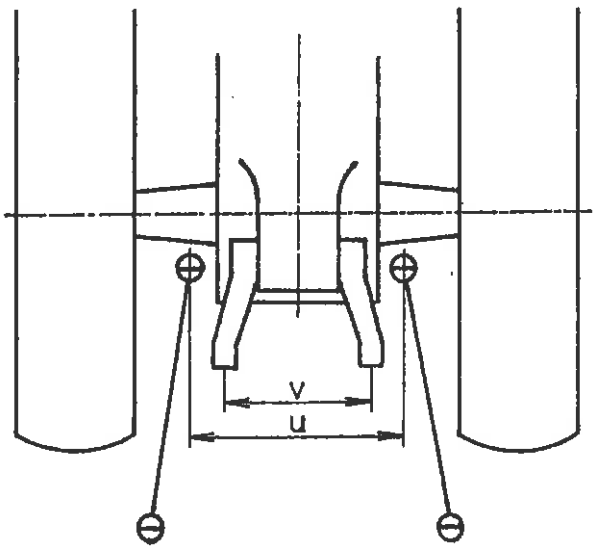
Type, number and location of tapping points: 4 pressure and 1 return, quick release at rear of tractor and 2 pressure and 1 return, quick release at right front corner of cab

Maximum volume of oil available to external cylinders: 10 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)	330	330
Length of lower links		(B)	910	910
Distance of lift arm pivot point from rear-wheel axis:	horizontally vertically	(a) (b)	150 275	150 275
Horizontal distance between the 2 lower link points		(u)	510	510
Horizontal distance between the 2 lift arm end points		(v)	590	590
Length of upper link		(S)	618 to 870	651
Distance of upper link pivot point from rear-wheel axis:	horizontally vertically	(c) (d)	360 116, 156, 196, 231	360 196
Distance of lower link pivot point from rear-wheel axis:	horizontally vertically	(e) (f)	144 249	144 249
Distance of lower link pivot points to lift rod pivot points on lower links		(D)	510	510
Length of lift rods		(L)	555 to 685	651
Height of lower hitch points relative to the rear-wheel axis:				
- in low position		(h)	438 to 809	620
- in high position		(H)	-87 to 222	110
Height above ground of lower hitch points when locked in transport position (*)			Any height withing lift range	
(*) Assuming the tyre dynamic radius index r=820 mm of ISO 4251/1-1992				

1.7 SWINGING DRAWBAR

Type:	Clevis on towing hook without pivot point
Height above ground:	
Maximum:	402 mm
Minimum:	402 mm
Type of adjustment:	None
Distance of hitch point from rear-wheel axis, horizontally:	880 mm
Distance of hitch point from power take-off shaft end:	
Vertically:	299 mm
Horizontally:	400 mm

Lateral adjustment (centre of clevis):	
Right-hand:	0 mm
Left-hand:	0 mm
Distance of pivot point from rear-wheel axis, horizontally:	-
Diameter drawbar pin hole:	32 mm
Maximum vertical permissible load:	8 kN

1.8 TRAILER HITCH

Type:	Automatic clevis
Hole diameter:	32 mm
Height above ground:	716, 816 and 991 mm
Distance of hitch point from rear-wheel axis, horizontally:	863 mm
Distance of hitch point from power take-off shaft end:	
Vertically:	15, 115 and 215 mm
Horizontally:	383 mm
Maximum vertical permissible load:	10 kN

1.9 HOLED DRAWBAR

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:	930 mm
Minimum:	200 mm
Horizontal distance to power take-off shaft end (rear):	574 mm

1.10 SEMI-TRAILER HITCH

Type:	Towing hook
Hole diameter:	47 mm
Height above ground:	467 mm
Distance of hitch point from rear-wheel axis, horizontally:	660 mm
Distance of hitch point from power take-off shaft end:	
Vertically:	234 mm
Horizontally:	180 mm

Maximum vertical permissible load: 15 kN

1.11 FRONT TOWING HITCH

Height above ground: 892 mm

Diameter of pin hole: 28 mm

1.12 STEERING

Make, model and type: DANFOSS, OSPC 125 ON, hydrostatic

Method of operation: Independent hydraulic circuit for steering

Pump: Gear, driven from engine

Ram: Double-acting cylinder on the front axle

Working pressure: 10.0 MPa

1.13 BRAKES

1.13.1 Service brake

On the rear axle:

Make, model and type: ZETOR, 78.227.000, wet disc, multiplate, 5 discs on each side

Method of operation: Hydraulically by pedals, coupled or independent

On the front axle: ZETOR, 78.225.000, dry disc on the drive shaft to the front axle

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 and driving

Rear: 2, driving

Wheelbase: 2369 mm

Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1645	1815	By changing wheel discs to either side of wheel centre
Rear	1505	1805	Reversing wheels and off-set lug rims

1.15 PROTECTIVE STRUCTURE

Make, model and type:	ZETOR, BK 7520/2, cab with integrated safety frame
Manufacturer's name and address:	ROSTROJ s.p., 683 01 Rousínov, Czech Republic
Protective device:	
Cab/frame/rollguard/other:	Cab
Tiltable/not tiltable:	Not tiltable
OECD approval number:	CSS 0302/1
Date of approval:	28th November 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, DS 85H/90A or GRAMMER, DS 85H/3A or 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

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	1105	120×120	200
Sidelights	1745	60×65	720
Rearlights	1815	120×40	770
Reflectors	1135	Ø78	880

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
4380	2100	2310	2705	2850

2.2 GROUND CLEARANCE (unballasted tractor): 360 mm

Clearance-limiting part: Semi-trailer hitch

2.3 TRACTOR MASS (unballasted tractor with cab)

	Without driver kg	With driver kg
Front	1670	1690
Rear	2510	2565
Total	4180	4255

2.4 TYRES AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Tyres:		
Make	BARUM	BARUM
Dimensions	14.9-24	18.4R38
Ply rating	8 PR	146 A8
Type	diagonal	radial
Maximum load (tyre manufacturer's)	17.60 kN	32.10 kN
Maximum load (tractor manufacturer's)	7.50 kN	30.00 kN
Inflation pressure (tyre manufacturer's)	180 kPa	160 kPa
Dynamic radius index	590 mm	820 mm
Chosen track width:	1745 mm	1725 mm

2.5 OILS AND LUBRICATION

2.5.1 Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	10.0	200	200
Gear box	40.0	1800	200
Front axle	3.1	1800	-
Rear axle		Common with gear box	
Final drive (front)	2×1.0	1800	-
Final drive (rear)		Common with gear box	
Hydraulic system		Common with gear box	
Steering	4.5	2400	2400

2.5.2 Specifications

	Recommended	Used during test
Engine oil:		
Type	SAE 20W/40	As recomended
Viscosity	14.0 cSt at 100 °C	
Classification	API SE/CD+	
Transmission oils:		
Type	SAE 80W	As recommended
Viscosity	7.5 cSt at 100 °C	
Classification	API GL-4	
Steering oil:		
Type	OH-HM 32	As recommended
Viscosity	28.8 cSt at 40 °C	
Classification	ISO 6743 HM 32	

Hydraulic fluid: Same as transmission

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: 0.836 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: 2nd April 1996, SZZPLS Praha

Type of dynamometer: FROUDE AG 400, eddy-current

Power	Speed		Fuel consumption			Specific energy
	Engine	P.T.O.	Hourly		Specific	
kW	rev/min		kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - TWO-HOUR TEST						
70.8	2100	1077	17.19	20.56	243	3.44
3.1.2 POWER AT RATED ENGINE SPEED						
68.9	2200	1128	17.00	20.33	247	3.39
3.1.3 SATNDARD POWER TAKE-OFF SPEED (1000±25 rev/min)						
68.2	1950	1000	16.17	19.34	237	3.53
3.1.4 PART LOADS 3.1.4.1 the torque corresponding to maximum power at rated engine speed						
68.9	2200	1128	17.00	20.33	247	3.39
3.1.4.2 85 % of torque obtained in 3.1.4.1						
60.7	2282	1170	15.78	18.88	260	3.22
3.1.4.3 75 % of torque defined in 3.1.4.2						
46.7	2340	1200	13.30	15.91	285	2.94
3.1.4.4 50 % of torque defined in 3.1.4.2						
31.5	2363	1212	10.56	12.63	335	2.49
3.1.4.5 25 % of torque defined in 3.1.4.2						
15.9	2391	1226	7.97	9.53	501	1.67
3.1.4.6 unloaded						
-	2422	1242	5.34	6.39	-	-

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						
68.2	1950	1000	16.17	19.34	237	3.53
3.1.5.2 85 % of torque obtained in 3.1.5.1						
60.8	2046	1049	14.81	17.72	244	3.43
3.1.5.3 75 % of torque defined in 3.1.5.2						
46.8	2098	1076	12.29	14.70	263	3.18
3.1.5.4 50 % of torque defined in 3.1.5.2						
31.9	2143	1099	9.66	11.56	303	2.76
3.1.5.5 25 % of torque defined in 3.1.5.2						
16.2	2184	1120	7.12	8.52	440	1.90
3.1.5.6 unloaded						
-	2221	1139	4.45	5.32	-	-

No load maximum engine speed: 2422 rev/min

Torque (equivalent crankshaft):

at maximum power: 321.9 Nm
at rated engine speed: 299.1 Nm
at standard power take-off speed: 334.0 Nm

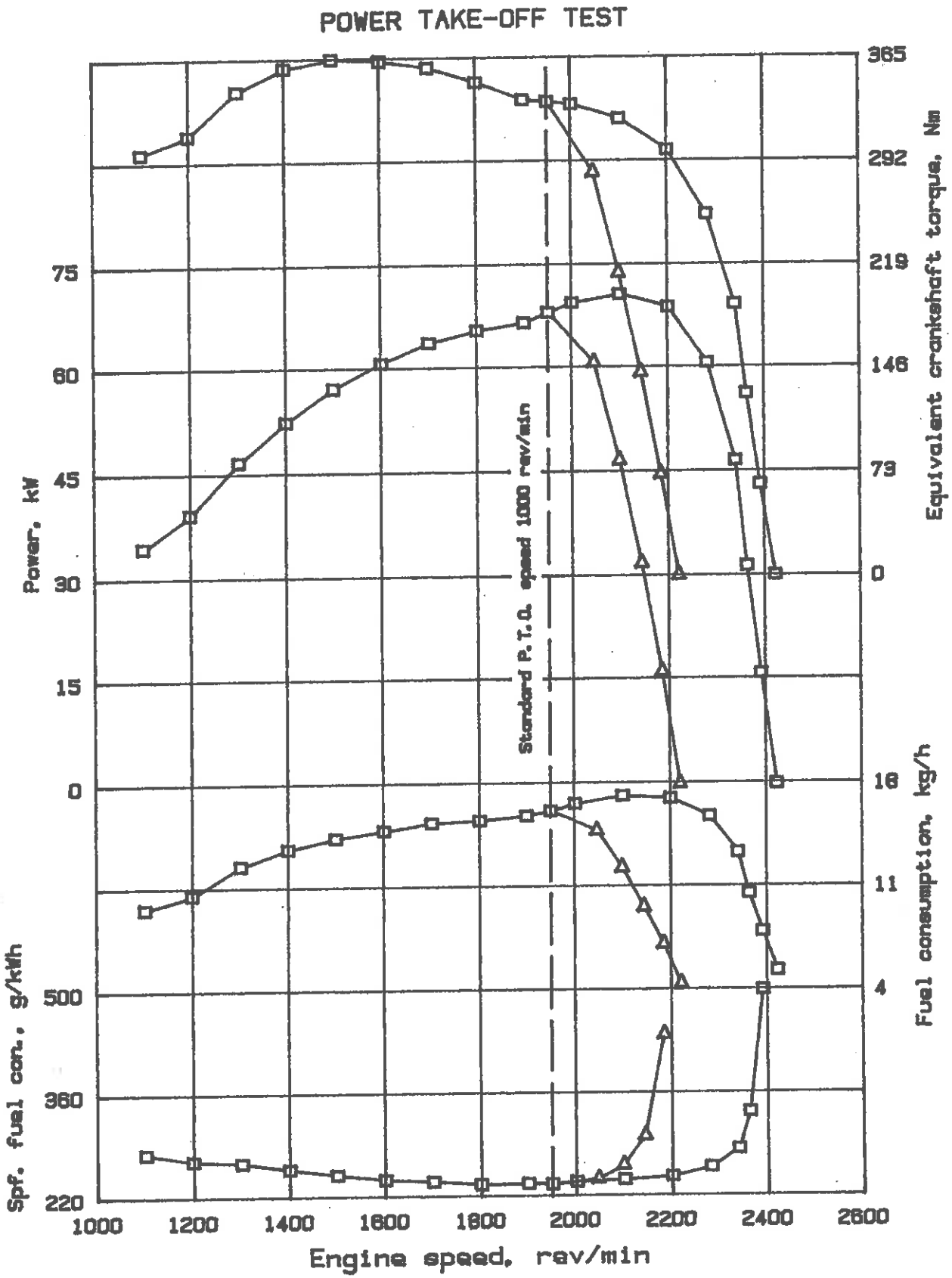
Maximum torque (equivalent crankshaft): 364.8 Nm
(engine speed: 1500 rev/min)

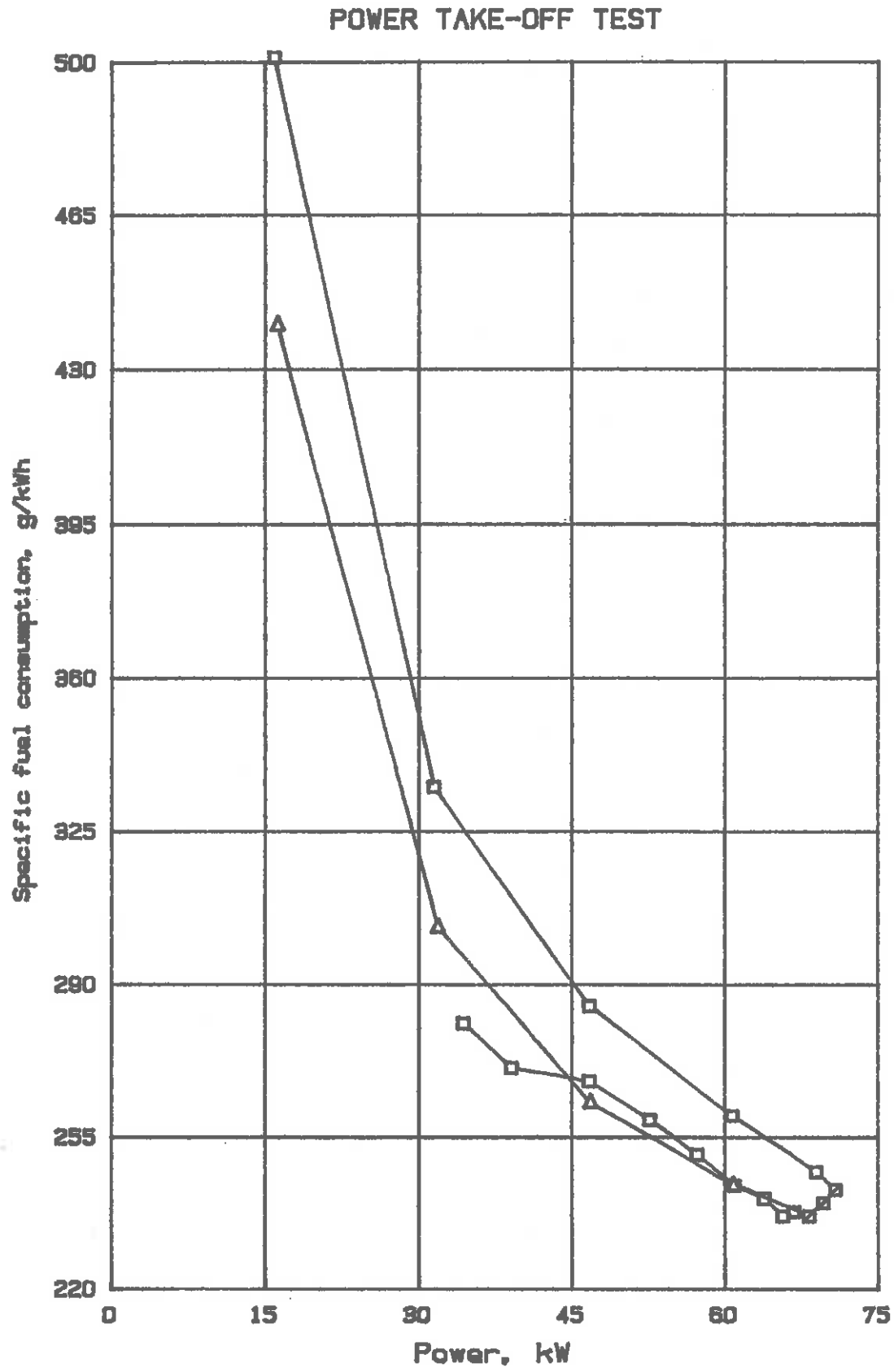
Mean atmospheric conditions:

Temperature: 22 °C
Pressure: 96.6 kPa
Relative humidity: 51 %

Maximum temperatures:

Coolant: 82 °C
Engine oil: 114 °C
Fuel: 47 °C
Engine air intake: 37 °C


POWER TAKE-OFF TEST
Power, kW
75
60
45
30
15
0
Spf. fuel con., g/kWh
500
360
220
Standard P.T.O. speed 1000 rev/min
Equivalent crankshaft torque, Nm
365
292
219
146
73
0
Fuel consumption, kg/h
16
11
4
1000
1200
1400
1600
1800
2000
2200
2400
2600
Engine speed, rev/min


POWER TAKE-OFF TEST
Specific fuel consumption, g/kWh
500
465
430
395
360
325
290
255
220
0
15
30
45
60
75
Power, kW

3.2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 16th and 17th May 1996

3.2.1 Hydraulic power test

Sustained pressure with relief valve open: 16.9 MPa

Pump delivery rate at minimum pressure: 59.0 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	37.0	15.2	9.4
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	56.0	13.7	12.8

Tapping point used for test: External tapping

Temperature of hydraulic fluid: 67 °C

Opening and closing pressures of the unloading valve: Not applicable

3.2.2 Power lift test

Linkage setting for test - see page 11

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement	695 mm	819 mm
Maximum corrected force exerted through full range	43.7 kN	35.7 kN
Corresponding pressure of hydraulic fluid	15.2 MPa	15.2 MPa
Moment about rear-wheel axis	46.1 kNm	59.4 kNm
Maximum tilt angle of mast from vertical	-	10 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points												
mm	-426	-400	-371	-300	-200	-100	0	+100	+200	+300	+324	+393
Lifting forces at the hitch points, corrected to 15.2 MPa												
kN	-	-	43.7	44.4	46.5	47.9	48.9	49.3	49.9	50.5	51.5	-
Lifting forces at the test frame, corrected to 15.2 MPa												
kN	39.6	40.4	-	41.1	41.6	41.1	40.4	39.1	38.1	36.9	-	35.7

3.3 DRAWBAR PERFORMANCE (unballasted tractor)

Date of tests: 25th April 1996

Type of track: Bituminous-concrete surface

Height of drawbar above ground	Tyre inflation pressure	
	Front	Rear
402 mm	120 kPa	100 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 LM1	43.1	35.2	4.41	2274	15.0	335
3 LM2	50.1	35.2	5.12	2250	15.0	318
3 LM3	55.5	35.4	5.64	2101	15.2	300
1 HM1	57.6	32.8	6.32	2100	10.7	288
1 HM2	59.6	27.9	7.69	2105	7.6	278
1 HM3	61.1	23.7	9.28	2112	5.6	271
2 HM1	60.6	18.4	11.85	2097	4.3	272
2 HM2	60.6	15.4	14.16	2107	3.3	274
2 HM3	60.4	13.2	16.48	2088	3.1	273
3.3.2 FUEL CONSUMPTION 3.3.2.1 in selected gear, at maximum power at rated speed						
1 HM3	59.3	22.0	9.70	2199	5.1	278
3.3.2.1.1 75 % of pull at maximum power at rated speed						
1 HM3	46.9	16.5	10.24	2288	3.8	300
3.3.2.1.2 50 % of pull at maximum power at rated speed						
1 HM3	32.5	11.0	10.64	2339	2.4	345
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 HM1	46.8	16.5	10.21	1796	3.8	272
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 HM1	32.5	11.0	10.64	1847	2.4	299
3.3.2.2 in selected gear nearest to 7.5 km/h at rated speed						
1 HM1	56.8	30.2	6.77	2202	8.8	291
3.3.2.2.1 75 % of pull at maximum power at rated speed						
1 HM1	45.8	22.7	7.27	2286	5.4	308
3.3.2.2.2 50 % of pull at maximum power at rated speed						
1 HM1	32.0	15.1	7.64	2341	3.3	350
3.3.2.2.3 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1						
1 HM2	45.5	22.7	7.22	1929	5.4	278
3.3.2.2.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2						
1 HM2	32.0	15.1	7.63	1994	3.3	305

Specific energy	Temperature			Atmospheric conditions		
	Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
kWh/l	°C	°C	°C	°C	%	kPa
2.50	41	76	105	15	68	98.1
2.63	40	75	105	16	68	98.1
2.79	39	77	105	16	64	98.1
2.91	39	78	105	16	62	98.1
3.00	39	81	104	17	61	98.1
3.09	39	83	105	17	60	98.1
3.07	38	82	104	18	54	98.1
3.05	39	82	104	19	53	98.1
3.06	40	85	105	19	52	98.1
3.01	39	82	103	17	60	98.1
2.78	40	80	102	18	51	98.1
2.42	42	81	103	18	51	98.1
3.08	37	79	100	18	51	98.1
2.79	38	76	97	18	51	98.1
2.88	39	77	104	16	62	98.1
2.72	40	80	101	18	51	98.1
2.39	41	80	101	18	51	98.1
3.01	37	77	100	18	51	98.1
2.74	38	77	98	18	51	98.1

4. OPTIONAL TEST RESULTS

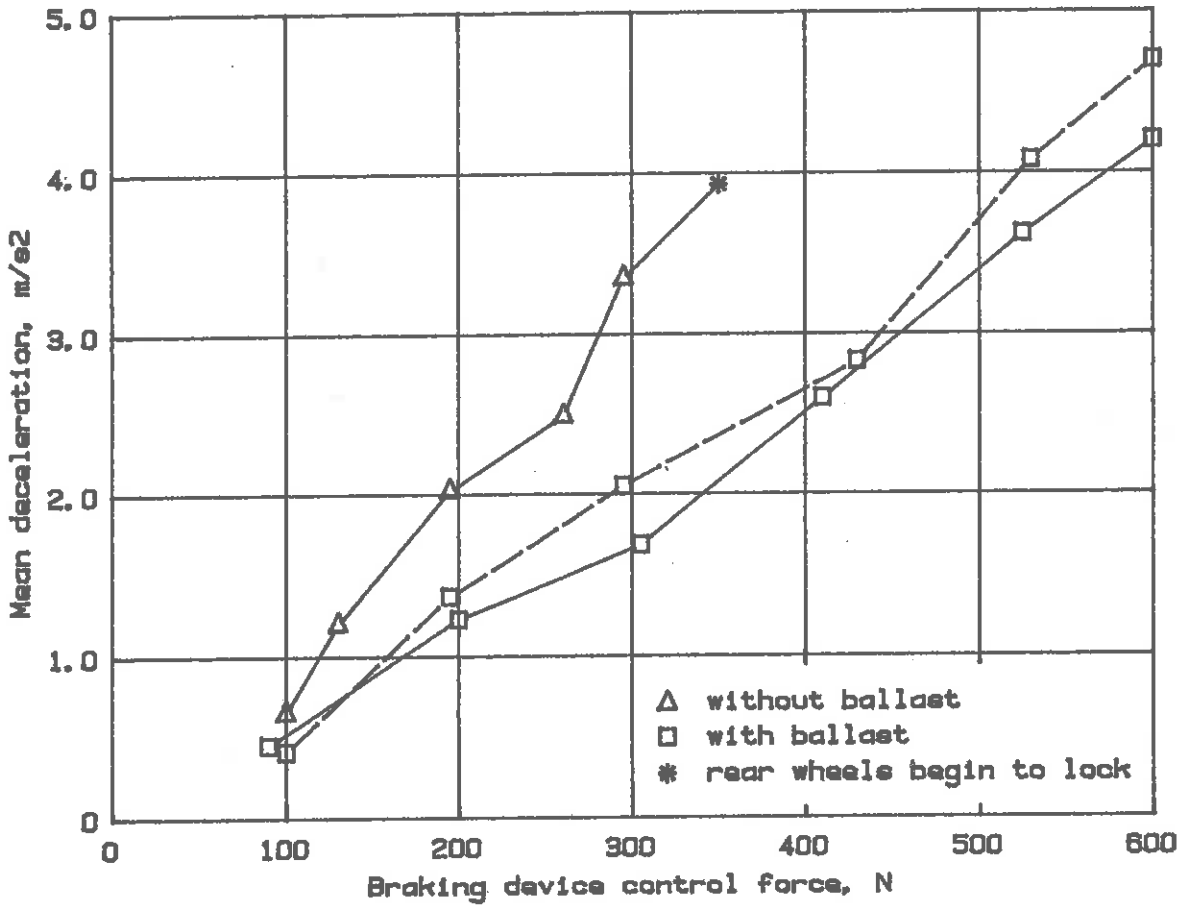
4.1 BRAKING

Date of tests: 22nd April and 3rd May 1996

	Tractor mass (with driver)			Speed before application of brakes km/h
	Front kg	Rear kg	Total kg	
Ballasted	1500	6000	7500	33.5
Unballasted	1690	2565	4255	33.9

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	255 N	260 N

4.2 MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of tests:	6th May 1996
Make and model of sound level meter:	BRÜEL & KJAER, 2231
Type of track:	Bituminous-concrete surface
Gear number:	3 HM3
Travelling speed before acceleration:	25.4 km/h
Sound level:	86.5 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