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BLT
WIESELBURG

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OECD-TEST-REPORT

for approbation according to OECD-Full Code (Code 1)
Standard Code by the OECD-Coordinating Centre at
C.E.M.A.G.R.E.F.
Antony, Cedex

Number and date of approval: 1/1997, September 6, 2002



Dieseltractor CASE IH 9090.71
(50 km/h version)

Trade name: CVX 170 (4WD)



Dieseltractor STEYR 9090.70
(50 km/h version)

Trade name: CVT 170 (4WD)

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

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▪ Tractor manufacturer's name and address	CNH Österreich GmbH
▪ Location of tractor assembly:	A 4300 St.Valentin
▪ Submitted for test by:	Manufacturer
▪ Selected for test by:	Manufacturer with agreement of BLT
▪ Place of running-in:	A 4300 St. Valentin
▪ Duration of running-in:	500 h
▪ Location of test:	BLT-Testing station, A 3250 Wieselburg, Austria

1. SPECIFICATIONS OF TRACTOR

1.1. Identification

▪ Make of the tractor:	CASE-IH
▪ Model (trade name):	CVX 170
▪ Type:	9090.71, 50km/h version, four wheel driven, continuously variable transmission, front axle with independent wheel suspension
▪ Number of driving wheels:	4
▪ 1st Serial N°:	DBD 0080001
▪ Serial N°:	DBD 0080018

1.2. Engine

▪ Make:	SISU Diesel Inc./ Finland
▪ Model:	6-cyl.watercooled diesel engine, direct injection; supercharged, injection pump with electronic controlled governor
▪ Type:	WD 620.90
▪ Serial N°:	K07089

1.2.1 Cylinders

▪ Number/disposition:	6 / vertical in line
▪ Bore/stroke:	108 / 120 mm/mm
▪ Capacity:	6,596 dm^3
▪ Compression ratio:	16,5 ± 0,5 : 1
▪ Arrangement of valves:	Overhead valves
▪ Cylinder liners (wet or dry):	wet

1.2.2 Supercharging

▪ Make:	SCHWITZER
▪ Model:	S2B
▪ Type:	exhaust driven supercharger
▪ Pressure:	max.130 kPa

1.2.3 Fuel system

■ Fuel feed system:	1 diaphragm fuel supply pump 1 fuel feed pump integrated in injection pump
■ Fuel filter	
- Make:	CAV
- Model:	2 FASL
- Type of fuel filter(s):	1 double filter with water trap, replaceable
■ Capacity of fuel tank:	310 dm^3
- Make:	ELKAMET
■ Injection pump	
- Make:	STANADYNE
- Model:	DB 4629-5712
- Type:	Distributor injection pump
- Serial N°:	DB 4629-5712 / 8368 54870
- Manufacturer's production setting of injection pump	87 ± 2 mm^3/stroke at full load and rated speed
- Flow rate (rated engine speed and full load):	37 dm^3/h
- Timing:	15 ± 0,5° before TDC
■ Injectors:	
- Make:	STANADYNE
- Model:	8366 59808
- Type:	M-Type
■ Injection pressure:	27 + 0,8 MPa

1.2.4 Governor

■ Make:	SISU Diesel EEM
■ Model:	8368 64000
■ Type:	All speed
■ Governed range of engine speed from	930 ± 10 to 2500 ± 20 rev/min
■ Rated engine speed:	2300 rev/min

1.2.5 Air cleaner

■ Pre-cleaner:	Incorporated in main cleaner
- Make:	
- Model:	
- Type:	
- Location of air intake:	Inside the bonnet, above the radiator
■ Main cleaner:	
- Make:	KNECHT
- Model:	LVPO 7120 AS/10
- Type:	PICLON combined filter, dry type with integrated cyclonic pre-cleaner with automatic dust drain to fan shroud and changeable paper filter insert and additional safety cartridge
- Location of air intake (in case of no pre-cleaner):	
■ Maintenance indicator:	Electric

1.2.6 Lubrication system

▪	Pressure Lubrication with engine oil/cooling water heat exchanger in filter socket
▪ Type of feed pump:	Gear pump
▪ Type of filter(s):	Full flow, replaceable cartridge
▪ Number of filters:	1

1.2.7 Cooling system

▪ Type of coolant:	Water –anti freeze mixture down to –20°C
▪ Type of pump:	Centrifugal pump belt driven
▪ Specification of fan or blower	Puller, 2 driving belts
- Number of fan blades:	7 (optional 10 not fitted on tested tractor) viscous fan
- Fan diameter:	540 mm
▪ Coolant capacity:	25 dm^3
▪ Type of temperature control:	Thermostat control
▪ Superpressure system:	70 kPa

1.2.8 Starting system

▪ Make	ISKRA
▪ Model:	
▪ Type:	Solenoid engaged screw push starter motor
▪ Starter motor power rating:	12 V / 3,0 kW
▪ Cold starting aid:	Inlet manifold electric heater
▪ Safety device:	Integrated in transmission software

1.2.9 Electrical system

▪ Voltage:	12 V
▪ Generator	14 V / 120A
- Make:	BOSCH
- Model:	
- Type:	
- Power:	1,68 kW
▪ Battery of accumulators	
- Number:	1
- Rating:	160 Ah at 20 hours

1.2.10 Exhaust system

▪ Make	ROTH
▪ Model:	47.05.9920.0.00
▪ Type:	Absorption-Reflexion Type
▪ Location:	Along the right cabin a-post vertical upwards

1.3. Transmission

1.3.1 Clutch

- No friction clutches for travel and PTO
- Method of operation: Wear-free claw-clutches in range transmission and for transfer of forward- and reverse power flow

1.3.2 Gear box

- Make: ZF STEYR
- Model: CVT
- Type: S-Matic 170
- Description: Automatically continuously transmission with compound planetary gear (mechanical and hydrostatic power is superimposed), and 4 mechanical speed ranges.
  Controlled by right hand control lever on seat-armrest or by accelerator pedal and shuttle lever (F/R) on steering column. Electronic CAN-BUS vehicle control unit regulates interaction of engine and transmission.
- Available versions: 40 km/h, 50 km/h
  50 km/h version on tested tractor
- Speed range: Range selected by toggle switch

Range		Travel speed [km/h]	
		Forward	Reverse
I	Heavy use	0 – 14	0 – 14
II	Fast transport	0 – 50	0 – 50

1.3.3 Rear axle and final drives

- Make: ZF STEYR
- Model: HA 170
- Type: Bevel gear drive with bevel gear differential and planetary final drives
- Differential lock
  - Type: Multi-plate wet
  - Method of engagement: By 3-step toggle switch or on option by automatic lock management (fitted to tractor tested) electro-hydraulically operated; acting in common with front axle differential lock
  - Method of disengagement: Self-disengaging (if not locked) or by automatic lock management

1.3.4 Front axle and final drives

- Make: CARRARO S.P.A.
- Model: 20.29 S
- Type: Swing axle with single wheel suspension with transverse control arms; hydro-pneumatic suspension, lockable, electronic height control, axle driven by wet multi-plate clutch, central shaft and bevel gear clutch electronically operated by toggle switch or engaged by service brake operation, planetary final drives
- Differential lock
  - Type: Multi-plate wet
  - Method of engagement: As rear axle differential
  - Method of disengagement: As rear axle differential

1.3.5 Total ratios and travelling speeds

- Continuously variable gear ratios 0-50 km/h, forward and reverse
  Optional 0 - 40 km/h
- Number of revolutions of front wheels for one revolution of rear-wheels: 1,318

1.4. Power take-off

1.4.1 Main power take-off

- Type: Independent
- Method of engagement: By wet multi-plate clutch, controlled by rocker switch, electro-hydraulically operated additional remote control at rear fender
- Number of shafts: 1
- Method of changing power take-off shaft ends and speeds: Flanged shafts exchangeable, 4 different standard speeds, shiftable by two separate levers

1.4.1.1 Power take-off proportional to engine speed

- For normal operation: 540 or 1000 p.t.o.
- For economic operation: 540E or 1000E p.t.o.
- Location: At rear of tractor
- Diameter of power take-off shaft end: 35 mm
- Number of splines: 6, in conformity with ISO 500:1991, type 1
  21, in conformity with ISO 500:1991, type 2
- Height above ground: 799 mm
- Distance from the median plane of the tractor: 0 mm
- Direction of rotation (viewed from behind tractor): Clockwise

p.t.o. type	p.t.o. transmission ratio	p.t.o. speed rev / min	Engine speed rev / min	Power restriction kW *)	Max. torque transmissible Nm *)
540	4,089	540 562	2208 2300	-	-
540 E	2,977	540 773	1608 2300	-	-
1000	2,197	1000 1047	2197 2300	-	-
1000 E	1,600	1000 1437	1600 2300	-	-

*) not specified by manufacturer

1.4.1.2 Power take-off proportional to ground speed

- Power take-off proportional to ground speed: No

1.4.1.3 Manual-Mode

- Speed ratio is frozen , p.t.o. speed is changing linearly to travelling speed.

1.4.2 Optional power take-off

Front p.t.o., independent, — Not fitted on test- tractor
- Location: — At front of tractor
- Diameter of power take-off shaft end: — 35 mm
- Number of splines: — 6, in conformity with ISO 500:1991, type 1
- Height above ground: — 890 mm
- Distance from the median plane of the tractor: — 0 mm
- Direction of rotation (viewed from in front of tractor): — Anti-clockwise
  electro-hydraulically controlled

p.t.o. type	p.t.o. transmission ratio	p.t.o. speed rev / min	Engine speed rev / min	Power restriction kW	Max.torque transmissible Nm *)
1000	1,93	1000 1192	1930 2300	No	-

*) not specified by manufacturer

1.5. Hydraulic power lift

- Make: — CASE-STEYR
- Model: — detached system, electro-hydraulic power lift
- Type:
  - Type of hydraulic system: Closed, load sensing, pressure and flow compensated (PFC hydraulic), supplies rear and front power lift including additional control valves, steering, brake valve, and height control of front axle suspension
  - Rear power lift: BOSCH EHR-D, electronic power lift control, lower link sensing, external push-buttons on left and right at rear mudguards, draft, position and intermixable control, floating position, fast raising, raise limit, lowering throttle, vibration damping, slip control
- Type and number of cylinders (single or double-acting): — 2 single
- Type of linkage lock for transport: — hydraulic
- Relief valve pressure setting (tolerance): — 22,0 + 2 MPa
- Opening pressure of cylinder safety valve (if fitted): — 20,5 + 5 MPa
- Lift pump type: — REXROTH, variable displacement axial piston pump, max. flow 115 dm/min at rated engine speed
- Transmission between pump and engine: — Pump driven by gearbox
- Type and number of filters — 1 filter in suction line, 1 filter in charge line
- Site of oil reservoir: — Between clutch housing and transmission
- Type, number and location of tapping points: — Max. 5 pairs, double acting, at rear of tractor
- Maximum volume of oil available to external cylinders: — 35 dm^3

1.6. Three point linkage

- Category: — 3, in conformity with categories of ISO 730-1:1994 + Cor.1:1995 and ISO 730-2:1979 with WALTERSCHEID quick couplers
- Category adapter: — Adjustment Cat.2 possible

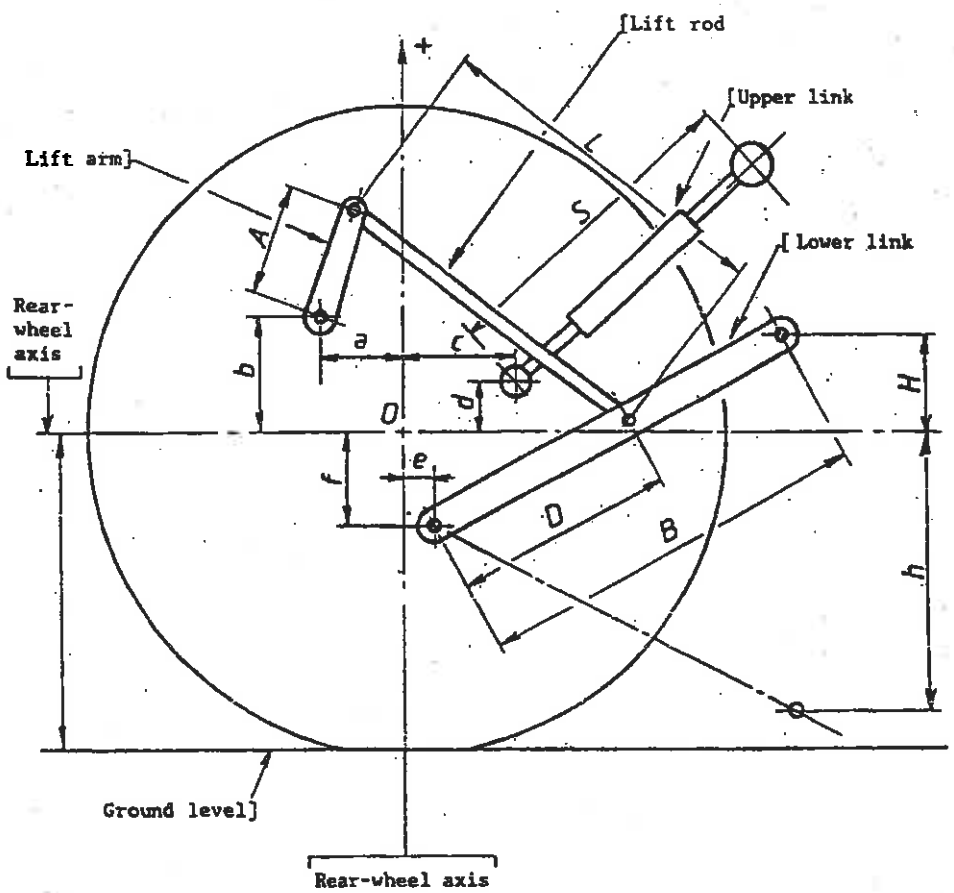


Figure 1.1

Lift test - Linkage geometry

Give detailed figures of power lift and complete table 1.1
with values corresponding to the dimensions of the figure above

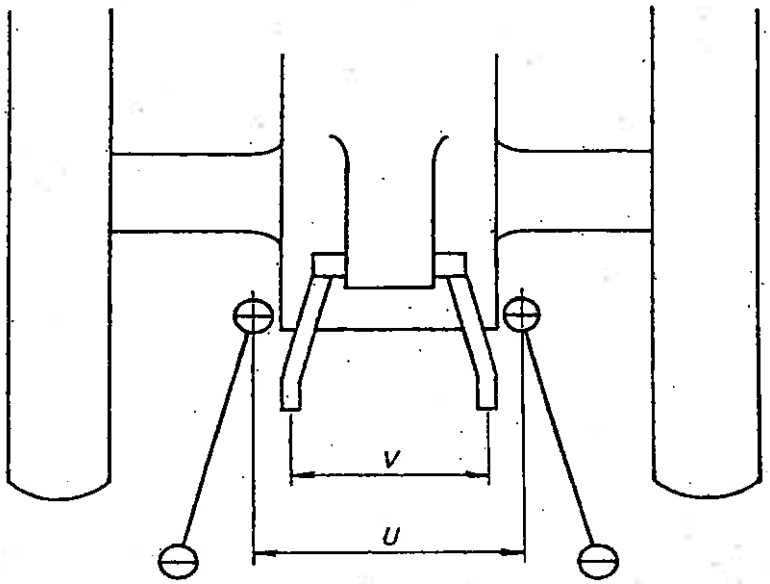


Figure 1.2

Lift test - Linkage geometry

		Dimension or range	Settings used in test
		mm	mm
Length of lift arms:	(A)	328	328
Length of lower links:	(B)	990	990
Distance of lift arm pivot point from rear-wheel axis :			
- horizontally	(a)	- 210	- 210
- vertically	(b)	445	445
Horizontal distance between the 2 lower link points:	(u)	470	470
Horizontal distance between the 2 lift arm end points:	(v)	671	671
Length of upper link:	(S)	655 to 892	820
Distance of upper link pivot point from rear wheel axis :			
- horizontally	(c)	380	380
- vertically	(d)	275 to 335	275
Distance of lower link pivot point from rear wheel axis :			
- horizontally	(e)	200	200
- vertically	(f)	230	230
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	495	495
Length of lift rods :	(L)	710 to 830	830
Height of lower hitch points relative to the rear-wheel axis:			
- in low position	(h)	406 to 675	675
- in high position	(H)	331 to 35	35
Height above ground of lower hitch points when locked in transport position (*)		1077 to 1236	–
(*) Assuming r = 905 tyre dynamic radius index not in conformity with ISO 4251-1:1992 (pneumatic tyred tractors only)			

Table 1.1

Dimensions of linkage geometry when connected to the standard frame

1.7. Swinging drawbar

- Available, not fitted

1.8. Trailer hitch

- Type: SCHARMÜLLER /2146-2 / automatic
- Hole diameter: 32 mm
- Height above ground: Clevis adjustable to 568/618/668/764/859/909/959/1009 mm
- Distance of hitch point from rear-wheel axis, horizontally: 689 mm
- Distance of hitch point from power take-off shaft end: 156 mm
  - Vertically: above 60/110/160 and 210 mm
    below 36/131/181 and 231 mm
  - Horizontally: 154 mm
- Maximum vertical permissible load: 25 kN

1.9. Holed drawbar

- Cat. 2 Available, not fitted
- Number of holes: 7
- Distance between holes: 115 mm
- Hole diameter: 33 mm
- Thickness/width of the drawbar: 30 mm / 80 mm
- Height above ground:
  - Minimum: 155 mm
  - Maximum: 1050 mm
- Horizontal distance to power take-off shaft end (rear): 694 mm

1.10. Steering

- Make: REXROTH
- Model: LAGU 220 / 60-20 / LDR
- Type:
- Method of operation: Hydrostatic power assisted steering with hydraulic transmission delivery 220 cm^3 / rev.
  - Pump: Hydraulic steering pump with priority valve
  - Ram: Front axle integrated cylinder of symmetrical design, 276 mm stroke, 75 mm bore, 38 mm dia of piston
- Working pressure: 17,5 MPa

1.11. Brakes

1.11.1 Service brake

- Make: SIRMAC
- Model: 9,5" x 7"
- Type: Foot-acted muscle power brake with hydraulic power train
  Wet oil immersed disk brake with acting faces on each differential half shaft, medium active disk dia 211 mm
- Method of operation: Pedal operated, acting on rear wheels, front axle drive automatically engaged when braking
- Optional:
  - Trailer braking take-off (hydraulic or air brake): Not fitted on tested tractor
  - Versions: Combined 2-line air brake system
    Hydraulic trailer brake system
    Engine brake as deceleration brake

1.11.2 Secondary brake device / parking braking device

- Method of operation: Hand-acted muscle power brake with mechanical power train, acting on brake lever of service brake

1.11.3 Parking lock

- Type:
- Method of operation: Mechanically safety lock of transmission, el. hydraulically engaged and released, electronically controlled

1.12. Wheels

- Number
  - Front: 2 driving / steering
  - Rear: 2 driving
- Wheelbase: 2831 mm

- Track width adjustment:

	Minimum	Maximum	Adjustment
	mm	mm	method
Front	1844	1908	Reversing the wheels
Rear	1870	1936	Reversing the wheels

1.13. Protective structure

▪ Make:	STEYR
▪ Model:	130.04
▪ Type:	Cab
▪ Manufacturer's name and address:	CNH Österreich GmbH A-4300 St.Valentin
▪ Protective device - Cab	Welded and screwed profile steel tube construction Not tiltable
▪ OECD approval:	None

1.14. Seat

1.14.1 Driver's seat

▪	Fitted to tractor
▪ Make:	Grammer
▪ Model:	MSG 95 AL /731
▪ Type:	Air-suspended upholstered seat with back rest, with vertical / longitudinal adjustment and horizontal suspension, with left-hand armrest and right-hand armrest control panel
▪ Seat and steering wheel reversible:	No
▪ Type of suspension:	Pneumatic
▪ Type of damping:	Hydraulic
▪ Range of adjustment:	
- Longitudinally:	150 mm
- Vertically:	80 mm
▪ Safety belt:	Attachment point for seat belt available

1.14.2 Optional driver's seat(s)

- No

1.14.3 Passenger seat

- Optional, fitted to tractor tested
- Location: On left-hand mudguard, beside the driver
- Characteristics: with passenger handhold in roof
- Standard: Folding seat pan of plastic with rubber cover
- Comfort: Fixed seat pan with foam and fabric cover, GRAMMER model S83/3B
- Capacity (number): 1

1.15. Lighting: *) CVX 170 , **) CVT170

- Electrical 12 V

	Height above ground of centre	Size	Distance from outside edge of lights to median plane of tractor
	mm	mm	mm
Headlights	1342	173 x 100 *) 160 x 100 **)	235 222
Sidelights	1926	110 x 80	850
Rearlights	1955	140 x 30	875
Reflectors 1st pair	1924	124 x 32	867
Reflectors 2nd pair	795	80 dia	617

2. TEST CONDITIONS

Separate tables may be added to report other test conditions or equipments.

2.1. Overall dimensions

	Length	Width		Height at top of	
		minimum	maximum	Protective structure	exhaust pipe
	mm	mm	mm	mm	mm
Ballasted	5230	2485	2550	3035	2942
Unballasted	4850	2485	2550	3035	2942

2.2. Ground clearance (unballasted tractor)

- 500 mm
- Clearance-limiting part: Central differential housing of front axle

2.3. Tractor mass

Mass (with cab):

	Ballasted		Unballasted	
	Without driver	With driver	Without driver	With driver
	kg	kg	kg	kg
Front	4920	4935	2620	2635
Rear	6030	6090	4435	4495
Total	10950	11025	7055	7130

2.4. Ballast

	Weights		Water
	Number	Total mass	
		kg	kg
Front	13	1255	680
Rear	10	590	1370
Optional	-	-	-

2.5. Track specifications

- Not applicable

2.6. Tyres and track width specifications

	Front	Rear
Tyres:		
- dimensions	540/65R30	650/65R42
- ply rating	143A8	158A8
- type	Radial ply	Radial ply
- maximum load (tyre manufacturer's)	27,25 kN	42,50 kN
- maximum load (tractor manufacturer's)	25,00 kN	45,00 kN
- inflation pressure (tyre manufacturer's)	160 kPa	160 kPa
- dynamic radius index	695 mm	905 mm
Chosen track width	1908 mm	1870 mm

2.7. Fuel

- Type: In conformity with national standard
- Density at 15°C: 0,833 g/cm³

2.8. Oils and lubricants

2.8.1 Capacity and change interval

	Capacity	Oil change	Filter change
	dm³	h	h
Engine	20	250	250
Gear box	60	1000	1000
Front axle	8	250	--
Rear axle final drive each side	12	250	--
Front axle final drive each side	1,5	250	--
Hydraulic system + steering	51	500	500

2.8.2 Specifications

	Recommended	Used during test
Engine		
. Type:	Single grade / Multi-grade oil Universal STOU	SHELL Engine Oil
. Viscosity:	SAE 10W30 , SAE 15W30	SAE 10W30
. Classification:	MIL-L-2104C/D , L- 2105	MIL-L-2105
Transmission (gearbox, rear axle)		
. Type:	SHELL Harvella TX	SHELL Harvella TX
. Viscosity:	SAE 10W40	SAE 10W40
. Classification:	MIL-L-2105	MIL-L-2105
Rear axle final drive		
. Type:	Transmission oil	SHELL SPIRAX A80W90
. Viscosity:	SAE 90, SAE 85W90, SAE 85W140	SAE 80W90
. Classification:	MIL-L-2105 C/D	MIL-L-2105 C/D
Hydraulic / steering		
. Type:	Hydraulic oil	SHELL T46
. Viscosity:	ISO VG 46 HLP DIN 51524	ISO VG 46 HLP
Front axle		
. Type:	Transmission oil	AGIP Rotra MP-BD
. Viscosity:	SAE 80W90 , SAE 85W90	SAE 80W90
. Classification:		MIL-L-2105 C/D

2.8.3 Grease

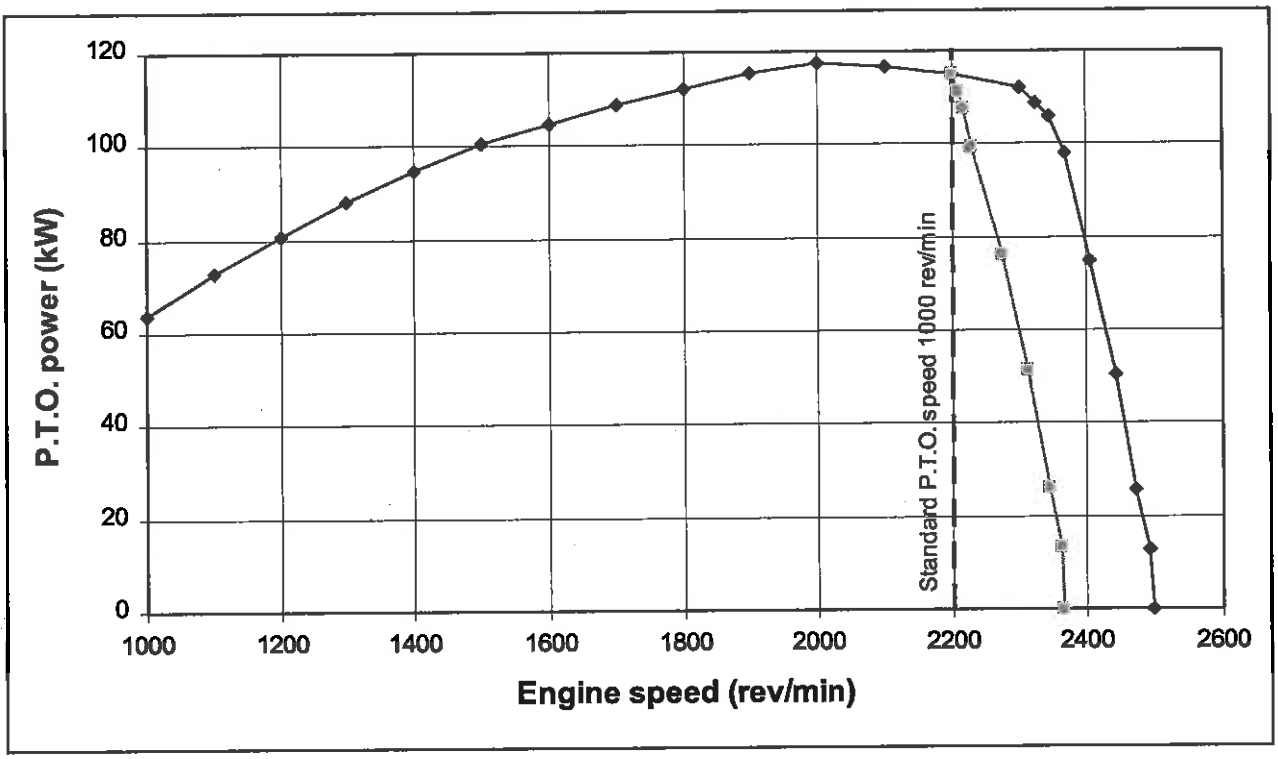
- Multipurpose grease
- Number of lubrication points: 22

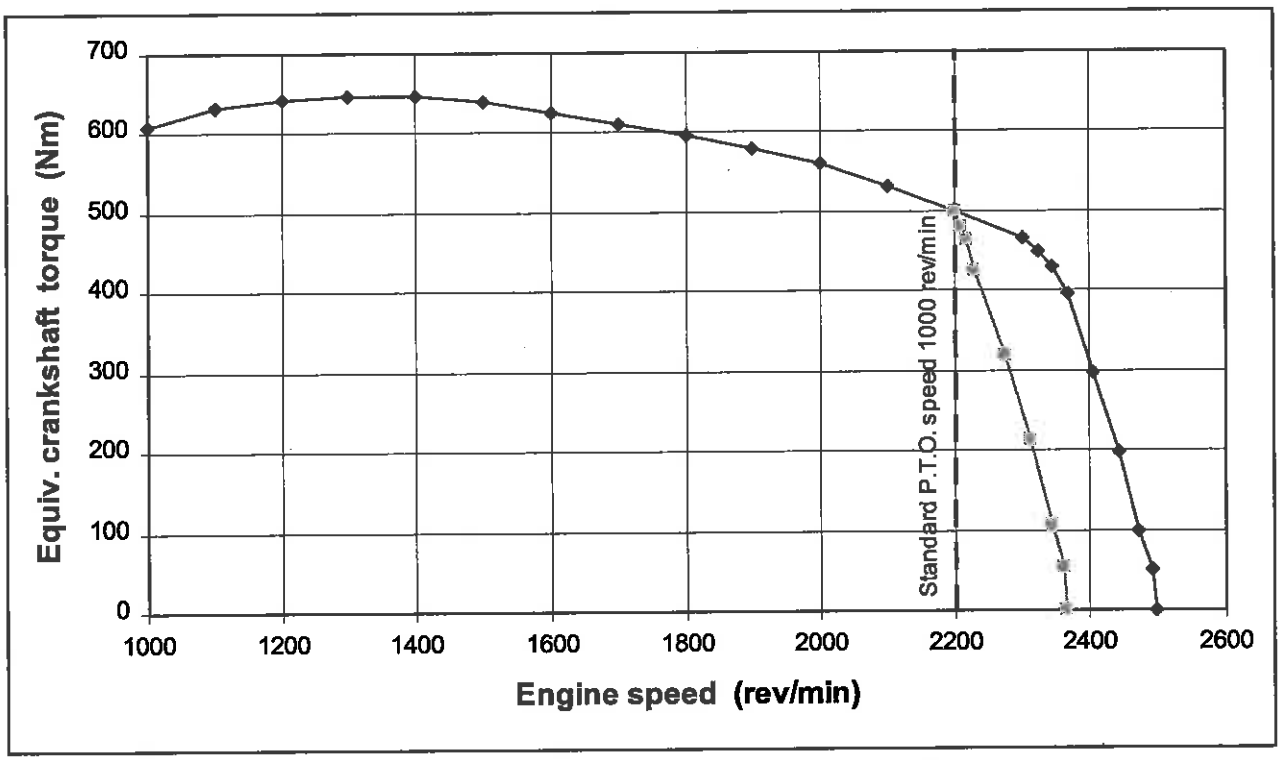
3. COMPULSORY TESTS RESULTS

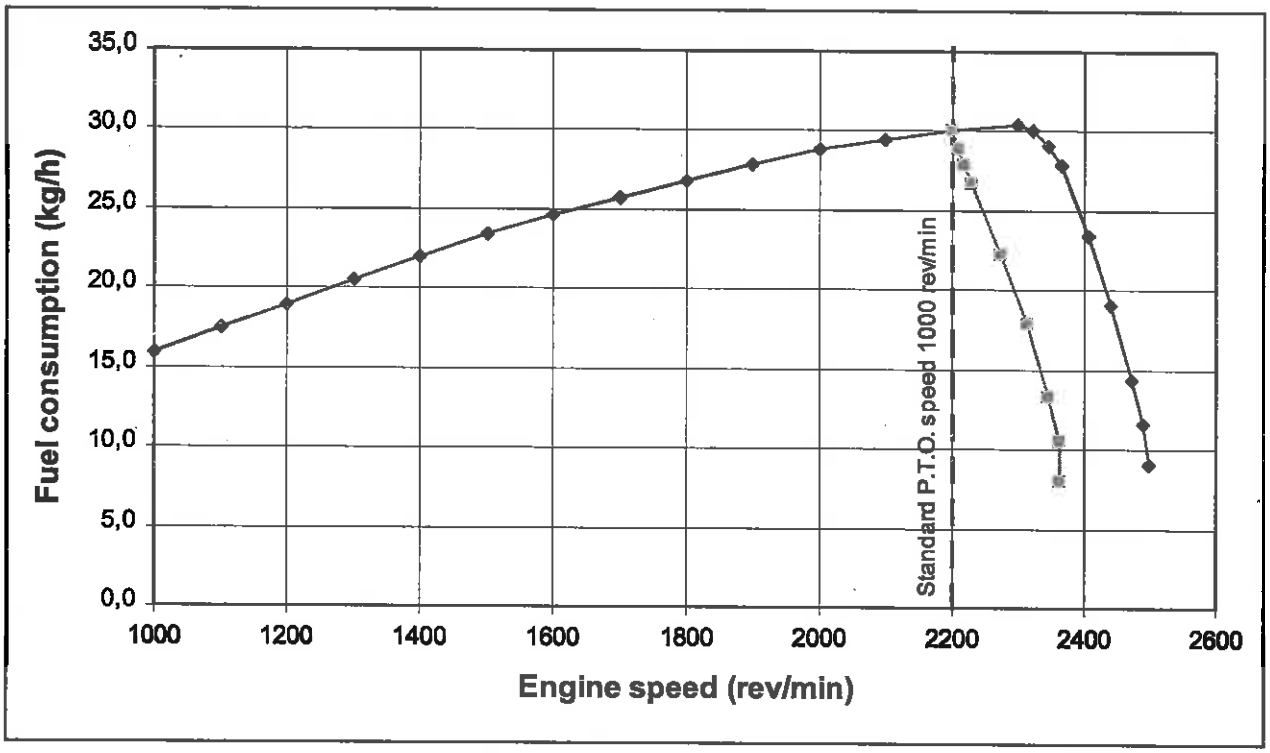
3.1. Main power take-off

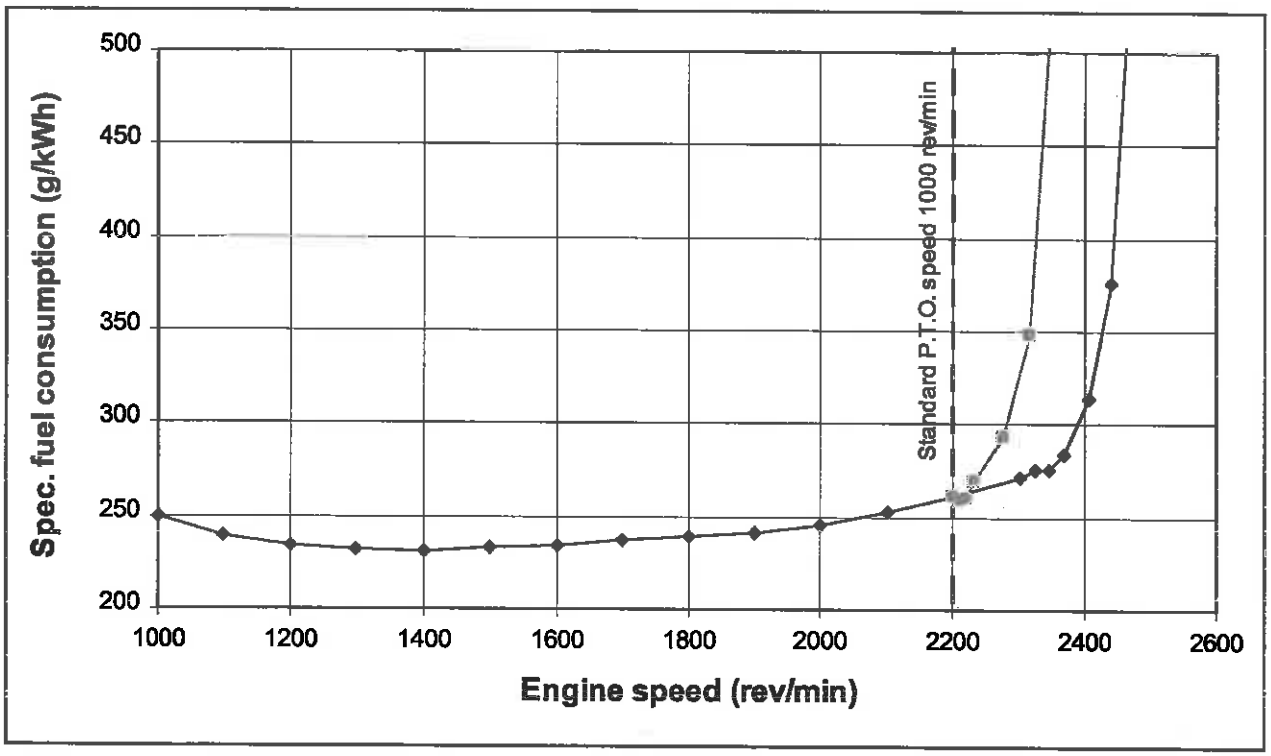
- Date and location of tests: 24.10.2001, Wieselburg, Austria
- Type of dynamometer bench: SCHENCK eddy-current brake W 780

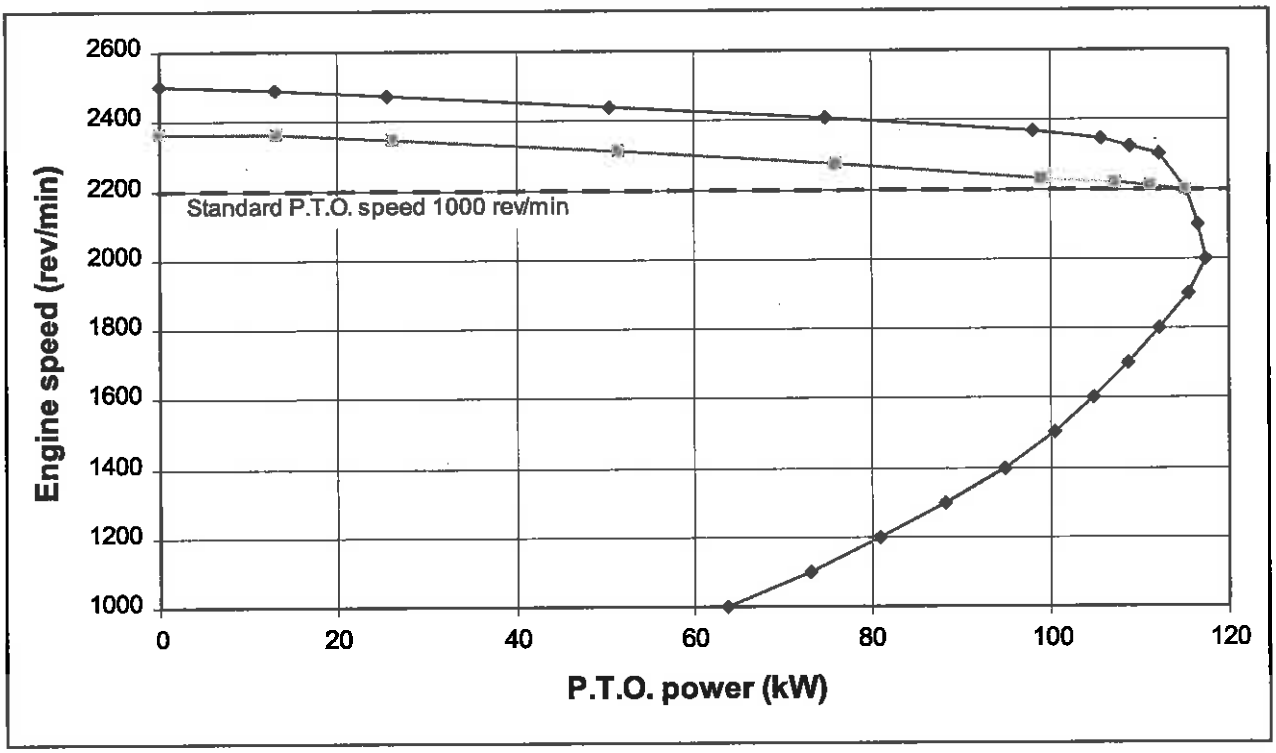
Power	Speed		Fuel consumption			Specific energy
	Engine	P.T.O.	Hourly		specific	
kW	rev / min		kg/h	l/h	g/kWh	kWh/l
3.1.1	**MAXIMUM POWER - TWO-HOUR TEST**					
117,4	2000	910	28,80	34,58	245,3	3,40
3.1.2	**POWER AT RATED ENGINE SPEED**					
112,1	2300	1047	30,47	36,58	271,8	3,06
3.1.3	**STANDARD POWER TAKE-OFF SPEED**					
115,1	2200	1001	30,07	36,10	261,2	3,19
3.1.4	**PART LOADS**					
3.1.4.1	**the torque corresponding to maximum power at rated engine speed**					
112,1	2300	1047	30,47	36,58	271,8	3,06
3.1.4.2	**85 % of torque obtained in 3.1.4.1**					
98,0	2367	1077	27,86	33,46	284,2	2,93
3.1.4.3	**75 % of torque defined in 3.1.4.2**					
74,8	2406	1095	23,44	28,15	313,4	2,66
3.1.4.4	**50 % of torque defined in 3.1.4.2**					
50,5	2441	1111	19,02	22,84	376,4	2,21
3.1.4.5	**25 % of torque defined in 3.1.4.2**					
25,6	2472	1125	14,39	17,28	561,1	1,48
3.1.4.6	**unloaded**					
-	2498	1137	9,05	10,87	-	-
3.1.5	**PART LOADS AT STANDARD POWER TAKE-OFF SPEED**					
3.1.5.1	**the torque corresponding to maximum power**					
115,1	2200	1001	30,07	36,10	261,2	3,19
3.1.5.2	**85 % of torque obtained in 3.1.5.1**					
99,3	2230	1015	26,70	32,06	269,0	3,10
3.1.5.3	**75 % of torque defined in 3.1.5.2**					
76,0	2274	1035	22,24	26,70	292,8	2,85
3.1.5.4	**50 % of torque defined in 3.1.5.2**					
51,5	2314	1053	17,91	21,50	347,8	2,40
3.1.5.5	**25 % of torque defined in 3.1.5.2**					
26,1	2345	1067	13,23	15,89	506,0	1,64
3.1.5.6	**unloaded**					
-	2364	1076	7,91	9,50	-	-

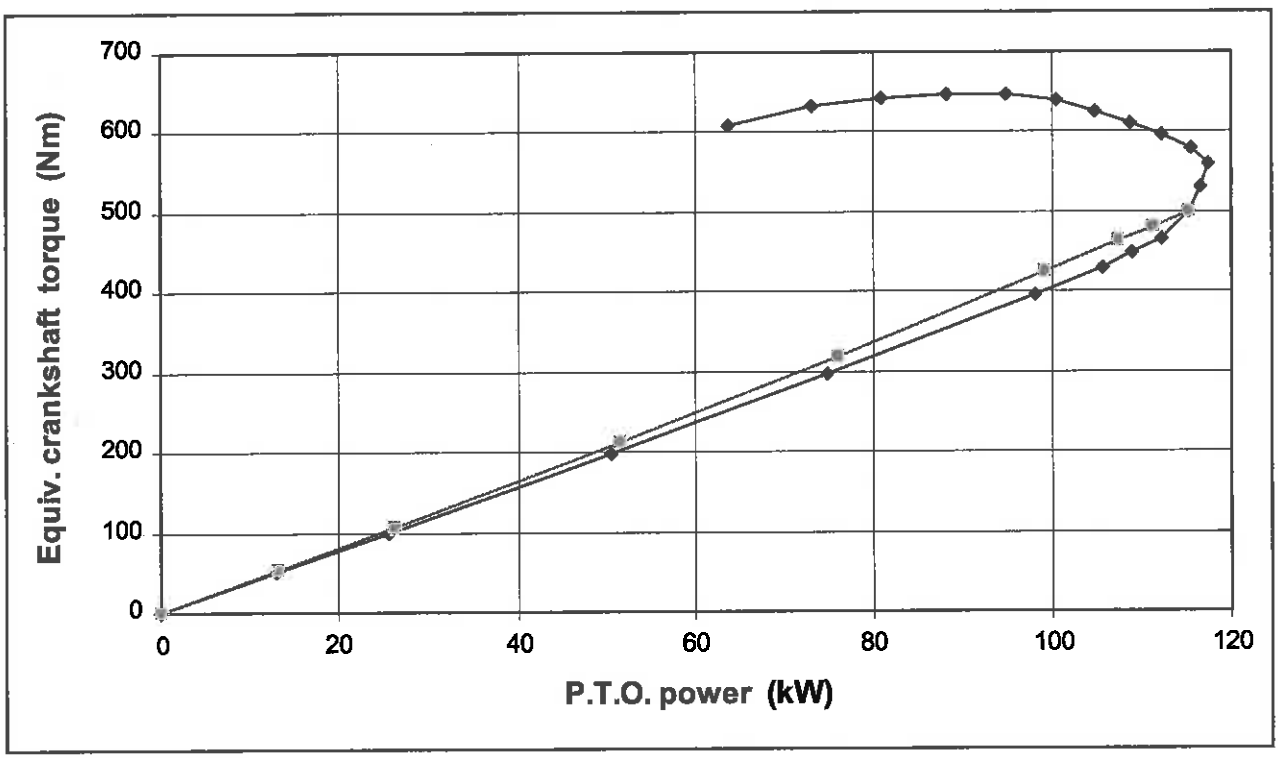

P.T.O. power (kW)
120
100
80
60
40
20
0
1000
1200
1400
1600
1800
2000
2200
2400
2600
Engine speed (rev/min)
Standard P.T.O. speed 1000 rev/min

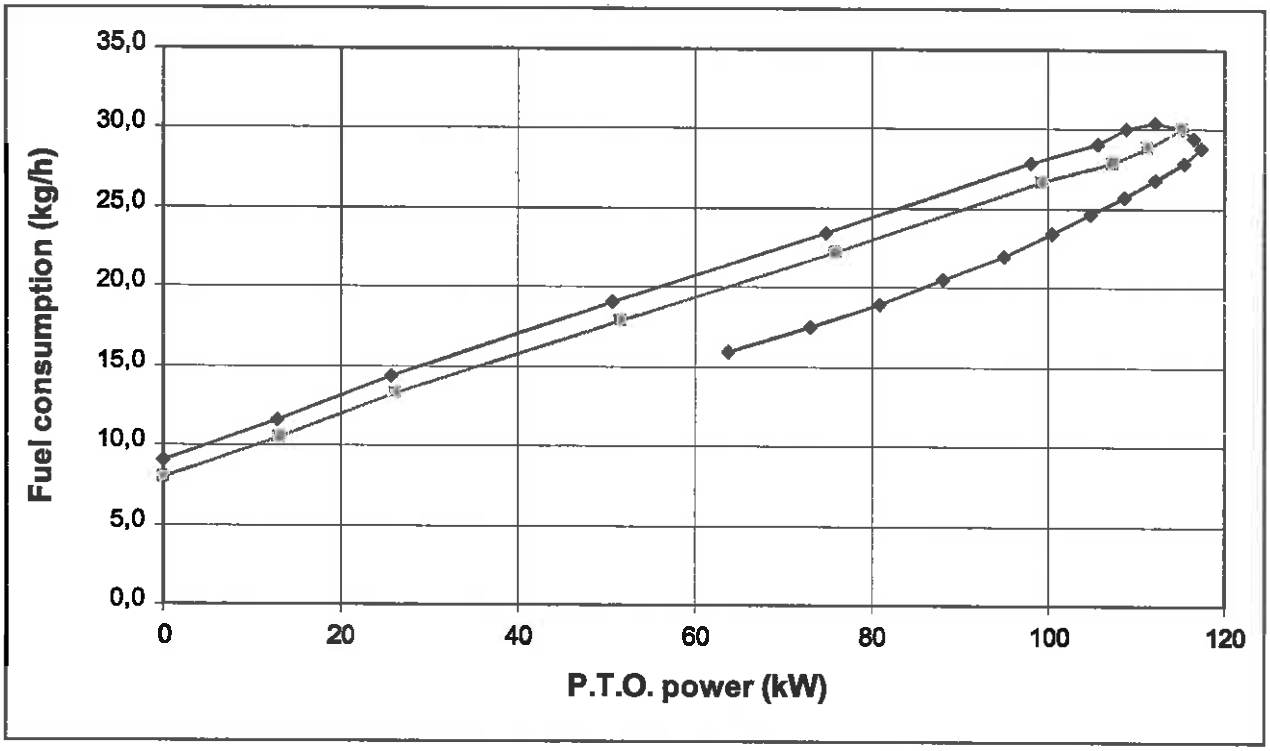

Equiv. crankshaft torque (Nm)
700
600
500
400
300
200
100
0
1000
1200
1400
1600
1800
2000
2200
2400
2600
Engine speed (rev/min)
Standard P.T.O. speed 1000 rev/min

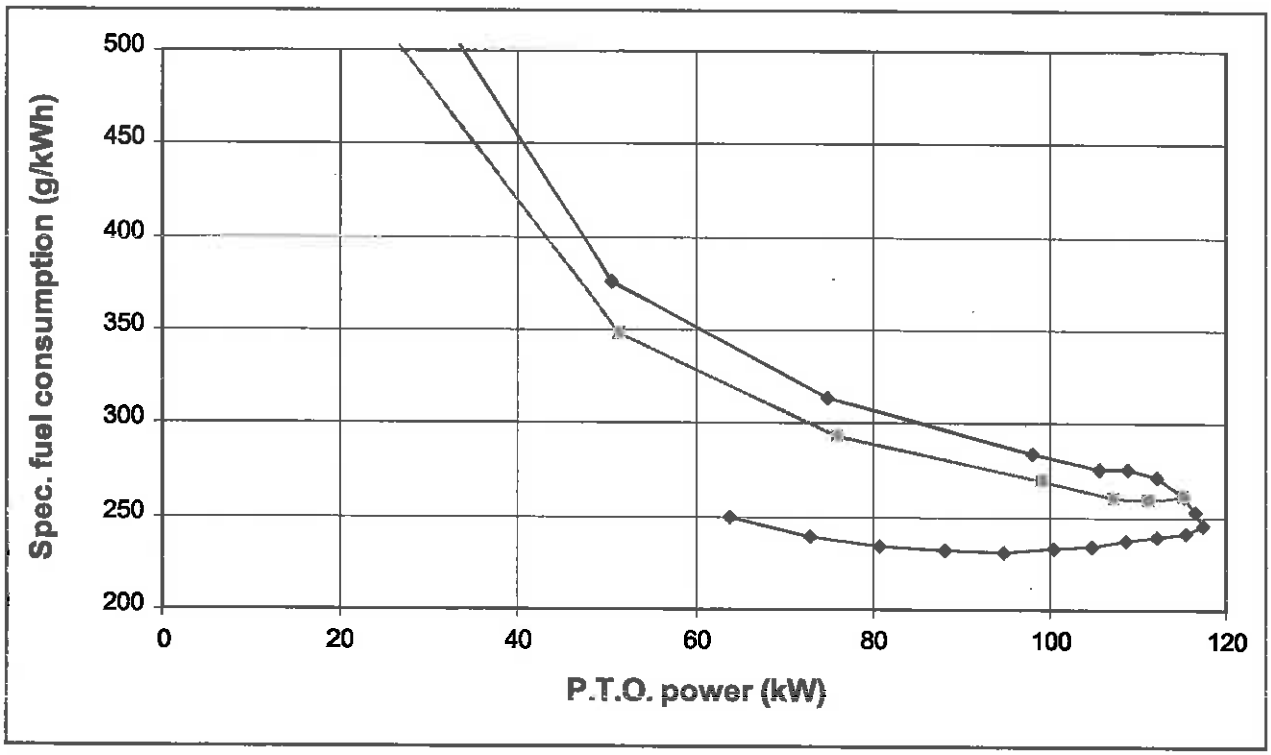

Fuel consumption (kg/h)
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
1000
1200
1400
1600
1800
2000
2200
2400
2600
Engine speed (rev/min)
Standard P.T.O. speed 1000 rev/min


Spec. fuel consumption (g/kWh)
500
450
400
350
300
250
200
1000
1200
1400
1600
1800
2000
2200
2400
2600
Engine speed (rev/min)
Standard P.T.O. speed 1000 rev/min


Engine speed (rev/min)
2600
2400
2200
2000
1800
1600
1400
1200
1000
Standard P.T.O. speed 1000 rev/min
0
20
40
60
80
100
120
P.T.O. power (kW)


Equiv. crankshaft torque (Nm)
700
600
500
400
300
200
100
0
0
20
40
60
80
100
120
P.T.O. power (kW)


Fuel consumption (kg/h)
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
0
20
40
60
80
100
120
P.T.O. power (kW)


Spec. fuel consumption (g/kWh)
500
450
400
350
300
250
200
0
20
40
60
80
100
120
P.T.O. power (kW)

- No load maximum engine speed: 2498 rev/min
- Torque (equivalent crankshaft) at maximum power:
  - At rated engine speed: 465,4 Nm
  - At 2-hour test 560,6 Nm
- Maximum torque (equivalent crankshaft): 647,5 Nm
  at 1300-1400 rev/min engine speed

Mean atmospheric conditions:	
Temperature	17°C
Pressure	99,3 kPa
Relative humidity	60 %
Maximum temperatures:	
Coolant	89°C
Engine oil	119°C
Fuel	56°C
Engine air intake	30°C

3.2. Hydraulic power and lifting force

- Date of tests: 27-06-2002

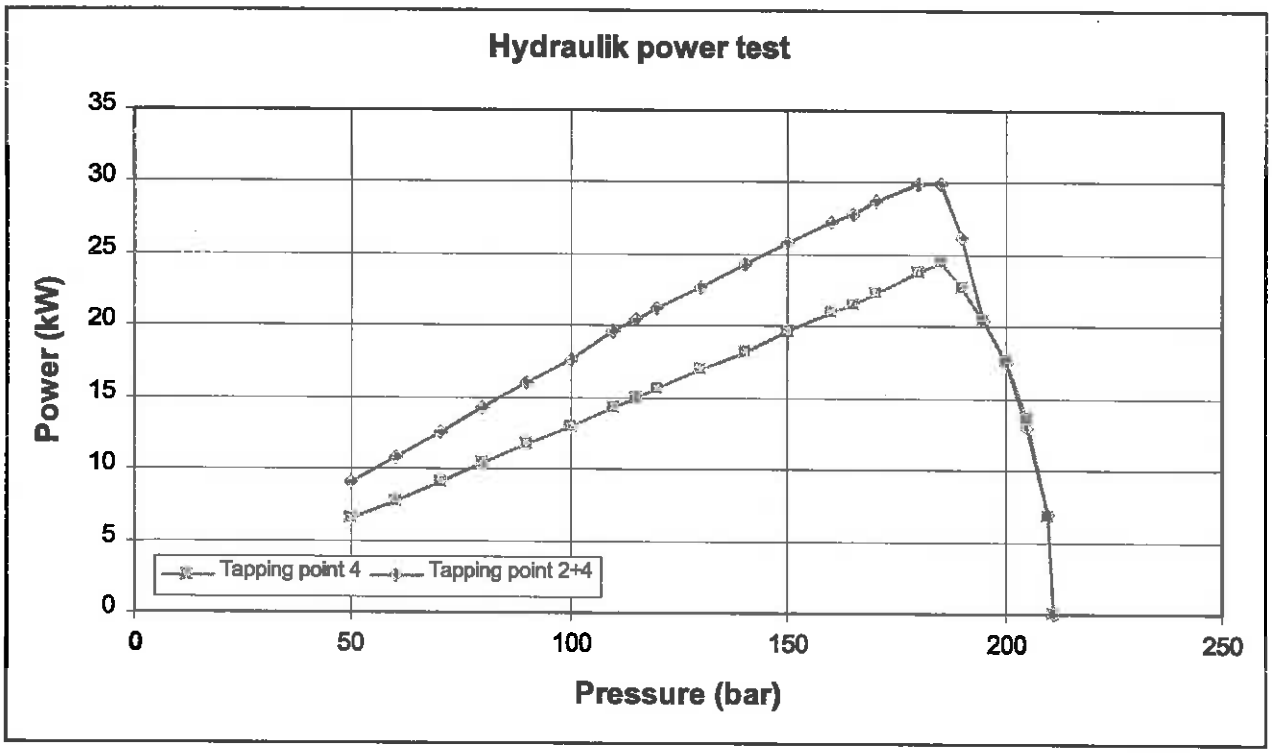
3.2.1 Hydraulic power test

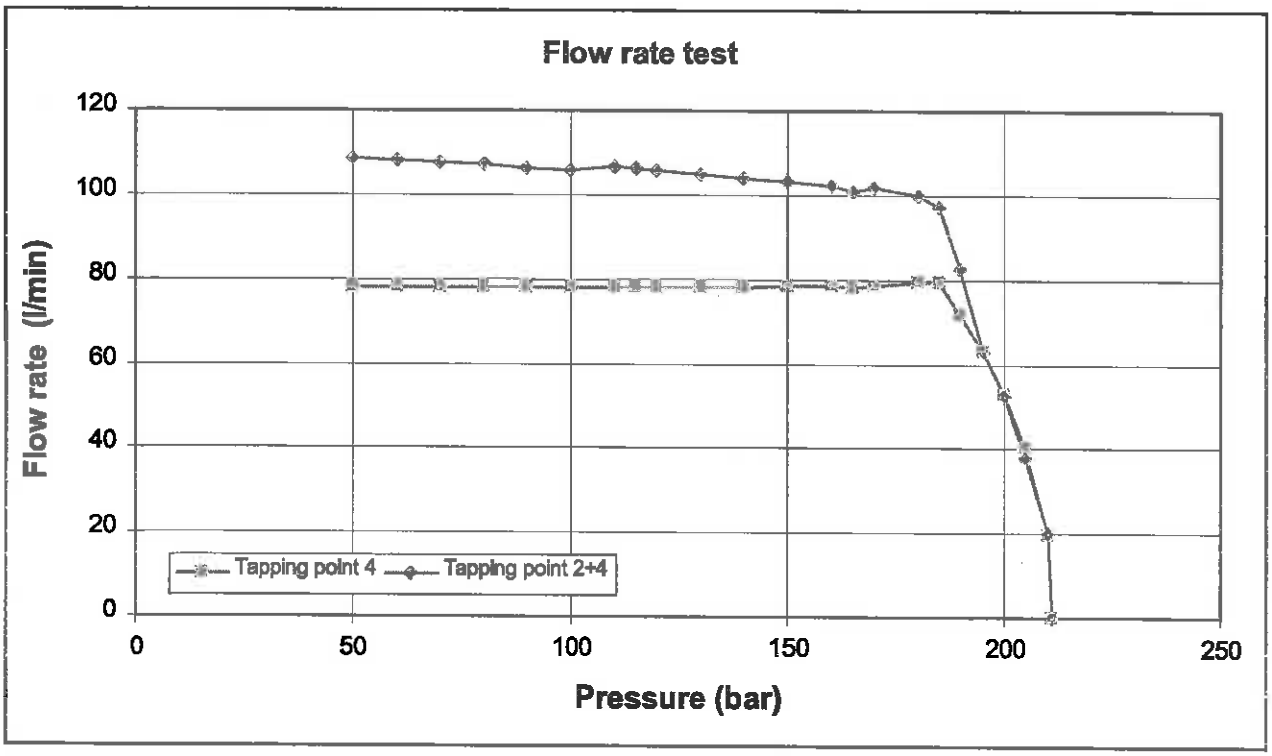
- Sustained pressure with relief valve open: 21,1 MPa
- Pump stalled: No
- Pump delivery rate at minimum pressure 109,5 l/min (Tapping point 2+4)
  78,0 l/min (Tapping point 4)

	Flow rate	Pressure	Power
	l/min	MPa	kW
Flow rate corresponding to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting and corresponding hydraulic power	82,6*) 71,7**)	19,0*) 19,0**)	26,2*) 22,7**)
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	97,2*) 79,2**)	19,0*) 19,0**)	30,0*) 24,4**)

*) Tapping point 2+4 **) Tapping point 4

- Tapping point used for test: At rear of tractor
- Temperature of hydraulic fluid, if different from 65 ± 5°C: 60°C
- Opening pressure of the unloading valve: -- MPa
- Closing pressure of the unloading valve: – MPa


Hydraulik power test
Power (kW)
35
30
25
20
15
10
5
0
0
50
100
150
200
250
Pressure (bar)
Tapping point 4
Tapping point 2+4

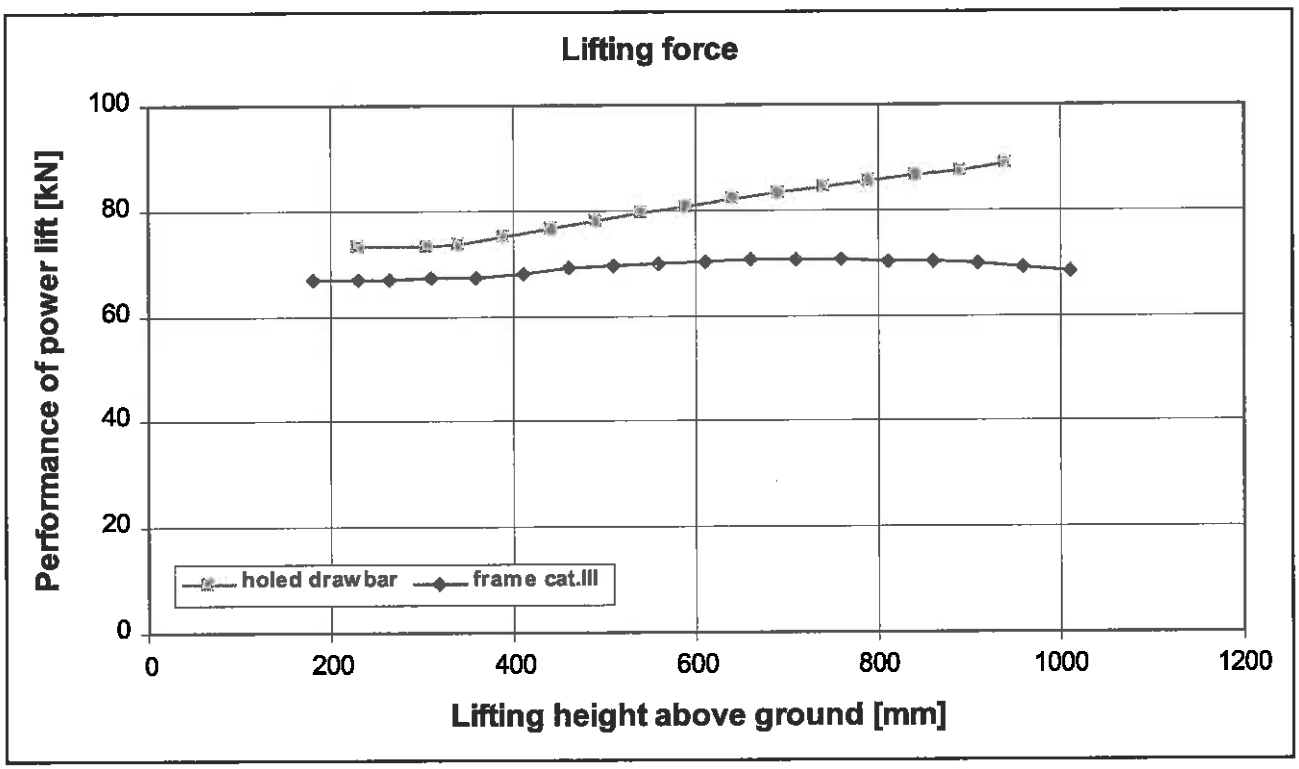

Flow rate test
Flow rate (l/min)
120
100
80
60
40
20
0
0
50
100
150
200
250
Pressure (bar)
Tapping point 4
Tapping point 2+4

3.2.2 Power lift test

- Linkage settings for test - see Table 1.1 and Figures 1.1 and 1.2.

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	230 mm	230 mm
Vertical movement	710 mm	830 mm
Maximum corrected force exerted through full range	73,1 kN	67,1 kN
Corresponding pressure of hydraulic fluid	19,0 MPa	19,0 MPa
Moment about rear-wheel axis	87,0 kNm	120,8 kNm
Maximum tilt angle of mast from vertical	–	11 °

Lifting heights relative to the horizontal plane including the lower link pivot points									
mm	- 495	- 445	- 300	- 200	- 100	0	+ 100	+ 265	+ 335
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting of the hydraulic lift system):									
at the hitch points in kN:	--	73,1	74,8	77,8	80,4	83,0	85,1	88,9	--
Corresponding pressure: 19,0 MPa									
at the frame in kN :	67,1	67,1	67,4	69,4	70,0	66,9	70,5	69,4	68,5
Corresponding pressure: 19,0 MPa									



3.3. Drawbar power test (ballasted and unballasted tractor)

- Date of tests: 5-11-2001, 27-11-2001, 30-1-2002, 12-2-2002
- Type of track: Concrete

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
	mm	kPa	kPa
Unballasted	585	120	100
Ballasted	585	120	100

Gear number and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3 3 1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
1,5	26,79	70,04	1,38	2436	15,0	720,2	1,16	46	82	108	13	65	99,6
2,0	35,19	68,12	1,86	2425	15,0	603,2	1,38	47	83	109	13	65	99,6
2,5	45,03	69,18	2,34	2412	15,0	505,3	1,65	47	83	109	13	67	99,6
3,0	53,14	68,68	2,79	2401	15,0	456,0	1,83	48	83	110	12	67	99,6
3,5	62,35	68,39	3,28	2393	15,0	409,0	2,04	47	83	110	12	67	99,6
4,0	69,32	68,65	3,64	2375	15,0	391,2	2,13	55	84	116	12	65	99,6
4,5	75,12	67,40	4,01	2330	15,0	396,0	2,10	55	84	116	11	65	99,6
5,0	82,31	68,56	4,32	2249	15,0	373,4	2,23	54	85	116	10	68	99,6
5,5	85,11	68,69	4,46	2109	15,0	352,1	2,37	52	83	116	10	68	99,6
6,0	87,78	66,53	4,75	2000	11,3	329,3	2,53	53	85	116	10	68	99,6
6,5	92,65	62,32	5,35	2003	8,0	313,5	2,66	52	84	115	11	67	99,6
7,0	94,93	58,22	5,87	1999	7,4	304,8	2,73	52	84	115	11	66	99,6
7,5	95,98	54,29	6,36	1999	5,6	302,9	2,75	51	84	115	11	66	99,6
8,0	97,28	50,98	6,87	2001	5,5	300,9	2,77	50	84	115	13	65	99,6
8,5	99,33	49,42	7,24	1997	6,4	294,7	2,83	49	84	113	12	65	99,6
9,0	100,75	46,81	7,75	2005	6,3	291,0	2,86	49	83	115	14	65	99,6
9,5	103,17	44,89	8,27	2005	6,2	284,4	2,93	49	84	115	12	65	99,6
10,0	104,61	43,31	8,70	1997	5,9	282,7	2,95	48	83	114	17	60	99,6
10,5	105,84	41,48	9,19	2001	5,8	279,7	2,98	47	83	113	15	60	99,6
11,0	107,44	40,05	9,66	1999	4,9	276,2	3,02	45	83	111	14	60	99,6
11,5	105,16	37,28	10,15	2003	4,1	280,3	2,97	47	83	114	12	64	99,6
12,0	103,85	35,59	10,51	1996	4,0	285,9	2,91	47	83	114	12	64	99,6
12,5	102,85	33,62	11,01	2003	3,7	287,1	2,90	47	83	114	11	64	99,6
13,0	102,54	32,19	11,47	2001	3,2	285,3	2,92	48	83	114	10	65	99,6
13,5	101,82	29,15	11,92	1997	2,8	285,5	2,92	48	83	114	11	65	99,6

Gear number and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.3.2	MAXIMUM POWER IN TESTED GEARS (ballasted tractor)												
4,0	89,07	96,09	3,34	2057	12,5	336,9	2,47	55	86	115	15	64	99,0
4,5	88,27	95,71	3,32	2030	12,3	336,5	2,48	60	85	118	16	64	99,0
5,0	87,46	95,43	3,30	2016	12,2	335,3	2,48	50	85	114	15	64	99,0
5,5	91,17	68,95	4,76	1999	5,0	322,2	2,59	54	85	116	15	62	99,0
6,0	95,09	64,89	5,28	2005	4,5	311,7	2,67	53	84	116	18	62	99,0
6,5	96,58	60,75	5,72	2003	3,9	304,5	2,73	54	85	116	18	62	99,0
7,0	98,19	56,79	6,22	2005	3,7	300,6	2,77	53	84	116	15	62	99,0
7,5	97,63	52,99	6,63	2001	3,4	298,9	2,79	52	84	115	16	62	99,0
8,0	100,56	50,77	7,13	2005	3,3	292,7	2,85	51	84	114	16	62	99,0
8,5	101,16	48,40	7,52	1997	3,2	292,2	2,85	51	84	115	13	65	99,0
9,0	102,93	46,36	7,99	1997	3,0	283,1	2,94	50	84	115	13	65	99,0
9,5	103,98	44,11	8,49	1997	2,8	286,6	2,91	49	84	113	13	65	99,0
10,0	104,78	42,37	8,90	1999	2,7	285,4	2,92	48	84	113	12	65	99,0
10,5	105,85	40,82	9,34	1999	2,4	288,2	2,89	44	84	111	9	68	99,0
11,0	104,90	37,85	9,90	2003	2,3	283,9	2,93	47	83	114	11	67	99,0
11,5	103,27	35,97	10,33	2001	2,1	287,0	2,90	48	83	115	12	65	99,0
12,0	102,62	34,19	10,81	1996	2,0	286,8	2,90	48	84	115	12	65	99,0
12,5	102,97	32,90	11,27	2001	1,8	288,4	2,89	446	83	111	14	63	99,0
13,0	100,02	30,87	11,66	2001	1,6	299,1	2,79	48	83	114	14	63	99,0
13,5	99,57	29,55	12,13	1997	1,5	297,5	2,80	47	84	115	13	63	99,0
14,0	97,79	28,10	12,53	1999	1,5	300,1	2,78	49	83	115	13	63	99,0
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												
10,5	93,20	30,48	11,01	2320	2,0	334,2	2,49	57	86	117	16	68	99,0
3.3.3.2	FIVE-HOUR TEST at pull corresponding to 15% wheel slip with additional ballast: None												
4,0	88,19	96,20	3,30	2060	12,7	335,6	2,48	60	88	118	17	60	100,0

Oil consumption during ten hours duration of tests 3.3.3.1 et 3.3.3.: 0 g/h

3.4. Turning area and turning circle

	Without brakes		With brakes	
	Right-hand	Left-hand	Right-hand	Left-hand
	m	m	m	m
Radius of turning area	6,93	6,79	5,84	5,74
Radius of turning circle	6,64	6,50	5,55	5,45

3.5. Location of centre of gravity

Height above ground	936 mm
Distance from the vertical plane containing the axis of the rear-wheels	1046 mm
Distance from the median longitudinal plane of the tractor	12 mm to the right

- Angle of suspension of the tractor: 11°

3.6. Braking

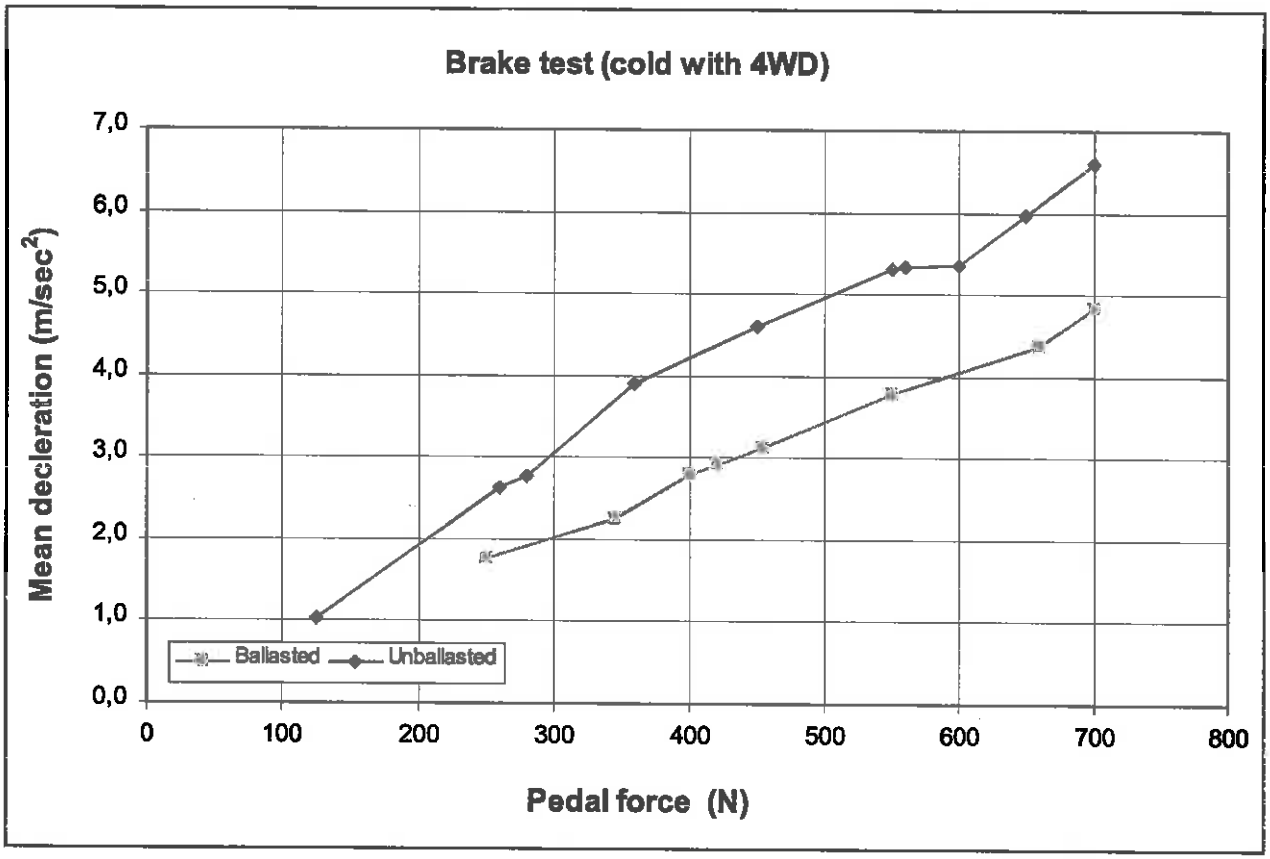
- Date of tests: 28-11-2001, 6-2-2002

3.6.1 Cold service braking device test

	Speed before application of brakes	Braking device control force	Mean deceleration
	km/h	kN	m/s^2
Unballasted tractor	51,9	0,13	1,0
	51,9	0,26	2,6
	51,9	0,28	2,8
	51,9	0,36	3,9
	51,9	0,45	4,6
	51,9	0,55	5,3
	51,9	0,56	5,3
	51,9	0,60	5,4
	51,9	0,65	6,0
	51,9	0,70	6,6

	Speed before application of brakes	Braking device control force	Mean deceleration
	km/h	kN	m/s²
Ballasted tractor	51,9	0,25	1,8
	51,9	0,35	2,3
	51,9	0,40	2,8
	51,9	0,42	2,9
	51,9	0,46	3,1
	51,9	0,55	3,8
	51,9	0,66	4,4
	51,9	0,70	4,8

- Maximum deviation of tractor from its original course: None
- Abnormal vibration: None
- Brake heating method: Not applicable



3.6.2 Fade test

Not possible, because of wet oil immersed disk brake

3.6.3 Parking braking device test

	Uphill	Downhill
Braking device control force	0,17 kN	0,20 kN

3.7. Measurement of external noise

- Date of tests: 28-11-2001
- Sound level meter, make/model/type: Brüel & Kjaer, 3560C with software Pulse 6.0
- Type of track: Concrete
- Gear number: --
- Travelling speed before acceleration: 37,5 km/h
- Sound level: 84,3 dB(A)

4. Optional test results

NONE

5. Repairs

NONE

6. Remarks

NONE

7. Annex

NONE

The head of department:

Hofrat Dipl.-Ing.
Herbert Lampel

Bundesanstalt für Landtechnik, Wieselburg a. d. Erlauf

Test and report carried out by:

Ing.Hermann Schaufler

The director of testing station:

Hofrat Dipl.-Ing. Dr.
Johann Schrottmaier