O.E.C.D. Report No.: 892

nicht die größtmöglichen Reifen
im Test montiert!

Bundesanstalt für Landtechnik

A-3250 Wieselburg, Austria

Dieseltractor LINDNER 1065A



Date of approval 1984 03 12

Date of tests 1983 02 22

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:	Traktorenwerk Lindner GmbH., Kundl, Austria
Submitted for test by:	Manufacturer
Selected by:	Manufacturer by agreement with BLT-Wieselburg
Place of running in:	Kundl, Austria
Duration of running in:	65 hours

SPECIFICATION OF TRACTOR

Tractor:

Make:	LINDNER GmbH.
Model:	Tractor 1065 A
Type:	Wheel tractor, four-wheel driven, unit construction
Serial No.:	10047

Engine:

Make:	Perkins
Model:	Perkins 4.236
Type:	4 stroke diesel engine with direct injection
Serial No.:	LD 22620 U 848 042 J
Cylinders:	4, vertical in line Bore/stroke: 98,4/127 mm Capacity: 3863 cm^3 Compression ratio: 16,1 : 1 Dry liners
Valves:	Overhead valves
Fuel system:	Capacity of fuel tank: appr. 55 l Tank - transperent sediment bowl - - fuel feed pump with hand primer - CAV paper element filter
	CAV distributor injection pump Model: CAV 3248 F 441 RO 4791 TZ PS 61/850/8 2200
	Manufacturers production setting: 54 ± 2 mm^3/stroke at 2300 rev/min and full load Injection timing: pump delivery starts 23° before TDC
	Injectors: CAV Multi hole injector nozzles BDLL 150 S 6382
	Injection pressure: 17,73 MPa (177,3 bar)

Governor:	C.A.V. variable speed governor Mechanically acting, incorporated in injection pump Range of speed: 850 to 2440 rev/min Rated speed: 2300 rev/min
Air cleaner:	MANN & HUMMEL pre-cleaner Cyclonic pre-cleaner with transparent dust container for visual control Typ: 48 030 67 900 Main filter: FIAAM Dry type with dust valve in the filter-housing Filter insert: FLI 6489 Changing and service interval: Main cleaner paper element when electrical indication After 6 times cleaning the paper element is to renew Electrical filter indicator: -0,65 mbar for indication
Exhaust silencer:	EBERSPÄCHER Absorptions-reflexion type, 190 mm right of the engine, mouth upwards, 2500 mm above ground Model: T 16 47 28 102 000 337 00 54 00 23 replacement number
Lubrication:	Forced lubrication with gear pump, strainer in sump, paper filter in full flow Oil capacity: appr. 7,1 l Changing interval of oil and filter: 250 hours Paper filter: full flow replaceable element filter Recommended oil: API CC - CD, MIL-L-46152
Cooling system:	Double circuit water cooling with centrifugal pump, pump and 6 blade fan (dia 430 mm) belt driven Tubular radiator, frostprotection down to -20°C Thermostat control, cooling water thermometer Coolant capacity: appr. 14 l Overpressure: max. 60 kPa (0,60 bar)
Starting system:	Electrically LUCAS solenoid engaged starter model M 50 G 12 V 26414 E 25 82 Cold starting aid: Thermostart 12 V 3 TZ, manifold flame-type cold starting aid, 18 54 102
Electrical system:	Voltage: 12 V, negativ earth Generator: LUCAS, three phase type model: 3 17 ACR 33 81 12 V 23774 D Ⓜ Batterie: lead acid type, 1 with 12 V and 120 Ah capacity at 20 hours rating Regulator: LUCAS 14 TR 37581 D 3281

Transmission:

Clutches:	FICHTEL & SACHS Dual plate dry clutch, model DUT - 280/280, both plates 280 mm dia, independent activated Main clutch: 280 mm dia, pedal operated P.t.o. clutch: 280 mm dia, hand lever operated Front wheel drive clutch: wet multiplate clutch, hand lever operated
Gearbox:	ZF, mechanically acting, model A - 212 4 speed change gear combined with 3 speed reduction gear (HIGH - LOW - REVERSE) Total: 8 forward and 4 reverse speeds
Rear axle and final drive:	ZF, model A - 212 Central axle; pinion and bevel gear, lockable bevel gear differential, acting by planetary gears on rear wheels Differential lock: mechanically acting, food lever operated, preselectable, self disengaging.
Front axle and final drive:	ZF Passau Driving and steering axle, model APL - 1251 19095 Gearbox - wet multiplate clutch - universal joint - propeller shaft - universal joint - pinion and bevel gear - bevel gear differential - half shafts - universal joints - planetary gears in wheel hubs. Optional (on tested tractor): Bevel gear differential with friction differential lock (ZF)
Oil capacity:	Gearbox and rear axle: appr. 20 l SAE 90 API GL 5 or MIL-L-2105 B Rear axle final drives: appr. 2,5 l for each planetary gear SAE 90 API GL 5 or MIL-L-2105 B Front axle differential: appr. 6,69 l SAE 90 API GL 5 or MIL-L-2105 B Front axle final drives: appr. 0,5 l each side SAE 90 API GL 5 or MIL-L-2105 B General changing interval: 1000 hours or one year

Total ratios and speeds:

Gear	Number of engine revolutions for one revolution of driving wheel	Nominal travelling speed for rated engine speed *) km/h
1 L	232,72	2,38
2 L	136,79	4,06
3 L	91,01	6,10
4 L	57,83	9,60
1 S	66,49	8,35
2 S	39,08	14,20
3 S	26,00	21,34
4 S	16,52	33,59
1 R	132,98	4,17
2 R	78,17	7,10
3 R	52,01	10,67
4 R	33,05	16,79

*) Calculated with index radius of 640 mm and test tyre equipment 14,9/13 - 28 AS

Power take off:

At rear of tractor, in median plane, 260 mm behind rear axle, 550 mm above ground (640 mm tyre index radius)

Dimension: ISO R 500, Tye I (35 mm, 6 splines)

Proportional to engine speed (independent) p.t.o.:

Driven by p.t.o. clutch (dry plate type), speed selector, p.t.o. shaft.

Speeds:
540/ 601 rev/min at 2066/2300 rev/min engine speed
1000/1202 rev/min at 1913/2300 rev/min engine speed

Engine speed resp. p.t.o. speed indication by a needle instrument

Direction of rotation: clockwise viewed from driving end

Power take off: (cont.)

Optional (not on tested tractor):
Direction of rotation clockwise and anticlockwise

Optional (not on tested tractor):
V-Belt power transmission from gearbox for mower working, 550 mm about ground, 700 mm before rear axle

Front p.t.o.:

Optional (not on tested tractor)
Propeller shaft - electromagnetic clutch - front p.t.o. shaft
No power restriction
Direction of rotation: anticlockwise viewed from the driving end

Power lift:

STEYR, 58 38 04, open center type
Draught control with two-stage pull adjustment and upper link sensing, position control, floating position
Standard linkage, category I/II, double hole lift arms, in accordance to ISO 730/I
Dimensions of three point linkage: see page 23
BOSCH gear type pump, model 0 510 565 xxx 018
1517 222 xxx 5
559
directly driven by engine
BOSCH control unit 0 521 704 103
245
Oilfilter: PUROLATOR PER-157
Changing interval of filter element: 500 hours
Changing interval of hydraulic oil: 1000 hours
Own oil supply, capacity: 14 l (15 l with oil tappings)
Recommended oil: SAE 20 W, ISO HM, DIN 51525 H-LP 68
Working cylinder: single acting type
bore/stroke: 85/152 mm
Oil tappings: up to 3 oil circuits with BOSCH control units for single or double acting cylinders; working pressure: 17,1 MPa (171 bar)
Capacity of tappings: 6 l

Holed drawbar:

Fitted in the clevis of the lower links of the three point linkage, category I or II

Dimensions		Category I
Length	mm	815
Width	mm	80
Thickness	mm	30
Number of holes (with central hole)		7
Hole diameter	mm	32
Distance between holes	mm	80

Holed drawbar (cont.):

Height above ground *)	Min.lift rod length (600 mm)	Max.lift rod length (705 mm)	Vertical movement
Max.mech.advantage Liftarm 200 mm	from 353 to 820 mm	from 90 to 610 mm	467/520 mm
Min.mech.advantage Liftarm 240 mm	from 250 to 810 mm	from -10 to 595 mm	560/605 mm

*) Calculated with tyre index radius of 640 mm

Method of changing: by power lift, lift rod length and changing the lift rod-lift arm coupling point
Distance to rear axle: 940 mm (lower links horizontally)
Distance relative to p.t.o.: 680 mm

Pull attachement:

Trailer hitch:

Own make
Fork type
Height above ground: 395 mm
Distance from rear axle: 405 mm
Position relative to p.t.o.: rearwards 145 mm

Height above ground: 695/735/775 mm
Distance from rear axle: 395 mm
Position relative to p.t.o.: rearwards 135 mm
Diameter of coupling pin: 30 mm
Max. vertical load (max.technical load): 15 kN

Towing hitch:

Fork type without ballast
Height above ground: 580 mm
Distance from front axle: forwards 470 mm
Diameter of coupling pin: 30 mm

Fork type with ballast
Height above ground: 510 mm
Distance from front axle: forwards 620 mm
Diameter of coupling pin: 30 mm

Steering:

ZF-SCHWÄBISCH GMÜND
Operated by steering wheel acting on front wheels
Hydrostatic steering, model 8490
Own oil circuit, gear pump directly driven by engine
Capacity of oil case: 1,75 l
Control interval of oil level: 250 hours
Changing interval of filter in the oil case: 1000 h
Changing interval of oil: 2000 hours
Recommended oil: Automatic Transmission Fluid (ATF Dexron II or ATF M 2 C 33 E/F)
BOSCH gear pump 1 517 222 377
Pump delivery rate at rated engine speed (2300 rev/min): 22 l/min
Working pressure: 10,0 MPa (100 bar)

Steering (cont.):

Steering cylinder: one double acting cylinder, acting on a separate steering lever on the right side
Diameter of cylinder: 45/22 mm
Stroke of cylinder: 202 mm
Number of revolutions of steering wheel for the whole steering lock: 4,2

Brakes:

Service brake:

ZF
Hydraulically activated inner brakes (Simplex drum brakes), pedal operated
Brakes acting on the differential shafts
drums: 203 mm dia, 60 mm width

Parking brake:

Mechanically activated separate inner brakes (Simplex drum brakes), separate force transmission, operated by hand lever with ratchet
drums: 200 mm dia, 30 mm width

Steering assistance brake:

Acting on service brake by a distributor-valve
Valve preselectable and switchable by a hand lever, automatically resetting

Optional (on tested tractor):
Brake for front axle
Hydraulically activated dry disc brake, acting on the front axle propeller shaft
By activating the steering brake front axle disc-brake is deconnected
Diameter of disc: 240 mm
Acting dia of disc: 200 mm

Trailer braking system:

Optional, not on tested tractor

Wheels:

Front wheels:

2 pneumatics, steering and driving function, diagonal carcass
10,5 - 18 MPT, PR 6, AS Farmer; rim: 9 x 18
Maximum permissible load on each tyre:
14715 N (1500 kp) at 3,0 bar inflation pressure
16920 N (1725 kp) at the same inflation pressure but with speed limit of 10 km/h for front implement working

Recommended tyre inflation pressure:
ballasted: 1,0 bar
unballasted: 1,0 bar

Track width: 1510 mm for all versions

Optional front wheel equipment:
10,5 - 20 AS

Rear wheels: 2 pneumatics, driving function, diagonal carcass 14,9/13 - 28 AS, PR 6; rim: W 12 x 28
Maximum permissible load on each tyre: 15795 N (1610 kp) at 1,4 bar inflation pressure

Track width: 1425 mm

Optional rear wheel equipment: 14,9/13 - 30

Wheel base: 2050 mm

Lighting: Unrestricted beam angle of head light in plan view: 92 mrad (5,27°)

	*) Height above ground of centre mm	Dimension Width/Height mm	**) Distance from outside edge of tractor to centre mm
Head lights	820	115 x 115	745
Side lights	1415	55 x 55	425
Rear lights	1375	55 x 60	210
Brake lights	1375	55 x 60	210
Direction indicators front	1415	55 x 65	365
Direction indication rear	1375	55 x 60	590
Reflectors	1375	45 x 53	260

*) measured with tyre index radius at rear 640 mm and 400 mm at front
**) with overall width of 1800 mm (measured on the outside edge of the rear tyres)

Number of grease points: 22
Recommended grease NL GI 2
Multi-purpos grease (lithium-base)

Driver seat: Grammer DS 85 H / 90
Tested on tractor according to national regulation Prot.Nr. 059/83
X-lever construction with adjustable tension springs to the drivers weight, acting on a curved guiding mechanism with ball bearing.
Hydraulically damping
Horizontal adjustment range: 150 mm
Vertical adjustment range: 3 steps adjustable

Safety cab:

MAUSER
Model A-1065
Welded and screwed profile steel tube platform-construction with pressed sheet metal roof (6 post frame).
The platform is connected by rubber silent elements on consoles which are screwed on the tractor block (clutch housing and gearbox). For service the whole cabine can turned to the rear (the axis of rotation is the connection line of the two special silent elements in the rear) after the two rubber elements in the front are unfastened.
Closed cabine with damped rubber floor, claddings on the mudguards, damped roof and windscreen, side and rear glasses. Profile steel doors with glass. The windscreen and the rear glass can be opened, the side glasses can be turned out.
Strength tested according to OECD-Code and to national legislation (identical to OECD-Code)
Austrian Prot.Nr. 005/83
OECD-test report Nr. CSD 0605/1

CONDITIONS DURING TEST

Tractormass:

Tractor without driver but with tanks full and safety cab

	Front	Rear	Total
Without ballast	1210 kg	1630 kg	2840 kg
With ballast	1395 kg	1800 kg	3195 kg

Ballastmass:

	Number of weights	Total mass (excluding water)	Water
Front	3 + 1	177 kg	-
Rear	6	178 kg	-
Additional	-	-	-

Track setting and tyre equipment:

1510 mm at front
1425 mm at rear
Front wheel equipment: 10,5 - 18 MPT, PR 6; rim: 9 x 18
Rear wheel equipment: 14,9/13 - 28 AS, PR 6; rim: W 12 x 28

Overall dimensions:

	Length	Width *)		Height **)
		max.	min.	
	mm	mm	mm	mm
With ballast	3720	1800	1800	2275/2580
Without ballast	3705	1800	1800	2275/2580

*) measured on the outside edge of the rear wheels
**) measured on top of: safety cab/exhaust pipe

Minimum ground clearance:
300 mm under front axle differential with front tyre equipment 10,5 - 18 MPT
325 mm under towing hitch mounting console

Fuel and lubricants used in tests:

Fuel:	ELAN Diesel fuel (according to DIN 51601) Specific gravity used for volumetric measurement: 0,839 kg/l at 15°C Viscosity at 20°C: 5 mm^2/s (5 cSt) Cetan no.: 46
Engine oil:	BP VANELLUS M 20 Viscosity at 100°C: 7,9 mm^2/s (7,9 cSt) API-SE-CC, MIL-L-46152
Transmission oil:	BP HYPOGEAR OIL EP 80 Viscosity at 40°C: 94 mm^2/s (94 cSt) Viscosity at 100°C: 10,2 mm^2/s (10,2 cSt) API-GL-5; MIL-L-2105 B bzw. C
Hydraulic oil:	SHELL Tellus 33, SAE 20 W Viscosity at 50°C: 40 mm^2/s (40 cSt)

COMPULSORY TEST

1. Main power take-off performance

Date and location of tests: 1983 02 23, Wieselburg, Austria
Type of dynamometer: SCHENK-eddy-current brake - W 780

Main test on: ISO R 500, Type 1 - 540 rev/min

Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
MAXIMUM POWER					
Maximum power - 2 hours test					
43,51	2300	601	12,44 14,83	286	2,933
Standard p.t.o. speed					
41,90	2066	540	11,50 13,71	274,5	3,056
The speed recommended by the manufacturer for drawbar work					
43,51	2300	601	12,44 14,83	286	2,933
PART LOADS Governor hand lever in position giving maximum power					
(i) 85 % of torque at maximum power					
38,07	2368	619	11,12 13,30	292	2,863
(ii) unloaded					
-	2433	636	3,77 4,50	-	-
(iii) 50 % of the load defined in (i)					
19,37	2407	629	7,24 8,63	374	2,243
(iv) maximum power					
43,51	2300	601	12,44 14,83	286	2,933
(v) 25 % of the load defined in (i)					
9,73	2418	632	5,48 6,53	563	1,490
(vi) 75 % of the load defined in (i)					
28,84	2391	625	9,06 10,79	314	2,672

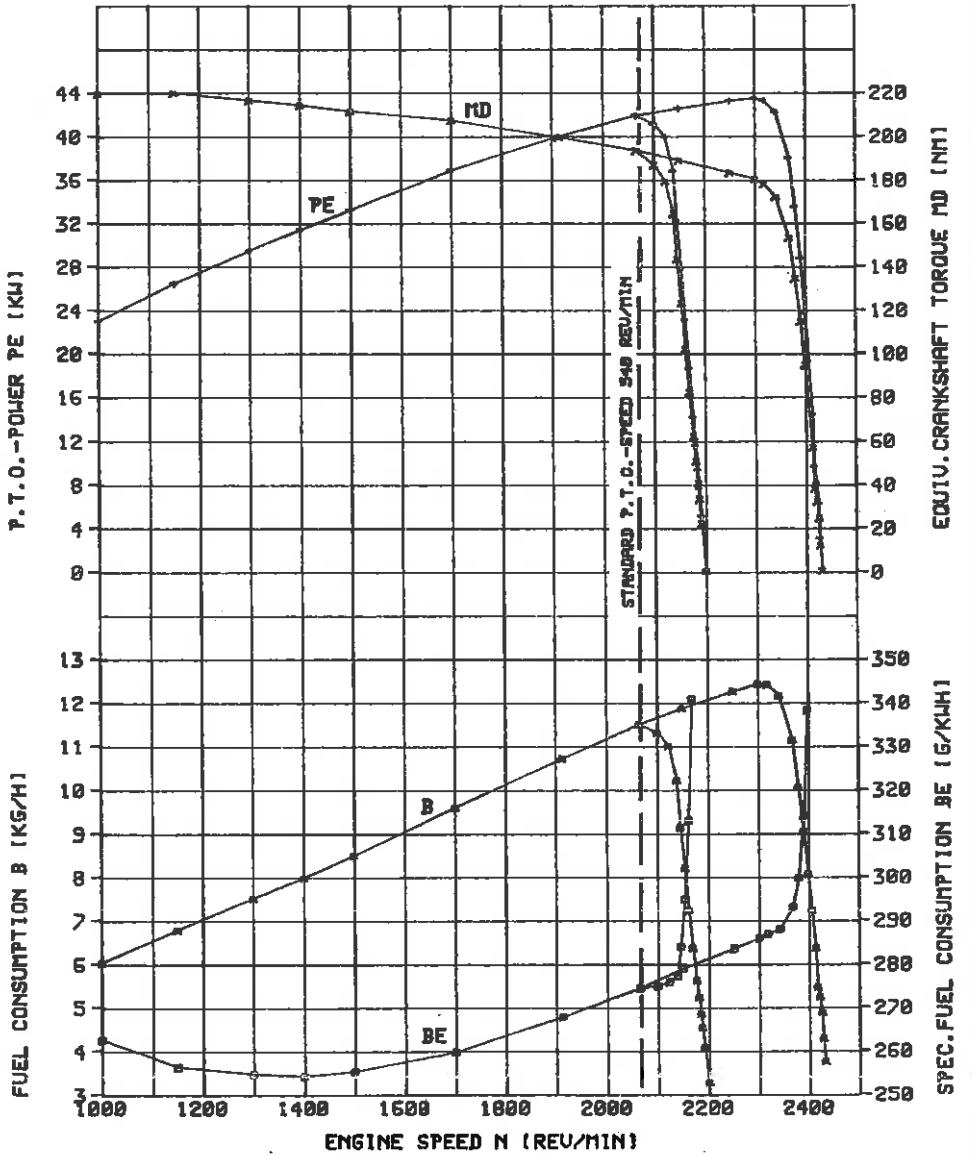
Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
PART LOADS Governor hand lever in position giving standard p.t.o. speed at full load					
(i) 85 % at torque at standard p.t.o. speed					
36,89	2139	559	10,23 12,20	277,5	3,024
(ii) unloaded					
-	2200	575	3,30 3,93	-	-
(iii) 50 % of the load defined in (i)					
18,71	2169	567	6,38 7,60	341	2,461
(iv) maximum power at standard p.t.o. speed					
41,90	2066	540	11,50 13,71	274,5	3,056
(v) 25 % of the load defined in (i)					
9,42	2185	571	4,87 5,80	517	1,623
(vi) 75 % of the load defined in (i)					
27,87	2154	563	8,22 9,80	295	2,844
STANDARD SPECIFIC FUEL CONSUMPTION: 292/374 - 277,5/341 g/kWh					

No load maximum engine speed: 2433 rev/min
Equivalent crankshaft torque
at maximum power: 180,6 Nm
Maximum equivalent crankshaft torque: 220,2 Nm at 1150 rev/min of engine

Mean atmospheric conditions: temperature: 15°C
pressure: 1001 bar
humidity: 54 %

Maximum temperatures: coolant: 77°C
engine oil: 114°C
fuel: 51°C
air intake: 23°C

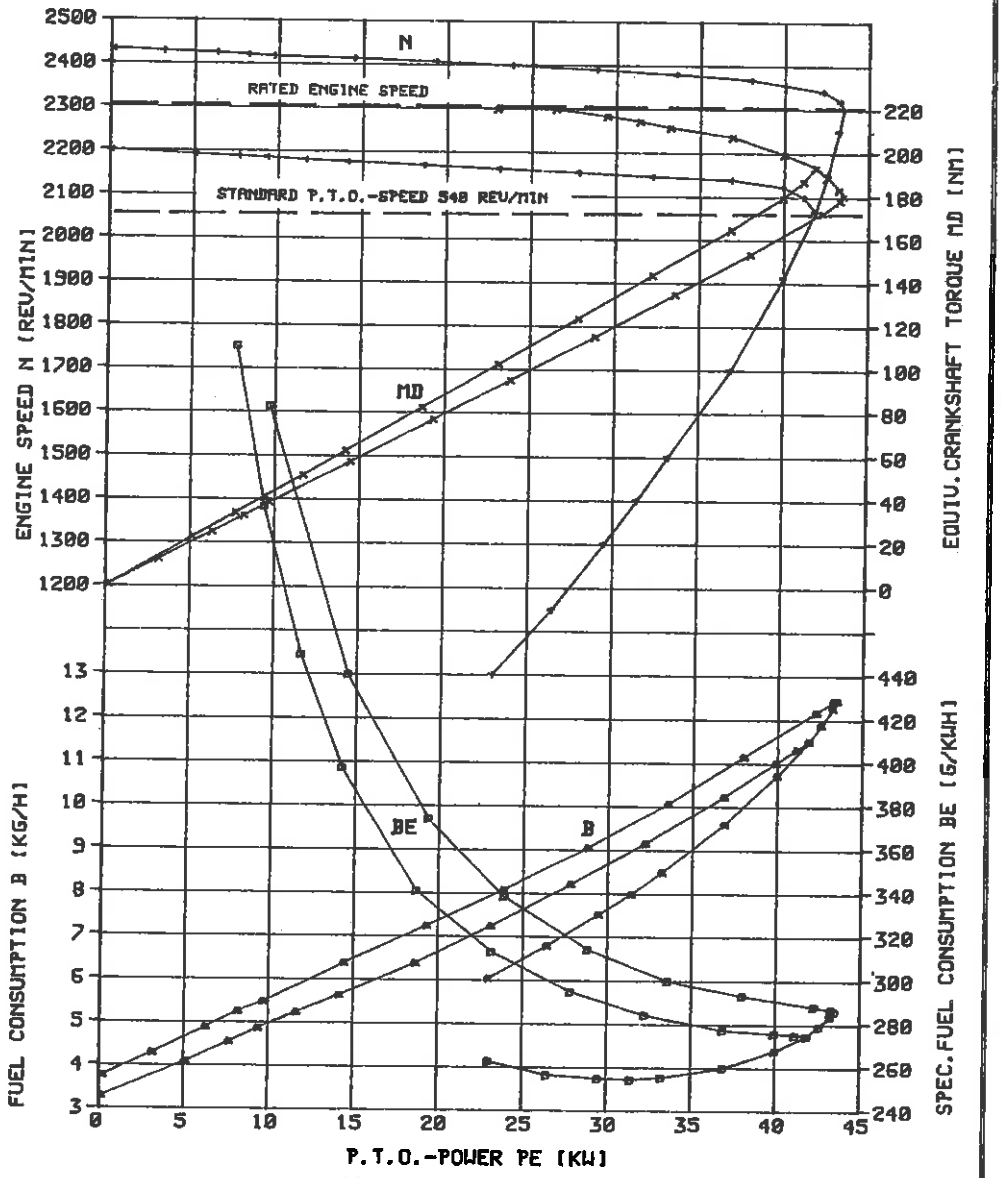
BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 150/83	P.T.O.-TEST	LINDNER TYP 1065 A MOT.TYP PERKINS 4.236



ENGINE SER.NR.: LD22620U848042J	ATM.PRESSURE : 1001 MBAR	FUEL TEMP.: 51 C	SIGNATURE
TRAKTOR SER.NR.: 18047	AIR TEMPER. : 15 C	D.OF TESTS: 1983-02-23	
FUEL : B.033/15 C	COOLANT TEMP.: 77 C	TEST NO. : 138/ZR/1346	
ENGINE OIL : BP VANELLUS M20	OIL TEMP. : 114 C	CURVES NO.: 1	REITHER

DUR.:0100846-DL003:MKU875:MKU20-21

BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 150/83	P.T.O.-TEST	LINDNER TYP 1065 A MOT.TYP PERKINS 4.236



ENGINE SER.NR.: LD22620U848842J	ATM.PRESSURE : 1001 MBAR	FUEL TEMP.: 51 C	SIGNATURE
TRAKTOR SER.NR.: 10047	AIR TEMPER. : 15 C	D.OF TESTS: 1983-02-23	
FUEL : 0.839/15 C	COOLANT TEMP.: 77 C	TEST NO. : 130/2A/134A	
ENGINE OIL : BP VANELLUS M20	OIL TEMP. : 114 C	CURVES NO.: 2	REITHER

DVR.: 0100846-DLB03,MKU875,MKU20-21

2. Drawbar performance:

Date of tests: 1983 03 31, 05 03, 05 16
Type of track: concrete
Height above drawbar above ground: 360 mm ballasted, 390 mm unballasted

Gear No.	Speed	Power	Drawbar pull	Engine speed	Slip of wheels	Specific energy	Specific fuel consumption	Temperatures			Atmosph. conditions		
								Fuel	Coolant	Engine oil	Temperature	rel.humidity	Pressure
	km/h	kW	N	rev/min	%	kWh/l	g/kWh	°C	°C	°C	°C	%	mbar
(i) Maximum power (ballasted) tyre inflation pressure in the front 1,0 bar, in the rear 0,9 bar													
1 L	2,107	18,44	31500	2382	15	1,543	543,5	56	76	113	26	56	981
2 L	3,560	31,15	31503	2366	15	2,305	364	55	75	113	26	56	981
3 L	5,607	37,38	24000	2300	8,4	2,513	334	55	74	112	26	58	981
1 S	7,893	38,00	17330	2300	5,8	2,555	328,5	55	74	112	26	58	981
4 L	9,150	37,71	14835	2300	5	2,536	331	55	74	112	26	58	981
2 S	13,768	35,69	9333	2300	3,4	2,400	349,5	54	73	111	26	58	981
3 S	20,909	31,99	5508	2300	2,4	2,151	390	53	72	110	26	58	981

Gear No.	Speed	Power	Drawbar pull	Engine speed	Slip of wheels	Specific energy	Specific fuel consumption	Temperatures			Atmosph.conditions		
								Fuel	Coolant	Engine oil	Temperature	rel.humidity	Pressure
	km/h	kW	N	rev/min	%	kWh/l	g/kWh	°C	°C	°C	°C	%	mbar
(ii) Five-hour-test at 75 % of pull at maximum power													
1 S	8,244	29,77	13000	2370	4,5	2,270	369,5	52	75	114	26	68	984
(iii) Five-hour-test at pull corresponding to 15 % wheelslip in test (i)													
2 L	3,560	31,15	31500	2366	15	2,309	363,5	60	78	120	27	54	981
(iv) Maximum power (unballasted) tyre inflation pressure 1,0 bar in the front, 0,9 bar in the rear													
1 L	2,105	16,61	28404	2385	15	1,423	589,5	36	75	104	14	72	981
2 L	3,555	28,05	28403	2367	15	2,092	401	37	75	104	14	78	981
3 L	5,522	36,40	23728	2300	9,6	2,448	343	36	74	104	14	74	981
1 S	7,817	37,56	17300	2300	6,5	2,525	332	36	74	103	13	74	981
4 L	9,075	37,41	14841	2300	5,6	2,515	333,5	37	74	103	13	74	981
2 S	13,699	35,99	9459	2300	3,7	2,420	346,5	36	74	103	14	71	981
3 S	20,825	32,97	5700	2300	2,6	2,217	378,5	36	73	102	14	70	981

Total oil consumption during 10 hours duration of test (ii) and (iii): 37,4 g/h

3. Turning space and turning circle

Wheel equipment front: 10,5 - 18 MPT, PR 6
rear: 14,9/13 - 28 AS, PR 6

Track of wheel front: 1510 mm
rear: 1425 mm

Results *)	With brakes		Without brakes	
	right-hand	left-hand	right-hand	left-hand
	m	m	m	m
Radius for turning space	3,86/4,08	3,56/3,98	5,17/4,72	5,03/4,66
Radius of turning circle	3,71/3,92	3,40/3,82	5,01/4,56	4,87/4,50

*) Four-wheel-drive switched: ON/OFF

4. Location of centre of gravity

	mm
Height above ground	855
Distance forward from the vertical plane containing the axis of the rear wheels	854
Distance from the median plane	to left 13

5. Braking

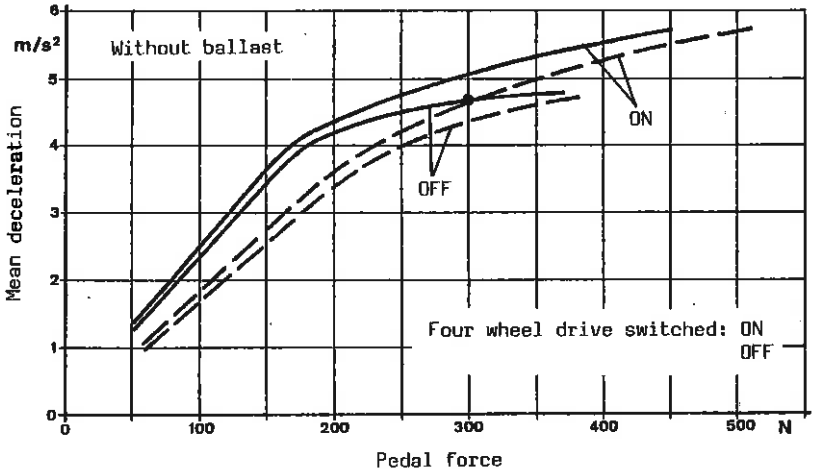
Date of tests: 1983 04 11
Type of track: concrete
Type of decelerometer: Moto-Meter Nr. 03382 (Kombi-Schreiber)

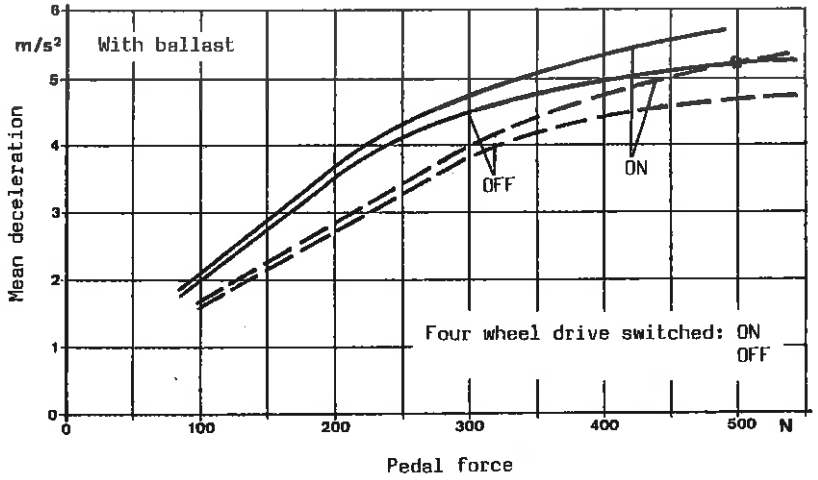
Tractor mass during brake tests (with driver):

	Front kg	Rear kg	Total kg
Ballasted	1402	1868	3270
Unballasted	1215	1700	2915

A) Service brake

Four-wheel-drive switched ON and OFF
Type-0-test (cold brakes) ———— , Type-I(fade)test — — — —





Speed before application of brakes: 32,5 km/h
The tractor brakes were heated by towing of the tractor for 1 km.

B) Parking brake

	Ballasted tractor on 18 %-slope		Unballasted tractor on 12 %-slope with trailer of 2915 kp	
	up	down	up	down
Braking device control force	135 N	125 N	245 N	175 N

6. Measurement of ambient noise level

Date of tests: 1983 05 06
Type of sound level meter: BRÜEL & KJAER 2209 and 2308
Type of track: concrete

Results of tests:
Gear: S 4
Travelling speed before acceleration: 24,3 km/h
Sound level: 83 dB(A)

7. Noise measurement at the driver's ear

Date of tests: 1983 05 06
Type of sound level meter: BRÜEL & KJAER 2209 and 2308
Type of track: concrete
Safety cab with acoustic damping, closed

Results of tests:

Gear	Drawbar pull at which the tractor develops the max. sound level	Measured travelling speed	Sound level
-	N	km/h	dB(A)
L 1	29222	2,0	88
L 2	29666	3,43	88,5
L 3	23664	5,55	90
L 4	14189	9,07	89,5
S 1	16958	7,93	90
S 1 *)	light load 2180	8,65	88,5
S 2	9280	13,77	89,5
S 3	5597	20,74	89,5
S 4	2900 also light load	32,73	89,5

*) The S 1 gear corresponds to the nominal travelling speed nearest to 7,5 km/h

8. Power lift and hydraulic pump performance

Date and location of tests: 1983 06 09, Wieselburg, Austria

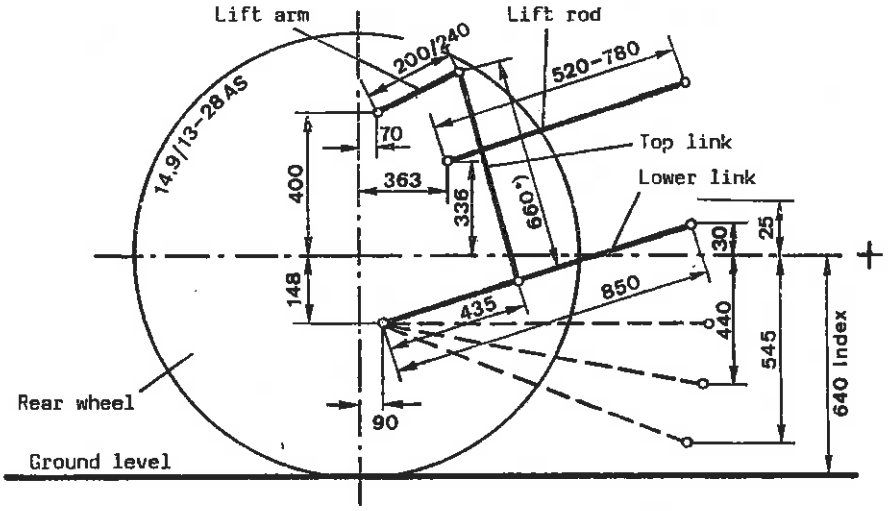
Hydraulic fluid:
Make and type: SHELL Tellus 33, SAE 20 W
Viscosity at 50°C: 40 mm^2/s (40 cSt)
Type of linkage lock for transport: hydraulically by throttle valve
Opening pressure of the cylinder overpressure safety valve (manufacturers specification): 24,5 MPa (245 bar)

Pump characteristics:

(i) Sustained pressure of the relief valve: 17,7 MPa (177 bar)
Opening pressure of the relief valve: 17,1 MPa (171 bar)

(ii) Pump delivery rate at minimum pressure and rated engine speed: 30 l/min

(iii) Pump delivery rate: 28 l/min
Pressure of hydraulic power calculation (90 % of relief valve setting): 15,9 MPa (159 bar)
Hydraulic power: 7,42 kW



*) Left lift rod adjustable from 580 mm to 740 mm by a thread, right lift rod adjustable from 600 mm to 705 mm by a gear and thread.

	*) Height of lower hitch point above ground in down position mm	Vertical movement mm	Max. force exerted through full range kN	Corresponding pressure of hydraulic fluid MPa	Moment about rear axle kNm	Max. lift angle of mast over range of lift degrees
At hitch points	200/95	470/570	21,1/18,0	15,9 (159 bar)	19,8/16,9	
On the frame 520 mm mast height	205/130	485/540	17,5/15,4	15,9 (159 bar)	27,1/23,9	3° from +3° to 0° and to +3°

*) Max./Min. mechanical advantage

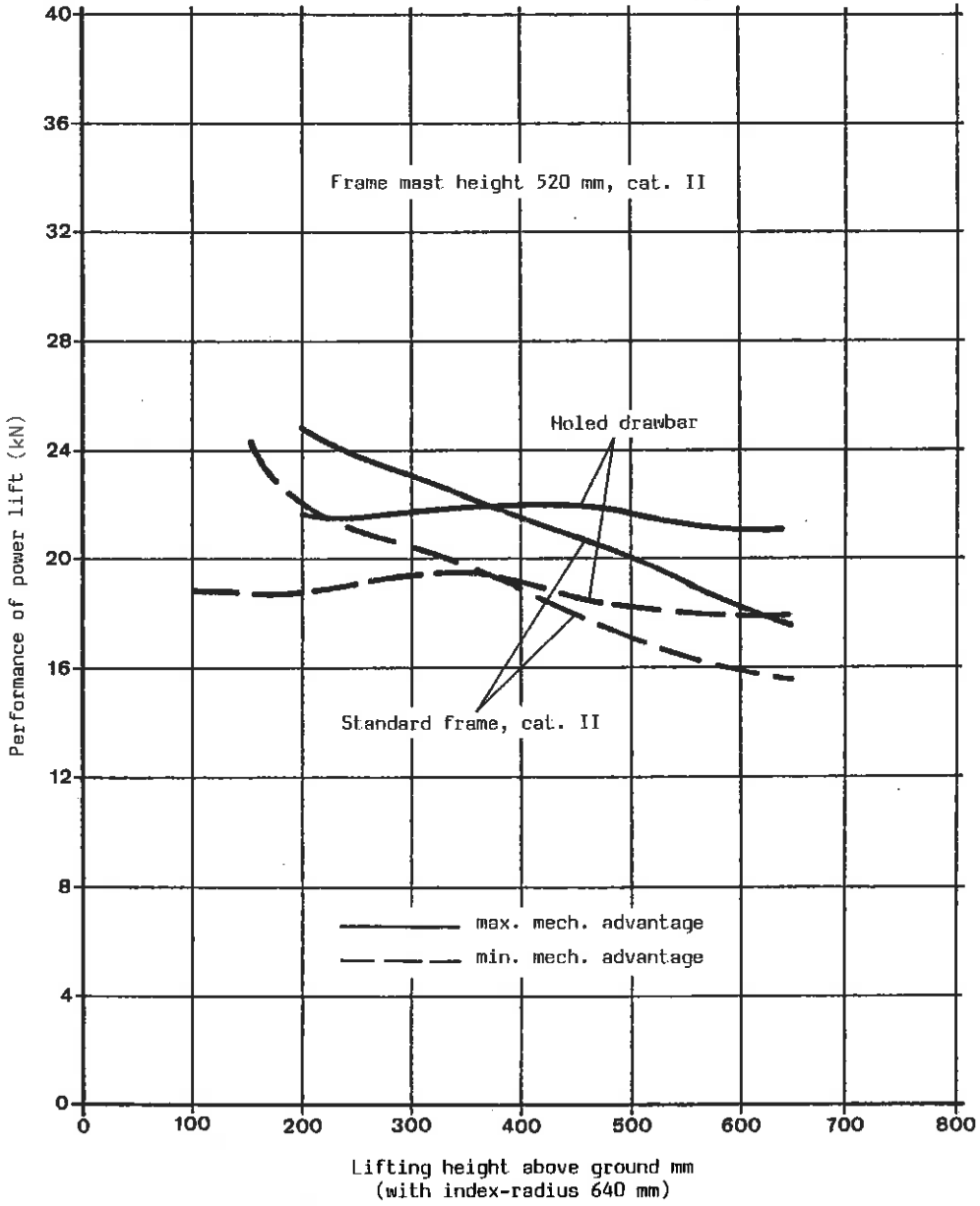
Temperature of hydraulic fluid at start of test: 61°C

Linkage geometry when connected to the standard frame (mast height 520 mm)

Projected length in side view			Maximum mechanical advantage	Minimum mechanical advantage
Lower links		mm	850	850
Lift arms		mm	200	240
Lift rods		mm	660	660
Top link		mm	560	560
Distance of lift rod connection point from pivot point of lower link		mm	435	435
This dimensions are given relative to the rear wheel centre line, 640 mm above the ground level	Lower link pivot point	mm	90 behind 148 below	90 behind 148 below
	Top link pivot point	mm	363 behind 336 above	363 behind 336 above
	Lift arm pivot point	mm	70 behind 400 above	70 behind 400 above
	Maximum and minimum height of lower link hitch points	mm	30 above to 440 below	25 above to 545 below
	Height of lower link hitch points locked in transport position	mm	from 30 above to 440 below	from 25 above to 545 below

Performance of power lift

Lifting heights in relation to a horizontal line through the lower link pivoting point mm		-400	-350	-290	-250	-200	-150	-100	-50	0	+50	+100	+130	+150	+160
Lifting force at the hitch-points kN (Values for the pressure, calculated with 90 % of sustained oil pressure)	max.mech. advantage			21,4	21,3	21,6	21,8	22,0	22,0	21,8	21,4	21,1	21,1	21,1	21,1
	min.mech. advantage	18,9	18,8	18,7	18,9	19,3	19,2	19,0	18,6	18,3	18,2	18,1	18,0	18,0	
	Maximum force exerted through whole range: 21,1 / 18,0 kN (2150 kp/1835 kp)														
	Calculated oil pressure: 15,9 MPa (159 bar)														
Lifting force at the standard frame 520 mm mast height, 610 mm behind lower links hitch-point kN (Values for the pressure, calculated with 90 % of sustained oil pressure)	max.mech. advantage			24,9	23,9	23,2	22,5	21,6	20,9	20,2	19,3	18,4	18,0	17,7	17,5
	min.mech. advantage		24,8	22,0	20,6	19,9	19,0	18,0	17,3	16,6	16,0	15,6	15,4		
	Maximum force exerted through whole range: 17,5 / 15,4 kN (1785 kp/1570 kp)														
	Calculated oil pressure: 15,9 MPa (159 bar)														


Performance of power lift (kN)
40
36
32
28
24
20
16
12
8
4
0
0
100
200
300
400
500
600
700
800
Frame mast height 520 mm, cat. II
Holed drawbar
Standard frame, cat. II
max. mech. advantage
min. mech. advantage
Lifting height above ground mm
(with index-radius 640 mm)

OPTIONAL TESTS

9. Main power take-off performance

Date and location of tests: 1983 02 22, Wieselburg, Austria
Type of dynamometer: SCHENK-eddy-current brake W 780

Main test on: ISO R 500, Typ 2 (DIN 9611) - 1000 rev/min p.t.o.

Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
MAXIMUM POWER					
Maximum power - 2 hours test					
44,71	2300	1202	12,48 14,87	279	3,006
Standard p.t.o. speed					
41,30	1913	1000	10,78 12,85	261	3,213
The speed recommended by the manufacturer for drawbar work					
44,71	2300	1202	12,48 14,87	279	3,006
PART LOADS Governor hand lever in position giving maximum power					
(i) 85 % of torque at maximum power					
39,12	2368	1238	11,17 13,31	285,5	2,938
(ii) unloaded					
-	2433	1272	3,75 4,46	-	-
(iii) 50 % of the load defined in (i)					
19,89	2408	1259	7,27 8,67	366	2,294
(iv) maximum power					
44,71	2300	1202	12,48 14,87	279	3,006
(v) 25 % of the load defined in (i)					
9,99	2418	1264	5,50 6,56	550,5	1,523
(vi) 75 % of the load defined in (i)					
29,62	2391	1250	9,13 10,87	308	2,724

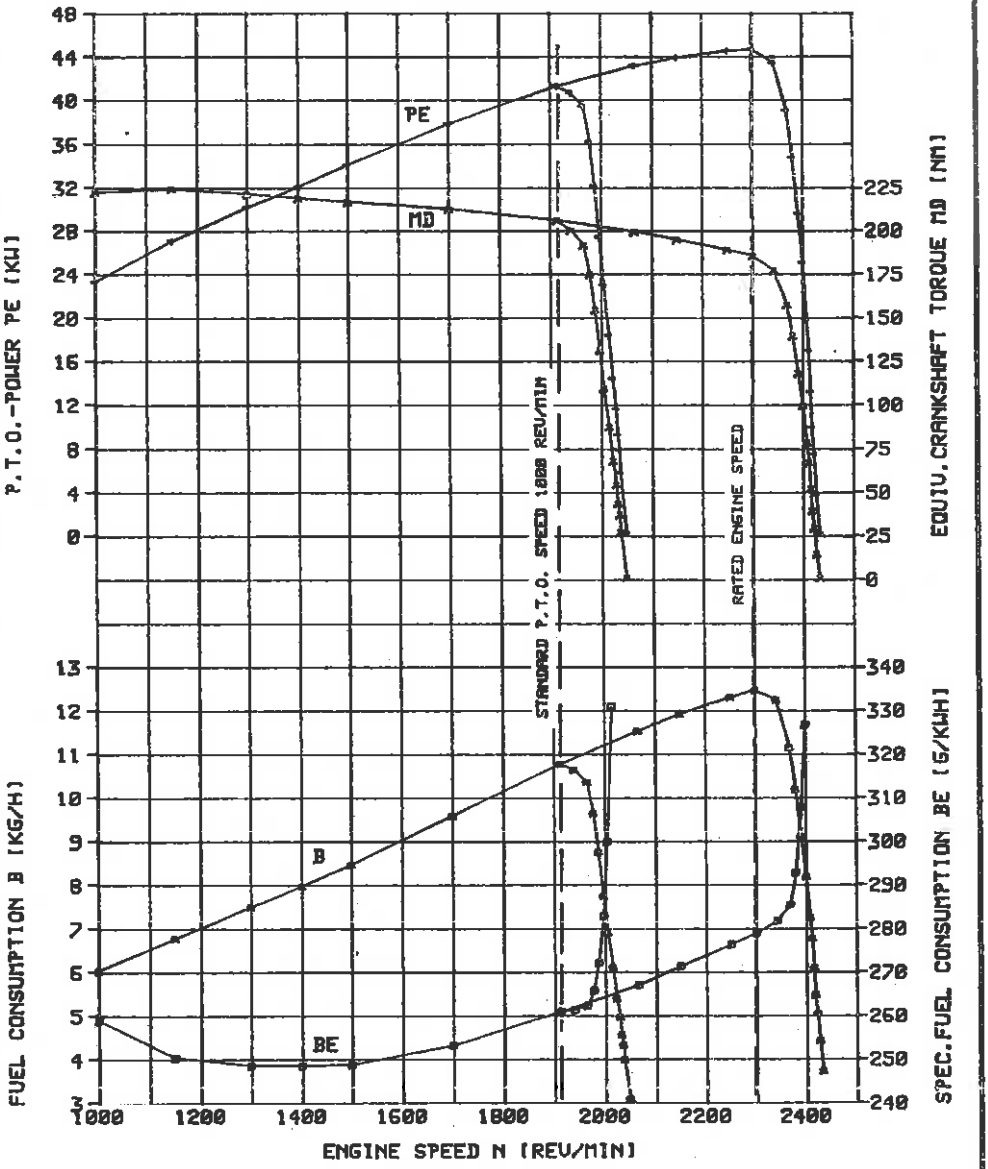
Power	Speed		Fuel consumption		Specific energy
	engine	p.t.o.	hourly	specific	
kW	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
PART LOADS Governor hand lever in position giving standard p.t.o. speed at full load					
(i) 85 % at torque at standard p.t.o. speed					
36,29	1978	1034	9,65 11,50	266	3,155
(ii) unloaded					
-	2049	1071	3,10 3,70	-	-
(iii) 50 % of the load defined in (i)					
18,48	2014	1053	6,12 7,29	331	2,535
(iv) maximum power at standard p.t.o. speed					
41,30	1913	1000	10,78 12,85	261	3,213
(v) 25 % of the load defined in (i)					
9,34	2032	1062	4,59 5,47	491	1,709
(vi) 75 % of the load defined in (i)					
27,47	1997	1044	7,77 9,26	283	2,965
STANDARD SPECIFIC FUEL CONSUMPTION: 285,5/366 - 266/331 g/kWh					

No load maximum engine speed: 2433 rev/min
Equivalent crankshaft torque
at maximum power: 185,6 Nm
Maximum equivalent crankshaft torque: 224,6 Nm at 1150 rev/min of engine

Mean atmospheric conditions: temperature: 15°C
pressure: 1001 mbar
humidity: 56 %

Maximum temperatures: coolant: 78°C
engine oil: 114°C
fuel: 52°C
air intake: 23°C

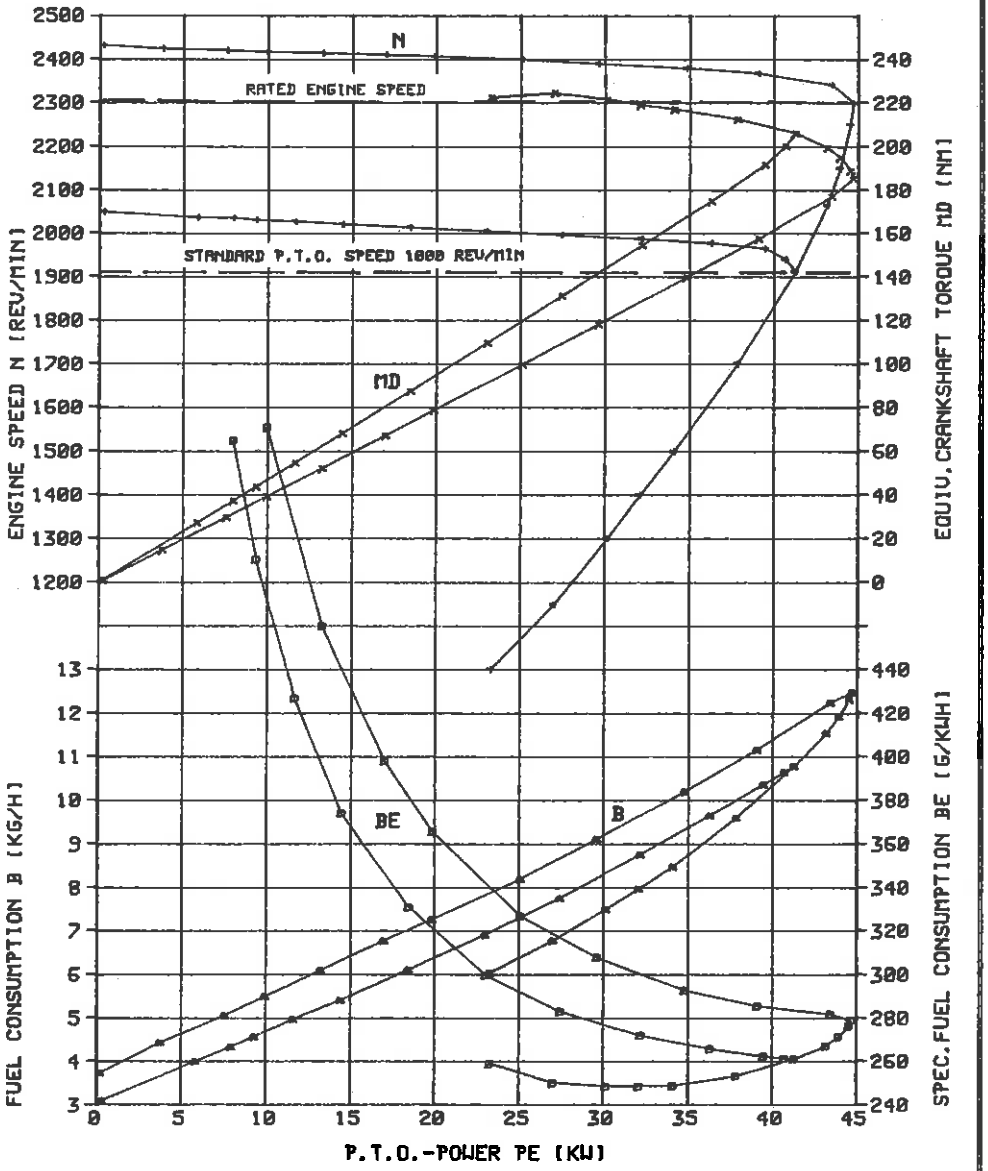
BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 150/83	P.T.O.-TEST	LINDNER TYP 1065 A MOT.TYP PERKINS 4.236



ENGINE SER.NR.: LD22628U848042J	ATM.PRESSURE : 1001 MBAR	FUEL TEMP.: 52 C	SIGNATURE
TRAKTOR SER.NR.: 18847	AIR TEMPER. : 15 C	D.OF TESTS: 1983-02-23	
FUEL : 6.839/15 C	COOLANT TEMP.: 78 C	TEST NO. : 138/2A/134A	
ENGINE OIL : BP VANELLUS M20	OIL TEMP. : 114 C	CURVES NO.: 3	REITHER

DUR.:0100846-DL883;MKU075.DAT;MKU28-22

BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 150/83	P.T.O.-TEST	LINDNER TYP 1065 A MOT.TYP PERKINS 4.236



ENGINE SER.NR.: LD22628U848042J	ATM.PRESSURE : 1001 MBAR	FUEL TEMP.: 52 C	SIGNATURE
TRAKTOR SER.NR.: 18847	AIR TEMPER. : 15 C	D.OF TESTS: 1983-02-23	
FUEL : 0,839/15 C	COOLANT TEMP.: 78 C	TEST NO. : 138/2A/134A	
ENGINE OIL : BP VANELLUS M20	OIL TEMP. : 114 C	CURVES NO.: 4	REITHER

DVR.:0100846-DL083;TKU075;TKU20-22

10. Engine performance

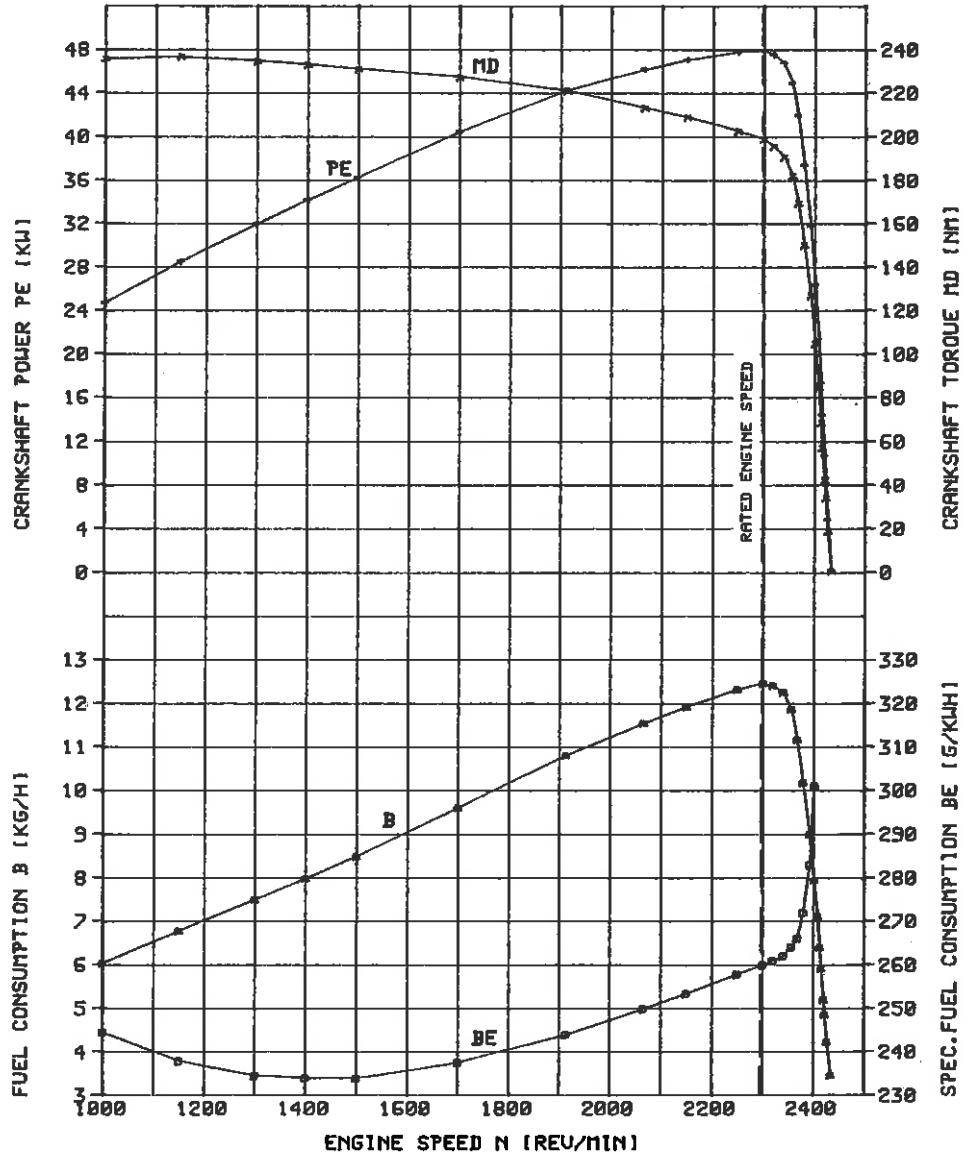
Date and location of test: 1983 02 15, Wieselburg, Austria
Type of dynamometer: SCHENK-eddy-current brake Typ W 150

Power	Engine speed	Fuel consumption		Specific energy
		total	specific	
kW	rev/min	kg/h l/h	g/kWh	kWh/l
Maximum power - 2 hours test				
47,95	2300	12,47 14,86	260	3,226
Standard p.t.o. speed				
46,17	2066	11,54 13,76	250	3,355
44,28	1913	10,80 12,88	244	3,439
The speed recommended by the manufacturer for drawbar work				
47,81	2250	12,33 14,70	258	3,252
Part loads				
(i) 85 % of torque at maximum power				
42,03	2368	11,19 13,33	266	3,152
(ii) unloaded				
-	2435	3,47 4,14	-	-
(iii) 50 % of the load defined in (i)				
21,44	2409	7,12 8,49	332	2,525
(iv) maximum power				
47,95	2300	12,47 14,86	260	3,226
(v) 25 % of the load defined in (i)				
10,77	2421	5,21 6,20	483,5	1,736
(vi) 75 % of the load defined in (i)				
31,83	2393	9,01 10,73	283	2,965

Optimum fuel consumption: 231 g/kWh at 27,3 kW and 1300 rev/min
No load maximum engine speed: 2435 rev/min
Torque at maximum power: 199,1 Nm
Maximum torque: 236,8 Nm at 1150 rev/min of engine

Mean atmospheric conditions:	temperature:	15°C
	pressure:	993 mbar
	relative humidity:	54 %
Maximum temperatures:	coolant:	76°C
	engine oil:	109°C
	fuel:	45°C
	engine air intake:	23°C

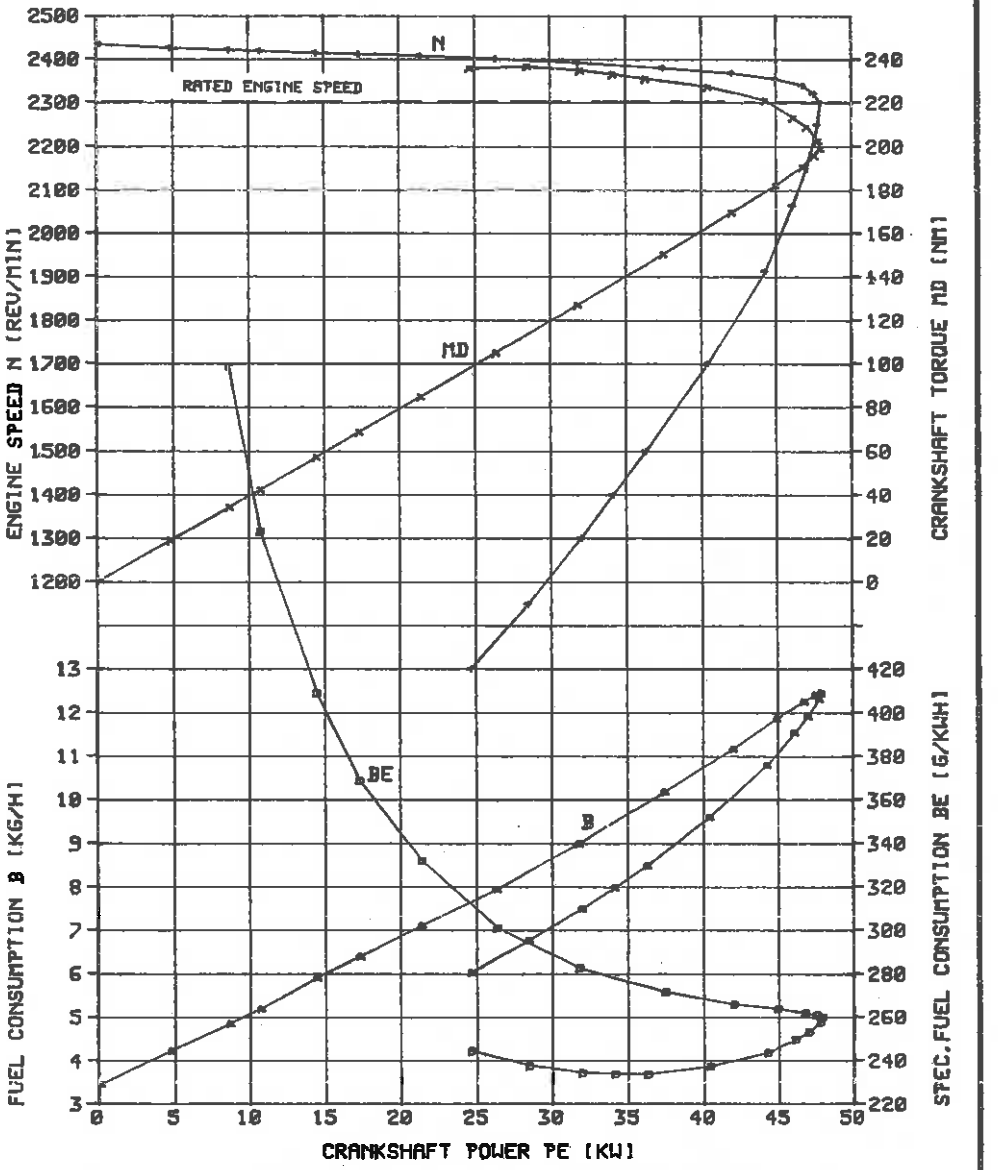
BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 150/83	ENGINE-TEST	LINDNER TYP 1065 A MOT.TYP PERKINS 4.236



ENGINE SER.NR.: LD22628U848042J	ATM.PRESSURE : 993 MBAR	FUEL TEMP.: 45 C	SIGNATURE
TRAKTOR SER.NR.: 18847	AIR TEMPER. : 15 C	D.OF TESTS: 1983-02-15	
FUEL : 0.839/15 C	COOLANT TEMP.: 76 C	TEST NO. : 138/M/83	
ENGINE OIL : BP VANELLUS M2B	OIL TEMP. : 109 C	CURVES NO.: 5	REITHER

DUR.:0100846-DL003;MKU875;MKU28-KU

BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.: 150/83	ENGINE-TEST	LINDNER TYP 1065 A MOT.TYP PERKINS 4.236



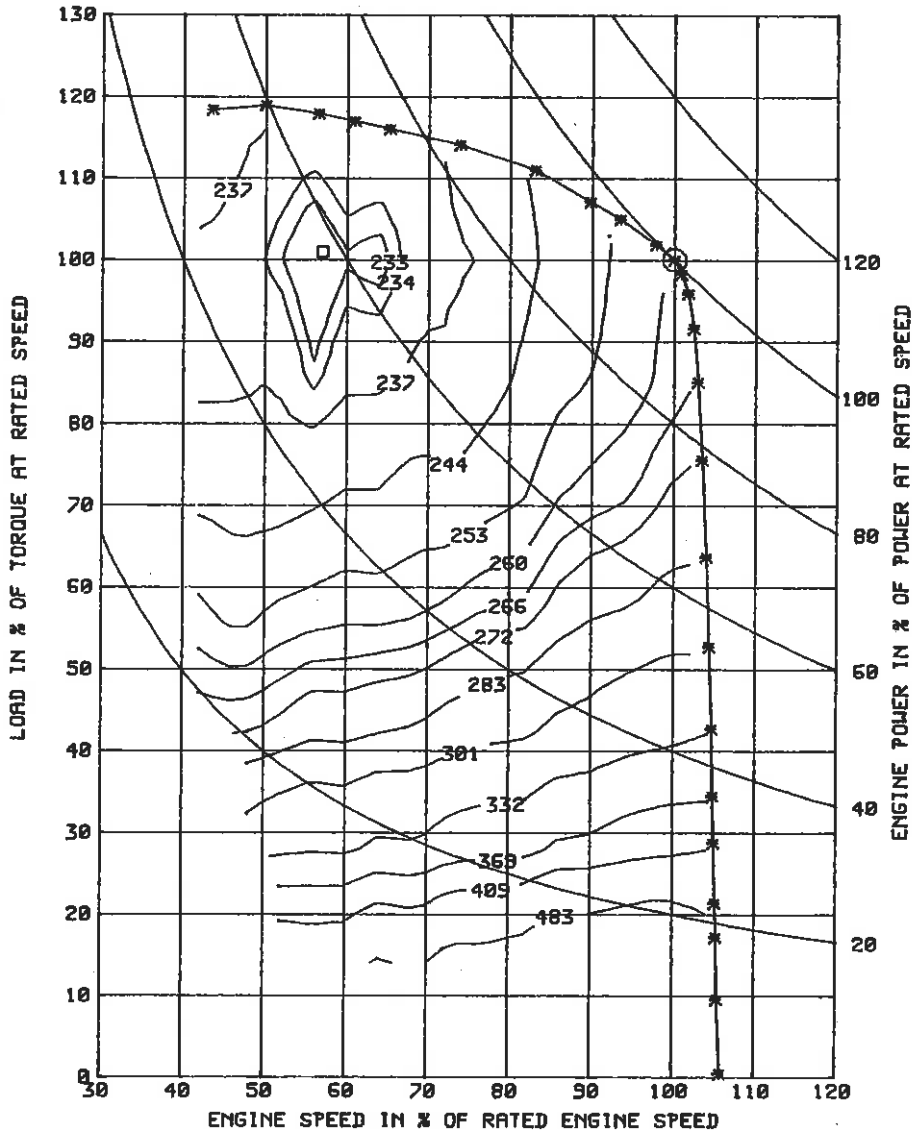
ENGINE SER.NR.: LD22620U848842J	ATM.PRESSURE : 993 MBAR	FUEL TEMP.: 45 C	SIGNATURE
TRACTOR SER.NR.: 18847	AIR TEMPER. : 15 C	D.OF TESTS: 1983-02-15	
FUEL : B.039/15 C	COOLANT TEMP.: 76 C	TEST NO. : 138/11/83	
ENGINE OIL : BP VANELLUS M20	OIL TEMP. : 109 C	CURVES NO.: 6	REITHER

DUR.:0100846-DL083,MKU075,MKU20-KU

BUNDESANSTALT FUER LANDTECHNIK WIESELBURG/ERLAUF, AUSTRIA PROT.NR.:150/83	ENGINE PERFORMANCE CHARACTERISTICS	LINDNER TYP 1065 A MOT.TYP PERKINS 4.236

□ ....MIN.FUEL CONS. 231.00 G/KWH AT N = 1311. REV/MIN, MD = 201.09 NM, P = 27.6 KW

⊛....N = 2300. REV/MIN, MD = 199. NM, P = 48.0 KW



ENGINE SER.NR.: LD22628U848842J	ATM.PRESSURE : 993 MBAR	FUEL TEMP.: 45 C	SIGNATURE
TRAKTOR SER.NR.: 10047	AIR TEMPER. : 15 C	D.OF TESTS: 1983-02-15	
FUEL : 0.839/15 C	COOLANT TEMP.: 76 C	TEST NO. : 138/11/83	
ENGINE OIL : BP VANELLUS M20	OIL TEMP. : 103 C	CURVES NO.: 7	REITHER

EDU-DL003;MRU025.DAT;MRU04MU

11. REDUCTION OF POWER DATA TO STANDARD CONDITIONS

According to:

Austrian Standard Ö-Norm V - 5003
German Standard DIN 70020 Teil 6

$$P_{RED} = P_{OECD} \cdot k; \quad \text{where } k = \frac{1013}{B} \cdot \sqrt{\frac{273 + t}{293}}$$

P_{RED} Reduced power to standard conditions
P_{OECD} = Power according to OECD
k = Reduction coefficient, resulting from the formula above

MAIN POWER TAKE OFF PERFORMANCE (page 13, 14 and 27, 28)
ENGINE PERFORMANCE (page 31)

Test conditions:

		540 p.t.o.	1000 p.t.o.	2300 engine
Intake air temperatur (°C)	t	23	23	23
Atmospheric pressure	B	1001	1001	993
Resulting reduction coefficient	k	1,0172	1,0172	1,0254

	P_{OECD}	P_{RED}
MAXIMUM POWER 540 rev/min p.t.o.	43,51 kW (59,17 mHP)	44,26 kW (60,19 mHP)
MAXIMUM POWER 1000 rev/min p.t.o.	44,71 kW (60,81 mHP)	45,48 kW (61,85 mHP)
MAXIMUM POWER 2300 rev/min engine speed	47,95 kW (65,21 mHP)	49,16 kW (66,86 mHP)

ANNEX

Out of the OECD-Code under responsibility of the Austrian Testing Station

OCTAVE ANALYSIS OF NOISE AT THE DRIVER'S EAR LEVEL
(to page 21, chapter 7)

