O.E.C.D. Report No.: 864

Bundesanstalt für Landtechnik

A-3250 Wieselburg, Austria

Dieseltractor
LAMBORGHINI Typ 653 DT



ate of approval: 1983 03 09

Date of tests: 1980 12 09

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

TABLE OF CONTENTS

	Page
SPECIFICATION OF TRACTOR	2
CONDITIONS DURING TEST	10
COMPULSORY TESTS	
Main power take-off performance - 540 rev/min	12
Drawbar performance	16
Turning space and turning circle	18
Location of centre of gravity	18
Braking performance	18
Ambient noise	20
Noise at the driver's ear	20
Power lift and hydraulic pump performance	22
Linkage geometry	23
Performance of power lift	24
OPTIONAL TEST	
Main power take-off performance - 1000 rev/min	25
Reduction of power data to standard conditions	29

Tractor manufacturer:	Trattori Lamborghini S.p.A. I-40066 Pieve di Cento (Bologna), Italy
Submitted for test by:	Trattori Lamborghini S.p.A. I-40066 Pieve di Cento (Bologna), Italy
Selected by:	Manufacturer by agreement with BVPA-Wieselburg
Place of running in:	Wieselburg, Austria
Duration of running in:	100 hours

SPECIFICATION OF TRACTOR

Tractor:

Make:	LAMBORGHINI Trattori S.p.A.
Model:	Diesel-Tractor Lamborghini 653 DT
Type:	Wheel tractor, four-wheel driven, unit construction
Serial No.:	653 DT - 1280

Engine:

Make:	Own make
Model:	1053/P
Type:	4 stroke diesel engine with direct injection
Serial No.:	1053/P 1186
Cylinders:	3, vertical in line Bore/stroke: 105/120 mm Capacity: 3117 cm^3 Compression ratio: 16,5/1 Changeable liners
Valves:	Overhead valves
Fuel system:	Capacity of fuel tank: appr. 70 l Fuel feed by diaphragm pump
	Fuel filter: CAV 296 1 changeable paper element
	BOSCH in-line injection pump Model: PFR 3k80A 392/2 Manufacturers production setting: $66^{\pm 2}$ mm^3/stroke at 2300 rev/min engine speed and full load Injection timing: 24° before TDC
	Injectors: BOSCH Multi hole injector nozzles DLLA 160 S 255 Injection pressure: $22,0^{\pm 0,5}$ (220^{-5} bar)

Governor:
BOSCH variable speed governor
Mechanically acting (centrifugal regulator)
Range of speed: 650 to 2565 rev/min engine speed
Rated speed: 2300 rev/min

Air cleaner:
WHITE-HEAD-MOTO FIDES

Pre-cleaner: cyclonic type, with dust-drain valve

Main-cleaner: oil bath air filter
Oil capacity: 0,72 l
Recommended oil: motor oil
Service interval:
in dust surrounding 5 hours cleaning interval of filter
125 hours changing interval of filter-oil

Exhaust silencer:
SLH, drawing number Lamborghini 08/99
Combination-type; reflexions-expansions-absorptions parts
Length of silencer: 1220 mm
Length of silencer-body: 745 mm
Mouth upwards, at right side of the engine, 2680 mm above ground, 95 mm right of median plane

Lubrication:
Forced lubrication with gear pump, strainer in sump, paper filter in full flow
Oil capacity: appr. 10 l
Oil changing interval: 125 hours;
paper filter: 250 hours
Recommended oil viscosity:
SAE 20 W/20 below 0°C
SAE 30 from 0°C to +30°C
SAE 40 above 30°C temperature of the surrounding
Specification: MIL-L-2104, MIL-L-46152

Cooling system:
Air cooling with air duct and 1 common axial-fan
Oil cooler in the colling-air system
Axial fan driven by 2 V-belts

Starting system:
Electrically
BOSCH solenoid engaged starter
Model: JF, 12 V, 1,8 kW

Electrical system:
Voltage: 12 V, negativ earth
Generator: BOSCH, three phase type
model: 33 A 27
14 V, 33 A, 400 W
Batterie: lead acid type, 1 with 110 Ah capacity at 20 hours rating

Transmission:

Clutches:
Clutch: VALEO
Dual plate dry clutch, both plates 280 mm dia, independent activated

Main clutch: pedal operated
P.t.o. clutch: hand lever operated

Gearbox:	Own make, mechanically acting Basis model: change gear with 4 forward and 1 reverse gear, reduction gear with 3 speeds (direct speed and 2 planetary-reduced speeds). Total: 12 forward and 3 reverse speeds Optional: crawler model Reduction gear with 4 speeds (direct speed and 3 planetary-reduced speeds). Total: 16 forward and 4 reverse speeds
Rear axle and final drive:	Own make Portal-axle; pinion and bevel gear, lockable bevel gear differential, acting by spur gears on rear wheels Differential lock: mechanically acting, hand lever (stick) operated, lockable, not self disengaging
Front axle and final drive:	Own make Steering and driving axle, central type Driving shaft, pinion and bevel gear, bevel gear differential, half shafts, double universal joint (homokinetic transmission), planetary gears in wheel hubs; differential not lockable Front wheel drive: mechanically engaged, hand lever (tension handle) operated
Oil capacity:	Gearbox and rear axle differential: appr. 24 l (also oil supply for power lift and external hydraulic tappings) Rear axle final drive: 3,5 l each side Front axle differential: 4,5 l Front axle final drive: 2,0 l each side Recommended oil: SAE 80 W MIL-L-2105
Oil changing interval:	1000 hours: front axle differential and front axle final drives 3000 hours: gearbox and rear axle differential, rear axle final drives

Total ratios and speeds

Planetary groups	Gear No.	Number of engine revolutions for one revolution of driving wheel	Nominal travelling speed for rated speed of engine km/h *)
forward low L	1	543,03	1,109
	2	350,80	1,717
	3	285,58	2,109
	4	232,98	2,585
forward middle M	1	175,52	3,432
	2	113,37	5,313
	3	92,30	6,526
	4	75,29	8,000
forward fast S	1	56,73	10,617
	2	36,65	16,434
	3	29,83	20,192
	4	24,33	24,756
reverse L	R	313,21	1,924
reverse M	R	101,22	5,953
reverse S	R	32,72	10,417

Optional (not on tested tractor):

forward crawler C	1	1680,00	0,358
	2	1085,28	0,555
	3	883,51	0,682
	4	720,79	0,836
reverse C	R	968,99	0,622

*) calculated with tyre index radius of 695 mm

Power take off:

At rear of tractor, in median plane, 185 mm behind the axle between the rear wheels; 650 mm above ground

Dimensions: ISO R 500, Type I (35 mm, 6 splines)

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

P.t.o. shaft driven by a plate of the dual plate dry clutch, sliding gear, speed selection by reduction gear, p.t.o.-shaft

Speeds:
540/ 641 rev/min at 1938/2300 rev/min engine speed
1000/1194 rev/min at 1926/2300 rev/min engine speed

Direction of rotation: clockwise viewed from driving end

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

Power take off: (cont.)

Proportional to ground speed p.t.o.:

Switchable in all gear-positions
11,26 rotations of p.t.o. for 1 rotation of the rear wheel or
20,99 rotations of p.t.o. for 1 rotation of the rear wheel

Direction of rotation: clockwise; viewed from driving end and in forward speeds

Power lift:

Own make, open center type
Upper link sensing; position control, draught control
Standard linkage, category I/II
Gear type pump, directly driven by engine
2921 rev/min on the pump at 2300 rev/min engine speed
Oil supply common with gearbox
Own oil filter cartridge
Filter service interval: 250 hours
Available capacity of tappings: 10 l

Holed drawbar:

Fitted in the clevis of the lower links of threepoint linkage, category I/II

Dimensions	Category I/II
Length	825 mm
Width	60 mm
Thickness	30 mm
Number of holes (with central hole)	11
Hole diameter	22 mm
Distance between holes	60 mm

Height above ground *)	Min.lift rod length (530 mm)	Max.lift rod length (665 mm)	Vertical movement
Max.mech.advantage (connect.point 500 mm)	from 450 to 980 mm	from 200 to 770 mm	530/570 mm
Min.mech.advantage (connect.point 470 mm)	from 420 to 995 mm	from 160 to 755 mm	575/595 mm

*) calculatet with tyre index radius of 695 mm

Method of changing: by power lift, lift rod and lower link-lift rod coupling point
Distance of the rear axle: 885 mm (lower links horizontally)
Distance relative to p.t.o.: 700 mm

Pull attachement:

Trailer hitch:

Fork type
Height above ground: 480/555/580/630/745/845 mm
Distance from rear axle: 445 mm
Position relative to p.t.o.: rearwards 230 mm
Diameter of coupling pin: 28 mm
Max. vertical load: kN

Towing hitch:

Fork type
Height above ground: 680 mm
Distance from front axle: with ballast 880 mm
without ballast 470 mm
Diameter of coupling pin: 28 mm

Steering:

DANFOSS
Hydrostatic steering, model OSP B 100 ON
Own oil circuit, gear pump directly driven by engine, metal-net-filter in the oil case

Gear pump: BOSCH
model: HY/ZFS 11/8 L 201

Oil delivery rate: 18,4 l/min at 2300 rev/min engine speed
Oil changing interval: 1000 hours
Oil capacity of steering: appr. 2,5 l
Recommended oil: Automatic Transmission Fluid
AGIP F1 DEXRON
(ATF Dexron D or ATF M2 C 33 E/F)

Working pressure: 9,0 MPa (90 bar)
Operated by steering wheel, acting on front wheels
Steering cylinder: double acting;
bore/stroke: 48/215 mm

Brakes:

Own make

Service brake:

Mechanically acting dry disc brake, acting on rear axle differential output shafts, 2 plates with 4 surfaces each side, expanding mechanism with balls and keys pedal operated

Parking brake:

Mechanically acting on the same dry disc brakes as service brake,
force transmission common with service brake, activated by hand lever with ratchet

Steering assistance brake:

Operated by divided pedal of service brake,
pedals disconnectable by a bolt

Trailer braking system:

Optional, not on tested tractor

Wheels:

Front wheels: 2 pneumatics, steering and driving function, diagonal carcass
11,2/10-24 AS, 6 PR; rim: W 9 x 24
Maximum permissible load on each tyre:
10250 N (1045 kp) at 1,8 bar inflation pressure
(15375 N (1560 kp) at 2,25 bar inflation pressure for front-implement working with speed limit of 8 km/h)

Track width: 1500 mm

Optional:
9,5/9-24 AS, 4 PR; rim: W 8 x 24

Rear wheels: 2 pneumatics, driving function, radial carcass
16,9 R 30, 6 PR; rim: DW 12 - 30
Maximum permissible load on each tyre:
18640 N (1900 kp) at 1,3 bar inflation pressure

Track width: 1370 mm

Optional:

14,9-30, 6 PR; rim: DW 12 - 30

Wheel base: 2147 mm

Lighting:

Unrestricted beam angle of headlight in plan view
0,0919 mrad (5,27°)

	*) Height above ground of centre mm	Dimension mm	**) Distance from outside edge of tractor to centre mm
Head lights	820	100 dia	680
Side lights	1450	160 x 60	140
Rear lights	1450	160 x 60	120
Reflectors	6750 1365	85 dia	680 +90

*) measured with tyre index radius at rear 695 mm and 515 mm at front
**) with overall width of 1735 mm

Number of grease points: 10

Driver seat:

Bostrom Division, Northampton, England
Model: XH-Argus; tested on the tractor according to national regulation (Prot.Nr. 052/80)
X-lever suspension with torsion springs, adjustable to drivers weight
Hydraulically damping
Horizontal adjustment range: 160 mm
Vertical range of swinging: from 90 to 160 mm (depending from adjustment of drivers weight)

Safety cab:

SICURCAB
Model CS 653
Rubber mounted profil-tube conctruction with roof, windscreen, front cladding and rubber floor, with doors and side and rear glasses with ventilation
Strength tested according to OECD-Code (identical to Austrian national legislation)
OECD-test report Nr. CSD 0289/1-a (C)

Optional: on tested tractor
Cabine-heater: EBERSPÄCHER
Diesel-fuel burner with electrical ventilator; thermostat controlled; fuel-supply from the tractor tank.

CONDITIONS DURING TEST

Tractormass:

Tractor without driver but with tanks full and safety cab

	Front	Rear	Total
Without ballast	1280 kg	1625 kg	2905 kg
With ballast	1992 kg	2274 kg	4266 kg

Ballastmass:

	Number of weights	Total mass (excluding water)	Water
Front	10 + ballast frame	427 kg	2 x 80 kg
Rear	6 (2 x 3)	294 kg	2 x 240 kg
Additional	-	-	-

Track setting and tyre equipment:

1500 mm at front
1370 mm at rear
Front wheels: 11,2/10 - 24 AS, 6 PR; rim: W 9 x 24
Rear wheels: 16,9 R 30, 6 PR; rim: DW 12 - 30

Overall dimensions:

	Length	Width		Height ***)
	mm	max.*) mm	min.**) mm	mm
With ballast	3950	2380	1680	2360/2680
Without ballast	3650	2280	1680	2360/2680

*) with maximal adjusted wheels
**) measured on the mudguards of the rear wheels
***) measured on top of safety cab/exhaust pipe

Minimum ground clearance: 380 mm below the front axle differential with
front tyre equipment 11,2/10 - 24 AS

Fuel and lubricants used in test:

Fuel:	ELAN Diesel fuel (according to DIN 51601) Specific gravity used for volumetric measurement: 0,830 kg/l at 15°C Viscosity at 20°C: 5 mm^2/s (5 cSt) Cetan no.: 46
Engine oil:	AGIP F 1 Diesel Gamma, SAE 30 Viscosity at 100°C: 10,8 mm^2/s (10,8 cSt) MIL-L-2104 A
Transmission oil and hydraulic oil:	AGIP F 1 Rotra MP/S, SAE 80 W Viscosity at 100°C: 9,5 mm^2/s (9,5 cSt) MIL-L-2105, API: GL - 4
Steering fluid:	AGIP ARNICA 645 or AGIP F 1 ATF DEXRON

COMPULSORY TEST

1. Main power take-off performance

Date and location of tests: 1980 12 09, Wieselburg, Austria
Type of dynamometer: SCHENK-eddy-current brake - W 780

Main test on: ISO R 500, Typ 1 (din 9611) - 540 rev/min p.t.o.

Power	Speed		Fuel consumption		
	engine	p.t.o.	hourly	specific	specific
kW	rev/min	rev/min	kg/h 1/h	g/kWh	kWh/l
MAXIMUM POWER					
Maximum power - 2 hours test					
42,30	2300	641	10,96 13,20	259	3,205
Standard p.t.o. speed					
39,42	1938	540	9,63 11,61	244,5	3,395
The speed recommended by the manufacturer for drawbar work					
42,30	2300	641	10,96 13,20	259	3,205
PART LOADS Governor hand lever in position giving maximum power					
(i) 85 % of torque at maximum power					
37,81	2418	674	9,98 12,02	264	3,144
(ii) unloaded					
-	2547	710	3,19 3,84	-	-
(iii) 50 % of the load defined in (i)					
19,44	2486	693	6,57 7,91	338	2,456
(iv) maximum power					
42,30	2300	641	10,96 13,20	259	3,205
(v) 25 % of the load defined in (i)					
9,81	2515	701	4,90 5,91	500	1,660
(vi) 75 % of the load defined in (i)					
28,84	2458	685	8,37 10,09	290	2,859

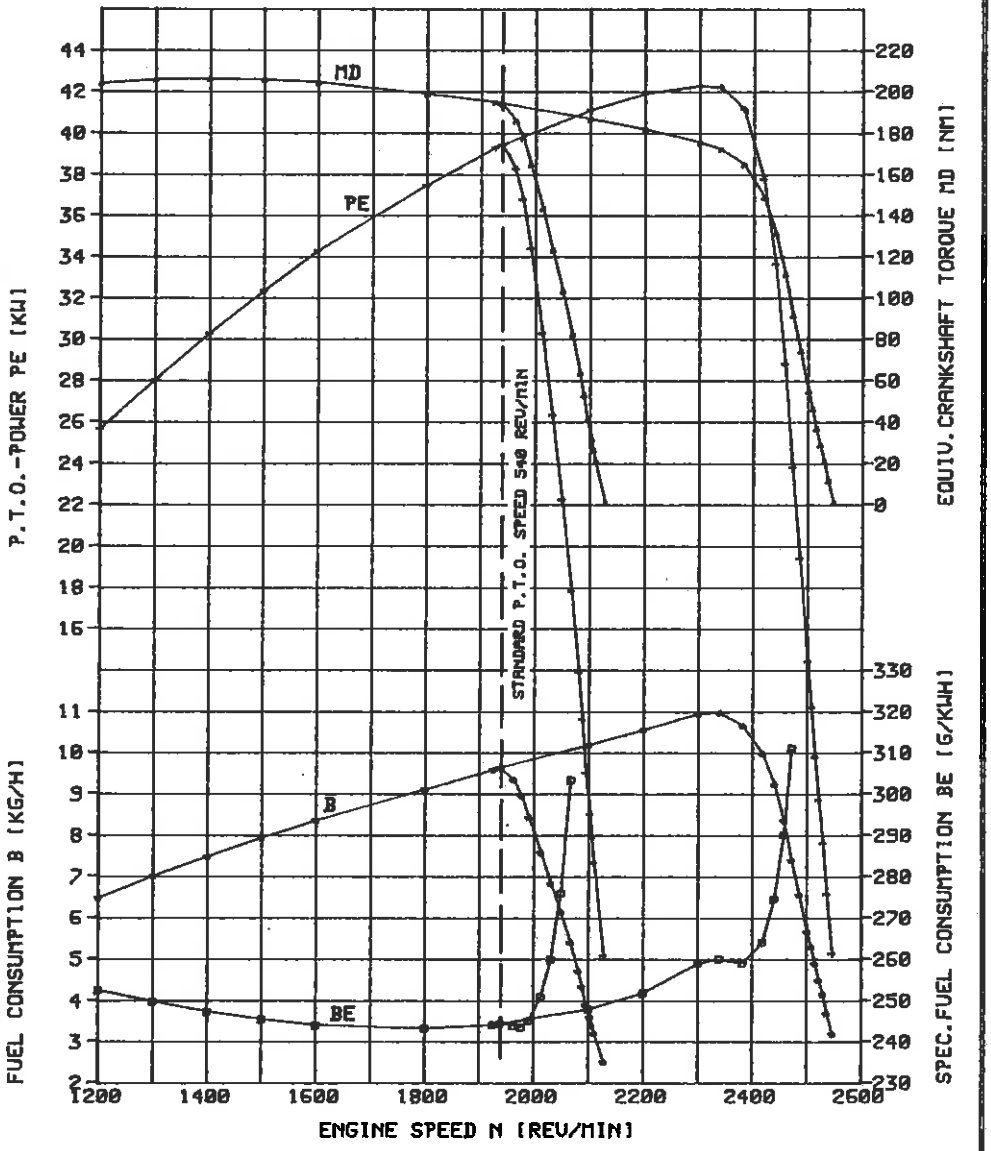
Power	Speed		Fuel consumption			
	engine	p.t.o.	hourly		specific	specific
kW	rev/min	rev/min	kg/h	l/h	g/kWh	kWh/l
PART LOADS Governor hand lever in position giving standard p.t.o. speed at full load						
(i) 85 % at torque at standard p.t.o. speed						
34,44	1991	555	8,44	10,16	245	3,388
(ii) unloaded						
-	2128	593	2,50	3,02	-	-
(iii) 50 % of the load defined in (i)						
17,86	2067	576	5,42	6,53	303,5	2,736
(iv) maximum power at standard p.t.o. speed						
39,42	1938	540	9,64	11,61	244,5	3,395
(v) 25 % of the load defined in (i)						
9,05	2095	584	3,92	4,72	433	1,917
(vi) 75 % of the load defined in (i)						
26,35	2031	566	6,85	8,25	260	3,194
STANDARD SPECIFIC FUEL CONSUMPTION: 264/338 - 245/303,5 g/kWh						

No load maximum engine speed: 2547 rev/min
Equivalent crankshaft torque
at maximum power: 175,6 Nm
Maximum equivalent crankshaft torque: 206,4 Nm at 1400 rev/min of engine

Mean atmospheric conditions: temperature: 15°c
pressure: 1012 mbar
humidity: 52 %

Maximum temperatures: coolant: -
engine oil: 120°C
fuel: 70°C
air intake: 20°C

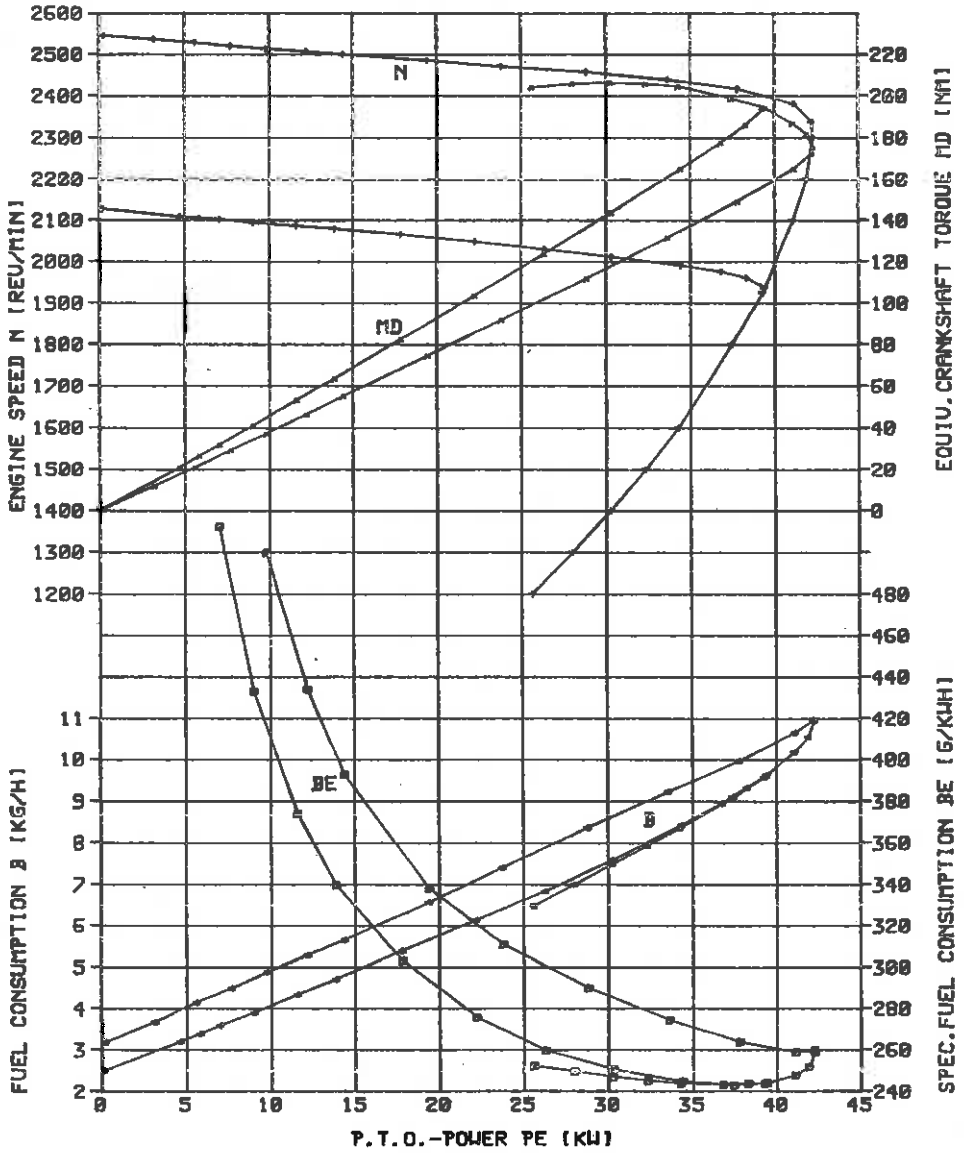
BUNDESVERSUCHS-U. PRUEFUNGSANST. FUER LANDW. MASCHINEN U. GERAETE WIESELBURG/ERLAUF, AUSTRIA PROT.NR.:	P.T.O.-TEST	LAMBORGHINI TYP 653 DT MOT.TYP 1053/P



ENGINE SER.NR.: 1186	ATM.PRESSURE : 1012 MBAR	FUEL TEMP.: 69 C	SIGNATURE
TRAKTOR SER.NR.: 653DT-1288	AIR TEMPER. : 15 C	D.OF TESTS: 1988-12-09	
FUEL : 0.83/15 C	COOLANT TEMP.:	TEST NO. : 132/ZA128A	
ENGINE OIL : AGIP F1,SAE 30	OIL TEMP. : 119 C	CURVES NO.: 1	REITHER

DOK.: 0180846-AL883;MKU859;MKU28-21

BUNDESVERSUCHS-U. PRUEFUNGSANST. FUER LANDW. MASCHINEN U. GERAETE WIESELBURG/ERLAUF, AUSTRIA PROT.NR.:	P.T.O.-TEST	LAMBORGHINI TYP 653 DT MOT.TYP 1053/P



ENGINE SER.NR.: 1186	ATM.PRESSURE : 1012 MBAR	FUEL TEMP.: 69 C	SIGNATURE
TRAKTOR SER.NR.: 653DT-1288	AIR TEMPER. : 15 C	D.OF TESTS: 1988-12-89	
FUEL : B.83/15 C	COOLANT TEMP.:	TEST NO. : 132/2R1288	
ENGINE OIL : AGIP F1,SAE 30	OIL TEMP. : 119 C	CURVES NO.: 2	REITHER

DOK.:0100846-DE003;PRUE59.PRO20-21

2. Drawbar performance

Date of tests: 1981 05 14, 05 25, 05 27 and 06 01
Type of track: Concrete
Height of drawbar abore ground: 450 mm ballasted, 430 mm unballasted

Gear No.	Speed	Power	Drawbar pull	Engine speed	Slip of wheels	Fuel consumption		Temperatures			Atmosph. conditions		
						specific	specific	Fuel	Coolant	Engine oil	Tempe-rature	rel.hu-midity	Pre-sure
	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 1,7 bar, in the rear 1,1 bar													
1 L	1,036	11,68	40580	2507	15	-	-	57	-	101	19	68	986
2 L	1,587	17,89	40588	2483	15	-	-	56	-	104	20	70	986
3 L	1,936	21,82	40584	2464	15	-	-	60	-	107	18	72	986
4 L	2,356	26,56	40593	2446	15	2,416	343,5	55	-	105	17	74	986
1 M	2,988	33,70	40599	2337	15	2,552	325	57	-	104	18	72	986
2 M	4,959	36,50	26494	2300	7,4	2,755	301	60	-	106	17	75	986
3 M	6,203	36,90	21417	2300	5,7	2,786	298	59	-	102	17	76	986
4 M	7,717	36,85	17192	2300	4,3	2,782	298,5	58	-	102	17	77	986
1 S	10,380	36,00	12487	2300	3	2,718	305,5	58	-	100	16	78	986
2 S	16,283	33,00	7295	2300	1,7	2,491	333	49	-	91	15	78	986

Gear No.	Speed	Power	Drawbar pull	Engine speed	Slip of wheels	Fuel consumption		Temperatures			Atmosph.conditions		
						specific	specific	Fuel	Coo-lant	Engine oil	Tempe-rature	rel.hu-midity	Pres-sure
	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													
3 M	6,696	29,86	16057	2439	4	2,670	311	67	-	111	16	68	984
(iii) Five-hour-test at pull corresponding to 15 % wheelslip in test (i)													
1 M	2,983	33,65	40601	2345	15	2,563	324	72	-	121	22	60	990
(iv) Maximum power (unballasted) tyre inflation pressure in the front 1,3 bar, in the rear 1,1 bar													
3 L	1,976	16,14	29396	2490	15	-	-	54	-	105	16	78	982
4 L	2,410	19,68	29400	2476	15	2,257	368	55	-	104	16	79	982
1 M	3,156	25,79	29421	2444	15	2,379	349	58	-	108	16	79	982
2 M	4,798	34,65	26000	2300	11,3	2,616	317,5	57	-	107	16	78	982
3 M	6,088	36,00	21288	2300	8,4	2,718	305,5	58	-	104	16	78	982
4 M	7,615	36,40	17205	2300	6,5	2,748	302	60	-	105	16	79	982
1 S	10,304	36,16	12635	2300	4,7	2,730	304	58	-	102	16	78	982
2 S	16,283	34,50	7628	2300	2,7	2,605	318,5	56	-	99	16	78	982

Total oil consumption during 10 hours duration of tests (i) and (iii): 57,4 g/h

3. Turning space and turning circle

Wheel equipment front: 11,2/10 - 24 AS, 6 PR; rim: W 9 x 24
rear: 16,9 R 30, 6 PR; rim: DW 12 - 30
Track of wheels front: 1500 mm
rear: 1370 mm

Results *)	With brakes		Without brakes	
	right-hand	left-hand	right-hand	left-hand
	m	m	m	m
Radius of turning space	3,96/4,50	3,58/4,13	5,66/5,40	4,91/4,63
Radius of turning circle	3,78/4,32	3,40/3,95	5,48/5,22	4,73/4,45

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

4. Location of centre of gravity

	mm
Height above ground	913
Distance forward from the vertical plane containing the axis of the rear wheels	929
Distance from the median plane	0

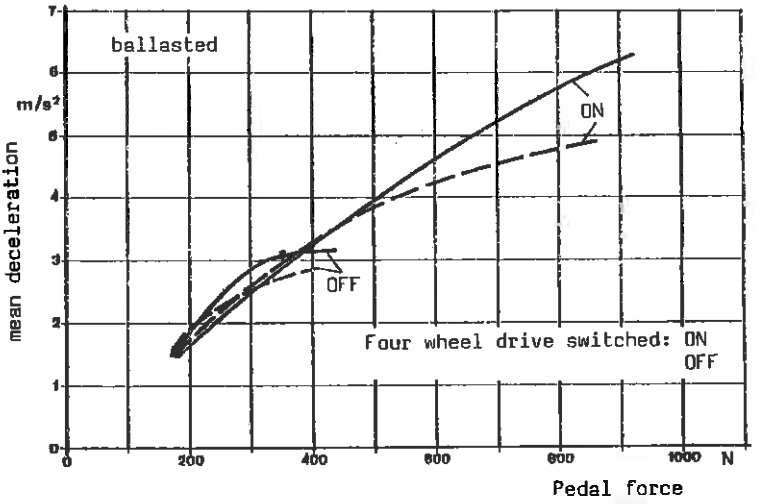
5. Braking

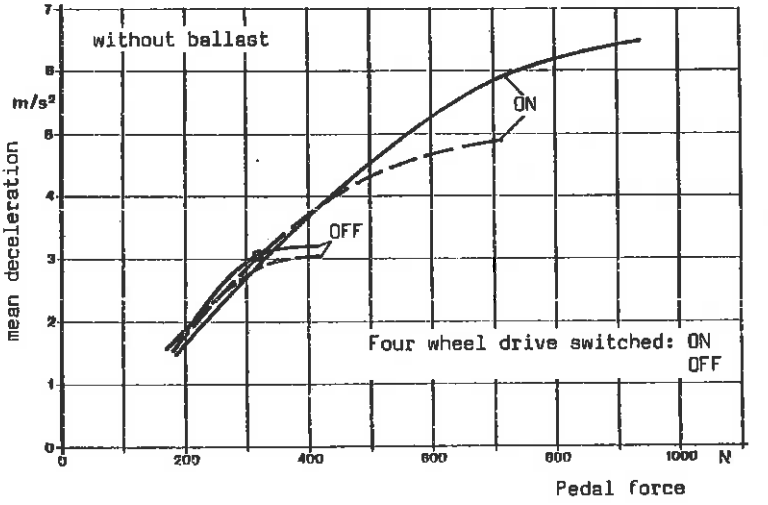
Date of tests:
Type of track: Concrete
Type of decelerometer: Moto-Meter Nr. 03382 (Kombi-Schreiber)
Tractor masses during brake tests (with driver):

	Front kg	Rear kg	Total kg
Ballasted	2000	2341	4341
Unballasted	1300	1680	2980

A) Service breke

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





Speed before application of brakes: 26 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 2980 kg	
	up	down	up	down
Braking device control force	205 N	225 N	195 N	195 N

6. Measurement of ambient noise level

Date of tests: 1981 05 19
Type of sound level meter: BRÜEL & KJAER 2209 and 2308
Type of track: Concrete

Results of tests:
Gear: S 4
Travelling speed before acceleration: 19,5 km/h
Sound level: 86 dB(A)

7. Noise measurement at the driver's ear

Date of tests: 1981 05 19
Type of sound level meter: BRÜEL & KJAER 2209 and 2308
Type of track: Concrete
Safety cab with all openings 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	24780	1,05	83,5
L 2	26280	1,62	84,0
L 3	26350	1,99	87,0
L 4	27000	2,40	87,5
M 1	27130	3,13	87,0
M 2	24430	5,06	87,0
M 3	20520	6,10	87,5
M 4 *)	16050	7,72	88,0
M 4	light load	7,80	85,5
S 1	12400	10,70	88,0
S 2	7340	18,76	86,0
S 3	5500	20,95	86,0
S 4	3000	26,08	85,5

*) The M 4 gear corresponds to the nominal travelling speed nearest to 7,5 km/h.

8. Power lift and hydraulic pump performance

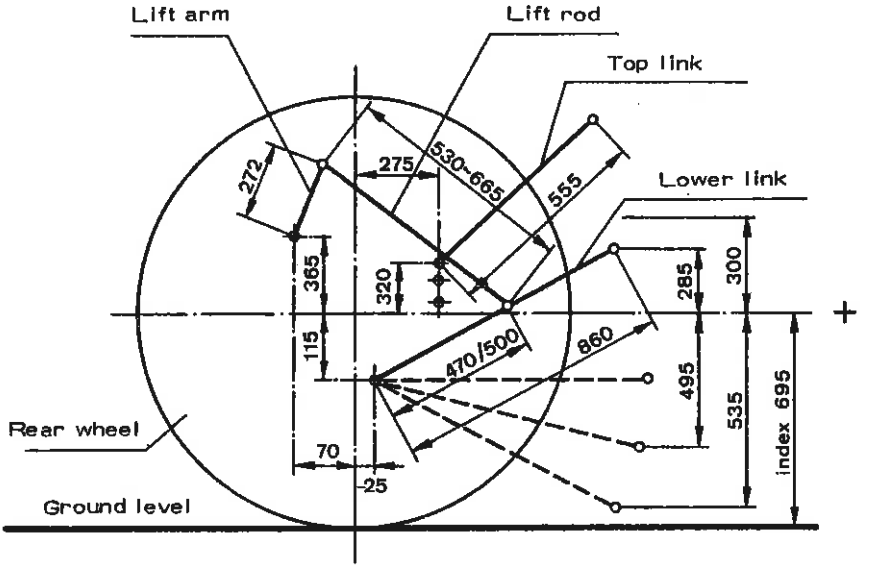
Date and location of tests: 1981 06 24, Wieselburg, Austria
Hydraulic fluid:
Make and type: AGIP F 1 Rotra MP/S, SAE 80 W
common oil with gearbox
Viscosity at 50°C: 48 mm^2/s (48 cSt)
Type of linkage lock for transport: hydraulically by throttle valve

Pump characteristics:

(i) Sustained pressure of the relief valve: 21,2 MPa (212 bar)
Opening pressure of the relief valve: 20,0 MPa (200 bar)

(ii) Pump delivery rate at minimum pressure and rated engine speed: 32 l/min

(iii) Pump delivery rate: 30 l/min
Pressure of hydraulic power calculation (90 % of relief valve setting): 19,08 MPa (190,8 bar)
Hydraulic power: 9,5 kW



Linkage geometry when connected to the standard frame (mast height 460 mm)

Projected length in side view		Maximum mechanical advantage	Minimum mechanical advantage
Lower links	mm	860	860
Lift arms	mm	272	272
Lift rods	mm	598	598
Top link	mm	555	555
Distance of lift rod connection point from pivot point of lower link	mm	500	470
This dimensions are given relative to the rear wheel centre line, 695 mm above the ground level: Lower link pivot point	mm	25 before 115 below	25 before 115 below
Top link pivot point	mm	275 behind 320 above	275 behind 320 above
Lift arm pivot point	mm	70 before 365 above	70 before 365 above
Maximum and minimum height of lower link hitch points	mm	195 above 360 below	195 above 400 below
Height of lower link hitch points locked in transport position	mm	from 195 above to 360 below	195 above 400 below

	Moment about rear axle *) kNm		Max. tilt angle of mast over range of lift degrees	
	max.mech.advantage	min.mech.advantage	max.mech.advantage	min.mech.advantage
At hitch points	18,7	17,5		
On the frame	32,9	32,5	11° (from -1° to 0° and to +10°)	12° (from -1° to 0° and to + 11°)

*) calculated with the hydraulic power of 90 % of sustained oil pressure

Performance of power lift

Lifting heights in relation to a horizontal line through the lower link pivoting point mm		-270	-245	-230	-210	-150	-75	0	75	125	175	225	285	300	335
Lifting force at the hitch-points kN (Values for the pressure, calculated with 90 % of sustained oil pressure)	max.mech. advantage			21,3	22,2	24,2	26,2	27,6	28,6	29,2	29,8	30,4	31,3		
	min.mech. advantage	19,9	20,8	21,1	21,8	23,3	24,9	26,4	27,4	28	28,7	29,4	30,4	30,9	
	Maximum force exerted through whole range: 19,9 kN/21,3 kN (2030 kp/2170 kp)														
	Calculated oil pressure: 19,08 MPa (190,8 bar)														
Lifting force at the standard frame 460 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				23,9	24,7	25,4	25,3	24,8	24,4	24	23,6	23	22,8	22,1
	min.mech. advantage		22,3	22,7	23,2	23,8	24,2	24,2	23,6	23,2	22,8	22,5	22,2	22,1	21,8
	Maximum force exerted through whole range: 21,8 kN / 22,1 kN (2225 kp/2255 kp)														
	Calculated oil pressure: 19,08 MPa (190,8 bar)														

OPTIONAL TEST

9. Main power take-off performance

Date and location of tests: 1980 12 09, 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		
	engine	p.t.o.	hourly	specific	specific
	rev/min	rev/min	kg/h l/h	g/kWh	kWh/l
MAXIMUM POWER					
Maximum power - 2 hours test					
42,98	2300	1194	11,00 13,25	256	3,244
Standard p.t.o. speed					
40,10	1926	1000	9,69 11,67	241,5	3,436
The speed recommended by the manufacturer for drawbar work					
42,98	2300	1194	11,00 13,25	256	3,244
PART LOADS Governor hand lever in position giving maximum power					
(i) 85 % of torque at maximum power					
38,43	2419	1256	9,96 11,99	259	3,204
(ii) unloaded					
-	2550	1324	3,18 3,83	-	-
(iii) 50 % of the load defined in (i)					
19,77	2488	1292	6,56 7,91	332	2,500
(iv) maximum power					
42,98	2300	1194	11,00 13,25	256	3,244
(v) 25 % of the load defined in (i)					
10,00	2517	1307	4,90 5,90	490	1,693
(vi) 75 % of the load defined in (i)					
29,26	2456	1275	8,34 10,05	285	2,911

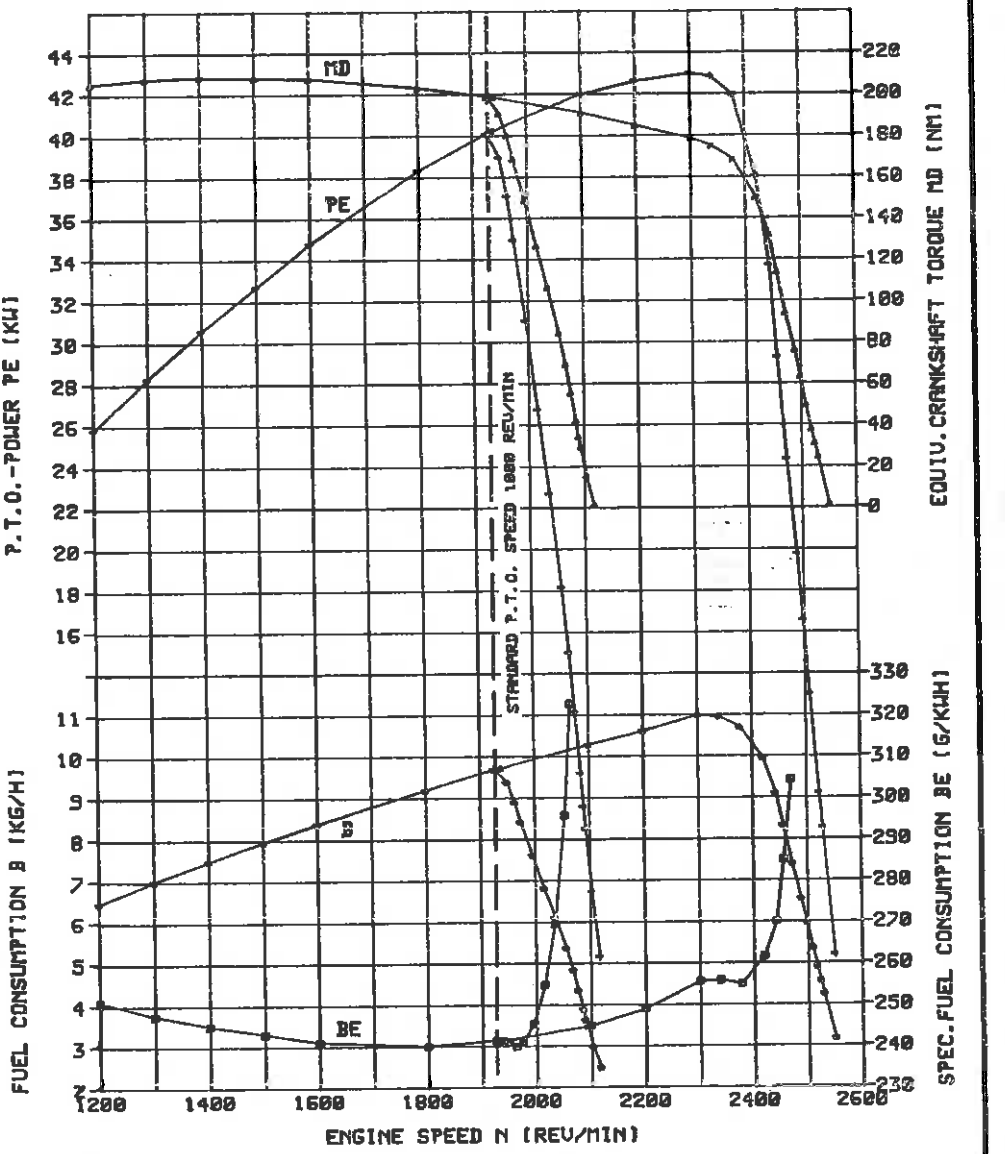
Power	Speed		Fuel consumption		
	engine	p.t.o.	hourly	specific	specific
	rev/min	rev/min	kg/h 1/h	g/kWh	kWh/l
PART LOADS Governor hand lever in position giving standard p.t.o. speed at full load					
(i) 85 % at torque at standard p.t.o. speed					
34,95	1974	1025	8,42 10,15	241	3,445
(ii) unloaded					
-	2117	1099	2,48 2,99	-	-
(iii) 50 % of the load defined in (i)					
18,19	2055	1067	5,38 6,49	296	2,804
(iv) maximum power at standard p.t.o. speed					
40,10	1926	1000	9,69 11,67	241,5	3,436
(v) 25 % of the load defined in (i)					
9,20	2086	1083	3,90 4,70	424	1,959
(vi) 75 % of the load defined in (i)					
26,75	2016	1047	6,82 8,21	255	3,256
STANDARD SPECIFIC FUEL CONSUMPTION: 259/332 - 241/296 g/kWh					

No load maximum engine speed: 2550 rev/min
Equivalent crankshaft torque
at maximum power: 178,5 Nm
Maximum equivalent crankshaft torque: 208,8 Nm at 1400 rev/min of engine

Mean atmospheric conditions: temperature: 15°c
pressure: 1012 mbar
humidity: 56 %

Maximum temperatures: coolant: -
engine oil: 119°C
fuel: 69°C
air intake: 20°C

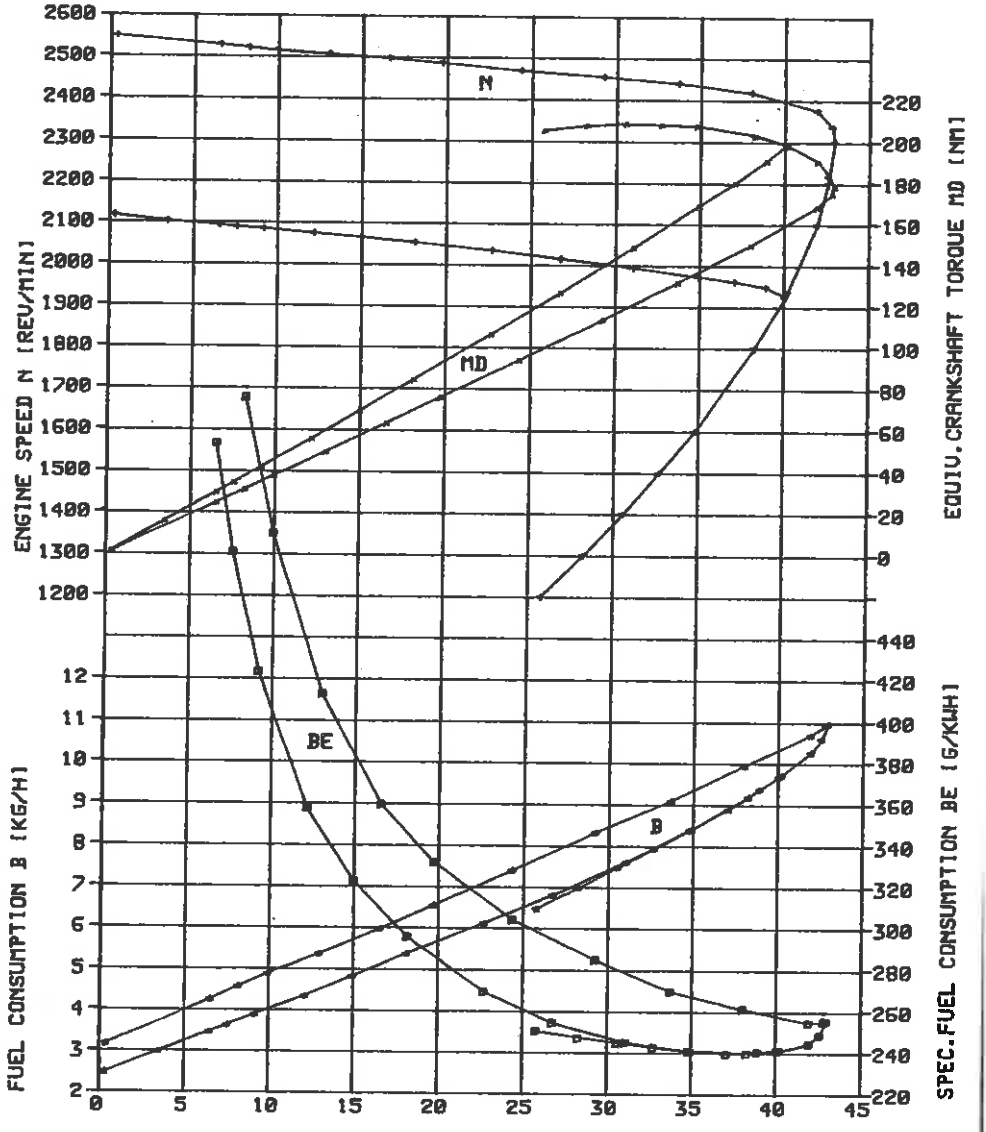
BUNDESVERSUCHS-U. PRUEFUNGSANST. FUER LAND U. MASCHINEN U. GERAETE WIEGELBURG/ERLAUF, AUSTRIA PROT. NR.:	P.T.O.-TEST	LAMBORGHINI TYP 653 DT MOT. TYP 1053/P



ENGINE SER.NR.: 1106	ATM. PRESSURE : 1012 MBAR	FUEL TEMP.: 69 C	SIGNATURE
TRAKTOR SER.NR.: 653DT-1288	AIR TEMPER. : 15 C	D.OF TESTS: 1988-12-09	
FUEL : B.83/15 C	COOLANT TEMP.:	TEST NO. : 132/2R128A	
ENGINE OIL : AGIP F1,SAE 30	OIL TEMP. : 119 C	CURVES NO.: 3	REITHER

DOK.: 81000646-DL001; TRU0659; TKU28-22

BUNDESVERSUCHS-U. PRUEFUNGSANST. FUER LANDW. MASCHINEN U. GERRETE WIESELBURG/ERLAUF, AUSTRIA PROT.NR.:	P.T.O.-TEST	LAMBORGHINI TYP 653 DT MOT.TYP 1053/P



ENGINE SER.NR.: 1186	ATM.PRESSURE : 1012 MBAR	FUEL TEMP.: 63 C	SIGNATURE
TRAKTOR SER.NR.: 653DT-1288	AIR TEMPER. : 15 C	D.OF TESTS: 1988-12-09	
FUEL : B.83/15 C	COOLANT TEMP.:	TEST NO. : 132/ZA128A	
ENGINE OIL : AGIP F1,SAE 30	OIL TEMP. : 119 C	CURVES NO.: 4	REITHER

10. REDUCTION OF POWER DATA TO STANDARD CONDITIONS

According to:

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

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

MAIN POWER TAKE OFF PERFORMANCE (page 12 and 13)

Test conditions: Intake air temperature t = 20°C
Atmospheric pressure B = 1012 mbar
Resulting reduction coefficient: k = 1,000

	P_{OECD}	P_{RED}
MAXIMUM POWER 540 rev/min p.t.o.	39,42 kW (53,61 mHP)	39,42 kW (53,61 mHP)