Report on test in accordance with O.E.C.D. STANDARD CODE

O.E.C.D. No. 866



Agricultural Tractor
FENDT FARMER 304 LS TURBOMATIK (4WD)

Manufacturer
X. Fendt & Co., Maschinen- und Schlepperfabrik
D-8952 Marktoberdorf

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This bulletin is based on engineering tests in accordance with the O.E.C.D. STANDARD CODE for the Official Testing of Agricultural Tractor Performance. It does not contain an evaluation of the tractor performance on practical work.

Duration of Tests: September till November 1982
DLG-Testing-Station for Agricultural Machinery, Max-Eyth-Weg 1,
D-6114 Groß-Umstadt

This report has been approved by the O.E.C.D. Coordinating Centre (C.E.M.A.G.R.E.F., France) as being in accordance with the O.E.C.D. STANDARD CODE.

Date of Approval: 13th April 1983 O.E.C.D. No. 866

In this report all performance characteristics are given corresponding to the International System of Units.

The reference to the former used Technical System of Units is given by the following relations:

Forces	1 daN = 10 N	=	1,02 kp	or 1 kp	= 0,981 daN
Powers	1 kW	=	1,36 PS	or 1 PS	= 0,736 kW
Pressures	1 bar	=	1,02 kp/cm²	or 1 kp/cm²	= 0,981 bar
	1000 mbar	=	750,10 mm Hg		

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PRÜFUNGS-ABTEILUNG
FENDT FARMER 304 LS

Test No. 82-25

Tractor manufacturer:	X. Fendt & Co. D-8952 Marktoberdorf
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Marktoberdorf and Groß-Umstadt
Duration of running-in:	Engine and tractor appr. 80 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	X. FENDT & CO.
Trade denomination:	FARMER 304 LS TURBOMATIK
Model:	FWA 158S
Type:	Wheel tractor, unit construction
Serial-No.:	158/21/0054

Engine

Make:	MOTORENWERKE MANNHEIM AG
Model:	D 226-3
Type:	Watercooled 4-stroke Diesel-engine, direct injection
Serial-No.:	D 226.3.2.11811
Cylinders:	3, in line, bore 105 mm, stroke 120 mm, displacement 3117 cm^3, compression ratio 17; replaceable dry cylinder liners
Valves:	Overhead
Fuel system:	SOLEX fuel feed pump PE 15509; BOSCH in line injection pump: PES 3A 80D 320/3 RS 1299, manufacturer's production setting 57,5±1 mm^3/stroke at rated speed and full load; injection timing 28° before TDC; BOSCH multihole injection nozzles 925 DLLB 150 S 821, injection pressure 180 ± 5 bar; BOSCH fuel filter with replaceable cartridge; capacity of fuel tank 80 l
Governor:	BOSCH centrifugal variable speed type governor EP/RSV 325-1500 A 2 B 505 DR; governed range of engine speed 650 to 2480 rev/min; rated engine speed 2350 rev/min

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Air cleaner:	MANN dry paper element filter with replaceable main cartridge and safety cartridge, cyclone pre-cleaner, electrical maintenance indicator; air intake above bonnet; optionally available with longer air intake pipe
Exhaust silencer:	EBERSPÄCHER reflection-absorption-type silencer; 172 mm dia, 454 mm long; on the left hand side, mouth showing rearwards, 430 mm above ground; optionally available silencer above bonnet with mouth showing upwards
Lubrication system:	Forced feed from gear type pump; strainer in sump; filter in full flow with by-pass valve and replaceable cartridge; oil and cartridge change period 200 operating hours; oil capacity 7,25 l; specified oil quality MIL-L-46 152 or MIL-L-2104 C recommended oil viscosities: over + 5°C SAE 30 over -10°C to +10°C SAE 20W/20 below - 5°C SAE 10W
Cooling system:	Watercooling with impeller pump; overpressure valve set to 0,4 bar; cooling circuit with by-pass and thermostat; fan with 7 blades, 440 mm dia; water capacity 9,6 l
Starting system:	Electrical BOSCH pre engaged-drive starting motor 2,4 kW; BERU flame plug in intake manifold
Electrical equipment:	12 Volt, negative earth BOSCH 3-phase alternator G1-14V 33A 27, 462 W; 1 lead acid battery, 88 Ah at 20 hours rating

Transmission

Clutch:	1. VOITH GETRIEBE KG fluid clutch 358 TD-F for travel and p.t.o. drive 2. FICHTEL UND SACHS AG dry disc type clutch GT 310 N, 295 mm dia, for travel drive, hydraulically operated by pedal, self readjusting
Gear box:	FENDT synchromesh speed change gear with 3 forward speeds and 1 reverse speed; 2 group gears: synchronized closed stepped group gear high/low (FS/FL); 2nd group gear with collar shifted road group (S) and sliding gear shifted field group (A); 3 independent synchronized overdrive speeds, totally 15 forward speeds and 4 reverse speeds on tested tractor; optionally available creeper group excluding third overdrive speed
Rear axle:	FENDT portal construction; bevel gear drive; bevel gear differential, with pedal operated lock, not selfdisengaging, with pilot lamp; spur gear final drives in portals
Driven front axle:	ZAHNRADFABRIK FRIEDRICHSHAFEN AG APL 1351 driven by universal joint shaft on the left hand side of gear box, dry multi-disc clutch to be shifted by hand lever under load; bevel gear drive; bevel gear differential, optionally available with automatic lock; planetary final drives in wheel hubs
Oil change:	Fluid clutch all 5000 operating hours other gears all 1000 operating hours or once a year
Recommended oil qualities:	Gear box MIL-L-2105 final drives and front axle differential MIL-L-2105B

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Oil capacity and viscosity:

Fluid clutch	5,7 l		SAE 10W
gear box	32,5 l		SAE 80
rear axle final drives	3	1 each	SAE 90
front axle differential	4,8 l		SAE 90
front axle final drives	0,5 l	each	SAE 90

Total ratios and speeds

Group	Closed stepped group	Gear	Total ratio engine : driving wheel	Nominal travelling speed at rated engine speed *) km/h
Forward speeds				
A	FL	1	429,81	1,41
		2	268,63	2,25
		3	165,92	3,64
	FS	1	352,22	1,72
		2	220,14	2,74
		3	135,97	4,45
S	FL	1	107,45	5,62
		2	67,16	9,00
		3	41,48	14,57
	FS	1	88,06	6,86
		2	55,03	10,98
		3	33,99	17,78
1st overdrive			26,19	23,03
2nd overdrive			20,79	29,06
3rd overdrive			16,73	36,12
Reverse speeds				
A	FL	R	296,91	2,04
	FS	R	243,31	2,48
S	FL	R	74,23	8,14
	FS	R	60,83	9,93

*) calculated with the radius index 695 mm and the slip of the fluid clutch of 1,9%, measured at rated speed and maximum power

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Power take-off

Main p.t.o.:	At rear of tractor; driven by a multiplate clutch with 168 mm dia, independent from travel drive clutch, operated by hand lever on console; height above ground 647 mm, in median plane of tractor, 356 mm behind rear axle centre line; 35 mm dia, 6 splines ISO 500/DIN 9611, type 1; 3 speeds preselectable by hand lever: 540 rev/min p.t.o. 570 rev/min at rated engine speed and full load, 581 rev/min at rated engine speed with no load, standard p.t.o. speed 540 rev/min at 2232 rev/min engine speed at full load or 2185 rev/min engine speed at no load fluid clutch slippage at full load at rated engine speed 1,9% at standard p.t.o. speed 2,1% 750 rev/min p.t.o. (with pilot lamp) 743 rev/min at rated engine speed and full load, 759 rev/min at rated engine speed with no load, standard p.t.o. speed 540 rev/min at 1722 rev/min engine speed and full load 1000 rev/min p.t.o. (with pilot lamp) 1060 rev/min at rated engine speed with no load, standard p.t.o. speed 1000 rev/min at 2217 rev/min engine speed with no load direction of rotation clockwise, viewed from tractor rear
Ground speed p.t.o.:	Optional, not fitted on tested tractor
Secondary p.t.o.:	Optionally available front p.t.o. (1000 rev/min or 540 rev/min) not fitted on tested tractor

Power lift	**FENDT** hydraulic power lift, unit construction draft and position control both steplessly mixable, floating position; top link sensing, lowering throttle
Hydraulic system:	Open centre system; BOSCH tandem gear type pump HY/ZFFS 11/16+14 directly driven by engine, delivery 16 cm^3/rev at rated engine speed; hydraulic filter with replaceable cartridge incorporated in return line, cartridge change after 1000 operating hours or once a year; BOSCH control valve HY/SR 175/60L, maximum working pressure 175 + 12 bar; single acting cylinder with 86 mm bore and 138 mm stroke, without safety valve; 1 single acting auxiliary BOSCH control valve with return line fitted; up to 5 single, partially double acting auxiliary valves with oil tappings and return lines in the rear and middle of tractor available; optional flow dividing valve in steering oil circuit and additional control valve: residual oil flow of steering circuit may be taken off directly and independently or in common with oil flow of hydraulic circuit through oil tappings separate hydraulic tank with 18 l capacity; max. 6 l may be taken off through oil tappings when tractor is travelling, 15 l when tractor is working stationary recommended oil: engine oil SAE 20W/20 (tropics SAE 30) MIL-L-2104C or MIL-L-46 152 oil change after 1000 operating hours or once a year

Implement linkage at rear:	Three point linkage ISO 730/I or DIN 9674, category 2; length of lift rods adjustable by crank handles from 633 to 762 mm, mean length of lift rods 698 mm with lifting range above ground from 132 to 825 mm
Implement linkage at front:	Optionally available, not fitted on tested tractor
Holed drawbar:	Long bar, fitted on clevis of lower links, can be used as towing bar; total length 1700 mm; length between joint balls 830 mm, thickness 25 mm, width 100 mm, centre hole and 8 holes to each side, all holes 33 mm ∅; height above ground adjustable by power lift; holed drawbar can be fixed hydraulically-mechanically to a height of 405 mm above ground measured at surface of bar; lower links stabilization by quick clamping devices; distance of holes' centre line with lower links in horizontal position: from rear axle centre 989 mm from p.t.o. shaft end 633 mm; short bar optionally available

Pull attachment

Trailer hitch:	ROCKINGER 273 U 140 non-automatical, optionally automatical hitch available; height above ground adjustable by one-hand quick adjustment to 677, 719, 761, 803 and 845 mm; hitch hole 33 mm dia, distance of hitch hole centre to rear axle centre 524 mm, to p.t.o. shaft end 168 mm; permissible vertical load 1500 kg

Swinging drawbar:	Optionally available, height above ground 391 and 301 mm by reversing; hitch hole 33 mm dia, distance of hitch hole to rear axle centre 679 and 764 mm, to p.t.o. shaft end 323 and 408 mm; pivot point 200 mm behind rear axle, lateral swinging range 154 mm to each side; optionally available fixed pin (piton fix) or hitch
Towing hitch:	665 mm above ground at front of tractor

Steering

FENDT and ZAHNRADFABRIK FRIEDRICHSHAFEN AG hydrostatic steering model 8491 with own oil circuit and oil filter, filter change after 1000 operating hours or once a year;
oil supply by tandem part of hydraulic pump, displacement 14 cm^3/rev or 32 l/min at rated engine speed;
optional flow dividing valve in oil circuit of steering (see page 9, hydraulic system);
oil reservoir in common with power lift tank;
1 double acting ram, directly acting on front axle, 235 mm stroke, 50 mm dia, piston rod 22 mm dia

Brakes

Parking brake:	Internal-expanding-shoe brake; mechanically acting on 2 brake drums on the differential half shafts, 180 mm dia, 30 mm width, operated by pulling handle with ratchet
Service brake:	FENDT and MASCHINENBAU KNOTT muscle power brake with hydraulic transmission; 2 internal-expanding-shoe brakes on the differential half shafts; 1 disc brake situated on joint shaft of front wheel drive;
Steering brake:	Divided pedal of service brake, for normal use locked together
Trailer brake:	optionally available single- or dual-circuit air brake

Wheels

Steered wheels:	2 pneumatics in front 12.5-20 MPT 8 ply, diagonal type casing; max. permissible load per tyre 2125 kg at 2,5 bar inflation pressure and 30 km/h; track width 1573 mm; track width adjustable to 1713 mm by reversing wheels; rims 11 x 20,
Driven wheels:	At front and at rear driving rear wheels: radial type casing 2 pneumatics 16,9 R 30 8 ply; max. permissible load per tyre 2245 kg at 1,7 bar inflation pressure and 30 km/h; track width 1508 mm; rims DW 14 x 30, optionally offset lug type rims available
Wheel base:	2192 mm

Cab

FENDT
OECD-tested safety-cab
OECD-No. CSD 0274/9;
optionally OECD-tested safety frame with roof available, OECD No. CSD 0336/9;
cab mounted to tractor with 4 silent blocks;
front-, rear- and side windows tiltable;
doors on both sides with additional stop devices for ventilation;
2 steps each on either side 470 and 725 mm above ground;
combined heating and ventilation system with blower, connected to the cooling circuit;
air outlet jets near the cab floor and at the windscreen;
additional fan-assisted ventilation system in the roof optionally available

noise-reduction materials
floor:
bitumen-mat 4 mm,
heavy-layer nap pattern mat with rubber foam lining 12 mm

mudguards:
PUR-foam coated with imitation leather 15 mm
roof:
moulded resin-impregnated, cotton fibres 6 mm
instrument and steering console:
sheet metal plates coated with bitumen-mat 4 mm,
rubber foam mat 40 mm below instrument panel,
additional rubber foam stripes 50 to 70 mm in lower part of console

Seat

GRAMMER DS 85H/50R
upholstered seat with arm rests and folding back rest (upper part),
adjustable spring with shock absorber;
additional horizontal spring suspension with shock absorber in longitudinal direction;
height of platform above ground 990 mm,
height of unballasted seat above platform adjustable in 2 steps from 500 to 560 mm;
longitudinal adjustment range 150 mm;
optionally seat GRAMMER DS 85H/90 AR available

Number of grease points

18

Dimensions

Total length:	3822 mm	without ballast
	4242 mm	with ballast
Total width:	1970 mm	without ballast
	1970 mm	with ballast
Total height:	2552 mm	to top of cab roof, optionally cab with roof which is 70 mm lower available
Ground clearance:	325 mm	below swinging drawbar
	369 mm	below front axle differential

Lighting equipment — Electrical, 12 Volt
as per German legislation

	Dimensions mm	Height above ground to centre mm	Distance from outside edge of tractor to centre mm
Head lamps	135 x 115	965	808
Side lamps	65 x 20	1420	153
Rear lamps	33 x 60	1475	280
Reflectors			
1st pair	115 x 25	1418	278
2nd pair	70 Ø	635	638

Available wheel equipment

wheel equipment	
front	rear
9.5-24 6 ply	12.4-36 6 ply 13.6-36 6 ply
10.5-20 MPT 6 ply	14.9-30 6 ply 16.9-30 6 ply
12.5-20 MPT 8 ply	16.9-30 8 ply 9.5-44 8 ply

Running-time meter — Mechanical, with tachometer combined, driven by camshaft of engine; reference engine speed for one really counted hour 1715 rev/min

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TEST CONDITIONS

Track of wheels: front 1573 mm, rear 1508 mm

Weights: during drawbar performance test

		without driver	with driver
Without ballast:	front	1220 kg	1230 kg
	rear	2120 kg	2195 kg
	total	3340 kg	3425 kg
Ballast in front:	12 weights, total		581 kg
	water in the tyres		200 kg
Ballast at rear:	2 weights per tyre, 105 kg each		210 kg
	water in the tyres		589 kg
With ballast:	front	2120 kg	2130 kg
	rear	2800 kg	2875 kg
	total	4920 kg	5005 kg

Fuels and lubricants used in test

Fuel:	ARAL Diesel-fuel DIN 51 601	
	specific gravity at 15°C	
	at engine test	0,838 kg/l
	at p.t.o. and drawbar test	0,835 kg/l
Engine:	MOBIL DELVAC 1320	SAE 20W/20
Fluid clutch:	MOBIL DELVAC 1210	SAE 10W
Transmission:	MOBIL MOBILUBE GX 80	SAE 80
Differential in front, final drives at rear and in front:	MOBIL MOBILUBE HD 90	SAE 90
Power lift and power steering:	MOBIL DELVAC 1320	SAE 20W/20

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Test No. 82-25

COMPULSORY TESTS

(1) MAIN POWER TAKE-OFF PERFORMANCE (540 rev/min)

Date of tests: 28th October 1982
Location of tests: DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power	engine	Speed fl.clutch output	p.t.o.	Fuel consumption total		spec.	Specific energy
kW	rev/min	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
Maximum power							
At 2-hour test							
38.3	2350	2306	570	11.63	9.71	253	3.30
At rated engine speed							
38.3	2350	2306	570	11.63	9.71	253	3.30
Part loads, the governor hand lever in the position corresponding to the maximum power at full load (curve a)							
(i) 85% of the torque at maximum power at 2-hour test							
33.3	2394	2358	583	10.16	8.49	255	3.28
(ii) unloaded							
-	2487	2480	613	3.25	2.71	-	-
(iii) 50% of the torque defined in (i)							
17.1	2438	2416	597	6.46	5.40	316	2.64
(iv) maximum power							
38.3	2350	2306	570	11.63	9.71	253	3.30
(v) 25% of the torque defined in (i)							
8.7	2466	2452	606	4.83	4.03	465	1.79
(vi) 75% of the torque defined in (i)							
25.3	2422	2390	591	8.15	6.80	269	3.11

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Power	engine	Speed fl.clutch output	p.t.o.	Fuel consumption total		spec.	Specific energy
kW	rev/min	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
	Part loads, the governor hand lever in the position corresponding to the standard p.t.o. speed at full load (curve b)						
(i)	85% of the torque at maximum power at standard p.t.o speed						
32.8	2272	2230	551	9.83	8.21	250	3.34
(ii)	unloaded						
-	2366	2360	583	2.93	2.45	-	-
(iii)	50% of the torque defined in (i)						
16.9	2318	2299	568	6.13	5.12	302	2.76
(iv)	maximum power						
37.9	2232	2186	540	11.29	9.42	249	3.36
(v)	25% of the torque defined in (i)						
8.6	2342	2326	575	4.49	3.75	438	1.91
(vi)	75% of the torque defined in (i)						
25.0	2296	2263	559	7.91	6.61	264	3.16

Standard specific fuel consumption (g/kWh): 255/316/250/302

No load maximum engine speed: 2487 rev/min
Equivalent flywheel torque at maximum power (2 hours): 159 Nm
Maximum equivalent flywheel torque: 186 Nm at 1500 rev/min of the engine

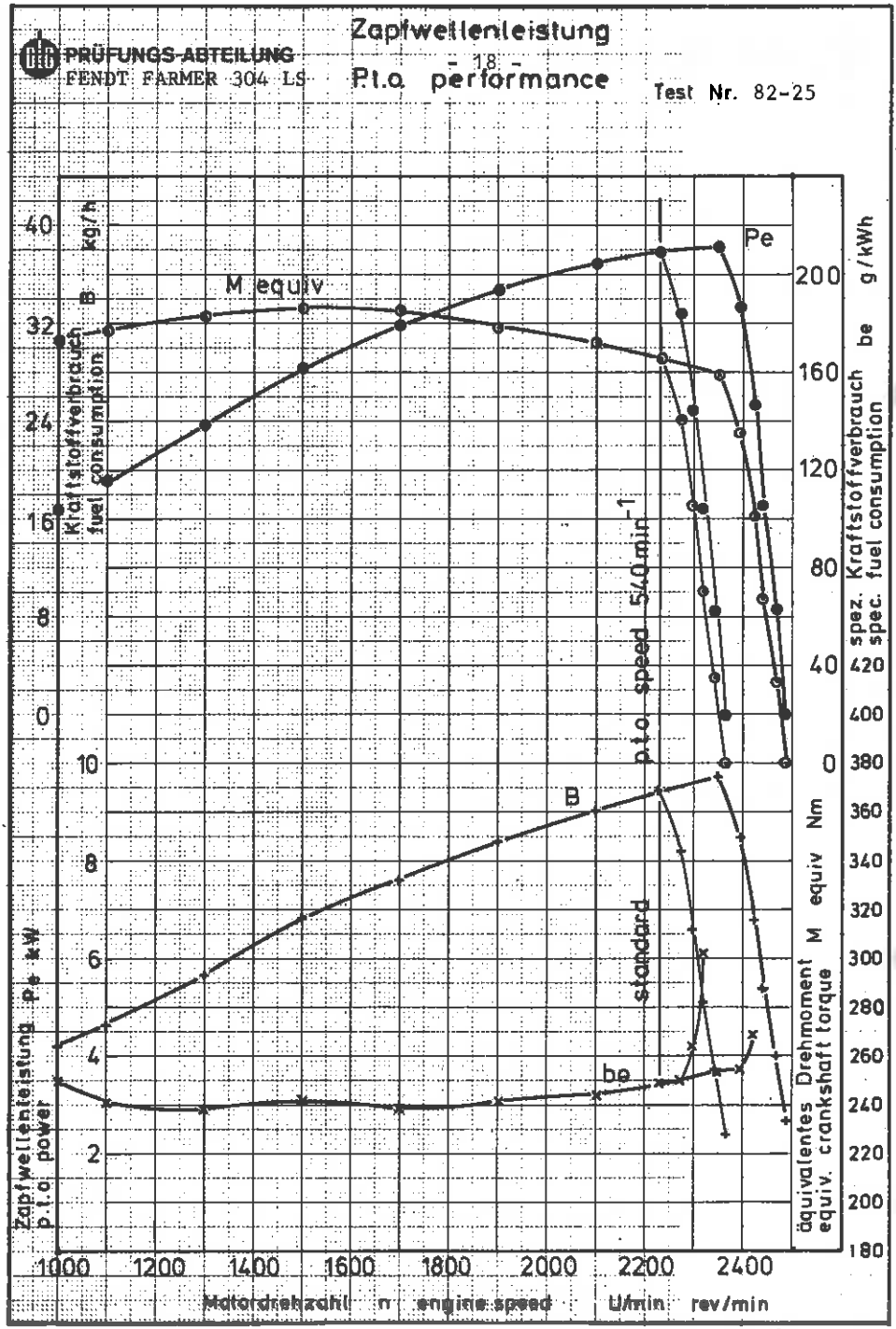
Mean atmospheric conditions:	temperature	20 °C
	pressure	1012 mbar
	relative humidity	65 %
Maximum temperatures:	coolant	86 °C
	engine oil	104 °C
	fuel	20 °C
	engine air intake	21 °C

The equivalent flywheel torques are given relative to the output shaft of the fluid clutch

Zapfwellenleistung
P.t.o. performance

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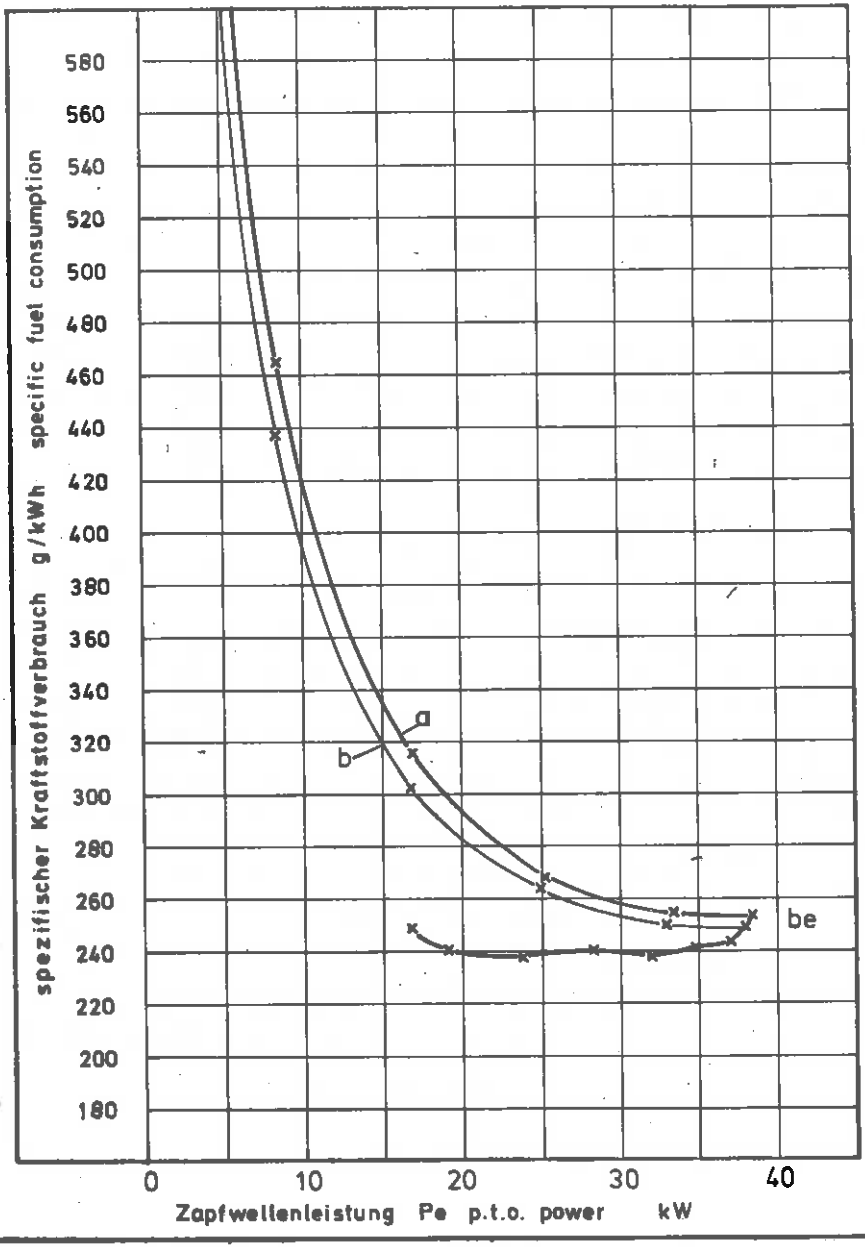
Test Nr. 82-25



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Zapfwellenleistung
- 19 -
P.t.o. performance

Test Nr. 82-25



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(2) DRAWBAR PERFORMANCE

Date of tests: 1st till 9th November 1982
Type of track: Concrete

Gear no. and group	Driving speed km/h	Power kW	Drawbar pull daN	Engine speed rev/min	Slip of wheels %
(i) MAXIMUM POWER (unballasted) height of drawbar above ground 390 mm					
2 A FL	2,04	20,2	3568	2426	14,9
2 A FS	2,45	24,4	3581	2391	14,9
3 A FL	3,19	31,5	3550	2352	14,5
3 A FS	4,08	32,7	2890	2349	10,2
1 S FL	5,31	33,0	2236	2350	7,7
1 S FS	6,58	33,2	1818	2349	6,1
2 S FL	8,77	32,1	1319	2350	4,5
(ii) MAXIMUM POWER (ballasted) height of drawbar above ground 380 mm					
1 A FL	1,26	17,6	5036	2398	15,1
1 A FS	1,53	21,4	5045	2385	15,0
2 A FL	1,99	27,8	5032	2388	15,0
2 A FS	2,46	31,9	4662	2344	12,2
3 A FL	3,45	32,5	3387	2353	7,6
3 A FS	4,27	32,6	2747	2346	5,9
1 S FL	5,47	32,7	2150	2350	4,5
1 S FS	6,74	31,6	1689	2352	3,5
2 S FL	8,92	30,8	1242	2350	2,6
(iii) FIVE-HOUR-TEST at 75% of pull at maximum power in 1 S FS gear					
1 S FS	6,98	24,6	1267	2401	2,4
(iv) FIVE-HOUR-TEST at pull corresponding to 15% wheel slip in test (ii)					
2 A FL	1,86	26,1	5045	2363	-

Total oil consumption during ten hours duration of tests (iii) and (iv) 21 g/h

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Tyre size front: 12.5 - 20 MPT 8 ply
rear: 16.9 R 30 8 ply

Tread bar height at the beginning of drawbar tests front and rear 91% of the values when new

Specific fuel consumpt. g/kWh	Specific energy kWh/l	Temperatures Fuel °C	Coolant °C	Engine-oil °C	Atmospheric conditions Tempe-rature °C	Relative humidity %	Pressure mbar
tyre inflation pressure 0,8 bar rear, 1,5 bar front							
347	2,40	16	72	85	9	95	1012
322	2,59	17	73	94	10	96	1011
311	2,69	16	77	90	10	92	1012
299	2,79	17	79	90	10	91	1012
296	2,80	17	77	89	11	89	1012
297	2,81	19	77	88	13	88	1012
305	2,74	19	77	90	13	87	1012
tyre inflation pressure 0,8 bar rear, 1,5 bar front							
362	2,32	16	76	84	11	97	1006
338	2,47	16	74	85	11	97	1006
325	2,57	17	75	85	12	87	1006
307	2,72	17	80	89	10	98	1006
300	2,78	17	79	91	11	99	1006
299	2,79	17	77	89	10	98	1006
300	2,78	17	80	91	11	96	1006
310	2,69	16	79	91	11	98	1006
319	2,62	17	80	92	10	95	1006
324	2,58	22	77	96	17	85	997
-	-	18	76	95	12	57	958

Test (iv) was carried out with additional ballast, the figures not quoted are therefore irrelevant

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 20.5 - 20 MPT 8 ply
rear: 16.9 R 30 8 ply

Track of wheels front: 1573 mm
rear: 1508 mm

Front wheel drive disengaged

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	4,27	4,37	4,78	4,95
Radius of turning circle	4,00	4,12	4,51	4,79

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	1084 mm
Distance forward from rear axle centre	787 mm
Distance from tractor's median plane, to the left	4 mm

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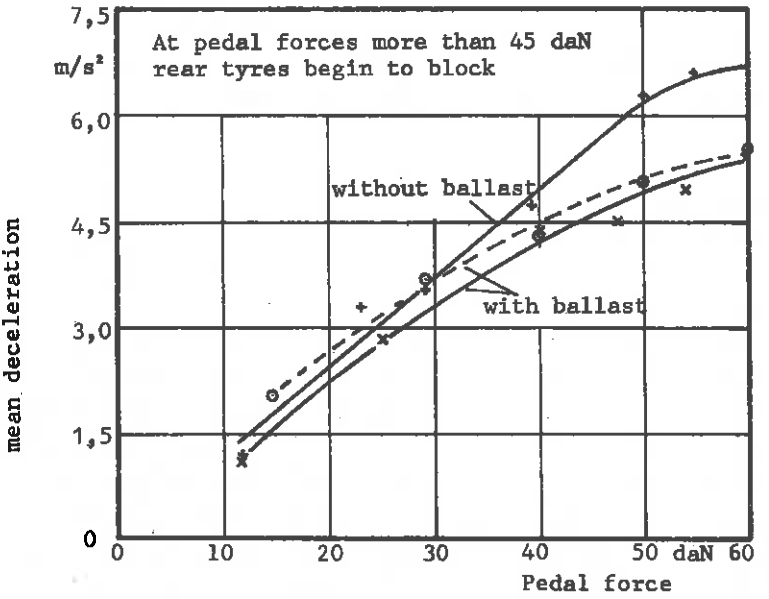
(5) Braking (Front wheel drive disengaged)

Date of tests: 2nd and 3rd November 1982

Tractor masses during tests with driver:	front kg	rear kg	total kg
without ballast	1230	2195	3425
with ballast	2500	2505	5005

A) Service brake

Type-0-test (cold brakes) ——, Type-I-(fade)test – – –



Speed before application of brakes, without ballast 36,7 km/h
with ballast 36,2 km/h

The 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 3000 kg	
	up	down	up	down
Braking device control force daN	22	19	18	15

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(6) MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test: 1st November 1982
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

Results of test

Gear: 3rd Overdrive
Travelling speed before acceleration: 27,9 km/h
Sound level: 86,0 dB(A)

(7) NOISE MEASUREMENT AT THE DRIVER'S EAR

Date of tests: 1st November 1982
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209
The tractor was fitted with FENDT safety cab

Results of tests

Gear no. and range	Drawbar pull at which the tractor develops the maximum sound level daN	Travelling speed nominal km/h	Travelling speed effective km/h	Sound level dB(A)
1 A FL	3555	1,41	1,29	82,5
1 A FS	3569	1,72	1,53	82,0
2 A FL	3542	2,25	1,99	82,5
2 A FS	3566	2,74	2,43	82,0
3 A FL	3512	3,64	3,19	83,0
3 A FS	2843	4,45	4,10	82,5
1 S FL	2219	5,62	5,32	82,0
1 S FS*)	1791	6,86	6,58	82,5
1 S FS*)	light load	6,86	7,48	81,0
2 S FL	1309	9,00	8,74	82,5
2 S FS	1054	10,98	10,76	83,0
3 S FL	707	14,57	14,47	82,5
3 S FS	531	17,78	17,69	82,5
3rd Overdrive	light load	36,12	37,24	82,0**)

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

**) Front wheel drive disengaged

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(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date of tests: 10th November 1982

Power Lift

	Height of lower hitch point above ground in down pos. mm	Vertical movement mm	Max. force exerted through full range daN	Corresp. pressure of hydraul. fluid bar	Moment about rear axle daNm	Max. tilt angle of mast over range of lift degrees
At hitch points	132	693	1400	158	1322	-
On the frame	132	815	1260	158	1958	12*)

Temperature of hydraulic fluid at start of test 65 °C

*) max. tilting angle of mast from vertical position to max. height 8°

Lifting heights relative to horizontal lower links

mm	-415	-400	-363	-300	-200	-100	±0	+100	+200	+300	+330	+400
Lifting forces at hitch points												
daN			1400	1480	1580	1650	1650	1650	1620	1600	1650	
Lifting forces at test frame												
daN	1260	1280		1360	1430	1450	1410	1340	1320	1300		1260

Hydraulic Pump Performance

Opening pressure of the relief valve in remote circuit	175 bar
Sustained pressure with relief valve open	187 bar
Pump delivery rate at minimum pressure, the governor control lever being set for max. power	43,1 l/min
Hydraulic power at 90% of relief valve setting	11,4 kW
Corresponding delivery rate	40,7 l/min
Pressure	168 bar
Temperature of hydraulic fluid	65 °C

Tapping point used for test: At rear of tractor

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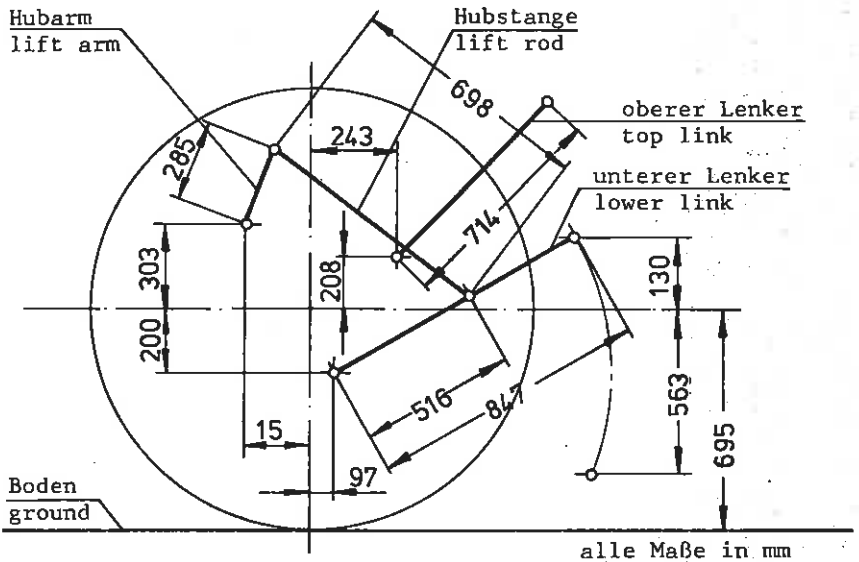
LINKAGE GEOMETRY when connected to the standard frame

Projected length in side view:

Lower links	847 mm
Lift arms	285 mm
Lift rods	698 mm
Top link	714 mm
Distance of lift rod connection point from pivot point of lower link	516 mm

The following dimensions are given relative to the rear wheel centre line, situated 695 mm above ground:

Lower link pivot point	97 mm behind,	200 mm below
Top link pivot point	243 mm behind,	207 mm above
Lift arm pivot point	15 mm forward,	303 mm above
Maximum and minimum height of lower link hitch points	563 mm below,	130 mm above
Height of lower link hitch points when locked in transport position	305 mm below	



alle Maße in mm
all dimensions in mm

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OPTIONAL TESTS

(9) ENGINE PERFORMANCE

Date of tests: 15th October 1982
Location of tests: DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK eddy-current dynamometer W 150

Power kW	Engine speed rev/min	Fuel consumption hourly l/h	Fuel consumption hourly kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power					
At 2-hour test					
42.9	2350	11.60	9.68	226	3.70
At standard p.t.o. speed (540 rev/min)					
42.4	2232	11.41	9.52	224	3.72
At rated engine speed					
42.9	2350	11.60	9.68	226	3.70
Part loads					
(i) 85% of the torque at maximum power at 2-hour test					
37.3	2388	10.06	8.40	226	3.70
(ii) unloaded					
-	2483	2.71	2.26	-	-
(iii) 50% of the torque defined in (i)					
19.0	2447	6.15	5.14	271	3.08
(iv) maximum power					
42.9	2350	11.60	9.68	226	3.70
(v) 25% of the torque defined in (i)					
9.6	2465	4.35	3.64	380	2.20
(vi) 75% of the torque defined in (i)					
28.1	2413	7.98	6.66	237	3.52

Optimum fuel consumption: 213 g/kWh at 23.7 kW and 1293 rev/min
No load maximum engine speed: 2483 rev/min
Torque at maximum power (2 hours): 174 Nm
Maximum torque: 204 Nm at 1599 rev/min of the engine

Mean atmospheric conditions:	temperature	12 °C
	pressure	970 mbar
	relative humidity	65 %
Maximum temperatures:	coolant	82 °C
	engine oil	101 °C
	fuel	19 °C
	engine air intake	20 °C

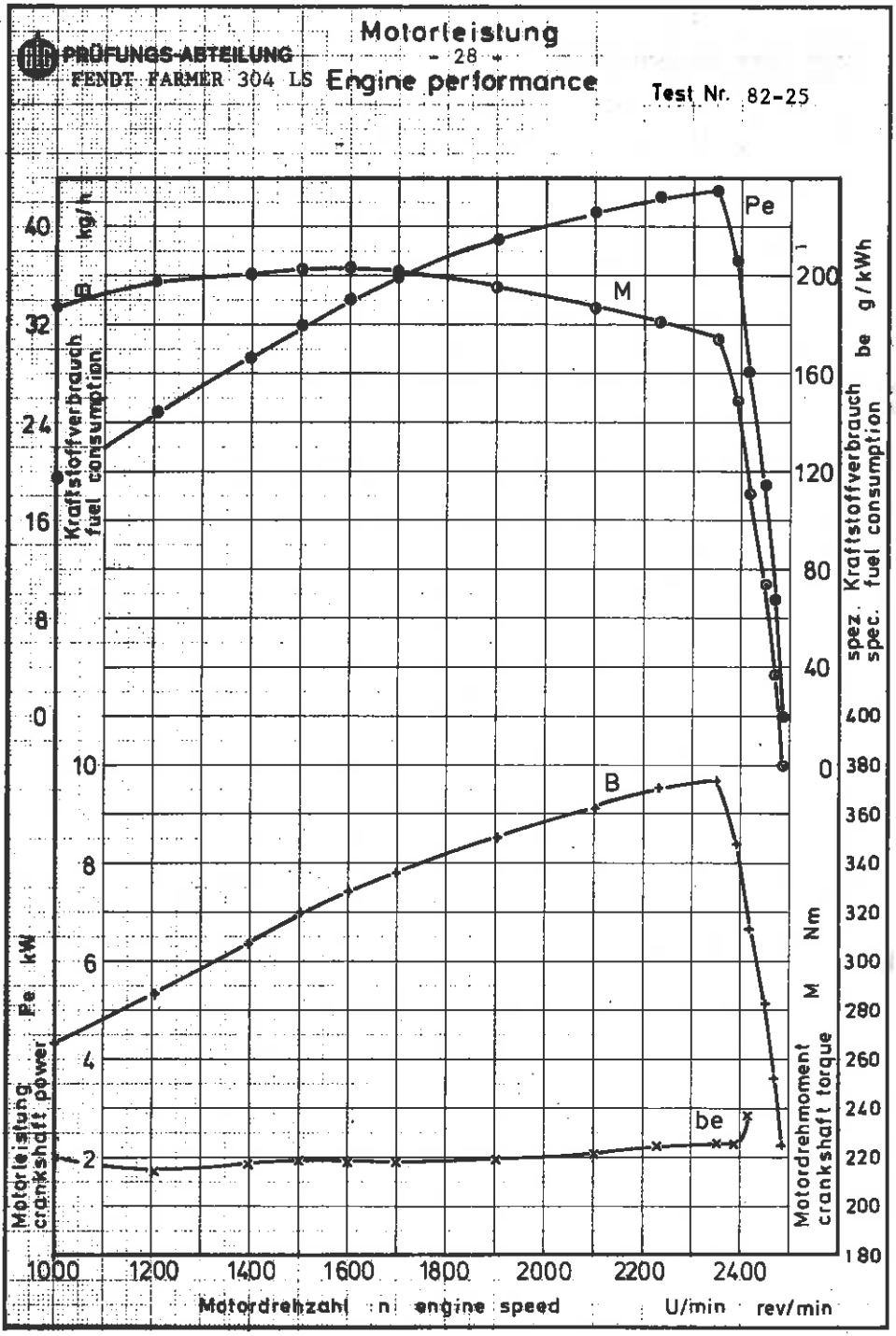
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Motorleistung

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FENDT FARMER 304 LS **Engine performance**

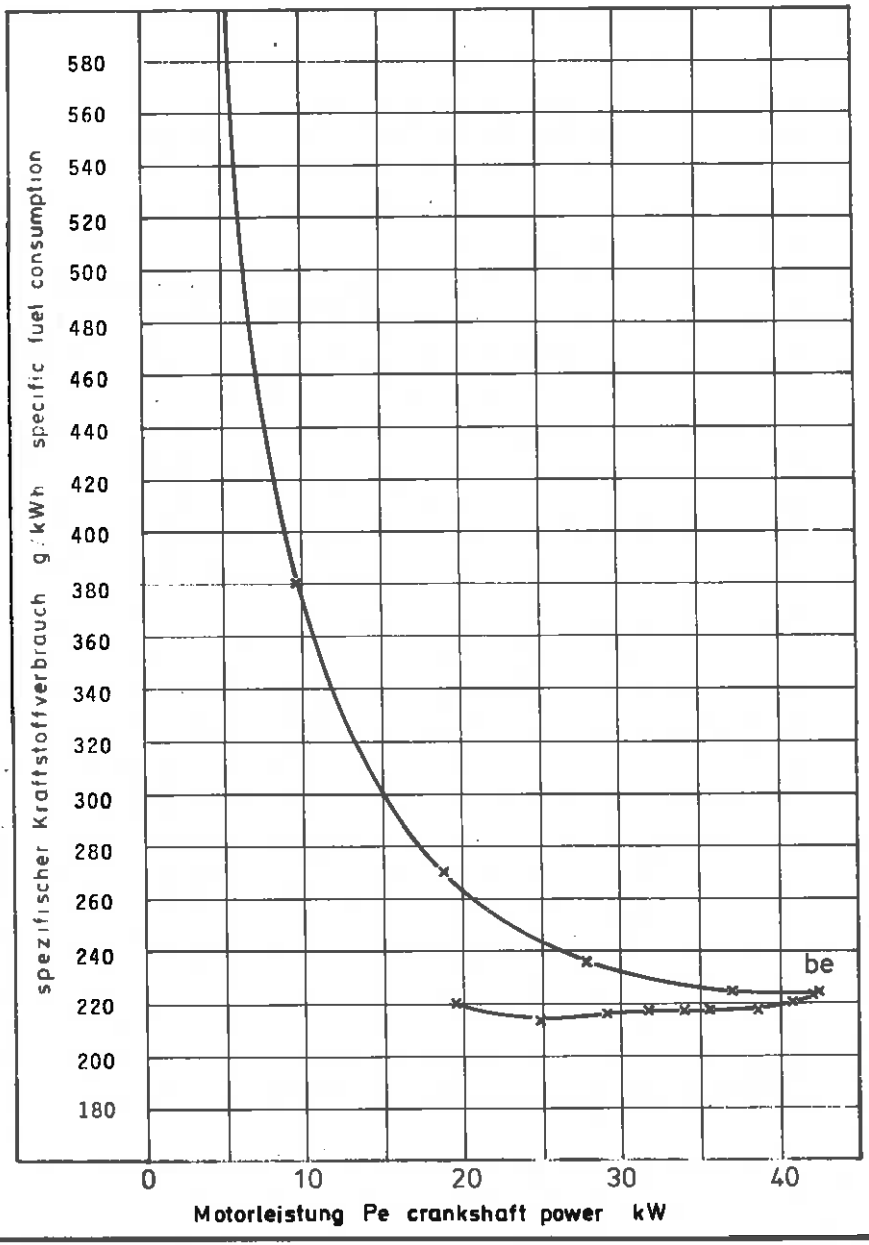
Test Nr. 82-25



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Motorleistung
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Engine performance

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Motorleistung
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Engine performance

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Motorleistung in % der Leistung bei Nenndrehzahl

engine power in % of power at rated engine speed

Belastung in % des Drehmomentes bei Nenndrehzahl

load in % of torque at rated engine speed

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ADDITIONAL TESTS

(10) MAIN POWER TAKE-OFF PERFORMANCE (750 rev/min)

Date of tests: 28th October 1982
Location of tests: DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power	engine	Speed fl.clutch output	p.t.o.	Fuel consumption total		spec.	Specific energy
kW	rev/min	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
Maximum power							
At 2-hour test							
38.5	2350	2302	743	11.63	9.71	252	3.31
At rated engine speed							
38.5	2350	2302	743	11.63	9.71	252	3.31
Part loads, the governor hand lever in the position corresponding to the maximum power at full load							
(i) 85% of the torque at maximum power at 2-hour test							
33.4	2392	2354	760	10.21	8.52	255	3.27
(ii) unloaded							
-	2487	2487	803	3.32	2.77	-	-
(iii) 50% of the torque defined in (i)							
17.2	2439	2417	780	6.47	5.40	315	2.65
(iv) maximum power							
38.5	2350	2302	743	11.63	9.71	252	3.31
(v) 25% of the torque defined in (i)							
8.7	2464	2452	792	4.86	4.06	465	1.80
(vi) 75% of the torque defined in (i)							
25.4	2418	2387	771	8.24	6.88	270	3.09

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Power	engine	Speed fl.clutch output	p.t.o.	Fuel consumption total		spec.	Specific energy
kW	rev/min	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l

Part loads, the governor hand lever in the position corresponding to the standard p.t.o. speed at full load

(i) 85% of the torque at maximum power at standard p.t.o speed							
29.1	1824	1774	573	8.30	6.93	238	3.50
(ii) unloaded							
-	1932	1931	624	2.08	1.74	-	-
(iii) 50% of the torque defined in (i)							
15.1	1874	1848	597	4.96	4.14	274	3.05
(iv) maximum power							
32.4	1722	1676	541	9.26	7.73	239	3.50
(v) 25% of the torque defined in (i)							
7.7	1906	1888	610	3.49	2.91	377	2.22
(vi) 75% of the torque defined in (i)							
22.3	1852	1813	585	6.56	5.48	246	3.40

Standard specific fuel consumption (g/kWh): 255/315/238/274

No load maximum engine speed: 2487 rev/min
Equivalent flywheel torque at maximum power (2 hours): 160 Nm
Maximum equivalent flywheel torque: 186 Nm at 1500 rev/min of the engine

Mean atmospheric conditions:	temperature	19 °C
	pressure	1012 mbar
	relative humidity	65 %
Maximum temperatures:	coolant	85 °C
	engine oil	101 °C
	fuel	18 °C
	engine air intake	21 °C

The equivalent flywheel torques are given relative to the output shaft of the fluid clutch

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(11) POWER LIFT PERFORMANCE

at minimum lift rods' length 633 mm

Date of tests: 10th November 1982

Power lift

	Height of lower hitch point above ground in down pos. mm	Vertical movement mm	Max. force exerted through full range daN	Corresp. pressure of hydraul. fluid bar	Moment about rear axle daNm	Max. tilt angle of mast over range of lift degrees
At hitch points	300	625	1540	158	1331	-
On the frame	300	759	1240	158	1828	13,5

Temperature of hydraulic fluid at start of test 65 °C

Lifting heights relative to horizontal lower links

mm	-234	-200	-195	-100	±0	+100	+200	+300	+400	+430	+500	+525
Lifting forces at hitch points												
daN			1540	1730	1810	1830	1770	1730	1750	1750		
Lifting forces at test frame												
daN	1410	1410		1470	1490	1470	1410	1340	1300		1260	1240

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