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

O.E.C.D. No. 840



Agricultural Tractor MB trac 900 (4WD)

Manufacturer
Daimler-Benz AG, Postfach 1220
D-7560 Gaggenau

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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: December 1981 till April 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.N.E.E.M.A., France) as being in accordance with the O.E.C.D STANDARD CODE.

Date of Approval: 20th July 1982 O.E.C.D. No. 840

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 = 750,1 mm Hg			

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Printed in the Federal Republic of Germany
September 1982; DLG-No. 175

PRÜFUNGS-ABTEILUNG

MB-trac 900 Test No. 80-208

TABLE OF CONTENTS

	Page
SPECIFICATION OF TRACTOR	4 to 14
TEST CONDITIONS	15
COMPULSORY TESTS	
(1) Main power take-off performance	16 to 19
(2) Drawbar performance on a concrete track	20 and 21
(3) Turning space and turning circle	22
(4) Location of centre of gravity	22
(5) Braking	23 and 24
(6) Measurement of external noise level	25
(7) Noise measurement at the driver's ear	25
(8) Power lift and hydraulic pump performance	26 to 29
OPTIONAL TESTS	
(9) Engine performance	30 to 33
ADDITIONAL TEST out of the OECD Code under the responsibility of the DLG-testing station	
(10) Noise at the driver's ear reported in the diagram of the NOISE RATING curves	34 and 35

PRÜFUNGS-ABTEILUNG
MB-trac 900

Test No. 80-208

Tractor manufacturer:	DAIMLER-BENZ-AG D-7560 Gaggenau
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Gaggenau and Groß-Umstadt
Duration of running-in:	Engine and tractor appr. 50 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	DAIMLER-BENZ AG
Model:	440 164 S; trade name MB-trac 900 Four wheel drive tractor with 4 equal sized wheels, chassis construction, spring suspended front axle
Serial No.:	440 164 00 08 1679

Engine

Make:	DAIMLER-BENZ AG
Model:	OM 314 A.I/1
Type:	Supercharged 4-stroke Diesel-engine with direct injection, watercooled
Serial No.:	314970 10 359448
Cylinders:	4, vertical, in-line, bore 97 mm, stroke 128 mm; displacement 3784 cm^3; compression ratio 17
Valves:	Overhead valves
Fuel system:	BOSCH fuel-feed pump FP/KS 22AD 6/4 BOSCH in-line injection pump with timing device: PES 4A 90 D 410 RS 2570 - EP 3002 manufacturer's production setting 60 mm^3/stroke at rated engine speed and full load; injection timing 15° before TDC + 8° range; BOSCH multihole injection nozzles DLLA 142 S 791; injection pressure 200 + 8 bar; BOSCH dual fuel filter with replaceable cartridge; capacity of fuel tank 120 l
Governor:	BOSCH centrifugal variable speed governor: EP/RSV 350-1200 A2B 1147 L-RS 3100 ; governed range of engine speed 700 to 2630 rev/min, rated engine speed 2400 rev/min

PRÜFUNGS-ABTEILUNG
MB-trac 900 Test No. 80-208

Supercharger:	Exhaust driven supercharger GARRET TPL 712 A max. supercharge pressure 560 ± 10 mbar without air intercooler
Air cleaner:	KNECHT (optional MANN); dry paper element filter with pre-cleaner; replaceable cartridge with safety cartridge; electrical service indicator; air intake above bonnet
Exhaust silencer:	GILLET KG multi-chamber expansion type muffler; 98 x 238 mm oval, 445 mm long; under engine cowling to the left side; mouth 2735 above ground
Lubrication system:	Forced feed from gear pump; strainer in sump; MANN oil filter in full flow with replaceable cartridge and by-pass valve; oil capacity 11 l; oil and oilfilter changing interval 300 operating hours; recommended oil viscosities: winter SAE 10W or 10W/40 summer SAE 30 or 10W/40 tropics SAE 40 recommended quality MIL-L-46 153, API CC
Cooling system:	Pressurized water cooling, impeller assisted; dual-circuit-thermostat valve and overpressure relief valve set at 0,4 bar; fan with 7 blades, 470 mm dia; water capacity 15 l
Starting system:	Electrical; solenoid pre- engaged drive BOSCH starter motor JF 12V 3kW; startpilot
Electrical equipment:	12 V, negative earth; BOSCH three phase alternator K1-14V 55A, 770W 1 lead acid battery 110 Ah at 20 hours rating

Transmission

Clutch:	LAMELLEN UND KUPPLUNGSBAU GMBH dry dual disc clutch DT 330/310G; tractor drive disc with 330 mm dia, hydraulically operated by pedal; p.t.o. drive disc with 310 mm dia, pneumatically operated by hand valve on the instrument panel
Gear box:	DAIMLER-BENZ AG synchromesh speed change gear with 4 speeds; range gear with 3 speeds: synchronized forward range S, collar shifted forward range G, collar shifted reverse range R; closed stepped range gear with 2 synchronized speeds H and L, pneumatically shifted; totally 16 forward- and 8 reverse speeds in the 40 km/h-version; the 4th speed of the S-range is blocked at the 25 km/h-version, resulting 14 forward and 8 reverse speeds; optionally available additional creeper and super creeper range gear box
Rear axle and final drives:	DAIMLER-BENZ AG portal axle, rigidly fitted to tractor chassis, driven by universal joint shaft; bevel gear drive; spur gear final drives
Front axle and final drives:	DAIMLER-BENZ AG portal axle, coil spring suspended with shock absorber and traverse-stabilizer; driven by universal joint shaft within thrust tube and double joints in the steering knuckles; pneumatically engageable under load; bevel gear drive; spur gear final drives
Both axles:	Driving axle ratio optional 24:7 or 22:7; tested tractor has been equipped with ratio 24:7; bevel gear drive differentials, differential locks in both axles to be engaged and disengaged in common when driving, not selfdisengaging

Oil capacity:	Gear box	7 l
	differentials at front and at rear, each	2 l
	final drives at front and at rear, each	1,2 l

Recommended oil: Gear box: SAE 80, API GL-4, MIL-L-2105 B
differentials and final drives:
SAE 90, API GL-5, MIL-L-2105 B

oil and oilfilter change interval every 1200 operating hours or at least yearly

Power take-off

Main p.t.o.: Independent p.t.o. at rear of tractor, driven by the second disc of the dual clutch;
621 mm above ground, 25 mm to the left side of median plane of tractor;
438 mm behind rear axle center;
p.t.o. shaft interchangeable:

35 mm dia, 6 splines DIN 9611/ISO 500, type 1

35 mm dia, 21 splines DIN 9611/ISO 500, type 2

45 mm dia, 20 splines DIN 9611/ISO 500, type 3

45 mm dia, 6 splines

2 speeds preselectable by hand lever:

540 rev/min p.t.o.
564 rev/min at rated engine speed;
standard p.t.o. speed 540 rev/min at 2300 rev/min of engine

1000 rev/min p.t.o.
1029 rev/min at rated engine speed;
standard p.t.o. speed 1000 rev/min at 2333 rev/min of engine

direction of rotation clockwise, viewed from rear of tractor

PRÜFUNGS-ABTEILUNG

MB-trac 900 Test No. 80-208

Total ratios and speeds (tyres 16,9-24)

Range		Gear	Total ratio engine : driving wheels		Nominal travelling speed at rated engine speed km/h *)	
			1)	2)	1)	2)
G	L	1	200,08	183,41	2,80	3,06
		2	119,30	109,36	4,70	5,13
		3	73,17	67,07	7,67	8,36
		4	44,43	40,02	12,63	13,77
	H	1	157,92	144,76	3,55	3,88
		2	94,16	86,32	5,96	6,50
		3	57,75	52,94	9,71	10,60
		4	35,07	32,14	16,00	17,45
S	L	1	80,03	73,36	7,01	7,65
		2	47,72	43,74	11,76	12,82
		3	29,27	26,83	19,17	20,91
		4**)	17,77	–	31,57	-
	H	1	63,17	57,90	8,88	9,69
		2	37,67	34,53	14,89	16,25
		3	23,10	21,18	24,28	26,49
		4**)	14,03	–	39,99	-
R	L	1	153,39	140,61	3,66	3,99
		2	91,46	83,84	6,13	6,69
		3	56,10	51,42	10,00	10,91
		4	34,06	31,22	16,47	17,97
	H	1	121,07	110,98	4,63	5,05
		2	72,19	66,18	7,77	8,84
		3	44,29	40,59	12,67	13,82
		4	26,88	24,64	20,87	22,76

*) Calculated with INDEX RADIUS 620 mm

1) Tractor tested with driving axle ratio 24:7 (40 resp. 25 km/h)

2) Optionally driving axle ratio 22:7 available (30 km/h)

**) The 4th speed of S-range is locked at 1) at 25 km/h-version and at 2) generally at 30 km/h version

Secondary p.t.o.:	Optionally avaible; at front, 213 mm to the left side of tractor's median plane, appr. 1075 mm above ground, distance from front wheel center 1100 mm; drive, profile, speeds and direction of rotation like main p.t.o. Main p.t.o. and secondary p.t.o. can be driven separately or together
Power lift	DAIMLER-BENZ AG hydraulic power lift, desintegrated construction; draft and position control infinitely mixable, floating position; lower link sensing; flow shutt-off valve
Hydraulic system:	Open centre system, ECKERLE gear type pump LPS F3, directly driven by engine by 2 V-belts, displacement 13 cm^3/rev or 40 l/min at rated engine speed; hydraulic oil filter in return line, filter change period every 800 operating hours; BOSCH control valve HY/SRZ, maximum working pressure 180 + 10 bar; 2 single acting rams with 150 mm stroke and 80 mm dia, overpressure relief valve in rams set to 200 + 10 bar, up to 3 BOSCH auxiliary control valves, double acting, floating position, automatical release of lever at 165 bar, with max. 4 oil tappings at front and 6 oil tappings at rear; separate hydraulic oil reservoir of 30 l capacity, 18 l can be taken out recommended oil: engine oil SAE 10W, MIL-L-46 152, API CC; oil change interval every 800 operating hours or yearly
Implement linkage at rear:	Three point linkage ISO 730/I, DIN 9674 category 2; optionally available WALTERSCHEID quick couplers; lift rods adjustable from 445 to 620 mm, at mean lift rods length of 533 mm lifting range above ground from 375 to 958 mm

Implement linkage at front:	Optionally available, only fitted for power lift forces' test
Holed drawbar:	Short bar, fitted to the clevis of lower links; length between ball joints 830 mm, thickness 25 mm; centre hole and 4 holes to either side, 80 mm distance each, 33 mm dia; height above ground at mean lift rods' length adjustable by power lift from 388 to 971 mm, measured at surface of bar; distance of centre hole at horizontal lower links from rear axle centre 1098 mm from p.t.o. shaft end 660 mm

Pull attachment

Trailer hitch:	ROCKINGER 278 B, non automatical; optionally available automatic hitch; height above ground adjustable to 967, 907, 847 and 787 mm; hitch hole diameter 33 mm distance of hitch hole from rear axle centre 573 mm from p.t.o. shaft end 135 mm permissible vertical load 1500 kg
Swinging drawbar:	Optionally available, not fitted to tested tractor
Towing hitch:	At front, 820 mm above ground

PRÜFUNGS-ABTEILUNG

MB-trac 900 Test No. 80-208

Steering

ZAHNRADFABRIK FRIEDRICHSHAFEN AG
SEVOSTAT 8453, hydrostatic steering;
ZF vane type pump,
displacement 16,5 cm³/rev,
V-belt driven by engine;
2 double acting steering rams, 40 mm dia,
250 mm stroke, fitted to differential
housing of front axle, acting to
steering levers;
own oil circuit with filter,
oil capacity 3 l;
recommended oil:
engine oil SAE 10W or 10W/40
API CC, MIL-L-46152

oil and oil filter change period
every 2400 operating hours

Brakes

Compressed air equipment: DAIMLER-BENZ AG
air compressor, directly driven by engine;
1 air-brake reservoir to right of chassis
with 20 l capacity; working pressure 8,1 bar

Parking brake: Spring-type brake actuator,
pneumatically actuated by hand valve;
locked by pressure release, acting on
the brake discs of rear axle

Service brake: DAIMLER-BENZ AG
pedal operated single circuit power assisted
brake, compressed air assisted; optional dual
circuit brake;hydraulic transmission,
1 dry caliper disc brake with 1 braking disc,
421 mm dia, at each wheel

Steering brake: None

Trailer brake: optionally available;
combined single/dual line type,
pneumatically controlled;
hydraulic brake for France

Wheels

Steering wheels:	At front
Driving wheels:	At front and rear; front wheel drive disengageable (s.p. 6); 4 pneumatics 16,9 R 24 8 ply; radial casing; maximum permissible load per tyre 2040 kg at 1,7 bar inflation pressure and 30 km/h; track width 1624 mm; optionally avaible offset lug type rims, track width 1612, 1816 and 2014 mm; rims 13,0 x 24
Wheel base:	2400 mm
Cab	DAIMLER-BENZ AG OECD-tested safety cab, appr.-no. CSD 0330/1; all-steel construction of molded elements, welded and bolted together, antivibration mounted by 4 silent blocks on chassis; cab can be tilted for maintenance purposes; 2 mounting steps 610 and 920 mm above ground (optional 3 mounting steps); door windows tiltable, optional front window tiltable, rear window to be opened by crank handle, optional tiltable roof hatch; engine coolant heat exchanger combined with ventilation; air intake below front window; air outlet jets for cab floor and within instrument panel; defroster jets for front window; noise reduction materials: cab floor with 5 mm elastomer mat, optional integral foam mat 22 mm and abrasion resistent surface; roof and optional rigid rear wall covered with dual layer paper and polyether foam and fabric covering 25 mm

Seat	ISRINGHAUSEN 5000/386; upholstered seat with back rest and arm rests, adjustable spring and shock absorber; height of cab platform above ground 1260 mm, height of non ballasted seat above platform adjustable from 460 to 525 mm within 6 steps; longitudinal adjustment 55 mm, restricted by lever of speed change gear
Central implement mounting area	Behind cab, between and over rear mudguards
Number of grease points	22
Dimensions	
Total length:	4550 mm without ballast 5300 mm with ballast
Total width:	2140 mm with and without ballast
Total height:	2735 mm up to exhaust mouth
Ground clearance:	525 mm below lower links fixing points
Running time meter	Electronical, combined with tachometer; reference engine speed for one really counted hour 1600 rev/min

PRÜFUNGS-ABTEILUNG
MB-trac 900

Test No. 80-208

Lighting equipment Electrical, 12 V
in accordance with German legislation

	Dimensions mm	Height of centre above ground mm	Distance from outside edge of tractor to centre mm
Head lamps	135 x 120	1255	850
Side lamps	30 x 58	1469	150
Rear lamps	55 x 80	1305	300
Reflectors	75 dia	908	300

Available tyres

Tyre sizes front and rear	
9,5-32	10 ply
12,4-28	8 ply
13,6-28	8 ply
14,9-24	8 ply
14,9-24	10 ply
14,9/80-24	10 ply
16,9-24	8 ply

TEST CONDITIONS

Track setting 1624 mm front and rear

Weights as during drawbar performance tests

		without driver	with driver
Without ballast:	front	2210 kg	2255 kg
	rear	1680 kg	1720 kg
	total	3890 kg	3975 kg
Front ballast:	front frame	88 kg	
	6 weights, 34 kg each	204 kg	
	1 weight	186 kg	
Rear ballast:	on central implement mounting area	2057 kg	
With ballast:	front	3215 kg	3260 kg
	rear	3210 kg	3250 kg
	total	6425 kg	6510 kg

Fuels and lubricants used in tests

Fuel:	ARAL Diesel fuel DIN 51601	
	specific gravity at 15°C	
	at engine test	0,830 kg/l
	at p.t.o. test	0,832 kg/l
	at drawbar test	0,847 kg/l
Engine oil:	FUCHS TITAN SAE 10W/40	
Gear box oil:	gear box: ESSO GP-D 80 SAE 80	
	differentials and final drives: ESSO HYPOID GX-D 90 SAE 90	
Power lift and steering:	FUCHS TITAN SAE 10W/40	

PRÜFUNGS-ABTEILUNG

MB-trac 900 Test No. 80-208

COMPULSORY TESTS

(1) MAIN POWER TAKE-OFF PERFORMANCE (1000 rev/min)

Date of tests: 11th January 1982
Location of tests: DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power kW	Speed engine rev/min	Speed p.t.o. 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						
58.3	2400	1029	16.98	14.13	242	3.43
At standard p.t.o. speed						
58.3	2333	1000	16.62	13.82	237	3.51
At the speed recommended for drawbar work						
58.3	2400	1029	16.98	14.13	242	3.43
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						
50.6	2452	1051	15.07	12.54	248	3.36
(ii) unloaded						
-	2595	1112	4.70	3.91	-	-
(iii) 50% of the load defined in (i)						
26.1	2533	1086	9.80	8.15	312	2.67
(iv) maximum power						
58.3	2400	1029	16.98	14.13	242	3.43
(v) 25% of the load defined in (i)						
13.2	2562	1098	7.23	6.01	454	1.83
(vi) 75% of the load defined in (i)						
38.7	2497	1071	12.51	10.40	269	3.09

PRÜFUNGS-ABTEILUNG
MB-trac 900

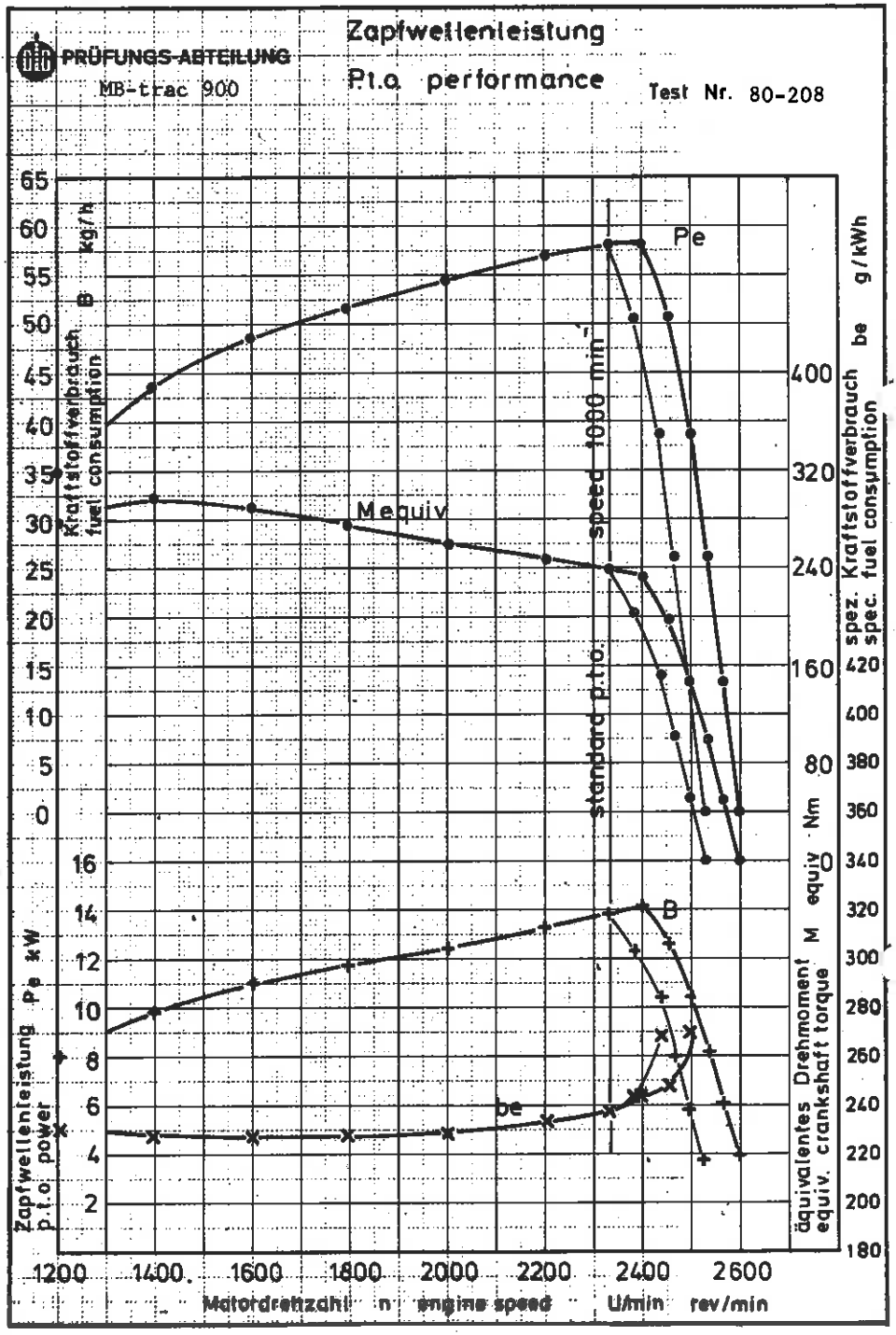
Test No. 80-208

Power kW	Speed engine rev/min	Speed p.t.o. rev/min	Fuel consumption hourly l/h	Fuel consumption hourly kg/h	Fuel consumption specific g/kWh	Specific energy 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						
50.4	2381	1020	14.74	12.26	243	3.42
(ii) unloaded						
-	2525	1082	4.51	3.75	-	-
(iii) 50% of the load defined in (i)						
26.1	2463	1056	9.58	7.97	305	2.72
(iv) maximum power						
58.3	2333	1000	16.62	13.82	237	3.51
(v) 25% of the load defined in (i)						
13.2	2493	1069	6.97	5.80	439	1.89
(vi) 75% of the load defined in (i)						
38.7	2435	1044	12.46	10.37	268	3.10

Standard specific fuel consumption (g/kWh): 248/312/243/305

No load maximum engine speed: 2595 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 232 Nm
Maximum equivalent crankshaft torque: 298 Nm at 1398 rev/min of the engine

Mean atmospheric conditions:	temperature	16 °C
	pressure	984 mbar
	relative humidity	45 %
Maximum temperatures:	coolant	83 °C
	engine oil	112 °C
	fuel	16 °C
	engine air intake	18 °C


Zapfwellenleistung
P.t.o. performance
PRÜFUNGS-ABTEILUNG
MB-trac 900
Test Nr. 80-208
Pe
Mequiv
B
be
standard p.t.o. speed 1000 min⁻¹
Kraftstoffverbrauch B kg/h
fuel consumption
Zapfwellenleistung Pe kW
p.t.o. power
äquivalentes Drehmoment M equiv Nm
equiv. crankshaft torque
spez. Kraftstoffverbrauch be g/kWh
spec. fuel consumption
Motordrehzahl n engine speed U/min rev/min
1200
1400
1600
1800
2000
2200
2400
2600

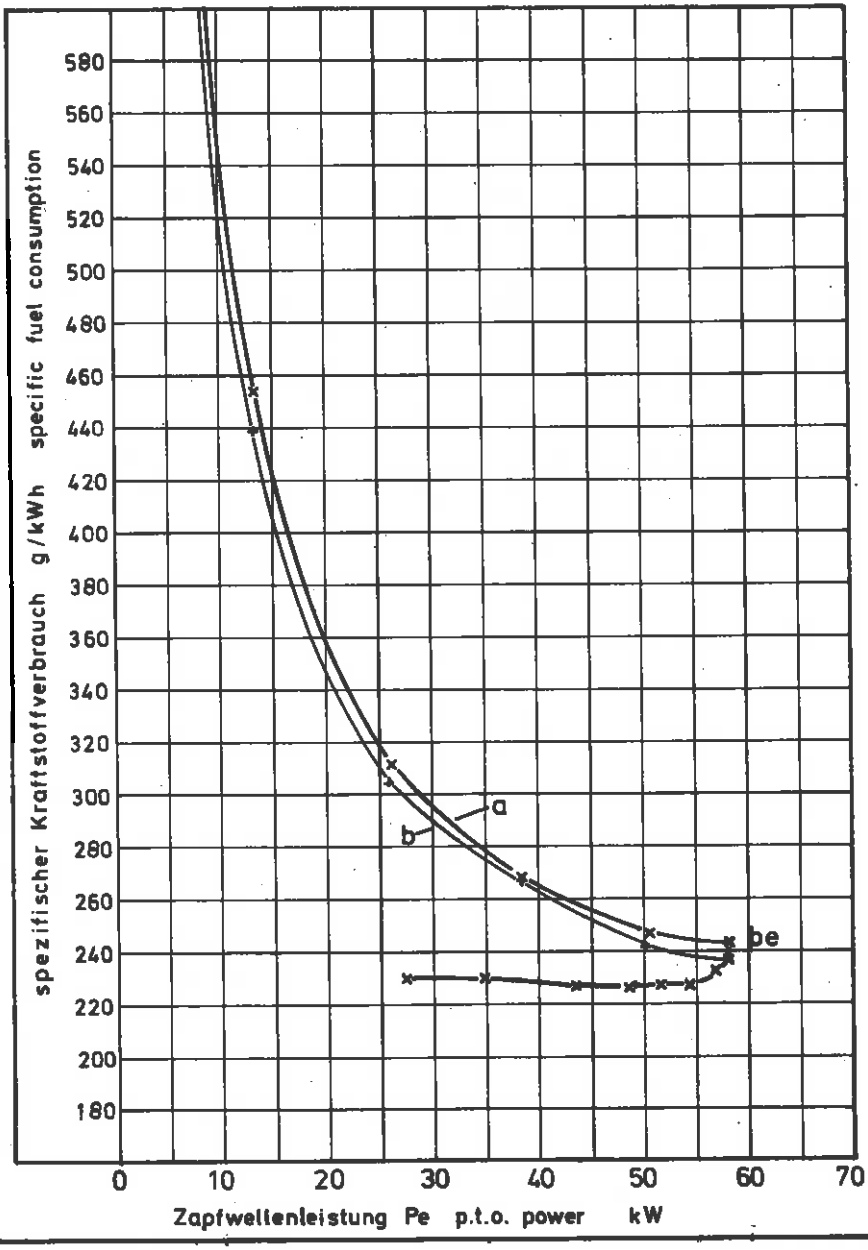
PRÜFUNGS-ABTEILUNG

MB-trac 900

Zapfwellenleistung

P.t.o. performance

Test Nr. 80-208



PRÜFUNGS-ABTEILUNG
MB-trac 900

(2) DRAWBAR PERFORMANCE

Date of tests: 24th March till 13th April 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 550 mm				
1 G L	2,51	30,1	4318	2516	14,9
1 G H	3,14	37,9	4348	2483	15,0
2 G L	4,20	48,5	4157	2401	11,2
2 G H	5,59	51,1	3289	2404	6,7
1 S L	6,68	51,0	2749	2402	5,1
3 G L	7,35	51,3	2514	2403	4,4
1 S H	8,54	53,4	2250	2400	3,7
3 G H	9,40	52,4	2005	2400	3,3
2 S L	11,45	51,7	1625	2398	2,5
4 G L	12,33	51,5	1504	2400	2,3
(ii)	MAXIMUM POWER (ballasted) height of drawbar above ground 520 mm				
1 G L	2,42	45,2	6730	2445	15,0
1 G H	3,28	52,3	5742	2400	7,2
2 G L	4,48	52,9	4252	2401	4,2
2 G H	5,72	53,7	3377	2400	3,0
1 S L	6,77	53,4	2838	2400	2,4
3 G L	7,43	52,3	2533	2400	2,1
1 S H	8,61	53,4	2232	2400	1,9
3 G H	9,44	51,6	1962	2399	1,7
2 S L	11,47	51,8	1626	2402	1,3
4 G L	12,32	50,9	1487	2400	1,3
(iii)	FIVE-HOUR-TEST at 75% of pull at maximum power in 1st S H gear				
1 S H	9,00	41,9	1674	2492	1,3
(iv)	FIVE-HOUR-TEST at pull corresponding to 15% wheel slip in test (ii)				
1 G L	2,50	46,7	6730	-	-

Total oil consumption during ten hours duration of tests (iii) and (iv) 23,5 g/h

PRÜFUNGS-ABTEILUNG

Test No. 80-208

Tyre size front: 16,9 R 24 8 ply
rear: 16,9 R 24 8 ply

Tread bar height at the beginning of drawbar tests
front 97%, rear 95% of the value, 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 front and rear 1,0 bar							
340	2,43	15	78	85	6	77	1017
318	2,60	15	79	89	5	85	1017
287	2,88	13	78	87	4	90	1017
274	3,02	16	74	90	6	82	1017
277	2,99	12	82	90	3	94	1017
274	3,02	16	83	91	5	86	1017
264	3,13	10	76	88	2	94	1016
267	3,10	12	75	90	3	90	1016
271	3,06	13	74	90	4	91	1016
272	3,04	13	74	90	5	91	1016
tyre inflation pressure front and rear 1,2 bar							
302	2,80	16	76	94	12	88	996
268	3,16	24	76	93	14	70	1000
265	3,19	23	76	93	13	70	1000
262	3,24	22	76	95	12	75	1000
264	3,21	23	76	95	10	80	1000
271	3,13	15	80	95	10	88	1000
263	3,22	26	74	95	18	63	1000
277	3,06	15	74	95	6	75	996
273	3,10	15	75	95	5	92	996
277	3,06	16	75	95	10	95	996
281	3,02	26	75	95	17	65	1000
-	-	28	80	108	18	60	995

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

PRÜFUNGS-ABTEILUNG

Test No. 80-208

MB-trac 900

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment	front:	16,9 R 24	8 ply
	rear:	16,9 R 24	8 ply
Track of wheels	front:	1,62 m	
	rear:	1,62 m	

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	-	-	5,88	5,86
Radius of turning circle	-	-	5,62	5,60

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	950 mm
Distance forward from rear axle centre	1359 mm
Distance from tractor's median plane, to the right	1 mm

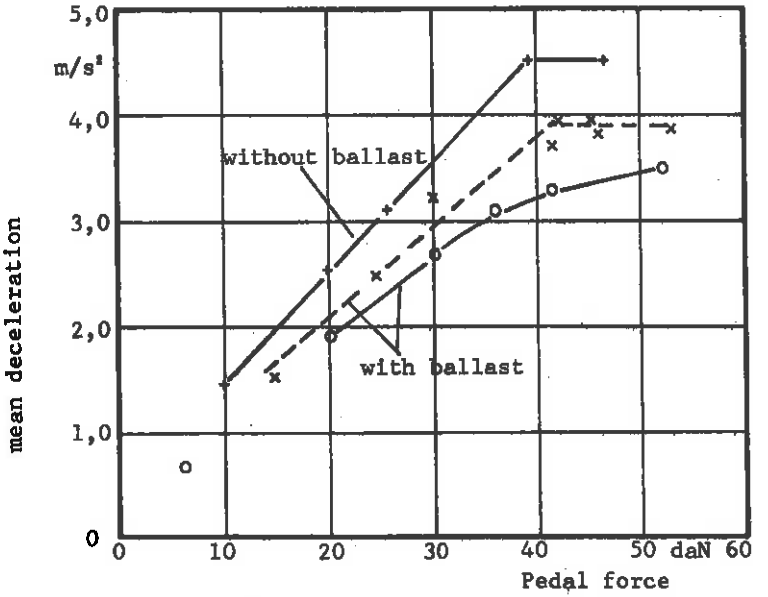
(5) Braking (25 km/h-version, 4th speed locked)

Date of tests: 23rd March 1982

Tractor masses during tests with driver:	front kg	rear kg	total kg
without ballast	2255	1720	3975
with ballast	3750	2755	6505

A) Service brake

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



Speed before application of brakes, without ballast 25,9 km/h
with ballast 25,5 km/h

The brakes were heated by towing of the tractor for 1 km

PRÜFUNGS-ABTEILUNG
MB-trac 900 Test No. 80-208

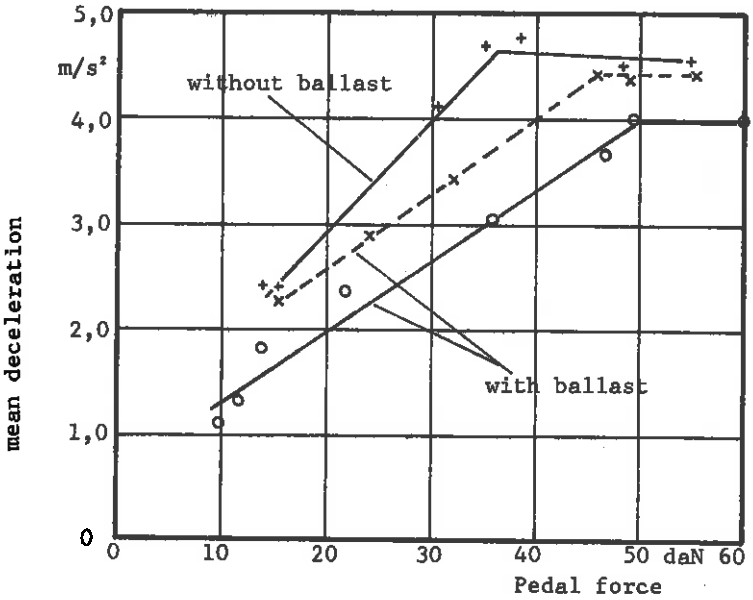
(5) Braking (40 km/h-version)

Date of tests: 26th March 1982

Tractor masses during tests with driver:	front kg	rear kg	total kg
without ballast	2255	1720	1975
with ballast	3260	3250	6510

A) Service brake

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



Speed before application of brakes, without ballast 42,0 km/h
with ballast 41,4 km/h

The brakes were heated by towing of the tractor for 1 km

B) Parking brake

	Ballasted tractor on 18%-slope up	Ballasted tractor on 18%-slope down	Unballasted tractor on 12%-slope with trailer of 3000 kg up	Unballasted tractor on 12%-slope with trailer of 3000 kg down
Braking device control force daN	pneumatically controlled by handvalve; tractor doesn't roll			

PRÜFUNGS-ABTEILUNG
MB-trac 900

Test No. 80-208

(6) MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test: 25th March 1982
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2203

Results of test

Gear:	3 S H	4 S H**)
Travelling speed before acceleration:	19,3 km/h	31,8 km/h
Sound level:	87,0 dB(A)	85,0 dB(A)

(7) NOISE MEASUREMENT AT THE DRIVER'S EAR

Date of tests: 24th March 1982
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

The tractor was equipped with DAIMLER-BENZ safety cab

Results of tests

Gear	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 G L	4259	2,80	2,49	81,0
1 G H	4321	3,55	3,10	81,5
2 G L	4053	4,70	4,12	82,5
2 G H	3248	5,96	5,60	82,0
1 S L	2597	7,01	6,82	81,5
3 G L*)	2473	7,67	7,35	82,0
3 G L*)	light load	7,67	8,10	78,5
1 S H	2253	8,88	8,47	80,5
3 G H	1991	9,71	9,30	81,0
2 S L	1452	11,76	11,39	81,0
4 G L	1489	12,63	12,34	81,0
2 S H	1245	14,90	14,23	80,5
4 G H	1128	16,00	15,59	81,0
3 S H	light load	24,28	25,78	80,0
4 S H**)	light load	40,00	42,44	81,0

*) The 3rd G L gear corresponds to the travelling speed nearest to 7,5 km/h
**) The 4th S H gear is locked in S-range of the 25 km/h version

PRÜFUNGS-ABTEILUNG
MB-trac 900

Test No. 80-208

(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date of tests: 23rd February 1982

Power Lift (at rear)

	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	375	583	2390	162	-	-
On the frame	375	692	2200	162	3758	11,5

Temperature of hydraulic fluid at start of test 65 °C

Lifting heights relative to horizontal lower links

mm	-207	-200	-183	-100	±0	+100	+200	+300	+400	+485
Lifting forces at hitch points										
daN			2390	2560	2750	2910	3080	3170	3210	
Lifting forces at test frame										
daN	2240	2260		2370	2410	2470	2490	2450	2320	2200

Hydraulic Pump Performance

Opening pressure of the relief valve in remote circuit	180 bar
Sustained pressure with relief valve open	190 bar
Pump delivery rate at minimum pressure, the governor control lever being set for max. power	45,5 l/min
Hydraulic power at 90% of relief valve setting	10,4 kW
Corresponding delivery rate	36,7 l/min
Pressure	171 bar
Temperature of hydraulic fluid	65 °C

Tapping point used for test: at tractor rear

PRÜFUNGS-ABTEILUNG
MB-trac 900

Test No. 80-208

(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date of tests: 23rd February 1982

Power Lift (front)

	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	370	678	910	162	-	-
On the frame	370	872	740	162	-	17,5

Temperature of hydraulic fluid at start of test 65 °C

Lifting heights relative to horizontal lower links

mm	-392	-311	-300	-200	-100	±0	+100	+200	+300	+367	+400	-480
Lifting forces at hitch points												
daN		910	910	1030	1120	1260	1410	1560	1740	1870		
Lifting forces at test frame												
daN	740		820	900	990	1030	1110	1170	1240		1280	1320

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MB-trac 900

Test No. 80-208

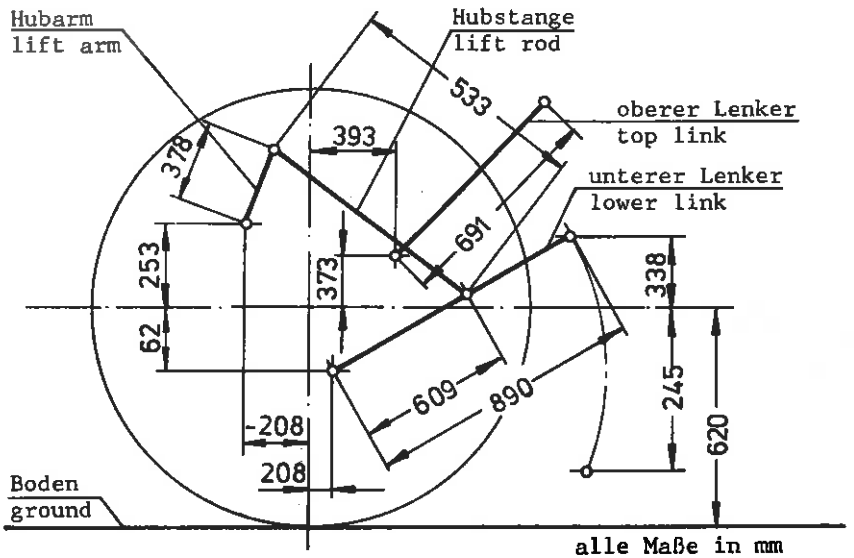
LINKAGE GEOMETRY when connected to the standard frame (at rear)

Projected length in side view:

Lower links	890 mm
Lift arms	378 mm
Lift rods	533 mm
Top link	691 mm
Distance of lift rod connection point from pivot point of lower link	609 mm

The following dimensions are given relative to the rear wheel centre line, situated 620 mm above ground:

Lower link pivot point	208 mm behind	62 mm below
Top link pivot point	393 mm behind	373 mm above
Lift arm pivot point	208 mm behind	253 mm above
Maximum and minimum height of lower link hitch points	245 mm below	338 mm above
Height of lower link hitch points when locked in transport position	338 mm above	



PRÜFUNGS-ABTEILUNG
MB-trac

Test No. 80-208

LINKAGE GEOMETRY when connected to the standard frame (in front)

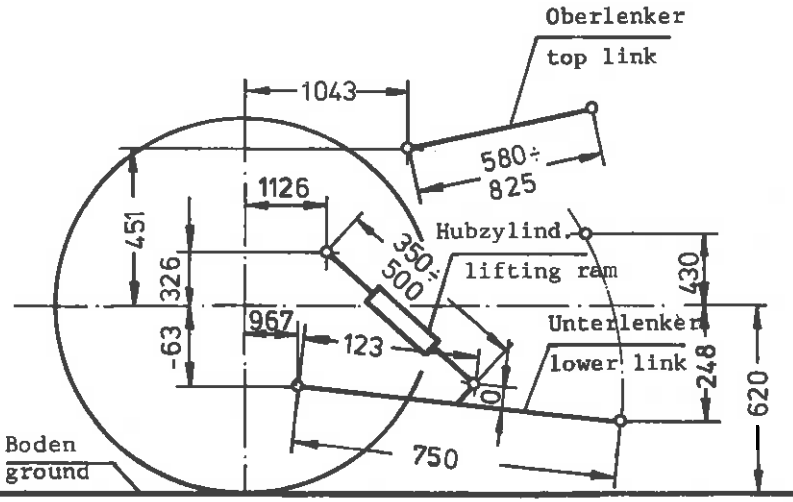
Projected length in side view

Lower links	750 mm
Lift ram	550 to 825 mm
Top link	696 mm
Distance of lift ram connection point from pivot point of lower link	123 mm

The following dimensions are given relative to front axle centre line 620 mm above ground

Lower link pivot point	967 mm forward	63 mm above
Top link pivot point	1043 mm forward	451 mm above
Lift ram pivot point	1126 mm forward	326 mm above
Maximum and minimum heights of lower link hitch points	430 mm above	248 mm below

Height of lower link hitch points above ground when locked in highest transport position	1050 mm



PRÜFUNGS-ABTEILUNG
MB-trac 900

Test No. 80-208

OPTIONAL TESTS

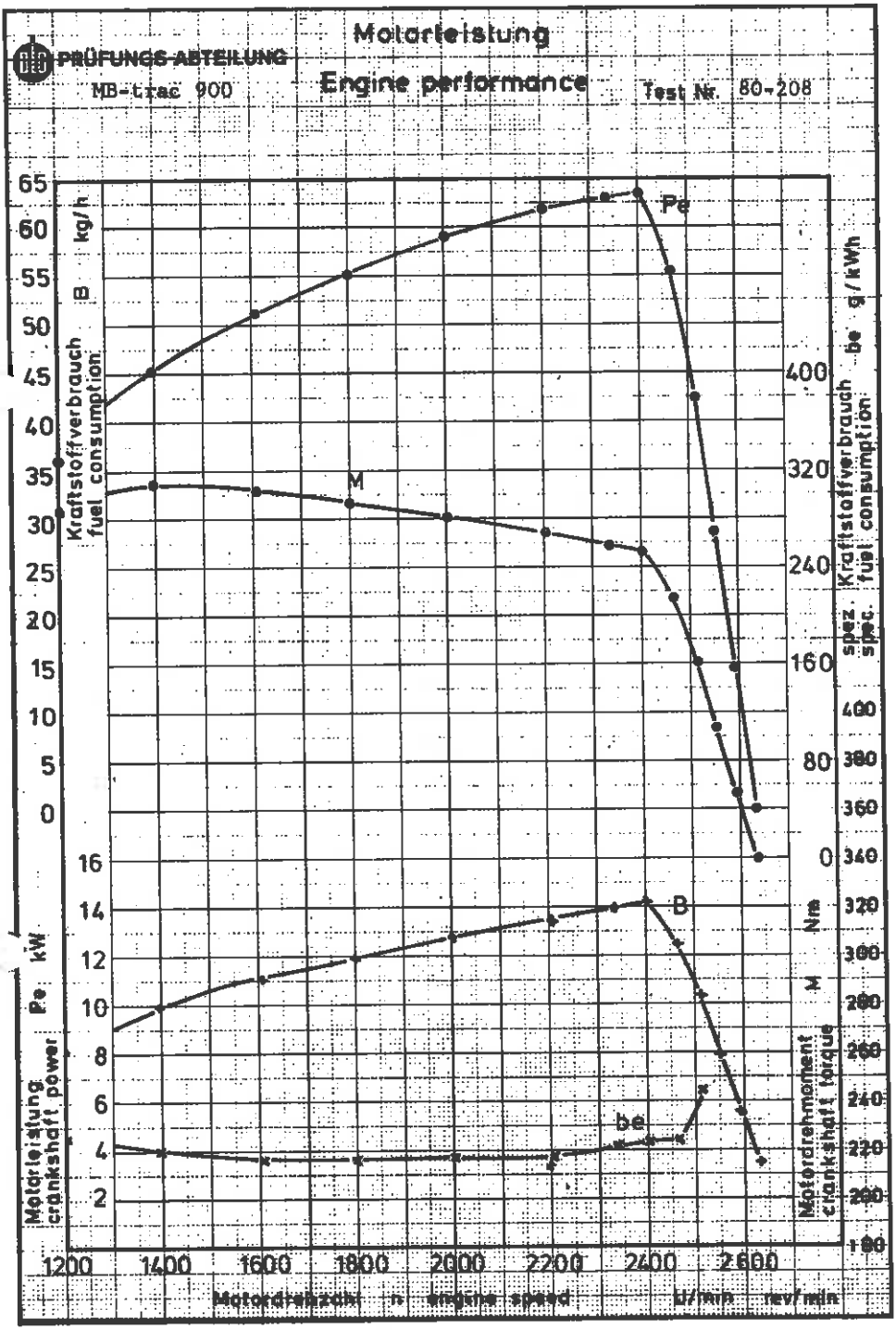
(9) ENGINE PERFORMANCE

Date of tests: 17th December 1981
Type of dynamometer: SCHENCK eddy-current dynamometer W 400

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					
63.5	2400	17.09	14.19	223	3.71
At standard p.t.o. speed (1000 rev/min)					
63.0	2333	16.83	13.97	222	3.74
At the speed recommended for drawbar work					
63.5	2400	17.09	14.19	223	3.71
Part loads					
(i) 85% of the torque at maximum power at 2-hour test					
55.3	2462	15.00	12.45	225	3.69
(ii) unloaded					
-	2629	4.23	3.51	-	-
(iii) 50% of the load defined in (i)					
28.6	2547	9.53	7.91	276	3.01
(iv) maximum power					
63.5	2400	17.09	14.19	223	3.71
(v) 25% of the load defined in (i)					
14.5	2587	6.68	5.55	381	2.18
(vi) 75% of the load defined in (i)					
42.3	2510	12.47	10.35	245	3.39

Optimum fuel consumption: 214 g/kWh at 39.2 kW and 1560 rev/min
No load maximum engine speed: 2629 rev/min
Torque at maximum power (2 hours): 253 Nm
Maximum torque: 309 Nm at 1394 rev/min of the engine

Mean atmospheric conditions:	temperature	19 °C
	pressure	990 mbar
	relative humidity	23 %
Maximum temperatures:	coolant	85 °C
	engine oil	84 °C
	fuel	19 °C
	engine air intake	20 °C


Motorleistung
Engine performance
PRÜFUNGS-ABTEILUNG
MB-trac 900
Test Nr. 80-208
Pe
M
B
be
Kraftstoffverbrauch B kg/h
fuel consumption
Kraftstoffverbrauch be g/kWh
spez. fuel consumption spec.
Motorleistung Pe kW
crankshaft power
Motordrehmoment M Nm
crankshaft torque
Motordrehzahl n engine speed U/min rev/min
65
60
55
50
45
40
35
30
25
20
15
10
5
0
16
14
12
10
8
6
4
2
400
320
240
160
80
0
480
440
400
360
320
280
240
200
160
1200
1400
1600
1800
2000
2200
2400
2600

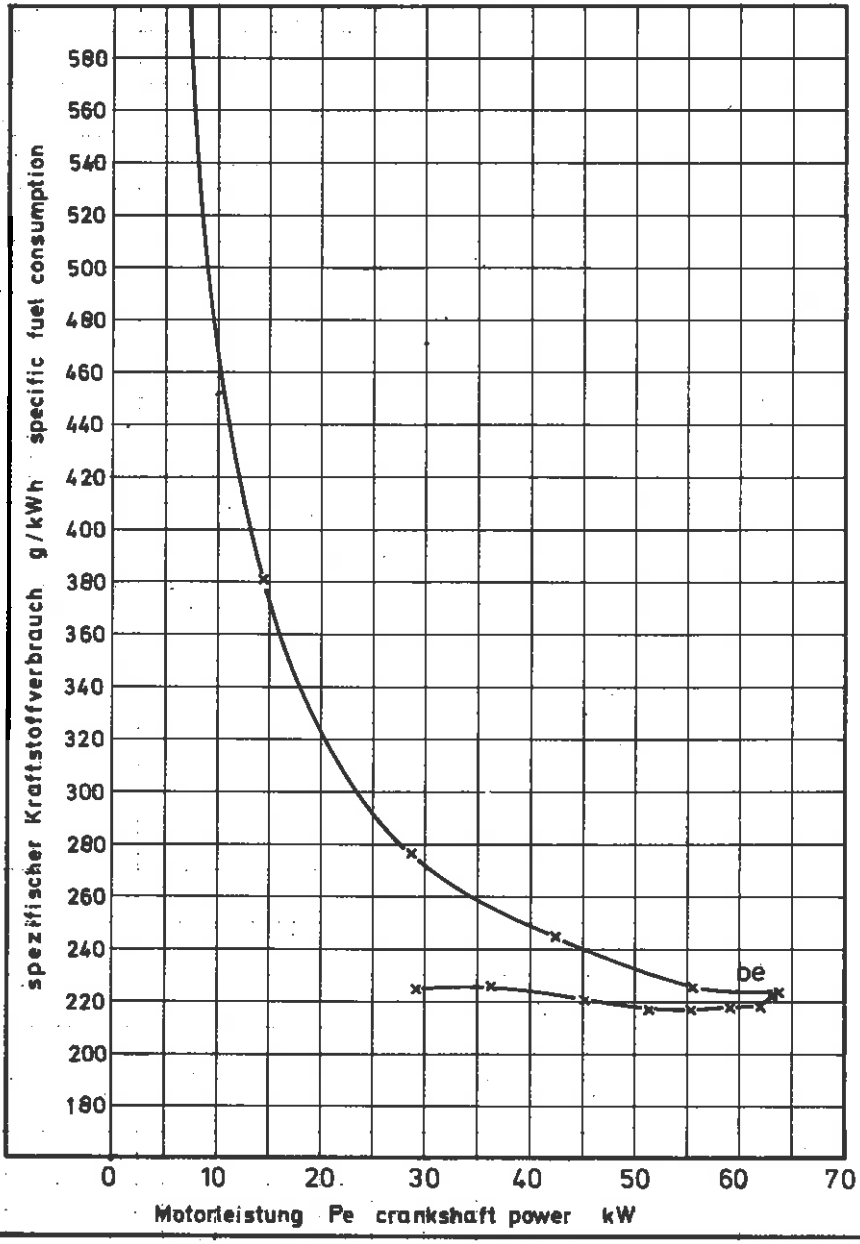
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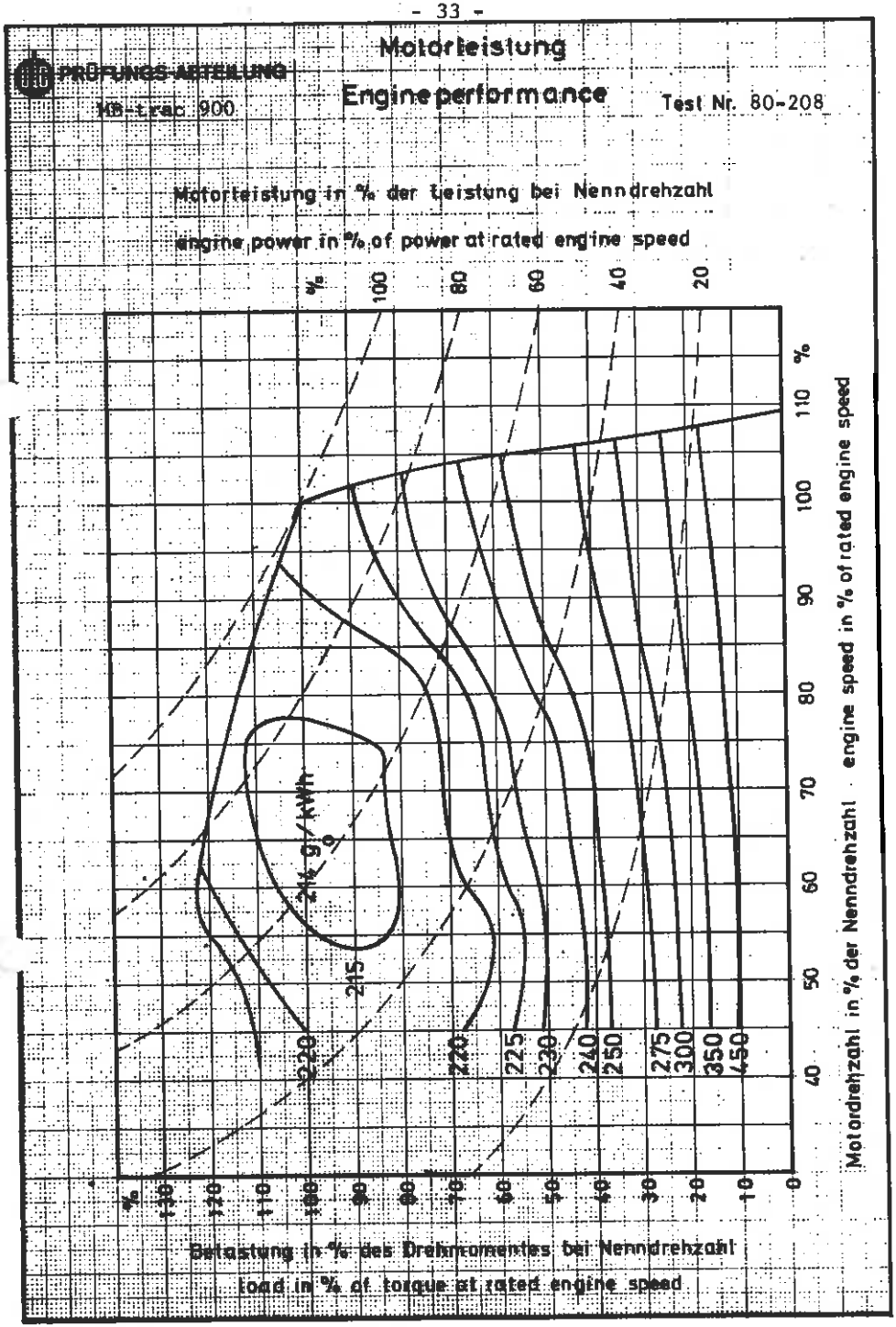
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Motorleistung

Engine performance

Test Nr. 80-208




Motorleistung
Engine performance
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Test Nr. 80-208
Motorleistung in % der Leistung bei Nenndrehzahl
engine power in % of power at rated engine speed
%
100
80
60
40
20
210 g/kWh
215
220
225
230
240
250
275
300
350
450
110 %
100
90
80
70
60
50
40
Motordrehzahl in % der Nenndrehzahl · engine speed in % of rated engine speed
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Belastung in % des Drehmomentes bei Nenndrehzahl
load in % of torque at rated engine speed

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MB-trac 900

Test No. 80-208

ADDITIONAL TEST

out of the OECD CODE under the responsibility of
the DLG-Testing-Station

(10) NOISE AT THE DRIVER'S EAR LEVEL

Date of test:	24th March 1982
Test track:	Concrete
Type of sound level meter:	BRÜEL AND KJAER model 2209
Octave filter:	BRÜEL AND KJAER model 1613

The tractor was fitted with a safety cab (see page 12)
OECD-tested, Approval No. CSD 0330/1

Results of test

Gear	Drawbar pull at which the tractor develops the maximum sound level daN	Travelling speed effective km/h	Sound level dB(A)	Sound level Noise Rating
3 G L	2473	7,35	82,0	77
2 G L	4053	4,12	83,5	78

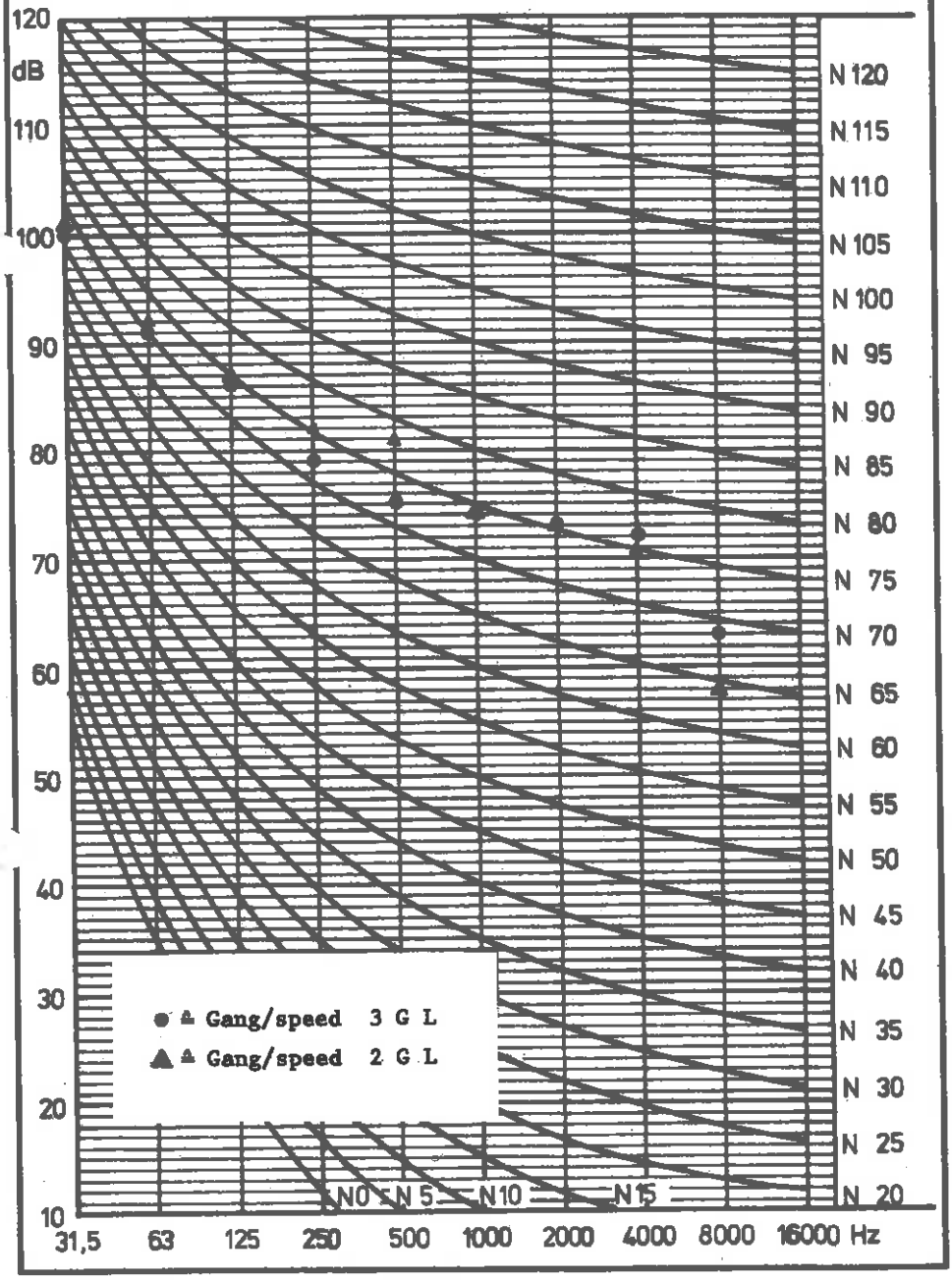
There is no gear combination with a NOISE RATING NUMBER higher than 78

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MB-trac 900

Test Nr.80-208

Schleppergeräusch am Ohr des Fahrers/Noise at the driver's ear level



Published
with the support of the Federal Minister for Food, Agriculture and Forestry

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