DLG	Report on test in accordance with O.E.C.D. STANDARD CODE	O.E.C.D. No. 547



Agricultural Tractor MB trac 1100

Manufacturer

Daimler-Benz AG, Postfach 128, D-7560 Gaggenau

Editor

Deutsche Landwirtschafts-Gesellschaft e. V. (DLG)
Fachbereich Landtechnik, Prüfungsabteilung für Landmaschinen
Zimmerweg 16 (DLG-Haus)
D-6000 Frankfurt am Main 1

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 performance of the tractor on practical work.

Performance of tests:

DLG-Testing-Station for Agricultural Machinery, Max-Eyth-Weg 1,
D-6114 Groß Umstadt

October till December 1976

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: 8th July 1977 O.E.C.D. No. 547

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

The relation with the former used Technical System of Units is given by the following formulas:

Forces:	1 N = 0,102 kp	or 1 kp = 9,81 N
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 HS	

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PRÜFUNGS-ABTEILUNG
MB trac 1100

Test No. 76-32

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. 30 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	DAIMLER-BENZ AG
Model:	MB trac 1100
Type:	All wheel drive tractor, chassis construction, spring suspended front axle, rotatable driver's seat for driving in two directions
Serial No.:	442 161-12-004363

Engine

Make:	Own make
Model:	OM 352.XIX model 353.949
Type:	4-stroke DIESEL engine with direct injection watercooled
Serial No.:	353.949-10-428918
Cylinders:	6 in-line, bore 97 mm; stroke 128 mm; displacement 5675 cm³; compression ratio 17:1
Valves:	Overhead
Fuel system:	BOSCH fuel-feed pump FP/KE 22 AD 112/2; BOSCH in-line injection pump: PES 6 A 90 D 410 RS 2293; manufacturer's production setting 51 mm³/stroke at rated engine speed and full load; injection timing 18° before TDC; BOSCH multihole injection nozzles DLLA 150 S 187; injection pressure 200 bar; BOSCH dual fuel filter with replaceable cartridges; capacity of fuel tank 170 l
Governor:	BOSCH centrifugal variable speed governor: EP/RSV 350-1300 AOB 1107 DL; governed range of engine speed: 700 to 2800 rev/min; rated engine speed 2600 rev/min

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Air cleaner:	MANN UND HUMMEL (optional KNECHT) dry paper element filter with pre-cleaner; service indicator
Exhaust silencer:	ROTH KG pre- and main silencer; pre-silencer optional, fitted on tractor tested singlechamber expansion type muffler 190 mm diameter, 310 mm long; main silencer, multichamber expansion type muffler; 210 x 115 mm oval, 1085 mm long; on the left hand side of engine; mouth showing upwards, mouth 2981 mm above ground
Lubrication system:	Forced feed from gear pump; strainer in sump MANN dual oil filter with by-pass in full flow, overpressure relief valve; (optional KNECHT); replaceable cartridges; oil capacity 13 l; oil changing interval 200 hours recommended oil qualities and viscosities: winter HD SAE 10W summer HD SAE 30 tropics HD SAE 40
Cooling system:	Pressurized water cooling, impeller assisted; by-pass thermostat; overpressure relief valve set at 0,4 bar; fan with 6 blades, 515 mm diameter; water capacity 19 l with cab heating 21 l
Starting system:	Electrical; BOSCH screw-push starter motor JD 3 kW; startpilot PRO-COMBUR: VISO F 27
Electrical equipment:	12 V, negative earth; BOSCH three phase alternator K1 14V 35A; 1 lead acid battery 110 Ah at 20 hours rating

Transmission

Clutch:	LAMELLEN UND KUPPLUNGSBAU dry dual disc clutch DT 330/310 G; tractor drive disc hydr. operated by pedal; p.t.o. drive disc operation see page 7
Gear box:	Own make; synchromesh speed change gear with pneumatically operated planetary group for duplication; 2 x 4 = 8 speeds; 7th and 8th speed locked; optional additional planetary group gear for field and creep speeds available; at tractor tested fitted with field speeds only; with additional planetary group shifted the 7th and 8th speed of the speed change gear are unlocked; reversing gear with locking synchronization for all gears; totally 14 forward and 14 reverse speeds at tractor tested
Rear axle and final drive:	Rigidly fitted to tractor chassis; driven by universal joint shaft; bevel gear drive with crown wheel and pinion; bevel gear type differential fitted with lock; planetary final drives in the wheel hubs
Front axle and final drive:	Coil-spring suspended with shock absorber and travers stabilizer; driven by universal joint shaft in the thrust tube and double joints in the steering knuckles; pneumatically engageable under load; bevel gear drive with crown wheel and pinion; bevel gear type differential fitted with lock; planetary final drives in the wheel hubs Differential locks of front and rear axle pneumatically engageable in common under load
Oil capacity:	Speed change gear and field group gear 12 l differentials 2 l each final drives 1,5 l each

Oil qualities:	Speed change gear and field group gear	transmission oil SAE 80
	differentials	transmission oil SAE 90
	final drives	transmission oil SAE 90
Oil changing interval:	400 hours	

Power take-off

Main p.t.o.:

Live p.t.o. in the rear of tractor;
592 mm above ground, 20 mm to the right hand side of tractor's median plane
driven through the second part of the dry dual disc clutch;
independent from the tractor drive the p.t.o. clutch may be engaged or disengaged pneumatically by a hand valve on the instrument panel

1 3/4 in involute profile, 20 splines;
DIN 9611 Form 3; ASAE S 204.6

The following 3 p.t.o.-shafts are optionally available:

a) 29 x 34,9 x 8,7 mm = 1 3/8 in; 6 splines;
DIN 9611 Form 1; BS 1495; ASAE S 203.7

b) 1 3/8 in involute profile, 21 splines;
DIN 9611 Form 2; ASAE S 204.4

c) 36 x 44,3 x 11 mm = 1 3/4 in, 6 splines

2 speeds are preselectable by hand lever:

540 rev/min p.t.o.
601 rev/min at rated engine speed;
standard p.t.o.-speed 540 rev/min at 2336 rev/min engine speed

1000 rev/min p.t.o.
1058 rev/min at rated engine speed;
standard p.t.o.-speed 1000 rev/min at 2456 rev/min engine speed

Direction of rotation clockwise,
viewed from tractor rear

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Total ratios and speeds

Forward speeds (tyres 16,9-30 AS)

Group	Gear	Total ratio engine : driving wheel	Nominal travelling speed *) at rated engine speed km/h	Nominal travelling speed *) at standard p.t.o. speed 540 rev/min km/h
Speed combinations as tested				
Road group	1	142,38	4,68	4,20
	2	102,52	6,50	5,84
	3	75,12	8,87	7,96
	4	55,13	12,08	10,84
	5	39,32	16,95	15,19
	6	28,32	23,53	21,10
Field group	1	819,66	0,82	0,74
	2	590,21	1,13	1,01
	3	432,46	1,54	1,38
	4	317,35	2,10	1,88
	5	226,38	2,94	2,63
	6	163,01	4,10	3,67
	7	119,44	5,58	5,01
	8	87,65	7,61	6,82
Optional creep speeds, not tested				
Creep group	1	7955,49	0,084	0,076
	2	5728,50	0,117	0,104
	3	4197,45	0,158	0,142
	4	3080,19	0,217	0,194
	5	2197,23	0,304	0,272
	6	1582,16	0,422	0,379
	7	1159,30	0,575	0,516
	8	850,72	0,783	0,702

*) calculated with the rolling radius 680 mm as per manufacturer's specification

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Reverse speeds (tyres 16,9-30 AS)

Group	Gear	Total ratio engine : driving wheel	Nominal travelling speed *) at rated engine speed km/h	Nominal travelling speed *) at standard p.t.o. speed 540 rev/min km/h
Speed combinations as tested				
Road group	1	137,92	4,83	4,33
	2	99,31	6,69	6,00
	3	72,77	9,14	8,21
	4	53,40	12,45	11,17
	5	38,09	17,46	15,66
	6	27,43	24,24	21,67
Field group	1	793,96	0,84	0,76
	2	571,71	1,17	1,04
	3	418,91	1,59	1,43
	4	307,40	2,17	2,03
	5	219,28	3,03	2,71
	6	157,90	4,22	3,79
	7	115,70	5,74	5,15
	8	84,90	7,83	7,01
Optional creep speeds, not tested				
Creep group	1	7706,08	0,087	0,078
	2	5548,91	0,119	0,105
	3	4065,85	0,163	0,147
	4	2983,62	0,223	0,200
	5	2128,35	0,313	0,280
	6	1532,56	0,434	0,391
	7	1122,95	0,594	0,531
	8	824,05	0,809	0,726

*) calculated with the rolling radius 680 mm as per manufacturer's specification

Power take-off (Continuation)

The following powers may be taken off from the different p.t.o.-shafts as per manufacturer's handbook:

Profile	p.t.o. 540 rev/min	p.t.o. 1000 rev/min
1 3/8 in 6 splines	33 kW	60 kW
1 3/8 in involute	50 kW	full power
1 3/4 in 6 splines	full power	full power
1 3/4 in involute	full power	full power

Secondary p.t.o.:

In front of tractor;
fitted but not tested;
213 mm to the left hand side of tractor's median plane, 931 mm above ground with front axle springs not compressed;
drive, profiles, speeds, direction of rotation and performance restrictions same as for main p.t.o.

Main p.t.o. and secondary p.t.o. may be driven in common or each one for itself

Power lift

In the rear:

Hydraulic power lift, disintegrated construction, open system;
WABCO gear type pump IPM 13645;
delivery nominal 13 cm^3/rev or 45 l/min at rated engine speed;
V-belt driven by engine;
2 double acting rams, bore 80 mm, stroke 200 mm, rod 30 mm diameter;
BOSCH control valve, double acting with automatic hydr. release and lock for not intended operation, for lifting, pushing down, locked position and floating position;
maximum pressure 200 bar;
mechanically acting load transfer system: SERVOTRAC;
(optionally control system BOSCH-DAIMLER-BENZ, draft control, position control, mixing control, floating position);
pressure accumulator LANGEN acting as shock absorber;
maximum accumulator pressure 130 bar

Power lift (continuation)	hydraulic oil tank with 50 l capacity; 35 l may be taken off through oil tappings when tractor is working stationary, 30 l when tractor is working driving; recommended oil: engine oil HD SAE 10W; oil changing intervals 1800 hours
In front:	Optional, fitted on tractor tested for power lift tests only; hydraulic power lift, disintegrated construction; oil supply from the front oil tappings; 2 double acting rams; bore 80 mm, rod 30 mm diameter, stroke 150 mm; optional: 1 double acting ram with same dimensions; BOSCH additional control valve, double-acting with automatic hydraulical release and lock for not intended operation

Implement linkage

In the rear:	Three point linkage, category II, DIN 9674; (optional category III); lift rods adjustable from 700 to 830 mm; lifting range above ground with long lift rods from 57 to 840 mm short lift rods from 268 to 1008 mm; hydraulically acting linkage lock for transport with shutoff valve
In front:	Three point implement linkage of own construction; clevis as per DIN 9674 category II; the rams act directly on a lateral stabilized balancer; height above ground with 2 rams from 307 to 1003 mm; with 1 ram from 232 to 967 mm; with front axle springs not compressed; maximum distance of clevis to front axle centre 1916 mm; hydraulically acting linkage lock for transport

Oil tappings	1 double acting BOSCH supplementary control valve with 2 oil tappings in front and 2 in the rear fitted on tractor tested; up to 3 double acting BOSCH supplementary control valves with 2 oil tappings each and 1 pressureless oil return in front as well as in the rear are available
Holed drawbar	Fitted on clevis of lower links of the 3-point implement linkage in the rear; length between the ball joints 1010 mm; thickness of the bar 25 mm, alloyed steel; centre hole and 5 holes on either side; 80 mm distance each; all holes 33 mm diameter; height above ground infinitely adjustable by power lift in the range from 70 mm to 1020 mm depending on lift rods length, measured at the surface of the bar, in any height above ground hydraulically lockable; distance of centre hole: from rear axle centre 1127 mm from p.t.o.-shaft end 607 mm
Pull attachment	
Swinging drawbar:	Height above ground 396 mm; hitch hole 33 mm diameter; distance of hitch hole from rear axle centre 920 mm p.t.o.-shaft end 400 mm; 241 mm swingable to either side; distance of pivot point 240 mm behind rear axle centre
Trailer hitch:	ROCKINGER model 279D or 277C, automatic; height above ground adjustable to 796 and 866 mm; hitch bolt diameter 30 mm; distance from hitch bolt centre to rear axle centre 580 mm; permissible vertical load 1800 kg permissible drawing pull 88400 N
Towing hitch:	At front of tractor; height above ground 721 mm with front axle springs not compressed

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Steering

ZAHNRADFABRIK FRIEDRICHSHAFEN AG
hydrostatic steering;
hand pump and control valve:
model 53, version 84;
unit construction, steering wheel operated;
ZF-rotary high pressure pump;
delivery 16,5 cm³/rev or 16 l/min at
rated engine speed;
pressure 100 bar;
V-belt driven by engine;
2 double acting rams;
bore 40 mm, stroke 250 mm;
propped to the front differential gear box,
acting on the steering levers;
own oil circuit;
hydraulic oil tank with 3 l capacity;
recommended oil: engine oil SAE 10

Brakes

Compressed air equipment:	Air compressor of own design; directly driven by engine; air tank on the right hand side of chassis; air capacity 40 l, working pressure 7 bar
Parking brake:	Pneumatically acting spring loaded brake; acting on the rear wheels only; locked by pressure release; internal shoe type brake; 2 brake drums with 410 mm diameter, fitted to the final drive axles; operated by hand valve
Service brake:	Internal shoe type brake; 2 brake drums on both axles with 410 mm Ø, fitted to the final drive axles; pneumatically controlled, pedal operated, hydraulically acting on all wheels, 2 circuits Brake drums of parking brake and service brake are in common
Steering brake:	None
Trailer brake:	WABCO-BOSCH combined single-dual line type; pneumatically controlled

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Wheels

Steering wheels:	In front, same size as driving wheels
Driving wheels:	In front and in the rear; front wheel drive disengageable (see page 6); 4 pneumatics 16,9-30 AS 12 ply DIN 7807, diagonal type casing; maximum permissible load per tyre 2920 kg at 2,0 bar inflation pressure and 25 km/h; track width 1870 mm; (optional: track width adjustment wheels for 1800, 1870 and 2004 mm track width; adjustable by offset lug type rims); rims W 13L x 30
Wheel base:	2650 mm

Cab

Own make;
All-steel construction consisting of moulded elements, welded and bolted together;
antivibration suspended on the chassis with 4 MEGI-supports;
entry by doors on the right and left hand side;
2 mounting steps on either side;
574 and 968 mm above ground;
height of the cab platform above ground 1336 mm;
all windows of single pane safety glass, (windscreen optionally of compound glass);
crank operated window panes in the doors;
doors can be removed;
for noise damping inside of cab is completely covered with PVC material;
driver's seat, steering hand wheel, pedals and instrument panel in unit construction, reversible about 180° for driving in foreward and reverse direction;
hot air heating and blower ventilation with defroster jet at windshield and back window;
electric windshield and back window wiper;
(optional: Windshield that can be raised, back window that can be raised or as sliding window available);
2 rear-view mirrors;
O.E.C.D. tested, approval no. CS 1201a

Driver's seat	ISRINGHAUSEN DERBY GJ 5000/405 (optional GRAMMER DS 85 H/3 A); upholstered seat with back rest; adjustable spring with shock absorber; parallelogram guidance; height above cab platform appr. 425 mm in downmost position; 80 mm up and down adjustable; 150 mm fore and aft adjustable; inclination of back rest variable by 20°; 20 mm right of tractor's median plane
Passenger's seat	Left from driver's seat; folding seat, upholstered with back rest; not spring suspended, damped or otherwise adjustable
Central implement-mounting area	Behind the cab; between the rear mudguards; length 1170 mm, width 1030 mm; covered with checkered steel plate; (optional: area available on additional frame for mounting rear implements: length 2000 mm, width 2500 mm)
Number of grease points	22

Weights — Ready for use, as tested

		without driver	with driver
Without ballast:	front	3125 kg	3160 kg
	rear	2505 kg	2550 kg
	total	5630 kg	5710 kg
Front ballast:	frame		100 kg
	6 front weights on the frame 45 kg each		270 kg
Rear ballast:	in the implement-mounting area		965 kg
	water in the tyres		955 kg
With ballast:	front	4350 kg	4385 kg
	rear	3570 kg	3615 kg
	total	7920 kg	8000 kg

Dimensions

Total length:	5750 mm	with implement linkage in front and in the rear
	5345 mm	with implement linkage only in the rear
	4680 mm	without implement linkage.
Total width:	2470 mm	at smallest track width 1800 mm
	2470 mm	at largest track width 2004 mm
Total height:	2950 mm	to top of cab-roof
Ground clearance:	515 mm	in tractor's median plane below the differentials

Lighting equipment: Electrical, 12 V
in accordance with German legislation

	Dimensions mm	Height above ground of centre mm	Distance from outside edge of tractor to centre mm
Head lights	140 x 125	1013	710
Additional head lights	140 x 125	2788	665
Side lights	30 x 58	1790	105
Rear lights	165 x 82	1442	322
Reflectors			
1st pair	75 Ø	1018	152
2nd pair	75 Ø	678	792

Permissible total weights and axle loads
for all available wheel equipment

Tyres	Permissible total weights kg	Permissible axle load front kg	Permissible axle load rear kg
16,9-30 AS 12 ply	9000	5840	5840
16,9R30 AS 12 ply	9000	5840	5840
14,9-30 AS 10 ply	9000	4680	4680
9,5-36 AS 12 ply	7240	3620	3620
18,4-30 AS 10 ply	9000	6020	6020
18,4R30 AS 10 ply	9000	6020	6020
17,5-25 EM 12 ply	9000	6020	7000
17,5R25 EM 12 ply	9000	6020	7000

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FUELS AND LUBRICANTS USED IN TESTS

Fuel:	ARAL DIESEL fuel DIN 51 601	
	specific gravity at 15°C	
	during engine tests	0,845 kg/l
	during p.t.o. tests	0,824 kg/l
	during drawbar tests	0,829 kg/l
Engine oil:	ARAL KOWAL HD 30	
Transmission oil:	ARAL transmission oil	
	Speed change gear and group gear	SAE 80
	Differential and final drives	SAE 90
Hydraulic oil:	ARAL engine oil HD 10	

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COMPULSORY TESTS

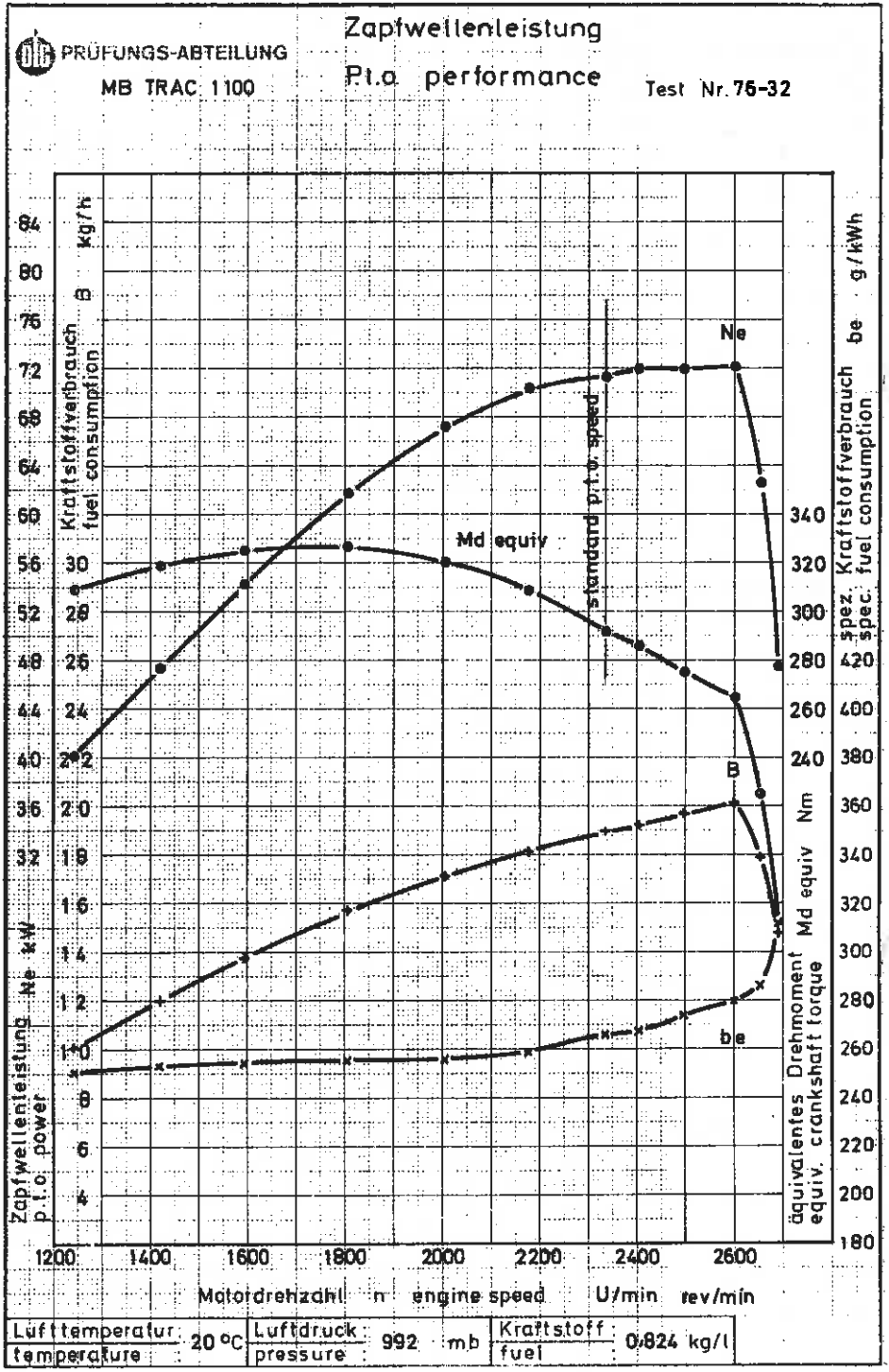
(1) MAIN POWER TAKE-OFF PERFORMANCE

Date of tests: 2nd November 1976
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power kW	Speed engine rev/min	Speed p.t.o. rev/min	Fuel consumption total l/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power						
At 2-hour test						
72.0	2600	601	24.47	20.17	280	2.94
At standard p.t.o. speed (540 rev/min)						
71.3	2336	540	23.01	18.96	266	3.10
At the speed recommended for drawbar work						
72.0	2600	601	24.47	20.17	280	2.94
Part loads						
(i) 85% of the torque at maximum power at 2-hour test						
62.5	2653	613	21.72	17.90	286	2.88
(ii) unloaded						
-	2801	647	8.42	6.94	-	-
(iii) 50% of the load defined in (i)						
32.2	2730	631	14.56	12.00	373	2.21
(iv) maximum power						
72.0	2600	601	24.47	20.17	280	2.94
(v) 25% of the load defined in (i)						
16.3	2763	639	11.44	9.42	580	1.42
(vi) 75% of the load defined in (i)						
47.5	2690	622	18.00	14.83	312	2.64

No load maximum engine speed: 2801 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 265 Nm
Maximum equivalent crankshaft torque: 326 Nm at 1805 rev/min of the engine

Mean atmospheric conditions:	temperature	20 °C
	pressure	992 mbar
	relative humidity	80 %
Maximum temperatures:	coolant	83 °C
	engine oil	94 °C
	fuel	30 °C


Zapfwellenleistung
P.t.o. performance
PRÜFUNGS-ABTEILUNG
MB TRAC 1100
Test Nr. 76-32
Ne
Md equiv
B
be
standard p.t.o. speed
Zapfwellenleistung Ne kW
p.t.o. power
Kraftstoffverbrauch B kg/h
fuel consumption
spez. Kraftstoffverbrauch be g/kWh
spec. fuel consumption
äquivalentes Drehmoment Md equiv Nm
equiv. crankshaft torque
Motordrehzahl n engine speed U/min rev/min
Lufttemperatur 20 °C
temperature
Luftdruck 992 mb
pressure
Kraftstoff 0,824 kg/l
fuel

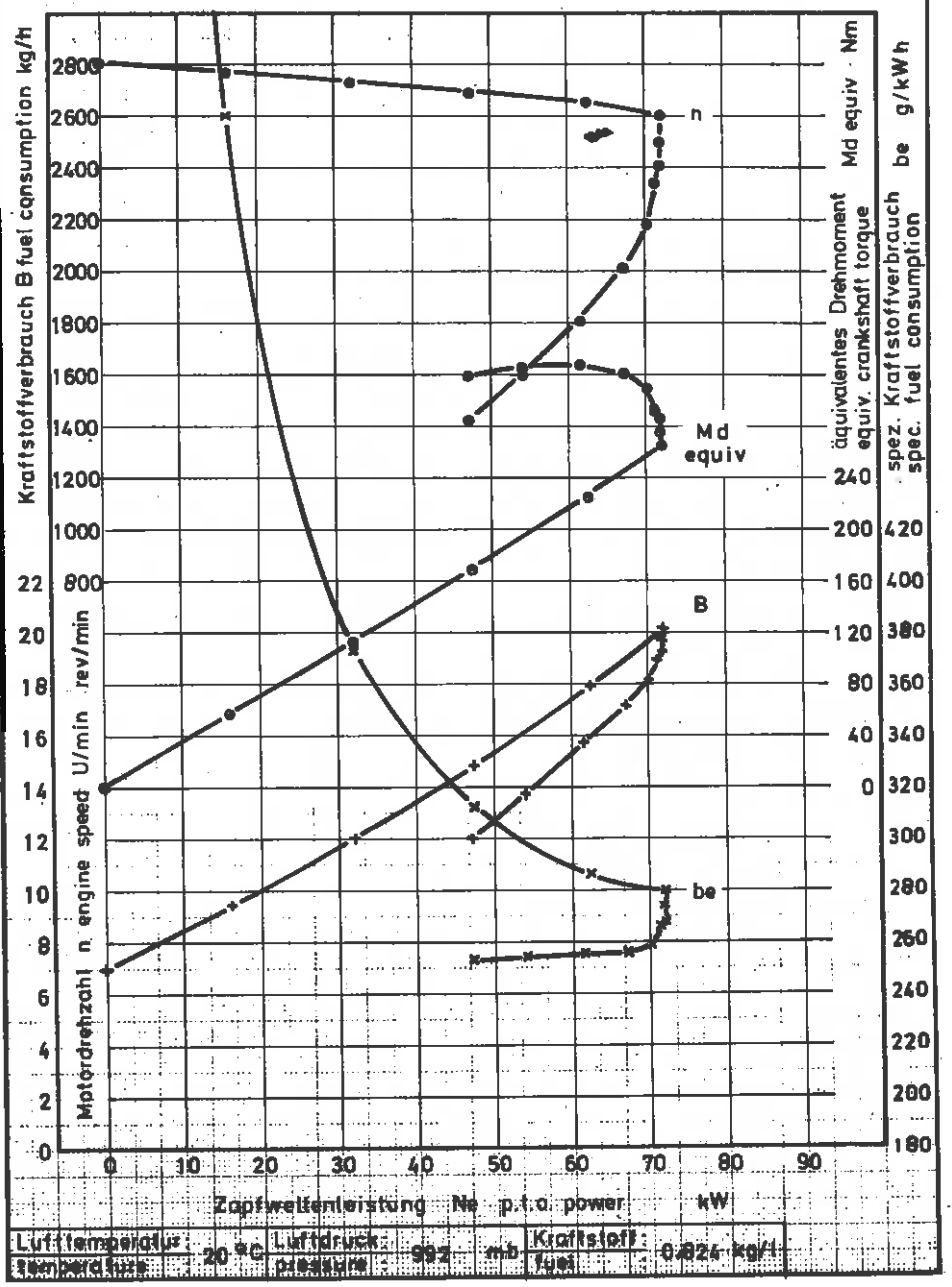
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Zapfwellenleistung

P.t.o. performance

Test Nr. 76-32



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(2) DRAWBAR PERFORMANCE

Date of tests: 16th November till 10th December 1976
Type of track: Concrete

Gear No. and Group	Speed km/h	Power kW	Drawbar pull N	Engine speed rev/min	Slip of wheels %	Specific energy kWh/l
(i) MAXIMUM POWER with ballast height of drawbar above ground 480 mm						
1 field	0,74	16,6	80380	2721	15,0	1,37
2 field	1,03	22,9	80420	2706	14,9	1,65
3 field	1,39	31,0	80270	2676	15,1	2,00
4 field	1,87	41,7	80360	2648	14,9	2,21
5 field	2,59	57,9	80440	2608	14,9	2,39
6 field	3,86	63,5	59250	2600	8,0	2,60
1 road	4,48	65,0	52240	2600	6,4	2,67
7 field	5,41	64,4	42870	2600	5,1	2,63
2 road	6,35	65,9	37350	2602	4,3	2,71
8 field	7,45	64,5	31180	2600	3,2	2,64
3 road	8,79	65,3	26750	2600	2,8	2,68
4 road	12,03	62,7	18760	2600	2,1	2,58
(ii) FIVE-HOUR-TEST at 75% of pull at maximum power in 8th gear of field group						
8 field	7,66	49,8	23390	2647	2,2	2,43
(iii) FIVE-HOUR-TEST at pull corresponding to 15% wheel slip in test (i)						
5 field	-	-	80440	-	-	-
(v) MAXIMUM POWER without ballast height of drawbar above ground 510 mm						
5 field	2,63	43,9	60030	2651	14,8	2,32
6 field	3,58	59,7	59990	2612	14,8	2,47
1 road	4,30	62,4	52260	2600	10,1	2,58
7 field	5,29	64,3	43780	2600	7,4	2,65
2 road	6,25	65,3	37590	2600	5,8	2,69
8 field	7,41	64,8	31480	2600	4,4	2,68
3 road	8,72	65,6	27070	2600	3,6	2,70
4 road	12,00	64,4	19310	2600	2,5	2,64
5 road	16,94	62,2	13220	2600	1,6	2,56

Total oil consumption during ten hours duration of tests (ii) and (iii) 88 g/h

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Tyres make and size: front: CONTINENTAL 16,9-30 AS 12 ply
rear: CONTINENTAL 16,9-30 AS 12 ply

Tread bar height at the beginning of drawbar tests: 74% of the value when new

Specific fuel consumpt. g/kWh	Temperatures Fuel °C	Coolant °C	Engine-oil °C	Atmospheric conditions Tempe-rature °C	Relative humidity %	Pressure mbar
tyre inflation pressure 1,8 bar rolling radius of tyres under static load 695 mm						
603	15	85	90	5	96	998
502	15	85	74	12	95	995
413	16	85	84	13	92	995
372	20	85	88	10	96	995
344	15	85	86	11	98	976
316	15	85	90	11	98	976
310	10	85	86	6	94	981
312	16	85	90	11	97	976
306	10	85	90	6	94	981
313	11	85	96	6	96	981
308	11	85	86	6	86	978
321	10	85	85	6	95	978
338	11	85	96	6	92	985
-	11	85	97	7	90	985
tyre inflation pressure 1,4 bar rolling radius of tyres under static load 697 mm						
356	14	85	93	14	97	1010
333	14	85	95	14	92	1010
320	14	85	94	14	98	1010
311	14	85	93	14	98	1010
307	14	85	97	14	96	1010
308	14	85	96	14	94	1010
304	15	85	90	15	98	1009
312	15	85	90	15	90	1012
322	15	85	87	15	92	1012

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

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 16,9-30 AS 12 ply
rear: 16,9-30 AS 12 ply

Track of wheels front: 1800 mm
rear: 1800 mm

	With all wheel-drive		With rear wheel-drive	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	6,84	6,89	6,44	6,59
Radius of turning circle	6,50	6,55	6,10	6,25

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	1049 mm
Distance forward from rear axle centre	1465 mm
Distance right or left from tractor's median plane	0 mm

PRÜFUNGS-ABTEILUNG
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(5) BRAKING PERFORMANCE

A) SERVICE BRAKE

Date of tests: 1st and 3rd December 1976
Type of track: Concrete
Type of decelerometer: MOTO-METER-Bremsverzögerungs- und Pedalkraftschreiber

Weight of ballasted tractor: 8000 kg with driver

Cold brakes

		With ballast	Without ballast
Travelling speed	km/h	25,0	25,0
Deceleration	m/s^2	7,1	8,5
Stopping distance	m	5,0	4,6
Force on pedal	N	220	200
Force on pedal to achieve a deceleration of 2,5 m/s^2	N	90	90

Brake fade characteristics (hot tests)

Deceleration	hot/cold	%	100	102
Stopping distance	cold/hot	%	100	104
Force on pedal	cold/hot	%	110	105

B) PARKING BRAKE

Pneumatically controlled spring loaded brake locked by air pressure release, operated by hand valve

Tractor facing up slope: tractor does not roll
Tractor facing down slope: tractor does not roll

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(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 1st December 1976
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2203

Results of test

Gear: 6th road gear
Travelling speed before acceleration: 18,8 km/h
Sound level: 87 dB(A)

(7) NOISE AT THE DRIVER'S EAR LEVEL

Date of tests: 1st December 1976
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2607
Type of frequency analyzer: BRÜEL AND KJAER model 1614 (fitted with octave filter)

A safety cab/safety frame was fitted on tractor O.E.C.D. tested, approval no. CS 1201a

Results of tests

Gear	Drawbar pull at which the tractor develops the maximum sound level N	Travelling speed nominal km/h	Travelling speed effective km/h	Sound level dB(A)
1 field	57800	0,82	0,64	79
2 field	57100	1,13	0,98	79,5
3 field	56900	1,54	1,25	80
4 field	57150	2,10	1,76	84,5
5 field	57600	2,94	2,58	81
6 field	57300	4,10	3,57	82
1 road	50800	4,68	4,34	81
7 field	42900	5,58	5,33	81,5
2 road	36450	6,50	6,29	81,5
8 field*)	30650	7,61	7,45	81
3 road	25950	8,87	8,69	81,5
4 road	15150	12,08	12,02	84,5
5 road	12550	16,95	16,90	81
6 road	light load	23,53	25,11	77

*) The 8th field gear corresponds to the travelling speed nearest to 7,25 km/h

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(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

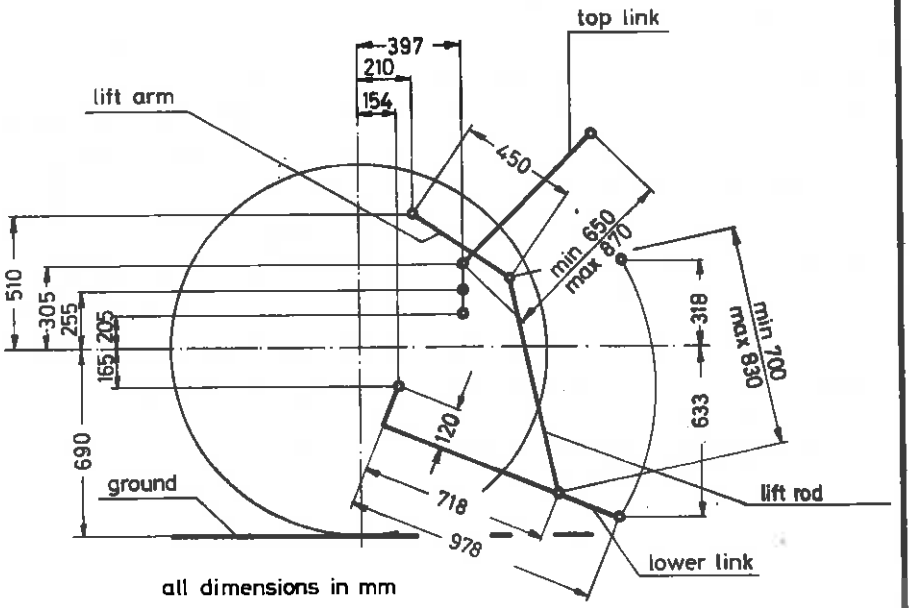
Date of tests: 11th till 15th November 1976

HYDRAULIC PUMP

(1) Opening pressure of relief valve in remote circuit	205 bar
Sustained pressure by open relief valve	200 bar
(2) Pump delivery rate at minimum pressure and maximum engine speed	49,8 l/min
(3) Pump delivery rate	44,3 l/min
Delivery pressure	176 bar
Hydraulic Power	12,95 kW

POWER LIFT (in the rear)

Dimensions of linkage geometry for the table on page 30



PRÜFUNGS-ABTEILUNG
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LIFTING FORCES (in the rear)

Lifting heights relative to horizontal lower links

mm	-468	-400	-399	-300	-287	-257	-200	-100	0
at hitch points maximum mechanical advantage									
N						48550	48450	46400	45300
minimum mechanical advantage									
N	46350	45250		43800			42600	41400	41000

Max. force exerted throughout the whole range 38850 N

Front of tractor does not lift with maximum allowable front ballast

at test frame maximum mechanical advantage									
N			60100	53100			47250	43450	40800
minimum mechanical advantage									
N					46650		44000	40900	38700

Max. force exerted throughout the whole range 32750 N

Front of tractor does not lift with maximum allowable front ballast

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Test No. 76-32

+100	+200	+300	+315	+400	+483	+500	+600	+631

lift rods 700 mm long

43800	42950	42000		40450	38850			

lift rods 830 mm long

39900	38850	37200	36800					

lift rods 830 mm long, upper pivot point of top link

38100	35350	32950	32750					

lift rods 700 mm long, lower pivot point of top link

36200	34050	31750		29500		27400	25300	24200

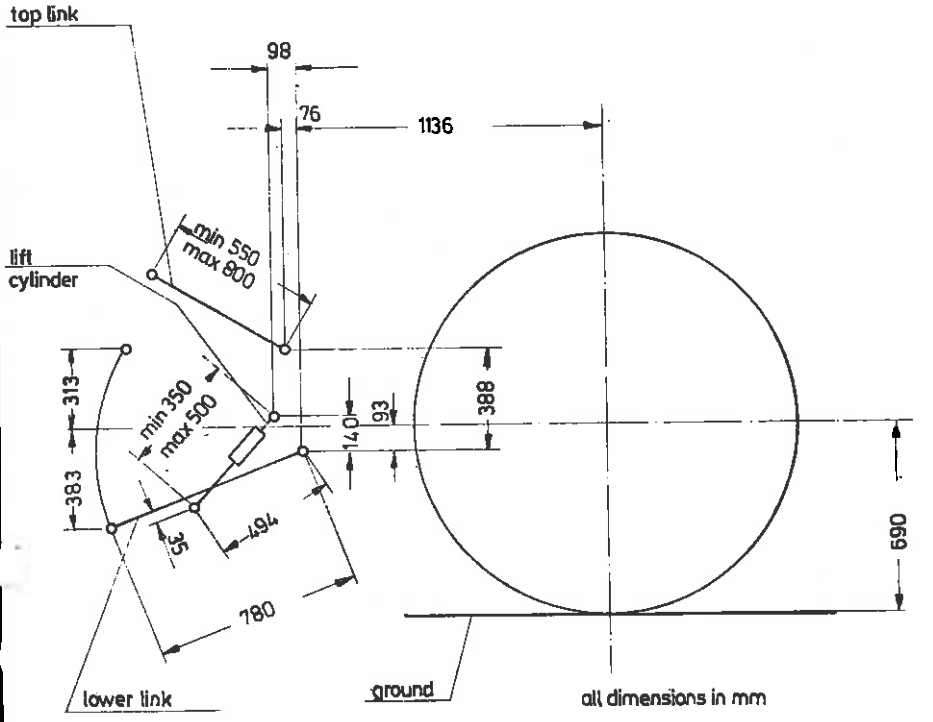
All values of forces for pressure at max. hydraulic power 176 bar, see page 27; calculated from measurements at max. oil pressure 200 bar

LINKAGE GEOMETRY when connected to the standard frame	Maximum mechanical advantage	Minimum mechanical advantage
Projected length in side view:		
Lower links	978 mm	978 mm
Lift arms	450 mm	450 mm
Lift rods	830 mm	700 mm
Top link	742 mm	740 mm
Distance of lift rod connection point from pivot point of lower link	718 mm	718 mm
The following dimensions are given relative to rear axle centre line 690 mm above ground		
Lower link pivot point	154 mm behind, 165 mm below	154 mm behind, 165 mm below
Top link pivot point	397 mm behind, 305 mm above	397 mm behind, 205 mm above
Lift arm pivot point	210 mm behind, 510 mm above	210 mm behind, 510 mm above
Maximum and minimum height of lower link hitch points	150 mm above, 633 mm below	318 mm above, 422 mm below
Height of lower link hitch points above ground when locked in highest transport position	840 mm	1008 mm

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POWER LIFT (in front)
with 2 rams



Dimensions of linkage geometry for the table on page 32

PRÜFUNGS-ABTEILUNG
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Test No. 76-32

LINKAGE GEOMETRY

when connected to the standard frame

Projected length in side view:	
Lower links	780 mm
Lift ram	350 to 500 mm
Top link	708 mm
Distance of lift ram connection point from pivot point of lower link	494 mm

The following dimensions are given relative to front axle centre line 690 mm above ground

Lower link pivot point	1136 mm forward, 93 mm below
Top link pivot point	1212 mm forward, 295 mm above
Lift ram pivot point	1234 mm forward, 47 mm above
Maximum and minimum height of lower link hitch points	313 mm above, 383 mm below
Height of lower link hitch points above ground when locked in highest transport position	1003 mm

LIFTING FORCES (in the front)

Lifting heights relative to horizontal lower links

mm	-329	-300	-290	-200	-100	0	+100	+200	+300	+400	+406	+459
at hitch points												
N			31750	30700	30000	29400	28600	27450	25700	23700	23250	

Maximum force exerted throughout the whole range 23250 N

With or without ballast the rear of tractor does not lift

at test frame												
N	29850	29600		28400	27700	26850	25700	24250	22450	20350		18600

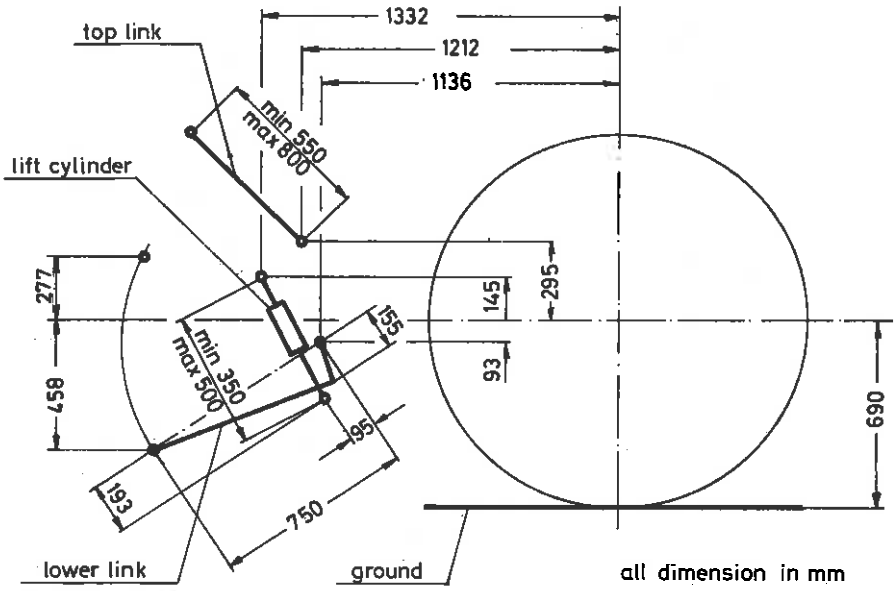
Maximum force exerted throughout the whole range 18600 N

Rear axle does not lift with all allowable ballast

All values of forces for pressure at max. hydraulic power 176 bar, see page 27
calculated from measurements at max. oil pressure 200 bar

POWER LIFT (in front)

with 1 ram



Dimensions of linkage geometry for the table on page 35

PRÜFUNGS-ABTEILUNG
MB trac 1100

Test No. 76-32

LINKAGE GEOMETRY

when connected to the standard frame

Projected length in side view:	
Lower links	750 mm
Lift ram	350 to 500 mm
Top link	678 mm
Distance of lift ram connection point from pivot point of lower link	95 mm

The following dimensions are given relative to front axle centre line 690 mm above ground

Lower link pivot point	1136 mm forward, 93 mm below
Top link pivot point	1212 mm forward, 295 mm above
Lift ram pivot point	1332 mm forward, 145 mm above
Maximum and minimum height of lower link hitch points	277 mm above, 458 mm below
Height of lower link hitch points above ground when locked in highest transport position	967 mm

LIFTING FORCES (in front)

Lifting heights relative to horizontal lower links

mm	-410	-400	-365	-300	-200	-100	0	+100	+200	+300	+370	+400	+435
at hitch points													
N			9700	10350	11650	12950	14450	16150	17700	20450	21300		

Maximum force exerted throughout the whole range 9700 N

With or without ballast the rear of tractor does not lift

at test frame													
N	9000	9100		9950	10900	11950	12800	13900	15000	15650		16050	16300

Maximum force exerted throughout the whole range 9000 N

Rear axle does not lift with all allowable ballast

All values of forces for pressure at max. hydraulic power 176 bar, see page 27
calculated from measurements at max. oil pressure 200 bar

PRÜFUNGS-ABTEILUNG
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Test No. 76-32

OPTIONAL TESTS

(1) ENGINE PERFORMANCE

Date of tests: 1st October 1976
Type of dynamometer: SCHENCK hydraulic dynamometer U1-30

Power kW	Engine speed rev/min	Fuel consumption total l/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power					
At 2-hour test					
80.9	2600	23.79	20.10	249	3.40
At standard p.t.o. speed (540 rev/min)					
78.9	2336	22.36	18.89	240	3.53
At the speed recommended for drawbar work					
80.9	2600	23.79	20.10	249	3.40
Part loads					
(i) 85% of the torque at maximum power at 2-hour test					
69.9	2639	20.86	17.63	252	3.35
(ii) unloaded					
-	2815	6.72	5.68	-	-
(iii) 50% of the load defined in (i)					
36.0	2718	13.32	11.26	313	2.70
(iv) maximum power					
80.9	2600	23.79	20.10	249	3.40
(v) 25% of the load defined in (i)					
18.2	2754	9.86	8.33	457	1.85
(vi) 75% of the load defined in (i)					
53.3	2684	16.81	14.20	266	3.17

Optimum fuel consumption: 226 g/kWh at 45.0 kW and 1502 rev/min
No load maximum engine speed: 2815 rev/min
Torque at maximum power (2 hours): 297 Nm
Maximum torque: 357 Nm at 1801 rev/min of the engine

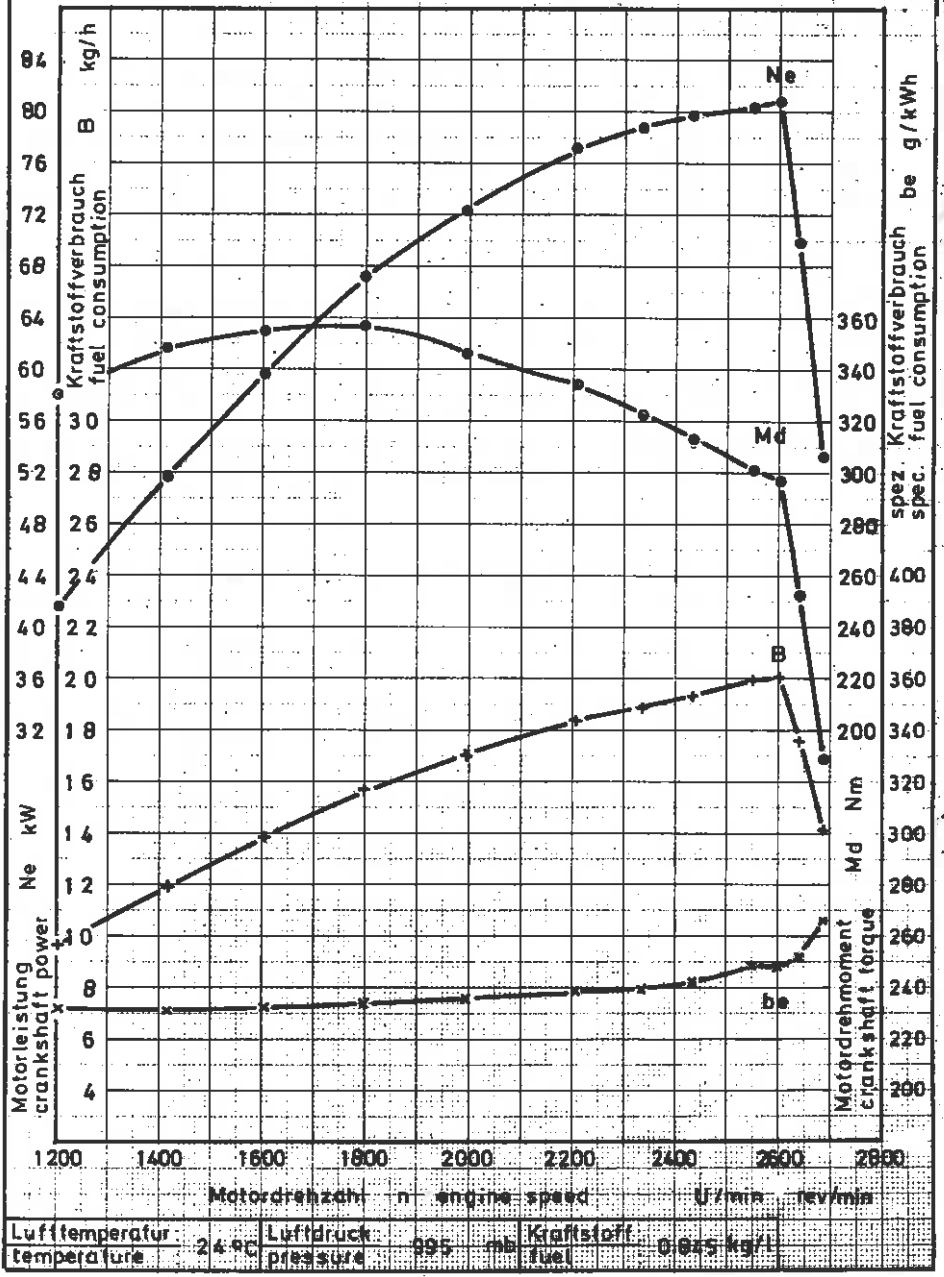
Mean atmospheric conditions:	temperature	24 °C
	pressure	995 mbar
	relative humidity	69 %
Maximum temperatures:	coolant	83 °C
	engine oil	92 °C
	fuel	30 °C

DLG PRÜFUNGS-ABTEILUNG

Motorleistung
Engine performance

MB TRAC 1100

Test Nr. 76-32



Lufttemperatur temperature	24 °C	Luftdruck pressure	995 mb	Kraftstoff fuel	0,825 kg/l

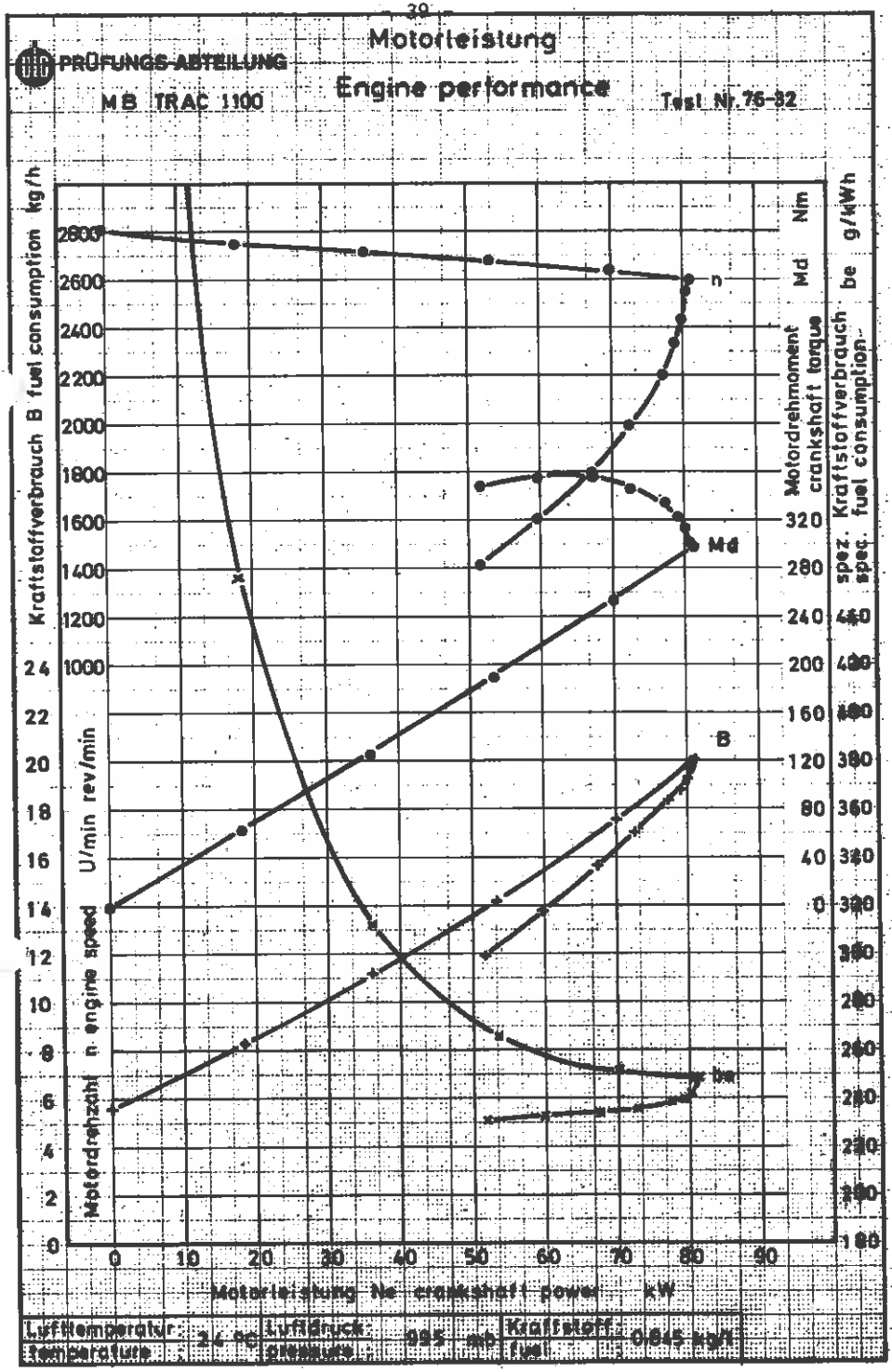
Motorleistung

Engine performance

PRÜFUNGS-ABTEILUNG

MB TRAC 1100

Test Nr. 76-32



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Motorleistung

Engine performance

Test Nr. 76-32

Motordrehzahl in % der Nenndrehzahl engine speed in % of rated engine speed

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

225 g/kWh

230 235 240 245 250 260 275 300 350 450

Lufttemperatur temperature 24 °C Luftdruck pressure 995 mb Kraftstoff fuel 0.845 kg/l

PRÜFUNGS-ABTEILUNG
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OPTIONAL TESTS

(2) MAIN POWER TAKE-OFF PERFORMANCE

Date of tests: 3rd November 1976
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power kW	Speed engine rev/min	Speed p.t.o. rev/min	Fuel consumption total l/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power						
At 2-hour test						
72.4	2600	1058	24.42	20.12	278	2.96
At standard p.t.o. speed (1000 rev/min)						
72.2	2457	1000	23.64	19.48	270	3.06
At the speed recommended for drawbar work						
72.4	2600	1058	24.42	20.12	278	2.96
Part loads						
(i) 85% of the torque at maximum power at 2-hour test						
62.3	2631	1071	21.49	17.71	284	2.90
(ii) unloaded						
-	2770	1127	8.02	6.61	-	-
(iii) 50% of the load defined in (i)						
31.9	2699	1099	14.37	11.84	371	2.22
(iv) maximum power						
72.4	2600	1058	24.42	20.12	278	2.96
(v) 25% of the load defined in (i)						
16.2	2732	1112	11.17	9.20	568	1.45
(vi) 75% of the load defined in (i)						
47.4	2673	1088	17.76	14.63	308	2.67

No load maximum engine speed: 2770 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 266 Nm
Maximum equivalent crankshaft torque: 333 Nm at 1699 rev/min of the engine

Mean atmospheric conditions:	temperature	15 °C
	pressure	983 mbar
	relative humidity	70 %
Maximum temperatures:	coolant	83 °C
	engine oil	95 °C
	fuel	28 °C

PRÜFUNGS-ABTEILUNG
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Test No. 76-32

ADDITIONAL TEST

out of the O.E.C.D. CODE under the responsibility of the DLG-Testing Station

(1) NOISE AT THE DRIVER'S EAR LEVEL

Octave analysis in the 8th field gear of which the nominal travelling speed is nearest to 7,25 km/h, in the 4th field, 6th field and in the 4th road gear reported in the NOISE RATING diagram

Date of test:	1st December 1976
Test track:	Concrete
Type of sound level meter:	BRÜEL AND KJAER model 2607
Type of frequency analyser: (fitted with octave filter)	BRÜEL AND KJAER model 1614

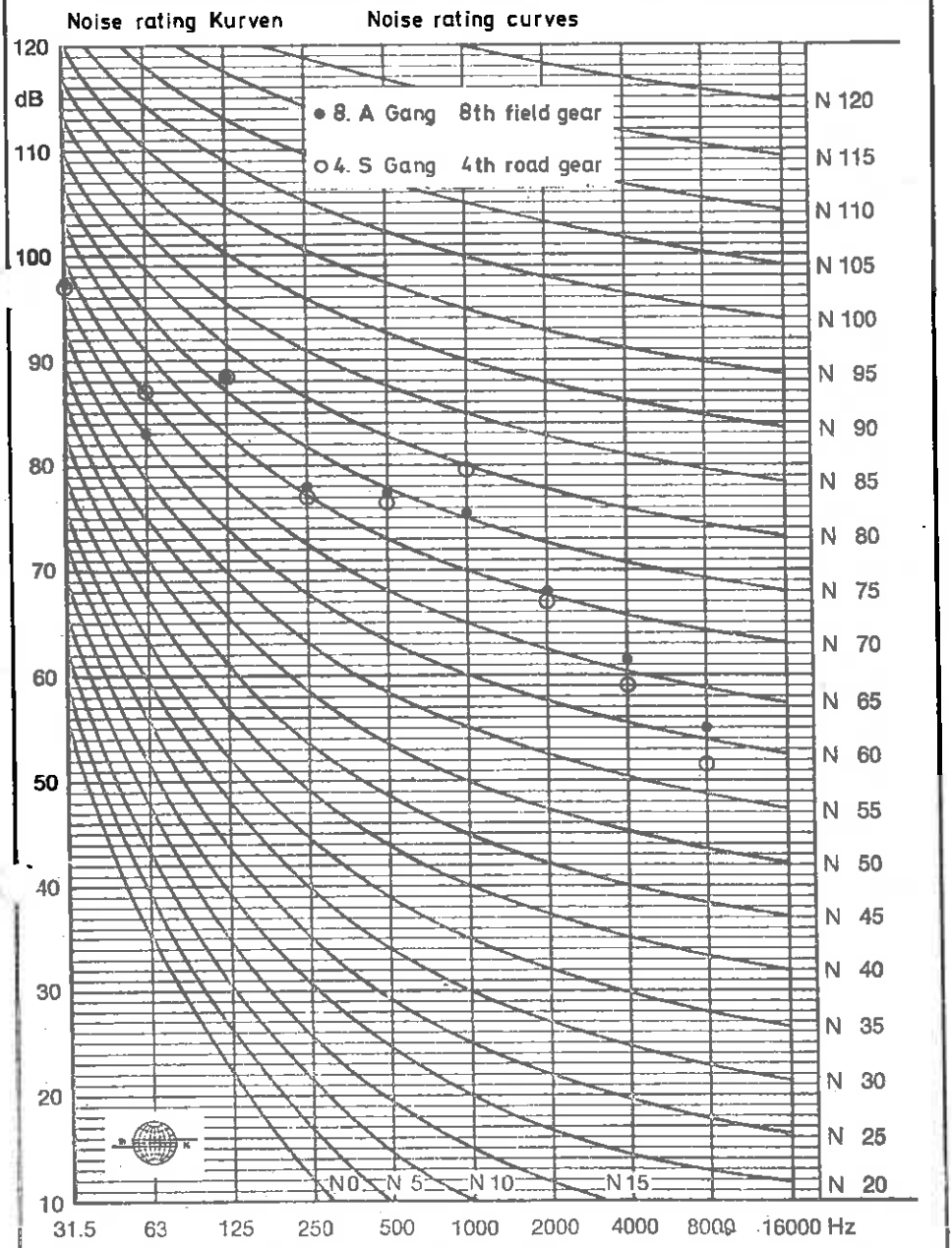
The tractor was fitted with a safety cab O.E.C.D. tested, approval no. CS 1201a

Results of test

Gear	Drawbar pull at which the tractor develops the maximum sound level N	Travelling speed effective km/h	Sound level dB(A)	Sound level noise rating
8 field	30650	7,45	81	77
4 field	57150	1,76	84,5	84
6 field	57300	3,57	82	78
4 road	15150	12,02	84,5	80

There is no gear combination with a NOISE RATING NUMBER higher than 85

PRÜFUNGS-ABTEILUNG	Schleppergeräusch am Ohr des Fahrers Noise at the drivers ear level	MB trac 1100



PRÜFUNGS-ABTEILUNG	Schleppergeräusch am Ohr des Fahrers Noise at the driver's ear level	MB trac 1100

