O.E.C.D. No.: 515
Printed: April 1976

Report on test in accordance with
O.E.C.D. STANDARD CODE for the Official Testing
of Agricultural Tractors



Agricultural Tractor UNIMOG U 120

Manufactured by: DAIMLER-BENZ AG
D-7560 Gaggenau

Date of Tests: May till October 1975

DLG-Testing Station for Agricultural Machinery
D-6114 Groß-Umstadt

DEUTSCHE LANDWIRTSCHAFTS-GESELLSCHAFT e.V.
Prüfungsabteilung für Landmaschinen
D-6000 Frankfurt/Main 1, Zimmerweg 16

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

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

Date of Approval: 9th April 1976

Serial No.: 515

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 Hg						

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Printed in Germany

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PRÜFUNGS-ABTEILUNG
DB-UNIMOG 120

Test No. 75-105

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:	U 120, version 425
Type:	All wheel drive tractor, chassis construction, spring suspended front and rear axle
Serial No.:	425.121-10-900010

Engine

Make:	Own make
Model:	OM 352, model 353.960
Type:	4-stroke DIESEL engine, direct injection; water cooled
Serial No.:	353.960-10-359552
Cylinders:	6 in-line, bore 97 mm; stroke 128 mm; displacement 5675 cm^3; 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 57 mm^3/stroke at rated engine speed and full load; injection timing 18° before TDC; BOSCH multihole injection nozzles DLLA S 187; injection pressure 200 bar; BOSCH dual fuel filter with replaceable cartridges; capacity of fuel tank 160 l

Governor:	BOSCH centrifugal variable speed governor: EP/RSV 350-1300 ABV 12920; governed range of engine speed: 700 to 2800 rev/min; rated engine speed 2600 rev/min
Air cleaner:	MANN UND HUMMEL paper element filter with pre-cleaner; PICLON 45 585 92 104; service indicator
Exhaust silencer:	Own make multi-chamber muffler 200 mm diameter; 700 mm long; on the left hand side of the chassis; mouth showing rearward at an angle of 45°
Lubrication system:	Forced feed from gear pump; strainer in sump; MANN oil filter, combination filter for full flow and by-pass; overpressure relief valve in full flow; replaceable cartridge; oil capacity 13 l; oil changing interval 200 hours; recommended oil viscosities: winter SAE 10W summer SAE 20W/20 or SAE 30 tropics 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 23 l
Starting system:	Electrical; BOSCH screw-push starter motor ID 3 kW; Startpilot PRO-COMBUR; VISO F 27
Electrical equipment:	12 V, negative earth; BOSCH three phase alternator: K1 12 V 35 A 20; 1 lead acid battery 110 Ah at 20 hours rating

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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; speed change gear with 4 speeds and planetary group for duplication, pneumatically shifted; all speeds synchronized; (optional: additional planetary group gear for field and creep speeds available, at tractor tested fitted with field speeds only) all speeds may be shifted for forward and reverse drive; totally 16 forward and 16 reverse speeds at tractor tested
Rear axle and final drive:	Portal construction; bevel gear with crown wheel and pinion; driven by universal joint shaft in the thrust tube; bevel gear type differential fitted with lock; spur gear final drive
Front axle and final drive:	Like rear axle; pneumatically engageable under load; double joints in the steering knuckles
	differential locks of front and rear axle pneumatically engageable and disengageable in common under load
Oil capacities:	Speed change gear and field group gear: 12 l differentials: each 2,5 l final drives: each 0,6 l
Oil qualities:	Speed change gear and field group gear and main p.t.o.: transmission oil SAE 80 axles: transmission oil SAE 90
Oil changing interval:	400 hours

Total ratios and speeds s. page 8 and 9

Power take-off

Main p.t.o.: Live p.t.o. in the rear of tractor;
either 916 mm above ground, 183 mm to the right hand side of tractor's median plane
or optionally 720 mm above ground,
10 mm right of tractor's median plane
with chassis springs not compressed;

driven through the second disc of the dry dual disc clutch, independent from the tractor drive disc;
pneumatically pilot controlled,
hydraulically engaged or disengaged by a servo hand valve

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) 36x44,3x11 mm = 1 3/4 in 6 splines;

2 speeds are preselectable by hand lever:

540 rev/min p.t.o.
602 rev/min at rated engine speed;
standard p.t.o.-speed 540 rev/min at 2334 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

Group	Gear	Total ratio engine : driving wheel	Nominal travelling speed at rated engine speed km/h	m/s *)
speed combinations as tested				
Road group	1	59,65	9,2	2,55
	2	42,95	12,8	3,56
	3	31,47	17,4	4,83
	4	23,10	23,8	6,61
	5	16,47	33,3	9,25
	6	11,86	46,3	12,9
	7	8,69	63,2	17,6
	8	6,38	86,1	23,9
Field group	1	343,39	1,60	0,44
	2	247,26	2,22	0,62
	3	181,17	3,03	0,84
	4	132,96	4,13	1,15
	5	94,84	5,79	1,61
	6	68,30	8,04	2,23
	7	50,05	10,97	3,05
	8	36,72	14,96	4,16
optional creep speeds, not tested				
Creep group	1	3332,72	0,165	0,046
	2	2399,76	0,229	0,064
	3	1758,30	0,312	0,087
	4	1290,40	0,426	0,118
	5	920,49	0,597	0,166
	6	662,84	0,828	0,230
	7	485,73	1,131	0,314
	8	356,36	1,541	0,428

*) calculated with the rolling circumference 3520 mm as per WdK 182

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Reverse speeds:

Group	Gear	Total ratio engine : driving wheel	Nominal travelling speed at rated engine speed km/h	m/s *)
Road group	1	57,77	9,5	2,64
	2	41,60	13,2	3,67
	3	30,84	18,0	5,00
	4	22,37	24,5	6,81
	5	15,96	34,4	9,56
	6	11,49	47,8	13,3
	7	8,42	65,2	18,1
	8	6,18	88,9	24,7
Field group	1	332,59	1,65	0,46
	2	239,52	2,29	0,64
	3	175,48	3,13	0,87
	4	128,77	4,26	1,18
	5	91,87	5,98	1,66
	6	66,17	8,30	2,31
	7	48,47	11,33	3,15
	8	35,58	15,43	4,29
Creep group	1	3227,95	0,170	0,047
	2	2324,57	0,236	0,066
	3	1703,07	0,322	0,089
	4	1249,77	0,439	0,122
	5	891,62	0,616	0,171
	6	642,17	0,855	0,238
	7	470,40	1,167	0,324
	8	345,32	1,590	0,442

Power take-off (Continuation)

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

	p.t.o.	
Profile	540 rev/min	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;
160 mm to the left hand side of tractor's median plane, 1023 mm above ground with chassis 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;
floating position only;
mechanically acting load transfer system: SERVOTRAC;
WABCO gear type pump IPM 16;
delivery nominal 15,8 cm³/rev;
V-belt driven by engine;
2 double acting rams, bore 100 mm, stroke 200 mm, rod 40 mm diameter;
WABCO control valve, double acting;
maximum pressure 200 bar;
pressure accumulator LANGEN acting as shock absorber;
maximum accumulator pressure 130 bar
hydraulic oil tank with 27 l capacity;
20 l may be taken off through oil tappings;
recommended oil: engine oil HD SAE 10W;
oil changing intervals 1800 hours

Power lift	(Continuation)
In front:	Optional, not fitted on tractor tested; figures acc. to manufacturer's specification; hydraulic power lift, disintegrated construction; connected to the hydraulic circuit of the rear power lift; 1 double acting ram, bore 80 mm, stroke 175 mm, rod 30 mm diameter; WABCO control valve, double acting
Implement linkage	
In the rear:	Three point linkage, category III, DIN 9674; (optionally category II); lift rods adjustable from 475 to 645 mm lifting range above ground with long lift rods from 515 to 1188 mm short lift rods from 245 to 975 mm with chassis springs not compressed; hydraulically acting linkage lock for transport
In front:	Three point implement linkage of own construction; the ram acts over a lift shaft, lift arm and a lift rod not adjustable in length on a lateral stabilized balancer, with clevis as per DIN 9674 category II; lifting range above ground from 280 to 1070 mm; maximum distance of clevis to front axle centre 1760 mm; hydraulically acting linkage lock for transport
Oil tappings	1 double-acting WABCO supplementary control valve with 2 oil tappings in front and 2 in the rear fitted on tractor tested; up to 3 double acting WABCO-supplementary control valves with 2 oil tappings and 1 pressureless oil return each 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 1065 mm;
thickness of the bar 25 mm, alloyed steel;
centre hole and 5 holes on either side;
80 mm distance each;
all holes 36,5 mm diameter;
height above ground infinitely adjustable by power lift in the range from 528 mm to 1200 mm depending on lift rods length, measured at the surface of the bar, with chassis springs not compressed,
distance of centre hole:
from rear axle centre 1280 mm
from p.t.o.-shaft end 510 mm

(optional: a rigidly mounted holed drawbar is available,
height above ground 490 mm)

Pull attachment

Trailer hitch:

RINGFEDER
model 605, automatic;
height above ground 945 mm with chassis springs not compressed,
in tractor's median plane;
hitch bolt diameter 38 mm;
distance from hitch bolt centre to rear axle centre 745 mm;
permissible vertical load 1500 kg;
permissible drawing pull 85000 N

Towing hitch:

At front of tractor;
height above ground 965 mm with chassis springs not compressed, 160 mm to the right hand side of tractor's median plane

Steering

Own make
ball-nut hydrosteering with own oil circuit;
ZF rotary pump, 12 l/min delivery;
max. pressure 130 bar;
acting on front wheels by a normal steering linkage;
recommended oil: engine oil HD SAE 10W

Brakes	Air brake assembly in accordance with EEC;
Compressed air equipment:	BOSCH air compressor; V-belt driven by engine; 2 compressed air tanks with 10 l capacity each; on the right hand side of chassis; parallelly connected with protective circuit valve; maximum air pressure 18 bar; (serving also for the control of group gear, front wheel drive, differential locks and p.t.o. drive)
Parking brake:	Mechanically acting spring-loaded brake; locked by pressure release; dry disc type brake; 2 discs with 380 mm diameter, fitted on the rear axle final drive gear boxes; operated by hand valve
Service brake:	Own make, 2 circuits; hydraulically acting, compressed air assisted, without servo effect; dry disc type brake with 2 brake discs each on the front and rear axle; fitted on the final drive gear boxes; pedal operated
Steering brake:	None
Trailer braking system:	WABCO-BOSCH single or dual line type; pneumatically controlled, hydraulically operated
Safety cab	Own make OEDC tested CS 424 b 25th July 1974
Auxiliary platform	Behind the cab; inside measurements: 2320 mm long, 2140 mm wide, height of boards 450 mm; (optionally available as threeway tipper; hydraulically operated by telescopic ram)

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 14,5-24 MPT 16 ply DIN 7793; maximum permissible load per tyre 2800 kg at 4,0 bar inflation pressure and 80 km/h; track width 1840 mm in front and in the rear; rims 11,0 x 24
Wheel base:	2810 mm

Weights — Ready for use as tested

		without driver	with driver
Without ballast:	front	3015 kg	3070 kg
	rear	2220	2240 kg
	total	5235 kg	5310 kg
Ballast:	Iron weights on the auxiliary platform:		2690 kg
With ballast:	front	3985 kg	4040 kg
	rear	3940 kg	3960 kg
	total	7925 kg	8000 kg

Driver's seat and passenger's seat

Own make
upholstered seat with back rest;
neither spring suspended nor damped
because the chassis is spring suspended;
mounting steps on both sides 620 mm
above ground with chassis springs not
compressed;
height of seat above cab platform adjustable
from 370 to 430 mm in 4 steps of 15 mm each;
150 mm adjustable fore and aft;
adjustabilities are independent

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Number of grease points 15

Dimensions

Total length: 4750 mm without implement linkage
5210 mm with implement linkage

Total width: 2320 mm

Total height: 2640 mm with cab

Ground clearance: 550 mm below differential cases

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

	Dimensions mm	Height above ground of centre mm	Distance from outside edge of tractor to centre mm
Head lights	290 x 160 (oval)	1020	380
Side lights	not necessary	-	-
Rear lights	280 x 100	936	920
Reflectors	80 ø	630	200

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Permissible total weights and axle loads

for all available wheel equipment

Tyres	Permissible total weight kg	Permissible axle kg
14,5-20 MPT 18 ply 14,5 R 20 MPT 18 ply	9000	5300
14,5-24 MPT 16 ply 14,5 R 24 MPT 16 ply	9000	5300
16/70-24 MPT 14 ply	9000	5300

FUELS AND LUBRICANTS USED IN TESTS

Fuel: ARAL-DIESEL-fuel (DIN 51601)

specific gravity at 15°C

during engine tests	0,829 kg/l
during p.t.o. tests	0,832 kg/l
during drawbar tests	0,830 kg/l

Engine oil: ARAL HD 20W/20

Transmission oil: Speed change gear, group gear, differentials and final drives
TEXACO transmission oil SAE 140

p.t.o. drive
ARAL engine oil HD 20W/20

Power lift and hydraulic steering: ARAL engine oil HD 10

PRÜFUNGS-ABTEILUNG
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COMPULSORY TESTS

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

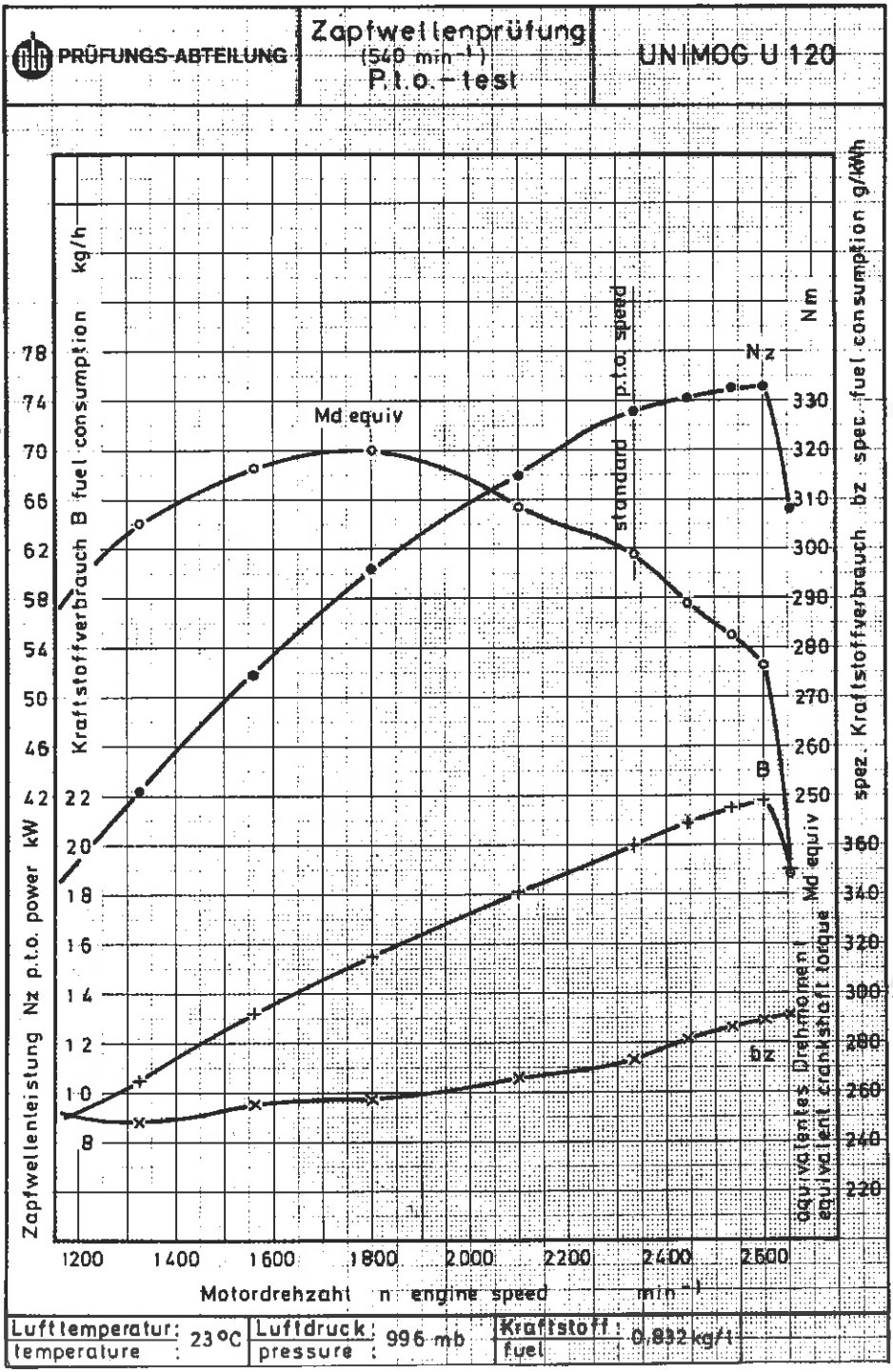
Date of tests: 26th May 1975
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

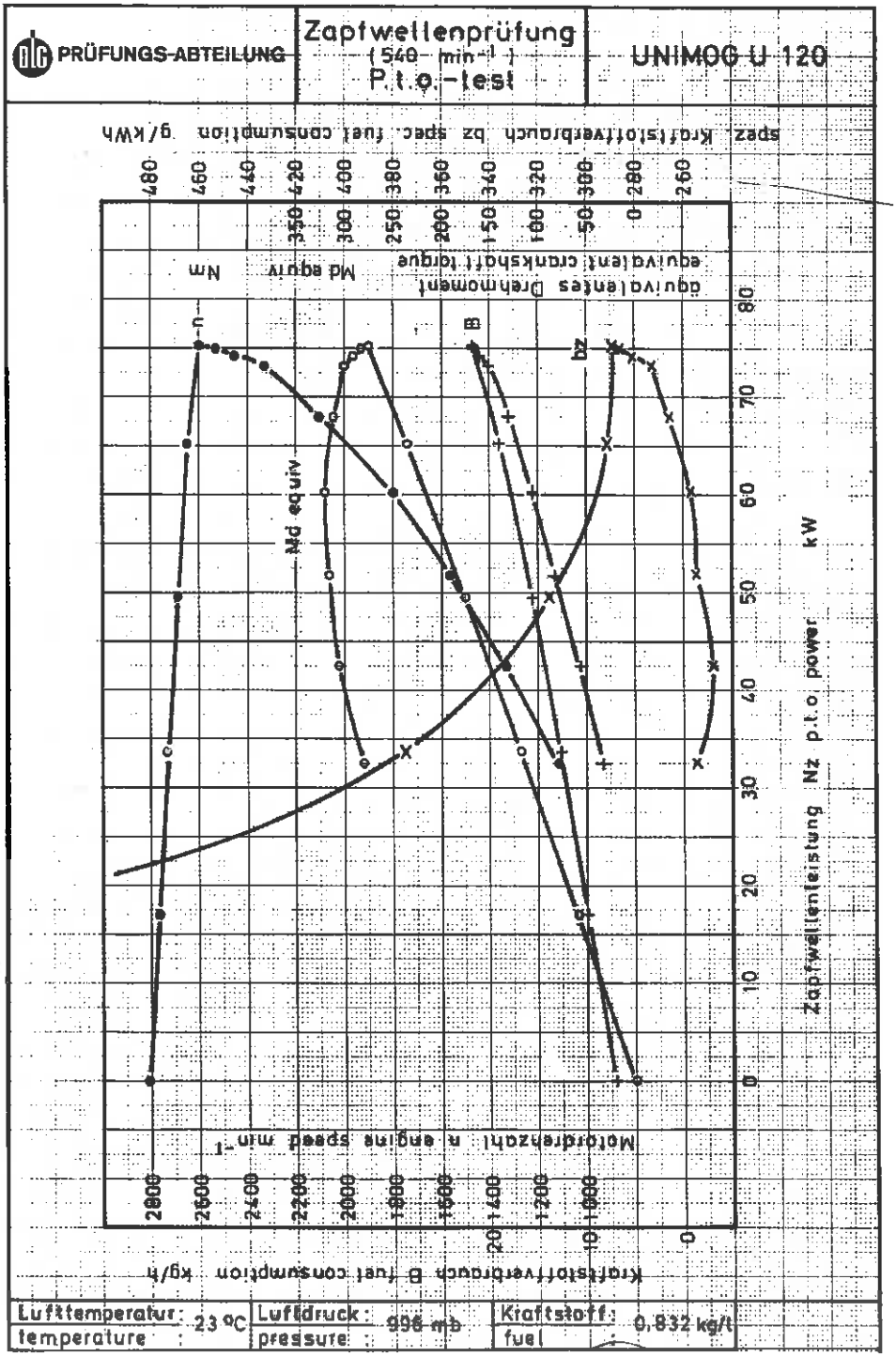
Maximum power

Power kW	Speed engine rev/min	Speed p.t.o. rev/min	Fuel consumption total 1/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
At maximum power 2-hour test						
75,3	2600	602	26,17	21,77	289	2,88
At standard p.t.o. speed (540 rev/min)						
73,2	2334	540	23,98	19,95	273	3,05
At the speed recommended for drawbar work						
75,3	2600	602	26,17	21,77	289	2,88
Part loads						
(i) 85% of the torque at maximum power						
65,3	2654	614	22,82	18,99	291	2,86
(ii) unloaded						
-	2807	649	8,53	7,10	-	-
(iii) 50% of the load defined in (i)						
33,7	2740	634	15,18	12,63	375	2,22
(iv) maximum power						
75,3	2600	602	26,17	21,77	289	2,88
(v) 25% of the load defined in (i)						
17,0	2770	641	11,75	9,78	575	1,45
(vi) 75% of the load defined in (i)						
49,6	2688	622	18,79	15,63	315	2,64

No load maximum engine speed: 2807 rev/min
Equivalent crankshaft torque at maximum power: 277 Nm
Maximum equivalent crankshaft torque: 320 Nm at 1800 rev/min of the engine

Mean atmospheric conditions:	temperature	23°C
	pressure	996 mbar
	relative humidity	65%
Maximum temperatures:	coolant	85°C
	engine oil	105°C
	fuel	32°C


PRÜFUNGS-ABTEILUNG
Zapfwellenprüfung
(540 min⁻¹)
P.t.o.-test
UNIMOG U 120
Zapfwellenleistung Nz p.t.o. power kW
Kraftstoffverbrauch B fuel consumption kg/h
spez. Kraftstoffverbrauch bz spec. fuel consumption g/kWh
Nm
Nz
Md equiv
standard p.t.o. speed
B
bz
äquivalentes Drehmoment equivalent crankshaft torque Md equiv
Motordrehzahl n engine speed min⁻¹
1200
1400
1600
1800
2000
2200
2400
2600
Lufttemperatur: temperature : 23 °C
Luftdruck: pressure : 996 mb
Kraftstoff: fuel : 0,832 kg/l


PRÜFUNGS-ABTEILUNG
Zapfwellenprüfung
(540 min⁻¹)
P.t.o.-test
UNIMOG U 120
spez. Kraftstoffverbrauch bz spec. fuel consumption g/kWh
äquivalentes Drehmoment
equivalent crankshaft torque
Md equiv
Nm
B
zq
u
Zapfwellenleistung Nz p.t.o. power kW
Motordrehzahl n engine speed min⁻¹
Kraftstoffverbrauch B fuel consumption kg/h
Lufttemperatur: 23 °C
temperature
Luftdruck: 996 mb
pressure
Kraftstoff: 0,832 kg/l
fuel

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(2) DRAWBAR PERFORMANCE

Date of tests: 28th May till 5th June 1975
Type of track: Concrete

Gear No. and Group	Driving 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 450 mm						
1 field	1,42	31,2	79100	2708	15,0	1,87
2 field	1,95	42,8	79150	2673	15,0	2,14
3 field	2,61	57,2	79200	2630	15,0	2,28
4 field	3,75	63,8	61400	2599	9,0	2,44
5 field	5,46	66,4	43850	2602	5,7	2,54
6 field	7,70	66,8	31250	2599	3,6	2,56
1 road	9,19	68,2	26780	2600	3,0	2,59
7 field	10,61	67,5	22900	2600	2,7	2,56
2 road	12,85	68,1	19080	2599	2,1	2,57
8 field	14,59	66,5	16420	2600	1,9	2,52
(ii) FIVE-HOUR-TEST at 75% of pull at maximum power in 5th gear of field group						
5 field	5,69	52,7	32900	2670	4,2	2,41
(iii) FIVE-HOUR-TEST at pull corresponding to 15% wheel slip in test (i)						
3 field	-	-	79200	2673	-	-
(v) MAXIMUM POWER without ballast height of drawbar above ground 550 mm						
3 field	2,65	41,9	57000	2679	15,0	2,11
4 field	3,57	56,3	56600	2632	14,9	2,21
5 field	5,36	63,7	42800	2600	7,0	2,42
6 field	7,62	65,1	30350	2598	4,4	2,48
1 road	9,08	65,9	26150	2598	3,7	2,51
7 field	10,56	66,0	22500	2603	3,1	2,52
2 road	12,75	66,7	18850	2601	2,7	2,54
8 field	14,46	65,7	16350	2599	2,2	2,50

Total oil consumption during ten hours duration of tests (ii) and (iii): 95 g/h

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Test No. 75-105

Tyres make and size — front: METZELER 14,5-20 MPT 16 ply
rear: METZELER 14,5-20 MPT 16 ply

Specific fuel consumpt. g/kWh	Temperatures: Fuel °C	Coolant °C	Engine-oil °C	Atmospheric conditions: Temperature °C	Relative humidity %	Pressure mbar
tyre inflation pressure 4,0 bar rolling radius of tyres under static load 576 mm						
444	17	85	98	17	86	1007
390	16	85	98	16	92	1007
363	16	85	97	13	92	1007
341	16	85	93	16	86	998
328	16	85	92	16	93	996
325	15	85	95	15	92	996
321	15	85	97	15	87	996
324	15	85	97	12	94	996
322	15	85	90	15	91	996
331	15	85	94	15	90	996
346	18	85	95	17	87	1008
-	19	85	96	18	85	1008
tyre inflation pressure 3,5 bar rolling radius of tyres under static load 578 mm						
390	20	85	100	18	74	1000
363	17	85	97	16	80	1000
342	27	85	98	28	67	1008
333	27	85	98	28	72	1008
330	26	85	98	25	77	1008
329	24	85	100	25	80	1008
328	21	85	104	25	84	1008
336	23	85	97	25	84	1008

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

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 14,5-20 MPT 16 ply
rear: 14,5-20 MPT 16 ply

Track of wheels front: 1840 mm
rear: 1840 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	6,69	6,71	6,43	6,43
Radius of turning circle	6,08	6,10	5,82	5,82

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	990 mm
Distance forward from the vertical plane containing the axis of the rear wheels	1625 mm
Distance of the median plane of the tractor to the right hand side	40 mm

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DB-UNIMOG 120 Test No. 75-105

(5) BRAKING PERFORMANCE

A) SERVICE BRAKE

Date of tests: 24th October 1975
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	5,9	7,6
Stopping distance	m	6,4	5,4
Force on pedal	N	340	235
Force on pedal to achieve a deceleration of 2,5 m/s^2	N	50	20

Brake fade characteristics (hot tests)

Deceleration	hot/cold	%	101	101
Stopping distance	cold/hot	%	103	102
Force on pedal	cold/hot	%	100	100

B) PARKING BRAKE

Mechanically acting 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

(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 2nd June 1975
Type of track: Concrete
Type of sound level meter: BRÜEL UND KJAER model 2203

Results of test

Gear: 4th road speed
Travelling speed before acceleration: 19,3 km/h
Sound level: 87 dB(A)

(7) NOISE AT THE DRIVER'S EAR LEVEL

Date of tests: 2nd June 1975
Type of track: Concrete
Type of sound level meter: BRÜEL UND KJAER model 2607
Type of frequency analyser: BRÜEL UND KJAER model 1614
(fitted with octave filter)

The tractor was fitted with a safety cab O.E.C.D. tested, approval no. CS 424 b, from 25th July 1974

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)
3 field	52600	3,03	2,64	85,5
4 field	52000	4,13	3,56	86
5 field	44650	5,79	5,31	86
6 field*	31230	8,04	7,61	86
1 road	27000	9,20	9,06	85
7 field	22700	10,97	10,55	86
2 road	8900	12,80	13,48	86
8 field	16420	14,96	14,39	85
3 road	4330	17,40	18,59	86
4 road	light load	23,80	25,71	82

*) The 6th field gear corresponds to the travelling speed nearest to 7,5 km/h

PRÜFUNGS-ABTEILUNG
DB-UNIMOG 120

Test No. 75-105

(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

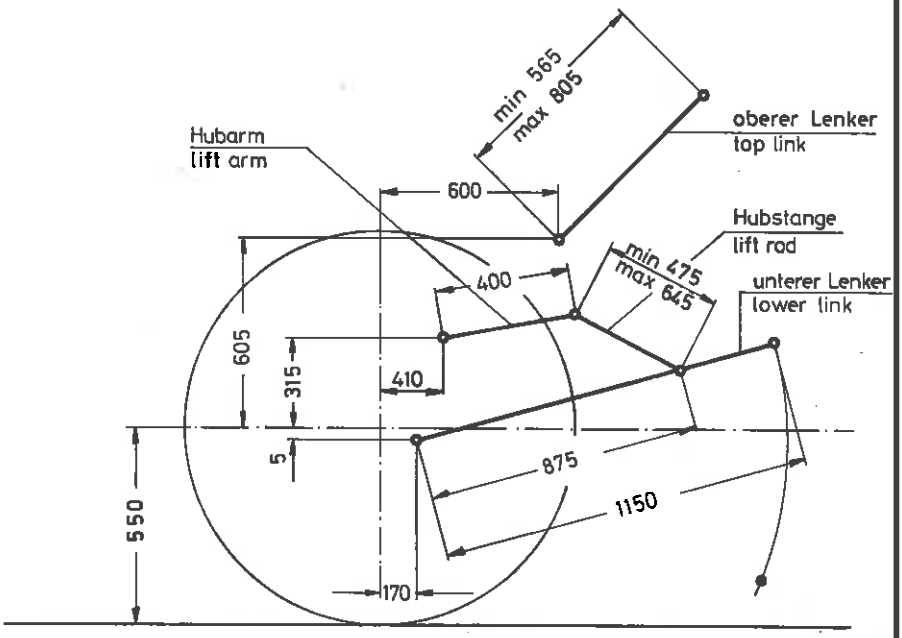
Date of tests: 28th and 30th October 1975

HYDRAULIC PUMP

(1)	Opening pressure of relief valve in remote circuit	200 bar
	Sustained pressure by open relief valve	193 bar
(2)	Pump delivery rate at minimum pressure and maximum engine speed	63,0 l/min
(3)	Pump delivery rate	54,1 l/min
	Delivery pressure	167 bar
	Hydraulic power	15,1 kW

POWER LIFT

Dimensions of linkage geometry (category III)



LIFTING FORCES at hitch points

(no measurements carried out at the test frame, because category III fitted)

Lifting heights relative to horizontal lower links

mm	-300	-200	-100	-70	0	+100	+200	+300	+400	+430	+500	+600	+645
maximum mechanical advantage, lift rods 475 mm long													
N				46560	48250	52490	55870	58410	60100		60100	56720	54010
minimum mechanical advantage, lift rods 645 mm long													
N	43170	46560	49950		52910	55030	56550	56300	52060	49100			

Max. force exerted throughout the whole range 46560 N

Front of tractor does not lift with max. allowable front ballast

All values of forces for pressure at max. hydraulic power 167 bar, see page 25, calculated from measurements at max. oil pressure 193 bar

PRÜFUNGS-ABTEILUNG
DB-UNIMOG 120

Test No. 75-105

OPTIONAL TESTS

(1) ENGINE PERFORMANCE

Date of tests: 14th and 15th May 1975
Type of dynamometer: SCHENCK hydraulic dynamometer U1-30

Maximum power

Power kW	Engine speed rev/min	Fuel consumption total 1/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
At maximum power 2-hour test					
89,2	2600	26,67	22,11	248	3,34
At standard p.t.o. speed (540 rev/min)					
82,8	2334	25,24	20,92	253	3,28
At the speed recommended for drawbar work					
89,2	2600	26,67	22,11	248	3,34

Part loads

(i) 85% of torque at maximum power					
77,2	2650	22,34	18,52	240	3,46
(ii) unloaded					
-	2798	5,67	4,70	-	-
(iii) 50% of the load defined in (i)					
39,6	2720	14,15	11,73	296	2,80
(iv) maximum power					
89,2	2600	26,67	22,11	248	3,34
(v) 25% of the load defined in (i)					
20,1	2758	10,06	8,34	415	2,00
(vi) 75% of the load defined in (i)					
58,7	2680	17,19	14,85	253	3,41

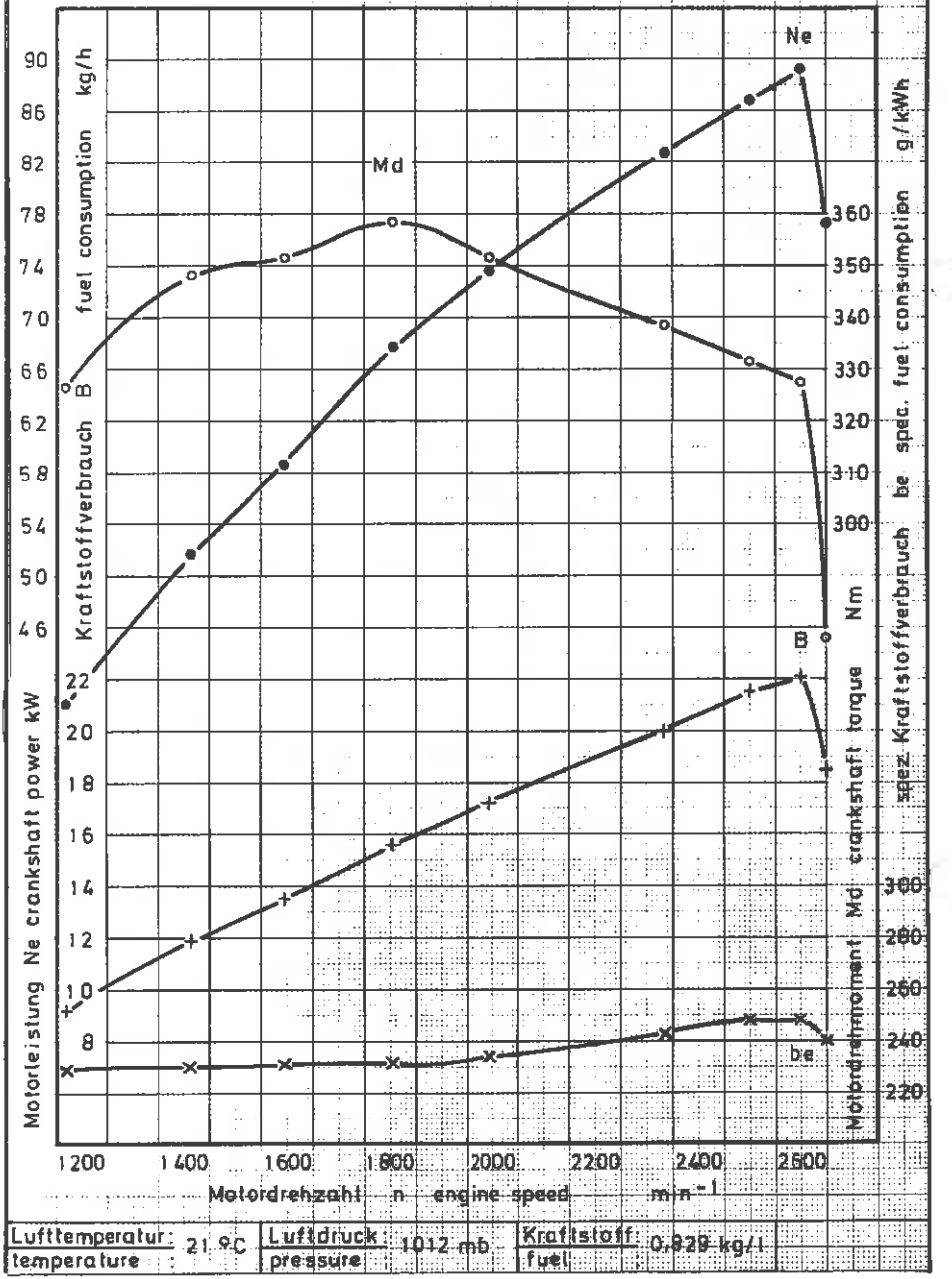
Optimum fuel consumption: 222 g/kWh at 52,9 kW and 1750 rev/min
Standard fuel consumption 1/2 (DIN 9606): 10,35/22,15 1/h
No load maximum engine speed: 2798 rev/min
Torque at maximum power: 327 Nm
Maximum torque: 358 Nm at 1800 rev/min of the engine

Mean atmospheric conditions:	temperature	21°C
	pressure	1012 mbar
	relative humidity	65%
Maximum temperatures:	coolant	80°C
	engine oil	105°C
	fuel	29°C

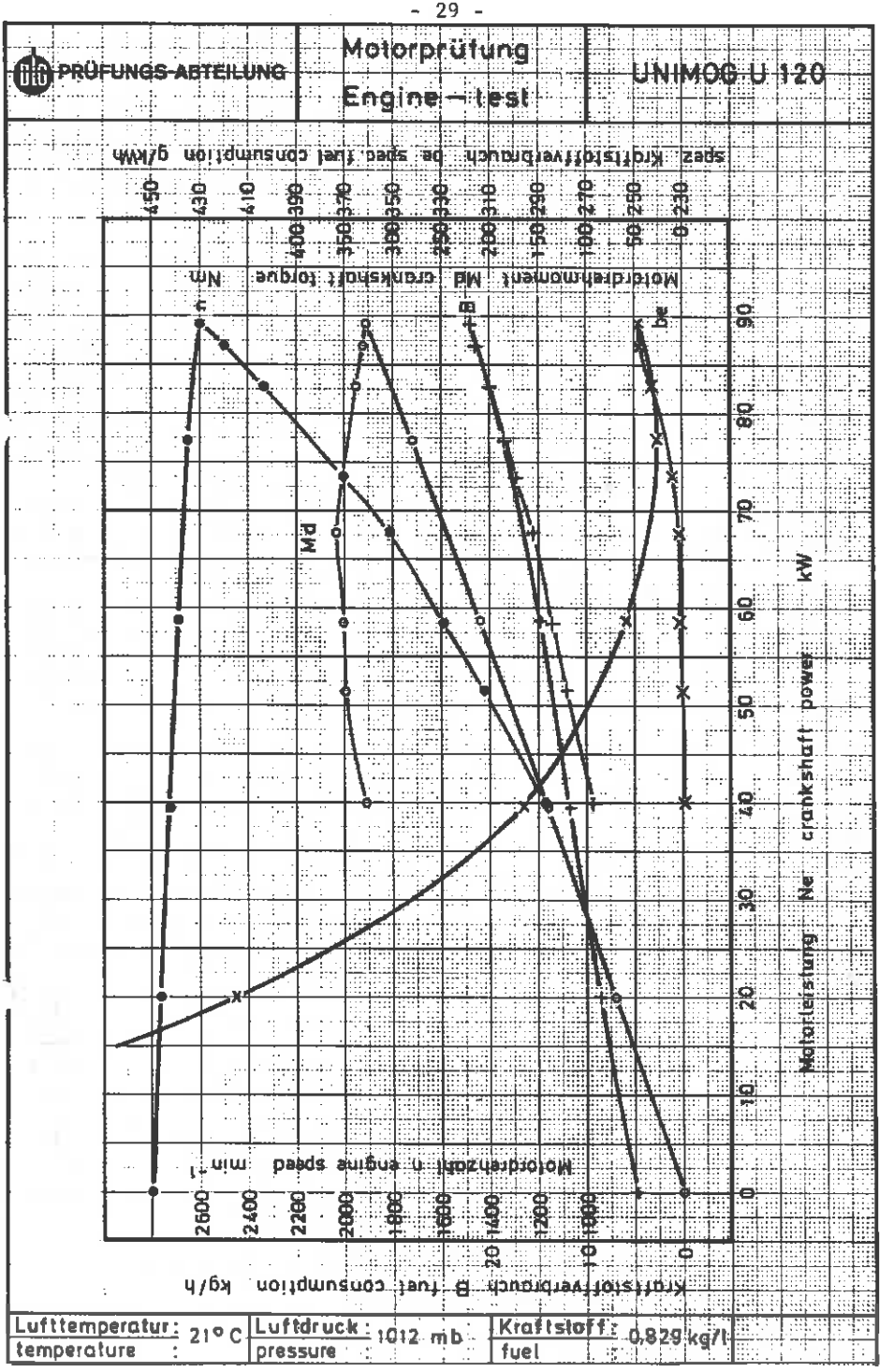
PRÜFUNGS-ABTEILUNG

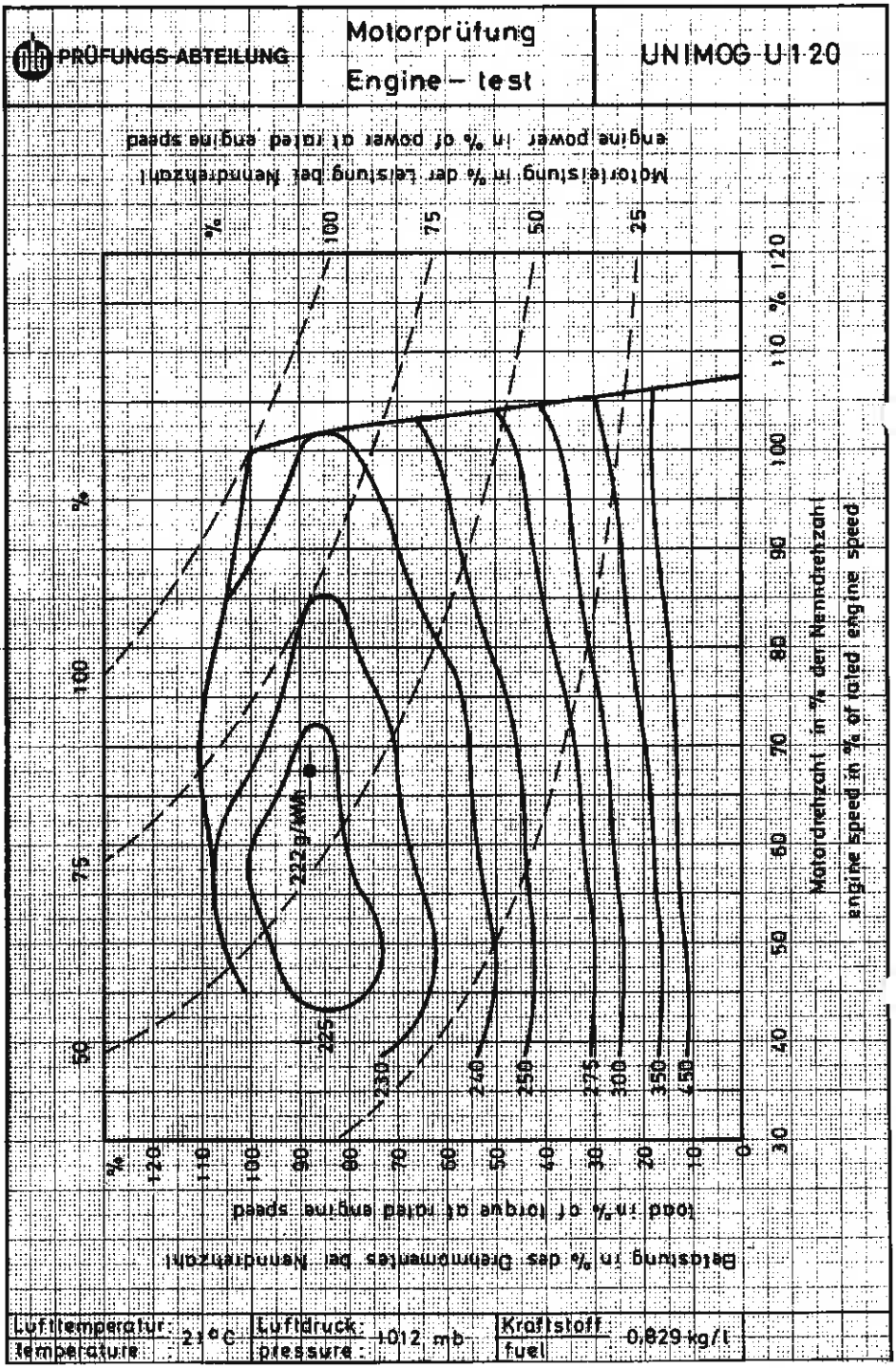
Motorprüfung
Engine – test

UNIMOG U 120



Lufttemperatur: temperature	21 °C	Luftdruck: pressure	1012 mb	Kraftstoff: fuel	0,829 kg/l


PRÜFUNGS-ABTEILUNG
Motorprüfung
Engine – test
UNIMOG U 120
Motordrehzahl n engine speed min⁻¹
Motorleistung Ne crankshaft power kW
Kraftstoffverbrauch B fuel consumption kg/h
Motordrehmoment Md crankshaft torque Nm
spez. Kraftstoffverbrauch be spec. fuel consumption g/kWh
Md
be
Lufttemperatur : 21° C
temperature :
Luftdruck : 1012 mb
pressure :
Kraftstoff : 0,829 kg/l
fuel :


PRÜFUNGS-ABTEILUNG
Motorprüfung
Engine – test
UNIMOG U 120
Motorleistung in % der Leistung bei Nenndrehzahl
engine power in % of power at rated engine speed
Motordrehzahl in % der Nenndrehzahl
engine speed in % of rated engine speed
Belastung in % des Drehmoments bei Nenndrehzahl
load in % of torque at rated engine speed
222 g/kWh
Luftdruck: 1012 mb
Kraftstoff 0,829 kg/l

PRÜFUNGS-ABTEILUNG
DB-UNIMOG 120

Test No. 75-105

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

Date of tests: 23rd May 1975
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Maximum power

Power kW	Speed engine rev/min	Speed p.t.o. rev/min	Fuel consumption total 1/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/1
At maximum power 2-hour test						
75,6	2600	1058	26,23	21,82	289	2,88
At standard p.t.o. speed (1000 rev/min)						
74,3	2456	1000	25,12	20,90	281	2,96
At the speed recommended for drawbar work						
75,6	2600	1058	26,23	21,82	289	2,88

Part loads

(i) 85% of the torque at maximum power						
65,4	2649	1078	22,98	19,12	292	2,85
(ii) unloaded						
-	2796	1138	8,41	7,00	-	-
(iii) 50% of the load defined in (i)						
33,7	2734	1113	15,26	12,70	377	2,21
(iv) maximum power						
75,6	2600	1058	26,23	21,82	289	2,88
(v) 25% of the load defined in (i)						
17,1	2769	1127	11,89	9,89	579	1,44
(vi) 75% of the load defined in (i)						
49,8	2688	1094	18,81	15,65	314	2,65

No load maximum engine speed: 2796 rev/min
Equivalent crankshaft torque at maximum power: 277 Nm
Maximum equivalent crankshaft torque: 320 Nm at 1825 rev/min of the engine

Mean atmospheric conditions:	temperature	21°C
	pressure	991 mbar
	relative humidity	52%
Maximum temperatures:	coolant	85°C
	engine oil	106°C
	fuel	31°C

PRÜFUNGS-ABTEILUNG
DB-UNIMOG 120

Test No. 75-105

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 6th field gear of which the nominal travelling speed is nearest to 7,5 km/h reported in the diagram of the NOISE RATING curves

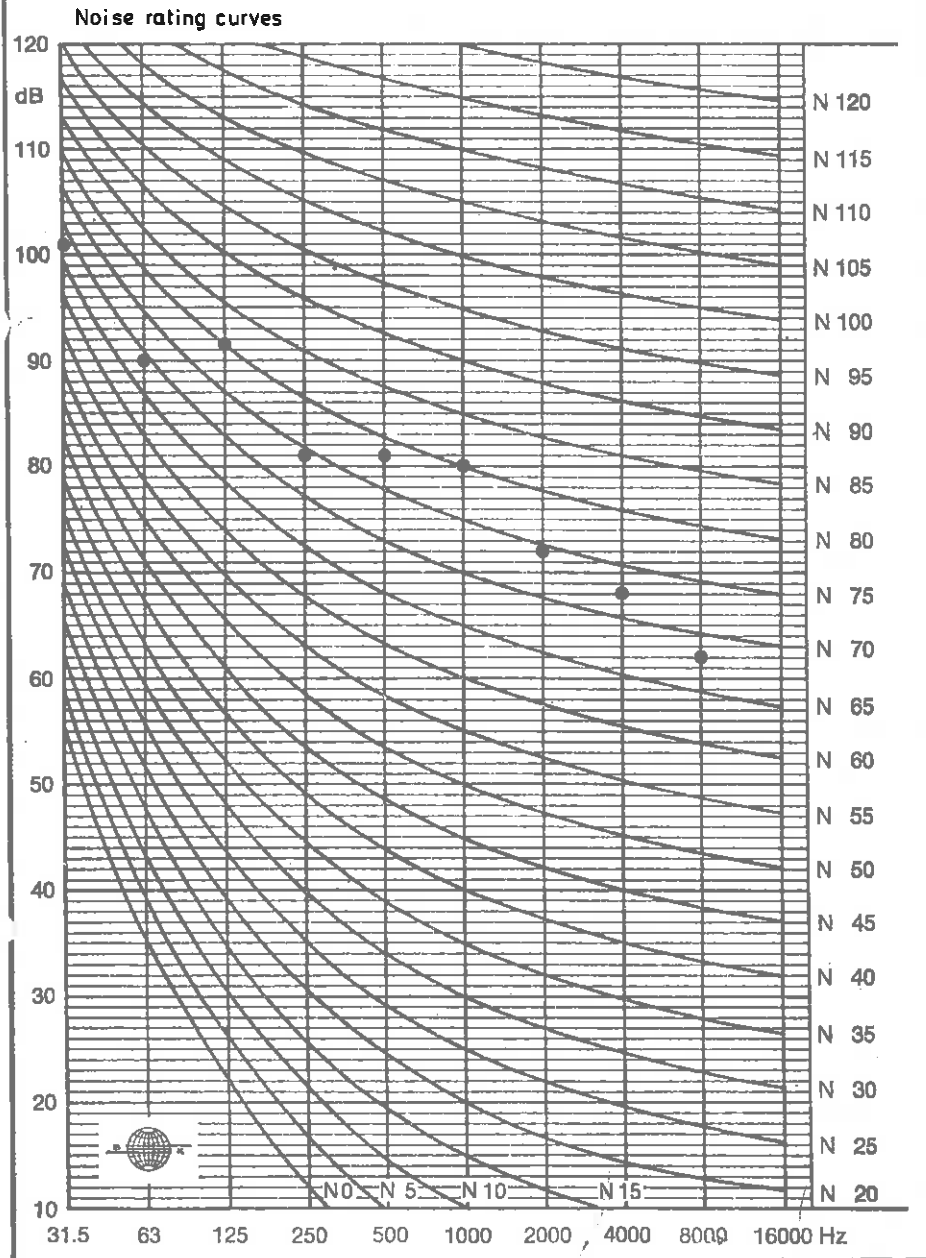
Date of test:	2nd June 1975
Test track:	Concrete
Type of sound level meter:	BRÜEL AND KJAER model 2607
Type of frequency analyser: (fitted with octave filter)	BRÜEL AND KJAER model 1614

The tractor was fitted with a safety cab O.E.C.D. tested, approval no. CS 424 b from 25th July 1974

Results of test

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)	Sound level noise rating
6 field	31230	8,04	7,61	86	80

PRÜFUNGS-ABTEILUNG	Noise at the driver's ear level	UNIMOG U 120



PRÜFUNGS-ABTEILUNG
DB-UNIMOG 120

Test No. 75-105

(2) FUEL CONSUMPTION AT PART LOADS

acc. to the French Standard NF U 10-154

Date of tests: 28th November 1975
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Results

	Fuel consumption hourly 1/h	specific g/kWh
a) at p.t.o.-speed corresponding to rated engine speed and with 85% load	22,82	291
b) at p.t.o.-speed corresponding to rated engine speed and with 50% load from a)	15,18	375
a') at p.t.o.-standard speed (540 rev/min) and 85% load	20,50	271
b') at p.t.o.-standard speed (540 rev/min) and 50% load from a')	13,00	331

Tractor

Model:	UNIMOG U 120 model 425
Serial No.:	425.121-10-900010

Engine

Make:	DAIMLER BENZ AG
Model:	OM 352 model 353.960
Type:	4-stroke DIESEL engine, direct injection, watercooled
Serial No.:	353.960-10-359552
Rated speed:	2600 rev/min
Fuel:	ARAL DIESEL fuel (DIN 51601) specific gravity at 15°C 0,829 kg/l
Engine oil:	ARAL HD 20W/20