O.E.C.D. Report No. 299

Report on test in accordance with
O.E.C.D. Test Code for Agricultural Tractors

DAIMLER-BENZ UNIMOG 406

Manufactured by: Daimler-Benz A.G., 756 Gaggenau/Baden

Date of Tests: June - September 1969

This report has been approved by the O.E.C.D.
Co-ordinating Centre (C.N.E.E.M.A., France) as being
in accordance with the O.E.C.D.-Tractor Test Code.

Date of Approval: 19.1.1970 Serial No. 299

DEUTSCHE LANDWIRTSCHAFTS-GESELLSCHAFT e.V.
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This Bulletin is based on engineering tests in accordance with the O.E.C.D.-Tractor Test Code. It does not contain an evaluation of the performance of the tractor on practical farm work.

Printed in Germany

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PRUFUNGS-ABTEILUNG
D.-B. Unimog 406

Test No. 69-45

Tractor manufacturer:	Daimler-Benz AG.,756 Gaggenau/Baden
Submitted for test by:	Manufacturer
Selected by:	Manufacturer by agreement with DLG
Place of running-in:	Gaggenau/Baden and Gross-Umstadt
Duration of running-in:	Engine 75 hours, tractor 50 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	Daimler-Benz AG., 756 Gaggenau/Baden
Model:	Unimog 406
Type:	Frame type with all-wheel drive and sprung chassis
Serial No.:	406 120-10 010540

Engine

Make:	Daimler-Benz AG., 68 Mannheim/Baden
Model:	OM 353 IX type 353.902
Type:	Direct injection type Diesel engine, 4 stroke water cooled
Serial No.:	353.902-10-031755
Cylinders:	6 cylinders, vertical in line; 97 mm bore, 128 mm stroke; piston displacement 5675 cm³; compression ratio 17 : 1; overhead valves
Fuel system:	Fuel: Commercially available Diesel oil; Bosch type PES 6A 80 C 410 RS 2085 W injection pump; Bosch type DLLA 150 S 187 injection nozzles; injection pressure 200 kp/cm²; injection timing 23° before TDC +.8°, automatically injection timing; Bosch type FP/KE 22 AD 223/2 feed pump; filter: Strainer in tank, sediment bowl, Bosch type two-stage felt tube filter; capacity of fuel tank appr. 90 l; optionally 120 l
Governor:	Bosch type EP RSV 350/1300 A 2 B 1005 DL, mechanical centrifugal variable speed governor; governed range of engine speed 700 rev/min to 2770 rev/min; rated engine speed for p.t.o.-work 2550 rev/min for field-work 2550 rev/min for transportation-work 2550 rev/min for belt-work 2550 rev/min
Air cleaner:	Mann & Hummel, 714 Ludwigsburg oil-bath type cleaner; oil capacity appr. 2 l; optional: Air intake chimney and cyclone precleaner

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Lubrication system: Forced feed from gear type pump; strainer in sump, main filter make Knecht, combined filter with pre-filter and fine-filter cartridge; oil capacity maximum 9 l; oil-change period using branded HD oil 200 hours; recommended oil in winter HD SAE 10
in summer HD SAE 30
in tropics HD SAE 40

Cooling system: Pressurised water cooling 0,4 kp/cm², impeller assisted and fan 11 blades 460 mm dia; by-pass thermostat for temperatur control; temperatur gauge; cooling water capacity 24 l

Electrical equipment Voltage 12 Volt, negative earth

Starting device: Bosch type KG 12V 4 PS screw-push starter motor
Starting aid: Start pilot, at strong frost
Generator: Bosch type K 1 14V 35A, ac-type
Battery: Lead acid battery 12 Volt 110 Ah

Transmission

Clutch: Make: Fichtel & Sachs AG., 872 Schweinfurt type G 280, dry single plate type clutch or
Make: Lamellen und Kupplungsbau GmbH, 785 Bühl/Baden type DT 280/280, dry single plate type dual clutch, foot pedal operated

Gearbox: Make: Daimler-Benz AG., 756 Gaggenau/Baden; fully synchron-mesh selecting gear; 6 forward speeds and 2 reverse;
optional: Reduction gear with 6 intermediate speeds, 4 creeping speeds, 4 crawling speeds and 6 reverse; front-wheel drive disengageable during travelling;

Front axle, rear axle and final drive: Make: Daimler-Benz AG., 756 Gaggenau/Baden; portal construction with spur gear final drive; bevel gear type differential; differential lock fitted in front and rear axle, pneumatically operated by hand lever

Oil capacity: Selecting gear with reduction gear 7,5 l, axle drive 2 l, final drive 0,3 l each; recommended oil-change period 400 hours

Total ratios and speeds with selecting gear

Gear No.	Number of engine revolutions for one revolution of the driving wheel	Theoretical travelling speed for rated speed of engine and tyres 12,5-20 km/h	m/s
	forward		
1.	94,84 : 1	4,86	1,35
2.	52,39 : 1	8,81	2,45
3.	29,40 : 1	15,70	4,36
4.	16,24 : 1	28,42	7,90
5.	10,75 : 1	42,92	11,93
6.	6,53 : 1	70,70	21,40
	reverse		
1.	75,88 : 1	6,08	1,69
2.	41,91 : 1	11,01	3,06

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Additional speeds with reduction gear fitted (optimal)

Gear No.	Number of engine revolutions for one revolution of the driving wheel	Theoretical travelling speed for rated speed of engine and tyres 12,5-20 km/h	m/s
	Intermediate speeds		
	forward		
1.	119,60 : 1	3,86	1,07
2.	66,07 : 1	6,98	1,94
3.	37,07 : 1	12,45	3,46
4.	20,48 : 1	22,53	6,25
5.	13,56 : 1	34,04	9,47
6.	8,23 : 1	56,06	15,58
	reverse		
1.	95,68 : 1	4,82	1,34
2.	52,85 : 1	8,73	2,42
	Greeping speeds		
	forward		
1.	442,64 : 1	1,04	0,29
2.	244,52 : 1	1,89	0,52
3.	137,20 : 1	3,36	0,93
4.	75,79 : 1	6,09	1,69
	reverse		
1.	354,12 : 1	1,30	0,36
2.	195,59 : 1	2,36	0,66
	Crawling speeds		
	forward		
1.	4066,62 : 1	0,113	0,031
2.	2246,42 : 1	0,206	0,057
3.	1260,48 : 1	0,366	0,102
4.	696,29 : 1	0,663	0,184
	reverse		
1.	3253,35 : 1	0,142	0,039
2.	1796,97 : 1	0,257	0,071

Power take-off

a) Main p.t.o.: Power take-off (optional: Live power take-off)

Location: At rear of tractor, 880 mm above ground, 175 mm to the left of median plane of tractor; optional: Additional offset transmission box with location of p.t.o., 700 mm above ground and 10 mm to the left of median plane

Dimensions: Spline shaft A 36 x 44 x 11 mm = 1 3/4", 6 splines (acc.to ASAE S 203.2), or spline shaft 29 x 34,9 x 8,7 mm = 1 3/8", 6 splines (acc.to DIN 9611 Form A; B.S.1495; ASAE S 203.5)

Speed: 552 rev/min at rated engine speed (acc. to DIN 9611; B.S. 1495; ASAE S 203.5); 1016 rev/min at rated engine speed (acc. to B.S. 1495; ASAE S204.4)

Direction of rotation: Clockwise viewed from tractor rear

b) Front p.t.o.: Drive, dimensions and speed same as staded for main p.t.o. under a)

Location: At front of tractor, 955 mm above ground, 213 mm to the left of tractor median plane

Direction of rotation: Anticlockwise viewed from tractor front

Power lift

Make: Westinghouse GmbH., 3 Hannover; live hydraulic system with dual acting ram; directly from engine by vee-belt driven gear type pump; two dual control valves for lifting-, neutral-, pressing- and floating position; hydraulic quickcouplings at the front as well as at the rear of the tractor. A third additional coupling at the rear may serve for the control of the lifting cylinder of the auxiliary three-way tipping platform or for the remote control of free cylinders on implements.
Maximum oil pressure 150 kp/cm²; oil capacity appr. 18 l; maximum oil flow 40 l/min (manufacturers specification)

Pull attachment

Implement linkage: At rear: Three-point implement linkage category II (acc. to DIN 9674; ASAE S 217.5); controlled by power lift; lift height above ground from 270 mm to 1100 mm, changed by fixing lift rods in different holes of lower links and changing length of rods.
For mounting implements at the front, in the middle as well as at the rear of the tractor fittings are available for mounting implements of the UNIMOG-implement line on the frame of the tractor, on the chassis as well as on the auxiliary platform

Drawbar: Fixed on implement linkage, hydraulically controlled by power lift; height above ground adjustable from 270 mm to 1100 mm; distance from rear axle 1090 mm when lower links in horizontal position; central hole and 4 holes with 80 mm distance each apart either side of centre line (acc. to DIN 9676); distance of centre hole to the end of p.t.o. 575 mm.
Riged fixed drawbar (acc.to. DIN 9670) available.

Trailer hitch: Make Rockinger type 227 G 10 A
(or Ringfeder type UNIMOG C)
at rear of tractor; height above ground 890 mm
(platform not loaded); distance from rear axle 540 mm

Towing hitch: At front of tractor; height above ground 848 mm

Steering device: Make: Zahnradfabrik Friedrichshafen AG.,
799 Friedrichshafen
ball-nut hydrostatic steering model 58 type 80
with separate Eaton oil-pump, oil flow 9 l/min
at 130 kp/cm², operated by hand wheel

Optional: Recirculating ball type steering gear
type L 2, Make: Daimler-Benz AG., 756 Gaggenau/Baden
when tractor is fitted with tyres 10,5-20 8 ply

Brakes

Parking brake: Mechanically acting on rear wheels, operated by hand lever

Foot brake: Hydraulically acting on all wheels as Simplex internal shoe type brake, operated by foot pedal

Trailer braking: Acting either as an one-cycle type and/ or two-cycle type, as wanted

Wheels

Steering wheels: Two at front (also acting as driving wheels),
tyres 12,5-20 e.Sp. 10 ply pneumatics;
maximum permissible weight on each tyre 1800 kp
at 3,0 kp/cm²; track 1616 mm

Driving wheels: Four, two at rear and two at front,
tyres 12,5-20 e.Sp. 10 ply pneumatics;
maximum permissible weight as well as
track same as with steering wheels

Wheel base: 2380 mm

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Weights

With power lift, three-point linkage, auxiliary platform, water, full fuel tank and oil, as tested

		without driver	with driver
Weight of tractor without ballast:	Front axle load:	2135 kp	2188 kp
	Rear axle load:	1365 kp	1385 kp
	Total:	3500 kp	3573 kp
Ballast on auxiliary platform:	2028 kp		
		without driver	with driver
Weight of tractor with ballast:	Front axle load:	2965 kp	2985 kp
	Rear axle load:	2598 kp	2615 kp
	Total:	5528 kp	5600 kp

Permissible axle loads and permissible total weights

Tyres: Inflation pressure kp/cm²:	10,5-20 8 ply 3,0	12,5-20 10 ply 2,5	14,5-20 10 ply 2,0
Permissible front axle load kp	3100	3500	3500
Permissible rear axle load kp	3100	3500	3500
Permissible total weight kp	5600	5600	5600

Permissible loads with heavy mounted implements and a travelling speed not faster than 20 km/h; with hydro-steering, using the all wheel drive

Tyres Inflation pressure kp/cm²	10,5-20 8 ply 3,0	12,5-20 10 ply 2,5
Permissible front axle load kp	3800	4300
Permissible rear axle load kp	3800	4300
Permissible total weight kp	7000	7000

For Unimog equipped with rotary snow plough there apply special permissible weights

Seat

Two sprung seats with cushion, upholstered back rest; height above ground 1380 mm; height and inclination of the seats as well as of its back rests adjustable; seats in longitudinal direction adjustable.
Location to the median plane of tractor:
400 mm to the left for driver's seat
400 mm to the right for attendant's seat

Number of the grease points (whole tractor): 7

Overall dimensions

Overall length:	4075 mm without three-point linkage
Overall width:	2270 mm at 1616 mm track, without ballast weights
Overall height:	2300 mm with folding top, auxiliary platform with no load
Maximum ground clearance:	490 mm in median plane of tractor 440 mm to the left of the median plane

Lighting equipment: Electric 12 Volt, acc.to StVZO (Germ. Govt.Regulation)

	Height above ground of centre mm	Dimensions of area mm	Distance from outside edge of tractor to centre mm
Head lights	1090	170 ø	405
Side lights	1420	20 x 40	105
Rear lights	1050	50 x 80	245
Reflectors	700	75 ø	235

FUELS AND LUBRICANTS USED IN TESTS

Laboratory tests

Fuel:	Aral Diesel oil, specific gravity at 15°C : 0,827 kg/l (commercially available quality acc.to DIN 51 601)
Engine oil:	Aral HD 30
Transmission oil:	SAE 80

Track tests

Fuel:	Aral Diesel oil, specific gravity at 15°C : 0,827 kp/l (commercially available quality acc.to DIN 51 601)
Engine oil:	Aral HD 30
Transmission oil:	SAE 80

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COMPULSORY TESTS

(1) MAIN POWER TAKE-OFF PERFORMANCE

Date and location of tests: 1.7.1969, Gross-Umstadt

Type of dynamometer: Schenck hydraulic dynamometer U1-40

Maximum power

Horsepower (metric) hp	Speed engine rev/min	Speed p.t.o. rev/min	Fuel consumption total l/h	Fuel consumption specific g/hph	hph/l
At maximum power 2-hour test					
75,0	2550	550	18,4	203	4,07
At standard p.t.o.speed (540 rev/min)					
74,5	2504	540	18,1	202	4,11
At the speed recommended by the manufacturer for drawbar work					
75,0	2550	550	18,4	203	4,07
Fuel consumption at part loads					
(i) 85% of torque at maximum power					
64,6	2590	559	16,7	214	3,97
(ii) unloaded					
-	2710	585	7,0	-	-
(iii) 50% of the load defined in (i)					
33,0	2640	569	11,3	281	2,14
(iv) maximum power					
75,0	2550	550	18,4	203	4,07
(v) 25% of the load defined in (i)					
16,7	2676	576	9,5	468	1,76
(vi) 75% of the load defined in (i)					
49,1	2620	565	13,5	226	3,64

No load maximum engine speed: 2710 rev/min

Torque*) at maximum power: 21,1 kpm

Maximum torque*) 23,6 kpm at 1590 rev/min of the engine

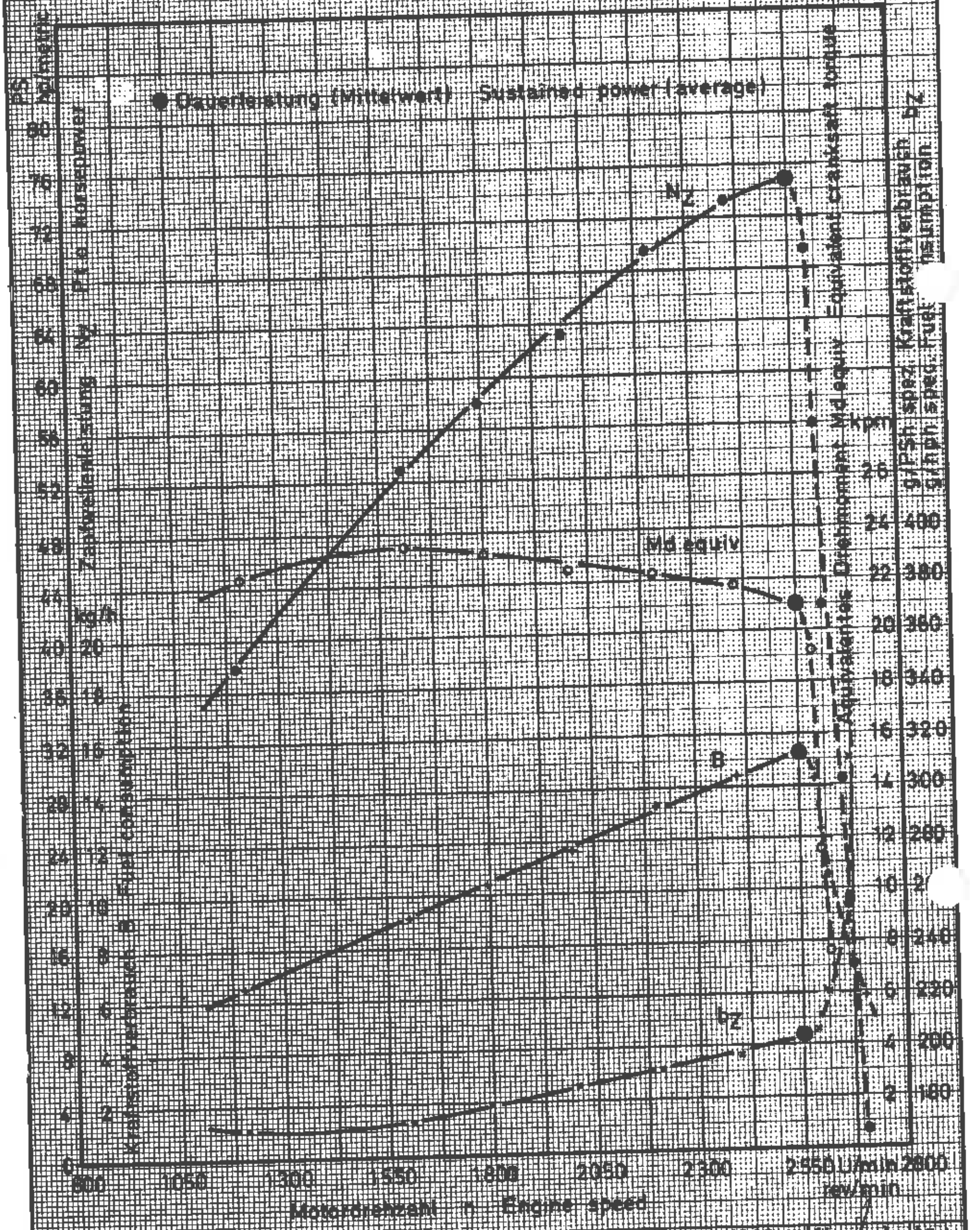
Mean atmospheric conditions: temperature: 27°C
pressure: 751 mm Hg
relative humidity: 53%

Maximum temperatures: coolant: 83°C
engine oil: 85°C
Fuel: 30°C

*) The torque reported is the equivalent crankshaft torque

PRÜFUNGS-ABTEILUNG	**Zapfwellenleistung** **Pt.o.-test**	D.B. Unimog 406 D.B. Dieselmotor O.M. Baumuster 353902

Test Nr.: 69 - 45

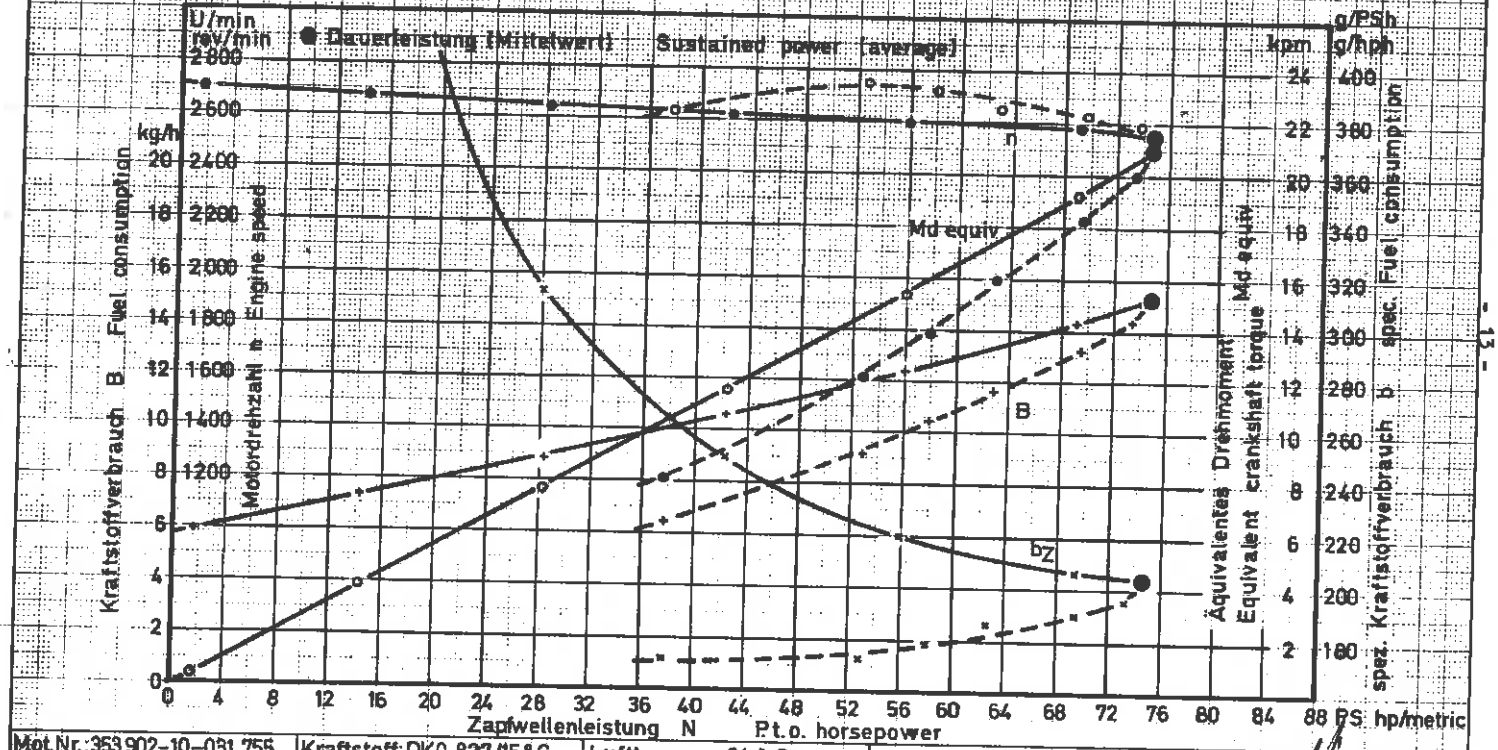


Mot.Nr.: 353902-10-031759	Motoröl: Aral HD 30	Versuchstag: 1.7.1969	Versuchsltg.:
Schl.Nr.: 406120-10-010542	Lufttemp.: 24° C	Versuchs Nr.: 69/45/147	S.
Kraftstoff: DK 0,827/15°C	Barom.std.: 751 mm Q.S.	Kurvenblatt: 1	

PRÜFUNGS ABTEILUNG

Zapfwellenleistung
P.t.o. - test

D.B. Unimog 406
D.B. Dieselmotor
O.M. Baumuster 353.902
Test Nr.: 69 - 45



Mot.Nr.: 353.902-10-031 755	Kraftstoff: DK0,827/15° C	Lufttemp.: 24 ° C	Versuchstag: 1.7.1969	Versuchsltg.:
Schl.Nr.: 406120-10-010 540	Motoröl: Aral HD 30	Barom.std.: 751 mm QS	Versuchs Nr.: 69/45/147	Kurvenblatt: 2 S.

(2) DRAWBAR PERFORMANCE (with all-wheel drive)

Date of tests: 31.7.1969 - 8.8.1969

Type of track: Concrete

Height of drawbar above ground: 840 mm

Tyres of driving-wheels 12,5-20 e.Sp. 10 ply

With ballast

Gear No. and Group	Horse-power (metric) hp	Drawbar pull kp	Engine speed rev/min	Slip of wheels %	Specific work hph/l	Specific fuel consumpt. g/hph	Temperatures Fuel °C	Coolant °C	Engine oil °C	Atmospheric conditions Temperature °C	Relative humidity %	Pressure mm Hg
(i) MAXIMUM POWER												
1.S.	2,8	6000	2720	15,2	0,4	2070	25	80	80	26	75	750
2.S.	4,1	6000	2710	15,5	0,56	1475	24	80	80	25	76	750
3.S.	7,4	6000	2700	15,3	0,92	905	24	80	80	25	78	750
4.S.	13,3	6000	2680	15,4	1,45	570	23	80	80	25	80	750
1.K.	20,3	6000	2620	15,3	2,07	445	23	80	80	25	70	753
2.K.	36,8	6000	2600	15,2	2,58	318	21	80	80	23	84	754
3.K.	62,4	5620	2550	12,3	3,33	250	10	80	80	13	84	755
1.Z.	63,0	4830	2548	9,8	3,36	248	12	80	80	13	87	752
1.N.	65,1	3810	2550	6,7	3,44	240	20	80	80	19	98	755
4.K.	66,7	3050	2555	4,5	3,57	232	20	80	80	20	86	756
2.Z.	66,9	2650	2550	3,5	3,54	233	19	80	80	20	84	756
2.N.	67,9	2120	2550	3,1	3,61	230	18	80	80	17	96	749
3.Z.	67,0	1463	2545	2,2	3,51	234	16	80	80	15	96	749
3.N.	67,2	1147	2548	1,2	3,55	231	26	80	80	26	77	751
4.Z.	66,2	794	2550	0,6	3,49	237	23	80	80	23	86	751
(ii) FIVE-HOUR TEST AT 75 % OF PULL AT MAXIMUM POWER IN 2th Z. GEAR												
2.Z.	51,2	1985	2595	2,4	3,30	250	18	80	80	20	69	751
(iii) FIVE-HOUR TEST AT PULL CORRESPONDING TO 15 % WHEEL SLIP IN TEST (i)												
2.K.	36,8	6000	2600	15,2	2,58	318	18	80	80	20	69	751

Engine oil consumption during ten hours duration of tests (ii) and (iii) : 48,2 g/h

(2) DRAWBAR PERFORMANCE (with all-wheel drive)

Date of tests: 10.7.1969 - 17.7.1969

Type of track: Concrete

Height of drawbar above ground: 890 mm Tyres of driving-wheels 12,5-20 e.Sp.-10 ply

Without ballast

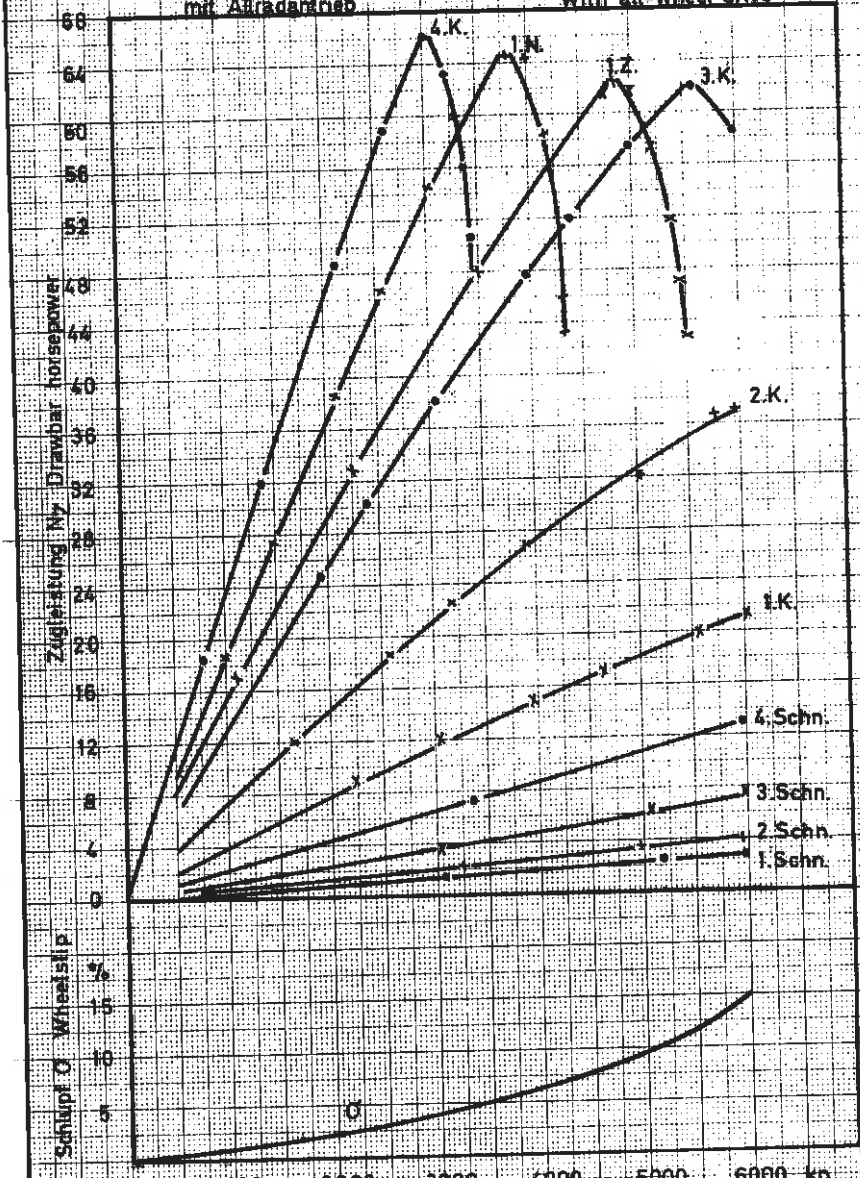
Gear No. and Group	Horse-power (metric) hp	Drawbar pull kp	Engine speed rev/min	Slip of wheels %	Specific work hph/l	Specific fuel consumpt. g/hph	Temperatures Fuel °C	Coolant °C	Engine oil °C	Atmospheric conditions Temperature °C	Relative humidity %	Pressure mm Hg
(v) MAXIMUM POWER												
1.Z.	51,0	4100	2565	15,3	2,89	284	26	80	80	26	60	760
1.N.	63,0	3905	2550	12,1	3,35	247	18	80	80	18	98	755
4.K.	65,0	3100	2550	8,2	3,44	238	20	80	80	20	90	753
2.Z.	65,4	2650	2550	5,9	3,46	238	22	80	80	20	75	755
2.N.	67,2	2115	2550	4,3	3,55	232	20	80	80	16	77	755
3.Z.	66,5	1460	2550	2,9	3,52	234	20	80	80	21	74	755
3.N.	67,3	1175	2550	2,4	3,59	230	15	80	80	15	85	757
4.Z.	66,4	795	2545	1,7	3,41	243	15	80	80	15	81	757

PRÜFUNGS-ABTEILUNG

Zugprüfung
Drawbar – test

D.B. Unimog 406
D.B. Dieselmotor
OM Baumuster 353.902

PS hp/metric — mit Ballast / With ballast — mit Allradantrieb / With all-wheel-drive — Test Nr. 69.–45

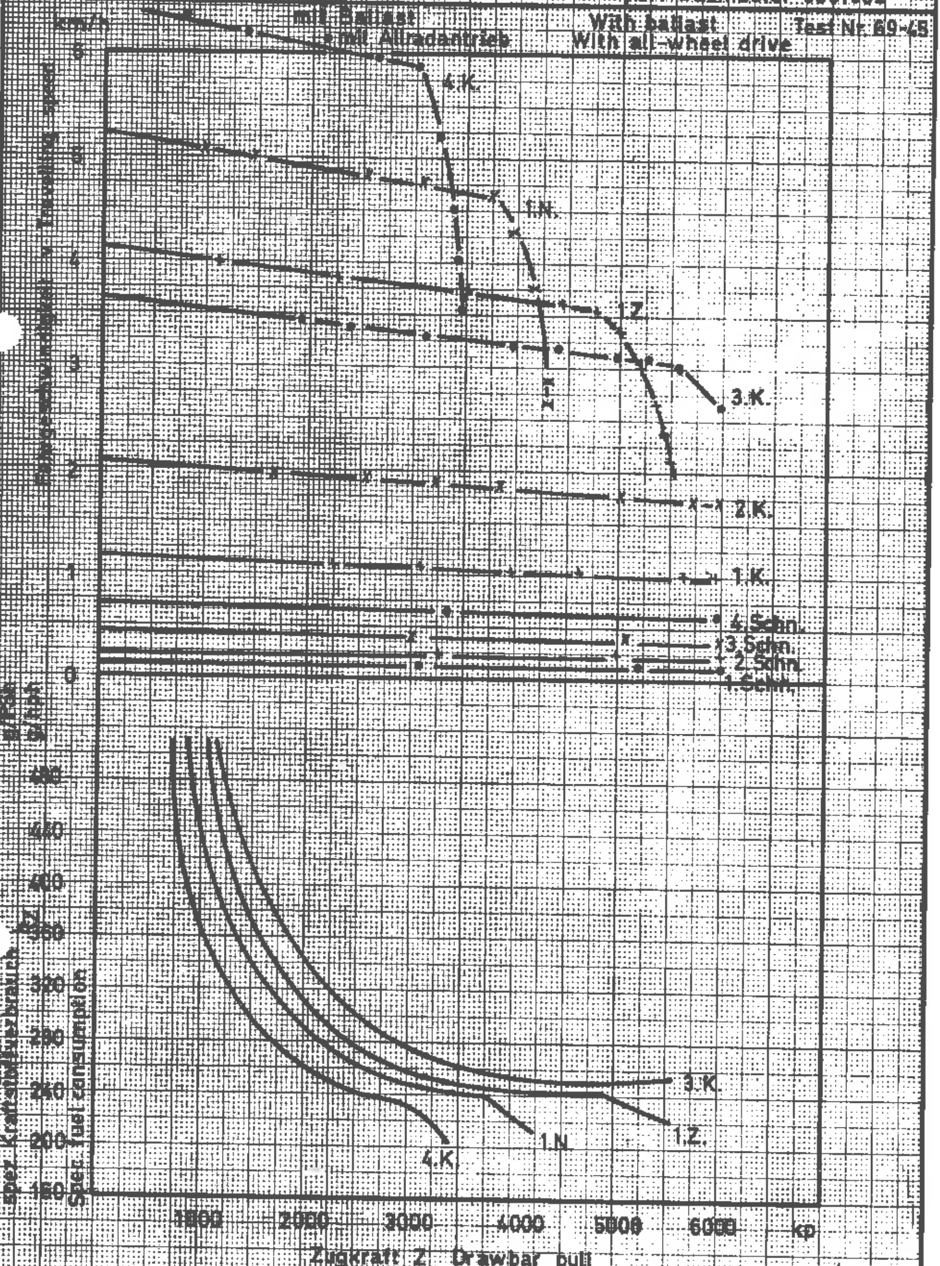


Mot.Nr.353.902-10-001755	Motoröl Aral HD 30	Versuchstag 6.8.1969	Versuchsstg.
Schl.Nr.406120-10-010540	Lufttemp. 20°C	Versuchs Nr. 157–161	
Kraftstoff: DK 0826/15*C	Barom.std. 750 mm QS	Kurvenblatt 3	

PRÜFUNGS-ABTEILUNG

Zugprüfung
Drawbar-test

D.B. Unimog 406
D.B. Dieselmotor
OM Baumuster 353.902



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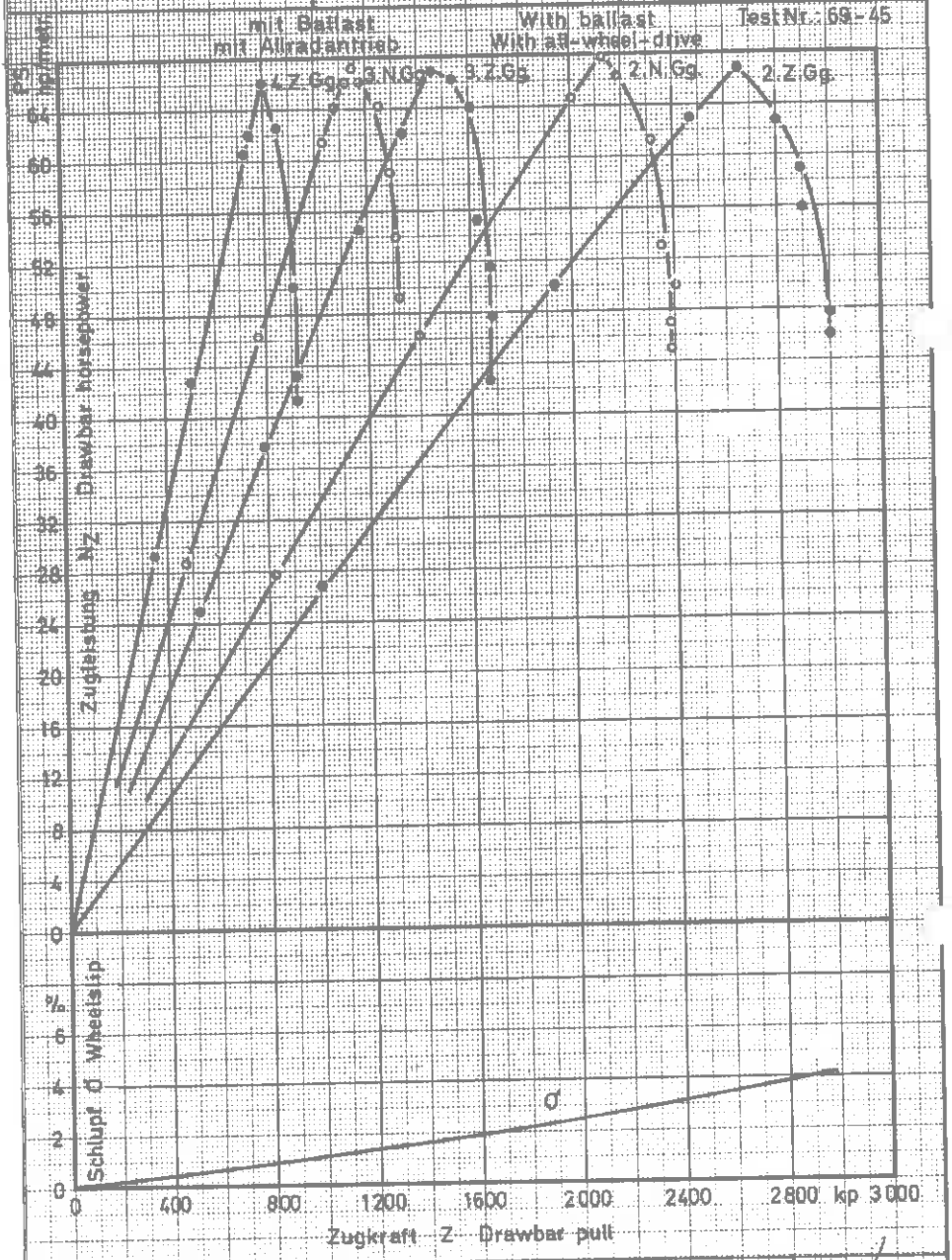
Schl.Nr. 406.120.10.0[illegible]540 Lufttemperatur: 20°C Versuchs Nr. 157-161
Kraftstoff: DK [illegible] Barom. std. 750 mm QS Kurvenblatt: 4

PRÜFUNGS-ABTEILUNG

Zugprüfung
Drawbar - test

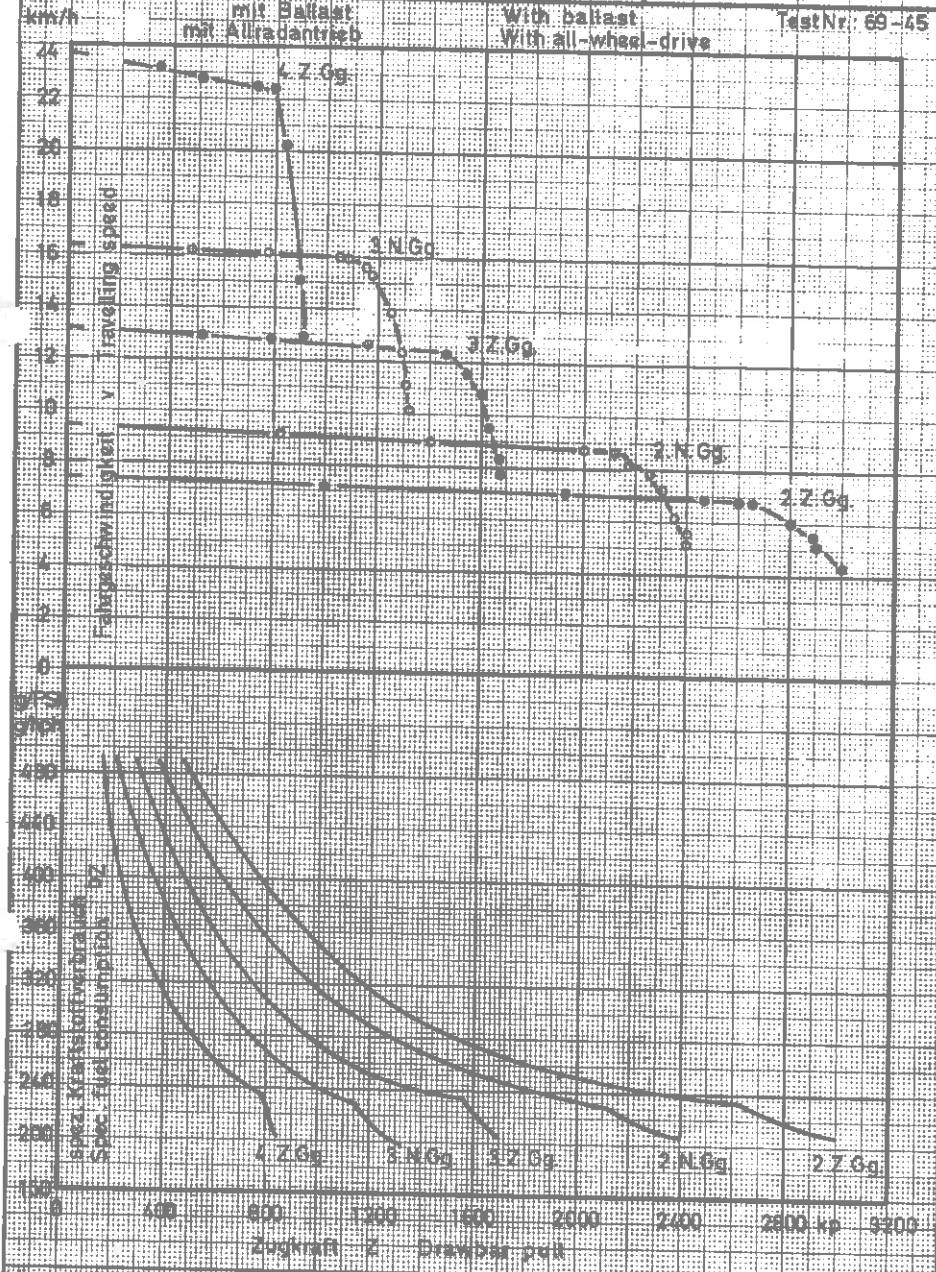
D.B. Unimog 406
D.B. Dieselmotor
O.M. Baumuster 353.902

Test Nr.: 69-45



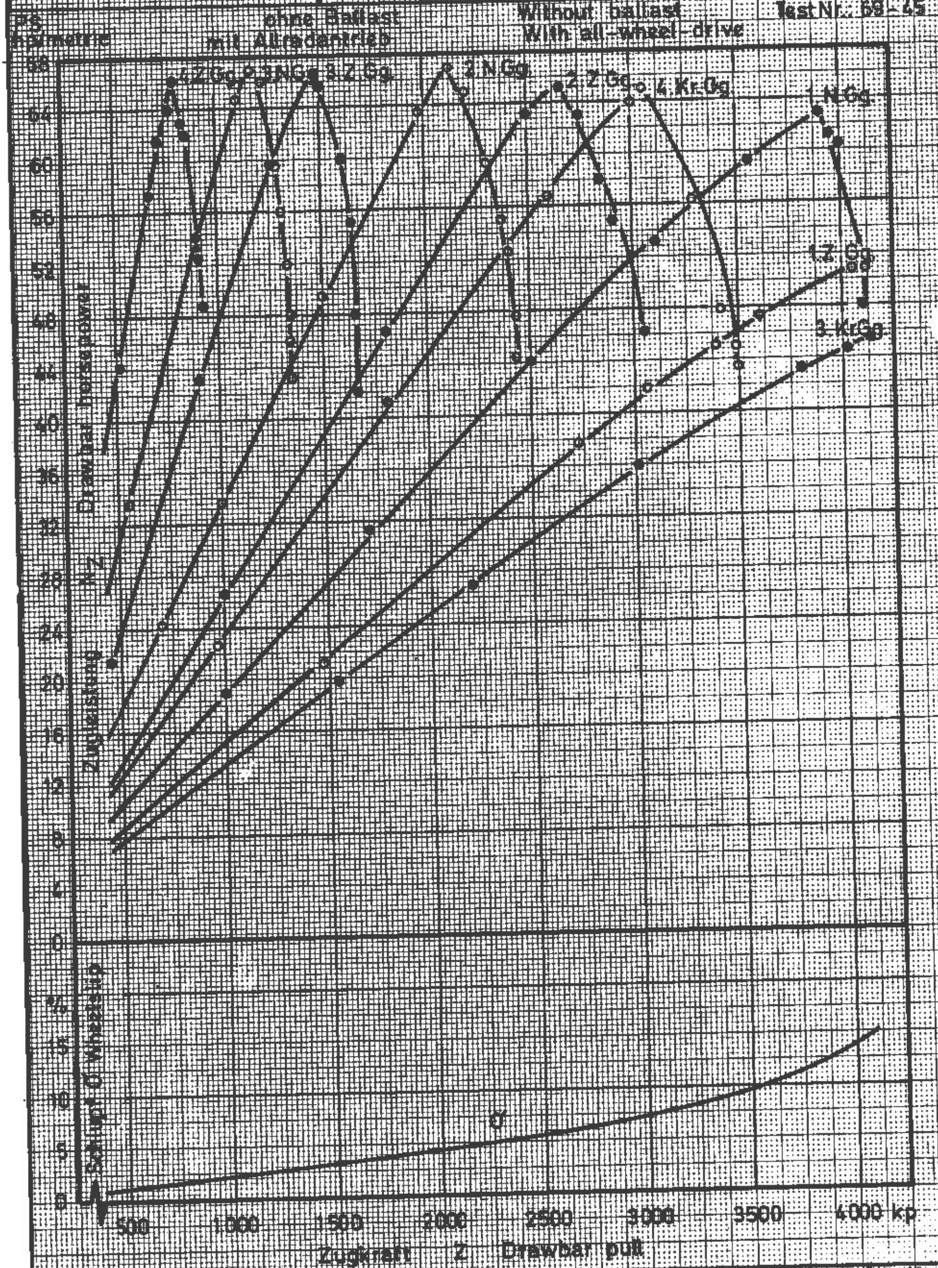
Mot. Nr.: 353.902-10-031755	Motoröl: Aral HD 30	Versuchstag: 31. 7. 1969	Versuchsltg.:
Sch. Nr.: 406 120-10-010540	Lufttemp.: 20° C	Versuchs Nr.: 147 / 151	
Kraftstoff: DK 0,827/15°C	Barom. std.: 750 mm QS	Kurvenblatt: 5	

PRÜFUNGS-ABTEILUNG	Zugprüfung Drawbar-test	D.B. Unimog 406 D.B. Dieselmotor O.M. Baumuster 353.902



Mot.Nr. 353.902-10-031 755	Motoröl Aral HD 30	Versuchstag 31. 7. 1969	Versuchsing.
Schl.Nr. 406.120-10-010 540	Lufttemp.: 20 °C	Versuchs Nr. 147/151	
Kraftstoff DK 0,827 kg/l	Barom.std. 750 mm QS	Kurvenblatt 6	

UTI PRÜFUNGS-ABTEILUNG	Zugprüfung Drawbar-test	D.B. Unimog 406 D.B. Dieselmotor O.M. Baumuster 353.902



Mot. Nr. 353902-10-031755 Motoröl: Aral HD 30	Versuchstag 10./14.7.1969	Versuchsltg.
Schl. Nr. 406120-10-010540 Lufttemp.: 25° C	Versuchs Nr. 123/133	
Kraftstoff: DK 0,828/15°C Barom.std.: 752 mm QS	Kurvenblatt 7	S.

(3 and 4) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 12,5-20 e.Sp. 10 ply, without ballast
rear: 12,5-20 e.Sp. 10 ply, without ballast

Track of wheels front: 1620 mm
rear: 1620 mm

	With rear-wheel drive		With all-wheel drive	
	left hand m	right hand m	left hand m	right hand m
Radius of turning space	5,46	5,30	5,70	5,50
Radius of turning circle	4,98	4,82	5,22	5,04

(5) LOCATION OF CENTRE OF GRAVITY

	Without ballast mm
Height above ground	885
Distance forward from the vertical plane containing the axis of the rear wheels	1430
Distance from the median plane of tractor	0

PRÜFUNGS-ABTEILUNG
D.-B. Unimog 406

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(6) BRAKE TESTS

A) FOOT BRAKE

Date of tests: 29.7.1969

Type of track: Concrete

Type of decelerometer: Moto Meter Bremsverzögerungs- und Pedalkraftschreiber, Moto Meter Hermann Schlaich 7 Stuttgart N

Travelling speed of tractor: 28 km/h

With cold brakes

		Tractor without ballast	Tractor with ballast
Maximum deceleration	m/s^2	9,1	8,4
Stopping distance	m	6,2	6,2
Force on pedal	kp	23	65

Brake fade characteristics, hot tests, tractor without ballast

Deceleration:	hot/cold:	96%
Stopping distance:	cold/hot:	91%
Force on pedal:	cold/hot:	96%

B) PARKING BRAKE

Force applied on the brake lever, cold brake 28 kp.
No rotation of the rear-wheels of tractor occured, when the tractor has been towed.

Force applied on the brake lever, hot brake 28 kp.
One hour after the brake has been applied no rotation of the rear-wheels of tractor occured, when the tractor has been towed.

PRÜFUNGS-ABTEILUNG
D.-B. Unimog 406

Test No. 69/45

(7) MEASUREMENT OF AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 24.7.1969
Type of track: Concrete
Type of sound level meter: Brüel & Kjaer, Typ 2203

Results of test

Speed: 4.N.
Travelling speed before acceleration: 19,0 km/h
Sound level: 87 dBA

(8) NOISE MEASUREMENT AT THE DRIVER'S EAR

Date of test: 3.9.1969
Type of track: Concrete
Type of sound level meter: EZGN, Rohde & Schwarz, 8 München
Type of octavfilter: PBO, Rohde & Schwarz, 8 München

A folding top was fitted on tractor

Results of tests

Gear	Travelling speed*) nominal km/h	real km/h	Sone
Folding top open			
2.Z.	6,98	7,0	57
1.Z.	3,86	3,67	63
Folding top closed			
2.Z.	6,98	7,00	75
1.Z.	3,86	3,67	80

*) The first gear tested corresponds to the travelling speed nearest to 7,25 km/h

PRÜFUNGS-ABTEILUNG
D.-B. Unimog 406

Test No. 69-45

(9) TEST OF POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date and location of tests: 13.8.1969, Gross-Umstadt

Hydraulic fluid: Engine oil Aral HD 30

POWER LIFT

a) Lift rods in the foremost holes of the lower links

Height above ground in down position hitch point mm	test frame mm	Total vertical movement mm	Maximal force exerted through full lift range kp	Pressure of hydr. oil kp/cm²	Linkage load at which unballasted front end load tractor lifts off the ground kp
Measured on the hitch points of lower links					
270	-	560	2500	150	*)
514	-	546	2560	150	*)
Measured on the test frame 610 mm to the rear of the hitch points					
270	293	513	3200	150	*)
514	492	608	2690	150	*)

*) greater than maximum lifting force

b) Lift rods in the rearemost holes of the lower links

Measured on the hitch points of lower links					
340	-	550	2600	150	*)
580	-	520	2850	150	*)
Measured on the test frame 610 mm to the rear of the hitch points					
340	337	540	2830	150	3030
580	540	610	2600	150	3030

*) greater than maximum lifting force

Type of linkage lock for transport: hydraulic lock
Opening pressure of the cylinder over pressure relief valve: no valve fitte

PUMP CHARACTERISTICS

(i) opening pressure of relief valve: 158 kp/cm²
sustained pressure by the open relief valve: 150 kp/cm²

Pump delivery rate at external tapping
(ii) at minimum pressure: 47,8 l/min
(iii) at maximum hydraulic power: 39,9 l/min
maximum hydraulic power: 11,9 hp (metric)
delivery pressure: 133 kp/cm²

PRÜFUNGS-ABTEILUNG
D.-B. Unimog 406

Test No. 69-45

OPTIONAL TESTS

(10) ENGINE TESTS

Date and location of tests: 26.6.1969, Gross-Umstadt

Type of dynamometer: Schenck hydraulic dynamometer U1-30

Maximum power

Horsepower (metric) hp	Engine speed rev/min	Fuel consumption total l/h	Fuel consumption specific g/hph	hph/l
At maximum power 2-hour test				
81,5	2550	18,7	190	4,36
At standard p.t.o.speed (540 rev/min)				
81,0	2504	18,4	188	4,40
At the speed recommended by the manufacturer for drawbar work				
81,5	2550	18,7	190	4,36
Fuel consumption at part loads				
(i) 85% of torque at maximum power				
71,0	2610	17,3	202	4,10
(ii) unloaded				
-	2720	6,5	-	-
(iii) 50% of the load defined in (i)				
36,2	2670	11,5	266	3,15
(iv) maximum power				
81,5	2550	18,7	190	4,36
(v) 25% of the load defined in (i)				
18,5	2720	9,4	420	1,97
(vi) 75% of the load defined in (i)				
53,7	2638	14,4	221	3,73

Optimum fuel consumption: 170 g/hph at 52 hp and 1480 rev/min

Standard fuel consumption 1/2 (acc.to DIN 9606): 8,0/ 16,2 l/h

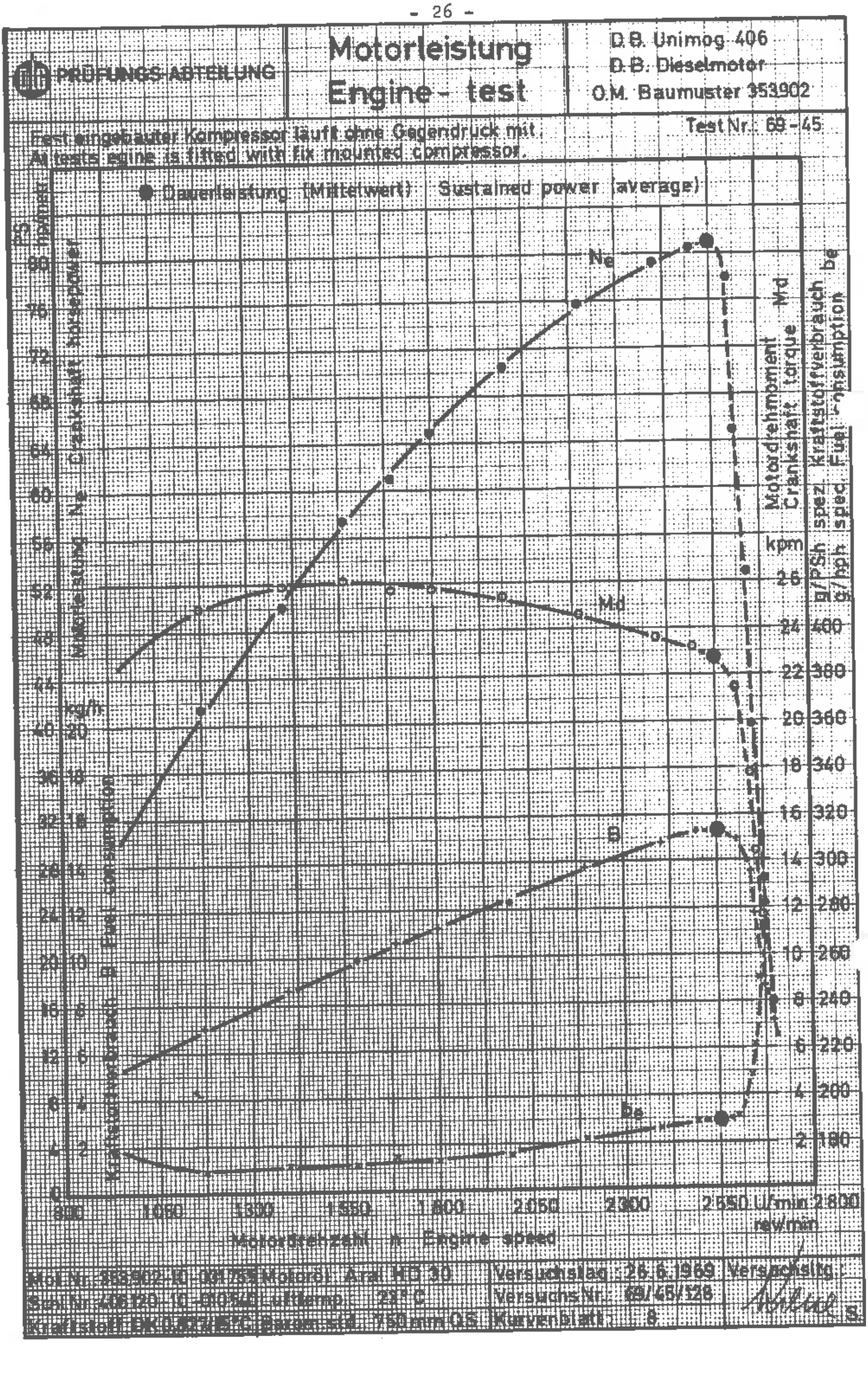
No load maximum engine speed: 2720 rev/min

Torque at maximum power: 22,9 kpm

Maximum torque: 26,1 kpm at 1588 rev/min of the engine

Mean atmospheric conditions:
temperature: 20° - 25°C
pressure: 751 mm Hg
relative humidity: 50 - 67%

Maximum temperatures:
coolant: 83°C
engine oil: 86°C
fuel: 30°C


PRÜFUNGS-ABTEILUNG
Motorleistung
Engine - test
D.B. Unimog 406
D.B. Dieselmotor
O.M. Baumuster 353902
Test Nr.: 69-45
Fest eingebauter Kompressor läuft ohne Gegendruck mit.
At tests engine is fitted with fix mounted compressor.
Dauerleistung (Mittelwert) Sustained power (average)
Ne
Md
B
be
kpm
kg/h
Motordrehmoment Md
Crankshaft torque
Kraftstoffverbrauch be
g/PSh spez.
g/hph spec.
900
1050
1300
1550
1800
2050
2300
2550 U/min 2800
rev/min
Motordrehzahl n Engine speed
Mot.Nr. 353902-10-001755
Motoröl: Aral HD 30
Versuchstag: 26.6.1969
Versuchsltg.:
Versuchs Nr. 69/45/128
Kurvenblatt: 8
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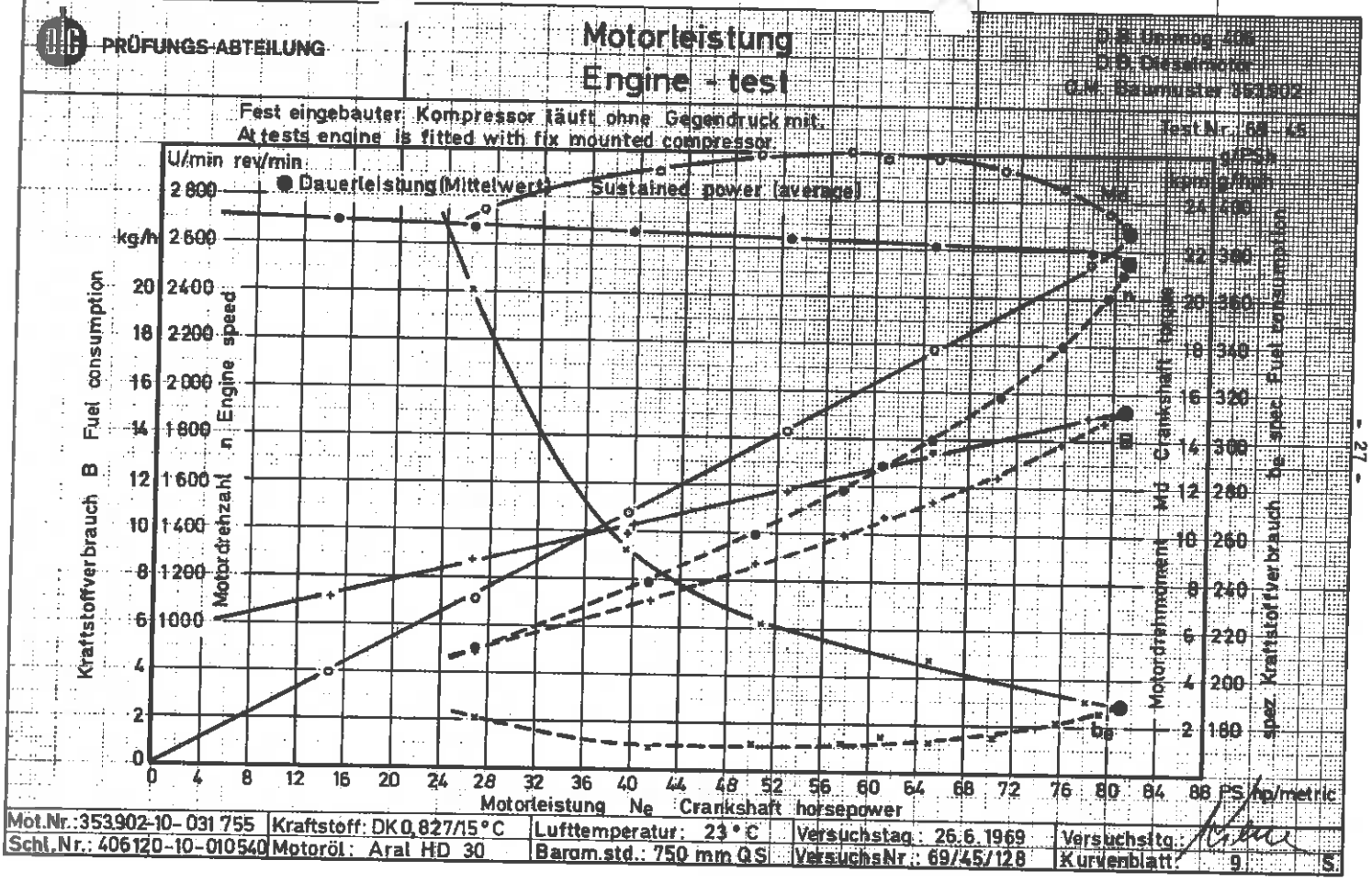
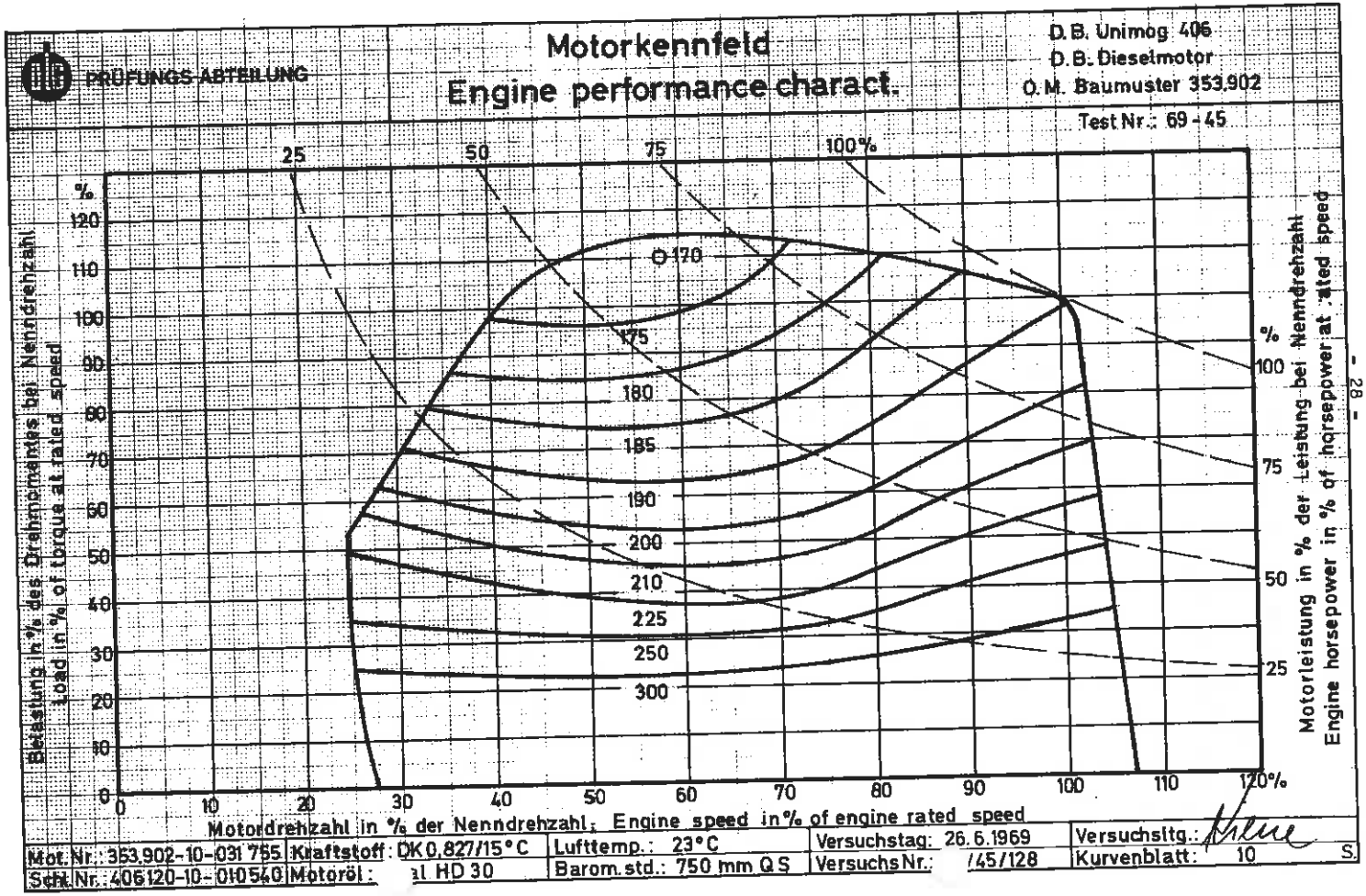

PRÜFUNGS-ABTEILUNG
Motorleistung
Engine - test
Fest eingebauter Kompressor läuft ohne Gegendruck mit.
At tests engine is fitted with fix mounted compressor.
U/min rev/min
Dauerleistung (Mittelwert) Sustained power (average)
kg/h
Kraftstoffverbrauch B Fuel consumption
n Engine speed
Motordrehzahl
Motordrehmoment M Crankshaft torque
spez. Kraftstoffverbrauch be spec. Fuel consumption
Motorleistung Ne Crankshaft horsepower
PS hp/metric
Mot.Nr.: 353902-10-031 755
Schl.Nr.: 406120-10-010540
Kraftstoff: DK 0,827/15 °C
Motoröl: Aral HD 30
Lufttemperatur: 23 °C
Baromstd.: 750 mm QS
Versuchstag: 26.6.1969
VersuchsNr.: 69/45/128
Versuchsltg.:
Kurvenblatt: 9


PRÜFUNGS-ABTEILUNG
Motorkennfeld
Engine performance charact.
D.B. Unimog 406
D.B. Dieselmotor
O.M. Baumuster 353.902
Test Nr.: 69-45
Belastung in % des Drehmomentes bei Nenndrehzahl
Load in % of torque at rated speed
Motordrehzahl in % der Nenndrehzahl; Engine speed in % of engine rated speed
Motorleistung in % der Leistung bei Nenndrehzahl
Engine horsepower in % of horsepower at rated speed
25
50
75
100%
170
175
180
185
190
200
210
225
250
300
Mot. Nr.: 353.902-10-031 755 | Kraftstoff: DK 0,827/15°C | Lufttemp.: 23°C | Versuchstag: 26.6.1969 | Versuchsltg.:
Schl. Nr.: 406120-10-010540 | Motoröl: al HD 30 | Barom. std.: 750 mm QS | Versuchs Nr.: /45/128 | Kurvenblatt: 10

(12) DRAWBAR PERFORMANCE ON AGRICULTURAL SOILS

Date of tests: 5.8.1969

Location of tests: Sickenhofen near Gross-Umstadt

Description of soil: Loose humous sand, very dry, barley stubble

Shear strength of soil: not recorded

Moisture content of soil: below 10 %

Front axle load: 2985 kp

Rear axle load: 2615 kp

Drawbar height: 840 mm

Tyres: 12,50-20 E 6, 10 ply Conti; inflation pressure 1,5 kp/cm²

With ballast

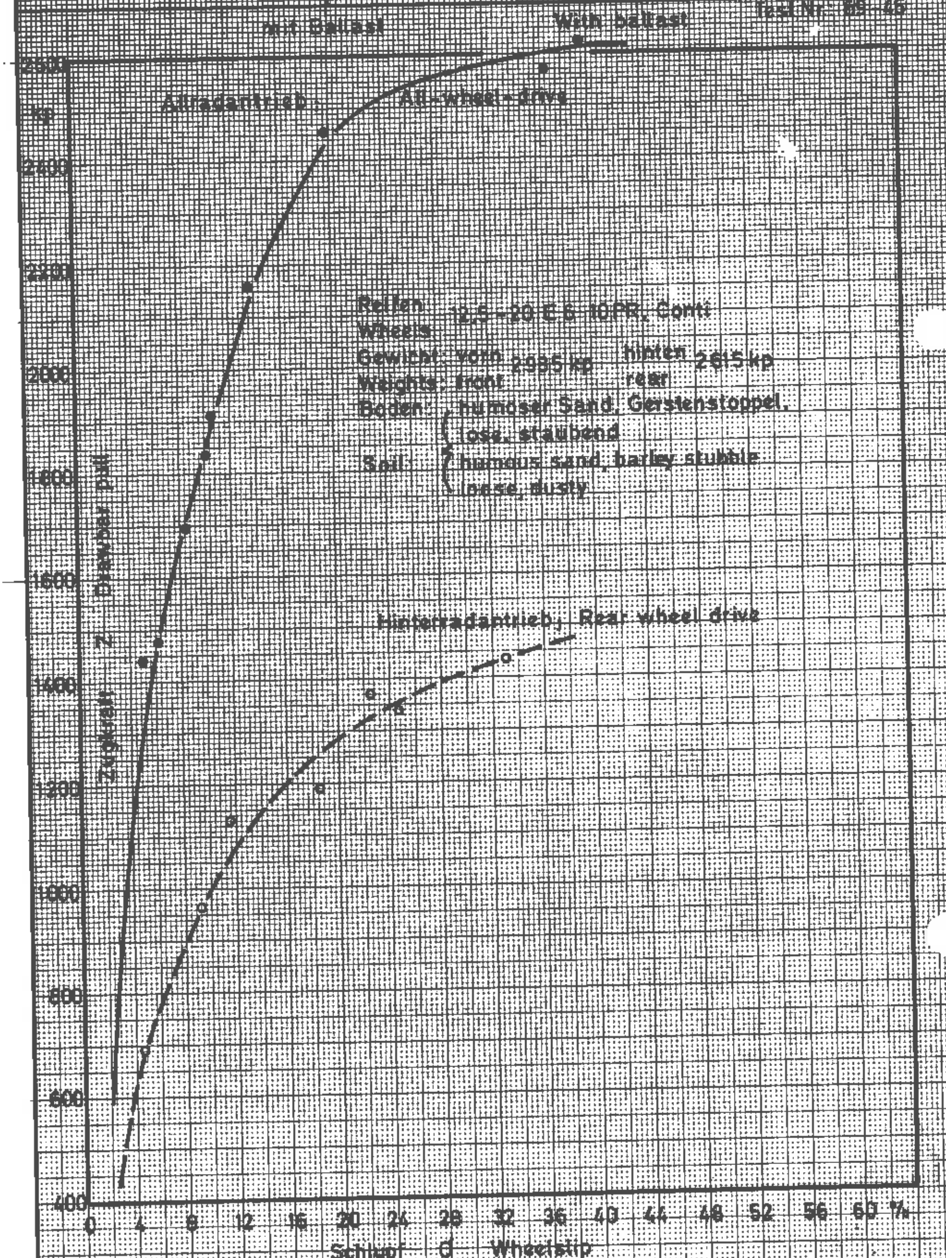
Gear No. and Group	Horse-power (metric) hp	Drawbar pull kp	Trav. speed km/h	Slip of wheels %	Specific work hph/l	Specific fuel consumpt. g/hph	Temperatures Fuel °C	Coolant °C	Engine oil °C	Atmospheric conditions Temperature °C	Relative humidity %	Pressure mm Hg
With rear-wheel drive												
1.N.	19,5	1375	3,83	22,5	not.rec.	not.rec.	not r.	85	95	26	60	753
1.N.	18,1	1155	4,23	15,1	not rec.	not rec.	not r.	85	95	26	60	753
1.N.	17,5	1435	3,29	33,0	not rec.	not rec.	not r.	85	95	26	60	753
With all-wheel drive												
1.N.	35,8	2455	3,94	19,7	not rec.	not rec.	not r.	85	100	26	60	753
1.N.	33,1	2300	4,0	15,2	not rec.	not rec.	not r.	85	100	26	60	753
1.N.	29,2	2635	2,99	39,4	not rec.	not rec.	not r.	85	100	26	60	753

PRÜFUNGS-ABTEILUNG

Zugprüfung
Drawbar-test

D.B. Unimog 406
D.B. Dieselmotor
O.M. Baumuster 353.902

Test Nr. 69-45



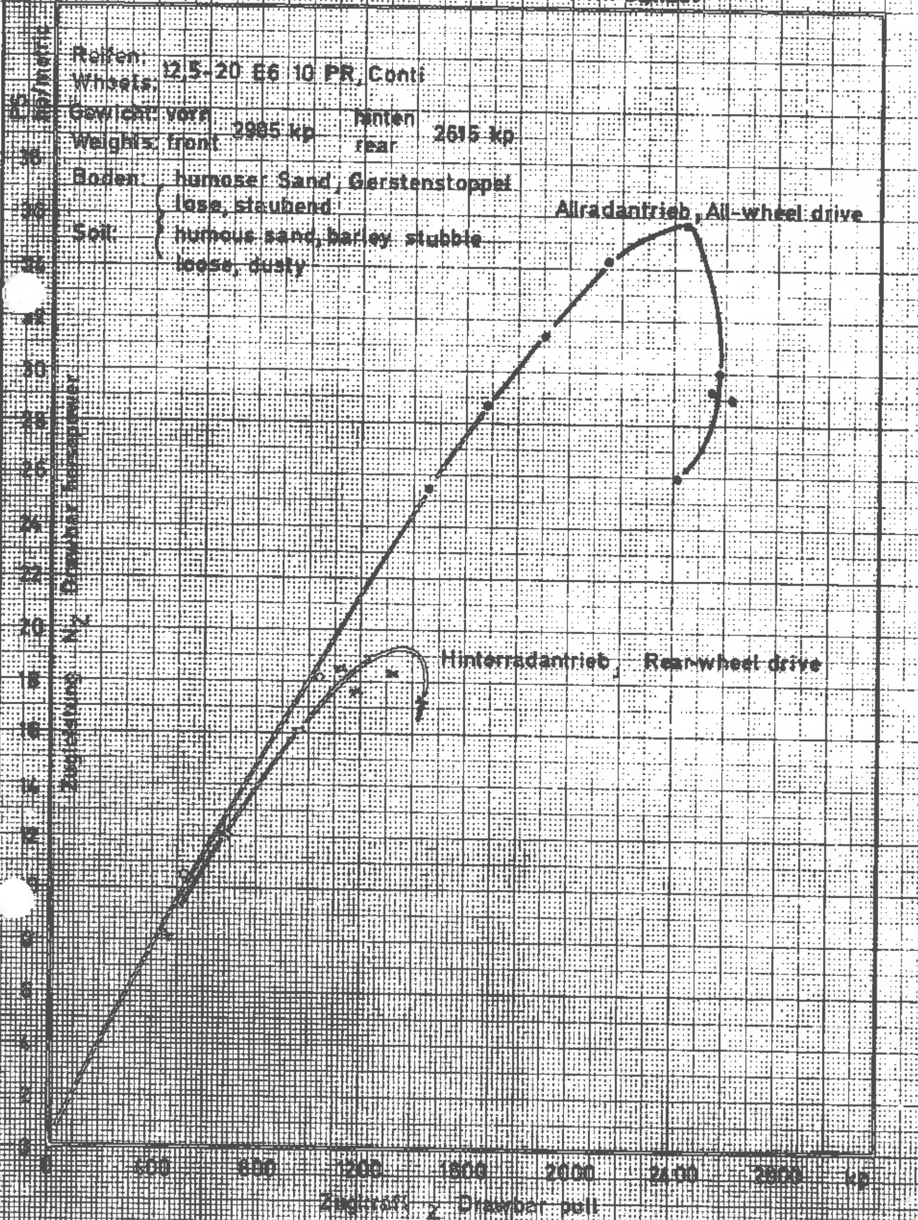
Motor Nr.: 353902-10-031755	Motoröl: Aral HD 30	Versuchstag: 5.8.1969	Versuchsltg.:
Schl. Nr. 406120-10-010540	Lufttemperatur: 26 °C	Versuchs Nr. 153/154	[signature]
Kraftstoff: DK 0,828/15 °C	Barom. std. 753 mm QS	Kurvenblatt: 11	

PRÜFUNGS-ABTEILUNG

Zugprüfung
Drawbar-test

D.B. Unimog 406
D.B. Dieselmotor
O.M. Baumuster 353.902

mit Ballast — With ballast — Test Nr.: 69-45



Motor Nr. 353902-10-001155	Motoröl Aral HD 30	Versuchstag: 5.8.1959	Versuchsleiter:
Sch.Nr. 406120-10-010540	Lufttemperatur: 26 °C	Versuchs Nr.: 153/154	
Kraftstoff: DK 0828/15 °C	Barom. std. 753 mm Q.S.	Kurvenblatt: 12	

PRÜFUNGS-ABTEILUNG
D.-B. Unimog 406

Test No. 69-45

(13) PERFORMANCE IN A HOT ATMOSPHERE

Date and location of tests: 9.9.1969, Gross-Umstadt

Limiting temperatures specified by the manufacturer:

Coolant: 108°C - 110°C

Engine oil: 132°C

Special equipment fitted: none

Fuel: Aral Diesel oil, density at 15°C : 0,830 kp/l
(commercially available quality acc.to DIN 51 601)

Oil: Engine: Aral HD 30

Transmission: SAE 80

Results of tests

Ambient temperature °C	Power at the p.t.o. (hp metric)	p.t.o. speed rev/min	Temperatures Coolant °C	Temperatures Oil °C	Atmospheric pressure mm Hg
45	67,5	550	109	113	748