O.E.C.D. Report No. 302

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

HOLDER A 15

Manufactured by: GEBRÜDER HOLDER, Maschinenfabrik
7418 Metzingen/ Württ.



Date of Tests: September - October 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: 16. Febr.1970 Serial No.: 302

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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.

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PRÜFUNGS-ABTEILUNG
Holder A 15

Test No. 69-67

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PRÜFUNGS-ABTEILUNG
Holder A 15

Test No. 69-67

Tractor manufacturer:	Gebrüder Holder, Maschinenfabrik, 7418 Metzingen / Württ.
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with the agreement of the DLG testing station
Place of running-in:	Metzingen and Groß-Umstadt
Duration of running-in:	Engine appr. 70 hours, tractor appr. 45 hours

SPECIFICATION OF TRACTOR

Tractor

Make: Gebrüder Holder, Maschinenfabrik, 7418 Metzingen/ Württ.
Model: A 15
Type: Wheel type tractor with all-wheel drive, unit construction
Serial No.: 1 10 111

Engine

Make: Gebrüder Holder, Maschinenfabrik, 7418 Metzingen/ Württ.
Model: HD 1
Type: Two-stroke Diesel engine with direct injection, water cooled
Serial No: D1 10 120

Cylinders: 1, upright; 88 mm bore, 90 mm stroke, 547 cm^3 capacity; compression ratio 16,8 : 1

Fuel system: Fuel: Commercially available diesel oil;
Bosch type PFR 1A 50/369/11 injection pump;
Bosch type DL 90 S 1086 injection nozzle;
injection pressure 175 kp/cm^2; injection timing 28° before TDC;
fine filter with paper cartridge; capacity of fuel tank 6 l

Governor: Make: Gebrüder Holder, Maschinenfabrik, 7418 Metzingen/ Württ.
centrifugal variable speed type governor; governed range of engine speed 600 rev/min to 2800 rev/min;
rated engine speed for p.t.o.-work: 2600 rev/min
for field-work: 2600 rev/min
for transportation-work: 2600 rev/min
for belt-work: 2600 rev/min

Air cleaner: Main cleaner
Make: torna technik, oil-bath type cleaner; type OL 160-10
oil capacity 0,65 l

Precleaner
Make: torna technik, cyclone type cleaner
type V 160-1

Lubrication system: Drip feed type lubrication with recirculating oil from piston type oil pump; fine screen in suction pipe; oil capacity 1 l; recommended oil changing period 250 hours; recommended oil in winter (below 0°C) HD SAE 10
in summer (0 - 30°C) HD SAE 20
in tropics (more than 30°C) HD SAE 30

Cooling system: Pressurised thermosyphon water cooling with radiator and 5 blades fan 200 mm dia; cooling water capacity 3,6 l

Electrical equipment Voltage 12 Volt, negative earth

Starting device: Bosch 12 Volt starter motor type AL/EGF 1/12 L

Starting aid: Sparking paper

Generator: Bosch type EH (R) 14 V 11 A 19

Battery: Lead acid battery 12 V 24 Ah

Transmission

Clutch: Make: Fichtel & Sachs AG., 872 Schweinfurt; dry single plate type clutch type K 160 D, operated by foot pedal

Gearbox: Make: Gebrüder Holder, Maschinenfabrik, 7418 Metzingen 3 speed selecting gear and group gear with 2 forward groups and 1 reverse, giving 6 forward speeds and 3 reverse

Rear axle and final drive: Make: Gebrüder Holder, Maschinenfabrik, 7418 Metzingen bevel gear type differential gear with crown wheel and pinion for front and rear axle; differential lock fitted on front axle differential gear, foot pedal operated

Oil capacity: 3,8 l total, recommended changing period 2500 hours

Total ratios and speeds

Group gear	Gear No.	Number of engine revolutions for one revolution of the driving wheel	Theoretical travelling speed at rated engine speed of 2600 rev/min	
			km/h	m/s
slow (L.)	1.	232,16 : 1	1,27	0,35
	2.	153,05 : 1	1,93	0,54
	3.	79,35 : 1	3,72	1,03
fast (S.)	1.	44,66 : 1	6,61	1,84
	2.	29,44 : 1	10,03	2,78
	3.	15,26 : 1	19,34	5,37
reverse (R.)	1.	232,16 : 1	1,27	0,35
	2.	153,05 : 1	1,93	0,54
	3.	79,35 : 1	3,72	1,03

Holder A 15

Power take-off	Proportional engine speed; manually engaged
Location:	At rear of tractor, in median plane, 360 mm above ground
Dimensions:	Spline shaft 29 x 34,9 x 8,7 mm = $1^3/8$", 6 splines (acc. to DIN 9611, Form A; BS 1495; ASAE S 203.5)
Speed:	666 rev/min at 2600 rev/min rated engine speed; standard p.t.o.-speed 540 rev/min at 2100 rev/min engine speed
Direction of rotation:	Clockwise viewed from tractor rear
Power lift	Make: Gebrüder Holder, Maschinenfabrik, 7418 Metzingen life hydraulic lift with floating position; single acting ram; Bosch type HY ZBR 1/1 R 101 gear type pump directly driven by engine; maximum oil pressure 175 kp/cm^2; Bosch type HY/SEA 5/175/1 control valve; oil capacity 1,6 l
Pull attachment	
Implement linkage:	Three-point implement linkage make Holder, special design, controlled by power lift; lift height above ground of hitch point of lower links from 115 mm to 540 mm
Drawbar:	Fixed on hydraulically controlled implement linkage; height above ground from 120 mm to 540 mm adjustable by power lift; centre hole 22 mm dia and 2 holes with 45 mm distance apart either side of centre line; distance of centre hole to the end of p.t.o. 370 mm when lower links in horizontal position

Trailer hitch: At rear of tractor, height above ground 500 mm; distance from rear axle centre 245 mm

Steering device: Make: Gebrüder Holder, Maschinenfabrik, 7418 Metzingen
spur gear steering device

Brakes

Parking brake: Internal shoe type brake, mechanically acting on drums in rear wheels; operated by ratchet hand lever

Foot brake: Internal shoe type brake, mechanically acting on drums in front wheels; operated by foot pedal

Steering brake: Not fitted

Wheels

Steering wheels: Two at front, also as driving wheels acting; tyres 6-14 AS 2 ply pneumatics (acc.to DIN 7814); maximum permissible weight on each wheel 190 kp at 1,0 kp/cm^2; track 490 mm and 630 mm, changed by reversing wheels; rim 5 J x 14

Driving wheels: Two at front and two at rear; tyres 6-14 AS 2 ply pneumatics (acc.to DIN 7814); maximum permissible weight on each wheel 190 kp at 1,0 kp/cm^2; track 490 mm and 630 mm, changed by reversing wheels; rim 5 J x 14

Wheel base: 940 mm

PRÜFUNGS-ABTEILUNG
Holder A 15

Test No. 69-57

Weights

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

		without driver	with driver
Weight of tractor without ballast:	Front axle load:	356 kp	365 kp
	Rear axle load :	144 kp	210 kp
	Total:	500 kp	575 kp

Ballast front: 1 weight (23,75 kp) per wheel = 47,5 kp

Ballast rear: 1 weight (23,75 kp) per wheel = 47,5 kp

		without driver	with driver
Weight of tractor with ballast:	Front axle load:	398 kp	410 kp
	Rear axle load :	197 kp	260 kp
	Total:	595 kp	670 kp

Seat

Make: Gebrüder Holder, Maschinenfabrik, 7418 Metzingen upholstered seat and back rest; horizontal rocker arms and rubber bumper; height above ground 670 mm, in median plane

Number of grease points (whole tractor) : 10

Overall dimensions

Overall length: 2225 mm with three-point linkage
Overall width : 645/785 mm at 490/630 mm track, without ballast weights
Overall height: 960 mm to top of steering wheel
Maximum ground clearance: 220 mm above median plane of tractor
260 mm apart median plane of tractor to the left

Lighting equipment

Electric 12 Volt, acc. to StVZO (German Govt. regulation)

	height above ground of centre mm	Dimensions of area mm	Distance from outside edge of tractor to centre mm *)
Head lights	850	90 Ø	210/280
Rear lights	760	75 Ø	100/170
Reflectors	760	75 Ø	180/250

*) at track 490/630 mm

PRÜFUNGS-ABTEILUNG
Holder A 15

Test No. 69-67

FUEL AND LUBRICANTS USED IN TESTS

Laboratory tests

Fuel:	Aral Diesel oil, specific gravity at 15°C : 0,831 kg/l (commercially available quality acc.to DIN 51 601)
Engine oil:	Aral HD 20
Transmission oil:	SAE 80

Track tests

Fuel:	Aral Diesel oil, specific gravity at 15°C : 0,831 kg/l (commercially available quality acc.to DIN 51 601)
Engine oil:	Aral HD 20
Transmission oil:	SAE 80

PRUFUNGS-ABTEILUNG
Holder A 15

Test No. 69-67

(1) MAIN POWER TAKE-OFF PERFORMANCE

Date and location of tests: 2./3. 10. 1969, Groß-Umstadt

Type of dynamometer: Schenck hydraulic dynamometer U1-30

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					
11,5	2600	666	3,44	249	3,35
At standard p.t.o.speed (540 rev/min)					
8,9	2108	540	2,48	234	3,59
At the speed recommended by the manufacturer for drawbar work					
11,5	2600	666	3,44	249	3,35

Fuel consumption at part loads

(i) 85% of torque at maximum power					
10,0	2680	687	2,77	230	3,61
(ii) unloaded					
-	2775	712	0,84	-	-
(iii) 50% of the load defined in (i)					
5,2	2750	706	1,64	263	3,17
(iv) maximum power					
11,5	2600	666	3,44	249	3,35
(v) 25% of the load defined in (i)					
2,6	2757	707	1,21	387	2,15
(vi) 75% of the load defined in (i)					
7,5	2695	690	2,08	229	3,62

No load maximum engine speed: 2775 rev/min

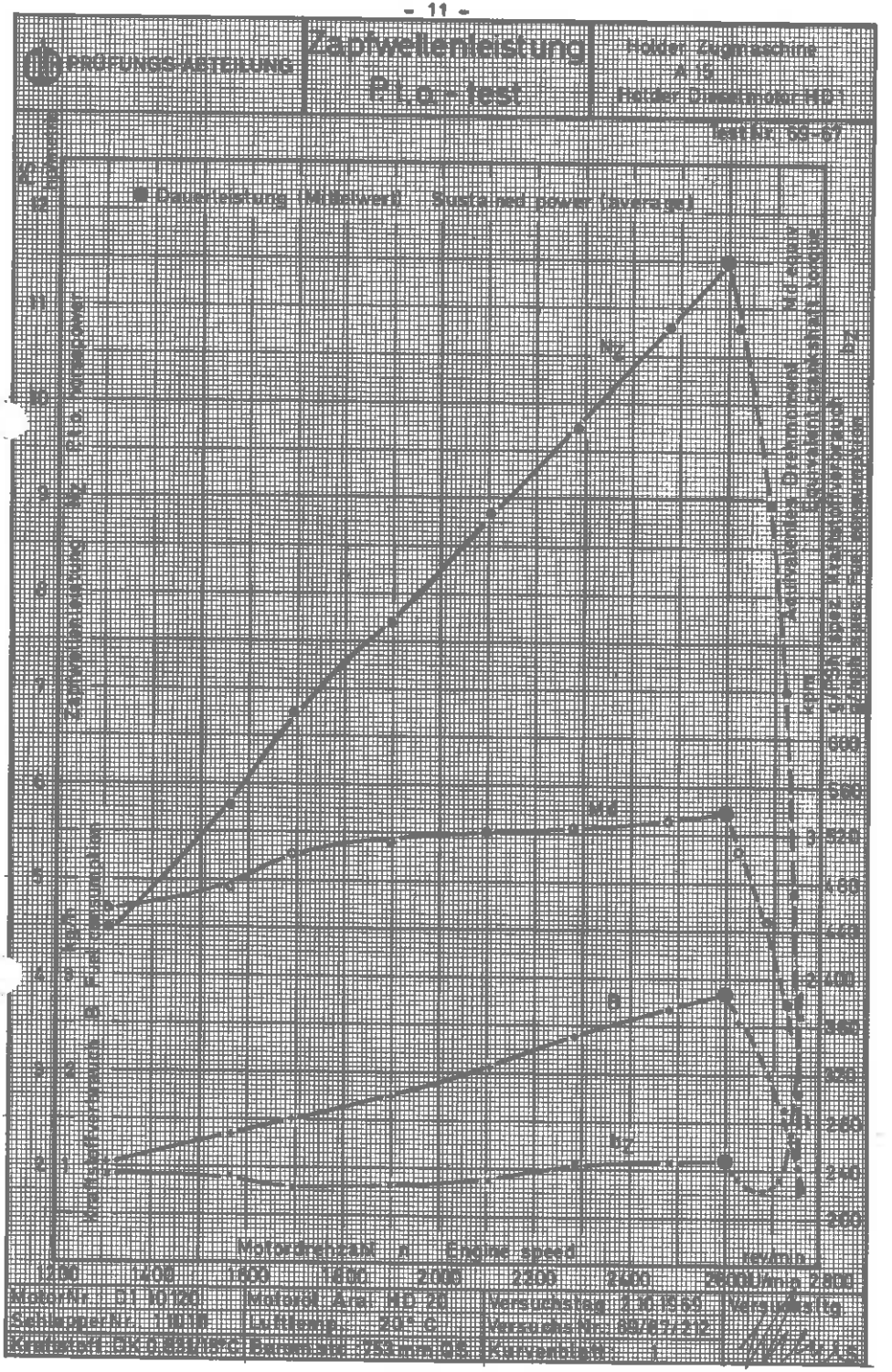
Torque[+)] at maximum power: 3,17 kpm

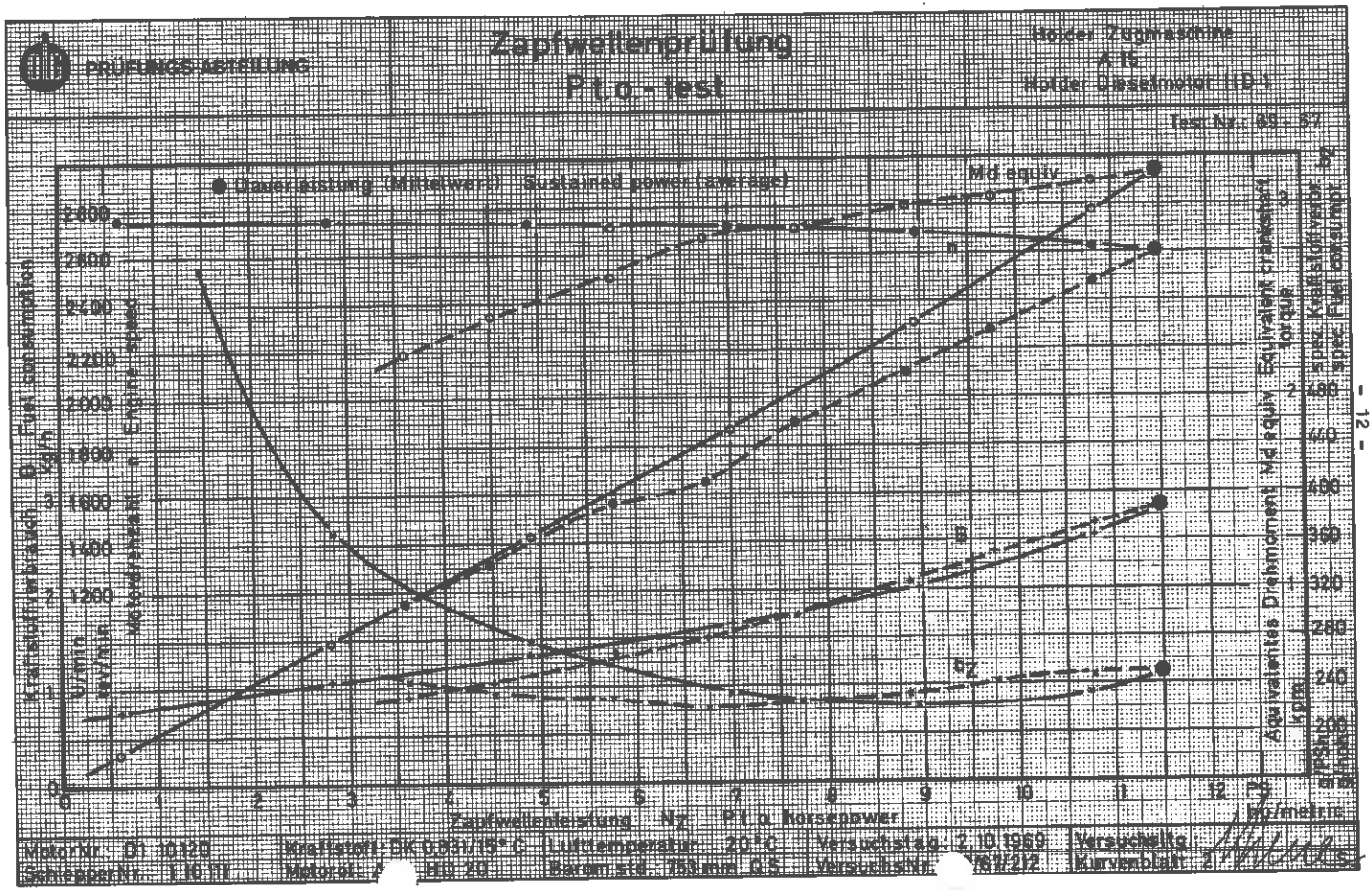
Maximum torque[+)] 3,17 kpm at 2600 rev/min of the engine

Mean atmospheric conditions: temperature: 20°C
pressure: 753 mm Hg
relative humidity: 66-80%

Maximum temperatures: coolant: 80°C
engine oil: 75°C
fuel: 21°C

([+)]The torque reported is the equivalent crankshaft torque)


PROFUNGS-ABTEILUNG
Zapfwellenleistung
P.t.o.-test
Hofer Zugmaschine
A 12
Hofer Dieselmotor HD 1
Test BK 53-37
Dauerleistung (Mittelwert) Sustained power (average)
Zapfwellenleistung
Power at power take-off
Kraftstoffverbrauch
Fuel consumption
Motordrehzahl n Engine speed
U/min
Motor-Nr. 01 X0120
Motorart Arat HD 28
Versuchstag 2.10.1953
Versuchs-Nr. 53/57/212
Schlauchwelle
Luftdruck 20° C
Kraftstoff DIN 51601/2
Barom. Nr. 733 mm Hg
Part Load 50 %


Zapfwellenprüfung
P t o - test
PRÜFUNGSABTEILUNG
Holder Zapfwelle
A 15
Holder Dieselmotor HD 1
Test Nr. 85 - 87
Dauerleistung (Mittelwert) Sustained power (average)
Mid equiv.
Kraftstoffverbrauch
Fuel consumption
Drehzahlen
Speed
Leistung
Power
Drehmoment
Torque
Äquivalentes Drehmoment Mid equiv. Equivalent torque
Spez. Kraftstoffverbrauch
Spec. fuel consumption
Zapfwellenleistung Nz P t o Horsepower
Motor Nr. D1 0120
Schlepper Nr. 110 101
Kraftstoff DK 0,831/15° C
Motoröl HD 20
Lufttemperatur 20 °C
Barometerst. 758 mm Q.S.
Versuchstag 2.10.1969
Versuchs Nr. 867/212
Versuchsblatt
Kurvenblatt 27

(2) DRAWBAR PERFORMANCE

Date of tests: 15.-29.10.1969 and 2.12.1969

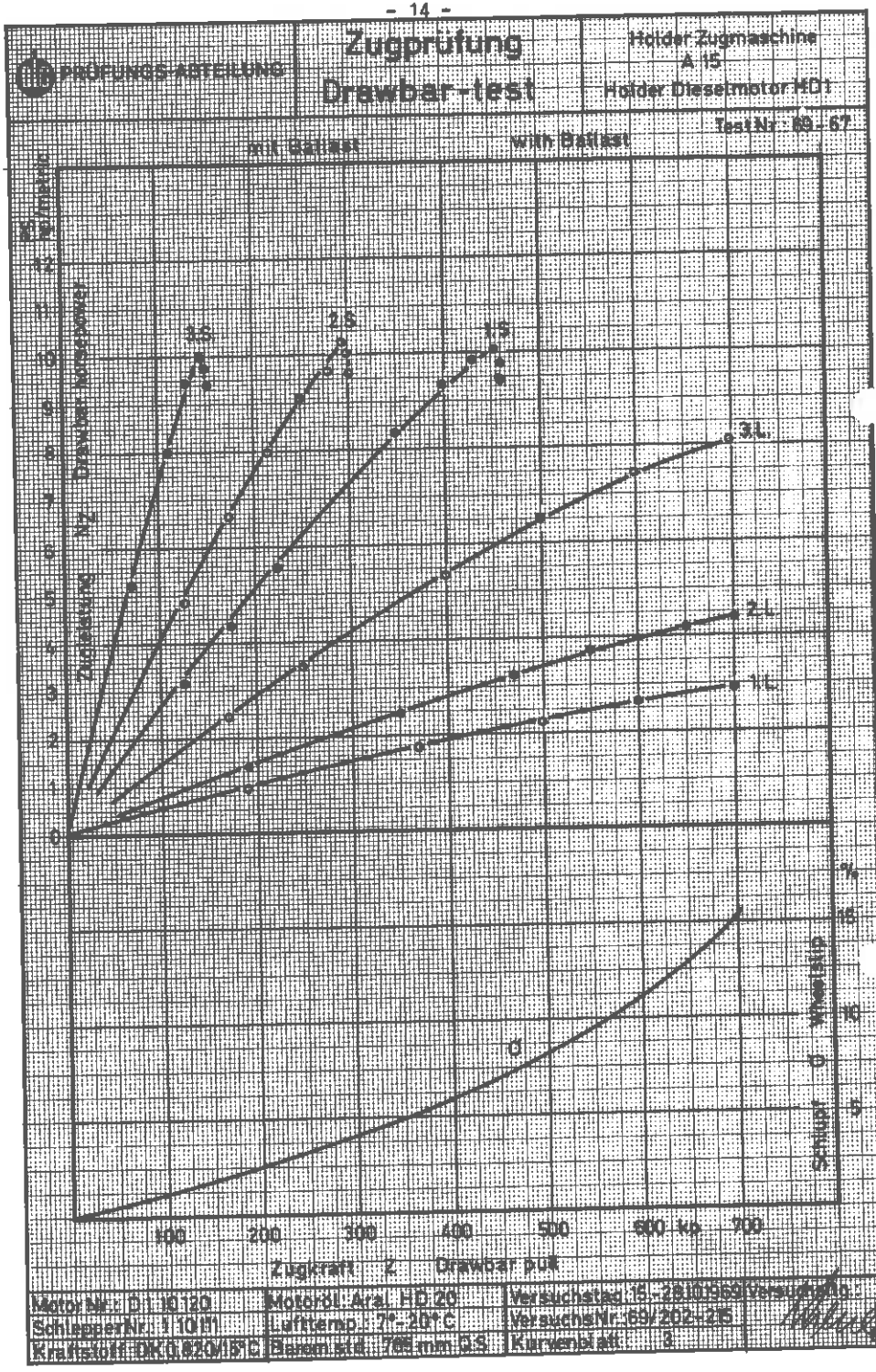
Type of track: Concrete

Height of drawbar above ground: 320 mm

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.L.	2,92	700	2775	15,3	1,96	417	21	85	30	23	42	761
2.L.	4,35	700	2735	15,5	2,42	339	17	85	25	14	68	761
3.L.	8,15	700	2645	15,1	2,69	303	20	85	28	19	50	761
1.S.	10,10	455	2600	7,4	2,87	285	17	85	25	14	72	765
2.S.	10,30	295	2600	3,9	2,95	278	16	85	26	15	65	765
3.S.	10,00	145	2600	1,9	2,88	285	17	85	25	13	85	764
(ii) FIVE-HOUR-TEST AT 75% OF PULL AT MAXIMUM POWER IN 3rd L.Gear												
3.L.	6,66	525	2710	9,2	2,87	289	3	85	12	-3	80	753
(iii) FIVE-HOUR-TEST AT PULL CORRESPONDING TO 15% WHEEL SLIP IN TEST (i)												
3.L.	8,15	700	2645	15,1	2,69	303	4	85	12	-3	80	753
Without ballast												
(v) MAXIMUM POWER												
2.L.	3,70	580	2760	15,2	2,72	361	17	85	25	9	67	753
3.L.	7,10	585	2705	15,4	2,86	287	12	85	24	10	87	763
1.S.	10,10	460	2600	9,6	2,87	285	17	85	28	16	85	765
2.S.	10,10	290	2600	5,5	2,90	284	12	85	18	7	88	753
3.S.	10,00	145	2600	3,9	2,85	286	12	85	18	7	88	753

Engine oil consumption during ten hours duration of tests (ii) and (iii) : 72 g/h


PRÜFUNGS-ABTEILUNG
Zugprüfung
Drawbar-test
Holder Zugmaschine
A 15
Holder Dieselmotor HD1
Test Nr. 69 - 67
mit Ballast
with Ballast
Fahrgeschwindigkeit
Travelling speed
km/h
3S
2S
1S
3L
2L
1L
Schlupf
Slip
%
0
100
200
300
400
500
600 kp
700
Zugkraft Z Drawbar pull
Motor Nr.: D I 10120
Schlepper Nr.: 1101 H
Kraftstoff: DK 0,820/15°C
Motoröl: Aral. HD 20
Lufttemp.: 7° - 20° C
Barom. st.d. 765 mm QS
Versuchstag: 15.-28.10.1969
Versuchs Nr.: 69/202-215
Kurvenblatt: 8

PRÜFUNGS-ABTEILUNG

Zugprüfung
Drawbar-test

Holder Zugmaschine
A 15
Holder Dieselmotor KD1

Test Nr.: 69 - 87

mit Ballast — with Ballast

Fahrgeschwindigkeit — Travelling speed

1 S
2 S
1 S
3 L
2 L
1 L

Motorleistung — Engine power

1 L
2 L
3 L
4 S
2 S
3 S

100 200 300 400 500 600 700 kp

Zugkraft Z — Drawbar pull

Motor Nr.: 101 10120
Schlepper Nr.: 1101
Kraftstoff: DK 0,840 bei 15 °C

Motoröl: Aral HD 20
Lufttemp.: 20-25° C
Barometer: 736 mm QS

Reifendruck: R - 24 0,9 kp/cm²
Versuchs Nr.: 69/202-265
Kennblatt: 4

Bemerkungen:

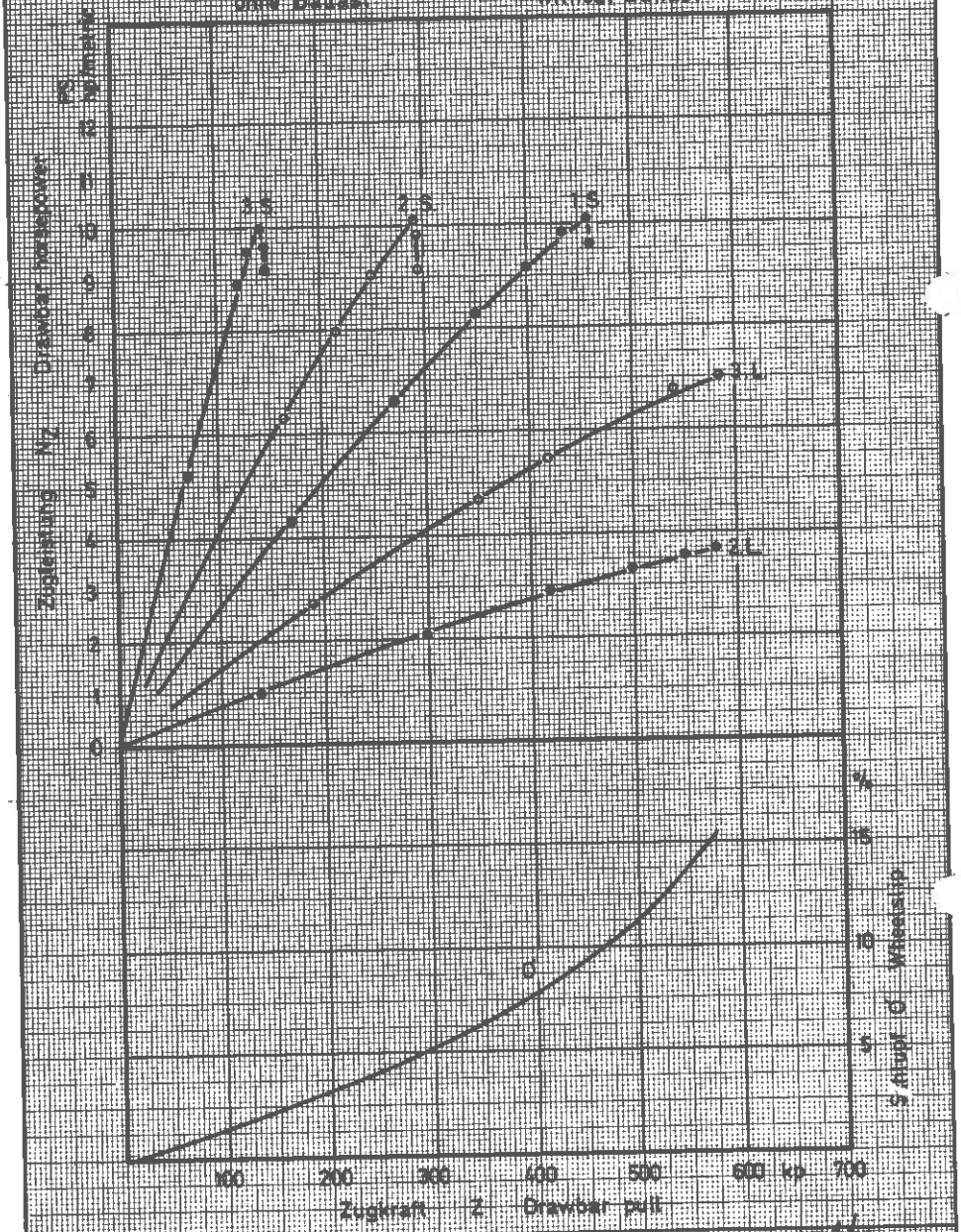
PRÜFUNGS-ABTEILUNG

Zugprüfung
Drawbar-Test

Holder Zugwaschine A 15
Holder Dieselmotor HD1

Test Nr. 69 - 67

ohne Ballast — without Ballast



Motor Nr. D1 10 120	Motoröl: Aral HD 20	Versuchsstag: 15.-28.10.69 Verfasser:
Schlepper Nr. 110 M	Lufttemp.: 7°-20° C	Versuchs Nr.: 69/202 - 215
Kraftstoff: DK0 820/45°C	Barom. std.: 765 m m Q.S.	Kurvenblatt: 5

(3 and 4) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 6-14 AS 2 ply, without ballast
rear: 6-14 AS 2 ply, without ballast

Track of wheels front: 630 mm
rear: 630 mm

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	no brakes fitted		1,60	1,55
Radius of turning circle			1,50	1,45

(5) LOCATION OF CENTRE OF GRAVITY

	Without ballast mm
Height above ground	516
Distance forward from the vertical plane containig the axis of the rear wheels	592
Distance from the median plane of the tractor	0

(6) BRAKE TESTS

A) FOOT BRAKE

Date of test: 3.11.1969

Type of track: Concrete

Type of decelerometer: Moto Meter Bremsverzögerungs- und Pedalkraftmesser
Moto Meter Hermann Schlaich GmbH.
7 Stuttgart N

Travelling speed of tractor: 19,34 km/h

With cold brakes

		Tractor without ballast	Tractor with ballast
Maximum deceleration	m/s^2	6,2	7,3
Stopping distance	m	4,4	3,2
Force on pedal	kp	48	50

Brake fade characteristics, hot tests, tractor without ballast

Deceleration: hot/cold 100%
Stopping distance: cold/hot 100%
Force on pedal: cold/hot 100%

B) PARKING BRAKE

Force applied on the brake lever, cold brake 44 kp.
No rotation of the rear-wheels of tractor occured when the tractor has been towed.

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

*)Hot brake tests not applicable. Hand brake device not influenced by the temperature of foot-brake device.

(7) MEASUREMENT OF AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test : 13.10.1969
Type of track: Concrete
Type of sound level meter: Brüel & Kjaer Typ 2203

Results of test

Speed: 3.S.
Travelling speed before acceleration: 13,5 km/h
Sound level: 88 dBA

(8) NOISE MEASUREMENT AT THE DRIVER'S EAR

Date of test: 29.10.1969
Type of track: Concrete
Type of sound level meter: EZGN, Rohde & Schwarz, 8 München
Type of octavfilter: PBO, Rohde & Schwarz, 8 München

No cab fitted on tractor

Results of tests

Gear	Travelling speed+) nominal km/h	real km/h	Sone
1.S.	6,61	6,30	113
2.S.	10,03	9,85	113

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

PRÜFUNGS-ABTEILUNG
Holder A 15

Test No. 69-67

(9) TEST OF POWER LIFT

Date and location of tests: 3.11.1969
Hydraulic fluid: Engine oil SAE 20

POWER LIFT

a) Lift rods in the foremost holes of the lift arms

Height above ground in down position hitch point mm	test frame mm	Total vertical movement mm	Maximum force exerted through full lift range kp	Pressure of hydr. oil kp/cm^2	Linkage load at which unballasted front end of tractor lifts off the ground kp
Measured on the hitch points of lower links					
305	+)	202	790	174	585

b) Lift rods in the rearemost holes of the lift arms

Measured on the hitch points of lower links					
105	+)	452	515	174	585

Type of linkage lock for transport: no lock fitted

Opening pressure of cylinder over pressure relief valve: no valve fitted

+) Tests with test frame not applicable because the test frame is not suitable for the three-point linkage of this small tractor.

OPTIONAL TESTS

(10) ENGINE TESTS

Date and location of tests: 23./24. 9. 1969, Groß-Umstadt

Type of dynamometer: Schenck eddy current dynamometer W 50

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				
12,2	2600	3,43	232	3,56
At standard p.t.o.speed (540 rev/min)				
9,5	2106	2,48	206	3,95
At the speed recommended by the manufacturer for drawbar work				
12,2	2600	3,43	232	3,56

Fuel consumption at part loads

(i) 85% of torque at maximum power				
10,7	2675	2,72	226	3,95
(ii) unloaded				
-	2775	0,68	-	-
(iii) 50% of the load defined in (i)				
5,5	2748	1,58	238	3,48
(iv) maximum power				
12,2	2600	3,43	232	3,56
(v) 25% of the load defined in (i)				
2,8	2760	1,16	346	2,38
(vi) 75% of the load defined in (i)				
8,2	2720	2,05	208	3,97

Optimum fuel consumption : 205 g/hph at 9,2 hp and 2200 rev/min

Standard fuel consumption 1/2 (acc.to DIN 9606): 1,3/ 2,5 l/h

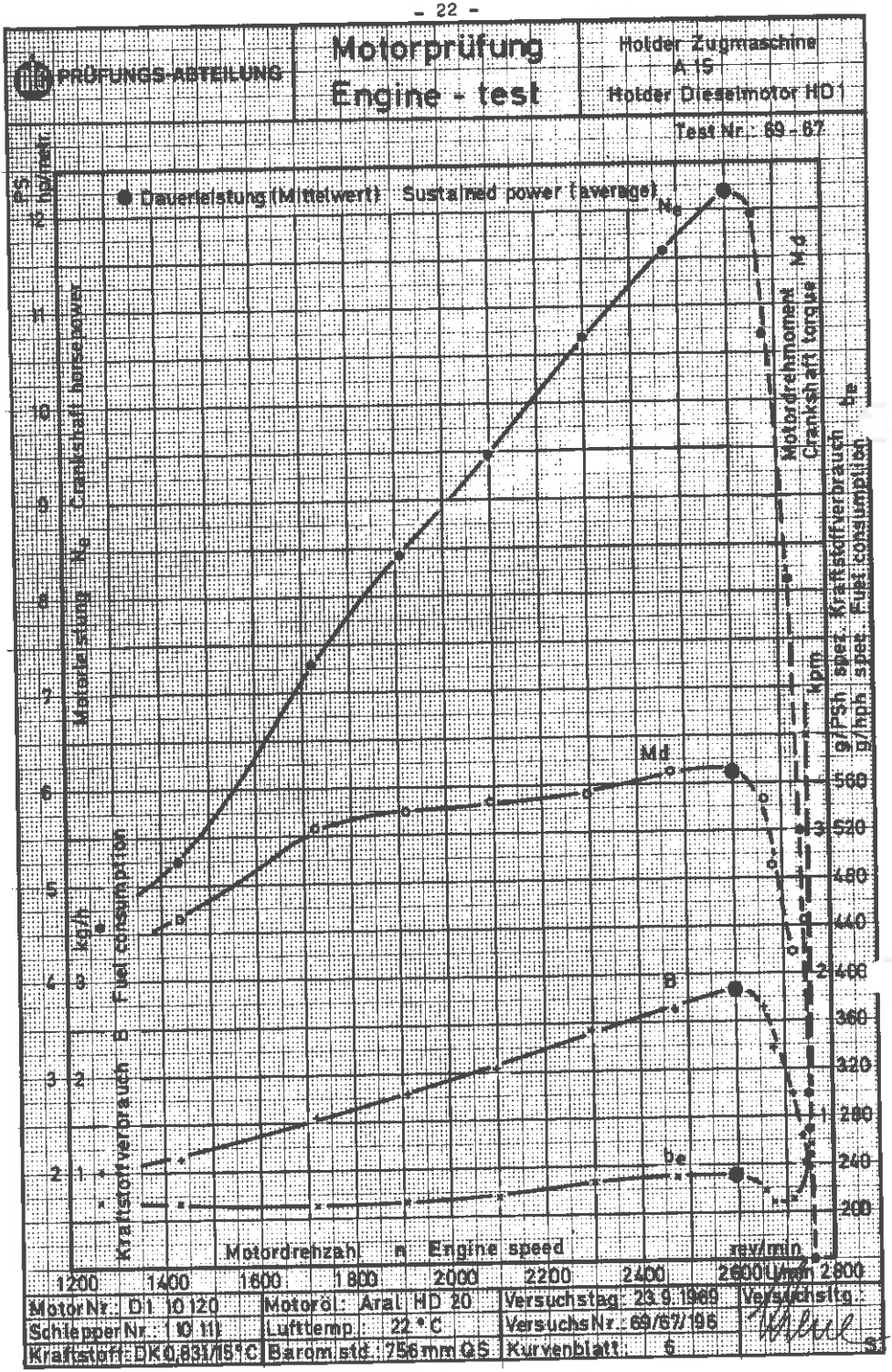
No load maximum engine speed: 2775 rev/min

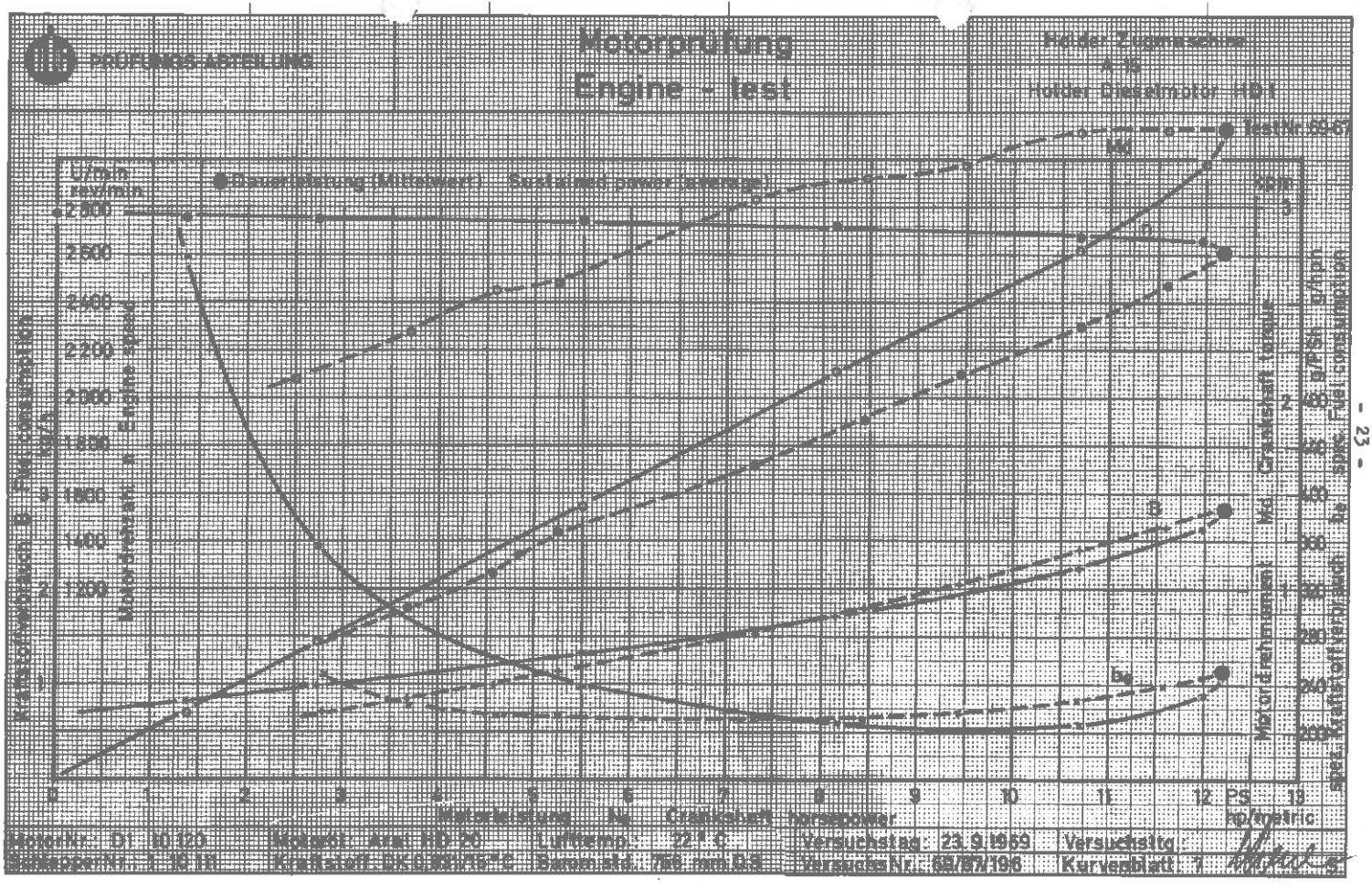
Torque at maximum power: 3,36 kpm

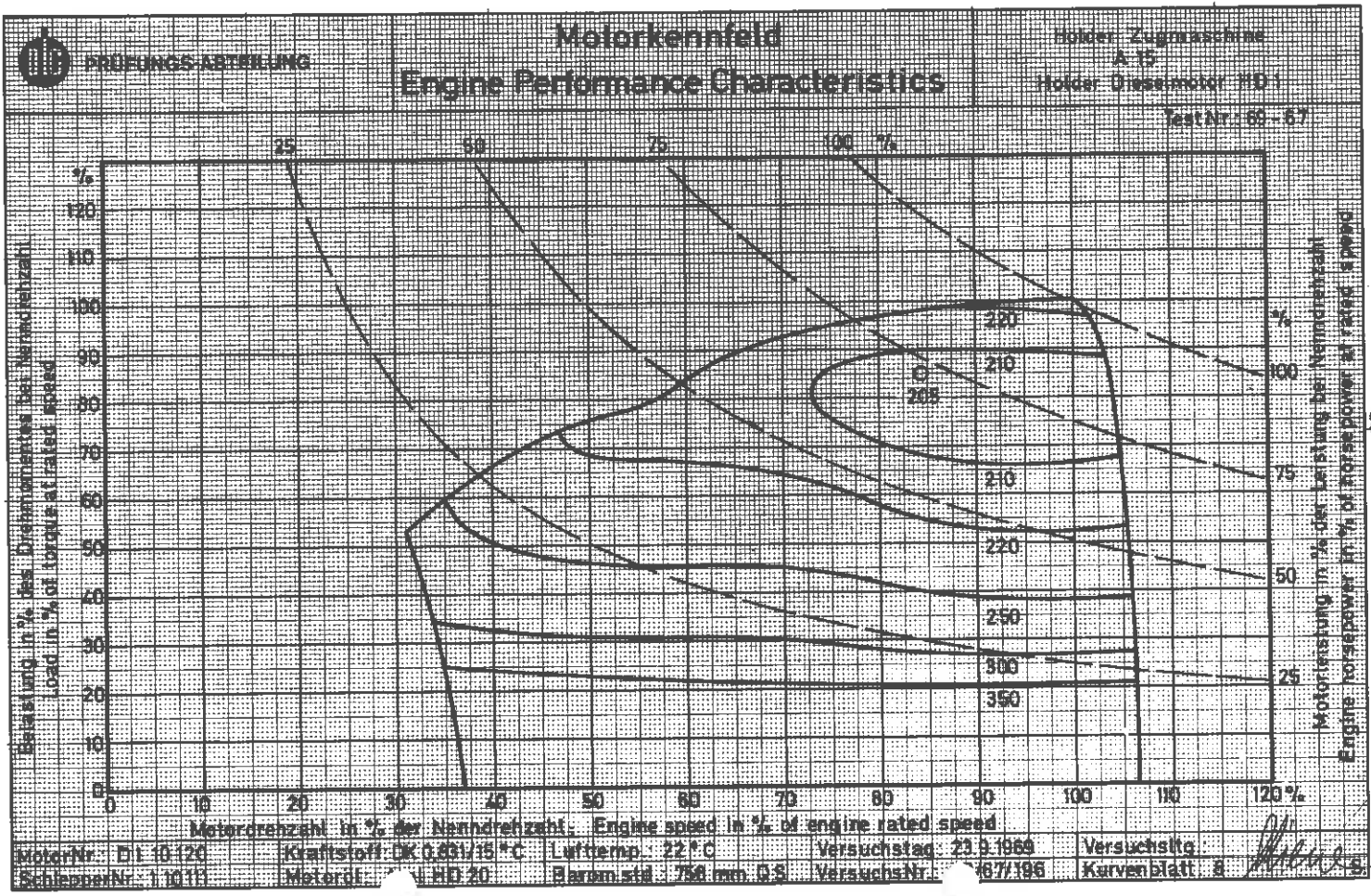
Maximum torque: 3,37 kpm at 2500 rev/min of the engine

Mean atmospheric conditions: temperature: 22°C
pressure: 756 mm Hg
relative humidity: 84%

Maximum temperatures: coolant: 85°C
engine oil: 80°C
fuel: 25°C


PRÜFUNGS-ABTEILUNG
Motorprüfung
Engine - test
Holder Zugmaschine A 15
Holder Dieselmotor HD1
Test Nr.: 69 - 67
Dauerleistung (Mittelwert) Sustained power (average)
Motorleistung Ne Crankshaft horsepower
Kraftstoffverbrauch B Fuel consumption
Motordrehmoment Md Crankshaft torque
spez. Kraftstoffverbrauch be spec. fuel consumption
PS
kg/h
kpm
g/PSh
g/hph
Motordrehzahl n Engine speed
rev/min
Umin
Ne
Md
B
be
Motor Nr.: D1 10 120
Motoröl: Aral HD 20
Versuchstag: 23.9.1969
Versuchsstg.:
Schlepper Nr.: 10 11
Lufttemp.: 22 °C
Versuchs Nr.: 69/67/196
Kraftstoff: DK 0,831/15°C
Barom.std.: 756 mm QS
Kurvenblatt: 6


PRÜFBLOCK-ABTEILUNG
Motorerufung
Engine - test
Holder Dieselmotor A6/1
Test No. 69-67
U/min
rev/min
Leistung (Mittelwert)
Average power
Drehmoment
Torque
Motordrehzahl
Engine speed
Kraftstoffverbrauch
Fuel consumption
Motorleistung
Engine power
Kraftstoffverbrauch spez.
Specific fuel consumption
Kraftstoffverbrauch stündl.
Hourly fuel consumption
Wirkungsgrad
Efficiency
Motor-Nr.
Motorart
Versuchstag
Versuchsstg
Kurvenblatt
Kraftstoff
Datum
Versuchs-Nr.
Bemerkungen


PRÜFUNGS-ABTEILUNG
Motorkennfeld
Engine Performance Characteristics
Holder Zugmaschine A 15
Holder Dieselmotor 110 i
Test Nr.: 66 - 67
Drehmoment in % des Drehmomentes bei Nenndrehzahl
Load in % of torque at rated speed
Motorleistung in % der Leistung bei Nenndrehzahl
Engine horsepower in % of horsepower at rated speed
Motordrehzahl in % der Nenndrehzahl; Engine speed in % of engine rated speed
Motor Nr.: DI 10 120
Kraftstoff: DK 0,83 1/15 °C
Lufttemp.: 22 °C
Versuchstag: 23.9.1969
Versuchsltg.:
Schlepper Nr.: 1 10 111
Meteröl: HD 20
Barom. std.: 756 mm QS
Versuchs Nr.: 67/196
Kurvenblatt: 8

Annex

to the report on Test No. 69-67

Tests of the engine horsepower at changed setting of the engine

Additionally to the tests for the O.E.C.D.-Test of the Holder Tractor A 15 tests has been carried out with the same engine used for the O.E.C.D. Test but with an engine setting giving a diminished engine output as, in some cases, the tractor is delivered with this diminished output.

These Tests are independent to the O.E.C.D.-Test and are carried out in the responsibility of the DLG-Testing Station but strictly in accordance with the O.E.C.D. Code.

PRÜFUNGS-ABTEILUNG
Holder A 15

Test No. 69-67

OPTIONAL TESTS

(10) ENGINE TESTS

Date and location of tests: 9.12.1969, Groß-Umstadt

Type of dynamometer: Schenck eddy current dynamometer W 50

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				
9,9	2600	2,44	202	4,05
At standard p.t.o. speed (540 rev/min)				
7,95	2110	2,01	208	3,96
At the speed recommended by the manufacturer for drawbar work				
9,9	2600	2,44	202	4,05
Fuel consumption at part loads				
(i) 85% of torque at maximum power				
8,44	2615	2,07	202	4,07
(ii) unloaded				
-	2680	0,78	-	-
(iii) 50% of the load defined in (i)				
4,29	2660	1,39	266	3,09
(iv) maximum power				
9,9	2600	2,44	202	4,05
(v) 25% of the load defined in (i)				
2,34	2670	1,08	378	2,16
(vi) 75% of the load defined in (i)				
6,36	2630	2,10	224	3,03

Optimum fuel consumption: 202 g/PSh at 9,4 hp and 2410 rev/min

Standard fuel consumption 1/2 (acc.to DIN 9606): 1,17 /2,07 l/h

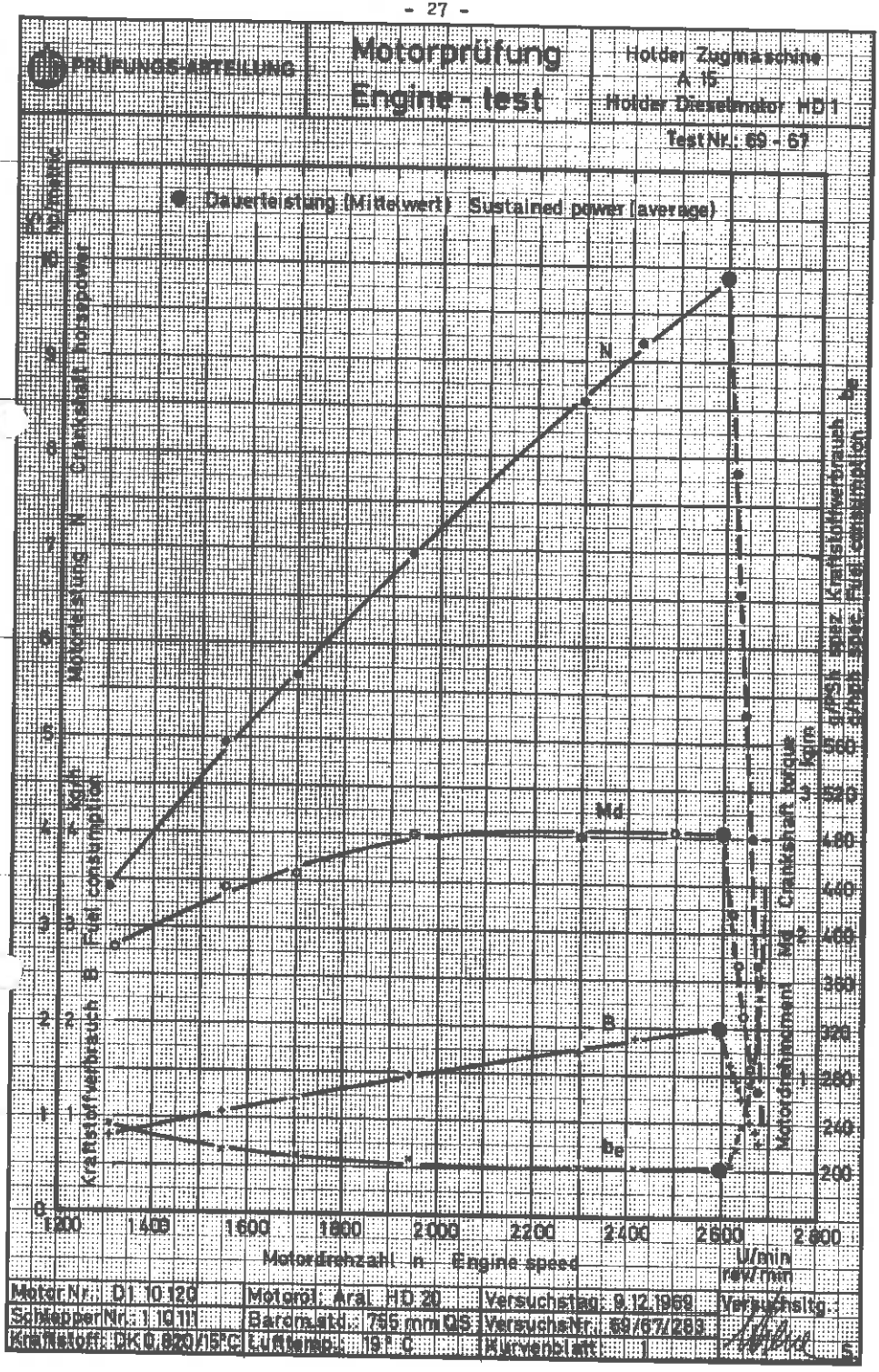
No load maximum engine speed: 2680 rev/min

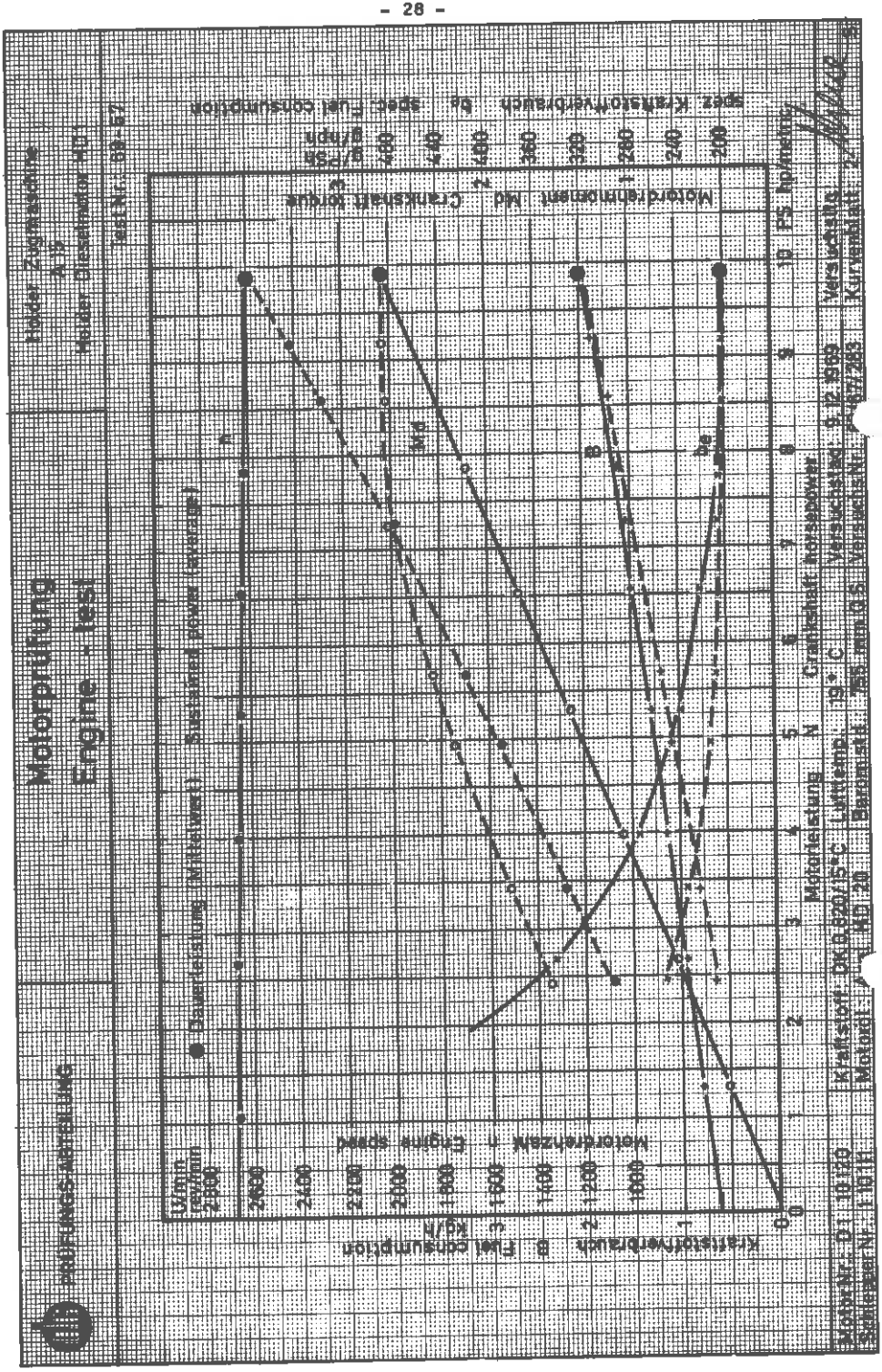
Torque at maximum power: 2,72 kpm

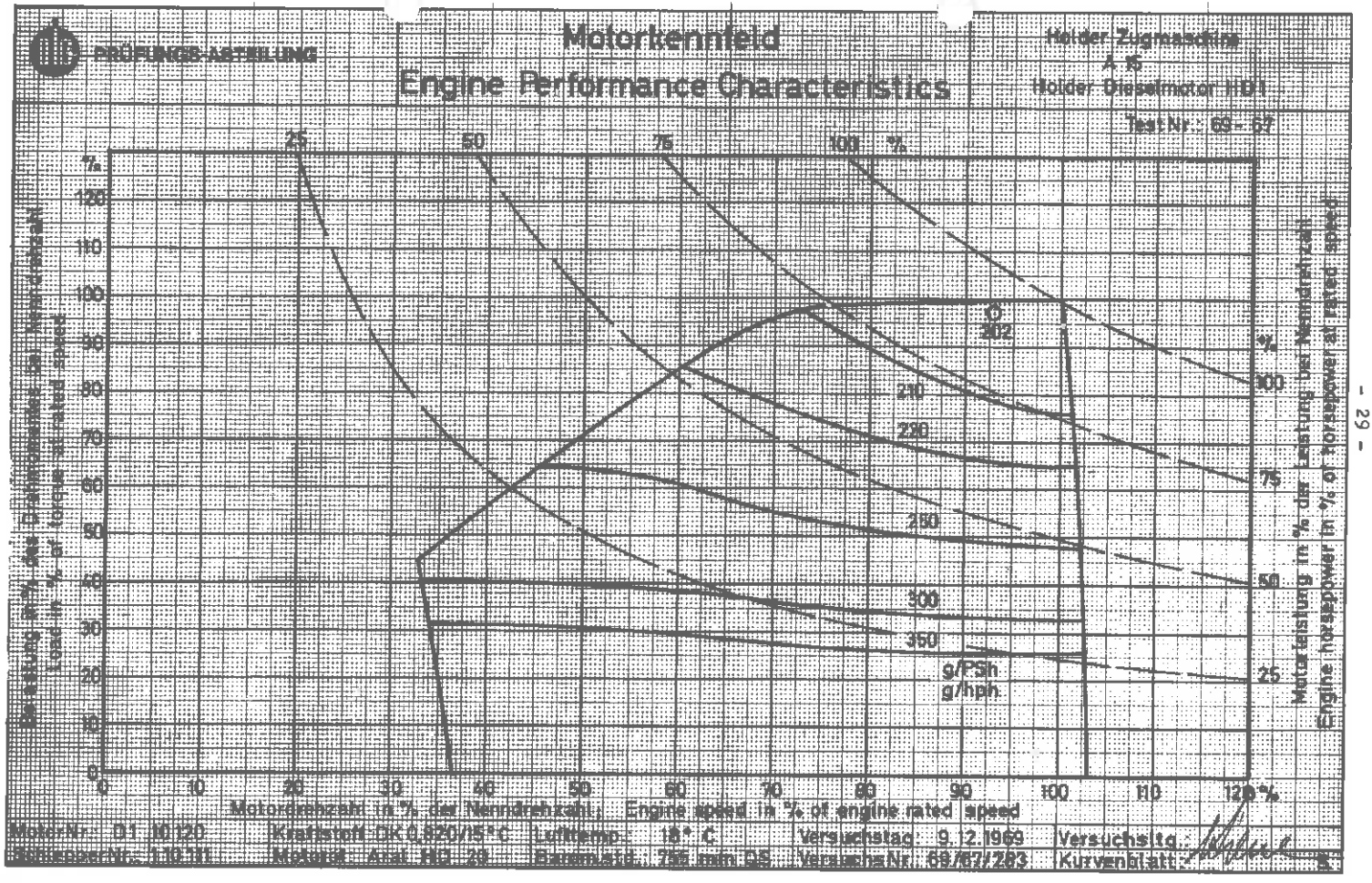
Maximum torque: 2,72 kpm at 2600 rev/min of the engine

Mean atmospheric conditions: temperature: 18°C
pressure: 755 mm QS
relative humidity: 50%

Maximum temperatures: coolant: 85°C
engine oil: 80°C
fuel: 25°C


PRÜFUNGS-ABTEILUNG
Motorprüfung
Engine - test
Holder Zugmaschine
A 15
Holder Dieselmotor HD 1
Test Nr.: 69 - 67
Dauerleistung (Mittelwert) Sustained power (average)
Nutzleistung N
Kraftstoffverbrauch B
Fuel consumption
Drehmoment Md
Motordrehzahl n
Engine speed
U/min
rev/min
Motor Nr.: D 1 10 120
Schlepper Nr.: 1 10 111
Kraftstoff: DIN 51 601
Motoröl: Aral HD 20
Barometerstd.: 755 mm QS
Lufttemp.: 19° C
Versuchstag: 9.12.1969
Versuchs Nr.: 69/67/289
Kurvenblatt Nr.: 1


Motorprüfung
Engine - test
Kraftstoffverbrauch B Fuel consumption kg/h
Motordrehzahl n Engine speed
Motorleistung N Engine power (measured)
Baumeßstelle (Mikafilter)
Motorleistung N Engine power (measured)
Motordrehmoment Md Crankshaft torque
spez. Kraftstoffverbrauch be spec. Fuel consumption g/PSh
Kraftstoff: DK 0,820/15°C
Motor: HD 20
Versuchsstand: 9.12.1969
Versuchs-Nr.: 1/288
Kurvenblatt: 2
Hubvol. Zylinder: 2,0 l
Motor Dieselwerk KD
Test-Nr.: 69-52


PRÜFUNGS-ABTEILUNG
Motorkennfeld
Engine Performance Characteristics
Holder-Zugmaschine
A 35
Holder Dieselmotor HDI
Test Nr.: 69 - 67
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
g/PSh
g/hph
302
310
320
350
500
Motor-Nr.: 01 M 120
Kraftstoff: DK 0,820/15° C
Lufttemp.: 18° C
Versuchstag: 9.12.1969
Versuchsstg.:
Pumpen-Nr.: 110 731
Motorart: A 4 H D 28
Barometerst.: 736 mm QS
Versuchs-Nr.: 69/67/283
Kurvenblatt: