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

O.E.C.D. No. 699



Agricultural Tractor HOLDER A 40

Model name HOLDER 411 (24 kW)

Manufacturer
Gebr. Holder GmbH & Co.
D-7430 Metzingen

Deutsche Landwirtschafts-Gesellschaft e. V.
Zimmerweg 16 · D-6000 Frankfurt a. M. 1
Telefon: (0611) 71 68-0 · Telex 04 131 85 dlg-d

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

Duration of tests: June till August 1980

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

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

Date of Approval: 26th November 1980 O.E.C.D. No. 699

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

The reference to the former used Technical System of Units is given by the following relations:

Forces	1 daN = 10 N = 1,02 kp	or 1 kp	= 0,981 daN
Powers	1 kW = 1,36 PS	or 1 PS	= 0,736 kW
Pressures	1 bar = 1,02 kp/cm²	or 1 kp/cm²	= 0,981 bar
	1000 mbar = 750,1 mm Hg		

All rights including the right of translation, reprint and photomechanical copying – also of excerpts – reserved by the DLG.

Printed in the Federal Republic of Germany
February 1981; DLG-No. 152

PRÜFUNGS-ABTEILUNG
HOLDER A 40

Test No. 79-260

TABLE OF CONTENTS

	Page
Specification of tractor	4 to 13
Fuel and lubricants used in tests	13
COMPULSORY TESTS	
(1) Main power take-off performance	14 to 17
(2) Drawbar performance on a concrete track	18 and 19
(3) Turning space and turning circle	20
(4) Location of centre of gravity	20
(5) Braking	21
(6) Measurement of external noise level	22
(7) Noise measurement at the driver's ear	22
(8) Power lift and hydraulic pump performance	23 to 26
OPTIONAL TESTS	
(9) Engine performance	27 to 30

Tractor manufacturer:	GEBR. HOLDER GmbH & Co. D-7430 Metzingen
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Metzingen
Duration of running-in:	Engine and tractor appr. 60 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	HOLDER
Model:	Trade name A 40, model name 411 (24 kW)
Type:	Wheel tractor, articulated steering, all-wheel driven
Serial-No.:	410 00 100

Engine

Make:	Own make
Model:	6001-2
Type:	4-stroke Diesel-engine, direct injection, water-cooled
Serial-No.:	62 10 249
Cylinders:	2, in line, bore 100 mm, stroke 100 mm, displacement 1571 cm^3, compression ratio 16,6 cylinder liners not replaceable
Valves:	Overhead
Fuel system:	Fuel feed by gravity; BOSCH in line injection pump: PES 2A 80D 410/3 RS 1329, manufacturer's production setting 50 mm^3/stroke at rated engine speed and full load; injection timing 32° before TDC; BOSCH multihole injection nozzles DLLA 150 S 764, injection pressure 185 bar; MANN fuel filter with replaceable cartridge; capacity of fuel tank 40 l
Governor:	BOSCH centrifugal variable speed governor: EP/RSV 400-1250 AOB 1123L, governed range of speed 800 to 2760 rev/min, rated engine speed 2500 rev/min

Air cleaner:	MANN dry paper element filter with precleaner, with replaceable cartridge and acoustically operating maintenance-indicator
Exhaust silencer:	Own make reflexion-absorption type silencer, 115 mm dia, 407 mm long, on the left side above engine cowling, mouth showing upward, mouth 1977 mm above ground
Lubrication system:	Forced feed from gear pump; strainer in sump; MANN oil filter in full flow with replaceable cartridge and by-pass valve; cartridge and oil change interval 150 hours; oil capacity 4 l; recommended oil quality MIL-L-2104 B, MIL-L-46152 or for hard working conditions MIL-L-2104C; recommended oil viscosities: below: -10°C SAE 10W from -10°C to +20°C SAE 20W/20 above +20°C SAE 30
Cooling system:	Water cooling with overpressure relief valve, adjusted to 0,4 bar, impeller assisted; by-pass thermostat; fan with 4 blades, 270 mm Ø; water capacity 6 l
Starting system:	Electrical BOSCH screw-push starter motor JF 12V/2,4 kW; BERU spiral-type glow plug in intake manifold
Electrical equipment:	12 Volt, negative earth; BOSCH 3-phase alternator G1 14V/33A; 1 lead acid battery 55 Ah at 20 hours rating

Transmission

Clutch:

FICHTEL UND SACHS AG
dry single-plate type clutch MF 240 K,
disc diameter 240 mm,
hydraulically pedal operated

Gear box:

Own make
consisting of 2 gear boxes, connected with each other by universally-jointed propeller shafts;
speed change gear with 4 speeds, synchronized;
group gear with 2 synchronized forward groups and 1 collar shifted reverse group;
totally 8 forward and 4 reverse speeds

Axles and final drives:

Own make
all-wheel drive, not disengageable;
at front and at rear:
bevel gear drive with crown wheel and pinion,
bevel gear type differentials with locks,
in common hydraulically engageable by hand lever
self-disengaging;
planetary final drives

Transmission lubrication:

Transmission oil SAE 80
MIL-L-2105/API GL-4

front gear box with	front axle	10,2 l
rear gear box with	rear axle	6,3 l
final drives	each	0,3 l

without oil filter;

oil change interval 1500 hours

PRÜFUNGS-ABTEILUNG

HOLDER A 40

Test No. 79-260

Total ratios and speeds

Group	Gear	Total ratio engine : driving wheel	Nominal travelling speed *) at rated engine speed km/h
Forward speeds			
L	1	265,86	1,51
	2	146,51	2,73
	3	88,09	4,55
	4	56,92	7,04
S	1	74,43	5,38
	2	41,02	9,76
	3	24,66	16,24
	4	15,94	25,13
Reverse speeds			
R	1	225,40	1,78
	2	124,22	3,22
	3	74,68	5,36
	4	48,26	8,30

*) calculated with a tyre dynamic radius of 425 mm

PRÜFUNGS-ABTEILUNG

HOLDER A 40

Test No. 79-260

Power-take-off

Main p.t.o.:	Independent p.t.o., driven by a wet multi disc clutch, operated by hand lever; at rear of tractor, in tractor's median plane, 472 mm above ground, p.t.o. shaft end 288 mm behind rear axle centre line; 35 mm dia, 6 splines DIN 9611 and ISO 500 type 1; 612 rev/min at rated engine speed, standard p.t.o. speed 540 rev/min at 2205 rev/min engine speed; direction of rotation clockwise viewed from tractor rear
Secondary p.t.o.:	In front of front axle; drive and p.t.o. stub shaft type same as for main p.t.o.; 327 mm above ground, in tractor's median plane, p.t.o. shaft end 190 mm before front axle centre line; 1061 rev/min at rated engine speed, standard p.t.o. speed 1000 rev/min at 2357 rev/min engine speed; direction of rotation counterclockwise viewed from tractor rear; p.t.o. speeds may be set by aid of tractormeter

Power lift

Hydraulic system:	Own make hydraulic power lift in disintegrated construction; BOSCH gear type pump HY/ZFS, delivery 14 cm^3/rev or 35 l/min at rated engine speed, driven by the engine; pressure relief valve set to 190 bar
Power lift at rear:	BUCHER control valve for lifting and lowering; 2 single-acting rams with 60 mm bore and 116 mm stroke without overpressure relief valves in the rams, without lowering throttle

PRÜFUNGS-ABTEILUNG
HOLDER A 40

Test No. 79-260

Power lift at front:	Optionally available, fitted on tractor tested; BUCHER control valve for lifting and lowering; 1 single-acting ram with 50 mm bore and 160 mm stroke, without overpressure relief valve in the ram, without lowering throttle Up to 5 singleor double acting additional control valves with oil tappings available
Hydraulic fluid:	Hydraulic oil tank with 14 l capacity, 3,5 l may be taken off through oil tappings when tractor is working driving, 11 l when tractor is working stationary; oil filter with replaceable cartridge; cartridge change all 300 hours; recommended oil: engine oil SAE 20W/20 MIL-L-2104 A; oil change once a year
Implement linkage at rear:	Three point linkage category I DIN 9674, right lift rod adjustable about ± 40 mm, lifting height above ground 77 to 662 mm
Implement linkage at front:	Linkage of own construction, ram acting on 2 laterally stabilized arms
Holed bar:	Short bar, fitted on clevis of lower links; length between the joint balls 680 mm, width 70 mm, thickness 30 mm; centre hole and 3 holes in 80 mm distance each on either side, all holes 33 mm dia; height above ground adjustable by power lift in the range from 92 to 677 mm, measured at the surface of the bar; distance of holes centre line with lower links in horizontal position: from rear axle centre 738 mm from p.t.o. shaft end 450 mm

Pull attachment

Trailer hitch:	ROCKINGER height above ground adjustable by shifting to 582, 622 and 662 mm, hitch hole 33 mm dia; distance of hitch hole centre from rear axle centre 430 mm; permissible vertical load 600 kg
Towing hitch:	None

Steering

Own make in cooperation with DANFOSS,
Type OSPB 100,
hydrostatic articulated steering,
connected with priority flowcontrol valve to the hydraulic system of power lift;
2 double-acting WEBER cylinders with 55 mm bore and 111 mm stroke between front and rear parts of the tractor

Brakes

Parking brake:	Mechanically acting on the drums of the service brake, operated by pedal with ratchet
Service brake:	Own make in cooperation with KNOTT mechanically acting internal-expanding-shoe brake with 150 mm dia, on each differential half shaft of the rear axle, pedal operated

Wheels

Driving wheels:	At front and at rear 4 pneumatics 10,5/80-18 Impl. 6 ply, diagonal type tyre casing; maximum permissible load per tyre 1430 kg at 2,25 bar inflation pressure and 30 km/h; track widths 814,830,924,940,1014 and 1030 mm, adjustable by turning wheels and fitting of intermediate rings to the wheel hubs; rims W 9 x 18

Wheel base	1450 mm
Cab	Own make, type 4134-5 OECD-tested safety cab, approval no. CSD 0278/2-a (c) antivibration mounts, front windshield tiltable, sliding rear windows, inside of cab covered with noise damping materials; doors on both sides of the cab; heat exchanger with blower in the roof of the cab, connected to the engine cooling system
Seat	BOSTROM XH2 and BRENDEL upholstered seat with back rest; adjustable spring with shock absorber; height of driver's platform above ground 500 mm; height of unloaded seat above platform adjustable to 6 positions between 445 and 505 mm; for and aft adjustable about 60 mm
Number of grease points	10
Track setting during test	Front and rear axle 924 mm

Dimensions

Total length:	3255 mm without ballast 4132 mm with ballast
Total width:	1193 mm with and without ballast
Total height:	2036 mm to top of cab
Ground clearance:	250 mm below clutch housing

PRÜFUNGS-ABTEILUNG
HOLDER A 40

Test No. 79-260

Lighting equipment — Electrical 12 Volt as per German legislation

	Dimensions mm	Height above ground to centre mm	Distance from outside edge of tractor to centre mm
Head lights	140 x 75	1005	455
Side lights	70 x 20	1945	295
Rear lights	90 x 40	970	295
Reflectors	90 x 45	915	295

Permissible total weights and axle loads

for all available wheel equipment (authorized by the national administration)

Tyre dimensions at front and at rear	Permissible total weight kg	Permissible axle load at front and at rear kg
7,50-18 Impl. 8 or 10 ply 10,5/80-18 Impl. 6 or 8 ply 28 x 9,00-15 6 ply 400 - 15,5 6 ply 400/60-15,5 4 or 6 ply 7,50-20 6 or 8 ply 31 x 15,5-15 4 or 6 ply	2700	1500

PRÜFUNGS-ABTEILUNG
HOLDER A 40

Test No. 79-260

Weights	Ready for use, as tested	without driver	with driver
Without ballast:	front	1020 kg	1025 kg
	rear	570 kg	645 kg
	total	1590 kg	1670 kg
Front ballast:	1 weight per wheel 50 kg each		100 kg
	1 concrete weight in front implement linkage		370 kg
Rear ballast	1 concrete weight in rear implement linkage		565 kg
With ballast:	front	1440 kg	1445 kg
	rear	1185 kg	1260 kg
	total	2625 kg	2705 kg

FUELS AND LUBRICANTS USED IN TESTS

Fuel:	ARAL Diesel-fuel DIN 51601	
	specific gravity at 15°C	
	at engine and p.t.o. tests	0,834 kg/l
	at drawbar tests	0,836 kg/l
Engine:	MOBIL engine oil DELVAC 1120	SAE 20W/20
Transmission, axles and final drives:	MOBIL transmission oil	SAE 80
Hydraulic system and steering:	MOBIL engine oil DELVAC 1120	SAE 20W/20

PRÜFUNGS-ABTEILUNG

HOLDER A 40 Test No. 79-260

COMPULSORY TESTS

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

Date of tests: 3rd July 1980
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						
20.4	2500	612	7.46	6.22	305	2.73
At standard p.t.o. speed						
19.1	2205	540	6.64	5.54	291	2.87
At the speed recommended for drawbar work						
20.4	2500	612	7.46	6.22	305	2.73
Part loads, the governor hand lever in the position corresponding to the maximum power at full load						
(i) 85% of the torque at maximum power at 2-hour test						
18.1	2607	638	6.57	5.48	303	2.75
(ii) unloaded						
-	2739	671	2.04	1.70	-	-
(iii) 50% of the load defined in (i)						
9.3	2672	654	4.04	3.37	364	2.29
(iv) maximum power						
20.4	2500	612	7.46	6.22	305	2.73
(v) 25% of the load defined in (i)						
4.7	2703	662	3.02	2.52	537	1.55
(vi) 75% of the load defined in (i)						
13.8	2646	648	5.07	4.23	307	2.72

PRÜFUNGS-ABTEILUNG

HOLDER A 40

Test No. 79-260

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
Part loads, the governor hand lever in the position corresponding to the standard p.t.o. speed at full load						
(i) 85% of the torque at maximum power at standard p.t.o. speed						
17.0	2318	568	5.74	4.78	281	2.96
(ii) unloaded						
-	2442	598	1.72	1.43	-	-
(iii) 50% of the load defined in (i)						
8.8	2390	585	3.54	2.96	337	2.48
(iv) maximum power						
19.1	2205	540	6.64	5.54	291	2.87
(v) 25% of the load defined in (i)						
4.4	2421	593	2.60	2.17	488	1.71
(vi) 75% of the load defined in (i)						
13.0	2361	578	4.50	3.75	289	2.88

Standard specific fuel consumption (g/kWh): 303/364/281/337

No load maximum engine speed: 2739 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 78 Nm
Maximum equivalent crankshaft torque: 86 Nm at 1792 rev/min of the engine

Mean atmospheric conditions:	temperature	20 °C
	pressure	995 mbar
	relative humidity	70 %
Maximum temperatures:	coolant	75 °C
	engine oil	102 °C
	fuel	22 °C
	engine air intake	20 °C

PRÜFUNGS-ABTEILUNG
ROLLER & CO
Zapfwellenleistung
PTO performance
Test Nr. 79-260
540 U/Min 540 rev/min
Kraftstoffverbrauch
fuel consumption
B g/kWh
Drehmoment
torque M equiv. Nm
äquivalentes Drehmoment
equiv. crankshaft torque
spez. Kraftstoffverbrauch
spec. fuel consumption be g/kWh
standard p.t.o. speed
Pe
B
be
M equiv
Zapfwellenleistung
p.t.o. power Pe kW
Motordrehzahl n engine speed U/min rev/min

PRÜFUNGS-ABTEILUNG

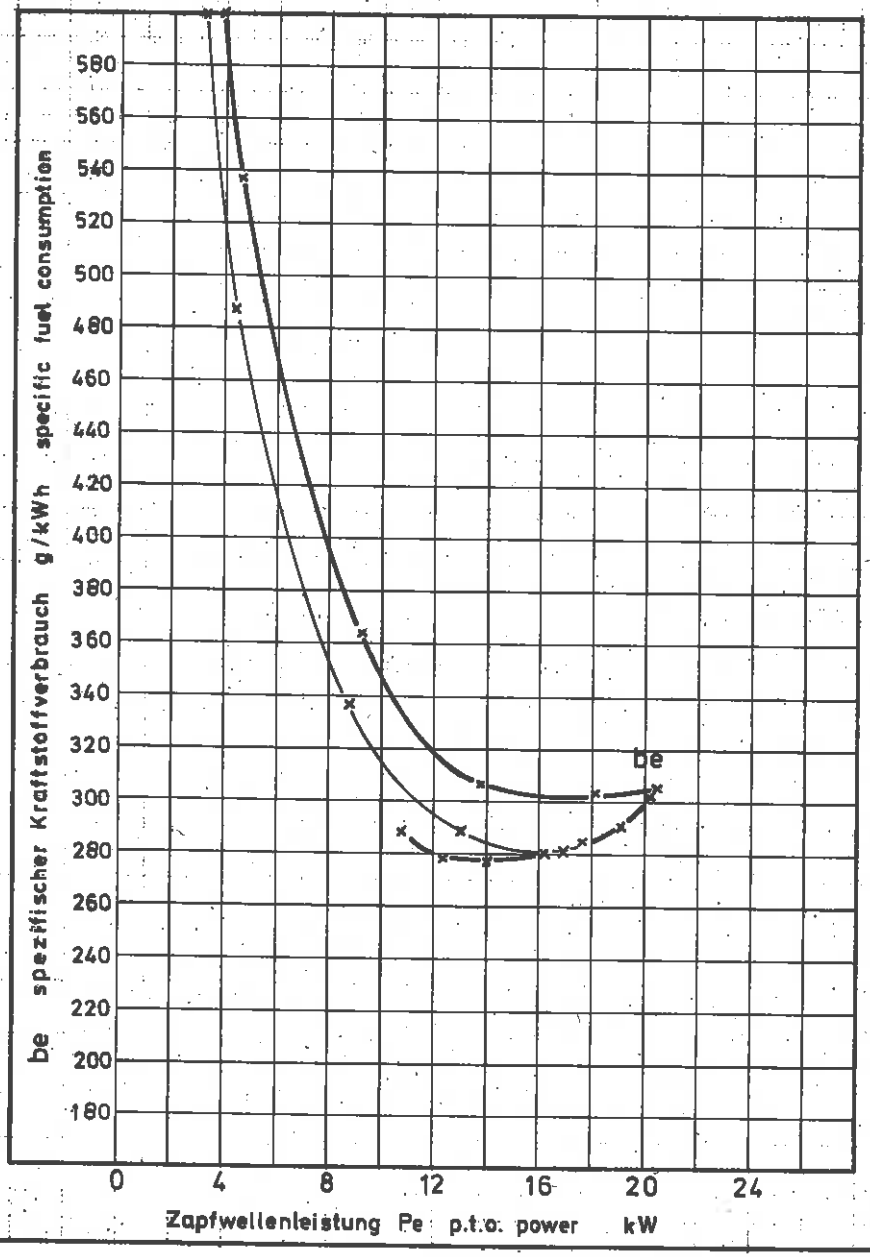
HOLDER A 40

Zapfwellenleistung

P.t.o. performance

Test Nr. 79-260

540 U/min rev/min



PRÜFUNGS-ABTEILUNG
HOLDER A 40

(2) DRAWBAR PERFORMANCE

Date of tests: 16th July till 18th August 1980
Type of track: Concrete

Gear No. and Group	Driving speed km/h	Power kW	Drawbar pull daN	Engine speed rev/min	Slip of wheels %
(i) MAXIMUM POWER with ballast height of drawbar above ground 380 mm					
1 L	1,35	10,0	2668	2612	14,9
2 L	2,45	15,1	2213	2499	10,7
3 L	4,29	16,6	1394	2500	5,7
1 S	5,14	17,1	1196	2499	4,6
4 L	6,83	16,6	873	2502	3,0
2 S	9,55	16,4	619	2500	2,2
(ii) FIVE-HOUR-TEST at 75 % of pull at maximum power in 1st S gear					
1 S	5,45	13,6	897	2613	3,2
(iii) FIVE-HOUR-TEST at pull corresponding to 15 % wheel slip in test (i)					
1 L	1,40	10,4	2668	2611	-
(iv) MAXIMUM POWER without ballast height of drawbar above ground 380 mm					
1 L	1,39	6,7	1747	2668	15,1
2 L	2,48	12,2	1772	2616	15,0
3 L	4,17	16,6	1436	2504	10,2
1 S	5,01	17,3	1244	2497	8,4
4 L	6,75	17,3	922	2501	5,9
2 S	9,52	17,7	669	2501	4,4
3 S	16,12	16,7	372	2501	2,2

Total oil consumption during ten hours duration of tests (ii) and (iii) 10 g/h

PRÜFUNGS-ABTEILUNG

Test No. 79-260

Tyres size front and rear: 10,5/80-18 Impl. 6 ply

Tread bar height at the beginning of drawbar tests 89 % of the value when new at front, 87 % at rear

Specific energy kWh/ l	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 1,0 bar at front and at rear							
1,97	419	23	66	84	20	85	999
1,98	415	26	68	89	26	62	999
2,18	377	25	70	90	24	71	999
2,27	363	25	70	90	24	70	999
2,21	374	23	72	93	21	85	999
2,17	380	26	68	88	26	61	998
2,34	352	25	73	94	24	89	1002
-	-	24	73	93	23	68	993
tyre inflation pressure 1,0 bar at front and at rear							
1,85	448	22	65	74	19	64	999
2,24	370	22	65	75	19	65	999
2,19	378	22	67	84	21	64	999
2,30	361	22	67	86	21	69	999
2,28	363	22	67	84	21	68	999
2,34	353	23	67	83	20	65	999
2,20	376	23	67	84	20	66	999

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

PRÜFUNGS-ABTEILUNG
HOLDER A 40

Test No. 79-260

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment at front and at rear: 10,5/80-18 Impl. 6 ply

Track of wheels at front and at rear: 924 mm

	Left-hand m	Right-hand m
Radius of turning space	2,96	2,96
Radius of turning circle	2,80	2,80

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	647 mm
Distance forward from rear axle centre	859 mm
Distance from tractor's median plane, to the right	1 mm

PRÜFUNGS-ABTEILUNG
HOLDER A 40

Test No. 79-260

(5) BRAKING PERFORMANCE

A) SERVICE BRAKE

Date of tests: 22nd July and 20th August 1980
Type of track: Concrete
Type of decelerometer: MOTO-METER-Bremsverzögerungs- und Pedalkraftschreiber

Weight of ballasted tractor with driver 2705 kg

Cold brakes

		With ballast	Without ballast
Travelling speed	km/h	25,0	25,0
Deceleration	m/s^2	4,9	6,0
Stopping distance	m	5,8	5,0
Force on pedal	daN	60	50
Force on pedal to achieve a deceleration of 2,5 m/s^2	daN	28	19

Brake fade characteristics (hot tests)

Deceleration	hot/cold	%	100	112
Stopping distance	cold/hot	%	100	109
Force on pedal	cold/hot	%	100	104

B) PARKING BRAKE

Tractor facing up 16% slope
Force on pedal 43 daN, tractor does not roll

Tractor facing down 16% slope
Force on pedal 40 daN, tractor does not roll

(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 17th July 1980
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

Results of test

Gear: 4th S
Travelling speed before acceleration: 20,3 km/h
Sound level: 84,5 dB(A)

(7) NOISE AT THE DRIVER'S EAR LEVEL

Date of tests: 16th July 1980
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

The tractor was fitted with HOLDER safety cab

Results of tests

Gear	Drawbar pull at which the tractor develops the maximum sound level da N	Travelling speed nominal km/h	Travelling speed effective km/h	Sound level dB(A)
1 L	1734	1,51	1,38	92
2 L	1702	2,73	2,46	92,5
3 L	1371	4,55	4,31	93
1 S	1128	5,38	5,27	92,5
4 L*)	909	7,04	6,75	92,5
2 S	636	9,76	9,77	92
3 S	370	16,24	16,11	91
4 S	light load	25,13	27,00	90,5

*) the 4th L gear corresponds to the travelling speed nearest to 7,5 km/h

(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

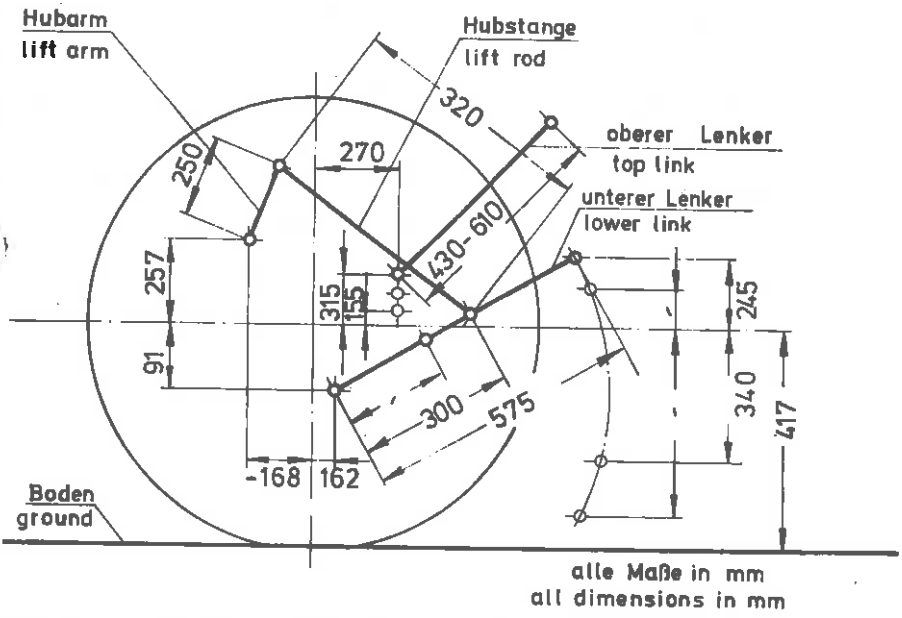
Date of tests: 21st July and 25th August 1980

HYDRAULIC PUMP

(1) Opening pressure of relief valve in remote circuit	170	bar
Sustained pressure by open relief valve	189	bar
(2) Pump delivery rate at minimum pressure and rated engine speed	25,2	l/min
(3) Pump delivery rate at max. hydraulic power	25,5	l/min
corresponding delivery pressure	170	bar
power	7,2	kW

POWER LIFT

Dimensions of linkage geometry for the table on page 26



PRÜFUNGS-ABTEILUNG
HOLDER A 40

Test No. 79-260

LIFTING FORCES

Lifting heights relative to horizontal lower links

mm	-490	-400	-375	-340	-300	-200	-100	0

At hitch points

daN				1810	1770	1730	1690	1640

Max. force exerted throughout the whole range 1480 daN

Front axle does not lift

At test frame maximum mechanical advantage

daN			1750		1580	1500	1420	1330

minimum mechanical advantage

daN	1240	1150			1090	1060	1020	970

Max. force exerted throughout the whole range 940 daN

Front axle does not lift

+100	+200	+245	+300	+335	+400	+500	+515

1600	1530	1480					

high top link pivot point

1240	1130		1000	940			

low top link pivot point

920	870		790		740	680	670

All values of forces for pressure 170 bar at max. hydraulic power, see page 23; calculated from measurements at max. oil pressure 189 bar

LINKAGE GEOMETRY when connected to the standard frame	Maximum mechanical advantage	Minimum mechanical advantage
Projected length in side view:		
Lower links	575 mm	575 mm
Lift arms	250 mm	250 mm
Lift rods	320 mm	320 mm
Top link	498 mm	537 mm
Distance of lift rod connection point from pivot point of lower link	300 mm	300 mm
The following dimensions are given relative to rear axle centre line 417 mm above ground		
Lower link pivot point	162 mm behind, 91 mm below	162 mm behind, 91 mm below
Top link pivot point	270 mm behind, 315 mm above	270 mm behind, 155 mm above
Lift arm pivot point	168 mm behind, 257 mm above	168 mm behind, 257 mm above
Maximum and minimum height of lower link hitch points	245 mm above, 340 mm below	245 mm above, 340 mm below
Height of lower link hitch points above ground when locked in highest transport position	662 mm	662 mm

PRÜFUNGS-ABTEILUNG
HOLDER A 40

Test **No. 79-260**

OPTIONAL TESTS

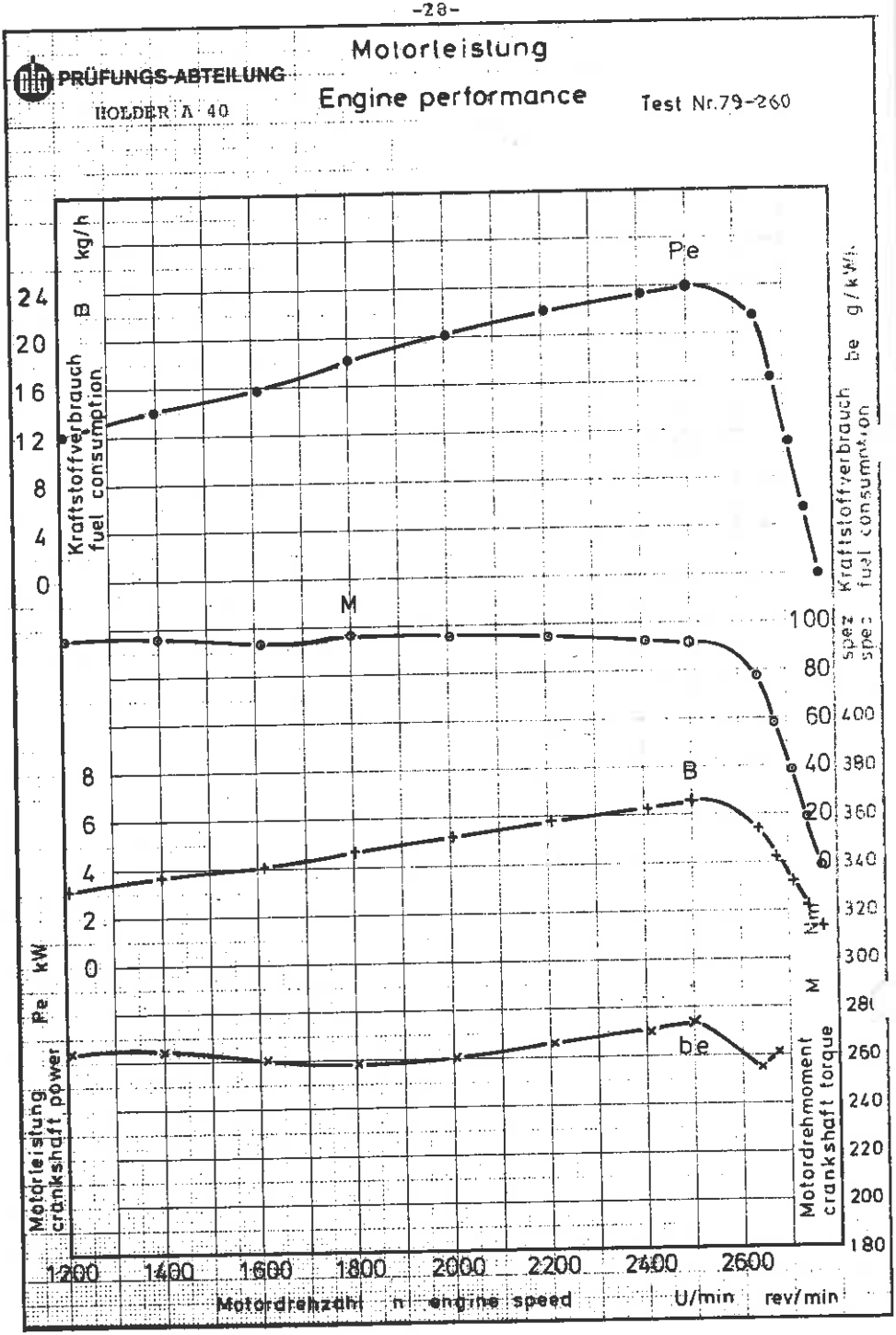
(9) ENGINE PERFORMANCE

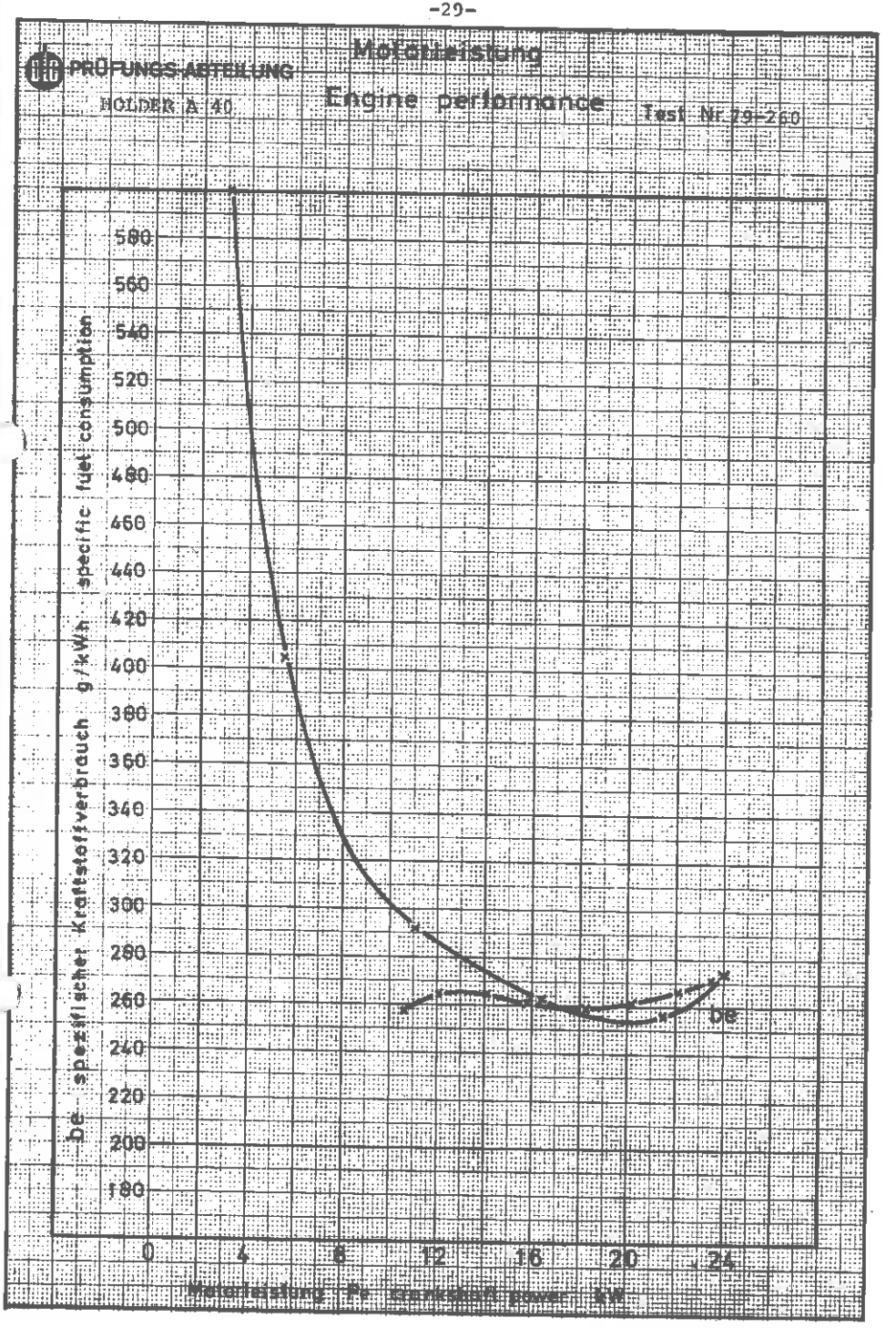
Date of tests: 26th and 27th June 1980
Type of dynamometer: SCHENCK eddy-current dynamometer W 150

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					
24.0	2500	7.89	6.58	274	3.04
At standard p.t.o. speed (540 rev/min)					
22.1	2205	7.03	5.87	266	3.14
At the speed recommended for drawbar work					
24.0	2500	7.89	6.58	274	3.04
Part loads					
(i) 85% of the torque at maximum power at 2-hour test					
21.5	2637	6.59	5.50	256	3.26
(ii) unloaded					
-	2765	1.70	1.42	-	-
(iii) 50% of the load defined in (i)					
11.1	2708	3.86	3.22	292	2.86
(iv) maximum power					
24.0	2500	7.89	6.58	274	3.04
(v) 25% of the load defined in (i)					
5.6	2737	2.71	2.26	405	2.06
(vi) 75% of the load defined in (i)					
16.4	2672	5.15	4.29	262	3.18

Optimum fuel consumption: 236 g/kWh at 10,1 kW and 1375 rev/min
No load maximum engine speed: 2765 rev/min
Torque at maximum power (2 hours): 92 Nm
Maximum torque: 97 Nm at 1802 rev/min of the engine

Mean atmospheric conditions:	temperature	20 °C
	pressure	992 mbar
	relative humidity	60 %
Maximum temperatures:	coolant	70 °C
	engine oil	89 °C
	fuel	21 °C
	engine air intake	24 °C


Motorleistung
Engine performance
PRÜFUNGS-ABTEILUNG
HOLDER A 40
Test Nr.79-260
Kraftstoffverbrauch B kg/h
fuel consumption
Pe
M
B
be
Kraftstoffverbrauch be g/kWh
spez. fuel consumption
Motorleistung Pe kW
crankshaft power
Motordrehmoment M Nm
crankshaft torque
Motordrehzahl n engine speed U/min rev/min
1200 1400 1600 1800 2000 2200 2400 2600
24 20 16 12 8 4 0
8 6 4 2 0
100 80 60 40 20 0
400 380 360 340 320 300 280 260 240 220 200 180


PRÜFUNGS-ABTEILUNG
HOLDER A 40
Motorleistung
Engine performance
Test Nr. 79-260
be spezifischer Kraftstoffverbrauch g/kWh specific fuel consumption
580
560
540
520
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
0
4
8
12
16
20
24
Motorleistung Pe brake power kW
be

PRÜFUNGS-ABTEILUNG
MOLDER A. 40
Motorleistung
Engine performance
Test Nr. 79-269
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 Drehmomentes bei Nenndrehzahl
load in % of torque at rated engine speed
236 g/kWh
240
250
260
275
300
350
450

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

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