DLG	Report on test in accordance with O.E.C.D. STANDARD CODE	O.E.C.D. No. 583



Agricultural Tractor Bührer 475

Manufacturer

Bührer Traktorenfabrik AG, CH-8340 Hinwil

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.

Performance of tests: September till November 1977

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: 23rd March 1978 O.E.C.D. No. 583

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 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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PRÜFUNGS-ABTEILUNG
BÜHRER 475

Test No. 77-67

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Tractor manufacturer:	BÜHRER Traktorenfabrik AG CH-8340 Hinwil
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Groß-Umstadt
Duration of running-in:	Engine and tractor appr. 75 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	BÜHRER Traktorenfabrik AG
Model:	475
Type:	Wheeled tractor, unit construction with additional half-frame, rear wheel driven
Serial-No:	21915

Engine

Make:	PERKINS ENGINES Company
Model:	4.248
Type:	4-stroke DIESEL engine, with direct injection, water cooled
Serial-No:	145412 L
Cylinders:	4, in line, bore 101 mm, stroke 127 mm displacement 4068 cm³; compression ratio 16:1
Valves:	Overhead
Fuel system:	AC fuel feed pump; CAV distributor injection pump DPA 3241 F 102; manufacturer's production setting 58 mm³/stroke at rated engine speed; injection timing 24° before TDC; CAV multihole injection nozzles C4; injection pressure 175 bar; CAV fuel filter with replaceable cartridge; capacity of fuel tank 64 l
Governor:	Mechanically acting centrifugal variable speed governor, incorporated in injection pump; governed range of engine speed from 800 to 2300 rev/min; rated engine speed 2125 rev/min

Air filter:	MANN UND HUMMEL dry paper element filter with replaceable cartridge and service indicator
Exhaust silencer:	Own make; multi-chamber, expansion type silencer; 120 mm diameter, 600 mm long; at the right hand side of engine; mouth 450 mm above ground, showing to the left hand side
Lubrication system:	Forced feed from rotary pump; strainer in sump; PERKINS oil filter in full flow with by-pass valve and replaceable cartridge; cartridge change at all oil changes; oil capacity 8 l; oil changing interval 200 hours; recommended oil quality MIL-L-2104 B; recommended oil viscosities: winter SAE 20W/20 summer SAE 20 tropics SAE 30
Cooling system:	Pressurized water cooling with centrifugal pump; thermostat with by-pass; fan with 6 blades, 430 mm diameter; cooling water capacity 15 l
Starting system:	Electrical; LUCAS-magnetic-push-starter motor M 45 G 2 kW; CAV flame plug in intake pipe
Electrical equipment:	12 Volt, LUCAS generator C 40 A 1 battery 110 Ah at 20 hours rating

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Transmission

Clutch:	Own make 1 Dry dual disc type clutch between speed-change gear and group gear; for travel drive; pedal operated; disc diameter 250 mm 2 Dry single disc type clutch between engine and speed change gear; for p.t.o.-drive only when tractor is stationary; hand lever operated; disc diameter 250 mm 3 Dry multiplate disc type clutch for the independent p.t.o.-drive (live p.t.o.) hand lever operated
Gear box:	Own make; speed change gear with 5 forward speeds and 1 reverse speed; all speeds synchronized; group gear with 3 groups, collar shifted; totally 15 forward and 3 reverse speeds
Rear axle and final drive:	Bevel gear drive with crown wheel and pinion; bevel gear differential with lock; pedal operated, self- disengaging; planetary final drives
Oil capacity and recommended oil quality:	Speed change gear: 6,5 l ATF type A suffix A group gear and rear axle: 33 l SAE 85W/90 MIL-L-2105 B API GL 5
Oil changing interval:	1000 hours

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Total ratios and speeds

Group	Gear	Total ratio engine : driving wheel	Nominal travelling speed *) at rated engine speed km/h	Nominal travelling speed *) at standard p.t.o. speed 540 rev/min km/h
Creep	1	414,19	1,34	1,20
	2	295,35	1,89	1,68
	3	208,13	2,68	2,39
	4	146,97	3,79	3,38
	5	105,22	5,29	4,72
	R	293,27	1,90	1,69
Field	1	142,24	3,91	3,49
	2	101,43	5,49	4,89
	3	71,47	7,79	6,95
	4	50,47	11,03	9,84
	5	36,13	15,41	13,74
	R	100,71	5,53	4,93
Road	1	86,48	6,44	5,74
	2	61,67	9,03	8,05
	3	43,45	12,81	11,42
	4	30,69	18,14	16,18
	5	21,97	25,34	22,60
	R	61,23	9,09	8,11

*) calculated with the INDEX-RADIUS 695 mm WdK 154

Power take-off

Main p.t.o.: Independent p.t.o.;
driven from the dry multi-disc clutch;
at rear of tractor;
height above ground 545 mm;
in tractor's median plane;
29 x 34,9 x 8,7 mm = 1 3/8in, 6 splines;
DIN 9611 Form 1; BS 1495; ASAE S 203.7;
2 speeds are preselectable:

540 rev/min p.t.o.
606 rev/min at rated engine speed;
standard p.t.o. speed 540 rev/min at
1895 rev/min engine speed

800 rev/min p.t.o.
860 rev/min at rated engine speed;
standard p.t.o. speed 540 rev/min at
1335 rev/min engine speed

p.t.o. speeds may be set by aid of
tractormeter;
direction of rotation clockwise, viewed
from tractor rear

Secondary p.t.o.: The main p.t.o. can be shifted to
ground speed p.t.o.;
travelling distance per 1 rev of the p.t.o.:
in creep group 0,077 m
in field group 0,223 m
in road group 0,366 m

1 rev of driving wheel for:
57,12 rev of p.t.o. in creep group
19,61 rev of p.t.o. in field group
11,93 rev of p.t.o. in road group

The ground speed p.t.o. can also be
driven stationary, whith the group gear
shifting lever in neutral position

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Secondary p.t.o.: (Continuation)

The following p.t.o.-speeds are selectable

Gear	P.t.o.-speed at rated engine speed rev/min
1	235
2	411
3	585
4	828
5	1155
R	414

Direction of rotation clockwise in forward speeds, anticlockwise in reverse speed, viewed from tractor rear

Power lift

Hydraulic system: Own make;
open system;
BOSCH gear type pump with 11 cm^3/rev delivery;
driven from gear box;
ram, lift shaft and control valve in unit construction;
BOSCH control valve for lifting, sinking and floating position, power and position control;
maximum oil pressure 200 bar;
1 single acting ram
bore 100 mm, stroke 130 mm;
no overpressure relief valve for ram;
up to 3 oil tappings with single or double acting additional control valves at rear of tractor;
hydraulic oil tank with 11 l capacity;
up to 5,5 l may be taken off through oil tappings when tractor is travelling or stationary

Oil quality: ATF type A suffix A

Oil changing interval: 1000 hours

Implement linkage:	Three-point linkage category II DIN 9674; lift rods adjustable from 565 to 715 mm; lifting range above ground with short lift rods from 370 to 975 mm long lift rods from 55 to 730 mm
Holed bar:	Short bar, fitted on the clevis of lower links; length between the ball joints 683 mm; thickness of the bar 30 mm; width 70 mm; centre hole and 3 holes on either side with 80 mm distance each, 1 further hole on either side with 40 mm distance each; totally 9 holes; all holes 22 mm diameter; height above ground adjustable by power lift from 70 to 990 mm depending on lift rods length, measured at the surface of the bar; in any height of the lift range hydraulically lockable; with lower links in horizontal position distance of holes centre line to rear axle centre 970 mm to p.t.o. shaft end 540 mm

Pull attachment

Trailer hitch:	Own make; height above ground adjustable to 735, 785, 835 or 885 mm by shifting hitch; diameter of clevis hole 30 mm; distance of clevis hole to rear axle centre 482 mm; permissible vertical load 1500 kg
Towing hitch:	At front of tractor; height above ground 680 mm

Steering

ZAHNRADFABRIK FRIEDRICHSHAFEN AG
column hydrosteering model 7409;
own oil circuit;
PLESSEY high pressure rotary pump with
6 l/min delivery; directly driven by engine;
oil tank with 2,5 l capacity in unit
construction with pump;
recommended oil quality ATF type A suffix A;
oil changing interval 1000 hours

Brakes

Parking brake: Mechanically acting shoe type brake;
acting on 2 brake drums with 250 mm diameter
on the differential half shafts;
operated by hand lever with ratchet

Service brake: Mechanically acting shoe type brake;
acting on 2 brake drums with 250 mm diameter
on the differential half shafts;
pedal operated

Steering brakes: Divided pedal of service brake;
for normal use locked together

Wheels

Steered wheels: Two pneumatics at front 7,50-16 AS 6 ply
maximum permissible load per tyre 857 kg
at 2,25 bar inflation pressure and 25 km/h;
track width 1500 mm;
rims 5,50 F x 16

Driving wheels: Two pneumatics at rear 16,9-30 AS 6 ply;
radial type tyre casing;
maximum permissible load per tyre 2016 kg
at 1,3 bar inflation pressure and 25 km/h;
track width 1320 and 1500 mm
adjustable by turning wheels;
rims DW 12 x 30

Wheel base: 2125 mm

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Cab

Own make;
square tubes welded together;
entrance from the right and left hand side;
1 entrance step on either side,
480 mm above ground;
height of platform above ground 715 mm

Seat

GRAMMER
DS 44/3JV;
upholstered seat with back rest;
adjustable spring with shock absorber;
height of unloaded seat above platform
570 mm not adjustable;
for and aft adjustable about 100 mm

Weights

Ready for use, as tested

		without driver	with driver
Without ballast:	front	1132 kg	1149 kg
	rear	1893 kg	1951 kg
	total	3025 kg	3100 kg
Front ballast:	12 front weights	27 kg each	324 kg
Rear ballast:	No wheel weights available water in the tyres		481 kg
With ballast:	front	1560 kg	1575 kg
	rear	2270 kg	2330 kg
	total	3830 kg	3905 kg

Dimensions

Total length:	3640 mm with 3 point linkage without ballast 4140 mm with 3 point linkage with ballast
Total width:	1940 mm ab 1320 and 1500 mm track width
Total height:	2400 mm to top of cab
Ground clearance:	480 mm below gear box

Number of grease points 11

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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	130 x 130	1000	820
Side lights	96 x 66	1460	350
Rear lights	96 x 66	1460	350
Reflectors			
1st pair	75 ø	750	480
2nd pair	75 ø	1460	180

Permissible total weights and axle loads
for all available wheel equipment

Tyres front	Tyres rear	Permissible total weight kg	Permissible front axle load kg	Permissible rear axle load kg
7,50-16	16,9-30		1490	3800
7,50-18	16,9-30		1620	3800
7,50-18	13,4-36		1620	3060
7,50-18	16,9-34	4800	1620	3740
11,5/80-15	16,9-34		1410	3740
7,50-18	15,5-38		1620	3380
11,5/80-15	15,5-38		1410	3380

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FUELS AND LUBRICANTS USED IN TESTS

Fuel	ARAL-DIESEL-fuel DIN 51 601
	specific gravity at 15°C
	at engine tests 0,840 kg/l
	at p.t.o. tests 0,826 kg/l
	at drawbar tests 0,836 kg/l
Engine oil:	ESSO HD 20W/20 MIL-L-2104 B
Transmission oil:	Speed change gear ESSO ATF type DEXRON B
	group gear, rear axle, differential, final drive ESSO SAE 85W/90
Hydraulic oil:	ESSO ATF type DEXRON B

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COMPULSORY TESTS

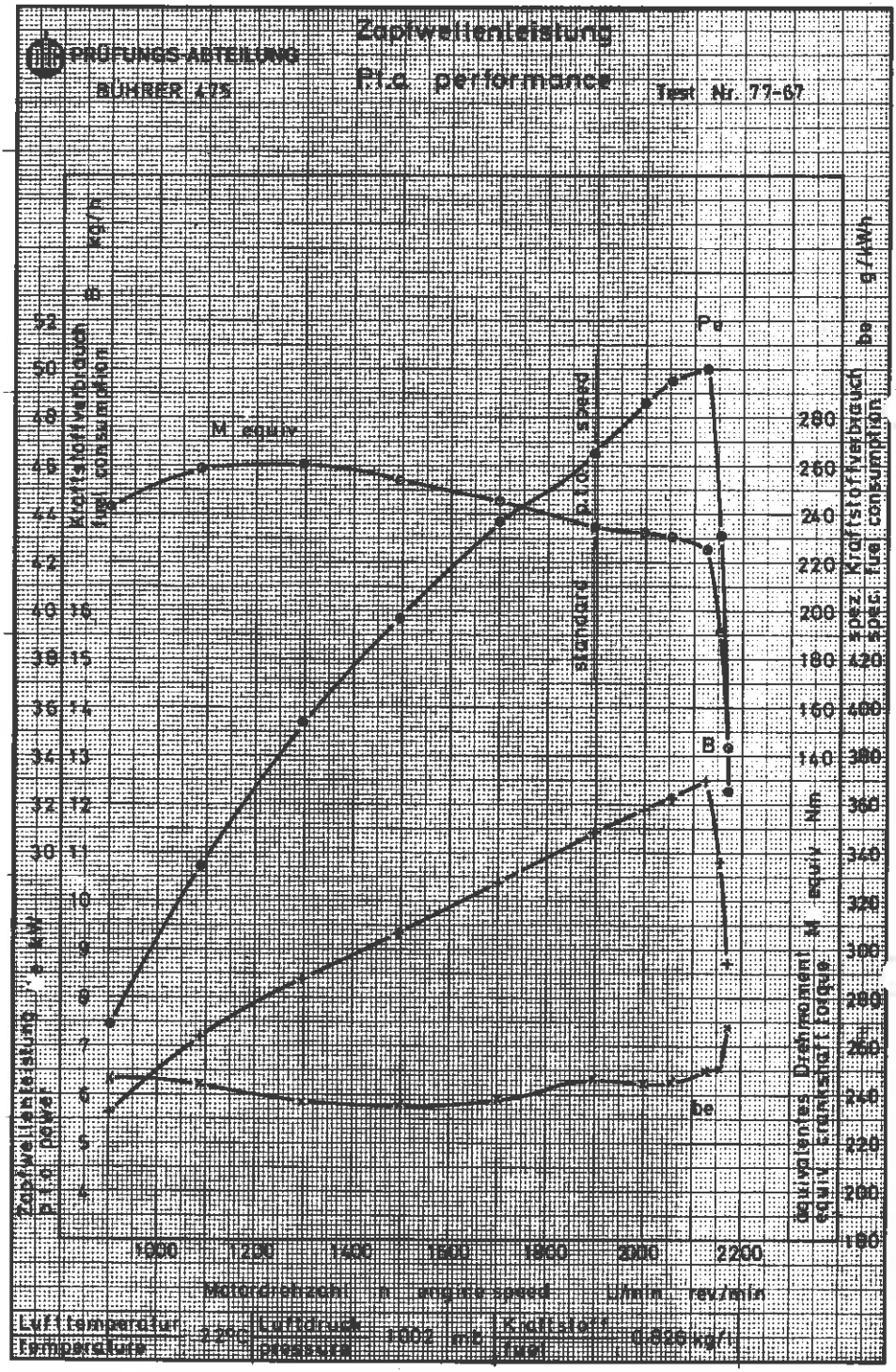
(1) MAIN POWER TAKE-OFF PERFORMANCE

Date of tests: 12th October 1977
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						
50.0	2125	606	15.12	12.49	250	3.31
At standard p.t.o. speed (540 rev/min)						
46.5	1895	540	13.84	11.44	246	3.36
At the speed recommended for drawbar work						
50.0	2125	606	15.12	12.49	250	3.31
Part loads						
(i) 85% of the torque at maximum power at 2-hour test						
43.1	2152	613	13.06	10.79	251	3.30
(ii) unloaded						
-	2225	634	3.99	3.29	-	-
(iii) 50% of the load defined in (i)						
21.8	2182	622	8.30	6.86	314	2.63
(iv) maximum power						
50.0	2125	606	15.12	12.49	250	3.31
(v) 25% of the load defined in (i)						
11.0	2199	627	6.14	5.07	461	1.79
(vi) 75% of the load defined in (i)						
32.6	2170	618	10.54	8.71	267	3.09

No load maximum engine speed: 2225 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 225 Nm
Maximum equivalent crankshaft torque: 260 Nm at 1297 rev/min of the engine

Mean atmospheric conditions:	temperature	22 °C
	pressure	1002 mbar
	relative humidity	60 %
Maximum temperatures:	coolant	76 °C
	engine oil	118 °C
	fuel	26 °C
	engine air intake	24 °C


Zapfwellenleistung
PTO performance
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Pe
B
be
M equiv
standard p.t.o. speed
Zapfwellenleistung P.t.o. power kW
Kraftstoffverbrauch fuel consumption kg/h
Kraftstoffverbrauch fuel consumption g/kWh
Drehmoment M equiv Nm
Motordrehzahl n engine speed U/min rev/min
Luft temperatur temperature 22°C
Luftdruck pressure 1002 mb
Kraftstoff fuel 0.826 kg/l

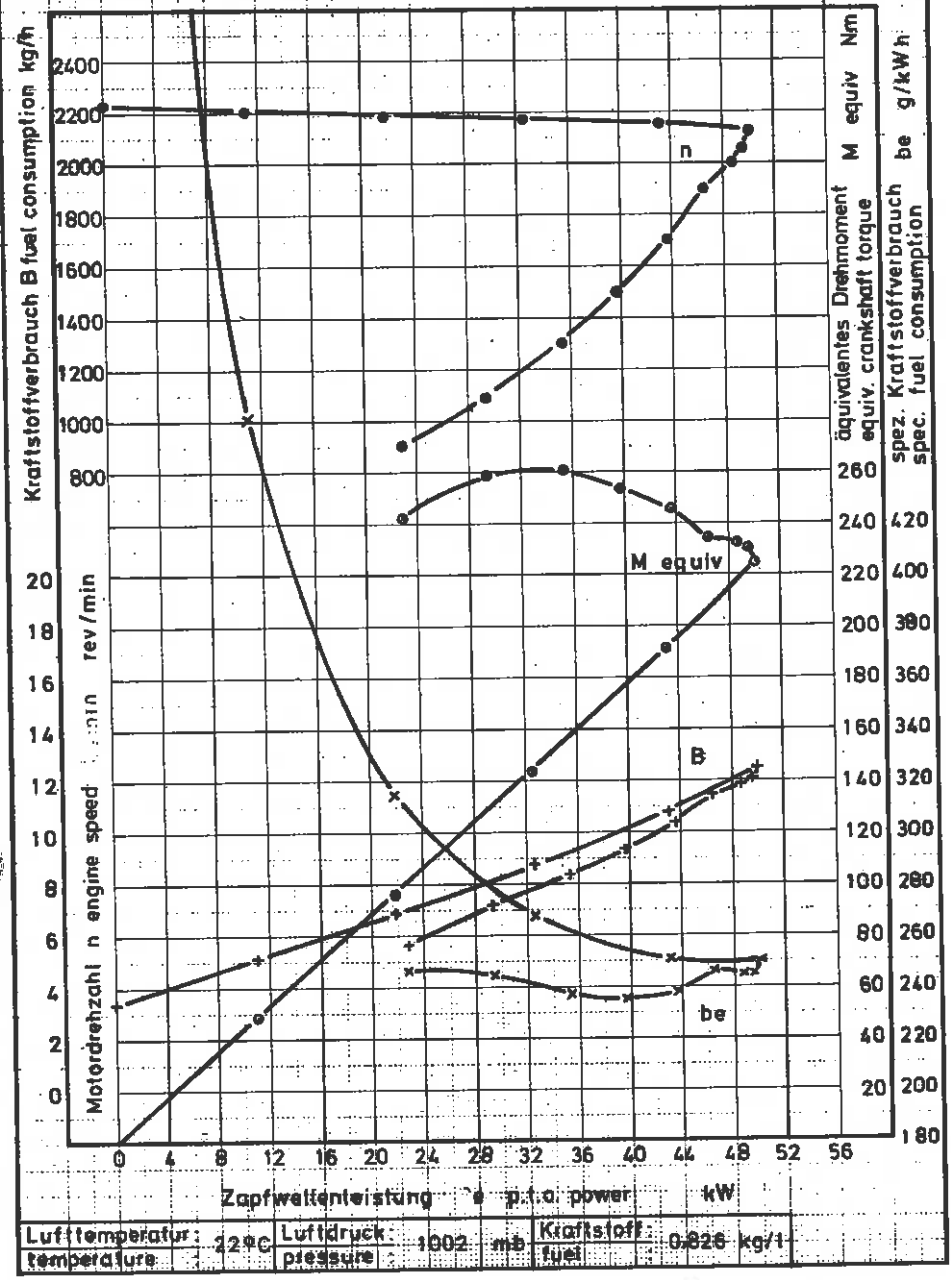
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Zapfwellenleistung

P.t.o. performance

Test Nr. 77-67



Lufttemperatur: temperature	22°C	Luftdruck: pressure	1002	mb	Kraftstoff: fuel	0.826	kg/l

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(2) DRAWBAR PERFORMANCE

Date of tests: 14th till 25th October 1977
Type of track: Concrete

Gear No. and group	Speed km/h	Power kW	Drawbar pull N	Engine speed rev/min	Slip of wheels %	Specific energy kWh/l
(i) MAXIMUM POWER with ballast height of drawbar above ground 720 mm						
1 creep	1,19	11,9	36120	2192	15,0	1,72
2 creep	1,67	16,8	36160	2184	14,8	2,05
3 creep	2,35	23,5	36060	2169	14,8	2,38
4 creep	3,29	32,9	36000	2155	15,1	2,61
1 field	3,39	33,7	35780	2150	15,0	2,67
5 creep	4,68	42,0	32300	2125	12,0	2,76
2 field	4,89	42,5	31280	2125	11,4	2,79
1 road	5,87	44,4	27240	2125	9,2	2,91
3 field	7,23	44,3	22080	2125	7,6	2,91
2 road	8,45	45,2	19240	2125	6,8	2,97
4 field	10.46	44,6	15350	2125	5,5	2,93
3 road	12,28	45,4	13300	2125	4,5	2,99
5 field	14,91	43,3	10460	2125	3,6	2,88
(ii) FIVE-HOUR-TEST at 75% of pull at maximum power in 1st gear of road group						
1 road	6,10	34,6	20430	2150	6,8	2,92
(iii) FIVE-HOUR-TEST at pull corresponding to 15% wheel slip in test (i)						
1 field	-	-	36160	-	-	-
(iv) MAXIMUM POWER without ballast height of drawbar above ground 630 mm						
5 creep	4,55	38,2	30260	2143	15,0	2,70
2 field	4,71	39,5	30180	2140	15,0	2,77
1 road	5,72	43,9	27640	2125	11,5	2,92
3 field	7,14	43,8	22080	2125	8,5	2,92
2 road	8,37	45,0	19360	2125	7,4	3,00
4 field	10,40	44,6	15440	2125	6,0	2,97
3 road	12,18	45,5	13450	2125	4,9	3,03
5 field	14,73	45,3	11080	2125	4,3	3,01

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

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Tyres make and size front: VEITH 7,50-16 AS 6 ply
rear: PIRELLI CINTURATO 16,9-30 AS 6 ply

Tread bar height at the beginning of drawbar tests
92% of the value when new

Specific fuel consumpt. g/kWh	Temperatures Fuel °C	Coolant °C	Engine-oil °C	Atmospheric conditions Tempe-rature °C	Relative humidity %	Pressure mbar
tyre inflation pressure 1,3 bar rolling radius of tyres under static load 702 mm						
479	22	85	98	21	97	1010
401	21	85	96	20	98	1010
345	21	85	95	20	98	1010
315	20	85	97	18	96	1010
308	22	85	100	21	97	1008
298	22	85	97	21	98	1009
294	22	85	97	21	98	1009
283	20	85	99	19	98	1010
283	19	85	98	17	98	1010
277	18	85	104	16	98	1010
282	17	85	102	16	98	1010
275	18	85	102	16	98	1010
286	18	85	98	16	98	1010
282	21	85	97	21	98	1010
-	22	85	98	21	98	1010
tyre inflation pressure 1,3 bar rolling radius of tyres under static load 703 mm						
310	16	85	98	13	98	1006
304	15	85	98	13	98	1006
287	16	85	101	13	98	1006
287	17	85	98	11	98	1006
280	16	85	102	12	98	1006
282	17	85	105	16	95	1006
276	20	85	99	16	97	1006
278	16	85	97	13	98	1006

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

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(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 7,50-16 AS Front 6 ply
rear: 16,9-30 AS 6 ply

Track of wheels front: 1500 mm
rear: 1500 mm

	With brakes left-hand m	With brakes right-hand m	Without brakes left-hand m	Without brakes right-hand m
Radius of turning space	3,56	3,44	3,89	3,78
Radius of turning circle	3,42	3,30	3,75	3,64

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	872 mm
Distance forward from rear axle centre	798 mm
Distance from tractor's median plane	0 mm

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(5) BRAKING PERFORMANCE

A) SERVICE BRAKE

Date of tests: 19th and 20th October 1977
Type of track: Concrete
Type of decelerometer: MOTO METER-Bremsverzögerungs- und Pedalkraftschreiber

Weight of ballasted tractor: 3905 kg with driver

Cold brakes

		With ballast	Without ballast
Travelling speed	km/h	25,0	25,0
Deceleration	m/s^2	3,9	4,0
Stopping distance	m	7,6	7,8
Force on pedal	N	400	380
Force on pedal to achieve a deceleration of 2,5 m/s^2	N	250	220

Brake fade characteristics (hot tests)

Deceleration	hot/cold	%	100	105
Stopping distance	cold/hot	%	100	105
Force on pedal	cold/hot	%	100	95

B) PARKING BRAKE

Tractor facing up 16% slope:
Pull on hand brake 140 N, tractor does not roll

Tractor facing down 16% slope:
Pull on hand brake 140 N, tractor does not roll

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(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 17th October 1977
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2203

Results of test

Gear: 5th road gear
Travelling speed before acceleration: 19,7 km/h
Sound level: 89 dB(A)

(7) NOISE AT THE DRIVER'S EAR LEVEL

Date of tests: 17th October 1977
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2607
Type of frequency analyzer: BRÜEL AND KJAER model 1614
(Fitted with octave filter)

A cab was fitted on tractor

Results of tests

Gear	Drawbar pull at which the tractor develops the maximum sound level N	Travelling speed nominal km/h	Travelling speed effective km/h	Sound level dB(A)
1 creep	29970	1,34	1,17	98
2 creep	29940	1,89	1,67	98
3 creep	29920	2,68	2,32	98,5
4 creep	30090	3,79	3,18	99
1 field	29890	3,91	3,48	99,5
5 creep	29540	5,29	4,69	100
2 field	29450	5,49	4,71	101
1 road	26790	6,44	5,81	100,5
3 field*)	21850	7,79	7,24	100,5
2 road	19120	9,03	8,45	101
4 field	15290	11,03	10,48	100,5
3 road	13150	12,81	12,23	101
5 field	10490	15,41	14,83	101
4 road	8980	18,14	17,45	101
5 road	light load	25,34	26,34	99,5

*) The 3rd field gear corresponds to the travelling speed nearest to 7,5 km/h

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(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

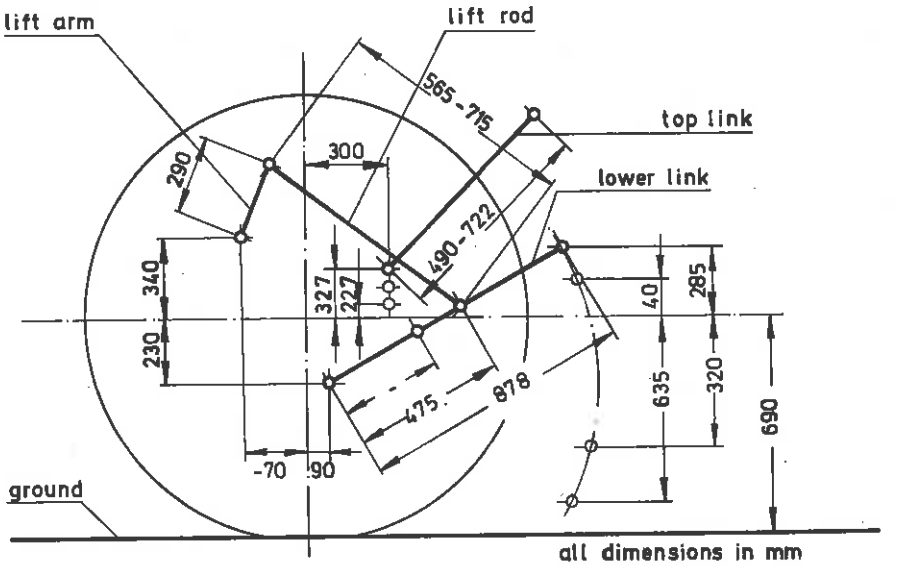
Date of tests: 17th November 1977

HYDRAULIC PUMP

(1) Opening pressure of relief valve in remote circuit	150 bar
Sustained pressure by open relief valve	201 bar
(2) Pump delivery rate at minimum pressure and maximum engine speed	31,7 l/min
(3) Pump delivery rate	23,7 l/min
Delivery pressure	191 bar
Hydraulic Power	7,55 kW

POWER LIFT

Dimensions of linkage geometry for the table on page 26



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LIFTING FORCES

Lifting heights relative to horizontal lower links

mm	-405	-400	-300	-200	-135	-100	-98	-90	0

at hitch points maximum mechanical advantage

N								32400	31450

minimum mechanical advantage

N	31630	31625	31600	28550		26800			25500

Max. force exerted throughout the whole range 26850 N

Front of tractor does not lift with maximum allowable front ballast

at test frame maximum mechanical advantage

N					40700	37450			31400

minimum mechanical advantage

N							33500		30350

Max. force exerted throughout the whole range 25750 N

Force at which front of tractor lifts with maximum allowable front ballast 21100 N

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+100	+200	+218	+270	+300	+400	+500	+515	+600	+665

lift rods 565 mm long

30200	28550			27150	26850	26850	26850		

lift rods 715 mm long

25050	25050		25150						

lift rods 715 mm long

28370	26200	25750							

lift rods 655 mm long

27500	26330			21600	19080	17100		15200	14530

All values of forces for pressure at max. hydraulic power 191 bar, see page 23; calculated from measurements at max. oil pressure 201 bar

LINKAGE GEOMETRY when connected to the standard frame	Maximum mechanical advantage	Minimum mechanical advantage
Projected length in side view:		
Lower links	878 mm	878 mm
Lift arms	290 mm	290 mm
Lift rods	715 mm	565 mm
Top link	580 mm	573 mm
Distance of lift rod connection point from pivot point of lower link	475 mm	475 mm
The following dimensions are given relative to rear axle centre line 690 mm above ground		
Lower link pivot point	90 mm behind, 230 mm below	90 mm behind, 230 mm below
Top link pivot point	300 mm behind, 327 mm above	300 mm behind, 227 mm above
Lift arm pivot point	70 mm behind, 340 mm above	70 mm behind, 340 mm above
Maximum and minimum height of lower link hitch points	40 mm above, 635 mm below	285 mm above, 320 mm below
Height of lower link hitch points above ground when locked in highest transport position	730 mm	975 mm

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BÜHRER 475

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OPTIONAL TESTS

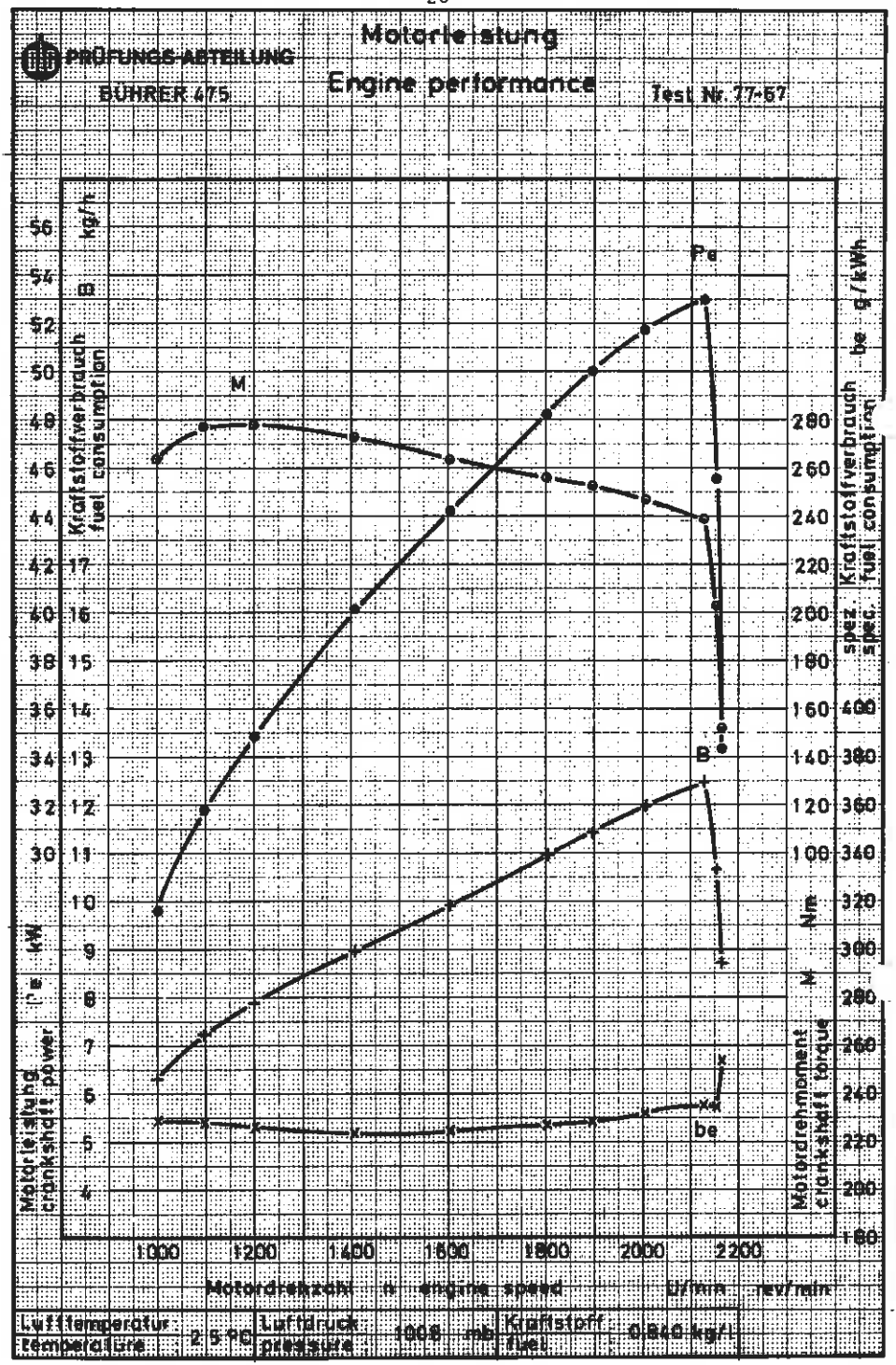
(1) ENGINE PERFORMANCE

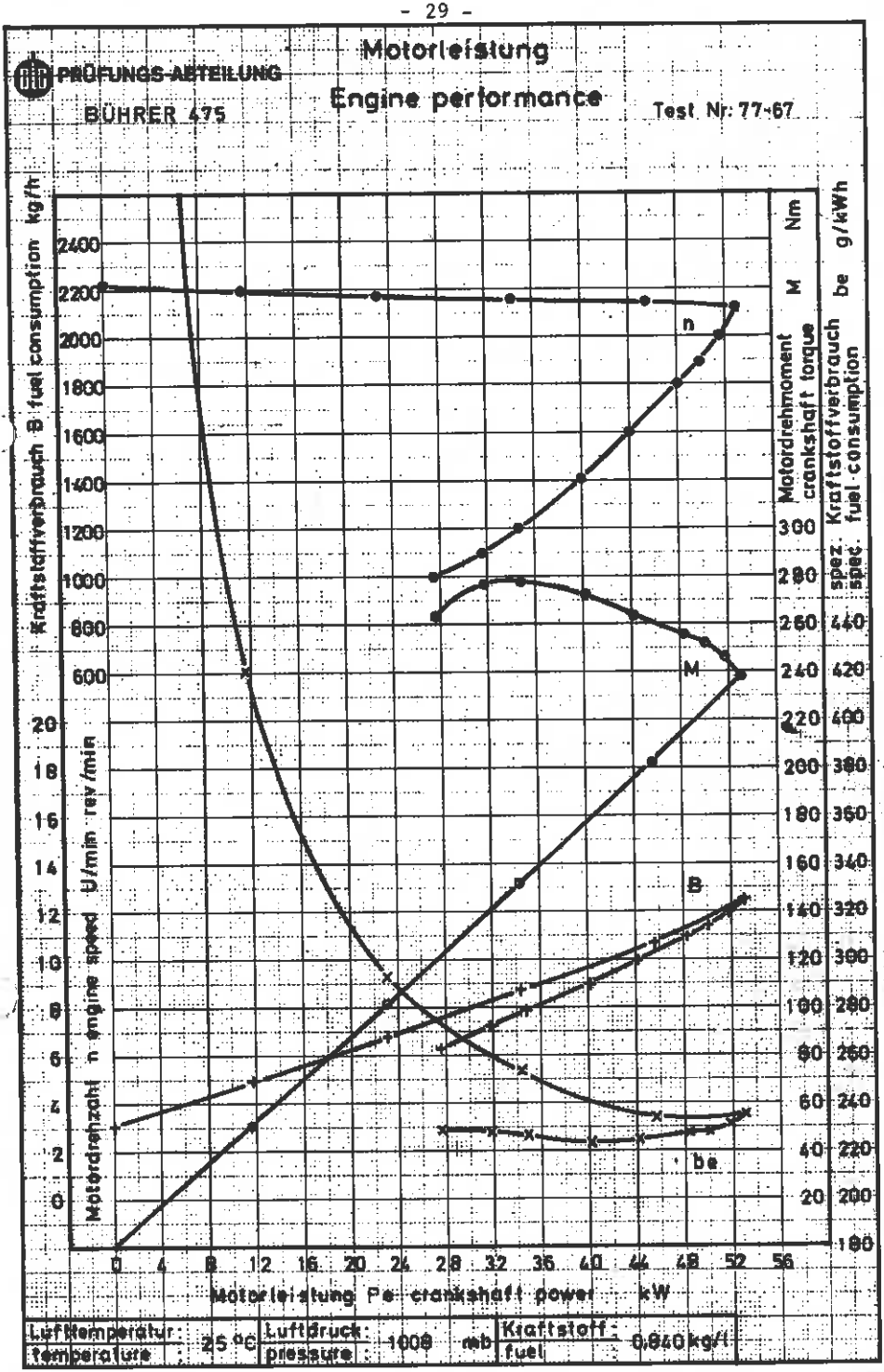
Date of tests: 27th and 28th September 1977
Type of dynamometer: SCHENCK eddy-current dynamometer W 150

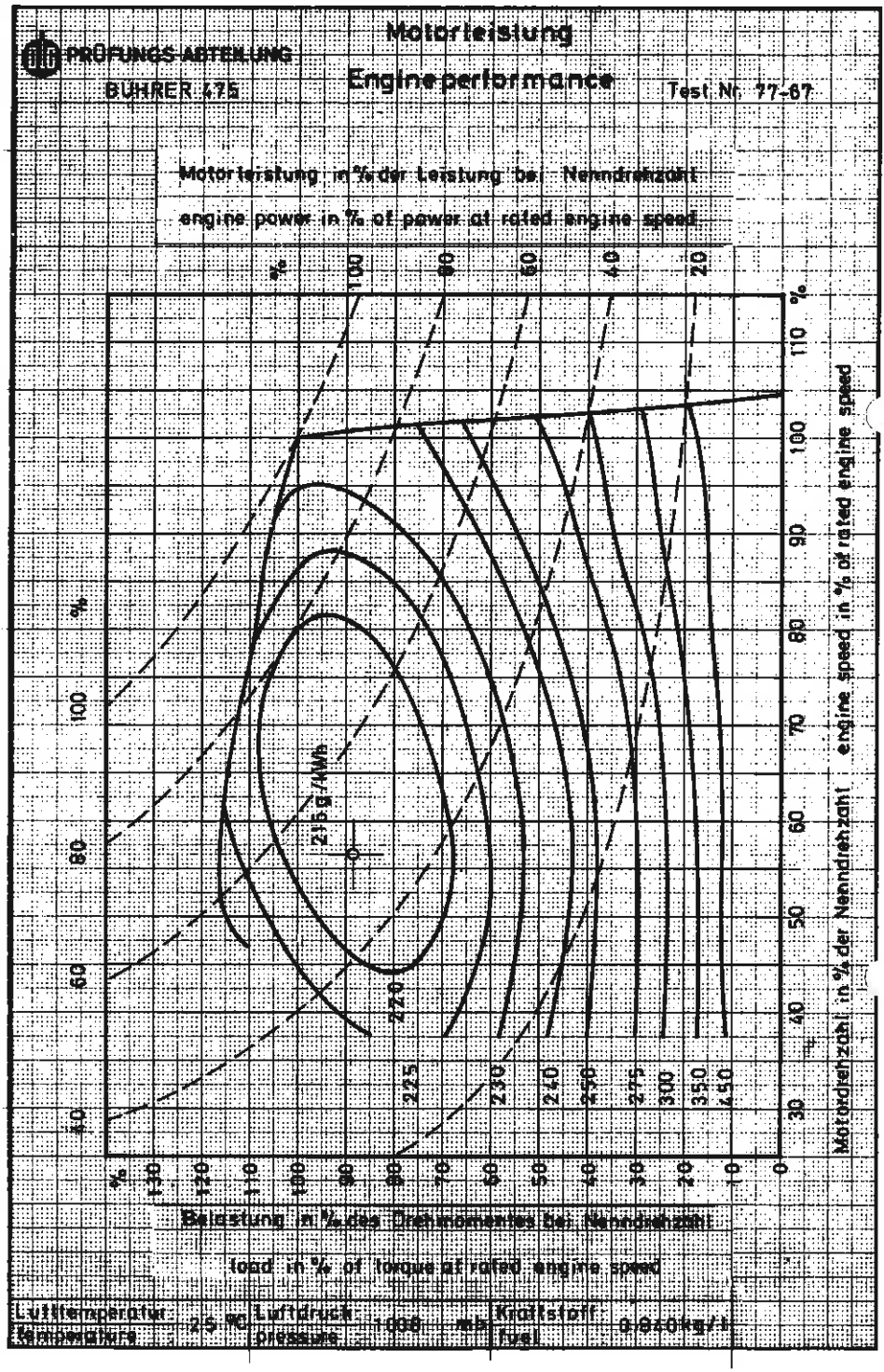
Power kW	Engine speed rev/min	Fuel consumption total l/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power					
At 2-hour test					
53.0	2125	14.83	12.46	235	3.57
At standard p.t.o. speed (540 rev/min)					
50.0	1895	13.60	11.42	228	3.68
At the speed recommended for drawbar work					
53.0	2125	14.83	12.46	235	3.57
Part loads					
(i) 85% of the torque at maximum power at 2-hour test					
45.5	2149	12.69	10.66	234	3.59
(ii) unloaded					
-	2221	3.65	3.06	-	-
(iii) 50% of the load defined in (i)					
23.1	2177	8.03	6.75	293	2.87
(iv) maximum power					
53.0	2125	14.83	12.46	235	3.57
(v) 25% of the load defined in (i)					
11.6	2199	5.84	4.90	421	2.00
(vi) 75% of the load defined in (i)					
34.3	2162	10.37	8.71	254	3.31

Optimum fuel consumption: 216 g/kWh at 26,5 kW and 1202 rev/min
No load maximum engine speed: 2221 rev/min
Torque at maximum power (2 hours): 238 Nm
Maximum torque: 277 Nm at 1200 rev/min of the engine

Mean atmospheric conditions:	temperature	25 °C
	pressure	1008 mbar
	relative humidity	65 %
Maximum temperatures:	coolant	76 °C
	engine oil	106 °C
	fuel	25 °C
	engine air intake	26 °C


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Motorleistung
Engine performance
Test Nr. 77-67
Pe
M
B
be
Motorleistung Pe kW
Kraftstoffverbrauch B kg/h
fuel consumption
spez. Kraftstoffverbrauch be g/kWh
spec. fuel consumption
Motordrehmoment M Nm
crankshaft torque
Motordrehzahl n engine speed U/min rev/min
1000 1200 1400 1600 1800 2000 2200
Lufttemperatur 25 °C
temperature
Luftdruck 1008 mb
pressure
Kraftstoff 0,840 kg/l
fuel


Motorleistung
Engine performance
PRÜFUNGS-ABTEILUNG
BÜHRER 475
Test Nr: 77-67
Kraftstoffverbrauch B fuel consumption kg/h
Motordrehzahl n engine speed U/min rev/min
Motordrehmoment crankshaft torque M Nm
spez. Kraftstoffverbrauch spec. fuel consumption be g/kWh
n
M
B
be
Motorleistung Pe crankshaft power kW
Lufttemperatur temperature : 25 °C
Luftdruck pressure : 1009 mb
Kraftstoff fuel : 0,840 kg/l


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Motorleistung
Engine performance
Test Nr. 77-67
Motorleistung in % der Leistung bei Nenndrehzahl
engine power in % of power at rated engine speed
g
%
100
80
60
40
20
110 %
100
90
80
70
60
50
40
30
0
Motordrehzahl in % der Nenndrehzahl engine speed in % of rated engine speed
%
100
80
60
40
235 g/kWh
220
225
230
240
250
275
300
350
450
%
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Belastung in % des Drehmomentes bei Nenndrehzahl
load in % of torque at rated engine speed
Lufttemperatur 25 °C Luftdruck 1000 mb Kraftstoff 0,82 kg/l
temperature pressure fuel

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