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

O.E.C.D. No. 664



Agricultural Tractor EICHER 3356 A
trade name: EICHER 4060 A

Manufacturer
Gebr. Eicher, Traktoren- und Landmaschinenwerke GmbH
D-8380 Landau a. d. Isar

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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: January till November 1979

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: 6th March 1980 O.E.C.D. No. 664

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/cm^2	or 1 kp/cm^2	= 0,981 bar
	1000 mbar = 750,1 mm Hg			

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PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

TABLE OF CONTENTS

	Page
Specification of tractor	4 to 14
Fuel and lubricants used in tests	15
COMPULSORY TESTS	
(1) Main power take-off performance	16 to 19
(2) Drawbar performance on a concrete track	20 and 21
(3) Turning space and turning circle	22
(4) Location of centre of gravity	22
(5) Braking performance	23
(6) Ambient noise, emitted by the tractor	24
(7) Noise at the driver's ear level	24
(8) Power lift and hydraulic pump performance	25 to 29
OPTIONAL TESTS	
(9) Engine performance	30 to 33

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

Tractor manufacturer:	GEBRÜDER EICHER GMBH D-8380 Landau
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Landau
Duration of running-in:	Engine 50 hours, tractor appr. 30 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	EICHER
Model:	3356 A trade name 4060 A wheel tractor, unit construction, all-wheel driven
Serial no.:	147651

Engine

Make:	PERKINS ENGINES S.A.
Model:	A 4.203
Type:	4-stroke Diesel-engine, direct injection, water-cooled
Serial no:	JE 22707 U 516 194 E
Cylinders:	4, in line, bore 91,4 mm, stroke 127 mm, displacement 3333 cm^3; compression ratio 16,4 replaceable dry cylinder liners
Valves:	Overhead
Fuel system:	AC DELCO fuel feed pump CAV distributor injection pump MP 54/600/5/2380 manufacturer's production setting 52 mm^3/stroke at rated engine speed; injection timing 26° before TDC; CAV multihole injection nozzles BDLL 150 S, injection pressure 170 bar; CAV fuel filter with replaceable cartridge; capacity of fuel tank 98 l
Governor:	Mechanically acting centrifugal variable speed governor, incorporated in injection pump; governed range of engine speed 620 to 2220 rev/min, rated engine speed 2100 rev/min

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

Air cleaner:	MANN PICLON dry paper element filter with precleaner, with replaceable cartridge and electrically operating maintenance indicator
Exhaust silencer:	LEISTRITZ multi chamber reflexion-type silencer, 100 mm dia, 640 mm long, on the left hand side of engine cowling, mouth showing upward, mouth 2325 mm above ground
Lubrication system:	Forced feed from gear pump; strainer in Sump; PERKINS oil filter in full flow with replaceable cartridge and by-pass valve; cartridge change at all oil changes; oil capacity 8,3 l; recommended oil quality MIL-L-2104 B; recommended oil viscosities: winter SAE 10W summer SAE 20W/20 tropics SAE 30 oil change interval 150 hours
Cooling system:	Pressurized water cooling system with pump; overpressure set to 0,5 bar; thermostat with by-pass; fan with 4 blades, 394 mm dia, cooling water capacity 11,5 l
Starting system:	Electrical LUCAS screw-push starter motor M50G-12V, 3 kW; CAV flame plug in intake pipe
Electrical equipment:	12 Volt BOSCH 3-phase alternator G1 14V 28A, 1 lead-acid battery 88 Ah at 20 hours rating

Transmission

Clutch:	FICHTEL UND SACHS AG dry dual disc clutch DUT 250/250 gearbox drive pedal operated, p.t.o. drive hand lever operated; both discs 250 mm dia
Gear box:	Own make speed change gear with 4 forward speeds and 1 reverse speed, reverse and 1st gear collar shifted, 2nd gear sliding gear shifted, 3rd and 4th gear synchronized; group gear with 2 groups L and H, L-group collar shifted, H-group sliding gear shifted; additional reduction gear with 2 groups RGL and RGH, collar shifted; totally 16 forward speeds and 4 reverse speeds
Rear axle and final drives:	MASSEY-FERGUSON S.A. bevel gear drive with crown wheel and pinion; bevel gear differential with lock, pedal operated, self disengaging; planetary final drives
Driven front axle:	ZAHNRADFABRIK FRIEDRICHSHAFEN AG APL-1251 driven by universal joint shaft, situated on the left hand side of the gear box; under load engageable and disengageable by a wet multi disc type clutch, hand lever operated; bevel gear drive with crown wheel and pinion; bevel gear type differential without lock; planetary final drives

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

Oil capacity:	Gear box in common with rear axle drive and hydraulic system		47 l
	rear axle final drives	each	2 l
	front axle differential		4,5 l
	front axle final drives	each	0,5 l
Oil changing interval:	Front axle differential		900 hours
	other gears		600 hours

Recommended oil qualities:
Front axle differential and all final drives: Transmission oil SAE 90 MIL-L-2105 B

gear box: Multi-purpose transmission oil SAE 20W/30 acc. to MF specif. M 1139

Total ratios and speeds see page 8

Power take-off

Independent p.t.o.,
at rear of tractor,
driven through the second disc of the dual disc clutch;
height above ground 563 mm,
in tractor's median plane;
2 interchangeable p.t.o. shafts for 540 rev/min and 1000 rev/min p.t.o. speeds;
by interchanging p.t.o.-stub-shafts correct speed ratio is selected:

540 rev/min p.t.o.
35 mm dia, 6 splines DIN 9611
and ISO 500 type 1;
599 rev/min at rated engine speed,
standard p.t.o. speed 540 rev/min at
1893 rev/min engine speed

1000 rev/min p.t.o.
35 mm dia, 21 splines DIN 9611
and ISO 500 type 2;
1105 rev/min at rated engine speed,
standard p.t.o. speed 1000 rev/min at
1900 rev/min engine speed

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

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

Total ratios and speeds (tyres 16,9 R 30)

Group	Reduction gear	Gear	Total ratio engine : driving wheels	Nominal travelling speed *) at rated engine speed km/h
Forward speeds				
L	RGL	1	555,91	0,99
		2	379,03	1,45
		3	277,50	1,98
		4	206,74	2,66
	RGH	1	238,86	2,30
		2	162,86	3,38
		3	119,23	4,61
		4	88,83	6,19
H	RGL	1	138,98	3,96
		2	94,76	5,81
		3	69,38	7,93
		4	51,69	10,65
	RGH	1	59,71	9,21
		2	40,71	13,51
		3	29,81	18,46
		4	22,21	24,78
Reverse speeds				
L	RGL	R	408,19	1,35
	RGH	R	175,38	3,14
H	RGL	R	102,05	5,39
	RGH	R	43,85	12,55

*) calculated with the RADIUS INDEX 695 mm as per WdK 154

Power lift

Hydraulic system:

MASSEY-FERGUSON S.A.
hydraulic power lift in unit construction;
MF piston pump with 27 l/min delivery
at rated engine speed,
in gear box, driven by the disc of the p.t.o. clutch; *)
MF control valve for lifting, lowering, draft control, position control and floating position;
top link sensing;
maximum oil pressure 222 bar;
1 single acting main cylinder with 85,6 mm bore and 120,7 mm stroke,
without overpressure relief valve;

MF gear-type pump for auxiliary hydraulic system,
34 l/min delivery at rated engine speed,
in gear box, driven by the disc of the p.t.o. clutch; *)
up to 3 single or double acting additional control valves with oil tappings available

oil capacity 47 l in common with gear box;
max. 13 l may be taken off through oil tappings when tractor is travelling,
15 l when tractor is working stationary

Implement linkage:

Three point linkage category II DIN 9674

lift rods adjustable from 630 to 740 mm;
lifting range above ground with
short lift rods from 425 to 1030 mm
long lift rods from 125 to 835 mm

*) both pumps stall during manipulation of p.t.o. clutch hand lever

Holed bar:	Long bar, fitted on clevis of lower links; length between the joint balls 810 mm, width 80 mm, thickness 30 mm; centre hole and 2 holes on either side between the joint balls, 2 holes on either side outside the distance between the joint balls; totally 9 holes, all holes 33 mm diameter; height above ground adjustable by power lift in the range from 200 to 1105 mm, depending on lift rods length, measured at the surface of the bar; distance of holes centre line with lower links in horizontal position: from rear axle centre 943 mm from p.t.o. shaft end 643 mm

Pull attachment

Swinging drawbar:	Height above ground 430 or 480 mm, adjustable by turning drawbar; hitch hole 33 mm diameter; distance of hitch hole centre: from rear axle centre 700 mm from p.t.o. shaft end 400 mm pivot point 145 mm behind rear axle centre; drawbar lateral swingable about 280 mm to either side
Trailer hitch:	CRAMER height above ground adjustable by shifting to 765 mm and 874 mm, hitch hole 33 mm diameter; distance of hitch hole centre to rear axle centre 490 mm; permissible vertical load 1000 kg
Towing hitch:	707 mm above ground

Steering

ZAHNRADFABRIK FRIEDRICHSHAFEN AG
hydrostatic steering model 8450 with own oil circuit;
PLESSEY gear type pump with 6 cm³/rev delivery,
directly driven by engine;
oil capacity 5 l,
transmission oil ATF type A;
oil changing once a year;
1 double acting ram with 57 mm bore and 150 mm stroke
acting directly on front axle

Brakes

Parking brake: Mechanically acting on the discs of the service brake;
operated by hand lever with ratchet

Service brake: GIRLING
hydraulically acting wet disc brake with 3 lining discs on each differential half shaft,
disc diameter 222 mm,
pedal operated

Steering brake: 2 additional hand levers on the left hand side of driver's seat, acting on the parking brake

Wheels

Steered wheels: 2 pneumatics in front 10,5-20 MPT 6 ply diagonal type tyre casing;
maximum permissible load per tyre 1750 kg at 2,5 bar inflation pressure and 30 km/h;
track width adjustable to 1420 or 1580 mm by turning wheels

rims W 9 x 20

Driving wheels: At front and at rear,
specification of driving front wheels
see at steered wheels;
driving rear wheels:
2 pneumatics 16,9 R 30 6 ply,
radial type tyre casing;
maximum permissible load per tyre 1900 kg
at 1,3 bar inflation pressure and 30 km/h;
track width adjustable from 1430 to 2130 mm
in steps of 100 mm each by turning wheels
and offset lug type rims;
rims W 14L x 30

Wheel base: 2295 mm

Safety frame: Own make
OECD tested
approval no. CSD 0016/1-a (F)

Seat: GRAMMER
DS 85 H4
upholstered seat with back rest;
adjustable spring with shock absorber;
height of driver's platform above
ground 785 mm;
height of unloaded seat above platform
adjustable to 3 positions:
485, 515 and 545 mm;
for and aft adjustable about 150 mm

Number of grease points: 21

Track setting during tests

front axle	1420 mm
rear axle	1430 mm

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

Dimensions

Total length:	3790 mm	without ballast
	3790 mm	with ballast
Total width:	1840 mm	without ballast
	2080 mm	with ballast
Total height:	2340 mm	to top of safety frame
Ground clearance:	335 mm	below front axle differential

Weights

Ready for use as tested, with safety frame

		without driver		with driver
Without ballast:	front	1130 kg		1150 kg
	rear	1820 kg		1885 kg
	total	2950 kg		3035 kg
Front ballast:	5 front weights	40 kg	each	200 kg
Rear ballast:	2 weights per wheel	64 kg	each	256 kg
	water in the tyres			484 kg
With ballast:	front	1350 kg		1370 kg
	rear	2540 kg		2605 kg
	total	3890 kg		3975 kg

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

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	145 x 90	1035	780
Side lights	70 x 20	1420	215
Rear lights	30 x 65	1435	270
Reflectors			
1st pair	130 x 40	1210	280
2nd pair	60 Ø	635	510

Permissible total weights and axle loads for all available wheel equipment

Wheel equipment front	Wheel equipment rear	Permissible total weight kg	Permissible axle load front kg	Permissible axle load rear kg
7,50-20 6 ply 10,5 -18 MPT 6 ply 10,5/80-18 6 ply	14,9-28 6 ply	4000	1900	3000
7,50-20 6 ply 10,5 -20 MPT 6 ply	14,9-30 6 ply	4000	1900	3000
10,5 -20 MPT 6 ply	16,9-30 6 ply	4000	1900	3000
7,50-20 6 ply 10,5 -18 MPT 6 ply 10,5/80-18 6 ply	12,4-32 6 ply	4000	1900	2880
7,50-20 6 ply 10,5 -18 MPT 6 ply 10,5/80-18 6 ply	9,5-36 6 ply	4000	1900	2410
10,5 -20 MPT 6 ply	12,4-36 6 ply	4000	1900	3000
8,3 -24 6 ply	13,6-36 6 ply	4000	1730	3000

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

FUELS AND LUBRICANTS USED IN TESTS

Fuel:	ARAL Diesel-fuel DIN 51601	
	specific gravity at 15°C:	
	at engine tests	0,836 kg/l
	at p.t.o. tests	0,826 kg/l
	at drawbar tests	0,828 kg/l
Engine:	ESSO ESSOLUBE HDX	SAE 20W/20
Transmission, rear axle and hydraulic:	ESSO multi purpose oil	20W/30
Front axle differential, front and rear axle final drives:	ESSO transmission oil	SAE 90
Steering:	OEST ATF oil type A	

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

COMPULSORY TESTS

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

Date of tests: 29th March 1979
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						
39.0	2100	599	13.03	10.77	276	2.99
At standard p.t.o. speed						
37.3	1893	540	12.18	10.06	270	3.06
At the speed recommended for drawbar work						
39.0	2100	599	13.03	10.77	276	2.99
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						
33.8	2141	611	10.87	8.98	266	3.11
(ii) unloaded						
-	2226	635	3.33	2.75	-	-
(iii) 50% of the load defined in (i)						
17.3	2194	626	6.85	5.66	327	2.53
(iv) maximum power						
39.0	2100	599	13.03	10.77	276	2.99
(v) 25% of the load defined in (i)						
8.7	2208	630	5.07	4.19	481	1.72
(vi) 75% of the load defined in (i)						
25.8	2177	621	8.69	7.18	279	2.96

PRÜFUNGS-ABTEILUNG

EICHER 3356 A

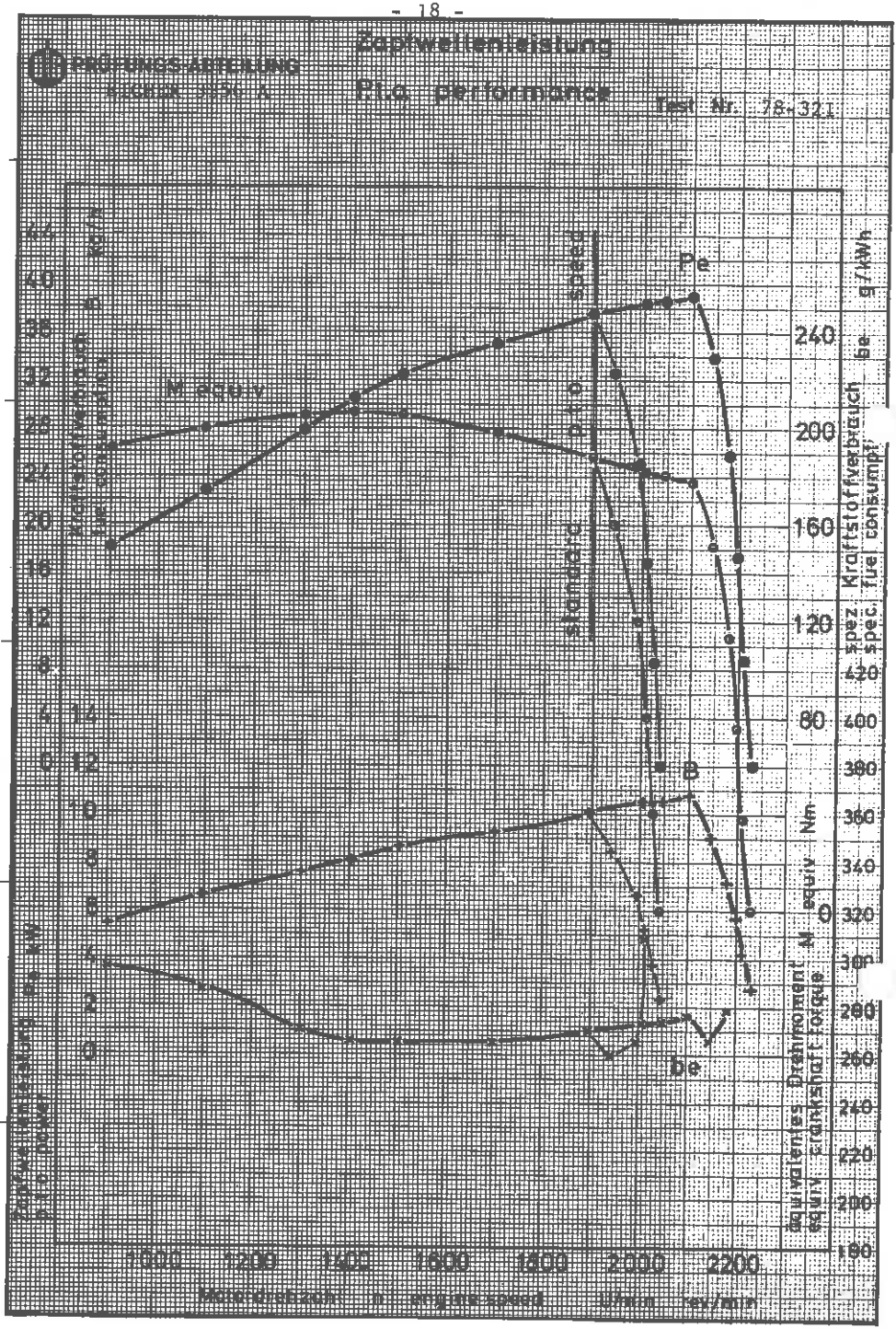
Test No. 78-321

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						
32.5	1939	553	10.21	8.43	260	3.18
(ii) unloaded						
-	2038	581	2.83	2.34	-	-
(iii) 50% of the load defined in (i)						
16.8	2007	573	6.27	5.18	308	2.68
(iv) maximum power						
37.3	1893	540	12.18	10.06	270	3.06
(v) 25% of the load defined in (i)						
8.5	2023	577	4.48	3.70	436	1.89
(vi) 75% of the load defined in (i)						
25.0	1990	567	8.04	6.64	265	3.11

Standard specific fuel consumption (g/kWh): 266/327/260/308

No load maximum engine speed: 2226 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 177 Nm
Maximum equivalent crankshaft torque: 207 Nm at 1402 rev/min of the engine

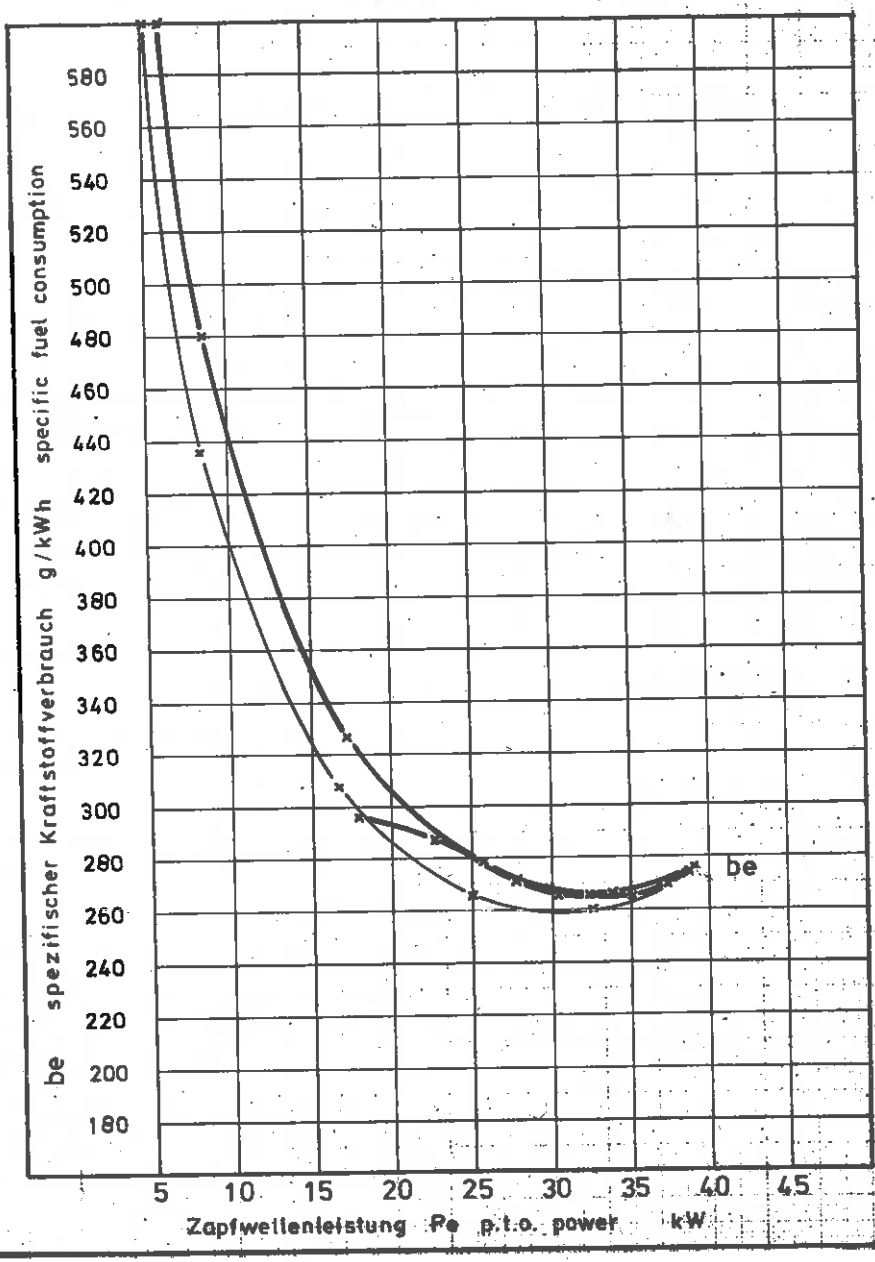
Mean atmospheric conditions:	temperature	16 °C
	pressure	976 mbar
	relative humidity	55 %
Maximum temperatures:	coolant	82 °C
	engine oil	103 °C
	fuel	19 °C
	engine air intake	19 °C


Zapfwellenleistung
PRÜFSTANDSABTEILUNG
P.t.o. performance
Test Nr. 78-321
Pe
B
be
standard speed
Motordrehzahl
engine speed
U/min
rev/min
Nm
g/kWh
kW

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Zapfwellenleistung
P.t.o. performance

Test Nr. 78-321



PRÜFUNGS-ABTEILUNG
EICHER 3356 A

(2) DRAWBAR PERFORMANCE

Date of tests: 12th till 23rd October 1979
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 425 mm					
1 L RGL	0,89	9,7	3956	2194	15,1
2 L RGL	1,30	14,1	3907	2188	14,9
3 L RGL	1,76	19,2	3914	2175	15,0
1 L RGH	2,03	22,3	3946	2159	15,0
4 L RGL	2,31	25,3	3942	2139	15,0
2 L RGH	2,94	31,6	3869	2099	13,2
1 H RGL	3,61	32,9	3282	2099	8,8
3 L RGH	4,30	33,8	2830	2100	7,0
2 H RGL	5,51	33,4	2184	2102	4,7
4 L RGH	5,92	33,9	2060	2103	4,4
3 H RGL	7,65	32,8	1543	2100	3,1
1 H RGH	8,94	33,4	1345	2102	2,8
4 H RGL	10,40	31,6	1093	2101	2,2
2 H RGH	13,29	32,2	871	2104	1,7
(ii) FIVE-HOUR-TEST at 75% of pull at maximum power in 3rd H RGL gear					
3 H RGL	7,88	25,3	1157	2146	2,2
(iii) FIVE-HOUR-TEST at pull corresponding to 15% wheel slip in test (i)					
4 L RGL	2,40	26,4	3956	-	-
(iv) MAXIMUM POWER without ballast height of drawbar above ground 445 mm					
2 L RGH	2,99	25,8	3103	2152	14,9
1 H RGL	3,45	29,7	3098	2124	15,0
3 L RGH	4,13	31,6	2751	2100	11,7
2 H RGL	5,39	32,8	2190	2098	8,3
4 L RGH	5,79	32,9	2048	2102	7,6
3 H RGL	7,60	32,4	1536	2101	5,2
1 H RGH	8,88	33,2	1347	2100	4,4
4 H RGL	10,34	32,7	1139	2103	3,8
2 H RGH	13,24	32,8	893	2101	2,9

Total oil consumption during ten hours duration of tests (ii) and (iii) 75 g/h

PRÜFUNGS-ABTEILUNG

Test No. 78-321

Tyres size front: 10,5-20 MPT 6 ply
rear: 16,9 R 30 6 ply

Tread bar height at the beginning of drawbar tests in % of the value when new: 96% at front, 96% at rear

Specific energy kWh/l	Specific fuel consumpt. g/kWh	Temperatures Fuel °C	Coolant °C	Engine-oil °C	Atmospheric conditions Temperature °C	Relative humidity %	Pressure mbar
tyre inflation pressure 1,5 bar at front, 0,8 bar at rear							
1,63	507	14	82	85	8	74	1007
2,00	414	15	82	85	8	73	1008
2,23	372	16	82	86	8	71	1007
2,42	342	16	82	86	8	69	1007
2,37	349	18	82	86	8	67	1007
2,45	339	14	82	103	10	71	1007
2,52	329	14	82	101	11	66	1008
2,59	320	14	82	98	12	67	1007
2,57	323	14	82	96	12	64	1006
2,62	317	14	82	94	12	61	1006
2,51	330	15	82	93	14	59	1006
2,59	320	15	82	98	15	58	1006
2,41	343	15	82	94	14	58	1006
2,47	335	15	82	93	14	57	1006
2,54	326	13	82	95	10	68	1002
-	-	14	82	98	8	72	1000
tyre inflation pressure 1,5 bar at front, 0,8 bar at rear							
2,54	325	21	82	95	21	74	988
2,38	345	21	82	94	20	78	988
2,42	341	22	82	96	21	75	988
2,48	331	22	82	98	21	73	988
2,50	329	23	82	96	22	72	988
2,48	331	23	82	95	22	70	988
2,53	325	23	82	97	22	70	988
2,50	331	16	82	97	13	89	1006
2,50	330	16	82	97	14	92	1006

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

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 10,5 - 20 MPT 6 ply
rear: 16,9 R 30 6 ply

Track of wheels front: 1420 mm
rear: 1430 mm

Front axle drive disengaged

	With brakes left-hand m	With brakes right-hand m	Without brakes left-hand m	Without brakes right-hand m
Radius of turning space	4,35	4,29	4,93	4,83
Radius of turning circle	4,16	4,09	4,74	4,63

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	791 mm
Distance forward from rear axle centre	870 mm
Distance from tractor's median plane	11 mm to the left

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

(5) BRAKING PERFORMANCE

A) SERVICE BRAKE

Date of tests: 18th and 22nd October 1979
Type of track: Concrete
Type of decelerometer: MOTO-METER-Bremsverzögerungs- und Pedalkraftschreiber

Weight of ballasted tractor with driver 3975 kg

Front axle drive disengaged

Cold brakes

		With ballast	Without ballast
Travelling speed	km/h	25,0	25,0
Deceleration	m/s^2	4,4	4,2
Stopping distance	m	6,6	7,2
Force on pedal	daN	53	43
Force on pedal to achieve a deceleration of 2,5 m/s^2	daN	25	20

Brake fade characteristics (hot tests)

Deceleration	hot/cold	%	102	98
Stopping distance	cold/hot	%	103	100
Force on pedal	cold/hot	%	108	110

B) PARKING BRAKE

Tractor facing up 16% slope
Pull on hand brake 24 daN, tractor does not roll

Tractor facing down 16% slope
Pull on hand brake 22 daN, tractor does not roll

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 18th October 1979
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

Results of test

Gear: 4th H RGH
Travelling speed before acceleration: 19,1 km/h
Sound level: 87,5 dB(A)

(7) NOISE AT THE DRIVER'S EAR LEVEL

Date of tests: 9th October 1979
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

Tractor fitted with EICHER safety frame

Results of tests

Gear no. and group	Drawbar pull at which the tractor develops the maximum sound level daN	Travelling speed nominal km/h	Travelling speed effective km/h	Sound level dB(A)
1 L RGL	3065	0,99	0,87	91,5
2 L RGL	3070	1,45	1,28	92,0
3 L RGL	3095	1,98	1,77	92,5
1 L RGH	3071	2,30	2,01	93,0
4 L RGL	3068	2,66	2,33	94,0
2 L RGH	3066	3,38	3,03	94,5
1 H RGL	3073	3,96	3,52	96,0
3 L RGH	2853	4,61	4,00	96,5
2 H RGL	2136	5,81	5,41	96,5
4 L RGH	2050	6,19	5,79	96,5
3 H RGL *)	1578	7,93	7,56	97,0
1 H RGH	1344	9,21	8,88	96,5
4 H RGL	1119	10,65	10,33	97,0
2 H RGH	884	13,51	13,24	96,5
3 H RGH	599	18,46	18,24	97,0
4 H RGH	light load	24,78	25,41	93,5

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

PRÜFUNGS-ABTEILUNG
EICHER 3356 A

Test No. 78-321

(8) HYDRAULIC PUMP PERFORMANCE AND POWER LIFT

Date of tests: 17th October and 1st November 1979

HYDRAULIC PUMP

Power lift circuit

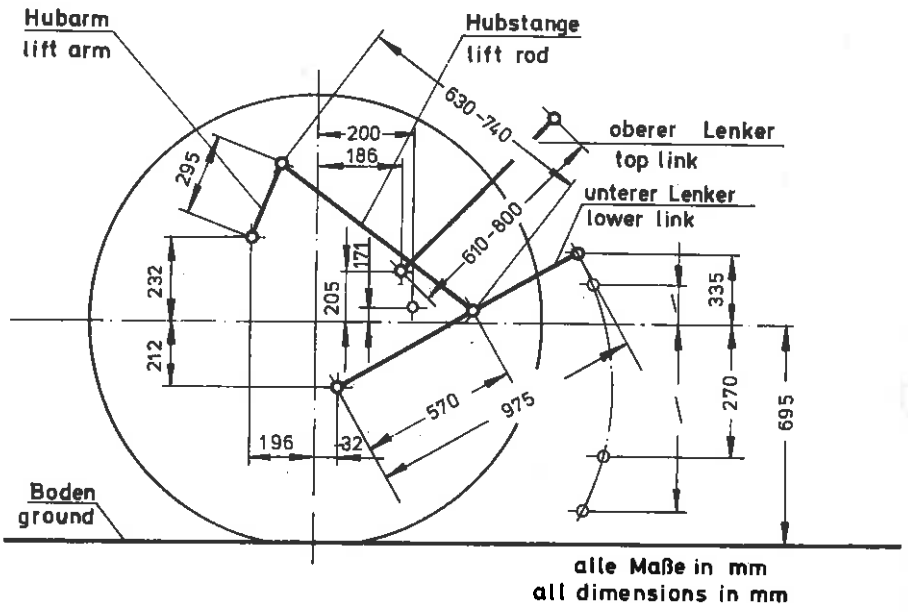
(1)	Opening pressure of relief valve in power lift circuit	140 bar
	Sustained pressure by open relief valve	222 bar
(2)	Pump delivery rate at minimum pressure and rated engine speed	26,9 l/min
(3)	Pump delivery rate at max. hydraulic power	20,6 l/min
	corresponding delivery pressure	180 bar
	power	6,2 kW

Auxiliary hydraulic circuit

(1)	Opening pressure of relief valve in remote circuit	160 bar
	Sustained pressure by open relief valve	182 bar
(2)	Pump delivery rate at minimum pressure and rated engine speed	34,1 l/min
(3)	Pump delivery rate at max. hydraulic power	32,9 l/min
	corresponding delivery pressure	160 bar
	power	8,8 kW

POWER LIFT

Dimensions of linkage geometry for the table on page 27



LINKAGE GEOMETRY when connected to the standard frame	Maximum mechanical advantage	Minimum mechanical advantage
Projected length in side view:		
Lower links	975 mm	975 mm
Lift arms	295 mm	295 mm
Lift rods	630 mm	630 mm
Top link	766 mm	753 mm
Distance of lift rod connection point from pivot point of lower link	570 mm	570 mm
The following dimensions are given relative to rear axle centre line 695 mm above ground		
Lower link pivot point	32 mm forward, 212 mm below	32 mm forward, 212 mm below
Top link pivot point	186 mm behind, 205 mm above	200 mm behind, 171 mm above
Lift arm pivot point	196 mm forward, 232 mm above	196 mm forward, 232 mm above
Maximum and minimum height of lower link hitch points	335 mm above, 270 mm below	335 mm above, 270 mm below
Height of lower link hitch points above ground when locked in highest transport position	1030 mm	1030 mm

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EICHER 3356 A

LIFTING FORCES

Lifting heights relative to horizontal lower links

mm	-358	-300	-200	-100	-68	-63	-58	0	+100
at hitch points maximum mechanical advantage									
daN							1800	1950	2080
minimum mechanical advantage									
daN	1520	1580	1690	1770				1840	1860

Max. force exerted throughout the whole range 1800 daN

Front of tractor does not lift

at test frame maximum mechanical advantage									
daN						1850		1850	1870
minimum mechanical advantage									
daN					1770			1770	1770

Max. force exerted throughout the whole range 1460 daN

Front of tractor does not lift if front axle is ballasted to its maximum allowable load (1900 kg)

PRÜFUNGS-ABTEILUNG

Test No. 78-321

+200	+300	+352	+400	+500	+547	+600	+647	+692

lift rods 630 mm long

2120	2100		2080	2100	2140			

lift rods 740 mm long

1860	1880	1950						

lift rods 630 mm long, high top link pivot point

1830	1770		1680	1570		1510	1460	

lift rods 630 mm long, low top link pivot point

1720	1660		1570	1490		1400		1340

All values of forces for pressure 180 bar at maximum hydraulic power, see page 25; calculated from measurements at max. oil pressure 222 bar

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EICHER 3356 A

Test No. 78-321

OPTIONAL TESTS

(9) ENGINE PERFORMANCE

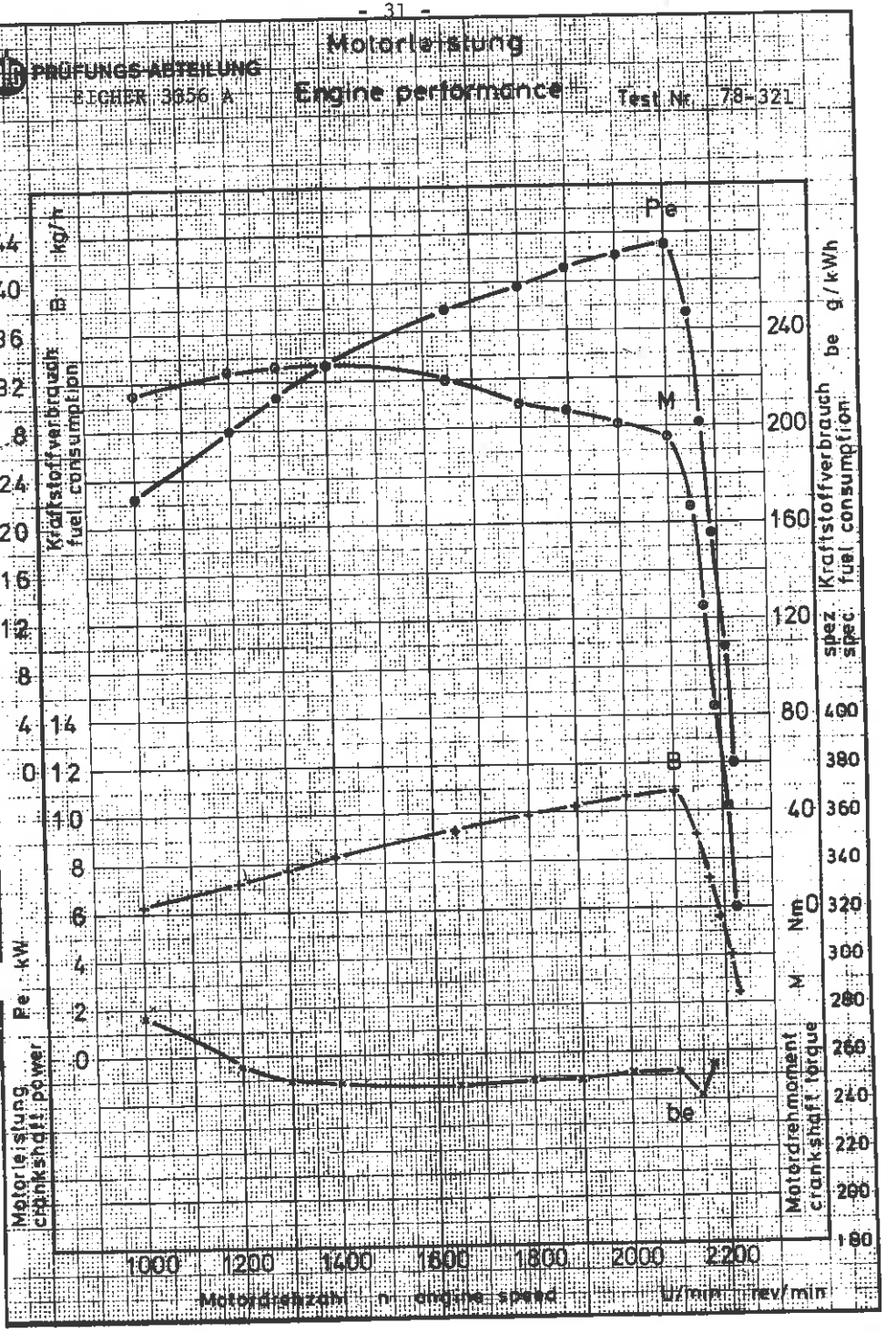
Date of tests: 23rd and 30th January 1979
Type of dynamometer: SCHENCK eddy-current dynamometer W 150

Power kW	Engine speed rev/min	Fuel consumption total 1/h	Fuel consumption total kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power					
At 2-hour test					
43.1	2100	12.95	10.83	251	3.33
At standard p.t.o. speed (540 rev/min)					
41.2	1893	12.21	10.20	248	3.37
At the speed recommended for drawbar work					
43.1	2100	12.95	10.83	251	3.33
Part loads					
(i) 85% of the torque at maximum power at 2-hour test					
37.4	2143	10.79	9.02	242	3.46
(ii) unloaded					
-	2222	2.90	2.42	-	-
(iii) 50% of the load defined in (i)					
19.1	2186	6.67	5.58	292	2.86
(iv) maximum power					
43.1	2100	12.95	10.83	251	3.33
(v) 25% of the load defined in (i)					
9.6	2210	4.77	3.99	414	2.02
(vi) 75% of the load defined in (i)					
28.3	2167	8.62	7.20	254	3.29

Optimum fuel consumption: 227 g/kWh at 23,3 kW and 1365 rev/min
No load maximum engine speed: 2222 rev/min
Torque at maximum power (2 hours): 196 Nm
Maximum torque: 227 Nm at 1399 rev/min of the engine

Mean atmospheric conditions:
- temperature 17 °C
- pressure 990 mbar
- relative humidity 44 %

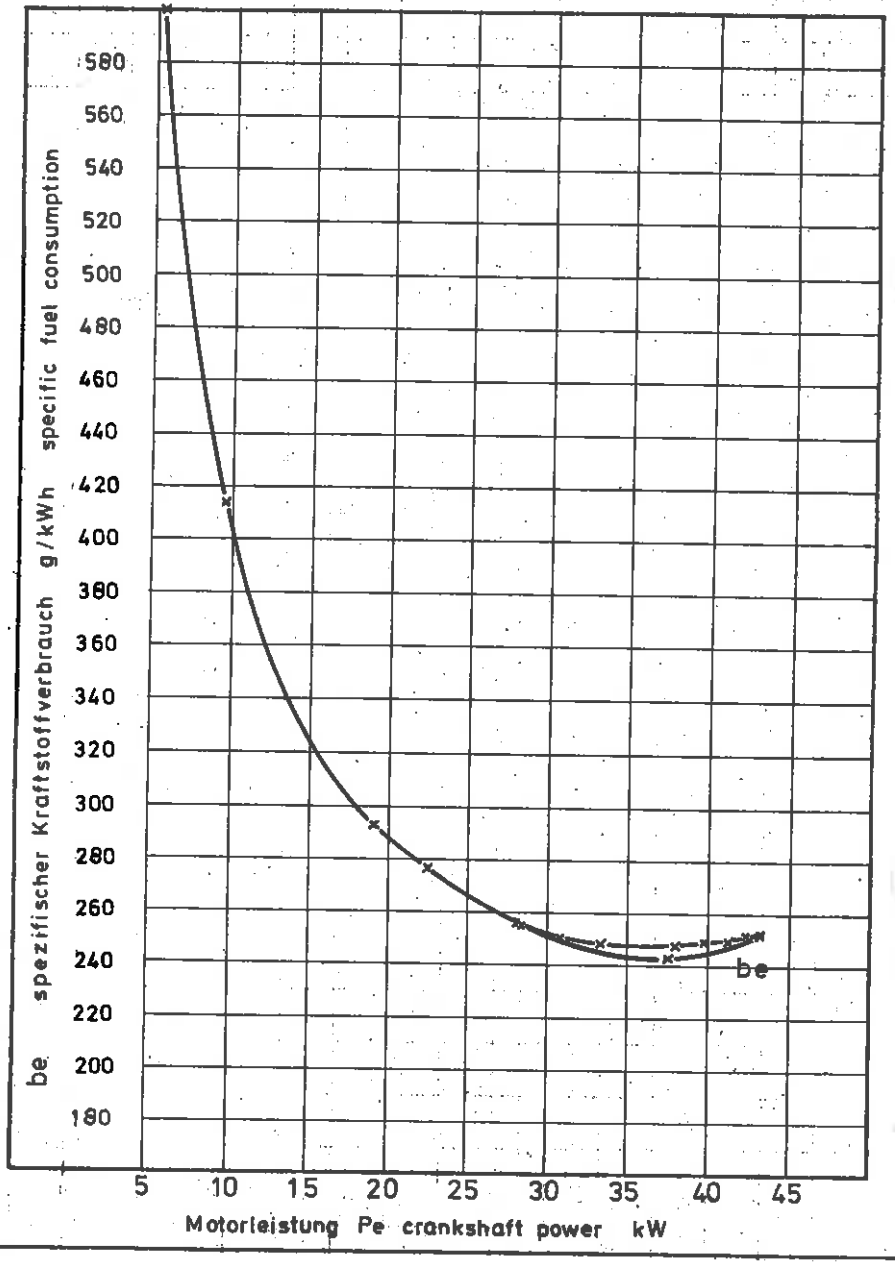
Maximum temperatures:
- coolant 82 °C
- engine oil 93 °C
- fuel 18 °C
- engine air intake 18 °C


Motorleistung
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Engine performance
Test Nr. 78-321
Pe
M
B
be
Motorleistung Pe kW
Kraftstoffverbrauch B kg/h
Motordrehmoment M Nm
spez. Kraftstoffverbrauch be g/kWh
Motordrehzahl n engine speed U/min rev/min
1000
1200
1400
1600
1800
2000
2200

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EICHER 3356 A

Motorleistung
Engine performance

Test Nr. 78-321



Motorleistung

Prüfstands-Nr. 3

Engine performance

Test Nr. 78-321

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

227 g/kWh

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