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

O.E.C.D. No. 650



Agricultural Tractor DEUTZ DX 160-N

Manufacturer
Klöckner-Humboldt-Deutz AG, D-5000 Köln 80

Deutsche Landwirtschafts-Gesellschaft e.V.
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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: October 1978 till May 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: 7th December 1979 O.E.C.D. No. 650

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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Printed in the Federal Republic of Germany

December 1979; DLG-No. 132

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PRÜFUNGS-ABTEILUNG
DEUTZ DX 160-N

Test No. 78-32

Tractor manufacturer:	KLÖCKNER-HUMBOLDT-DEUTZ AG D-5000 Köln-80
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Köln-Deutz and Groß-Umstadt
Duration of running-in:	Engine and tractor appr. 100 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	KLÖCKNER-HUMBOLDT-DEUTZ AG
Model:	DX 160-N
Type:	Wheel tractor, unit construction, rear wheel driven
Serial No:	76240003

Engine

Make:	KLÖCKNER-HUMBOLDT-DEUTZ AG
Model:	BF6L 913
Type:	4-stroke DIESEL engine, direct injection, air cooled, turbo supercharged
Serial No:	5902522
Cylinders:	6, in line, bore 102 mm, stroke 125 mm, displacement 6128 cm^3, compression ratio 15,5:1 replaceable ribbed cylinder liners
Valves:	Overhead
Fuel system:	BOSCH fuel feed pump FB/KS 22 AD 23/2; BOSCH in line injection pump: PES 6 A 85 D 410 RS 2537; manufacturer's production setting 79 mm^3/stroke at rated engine speed; injection timing 32° before TDC; BOSCH multihole injectors DLLA 149 S 490; injection pressure 175 bar; BOSCH two stage filter 213 3556 with replaceable cartridges; capacity of fuel tank 155 l, additional tank with 50 l capacity

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Governor:	BOSCH centrifugal variable speed governor: EP/RSV 325-1150 A8B 2020 DL; governed range of engine speed: 700 to 2340 rev/min; rated engine speed 2200 rev/min
Charger:	Exhaust driven supercharger; KÜHNLE, KOPP UND KAUSCH; 3 LEP 229 A/13.2; supercharge pressure 440 mbar ± 10 %; without supercharger air intercooler
Air cleaner:	Own make; DEUTZ SICCOPUR dry paper element filter with precleaner with replaceable cartridge and electrically operating maintenance tele-indicator
Exhaust silencer:	LANGE KH 5 single chamber absorption type silencer; 120 x 230 mm oval, 1090 mm long; on the left hand side of bonnet; mouth showing upward; mouth 2850 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 change at all oil changes; oil capacity 16 l; recommended oil and change interval MIL-L-2104 C 200 hours recommended oil viscosities: below -5°C SAE 10W from -10°C to+10°C SAE 20W/20 from +5°C to+30°C SAE 30 above +25°C SAE 40 or SAE 20W/40 multigrade oil above -10°C oil cooler on the right hand side of engine

Cooling system:	Air cooling with axial blower V-belt driven
Starting system:	Electrical BOSCH screw push starter motor ID 12V 3 kW; BOSCH flame plug in air intake pipe: B 12V H 7632
Electrical equipment:	12 Volt, negative earth; BOSCH 3-phase alternator G 1 14V 65A; 1 battery 143 Ah at 20 hours rating, lead acid type

Transmission

Clutch:	LAMELLEN-UND KUPPLUNGSBAU GMBH A 1 435 003 dry single disc type clutch for travel drive only, pedal operated; clutch disc diameter 350 mm
Gear box:	STEYR-DAIMLER-PUCH AG, Austria TW 1200-N; synchromesh speed change gear with 4 speeds; group gear with 3 forward groups (slow, fast and intermediate group) and 1 reverse group, slow and fast group collar shifted; intermediate and reverse group synchronized; optional: additional spur gear drive ahead of transmission either power shift reduction gear only or with creep speed gear; creep speed gear collar shifted; power shift reduction gear acts on all speeds without creep speeds; tractor tested is fitted with power shift reduction gear only; totally 24 forward speeds and 8 reverse speeds

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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:	All transmission units together 70 l
Specified oil:	Super-Tractor-Universal-Oil (STUO) with Lubrizol 3950 15W/30 or 20W/30
Oil changing interval:	1000 hours

Total ratios and speeds (Tyres 20,8 R 38)

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 1000 rev/min km/h
Power shift HI				
Slow group (L)	1	274,18	2,59	2,23
	2	195,26	3,63	3,13
	3	141,72	5,00	4,32
	4	101,75	6,97	6,02
Inter group (Z)	1	164,73	4,30	3,21
	2	117,31	6,04	5,22
	3	85,15	8,33	7,19
	4	61,30	11,57	9,99
Fast group (S)	1	75,45	9,40	8,12
	2	53,73	13,20	11,40
	3	39,00	18,18	15,70
	4	28,00	25,33	21,87
Reverse group (R)	1	158,62	4,47	3,86
	2	112,96	6,28	5,42
	3	81,99	8,65	7,47
	4	58,86	12,05	10,41

*) calculated with INDEX RADIUS 855 mm as per WdK 154

PRÜFUNGS-ABTEILUNG
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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 1000 rev/min km/h
Power shift LO				
Slow group (L)	1	344,02	2,06	1,78
	2	245,00	2,89	2,50
	3	177,82	3,99	3,45
	4	127,67	5,55	4,79
Inter group (Z)	1	206,69	3,43	2,96
	2	147,19	4,82	4,16
	3	106,83	6,64	5,73
	4	76,70	9,25	7,99
Fast group (S)	1	94,67	7,49	6,47
	2	67,42	10,52	9,08
	3	48,93	14,49	12,51
	4	35,13	20,19	17,19
Reverse group (R)	1	199,02	3,56	2,65
	2	141,74	5,00	4,32
	3	102,87	6,89	5,95
	4	73,86	9,60	8,29
Creep group (not fitted in tractor tested)				
Slow group (L)	1	2315,33	0,31	0,27
	2	1648,89	0,43	0,37
	3	1196,77	0,59	0,51
	4	859,22	0,83	0,72
Inter group (Z)	1	1391,03	0,51	0,44
	2	990,64	0,72	0,62
	3	719,01	0,99	0,85
	4	516,21	1,37	1,18
Fast group (S)	1	637,14	1,11	0,96
	2	453,75	1,56	1,35
	3	329,33	2,15	1,86
	4	236,44	3,00	2,59
Reverse group (R)	1	1339,45	0,53	0,46
	2	953,90	0,74	0,64
	3	692,35	1,02	0,88
	4	497,07	1,43	1,23

Power take-off	Independent p.t.o.; engaged and disengaged through hydraulically operated wet multidisc clutch; at rear of tractor, in tractor's median plane; 593 mm behind rear axle centre line 713 mm above ground; involute profile with 21 spleens, 35 mm dia DIN 9611 or ISO 500 Type 2 1148 rev/min at rated engine speed; standard p.t.o. speed 1000 rev/min at 1917 rev/min engine speed; p.t.o. speeds may be set by aid of tractormeter; direction of rotation clockwise viewed from tractor rear
Power lift	Own make; K 55.2 DEUTZ-TRANSFERMATIK-system; hydraulic power lift unit construction; lower link control; BOSCH gear pump HY/ZFS 11/22,5 L; delivery 22,5 cm^3/rev or 58,4 l/min at rated engine speed, driven by the forward end of the p.t.o. shaft, in front of the p.t.o. clutch; DEUTZ control valve for lifting, lowering, draft control, position control and floating position; maximum working pressure 175 bar; main cylinder in power lift unit with 90 mm bore, 146 mm stroke; 2 external additional lift assist rams with 65 mm bore, 185 mm stroke; optional: up to 3 single or double acting additional control valves with 1 or 2 oil tappings each in every combination available

oil tank in power lift unit with
18,5 l capacity;
optional: additional oil tank with
20 l capacity;
7,5 l (27,5 l with additional oil tank),
may be taken off through oil tappings when
tractor is working stationary or driving;
recommended oil:
engine oil SAE 10W MIL-L-2104 B;
oil changing interval once a year

Implement linkage

Three point linkage category II DIN 9674;
category III optionally;
WALTERSCHEID quick coupler optionally
available;
2 holes in the lower links for fitting
the lift rods:
hole 1 in 563 mm
hole 2 in 620 mm distance of pivot point
of lower links;
lift rods adjustable from 855 to 995 mm;
lifting range above ground when using
hole no. 1:
with short lift rods from 367 to 1032 mm
with long lift rods from 90 to 801 mm
hole no 2:
with short lift rods from 417 to 1027 mm
with long lift rods from 157 to 817 mm

Holed bar

Short bar;
fitted on clevis of lower links;
length between the joint balls 825 mm;
width 80 mm, thickness 30 mm;
centre hole and 4 holes in 80 mm distance
each on either side;
all holes 33 mm diameter;
height above ground adjustable by power lift
in the range from 105 mm to 1047 mm,
depending on lift rods length and fixing
hole on the lower links, measured at the
surface of the bar;

in the range from 485 to 705 mm mechanically-hydraulically fixable, depending on lift rods length;
distance of centre hole with lower links in horizontal position:
from rear axle centre 1166 mm
from p.t.o. shaft end 573 mm

Trailer hitch

CRAMER, automatical;
KU 758;
hitch hole diameter 33 mm;
height above ground 892, 908, 942 or 958 mm;
adjustable by shifting and turning hitch;
distance of hitch hole centre to rear axle centre 636 mm;
permissible vertical load 2000 kg

Swinging drawbar

Optional;
height above ground adjustable by turning drawbar to 366 or 471 mm;
hitch hole 33 mm diameter;
distance of hitch hole centre:
from p.t.o. shaft end 355, 400 or 500 mm
from rear axle centre 940, 985 or 1085 mm;
lateral swingable about 505, 525 or 565 mm to either side;
pivot point 275 mm before rear axle centre

Towing hitch

897 mm above ground

Steering

ZAHNRADFABRIK FRIEDRICHSHAFEN AG
hydrostatic steering, model 8452;
own oil circuit;
BOSCH hydraulic gear pump HY/ZFS 11/19L;
delivery 19 cm^3 / rev or 45 l/min at rated engine speed;
directly driven by engine;
1 ram acting directly on front axle,
bore 50 mm, stroke 250 mm

Brakes

Parking brake:	Mechanically acting on the discs of the service brake; operated by hand lever with ratchet; optional parking brake acting on separate discs, not fitted on tractor tested
Service brake:	Mechanically-hydraulically acting wet GIRLING multi-disc-type brake with 6 coated discs per brake on either side of differential half shafts; disc diameter 222 mm; pedal operated
Steering brake:	Divided pedal of service brake, for normal use locked together

Wheels

Steered wheels:	2 pneumatics in front 11,00-16 AS Front 8 ply; maximum permissible load per tyre 1320 kg at 2,5 bar inflation pressure and 30 km/h; track width adjustable from 1596 to 2196 mm in 6 steps of 100 mm each by extending telescopic half axles; rims W 8 L x 16
Driving wheels:	2 pneumatics at rear 20,8 R 38 AS 8 ply; radial type tyre casing; maximum permissible load per tyre 3090 kg at 1,3 bar inflation pressure and 30 km/h; track width adjustable from 1800 to 2200 mm in 4 steps of 100 mm each by turning wheels and offset lug type rims; rims W 18 L x 38
Wheel base:	2831 mm

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Cab	Own make; safety cab: model SK 1905-37 LUXUS (MASTER CAB) O.E.C.D.-tested, approval no. CSD 0021/3-a(C); platform with rubber vibration dampers fixed on rear axle casing and clutch casing; 4-post protection frame of square steel tubes with steel roof built up upon platform; protection frame completed by front frame of square steel tubes too; round about glassed with safety glass; windscreen and upper part of back window may be opened upwards and fixed; inside covered with noise damping padding of flame resistant plastics; door on the left hand side, optional on the left and right hand side, manufactured of glass fiber reinforced synthetics; entry with 2 steps, lower step 620, upper step 910 mm above ground; oilcooler-heat-exchanger heating; optionally additional heating and/or air conditioning system available
Seat	GRAMMER DS 85 H/90 AR upholstered seat with back and arm rests; adjustable spring with shock absorber, back rest infinitely variable, side inclination and arm rests adjustable; height of driver's platform 1210 mm above ground; height of unloaded seat above platform adjustable in 3 steps from 420 to 480 mm; for and aft adjustable about 155 mm

Dimensions

Total length:	4714 mm with 3-point linkage without ballast 5034 mm with 3-point linkage with ballast
Total width:	2372 mm at smallest track width 2770 mm at largest track width
Total height:	2850 mm to mouth of exhaust pipe
Ground clearance:	500 mm below engine casing

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Weights — Ready for use as tested, with cab

		without driver	with driver
Without ballast:	front	1925 kg	1935 kg
	rear	3435 kg	3500 kg
	total	5360 kg	5435 kg
Front ballast:	5 front weights 40 kg each		200 kg
Rear ballast:	1 intermediate ring per wheel 45 kg each		90 kg
	10 weights per wheel 50 kg each		1000 kg
	water in the tyres		980 kg
With ballast:	front	2155 kg	2165 kg
	rear	5475 kg	5540 kg
	total	7630 kg	7705 kg

Track setting during tests — front axle 1596 mm
rear axle 1800 mm

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 with parking lights	130 ⌀	1118	978
Side lights	50 x 50	1715	388
Rear lights	45 x 65	1740	356
Reflectors			
1st pair	103 x 58	1454	177
2nd pair	103 x 58	617	697

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Permissible total weights and axle loads
for all available wheel equipment

Wheel equipment front	Wheel equipment rear	Permissible total weights kg	Permissible axle load front kg	Permissible axle load rear kg
11,00 - 16 8 ply	9,5-48 8 ply	6890	2800	4090
	16,9-42 8 ply	7700		5710
	18,4-38 8 ply	7700		5810
	20,8-38 8 ply	7700		6300

All driving wheel tyres are permissible as diagonal type tyre casings as well as radial type tyre casings

FUELS AND LUBRICANTS USED IN TESTS

Fuel:	ARAL DIESEL-fuel DIN 51601
	specific gravity at 15°C
	at engine tests 0,830 kg/l
	at p.t.o. tests 0,828 kg/l
	at drawbar tests 0,832 kg/l
Engine oil:	ESSOLUBE XD3 SAE 20W/20 MIL-L-2104 C
Transmission oil:	SHELL AGROMA 20W/30
Hydraulic oil:	ESSOLUBE HDX SAE 10W MIL-L-2104 B

COMPULSORY TESTS

(1) MAIN POWER TAKE-OFF PERFORMANCE (1000 rev/min)

Date of tests: 30th April 1979
Type of dynamometer: SCHENCK hydraulic dynamometer U1-10

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						
100.5	2200	1148	31.70	26.24	261	3.17
At standard p.t.o. speed						
94.0	1917	1000	27.85	23.05	245	3.37
At the speed recommended for drawbar work						
100.5	2200	1148	31.70	26.24	261	3.17
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						
88.0	2267	1183	28.62	23.68	269	3.09
(ii) unloaded						
-	2351	1226	8.17	6.76	-	-
(iii) 50% of the load defined in (i)						
44.7	2303	1202	18.06	14.94	334	2.48
(iv) maximum power						
100.5	2200	1148	31.70	26.24	261	3.17
(v) 25% of the load defined in (i)						
22.5	2320	1210	12.92	10.70	475	1.74
(vi) 75% of the load defined in (i)						
66.6	2288	1194	23.44	19.40	291	2.84

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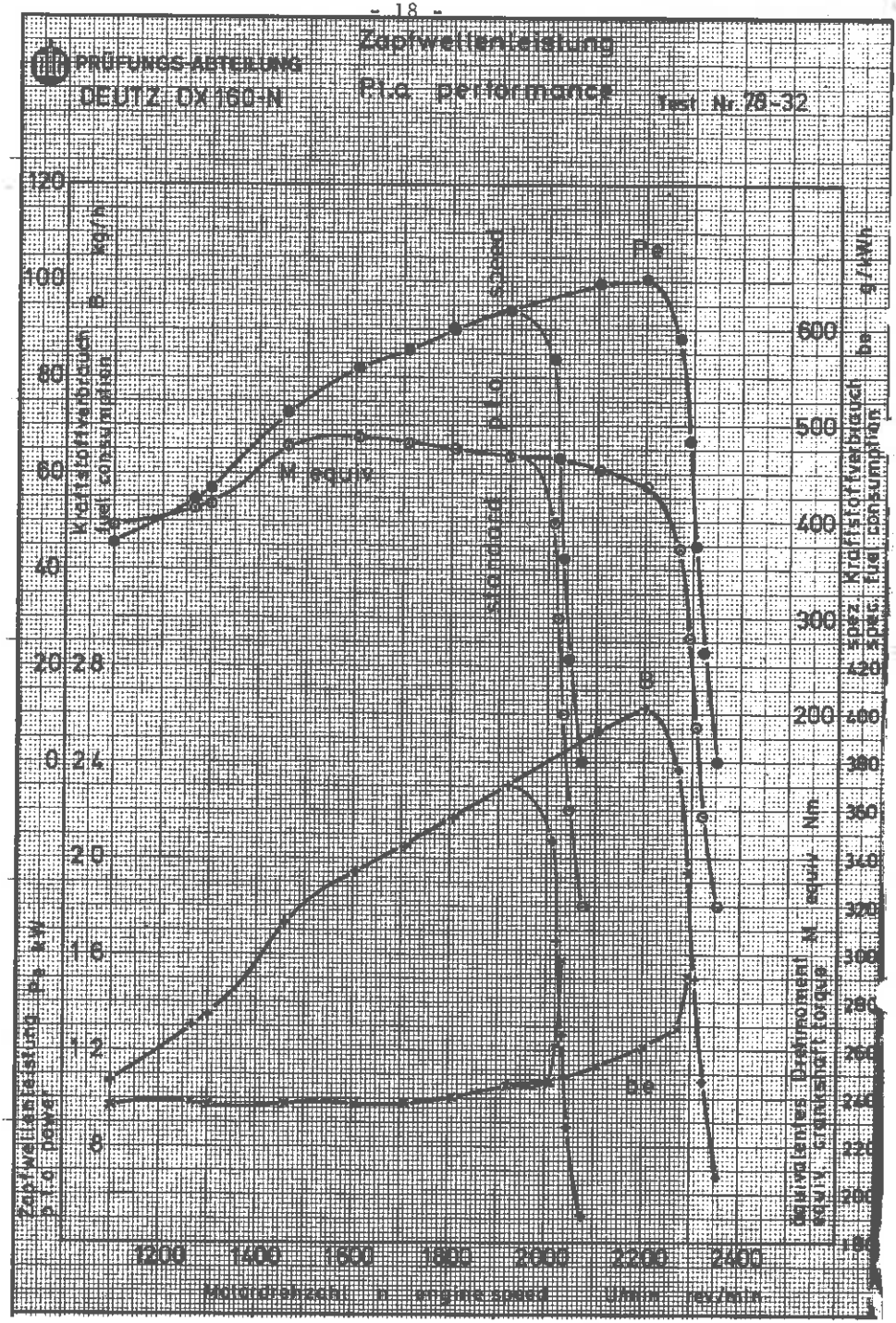
Test No. 78-32

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 2-hour test						
83.6	2007	1047	25.03	20.71	248	3.34
(ii) unloaded						
-	2070	1080	6.20	5.13	-	-
(iii) 50% of the load defined in (i)						
42.2	2027	1058	15.18	12.57	297	2.78
(iv) maximum power						
94.0	1917	1000	27.85	23.05	245	3.37
(v) 25% of the load defined in (i)						
21.3	2040	1064	10.60	8.77	413	2.00
(vi) 75% of the load defined in (i)						
63.0	2017	1052	19.95	16.51	262	3.16

Standard specific fuel consumption (g/kWh): 269/334/248/297

No load maximum engine speed: 2351 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 436 Nm
Maximum equivalent crankshaft torque: 487 Nm at 1604 rev/min of the engine

Mean atmospheric conditions:	temperature	26 °C
	pressure	1000 mbar
	relative humidity	53 %
Maximum temperatures:	coolant	-
	engine oil	106 °C
	fuel	33 °C
	engine air intake	33 °C

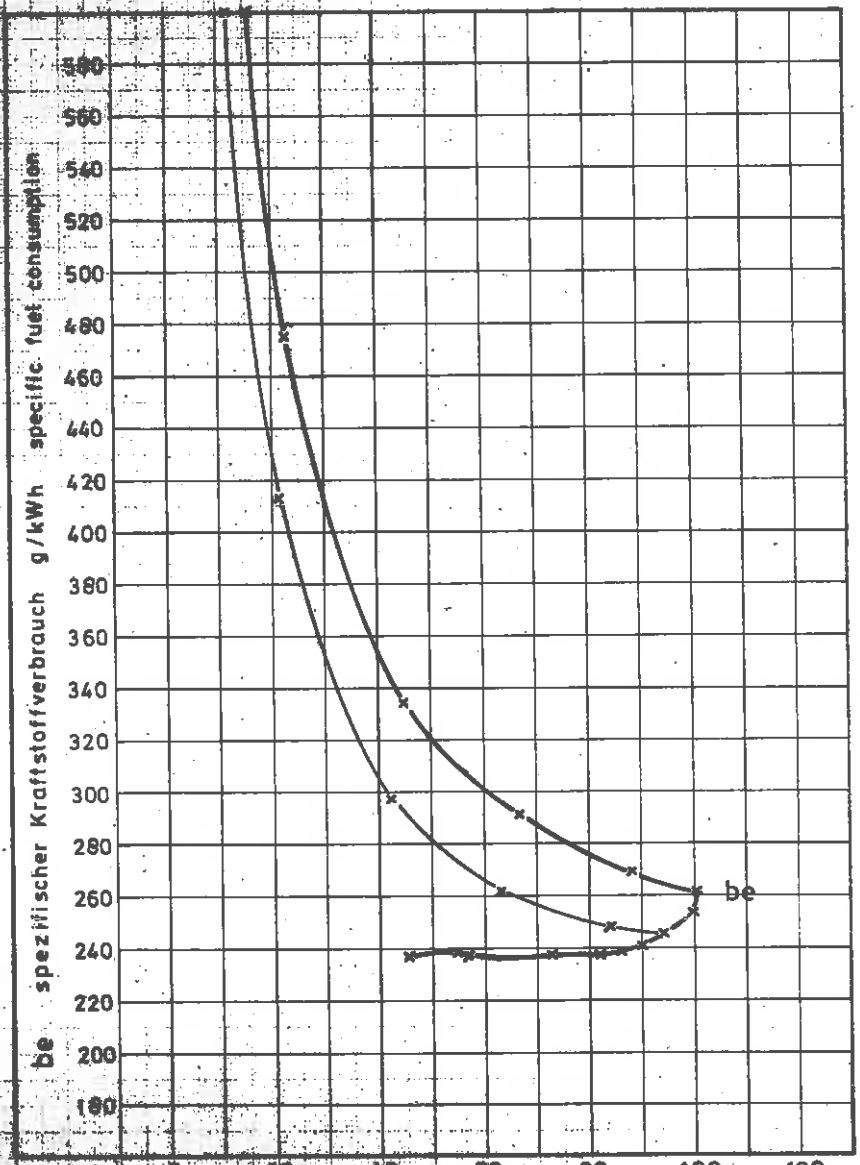

PRÜFUNGS-ABTEILUNG
DEUTZ DX 160-N
Zapfwellenleistung
P.t.o. performance
Test Nr. 78-32
Pe
M equiv.
B
Be
standard
p.t.o.
Zapfwellenleistung P.t.o. power Pe kW
Kraftstoffverbrauch Fuel consumption kg/h
Kraftstoffverbrauch spez. spec. fuel consumption be g/kWh
Äquivalentes Drehmoment equiv. torque M equiv. Nm
Motordrehzahl n engine speed U/min rev/min

Zapfwellenleistung

DEUTZ DX 150-N

PTO performance

Test Nr. 78-32



PRÜFUNGS-ABTEILUNG
DEUTZ DX 160-N

(2) DRAWBAR PERFORMANCE

Date of tests: 21th May till 28th May 1979
Type of track: Concrete

Gear	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 630 mm					
1 L LO	1,82	37,7	7460	2283	15,0
1 L HI	2,28	47,4	7481	2277	14,9
2 L LO	2,55	52,9	7472	2273	14,9
1 Z LO	3,01	62,5	7471	2269	14,9
2 L HI	3,17	66,0	7493	2264	15,0
3 L LO	3,48	72,5	7498	2261	15,0
1 Z HI	3,73	77,7	7496	2242	15,0
2 Z LO	4,27	83,5	7049	2200	11,2
3 L HI	4,48	85,2	6849	2202	10,3
4 L LO	5,09	85,8	6071	2203	8,3
2 Z HI	5,58	87,9	5671	2200	7,5
3 Z LO	6,22	86,8	5024	2203	6,2
4 L HI	6,53	88,0	4851	2199	5,9
1 S LO	7,07	86,2	4390	2197	5,1
3 Z HI	7,92	89,3	4058	2204	4,6
4 Z LO	8,83	87,3	3560	2200	3,9
1 S HI	8,99	88,3	3537	2199	3,8
(ii) FIVE-HOUR-TEST at 75 % of pull at max. power in 3 Z LO gear					
3 Z LO	6,54	68,5	3768	2268	4,2
(iii) FIVE-HOUR-TEST at pull corresponding to 15 % wheel slip in test (i)					
1 Z HI	3,77	78,5	7498	-	-
(iv) MAXIMUM POWER without ballast height of drawbar above ground 780 mm					
4 L LO	4,88	73,3	5409	2271	15,0
2 Z HI	5,29	79,4	5402	2262	14,9
3 Z LO	5,87	82,6	5067	2201	11,9
4 L HI	6,23	84,3	4871	2203	11,0
1 S LO	6,84	83,3	4383	2200	8,9
3 Z HI	7,67	87,1	4088	2200	8,1
4 Z LO	8,64	85,3	3556	2203	6,9
1 S HI	8,78	86,6	3549	2201	6,8
2 S LO	9,92	84,6	3071	2198	5,8
4 Z HI	10,99	87,0	2850	2200	5,3
2 S HI	12,59	86,5	2474	2197	4,5

Total oil consumption during ten hours duration of tests (ii) and (iii) 180 g/h

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Tyres size front: 11.00-16 8 ply
rear: 20. 8 R 38 8 ply

Tread bar height at the beginning of drawbar tests 70 % of the value when new

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 1,1 bar							
2,03	404	28	-	97	29	58	993
2,23	368	28	-	96	29	58	993
2,26	364	26	-	98	27	58	993
2,37	346	26	-	97	27	58	993
2,43	339	24	-	96	27	62	994
2,44	334	28	-	98	25	66	995
2,51	326	30	-	97	30	51	992
2,63	313	24	-	101	21	71	1002
2,69	306	24	-	108	21	70	1002
2,71	304	24	-	108	21	70	1002
2,77	298	20	-	108	16	79	993
2,75	301	20	-	109	18	75	1001
2,78	297	21	-	107	20	72	1001
2,72	305	19	-	108	17	75	1000
2,81	294	21	-	102	20	76	1002
2,75	301	21	-	109	20	74	1002
2,80	294	22	-	108	20	72	1002
2,63	314	20	-	110	19	74	1002
-	-	22	-	100	23	72	1000
tyre inflation pressure 1,0 bar							
2,43	340	22	-	89	18	80	995
2,51	329	20	-	90	17	70	1000
2,59	318	22	-	99	17	70	1000
2,65	312	23	-	97	22	62	1000
2,62	314	23	-	95	22	64	1000
2,73	302	23	-	100	22	65	1000
2,68	308	23	-	97	22	64	1000
2,72	303	24	-	101	21	67	1000
2,66	309	24	-	92	21	66	1000
2,73	301	25	-	94	22	64	1000
2,73	301	25	-	97	22	63	1000

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

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 11,00-16 AS Front 8 ply
rear: 20,8 R 38 AS 8 ply

Track of wheels front: 1596 mm
rear: 1800 mm

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	4,59	4,47	5,24	4,97
Radius of turning circle	4,34	4,22	4,99	4,72

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	1029 mm
Distance forward from rear axle centre	1011 mm
Distance from tractor's median plane	4 mm to the left

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(5) BRAKING PERFORMANCE

A) SERVICE BRAKE

Date of tests: 22nd and 23rd May 1979
Type of track: Concrete
Type of decelerometer: MOTO-METER-Bremsverzögerungs- und Pedalkraftschreiber

Weight of ballasted tractor with driver 7705 kg

Cold brakes

		With ballast	Without ballast
Travelling speed	km/h	25,0	25,0
Deceleration	m/s^2	4,4	3,9
Stopping distance	m	6,8	7,9
Force on pedal	daN	37	25
Force on pedal to achieve a deceleration of 2,5 m/s^2	daN	19	18

Brake fade characteristics (hot tests)

Deceleration	hot/cold	%	99	100
Stopping distance	cold/hot	%	96	99
Force on pedal	cold/hot	%	101	100

B) PARKING BRAKE

Tractor facing up 16% slope
Pull on hand brake 30 daN, tractor does not roll

Tractor facing down 16% slope
Pull on hand brake 29 daN, tractor does not roll

(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 22nd May 1979
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

Results of test

Gear: 4.S HI
Travelling speed before acceleration: 20,3 km/h
Sound level: 87,5 dB(A)

(7) NOISE AT THE DRIVER'S EAR LEVEL

Date of tests: 22nd May 1979
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

A safety cab was fitted on tractor SK 1905-37 MASTER CAB

Results of tests

Gear	Drawbar pull at maximum sound level daN	Travelling speed nominal km/h	Travelling speed effective km/h	Sound level dB(A)
1 L LO	5217	2,06	1,68	83,5
1 L HI	5250	2,59	2,01	83,5
2 L LO	5243	2,89	2,41	83,0
1 Z LO	5168	3,43	2,75	84,0
2 L HI	5241	3,63	3,30	83,5
3 L LO	5272	3,99	3,67	84,0
1 Z HI	5368	4,30	3,58	84,5
2 Z LO	5419	4,82	4,25	84,5
3 L HI	5147	5,00	4,36	84,0
4 L LO	4792	5,55	4,77	84,0
2 Z HI	5369	6,04	5,30	85,0
3 Z LO	5106	6,64	5,82	86,0
4 L HI	4875	6,97	6,22	86,0
1 S LO*)	4380	7,49	6,85	85,5
3 Z HI	4079	8,33	7,68	86,0
4 Z LO	3549	9,25	8,65	86,0
1 S HI	3552	9,40	8,78	85,5
2 S LO	3095	10,52	9,91	85,0
4 Z HI	2858	11,57	10,98	85,5
2 S HI	2465	13,20	12,61	85,5
3 S LO	2190	14,49	13,87	86,5
3 S HI	1714	18,18	17,63	86,0
4 S HI	light load	25,33	27,00	84,0

*) The 1st S LO gear corresponds to the travelling speed nearest to 7,5 km/h

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(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

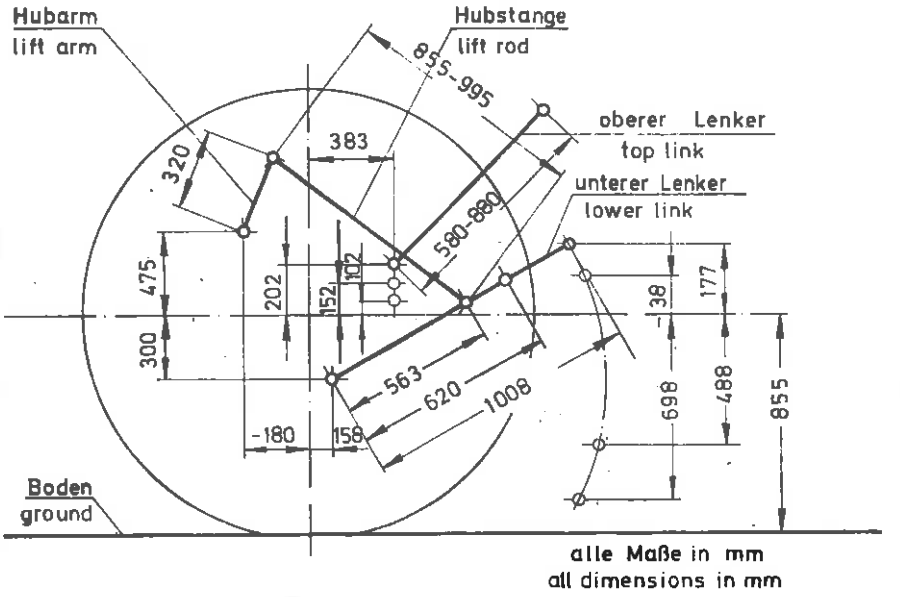
Date of tests: 7th September 1978

HYDRAULIC PUMP

(1) Opening pressure of relief valve in remote circuit	167 bar
Sustained pressure by open relief valve	175 bar
(2) Pump delivery rate at minimum pressure and maximum engine speed	61,3 l/min
(3) Pump delivery rate	57,7 l/min
Delivery pressure	169 bar
Hydraulic Power	16,2 kW

POWER LIFT

Dimensions of linkage geometry for the table on page 28



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LIFTING FORCES

Lifting heights relative to horizontal lower links

mm	-465	-400	-367	-300	-206	-200	-138	-100	0

at hitch points maximum mechanical advantage

daN							5100	5250	548

minimum mechanical advantage

daN	4490	4580		4730		4870		5010	5100

Max. force exerted throughout the whole range 5100 daN

Front of tractor does not lift if front axle is ballasted to its maximum permissible load (2800 kg)

at test frame maximum mechanical advantage

daN			6610	6610		6180		6040	5900

minimum mechanical advantage

daN					4430	4430		4520	462(

Max. force exerted throughout the whole range 5710 daN

Force at which front of tractor lifts when front axle is ballasted to its max. permissible load (2800 kg) 4380 daN

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+100	+200	+237	+246	+300	+400	+472	+500	+564
lift rods 855 mm long, hole no. 2								
5670	5820			5960	6100	6290		
lift rods 995 mm long, hole no. 1								
5250	5480		5580					
lift rods 995 mm long, high top link pivot point, hole no. 2								
5760	5710	5710						
lift rods 855 mm long, low top link pivot point, hole no. 1								
4620	4570			4480	4380		4240	4190

All values of forces for pressure at max. hydraulic power 169 bar, see page 25; calculated from measurements at max. oil pressure 175 bar

LINKAGE GEOMETRY when connected to the standard frame	Maximum mechanical advantage	Minimum mechanical advantage
Projected length in side view:		
Lower links	1008 mm	1008 mm
Lift arms	320 mm	320 mm
Lift rods	995 mm	885 mm
Top link	790 mm	793 mm
Distance of lift rod connection point from pivot point of lower link	620 mm	563 mm
The following dimensions are given relative to rear axle centre line 855 mm above ground		
Lower link pivot point	158 mm behind, 300 mm below	158 mm behind, 300 mm below
Top link pivot point	383 mm behind, 202 mm above	383 mm behind, 102 mm above
Lift arm pivot point	180 mm behind, 475 mm above	180 mm behind, 475 mm above
Maximum and minimum height of lower link hitch points	38 mm below, 698 mm below	177 mm above, 488 mm below
Height of lower link hitch points above ground when locked in highest transport position	817 mm	1032 mm

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OPTIONAL TESTS

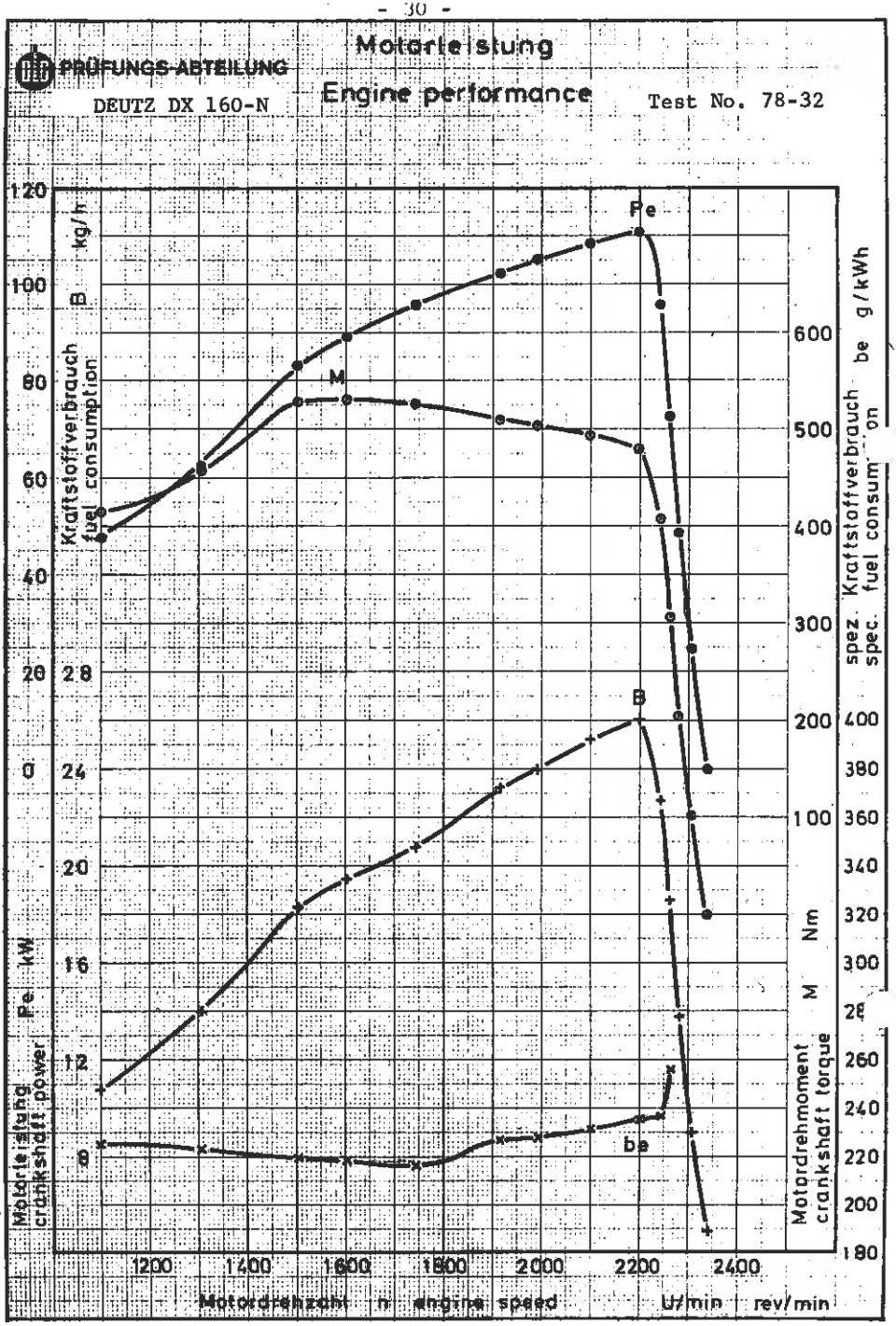
(9) ENGINE PERFORMANCE

Date of tests: 11th October 1978
Type of dynamometer: SCHENCK eddy-current dynamometer W 400

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					
110.7	2200	31.36	26.02	235	3.53
At standard p.t.o. speed (1000 rev/min)					
102.5	1917	28.02	23.26	227	3.66
At the speed recommended for drawbar work					
110.7	2200	31.36	26.02	235	3.53
Part loads					
(i) 85% of the torque at maximum power at 2-hour test					
95.9	2243	27.36	22.71	237	3.51
(ii) unloaded					
-	2337	5.92	4.91	-	-
(iii) 50% of the load defined in (i)					
48.7	2279	16.55	13.74	282	2.94
(iv) maximum power					
110.7	2200	31.36	26.02	235	3.53
(v) 25% of the load defined in (i)					
24.6	2306	10.81	8.97	364	2.23
(vi) 75% of the load defined in (i)					
72.6	2263	22.38	18.58	256	3.24

Optimum fuel consumption: 216 g/kWh at 82,5 kW and 1650 rev/min
No load maximum engine speed: 2337 rev/min
Torque at maximum power (2 hours): 480 Nm
Maximum torque: 533 Nm at 1602 rev/min of the engine

Mean atmospheric conditions:	temperature	24 °C
	pressure	1006 mbar
	relative humidity	60 %
Maximum temperatures:	coolant	-
	engine oil	98 °C
	fuel	24 °C
	engine air intake	25 °C


PRÜFUNGS-ABTEILUNG
DEUTZ DX 160-N
Motorleistung
Engine performance
Test No. 78-32
Pe
M
B
be
Kraftstoffverbrauch B kg/h
fuel consumption
spez. Kraftstoffverbrauch be g/kWh
spec. 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

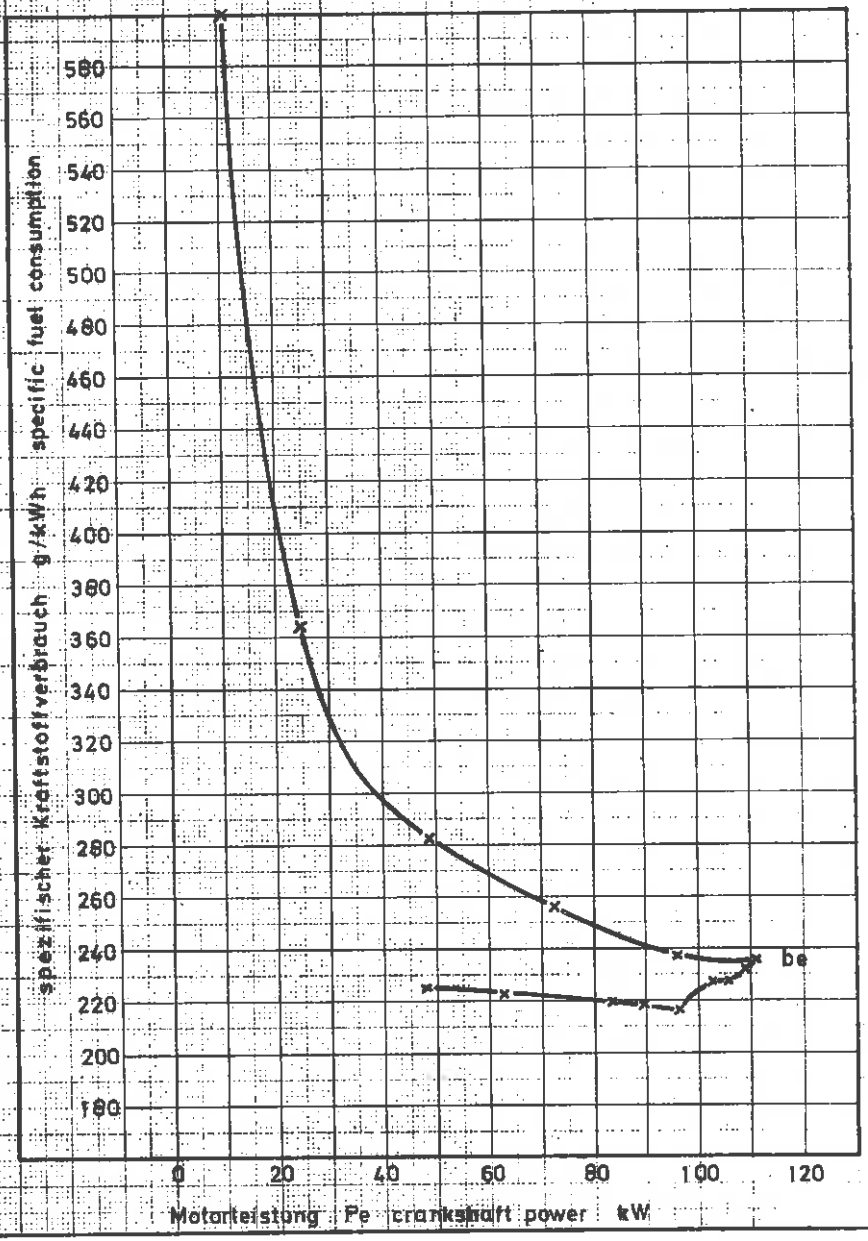
PRÜFUNGS-ABTEILUNG

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Motorleistung

Engine performance

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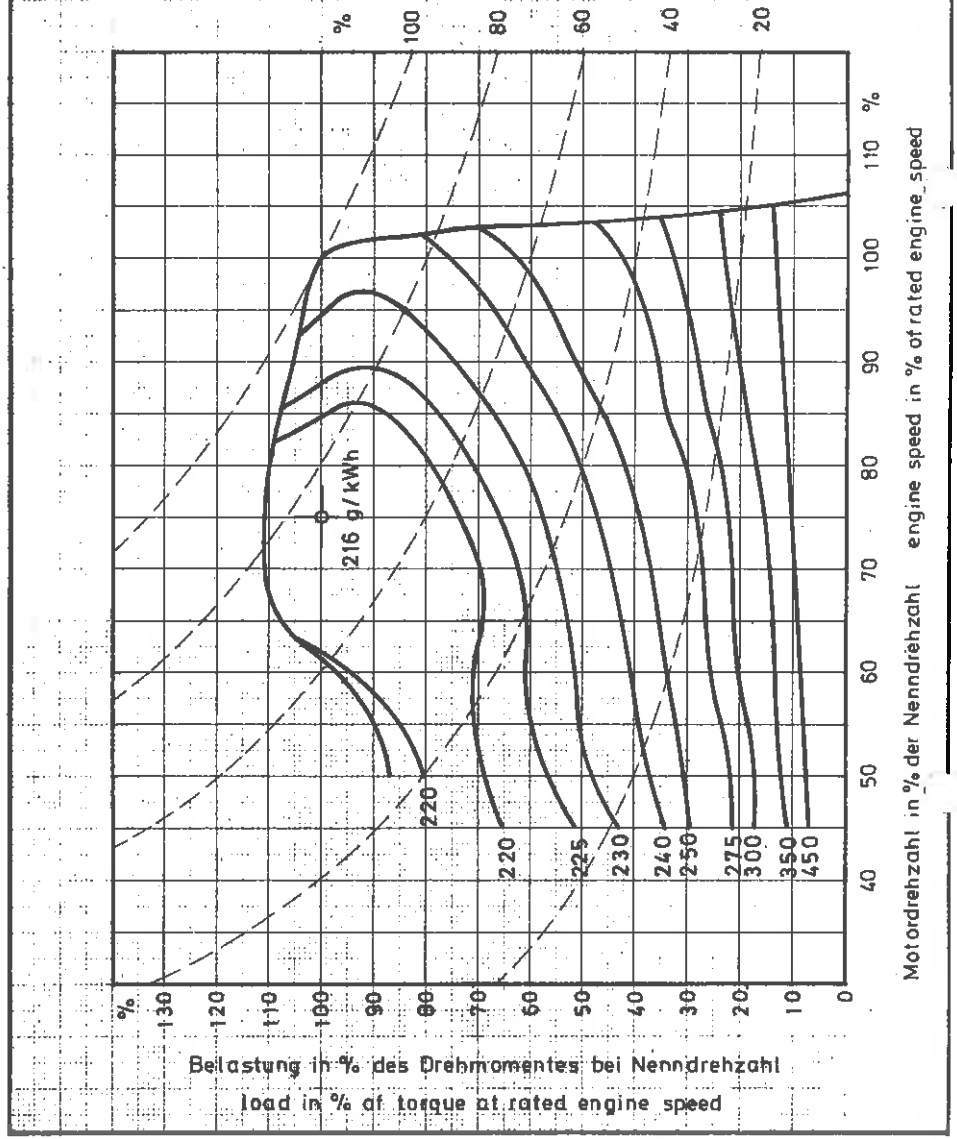
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Motorleistung

Engine performance

Test No. 78-32



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

Deutsche Landwirtschafts-Gesellschaft e.V. (DLG)
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