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

O.E.C.D. No. 627



Agricultural Tractor Deutz DX 110-S and DX 110-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.

Performance of tests: July 1978 till February 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: 16th March 1979 O.E.C.D. No. 627

The tractor DX 110 is manufactured in 2 variants:

i) as **DX 110-S** with a speed change gear with 5 speeds and a maximum design related speed of 30 km/h
ii) as **DX 110-N** with the same speed change gear but without the 5th gear and a maximum design related speed of 25 km/h.

In the rest both variants are identical.

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
DEUTZ DX 110-S
DX 110-N

Test No. 78-29

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 und Groß-Umstadt
Duration of running-in:	Engine and tractor appr. 100 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	KLÖCKNER-HUMBOLDT-DEUTZ AG
Model:	DX 110-S and DX 110-N
Type:	Wheel tractor, unit construction, rear wheel driven
Serial no:	7621/0021

Engine

Make:	Own make
Model:	F6L 912
Type:	4-stroke DIESEL engine with direct injection, air cooled
Serial no:	5857445
Cylinders:	6 in line, bore 100 mm, stroke 120 mm; displacement 5655 cm^3; compression ratio 17:1, replaceable ribbed cylinder liners
Valves:	Overhead
Fuel system:	PIERBURG fuel feed pump PE 15252; BOSCH in line injection pump: PES 6 A 80 D 410/3 RS 2527 manufacturer's production setting 52 mm^3/stroke at rated engine speed; injection timing 30° before TDC; BOSCH multihole injection nozzles DLLA 149 S 394; injection pressure 175 bar; BOSCH fuel filter with replaceable cartridge; capacity of fuel tank 125 l
Governor:	BOSCH centrifugal variable speed governor: EP/RSV 325-1150 A 8 B 2014 DL governed range of engine speed 750 to 2450 rev/min; rated engine speed 2300 rev/min

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Air cleaner:	Own make DEUTZ-SICCOPUR dry paper element filter with precleaner, replaceable cartridge with electrically operating maintenance teleindicator; air intake below bonnet; on desire additional DONALDSON cyclonic precleaner with air intake above bonnet; optional: MANN UND HUMMEL oil bath air cleaner with DONALDSON cyclonic precleaner with air intake above bonnet; oil capacity 0,9 l
Exhaust silencer:	LANGE 1-chamber-expansion type silencer; 120 x 230 mm oval, 1090 mm long; on the left hand side of the bonnet; mouth showing upwards; mouth 2724 mm above ground
Lubrication system:	Forced feed from gear pump; strainer in sump; MANN UND HUMMEL oil filter in full flow with by-pass valve and replaceable cartridge; cartridge change at all oil changes; oil capacity 15 l; recommended oils and change intervals: MIL-L-2104 B or MIL-L-2104 C 100 hours 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 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 JD 12V 3 kW, BOSCH flame plug in intake pipe
Electrical equipment:	12 Volt, negative earth; BOSCH three phase alternator G 1 14 V 33 A; 1 battery 110 Ah at 20 hours rating

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Transmission

Clutch:	LAMELLEN UND KUPPLUNGSBAU GMBH independent dry dual disc clutch: DT 310/310 G; driving part pedal operated, 310 mm diameter, p.t.o. part hand lever operated, 310 mm diameter
Gear box:	Own make; TW 90.30; synchromesh speed change gear with 5 speeds; at model DX 110-N with 4 speeds; collar shifted group gear with 3 forward groups and 1 reverse group; optional: intermediate group and reverse group synchronized; collar shifted creep group optional, not fitted on tractor tested; totally 15 forward and 5 reverse speeds; at model DX 110-N 12 forward and 4 reverse speeds, see page 7
Rear axle and final drive:	Bevel gear with crown wheel and pinion; bevel gear differential on intermediate shaft; spur gear final drives; differential lock in the rear axle, pedal operated, self disengaging, electrically tele-indicated when locked
Front axle:	Not propelled; standard axle model 02; reinforced front axle model 03 for heavy-duty available; permissible axle loads are the same for both axle models
Oil capacity:	Speed change gear, group gear, rear axle and final drives totally 48 l
Recommended oil:	Engine oil SAE 20W/20 MIL-L-2104 B
Oil changing:	2000 hours but at least after 2 years

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Total ratios and speeds (for tyres 18,4-38)

Group	Gear	Total ratio engine : driving wheel	Nominal travelling speed *) at rated engine speed km/h	at standard p.t.o. speed 540 rev/min km/h
Creep group optional o)	1	1758,73	0,40	0,36
	2	1151,92	0,62	0,55
	3	939,53	0,76	0,68
	4	647,95	1,10	0,98
	5 +)	527,96	1,35	1,20
Slow group	1	329,29	2,16	1,93
	2	215,68	3,30	2,95
	3	175,91	4,04	3,62
	4	121,32	5,86	5,24
	5 +)	98,85	7,19	6,43
Intermediate group	1	162,51	4,38	3,91
	2	106,44	6,68	5,97
	3	86,81	8,19	7,33
	4	59,87	11,88	10,62
	5 +)	48,78	14,57	13,04
Fast group	1	77,48	9,18	8,21
	2	50,75	14,01	12,53
	3	41,39	17,18	15,36
	4	28,55	24,91	22,28
	5 +)	23,26	30,57	27,34
Reverse group	1	132,41	5,37	4,80
	2	86,72	8,20	7,33
	3	70,73	10,05	8,99
	4	48,78	14,58	13,04
	5 +)	39,75	17,89	16,00

*) calculated with the INDEX RADIUS 820 mm as per WdK 154

+) not fitted on model variant DX 110-N

o) not fitted on tractor tested

Power take-off

Independent p.t.o.;
2 stub shafts at rear of tractor,
1 for 540 rev/min, 1 for 1000 rev/min;
both shafts rotate in common and are
driven through the hand lever operated
second disc of the dual disc clutch;
both are engaged or disengaged in common
by the hand lever of p.t.o.-disc
of dual disc clutch;
direction of rotation of both p.t.o. shafts
clockwise, viewed from tractor rear

540 rev/min p.t.o.
665 mm above ground,
50 mm right of tractor's median plane;
29 x 34,9 x 8,7 mm = 1 3/8 in, 6 splines
DIN 9611 Form 1, BS 1495 ASAE S 203.7;
604 rev/min at rated engine speed;
standard p.t.o. speed 540 rev/min at
2057 rev/min engine speed

1000 rev/min p.t.o.
650 mm above ground,
50 mm left of tractor's median plane;
involute profile 1 3/8 in, 21 splines;
DIN 9611 Form 2, ASAE S 204.4;
optional: 29 x 34,9 x 8,7 mm = 1 3/8 in,
6 splines;
DIN 9611 Form 1, BS 1495, ASAE S 203.7;
1110 rev/min at rated engine speed;
standard p.t.o. speed 1000 rev/min at
2071 rev/min engine speed

All p.t.o. speeds may be set by aid
of tractormeter

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Power lift

Hydraulic system:	Own make K 55.2 DEUTZ TRANSFERMATIC system; hydraulic power lift, unit construction; BOSCH tandem gear type pump: HY/ZFFS 11/6 + 14 L; tandem part for hydraulic steering; delivery of power lift part 16 cm^3/rev or 39,6 l/min at rated engine speed; optional: BOSCH tandem gear type pump: HY/ZFFS 11/22,5 + 14 L; delivery of power lift part 22,5 cm^3/rev or 55,6 l/min at rated engine speed; directly driven by engine; single acting ram 90 mm bore, 146 mm stroke; overpressure relief valve for ram adjusted to 210 to 260 bar; 2 external additional rams of own make, 55 mm bore, 185 mm stroke; DEUTZ control valve for lifting, lowering, neutral and floating position, draft control and position control; maximum oil pressure 175 bar; up to 3 single and/or dual acting DEUTZ-additional control valves with each 1 or 2 oil tappings available; hydraulic oil tank with 18,5 l capacity; optional: additional oil tank with 20 l capacity; 4,5 l (with additional tank 24,5 l) oil may be taken off through oil tappings when tractor is working driving, 7,5 l (with additional tank 27,5 l) when tractor is working stationary; recommended oil engine oil SAE 10W MIL-L-2104 B throughout the year; oil changing interval 1000 hours or once a year
Implement linkage:	Three point linkage category II DIN 9674; WALTERSCHEIDT quick coupler available; 2 holes in the lower links for fitting the lift rods; hole 1 in 570 mm hole 2 in 610 mm distance of the pivot point of lower links;

lift rods length adjustable from 755 to 895 mm;
lifting range above ground when using
hole no. 1:
with short lift rods from 418 to 1063 mm
with long lift rods from 147 to 855 mm
hole no. 2:
with short lift rods from 460 to 1063 mm
with long lift rods from 205 to 863 mm

Holed bar

Short bar;
fitted on clevis of lower links;
length between the joint balls 825 mm;
width of the bar 80 mm, thickness 30 mm;
centre hole and 4 holes on either side with 80 mm distance each;
all holes 33 mm diameter;
height above ground adjustable by power lift from 162 to 1078 mm depending from lift rods length and fixing on the lower links, measured at the surface of the bar;
distance of centre hole with lower links in horizontal position
from rear axle centre 1087 mm
from p.t.o. shaft end 562 mm

Trailer hitch

CRAMER	or	own make
KU 758		AK 8500
automatical		not automatical

height above ground 915 mm, not adjustable;
hitch hole diameter 33 mm;
distance of hitch hole centre to rear axle centre 608 mm;
permissible vertical load 1310 kg

Swinging drawbar

Height above ground 432 mm;
diameter of hitch hole 33 mm;
pivot point 338 mm before rear axle centre;
in 3 positions fixable on pivot point;
distance of hitch hole
from rear axle centre 881, 926 or 1026 mm
from p.t.o. shaft end 355, 400 or 500 mm;
swingable to either side about 530, 545 or 590 mm

Towing hitch

834 mm above ground

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Steering

ZAHNRADFABRIK FRIEDRICHSHAFEN AG
hydrostatic steering;
model SERVOSTAT 8452;
pressure oil supply from tandem part of power lift hydraulic pump;
oil delivery 14 cm^3 per revolution;
control valve operated by steering wheel;
double acting ram propped on the front axle;
ram with 50 mm bore and 250 mm stroke

Brakes

Parking brake:
SIMPLEX shoe type brake;
mechanically acting on 2 brake drums on the differential half shafts;
brake drum diameter 180 mm, width 60 mm;
operated by hand lever with ratchet

Service brake:
TEVES
hydraulically-mechanically acting dry fixed saddle disc type brake SS 60;
acting on 2 discs on the differential half shafts;
effectual disc diameter 216 mm;
outside disc diameter 276 mm;
pedal operated

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

Trailer braking device:
Own make;
dual line type or combined single-dual line type;
air compressor with 120 l/min delivery at rated engine speed,
air tank with 20 l capacity;
operating pressure 8 bar;
air pressure to relief valve 14 bar
to control valve 7,3 bar;
connection pressure
at single line type 5,3 bar
at dual line type 7,3 bar

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Wheels

Steered wheels:	2 pneumatics in front 11.00-16 AS 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 18,4-38 AS 8 ply diagonal type tyre casing; maximum permissible load per tyre 2715 kg at 1,4 bar inflation pressure and 30 km/h; track width adjustable from 1600 to 2200 mm in 6 steps of 100 mm each by turning wheels and offset lug type rims; rims W 15 L x 38
Wheel base:	2688 mm
Other wheels:	Optional available are: Steered wheels 7,50-20 AS 6 ply Driving wheels 9,5-48 AS 8 ply 16,9-38 AS 8 ply 18,4-34 AS 8 ply 18,4-38 AS 8 ply 20,8-34 AS 8 ply only for DX 110-N radial type tyre casings as well as diagonal type tyre casings permissible; permissible loads and total weights page 15

Cab

Own make;
safety cab:
model SK 1905-37 LUXUS (MASTER CAB)
O.E.C.D. tested
approval no. CSD 0018/4-a(C) DX 110-S
CSD 0018/3-a(C) DX 110-N
platform with rubber vibration damper
fixed on rear axle casing and clutch casing;
four 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;
rear side windows may be removed;

lower part of back window for free look on implement linkage, swinging drawbar and trailer hitch is built in solid;
inside totally covered with noise damping paddings 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 540 mm above ground, upper step 830 mm above ground;
oil cooler heat exchanger heating system;
optional additional heating and/or air-conditioning system;
electric windscreen wiper and washer;
2 rear view mirrors;
optional inside mirror

The tractor is also available without cab or with safety frame or without safety frame or with JUNIOR CAB (simpler equipment)

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 adjustable,
arm rest adjustable;
height of driver's platform 1130 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:	4491 mm	with implement linkage without ballast
Total width:	2304 mm	with smallest track width
	2704 mm	with largest track width
Total height:	2724 mm	to top of exhaust pipe
Ground clearance:	510 mm	below front axle

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Weights — Ready for use as tested

		without driver	with driver
Without ballast:	front	1510 kg	1525 kg
	rear	2805 kg	2865 kg
	total	4315 kg	4390 kg
Front ballast:	3 weights in the front axle bracket	total	186 kg
	10 front weights, 40 kg each		400 kg
Rear ballast:	1 intermediate ring per wheel	45 kg	90 kg
	10 weights per wheel, 50 kg each		1000 kg
	water in the tyres		734 kg
With ballast:	front	2190 kg	2205 kg
	rear	4535 kg	4595 kg
	total	6725 kg	6800 kg

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 ø	1052	944
Side lights	50 x 50	1720	354
Rear lights	45 x 60	1680	325
Reflectors	103 x 58	1377	142

*) at smallest track width

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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
DX 110-S				
7,50-20 6 PR	9,5-48 8 PR	5840	1750	4090
	16,9-38 8 PR	6350		4600
	18,4-34 8 PR	6350		4600
	18,4-38 8 PR	6350		4600
11,00-16 8 PR	9,5-48 8 PR	6390	2300	4090
	16,9-38 8 PR	6800		4600
	18,4-34 8 PR	6800		4600
	18,4-38 8 PR	6800		4600
DX 110-N				
7,50-20 6 PR	9,5-48 8 PR	6100	2010	4090
	16,9-38 8 PR	6610		4600
	18,4-34 8 PR	6610		4600
	18,4-38 8 PR	6610		4600
	20,8-34 8 PR	6610		4600
11,00-16 8 PR	9,5-48 8 PR	6390	2300	4090
	16,9-38 8 PR	6800		4600
	18,4 34 8 PR	6800		4600
	18,4 38 8 PR	6800		4600
	20,8 34 8 PR	6800		4600

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

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FUELS AND LUBRICANTS USED IN TESTS

Fuel:	ARAL-DIESEL-fuel DIN 51601	
	specific gravity at 15°C	
	at engine tests	0,835 kg/l
	at p.t.o. tests	0,833 kg/l
	at drawbar tests	0,833 kg/l
Engine oil and transmission oil:	ESSOLUBE HDX SAE 20W/20 MIL-L-2104 B	
Hydraulic oil:	ESSOLUBE HDX SAE 10W MIL-L-2104 B	

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TEST RESULTS

PRÜFUNGS-ABTEILUNG
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COMPULSORY TESTS

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

Date of tests: 7th August 1978
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						
70.6	2300	1110	21.73	18.11	256	3.25
At standard p.t.o. speed						
68.0	2071	1000	20.18	16.81	247	3.37
At the speed recommended for drawbar work						
70.6	2300	1110	21.73	18.11	256	3.25
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						
61.7	2364	1141	19.03	15.85	257	3.24
(ii) unloaded						
-	2427	1172	5.40	4.50	-	-
(iii) 50% of the load defined in (i)						
31.3	2396	1157	11.76	9.79	313	2.66
(iv) maximum power						
70.6	2300	1110	21.73	18.11	256	3.25
(v) 25% of the load defined in (i)						
15.8	2420	1168	8.61	7.17	453	1.84
(vi) 75% of the load defined in (i)						
46.7	2387	1152	15.24	12.69	272	3.06

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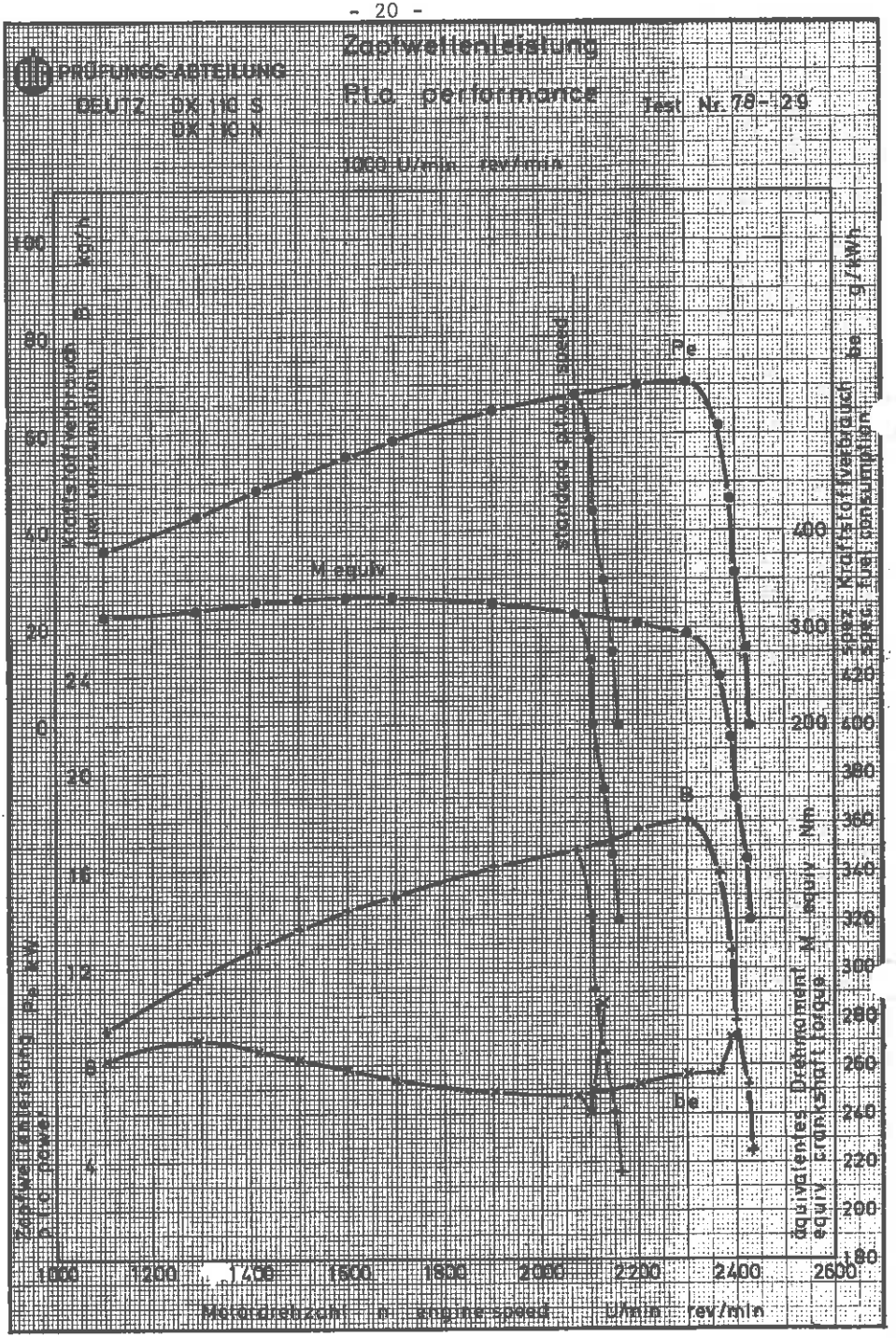
Test No. 78-29

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						
58.6	2101	1014	16.95	14.12	241	3.46
(ii) unloaded						
-	2161	1043	4.29	3.57	-	-
(iii) 50% of the load defined in (i)						
29.7	2127	1027	10.16	8.46	285	2.92
(iv) maximum power						
68.0	2071	1000	20.18	16.81	247	3.37
(v) 25% of the load defined in (i)						
15.0	2146	1036	7.22	6.01	400	2.08
(vi) 75% of the load defined in (i)						
44.1	2106	1017	13.26	11.05	250	3.33

Standard specific fuel consumption (g/kWh): 257/313/241/285

No load maximum engine speed: 2427 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 293 Nm
Maximum equivalent crankshaft torque: 331 Nm at 1600 rev/min of the engine

Mean atmospheric conditions:	temperature	27 °C
	pressure	999 mbar
	relative humidity	60 %
Maximum temperatures:	coolant	-
	engine oil	102 °C
	fuel	28 °C
	engine air intake	27 °C


Zapfwellenleistung
PTO performance
PRÜFUNGS-ABTEILUNG
DEUTZ BK 1 C S
BK 1 C N
Test Nr. 78 - 29
1000 U/min rev/min
kg/h
Kraftstoffverbrauch
fuel consumption
g/kWh
Pe
Me equiv.
Be
Zapfwellenleistung
P.t.o. power
PS
kW
Drehmoment M
equiv. torque
Nm
equivalentes
equiv.
Motordrehzahl n engine-speed U/min rev/min
1000
1200
1400
1600
1800
2000
2200
2400
2600

PRÜFUNGS-ABTEILUNG

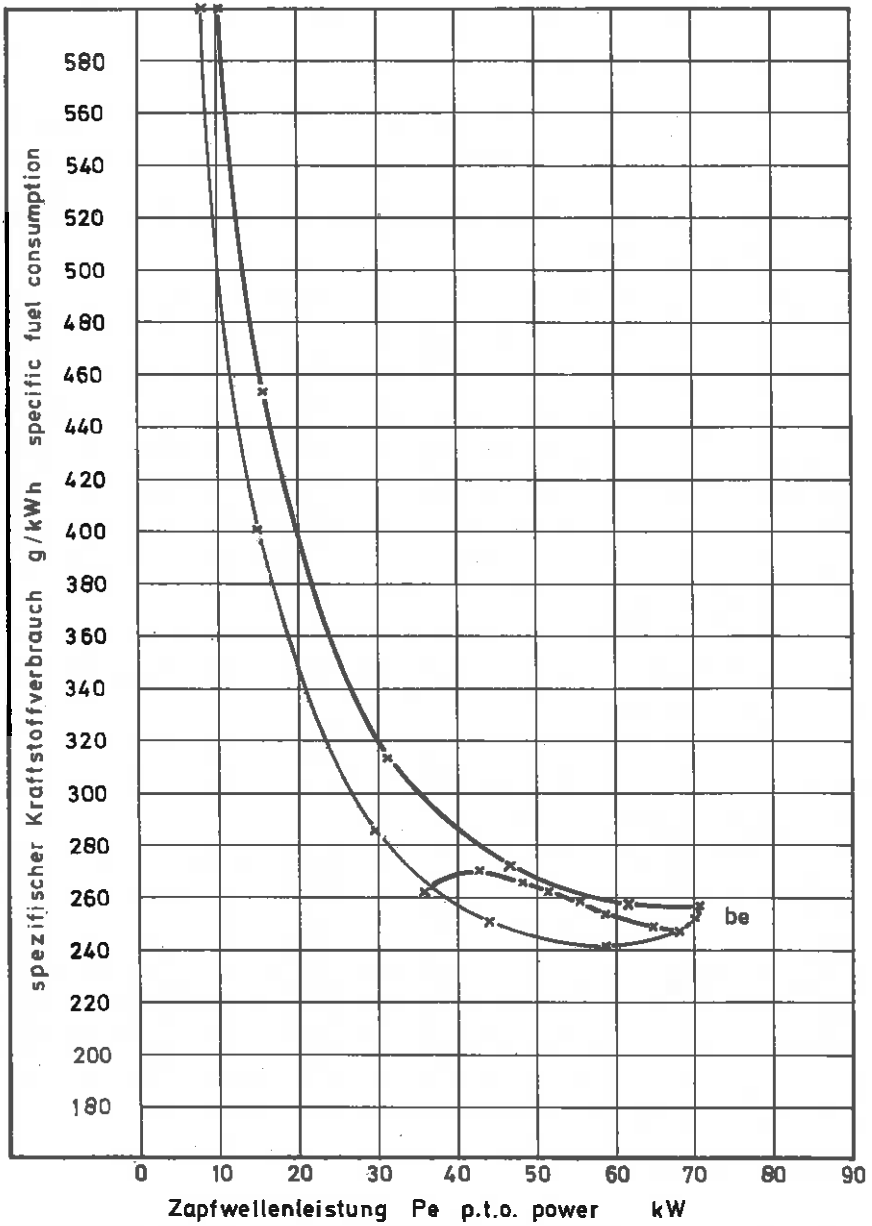
DEUTZ DX 110 S
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Zapfwellenleistung

P.t.o. performance

Test Nr. 78 – 29

1000 U/min rev/min



PRÜFUNGS-ABTEILUNG
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(2) DRAWBAR PERFORMANCE

Date of tests: 24th August till 12th September 1978
Type of track: Concrete

Gear No. and Group	Driving speed km/h	Power kW	Drawbar pull daN	Engine speed rev/min	Slip of wheels %	Specific energy kWh/l
(i) MAXIMUM POWER with ballast height of drawbar above ground 775 mm						
1 slow	1,95	31,3	5783	2384	15,0	2,29
2 slow	2,94	47,3	5788	2366	15,0	2,59
3 slow	3,57	57,3	5778	2329	15,0	2,64
1 inter	3,86	58,5	5459	2300	13,5	2,71
4 slow	5,39	61,3	4095	2300	9,6	2,84
2 inter	6,23	61,7	3564	2300	8,3	2,85
5 slow *)	6,77	61,5	3270	2300	7,7	2,84
3 inter	7,76	61,6	2858	2300	6,7	2,84
1 fast	8,78	61,4	2517	2300	5,8	2,84
4 inter	11,52	62,7	1958	2300	4,6	2,88
2 fast	13,71	60,1	1579	2300	3,6	2,78
(ii) FIVE-HOUR-TEST at 75% of pull at max. power in 2nd gear of inter group						
2 inter	6,58	48,9	2673	2371	6,1	2,78
(iii) FIVE-HOUR-TEST at pull corresponding to 15% wheel slip in test (i)						
3 slow	-	-	5788	-	-	-
(iv) MAXIMUM POWER without ballast height of drawbar above ground 745 mm						
1 inter	3,92	45,2	4152	2369	15,0	2,55
4 slow	5,14	59,4	4159	2316	15,0	2,72
2 inter	6,03	60,1	3590	2301	11,9	2,78
5 slow *)	6,57	60,7	3327	2302	10,8	2,79
3 inter	7,60	61,9	2930	2300	9,1	2,86
1 fast	8,61	62,9	2629	2298	8,0	2,87
4 inter	11,39	64,2	2029	2301	6,1	2,94
2 fast	13,58	63,1	1673	2299	5,0	2,91

Total oil consumption during ten hours duration of tests (ii) and (iii): 85 g/h

*) not at DX 110-N

PRÜFUNGS-ABTEILUNG

Test No. 78-29

Tyres make and size: front: 11,00-16 GOODYEAR 8 ply
rear: 18,4-38 AS SEMPERIT 8 ply

Tread bar height at the beginning of drawbar tests
96% of the value when new

Specific fuel consumpt. g/kWh	Temperatures: Fuel °C	Coolant °C	Engine-oil °C	Atmospheric conditions: Temperature °C	Relative humidity %	Pressure mbar
tyre inflation pressure 1,4 bar						
362	20	-	84	16	98	997
319	27	-	83	23	99	999
314	24	-	85	22	100	996
306	26	-	86	23	98	996
292	26	-	86	26	90	991
291	26	-	85	23	100	994
291	27	-	87	23	99	994
292	26	-	85	24	96	993
291	26	-	85	24	95	992
288	27	-	86	25	93	991
298	27	-	85	25	91	990
298	26	-	85	23	100	994
-	26	-	87	23	100	990
tyre inflation pressure 1,0 bar						
324	27	-	83	24	86	1007
303	29	-	86	25	85	1007
297	30	-	86	26	80	1007
297	30	-	84	28	78	1007
289	30	-	87	28	76	1007
288	30	-	84	29	75	1007
281	31	-	85	28	76	1007
284	31	-	85	28	76	1007

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

PRÜFUNGS-ABTEILUNG
DEUTZ DX 110-S
DX 110-N

Test No. 78-29

(3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 11,00-16 AS FRONT 8 ply
rear: 18,4 -38 AS 8 ply

Track of wheels front: 1796 mm
rear: 1800 mm

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning space	4,28	4,37	4,83	4,89
Radius of turning circle	4,04	4,14	4,59	4,66

(4) LOCATION OF CENTRE OF GRAVITY

Height above ground	997 mm
Distance forward from rear axle centre	928 mm
Distance from tractor's median plane, left-hand	8 mm

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DEUTZ DX 110-S
DX 110-N

Test No. 78-29

(5) BRAKING PERFORMANCE

A) SERVICE BRAKE

Date of tests: 16th and 17th August 1978
Type of track: Concrete
Type of decelerometer: MOTO-METER-Bremsverzögerungs- und Pedalkraftschreiber

Weight of ballasted tractor with driver 6800 kg

Cold brakes

		With ballast	Without ballast
Travelling speed	km/h	26,0	26,0
Deceleration	m/s^2	4,1	4,0
Stopping distance	m	7,8	7,6
Force on pedal	daN	33	23
Force on pedal to achieve a deceleration of 2,5 m/s^2	daN	20	14

Brake fade characteristics (hot tests)

Deceleration	hot/cold	%	98	100
Stopping distance	cold/hot	%	103	103
Force on pedal	cold/hot	%	100	121

B) PARKING BRAKE

Tractor facing up 16 % slope
Pull on hand brake 28 daN, tractor does not roll

Tractor facing down 16 % slope
Pull on hand brake 26 daN, tractor does not roll

PRÜFUNGS-ABTEILUNG
DEUTZ DX 110-S
DX 110-N

Test No. 78-29

(6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 16th August 1978
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

Results of test	DX 110-S	DX 110-N
Gear:	5th fast	4th fast
Travelling speed before acceleration:	24,4 km/h	20,0 km/h
Sound level:	88,0 dB(A)	86,5 dB(A)

(7) NOISE AT THE DRIVER'S EAR LEVEL

Date of tests: 16th February 1979
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

The tractor was fitted with a safety cab
SK 1905-37-MASTER CAB

Results of tests

Gear	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 slow	3883	2,16	1,92	85,0
2 slow	3735	3,30	3,05	85,5
3 slow	4107	4,04	3,38	85,0
1 inter	4012	4,38	3,77	85,5
4 slow	3953	5,86	4,88	85,5
2 inter	3424	6,68	6,14	86,0
5 slow *) o)	3129	7,19	6,55	85,5
3 inter +)	2965	8,19	7,56	86,0
1 fast	2474	9,18	8,85	86,5
4 inter	1899	11,88	11,59	86,0
2 fast	1535	14,01	13,86	86,5
5 inter o)	1479	14,57	14,44	86,0
3 fast	1232	17,18	17,07	86,0
4 fast	light load	24,91	26,70	84,5
5 fast o)	light load	30,57	32,75	84,5

+) at DX 110-N the 3rd inter gear corresponds to the travelling speed nearest to 7,5 km/h

*) at DX 110-S the 5th slow gear corresponds to the travelling speed nearest to 7,5 km/h

o) not at DX 110-N

PRÜFUNGS-ABTEILUNG
DEUTZ DX 110-S/DX 110-N Test No. 78-29

(8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

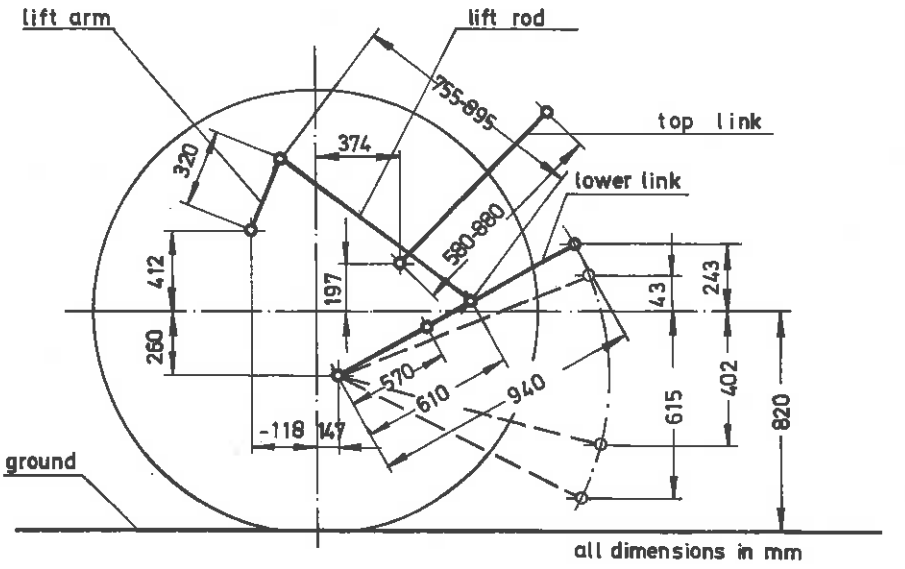
Date of tests: 1st August 1978

HYDRAULIC PUMP

(1) Opening pressure of relief valve in remote circuit	167 bar
Sustained pressure by open relief valve	174 bar
(2) Pump delivery rate at minimum pressure and maximum engine speed	42,0 l/min
(3) Pump delivery rate	38,0 l/min
Delivery pressure	169 bar
Hydraulic Power	10,7 kW

POWER LIFT

Dimensions of linkage geometry for the table on page 30



PRÜFUNGS-ABTEILUNG
DEUTZ DX 110-S
DX 110-N

LIFTING FORCES

Lifting heights relative to horizontal lower links

mm	-413	-400	-330	-300	-200	-145	-100	0
at hitch points	maximum mechanical advantage							
daN							4750	4800
	minimum mechanical advantage							
daN	3990	3990		4130	4230		4270	4320

Max. force exerted throughout the whole range 4750 daN

Front of tractor does not lift, if front axle is ballasted to its maximum permissible load

at test frame	maximum mechanical advantage							
daN			4860	4810	4640		4500	4360
	minimum mechanical advantage							
daN						4360	4360	4360

Max. force exerted throughout the whole range 3880 daN

Force at which front of tractor lifts when front axle is ballasted to its maximum permissible load 3574 daN

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+100	+200	+295	+300	+311	+400	+500	+503	+560
lift rods 755 mm long, hole no. 2								
4850	4890		4890		4890	4990	4990	
lift rods 895 mm long, hole no. 1								
4320	4370	4420						
lift rods 895 mm long, hole no. 2								
4210	3980		3910	3880				
lift rods 755 mm long, hole no. 1								
4260	4170		3930		3740	3550		3500

All values of forces for pressure 169 bar at max. hydraulic power, see page 27; calculated from measurements at max. oil pressure 174 bar

LINKAGE GEOMETRY when connected to the standard frame	Maximum mechanical advantage	Minimum mechanical advantage
Projected length in side view:		
Lower links	940 mm	940 mm
Lift arms	320 mm	320 mm
Lift rods	895 mm	755 mm
Top link	730 mm	730 mm
Distance of lift rod connection point from pivot point of lower link	610 mm	570 mm
The following dimensions are given relative to rear axle centre line 820 mm above ground		
Lower link pivot point	147 mm behind, 260 mm below	147 mm behind, 260 mm below
Top link pivot point	374 mm behind, 197 mm above	374 mm behind, 197 mm above
Lift arm pivot point	118 mm behind, 412 mm above	118 mm behind, 412 mm above
Maximum and minimum height of lower link hitch points	43 mm above, 615 mm below	243 mm above, 402 mm below
Height of lower link hitch points above ground when locked in highest transport position	863 mm	1063 mm

PRÜFUNGS-ABTEILUNG

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DX 110-N

Test No. 78-29

OPTIONAL TESTS

(9) ENGINE PERFORMANCE

Date of tests: 14th July till 17th July 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					
75.2	2300	21.63	18.05	240	3.48
At standard p.t.o. speed (1000 rev/min)					
70.8	2071	20.11	16.78	237	3.52
At the speed recommended for drawbar work					
75.2	2300	21.63	18.05	240	3.48
Part loads					
(i) 85% of the torque at maximum power at 2-hour test					
66.0	2374	18.87	15.75	239	3.50
(ii) unloaded					
-	2441	4.76	3.97	-	-
(iii) 50% of the load defined in (i)					
33.4	2404	11.36	9.48	284	2.94
(iv) maximum power					
75.2	2300	21.63	18.05	240	3.48
(v) 25% of the load defined in (i)					
16.8	2419	8.01	6.68	397	2.10
(vi) 75% of the load defined in (i)					
49.8	2389	15.19	12.68	255	3.28

Optimum fuel consumption: 223 g/kWh at 41,8 kW and 1495 rev/min
No load maximum engine speed: 2441 rev/min
Torque at maximum power (2 hours): 312 Nm
Maximum torque: 350 Nm at 1602 rev/min of the engine

Mean atmospheric conditions:	temperature	24 °C
	pressure	1003 mbar
	relative humidity	60 %
Maximum temperatures:	coolant	-
	engine oil	93 °C
	fuel	26 °C
	engine air intake	27 °C

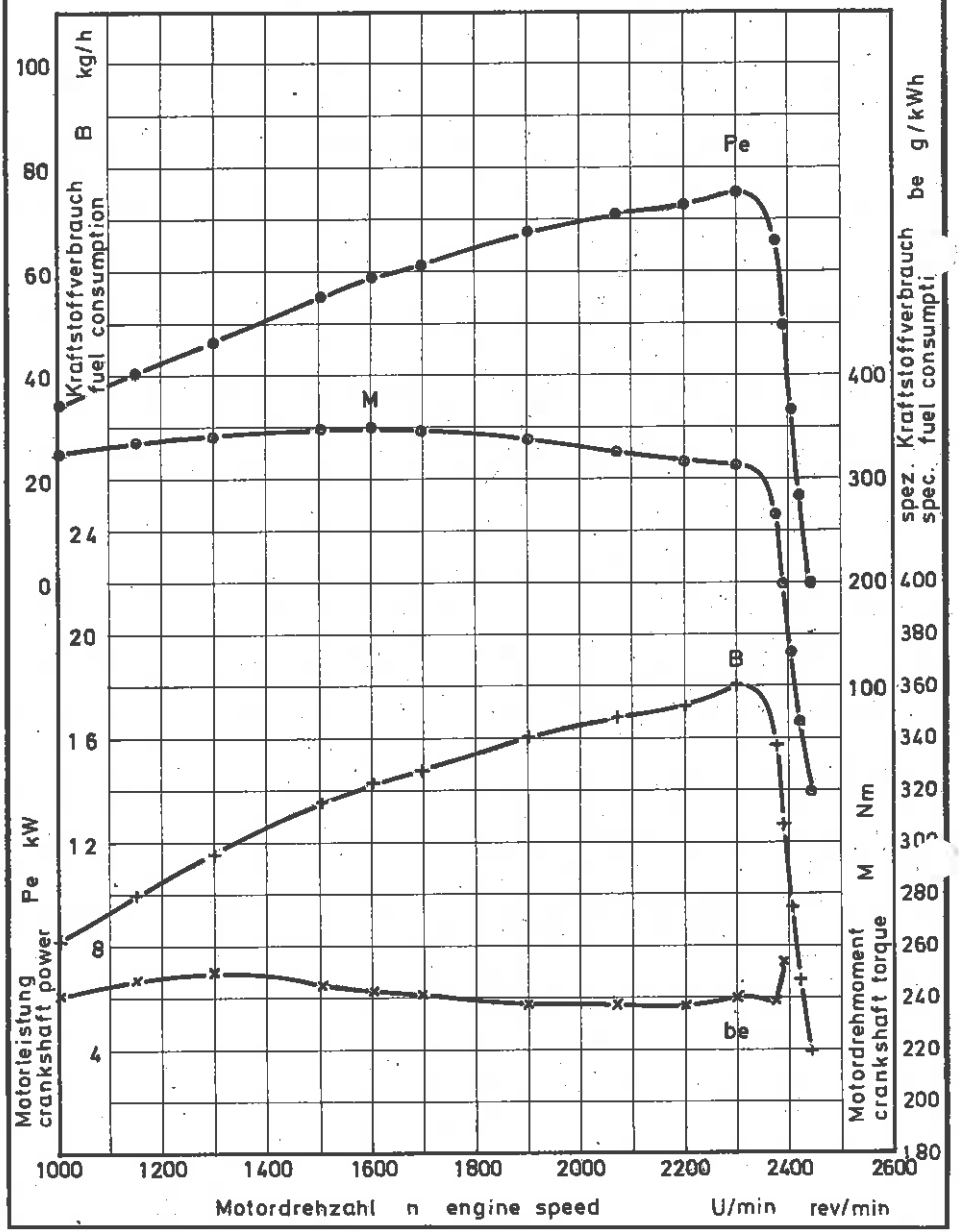
PRÜFUNGS-ABTEILUNG

DEUTZ DX 110 S
DX 110 N

Motorleistung

Engine performance

Test Nr. 78-129



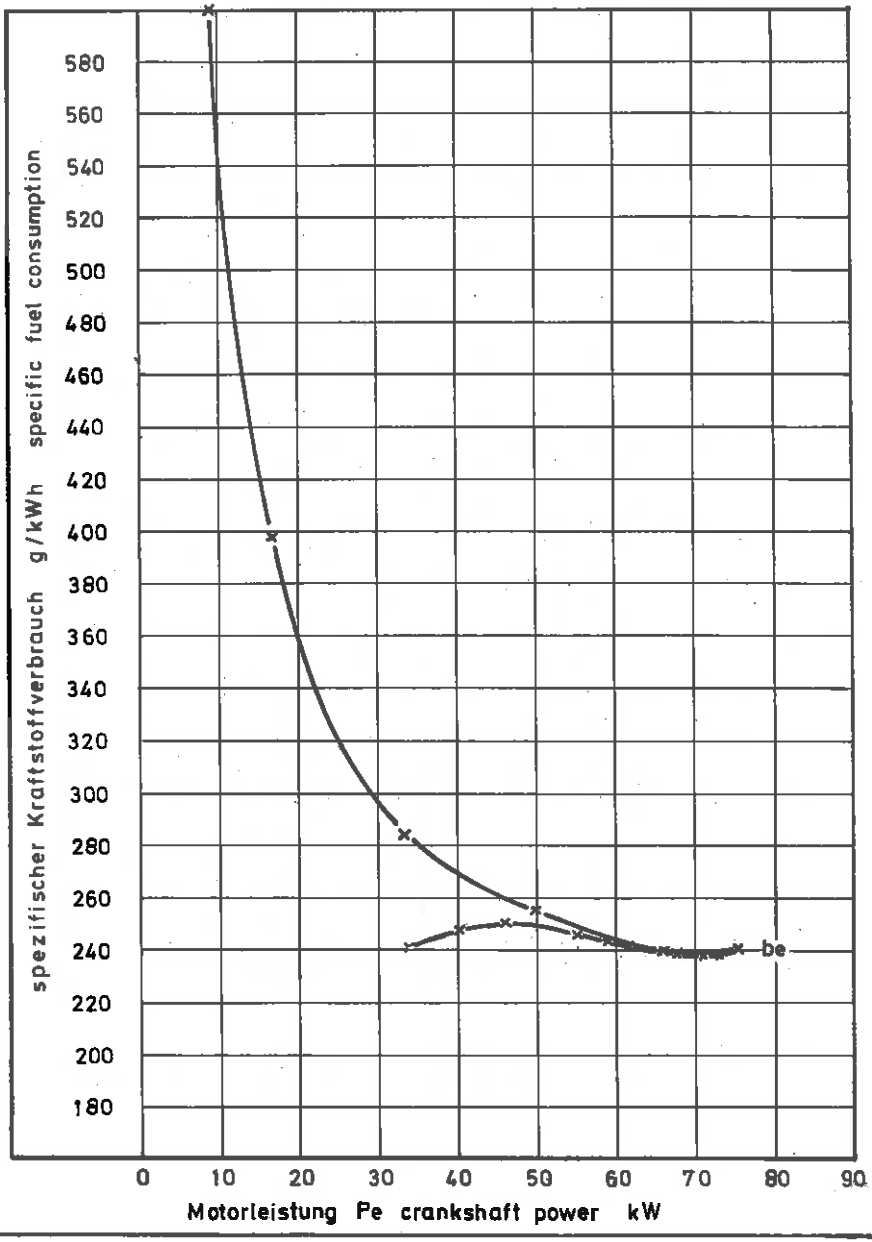
PRÜFUNGS-ABTEILUNG

DEUTZ DX 110 S
DX 110 N

Motorleistung

Engine performance

Test Nr. 78- 29



PRÜFUNGS-ABTEILUNG

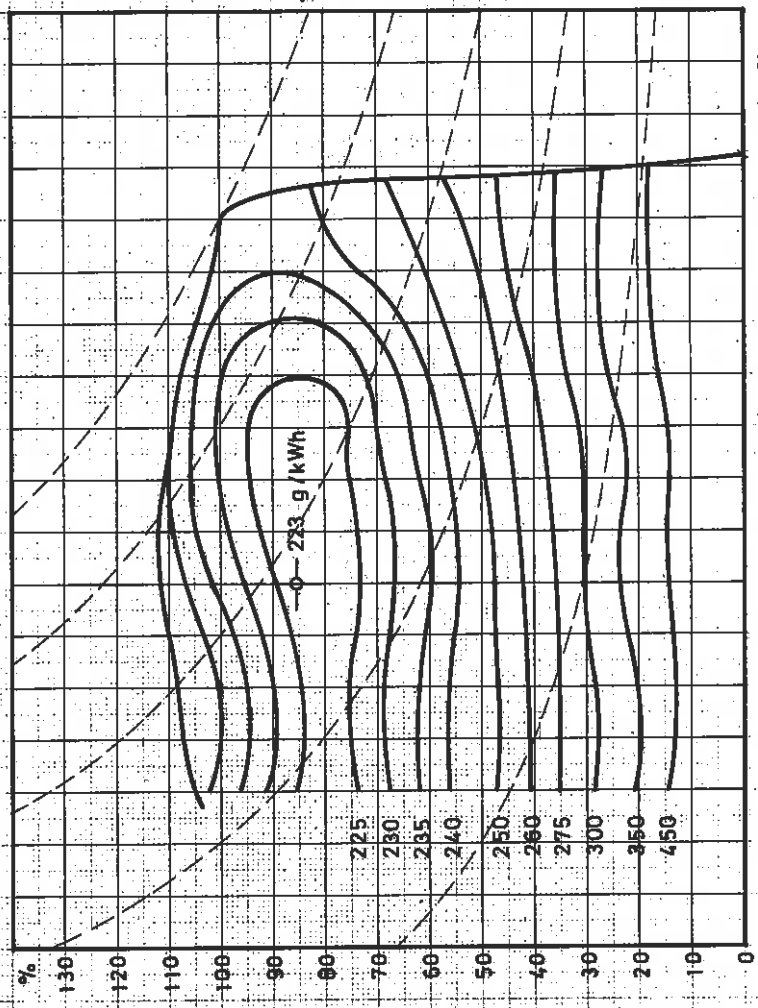
DEUTZ DX 110 S
DX 110 N

Motorleistung
Engine performance

Test Nr. 78- 29

Motorleistung in % der Leistung bei Nenndrehzahl

engine power in % of power at rated engine speed



Belastung in % des Drehmomentes bei Nenndrehzahl

load in % of torque at rated engine speed

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