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

O.E.C.D. No. **911**



# Agricultural Tractor
# DEUTZ-FAHR DX 6.50 (4WD)
## Type denomination D 1029 A-S, D 1029 A-T

**Manufacturer**
Klöckner-Humboldt-Deutz AG
D-5000 Köln-Deutz

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: January till May 1984
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.E.M.A.G.R.E.F., France) as being in accordance with the O.E.C.D. STANDARD CODE.

Date of Approval: 15th October 1984 O.E.C.D. No. 911

The tractor DX 6.50, type denomination D 1029, has been tested in 2 variants:

1) As model D 1029 A-S with 5 speed change gear and maximum design related speed 30 km/h,
2) as model D 1029 A-T with 6 speed change gear and maximum design related speed 40 km/h.

In the rest both variants are identical.

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

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

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

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**PRÜFUNGS-ABTEILUNG**
DEUTZ-FAHR DX 6.50 Test No. 84-40

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

## SPECIFICATION OF TRACTOR

### Tractor

| | |
|---|---|
| Make: | DEUTZ-FAHR |
| Trade name: | DX 6.50 |
| Type denomination: | D 1029 A-S and D 1029 A-T |
| Type: | Four-wheel-drive tractor, unit construction |
| Serial No.: | 7441 0003 |

### Engine

| | |
|---|---|
| Make: | DEUTZ |
| Model: | BF6L 913.101 |
| Type: | Supercharged 4-stroke Diesel engine, direct injection, air cooled |
| Serial No.: | 6673166 |
| 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: | PIERBURG fuel feed pump;<br>BOSCH in-line injection pump:<br>PES 6A 85D 410 RS 2537;<br>manufacturer's production setting 69,0 $mm^3$/stroke at rated engine speed and full load;<br>injection timing $28^{\circ} \pm 1^{\circ}$ before TDC;<br>BOSCH multihole injection nozzles DLLA 149S 775, injection pressure 175 + 8 bar;<br>MANN fuel filter with replaceable cartridge;<br>capacity of fuel tank 155 l, additional tank with 100 l capacity available |
| Governor: | BOSCH centrifugal variable speed governor with manifold-pressure compensator<br>RSV 325-1150 A8B 2020 DL;<br>governed range of engine speed 650 to 2430 1/min, rated engine speed 2300 1/min |

**PRÜFUNGS-ABTEILUNG**
DEUTZ-FAHR DX 6.50 Test No. 84-40

| | |
|---|---|
| Supercharger: | KÜHNLE, KOPP UND KAUSCH<br>3LEP 229A 13.2<br>exhaust driven turbo supercharger<br>maximum supercharge pressure 680 mbar |
| Air cleaner: | DEUTZ-SICCOPUR<br>dry paper element filter with precleaner, replaceable cartridge, electrical maintenance indicator, air intake above bonnet |
| Exhaust silencer: | WALKER<br>single chamber-absorption type silencer, 120 x 230 mm oval, 1090 mm long;<br>on the left beside the bonnet, mouth showing upwards;<br>mouth 2925 mm above ground |
| Lubrication system: | Forced feed from gear pump;<br>strainer in sump;<br>MANN oil filter in full flow with by-pass valve and replaceable cartridge;<br>cartridge change every 500 operating hours;<br>oil capacity 17 l;<br>specified oil quality API-CD,<br>oil change period 250 operating hours<br>specified oil viscosities:<br>below - 5°C SAE 10W<br>from -10°C to +10°C SAE 20W/20<br>from + 5°C to +30°C SAE 30<br>over +25°C SAE 40<br>or over -10°C SAE 15W/40;<br>oil cooler at right side of engine at engine's cooling air baffle |
| Cooling system: | Air cooling with axial blower driven by V-belt and fluid coupling, blower speed controlled by exhaust gas temperature |
| Starting system: | Electrical<br>BOSCH solenoid pre-engaged-drive-starting motor JF 12V 2,7 kW;<br>BOSCH flame plug in intake manifold |
| Electrical equipment: | 12 Volt, negative earth;<br>BOSCH 3 phase alternator K1 14V 65A21 910 W;<br>1 lead acid battery 110 Ah at 20 hours rating |

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Transmission

| | |
|---|---|
| Travel drive clutch: | LAMELLEN- UND KUPPLUNGSBAU GMBH<br>single-plate dry clutch A1435,<br>by pedal hydraulically operated,<br>disc 350 mm dia |
| P.t.o. clutch: | ORTLINGHAUS<br>wet multi-plate clutch in gear box,<br>by hand-valve hydraulically operated |
| Gear box: | DEUTZ-FAHR<br>TW 911<br>synchromesh speed change gear with<br>5 speeds at model D 1029 A-S and<br>6 speeds at model D 1029 A-T;<br>synchronized range gear with 3 forward ranges<br>(L, M and H) and 1 reverse range (R);<br>total 15 forward and 5 reverse speeds<br>at model D 1029 A-S,<br>18 forward and 6 reverse speeds<br>at model D 1029 A-T;<br>collar shifted creeper group optional,<br>not attached to tested tractor |
| Rear axle and final drives: | DEUTZ-FAHR<br>bevel gear and bevel gear differential on<br>intermediate shaft;<br>cylindrical gear transmissions to rear axle<br>half shafts, rear axle half shafts with<br>pedal operated under load shiftable<br>differential lock;<br>differential lock not self disengaging, with<br>electrical indicator;<br>planetary final drives |
| Front axle and final drives: | ZAHNRADFABRIK FRIEDRICHSHAFEN<br>APL 350<br>driven by universal joint shaft (placed in<br>tractor's median plane); wet multi-plate<br>safety clutch, by control knob electrically-<br>hydraulically operated;<br>bevel gear,<br>No Spin-differential OPTITRAC;<br>planetary final drives |

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DEUTZ-FAHR DX 6.50

Test No. 84-40

Total ratios and speeds (tyres 20.8 R 38)

| Range | Gear | Total ratio engine : driving wheels | Nominal travelling speed *) at rated engine speed km/h |
|---|---|---|---|
| L | 1 | 315,43 | 2,35 |
| | 2 | 234,44 | 3,16 |
| | 3 | 179,03 | 4,14 |
| | 4 | 127,88 | 5,80 |
| | 5 | 104,20 | 7,11 |
| | 6 +) | 82,50 | 8,99 |
| M | 1 | 152,55 | 4,86 |
| | 2 | 113,39 | 6,54 |
| | 3 | 86,59 | 8,56 |
| | 4 | 61,85 | 11,99 |
| | 5 | 50,39 | 14,71 |
| | 6 +) | 39,90 | 18,58 |
| H | 1 | 74,94 | 9,89 |
| | 2 | 55,70 | 13,31 |
| | 3 | 42,53 | 17,43 |
| | 4 | 30,38 | 24,40 |
| | 5 | 24,75 | 29,95 |
| | 6 +) | 19,60 | 37,82 |
| R | 1 | 163,39 | 4,54 |
| | 2 | 121,44 | 6,10 |
| | 3 | 92,74 | 7,99 |
| | 4 | 66,24 | 11,19 |
| | 5 | 53,97 | 13,74 |
| | 6 +) | 42,74 | 17,35 |

*) calculated with the radius index 855 mm

+) not at model D 1029 A-S

Gear lubrication: Oil screen filter in gear housing, cleaning every 2000 operating hours

oil capacity in gearbox including rear axle with final drives 46 l
specified: engine oil SAE 15W/40
recommended quality API-CC or API-CD;
oil change period 2000 operating hours

oil capacity in front axle bevel gear drive 7,5 l
in front axle final drives, each 0,75 l
specified: EP-gear oil SAE 90, quality API-GL5;
oil change period 1000 operating hours

**PRÜFUNGS-ABTEILUNG**
DEUTZ-FAHR DX 6.50 Test No. 84-40

| | |
|---|---|
| Power-take-off | Independent p.t.o.<br>2 p.t.o. shafts at rear of tractor, driven by wet multi-plate clutch; both shafts rotate simultaneously and are shifted in common by p.t.o. hand lever; rotation clockwise, viewed to tractor's rear<br><br>540 1/min p.t.o.<br>700 mm above ground,*) 50 mm to the right of tractor's median plane;<br>35 mm dia, 6 splines, ISO 500/DIN 9611 type 1;<br>567 1/min at rated engine speed, standard p.t.o. speed 540 1/min at engine speed 2192 1/min<br><br>1000 1/min p.t.o.<br>685 mm above ground,*) 50 mm to the left of tractor's median plane;<br>35 mm dia, 21 splines, ISO 500/DIN 9611 type 2,<br>optional<br>35 mm dia, 6 splines, ISO 500/DIN 9611 type 1;<br>1039 1/min at rated engine speed, standard p.t.o. speed 1000 1/min at engine speed 2214 1/min .<br><br>p.t.o. shafts 525 mm behind rear axle centre line |
| Power lift | DEUTZ-FAHR<br>K 55.2 DEUTZ TRANSFERMATIC-system, hydraulic power lift in unit construction, draft control, position control and intermixable control, floating position;<br>lower link sensing,<br>no lowering throttle |

*) rear tyres size 20.8 R 38

| | |
|---|---|
| Hydraulic system: | Open centre system;<br>BOSCH tandem gear pump HY/ZFFS 11/22,5 + 14 L, directly driven by engine;<br>delivery 56,0 l/min at rated engine speed;<br>hydraulic oil filter with electrical maintenance indicator, filter change yearly<br><br>DEUTZ-FAHR control valve;<br>maximum working pressure 175 + 8 bar,<br>single acting cylinder with 90 mm bore and 145 mm stroke, overpressure relief valve in cylinder set to 240 bar; 2 single acting additional rams with 185 mm stroke and 65 (optional 55) mm bore<br><br>1 double acting additional DEUTZ-FAHR control valve SD.80,<br>2 couplings at rear of tractor;<br>maximum 3 double acting additional control valves available;<br>1 separate oil return pipe at rear of tractor<br><br>hydraulic oil reservoir with 13 l capacity in power lift unit, additional tank with 25 l capacity optional;<br>by oil tap may be taken off 8 l if tractor is working stationary or travelling,<br>30 l may be taken off if tractor is fitted out with additional tank;<br>hydraulic oil cooler below cooling air baffle |
| Hydraulic oil: | Recommended: engine oil SAE 20W/20 API-CC,<br>oil change period 1000 operating hours,<br>or engine oil SAE 20W/20 API-CD,<br>oil change period 2000 operating hours |
| Implement linkage: | Three point linkage, quick couplers optional, mounted to tested tractor;<br>joint balls category 2 acc. to ISO 730/I;<br>lift rods adjustable from 830 to 970 mm;<br>lifting range with mean lift rods' length of 900 mm:<br>from 321 mm to 865 mm above ground;<br>length of top link adjustable from 580 mm to 865 mm,<br>length of lower links 955 mm |

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Pull attachment

| | |
|---|---|
| Trailer hitch: | CRAMER, KU 9602 automatical;<br>height above ground adjustable to 921 or 988 mm,<br>coupling pin 32 mm dia;<br>distance of hitch hole centre<br>to rear axle centre line 571 mm<br>to p.t.o. shaft end 46 mm;<br>permissible vertical load 2000 kg |
| Swinging drawbar: | Optionally available, not attached to tested tractor |
| Holed drawbar: | Short bar, mounted to hitch points of lower links;<br>length between the joint balls 825 mm;<br>thickness of bar 30 mm, width 80 mm;<br>centre hole and 4 holes on either side with 80 mm distance each;<br>all holes 33 mm dia;<br>distance of holes' centre line with lower links in horizontal position<br>from rear axle centre line 1102 mm<br>from p.t.o. shaft end 577 mm<br>with lift rods adjusted to mean length of 900 mm lifting range from 336 mm to 880 mm above ground;<br>the drawbar may be fixed mechanically-hydraulically in the height of 570 mm above ground, measured on the surface of bar |
| Towing hitch: | At front of tractor, 953 mm above ground |

Steering

Hydrostatic, DANFOSS
OSPC 140 OR
oil circuit in common with power lift, supplied by tandem part of the BOSCH gear pump with delivery 14 $cm^3$/rev;
1 integrated steering cylinder directly acting on front axle; bore 70 mm dia, stroke 238 mm, piston rod 36 mm dia

## Brakes

| | |
|---|---|
| Parking brake: | GIRLING<br>dry mechanical disc brake, acting on intermediate shaft;<br>operated by pulling handle with ratchet;<br>1 disc brake with 2 lining discs each on the left and right outside of gearbox |
| Service brake: | pedal operated muscle power brake with hydraulical transmission,<br>acting on front- and rear axle;<br>at rear: TEVES<br>1 brake disc with 245 mm dia and 2 brake calipers each on the left and right, outside of gearbox, on intermediate shaft<br>at front: TEVES<br>1 caliper disc brake between universal joint shaft and bevel gear drive of front axle;<br>brake disc 282 mm dia;<br>front axle brake at 40 km/h version standard, for 30 km/h version optional |
| Steering brake: | Divided pedal of service brake;<br>for normal use locked together |
| Trailer brake: | optionally available;<br>dual line or combined single-dual line compressed air brake |

## Wheels

| | |
|---|---|
| Steering wheels: | At front, 2 cross-ply tyres<br>18.4 - 26 8ply GOODYEAR;<br>maximum permissible load per tyre<br>2265 kg at 1,4 bar inflation pressure and 30 km/h road speed;<br>track width adjustable to 1856 mm or by turning the wheels to 1952 mm;<br>rims DW 16 x 26 |

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Driving wheels: At front and at rear;
rear wheels:
2 radial-ply tyres
20.8 R 38 8 ply CONTINENTAL
maximum permissible load per tyre 3090 kg
at 1,3 bar inflation pressure and 30-40 km/h
road speed;
track width adjustable to 1800 mm or by
turning the wheels to 2000 mm;
rims W 18 L x 38
adjustable gauge bowl wheels with possible
track adjustings from 1800 to 2200 mm (in
steps of 100 mm each) available

Wheel base: 2703 mm

Cab

DEUTZ-FAHR
OECD-tested safety cab SK 1905-37/5
approval no. CSD 0500/1 (model D 1029 A-S)
CSD 0500/5 (model D 1029 A-T)
antivibration mounted by 4 silent blocks on
tractor;
1 door and 3 steps each on the left and right
hand side, steps 540, 805 and 1055 mm above
ground; driver's platform 1320 mm above ground

windscreen and upper rear window tiltable;
engine-oil heat exchanger heating-system
with blower,
incorporated in instrument and steering
support;
air intake above engine bonnet, air outlet
jets at cab floor, at instrument panel and at
windscreen;
heating by recirculating air is possible

noise reduction materials:

| | | |
|---|---|---|
| floor | foam PUR | 25 mm |
| | in PE-foil | 0,05 mm |
| | rubber mat | 5 mm |
| mudguards | imitation leather on moltoprene foam | 8 mm |
| seat support | rubber mat | 4 mm |
| roof | cotton fleece, phenolic resin bonded | 2-6 mm |
| | needle fleece | 2 mm |
| | foam | 30 mm |
| | needle fleece | 3 mm |

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| | |
|---|---|
| Seat | GRAMMER, DS 85 H/90 A<br>upholstered seat with back rest and arm rests, adjustable spring with shock absorber; height of unloaded seat above driver's platform adjustable in 2 steps from 480 to 540 mm, back rest inclination adjustable about 10°, longitudinal adjustment 160 mm, seat revolving about vertical axle to the left and right each about 25° |
| Number of grease points | 22 |
| Dimensions | Total length: 4552 mm without ballast<br>4872 mm with ballast |
| | Total width: 2372 mm with and without ballast |
| | Total height: 2925 mm to mouth of exhaust silencer<br>2880 mm to top of cab roof |
| | Ground clearance: 450 mm below side fixation of lower links |

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Possible combinations of tyres

| tyre size | | | |
|---|---|---|---|
| at front | | at rear | |
| model D 1029 A-S (30 km/h-version) | | | |
| 9.5 - 36 | 10 ply | 11.2 - 48<br>12.4 - 46 | 8 ply<br>10 ply |
| 14.9 - 28<br>16.9 - 26 | 6 ply<br>6 ply | 18.4 - 38 | 8 ply |
| 16.9 - 28<br>18.4 - 26 | 6 ply<br>8 ply | 20.8 - 38 | 8 ply |
| model D 1029 A-T (40 km/h-version) | | | |
| 9.5 R 36 | 10 ply | 12.4 R 46 | 10 ply |
| 14.9 R 28<br>16.9 - 26 | 6 ply<br>6 ply | 18.4 R 38 | 8 ply |
| 16.9 R 28<br>18.4 - 26 | 6 ply<br>8 ply | 20.8 R 38 | 8 ply |
| 18.4 - 26 | 8 ply | 20.8 - 38 | 8 ply |

Lighting equipment — Electrical 12 V, in accordance with German legislation

| | Dimensions<br>mm | Height above ground to centre<br>mm | Distance from outside edge of tractor to centre<br>mm |
|---|---|---|---|
| Head lights | 130 dia | 1325 | 978 |
| Side lights | 50x50 | 1835 | 400 |
| Rear lights | 45x64 | 1760 | 365 |
| Reflectors | | | |
| 1st pair | 103x58 | 1460 | 177 |
| 2nd pair | 103x58 | 635 | 697 |

Running-time meter — Mechanical, combined with tachometer, driven by camshaft of engine; reference engine speed for one really counted hour 1500 rev/min

**PRÜFUNGS-ABTEILUNG**
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## TEST CONDITIONS

Track setting: 1856 mm at front
1800 mm at rear

Weights

| | | without driver | with driver |
|---|---|---|---|
| Without ballast: | at front | 2080 kg | 2090 kg |
| | at rear | 3260 kg | 3320 kg |
| | total | 5340 kg | 5410 kg |
| Front ballast: | water in the tyres | | 530 kg |
| | 11 front weights, total | | 440 kg |
| Rear ballast: | water in the tyres | | 1130 kg |
| | 5 weights per wheel, total | | 490 kg |
| With ballast: | at front | 3190 kg | 3200 kg |
| | at rear | 4740 kg | 4800 kg |
| | total | 7930 kg | 8000 kg |

Fuels and lubricants used in tests

| | | |
|---|---|---|
| Fuel: | ARAL Diesel-fuel DIN 51601 density at 15°C | |
| | at engine test | 0,838 kg/l |
| | at p.t.o. test | 0,834 kg/l |
| | at drawbar test | 0,824 kg/l |
| Engine oil: | DEUTZ HD SAE 15W/40 | |
| Gear oil: | DEUTZ HD SAE 15W/40 in gearbox including rear axle | |
| | DEUTZ gear oil API-GL5 hypoid SAE 90 in front axle including final drives | |
| Hydraulic oil: | DEUTZ SGHD-B SAE 20W/20 in power lift and in steering | |

**PRÜFUNGS-ABTEILUNG**
DEUTZ-FAHR DX 6.50

Test No. 84-40

## COMPULSORY TESTS

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

Date of tests: 17th February 1984
Location of tests: DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

| Power kW | Speed engine rev/min | Speed p.t.o. rev/min | Fuel consumption hourly l/h | Fuel consumption hourly kg/h | Fuel consumption specific g/kWh | Specific energy kWh/l |
|---|---|---|---|---|---|---|
| **Maximum power** | | | | | | |
| At 2-hour test | | | | | | |
| 93.8 | 2214 | 1000 | 28.14 | 23.47 | 250 | 3.34 |
| At standard p.t.o. speed | | | | | | |
| 93.8 | 2214 | 1000 | 28.14 | 23.47 | 250 | 3.34 |
| At rated engine speed | | | | | | |
| 93.0 | 2300 | 1039 | 28.51 | 23.78 | 256 | 3.26 |
| **Part loads**, the governor hand lever in the position corresponding to the maximum power at full load (curve a) | | | | | | |
| (i) 85% of the torque at rated speed | | | | | | |
| 80.3 | 2335 | 1055 | 25.60 | 21.35 | 266 | 3.14 |
| (ii) unloaded | | | | | | |
| - | 2420 | 1093 | 6.75 | 5.63 | - | - |
| (iii) 50% of the load defined in (i) | | | | | | |
| 40.8 | 2371 | 1071 | 15.97 | 13.32 | 327 | 2.55 |
| (iv) maximum power | | | | | | |
| 93.0 | 2300 | 1039 | 28.51 | 23.78 | 256 | 3.26 |
| (v) 25% of the load defined in (i) | | | | | | |
| 20.6 | 2395 | 1082 | 11.14 | 9.29 | 451 | 1.85 |
| (vi) 75% of the load defined in (i) | | | | | | |
| 60.7 | 2354 | 1063 | 20.61 | 17.19 | 283 | 2.94 |

| Power kW | Speed engine rev/min | Speed p.t.o. rev/min | Fuel consumption hourly l/h | Fuel consumption hourly 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 (curve b)** | | | | | | |
| (i) 85% of the torque at maximum power at standard p.t.o. speed | | | | | | |
| 81.8 | 2269 | 1025 | 25.38 | 21.16 | 259 | 3.22 |
| (ii) unloaded | | | | | | |
| - | 2340 | 1057 | 6.25 | 5.21 | - | - |
| (iii) 50% of the load defined in (i) | | | | | | |
| 41.5 | 2301 | 1039 | 15.62 | 13.03 | 314 | 2.65 |
| (iv) maximum power | | | | | | |
| 93.8 | 2214 | 1000 | 28.14 | 23.47 | 250 | 3.34 |
| (v) 25% of the load defined in (i) | | | | | | |
| 20.9 | 2324 | 1050 | 10.53 | 8.78 | 420 | 1.99 |
| (vi) 75% of the load defined in (i) | | | | | | |
| 61.7 | 2283 | 1031 | 20.32 | 16.95 | 275 | 3.03 |

Standard specific fuel consumption (g/kWh): 266/327/259/314

No load maximum engine speed: 2420 rev/min
Equivalent crankshaft torque at maximum power (2 hours): 405 Nm
Equivalent crankshaft torque at rated speed: 386 Nm
Maximum equivalent crankshaft torque: 470 Nm at 1596 rev/min of the engine

| | | |
|---|---|---|
| Mean atmospheric conditions: | temperature | 20 °C |
| | pressure | 995 mbar |
| | relative humidity | 30 % |
| Maximum temperatures: | cylinder head | 100 °C |
| | engine oil | 115 °C |
| | fuel | 18 °C |
| | engine air intake | 19 °C |

PRÜFUNGS-ABTEILUNG

# Zapfwellenleistung

## P.t.o. performance

Test Nr. 84-40

Motordrehzahl n engine speed t/min rev/min

Zapfwellenleistung p.t.o. power P_e kW

äquivalentes Drehmoment equiv. crankshaft torque M equiv Nm

spez. Kraftstoffverbrauch spec. fuel consumption b_e g/kWh

standard p.t.o. speed 1000 1/min

M equiv

P_e

B

b_e

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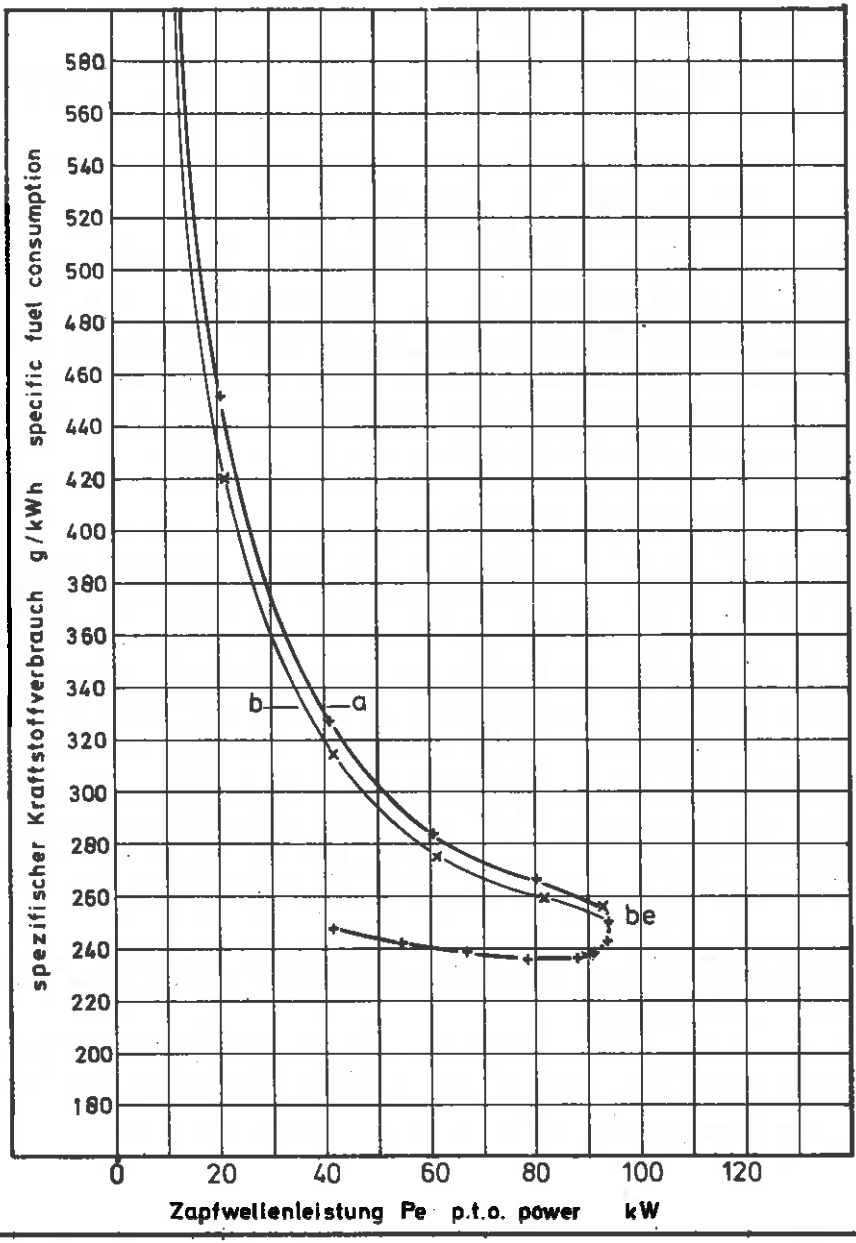
DEUTZ-FAHR DX 6.50

# Zapfwellenleistung

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## P.t.o. performance

Test Nr. 84-40



**PRÜFUNGS-ABTEILUNG**
DEUTZ-FAHR DX 6.50

(2) DRAWBAR PERFORMANCE

Date of tests: 26th March till 17th April 1984
Type of track: Concrete

| Gear | Driving speed km/h | Power kW | Drawbar pull daN | Engine speed rev/min | Slip of wheels % |
|---|---|---|---|---|---|
| (i) | MAXIMUM POWER (unballasted) height of drawbar above ground 590 mm | | | | |
| 1 M | 4,28 | 66,1 | 5563 | 2309 | 14,9 |
| 4 L | 4,88 | 75,2 | 5544 | 2214 | 15,1 |
| 2 M | 5,84 | 79,6 | 4906 | 2217 | 9,4 |
| 5 L | 6,40 | 79,1 | 4451 | 2214 | 7,7 |
| 3 M | 7,84 | 82,1 | 3768 | 2218 | 6,1 |
| 6 L | 8,26 | 78,4 | 3415 | 2211 | 5,5 |
| 1 H | 9,29 | 81,9 | 3172 | 2217 | 4,9 |
| 4 M | 11,36 | 80,6 | 2555 | 2218 | 3,9 |
| 2 H | 12,62 | 81,2 | 2317 | 2213 | 3,5 |
| (ii) | MAXIMUM POWER (ballasted) height of drawbar above ground 575 mm | | | | |
| 1 L | 2,09 | 46,4 | 7996 | 2348 | 15,0 |
| 2 L | 2,79 | 61,9 | 7989 | 2330 | 15,0 |
| 3 L | 3,50 | 76,9 | 7911 | 2216 | 14,3 |
| 1 M | 4,41 | 81,0 | 6610 | 2214 | 7,6 |
| 4 L | 5,40 | 82 0 | 5468 | 2219 | 5,2 |
| 2 M | 6,13 | 83,4 | 4900 | 2217 | 4,6 |
| 5 L | 6,71 | 81,9 | 4394 | 2214 | 3,9 |
| 3 M | 8,12 | 84,9 | 3763 | 2214 | 3,2 |
| 6 L | 8,55 | 80,7 | 3396 | 2216 | 2,8 |
| 1 H | 9,43 | 82,8 | 3160 | 2216 | 2,6 |
| 4 M | 11,48 | 81,6 | 2558 | 2213 | 2,1 |
| 2 H | 12,79 | 80,6 | 2268 | 2216 | 1,9 |
| (iii) | FIVE-HOUR-TEST at 75 % of pull at maximum power in 3 M gear | | | | |
| 3 M | 8,59 | 67,3 | 2822 | 2324 | 2,4 |
| (iv) | FIVE-HOUR-TEST at pull corresponding to 15 % wheel slip in test (ii) | | | | |
| 2 L | 2,83 | 62,9 | 7996 | 2328 | - |

Total oil consumption during ten hours duration of tests (iii) and (iv) 91 g/h

**PRÜFUNGS-ABTEILUNG**

Test No. 84-40

Tyre size front: 18.4 - 26 8 ply
rear: 20.8 R 38 8 ply

Tread bar height at the beginning of drawbar tests 97 % at front, 93 % at rear of the value, when new

| Specific fuel consumpt. g/kWh | Specific energy kWh/l | Temperatures Fuel °C | Cylinder-head °C | Engine oil °C | Atmospheric conditions Temperature °C | Relative humidity % | Pressure mbar |
|---|---|---|---|---|---|---|---|
| tyre inflation pressure 1,1 bar at front; 1,0 bar at rear | | | | | | | |
| 329 | 2,51 | 24 | 65 | 90 | 11 | 72 | 982 |
| 313 | 2,63 | 24 | 84 | 90 | 13 | 64 | 982 |
| 295 | 2,79 | 27 | 82 | 94 | 14 | 61 | 982 |
| 298 | 2,77 | 25 | 84 | 89 | 13 | 63 | 982 |
| 287 | 2,87 | 26 | 82 | 90 | 13 | 64 | 982 |
| 300 | 2,75 | 25 | 87 | 89 | 13 | 61 | 982 |
| 288 | 2,86 | 20 | 84 | 89 | 9 | 73 | 989 |
| 293 | 2,81 | 24 | 80 | 87 | 8 | 82 | 989 |
| 289 | 2,85 | 24 | 81 | 88 | 8 | 86 | 989 |
| tyre inflation pressure 1,1 bar at front; 1,0 bar at rear | | | | | | | |
| 363 | 2,27 | 24 | 59 | 90 | 7 | 94 | 996 |
| 337 | 2,44 | 21 | 64 | 89 | 9 | 74 | 996 |
| 306 | 2,69 | 21 | 60 | 90 | 7 | 95 | 996 |
| 290 | 2,85 | 21 | 75 | 90 | 7 | 96 | 996 |
| 288 | 2,86 | 24 | 79 | 89 | 7 | 94 | 996 |
| 284 | 2,90 | 25 | 75 | 86 | 8 | 91 | 996 |
| 289 | 2,85 | 25 | 79 | 87 | 9 | 90 | 996 |
| 279 | 2,96 | 25 | 79 | 89 | 9 | 92 | 997 |
| 294 | 2,81 | 24 | 76 | 89 | 9 | 90 | 997 |
| 285 | 2,89 | 24 | 79 | 87 | 9 | 90 | 997 |
| 290 | 2,84 | 25 | 74 | 87 | 10 | 90 | 997 |
| 293 | 2,81 | 25 | 78 | 88 | 10 | 93 | 997 |
| 303 | 2,72 | 28 | 74 | 84 | 13 | 65 | 1010 |
| - | - | 27 | 72 | 94 | 11 | 87 | 1008 |

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

## (3) TURNING SPACE AND TURNING CIRCLE

Wheel equipment front: 18.4 - 26 8 ply
rear: 20.8 R 38 8 ply

Track of wheels front: 1856 mm
rear: 1800 mm

front wheel drive disengaged

| | With brakes | | Without brakes | |
|---|---|---|---|---|
| | left-hand m | right-hand m | left-hand m | right-hand m |
| Radius of turning space | 5,19 | 5,17 | 5,86 | 5,79 |
| Radius of turning circle | 4,78 | 4,75 | 5,45 | 5,37 |

## (4) LOCATION OF CENTRE OF GRAVITY

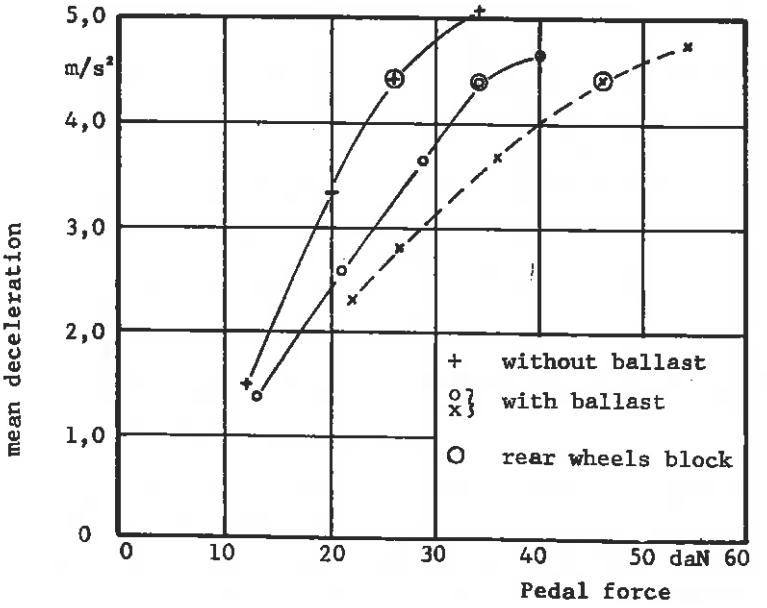
| | |
|---|---|
| Height above ground | 1040 mm |
| Distance forward from rear axle centre | 1044 mm |
| Distance from tractor's median plane , to the right | 5 mm |

(5) Braking

Date of tests: 9th March and 5th April 1984

| Tractor masses during tests with driver: | front kg | rear kg | total kg |
|---|---|---|---|
| without ballast | 2090 | 3320 | 5410 |
| with ballast | 3200 | 4800 | 8000 |

A) Service brake 30 km/h-version, front wheel drive disengaged
Type-0-test (cold brakes) ——, Type-I-(fade)test – – –



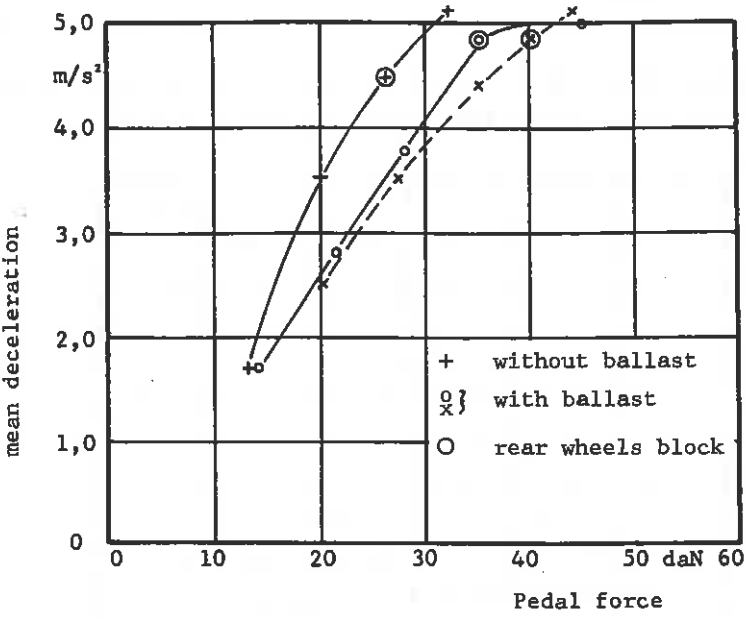

Speed before application of brakes, without ballast 31,7 km/h
with ballast 31,4 km/h

The brakes were heated by towing of the tractor for 1 km

no deviation of tractor from original course
no abnormal vibriation

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B) Service brake 40 km/h-version, front wheel drive disengaged
Type-0-test (cold brakes) ——, Type-I-(fade)test – – –




Speed before application of brakes, without ballast 40,0 km/h
with ballast 39,4 km/h

The brakes were heated by towing of the tractor for 1 km

no deviation of tractor from original course
no abnormal vibration

Parking brake

| | Ballasted tractor on 18%-slope | | Unballasted tractor on 12%-slope with trailer of 3000 kg | |
|---|---|---|---|---|
| | up | down | up | down |
| Braking device control force daN | 12 | 12 | 9 | 10 |

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(6) MEASUREMENT OF EXTERNAL NOISE LEVEL +)

Date of test: 28th March 1984
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2203

| Results of test | 30 km/h-version | 40 km/h-version |
|---|---|---|
| Gear: | 5 H | 6 H |
| Travelling speed before acceleration: | 23,8 km/h | 30,0 km/h |
| Sound level: | 85,5 dB(A) | 85,5 dB(A) |

(7) NOISE MEASUREMENT AT THE DRIVER'S EAR

Date of tests: 27th March 1984
Type of track: Concrete
Type of sound level meter: BRÜEL AND KJAER model 2209

tractor fitted out with DEUTZ-FAHR safety cab SK 1905-37/5

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 L | 5515 | 2,35 | 2,07 | 80,0 |
| 2 L | 5521 | 3,16 | 2,79 | 80,5 |
| 3 L | 5492 | 4,14 | 3,69 | 81,0 |
| 1 M | 5517 | 4,86 | 4,27 | 81,5 |
| 4 L | 5142 | 5,80 | 5,08 | 82,0 |
| 2 M | 4601 | 6,54 | 6,19 | 81,5 |
| 5 L *) | 4087 | 7,11 | 6,85 | 82,5 |
| 5 L *) | light load | 7,11 | 7,55 | 80,5 |
| 3 M | 3546 | 8,56 | 8,28 | 81,5 |
| 6 L | 3162 | 8,99 | 8,75 | 82,5 |
| 1 H | 2994 | 9,89 | 9,62 | 82,0 |
| 4 M | 2399 | 11,99 | 11,69 | 81,5 |
| 2 H | 2177 | 13,31 | 13,04 | 81,5 |
| 5 M | 1889 | 14,71 | 14,42 | 82,0 |
| 3 H | 1635 | 17,43 | 17,02 | 81,5 |
| 6 M | 1820 | 18,58 | 18,46 | 81,5 |
| 5 H +) | light load | 29,95 | 31,70 | 82,0 |
| 6 H +) | light load | 37,82 | 40,00 | 82,5 |

+) front wheel drive disengaged
*) the 5 L gear corresponds to the nominal travelling speed nearest to 7,5 km/h

## (8) POWER LIFT AND HYDRAULIC PUMP PERFORMANCE

Date of tests: 28th February and 18th April 1984

### Power Lift

| | Height of lower hitch point above ground in down pos. mm | Vertical movement mm | Max. force exerted through full range daN | Corresp. pressure of hydraul. fluid bar | Moment about rear axle daNm | Max. tilt angle of mast over range of lift degrees |
|---|---|---|---|---|---|---|
| At hitch points | 321 | 544 | 4995 | 158 | - | - |
| On the frame | 321 | 590 | 3780 | 158 | 6471 | 6 +) |

Temperature of hydraulic fluid at start of test 65 °C

+) tilt angle of mast from vertical to uppermost position 5°

Lifting heights relative to horizontal lower links

| mm | -280 | -274 | -200 | -100 | 0 | +100 | +200 | +270 | +300 | +310 |
|---|---|---|---|---|---|---|---|---|---|---|
| Lifting forces at hitch points | | | | | | | | | | |
| daN | | 5340 | 5380 | 5340 | 5380 | 5210 | 5080 | 4995 | | |
| Lifting forces at test frame | | | | | | | | | | |
| daN | 5335 | | 5185 | 5030 | 4815 | 4600 | 4255 | | 3800 | 3780 |

### Hydraulic Pump Performance

| | |
|---|---|
| Opening pressure of the relief valve in remote circuit | 158 bar |
| Sustained pressure with relief valve open | 179 bar |
| Pump delivery rate at minimum pressure, the governor control lever being set for max. power | 57,6 l/min |
| Hydraulic power at 90% of relief valve setting | 12,0 kW |
| Corresponding delivery rate | 44,7 l/min |
| Pressure | 161 bar |
| Temperature of hydraulic fluid | 65 °C |

Tapping point used for test: at rear of tractor

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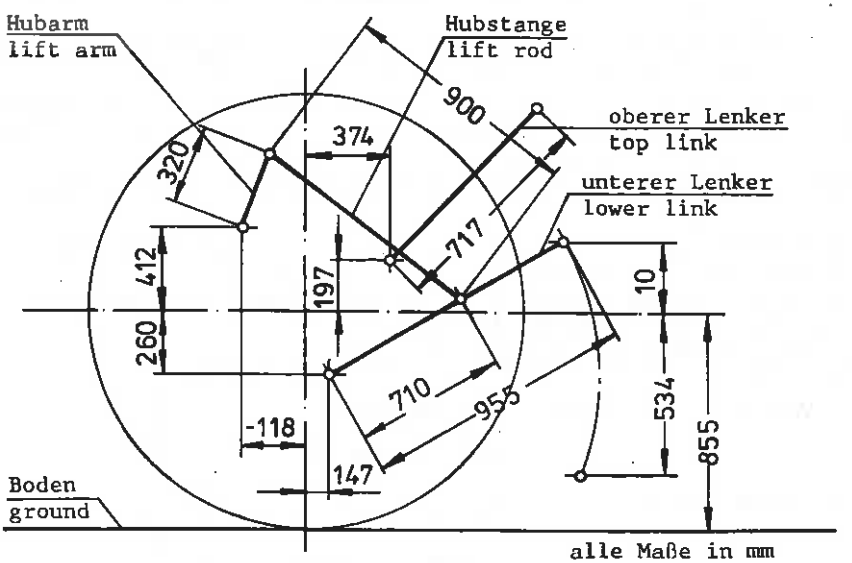
LINKAGE GEOMETRY when connected to the standard frame

Projected length in side view:

| | |
|---|---|
| Lower links | 955 mm |
| Lift arms | 320 mm |
| Lift rods | 900 mm |
| Top link | 717 mm |
| Distance of lift rod connection point from pivot point of lower link | 710 mm |

The following dimensions are given relative to the rear wheel centre line, situated 855 mm above ground:

| | | |
|---|---|---|
| Lower link pivot point | 260 mm below, | 147 mm behind |
| Top link pivot point | 197 mm above, | 374 mm behind |
| Lift arm pivot point | 412 mm above, | 118 mm behind |
| Maximum and minimum height of lower link hitch points | 10 mm above, | 534 mm below |
| Height of lower link hitch points when locked in transport position | | 300 mm below |




alle Maße in mm
all dimensions in mm

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## OPTIONAL TESTS

### (9) ENGINE PERFORMANCE

Date of tests: 2nd February 1984
Location of tests: DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK eddy-current dynamometer W 400

| Power kW | Engine speed rev/min | Fuel consumption hourly l/h | Fuel consumption hourly kg/h | Fuel consumption specific g/kWh | Specific energy kWh/l |
|---|---|---|---|---|---|
| **Maximum power** | | | | | |
| At 2-hour test | | | | | |
| 101.7 | 2300 | 28.48 | 23.75 | 233 | 3.57 |
| At standard p.t.o. speed (1000 rev/min) | | | | | |
| 101.2 | 2214 | 27.67 | 23.08 | 228 | 3.66 |
| At rated engine speed | | | | | |
| 101.7 | 2300 | 28.48 | 23.75 | 233 | 3.57 |
| **Part loads** | | | | | |
| (i) 85% of the torque at maximum power at 2-hour test | | | | | |
| 87.9 | 2338 | 25.27 | 21.08 | 240 | 3.48 |
| (ii) unloaded | | | | | |
| - | 2430 | 5.51 | 4.60 | - | - |
| (iii) 50% of the torque defined in (i) | | | | | |
| 44.9 | 2388 | 15.34 | 12.79 | 285 | 2.93 |
| (iv) maximum power | | | | | |
| 101.7 | 2300 | 28.48 | 23.75 | 233 | 3.57 |
| (v) 25% of the torque defined in (i) | | | | | |
| 22.6 | 2409 | 10.25 | 8.55 | 377 | 2.21 |
| (vi) 75% of the torque defined in (i) | | | | | |
| 66.6 | 2360 | 20.23 | 16.87 | 254 | 3.29 |

Optimum fuel consumption: 214 g/kWh at 47.5 kW and 1265 rev/min
No load maximum engine speed: 2430 rev/min
Torque at maximum power (2 hours): 422 Nm
Maximum torque: 508 Nm at 1702 rev/min of the engine

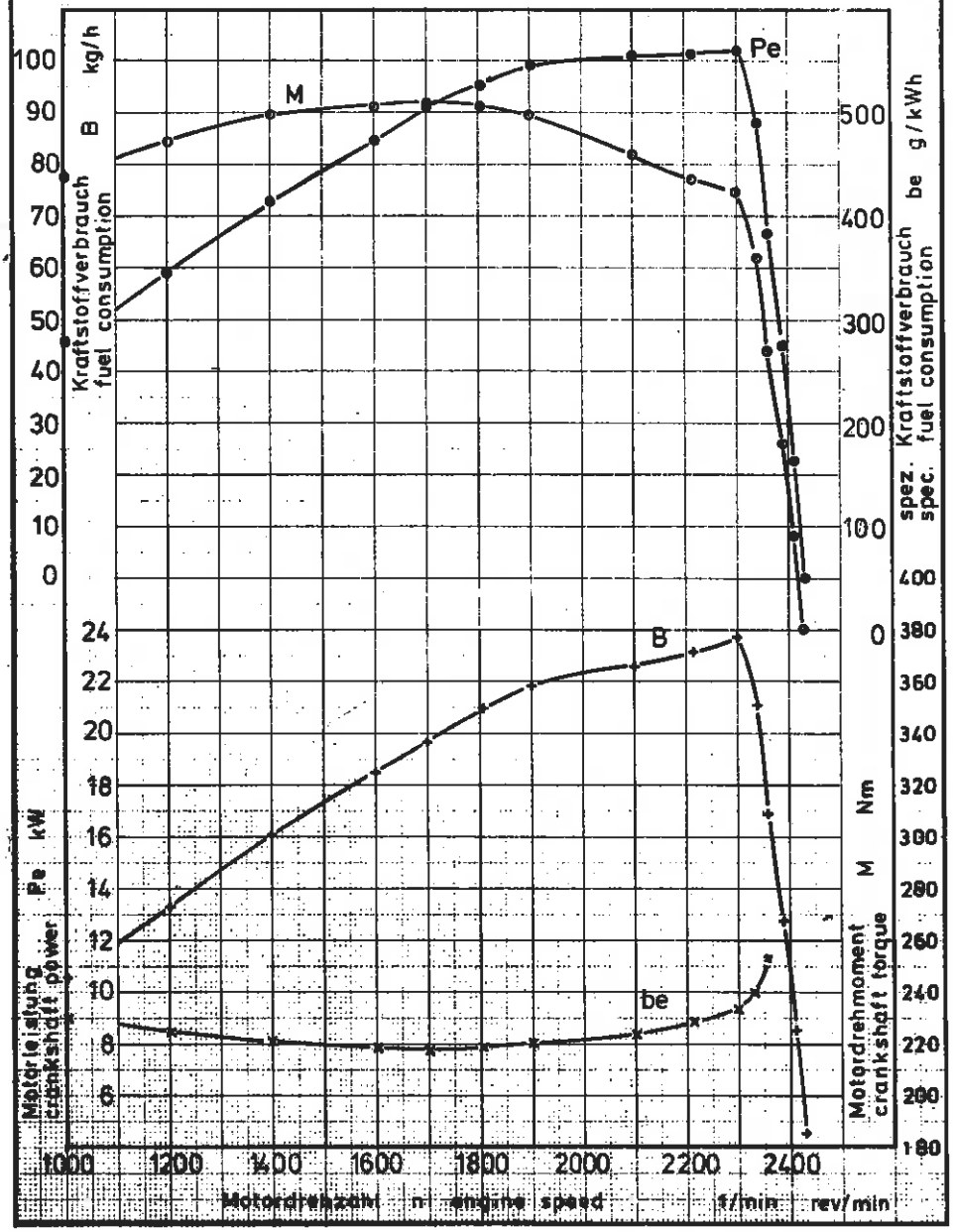
| | | |
|---|---|---|
| Mean atmospheric conditions: | temperature | 18 °C |
| | pressure | 984 mbar |
| | relative humidity | 39 % |
| Maximum temperatures: | cylinder head | 99 °C |
| | engine oil | 96 °C |
| | fuel | 20 °C |
| | engine air intake | 21 °C |

PRÜFUNGS-ABTEILUNG

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# Motorleistung
- 29 -
# Engine performance

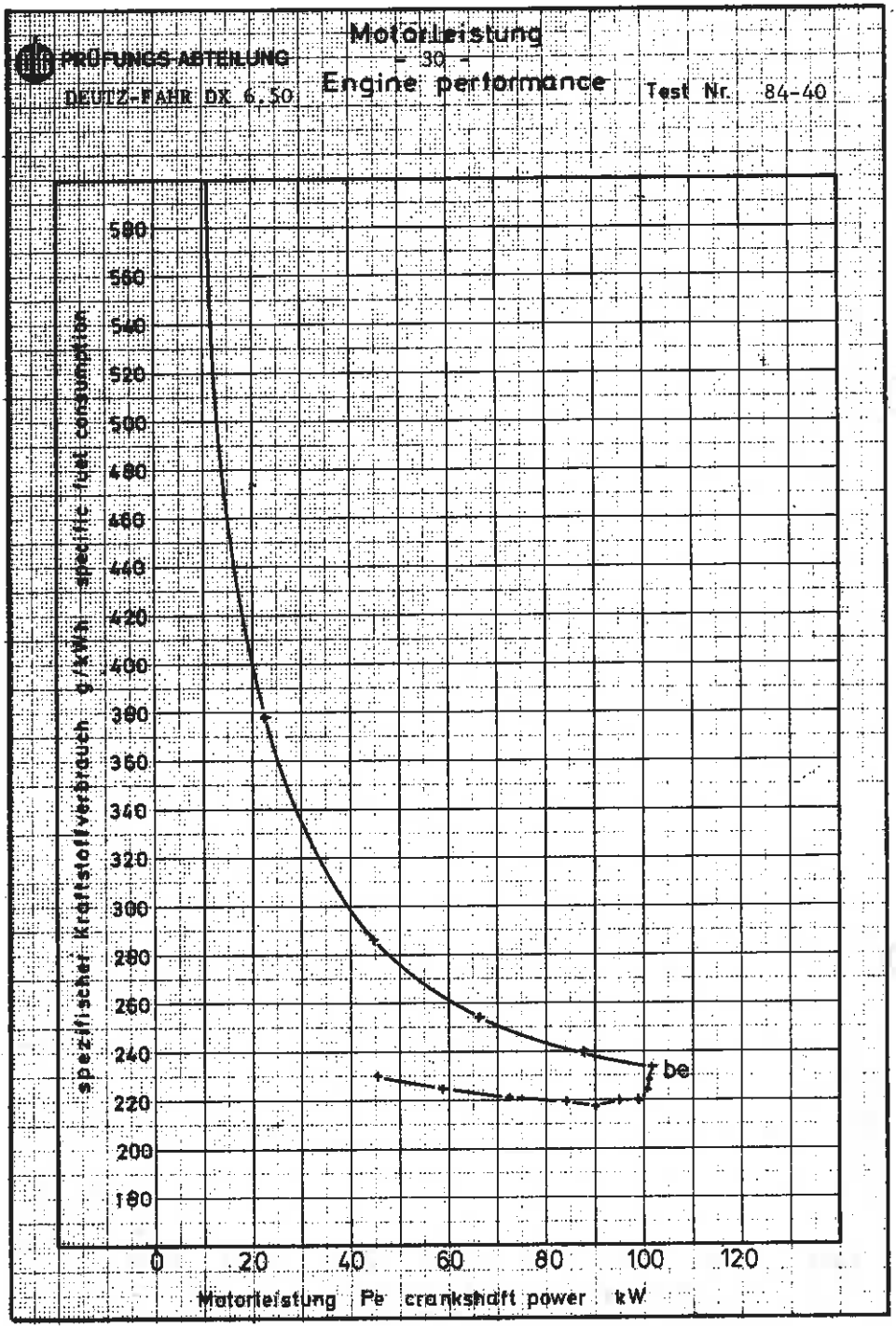
Test Nr. 84-40



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Motorleistung
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Engine performance

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# Motorleistung
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# Engine performance

Test Nr. 84-40

Motorleistung in % der Leistung bei Nenndrehzahl

engine power in % of power at rated engine speed

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