Report on test in accordance with OECD STANDARD CODE

OECD No. 1217



# Agricultural Tractor DEUTZ-FAHR DX 6.05 (4WD)

## Type denomination D 1038 A-T

**Manufacturer**

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

Deutsche Landwirtschafts-Gesellschaft e.V.
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This is a report on a tractor test in accordance with OECD STANDARD CODE for the Official Testing of Agricultural Tractor Performance (C(87)53(Final), Code I).

It does not contain an evaluation of the tractor on practical work.

Duration of tests: November 1988 till May 1989

DLG-Testing Station for Agricultural Machinery, Max-Eyth-Weg 1,
D-6114 Groß-Umstadt

This report has been approved by the OECD Co-Ordinating Centre (CEMAGREF, France) as being in accordance with the OECD STANDARD CODE.

Date of approval: 8th September 1989 OECD No. 1217

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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 kN | = | 1000 N | = | 102 kp |
| Powers | | | 1 kW | = | 1,36 PS |
| Pressures | 1 MPa | = | 10 bar | = | 10,2 kp/cm² |
| | 100 kPa | = | 1000 mbar | = | 750,10 mm Hg |

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PRÜFUNGS-ABTEILUNG
DEUTZ-FAHR DX 6.05

Test No. 88-209

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**PRÜFUNGS-ABTEILUNG**
DEUTZ-FAHR DX 6.05 Test No. 88-209

| | |
|---|---|
| Tractor manufacturer: | KLÖCKNER-HUMBOLDT-DEUTZ AG<br>D-5000 Köln-Deutz |
| Location of tractor assembly: | 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 6.05 |
| Type denomination: | D 1038 A-T |
| Type: | Four-wheel-drive tractor, unit construction |
| Serial No.: | 7449 0918 |
| Start of series: | 7449 0001 |

### Engine

| | |
|---|---|
| Make: | DEUTZ |
| Model: | F6L 912, |
| Type: | 4-stroke Diesel engine, direct injection, air cooled, naturally aspirated |
| Serial No.: | 7467582 |
| Cylinders: | 6, in-line, bore 100 mm, stroke 120 mm, displacement 5655 cm³, compression ratio 17:1; replaceable ribbed cylinder liners |
| Valves: | Overhead |
| Fuel system: | PIERBURG fuel supply pump,<br>BOSCH in-line injection pump<br>PES 6A 80D410/3RS 2527,<br>serial No.: 0400866084;<br>manufacturer's production setting<br>49,5±1 mm³/stroke at rated engine speed and full load;<br>injection timing 30°±1° before TDC;<br>BOSCH multihole injection nozzles<br>DLLA 149 S 774, injection<br>pressure 17,5±0,8 MPa;<br>PUROLATOR fuel filter,<br>replaceable;<br>capacity of fuel tank 132 dm³ |

| | |
|---|---|
| Governor: | BOSCH centrifugal variable speed governor RSV 325-1150 A8C 2014L, governed range of engine speed 650 to 2420 rev/min, rated engine speed 2300 rev/min |
| Air cleaner: | MANN<br>dry paper element filter with precleaner, replaceable cartridge, pilot lamp;<br>air intake below bonnet |
| Lubrication system: | Forced-feed lubrication with gear pump, strainer in sump;<br>MANN oil filter in full flow with by-pass valve and replaceable cartridge;<br>engine oil cooler inside of cooling baffle |
| Cooling system: | Air cooling with axial blower with 11 blades, 270 mm dia, driven by V-belt and fluid coupling, blower speed controlled by exhaust gas temperature, additional priority control (full blower speed at raised temperature of hydraulic oil) |
| Starting system: | Electrical<br>BOSCH solenoid pre-engaged-drive-starting motor JF 12V 2,7 kW;<br>BOSCH flame plug in intake manifold |
| Safety device: | Range shift lever in neutral position |
| Electrical equipment: | 12 Volt, negative earth;<br>BOSCH 3-phase alternator K1 14V 33A, 462 W;<br>1 lead acid battery 110 Ah at 20 hours rating |
| Exhaust silencer: | ROTH, 13.03.1031.0.00, multichamber-expansion-reflexion type silencer,<br>conical, 170 to 100 mm dia, 948 mm long, vertical on the left, above the bonnet, mouth showing upwards;<br>mouth 2741 mm above ground |

## Transmission

| | |
|---|---|
| Clutch: | LUK<br>dry dual disc clutch A2 031;<br>travel drive pedal operated, disc 310 mm dia;<br>p.t.o. drive handlever operated,<br>disc 280 mm dia |
| Gear box: | DEUTZ-FAHR<br>TW 902-T;<br>synchromesh gearbox with 6 speeds;<br>synchromesh group gear with 3<br>forward ranges (L, M and H) and<br>1 reverse range (R);<br>total 18 forward and 6 reverse speeds;<br>collar shifted creeper group optionally<br>available, not fitted;<br>2 shift levers |
| Rear axle and final drives: | DEUTZ-FAHR; bevel gear drive,<br>bevel gear differential on<br>intermediate shaft;<br>spur gear final drives;<br>differential with pedal operated lock,<br>lock not self disengaging;<br>pilot lamp |
| Front axle and final drives: | SIGE, 4180;<br>driven by wet multi disc safety clutch and<br>by universal joint shaft (placed in<br>tractor's median plane);<br>front axle drive shiftable by claw coupling;<br>bevel gear, No Spin-differential OPTITRAC,<br>planetary final drives |

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Total ratios and speeds

| Gear | Range | Total ratio engine : driving wheels | Nominal travelling speed *) at rated engine speed of 2300 rev/min km/h |
|---|---|---|---|
| 1 | L | 292,37 | 2,43 |
| 2 | | 217,30 | 3,27 |
| 3 | | 171,86 | 4,14 |
| 4 | | 118,53 | 6,00 |
| 5 | | 96,58 | 7,36 |
| 6 | | 76,47 | 9,30 |
| 1 | M | 141,40 | 5,03 |
| 2 | | 105,09 | 6,77 |
| 3 | | 83,12 | 8,55 |
| 4 | | 57,32 | 12,40 |
| 5 | | 46,71 | 15,22 |
| 6 | | 36,98 | 19,23 |
| 1 | H | 69,46 | 10,24 |
| 2 | | 51,63 | 13,77 |
| 3 | | 40,83 | 17,41 |
| 4 | | 28,16 | 25,25 |
| 5 | | 22,94 | 30,99 |
| 6 | | 18,17 | 39,14 |
| 1 | R | 151,44 | 4,69 |
| 2 | | 112,56 | 6,32 |
| 3 | | 89,03 | 7,99 |
| 4 | | 61,40 | 11,58 |
| 5 | | 50,03 | 14,21 |
| 6 | | 39,61 | 17,95 |

*) calculated with the radius index 820 mm (ISO 4251/1-1984)

Number of revolutions of front wheels for one revolution of rear wheels: 1,3866

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Main p.t.o.

Independent, driven by second disc of dual disc clutch;
1 p.t.o. shaft at rear of tractor, 755 mm above ground, in tractor's median plane, shaft end 536 mm behind rear wheel centre;
35 mm dia, 6 splines, ISO 500-1979, DIN 9611, type 1;
sense of rotation clockwise, viewed facing tractor's rear;
2 speeds are preselectable by hand lever

| P.t.o. | P.t.o. speed rev/min | Engine speed rev/min | P.t.o. transmission ratio | Power restriction kW |
|---|---|---|---|---|
| 540 | 540 | 2025 | 3,7500 | 55 |
| | 613 | 2300 | | |
| 1000 | 1000 | 2111 | 2,1111 | - |
| | 1089 | 2300 | | |

Power lift

DEUTZ-FAHR
K 55.4 DEUTZ-FAHR TRANSFERMATIC;
hydraulic power lift in unit construction;
draft- and position-control, both steplessly mixable, floating position;
lower link sensing;
no lowering throttle

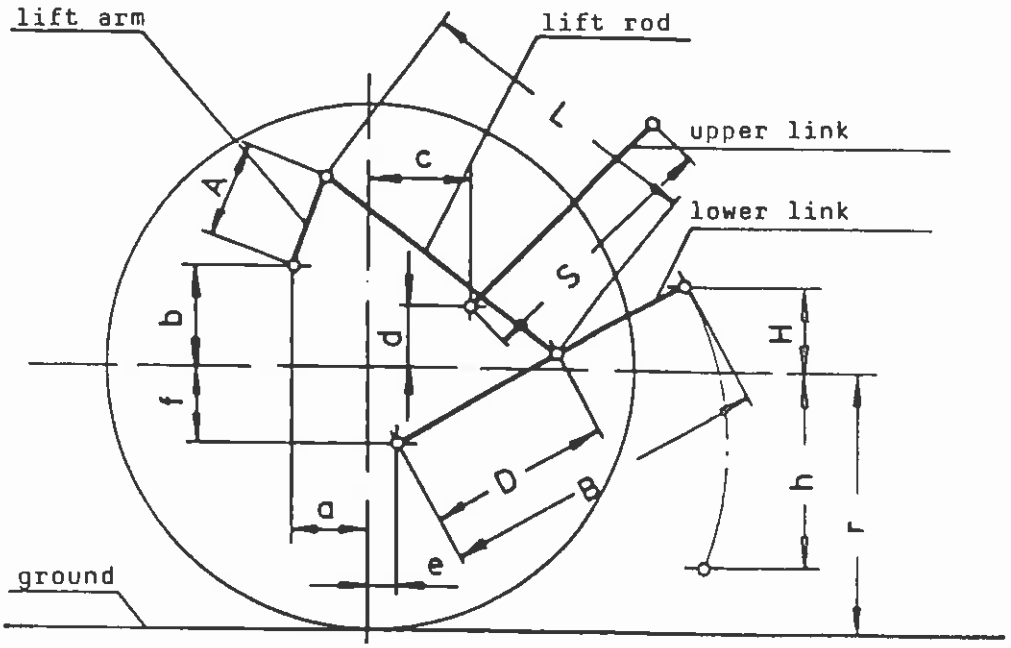
Hydraulic system:

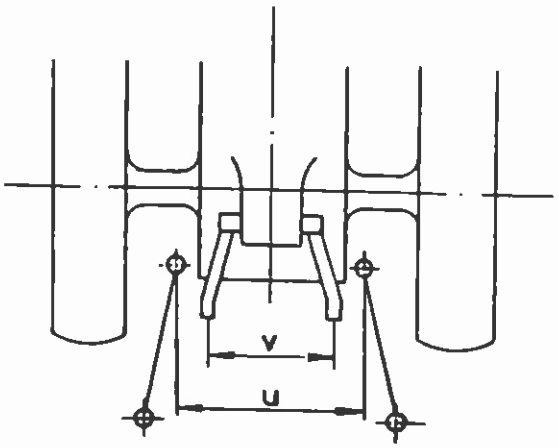
Open centre system,
BOSCH gear type tandem pump HV/ZFFS 11/19+11 (218/1), gear driven by engine, delivery 47 l/min at rated engine speed
oil cooler and oil filter (see page -11- steering), remote control;
DEUTZ-FAHR control valve,
relief valve pressure setting 17,5+0,8 MPa;
single acting cylinder with 90 mm bore and 145 mm stroke,
safety valve set to 24,0 MPa;
2 single acting additional rams with 55 mm bore and 200 mm stroke;

1 double acting additional DEUTZ-FAHR control valve SD 80, 2 couplings at rear of tractor; maximum 3 double acting additional control valves available;

1 separate oil return line at rear of tractor;
hydraulic oil tank with 13 dm³ capacity in power lift unit;
additional tank with 25 dm³ capacity optional;
max. 8 dm³ may be taken off if tractor is working stationary or travelling (up to 30 dm³ if tractor is fitted out with additional tank)

Implement linkage: 3-point linkage, category 2 acc. to ISO 730/1-1977 or DIN 9674



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Dimensions of rear implement linkage (projected lengths in mm, underlined dimensions are valid for power lift measurements p.21)

| | | | |
|---|---|---|---|
| Rear tyres | radius index | (r) | 820 |
| Front tyres | radius index | (r') | 610 |
| Length of lift arms | | (A) | 320 |
| Length of lower links | | (B) | 940 |
| Distance of lift arm pivot points from rear wheel centre | horizontal | (a) | -118 |
| | vertical | (b) | 412 |
| Horizontal distance between lower link pivot points | | (u) | 530 |
| Horizontal distance between lift arm end points | | (v) | 635 |
| Length of upper link | | (S) | 583 to 813, <u>710</u> |
| Distance of upper link pivot point from rear wheel centre | horizontal | (c) | 374 |
| | vertical | (d) | 185 |
| Distance of lower link pivot point from rear wheel centre | horizontal | (e) | 147 |
| | vertical | (f) | 260 |
| Distance of lower link pivot points from lift rod pivot points on lower links | | (D) | <u>570</u>, 640 |
| Length of lift rods | | (L) | 730 to 890, <u>855</u> |

Height of lower link hitch points relative to rear wheels' centre line (situated 820 mm above ground), these data are valid for unloaded power lift:

| Length of lift rods | (L) | <u>855</u> | 730 | | 890 | |
|---|---|---|---|---|---|---|
| Linkage distance of lift rods | (D) | <u>570</u> | 570 | 640 | 570 | 640 |
| Lowest position | (h) | 620 | 390 | 308 | 683 | 605 |
| Highest position | (H) | 46 | 240 | 250 | 15 | 30 |
| Transport position | (H') | 280 | 75 | 45 | 345 | 300 |

Type of transport lock: Hydraulic-mechanical

## Pull attachment

**Trailer hitch:** CRAMER, KU 9602, automatical;

| | |
|---|---|
| diameter of hitch pin | 32 mm |
| hitch point | |
| above ground | 920 or 970 mm |
| behind rear wheel centre | 618 mm |
| above p.t.o. | 165 or 215 mm |
| behind p.t.o. shaft end | 82 mm |
| permissible vertical load | 2000 kg |

**Swinging drawbar:** Optionally avaiable, not fitted

**Holed drawbar:** Short bar,
length between joint balls 825 mm,
thickness 30 mm, width 80 mm,
9 holes 33 mm dia with 80 mm distance each, holes' centres behind p.t.o. shaft end 551 mm (with horizontal lower links),
height above ground (measured without load):

| | |
|---|---|
| minimum | 137 mm |
| maximum | 1070 mm |

**Towing hitch:** at front,
870 mm above ground

## Steering

DANFOSS, OSPC 100 OR,
hydrostatic, oil in common with power lift; oil supply by tandem part of hydraulic pump, delivery 27 l/min at rated engine speed,
maximum pressure 15,0 MPa;
hydraulic oil cooler in steering-oil circuit, at engine's cooling air baffle;
replaceable oil filter PUROLATOR PER 330 in suction line of steering oil circuit, maintenance indicator;
1 integrated WEBER cylinder (symmetrical design), 250 mm stroke, 50 mm bore and 25 mm piston rod diameter, directly acting on steering levers

## Brakes

**Service brake:** DEUTZ-FAHR and ATE;
pedal operated muscle power brake with hydraulic transmission, acting on front- and rear axle;
at rear: ATE, 1 caliper disc brake with 2 calipers and 276 mm disc diameter, on intermediate shaft each on the left and right outside of gearbox
at front: ATE, 1 caliper disc brake with 256 mm disc diameter between propeller shaft and bevel gear drive of front axle

Parking brake: Mechanical internal-expanding-shoe brake, acting on intermediate shaft, operated by pulling handle with ratchet;
1 brake drum with 180 mm dia and 60 mm width each on the left and right, outside of gearbox

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

Trailer brake: Optionally available, for France hydraulic trailer brake

## Wheels

Steered wheels: At front, 2 pneumatics 13.6 R 28
rims W12x28

Driving wheels: At front and at rear,
at rear: 2 pneumatics 18.4 R 38,
rims W16Lx38

Wheelbase: 2667 mm

Track widths: At front: 1600 or 1800 mm, by turning the wheels;
at rear: 1800 mm, track width not adjustable; on request adjustable-gauge bowl wheels, track widths from 1600 mm up to 2000 mm in steps of 100 mm each

Permissible tyre combinations:

| Tyre size | | | |
|---|---|---|---|
| at front | | at rear | |
| 9.5 - 32 | 10 ply | 9.5 R 48 | 8 ply |
| 12.4 R 24 | 6 ply | 13.6 R 38 | 6 ply |
| 14.9 - 24 | 6 ply | 16.9 - 38 | 8 ply |
| | | 16.9 R 38 | 8 ply |
| 13.6 R 24 | 8 ply | 18.4 R 34 | 8 ply |
| 13.6 R 28 | 6 ply | 18.4 R 38 | 8 ply |
| 16.9 - 24 | 8 ply | 18.4 R 38 | 8 ply |

| | |
|---|---|
| Protective structure | DEUTZ-FAHR safety-cab SK 1905-37/4 with integrated safety-frame SR 1905-37/4; OECD-approved, approval-no. CSD 0501/43-a(C); antivibration mounted by 4 silent blocks on tractor; 2 doors with 3 steps each, steps 495, 725 and 950 mm, driver's platform 1180 mm above ground; windscreen, rear and side windows tiltable; engine-oil heat exchanger heating-system with 3-step blower, air intake above engine bonnet, dry air filter; air outlet jets for feet and head at instrument panel, defroster nozzles |

Noise reduction materials:

| | | |
|---|---|---|
| floor | rubber mat (molded) | 6 mm |
| | PUR-foam in polyester foil | 25 mm |
| seat support | rubber mat (molded) | 4 mm |
| mudguards | plastic foam leather on moltopren | 8 mm |
| roof | polyester texture with polyethylen or polyamid | 1 mm |
| | phenolic resin bonded mixed fleece with cotton, molded | 2-8 mm |
| bulk head | polyurethan - cold-foam in polyethylen foil | 15-30 mm |

| | |
|---|---|
| Seat | GRAMMER, DS 85H/90A upholstered seat with back rest and arm rests, adjustable spring, hydraulic shock absorber; height of unloaded seat above platform adjustable in 2 steps from 470 to 530 mm; longitudinal adjustment 160 mm |
| Running-time meter | Mechanical, combined with tachometer, driven by camshaft of engine; reference engine speed for one really counted hour 1500 rev/min |

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Lighting — Electrical, 12 Volt, as per German legislation

| | Height above ground of centre mm | Size mm | Distance from outside edge to median plane of tractor mm |
|---|---|---|---|
| Headlights | 1155 | 130 dia | 270 |
| Side lights | 1700 | 50 x 50 | 815 |
| Rear lights | 1660 | 40 x 60 | 827 |
| Reflectors | | | |
| 1st pair | 1357 | 103 x 58 | 913 |
| 2nd pair | 680 | 103 x 58 | 540 |

## TEST CONDITIONS

### Overall dimensions

Length: 4464 mm without ballast
4624 mm with ballast

Width: 2210 mm without ballast
2500 mm with ballast

Height: 2710 mm to top of cab
2741 mm to exhaust silencer mouth

Ground clearance: 455 mm below front axle brake

### Tractor mass

| | | Without driver kg | With driver kg |
|---|---|---|---|
| Without ballast: | at front | 1550 | 1560 |
| | at rear | 2840 | 2920 |
| | total | 4390 | 4480 |
| With ballast: | at front | 2490 | 2500 |
| | at rear | 4420 | 4500 |
| | total | 6910 | 7000 |

Front ballast: 13 weights, total 530 kg
water in the tyres 385 kg

Rear ballast: 10 weights per wheel, total 990 kg
water in the tyres 615 kg

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## Tyres and track widths specifications

| | Front | Rear |
|---|---|---|
| Tyres: | KLEBER | CONTINENTAL |
| dimensions | 13.6 R 28 | 18.4 R 38 |
| type | radial | radial |
| ply rating/load and speed index | -/123 A8 | 8 ply/- |
| maximum load | 1550 kg (40 km/h) | 2715 kg (40 km/h) |
| inflation pressure | 160 kPa | 140 kPa |
| radius index | 610 mm | 820 mm |
| Chosen track width: | 1600 mm | 1800 mm |
| Technically permissible axle load: | 2500 kg | 4700 kg |
| Technically permissible total weight: | 7000 kg | |

## Oils and lubrication

Capacity and change interval:

| | Capacity dm³ | Oil change h | Filter change h |
|---|---|---|---|
| Engine | 16,0 | 250/500 *) | 500 |
| Gear box with rear axle | 44,0 | 2000 | - |
| Front axle | 5 | 1000 | - |
| Front final drives | 2 x 0,6 | | |
| Hydraulic system with steering | 13,0 | | yearly |

*) API-CC/API-CD

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Specifications:

| | Recommended | Used during test |
|---|---|---|
| Engine oil: | | |
| type | engine oil | DEUTZ HDC |
| viscosity | | |
| below -5°C | SAE 10W | |
| -10°C to +10°C | SAE 20W/20 | |
| +5°C to +30°C | SAE 30 | SAE 15W/40 |
| above +25°C | SAE 40 | |
| above -10°C | SAE 15W/40 | |
| classification | API-CC or - CD | API-CD |
| Transmission oils: | | |
| gear box | | |
| type | engine oil / STOU[x)] | DEUTZ HDC |
| viscosity | SAE 15W/40 / SAE 15W/30 | SAE 15W/40 |
| classification | API-CC or - CD / API-CD and API-GL4 | API-CD |
| front axle and front final drives | | |
| type | gear oil | gear oil |
| viscosity | SAE 90 | SAE 90 |
| classification | API-GL5 | API-GL5 |
| Hydraulic system with steering | | |
| type | engine oil | DEUTZ HDC |
| viscosity | SAE 20W/20 | SAE 20W/20 |
| classification | API-CC or - CD | API-CD |

x) STOU = Super-Tractor-Oil-Universal

Grease: Multi purpose grease
number of lubrication points: 23

Fuel

type: ARAL Diesel-fuel in conformity with DIN 51601
density: at 15°C at engine- and p.t.o.-tests 0,837 g/cm³
at drawbar power tests 0,844 g/cm³

REPAIRS None

REMARKS None

**PRÜFUNGS-ABTEILUNG**
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## COMPULSORY TESTS

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

Date of tests: 2nd December 1988
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 | | | | | | |
| 1.1 At 2-hour test | | | | | | |
| 67,8 | 2300 | 1089 | 20,62 | 17,25 | 255 | 3,29 |
| 1.2 At rated speed | | | | | | |
| 67,8 | 2300 | 1089 | 20,62 | 17,25 | 255 | 3,29 |
| 1.3 At standard p.t.o. speed | | | | | | |
| 67,6 | 2111 | 1000 | 20,06 | 16,78 | 248 | 3,37 |
| 1.4 Part loads, the governor hand lever in the position corresponding to maximum power at full load (curve a) | | | | | | |
| 1.4.1 the torque corresponding to maximum power at rated speed | | | | | | |
| 67,8 | 2300 | 1089 | 20,62 | 17,25 | 255 | 3,29 |
| 1.4.2 85% of the torque obtained in 1.4.1 | | | | | | |
| 58,7 | 2343 | 1110 | 17,87 | 14,95 | 255 | 3,28 |
| 1.4.3 75% of the torque defined in 1.4.2 | | | | | | |
| 44,4 | 2362 | 1119 | 14,21 | 11,89 | 268 | 3,12 |
| 1.4.4 50% of the torque defined in 1.4.2 | | | | | | |
| 29,8 | 2380 | 1128 | 11,07 | 9,26 | 311 | 2,69 |
| 1.4.5 25% of the torque defined in 1.4.2 | | | | | | |
| 15,0 | 2397 | 1135 | 7,70 | 6,44 | 429 | 1,95 |
| 1.4.6 unloaded | | | | | | |
| - | 2414 | 1144 | 4,71 | 3,94 | - | - |

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| 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 |
|---|---|---|---|---|---|---|
| 1.5 Part loads, the governor hand lever in the position corresponding to the standard p.t.o. speed at full load (curve b) | | | | | | |
| 1.5.1 the torque corresponding to maximum power | | | | | | |
| 67,6 | 2111 | 1000 | 20,06 | 16,78 | 248 | 3,37 |
| 1.5.2 85% of the torque obtained in 1.5.1 | | | | | | |
| 58,8 | 2158 | 1022 | 17,08 | 14,29 | 243 | 3,44 |
| 1.5.3 75% of the torque defined in 1.5.2 | | | | | | |
| 44,3 | 2172 | 1029 | 13,45 | 11,25 | 254 | 3,30 |
| 1.5.4 50% of the torque defined in 1.5.2 | | | | | | |
| 29,7 | 2183 | 1034 | 10,22 | 8,55 | 288 | 2,91 |
| 1.5.5 25% of the torque defined in 1.5.2 | | | | | | |
| 15,0 | 2208 | 1046 | 7,00 | 5,85 | 389 | 2,15 |
| 1.5.6 unloaded | | | | | | |
| - | 2237 | 1060 | 4,04 | 3,38 | - | - |

No load maximum engine speed: 2414 rev/min
Equivalent flywheel torque at rated engine speed: 281 Nm
Maximum equivalent flywheel torque: 339 Nm at 1602 rev/min of the engine

Mean atmospheric conditions

| | |
|---|---|
| temperature | 19 °C |
| pressure | 98 kPa |
| rel. humidity | 40 % |

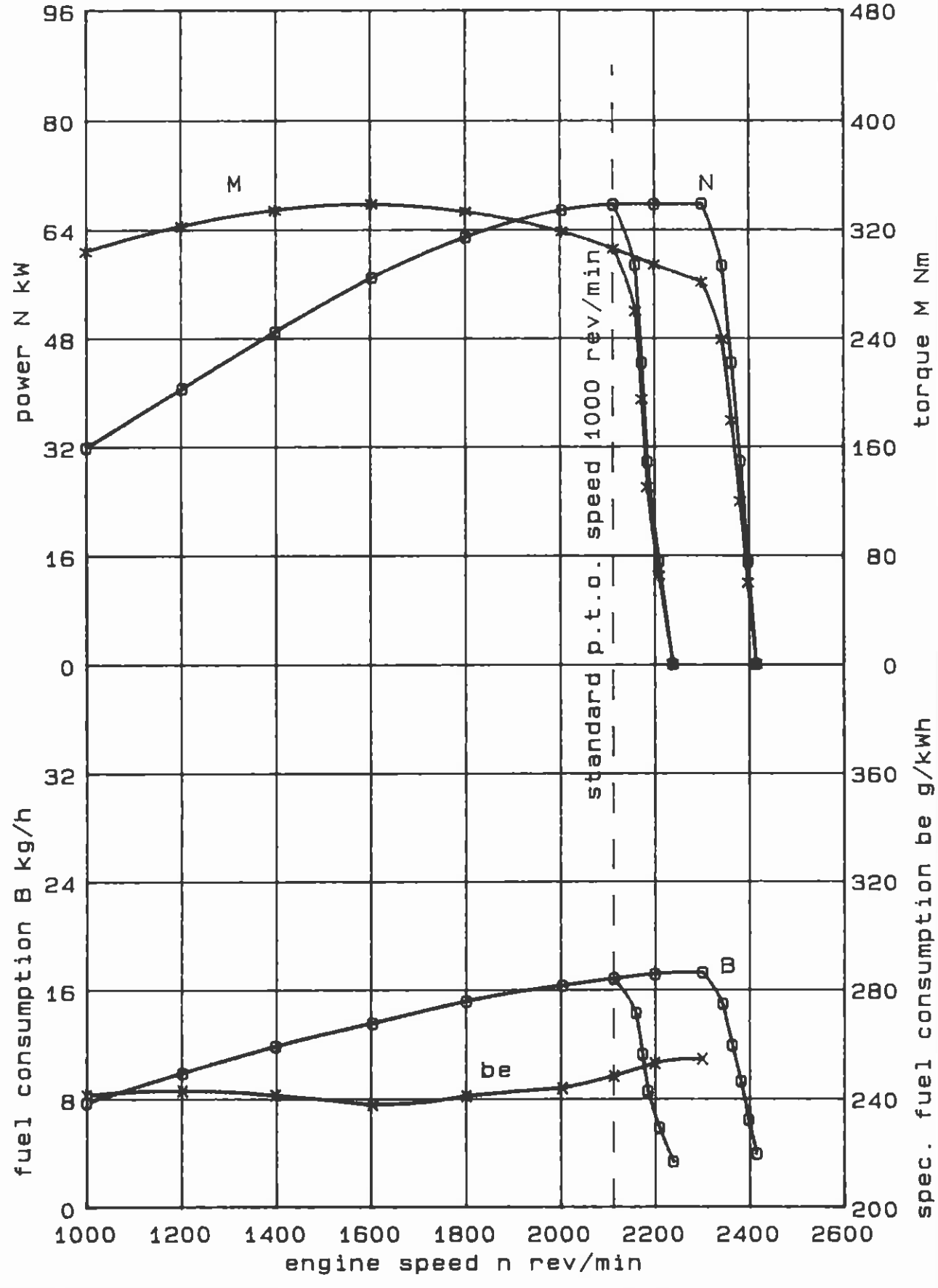
Maximum temperatures

| | |
|---|---|
| cylinder head | 110 °C |
| oil | 107 °C |
| fuel | 16 °C |
| air intake | 19 °C |

**PRÜFUNGS-ABTEILUNG**

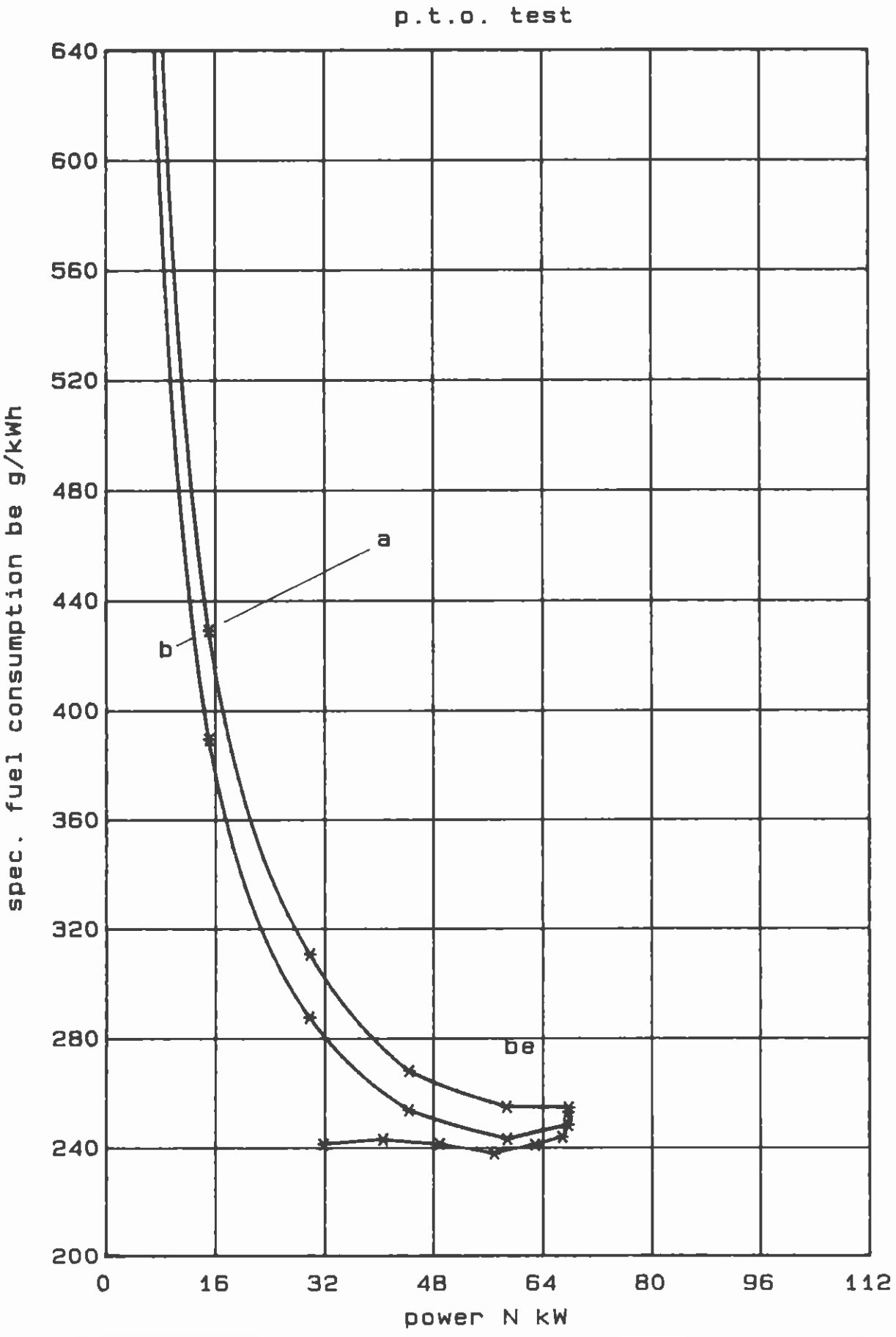
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## 2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 28th February 1989

### 2.1 Hydraulic power test

Sustained pressure with relief valve open 17,8 MPa
Pump delivery rate at minimum pressure 48,8 l/min

| | Hydraulic power kW | Flow rate l/min | Pressure MPa | Oil temperature °C |
|---|---|---|---|---|
| At 90% of the actual relief valve setting | 11,5 | 43,3 | 16,0 | 65 |
| At max. power | 11,6 | 43,1 | 16,1 | 65 |

Tapping point used for test: At rear of tractor

### 2.2 Power lift test

| | At the hitch point | On the frame |
|---|---|---|
| Height of lower hitch points above ground in down position | 200 mm | |
| Vertical movement without lifting forces<br>with lifting forces | 666 mm<br>635 mm | 717 mm<br>675 mm |
| Max. corrected force exerted through full range | 36,9 kN | 32,5 kN |
| Corresponding pressure | 16,0 MPa | |
| Moment about rear axle | - | 55,2 kNm |
| Max. tilt angle of mast from vertical | - | 50 |

Lifting heights relative to horizontal lower links

| mm | -375 | -360 | -300 | -200 | -100 | 0 | +100 | +200 | +275 | +300 |
|---|---|---|---|---|---|---|---|---|---|---|

Lifting forces at hitch points, corrected to 16,0 MPa

| kN | | 36,9 | 37,8 | 38,7 | 39,5 | 40,4 | 40,4 | 40,4 | 40,4 | |
|---|---|---|---|---|---|---|---|---|---|---|

Lifting forces at standard frame, corrected to 16,0 MPa

| kN | 37,7 | | 37,7 | 37,7 | 36,9 | 36,0 | 35,1 | 33,8 | | 32,5 |
|---|---|---|---|---|---|---|---|---|---|---|

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## 3 DRAWBAR PERFORMANCE

Date of tests: 19th April till 2nd May 1989
Type of track: Concrete

| Gear | Driving speed km/h | Power kW | Drawbar pull kN | Engine speed rev/min | Slip of wheels % |
|---|---|---|---|---|---|
| 3.1 Maximum power in tested gears (unballasted tractor) height of drawbar above ground 530 mm | | | | | |
| 2L | 2,90 | 37,4 | 46,43 | 2358 | 15,0 |
| 3L | 3,65 | 47,3 | 46,64 | 2351 | 15,0 |
| 1M | 4,48 | 56,2 | 45,17 | 2297 | 11,9 |
| 4L | 5,64 | 59,4 | 37,93 | 2299 | 7,2 |
| 2M | 6,45 | 58,7 | 32,76 | 2301 | 5,9 |
| 5L | 7,07 | 58,2 | 29,64 | 2299 | 5,1 |
| 3M | 8,25 | 58,9 | 25,72 | 2301 | 4,4 |
| 6L | 9,04 | 57,4 | 22,85 | 2305 | 3,9 |
| 1H | 9,95 | 59,0 | 21,36 | 2297 | 3,5 |
| 4M | 12,09 | 58,8 | 17,51 | 2301 | 2,8 |
| 2H | 13,42 | 56,7 | 15,22 | 2301 | 2,5 |
| 5M | 15,00 | 56,0 | 13,45 | 2297 | 2,1 |
| 3.2 Maximum power in tested gears (ballasted tractor) height of drawbar above ground 510 mm | | | | | |
| 1L | 2,13 | 40,8 | 69,01 | 2345 | 15,0 |
| 2L | 2,79 | 53,4 | 68,90 | 2274 | 15,0 |
| 3L | 3,87 | 57,8 | 53,78 | 2299 | 7,6 |
| 1M | 4,80 | 58,9 | 44,15 | 2297 | 5,3 |
| 4L | 5,81 | 60,1 | 37,22 | 2301 | 4,1 |
| 2M | 6,59 | 58,8 | 32,13 | 2299 | 3,3 |
| 5L | 7,19 | 57,9 | 29,00 | 2301 | 3,0 |
| 3M | 8,39 | 58,0 | 24,90 | 2301 | 2,5 |
| 6L | 9,16 | 56,7 | 22,28 | 2303 | 2,2 |
| 1H | 10,08 | 57,5 | 20,53 | 2299 | 2,0 |
| 4M | 12,27 | 56,8 | 16,66 | 2303 | 2,5 |
| 2H | 13,64 | 55,2 | 14,57 | 2301 | 1,3 |
| 5M | 15,08 | 53,1 | 12,67 | 2303 | 1,2 |
| 3.3.1 Five-hour-test at 75% of pull at maximum power in 3M gear | | | | | |
| 3M | 8,57 | 44,5 | 18,68 | 2335 | 1,8 |
| 3.3.2 Five-hour-test at pull corresponding to 15% wheel slip in test 3.2 | | | | | |
| 2L | 2,80 | 53,7 | 69,02 | 2278 | - |

Total oil consumption during ten hours duration of tests 3.3.1 and 3.3.2 : 60 g/h

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Tyre size front: 13.6 R 28
rear: 18.4 R 38

| Specific fuel consumption g/kWh | Specific energy kWh/l | Temperatures Fuel °C | Cylinder head °C | Engine-oil °C | Atmospheric conditions Tempe-rature °C | Relative humidity % | Pressure kPa |
|---|---|---|---|---|---|---|---|
| tyre inflation pressure: 80 kPa at front and 100 kPa at rear | | | | | | | |
| 335 | 2,52 | 22 | 72 | 92 | 10 | 70 | 99,4 |
| 327 | 2,58 | 24 | 69 | 93 | 10 | 78 | 99,2 |
| 308 | 2,74 | 21 | 69 | 94 | 10 | 80 | 99,2 |
| 290 | 2,91 | 21 | 69 | 95 | 10 | 80 | 99,2 |
| 296 | 2,85 | 20 | 63 | 90 | 10 | 80 | 99,2 |
| 297 | 2,84 | 23 | 69 | 94 | 12 | 65 | 99,4 |
| 290 | 2,91 | 25 | 74 | 94 | 13 | 68 | 99,4 |
| 300 | 2,81 | 25 | 74 | 95 | 13 | 68 | 99,4 |
| 293 | 2,88 | 25 | 74 | 95 | 13 | 68 | 99,4 |
| 298 | 2,84 | 25 | 75 | 95 | 13 | 68 | 99,4 |
| 301 | 2,80 | 26 | 68 | 95 | 16 | 65 | 99,4 |
| 305 | 2,76 | 26 | 69 | 94 | 16 | 58 | 99,4 |
| tyre inflation pressure: 120 kPa at front and 100 kPa at rear | | | | | | | |
| 338 | 2,50 | 28 | 65 | 92 | 15 | 95 | 97,9 |
| 319 | 2,64 | 28 | 64 | 92 | 15 | 94 | 97,9 |
| 299 | 2,83 | 28 | 76 | 95 | 15 | 94 | 97,9 |
| 294 | 2,87 | 25 | 67 | 92 | 15 | 96 | 97,9 |
| 288 | 2,93 | 25 | 76 | 95 | 15 | 95 | 97,9 |
| 293 | 2,88 | 25 | 75 | 95 | 15 | 98 | 97,9 |
| 298 | 2,83 | 25 | 75 | 95 | 15 | 98 | 97,9 |
| 294 | 2,87 | 27 | 80 | 93 | 16 | 98 | 97,9 |
| 302 | 2,80 | 25 | 68 | 95 | 14 | 98 | 98,0 |
| 298 | 2,83 | 26 | 75 | 95 | 14 | 95 | 98,0 |
| 304 | 2,77 | 26 | 75 | 95 | 14 | 95 | 98,0 |
| 313 | 2,69 | 26 | 75 | 94 | 14 | 95 | 98,0 |
| 327 | 2,58 | 26 | 76 | 96 | 14 | 95 | 98,0 |
| 311 | 2,71 | 24 | 54 | 92 | 14 | 65 | 98,5 |
| - | - | 22 | 63 | 96 | 10 | 80 | 98,5 |

Test 3.3.2 was carried out with additional ballast of 470 kg, the figures not quoted are therefore irrelevant

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## 4 TURNING AREA AND TURNING CIRCLE (front wheel drive disengaged)

Wheel equipment front: 13.6 R 28
rear: 18.4 R 38

Track of wheels front: 1600 mm
rear: 1800 mm

| | With brakes | | Without brakes | |
|---|---|---|---|---|
| | left-hand m | right-hand m | left-hand m | right-hand m |
| Radius of turning area | 4,91 | 4,87 | 5,84 | 5,79 |
| Radius of Turning circle | 4,59 | 4,60 | 5,52 | 5,52 |

## 5 LOCATION OF CENTRE OF GRAVITY

| | |
|---|---|
| Height above ground | 960 mm |
| Distance forward from rear axle centre | 929 mm |
| Distance from tractor's median plane, to the left | 5 mm |

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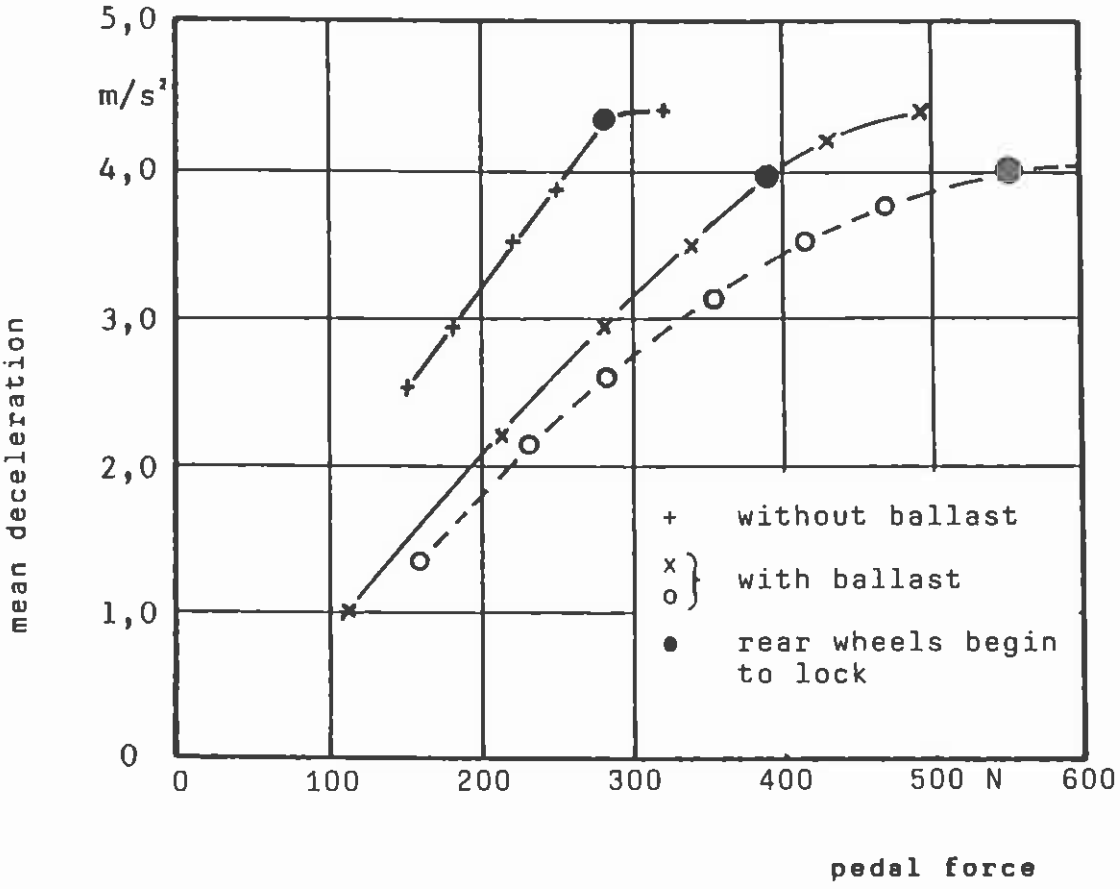
## 6 BRAKING (Front wheel drive disengaged)

Date of tests: 24th and 25th April 1989

| | Tractor mass (with driver) front kg | rear kg | total kg | Speed before application of brakes km/h |
|---|---|---|---|---|
| Without ballast | 1560 | 2920 | 4480 | 40,6 |
| With ballast | 2500 | 4500 | 7000 | 39,8 |

### 6.1 Cold service braking device test

### 6.2 Fade test




No significant deviation of tractor from original course and no abnormal vibrations

Brakes-heating: Actuating of brake for 1 km with pedal force corresponding to 1 m/s²

### 6.3 Parking braking device test

| | | Ballasted tractor on 18% - slope up | down |
|---|---|---|---|
| Braking device control force | N | 300 | 310 |

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## 7 MEASUREMENT OF EXTERNAL NOISE LEVEL +)

Date of test: 20th April 1989
Type of track: Concrete
Type of sound level meter: BRÜEL & KJAER model 2233

### Results of test

Gear: 6H
Travelling speed before acceleration: 30,2 km/h
Sound level: 87,0 dB(A)

## APPENDIX

## MEASUREMENTS OF NOISE IN THE PROTECTIVE STRUCTURE

Results of OECD-test no. CSD 0501/43-a(C)

Date of test: 4th August 1987
Type of track: Concrete
Type of sound level meter: BRÜEL & KJAER model 2209

| Gear | Drawbar pull kN | Travelling speed km/h | Sound level dB(A) |
|---|---|---|---|
| 5L *) | 26,49 | 7,37 | 82,5 |
| 5L *) | light load | 8,06 | 80,5 |
| 6H +) | light load | 42,11 | 81,0 |

*) The 5 L gear corresponds to the nominal travelling speed nearest to 7,5 km/h

+) front wheel drive disengaged

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OPTIONAL TEST

## 8. ENGINE PERFORMANCE

Date of tests: 22nd November 1988
Location of tests DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK eddy-current-dynamometer WM 400

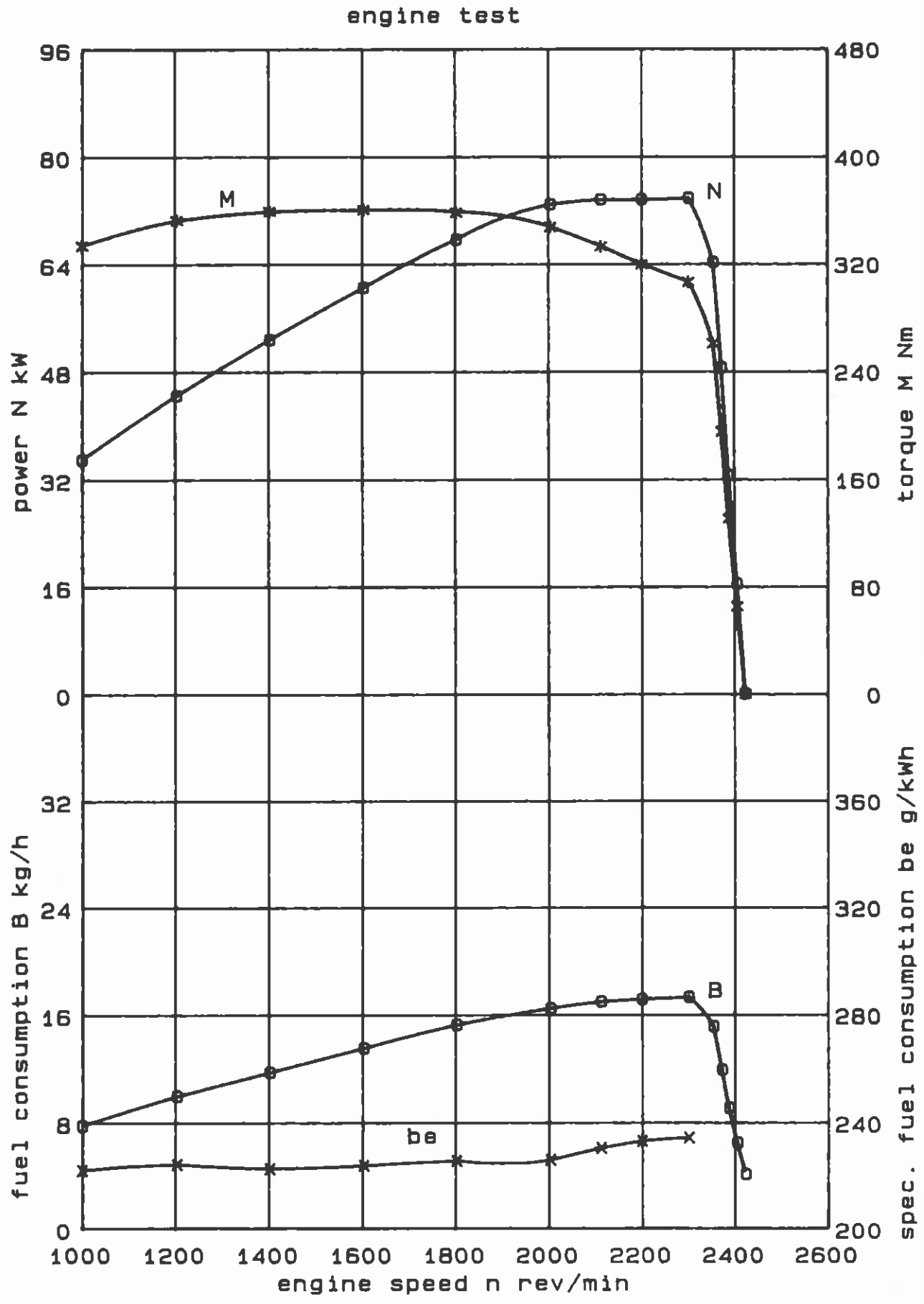
| Power kW | Engine speed rev/min | Fuel consumption hourly l/h | Fuel consumption hourly kg/h | Fuel consumption specific g/kWh | Specific energy kWh/l |
|---|---|---|---|---|---|
| Maximum power | | | | | |
| 8.1 At 2-hour test | | | | | |
| 73,8 | 2300 | 20,69 | 17,31 | 234 | 3,57 |
| 8.2 At rated engine speed | | | | | |
| 73,8 | 2300 | 20,69 | 17,31 | 234 | 3,57 |
| 8.3 At standard p.t.o. speed ( 1000 rev/min) | | | | | |
| 73,6 | 2111 | 20,29 | 16,97 | 231 | 3,63 |
| 8.4 Part loads | | | | | |
| 8.4.1 the torque corresponding to maximum power at rated speed | | | | | |
| 73,8 | 2300 | 20,69 | 17,31 | 234 | 3,57 |
| 8.4.2 85% of the torque obtained in 8.4.1 | | | | | |
| 64,2 | 2353 | 18,09 | 15,13 | 236 | 3,55 |
| 8.4.3 75% of the torque obtained in 8.4.2 | | | | | |
| 48,5 | 2372 | 14,23 | 11,90 | 245 | 3,41 |
| 8.4.4 50% of the torque obtained in 8.4.2 | | | | | |
| 32,6 | 2387 | 10,87 | 9,09 | 279 | 3,00 |
| 8.4.5 25% of the torque obtained in 8.4.2 | | | | | |
| 16,4 | 2405 | 7,76 | 6,49 | 396 | 2,11 |
| 8.4.6 unloaded | | | | | |
| - | 2423 | 4,96 | 4,15 | - | - |

Optimum fuel consumption: 211 g/kWh at 39,9 kW and 1380 rev/min
No load maximum engine speed: 2423 rev/min
Torque at rated engine speed: 307 Nm
Maximum torque: 360 Nm at 1602 rev/min of the engine

| | | |
|---|---|---|
| Mean atmospheric conditions | temperature | 18 °C |
| | pressure | 101 kPa |
| | relative humidity | 20 % |
| Maximum temperatures | cylinder head | 85 °C |
| | oil | 96 °C |
| | fuel | 20 °C |
| | engine air intake | 20 °C |

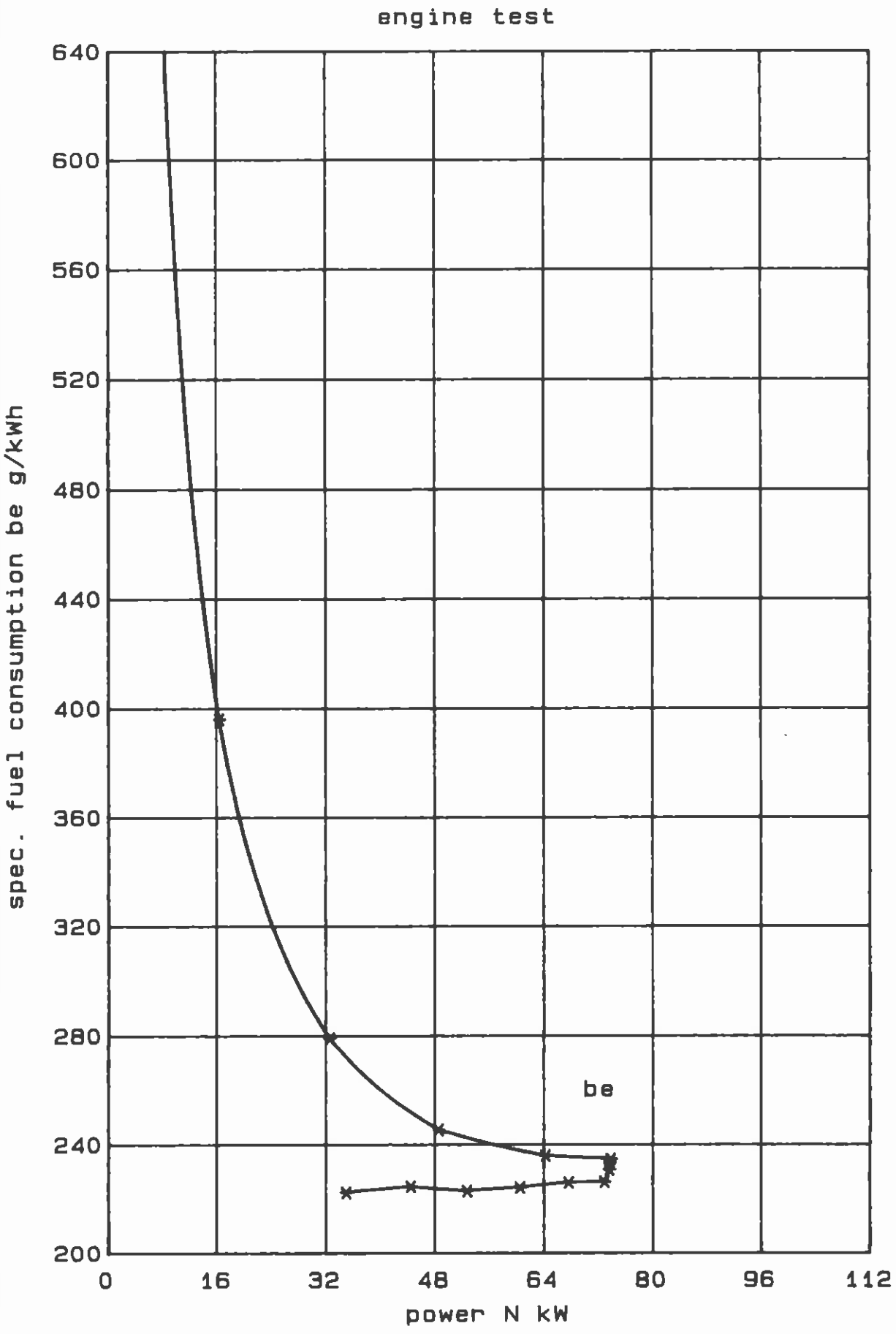
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