Report on test in accordance with OECD STANDARD CODE

OECD No. 1202/1

Agricultural Tractor LANDINI DT 8860 (4WD)

Type denomination

TL 23 DT/M



OECD No. 1202/2

Agricultural Tractor MASSEY-FERGUSON 393-4 (4WD)

Type denomination

TL 23 DT/N



Manufacturer

Massey-Ferguson S.p.A., Landini Division
I-42042 Fabbrico (R.E.) Italy

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: July till November 1988
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: 24th Mai 1989
OECD No. 1202/1 for LANDINI D 8860 (4WD)
OECD No. 1202/2 for MASSEY-FERGUSON 393-4 (4WD)

The tractors LANDINI DT 8860 and
MASSEY-FERGUSON 393-4
are technically identical in all main respects except colour and denominations.

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
LANDINI DT 8860

Test No. 88-87

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LANDINI DT 8860

Test No.88-87

Tractor manufacturer:	MASSEY-FERGUSON S.p.A. I-42042 Fabbrico (R.E.), Italy
Location of tractor assembly:	I-42042 Fabbrico
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Fabbrico and Groß-Umstadt
Duration of running-in:	Engine 15 hours and tractor appr. 73 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	LANDINI respectively MASSEY-FERGUSON
Trade name:	DT 8860 respectively 393-4
Type denomination:	TL 23 DT/M respectively TL 23 DT/N
Type:	Wheel tractor, unit construction, four wheel driven
Serial No.:	5377 V 512 61
Start of series:	5377 V 51003

Engine

Make:	PERKINS
Model:	4.248
Type:	Watercooled 4-stroke Diesel-engine, direct injection, naturally aspirated
Serial No.:	LF 31204 U 243 7195 A 4081
Cylinders:	4, in line, bore 101,1 mm, stroke 127 mm, displacement 4078 cm³, compression ratio 16±1:1; replaceable wet cylinder liners
Valves:	Overhead

Fuel system:	PERKINS fuel supply pump; CAV distributor injection pump DPA 3343 F010, serial no. B05857 AF; manufacturer's production setting 64+2 mm³/stroke at rated engine speed and full load; without automatic injection timing device; injection timing 24±2° before TDC; CAV multihole-injection nozzles P/N 2646826, injection pressure 17,5 MPa, CAV fuel filter with replaceable paper element; capacity of fuel tank 86 dm³
Governor:	CAV centrifugal variable speed governor, governed range of engine speed 750 to 2280 rev/min, rated engine speed 2200 rev/min;
Air cleaner:	FISPA oil bath air filter, cyclone pre-cleaner; no maintenance indicator; air intake in front of engine, below bonnet
Lubrication system:	Forced feed with gear pump; strainer in sump, PERKINS oil filter in full flow, replaceable
Cooling system:	Water cooling with impeller pump, overpressure relief valve set to 70 kPa, thermostat with by-pass; fan with 6 blades with 410 mm dia, water capacity 15 dm³
Starting system:	Electrical; LUCAS solenoid pre engaged-drive starter motor 2,5 kW; depressed pedal of clutch as safety device; ISKRA flame plug in intake manifold
Electrical equipment:	12 Volt, negative earth; LUCAS 3-phase alternator 12 V 500 W; 1 lead acid battery, 95 Ah at 20 hours rating, test current for low temperature 510 A

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Exhaust silencer:	ANSA, DGM SA 1269, expansion type silencer, vertical, 130 x 100 mm oval, 660 mm long; on the left, beside the engine bonnet, mouth showing upwards, 2325 mm above ground

Transmission

Clutch:	LUK dry dual-disc clutch; pedal operated travel drive, disc 305 mm dia, cerametallic lining, hand lever operated p.t.o. drive, disc 305 mm dia, organic lining
Gear box:	MASSEY-FERGUSON synchronized speed change gear with 4 gears, collar shifted range gear with 3 forward ranges (L, M and H) and 1 reverse range (R); total 12 forward and 4 reverse speeds, 2 gear shift levers; two further gear box models on request available: 1. gear arrangement as described above, additional range gear with 3 ranges, in 3 variants: Standard range combined with a) creeper and underdrive range, or b) creeper and overdrive range, or c) underdrive and overdrive range; in each case total: 36 forward and 12 reverse speeds 2. change gear with 4 gears, range gear with 3 forward ranges, reversing gear (acting on 4x3 forward speeds), combined in 3 variants with a) creeper range, or b) underdrive range, or c) overdrive range; in each case total: 24 forward and 12 reverse speeds
Rear axle and final drives:	MASSEY-FERGUSON bevel gear drive, bevel gear differential with pedal operated lock, self disengaging; spur gear final drives
Front axle and final drives:	MASSEY-FERGUSON, driven by jointless central propeller shaft, hand lever operated, collar shifted; bevel gear drive, planetary final drives, No-spin differential optionally available
Lubrication:	Gear box, rear axle and hydraulic system have oil in common, see pages 15 and 16

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Total ratios and speeds

Range	Gear	Total ratio engine : driving wheel	Nominal travelling speed *) at rated engine speed of 2200 rev/min km/h
L	1	358,12	1,73
	2	227,83	2,71
	3	180,40	3,43
	4	122,27	5,05
M	1	149,91	4,12
	2	95,37	6,48
	3	75,52	8,18
	4	51,18	12,07
H	1	60,77	10,17
	2	38,66	15,98
	3	30,52	20,18
	4	20,75	29,78
R	1	134,18	4,60
	2	85,36	7,24
	3	67,59	9,14
	4	45,81	13,49

*) calculated with the radius index 745 mm (ISO 4251/1-1984)

Number of revolutions of front wheels for one revolution of rear wheels: 1,3807

Power take-off

Main p.t.o.: Shiftable by hand lever (collar shifting) to independent or ground speed p.t.o. and by second hand lever to 540 or 1000 rev/min;
p.t.o. speed indicator lamps

1 p.t.o. shaft at rear of tractor, in tractor's median plane;
height above ground 737 mm,
horizontal distance to rear wheels centre line 227 mm;
35 mm dia, 6 splines, in conformity with ISO 500/1979, type 1, when using 540 rev/min speed

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Power take-off proportional to engine speed
(independent p.t.o.): Driven by second plate of dry dual-disc clutch; sense of rotation clockwise (viewed to tractor's rear)

P.t.o. type	P.t.o. speed rev/min	Engine speed rev/min	Ratio engine : p.t.o.	Power restriction kW
540	540	1944	3,6000	-
	611	2200		
1000	1000	1917	1,9167	-
	1148	2200		

Power take-off proportional to ground speed:
Driven by rear axle drive, sense of rotation clockwise (at forward movement, viewed to tractor's rear)

P.t.o. type	Travel distance per p.t.o. revolution m	Number of p.t.o. revolutions per rear wheel revolution
540	0,4722	9,9136
1000	0,2514	18,6203

Power lift

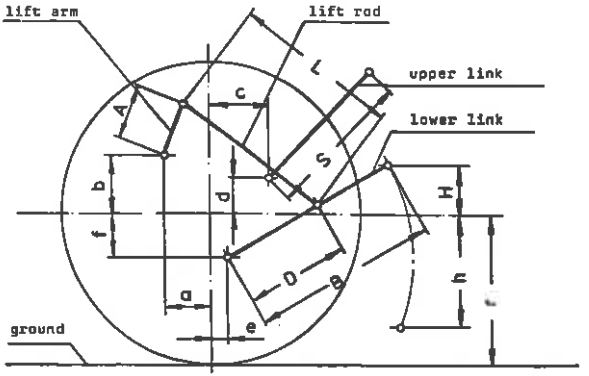
MASSEY-FERGUSON
hydraulic power lift, unit construction;
draft and position control, both infinitely mixable, floating position, lowering throttle (non-adjustable);
adjustable raise control, top link sensing;
open centre system
1 single acting lifting cylinder,
100 mm bore, 127 mm stroke;
cylinder safety valve set to 19,0 MPa

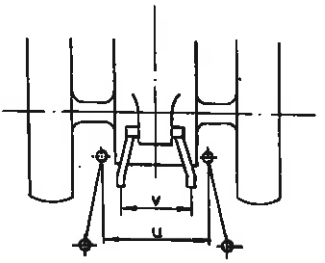
optionally available:
2 single acting assister cylinders
40 mm bore, 207 mm stroke;

no linkage lock for transport;
SUNDSTRAND/TUROLLA gear type pump TFA/211 S,
gear driven by engine;
delivery 37 l/min at rated engine speed, relief valve pressure setting 17,0+0,5 MPa;
1 hydraulic oil filter within suction line;
hydraulic oil circuit in common with gear box lubrication, reservoir within gear box;

MASSEY-FERGUSON control valve,
1 double acting OMC additional control valve, 2 oil couplings ar rear of tractor;
maximum volume of oil available to external cylinders 5 dm³

Three-point linkage — category 2 acc. to ISO 730/I-1977





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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 16.9 R 34		radius index	(r)	745
Front tyres 13.6 R 24		radius index	(r')	560
Length of lift arms			(A)	272
Length of lower links			(B)	910
Distance of lift arm pivot points from rear wheel centre		horizontal	(a)	12
		vertical	(b)	310
Horizontal distance between lower link pivot points			(u)	390
Horizontal distance between lift arm end points			(v)	525
Length of upper link			(S)	640 to 840, <u>745</u>
Distance of upper link pivot point from rear wheel centre		horizontal	(c)	205
		vertical	(d)	<u>256</u> or 301
Distance of lower link pivot point from rear wheel centre		horizontal	(e)	32
		vertical	(f)	138
Distance of lower link pivot points from lift rod pivot points on lower links			(D)	495
Length of lift rods			(L)	545 to 665, <u>650</u>

Height of lower link hitch points relative to rear wheels' centre line (situated 745 mm above ground), these data are valid for unloaded power lift:

Length of lift rods	(L)	<u>650</u>	545	665
Linkage distance of lift rods	(D)	495		
Lowest position	(h)	545	275	595
Highest position	(H)	150	355	140
Transport position	(H')	150	355	140

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Pull attachment

Swinging drawbar:	Optionally available (not fitted on tested tractor)	
Trailer hitch:	LANDINI, DGM GA 725 C-87 6tV1,5; non-automatical, height adjustable;	
	hole diameter	28 mm
	hitch point	
	above ground 530, 625, 730 or	850 mm
	behind rear wheel axis	
	horizontal	364 mm
	distance from p.t.o. shaft end	
	vertical, above	18 or 113 mm
	below	112 or 207 mm
	horizontal	137 mm
	maximum permissible vertical load	15 kN
Holed drawbar:	Long bar; length 1500 mm, thickness 30 mm, width 80 mm, length between joint balls 770 mm; 7 holes between joint balls with 80 mm distance each, 2 holes outside the joint balls on either side with 120 mm distance each, holes' diameter 22 mm and 24 mm alternately; at each end of the bar 1 hole with 32 mm dia;	
	height above ground minimum	200 mm
	maximum	1150 mm
	holes' centre line behind p.t.o. shaft end (lower links in horizontal position)	755 mm
Towing hitch:	At front of tractor,	
	height above ground	730 mm

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Steering	MASSEY-FERGUSON and DANFOSS, model ORBITROL OSPC 100 , hydrostatic steering; separate oil circuit fed by SUNDSTRAND/ TUROLLA gear type pump TFA/211 S, directly driven by front end of crankshaft; delivery 24 l/min at rated engine speed, working pressure 15,0 MPa; 1 double acting ram (symmetrical design), bore 57 mm, stroke 234 mm, piston rod 32 mm dia, acting on steering levers of front axle; oil filter incorporated in steering oil tank
Brakes	
Service brake:	SIRMAC, 7 x 5,5 inches pedal operated muscle power brake with mechanical transmission, acting on rear axle of tractor; wet disc brakes on the differential half shafts with 5 lining discs each with 178 mm dia
Parking brake:	Mechanically actuated by hand lever with ratchet, acting on the discs of service brake
Steering brake:	Divided pedals of service brake, for normal use locked together
Trailer braking take-off:	None
Wheels	
Steering wheels:	At front, 2 pneumatics 13.6 R 24 rims W12x24
Driving wheels:	At front and at rear, rear wheels: 2 pneumatics 16.9 R 34 rims W14Lx34
Wheelbase:	2317 mm
Track widths:	At front 1500, 1588, 1688, 1772 1776, 1860, 1960 or 2048 mm, variable by adjustable gauge bowl wheels, at rear 1324 to 1824 in steps of 100 mm each, variable by adjustable gauge bowl wheels, or after turning the wheels from 1506 to 2006 mm

Permissible tyre combinations:

Tyre sizes			
at front		at rear	
11.2 R 24	114 A8	16.9 R 30	6 ply
12.4 R 24	119 A8	18.4 R 30	142 A8
13.6 R 24	121 A8	13.6 R 38 16.9 R 34	128 A8 139 A8
380/70 R 24	125 A8	480/70 R 34	143 A8

Protective structure: LANDINI TS 19/2, MASSEY-FERGUSON TS 20/2, 4 post frame, OECD-tested, approval-no. CSS 081/1 for Landini DT 8860 (TL23DT/M), CSS 081/21 for MASSEY-FERGUSON 393-4 (TL23DT/N)

Driver's seat: GRAMMER, DS 44/1H; upholstered seat with back rest, adjustable suspension and hydraulic shock absorber; driver's platform 870 mm above ground, 1 step, 595 mm above ground; range of adjustment of unloaded seat: longitudinal 200 mm vertical 510 to 570 mm (stepless) above platform

Running-time meter: Electronic, counts real operating hours, when engine speed rises above 800 rev/min

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Lighting — Electrical 12 Volt, in accordance with Italian legislation

	Size mm	Height above ground of centre mm	Distance from outside edge of lights to median plane of tractor mm
Head lights	130 dia	1130	240
Side lights	110x130	1450	787
Rear lights	70x50	1555	595
Reflectors			
1st pair	45x50	1555	642
2nd pair	80 dia	635	400

TEST CONDITIONS

Overall dimensions

Length: 3880 mm without ballast, 4110 mm with ballast

Width: 1975 mm without ballast, 1975 mm with ballast

Height: 2420 mm to top of protective structure
2325 mm to exhaust pipe's mouth

Ground clearance: 430 mm below front axle differential

Tractor mass

			without driver kg	with driver kg
Without ballast:	Mass	front	1250	1260
		rear	1870	1950
		total	3120	3210
With ballast:	Mass	front	1850	1860
		rear	2710	2790
		total	4560	4650

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Ballast

Front:	8 weights, total	288 kg
	water in the tyres	290 kg
Rear:	2 weights per wheel, total	240 kg
	water in the tyres	622 kg

Tyres and track widths specifications

	Front	Rear
Tyres:	MICHELIN BIB'X	MICHELIN BIB'X
dimensions	13.6 R 24	16.9 R 34
type	radial	radial
ply rating/load index	-/121 A8	-/139 A8
maximum load	1450 kg	2430 kg
inflation pressure	160 kPa	160 kPa
radius index	560 mm	745 mm
Chosen track width:	1588 mm	1524 mm
Technically permissible axle load:	1860 kg	4000 kg
Technically permissible total weight:	4650 kg	

Oils and lubrication

Capacity and change interval:

	Capacity dm³	Oil change h	Filter change h
engine	7,0	250	250
gear box including rear axle and hydraulic system	33,0	1000	250 *)
front axle	5,8		-
final drives at front	2x1,4		-
final drives at rear	2x3,6		-
steering system	2,3		500 *)

*) only filter cleaning

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Specifications

	Recommended	Used during test
Engine oil:		
type	engine oil	MF SUPER UNIVERSALOIL
viscosity		
winter	SAE 10W, 20W or 10W/30	SAE 15W/40
summer	SAE 20W or 20W/30	
tropics	SAE 30, 20W/40 or 20W/50	
for all conditions	SAE 15W/40	
classification	API - CC	API - CC
Transmission oils:		
Gearbox, rear axle hydraulic system		
type	super tractor oil universal	MF SUPER UNIVERSALOIL
viscosity	SAE 15W/40	SAE 15W/40
classification	API - CD/API -GL4	API - CD/API - GL4
Final drives at front and at rear, front axle		
type	gear oil	MOBILUBE GX85W/90-A
viscosity	SAE 85W/90	SAE 85W/90
classification	API - GL4	API - GL4
Steering oil:		
Steering system		
type	automatic transmission fluid	MOBIL ATF 200
viscosity		
classification	Type A, SUFFIX A	

Grease: Multi purpose grease
number of lubrication points 13

Fuel

type: ARAL Diesel-fuel in conformity with DIN 51601
density: at 15°C at engine test 0,819 g/cm³
at p.t.o. test 0,838 g/cm³
at drawbar power test 0,822 g/cm³

REPAIRS None

REMARKS None

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COMPULSORY TESTS

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

Date of tests: 6th October 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						
55,8	2200	1148	17,22	14,43	259	3,24
1.2 At rated speed						
55,8	2200	1148	17,22	14,43	259	3,24
1.3 At standard p.t.o. speed						
52,4	1917	1000	15,50	12,99	248	3,38
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						
55,8	2200	1148	17,22	14,43	259	3,24
1.4.2 85% of the torque obtained in 1.4.1						
48,4	2245	1171	14,73	12,35	255	3,29
1.4.3 75% of the torque defined in 1.4.2						
36,5	2258	1178	11,80	9,88	271	3,10
1.4.4 50% of the torque defined in 1.4.2						
24,4	2266	1182	8,99	7,54	308	2,72
1.4.5 25% of the torque defined in 1.4.2						
12,2	2265	1182	6,57	5,50	451	1,86
1.4.6 unloaded						
-	2278	1189	4,38	3,67	-	-

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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						
52,4	1917	1000	15,50	12,99	248	3,38
1.5.2 85% of the torque obtained in 1.5.1						
45,7	1966	1026	13,11	10,99	240	3,49
1.5.3 75% of the torque defined in 1.5.2						
34,6	1980	1033	10,49	8,79	254	3,29
1.5.4 50% of the torque defined in 1.5.2						
23,2	1994	1041	7,85	6,58	284	2,95
1.5.5 25% of the torque defined in 1.5.2						
11,7	2008	1048	5,52	4,63	396	2,11
1.5.6 unloaded						
-	2027	1057	3,34	2,80	-	-

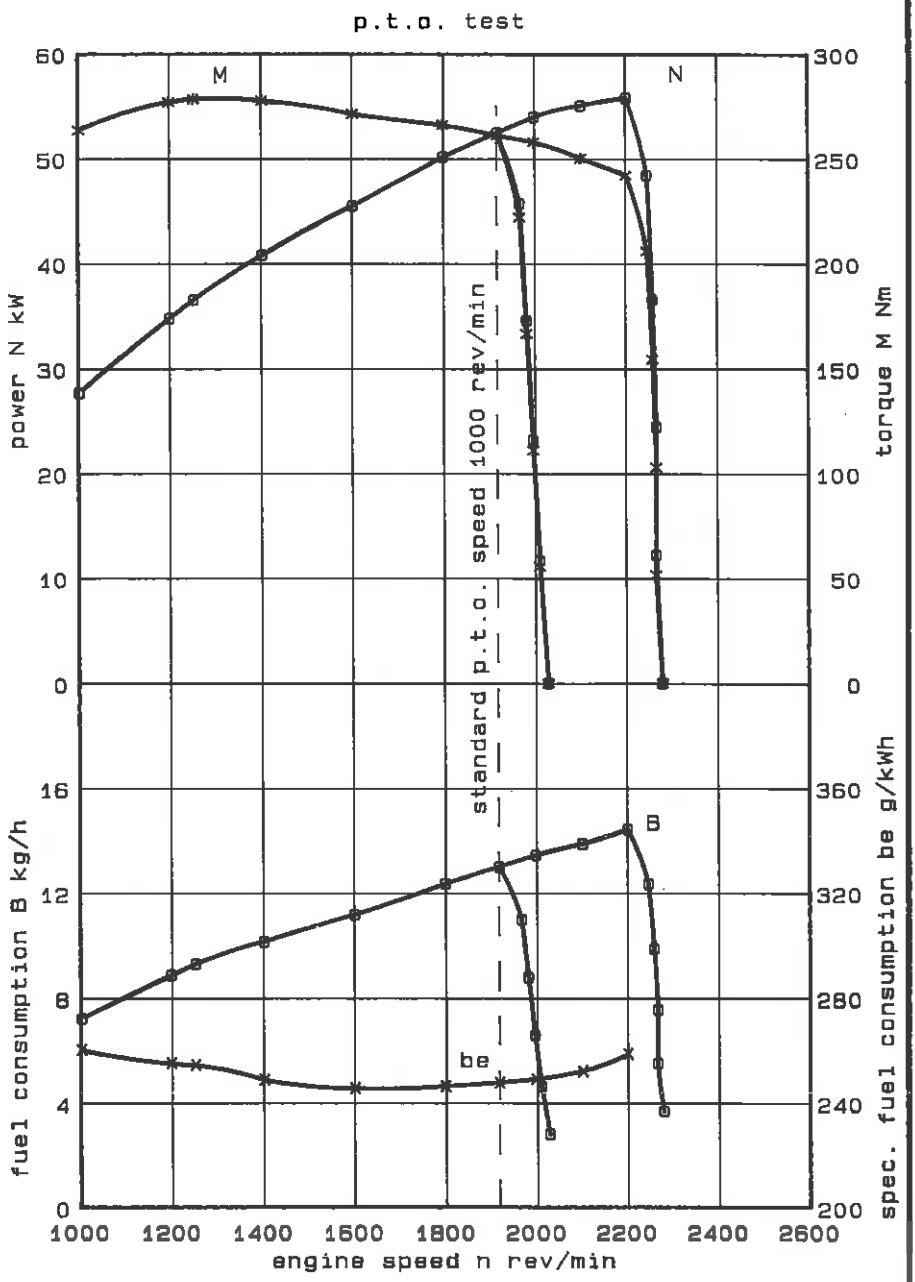
No load maximum engine speed: 2278 rev/min
Equivalent flywheel torque at rated engine speed: 242 Nm
Maximum equivalent flywheel torque: 278 Nm at 1252 rev/min of the engine

Mean atmospheric conditions

temperature	20 °C
pressure	99 kPa
rel. humidity	65 %

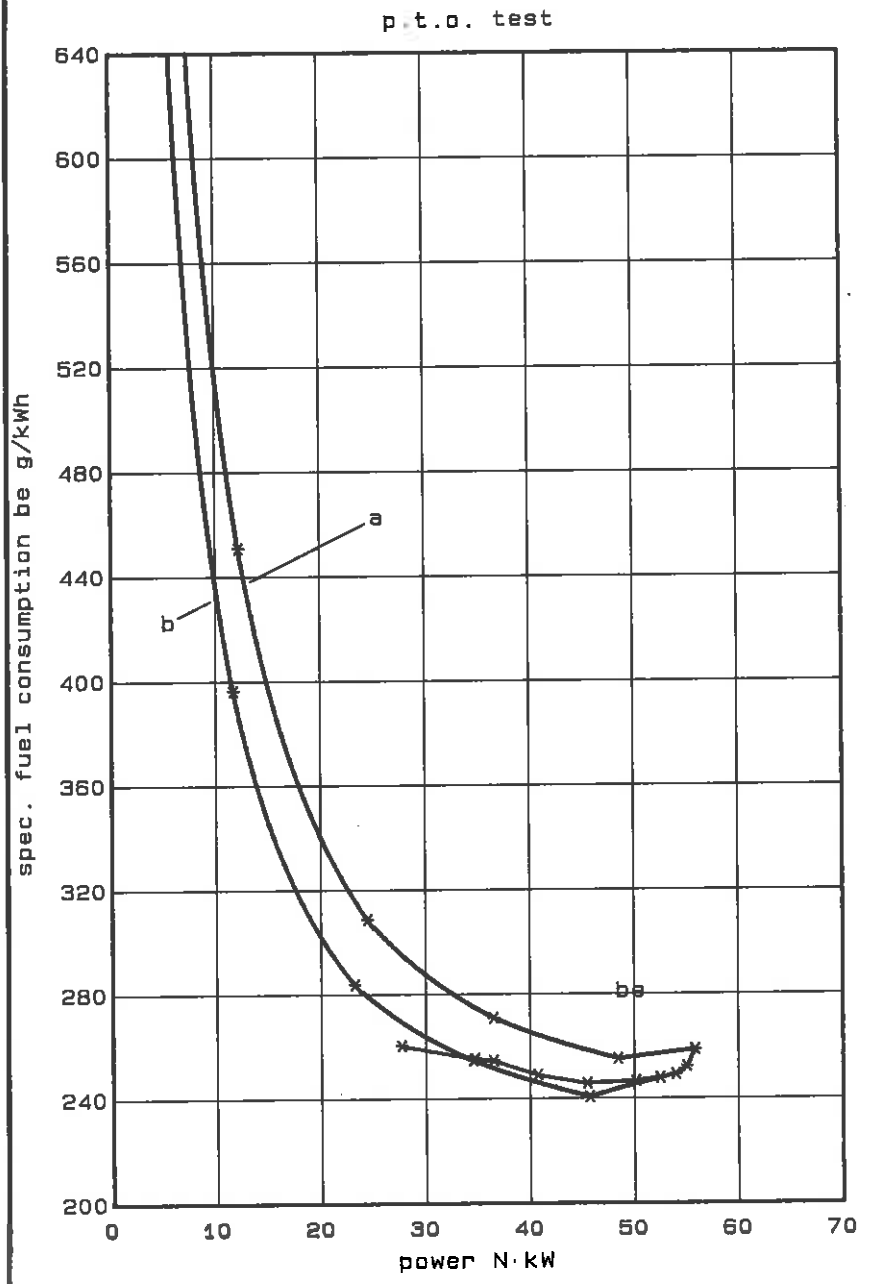
Maximum temperatures

coolant	94 °C
oil	106 °C
fuel	29 °C
air intake	20 °C


p.t.o. test
M
N
B
be
power N kW
torque M Nm
fuel consumption B kg/h
spec. fuel consumption be g/kWh
standard p.t.o. speed 1000 rev/min
engine speed n rev/min
60
50
40
30
20
10
0
300
250
200
150
100
50
0
16
12
8
4
0
360
320
280
240
200
1000
1200
1400
1600
1800
2000
2200
2400
2600

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2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 22nd November 1988

2.1 Hydraulic power test

Sustained pressure with relief valve open 17,5 MPa
Pump delivery rate at minimum pressure 35,3 l/min

	Hydraulic power kW	Flow rate l/min	Pressure MPa	Oil temperature °C
At 90% of the actual relief valve setting	7,8	29,8	15,8	35 +)
At max. power	8,7	34,2	15,2	35 +)

Tapping point used for test: At rear of tractor

+) oil temperature in suction line of hydraulic pump more than 65°C

2.2 Power lift test

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement without lifting forces	695 mm	810 mm
Vertical movement with lifting forces	685 mm	755 mm
Max. corrected force exerted through full range	13,5 kN	12,4 kN
Corresponding pressure	15,2 MPa	15,2 MPa
Moment about rear axle	-	19,2 kNm
Max. tilt angle of mast from vertical	-	6°

Lifting heights relative to horizontal lower links

mm	-472	-407	-400	-300	-200	-100	0	+100	+200	+278	+283

Lifting forces at hitch points, corrected to 15,2 MPa

kN		13,5	13,9	16,1	17,6	18,6	19,3	19,9	20,1	20,3	

Lifting forces at standard frame, corrected to 15,2 MPa

kN	12,4		13,9	15,2	15,8	16,0	16,2	16,2	15,8		15,4

PRÜFUNGS-ABTEILUNG
LANDINI DT 8860

3 DRAWBAR PERFORMANCE

Date of tests: 17th October, 31st October and 3rd November 1988
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 540 mm					
1 M	3,64	33,6	33,20	2239	14,9
4 L	4,43	40,7	33,05	2229	14,9
2 M	6,04	45,8	27,30	2198	8,2
3 M	7,89	46,7	21,30	2204	5,0
1 H	9,91	47,5	17,27	2198	3,8
4 M	11,87	45,8	13,89	2200	2,7
3.2 Maximum power in tested gears (ballasted tractor) height of drawbar above ground 530 mm					
1 L	1,52	19,4	45,94	2243	15,1
2 L	2,40	30,5	45,74	2252	14,9
3 L	3,01	38,3	45,85	2243	15,0
1 M	3,69	45,6	44,46	2198	11,6
4 L	4,81	48,0	35,90	2200	6,0
2 M	6,29	48,4	27,71	2198	3,9
3 M	8,02	47,5	21,31	2200	2,9
1 H	10,04	47,6	17,08	2202	2,1
3.3.1 Five-hour-test at 75% of pull at maximum power in 2 M gear					
2 M	6,50	37,6	20,82	2244	2,7
3.3.2 Five-hour-test at pull corresponding to 15% wheel slip in test 3.2					
3 L	3,17	40,5	46,02	2237	-

Total oil consumption during ten hours duration of tests 3.3.1 and 3.3.2 : 34 g/h

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Tyre size front: 13.6 R 24
rear: 16.9 R 34

Specific fuel consumption g/kWh	Specific energy kWh/l	Temperatures Fuel °C	Coolant °C	Engine-oil °C	Atmospheric conditions Tempe-rature °C	Relative humidity %	Pressure kPa
tyre inflation pressure: 80 kPa at front and at rear							
342	2,40	24	78	79	14	99	100,2
340	2,42	24	77	79	14	99	100,2
313	2,63	24	80	89	14	99	100,2
309	2,66	25	80	89	14	98	100,2
302	2,72	25	81	89	14	95	100,2
314	2,62	25	80	88	14	98	100,2
tyre inflation pressure: 80 kPa at front and at rear							
403	2,04	22	77	85	14	100	99,2
346	2,38	20	74	78	8	60	100,6
325	2,53	20	73	80	8	64	100,6
316	2,60	20	78	84	8	64	100,6
301	2,73	20	77	85	8	65	100,6
298	2,76	21	76	84	8	71	100,6
306	2,68	19	77	86	8	64	100,6
303	2,71	20	77	87	8	67	100,6
304	2,70	21	74	91	8	76	100,0
-	-	23	77	94	11	73	100,4

Test 3.3.2 was carried out with additional ballast of 672 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 24
rear: 16.9 R 34

Track of wheels front: 1588 mm
rear: 1524 mm

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning area	4,26	4,23	4,93	4,89
Radius of turning circle	3,98	3,95	4,65	4,61

5 LOCATION OF CENTRE OF GRAVITY

Height above ground	816 mm
Distance forward from rear axle centre	910 mm
Distance from tractor's median plane, to the right	1 mm

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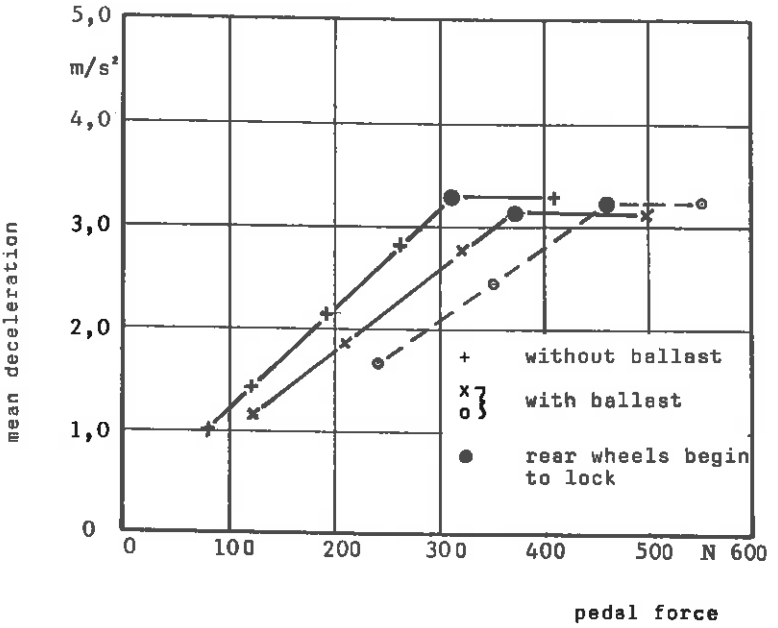
6 BRAKING (Front wheel drive disengaged)

Date of tests: 18th October 1988

	Tractor mass (with driver) front kg	rear kg	total kg	Speed before application of brakes km/h
Without ballast	1260	1950	3210	30,8
With ballast	1860	2790	4650	30,7

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	20	20

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7 MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test: 18th October 1988
Type of track: Concrete
Type of sound level meter: BRÜEL & KJAER model 2233

Results of test

Gear: 4 H *)
Travelling speed before acceleration: 22,8 km/h
Sound level: 88,5 dB(A)

APPENDIX

MEASUREMENT OF NOISE IN THE PROTECTIVE STRUCTURE

with 4-post frame LANDINI TS 19/2

Date of test: 17th October 1988
Type of track: Concrete
Type of sound level meter: BRÜEL & KJAER model 2233

Gear	Drawbar pull kN	Travelling speed km/h	Sound level dB(A)
1 L	31,44	1,58	92,5
2 L	30,92	2,47	94,5
3 L	31,47	3,07	95,5
1 M	31,05	3,66	96,0
4 L	30,15	4,36	98,0
2 M	27,04	6,05	99,0
3 M +)	21,22	7,88	99,5
3 M +)	light load	8,50	91,0
1 H	17,17	9,90	99,5
4 M	13,69	11,87	99,5
2 H	10,14	15,71	100,0
4 H *)	light load	30,38	94,0

+) The 3 M 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: 26th September 1988
Location of tests: DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK eddy-current-dynamometer W 150

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					
59,6	2200	17,56	14,38	241	3,39
8.2 At rated engine speed					
59,6	2200	17,56	14,38	241	3,39
8.3 At standard p.t.o. speed (1000 rev/min)					
55,0	1917	15,77	12,91	235	3,49
8.4 Part loads					
8.4.1 the torque corresponding to maximum power at rated speed					
59,6	2200	17,56	14,38	241	3,39
8.4.2 85% of the torque obtained in 8.4.1					
51,4	2235	14,83	12,15	236	3,47
8.4.3 75% of the torque obtained in 8.4.2					
38,8	2247	11,74	9,62	248	3,30
8.4.4 50% of the torque obtained in 8.4.2					
26,0	2261	8,79	7,20	277	2,96
8.4.5 25% of the torque obtained in 8.4.2					
13,0	2261	6,22	5,09	392	2,09
8.4.6 unloaded					
-	2269	3,69	3,02	-	-

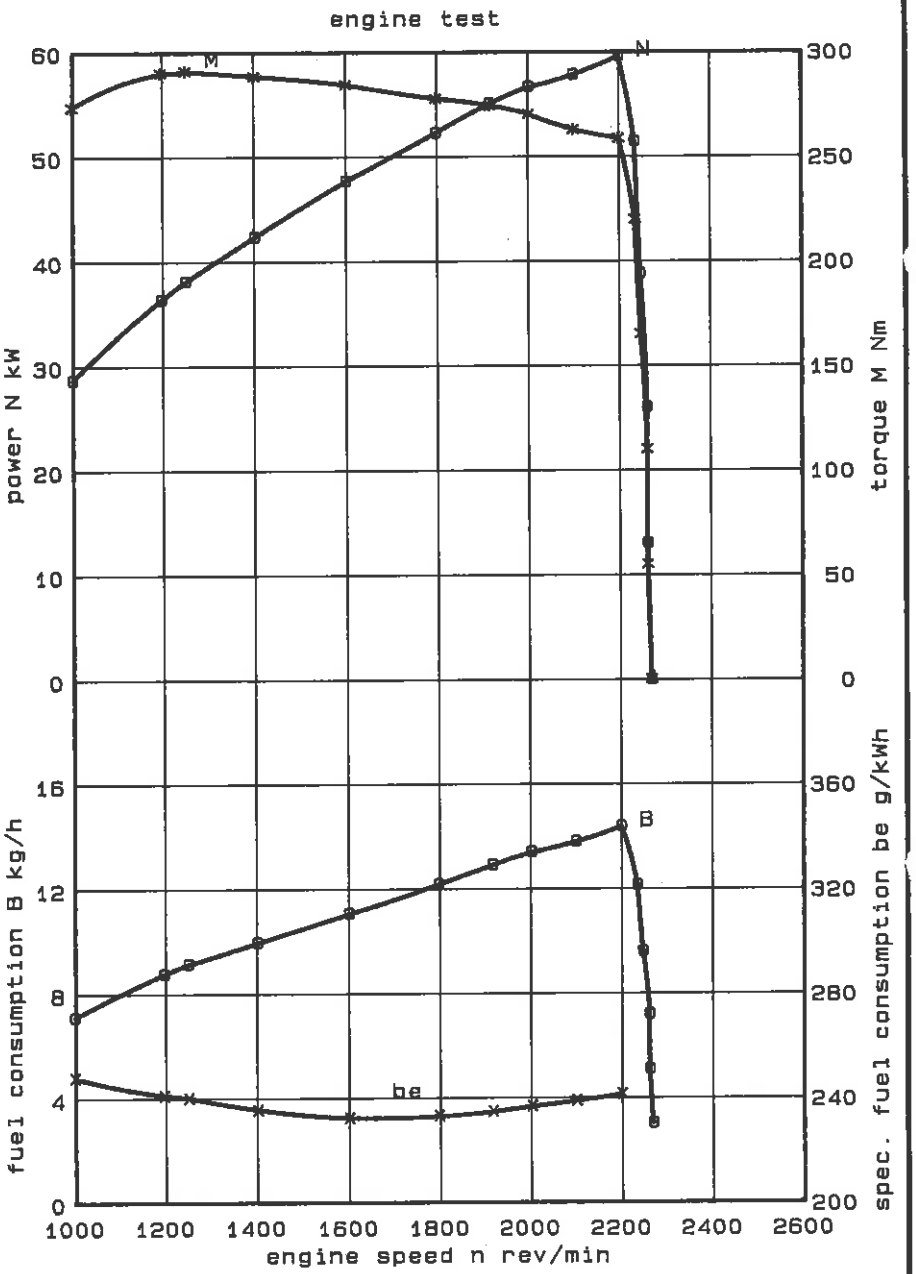
Optimum fuel consumption: 220 g/kWh at 28,6 kW and 1320 rev/min
No load maximum engine speed: 2269 rev/min
Torque at rated engine speed: 258 Nm
Maximum torque: 291 Nm at 1251 rev/min of the engine

Mean atmospheric conditions
- temperature 21 °C
- pressure 100 kPa
- relative humidity 55 %

Maximum temperatures
- coolant 83 °C
- oil 101 °C
- fuel 23 °C
- engine air intake 22 °C

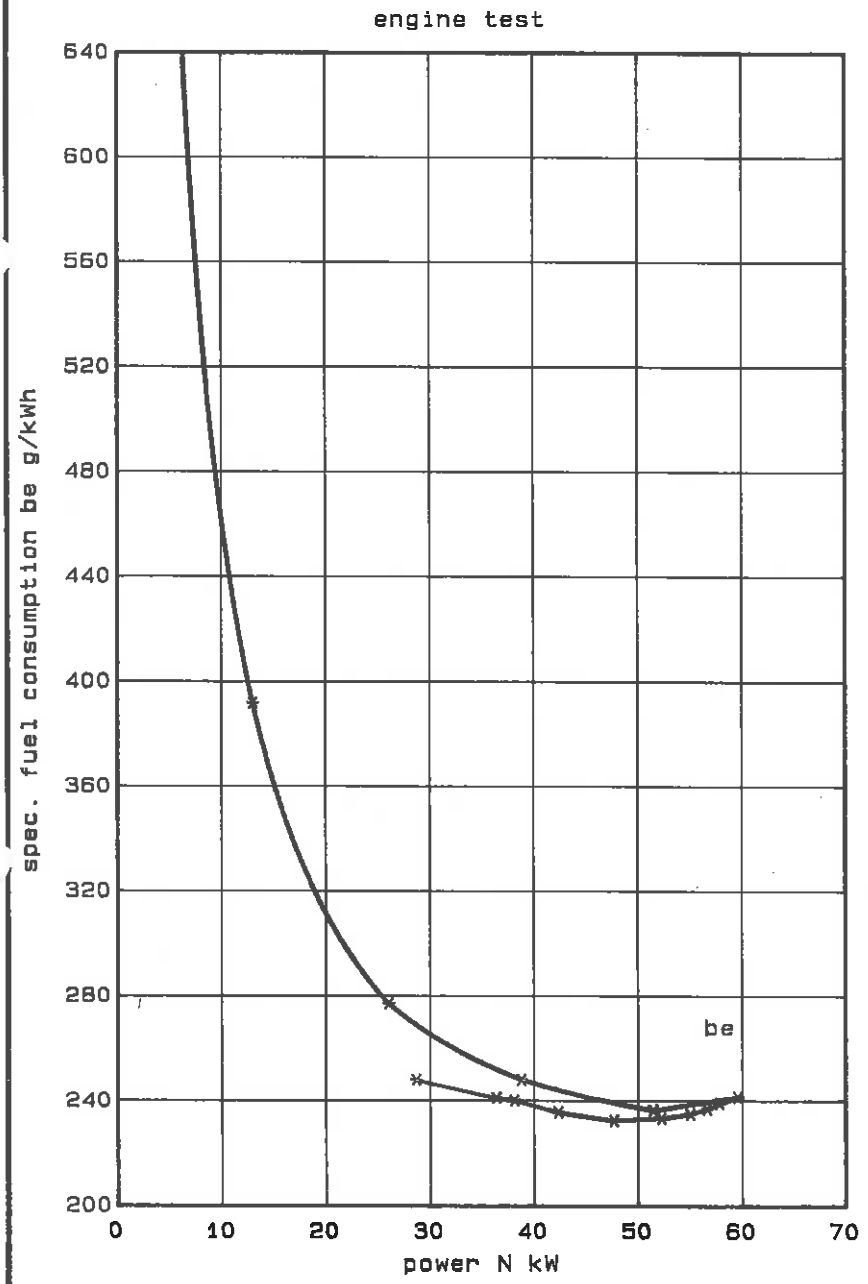
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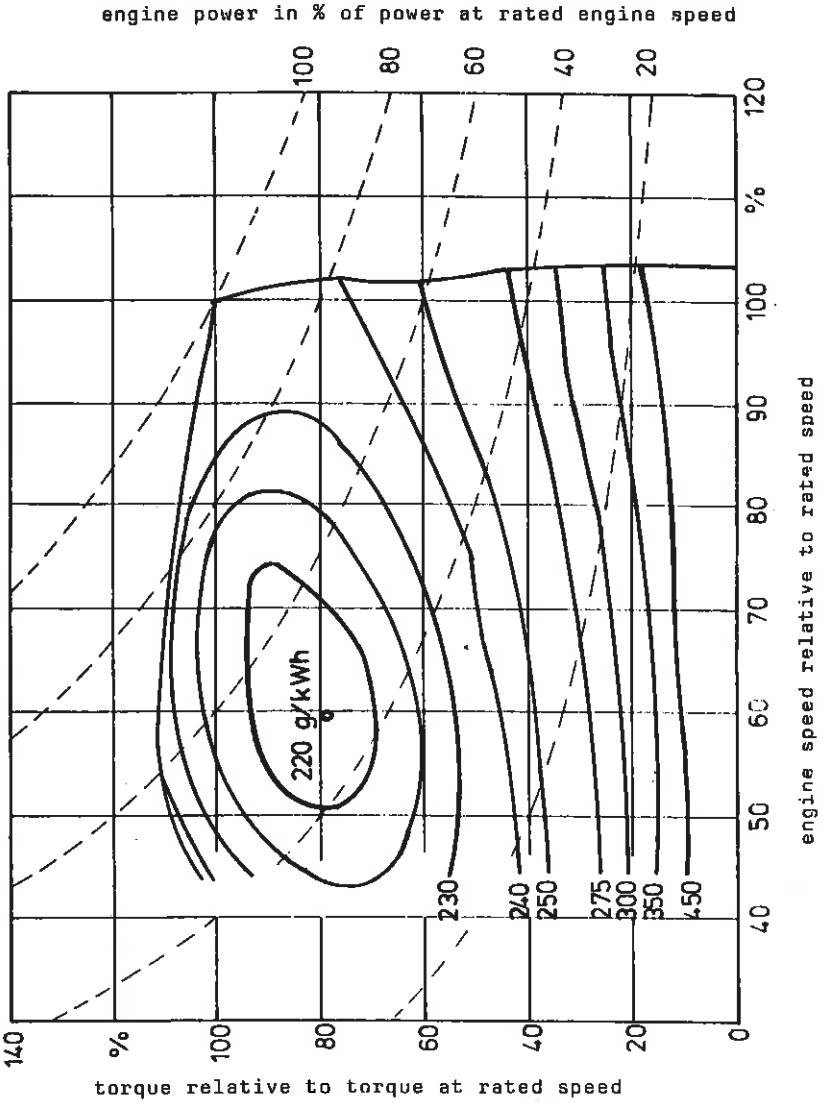
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ADDITIONAL TESTS

under the responsibility of the DLG-Testing Station

9 LIFTING FORCES at rear power lift
(fitted with 2 assister cylinders)

Date of tests: 22nd November 1988

2.2 Power lift test

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement without lifting forces	695 mm	810 mm
Vertical movement with lifting forces	685 mm	755 mm
Max. corrected force exerted through full range	23,7 kN	22,0 kN
Corresponding pressure	15,2 MPa	15,2 MPa
Moment about rear axle	-	34,1 kNm
Max. tilt angle of mast from vertical	-	6°

Lifting heights relative to horizontal lower links

mm	-472	-407	-400	-300	-200	-100	0	+100	+200	+278	+283

Lifting forces at hitch points, corrected to 15,2 MPa

kN		23,7	23,9	25,1	27,8	28,8	29,5	29,9	29,9	29,9	

Lifting forces at standard frame, corrected to 15,2 MPa

kN	22,0		23,3	24,3	25,0	25,2	25,0	24,5	23,9		23,3

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