Report on test in accordance with OECD STANDARD CODE

OECD No. **1211/1**

Agricultural Tractor
LANDINI
R 6860 (2WD)

Type denomination

TL 21 N/K



OECD No. **1211/2**

Agricultural Tractor
MASSEY-FERGUSON
373 (2WD)

Type denomination

TL 21 N/V



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: May till September 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: 23 rd August 1989
OECD No. 1211/1 for LANDINI R 6860 (2WD)
OECD No. 1211/2 for MASSEY-FERGUSON 373 (2WD)

The tractors LANDINI R 6860 (2WD) and
MASSEY-FERGUSON 373 (2WD)
are technically identical in all main respects except colour and denominations.

The tractor LANDINI 6860, serial no. 5373V51260 had been tested in 2 variants: As model DT 6860 (4WD) and as model R 6860 (2WD).

Model DT 6860 was converted into model R 6860 by dismantling the front axle drive and by exchange of front axle and steering.

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 R 6860

Test No. 88-84

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 and tractor appr. 25 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	LANDINI respectively MASSEY-FERGUSON
Trade name:	R 6860 respectively 373
Type denomination:	TL 21 N/K resp. TL 21 N/V
Type:	Wheel tractor, unit construction, rear wheel driven
Serial No.:	5373 V 51260
Start of series:	5372 V 51002 (see note on page 2)

Engine

Make:	PERKINS
Model:	4.236
Type:	Watercooled 4-stroke Diesel-engine, direct injection, naturally aspirated
Serial No.:	LD 31202 U 204215 P
Cylinders:	4, in line, bore 98,5 mm, stroke 127 mm, displacement 3871 cm³, compression ratio 16,0±1:1; replaceable wet cylinder liners
Valves:	Overhead

Fuel system:	PERKINS fuel supply pump; CAV distributor injection pump DPA 3241 F490, serial no. 22117 LRG; manufacturer's production setting 55±1,5 mm³/stroke at rated engine speed and full load; injection timing 23°±2° before TDC, without automatic injection timing device, CAV multihole-injection nozzles PN2646842, injection pressure 17,0 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 2340 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 filter
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

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, 2305 mm above ground

Transmission

Clutch:	LUK, model A2.028.074.08, dry dual-disc clutch; pedal operated travel drive, disc 280 mm dia, organic lining; hand lever operated p.t.o. drive, disc 280 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 varaiants: 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:	MASSEY-FERGUSON not driven, telescopically adjustable
Lubrication:	Gear box, rear axle and hydraulic system have oil in common, see pages 15 and 16

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	331,81	1,74
	2	211,09	2,73
	3	167,28	3,45
	4	113,28	5,09
M	1	138,90	4,15
	2	88,36	6,52
	3	69,97	8,24
	4	47,42	12,16
H	1	56,31	10,24
	2	35,82	16,09
	3	28,37	20,32
	4	19,22	29,99
R	1	124,32	4,64
	2	79,09	7,29
	3	62,63	9,20
	4	42,44	13,58

*) calculated with the radius index 695 mm (ISO 4251/1-1984)

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 680 mm, horizontal distance to rear wheels centre line 265 mm;
35 mm dia, 6 splines, in conformity with ISO 500/1979, type 1, when using 540 rev/min speed

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	0,4754	9,1852
1000	0,2531	17,2522

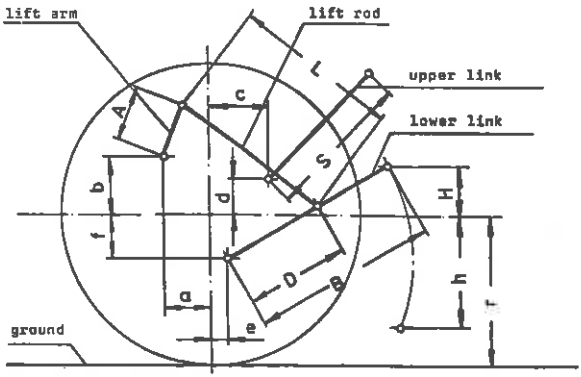
Power lift

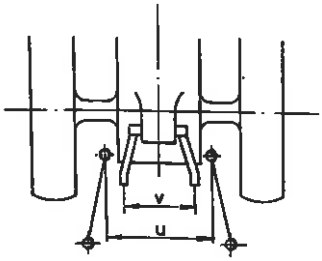
MASSEY-FERGUSON
hydraulic power lift, unit construction;
draft and position control, both infinitely mixable, floating position, lowering throttle (non-adjustable);
adjustable raise control, top link sensing;
open centre system
1 single acting lifting cylinder,
100 mm bore, 127 mm stroke;
cylinder safety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

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 30)	radius index	(r)	695
Front tyres (7.50 - 18)	static radius	(r')	399
Length of lift arms		(A)	272
Length of lower links		(B)	855
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)	590 to 790, <u>680</u>
Distance of upper link pivot point from rear wheel centre	horizontal	(c)	254
	vertical	(d)	256 or <u>301</u>
Distance of lower link pivot point from rear wheel centre	horizontal	(e)	80
	vertical	(f)	138
Distance of lower link pivot points from lift rod pivot points on lower links		(D)	455
Length of lift rods		(L)	545 to 665, <u>606</u>

Height of lower link hitch points relative to rear wheels' centre line (situated 695 mm above ground), these data are valid for unloaded power lift:

Length of lift rods	(L)	<u>606</u>	545	665
Linkage distance of lift rods	(D)	455		
Lowest position	(h)	495	338	635
Highest position	(H)	217	316	102
Transport position	(H')	217	316	102

Pull attachment

Swinging drawbar:	Optionally available (not fitted on tested tractor)
Trailer hitch:	LANDINI DGM GA 725 C-87 6t V1,5, non-automatical, height adjustable; hole diameter 28 mm, hitch point above ground 475, 570, 700 or 795 mm, behind rear wheel axis horizontal 395 mm distance from p.t.o. shaft end vertical, above 20 or 115 mm, below 110 or 205 mm, horizontal 130 mm, maximum permissible vertical load 1500 kg
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 120 mm maximum 1071 mm holes' centre line behind p.t.o. shaft end 710 mm (lower links in horizontal position)
Towing hitch:	At front of tractor, height above ground 735 mm

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Steering	MASSEY-FERGUSON and DANFOSS, model ORBITROL OSPC 80, hydrostatic steering; separate oil circuit fed by SUNDSTRAND/ TUROLLA gear type pump TFA/211S, directly driven by front end of crankshaft; delivery 24 l/min at rated engine speed, working pressure 12,0 MPa; 1 double acting differential ram, bore 45 mm, stroke 165 mm, piston rod 20 mm dia, acting on track rod 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 4 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 7.50-18, rims 5.50 Fx18
Driving wheels:	At rear, 2 pneumatics 16.9 R 30, rims W14x30
Wheelbase:	2249 mm
Track widths:	At front 1420 to 1920 mm, in steps of 100 mm each, variable by extending telescopic half axles at rear 1400 to 2000 mm in steps of 100 mm each, variable by adjustable gauge bowl wheels

Permissible tyre combinations:

Tyre sizes	
at front	at rear
7.50 - 16 6 ply	14.9 R 28 128 A8 14.9 R 30 129 A8 420/70 R 28 133 A8 16.9 R 28 136 A8 16.9 R 30 6 ply
7.50 - 18 6 ply	8.3 - 44 6 ply 12,4 R 36 6 ply 16.9 R 30 6 ply
7.50 - 20 6 ply	9.5 - 44 8 ply 13.6 R 38 128 A8

Protective structure: LANDINI TS 19/2 - MASSEY-FERGUSON TS 20/2, 4-post frame, OECD-tested, approval-no. CSS 081/10 for LANDINI R 6880 (TL 21 N/K, CSS 081/30 for MASSEY-FERGUSON 373 (TL 21 N/V)

Driver's seat: GRAMMER, DS 44/1H; upholstered seat with back rest, adjustable suspension and hydraulic shock absorber; driver's platform 835 mm above ground, 1 step, 560 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	1125	241
Side lights	110x30	1450	788
Rear lights	70x50	1505	606
Reflectors			
1st pair	50x45	1505	646
2nd pair	80 dia	590	400

TEST CONDITIONS

Overall dimensions

Length: 3650 mm without ballast, 3925 mm with ballast

Width: 1915 mm with and without ballast

Height: 2375 mm to top of protective structure
2305 mm to exhaust pipe's mouth

Ground clearance: 485 mm below bracket of trailer hitch

Tractor mass

			without driver kg	with driver kg
Without ballast:	Mass	front	930	935
		rear	1560	1645
		total	2490	2580
With ballast:	Mass	front	1290	1295
		rear	2360	2445
		total	3650	3740

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Ballast

Front:	9 weights, total	324 kg
Rear:	3 weights per wheel, total	360 kg
	water in the tyres	476 kg

Tyres and track widths specifications

	Front	Rear
Tyres:	MICHELIN	MICHELIN BIB' X
dimensions	7.50 - 18	16.9 R 30
type	cross-ply	radial
ply rating/load index	6/-	-/137 A8
maximum load	810 kg (30 km/h)	2300 kg
inflation pressure	225 kPa	160 kPa
radius index	399 mm (static)	695 mm
Chosen track width:	1420 mm	1500 mm
Technically permissible axle load:	1300 kg	3400 kg
Technically permissible total weight:		3750 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 *)
final drives	2x2,2		-
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 rear		
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 15

Fuel

type: ARAL Diesel-fuel in conformity with DIN 51601
density: at 15°C at engine test 0,835 g/cm³
at p.t.o. test 0,819 g/cm³
at drawbar power test 0,819 g/cm³

REPAIRS None

REMARKS None

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COMPULSORY TESTS

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

Date of tests: 14th June 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						
42,7	2200	1148	14,72	12,06	283	2,90
1.2 At rated speed						
42,7	2200	1148	14,72	12,06	283	2,90
1.3 At standard p.t.o. speed						
41,2	1917	1000	13,08	10,71	260	3,15
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						
42,7	2200	1148	14,72	12,06	283	2,90
1.4.2 85% of the torque obtained in 1.4.1						
37,6	2280	1189	13,96	11,44	304	2,69
1.4.3 75% of the torque defined in 1.4.2						
28,6	2310	1205	11,39	9,33	327	2,51
1.4.4 50% of the torque defined in 1.4.2						
19,1	2312	1206	8,77	7,19	377	2,17
1.4.5 25% of the torque defined in 1.4.2						
9,6	2321	1211	6,87	5,62	584	1,40
1.4.6 unloaded						
-	2331	1216	4,94	4,05	-	-

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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						
41,2	1917	1000	13,08	10,71	260	3,15
1.5.2 85% of the torque obtained in 1.5.1						
35,4	1936	1010	11,32	9,27	262	3,13
1.5.3 75% of the torque defined in 1.5.2						
27,2	1984	1035	9,49	7,77	286	2,87
1.5.4 50% of the torque defined in 1.5.2						
18,5	2026	1057	7,45	6,10	329	2,49
1.5.5 25% of the torque defined in 1.5.2						
9,4	2055	1072	5,87	4,80	512	1,60
1.5.6 unloaded						
-	2085	1088	3,83	3,14	-	-

No load maximum engine speed: 2331 rev/m
Equivalent flywheel torque at rated engine speed: 185 Nm
Maximum equivalent flywheel torque: 239 Nm at 1199 rev/min of the engine

Mean atmospheric conditions

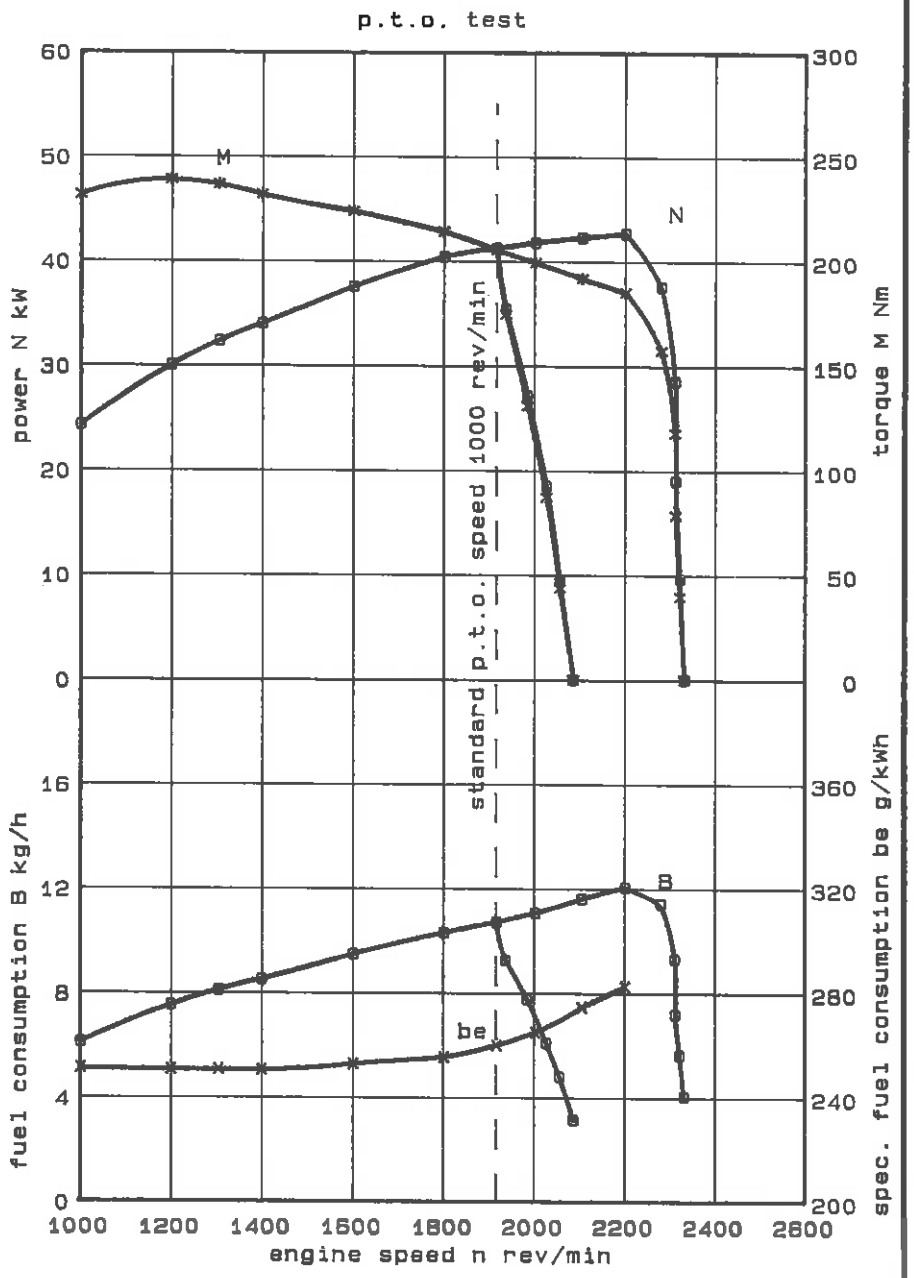
temperature	24 °C
pressure	100 kPa
rel. humidity	40 %

Maximum temperatures

coolant	82 °C
oil	104 °C
fuel	25 °C
air intake	26 °C

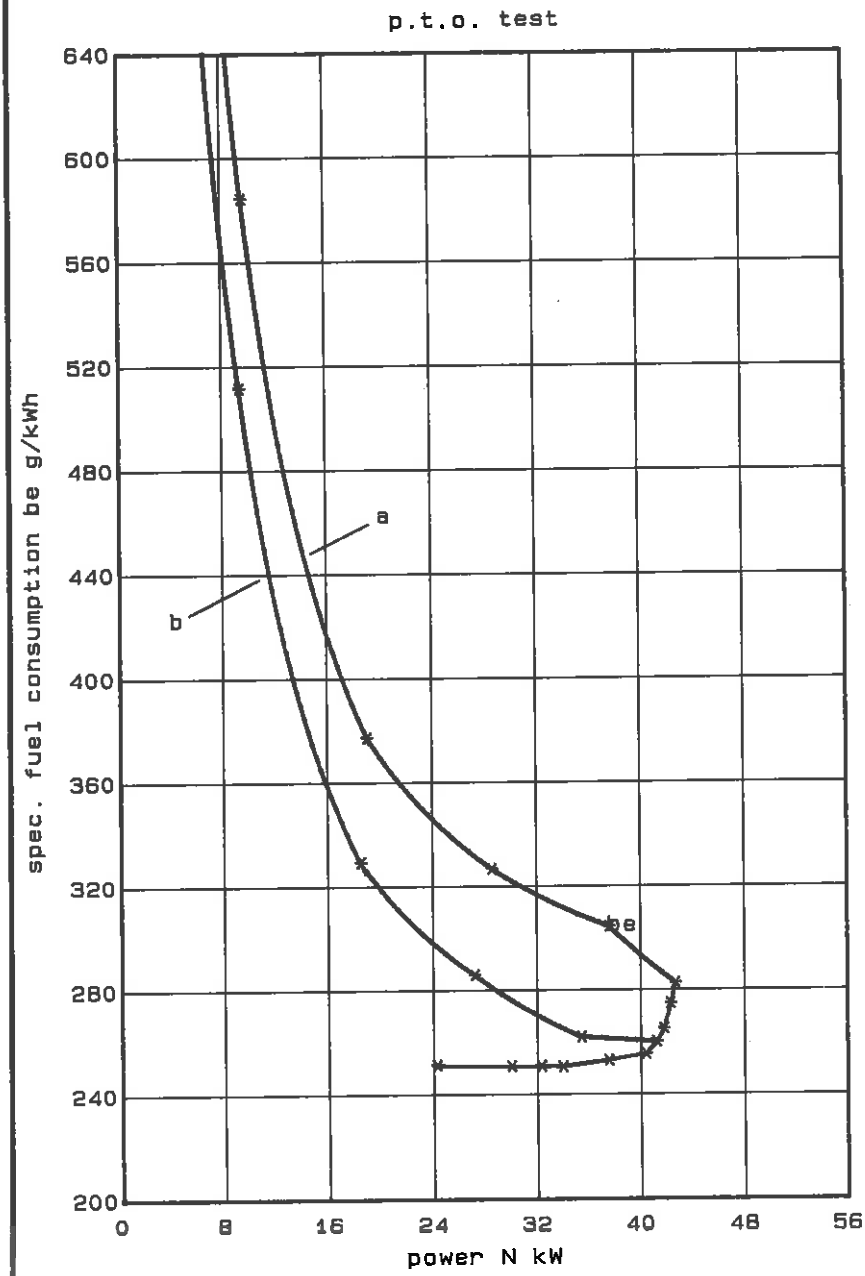
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2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 17th August 1988

2.1 Hydraulic power test

Sustained pressure with relief valve open 16,7 MPa
Pump delivery rate at minimum pressure 38,4 l/min

	Hydraulic power kW	Flow rate l/min	Pressure MPa	Oil temperature °C
At 90% of the actual relief valve setting	6,7	26,7	15,0	38 *)
At max. power	8,9	37,7	14,1	38 *)

Tapping point used for test: At rear of tractor

*) Oil temperature in suction line of hydraulic pump more than 60°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	712 mm	785 mm
Vertical movement with lifting forces	677 mm	729 mm
Max. corrected force exerted through full range	12,9 kN	13,0 kN
Corresponding pressure	14,1 MPa	14,1 MPa
Moment about rear axle	-	20,1 kNm
Max. tilt angle of mast from vertical	-	7,5°

Lifting heights relative to horizontal lower links

mm	-389	-357	-300	-200	-100	0	+100	+200	+300	+320	+340

Lifting forces at hitch points, corrected to 14,1 MPa

kN		12,9	14,2	16,1	17,4	18,3	18,9	19,3	19,8	19,9	

Lifting forces at standard frame, corrected to 14,1 MPa

kN	13,0		14,3	15,4	16,0	16,2	16,2	15,8	15,3		15,2

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3 DRAWBAR PERFORMANCE

Date of tests: 4th and 5th July and 8th till 12th September 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 660 mm					
1 M	3,64	24,6	24,29	2287	14,9
4 L	4,42	30,0	24,40	2264	14,9
2 M	5,83	35,6	22,00	2204	9,9
3 M	7,61	36,5	17,29	2200	6,5
1 H	9,62	37,0	13,86	2202	5,0
4 M	11,56	35,3	10,98	2204	3,9
3.2 Maximum power in tested gears (ballasted tractor) height of drawbar above ground 660 mm					
1 L	1,52	14,4	34,04	2292	15,1
2 L	2,37	22,5	34,19	2275	15,1
3 L	2,98	28,2	34,02	2267	15,1
1 M	3,50	33,2	34,12	2208	15,0
4 L	4,60	35,3	27,61	2200	8,4
2 M	6,06	35,9	21,34	2200	5,7
3 M	7,77	35,7	16,55	2202	4,2
1 H	9,74	36,1	13,34	2198	3,1
4 M	11,64	33,8	10,45	2200	2,5
3.3.1 Five-hour-test at 75% of pull at maximum power in 3 M gear *)					
3 M	8,37	26,0	11,20	2267	2,8
3.3.2 Five-hour-test at pull corresponding to 15% wheel slip in test 3.2 *)					
2 L	2,27	24,7	39,21	2266	-

Total oil consumption during ten hours duration of tests 3.3.1 and 3.3.2 : 41 g/h

*) The tests 3.3.1 and 3.3.2 were carried out with the model DT 6860 (4WD)

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Tyre size front: 7.50 - 18
rear: 16.9 R 30

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: 100 kPa at front, 80 kPa at rear							
394	2,08	23	78	84	13	98	100,7
376	2,18	22	78	85	13	100	100,7
336	2,44	22	79	89	14	98	100,7
329	2,49	23	79	90	14	99	100,7
323	2,53	24	80	90	15	96	100,6
339	2,41	24	81	91	15	91	100,6
tyre inflation pressure: 150 kPa at front, 80 kPa at rear							
502	1,63	25	78	85	17	82	100,0
403	2,03	25	78	87	17	78	100,0
380	2,15	25	79	87	17	78	100,0
360	2,27	27	79	89	18	77	100,0
338	2,42	26	80	90	18	74	100,0
333	2,46	27	80	90	18	71	99,8
334	2,45	26	80	91	18	72	99,8
332	2,47	29	79	89	18	74	99,8
353	2,32	28	80	90	19	71	99,8
394	2,08	31	81	95	23	68	98,9
-	-	31	81	98	23	70	98,9

Test 3.3.2 was carried out with additional ballast of 505 kg, relative to the weight of ballasted model DT 6860 (4WD). the figures not quoted are therefore irrelevant

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4 TURNING AREA AND TURNING CIRCLE

Wheel equipment front: 7.50 - 18
rear: 16.9 R 30

Track of wheels front: 1420 mm
rear: 1500 mm

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning area	3,83	3,58	4,38	3,99
Radius of turning circle	3,68	3,42	4,23	3,83

5 LOCATION OF CENTRE OF GRAVITY

Height above ground	839 mm
Distance forward from rear axle centre	820 mm
Distance from tractor's median plane, to the right	1 mm

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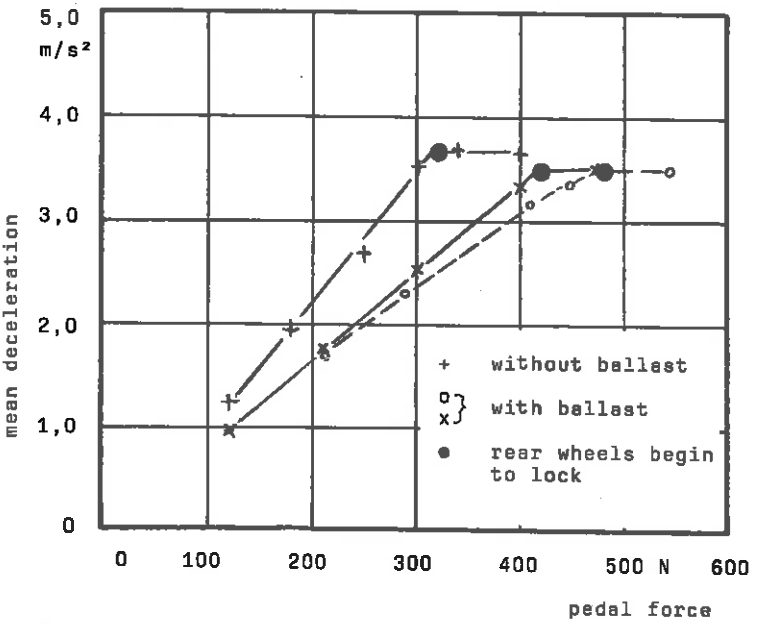
6 BRAKING

Date of tests: 8th and 9th September 1988

	Tractor mass (with driver) front kg	rear kg	total kg	Speed before application of brakes km/h
Without ballast	935	1645	2580	30,8
With ballast	1295	2445	3740	31,0

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	190	190

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7 MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test: 8th September 1988
Type of track: Concrete
Type of sound level meter: BRÜEL & KJAER model 2233

Results of test

Gear: 4 H
Travelling speed before acceleration: 23,3 km/h
Sound level: 86,5 dB(A)

APPENDIX

MEASUREMENT OF NOISE IN THE PROTECTIVE STRUCTURE

with 4-post frame LANDINI TS 19/2

Date of test: 8th September 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	23,00	1,56	92,5
2 L	22,77	2,43	93,5
3 L	21,99	3,05	94,0
1 M	22,40	3,65	94,0
4 L	22,49	4,43	96,0
2 M	21,85	5,79	96,0
3 M *)	17,17	7,60	96,5
3 M *)	light load	8,65	92,5
1 H	13,68	9,59	96,0
4 M	10,88	11,54	96,5
2 H	8,10	15,37	96,5
4 H	light load	31,03	94,0

*) The 3 M gear corresponds to the nominal travelling speed nearest to 7,5 km/h

OPTIONAL TEST

8. ENGINE PERFORMANCE

Date of tests: 27th May 1988
Location of tests: DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK eddy-current-dynamometer W 150

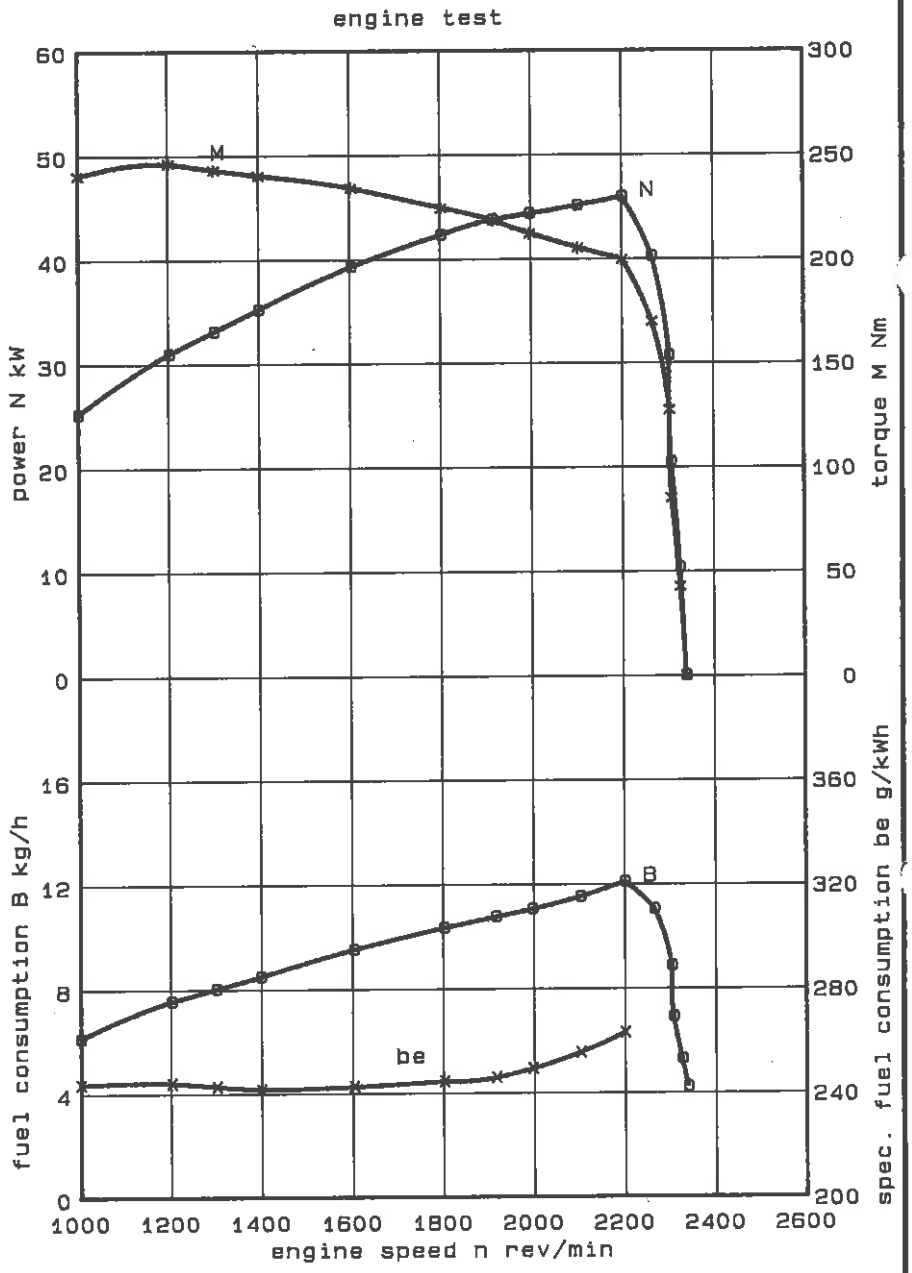
Power kW	Engine speed rev/min	Fuel consumption hourly l/h	Fuel consumption hourly kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power					
8.1 At 2-hour test					
46,0	2200	14,48	12,10	263	3,18
8.2 At rated engine speed					
46,0	2200	14,48	12,10	263	3,18
8.3 At standard p.t.o. speed (1000 rev/min)					
43,8	1917	12,90	10,78	246	3,40
8.4 Part loads					
8.4.1 the torque corresponding to maximum power at rated speed					
46,0	2200	14,48	12,10	263	3,18
8.4.2 85% of the torque obtained in 8.4.1					
40,3	2265	13,23	11,05	275	3,04
8.4.3 75% of the torque obtained in 8.4.2					
30,7	2303	10,62	8,88	289	2,89
8.4.4 50% of the torque obtained in 8.4.2					
20,5	2307	8,28	6,92	337	2,48
8.4.5 25% of the torque obtained in 8.4.2					
10,3	2326	6,36	5,31	514	1,62
8.4.6 unloaded					
-	2339	5,05	4,22	-	-

Optimum fuel consumption: 228 g/kWh at 25.3 kW and 1210 rev/min
No load maximum engine speed: 2339 rev/min
Torque at rated engine speed: 199 Nm
Maximum torque: 246 Nm at 1201 rev/min of the engine

Mean atmospheric conditions	temperature	24 °C
	pressure	100 kPa
	relative humidity	42 %
Maximum temperatures	coolant	82 °C
	oil	105 °C
	fuel	25 °C
	engine air intake	24 °C

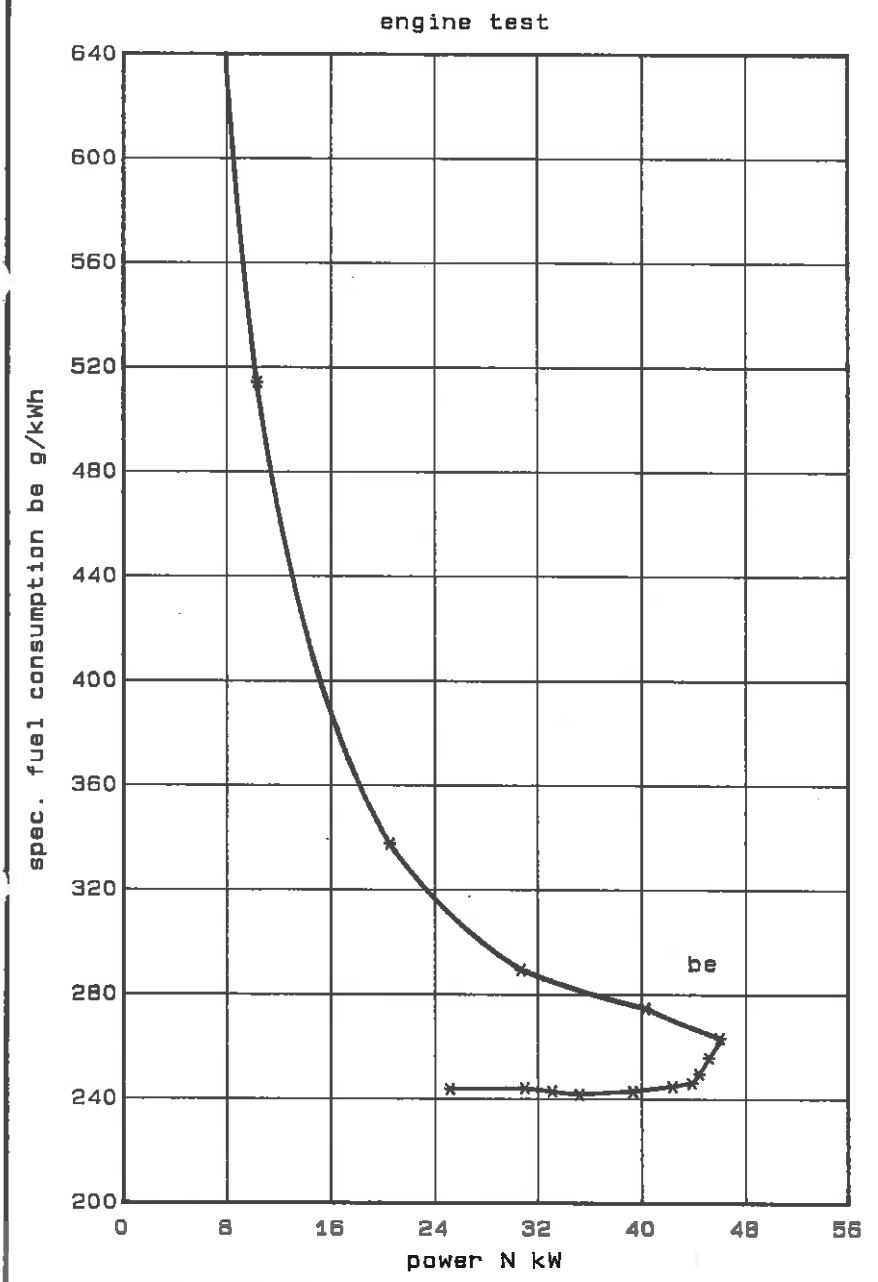
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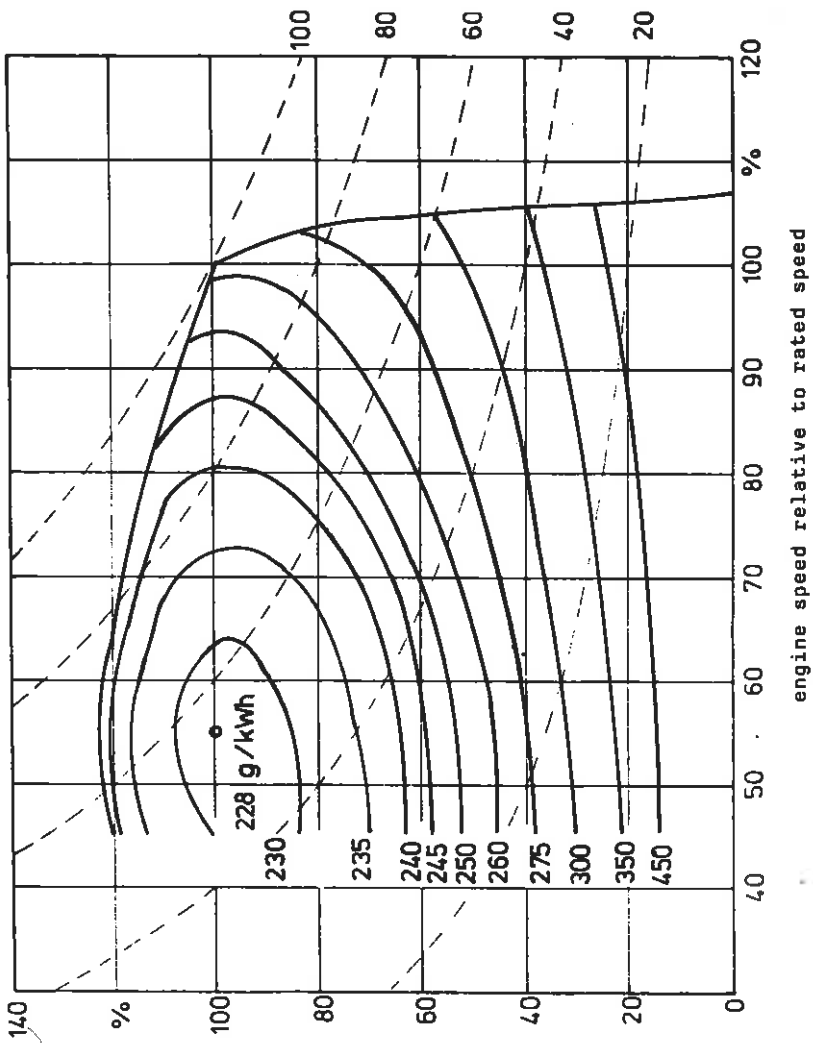
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