COMITATO PER L'OMOLOGAZIONE
DELLE MACCHINE AGRICOLE

TEST IN ACCORDANCE WITH THE OECD FULL
CODE FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS

O.E.C.D. Approval No. 1226/1

AGRICULTURAL TRACTOR

Make: **LANDINI**
Model: **DT 8560 L (TL 40 DT/M)**
Type: **4 WD**



O.E.C.D. Approval No. 1226/2

AGRICULTURAL TRACTOR

Make: **MASSEY FERGUSON**
Model: **394-4F (TL 40 DT/N)**
Type: **4 WD**



Manufactured by: LANDINI S.r.l. - Works of FABBRICO (Reggio Emilia) - Italy

CONSIGLIO NAZIONALE DELLE RICERCHE
ISTITUTO PER LA MECCANIZZAZIONE AGRICOLA
TORINO - Italy

Date and location of tests: September - November 1988 - Turin (Italy)

This report has been approved by the O.E.C.D. Coordinating Center CEMAGREF, France) as being in accordance with the O.E.C.D. Tractor Test Code.

Date of approval: 03rd January 1990

The LANDINI DT 8560 L tractor and the MASSEY FERGUSON MF 394-4F tractor being mechanically similar, the tests have not been repeated and the approval number is valid for both models of tractor.

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This bulletin is based on engineering test in accordance with O.E.C.D. Tractor Code. It does not contain an evaluation of performance of the tractor on practical farm work.

The LANDINI DT 8560 L tractor and similar MASSEY FERGUSON MF 394-4F tractor are manufactured in following variants:

1. STANDARD model with 12 forward and 4 reverse speeds (4 x 4 gear units)
2. SHUTTLE + CREEPER model with 24 forward and 12 reverse speeds (3x4x3 gear units)
3. UNDERDRIVE + SHUTTLE model with 24 forward and 12 reverse speeds (3x4x3 gear units)
4. UNDERDRIVE + CREEPER model with 36 forward and 12 reverse speeds (3x4x4 gear units)

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 N	= 0.10197 kg	or 1 kg	= 9.80665 N
Powers:	1 kW	= 1.35962 metric hp	or 1 metric hp	= 0.73550 kW
Pressures:	1 bar	= 100.000 Pa	or 1 Pa	= 10^{-5} bar
Rotation speeds:	1 rad/s	= 9.54930 rev/min	or 1 rev/min	= 0.10472 rad/s
Torques:	1 mN	= 0.10196 mkg	or 1 mkg	= 9.80665 mN

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Tractor manufacturer's name and address:	LANDINI S.r.l. Via G. Matteotti, 7 FABBRICO - Reggio Emilia - Italy
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by Istituto per la Meccanizzazione Agricola - Torino (Italy)
Place of running-in:	Istituto per la Meccanizzazione Agricola - Torino (Italy)
Duration of running-in:	Engine and tractor appr. 60 hours
Location of test:	Istituto per la Meccanizzazione Agricola - Torino (Italy)

SPECIFICATION OF TRACTOR:

Tractor:

Make:	LANDINI	MASSEY FERGUSON
Model:	DT 8560 L (TL 40 DT/M)	394-4F (TL 40 DT/N)
Type:	Wheel tractor unit construction, four wheel driven	
Serial No.:	5545 N 12002	
1st serial No.:	5545 N 12001	

Engine:

Make:	PERKINS
Model:	4.248
Type:	4-stroke Diesel engine, naturally aspirated, direct injection, water cooled
Serial No.:	LF 31204 U 2215744
Cylinders:	4 cylinders, vertical, in-line, 101.1 mm bore × 127 mm stroke, capacity 4078 cm^3, compression ratio 16.0 : 1, overhead in-line valves, replaceable cast-iron dry cylinder liners.
Fuel system:	Forced feed; AC DELCO mechanical diaphragm-type fuel pump; 1 CAV paper filter, type FAS 5836B 320 with replaceable cartridge element; changing interval: 500 working houres; capacity of fuel tank 62 litres; CAV model DPA ROTARY DISTRIBUTOR 3343 F 010 injection pump, PERKINS P/N 2643 C 279; manufacturer's production setting 18.62 l/h at rated engine speed and full load. Injection timing 24 ± 2 before TDC. CAV multihole injectors, model BKBL67/S 5299 AF, injector pressure 17.5 MPa; serial number: DES 5281631.
Governor:	CAV centrifugal variable speed governor, mechanical type, incorporated in fuel injection pump, governed range engine speed 750 to 2325 rev/min; rated engine speed 2200 rev/min.

Air cleaner:	DONALDSON main cleaner, model XLP 772549 dry type with double replaceable cartridge. Air inlet under bonnet in front of engine. Maintenance indicator: warning ligth on the dashboard.
Lubrication system:	Forced feed from gear-type pump; one, PERKINS model, replaceable cartridge type filters installed on the pressure line to the engine.
Cooling system:	Water cooled with centrifugal impeller pump, overpressure relief valve set to 70 KPa, thermostat with by-pass; 410 mm dia, 6 blades, belt driven fan; cooling water capacity 15.5 litres. Temperature visual control with thermometer. Superpressure system: radiator cap.
Starting system:	Electrical, LUCAS or VALEO make, 12 V 2.5 kW; starting motor pinion coupling solenoid operated. Cold starting aid: ISKRA make, thermostart model with induction heater in intake manifold. Safety device: operable only when the gear box is in neutral position.

Electrical system

Voltage:	12 V, negative earth.
Generator:	Alternator, LUCAS make, A 115/45, three phase, 12 V; 500 W power.
Battery:	One, MARELLI or SCAINI make, 434470-ES (MARELLI) and BK 500.0 (SCAINI) model, lead acid type; capacity: 100 Ah at 20 hours rating for MARELLI and 95 Ah at 20 houres rating for SCAINI.
EXHAUST SILENCER:	ANSA make, DGM-SA 1269 model, rectangular shape 150 x 100 mm, expansion type; length 870 mm. Vertical position on engine right side, maximum height above ground 2210 mm. ANSA make, DGM-SA 1150 model, oval shape 155x105 mm, expansion type, 320 mm length horizontal position on engine left side; height above ground 470 mm; with pre-chamber ANSA make, DGM SA 1309 model, circular shape 82 mm dia, expansion type, 450 mm length.
TRANSMISSION TO WHEELS:	
Clutch:	LUK or OMG make, independent dry dual disc clutch; 280 mm dia plates; travelling part: pedal operated; p.t.o. part: hand lever operated, organic facing.
Gearbox:	Own make. On the tractor model tested: mechanical type syncronized constant mesh gear with total 12 forward and 4 reverse speeds; the transmission consists of two mechanical in series gear groups: the first with four speeds fully synchronized, the second with four positions to select the gear ratios (slow, normal, high and reverse); each group is operated by own lever.

The LANDINI DT 8560 L and MF 394-4F are available in other three variants:

— SHUTTLE + CREEPER model with 24 forward and 12 reverse speeds; the transmission consists of three mechanical in series gear units: the first with three groups (forward, reverse and creeper), the second with four speeds, the third with three positions to select the gear group (slow, normal and high).
— UNDERDRIVE + SHUTTLE model with 24 forward and 12 reverse speeds; the transmission consists of three mechanical in series gear units: the first with three groups (forward, reverse and underdrive), the second with four speeds, the third with three positions to select the gear group (slow, normal and high).
— UNDERDRIVE + CREEPER model with 36 forward and 12 reverse speeds; the transmission consists of three mechanical in series gear units: the first with three groups (forward, underdrive and creeper), the second with four speeds, the third with four position to select the gear groups (slow, normal, high and reverse).

Real axle and final drive: Own make, mechanical type; differential gear with 2 planet gears; mechanical differential locking, pedal operated, and self-disengaging lock; epicyclic train final drive.

Front axle and final drive: Own make, FRUIT type, mechanical differential gear with 2 planet gears; mechanical autoblock (NO SPIN), as option. Epicyclic train final drive.

Total ratios and travelling speed (tyres 420/70 R 28 and pressure 160 KPa)

Gear	Group	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed (*) at rated engine speed (2200 rev/min) km/h
I	Slow	298.868	1.78
II		190.128	2.79
III		150.564	3.53
IV		102.039	5.20
I	Normal	125.122	4.24
II		79.601	6.67
III		63.020	8.42
IV		42.717	12.43
I	High	50.709	10.47
II		32.267	16.45
III		25.541	20.78
IV		17.322	30.64
I	Reverse	111.967	4.74
II		71.236	7.45
III		56.393	9.41
IV		38.224	13.89

(*) Calculated with a tyre dynamic radius index of 640 mm (ISO 4251/1 - 1984).
Number of revolutions of frontwheels for one revolution of rear-wheels: 1.486.

SHUTTLE + CREEPER model
Total ratios and travelling speeds (tyres 420/70 R 28 and pressure 160 KPa)

	Gear	Group	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed (*) at rated engine speed (2200 rev/min) km/h
CREEPER	I	Slow	1531.102	0.35
	II		964.026	0.55
	III		771.337	0.69
	IV		522.744	1.02
	I	Normal	641.001	0.83
	II		407.794	1.30
	III		322.853	1.64
	IV		218.838	2.43
	I	High	259.783	2.04
	II		165.305	3.21
	III		130.845	4.06
	IV		88.756	5.98
STANDARD	I	Slow	298.868	1.78
	II		190.128	2.79
	III		150.564	3.53
	IV		102.039	5.20
	I	Normal	125.122	4.24
	II		79.601	6.67
	III		63.020	8.42
	IV		42.717	12.43
	I	High	50.709	10.47
	II		32.267	16.45
	III		25.541	20.78
	IV		17.322	30.64
SHUTTLE	I	Slow	295.880	1.79
	II		188.227	2.82
	III		149.058	3.56
	IV		101.018	5.26
	I	Normal	123.871	4.29
	II		78.805	6.74
	III		62.390	8.51
	IV		42.290	12.55
	I	High	50.202	10.57
	II		31.944	16.62
	III		25.285	20.99
	IV		17.152	30.95

(*) Calculated with a tyre dynamic radius index of 640 mm (ISO 4251/1 - 1984)
Number of revolutions of frontwheels for one revolution of rear-wheels: 1.486.

UNDERDRIVE + SHUTTLE model
Total ratios and travelling speeds (tyres 420/70 R 28 and pressure 160 KPa)

	Gear	Group	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed (*) at rated engine speed (2200 rev/min) km/h
UNDERDRIVE	I	Slow	360.585	1.47
	II		229.389	2.31
	III		181.655	2.92
	IV		123.110	4.31
	I	Normal	150.960	3.52
	II		96.038	5.53
	III		76.034	6.98
	IV		51.538	10.30
	I	High	61.181	8.68
	II		38.930	13.64
	III		30.815	17.23
	IV		20.903	25.39
STANDARD	I	Slow	298.868	1.78
	II		190.128	2.79
	III		150.564	3.53
	IV		102.039	5.20
	I	Normal	125.122	4.24
	II		79.601	6.67
	III		63.020	8.42
	IV		42.717	12.43
	I	High	50.709	10.47
	II		32.267	16.45
	III		25.541	20.78
	IV		17.322	30.64
SHUTTLE	I	Slow	295.880	1.79
	II		188.227	2.82
	III		149.058	3.56
	IV		101.018	5.26
	I	Normal	123.871	4.29
	II		78.805	6.74
	III		62.390	8.51
	IV		42.290	12.55
	I	High	50.202	10.57
	II		31.944	16.62
	III		25.285	20.99
	IV		17.152	30.95

(*) Calculated with a tyre dynamic radius index of 640 mm (ISO 4251/1 - 1984)
Number of revolutions of frontwheels for one revolution of rear-wheels: 1.486.

UNDERDRIVE + CREEPER model
Total ratios and travelling speeds (tyres 420/70 R 28 and pressure 160 KPa)

	Gear	Group	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed (*) at rated engine speed (2200 rev/min) km/h
CREEPER	I	Slow	1531.102	0.35
	II		964.026	0.55
	III		771.337	0.69
	IV		522.744	1.02
	I	Normal	641.001	0.83
	II		407.794	1.30
	III		322.853	1.64
	IV		218.838	2.43
	I	High	259.783	2.04
	II		165.305	3.21
	III		130.845	4.06
	IV		88.756	5.98
	I	Reverse	573.607	0.93
	II		364.942	1.45
	III		288.902	1.84
	IV		195.822	2.71
STANDARD	I	Slow	298.868	1.78
	II		190.128	2.79
	III		150.564	3.53
	IV		102.039	5.20
	I	Normal	125.122	4.24
	II		79.601	6.67
	III		63.020	8.42
	IV		42.717	12.43
	I	High	50.709	10.47
	II		32.267	16.45
	III		25.541	20.78
	IV		17.322	30.64
	I	Reverse	111.967	4.74
	II		71.236	7.45
	III		56.393	9.41
	IV		38.224	13.89
UNDERDRIVE	I	Slow	360.585	1.47
	II		229.389	2.31
	III		181.655	2.92
	IV		123.110	4.31
	I	Normal	150.960	3.52
	II		96.038	5.53
	III		76.034	6.98
	IV		51.538	10.30
	I	High	61.181	8.68
	II		38.930	13.64
	III		30.815	17.23
	IV		20.903	25.39
	I	Reverse	135.088	3.93
	II		85.946	6.18
	III		68.038	7.80
	IV		46.117	11.51

(*) Calculated with a tyre dynamic radius index of 640 mm (ISO 4251/1 - 1984)
Number of revolutions of frontwheels for one revolution of rear-wheels: 1.486.

POWER TAKE OFF

Main:

Type: Independent; shiftable by hand lever to independent or ground speed p.t.o.; number of shafts: one.
Method of engagement: driven by the 2nd plate of the main clutch.
Position: rear of tractor, in median plane; height above ground 620 mm (with tyre 420/70 R 28).
Changing speeds: shiftable by second hand lever.

Proportional engine speed p.t.o.:

— 540 rev/min: distance behind rear axle 440 mm; diameter of p.t.o. shaft end 35 mm; 6 splines, in conformity with ISO 500/1979; no power restriction; 611 rev/min at rated engine speed; standard p.t.o. speed 540 rev/min at engine speed 1944 rev/min; p.t.o. shaft rotates clockwisely, viewed from tractor rear.
Ratio of rotation speed:

$$\text{Engine/p.t.o. ratio} = \frac{2200}{611} = 3.600$$

— 1000 rev/min: distance behind rear axle 440 mm; diameter of p.t.o. shaft end 35 mm; 6 splines, not in conformity with ISO 500/1979; no power restriction; 1148 rev/min at rated engine speed; standard p.t.o. speed 1000 rev/min at engine speed 1917 rev/min; p.t.o. shaft rotates clockwisely, viewed from tractor rear.

$$\text{Engine/p.t.o. ratio} = \frac{2200}{1148} = 1.917$$

— 750 rev/min: distance behind rear axle 440 mm; diameter of p.t.o. shaft end 35 mm; 6 splines, not in conformity with ISO 500/1979; no power restriction; 853 rev/min at rated engine speed; standard p.t.o. speed 750 rev/min at engine speed 1934 rev/min; p.t.o. shaft rotates clockwisely, viewed from tractor rear.

$$\text{Engine/p.t.o. artio} = \frac{2200}{853} = 2.579$$

OPTIONS AVAILABILITY:
— 540 rev/min
— or 540 rev/min + 1000 rev/min
— or 540 rev/min + 750 rev/min

P.t.o. proportional to ground speed:

size of tyres: 420/70 R 28, radius index 640 mm; travelling distance for one revolutions of p.t.o. shaft 0.486 m with 540 p.t.o., 0.348 m with 750 p.t.o. and 0.259 m with 1000 p.t.o.;

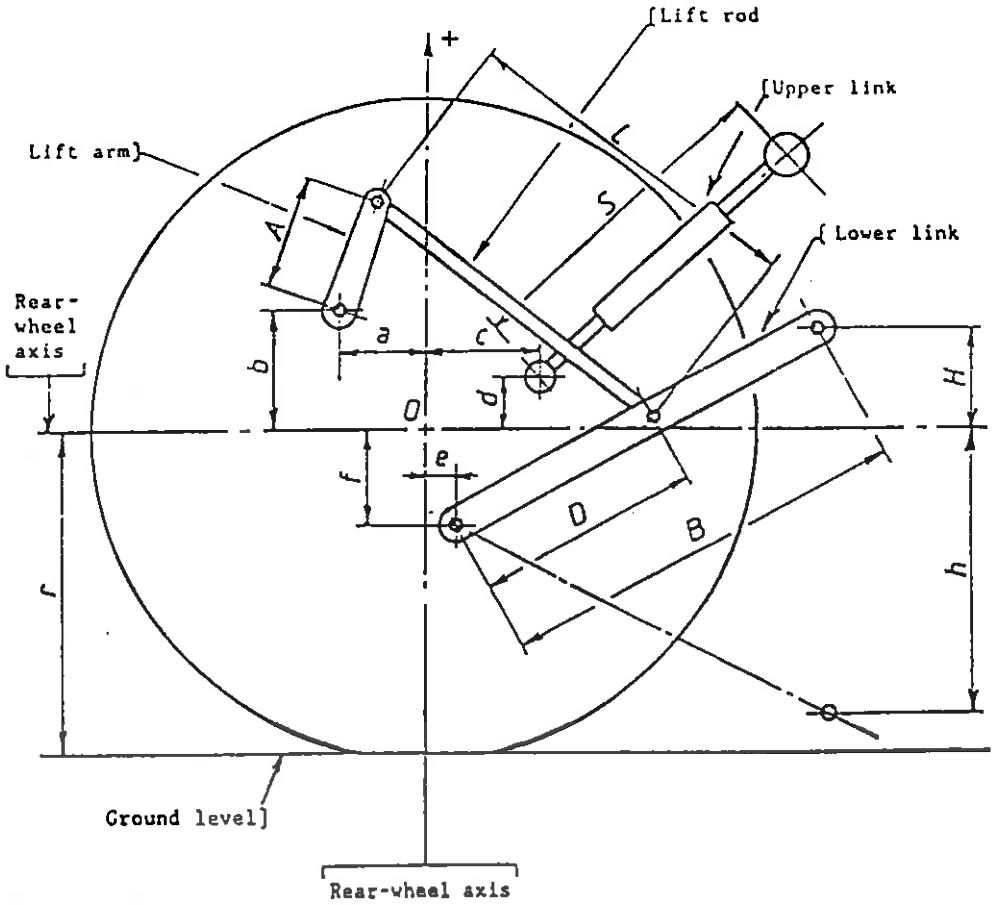
number of p.t.o. shaft revolution for one revolution of the real wheels: 8.274 with 540 p.t.o., 11.549 with 750 p.t.o. and 15.540 with 1000 p.t.o..
Direction of rotation with forward gear engaged: clockwise, viewed from tractor rear.

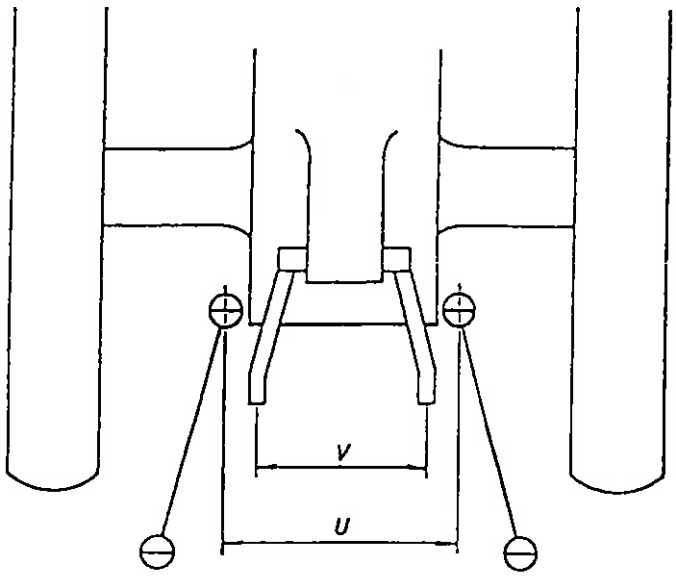
POWER LIFT:

Own make; hydraulic power lift in unit construction, draught, position, intermix control and floating control.
— **Hydraulic system:** open centre system with hydraulic oil circuit in common with gear box. One single acting cylinder with 100 mm bore and 127 mm stroke.
Relief valve pressure setting: 17 MPa
Antishock valve setting: 19 MPa
TUROLLA SNP 2/11 CO or BOSCH A 510 240 229 lift gear pump, directly driven by engine.
Engine/pump ratio: 1:1.75; delivery 42.3 l/min at rated engine speed.
There are no cylinder safety valves.
Type of linkage lock for transport: hydraulic. Oil capacity 33 litres. Site of oil reservoir: gearbox cast housing. Number two tapping points on the rear part of tractor. Maximum volume of oil available to external cylinders 5 litres.

Implement linkage:
three point linkage, joint balls category 1 or 2 interchangeable according to I.S.O. STANDARD 730/2 - 1979; dimensions see on pag. 14.

POWER LIFT


Lift rod
Upper link
Lift arm
Lower link
Rear-wheel axis
A
S
C
a
c
b
d
H
O
e
f
D
B
h
r
Ground level
Rear-wheel axis


V
U

Dimension of linkage geometry (when connected to the standard frame)

		Dimension or range mm	Settings used in test mm
Length of lift arms	(A)	272	272
Length of lower links	(B)	750	750
Distance of lift arm pivot: horizontally	(a)	—185	—185
point from rear-wheel axle: vertically	(b)	311	311
Horizontal distance between the 2 lower link points	(u)	390	390
Horizontal distance between the 2 lift arm end points	(v)	525	525
Length of upper link	(S)	from 450 to 630	580
Distance of upper link pivot point from rear: horizontally	(c)	420	420
wheel axle: vertically	(d)	from 256 to 301	256
Distance of lower link pivot point from rear: horizontally	(e)	240	240
wheel axle: vertically	(f)	140	140
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	370	370
Length of lift rods	(L)	from 440 to 500	500
Heigth of lower hitch points relative to the rear-wheel axle:			
— in low position	(h)	from 390 to 450	450
— in high position	(H)	from 100 to 160	100
Height above ground of liver hitch points when locked in transport position (*)		from 800 to 740	740

(*) Assuming the dynamic radius index: 640 mm (ISO 4251/1 - 1984)

SWINGING DRAWBAR:

Own make; clevis type.
Vertical height with tyres 420/70 R 28, to centre of clevis: min 330 mm max 380 mm above ground; adjustments obtained changing the setting of the drawbar on the drilled guide; clevis coupling pin diameter 28 mm; distance of hitch point from rear axle horizontally: 940 mm behind.
Position relative to p.t.o. horizontally and vertically:
— 550 mm behind
— from 240 mm below to 290 mm below.
Lateral adjustements: 5 position (one in the middle and two for each side at 125 mm and 250 mm).
Pivot position relative to rear wheels horizontally 440 mm.
Maximum vertical load: not allowed by italian legislation and by manufacturer.

HITCH:

Own make; clevis type; height above ground (with tyres 420/70 R 28) 450-670-540 and 760 mm, changeable by sliding on drilled guides; hitch hole 28 mm dia; distance of hitch hole to rear axle horizontally 570 mm; position relative to p.t.o.: vertical 170 and 80 mm below; 50 and 140 mm above; 130 mm horizontal, to rear.
Maximum vertical load 1500 kg according to italian legislation (with tyres 420/70 R 28 133 A8).

HOLED DRAWBAR:

fitted on hitch points of lower links; number 9 holes; distance between holes 55 mm, 20 mm dia holes, 30 mm thickness, 70 mm width, 824 mm lenght, height above ground min 83 mm, max 268 mm (with tyres 420/70 R 28); horizontal distance to p.t.o. shaft end 550 mm.

STEERING:

Own make, hydrostatic control, with independent hydraulic circuit. Distributor DANFOSS make, Orbitrol OSPC 80; gear pump delivery 18.7 l/min at rated engine speed, one double acting cylinder directly acting on the front wheel, transversaly mounted, bore 50 mm, stroke 222 mm, piston rod 32 mm dia; working pressure 12 ± 0.2 MPa.
Oil capacity 1.5 litres. Oil filter make: MF.

BRAKES:

Service brake:

Own make, multiple wet disc brakes type, 8 plates made of resin graphite; dimensions: 177.8x139.7 mm. Total braking area: 1540 cm^2 hydraulically acting on rear wheels; operated by two independent pedals locked together for road drive.
Hydraulic trailer braking take off available as optional, only for market where it is homologated.

Parking brake:

Own make, hand lever operated; the parking brake acts on the final part of service brake by means of different linkage.

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

WHEELS:

Steering wheels:
at front, two radial type tyres PIRELLI 260/80 R 20 6 ply.

Driving wheels:
at front and at rear;
at rear; two tyres PIRELLI 420/70 R 28 133 A8.

Wheelbase: 2014 mm

Track width adjustment

	Minimum mm	Maximum mm	Adjustment method
Front	1230	1530	manual through 8 positions
Rear	1140	1690	manual through 8 position, and PAVT, as option

Permissible tyre combinations:

Tyre size			
At front		At rear	
7.50 R 20	6 ply	13.6 R 28	123 A8
7.50 R 18	6 ply	14.9 R 24	126 A8
9.50 R 20	8 ply	14.9 R 28	128 A8
260/80 R 20	106 A8	14.9 R 28	128 A8
10.5 R 18	6 ply	16.9 R 24	134 A8
260/80 R 20	106 A8	420/70 R 28	133 A8
250/80 R 18	8 ply	13.6 R 28	123 A8
250/80 R 18	8 ply	420/70 R 24	130 A8

STRUCTURE:

Massey Ferguson, roll-bar, ARS6 type. NF-U 02-047 STANDARD CEMAGREF REPORT 5857 (28.01.86) approval number. It's composed by two post folding ROPS of steel welded and bolted construction in front of the operator's seat and it's tiltable.

SEAT:

Driver's seat:
GRAMMER make, DS 44/1H model, upholstered seat with back rest, double acting hydraulic damper suspension; height of unloaded seat above driver's platform adjustable from 540 mm to 585 mm in a

a continuos way, longitudinal adjustment 160 mm;

Passenger seat: none.

LIGHTING: Electrical 12 V, in accordance with Italian legislation.

	Height above ground of centre mm	Size mm	Distance from outside edge of light to median plane of tractor mm
Headlights	955	∅ 130	205
Sidelights	1465	110x35	515
Rearlights	1465	110x35	515
Reflectors 1st pair	1255	50x45	545
Reflectors 2nd pair	730	∅ 80	405

TEST CONDITIONS

OVERALL DIMENSIONS

	Length	Width		Height to top of	
		mini	maxi	exhaust silencer	structure
	m	m	m	m	m
With ballast	3.85	1.71	2.26	2.21	2.40
Without ballast	3.57	1.56	2.11	2.21	2.40

Ground clearance: 320 mm below pivot point of front axle.

Tractor mass
(with roll bar and full fuel tank):

	Without driver		With driver	
	Without ballasts kg	With ballasts kg	Without ballasts kg	With ballasts kg
Front	1045	1290	1065	1310
Rear	1420	1750	1470	1800
Total	2465	3040	2535	3110

Ballasts:

	Weights		Water (kg)
	Number	Total mass (kg)	
Front wheels	—	—	—
Front weight	6 + support	215	—
Rear wheels	8	360	—
Optional	—	—	—

Fuel:

— Type: Esso Diesel oil, in conformity with national standard.

— Density at 15 °C: 0.831 g/cm^3

Tyres and track width specifications

	Front	Rear
Tyres:	PIRELLI	PIRELLI
dimensions	260/80 R 20	420/70 R 28
ply rating	106 A8	133 A8
tyre	radial	radial
maximum load	950 kg (30 km/h)	2060 kg (30 km/h)
inflaction pressure (tyre manufacturer's)	160 KPa	160 KPa
dynamic radius index	446 mm	640 mm
Chosen track width:	1230 mm	1140 mm

Oils and lubrication

— Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	6.5	250	250
Gear box with hydraulic sistem	33	1000	250
Front axle and final reduction	4.8	1000	—
Rear axle and final reduction	3.6	1000	—
Steering system	1.5	1000	CLEANING EVERY 500 houres

— Specifications (SAE, API, MIL.L, ISO)

	Recommended	Used during test
Engine oil — Type: — Viscosity: — Classification:	 LAND-OIL SAE 15 W 40 MIL-L-2104 C	As recommended
Transmission oils — Type: — Viscosity: — Classification:	 LAND-OIL SAE 80 W 90 API CC/SE	As recommended
Hydraulic fluid — Type: — Viscosity: — Classification:	 LAND-OIL SAE 80 W 90 API CC/SE	As recommended
Steering oil — Type: — Viscosity: — Classification:	 LAND-OIL SAE W 40 MIL-46152	As recommended

— Grease: LAND-OIL
Number of lubrication points: 14

COMPULSORY TESTS RESULTS

(1) MAIN POWER-TAKE-OFF PERFORMANCE

Date and Location of tests: 28/09/1988, I.M.A., TORINO, ITALY
Type of dynamometer:
PARASITIC CURRENTS, BORGHI & SAVERI FA 300-30 SP

Power	SPEED		FUEL CONSUMPTION			Specific energy
	Engine	p.t.o.	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
MAXIMUM POWER - 2 - hour test						
54.70	2200	611	18.62	15.47	283	2.94
Power at rated engine speed						
54.90	2200	611	18.53	15.40	281	2.96
Standard power-take-off speed (540 ± 10 rev/min)						
51.28	1944	540	16.79	13.95	272	3.05
PART LOADS						
(1) the torque corresponding to maximum power at rated engine speed .						
54.67	2200	611	18.52	15.39	282	2.95
(2) 85% of torque obtained in (1)						
48.29	2286	635	15.58	12.95	268	3.10
(3) 75% of torque defined in (2)						
36.43	2300	639	12.32	10.24	281	2.96
(4) 50% of torque defined in (2)						
24.42	2311	642	9.22	7.66	314	2.65
(5) 25% of torque defined in (2)						
12.25	2322	645	7.89	6.56	536	1.55
(6) unloaded						
—	2333	648	5.23	4.35	—	—

PART LOADS AT STANDARD POWER-TAKE-OFF SPEED (540 ± 10 rev/min)

Power	SPEED		FUEL CONSUMPTION			Specific energy
	Engine	p.t.o.	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
(1) the torque corresponding to maximum power						
51.55	1944	540	16.79	13.95	271	3.07
(2) 85% of torque obtained in (1)						
45.19	2005	557	13.75	11.43	253	3.29
(3) 75% of torque defined in (2)						
34.27	2027	563	10.63	8.83	258	3.22
(4) 50% of torque defined in (2)						
22.98	2038	566	8.15	6.77	295	2.82
(5) 25% of torque defined in (2)						
11.58	2056	571	5.62	4.67	403	2.06
(6) unloaded						
—	2077	577	3.23	2.68	—	—

STANDARD SPECIFIC CONSUMPTION: 268/314/253/295 (g/kWh)
No load maximum engine speed : 2333 rev/min
Torque at maximum power (2 hours) : 237.5 N/m
Maximum torque : 264.2 Nm at 1500 rev/min of the engine
Mean atmospheric conditions : Temperature 23.0 °C
Pressure 992.0 mbar
Relative Humidity 69%
Maximum Temperature : Coolant 85.0 °C
Engine oil 127.0 °C
Fuel 27.0 °C
Engine air intake 22.5 °C

2 HYDRAULIC POWER AND LIFTING FORCE

— Date of tests: 26th January 1989

2.1 HYDRAULIC POWER TEST

— Sustained pressure with relief valve open: 18 MPa
— Pump delivery rate at minimum pressure: 11 l/min

	Flow rate l/min	Pressure MPa	Power kW
Flow rate corresponding to a hydraulic pressure equivalent to 90 per cent of the actual relief valve pressure setting and corresponding hydraulic power	39.6	16.2	10.0
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	39.4	16.4	10.1

— Tapping point used for test: at rear of tractor
— Temperature of hydraulic fluid: 65 °C

2.2 POWER LIFT TEST

	at the hitch point		on the frame	
Height of lower hitch points above ground in down position	190	mm	190	mm
Vertical movement	550	mm	410	mm
Maximum corrected force exerted through full range	20.3	kN	16.3	kN
Corresponding pressure of hydraulic fluid	16.2	MPa	16.2	MPa
Moment about rear-wheel axis	—	kNm	26.6	kNm
Maximum tilt angle of mast from vertical	—	degrees	5	degrees

Lifting heights relative to the horizontal plane including the lower link pivot points										
mm	—300	—250	—200	—100	—50	0	+50	+110	+200	+250
Lifting forces										
at the hitch points kN	21.30	21.10	21.05	20.90	20.80	20.60	20.60	20.55	20.50	20.30
Corresponding pressure: 16.2 MPa										
at the frame kN	22.85	21.80	21.40	20.00	19.20	18.45	17.70	16.30	—	—
Corresponding pressure: 16.2 MPa										

(3) DRAWBAR PERFORMANCE

Date of tests: 18th till 21st October 1988
Type of track: concrete
Tyre size front: 260/80 R 20 106 A8
rear: 420/70 R 28 133 A8

		Tyre inflation pressure	
	Height of drawbar above ground	Front	Rear
Unballasted	460 mm	160 kPa	160 kPa
Ballasted	455 mm	160 kPa	160 kPa

Gear no. and group	Driving speed	Power	Drawbar pull	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperatures			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	km/h	kW	daN	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	mbar
3.1 - MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
4 Slow	4.65	32.18	2491	2294	15.0	351	2.32	28.0	78	115	13.0	96	992.6
2 Normal	5.94	40.96	2481	2282	14.9	335	2.44	28.0	80	118	13.0	96	992.6
3 Normal	7.72	47.54	2216	2208	9.0	324	2.52	28.0	82	121	13.5	94	992.6
1 High	9.86	48.08	1755	2200	6.6	321	2.54	28.5	83	122	14.0	93	992.0
4 Normal	11.91	47.38	1432	2202	5.0	326	2.50	28.5	84	123	14.5	92	992.0
2 High	16.00	45.32	1020	2200	3.5	341	2.39	28.5	84	123	15.0	91	992.0
3.2 - MAXIMUM POWER IN TESTED GEARS (ballasted tractor)													
1 Slow	1.62	13.02	2893	2320	15.0	—	—	27.0	78	115	18.0	82	990.6
2 Slow	2.53	20.30	2883	2310	15.0	409	1.99	27.0	79	116	18.0	82	990.6
3 Slow	3.19	25.54	2883	2302	14.9	392	2.08	27.5	80	118	18.0	82	990.6
1 Normal	3.83	30.78	2893	2296	15.0	351	2.32	27.5	82	119	18.0	82	990.6
4 Slow	4.69	37.31	2864	2289	14.8	324	2.51	28.0	83	120	18.0	84	990.6
2 Normal	5.88	45.03	2756	2229	14.4	342	2.38	28.0	84	122	18.0	84	990.6
3 Normal	7.91	46.95	2138	2207	8.0	328	2.48	28.5	84	123	18.0	84	990.6
1 High	10.00	47.40	1706	2201	6.2	326	2.50	28.5	83	123	18.0	85	990.6
4 Normal	12.03	46.69	1397	2197	4.7	331	2.46	29.0	83	122	18.5	86	990.6
2 Hight	16.17	44.92	1000	2203	3.5	343	2.37	29.0	83	123	18.5	86	990.6
3.3.1 - FIVE HOUR TEST at 75% of pull at maximum power													
3 Normal	8.44	37.61	1603	2287	5.2	346	2.36	29.0	84	122	16.0	90.0	985.3
3.3.2 - FIVE HOUR TEST at pull corresponding to 15% wheelslip - with 280 kg as additional ballast													
2 Normal	4.84	38.52	2864	2284	—	—	—	28.5	83	123	17.0	73	986.6

Oil consumption during ten hours tests 3.3.1 and 3.3.2: 33 g/h
Test 3.3.2 was carried out with additional ballasts; so, the not quoted figures are irrelevant

4. TURNING AREA AND TURNING CIRCLE

Wheel equipment front: 260/70 R 28 106 A8
rear : 420/70 R 28 133 A8
Track width front: 1230 mm
rear : 1140 mm

	With brakes		Without brakes	
	Right-hand m	Left-hand m	Right-hand m	Left-hand m
Radius of turning area	4.55	4.47	5.02	4.95
Radius of turning circle	4.30	4.21	4.76	4.69

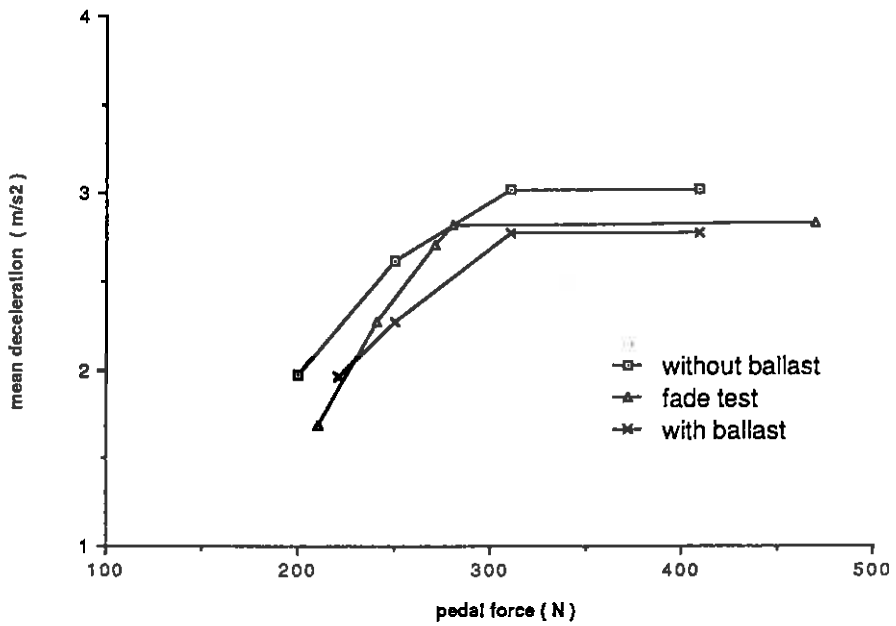
5. LOCATION OF CENTRE OF GRAVITY

Height above ground	725	mm
Distance forward from the vertical plane containing the axis of the rear wheels	846	mm
Distance from the median plane of the tractor, to the left	11	mm

6. BRAKING

— Date of tests: 7th and 8th october 1988

6.1 cold service braking device test - 6.2 fade test



6.2 **COLD SERVICE BRAKING DEVICE TEST**

	Ballasted tractor	Unballasted tractor
Speed before application of brakes (Km/h)	30.65	30.45

FADE TEST

— Maximum deviation of the tractor from its original course: none.
— Abnormal vibration. none.
— Brake heating method: by means of towing the tractor for 1 Km at 24.5 Km/h with a towing force of 310 Kg.

6.3 **PARKING BRAKING DEVICE TEST**

	Uphill	Downhill
Braking device control force	11.3 kN	10.9 kN

7. **MEASUREMENT OF EXTERNAL NOISE LEVEL**

— Date of tests: 28th october 1988
— Type of sound level meter: impulse precision BRUEL & KJAER 2209 model.
— Type of track: concrete

7.1 Results of test with DGM SA 1150 model

— Gear number: 4 High
— Travelling speed before acceleration: 20.35 km/h
— Sound level: 90.0 dB(A)

7.2 Results of test with DGM SA 1231 model

— Gear number: 4 High
— Travelling speed before acceleration: 20.25 km/h
— Sound level: 90.0 dB(A)

OPTIONAL TESTS RESULTS

8. ENGINE PERFORMANCE

Date and Location of tests: 23/11/1988 I.M.A., TORINO, ITALY
Type of dynamometer: PARASITIC CURRENTS, BORGHI & SAVERI FA 300-30 SP

Power	Engine Speed	FUEL CONSUMPTION			Specific Energy
		Hourly		Specific	
kW	rev/min	l/h	kg/h	g/kWh	kWh/l
MAXIMUM POWER - 2 - hour test					
58.52	2200	18.59	15.45	264	3.15
POWER AT RATED ENGINE SPEED					
58.52	2200	18.59	15.45	264	3.15
STANDARD POWER-TAKE-OFF SPEED (1000±25 rev/min)					
54.70	1944	16.82	13.98	256	3.25
PART LOADS					
(1) the torque corresponding to maximum power at rated engine speed					
58.52	2200	18.59	15.45	264	3.15
(2) 85% of torque obtained in (1)					
51.71	2287	15.99	13.29	257	3.23
(3) 75% of torque defined in (2)					
39.02	2300	12.21	10.15	260	3.20
(4) 50% of torque defined in (2)					
26.14	2311	9.22	7.66	293	2.84
(5) 25% of torque defined in (2)					
13.14	2324	6.56	5.45	415	2.00
(6) unloaded					
—	2338	4.12	3.42	—	—

STANDARD SPECIFIC CONSUMPTION: 257/293 (g/kWh)
No load maximum engine speed: 2338 rev/min
Torque at maximum power (2 hours): 254.0 N/m
Maximum torque: 282.4 Nm at 1400 rev/min of the engine
Mean atmospheric conditions: Temperature 13.0 C
Pressure 993.3 mbar
Relative Humidity 50%
Maximum Temperature: Coolant 88.0 C
Engine oil 123.0 C
Fuel 26.0 C
Engine air intake 14.0 c

9. **REPAIRS AND ADJUSTMENT DURING TEST** = none

10. **REMARKS** = none

TEST CARRIED OUT BY:

W. Faccio

M. Giangualano

HEAD OF I.M.A.
TEST DEPARTMENT

R. Gioia

DIRECTOR OF I.M.A.

L. Lisa

Turin, 7th June 1989

LANDINI DT 8560 L (TL 40 DT/M) 4 WD

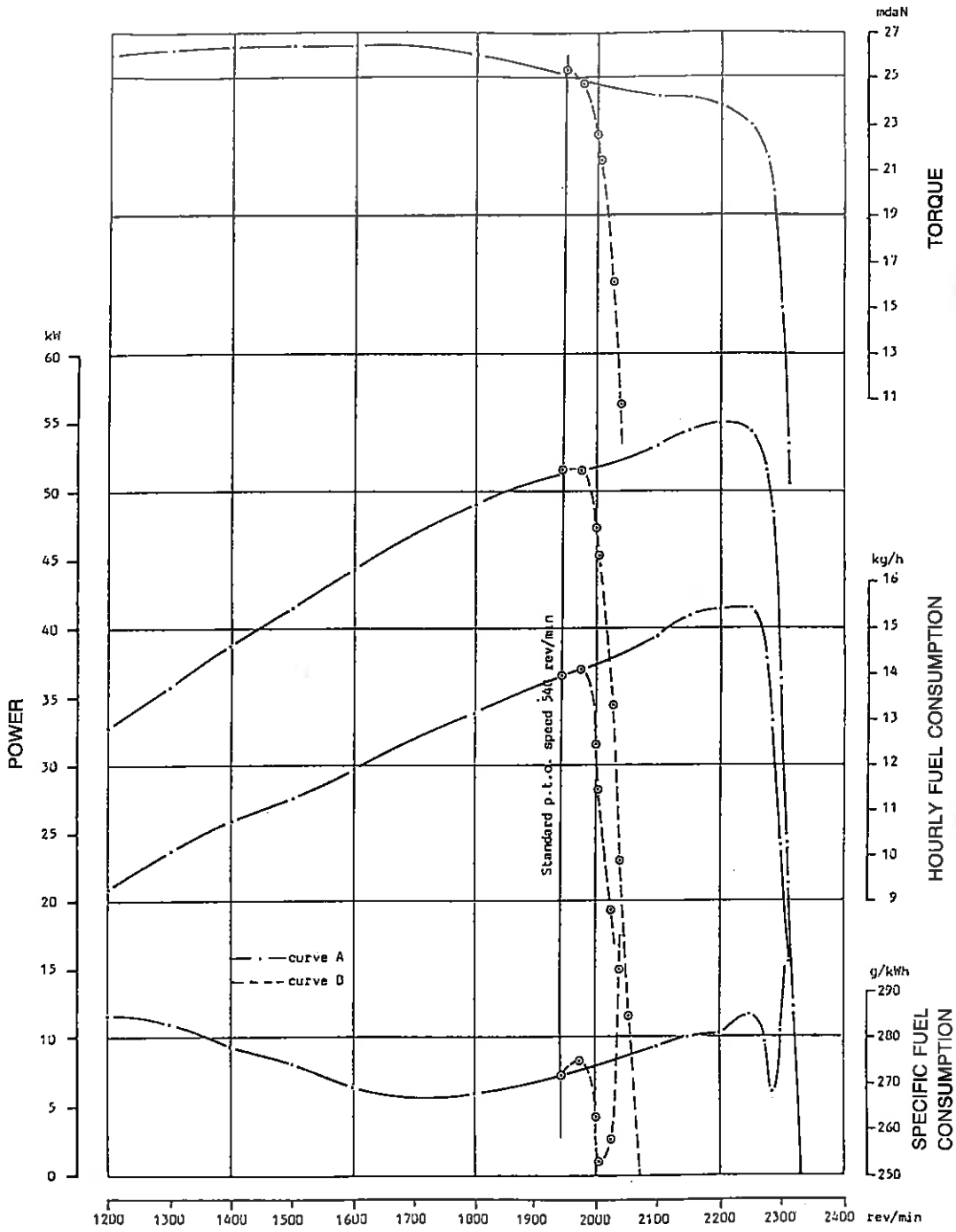


Fig. 1 - POWER TAKE-OFF TEST

LANDINI DT 8560 L (TL 40 DT/M) 4 WD

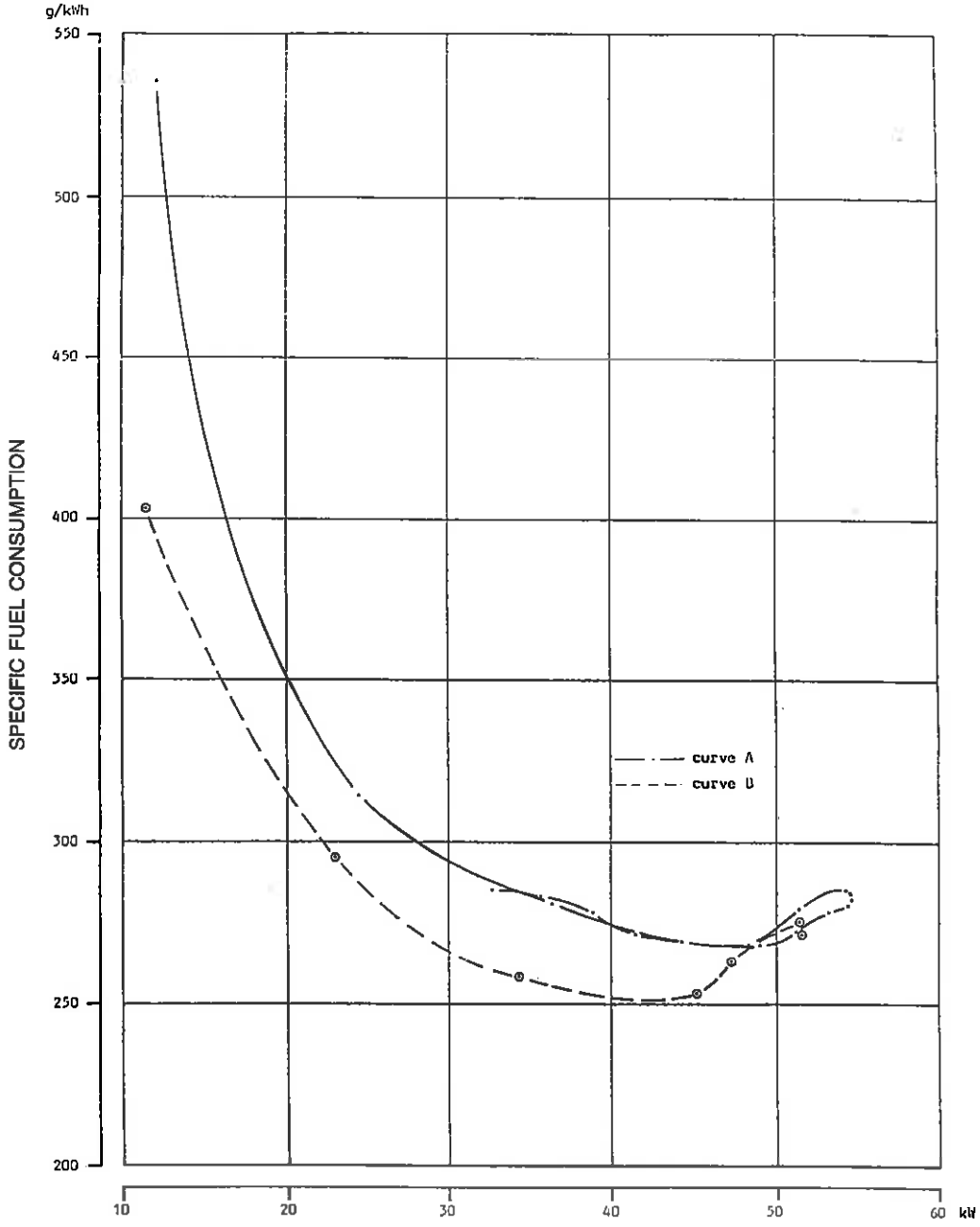


Fig. 2 - POWER TAKE-OFF TEST

LANDINI DT 8560 L (TL 40 DT/M) 4 WD

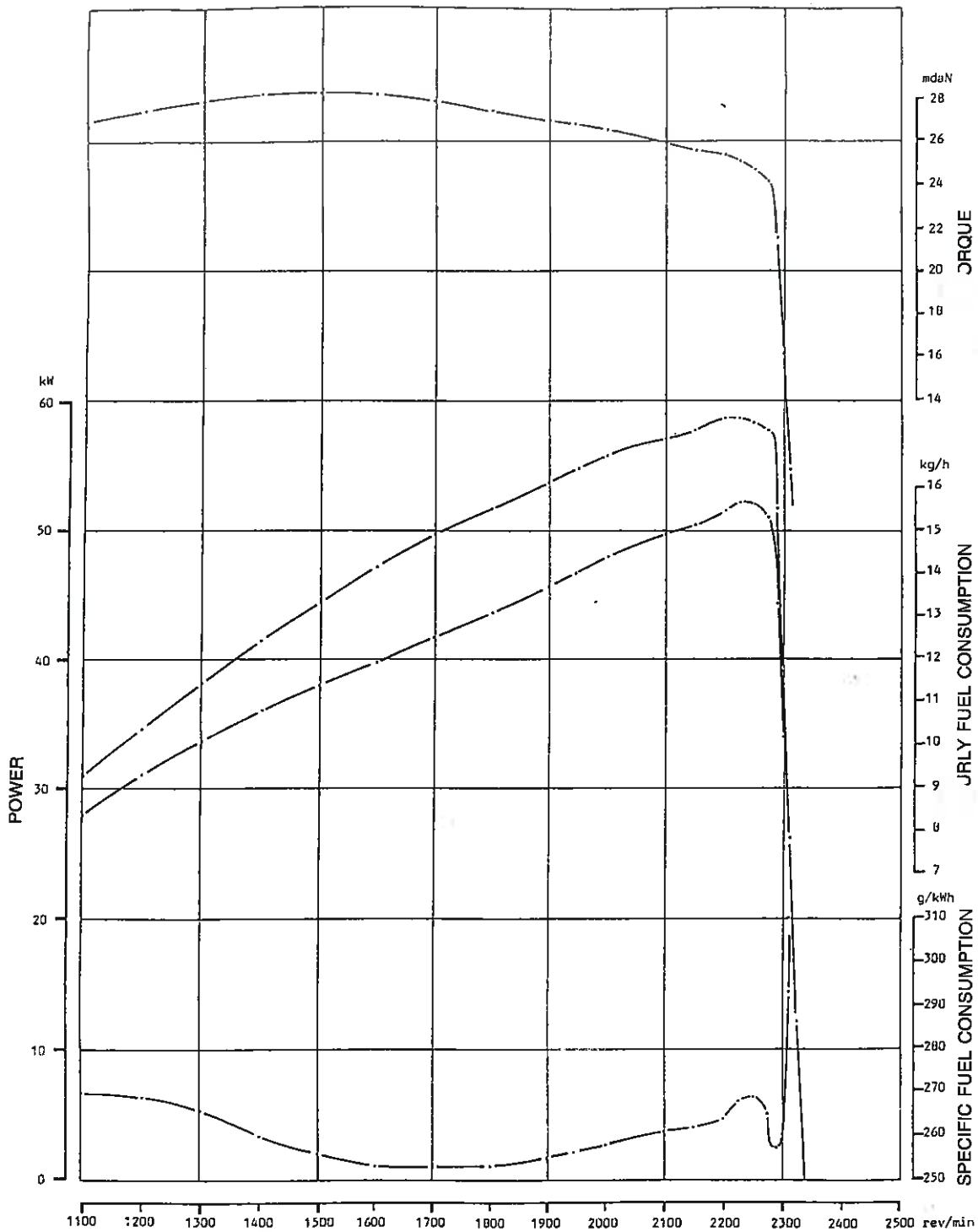


Fig. 3 - ENGINE TEST

LANDINI DT 8560 L (TL 40 DT/M) 4 WD

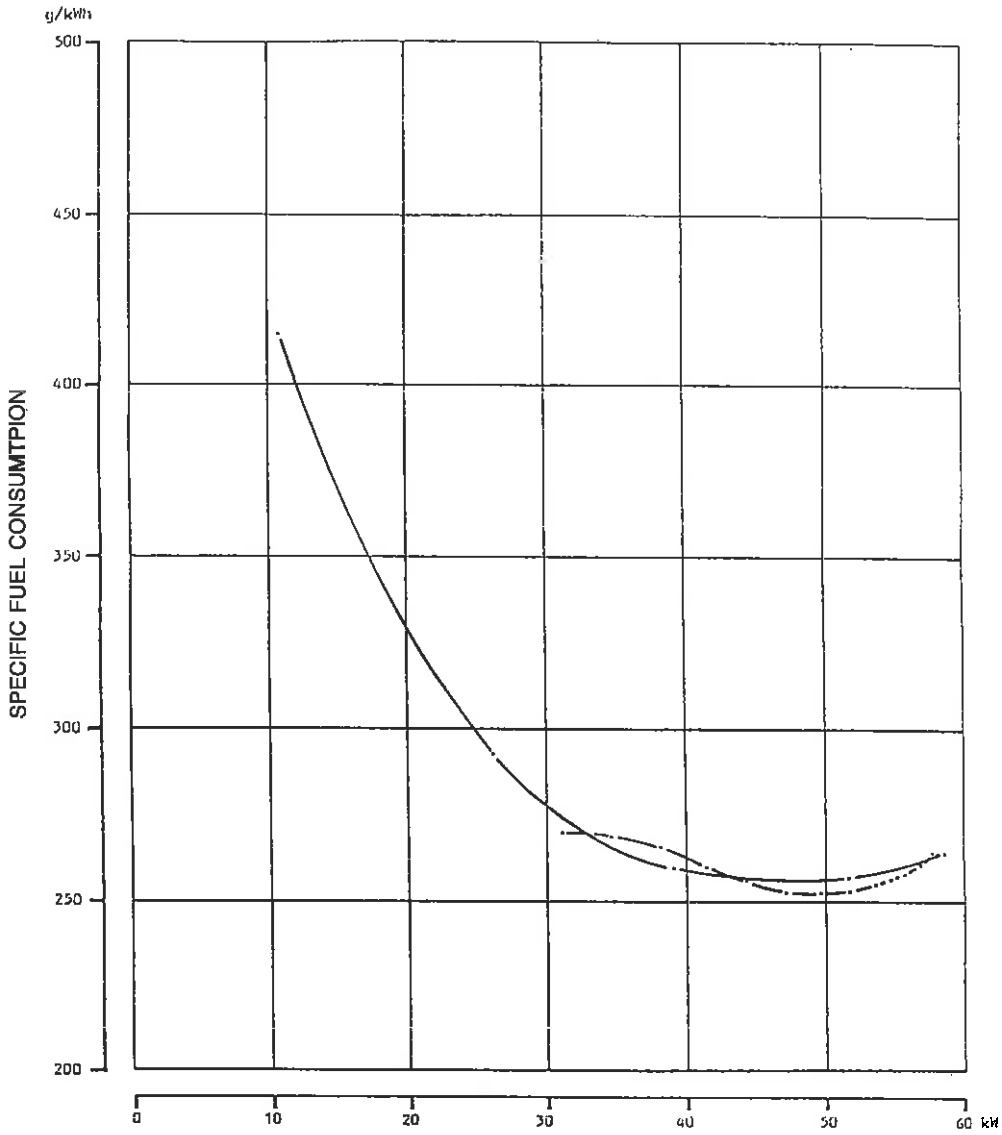


Fig. 4 - ENGINE TEST

LANDINI DT 8560 L (TL 40 DT/M) 4 WD

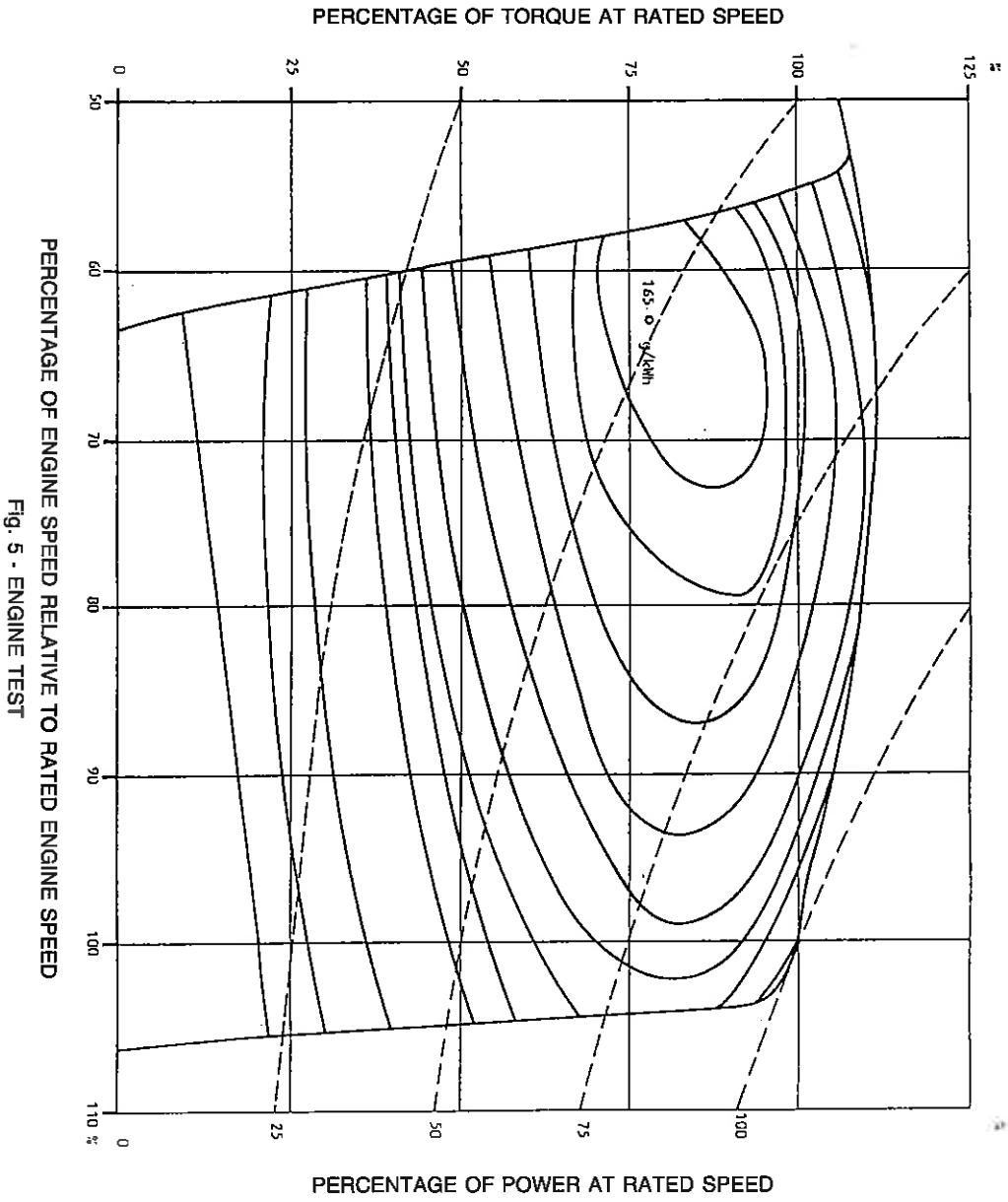


Fig. 5 - ENGINE TEST