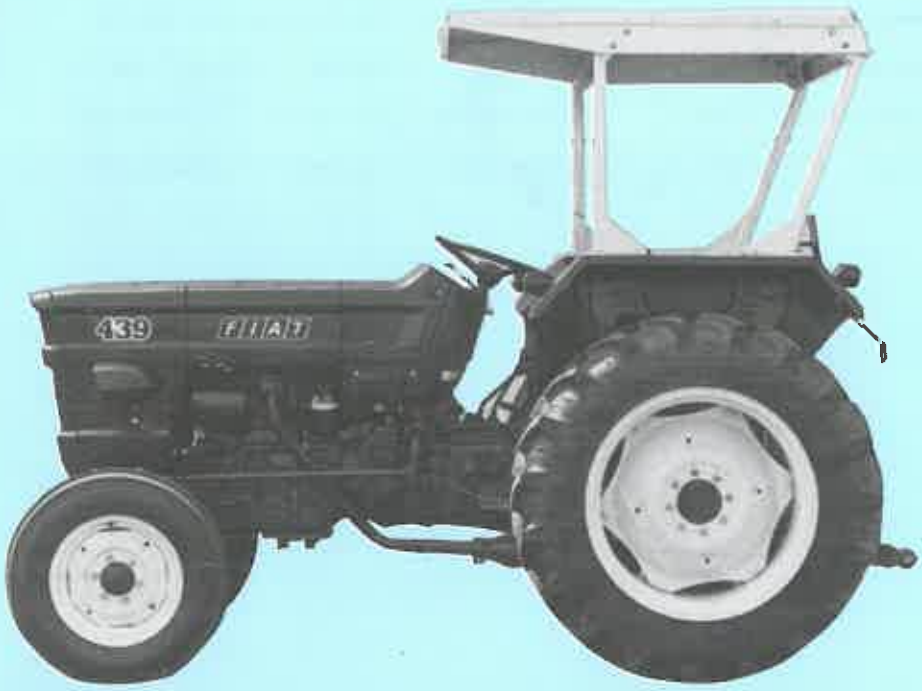
COMITATO PER L'OMOLOGAZIONE
DELLE MACCHINE AGRICOLE

O.E.C.D. Approval N°. 1220

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

TRACTOR: Make: FIAT
Model: 439
Type: 2WD



Manufactured by: UZINA TRACTORUL BRA
SOZ (U.T.B.) - BRAZOV - ROMANIA

Date and location of tests: June - July 1989 - 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: 19th December 1989

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

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

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:	U.T.B. - BRAZOV (ROMANIA)
Submitted for test by:	FIATGEOTECH - MODENA
Selected by:	Manufacturer with agreement by Istituto per la Me canizzazione 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:	FIAT
Model:	439
Type:	Wheel tractor unit construction, two rear wheel driven
Serial N°:	481345
1st serial N°:	481000

ENGINE:

Make:	U.T.B.
Model:	D-115.012
Type:	4-stroke Diesel engine, naturally aspirated, direct injection, water cooled
Serial n°:	309681
Cylinders:	3 cylinders, vertical, in-line, 95 mm bore x 110 mm stroke, capacity 2339 cm^3,compression ratio 17 : 1, overhead in-line valves, replaceable cast-iron dry cylinder liners.

Fuel system:	Forced feed; mechanical diaphragm-type fuel pump; 1 CAV paper filter replaceable cartridge element; changing interval: 200 working houres; capacity of fuel tank 52 litres; MEFIN model CAV DPA ROTARY DISTRIBUTOR 3832F050 injection pump, Serial N° 39DG; manufacturer's production setting 8.72 1/h at rated engine speed and full load. Injection timing 13 ± 1 before TDC. 4 multihole injectors, model CAV, Serial N° DLL145560F; injector pressure 23 ± 0.8 MPa.
Governor:	CAV centrifugal variable speed governor, mechanical type, incorporated in fuel injection pump, governed range engine speed 800 to 2500 rev/min;rated engine speed 2400 rev/min.
Air cleaner:	FIAT make main cleaner, model 18518 212 oil bath type with centrifugal type precleaner with automatic dust unloader. Oil capacity: 0.94 l. Air inlet under bonnet in front of engine. Maintenance indicator: none.
Lubrification system:	Forced feed from gear-type pump; one screen type filter installed on pump suction and one, own model, replaceable cartridge type filter 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; 390 mm dia, 4 blades, belt driven fan; cooling water capacity 13 litres. Temperature visual control with thermometer. Superpressure system: radiator cap.
Starting system:	Electrical, MARELLI make, 12 V 2.94 KW; starting motor pinion coupling solenoid operated. Cold starting aid: with thermostart or start-pilote. Safety device: operable only when the gear box is in the neutral position.

ELECTRICAL SYSTEM

Voltage:	12 V, negative earth.
Generator:	Alternator E/P make, 01134 type, three phase, 14 V; 430 W power.

Battery: One, MARELLI make, 456580-ES model, lead acid type; capacity: 132 Ah at 20 hours reating.

EXAUST SILENCER: U.T.B. make, oval shape 95x90 mm, expansion type, 630 mm length horizontal position on engine left side; heigth above ground 310 mm.

TRANSMISSION TO WHEELS:

Clutch: Own LUK make, independent dry dual disc clutch; 280 mm dia plates; travelling part: pedal operated; p.t.o. part: hand operated, organic facing.

Gearbox: Own make: mechanical type with sliding and constant mesh gear with total 8 forward and 2 reverse speeds; the transmission consists of two mechanical in series gear groups: the first with four forward and one reverse speeds, the second with two positions to select the gear ratios (slow, normal); each group is operated by own lever.

Rear axle and final drive: Own make, mechanical type; crown wheel and pinion with bevel gear type differential; mechanical differential locking, pedal operated, and self-disengaging lock; bull gear final drive.

Front axle and final drive: Own make, telescopic adjustable axle.

Total ratios and travelling speed (tyres 12.4 R 28 and pressure 160 KPa)

Gear	Group	Number of engine revolutions for one revolution of the wheelsdriving	Nominal travelling speed (*) at rated engine speed (2400 rev/min) Km/h
I	Slow	256.105	2.08
II		170.308	3.13
III		116.286	4.59
IV		90.038	5.93
I	Normal	71.206	7.49
II		47.309	11.28
III		32.307	16.51
IV		25.011	21.33
I	Reverse	178.331	2.99
II		49.539	10.77

(*) Calculated with a tyre dynamic radius index of 590 mm (ISO 4251/1 - 1984)

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 second plate of the main clutch.
Position: rear of tractor, in median plane; height above ground 555 mm (with tyre 12.4 R 28).

Proportional engine speed p.t.o.:

— 540 rev/min: distance behind rear axle 265 mm; diameter of p.t.o. shaft end 35 mm; 6 splines, in conformity with ISO 500/1979; no power restriction; 600 rev/min at rated engine speed; standard p.t.o. speed 540 rev/min at engine speed 2160 rev/min; p.t.o. shaft rotates clockwisely, viewed from tractor rear.
Ratio of rotation speed:

$$\text{Engine/pto ratio} = \frac{2160}{540} = 4.000$$

P.t.o. proportional to ground speed:

size of tyres: 12.4 R 28, radius index 590 mm; travelling distance for one revolutions of p.t.o. shaft: 0.262 m with 540 p.t.o.;
number of p.t.o. shaft revolution for one revolution of the real wheels: 15.5 with 540 p.t.o..
Direction of rotation with forward gear engaged: clockwise, viewed from tractor rear.

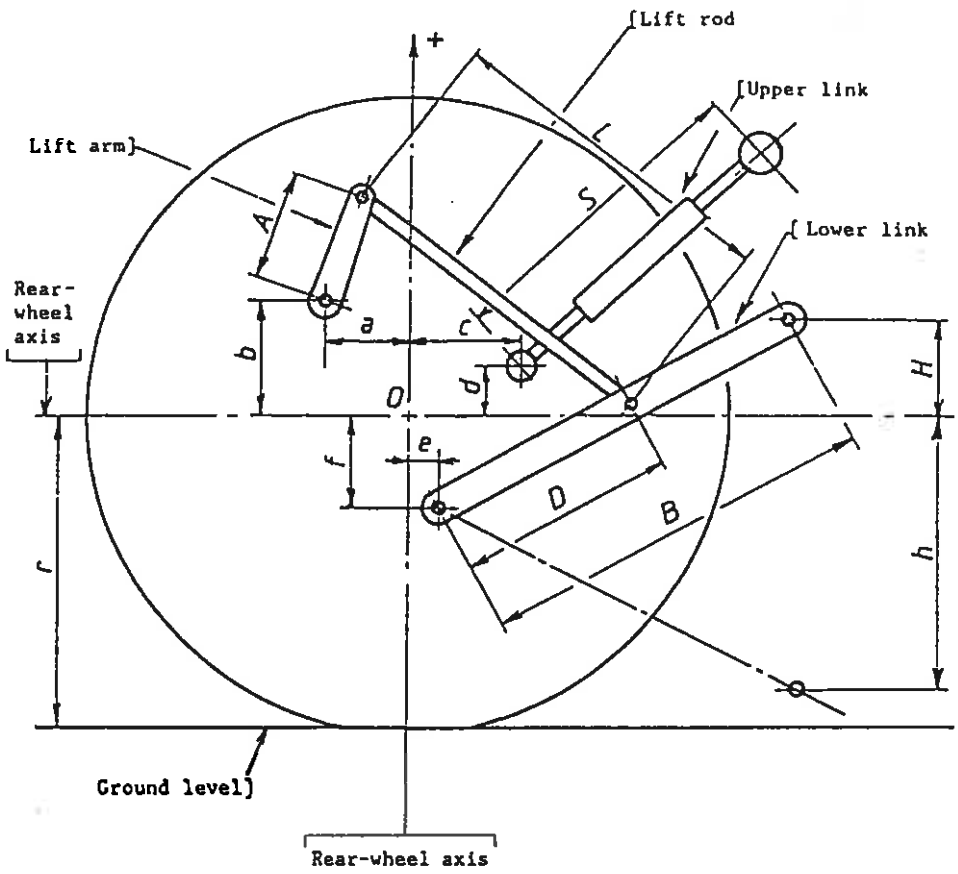
POWER LIFT:

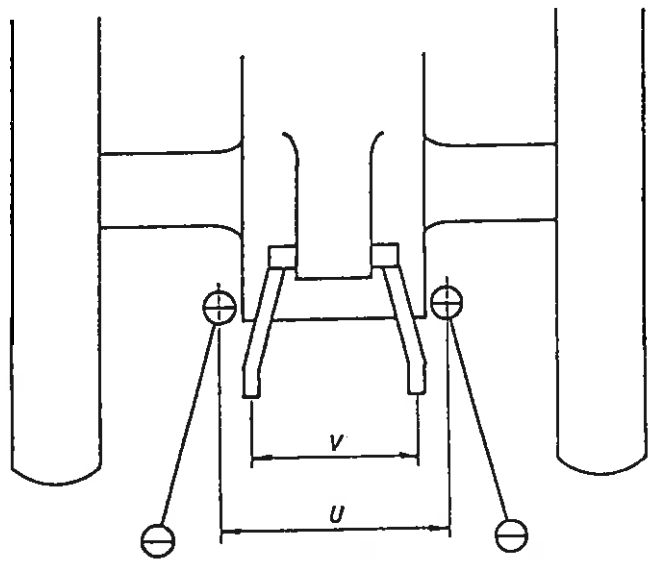
Own make; hidraulic power lift in unit construction, draught and position control.

— Hydraulic system: open centre system with hydraulic oil circuit in common with gear box. One single acting cylinder with 90 mm bore and 90 mm stroke.
Rilief valve pressure setting: 15 MPa
Antishock valve setting: 20 MPa
UMP type, PD 10-0 model lift gear pump, directly driven by engine.
Engine/pump ratio: 1 : 091; delivery 21.8 l/min at rated engine speed.

There are no cylinder safety valves.
Type of linkage lock for transport: hydraulic. Oil capacity 17.8 litres. Site of oil reservoir: transmission box. Number 3 tapping points on the rear part of tractor. Maximum volume of oil available to external cylinders 10 litres.

Implement linkage:
three point linkage, joint balls category 1 and 2, interchangeable according to I.S.O. 730/2-1979; dimension see on pag. 9.


Lift rod
Upper link
Lift arm
Lower link
Rear-wheel axis
+
A
S
L
a
c
b
d
O
H
e
f
D
B
r
h
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)	220	220
Length of lower links	(B)	770	770
Distance of lift arm pivot: horizontally	(a)	0	0
point from rear-wheel axis: vertically	(b)	285	285
Horizontal distance between the 2 lower link points	(u)	435	435
Horizontal distance between the 2 lift arm end points	(v)	535	535
Length of upper link	(S)	from 540 to 830	610
Distance of upper link pivot point from rear : horizontally	(c)	140	140
wheel axis : vertically	(d)	from 205 to 280	230
Distance of lower link pivot point from rear : horizontally	(e)	40	40
wheel axis : vertically	(f)	140	140
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	390 - 300	390
Length of lift rods	(L)	from 435 to 470	470
Heigth of lover hitch points relative to the rear-wheel axis:			
- in low position	(h)	from 242 to 335	335
- in high position	(H)	from 145 to 210	145
Height above ground of liwer hitch points when locked in transport position (*)		from 800 to 863	800

(*) Assuming the dynamic radius index: 590 mm (ISO 4251/1-1984)

SWINGING DRAWBAR:

Own make; clevis type.
Vertical heigth with tyres 12.4 R 28, to centre of clevis: min 340 mm max 450 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: 625-670-715 mm behind.
Position relative to p.t.o., horizontally and vertically:
- 360-405-450 mm behind
- from 215 mm below to 105 mm below

Lateral adjustements: 5 position (one in the middle and two for each side at 150 mm and 280 mm).
Pivot position relative to rear wheels horizontally 125 mm.
Maximum vertical load: not allowed by italian legislation and by manufacturer.

HITCH:

Own make; clevis type; heigth above ground (with tyres 12.4 R 28) 360-430-680 and 750 mm, changeable by sliding on drilled guides; hitch hole 28 mm dia; distance of hitch hole to rear axle horizontally 325 mm; position relative to p.t.o.:
vertical 195 and 125 mm below; 125 and 195 mm above; 60 mm horizontal, to rear.
Maximum vertical load 1500 Kg according to italian legislation (with tyres 12.4 R 28 121 A8)

HOLED DRAWBAR:

not fitted.

STEERING:

Own make, worm gear mechanical type, steering wheel control. Oil capacity 0.45 litres.

BRAKES:

Service brake:

Own make, band type with drums mechanically. Acting on differential half-shafts; operated by two independent pedals locked together for road drive.
Trailing braking take-off: not available.

Parking brake:

Own make, hand lever operated; the parking brake acts on the final part 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 tyres KLEBER 6.00-16 6 ply.

Driving wheels:

at rear; two tyres KLEBER 12.4 R 28 121 A8.

- Wheelbase: 1960 mm

- Track width adjustment

	Minimum mm	Maximum mm	Adjustment method
Front	1280	1980	by 100 mm steps extending axle
Rear	1200	1900	manual reversing wheel centres and off set lugs on rims

PROTECTIVE STRUCTURE: FIAT, not OECD-tested

FRAME:

Make: FIAT
Model: FIAT TS 4
Manufacturer's: FIATGEOTECH - Modena - Italy
O.E.C.D. approval: none

SEAT:

Driver's seat:

FIAT make model, upholstered seat with back rest, parallelogram suspension with rubber lined coil spring; height of unloaded seat above driver's platform 600 mm, longitudinal adjustement 100 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 lights to median plane of tractor mm
Headlights	985	Ø 130	470
Sidelights	1325	70 x 70	635
Rearlights	1345	70 x 70	570
Reflectors 1st pair	1080	Ø 50	590

TEST CONDITIONS

OVERALL DIMENSIONS

	Length	Width		Height to top of steering wheel
		mini	maxi	
	m	m	m	m
With ballast	3.27	1.67	2.37	1.51
Without ballast	3.16	1.52	2.22	1.51

Ground clearance: 295 mm below exaust pipe of engine
380 mm below engine cup.

Tractor mass
(with full fuel tank and protective structure):

	Without driver		With driver	
	Without ballasts Kg	With ballasts Kg	Without ballasts Kg	With ballasts Kg
Front	670	864	690	884
Rear	1170	1460	1220	1510
Total	1840	2324	1910	2394

Ballasts:

	Weights		Water (Kg)
	Number	Total mass (Kg)	
Front wheels Front weight	2 3	70 84	- -
Rear wheels	6	330	-
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:	KLEBER	KLEBER
dimensions	6.00-16	12.4 R 28
ply rating	6	121 A8
tyre	diagonal	radial
maximum load	685 Kg (30 Km/h)	1450 Kg (30 Km/h)
inflaction pressure (tyre manufacturer's)	275 KPa	160 KPa
dynamic radius index	345 mm	590 mm
Chosen track width:	1280 mm	1400 mm

Oils and lubrification

- Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	7.5	200	400
Gear box with hydraulic system	17.8	1600	400
Rear axle and final reduction	2x1.5	1600	-

- Specifications (SAE, API, MIL-L, ISO)

	Reccomended	Used during test
Engine oil - Type: - Viscosity: - Classification:	AMBRASUPER SAE 15 W 40 MIL-L-2104C	As recommended
Trasmission oils - Type: - Viscosity: - Classification:	TUTELAMULTIF SAE 10 W 30 MIL-L-2105B	As recommended
Hydraulic fluid - Type - Viscosity: - Classification:	TUTELAMULTIF SAE 10 W 30 MIL-L-2105B	As recommended
Steering oil - Type: - Viscosity: - Classification:	TUTELAMULTIF SAE 10 W 30 MIL-L-2105B	As recommended

- Grease: FIAT-TUTELA G 9

Number of lubrification points: 13

COMPULSORY TESTS RESULTS

(1) MAIN POWER-TAKE-OFF PERFORMANCE

Date and Location of tests: 04/07/1989 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						
25.10	2400	600	8.72	7.25	289	2.88
POWER AT RATED ENGINE SPEED						
25.00	2400	600	8.75	7.28	291	2.86
STANDARD POWER-TAKE-OFF SPEED (540+-10 rev/min)						
23.56	2160	540	8.00	6.65	282	2.95
PART LOADS						
(1) the torque corresponding to maximum power at rated engine speed						
25.00	2400	600	8.75	7.28	291	2.86
(2) 85% of torque obtained in (1)						
21.75	2456	614	7.88	6.55	301	2.76
(3) 75% of torque defined in (2)						
16.36	2464	616	6.74	5.60	342	2.43
(4) 50% of torque defined in (2)						
10.96	2476	619	5.72	4.75	433	1.92
(5) 25% of torque defined in (2)						
5.49	2485	621	5.23	4.35	792	1.05
(6) unloaded						
---	2492	623	4.69	3.90	---	---

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						
23.29	2160	540	7.94	6.60	283	2.93
(2) 85% of torque obtained in (1)						
19.50	2205	551	6.94	5.77	296	2.81
(3) 75% of torque defined in (2)						
15.24	2216	554	5.90	4.90	322	2.58
(4) 50% of torque defined in (2)						
10.22	2228	557	4.96	4.12	403	2.06
(5) 25% of torque defined in (2)						
5.14	2240	560	4.69	3.90	759	1.10
(6) unloaded						
---	2248	562	4.27	3.55	---	---

STANDARD SPECIFIC CONSUMPTION: 301/433/296/403 (g/KWh)
No load maximum engine speed: 2492 rev/min
Torque at maximum power (2 hours): 99.9 N/m
Maximum torque: 121.4 Nm at 1200 rev/min of the engine
Mean atmospheric conditions: Temperature 28.0 C
Pressure 986.6 mbar
Relative Humidity 48%
Maximum Temperature: Coolant 82.0 C
Engine oil 112.0 C
Fuel 35.0 C
Engine air intake 27.0 C

2. HYDRAULIC POWER AND LIFTING FORCE

- Date of tests: 10th July 1989

2.1 HYDRAULIC POWER TEST

- Sustained pressure with relief valve open: 15 MPa
- Pump delivery rate at minimum pressure: 25.1 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	22.2	13.5	4.7
Flow rate and hydraulic pressure corresponding tomaximum hydraulic power	22.2	13.5	4.7

- 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	255	mm	255	mm
Vertical movement	480	mm	480	mm
Maximum corrected force exerted through full range	10.40	kN	6.4	kN
Corresponding pressure of hydraulic fluid	13.5	MPa	13.5	MPa
Moment about rear-wheel axis	-	kNm	9.1	kNm
Maximum tilt angle of mast from vertical	-	degress	6	degress

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 195	- 100	- 50	0	+ 50	+ 10	+ 150	+ 200	+ 285		
Lifting forces											
at the hitch points kN	10.50	12.20	11.05	11.10	11.00	11.10	11.10	10.50	10.40		
Corresponding pressure: 13.5 MPa											
at the frame kN	7.95	8.10	8.10	8.05	7.90	7.75	7.60	6.90	6.40		
Corresponding pressure: 13.5 MPa											

3. DRAWBAR PERFORMANCE

Date of tests: 3rd till 7th July 1989
Type of track: concrete

Tyre size front: 6.00-16 (6 ply)
rear: 12.4 R 28 (121 A8)

	Height of drawbar above ground	Tyre inflation pressure Front	Rear
Unballasted	685 mm	275 kPa	160 kPa
Ballasted	680 mm	275 kPa	160 kPa

Gear no. and group	Driving speed km/h	Power kW	Drawbar pull daN	Engine speed rev/min	Slip of wheels %	Specific fuel consumption g/kWh	Specific energy kWh/l	Temperatures Fuel °C	Coolant °C	Engine oil °C	Atmospheric conditions Temperature °C	Relative humidity %	Pressure mbar
3.1 - MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
II Slow	2.75	11.24	1471	2470	14.9	451	2.22	31.0	82	110	18.0	80	988.0
III Slow	3.99	16.31	1471	2450	14.9	388	2.58	31.0	82	110	18.0	78	988.0
IV Slow	5.33	20.82	1407	2404	10.3	348	2.88	31.0	82	111	18.0	76	988.0
I Normal	7.01	22.23	1142	2395	6.4	326	3.07	31.0	82	111	18.0	75	988.0
II Normal	10.88	21.95	726	2404	3.8	334	2.99	31.0	82	112	18.0	74	988.0
III Normal	16.19	20.73	461	2406	2.3	352	2.84	31.0	82	112	18.0	75	988.0
3.2 - MAXIMUM POWER IN TESTED GEARS (ballasted tractor)													
I Slow	1.84	9.00	1765	2480	14.9	-	-	31.5	82	110	19.0	78	989.3
II Slow	2.74	13.45	1765	2457	14.5	414	2.41	31.5	82	110	19.0	78	989.3
III Slow	3.96	19.81	1800	2432	15.0	358	2.79	31.5	82	111	19.0	78	989.3
IV Slow	5.53	21.63	1407	2408	7.1	336	2.98	31.5	82	111	19.0	78	989.3
I Normal	7.21	22.50	1123	2400	3.9	320	3.13	31.5	82	112	19.0	78	989.3
II Normal	10.93	21.59	711	2395	3.0	336	2.98	31.5	82	112	19.0	78	989.3
III Normal	16.22	20.10	446	2403	2.0	364	2.75	31.5	82	112	19.0	78	989.3
3.3.1 - FIVE HOUR TEST at 75% of pull at maximum power													
I Normal	7.38	17.29	843	2456	3.8	349	2.87	31.0	82	112	28.0	36	989.3
3.3.2 - FIVE HOUR TEST at pull corresponding to 15% wheelslip - with kg as additional ballast													
II Slow	2.65	13.14	1785	2450	-	-	-	31.5	82	112	29.0	40	988.0

Oil consumption during ten hours tests 3.3.1 and 3.3.2: 75 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: 6.00-16 (6 ply)
rear: 12.4 R 28 (121 A8)
Track width front: 1280
rear: 1400

	With brakes		Without brakes	
	Right-hand m	Left-hand m	Right-hand m	left-hand m
Radius of turning area	3.15	3.12	3.52	3.49
Radius of turning circle	3.04	3.01	3.41	3.38

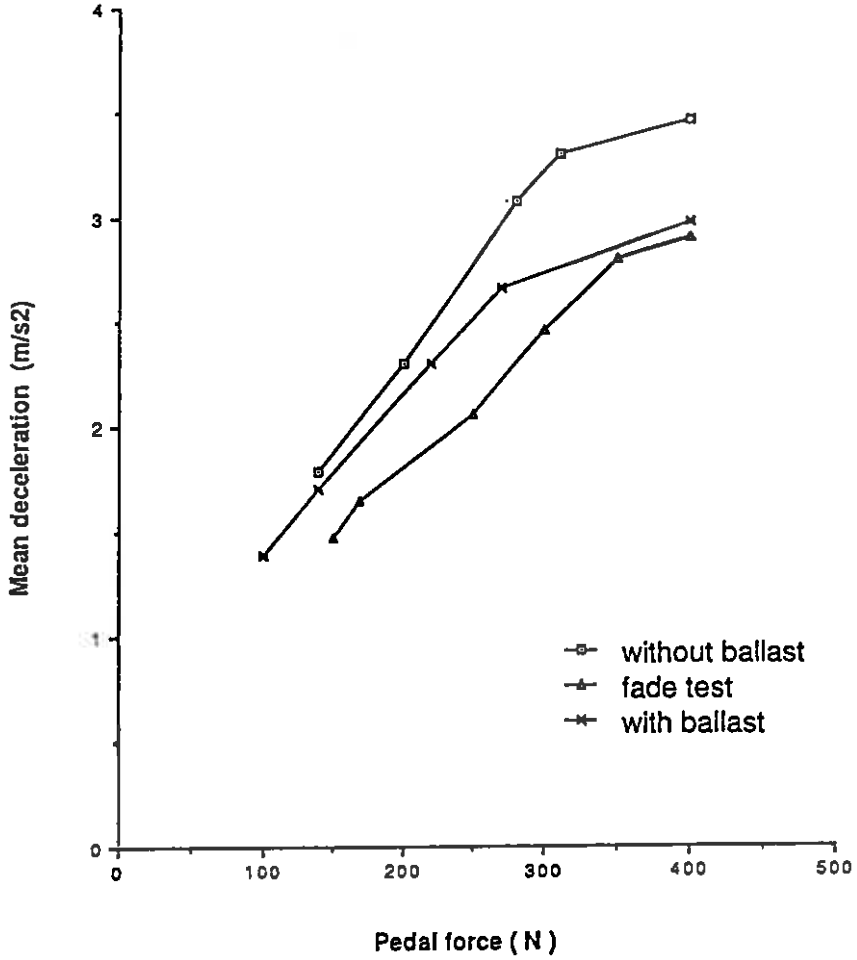
5. LOCATION OF CENTRE OF GRAVITY

Height above ground	580 mm
Distance forward from the vertical plane containing the axis of the rear wheels	728 mm
Distance from the median plane of the tractor, to the left	0 mm

6. BRAKING

- Date of tests: 3rd and 4th July 1989

6.1 Cold service braking device test - 6.2 Fade test



6.3 **PARKING BRAKING DEVICE TEST**

	Uphill	Downhill
Braking device control force	15 kN	15.5 kN

7. MEASUREMENT OF EXTERNAL NOISE LEVEL

- Date of tests: 29th July 1989
- Type of sound level meter: impulse precision BRUEL & KJAER 2209 model.
- Type of track: concrete

7.1 Results of tests with DGM SA model

- Gear number: 4 Normal
- Travelling speed before acceleration: 14.25 Km/h
- Sound level: 85.0 dB (A)

OPTIONAL TESTS RESULTS

8. ENGINE PERFORMANCE

Date and Location of tests: 19/07/1989 I.M.A., TORINO, ITALY
Type of dynamometer: PARASITIC CURRENTS, BORGHI & SAVERI FA 300-30 SP

POWER	ENGINE SPEED	FUEL CONSUMPTION HOURLY		SPECIFIC	SPECIFIC ENERGY
kW	rev/min	l/h	kg/h	g/kWh	kWh/l
MAXIMUM POWER - 2 - hour test					
28.58	2400	8.89	7.39	259	3.21
POWER AT RATED ENGINE SPEED					
28.58	2400	8.89	7.39	259	3.21
STANDARD POWER-TAKE-OFF SPEED (540+-10 rev/min)					
26.87	2160	8.04	6.68	249	3.34
PART LOADS					
(1) the torque corresponding to maximum power at rated engine speed					
28.58	2400	8.89	7.39	259	3.21
(2) 85% of torque obtained in (1)					
24.80	2449	7.70	6.40	258	3.22
(3) 75% of torque defined in (2)					
18.71	2465	6.32	5.25	281	2.96
(4) 50% of torque defined in (2)					
12.52	2475	5.31	4.41	352	2.36
(5) 25% of torque defined in (2)					
6.29	2492	4.16	3.46	550	1.51
(6) unloaded					
---	2509	3.55	2.95	---	---

STANDARD SPECIFIC CONSUMPTION: 258/352 (g/KWh)
No load maximum engine speed: 2509 rev/min
Torque at maximum power (2 hours): 113.7 N/m
Maximum torque: 133.1 Nm at 1200 rev/min of the engine
Mean atmospheric conditions: Temperature 24.0 C
Pressure 986.6 mbar
Relative Humidity 54%
Maximum Temperature: Coolant 84.0 C
Engine oil 110.0 C
Fuel 30.0 C
Engine air intake 25.0 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, 20th July 1989

FIAT 439 (2 WD)

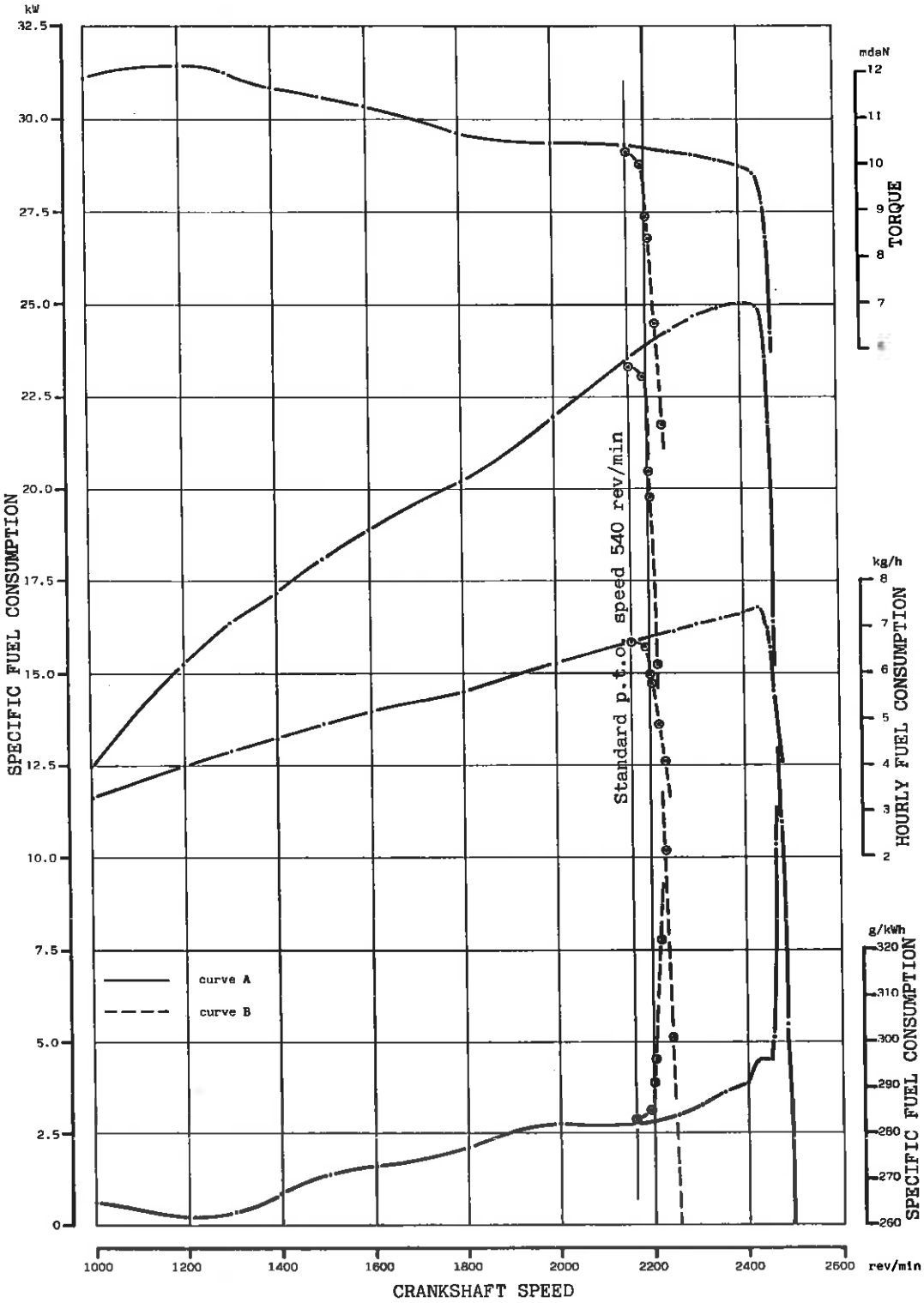


Fig. 1 - POWER TAKE-OFF TEST

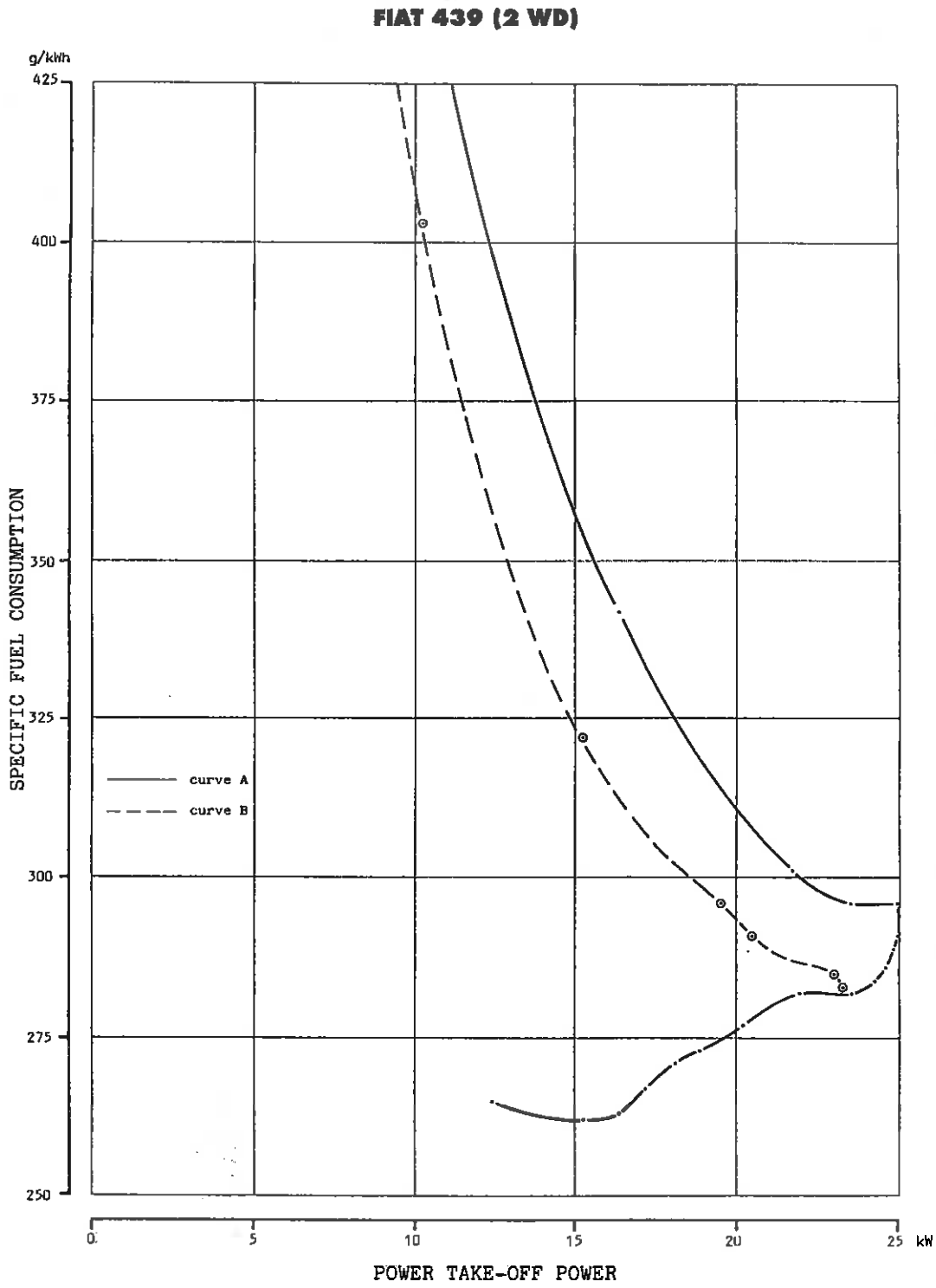


Fig. 2 - POWER TAKE-OFF TEST

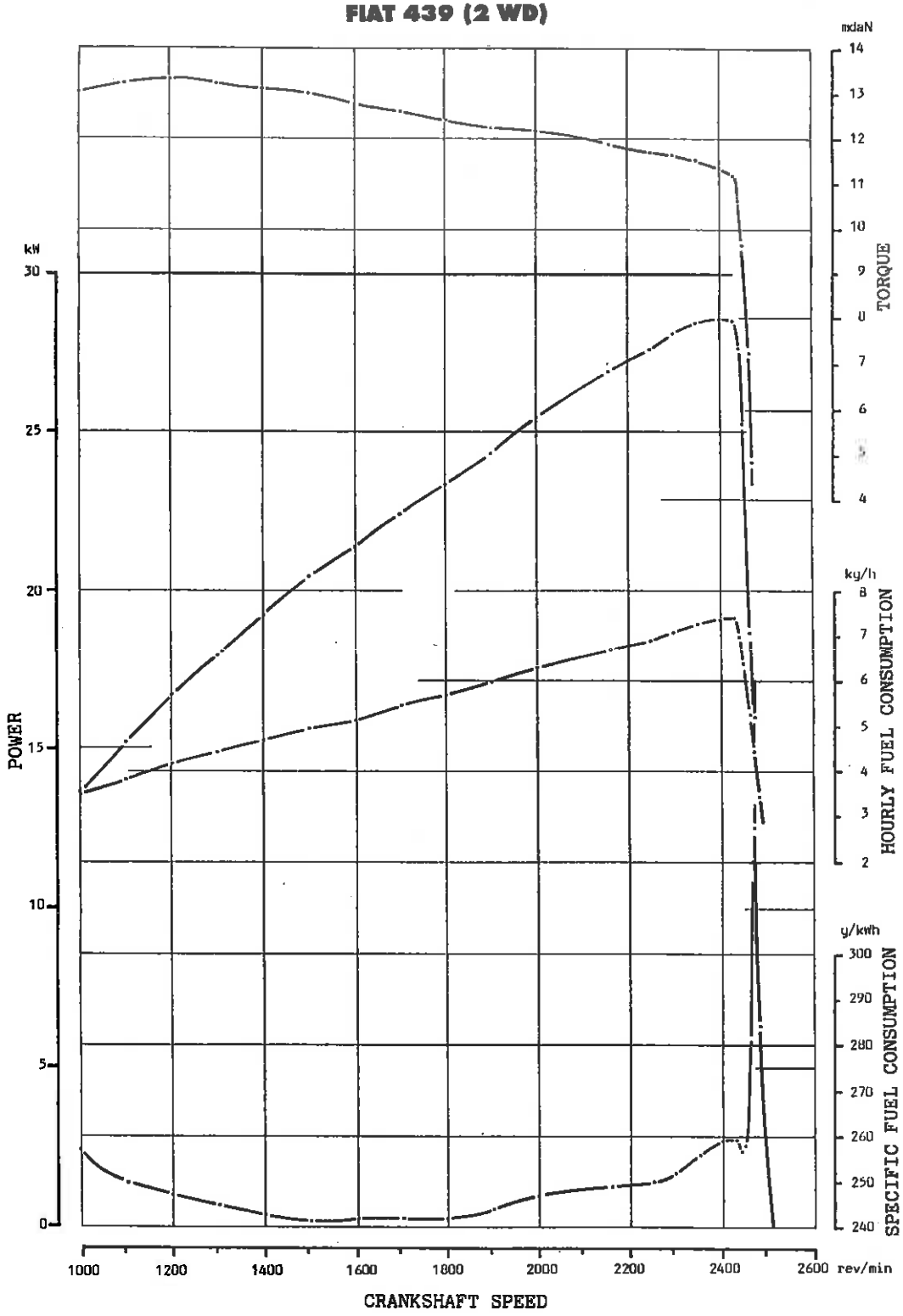


Fig. 3 - ENGINE TEST

FIAT 439 (2 WD)

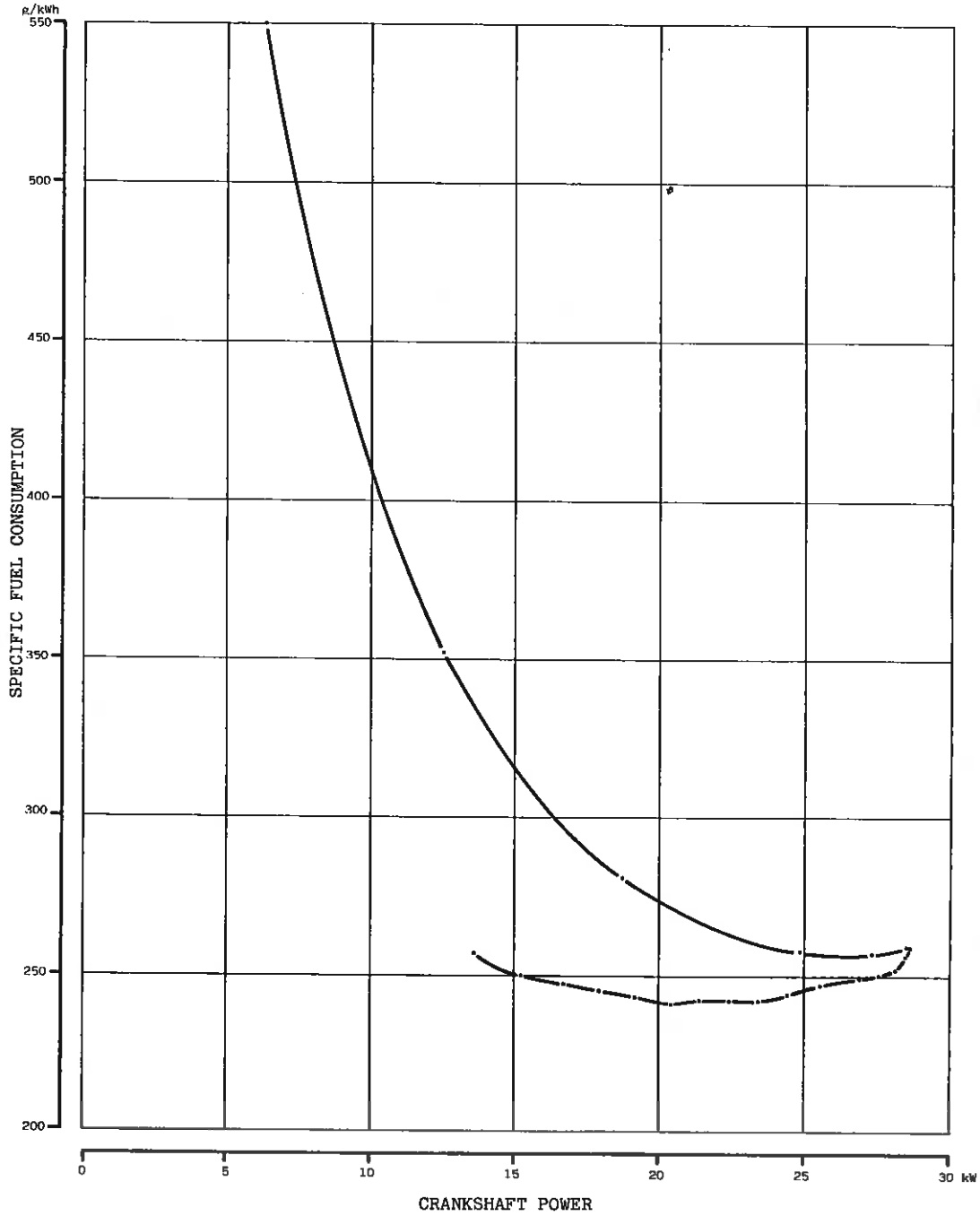


Fig. 4 - ENGINE TEST

FIAT 439 (2 WD)

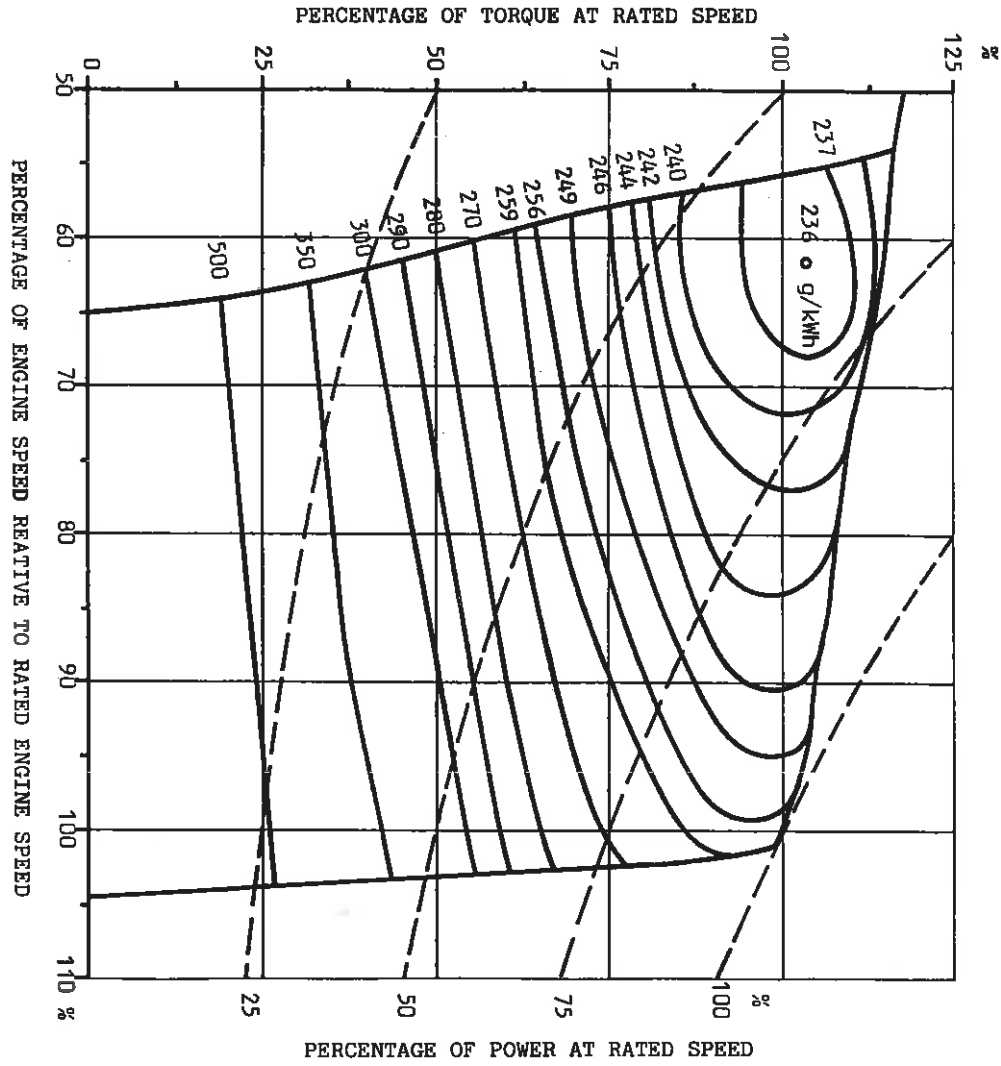


Fig. 5 - ENGINE TEST