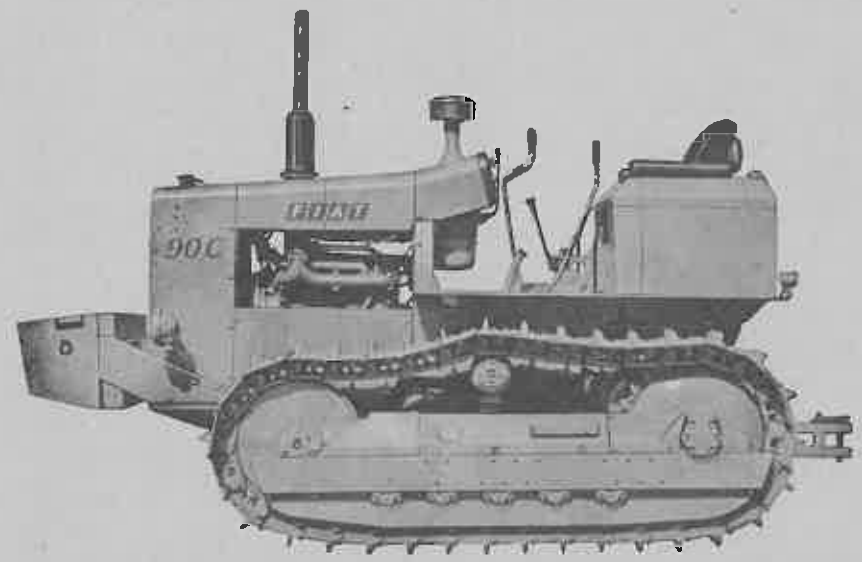
COMITATO PER L'OMOLOGAZIONE
DELLE MACCHINE AGRICOLE

REPORT No. 487

REPORT ON TEST IN ACCORDANCE WITH O.E.C.D. TEST
CODE FOR AGRICULTURAL TRACTORS OF:

FIAT 90 C DIESEL TRACTOR



Manufactured by: FIAT-ALLIS S.p.A.
LECCE (Italy)

Date of tests: July - October 1974

This report has been approved by the O.E.C.D. Coordinating Centre (C.N.E.E.M.A., France) as being in accordance with the O.E.C.D. Tractor Test Code

Date of approval: 6th April 1976

CONSIGLIO NAZIONALE DELLE RICERCHE
LABORATORIO PER LA MECCANIZZAZIONE AGRICOLA
TORINO - ITALY

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

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Optional tests

None

PERFORMANCE CURVES

FIG. No.

a) *Power take-off test*

Curves of horsepower, torque, hourly and specific fuel consumption/crankshaft speed 1

Curves of specific fuel consumption/crankshaft power . . 2

b) *Drawbar test*

Curves of drawbar horsepower and wheelslip/drawbar pull . . . 3

Curves of travel speed and specific fuel consumption/drawbar pull . . 4

Manufacturer:	FIAT-ALLIS S.p.A., - LECCE (Italy)
Submitted for test by:	The manufacturer
Selected by:	The manufacturer with the agreement of the testing station
Place of running-in	FIAT-ALLIS - Servizio Esperienze - TORINO (Italy)

SPECIFICATION OF TRACTOR

Make:	FIAT
Model:	90 C
Type:	Track, unit construction
Serial No.:	700001

Engine

Make:	OM
Model:	C03/130T
Type:	4-stroke, direct injection diesel
Serial No.:	006152
Cylinders:	Four, vertical, in-line, 115 mm bore x 130 mm stroke, capacity 5401 cm^3, compression ratio 17 : 1, overhead valves, replaceable cylinder liners.
Fuel system:	Forced feed: own make plunger type fuel pump; model FP/KS 22 A/L4/4. FISPA make, dual fuel filter: a cloth filtering element and replaceable cartridge element preceded by a transparent sediment bowl. Fuel: diesel oil Capacity of fuel tank 148 liters (*) OM - Bosch licence injection pump model PES 4 A 90 B 410: L4/168; manufacturer's production setting 20,0 to 20,5 l/h

(*) *Optional auxiliary tank 80 liters.*

	at 2000 engine rev/min and 15 °C fuel temperature. OM make injectors model DLL 145 S 54, injector setting 200 ± 5 kg/cm².
Governor:	Bosch make, mechanical type RPVA 250 - 1000 F 144 incorporated in fuel injection pump. Rated engine speed 2000 rev/min. Governed range of speed 650 to 2180 rev/min.
Air cleaner:	FIAT make, oil bath with centrifugal precleaner type with automatic dust unloader; oil capacity 2.2 liters.
Lubrication system:	Forced feed from gear-type pump, with pick up screen in sump and cartridge type filters FISPA or SAVARA make, installed on the pressure line to the engine. Oil capacity (engine sump) 11 liters. Recommended oil change period: 300 hours. Cartridge change period: 600 hours. Recommended oil viscosity: SAE 40.
Cooling system:	Water cooled from centrifugal pump (0.75 kg/cm²) with thermostatic control; 496 mm dia, 4-blade belt-driven fan. Water temperature gauge. Cooling water radiator capacity 19 liters.
Starting system:	Electrical, 24 V, 4 CV MARELLI model M 125 starting motor.

Electrical system

Voltage:	24 V, negative earth.
Alternator:	FIAT, model A 12 M 124/24/26.
Battery:	Two 12 V in series, of MARELLI or TITANO make, model 6 ATP/21 (Marelli) and model 6 DE 10 F (Titano), capacity 110 Ah.

Transmission

Clutch:	FIAT make, dual plate 14 in. dia overcentre oil-bath hand lever operated.

Gearbox: FIAT make, sliding gear type, 5 forward speeds and 1 reverse.

Final drive: FIAT make, crown wheel and pinion, side steering clutches and spur gear double reduction final drives.

Oil capacities: Gearbox 23.5 liters; engine clutch 17.5 liters; final drives 10 liters each; oil change period: 600 hours engine clutch; 1200 hours gearbox and final drives; recommended oil viscosity: SAE 40.

Gear no.	*Number of engine revolutions for one revolution of driving wheels*	*Travelling speed for 2000 rev/min rated engine speed km/h*
1	98.554	2.79
2	63.886	4.31
3	53.034	5.19
4	42.224	6.52
5	30.777	8.95
Reverse	77.129	3.57

Power take-off

In centre-line at rear of tractor. Not independent, engaged through the same clutch as the gearbox and through a dog clutch hand lever operated.
1¾ in. dia, according to ISO Standard, 6 splines.
Height above ground 590 mm.
Proportional engine speed: 1118 rev/min at 2000 rev/min rated engine speed; 1000 rev/min at 1789 rev/min engine speed.
Direction of rotation clockwise viewed from tractor rear.

Belt pulley

None.

Power lift

None.

Swinging drawbar

Clevis type sliding on fixed drilled guide. Radius of swing: 1570 mm.
Vertical height to center of clevis: 410 mm and 370 mm.
Drawbar hole: 37 mm, distance behind rear axle 800 mm, position relative to p.t.o. 175 mm below and 240 mm to rear (horizontal line).
Lateral adjustment: 9 positions, from 0 to 360 mm each side.

Steering

FIAT make, dry multi-plate steering clutches on axle shafts of the transmission, hand lever operated.

Brakes

FIAT make, band type acting on outer drums of steering clutches, operated through two pedals.
Parking brake hand lever with ratchet and pawl, acting on both service brakes.

Tracks

FIAT make, not girder, 34 track plates 450 mm wide, integral grousers 53 mm high, track pitch 170 mm, size of pins 35 mm, track gauge 1800 mm, approximate length of track in ground contact 1800 mm, total ground bearing area 16200 cm^2, nominal ground pressure 0.435 kg/cm^2, tread width 1550 mm.

Suspension

Rigid rear suspension by cross beam supported on track frame through lubricated bushes allowing independent track frame swing. Front suspension by transverse leaf spring.

Track roller frame

Five bottom track rollers and one top carrier roller per side, rolling dia 185 mm, disc-type idler wheel rolling dia 542 mm. Track suspension adjustement by coil spring and hydraulic system.
Sprockets: pitch dia 737.2 mm, 27 teeth, tooth thickness 60 mm, rolling dia 683.2 mm.

Lighting

	Height above ground of centre *cm*	*Size dia* *cm*	*Distance from outside edge of tractor to centre* *cm*
Headlights	98.5	13	46
Side lights	98.5	13	46
Rear lights	116.5	6.5	37
Reflectors	114.0	5.5	39

Number of grease points

8

CONDITION DURING TEST

Weights

Without driver but with tanks full, as tested: 6990 kg including 540 kg front ballast which should not be released when using the tractor (Manufacturer's specification).

Overall dimensions

— length	3.89 m
— width	2.03 m
— height	2.71 m
Remarks:	Height, 2.71 m, has been measured at top of exhaust.

Seat

Make BREMSHEY with F.I.S.A. spring suspension type. Range of adjustment: horizontal 140 mm; vertical 45 mm squab angle from 7° to 29°.

FUEL AND LUBRICANTS USED IN TESTS

Laboratory and track tests

Fuel:	Diesel oil, density 0.831 kg/l at 15 °C, cetane No. not recorded.
Engine oil:	FIAT AGERTER, viscosity SAE 40
Transmission oil:	FIAT AW 90/M, viscosity SAE 90 EP
Final drives oil:	FIAT AW 90/M, viscosity SAE 90 EP

COMPULSORY TESTS

1. Power take-off performance

Date and location of tests: 4th September 1974 - L.M.A., TURIN - Italy

Type of dynamometer: Electrical, swinging frame

Horse-power	*Speeds*		*Fuel consumption*			
	Engine	*P.t.o.*	*Total*		*Specific*	*HP hours/ unit of vol.*
metric hp	*rev/min*	*rev/min*	*l/h*	*kg/h*	*g/metric hph*	*metric hp h/l*
A - MAXIMUM POWER: 2-hour test						
90.01	2050	1146	20.37	16.93	188	4.42
B - STANDARD p.t.o. SPEED (1000 rev/min)						
84.00	1789	1000	18.80	15.62	186	4.47
C - MANUFACTURER-RECOMMENDED SPEED FOR DRAWBAR WORK						
89.29	2000	1118	20.07	16.68	187	4.45
D - PART LOADS						
78.37	2100	1174	17.33	14.40	184	4.52
—	2180	—	5.34	4.44	—	—
39.73	2130	1190	10.25	8.52	214	3.88
90.01	2050	1146	20.37	16.93	188	4.42
20.01	2145	1199	7.51	6.24	312	2.66
59.38	2122	1186	13.72	11.40	192	4.33

No load, maximum engine speed: 2186 rev/min

Equivalent crankshaft torque at maximum power: 31.45 mkg

Maximum equivalent crankshaft torque: 35.29 mkg at 1300 rev/min engine speed

Mean atmospheric conditions:

temperature	23.5 °C
pressure	744.8 mmHg
relative humidity	62 %

Maximum temperature:

coolant	88 °C
engine oil	116 °C
fuel	26 °C
engine air intake	27 °C

2. Drawbar performance

Date and location of tests: 9th and 11th September - 11th October 1974
Type of track: Clay-loam soil, bare
Height of drawbar above ground: 410 mm

Gear.	Travelling speed	Horsepower	Drawbar pull	Engine speed	Trackslip	Fuel consumption		Temperature			Atmospheric conditions		
						Drawbar hp h/l	Specific	Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
No.	km/h	metric hp	kg	rev/min	%	metric hp h/l	g/hph	°C	°C	°C	°C	%	mmHg
1 - MAXIMUM POWER (ballasted)													
1	2.69	66.75	6700	2085	10.0	3.51	237	35	78	95	24.1	60	750.0
2	4.37	69.92	4320	2034	3.0	3.48	239	37	80	100	24.1	64	750.0
3	5.25	70.39	3620	2023	2.0	3.52	236	42	82	106	21.9	75	754.0
4	6.67	69.17	2800	2030	0.8	3.45	241	42	82	106	22.0	76	753.5
2 - TEN-HOUR TEST AT 75% OF PULL AT MAXIMUM POWER													
2	4.46	52.86	3200	2082	2.2	3.76	266	44	78	98	11.2	86	746.2

OIL CONSUMPTION DURING TEN HOURS DURATION OF TEST 2): 53 g/h

DRAWBAR PULL: Maximum: 6950 kg - Trackslip: 15%
Corresponding to 7% trackslip: 6220 kg

3. **Radius of turning space** 2.40 mm

4. **Location of centre of gravity**

	mm
Height above ground	660
Distance forward from the vertical plane containing the axis of the rear wheels	950
Distance from the median plane of the tractor	0

5. **Noise measurement at the driver's ear level**

Date of tests:	11th October 1974
Type of sound level meter and octave filter:	BRUEL & KJAER mod. 2209 and mod. 1613
Type of track:	Clay-loam soil, bare.
Type of frequency analyzer:	octave type, with 10 bands from 31.5 to 16.000 Hz.

RESULTS OF TEST

Gear	*Travelling speed (*) km/h*	*dB (A)*	*Sones*
4	6.50	102	146
5	8.90	103	169

(*) The first gear tested corresponds to the travelling speed nearest to 7.25 km/h

OFFICER IN CHARGE
(R. Gioia)

HEAD OF L.M.A.
(L. Lisa)

Turin, 12th November 1974

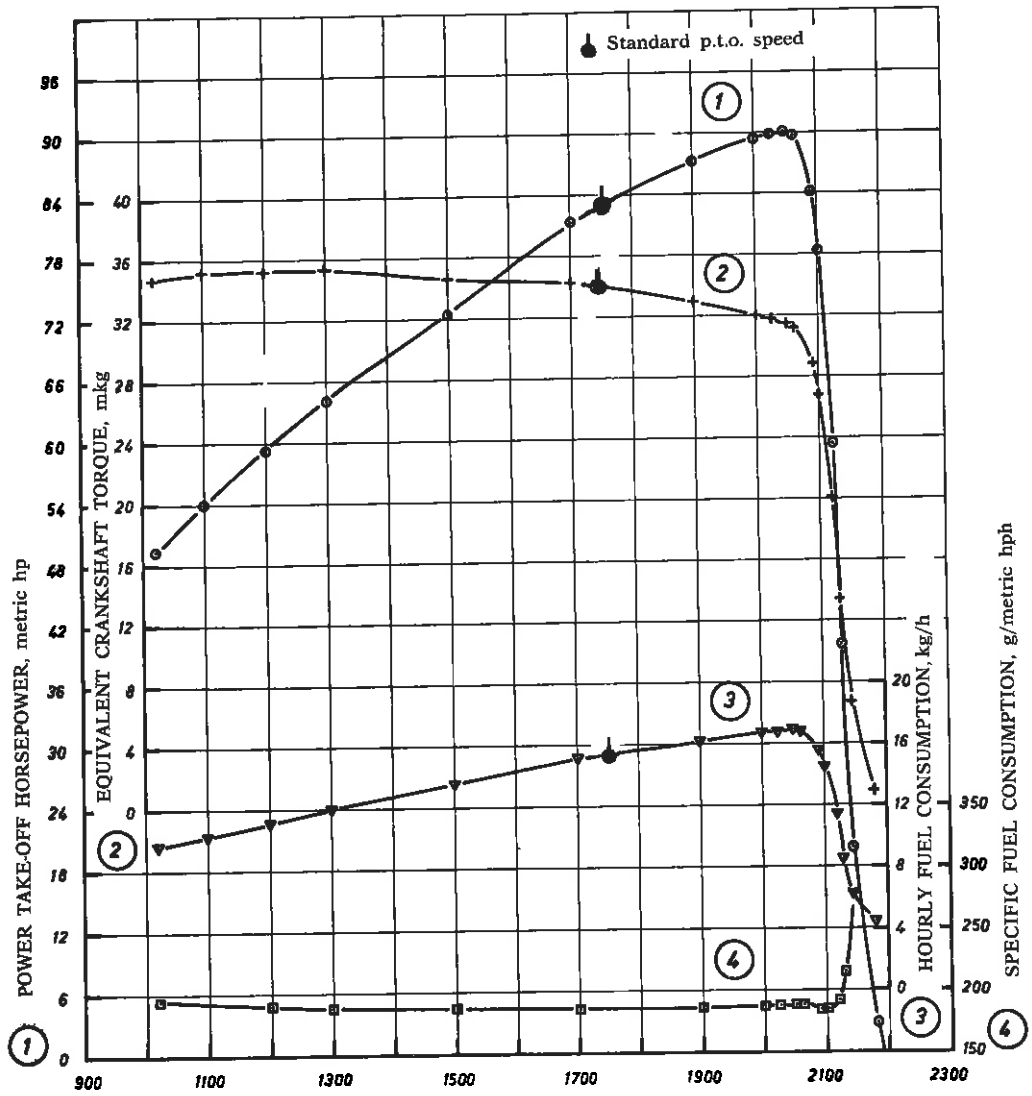


FIG. 1 - POWER TAKE - OFF TEST

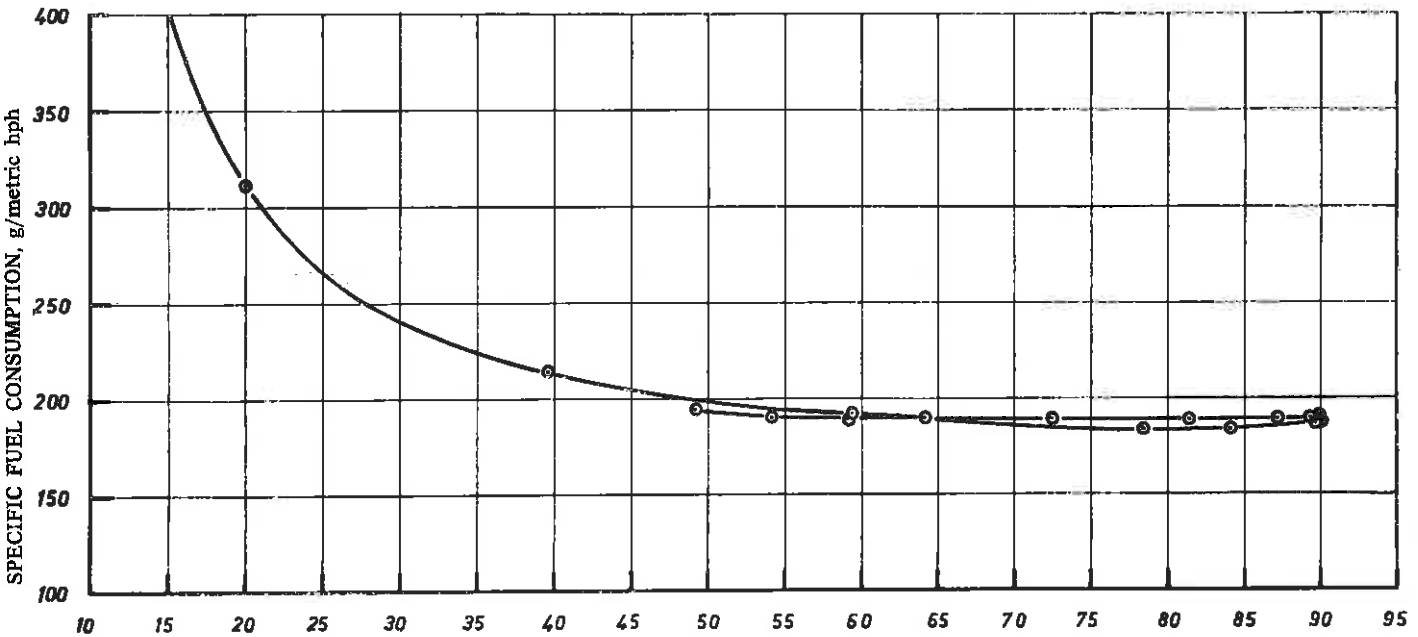


FIG. 2 - POWER TAKE - OFF TEST

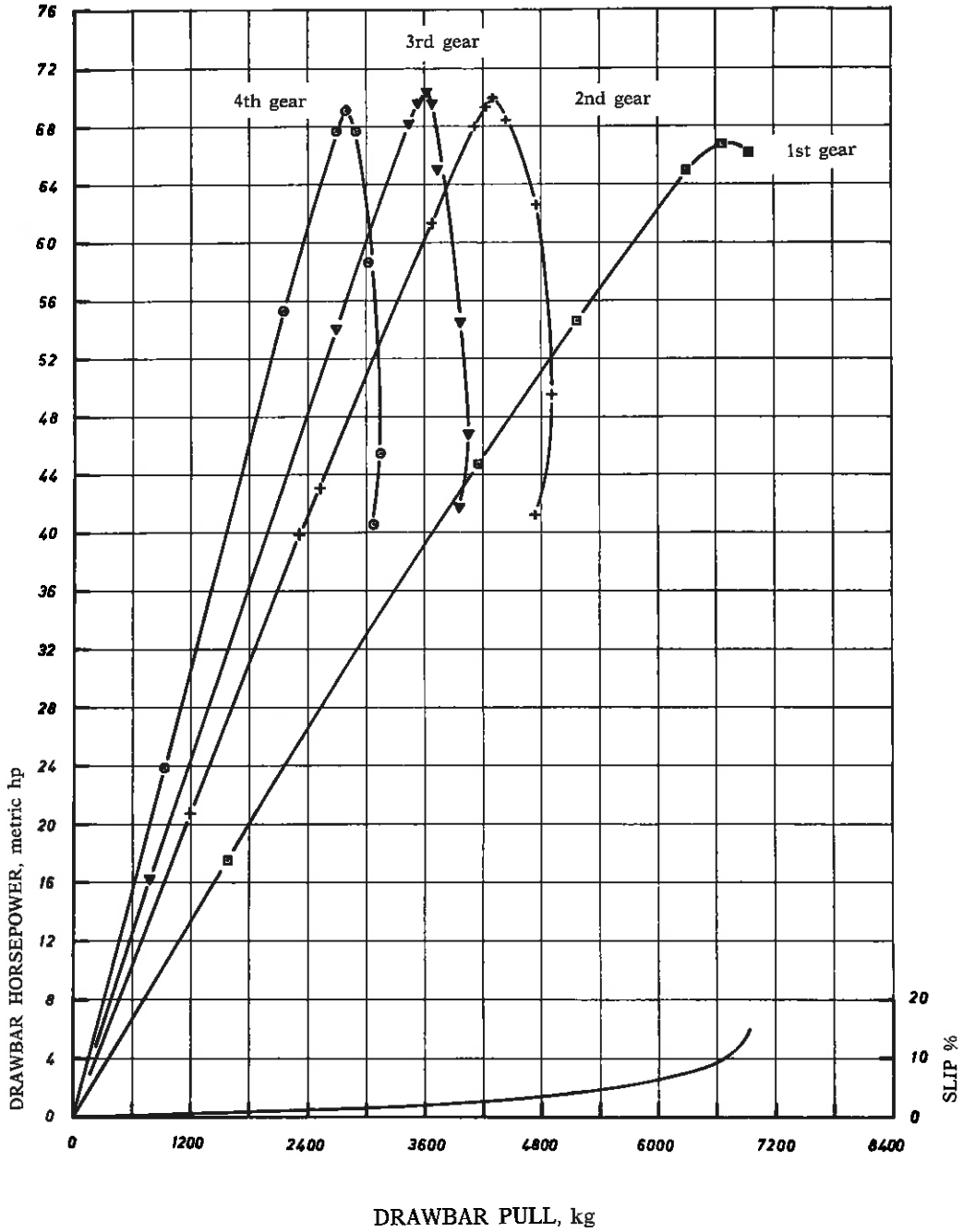


FIG. 3 - DRAWBAR TEST ON CLAY LOAM SOIL

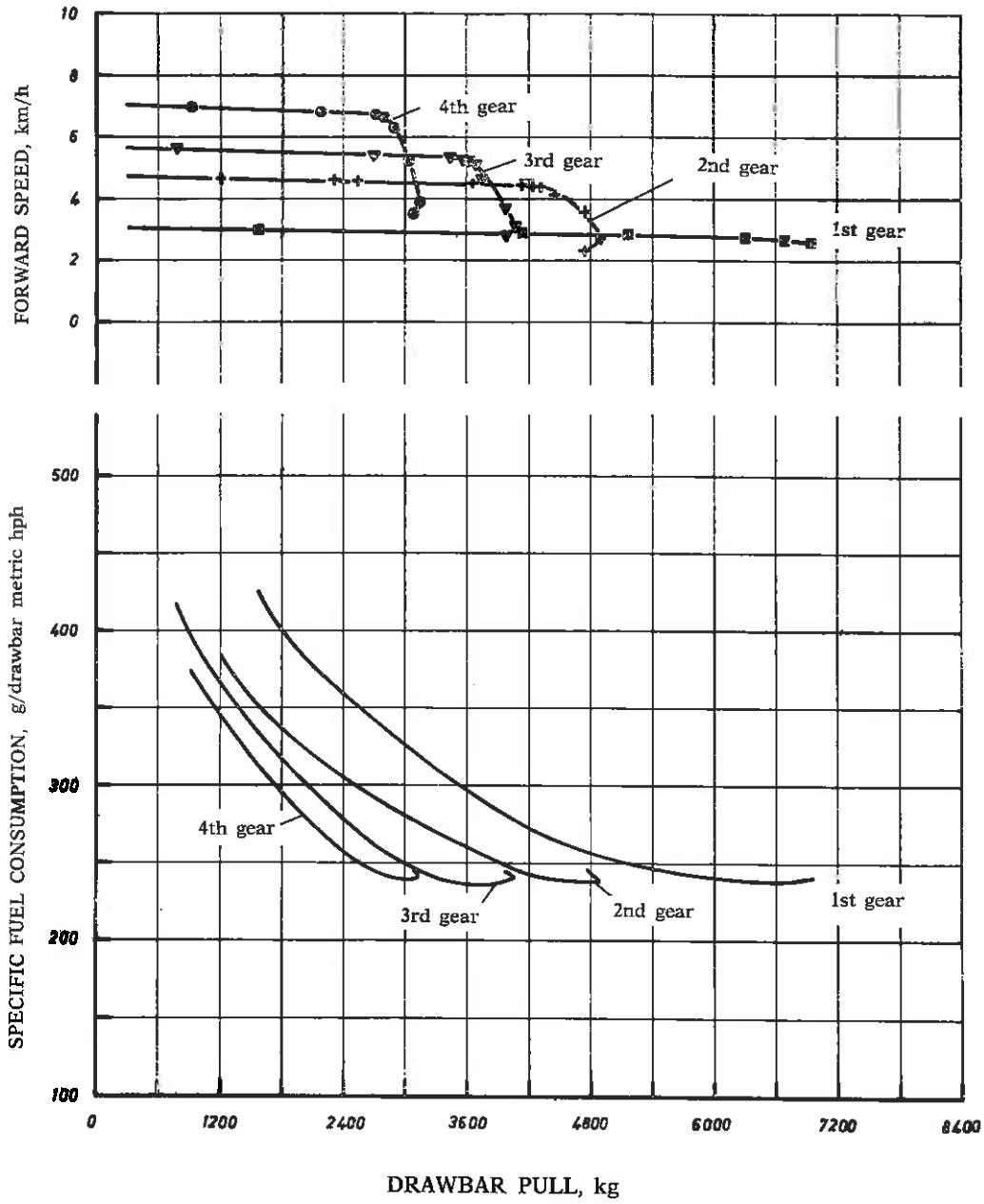


FIG. 4 - DRAWBAR TEST ON CLAY LOAM SOIL