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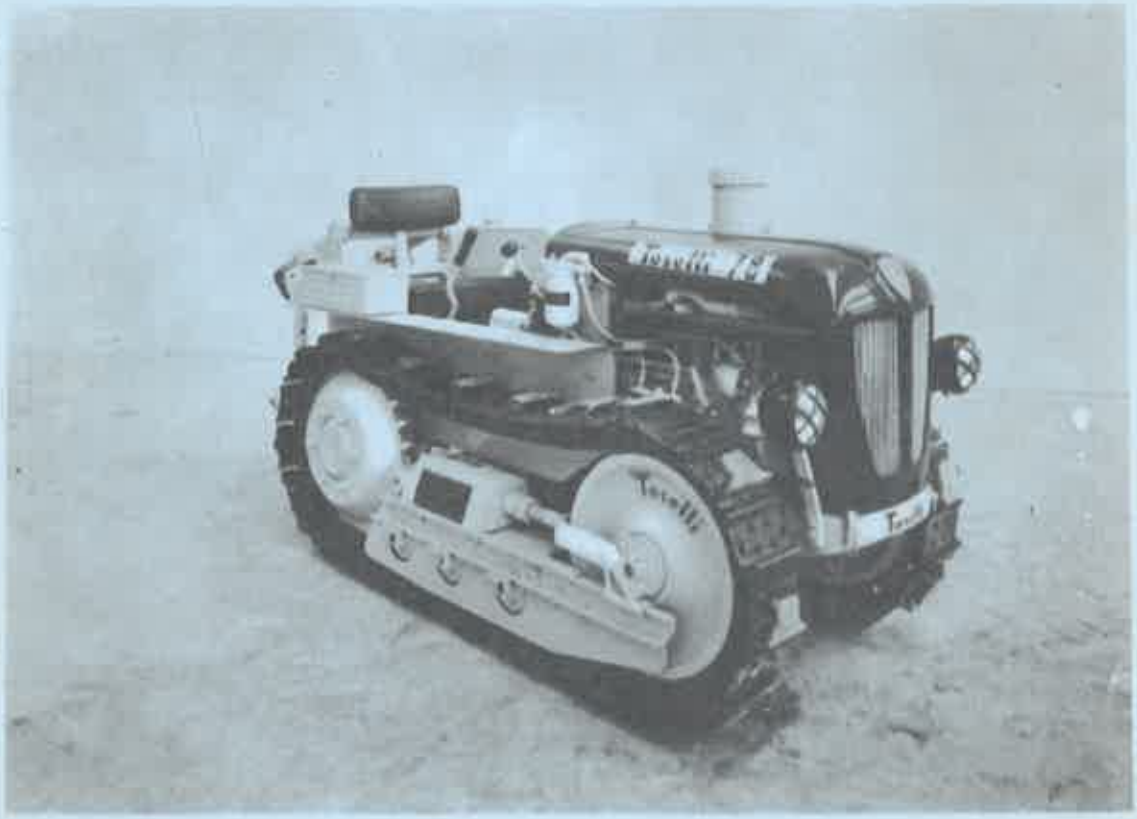
COMITATO DI COORDINAMENTO PER L'OMOLOGAZIONE
DELLE MACCHINE AGRICOLE IN ITALIA

REPORT No. 203/O.E.C.D.

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

TOSELLI 78

Manufactured by: TOSELLI S.r.l.
Ferrara, Italy



Date of Test: June/September 1965
Test No: 203/O.E.C.D.

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

Date of approval: 30th Decembre 1965 *Serial No.:* 100

CENTRO NAZIONALE MECCANICO AGRICOLO
TORINO - ITALY

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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

PART 1

SPECIFICATION OF TRACTOR

Tractor:	
Make:	TOSELLI
Model:	78
No.:	Serial No. 2109
Engine:	
Make:	V.M. Cento (Ferrara), direct injection diesel, Serial No. 1028.
Cylinders:	2 cylinders, vertical, in-line, 90 mm bore × 95 mm stroke, compression ratio 18.5 : 1, overhead valves.
Rated speeds:	2400 rev/min, governor setting - no load engine speed 2600 ± 15 rev/min.
Fuel system:	Fuel - Diesel oil. Injection pump: Bosch type PPR 2K 80/247; injector nozzles: FL BOSIO. Manufacturer's production setting for injection pump: 4.05 Kg/h to 4.22 Kg/h at 2400 rev/min engine speed at 15 °C fuel temperature (bench test figures); injection pressure 180 ± 5 Kg/cm². SAVARA A.C. type 6007/80 fuel feed pump and two BOSCH type FY/D 5/303 filters on pressure side. Capacity of fuel tank 12.5 l.
Governor:	V.M. mechanical, incorporated in fuel injection pump. Governed range of engine speed 450 rev/min to 2400 rev/min.
Air cleaner:	One TORMILASTRA type GZ 114/180 with replaceable cartridge element dry pre-cleaner and one V.M. type 902-30 oil bath cleaner. Oil capacity 0.6 l.
Oiling system:	Forced feed from gear type pump with metal strainer in sump. S.A.E. 20 or 30 oil. V.M. full flow sheet type oil filter. Recommended oil change period: from 120 to 150 h. Oil capacity engine sump 5.5 l.

Cooling system: Air cooled, impeller assisted with 170 mm dia 8-blade V-belt driven fan.

Transmission:

Clutch: PITTERI & VIOLINI 215 mm dia, single plate dry clutch, pedal operated.

Gearbox: Own make, sliding gear type, 6 forward speeds and 1 reverse.

Differential: Crown wheel and pinion and differential with bull gear final drives.

Oil capacities: Transmission 7.50 l, final drive 1.01 l each.

GEAR No.	NUMBER OF ENGINE REVOLUTIONS FOR ONE REVOLUTION OF DRIVING WHEEL	THEORETICAL TRAVELLING SPEED FOR 2400 REV/MIN RATED SPEED OF ENGINE Km/h
1	231.95	0.94
2	108.25	2.01
3	75.42	2.89
4	53.54	4.07
5	31.64	6.88
6	19.12	11.38
R.	75.42	2.89

Steering device: Dry disc brakes on differential half shafts, hand lever operated.

Brakes: Dry disc brakes on differential half shafts, hand lever operated. A parking hand lever with ratchet and pawl permits to use both brakes at the same time.

Sprockets: Pitch dia 486 mm. 27 teeth, face width 35 mm.

Tracks: Girder, track pitch 112 mm, 28 mm dia pins, 160 mm wide track plates, 33 per track, integral grousers 41 mm; track

	gauge 1080 mm; approximate length of track in ground contact 1080, total area of contact with ground 3,456 cm^2; pressure on ground 0.355 Kg/cm^2.
Suspension:	Front idler wheels 386 mm rolling dia, 3 bottom track rollers per track at 215 mm centres, rolling dia 135 mm. Rear suspension by cross beam supported on track frames through lubricated bushes allowing independent track frame swing. Front suspension by transverse leaf spring.

Belt Pulley:

Location:	At rear of the tractor driven from engine clutch through bevel gear.
Diameter/width:	210 mm × 120 mm.
Speeds:	1454 rev/min giving 15.99 m/s linear speed at 2400 rev/min rated engine speed.
Direction of rotation:	Anti-clockwise viewed from tractor rear.

Power take-off:

Main:	6-spline, 34.9 mm ($1\frac{3}{8}$ in.) dia, in centre-line at rear of tractor.
Heigth above ground:	325 mm.
Proportional engine speed:	554 rev/min at 2400 rev/min rated engine speed 540 rev/min at 2339 rev/min engine speed.
Proportional ground speed:	1 revolution of p.t.o. for approximately 72 mm of travel.
Direction of ration:	Clockwise viewed from tractor rear.
Drawbar:	Tested with swinging drawbar, vertical height to centre of clevis 240 mm.

Electrical equipment:

Voltage:	12 V.

Generator:	MARELLI Type DM 36 B-80/ 12/ 22001.
Batteries:	One 12 V, capacity 48 amp h.
Overall dimensions:	
Overall length:	1.87 m as tested.
Overall width:	0.81 m.
Overall heigth:	1.24 m to top of exhaust pipe 0.95 m to top of bonnet.
Minimum ground clearance:	0.18 m to bottom of swinging drawbar.
Weight:	With full fuel tank, oil : standard track shoes, no driver 1278 Kg.
Special remarks:	Power lift (optional).

PART II

LABORATORY TESTS

1. **Compunsory tests:** Power take - off test

Date and location of tests: 10th June 1965, C.N.M.A. Torino, Italy

Type of dynamometer: Electrical, swinging frame

Fuel:: Diesel oil, density 0.831 Kg/l at 15°C
Cetane No. not recorded

Engine oil:: S.A.E. 20

Transmission oil:: S.A.E. 90

HORSEPOWER	SPEEDS		EQUIVALENT CRANKSHAFT TORQUE	FUEL CONSUMPTION			TEMPERATURE			ATMOSPHER. CONDITIONS	
	ENGINE	P. T. O.		PER HOUR	SPECIFIC	HP HOURS/ UNIT OF VOLUME	COOLANT	OIL	FUEL	AIR TEMP.	ATMOSPHERIC PRESSURE
effective hp	rev/ min	rev/ min	mkg	l/h	g/metric hph	metric hph/l	°C	°C	°C	°C	mmHg
A. Maximum power											
17.65	2413	557	5.24	4.76	224	3.71	95	120	25	24.8	737.2
B. Power at standard p.t.o. speed (540 rev/min)											
17.47	2339	540	5.35	4.60	219	3.80	94	111	23	22.0	737.2
C. Power at maximum torque											
15.23	1998	461	5.46	3.90	213	3.90	80	100	24	23.0	737.2
D. Power at rated speed											
17.60	2400	554	5.25	4.79	226	3.67	97	120	25	25.0	737.2
No load, maximum engine speed: 2595 rev/min											

2. **Supplementary tests:** Engine test (in installed condition)

Date and location of tests: 3rd June 1965, C.N.M.A. Torino, Italy

Type of dynamometer: Electrical, swinging frame

Fuel: Diesel oil, density 0.831 Kg/ l at 15°C
Cetane No. not recorded

Engine oil: S.A.E. 20

HORSEPOWER	SPEED	CRANKSHAFT TORQUE	FUEL CONSUMPTION			TEMPERATURE			ATMOSPHER. CONDITIONS	
			PER HOUR	SPECIFIC	HP HOURS/UNIT OF VOLUME	COOLANT	OIL	FUEL	AIR TEMP.	ATMOSPHER. PRESSURE
metric hp	rev/min	mkg	l/h	g/metric hph	metric hph/l	°C	°C	°C	°C	mmHg
A. Maximum power										
20.06	2402	5.98	4.88	202	4.11	80	100	19.5	19.2	743.0
B. Power at standard p.t.o. speed (540 rev/min)										
19.76	2339	6.05	4.90	206	4.03	80	100	19.5	19.2	743.0
C. Power at maximum torque										
17.43	2000	6.24	4.03	192	4.33	75	97	19.5	19.2	743.0
D. Power at rated speed										
20.04	2400	5.98	4.87	202	4.11	80	100	19.5	19.2	743.0
No load, maximum engine speed: 2598 rev/min										

PART III

DRAWBAR TESTS ON ARTIFICIAL TRACK

Date of tests: 16th and 17th September 1965

Type of track: Clay loams soil

Position of governor control lever: Fully open, giving no load engine speed 2600 ÷ 15 rev/min

Fuel: Diesel oil; density 0.831 Kg/l at 15° C
Cetane No. not recordes

Engine oil: S.A.E. 20
Transmission oil: S.A.E. 90

Weight without driver: 1228 Kg
Height of avobe ground: 240 mm

1. Maximum powers and pulls

GEAR	MAXIMUM POWERS						AIR TEMP.	ATMOSPHER. PRESSURE	MAXIMUM PUDES	
	HORSEPOWER	CORRESPONDING PULL	TRACK SLIP	ENGINE SPEED	SPEED	ENGINE COOLANT TEMP.			PULL	REASON FOR STALL
No.	metric hp	Kg	%	rev/min	km/h	°C	°C	mmHg	kg	
1	4.20	1205	7.8	2593	0.94	80	23	749.8	1224	Track slip
2	8.98	1219	7.2	2551	1.99	80	23	749.8	1300	Track slip
3	12.30	1212	7.5	2459	2.74	85	23	749.8	1225	Track slip
4	14.09	1001	6.9	2417	3.82	85	23	749.8	1043	Track slip
5	14.17	561	1.3	2403	6.82	90	21	749.0	625	Engine stall
6	13.98	335	1.1	2399	11.27	90	21	749.0	380	Engine stall

2 Fuel consumption

GEAR	OPTIMUM FUEL CONSUMPTION			RANGE OF PULL, OVER WHICH SPECIFIC FUEL CONSUMPTION DOES NOT EXEED OPTIMUM CONSUMPTION BY MORE THAN 10%
	SPECIFIC FUEL CONSUMPTION	HP HOURS / UNIT OF VOLUME	CORRESPONDING PULL	
No.	g metric D.B. h.p.h.	D.B. metric h.p.h. / l	kg	kg
1	505	1.65	1205	1050 - 1224 (M.S.P.)
2	313	2.65	1225	1030 - 1301 (M.S.P.)
3	272	3.06	1212	740 - 1225 (M.S.P.)
4	293	2.84	980	710 - 1043 (M.S.P.)
5	295	2.82	561	450 - 615
6	302	2.75	345	275 - 377

PART IV

1. Location of centre of gravity

Height above ground:	400 mm
Distance forward fron the vertical plane containing the axis of sprockets:	510 mm
Distance from the median plane parallel to the longitudinal axis of the tractor bisecting the track:	0

2. Radius of turning space: 1,25 m

PART V

1. Repairs and adjustments during tests: None

2. Remarks: None

TEST ENGINEER
(S. Sarcinelli)

DIRECTOR OF MECHANICAL DEPARTMENT
(G. Priorelli)

DATE: 30th October 1965

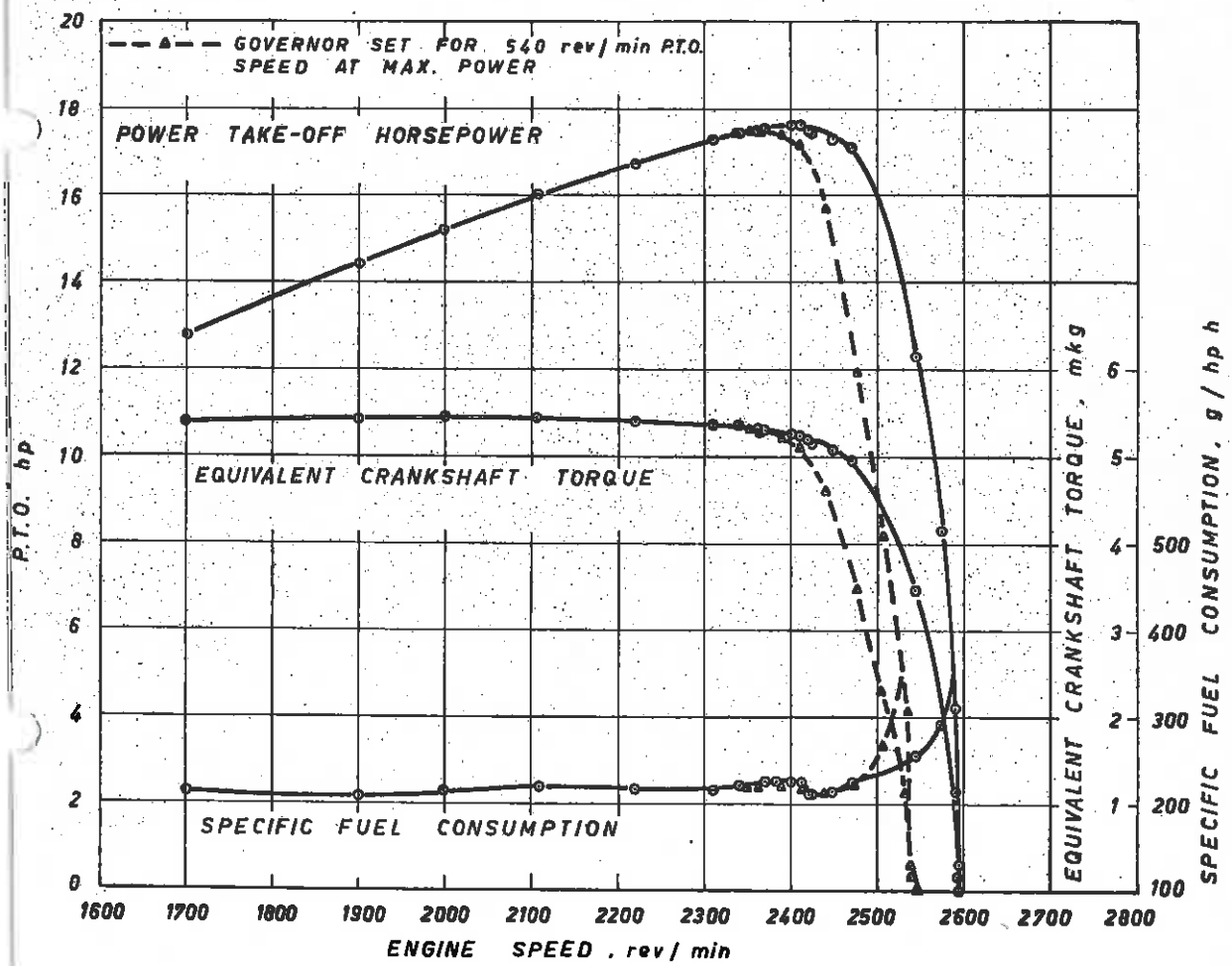


Fig. 1 - POWER TAKE-OFF TEST

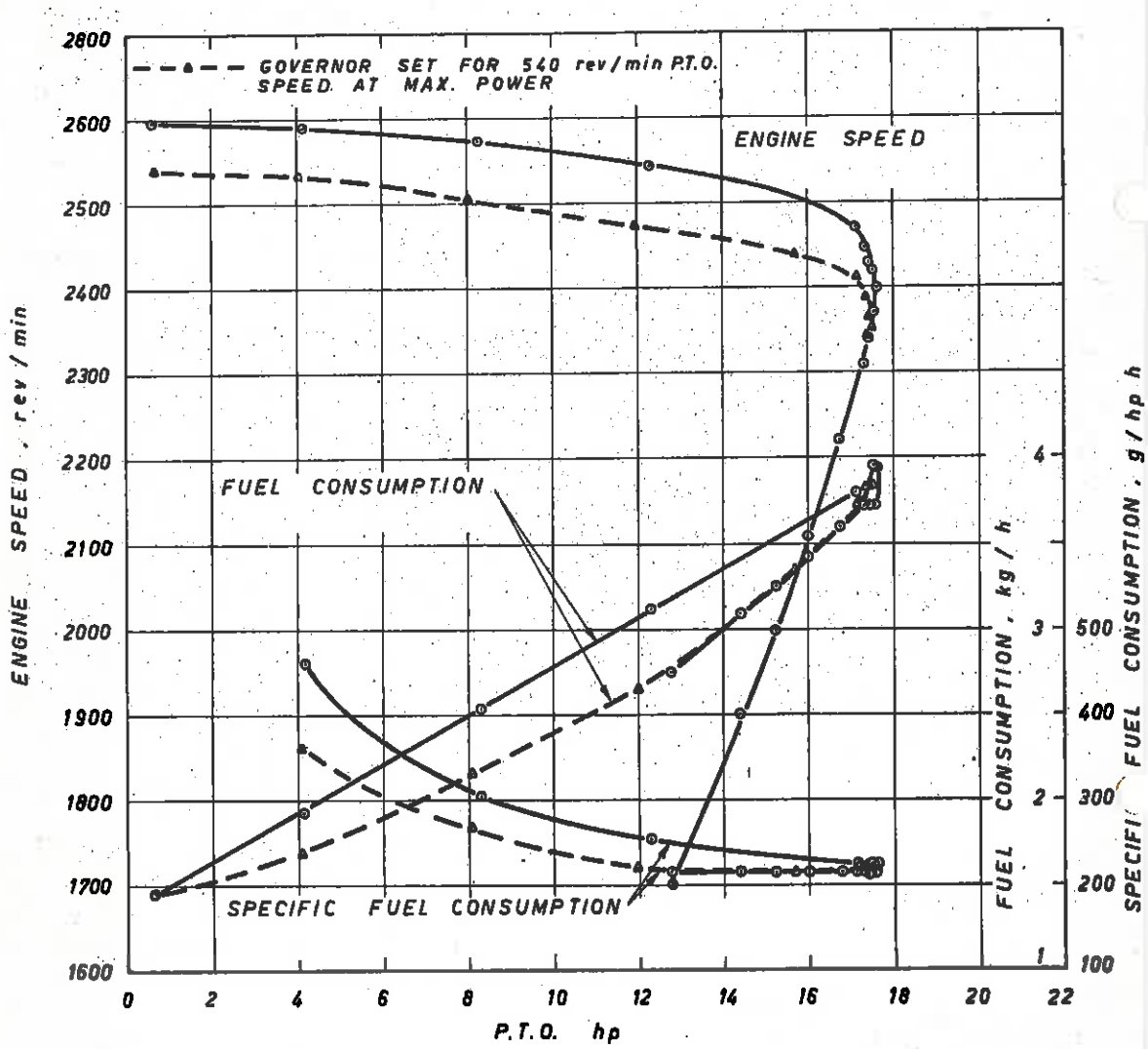


Fig. 2 - POWER TAKE-OFF TEST

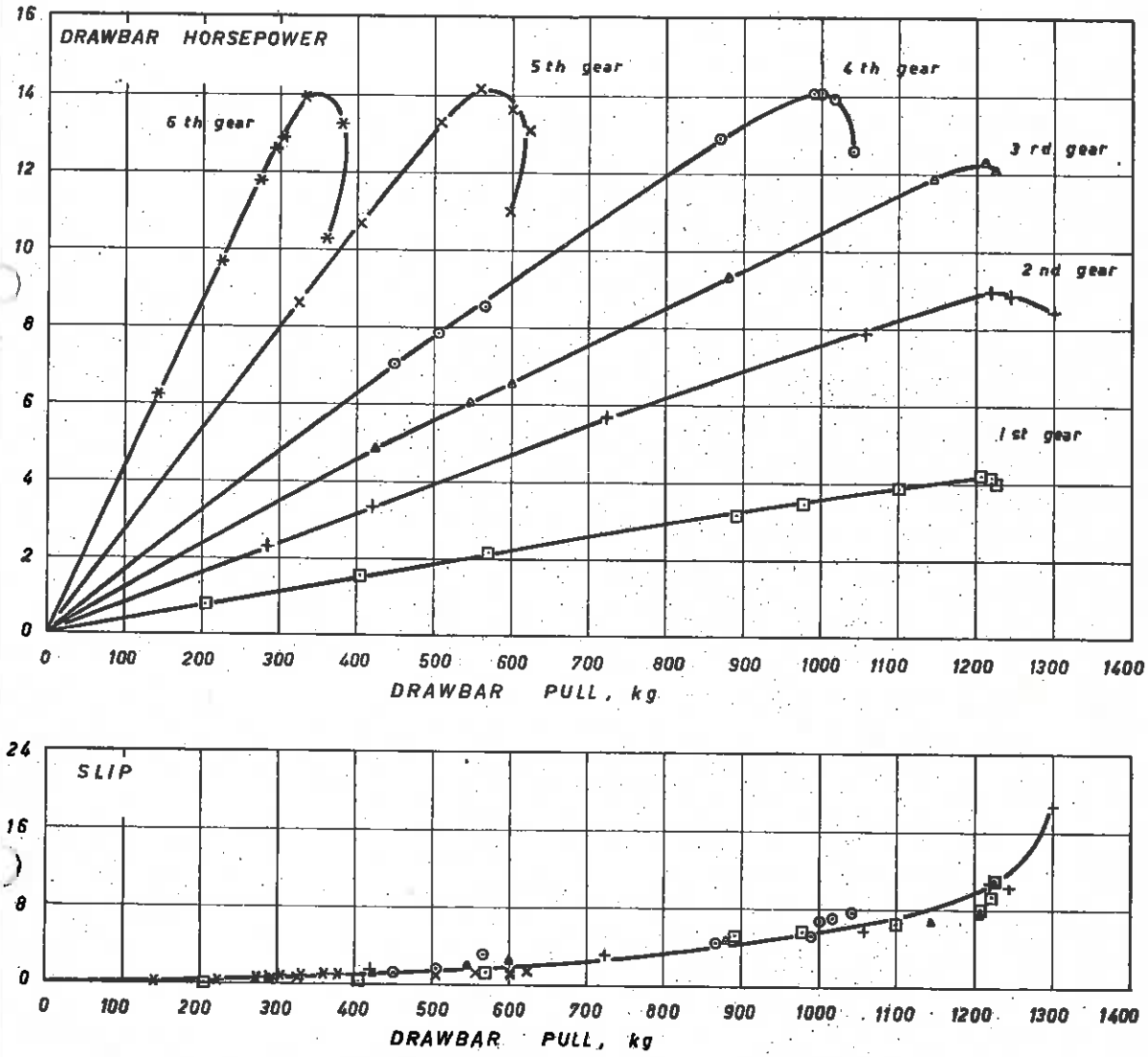
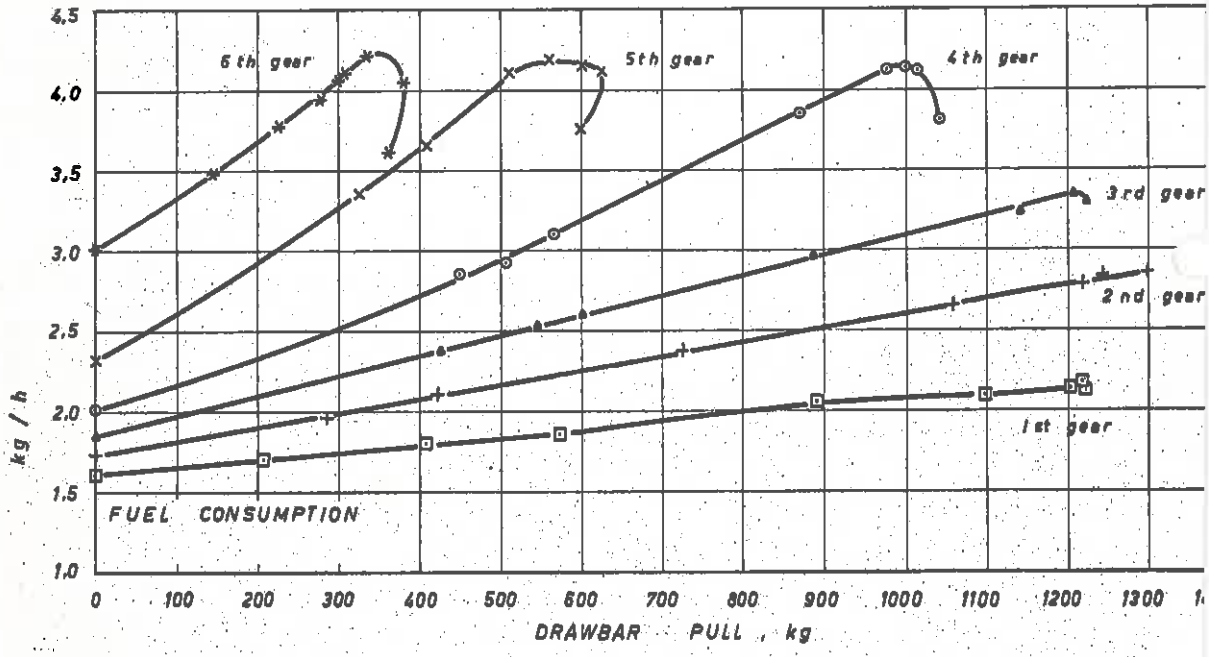


Fig. 3 - DRAWBAR TEST ON CLAY LOAM SOIL



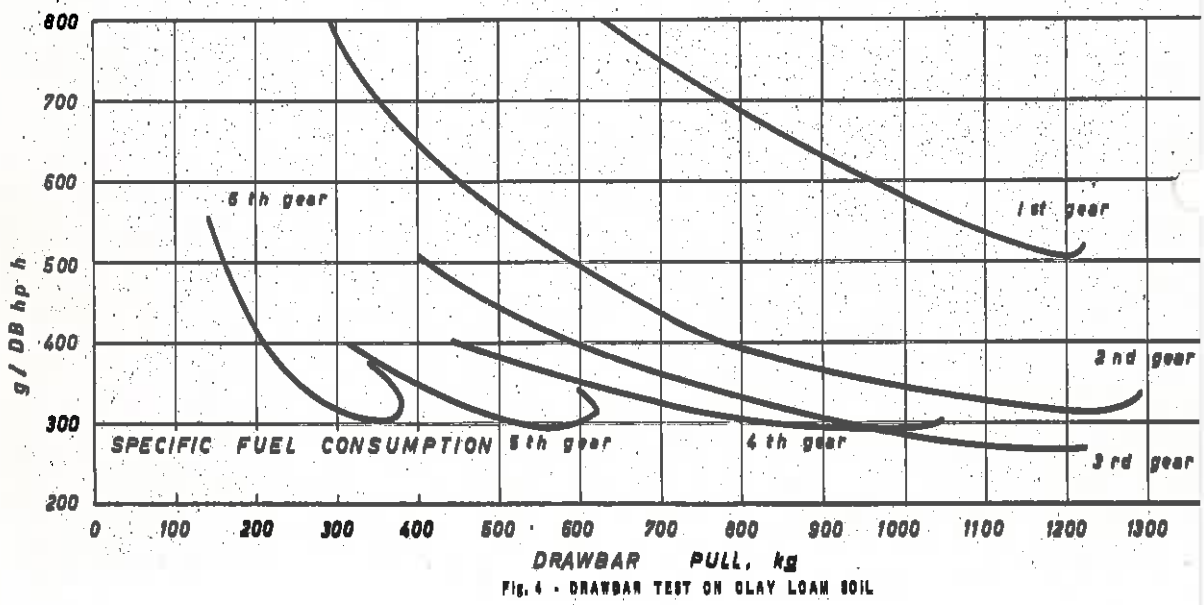


Fig. 4 - DRAWBAR TEST ON CLAY LOAM SOIL