

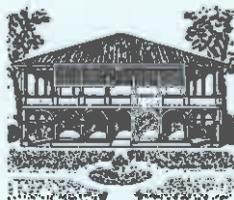
REPORT ON TEST IN ACCORDANCE WITH O.E.C.D.
TEST CODE FOR AGRICULTURAL TRACTORS

GOLDONI 1038



Manufactured by: GOLDONI S.p.A.
Migliarina di Carpi—MODENA (ITALY)

Date of tests: February — July 1979



This bulletin is based on engineering tests in accordance with the O.E.C.D. STANDARD CODE for the Official Testing of Agricultural Tractors. It does not contain an evaluation of the performance of the tractor on practical work.

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. STANDARD CODE.

Date of Approval: 1st July 1980

Serial No. : 681

In this report all performance characteristics are given according to the International System of Units and to the Technical System.

Equivalences

Forces:	1 N	= 0.102 kp	or	1 kp	= 9.81 N
Powers:	1 kW	= 1.36 h.p.	or	1 h.p.	= 0.736 kW
Pressures:	1 bar	= 1.02 kp/cm ²	or	1 kp/cm ²	= 0.981 bar
Angular velocity:	1 rad/s	= 9.554 rev/min	or	1 rev/min	= 0.1047 rad/s

GOLDONI 1038 TRACTOR

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Tractor manufacturer: GOLDONI S.p.A. Migliarina di Carpi (Modena)
Submitted for test by: Manufacturer
Selected by: Manufacturer with the agreement of Istituto di Meccanica agraria - University of Bologna
Place of running-in: GOLDONI S.p.A. workshop, Migliarina di Carpi
Duration of running-in: 30 hrs for engine, 20 hrs for the tractor

SPECIFICATION OF TRACTOR

Tractor

Make: GOLDONI S.p.A.
Model: 1038
Type: Wheeled tractor, unit construction, four wheels drive
Serial No: 106730

Engine

Make: LOMBARDINI S.p.A. Reggio Emilia
Model: 832
Type: Four-stroke direct injection Diesel
Serial No: 1317239
Cylinders: 2, vertical, dry, in line;
bore 100 mm, stroke 105 mm, total capacity 1648 cm³;
compression ratio 17.5
Valves: Overhead
Fuel system: Forced with diaphragm pump FISPA SUP 75;
FIAAM FNA 32/01 replaceable paper cartridge-type filter;
CIPA CPFR-2 K 70/1077 injection pump, manufacturer's production setting for injection pump 46-48 mm³ for stroke at 3000 rev/min of engine;
BOSCH BLL 160 injection nozzles, injection pressure 214 bar; advanced admission: 27° (fly wheel measured); capacity of fuel tank 16 l
Governor: LOMBARDINI mechanical type with centrifugal weights governed range of engine speeds 1000-3200 rev/min; rated engine speed 3000 rev/min
Air cleaner: FISPA 2132-43 oil filter with cyclone pre-cleaner FISPA 2071-01;
oil capacity 0.5 l;
flow 3000 l/min

Lubrication system: LOMBARDINI forced feed from gear-type pump; sieve filter in suction and paper cartridge replaceable filter FIAAM FOL 542-030 at delivery; oil capacity 4.3 l; recommended oil: ESSOLUBE HD Serie 3, SAE 40 (over 20°C), SAE 20 (between 10°-20°C), SAE 10 (under 10°C) or another, conforming MIL L 2104 Supp. 1; recommended oil change period 100 hrs; recommended filter change period 100 hrs

Cooling system: Air forced with 28 blades flywheel axial impeller; flywheel diameter 200 mm; flow 1620 m³/h at 3000 rev/min of engine

Starting system: Solenoid engaged type ISKRA AZJ 0101, 12 V, 1.32 kW motor; low temperature starting aid: manual operated fuel supplementary ratio device on injection pump

Muffler system: LOMBARDINI DGM-SA 553 motor left side located, lateral discharge

Electrical equipment:

12 V;
DUCATI E 52-1156-54 alternator, 0.19 kW;
one battery, capacity 92 Ah at 20 hours rating

Transmission

Clutch: PITTERI AND VIOLINI F 215; single dry plate type, plate diameter 215 mm; driving both gear box and p.t.o.; pedal operated

Gear box: Own make, mechanical; sliding gear countershaft change gear with 3 gear and one group gear with 2 forward and 1 reverse gear. Total: 6 forward and 3 reverse speed selected by means of 2 hand levers

Front and rear axles and final transmission: Own model 1000; differential operated by bevel gear (ratio 1:4.776) and bull gear final drives (ratio 1:3.143) Hand operated differential lock, manual disengaging for front axle, automatic for rear axle The front and rear axles are constantly mechanically connected

Oil capacities: Gear box and transmission 8.9 l

Oil change period: 1000 working hrs

Recommended oil qualities: ESSO GEAR OIL GX80W90 or another conforming MIL L 2104 Supp. 1

Total ratios and speed

Gear	No of engine revolution for one revolution of driving wheels	Theoretical travelling speed for 3000 rev/min rated speed of engine	
		m/s	km/h
1st lower	347.073	0.36	1.28
2nd lower	166.178	0.74	2.68
3rd lower	110.450	1.12	4.03
1st high	64.573	1.92	6.90
2nd high	30.920	4.00	14.41
3rd high	20.543	6.03	21.69
1st reverse	264.449	0.47	1.68
2nd reverse	126.623	0.98	3.52
3rd reverse	84.155	1.47	5.29

Calculated with the tyre rolling circumference of 2474 mm in accordance to tyre manufacturer's specification

Power take-off (Non independents)

Main p.t.o.: Located at the rear of tractor, central position; height above ground 454 mm; dimensions 34.8x27.9x8.6mm(1.3/8", ISO R 500), 6 splines; hand lever engaged.

Speeds proportional at engine speed:
two, 577 or 879 rev/min at 3000 rev/min rated engine speed;
2807 or 1843 rev/min of engine at p.t.o. 540 rev/min
Direction of rotation, clockwise viewed from tractor rear.

Speeds proportional to travelling speed:
one, one p.t.o. revolution for 0.16 m;
15.1 p.t.o. rev/min for one revolution of driving wheels.
Direction of rotation, clockwise in forward speeds, anti-clockwise in reverse speed

Accessory p.t.o.: Located under the main p.t.o., central position; height above ground 374 mm; dimensions 30x26x6 mm, 6 splines; hand lever engaged.

Speeds proportional at engine speed:
two, 577 or 879 rev/min at 3000 rev/min rated engine speed;
2807 or 1843 rev/min of engine at p.t.o. 540 rev/min
Direction of rotation, anticlockwise viewed from tractor rear.

Speeds proportionat to travelling speed:
one, one p.t.o. revolution for 0.16 m;
15.1 p.t.o. rev/min for one revolution of driving wheels.
Direction of rotation, anticlockwise in forward speeds,
clockwise in reverse speed.

- Power lift: Make ERPOZ type 40G;
integral hydraulic system;
draught control hydraulic lift;
one single acting cylindres, 85 mm bore, 119.5 mm stroke;
SALAMI 2PA 6.2/DSV 120 hydraulic gear pump directly driven
by engine;
maximum pressure 120 bar;
oil capacity 4.5 l ESSO NUTO H 68
(2 oil tapping for two remote ram optional, non fitted on
tractor tested: max amount of oil which may be taken off
without damage for the system, 1 l)
- Three point linkage: In special non unificated construction (cat 1N - proposal
ISO, tab 730 II);
balls of link acc. to ISO I cat.
Lift rods lenght adjustable: 420 or 450 mm;
lift height above ground from 40 to 610 mm
- Holed drawbar: Fitted on clevis of lower links;
lenght between the ball joints 735 mm;
thickness of holed bar 25 mm, width 65 mm;
7 holes, diameter 20 mm
Height above ground level adjustable from 40 to 610 mm
Distance of centre hole:
to rear axle centre 660 mm;
to end of main p.t.o. - shaft 500 mm
- Hitch: Own make;
height above ground 210 or 290 mm;
adjustable by shifting hitch;
diameter of clevis hole 28 mm;
distance to rear axle centre 395 mm;
distance referred to the main p.t.o. - shaft:
horizontal 50 mm, vertical 2 position, 165 or 245 mm (under)
- Steering: Make ORSTA type PG 63; hydrostatic type;
oil supply from hydraulic system of power lift;
handwheel operated steering valve acting one double-acting
cylinder on front wheels
- Brakes: Own make.
Travelling brakes: hydraulic operated internal shoe type
brake acting on 4 brakes drums in the front and rear wheels;
pedal operated.
Parking brake: with independent mechanic system acting the
same brake drums in the rear wheels;
operated by hand lever with ratchet

Drive wheels: 2 at front and 2 at rear: 7.50 R 18, 4 p.r. radial pneumatic; 2 at front are steering
 max. permissible masse on each tyre 510 kg at 1.3 bar in internal air pressure;
 track width 990 or 1100 mm; changeable by turning wheels;
 wheelbase 1155 mm

Masses: With full fuel tank, oil; ballast no fitted

No driver			With driver		
on front wheels (kg)	on rear wheels (kg)	total (kg)	on front wheels (kg)	on rear wheels (kg)	total (kg)
790	455	1245	800	515	1315

Seat: Own make;
 rigid with rubber cushion;
 range of adjustment 20 mm, fore and aft in median plane of tractor; no vertical adjustment

Number of grease points: (whole tractor) 5

Overall dimensions: Lenght 2.68 m (with three points linkage 2.95 m)
 Width 1.18 or 1.29 m
 Height 1.17 m (to top of steering wheel)
 Maximum ground clearance 0.155 m (to hitch in lower position)

Lighting:

	Height above ground of centre cm	Diameter cm	Distance of centre from outside edge of tractor cm
Headlights	71	13.5	46 (1)
Side lights	81	6.0 x 7.0	15 (1)
Rear lights	86	6 x 7	20 (1)
Reflectors	80.5	5.5 x 5	14.5 (1)

(1) With track width of 0.99 m

Fuel and lubricants used in test

Fuel: Agricultural Diesel oil;
density 15°C: 0.825 kg/l
cetane number: 69

Engine oil: ESSOLUBE HDX SAE 20W/40
viscosity index: 95

Transmission oil: ESSO GEAR OIL CX 80 W 90
viscosity index: 99

Hydraulic fluid: ESSO NUTO H 68
viscosity index: 103

COMPULSORY TEST

1) MAIN POWER TAKE-OFF PERFORMANCE

Date and location of test: 8th February 1979 - Experimental Centre of
Cadriano - University of Bologna

Type of dynamometer: Electrical, type I.M.A. Bo 65

Power kW	Speed		Fuel consumption		Specific energy kWh/l
	engine rev/min	p.t.o. rev/min	hourly l/h	specific kg/kWh	
AT MAXIMUM POWER 2-HOURS TEST					
24.22	2995	576	8.54	0.291	2.84
AT THE SPEED RECOMMENDED BY THE MANUFACTURER FOR DRAWBAR WORK					
24.22	2995	576	8.54	0.291	2.84
PART LOADS AT MAXIMUM POWER					
I) 85% of the torque at maximum power					
21.30	3099	596	7.76	0.300	2.74
II) Unloaded					
--	3203	616	2.67	--	--
III) 50% of the load defined in (I)					
10.92	3177	611	4.96	0.375	2.20
IV) Maximum power					
24.22	2995	576	8.54	0.291	2.84
V) 25% of the load defined in (I)					
5.48	3177	611	3.64	0.547	1.51
VI) 75% of the load defined in (I)					
16.39	3166	609	6.42	0.323	2.55

Power kW	Speed		Fuel consumption		Specific energy kWh/l
	engine rev/min	p.t.o. rev/min	hourly l/h	specific kg/kWh	

PART LOADS AT STANDARD SPEED OF p.t.o.

I) 85% of the torque at maximum power

21.26	2896	557	7.09	0.275	3.00
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II) Unloaded

—	2989	575	2.55	—	—
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III) 50% of the load defined in (I)

10.82	2943	566	4.55	0.347	2.38
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IV) Maximum power

24.10	2807	540	8.36	0.286	2.88
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V) 25% of the load defined in (I)

5.42	2948	567	3.36	0.512	1.61
------	------	-----	------	-------	------

VI) 75% of the load defined in (I)

16.05	2911	560	5.73	0.294	2.80
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SPECIFIC STANDARD FUEL CONSUMPTION: 0.300 - 0.375 - 0.275 - 0.347 kg/kWh

No load maximum engine speed: 3203 rev/min

Equivalent crankshaft torque at maximum power: 77.3 mN

Maximum equivalent crankshaft torque: 92.8 mN at 1898 rev/min of the engine

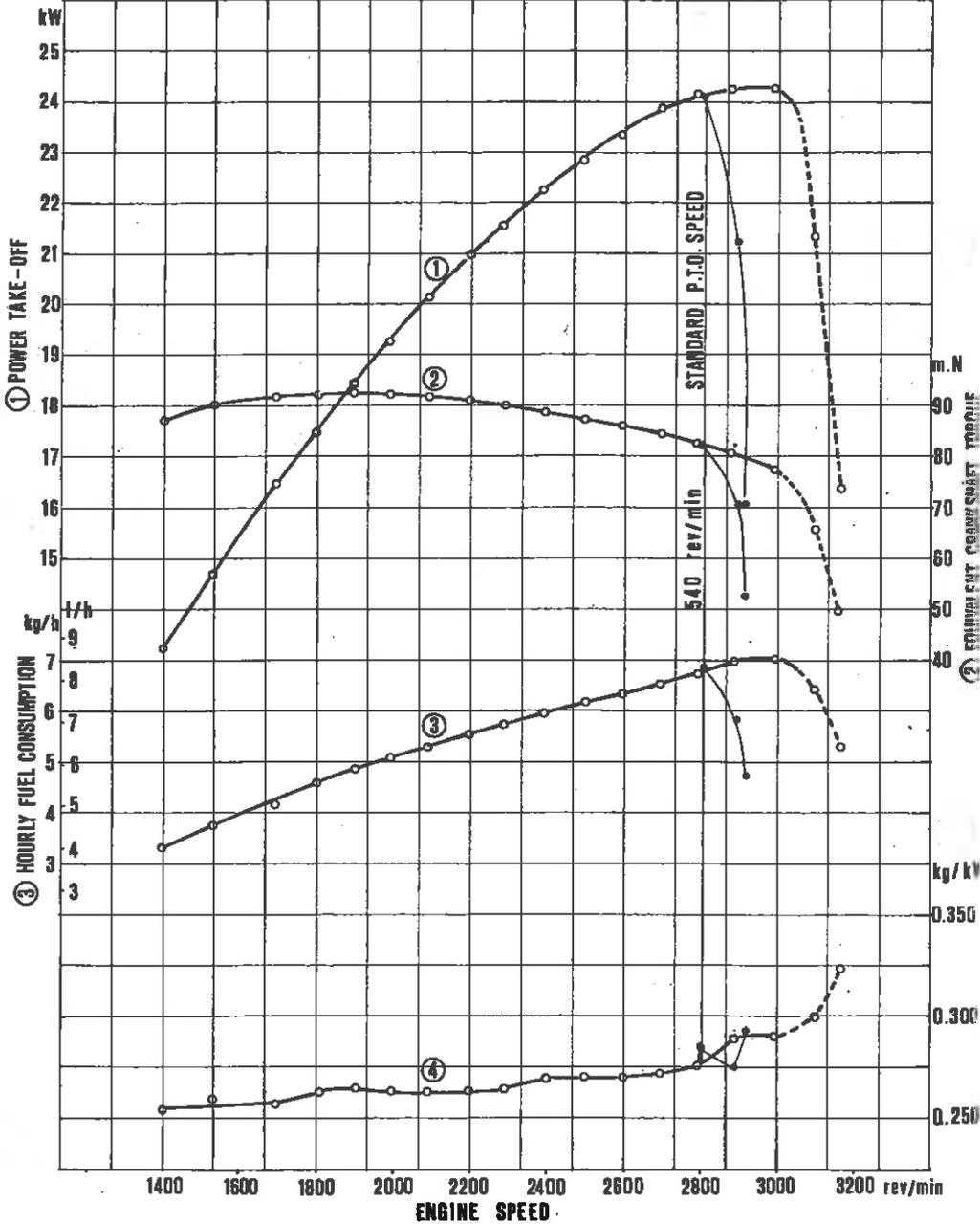
Mean atmospheric conditions: temperature 19.5 °C
 pressure 102100 Pascal
 relative umldity 42 %

Maximum temperature: coolant 92 °C
 engine oil 108 °C
 fuel 30 °C

TRACTOR: GOLDONI 1038 - ENGINE: LOMBARDINI 832 n. 1317239

POWER TAKE-OFF TEST

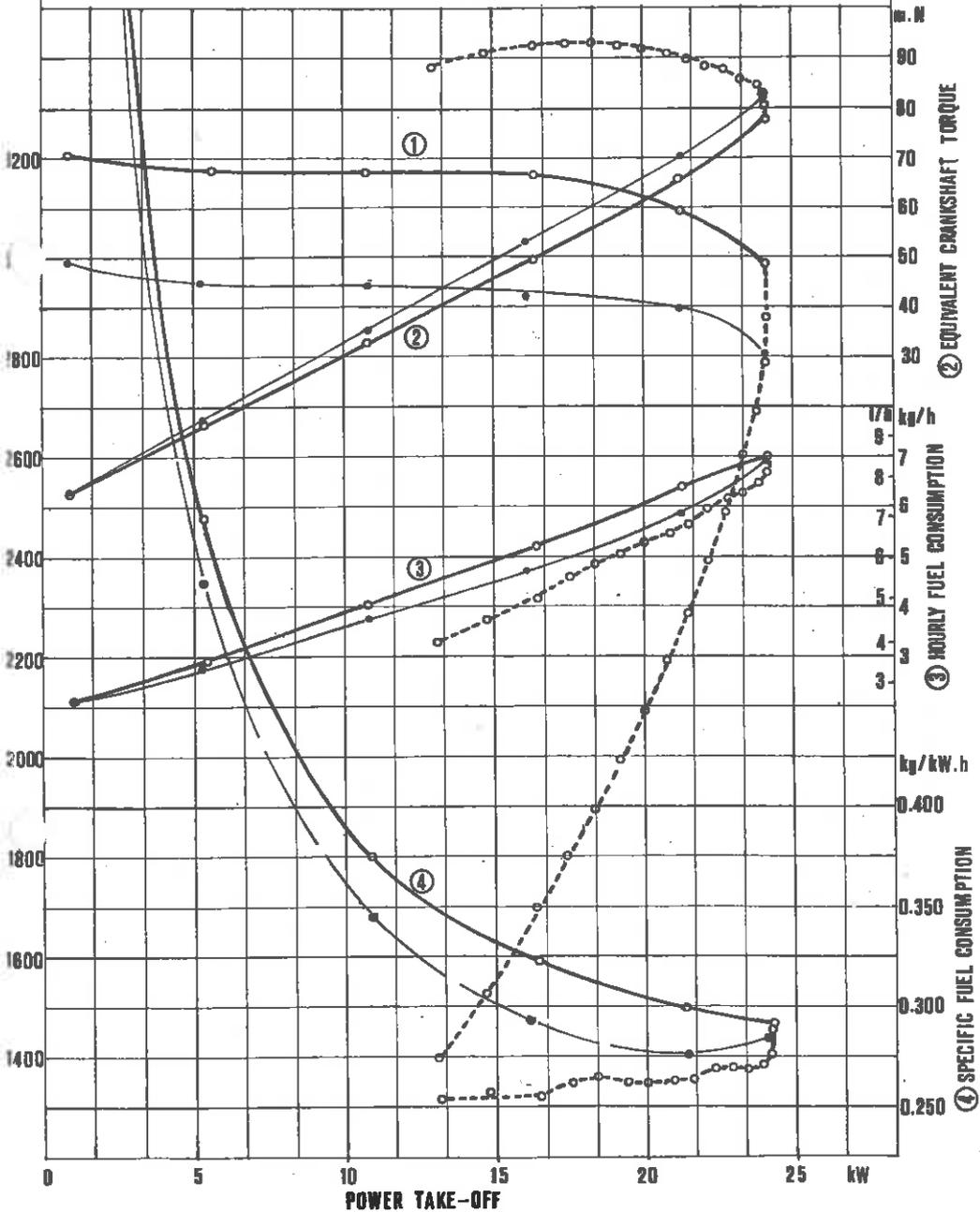
Date of test: 8th February 1978



TRACTOR: GOLDONI 1038 - ENGINE: LOMBARDINI 632 n.1317239

POWER TAKE-OFF TEST

Date of test: 8th February 1978



2) DRAWBAR PERFORMANCE

Date of test: 10th - 15th May 1979

Type of track: concrete

Gear	Speed km/h	Power kW	Drawbar pull N	Engine speed rev/min	Slip of wheels %	Drawbar fuel consumption kWh/l
i) Maximum power						
1st l	1.18	3.8	11520	3200	15.0	1.10
2nd l	2.45	7.7	11470	3165	14.3	1.77
3rd l	3.63	11.6	11470	3160	15.0	2.13
1st h	6.11	19.6	11520	3120	15.0	2.43
2nd h	13.92	22.9	5930	3060	5.3	2.72
3rd h	21.00	21.7	3725	2965	2.1	2.56
ii) Five hour test at 75% of pull at maximum power (in the 1st h gear)						
1st h	6.85	16.4	8630	3170	7.0	2.36
iii) Five hour test at pull corresponding to 15% wheelslip in test i)						
1st h	6.56	21.0	11520	3120	9.2	2.57

Test iii) was carried out with additional ballast of 150 kg

Oil consumption during ten hours duration of test ii) and iii): 95 g/h

Tyres inflation pressure 1.3 bar at front and rear

Height of drawbar above ground: 290 mm

Drawbar fuel consumption kg/kWh	Temperatures °C			Atmospheric conditions		
	Fuel	Coolant	Engine oil	Temperature °C	Relative umidity %	Pressure Pa
0.749	20	68	70	26	42	102000
0.465	20	68	70	26	44	102000
0.388	21	74	76	26	44	102000
0.340	21	83	84	25	42	102000
0.303	22	90	92	25	40	102000
0.322	22	90	92	24	40	102000
0.350	24	92	102	26	45	101900
0.321	25	104	110	25	50	101900

3) TURNING SPACE AND TURNING CIRCLE

Details of wheels Front and rear 7.50 R 18, 4 p.r. pneumatic;
equipment: track width, 990 mm

	Without brakes *	
	right hand	left hand
Radius of turning space, m	4.20	4.10
Radius of turning circle, m	4.10	4.00

* No "With brakes" test has been carried out since tractor is not provided with steering brakes.

4) LOCATION OF CENTRE OF GRAVITY

- Height above ground	530 mm
- Distance forward from the vertical plane containing the axis of the rear wheels	705 mm
- Distance of the median plane of the tractor to the right hand side	0 mm

5) BRAKING PERFORMANCE

Date of tests: 21th May 1979
Type of track: Concrete
Type of decelerometer: Moto Meter, at maximum, recorder
Mass of tractor: 1315 kg, with driver

A) Foot brake

Cold brakes

Travelling speed	23.1	km/h
Deceleration	9.5	m/s ²
Stopping distance	2.8	m
Force on pedal	550	N
Force on pedal for maximum deceleration of 2.5 m/s ²	80	N

Brake fade characteristics (hot tests)

Deceleration	hot/cold	97 %
Stopping distance	cold/hot	88 %
Force on pedal	hot/cold	93 %

B) Park brake

Tractor facing up slope:
Pull on hand brake 60 N, tractor does not roll

Tractor facing down slope:
Pull on hand brake 60 N, tractor does not roll

6) AMBIENT NOISE EMITTED BY THE TRACTOR

Date of test: 10th May 1979
Type of track: Concrete
Type of sound level meter: Brüel and Kjaer, type 2209

Results of test

Gear	3 rd	h
Maximum travelling speed:	23.1	km/h
Travelling speed before acceleration:	17.4	km/h
Sound level:	92.7	dB(A)

7) NOISE AT THE DRIVER'S EAR LEVEL

Date of test: 10th May 1979
Type of track: Concrete
Type of sound level meter: Brüel and Kjaer, type 2209
Type of frequency analyser: Brüel and Kjaer, type 1613

No cab or safety frame fitted on tractor

Results of test

Gear	Drawbar pull at which the tractor develops the maximum sound level N	Travelling speed km/h		Sound level	
		nominal	effective	dB(A)	Sones
1st h*	11520	6.90	6.11	101.4	166.2

* The 1st h gear corresponds to the travelling speed nearest to 7.25 km/h

8) POWER LIFT PERFORMANCE

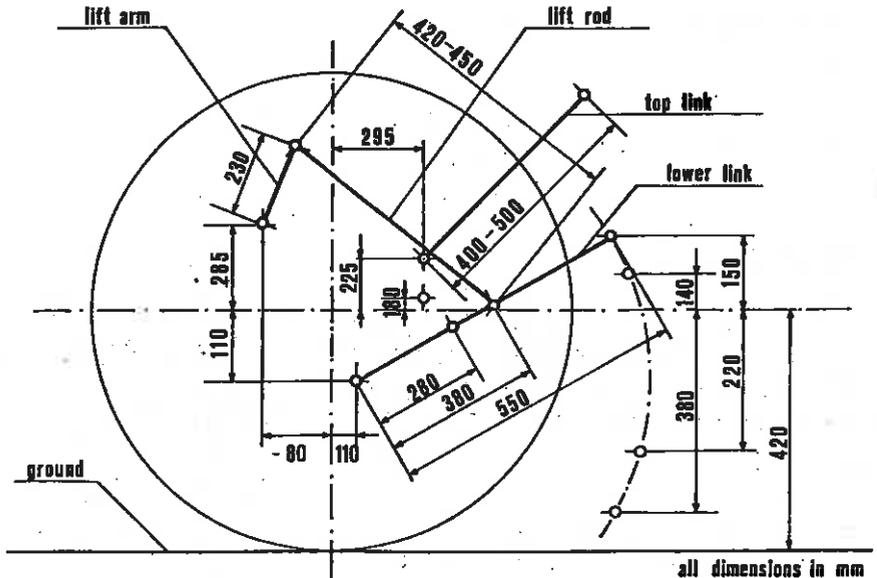
Date and location of test: 11th July 1979 - Experimental Centre of Cadriano
Hydraulic fluid: Esso Nuto H 68 - Viscosity index: 103
Type of linkage lok for transport: Hydraulic
Opening pressure of the cylinder over pressure relief valve: 110 bar

Hydraulic pump

- i) Opening pressure of relief valve: 110 bar
sustained pressure by open relief valve: 108 bar
- ii) Pump delivery rate ad minimum pressure and maximum engine speed: 12.5 l/min
- iii) Pump delivery rate: 10.7 l/min
Delivery pressure: 78 bar
Hydraulic power: 1.4 kW

Power lift

Dimensions of implement linkage for the table on the page 19



Linkage geometry (*)

		Maximum mechanical advantage	Minimum mechanical advantage
Projected length in side view			
lower links,	mm	550	550
lift arms,	mm	230	230
lift rods,	mm	420	450
top link, (*)	mm	400-500	400-500
Distance of lift rod connection point from pivot point of lower link	mm	380	280
The following dimensions are given relative to the rear wheel centre line, situated 420 mm above the ground level			
Lower link pivot point	mm	110 behind, 110 below	110 behind, 110 below
Top link pivot point (*)	mm	295 behind 180-225 above	295 behind 180-225 above
Lift arm pivot point	mm	80 behind, 285 above	80 behind, 285 above
Maximum and minimum height of lower link hitch points	mm	150 above, 220 below	140 above, 380 below
Height of lower link hitch points when locked in transport position	mm	150 above	150 above

(*) The standard test frame cannot be fitted because of the special construction of the implement linkage (Cat 1N - Prop. ISO tab. 730/II)

Lifting forces

Lifting heights in relation to a horizontal line through the lower link pivoting point, cm	- 27	- 25	- 20	- 15	- 11	- 10	- 5	0	+ 5	+ 10	+ 15	+ 20	+ 25	+ 26
	Lifting force at the hitch points N	—	—	—	—	14890	14890	14890	14380	14380	14380	14670	14670	14600
Values for the pressure at maximum hydraulic horsepower (78 bar), calculated from measurement made at maximum pressure (108 bar)	9500	9580	9580	9970	—	10100	10360	10620	10880	10880	10880	10880	10800	—

Maximum force exerted throughout whole range 9500 N
Force at which front of tractor is calculated to lift with maximum allowable front ballast 16275 N

The standard test frame cannot be fitted because of the special construction of the implement linkage (Cat. 1N - Prop. ISO Tab. 730/II)

Bologna, July 1979

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