ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

REPORT ON TEST IN ACCORDANCE WITH OECD STANDARD CODE FOR THE OFFICIAL TESTING OF AGRICULTURAL AND FORESTRY TRACTOR PERFORMANCE (CODE 2)





GOLDONI IDEA 40 DT
type denomination **TYA1**

JOHN DEERE 1046
type denomination **FH1046**

12 forward and 4 reverse speeds
30 km/h
four-wheel drive agricultural tractor

Manufactured by: GOLDONI S.p.A.
Via Canale, 3
41012 Migliarina di Carpi MO
Italy

OECD approval No.: **2/1880**
Date of approval: 28 January 2000
Period of test: October - November 1999

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Table of contents

1. SPECIFICATION OF TRACTOR 1

2. TEST CONDITIONS 14

3. TEST RESULTS 17

3.1 Main power take-off performance 17

3.2 Hydraulic power and lifting force 21

3.3 Drawbar performance 22

4. OPTIONAL TEST RESULTS 23

5. REPAIRS 23

6. REMARKS 23

The Goldoni Idea 40 DT TYA1 (4WD) and John Deere 1046 FH1046 (4WD) tractors are technically identical in all main respects except with regard to model designation and colour.

All tests were carried out on the Goldoni Idea 40 DT TYA1

All stated dimensions and tests refer to tyre size 7.00 - 12 at front and 12.4 R20 at rear, as well as to track widths 980 mm at front and 960 mm at rear.

- Tractor manufacturer's name and address:	GOLDONI S.p.A.; Via Canale, 3 41012 Migliarina di Carpi MO, Italy;
- Location of tractor assembly:	Migliarina di Carpi MO, Italy;
- Submitted for test by:	the manufacturer;
- Selected by:	the manufacturer with the agreement of ISMA;
- Place of running in:	Treviglio BG, Italy;
- Duration of running in:	50 hours;
- Location of test:	ISMA, Via Milano 43, Treviglio BG, Italy.

1. SPECIFICATION OF TRACTOR

1.1 Identification

- Make:	GOLDONI respectively JOHN DEERE;
- Model:	IDEA 40 DT respectively 1046 with 12 forward and 4 reverse speeds 30km/h version;
- Type denomination:	TYA1 respectively FH1046;
- Type:	four-wheel drive, unit construction;
- Number of driving wheels:	4;
- Serial number:	487984;
- First serial number:	487000

1.2 Engine

- Make:	LOMBARDINI;
- Model:	LDW 1503;
- Type:	water cooled 4-stroke diesel, indirect injection naturally aspirated;
- Serial number:	4210662.

1.2.1 *Cylinders*

- Number and disposition:	3 vertical in line;
- Bore x stroke:	88 x 85 mm;
- Capacity:	1551 cm^3;
- Compression ratio:	22:1;
- Arrangement of valves:	overhead;
- Cylinder liners:	wet liners.

1.2.2 *Supercharging* none.

1.2.3 *Fuel system*

- Fuel feed system:	AC corone fuel feed pump;
- Make, model and type of fuel filter:	STANADYNE final fuel filter (FFF);
- Total capacity of fuel tanks:	20 dm^3;
- Make, model and type of injection pump:	LOMBARDINI 6590-249, immersed, one per cylinder in line;
- Serial number:	PC1Q6Pa 2061;
- Manufacturer's production setting of injection pump:	
. Flow rate:	37 ± 2 mm^3/stroke at rated speed and full load corresponding 10.1 dm^3/h;
. Timing:	12° before TDC;
- Make, model and type of injectors:	STANADYNE SDNO DS 293 L 5010 003;
- Injection pressure:	25 ± 0.8 MPa.

1.2.4 *Governor*

- Make:	LOMBARDINI;
- Model:	none;
- Type:	centrifugal automatic;
- Governed range of engine speed:	from 500 to 3269 rev/min;
- Rated engine speed:	3000 rev/min.

1.2.5 *Air cleaner*

- Pre-cleaner:	none
- Main filter	
. Make:	VIRGIS;
. Model:	CH 11998 26245;
. Type:	dry paper element filter with replaceable cartridge;
. Location of air intake :	front of engine, above bonnet;
- Maintenance indicator	with the warning lamp on the dashboard.

1.2.6 *Lubrication system*

- Type of feed pump:	forced feed from gear pump;
- Type of filter:	FIAMM FT 5144 VM;
- Number of filters:	1.

1.2.7 *Cooling system*

- Type of coolant:	water cooling with impeller pump;
- Specification of fan:	propeller fan driven by engine shaft;
- Number of fan blades:	6;
- Fan diameter:	350 mm;
- Coolant capacity:	6.5 dm^3;
- Type of temperature control:	thermostat;
- Superpressure system:	98 kPa.

1.2.8 *Starting system*

- Make:	BOSCH;
- Model:	DV 12V 0 001 109 031;
- Type:	electromagnetic engagement;
- Starter motor power rating:	2.2 kW;
- Cold starting aid:	none;
- Safety device:	electrical lockout on clutch;

1.2.9 *Electrical equipment*

- Voltage:	12 V;
- Generator	
. Make:	ISKRA;
. Model:	AER 1528 14 V ;
. Type:	alternator;
. Power:	45 A;
- Battery:	1 lead acid;
. capacity:	55 Ah at 20 hours rating.

1.2.10 *Exhaust system*

- Make:	GOLDONI;
- Model:	0034991;
- Type:	one reflection absorption chamber;
- Location:	on the left hand side of engine, horizontal position under side bonnet;
- Height of outlet above ground:	360 mm.

1.3 Transmission

1.3.1 *Clutch (utilized only for travelling of tractor)*

- Make:	PITTERI VIOLINI;
- Model:	18.974.000;
- Type:	double disk dry clutch;
- Number of plates:	1;
- Plates diameter:	184 mm;
- Control system:	mechanical operated by pedal.

1.3.2 *Gear box*

- Make: GOLDONI;
- Model: IDEA;
- Type: mechanical synchromesh speed change gear; 4 speeds with 3 ranges of speed (S/N/F) and 1 reverse group

	Forward	Reverse
Number of gears	4	4
Number of ranges	3	1
Number of reduction gears	-	-
Total of arrangements	12	4

1.3.3 *Rear axle and final drives*

- Make: GOLDONI;
- Model: IDEA;
- Type: bevel gear differential and epicyclic final drive.
- Differential lock
  - Make: GOLDONI;
  - Model: IDEA;
  - Type: mechanical;
  - Control system: engaged or disengaged by foot pedal.

1.3.4 *Front axle and final drives*

- Make: GOLDONI;
- Model: IDEA;
- Type: system with central shaft bevel gear drive, differential and epicyclic final drives.

- Differential lock none;

1.3.5 *Total ratios and travelling speeds*

Gear	Group	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed at rated engine speed of 3000 rev/min (*) km/h
FORWARD			
1	Slow	736.87	0.75
2	Slow	489.49	1.13
3	Slow	341.07	1.62
4	Slow	242.11	2.29
1	Normal	202.84	2.73
2	Normal	134.74	4.11
3	Normal	93.88	5.90
4	Normal	66.65	8.31
1	Fast	57.88	9.57
2	Fast	38.45	14.40
3	Fast	26.79	20.67
4	Fast	19.02	29.12
REVERSE			
1	Reverse	154.21	3.59
2	Reverse	102.44	5.41
3	Reverse	71.38	7.76
4	Reverse	50.67	10.93

(*) *Calculated with a tyre dynamic radius index of 490 mm. (ISO 4251-1:1992)*

- Number of revolutions of front wheels for one revolution of rear wheels: 1.60.

1.4 Power take-off

1.4.1 *Main power take-off*

- Type: independent, at rear of tractor;
- Method of engagement: engaged or disengaged by hand lever, driven by single dry clutch independent of travel clutch;
- Number of shafts: 1;
- Method of changing of power take-off shaft ends: not changeable;
- Method of changing speeds: by external hand lever;

1.4.1.1 Power take-off proportional to engine speed (continued)

Power take-off at 540 (rev/min)

- Location: at rear of tractor;
- Diameter of power take-off shaft ends: 35 mm;
- Number of splines: 6, in conformity with ISO 500:1991, type 1;
- Height above ground: 555 mm;
- Distance from the median plane of the tractor: 0 mm;
- Distance behind rear axle: 260 mm;
- PTO speed at rated engine speed: 620 rev/min;
- Engine speed at standard power take-off speed: 2608 rev/min;
- Ratio of rotation speeds (engine speed/p.t.o. speed): 4.83;
- Power restriction: none;
- Maximum torque transmissible: none;
- Direction of rotation (viewed from behind tractor): clockwise.

Power take-off at 1000 (rev/min)

- Location: at rear of tractor;
- Diameter of power take-off shaft ends: 35 mm;
- Number of splines: 6, in conformity with ISO 500:1991, type 1;
- Height above ground: 555 mm;
- Distance from the median plane of the tractor: 0 mm;
- Distance behind rear axle: 260 mm;
- PTO speed at rated engine speed: 1145 rev/min;
- Engine speed at standard power take-off speed: 2620 rev/min;
- Ratio of rotation speeds (engine speed/p.t.o. speed): 2.62;
- Power restriction: none;
- Maximum torque transmissible: none;
- Direction of rotation (viewed from behind tractor): clockwise.

1.4.1.2 *Power take-off proportional to ground speed*
(optional, not fitted on tested tractor)

- Type:	independent, not adjustable to 540-1000 rev/min location at rear of tractor, in tractor's median plane, engaged or disengaged by hand lever at the left hand side of the seat;
- Number and type of shafts:	1, 28.5 mm dia, 6 splines not in conformity with ISO 500:1991;
- Method of changing power take-off shaft ends:	none;
- Travelling distance for one revolution of power take-off shaft:	0.14 m;
- Number of power take-off shaft revolutions for one revolution of rear driving wheels:	21.21;
- Direction of rotation with forward gear engaged (viewed from behind tractor):	anticlockwise.

1.5 Hydraulic power lift

1.5.1 *Rear power lift*

- Make:	GOLDONI;
- Model:	IDEA;
- Type:	load sensing;
- Type of hydraulic system:	open centre system;
- Number and type of cylinders:	1 internal single-acting;
- Type of lock for transport:	hydraulic;
- Relief valves pressure setting:	17.0 ± 0.5 Mpa;
- Opening pressure of anti-shock valve:	21.0 ± 0.5 MPa;
- Lift pump	
. Make:	HIDROIRMA;
. Type:	hydraulic rotary pump, driven by engine shaft;
- Transmission between pump and engine:	mechanical;
- Number and type of filters:	1, metal cleaner cartridge;
- Oil capacity:	24 dm^3;
- Site of oil reservoir:	gear box;
- Number, type and location of tapping points:	1, double acting, at rear of tractor;
- Maximum volume of oil available to external cylinders:	0.35 dm^3

1.5.2 *Front power lift* (optional, not fitted on tested tractor)

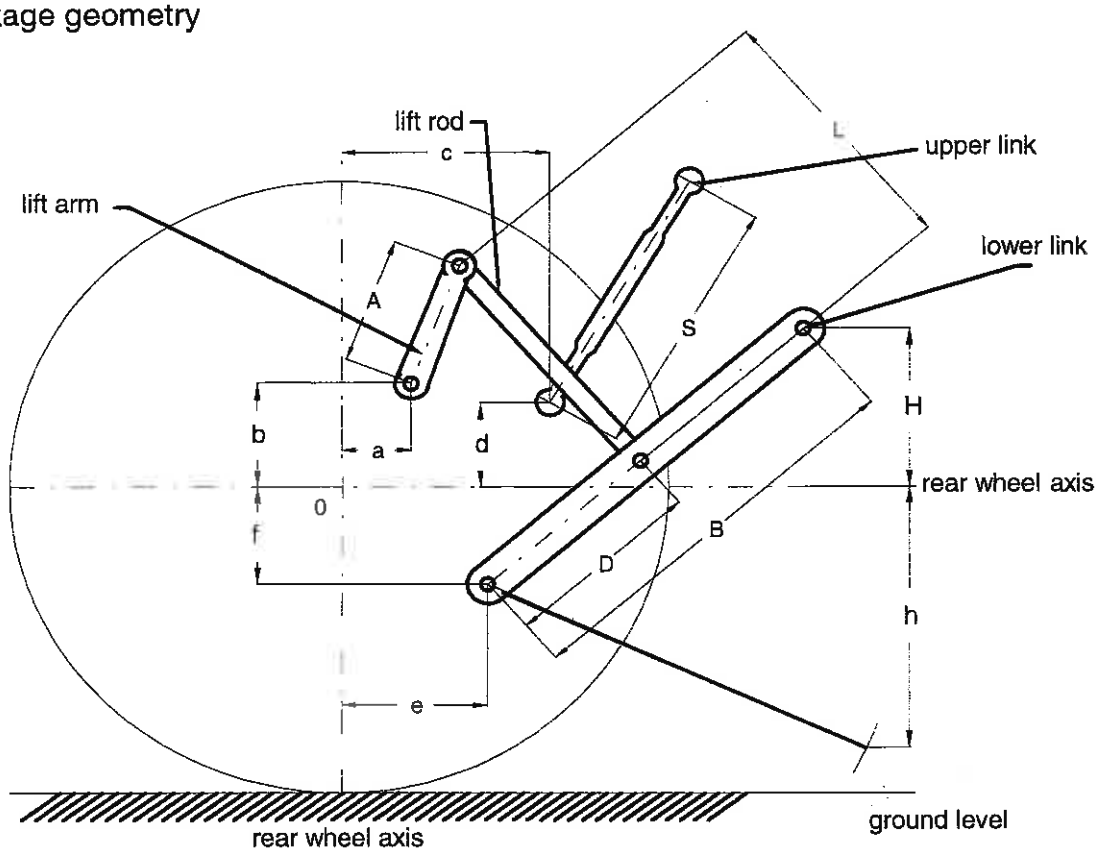
- Make: GOLDONI;
- Model: IDEA;
- Type of hydraulic system: open centre system;
- Type and number of cilinders: 2 at single acting;
- Type of lock for transport: none;
- Relief valve pressure setting: 17.0 ± 0.5 Mpa;
- Opening pressure of anti-shock valve: 21.0 Mpa;
- Lift pump type: hydraulic rotary pump, driven by engine shaft;
- Trasmission between pump and engine: mechanical;
- Number and type of filters: 1, metal cleaner cartridge;
- Oil capacity: 24 dm^3;
- Site of oil reservoir: gear box;
- Number, type and location of tapping points: none;
- Maximum volume of oil available to external cylinders: none;
  oil available to external cylinders: 0.14 dm^3

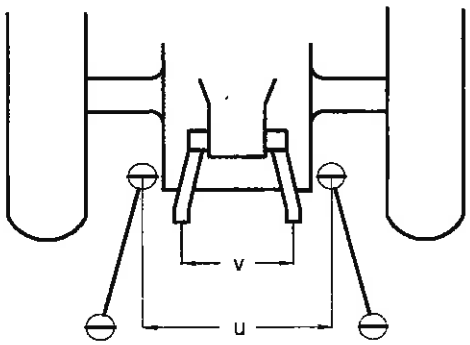
1.6 Three-point linkage

1.6.1 *Rear three point linkage*

- Category: 1, in conformity with category 1 of ISO 730-1:1994 + technical corrigendum;
- Category adapter: none.

Rear linkage geometry





Dimensions of rear linkage geometry when connected to the standard frame

			Dimension or range mm	Settings used in test mm
Length of lift arms		(A)	230	230
Length of lower links		(B)	640	640
Distance of lift arm pivot point from rear wheel axis (behind)				
- horizontally		(a)	53	53
- vertically		(b)	249	249
Horizontal distance between the 2 lower link points		(u)	268	268
Horizontal distance between the 2 lift arm end points		(v)	370	370
Length of upper link		(S)	from 445 to 570	564
Distance of upper link pivot point from rear wheel axis				
- horizontally		(c)	215	215
- vertically		(d)	265 - 300	300
Distance of lower link pivot point from rear wheel axis				
- horizontally		(e)	136	136
- vertically		(f)	105	105
Distance of lower link pivot points to lift rod pivot points on lower links		(D)	294	294
Length of lift rods		(L)	from 390 to 460	415
Height of lower hitch points relative to the rear wheel axis:				
Length of lift rods	(L)	390	460	415
Linkage distance of lift rods	(D)	294	294	294
Lowest position	(h)	270	461	340
Highest position	(H)	272	133	222
Height above ground of lower hitch points when locked in transport position (*)				712

(*) *Assuming the dynamic radius index = 490 mm (ISO 4251-1:1992)*

1.7 Swinging drawbar (not available)

1.8 Trailer hitch

- Type:	DGM-GA 2968 cat. B;
- Hole diameter:	28.5 mm;
- Height above ground	
. Min.:	310 mm;
. Max.:	730 mm;
- Distance of hitch point from rear wheel axis	
. Horizontally:	340 mm;
- Distance of hitch point from power take-off shaft end	
. Vertically:	209 mm below, 140 mm above;
. Horizontally:	81 mm;
- Maximum vertical permissible load:	5 kN.

1.9 Holed drawbar (optional, not fitted on tested tractor)

- Number of holes:	7;
- Distance between holes:	50 mm;
- Hole diameter:	20 mm;
- Thickness x width of the drawbar:	25 x 60 mm;
- Height above ground,	
. Min.:	35 mm;
. Max.:	760 mm;
- Horizontal distance behind power take-off shaft end:	400 mm;
- Diameter of the pinhole:	19.5 mm.

1.10 Steering

- Specification:	hydrostatic steering with HIDROIRMA hydraulic gear pump;
- Make:	OGNIBENE;
- Model:	MSTY OM 3261;
- Type:	hydrostatic;
- Working pressure:	7 MPa;

1.11 Brakes

1.11.1 *Service brake*

- Make: GOLDONI;
- Model: IDEA;
- Type: oil bath disc, total 8 discs, 4 at rear per wheel, all mounted before the final drive;
  . Front disc diameter: none;
  . Rear disc diameter: 100 mm;
  . Material: HDT 303;
- Method of operation: hydraulically actuated with 2 pedals;
- Trailer braking take-off: none.

1.11.2 *Parking brake*

- Type: mechanical, in common with service brake;
- Method of operation: mechanical by hand lever.

1.11.3 *Steering brake*

- Method of operation: divided pedal of service brake, for normal use locked together.

1.12 Wheels

- Number
  . Front: 2, steering and driving;
  . Rear: 2, driving;
- Wheelbase: 1600 mm.

-Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	908	1166	changing the position of the rims with respect to the disc
Rear	820	1026	

1.13 Protective strutture

- Make: GOLDONI;
- Model: k35;
- Type: roll-bar, tiltable;
- Manufacturer's name and address: GOLDONI S.p.A.,via canale 3, Migliarina di Carpi MO, Italy.
- OECD approval number: 6/S/0 102/1;
- Date of approval of the extension: 17 January 2000;
- Modification certificate: none.

1.14 Seat

1.14.1 *Driver's seat*

- Make: GOLDONI;
- Model: Y01 EEC om e2 034;
- Type: upholstered seat with back rest;
- Seat and steering wheel reversible: no;
- Type of suspension: mechanical;
- Type of damping: shock absorber;
- Range of adjustment: 76 mm longitudinally and 76 mm vertically;
- Safety belt: no.

1.14.2 *Optional driver's seats* none;

1.14.3 *Passenger's seat* none.

1.15 Lighting

Lighting system in accordance with EEC 78/933

	Height above ground of centre mm	Size mm	Distance from out side edge of lights to median plane of tractor mm
Headlights	880	150 x 85	170
Front parking lights	760	70 x 20	440
Front direction indicator	780	70 x 50	440
Rear parking lights	1130	70 x 60	375
Rear direction indicator	1130	90 x 60	465
Brake lights	1130	70 x 60	375
Reflectors	920	90 x 53	400

2. TEST CONDITIONS

2.1 Overall dimensions

	Length	Width		Height at top of	
		minimum	maximum	protective structure	exhaust pipe
	mm	mm	mm	mm	mm
Unballasted	2750	1180	1340	1910	360

2.2 Ground clearance: 285 mm below front axle (unballasted tractor).

2.3 Tractor mass (with full fuel tanks, and roll bar)

	Without driver kg	With driver kg
Front	705	730
Rear	470	520
Total	1175	1250

2.5 Tyres and track width specifications

	Front	Rear
Tyres		
make	PIRELLI	PIRELLI
model	IM 110	TM 200
dimensions	7.00 - 12	12.4 R20
ply rating	6 PR	-
load index/speed index	-	116 A8
type	diagonal	radial
maximum load (tyre manufacturer's)	440 daN	1285 daN
inflation pressure (tyre manufact.'s)	250 kPa	160 kPa
dynamic radius index	305 mm	490 mm
Chosen track width	980 mm	960 mm
Technically permissible axle load	750 daN	1650 daN
Other tyres available	5.00-15	11.2-R20
	6.5/80-12	260/80 R20
	11.0/65-12	360/70 R20
	6.5/80-15	8.3-R24
	23x10.50-12	36x13.50-15

2.6 Fuel

- Type: AGIP DIESEL DIN 51061;
  (in accordance with the national standard)
- Density at 15 °C: 0.836 g/cm^3.

2.7 Oils and lubricants

2.7.1 *Capacity and change interval*

	Capacity dm^3	Oil change h	Filter change h
Engine	3.5	200	200
Gear box with rear axle and final drives, hydraulic system, steering	22	800	200
Front PTO transmission	0.7	800	-
Front axle/final drives	2.8	-	-
Brakes	0.7	2 years	-

2.7.2 *Specifications*

	Recommended	Using during test
Engine oil		
Type	AGIP SUPER TRACTOR UNIVERSAL 15W/40	AGIP SUPER TRACTOR UNIVERSAL 15W/40
Viscosity	13.6 cSt	13.6 cSt
Classification	API GL4	API GL4
Transmission oil used in Gear box, front PTO transmission, front / rear axle and final drives		
Type	AGIP SUPER TRACTOR UNIVERSAL 15W/40	AGIP SUPER TRACTOR UNIVERSAL 15W/40
Viscosity	13.6 cSt	13.6 cSt
Classification	API GL4	API GL4
Steering oil		
Type	AGIP SUPER TRACTOR UNIVERSAL 15W/40	AGIP SUPER TRACTOR UNIVERSAL 15W/40
Viscosity	13.6 cSt	13.6 cSt
Classification	API GL4	API GL4
Braking oil		
Type	AGIP BRAKE FLUID DOT 4	AGIP BRAKE FLUID DOT 4
Viscosity	2.2 cSt	2.2 cSt
Classification	SAE J 1703; ISO 4925 CUNA NC 956 DOT 4	SAE J 1703; ISO 4925 CUNA NC 956 DOT 4

2.7.3 *Grease*

- Type: ESSO GP GREASE;
- Number of lubrication points: 8.

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

- Date and location of test: 12 October 1999, ISMA, Treviglio BG, Italy;
- Type of dynamometer: eddy-current, ZÖLLNER B500.

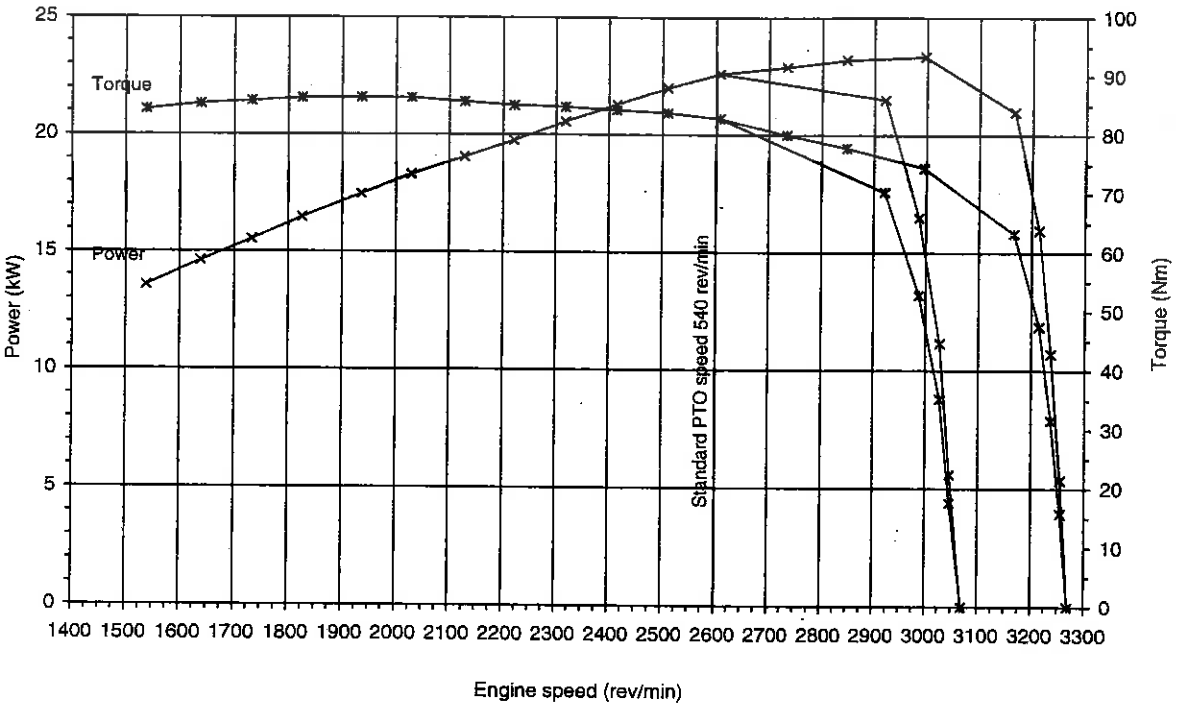
Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - TWO-HOUR TEST						
23.35	2997	620	10.01	8.37	358	2.33
3.1.2 POWER AT RATED ENGINE SPEED						
23.35	2997	620	10.01	8.37	358	2.33
3.1.3 STANDARD POWER TAKE-OFF SPEED (540 ± 10 rev/min)						
22.59	2608	540	10.02	8.38	371	2.25
3.1.4 PART LOADS						
3.1.4.1 The torque corresponding to maximum power at rated engine speed						
23.35	2997	620	10.01	8.37	358	2.33
3.1.4.2 85% of torque obtained in 3.1.4.1						
20.98	3166	655	9.16	7.66	365	2.29
3.1.4.3 75% of torque defined in 3.1.4.2						
15.97	3215	666	7.13	5.96	373	2.24
3.1.4.4 50% of torque defined in 3.1.4.2						
10.71	3237	670	6.24	5.22	488	1.71
3.1.4.5 25% of torque defined in 3.1.4.2						
5.38	3255	674	4.67	3.90	725	1.15
3.1.4.6 unloaded						
0	3269	677	2.76	2.31	-	-

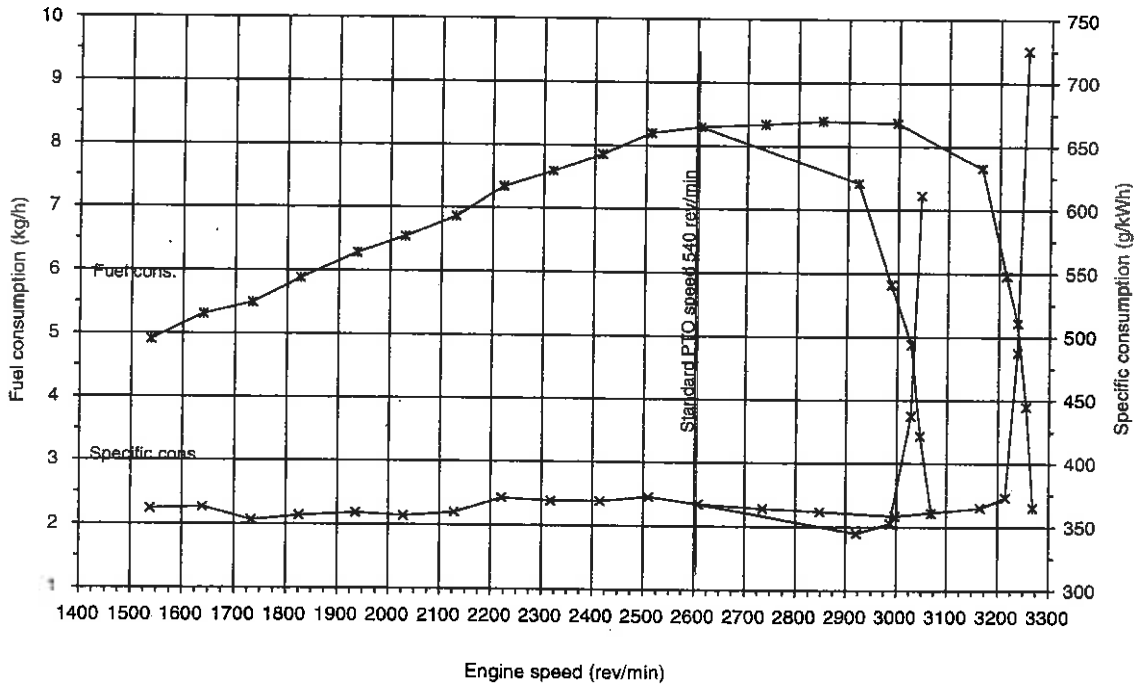
Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (540 ± 10 rev/min)						
3.1.5.1 The torque corresponding to maximum power available						
22.59	2608	540	10.02	8.38	371	2.25
3.1.5.2 85% of torque obtained in 3.1.5.1						
21.51	2921	605	8.88	7.42	345	2.42
3.1.5.3 75% of torque defined in 3.1.5.2						
16.50	2987	618	6.96	5.82	353	2.37
3.1.5.4 50% of torque defined in 3.1.5.2						
11.15	3028	627	5.84	4.88	438	1.91
3.1.5.5 25% of torque defined in 3.1.5.2						
5.61	3047	631	4.10	3.43	611	1.37
3.1.5.6 unloaded						
0	3070	636	3.01	2.52	-	-

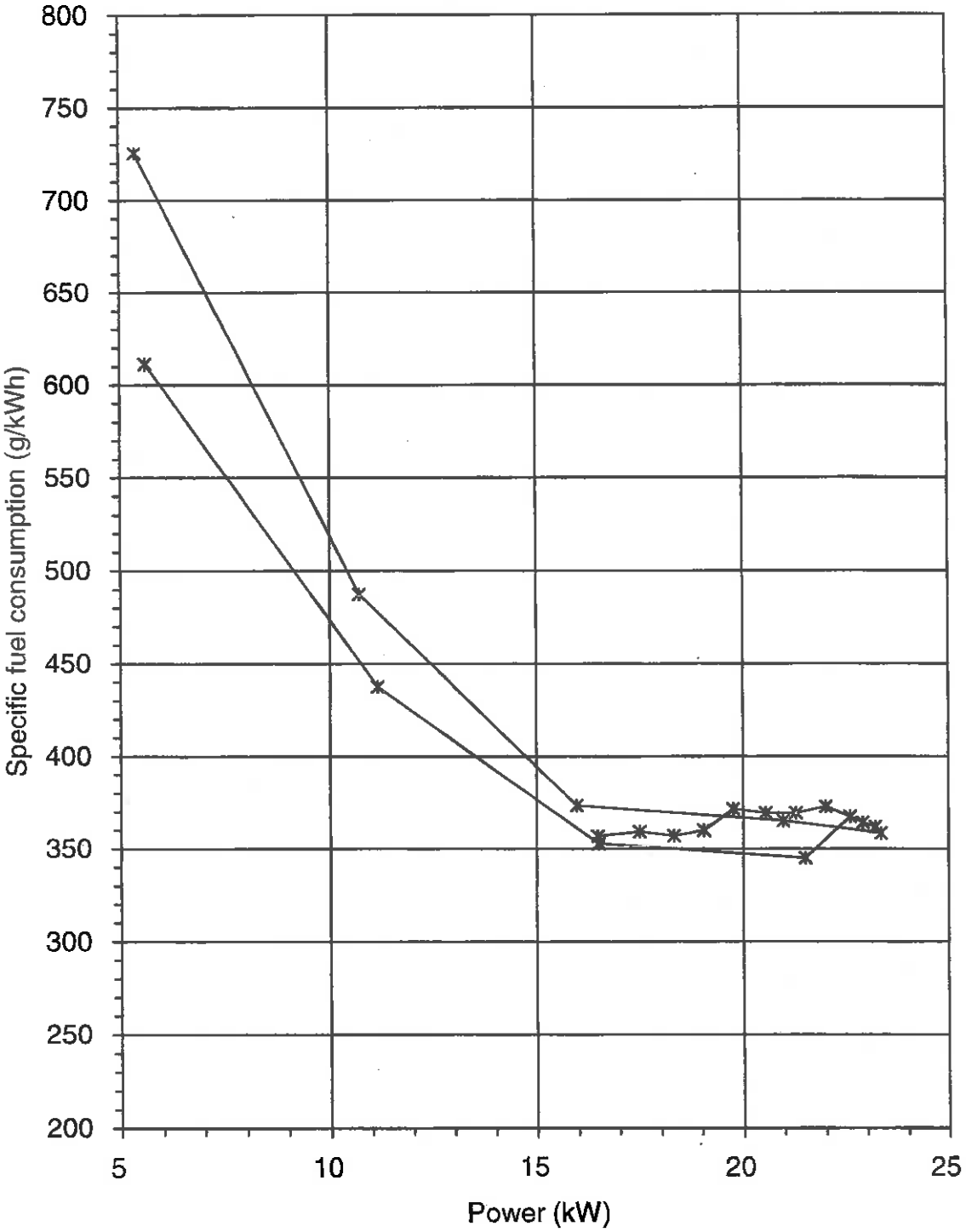
- No load maximum engine speed: 3269 rev/min;
- Equivalent flywheel torque at rated engine speed: 74.43 Nm;
- Equivalent flywheel torque at 2-hour test: 74.43 Nm;
- Maximum equivalent flywheel torque: 86.29 Nm at 1936 rev/min of the engine.

- Mean atmospheric conditions
  . Temperature: 23°C
  . Pressure: 99.0 kPa
  . Relative humidity: 62 %

- Maximum temperatures
  . Coolant: 84°C
  . Engine oil: 110°C
  . Fuel: 26°C
  . Engine air intake: 34°C


Torque
Power
Power (kW)
Torque (Nm)
Standard PTO speed 540 rev/min
Engine speed (rev/min)


Fuel cons.
Specific cons.
Fuel consumption (kg/h)
Specific consumption (g/kWh)
Standard PTO speed 540 rev/min
Engine speed (rev/min)


800
750
700
650
600
550
500
450
400
350
300
250
200
Specific fuel consumption (g/kWh)
5
10
15
20
25
Power (kW)

3.2 Hydraulic power and lifting force

- Date of tests: 24 November 1999.

3.2.1 *Hydraulic power test*

- Sustained pressure with relief valve open: 17.0 MPa;
- Pump delivery rate at minimum pressure: 18.5 l/min;

	Flow rate l/min	Pressure MPa	Power kW
At 90% of the actual relief valve setting	17.3	15.3	4.41
Maximum	17.2	16.0	4.59

- Tapping point used for test: at rear of tractor;
- Temperature of hydraulic fluid if different from 65 ± 5°C: - ;
- Opening pressure of the unloading valve: - (*);
- Closing pressure of the unloading valve: - (*).

(*) Opening and closing pressures of the unloading valve could not be measured

3.2.2 *Rear power lift test*

Linkage settings for test - see paragraph 1.6

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	150	150
Vertical movement			
without lifting forces	mm	562	647
with lifting forces	mm	540	625
Maximum corrected force exerted through full range	kN	6.40	5.00
Corresponding pressure of hydraulic fluid	MPa	15.3	15.3
Moment about rear-wheel axis	kNm	4.97	6.93
Maximum tilt angle of mast from vertical	degrees	-	6

Lifting heights relative to the horizontal plane including the lower link pivot points.											
mm	-266	-245	-200	-100	0	+100	+200	+295	+300	+359	
Lifting forces at hitch points, corrected to 15.3 MPa											
kN	-	6.40	6.41	6.54	6.76	6.91	6.87	7.06	-	-	
Lifting forces at test frame, corrected to 15.3 MPa											
kN	5.91	-	5.72	5.84	5.79	5.74	5.48	-	5.35	5.00	

3.3 Drawbar performance

- Date of tests: 9 November 1999;
- Type of track: concrete.

	Height of drawbar above ground mm	Tyre inflation pressure	
		Front kPa	Rear kPa
Unballasted	320	250	160

Gear and range	Power kW	Drawbar pull kN	Speed km/h	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 kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
1S	1.90	9.25	0.74	3267	15.0	1358	0.62	19	83	109	8	66	100.1
2S	3.14	10.47	1.08	3262	14.9	1013	0.83	19	83	109	8	66	100.1
3S	4.46	10.42	1.54	3254	15.1	908	0.92	20	83	110	8	66	100.1
4S	6.37	11.02	2.08	3244	15.0	750	1.11	20	83	109	8	66	100.1
1N	7.83	11.37	2.48	3241	14.9	646	1.29	20	85	109	8	64	100.0
2N	11.62	11.25	3.72	3225	14.7	494	1.69	21	85	108	9	64	100.1
3N	16.55	11.31	5.27	3183	15.0	431	1.94	21	84	109	9	64	100.1
4N	19.73	9.83	7.23	2996	12.2	427	1.96	21	85	108	9	65	100.0
1F	20.23	8.34	8.74	2994	8.3	417	2.01	22	85	109	9	64	100.1
2F	20.83	5.36	13.98	2998	2.5	404	2.07	22	84	109	9	64	100.2
3F	20.67	3.65	20.40	2996	1.0	406	2.06	22	85	109	10	65	100.2

Gear and range	Power kW	Drawbar pull kN	Speed km/h	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 kPa
3.3.2 FUEL CONSUMPTION													
3.3.2.1 in selected gear, at maximum power at rated speed													
2F	20.83	5.36	13.98	2998	2.5	404	2.07	22	84	109	9	64	100.2
3.3.2.1.1 75% of pull at maximum power at rated speed													
2F	16.91	4.01	15.18	3185	0.9	414	2.02	18	82	103	11	64	100.1
3.3.2.1.2 50% of pull at maximum power at rated speed													
2F	11.65	2.71	15.50	3230	0.3	472	1.77	20	82	103	11	65	100.1
3.3.2.1.3.next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1													
3F	16.96	4.03	15.15	2208	0.6	298	2.80	20	83	103	12	63	100.1
3.3.2.1.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2													
3F	11.64	2.70	15.54	2268	0.3	361	2.32	21	83	102	11	63	100.1
3.3.2.2 in selected gear nearest to 7.5 km/h at rated speed													
4N	19.73	9.83	7.23	2996	12.2	427	1.96	21	85	108	9	65	100.0
3.3.2.2.1 75% of pull at maximum power at rated speed													
4N	17.16	7.35	8.40	3195	5.0	389	2.15	21	82	102	12	63	100.1
3.3.2.2.2 50% of pull at maximum power at rated speed													
4N	12.03	4.92	8.80	3239	1.5	422	1.98	20	82	103	12	63	100.1
3.3.2.2.3 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1													
1F	17.25	7.40	8.39	2759	4.3	290	2.88	20	83	102	12	63	100.2
3.3.2.2.4 next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2													
1F	12.00	4.89	8.83	2815	1.3	335	2.50	20	82	101	12	63	100.2

4. Optional test results: none.

5. Repairs: none.

6. Remarks: none.

TEST ENGINEER
(Dr. Carlo BISAGLIA)

DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA
(Ing. Giovanni SANTORO)