ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Report on test in accordance with the OECD Standard Code II (Restricted Code) for the Official Testing of Agricultural and Forestry Tractor





GOLDONI STAR 65
Type denomination **TZB 36**
OECD No. **1666/2** Restricted Code

JOHN DEERE 1846 F
Type denomination **FH 1846 BF**
OECD No. **1666/4** Restricted Code

GOLDONI STAR 65
Type denomination **TZA 36**
OECD No. **1666/1** Restricted Code

JOHN DEERE 1846 F
Type denomination **FH 1846 AF**
OECD No. **1666/3** Restricted Code

40 km/h four-wheel drive agricultural tractors

Manufactured by:	GOLDONI S.p.A. Via Canale, 3 Migliarina di Carpi MO Italy
Date of OECD approval:	21 May 1997
Period of test:	July - September 1996

ISMA Via Milano 43 24047 Treviglio BG Italy
Tel: (0363) 49603 Fax: (0363) 302007

The GOLDONI STAR 65 models whose test results are presented in this report are technically identical to the JOHN DEERE 1846 F models in all main respects except with regard to model designation and colour.

The GOLDONI STAR 65 TZA 36 and the JOHN DEERE 1846 F FH 1846 AF

differ, respectively, from the

GOLDONI STAR 65 TZB 36 and the JOHN DEERE 1846 F FH 1846 BF

with regard to the rear wheel axis position relative to the rear differential axis, as shown in the following table:

Make	Model	Type denomination	Distance of rear wheel axis from differential axis	
			vertically mm	horizontally mm
GOLDONI	STAR 65	*TZA 36*	*21 lower*	*153 behind*
		TZB 36	39 higher	150 behind
JOHN DEERE	1846 F	*FH 1846 AF*	21 lower	*153 behind*
		FH 1846 BF	39 higher	150 behind

All the above differences have no influence on the test results.

All tests were carried out on the GOLDONI STAR 65 TZB 36.

Table of contents

SPECIFICATION OF TRACTOR 7

TEST CONDITIONS 20

TEST RESULTS

1. Main power take-off performance 23
2. Hydraulic power and lifting force 27
3. Drawbar performance 28
4. Repairs and Remarks 29

All stated dimensions and tests refer to tyre size 10.0/75-15.3 at front and 380/70R24 at rear, as well as to track widths 1250 mm at front and 1180 mm at rear.

Tractor manufacturer

- Name:	GOLDONI S.p.A.;
- Address:	Via Canale 3, 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:	Migliarina di Carpi MO, Italy;
- Duration of running in:	50 hours,
- Location of test:	ISMA, Via Milano 43, Treviglio BG, Italy.

SPECIFICATION OF TRACTOR

TRACTOR

- Make:	GOLDONI respectively JOHN DEERE;
- Model:	STAR 65 respectively 1846 F, with 16 forward and 8 reverse / 8 forward and 8 reverse speeds 40 km/h version;
- Type denomination:	TZA 36 and TZB 36 respectively FH 1846 AF and FH 1846 BF;
- Type:	four-wheel drive, unit construction;
- Number of driving wheels:	4;
- Serial number:	457347;
- First serial number:	457000.

ENGINE

- Make:	JOHN DEERE;
- Model:	3029 DFG 22;
- Type:	water cooled 4-stroke diesel, direct injection, naturally aspirated;
- Serial number:	CD 3029 D 299784.

Cylinders

- Number and disposition:	3, vertical, in-line;
- Bore x stroke:	106.5 x 110 mm;
- Capacity:	2940 cm^3;
- Compression ratio:	17.8:1;
- Arrangement of valves:	overhead;
- Cylinder liners:	wet liners.

Fuel system

- Fuel feed system:	mechanical SOFABEX;
- Make, model and type of fuel filter:	STANADYNE final fuel filter (FFF);
- Capacity of fuel tank:	40 dm^3;
- Make, model and type of injection pump:	LUCAS 1120, RE 57288, rotative;
. serial number:	22529GOG;
- Manufacturer's production setting of injection pump:	
. flow rate:	56 ± 2 mm^3/stroke at rated speed and full load corresponding 12.21 dm^3/h;
. timing:	15° before TDC;
- Make, model and type of injectors:	STANADYNE, 28481 or 28480, multihole injection nozzles;
- Injection pressure:	22 ± 0.5 MPa.

Governor

- Make:	LUCAS;
- Type:	centrifugal variable speed governor;
- Governor range of engine speed:	from 850 to 2630 rev/min;
- Rated engine speed:	2400 rev/min.

Air cleaner

- Pre-cleaner	none.
- Main filter	
. make, model:	VIRGIS, FC 08 or GOLDONI, 26245, or SOFILTRA 5708;
. type:	dry paper element filter with replaceable cartridge;
. location:	front of engine;
. air intake location:	above bonnet;
- Maintenance indicator:	with the warning lamp on the dashboard.

Lubrication system

- Type of feed pump:	forced feed from gear pump;
- Type of filter:	paper full flow;
- Oil specifications:	see page 22.

Cooling system

- Type and detail:	water cooling with impeller pump;
- Specification of fan:	propeller fan driven by engine shaft;
- Number of fan blades:	8;
- Fan diameter:	360 mm;
- Type of temperature control:	thermostat.

Starting system

- Make:	ISKRA;
- Model:	12 V;
- Type:	electromagnetic engagement;
- Starter motor power rating:	3.1 kW;
- Safety device:	electrical lockout on clutch;
- Starting system for low temperatures:	none.

Electrical equipment

- Voltage:	12 V;
- Generator	
. make:	MAGNETON;
. model:	55 A;
. type:	alternator;
. power:	55 A;
- Battery:	1lead acid;
. capacity:	100 Ah at 20 hours rating.

Exhaust system

- Make:	GOLDONI;
- Model:	G 18105, DGM-SA 1378;
- Type:	reflection absorption chamber;
- Location:	on the left hand side of engine, horizontal position;
- Height of outlet above ground:	365 mm.

TRANSMISSION

Clutch (utilized only for travelling of tractor)

- Make:	LUK;
- Model:	11";
- Type:	double disk dry clutch;
- Number of plates:	1;
- Plates diameter:	250 mm;
- Control system:	mechanical, operated by pedal.

Gear box

- Gear box	
. make:	GOLDONI;
. model:	STAR;
. type:	mechanical synchronized speed change gear; hand lever selects two speed/range combinations;
. arrangement and number of gears:	4 speeds combined with 2 forward (Normal/Fast) and 1 reverse group and with 1 reduction gear (High/Low); total of 16 forward and 8 reverse, combination selected during the test or 4 speeds combined with 2 forward (Normal/Fast) and 1 reverse group; total of 8 forward and 8 reverse.
- Available options:	4 speeds combined with 2 forward (Super creep/Fast) and 1 reverse group and with 1 reduction gear (High/Low);
. number of gears:	16 forward and 8 reverse or 4 speeds combined with 2 forward (Normal/Fast) and 1 reverse group;
. number of gears:	8 forward and 8 reverse.

Rear axle and final drives

- Make:	GOLDONI;
- Model:	STAR;
- Type:	bevel gear differential and epicyclic final drive.

Rear differential lock

- Make:	GOLDONI;
- Model:	STAR;
- Type:	mechanical;
- Control system:	engaged or disengaged by foot pedal.

Front axle and final drives

- Make: GOLDONI;
- Model: STAR;
- Type: central shaft, bevel gear type, differential and final drive

Front differential lock: none.

Total ratios and speeds

16 forward and 8 reverse (combination selected during the test)

Gear	Group	Number of engine revolution for one revolution of the driving wheels		Nominal travelling speed at rated engine speed of 2400 rev/min (*) km/h	
		Low	High	Low	High
FORWARD					
1	Normal	400.19	316.86	1.27	1.60
2	Normal	243.09	192.47	2.08	2.63
3	Normal	140.83	111.51	3.60	4.54
4	Normal	97.34	77.07	5.21	6.57
1	Fast	70.12	55.52	7.23	9.13
2	Fast	42.60	33.73	11.89	15.02
3	Fast	24.68	19.54	20.53	25.93
4	Fast	17.06	13.51	29.70	37.50
REVERSE					
1	Reverse	167.52	132.64	3.02	3.82
2	Reverse	101.76	80.57	4.98	6.29
3	Reverse	58.95	46.68	8.60	10.85
4	Reverse	40.75	32.26	12.43	15.71

(*) Calculated with a tyre dynamic radius index of 560 mm (ISO 4251/1-1992).

Number of revolutions of front wheels for one revolution of rear wheels: 1.5.

Total ratios and speeds (continued)

8 forward and 8 reverse

Gear	Group	Number of engine revolution for one revolution of the driving wheels	Nominal travelling speed at rated engine speed of 2400 rev/min (*) km/h
FORWARD			
1	Normal	316.86	1.60
2	Normal	192.47	2.63
3	Normal	111.51	4.54
4	Normal	77.07	6.57
1	Fast	55.52	9.13
2	Fast	33.73	15.02
3	Fast	19.54	25.93
4	Fast	13.51	37.50
REVERSE			
1	Normal	401.25	1.26
2	Normal	243.73	2.08
3	Normal	141.20	3.59
4	Normal	97.60	5.19
1	Fast	70.31	7.21
2	Fast	42.71	11.86
3	Fast	24.74	20.48
4	Fast	17.10	29.63

(*) Calculated with a tyre dynamic radius index of 560 mm (ISO 4251/1-1992).

Number of revolutions of front wheels for one revolution of rear wheels: 1.5.

POWER TAKE-OFF

Main power take-off proportional to engine speed

- Type: independent, at rear of tractor, in tractor's median plane, engaged or disengaged by hand lever, driven by single dry clutch independent of travel clutch;
- Number of shafts: 1, 35 mm diameter, 6 splines, ISO 500-1991, type 1 ;
- Method of changing power take-off shaft ends: none;

Main power take-off proportional to engine speed (continued)

- Height above ground: 432 mm;
- Distance from the median plane of the tractor: 0 mm;
- Distance behind rear axle: 313 mm;
- Direction of rotation (viewed facing driving end): clockwise.

PTO type	PTO speed rev/min	Engine speed rev/min	Engine/PTO transmission ratio	Power restriction kW
540	540 600	2160 2400	4.00	51.5
750(*)	750 800	2250 2400	3.00	51.5
1000(*)	1000 1086	2210 2400	2.21	51.5

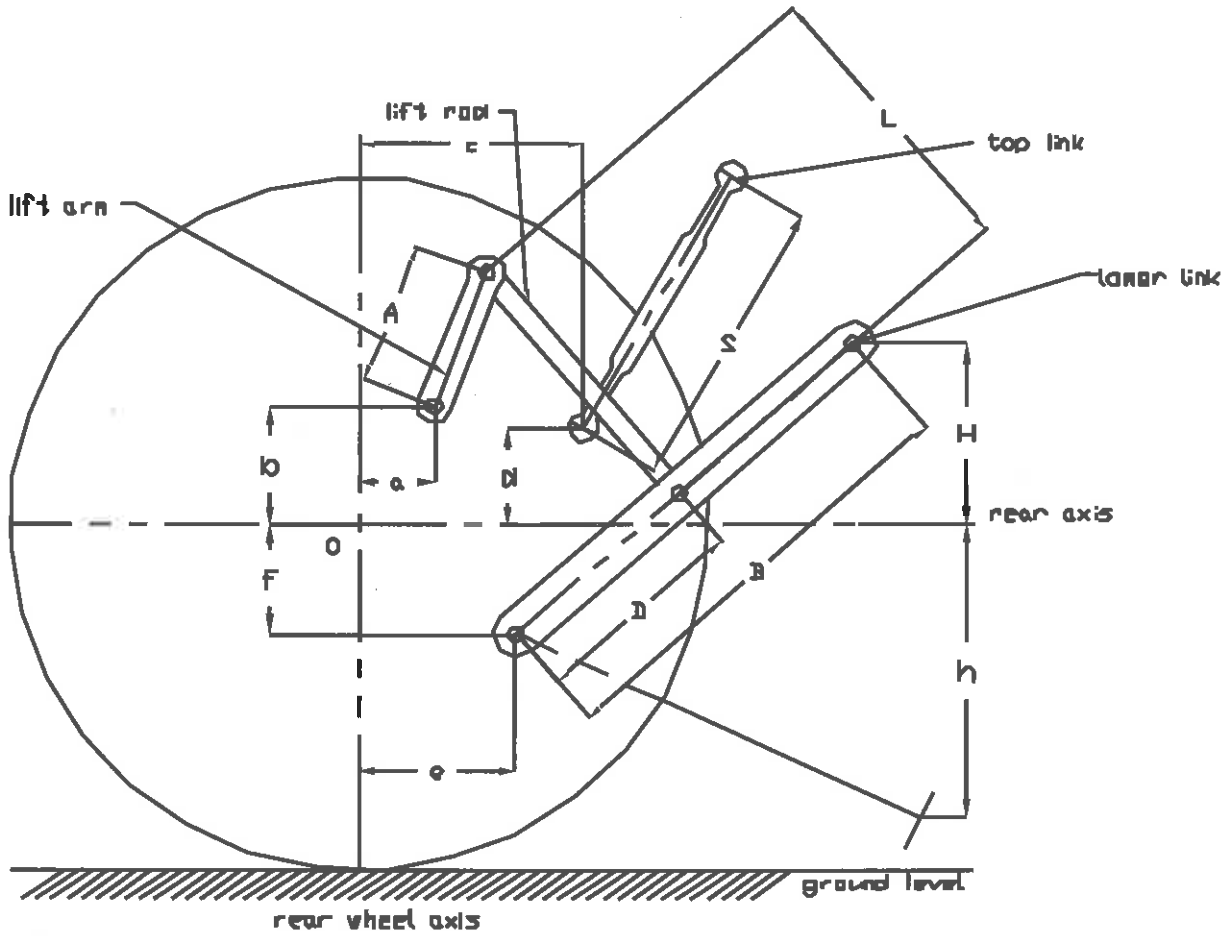
(*) optional

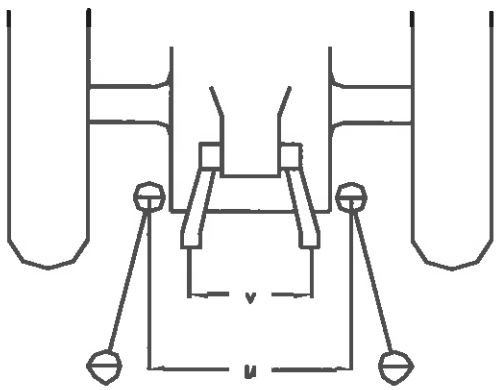
POWER LIFT

- Make: GOLDONI;
- Model: STAR;
- Type: load sensing;
- Type of hydraulic system: open centre system;
- Number and type of cylinders: 1 internal single-acting;
- Type of lock for transport: by lever;
- Relief valves pressure setting: 19.0 ± 0.5 MPa;
- Opening pressure of anti-shock valve: 21.0 + 0.5 MPa;
- Lift pump
  . make: BOSCH;
  . type: hydraulic rotary pumps, driven by engine shaft;
- Transmission between pump and engine: mechanical;
- Number and type of filters: 1, replaceable paper cartridge;
- Oil capacity: 32 dm^3;
- Site of oil reservoir: gear box
- Number type an location of tapping points: 1, double acting at rear of tractor;
- Maximum volume of oil available to external cylinders: 7 dm^3.
- Recommended oil: see page 22.

Rear three-point linkage

- Category : 1 (ISO 730/1-1990);
- Category adapter: 2 (ISO 730/1-1990).





REAR LINKAGE GEOMETRY

POWER LIFT (continued)

Dimensions of 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)	805	805
Distance of lift arm pivot point from rear wheel axis (behind)			
- horizontally	(a)	21	21
- vertically	(b)	228	228
Horizontal distance between the 2 lower link points	(u)	480	480
Horizontal distance between the 2 lift arm end points	(v)	325	325
Length of upper link	(S)	from 590 to 720	616
Distance of upper link pivot point from rear wheel axis			
- horizontally	(c)	203-195-187-175	187
- vertically	(d)	173-199-225-262	225
Distance of lower link pivot point from rear wheel axis			
- horizontally	(e)	5	5
- vertically	(f)	182	182
Distance of lower link pivot point to lift rod pivot points on lower links	(D)	360	360
Length of lift rods	(L)	from 385 to 455	415

Height of lower hitch points relative to the rear wheel axis:

Length of lift rods	(L)	385	455	430
Linkage distance of lift rods	(D)	360	360	360
Lowest position	(h)	280	469	360
Highest position	(H)	254	114	195

Height above ground of lower hitch points in transport position (*)	755

(*) *Assuming the dynamic radius index = 560 mm (ISO 4251/1-1992)*

SWINGING DRAWBAR (optional not fitted on test tractor)

- Type:	GOLDONI DGM-GA 1052 Cat A;
- Height above ground:	310 mm;
- Type of adjustment:	reversible;
- Distance of hitch point from rear wheel axis	
. horizontally:	593 mm;
- Distance of hitch point from power take-off shaft end	
. vertically:	115 mm below;
. horizontally:	322 mm behind;
- Lateral adjustment (centre of clevis)	
. right hand:	50 mm;
. left hand:	50 mm;
- Distance of pivot point from rear wheel axis	
. horizontally:	597 mm forward;
- Diameter of drawbar pin hole:	28.5 mm;
- Maximum vertical permissible load:	not specified.

HOLED DRAWBAR: none.

TRAILER HITCH

- Type:	GOLDONI DGM-GA 1051 Cat C
- Hole diameter:	28.5 mm;
- Height above ground	
. min:	300 mm;
. max:	635 mm;
- Distance of hitch point from rear wheel axis	
. horizontally:	350 mm;
- Distance of hitch point from power take-off shaft end	
. vertically:	144 mm below, 201 mm above;
. horizontally:	111 mm;
- Maximum vertical permissible load:	1.47 kN.

STEERING

- Specification:	hydrostatic steering with BOSCH hydraulic gear pump, one double acting ram acting directly on front axle.
- Make:	DANFOSS;
- Model:	OSPC 80 LS;
- Type:	hydrostatic;
- Working pressure:	15 MPa;
- Recommended oil:	see page 22.

BRAKES

Service brake

- Make:	GOLDONI;
- Model:	STAR;
- Type:	oil bath disc, total 18 discs, 6 at front (3 per wheel) and 12 at rear (6 per wheel) all mounted before the final drive;
- Available options:	oil bath disc, 12 at rear (6 per wheel) all mounted before the final drive;
- Method of operation:	hydraulically actuated with 2 pedals;
- Trailer braking take-off:	none.

Parking brake

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

Steering brake

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

STEERING WHEELS

- Number:	2;
- Location:	at front;
- Track widths	
. min:	1248 mm:
. max:	1372 mm;
- Adjustment:	changing the position of the rims with respect to the disc.

DRIVING WHEELS

- Number: 4;
- Location: two at front and two at rear;
- Rear track widths
  . minimum: 1180 mm;
  . maximum: 1488 mm;
- Adjustment: changing the position of the rims with respect to the disc.

WHEELBASE: 1912 mm.

PROTECTIVE STRUCTURE

Specifications

Tractor	Seat model	OECD approval number
GOLDONI STAR 65 TZA 36	GOLDONI COMPACT	NT/ROPS-F/S 017/43
	GOLDONI Y 01	NT/ROPS-F/S 017/44
GOLDONI STAR 65 TZB 36	GOLDONI COMPACT	NT/ROPS-F/S 017/59
	GOLDONI Y 01	NT/ROPS-F/S 017/60
JOHN DEERE 1846 F FH 1846 AF	GOLDONI COMPACT	NT/ROPS-F/S 017/63
	GOLDONI Y 01	NT/ROPS-F/S 017/64
JOHN DEERE 1846 F FH 1846 BF	GOLDONI COMPACT	NT/ROPS-F/S 017/69
	GOLDONI Y 01	NT/ROPS-F/S 017/70

- Date of approval: 10 September 1996;
- Location and country of test of protective structure: D.E.I. AGRA. - Sez. I.A., Bologna, ITALY;
- Mass used for calculating impact energies and crushing forces: 2250 kg;
- Make: GOLDONI;
- Model: K 16;
- Type: roll-bar, tiltable;
- Manufacturer's name and address: GOLDONI S.p.A., Via canale 3, Migliarina di Carpi MO, Italy.

DRIVER'S SEAT

Standard

- Make:	GOLDONI;
- Model:	COMPACT;
- Type:	upholstered seat with back rest;
- Type of suspension:	mechanical
- Type of damping:	shock absorber;
- Range of adjustment	
. vertical:	80 mm;
. longitudinal:	80 mm.

Optional

- Make:	GOLDONI;
- Model:	Y 01 EEC om. e2 034;
- Type:	upholstered seat with back rest;
- Type of suspension:	mechanical
- Type of damping:	shock absorber;
- Range of adjustment	
. vertical:	76 mm;
. longitudinal:	76 mm.

PASSENGER'S SEAT : none.

LIGHTING

Lighting system in accordance with EEC 78/933

	Height above ground of centre	Size	Distance from outside edge of lights to median plane of tractor
	mm	mm	mm
Headligths	970	150 x 100	210
Sidelights	900	70 x 100	535
Rearlights	1195	155 x 60	550
Reflectors 1st pair	1115	80 x 50	517
2nd pair	610	50 x 100	320

TEST CONDITIONS

OVERALL DIMENSIONS

	Length	Width		Height at top of	
		minimum	maximum	protective structure	exhaust silencer
	mm	mm	mm	mm	mm
Unballasted	3267	1460	1860	2110	365

- Ground clearance: 340 mm below front axle;

TRACTOR MASS (unballasted with full fuel tank and protective structure)

	Without driver	With driver
	kg	kg
Front	940	955
Rear	1110	1170
Total	2050	2125

TYRES AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Tyres		
make	PIRELLI	PIRELLI
model	AS AGRAR	TM 700
dimensions	10.0/75-15.3	380/70R24
ply rating	8	-
load index/speed index	-	125 A8
type	diagonal	radial
maximum load (tyre manufacturer's)	824 daN	1618 daN
inflation pressure (tyre manufact.'s)	370 kPa	160 kPa
dinamic radius index	360 mm	560 mm
Chosen track width	1250 mm	1180 mm
Technically permissible axle load	1315 daN	2649 daN

TYRES AND TRACK WIDTH SPECIFICATIONS (continued)

Other tyres available

Tractors	Front	Rear
GOLDONI STAR 65 TZA36 JOHN DEERE 1846 F FH 1846 AF	280/70R16	380/70R24
	250/80-18	12.4R28
	280/70R18	420/70R24
	250/80-18	14.9R24
	280/70R16	380/70R24
	29x12.50-15	44x18.00-20
	8.25-16	13.6R24
GOLDONI STAR 65 TZB 36 JOHN DEERE 1846 F FH 1846 BF	280/70R16	380/70R24
	260/70R16	360/70R24
	9.0/75-16	360/70R24
	9.0/75-16	12.4R24
	29x12.50-15	44x18.00-20
	280/60-15.5	375/75R20
	200/70R16	320/70R24
	240/70R16	320/70R24
	210/80R16	320/70R24
	10.0/75-15.3	380/70R24

OILS AND LUBRICATION

Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	8.5	200	200
Gear box with rear axle and final drives, hydraulic system, steering	32	800	200
Front axle / final drives	4.5	800	-

OILS AND LUBRICATION (continued)

Specifications

	Recomended	Using during test
Engine oil		
Type	AGIP DIESEL SIGMA	AGIP DIESEL SIGMA
Viscosity	12.50 cSt	12.50 cSt
Classification	API SE - CD	API SE - CD
Transmission oil used in		
Gear box		
Front/Rear axle and final drives		
Type	AGIP OSO 68	AGIP OSO 68
Viscosity	8.6 cSt	8.6 cSt
Classification	API GL 4	API GL 4
Steering oil		
Type	AGIP OSO 68	AGIP OSO 68
Viscosity	8.6 cSt	8.6 cSt
Classification	API GL 4	API GL 4

Grease

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

FUEL

- Type: AGIP DIESEL DIN 51061;
(in accordance with the national standard)
- Density at 15 °C: 0.837 g/cm^3.

TEST RESULTS

COMPULSORY TESTS RESULTS

1. MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 1 August 1996, ISMA, Treviglio BG, Italy;

- Type of dynamometer: ZÖLLNER B 500.

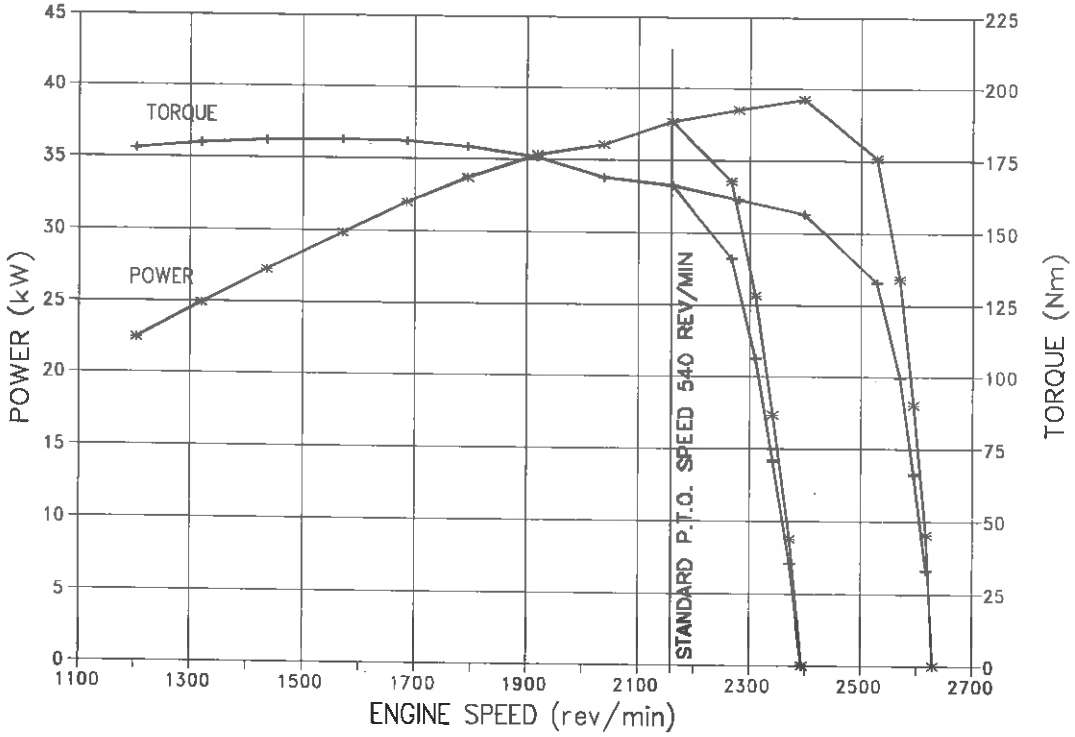
Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
1.1 MAXIMUM POWER - TWO-HOUR TEST						
39.3	2399	600	12.21	10.22	260	3.22
1.2 POWER AT RATED ENGINE SPEED						
39.3	2399	600	12.21	10.22	260	3.22
1.3 STANDARD POWER TAKE-OFF SPEED (540 rev/min)						
37.7	2161	540	11.95	10.00	266	3.15
1.4 PART LOADS 1.4.1 The torque corresponding to maximum power at rated engine speed						
39.3	2399	600	12.21	10.22	260	3.22
1.4.2 85% of torque obtained in 1.4.1						
35.2	2529	632	10.92	9.14	260	3.22
1.4.3 75% of torque defined in 1.4.2						
26.8	2571	643	8.79	7.36	274	3.05
1.4.4 50% of torque defined in 1.4.2						
18.0	2594	649	7.03	5.88	326	2.57
1.4.5 25% of torque defined in 1.4.2						
9.1	2617	654	5.30	4.44	488	1.72
1.4.6 unloaded						
0	2630	658	3.38	2.83	-	-

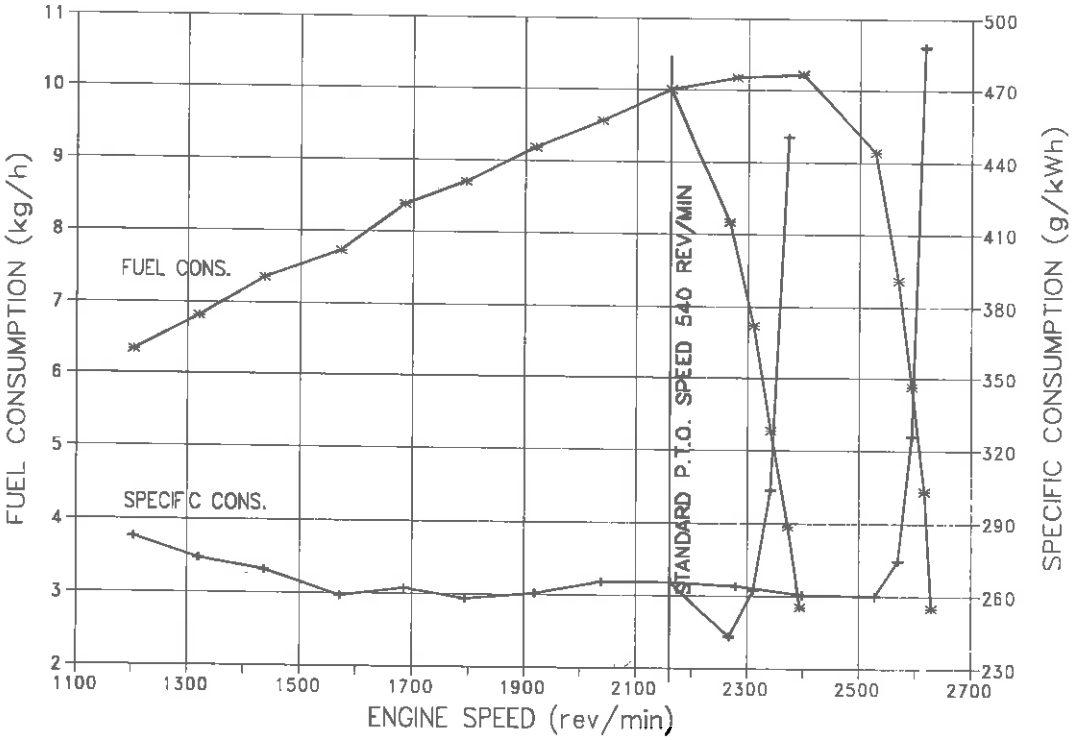
Power	Speed		Fuel consumption			Specific
	Engine	PTO	Hourly		Specific	energy
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (540 rev/min)						
1.5.1 The torque corresponding to maximum power available						
37.7	2161	540	11.95	10.00	266	3.15
1.5.2 85% of torque obtained in 1.5.1						
33.6	2268	567	9.75	8.16	243	3.44
1.5.3 75% of torque defined in 1.5.2						
25.7	2311	578	8.04	6.73	262	3.19
1.5.4 50% of torque defined in 1.5.2						
17.4	2342	586	6.30	5.27	304	2.76
1.5.5 25% of torque defined in 1.5.2						
8.8	2373	593	4.73	3.96	450	1.86
1.5.6 unloaded						
0	2395	599	3.41	2.85	-	-

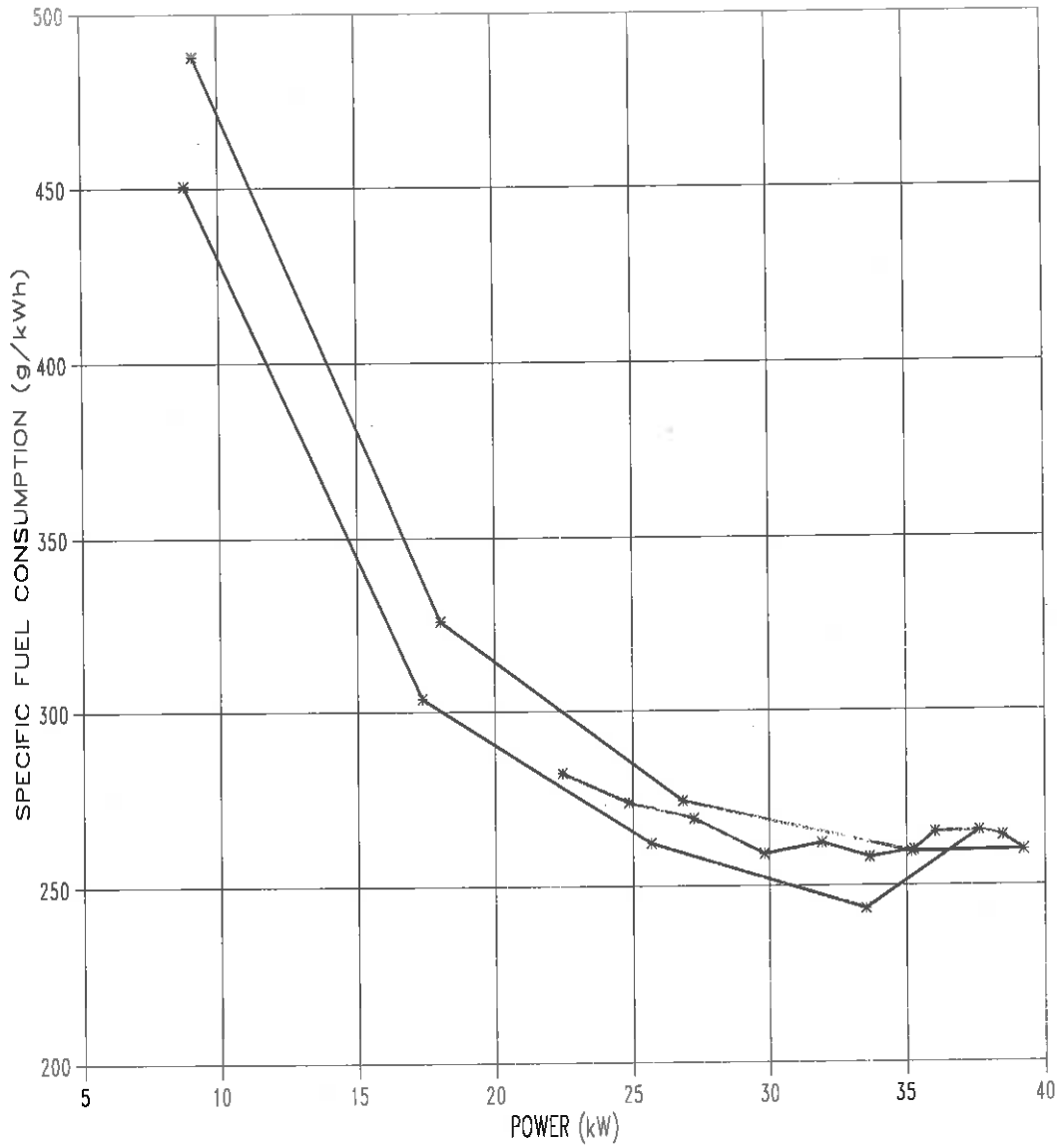
- No load maximum engine speed: 2530 rev/min;
- Equivalent flywheel torque at rated engine speed: 156.31 Nm;
- Equivalent flywheel torque at 2-hour test: 156.31 Nm;
- Maximum equivalent flywheel torque: 181.41 Nm at 1570 rev/min of the engine.

- Mean atmospheric conditions
  . temperature: 29°C
  . pressure: 100.9 kPa
  . relative humidity: 63 %

- Maximum temperatures
  . coolant: 86 °C
  . engine oil: 123 °C
  . fuel: 33 °C
  . engine air intake: 30 °C


TORQUE
POWER
POWER (kW)
TORQUE (Nm)
STANDARD P.T.O. SPEED 540 REV/MIN
ENGINE SPEED (rev/min)
45
40
35
30
25
20
15
10
5
0
225
200
175
150
125
100
75
50
25
0
1100
1300
1500
1700
1900
2100
2300
2500
2700


FUEL CONS.
SPECIFIC CONS.
FUEL CONSUMPTION (kg/h)
SPECIFIC CONSUMPTION (g/kWh)
STANDARD P.T.O. SPEED 540 REV/MIN
ENGINE SPEED (rev/min)
11
10
9
8
7
6
5
4
3
2
500
470
440
410
380
350
320
290
260
230
1100
1300
1500
1700
1900
2100
2300
2500
2700


SPECIFIC FUEL CONSUMPTION (g/kWh)
500
450
400
350
300
250
200
5
10
15
20
25
30
35
40
POWER (kW)

2. HYDRAULIC POWER AND LIFTING FORCE

- Date of tests: 6 August 1996.

2.1 HYDRAULIC POWER TEST

- Sustained pressure with relief valve open: 20.0 MPa;
- Pump delivery rate at minimum pressure: 26 l/min;

	Power kW	Flow rate l/min	Pressure MPa	Oil temp. °C
At 90% of the actual relief valve setting	7.11	23.7	18.0	67
Maximum	7.11	23.7	18.0	67

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

2.2 POWER LIFT

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	200	200
Vertical movement			
without lifting forces	mm	555	661
with lifting forces	mm	547	652
Maximum corrected force exerted through full range	kN	15.38	10.70
Corresponding pressure of hydraulic fluid	MPa	18.0	18.0
Moment about rear axle	kNm	12.46	15.19
Maximum tilt angle of mast over range of lift	degrees	-	9

Lifting heights relative to the horizontal lower links										
mm	-189	-179	-100	0	+100	+200	+300	+368	+400	+ 463
Lifting forces at hitch points, corrected to 18.0 MPa										
kN	-	16.84	16.91	16.89	16.69	16.51	16.06	15.38	-	-
Lifting forces at test frame, corrected to 18.0 MPa										
kN	15.72	-	15.39	14.81	14.04	13.32	11.88	-	11.04	10.70

3. DRAWBAR PERFORMANCE

- Date of test: 7 August 1996;
- Type of track: concrete.

Height of drawbar above ground mm	Tyre inflation pressure	
	Front kPa	Rear kPa
365	230	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			Atmospheric conditions		
								Fuel °C	Coolant °C	Engine oil °C	Temperature °C	Relative humidity %	Pressure kPa
3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
1NL	5.2	15.99	1.18	2620	15	786	1.06	29	84	100	25	63	100.0
1NH	6.8	16.48	1.49	2616	15	682	1.23	29	84	100	25	63	99.9
2NL	8.6	16.12	1.91	2608	15	585	1.43	29	85	100	25	63	99.9
2NH	11.0	16.30	2.44	2600	15	503	1.66	30	85	100	25	63	99.8
3NL	15.3	16.66	3.30	2588	15	414	2.02	30	86	101	25	63	99.9
3NH	18.6	16.08	4.17	2568	15	405	2.06	30	86	101	25	64	99.9
4NL	21.4	16.23	4.75	2552	15	383	2.19	30	84	101	25	63	100.0
4NH	27.8	17.04	5.88	2520	15	332	2.52	31	85	102	26	63	100.0
1FL	31.2	17.65	6.37	2480	15	307	2.72	31	85	102	26	62	100.0
1FH	31.9	13.75	8.35	2400	9	322	2.60	30	86	103	26	62	100.0
2FL	33.0	10.56	11.24	2400	6	312	2.68	30	86	102	26	62	99.9
2FH	32.9	8.27	14.34	2400	5	310	2.70	31	86	102	26	62	100.0
3FL	28.4	5.02	20.36	2400	1	360	2.33	30	86	102	26	62	100.0

N= Normal, F= Fast, L= Low, H= High.

Gear and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperatures			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.2 FUEL CONSUMPTION													
3.2.1) Selected gear, at maximum power at rated speed													
FL	33.0	10.56	11.24	2400	6	312	2.68	30	86	102	26	62	99.9
3.2.1.1) 75% of pull at maximum power at rated speed													
FL	27.1	7.89	12.34	2556	3	299	2.80	28	82	99	27	60	99.9
3.2.1.2) 50% of pull at maximum power at rated speed													
FL	18.6	5.26	12.71	2600	2	299	2.80	28	82	99	28	60	99.9
3.2.1.3) next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.1													
FH	27.1	7.92	12.31	2012	3	236	3.54	29	83	100	28	59	99.9
3.2.1.4) next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.1.2													
FH	18.7	5.30	12.74	2064	2	261	3.20	29	83	99	28	60	100.0
3.2.2) Selected gear, nearest to 7.5 km/h at rated speed													
FL	31.2	17.65	6.37	2480	15	307	2.72	31	85	102	26	62	100.0
3.2.2.1) 75% of pull at maximum power at rated speed													
FL	26.8	13.24	7.28	2568	6	282	2.97	29	84	99	28	60	100.0
3.2.2.2) 50% of pull at maximum power at rated speed													
FL	18.7	8.88	7.57	2584	3	348	2.40	29	82	100	28	60	99.9
3.2.2.3) next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.1													
FH	27.0	13.26	7.32	2052	6	193	4.34	28	83	100	29	60	99.9
3.2.2.4) next higher gear at reduced engine speed; same pull and travelling speed as in 3.2.2.2													
FH	18.7	8.83	7.61	2064	3	290	2.89	30	82	99	29	60	99.8

N= Normal, F= Fast, L= Low, H= High.

4. REPAIRS and REMARKS: none.

TEST ENGINEER
(Dr. Carlo BISAGLIA)

DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA
(Ing. Giovanni SANTORO)