ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Report on test in accordance with the OECD Standard Code for the Official Testing of Agricultural Tractor Performance



SAME SOLARIS 35 DT "4WD" OECD No. **1521/3** Full Code
HÜRLIMANN PRINCE 435 DT "4WD" OECD No. **1521/1** Full Code
LAMBORGHINI RUNNER 350 DT "4WD" OECD No. **1521/2** Full Code

Manufactured by: S+L+H S.p.A.
V.le F. Cassani 15
24047 Treviglio BG
Italy

Date of OECD approval: 21 July 1994
Period of test: June 1994

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

Table of contents

SPECIFICATION OF TRACTOR 5

TEST CONDITIONS 17

TEST RESULTS

1. Main power take-off performance 20
2. Hydraulic power and lifting force 24
3. Drawbar performance 26
4. Turning area and turning circle 27
5. Location of centre of gravity 27
6. Braking performance 28
7. Measurement of external noise level 29
8. Repairs and remarks 29

The Same Solaris 35 DT (4WD), Hürlimann Prince 435 DT (4WD) and Lamborghini Runner 350 DT (4WD) tractors are technically identical in all main respects except with regard to model designation and colour.
All tests were carried out on the Same Solaris 35 DT (4WD).

All stated dimensions and tests refer to tyre size 6.50 -16 (4 ply) at front and 11.2 R 24 114 (A8) at rear, as well as to track widths 1040 mm at front and 1020 mm at rear.

Tractor manufacturer

- Name:	S+L+H S.p.A.;
- Address:	V.le F. Cassani 15, 24047 Treviglio BG, Italy;
- Location of tractor assembly:	Treviglio BG, 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.

SPECIFICATION OF TRACTOR

TRACTOR

- Make:	Same;
- Model:	Solaris 35 DT;
- Type:	wheeled tractor, unit construction, all wheels drive tractor;
- Number of driving wheels:	4;
- Serial number:	1998;
- First serial number:	1001.

ENGINE

- Make:	MITSUBISHI;
- Model:	K4F-D;
- Type:	water cooled 4-stroke diesel engine, direct injection, naturally aspirated;
- Serial number:	1998.

Cylinders

- Number and disposition:	4, vertical, in-line;
- Bore x stroke:	78 x 78 mm;
- Capacity:	1490 cm^3;
- Compression ratio:	18:1;
- Arrangement of valves:	overhead;
- Cylinder liners:	without liners.

Supercharging: none.

Fuel system

- Fuel feed system: MITSUBISHI electrical 12V;
- Make, model and type of fuel filter: FIAMM FNA 166/20;
- Capacity of fuel tank: 29 dm^3;
- Make, model and type of injection pump: NIPPON DENSO PER4M65A1ND607, immersed pump, in line injection pump;
  . serial number: without serial number;
- Manufacturer's production setting of injection pump:
  . flow rate: 22 ± 2 mm^3/stroke at rated speed and full load corresponding 7.94 dm^3/h;
  . timing: 22° before TDC;
- Make, model and type of injectors: NIPPON DENSO DLLA 150 P 73 multihole injection nozzles;
- Injection pressure: 216 $\pm$ 5 MPa.

Governor

- Make: MITSUBISHI;
- Model: centrifugal;
- Type: mechanical;
- Governor range of engine speed: from 840 to 3226 rev/min;
- Rated engine speed: 3000 rev/min.

Air cleaner

- Main filter
  . make: DONALDSON;
  . model: FHG 05-2568;
  . type: dry paper element filter with replaceable cartridge;
  . location: front of engine;
  . air intake location: below bonnet;
- Maintenance indicator: with the warning lamp on the dashboard.

Lubrication system

- Type of feed pump: forced feed from gear pump;
- Type of filter: FIAMM FT 4763;
- Oil specifications: see page 19.

Cooling system

- Type and detail:	water cooling with impeller pump;
- Specification of fan:	propeller fan driven by engine shaft;
- Number of fan blades:	6;
- Fan diameter:	340 mm;
- Type of temperature control:	none.

Starting system

- Make:	ISKRA;
- Model:	AZJ 3155;
- Type:	electromagnetic engagement;
- Starter motor power rating:	1.4 kW;
- Safety device:	electrical lockout on clutch and PTO controls;
- Starting system for low temperatures:	none.

Electrical equipment

- Voltage:	12 V;
- Generator	
. make:	MITSUBISHI;
. model:	MM435081;
. type:	included in the fan of cooling system;
. power:	400 W;
- Battery:	1 lead acid;
. capacity:	70 Ah at 20 hours rating.

Exhaust system

- Make:	S+L+H;
- Model:	DGM SA 2281;
- Type:	one reflection absorption chamber;
- Location:	on the left hand side of engine, horizontal position, under side bonnet;
- Height of outlet above ground:	730 mm.

TRANSMISSION

Clutch (utilized only for travelling of tractor)

- Make:	S+L+H;
- Model:	636.23;
- Type:	single disk dry clutch;
- Number of plates:	1;
- Plates diameter:	181.5 mm;
- Control system:	mechanical operated by pedal.

Gear box

- Make:	own make;
- Model:	636.31;
- Type:	mechanical syncromesh speed change gear;
- Arrangement:	four speeds forward, with three ranges of speeds, and one reverse group;
- Number of speeds:	12 forward and 12 reverse;
- Available options:	none.

Rear axle and final drives

- Make:	own make;
- Model:	636.44;
- Type:	bevel gear differential and side final drive.

Rear differential lock

- Make:	own make;
- Model:	636.47;
- Type:	mechanical;
- Control system:	engaged or disengaged by pedal.

Front axle and final drives

- Make:	own make;
- Model:	636.43;
- Type:	central shaft, bevel gear drive, differential final drives.

Front differential lock

- Make:	own make;
- Model:	636.46;
- Type:	mechanical;
- Control system:	engaged or disengaged by push button.

Total ratios and 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	S	772.63	0.75
2	S	476.78	1.22
1	N	306.30	1.90
3	S	287.86	2.02
4	S	223.20	2.61
2	N	189.01	3.08
3	N	114.11	5.10
4	N	88.47	6.58
1	F	75.67	7.70
2	F	46.70	12.47
3	F	28.20	20.65
4	F	21.86	26.65
REVERSE			
1	S	677.56	0.86
2	S	418.11	1.39
1	N	268.61	2.17
3	S	252.44	2.31
4	S	195.73	2.98
2	N	165.75	3.51
3	N	100.06	5.82
4	N	77.58	7.51
1	F	66.36	8.78
2	F	40.95	14.22
3	F	24.73	23.55
4	F	19.17	30.38

S =Slow; N =Normal; F =Fast.

(*) *Calculated with a tyre dynamic radius index of 515 mm (ISO 4251/1-1984).*
Number of revolutions of front wheels for one revolution of rear wheels: 1.4725.

POWER TAKE-OFF

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 disk dry clutch (diameter 184 mm) independent of travel clutch;
- Number of shafts:	1;
- Method of changing power take-off shaft ends:	none;
- Method of changing speed:	by hand lever.
540 rev/min PTO:	35 mm diameter, 6 splines, in conformity with ISO 500-1979, type 1;
- PTO speed at rated engine speed:	612 rev/min;
- Engine speed at standard PTO speed:	2646 rev/min;
- Ratio of rotation speeds (engine speed/PTO speed):	4.9;
- Power restriction and maximum torque:	power and torque of the engine.
1000 rev/min PTO:	35 mm diameter, 6 splines, not in conformity with ISO 500-1979;
- PTO speed at rated engine speed:	1096 rev/min;
- Engine speed at standard PTO speed:	2736 rev/min;
- Ratio of rotation speeds (engine speed/PTO speed):	2.736.
- Power restriction and maximum torque:	power and torque of the engine.

Height above ground:	550	mm
Distance from the median plane of the tractor:	0	mm
Distance behind rear axle or forward from front axle:	385	mm
Direction of rotation (viewed facing driving end):	clockwise	

Power take-off proportional to ground speed

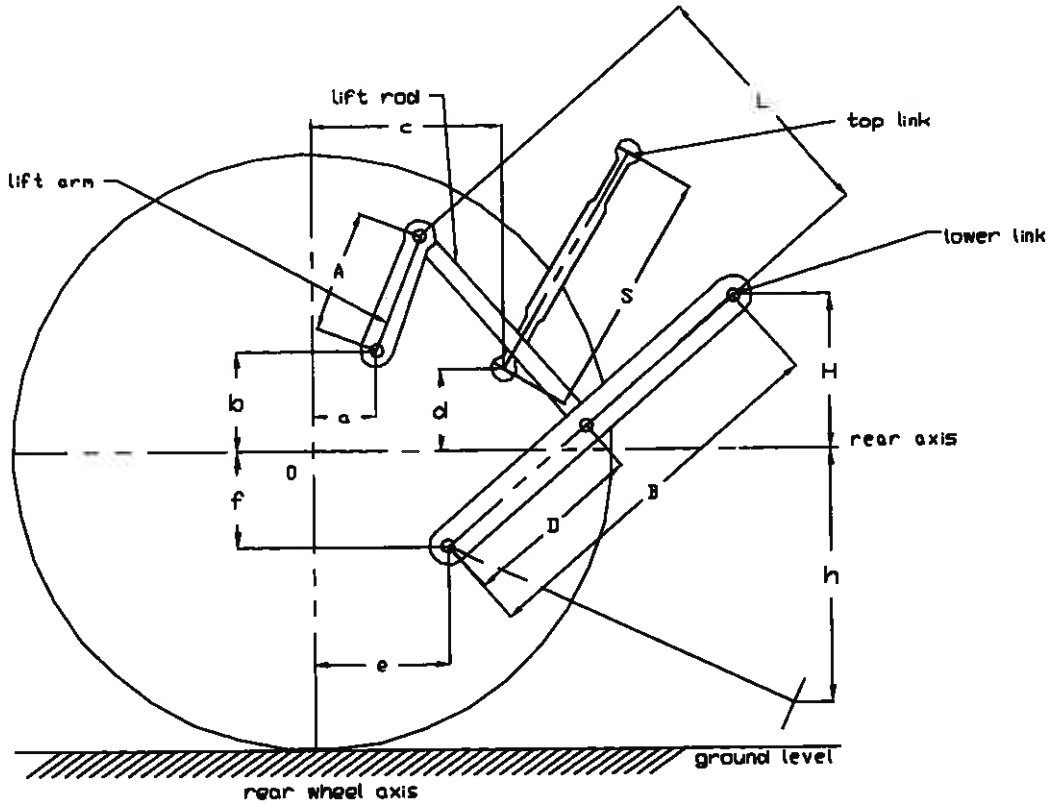
- Speed of shaft:	independent of 540/1000 rev/min;
- Location:	at rear of tractor, same shaft end as PTO proportional to engine speed;
- Direction of rotation with forward gear engaged:	clockwise;
- Travelling distance for one revolution of power take-off shaft:	0.63 m;
- Number of power take-off shaft revolutions for one revolution of rear driving wheels:	7.10.

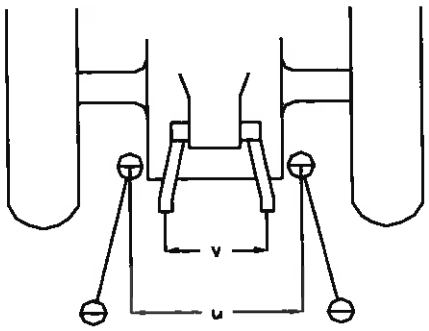
POWER LIFT

- Make:	MITA;
- Model:	008.7542.4;
- Type:	load sensing;
- Type of hydraulic system:	open centre system;
- Number and type of cylinders:	1 internal single-acting;
- Type of lock for transport:	mechanical, with screwed tie rods that lock the lower links;
- Relief valves pressure setting:	18.0 ± 0.5 MPa at cylinder of power lift; 9.0 ± 0.5 MPa at tapping point;
- Opening pressure of anti-shock valve:	20.0 ± 0.5 MPa;
- 1st pump:	supplies power lift circuit, and remote circuit, max. working pressure 18.0 ± 0.5 MPa;
- 2nd pump:	optionally fitted on test tractor, supplies remote circuit; maximum working pressure 18.0 ± 0.5 MPa;
. make:	HEMA;
. 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:	21 dm^3;
- Site of oil reservoir:	gear box;
- Number, type and location of tapping points	
. fed by pump 1:	1 sigle-acting at rear of tractor;
. fed by pump 2:	2 double acting at rear, 1 double acting at front and 1 double acting at middle of tractor;
- Maximum volume of oil available to external cylinders:	5 dm^3;
- Recommended oil:	see page 19.

Three-point linkage

- Category (ISO 730/1-1990): 1;
- Category adapter: none.





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)	635	635
Distance of lift arm pivot point from rear wheel axis (behind)			
- horizontally	(a)	50	50
- vertically	(b)	246	246
Horizontal distance between the 2 lower link points	(u)	230	230
Horizontal distance between the 2 lift arm end points	(v)	350	350
Length of upper link	(S)	from 470 to 570	512
Distance of upper link pivot point from rear wheel axis			
- horizontally	(c)	254	254
- vertically	(d)	222 - 251	251
Distance of lower link pivot point from rear wheel axis			
- horizontally	(e)	124	124
- vertically	(f)	127	127
Distance of lower link pivot point to lift rod pivot points on lower links	(D)	310 - 360	360
Length of lift rods	(L)	400	400

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

Length of lift rods	(L)	400	400
Linkage distance of lift rods	(D)	310	360
Lowest position	(h)	253	197
Highest position	(H)	286	285
Height above ground of lower hitch points when locked in transport position (*)		801	785

(*) *Assuming the dynamic radius index = 515 mm (ISO 4251/1-1984)*

SWINGING DRAWBAR: none.

HOLED DRAWBAR

- Number of holes:	9;
- Distance between holes:	55 mm;
- Hole diameter:	22 mm;
- Thickness x width of the drawbar:	25 x 70 mm;
- Height above ground, (tyre size: 11.2R24)	
. min:	200 mm;
. max:	840 mm;
- Horizontal distance behind power take-off shaft end:	540 mm;
- Diameter of the pinhole:	22 mm.

TRAILER HITCH

- Type:	SAME DGM-GA 2108 B;
- Hole diameter:	28 mm;
- Height above ground	
. min:	390 mm;
. max:	500 mm;
- Distance of hitch point from rear wheel axis	
. horizontally:	305 mm;
- Distance of hitch point from power take-off shaft end	
. vertically:	160 mm below, 50 mm above;
. horizontally:	80 mm;
- Maximum vertical permissible load:	4.9 kN.

STEERING

- Specification:	hydrostatic steering with HEMA hydraulic gear pump, one double acting ram acting directly on front axle.
- Make:	DANFOSS;
- Model:	OSPC LS 80;
- Type:	hydrostatic;
- Working pressure:	9 MPa;
- Recommended oil:	see page 19.

BRAKES

Service brake

- Make:	S+L+H;
- Model:	636.54;
- Type:	oil bath disc, total 4 discs, at rear (2 per wheel), mounted before the final drive;
. disc diameter:	224 mm,
. material:	FRENDO HDT 303 lining material;
- Method of operation:	mechanically actuated with 2 pedals;
- Trailer braking take-off:	none.

Parking brake

- Type:	mechanically acting on the 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:	970 mm:
. max:	1090 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	
. min:	820 mm;
. max:	1030 mm;
- Adjustment:	changing the position of the rims with respect to the disc.

WHEELBASE: 1630 mm.

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

PROTECTIVE STRUCTURE

Specifications

Tractors	OECD approval numbers
S+L+H SAME SOLARIS 35 DT (4WD) with seat KAB P 1 XL 2	NT/ROPS/F-D 012/73
S+L+H HÜRLIMANN PRINCE 435 DT (4WD) with seat KAB P 1 XL 2	NT/ROPS/F-D 012/13
S+L+H LAMBORGHINI RUNNER 350 DT (4WD) with seat KAB P 1 XL 2	NT/ROPS/F-D 012/37

- Date of approval: 9 December 1992;
- Location and country of test of protective structure: Istituto di Ingegneria Agraria, Università degli Studi di Milano, Italy;
- Reference mass and wheelbase used for calculating impact energies and crushing forces: 1300 kg and 1701 mm;
- Make: S+L+H;
- Model: T 61;
- Type: front roll guard,tiltable;
- Manufacturer's name: S+L+H S.p.A.;
  . address: V.le F. Cassani 15, 24047 Treviglio BG, Italy;
- Protective device: frame.

DRIVER'S SEAT

- Make: KAB;
- Model: P 1 XL 2;
- Type: upholstered seat with back rest;
- Type of suspension: adjustable spring;
- Type of damping: shock absorber;
- Range of adjustment
  . longitudinal: 150 mm;
  . vertical: 60 mm.

PASSENGER'S SEAT : none.

LIGHTING

Lighting system in accordance with EEC 78/933

	Height above ground of centre with tyre mm	Size mm	Distance from outside edge of tractor to centre at 1020 mm track width mm
Headligths	930	145 x 85	370
Front parking lights	900	110 x 35	200
Front direction indicators	930	110 x 35	200
Rear parking lights	1190	100 x 60	360
Rear direction indicators	1190	180 x 60	190
Brake lights	1190	100 x 60	360
Reflectors	1020	dia 80	190

TEST CONDITIONS

OVERALL DIMENSIONS

	Length mm	Width min mm	Width max mm	Height at top of protective structure mm
Unballasted	2960	1020	1360	2000
Ballasted	2960	1020	1360	2000

- Ground clearance: 230 mm (final drive case);
360 mm (differential case).

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

TRACTOR MASS (with full fuel tanks, roll-bar and no water in tyres)

	Front kg	Rear kg	Total kg
Without driver			
Unballasted	525	655	1180
Ballasted	575	745	1320
With driver			
Unballasted	545	710	1255
Ballasted	595	800	1395

BALLAST

	Weights no.	Total weight kg	Water kg
Front	3	50	-
Rear	1 + 1	90	-

TYRES AND TRACK WIDTH SPECIFICATIONS

		Front	Rear
- Tyres			
. dimensions		6.50-16	11.2R24
. ply rating		4	-
. load index/speed index		-	114 A8
. type		diagonal	radial
. maximum load (tyre manufacturer's)	daN	627	1235
. inflation pressure (tyre manufact.'s)	kPa	200	160
. dynamic radius index	mm	350	515
- Chosen track width	mm	1040	1020
- Technically permissible axle load	daN	980	1372
- Other tyres available		7.00-12 7.00-12	320/70R20 11.2/20

OILS AND LUBRICATION

Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	5.6	100	400
Gear box	21.0	1200	2400 (*)
Front axle and final drives	4.8	1200	-
Rear axle and final drives	in common with gear box		
Hydraulic system	in common with gear box		
Other (steering, etc.)	in common with gear box		

(*) *Or when the warning lamp is lighted*

FUEL AND LUBRICANTS RECCOMENDED AND USED IN TESTS

Fuel
- Type: AGIP DIESEL, DIN 51601; (in accordance with the national standard)
- Specific gravity at 15 °C: 0.841 g/cm^3.

Engine oil
- Type: AKROS TURBO 15W40;
- Viscosity: 12.50 cSt;
- Classification: API SE - CD.

Transmission (front and rear axle, final drives and gear box), hydraulic system and steering oil
- Type: AGIP ROTRA THT;
- Viscosity: 11.50 cSt;
- Viscosity index: 95;
- Classification: API GL 4.

Grease
- Type: GREASE 30;
- Number of lubrication points: 3.

TEST RESULTS

COMPULSORY TESTS RESULTS

1. MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 6 June 1994, ISMA, Treviglio BG, Italy
- Type of dynamometer: ZÖLLNER 350 AC

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 - 2 HOUR TEST						
23.7	3000	612	7.94	6.68	282	2.98
1.2 POWER AT RATED ENGINE SPEED						
23.7	3000	612	7.94	6.68	282	2.98
1.3 STANDARD POWER TAKE-OFF SPEED (540 rev/min)						
22.4	2648	540	7.13	6.00	268	3.14
1.4 PART LOADS						
1.4.1 The torque corresponding to maximum power at rated engine speed						
23.7	3000	612	7.94	6.68	282	2.98
1.4.2 85% of torque obtained in 1.4.1						
20.9	3106	634	7.05	5.93	284	2.96
1.4.3 75% of torque defined in 1.4.2						
15.9	3141	641	5.66	4.76	300	2.81
1.4.4 50% of torque defined in 1.4.2						
10.7	3167	646	4.45	3.74	350	2.40
1.4.5 25% of torque defined in 1.4.2						
5.3	3189	651	3.39	2.85	537	1.57
1.4.6 unloaded						
0	3226	658	2.45	2.06	-	-

Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
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						
22.4	2648	540	7.13	6.00	268	3.14
1.5.2 85% of torque obtained in 1.5.1						
19.4	2699	551	6.35	5.34	276	3.05
1.5.3 75% of torque defined in 1.5.2						
14.7	2742	560	5.08	4.27	290	2.90
1.5.4 50% of torque defined in 1.5.2						
9.9	2771	566	3.75	3.15	318	2.65
1.5.5 25% of torque defined in 1.5.2						
5.0	2805	572	2.81	2.36	470	1.79
1.5.6 unloaded						
0	2854	582	2.02	1.70	-	-

- No load maximum engine speed: 3226 rev/min;
- Torque (1) at maximum power at rated engine speed: 7.55 daNm;
- Maximum torque (1) (engine speed: 2066 rev/min): 8.49 daNm.

- Mean atmospheric conditions

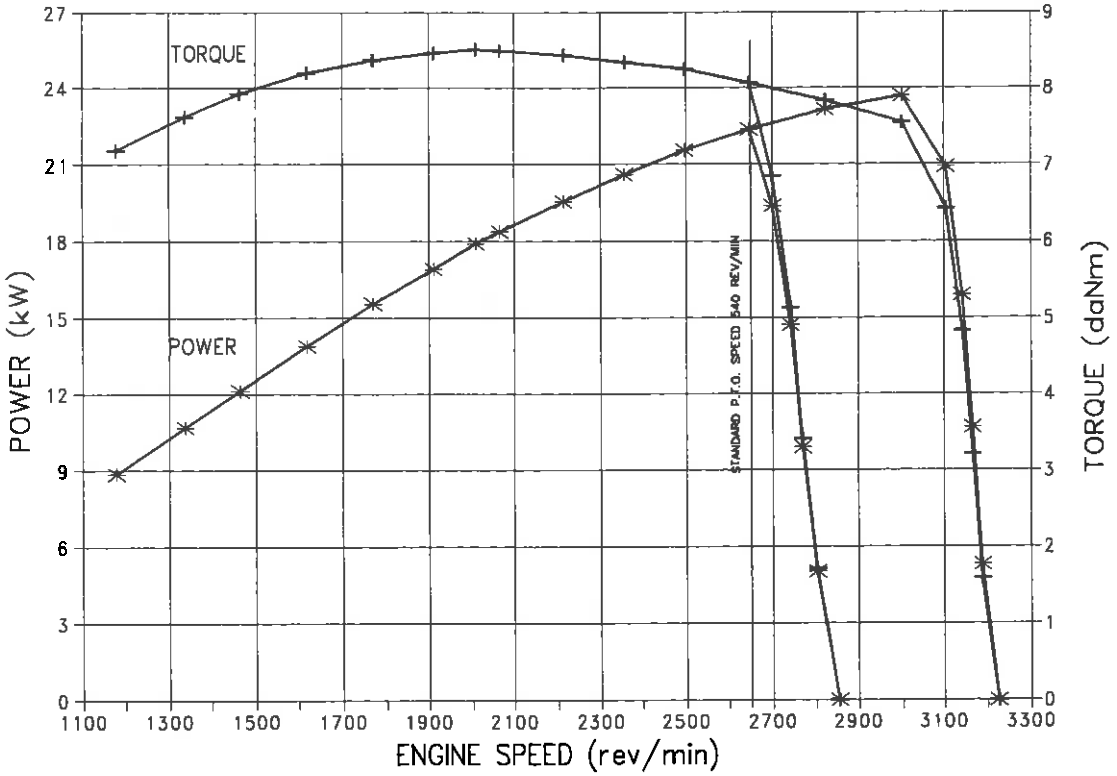
. temperature: 23 °C
. pressure: 100.0 kPa
. relative humidity: 55 %

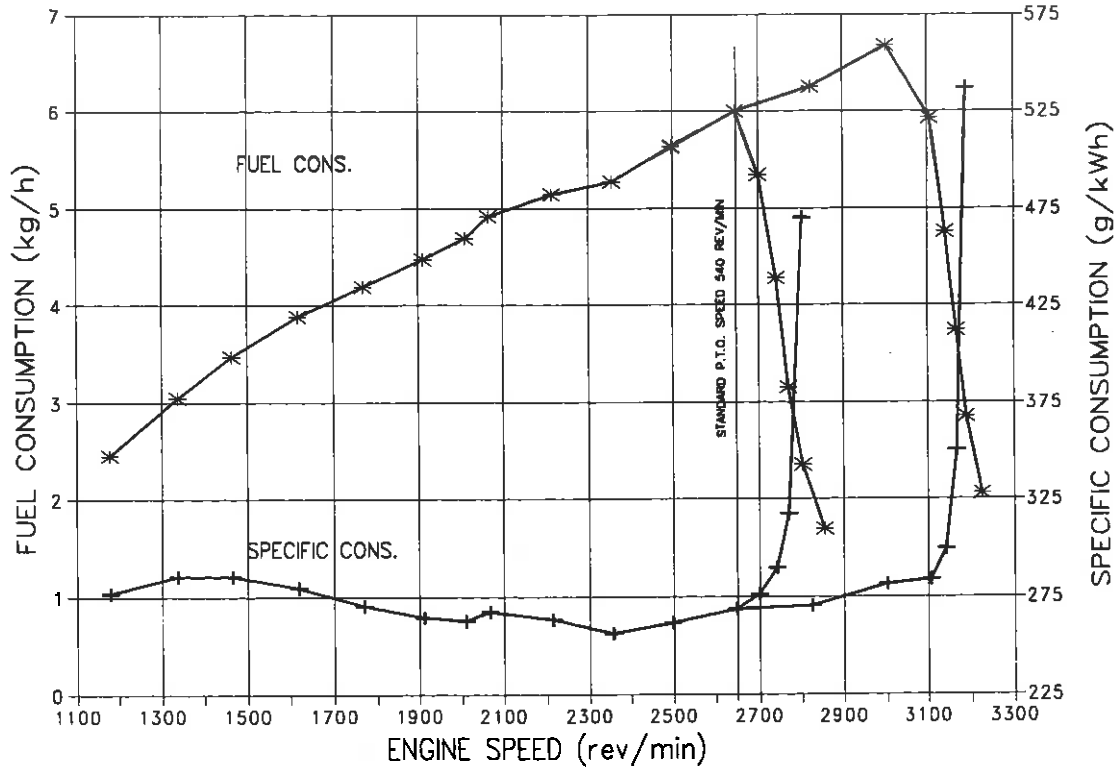
- Maximum temperatures

. coolant: - °C
. engine oil: 98 °C
. fuel: 36 °C
. engine air intake: 35 °C

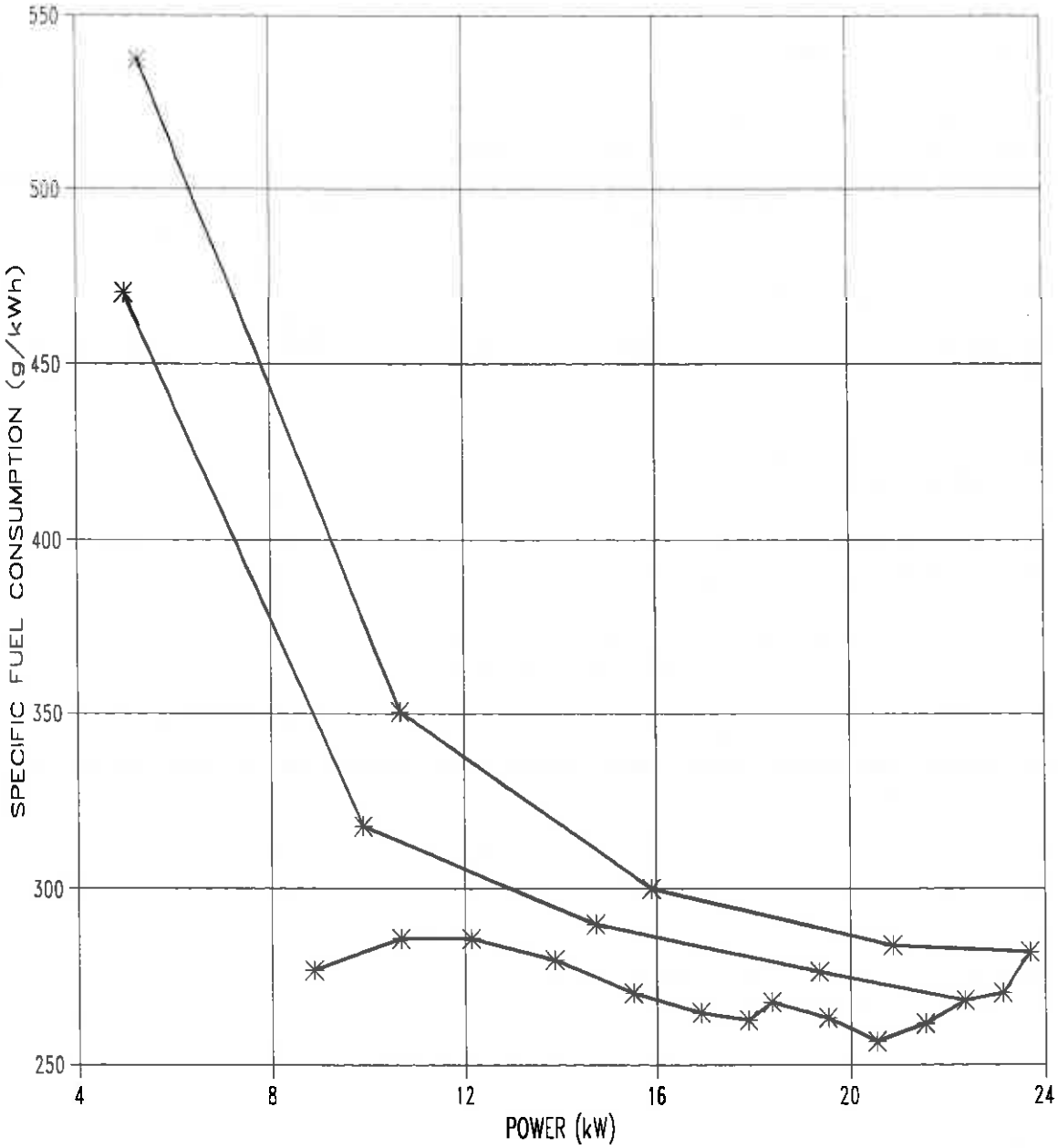
(1) *The torque is the equivalent crankshaft torque.*

PTO test


TORQUE
POWER
STANDARD P.T.O. SPEED 540 REV/MIN
POWER (kW)
TORQUE (daNm)
ENGINE SPEED (rev/min)
0
3
6
9
12
15
18
21
24
27
0
1
2
3
4
5
6
7
8
9
1100
1300
1500
1700
1900
2100
2300
2500
2700
2900
3100
3300


FUEL CONS.
SPECIFIC CONS.
STANDARD P.T.O. SPEED 540 REV/MIN
FUEL CONSUMPTION (kg/h)
SPECIFIC CONSUMPTION (g/kWh)
ENGINE SPEED (rev/min)
0
1
2
3
4
5
6
7
225
275
325
375
425
475
525
575
1100
1300
1500
1700
1900
2100
2300
2500
2700
2900
3100
3300

PTO test


SPECIFIC FUEL CONSUMPTION (g/kWh)
550
500
450
400
350
300
250
4
8
12
16
20
24
POWER (kW)

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

2. HYDRAULIC POWER AND LIFTING FORCE

- Date and location of tests: 9 March 1994, ISMA, Treviglio BG, Italy

2.1 HYDRAULIC POWER TEST

2.1.1 FIRST PUMP (see page 11)

- Sustained pressure with relief valve open: 12.2 MPa;
- Pump delivery rate at minimum pressure: 7.5 l/min;

	Hydraulic power kW	Flow rate l/min	Pressure MPa	Oil temp. °C
At 90% of the actual relief valve setting	0.90	5.0	10.8	65
Maximum	0.93	5.3	10.5	65

- Tapping point used for test: at rear of tractor;
- Hydraulic fluid: see page 19.

2.1.2 SECOND PUMP (see page 11)

- Sustained pressure with relief valve open: 17.0 MPa;
- Pump delivery rate at minimum pressure: 15.0 l/min;

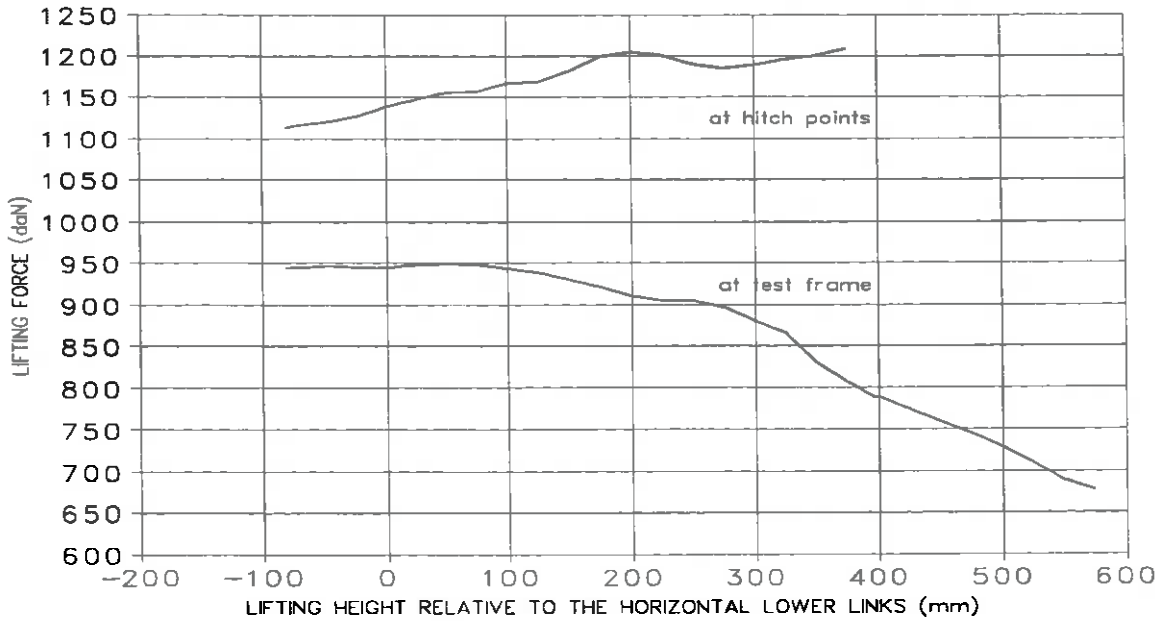
	Hydraulic power kW	Flow rate l/min	Pressure MPa	Oil temp. °C
At 90% of the actual relief valve setting	2.73	10.7	15.3	66
Maximum	3.29	14.1	14.0	64

- Tapping point used for test: at rear of tractor;
- Hydraulic fluid: see page 19.

2.2 POWER LIFT

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	318	307
Vertical movement			
without lifting forces	mm	482	692
with lifting forces	mm	467	656
Maximum corrected force exerted through full range	daN	1112	677
Corresponding pressure of hydraulic fluid	MPa	15.3	15.3
Moment about rear axle	daNm	844	927
Maximum tilt angle of mast over range of lift	degrees	-	17

Lifting heights relative to the horizontal lower links										
mm	-81	-70	0	100	200	300	397	400	500	575
Lifting forces at hitch points, corrected to 15.3 MPa										
daN	-	1112	1128	1157	1199	1184	1209	-	-	-
Lifting forces at test frame, corrected to 15.3 MPa										
daN	945	-	945	944	911	880	-	789	729	677



ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

3. DRAWBAR PERFORMANCE

- Date of test: 13 to 15 June 1994
- Type of track: concrete

3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)

- Height of drawbar above ground: 400 mm;
- Tyre inflation pressure: 200 kPa front, 160 kPa rear.

Gear and range	Power kW	Draw. pull daN	Speed km/h	Eng. speed rev/min	Slip of wheels %	Specific ener. kWh/l	Specific cons. g/kWh	Temperatures Fuel °C	Cool. °C	Eng. °C	Atm. conditions Temp. °C	Hum. %	Press. kPa
1 S	1.7	883	0.68	3200	15	0.54	1557	27	-	95	18	70	100.3
2 S	2.8	919	1.10	3192	15	0.84	996	27	-	95	18	68	100.3
1 N	4.8	1008	1.72	3188	15	1.44	583	27	-	96	18	67	100.2
3 S	4.8	951	1.82	3174	15	1.21	696	28	-	95	19	65	100.2
4 S	6.4	976	2.35	3185	15	1.79	471	28	-	95	19	65	100.2
2 N	7.6	990	2.77	3177	15	1.94	433	27	-	96	19	63	100.3
3 N	12.4	981	4.54	3146	15	2.95	285	27	-	96	20	64	100.3
4 N	15.4	955	5.82	3109	15	2.22	378	28	-	97	19	62	100.2
1 F	18.1	947	6.88	3004	10	2.27	371	27	-	97	19	60	100.2
2 F	18.0	541	11.98	3001	3	2.24	375	27	-	97	20	60	100.2
3 F	16.5	290	20.51	2999	1	2.05	410	26	-	97	20	58	100.2

3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)

- Height of drawbar above ground: 400 mm;
- Tyre inflation pressure: 200 kPa front, 160 kPa rear.

Gear and range	Power kW	Draw. pull daN	Speed km/h	Eng. speed rev/min	Slip of wheels %	Specific ener. kWh/l	Specific cons. g/kWh	Temperatures Fuel °C	Cool. °C	Eng. °C	Atm. conditions Temp. °C	Hum. %	Press. kPa
1 S	2.0	1074	0.68	3194	15	0.63	1330	28	-	97	22	47	100.0
2 S	3.2	1062	1.09	3177	15	0.83	1012	28	-	97	22	47	100.0
1 N	5.0	1061	1.70	3161	15	1.05	798	29	-	97	22	45	99.9
3 S	5.4	1071	1.81	3166	15	1.18	712	29	-	99	23	46	100.0
4 S	7.2	1112	2.33	3155	15	1.44	583	30	-	99	22	45	100.0
2 N	8.1	1069	2.74	3151	15	1.57	536	29	-	100	22	44	99.9
3 N	13.5	1095	4.44	3078	15	2.14	392	29	-	100	23	44	99.9
4 N	16.7	1058	5.67	3036	15	2.16	390	28	-	101	23	45	100.0
1 F	18.3	926	7.12	3008	7	2.28	369	29	-	103	23	45	100.1
2 F	18.1	539	12.10	3000	2	2.25	374	29	-	103	24	46	100.1
3 F	15.1	265	20.51	3000	1	1.87	450	28	-	105	23	46	100.1

S= Slow; N= Normal; F= Fast.

DRAWBAR PERFORMANCE (continued)

3.3 FIVE HOUR TESTS

Gear and range	Power kW	Draw. pull daN	Speed km/h	Eng. speed rev/min	Slip of wheels %	Specific ener. cons. kWh/l	Specific ener. cons. g/kWh	Temperatures Fuel °C	Temperatures Cool. °C	Temperatures Eng. °C	Atm. conditions Temp. °C	Atm. conditions Hum. %	Atm. conditions Press. kPa
3.3.1) FIVE HOUR TEST at 75% of pull at maximum power													
1 F	14.6	697	7.54	3091	4	1.89	445	28	-	104	25	53	99.9
3.3.2) FIVE HOUR TEST at pull corresponding to 15% wheelslip with additional ballast: 120 kg													
4 N	16.3	927	6.34	3038	(*)	(*)	(*)	28	-	102	23	56	100.3

S= Slow; N= Normal; F= Fast.
(*) *Having the test been carried out with additional ballast, these figures are irrelevant.*

Oil consumption during ten hours duration of tests 3.3.1 and 3.3.2: 8 g/h.

4. TURNING AREA AND TURNING CIRCLE

	With brakes Right hand m	With brakes Left hand m	Without brakes Right hand m	Without brakes Left hand m
Radius of turning area	2.73	2.75	2.99	3.06
Radius of turning circle	2.65	2.67	2.91	2.98

5. LOCATION OF CENTRE OF GRAVITY

Height above ground	mm	621
Distance forward from rear axle centre	mm	708
Distance from tractor's median plane	mm	0

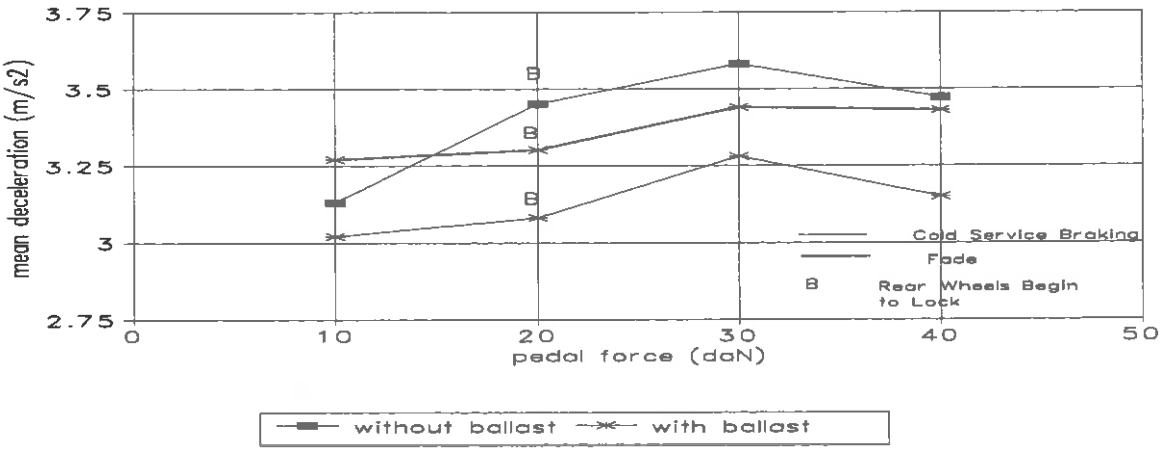
6. BRAKING PERFORMANCE

- Date of test: 10 June 1994;
- Type of track: asphalt;
- Type of decelerometer: PEISELER.

Tractor mass (with driver)

	Front axle kg	Rear axle kg	Total kg
Unballasted	545	710	1255
Ballasted	595	800	1395

6.1 SERVICE BRAKES



- Speed before application of brakes (unballasted tractor): 28.5 km/h.
- Speed before application of brakes (ballasted tractor): 28.5 km/h.

The tractor brakes were heated by towing of the tractor for 1 km.
No significant deviation of tractor from original course and no abnormal vibrations were observed.

6.2) PARKING BRAKE

Ballasted tractor on 18% slope

		Up	Down
Braking device control force	daN	24.5	24.5

7. MEASUREMENT OF EXTERNAL NOISE LEVEL

- Date of test: 17 June 1994;
- Type of track: concrete;
- Type of sound level meter: BRÜEL & KJÆR, model 2231.

Gear and group	Travelling speed before acceleration km/h	Sound level dB(A)
4 F	21.4	82.0

.

8. REPAIRS AND REMARKS: none.

DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA
(Ing. Giovanni SANTORO)