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 45 DT (4WD) OECD No. **1550/1** Full Code
(identical to Same Solaris 40 DT)

HÜRLIMANN PRINCE 445 DT (4WD) OECD No. **1550/2** Full Code
(identical to Hürlimann Prince 440 DT)

LAMBORGHINI RUNNER 450 DT (4WD) OECD No. **1550/3** Full Code
(identical to Lamborghini Runner 400 DT)

Manufactured by:

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

Date of OECD approval: 28 February 1995
Period of test: October 1994 - January 1995

ISMA Via Milano 43 24047 Treviglio BG Italy
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All tests were carried out on the model Same Solaris 40 DT which is identical to the trade name Same Solaris 45 DT.
The models Hürlimann Prince 445 DT (4WD) (identical to Hürlimann Prince 440 DT) and Lamborghini Runner 450 DT (4WD) (identical to Lamborghini Runner 400 DT) are technically identical to model Same Solaris 45 DT (4WD), in all main respects except with regard to model designation and colour.

All stated dimensions and tests refer to tyre size 7.50-16 at front and 360.70R 24 at rear, as well as to track widths 970 mm at front and 910 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;
- Trade name	Solaris 45 DT;
- Model:	Solaris 40 DT;
- Type:	wheeled tractor, unit construction, all wheels drive tractor;
- Number of driving wheels:	4;
- Serial number:	1100;
- First serial number:	1001.

ENGINE

- Make:	MITSUBISHI;
- Model:	K4F-DT;
- Type:	water cooled 4-stroke diesel engine, direct injection, turbo charged;
- Serial number:	24881.

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

- Make:	MITSUBISHI;
- Model:	TD 025-05C;
- Type:	exhaust driven supercharger, without intercooler;
- Supercharging pressure:	70 kPa;

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 PFR4M70A1ND261, immersed pump, in line injection pump;
. serial number:	without serial number;
- Manufacturer's production setting of injection pump:	
. flow rate:	24 ± 2 mm^3/stroke at rated speed and full load corresponding 8.92 dm^3/h;
. timing:	22° before TDC;
- Make, model and type of injectors:	NIPPON DENSO DLLA 150 P 73 multihole injection nozzles;
- Injection pressure:	21.6 ± 5 MPa.

Governor

- Make:	MITSUBISHI;
- Model:	centrifugal;
- Type:	mechanical;
- Governor range of engine speed:	from 950 to 3149 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:	on the right hand side 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:	MITSUBISHI;
- Model:	MOO2T56271;
- Type:	electromagnetic engagement;
- Starter motor power rating:	2 kW;
- Safety device:	electrical lockout on clutch and PTO controls;
- Starting system for low temperatures:	none.

Electrical equipment

- Voltage:	12 V,negative earth;
- Generator	
. make:	MITSUBISHI;
. model:	MM435081;
. type:	alternator;
. power:	400 W;
- Battery:	1 lead acid;
. capacity:	70 Ah at 20 hours rating.

Exhaust system

- Make:	S+L+H;
- Model:	DGM SA 2620;
- Type:	one reflection absorption chamber;
- Location:	on the left hand side of engine, horizontal position, under side bonnet;
- Height of outlet above ground:	720 mm.

TRANSMISSION

Clutch (utilized only for travelling of tractor)

- Make:	S+L+H;
- Model:	755.23;
- Type:	single disk dry clutch;
- Number of plates:	1;
- Plates diameter:	215 mm;
- Control system:	mechanical operated by pedal.

Gear box

- Make:	own make;
- Model:	755.31;
- 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:	755.44;
- Type:	bevel gear differential and side final drive.

Rear differential lock

- Make:	own make;
- Model:	755.47;
- Type:	mechanical;
- Control system:	engaged or disengaged by pedal.

Front axle and final drives

- Make:	own make;
- Model:	755.43;
- Type:	central shaft, bevel gear drive, differential final drives.
Front differential lock:	optional not fitted on tested tractor.

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	837.23	0.73
2	S	551.47	1.11
3	S	364.56	1.68
1	N	331.90	1.84
4	S	241.87	2.53
2	N	218.62	2.79
3	N	144.46	4.23
4	N	95.87	6.37
1	F	82.01	7.45
2	F	54.01	11.31
3	F	35.69	17.11
4	F	23.69	25.78
REVERSE			
1	S	677.55	0.90
2	S	446.29	1.37
3	S	295.03	2.07
1	N	268.60	2.27
4	S	195.74	3.12
2	N	176.92	3.45
3	N	116.91	5.22
4	N	77.59	7.87
1	F	66.37	9.20
2	F	43.71	13.97
3	F	28.89	21.14
4	F	19.17	31.86

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

(*) Calculated with a tyre dynamic radius index of 540 mm (ISO 4251/1-1992).
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 215 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 500-1991, 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 500-1991;
- 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:	585	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

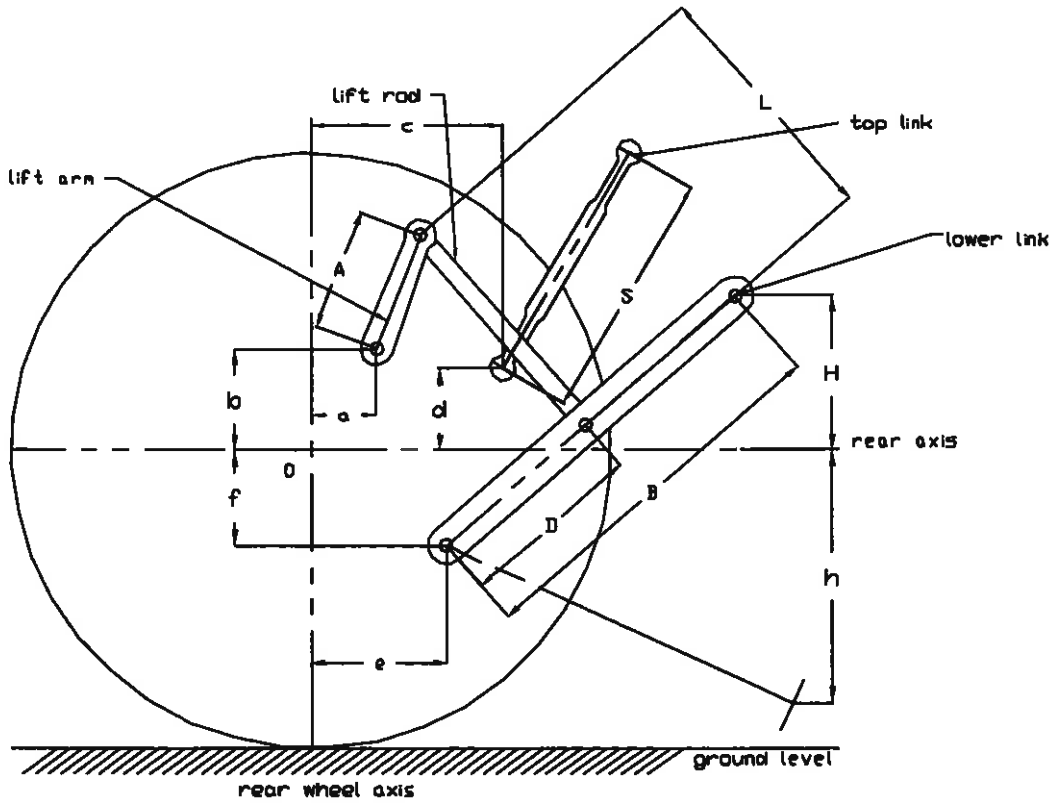
- Speed of shaft:	independent of 540/1000 rev/min;
- Location:	at rear of tractor, same shaft end as PTO proportional to engine speed;
- Direction of rotation with forward gear engaged:	clockwise;
- Travelling distance for one revolution of power take-off shaft:	0.48 m;
- Number of power take-off shaft revolutions for one revolution of rear driving wheels:	7.10.

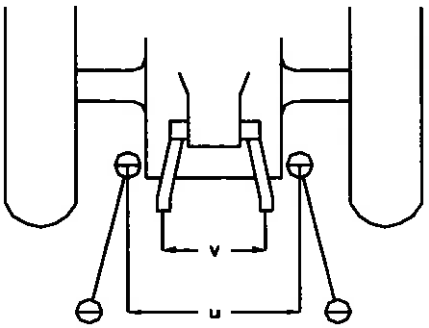
POWER LIFT

- 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;
- Lift pump	
. make:	KTB;
. 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:	1 sigle-acting at rear 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)	330 - 380	330
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)	380	330
Lowest position	(h)	184	260
Highest position	(H)	299	310
Height above ground of lower hitch points when locked in transport position (*)		839	850

(*) *Assuming the dynamic radius index = 540mm (ISO 4251/1-1992)*

SWINGING DRAWBAR: none.

HOLED DRAWBAR: optionally fitted on test tractor.

- 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: 360.70R24)	
. 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:	340 mm;
. max:	740 mm;
- Distance of hitch point from rear wheel axis	
. horizontally:	305 mm;
- Distance of hitch point from power take-off shaft end	
. vertically:	245 mm below, 155 mm above;
. horizontally:	80 mm;
- Maximum vertical permissible load:	4.9 kN.

STEERING

- Specification:	hydrostatic steering with KTB 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:	143 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:	1070 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:	910 mm;
. max:	1010 mm;
- Adjustment:	changing the position of the rims with respect to the disc.

WHEELBASE: 1700 mm.

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PROTECTIVE STRUCTURE

Specifications

Tractors	OECD approval numbers
S+L+H SAME SOLARIS 40 DT (Trade name: Same Solaris 45 DT (4WD)) with seat KAB P 1 XL 2	NT/ROPS-F/D 012/67
S+L+H LAMBORGHINI RUNNER 400 DT (Trade name: Lamborghini Runner 450 DT (4WD)) with seat KAB P 1 XL 2	NT/ROPS-F/D 012/31
S+L+H HÜRLIMANN PRINCE 440 DT (Trade name: Hürlimann Prince 445 DT (4WD)) with seat KAB P 1 XL 2	NT/ROPS-F/D 012/7

- 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 910 mm track width mm
Headligths	950	145 x 85	515
Front parking lights	920	110 x 35	290
Front direction indicators	955	110 x 35	290
Rear parking lights	1275	100 x 60	390
Rear direction indicators	1275	180 x 60	260
Brake lights	1275	100 x 60	390
Reflectors	1080	dia 80	200

TEST CONDITIONS

OVERALL DIMENSIONS

	Length mm	Width min mm	Width max mm	Height at top of protective structure mm
Unballasted	3030	1260	1360	2030
Ballasted	3030	1260	1360	2030

- Ground clearance: 240 mm (final drive case);
390 mm (differential case).

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

	Front kg	Rear kg	Total kg
Without driver			
Unballasted	540	700	1240
Ballasted	600	780	1380
With driver			
Unballasted	560	755	1315
Ballasted	620	835	1455

BALLAST

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

TYRES AND TRACK WIDTH SPECIFICATIONS

		Front	Rear
- Tyres			
. dimensions		7.50-16	360/70R24
. ply rating		6	-
. load index/speed index		-	122 A8
. type		diagonal	radial
. maximum load (tyre manufacturer's)	daN	873	1471
. inflation pressure (tyre manufact.'s)	kPa	225	160
. dynamic radius index	mm	375	540
- Chosen track width	mm	970	910
- Technically permissible axle load	daN	980	1372
- Other tyres available		7.50-16 27x8.50-15	12.4R24 38x14.00-20

ISTITUTO SPERIMENTALE PER
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SEZIONE DI TREVIGLIO

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: 0.839 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.

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TEST RESULTS

COMPULSORY TESTS RESULTS

1. MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 21 October 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						
27.5	3000	612	8.92	7.48	272	3.09
1.2 POWER AT RATED ENGINE SPEED						
27.5	3000	612	8.92	7.48	272	3.09
1.3 STANDARD POWER TAKE-OFF SPEED (540 rev/min)						
26.1	2648	540	7.82	6.56	252	3.34
1.4 PART LOADS						
1.4.1 The torque corresponding to maximum power at rated engine speed						
27.5	3000	612	8.92	7.48	272	3.09
1.4.2 85% of torque obtained in 1.4.1						
23.9	3053	623	7.71	6.47	271	3.10
1.4.3 75% of torque defined in 1.4.2						
18.0	3077	628	6.69	5.61	312	2.69
1.4.4 50% of torque defined in 1.4.2						
12.0	3085	630	5.34	4.48	372	2.26
1.4.5 25% of torque defined in 1.4.2						
6.1	3100	633	3.98	3.34	548	1.53
1.4.6 unloaded						
0	3149	643	2.96	2.48	-	-

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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						
26.1	2648	540	7.82	6.56	252	3.34
1.5.2 85% of torque obtained in 1.5.1						
22.0	2624	536	6.71	5.63	256	3.28
1.5.3 75% of torque defined in 1.5.2						
16.7	2657	542	5.54	4.65	278	3.02
1.5.4 50% of torque defined in 1.5.2						
11.2	2675	546	4.37	3.67	328	2.56
1.5.5 25% of torque defined in 1.5.2						
5.6	2706	552	3.28	2.75	488	1.72
1.5.6 unloaded						
0	2798	571	2.05	1.72	-	-

- No load maximum engine speed: 3149 rev/min;
- Torque (1) at maximum power at rated engine speed: 8.77 daNm;
- Maximum torque (1) (engine speed: 1833 rev/min): 10.02 daNm.

- Mean atmospheric conditions

. temperature: 20 °C
. pressure: 99.3 kPa
. relative humidity: 51 %

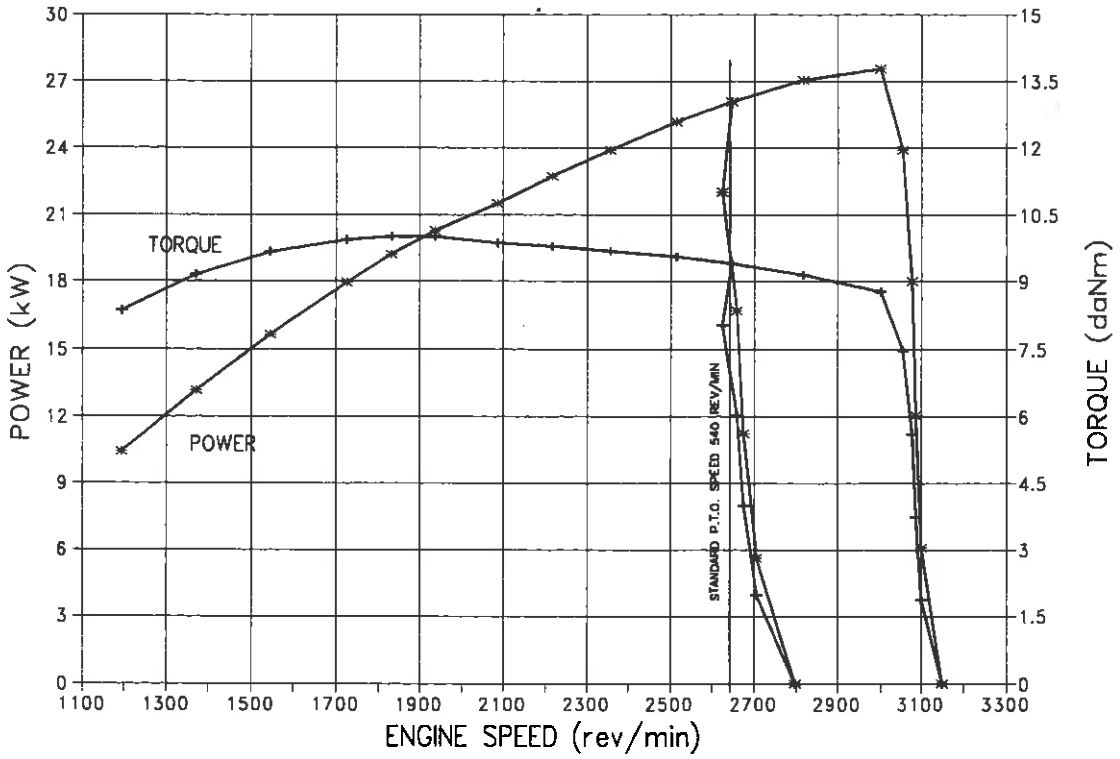
- Maximum temperatures

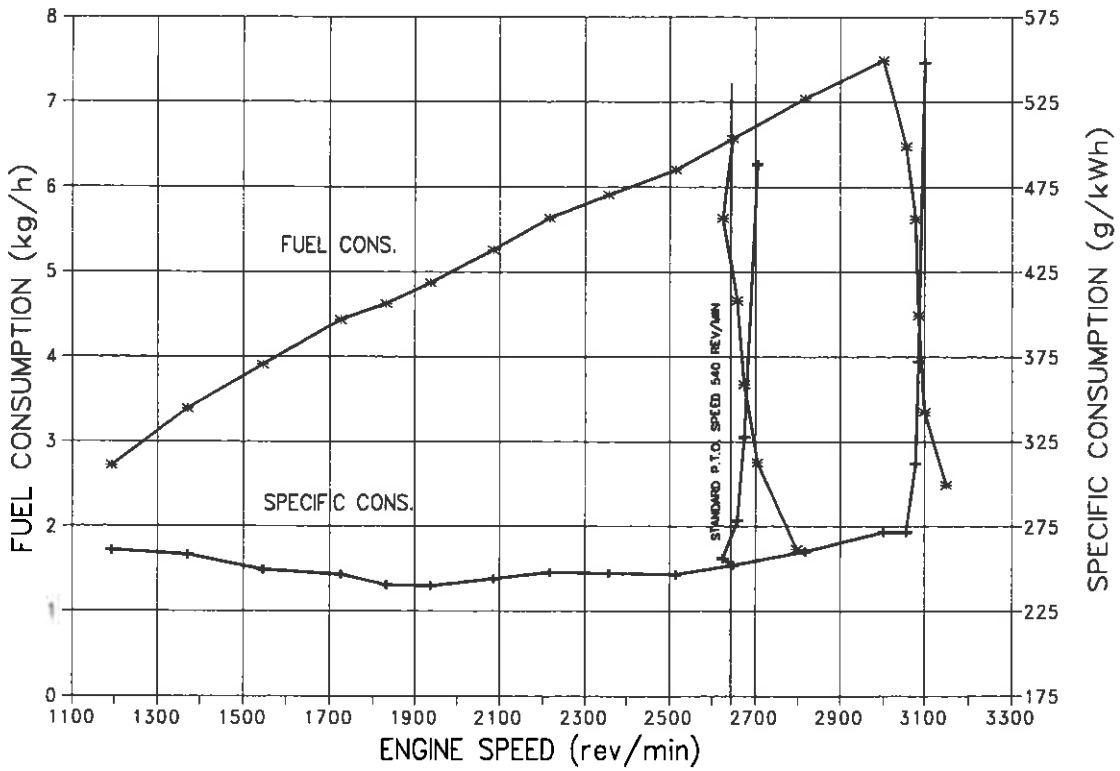
. coolant: - °C
. engine oil: 119 °C
. fuel: 35 °C
. engine air intake: 26 °C

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

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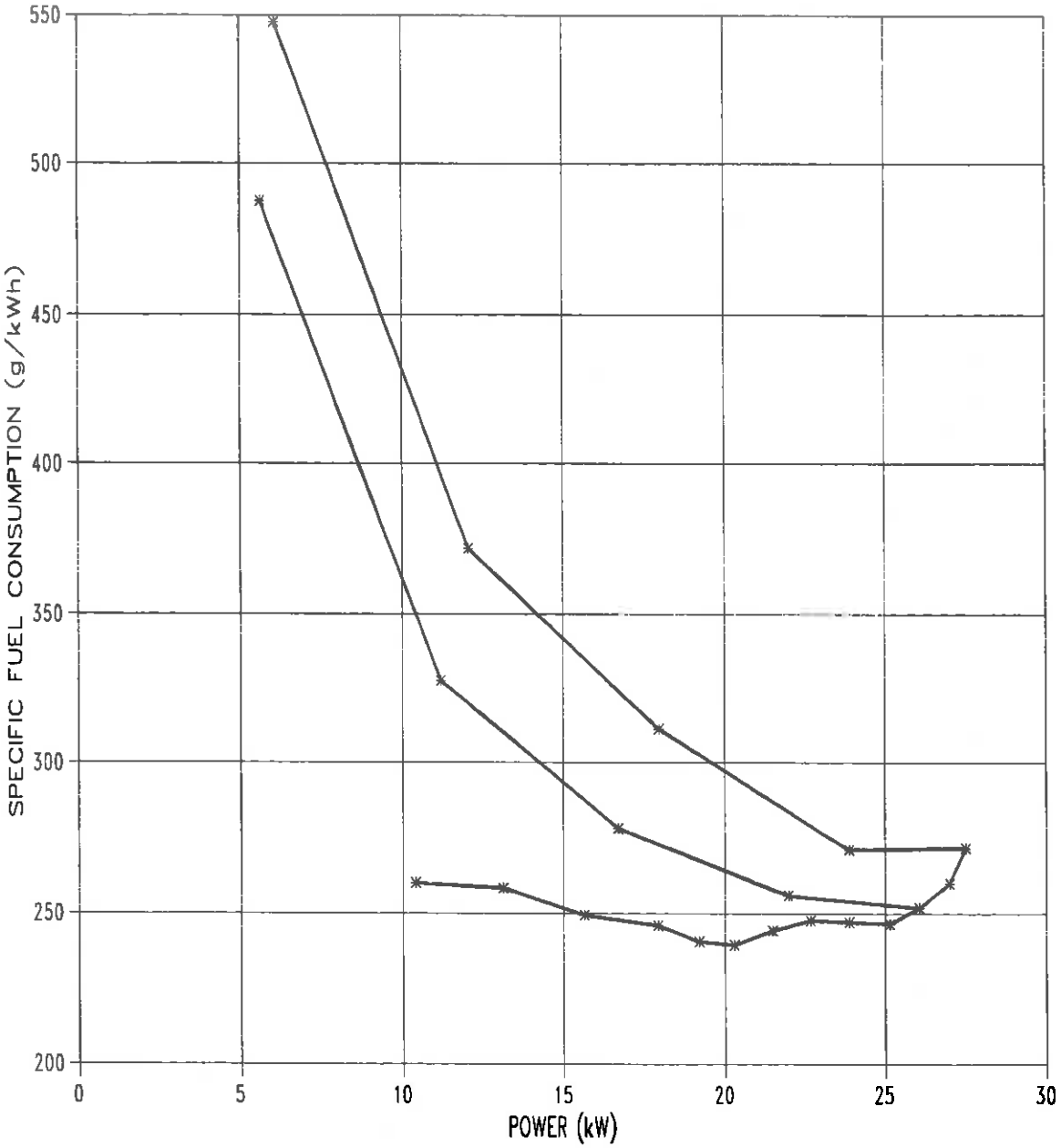
PTO test





ISTITUTO SPERIMENTALE PER
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PTO test



ISTITUTO SPERIMENTALE PER
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SEZIONE DI TREVIGLIO

2. HYDRAULIC POWER AND LIFTING FORCE

- Date and location of tests: 21 October 1994, ISMA, Treviglio BG, Italy.

2.1 HYDRAULIC POWER TEST

- Sustained pressure with relief valve open: 10.0 MPa;
- Pump delivery rate at minimum pressure: 7.1 l/min.

	Hydraulic power kW	Flow rate l/min	Pressure MPa	Oil temp. °C
At 90% of the actual relief valve setting	0.62	4.1	9.0	63
Maximum	0.96	7.0	8.2	64

- 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.

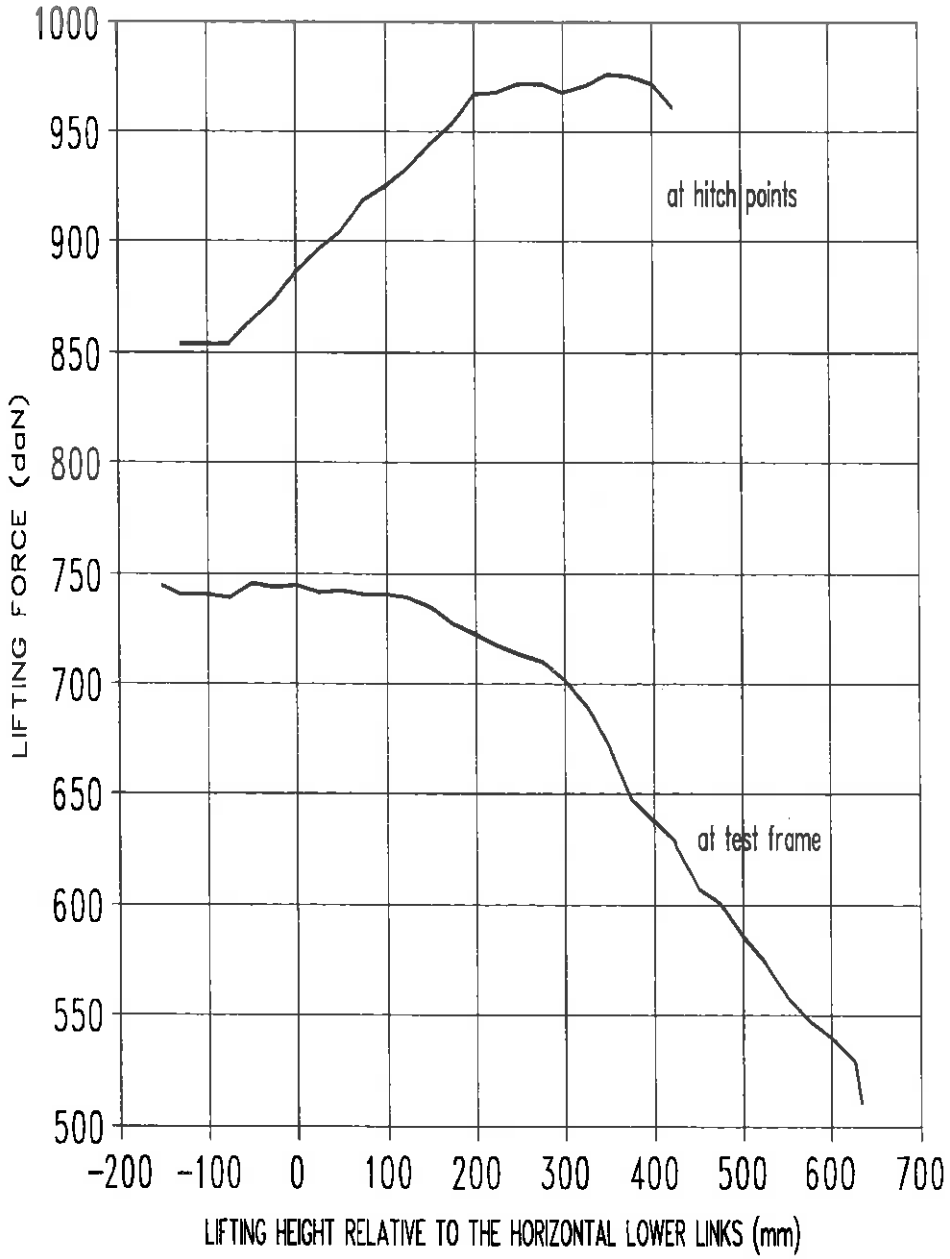
2.2 POWER LIFT

- Maximum pressure in the cylinder: 18.0 Mpa.

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	280	261
Vertical movement			
without lifting forces	mm	568	818
with lifting forces	mm	557	785
Maximum corrected force exerted through full range	daN	854	510
Corresponding pressure of hydraulic fluid	MPa	16.2	16.2
Moment about rear axle	daNm	648	698
Maximum tilt angle of mast over range of lift	degrees	-	20

Lifting heights relative to the horizontal lower links (mm)											
-152	-133	-100	0	100	200	300	400	424	500	600	633
Lifting forces at hitch points, corrected to 16.2 MPa (daN)											
-	854	854	886	925	967	968	971	961	-	-	-
Lifting forces at test frame, corrected to 16.2 MPa (daN)											
744	741	741	744	741	722	702	637	-	585	540	510

Performance of power lift



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3. DRAWBAR PERFORMANCE

- Date of test: 25 to 27 October 1994
- Type of track: concrete

3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)

- Height of drawbar above ground: 480 mm;
- Tyre inflation pressure: 225 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	1.4	810	0.64	3095	15	0.33	2569	26	-	105	13	84	99.3
2 S	2.3	849	0.97	3095	15	0.51	1638	26	-	105	13	84	99.3
3 S	3.8	939	1.46	3086	15	0.72	1168	27	-	105	14	82	99.2
1 N	3.8	859	1.60	3081	15	0.62	1356	27	-	106	14	81	99.2
4 S	5.2	857	2.20	3080	15	0.85	992	27	-	105	15	81	99.2
2 N	6.2	921	2.43	3078	15	0.99	845	28	-	105	14	80	99.3
3 N	9.2	904	3.67	3067	15	1.29	651	27	-	107	15	78	99.4
4 N	14.2	938	5.46	3043	15	1.78	471	27	-	106	15	78	99.3
1 F	16.7	928	6.47	3036	14	2.07	405	28	-	107	16	77	99.3
2 F	19.7	684	10.37	3002	8	2.22	379	28	-	107	16	75	99.3
3 F	19.0	420	16.26	3000	4	2.11	397	28	-	107	16	75	99.3

3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)

- Height of drawbar above ground: 480 mm;
- Tyre inflation pressure: 225 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	1.8	1001	0.64	3117	15	0.48	1742	28	-	104	17	71	99.4
2 S	2.6	1006	0.94	3017	15	0.71	1179	28	-	104	17	71	99.3
3 S	4.1	1023	1.46	3091	15	0.87	964	27	-	105	17	73	99.3
1 N	4.6	1034	1.60	3085	15	0.86	980	27	-	105	16	74	99.2
4 S	6.3	1026	2.20	3083	15	1.11	758	28	-	106	16	77	99.3
2 N	7.0	1034	2.43	3083	15	1.22	688	28	-	106	16	77	99.2
3 N	10.5	1027	3.67	3069	15	1.51	554	27	-	106	15	82	99.2
4 N	15.5	1021	5.47	3045	15	1.97	426	27	-	105	16	83	99.2
1 F	17.9	1013	6.35	3017	15	2.11	398	28	-	106	15	84	99.2
2 F	19.6	679	10.39	3001	8	2.19	383	28	-	105	15	86	99.2
3 F	18.7	414	16.23	3001	4	2.08	403	28	-	105	14	89	99.3

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

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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													
4 N	12.8	772	5.97	3070	8	1.85	453	27	-	105	15	80	99.5
3.3.2) FIVE HOUR TEST at pull corresponding to 15% wheelslip with additional ballast: 120 kg													
1 F	19.0	1010	6.76	3038	(*)	(*)	(*)	28	-	105	13	72	99.1

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: 11 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	3.30	3.19	3.75	3.62
Radius of turning circle	3.25	3.14	3.68	3.55

5. LOCATION OF CENTRE OF GRAVITY

Height above ground	mm	612
Distance forward from rear axle centre	mm	724
Distance from tractor's median plane	mm	0

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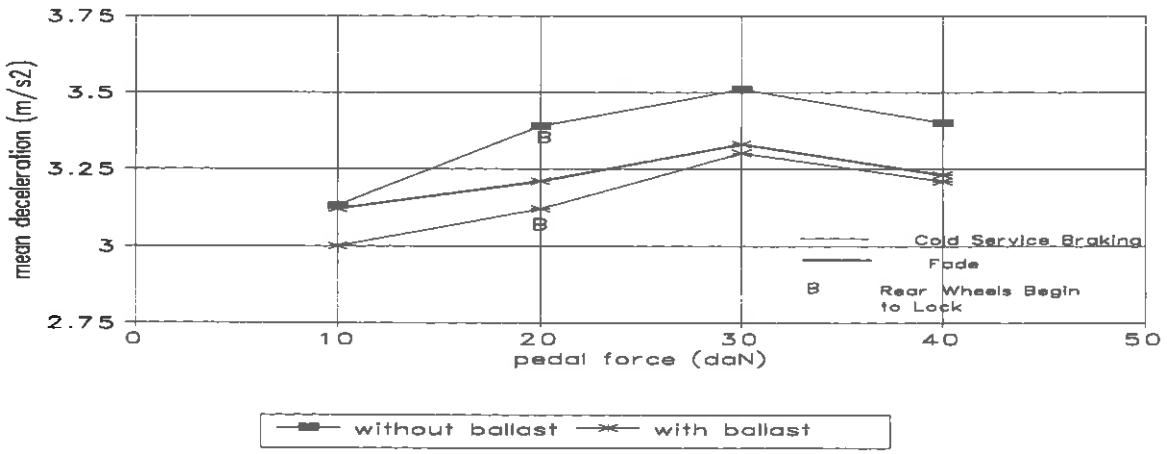
6. BRAKING PERFORMANCE

- Date of test: 7 November 1994;
- Type of track: concrete;
- Type of decelerometer: PEISELER.

Tractor mass (with driver)

	Front axle kg	Rear axle kg	Total kg
Unballasted	600	780	1380
Ballasted	620	835	1455

6.1 SERVICE BRAKES



- Speed before application of brakes (unballasted tractor): 27.1 km/h.
- Speed before application of brakes (ballasted tractor): 27.0 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	17.6	16.6

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7. MEASUREMENT OF EXTERNAL NOISE LEVEL

- Date of test: 20 November 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	20.3	81.0

8. REPAIRS AND REMARKS: none.

DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA
(Ing. Giovanni SANTORO)