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 TITAN 160 VDT W

OECD No. **1623** Full Code

40 km/h four-wheel
drive agricultural tractor

Manufactured by:	S+L+H S.p.A. V.le F. Cassani 15 24047 Treviglio BG Italy
Date of OECD approval:	1 July 1996
Period of test:	March 1996

ISMA Via Milano 43 24047 Treviglio BG Italy
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All stated dimensions and tests refer to tyre size 16.9R30 at front and 20.8R38 at rear, as well as to track widths 1920 mm at front and 1840 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:	TITAN 160 VDT W, 40 km/h version;
- Type:	four-wheel drive, unit construction;
- Number of driving wheels:	4;
- Serial number:	2026;
- First serial number:	2001.

ENGINE

- Make:	S+L+H;
- Model:	1000.6 WTI2;
- Type:	water cooled 4-stroke diesel, direct injection, turbocharged with intercooler;
- Serial number:	1649.

Cylinders

- Number and disposition:	6, vertical, in-line;
- Bore x stroke:	105 x 115.5 mm;
- Capacity:	6000 cm^3;
- Compression ratio:	16:1;
- Arrangement of valves:	overhead;
- Cylinder liners:	wet liners.

Supercharging:

- Make:	GARRET;
- Model:	TO4E49;
- Type:	exhaust driven supercharger, with intercooler;
- Supercharging pressure:	93 kPa.

Fuel system

- Fuel feed system:	AC corone fuel feed pump;
- Make, model and type of fuel filter:	FIAAM FNA 255/00;
- Total capacity of fuel tanks:	380 dm^3 (2x190 dm^3);
- Make, model and type of injection pump:	BOSCH PFR 1K 90 A 535, immersed, one per cylinder in line;
. serial number:	without serial number;
- Manufacturer's production setting of injection pump:	
. flow rate:	77 ± 2 mm^3/stroke at rated speed and full load corresponding 32.78 dm^3/h;
. timing:	16 ± 0.5° before TDC;
- Make, model and type of injectors:	BOSCH DLLA 150 S 1158 multihole injection nozzles;
- Injection pressure:	18 ± 1 MPa.

Governor

- Make:	S+L+H;
- Model:	527.16;
- Type:	electronic;
- Governor range of engine speed:	from 650 to 2550 rev/min;
- Rated engine speed:	2350 rev/min.

Air cleaner

- Main filter	
. make:	DONALDSON;
. model:	FLB 12-0260;
. type:	dry paper element filter with two replaceable cartridge elements; P77-2520 type for the external one and P77-0678 type for the internal one;
. 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:	FIAMM FT 4803 IN;
- 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:	8;
- Fan diameter:	500 mm;
- Water capacity:	16 dm^3
- Type of temperature control:	electrical indicator.

Starting system

- Make:	ISKRA;
- Model:	AZ J3537 12 V;
- Type:	electromagnetic engagement;
- Starter motor power rating:	3 kW;
- Safety device:	none (gear is automatically disengaged when engine is stopped);
- Starting system for low temperatures:	thermostarter.

Electrical equipment

- Voltage:	12 V;
- Generator	
. make:	BOSCH;
. model:	K 1 14V 65A;
. type:	alternator;
. power:	65 A;
- Battery:	1lead acid;
. capacity:	180 Ah at 20 hours rating.

Exhaust system

- Make:	S+L+H;
- Model:	83683.3, DGM SA 1686;
- Type:	one reflection absorption chamber;
- Location:	on the left hand side of engine, vertical position, under side bonnet;
- Height of outlet above ground:	2970 mm.

TRANSMISSION

Clutch (utilized only for travelling of tractor)

- Make:	S+L+H;
- Model:	527.22;
- Type:	indipendent multidisk in oil bath with axial piston;
- Number of plates:	8;
- Plates diameter:	168 mm;
- Control system:	hydraulic, operated by pedal.

Gear box

- Gear box	
. make:	S+L+H;
. model:	527.23;
. type:	electronic power shift, with mechanical reduction gear, 9 speed forward and reverse with 3 ranges of speeds (C/N/F);
. number of gears:	27 forward and 27 reverse;
- Available options:	none.

Rear axle and final drives

- Make:	S+L+H
- Model:	527.44;
- Type:	bevel gear differential and epicyclic final drive.

Rear differential lock

- Make:	own make;
- Model:	527.35;
- Type:	electrohydraulic;
- Control system:	engaged or disengaged by push button or automatically when steering angle exceeds 17 degrees, or when forward speed exceeds 15 km/h.

Front axle and final drives

- Make:	own make;
- Model:	527.43;
- Type:	original S+L+H system with central shaft, bevel gear drive, differential and epicyclic final drives.

Front differential lock

- Make: own make;
- Model: SBA original SAME system;
- Type: electrohydraulic;
- Control system: engaged or disengaged by push button or automatically when steering angle exceeds 17 degrees, or when forward speed exceeds 15 km/h.

Total rations and speed

Gear	Group	Number of engine revolution for one revolution of the driving wheels	Nominal travelling speed at rated engine speed of 2350 rev/min (*) km/h
FORWARD			
1	Creep	1499.13	0.51
2		1242.20	0.61
3		1032.59	0.73
4		896.54	0.84
5		655.59	1.14
6		617.50	1.23
7		542.14	1.40
8		449.30	1.69
9		373.43	2.03
1	Normal	303.22	2.50
2		251.27	3.01
3		208.83	3.63
4		181.31	4.18
5		150.20	5.04
6		124.99	6.06
7		109.56	6.91
8		91.04	8.32
9		75.35	10.05
1	Fast	80.24	9.44
2		66.35	11.42
3		55.29	13.70
4		47.84	15.83
5		39.61	19.13
6		32.92	23.01
7		28.80	26.30
8		23.92	31.67
9		20.00	37.87

(*) Calculated with a tyre dynamic radius index of 855 mm (ISO 4251/1-1992).

Number of revolutions of front wheels for one revolution of rear wheels: 1.2515.

Total rations and speed (continued)

Gear	Group	Number of engine revolution for one revolution of the driving wheels	Nominal travelling speed at rated engine speed of 2350 rev/min (*) km/h
REVERSE			
1		1374.25	0.55
2	Creep	1138.72	0.67
3		946.58	0.80
4		981.86	0.92
5		610.15	1.24
6		565.06	1.34
7		496.98	1.52
8		411.87	1.84
9		342.32	2.21
1	Normal	277.96	2.73
2		230.34	3.29
3		191.44	3.96
4		166.21	4.56
5		137.68	5.50
6		114.58	6.61
7		100.43	7.54
8		83.46	9.08
9		69.08	10.97
1	Fast	73.56	10.30
2		60.83	12.45
3		50.69	14.94
4		43.85	17.27
5		36.31	20.86
6		30.18	25.10
7		26.41	28.69
8		21.93	34.55
9		18.30	41.39

(*) Calculated with a tyre dynamic radius index of 855 mm (ISO 4251/1-1992).

Number of revolutions of front wheels for one revolution of rear wheels: 1.2515.

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 push botton, driven by multiplate wet clutch independent of travel clutch;
- Number of shafts: 1;
- Method of changing power take-off shaft ends: it is possible, through 6 screws, to mount one PTO shaft end, 35 mm diameter, 6 splines, ISO 500-1991, type 1or 35 mm diameter, 21 splines, ISO 500-1991, type 2;
- Method of changing speed: combination of internal and external hand lever;
- Height above ground: 835 mm;
- Distance from the median plane of the tractor: 0 mm;
- Distance behind rear axle: 485 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	540 609	2083 2350	3.8571	-
1000	1000 1028	2285 2350	2.2857	-

Power take-off proportional to ground speed : none.

POWER LIFT

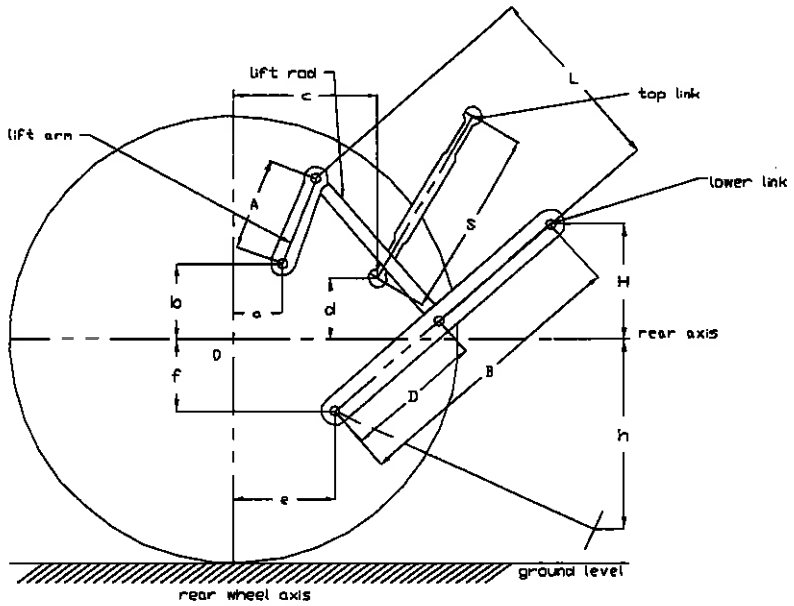
- Make: S+L+H;
- Model: 527.59 electronic-hydraulic power lift;
- Type: load sensing;
- Type of hydraulic system: open centre system;
- Number and type of cylinders: 1 internal single-acting and two external single acting;
- Type of lock for transport: electro-hydraulic;
- Relief valves pressure setting: 18.0 ± 0.5 MPa;

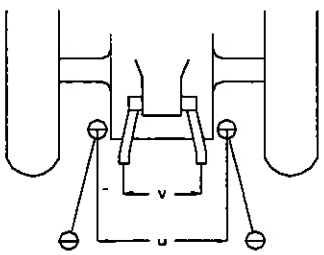
- Opening pressure of anti-shock valve: 21.0 ± 0.5 MPa;
- Lift pump
  . make: BOSCH;
  . type: hydraulic rotary pumps, driven by engine shaft;
- Transmission between pump and engine: mechanical;
- Number and type of filters: 1, replaceable paper cartridge;
- Oil capacity: 118 dm^3;
- Site of oil reservoir: gear box;
- Number, type and location of tapping points: 8 ways distributor at rear of tractor;
- Maximum volume of oil available to external cylinders: 20 dm^3.

- Recommended oil: see page 19.

Three-point linkage

- Category (ISO 730/1-1990): 2;
- Category adapter: 3.





Dimensions of linkage geometry (when connected to the standard frame)

		Dimension or range mm	Settings used in test mm
Length of lift arms	(A)	305	305
Length of lower links	(B)	950	950
Distance of lift arm pivot point from rear wheel axis (behind)			
- horizontally	(a)	141	141
- vertically	(b)	450	450
Horizontal distance between the 2 lower link points	(u)	650	650
Horizontal distance between the 2 lift arm end points	(v)	540	540
Length of upper link	(S)	from 615 to 785	711
Distance of upper link pivot point from rear wheel axis			
- horizontally	(c)	410	410
- vertically	(d)	245-310-375	310
Distance of lower link pivot point from rear wheel axis			
- horizontally	(e)	170	170
- vertically	(f)	240	240
Distance of lower link pivot point to lift rod pivot points on lower links	(D)	465	465
Length of lift rods	(L)	from 780 to 910	835

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

Length of lift rods	(L)	780	910	835
Linkage distance of lift rods	(D)	465	465	465
Lowest position	(h)	433	724	555
Highest position	(H)	274	32	175

Height above ground of lower hitch points when locked in transport position (*)	1030

(*) *Assuming the dynamic radius index = 855 mm (ISO 4251/1-1992)*

SWINGING DRAWBAR: optional, not fitted on tested tractor

HOLED DRAWBAR:

- Number of holes:	9;
- Distance between holes:	100 mm;
- Hole diameter:	33 mm;
- Thickness x width of the drawbar:	30 x 80 mm;
- Height above ground,	
. min:	300 mm;
. max:	1030 mm;
- Horizontal distance behind power take-off shaft end:	635 mm;
- Diameter of the pinhole:	36.6 mm.

TRAILER HITCH

- Type:	DGM-GA 901/C;
- Hole diameter:	28 mm;
- Height above ground	
. min:	630 mm;
. max:	960 mm;
- Distance of hitch point from rear wheel axis	
. horizontally:	670 mm;
- Distance of hitch point from power take-off shaft end	
. vertically:	205 mm below, 125 mm above;
. horizontally:	185 mm;
- Maximum vertical permissible load:	14.7 kN.

STEERING

- Specification:	hydrostatic steering with BOSCH hydraulic gear pump, two double acting ram acting directly on front axle.
- Make:	DANFOSS;
- Model:	ORBITROLL OSPC 200 OR;
- Type:	hydrostatic;
- Working pressure:	15 MPa;
- Recommended oil:	see page 19.

BRAKES

Service brake

- Make:	S+L+H;
- Model:	527.54;
- Type:	oil bath disc, total 8 discs, 4 at front (2 per wheel) and 4 at rear (2 per wheel), all mounted before the final drive;
. front disc diameter:	224 mm,
. rear disc diameter:	302 mm,
. material:	FRENDO HDT 303 lining material;
- Method of operation:	hydraulically actuated with 2 pedals;
- Trailer braking take-off:	none.

Parking brake

- Type:	fully independent of service brake, 4 oil bath disc mounted on the pinion shaft in the gear box;
- 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:	1810 mm:
. max:	1940 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:	1635 mm;
. max:	1835 mm;
- Adjustment:	changing the position of the rims with respect to the disc.

WHEELBASE: 2850 mm.

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PROTECTIVE STRUCTURE

Specifications

- Make:	S+L+H;
- Model:	C 33;
- Type:	cab, not tiltable;
- Manufacturer's name and address:	S+L+H S.p.A., Viale F. Cassani 15, 24047 Treviglio BG, Italy.
- OECD approval number:	CSD 1338/35;
- Date of approval:	31 January 1996;
- Location and country of test of protective structure:	Istituto di Ingegneria Agraria, Università degli Studi di Milano, Italy;
- Mass used for calculating impact energies and crushing forces:	6300 kg;
- Wheelbase used for calculating impact energy at the rear:	2856 mm;

Details of materials used for sound proofing the protective structure

- Glass	
. type:	security glass, thickness 5 and 6 mm;
. model:	43 R - 000589 (doors, windscreen, windows);
- Windscreen wipers:	OSLV, parallelogram type;
- Direction indicators:	COBO E3;
- Heating and ventilation system:	BORLETTI;
- Draught proofing:	rubber GMTA 20 - 70 P, SP 550 and PEC 75.
- Interior padding:	next page;

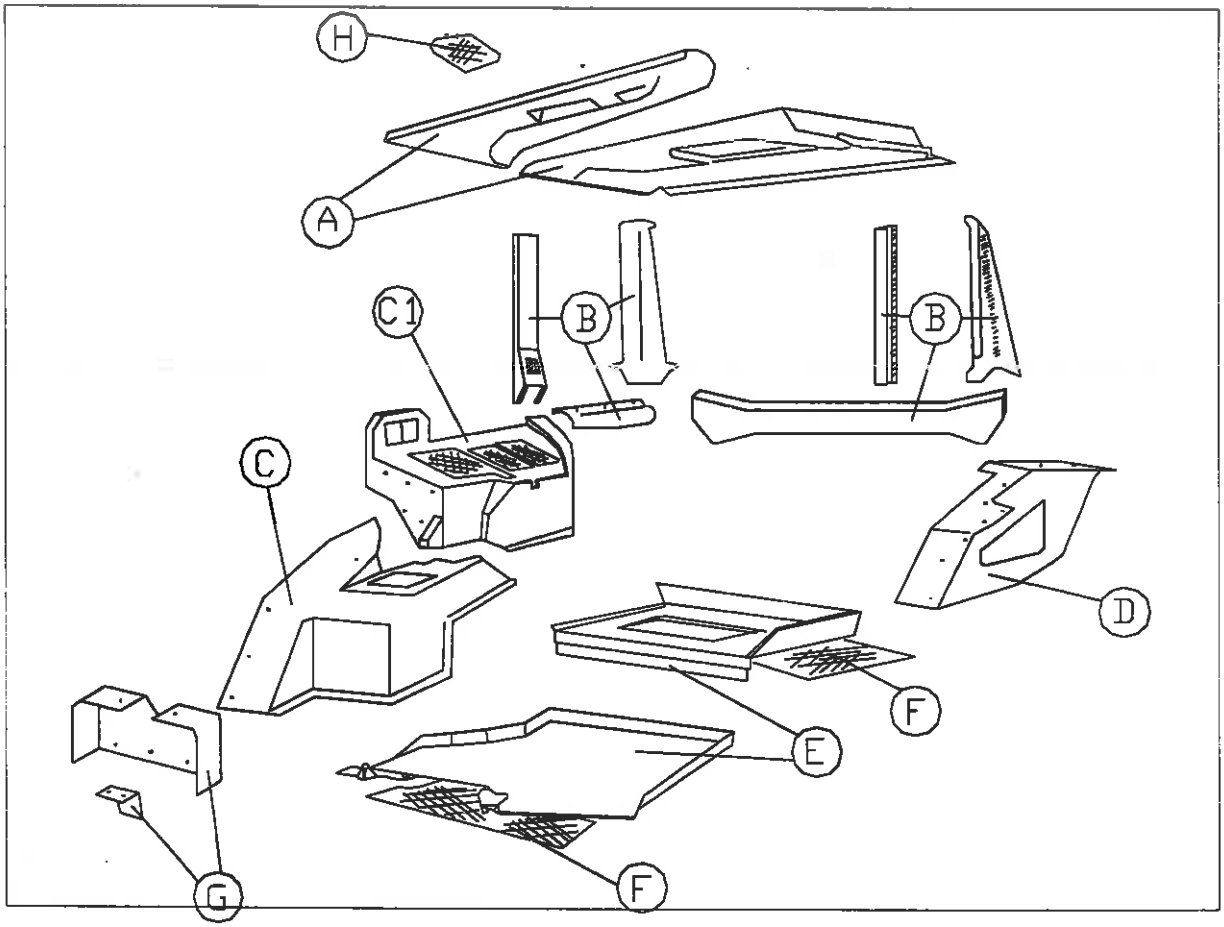
SEAT

Driver's seat

- Make:	GRAMMER;
- Model:	LS 95 H1/90 AR;
- Type:	upholstered seat with back rest;
- Type of suspension:	pneumatic;
- Type of damping:	hydraulic;
- Range of adjustment	
. longitudinal:	150 mm;
. vertical:	60 mm.

Passenger's seat : 1 place seat at the left side of the driver's seat.

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A) Porous material, 50-60 g/m^3, thickness 15-20 mm + Tassel AD, 1200-1400 g/m^3, thickness 6 mm + textile fiber + TNT.

B) PUR, low density, 250-300 g/m^3, coated with expanded laminated PVC.

C) Polypropylene, thickness 3 mm, internally covered with polyurethan foam, thickness 30 mm, and bitumen sheet.

C1) Polypropylene, thickness 3 mm, internally covered with polyurethan foam, thickness 30 mm.

D) Tassel AD, 1400-1600 g/m^3 + PVC, thickness 12 + 22 mm.

E) Rubber, 2-3 kg/m^3, thickness 5 mm + polyurethan foam, thickness 20 mm + thermoplastic film.

F) Bitumen, thickness 6 mm.

G) Rubber + Tassel AB X AD, 800-1000 g/m^3 + Tassel AB X BD, 1400 g/m^3, thickness 23 mm.

H) Polyurethan foam, thickness 30 mm.

LIGHTING

Lighting system in accordance with EEC 78/933

	Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Headligths	1415	165 x 105	240
Sidelights	1915	110 x 35	850
Rearlights	1835	115 x 70	860
Reflectors	770	∅ 80	580

TEST CONDITIONS

OVERALL DIMENSIONS

	Length mm	Width minimum mm	Width maximum mm	Height at top of protective structure mm	Height at top of exhaust silencer mm
Ballasted	5060	2310	2500	2970	2970
Unballasted	4770	2310	2500	2970	2970

- Ground clearance: 550 mm below front axle;

TRACTOR MASS (with full fuel tanks, and protective structure)

	Ballasted		Unballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	3110	3130	2655	2675
Rear	4020	4075	3815	3870
Total	7130	7205	6470	6545

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BALLAST

	Weights		Water
	Number	Total mass kg	kg
Front	10	400	-
Rear wheels	3+3	260	-

TYRES AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Tyres		
make	PIRELLI	PIRELLI
model	TM 300 S	TM 300 S
dimensions	16.9R30	20.8R38
ply rating	-	-
load index/speed index	137 A8	153 A8
type	radial	radial
maximum load (tyre manufacturer's)	22.25 kN	35.79 kN
inflation pressure (tyre manufact.'s)	160 kPa	160 kPa
dinamic radius index	695 mm	855 mm
Chosen track width	**1920 mm**	**1840 mm**
Technically permissible axle load	38.42 kN	68.64 kN
Other tyres available	480/70R30	520/70R38
	480/70R30	650/75R34

OILS AND LUBRICATION

Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	15	150	300
Gear box with rear axle and final drives, hydraulic system, steering	118	1200	2400 (*)
Front axle / final drives	13 / 5	1200	-
Brakes	2.5	-	-

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

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Specifications

	Recomended	Using during test
Engine oil		
Type	AKROS TURBO15 W 40	AKROS TURBO 15 W 40
Viscosity	12.5 cSt	12.5 cSt
Classification	API SE - CD	API SE - CD
Transmission oil used in		
Gear box		
Front axle and final drives		
Rear axle and final drives		
Type	AKROS MULTI	AKROS MULTI
Viscosity	11.5 cSt	11.5 cSt
Classification	API GL 4	API GL 4
Steering oil		
Type	AKROS MULTI	AKROS MULTI
Viscosity	11.5 cSt	11.5 cSt
Classification	API GL 4	API GL 4
Braking oil		
Type	AKROS MATIC	AKROS MATIC
Viscosity	6.7 cSt	6.7 cSt
Classification	API GL 4	API GL 4

Grease

- Type: AKROS GREASE 30;
- Number of lubrication points: 10.

FUEL

- Type: AGIP DIESEL, DIN 51601; (in accordance with the national standard)
- Density at 15 °C: 0.838 g/cm^3.

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TEST RESULTS

COMPULSORY TESTS RESULTS

1. MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 27 February 1996, ISMA, Treviglio BG, Italy;
- Type of dynamometer: ZÖLLNER B 500.

Power	Speed		Fuel consumption			Specific
	Engine	PTO	Hourly		Specific	energy
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
1.1 MAXIMUM POWER - TWO-HOUR TEST						
113.2	2350	1028	32.78	27.47	243	3.45
1.2 POWER AT RATED ENGINE SPEED						
113.2	2350	1028	32.78	27.47	243	3.45
1.3 STANDARD POWER TAKE-OFF SPEED (1000 rev/min)						
112.3	2286	1000	32.17	26.96	240	3.49
1.4 PART LOADS 1.4.1 The torque corresponding to maximum power at rated engine speed						
113.2	2350	1028	32.78	27.47	243	3.45
1.4.2 85% of torque obtained in 1.4.1						
98.2	2400	1050	29.58	24.79	252	3.32
1.4.3 75% of torque defined in 1.4.2						
74.5	2428	1062	24.15	20.24	272	3.09
1.4.4 50% of torque defined in 1.4.2						
50.1	2448	1071	18.77	15.73	314	2.67
1.4.5 25% of torque defined in 1.4.2						
25.2	2464	1078	13.35	11.19	444	1.89
1.4.6 unloaded						
0	2491	1090	8.31	6.96	-	-

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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 (1000 rev/min)						
1.5.1 The torque corresponding to maximum power available						
112.3	2286	1000	32.17	26.96	240	3.49
1.5.2 85% of torque obtained in 1.5.1						
98.0	2347	1027	29.02	24.32	248	3.38
1.5.3 75% of torque defined in 1.5.2						
74.2	2370	1037	23.48	19.68	265	3.16
1.5.4 50% of torque defined in 1.5.2						
49.9	2390	1046	18.17	15.23	305	2.75
1.5.5 25% of torque defined in 1.5.2						
25.2	2406	1053	12.77	10.70	425	1.97
1.5.6 unloaded						
0	2429	1063	7.97	6.68	-	-

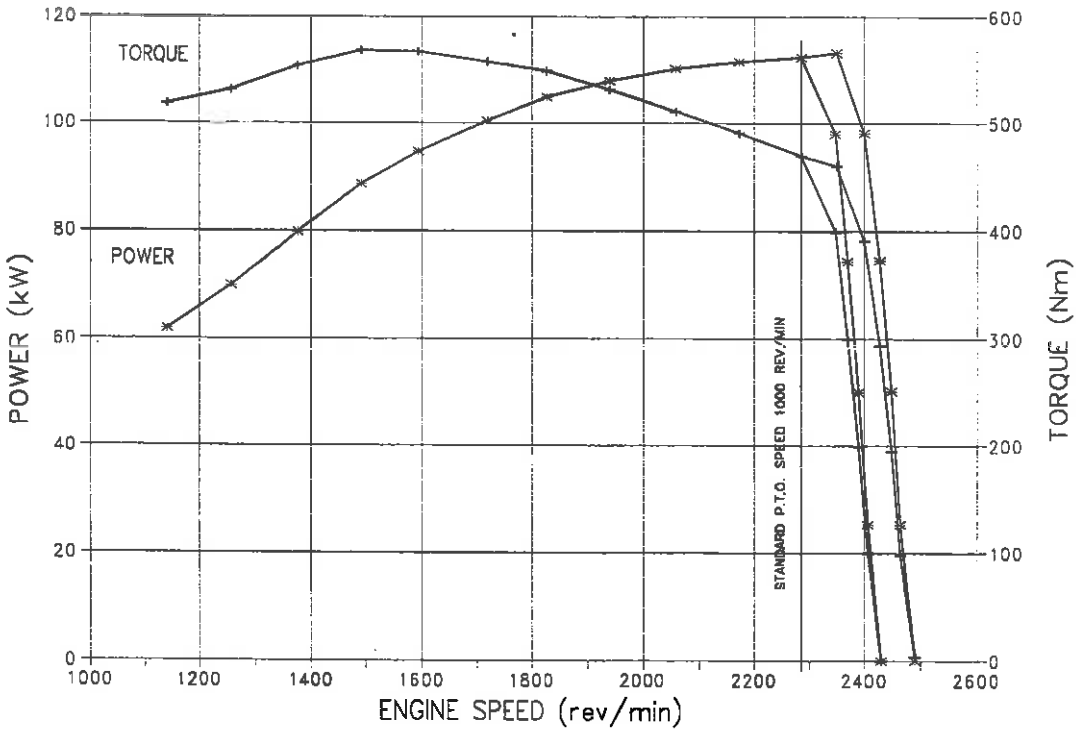
- No load maximum engine speed: 2491 rev/min;
- Equivalent flywheel torque at rated engine speed: 460.14 Nm;
- Equivalent flywheel torque at 2-hour test: 460.14 Nm
- Maximum equivalent flywheel torque: 568.08 Nm at 1491 rev/min of the engine.

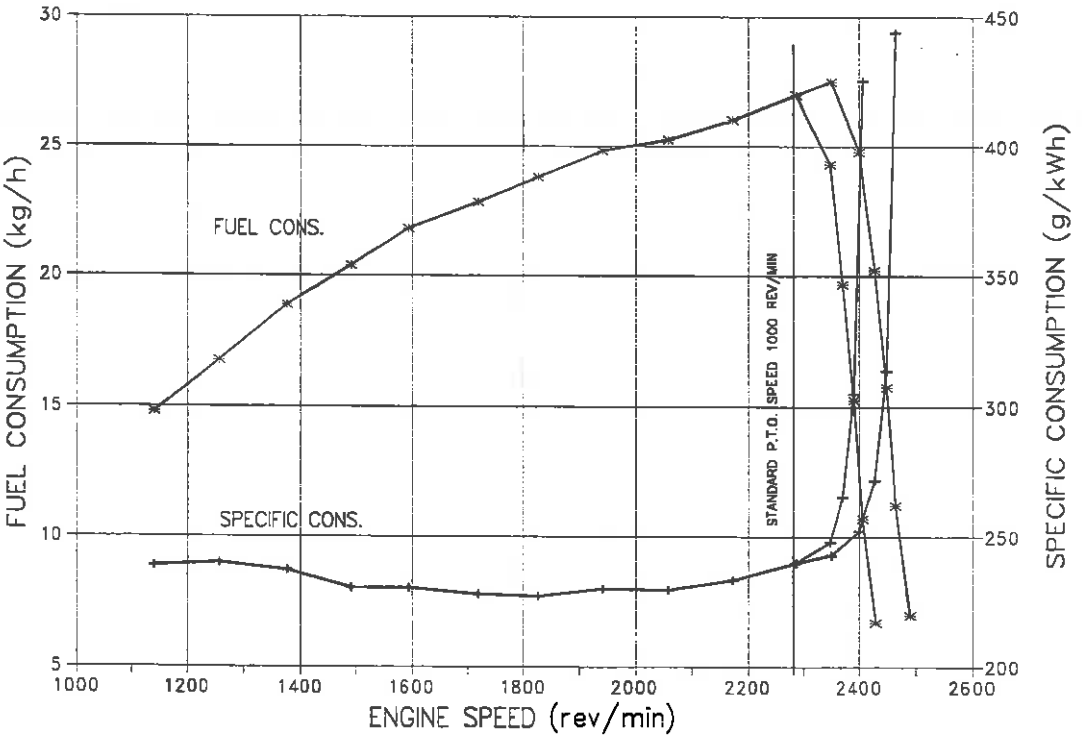
- Mean atmospheric conditions
  . temperature: 19°C
  . pressure: 100.5 kPa
  . relative humidity: 58 %

- Maximum temperatures

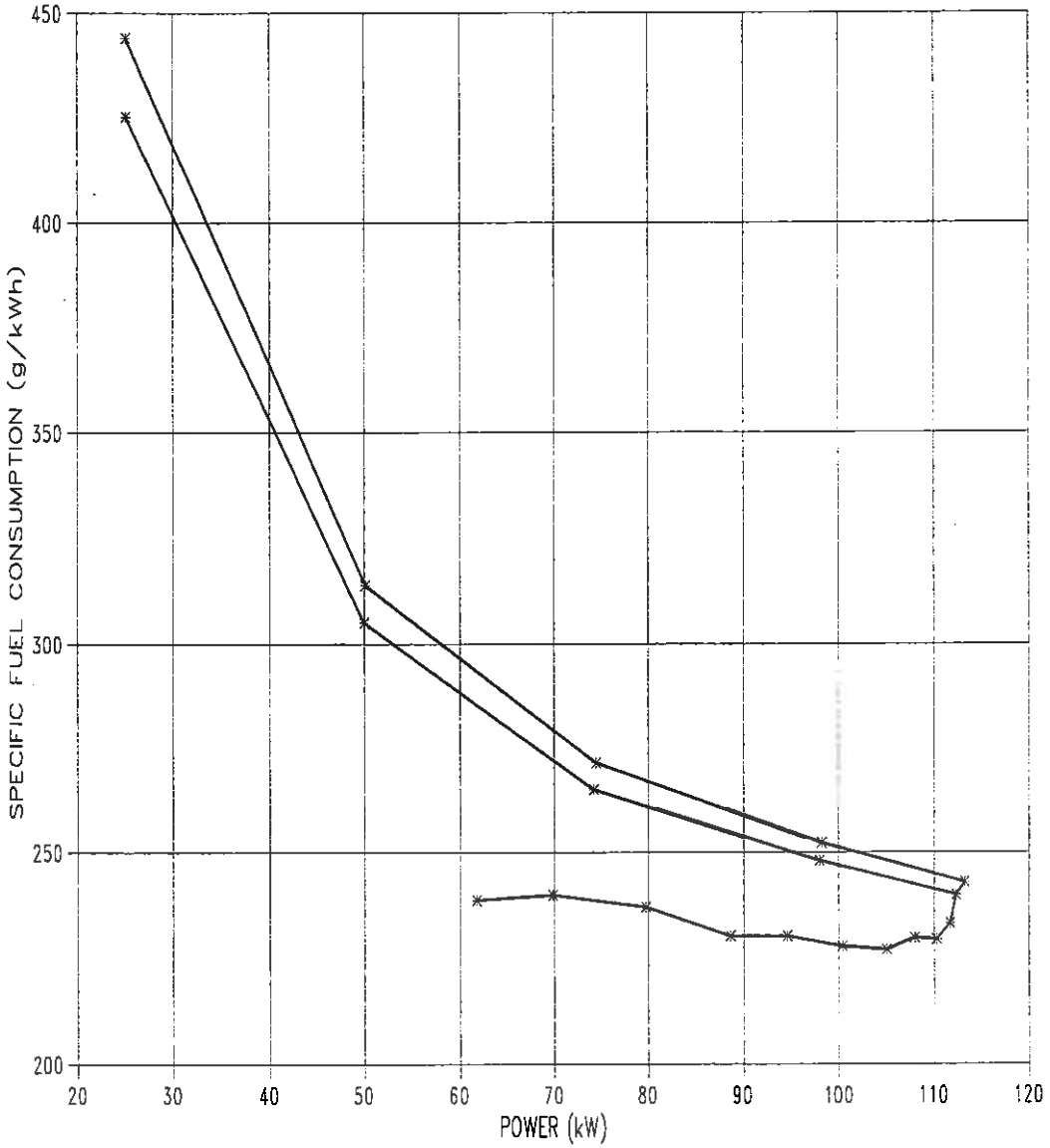
  . coolant: 92 °C
  . engine oil: 130 °C
  . fuel: 32 °C
  . engine air intake: 23 °C

ISTITUTO SPERIMENTALE PER
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SEZIONE DI TREVIGLIO





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SEZIONE DI TREVIGLIO

2. HYDRAULIC POWER AND LIFTING FORCE

- Date of tests: 20 March 1996

2.1 HYDRAULIC POWER TEST

- Sustained pressure with relief valve open: 18.0 MPa;
- Pump delivery rate at minimum pressure: 59.4 l/min;

	Power kW	Flow rate l/min	Pressure MPa	Oil temp. °C
At 90% of the actual relief valve setting	5.08	18.8	162	66
Maximum	11.58	54.3	128	63

- 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 REAR POWER LIFT

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	300	300
Vertical movement			
without lifting forces	mm	730	687
with lifting forces	mm	724	682
Maximum corrected force exerted through full range	kN	55.0	64.4
Corresponding pressure of hydraulic fluid	MPa	16.2	16.2
Moment about rear axle	daNm	61.6	111.3
Maximum tilt angle of mast over range of lift	degrees	-	5

Lifting heights relative to the horizontal lower links												
mm	- 315	- 300	-262	-200	-100	0	+100	+200	+300	+ 400	+ 409	+ 420
	Lifting forces at hitch points, corrected to 16.2 MPa											
kN	55.0	55.2	-	55.9	59.6	62.7	64.9	66.5	68.7	73.6	72.2	-
	Lifting forces at test frame, corrected to 16.2 MPa											
kN	-	-	65.6	65.8	67.1	67.3	66.4	66.4	65.9	65.6	-	64.4

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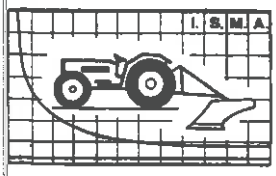
3. DRAWBAR PERFORMANCE

- Date of test: 13 March 1996;
- Type of track: concrete.

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
	mm	kPa	kPa
Unballasted	628	160	160
Ballasted	628	160	160

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
3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
2 S	43.1	58.62	2.65	2443	15	396	2.11	23	81	104	6	60	100.1
3 S	51.3	58.50	3.16	2427	15	397	2.11	24	81	104	6	60	100.2
4 S	59.6	58.59	3.66	2421	15	361	2.32	23	83	103	6	60	100.3
5 S	70.7	58.26	4.37	2407	15	334	2.51	25	82	106	7	62	100.2
6 S	83.5	57.91	5.19	2382	15	309	2.72	25	83	106	6	62	100.2
7 S	92.4	51.73	6.43	2350	6	298	2.81	24	83	106	7	62	100.2
8 S	93.0	41.73	8.03	2350	3	295	2.84	26	83	105	7	63	100.3
1 F	94.2	37.24	9.11	2345	3	293	2.86	25	83	106	7	62	100.3
9 S	94.1	34.47	9.83	2347	2	291	2.88	25	82	106	6	63	100.1
2 F	95.9	30.94	11.16	2345	2	287	2.92	26	82	107	7	63	100.1
3 F	95.0	25.25	13.55	2350	1	290	2.89	26	83	106	7	63	100.2

S= Slow, F= Fast.



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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 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)													
1 C	7.6	61.12	0.45	2478	15	1185	0.71	24	83	107	9	55	100.0
2 C	9.1	60.95	0.54	2469	15	1138	0.74	24	83	108	9	55	100.0
3 C	11.3	62.69	0.65	2466	15	932	0.90	24	83	108	9	55	100.0
4 C	12.8	61.59	0.75	2462	15	916	0.92	25	82	110	8	56	100.1
5 C	17.6	63.26	1.00	2459	15	660	1.27	25	82	110	8	55	100.2
6 C	18.9	62.93	1.08	2457	15	703	1.19	24	82	110	9	54	100.2
7 C	21.3	62.26	1.23	2453	15	683	1.23	23	83	109	9	54	100.1
8 C	25.8	62.88	1.48	2448	15	611	1.37	24	83	110	10	54	100.3
9 C	31.3	63.41	1.78	2443	15	546	1.54	24	84	110	10	54	100.2
1 S	38.2	62.76	2.19	2439	15	466	1.80	25	84	111	10	55	100.1
2 S	45.9	62.88	2.63	2427	15	444	1.89	26	84	112	10	55	100.2
3 S	55.1	62.97	3.15	2421	15	390	2.15	26	83	112	11	54	100.2
4 S	64.4	63.74	3.64	2411	15	359	2.34	26	82	112	10	54	100.1
5 S	76.4	63.24	4.35	2400	15	324	2.58	25	83	113	10	55	100.1
6 S	89.9	58.66	5.52	2347	8	307	2.73	25	83	114	11	55	100.1
7 S	93.3	51.19	6.56	2352	4	294	2.85	26	83	113	11	56	100.0
8 S	94.6	42.06	8.10	2350	2	291	2.88	26	83	112	10	56	100.0
1 F	95.8	37.51	9.20	2350	2	288	2.91	25	82	113	10	56	100.1
9 S	95.7	34.71	9.93	2352	1	287	2.92	25	83	114	10	56	100.1
2 F	93.8	29.97	11.27	2350	1	293	2.86	25	83	114	10	56	100.2
3.3 FIVE HOUR TESTS													
3.3.1 FIVE HOUR TEST at 75% of pull at maximum power													
7 S	72.7	38.49	6.8	2411	3	318	2.64	27	83	112	10	58	100.4
3.3.2 FIVE HOUR TEST at pull corresponding to 15% wheel slip with additional ballast: 85 kg													
5 S	79.3	62.76	4.55	2400	(*)	(*)	(*)	26	-	113	12	57	100.4

C= Creep, S= Slow, 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: 69 g/h.

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4.TURNING AREA AND TURNING CIRCLE (front wheel drive disengaged)

	With brakes		Without brakes	
	left-hand	right-hand	left-hand	right-hand
	m	m	m	m
Radius of turning area	4.35	4.35	5.90	5.95
Radius of turning circle	4.15	4.15	5.70	5.75

5. LOCATION OF CENTRE OF GRAVITY

	mm
Height above ground	1040
Distance forward from rear axle centre	1165
Distance from tractor's median plane to the left	0

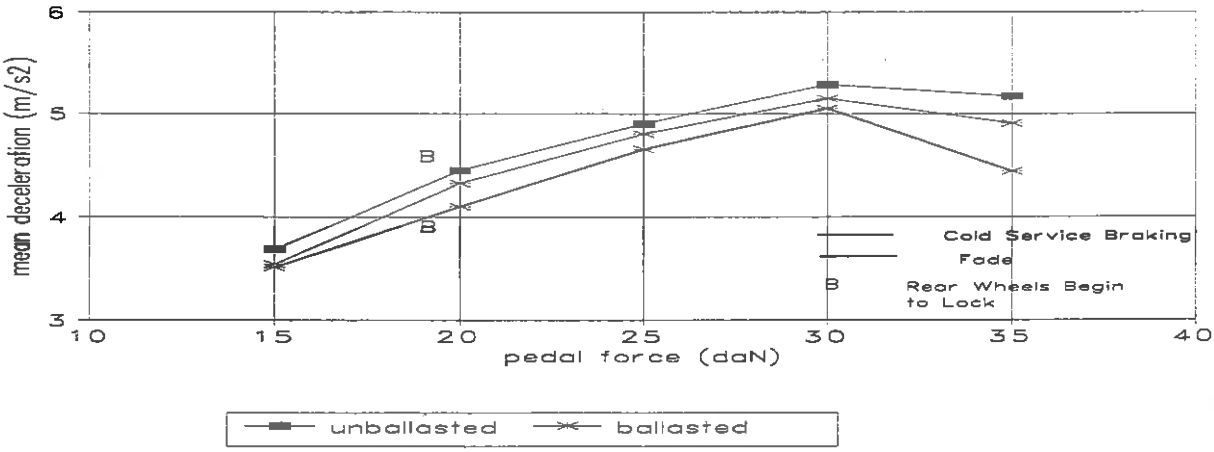
6. BRAKING (front wheel drive disengaged)

- Date of test: 25 March 1996;
- Type of track: concrete.

	Tractor mass (with driver)			Speed before application brakes
	front	rear	total	
	kg	kg	kg	km/h
Unballasted	2675	3870	6545	40.0
Ballasted	3130	4075	7205	40.0

6.1 COLD SERVICE BRAKING DEVICE TEST

6.2 FADE TEST



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

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6.3 PARKING BRAKE

	Ballasted tractor on 18% slope	
	up	down
	daN	daN
Braking device control force	10.3	10.5

7. MEASUREMENT OF EXTERNAL NOISE LEVEL

- Date of test: 16 April 1996;
- Type of track: concrete;
- Type of sound level meter: BRÜEL & KJÆR model 2231.

Gear	Travelling speed before acceleration	Sound level
	km/h	dB(A)
9 F	29.9	83.4

8. REPAIRS: none.

9. REMARKS: none.

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APPENDIX

MEASUREMENT OF NOISE IN THE PROTECTIVE STRUCTURE - OECD code V

- Test report of: SAME TITAN 160 VDT W (4WD);
- Protective structure: S+L+H C33;
- Driver's seat: GRAMMER LS 95 H1/90 AR;
- OECD test No.: CSD 1338/35/NM 1684;
- Date of approval: 12 March 1996;
- Date of test: 30 January 1996;
- Location: ISMA, Via Milano 43, Treviglio BG, Italy;
- Type of sound level meter: BRÜEL & KJÆR 2231;
- Type of track: concrete.

Gear	Driving axles	Drawbar pull kN	Travelling speed km/h	Sound level a dB(A)	Sound level b dB(A)
Unloaded test in the gear giving the forward speed nearest to 7.5 km/h					
7 slow	1	0	7.2	73.8	83.3
7 slow	2	0	7.4	74.0	83.5
Unloaded test in the gear giving the maximum forward speed					
9 fast	1	0	40.0	76.2	86.0
9 fast	2	0	40.1	76.2	86.0
Test with the drawbar pull for which the tractor gives the maximum sound level in a gear giving the nominal forward speed nearest to 7.5 km/h					
7 slow	1	20.6	6.7	76.0	86.2
7 slow	2	51.9	6.5	76.5	86.3
Test with the drawbar pull for which the tractor gives the maximum sound level in any gear with a sound level increase of at least 1 dB(A) compared to the previous test					
-	-	-	-	-	-
-	-	-	-	-	-

a - *all openings closed*
b - *side and rear windows and roof hatch open*

TEST ENGINEER
(Dr. Carlo BISAGLIA)

DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA
(Ing. Giovanni SANTORO)